Enbridge Line 6B MP 608
Marshall, MI Pipeline Release

Monthly Progress Report for the
Time Frame of December 1 – 31, 2012

Prepared for United States Environmental Protection Agency and
Michigan Department of Environmental Quality

Enbridge Energy, Limited Partnership

Submitted: January 23, 2013

Table of Contents

Table of Contents i

Tables iii

Figures iv

Appendices v

Acronyms and Abbreviations vi

1.0 Introduction 1

2a.0 Surface Water and Sediment Monitoring Activities 3

2a.1 Introduction 3

2a.2 Work Completed 3

2a.3 Work Planned 7

2b.0 Water Quality Monitoring Activities 8

2b.1 Introduction 8

2b.2 Work Completed 8

2b.3 Work Planned 8

2c.0 Potable Water Monitoring Activities 9

2c.1 Introduction 9

2c.2 Work Completed 9

2c.3 Work Planned 10

2d.0 Air Sampling and Monitoring Activities 11

2d.1 Introduction 11

2d.2 Work Completed 11

2d.3 Work Planned 12

2e.0 Submerged Oil Assessment and Recovery Activities 13

2e.1 Introduction 13

2e.2 Work Completed 13

2e.3 Work Planned 14

2f.0 Remedial Investigation Activities 16

2f.1 Introduction 16

2f.2 Work Completed 16

2f.3 Work Planned 18

2g.0 Temporary Facility Restoration and Demobilization Activities 20

2g.1 Introduction 20

2g.2 Work Completed 20

2g.3 Work Planned 20
2h.0 River Bank Erosion Control and Restoration Activities 21
2h.1 Introduction 21
2h.2 Work Completed 21
2h.3 Work Planned 21
2i.0 Sediment Traps and Cylindrical Sampling Devices 22
2i.1 Introduction 22
2i.2 Work Completed 23
2i.3 Work Planned 24
2j.0 Waste Management Activities 25
2j.1 Introduction 25
2j.2 Work Completed 26
2j.3 Work Planned 28
2k.0 Overbank Excavation Activities 30
2k.1 Introduction 30
2k.2 Work Completed 30
2k.3 Work Planned 30
2l.0 Overbank Oil Recovery Activities 31
2l.1 Introduction 31
2l.2 Work Completed 31
2l.3 Work Planned 31
2m.0 Hydrodynamic Assessment and Model Activities 32
2m.1 Introduction 32
2m.2 Work Completed 32
2m.3 Work Planned 32
3.0 Conclusion 33
4.0 References 34

Tables

Table 2a-1	Surface Water Monitoring Locations-Kalamazoo River and Morrow Lake	4
Table 2a-2	Sediment Monitoring Locations	4
Table 2c-1	Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells (See Attached)	9
Table 2c-2	Residential Well Sampling and Letter Status Through January 4, 2013 - Winterized Wells (See Attached)	9
Table 2c-3	Residential Well Sampling and Letter Status Through January 4, 2013 - Wells Not Being Sampled (See Attached)	9
Table 2c-4	Residential Well Sampling and Letter Status for the Month of December 2012 - Sampled Wells (See Attached)	9
Table 2i-1	2012 Sediment Trap Monitoring Rounds and CSD Sedimentation Rates Summary (See Attached)	23
Table 2j-1	Waste Transporters and Disposal Facilities December 2012	25
Table 2j-2	Waste Shipment Summary through December 31, 2012	26
Table 2j-3	Weekly and Project Cumulative Recovered Oil through January 7, 2013	28

Figures

Figure 2a-1	Kalamazoo River and Morrow Lake Surface Water Monitoring Locations December 2012
Figure 2a-2	Kalamazoo River and Morrow Lake Sediment Monitoring Locations December 2012
Figure 2c-1	Potable Well Locations, Eligibility Status, and Wells Sampled as of January 4, 2013
Figure 2e-1	Submerged Oil Poling Locations and Results Sediment Fan and Morrow Lake (Round 27) December 2012
Figure 2e-2	Submerged Oil Poling Locations and Results Morrow Lake Delta (Round 11) December 2012
Figure 2e-3	Submerged Oil Poling Locations and Results Downstream Morrow Lake Dam December 2012
Figure 2e-4	E 4.0 Boom Bathymetry Points December 2012
Figure 2f-1	Kalamazoo River Remedial Investigation Sample Locations December 2012
Figure 2i-1	Cylindrical Sampling Device Data
Figure 2i-2	Sampled Cylindrical Sampling Devices December 2012
Figure 2i-3	Sediment Traps Bathymetry December 2012

Appendices

Appendix A	Planning Resources
Appendix B	Analytical Data Reports for Samples Collected in December 2012
Appendix C	Analytical Data Reports for Samples Collected Prior to December 2012
Appendix D	Level 1 Reviews of Laboratory Analytical Results
Appendix E	Waste Manifests and Bills of Lading

Acronyms and Abbreviations

COPC	Chemical of Potential Concern
CSD	Cylindrical Sampling Device
CWA	Clean Water Act
CWP	*Addendum to the Response Plan for Downstream Impacted Areas, August 2, 2010 (Revised August 17, 2010 per U.S. EPA August 17, 2010 letter), Supplement to Source Area Response Plan, and Supplement to Response Plan for Downstream Impacted Areas, Referred to as Operations and Maintenance Work Plan, Commonly referred to as "Consolidated Work Plan from Fall 2011 through Fall 2012"*
°F	Degrees Fahrenheit
Enbridge	Enbridge Energy, Limited Partnership
ESL	Ecological Screening Level
FTC	Frac Tank City
IAPs	Incident Action Plans
ICS	Incident Command System
LDB	Left Descending Bank
Line 6B	The pipeline owned by Enbridge Energy, Limited Partnership that runs just south of Marshall, Michigan
LIWS	Liquid Industrial Waste Services
MDEQ	Michigan Department of Environmental Quality
MDEQ Order	Administrative Consent Order And Partial Settlement Agreement entered *In the Matter of Enbridge Energy Partners, L.P., and Enbridge Energy, Limited Partnership*, proceedings under the Michigan Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, MCL 324.101 et seq.
MP	Mile Post
MSW	Municipal Solid Waste
OB	Overbank
O&M	Operations and Maintenance
RDB	Right Descending Bank
RDF	Recycling & Disposal Facility
RI	Remedial Investigation
RRD	Remediation and Redevelopment Division
Supplemental Order	Supplement to Order for Compliance Under Section 311(c) of the Clean Water Act, issued by U.S. EPA Region 5 on September 23, 2010 to Enbridge Energy Partners, L.P. *et al*., Respondents, Docket No: CWA 1321-5-10-001

TEC	Threshold Effects Concentration
U.S. EPA	United States Environmental Protection Agency
U.S. EPA Order	U.S. EPA Removal Administrative Order Under Section 311(c) of the Clean Water Act, issued on July 27, 2010 to Enbridge Energy Partners, L.P., Docket Number: CWA 1321-5-10-001
VOCs	Volatile Organic Compounds
WTTD	Waste Treatment, Transportation, and Disposal
WTTD Plan	Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Waste Treatment, Transportation, and Disposal Plan.* Approved by U.S. EPA on May 17, 2011.

1.0 Introduction

This monthly progress report for the period of December 1 through and including December 31, 2012 is submitted to the United States Environmental Protection Agency (U.S. EPA) and to the Michigan Department of Environmental Quality (MDEQ) to satisfy reporting requirements for each agency as defined below describing activities completed during the prior month.

Paragraph 18 of the U.S. EPA *Removal Administrative Order Under Section 311(c) of the Clean Water Act* (CWA), issued on July 27, 2010 to Enbridge Energy Partners, L.P., Docket Number: CWA 1321-5-10-001 (U.S. EPA Order) as modified by Paragraph 6 of the Supplement to Order for Compliance Under Section 311(c) of the CWA, issued by U.S. EPA Region 5 on September 23, 2010 to Enbridge Energy Partners, L.P. *et al*., Respondents, Docket No: CWA 1321-5-10-001 (Supplemental Order) (U.S. EPA, 2010) requires monthly progress reports to be submitted to the U.S. EPA commencing on December 27, 2010 and continuing monthly thereafter (Supplemental Order, Paragraph 6(o)).

Paragraph 7.9 of the Administrative Consent Order and Partial Settlement Agreement entered *In the Matter of Enbridge Energy Partners, L.P., and Enbridge Energy, Limited Partnership,* proceedings under the Michigan Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, MCL 324.101 et seq. signed on November 1, 2010 (MDEQ, 2010) (MDEQ Order) requires Enbridge Energy, Limited Partnership (Enbridge) to submit to the MDEQ, formerly Michigan Department of Natural Resources and Environment, written progress reports on the 27th day of each month.

Following this introduction, *Section 2* of this report is arranged by activity, for example 'Surface Water and Sediment Monitoring Activities'. In each subsection, the subject area work is introduced and an update of progress made in the previous month is described, including field activities performed, analyses completed, and reports submitted. Each section also summarizes future work planned. Conclusions are presented in *Section 3* and references are provided for each section in *Section 4.* Planning resources, including daily summaries of completed work referred to as *Incident Command System* (ICS) *214, Incident Action Plans* (IAPs), and work orders are provided as *Appendix A.*

Laboratory analytical reports of samples that were collected and received in December 2012 can be found in *Appendix B*. Laboratory analytical reports received in December 2012 for samples collected prior to December 2012 (but not previously submitted in the monthly report) can be found in *Appendix C*. All laboratory analytical results received for samples collected in December 2012 and received in January 2013 will be submitted with the January 2013 monthly progress report.

During December 2012, no work plans or procedures were approved.

Level 1 reviews of laboratory analytical results are included in *Appendix D*.

Waste manifests and bills of lading received in December 2012 are included in *Appendix E*.

2a.0 Surface Water and Sediment Monitoring Activities

2a.1 Introduction

In December 2012, monthly surface water and quarterly sediment monitoring activities were conducted per the *Addendum to the Sampling and Analysis Plan (SAP): Attachment C - Surface Water and Sediment Monitoring Supplement to the Sampling and Analysis Plan,* approved by MDEQ on May 18, 2012 (Enbridge, 2012). Surface water sampling activities were completed at 18 routine monitoring locations to assess the quality of the surface water in the Kalamazoo River and Morrow Lake. In addition, sediment samples were collected at three routine monitoring locations to assess the quality of the sediment in the Kalamazoo River and Morrow Lake.

2a.2 Work Completed

2a.2.1 Surface Water Monitoring

In December 2012, 18 surface water samples were collected from 9 locations in the Kalamazoo River (between the Talmadge Creek confluence and Morrow Lake), 8 locations within Morrow Lake, and 1 location in the Kalamazoo River immediately downstream of the Morrow Lake Dam. The results of the laboratory analyses of the 18 samples (plus 1 duplicate) were compared to Michigan *Rule 57 Water Quality Standards* (MDEQ, 2011). There were no analytical results that exceeded these standards.

Sample locations are shown in *Figure 2a-1*. Surface water sample location identification number, location description, and latitude and longitude coordinates in decimal degrees for the surface water monitoring locations are provided in *Table 2a-1*.

Location ID	Location Description	Latitude	Longitude
ML-1	Morrow Lake	42.279011	-85.458466
SW-935	Morrow Lake	42.278255	-85.472069
ML-7	Morrow Lake	42.281063	-85.480469
ML-10	Morrow Lake	42.276375	-85.478920
SWKR3840C02	Morrow Lake	42.274991	-85.464724
SW-936	Morrow Lake	42.276611	-85.453972
SW-937	Morrow Lake	42.281200	-85.486115
SW-112	Downstream of Morrow Lake Dam	42.283659	-85.498262
SWKR3980C01	Morrow Lake Dam	42.282665	-85.491508
SW-105	15 Mile Bridge	42.258250	-84.998184
SW-115	Fort Custer State Park	42.324341	-85.358049
SWKR0510C01	Mile Post (MP) 5.10	42.265084	-85.048406
SWKR0600C01	MP 6.0	42.270887	-85.063948
SW-120	Shady Bend Campground, Augusta	42.347423	-85.329214
SWKR1480C01	MP 14.8	42.304726	-85.183417
SWKR1565C01	MP 15.5	42.312748	-85.184869
SWKR1948C01	MP 19.4	42.343617	-85.243147
SW-110	35th Street Bridge, Galesburg	42.280206	-85.429028

Table 2a-1. Surface Water Monitoring Locations-Kalamazoo River and Morrow Lake

2a.2.2 Sediment Monitoring

Sediment sampling consisted of collecting samples from two locations in the Kalamazoo River (between the Talmadge Creek confluence and Morrow Lake) and one location within Morrow Lake. The sample location identification, location description, and latitude and longitude coordinates in decimal degrees for these sediment monitoring locations are provided in *Table 2a-2*. *Figure 2a*-2 showsthese sample locations and any exceedances of U.S. EPA Region 5 Ecological Screening Levels (ESLs) 2003 (U.S. EPA, 2003) or Threshold Effects Concentration (TEC) Guidelines (MacDonald et al., 2000), both of which are included as appendices to the Remediation and Redevelopment Division (RRD) *Operational Memorandum No. 4, Attachment* (MDEQ, 2006.

Location ID	Location Description	Latitude	Longitude
SWKR0600C01	MP 6.0, Operations and Maintenance (O&M) Control Point	42.270887	-85.063948
SWKR1565C01	MP 15.5, O&M Control Point	42.312748	-85.184869
SW-937	Morrow Lake	42.281200	-85.486115

Table 2a-2. Sediment Monitoring Locations

A total of three sediment samples (plus one duplicate) were collected from three monitoring locations during December 2012 and compared to U.S. EPA Region 5 ESL 2003 (U.S. EPA, 2003), and to TEC Guidelines (MacDonald et al., 2000). The sediment samples collected from two monitoring locations (SWKR1565C01 and SW-937) had laboratory analytical results that exceeded criteria.

The following constituents were detected above the ESL in the sediment sample collected from monitoring location SWKR1565C01:

- Benzo(a)anthracene,
- Benzo(a)pyrene,
- Benzo(g,h,i)perylene,
- Chrysene,
- Fluoranthene,
- Indeno(1,2,3-c,d)pyrene, and
- Pyrene.

Also, the following constituents were detected above the TEC in the above sediment sample:

- Benzo(a)anthracene,
- Benzo(a)pyrene,
- Benzo(b)flouranthene,
- Benzo(g,h,i)perylene,
- Chrysene,
- Fluoranthene,
- Indeno(1,2,3-c,d)pyrene, and
- Pyrene.

The following constituents were detected above the ESL in the sediment sample collected from monitoring location SW-937:

- Benzo(a)pyrene,
- Benzo(k)fluoranthene,
- Chrysene,
- Fluoranthene, and
- Pyrene.

Also, the following constituents were detected above the TEC in the above sediment sample:

- Benzo(a)pyrene,
- Benzo(b)flouranthene,
- Benzo(k)flouranthene,
- Chrysene,
- Fluoranthene, and
- Pyrene.

The following constituents were detected above the ESL in the duplicate sample collected from monitoring location SW-937:

- Benzo(a)pyrene,
- Chrysene,
- Fluoranthene, and
- Pyrene.

Also, the following constituents were detected above the TEC in the duplicate sample:

- Benzo(a)pyrene,
- Benzo(b)flouranthene,
- Chrysene,
- Fluoranthene, and
- Pyrene.

2a.3 Work Planned

2a.3.1 Surface Water Monitoring

The next monthly surface water monitoring event for the Kalamazoo River and Morrow Lake is scheduled for the week of January 14, 2013 per the *Addendum to the Sampling and Analysis Plan (SAP): Attachment C - Surface Water and Sediment Monitoring Supplement to the Sampling and Analysis Plan*, approved by MDEQ on May 18, 2012 (Enbridge, 2012).

2a.3.2 Sediment Monitoring

Sediment monitoring for the Kalamazoo River and Morrow Lake is conducted quarterly according to the *Addendum to the Sampling and Analysis Plan (SAP): Attachment C - Surface Water and Sediment Monitoring Supplement to the Sampling and Analysis Plan*, approved by MDEQ on May 18, 2012 (Enbridge, 2012). The next sampling event is tentatively scheduled for the week of March 11, 2013.

2b.0 Water Quality Monitoring Activities

2b.1 Introduction

The Water Quality Monitoring Program was initiated in July 2011 in response to concerns about the potential risk to fish populations related to low dissolved oxygen levels. This monitoring program was implemented in accordance with the *Water Quality Measurement Standard Operating Procedure* (Enbridge, 2011), approved by MDEQ on September 22, 2011.

2b.2 Work Completed

No water quality monitoring was conducted in December 2012.

2b.3 Work Planned

No water quality monitoring is planned for January 2013. Water quality monitoring requirements will be evaluated and water quality monitoring will be continued as appropriate.

2c.0 Potable Water Monitoring Activities

2c.1 Introduction

In December 2012, there were 79 potable well samples collected. Potable water monitoring activities are conducted in accordance with the *Addendum to the Sampling Analysis Plan (SAP): Attachment B Drinking Water Well Supplement to the Sampling and Analysis Plan*, approved by MDEQ on May 18, 2012 (Enbridge, 2012(1)). An amended sampling plan for wells not sampled on a quarterly basis, the *Request for Reduction of the Drinking Water Monitoring Program* submitted to the MDEQ October 10, 2012 (Enbridge 2012(2)), is currently under review by the MDEQ.

Groundwater samples were collected and analyzed in December 2012 from five monitoring wells at the Village of Augusta and five monitoring wells at the City of Kalamazoo Wellfield #39. Samples were collected in accordance with the *Augusta Monitoring Well Installation Work Plan* (Enbridge, 2011(1)) and the *Kalamazoo Monitoring Well Installation Work Plan* (Enbridge, 2011(2)).

2c.2 Work Completed

2c.2.1 Residential Potable Drinking Water Wells

During December 2012, there were 79 potable well samples collected.

Wells eligible for sampling fall into four categories: winterized, not accessible, refused permission, and yes. 'Yes' denotes the wells are being sampled at the quarterly frequency. Wells designated as 'winterized', 'not accessible', or 'refused permission' are eligible under the program but they are not currently being sampled.

The eligibility status of two wells was changed from 'yes' to 'winterized' during December 2012.

Multiple sampling events have been completed at the 167 residential wells included in the Drinking Water Monitoring Program. The results and eligibility status for all eligible wells through January 4, 2013 are summarized on *Tables 2c-1* through *2c-4* (See Attached)) and *Figure 2c-1*. Tables include updates on well locations, access status, sampling data, and

landowner letters. The potable well locations, eligibility status, and constituent detections are also summarized on *Figure 2c-1*.

2c.2.2 Groundwater Monitoring

Groundwater sampling from the five monitoring wells at the Village of Augusta Municipal Wellfield and the five monitoring wells at the City of Kalamazoo Wellfield #39 was conducted during December 2012.

2c.3 Work Planned

2c.3.1 Residential Drinking Water Wells

Residential drinking water sampling is planned to be conducted during March 2013 per the *Addendum to the Sampling Analysis Plan (SAP): Attachment B Drinking Water Well Supplement to the Sampling and Analysis Plan*, approved by MDEQ on May 18, 2012 (Enbridge, 2012).

2c.3.2 Groundwater Monitoring

A letter report for the December 2012 monitoring well sampling at the Village of Augusta Wellfield, will be prepared and submitted to the Village of Augusta, the Village of Augusta Chief of Police Jeff Heppler, and a courtesy copy will also be provided to MDEQ in January 2013.

A letter report for the December 2012 monitoring well sampling at the City of Kalamazoo Wellfield #39, will be prepared and submitted to the City of Kalamazoo and a courtesy copy will also be provided to MDEQ in January 2013.

The next groundwater sampling event for the five monitoring wells at the City of Kalamazoo Wellfield #39 is tentatively scheduled to be conducted during the week of March 18, 2013. There is currently no plan to continue groundwater monitoring at the five monitoring wells at the Village of Augusta Municipal Wellfield.

2d.0 Air Sampling and Monitoring Activities

2d.1 Introduction

Air sampling and monitoring activities are performed in 'community' and 'work areas' in accordance with the *Air Monitoring and Sampling Addendum to the Sampling and Analysis Plan* (Enbridge, 2012(1)). The term 'community' includes all individuals living or working near areas potentially impacted by the Enbridge Line 6B crude oil release or from subsequent release response actions. 'Work areas' are those sites where workers are engaged in oil recovery activities. During December 2012, there were no air monitoring or sampling activities conducted.

The purpose of air monitoring and sampling activities is to assess community exposures to target analytes and worker exposure to chemicals of potential concern (COPCs). Target analytes are those volatile organic compounds (VOCs) associated with the Line 6B crude oil release and measured by modified U.S. EPA Method TO-15 laboratory analysis. All other VOCs reported from the TO-15 method are referred to as non-target analytes. COPCs are a subset of the 'target analytes' that include:

- Benzene,
- Toluene,
- Ethylbenzene,
- Xylenes, and
- N-hexane.

2d.2 Work Completed

During December 2012, there were no submittals presented to the U.S. EPA for review. No air monitoring or sampling activities were conducted in December 2012.

2d.2.1 Community Air Monitoring

No community air monitoring was conducted during December 2012.

2d.2.2 Community Air Sampling

No community air sampling was conducted during December 2012.

2d.2.3 Work Area Air Monitoring

No work area air monitoring was conducted during December 2012.

Air monitoring activities were suspended on September 5, 2012 based on verbal approval of *Request for Modification of the Air Monitoring and Sampling Addendum to the Sampling and Analysis Plan* (Enbridge, 2012(2)), followed by a formal approval by U.S. EPA on September 10, 2012 as documented by *Approval of Temporary Suspension of Air Monitoring and Odor Response Activities* (U.S. EPA, 2012).

2d.2.4 Odor Response

In response to the release, Enbridge established a hotline number that remains available throughout the response activities for the public to communicate their concerns to Enbridge. As work activities were initiated, the public was encouraged to use the hotline to report any perceived odor issues related to these activities. The most recent odor complaint received on this hotline was in October 2011. There were no calls regarding odor issues that required air sampling or monitoring efforts in December 2012.

2d.3 Work Planned

As documented in *Section 2d.2.3*, air monitoring and sampling activities have been suspended per the approved *Request for Modification of the Air Monitoring and Sampling Addendum to the Sampling and Analysis Plan* (Enbridge, 2012(2)). Specifically, air monitoring and odor response activities are suspended; however, upon resumption of any active oil recovery activities and/or at any other time as directed by the U.S. EPA, air monitoring will be resumed as outlined in *Approval of Temporary Suspension of Air Monitoring and Odor Response Activities* (U.S. EPA, 2012).

2e.0 Submerged Oil Assessment and Recovery Activities

2e.1 Introduction

During December 2012, submerged oil assessment activities included bathymetry measurements along the former E 4.0 boom and curtain locations, poling monitoring on Morrow Lake, Morrow Lake Delta, and downstream of the Morrow Lake Dam, and logging and sampling of cores from the agitation evaluation study.

No submerged oil recovery field activities were conducted during December 2012.

2e.2 Work Completed

2e.2.1 Poling

Poling activities were conducted at fixed locations on Morrow Lake including the Sediment Fan and Morrow Lake Delta from December 3 through and including December 6, 2012. Beginning with this round of poling, 5 of the locations were shifted and 4 new locations were added for a total of 69 poling locations. One round of poling (Round 27) was completed at 68 of the 69 pre-determined poling locations on Morrow Lake including the Sediment Fan. The poling category results were classified as 4 'moderate', 34 'light', and 30 'none' locations. There were no 'heavy' locations identified. The four 'moderate' locations were identified in the eastern portion of the lake. The poling locations and associated results are shown on *Figure 2e-1*.

One round (Round 11) of poling was conducted during December 2012 on the Morrow Lake Delta including the neck between the Morrow Lake Delta and Morrow Lake. A total of 67 pre-selected locations were poled. The results of poling conducted during this round showed 10 'moderate', 34 'light', and 23 'none' locations. There were no 'heavy' locations identified. The poling locations and associated results are shown on *Figure 2e-2.*

In addition, poling was conducted downstream of Morrow Lake Dam from December 10 through and including December 13, 2012. Poling data was collected from a total of 96 locations. Due to regulations set forth by the Federal Energy Regulatory Commission, which states that public access is not permitted within 300 feet on the upstream or downstream side of any dam, poling activities

were not permitted within the area between Morrow Lake Dam and the first downstream island at approximately MP 39.95. The results of the 96 poling locations were all classified as “none’. The poling locations and results are shown in *Figure 2e-3*.

2e.2.2 E 4.0 Boom Bathymetry

Bathymetry measurements were collected at the same locations as the November 2012 post-removal bathymetry measurements along the former location of the E 4.0 boom. Bathymetry measurements were collected from December 14 through and including December 20, 2012, except on Sunday December 16, 2012. The bathymetry data for the former E 4.0 boom locations are shown on *Figure 2e-4*.

2e.2.3 Quantification Evaluation Study

Logging and sampling of the remaining quantification cores that had been frozen occurred on December 7 and December 10, 2012. Logging and sampling of four quantification evaluation cores and one core for the method detection limit portion of the quantification evaluation study were completed.

2e.2.4 Agitation Evaluation Study

Logging and sampling of agitation cores that had been frozen began on December 5 and continued through and including December 7, 2012. Logging and sampling of 30 cores were completed.

2e.3 Work Planned

2e.3.1 Poling

Poling at fixed locations on Morrow Lake including the Sediment Fan and Morrow Lake Delta is planned for January 2013, unless ice buildup in the survey area prevents field activities from occurring.

2e.3.2 E 4.0 Boom Bathymetry

The collection of bathymetry measurements along the former location of the E 4.0 boom is planned for January 2013, unless ice buildup in the survey area prevents field activities from occurring.

2e.3.3 Quantification Evaluation Study

Data compilation, review, and quality control will continue in January 2013.

2e.3.4 Agitation Evaluation Study

Data compilation, review, and quality control will continue in January 2013.

2f.0 Remedial Investigation Activities

2f.1 Introduction

Remedial investigation (RI) activities conducted in December 2012 were in support of the Kalamazoo River RI Program. Activities for the RI were conducted in accordance with the following work plans:

- *Remedial Investigation Work Plan for Kalamazoo River (MP 5.80 to MP 11.00)* approved by MDEQ on February 10, 2012 (Enbridge, 2012(1)), and
- *Remedial Investigation Work Plan for Kalamazoo River (MP 11.00 to Morrow Lake Dam)* approved by MDEQ on March 8, 2012 (Enbridge, 2012(2)).

RI field activities were suspended from December 5 through and including December 7, 2012 to allow for activities associated with the agitation study and submerged oil quantification study core logging (See *Section 2e.0*). All RI activities were suspended from December 22, 2012 through and including January 6, 2013 for the Enbridge field work shutdown over the Christmas and New Year holiday period.

2f.2 Work Completed

2f.2.1 Kalamazoo River Remedial Investigation

Field activities related to the Kalamazoo River RI were conducted between MP 10.50 and MP 10.75 and from MP 11.25 to MP 13.00. Field activities included the following:

- Soil and sediment core collection via manual techniques,
- Logging of collected cores,
- Evaluation of soil and sediment cores using ultraviolet light,
- Soil and sediment sampling from the collected cores,
- Installation of temporary monitoring wells in select soil borings, and
- Global positioning system collection of horizontal (X, Y) coordinates for each boring.

Soil and sediment samples were collected and analyzed for:

- Polynuclear aromatic hydrocarbons,
- Four select metals (beryllium, vanadium, nickel, and molybdenum), and
- Total petroleum hydrocarbons as diesel range organics and oil range organics.

Per the approved work plans, all soil samples collected at locations upstream of MP 14.00 were analyzed for VOCs.

The locations of soil borings installed during the Kalamazoo River RI are presented in *Figure2f-1*.

Compilation of Kalamazoo River RI data for Parcel Primer development (See *Section 2f.2.2*) and the development of several documents for submittal to the MDEQ were also performed in December 2012.

The following document was submitted in December 2012:

- *Work Plan for Monitoring Well Abandonment* (Enbridge, 2012(3)) submitted to MDEQ on December 3, 2012.

The following documents remain in development through December 2012:

- *Presentation of Data for Kalamazoo River Parcels ROW - Michigan Avenue Bridge and ROW – Railroad 1, Augusta, Michigan (MP 28.75 to MP 29.00),*
- *Presentation of Data for Kalamazoo River Parcel ROW - Michigan Avenue Bridge 1, Galesburg, Michigan (MP 34.00 to MP 34.25),*
- *Hydrocarbon Fingerprint Evaluation,*
- *Overbank Soil Background Metals Evaluation,* and
- *Tier 1 LNAPL Conceptual Site Model for Line 6B Crude Oil.*

2f.2.2 Parcel Primers and Presentations

Parcel Primer and presentation procedure development was initiated in June 2012. The purpose of the Parcel Primer is to provide the parcel owner with documentation of Enbridge and MDEQ

concurrence that further operations and maintenance and/or RI activities are not required on the subject parcel. This process is currently under review and subject to modification.

Each parcel is categorized into one of three color code designations:

- "No Color" – Parcel does not require investigation, data compilation, or review,
- "Green Hatched" – Limited data compilation and a "Live GIS" presentation to show lack of historical issues, and
- "Orange" – Parcel requires RI activities and a full Primer package.

The final templates for the primer package and concurrence form remain under review by MDEQ.

No Parcel Primers were submitted for MDEQ review and concurrence in December 2012. Parcel Primer development and presentation activities were curtailed starting on December 5, 2012 and remained suspended through and including December 31, 2012.

2f.2.3 Additional Investigations

No additional investigation activities were conducted in December 2012.

2f.3 Work Planned

Planned RI activities for January 2013 consist of the following:

- Continue RI data compilation,
- Continue Parcel Primer generation (with presentations),
- Continue preparation of RI documents,
- Continue implementation of field activities for the Kalamazoo River RI (MP 2.25 to MP 3.14) in accordance with *Remedial Investigation Work Plan for Kalamazoo River (MP 2.25 to MP 3.14)* approved by MDEQ on November 18, 2011 (Enbridge, 2011),

- Continue implementation of field activities for the Kalamazoo River RI (MP 3.14 to Ceresco Dam (MP 5.80)) in accordance with *Remedial Investigation Work Plan for Kalamazoo River (MP 3.14 to Ceresco Dam (MP 5.80))* approved by MDEQ on January 13, 2012 (Enbridge, 2012(4)),
- Continue implementation of the Kalamazoo River RI (MP 5.80 to MP 11.00) in accordance with *Remedial Investigation Work Plan for Kalamazoo River (MP 5.80 to MP 11.00)* approved by MDEQ on February 10, 2012 (Enbridge, 2012(1)), and
- Continue implementation of the Kalamazoo River RI (MP 11.00 to Morrow Lake Dam) in accordance with the *Remedial Investigation Work Plan for Kalamazoo River (MP 11.00 to Morrow Lake Dam)* approved by MDEQ on March 8, 2012 (Enbridge, 2012(2)).

2g.0 Temporary Facility Restoration and Demobilization Activities

2g.1 Introduction

Approximately 95 work sites have been used for release response activities to provide river access, staging of equipment and materials, decontamination, waste staging, and similar activities. As response and remediation work was completed, site decommissioning and closure activities including removal of equipment and consumables, implementation of soil erosion and sediment control measures, restoration of the site to pre-response conditions, and inspections were performed. To evaluate if response activities had an adverse environmental impact at these sites, verification soil samples were collected for laboratory analysis in accordance with MDEQ requirements outlined in *RRD Operational Memorandum No. 2* (MDEQ, 2004) for comparison to applicable Part 201 of Michigan's Act 451 of 1994, as amended, and Generic Soil Residential Criteria in accordance with the *Soil Staging, Decontamination & River Access Site Closure Plan* (Enbridge, 2011), currently under review by MDEQ and U.S. EPA. The MDEQ is notified of each sampling event.

2g.2 Work Completed

2g.2.1 River Access Sites and Other Work Sites

No soil samples were collected at river access sites or other work sites during December 2012.

2g.2.2 Soil Staging and Decontamination Areas

No site decommissioning samples were collected at soil staging and decontamination areas in December 2012.

2g.3 Work Planned

Sampling activities are tentatively planned for multiple temporary facilities and River Access Sites during January 2013.

2h.0 River Bank Erosion Control and Restoration Activities

2h.1 Introduction

In December 2012, no restoration or erosion control activities were completed at Kalamazoo River Bank Erosion Assessment sites. No additional sites requiring erosion control or restoration activities were identified during December 2012.

2h.2 Work Completed

During December 2012, no restoration activities were completed along either Talmadge Creek or the Kalamazoo River. Assistance with supporting documents for Kalamazoo River RI sites continued through the month.

2h.3 Work Planned

No river bank erosion control or restoration activities are planned for January 2013. The need for future activities will be determined subsequent to receipt of MDEQ comments and approval of the *Kalamazoo River Bank Erosion Assessment and Action Plan Summary Report – Monitoring Trip No. 9*, submitted to MDEQ on September 13, 2012 (Enbridge, 2012).

2i.0 Sediment Traps and Cylindrical Sampling Devices

2i.1 Introduction

2i.1.1 Phase I Sediment Traps

During December 2012, sediment trap and cylindrical sampling device (CSD) activities included monitoring and measuring bathymetry at the six Phase I sediment traps and monitoring data compilation in accordance with the *Sediment Trap Monitoring and Maintenance Plan*, approved by the U.S. EPA on July 10, 2012 (Enbridge, 2012). During monitoring Round 10, no poling activities were conducted because water and sediment temperatures were below 60 degrees Fahrenheit (°F).

Phase I sediment traps are installed at the following locations:

- MP 10.75 left descending bank (LDB),
- MP 14.75 right descending bank (RDB),
- MP 19.25 LDB,
- MP 21.50 RDB,
- MP 28.25 RDB, and
- MP 36.10 NW.

Bathymetry measurements will be collected at sediment trap MP 36.10 NW when property access has been obtained.

2i.1.2 Phase II Sediment Traps

During December 2012, Phase II sediment trap and CSD activities included conducting Round 10 monitoring and measuring bathymetry at the 11 Phase II sediment trap locations in accordance with the *Sediment Trap Monitoring and Maintenance Plan,* approved by the U.S. EPA on July 10, 2012 (Enbridge, 2012). Round 10 activities included monitoring and monitoring data compilation. No poling activities were conducted during Round 10 because water and sediment temperatures were below 60 °F.

The 11 Phase II sediment traps are installed at the following locations:

- Ceresco/MP 5.75,
- MP 10.40 N,
- MP 10.50 L2,
- OB 11.79 LDB,
- MP 26.00 RDB,
- MP 30.80 LDB,
- MP 33.00 A,
- MP 33.00 B,
- Delta A/MP 36.75,
- Delta Z/MP 37.50, and
- MP 37.75 Islands.

2i.2 Work Completed

During December 2012, data compilation and evaluation included calculating the rate of sedimentation within the CSD sample jars. The sedimentation rates were determined through review and evaluation of the data collected during Round 10 monitoring conducted at the Phase I and Phase II sediment traps. The results for the sedimentation rates within the CSD sample jars collected during monitoring Round 1 through and including Round 10 are shown graphically in *Figure 2i-1* and are summarized in *Table 2i-1* (See Attached). Issues with the CSDs were observed and documented. The resulting evaluation indicated that the accumulation of sediment within the CSDs is not necessarily indicative of sedimentation within the sediment traps. The observed issues include scour and/or settling of the CSDs into the soft sediment, which tilted the CSDs. The observed issues are summarized in *Table 2i-1*.

2i.2.1 Sediment Trap Installation

During December 2012, no sediment traps were installed.

2i.2.2 Sediment Trap Monitoring

During December 2012, monitoring was conducted at all five of the six Phase I sediment trap locations and the 11 Phase II sediment trap locations in accordance with the *Sediment Trap*

Monitoring and Maintenance Plan, approved by the U.S. EPA on July 10, 2012 (Enbridge, 2012). Monitoring activities included measurement and sampling of the sediment collected in the CSD samplers.

In December 2012, no poling activities were conducted during Round 10 monitoring because water and sediment temperatures were below 60 °F.

In December 2012, sediment samples were collected, composited, and submitted for analysis from 62 CSD locations. The CSD sampling locations are summarized in *Table 2i-1* and shown in *Figure 2i-2*.

2i.2.3 Baseline Bathymetry Survey

During December 2012, quarterly bathymetry data was collected at 11 of the 17 Phase I and Phase II sediment trap locations along predetermined transects. The bathymetry data will be used to construct a cross sectional profile along each predetermined transect and will then be compared to future bathymetry data to determine sedimentation rates within the sediment traps. The bathymetry data collected at the 11 Phase I and Phase II sediment traps is shown on *Figure 2i-3*.

2i.3 Work Planned

During January 2013, monitoring of five of the six Phase I sediment traps and the 11 Phase II sediment traps is planned for the week of January 14, 2013, depending on winter weather conditions. Bathymetry data collection is planned to continue at the six remaining Phase I and Phase II sediment traps. In addition, the amount of sediment within the CSD sample jars will also be recorded.

2j.0 Waste Management Activities

2j.1 Introduction

In December 2012, waste management activities were conducted in accordance with the *Waste Treatment, Transportation, and Disposal (WTTD) Plan* (WTTD Plan), approved by the U.S. EPA on May 20, 2011 (Enbridge, 2011(1)), the *Addendum to the Revised Waste Treatment, Transportation and Disposal Plan*, approved by the U.S. EPA on June 20, 2011 (Enbridge, 2011(2)), and the *Operation and Maintenance Excavation Work Plan titled Waste Best Management Practices*, approved by the U.S. EPA on June 29, 2011 (Enbridge, 2011(3)). In addition, the *Winter Water Management Work Plan Frac Tank City 2012* (Enbridge, 2012) was submitted to the U.S. EPA for approval on December 20, 2012.

Generated waste streams included, but were not limited to:

- Crude oil impacted debris,
- Non-impacted debris - municipal solid waste (MSW),
- Crude oil impacted soil,
- Miscellaneous other small volume materials,
- Crude oil impacted water, and
- Non-impacted precipitation.

Table 2j-1 provides a list of transporters and disposal facilities used for management of each waste stream.

Waste Stream	Disposal Company	U.S. EPA ID Number	Treatment Option	Transporter
Wastewater (Non-Hazardous)	Dynecol, Inc.	MID 074 259 565	Wastewater Treatment	PVS Transportation, HM Environmental, SET Environmental, Inc., and sub-contractors
Wastewater (Non-Hazardous)	Liquid Industrial Waste Services (LIWS)	MID 006 546 121	Wastewater Treatment	LIWS
Wastewater (Non-Hazardous)	Plummer's Environmental Services	MIK 111 229 563	Wastewater Treatment	Plummer's Environmental Services
Non-Hazardous Waste Solid	Republic Services C&C Landfill	MID 985 618 420	Landfill	SET Environmental, Inc. and sub-contractors
Non-Hazardous Soil	Republic Services C&C Landfill	MID 985 618 420	Landfill	SET Environmental, Inc. and sub-contractors

Table 2j-1. Waste Transporters and Disposal Facilities December 2012

2j.2 Work Completed

Table 2j-2 is a summary of the active waste streams and any shipments that occurred during December 2012. The cumulative amount of each waste type generated during response is the total shipped as of December 31, 2012. The processes that generate each waste stream are described further in the following sections. Waste manifests and bills of lading received in December 2012 are included in *Appendix E.*

Waste Stream	Shipped to	Quantity Shipped in December 2012	Cumulative Total Shipped as of December 31, 2012	Unit of Measure
Non-Hazardous Soil	C&C Landfill Marshall, MI	0.0	78,109	Cubic Yards
Non-Hazardous Debris (oily debris)	C&C Landfill Marshall, MI	6.09	7,153	Tons
Non-Hazardous Debris (MSW, non-impacted)	C&C Landfill Marshall, MI	0.83	1,802	Tons
Non-Hazardous Water (precipitation)	Battle Creek Publically Owned Treatment Works, MI	0.0	1,143,280	Gallons
Non-Hazardous Water	Dynecol Detroit, MI	0.0	981,792	Gallons
Non-Hazardous Water	LIWS, Inc.	0.0	1,376,757	Gallons
Non-Hazardous Water	Plummer's Environmental Services	45,000	521,726	Gallons

Table 2j-2. Waste Shipment Summary through December 31, 2012

2j.2.1 Oily Debris

Oily debris was segregated from non-oily debris and stored in lined 20-cubic yard roll off boxes and transported to Republic Services' C&C Landfill in Marshall, Michigan for disposal. Handling procedures for oily debris were conducted in accordance with procedures outlined in the approved WTTD Plan (Enbridge, 2011(1)). Based on how the waste was generated (e.g., control points), sampling and required analyses were performed in accordance with the WTTD Plan (Enbridge, 2011(1)).

2j.2.2 Non-Impacted Debris

Non-impacted (non-oily) debris or MSW generated at field locations was transported to Republic Services' C&C Landfill in Marshall, Michigan using lined 20-cubic yard roll off boxes. Non-impacted debris was not sampled and was not included in the recovered oil calculations. The non-hazardous designation for the debris was based on generator knowledge.

2j.2.3 Soil

Disposal requirements for oil impacted soil are based on an evaluation of analytical data. Handling and sampling procedures for non-hazardous oil impacted soil were conducted in accordance with the WTTD Plan (Enbridge, 2011(1)). Sampling frequency and required analyses were also performed in accordance with the WTTD Plan (Enbridge, 2011(1)).

Hazardous soil was not generated during December 2012.

2j.2.4 Miscellaneous Small Quantity Waste Streams

Miscellaneous small quantity waste streams have been generated throughout the project. These wastes have primarily been stored in drums and include, but are not limited to: used oil, batteries, small quantities of medical waste, and lab samples. These waste streams have been characterized individually and disposed at approved facilities as required.

2j.2.5 Decontamination and Precipitation Wastewater

Accumulated water from decontamination and precipitation at Frac Tank City (FTC) soil staging cell containment was transported to Plummer's Environmental Services for disposal. A total of 45,000 gallons were disposed in December 2012.

2j.2.6 Recovered Oil Calculations

The quantity of oil contained in waste materials has been calculated since the beginning of the release response. Oil and grease analytical results for oily solids and oily liquids are used to calculate recovered oil volumes. The oil quantity calculation is based on the concentration of oil (analytical results) in the waste and the total amount of waste shipped. Recovered oil values are determined for each waste stream and a recovered oil summary is reported weekly to the U.S. EPA. A summary of this report through January 7, 2013 is provided in *Table 2j-3*.

Waste Stream	Weekly Oil Recovery Estimates (gallons)					Cumulative Oil Recovery Estimate (gallons)
	12/3/2012	12/10/2012	12/17/2012	12/21/2012	1/07/2013	
Soil (Non-Haz) (Impacted Soil & Debris) C&C Landfill	0.0	0.0	0.0	0.0	0.0	**14,032**
Soil (Haz) (Impacted Soil & Debris) Envirosafe/Westside Recycling & Disposal Facility (RDF)	--	--	--	--	--	**278,665**
Geotube Sediment (Impacted Sediment) Westside RDF	--	--	--	--	--	**1,298**
Debris (Non-Haz) (Roll off boxes with Impacted Sorbents, boom, pads, plastic, Personal Protective Equipment, vegetation, and biomass)	1.7	3.1	0.0	8.8	0.0	**34,493**
Wastewater (Haz) FTC - Influent to Carbon Filtration System	--	--	--	--	--	**8,109**
Wastewater (Non-Haz) FTC - Water to Dynecol/ LIWS/Plummer's/City of Battle Creek	0.0	0.1	0.0	0.1	0.0	**46,176**
Wastewater (Non-Haz) Battle Creek - Non-Hazardous rain water Ceresco Dredge and C05 Inactive Decon Pad	--	--	--	--	--	**--**
Wildlife Center Wastewater (Non-Haz) Water to Plummer's	--	--	--	--	--	**--**
Ceresco Pretreatment System	--	--	--	--	--	**90**
A-1 Pretreatment System (Haz)	--	--	--	--	--	**9**
Oily Water (Non-Haz) Recoverable Petroleum Product to Griffith	--	--	--	--	--	**766,288**
						Total: 1,149,160

Table 2j-3. Weekly and Project Cumulative Recovered Oil through January 7, 2013

2j.3 Work Planned

During January 2013, waste management activities are planned to continue in accordance with the plans referenced in *Section 2j.1*. Soils with no free liquids will either be transported to FTC and stockpiled using a bill of lading or transported directly to a landfill using a manifest in

accordance with the approved *Addendum to the Revised Waste Treatment, Transportation, and Disposal Plan* (Enbridge, 2011(2)). Each soil stockpile will have a representative sample (one 4-point composite sample collected and homogenized for oil and grease analysis) collected for every 200 cubic yards of waste soil. Each load transported directly to the landfill will have one scoop (single point aliquot) of soil collected for oil and grease analysis prior to leaving the site per the approved *Operation and Maintenance Excavation Work Plan titled Waste Best Management Practices* (Enbridge, 2011(3)).

2k.0 Overbank Excavation Activities

2k.1 Introduction

During December 2012, no overbank (OB) excavation activities were performed.

2k.2 Work Completed

During December 2012, no OB excavation activities were performed.

2k.3 Work Planned

No OB excavation activities are scheduled to be conducted during January 2013.

2l.0 Overbank Oil Recovery Activities

2l.1 Introduction

During December 2012, no OB oil recovery activities were conducted.

2l.2 Work Completed

No OB oil recovery activities were conducted during December 2012.

2l.3 Work Planned

No OB oil recovery activities are scheduled to be conducted during January 2013.

2m.0 Hydrodynamic Assessment and Model Activities

2m.1 Introduction

Hydrodynamic assessment data has been used to develop an understanding of the riverine and floodplain system by identifying physical patterns and migration rates of sediment caused by various river conditions.

2m.2 Work Completed

During December 2012, the *Addendum to the Response Plan for Downstream Impacted Areas, August 2, 2010 (Revised August 17, 2010 per U.S. EPA August 17, 2010 letter), Supplement to Source Area Response Plan, and Supplement to Response Plan for Downstream Impacted Areas, Referred to as Operations and Maintenance Work Plan, Commonly referred to as "Consolidated Work Plan from Fall 2011 through Fall 2012"* (CWP) (Enbridge, 2011) approved by the U.S. EPA on December 21, 2011 was reviewed to determine the status of the hydrodynamic model in relation to the requirements of the CWP.

2m.3 Work Planned

No hydrodynamic assessment and model activities are scheduled to be conducted during January 2013.

3.0 Conclusion

As described in this monthly progress report for December 2012, Enbridge continued to conduct activities required under the U.S. EPA Order and Supplemental Order and to conduct activities pursuant to the MDEQ Order. The work conducted and data received during January 2013 will be included in the monthly report to be submitted in February 2013.

4.0 References

Section 1.0 Introduction

MDEQ, 2010. "Administrative Consent Order and Partial Settlement Agreement entered *In the Matter of Enbridge Energy Partners, L.P., and Enbridge Energy, Limited Partnership*, proceedings under the Michigan Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, MCL 324.101 et seq. signed November 1, 2010."

U.S. EPA, 2010. "*Removal Administrative Order Section 311(c) of the Clean Water Act*, issued on July 27, 2010 to Enbridge Energy Partners, L.P., Docket Number: CWA 1321-5-10-001 as modified by Paragraph 6 of the Supplement to Order for Compliance Under Section 311(c) of the Clean Water Act, issued by the U.S. EPA Region 5 on September 23, 2010 to Enbridge Energy Partners, L.P. *et al.*, Respondents, Docket No: CWA 1321-5-10-001."

Section 2a.0 Surface Water and Sediment Monitoring Activities

Enbridge, 2012. "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Addendum to the Sampling and Analysis Plan (SAP): Attachment C - Surface Water and Sediment Monitoring Supplement to the Sampling and Analysis Plan.*" Approved by MDEQ on May 18, 2012.

MacDonald et al, 2000. MacDonald Environmental Sciences Ltd. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems "*Threshold Effects Concentration (TEC) Guidelines."* January 2000.

MDEQ, 2006. Michigan Department of Environmental Quality; "*RRD Operational Memorandum No. 4, Attachment 7."* May 2006.

MDEQ, 2011. "*Rule 57 Water Quality Values*" "*Rule 323.1057 (Toxic Substances) of the Part 4 Water Quality Standards.*" June 2011.

U.S. EPA, 2003. United States Environmental Protection Agency "*U.S. EPA Region 5 Ecological Screening Levels 2003."* August 2003.

Section 2b.0 Water Quality Monitoring Activities

Enbridge, 2011. "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Water Quality Measurement Standard Operating Procedure.*" Approved by MDEQ on September 22, 2011.

Section 2c.0 Potable Water Investigation Activities

Enbridge, 2011(1). "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Augusta Monitoring Well Installation Work Plan,*" submitted to MDEQ on February 10, 2011.

Enbridge, 2011(2). "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Kalamazoo Monitoring Well Installation Work Plan,*" submitted to MDEQ on February 10, 2011.

Enbridge, 2012(1). "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Addendum to Sampling and Analysis Plan (SAP): Attachment B - Drinking Water Well Supplement to the Sampling and Analysis Plan.*" Approved by MDEQ on May 18, 2012.

Enbridge, 2012 (2). "*Request for Reduction of the Drinking Water Monitoring Program*, Enbridge Line 6B MP 608 Marshall, MI Pipeline Release Submitted to the MDEQ on October 10, 2012.

Section 2d.0 Air Sampling and Monitoring Activities

Enbridge, 2012(1). "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Air Monitoring & Sampling Addendum to the Sampling & Analysis Plan.*" Submitted to U.S. EPA on December 9, 2011 and resubmitted on January 31, 2012, March 28, 2012, and May 3, 2012. Approved by U.S. EPA on May 4, 2012.

Enbridge, 2012(2). "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Request for Modification of the Air Monitoring and Sampling Addendum to the Sampling and Analysis Plan.*" Submitted to U.S. EPA on August 17, 2012.

U.S. EPA, 2012. "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Approval of Temporary Suspension of Air Monitoring and Odor Response Activities."* Submitted to Enbridge on September 10, 2012.

Section 2f.0 Remedial Investigation Activities

Enbridge, 2011. "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Remedial Investigation Work Plan for Kalamazoo River (MP 2.25 to MP 3.14).*" Approved by MDEQ on November 18, 2011.

Enbridge, 2012(1). "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Remedial Investigation Work Plan for Kalamazoo River (MP 5.80 to MP 11.00).*" Approved by MDEQ on February 10, 2012.

Enbridge, 2012(2). "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan*; Remedial Investigation Work Plan for Kalamazoo River (MP 11.00 to Morrow Lake Dam).*" Approved by MDEQ on March 8, 2012.

Enbridge, 2012(3). "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan*; Work Plan for Monitoring Well Abandonment.* Submitted December 3, 2012.

Enbridge, 2012(4). "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Remedial Investigation Work Plan for Kalamazoo River (MP 3.14 to Ceresco Dam (MP 5.80)).*" Approved by MDEQ on January 13, 2012.

Section 2g.0 Temporary Facility Restoration and Demobilization Activities

Enbridge, 2011. "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Soil Staging, Decontamination and River Access Site Closure Plan.*" Submitted to U.S. EPA and MDEQ on January 11, 2011.

MDEQ, 2004. "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *RRD Operational Memorandum No. 2, MDEQ Remediation and Redevelopment Division, Sampling and Analysis.*" October 22, 2004.

Section 2h.0 River Bank Erosion Control and Restoration Activities

Enbridge, 2012. "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Kalamazoo River Bank Erosion Assessment and Action Plan Summary Report – Monitoring Trip No. 9.*" Submitted to MDEQ on September 13, 2012.

Section 2i.0 Sediment Traps and Cylindrical Sampling Devices

Enbridge, 2012. "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Sediment Trap Monitoring and Maintenance Plan.*" Approved by U.S. EPA on July 10, 2012.

Section 2j.0 Waste Management Activities

Enbridge, 2011(1). "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Waste Treatment, Transportation, and Disposal Plan.*" Approved by U.S. EPA on May 20, 2011.

Enbridge, 2011(2). "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Addendum to the Revised Waste Treatment, Transportation and Disposal Plan.*" Approved by U.S. EPA on June 20, 2011.

Enbridge, 2011(3). "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Operation and Maintenance Excavation Work Plan titled Waste Best Management Practices.*" Approved by U.S. EPA on June 29, 2011.

Enbridge, 2012. "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Winter Water Management Work Plan Frac Tank City 2012.*" Submitted to the U.S. EPA on December 20, 2012.

Section 2m.0 Hydrodynamic Assessment and Model Activities

Enbridge, 2011. "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Addendum to the Response Plan for Downstream Impacted Areas, August 2, 2010 (Revised August 17, 2010 per U.S. EPA August 17, 2010 letter), Supplement to Source Area Response Plan and Supplement to Response Plan for Downstream Impacted Areas, Referred to as Operations and Maintenance Work Plan commonly referred to as "Consolidated Work Plan for Activities through 2012.*" Submitted to U.S. EPA on October 20, 2011.

Enbridge Line 6B MP 608 Pipeline Release

Marshall, Michigan

Tables

Prepared for U.S. EPA and MDEQ

Enbridge Energy, Limited Partnership

Submitted: January 23, 2013

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0004F3A	C0004F3 [redacted]	[redacted]	Ceresco MI	Calhoun	7.5	Permit but Call/Schedule Required	12-Sep-10	Prior to Sale or Occupation	8	7	**30-Jul-10**	21-Aug-10		
											31-Aug-10	01-Oct-10		Iron
											12-Sep-10	01-Oct-10		Iron
											20-Sep-10			Iron
											17-Oct-10	01-Nov-10		Iron
											30-Oct-10	18-Nov-10		IRON
											15-Sep-11	29-Nov-11		IRON, TOTAL
											16-Dec-11	20-Jan-12		
C001899A	C001899 [redacted]	[redacted]	Marshall MI	Calhoun	1.5	Unattended Permission, Anytime	31-Aug-10	Prior to Sale or Occupation	12	12	**30-Jul-10**	21-Aug-10		
											31-Aug-10	14-Oct-10		Iron
											11-Oct-10	26-Oct-10		Iron
											12-Oct-10	26-Oct-10		Iron
											22-Oct-10	12-Nov-10		IRON
											05-Nov-10	09-Dec-10		IRON, TOTAL

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C001899A	C001899 [redacted]	[redacted]	Marshall MI	Calhoun	1.5	Unattended Permission, Anytime	31-Aug-10	Prior to Sale or Occupation	12	12	**30-Nov-10**	15-Dec-10		IRON, TOTAL
											05-Jan-11	24-Jan-11		IRON, TOTAL, NICKEL, TOTAL
											12-Apr-11	02-May-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											19-Jul-11	02-Aug-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											19-Oct-11	08-Dec-11		
											19-Jan-12	09-Feb-12		
C0021FEA	C0021FE [redacted]	[redacted]	Marshall MI	Calhoun	1.5	Permit but Call/Schedule Required	19-Sep-10	Prior to Sale or Occupation	12	12	**27-Jul-10**	21-Aug-10		
											31-Aug-10	14-Oct-10		Iron
											04-Sep-10	04-Oct-10		
											19-Sep-10	01-Nov-10		
											11-Oct-10	26-Oct-10		Iron
											24-Oct-10	30-Nov-10		IRON

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0021FEA	C0021FE [redacted]	[redacted]	Marshall MI	Calhoun	1.5	Permit but Call/Schedule Required	19-Sep-10	Prior to Sale or Occupation	12	12	05-Nov-10	09-Dec-10		IRON, TOTAL
											05-Jan-11	24-Jan-11		IRON, TOTAL, NICKEL, TOTAL
											12-Apr-11	02-May-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											19-Jul-11	02-Aug-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, TITANIUM
											20-Oct-11	08-Dec-11		IRON, TOTAL
											19-Jan-12	09-Feb-12		
C002471A	C002471 [redacted]	[redacted]	Marshall MI	Calhoun	1.25	Permit but Call/Schedule Required	01-Sep-10	Prior to Sale or Occupation	7	6	31-Jul-10	25-Aug-10		
											01-Sep-10	05-Oct-10		Iron
											04-Sep-10	13-Oct-10		
											17-Sep-10			Iron
											13-Oct-10	13-Nov-10		Iron
											29-Oct-10	04-Dec-10		IRON
											23-Feb-12	30-Mar-12		

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0027CBA	C0027CB [redacted]	[redacted]	Marshall MI	Calhoun	1.5	Unattended Permission, Anytime	31-Aug-10	Prior to Sale or Occupation	10	10	**07-Aug-10**	19-Aug-10		Iron
											31-Aug-10	14-Oct-10		Iron
											12-Sep-10	07-Jan-11		Iron
											17-Sep-10	08-Feb-11		Iron
											11-Oct-10	28-Oct-10		Iron
											21-Oct-10	13-Dec-10		IRON
											05-Nov-10	09-Dec-10		IRON, TOTAL
											30-Nov-10	15-Dec-10		IRON, TOTAL
											05-Jan-11	24-Jan-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, VANADIUM, TOTAL
											22-Feb-12	16-Mar-12		
C0040EEA	C0040EE [redacted]	[redacted]	Marshall MI	Calhoun	2.5	Permit but Call/Schedule Required	25-Oct-10	Prior to Sale or Occupation	11	11	**29-Jul-10**	21-Aug-10		
											25-Oct-10	12-Nov-10		
											03-Nov-10	19-Nov-10		

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0040EEA	C0040EE [redacted]	[redacted]	Marshall MI	Calhoun	2.5	Permit but Call/Schedule Required	25-Oct-10	Prior to Sale or Occupation	11	11	**11-Nov-10**	21-Dec-10		IRON, TOTAL
											29-Nov-10	10-Dec-10		IRON, TOTAL
											14-Dec-10	26-Jan-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, VANADIUM, TOTAL
											05-Jan-11	24-Jan-11		IRON, TOTAL, NICKEL, TOTAL
											11-Feb-11	07-Mar-11		IRON, TOTAL, MERCURY, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											12-May-11	02-Jun-11		IRON, TOTAL, MOLYBDENUM, TITANIUM
											15-Aug-11	14-Sep-11		IRON, TOTAL, MOLYBDENUM, TITANIUM
											17-Nov-11	14-Dec-11		IRON, TOTAL
C005139A	C005139 [redacted]	[redacted]	Battle Creek MI	Calhoun	22.75	Unattended Permission, Anytime	26-Aug-10	Prior to Sale or Occupation	12	12	**07-Aug-10**	19-Sep-10		Iron
											28-Aug-10	02-Oct-10		Iron
											13-Sep-10	04-Oct-10		Iron

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C005139A	C005139 [redacted]	[redacted]	Battle Creek MI	Calhoun	22.75	Unattended Permission, Anytime	26-Aug-10	Prior to Sale or Occupation	12	12	21-Sep-10	08-Oct-10		Iron
											07-Oct-10	26-Oct-10		Iron
											17-Oct-10	01-Nov-10		Iron
											30-Oct-10	18-Nov-10		IRON
											01-Dec-10	15-Dec-10		IRON, TOTAL
											04-Jan-11	24-Jan-11		IRON, TOTAL
											08-Apr-11	02-May-11		IRON, TOTAL, MOLYBDENUM, TITANIUM
											15-Jul-11	02-Aug-11		IRON, TOTAL
											17-Oct-11	08-Dec-11		IRON, TOTAL
C0094BAPW1	C0094BA [redacted]	[redacted]	Marshall MI	Calhoun	1.75	Permit but Call/Schedule Required	01-Sep-10	Prior to Sale or Occupation	11	10	29-Jul-10	21-Aug-10		
											11-Sep-10	04-Oct-10		Iron
											25-Sep-10	07-Oct-10		Iron
											29-Oct-10	16-Dec-10		IRON
											25-Jan-11	02-Mar-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0094BAPW1	C0094BA [redacted]	[redacted]	Marshall MI	Calhoun	1.75	Permit but Call/Schedule Required	01-Sep-10	Prior to Sale or Occupation	11	10	**15-Feb-11**	03-Mar-11		IRON, TOTAL, MOLYBDENUM, TITANIUM
											09-Jun-11	21-Jun-11		IRON, TOTAL, MOLYBDENUM, TITANIUM
											16-Aug-11	29-Aug-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											17-Nov-11	14-Dec-11		IRON, TOTAL, NICKEL, TOTAL
											23-Feb-12	16-Mar-12		
C0108EFA	C0108EF [redacted]	[redacted]	Marshall MI	Calhoun	0.75	Unattended Permission, Anytime	24-Oct-10	Prior to Sale or Occupation	13	12	**01-Aug-10**	21-Aug-10		
											10-Aug-10	01-Nov-10		Iron
											12-Aug-10	05-Oct-10		Iron
											20-Aug-10	27-Sep-10		Iron
											24-Oct-10	30-Nov-10		
											03-Nov-10			
											11-Nov-10	09-Dec-10		IRON, TOTAL
											17-Dec-10	17-Feb-11		IRON, TOTAL, TITANIUM, VANADIUM, TOTAL

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0108EFA	C0108EF [redacted]	[redacted]	Marshall MI	Calhoun	0.75	Unattended Permission, Anytime	24-Oct-10	Prior to Sale or Occupation	13	12	**07-Jan-11**	15-Feb-11		IRON, TOTAL
											11-Feb-11	07-Mar-11		BERYLLIUM, TOTAL, IRON, TOTAL, MERCURY, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL
											02-May-11	12-May-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											15-Aug-11	14-Sep-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, TITANIUM
											18-Nov-11	19-Dec-11		IRON, TOTAL
C0118AEA	C0118AE [redacted]	[redacted]	Ceresco MI	Calhoun	5.75	Permit but Call/Schedule Required	28-Aug-10	Prior to Sale or Occupation	12	12	**28-Jul-10**	21-Aug-10		
											28-Aug-10	01-Oct-10		Iron
											11-Sep-10	01-Oct-10		Iron
											20-Sep-10	09-Feb-11		Iron
											12-Oct-10	26-Oct-10		Iron

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0118AEA	C0118AE [redacted]	[redacted]	Ceresco MI	Calhoun	5.75	Permit but Call/Schedule Required	28-Aug-10	Prior to Sale or Occupation	12	12	22-Oct-10	30-Nov-10		IRON
											06-Nov-10	29-Nov-10		IRON
											01-Dec-10	15-Dec-10		IRON, TOTAL
											21-Jan-11	17-Feb-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											11-Feb-11	07-Mar-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											12-May-11	02-Jun-11		IRON, TOTAL, MOLYBDENUM, TITANIUM
											12-Aug-11	14-Sep-11		IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL
C0127FCA	C0127FC [redacted]	[redacted]	Marshall MI	Calhoun	3.25	Unattended Permission, Anytime	16-Sep-10	Prior to Sale or Occupation	7	7	01-Aug-10	25-Aug-10		
											31-Aug-10	05-Oct-10		Iron
											23-Oct-10	12-Nov-10		IRON
											05-Nov-10	09-Dec-10		IRON, TOTAL
											30-Nov-10	15-Dec-10		IRON, TOTAL
											24-Jan-11	15-Feb-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0127FCA	C0127FC [redacted]	[redacted]	Marshall MI	Calhoun	3.25	Unattended Permission, Anytime	16-Sep-10	Prior to Sale or Occupation	7	7	**11-Feb-11**	07-Mar-11		IRON, TOTAL, MERCURY, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
C0129FBA	C0129FB [redacted]	[redacted]	Marshall MI	Calhoun	3.25	Unattended Permission, Anytime	04-Sep-10	Prior to Sale or Occupation	11	11	**07-Aug-10**	19-Aug-10		Iron
											04-Sep-10	04-Oct-10		
											09-Sep-10	04-Oct-10		Iron
											24-Sep-10	07-Oct-10		Iron
											11-Oct-10	28-Oct-10		Iron
											21-Oct-10	12-Nov-10		IRON
											05-Nov-10	09-Dec-10		IRON, TOTAL
											30-Nov-10	15-Dec-10		IRON, TOTAL
											07-Jan-11	15-Feb-11		IRON, TOTAL, NICKEL, TOTAL
											06-Apr-11	26-Apr-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0129FBA	C0129FB [redacted]	[redacted]	Marshall MI	Calhoun	3.25	Unattended Permission, Anytime	04-Sep-10	Prior to Sale or Occupation	11	11	**19-Jul-11**	02-Aug-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
C013407A	C013407 [redacted]	[redacted]	Ceresco MI	Calhoun	6	Unattended Permission, Anytime	19-Sep-10	Prior to Sale or Occupation	8	8	**28-Jul-10**	08-Sep-10		
											05-Sep-10	01-Oct-10		
											20-Sep-10	08-Feb-11		Iron
											06-Oct-10	20-Oct-10		
											15-Oct-10	26-Oct-10		Iron
											29-Oct-10	07-Jan-11		IRON
											01-Dec-10	15-Dec-10		IRON, TOTAL, NICKEL, TOTAL
											16-Nov-11	18-Jan-12		IRON, TOTAL
C0139BAA	C0139BA [redacted]	[redacted]	Marshall MI	Calhoun	2.75	Unattended Permission, Anytime	01-Sep-10	Prior to Sale or Occupation	13	11	**02-Aug-10**	25-Aug-10		
											01-Sep-10	05-Oct-10		Iron
											12-Sep-10	04-Oct-10		Iron
											19-Sep-10	08-Feb-11		Iron

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0139BAA	C0139BA [redacted]	[redacted]	Marshall MI	Calhoun	2.75	Unattended Permission, Anytime	01-Sep-10	Prior to Sale or Occupation	13	11	**03-Oct-10**	20-Oct-10		Iron
											16-Oct-10			Iron
											29-Oct-10	03-Dec-10		IRON
											30-Nov-10	15-Dec-10		IRON, TOTAL
											07-Jan-11	15-Feb-11		IRON, TOTAL, NICKEL, TOTAL
											06-Apr-11	26-Apr-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											20-Jul-11	02-Aug-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											19-Oct-11	08-Dec-11		
C0144C0A	C0144C0 [redacted]	[redacted]	Marshall MI	Calhoun	3.25	Unattended Permission, Anytime	12-Sep-10	Prior to Sale or Occupation	14	14	**27-Jul-10**	21-Aug-10		
											31-Aug-10	05-Oct-10		Iron
											12-Sep-10	04-Oct-10		Iron
											19-Sep-10	08-Feb-11		Iron
											01-Oct-10	08-Feb-11		Iron

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0144C0A	C0144C0 [redacted]	[redacted]	Marshall MI	Calhoun	3.25	Unattended Permission, Anytime	12-Sep-10	Prior to Sale or Occupation	14	14	**14-Oct-10**	28-Oct-10		Iron
											28-Oct-10	17-Nov-10		IRON
											30-Nov-10	15-Dec-10		IRON, TOTAL
											11-Jan-11	15-Feb-11		IRON, TOTAL, NICKEL, TOTAL, TITANIUM
											11-Feb-11	07-Mar-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											02-May-11	12-May-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											12-Aug-11	14-Sep-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL
											17-Nov-11	18-Jan-12		IRON, TOTAL
											24-Feb-12	16-Mar-12		
C01497DA	C01497D [redacted]	[redacted]	Battle Creek MI	Calhoun	23	Permit but Call/Schedule Required	21-Sep-10	Prior to Sale or Occupation	8	7	**29-Jul-10**	25-Aug-10		
											31-Aug-10	14-Oct-10		Iron
											21-Sep-10	08-Oct-10		Iron

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
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Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C01497DA	C01497D [redacted]	[redacted]	Battle Creek MI	Calhoun	23	Permit but Call/Schedule Required	21-Sep-10	Prior to Sale or Occupation	8	7	**10-Oct-10**	28-Oct-10		Iron
											21-Oct-10	12-Nov-10		
											07-Nov-10	29-Nov-10		
											02-Dec-10	18-Dec-10		
C015098PW1	C015098 [redacted]	[redacted]	Battle Creek MI	Calhoun	14.5	Unattended Permission, Anytime	26-Aug-10	Prior to Sale or Occupation	12	11	**10-Aug-10**	11-Nov-10		Iron
											28-Aug-10	02-Oct-10		Iron
											13-Sep-10	11-Nov-10		Iron
											19-Sep-10	08-Feb-11		Iron
											10-Oct-10	26-Oct-10		Iron
											20-Oct-10			Iron
											30-Oct-10	18-Nov-10		IRON
											03-Dec-10	18-Dec-10		IRON, TOTAL
											18-Jan-11	15-Feb-11		IRON, TOTAL, NICKEL, TOTAL
											03-Feb-11	02-Mar-11		IRON, TOTAL, NICKEL, TOTAL

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Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C015098PW1	C015098 [redacted]	[redacted]	Battle Creek MI	Calhoun	14.5	Unattended Permission, Anytime	26-Aug-10	Prior to Sale or Occupation	12	11	**13-Sep-11**	30-Nov-11		IRON, TOTAL
											19-Dec-11	20-Jan-12		
C016277A	C016277 [redacted]	[redacted]	Marshall MI	Calhoun	3.25	Unattended Permission, Anytime	06-Sep-10	Prior to Sale or Occupation	9	9	**07-Aug-10**	19-Aug-10		Iron
											08-Sep-10	05-Oct-10		Iron
											23-Oct-10	12-Nov-10		IRON
											05-Nov-10	09-Dec-10		IRON, TOTAL
											30-Nov-10	15-Dec-10		IRON, TOTAL
											07-Jan-11	15-Feb-11		IRON, TOTAL, NICKEL, TOTAL
											06-Apr-11	26-Apr-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, TITANIUM
											19-Jul-11	02-Aug-11		IRON, TOTAL, NICKEL, TOTAL, TITANIUM
											18-Oct-11	18-Jan-12		IRON, TOTAL
C0173A0PW1	C0173A0 [redacted]	[redacted]	Marshall MI	Calhoun	3	Unattended Permission, Anytime	29-Aug-10	Prior to Sale or Occupation	12	11	**05-Aug-10**	20-Aug-10		
											20-Sep-10	01-Nov-10		Iron

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
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C0173A0PW1	C0173A0 [redacted]	[redacted]	Marshall MI	Calhoun	3	Unattended Permission, Anytime	29-Aug-10	Prior to Sale or Occupation	12	11	**24-Jan-11**	17-Feb-11		IRON, TOTAL, MERCURY, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											10-Feb-11	07-Mar-11		BERYLLIUM, TOTAL, MERCURY, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											02-Mar-11	25-Mar-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, VANADIUM, TOTAL
											06-Apr-11	26-Apr-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											02-May-11	12-May-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											06-Jun-11	21-Jun-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											19-Jul-11	02-Aug-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											14-Sep-11	30-Nov-11		IRON, TOTAL
											19-Jan-12	09-Feb-12		

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Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
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Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0179BEPW1	C0179BE [redacted]	[redacted]	Marshall MI	Calhoun	3	Unattended Permission, Anytime	15-Sep-10	Prior to Sale or Occupation	12	11	**27-Jul-10**	21-Aug-10		
											13-Oct-10	13-Nov-10		
											23-Oct-10	14-Jan-11		
											05-Nov-10	09-Dec-10		
											01-Dec-10	15-Dec-10		NICKEL, TOTAL
											24-Jan-11	15-Feb-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											10-Feb-11	07-Mar-11		MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											02-May-11	12-May-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											12-Aug-11	14-Sep-11		IRON, TOTAL, MOLYBDENUM, TITANIUM
											17-Nov-11	18-Jan-12		
											24-Feb-12	16-Mar-12		
C01855AA	C01855A [redacted]	[redacted]	Galesburg MI	Kalamazoo	37.25	Unattended Permission, Anytime	23-Sep-10	Prior to Sale or Occupation	12	12	**10-Aug-10**	23-Aug-10		
											23-Sep-10	07-Oct-10		

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Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C01855AA	C01855A [redacted]	[redacted]	Galesburg MI	Kalamazoo	37.25	Unattended Permission, Anytime	23-Sep-10	Prior to Sale or Occupation	12	12	**05-Oct-10**	20-Oct-10		
											16-Oct-10	28-Oct-10		Nickel
											29-Oct-10	04-Dec-10		
											11-Nov-10	09-Dec-10		
											29-Nov-10	10-Dec-10		
											12-Jan-11	15-Feb-11		IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL
											11-Apr-11	02-May-11		IRON, TOTAL, MOLYBDENUM, TITANIUM
											11-Jul-11	21-Jul-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											18-Oct-11	18-Jan-12		
											16-Jan-12	09-Feb-12		
C01932EA	C01932E [redacted]	[redacted]	Galesburg MI	Kalamazoo	34.75	Unattended Permission, Anytime	01-Sep-10	Prior to Sale or Occupation	18	17	**07-Aug-10**	01-Sep-10		Iron
											01-Sep-10	01-Nov-10		
											12-Sep-10	04-Oct-10		

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Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C01932EA	C01932E [redacted]	[redacted]	Galesburg MI	Kalamazoo	34.75	Unattended Permission, Anytime	01-Sep-10	Prior to Sale or Occupation	18	17	**03-Oct-10**	07-Jan-11		
											16-Oct-10	26-Oct-10		
											30-Oct-10	18-Nov-10		
											01-Dec-10	06-Jan-11		
											12-Jan-11	15-Feb-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											31-Jan-11	02-Mar-11		MOLYBDENUM, NICKEL, TOTAL
											28-Feb-11	23-Mar-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											05-Apr-11	26-Apr-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											03-May-11	17-May-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											10-Jun-11	22-Jun-11		MOLYBDENUM, TITANIUM
											14-Jul-11	02-Aug-11		MOLYBDENUM, NICKEL, TOTAL, TITANIUM

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C01932EA	C01932E [redacted]	[redacted]	Galesburg MI	Kalamazoo	34.75	Unattended Permission, Anytime	01-Sep-10	Prior to Sale or Occupation	18	17	**08-Aug-11**	11-Sep-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											18-Oct-11	18-Jan-12		
											16-Jan-12	09-Feb-12		
C019930PW1	C019930 [redacted]	[redacted]	Galesburg MI	Kalamazoo	33.5	Unattended Permission, Anytime	23-Oct-10	Prior to Sale or Occupation	8	8	**08-Aug-10**	01-Sep-10		Iron
											23-Oct-10	12-Nov-10		IRON
											04-Nov-10	23-Nov-10		IRON
											01-Dec-10	15-Dec-10		IRON, TOTAL
											10-Jan-11	16-Feb-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											31-Jan-11	07-Mar-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											28-Feb-11	25-Mar-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											16-Jan-12	09-Feb-12		
C0208B6A	C0208B6 [redacted]	[redacted]	Ceresco MI	Calhoun	7.25	Unattended Permission, Anytime	24-Sep-10	Prior to Sale or Occupation	14	12	**27-Jul-10**	01-Sep-10		

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0208B6A	C0208B6 [redacted]	[redacted]	Ceresco MI	Calhoun	7.25	Unattended Permission, Anytime	24-Sep-10	Prior to Sale or Occupation	14	12	31-Jul-10	01-Sep-10		
											24-Sep-10	07-Oct-10		Iron
											06-Oct-10	01-Nov-10		Iron, Naphthalene
											16-Oct-10	28-Oct-10		Iron, Naphthalene
											30-Oct-10			IRON, NAPHTHALENE
											11-Nov-10			IRON, TOTAL, NAPHTHALENE
											29-Nov-10	10-Dec-10		IRON, TOTAL
											16-Dec-10	26-Jan-11		IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL
											03-Jan-11	26-Jan-11		IRON, TOTAL, NICKEL, TOTAL
											06-Apr-11	26-Apr-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											18-Jul-11	02-Aug-11		IRON, TOTAL, NICKEL, TOTAL
											18-Oct-11	18-Jan-12		IRON, TOTAL
											18-Jan-12	09-Feb-12		

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0218F7PW1	C0218F7 [redacted]	[redacted]	Marshall MI	Calhoun	2.25	Permit but Call/Schedule Required	01-Sep-10	Prior to Sale or Occupation	7	7	**27-Jul-10**	01-Nov-10		
											31-Jul-10	01-Nov-10		
											15-Sep-10	04-Oct-10		Iron
											22-Sep-10	13-Oct-10		Iron
											06-Nov-10	04-Dec-10		IRON
											17-Nov-11	14-Dec-11		IRON, TOTAL
											23-Feb-12	16-Mar-12		
C0227A5A	C0227A5 [redacted]	[redacted]	Battle Creek MI	Calhoun	22.75	Unattended Permission, Anytime	26-Aug-10	Prior to Sale or Occupation	12	12	**07-Aug-10**	21-Sep-10		
											28-Aug-10	04-Oct-10		
											13-Sep-10	14-Oct-10		
											21-Sep-10	14-Oct-10		
											10-Oct-10	28-Oct-10		
											21-Oct-10	12-Nov-10		
											02-Nov-10	19-Nov-10		

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0227A5A	C0227A5 [redacted]	[redacted]	Battle Creek MI	Calhoun	22.75	Unattended Permission, Anytime	26-Aug-10	Prior to Sale or Occupation	12	12	**02-Dec-10**	18-Dec-10		IRON, TOTAL
											19-Jan-11	15-Feb-11		NICKEL, TOTAL, VANADIUM, TOTAL
											04-Feb-11	02-Mar-11		IRON, TOTAL, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL
											04-May-11	17-May-11		IRON, TOTAL, VANADIUM, TOTAL
											08-Aug-11	11-Sep-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL
C024080PW1	C024080 [redacted]	[redacted]	Marshall MI	Calhoun	3	Permit but Call/Schedule Required	06-Sep-10	Prior to Sale or Occupation	10	9	**08-Sep-10**	03-Nov-10		Iron
											14-Dec-10	26-Jan-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, VANADIUM, TOTAL
											18-Jan-11	10-Mar-11		IRON, TOTAL, NICKEL, TOTAL
											31-Jan-11	07-Mar-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											15-Feb-11	09-Mar-11		IRON, TOTAL, MOLYBDENUM

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C024080PW1	C024080 [redacted]	[redacted]	Marshall MI	Calhoun	3	Permit but Call/Schedule Required	06-Sep-10	Prior to Sale or Occupation	10	9	**02-Mar-11**	25-Mar-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, VANADIUM, TOTAL
											06-Jun-11	21-Jun-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											14-Sep-11	29-Nov-11		IRON, TOTAL
											16-Dec-11	20-Jan-12		
C02433AWP1	C02433A [redacted]	[redacted]	Ceresco MI	Calhoun	6	Unattended Permission, Anytime	04-Sep-10	Prior to Sale or Occupation	11	10	**04-Sep-10**	13-Oct-10		
											17-Sep-10	13-Oct-10		Iron
											06-Oct-10			Iron
											15-Oct-10	26-Oct-10		Iron
											29-Oct-10	07-Jan-11		IRON
											30-Nov-10	15-Dec-10		IRON, TOTAL
											24-Jan-11	15-Feb-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											14-Feb-11	03-Mar-11		IRON, TOTAL, MERCURY, TOTAL, TITANIUM, VANADIUM, TOTAL

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C02433AWP1	C02433A [redacted]	[redacted]	Ceresco MI	Calhoun	6	Unattended Permission, Anytime	04-Sep-10	Prior to Sale or Occupation	11	10	**09-May-11**	26-May-11		IRON, TOTAL, TITANIUM
											11-Aug-11	29-Aug-11		IRON, TOTAL, MERCURY, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											23-Feb-12	16-Mar-12		
C0248B2PW1	C0248B2 [redacted]	[redacted]	Galesburg MI	Kalamazoo	36.25	Permit but Call/Schedule Required	06-Sep-10	Prior to Sale or Occupation	11	11	**08-Sep-10**	13-Oct-10		Iron
											17-Sep-10	07-Oct-10		Iron
											06-Oct-10	20-Oct-10		Iron
											16-Oct-10	22-Nov-10		Iron
											06-Nov-10	23-Nov-10		IRON
											03-Dec-10	18-Dec-10		IRON, TOTAL
											12-Jan-11	15-Feb-11		IRON, TOTAL, NICKEL, TOTAL
											08-Apr-11	05-May-11		IRON, TOTAL, MOLYBDENUM, TITANIUM
											14-Jul-11	02-Aug-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											19-Oct-11	08-Dec-11		

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0248B2PW1	C0248B2 [redacted]	[redacted]	Galesburg MI	Kalamazoo	36.25	Permit but Call/Schedule Required	06-Sep-10	Prior to Sale or Occupation	11	11	16-Jan-12	09-Feb-12		
C0250C1WP1	C0250C1 [redacted]	[redacted]	Galesburg MI	Kalamazoo	36.25	Unattended Permission, Anytime		Prior to Sale or Occupation	10	8	**18-Oct-10**			Iron
											30-Oct-10	18-Nov-10		IRON
											03-Dec-10			IRON, TOTAL
											12-Jan-11	15-Feb-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											31-Jan-11	02-Mar-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											28-Feb-11	23-Mar-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											05-Apr-11	26-Apr-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											03-May-11	17-May-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											09-Jun-11	21-Jun-11		IRON, TOTAL, MOLYBDENUM, TITANIUM
											15-Dec-11	20-Jan-12		
C0286B9PW1	C0286B9 [redacted]	[redacted]	Marshall MI	Calhoun	1	Permit but Call/Schedule Required	24-Sep-10	Prior to Sale or Occupation	1	1	01-Mar-12	16-Mar-12		
C0292E1A	C0292E1 [redacted]	[redacted]	Marshall MI	Calhoun	1.5	Permit but Call/Schedule Required	31-Aug-10	Prior to Sale or Occupation	8	7	**12-Aug-10**	01-Sep-10		

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0292E1A	C0292E1 [redacted]	[redacted]	Marshall MI	Calhoun	1.5	Permit but Call/Schedule Required	31-Aug-10	Prior to Sale or Occupation	8	7	**31-Aug-10**	13-Oct-10		Iron
											22-Sep-10	13-Oct-10		Iron
											01-Oct-10			Iron
											14-Oct-10	26-Oct-10		Iron
											28-Oct-10	17-Nov-10		IRON
											30-Nov-10	15-Dec-10		IRON, TOTAL
											16-Dec-11	20-Jan-12		
C0300B3WP1	C0300B3 [redacted]	[redacted]	Galesburg MI	Kalamazoo	33.25	Unattended Permission, Anytime	07-Sep-10	Prior to Sale or Occupation	7	7	**09-Sep-10**	16-Oct-10		Iron
											23-Oct-10	12-Nov-10		IRON
											29-Oct-10	04-Dec-10		IRON
											06-Nov-10	03-Dec-10		IRON
											01-Dec-10	15-Dec-10		IRON, TOTAL
											15-Dec-10	26-Jan-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, VANADIUM, TOTAL

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0300B3WP1	C0300B3 [redacted]	[redacted]	Galesburg MI	Kalamazoo	33.25	Unattended Permission, Anytime	07-Sep-10	Prior to Sale or Occupation	7	7	10-Jan-11	15-Feb-11		IRON, TOTAL, MOLYBDENUM, TITANIUM
C0304AAPW1	C0304AA [redacted]	[redacted]	Battle Creek MI	Calhoun	13.75	Unattended Permission, Anytime	29-Sep-10	Prior to Sale or Occupation	12	10	04-Sep-10	13-Oct-10		
											29-Sep-10	20-Oct-10		Iron
											12-Oct-10	26-Oct-10		Iron
											23-Oct-10	13-Jan-11	ETHYLBENZENE, M-P-XYLENE, O-XYLENE (1,2-DIMETHYLBENZENE)	IRON
											07-Nov-10			IRON
											03-Dec-10	18-Dec-10		IRON, TOTAL
											06-Jan-11	24-Jan-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											09-Feb-11	07-Mar-11		IRON, TOTAL, NICKEL, TOTAL, TITANIUM
											02-Mar-11	25-Mar-11		IRON, TOTAL, MOLYBDENUM
											04-Apr-11	26-Apr-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											06-Jun-11	21-Jun-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0314EBWP1	C0314EB [redacted]	[redacted]	Ceresco MI	Calhoun	6	Permit but Call/Schedule Required	12-Oct-10	Prior to Sale or Occupation	4	4	**15-Oct-10**	26-Oct-10		Iron
											12-Nov-10	02-Dec-10		IRON
											29-Nov-10	10-Dec-10		IRON, TOTAL
											19-Oct-11	07-Dec-11		
C033469WP1	C033469 [redacted]	[redacted]	Augusta MI	Kalamazoo	28.25	Unattended Permission, Anytime	05-Sep-10	Prior to Sale or Occupation	7	6	**08-Sep-10**	21-Oct-10		Iron
											18-Sep-10	14-Oct-10		Iron
											08-Oct-10	26-Oct-10		Iron
											19-Oct-10			Iron
											05-Nov-10	09-Dec-10		IRON, TOTAL
											02-Dec-10	20-Dec-10		IRON, TOTAL
											14-Jan-11	17-Feb-11		IRON, TOTAL, TITANIUM
C0335FFWP1	C0335FF [redacted]	[redacted]	Augusta MI	Kalamazoo	27.5	Permit but Call/Schedule Required	29-Aug-10	Prior to Sale or Occupation	8	8	**03-Oct-10**	16-Nov-10		Iron
											27-Oct-10	14-Jan-11		IRON
											05-Nov-10	10-Dec-10		IRON, TOTAL

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0335FFWP1	C0335FF [redacted]	[redacted]	Augusta MI	Kalamazoo	27.5	Permit but Call/Schedule Required	29-Aug-10	Prior to Sale or Occupation	8	8	**02-Dec-10**	18-Dec-10		IRON, TOTAL
											03-May-11	17-May-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											09-Jun-11	21-Jun-11		IRON, TOTAL, MOLYBDENUM, TITANIUM
											12-Sep-11	29-Nov-11		IRON, TOTAL
											15-Dec-11	20-Jan-12		
C033645WP1	C033645 [redacted]	[redacted]	Augusta MI	Kalamazoo	27.25	Unattended Permission, Anytime	12-Sep-10	Prior to Sale or Occupation	8	7	**12-Sep-10**			Iron
											27-Oct-10	14-Jan-11		IRON
											06-Nov-10	03-Dec-10		IRON
											02-Dec-10	18-Dec-10		IRON, TOTAL
											10-Jan-11	15-Feb-11		IRON, TOTAL, TITANIUM
											04-Feb-11	02-Mar-11		IRON, TOTAL, MOLYBDENUM, TITANIUM
											03-May-11	17-May-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											08-Aug-11	18-Aug-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
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Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0375FBWP1	C0375FB [redacted]	[redacted]	Battle Creek MI	Calhoun	12	Unattended Permission, Anytime	04-Sep-10	Prior to Sale or Occupation	12	12	24-Aug-10	14-Oct-10		Iron
											04-Sep-10	14-Oct-10		
											19-Sep-10	27-Oct-10		Iron
											11-Oct-10	26-Oct-10		Iron
											21-Oct-10	12-Nov-10		IRON
											01-Nov-10	19-Nov-10		IRON
											02-Dec-10	18-Dec-10		IRON, TOTAL
											20-Jan-11	15-Feb-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											09-Feb-11	07-Mar-11		IRON, TOTAL, NICKEL, TOTAL, TITANIUM
											05-May-11	17-May-11		IRON, TOTAL, NICKEL, TOTAL, TITANIUM
											09-Aug-11	24-Aug-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											22-Feb-12	16-Mar-12		
C0384A2WP1	C0384A2 [redacted]	[redacted]	Ceresco MI	Calhoun	5.75	Permit but Call/Schedule Required	05-Sep-10	Prior to Sale or Occupation	6	6	05-Sep-10	13-Oct-10		Iron

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
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Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0384A2WP1	C0384A2 [redacted]	[redacted]	Ceresco MI	Calhoun	5.75	Permit but Call/Schedule Required	05-Sep-10	Prior to Sale or Occupation	6	6	**21-Sep-10**	13-Oct-10		Iron
											06-Oct-10	26-Oct-10		Iron
											15-Oct-10	28-Oct-10		Iron
											29-Oct-10	07-Jan-11		
											02-Dec-10	18-Dec-10		IRON, TOTAL
C038718WP1	C038718 [redacted]	[redacted]	Marshall MI	Calhoun	2.75	Permit but Call/Schedule Required	21-Sep-10	Prior to Sale or Occupation	7	6	**11-Sep-10**	13-Oct-10		
											21-Sep-10	07-Jan-11		
											02-Oct-10			
											15-Oct-10	28-Oct-10		
											29-Oct-10	11-Jan-11		
											30-Nov-10	15-Dec-10		NICKEL, TOTAL
											24-Feb-12	16-Mar-12		
C043756WP1	C043756 [redacted]	[redacted]	Marshall MI	Calhoun	2.75	Unattended Permission, Anytime	07-Sep-10	Prior to Sale or Occupation	11	11	**09-Sep-10**	13-Oct-10		Iron
											21-Sep-10	13-Oct-10		Iron

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
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Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C043756WP1	C043756 [redacted]	[redacted]	Marshall MI	Calhoun	2.75	Unattended Permission, Anytime	07-Sep-10	Prior to Sale or Occupation	11	11	**12-Oct-10**	26-Oct-10		Iron
											22-Oct-10	12-Nov-10		IRON
											06-Nov-10	20-Dec-10		IRON
											30-Nov-10	15-Dec-10		IRON, TOTAL
											05-Jan-11	24-Jan-11		IRON, TOTAL, NICKEL, TOTAL
											06-Apr-11	26-Apr-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											18-Jul-11	02-Aug-11		IRON, TOTAL, NICKEL, TOTAL
											19-Oct-11	08-Dec-11		
											19-Jan-12	09-Feb-12		
C044607PW1	C044607 [redacted]	[redacted]	Marshall MI	Calhoun	2.75	Permit but Call/Schedule Required	08-Sep-10	Prior to Sale or Occupation	8	8	**09-Sep-10**	13-Oct-10		Iron
											21-Sep-10	13-Oct-10		Iron
											12-Oct-10	26-Oct-10		Iron
											22-Oct-10	12-Nov-10		IRON

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C044607PW1	C044607 [redacted]	[redacted]	Marshall MI	Calhoun	2.75	Permit but Call/Schedule Required	08-Sep-10	Prior to Sale or Occupation	8	8	**06-Nov-10**	29-Nov-10		IRON
											06-Dec-10	18-Dec-10		IRON, TOTAL
											14-Sep-11	30-Nov-11		IRON, TOTAL
											19-Jan-12	09-Feb-12		
C0470F1PW1	C0470F1 [redacted]	[redacted]	Battle Creek MI	Calhoun	23	Unattended Permission, Anytime	26-Aug-10	Prior to Sale or Occupation	11	11	**04-Sep-10**	13-Oct-10		
											21-Sep-10	13-Oct-10		Iron
											10-Oct-10	28-Oct-10		Iron
											21-Oct-10	12-Nov-10		IRON
											07-Nov-10	29-Nov-10		IRON
											02-Dec-10	18-Dec-10		IRON, TOTAL
											24-Jan-11	15-Feb-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											08-Feb-11	07-Mar-11		IRON, TOTAL, NICKEL, TOTAL, TITANIUM
											04-May-11	25-May-11		IRON, TOTAL, NICKEL, TOTAL

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0470F1PW1	C0470F1 [redacted]	[redacted]	Battle Creek MI	Calhoun	23	Unattended Permission, Anytime	26-Aug-10	Prior to Sale or Occupation	11	11	**10-Aug-11**	24-Aug-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											20-Feb-12	16-Mar-12		
C04757EWP1	C04757E [redacted]	[redacted]	Battle Creek MI	Calhoun	23	Permit but Call/Schedule Required	07-Sep-10	Prior to Sale or Occupation	6	6	**07-Sep-10**	13-Oct-10		
											21-Sep-10	13-Oct-10		
											10-Oct-10	28-Oct-10		
											21-Oct-10	12-Nov-10		
											07-Nov-10	29-Nov-10		IRON
											02-Dec-10	18-Dec-10		IRON, TOTAL
C053154PW1	C053154 [redacted]	[redacted]	Battle Creek MI	Calhoun	14.5	Permit but Call/Schedule Required	04-Sep-10	Prior to Sale or Occupation	3	2	**09-Oct-10**	28-Oct-10		Iron
											20-Oct-10			Iron
											30-Oct-10	18-Nov-10		IRON
C0568B5PW1	C0568B5 [redacted]	[redacted]	Marshall MI	Calhoun	3	Unattended Permission, Anytime	06-Sep-10	Prior to Sale or Occupation	12	11	**08-Sep-10**	13-Oct-10		Iron
											19-Sep-10	13-Oct-10		Iron

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
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Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0568B5PW1	C0568B5 [redacted]	[redacted]	Marshall MI	Calhoun	3	Unattended Permission, Anytime	06-Sep-10	Prior to Sale or Occupation	12	11	01-Oct-10			Iron
											15-Oct-10	26-Oct-10		Iron
											29-Oct-10	03-Dec-10		IRON
											30-Nov-10	15-Dec-10		IRON, TOTAL
											24-Jan-11	15-Feb-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											11-Feb-11	07-Mar-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											02-May-11	12-May-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											15-Aug-11	14-Sep-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											17-Nov-11	18-Jan-12		IRON, TOTAL
											24-Feb-12	16-Mar-12		
C0601CEWP1	C0601CE [redacted]	[redacted]	Battle Creek MI	Calhoun	10.5	Unattended Permission, Anytime	11-Oct-10	Prior to Sale or Occupation	16	14	20-Oct-10	26-Jan-11		Iron
											01-Nov-10	19-Nov-10		IRON

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
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Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0601CEWP1	C0601CE [redacted]	[redacted]	Battle Creek MI	Calhoun	10.5	Unattended Permission, Anytime	11-Oct-10	Prior to Sale or Occupation	16	14	**12-Nov-10**	29-Mar-11		IRON, NICKEL
											17-Jan-11	10-Mar-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, VANADIUM, TOTAL
											27-Jan-11	02-Mar-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											15-Feb-11	09-Mar-11		IRON, TOTAL
											03-Mar-11	25-Mar-11		IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL
											04-Apr-11	26-Apr-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL
											05-May-11	17-May-11		IRON, TOTAL, NICKEL, TOTAL, TITANIUM
											06-Jun-11	21-Jun-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											18-Jul-11	02-Aug-11		IRON, TOTAL, NICKEL, TOTAL

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0601CEWP1	C0601CE [redacted]	[redacted]	Battle Creek MI	Calhoun	10.5	Unattended Permission, Anytime	11-Oct-10	Prior to Sale or Occupation	16	14	**09-Aug-11**	24-Aug-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL
											13-Sep-11	30-Nov-11		IRON, TOTAL
											20-Dec-11	20-Jan-12		
C0603E2WP1	C0603E2 [redacted]	[redacted]	Battle Creek MI	Calhoun	10	Permit but Call/Schedule Required	14-Sep-10	Prior to Sale or Occupation	4	3	**30-Aug-10**	15-Oct-10		Iron
											14-Sep-10			Iron
											13-Sep-11	30-Nov-11		IRON, TOTAL
											20-Dec-11	20-Jan-12		
C060441WP1	C060441 [redacted]	[redacted]	Battle Creek MI	Calhoun	10	Permit but Call/Schedule Required	25-Sep-10	Prior to Sale or Occupation	4	4	**04-Sep-10**	13-Oct-10		
											19-Sep-10	13-Oct-10		Iron
											13-Sep-11	30-Nov-11		IRON, TOTAL
											20-Dec-11	20-Jan-12		
C0605D7WP1	C0605D7 [redacted]	[redacted]	Battle Creek MI	Calhoun	10	Permit but Call/Schedule Required		Prior to Sale or Occupation	4	4	**06-Dec-10**	20-Dec-10		IRON, TOTAL

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0605D7WP1	C0605D7 [redacted]	[redacted]	Battle Creek MI	Calhoun	10	Permit but Call/Schedule Required		Prior to Sale or Occupation	4	4	**17-Jan-11**	10-Mar-11		BERYLLIUM, TOTAL, IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL
											13-Sep-11	30-Nov-11		IRON, TOTAL
											20-Dec-11	20-Jan-12		
C06827CA	C06827C [redacted]	[redacted]	Battle Creek MI	Calhoun	12.25	Unattended Permission, Anytime	28-Oct-10	Prior to Sale or Occupation	6	6	**19-Aug-10**	06-Oct-10		Iron
											28-Oct-10	17-Nov-10		IRON
											02-Dec-10	20-Dec-10		IRON, TOTAL, NICKEL, TOTAL
											06-Jan-11	24-Jan-11		IRON, TOTAL, NICKEL, TOTAL
											07-Feb-11	07-Mar-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											05-May-11	17-May-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
C07313APW1	C07313A [redacted]	[redacted]	Galesburg MI	Kalamazoo		Unattended Permission, Anytime	15-Sep-10	Prior to Sale or Occupation	8	6	**15-Sep-10**			Iron
											03-May-11	17-May-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											09-Jun-11	21-Jun-11		IRON, TOTAL, MOLYBDENUM, TITANIUM

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C07313APW1	C07313A [redacted]	[redacted]	Galesburg MI	Kalamazoo		Unattended Permission, Anytime	15-Sep-10	Prior to Sale or Occupation	8	6	**14-Jul-11**	02-Aug-11		IRON, TOTAL, MOLYBDENUM, TITANIUM
											08-Aug-11	11-Sep-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											12-Sep-11	29-Nov-11		IRON, TOTAL, NICKEL, TOTAL
											15-Dec-11	20-Jan-12		
C0789C3PW1	C0789C3 [redacted]	[redacted]	Augusta MI	Kalamazoo	26.75	Permit but Call/Schedule Required	06-Sep-10	Prior to Sale or Occupation	4	4	**07-Dec-10**	20-Dec-10		IRON, TOTAL
											17-Jan-11	10-Mar-11		IRON, TOTAL, NICKEL, TOTAL
											14-Nov-11	14-Dec-11		IRON, TOTAL
											20-Feb-12	16-Mar-12		
C0872B9PW2	C0872B9 [redacted]	[redacted]	Augusta MI	Kalamazoo	26.75	Unattended Permission, Anytime	29-Aug-10	Prior to Sale or Occupation	8	8	**04-Sep-10**	28-Oct-10		
											18-Sep-10	16-Nov-10		
											08-Oct-10	26-Oct-10		
											02-Dec-10	08-Feb-11		IRON, TOTAL
											13-Jan-11	15-Feb-11		IRON, TOTAL, VANADIUM, TOTAL

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0872B9PW2	C0872B9 [redacted]	[redacted]	Augusta MI	Kalamazoo	26.75	Unattended Permission, Anytime	29-Aug-10	Prior to Sale or Occupation	8	8	07-Apr-11	02-May-11		IRON, TOTAL, TITANIUM, VANADIUM, TOTAL
											14-Jul-11	02-Aug-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, TITANIUM, VANADIUM, TOTAL
											17-Oct-11	14-Dec-11		
C090249WP1	C090249 [redacted]	[redacted]	Galesburg MI	Kalamazoo	37.25	Unattended Permission, Anytime	26-Sep-10	Prior to Sale or Occupation	11	10	04-Oct-10	16-Nov-10		
											13-Oct-10	16-Nov-10		
											23-Oct-10	12-Nov-10		
											06-Nov-10	03-Dec-10		
											01-Dec-10	15-Dec-10		
											12-Jan-11	15-Feb-11		IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL
											11-Apr-11	02-May-11		IRON, TOTAL, MOLYBDENUM, TITANIUM
											11-Jul-11	21-Jul-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											18-Oct-11	18-Jan-12		IRON, TOTAL

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Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C090249WP1	C090249 [redacted]	[redacted]	Galesburg MI	Kalamazoo	37.25	Unattended Permission, Anytime	26-Sep-10	Prior to Sale or Occupation	11	10	16-Jan-12	09-Feb-12		
											12-Jul-12			
C0947C2WP1	C0947C2 [redacted]	[redacted]	Marshall MI	Calhoun	2	Permit but Call/Schedule Required	05-Oct-10	Prior to Sale or Occupation	5	4	**02-Nov-10**	30-Nov-10		IRON
											17-Nov-10	02-Dec-10		IRON
											29-Nov-10	28-Jan-11		IRON, TOTAL
											05-Jan-11	24-Jan-11		IRON, TOTAL, NICKEL, TOTAL
C107264WP1	C107264 [redacted]	[redacted]	Ceresco MI	Calhoun	6.5	Unattended Permission, Anytime	28-Oct-10	Prior to Sale or Occupation	8	6	01-Aug-10			
											28-Oct-10	17-Nov-10		IRON
											11-Nov-10	09-Dec-10		IRON, TOTAL
											29-Nov-10	10-Dec-10		IRON, TOTAL
											20-Jan-11			IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											08-Feb-11	07-Mar-11		IRON, TOTAL, NICKEL, TOTAL, TITANIUM
											13-Sep-11	29-Nov-11		IRON, TOTAL, NICKEL, TOTAL
											22-Feb-12	16-Mar-12		

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
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Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C1426E4WP1	C1426E4 [redacted]	[redacted]	Battle Creek MI	Calhoun	21	Unattended Permission, Anytime	27-Oct-10	Prior to Sale or Occupation	9	10	**27-Oct-10**	14-Jan-11		IRON
											03-Nov-10	19-Nov-10		IRON
											03-Nov-10	12-Jan-11		IRON
											19-Nov-10	13-Dec-10		IRON, TOTAL
											02-Dec-10	20-Dec-10		IRON, TOTAL
											19-Jan-11	15-Feb-11		IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL
											01-Feb-11	02-Mar-11		IRON, TOTAL, NICKEL, TOTAL
											05-May-11	17-May-11		IRON, TOTAL, VANADIUM, TOTAL
											10-Aug-11	24-Aug-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL
											21-Feb-12	16-Mar-12		
C0002C6A	C0002C6 [redacted]	[redacted]	Ceresco MI	Calhoun	6	Unattended Permission, Anytime	25-Sep-10	Quarterly 2	14	13	**03-Aug-10**	13-Nov-10		
											25-Sep-10	07-Oct-10		Iron

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C0002C6A	C0002C6 [redacted]	[redacted]	Ceresco MI	Calhoun	6	Unattended Permission, Anytime	25-Sep-10	Quarterly 2	14	13	**25-Oct-10**	12-Nov-10		IRON
											29-Oct-10	07-Jan-11		IRON
											30-Nov-10	15-Dec-10		IRON, TOTAL
											20-Jan-11	15-Feb-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											14-Feb-11	03-Mar-11		IRON, TOTAL, TITANIUM, VANADIUM, TOTAL
											09-May-11	26-May-11		IRON, TOTAL, TITANIUM
											12-Aug-11	14-Sep-11		IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL
											16-Nov-11	14-Dec-11		IRON, TOTAL
											23-Feb-12	16-Mar-12		
											25-Jun-12	24-Jul-12		
											18-Sep-12	26-Oct-12		
											12-Dec-12			
C0029CCWP1	C0029CC [redacted]	[redacted]	Ceresco MI	Calhoun	6	Unattended Permission, Anytime	08-Sep-10	Quarterly 2	16	15	**03-Aug-10**	25-Aug-10		

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C0029CCWP1	C0029CC [redacted]	[redacted]	Ceresco MI	Calhoun	6	Unattended Permission, Anytime	08-Sep-10	Quarterly 2	16	15	10-Sep-10	01-Oct-10		Iron
											12-Sep-10	01-Oct-10		
											25-Oct-10	12-Nov-10		
											29-Oct-10	07-Jan-11		
											30-Nov-10	15-Dec-10		
											20-Jan-11	15-Feb-11		IRON, TOTAL, MOLYBDENUM, VANADIUM, TOTAL
											09-Feb-11	07-Mar-11		IRON, TOTAL, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL
											01-Mar-11	25-Mar-11		IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL
											04-Apr-11	26-Apr-11		IRON, TOTAL, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL
											10-Jun-11	22-Jun-11		IRON, TOTAL, TITANIUM
											13-Sep-11	29-Nov-11		
											16-Dec-11	20-Jan-12		

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C0029CCWP1	C0029CC [redacted]	[redacted]	Ceresco MI	Calhoun	6	Unattended Permission, Anytime	08-Sep-10	Quarterly 2	16	15	25-Jun-12	24-Jul-12		
											18-Sep-12	26-Oct-12		
											13-Dec-12			
C005315A	C005315 [redacted]	[redacted]	Ceresco MI	Calhoun	6	Unattended Permission, Restricted Times	25-Oct-10	Quarterly 2	13	12	**01-Aug-10**	25-Aug-10		
											25-Oct-10	12-Nov-10		
											29-Oct-10	07-Jan-11		
											30-Nov-10	15-Dec-10		
											26-Jan-11	02-Mar-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											14-Feb-11	03-Mar-11		IRON, TOTAL, MOLYBDENUM, TITANIUM
											09-May-11	26-May-11		IRON, TOTAL, MOLYBDENUM, TITANIUM
											11-Aug-11	29-Aug-11		IRON, TOTAL, MERCURY, TOTAL, NICKEL, TOTAL
											16-Nov-11	14-Dec-11		
											23-Feb-12	16-Mar-12		

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C005315A	C005315 [redacted]	[redacted]	Ceresco MI	Calhoun	6	Unattended Permission, Restricted Times	25-Oct-10	Quarterly 2	13	12	25-Jun-12	24-Jul-12		
											19-Sep-12	26-Oct-12		
											12-Dec-12			
C011485A	C011485 [redacted]	[redacted]	Ceresco MI	Calhoun	6	Unattended Permission, Anytime	19-Sep-10	Quarterly 2	15	14	**03-Aug-10**	25-Aug-10		
											19-Sep-10	08-Feb-11		Iron
											06-Oct-10	20-Oct-10		Iron
											16-Oct-10	28-Oct-10		Iron
											30-Oct-10	18-Nov-10		IRON
											30-Nov-10	15-Dec-10		IRON, TOTAL
											21-Jan-11	15-Feb-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											10-Feb-11	07-Mar-11		IRON, TOTAL, MOLYBDENUM, TITANIUM
											09-May-11	26-May-11		IRON, TOTAL, TITANIUM
											11-Aug-11	29-Aug-11		IRON, TOTAL, NICKEL, TOTAL
											16-Nov-11	14-Dec-11		IRON, TOTAL

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Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C011485A	C011485 [redacted]	[redacted]	Ceresco MI	Calhoun	6	Unattended Permission, Anytime	19-Sep-10	Quarterly 2	15	14	23-Feb-12	16-Mar-12		
											25-Jun-12	24-Jul-12		
											18-Sep-12	26-Oct-12		
											10-Dec-12			
C0223BCA	C0223BC [redacted]	[redacted]	Marshall MI	Calhoun	0.5	Unattended Permission, Anytime		Quarterly 2	14	10	**07-Aug-10**	25-Aug-10		Iron
											01-Nov-10	07-Jan-11		IRON
											01-Dec-10	06-Jan-11		IRON, TOTAL
											07-Jan-11	15-Feb-11		IRON, TOTAL, NICKEL, TOTAL
											11-Feb-11	07-Mar-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											02-May-11	25-May-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											15-Aug-11	14-Sep-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0223BCA	C0223BC [redacted]	[redacted]	Marshall MI	Calhoun	0.5	Unattended Permission, Anytime		Quarterly 2	14	10	**18-Nov-11**			IRON, TOTAL
											23-Feb-12	16-Mar-12		
											25-Jun-12	24-Jul-12		
											19-Sep-12	26-Oct-12		
											13-Dec-12			
C0254D8	C0254D8 [redacted]	[redacted]	Ceresco MI	Calhoun	7.5	Unattended Permission, Anytime	05-Sep-10	Quarterly 2	12	11	**05-Sep-10**	07-Oct-10		Iron
											24-Oct-10	12-Nov-10		IRON
											06-Nov-10	03-Dec-10		IRON
											01-Dec-10	15-Dec-10		IRON, TOTAL
											06-Jan-11	24-Jan-11		IRON, TOTAL
											06-Apr-11	26-Apr-11		IRON, TOTAL, MOLYBDENUM, TITANIUM
											18-Jul-11	02-Aug-11		IRON, TOTAL, NICKEL, TOTAL
											18-Oct-11	18-Jan-12		IRON, TOTAL
											18-Jan-12	09-Feb-12		

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0254D8	C0254D8 [redacted]	[redacted]	Ceresco MI	Calhoun	7.5	Unattended Permission, Anytime	05-Sep-10	Quarterly 2	12	11	26-Jun-12	24-Jul-12		
											20-Sep-12	26-Oct-12		
											12-Dec-12			
C0273F9WP1	C0273F9 [redacted]	[redacted]	Ceresco MI	Calhoun	6.5	Unattended Permission, Anytime	03-Oct-10	Quarterly 2	16	14	**01-Sep-10**	01-Nov-10	Toluene	Iron
											03-Oct-10	27-Oct-10	Toluene	Iron
											24-Oct-10	30-Nov-10		IRON
											05-Nov-10		ETHYLBENZENE, TOLUENE	
											17-Nov-10	02-Dec-10		IRON
											29-Nov-10	10-Dec-10		IRON, TOTAL
											14-Dec-10	26-Jan-11		IRON, TOTAL, MOLYBDENUM, VANADIUM, TOTAL
											20-Jan-11	15-Feb-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											08-Feb-11	07-Mar-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0273F9WP1	C0273F9 [redacted]	[redacted]	Ceresco MI	Calhoun	6.5	Unattended Permission, Anytime	03-Oct-10	Quarterly 2	16	14	**12-May-11**	02-Jun-11		IRON, TOTAL, MOLYBDENUM, TITANIUM
											12-Aug-11	14-Sep-11		IRON, TOTAL, NICKEL, TOTAL
											16-Nov-11	14-Dec-11		IRON, TOTAL
											22-Feb-12	16-Mar-12		
											26-Jun-12	24-Jul-12		
											19-Sep-12	26-Oct-12		
											10-Dec-12			
C030309WP1	C030309 [redacted]	[redacted]	Ceresco MI	Calhoun	6	Unattended Permission, Anytime	08-Sep-10	Quarterly 2	16	15	**10-Sep-10**	13-Oct-10		
											11-Sep-10	13-Oct-10		
											20-Sep-10	13-Oct-10		
											06-Oct-10	20-Oct-10		
											15-Oct-10	28-Oct-10		
											29-Oct-10	07-Jan-11		
											30-Nov-10	15-Dec-10		

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C030309WP1	C030309 [redacted]	[redacted]	Ceresco MI	Calhoun	6	Unattended Permission, Anytime	08-Sep-10	Quarterly 2	16	15	**26-Jan-11**	02-Mar-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											14-Feb-11	03-Mar-11		IRON, TOTAL, MOLYBDENUM, TITANIUM, VANADIUM, TOTAL
											09-May-11	26-May-11		IRON, TOTAL, TITANIUM
											12-Aug-11	14-Sep-11		IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL
											16-Nov-11	14-Dec-11		
											23-Feb-12	16-Mar-12		
											25-Jun-12	24-Jul-12		
											18-Sep-12	26-Oct-12		
											12-Dec-12			
C031751PW1	C031751 [redacted]	[redacted]	Ceresco MI	Calhoun	6	Unattended Permission, Anytime	26-Aug-10	Quarterly 2	13	11	**28-Aug-10**	01-Nov-10		Iron
											11-Sep-10			Iron
											24-Oct-10	30-Nov-10		IRON
											06-Nov-10	29-Nov-10		IRON, NICKEL

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C031751PW1	C031751 [redacted]	[redacted]	Ceresco MI	Calhoun	6	Unattended Permission, Anytime	26-Aug-10	Quarterly 2	13	11	**30-Nov-10**	15-Dec-10		IRON, TOTAL
											20-Jan-11	15-Feb-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											09-Feb-11	07-Mar-11		IRON, TOTAL, NICKEL, TOTAL, TITANIUM
											09-May-11	26-May-11		IRON, TOTAL, TITANIUM
											12-Aug-11	14-Sep-11		IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL
											16-Nov-11	14-Dec-11		
											25-Jun-12	24-Jul-12		
											18-Sep-12	26-Oct-12		
											12-Dec-12			
C0377D7A	C0377D7 [redacted]	[redacted]	Ceresco MI	Calhoun	6	Unattended Permission, Anytime	25-Sep-10	Quarterly 2	16	14	**15-Aug-10**	02-Sep-10		
											28-Aug-10	01-Oct-10		
											25-Sep-10	07-Oct-10		Iron
											06-Oct-10	20-Oct-10		Iron
											20-Oct-10			Iron

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0377D7A	C0377D7 [redacted]	[redacted]	Ceresco MI	Calhoun	6	Unattended Permission, Anytime	25-Sep-10	Quarterly 2	16	14	**06-Nov-10**	29-Nov-10		IRON
											30-Nov-10	15-Dec-10		IRON, TOTAL
											20-Jan-11	15-Feb-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											09-Feb-11	07-Mar-11		IRON, TOTAL, NICKEL, TOTAL, TITANIUM
											09-May-11	26-May-11		IRON, TOTAL, TITANIUM
											16-Aug-11	29-Aug-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, VANADIUM, TOTAL
											16-Nov-11	14-Dec-11		
											22-Feb-12	16-Mar-12		
											25-Jun-12	24-Jul-12		
											19-Sep-12	26-Oct-12		
											12-Dec-12			
C03868EWP1	C03868E [redacted]	[redacted]	Ceresco MI	Calhoun	6	Unattended Permission, Anytime	04-Sep-10	Quarterly 2	14	13	**04-Sep-10**	13-Oct-10		
											21-Sep-10	07-Jan-11		

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C03868EWP1	C03868E [redacted]	[redacted]	Ceresco MI	Calhoun	6	Unattended Permission, Anytime	04-Sep-10	Quarterly 2	14	13	**06-Oct-10**	20-Oct-10		
											15-Oct-10	01-Nov-10		
											29-Oct-10	07-Jan-11		
											30-Nov-10	15-Dec-10		
											21-Jan-11	15-Feb-11		IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL
											10-Feb-11	07-Mar-11		IRON, TOTAL, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL
											12-May-11	02-Jun-11		IRON, TOTAL, MOLYBDENUM, TITANIUM
											11-Aug-11	29-Aug-11		IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL
											16-Nov-11	18-Jan-12		
											25-Jun-12	24-Jul-12		
											18-Sep-12	26-Oct-12		
											10-Dec-12			
C07198APW1	C07198A [redacted]	[redacted]	Galesburg MI	Kalamazoo	34.75	Permit but Call/Schedule Required	04-Oct-10	Quarterly 2	11	9	08-Aug-10			

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C07198APW1	C07198A [redacted]	[redacted]	Galesburg MI	Kalamazoo	34.75	Permit but Call/Schedule Required	04-Oct-10	Quarterly 2	11	9	**04-Oct-10**	16-Oct-10		Iron
											15-Dec-10	26-Jan-11		IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL
											31-Jan-11	02-Mar-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											28-Feb-11	21-Apr-11		IRON, TOTAL, NICKEL, TOTAL
											15-Jul-11	02-Aug-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, TITANIUM
											18-Oct-11	02-Dec-11		IRON, TOTAL
											21-Dec-11	20-Jan-12		
											17-Apr-12	16-May-12		
											27-Sep-12	26-Oct-12		
											05-Dec-12			
C086970PW1	C086970 [redacted]	Augusta Municipal Wells	Augusta MI	Kalamazoo	28.75	Permit but Call/Schedule Required	27-Oct-10	Quarterly 2	19	17	**27-Oct-10**	14-Jan-11		IRON
											03-Nov-10	04-Dec-10		IRON
											18-Nov-10	21-Jan-11		IRON, TOTAL

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C086970PW1	C086970 [redacted]	Augusta Municipal Wells	Augusta MI	Kalamazoo	28.75	Permit but Call/Schedule Required	27-Oct-10	Quarterly 2	19	17	**02-Dec-10**	18-Dec-10		IRON, TOTAL
											10-Jan-11	19-Apr-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											04-Feb-11	09-Mar-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											01-Mar-11	25-Mar-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											05-Apr-11	26-Apr-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											04-May-11	17-May-11		IRON, TOTAL
											09-Jun-11	21-Jun-11		IRON, TOTAL, MOLYBDENUM, TITANIUM
											19-Jul-11	02-Aug-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											11-Aug-11	29-Aug-11		IRON, TOTAL, NICKEL, TOTAL
											14-Sep-11	28-Nov-11		IRON, TOTAL
											15-Dec-11	20-Jan-12		

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Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
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Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C086970PW1	C086970 [redacted]	Augusta Municipal Wells	Augusta MI	Kalamazoo	28.75	Permit but Call/Schedule Required	27-Oct-10	Quarterly 2	19	17	24-Apr-12	16-May-12		
											26-Jun-12	24-Jul-12		
											19-Sep-12	26-Oct-12		
											04-Dec-12			
C086970PW2	C086970 [redacted]	Augusta Municipal Wells	Augusta MI	Kalamazoo	28.75	Permit but Call/Schedule Required	27-Oct-10	Quarterly 2	18	17	**27-Oct-10**	14-Jan-11		IRON
											03-Nov-10	04-Dec-10		IRON
											18-Nov-10	09-Dec-10		IRON, TOTAL
											02-Dec-10	18-Dec-10		IRON, TOTAL
											10-Jan-11	19-Apr-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											04-Feb-11	09-Mar-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											01-Mar-11	25-Mar-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, VANADIUM, TOTAL

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
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Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C086970PW2	C086970 [redacted]	Augusta Municipal Wells	Augusta MI	Kalamazoo	28.75	Permit but Call/Schedule Required	27-Oct-10	Quarterly 2	18	17	**05-Apr-11**	26-Apr-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											04-May-11	17-May-11		IRON, TOTAL, NICKEL, TOTAL
											09-Jun-11	21-Jun-11		IRON, TOTAL, MOLYBDENUM, TITANIUM
											19-Jul-11	02-Aug-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											11-Aug-11	29-Aug-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											14-Sep-11	28-Nov-11		IRON, TOTAL
											15-Dec-11	20-Jan-12		
											24-Apr-12	16-May-12		
											26-Jun-12	24-Jul-12		
											19-Sep-12	26-Oct-12		
											04-Dec-12			
C0881CCWP1	C0881CC [redacted]	[redacted]	Ceresco MI	Calhoun	6	Unattended Permission, Anytime	02-Oct-10	Quarterly 2	14	12	**04-Oct-10**	20-Oct-10		Iron

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
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Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0881CCWP1	C0881CC [redacted]	[redacted]	Ceresco MI	Calhoun	6	Unattended Permission, Anytime	02-Oct-10	Quarterly 2	14	12	**16-Oct-10**	26-Oct-10		Iron
											30-Oct-10	18-Nov-10		IRON
											30-Nov-10	15-Dec-10		IRON, TOTAL, NICKEL, TOTAL
											21-Jan-11	15-Feb-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											10-Feb-11	07-Mar-11		IRON, TOTAL, NICKEL, TOTAL, TITANIUM
											09-May-11	26-May-11		IRON, TOTAL, MOLYBDENUM, TITANIUM
											11-Aug-11	29-Aug-11		IRON, TOTAL, NICKEL, TOTAL
											16-Nov-11	14-Dec-11		IRON, TOTAL
											23-Feb-12	16-Mar-12		
											26-Jun-12	24-Jul-12		
											18-Sep-12	26-Oct-12		
											10-Dec-12			
C088276WP1	C088276 [redacted]	[redacted]	Ceresco MI	Calhoun	6	Permit but Call/Schedule Required	12-Oct-10	Quarterly 2	10	9	**13-Oct-10**	13-Nov-10		Iron
											22-Oct-10	12-Nov-10		IRON

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
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Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C088276WP1	C088276 [redacted]	[redacted]	Ceresco MI	Calhoun	6	Permit but Call/Schedule Required	12-Oct-10	Quarterly 2	10	9	**06-Nov-10**	29-Nov-10		IRON
											30-Nov-10	15-Dec-10		IRON, TOTAL
											21-Jan-11	15-Feb-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											10-Feb-11	07-Mar-11		IRON, TOTAL, TITANIUM
											02-Mar-11	23-Mar-11		IRON, TOTAL
											19-Oct-11	07-Dec-11		
											26-Jun-12	24-Jul-12		
											10-Dec-12			
C0889FEWP1	C0889FE [redacted]	[redacted]	Galesburg MI	Kalamazoo	38	Permit but Call/Schedule Required		Quarterly 2	12	11	**01-Dec-10**	21-Dec-10		IRON, TOTAL
											15-Dec-10	26-Jan-11		IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL
											04-Jan-11	26-Jan-11		IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL
											04-Feb-11	02-Mar-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0889FEWP1	C0889FE [redacted]	[redacted]	Galesburg MI	Kalamazoo	38	Permit but Call/Schedule Required		Quarterly 2	12	11	**01-Mar-11**	29-Mar-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, VANADIUM, TOTAL
											09-Jun-11	21-Jun-11		IRON, TOTAL, MOLYBDENUM, TITANIUM, VANADIUM, TOTAL
											15-Sep-11	28-Nov-11		IRON, TOTAL
											18-Jan-12	09-Feb-12		
											24-Apr-12	16-May-12		
											26-Jun-12	24-Jul-12		
											19-Sep-12	02-Nov-12		
											04-Dec-12			
C0955AFPW1	C0955AF [redacted]	[redacted]	Ceresco MI	Calhoun	6	Permit But Call First		Quarterly 2						
C10619FWP1	C10619F [redacted]	[redacted]	Ceresco MI	Calhoun	8	Unattended Permission, Anytime	09-Oct-10	Quarterly 2	24	20	**30-Aug-10**	28-Oct-10		Iron
											31-Aug-10	06-Oct-10		Iron
											12-Oct-10	28-Oct-10	Toluene	Iron

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
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Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C10619FWP1	C10619F [redacted]	[redacted]	Ceresco MI	Calhoun	8	Unattended Permission, Anytime	09-Oct-10	Quarterly 2	24	20	22-Oct-10		TOLUENE	IRON
											04-Nov-10		TOLUENE	IRON
											17-Nov-10	02-Dec-10	TOLUENE	IRON
											29-Nov-10	11-Dec-10	TOLUENE	IRON, TOTAL
											16-Dec-10	26-Jan-11		IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL
											03-Jan-11	26-Jan-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											17-Jan-11	10-Mar-11	TOLUENE	IRON, TOTAL
											27-Jan-11	02-Mar-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											15-Feb-11	09-Mar-11		IRON, TOTAL, MOLYBDENUM
											03-Mar-11	29-Mar-11	TOLUENE	IRON, TOTAL, MOLYBDENUM
											04-Apr-11	26-Apr-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, VANADIUM, TOTAL

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
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Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C10619FWP1	C10619F [redacted]	[redacted]	Ceresco MI	Calhoun	8	Unattended Permission, Anytime	09-Oct-10	Quarterly 2	24	20	**12-May-11**	02-Jun-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											06-Jun-11	21-Jun-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											18-Jul-11	02-Aug-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											12-Aug-11	14-Sep-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL
											14-Sep-11	29-Nov-11		IRON, TOTAL
											16-Dec-11	20-Jan-12		
											26-Jun-12	24-Jul-12		
											20-Sep-12	26-Oct-12		
											12-Dec-12			
C135093WP1	C135093 [redacted]	[redacted]	Marshall MI	Calhoun	0.25	Unattended Permission, Anytime	11-Oct-10	Quarterly 2	14	11	19-Aug-10			
											11-Oct-10	26-Oct-10		
											21-Oct-10	13-Dec-10		

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C135093WP1	C135093 [redacted]	[redacted]	Marshall MI	Calhoun	0.25	Unattended Permission, Anytime	11-Oct-10	Quarterly 2	14	11	**06-Nov-10**	17-Feb-11		
											01-Dec-10	15-Dec-10		
											26-Jan-11	02-Mar-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											11-Feb-11	07-Mar-11		IRON, TOTAL, NICKEL, TOTAL, TITANIUM
											02-May-11	12-May-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											15-Aug-11	14-Sep-11		IRON, TOTAL, MOLYBDENUM, TITANIUM
											18-Nov-11			
											23-Feb-12	16-Mar-12		
											25-Jun-12	24-Jul-12		
											19-Sep-12	26-Oct-12		
											13-Dec-12			
C152569WP1	C152569 [redacted]	[redacted]	Ceresco MI	Calhoun	7.25	Unattended Permission, Anytime		Quarterly 2	12	11	**17-Nov-10**	02-Dec-10		IRON
											29-Nov-10	13-Dec-10		IRON, TOTAL

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C152569WP1	C152569 [redacted]	[redacted]	Ceresco MI	Calhoun	7.25	Unattended Permission, Anytime		Quarterly 2	12	11	**16-Dec-10**	26-Jan-11		IRON, TOTAL, VANADIUM, TOTAL
											06-Jan-11	26-Jan-11		IRON, TOTAL, NICKEL, TOTAL
											09-Feb-11	07-Mar-11		IRON, TOTAL, NICKEL, TOTAL, TITANIUM
											12-May-11	02-Jun-11		IRON, TOTAL, MOLYBDENUM, TITANIUM
											12-Aug-11	14-Sep-11		IRON, TOTAL, MOLYBDENUM, TITANIUM, VANADIUM, TOTAL
											16-Nov-11	14-Dec-11		IRON, TOTAL
											22-Feb-12	16-Mar-12		
											26-Jun-12	24-Jul-12		
											20-Sep-12	26-Oct-12		
											12-Dec-12			
C1528D4PW1	C1528D4 [redacted]	[redacted]	Ceresco MI	Calhoun	6	Unattended Permission, Anytime		Quarterly 2	13	11	**11-Nov-10**	06-Jan-11		IRON, TOTAL, NICKEL, TOTAL
											29-Nov-10	06-Jan-11		IRON, TOTAL

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C1528D4PW1	C1528D4 [redacted]	[redacted]	Ceresco MI	Calhoun	6	Unattended Permission, Anytime		Quarterly 2	13	11	**14-Dec-10**	26-Jan-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, VANADIUM, TOTAL
											03-Jan-11	26-Jan-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											10-Feb-11	07-Mar-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											12-May-11	02-Jun-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL
											12-Aug-11	14-Sep-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL
											16-Nov-11	14-Dec-11		
											23-Feb-12	16-Mar-12		
											25-Jun-12	24-Jul-12		
											19-Sep-12	26-Oct-12		

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C1528D4PW1	C1528D4 [redacted]	[redacted]	Ceresco MI	Calhoun	6	Unattended Permission, Anytime		Quarterly 2	13	11	12-Dec-12			
C153895PW1	C153895 [redacted]	[redacted]	Ceresco MI	Calhoun	6	Permit But Call First		Quarterly 2	17	15	**17-Nov-10**	02-Dec-10		IRON
											29-Nov-10	10-Dec-10		IRON, TOTAL
											14-Dec-10	26-Jan-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, VANADIUM, TOTAL
											21-Jan-11	15-Feb-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											10-Feb-11	07-Mar-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											02-Mar-11	25-Mar-11		IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL
											04-Apr-11	26-Apr-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL
											09-May-11	26-May-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											10-Jun-11	22-Jun-11		IRON, TOTAL, MOLYBDENUM, TITANIUM

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C153895PW1	C153895 [redacted]	[redacted]	Ceresco MI	Calhoun	6	Permit But Call First		Quarterly 2	17	15	**20-Jul-11**	02-Aug-11		IRON, TOTAL, NICKEL, TOTAL, TITANIUM
											11-Aug-11	29-Aug-11		IRON, TOTAL, NICKEL, TOTAL
											14-Sep-11	29-Nov-11		IRON, TOTAL
											16-Dec-11	20-Jan-12		
											25-Jun-12	24-Jul-12		
											19-Sep-12	26-Oct-12		
											12-Dec-12			
C000749A	C000749 [redacted]	[redacted]	Battle Creek MI	Calhoun	22.75	Permit but Call/Schedule Required	19-Nov-10	Semi-Annual	10	9	**06-Aug-10**	20-Aug-10		Iron
											17-Nov-10	13-Dec-10		IRON, NICKEL
											29-Nov-10	11-Dec-10		IRON, TOTAL
											17-Jan-11	10-Mar-11		IRON, TOTAL, NICKEL, TOTAL
											27-Jan-11	02-Mar-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											03-May-11	17-May-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C000749A	C000749 [redacted]	[redacted]	Battle Creek MI	Calhoun	22.75	Permit but Call/Schedule Required	19-Nov-10	Semi-Annual	10	9	**15-Aug-11**	14-Sep-11		IRON, TOTAL, MOLYBDENUM, TITANIUM
											15-Nov-11	14-Dec-11		IRON, TOTAL
											20-Feb-12	16-Mar-12		
											13-Dec-12			
C001311A	C001311 [redacted]	[redacted]	Marshall MI	Calhoun	3	Unattended Permission, Anytime	06-Sep-10	Semi-Annual	12	11	**31-Jul-10**	25-Aug-10		
											08-Sep-10	04-Oct-10		Iron
											27-Oct-10	14-Jan-11		IRON
											05-Nov-10	09-Dec-10		IRON, TOTAL
											01-Dec-10	15-Dec-10		IRON, TOTAL
											24-Jan-11	15-Feb-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											10-Feb-11	07-Mar-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											02-May-11	12-May-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C001311A	C001311 [redacted]	[redacted]	Marshall MI	Calhoun	3	Unattended Permission, Anytime	06-Sep-10	Semi-Annual	12	11	**15-Aug-11**	14-Sep-11		IRON, TOTAL, MOLYBDENUM, TITANIUM
											17-Nov-11	14-Dec-11		IRON, TOTAL
											24-Feb-12	16-Mar-12		
											04-Dec-12			
C0042C2A	C0042C2 [redacted]	[redacted]	Battle Creek MI	Calhoun	13.5	Unattended Permission, Anytime	23-Oct-10	Semi-Annual	11	10	**02-Aug-10**	25-Aug-10		
											29-Oct-10	04-Dec-10		
											11-Nov-10	13-Jan-11	M,P-XYLENES	IRON, TOTAL
											29-Nov-10	10-Dec-10		IRON, TOTAL
											16-Dec-10	26-Jan-11		IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL
											06-Jan-11	15-Feb-11		IRON, TOTAL, NICKEL, TOTAL
											11-Apr-11	02-May-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL
											15-Jul-11	02-Aug-11		IRON, TOTAL

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0042C2A	C0042C2 [redacted]	[redacted]	Battle Creek MI	Calhoun	13.5	Unattended Permission, Anytime	23-Oct-10	Semi-Annual	11	10	**17-Oct-11**	08-Dec-11		IRON, TOTAL
											17-Jan-12	09-Feb-12		
											07-Dec-12			
C00474DA	C00474D [redacted]	[redacted]	Battle Creek MI	Calhoun	13.75	Unattended Permission, Anytime	24-Oct-10	Semi-Annual	12	10	**02-Aug-10**	25-Aug-10		
											05-Aug-10	20-Aug-10		
											24-Oct-10	12-Nov-10		IRON
											02-Nov-10	19-Nov-10		IRON
											03-Dec-10	18-Dec-10		IRON, TOTAL
											04-Jan-11	24-Jan-11		IRON, TOTAL, NICKEL, TOTAL
											11-Apr-11	02-May-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											18-Jul-11	02-Aug-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											17-Oct-11	08-Dec-11		IRON, TOTAL
											18-Jan-12	09-Feb-12		

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C00474DA	C00474D [redacted]	[redacted]	Battle Creek MI	Calhoun	13.75	Unattended Permission, Anytime	24-Oct-10	Semi-Annual	12	10	07-Dec-12			
C0048DCA	C0048DC [redacted]	[redacted]	Battle Creek MI	Calhoun	22.75	Unattended Permission, Anytime	23-Sep-10	Semi-Annual	13	11	**10-Aug-10**	25-Aug-10		
											23-Sep-10	07-Oct-10		Iron
											07-Oct-10	26-Oct-10		Iron
											17-Oct-10	01-Nov-10		Iron
											30-Oct-10	18-Nov-10		IRON
											01-Dec-10	15-Dec-10		IRON, TOTAL
											04-Jan-11	24-Jan-11		IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL
											08-Apr-11	02-May-11		IRON, TOTAL, MOLYBDENUM, TITANIUM, VANADIUM, TOTAL
											15-Jul-11	02-Aug-11		IRON, TOTAL, VANADIUM, TOTAL
											17-Oct-11	14-Dec-11		
											17-Jan-12	09-Feb-12		
											06-Dec-12			

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C00589DA	C00589D [redacted]	[redacted]	Battle Creek MI	Calhoun	22.75	Unattended Permission, Anytime	26-Aug-10	Semi-Annual	14	13	**10-Aug-10**	25-Aug-10		Iron
											28-Aug-10	02-Oct-10		Iron
											13-Sep-10	04-Oct-10		Iron
											21-Sep-10	08-Oct-10		Iron
											07-Oct-10	26-Oct-10		Iron
											17-Oct-10	01-Nov-10		Iron
											30-Oct-10	18-Nov-10		IRON
											01-Dec-10	15-Dec-10		IRON, TOTAL
											04-Jan-11	24-Jan-11		IRON, TOTAL
											08-Apr-11	02-May-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, TITANIUM
											15-Jul-11	02-Aug-11		IRON, TOTAL
											17-Oct-11	08-Dec-11		IRON, TOTAL
											17-Jan-12	09-Feb-12		

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C00589DA	C00589D [redacted]	[redacted]	Battle Creek MI	Calhoun	22.75	Unattended Permission, Anytime	26-Aug-10	Semi-Annual	14	13	06-Dec-12			
C00856DA	C00856D [redacted]	[redacted]	Augusta MI	Kalamazoo	27.25	Unattended Permission, Anytime	07-Sep-10	Semi-Annual	15	14	**04-Aug-10**	25-Aug-10		
											07-Sep-10	05-Oct-10		Iron
											17-Sep-10	08-Feb-11		Iron
											08-Oct-10	26-Oct-10		Iron
											18-Oct-10	12-Nov-10		Iron
											30-Oct-10	18-Nov-10		IRON
											02-Dec-10	18-Dec-10		IRON, TOTAL
											13-Jan-11	15-Feb-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, VANADIUM, TOTAL
											04-Feb-11	02-Mar-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											28-Feb-11	25-Mar-11		BERYLLIUM, TOTAL, IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C00856DA	C00856D [redacted]	[redacted]	Augusta MI	Kalamazoo	27.25	Unattended Permission, Anytime	07-Sep-10	Semi-Annual	15	14	**05-Apr-11**	26-Apr-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											09-Jun-11	21-Jun-11		IRON, TOTAL, MOLYBDENUM, TITANIUM
											12-Sep-11	29-Nov-11		IRON, TOTAL
											15-Dec-11	20-Jan-12		
											05-Dec-12			
C00928FA	C00928F [redacted]	[redacted]	Augusta MI	Kalamazoo	26.5	Unattended Permission, Anytime	27-Oct-10	Semi-Annual	11	10	**03-Aug-10**	23-Aug-10		
											31-Aug-10	05-Oct-10		
											27-Oct-10	14-Jan-11		
											05-Nov-10	09-Dec-10		IRON, TOTAL
											02-Dec-10	18-Dec-10		IRON, TOTAL
											13-Jan-11	15-Feb-11		IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL
											07-Apr-11	02-May-11		IRON, TOTAL, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL

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Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C00928FA	C00928F [redacted]	[redacted]	Augusta MI	Kalamazoo	26.5	Unattended Permission, Anytime	27-Oct-10	Semi-Annual	11	10	**14-Jul-11**	02-Aug-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL
											17-Oct-11	08-Dec-11		
											17-Jan-12	09-Feb-12		
											05-Dec-12			
C0137BDA	C0137BD [redacted]	[redacted]	Marshall MI	Calhoun	2.75	Unattended Permission, Anytime	01-Sep-10	Semi-Annual	14	13	**08-Aug-10**	01-Sep-10		Iron
											01-Sep-10	05-Oct-10		Iron
											11-Sep-10	04-Oct-10		Iron
											20-Sep-10	08-Feb-11		Iron
											02-Oct-10	08-Feb-11		Iron
											16-Oct-10	28-Oct-10		Iron
											05-Nov-10	09-Dec-10		IRON, TOTAL
											30-Nov-10	15-Dec-10		IRON, TOTAL

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Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0137BDA	C0137BD [redacted]	[redacted]	Marshall MI	Calhoun	2.75	Unattended Permission, Anytime	01-Sep-10	Semi-Annual	14	13	**07-Jan-11**	15-Feb-11		IRON, TOTAL, NICKEL, TOTAL
											06-Apr-11	26-Apr-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											20-Jul-11	02-Aug-11		IRON, TOTAL, NICKEL, TOTAL, TITANIUM
											19-Oct-11	08-Dec-11		
											19-Jan-12	09-Feb-12		
											04-Dec-12			
C015322A	C015322 [redacted]	[redacted]	Battle Creek MI	Calhoun	23	Unattended Permission, Anytime	07-Sep-10	Semi-Annual	17	14	**05-Aug-10**			
											07-Sep-10	07-Oct-10		Iron
											13-Sep-10	04-Oct-10		Iron
											16-Sep-10	07-Oct-10		Iron
											30-Sep-10	20-Oct-10		Iron
											14-Oct-10	28-Oct-10		Iron, Nickel
											28-Oct-10	17-Nov-10		IRON

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Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C015322A	C015322 [redacted]	[redacted]	Battle Creek MI	Calhoun	23	Unattended Permission, Anytime	07-Sep-10	Semi-Annual	17	14	**11-Nov-10**	09-Dec-10		IRON, TOTAL
											29-Nov-10	11-Dec-10		IRON, TOTAL
											14-Jan-11	17-Feb-11		IRON, TOTAL, NICKEL, TOTAL, TITANIUM
											07-Feb-11	07-Mar-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL
											04-May-11	17-May-11		IRON, TOTAL
											11-Aug-11	29-Aug-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											15-Nov-11	18-Jan-12		IRON, TOTAL
											20-Feb-12	16-Mar-12		
											05-Dec-12			
C015481A	C015481 [redacted]	[redacted]	Battle Creek MI	Calhoun	23	Unattended Permission, Anytime	04-Sep-10	Semi-Annual	14	13	**05-Aug-10**	20-Aug-10		
											04-Sep-10	04-Oct-10		
											16-Sep-10	07-Oct-10		Iron

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C015481A	C015481 [redacted]	[redacted]	Battle Creek MI	Calhoun	23	Unattended Permission, Anytime	04-Sep-10	Semi-Annual	14	13	**30-Sep-10**	20-Oct-10		Iron
											14-Oct-10	28-Oct-10		Iron
											28-Oct-10	17-Nov-10		IRON
											02-Dec-10	18-Dec-10		IRON, TOTAL
											14-Jan-11	17-Feb-11		IRON, TOTAL, TITANIUM
											07-Feb-11	07-Mar-11		IRON, TOTAL, MOLYBDENUM, TITANIUM
											04-May-11	17-May-11		IRON, TOTAL
											10-Aug-11	24-Aug-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											15-Nov-11	18-Jan-12		IRON, TOTAL
											20-Feb-12	16-Mar-12		
											06-Dec-12			
C0156ADA	C0156AD [redacted]	[redacted]	Battle Creek MI	Calhoun	23.25	Unattended Permission, Anytime	01-Sep-10	Semi-Annual	16	14	**05-Aug-10**			
											01-Sep-10	14-Oct-10		Iron

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
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Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0156ADA	C0156AD [redacted]	[redacted]	Battle Creek MI	Calhoun	23.25	Unattended Permission, Anytime	01-Sep-10	Semi-Annual	16	14	13-Sep-10	30-Nov-10		Iron, Nickel
											21-Sep-10	28-Oct-10		Iron, Nickel
											30-Sep-10	30-Nov-10		Iron, Nickel
											14-Oct-10	28-Oct-10		Iron
											28-Oct-10	30-Nov-10		IRON, NICKEL
											11-Nov-10	09-Dec-10		IRON, TOTAL
											02-Dec-10	18-Dec-10		IRON, TOTAL, NICKEL, TOTAL
											14-Jan-11	17-Feb-11		IRON, TOTAL, NICKEL, TOTAL, TITANIUM
											09-Feb-11	07-Mar-11		IRON, TOTAL, NICKEL, TOTAL, TITANIUM
											04-May-11	17-May-11		IRON, TOTAL, NICKEL, TOTAL
											10-Aug-11	24-Aug-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL
											15-Nov-11	15-Mar-12		IRON, TOTAL
											20-Feb-12	16-Mar-12		

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
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Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0156ADA	C0156AD [redacted]	[redacted]	Battle Creek MI	Calhoun	23.25	Unattended Permission, Anytime	01-Sep-10	Semi-Annual	16	14	06-Dec-12			
C01573BA	C01573B [redacted]	[redacted]	Battle Creek MI	Calhoun	23.25	Unattended Permission, Anytime	01-Sep-10	Semi-Annual	14	12	**05-Aug-10**			
											01-Sep-10	28-Oct-10		Iron
											13-Sep-10	04-Oct-10		Iron
											16-Sep-10	07-Jan-11		Iron
											30-Sep-10	08-Feb-11		Iron
											14-Oct-10	26-Oct-10		Iron
											28-Oct-10	17-Nov-10		IRON
											02-Dec-10	20-Dec-10		IRON, TOTAL
											13-Jan-11	15-Feb-11		IRON, TOTAL
											11-Apr-11	02-May-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											15-Jul-11	02-Aug-11		IRON, TOTAL
											17-Oct-11	08-Dec-11		IRON, TOTAL

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C01573BA	C01573B [redacted]	[redacted]	Battle Creek MI	Calhoun	23.25	Unattended Permission, Anytime	01-Sep-10	Semi-Annual	14	12	19-Jan-12	09-Feb-12		
											06-Dec-12			
C0165D4PW1	C0165D4M [redacted]	[redacted]	Battle Creek MI	Calhoun	14.5	Unattended Permission, Anytime	14-Sep-10	Semi-Annual	17	14	**28-Aug-10**	04-Oct-10		Iron
											31-Aug-10	05-Oct-10		Iron
											14-Sep-10	05-Oct-10		Iron
											20-Sep-10	08-Feb-11		
											09-Oct-10	28-Oct-10		
											19-Oct-10	08-Feb-11		
											30-Oct-10	18-Nov-10		IRON
											18-Nov-10	09-Dec-10		IRON, TOTAL
											18-Jan-11	15-Feb-11		IRON, TOTAL, NICKEL, TOTAL
											03-Feb-11	02-Mar-11		IRON, TOTAL, NICKEL, TOTAL
											06-May-11	26-May-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0165D4PW1	C0165D4M [redacted]	[redacted]	Battle Creek MI	Calhoun	14.5	Unattended Permission, Anytime	14-Sep-10	Semi-Annual	17	14	**10-Aug-11**	24-Aug-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL
											14-Nov-11	14-Dec-11		
											21-Feb-12	16-Mar-12		
											11-Dec-12			
C017595PW1	C017595 [redacted]	[redacted]	Battle Creek MI	Calhoun	14.25	Unattended Permission, Anytime	24-Oct-10	Semi-Annual	13	10	**29-Jul-10**	21-Aug-10		
											24-Oct-10	12-Nov-10		IRON
											02-Nov-10	19-Nov-10		IRON
											01-Dec-10	15-Dec-10		IRON, TOTAL
											14-Jan-11	17-Feb-11		IRON, TOTAL, NICKEL, TOTAL, TITANIUM
											03-Feb-11	07-Mar-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											09-May-11	26-May-11		IRON, TOTAL, TITANIUM

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C017595PW1	C017595 [redacted]	[redacted]	Battle Creek MI	Calhoun	14.25	Unattended Permission, Anytime	24-Oct-10	Semi-Annual	13	10	**09-Aug-11**	11-Sep-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											16-Nov-11	18-Jan-12		IRON, TOTAL
											21-Feb-12	16-Mar-12		
											07-Dec-12			
C0177B9A	C0177B9 [redacted]	[redacted]	Battle Creek MI	Calhoun	14	Unattended Permission, Anytime	28-Sep-10	Semi-Annual	12	11	**10-Aug-10**	02-Sep-10		Iron
											28-Sep-10	20-Oct-10		Iron
											24-Oct-10	12-Nov-10		IRON
											07-Nov-10	29-Nov-10		IRON
											01-Dec-10	15-Dec-10		IRON, TOTAL
											25-Jan-11	02-Mar-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											03-Feb-11	02-Mar-11		IRON, TOTAL
											06-May-11	26-May-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0177B9A	C0177B9 [redacted]	[redacted]	Battle Creek MI	Calhoun	14	Unattended Permission, Anytime	28-Sep-10	Semi-Annual	12	11	**09-Aug-11**	24-Aug-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL
											16-Nov-11	18-Jan-12		IRON, TOTAL
											21-Feb-12	16-Mar-12		
											07-Dec-12			
C0180D5A	C0180D5 [redacted]	[redacted]	Battle Creek MI	Calhoun	14	Permit but Call/Schedule Required	31-Aug-10	Semi-Annual	16	13	**08-Aug-10**	19-Aug-10		Iron
											31-Aug-10	05-Oct-10		Iron
											14-Sep-10	05-Oct-10		Iron
											20-Sep-10			Iron
											07-Oct-10	28-Oct-10		Iron
											17-Oct-10	01-Nov-10		Iron
											30-Oct-10	17-Nov-10		IRON
											01-Dec-10	15-Dec-10		IRON, TOTAL
											19-Jan-11	15-Feb-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0180D5A	C0180D5 [redacted]	[redacted]	Battle Creek MI	Calhoun	14	Permit but Call/Schedule Required	31-Aug-10	Semi-Annual	16	13	**08-Feb-11**	07-Mar-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											06-May-11	26-May-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											09-Aug-11	24-Aug-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											17-Nov-11	18-Jan-12		IRON, TOTAL
											21-Feb-12	16-Mar-12		
											11-Dec-12			
C018776A	C018776 [redacted]	[redacted]	Galesburg MI	Kalamazoo	37.25	Unattended Permission, Anytime	23-Sep-10	Semi-Annual	12	11	**10-Aug-10**	23-Aug-10		
											23-Sep-10	07-Oct-10		
											05-Oct-10	20-Oct-10		
											16-Oct-10	01-Nov-10		
											29-Oct-10	04-Dec-10		
											01-Dec-10	15-Dec-10		

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C018776A	C018776 [redacted]	[redacted]	Galesburg MI	Kalamazoo	37.25	Unattended Permission, Anytime	23-Sep-10	Semi-Annual	12	11	**12-Jan-11**	15-Feb-11		IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL
											11-Apr-11	02-May-11		TITANIUM, VANADIUM, TOTAL
											11-Jul-11	21-Jul-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											18-Oct-11	18-Jan-12		
											16-Jan-12	09-Feb-12		
											03-Dec-12			
C01948DPW1	C01948D [redacted]	[redacted]	Galesburg MI	Kalamazoo	34.25	Unattended Permission, Anytime	06-Sep-10	Semi-Annual	12	10	**08-Sep-10**	16-Oct-10		
											17-Sep-10	08-Oct-10		
											08-Oct-10	26-Oct-10		
											18-Oct-10			
											30-Oct-10	18-Nov-10		
											01-Dec-10	06-Jan-11		
											12-Jan-11	21-Apr-11		IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C01948DPW1	C01948D [redacted]	[redacted]	Galesburg MI	Kalamazoo	34.25	Unattended Permission, Anytime	06-Sep-10	Semi-Annual	12	10	**07-Apr-11**	05-May-11		MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL
											14-Jul-11	02-Aug-11		IRON, TOTAL, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL
											18-Oct-11	18-Jan-12		
											16-Jan-12	09-Feb-12		
											03-Dec-12			
C0229A2A	C0229A2M [redacted]	[redacted]	Battle Creek MI	Calhoun	14.75	Unattended Permission, Anytime	28-Sep-10	Semi-Annual	17	16	**02-Aug-10**	17-Nov-10		
											28-Sep-10	11-Nov-10		Iron
											12-Oct-10	11-Nov-10		Iron
											27-Oct-10	10-Jan-11		IRON, NICKEL
											05-Nov-10	20-Jan-11		IRON, TOTAL
											16-Dec-10	24-Jan-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											18-Jan-11	17-Feb-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0229A2A	C0229A2M [redacted]	[redacted]	Battle Creek MI	Calhoun	14.75	Unattended Permission, Anytime	28-Sep-10	Semi-Annual	17	16	**03-Feb-11**	02-Mar-11		IRON, TOTAL, NICKEL, TOTAL
											01-Mar-11	23-Mar-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, VANADIUM, TOTAL
											05-Apr-11	26-Apr-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											06-May-11	26-May-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											06-Jun-11	21-Jun-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											15-Jul-11	02-Aug-11		IRON, TOTAL
											10-Aug-11	24-Aug-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL
											14-Nov-11	14-Dec-11		IRON, TOTAL
											21-Feb-12	16-Mar-12		
											10-Dec-12			

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Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C023047A	C023047 [redacted]	[redacted]	Battle Creek MI	Calhoun	23	Unattended Permission, Anytime	31-Aug-10	Semi-Annual	16	14	07-Aug-10	01-Sep-10		Iron
											31-Aug-10	05-Oct-10		Iron
											13-Sep-10	04-Oct-10		Iron
											16-Sep-10	07-Oct-10		Iron
											30-Sep-10	20-Oct-10		Iron
											14-Oct-10	01-Nov-10		Iron
											28-Oct-10	17-Nov-10		IRON
											02-Dec-10	20-Dec-10		IRON, TOTAL
											14-Jan-11	17-Feb-11		IRON, TOTAL, NICKEL, TOTAL, TITANIUM
											14-Feb-11	03-Mar-11		IRON, TOTAL, MERCURY, TOTAL, MOLYBDENUM, TITANIUM
											04-May-11	17-May-11		IRON, TOTAL
											08-Aug-11	11-Sep-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
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Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C023047A	C023047 [redacted]	[redacted]	Battle Creek MI	Calhoun	23	Unattended Permission, Anytime	31-Aug-10	Semi-Annual	16	14	**15-Nov-11**	18-Jan-12		IRON, TOTAL
											20-Feb-12	16-Mar-12		
											05-Dec-12			
C0231D1A	C0231D1 [redacted]	[redacted]	Battle Creek MI	Calhoun	23	Unattended Permission, Anytime	23-Sep-10	Semi-Annual	13	11	**07-Aug-10**	01-Sep-10		Iron
											25-Sep-10	07-Oct-10		Iron
											30-Sep-10			Iron
											14-Oct-10	28-Oct-10		Iron
											28-Oct-10	17-Nov-10		IRON
											02-Dec-10	20-Dec-10		IRON, TOTAL
											14-Jan-11	17-Feb-11		IRON, TOTAL, TITANIUM
											09-Feb-11	07-Mar-11		IRON, TOTAL, NICKEL, TOTAL, TITANIUM
											04-May-11	17-May-11		IRON, TOTAL

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0231D1A	C0231D1 [redacted]	[redacted]	Battle Creek MI	Calhoun	23	Unattended Permission, Anytime	23-Sep-10	Semi-Annual	13	11	**10-Aug-11**	24-Aug-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL
											15-Nov-11	18-Jan-12		IRON, TOTAL
											21-Feb-12	16-Mar-12		
											06-Dec-12			
C024723PW1	C024723 [redacted]	[redacted]	Galesburg MI	Kalamazoo	36.25	Unattended Permission, Anytime	26-Aug-10	Semi-Annual	17	15	**04-Sep-10**	07-Oct-10		
											17-Sep-10	07-Oct-10		
											06-Oct-10	20-Oct-10		
											19-Oct-10	12-Nov-10		
											06-Nov-10	03-Dec-10		
											03-Dec-10	18-Dec-10		
											12-Jan-11	15-Feb-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, VANADIUM, TOTAL

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Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C024723PW1	C024723 [redacted]	[redacted]	Galesburg MI	Kalamazoo	36.25	Unattended Permission, Anytime	26-Aug-10	Semi-Annual	17	15	**31-Jan-11**	02-Mar-11		IRON, TOTAL, VANADIUM, TOTAL
											28-Feb-11	25-Mar-11		IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL
											05-Apr-11	26-Apr-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL
											02-May-11	12-May-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL
											09-Jun-11	21-Jun-11		IRON, TOTAL, TITANIUM
											14-Jul-11	02-Aug-11		IRON, TOTAL, TITANIUM, VANADIUM, TOTAL
											12-Sep-11	29-Nov-11		
											15-Dec-11	20-Jan-12		
											03-Dec-12			
C0252EDA	C0252ED [redacted]	[redacted]	Galesburg MI	Kalamazoo	36.25	Permit but Call/Schedule Required	06-Sep-10	Semi-Annual	13	12	**24-Aug-10**	06-Oct-10		

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
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Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0252EDA	C0252ED [redacted]	[redacted]	Galesburg MI	Kalamazoo	36.25	Permit but Call/Schedule Required	06-Sep-10	Semi-Annual	13	12	**08-Sep-10**	13-Oct-10		
											17-Sep-10	07-Oct-10		
											06-Oct-10	20-Oct-10		
											16-Oct-10	28-Oct-10		
											29-Oct-10	04-Dec-10		
											03-Dec-10	18-Dec-10		
											13-Jan-11	15-Feb-11		IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL
											11-Apr-11	02-May-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL
											18-Jul-11	02-Aug-11		IRON, TOTAL, NICKEL, TOTAL
											18-Oct-11	18-Jan-12		
											16-Jan-12	09-Feb-12		
											03-Dec-12			

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0269A6PW1	C0269A6 [redacted]	[redacted]	Galesburg MI	Kalamazoo	34.75	Unattended Permission, Anytime	08-Oct-10	Semi-Annual	18	16	29-Aug-10	28-Oct-10		
											11-Sep-10			
											17-Sep-10	28-Oct-10		
											08-Oct-10	26-Oct-10		
											18-Oct-10	12-Nov-10		
											30-Oct-10	18-Nov-10		
											16-Dec-10	24-Jan-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											12-Jan-11	15-Feb-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											31-Jan-11	02-Mar-11		BERYLLIUM, TOTAL, MOLYBDENUM, NICKEL, TOTAL, VANADIUM, TOTAL
											28-Feb-11	23-Mar-11		IRON, TOTAL, MOLYBDENUM
											05-Apr-11	26-Apr-11		IRON, TOTAL, MOLYBDENUM, TITANIUM
											03-May-11	17-May-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
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Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0269A6PW1	C0269A6 [redacted]	[redacted]	Galesburg MI	Kalamazoo	34.75	Unattended Permission, Anytime	08-Oct-10	Semi-Annual	18	16	**09-Jun-11**	21-Jun-11		IRON, TOTAL, MOLYBDENUM, TITANIUM
											14-Jul-11	02-Aug-11		MOLYBDENUM, TITANIUM
											08-Aug-11	11-Sep-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											18-Oct-11	18-Jan-12		
											16-Jan-12	09-Feb-12		
											03-Dec-12			
C0271D5PW1	C0271D5 [redacted]	[redacted]	Galesburg MI	Kalamazoo	34.25	Unattended Permission, Anytime	25-Oct-10	Semi-Annual	10	9	**19-Sep-10**	11-Nov-10		
											25-Oct-10	12-Nov-10		IRON
											06-Nov-10	03-Dec-10		IRON
											01-Dec-10	15-Dec-10		
											13-Jan-11	15-Feb-11		IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL
											07-Apr-11	02-May-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
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Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0271D5PW1	C0271D5 [redacted]	[redacted]	Galesburg MI	Kalamazoo	34.25	Unattended Permission, Anytime	25-Oct-10	Semi-Annual	10	9	**14-Jul-11**	02-Aug-11		IRON, TOTAL, MERCURY, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											18-Oct-11	18-Jan-12		
											16-Jan-12	09-Feb-12		
											05-Dec-12			
C0298FFWP1	C0298FF [redacted]	[redacted]	Battle Creek MI	Calhoun	17	Permit but Call/Schedule Required	06-Oct-10	Semi-Annual	15	14	**07-Oct-10**	28-Oct-10		Iron
											17-Oct-10	01-Nov-10		Iron
											30-Oct-10	18-Nov-10		IRON
											02-Dec-10	20-Dec-10		IRON, TOTAL
											14-Jan-11	17-Feb-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											01-Feb-11	02-Mar-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											01-Mar-11	25-Mar-11		IRON, TOTAL, NICKEL, TOTAL

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
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Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0298FFWP1	C0298FF [redacted]	[redacted]	Battle Creek MI	Calhoun	17	Permit but Call/Schedule Required	06-Oct-10	Semi-Annual	15	14	**05-Apr-11**	26-Apr-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											05-May-11	17-May-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											10-Jun-11	22-Jun-11		IRON, TOTAL, TITANIUM
											19-Jul-11	02-Aug-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											16-Aug-11	29-Aug-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											20-Oct-11	08-Dec-11		IRON, TOTAL
											18-Jan-12	09-Feb-12		
											10-Dec-12			
C0298FFWP2	C0298FF [redacted]	[redacted]	Battle Creek MI	Calhoun	17	Permit but Call/Schedule Required	06-Oct-10	Semi-Annual	11	10	**07-Oct-10**	28-Oct-10		Iron
											17-Oct-10	01-Nov-10		Iron
											30-Oct-10	18-Nov-10		IRON
											02-Dec-10	12-Jan-11		IRON, TOTAL

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
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Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0298FFWP2	C0298FF [redacted]	[redacted]	Battle Creek MI	Calhoun	17	Permit but Call/Schedule Required	06-Oct-10	Semi-Annual	11	10	**14-Jan-11**	17-Feb-11		BERYLLIUM, TOTAL, IRON, TOTAL, NICKEL, TOTAL, TITANIUM
											01-Feb-11	02-Mar-11		IRON, TOTAL, NICKEL, TOTAL
											05-May-11	17-May-11		BERYLLIUM, TOTAL, IRON, TOTAL, NICKEL, TOTAL
											16-Aug-11	29-Aug-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											20-Oct-11	08-Dec-11		IRON, TOTAL
											18-Jan-12	09-Feb-12		
											10-Dec-12			
C030917WP1	C030917 [redacted]	[redacted]	Galesburg MI	Kalamazoo	32.5	Permit but Call/Schedule Required	07-Sep-10	Semi-Annual	12	11	**23-Oct-10**	12-Nov-10		IRON
											04-Nov-10	23-Nov-10		IRON
											18-Nov-10	09-Dec-10		IRON, TOTAL
											01-Dec-10	21-Dec-10		IRON, TOTAL
											10-Jan-11	15-Feb-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C030917WP1	C030917 [redacted]	[redacted]	Galesburg MI	Kalamazoo	32.5	Permit but Call/Schedule Required	07-Sep-10	Semi-Annual	12	11	**31-Jan-11**	02-Mar-11		IRON, TOTAL, MOLYBDENUM
											28-Feb-11	23-Mar-11		IRON, TOTAL, MOLYBDENUM
											05-Apr-11	26-Apr-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											10-Jun-11	22-Jun-11		IRON, TOTAL, MOLYBDENUM, TITANIUM
											12-Sep-11	29-Nov-11		IRON, TOTAL
											15-Dec-11	20-Jan-12		
											03-Dec-12			
C0310F2PW1	C0310F2 [redacted]	[redacted]	Marshall MI	Calhoun	3.25	Unattended Permission, Anytime	24-Oct-10	Semi-Annual	15	14	**08-Sep-10**	16-Oct-10		Iron
											24-Oct-10	30-Nov-10		IRON
											05-Nov-10	09-Dec-10		IRON, TOTAL
											30-Nov-10	15-Dec-10		IRON, TOTAL
											11-Jan-11	15-Feb-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0310F2PW1	C0310F2 [redacted]	[redacted]	Marshall MI	Calhoun	3.25	Unattended Permission, Anytime	24-Oct-10	Semi-Annual	15	14	**11-Feb-11**	07-Mar-11		BERYLLIUM, TOTAL, IRON, TOTAL, MERCURY, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											02-Mar-11	25-Mar-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											04-Apr-11	26-Apr-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											02-May-11	12-May-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											06-Jun-11	21-Jun-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											19-Jul-11	02-Aug-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											12-Aug-11	14-Sep-11		IRON, TOTAL, MOLYBDENUM, TITANIUM, VANADIUM, TOTAL
											14-Sep-11	29-Nov-11		IRON, TOTAL
											16-Dec-11	20-Jan-12		

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0310F2PW1	C0310F2 [redacted]	[redacted]	Marshall MI	Calhoun	3.25	Unattended Permission, Anytime	24-Oct-10	Semi-Annual	15	14	04-Dec-12			
C0337D3WP1	C0337D3 [redacted]	[redacted]	Augusta MI	Kalamazoo	27.25	Unattended Permission, Anytime	04-Sep-10	Semi-Annual	12	10	**04-Sep-10**	13-Oct-10		
											18-Sep-10	13-Oct-10		Iron
											08-Oct-10	26-Oct-10		Iron
											18-Oct-10			Iron
											05-Nov-10	09-Dec-10		IRON, TOTAL
											02-Dec-10	18-Dec-10		IRON, TOTAL
											13-Jan-11	15-Feb-11		IRON, TOTAL, NICKEL, TOTAL
											07-Apr-11	02-May-11		IRON, TOTAL, TITANIUM
											15-Jul-11	02-Aug-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM
											17-Oct-11	08-Dec-11		IRON, TOTAL
											17-Jan-12	09-Feb-12		
											05-Dec-12			
C03429BWP1	C03429B [redacted]	[redacted]	Augusta MI	Kalamazoo	26.75	Unattended Permission, Anytime	18-Oct-10	Semi-Annual	12	10	**07-Sep-10**	13-Oct-10		Iron

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Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C03429BWP1	C03429B [redacted]	[redacted]	Augusta MI	Kalamazoo	26.75	Unattended Permission, Anytime	18-Oct-10	Semi-Annual	12	10	**18-Sep-10**	13-Oct-10		Iron
											09-Oct-10	26-Oct-10		Iron
											20-Oct-10			Iron
											05-Nov-10	09-Dec-10		IRON, TOTAL
											02-Dec-10	18-Dec-10		IRON, TOTAL
											13-Jan-11	21-Apr-11		IRON, TOTAL, NICKEL, TOTAL
											07-Apr-11	02-May-11		IRON, TOTAL, NICKEL, TOTAL, TITANIUM
											15-Jul-11	02-Aug-11		IRON, TOTAL
											17-Oct-11	08-Dec-11		IRON, TOTAL
											17-Jan-12	09-Feb-12		
											05-Dec-12			
C046713WP1	C046713 [redacted]	[redacted]	Battle Creek MI	Calhoun	22.75	Unattended Permission, Anytime	26-Aug-10	Semi-Annual	15	12	**26-Aug-10**	30-Nov-10		Iron, Nickel
											28-Aug-10	13-Oct-10		
											13-Sep-10	13-Oct-10		

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Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
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Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C046713WP1	C046713 [redacted]	[redacted]	Battle Creek MI	Calhoun	22.75	Unattended Permission, Anytime	26-Aug-10	Semi-Annual	15	12	21-Sep-10	13-Oct-10		
											10-Oct-10	01-Nov-10		
											21-Oct-10			
											01-Nov-10			
											17-Nov-10	02-Dec-10		IRON
											02-Dec-10	18-Dec-10		IRON, TOTAL
											19-Jan-11	15-Feb-11		IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL
											01-Feb-11	02-Mar-11		IRON, TOTAL, VANADIUM, TOTAL
											04-May-11	17-May-11		IRON, TOTAL, VANADIUM, TOTAL
											08-Aug-11	11-Sep-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL
											15-Nov-11	18-Jan-12		NICKEL, TOTAL
											06-Dec-12			

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C04879DWP1	C04879DM [redacted]	[redacted]	Battle Creek MI	Calhoun	14.75	Unattended Permission, Anytime	28-Sep-10	Semi-Annual	12	11	**28-Sep-10**	11-Nov-10		Iron
											12-Oct-10	11-Nov-10	p,m-Xylene	Iron
											23-Oct-10	14-Jan-11		IRON
											04-Nov-10	30-Nov-10		IRON
											19-Nov-10	06-Dec-10		IRON, TOTAL
											18-Jan-11	15-Feb-11		IRON, TOTAL, NICKEL, TOTAL
											03-Feb-11	02-Mar-11		IRON, TOTAL, NICKEL, TOTAL
											06-May-11	26-May-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											10-Aug-11	24-Aug-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL
											14-Nov-11	14-Dec-11		IRON, TOTAL
											21-Feb-12	16-Mar-12		
											10-Dec-12			

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Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0491E9PW1	C0491E9 [redacted]	[redacted]	Battle Creek MI	Calhoun	14.5	Unattended Permission, Anytime	26-Aug-10	Semi-Annual	15	13	28-Aug-10	13-Oct-10		Iron
											13-Sep-10	13-Oct-10		Iron
											19-Sep-10	13-Oct-10		Iron
											10-Oct-10	28-Oct-10		Iron
											20-Oct-10			Iron
											30-Oct-10	18-Nov-10		IRON
											03-Dec-10	20-Dec-10		IRON, TOTAL
											18-Jan-11	15-Feb-11		IRON, TOTAL, NICKEL, TOTAL
											04-Feb-11	02-Mar-11		IRON, TOTAL, NICKEL, TOTAL, TITANIUM
											14-Feb-11	03-Mar-11		IRON, TOTAL, MOLYBDENUM, TITANIUM
											06-May-11	26-May-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											10-Aug-11	29-Aug-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											15-Nov-11	18-Jan-12		IRON, TOTAL

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0491E9PW1	C0491E9 [redacted]	[redacted]	Battle Creek MI	Calhoun	14.5	Unattended Permission, Anytime	26-Aug-10	Semi-Annual	15	13	21-Feb-12	16-Mar-12		
											13-Dec-12			
C052927WP1	C052927 [redacted]	[redacted]	Marshall MI	Calhoun	3	Unattended Permission, Anytime		Semi-Annual	10	9	**14-Dec-10**	26-Jan-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, VANADIUM, TOTAL
											03-Jan-11	26-Jan-11		IRON, TOTAL, NICKEL, TOTAL
											17-Jan-11	10-Mar-11		IRON, TOTAL, NICKEL, TOTAL
											27-Jan-11	02-Mar-11		MOLYBDENUM, NICKEL, TOTAL
											02-Mar-11	25-Mar-11		MOLYBDENUM, NICKEL, TOTAL
											04-Apr-11	26-Apr-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											06-Jun-11	21-Jun-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											14-Sep-11	30-Nov-11		
											16-Dec-11	20-Jan-12		
											13-Dec-12			

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Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C05354DA	C05354D [redacted]	[redacted]	Battle Creek MI	Calhoun	14.5	Unattended Permission, Anytime	15-Sep-10	Semi-Annual	15	13	**15-Aug-10**	02-Sep-10		Iron
											28-Aug-10	02-Oct-10		Iron
											15-Sep-10	04-Oct-10		Iron
											22-Sep-10	14-Oct-10		Iron
											09-Oct-10	26-Oct-10		Iron
											19-Oct-10			Iron
											30-Oct-10	30-Nov-10		IRON
											03-Dec-10	18-Dec-10		IRON, TOTAL
											18-Jan-11	15-Feb-11		IRON, TOTAL, NICKEL, TOTAL
											03-Feb-11	02-Mar-11		IRON, TOTAL, NICKEL, TOTAL
											06-May-11	26-May-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											09-Aug-11	24-Aug-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											14-Nov-11	18-Jan-12		IRON, TOTAL

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Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C05354DA	C05354D [redacted]	[redacted]	Battle Creek MI	Calhoun	14.5	Unattended Permission, Anytime	15-Sep-10	Semi-Annual	15	13	21-Feb-12	16-Mar-12		
											10-Dec-12			
C053761WP1	C053761 [redacted]	[redacted]	Battle Creek MI	Calhoun	18.25	Permit but Call/Schedule Required	09-Sep-10	Semi-Annual	12	11	**20-Sep-10**	13-Oct-10		Iron
											12-Oct-10	28-Oct-10		Iron
											25-Oct-10	03-Dec-10		IRON
											08-Nov-10	29-Nov-10		IRON
											02-Dec-10	18-Dec-10		IRON, TOTAL
											19-Jan-11	15-Feb-11		IRON, TOTAL, NICKEL, TOTAL
											03-Feb-11	02-Mar-11		IRON, TOTAL
											05-May-11	17-May-11		IRON, TOTAL, NICKEL, TOTAL
											10-Aug-11	24-Aug-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											16-Nov-11	18-Jan-12		IRON, TOTAL
											22-Feb-12	16-Mar-12		

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Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C053761WP1	C053761 [redacted]	[redacted]	Battle Creek MI	Calhoun	18.25	Permit but Call/Schedule Required	09-Sep-10	Semi-Annual	12	11	07-Dec-12			
C0572EAWP1	C0572EA [redacted]	[redacted]	Battle Creek MI	Calhoun	14.5	Permit but Call/Schedule Required	04-Sep-10	Semi-Annual	13	12	**07-Sep-10**	13-Oct-10		Iron
											20-Sep-10	13-Oct-10		Iron
											11-Oct-10	26-Oct-10		Iron
											23-Oct-10	12-Nov-10		IRON
											08-Nov-10	29-Nov-10		IRON
											02-Dec-10	18-Dec-10		IRON, TOTAL
											19-Jan-11	15-Feb-11		IRON, TOTAL, NICKEL, TOTAL
											14-Feb-11	03-Mar-11		IRON, TOTAL, MOLYBDENUM, TITANIUM, VANADIUM, TOTAL
											06-May-11	26-May-11		IRON, TOTAL, MOLYBDENUM, TITANIUM
											09-Aug-11	24-Aug-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											14-Nov-11	18-Jan-12		IRON, TOTAL
											21-Feb-12	16-Mar-12		

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0572EAWP1	C0572EA [redacted]	[redacted]	Battle Creek MI	Calhoun	14.5	Permit but Call/Schedule Required	04-Sep-10	Semi-Annual	13	12	11-Dec-12			
C0574DFWP1	C0574DF [redacted]	[redacted]	Battle Creek MI	Calhoun	14.5	Unattended Permission, Anytime	14-Sep-10	Semi-Annual	13	11	**28-Sep-10**	20-Oct-10		Iron
											12-Oct-10	28-Oct-10		Iron
											23-Oct-10	14-Jan-11		IRON
											09-Nov-10	02-Dec-10		IRON
											02-Dec-10	18-Dec-10		IRON, TOTAL
											18-Jan-11	15-Feb-11		IRON, TOTAL, NICKEL, TOTAL
											08-Feb-11	07-Mar-11		IRON, TOTAL, NICKEL, TOTAL, TITANIUM
											06-May-11	26-May-11		IRON, TOTAL, MOLYBDENUM, TITANIUM
											09-Aug-11	11-Sep-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL
											15-Nov-11	18-Jan-12		IRON, TOTAL
											21-Feb-12	16-Mar-12		

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0574DFWP1	C0574DF [redacted]	[redacted]	Battle Creek MI	Calhoun	14.5	Unattended Permission, Anytime	14-Sep-10	Semi-Annual	13	11	11-Dec-12			
C059451PW1	C059451 [redacted]	[redacted]	Battle Creek MI	Calhoun	10.5	Permit but Call/Schedule Required	20-Sep-10	Semi-Annual	9	8	**04-Sep-10**	13-Oct-10		
											16-Dec-10	26-Jan-11		IRON, TOTAL, VANADIUM, TOTAL
											03-Jan-11	15-Feb-11		IRON, TOTAL
											08-Feb-11	07-Mar-11		IRON, TOTAL, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL
											01-Mar-11	25-Mar-11		MOLYBDENUM, VANADIUM, TOTAL
											10-Jun-11	22-Jun-11		IRON, TOTAL, MOLYBDENUM, TITANIUM
											14-Sep-11	30-Nov-11		
											20-Dec-11	20-Jan-12		
											11-Dec-12			
C06162CPW1	C06162C [redacted]	[redacted]	Battle Creek MI	Calhoun	14.75	Permit but Call/Schedule Required	20-Sep-10	Semi-Annual	13	12	**07-Sep-10**	07-Jan-11		Iron
											20-Sep-10	13-Oct-10		Iron
											11-Oct-10	08-Feb-11		Iron

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C06162CPW1	C06162C [redacted]	[redacted]	Battle Creek MI	Calhoun	14.75	Permit but Call/Schedule Required	20-Sep-10	Semi-Annual	13	12	**25-Oct-10**	08-Feb-11	TOLUENE	IRON
											08-Nov-10	29-Nov-10		IRON
											02-Dec-10	18-Dec-10		IRON, TOTAL
											19-Jan-11	21-Apr-11		IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL
											03-Feb-11	02-Mar-11		BERYLLIUM, TOTAL, IRON, TOTAL, VANADIUM, TOTAL
											05-May-11	17-May-11		BERYLLIUM, TOTAL, IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL
											11-Aug-11	29-Aug-11		BERYLLIUM, TOTAL, IRON, TOTAL, MERCURY, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL
											16-Nov-11	18-Jan-12		IRON, TOTAL
											22-Feb-12	16-Mar-12		
											11-Dec-12			
C0668ECA	C0668EC [redacted]	[redacted]	Marshall MI	Calhoun	2.75	Unattended Permission, Anytime		Semi-Annual	10	9	**18-Aug-10**	24-Sep-10		

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0668ECA	C0668EC [redacted]	[redacted]	Marshall MI	Calhoun	2.75	Unattended Permission, Anytime		Semi-Annual	10	9	**24-Oct-10**	12-Nov-10		IRON
											05-Nov-10	10-Dec-10		IRON, TOTAL
											30-Nov-10	15-Dec-10		
											07-Jan-11	15-Feb-11		IRON, TOTAL
											06-Apr-11	26-Apr-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											20-Jul-11	02-Aug-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											18-Oct-11	18-Jan-12		
											19-Jan-12	09-Feb-12		
											13-Dec-12			
C0693ABPW1	C0693AB [redacted]	[redacted]	Battle Creek MI	Calhoun	11	Permit but Call/Schedule Required	27-Oct-10	Semi-Annual	11	10	**20-Aug-10**	27-Sep-10		Iron, Nickel
											27-Oct-10	14-Jan-11		IRON
											03-Nov-10	19-Nov-10		IRON
											17-Nov-10	02-Dec-10		IRON

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0693ABPW1	C0693AB [redacted]	[redacted]	Battle Creek MI	Calhoun	11	Permit but Call/Schedule Required	27-Oct-10	Semi-Annual	11	10	**02-Dec-10**	20-Dec-10		IRON, TOTAL
											06-Jan-11	24-Jan-11		IRON, TOTAL
											12-Apr-11	02-May-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											18-Jul-11	02-Aug-11		IRON, TOTAL, NICKEL, TOTAL
											20-Oct-11	08-Dec-11		IRON, TOTAL
											18-Jan-12	09-Feb-12		
											11-Dec-12			
C0730ACPW1	C0730AC [redacted]	[redacted]	Galesburg MI	Kalamazoo	34.5	Unattended Permission, Anytime	14-Sep-10	Semi-Annual	18	17	**01-Sep-10**	09-Nov-10		Iron
											14-Sep-10	09-Nov-10		
											22-Sep-10	09-Nov-10		Iron
											09-Oct-10	09-Nov-10		
											25-Oct-10	14-Jan-11		
											06-Nov-10	03-Dec-10		

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0730ACPW1	C0730AC [redacted]	[redacted]	Galesburg MI	Kalamazoo	34.5	Unattended Permission, Anytime	14-Sep-10	Semi-Annual	18	17	01-Dec-10	15-Dec-10		
											12-Jan-11	21-Apr-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, VANADIUM, TOTAL
											31-Jan-11	02-Mar-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											28-Feb-11	25-Mar-11		IRON, TOTAL, MOLYBDENUM, VANADIUM, TOTAL
											05-Apr-11	26-Apr-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											03-May-11	17-May-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, VANADIUM, TOTAL
											09-Jun-11	21-Jun-11		IRON, TOTAL, MOLYBDENUM, TITANIUM, VANADIUM, TOTAL
											14-Jul-11	02-Aug-11		IRON, TOTAL, MOLYBDENUM, TITANIUM, VANADIUM, TOTAL
											08-Aug-11	11-Sep-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											12-Sep-11	29-Nov-11		

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0730ACPW1	C0730AC [redacted]	[redacted]	Galesburg MI	Kalamazoo	34.5	Unattended Permission, Anytime	14-Sep-10	Semi-Annual	18	17	15-Dec-11	20-Jan-12		
											03-Dec-12			
C07824BPW1	C07824B [redacted]	[redacted]	Augusta MI	Kalamazoo	27.5	Unattended Permission, Anytime	29-Aug-10	Semi-Annual	11	10	**27-Oct-10**	14-Jan-11		IRON
											03-Nov-10	07-Jan-11		IRON
											19-Nov-10	04-Dec-10		IRON, TOTAL
											02-Dec-10	20-Dec-10		IRON, TOTAL
											10-Jan-11	21-Apr-11		IRON, TOTAL, NICKEL, TOTAL, TITANIUM
											04-Feb-11	02-Mar-11		IRON, TOTAL, MOLYBDENUM, TITANIUM
											03-May-11	17-May-11		IRON, TOTAL, MOLYBDENUM
											08-Aug-11	11-Sep-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											14-Nov-11	14-Dec-11		IRON, TOTAL
											20-Feb-12	16-Mar-12		
											03-Dec-12			

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0876A0WP1	C0876A0 [redacted]	[redacted]	Battle Creek MI	Calhoun	19.25	Permit but Call/Schedule Required	04-Oct-10	Semi-Annual	10	9	**05-Oct-10**	20-Oct-10		Iron
											25-Oct-10	12-Nov-10		IRON
											07-Nov-10	29-Nov-10		IRON
											03-Dec-10	20-Dec-10		IRON, TOTAL
											06-Jan-11	24-Jan-11		IRON, TOTAL, NICKEL, TOTAL
											12-Apr-11	02-May-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											18-Jul-11	02-Aug-11		IRON, TOTAL, NICKEL, TOTAL
											19-Oct-11	08-Dec-11		
											18-Jan-12	09-Feb-12		
											07-Dec-12			
C087736WP1	C087736 [redacted]	[redacted]	Galesburg MI	Kalamazoo	34.5	Unattended Permission, Anytime	27-Sep-10	Semi-Annual	12	10	**27-Sep-10**	28-Oct-10		Nickel
											09-Oct-10	26-Oct-10		
											19-Oct-10			

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C087736WP1	C087736 [redacted]	[redacted]	Galesburg MI	Kalamazoo	34.5	Unattended Permission, Anytime	27-Sep-10	Semi-Annual	12	10	**03-Nov-10**	19-Nov-10		IRON
											18-Nov-10	05-Jan-11		IRON, TOTAL
											01-Dec-10	15-Dec-10		
											12-Jan-11	15-Feb-11		IRON, TOTAL, VANADIUM, TOTAL
											07-Apr-11	02-May-11		IRON, TOTAL, TITANIUM
											14-Jul-11	02-Aug-11		IRON, TOTAL, TITANIUM
											18-Oct-11	18-Jan-12		
											16-Jan-12	09-Feb-12		
											03-Dec-12			
C0920E7PW1	C0920E7 [redacted]	[redacted]	Battle Creek MI	Calhoun	22.75	Unattended Permission, Anytime	23-Nov-10	Semi-Annual	9	8	**01-Dec-10**	15-Dec-10		
											15-Dec-10	26-Jan-11		IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL
											04-Jan-11	26-Jan-11		IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL
											01-Feb-11	07-Mar-11		IRON, TOTAL, VANADIUM, TOTAL

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0920E7PW1	C0920E7 [redacted]	[redacted]	Battle Creek MI	Calhoun	22.75	Unattended Permission, Anytime	23-Nov-10	Semi-Annual	9	8	**28-Feb-11**	25-Mar-11		IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL
											06-Jun-11	21-Jun-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, VANADIUM, TOTAL
											13-Sep-11	29-Nov-11		
											19-Dec-11	20-Jan-12		
											06-Dec-12			
C0949C5WP1	C0949C5 [redacted]	[redacted]	Battle Creek MI	Calhoun	13.75	Unattended Permission, Anytime	25-Sep-10	Semi-Annual	13	12	**25-Sep-10**	13-Oct-10		Iron
											12-Oct-10	26-Oct-10		Iron
											23-Oct-10	14-Jan-11		IRON
											07-Nov-10	29-Nov-10		IRON
											03-Dec-10	20-Dec-10		IRON, TOTAL
											06-Jan-11	24-Jan-11		IRON, TOTAL, MERCURY, TOTAL, NICKEL, TOTAL
											09-Feb-11	07-Mar-11		IRON, TOTAL, NICKEL, TOTAL, TITANIUM

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0949C5WP1	C0949C5 [redacted]	[redacted]	Battle Creek MI	Calhoun	13.75	Unattended Permission, Anytime	25-Sep-10	Semi-Annual	13	12	**02-Mar-11**	25-Mar-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											04-Apr-11	26-Apr-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											06-Jun-11	21-Jun-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											13-Sep-11	28-Nov-11		IRON, TOTAL
											19-Dec-11	20-Jan-12		
											11-Dec-12			
C1346E7WP1	C1346E7 [redacted]	[redacted]	Galesburg MI	Kalamazoo	38.75	Unattended Permission, Anytime	16-Oct-10	Semi-Annual	8	7	**28-Sep-10**	13-Nov-10		Iron
											16-Oct-10	26-Oct-10		Iron
											30-Oct-10	03-Dec-10		
											01-Dec-10	15-Dec-10		IRON, TOTAL
											04-May-11	17-May-11		IRON, TOTAL, VANADIUM, TOTAL
											09-Jun-11	21-Jun-11		TITANIUM, VANADIUM, TOTAL

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C1346E7WP1	C1346E7 [redacted]	[redacted]	Galesburg MI	Kalamazoo	38.75	Unattended Permission, Anytime	16-Oct-10	Semi-Annual	8	7	**12-Sep-11**	30-Nov-11		
											05-Dec-12			
C14123EWP1	C14123E [redacted]	[redacted]	Battle Creek MI	Calhoun	20.25	Unattended Permission, Anytime	20-Oct-10	Semi-Annual	11	10	**24-Oct-10**	12-Nov-10		IRON
											03-Nov-10	07-Jan-11		IRON, NICKEL
											18-Nov-10	21-Dec-10		IRON, TOTAL, NICKEL, TOTAL
											02-Dec-10	20-Dec-10		IRON, TOTAL
											15-Dec-10	26-Jan-11		IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL
											03-Jan-11	21-Apr-11		IRON, TOTAL, NICKEL, TOTAL
											11-Apr-11	02-May-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											15-Jul-11	02-Aug-11		IRON, TOTAL
											17-Oct-11	08-Dec-11		IRON, TOTAL
											17-Jan-12	09-Feb-12		
											06-Dec-12			

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C14332AWP1	C14332A [redacted]	[redacted]	Augusta MI	Kalamazoo	29.75	Permit but Call/Schedule Required		Semi-Annual	10	9	**19-Nov-10**	04-Dec-10		IRON, TOTAL
											29-Nov-10	11-Dec-10		IRON, TOTAL
											15-Dec-10	26-Jan-11		IRON, TOTAL, VANADIUM, TOTAL
											10-Jan-11	21-Apr-11		IRON, TOTAL, NICKEL, TOTAL, TITANIUM
											04-Feb-11	02-Mar-11		IRON, TOTAL, MOLYBDENUM, TITANIUM
											11-Apr-11	02-May-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											14-Jul-11	02-Aug-11		IRON, TOTAL, MOLYBDENUM, TITANIUM
											20-Oct-11	08-Dec-11		IRON, TOTAL
											18-Jan-12	09-Feb-12		
											05-Dec-12			
C145599A	C145599 [redacted]	[redacted]	Battle Creek MI	Calhoun	11	Permit but Call/Schedule Required		Semi-Annual	9	8	**23-Aug-10**	01-Nov-10		Iron
											17-Nov-10	02-Dec-10		IRON
											01-Dec-10	15-Dec-10		IRON, TOTAL

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C145599A	C145599 [redacted]	[redacted]	Battle Creek MI	Calhoun	11	Permit but Call/Schedule Required		Semi-Annual	9	8	**06-Jan-11**	26-Jan-11		IRON, TOTAL, NICKEL, TOTAL
											08-Feb-11	07-Mar-11		IRON, TOTAL, NICKEL, TOTAL, TITANIUM
											05-May-11	17-May-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											09-Aug-11	24-Aug-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											16-Nov-11	18-Jan-12		IRON, TOTAL
											11-Dec-12			
C145623WP1	C145623 [redacted]	[redacted]	Battle Creek MI	Calhoun	10.75	Unattended Permission, Anytime	28-Oct-10	Semi-Annual	9	8	**03-Nov-10**	07-Jan-11		IRON
											17-Nov-10	02-Dec-10		IRON
											29-Nov-10	10-Dec-10		IRON, TOTAL
											08-Feb-11	07-Mar-11		IRON, TOTAL, NICKEL, TOTAL, TITANIUM
											01-Mar-11	25-Mar-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											10-Jun-11	22-Jun-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C145623WP1	C145623 [redacted]	[redacted]	Battle Creek MI	Calhoun	10.75	Unattended Permission, Anytime	28-Oct-10	Semi-Annual	9	8	**13-Sep-11**	08-Dec-11		IRON, TOTAL, NICKEL, TOTAL
											20-Dec-11	20-Jan-12		
											11-Dec-12			
C1509C0WP1	C1509C0 [redacted]	[redacted]	Battle Creek MI	Calhoun	20.5	Permit but Call/Schedule Required		Semi-Annual	13	10	13-Aug-10			
											07-Nov-10	10-Dec-10		IRON
											18-Nov-10	05-Jan-11		IRON, TOTAL
											29-Nov-10	11-Dec-10		IRON, TOTAL
											15-Dec-10	26-Jan-11		IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL
											19-Jan-11	15-Feb-11		IRON, TOTAL, NICKEL, TOTAL
											01-Feb-11	02-Mar-11		IRON, TOTAL, NICKEL, TOTAL
											05-May-11	17-May-11		IRON, TOTAL
											10-Aug-11	24-Aug-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
											16-Nov-11	14-Dec-11		

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C1509C0WP1	C1509C0 [redacted]	[redacted]	Battle Creek MI	Calhoun	20.5	Permit but Call/Schedule Required		Semi-Annual	13	10	20-Feb-12	16-Mar-12		
											06-Dec-12			
C1520E6WP1	C1520E6 [redacted]	[redacted]	Battle Creek MI	Calhoun	2.25	Unattended Permission, Anytime	19-Nov-10	Semi-Annual	10	8	09-Aug-10			
											02-Dec-10	26-Jan-11		
											03-Jan-11	26-Jan-11		IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL
											17-Jan-11	10-Mar-11		IRON, TOTAL, VANADIUM, TOTAL
											01-Feb-11	07-Mar-11		IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL
											01-Mar-11	25-Mar-11		VANADIUM, TOTAL
											06-Jun-11	21-Jun-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											13-Sep-11	29-Nov-11		
											19-Dec-11	20-Jan-12		
											07-Dec-12			

Table 2c-1. Residential Well Sampling and Letter Status Through January 4, 2013 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects

Notes:

05-Sep-10 Sample Date: Represents analytical results that have had a Level II Validation performed.

05-Sep-10 Sample Date: Represents analytical results that have had a Level I Review performed.

BTEX: Benzene, Toluene, Ethylbenzene, and Xylenes
Cnt: Count
DRO: Diesel Range Organics
GRO: Gasoline Range Organics
ORO: Oil Range Organics

Table 2c-2. Residential Well Sampling and Letter Status Through January 4, 2013 - Winterized Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Releas
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0250C1WP2	C0250C1 [redacted]	[redacted]	Galesburg MI	Kalamazoo	36	Unattended Permission, Anytime		Prior to Sale or Occupation	3	3	23-Oct-10	12-Nov-10		
											30-Oct-10	18-Nov-10		
											03-Dec-10	20-Dec-10		IRON, TOTAL
C0555CBA	C0555CB [redacted]	[redacted]	Marshall MI	Calhoun	3	Unattended Permission, Anytime	06-Sep-10	Prior to Sale or Occupation	9	7	15-Aug-10	01-Sep-10		Iron
											08-Sep-10	05-Oct-10		Iron
											19-Sep-10			Iron
											01-Oct-10			Iron
											14-Oct-10	26-Oct-10		Iron
											28-Oct-10	17-Nov-10		IRON
											30-Nov-10	15-Dec-10		IRON, TOTAL
											11-Jan-11	15-Feb-11		IRON, TOTAL, NICKEL, TOTAL, TITANIUM
											11-Feb-11	07-Mar-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
C0872B9PW1	C0872B9 [redacted]	[redacted]	Augusta MI	Kalamazoo	27	Unattended Permission, Anytime	29-Aug-10	Prior to Sale or Occupation	3	3	30-Aug-10	28-Oct-10		Iron
											18-Sep-10	16-Nov-10		Iron

Table 2c-2. Residential Well Sampling and Letter Status Through January 4, 2013 - Winterized Wells

Enbridge Line 6B MP 608 Marshall, MI Pipeline Releas

Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0872B9PW1	C0872B9 [redacted]	[redacted]	Augusta MI	Kalamazoo	27	Unattended Permission, Anytime	29-Aug-10	Prior to Sale or Occupation	3	3	08-Oct-10	26-Oct-10		Iron
C50318DWP2	C50318D [redacted]	[redacted]	Marshall MI	Calhoun	2.25	Permit but Call/Schedule Required	03-Dec-10	Prior to Sale or Occupation						
C062360A	C062360 [redacted]	[redacted]	Ceresco MI	Calhoun	6	Permit but Call/Schedule Required		Quarterly 2	4	4	18-Aug-10	03-Nov-10		Iron
											20-Jul-11	02-Aug-11		IRON, TOTAL, NICKEL, TOTAL, TITANIUM
											11-Aug-11	29-Aug-11		IRON, TOTAL, MERCURY, TOTAL, NICKEL, TOTAL
											14-Sep-11	29-Nov-11		IRON, TOTAL
C01836FA	C01836F [redacted]	[redacted]	Battle Creek MI	Calhoun	14	Unattended Permission, Anytime	30-Aug-10	Semi-Annual	10	9	08-Aug-10	19-Aug-10		Iron
											30-Aug-10	05-Oct-10		Iron
											13-Sep-10	04-Oct-10		Iron
											20-Sep-10			Iron
											07-Oct-10	28-Oct-10		Iron
											17-Oct-10	01-Nov-10		Iron
											30-Oct-10	18-Nov-10		IRON

Table 2c-2. Residential Well Sampling and Letter Status Through January 4, 2013 - Winterized Wells

Enbridge Line 6B MP 608 Marshall, MI Pipeline Releas

Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C01836FA	C01836F	[redacted]	Battle Creek	Calhoun	14	Unattended Permission, Anytime	30-Aug-10	Semi-Annual	10	9	**12-May-11**	02-Jun-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
	[redacted]		MI											
											06-Jun-11	21-Jun-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											13-Sep-11	30-Nov-11		IRON, TOTAL, NICKEL, TOTAL
C052339PW1	C052339	[redacted]	Battle Creek	Calhoun	14.5	Unattended Permission, Anytime	26-Sep-10	Semi-Annual	12	11	**28-Aug-10**	13-Oct-10		Iron
	[redacted]		MI											
											13-Sep-10	13-Oct-10		Iron
											19-Sep-10	13-Oct-10		Iron
											09-Oct-10	28-Oct-10		Iron
											19-Oct-10			Iron
											30-Oct-10	18-Nov-10		IRON
											03-Dec-10	18-Dec-10		IRON, TOTAL
											18-Jan-11	15-Feb-11		IRON, TOTAL, NICKEL, TOTAL
											03-Feb-11	07-Mar-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL

Table 2c-2. Residential Well Sampling and Letter Status Through January 4, 2013 - Winterized Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Releas
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C052339PW1	C052339	[redacted]	Battle Creek	Calhoun	14.5	Unattended Permission, Anytime	26-Sep-10	Semi-Annual	12	11	06-May-11	26-May-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
	[redacted]		MI											
											09-Aug-11	15-Sep-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
											14-Nov-11	18-Jan-12		IRON, TOTAL
C0678ADA	C0678AD	[redacted]	Augusta	Kalamazoo	29.5	Unattended Permission, Anytime	23-Sep-10	Semi-Annual	12	11	13-Aug-10	07-Sep-10		
	[redacted]		MI											
											23-Sep-10	07-Oct-10		
											08-Oct-10	26-Oct-10		
											18-Oct-10			
											30-Oct-10	03-Dec-10		
											02-Dec-10	18-Dec-10		IRON, TOTAL
											10-Jan-11	15-Feb-11		IRON, TOTAL, NICKEL, TOTAL, PHENANTHRENE, TITANIUM
											31-Jan-11	02-Mar-11		
											03-May-11	17-May-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL

Table 2c-2. Residential Well Sampling and Letter Status Through January 4, 2013 - Winterized Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Releas
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0678ADA	C0678AD	[redacted]	Augusta	Kalamazoo	29.5	Unattended Permission, Anytime	23-Sep-10	Semi-Annual	12	11	**08-Aug-11**	18-Aug-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM
	[redacted]		MI								**14-Nov-11**	18-Jan-12		
											20-Feb-12	16-Mar-12		

Notes:
05-Sep-10 Sample Date: Represents analytical results that have had a Level II Validation performed.
05-Sep-10 Sample Date: Represents analytical results that have had a Level I Review performed.
BTEX: Benzene, Toluene, Ethylbenzene, and Xylenes
Cnt: Count
DRO: Diesel Range Organics
GRO: Gasoline Range Organics
ORO: Oil Range Organics

Table 2c-3. Residential Well Sampling and Letter Status Through January 4, 2013 - Wells Not Being Sampled
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0246B5WP1	C0246B5 [redacted]	[redacted]	Galesburg MI	Kalamazoo	34.75	Unattended Permission, Anytime	12-Oct-10	Prior to Sale or Occupation	1					
C025965WP1	C025965 [redacted]	[redacted]	Galesburg MI	Kalamazoo	34.75	Unattended Permission, Anytime	09-Oct-10	Prior to Sale or Occupation	3	1				
											16-Oct-10	01-Nov-10		Iron
											30-Oct-10			IRON
C038297	C038297 [redacted]	[redacted]	Ceresco MI	Calhoun	6	Unattended Permission, Anytime	05-Sep-10	Prior to Sale or Occupation	9	8				
											05-Sep-10	07-Oct-10		
											24-Oct-10	30-Nov-10		NICKEL
											06-Nov-10	29-Nov-10		
											30-Nov-10	15-Dec-10		IRON, TOTAL
											20-Jan-11	15-Feb-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, VANADIUM, TOTAL
											08-Feb-11	07-Mar-11		BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL

Table 2c-3. Residential Well Sampling and Letter Status Through January 4, 2013 - Wells Not Being Sampled
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C038297	C038297	[redacted]	Ceresco	Calhoun	6	Unattended Permission, Anytime	05-Sep-10	Prior to Sale or Occupation	9	8	**12-May-11**	02-Jun-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL
	[redacted]		MI											
											12-Aug-11	14-Sep-11		IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL
C039759WP1	C039759	[redacted]	Ceresco	Calhoun	5.75	Permit but Call/Schedule Required	03-Oct-10	Prior to Sale or Occupation	4	3				
	[redacted]		MI											
											12-Oct-10	01-Nov-10		Iron
											23-Oct-10	03-Dec-10		BERYLLIUM, IRON
											08-Nov-10	03-Dec-10		IRON
C046882A	C046882	[redacted]	Battle Creek	Calhoun	22.75	Permit but Call and Schedule First	26-Aug-10	Prior to Sale or Occupation	12	11				
	[redacted]		MI											
											03-Aug-10	21-Sep-10		
											28-Aug-10	01-Nov-10		
											28-Aug-10	28-Oct-10		
											13-Sep-10	28-Oct-10		
											21-Sep-10			
											10-Oct-10	26-Oct-10		

Table 2c-3. Residential Well Sampling and Letter Status Through January 4, 2013 - Wells Not Being Sampled
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C046882A	C046882 [redacted]	[redacted]	Battle Creek MI	Calhoun	22.75	Permit but Call and Schedule First	26-Aug-10	Prior to Sale or Occupation	12	11	**20-Oct-10**	12-Nov-10		
											03-Nov-10	15-Feb-11		
											02-Dec-10	18-Dec-10		IRON, TOTAL
											19-Jan-11	15-Feb-11		NICKEL, TOTAL, VANADIUM, TOTAL
											01-Feb-11	02-Mar-11		IRON, TOTAL, VANADIUM, TOTAL
											04-May-11	17-May-11		IRON, TOTAL, VANADIUM, TOTAL
C0883E0WP1	C0883E0 [redacted]	[redacted]	Galesburg MI	Kalamazoo	37.5	Permit but Call/Schedule Required	07-Oct-10	Prior to Sale or Occupation	1					
C50318DWP1	C50318D [redacted]	[redacted]	Marshall MI	Calhoun	2.25	Permit but Call/Schedule Required	03-Dec-10	Prior to Sale or Occupation	4	3				
											03-Aug-10	25-Aug-10		
											06-Dec-10	20-Dec-10		IRON, TOTAL
											11-Jan-11	15-Feb-11		IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL
C002068A	C002068 [redacted]	[redacted]	Marshall MI	Calhoun	1.25	Refused Permission	31-Aug-10	Quarterly 2	7	7	**01-Aug-10**	01-Sep-10		
											31-Aug-10	28-Oct-10		Iron

Table 2c-3. Residential Well Sampling and Letter Status Through January 4, 2013 - Wells Not Being Sampled
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C002068A	C002068 [redacted]	[redacted]	Marshall MI	Calhoun	1.25	Refused Permission	31-Aug-10	Quarterly 2	7	7	12-Sep-10	21-Oct-10		
											22-Oct-10	12-Nov-10		
											05-Nov-10	20-Dec-10		
											30-Nov-10	15-Dec-10		
											05-Jan-11	24-Jan-11		IRON, TOTAL, NICKEL, TOTAL
C0023D2WP1	C0023D2 [redacted]	[redacted]	Ceresco MI	Calhoun	6	Permit But Call First		Quarterly 2	1	1	28-Jul-10	21-Aug-10		
C0188E7A	C0188E7 [redacted]	[redacted]	Ceresco MI	Calhoun	6			Quarterly 2	1	1	08-Aug-10	02-Sep-10		
C032604WP1	C032604 [redacted]	[redacted]	Ceresco MI	Calhoun	6	Permit but Call/Schedule Required	15-Oct-10	Quarterly 2	1					
C01477APW1	C01477A [redacted]	[redacted]	Battle Creek MI	Calhoun	21	Refused Permission	29-Sep-10	Semi-Annual	2	1	08-Aug-10			Iron
											17-Aug-10	01-Sep-10		Iron
C035755WP1	C035755 [redacted]	[redacted]	Augusta MI	Kalamazoo	24.75	Refused Permission	05-Sep-10	Semi-Annual	5	5	08-Sep-10	13-Oct-10		Iron
											18-Sep-10	13-Oct-10		Iron
											08-Oct-10	26-Oct-10		Iron
											18-Oct-10	12-Nov-10		Iron
											06-Nov-10	03-Dec-10		IRON

Table 2c-3. Residential Well Sampling and Letter Status Through January 4, 2013 - Wells Not Being Sampled
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C035755WP2	C035755 [redacted]	[redacted]	Augusta MI	Kalamazoo	24.75	Refused Permission	05-Sep-10	Semi-Annual	5	5	**08-Sep-10**	13-Oct-10		
											18-Sep-10	13-Oct-10		
											08-Oct-10	26-Oct-10		
											18-Oct-10	12-Nov-10		Iron
											06-Nov-10	03-Dec-10		
C0609FCWP1	C0609FC [redacted]	[redacted]	Battle Creek MI	Calhoun	14			Semi-Annual	1					
C068050PW1	C068050 [redacted]0	[redacted]t	Battle Creek MI	Calhoun	15	Refused Permission	22-Oct-10	Semi-Annual	1	1	**18-Aug-10**	24-Sep-10		
C0878A7WP1	C0878A7 [redacted]	[redacted]	Springfield MI	Calhoun	17.75			Semi-Annual	1					
C12624BPW1	C12624B [redacted]	[redacted]	Battle Creek MI	Calhoun	13.75			Semi-Annual						
C14255EWP1	C14255E [redacted]	[redacted]	Springfield MI	Calhoun	17.75	Refused Permission		Semi-Annual						
C14351FWP1	C14351F [redacted]	[redacted]	Battle Creek MI	Calhoun	14			Semi-Annual	1					

Notes:

05-Sep-10 Sample Date: Represents analytical results that have had a Level II Validation performed.

05-Sep-10 Sample Date: Represents analytical results that have had a Level I Review performed.

BTEX: Benzene, Toluene, Ethylbenzene, and Xylenes
Cnt: Count
DRO: Diesel Range Organics
GRO: Gasoline Range Organics
ORO: Oil Range Organics

Table 2c-4. Residential Well Sampling and Letter Status for the Month of December 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0002C6A	C0002C6 [redacted]	[redacted]	Ceresco MI	Calhoun	6	Unattended Permission, Anytime	25-Sep-10	Quarterly 2	14	13	12-Dec-12			
C0029CCWP1	C0029CC [redacted]	[redacted]	Ceresco MI	Calhoun	6	Unattended Permission, Anytime	08-Sep-10	Quarterly 2	16	15	13-Dec-12			
C005315A	C005315 [redacted]	[redacted]	Ceresco MI	Calhoun	6	Unattended Permission, Restricted Times	25-Oct-10	Quarterly 2	13	12	12-Dec-12			
C011485A	C011485 [redacted]	[redacted]	Ceresco MI	Calhoun	6	Unattended Permission, Anytime	19-Sep-10	Quarterly 2	15	14	10-Dec-12			
C0223BCA	C0223BC [redacted]	[redacted]	Marshall MI	Calhoun	0.5	Unattended Permission, Anytime		Quarterly 2	14	10	13-Dec-12			
C0254D8	C0254D8 [redacted]	[redacted]	Ceresco MI	Calhoun	7.5	Unattended Permission, Anytime	05-Sep-10	Quarterly 2	12	11	12-Dec-12			
C0273F9WP1	C0273F9 [redacted]	[redacted]	Ceresco MI	Calhoun	6.5	Unattended Permission, Anytime	03-Oct-10	Quarterly 2	16	14	10-Dec-12			
C030309WP1	C030309 [redacted]	[redacted]	Ceresco MI	Calhoun	6	Unattended Permission, Anytime	08-Sep-10	Quarterly 2	16	15	12-Dec-12			
C031751PW1	C031751 [redacted]	[redacted]	Ceresco MI	Calhoun	6	Unattended Permission, Anytime	26-Aug-10	Quarterly 2	13	11	12-Dec-12			
C0377D7A	C0377D7 [redacted]	[redacted]	Ceresco MI	Calhoun	6	Unattended Permission, Anytime	25-Sep-10	Quarterly 2	16	14	12-Dec-12			
C03868EWP1	C03868E [redacted]	[redacted]	Ceresco MI	Calhoun	6	Unattended Permission, Anytime	04-Sep-10	Quarterly 2	14	13	10-Dec-12			
C07198APW1	C07198A [redacted]	[redacted]	Galesburg MI	Kalamazoo	34.75	Permit but Call/Schedule Required	04-Oct-10	Quarterly 2	11	9	05-Dec-12			

Table 2c-4. Residential Well Sampling and Letter Status for the Month of December 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C086970PW1	C086970 [redacted]	Augusta Municipal Wells	Augusta MI	Kalamazoo	28.75	Permit but Call/Schedule Required	27-Oct-10	Quarterly 2	19	17	04-Dec-12			
C086970PW2	C086970 [redacted]	Augusta Municipal Wells	Augusta MI	Kalamazoo	28.75	Permit but Call/Schedule Required	27-Oct-10	Quarterly 2	18	17	04-Dec-12			
C0881CCWP1	C0881CC [redacted]	[redacted]	Ceresco MI	Calhoun	6	Unattended Permission, Anytime	02-Oct-10	Quarterly 2	14	12	10-Dec-12			
C088276WP1	C088276 [redacted]	[redacted]	Ceresco MI	Calhoun	6	Permit but Call/Schedule Required	12-Oct-10	Quarterly 2	10	9	10-Dec-12			
C0889FEWP1	C0889FE [redacted]	[redacted]	Galesburg MI	Kalamazoo	38	Permit but Call/Schedule Required		Quarterly 2	12	11	04-Dec-12			
C10619FWP1	C10619F [redacted]	[redacted]	Ceresco MI	Calhoun	8	Unattended Permission, Anytime	09-Oct-10	Quarterly 2	24	20	12-Dec-12			
C135093WP1	C135093 [redacted]0	[redacted]	Marshall MI	Calhoun	0.25	Unattended Permission, Anytime	11-Oct-10	Quarterly 2	14	11	13-Dec-12			
C152569WP1	C152569 [redacted]	[redacted]	Ceresco MI	Calhoun	7.25	Unattended Permission, Anytime		Quarterly 2	12	11	12-Dec-12			
C1528D4PW1	C1528D4 [redacted]	[redacted]	Ceresco MI	Calhoun	6	Unattended Permission, Anytime		Quarterly 2	13	11	12-Dec-12			
C153895PW1	C153895 [redacted]	[redacted]	Ceresco MI	Calhoun	6	Permit But Call First		Quarterly 2	17	15	12-Dec-12			
C000749A	C000749 [redacted]	[redacted]	Battle Creek MI	Calhoun	22.75	Permit but Call/Schedule Required	19-Nov-10	Semi-Annual	10	9	13-Dec-12			
C001311A	C001311 [redacted]	[redacted]	Marshall MI	Calhoun	3	Unattended Permission, Anytime	06-Sep-10	Semi-Annual	12	11	04-Dec-12			
C0042C2A	C0042C2 [redacted]	[redacted]	Battle Creek MI	Calhoun	13.5	Unattended Permission, Anytime	23-Oct-10	Semi-Annual	11	10	07-Dec-12			

Table 2c-4. Residential Well Sampling and Letter Status for the Month of December 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C00474DA	C00474D	[redacted]	Battle Creek MI	Calhoun	13.75	Unattended Permission, Anytime	24-Oct-10	Semi-Annual	12	10	07-Dec-12			
C0048DCA	C0048DC	[redacted]	Battle Creek MI	Calhoun	22.75	Unattended Permission, Anytime	23-Sep-10	Semi-Annual	13	11	06-Dec-12			
C00589DA	C00589D	[redacted]	Battle Creek MI	Calhoun	22.75	Unattended Permission, Anytime	26-Aug-10	Semi-Annual	14	13	06-Dec-12			
C00856DA	C00856D	[redacted]	Augusta MI	Kalamazoo	27.25	Unattended Permission, Anytime	07-Sep-10	Semi-Annual	15	14	05-Dec-12			
C00928FA	C00928F	[redacted]	Augusta MI	Kalamazoo	26.5	Unattended Permission, Anytime	27-Oct-10	Semi-Annual	11	10	05-Dec-12			
C0137BDA	C0137BD	[redacted]	Marshall MI	Calhoun	2.75	Unattended Permission, Anytime	01-Sep-10	Semi-Annual	14	13	04-Dec-12			
C015322A	C015322	[redacted]	Battle Creek MI	Calhoun	23	Unattended Permission, Anytime	07-Sep-10	Semi-Annual	17	14	05-Dec-12			
C015481A	C015481	[redacted]	Battle Creek MI	Calhoun	23	Unattended Permission, Anytime	04-Sep-10	Semi-Annual	14	13	06-Dec-12			
C0156ADA	C0156AD	[redacted]	Battle Creek MI	Calhoun	23.25	Unattended Permission, Anytime	01-Sep-10	Semi-Annual	16	14	06-Dec-12			
C01573BA	C01573B	[redacted]	Battle Creek MI	Calhoun	23.25	Unattended Permission, Anytime	01-Sep-10	Semi-Annual	14	12	06-Dec-12			
C0165D4PW1	C0165D4M	[redacted]	Battle Creek MI	Calhoun	14.5	Unattended Permission, Anytime	14-Sep-10	Semi-Annual	17	14	11-Dec-12			
C017595PW1	C017595	[redacted]	Battle Creek MI	Calhoun	14.25	Unattended Permission, Anytime	24-Oct-10	Semi-Annual	13	10	07-Dec-12			

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Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0177B9A	C0177B9 [redacted]	[redacted]	Battle Creek MI	Calhoun	14	Unattended Permission, Anytime	28-Sep-10	Semi-Annual	12	11	07-Dec-12			
C0180D5A	C0180D5 [redacted]	[redacted]	Battle Creek MI	Calhoun	14	Permit but Call/Schedule Required	31-Aug-10	Semi-Annual	16	13	11-Dec-12			
C018776A	C018776 [redacted]	[redacted]	Galesburg MI	Kalamazoo	37.25	Unattended Permission, Anytime	23-Sep-10	Semi-Annual	12	11	03-Dec-12			
C01948DPW1	C01948D [redacted]	[redacted]	Galesburg MI	Kalamazoo	34.25	Unattended Permission, Anytime	06-Sep-10	Semi-Annual	12	10	03-Dec-12			
C0229A2A	C0229A2M [redacted]	[redacted]	Battle Creek MI	Calhoun	14.75	Unattended Permission, Anytime	28-Sep-10	Semi-Annual	17	16	10-Dec-12			
C023047A	C023047 [redacted]	[redacted]	Battle Creek MI	Calhoun	23	Unattended Permission, Anytime	31-Aug-10	Semi-Annual	16	14	05-Dec-12			
C0231D1A	C0231D1 [redacted]	[redacted]	Battle Creek MI	Calhoun	23	Unattended Permission, Anytime	23-Sep-10	Semi-Annual	13	11	06-Dec-12			
C024723PW1	C024723 [redacted]	[redacted]	Galesburg MI	Kalamazoo	36.25	Unattended Permission, Anytime	26-Aug-10	Semi-Annual	17	15	03-Dec-12			
C0252EDA	C0252ED [redacted]	[redacted]	Galesburg MI	Kalamazoo	36.25	Permit but Call/Schedule Required	06-Sep-10	Semi-Annual	13	12	03-Dec-12			
C0269A6PW1	C0269A6 [redacted]	[redacted]	Galesburg MI	Kalamazoo	34.75	Unattended Permission, Anytime	08-Oct-10	Semi-Annual	18	16	03-Dec-12			
C0271D5PW1	C0271D5 [redacted]	[redacted]	Galesburg MI	Kalamazoo	34.25	Unattended Permission, Anytime	25-Oct-10	Semi-Annual	10	9	05-Dec-12			
C0298FFWP1	C0298FF [redacted]	[redacted]	Battle Creek MI	Calhoun	17	Permit but Call/Schedule Required	06-Oct-10	Semi-Annual	15	14	10-Dec-12			

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Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0298FFWP2	C0298FF	[redacted]	Battle Creek MI	Calhoun	17	Permit but Call/Schedule Required	06-Oct-10	Semi-Annual	11	10	10-Dec-12			
C030917WP1	C030917	[redacted]	Galesburg MI	Kalamazoo	32.5	Permit but Call/Schedule Required	07-Sep-10	Semi-Annual	12	11	03-Dec-12			
C0310F2PW1	C0310F2	[redacted]	Marshall MI	Calhoun	3.25	Unattended Permission, Anytime	24-Oct-10	Semi-Annual	15	14	04-Dec-12			
C0337D3WP1	C0337D3	[redacted]	Augusta MI	Kalamazoo	27.25	Unattended Permission, Anytime	04-Sep-10	Semi-Annual	12	10	05-Dec-12			
C03429BWP1	C03429B	[redacted]	Augusta MI	Kalamazoo	26.75	Unattended Permission, Anytime	18-Oct-10	Semi-Annual	12	10	05-Dec-12			
C046713WP1	C046713	[redacted]	Battle Creek MI	Calhoun	22.75	Unattended Permission, Anytime	26-Aug-10	Semi-Annual	15	12	06-Dec-12			
C04879DWP1	C04879DM	[redacted]	Battle Creek MI	Calhoun	14.75	Unattended Permission, Anytime	28-Sep-10	Semi-Annual	12	11	10-Dec-12			
C0491E9PW1	C0491E9	[redacted]	Battle Creek MI	Calhoun	14.5	Unattended Permission, Anytime	26-Aug-10	Semi-Annual	15	13	13-Dec-12			
C052927WP1	C052927	[redacted]	Marshall MI	Calhoun	3	Unattended Permission, Anytime		Semi-Annual	10	9	13-Dec-12			
C05354DA	C05354D	[redacted]	Battle Creek MI	Calhoun	14.5	Unattended Permission, Anytime	15-Sep-10	Semi-Annual	15	13	10-Dec-12			
C053761WP1	C053761	[redacted]	Battle Creek MI	Calhoun	18.25	Permit but Call/Schedule Required	09-Sep-10	Semi-Annual	12	11	07-Dec-12			
C0572EAWP1	C0572EA	[redacted]	Battle Creek MI	Calhoun	14.5	Permit but Call/Schedule Required	04-Sep-10	Semi-Annual	13	12	11-Dec-12			

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Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C0574DFWP1	C0574DF	[redacted]	Battle Creek MI	Calhoun	14.5	Unattended Permission, Anytime	14-Sep-10	Semi-Annual	13	11	11-Dec-12			
C059451PW1	C059451	[redacted]	Battle Creek MI	Calhoun	10.5	Permit but Call/Schedule Required	20-Sep-10	Semi-Annual	9	8	11-Dec-12			
C06162CPW1	C06162C	[redacted]	Battle Creek MI	Calhoun	14.75	Permit but Call/Schedule Required	20-Sep-10	Semi-Annual	13	12	11-Dec-12			
C0668ECA	C0668EC	[redacted]	Marshall MI	Calhoun	2.75	Unattended Permission, Anytime		Semi-Annual	10	9	13-Dec-12			
C0693ABPW1	C0693AB	[redacted]	Battle Creek MI	Calhoun	11	Permit but Call/Schedule Required	27-Oct-10	Semi-Annual	11	10	11-Dec-12			
C0730ACPW1	C0730AC	[redacted]	Galesburg MI	Kalamazoo	34.5	Unattended Permission, Anytime	14-Sep-10	Semi-Annual	18	17	03-Dec-12			
C07824BPW1	C07824B	[redacted]	Augusta MI	Kalamazoo	27.5	Unattended Permission, Anytime	29-Aug-10	Semi-Annual	11	10	03-Dec-12			
C0876A0WP1	C0876A0	[redacted]	Battle Creek MI	Calhoun	19.25	Permit but Call/Schedule Required	04-Oct-10	Semi-Annual	10	9	07-Dec-12			
C087736WP1	C087736	[redacted]	Galesburg MI	Kalamazoo	34.5	Unattended Permission, Anytime	27-Sep-10	Semi-Annual	12	10	03-Dec-12			
C0920E7PW1	C0920E7	[redacted]	Battle Creek MI	Calhoun	22.75	Unattended Permission, Anytime	23-Nov-10	Semi-Annual	9	8	06-Dec-12			
C0949C5WP1	C0949C5	[redacted]	Battle Creek MI	Calhoun	13.75	Unattended Permission, Anytime	25-Sep-10	Semi-Annual	13	12	11-Dec-12			
C1346E7WP1	C1346E7	[redacted]	Galesburg MI	Kalamazoo	38.75	Unattended Permission, Anytime	16-Oct-10	Semi-Annual	8	7	05-Dec-12			

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Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
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Well No	Property No/Tax ID	Address	City/State	County	Mile Post	Permission	Permission Date	Frequency	Sample Cnt.	Letter Cnt.	Sample Date	Letter Sent Date	BTEX, GRO, ORO, DRO Detects	Other Crude Oil Constituent Detects
C14123EWP1	C14123E	[redacted]	Battle Creek MI	Calhoun	20.25	Unattended Permission, Anytime	20-Oct-10	Semi-Annual	11	10	06-Dec-12			
C14332AWP1	C14332A	[redacted]	Augusta MI	Kalamazoo	29.75	Permit but Call/Schedule Required		Semi-Annual	10	9	05-Dec-12			
C145599A	C145599	[redacted]	Battle Creek MI	Calhoun	11	Permit but Call/Schedule Required		Semi-Annual	9	8	11-Dec-12			
C145623WP1	C145623	[redacted]	Battle Creek MI	Calhoun	10.75	Unattended Permission, Anytime	28-Oct-10	Semi-Annual	9	8	11-Dec-12			
C1509C0WP1	C1509C0	[redacted]	Battle Creek MI	Calhoun	20.5	Permit but Call/Schedule Required		Semi-Annual	13	10	06-Dec-12			
C1520E6WP1	C1520E6	[redacted]	Battle Creek MI	Calhoun	2.25	Unattended Permission, Anytime	19-Nov-10	Semi-Annual	10	8	07-Dec-12			

Notes:
Bold and Underlined Sample Date: Represents analytical results that have had a Level II Validation performed.
Non Bold and Underlined Sample Date: Represents analytical results that have had a Level I Review performed.
BTEX: Benzene, Toluene, Ethylbenzene, and Xylenes
Cnt: Count
DRO: Diesel Range Organics
GRO: Gasoline Range Organics
ORO: Oil Range Organics

Locations	Geomorphic Setting	Channel Gradient	CSD Identification Number	CSD Identification Number	Monitoring Round 1						
					Sample Jars Collected	Date Conducted	# of Days	Measured Sediment LDJ (mm)	Measured Sediment RDJ (mm)	Measured Sediment (mm)*	Sedimentation Rate (mm/day)
MP 10.75 LDB	Backwater	2.7 ft/mile	C01	5/2/2012	Yes	5/10/2012	8	19	12	16	1.94
			C02	5/2/2012	Yes	5/10/2012	8	25	19	22	2.75
			C03	6/13/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MP 14.75 RDB	Cut off channel	0.5 ft/mile	C01	5/1/2012	Yes	5/11/2012	10	76	76	76	7.60
			C02	5/1/2012	Yes	5/11/2012	10	75	75	75	7.50
			C03	5/1/2012	Yes	5/11/2012	10	20	20	20	2.00
MP 19.25 LDB	Cut off channel	0.6 ft/mile	C01	5/2/2012	Yes	5/10/2012	8	25	25	25	3.13
			C02	5/2/2012	Yes	5/10/2012	8	37	37	37	4.63
			C03	5/2/2012	Yes	5/9/2012	7	3	3	3	0.43
			C04	5/2/2012	Yes	5/9/2012	7	13	13	13	1.86
			C05	5/2/2012	Yes	5/9/2012	7	30	15	23	3.21
MP 21.50 RDB	Oxbow	0.5 ft/mile	C01	5/2/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			C02	5/2/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			C03	5/2/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MP 28.25 RDB	Oxbow	0.4 ft/mile	C01	5/2/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			C02	5/2/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			C03	5/2/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MP 36.10 NW	Cut off channel	0.3 ft/mile	C01	5/8/2012	Yes	5/11/2012	3	19	19	19	6.33
			C02	5/8/2012	Yes	5/11/2012	3	26	26	26	8.67
			C03	5/8/2012	Yes	5/11/2012	3	7	7	7	2.33

Locations	Geomorphic Setting	Channel Gradient	CSD Identification Number	CSD Identification Number	Monitoring Round 2							
					Sample Jars Collected	Date Conducted	# of Days	Measured Sediment LDJ (mm)	Measured Sediment RDJ (mm)	Measured Sediment (mm)*	Sedimentation Rate (mm/day)	Amount of Water Above CSD (ft)
MP 10.75 LDB	Backwater	2.7 ft/mile	C01	5/2/2012	No	5/16/2012	6	10	10	10	1.67	N/A
			C02	5/2/2012	No	5/16/2012	6	10	10	10	1.67	N/A
			C03	6/13/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MP 14.75 RDB	Cut off channel	0.5 ft/mile	C01	5/1/2012	No	5/16/2012	5	50	50	50	10.00	N/A
			C02	5/1/2012	Yes	5/16/2012	5	78	70	74	14.80	N/A
			C03	5/1/2012	No	5/16/2012	5	25	25	25	5.00	N/A
MP 19.25 LDB	Cut off channel	0.6 ft/mile	C01	5/2/2012	No	5/16/2012	6	19	19	19	3.17	-0.05
			C02	5/2/2012	No	5/16/2012	6	19	19	19	3.17	N/A
			C03	5/2/2012	No	5/16/2012	7	3	3	3	0.43	-0.05
			C04	5/2/2012	No	5/16/2012	7	10	10	10	1.43	N/A
			C05	5/2/2012	No	5/16/2012	7	20	20	20	2.86	N/A
MP 21.50 RDB	Oxbow	0.5 ft/mile	C01	5/2/2012	Yes	5/17/2012	15	51	76	64	4.23	N/A
			C02	5/2/2012	Yes	5/17/2012	15	95	38	67	4.43	N/A
			C03	5/2/2012	Yes	5/17/2012	15	114	140	127	8.47	N/A
MP 28.25 RDB	Oxbow	0.4 ft/mile	C01	5/2/2012	No	5/18/2012	16	38	19	29	1.78	N/A
			C02	5/2/2012	Yes	5/18/2012	16	57	127	92	5.75	N/A
			C03	5/2/2012	Yes	5/18/2012	16	95	76	86	5.34	N/A
MP 36.10 NW	Cut off channel	0.3 ft/mile	C01	5/8/2012	No	5/17/2012	6	29	29	29	4.83	N/A
			C02	5/8/2012	No	5/17/2012	6	38	44	41	6.83	N/A
			C03	5/8/2012	No	5/17/2012	6	25	17	21	3.50	N/A

Locations	Geomorphic Setting	Channel Gradient	CSD Identification Number	CSD Identification Number	Monitoring Round 3							
					Sample Jars Collected	Date Conducted	# of Days	Measured Sediment LDJ (mm)	Measured Sediment RDJ (mm)	Measured Sediment (mm)*	Sedimentation Rate (mm/day)	Amount of Water Above CSD (ft)
MP 10.75 LDB	Backwater	2.7 ft/mile	C01	5/2/2012	No	5/23/2012	13	22	22	22	1.69	N/A
			C02	5/2/2012	No	5/23/2012	13	17	17	17	1.31	N/A
			C03	6/13/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MP 14.75 RDB	Cut off channel	0.5 ft/mile	C01	5/1/2012	No	5/23/2012	12	102	89	96	7.96	N/A
			C02	5/1/2012	No	5/23/2012	7	45	45	45	6.43	N/A
			C03	5/1/2012	No	5/23/2012	12	32	44	38	3.17	N/A
MP 19.25 LDB	Cut off channel	0.6 ft/mile	C01	5/2/2012	No	5/23/2012	13	19	19	19	1.46	-0.02
			C02	5/2/2012	No	5/23/2012	13	30	30	30	2.31	N/A
			C03	5/2/2012	No	5/23/2012	14	N/A	N/A	N/A	N/A	-0.02
			C04	5/2/2012	No	5/23/2012	14	32	32	32	2.29	N/A
			C05	5/2/2012	No	5/23/2012	14	41	41	41	2.93	N/A
MP 21.50 RDB	Oxbow	0.5 ft/mile	C01	5/2/2012	No	5/24/2012	7	32	19	26	3.64	N/A
			C02	5/2/2012	No	5/24/2012	7	44	19	32	4.50	N/A
			C03	5/2/2012	No	5/24/2012	7	65	60	63	8.93	N/A
MP 28.25 RDB	Oxbow	0.4 ft/mile	C01	5/2/2012	No	5/24/2012	22	31	57	44	2.00	0.01
			C02	5/2/2012	No	5/24/2012	6	10	10	10	1.67	N/A
			C03	5/2/2012	No	5/24/2012	6	13	13	13	2.17	N/A
MP 36.10 NW	Cut off channel	0.3 ft/mile	C01	5/8/2012	No	5/24/2012	13	50	50	50	3.85	N/A
			C02	5/8/2012	No	5/24/2012	13	51	57	54	4.15	N/A
			C03	5/8/2012	No	5/24/2012	13	44	31	38	2.88	N/A

Locations	Geomorphic Setting	Channel Gradient	CSD Identification Number	CSD Identification Number	Monitoring Round 4							
					Sample Jars Collected	Date Conducted	# of Days	Measured Sediment LDJ (mm)	Measured Sediment RDJ (mm)	Measured Sediment (mm)*	Sedimentation Rate (mm/day)	Amount of Water Above CSD (ft)
MP 10.75 LDB	Backwater	2.7 ft/mile	C01	5/2/2012	No	5/31/2012	21	22	22	22	1.05	N/A
			C02	5/2/2012	No	5/31/2012	21	22	22	22	1.05	N/A
			C03	6/13/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MP 14.75 RDB	Cut off channel	0.5 ft/mile	C01	5/1/2012	No	5/31/2012	20	107	101	104	5.20	N/A
			C02	5/1/2012	No	5/31/2012	15	31	50	41	2.70	N/A
			C03	5/1/2012	No	5/31/2012	20	31	36	34	1.68	N/A
MP 19.25 LDB	Cut off channel	0.6 ft/mile	C01	5/2/2012	No	5/31/2012	21	19	19	19	0.90	-0.25
			C02	5/2/2012	No	5/31/2012	21	50	50	50	2.38	-0.05
			C03	5/2/2012	No	5/31/2012	22			N/A	N/A	-0.30
			C04	5/2/2012	No	5/31/2012	22	51	51	51	2.32	N/A
			C05	5/2/2012	No	5/31/2012	22	76	70	73	3.32	No
MP 21.50 RDB	Oxbow	0.5 ft/mile	C01	5/2/2012	No	6/1/2012	15	50	50	50	3.33	N/A
			C02	5/2/2012	No	6/1/2012	15	63	50	57	3.77	N/A
			C03	5/2/2012	No	6/1/2012	15	76	38	57	3.80	N/A
MP 28.25 RDB	Oxbow	0.4 ft/mile	C01	5/2/2012	No	6/1/2012	30	31	57	44	1.47	-0.20
			C02	5/2/2012	No	6/1/2012	14	19	19	19	1.36	N/A
			C03	5/2/2012	No	6/1/2012	14	19	19	19	1.36	N/A
MP 36.10 NW	Cut off channel	0.3 ft/mile	C01	5/8/2012	No	5/30/2012	19	9	69	39	2.05	N/A
			C02	5/8/2012	No	5/30/2012	19	69	69	69	3.63	N/A
			C03	5/8/2012	No	5/30/2012	19	57	38	48	2.50	N/A

Locations	Geomorphic Setting	Channel Gradient	CSD Identification Number	CSD Identification Number	Monitoring Round 5										
					Sample Jars Collected	Date Conducted	# of Days	Measured Sediment LDJ (mm)	Measured Sediment RDJ (mm)	Measured Sediment (mm)*	Sedimentation Rate (mm/day)	Scour Observed	Amount of Water Above CSD if Tilting Observed (ft)		Amount of Water Above CSD (ft)
													LDJ/Up	RDJ/Down	
MP 10.75 LDB	Backwater	2.7 ft/mile	C01	5/2/2012	No	7/9/2012	60	38	35	37	0.61	No	N/A	N/A	0.25
			C02	5/2/2012	No	7/9/2012	60	18	22	20	0.33	No	N/A	N/A	0.50
			C03	6/13/2012	No	7/9/2012	26	10	19	15	0.56	No	N/A	N/A	1.00
MP 14.75 RDB	Cut off channel	0.5 ft/mile	C01	5/1/2012	Yes	7/11/2012	61	125	136	131	2.14	No	N/A	N/A	0.75
			C02	5/1/2012	Yes	7/11/2012	56	55	110	83	1.47	No	Observed by field crew		N/A
			C03	5/1/2012	Yes	7/11/2012	61	90	85	88	1.43	No	N/A	N/A	1.10
MP 19.25 LDB	Cut off channel	0.6 ft/mile	C01	5/2/2012	No	7/10/2012	61	14	19	16.5	0.27	No	N/A	N/A	-0.60
			C02	5/2/2012	No	7/10/2012	61	52	48	50	0.82	No	N/A	N/A	-0.25
			C03	5/2/2012	No	7/10/2012	62	4	6	5	0.08	No	N/A	N/A	-0.50
			C04	5/2/2012	Yes	7/10/2012	62	135	135	135	2.18	No	N/A	N/A	0.10
			C05	5/2/2012	Yes	7/10/2012	62	107	120	114	1.83	No	N/A	N/A	N/A
MP 21.50 RDB	Oxbow	0.5 ft/mile	C01	5/2/2012	Yes	7/12/2012	56	89	78	84	1.49	No	1.25	0.95	N/A
			C02	5/2/2012	Yes	7/12/2012	56	127	121	124	2.21	No	N/A	N/A	1.20
			C03	5/2/2012	Yes	7/12/2012	56	159	161	160	2.86	No	N/A	N/A	0.20
MP 28.25 RDB	Oxbow	0.4 ft/mile	C01	5/2/2012	No	7/13/2012	72	47	45	46	0.64	No	N/A	N/A	-0.80
			C02	5/2/2012	No	7/13/2012	56	50	50	50	0.89	No	N/A	N/A	0.05
			C03	5/2/2012	No	7/13/2012	56	47	59	53	0.95	No	0.05	0.15	N/A
MP 36.10 NW	Cut off channel	0.3 ft/mile	C01	5/8/2012	Yes	7/16/2012	66	107	106	107	1.61	No	0.90	1.05	N/A
			C02	5/8/2012	Yes	7/16/2012	66	111	106	109	1.64	Yes	0.75	0.80	N/A
			C03	5/8/2012	Yes	7/16/2012	66	149	131	140	2.12	No	0.75	1.00	N/A

Locations	Geomorphic Setting	Channel Gradient	CSD Identification Number	CSD Identification Number	Monitoring Round 6										
					Sample Jars Collected	Date Conducted	# of Days	Measured Sediment LDJ (mm)	Measured Sediment RDJ (mm)	Measured Sediment (mm)*	Sedimentation Rate (mm/day)	Scour Observed	Amount of Water Above CSD if Tilting Observed (ft)		Amount of Water Above CSD (ft)
													LDJ/Up	RDJ/Down	
MP 10.75 LDB	Backwater	2.7 ft/mile	C01	5/2/2012	No	8/13/2012	95	17	30	24	0.25	No	N/A	N/A	0.70
			C02	5/2/2012	No	8/13/2012	95	54	50	52	0.55	No	N/A	N/A	0.60
			C03	6/13/2012	Yes	8/13/2012	61	117	77	97	1.59	No	N/A	N/A	1.20
MP 14.75 RDB	Cut off channel	0.5 ft/mile	C01	5/1/2012	No	8/14/2012	34	70	50	60	1.76	No	N/A	N/A	1.00
			C02	5/1/2012	No	8/14/2012	34	60	80	70	2.06	No	N/A	N/A	1.90
			C03	5/1/2012	No	8/14/2012	34	40	50	45	1.32	No	N/A	N/A	1.40
MP 19.25 LDB	Cut off channel	0.6 ft/mile	C01	5/2/2012	No	8/15/2012	97	18	16	17	0.18	No	N/A	N/A	-0.50
			C02	5/2/2012	No	8/15/2012	97	50	70	60	0.62	No	N/A	N/A	-0.10
			C03	5/2/2012	No	8/15/2012	98	60	10	35	0.36	No	Broken Jar	N/A	-0.50
			C04	5/2/2012	No	8/15/2012	36	50	50	50	1.39	No	N/A	N/A	0.40
			C05	5/2/2012	No	8/15/2012	36	60	45	53	1.46	No	N/A	N/A	1.00
MP 21.50 RDB	Oxbow	0.5 ft/mile	C01	5/2/2012	Yes	8/17/2012	36	130	143	137	3.79	No	N/A	N/A	1.60
			C02	5/2/2012	Yes	8/17/2012	36	120	120	120	3.33	No	N/A	N/A	1.80
			C03	5/2/2012	Yes	8/16/2012	35	130	138	134	3.83	No	N/A	N/A	N/A
MP 28.25 RDB	Oxbow	0.4 ft/mile	C01	5/2/2012	No	8/16/2012	106	57	70	63.5	0.60	No	N/A	N/A	-0.30
			C02	5/2/2012	No	8/16/2012	90	67	75	71	0.79	No	N/A	N/A	0.60
			C03	5/2/2012	No	8/16/2012	90	55	65	60	0.67	No	Turned over on side		0.80
MP 36.10 NW	Cut off channel	0.3 ft/mile	C01	5/8/2012	Yes	8/21/2012	36	130	125	128	3.54	No	N/A	N/A	0.80
			C02	5/8/2012	Yes	8/21/2012	36	130	130	130	3.61	No	N/A	N/A	0.70
			C03	5/8/2012	Yes	8/21/2012	36	120	120	120	3.33	No	N/A	N/A	0.70

Locations	Geomorphic Setting	Channel Gradient	CSD Identification Number	CSD Identification Number	Monitoring Baseline/Round 7										
					Sample Jars Collected	Date Conducted	# of Days	Measured Sediment LDJ (mm)	Measured Sediment RDJ (mm)	Measured Sediment (mm)*	Sedimentation Rate (mm/day)	Scour Observed	Amount of Water Above CSD if Tilting Observed (ft)		Amount of Water Above CSD (ft)
													LDJ/Up	RDJ/Down	
MP 10.75 LDB	Backwater	2.7 ft/mile	C01	5/2/2012	No	9/14/2012	127	77	65	71	0.56	No	N/A	N/A	0.20
			C02	5/2/2012	No	9/14/2012	127	45	35	40	0.31	No	N/A	N/A	0.30
			C03	6/13/2012	Yes	9/14/2012	32	135	135	135	4.22	No	N/A	N/A	1.20
MP 14.75 RDB	Cut off channel	0.5 ft/mile	C01	5/1/2012	Yes	9/14/2012	65	105	85	95	1.46	No	N/A	N/A	0.60
			C02	5/1/2012	Yes	9/14/2012	65	115	135	125	1.92	No	N/A	N/A	1.40
			C03	5/1/2012	No	9/14/2012	65	60	110	85	1.31	No	N/A	N/A	1.20
MP 19.25 LDB	Cut off channel	0.6 ft/mile	C01	5/2/2012	No	9/14/2012	127	N/A	N/A	N/A	N/A	No	N/A	N/A	-0.60
			C02	5/2/2012	No	9/14/2012	127	N/A	N/A	N/A	N/A	No	N/A	N/A	-0.20
			C03	5/2/2012	No	9/14/2012	128	N/A	N/A	N/A	N/A	No	N/A	N/A	-0.50
			C04	5/2/2012	No	9/14/2012	66	70	70	70	1.06	No	N/A	N/A	0.10
			C05	5/2/2012	Yes	9/14/2012	66	92	90	91	1.38	No	N/A	N/A	0.80
MP 21.50 RDB	Oxbow	0.5 ft/mile	C01	5/2/2012	Yes	9/14/2012	28	130	120	125	4.46	No	N/A	N/A	1.30
			C02	5/2/2012	Yes	9/14/2012	28	115	117	116	4.14	No	N/A	N/A	1.40
			C03	5/2/2012	Yes	9/14/2012	29	120	135	128	4.40	No	N/A	N/A	0.40
MP 28.25 RDB	Oxbow	0.4 ft/mile	C01	5/2/2012	No	9/19/2012	140	N/A	N/A	N/A	N/A	No	N/A	N/A	-0.30
			C02	5/2/2012	Yes	9/19/2012	124	90	90	90	0.73	No	N/A	N/A	0.10
			C03	5/2/2012	Yes	9/19/2012	124	100	110	105	0.85	No	On side		N/A
MP 36.10 NW	Cut off channel	0.3 ft/mile	C01	5/8/2012	No	9/19/2012	29	75	65	70	2.41	No	N/A	N/A	0.80
			C02	5/8/2012	No	9/19/2012	29	71	65	68	2.34	No	N/A	N/A	0.60
			C03	5/8/2012	Yes	9/19/2012	29	70	65	68	2.33	No	N/A	N/A	0.60

Locations	Geomorphic Setting	Channel Gradient	CSD Identification Number	CSD Identification Number	Monitoring Round 8										
					Sample Jars Collected	Date Conducted	# of Days	Measured Sediment LDJ (mm)	Measured Sediment RDJ (mm)	Measured Sediment (mm)*	Sedimentation Rate (mm/day)	Scour Observed	Amount of Water Above CSD if Tilting Observed (ft)		Amount of Water Above CSD (ft)
													LDJ/Up	RDJ/Down	
MP 10.75 LDB	Backwater	2.7 ft/mile	C01	5/2/2012	Yes	10/8/2012	151	75	68	72	0.47	No	N/A	N/A	0.40
			C02	5/2/2012	No	10/8/2012	151	19	31	25	0.17	No	N/A	N/A	0.40
			C03	6/13/2012	No	10/8/2012	24	51	33	42	1.75	No	N/A	N/A	1.20
MP 14.75 RDB	Cut off channel	0.5 ft/mile	C01	5/1/2012	No	10/9/2012	25	29	28	29	1.14	No	0.55	0.75	N/A
			C02	5/1/2012	No	10/9/2012	25	27	26	27	1.06	No	N/A	N/A	1.40
			C03	5/1/2012	Yes	10/9/2012	90	75	85	80	0.89	No	N/A	N/A	1.10
MP 19.25 LDB	Cut off channel	0.6 ft/mile	C01	5/2/2012	No	10/9/2012	152	17	18	17.5	0.12	No	N/A	N/A	-0.60
			C02	5/2/2012	No	10/9/2012	152	43	51	47	0.31	No	N/A	N/A	-0.30
			C03	5/2/2012	No	10/9/2012	153	0	7	3.5	0.02	No	N/A	N/A	-0.40
			C04	5/2/2012	Yes	10/9/2012	91	81	71	76	0.84	No	N/A	N/A	0.20
			C05	5/2/2012	No	10/9/2012	25	17	21	19	0.76	No	N/A	N/A	0.80
MP 21.50 RDB	Oxbow	0.5 ft/mile	C01	5/2/2012	No	10/9/2012	25	46	52	49	1.96	No	N/A	N/A	1.40
			C02	5/2/2012	No	10/9/2012	25	60	46	53	2.12	No	N/A	N/A	1.40
			C03	5/2/2012	No	10/9/2012	25	56	45	51	2.02	No	0.60	0.50	N/A
MP 28.25 RDB	Oxbow	0.4 ft/mile	C01	5/2/2012	No	10/11/2012	162	46	64	55	0.34	No	N/A	N/A	-0.50
			C02	5/2/2012	No	10/11/2012	22	11	10	11	0.48	No	N/A	N/A	0.30
			C03	5/2/2012	No	10/11/2012	22	19	17	18	0.82	No	0.30	0.55	N/A
MP 36.10 NW	Cut off channel	0.3 ft/mile	C01	5/8/2012	No	10/10/2012	50	51	57	54	1.08	No	N/A	N/A	0.80
			C02	5/8/2012	No	10/10/2012	50	48	51	50	0.99	No	0.85	0.75	N/A
			C03	5/8/2012	No	10/10/2012	21	16	17	17	0.79	No	N/A	N/A	0.80

Locations	Geomorphic Setting	Channel Gradient	CSD Identification Number	CSD Identification Number	Monitoring Round 9										
					Sample Jars Collected	Date Conducted	# of Days	Measured Sediment LDJ (mm)	Measured Sediment RDJ (mm)	Measured Sediment (mm)*	Sedimentation Rate in CSD (mm/day)	Scour Observed	Amount of Water Above CSD if Tilting Observed (ft)		Amount of Water Above CSD (ft)
													LDJ/Up	RDJ/Down	
MP 10.75 LDB	Backwater	2.7 ft/mile	C01	5/2/2012	No	11/5/2012	28	51	61	56	2.00	No	Observed No Measurement		1.20
			C02	5/2/2012	No	11/5/2012	179	19	42	30.5	0.17	No	0.60	0.50	N/A
			C03	6/13/2012	No	11/5/2012	52	24	20	22	0.42	No	0.40	0.50	N/A
MP 14.75 RDB	Cut off channel	0.5 ft/mile	C01	5/1/2012	Yes	11/6/2012	53	76	70	73	1.38	No	0.65	0.80	N/A
			C02	5/1/2012	No	11/6/2012	53	58	60	59	1.11	No	N/A	N/A	1.95
			C03	5/1/2012	No	11/6/2012	28	35	30	32.5	1.16	No	N/A	N/A	1.20
MP 19.25 LDB	Cut off channel	0.6 ft/mile	C01	5/2/2012	No	11/9/2012	183	16	15	15.5	0.08	No	-0.50	-0.40	N/A
			C02	5/2/2012	No	11/9/2012	183	50	55	52.5	0.29	No	-0.10	-0.20	N/A
			C03	5/2/2012	No	11/9/2012	184	5	5	5	0.03	No	N/A	N/A	-0.30
			C04	5/2/2012	No	11/9/2012	31	Trace	Trace	0	0.00	No	0.30	0.40	N/A
			C05	5/2/2012	No	11/9/2012	56	27	29	28	0.50	No	N/A	N/A	0.90
MP 21.50 RDB	Oxbow	0.5 ft/mile	C01	5/2/2012	Yes	11/6/2012	53	135	137	136	2.57	No	N/A	N/A	1.70
			C02	5/2/2012	Yes	11/6/2012	53	113	137	125	2.36	No	Dragged by large log on side		1.60
			C03	5/2/2012	Yes	11/6/2012	53	88	75	81.5	1.54	No	N/A	N/A	1.00
MP 28.25 RDB	Oxbow	0.4 ft/mile	C01	5/2/2012	No	11/6/2012	188	48	68	58	0.31	No	N/A	N/A	-0.20
			C02	5/2/2012	No	11/6/2012	48	60	42	51	1.06	No	N/A	N/A	0.70
			C03	5/2/2012	No	11/6/2012	48	32	25	28.5	0.59	No	N/A	N/A	0.70
MP 36.10 NW	Cut off channel	0.3 ft/mile	C01	5/8/2012	No	11/1/2012	72	75	90	82.5	1.15	No	N/A	N/A	1.00
			C02	5/8/2012	No	11/1/2012	72	80	80	80	1.11	No	N/A	N/A	1.00
			C03	5/8/2012	No	11/1/2012	43	20	45	32.5	0.76	No	N/A	N/A	0.90

Locations	Geomorphic Setting	Channel Gradient	CSD Identification Number	CSD Identification Number	Monitoring Round 10										
					Sample Jars Collected	Date Conducted	# of Days	Measured Sediment LDJ (mm)	Measured Sediment RDJ (mm)	Measured Sediment (mm)*	Sedimentation Rate in CSD (mm/day)	Scour Observed	Amount of Water Above CSD if Tilting Observed (ft)		Amount of Water Above CSD (ft)
													LDJ/Up	RDJ/Down	
MP 10.75 LDB	Backwater	2.7 ft/mile	C01	5/2/2012	Yes/Hold	12/10/2012	35	39	45	42	1.20	No			0.55
			C02	5/2/2012	Yes/Hold	12/10/2012	214	26	53	39.5	0.18	No			0.70
			C03	6/13/2012	Yes/Hold	12/10/2012	87	92	90	91	1.05	No			1.35
MP 14.75 RDB	Cut off channel	0.5 ft/mile	C01	5/1/2012	Yes/Hold	12/10/2012	34	30	30	30	0.88	No	0.90	1.00	
			C02	5/1/2012	Yes/Hold/Partial	12/10/2012	87	74	60	67	0.77	No	1.75	1.60	
			C03	5/1/2012	Yes/Hold	12/10/2012	62	25	30	27.5	0.44	No	1.85	1.60	
MP 19.25 LDB	Cut off channel	0.6 ft/mile	C01	5/2/2012	Yes/Hold/Partial	12/11/2012	215	0	20	10	0.05	No			-0.30
			C02	5/2/2012	Yes/Hold	12/11/2012	215	58	61	59.5	0.28	No			0.10
			C03	5/2/2012	No	12/11/2012	216	10	12	11	0.05	No			-0.30
			C04	5/2/2012	Yes/Hold	12/11/2012	63	70	70	70	1.11	No			0.60
			C05	5/2/2012	Yes/Hold	12/11/2012	88	35	50	42.5	0.48	No			1.10
MP 21.50 RDB	Oxbow	0.5 ft/mile	C01	5/2/2012	Yes/Hold	12/11/2012	35	115	100	107.5	3.07	No	1.95	1.80	
			C02	5/2/2012	Yes/Hold	12/11/2012	35	65	67	66	1.89	No	2.00	1.95	
			C03	5/2/2012	Yes/Hold	12/11/2012	35	60	50	55	1.57	No			1.20
MP 28.25 RDB	Oxbow	0.4 ft/mile	C01	5/2/2012	Yes/Hold	12/12/2012	224	88	75	81.5	0.36	No	0.05	0.15	
			C02	5/2/2012	Yes/Hold	12/12/2012	84	74	99	86.5	1.03	Yes	0.80	1.10	
			C03	5/2/2012	Yes/Hold	12/12/2012	84	31	38	34.5	0.41	No	0.70	0.80	
MP 36.10 NW	Cut off channel	0.3 ft/mile	C01	5/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			C02	5/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			C03	5/8/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Locations:	Geomorphic Setting	Channel Gradient	CSD Identification Number	CSD Identification Number	Date Installed	Monitoring Round 7										
						Sample Jars Collected	Date Conducted	# of Days	Measured Sediment LDJ (mm)	Measured Sediment RDJ (mm)	Measured Sediment (mm)*	Sedimentation Rate (mm/day)	Scour Observed	Amount of Water Above CSD if Tilting Observed (ft)		Amount of Water Above CSD (ft)
														LDJ/Up	RDJ/Down	
Ceresco/MP 5.75	Impoundment	0.0 ft/mile	9/12/2012	C01	No Access	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				C02	9/13/2012	No	9/25/2012	12	30	40	35	2.92	No			1.00
				C03	9/13/2012	No	9/25/2012	12	45	30	37.5	3.13	No			1.00
				C04	No Access	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				C05	No Access	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MP 10.40 N	Backwater (downstream side of point bar)	3.3 ft/mile	9/13/2012	C01	9/18/2012	No	9/28/2012	10	20	15	17.5	1.75	No			-0.05
				C02	9/18/2012	No	9/28/2012	10	12	2	7	0.70	No			-0.25
				C03	9/18/2012	No	9/28/2012	10	18	50	34	3.40	No			0.55
MP 10.50 L2	Backwater	3.3 ft/mile	9/14/2012	C01	9/18/2012	No	9/28/2012	10	45	43	44	4.40	No			0.10
				C02	9/18/2012	Yes	9/28/2012	10	100	108	104	10.40	No	Level with Sediment		0.60
				C03	9/18/2012	No	9/28/2012	10	0	0	0	0.00	No			-0.30
				C04	9/18/2012	No	9/28/2012	10	0	0	0	0.00	No			-0.60
				C05	9/18/2012	No	9/28/2012	10	23	15	19	1.90	No			0.10
MP 26.00 RDB	Backwater (downstream side of point bar)	1.4 ft/mile	9/11/2012	C01	9/12/2012	No	9/27/2012	15			N/A	0.00	No			-0.80
				C02	9/12/2012	No	9/27/2012	15			N/A	0.00	No			-0.20
				C03	9/12/2012	No	9/27/2012	15			N/A	0.00	No			-0.80
				C04	9/12/2012	No	9/27/2012	15			N/A	N/A	No			N/A
				C05	9/12/2012	No	9/27/2012	15			N/A	N/A	No			N/A
MP 30.80 LDB	Backwater (downstream side of point bar)	1.4 ft/mile	9/17/2012	C01	9/18/2012	No	9/28/2012	10			N/A	N/A	No			N/A
				C02	9/18/2012	No	9/28/2012	10			N/A	N/A	No			N/A
				C03	9/18/2012	No	9/28/2012	10			N/A	N/A	No			N/A
				C04	9/18/2012	No	9/28/2012	10			N/A	N/A	No			N/A
				C05	9/18/2012	No	9/28/2012	10			N/A	N/A	No			N/A
MP 33.00 A	Backwater (downstream side of point bar)	0.2 ft/mile	9/6/2012	C01	9/10/2012	No	9/24/2012	14	45	53	49	3.50	No			0.60
				C02	9/10/2012	No	9/24/2012	14	0	0	0	0.00	No			-0.20
				C03	9/10/2012	No	9/24/2012	14	50	65	57.5	4.11	No			0.90
				C04	9/10/2012	No	9/24/2012	14	58	58	58	4.14	No			0.50
				C05	9/10/2012	No	9/24/2012	14	25	28	26.5	1.89	No			0.30
MP 33.00 B	Backwater (downstream side of point bar)	0.2 ft/mile	9/14/2012	C01	9/18/2012	No	10/1/2012	13	0	0	0	0.00	No			-0.80
				C02	9/18/2012	No	10/1/2012	13	0	0	0	0.00	No			-0.50
				C03	9/18/2012	No	10/1/2012	13	27.5	27.5	27.5	2.12	No			0.40
				C04	9/18/2012	No	10/1/2012	13	22.5	22.5	22.5	1.73	No			1.40
				C05	9/18/2012	No	10/1/2012	13	37.5	32.7	35.1	2.70	No			2.50
Delta A/MP 36.75	Delta distributary channel	0.0 ft/mile	9/7/2012	C01	9/10/2012	No	9/25/2012	15	20	35	27.5	1.83	Yes			0.40
				C02	9/10/2012	No	9/25/2012	15	0	25	12.5	0.83	No			0.50
				C03	9/10/2012	No	9/25/2012	15	65	34	49.5	3.30	No	0.60	0.25	
				C04	9/10/2012	Yes	9/25/2012	15	127	110	118.5	7.90	Yes			N/A
				C05	9/10/2012	No	9/25/2012	15	37	28	32.5	2.17	No			N/A

Locations:	Geomorphic Setting	Channel Gradient	CSD Identification Number	CSD Identification Number	Date Installed	Monitoring Round 7									
						Sample Jars Collected	Date Conducted	# of Days	Measured Sediment LDJ (mm)	Measured Sediment RDJ (mm)	Measured Sediment (mm)*	Sedimentation Rate (mm/day)	Scour Observed	Amount of Water Above CSD if Tilting Observed (ft)		Amount of Water Above CSD (ft)
														LDJ/Up	RDJ/Down	
Delta Z/MP 37.50	Delta	0.0 ft/mile	9/19/2012	C01	9/20/2012	No	10/4/2012	14	35	42	38.5	2.75	No	Observed by field crew		0.20
				C02	9/20/2012	No	10/5/2012	15	42	35	38.5	2.57	No			0.10
				C03	9/20/2012	No	10/5/2012	15	13	10	11.5	0.77	No	Observed by field crew		-0.05
				C04	9/20/2012	No	10/5/2012	15	27	24	25.5	1.70	No			0.30
				C05	9/20/2012	No	10/5/2012	15	40	33	36.5	2.43	No	Observed by field crew		0.90
				C06	9/20/2012	No	10/5/2012	15	10	8	9	0.60	No			-0.05
				C07	9/20/2012	No	10/4/2012	14	10	9	9.5	0.68	No			-0.15
				C08	9/20/2012	No	10/4/2012	14	35	35	35	2.50	No	Observed by field crew		0.40
				C09	9/20/2012	Yes	10/2/2012	12	75	78	76.5	6.38	No			0.70
				C10	9/20/2012	No	10/2/2012	12	30	33	31.5	2.63	No			0.40
37.75 Islands	Delta	0.0 ft/mile	9/19/2012	C01	9/20/2012	No	10/3/2012	13	10	10	10	0.77	No			0.20
				C02	9/20/2012	No	10/3/2012	13	27	35	31	2.38	No			0.30
				C03	9/20/2012	No	10/3/2012	13	0	0	0	0.00	No			-0.80
				C04	9/20/2012	No	10/3/2012	13	50	47	48.5	3.73	No			1.20
				C05	9/20/2012	No	10/3/2012	13	60	60	60	4.62	No			2.10
OB 11.79 LDB	Flood plain	Unknown	9/21/2012	C01	9/13/2012	No	9/28/2012	15	0	0	0	0.00	No			-0.80
				C02	9/13/2012	No	9/28/2012	15	0	0	0	0.00	No			-0.80
				C03	9/13/2012	No	9/28/2012	15	0	0	0	0.00	No			-0.80

Locations:	Geomorphic Setting	Channel Gradient	CSD Identification Number	CSD Identification Number	Date Installed	Monitoring Round 8										
						Sample Jars Collected	Date Conducted	# of Days	Measured Sediment LDJ (mm)	Measured Sediment RDJ (mm)	Measured Sediment (mm)*	Sedimentation Rate (mm/day)	Scour Observed	Amount of Water Above CSD if Tilting Observed (ft)		Amount of Water Above CSD (ft)
														LDJ/Up	RDJ/Down	
Ceresco/MP 5.75	Impoundment	0.0 ft/mile	9/12/2012	C01	No Access	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				C02	9/13/2012	No	10/8/2012	25	26	42	34	1.36	No			0.90
				C03	9/13/2012	No	10/8/2012	25	55	46	50.5	2.02	No	0.70	0.85	
				C04	No Access	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				C05	No Access	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MP 10.40 N	Backwater (downstream side of point bar)	3.3 ft/mile	9/13/2012	C01	9/18/2012	No	10/8/2012	20	19	10	14.5	0.73	No			0.05
				C02	9/18/2012	No	10/8/2012	20	11	20	15.5	0.78	No			-0.10
				C03	9/18/2012	No	10/8/2012	20	27	36	31.5	1.58	No	0.85	0.70	
MP 10.50 L2	Backwater	3.3 ft/mile	9/14/2012	C01	9/18/2012	No	10/8/2012	20	30	28	29	1.45	No			0.10
				C02	9/18/2012	Yes	10/8/2012	10	90	68	79	7.90	No	0.10	0.20	
				C03	9/18/2012	No	10/8/2012	20	0	0	0	0.00	No			-0.20
				C04	9/18/2012	No	10/8/2012	20	0	0	0	0.00	No			-0.60
				C05	9/18/2012	No	10/8/2012	20	30	24	27	1.35	No			0.10
MP 26.00 RDB	Backwater (downstream side of point bar)	1.4 ft/mile	9/11/2012	C01	9/12/2012	No	10/11/2012	29	0	0	0	0.00	No			-0.80
				C02	9/12/2012	No	10/11/2012	29	29	24	26.5	0.91	Yes			0.20
				C03	9/12/2012	No	10/11/2012	29	0	0	0	0.00	No			-0.80
				C04	9/12/2012	No	10/11/2012	29	47	44	45.5	1.57	Yes			0.40
				C05	9/12/2012	No	10/11/2012	29	44	51	47.5	1.64	No			0.40
MP 30.80 LDB	Backwater (downstream side of point bar)	1.4 ft/mile	9/17/2012	C01	9/18/2012	No	10/15/2012	27	11	10	10.5	0.39	No			0.60
				C02	9/18/2012	No	10/15/2012	27	18	19	18.5	0.69	No			0.70
				C03	9/18/2012	No	10/15/2012	27	29	41	35	1.30	No			1.30
				C04	9/18/2012	No	10/15/2012	27	24	18	21	0.78	No			1.10
				C05	9/18/2012	No	10/15/2012	27	1	2	1.5	0.06	No			0.60
MP 33.00 A	Backwater (downstream side of point bar)	0.2 ft/mile	9/6/2012	C01	9/10/2012	No	10/12/2012	32	55	64	59.5	1.86	No	0.80	0.60	
				C02	9/10/2012	No	10/12/2012	32	0	0	0	0.00	No			-0.20
				C03	9/10/2012	No	10/12/2012	32	52	65	58.5	1.83	No	0.85	0.75	
				C04	9/10/2012	No	10/12/2012	32	71	65	68	2.13	No	Observed by field crew		
				C05	9/10/2012	No	10/12/2012	32	19	19	19	0.59	No	0.50	0.20	
MP 33.00 B	Backwater (downstream side of point bar)	0.2 ft/mile	9/14/2012	C01	9/18/2012	No	10/15/2012	27	0	0	0	0.00	No			-0.80
				C02	9/18/2012	No	10/15/2012	27	13	13	13	0.48	No	-0.35	-0.50	
				C03	9/18/2012	No	10/15/2012	27	30	22	26	0.96	No	1.40	1.70	
				C04	9/18/2012	No	10/15/2012	27	21	20	20.5	0.76	No			1.40
				C05	9/18/2012	No	10/15/2012	27	49	24	36.5	1.35	No			2.50
Delta A/MP 36.75	Delta distributary channel	0.0 ft/mile	9/7/2012	C01	9/10/2012	No	10/10/2012	30	10	51	30.5	1.02	No	0.50	0.60	
				C02	9/10/2012	No	10/10/2012	30	18	54	36	1.20	No			0.50
				C03	9/10/2012	Yes	10/10/2012	30	101	60	80.5	2.68	No	0.75	0.65	
				C04	9/10/2012	Yes	10/10/2012	15	96	95	95.5	6.37	No	1.05	0.90	
				C05	9/10/2012	No	10/10/2012	30	29	53	41	1.37	No			1.80

Locations:	Geomorphic Setting	Channel Gradient	CSD Identification Number	CSD Identification Number	Date Installed	Monitoring Round 8									
						Sample Jars Collected	Date Conducted	# of Days	Measured Sediment LDJ (mm)	Measured Sediment RDJ (mm)	Measured Sediment (mm)*	Sedimentation Rate (mm/day)	Scour Observed	Amount of Water Above CSD if Tilting Observed (ft)		Amount of Water Above CSD (ft)
														LDJ/Up	RDJ/Down	
Delta Z/MP 37.50	Delta	0.0 ft/mile	9/19/2012	C01	9/20/2012	No	10/16/2012	26	42	59	50.5	1.94	Yes	0.30	0.10	
				C02	9/20/2012	No	10/16/2012	26	41	54	47.5	1.83	No	0.15	0.01	
				C03	9/20/2012	Yes	10/16/2012	26	93	80	86.5	3.33	No			-0.10
				C04	9/20/2012	No	10/16/2012	26	41	51	46	1.77	No			0.20
				C05	9/20/2012	No	10/16/2012	26	43	32	37.5	1.44	No			0.80
				C06	9/20/2012	No	10/16/2012	26	15	9	12	0.46	No			-0.10
				C07	9/20/2012	No	10/16/2012	26	18	16	17	0.65	Yes			-0.20
				C08	9/20/2012	No	10/16/2012	26	31	26	28.5	1.10	Yes			0.40
				C09	9/20/2012	No	10/16/2012	14	29	28	28.5	2.04	Yes	0.65	0.50	
				C10	9/20/2012	No	10/16/2012	26	21	42	31.5	1.21	Yes			0.30
37.75 Islands	Delta	0.0 ft/mile	9/19/2012	C01	9/20/2012	No	10/16/2012	26	28	24	26	1.00	No			0.10
				C02	9/20/2012	No	10/16/2012	26	55	62	58.5	2.25	No			0.40
				C03	9/20/2012	No	10/16/2012	26	0	0	0	0.00	No			-0.40
				C04	9/20/2012	No	10/16/2012	26	65	68	66.5	2.56	No			1.00
				C05	9/20/2012	Yes	10/16/2012	26	88	88	88	3.38	No			1.80
OB 11.79 LDB	Flood plain	Unknown	9/21/2012	C01	9/13/2012	No	10/12/2012	29	0	0	0	0.00	No			-0.40
				C02	9/13/2012	No	10/12/2012	29	0	0	0	0.00	No			-0.80
				C03	9/13/2012	No	10/12/2012	29	0	0	0	0.00	No			-0.80

Locations:	Geomorphic Setting	Channel Gradient	CSD Identification Number	CSD Identification Number	Date Installed	Monitoring Round 9										
						Sample Jars Collected	Date Conducted	# of Days	Measured Sediment LDJ (mm)	Measured Sediment RDJ (mm)	Measured Sediment (mm)*	Sedimentation Rate in CSD (mm/day)	Scour Observed	Amount of Water Above CSD if Tilting Observed (ft)		Amount of Water Above CSD (ft)
														LDJ/Up	RDJ/Down	
Ceresco/MP 5.75	Impoundment	0.0 ft/mile	9/12/2012	C01	No Access	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				C02	9/13/2012	No	11/5/2012	53	31	40	35.5	0.67	No			1.15
				C03	9/13/2012	No	11/5/2012	53	78	44	61	1.15	No	0.90	1.00	
				C04	No Access	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				C05	No Access	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MP 10.40 N	Backwater (downstream side of point bar)	3.3 ft/mile	9/13/2012	C01	9/18/2012	No	11/5/2012	48	19	27	23	0.48	No			0.10
				C02	9/18/2012	No	11/5/2012	48	26	29	27.5	0.57	No			0.00
				C03	9/18/2012	No	11/5/2012	48	26	36	31	0.65	No	0.90	0.75	
MP 10.50 L2	Backwater	3.3 ft/mile	9/14/2012	C01	9/18/2012	No	11/5/2012	48	31	27	29	0.60	No			0.70
				C02	9/18/2012	No	11/5/2012	28	32	32	32	1.14	No			0.20
				C03	9/18/2012	No	11/5/2012	48	7	6	6.5	0.14	No			-0.10
				C04	9/18/2012	No	11/5/2012	48	7	8	7.5	0.16	No			-0.30
				C05	9/18/2012	No	11/5/2012	48	20	13	16.5	0.34	No	0.20	0.30	
MP 26.00 RDB	Backwater (downstream side of point bar)	1.4 ft/mile	9/11/2012	C01	9/12/2012	No	11/6/2012	55	0	0	0	0.00	No			-0.80
				C02	9/12/2012	No	11/6/2012	55	42	60	51	0.93	No			0.55
				C03	9/12/2012	No	11/6/2012	55	0	0	0	0.00	No			-0.80
				C04	9/12/2012	Yes	11/6/2012	55	125	112	118.5	2.15	Yes			0.80
				C05	9/12/2012	Yes	11/6/2012	55	75	84	79.5	1.45	No			4.70
MP 30.80 LDB	Backwater (downstream side of point bar)	1.4 ft/mile	9/17/2012	C01	9/18/2012	No	11/7/2012	50	37	37	37	0.74	No	0.00	-0.10	
				C02	9/18/2012	Yes	11/7/2012	50	165	121	143	2.86	No	0.20	0.10	
				C03	9/18/2012	Yes	11/7/2012	50	76	72	74	1.48	No	0.40	0.30	
				C04	9/18/2012	Yes	11/7/2012	50	85	85	85	1.70	No	0.30	0.50	
				C05	9/18/2012	No	11/7/2012	50	14	19	16.5	0.33	No			0.50
MP 33.00 A	Backwater (downstream side of point bar)	0.2 ft/mile	9/6/2012	C01	9/10/2012	Yes	11/7/2012	58	122	126	124	2.14	No	1.00	0.80	
				C02	9/10/2012	Yes	11/7/2012	58	96	88	92	1.59	No	-0.10	-0.20	
				C03	9/10/2012	Yes	11/7/2012	58	82	80	81	1.40	Yes	1.00	0.90	
				C04	9/10/2012	Yes	11/7/2012	58	106	96	101	1.74	No			0.50
				C05	9/10/2012	No	11/7/2012	58	52	50	51	0.88	No	0.50	0.40	
MP 33.00 B	Backwater (downstream side of point bar)	0.2 ft/mile	9/14/2012	C01	9/18/2012	No	11/7/2012	50	0	0	0	0.00	No			-0.80
				C02	9/18/2012	No	11/7/2012	50	22	24	23	0.46	No			-0.15
				C03	9/18/2012	Yes	11/7/2012	50	140	160	150	3.00	No	1.20	1.00	
				C04	9/18/2012	Yes	11/7/2012	50	51	69	60	1.20	No			2.40
				C05	9/18/2012	Yes	11/7/2012	50	120	117	118.5	2.37	No			2.80
Delta A/MP 36.75	Delta distributary channel	0.0 ft/mile	9/7/2012	C01	9/10/2012	Yes	11/8/2012	59	64	99	81.5	1.38	Yes	0.50	0.60	
				C02	9/10/2012	Yes	11/8/2012	59	85	99	92	1.56	Yes	0.60	0.70	
				C03	9/10/2012	No	11/8/2012	29	60	70	65	2.24	Yes			0.70
				C04	9/10/2012	Yes	11/8/2012	29	174	174	174	6.00	Yes	0.90	1.10	
				C05	9/10/2012	Yes	11/8/2012	59	98	71	84.5	1.43	Yes			0.65

Locations:	Geomorphic Setting	Channel Gradient	CSD Identification Number	CSD Identification Number	Date Installed	Monitoring Round 9										
						Sample Jars Collected	Date Conducted	# of Days	Measured Sediment LDJ (mm)	Measured Sediment RDJ (mm)	Measured Sediment (mm)*	Sedimentation Rate in CSD (mm/day)	Scour Observed	Amount of Water Above CSD if Tilting Observed (ft)		Amount of Water Above CSD (ft)
														LDJ/Up	RDJ/Down	
Delta Z/MP 37.50	Delta	0.0 ft/mile	9/19/2012	C01	9/20/2012	Yes	11/8/2012	49	122	111	116.5	2.38	Yes	0.40	0.30	
				C02	9/20/2012	Yes	11/8/2012	49	75	72	73.5	1.50	No			0.15
				C03	9/20/2012	No	11/8/2012	23	21	23	22	0.96	No			0.00
				C04	9/20/2012	No	11/8/2012	49	65	62	63.5	1.30	No			0.30
				C05	9/20/2012	Yes	11/8/2012	49	104	66	85	1.73	Yes	Observation only no measurement		1.00
				C06	9/20/2012	No	11/8/2012	49	0	0	0	0.00	Yes			0.00
				C07	9/20/2012	No	11/8/2012	49	28	19	23.5	0.48	Yes			-0.10
				C08	9/20/2012	No	11/8/2012	49	54	39	46.5	0.95	Yes			0.45
				C09	9/20/2012	No	11/8/2012	37	8	76	42	1.14	Yes			0.60
				C10	9/20/2012	No	11/8/2012	49	76	66	71	1.45	Yes			0.30
37.75 Islands	Delta	0.0 ft/mile	9/19/2012	C01	9/20/2012	No	11/8/2012	49	20	30	25	0.51	No			0.30
				C02	9/20/2012	Yes	11/8/2012	49	70	81	75.5	1.54	Yes			0.60
				C03	9/20/2012	No	11/8/2012	49	0	0	0	0.00	No			-0.30
				C04	9/20/2012	Yes	11/8/2012	49	108	89	98.5	2.01	No	1.30	1.20	
				C05	9/20/2012	No	11/8/2012	23	45	42	43.5	1.89	No			1.80
OB 11.79 LDB	Flood plain	Unknown	9/21/2012	C01	9/13/2012	No	11/5/2012	53	0	0	0	0.00	No			0.45
				C02	9/13/2012	No	11/5/2012	53	0	0	0	0.00	No			-0.80
				C03	9/13/2012	No	11/5/2012	53	0	0	0	0.00	No			-0.80

Locations:	Geomorphic Setting	Channel Gradient	CSD Identification Number	CSD Identification Number	Date Installed	Sampling Pre-Removal of E 4.0 Containment System										
						Sample Jars Collected	Date Conducted	# of Days	Measured Sediment LDJ (mm)	Measured Sediment RDJ (mm)	Amount of Water Above CSD if Tilting Observed (ft)	Sedimentation Rate in CSD (mm/day)	Scour Observed	Amount of Water Above CSD if Tilting Observed (ft)		Amount of Water Above CSD (ft)
														LDJ/Up	RDJ/Down	
Ceresco/MP 5.75	Impoundment	0.0 ft/mile	9/12/2012	C01	No Access	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				C02	9/13/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				C03	9/13/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				C04	No Access	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				C05	No Access	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MP 10.40 N	Backwater (downstream side of point bar)	3.3 ft/mile	9/13/2012	C01	9/18/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				C02	9/18/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				C03	9/18/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MP 10.50 L2	Backwater	3.3 ft/mile	9/14/2012	C01	9/18/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				C02	9/18/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				C03	9/18/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				C04	9/18/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				C05	9/18/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MP 26.00 RDB	Backwater (downstream side of point bar)	1.4 ft/mile	9/11/2012	C01	9/12/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				C02	9/12/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				C03	9/12/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				C04	9/12/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				C05	9/12/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MP 30.80 LDB	Backwater (downstream side of point bar)	1.4 ft/mile	9/17/2012	C01	9/18/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				C02	9/18/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				C03	9/18/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				C04	9/18/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				C05	9/18/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MP 33.00 A	Backwater (downstream side of point bar)	0.2 ft/mile	9/6/2012	C01	9/10/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				C02	9/10/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				C03	9/10/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				C04	9/10/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				C05	9/10/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MP 33.00 B	Backwater (downstream side of point bar)	0.2 ft/mile	9/14/2012	C01	9/18/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				C02	9/18/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				C03	9/18/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				C04	9/18/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				C05	9/18/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Delta A/MP 36.75	Delta distributary channel	0.0 ft/mile	9/7/2012	C01	9/10/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				C02	9/10/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				C03	9/10/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				C04	9/10/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				C05	9/10/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Locations:	Geomorphic Setting	Channel Gradient	CSD Identification Number	CSD Identification Number	Date Installed	Sampling Pre-Removal of E 4.0 Containment System										
						Sample Jars Collected	Date Conducted	# of Days	Measured Sediment LDJ (mm)	Measured Sediment RDJ (mm)	Amount of Water Above CSD if Tilting Observed (ft)	Sedimentation Rate in CSD (mm/day)	Scour Observed	Amount of Water Above CSD if Tilting Observed (ft)		Amount of Water Above CSD (ft)
														LDJ/Up	RDJ/Down	
Delta Z/MP 37.50	Delta	0.0 ft/mile	9/19/2012	C01	9/20/2012	Yes	11/17/2012	9	35	41	38	4.22	N/A	N/A	N/A	N/A
				C02	9/20/2012	Yes	11/17/2012	9	21	26	23.5	2.61	N/A	N/A	N/A	N/A
				C03	9/20/2012	Yes	11/17/2012	32	55	46	50.5	1.58	N/A	N/A	N/A	N/A
				C04	9/20/2012	Yes	11/17/2012	58	82	78	80	1.38	N/A	N/A	N/A	N/A
				C05	9/20/2012	Yes	11/17/2012	9	26	28	27	3.00	N/A	N/A	N/A	N/A
				C06	9/20/2012	Yes	11/17/2012	58	13	13	13	0.22	N/A	N/A	N/A	N/A
				C07	9/20/2012	Yes	11/17/2012	58	33	26	29.5	0.51	N/A	N/A	N/A	N/A
				C08	9/20/2012	Yes	11/17/2012	58	55	65	60	1.03	N/A	N/A	N/A	N/A
				C09	9/20/2012	Yes	11/17/2012	46	15	105	60	1.30	N/A	N/A	N/A	N/A
				C10	9/20/2012	Yes	11/17/2012	58	77	99	88	1.52	N/A	N/A	N/A	N/A
37.75 Islands	Delta	0.0 ft/mile	9/19/2012	C01	9/20/2012	Yes	11/17/2012	58	31	35	33	0.57	N/A	N/A	N/A	N/A
				C02	9/20/2012	Yes	11/17/2012	9	27	32	29.5	3.28	N/A	N/A	N/A	N/A
				C03	9/20/2012	No	11/17/2012	58	0	0	0	0.00	N/A	N/A	N/A	N/A
				C04	9/20/2012	Yes	11/17/2012	9	27	30	28.5	3.17	N/A	N/A	N/A	N/A
				C05	9/20/2012	Yes	11/17/2012	32	61	45	53	1.66	N/A	N/A	N/A	N/A
OB 11.79 LDB	Flood plain	Unknown	9/21/2012	C01	9/13/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				C02	9/13/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				C03	9/13/2012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Locations:	Geomorphic Setting	Channel Gradient	CSD Identification Number	CSD Identification Number	Date Installed	Monitoring Round 10										
						Sample Jars Collected	Date Conducted	# of Days	Measured Sediment LDJ (mm)	Measured Sediment RDJ (mm)	Measured Sediment (mm)*	Sedimentation Rate in CSD (mm/day)	Scour Observed	Amount of Water Above CSD if Tilting Observed (ft)		Amount of Water Above CSD (ft)
														LDJ/Up	RDJ/Down	
Ceresco/MP 5.75	Impoundment	0.0 ft/mile	9/12/2012	C01	No Access	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				C02	9/13/2012	Yes/Hold	12/11/2012	89	75	82	78.5	0.88	No	1.40	1.30	
				C03	9/13/2012	Yes/Hold	12/11/2012	89	107	75	91	1.02	No	1.10	1.00	
				C04	No Access	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				C05	No Access	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MP 10.40 N	Backwater (downstream side of point bar)	3.3 ft/mile	9/13/2012	C01	9/18/2012	Yes/Hold	12/10/2012	83	85	104	94.5	1.14	No			0.30
				C02	9/18/2012	Yes/Hold	12/10/2012	83	60	68	64	0.77	No			0.20
				C03	9/18/2012	Yes/Hold	12/10/2012	83	55	52	53.5	0.64	No			0.30
MP 10.50 L2	Backwater	3.3 ft/mile	9/14/2012	C01	9/18/2012	Yes/Hold	12/10/2012	83	40	80	60	0.72	No			0.50
				C02	9/18/2012	Yes/Hold	12/10/2012	35	70	45	57.5	1.64	No	1.05	0.85	
				C03	9/18/2012	Yes/Hold	12/10/2012	83	10	21	15.5	0.19	No			0.10
				C04	9/18/2012	Yes/Hold/Partial	12/10/2012	83	10	14	12	0.14	No			-0.20
				C05	9/18/2012	Yes/Hold/Partial	12/10/2012	83	38	50	44	0.53	No	0.40	0.50	
MP 26.00 RDB	Backwater (downstream side of point bar)	1.4 ft/mile	9/11/2012	C01	9/12/2012	No	12/11/2012	90	0	0	0	0.00	No			-0.50
				C02	9/12/2012	Yes/Hold	12/11/2012	90	88	92	90	1.00	No			0.80
				C03	9/12/2012	No	12/11/2012	90	0	0	0	0.00	No			-0.80
				C04	9/12/2012	Yes/Hold	12/11/2012	35	53	65	59	1.69	No	1.50	1.30	
				C05	9/12/2012	Yes/Hold	12/11/2012	35	25	50	37.5	1.07	No	N/A	N/A	N/A
MP 30.80 LDB	Backwater (downstream side of point bar)	1.4 ft/mile	9/17/2012	C01	9/18/2012	Yes/Hold	12/13/2012	86	42	42	42	0.49	No	0.20	0.15	
				C02	9/18/2012	Yes/Hold/Partial	12/13/2012	36	27	30	28.5	0.79	No	0.20	0.35	
				C03	9/18/2012	Yes/Hold/Partial	12/13/2012	36	35	32	33.5	0.93	No	0.50	0.60	
				C04	9/18/2012	Yes/Hold/Partial	12/13/2012	36	40	40	40	1.11	No	0.50	0.60	
				C05	9/18/2012	Yes/Hold/Partial	12/13/2012	86	25	22	23.5	0.27	No	0.30	0.20	
MP 33.00 A	Backwater (downstream side of point bar)	0.2 ft/mile	9/6/2012	C01	9/10/2012	Yes/Hold	12/12/2012	35	77	85	81	2.31	No	1.10	0.90	
				C02	9/10/2012	Yes/Hold/Partial	12/12/2012	35	14	13	13.5	0.39	No	0.05	0.00	
				C03	9/10/2012	Yes/Hold/Partial	12/12/2012	35	0	61	30.5	0.87	Yes			1.15
				C04	9/10/2012	Yes/Hold	12/12/2012	35	56	50	53	1.51	Yes	Observation only		1.00
				C05	9/10/2012	Yes/Hold	12/12/2012	93	74	63	68.5	0.74	Yes	1.40	1.10	
MP 33.00 B	Backwater (downstream side of point bar)	0.2 ft/mile	9/14/2012	C01	9/18/2012	No	12/12/2012	85	0	0	0	0.00	No			-0.80
				C02	9/18/2012	Yes/Hold	12/12/2012	85	37	29	33	0.39	No			0.05
				C03	9/18/2012	Yes/Hold	12/12/2012	35	64	60	62	1.77	No			1.29
				C04	9/18/2012	Yes/Hold	12/12/2012	35	42	38	40	1.14	No	2.55	2.79	
				C05	9/18/2012	Yes/Hold	12/12/2012	35	57	55	56	1.60	No			2.84
Delta A/MP 36.75	Delta distributary channel	0.0 ft/mile	9/7/2012	C01	9/10/2012	Yes/Hold	12/13/2012	35	90	127	108.5	3.10	No	0.90	1.00	
				C02	9/10/2012	Yes/Hold	12/13/2012	35	50	55	52.5	1.50	Yes	1.30	1.50	
				C03	9/10/2012	Yes/Hold	12/13/2012	64	100	112	106	1.66	No			0.70
				C04	9/10/2012	Yes/Hold	12/13/2012	35	91	73	82	2.34	No	0.70	0.60	
				C05	9/10/2012	Yes/Hold	12/13/2012	35	25	20	22.5	0.64	No			0.60

Locations:	Geomorphic Setting	Channel Gradient	CSD Identification Number	CSD Identification Number	Date Installed	Monitoring Round 10										
						Sample Jars Collected	Date Conducted	# of Days	Measured Sediment LDJ (mm)	Measured Sediment RDJ (mm)	Measured Sediment (mm)*	Sedimentation Rate in CSD (mm/day)	Scour Observed	Amount of Water Above CSD if Tilting Observed (ft)		Amount of Water Above CSD (ft)
														LDJ/Up	RDJ/Down	
Delta Z/MP 37.50	Delta	0.0 ft/mile	9/19/2012	C01	9/20/2012	Yes/Hold/Partial	12/14/2012	27	57	55	56	2.07	No	0.60	0.50	
				C02	9/20/2012	Yes/Hold	12/14/2012	27	32	32	32	1.19	No	0.40	0.35	
				C03	9/20/2012	Yes/Hold	12/14/2012	27	102	74	88	3.26	No	0.30	0.25	
				C04	9/20/2012	Yes/Hold	12/14/2012	27	33	30	31.5	1.17	No	0.50	0.55	
				C05	9/20/2012	Yes/Hold	12/14/2012	27	40	43	41.5	1.54	Yes	1.20	1.30	
				C06	9/20/2012	Yes/Hold/Partial	12/14/2012	27	18	20	19	0.70	No			0.30
				C07	9/20/2012	Yes/Hold/Partial	12/14/2012	27	21	20	20.5	0.76	Yes	0.35	0.30	
				C08	9/20/2012	Yes/Hold/Partial	12/14/2012	27	20	25	22.5	0.83	No			0.60
				C09	9/20/2012	Yes/Hold	12/14/2012	27	50	41	45.5	1.69	No	0.80	0.90	
				C10	9/20/2012	Yes/Hold	12/14/2012	27	50	52	51	1.89	No	0.80	1.05	
37.75 Islands	Delta	0.0 ft/mile	9/19/2012	C01	9/20/2012	Yes/Hold/Partial	12/13/2012	26	25	20	22.5	0.87	No			0.20
				C02	9/20/2012	Yes/Hold	12/13/2012	26	67	54	60.5	2.33	No			0.50
				C03	9/20/2012	No	12/14/2012	85	12	12	12	0.00	No			0.00
				C04	9/20/2012	Yes/Hold	12/14/2012	27	35	30	32.5	1.20	No	1.40	1.50	
				C05	9/20/2012	Yes/Hold	12/14/2012	27	30	43	36.5	1.35	No	2.20	2.10	
OB 11.79 LDB	Flood plain	Unknown	9/21/2012	C01	9/13/2012	No	12/14/2012	92	0	0	0	0.00	No	-0.20	-0.30	
				C02	9/13/2012	No	12/14/2012	92	0	0	0	0.00	No			-0.80
				C03	9/13/2012	No	12/14/2012	92	0	0	0	0.00	No			-0.80

CSD	Cylindrical Sampling Device
ft	Feet
LDB	Left Descending Bank
LDJ	Left Descending Jar
mm	Millimeter
(mm)*	Measured sediment is the average between both jars in CSD
mm/day	Millimeters per day
MP	Mile Post
N/A	Either no sampler in location or not assessed during monitoring round
RDB	Right Descending Bank
RDJ	Right Descending Jar
TEXT	Sample device tilted due to scour or settling into soft sediment
	Sample jars replaced but no sample collected
	Sample device top at or above surface of water
TEXT	Sample device ovserved tilting upstream
TEXT	Sample device observed tilting downstream
TEXT	Sample device observed tilting toward left descending bank
TEXT	Sample device observed tilting toward right descending bank
0	Mason jar broken

Enbridge Line 6B MP 608 Pipeline Release

Marshall, Michigan

Figures

Prepared for U.S. EPA and MDEQ

Enbridge Energy, Limited Partnership

Submitted: January 23, 2013

SWKR0600C01

SWKR0510C01

SW-105

7.00 6.75 6.50 6.25 6.00 5.75 5.50 5.25 5.00 4.75 4.50 4.25 4.00 3.75 3.50 3.25 3.00 2.75 2.50 2.25 2.00 1.75 1.50 1.25 1.00 0.75 0.50 0.25 0.00

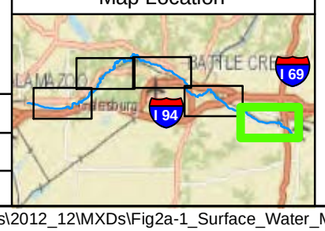
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12 Mile Rd | 13 Mile Rd | 14 Mile Rd | 15 Mile Rd | 15 1/2 Mile Rd | 13 1/2 Mile Rd

Battle Creek St | Court St | Church St | Pierce St | Wayne Ln | Eden St | Bentley Blvd | Michigan Ave E | M 96 | Old Verona Rd | Verona Rd | West Dr | McGlen | Winston Ct | Winston Dr | Preston Dr | Industrial Rd | Dobbin Ct | Dobbins St | Arms St | Elk St | Plum St | W Mansion St | W Michigan Ave | W Green St | W Hanover St | BUS 94 | 69 | N Fountain St | Greenfield Blvd | Deerfield Ln | Fennimore Dr | Sherman Dr | Sherman Ct | Union St | N Linden St | Birch St | Brewer St | Hobart Rd | N Kalamazoo Ave | Jacob St | North Dr W | North Dr E | Chauncey Ct | Wright Ln | Laura Ln | Canyon Ct | Venture Way | N Mulberry St | N Sycamore St | N Grand St | N Eagle St | Maple Grove Ave | E Green St | S Mulberry St | S Sycamore St | S Grand St | Monroe St | Hart St | S Linden St | Page St | W Pearl St | Crary St | Ketchum St | E Hughes St | W Hughes St | Circle Dr | Rose St | Mudea St | Fairway Meadow Dr | Liggett Rd | S Kalamazoo Ave | Adams Ave | Oliver Dr | Brooks Dr | Woolley Dr | Division Dr | Tau Dr | Prest Dr | Friendship Ln | Peter Pan Ln | Kristen Dr | Heather Dr | Squaw Creek Rd | Brook Dr | River Park Dr

Drawn:	NS	1/2/2013
Approved:	EE	1/2/2013
Project #:	60246209	

Map Location



Legend

- Surface Water Sampling Location
- Kalamazoo River
- Talmadge Creek
- Quarter Mile Grid Segments
- SW-105 Sample Location ID - No Exceedances

N

0 1,000 2,000 4,000

Scale in Feet

FIGURE 2a-1
KALAMAZOO RIVER AND MORROW LAKE
SURFACE WATER MONITORING LOCATIONS
DECEMBER 2012
SHEET 1 OF 5

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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Aerial Photography Date: April 2011 over August 2010

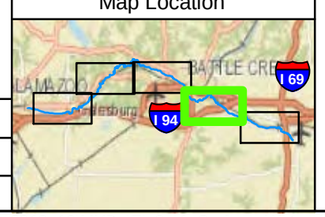
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SWKR1480C01

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Drawn:	NS	1/2/2013
Approved:	EE	1/2/2013
Project #:	60246209	

Map Location



Legend

- Surface Water Sampling Location
- Kalamazoo River
- Talmadge Creek
- Quarter Mile Grid Segments
- SW-105 Sample Location ID - No Exceedances

N

0 1,000 2,000 4,000

Scale in Feet

FIGURE 2a-1
KALAMAZOO RIVER AND MORROW LAKE
SURFACE WATER MONITORING LOCATIONS
DECEMBER 2012
SHEET 2 OF 5

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

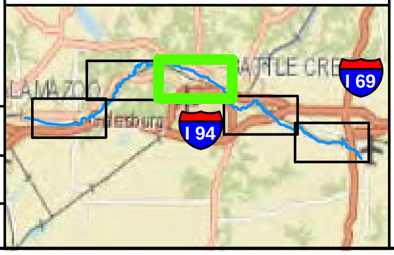
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Aerial Photography Date: April 2011 over August 2010



Drawn: NS	1/2/2013
Approved: EE	1/2/2013
Project #: 60246209	

Map Location



Legend

- Surface Water Sampling Location
- Kalamazoo River
- Talmadge Creek
- Quarter Mile Grid Segments
- SW-105 Sample Location ID - No Exceedances

N

0 1,000 2,000 4,000

Scale in Feet

FIGURE 2a-1
KALAMAZOO RIVER AND MORROW LAKE
SURFACE WATER MONITORING LOCATIONS
DECEMBER 2012
SHEET 3 OF 5

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_12\MXDs\Fig2a-1_Surface_Water_Monitoring_Locations.mxd

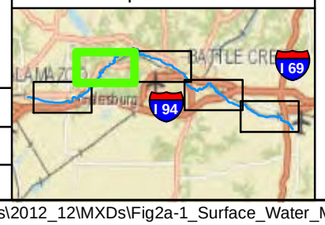
Aerial Photography Date: April 2011 over August 2010



ENBRIDGE

Drawn:	NS	1/2/2013
Approved:	EE	1/2/2013
Project #:	60246209	

Map Location



Legend

- Surface Water Sampling Location
- Kalamazoo River
- Talmadge Creek
- Quarter Mile Grid Segments
- SW-105 Sample Location ID - No Exceedances

N

0 1,000 2,000 4,000

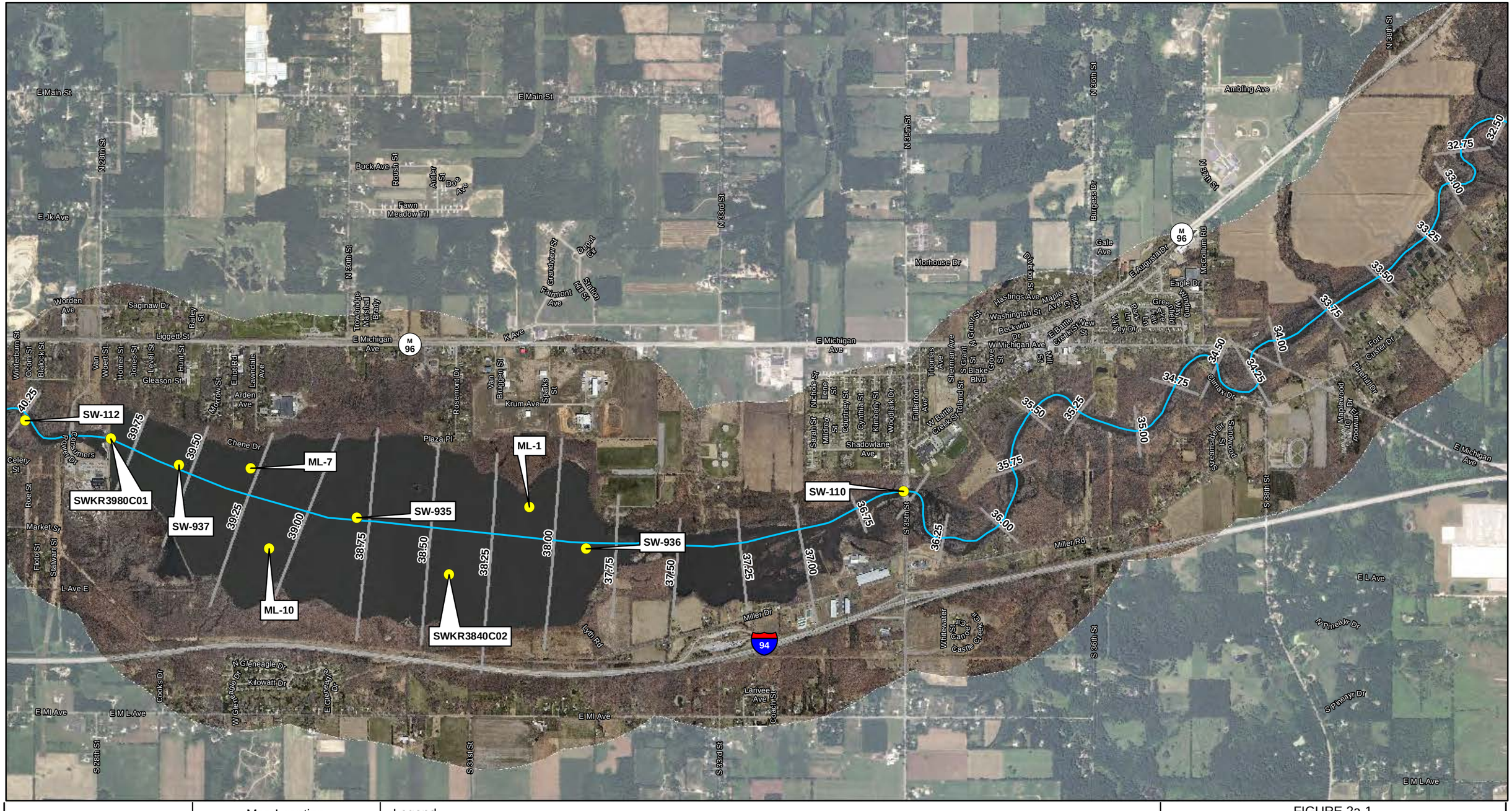
Scale in Feet

FIGURE 2a-1
KALAMAZOO RIVER AND MORROW LAKE
SURFACE WATER MONITORING LOCATIONS
DECEMBER 2012
SHEET 4 OF 5

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_12\MXDs\Fig2a-1_Surface_Water_Monitoring_Locations.mxd

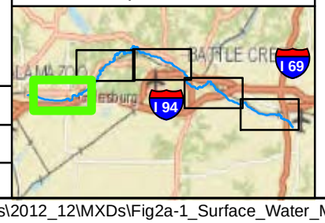
Aerial Photography Date: April 2011 over August 2010



ENBRIDGE

Drawn:	NS	1/2/2013
Approved:	EE	1/2/2013
Project #:	60246209	

Map Location



Legend

- Surface Water Sampling Location
- Kalamazoo River
- Talmadge Creek
- Quarter Mile Grid Segments
- SW-105 Sample Location ID - No Exceedances

N

0 1,000 2,000 4,000

Scale in Feet

FIGURE 2a-1
KALAMAZOO RIVER AND MORROW LAKE
SURFACE WATER MONITORING LOCATIONS
DECEMBER 2012
SHEET 5 OF 5

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

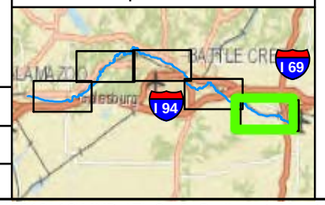
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Aerial Photography Date: April 2011 over August 2010



Drawn:	NS	1/11/2013
Approved:	EE	1/11/2013
Project #:	60284509	

Map Location



Legend

- Sediment Sampling Location
- Talmadge Creek
- Kalamazoo River
- Quarter Mile Grid Segments
- SW-105 Sample Location ID - No Exceedances

Sample Result Exceeds Threshold Effect Concentration

Sample Result Exceeds U.S. EPA Region 5 Ecological Screening Level and Threshold Effect Concentration

N

0 1,000 2,000 4,000

Scale in Feet

FIGURE 2a-2
KALAMAZOO RIVER AND MORROW LAKE
SEDIMENT MONITORING LOCATIONS
DECEMBER 2012
SHEET 1 OF 5

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_12\MXDs\Fig2a-2_Sediment_Monitoring_Locations.mxd

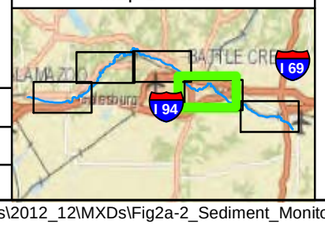
Aerial Photography Date: April 2011 over August 2010

Analyte	Location: SWKR1565C01 Sample ID & Result SEC12191603JTC1
Benzo(a)anthracene	660 ug/kg
Benzo(a)pyrene	850 ug/kg
Benzo(b)fluoranthene	710 ug/kg
Benzo(g,h,i)perylene	400 ug/kg
Chrysene	680 ug/kg
Fluoranthene	880 ug/kg
Indeno(1,2,3-c,d)pyrene	360 ug/kg
Pyrene	1100 ug/kg

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Approved:	EE	1/11/2013
Project #:	60284509	

Map Location



Legend

- Sediment Sampling Location
- Talmadge Creek
- Kalamazoo River
- Quarter Mile Grid Segments
- SW-105 Sample Location ID - No Exceedances

Sample Result Exceeds Threshold Effect Concentration

Sample Result Exceeds U.S. EPA Region 5 Ecological Screening Level and Threshold Effect Concentration

N

0 1,000 2,000 4,000

Scale in Feet

FIGURE 2a-2
KALAMAZOO RIVER AND MORROW LAKE
SEDIMENT MONITORING LOCATIONS
DECEMBER 2012
SHEET 2 OF 5

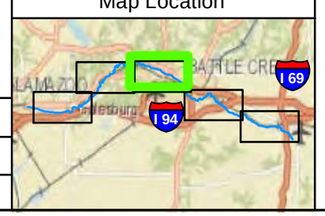
ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_12\MXDs\Fig2a-2_Sediment_Monitoring_Locations.mxd

Aerial Photography Date: April 2011 over August 2010

ENBRIDGE		
Drawn:	NS	1/11/2013
Approved:	EE	1/11/2013
Project #:	60284509	

Map Location



Legend

- Sediment Sampling Location
- Talmadge Creek
- Kalamazoo River
- Quarter Mile Grid Segments
- SW-105 Sample Location ID - No Exceedances

Sample Result Exceeds Threshold Effect Concentration

Sample Result Exceeds U.S. EPA Region 5 Ecological Screening Level and Threshold Effect Concentration

N

0 1,000 2,000 4,000

Scale in Feet

FIGURE 2a-2
KALAMAZOO RIVER AND MORROW LAKE
SEDIMENT MONITORING LOCATIONS
DECEMBER 2012
SHEET 3 OF 5

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_12\MXDs\Fig2a-2_Sediment_Monitoring_Locations.mxd

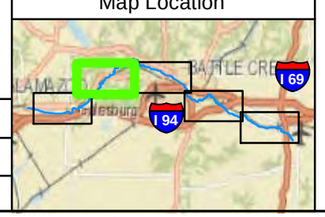
Aerial Photography Date: April 2011 over August 2010



ENBRIDGE

Drawn:	NS	1/11/2013
Approved:	EE	1/11/2013
Project #:	60284509	

Map Location



Legend

- Sediment Sampling Location
- Talmadge Creek
- Kalamazoo River
- Quarter Mile Grid Segments
- SW-105 Sample Location ID - No Exceedances

Sample Result Exceeds Threshold Effect Concentration

Sample Result Exceeds U.S. EPA Region 5 Ecological Screening Level and Threshold Effect Concentration

N

0 1,000 2,000 4,000

Scale in Feet

FIGURE 2a-2
KALAMAZOO RIVER AND MORROW LAKE
SEDIMENT MONITORING LOCATIONS
DECEMBER 2012
SHEET 4 OF 5

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_12\MXDs\Fig2a-2_Sediment_Monitoring_Locations.mxd

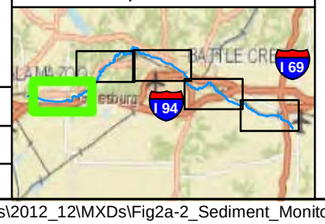
Aerial Photography Date: April 2011 over August 2010

Analyte	Location: SW-937	
	Sample ID & Result	Duplicate ID & Result
	SEE12191125JTC1	SEE12191125JTC2
Benzo(a)pyrene	550 ug/kg	390 ug/kg
Benzo(b)fluoranthene	780 ug/kg	570 ug/kg
Benzo(k)fluoranthene	410 ug/kg	No exceedance
Chrysene	690 ug/kg	490 ug/kg
Fluoranthene	1000 ug/kg	710 ug/kg
Pyrene	1200 ug/kg	740 ug/kg

ENBRIDGE

Drawn:	NS	1/11/2013
Approved:	EE	1/11/2013
Project #:	60284509	

Map Location



Legend

- Sediment Sampling Location
- Talmadge Creek
- Kalamazoo River
- Quarter Mile Grid Segments
- SW-105 Sample Location ID - No Exceedances

Sample Result Exceeds Threshold Effect Concentration

Sample Result Exceeds U.S. EPA Region 5 Ecological Screening Level and Threshold Effect Concentration

N

0 1,000 2,000 4,000

Scale in Feet

FIGURE 2a-2
KALAMAZOO RIVER AND MORROW LAKE
SEDIMENT MONITORING LOCATIONS
DECEMBER 2012
SHEET 5 OF 5

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_12\MXDs\Fig2a-2_Sediment_Monitoring_Locations.mxd

Aerial Photography Date: April 2011 over August 2010

Well ID - C0127FCA
Sampled - 7
Letter - 7
Hydrocarbon - 0
Detect
Other Detect - 23

Well ID - C0568B5PW1
Sampled - 12
Letter - 10
Hydrocarbon - 0
Detect
Other Detect - 42

Well ID - C0179BEPW1
Sampled - 12
Letter - 10
Hydrocarbon - 0
Detect
Other Detect - 24

Well ID - C038718WP1
Sampled - 7
Letter - 5
Hydrocarbon - 0
Detect
Other Detect - 13

Well ID - C0173A0PW1
Sampled - 12
Letter - 10
Hydrocarbon - 0
Detect
Other Detect - 39

Well ID - C024080PW1
Sampled - 10
Letter - 8
Hydrocarbon - 0
Detect
Other Detect - 37

Well ID - C016277A
Sampled - 9
Letter - 9
Hydrocarbon - 0
Detect
Other Detect - 25

Well ID - C0040EEA
Sampled - 11
Letter - 9
Hydrocarbon - 0
Detect
Other Detect - 27

Well ID - C044607PW1
Sampled - 8
Letter - 7
Hydrocarbon - 0
Detect
Other Detect - 25

Well ID - C0218F7PW1
Sampled - 7
Letter - 6
Hydrocarbon - 0
Detect
Other Detect - 14

Well ID - C0947C2WP1
Sampled - 5
Letter - 4
Hydrocarbon - 0
Detect
Other Detect - 15

Well ID - C50318DWP2
Sampled - 0
Letter - 0
Hydrocarbon - 0
Detect
Other Detect - 0

Well ID - C0129FBA
Sampled - 11
Letter - 11
Hydrocarbon - 0
Detect
Other Detect - 46

Well ID - C0027CBA
Sampled - 10
Letter - 9
Hydrocarbon - 0
Detect
Other Detect - 30

Well ID - C0310F2PW1
Sampled - 15
Letter - 13
Hydrocarbon - 0
Detect
Other Detect - 47

Well ID - C043756WP1
Sampled - 11
Letter - 9
Hydrocarbon - 0
Detect
Other Detect - 30

Well ID - C002471A
Sampled - 7
Letter - 5
Hydrocarbon - 0
Detect
Other Detect - 24

Well ID - C0144C0A
Sampled - 14
Letter - 13
Hydrocarbon - 0
Detect
Other Detect - 49

Well ID - C0668ECA
Sampled - 10
Letter - 8
Hydrocarbon - 0
Detect
Other Detect - 19

Well ID - C50318DWP1
Sampled - 3
Letter - 2
Hydrocarbon - 0
Detect
Other Detect - 6

Well ID - C002068A
Sampled - 7
Letter - 7
Hydrocarbon - 0
Detect
Other Detect - 14

Well ID - C0286B9PW1
Sampled - 1
Letter - 0
Hydrocarbon - 0
Detect
Other Detect - 0

Well ID - C052927WP1
Sampled - 10
Letter - 8
Hydrocarbon - 0
Detect
Other Detect - 27

Well ID - C001311A
Sampled - 12
Letter - 10
Hydrocarbon - 0
Detect
Other Detect - 31

Well ID - C0137BDA
Sampled - 14
Letter - 11
Hydrocarbon - 0
Detect
Other Detect - 44

Well ID - C0139BAA
Sampled - 13
Letter - 9
Hydrocarbon - 0
Detect
Other Detect - 44

Well ID - C0094BAPW1
Sampled - 11
Letter - 9
Hydrocarbon - 0
Detect
Other Detect - 34

Well ID - C0108EFA
Sampled - 13
Letter - 11
Hydrocarbon - 0
Detect
Other Detect - 37

Well ID - C0223BCA
Sampled - 14
Letter - 7
Hydrocarbon - 0
Detect
Other Detect - 36

Well ID - C0555CBA
Sampled - 9
Letter - 7
Hydrocarbon - 0
Detect
Other Detect - 43

Well ID - C0292E1A
Sampled - 8
Letter - 6
Hydrocarbon - 0
Detect
Other Detect - 24

Well ID - C0021FEA
Sampled - 12
Letter - 11
Hydrocarbon - 0
Detect
Other Detect - 24

Well ID - C001899A
Sampled - 12
Letter - 10
Hydrocarbon - 0
Detect
Other Detect - 33

Well ID - C135093WP1
Sampled - 14
Letter - 8
Hydrocarbon - 0
Detect
Other Detect - 21

3.50
2.25
2.00
1.75
1.50
1.00
0.75
0.50
0.25

Industrial Rd
15 Mile Rd
15 1/2 Mile Rd
16 Mile Rd
W Hughes St
Mulica St
Skalamazoo Ave
Fairway Meadow Dr
Liggett Rd
Division Dr
Oliver Dr
Brooks Dr
A Dr N
69

Map Location

Legend

Well Eligibility Status

- Eligible
- Not Accessible
- Winterized
- Refused Permission

- Target Area
- Kalamazoo River Flood Inundation Boundary
- Talmadge Creek
- Quarter Mile Grid Segments
- Hydrocarbon Detection

Well ID C14255EWP1 is not shown as owner refused permission to have a GPS location taken.

N

0 1,000 2,000
Scale in Feet

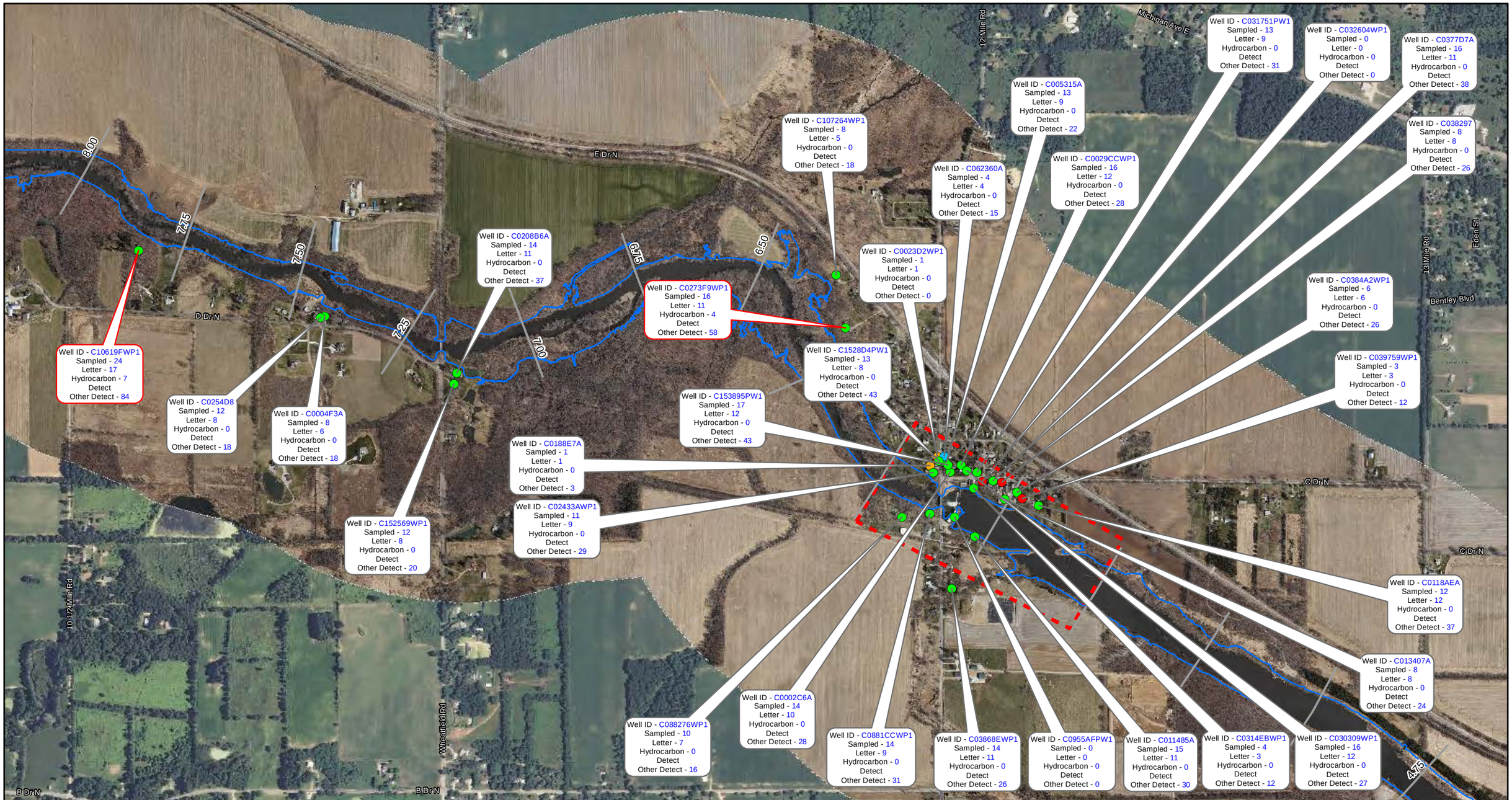
Drawn:	NS	1/10/2013
Approved:	EE	1/10/2013
Project #:	60284509	

FIGURE 2c-1
POTABLE WELL LOCATIONS, ELIGIBILITY STATUS, AND WELLS SAMPLED AS OF JANUARY 4, 2013
SHEET 1 OF 10

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_12\MXDs\Fig2c-1_Potable_Wells_Sampled.mxd

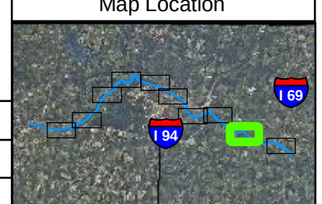
Aerial Photography Date: April 2011 over 2010



ENBRIDGE

Drawn:	NS	1/10/2013
Approved:	EE	1/10/2013
Project #:	60284509	

Map Location



Legend

Well Eligibility Status

- Eligible
- Not Accessible
- Winterized
- Refused Permission

- Target Area
- Kalamazoo River Flood Inundation Boundary
- Talmadge Creek
- Quarter Mile Grid Segments
- Hydrocarbon Detection

Well ID C14255EWP1 is not shown as owner refused permission to have a GPS location taken.

N

0 1,000 2,000

Scale in Feet

FIGURE 2c-1
POTABLE WELL LOCATIONS, ELIGIBILITY STATUS, AND WELLS SAMPLED AS OF JANUARY 4, 2013
SHEET 2 OF 10

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_12\MXDs\Fig2c-1_Potable_Wells_Sampled.mxd

Aerial Photography Date: April 2011 over 2010

Well ID - C0375FBWP1
Sampled - 12
Letter - 11
Hydrocarbon - 0
Detect
Other Detect - 43

Well ID - C06827CA
Sampled - 6
Letter - 6
Hydrocarbon - 0
Detect
Other Detect - 19

Well ID - C145599A
Sampled - 9
Letter - 8
Hydrocarbon - 0
Detect
Other Detect - 26

Well ID - C145623WP1
Sampled - 9
Letter - 7
Hydrocarbon - 0
Detect
Other Detect - 23

Well ID - C0693ABPW1
Sampled - 11
Letter - 9
Hydrocarbon - 0
Detect
Other Detect - 35

Well ID - C059451PW1
Sampled - 9
Letter - 7
Hydrocarbon - 0
Detect
Other Detect - 15

Well ID - C060441WP1
Sampled - 4
Letter - 3
Hydrocarbon - 0
Detect
Other Detect - 6

Well ID - C0601CEWP1
Sampled - 16
Letter - 13
Hydrocarbon - 0
Detect
Other Detect - 66

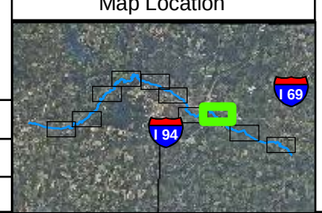
Well ID - C0603E2WP1
Sampled - 4
Letter - 2
Hydrocarbon - 0
Detect
Other Detect - 14

Well ID - C0605D7WP1
Sampled - 4
Letter - 3
Hydrocarbon - 0
Detect
Other Detect - 10

ENBRIDGE

Drawn:	NS	1/10/2013
Approved:	EE	1/10/2013
Project #:	60284509	

Map Location



Legend

Well Eligibility Status
- Eligible
- Not Accessible
- Winterized
- Refused Permission

- Target Area
- Kalamazoo River Flood Inundation Boundary
- Talmadge Creek
- Quarter Mile Grid Segments
- Hydrocarbon Detection

Well ID C14255EWP1 is not shown as owner refused permission to have a GPS location taken.

N

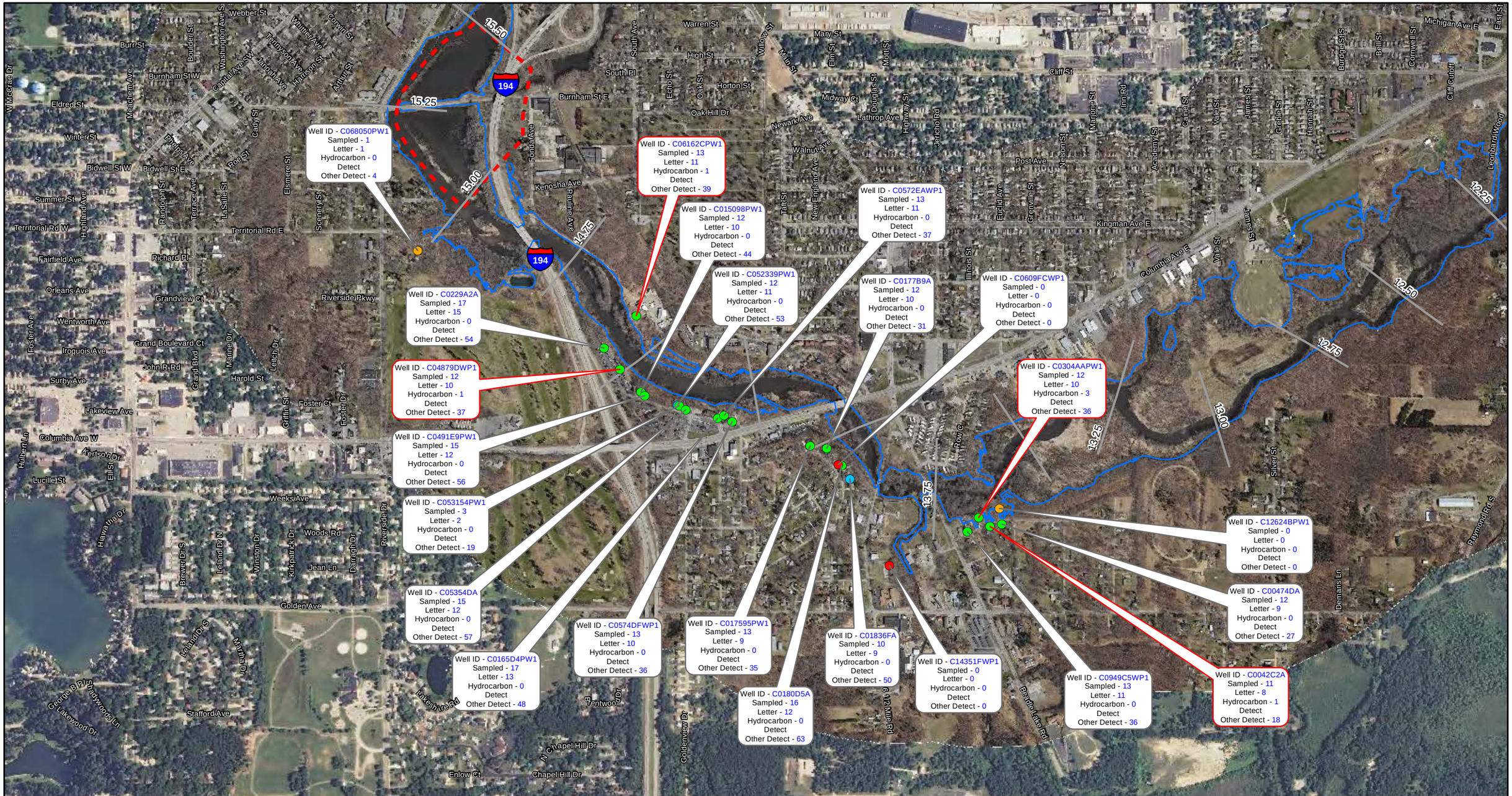
0 1,000 2,000
Scale in Feet

FIGURE 2c-1
POTABLE WELL LOCATIONS, ELIGIBILITY STATUS, AND WELLS SAMPLED AS OF JANUARY 4, 2013
SHEET 3 OF 10

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_12\MXDs\Fig2c-1_Potable_Wells_Sampled.mxd

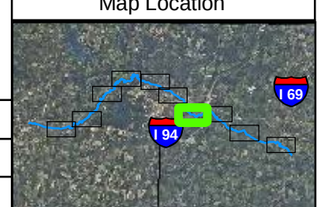
Aerial Photography Date: April 2011 over 2010



ENBRIDGE

Drawn:	NS	1/10/2013
Approved:	EE	1/10/2013
Project #:	60284509	

Map Location



Legend

Well Eligibility Status

- Eligible
- Not Accessible
- Winterized
- Refused Permission

- Target Area
- Kalamazoo River Flood Inundation Boundary
- Talmadge Creek
- Quarter Mile Grid Segments
- Hydrocarbon Detection

Well ID C14255EWP1 is not shown as owner refused permission to have a GPS location taken.

N

0 1,000 2,000

Scale in Feet

FIGURE 2c-1
POTABLE WELL LOCATIONS, ELIGIBILITY STATUS, AND WELLS SAMPLED AS OF JANUARY 4, 2013
SHEET 4 OF 10

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

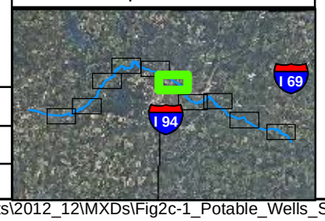
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Aerial Photography Date: April 2011 over 2010



Drawn:	NS	1/10/2013
Approved:	EE	1/10/2013
Project #:	60284509	

Map Location



Legend

Well Eligibility Status

- Eligible
- Not Accessible
- Winterized
- Refused Permission

- Target Area
- Kalamazoo River Flood Inundation Boundary
- Talmadge Creek
- Quarter Mile Grid Segments
- Hydrocarbon Detection

Well ID C14255EWP1 is not shown as owner refused permission to have a GPS location taken.

N

0 1,000 2,000

Scale in Feet

FIGURE 2c-1
POTABLE WELL LOCATIONS, ELIGIBILITY STATUS, AND WELLS SAMPLED AS OF JANUARY 4, 2013
SHEET 5 OF 10

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_12\MXDs\Fig2c-1_Potable_Wells_Sampled.mxd

Aerial Photography Date: April 2011 over 2010

Well ID - C01477APW1
Sampled - 2
Letter - 1
Hydrocarbon - 0
Detect
Other Detect - 13

Well ID - C1426E4WP1
Sampled - 9
Letter - 9
Hydrocarbon - 0
Detect
Other Detect - 28

Well ID - C1509C0WP1
Sampled - 13
Letter - 9
Hydrocarbon - 0
Detect
Other Detect - 23

Well ID - C14123EWP1
Sampled - 11
Letter - 9
Hydrocarbon - 0
Detect
Other Detect - 35

Well ID - C1520E6WP1
Sampled - 10
Letter - 7
Hydrocarbon - 0
Detect
Other Detect - 19

Drawn:	NS	1/10/2013
Approved:	EE	1/10/2013
Project #:	60284509	

Map Location

Legend

Well Eligibility Status
- Eligible
- Not Accessible
- Winterized
- Refused Permission

- Target Area
- Kalamazoo River Flood Inundation Boundary
- Talmadge Creek
- Quarter Mile Grid Segments
- Hydrocarbon Detection

Well ID C14255EWP1 is not shown as owner refused permission to have a GPS location taken.

N

0 1,000 2,000
Scale in Feet

FIGURE 2c-1
POTABLE WELL LOCATIONS, ELIGIBILITY STATUS, AND WELLS SAMPLED AS OF JANUARY 4, 2013
SHEET 6 OF 10

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_12\MXDs\Fig2c-1_Potable_Wells_Sampled.mxd

Aerial Photography Date: April 2011 over 2010

Well ID - C07824BPW1
Sampled - 11
Letter - 9
Hydrocarbon - 0
Detect
Other Detect - 24

Well ID - C00856DA
Sampled - 15
Letter - 13
Hydrocarbon - 0
Detect
Other Detect - 51

Well ID - C0872B9PW2
Sampled - 8
Letter - 8
Hydrocarbon - 0
Detect
Other Detect - 18

Well ID - C0789C3PW1
Sampled - 4
Letter - 3
Hydrocarbon - 0
Detect
Other Detect - 9

Well ID - C00928FA
Sampled - 11
Letter - 9
Hydrocarbon - 0
Detect
Other Detect - 23

Well ID - C03429BWP1
Sampled - 12
Letter - 9
Hydrocarbon - 0
Detect
Other Detect - 27

Well ID - C0872B9PW1
Sampled - 3
Letter - 3
Hydrocarbon - 0
Detect
Other Detect - 17

Well ID - C0337D3WP1
Sampled - 12
Letter - 9
Hydrocarbon - 0
Detect
Other Detect - 28

Well ID - C033645WP1
Sampled - 8
Letter - 7
Hydrocarbon - 0
Detect
Other Detect - 26

Well ID - C0335FFWP1
Sampled - 8
Letter - 7
Hydrocarbon - 0
Detect
Other Detect - 19

Well ID - C01573BA
Sampled - 14
Letter - 11
Hydrocarbon - 0
Detect
Other Detect - 37

Well ID - C0156ADA
Sampled - 16
Letter - 13
Hydrocarbon - 0
Detect
Other Detect - 62

Well ID - C0231D1A
Sampled - 13
Letter - 10
Hydrocarbon - 0
Detect
Other Detect - 40

Well ID - C04757EWP1
Sampled - 6
Letter - 6
Hydrocarbon - 0
Detect
Other Detect - 14

Well ID - C01497DA
Sampled - 8
Letter - 7
Hydrocarbon - 0
Detect
Other Detect - 14

Well ID - C0920E7PW1
Sampled - 9
Letter - 7
Hydrocarbon - 0
Detect
Other Detect - 19

Well ID - C005139A
Sampled - 12
Letter - 12
Hydrocarbon - 0
Detect
Other Detect - 41

Well ID - C015481A
Sampled - 14
Letter - 12
Hydrocarbon - 0
Detect
Other Detect - 32

Well ID - C000749A
Sampled - 10
Letter - 8
Hydrocarbon - 0
Detect
Other Detect - 29

Well ID - C015322A
Sampled - 17
Letter - 13
Hydrocarbon - 0
Detect
Other Detect - 53

Well ID - C023047A
Sampled - 16
Letter - 12
Hydrocarbon - 0
Detect
Other Detect - 57

Well ID - C0470F1PW1
Sampled - 11
Letter - 10
Hydrocarbon - 0
Detect
Other Detect - 26

Well ID - C046882A
Sampled - 11
Letter - 11
Hydrocarbon - 0
Detect
Other Detect - 27

Well ID - C0227A5A
Sampled - 12
Letter - 12
Hydrocarbon - 0
Detect
Other Detect - 41

Well ID - C00589DA
Sampled - 14
Letter - 12
Hydrocarbon - 0
Detect
Other Detect - 39

Well ID - C046713WP1
Sampled - 15
Letter - 12
Hydrocarbon - 0
Detect
Other Detect - 47

Well ID - C0048DCA
Sampled - 13
Letter - 10
Hydrocarbon - 0
Detect
Other Detect - 36

Well ID - C035755WP1
Sampled - 5
Letter - 5
Hydrocarbon - 0
Detect
Other Detect - 19

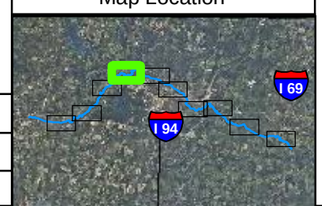
Well ID - C035755WP2
Sampled - 5
Letter - 5
Hydrocarbon - 0
Detect
Other Detect - 14

E E F Ave
N 46th St
Pin Oak Cir
Marsh Ridge Trl
Oriole Dr
Trail St
N 44th St
N Augusta Dr
Fort Custer Dr
Ann Ln
Martin Dr
James B Eads Dr
River Rd W
W County Line Rd
William Shafter Cir W
Paul Lambert Trl
Duane Dewey Ln
William Shafter Cir N
William Shafter Cir S
Clark Rd
26.25
26.00
25.75
25.50
25.25
25.00
24.75
24.50
24.25
22.00
21.75

ENBRIDGE

Drawn:	NS	1/10/2013
Approved:	EE	1/10/2013
Project #:	60284509	

Map Location



Legend

Well Eligibility Status

- Eligible
- Not Accessible
- Winterized
- Refused Permission

- Target Area
- Kalamazoo River Flood Inundation Boundary
- Talmadge Creek
- Quarter Mile Grid Segments
- Hydrocarbon Detection

Well ID C14255EWP1 is not shown as owner refused permission to have a GPS location taken.

N

0 1,000 2,000

Scale in Feet

FIGURE 2c-1
POTABLE WELL LOCATIONS, ELIGIBILITY STATUS, AND WELLS SAMPLED AS OF JANUARY 4, 2013
SHEET 7 OF 10

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_12\MXDs\Fig2c-1_Potable_Wells_Sampled.mxd

Aerial Photography Date: April 2011 over 2010

Well ID - C086970PW1
Sampled - 19
Letter - 13
Hydrocarbon - 0
Detect
Other Detect - 43

Well ID - C086970PW2
Sampled - 18
Letter - 13
Hydrocarbon - 0
Detect
Other Detect - 40

Well ID - C033469WP1
Sampled - 7
Letter - 6
Hydrocarbon - 0
Detect
Other Detect - 24

Well ID - C0678ADA
Sampled - 12
Letter - 10
Hydrocarbon - 0
Detect
Other Detect - 32

Well ID - C14332AWP1
Sampled - 10
Letter - 8
Hydrocarbon - 0
Detect
Other Detect - 22

Well ID - C14255EWP1 is not shown as owner refused permission to have a GPS location taken.

Drawn:	NS	1/10/2013
Approved:	EE	1/10/2013
Project #:	60284509	

Map Location

Legend

Well Eligibility Status
- Eligible
- Not Accessible
- Winterized
- Refused Permission

- Target Area
- Kalamazoo River Flood Inundation Boundary
- Talmadge Creek
- Quarter Mile Grid Segments
- Hydrocarbon Detection

N

0 1,000 2,000
Scale in Feet

FIGURE 2c-1
POTABLE WELL LOCATIONS, ELIGIBILITY STATUS, AND WELLS SAMPLED AS OF JANUARY 4, 2013
SHEET 8 OF 10

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_12\MXDs\Fig2c-1_Potable_Wells_Sampled.mxd

Aerial Photography Date: April 2011 over 2010

Well ID - C0246B5WP1
Sampled - 0
Letter - 0
Hydrocarbon - 0
Detect
Other Detect - 0

Well ID - C025965WP1
Sampled - 2
Letter - 1
Hydrocarbon - 0
Detect
Other Detect - 11

Well ID - C01932EA
Sampled - 18
Letter - 16
Hydrocarbon - 0
Detect
Other Detect - 46

Well ID - C019930PW1
Sampled - 8
Letter - 7
Hydrocarbon - 0
Detect
Other Detect - 27

Well ID - C01948DPW1
Sampled - 12
Letter - 9
Hydrocarbon - 0
Detect
Other Detect - 29

Well ID - C030917WP1
Sampled - 12
Letter - 10
Hydrocarbon - 0
Detect
Other Detect - 32

Well ID - C0300B3WP1
Sampled - 7
Letter - 7
Hydrocarbon - 0
Detect
Other Detect - 25

Well ID - C0271D5PW1
Sampled - 10
Letter - 8
Hydrocarbon - 0
Detect
Other Detect - 23

Well ID - C07198APW1
Sampled - 11
Letter - 6
Hydrocarbon - 0
Detect
Other Detect - 20

Well ID - C07313APW1
Sampled - 8
Letter - 5
Hydrocarbon - 0
Detect
Other Detect - 23

Well ID - C0730ACPW1
Sampled - 18
Letter - 16
Hydrocarbon - 0
Detect
Other Detect - 50

Well ID - C0269A6PW1
Sampled - 18
Letter - 15
Hydrocarbon - 0
Detect
Other Detect - 49

Well ID - C087736WP1
Sampled - 12
Letter - 9
Hydrocarbon - 0
Detect
Other Detect - 25

N 36th St
N 37th St
N 40th St
Burgess Dr
Division St
Hamilton St
Center St
Grove St
Maple Ave
Tillick Ct
E Battle Creek St
W Battle Creek St
Beckwith Dr
Church St
Park St
New St
Valley Dr
E Michigan Ave
E Augusta Dr
Territorial Rd
Bicycle Trail
Fort Custer Dr
Fort Hill Dr
Miller Rd
W I 94/ Michigan Ramp
M 96
I 69
I 94
94
32.25
32.50
32.75
33.00
33.25
33.50
33.75
34.00
34.25
35.25
35.50
35.00
35.75

ENBRIDGE

Drawn:	NS	1/10/2013
Approved:	EE	1/10/2013
Project #:	60284509	

Map Location

Legend

Well Eligibility Status

- Eligible
- Not Accessible
- Winterized
- Refused Permission

- Target Area
- Kalamazoo River Flood Inundation Boundary
- Talmadge Creek
- Quarter Mile Grid Segments
- Hydrocarbon Detection

Well ID C14255EWP1 is not shown as owner refused permission to have a GPS location taken.

N

0 1,000 2,000

Scale in Feet

FIGURE 2c-1
POTABLE WELL LOCATIONS, ELIGIBILITY STATUS, AND WELLS SAMPLED AS OF JANUARY 4, 2013
SHEET 9 OF 10

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_12\MXDs\Fig2c-1_Potable_Wells_Sampled.mxd

Aerial Photography Date: April 2011 over 2010

Well ID - C1346E7WP1
Sampled - 8
Letter - 7
Hydrocarbon - 0
Detect
Other Detect - 14

Well ID - C0889FEWP1
Sampled - 12
Letter - 7
Hydrocarbon - 0
Detect
Other Detect - 21

Well ID - C0883E0WP1
Sampled - 0
Letter - 0
Hydrocarbon - 0
Detect
Other Detect - 0

Well ID - C018776A
Sampled - 12
Letter - 10
Hydrocarbon - 0
Detect
Other Detect - 29

Well ID - C01855AA
Sampled - 12
Letter - 11
Hydrocarbon - 0
Detect
Other Detect - 32

Well ID - C090249WP1
Sampled - 11
Letter - 9
Hydrocarbon - 0
Detect
Other Detect - 20

Well ID - C0250C1WP1
Sampled - 10
Letter - 7
Hydrocarbon - 0
Detect
Other Detect - 31

Well ID - C0252EDA
Sampled - 13
Letter - 11
Hydrocarbon - 0
Detect
Other Detect - 31

Well ID - C0250C1WP2
Sampled - 3
Letter - 3
Hydrocarbon - 0
Detect
Other Detect - 11

Well ID - C0248B2PW1
Sampled - 11
Letter - 9
Hydrocarbon - 0
Detect
Other Detect - 35

Well ID - C024723PW1
Sampled - 17
Letter - 14
Hydrocarbon - 0
Detect
Other Detect - 42

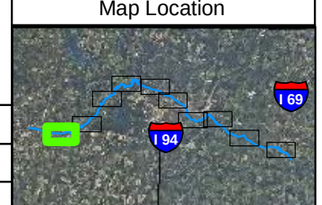
Krum Ave
Spark's St
Blake Blvd
Beth Anne Ave
Miah St
Shadowlane Ave
Nichole St
Ilene St
Sarah St
Mildred St
Courtney St
Cynthia St
Kimberly St
Woodlark Dr
S 35th St
Fullerton Ave
Grove St
W Battle Creek St
Miller Rd
Miller Dr
Larivee Ave
Carriage St
E MI Ave
S 31st St
S 33rd St
94
69

38.75
38.50
38.25
38.00
37.75
37.50
37.25
37.00
36.75
35.75
35.50
35.25

ENBRIDGE

Drawn:	NS	1/10/2013
Approved:	EE	1/10/2013
Project #:	60284509	

Map Location



Legend

Well Eligibility Status
- Eligible
- Not Accessible
- Winterized
- Refused Permission

- Target Area
- Kalamazoo River Flood Inundation Boundary
- Talmadge Creek
- Quarter Mile Grid Segments
- Hydrocarbon Detection

Well ID C14255EWP1 is not shown as owner refused permission to have a GPS location taken.

N

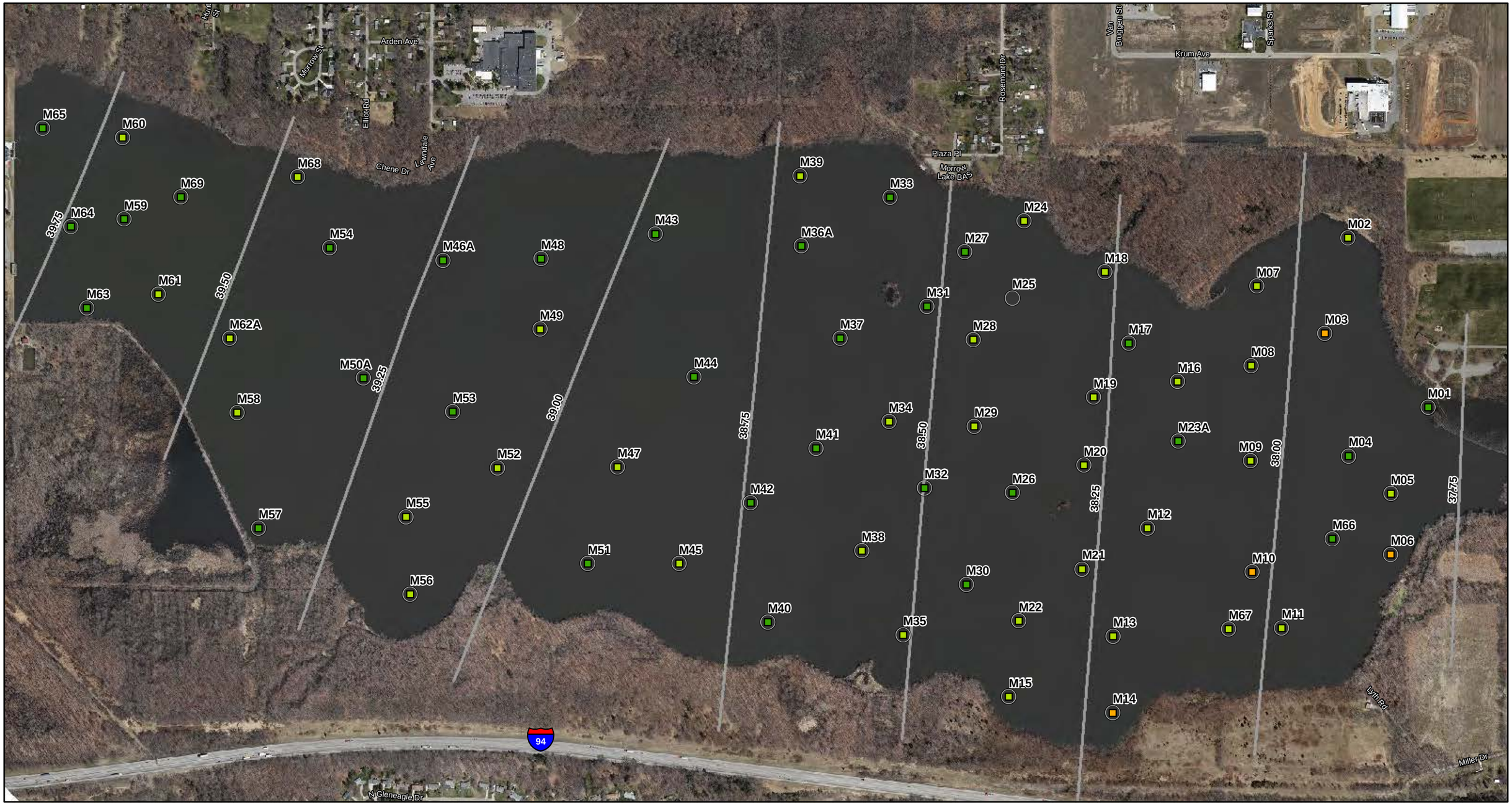
0 1,000 2,000
Scale in Feet

FIGURE 2c-1
POTABLE WELL LOCATIONS, ELIGIBILITY STATUS, AND WELLS SAMPLED AS OF JANUARY 4, 2013
SHEET 10 OF 10

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_12\MXDs\Fig2c-1_Potable_Wells_Sampled.mxd

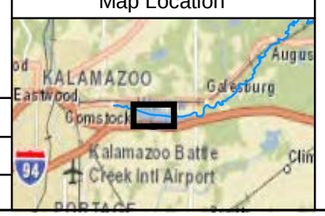
Aerial Photography Date: April 2011 over 2010



ENBRIDGE

Drawn:	NS	1/2/2013
Approved:	EE	1/2/2013
Project #:	60246209	

Map Location



Legend

Round 27 Monitoring Poling
Submerged Oil Category
- Heavy
- Moderate
- Light
- None

Sediment Fan and Lake Monitoring Poling Location
Quarter Mile Grid Segments
M - Morrow Lake

N

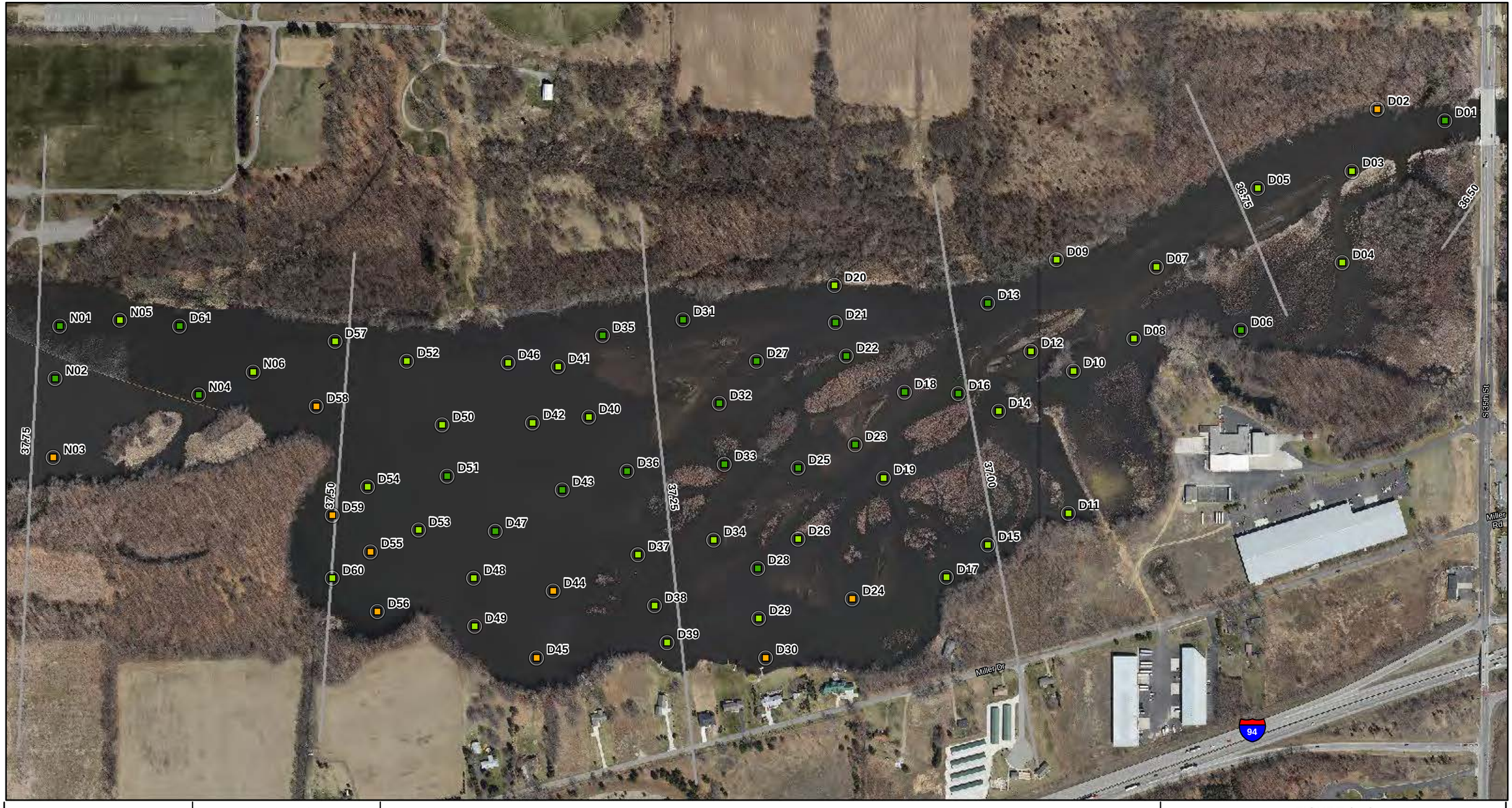
0 350 700 1,400
Scale in Feet

FIGURE 2e-1
SUBMERGED OIL POLING LOCATIONS AND RESULTS
SEDIMENT FAN AND MORROW LAKE (ROUND 27)
DECEMBER 2012
SHEET 1 OF 1

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
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Z:\Work\GIS\Monthly_Progress_Reports\2012_12\MXDs\Fig2e-1_SubOil_Monitoring_Morrow.mxd

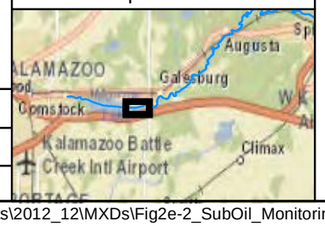
Aerial Photography Date: April 2011



ENBRIDGE

Drawn:	NS	1/11/2013
Approved:	EE	1/11/2013
Project #:	60284509	

Map Location



Legend

Round 11 Monitoring Poling

Submerged Oil Category

- Heavy
- Moderate
- Light
- None

Delta And Neck Monitoring Poling Location (Primary)

Quarter Mile Grid Segments

D - Morrow Lake Delta
N - Morrow Lake Neck

N

0 200 400 800

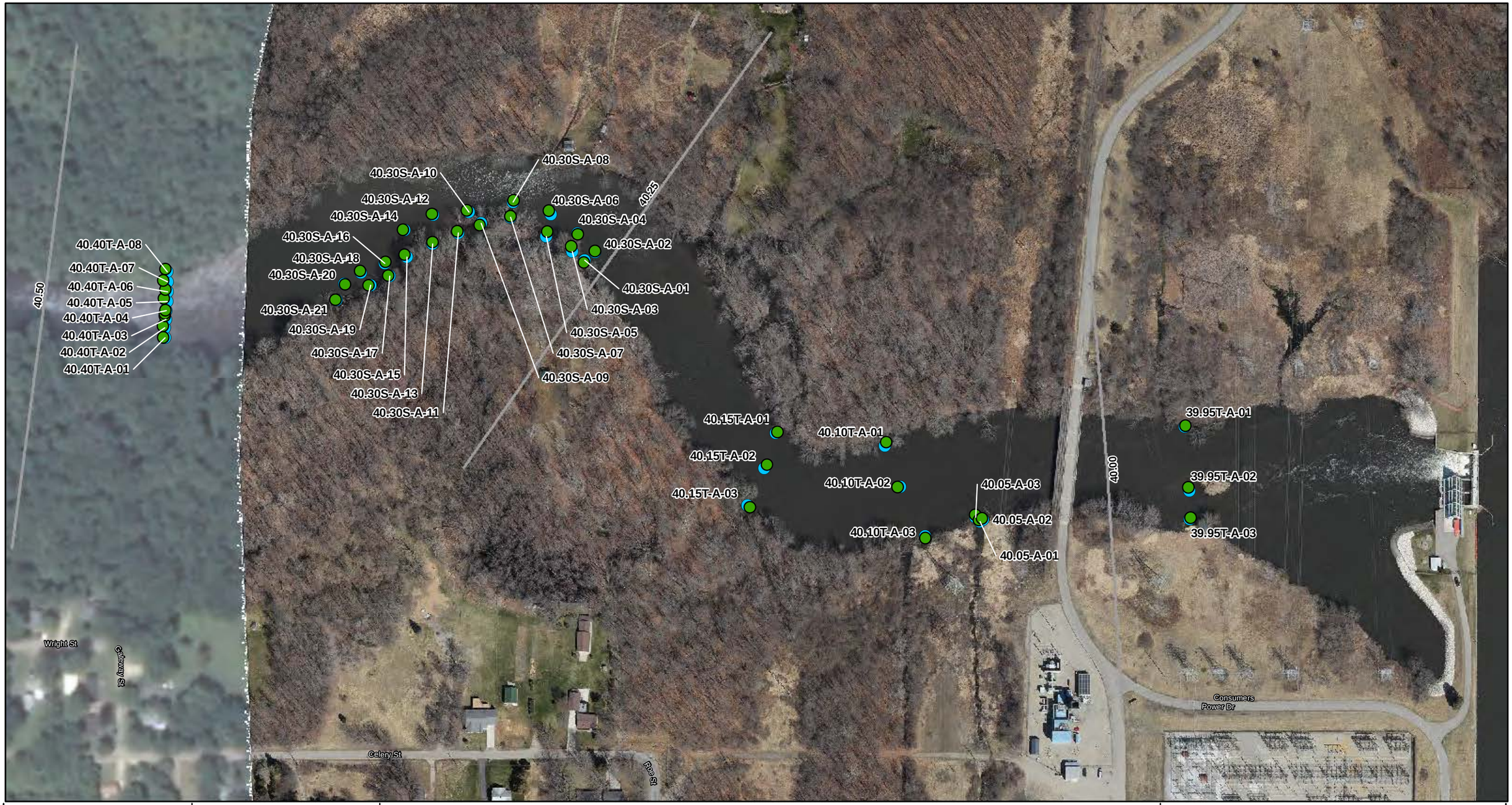
Scale in Feet

FIGURE 2e-2
SUBMERGED OIL POLING LOCATIONS AND RESULTS
MORROW LAKE DELTA (ROUND 11)
DECEMBER 2012
SHEET 1 OF 1

ENBRIDGE LINE 6B MP 608
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Z:\Work\GIS\Monthly_Progress_Reports\2012_12\MXDs\Fig2e-2_SubOil_Monitoring_Delta.mxd

Aerial Photography Date: April 2011



ENBRIDGE

Drawn:	NS	1/2/2013
Approved:	EE	1/2/2013
Project #:	60246209	

Map Location



Legend

Downstream Morrow Lake Dam Poling

Submerged Oil Category

- Dry
- Heavy
- Moderate
- Light
- None

Target Poling Location Below Morrow Lake Dam

Quarter Mile Grid Segments

N

0 100 200 400

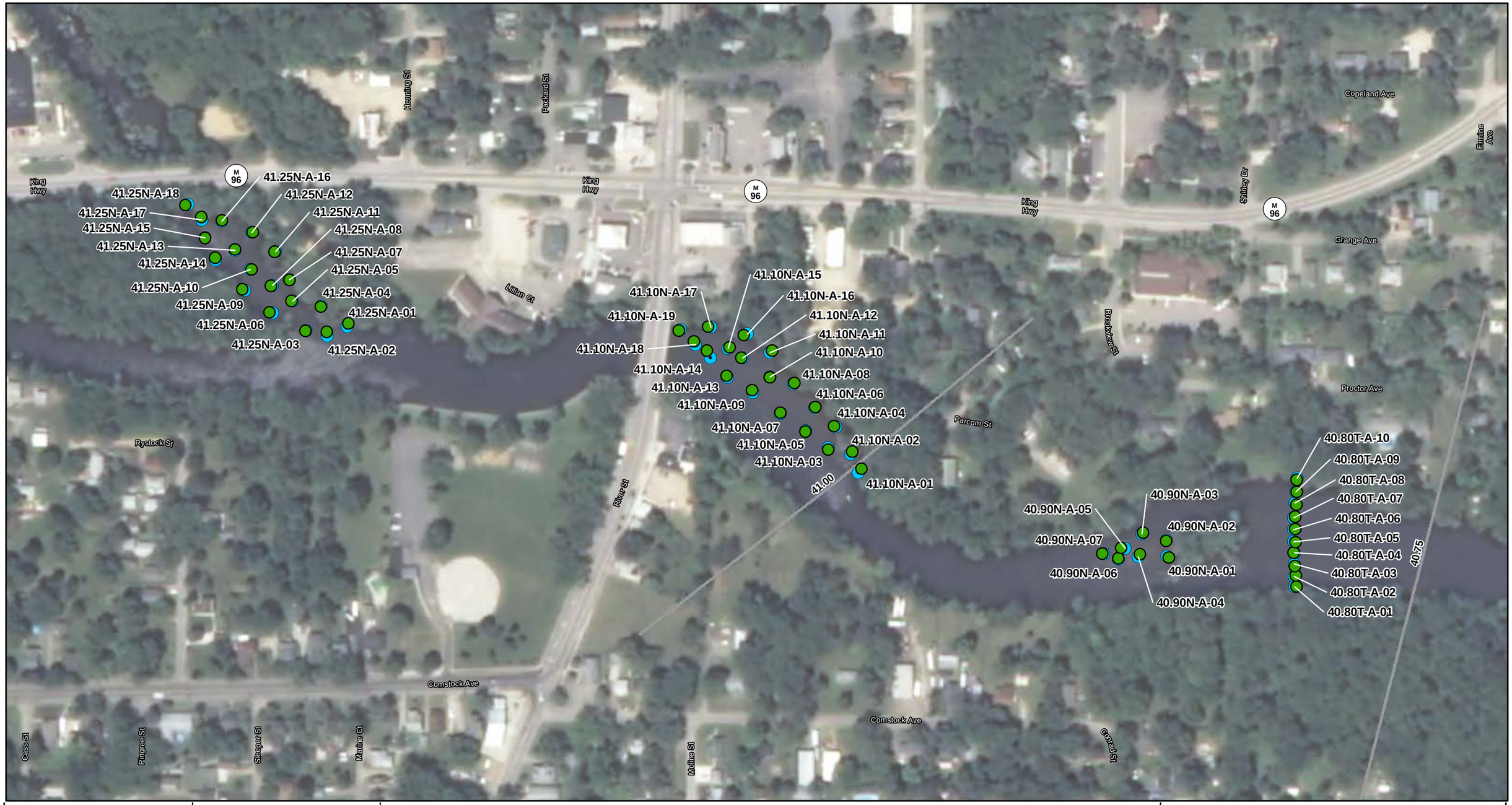
Scale in Feet

FIGURE 2e-3
SUBMERGED OIL POLING LOCATIONS AND RESULTS
DOWNSTREAM MORROW LAKE DAM
DECEMBER 2012
SHEET 1 OF 2

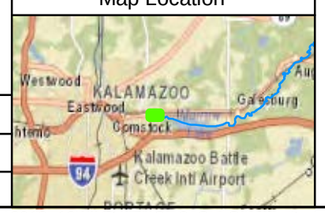
ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_12\MXDs\Fig2e-3_SubOil_Monitoring_Below_Morrow_Dam.mxd

Aerial Photography Date: April 2011 over August 2010



Map Location



ENBRIDGE

Drawn:	NS	1/2/2013
Approved:	EE	1/2/2013
Project #:	60246209	

Legend

Downstream Morrow Lake Dam Poling

Target Poling Location Below Morrow Lake Dam

Quarter Mile Grid Segments

Submerged Oil Category

- Dry
- Heavy
- Moderate
- Light
- None

N

0 100 200 400

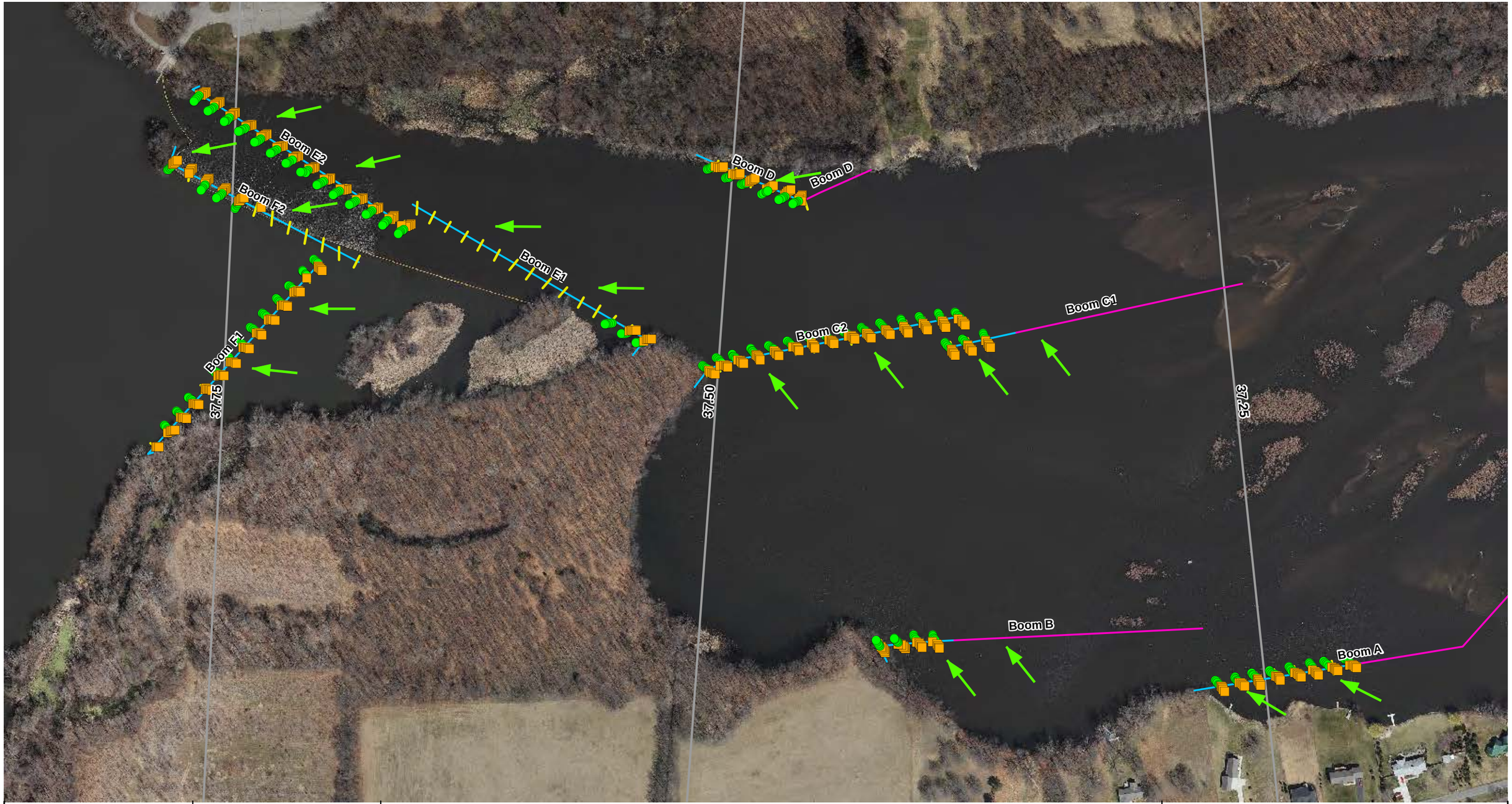
Scale in Feet

FIGURE 2e-3
SUBMERGED OIL POLING LOCATIONS AND RESULTS
DOWNSTREAM MORROW LAKE DAM
DECEMBER 2012
SHEET 2 OF 2

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
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Z:\Work\GIS\Monthly_Progress_Reports\2012_12\MXDs\Fig2e-3_SubOil_Monitoring_Below_Morrow_Dam.mxd

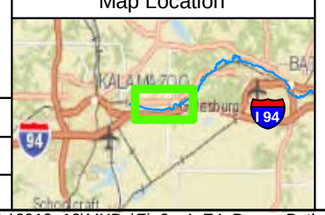
Aerial Photography Date: April 2011 over August 2010



ENBRIDGE

Drawn:	NS	1/2/2013
Approved:	EE	1/2/2013
Project #:	60246209	

Map Location



Legend

Bathymetry Points (December 2012)
- Upstream
- Downstream

E 4.0 Containment Curtain (Approximate Former Location)
- X-TEX Sediment Curtain
- No Curtain
- Target Transect
- Quarter Mile Grid Segments
- Approximate Flow Direction Based on Hydrodynamic Model

N

0 125 250 500

Scale in Feet

FIGURE 2e-4
E 4.0 BOOM BATHYMETRY POINTS
OVERVIEW
DECEMBER 2012
SHEET 1 OF 12

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

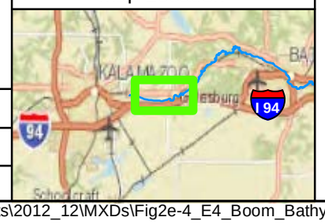
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Aerial Photography Date: April 2011



Drawn:	NS	1/2/2013
Approved:	EE	1/2/2013
Project #:	60246209	

Map Location



Legend

Bathymetry Points (December 2012)

- Upstream
- Downstream

E 4.0 Containment Curtain (Approximate Former Location)

- X-TEX Sediment Curtain
- No Curtain
- Target Transect
- Quarter Mile Grid Segments
- Approximate Flow Direction Based on Hydrodynamic Model

N

0 15 30 60

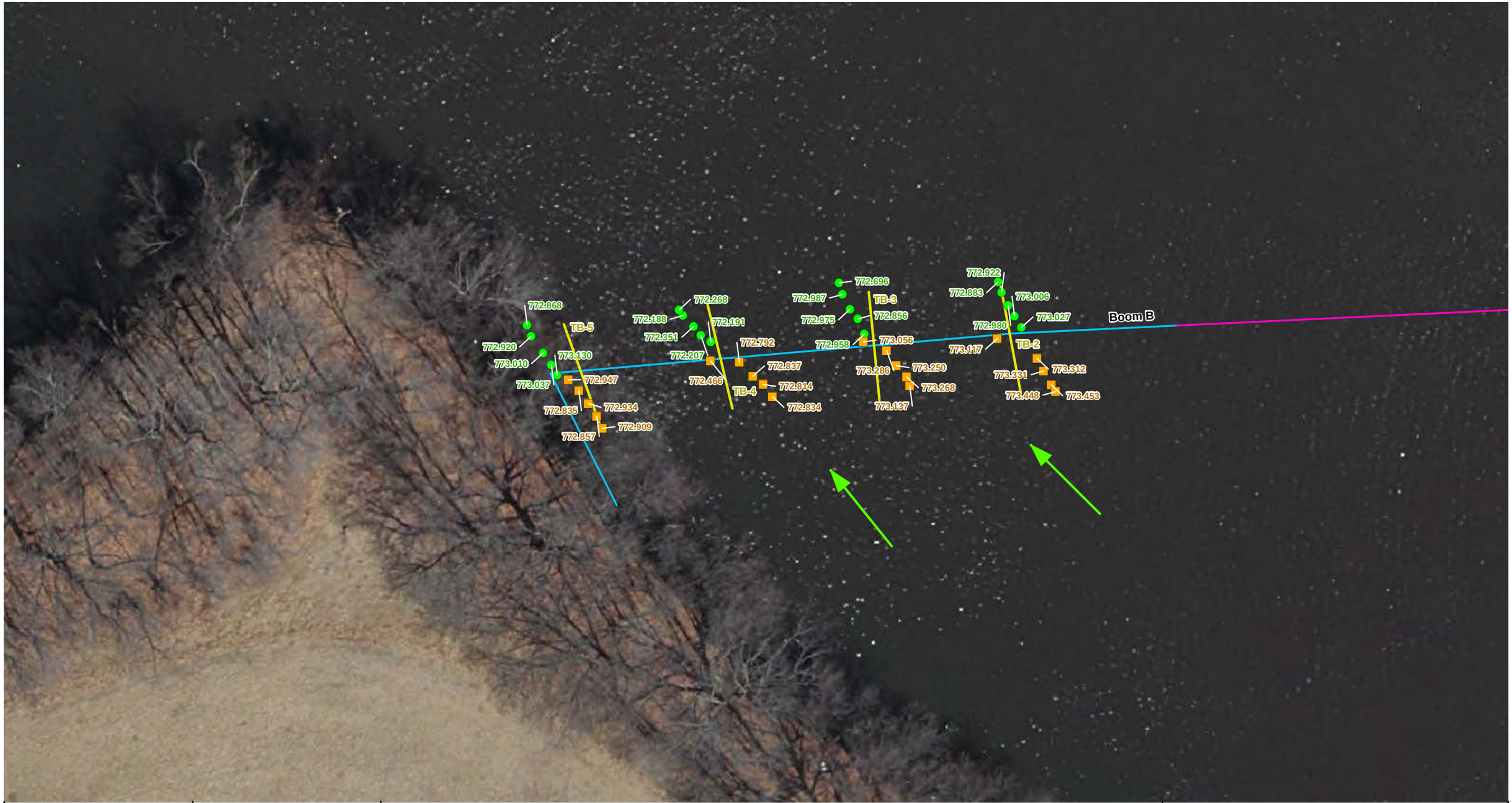
Scale in Feet

FIGURE 2e-4
E 4.0 BOOM BATHYMETRY POINTS
BOOM A
DECEMBER 2012
SHEET 2 OF 12

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_12\MXDs\Fig2e-4_E4_Boom_Bathy_Sheets2-12.mxd

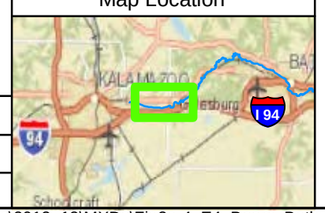
Aerial Photography Date: April 2011



ENBRIDGE

Drawn:	NS	1/2/2013
Approved:	EE	1/2/2013
Project #:	60246209	

Map Location



Legend

Bathymetry Points (December 2012)
- Upstream
- Downstream

E 4.0 Containment Curtain (Approximate Former Location)
- X-TEX Sediment Curtain
- No Curtain
- Target Transect
- Quarter Mile Grid Segments
- Approximate Flow Direction Based on Hydrodynamic Model

N

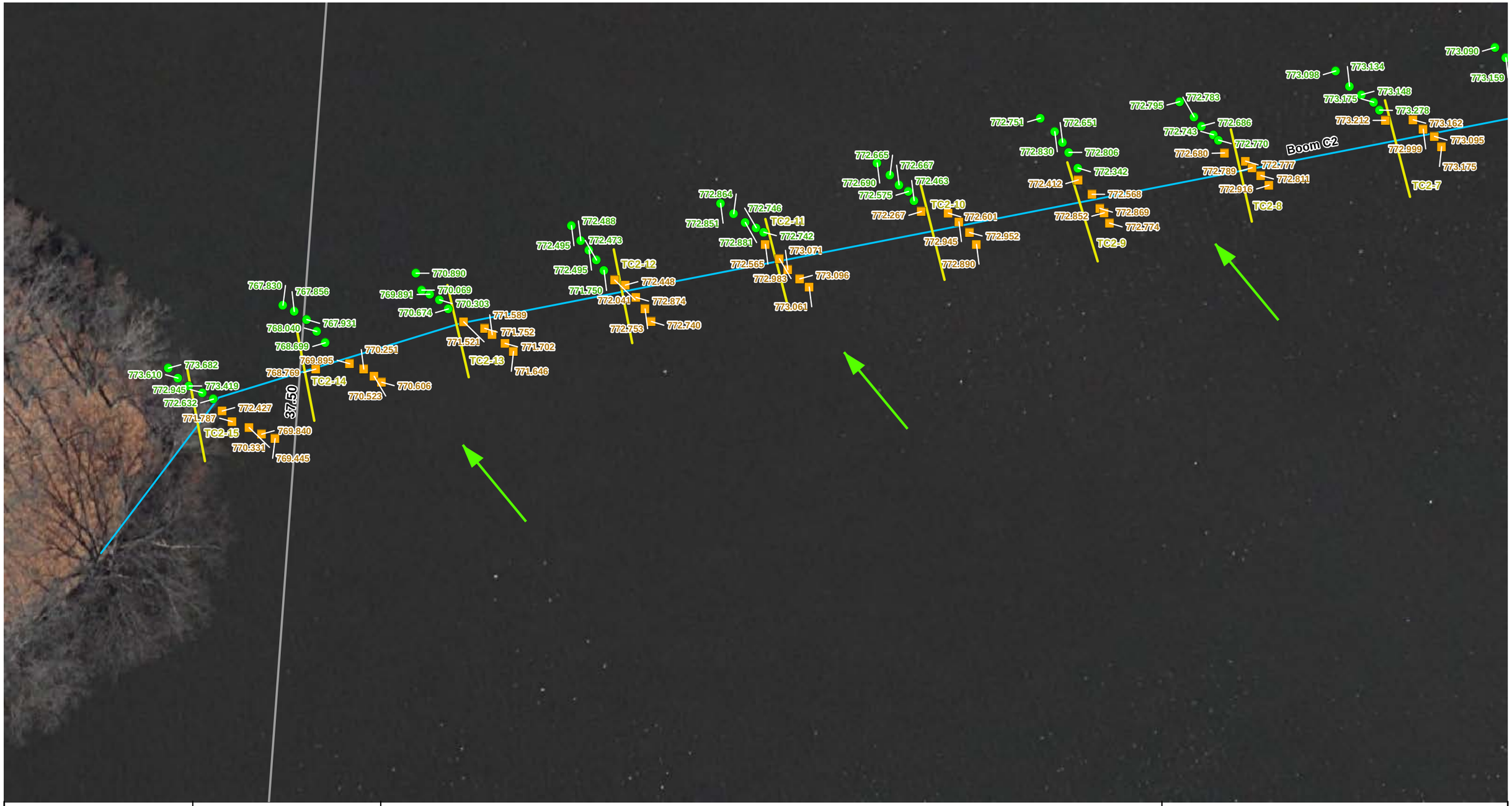
0 15 30 60
Scale in Feet

FIGURE 2e-4
E 4.0 BOOM BATHYMETRY POINTS
BOOM B
DECEMBER 2012
SHEET 3 OF 12

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_12\MXDs\Fig2e-4_E4_Boom_Bathy_Sheets2-12.mxd

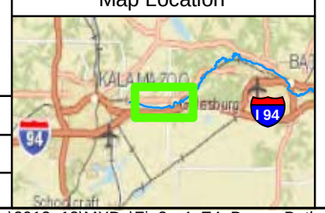
Aerial Photography Date: April 2011



ENBRIDGE

Drawn:	NS	1/2/2013
Approved:	EE	1/2/2013
Project #:	60246209	

Map Location



Legend

Bathymetry Points (December 2012)

- Upstream
- Downstream

E 4.0 Containment Curtain (Approximate Former Location)

- X-TEX Sediment Curtain
- No Curtain
- Target Transect
- Quarter Mile Grid Segments
- Approximate Flow Direction Based on Hydrodynamic Model

N

0 15 30 60

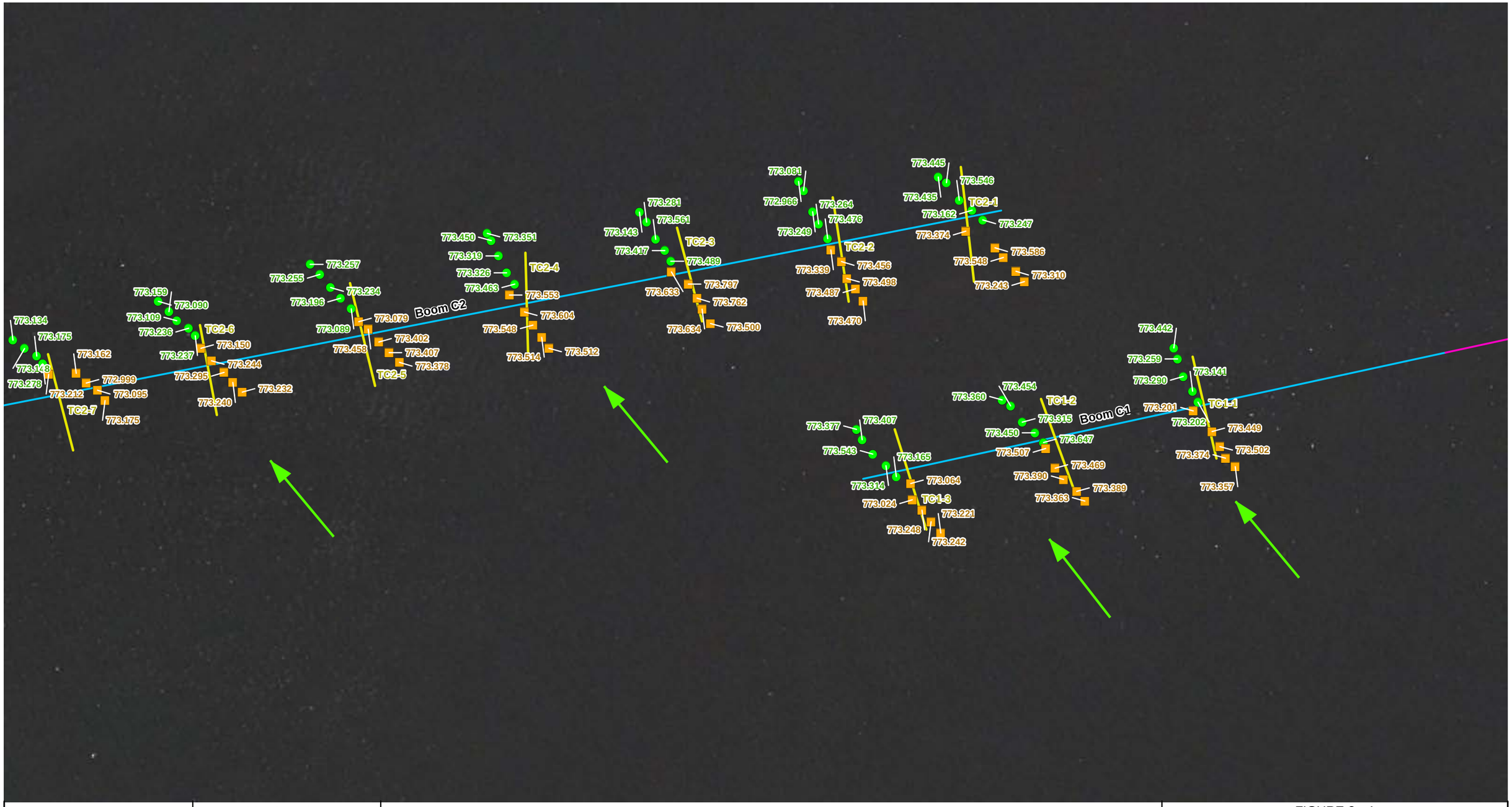
Scale in Feet

FIGURE 2e-4
E 4.0 BOOM BATHYMETRY POINTS
BOOM C2
DECEMBER 2012
SHEET 4 OF 12

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

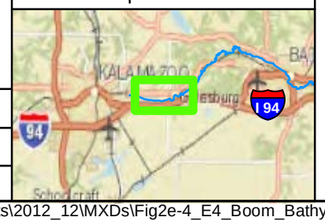
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Aerial Photography Date: April 2011



Drawn:	NS	1/2/2013
Approved:	EE	1/2/2013
Project #:	60246209	

Map Location



Legend

Bathymetry Points (December 2012)

- Upstream
- Downstream

E 4.0 Containment Curtain (Approximate Former Location)

- X-TEX Sediment Curtain
- No Curtain
- Target Transect
- Quarter Mile Grid Segments
- Approximate Flow Direction Based on Hydrodynamic Model

N

0 15 30 60

Scale in Feet

FIGURE 2e-4
E 4.0 BOOM BATHYMETRY POINTS
BOOM C2/C1
DECEMBER 2012
SHEET 5 OF 12

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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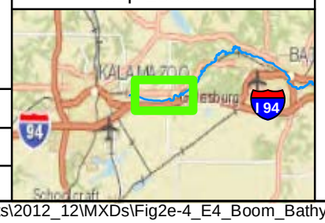
Aerial Photography Date: April 2011



ENBRIDGE

Drawn:	NS	1/2/2013
Approved:	EE	1/2/2013
Project #:	60246209	

Map Location



Legend

Bathymetry Points (December 2012)

- Upstream
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- No Curtain
- Target Transect
- Quarter Mile Grid Segments
- Approximate Flow Direction Based on Hydrodynamic Model

N

0 15 30 60

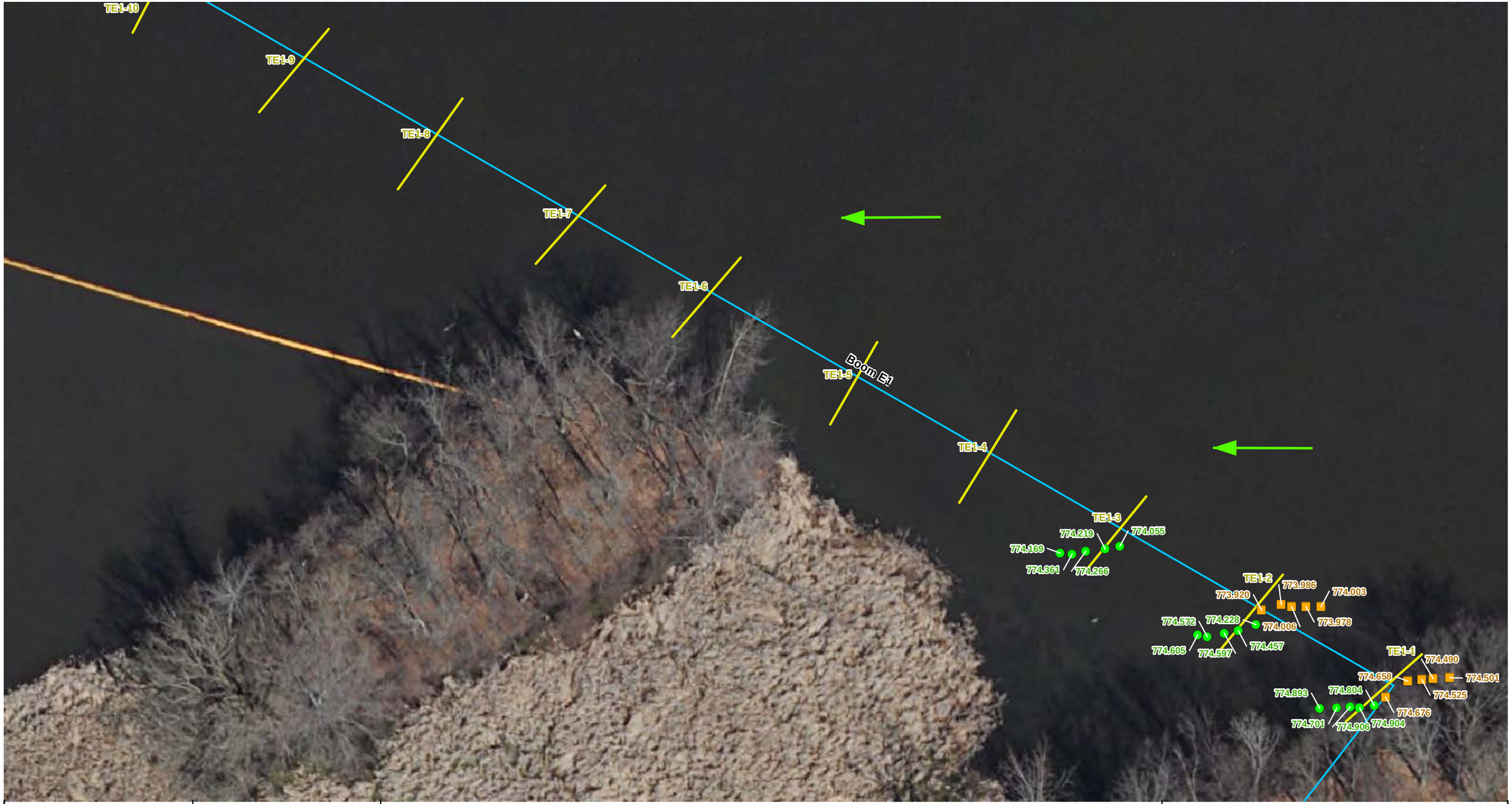
Scale in Feet

FIGURE 2e-4
E 4.0 BOOM BATHYMETRY POINTS
BOOM C2/C1
DECEMBER 2012
SHEET 6 OF 12

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

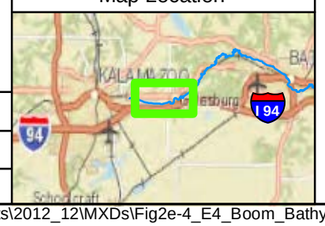
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Aerial Photography Date: April 2011



ENBRIDGE		
Drawn:	NS	1/2/2013
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Project #:	60246209	

Map Location



Legend

Bathymetry Points (December 2012)

- Upstream
- Downstream

E 4.0 Containment Curtain (Approximate Former Location)

- X-TEX Sediment Curtain
- No Curtain

- Target Transect
- Quarter Mile Grid Segments
- Approximate Flow Direction Based on Hydrodynamic Model

N

0 15 30 60

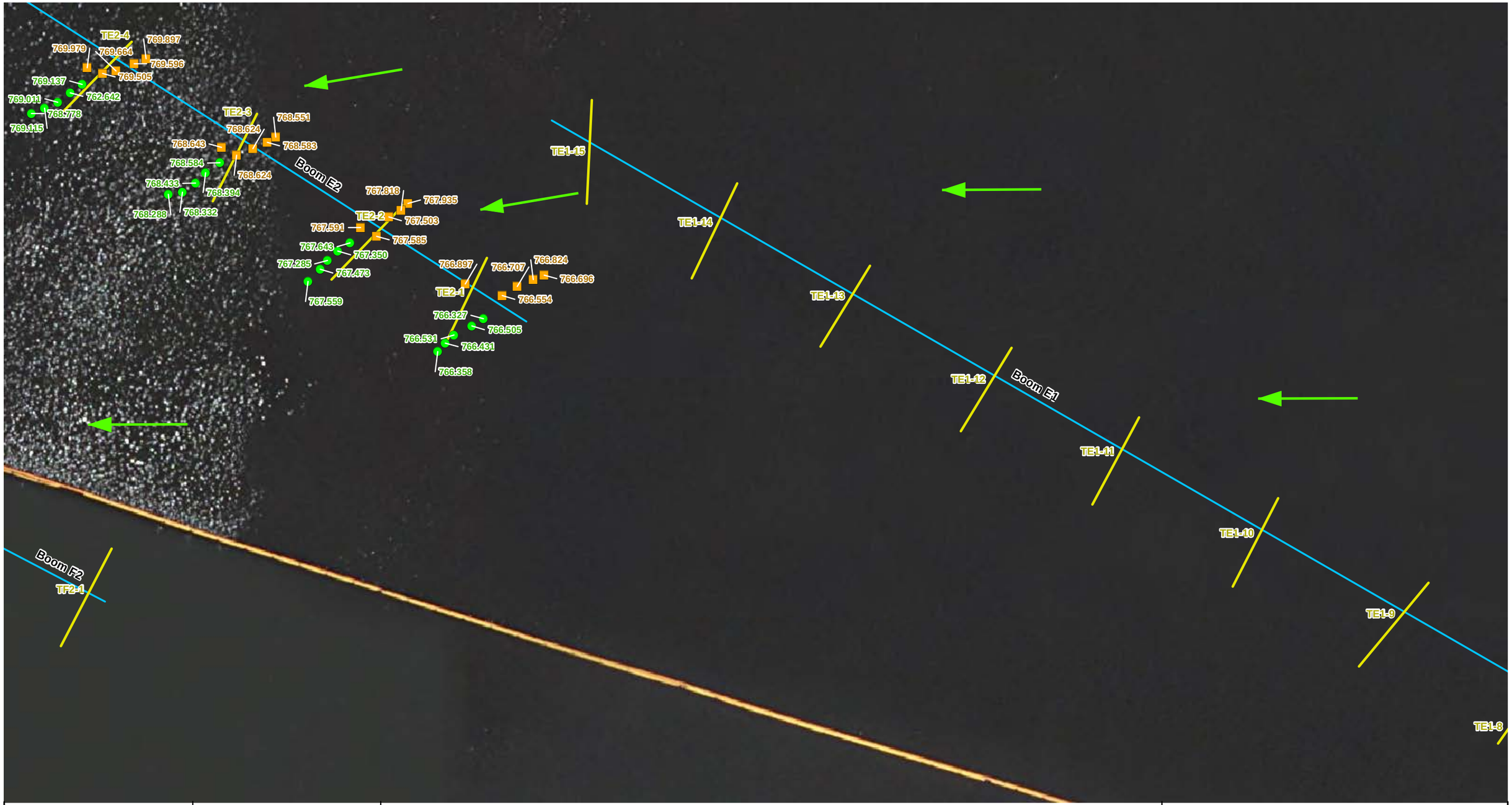
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FIGURE 2e-4
E 4.0 BOOM BATHYMETRY POINTS
BOOM E1
DECEMBER 2012
SHEET 7 OF 12

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

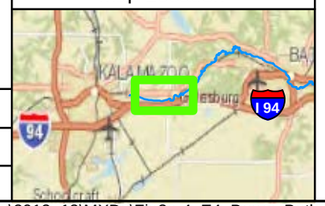
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Aerial Photography Date: April 2011



Drawn:	NS	1/2/2013
Approved:	EE	1/2/2013
Project #:	60246209	

Map Location



Legend

Bathymetry Points (December 2012)

- Upstream
- Downstream

E 4.0 Containment Curtain (Approximate Former Location)

- X-TEX Sediment Curtain
- No Curtain
- Target Transect
- Quarter Mile Grid Segments
- Approximate Flow Direction Based on Hydrodynamic Model

N

0 15 30 60

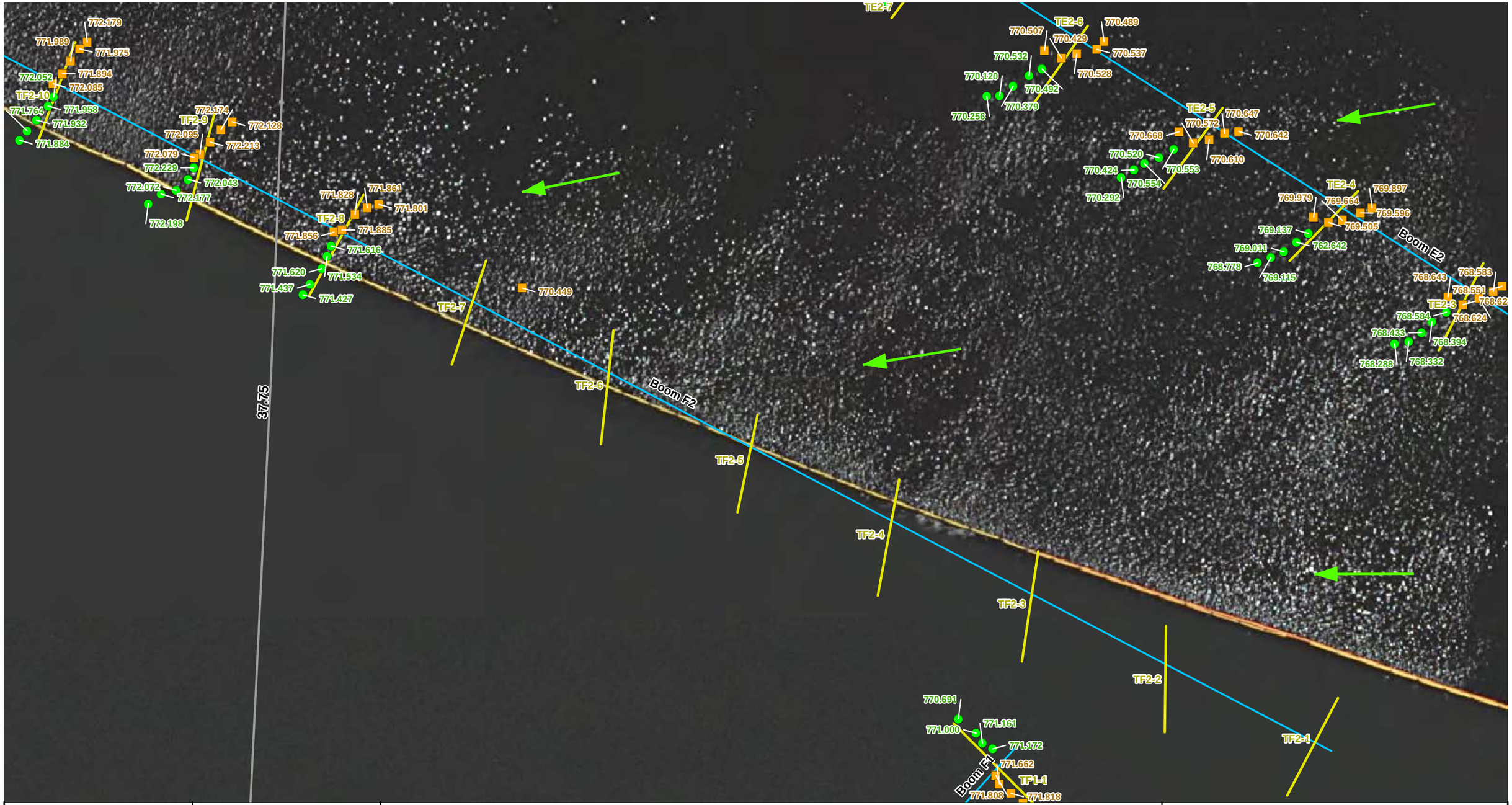
Scale in Feet

FIGURE 2e-4
E 4.0 BOOM BATHYMETRY POINTS
BOOM E1/E2
DECEMBER 2012
SHEET 8 OF 12

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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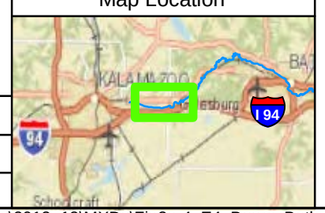
Aerial Photography Date: April 2011



ENBRIDGE

Drawn:	NS	1/2/2013
Approved:	EE	1/2/2013
Project #:	60246209	

Map Location



Legend

Bathymetry Points (December 2012)

- Upstream
- Downstream

E 4.0 Containment Curtain (Approximate Former Location)

- X-TEX Sediment Curtain
- No Curtain

- Target Transect
- Quarter Mile Grid Segments
- Approximate Flow Direction Based on Hydrodynamic Model

N

0 15 30 60

Scale in Feet

FIGURE 2e-4
E 4.0 BOOM BATHYMETRY POINTS
BOOM E2/F2
DECEMBER 2012
SHEET 9 OF 12

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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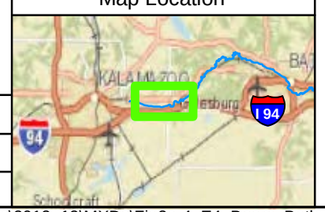
Aerial Photography Date: April 2011



ENBRIDGE

Drawn:	NS	1/2/2013
Approved:	EE	1/2/2013
Project #:	60246209	

Map Location



Legend

Bathymetry Points (December 2012)

- Upstream
- Downstream

E 4.0 Containment Curtain (Approximate Former Location)

- X-TEX Sediment Curtain
- No Curtain

- Target Transect
- Quarter Mile Grid Segments
- Approximate Flow Direction Based on Hydrodynamic Model

N

0 15 30 60

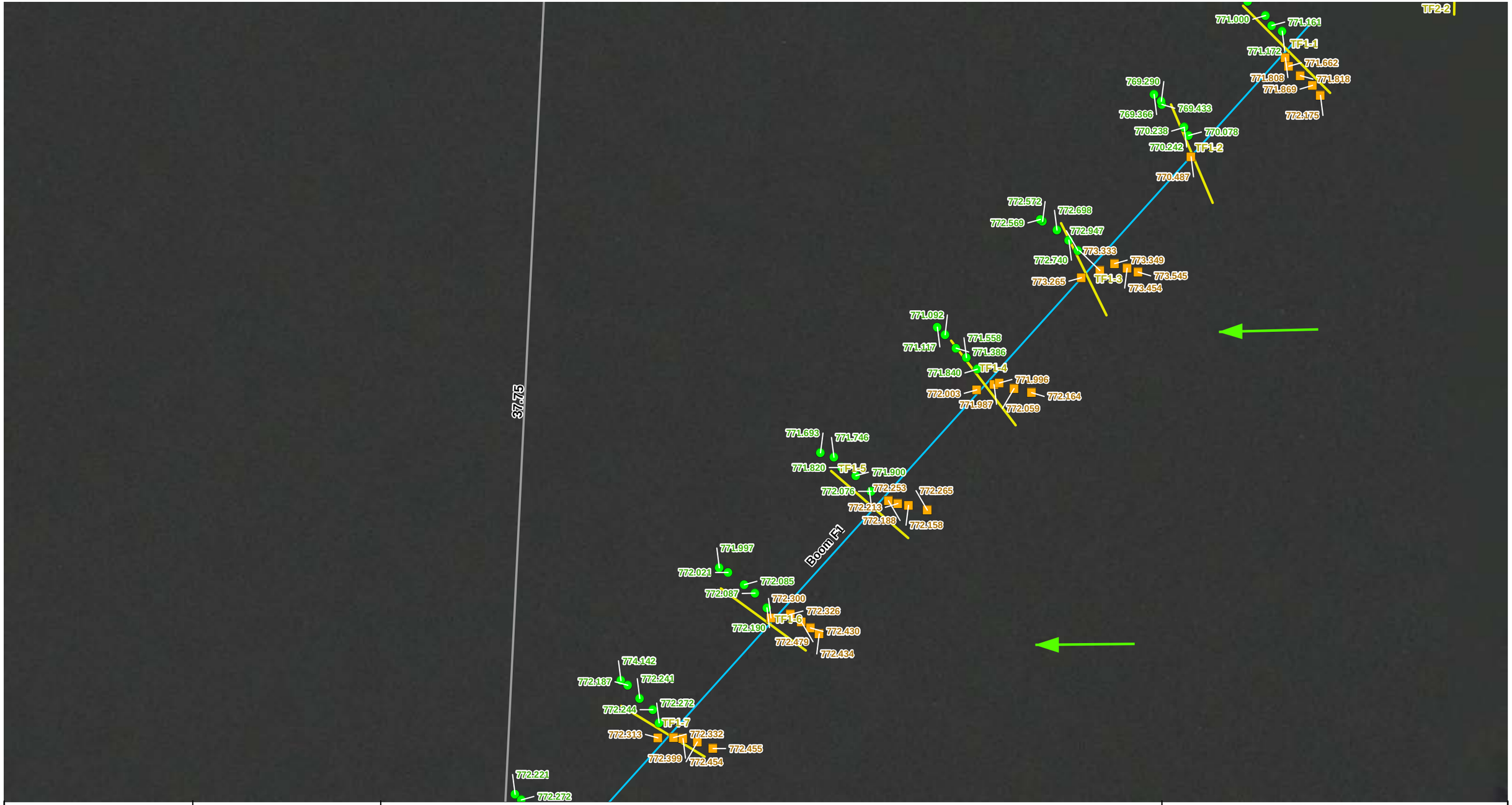
Scale in Feet

FIGURE 2e-4
E 4.0 BOOM BATHYMETRY POINTS
BOOM E2/F2
DECEMBER 2012
SHEET 10 OF 12

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

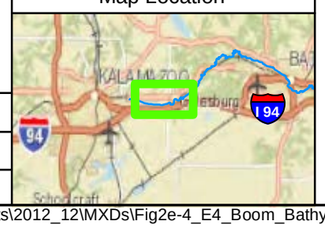
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Aerial Photography Date: April 2011



Drawn:	NS	1/2/2013
Approved:	EE	1/2/2013
Project #:	60246209	

Map Location



Legend

Bathymetry Points (December 2012)

- Upstream
- Downstream

E 4.0 Containment Curtain (Approximate Former Location)

- X-TEX Sediment Curtain
- No Curtain

- Target Transect
- Quarter Mile Grid Segments
- Approximate Flow Direction Based on Hydrodynamic Model

N

0 15 30 60

Scale in Feet

FIGURE 2e-4
E 4.0 BOOM BATHYMETRY POINTS
BOOM F1
DECEMBER 2012
SHEET 11 OF 12

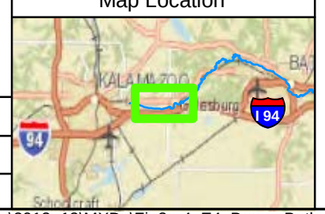
ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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Aerial Photography Date: April 2011



Map Location



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Drawn:	NS	1/2/2013
Approved:	EE	1/2/2013
Project #:	60246209	

Legend

Bathymetry Points (December 2012)

- Upstream
- Downstream

E 4.0 Containment Curtain (Approximate Former Location)

- X-TEX Sediment Curtain
- No Curtain
- Target Transect
- Quarter Mile Grid Segments
- Approximate Flow Direction Based on Hydrodynamic Model

N

0 15 30 60

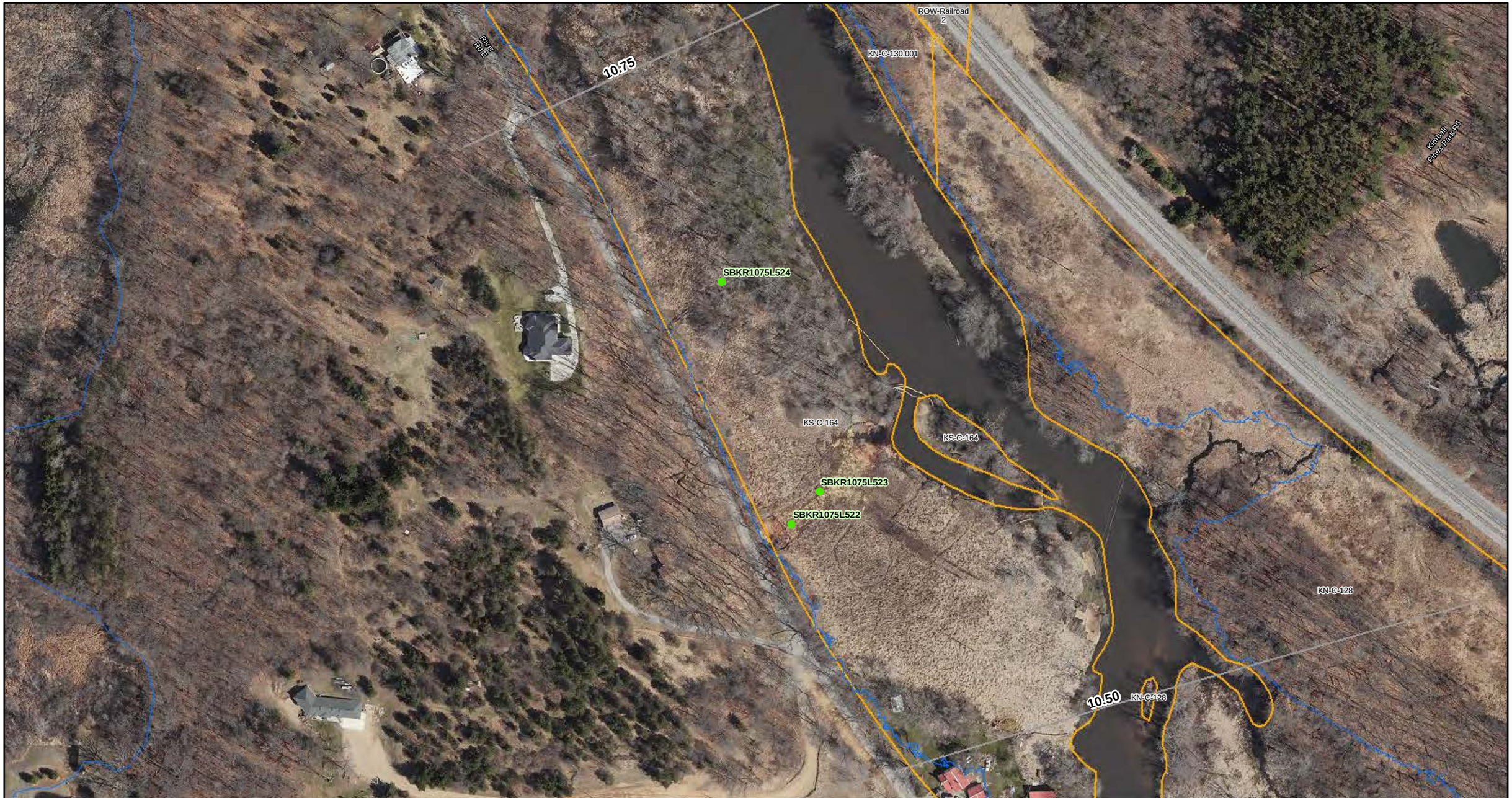
Scale in Feet

FIGURE 2e-4
E 4.0 BOOM BATHYMETRY POINTS
BOOM F1
DECEMBER 2012
SHEET 12 OF 12

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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Aerial Photography Date: April 2011



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Drawn:	NS	1/3/2013
Approved:	EE	1/3/2013
Project #:	60246209	

Map Location



Legend

Kalamazoo River Remedial Investigation

Observations

- Oil
- Visible Sheen
- Fluoresced Oil
- Trace Fluorescence
- No Oil Observed
- Not Logged

Temporary Wells

- Temp. Well, Not Sampled
- Temp. Well, Sampled
- Kalamazoo River Flood Inundation Boundary
- Parcel Boundary
- Quarter Mile Grid Segments

N

0 75 150 300

Scale in Feet

FIGURE 2f-1
KALAMAZOO RIVER REMEDIAL INVESTIGATION
SAMPLE LOCATIONS
DECEMBER 2012
SHEET 1 OF 6

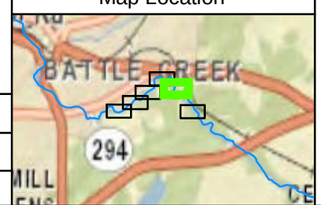
ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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Aerial Photography Date: April 2011

SBKR1175R501
SBKR1150R510
SEKR1150R501
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SBKR1150R507
SBKR1150R509
SBKR1150R508
SBKR1125R502
SBKR1150R506
SBKR1150R503
SBKR1150R502
SBKR1150R501
11.75
11.50
11.25
11.00
KS-C-168
KS-C-167
KS-C-166
KN-C-131
KN-C-130.002
KN-C-130.001
KS-C-170.OUT002.F
KS-C-170.OUT002.G
KS-C-170.OUT002.H
River Rd E
ROW-River Rd

Map Location



Drawn:	NS	1/3/2013
Approved:	EE	1/3/2013
Project #:	60246209	

Legend

Kalamazoo River Remedial Investigation

Observations

- Oil
- Visible Sheen
- Fluoresced Oil
- Trace Fluorescence
- No Oil Observed
- Not Logged

Temporary Wells

- Temp. Well, Not Sampled
- Temp. Well, Sampled
- Kalamazoo River Flood Inundation Boundary
- Parcel Boundary
- Quarter Mile Grid Segments

N

0 75 150 300

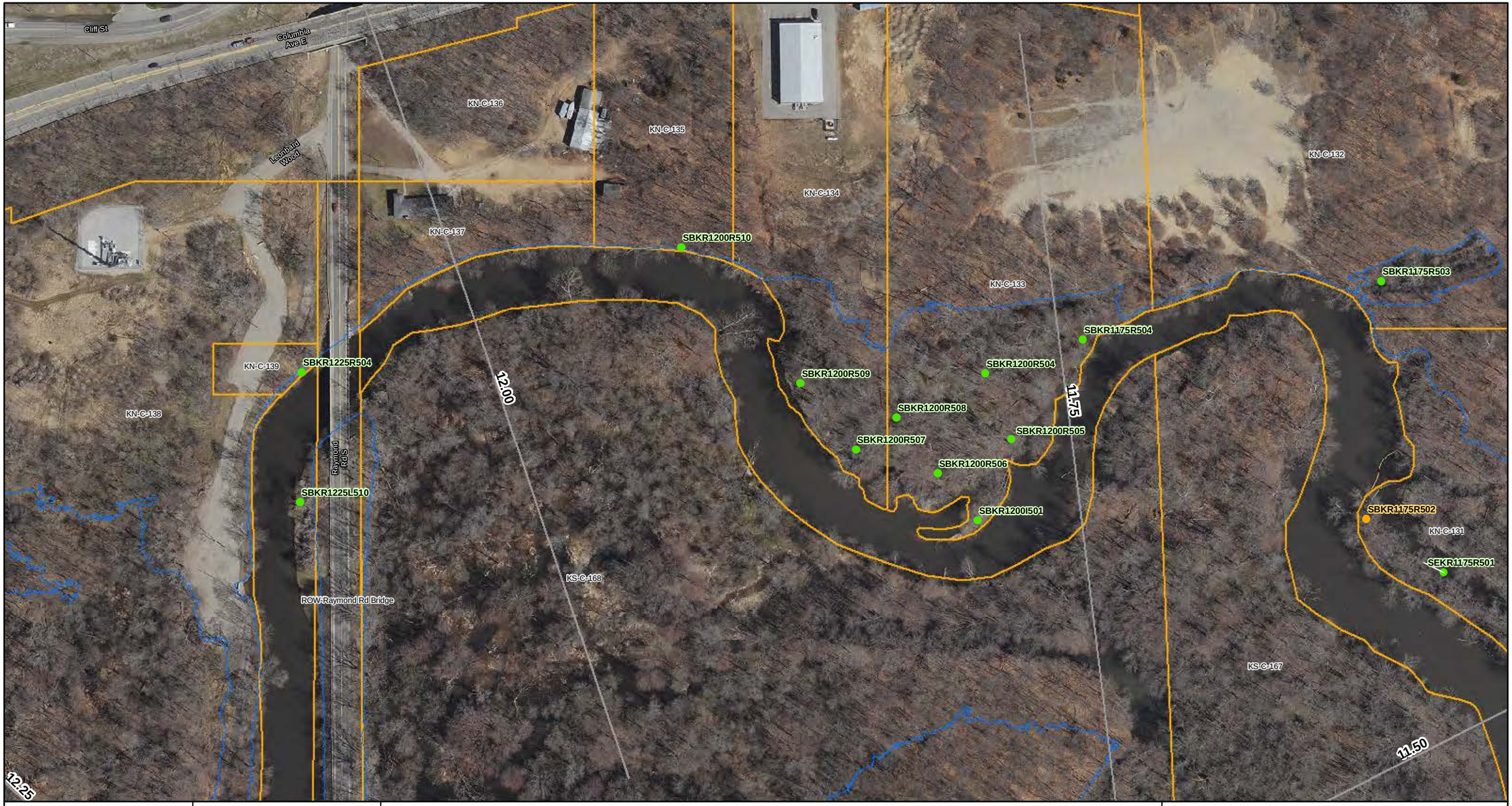
Scale in Feet

FIGURE 2f-1
KALAMAZOO RIVER REMEDIAL INVESTIGATION
SAMPLE LOCATIONS
DECEMBER 2012
SHEET 2 OF 6

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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Aerial Photography Date: April 2011



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Drawn:	NS	1/3/2013
Approved:	EE	1/3/2013
Project #:	60246209	

Map Location



Legend

Kalamazoo River Remedial Investigation

Observations

- Oil
- Visible Sheen
- Fluoresced Oil
- Trace Fluorescence
- No Oil Observed
- Not Logged

Temporary Wells

- Temp. Well, Not Sampled
- Temp. Well, Sampled
- Kalamazoo River Flood Inundation Boundary
- Parcel Boundary
- Quarter Mile Grid Segments

N

0 75 150 300

Scale in Feet

FIGURE 2f-1
KALAMAZOO RIVER REMEDIAL INVESTIGATION
SAMPLE LOCATIONS
DECEMBER 2012
SHEET 3 OF 6

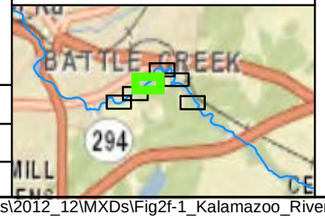
ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_12\MXDs\Fig2f-1_Kalamazoo_River_RI.mxd

Aerial Photography Date: April 2011



Map Location



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Approved:	EE	1/3/2013
Project #:	60246209	

Legend

Kalamazoo River Remedial Investigation Observations

- Oil
- Visible Sheen
- Fluoresced Oil
- Trace Fluorescence
- No Oil Observed
- Not Logged

Temporary Wells

- Temp. Well, Not Sampled
- Temp. Well, Sampled
- Kalamazoo River Flood Inundation Boundary
- Parcel Boundary
- Quarter Mile Grid Segments

N

0 75 150 300

Scale in Feet

FIGURE 2f-1
KALAMAZOO RIVER REMEDIAL INVESTIGATION
SAMPLE LOCATIONS
DECEMBER 2012
SHEET 4 OF 6

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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Aerial Photography Date: April 2011



Map Location



Legend

Kalamazoo River Remedial Investigation

Observations

- Oil
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- Fluoresced Oil
- Trace Fluorescence
- No Oil Observed
- Not Logged

Temporary Wells

- Temp. Well, Not Sampled
- Temp. Well, Sampled
- Kalamazoo River Flood Inundation Boundary
- Parcel Boundary
- Quarter Mile Grid Segments

N

0 75 150 300

Scale in Feet

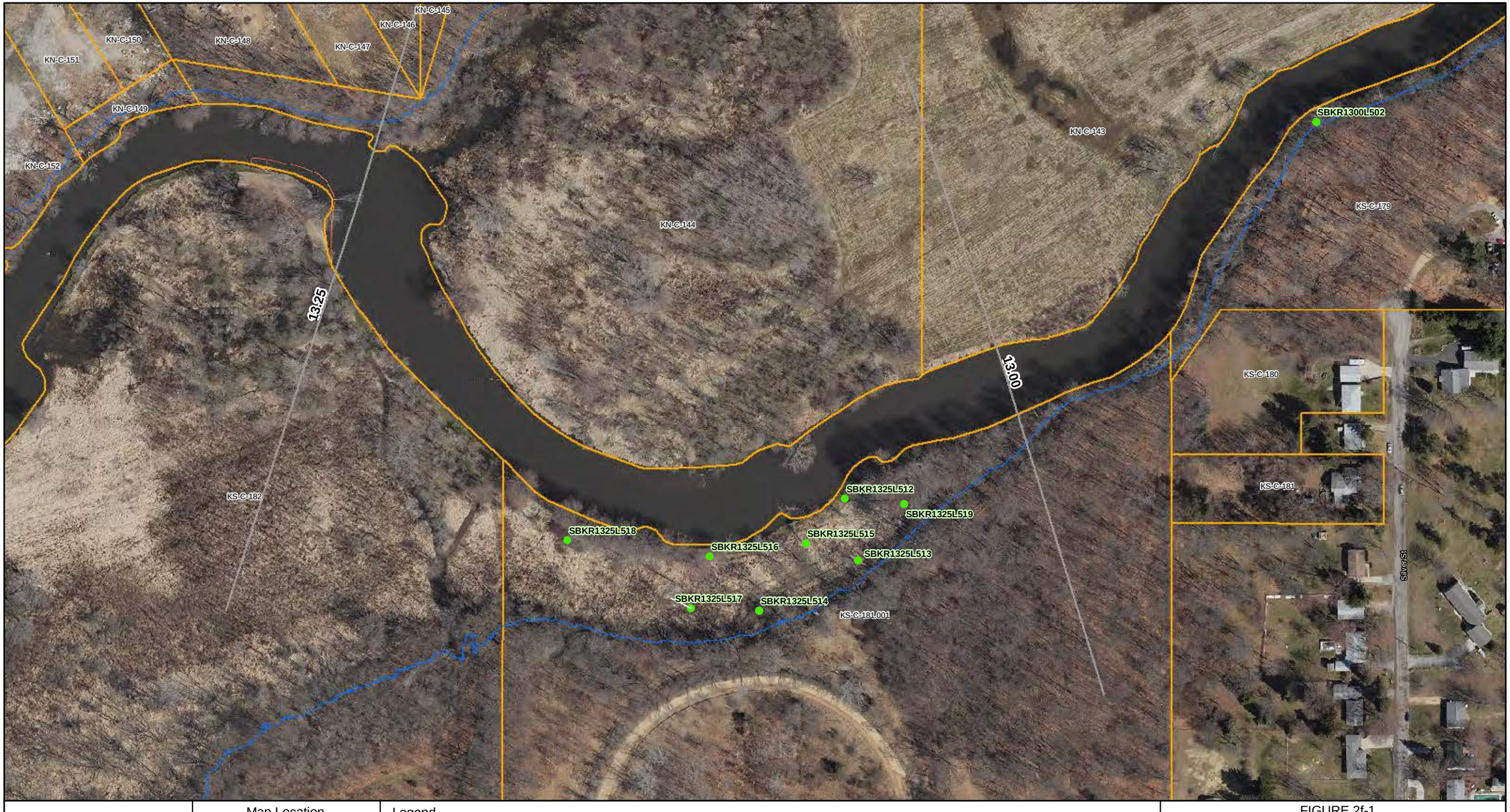
Drawn:	NS	1/3/2013
Approved:	EE	1/3/2013
Project #:	60246209	

FIGURE 2f-1
KALAMAZOO RIVER REMEDIAL INVESTIGATION
SAMPLE LOCATIONS
DECEMBER 2012
SHEET 5 OF 6

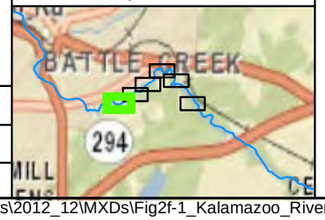
ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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Aerial Photography Date: April 2011



Map Location



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Approved:	EE	1/3/2013
Project #:	60246209	

Legend

Kalamazoo River Remedial Investigation Observations

- Oil
- Visible Sheen
- Fluoresced Oil
- Trace Fluorescence
- No Oil Observed
- Not Logged

Temporary Wells

- Temp. Well, Not Sampled
- Temp. Well, Sampled
- Kalamazoo River Flood Inundation Boundary
- Parcel Boundary
- Quarter Mile Grid Segments

N

0 75 150 300

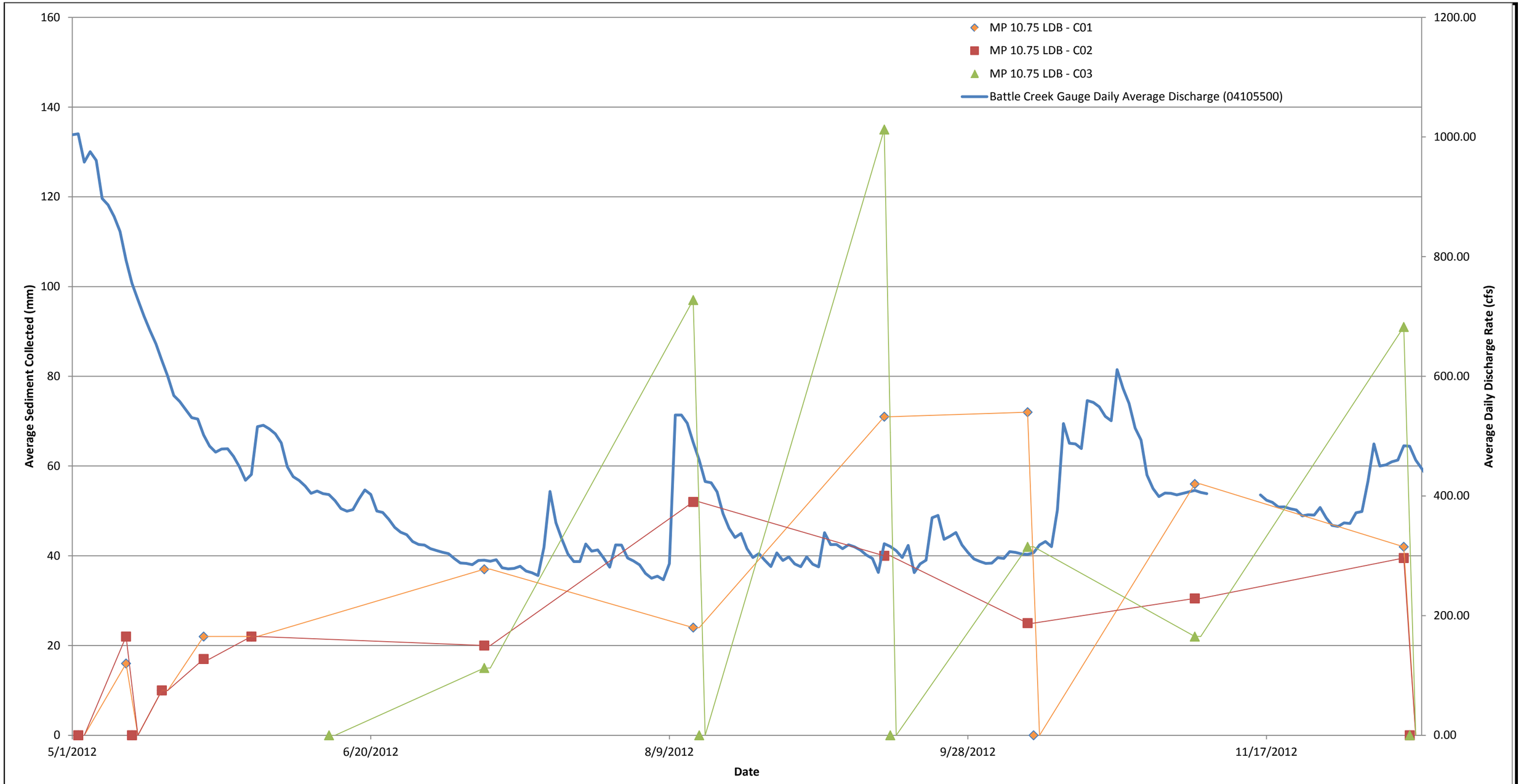
Scale in Feet

FIGURE 2f-1
KALAMAZOO RIVER REMEDIAL INVESTIGATION
SAMPLE LOCATIONS
DECEMBER 2012
SHEET 6 OF 6

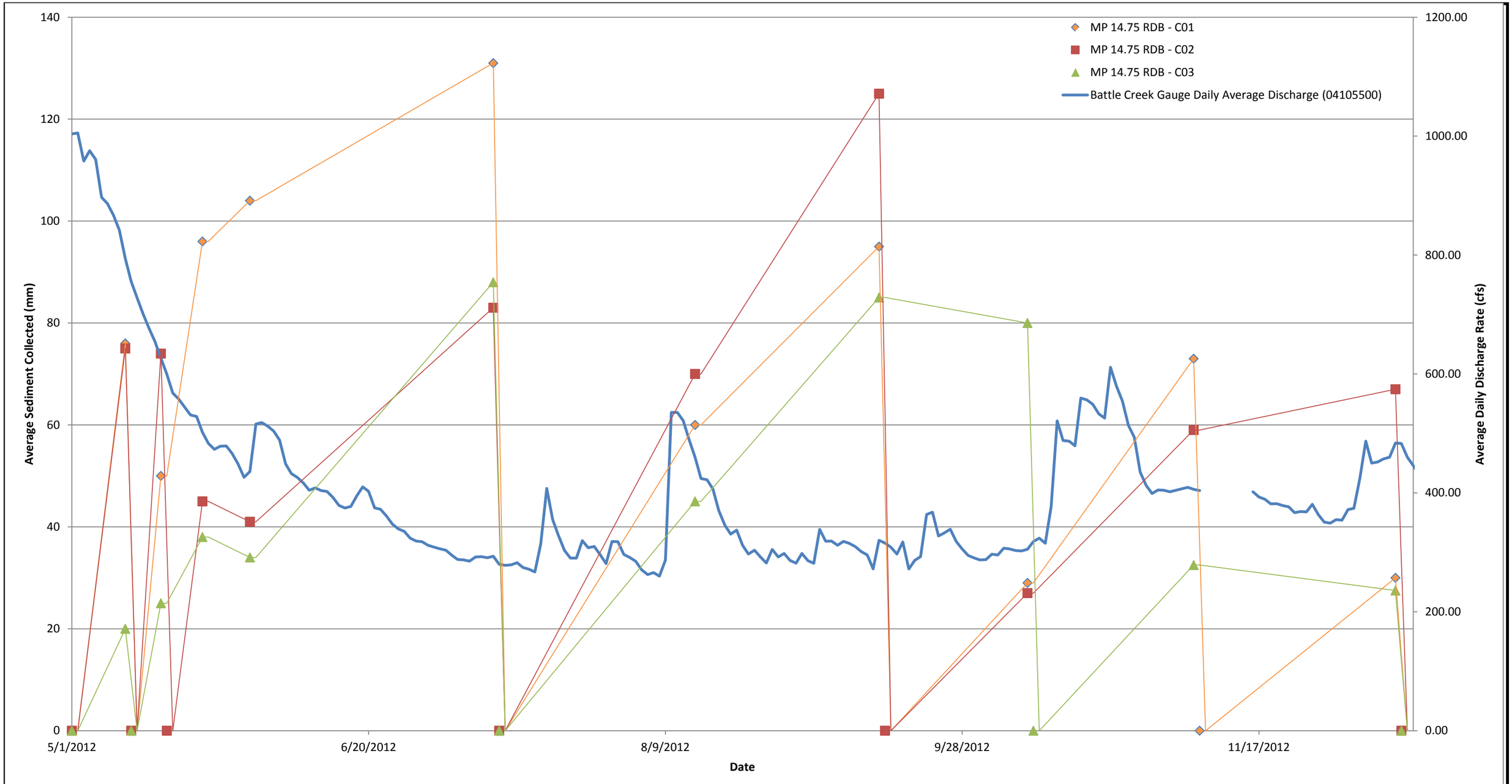
ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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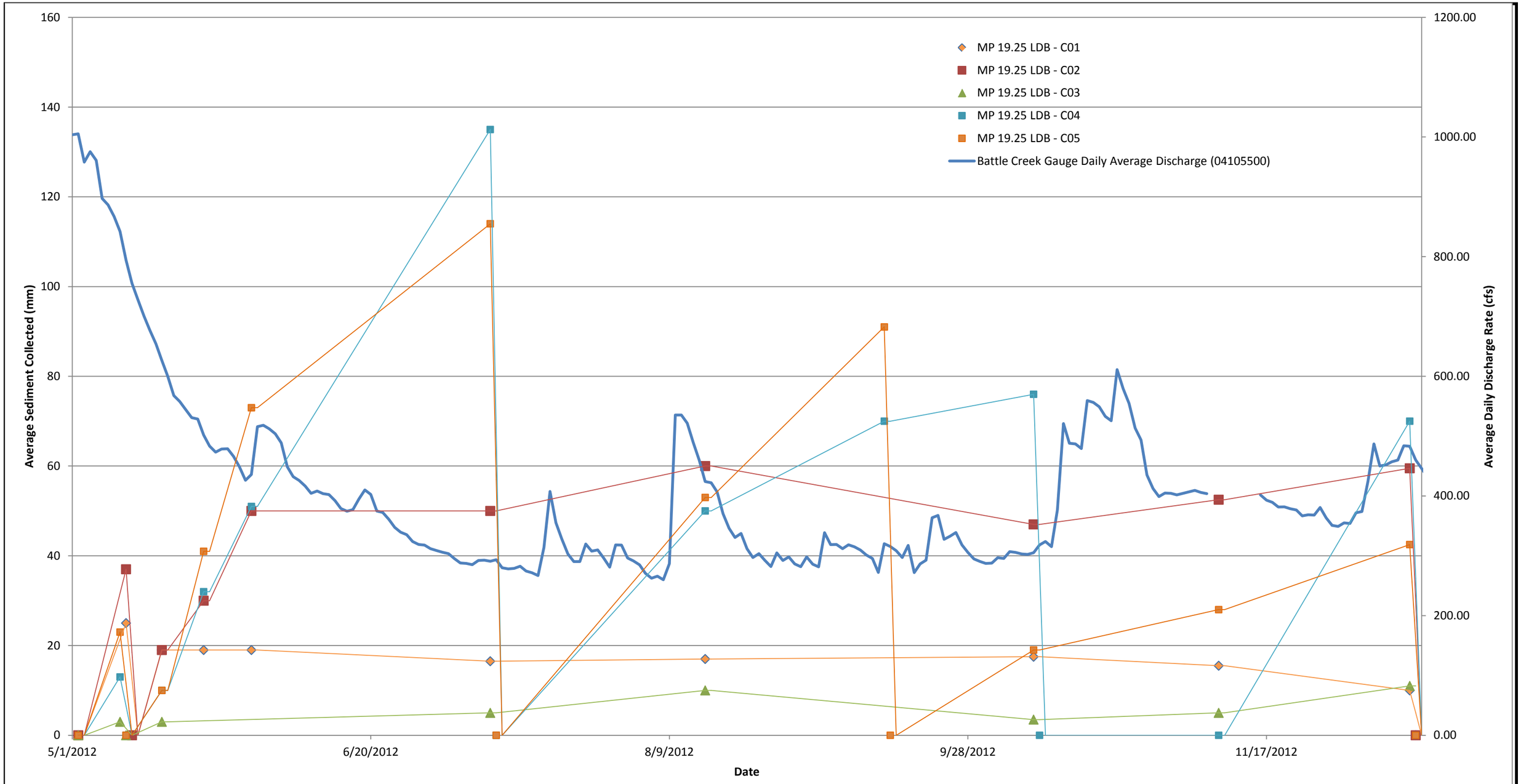
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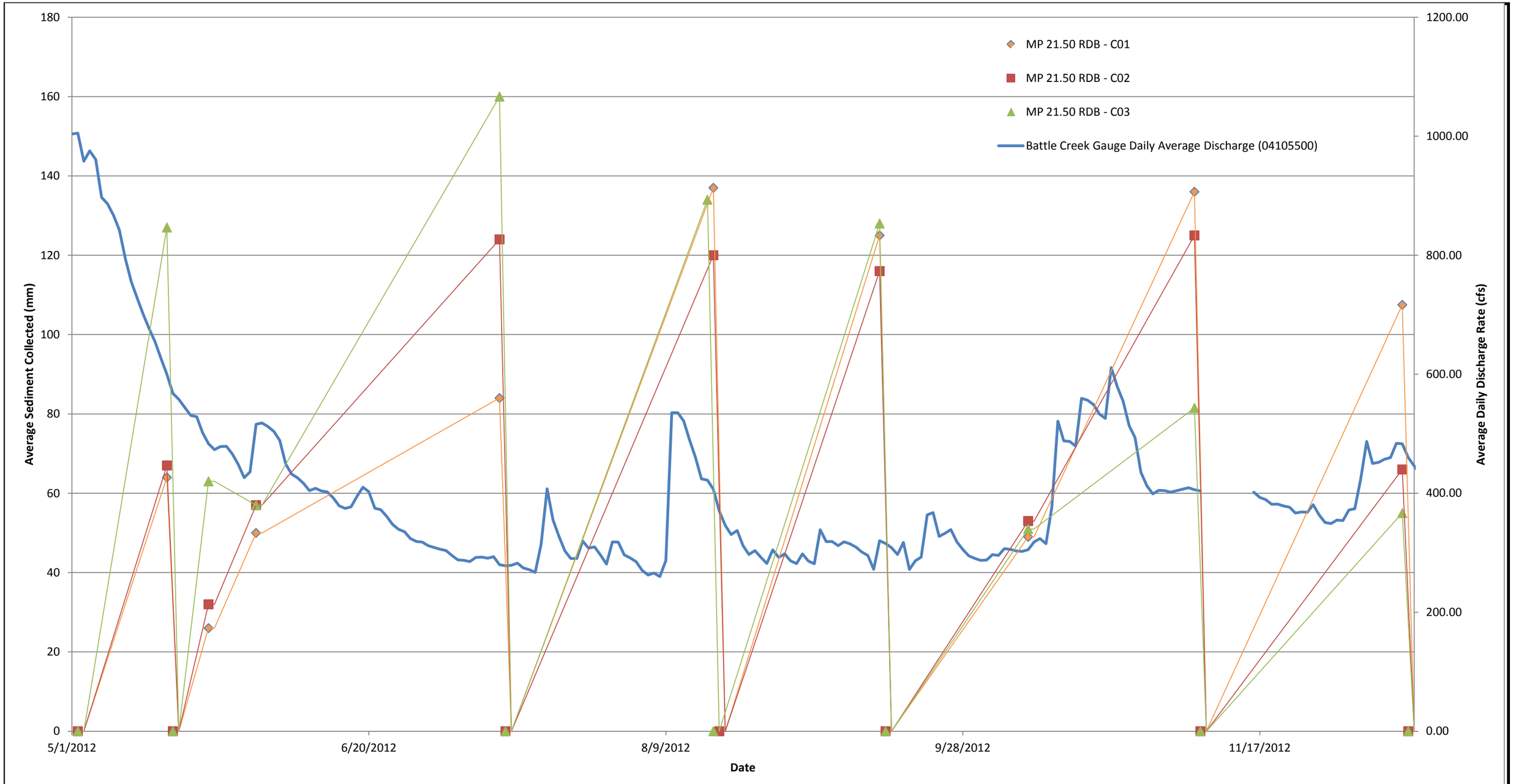
ENBRIDGE Drawn: CW Approved: EE Project#: 60246209	Legend: cfs = cubic feet per second mm = millimeter	FIGURE 2i-1 CYLINDRICAL SAMPLING DEVICE DATA PHASE I - MP 10.75 LDB SHEET 1 OF 17 ENBRIDGE LINE 6B MP 608 MARSHALL, MI PIPELINE RELEASE ENBRIDGE ENERGY, LIMITED PARTNERSHIP



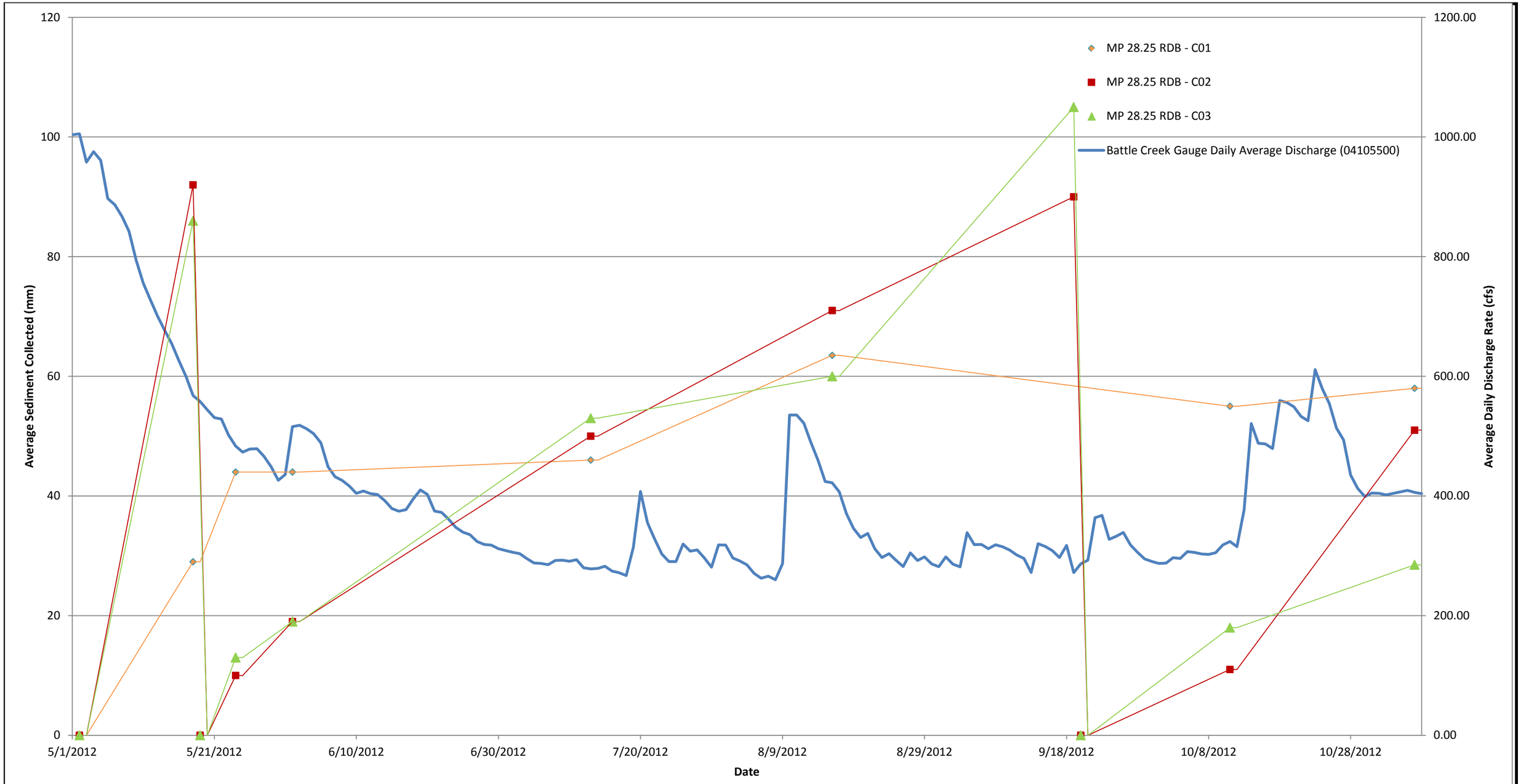
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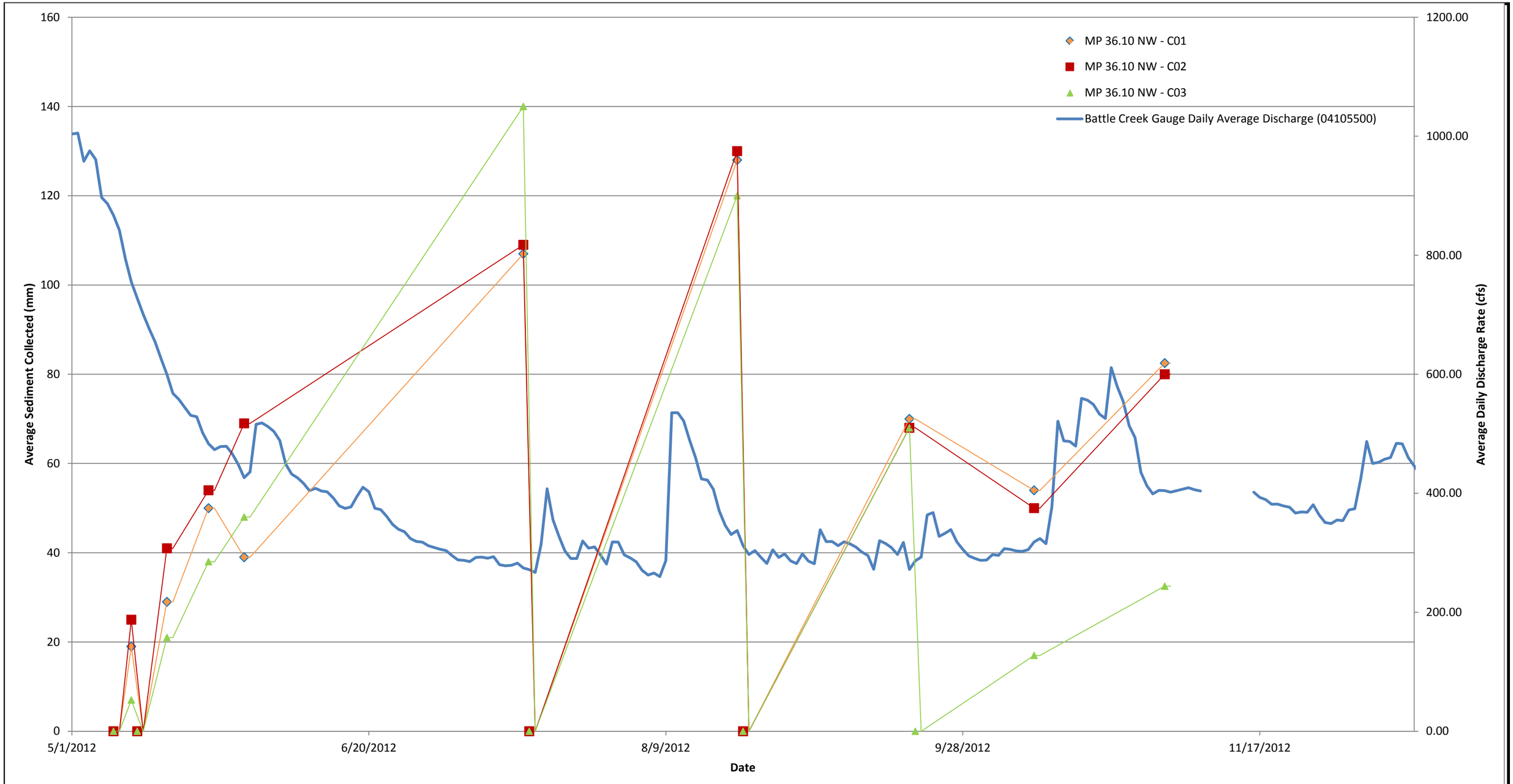
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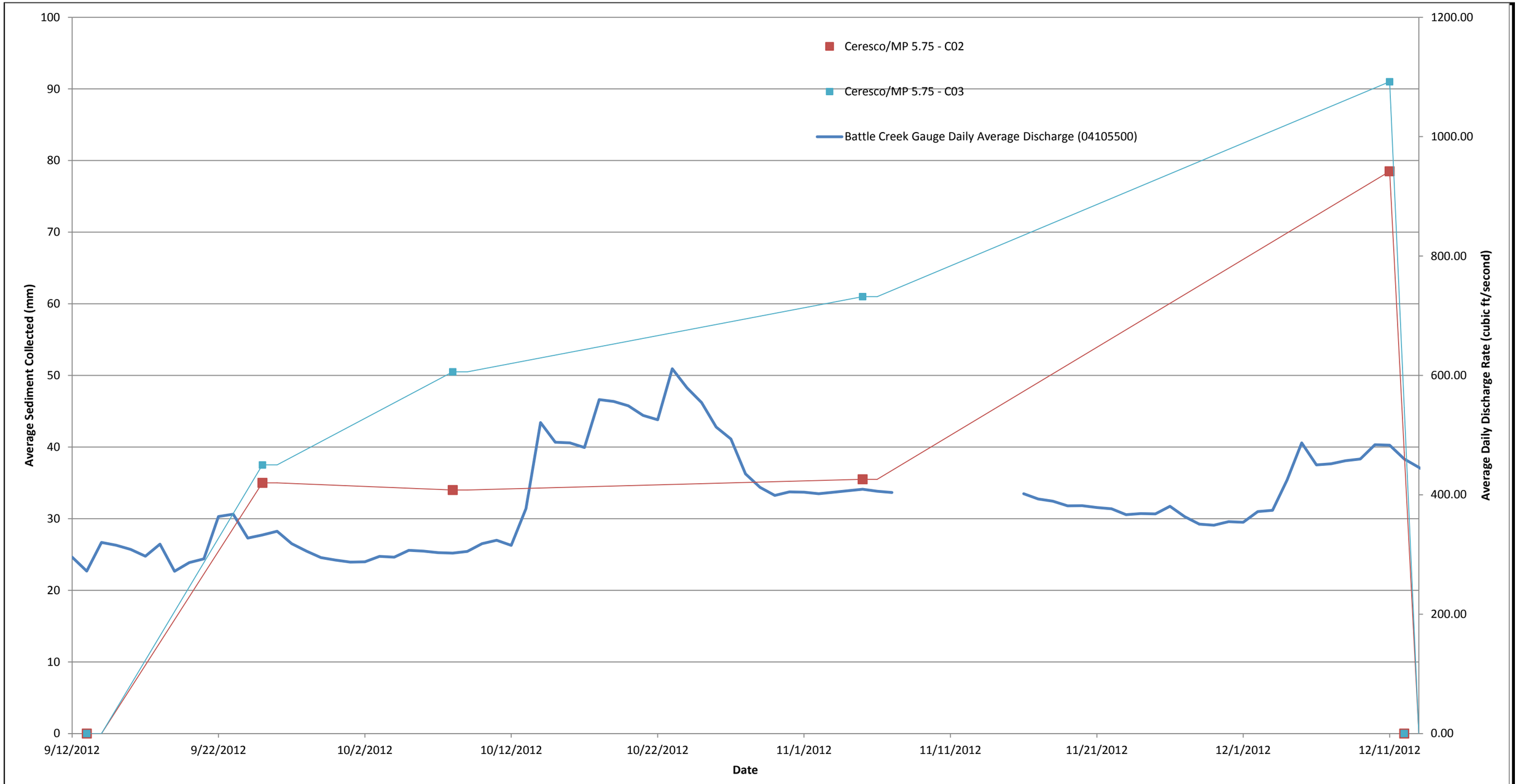
ENBRIDGE Drawn: CW Approved: EE Project#: 60246209	Legend: cfs = cubic feet per second mm = millimeter	FIGURE 2i-1 CYLINDRICAL SAMPLING DEVICE DATA PHASE I - MP 21.50 RDB SHEET 4 OF 17 ENBRIDGE LINE 6B MP 608 MARSHALL, MI PIPELINE RELEASE ENBRIDGE ENERGY, LIMITED PARTNERSHIP



ENBRIDGE Drawn: CW Approved: EE Project#: 60246209	Legend: cfs = cubic feet per second mm = millimeter	FIGURE 2i-1 CYLINDRICAL SAMPLING DEVICE DATA PHASE I - MP 28.25 RDB SHEET 5 OF 17 ENBRIDGE LINE 6B MP 608 MARSHALL, MI PIPELINE RELEASE ENBRIDGE ENERGY, LIMITED PARTNERSHIP



ENBRIDGE Drawn: CW Approved: EE Project#: 60246209	Legend: cfs = cubic feet per second mm = millimeter	FIGURE 2i-1 CYLINDRICAL SAMPLING DEVICE DATA PHASE I - MP 36.10 NW SHEET 6 OF 17 ENBRIDGE LINE 6B MP 608 MARSHALL, MI PIPELINE RELEASE ENBRIDGE ENERGY, LIMITED PARTNERSHIP



ENBRIDGE

Drawn: CW

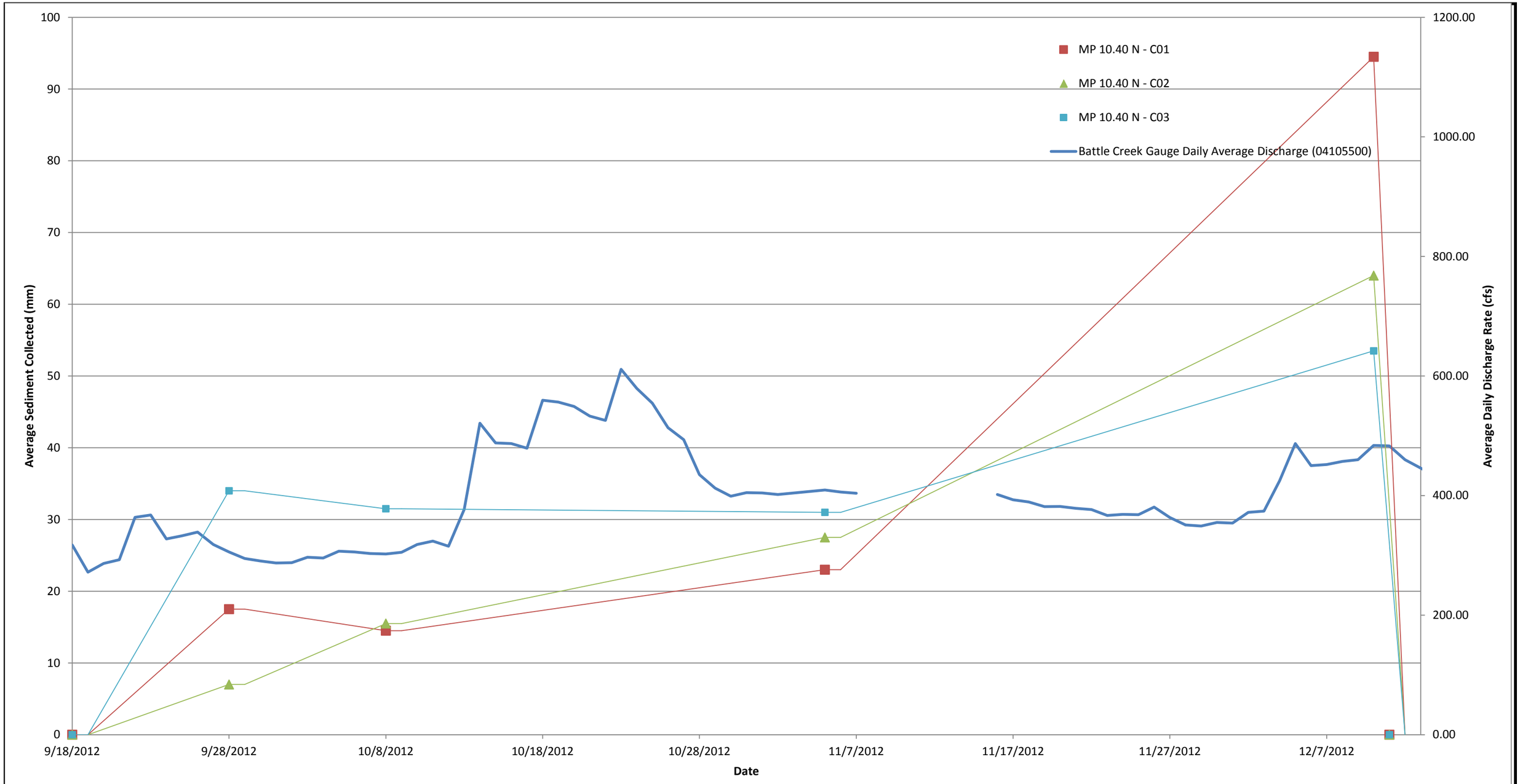
Approved: EE

Project#: 60246209

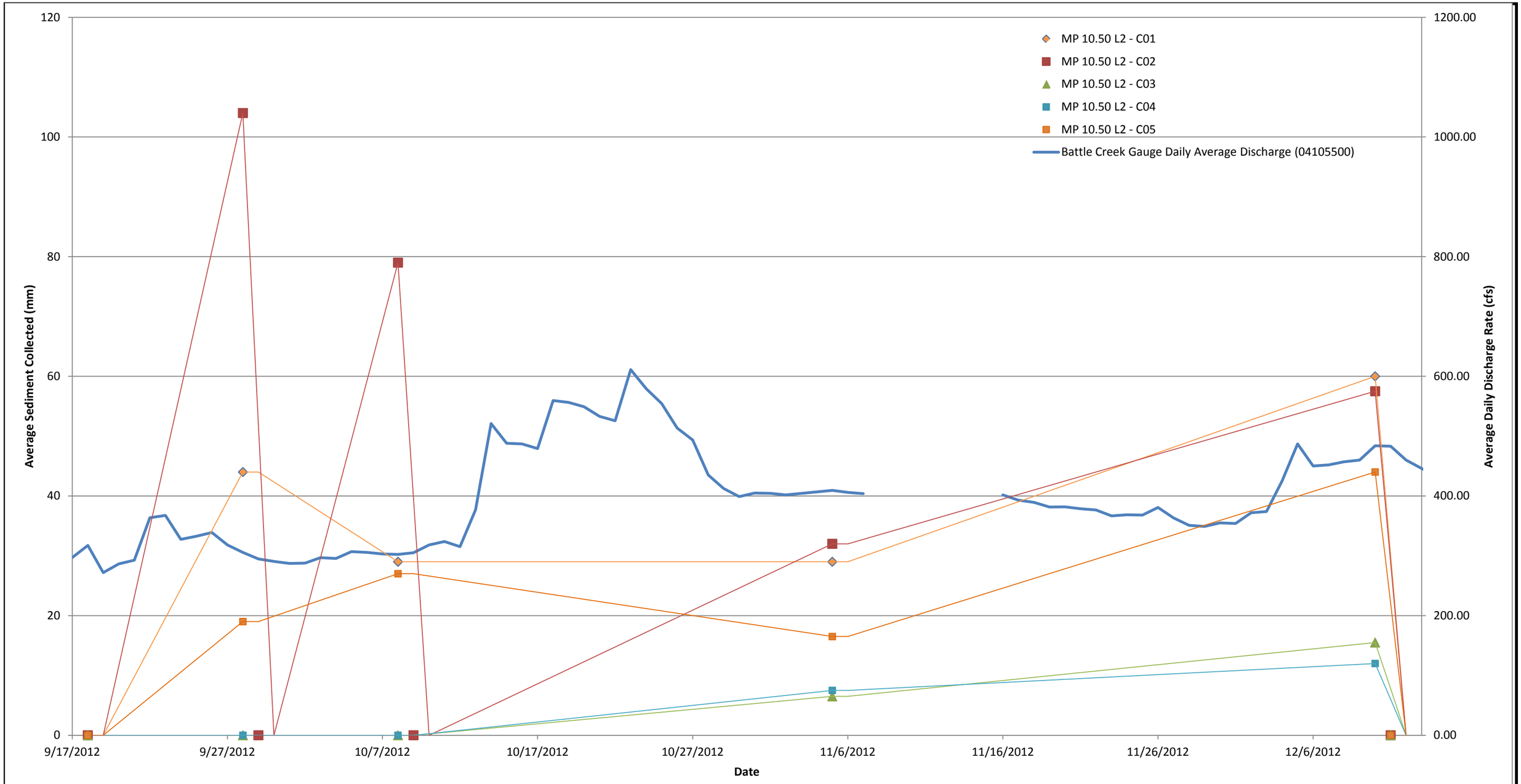
Legend:

cfs = cubic feet per second
mm = millimeter

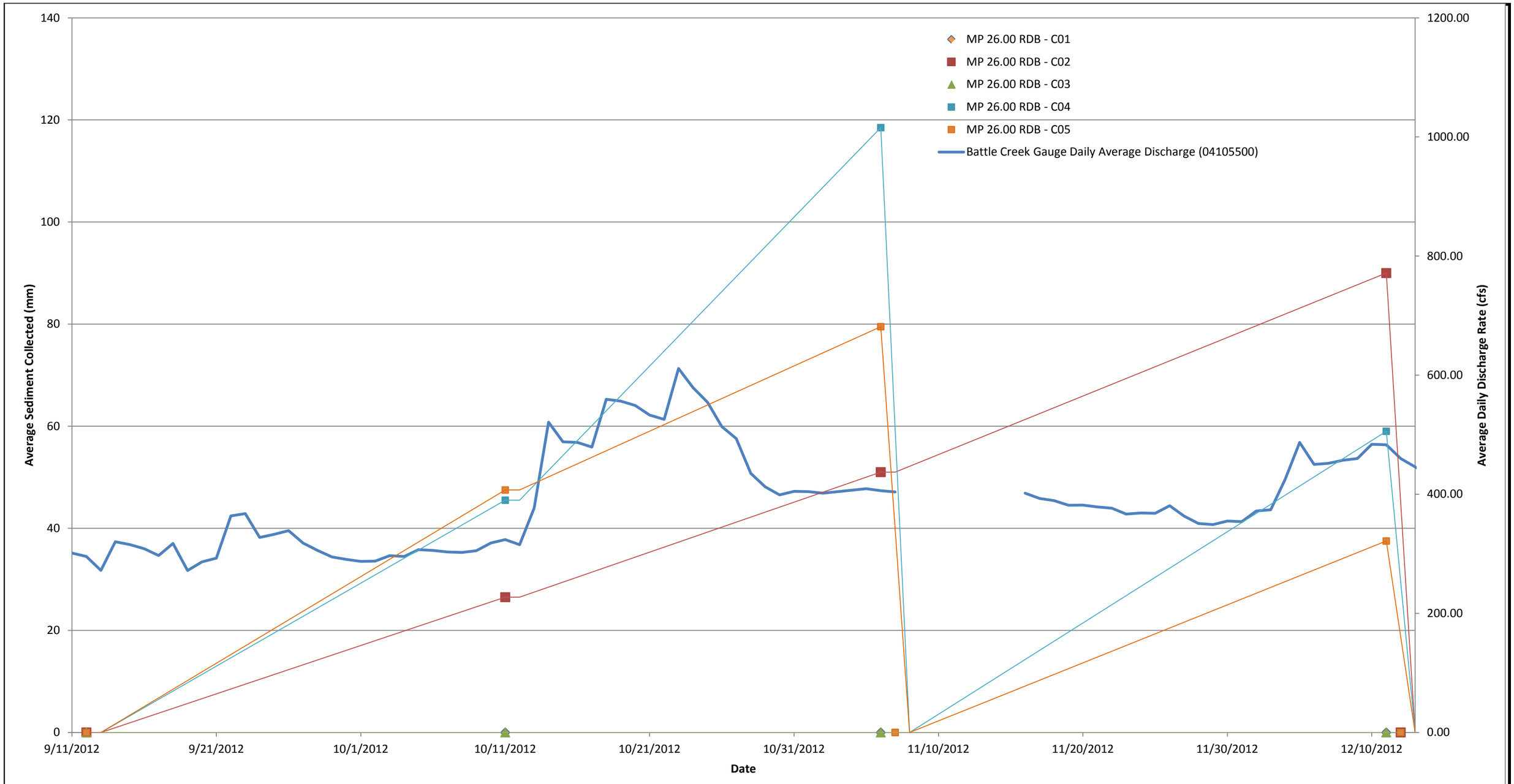
FIGURE 2i-1
CYLINDRICAL SAMPLING DEVICE DATA
PHASE II - CERESCO/MP 5.75
SHEET 7 OF 17
ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY,
LIMITED PARTNERSHIP



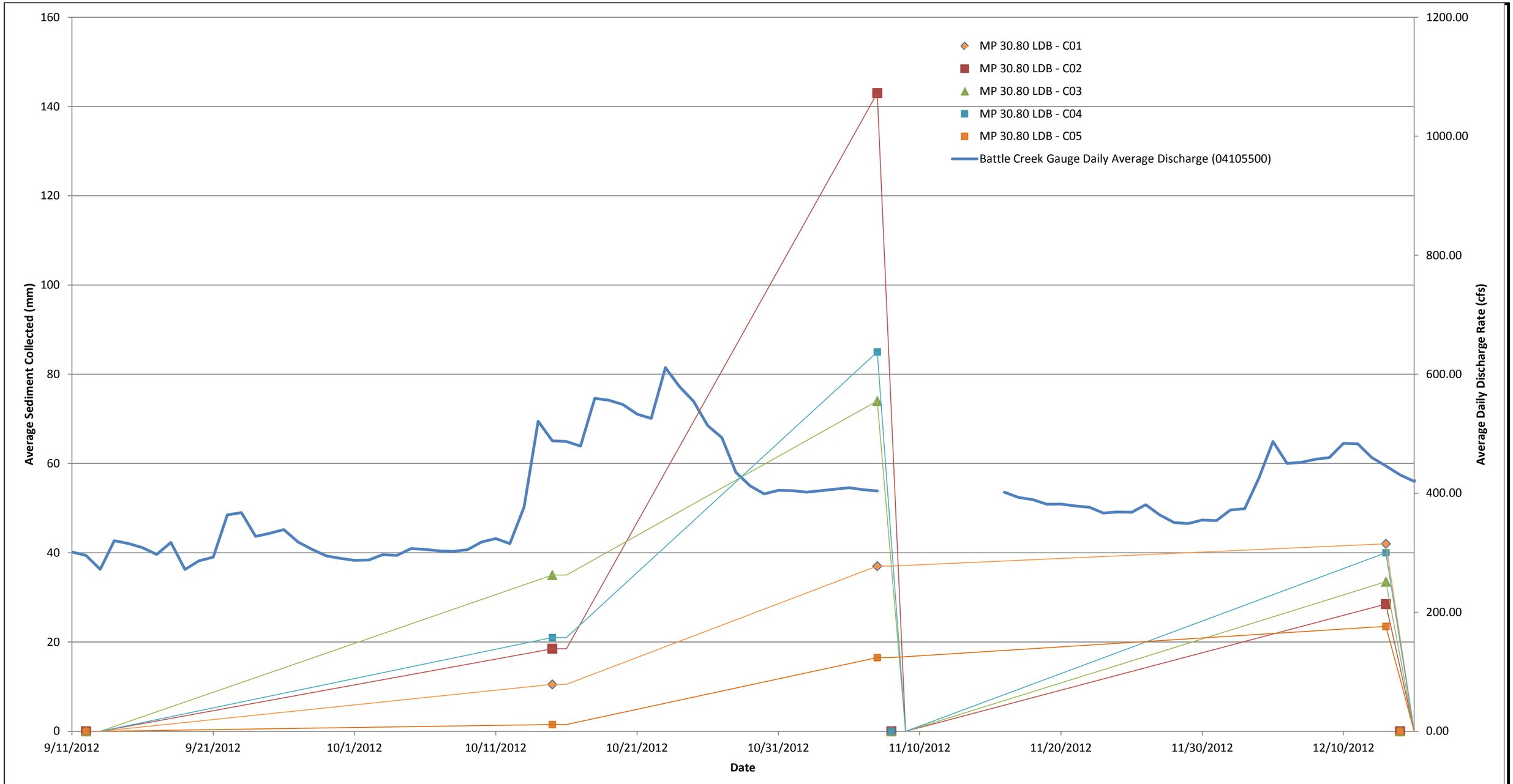
ENBRIDGE Drawn: CW Approved: EE Project#: 60246209	Legend: cfs = cubic feet per second mm = millimeter	FIGURE 2i-1 CYLINDRICAL SAMPLING DEVICE DATA PHASE II - MP 10.40 N SHEET 8 OF 17 ENBRIDGE LINE 6B MP 608 MARSHALL, MI PIPELINE RELEASE ENBRIDGE ENERGY, LIMITED PARTNERSHIP



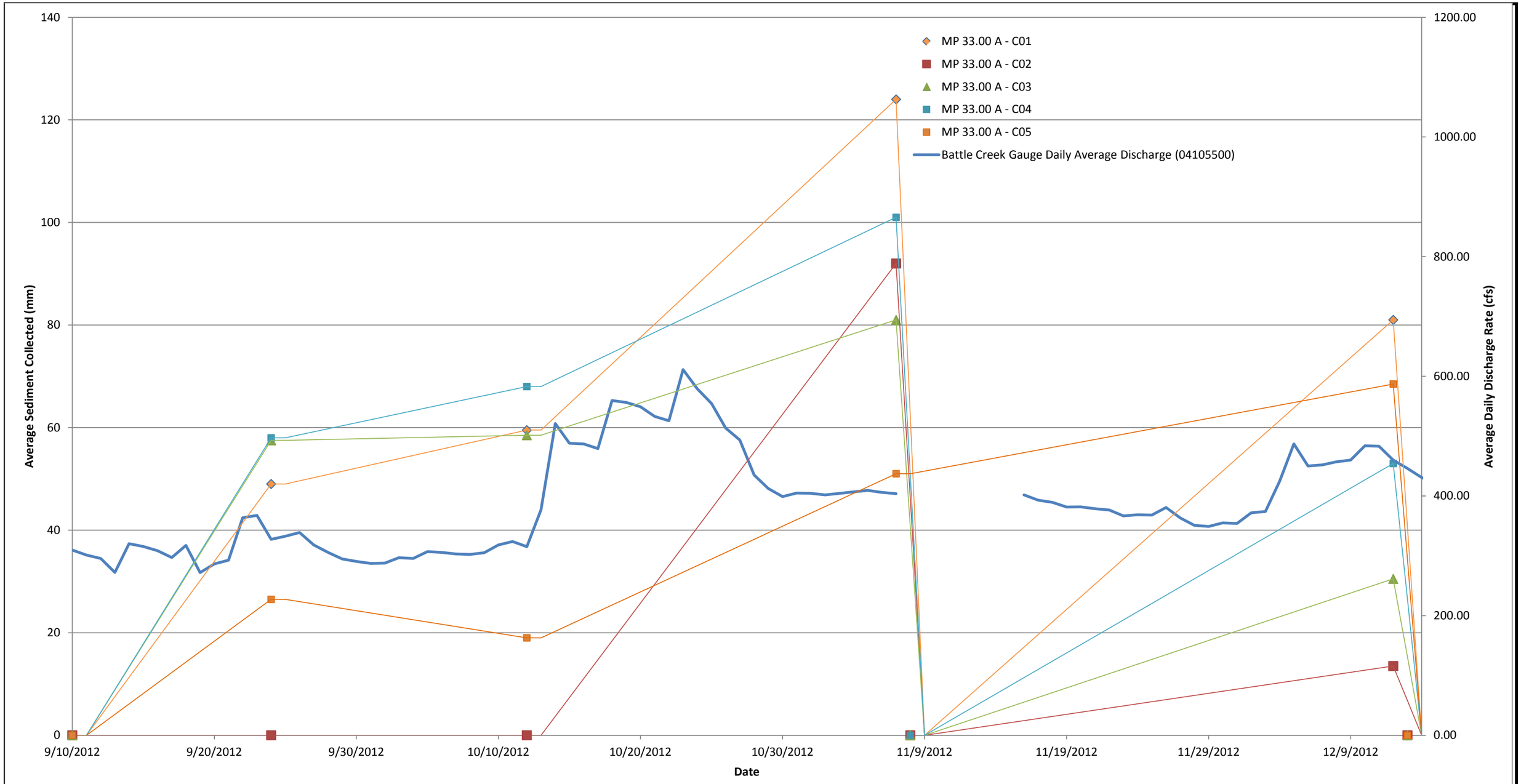
ENBRIDGE Drawn: CW Approved: EE Project#: 60246209	Legend: cfs = cubic feet per second mm = millimeter	FIGURE 2i-1 CYLINDRICAL SAMPLING DEVICE DATA PHASE II - MP 10.50 L2 SHEET 9 OF 17 ENBRIDGE LINE 6B MP 608 MARSHALL, MI PIPELINE RELEASE ENBRIDGE ENERGY, LIMITED PARTNERSHIP



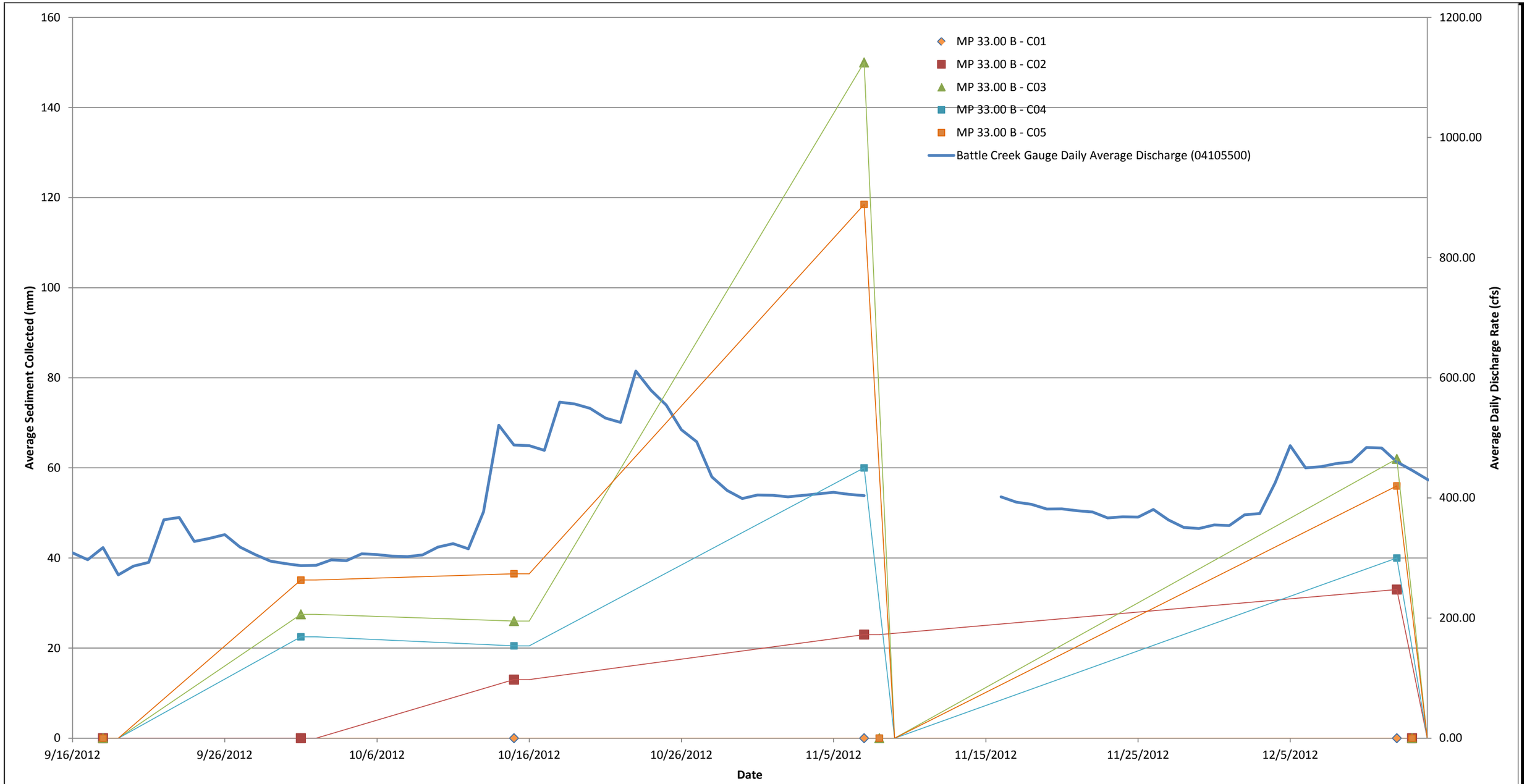
ENBRIDGE Drawn: CW Approved: EE Project#: 60246209	Legend: cfs = cubic feet per second mm = millimeter	FIGURE 2i-1 CYLINDRICAL SAMPLING DEVICE DATA PHASE II - MP 26.00 RDB SHEET 10 OF 17 ENBRIDGE LINE 6B MP 608 MARSHALL, MI PIPELINE RELEASE ENBRIDGE ENERGY, LIMITED PARTNERSHIP



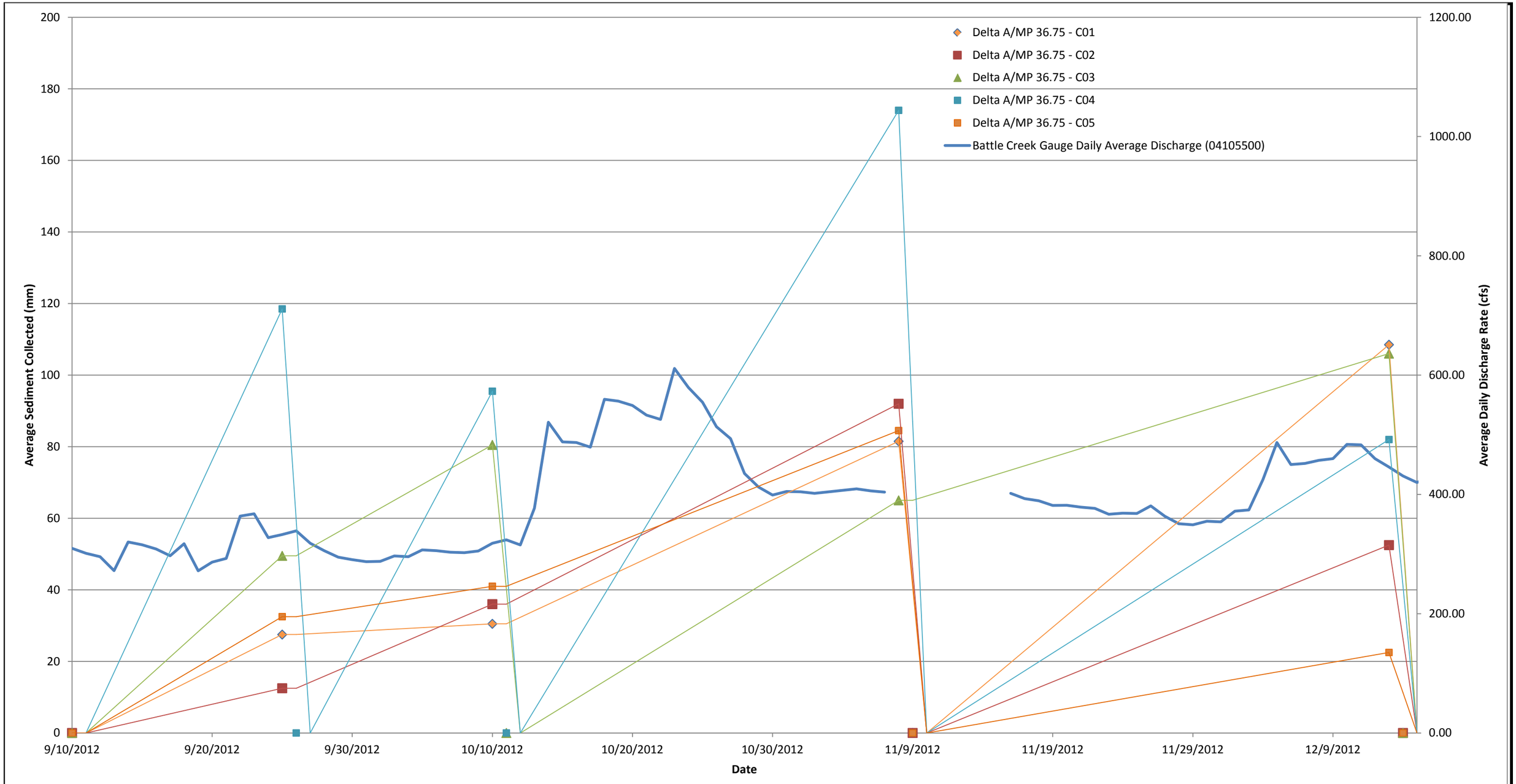
ENBRIDGE Drawn: CW Approved: EE Project#: 60246209	Legend: cfs = cubic feet per second mm = millimeter	FIGURE 2i-1 CYLINDRICAL SAMPLING DEVICE DATA PHASE II - MP 30.80 LDB SHEET 11 OF 17 ENBRIDGE LINE 6B MP 608 MARSHALL, MI PIPELINE RELEASE ENBRIDGE ENERGY, LIMITED PARTNERSHIP



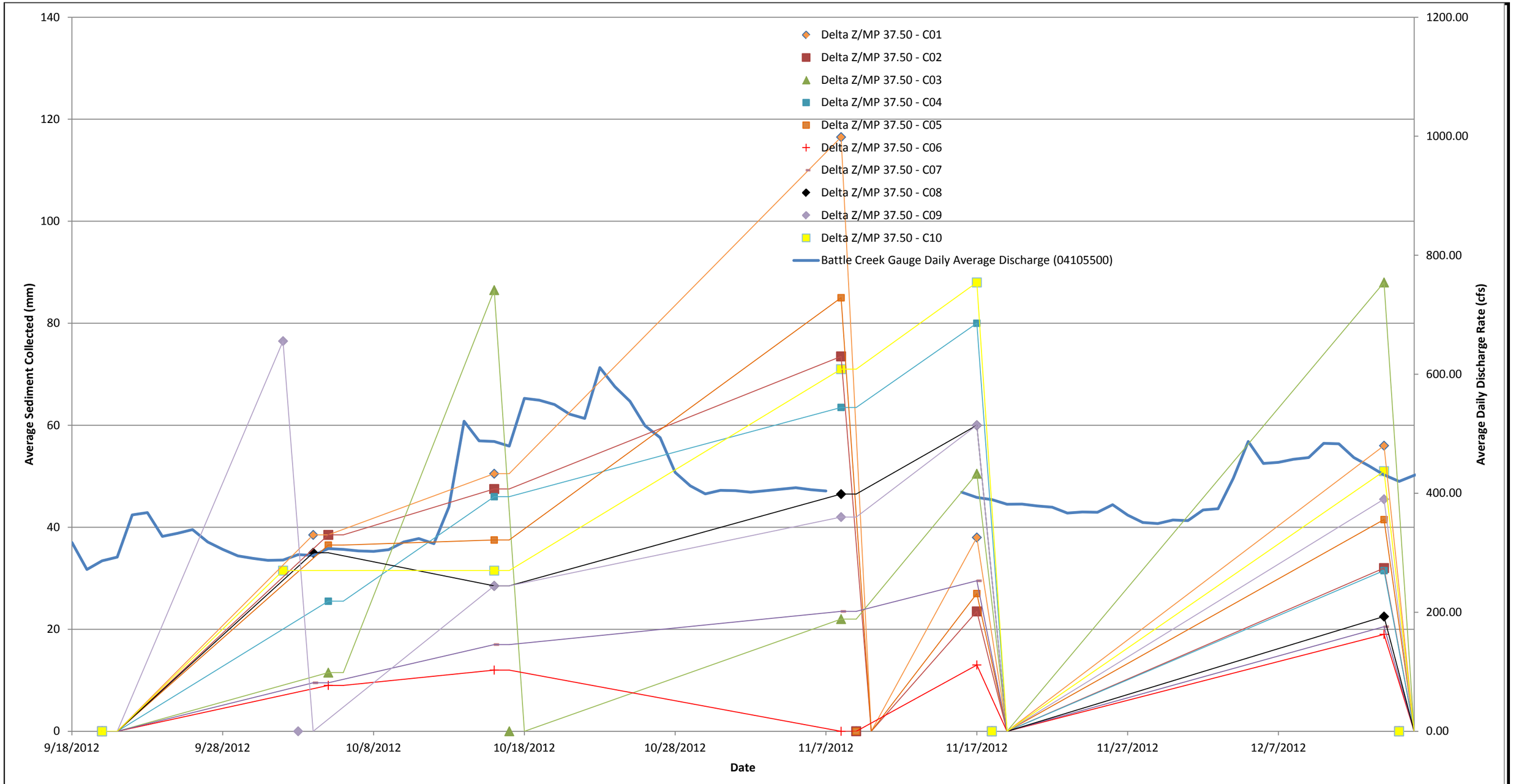
ENBRIDGE Drawn: CW Approved: EE Project#: 60246209	Legend: cfs = cubic feet per second mm = millimeter	FIGURE 2i-1 CYLINDRICAL SAMPLING DEVICE DATA PHASE II - MP 33.00 A SHEET 12 OF 17 ENBRIDGE LINE 6B MP 608 MARSHALL, MI PIPELINE RELEASE ENBRIDGE ENERGY, LIMITED PARTNERSHIP



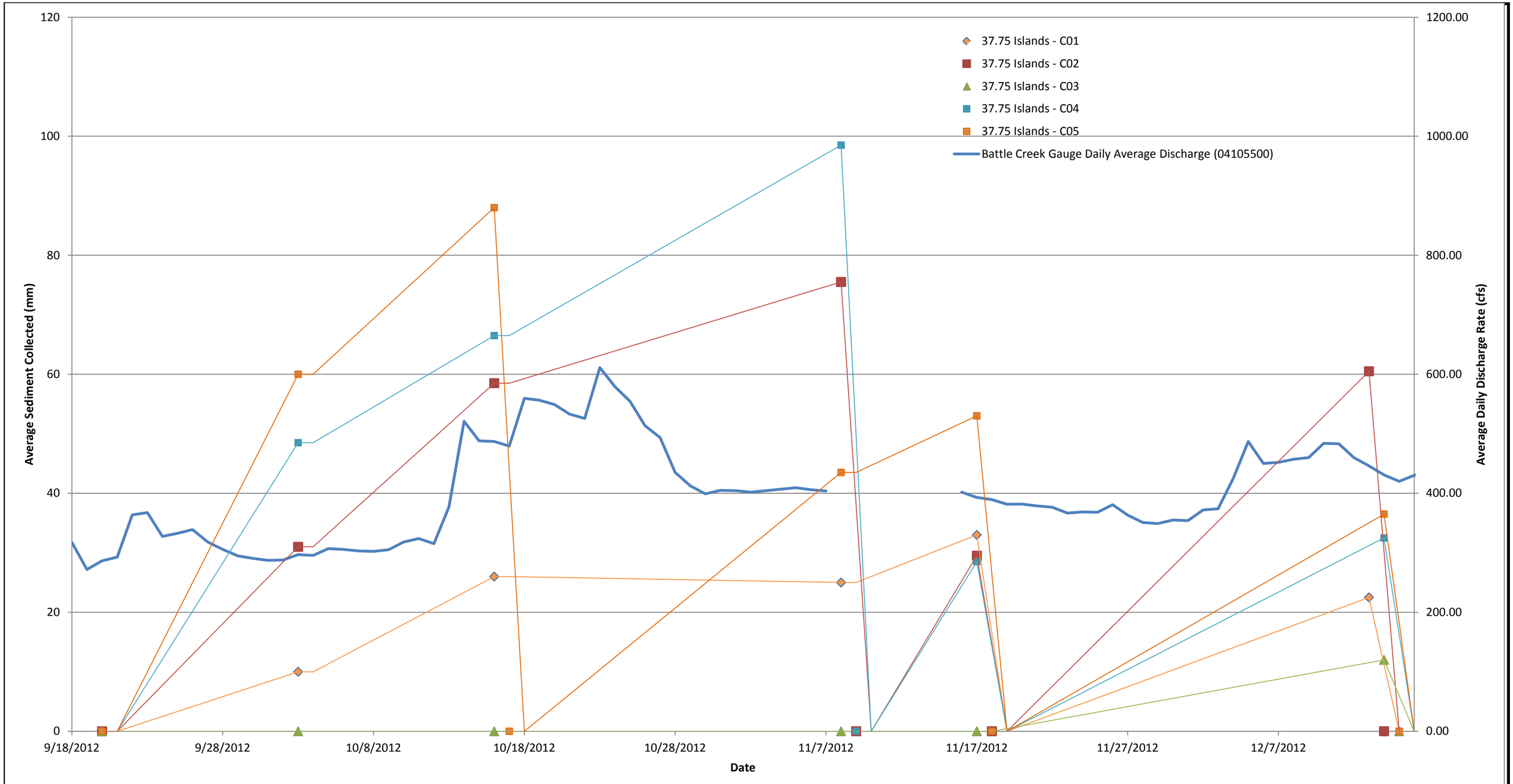
ENBRIDGE Drawn: CW Approved: EE Project#: 60246209	Legend: cfs = cubic feet per second mm = millimeter	FIGURE 2i-1 CYLINDRICAL SAMPLING DEVICE DATA PHASE II - MP 33.00 B SHEET 13 OF 17 ENBRIDGE LINE 6B MP 608 MARSHALL, MI PIPELINE RELEASE ENBRIDGE ENERGY, LIMITED PARTNERSHIP



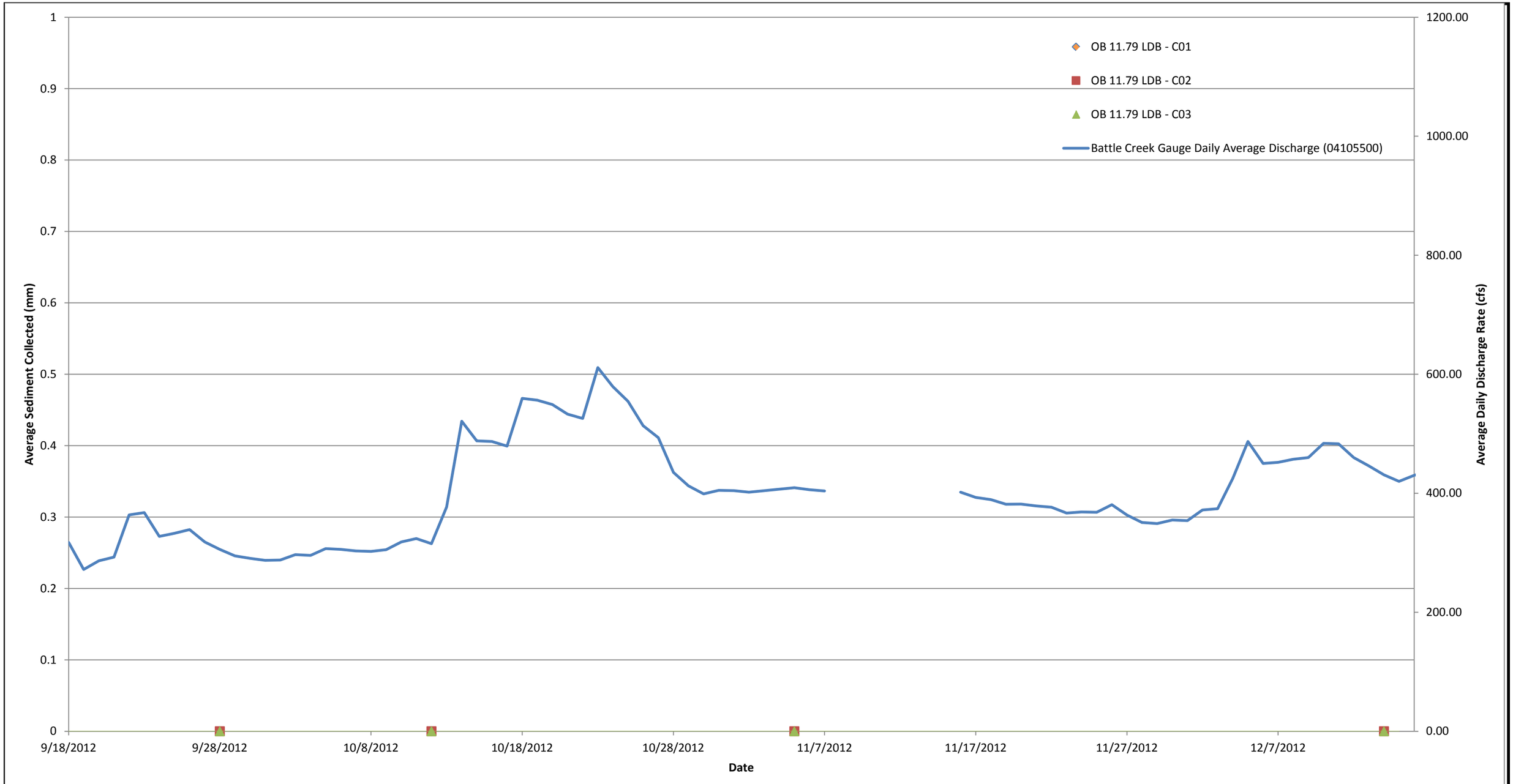
ENBRIDGE Drawn: CW Approved: EE Project#: 60246209	Legend: cfs = cubic feet per second mm = millimeter	FIGURE 2i-1 CYLINDRICAL SAMPLING DEVICE DATA PHASE II - DELTA A/MP 36.75 SHEET 14 OF 17 ENBRIDGE LINE 6B MP 608 MARSHALL, MI PIPELINE RELEASE ENBRIDGE ENERGY, LIMITED PARTNERSHIP



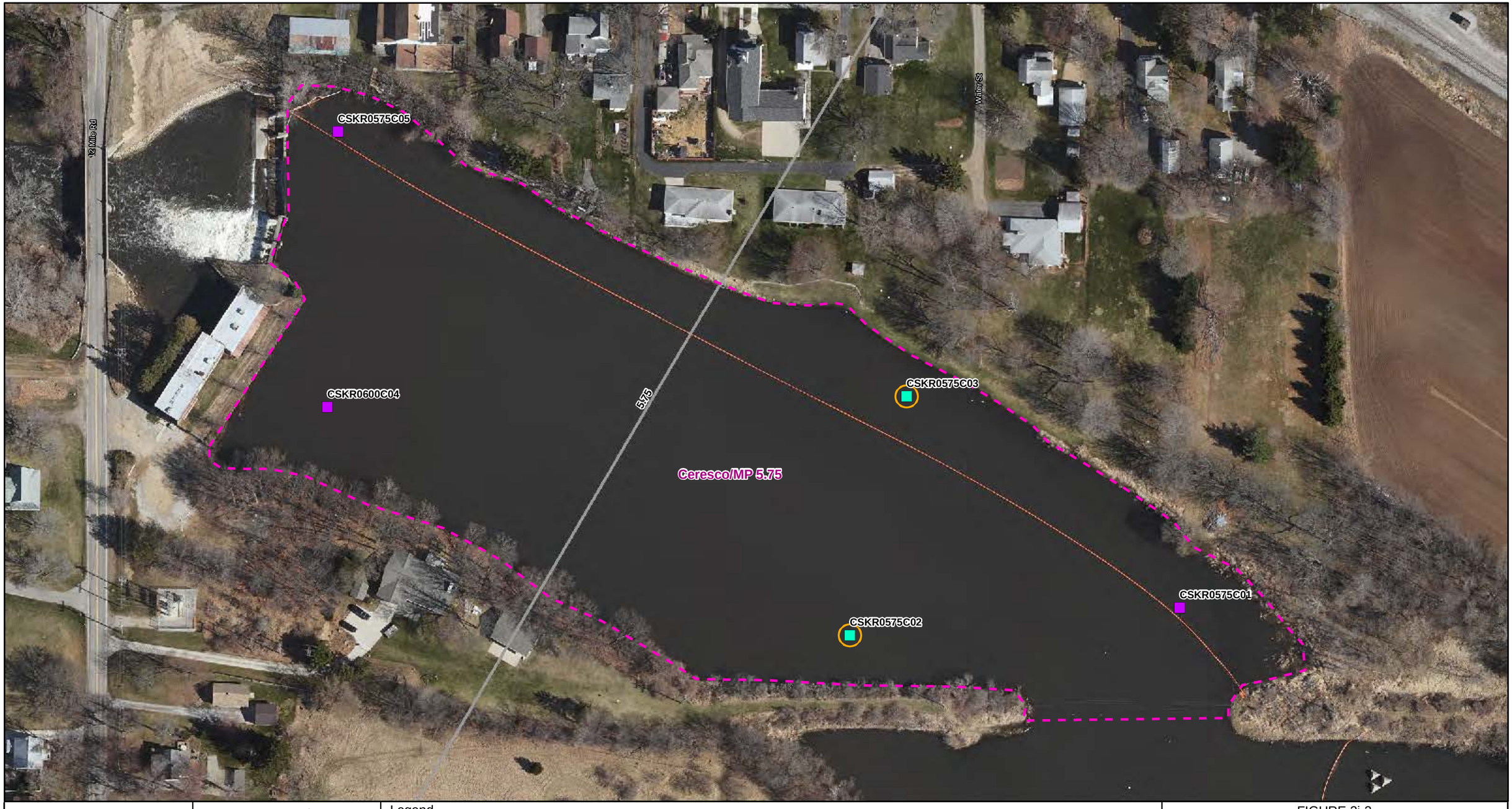
ENBRIDGE Drawn: CW Approved: EE Project#: 60246209	Legend: cfs = cubic feet per second mm = millimeter	FIGURE 2i-1 CYLINDRICAL SAMPLING DEVICE DATA PHASE II - DELTA Z/MP 37.50 SHEET 15 OF 17 ENBRIDGE LINE 6B MP 608 MARSHALL, MI PIPELINE RELEASE ENBRIDGE ENERGY, LIMITED PARTNERSHIP



ENBRIDGE Drawn: CW Approved: EE Project#: 60246209	Legend: cfs = cubic feet per second mm = millimeter	FIGURE 2i-1 CYLINDRICAL SAMPLING DEVICE DATA PHASE II - 37.75 ISLANDS SHEET 16 OF 17 ENBRIDGE LINE 6B MP 608 MARSHALL, MI PIPELINE RELEASE ENBRIDGE ENERGY, LIMITED PARTNERSHIP



ENBRIDGE Drawn: CW Approved: EE Project#: 60246209	Legend: cfs = cubic feet per second mm = millimeter	FIGURE 2i-1 CYLINDRICAL SAMPLING DEVICE DATA PHASE II - OB 11.79 LDB SHEET 17 OF 17 ENBRIDGE LINE 6B MP 608 MARSHALL, MI PIPELINE RELEASE ENBRIDGE ENERGY, LIMITED PARTNERSHIP



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Map Location



Legend

Cylindrical Sampling Device

- Installed
- Proposed
- Removed
- Sampled In December 2012
- Sediment Trap
- Quarter Mile Grid Segments

N

0 50 100 200

Scale in Feet

FIGURE 2i-2
SAMPLED CYLINDRICAL SAMPLING DEVICES
DECEMBER 2012
CERESCO/MP 5.75
SHEET 1 OF 16

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

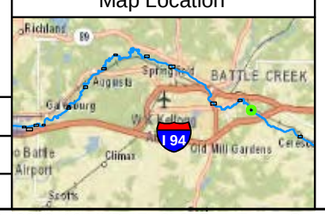
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Map Location



Legend

Cylindrical Sampling Device

- Installed
- Proposed
- Removed
- Sampled In December 2012
- Sediment Trap
- Quarter Mile Grid Segments

N

0 25 50 100

Scale in Feet

FIGURE 2i-2
SAMPLED CYLINDRICAL SAMPLING DEVICES
DECEMBER 2012
MP 10.40 N & MP 10.50 L2
SHEET 2 OF 16

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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Map Location



Legend

Cylindrical Sampling Device

- Installed
- Proposed
- Removed
- Sampled In December 2012
- Sediment Trap
- Quarter Mile Grid Segments

N

0 25 50 100

Scale in Feet

FIGURE 2i-2
SAMPLED CYLINDRICAL SAMPLING DEVICES
DECEMBER 2012
MP 10.75 LDB
SHEET 3 OF 16

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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Map Location



Legend

Cylindrical Sampling Device

- Installed
- Proposed
- Removed
- Sampled In December 2012
- Sediment Trap
- Quarter Mile Grid Segments

N

0 50 100 200

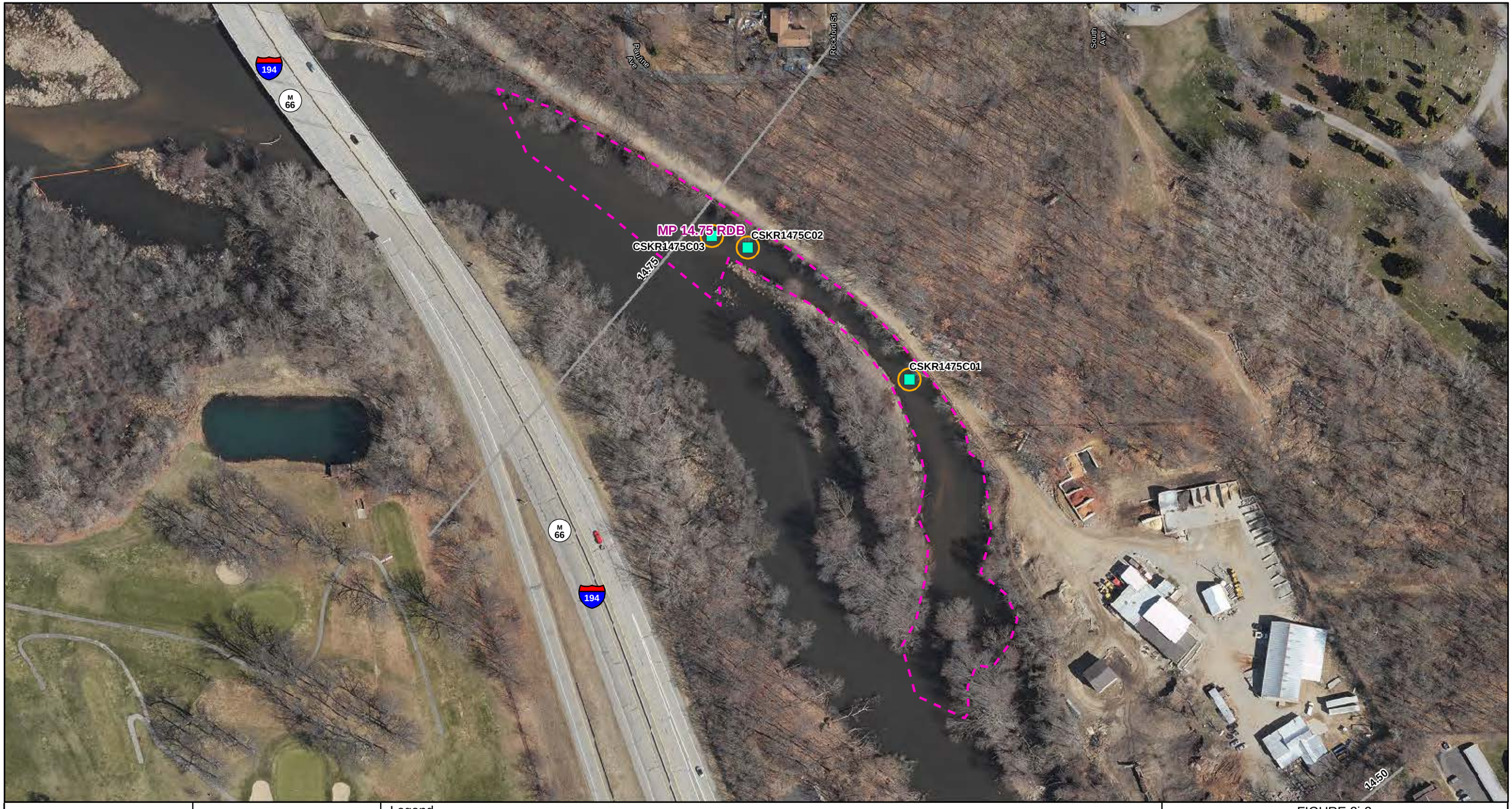
Scale in Feet

FIGURE 2i-2
SAMPLED CYLINDRICAL SAMPLING DEVICES
DECEMBER 2012
OB 11.79
SHEET 4 OF 16

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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Project #:	60284509	

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Legend

Cylindrical Sampling Device

- Installed
- Proposed
- Removed
- Sampled In December 2012
- Sediment Trap
- Quarter Mile Grid Segments

N

0 70 140 280

Scale in Feet

FIGURE 2i-2
SAMPLED CYLINDRICAL SAMPLING DEVICES
DECEMBER 2012
MP 14.75 RDB
SHEET 5 OF 16

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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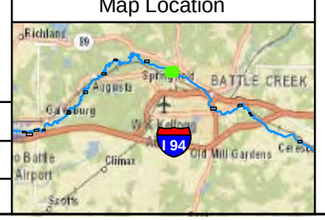
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Legend

Cylindrical Sampling Device

- Installed
- Proposed
- Removed
- Sampled In December 2012
- Sediment Trap
- Quarter Mile Grid Segments

N

0 70 140 280

Scale in Feet

FIGURE 2i-2
SAMPLED CYLINDRICAL SAMPLING DEVICES
DECEMBER 2012
MP 19.25 LDB
SHEET 6 OF 16

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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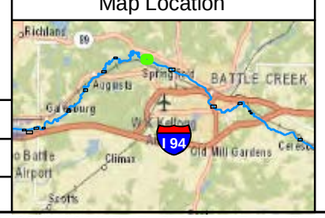
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Map Location



Legend

Cylindrical Sampling Device

- Installed
- Proposed
- Removed
- Sampled In December 2012
- Sediment Trap
- Quarter Mile Grid Segments

N

0 50 100 200

Scale in Feet

FIGURE 2i-2
SAMPLED CYLINDRICAL SAMPLING DEVICES
DECEMBER 2012
MP 21.50 RDB
SHEET 7 OF 16

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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Project #:	60284509	

Map Location



Legend

Cylindrical Sampling Device

- Installed
- Proposed
- Removed
- Sampled In December 2012
- Sediment Trap
- Quarter Mile Grid Segments

N

0 40 80 160

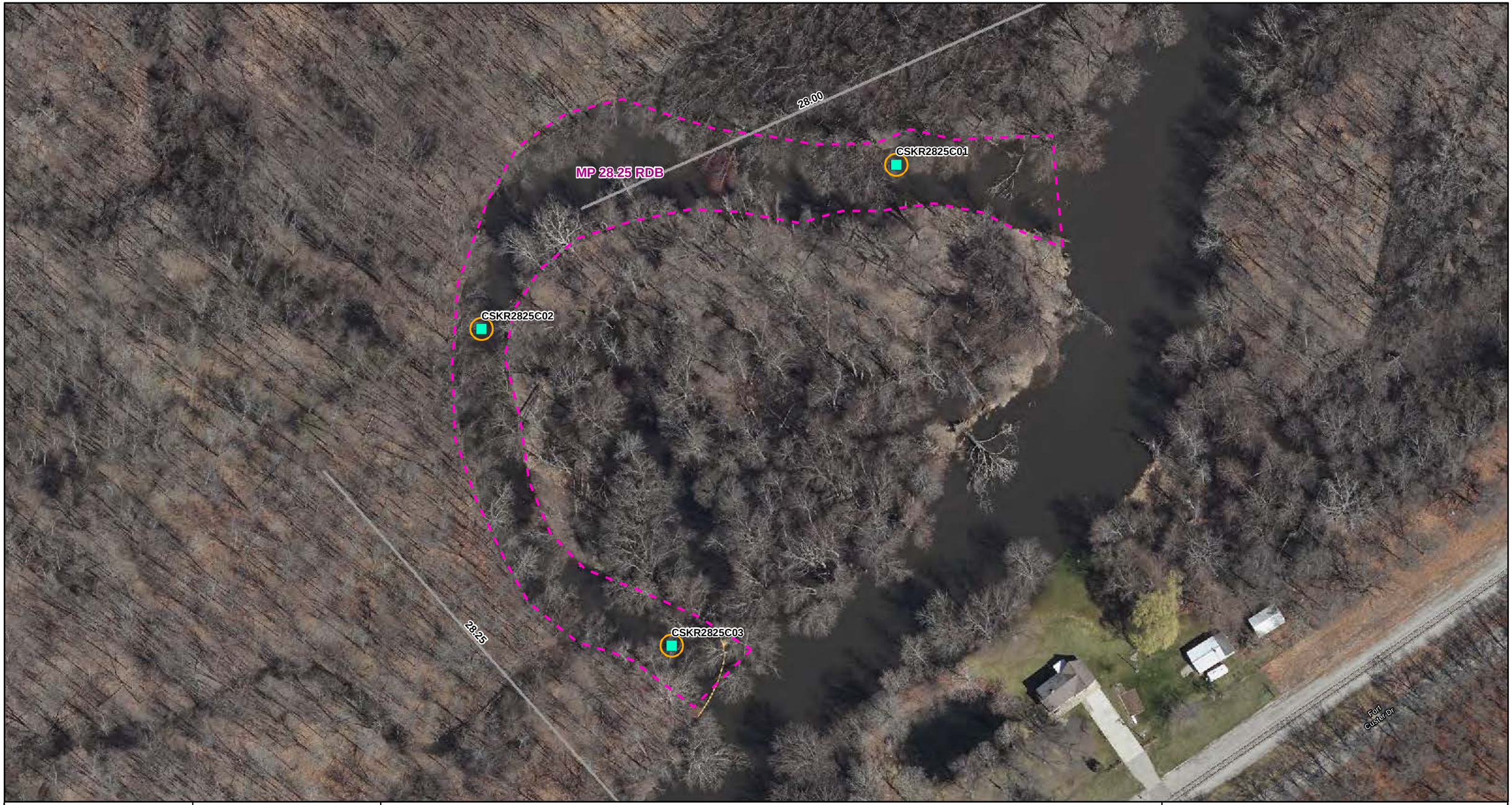
Scale in Feet

FIGURE 2i-2
SAMPLED CYLINDRICAL SAMPLING DEVICES
DECEMBER 2012
MP 26.00 RDB
SHEET 8 OF 16

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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Project #:	60284509	

Map Location



Legend

Cylindrical Sampling Device

- Installed
- Proposed
- Removed
- Sampled In December 2012
- Sediment Trap
- Quarter Mile Grid Segments

N

0 50 100 200

Scale in Feet

FIGURE 2i-2
SAMPLED CYLINDRICAL SAMPLING DEVICES
DECEMBER 2012
MP 28.25 RDB
SHEET 9 OF 16

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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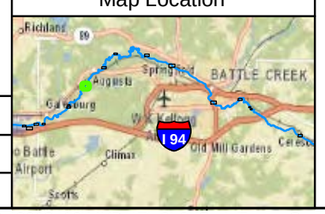
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Map Location



Legend

Cylindrical Sampling Device

- Installed
- Proposed
- Removed
- Sampled In December 2012
- Sediment Trap
- Quarter Mile Grid Segments

N

0 50 100 200

Scale in Feet

FIGURE 2i-2
SAMPLED CYLINDRICAL SAMPLING DEVICES
DECEMBER 2012
MP 30.80 LDB
SHEET 10 OF 16

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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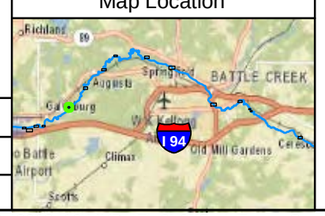
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Project #:	60284509	

Map Location



Legend

Cylindrical Sampling Device

- Installed
- Proposed
- Removed
- Sampled In December 2012
- Sediment Trap
- Quarter Mile Grid Segments

N

0 25 50 100

Scale in Feet

FIGURE 2i-2
SAMPLED CYLINDRICAL SAMPLING DEVICES
DECEMBER 2012
MP 33.00 A
SHEET 11 OF 16

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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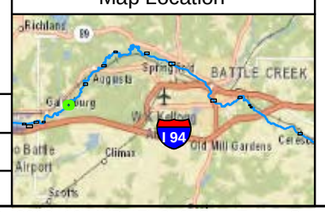
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Project #:	60284509	

Map Location



Legend

Cylindrical Sampling Device

- Installed
- Proposed
- Removed
- Sampled In December 2012
- Sediment Trap
- Quarter Mile Grid Segments

N

0 40 80 160

Scale in Feet

FIGURE 2i-2
SAMPLED CYLINDRICAL SAMPLING DEVICES
DECEMBER 2012
MP 33.00 B
SHEET 12 OF 16

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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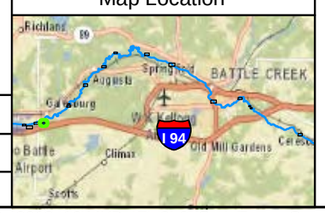
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Map Location



Legend

Cylindrical Sampling Device

- Installed
- Proposed
- Removed
- Sampled In December 2012
- Sediment Trap
- Quarter Mile Grid Segments

N

0 40 80 160

Scale in Feet

FIGURE 2i-2
SAMPLED CYLINDRICAL SAMPLING DEVICES
DECEMBER 2012
MP 36.10 NW
SHEET 13 OF 16

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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Project #:	60284509	

Map Location



Legend

Cylindrical Sampling Device

- Installed
- Proposed
- Removed
- Sampled In December 2012
- Sediment Trap
- Quarter Mile Grid Segments

N

0 50 100 200

Scale in Feet

FIGURE 2i-2
SAMPLED CYLINDRICAL SAMPLING DEVICES
DECEMBER 2012
DELTA A/MP 36.75
SHEET 14 OF 16

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

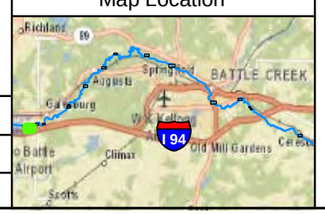
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Map Location



Legend

Cylindrical Sampling Device

- Installed
- Proposed
- Removed
- Sampled In December 2012
- Sediment Trap
- Quarter Mile Grid Segments

N

0 70 140 280

Scale in Feet

FIGURE 2i-2
SAMPLED CYLINDRICAL SAMPLING DEVICES
DECEMBER 2012
DELTA Z/MP 37.50
SHEET 15 OF 16

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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Project #:	60284509	

Map Location



Legend

Cylindrical Sampling Device

- Installed
- Proposed
- Removed
- Sampled In December 2012
- Sediment Trap
- Quarter Mile Grid Segments

N

0 40 80 160

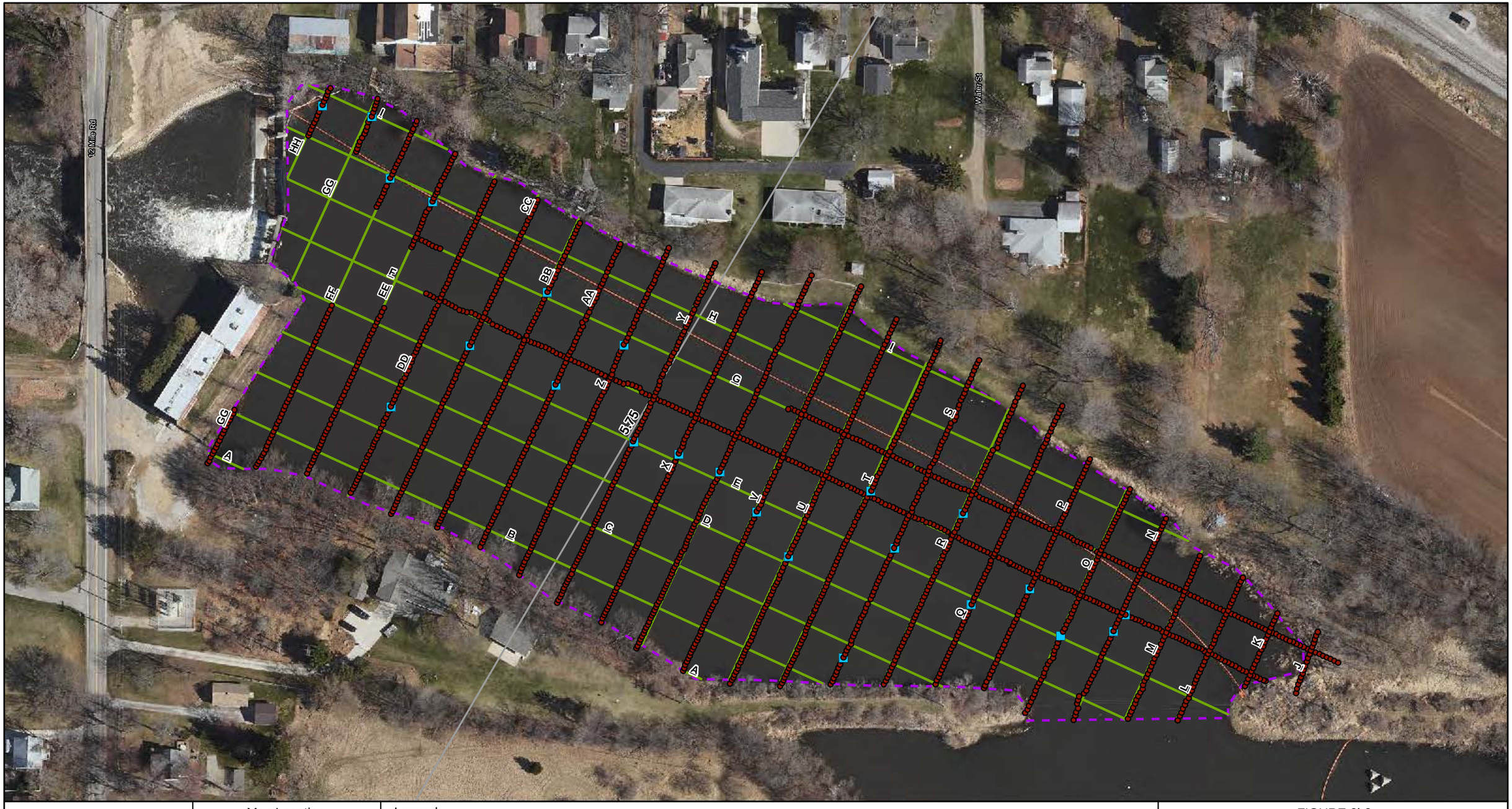
Scale in Feet

FIGURE 2i-2
SAMPLED CYLINDRICAL SAMPLING DEVICES
DECEMBER 2012
MP 37.75 ISLANDS
SHEET 16 OF 16

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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Project #:	60284509	

Map Location



Legend

- Collected Bathymetry Point (December 2012)
- Structure Elevation Point (December 2012)
- Water Level Point (December 2012)
- Conifer Tree Structure
- Target Transect
- Sediment Trap Boundaries
- Quarter Mile Grid Segments

N

0 50 100 200

Scale in Feet

FIGURE 2i-3
SEDIMENT TRAPS BATHYMETRY
CERESCO
DECEMBER 2012
SHEET 1 OF 11

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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Project #:	60284509	

Map Location



Legend

- Collected Bathymetry Point (December 2012)
- Structure Elevation Point (December 2012)
- Water Level Point (December 2012)
- Conifer Tree Structure
- Target Transect
- Sediment Trap Boundaries
- Quarter Mile Grid Segments

N

0 25 50 100

Scale in Feet

FIGURE 2i-3
SEDIMENT TRAPS BATHYMETRY
MP 10.40 N & MP 10.50 L2
DECEMBER 2012
SHEET 2 OF 11

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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Aerial Photography Date: April 2011



Drawn:	NS	1/8/2013
Approved:	EE	1/8/2013
Project #:	60284509	

Map Location



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- Water Level Point (December 2012)
- Conifer Tree Structure
- Target Transect
- Sediment Trap Boundaries
- Quarter Mile Grid Segments

N

0 25 50 100

Scale in Feet

FIGURE 2i-3
SEDIMENT TRAPS BATHYMETRY
MP 10.75 LDB
DECEMBER 2012
SHEET 3 OF 11

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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Aerial Photography Date: April 2011



ENBRIDGE

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Project #:	60284509	

Map Location



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- Water Level Point (December 2012)
- Conifer Tree Structure
- Target Transect
- Sediment Trap Boundaries
- Quarter Mile Grid Segments

N

0 70 140 280

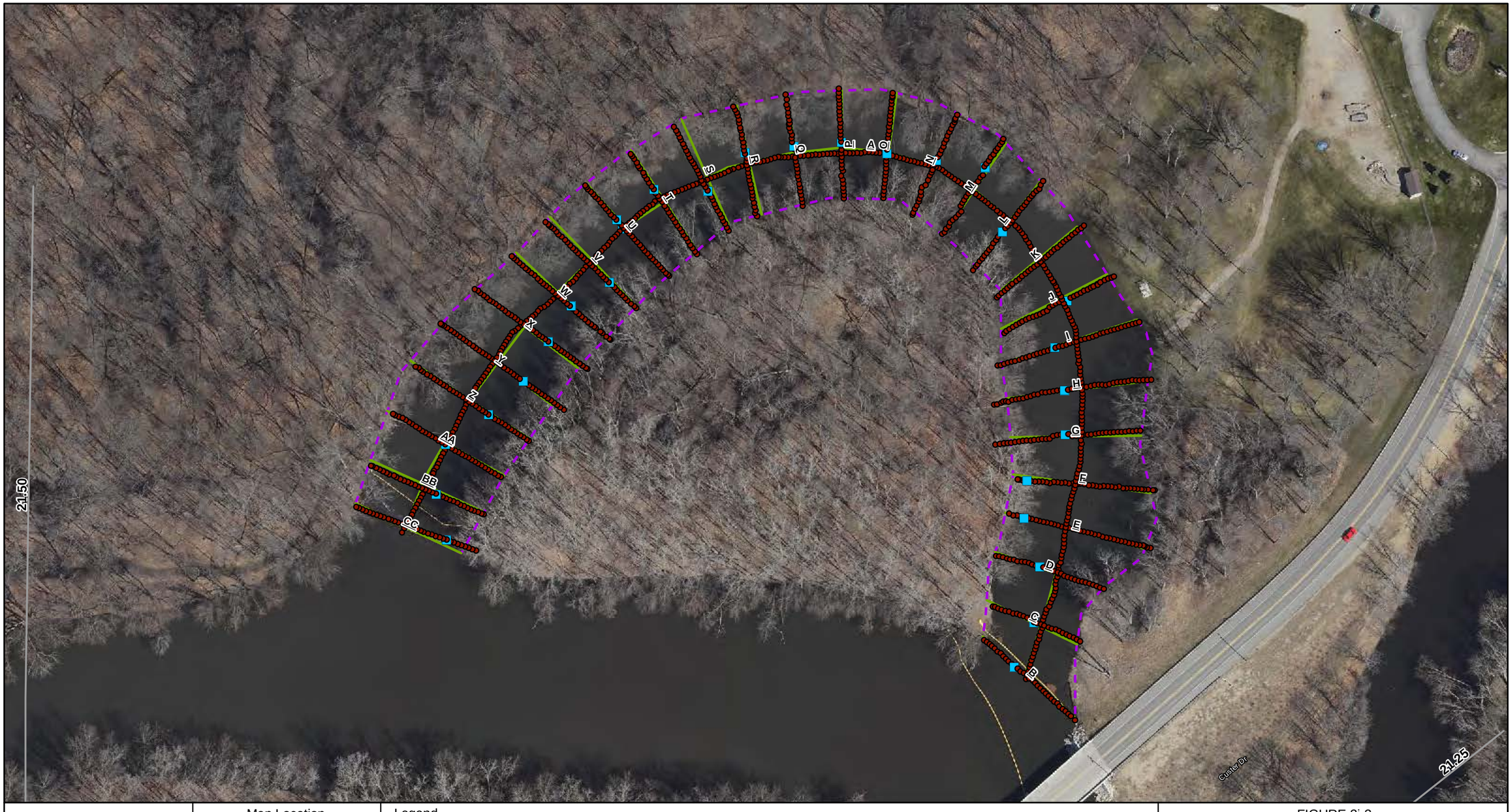
Scale in Feet

FIGURE 2i-3
SEDIMENT TRAPS BATHYMETRY
MP 19.25 LDB
DECEMBER 2012
SHEET 4 OF 11

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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- Water Level Point (December 2012)
- Conifer Tree Structure
- Target Transect
- Sediment Trap Boundaries
- Quarter Mile Grid Segments

N

0 50 100 200

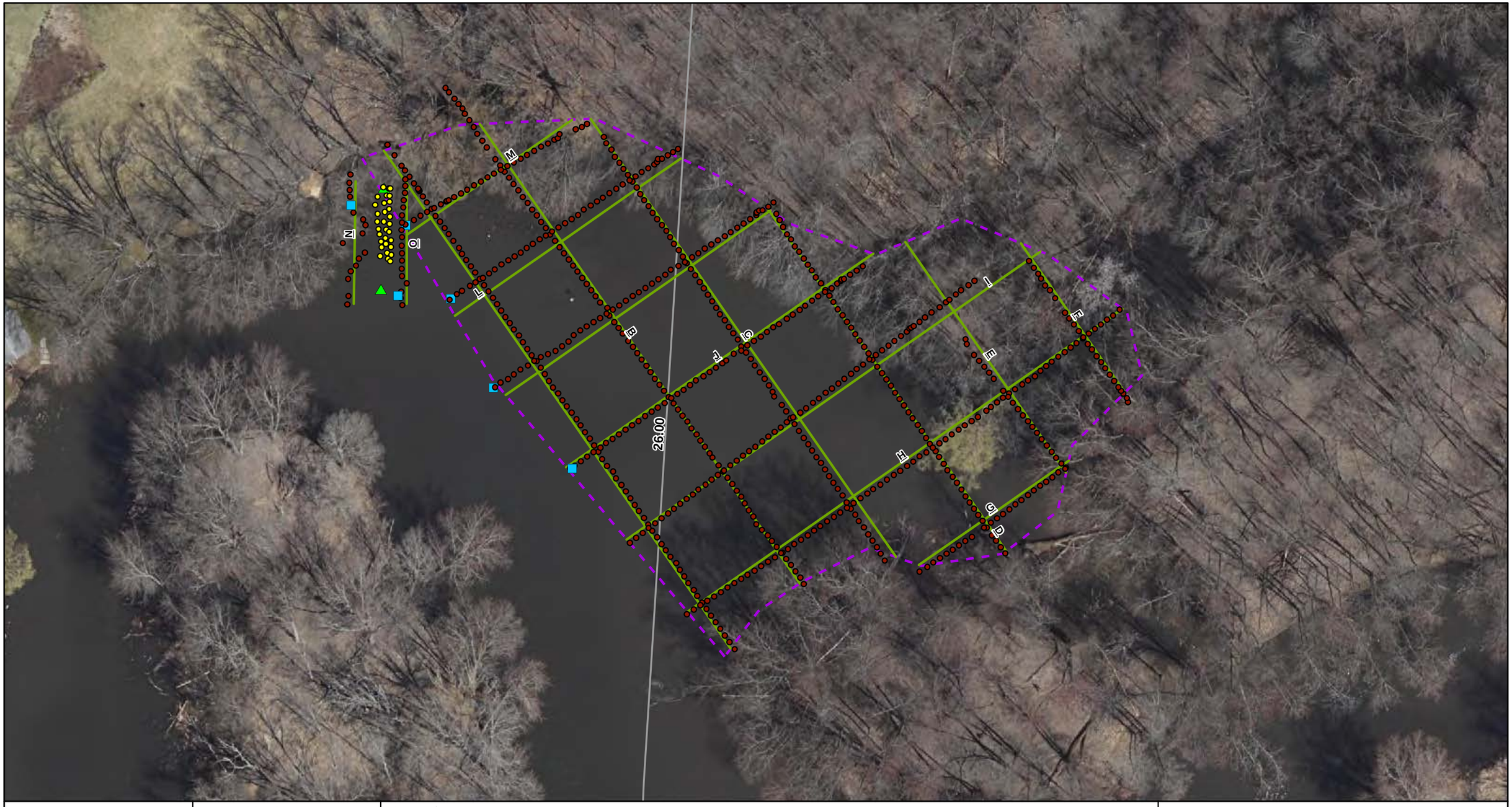
Scale in Feet

FIGURE 2i-3
SEDIMENT TRAPS BATHYMETRY
MP 21.50 RDB
DECEMBER 2012
SHEET 5 OF 11

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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Map Location



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- Structure Elevation Point (December 2012)
- Water Level Point (December 2012)
- Conifer Tree Structure
- Target Transect
- Sediment Trap Boundaries
- Quarter Mile Grid Segments

N

0 25 50 100

Scale in Feet

FIGURE 2i-3
SEDIMENT TRAPS BATHYMETRY
MP 26.00 RDB
DECEMBER 2012
SHEET 6 OF 11

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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N

0 50 100 200

Scale in Feet

FIGURE 2i-3
SEDIMENT TRAPS BATHYMETRY
MP 28.25 RDB
DECEMBER 2012
SHEET 7 OF 11

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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- Quarter Mile Grid Segments

N

0 25 50 100

Scale in Feet

FIGURE 2i-3
SEDIMENT TRAPS BATHYMETRY
MP 33.00 A
DECEMBER 2012
SHEET 8 OF 11

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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- Quarter Mile Grid Segments

N

0 40 80 160

Scale in Feet

FIGURE 2i-3
SEDIMENT TRAPS BATHYMETRY
MP 33.00 B
DECEMBER 2012
SHEET 9 OF 11

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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- Conifer Tree Structure
- Target Transect
- Sediment Trap Boundaries
- Quarter Mile Grid Segments

N

0 50 100 200

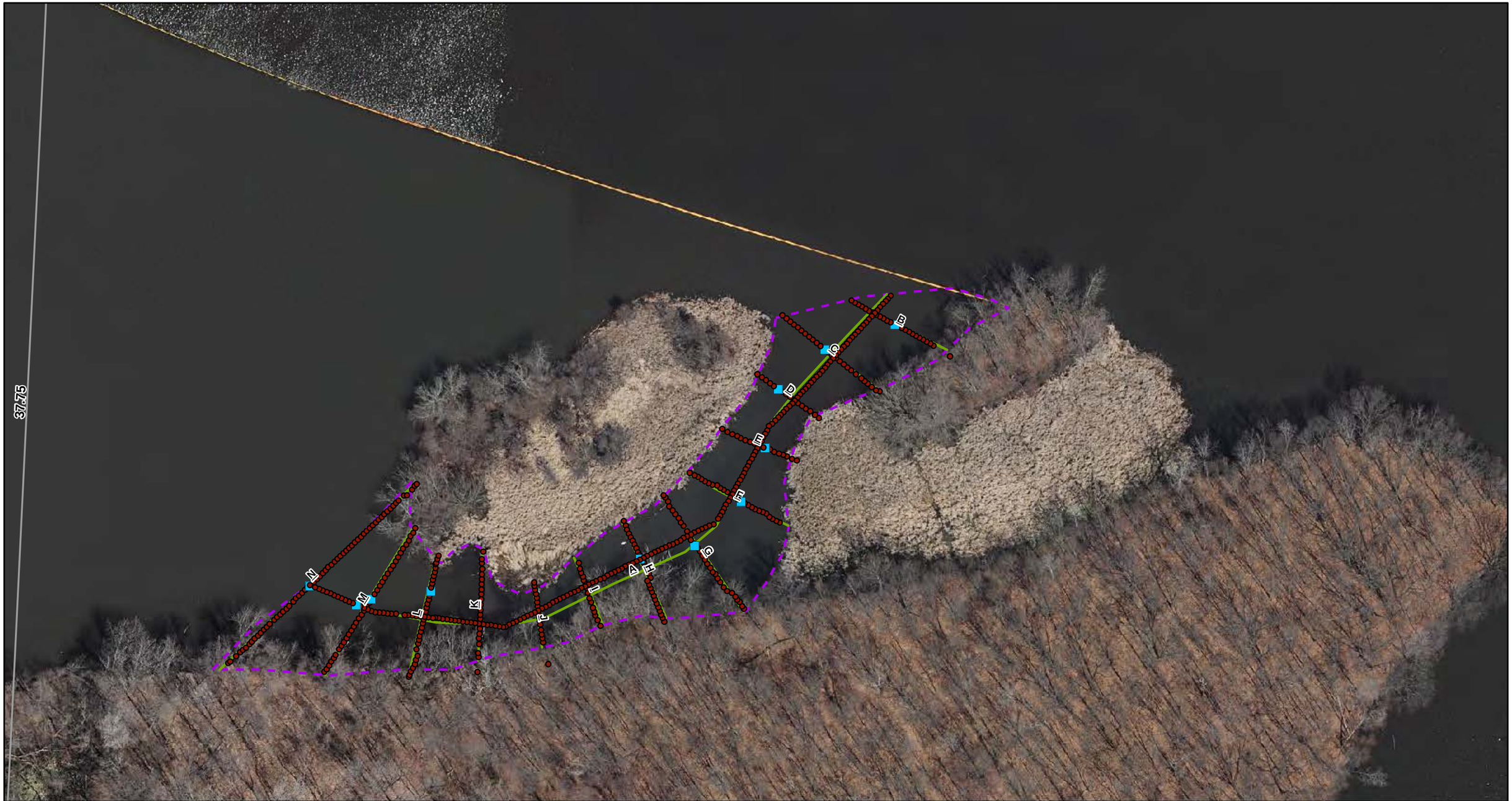
Scale in Feet

FIGURE 2i-3
SEDIMENT TRAPS BATHYMETRY
DELTA A/MP 36.75
DECEMBER 2012
SHEET 10 OF 11

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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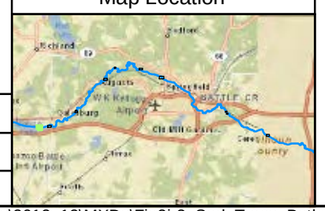
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- Water Level Point (December 2012)
- Conifer Tree Structure
- Target Transect
- Sediment Trap Boundaries
- Quarter Mile Grid Segments

N

0 40 80 160

Scale in Feet

FIGURE 2i-3
SEDIMENT TRAPS BATHYMETRY
MP 37.75 ISLANDS
DECEMBER 2012
SHEET 11 OF 11

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

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Aerial Photography Date: April 2011

Enbridge Line 6B MP 608 Pipeline Release

Marshall, Michigan

Appendix A

Planning Resources

Form 214's

Prepared for U.S. EPA and MDEQ

Enbridge Energy, Limited Partnership

Submitted: January 23, 2013

1. Incident Name	2. Date Prepared	3. Time Prepared	UNIT LOG ICS 214	
Kalamazoo River/Enbridge Spill Response	12/09/2012	12:00		
4. Unit Name/Designators	**5. Unit Leader**		**6. Operational Period : DATE/TIME**	
Enbridge Operations	**Name:**	John Sobojinski	**From:**	**November 27, 2012;0700**
	Position:	Incident Commander	**To:**	**December 10, 2012;0700**

7. Personnel Roster Assigned

Name	ICS Position	DUTY CELL
John Sobojinski	Enbridge Incident Commander	[redacted]
Dave Bareham	Environment	
Dave Bareham	Operations	
Jason Manshum	Public Information	
Dale Gross	Safety & Security	
John Wallace	Waste Management	
David Bareham	Submerged Oil	
Dean Sahara	Containment	
Bryan Stiemsma	Kalamazoo River	

8. Activity Log

Activity Areas	Safety & Security, Air Operations, Waste Management, Overbank, Submerged Oil, Containment, Talmadge Creek, Kalamazoo River

Health and Safety Issues

Safety & Security (Dale Gross)

General Safety Message:

11-27-12: Safe Lighting

This time of the year is when the days have become shorter. Today sunrise is at 07:46 and sunset is at 17:09. Work after dusk (with the exception of security) generally is not permitted and, if necessary, will only be allowed if the following conditions are met:

- Prior approval.
- A minimum of two workers, or communications exist to outside areas to request assistance, if required.
- Adequate lighting is provided to illuminate the work area.

Safety Items for November 27th, 2012: No issues to report.

11-28-12: Black Ice

Winter driving isn't just about dealing with snow; ice on the road is a real threat. Black ice, in particular, is dangerous because it's invisible (the term "black ice" being somewhat of a misnomer, as the ice is transparent). Tips for driving safely in icy conditions include:

- Decrease your speed and leave yourself plenty of room to stop. You should allow at least three times more space than usual between you and the car in front of you.
- Brake gently to avoid skidding.
- Use low gears to keep traction, especially on hills.
- Don't use cruise control on icy roads.
- Be especially careful on bridges, overpasses and infrequently traveled roads, which will freeze first. Even at temperatures above freezing, if the conditions are wet, you might encounter ice in shady areas or on exposed roadways like bridges.

Don't pass snow plow trucks. The drivers have limited visibility, and you're likely to find the road in front of them worse than the road behind.

Safety Items for November 28th, 2012: No issues to report.

11-29-12: Walking in Icy/Slippery Conditions

Wintery conditions such as snow, ice, wind and other factors such as poor lighting can contribute to risk of slips,

Health and Safety Issues (Cont.)	trips, and falls. The following are some tips aimed at helping prevent slips, trips and falls: ➢ Wear proper footwear with good traction that is kept in good repair. Take a look at the soles of shoes regularly to check for excessive wear. ➢ Use handrails when available ➢ Take short steps and reduce walking speed to help maintain stability. ➢ Make sure all areas have adequate lighting to illuminate any potential hazards. **Safety Items for November 29th, 2012:** No issues to report. **11-30-12 and 12-01-12: Housekeeping before Snow** ➢ Organize a "sweep" of work areas and pick up any materials that could get covered by snow and could become a trip hazard. ➢ Prepare by having snow shovels, brooms, and ice melt on hand for use to clear steps and paths. ➢ Identify entrances, exits, curbs, as well as drop offs. ➢ Repair any loose steps and install non-skid tape where the need has been identified. **Safety Items for November 30th and December 1st:** No issues to report. **12-02-12: Life Saving Rule #3 – Confined Space Entry** Always follow procedures for Confined Space Entry; ➢ Always complete the required permit ➢ Receive proper authorization and ensure personnel are in place to perform the rescue plan before entering a confined space ***Remember: It is up to us to keep unsafe behavior out of the workplace*** **Safety Items for December 2nd:** No issues to report. **12-03-12: Jon Boat Winter Safety** During winter operations on the Kalamazoo River, jon boat operations may be suspended when border ice has formed or once there is free floating ice. Water/ice conditions will be monitored daily as part of the daily safe work permit/hazard assessment. **Safety Items for December 3rd, 2012:** No issues to report. **12-04-12: Vehicles and Carbon Monoxide** Carbon Monoxide poisoning can happen at any time of the year, but the danger is greater during the winter. Hundreds of people die from carbon monoxide poisoning every year, and thousands of others suffer dizziness, nausea, and convulsions. The gas is frightening because it's odorless and colorless. One of the most dangerous wintertime sources of carbon monoxide is vehicle exhaust. If you are in your vehicle and you keep the engine on in order to run your heater, make sure the exhaust pipe is clear. If the pipe is clogged with snow or other materials, the exhaust could back up into your vehicle. Signs of carbon monoxide poisoning include headache, mental confusion, and extreme tiredness. Get to fresh air and call for help immediately. **Safety Items for December 4th, 2012:** No issues to report. **12-05-12: Snow and Ice Removal** Snow removal contractors have been hired to remove snow from work sites. Sand and/or salt shall not be used on any boat ramp or watercraft. These products can cause additional slipping hazards on the ramps. Accumulated ice and snow may be removed by shoveling and scraping. **Safety Items for December 5th, 2012:** No issues to report. **12-06-12: Hunting Reminder – Muzzle loading Deer Season** Today is the beginning of muzzle loading deer season in the State of Michigan and the season will continue until December 23. Hunting activity for deer is expected to increase from last year as the river is now open to the

Health and Safety Issues (Cont.)	public. While we cannot prevent hunting activities from occurring, there are a number of best practices we can utilize to work safely during hunting season. ➢ Be alert for hunters in your work area. ➢ Do not work alone. ➢ Wear high visibility orange hard hat covers and safety vests. Remember: If you feel threatened by any hunting activities, leave the area, call 911 and report the incident to the Enbridge Safety Office 269-753-9347. NOTE: No one is to hunt on Enbridge properties unless they are the tenant to that specific property and have approval from Enbridge Incident Commander. **Safety Items for December 6th, 2012:** No issues to report. **12-07-12 and 12-08-12: Cold and Flu Prevention** Always wash your hands before: ➢ Preparing Food/ Eating/Treating Wounds/Giving Medicine/Touching a Sick or Injured Person Always wash your hands after: ➢ Preparing Food/Utilizing the Toilet/Touching Animals/Blowing Nose/Coughing or Sneezing in Hands/ Treating Wounds/Touching a Sick or Injured Person/ Handling Garbage, Etc. Proper Hand Washing: ➢ Wet hands with running water, add soap and lather well ➢ Rub hands vigorously for at least 20 seconds. Remember to scrub all surfaces; o Wrists/Between Fingers/Under Nails/Thumbs/Finger Tips/ Back of Hands ➢ Rinse hands off under running water ➢ Dry hands with a clean or disposable towel or air dryer ➢ If possible, use your towel or the back of your hand to turn off the faucet Alcohol Based Sanitizer: ➢ Apply enough of the product to the palm of your hand to wet completely ➢ Rub hands together, covering all surfaces up to 25 seconds or until dry **Safety Items for December 7th and December 8th:** No issues to report. **12-09-12: Life Saving Rule #4 – Ground Disturbance** Dig Safely. Always follow procedures for locating, positively identifying and excavating buried facilities. Protect yourself, your community and the environment by protecting our pipelines – ensure that all buried facilities are identified and marked prior to excavation. By building a strong foundation of safe practices we can protect our most valuable resource – our people. ***Make certain you know and obey the Enbridge 10-2-1 Rule.*** **Safety Items for December 9th:** No issues to report.
Activities / Comments	**Waste Management (John Wallace):** **11-27-12:** Decon: No activities. T&D: No activities. Waste Management Characterization: Continuing waste management characterization, documentation and coordination. **11-28-12:** Decon: Multiple buoys were deconed and placed into storage in connex box behind metal barn in FTC. T&D: No activities.

Activities / Comments (Cont.)	Waste Management Characterization: Continuing waste management characterization, documentation and coordination. **11-29-12:** Decon: Crew deconed buoys and anchors from the E4 removal. T&D: No activities. Waste Management Characterization: Continuing waste management characterization, documentation and coordination. **11-30-12:** Decon: Crew deconed various items such as hard boom and anchors. T&D: No activities. Waste Management Characterization: Continuing waste management characterization, documentation and coordination. **12-01-12 and 12-02-12:** Decon: No activities. T&D: No activities. Waste Management Characterization: No activities. **12-03-12:** Decon: Crew deconed hard boom and buoys in their daily progress. T&D: A roll off of oily debris was hauled from E4 to C&C landfill for disposal. Waste Management Characterization: Continuing waste management characterization, documentation and coordination. **12-04-12:** Decon: Multiple can buoys were deconed along with ball buoys on 12-4-12. T&D: No activities. Waste Management Characterization: Continuing waste management characterization, documentation and coordination. **12-05-12:** Decon: Hard boom, concrete anchors and ball buoys were deconed. T&D: No activities. Waste Management Characterization: Continuing waste management characterization, documentation and coordination. **12-06-12:** Decon: Vinyl sheet pile and ball buoys were deconed in the operational period. T&D: A roll off of MSW was hauled to C&C landfill as well as an oily debris roll off. Waste Management Characterization: Continuing waste management characterization, documentation and coordination.

Activities / Comments (Cont.)	**12-07-12:** Decon: Can buoys and anchors were deconed. T&D: Water was hauled out from the cell A/B sump by Valley city and taken to Plummer's Environmental for disposal. Waste Management Characterization: Continuing waste management characterization, documentation and coordination. Collected on (1) waste water sample from the FTC sump. **12-08-12 and 12-09-12:** Decon: No activities. T&D: No activities. Waste Management Characterization: No activities. **Submerged Oil (David Bareham):** **11-27-12:** Science: Logged remaining quantification cores. Compliance: Collected Bathymetry data at Ceresco Impoundment. **11-28-12:** Science: Logged remaining quantification cores. Collected eight (8) sediment samples (4held, 4analyzed) from MP 04.25. Collected five (5) sediment samples (1held, 4analyzed) from MP 05.00. Collected six (6) sediment samples (6analyzed) from MP 05.25. Collected six (6) sediment samples (6analyed) from MP 05.50. Collected five (5) sediment samples (2held, 3analyzed) from MP 10.75. Collected six (6) sediment samples (6analyzed) from MP 15.50. Collected five (5) sediment samples (2held, 3analyzed) from MP 15.75. Collected six (6) sediment samples (3held, 3Analyzed) from MP 28.75. Collected thirteen (13) sediment samples (4held, 9analyzed) from MP 37.25. Collected nineteen (19) sediment samples (5held, 14analyzed) from MP 37.50.Collected six (6) sediment samples (6analyzed) from MP 37.75. Compliance: Collected Bathymetry data at Ceresco Impoundment. **11-29-12:** Science: Logged remaining quantification cores. Collected three (3) sediment samples (3analyzed) from MP 05.00. Collected six (6) sediment samples (6analyzed) from MP 05.50. Collected four (4) sediment samples (4analyzed) from MP 09.00. Collected four (4) sediment samples (2held, 2analyzed) from MP 11.00. Collected three (3) sediment samples (3analyzed) from MP 21.50. Collected four (4) sediment samples (1held, 3analyzed) from MP 21.75. Collected three (3) sediment samples (3analyzed) from MP 25.25. Collected six (6) sediment samples (5analyzed) from MP 26.25. Collected four (4) sediment samples (4analyzed) from MP 27.50. Collected four (4) sediment samples (4analyzed) from MP 32.50. Collected eleven (11) sediment samples (5held, 6analyzed) from MP 37.25. Collected fifteen (15) sediment samples (2held, 13analyzed) from MP 37.50. Compliance: Collected Bathymetry data at Ceresco Impoundment. **11-30-12:** Science: Logged remaining quantification cores. Collected thirty-two (32) sediment samples (22analyzed, 10on hold) for submerged oil quantification study. Compliance: Collected Bathymetry data at Ceresco Impoundment. **12-01-12 and 12-02-12:** Science: No activities. Compliance: No activities. **12-03-12 and 12-04-12:** Science: No activities.

	Compliance: Collected Bathymetry data at Ceresco Impoundment. Morrow Lake monitoring. **12-05-12:** Science: Collected two (2) sediment samples from Agitation Study. Compliance: Collected Bathymetry data at Ceresco Impoundment. Morrow Lake monitoring. **12-06-12:** Science: Collected five (5) sediment samples from Agitation Study. Collected two (2) globule samples for the Agitation Study. Compliance: Collected Bathymetry data at multiple locations. Morrow Lake monitoring. **12-07-12:** Science: Collected four (4) sediment samples from Agitation Study. Collected two (2) globule samples for the Agitation Study. Collected eighteen (18) sediment samples for the Quantification Study. Compliance: Collected Bathymetry data at multiple locations. **12-08-12:** Science: No activities. Compliance: Collected Bathymetry data at multiple locations. **12-09-12:** Science: No activities. Compliance: No activities.
Activities / Comments (Cont.)	**Containment (Dean Sahara) :** **11-27-12:** Completed River Inspections: Provided 2 Boats for Situational Awareness. Provided 1 Boat for Safety. Provided 1 Boat for Survey Crew. Provided 4 Boats for Bathymetry. E4 Configuration Removal: Nothing to Report. Boom: Nothing to report. Buoys: Nothing to report. Survey Crew: Installed 1 monument at MP 19.25, MP 28.25, MP 26 and MP 10.25. Sheen Sweep: E4 to MP 38.75: 50' of snare used. MP 36.5 to MP 37.75: 25' of snare used. MP 21.25 to MP 33.1: 24' of snare used. Ceresco: 50' of snare used. Total Footage Snare used: 149'. Debris Recovered: Ceresco: Recovered 51 bags of debris. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Inspected all containment on the river, completed adjustments as required. **11-28-12:** Completed River Inspections: Provided 2 Boats for Situational Awareness. Provided 1 Boat for Safety. Provided 1 Boat for Survey Crew. Provided 4 Boats for Bathymetry. E4 Configuration Removal: Removed 7 pipe anchors. Boom: Nothing to report. Buoys: Nothing to report. Survey Crew: 35th Street Bridge, installed 1 monument. MP 33 installed 1 monument. MP 11.79 installed 1 monument. Sheen Sweep: E4 to MP 38.75: 25' of snare used. MP 36.5 to MP 37.75: 25' of snare used. MP 21.25 to MP 33.1: 50' of snare used. Total Footage Snare used: 100'. Debris Recovered: Ceresco: Recovered 22 bags of debris. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Inspected all containment on the river, completed adjustments as required. **11-29-12:** Completed River Inspections: Provided 2 Boats for Situational Awareness. Provided 1 Boat for Safety. Provided 1 Boat for Survey Crew. Provided 4 Boats for Bathymetry. E4 Configuration Removal: Removed 16 pipe anchors. Boom: Nothing to report. Buoys: Nothing to report. Survey Crew: MP 21.5 installed 2 monuments. Sheen Sweep: E4 to MP 38.75: 25' of snare used. MP 36.5 to MP 37.75: 25' of snare used. MP 21.25 to MP 33.1: 25' of snare used. Total Footage Snare used: 75'. Debris Recovered: Ceresco: Recovered 11 bags of debris. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Inspected all containment on the river, completed adjustments as required.

Activities / Comments (Cont.)	**11-30-12:** Completed River Inspections: Provided 2 Boats for Situational Awareness. Provided 1 Boat for Safety. Provided 1 Boat for Survey Crew. Provided 4 Boats for Bathymetry. E4 Configuration Removal: Removed final pipe anchors. Boom: Nothing to report. Buoys: Nothing to report. Survey Crew: MP 10.75 installed 3 monuments. MP 21.5 installed 1 monument. Sheen Sweep: E4 to MP 38.75: 100' of snare used. MP 36.5 to MP 37.75: 24' of snare used. MP 21.25 to MP 33.1: 25' of snare used. Total Footage Snare used: 149'. Debris Recovered: Ceresco: Recovered 22 bags of debris. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Inspected all containment on the river, completed adjustments as required. **12-01-12:** Completed River Inspections: Provided 1 Boat for Situational Awareness. Provided 1 Boat for Safety. Provided 2 Boats for Bathymetry. Boom: Nothing to report. Buoys: Nothing to report. Sheen Sweep: E4 to MP 38.75: 50' of snare used. MP 36.5 to MP 37.75: 25' of snare used. Total Footage Snare used: 75'. Debris Recovered: Ceresco: Recovered 10 bags of debris. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Inspected all containment on the river, completed adjustments as required. **12-02-12:** No activities. **12-03-12:** Completed River Inspections: Provided 1 Boat for Situational Awareness. Provided 1 Boat for Safety. Provided 1 Boat for RI. Provided 1 Boat for MLD Poling. Provided 8 Boats for Bathymetry. Boom: Nothing to report. Buoys: Nothing to report. Sheen Sweep: E4 to MP 38.75: 50' of snare used. MP 36.5 to MP 37.75: 50' of snare used. MP 21.25 to MP 33.1: 25' of snare used. Total Footage Snare used: 125'. Debris Recovered: Ceresco: Recovered 0 bags of debris. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Inspected all containment on the river, completed adjustments as required. **12-04-12:** Completed River Inspections: Provided 1 Boat for Situational Awareness. Provided 1 Boat for Safety. Provided 1 Boat for RI. Provided 1 Boat for MLD Poling. Provided 8 Boats for Bathymetry. Boom: Nothing to report. Buoys: Nothing to report. Sheen Sweep: E4 to MP 38.75: 50' of snare used. MP 36.5 to MP 37.75: 50' of snare used. MP 21.25 to MP 33.1: 50' of snare used. Ceresco: 50' of snare used. Total Footage Snare used: 200'. Debris Recovered: Ceresco: Recovered 8 bags of debris. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Inspected all containment on the river, completed adjustments as required. **12-05-12:** Completed River Inspections: Provided 1 Boat for Situational Awareness. Provided 1 Boat for Safety. Provided 1 Boat for RI. Provided 1 Boat for MLD Poling. Provided 8 Boats for Bathymetry. Boom: Nothing to report. Buoys: Nothing to report. Sheen Sweep: E4 to MP 38.75: 50' of snare used. MP 36.5 to MP 37.75: 50' of snare used. MP 21.25 to MP 33.1: 24' of snare used. Ceresco: 50' of snare used. Total Footage Snare used: 174'. Debris Recovered: Ceresco: Recovered 8 bags of debris. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Inspected all containment on the river, completed adjustments as required. **12-06-12:** Completed River Inspections: Provided 1 Boat for Situational Awareness. Provided 1 Boat for Safety. Provided 1 Boat for MLD Poling. Provided 8 Boats for Bathymetry. Boom: Nothing to report. Buoys: Nothing to report. Sheen Sweep: E4 to MP 38.75: 50' of snare used. MP 36.5 to MP 37.75: 50' of snare used. MP 21.25 to MP 33.1: 24' of snare used. Total Footage Snare used: 124'. Debris Recovered: Ceresco: Recovered 7 bags of debris. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Inspected all containment on the river, completed adjustments as required. **12-07-12:** Completed River Inspections: Provided 2 Boats for Situational Awareness. Provided 1 Boat for Safety. Provided 1 Boat for MLD Poling. Provided 8 Boats for Bathymetry. Boom: Nothing to report. Buoys: Nothing to report. Sheen Sweep: E4 to MP 38.75: 50' of snare used. MP 36.5 to MP 37.75: 50' of snare used. MP 21.25 to MP 33.1: 50' of snare used. Ceresco: 50' of snare used. Total Footage Snare used: 200'. Debris Recovered: Ceresco: Recovered 6 bags of debris. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken

Activities / Comments (Cont.)	to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Inspected all containment on the river, completed adjustments as required. **12-08-12:** Completed River Inspections: Provided 1 Boat for Situational Awareness. Provided 1 Boat for Safety. Provided 1 Boat for MLD Poling. Provided 6 Boats for Bathymetry. Boom: Nothing to report. Buoys: Nothing to report. Sheen Sweep: E4 to MP 38.75: 25' of snare used. Total Footage Snare used: 25'. Debris Recovered: Ceresco: Recovered 6 bags of debris. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Inspected all containment on the river, completed adjustments as required. **12-09-12:** No activities. **<u>Kalamazoo River (Bryan Stiemsma):</u>** **11-27-12, 11-28-12, 11-29-12, 11-30-12, 12-01-12 and 12-02-12:** <u>Remedial Investigation</u>: No activities. <u>Remedial Action</u>: No activities. <u>Monitoring</u>: No activities. <u>Compliance</u>: No activities. **12-03-12:** <u>Remedial Investigation</u>: Collected three (3) soil samples at MP 10.75L. Collected one (1) soils sample at MP 11.50R. <u>Remedial Action</u>: No activities. <u>Monitoring</u>: Collected nine (9) potable samples. <u>Compliance</u>: No activities. **12-04-12:** <u>Remedial Investigation</u>: Collected seven (7) soil samples at MP 11.50R. Collected one (1) soil sample at MP 11.25R. <u>Remedial Action</u>: No activities. <u>Monitoring</u>: Collected nine (9) potable samples. <u>Compliance</u>: No activities. **12-05-12:** <u>Remedial Investigation</u>: Collected three (3) soil samples at MP 11.50R. <u>Remedial Action</u>: No activities. <u>Monitoring</u>: Collected ten (10) potable samples. <u>Compliance</u>: No activities. **12-06-12:** <u>Remedial Investigation</u>: No activities. <u>Remedial Action</u>: No activities. <u>Monitoring</u>: Collected ten (10) potable samples. <u>Compliance</u>: No activities.

Activities / Comments (Cont.)	**12-07-12:** Remedial Investigation: No activities. Remedial Action: No activities. Monitoring: Collected seven (7) potable samples. Compliance: No activities. **12-08-12 and 12-09-12:** Remedial Investigation: No activities. Remedial Action: No activities. Monitoring: No activities. Compliance: No activities.

1. Incident Name	2. Date Prepared	3. Time Prepared	UNIT LOG ICS 214	
Kalamazoo River/Enbridge Spill Response	12/21/2012	12:00		
4. Unit Name/Designators	**5. Unit Leader**		**6. Operational Period : DATE/TIME**	
Enbridge Operations	**Name:**	John Sobojinski	**From:**	**December 10, 2012;0700**
	Position:	Incident Commander	**To:**	**December 24, 2012;0700**

7. Personnel Roster Assigned

Name	ICS Position	DUTY CELL
John Sobojinski	Enbridge Incident Commander	[redacted]
Dave Bareham	Environment	
Dave Bareham	Operations	
Jason Manshum	Public Information	
Dale Gross	Safety & Security	
John Wallace	Waste Management	
David Bareham	Submerged Oil	
Dean Sahara	Containment	
Bryan Stiemsma	Kalamazoo River	

8. Activity Log

Activity Areas	Safety & Security, Air Operations, Waste Management, Overbank, Submerged Oil, Containment, Talmadge Creek, Kalamazoo River

Health and Safety Issues

Safety & Security (Dale Gross)

General Safety Message:

12-10-12: Poison Ivy Winter Precautions

Dormant poison ivy plants can still cause reactions during winter months. Every part of the plant contains the allergen that causes rash.

- Know what dormant poison ivy looks like.
- Wear appropriate PPE (gloves, long sleeves, etc.)
- If contact occurs:
  - Immediately clean skin with rubbing alcohol, poison plant wash, or degreasing soap (such as dishwashing soap) or detergent, and lots of water.
  - Use over the counter medications such as Cortisone, Calamine lotion, or Benadryl, etc. for relief
  - If severe symptoms persist, see a medical professional
- Wash work clothing frequently.

Safety Items for December 10th: No issues to report.

12-11-12: Housekeeping

Housekeeping is an important part of working safely.

- Keep trash and loose objects picked up and dispose of them.
- Place materials, tools, and equipment where they belong.
- If you see a housekeeping hazard, take care of it.
- Make sure walkways, stairs, and other paths of travel are kept safe and clear of loose objects.

Safety Items for December 11th, 2012: No issues to report.

12-12-12: Slips, Trips, and Falls

There are many situations that may cause slips, trips, and falls, such as ice, wet spots, grease, polished floors, loose flooring or carpeting, uneven walking surfaces, clutter, electrical cords, open desk drawers and filing cabinets, and damaged ladder steps.

The controls needed to prevent these hazards are usually obvious, but too often ignored, such as keeping walkways and stairs clear of scrap and debris; coiling up extension cords, lines, and hoses when not in use; keeping electrical and other wires out of the way; wearing lug soles in icy weather; clearing parking lots, stairs, and walkways in snowy weather; and using salt/sand as needed.

Safety Items for December 12th, 2012: No issues to report.

Health and Safety Issues (Cont.)

12-13-12: First Aid Kits

The Contractor shall ensure that all First Aid supplies as required in the applicable regulations are available and maintained. First aid supplies are required to be easily accessible. First aid kits shall be located on site or in each crew vehicle.

The contents of each first aid kit shall be checked by the Contractor before being sent out on each job site and on a regular basis to ensure they are properly stocked and contents have not expired.

Safety Items for December 13th, 2012: No issues to report.

12-14-12 and 12-15-12: Driving/Traffic Safety

- Always Wear Seatbelt
- Follow all Traffic Signals/ Signs/ Speed Limits
- Adjust Speed for Road/ Weather Conditions
- Maintain Safe Following Distance
- Secure Loads (Boats/ Waste/ Equipment, etc.)
- Avoid Distractions
    - Cell Phone/ Radio/ Electronic Devices
- Pedestrians/ Cyclists/ Children/ Wildlife
- Adequate Clearance - Fixed Objects/ Vehicles/ Equipment
- Parking:
    - Car Pooling
    - Designated Areas
    - Pulling Through
    - Back-In/ Honk Horn
- Vehicle Inspection – Brakes/ Horn/ Wipers/ Tire Pressure/ Windshield/ Lights/ Operating Controls

Safety Items for December 14th and December 15th: No issues to report.

12-16-12: Hunting Reminder - Late Antlerless Firearm Deer Season

Today is the beginning of the late antlerless firearm deer season in the State of Michigan and the season will continue until January 1st.

While we cannot prevent hunting activities from occurring, there are a number of best practices we can utilize to work safely during hunting season.

- Be alert for hunters in your work area.
- Do not work alone.
- Wear high visibility orange hard hat covers and safety vests.

Remember: If you feel threatened by any hunting activities, leave the area, call 911 and report the incident to the Enbridge Safety Office 269-753-9347.

NOTE: No one is to hunt on Enbridge properties unless they are the tenant to that specific property and have approval from Enbridge Incident Commander.

Safety Items for December 16th: No issues to report.

12-17-12: Life Saving Rule #5 – Isolate Energized Systems

Always follow procedures for lockout/ tag-out. Equipment, facilities and piping systems could have stored or residual energy that poses a danger.

Each and every one of us must do everything in our power to protect ourselves, and to protect those around us.

You are the power behind lifesaving rules.

Safety Items for December 17th, 2012: No issues to report.

12-18-12: Situational Awareness

Each of us is responsible in understanding what is happening in our environment.
One must understand how information, events, and their own actions will impact goals and objectives.

Health and Safety Issues (Cont.)	Before starting work; ➢ What potential hazards are present? ➢ What tools do you need to successfully complete the task? ➢ What resources may you require from your supervisor? ➢ Are your co-workers aware of their responsibilities? ➢ What hazards are present in order to complete the task safely? Being aware and staying focused before and during the task completion will greatly reduce the risk of potential injuries on the job. Complete an effective toolbox meeting, communicate with co-workers and stay conscious of the hazards associated with your task. **Safety Items for December 18th, 2012:** No issues to report. **12-19-12: Using Cleaning Products Safely** Many workers use cleaning products every day as part of their job responsibilities. Common cleaning products may seem harmless, but they can lead to serious health problems if mishandled. To avoid injury or illness while using cleaning products: ➢ Always read and follow warning labels, as well as Safety Data Sheets. ➢ Wear eye protection when using caustic cleaners. ➢ Wear gloves. Skin contact with cleaners can sometimes cause allergies. ➢ Never mix cleaners, as poisonous fumes may result. ➢ Be mindful of small rooms with poor ventilation. Leave windows and doors open or use a fan to better circulate air. ➢ Be aware that dust masks will not prevent you from breathing in fumes. ➢ Use less-toxic cleaners, if possible. **Safety Items for December 19th, 2012:** No issues to report. **12-20-12 Traveling Tips** Airline Travel: ➢ Be sure to contact your airline to make certain your flight is scheduled and on time ➢ Arrive to airport at least two (2) hours before your departure time ➢ Do not pack anything that may be used as a weapon, such as pocket knives, scissors or tools ➢ Leave all gifts unwrapped for proper inspection ➢ Do not wear clothing/accessories with lots of metal which will set off alarms at check points Vehicle Travel: ➢ Have your trip planned out and inform others of your departures and arrival times ➢ Avoid driver fatigue by getting proper rest prior to your departure ➢ Check the road and weather conditions before leaving ➢ Be sure to inspect your tires, oil levels, etc. **Safety Items for December 20th, 2012:** No issues to report.
Activities / Comments	**Waste Management (John Wallace):** **12-10-12, 12-11-12, 12-12-12, 12-13-12,and 12-14-12:** Decon: No activities. T&D: No activities. Waste Management Characterization: Continuing waste management characterization, documentation and coordination.

Activities / Comments (Cont.)	**12-15-12 and 12-16-12:** Decon: No activities. T&D: No activities. Waste Management Characterization: No activities. **12-17-12:** Decon: No activities. T&D: No activities. Waste Management Characterization: Continuing waste management characterization, documentation and coordination. **12-18-12:** Decon: No activities. T&D: A roll off of oily vegetation from C0.4 was hauled out by Valley City to C&C landfill for disposal. Waste Management Characterization: Continuing waste management characterization, documentation and coordination. **12-19-12 and 12-20-12:** Decon: No activities. T&D: No activities. Waste Management Characterization: Continuing waste management characterization, documentation and coordination. **Submerged Oil (David Bareham):** **12-10-12:** Science: Collected seven (7) sediment samples for the Quantification Study. Compliance: Collected Bathymetry data at multiple locations. Conducted poling activities downstream of Morrow Dam. Collected fourteen (14) sediment samples from sediment traps. **12-11-12** Science: No activities. Compliance: Collected Bathymetry data at multiple locations. Conducted poling activities downstream of Morrow Dam. Collected thirteen (13) sediment samples from sediment traps. **12-12-12** Science: No activities. Compliance: Collected Bathymetry data at multiple locations. Conducted poling activities downstream of Morrow Dam. Collected eight (8) sediment samples from sediment traps. **12-13-12:** Science: No activities. Compliance: Collected Bathymetry data at multiple locations. Conducted poling activities downstream of Morrow Dam. Collected twelve (12) sediment samples from sediment traps. **12-14-12:** Science: No activities.

Activities / Comments (Cont.)	Compliance: Collected Bathymetry data at multiple locations. Collected twelve (12) sediment samples from sediment traps. **12-15-12:** Science: No activities. Compliance: Collected Bathymetry data at multiple locations. **12-16-12:** Science: No activities. Compliance: No activities. **12-17-12, 12-18-12, 12-19-12 and 12-20-12:** Science: No activities. Compliance: Collected Bathymetry data at multiple locations. **Containment (Dean Sahara) :** **12-10-12:** Completed River Inspections: Provided 2 Boats for Situational Awareness. Provided 1 Boat for Safety. Provided 1 Boat for RI. Provided 1 Boat for Sediment Monitoring. Provided 1 Boat for MLD Poling. Provided 10 Boats for Bathymetry. Boom: Nothing to report. Buoys: Nothing to report. Sheen Sweep: E4 to MP 38.75: 50' of snare used. MP 36.5 to MP 37.75: 50' of snare used. MP 21.25 to MP 33.1: 25' of snare used. Ceresco: 50' of snare used. Total Footage Snare used: 175'. Debris Recovered: Nothing to Report. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Inspected all containment on the river, completed adjustments as required. **12-11-12:** Completed River Inspections: Provided 2 Boats for Situational Awareness. Provided 1 Boat for Safety. Provided 1 Boat for RI. Provided 2 Boats for Sediment Monitoring. Provided 1 Boat for MLD Poling. Provided 10 Boats for Bathymetry. Boom: Nothing to report. Buoys: Nothing to report. Sheen Sweep: E4 to MP 38.75: 50' of snare used. MP 21.25 to MP 33.1: 25' of snare used. Total Footage Snare used: 75'. Debris Recovered: Ceresco: Recovered 9 bags of debris. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Inspected all containment on the river, completed adjustments as required. **12-12-12:** Completed River Inspections: Provided 2 Boats for Situational Awareness. Provided 1 Boat for Safety. Provided 1 Boat for RI. Provided 2 Boats for Sediment Monitoring. Provided 1 Boat for MLD Poling. Provided 8 Boats for Bathymetry. Boom: Nothing to report. Buoys: Nothing to report. Sheen Sweep: E4 to MP 38.75: 50' of snare used. MP 21.25 to MP 33.1: 24' of snare used. Total Footage Snare used: 74'. Debris Recovered: Ceresco: Recovered 6 bags of debris. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Inspected all containment on the river, completed adjustments as required. **12-13-12:** Completed River Inspections: Provided 2 Boats for Situational Awareness. Provided 1 Boat for Safety. Provided 1 Boat for RI. Provided 2 Boats for Sediment Monitoring. Provided 2 Boats for MLD Poling. Provided 10 Boats for Bathymetry. Boom: Nothing to report. Buoys: Nothing to report. Sheen Sweep: E4 to MP 38.75: 50' of snare used. MP 21.25 to MP 33.1: 74' of snare used. Total Footage Snare used: 124'. Debris Recovered: Nothing to report. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Inspected all containment on the river, completed adjustments as required. **12-14-12:** Completed River Inspections: Provided 2 Boats for Situational Awareness. Provided 1 Boat for Safety. Provided 1 Boat for RI. Provided 1 Boat for Sediment Monitoring. Provided 8 Boats for Bathymetry. Boom: Nothing to report. Buoys: Nothing to report. Sheen Sweep: E4 to MP 38.75: 50' of snare used. MP 21.25 to MP 33.1: 24' of snare used. Total Footage Snare used: 74'. Debris Recovered: Nothing to Report. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Inspected all containment on the river, completed adjustments as required.

Activities / Comments (Cont.)	**12-15-12:** Completed River Inspections: Provided 1 Boat for Situational Awareness. Provided 1 Boat for Safety. Provided 6 Boats for Bathymetry. Boom: Nothing to report. Buoys: Nothing to report. Sheen Sweep: E4 to MP 38.75: 25' of snare used. Total Footage Snare used: 25'. Debris Recovered: Nothing to Report. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Inspected all containment on the river, completed adjustments as required. **12-16-12:** No activities. **12-17-12:** Completed River Inspections: Provided 2 Boats for Situational Awareness. Provided 1 Boat for Safety. Provided 1 Boat for RI. Provided 10 Boats for Bathymetry. Boom: Nothing to report. Buoys: Nothing to report. Sheen Sweep: E4 to MP 38.75: 50' of snare used. MP 21.25 to MP 33.1: 24' of snare used. Ceresco: 50' of snare used. Total Footage Snare used: 124'. Debris Recovered: Nothing to Report. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Inspected all containment on the river, completed adjustments as required. **12-18-12:** Completed River Inspections: Provided 2 Boats for Situational Awareness. Provided 1 Boat for Safety. Provided 1 Boat for RI. Provided 10 Boats for Bathymetry. Boom: Nothing to report. Buoys: Inspected Buoys. Sheen Sweep: E4 to MP 38.75: 50' of snare used. MP 21.25 to MP 33.1: 24' of snare used. Ceresco: 50' of snare used. Total Footage Snare used: 124'. Debris Recovered: Nothing to Report. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Inspected all containment on the river, completed adjustments as required. **12-19-12:** Completed River Inspections: Provided 2 Boats for Situational Awareness. Provided 1 Boat for Safety. Provided 1 Boat for Water Monitoring. Provided 1 Boat for RI. Provided 10 Boats for Bathymetry. Boom: Nothing to report. Buoys: Nothing to report. Sheen Sweep: E4 to MP 38.75: 50' of snare used. MP 21.25 to MP 33.1: 24' of snare used. Total Footage Snare used: 74'. Debris Recovered: Nothing to Report. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Inspected all containment on the river, completed adjustments as required. **12-20-12:** Completed River Inspections: Provided 2 Boats for Situational Awareness. Provided 1 Boat for Safety. Provided 1 Boat for RI. Provided 10 Boats for Bathymetry. Boom: Ceresco: Removed 800' of hard boom. Buoys: Nothing to report. Sheen Sweep: E4 to MP 38.75: 50' of snare used. MP 21.25 to MP 33.1: 24' of snare used. Total Footage Snare used: 74'. Debris Recovered: Ceresco: Recovered 11 bags of debris. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Inspected all containment on the river, completed adjustments as required.

1. Incident Name	2. Date Prepared	3. Time Prepared	UNIT LOG ICS 214	
Kalamazoo River/Enbridge Spill Response	12/21/2012	12:00		
4. Unit Name/Designators	**5. Unit Leader**		**6. Operational Period : DATE/TIME**	
Enbridge Operations	**Name:**	John Sobojinski	**From:**	**December 10, 2012;0700**
	Position:	Incident Commander	**To:**	**December 24, 2012;0700**

7. Personnel Roster Assigned

Name	ICS Position	DUTY CELL
John Sobojinski	Enbridge Incident Commander	
Dave Bareham	Environment	
Dave Bareham	Operations	
Jason Manshum	Public Information	
Dale Gross	Safety & Security	
John Wallace	Waste Management	
David Bareham	Submerged Oil	
Dean Sahara	Containment	
Bryan Stiemsma	Kalamazoo River	

8. Activity Log

Activity Areas	Safety & Security, Air Operations, Waste Management, Overbank, Submerged Oil, Containment, Talmadge Creek, Kalamazoo River

Health and Safety Issues

Safety & Security (Dale Gross)

General Safety Message:

12-10-12: Poison Ivy Winter Precautions

Dormant poison ivy plants can still cause reactions during winter months. Every part of the plant contains the allergen that causes rash.

- Know what dormant poison ivy looks like.
- Wear appropriate PPE (gloves, long sleeves, etc.)
- If contact occurs:
  - Immediately clean skin with rubbing alcohol, poison plant wash, or degreasing soap (such as dishwashing soap) or detergent, and lots of water.
  - Use over the counter medications such as Cortisone, Calamine lotion, or Benadryl, etc. for relief
  - If severe symptoms persist, see a medical professional
- Wash work clothing frequently.

Safety Items for December 10th: No issues to report.

12-11-12: Housekeeping

Housekeeping is an important part of working safely.

- Keep trash and loose objects picked up and dispose of them.
- Place materials, tools, and equipment where they belong.
- If you see a housekeeping hazard, take care of it.
- Make sure walkways, stairs, and other paths of travel are kept safe and clear of loose objects.

Safety Items for December 11th, 2012: No issues to report.

12-12-12: Slips, Trips, and Falls

There are many situations that may cause slips, trips, and falls, such as ice, wet spots, grease, polished floors, loose flooring or carpeting, uneven walking surfaces, clutter, electrical cords, open desk drawers and filing cabinets, and damaged ladder steps.

The controls needed to prevent these hazards are usually obvious, but too often ignored, such as keeping walkways and stairs clear of scrap and debris; coiling up extension cords, lines, and hoses when not in use; keeping electrical and other wires out of the way; wearing lug soles in icy weather; clearing parking lots, stairs, and walkways in snowy weather; and using salt/sand as needed.

Safety Items for December 12th, 2012: No issues to report.

Health and Safety Issues (Cont.)

12-13-12: First Aid Kits

The Contractor shall ensure that all First Aid supplies as required in the applicable regulations are available and maintained. First aid supplies are required to be easily accessible. First aid kits shall be located on site or in each crew vehicle.

The contents of each first aid kit shall be checked by the Contractor before being sent out on each job site and on a regular basis to ensure they are properly stocked and contents have not expired.

Safety Items for December 13th, 2012: No issues to report.

12-14-12 and 12-15-12: Driving/Traffic Safety

- Always Wear Seatbelt
- Follow all Traffic Signals/ Signs/ Speed Limits
- Adjust Speed for Road/ Weather Conditions
- Maintain Safe Following Distance
- Secure Loads (Boats/ Waste/ Equipment, etc.)
- Avoid Distractions
    - Cell Phone/ Radio/ Electronic Devices
- Pedestrians/ Cyclists/ Children/ Wildlife
- Adequate Clearance - Fixed Objects/ Vehicles/ Equipment
- Parking:
    - Car Pooling
    - Designated Areas
    - Pulling Through
    - Back-In/ Honk Horn
- Vehicle Inspection – Brakes/ Horn/ Wipers/ Tire Pressure/ Windshield/ Lights/ Operating Controls

Safety Items for December 14th and December 15th: No issues to report.

12-16-12: Hunting Reminder - Late Antlerless Firearm Deer Season

Today is the beginning of the late antlerless firearm deer season in the State of Michigan and the season will continue until January 1st.

While we cannot prevent hunting activities from occurring, there are a number of best practices we can utilize to work safely during hunting season.

- Be alert for hunters in your work area.
- Do not work alone.
- Wear high visibility orange hard hat covers and safety vests.

Remember: If you feel threatened by any hunting activities, leave the area, call 911 and report the incident to the Enbridge Safety Office 269-753-9347.

NOTE: No one is to hunt on Enbridge properties unless they are the tenant to that specific property and have approval from Enbridge Incident Commander.

Safety Items for December 16th: No issues to report.

12-17-12: Life Saving Rule #5 – Isolate Energized Systems

Always follow procedures for lockout/ tag-out. Equipment, facilities and piping systems could have stored or residual energy that poses a danger.

Each and every one of us must do everything in our power to protect ourselves, and to protect those around us.

You are the power behind lifesaving rules.

Safety Items for December 17th, 2012: No issues to report.

12-18-12: Situational Awareness

Each of us is responsible in understanding what is happening in our environment.
One must understand how information, events, and their own actions will impact goals and objectives.

Health and Safety Issues (Cont.)	Before starting work; ➢ What potential hazards are present? ➢ What tools do you need to successfully complete the task? ➢ What resources may you require from your supervisor? ➢ Are your co-workers aware of their responsibilities? ➢ What hazards are present in order to complete the task safely? Being aware and staying focused before and during the task completion will greatly reduce the risk of potential injuries on the job. Complete an effective toolbox meeting, communicate with co-workers and stay conscious of the hazards associated with your task. **Safety Items for December 18th, 2012:** No issues to report. **12-19-12: Using Cleaning Products Safely** Many workers use cleaning products every day as part of their job responsibilities. Common cleaning products may seem harmless, but they can lead to serious health problems if mishandled. To avoid injury or illness while using cleaning products: ➢ Always read and follow warning labels, as well as Safety Data Sheets. ➢ Wear eye protection when using caustic cleaners. ➢ Wear gloves. Skin contact with cleaners can sometimes cause allergies. ➢ Never mix cleaners, as poisonous fumes may result. ➢ Be mindful of small rooms with poor ventilation. Leave windows and doors open or use a fan to better circulate air. ➢ Be aware that dust masks will not prevent you from breathing in fumes. ➢ Use less-toxic cleaners, if possible. **Safety Items for December 19th, 2012:** No issues to report. **12-20-12: Traveling Tips** <u>Airline Travel:</u> ➢ Be sure to contact your airline to make certain your flight is scheduled and on time ➢ Arrive to airport at least two (2) hours before your departure time ➢ Do not pack anything that may be used as a weapon, such as pocket knives, scissors or tools ➢ Leave all gifts unwrapped for proper inspection ➢ Do not wear clothing/accessories with lots of metal which will set off alarms at check points <u>Vehicle Travel:</u> ➢ Have your trip planned out and inform others of your departures and arrival times ➢ Avoid driver fatigue by getting proper rest prior to your departure ➢ Check the road and weather conditions before leaving ➢ Be sure to inspect your tires, oil levels, etc. **Safety Items for December 20th, 2012:** No issues to report. **12-21-12, 12-22-12 and 12-23-12:** No Activity. **Safety Items for December 21st, 2012, December 22nd, 2012, and December 23rd, 2012:** No issues to report.
Activities / Comments	**<u>Waste Management (John Wallace):</u>** **12-10-12, 12-11-12, 12-12-12, 12-13-12,and 12-14-12:** <u>Decon:</u> No activities. <u>T&D</u>: No activities.

Activities / Comments (Cont.)	Waste Management Characterization: Continuing waste management characterization, documentation and coordination. **12-15-12 and 12-16-12:** Decon: No activities. T&D: No activities. Waste Management Characterization: No activities. **12-17-12:** Decon: No activities. T&D: No activities. Waste Management Characterization: Continuing waste management characterization, documentation and coordination. **12-18-12:** Decon: No activities. T&D: A roll off of oily vegetation from C0.4 was hauled out by Valley City to C&C landfill for disposal. Waste Management Characterization: Continuing waste management characterization, documentation and coordination. **12-19-12, 12-20-12 and 12-21-12:** Decon: No activities. T&D: No activities. Waste Management Characterization: Continuing waste management characterization, documentation and coordination. **12-22-12 and 12-23-12:** Decon: No activities. T&D: No activities. Waste Management Characterization: No activities. **Submerged Oil (David Bareham):** **12-10-12:** Science: Collected seven (7) sediment samples for the Quantification Study. Compliance: Collected Bathymetry data at multiple locations. Conducted poling activities downstream of Morrow Dam. Collected fourteen (14) sediment samples from sediment traps. **12-11-12** Science: No activities. Compliance: Collected Bathymetry data at multiple locations. Conducted poling activities downstream of Morrow Dam. Collected thirteen (13) sediment samples from sediment traps. **12-12-12** Science: No activities. Compliance: Collected Bathymetry data at multiple locations. Conducted poling activities downstream of

Activities / Comments (Cont.)	Morrow Dam. Collected eight (8) sediment samples from sediment traps. **12-13-12:** Science: No activities. Compliance: Collected Bathymetry data at multiple locations. Conducted poling activities downstream of Morrow Dam. Collected twelve (12) sediment samples from sediment traps. **12-14-12:** Science: No activities. Compliance: Collected Bathymetry data at multiple locations. Collected twelve (12) sediment samples from sediment traps. **12-15-12:** Science: No activities. Compliance: Collected Bathymetry data at multiple locations. **12-16-12:** Science: No activities. Compliance: No activities. **12-17-12, 12-18-12, 12-19-12 and 12-20-12:** Science: No activities. Compliance: Collected Bathymetry data at multiple locations. **12-21-12:** Science: No activities. Compliance: Collected Bathymetry data at multiple locations. Submitted six (6) sediment samples from sediment traps to Laboratory. **12-22-12 and 12-23-12:** Science: No activities. Compliance: No activities. **Containment (Dean Sahara) :** **12-10-12:** Completed River Inspections: Provided 2 Boats for Situational Awareness. Provided 1 Boat for Safety. Provided 1 Boat for RI. Provided 1 Boat for Sediment Monitoring. Provided 1 Boat for MLD Poling. Provided 10 Boats for Bathymetry. Boom: Nothing to report. Buoys: Nothing to report. Sheen Sweep: E4 to MP 38.75: 50' of snare used. MP 36.5 to MP 37.75: 50' of snare used. MP 21.25 to MP 33.1: 25' of snare used. Ceresco: 50' of snare used. Total Footage Snare used: 175'. Debris Recovered: Nothing to Report. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Inspected all containment on the river, completed adjustments as required. **12-11-12:** Completed River Inspections: Provided 2 Boats for Situational Awareness. Provided 1 Boat for Safety. Provided 1 Boat for RI. Provided 2 Boats for Sediment Monitoring. Provided 1 Boat for MLD Poling. Provided 10 Boats for Bathymetry. Boom: Nothing to report. Buoys: Nothing to report. Sheen Sweep: E4 to MP 38.75: 50' of snare used. MP 21.25 to MP 33.1: 25' of snare used. Total Footage Snare used: 75'. Debris Recovered: Ceresco: Recovered 9 bags of debris. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Inspected all containment on the river, completed adjustments as required. **12-12-12:** Completed River Inspections: Provided 2 Boats for Situational Awareness. Provided 1 Boat for Safety. Provided 1 Boat for RI. Provided 2 Boats for Sediment Monitoring. Provided 1 Boat for MLD Poling. Provided 8 Boats

Activities / Comments (Cont.)	for Bathymetry. Boom: Nothing to report. Buoys: Nothing to report. Sheen Sweep: E4 to MP 38.75: 50' of snare used. MP 21.25 to MP 33.1: 24' of snare used. Total Footage Snare used: 74'. Debris Recovered: Ceresco: Recovered 6 bags of debris. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Inspected all containment on the river, completed adjustments as required. **12-13-12:** Completed River Inspections: Provided 2 Boats for Situational Awareness. Provided 1 Boat for Safety. Provided 1 Boat for RI. Provided 2 Boats for Sediment Monitoring. Provided 2 Boats for MLD Poling. Provided 10 Boats for Bathymetry. Boom: Nothing to report. Buoys: Nothing to report. Sheen Sweep: E4 to MP 38.75: 50' of snare used. MP 21.25 to MP 33.1: 74' of snare used. Total Footage Snare used: 124'. Debris Recovered: Nothing to report. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Inspected all containment on the river, completed adjustments as required. **12-14-12:** Completed River Inspections: Provided 2 Boats for Situational Awareness. Provided 1 Boat for Safety. Provided 1 Boat for RI. Provided 1 Boat for Sediment Monitoring. Provided 8 Boats for Bathymetry. Boom: Nothing to report. Buoys: Nothing to report. Sheen Sweep: E4 to MP 38.75: 50' of snare used. MP 21.25 to MP 33.1: 24' of snare used. Total Footage Snare used: 74'. Debris Recovered: Nothing to Report. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Inspected all containment on the river, completed adjustments as required. **12-15-12:** Completed River Inspections: Provided 1 Boat for Situational Awareness. Provided 1 Boat for Safety. Provided 6 Boats for Bathymetry. Boom: Nothing to report. Buoys: Nothing to report. Sheen Sweep: E4 to MP 38.75: 25' of snare used. Total Footage Snare used: 25'. Debris Recovered: Nothing to Report. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Inspected all containment on the river, completed adjustments as required. **12-16-12:** No activities. **12-17-12:** Completed River Inspections: Provided 2 Boats for Situational Awareness. Provided 1 Boat for Safety. Provided 1 Boat for RI. Provided 10 Boats for Bathymetry. Boom: Nothing to report. Buoys: Nothing to report. Sheen Sweep: E4 to MP 38.75: 50' of snare used. MP 21.25 to MP 33.1: 24' of snare used. Ceresco: 50' of snare used. Total Footage Snare used: 124'. Debris Recovered: Nothing to Report. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Inspected all containment on the river, completed adjustments as required. **12-18-12:** Completed River Inspections: Provided 2 Boats for Situational Awareness. Provided 1 Boat for Safety. Provided 1 Boat for RI. Provided 10 Boats for Bathymetry. Boom: Nothing to report. Buoys: Inspected Buoys. Sheen Sweep: E4 to MP 38.75: 50' of snare used. MP 21.25 to MP 33.1: 24' of snare used. Ceresco: 50' of snare used. Total Footage Snare used: 124'. Debris Recovered: Nothing to Report. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Inspected all containment on the river, completed adjustments as required. **12-19-12:** Completed River Inspections: Provided 2 Boats for Situational Awareness. Provided 1 Boat for Safety. Provided 1 Boat for Water Monitoring. Provided 1 Boat for RI. Provided 10 Boats for Bathymetry. Boom: Nothing to report. Buoys: Nothing to report. Sheen Sweep: E4 to MP 38.75: 50' of snare used. MP 21.25 to MP 33.1: 24' of snare used. Total Footage Snare used: 74'. Debris Recovered: Nothing to Report. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Inspected all containment on the river, completed adjustments as required. **12-20-12:** Completed River Inspections: Provided 2 Boats for Situational Awareness. Provided 1 Boat for Safety. Provided 1 Boat for RI. Provided 10 Boats for Bathymetry. Boom: Ceresco: Removed 800' of hard boom. Buoys: Nothing to report. Sheen Sweep: E4 to MP 38.75: 50' of snare used. MP 21.25 to MP 33.1: 24' of snare used. Total Footage Snare used: 74'. Debris Recovered: Ceresco: Recovered 11 bags of debris. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off

Activities / Comments (Cont.)	for disposal at a later date. Inspected all containment on the river, completed adjustments as required. **12-21-12:** Completed River Inspections: Boat Operations cancelled due to weather. Boom: Nothing to Report. Buoys: Nothing to report. Sheen Sweep: Total Footage Snare used: 0'. Debris Recovered: Nothing to Report. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Inspected all containment on the river, completed adjustments as required. **12-22-12:** Completed River Inspections: Provided 1 Boat for Situation/Sheen Response. Boom: Nothing to Report. Buoys: Nothing to report. Sheen Sweep: Total Footage Snare used: 0'. Debris Recovered: Nothing to Report. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Inspected all containment on the river, completed adjustments as required. **12-23-12:** No activity.

1. Incident Name	2. Date Prepared	3. Time Prepared	UNIT LOG ICS 214	
Kalamazoo River/Enbridge Spill Response	1/14/2013	12:00		
4. Unit Name/Designators	**5. Unit Leader**		**6. Operational Period : DATE/TIME**	
Enbridge Operations	**Name:**	John Sobojinski	**From:**	**December 24, 2012;0700**
	Position:	Incident Commander	**To:**	**January 14, 2013;0700**

7. Personnel Roster Assigned

Name	ICS Position	DUTY CELL
John Sobojinski	Enbridge Incident Commander	[redacted]
Dave Bareham	Environment	
Dave Bareham	Operations	
Jason Manshum	Public Information	
Dale Gross	Safety & Security	
John Wallace	Waste Management	
David Bareham	Submerged Oil	
Dean Sahara	Containment	
Bryan Stiemsma	Kalamazoo River	

8. Activity Log

Activity Areas	**Safety & Security, Air Operations, Waste Management, Overbank, Submerged Oil, Containment, Talmadge Creek, Kalamazoo River**
Health and Safety Issues	**Safety & Security (Dale Gross)** **General Safety Message:** **12-24-12, 12-25-12, 12-26-12, 12-27-12, 12-28-12, 12-29-12, 12-30-12, 12-31-12, 1-01-13, 1-02-13, 1-03-13, 1-04-13, 1-05-13 and 1-06-13:** No Activity. **Safety Items for December 24th, 2012, December 25th, 2012, December 26th, 2012, December 27th, 2012, December 28th, 2012, December 29th, 2012, December 30th, 2012, December 31st, 2012, January 1st, 2013, January 2nd, 2013, January 3rd, 2013, January 4th, 2013, January 5th, 2013, and January 6th, 2013:** No issues to report. **1-07-13: Unsafe Acts** Many incidents are a result of unsafe acts, or things we do when we know better. This is kind of strange if you think about it. We have more to fear from our own actions than from any other job hazards around us. What is the reasoning for exposing ourselves to potential injury? **It Won't Happen To Me** Basically, when we are thinking about getting the job done, we tend to rationalize the risk of getting injured. We think to ourselves that we have done this job many times this way and nothing bad has happened. Therefore, nothing bad will happen to us today. Because we have not been injured so far, we actually think of ourselves as being very safety conscious. We know the right way to do it, we realize that it is hazardous to do it this way, but what we are really thinking to ourselves is "it won't happen to me." **We Take Short Cuts** Often when a job "will only take a minute" we may use an unsafe method or tool. For example, not putting on our safety glasses because the job will only take a minute, or not locking out a machine because an adjustment will only take a second. Usually we think about it just before we do something a little unsafe, or maybe quite a bit unsafe. We know better, we know the safe way to do it, but we take that little chance. In effect we are saying, "I know that this could result in an injury, but "it can't happen to me Why take a chance in the first place? Only you can decide to take the time to do your job safely and correctly the first time. **Safety Items for January 7th, 2013:** River operations suspended due to ice on river.

Health and Safety Issues (Cont.)

1-08-13: Chocking Vehicles and Equipment

Effective chocking practices are important to operator and public safety, and for avoiding unnecessary costs due to damages. A vehicle, trailer, or other mobile equipment moving uncontrollably can have devastating consequences. Chocks prevent the mobile equipment from inadvertently moving. Chocks slide tightly underneath and behind the wheels.

Guidelines for Effective Chocking:

- Attempt to park the equipment on the flattest surface whenever possible.
- Use chocking in addition to other methods, including the use of the parking brake, parking in gear or turning the wheels into a curb or berm.
- The height, width and length of the chock should be large enough to prevent the mobile equipment from rolling over it. Lay the chocks side-by-side if necessary to cover the width of the tire.
- Do not unhook trailers or equipment without chocking first.

Remember: The heavier the mobile equipment, the lesser the slope required for it to begin to roll.
Safety Items for January 8th, 2013: River operations suspended due to ice on river.

1-09-13: Cold Weather Recommendations

Workers should avoid exposure to extremely cold temperatures when possible. When cold environments or temperatures cannot be avoided, workers should follow these recommendations to protect themselves from cold stress:

- Wear appropriate clothing.
  - Wear several layers of loose clothing. Layering provides better insulation.
  - Tight clothing reduces blood circulation. Warm blood needs to be circulated to the extremities.
  - When choosing clothing, be aware that some clothing may restrict movement resulting in a hazardous situation.
- Make sure to protect the ears, face, hands and feet in extremely cold weather.
  - Boots should be waterproof and insulated.
  - Wear a hat; it will keep your whole body warmer. (Hats reduce the amount of body heat that escapes from your head.)
- Move into warm locations during work breaks; limit the amount of time outside on extremely cold days.
- Carry cold weather gear, such as extra socks, gloves, hats, jacket, blankets, a change of clothes and a thermos of hot liquid.
- Avoid touching cold metal surfaces with bare skin.
- Monitor your physical condition and that of your coworkers.

Safety Items for January 9th, 2013: River operations suspended due to ice on river. River operations scheduled to resume on 1/10/13.

1-10-13: Slips, Trips, and Falls - Contributing Factors and Behaviors

Contributing Factors

Proper housekeeping in work and walking areas can contribute to safety and the prevention of falls. Not only is it important to maintain a safe working environment and walking surface, these areas must also be kept free of obstacles which can cause slips and trips.

Adequate lighting to ensure proper vision is also important in the prevention of slips and falls. Moving from light to dark areas, or vice versa, can cause temporary vision problems that might enough to cause a person to slip on a wet floor or trip over a misplaced object.

Carrying an oversized object can also obstruct one's vision and result in a slip or a trip. This is a particularly

Health and Safety Issues (Cont.)	serious problem on stairs. **<u>Behaviors that Lead to Falls</u>** There are specific behaviors which can lead to slips, trips, and falls. Walking too fast or running can cause major problems. In normal walking, the most force is exerted when the heel strikes the ground, but in fast walking or running, one lands harder on the heel of the front foot and pushes harder off the sole of the rear foot; thus, greater traction is required to prevent slips and falls. Rapid changes in direction create a similar problem. Other problems that can lead to slips, trips, and falls are: distractions; not watching where one is going; carrying materials which obstruct view; wearing sunglasses in low-light areas; and failure to use handrails. These and other behaviors, caused by lack of knowledge, impatience, or bad habits developed from past experiences, can lead to falls, injuries, or even death. **Safety Items for January 10th, 2013:** No issues. **1-11-13: Hypothermia** Hypothermia occurs when the body loses more heat than it produces. Symptoms include change in mental status, uncontrollable shivering, cool abdomen and a low core body temperature. Severe hypothermia may cause rigid muscles, dark and puffy skin, irregular heartbeat and respiration, and unconsciousness. Treat hypothermia by protecting the victim from further heat loss and seeking immediate medical attention. Get the victim out of the cold. Add insulation such as blankets, pillows, towels or newspapers beneath and around the victim. Be sure to cover the victim's head. Replace wet clothing with dry clothing. Handle the victim gently because rough handling can cause cardiac arrest. Keep the victim in a horizontal (flat) position. **Safety Items for January 11th:** No issues to report. **1-12-13 and 1-13-13: Life Saving Rule #1 – Hazard Management** ➢ Always ensure an analysis has been performed for any potential hazards that may arise. ➢ Proper authorization must be received prior to starting any work. ➢ Follow the guidance that is provided in the hazard identification documentation to ensure the safety and security of the workers and the work site. ***Remember:* When we use our heads and follow the rules, we can all get home safe.** **Safety Items for January 12th, 2013 and January 13th, 2013:** No issues to report.
Activities / Comments	**<u>Waste Management (John Wallace):</u>** **12-24-12, 12-25-12, 12-26-12, 12-27-12, 12-28-12, 12-29-12, 12-30-12, 12-31-12, 1-01-13, 1-02-13, 1-03-13, 1-04-13, 1-05-13 and 1-06-13:** <u>Decon:</u> No activities. <u>T&D</u>: No activities. <u>Waste Management Characterization</u>: No activities. **1-07-13, 1-08-13, 1-09-13, 1-10-13 and 1-11-13:** <u>Decon:</u> No activities. <u>T&D</u>: No activities. <u>Waste Management Characterization</u>: Continuing waste management characterization, documentation and coordination. **1-12-13 and 1-13-13:** <u>Decon:</u> No activities. <u>T&D</u>: No activities. <u>Waste Management Characterization</u>: No activities.

Activities / Comments (Cont.)	**Submerged Oil (David Bareham):** **12-24-12, 12-25-12, 12-26-12, 12-27-12, 12-28-12, 12-29-12, 12-30-12, 12-31-12, 1-01-13, 1-02-13, 1-03-13, 1-04-13, 1-05-13, 1-06-13, 1-07-13, 1-08-13 and 1-09-13:** Science: No activity. Compliance: No activity. **1-10-13, 1-11-13 and 1-12-13:** Science: No activity. Compliance: Bathymetry data collection at E4. **1-13-13:** Science: No activity. Compliance: No activity. **Containment (Dean Sahara) :** **12-24-12, 12-25-12, and 12-26-12:** No Activity. **12-27-12:** Completed River Inspections: Provided 1 Boat for Situation/Sheen Response. Boom: Nothing to Report. Buoys: Nothing to report. Sheen Sweep: Total Footage Snare used: 0'. Debris Recovered: Nothing to Report. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Inspected all containment on the river, completed adjustments as required. **12-28-12:** Completed River Inspections: Provided 1 Boat for Situation/Sheen Response. Boom: Nothing to Report. Buoys: Nothing to report. Sheen Sweep: Total Footage Snare used: 0'. Debris Recovered: Nothing to Report. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Inspected all containment on the river, completed adjustments as required. **12-29-12:** Completed River Inspections: Provided 1 Boat for Situation. Boom: Nothing to Report. Buoys: Nothing to report. Sheen Sweep: Total Footage Snare used: 0'. Debris Recovered: Nothing to Report. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Inspected all containment on the river, completed adjustments as required. **12-30-12, 12-31-12 and 1-01-13:** No activity. **1-02-13, 1-03-13, 1-04-13, 1-05-13:** Completed River Inspections: Nothing to Report. Boom: Nothing to Report. Buoys: Nothing to report. Sheen Sweep: Total Footage Snare used: 0'. Debris Recovered: Nothing to Report. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Inspected all containment on the river, completed adjustments as required. **1-06-13, 1-07-13, 1-08-13 and 1-09-13:** No Activity. **1-10-13:** Completed River Inspections: Provided 1 Boat for Safety. Provided 1 Boat for Situational Awareness. Provided 3 Boats for Bathymetry. Boom: Nothing to Report. Buoys: Nothing to report. Sheen Sweep: Did not conduct sheen recovery. Total Footage Snare used: 0'. Debris Recovered: Nothing to Report. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Inspected all containment on the river, completed adjustments as required. **1-11-13:** Completed River Inspections: Provided 1 Boat for Safety. Provided 1 Boat for Situational Awareness. Provided 3 Boats for Bathymetry. Boom: Nothing to Report. Buoys: Nothing to report. Sheen Sweep: Did not conduct sheen recovery. Total Footage Snare used: 0'. Debris Recovered: Nothing to Report. All vegetation debris taken to C

Activities / Comments (Cont.)	0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Inspected all containment on the river, completed adjustments as required. **1-12-13:** Completed River Inspections: Provided 1 Boat for Safety. Provided 1 Boat for Situational Awareness. Provided 1 Boat for Bathymetry. Boom: Nothing to Report. Buoys: Nothing to report. Sheen Sweep: Did not conduct sheen recovery. Total Footage Snare used: 0'. Debris Recovered: Nothing to Report. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Inspected all containment on the river, completed adjustments as required. **1-13-13:** No activities.

Enbridge Line 6B MP 608 Pipeline Release

Marshall, Michigan

Appendix A

Planning Resources

IAP's

Prepared for U.S. EPA and MDEQ

Enbridge Energy, Limited Partnership

Submitted: January 23, 2013

1. Incident Name	2. Operational Period (Date/Time)	IAP
Kalamazoo River/Enbridge Spill	Starting: **November 27, 2012, 0700** End: **December 10, 2012, 0700**	**Cover Sheet**

3. Approved by Incident Commander(s):

M. DeLong Michelle DeLong, Michigan Department Environmental Quality

for Ralph Dollhopf, U.S. EPA

John Sobojinski, Enbridge

INCIDENT ACTION PLAN

The items below are included in this Incident Action Plan:

- ICS 202 (Response Objectives) 1
- ICS 207 (Organizational Chart & OPS Chart) 2
- ICS 204 (Assignment List) 5
- Communications List 11
- Project Schedule 13
- Meeting Locations and Traffic Plans 14
- Medical Plan and hospital maps 23
- Meetings Schedule 28



4. Prepared By:	Date/Time
Brad Nelson, Avery/Enbridge	11/16/2012

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1. Incident Name	2. Operational Period (Date/Time)	INCIDENT OBJECTIVES
Kalamazoo River/Enbridge Spill	From: November 27, 2012 @ 0700 To: December 10, 2012 @ 0700	**ICS 202-EPA**

3. Incident Objective(s)

1. Ensure health and safety of the public and response and recovery personnel.
2. Ensure absolute containment of submerged oil and oil-containing sediments within the Delta and the Fan of Morrow Lake.
3. Ensure effective transition of regulatory oversight from EPA to Michigan DEQ jurisdiction as appropriate.
4. Perform recovery and containment of oil from affected public and private areas of river and river system.
5. Perform remediation and restoration of affected public and private areas of river and river system.
6. Maintain effective communications with cooperating and assisting agencies, the public, including regular coordination with the Multi-Agency Coordination Group (MAC).
7. Provide protection of environmentally and culturally sensitive areas including wildlife and historic properties.
8. Collect, coordinate, manage and communicate environmental and public health data including maintenance of Joint Information Center function.

4. Operational Period Command Emphasis

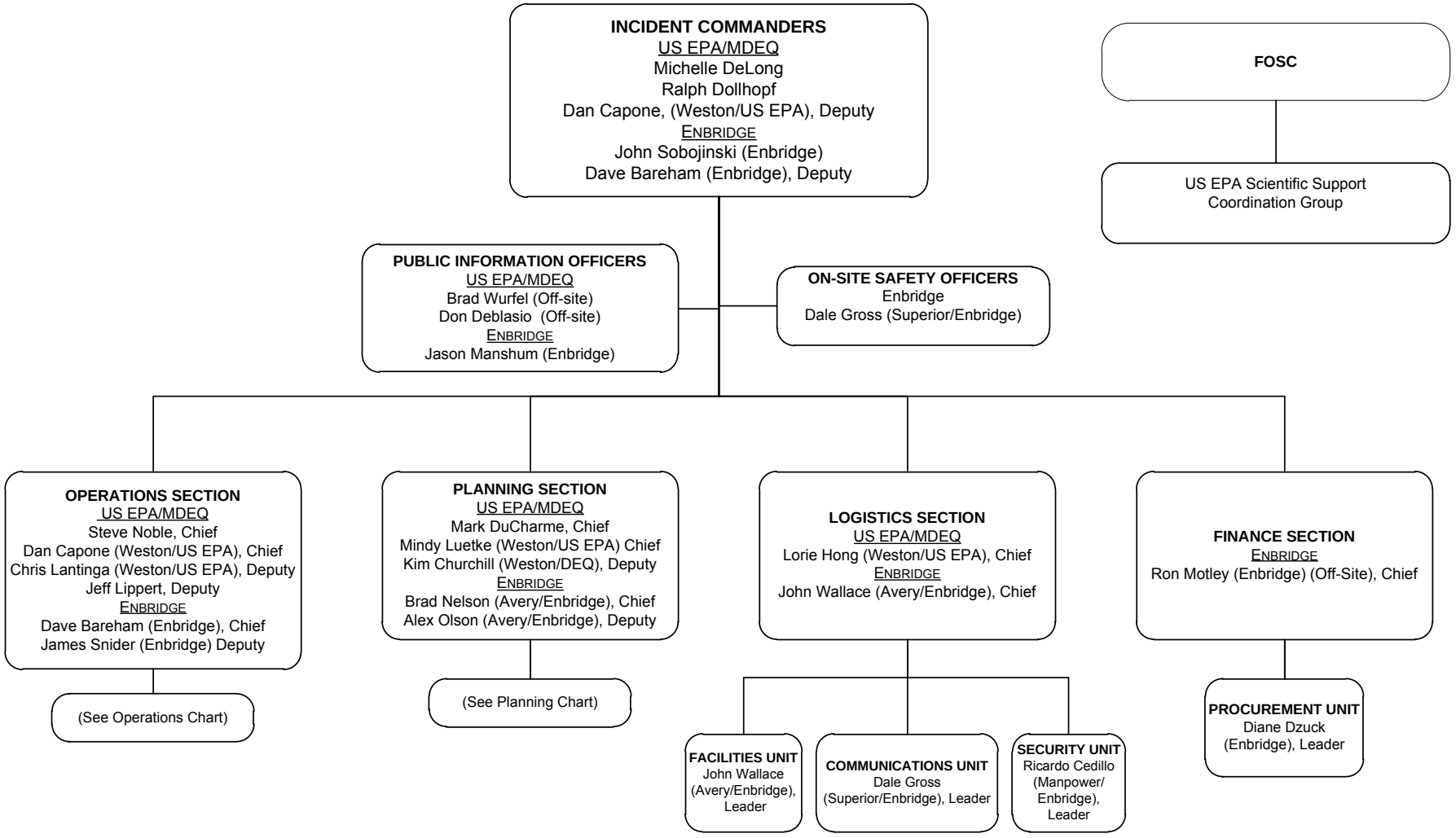
1. Respond to and document emerging oil throughout the Kalamazoo River system.
2. Implement path forward for submerged oil quantification cores.
3. Complete safe and efficient removal of the E4.0 containment system.

5. Safety Objectives for the Operational Period

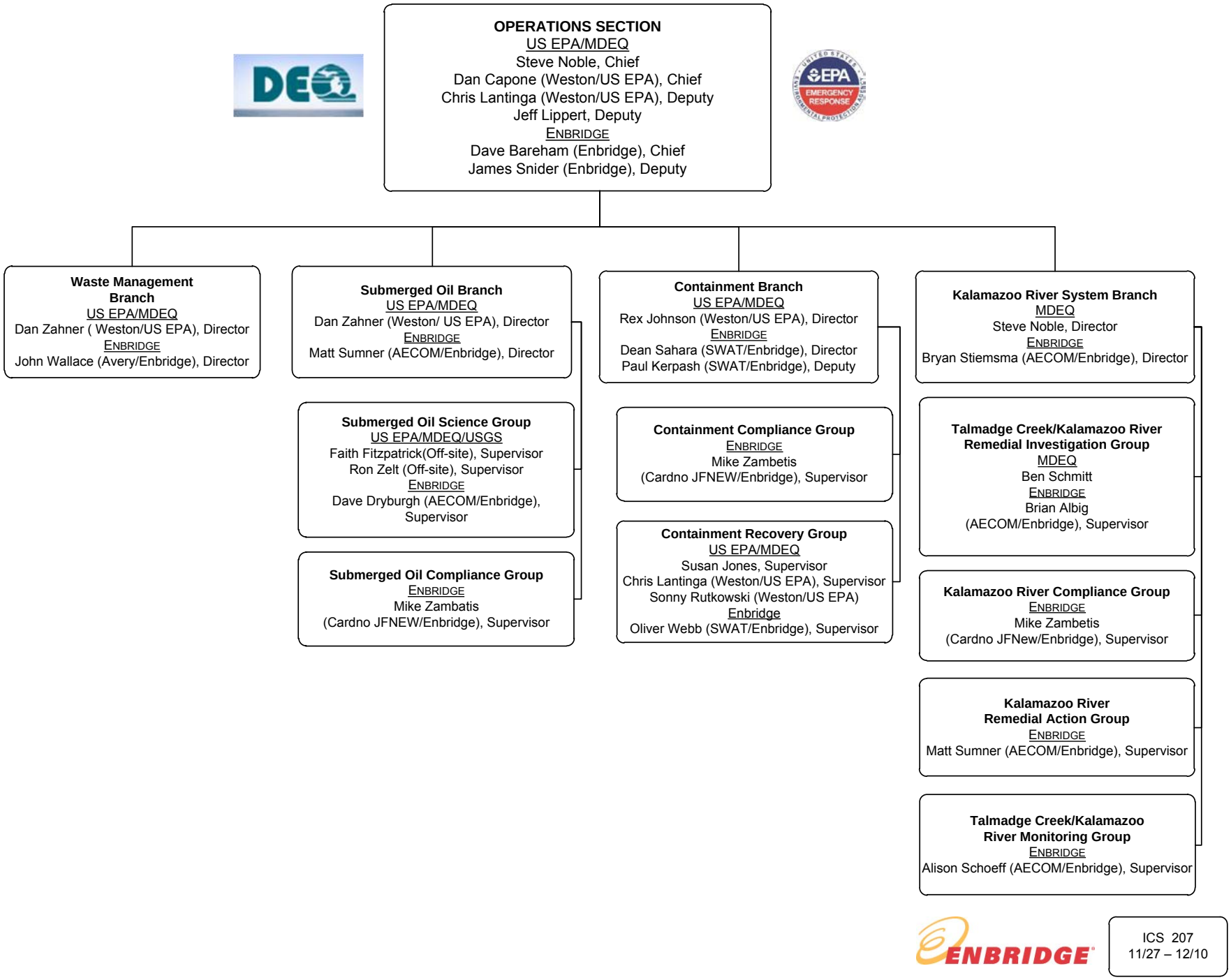
1. Focus on travel hazards as temperatures decrease.
2. Ensure the safe interaction between workers and the public, including hunters.

6. Prepared by Planning Section Chief (Enbridge):	**Date/Time:**	
Brad Nelson	11/16/2012	1145
7. Approved by Incident Commander (DEQ):	**Date/Time:**	
Michelle DeLong Michelle DeLong	11/16/2012	1416
8. Approved by Incident Commander (US EPA):	**Date/Time:**	
Ralph Dollhopf for Ralph Dollhopf	11/16/2012	1414
10. Approved by Incident Commander (Enbridge):	**Date/Time:**	
John Sobojinski	11/16/2012	1350

Enbridge Pipelines Response Unified Command



ICS 207
11/27 – 12/10


OPERATIONS SECTION
US EPA/MDEQ
Steve Noble, Chief
Dan Capone (Weston/US EPA), Chief
Chris Lantinga (Weston/US EPA), Deputy
Jeff Lippert, Deputy
ENBRIDGE
Dave Bareham (Enbridge), Chief
James Snider (Enbridge), Deputy
Waste Management Branch
US EPA/MDEQ
Dan Zahner (Weston/US EPA), Director
ENBRIDGE
John Wallace (Avery/Enbridge), Director
Submerged Oil Branch
US EPA/MDEQ
Dan Zahner (Weston/ US EPA), Director
ENBRIDGE
Matt Sumner (AECOM/Enbridge), Director
Submerged Oil Science Group
US EPA/MDEQ/USGS
Faith Fitzpatrick(Off-site), Supervisor
Ron Zelt (Off-site), Supervisor
ENBRIDGE
Dave Dryburgh (AECOM/Enbridge), Supervisor
Submerged Oil Compliance Group
ENBRIDGE
Mike Zambatis
(Cardno JFNEW/Enbridge), Supervisor
Containment Branch
US EPA/MDEQ
Rex Johnson (Weston/US EPA), Director
ENBRIDGE
Dean Sahara (SWAT/Enbridge), Director
Paul Kerpash (SWAT/Enbridge), Deputy
Containment Compliance Group
ENBRIDGE
Mike Zambetis
(Cardno JFNEW/Enbridge), Supervisor
Containment Recovery Group
US EPA/MDEQ
Susan Jones, Supervisor
Chris Lantinga (Weston/US EPA), Supervisor
Sonny Rutkowski (Weston/US EPA)
Enbridge
Oliver Webb (SWAT/Enbridge), Supervisor
Kalamazoo River System Branch
MDEQ
Steve Noble, Director
ENBRIDGE
Bryan Stiemsma (AECOM/Enbridge), Director
Talmadge Creek/Kalamazoo River Remedial Investigation Group
MDEQ
Ben Schmitt
ENBRIDGE
Brian Albig
(AECOM/Enbridge), Supervisor
Kalamazoo River Compliance Group
ENBRIDGE
Mike Zambetis
(Cardno JFNew/Enbridge), Supervisor
Kalamazoo River Remedial Action Group
ENBRIDGE
Matt Sumner (AECOM/Enbridge), Supervisor
Talmadge Creek/Kalamazoo River Monitoring Group
ENBRIDGE
Alison Schoeff (AECOM/Enbridge), Supervisor
ENBRIDGE
ICS 207
11/27 – 12/10



PLANNING SECTION
US EPA/MDEQ
Mark DuCharme, Chief
Kim Churchill, Deputy
Mindy Luetke (Weston/US EPA), Chief
ENBRIDGE
Brad Nelson (Avery/Enbridge), Chief
Alex Olson (Avery/Enbridge), Deputy



SITUATION UNIT
US EPA/MDEQ
Matt Haak (Weston/ US EPA), Leader
Larry Rader (weston/US EPA), Leader
ENBRIDGE
Alex Olson (Avery/Enbridge), Leader

RESOURCE UNIT
US EPA/MDEQ
Lorie Hong (Weston/US EPA), Leader
ENBRIDGE
Alex Olson (Avery/Enbridge), Leader

ENVIRONMENTAL UNIT
US EPA/MDEQ/USGS
Mike Alexander (Off-site)
Kim Churchill (Weston/DEQ), Leader
Isaac Aboulafia (Weston/US EPA)(Off-site), Leader
Elizabeth Wessling (Weston/US EPA)(Off-site), Leader
Faith Fitzpatrick (USGS)(Off-site), Leader
Ron Zelt (USGS)(Off-site), Assistant
Rex Johnson (Weston/US EPA), Assistant
Tom Graan (Weston/US EPA), Assistant
ENBRIDGE
John Bohrmann (Enbridge), Leader

DOCUMENTATION UNIT
US EPA/MDEQ
Crystal Laskey, Leader
Carolyn Giles-Smith (Weston/DEQ), Leader
Paul Moison (Weston/US EPA), Leader
ENBRIDGE
Brad Nelson (Avery/Enbridge), Leader

ENBRIDGE

ICS 207
1127 – 12/10

1. Incident Name	2. Operational Period (Date/Time)	Assignment List
Kalamazoo River/Enbridge Spill Response	From: November 27, 2012, 0700 To: December 10, 2012, 0700	ICS 204- EPA
3. Branch Waste Management	**4. Division/Group/Staging**	

5. Operations Personnel

	Name	Affiliation	Contact # (s)
Operations Section Chief:	Steve Noble	MDEQ	[redacted]
	Dan Capone	Weston/US EPA	
	Chris Lantinga, Deputy	Weston/US EPA	
	Jeff Lippert, Deputy	EPA	
	Dave Bareham	Enbridge	
	James Snider, Deputy	Enbridge	
Branch Director:	Dan Zahner	Weston/US EPA	
	John Wallace	Avery/Enbridge	

6. Resources Assigned

See Branch Directors			

7. Work Assignments

1. Field decon operations for: personnel, hand equipment, and boats for preparation of transport shall be installed prior to work beginning at boat launches / staging areas for individual work sites.
2. Haul contaminated soil, water, media and debris to staging areas for waste characterization and oil recovery sampling prior to offsite disposal.
3. Waste shall be collected as needed for direct haul to the landfill or transported to Frac Tank City (FTC) for consolidation with similar waste streams as necessary.
4. Waste management characterization, manifesting, and coordination of transportation and disposal.

For US EPA/MDEQ/Weston:

1. Provide oversight of all waste management activities.
2. Ensure appropriate sampling, tracking and disposal is performed on oil impacted debris, water and soil.
3. Review manifests, weight tickets and bills of lading for correlation to waste stream analytical data.
4. Review weekly oil recovery and waste disposal report.

8. Special Instructions

Ensure all Best Management Practices (BMPs) are in place and utilized.

In accordance with the Fatigue Management Plan, all work permit activities will be completed no later than 1900.

SAFETY INSTRUCTIONS:

For vacuum truck operation guidelines, please refer the HASP.

At Frac Tank City:

- The following procedure shall be used for initial opening of hatch or rear doors of liquid vacuum trucks and hatches of vacuum excavation units:
  - Approach the hatch to be opened with a calibrated five gas monitor and a benzene monitor.
  - Personnel performing this task must wear a full face respirator with organic vapor cartridge.
  - Slightly open the hatch and take VOC, H2S, LEL, Oxygen, CO and benzene readings.
  - If readings are greater than 10 ppm H2S, 10% LEL, 25 ppm CO or 25 ppm benzene then personnel shall close the hatch and utilize SCBA prior to opening the hatch.
- Operations - Respiratory protection may be required depending on periodic monitoring results. Wear a half-mask respirator equipped with an organic vapor cartridge when 0.5 ppm benzene is detected. Wear a full-face respirator equipped with an organic vapor/acid gas cartridge when benzene is at 5 ppm to 25 ppm.

9. Communications (radio and/or phone contact numbers needed for this assignment)

Incident Command Safety Office: 269-753-9347

Emergency Communications: Use IAP Medical Plan/IAP Phone list. Dial 911 for Medical Emergency.

10. Prepared by	Date/Time	11. Reviewed by (PSC),	Date/Time	12. Reviewed by (OSC),	Date/Time
A. Olson, Avery/Enbridge	11/16/2012 1130	B. Nelson, Avery/Enbridge	11/16/2012 1145	D. Bareham, Enbridge	11/16/2012 1230

1. Incident Name	2. Operational Period (Date/Time)	**Assignment List**
Kalamazoo River/Enbridge Spill Response	From: November 27, 2012, 0700 To: December 10, 2012, 0700	ICS 204 - EPA
3. Branch Submerged Oil	**4. Division/Group/Staging**	

5. Operations Personnel

	Name	Affiliation	Contact # (s)
Operations Section Chief:	Steve Noble	MDEQ	[redacted]
	Dan Capone	Weston/US EPA	
	Chris Lantinga, Deputy	Weston/US EPA	
	Jeff Lippert, Deputy	EPA	
	Dave Bareham	Enbridge	
	James Snider, Deputy	Enbridge	
Branch Director:	Dan Zahner	Weston/US EPA	
	Matt Sumner	AECOM/Enbridge	

6. Resources Assigned

Division Identifier	Leader	Contact Info. #	# of Persons
Submerged Oil Science	Faith Fitzpatrick (Off-site) Ron Zelt (Off Site) Dave Dryburgh (AECOM/Enbridge)	[redacted]	2 Weston/ US EPA 12 Contractors
Submerged Oil Compliance	Mike Zambatis (Cardno JFNEW/Enbridge)		

7. Work Assignments

Submerged Oil Science

1. Conduct bathymetry on the E4 Containment System. (1-2 Team)
2. Conduct phase I &II sediment trap sampling and bathymetry. (1-2 Team)
3. Survey monuments around the E4 containment system and sediment traps. (1 Team)
4. Complete core logging activities on the remaining quantification of oil cores (1 Team)

For US EPA/MDEQ/Weston:

1. Oversee and document Submerged Oil Science work activities.

Submerged Oil Compliance

1. Track previously submitted MDEQ permit applications for toolbox methods.

8. Special Instructions

Rowe Island, MP 38.50 to MP 38.75, is a No Go Zone – Environmental Sensitive Area.

SAFETY INSTRUCTIONS:

All in water activities of workers in water depths over fifty percent (50%) of thigh height will require tethering. Please refer to the HASP for further instructions.

9. Communications (radio and/or phone contact numbers needed for this assignment)

Incident Command Safety Office: 269-753-9347

Emergency Communications: Use IAP Medical Plan/IAP Phone list. Dial 911 for Medical Emergency.

10. Prepared by	Date/Time	11. Reviewed by (PSC),	Date/Time	12. Reviewed by (OSC),	Date/Time
A. Olson, Avery/Enbridge	11/16/2012 1130	B. Nelson, Avery/Enbridge	11/16/2012 1145	D. Bareham, Enbridge	11/16/2012 1230

1. Incident Name	2. Operational Period (Date/Time)	Assignment List
Kalamazoo River/Enbridge Spill Response	From: November 27, 2012, 0700 To: December 10, 2012, 0700	ICS 204 - EPA
3. Branch Containment	**4. Division/Group/Staging**	

5. Operations Personnel

	Name	Affiliation	Contact # (s)
Operations Section Chief:	Steve Noble	MDEQ	[redacted]
	Dan Capone	Weston/US EPA	
	Chris Lantinga, Deputy	Weston/US EPA	
	Jeff Lippert, Deputy	EPA	
	Dave Bareham	Enbridge	
	James Snider, Deputy	Enbridge	
Branch Director:	Rex Johnson	Weston/US EPA	
	Dean Sahara	SWAT/Enbridge	
	Paul Kerpash, Deputy	SWAT/Enbridge	

6. Resources Assigned

Division Identifier	Leader	Contact Info. #	# of Persons
Containment Compliance	Mike Zambetis (Cardno JFNEW/Enbridge)	[redacted]	
Containment Recovery	Susan Jones (MDEQ) Chris Lantinga (Weston/US EPA) Sonny Rutkowski (Weston/US EPA) Oliver Webb (SWAT/Enbridge)		1 Weston/US EPA 20 Contractors

7. Work Assignments

Containment Compliance

1. Provide support as necessary.

Containment Recovery

1. Perform containment strategies along the Kalamazoo River including the following tasks:
   a. Deploy and maintain shoreline containment boom as required.
   b. Complete sheen management as required.
2. Complete removal of E4.0 containment system per the Approved Removal Plan.
3. Maintain Kalamazoo River Sediment Traps, including any cylindrical sampling devices.

For US EPA/MDEQ/Weston:

1. Oversee and document Containment Recovery activities.

8. Special Instructions

Rowe Island, MP 38.50-MP 38.75, is a No Go Zone – Environmental Sensitive Area.

9. Communications (radio and/or phone contact numbers needed for this assignment)

Incident Command Safety Office: 269-753-9347

Emergency Communications: Use IAP Medical Plan/IAP Phone list. Dial 911 for Medical Emergency.

10. Prepared by	Date/Time	11. Reviewed by (PSC),	Date/Time	12. Reviewed by (OSC),	Date/Time
A. Olson, Avery/Enbridge	11/16/2012 1130	B. Nelson, Avery/Enbridge	11/16/2012 1145	D. Bareham, Enbridge	11/16/2012 1230

1. Incident Name	2. Operational Period (Date/Time)	Assignment List
Kalamazoo River/Enbridge Spill Response	From: November 27, 2012, 0700 To: December 10, 2012, 0700	**ICS 204 - EPA**
3. Branch	**4. Division/Group/Staging**	
Kalamazoo River System Branch		

5. Operations Personnel

	Name	Affiliation	Contact # (s)
Operations Section Chief:	Steve Noble	MDEQ	[redacted]
	Dan Capone	Weston/US EPA	
	Chris Lantinga, Deputy	Weston/US EPA	
	Jeff Lippert, Deputy	EPA	
	Dave Bareham	Enbridge	
	James Snider, Deputy	Enbridge	
Branch Director:	Steve Noble	MDEQ	
	Bryan Stiemsma	AECOM/Enbridge	

6. Resources Assigned

Division Identifier	Leader	Contact Info. #	# of Persons
Talmadge Creek/Kalamazoo River Remedial Investigation	Ben Schmitt (MDEQ) Brian Albig (AECOM/Enbridge)	[redacted]	6 Contractors
Kalamazoo River Compliance	Mike Zambetis (JFNew/Enbridge)		
Talmadge Creek/Kalamazoo River Remedial Action	Matt Sumner (AECOM/Enbridge)		
Talmadge Creek/Kalamazoo River Monitoring	Alison Schoeff (AECOM/Enbridge)		1 Contractor

7. Work Assignments

Talmadge Creek/Kalamazoo River Remedial Investigation

1. Continue Kalamazoo River remedial investigation field work. (1 Team)

For DEQ:

1. Observe and document RI activities with emphasis on conformance with approved work plans and standard operating procedures.
2. Collect RI split samples at approved frequency for soil, sediment and groundwater.

Kalamazoo River Compliance

1. Provide support as necessary.
2. Conduct decommissioning activities as needed.

Talmadge Creek/Kalamazoo River Remedial Action

1. Execute tasks assigned by ERO as requested.

Talmadge Creek/Kalamazoo River Monitoring

1. Conduct daily monitoring of river conditions.
2. Conduct Quarterly and Semi Annual Drinking Water Sampling Event.

8. Special Instructions

Rowe Island, MP 38.50 to MP 38.75, is a No Go Zone – Environmental Sensitive Area.

SAFETY INSTRUCTIONS:

When operating or working in the vicinity of ultra violet testing equipment, wear approved safety glasses that provide protection from UV A rays and never look directly into the illuminator.

All in water activities of workers in water depths over fifty percent (50%) of thigh height will require tethering. Please refer to the HASP for further instructions.

9. Communications (radio and/or phone contact numbers needed for this assignment)

Incident Command Safety Office: 269-753-9347

Emergency Communications: Use IAP Medical Plan/IAP Phone list. Dial 911 for Medical Emergency.

10. Prepared by	Date/Time	11. Reviewed by (PSC),	Date/Time	12. Reviewed by (OSC),	Date/Time
A. Olson, Avery/Enbridge	11/16/2012 1130	B. Nelson, Avery/Enbridge	11/16/2012 1145	D. Bareham, Enbridge	11/16/2012 1230

1. Incident Name	2. Operational Period (Date/Time)	Assignment List
Kalamazoo River/Enbridge Spill Response	From: November 27, 2012, 0700 To: December 10, 2012, 0700	**ICS 20**
3. Branch **Planning Section**	**4. Division/Group/Staging**	

5. Operations Personnel

	Name	Affiliation	Contact # (s)
Planning Section Chief:	Mark DuCharme Mindy Luetke Kim Churchill, Deputy Brad Nelson Alex Olson, Deputy	MDEQ Weston/US EPA Weston/ DEQ Avery/Enbridge Avery/Enbridge	[redacted]

6. Resources Assigned

Division Identifier	Leader	Contact Info. #	# of Persons
Situation Unit	Matt Haak (Weston/ US EPA) Larry Rader (Weston/ US EPA) Mark Fuller (AECOM/Enbridge)	[redacted]	1 Weston/EPA 1 Contractor
Resource Unit	Lorie Hong (Weston/US EPA) Alex Olson (Avery/Enbridge), Assistant		1 Contractor
Environmental Unit	Mike Alexander (Off-site) Kim Churchill (Weston/MDEQ) Isaac Aboulafia (Weston/US EPA) Elizabeth Wessling (Weston/US EPA)(Off-site) Faith Fitzpatrick (USGS) Ron Zelt (Off-site) (USGS), Assistant Rex Johnson (Weston/US EPA), Assistant Tom Graan (Weston/US EPA) , Assistant John Bohrmann (Enbridge)		1 Weston/MDEQ 2 MDEQ 2 Contractors
Documentation Unit	Crystal Laskey Carolyn Giles-Smith (Weston/MDEQ) Paul Moisan (Weston/US EPA)		1 Contractors

7. Work Assignments

Situation Unit:

1. Record and document sheen observations in main channel and overbank areas, and conduct sheen testing, if necessary. Report sheen observations back to operations section chiefs for monitoring and response.
2. Conduct weekly overflights; photo-document areas of sheen from source area to Morrow Lake dam and report observations back to operations section chiefs for monitoring and response. Additional flights will be scheduled as needed.
3. Organize field metrics, prepare for and facilitate presentations, and monitor action tracking. Maintain situational awareness around operational activities and plan for operational needs.

For US EPA/MDEQ/Weston:

1. Maintain situational awareness around operational activities.
2. Communicate observations to the Operations Section Chief.
3. Provide daily situational photo log summaries.
4. Conduct daily monitoring of river conditions, recording observations of sheen and/or oil.
5. Record and document sheen observations in main channel and overbank areas, and conduct sheen testing, if necessary. Report sheen observations back to operations section chiefs for monitoring and response.

Resource Unit:

1. Produce an Incident Action Plan as required by the Incident Commanders.
2. Support the planning efforts of operations and provide information to Logistics in order to properly prepare and order resources.

Environmental Unit:

1. Conduct strategic assessment, modeling, and environmental monitoring.
2. Review sheen tracking information from the field.
3. Continue submerged oil quantification for Spring 2012 with emphasis on implementing the path forward for submerged oil quantification cores.
4. Refine subsurface containment strategies throughout the Kalamazoo River system to prevent recontamination of the Morrow Lake fan.
5. Review and track RI progress.
6. Continue discussions on NAPL.
7. Review of property parcels for MDEQ end points.

For US EPA/MDEQ/Weston:

1. Continue to coordinate efforts to calculate the quantity of submerged oil remaining as of Spring 2012.
2. Continue supporting the evaluation of the hydrogeomorphology of the Kalamazoo River, the Morrow Lake Delta, and Morrow Lake.
3. Interface with Enbridge and assist with the refinement of surface and subsurface containment strategies throughout the Kalamazoo River system to prevent the continued migration of oil, oil sheen, submerged oil, and oil-containing sediments into Morrow Lake.
4. Review and comment on RI progress submittals
5. Support development of NAPL CSM.
6. Review Enbridge submittals with emphasis on compliance with state endpoints.

Documentation Unit:

1. Maintain accurate, up-to-date incident files.
2. Store files for post-incident use.

8. Special Instructions

In accordance with the Fatigue Management Plan, all work permit activities will be completed no later than 1900.

SAFETY INSTRUCTIONS:

Hexane is flammable and may be harmful in contact with skin. When handling hexane and sheen test samples containing hexane, wear approved safety glasses, disposable nitrile gloves and keep away from ignition sources. Properly dispose of sheen test samples containing hexane.

9. Communications (radio and/or phone contact numbers needed for this assignment)

Incident Command Safety Office: 269-753-9347

Emergency Communications: Use IAP Medical Plan/IAP Phone list. Dial 911 for Medical Emergency.

10. Prepared by	Date/Time	11. Reviewed by (PSC),	Date/Time	12. Reviewed by (OSC),	Date/Time
A. Olson, Avery/Enbridge	11/16/2012 1130	B. Nelson, Avery/Enbridge	11/16/2012 1145	D. Bareham, Enbridge	11/16/2012 1230

NAME	PHONE NUMBER	EMAIL ADDRESS	AGENCY / AFFILIATION	POSITION
Enbridge and Contractors				
Enbridge Marshall Office: 333 South Kalamazoo Ave Marshall MI 49068				
Adams, Rich	[redacted]		Enbridge	Operations
Albig, Brian			AECOM/Enbridge	Environment
Bareham, Dave			Enbridge	Environment
Bohrmann, John			Enbridge	Environment
Bretz, Ryan			Manpower/Enbridge	IT
Cox, Renee			Manpower/Enbridge	Documentation
Daniel, Pat			Enbridge	
Dekker, Shaun			SET/Enbridge	Waste Management
Dennis, Kate			Manpower/Enbridge	Admin Support
Doherty, Bob			Enbridge	Environment
Dryburgh, Dave			AECOM/Enbridge	Environment
Dzuck, Diane			Enbridge	Contracts
Eversole, Elijah			AECOM/Enbridge	Containment
Fuller, Mark			AECOM/Enbridge	Environment
Gross, Dale			Superior/Enbridge	Safety Officer
Hehir, Nate			Superior/Enbridge	Environment
Hummel, Rebecca			Manpower/Enbridge	Finance
Kaiser, Ken			AECOM/Enbridge	GIS Specialist
Kent, Norm			AECOM/Enbridge	Environment
Kerpash, Paul			SWAT/Enbridge	Control Point Management
Kogge, Stu			Cardno JFNEW/Enbridge	Operations
Manshum, Jason			Enbridge	Public Affairs
McKay, John			Enbridge	ROW
Nelson, Brad			Avery/Enbridge	Planning
Neumeier, Laura			Trimedia/Enbridge	Air Monitoring
Olson, Alex			Avery/Enbridge	Planning
Periard, Debora			AECOM/Enbridge	GIS Support
Pesses, David			LBG/Enbridge	Environmental Inspector
Powell, Meredith			Enbridge	Public & Govt. Affairs
Pratt, Catherine			AECOM/Enbridge	Environment
Sahara, Dean			SWAT/Enbridge	Operations
Saylor, Andy			SET/Enbridge	
Schoeff, Alison			AECOM/Enbridge	Water Monitoring Supervisor
Smith, Brian			Tulsa/ Enbridge	Project Controls
Snider, Jim			Enbridge	Environment Director
Sobojinski, John			Enbridge	Incident Commander
Standen, Joe			LBG/Enbridge	
Stiemsma, Bryan			AECOM/Enbridge	Environment Supervisor
Corrine Sullivan			Enbridge	ROW
Sumner, Matt			AECOM/Enbridge	Environment
Van Overmeiren, Rick			Enbridge	Purchasing
Wallace, John			Avery/Enbridge	Logistics / Facilities
Webb, Oliver			SWAT/Enbridge	Control Point Management
Wekseth, Mike			SWAT/Enbridge	Operations Inspector
Wiswell, Amber			Kelly Services/Enbridge	Admin. Assistant
Wolf, Mike			AECOM/Enbridge	Monitoring
Yokom, Brett			Trimedia/Enbridge	Environment
Zambetis, Mike			Cardno JFNEW/Enbridge	Restoration

AECOM Field Office
13464 Preston Drive
(Lower Level)
Marshall MI 49068

SWAT Field Office / Shop
12514 16 Mile Road
Marshall MI 49068

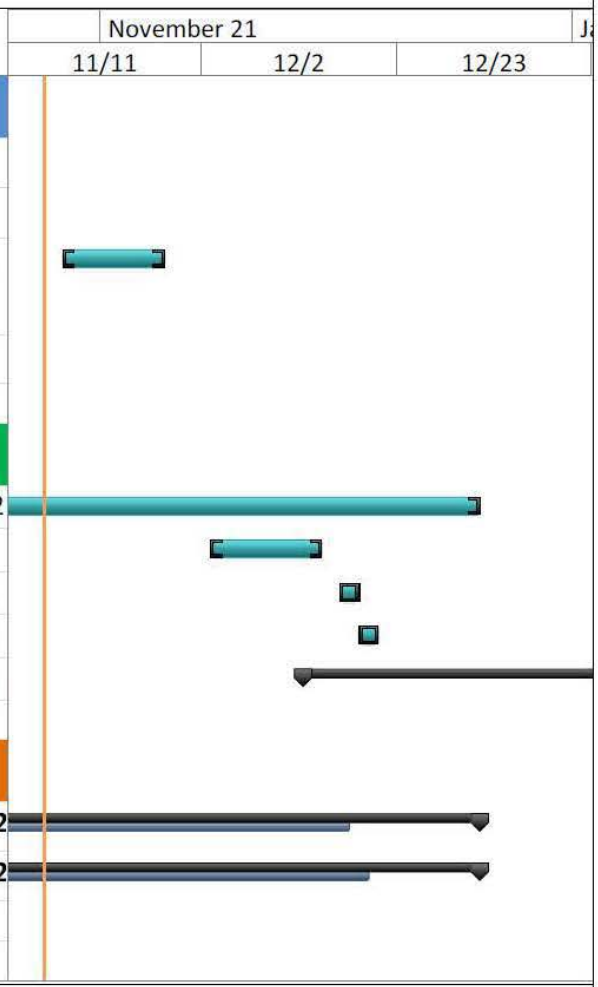
Superior Field Office
317 S Grand St
Marshall MI 49068

NAME	PHONE NUMBER	EMAIL ADDRESS	AGENCY / AFFILIATION	POSITION
Michigan DEQ and Contractors DEQ Field Office: 13444 Preston Drive Marshall MI 49068				
Alexander, Mike	[redacted]		DEQ	Environmental Unit
Brettmann, Gregg			DEQ	Environmental Unit Leader
Brown , Kevin			Weston/DEQ	GIS Support
Churchill, Kim			Weston/DEQ	Environmental Unit
DelloRusso, Vincent			Weston/DEQ	Operations
DeLong, Michelle			DEQ	Incident Commander
DuCharme, Mark			DEQ	Planning Section Chief
Fizzell, Chad			DEQ	GIS Support
Giles-Smith, Carolyn			Weston/DEQ	Documentation
Jones, Susan			DEQ	Operations
Laskey, Crystal			DEQ	Planning
Lisabeth, Nicole			MSP	PIO
Noble, Steve			DEQ	Water Resources Division
Sarkipato, Ernie			DEQ	Environmental Unit
Schmitt, Ben			DEQ	Operations
Spruit, Jeff			DEQ	Environment
Taft, Bill			DEQ	Wildlife Environmental NRDA Group
Thompson, Doug			DEQ	Operations
Wurfel, Brad			DEQ	Public Information
Zacharda, Nicole			DEQ	NRDA and Compliance
US Agencies and Contractors EPA Field Office: 13444 Preston Drive Marshall MI 49068				
Aboulafia, Isaac	[redacted]		START/US EPA	Planning
Berecz, Karen			START/US EPA	O & M
Blanchard, Mark			START/US EPA	
Capone, Dan			START/US EPA	Operations
Deblasio, Don			US EPA	Public Information
Dollhopf, Ralph			US EPA	Incident Commander (FOSC)
Fitzpatrick, Faith			USGS	Tech Specialist
Good, Gena			START/US EPA	
Graan, Tom			START/US EPA	Submerged Oil Lead
Haak, Matt			START/US EPA	Sit Unit Leader
Hackley, Richard			US EPA	Finance
Hendrix, Kristen			START/US EPA	Operations
Hoard, Chris			USGS	USGS
Hong, Lorie			START/US EPA	Logistics
Johnson, Rex			START/US EPA	Operations
Kidder, Steven			START/US EPA	Operations SOS
Kirby-Miles, Leslie			US EPA	Legal
Lantinga, Chris			START/US EPA	Operations
Laquerre, Tim			START/US EPA	Operations
Luetke, Mindy			START/US EPA	PSC
Mehl, Rick			START/US EPA	
Moisan, Paul			START/US EPA	Documentation
Muccianti, Marcus			START/US EPA	Operationsp
Pierce, Brennan			START/US EPA	Documentation
Rader, Larry			START/US EPA	Sit Unit Leader
Ross, Shauna			START/US EPA	
Roubik, Jonathan			START/US EPA	Operations
Rutkowski, Sonny			START/US EPA	Technical Specialist
Thierry, Mike			START/US EPA	Operations
Torres, Jason			START/US EPA	GIS Specialist
Valenza, James			START/US EPA	GIS Specialist
Wahrer, Marc			START/US EPA	Operations
Wellman, John			START/US EPA	Operations
Wessling, Elizabeth			START/US EPA	PSC
Williams, Lisa			USFWS	
Zahner, Dan			START/US EPA	Operations
Zelt, Ron			USGS	Environmental Unit Leader Assistant
Local Agencies / MAC members				
Baker, Paul	[redacted]		Kalamazoo OEM	MAC
Cardiff, Deb			Kalamazoo County - Env Health	MAC
Corbin, Scott			Allegan County Emerg Mgmt	MAC
Dunham, Durk			Calhoun County EMA	MAC
Dykema, Linda			Mich Dept of Community Health	MAC
Frost, Joe			Calhoun County Health	MAC
Kosmowski, Christine			City of Battle Creek	MAC
Makoski, Paul			Calhoun County Health	MAC
McKenzie, Michael			Battle Creek Emer. Srvs.	MAC
Quiggle, Lisa			MDCH	MAC
Reber, Lt. Barry			MSP EMHSD	MAC
Rutherford, James			Calhoun County Health	MAC
Schneider, Dave			Kalamazoo County	MAC
Vail, Linda			Kalamazoo County Health	MAC
Vosburg, Cheryl			City of Marshall	MAC

Line 6B Remediation
Marshall Michigan

Project Schedule

ID	Task Name	Duration	Start	Finish
1	**RIVER ACTIVITIES**			
2	**Removal of all Buoys**		TBD	TBD
3	**Removal of the boom at Ceresco**		TBD	TBD
4	**Removal of the E4 Boom Configuration/Turbidity Mon.**	8 days	Sat 11/17/12	Tue 11/27/12
5	**Removal of CSDs**		TBD	TBD
6				
7	**OVERBANK ACTIVITIES**			
8	**Remedial Investigation (2013 work not shown)**	68 days	Thu 9/27/12	Mon 12/31/12
9	**Drinking Water Monitoring**	10 days	Mon 12/3/12	Fri 12/14/12
10	**HydroGeo 2 - August/Kzoo Muni Monitoring Wells**	2 days	Mon 12/17/12	Tue 12/18/12
11	**Sediment Monitoring (Qtrly)**	2 days	Wed 12/19/12	Thu 12/20/12
12	**Surface Water Monitoring (Monthly)**	**45 days**	**Thu 12/13/12**	**Wed 2/13/13**
16				
17	**OTHER ACTIVITIES**			
18	**Quantification of Oil**	**121 days**	**Mon 7/16/12**	**Mon 12/31/12**
29	**Air Operations**	**71 days**	**Mon 9/24/12**	**Mon 12/31/12**
42				
43				



Project: Project Schedule 9-24
Date: Thu 11/15/12

Task	External Milestone	Manual Summary Rollup
Split	Inactive Task	Manual Summary
Milestone	Inactive Milestone	Start-only
Summary	Inactive Summary	Finish-only
Project Summary	Manual Task	Deadline
External Tasks	Duration-only	Progress

TRAFFIC PLAN: C 5



[redacted] Battle Creek, MI 49014

GPS Coordinates Lat: 42.304905 Long: -85.183463

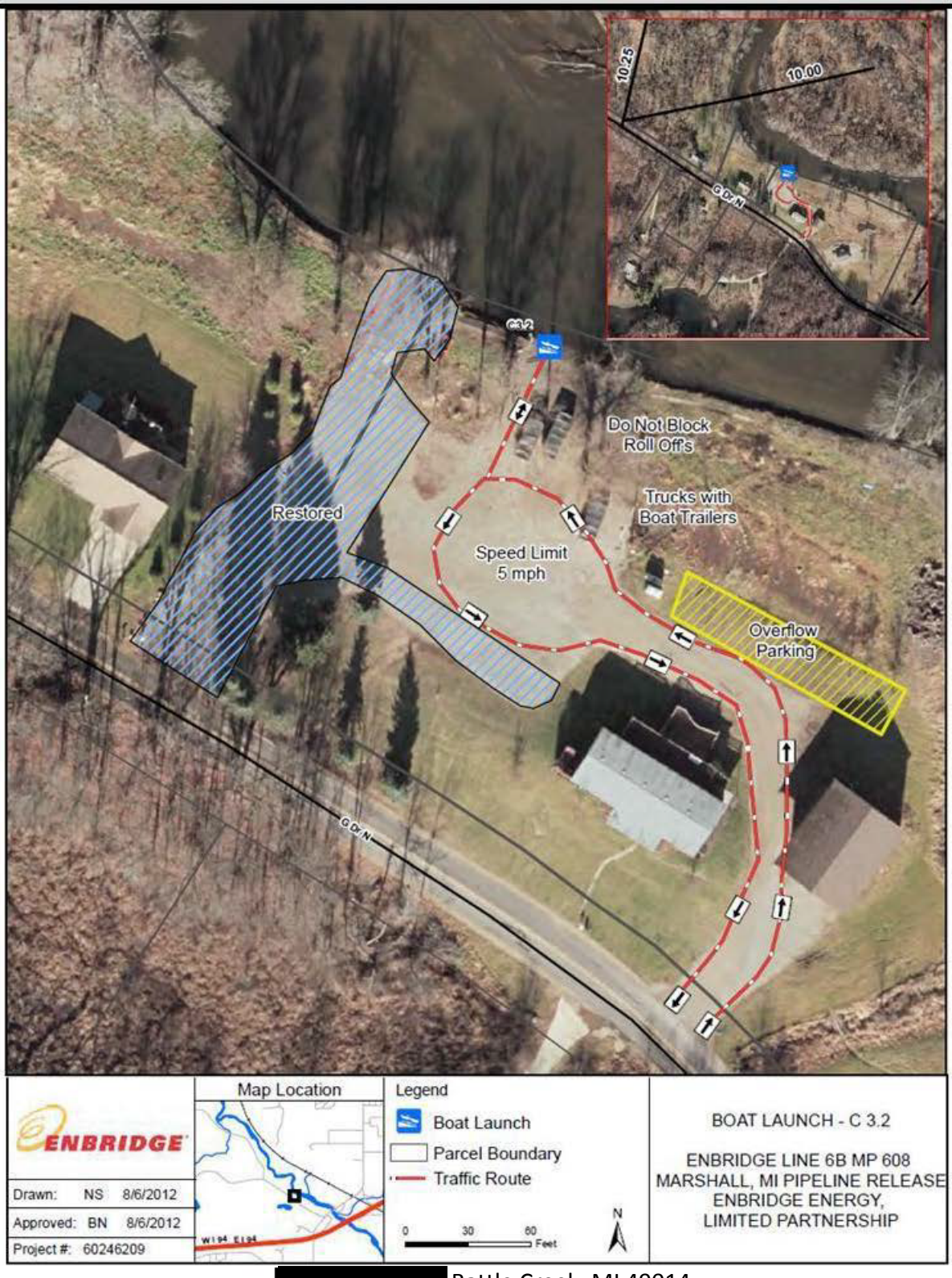
TRAFFIC PLAN: C 0.4



[redacted] Ceresco, MI 49033

GPS Coordinates: Lat: 42.265127, Long:-85.048364

TRAFFIC PLAN: C 3.2



[redacted] Battle Creek, MI 49014

GPS Coordinates: Lat: 42.293492 Long: -85.124479

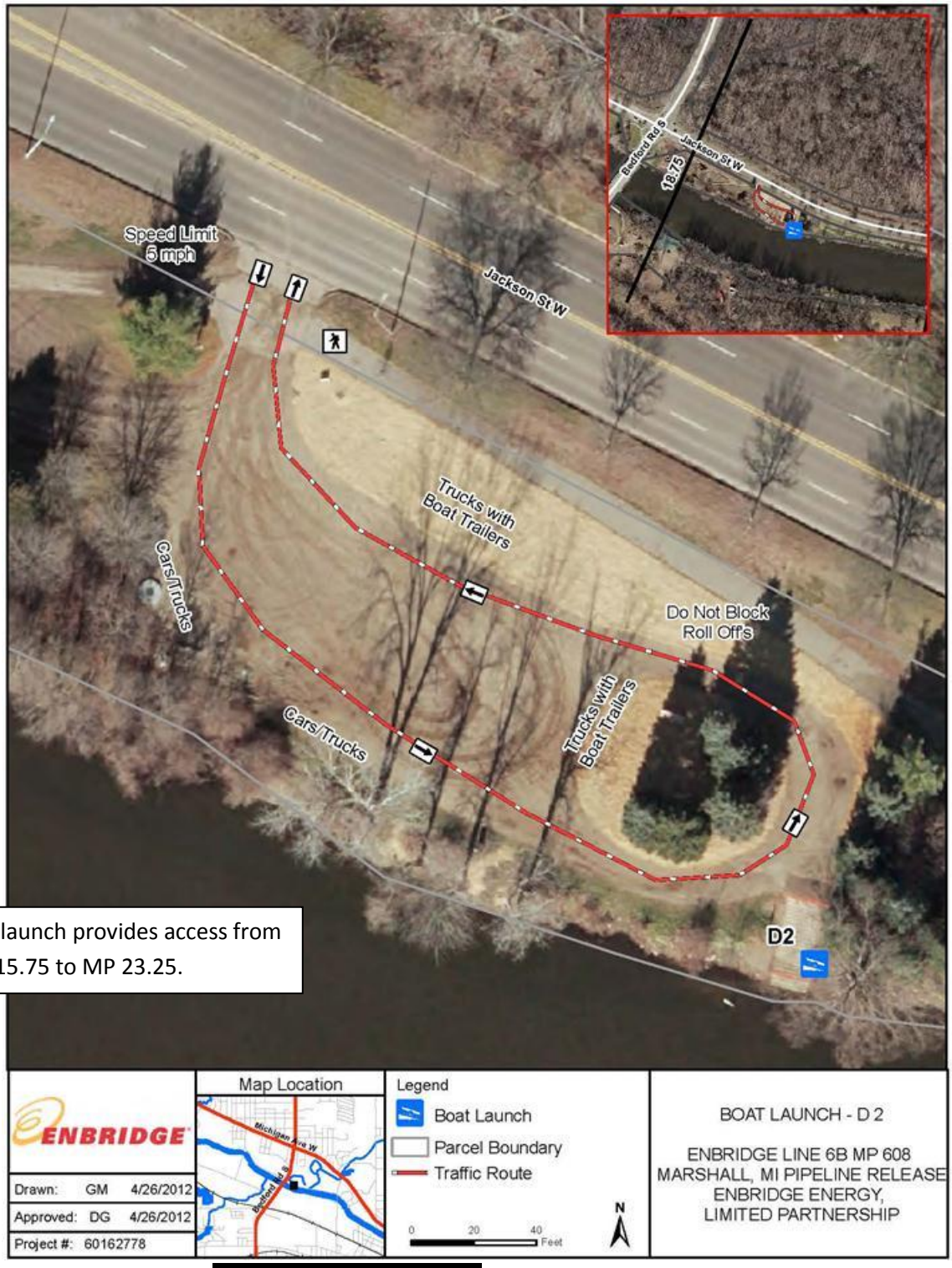
TRAFFIC PLAN: Wildlife Center



[redacted] Battle Creek, MI 49014

GPS Coordinates: Lat: 42.292173, Long: -85.123578

TRAFFIC PLAN: D2



This launch provides access from MP 15.75 to MP 23.25.

[redacted], Battle Creek, MI 49037

GPS Coordinates: Lat: 42.338427 Long:-85.232309

TRAFFIC PLAN: E 0.5



(Shady Bend Camp Ground), 15320 East Augusta Dr, Augusta, MI 49012
GPS Coordinates:Lat: 42.347408 Long: -85.3295

TRAFFIC PLAN: E 2



[redacted] Augusta, MI 49053

GPS Coordinates: Lat: 42.32412 Long: -85.358041

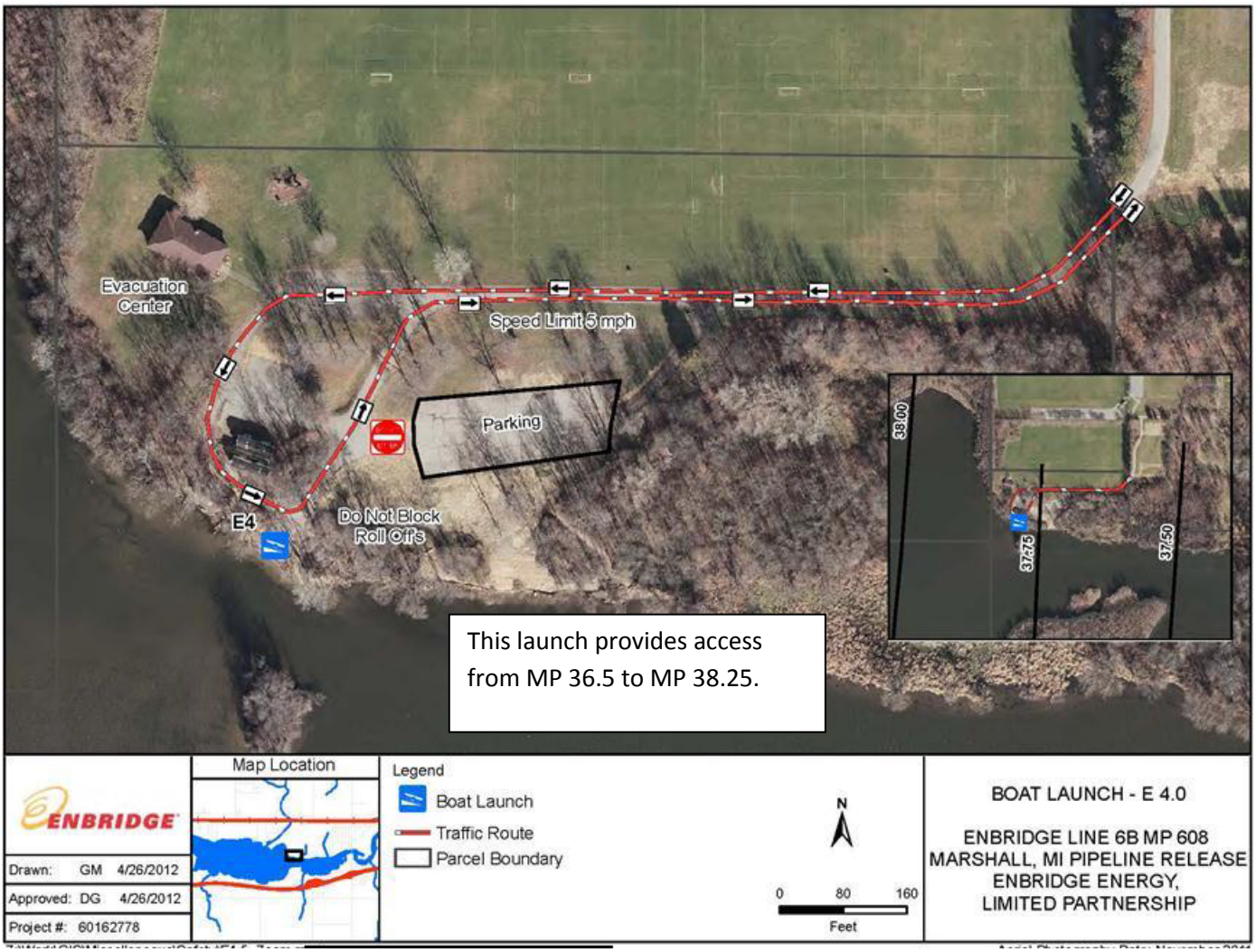
TRAFFIC PLAN: E 3



[redacted], Galesburg, MI 49053

GPS Coordinates: Lat: 42.284663 Long: -85.412855

TRAFFIC PLAN: E 4



[redacted], Galesburg, MI 49053

GPS Coordinates: Lat: 42.278265 Long: -85.452295

MEDICAL PLAN

Transportation			
Ambulance Services			
Name	Address	Phone	Paramedics Yes / No
Lifecare Ambulance	330 West Hamblin Avenue, Battle Creek, MI 49015	9-1-1	X /
City of Marshall Fire Dept	323 West Michigan Avenue, Marshall, MI 49068	9-1-1	X /

Hospitals								
Name	Address	Travel Time Air	Travel Time Ground	Phone	Helipad Yes	Helipad No	Burn Center Yes	Burn Center No
Bronson Methodist Hospital	601 John Street Kalamazoo, MI	15 Min	50 min	269-341-7654	X		X	
Borgess Medical Center	1521 Gull Road Kalamazoo, MI	15 min	50 min	269-226-7000	X			X
Oaklawn Hospital	200 N. Madison Ave Marshall, MI		5 min	269-781-4271		X		X
Battle Creek Health System	300 North Avenue Battle Creek, MI		20 min	269-966-8000		X		X

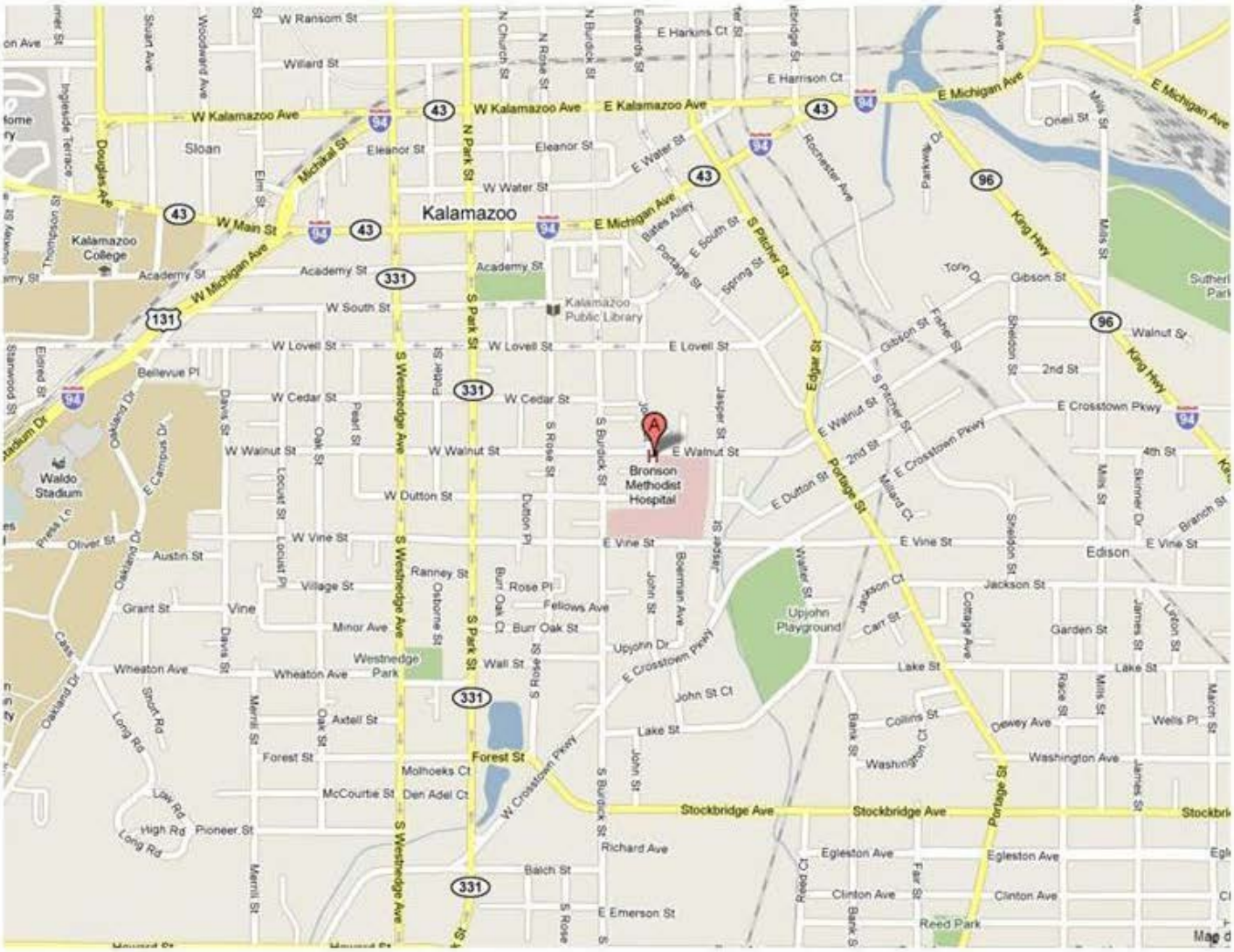
Medical Emergency Procedures

1. Dial 9-1-1 for all emergencies. Give 9-1-1 operators as much information as possible. Stay on the line and answer all questions – information may be radioed to responders. On-site personnel trained and certified in first aid should attempt to stabilize victim until fire department/EMS personnel arrive.
2. Report all incidents to the Project Safety Officer. Keep a log of events. Secure the area. Identify witnesses for later investigation.

NOTE: Suspend all operations during an actual emergency situation!

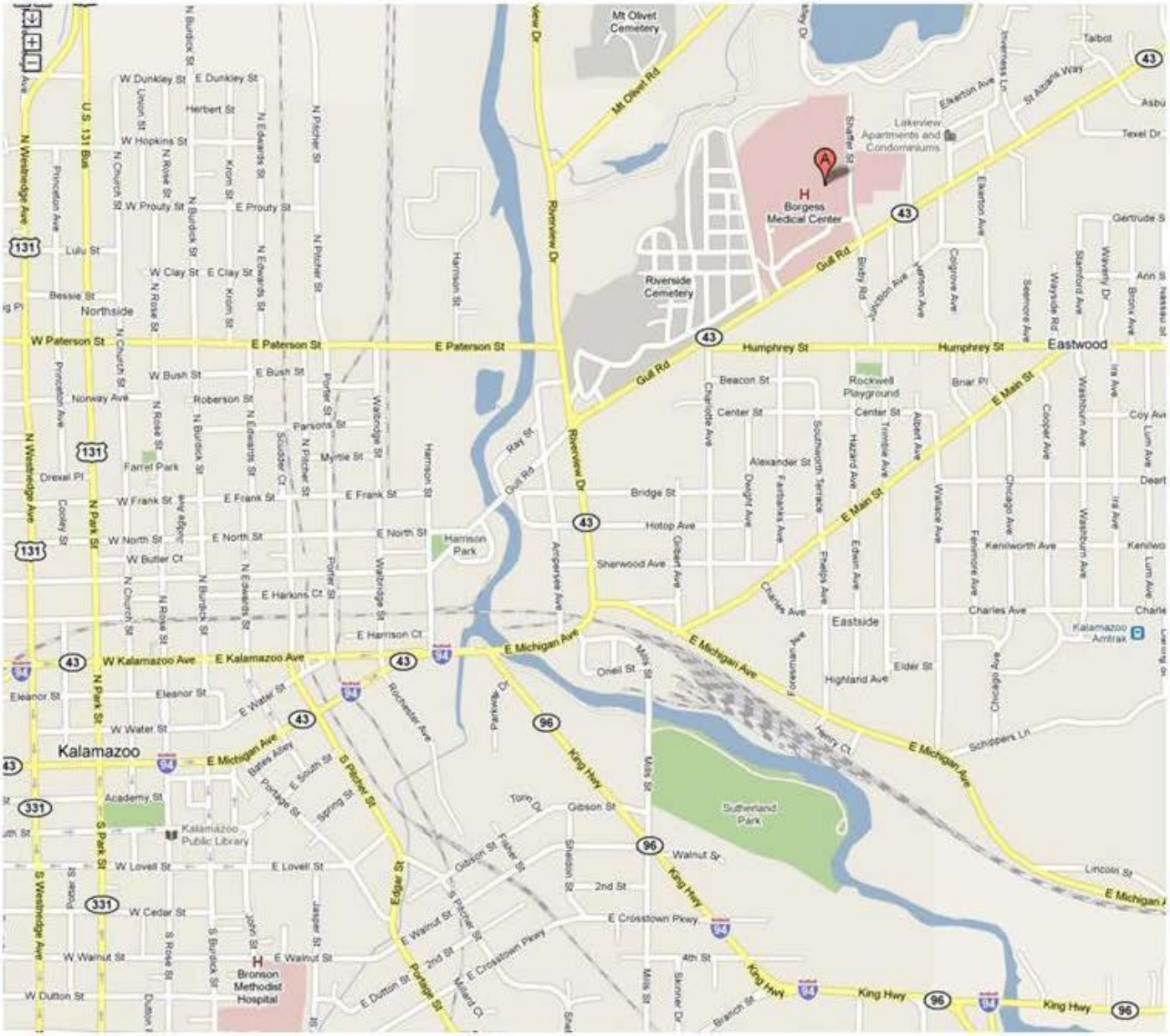
Prepared by	Reviewed by (Safety Officer)
Dale Gross 10/31/2012	Dale Gross 10/31/2012

Hospital Route Map – Bronson Methodist Hospital – Kalamazoo, MI



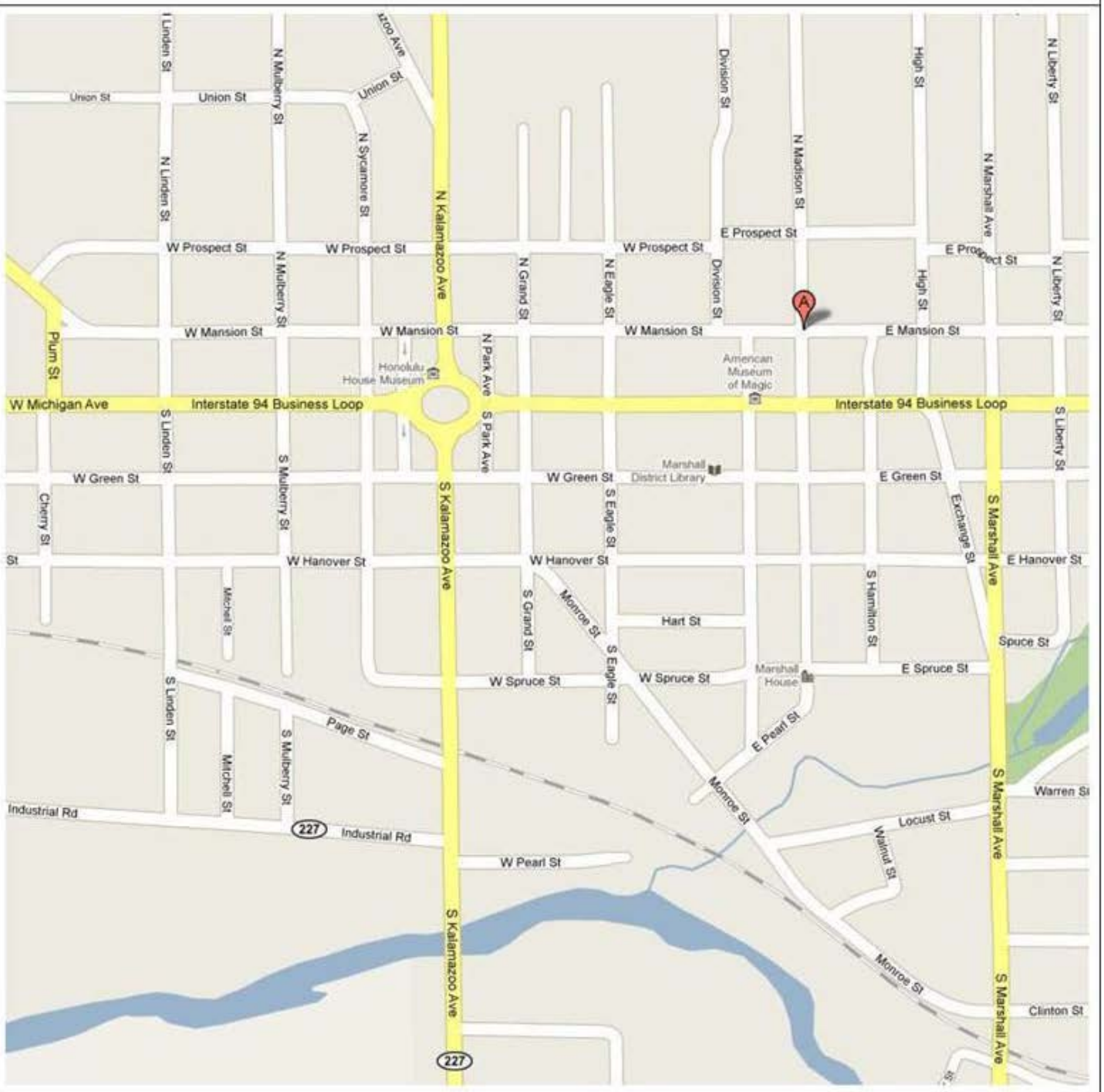
Bronson Methodist Hospital
601 John St
Kalamazoo, MI 49007
(269) 341 - 7979

Hospital Route Map – Borgess Medical Center – Kalamazoo, MI



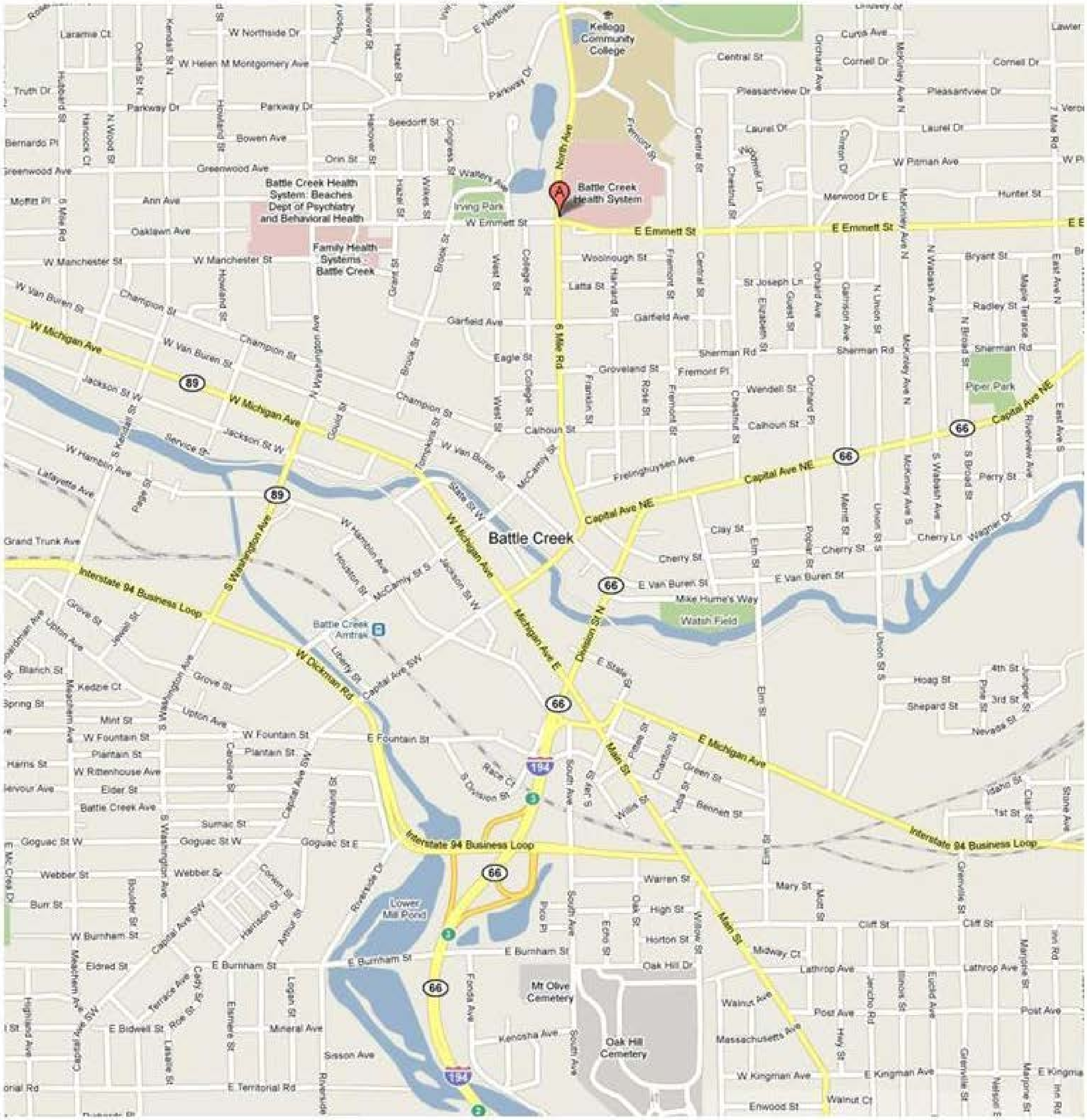
Borgess Medical Center
1521 Gull Road
Kalamazoo, MI 49048
(269) 226 - 7000

Hospital Route Map – Oaklawn Hospital – Marshall, MI



Oaklawn Hospital
200 North Madison St.
Marshall, MI
(269) 781-4271

Hospital Route Map – Battle Creek Health System – Battle Creek, MI



Battle Creek Health System
300 North Avenue
Battle Creek, MI
(269) 966-8000

Line 6B Remediation
Marshall Michigan

PROJECT CALENDAR

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Nov 25 - Dec 1	**11/25**	**11/26** Remob (travel day)	**11/27** **0700 IAP Brief to field (11/27-12/10)**	**11/28** **1500 UC Ops Brief**	**11/29** **1100-1300 Forensic Chem** **1400 Kzoo River**	**11/30**	**12/1**
Dec 2 - Dec 8	**12/2**	**12/3** **0900 Tactics**	**12/4**	**12/5** **1500 Consolidated ICS**	**12/6** **1100-1300 Forensic Chem** **1400 Kzoo River**	**12/7**	**12/8**
Dec 9 - Dec 15	**12/9**	**12/10** **0700 IAP Brief to field (12/10-1/7)**	**12/11**	**12/12** **1500 UC Ops Brief**	**12/13** **0900 MAC Meeting** **1100-1300 Forensic Chem** **1400 Kzoo River**	**12/14**	**12/15**

Color Code Key: **ICS/Project** **Science/Focus** **Special** **RI Meetings** Stand-down/holiday

1. Incident Name	2. Operational Period (Date/Time)	IAP
Kalamazoo River/Enbridge Spill	Starting**: December 10, 2012, 0700** End**: December 24, 2012, 0700**	**Cover Sheet**

3. Approved by Incident Commander(s):

_____ Michelle DeLong, Michigan Department Environmental Quality

_____ Ralph Dollhopf, U.S. EPA

_____ John Sobojinski, Enbridge

INCIDENT ACTION PLAN

The items below are included in this Incident Action Plan:

- ICS 202 (Response Objectives).....1
- ICS 207 (Organizational Chart & OPS Chart).....2
- ICS 204 (Assignment List) 5
- Communications List.....11
- Project Schedule 13
- Meeting Locations and Traffic Plans.....14
- Medical Plan and hospital maps 23
- Meetings Schedule.....28



4. Prepared By: Date/Time

Brad Nelson, Avery/Enbridge 12/6/2012

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1. Incident Name	2. Operational Period (Date/Time)	INCIDENT OBJECTIVES
Kalamazoo River/Enbridge Spill	From: December 10, 2012 @ 0700 To: December 24, 2012 @ 0700	**ICS 202-EPA**

3. Incident Objective(s)

1. Ensure health and safety of the public and response and recovery personnel.
2. Ensure absolute containment of submerged oil and oil-containing sediments within the Delta and the Fan of Morrow Lake.
3. Ensure effective transition of regulatory oversight from EPA to Michigan DEQ jurisdiction as appropriate.
4. Perform recovery and containment of oil from affected public and private areas of river and river system.
5. Perform remediation and restoration of affected public and private areas of river and river system.
6. Maintain effective communications with cooperating and assisting agencies, the public, including regular coordination with the Multi-Agency Coordination Group (MAC).
7. Provide protection of environmentally and culturally sensitive areas including wildlife and historic properties.
8. Collect, coordinate, manage and communicate environmental and public health data including maintenance of Joint Information Center function.

4. Operational Period Command Emphasis

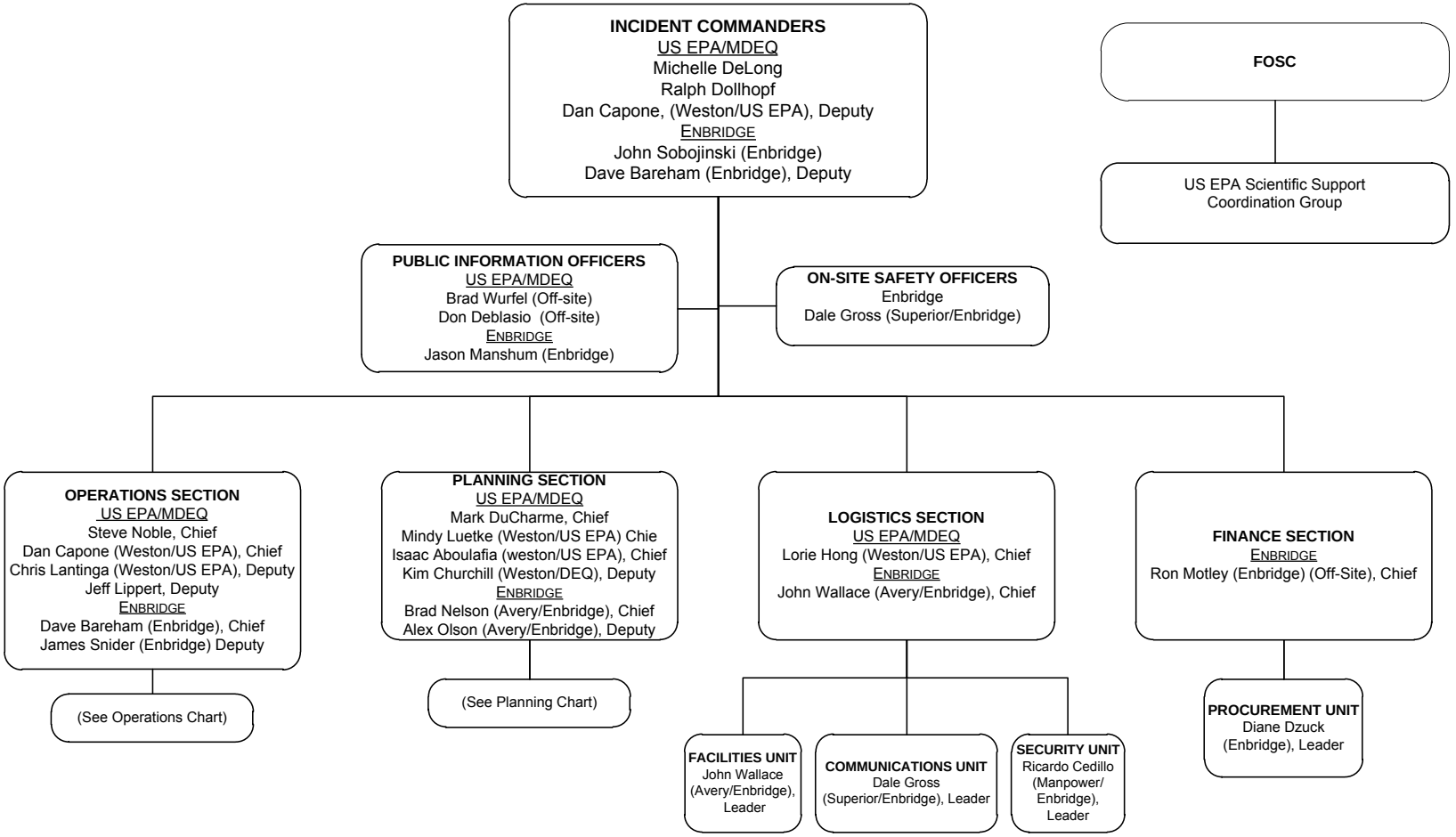
1. Respond to and document emerging oil throughout the Kalamazoo River system.

5. Safety Objectives for the Operational Period

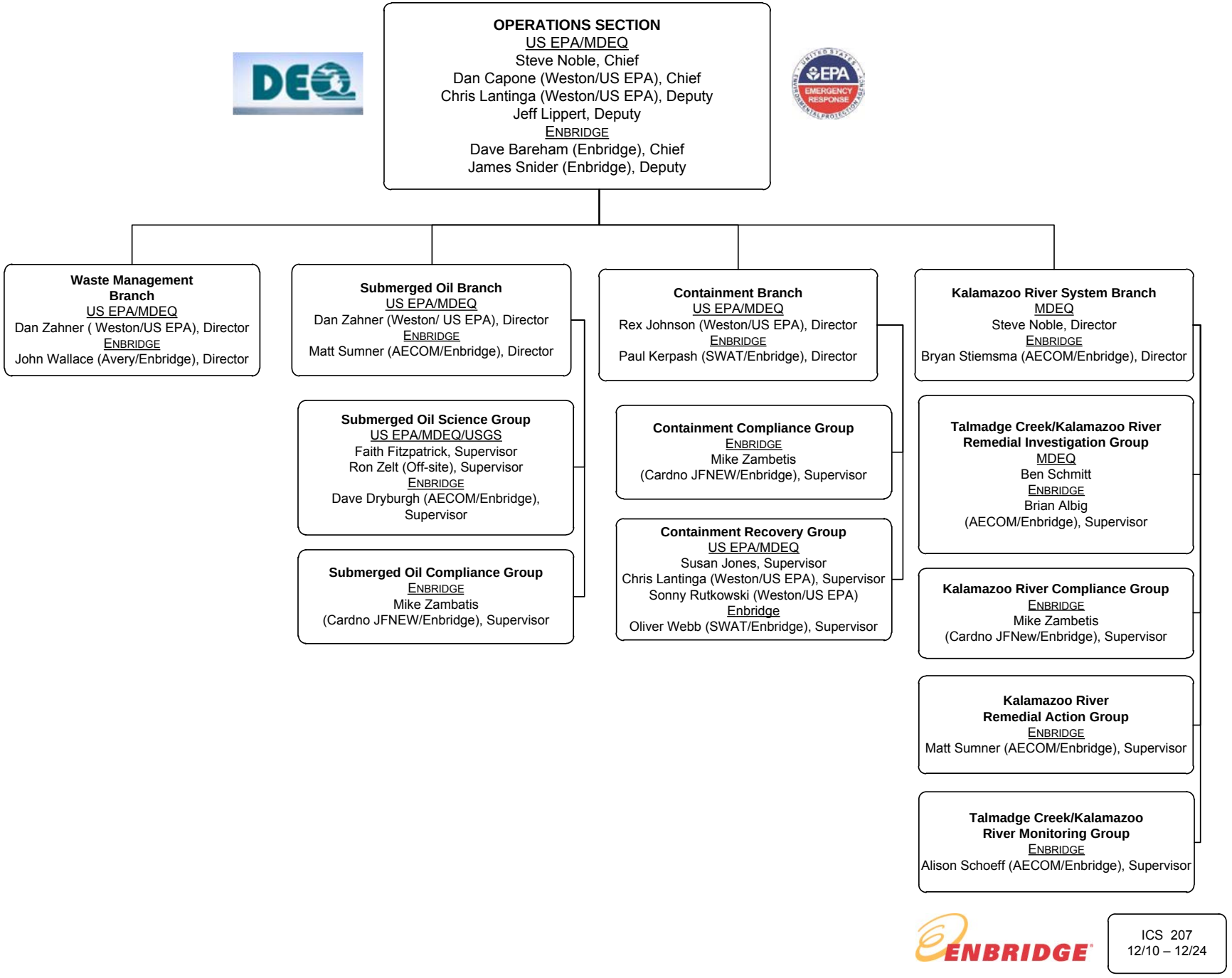
1. Emphasize safety awareness of changing work site conditions because of colder temperatures.
2. Ensure the safe interaction between workers and the public, including hunters.

6. Prepared by Planning Section Chief (Enbridge):	Date/Time:
Brad Nelson	12/6/2012
7. Approved by Incident Commander (DEQ):	**Date/Time:**
Michelle DeLong	12/6/2012
8. Approved by Incident Commander (US EPA):	**Date/Time:**
Ralph Dollhopf	12/6/2012
10. Approved by Incident Commander (Enbridge):	**Date/Time:**
John Sobojinski	12/6/2012

Enbridge Pipelines Response Unified Command



ICS 207
12/10 – 12/24


OPERATIONS SECTION
US EPA/MDEQ
Steve Noble, Chief
Dan Capone (Weston/US EPA), Chief
Chris Lantinga (Weston/US EPA), Deputy
Jeff Lippert, Deputy
ENBRIDGE
Dave Bareham (Enbridge), Chief
James Snider (Enbridge), Deputy
Waste Management Branch
US EPA/MDEQ
Dan Zahner (Weston/US EPA), Director
ENBRIDGE
John Wallace (Avery/Enbridge), Director
Submerged Oil Branch
US EPA/MDEQ
Dan Zahner (Weston/ US EPA), Director
ENBRIDGE
Matt Sumner (AECOM/Enbridge), Director
Submerged Oil Science Group
US EPA/MDEQ/USGS
Faith Fitzpatrick, Supervisor
Ron Zelt (Off-site), Supervisor
ENBRIDGE
Dave Dryburgh (AECOM/Enbridge), Supervisor
Submerged Oil Compliance Group
ENBRIDGE
Mike Zambatis
(Cardno JFNEW/Enbridge), Supervisor
Containment Branch
US EPA/MDEQ
Rex Johnson (Weston/US EPA), Director
ENBRIDGE
Paul Kerpash (SWAT/Enbridge), Director
Containment Compliance Group
ENBRIDGE
Mike Zambetis
(Cardno JFNEW/Enbridge), Supervisor
Containment Recovery Group
US EPA/MDEQ
Susan Jones, Supervisor
Chris Lantinga (Weston/US EPA), Supervisor
Sonny Rutkowski (Weston/US EPA)
Enbridge
Oliver Webb (SWAT/Enbridge), Supervisor
Kalamazoo River System Branch
MDEQ
Steve Noble, Director
ENBRIDGE
Bryan Stiemsma (AECOM/Enbridge), Director
Talmadge Creek/Kalamazoo River Remedial Investigation Group
MDEQ
Ben Schmitt
ENBRIDGE
Brian Albig
(AECOM/Enbridge), Supervisor
Kalamazoo River Compliance Group
ENBRIDGE
Mike Zambetis
(Cardno JFNew/Enbridge), Supervisor
Kalamazoo River Remedial Action Group
ENBRIDGE
Matt Sumner (AECOM/Enbridge), Supervisor
Talmadge Creek/Kalamazoo River Monitoring Group
ENBRIDGE
Alison Schoeff (AECOM/Enbridge), Supervisor
ENBRIDGE
ICS 207
12/10 – 12/24



PLANNING SECTION
US EPA/MDEQ
Mark DuCharme, Chief
Kim Churchill, Deputy
Mindy Luetke (Weston/US EPA), Chief
Isaac Aboulafia (weston/US EPA), Chief
ENBRIDGE
Brad Nelson (Avery/Enbridge), Chief
Alex Olson (Avery/Enbridge), Deputy



SITUATION UNIT
US EPA/MDEQ
Matt Haak (Weston/ US EPA), Leader
Larry Rader (weston/US EPA), Leader
ENBRIDGE
Alex Olson (Avery/Enbridge), Leader

RESOURCE UNIT
US EPA/MDEQ
Lorie Hong (Weston/US EPA), Leader
ENBRIDGE
Alex Olson (Avery/Enbridge), Leader

ENVIRONMENTAL UNIT
US EPA/MDEQ/USGS
Mike Alexander (Off-site)
Kim Churchill (Weston/DEQ), Leader
Vinnie DelloRusso (Weston/DEQ), Assistant
Isaac Aboulafia (Weston/US EPA, Leader
Elizabeth Wessling (Weston/US EPA)(Off-site), Leader
Faith Fitzpatrick (USGS), Leader
Ron Zelt (USGS)(Off-site), Assistant
Rex Johnson (Weston/US EPA), Assistant
Tom Graan (Weston/US EPA), Assistant
ENBRIDGE
John Bohrmann (Enbridge), Leader

DOCUMENTATION UNIT
US EPA/MDEQ
Crystal Laskey, Leader
Carolyn Giles-Smith (Weston/DEQ), Leader
Paul Moison (Weston/US EPA), Leader
ENBRIDGE
Brad Nelson (Avery/Enbridge), Leader

ENBRIDGE

ICS 207
12/10 – 12/24

1. Incident Name	2. Operational Period (Date/Time)	Assignment List ICS 204- EPA
Kalamazoo River/Enbridge Spill Response	From: December 10, 2012, 0700 To: December 24, 2012, 0700	
3. Branch	**4. Division/Group/Staging**	
Waste Management		

5. Operations Personnel

	Name	Affiliation	Contact # (s)
Operations Section Chief:	Steve Noble	MDEQ	[redacted]
	Dan Capone	Weston/US EPA	
	Chris Lantinga, Deputy	Weston/US EPA	
	Jeff Lippert, Deputy	EPA	
	Dave Bareham	Enbridge	
	James Snider, Deputy	Enbridge	
Branch Director:	Dan Zahner	Weston/US EPA	
	John Wallace	Avery/Enbridge	

6. Resources Assigned

See Branch Directors			

7. Work Assignments

1. Field decon operations for: personnel, hand equipment, and boats for preparation of transport shall be installed prior to work beginning at boat launches / staging areas for individual work sites.
2. Haul contaminated soil, water, media and debris to staging areas for waste characterization and oil recovery sampling prior to offsite disposal.
3. Waste shall be collected as needed for direct haul to the landfill or transported to Frac Tank City (FTC) for consolidation with similar waste streams as necessary.
4. Waste management characterization, manifesting, and coordination of transportation and disposal.

For US EPA/MDEQ/Weston:

1. Provide oversight of all waste management activities.
2. Ensure appropriate sampling, tracking and disposal is performed on oil impacted debris, water and soil.
3. Review manifests, weight tickets and bills of lading for correlation to waste stream analytical data.
4. Review weekly oil recovery and waste disposal report.

8. Special Instructions

The Winter Stand Down will begin Friday, December 21, at 1900. Report back to work Monday, January 7, 2013 or as directed by your supervisor. This stand down does not apply to the Sheen Management activities and 1 Situation Unit team. Sheen Management activities will continue during the Winter Stand Down. These activities include:

- Control Point Monitoring, Management and Cleaning;
- Sheen Sweep Crews will remain on standby and ready for rapid response.
- Operations Section Chiefs will be on call and available to direct sheen response activities as needed.

Ensure all Best Management Practices (BMPs) are in place and utilized.

In accordance with the Fatigue Management Plan, all work permit activities will be completed no later than 1900.

SAFETY INSTRUCTIONS:
For vacuum truck operation guidelines, please refer the HASP.

At Frac Tank City:

- The following procedure shall be used for initial opening of hatch or rear doors of liquid vacuum trucks and hatches of vacuum excavation units:
  - Approach the hatch to be opened with a calibrated five gas monitor and a benzene monitor.
  - Personnel performing this task must wear a full face respirator with organic vapor cartridge.
  - Slightly open the hatch and take VOC, H2S, LEL, Oxygen, CO and benzene readings.
  - If readings are greater than 10 ppm H2S, 10% LEL, 25 ppm CO or 25 ppm benzene then personnel shall close the hatch and utilize SCBA prior to opening the hatch.
- Operations - Respiratory protection may be required depending on periodic monitoring results. Wear a half-mask respirator equipped with an organic vapor cartridge when 0.5 ppm benzene is detected. Wear a full-face respirator equipped with an organic vapor/acid gas cartridge when benzene is at 5 ppm to 25 ppm.

9. Communications (radio and/or phone contact numbers needed for this assignment)

Incident Command Safety Office: 269-753-9347

Emergency Communications: Use IAP Medical Plan/IAP Phone list. Dial 911 for Medical Emergency.

10. Prepared by	Date/Time	11. Reviewed by (PSC),	Date/Time	12. Reviewed by (OSC),	Date/Time
A. Olson, Avery/Enbridge	12/6/2012	B. Nelson, Avery/Enbridge	12/6/2012	D. Bareham, Enbridge	12/6/2012

1. Incident Name	2. Operational Period (Date/Time)	Assignment List
Kalamazoo River/Enbridge Spill Response	From: December 10, 2012, 0700 To: December 24, 2012, 0700	**ICS 204 - EPA**
3. Branch **Submerged Oil**	**4. Division/Group/Staging**	

5. Operations Personnel

	Name	Affiliation	Contact # (s)
Operations Section Chief:	Steve Noble Dan Capone Chris Lantinga, Deputy Jeff Lippert, Deputy Dave Bareham James Snider, Deputy	MDEQ Weston/US EPA Weston/US EPA EPA Enbridge Enbridge	[redacted]
Branch Director:	Dan Zahner Matt Sumner	Weston/US EPA AECOM/Enbridge	

6. Resources Assigned

Division Identifier	Leader	Contact Info. #	# of Persons
Submerged Oil Science	Faith Fitzpatrick Ron Zelt (Off Site) Dave Dryburgh (AECOM/Enbridge)	[redacted]	5 Weston/ US EPA 14 Contractors
Submerged Oil Compliance	Mike Zambatis (Cardno JFNEW/Enbridge)		

7. Work Assignments

Submerged Oil Science

1. Conduct bathymetry on Phase I&II sediment traps and former E4 containment system. (6 Teams)
2. Conduct phase I &II sediment trap sampling. (1 Team)
3. Conduct poling activities downstream of Morrow Lake dam (1 Team)

For US EPA/MDEQ/Weston:

1. Oversee and document Submerged Oil Science work activities.

Submerged Oil Compliance

1. Provide support as necessary.

8. Special Instructions

The Winter Stand Down will begin Friday, December 21, at 1900. Report back to work Monday, January 7, 2013 or as directed by your supervisor. This stand down does not apply to the Sheen Management activities and 1 Situation Unit team. Sheen Management activities will continue during the Winter Stand Down. These activities include:

- Control Point Monitoring, Management and Cleaning;
- Sheen Sweep Crews will remain on standby and ready for rapid response.
- Operations Section Chiefs will be on call and available to direct sheen response activities as needed.

Rowe Island, MP 38.50 to MP 38.75, is a No Go Zone – Environmental Sensitive Area.

SAFETY INSTRUCTIONS:
All in water activities of workers in water depths over fifty percent (50%) of thigh height will require tethering. Please refer to the HASP for further instructions.

9. Communications (radio and/or phone contact numbers needed for this assignment)

Incident Command Safety Office: 269-753-9347

Emergency Communications: Use IAP Medical Plan/IAP Phone list. Dial 911 for Medical Emergency.

10. Prepared by	Date/Time	11. Reviewed by (PSC),	Date/Time	12. Reviewed by (OSC),	Date/Time
A. Olson, Avery/Enbridge	12/6/2012	B. Nelson, Avery/Enbridge	12/6/2012	D. Bareham, Enbridge	12/6/2012

1. Incident Name	2. Operational Period (Date/Time)	Assignment List ICS 204 - EPA
Kalamazoo River/Enbridge Spill Response	From: December 10, 2012, 0700 To: December 24, 2012, 0700	
3. Branch **Containment**	**4. Division/Group/Staging**	

5. Operations Personnel

	Name	Affiliation	Contact # (s)
Operations Section Chief:	Steve Noble	MDEQ	[redacted]
	Dan Capone	Weston/US EPA	
	Chris Lantinga, Deputy	Weston/US EPA	
	Jeff Lippert, Deputy	EPA	
	Dave Bareham	Enbridge	
	James Snider, Deputy	Enbridge	
Branch Director:	Rex Johnson	Weston/US EPA	
	Paul Kerpash	SWAT/Enbridge	

6. Resources Assigned

Division Identifier	Leader	Contact Info. #	# of Persons
Containment Compliance	Mike Zambetis (Cardno JFNEW/Enbridge)	[redacted]	
Containment Recovery	Susan Jones (MDEQ) Chris Lantinga (Weston/US EPA) Sonny Rutkowski (Weston/US EPA) Oliver Webb (SWAT/Enbridge)		1 Weston/US EPA 4 Contractors

7. Work Assignments

Containment Compliance

1. Provide support as necessary.

Containment Recovery

1. Perform containment strategies along the Kalamazoo River including the following tasks:
   a. Deploy and maintain shoreline containment boom as required.
   b. Complete sheen management as required.
2. Maintain Kalamazoo River Sediment Traps, including any cylindrical sampling devices.

For US EPA/MDEQ/Weston:

1. Oversee and document Containment Recovery activities.

8. Special Instructions

The Winter Stand Down will begin Friday, December 21, at 1900. Report back to work Monday, January 7, 2013 or as directed by your supervisor. This stand down does not apply to the Sheen Management activities and 1 Situation Unit team. Sheen Management activities will continue during the Winter Stand Down. These activities include:

- Control Point Monitoring, Management and Cleaning;
- Sheen Sweep Crews will remain on standby and ready for rapid response.
- Operations Section Chiefs will be on call and available to direct sheen response activities as needed.

Rowe Island, MP 38.50-MP 38.75, is a No Go Zone – Environmental Sensitive Area.

9. Communications (radio and/or phone contact numbers needed for this assignment)

Incident Command Safety Office: 269-753-9347

Emergency Communications: Use IAP Medical Plan/IAP Phone list. Dial 911 for Medical Emergency.

10. Prepared by	Date/Time	11. Reviewed by (PSC),	Date/Time	12. Reviewed by (OSC),	Date/Time
A. Olson, Avery/Enbridge	12/6/2012	B. Nelson, Avery/Enbridge	12/6/2012	D. Bareham, Enbridge	12/6/2012

1. Incident Name	2. Operational Period (Date/Time)	Assignment List ICS 204 - EPA
Kalamazoo River/Enbridge Spill Response	From: December 10, 2012, 0700 To: December 24, 2012, 0700	
3. Branch	**4. Division/Group/Staging**	
Kalamazoo River System Branch		

5. Operations Personnel

	Name	Affiliation	Contact # (s)
Operations Section Chief:	Steve Noble	MDEQ	[redacted]
	Dan Capone	Weston/US EPA	
	Chris Lantinga, Deputy	Weston/US EPA	
	Jeff Lippert, Deputy	EPA	
	Dave Bareham	Enbridge	
	James Snider, Deputy	Enbridge	
Branch Director:	Steve Noble	MDEQ	
	Bryan Stiemsma	AECOM/Enbridge	

6. Resources Assigned

Division Identifier	Leader	Contact Info. #	# of Persons
Talmadge Creek/Kalamazoo River Remedial Investigation	Ben Schmitt (MDEQ) Brian Albig (AECOM/Enbridge)	[redacted]	6 Contractors
Kalamazoo River Compliance	Mike Zambetis (JFNew/Enbridge)		
Talmadge Creek/Kalamazoo River Remedial Action	Matt Sumner (AECOM/Enbridge)		
Talmadge Creek/Kalamazoo River Monitoring	Alison Schoeff (AECOM/Enbridge)		2 Contractor

7. Work Assignments

Talmadge Creek/Kalamazoo River Remedial Investigation

1. Continue Kalamazoo River remedial investigation field work. (1 Team)

For DEQ:

1. Observe and document RI activities with emphasis on conformance with approved work plans and standard operating procedures.
2. Collect RI split samples at approved frequency for soil, sediment and groundwater.

Kalamazoo River Compliance

1. Provide support as necessary.
2. Conduct decommissioning activities as needed.

Talmadge Creek/Kalamazoo River Remedial Action

1. Execute tasks assigned by ERO as requested.

Talmadge Creek/Kalamazoo River Monitoring

1. Conduct daily monitoring of river conditions.
2. Conduct quarterly and semi-annual drinking water sampling event.
3. Conduct quarterly groundwater sampling at Village of Augusta and City Kalamazoo well field #39.
4. Conduct monthly surface water monitoring, river and weather conditions permitting.
5. Conduct quarterly sediment monitoring, river and weather conditions permitting.

8. Special Instructions

The Winter Stand Down will begin Friday, December 21, at 1900. Report back to work Monday, January 7, 2013 or as directed by your supervisor. This stand down does not apply to the Sheen Management activities and 1 Situation Unit team. Sheen Management activities will continue during the Winter Stand Down. These activities include:

- Control Point Monitoring, Management and Cleaning;
- Sheen Sweep Crews will remain on standby and ready for rapid response.
- Operations Section Chiefs will be on call and available to direct sheen response activities as needed.

Rowe Island, MP 38.50 to MP 38.75, is a No Go Zone – Environmental Sensitive Area.

SAFETY INSTRUCTIONS:
When operating or working in the vicinity of ultra violet testing equipment, wear approved safety glasses that provide protection from UV A rays and never look directly into the illuminator. All in water activities of workers in water depths over fifty percent (50%) of thigh height will require tethering. Please refer to the HASP for further instructions.

9. Communications (radio and/or phone contact numbers needed for this assignment)

Incident Command Safety Office: 269-753-9347

Emergency Communications: Use IAP Medical Plan/IAP Phone list. Dial 911 for Medical Emergency.

10. Prepared by	Date/Time	11. Reviewed by (PSC),	Date/Time	12. Reviewed by (OSC),	Date/Time
A. Olson, Avery/Enbridge	12/6/2012	B. Nelson, Avery/Enbridge	12/6/2012	D. Bareham, Enbridge	12/6/2012

1. Incident Name	2. Operational Period (Date/Time)	Assignment List
Kalamazoo River/Enbridge Spill Response	From: December 10, 2012, 0700 To: December 24, 2012, 0700	**ICS 20**
3. Branch **Planning Section**	**4. Division/Group/Staging**	

5. Operations Personnel

	Name	Affiliation	Contact # (s)
Planning Section Chief:	Mark DuCharme Mindy Luetke Isaac Aboulafia Kim Churchill, Deputy Brad Nelson Alex Olson, Deputy	MDEQ Weston/US EPA Weston/US EPA Weston/ DEQ Avery/Enbridge Avery/Enbridge	[redacted]

6. Resources Assigned

Division Identifier	Leader	Contact Info. #	# of Persons
Situation Unit	Matt Haak (Weston/ US EPA) Larry Rader (Weston/ US EPA) Alex Olson (Avery/Enbridge)	[redacted]	1 Weston/EPA 1 Contractor
Resource Unit	Lorie Hong (Weston/US EPA) Alex Olson (Avery/Enbridge), Assistant		1 Contractor
Environmental Unit	Mike Alexander (Off-site) Kim Churchill (Weston/MDEQ) Vinnie DelloRusso (Weston/MDEQ), Assistant Isaac Aboulafia (Weston/US EPA) Elizabeth Wessling (Weston/US EPA)(Off-site Faith Fitzpatrick (USGS) Ron Zelt (Off-site) (USGS), Assistant Rex Johnson (Weston/US EPA), Assistant Tom Graan (Weston/US EPA) , Assistant John Bohrmann (Enbridge)		2 MDEQ 2 Contractors
Documentation Unit	Brad Nelson (Avery/Enbridge) Crystal Laskey Carolyn Giles-Smith (Weston/MDEQ) Paul Mosian (Weston/EPA)		1 Contractors

7. Work Assignments

Situation Unit:

1. Record and document sheen observations in main channel and overbank areas, and conduct sheen testing, if necessary. Report sheen observations back to operations section chiefs for monitoring and response.
2. Conduct weekly overflights; photo-document areas of sheen from source area to Morrow Lake dam and report observations back to operations section chiefs for monitoring and response. Additional flights will be scheduled as needed.
3. Organize field metrics, prepare for and facilitate presentations, and monitor action tracking. Maintain situational awareness around operational activities and plan for operational needs.

For US EPA/MDEQ/Weston:

1. Maintain situational awareness around operational activities.
2. Communicate observations to the Operations Section Chief.
3. Provide daily situational photo log summaries.
4. Conduct daily monitoring of river conditions, recording observations of sheen and/or oil.
5. Record and document sheen observations in main channel and overbank areas, and conduct sheen testing, if necessary. Report sheen observations back to operations section chiefs for monitoring and response.

Resource Unit:

1. Produce an Incident Action Plan as required by the Incident Commanders.
2. Support the planning efforts of operations and provide information to Logistics in order to properly prepare and order resources.

Environmental Unit:

1. Conduct strategic assessment, modeling, and environmental monitoring.
2. Review sheen tracking information from the field.
3. Continue submerged oil quantification for Spring 2012.
4. Refine subsurface containment strategies throughout the Kalamazoo River system to prevent recontamination of the Morrow Lake fan.
5. Review and track RI progress.
6. Continue discussions on NAPL.
7. Review of property parcels for MDEQ end points.

For US EPA/MDEQ/Weston:

1. Continue to coordinate efforts to calculate the quantity of submerged oil remaining as of Spring 2012.
2. Continue supporting the evaluation of the hydrogeomorphology of the Kalamazoo River, the Morrow Lake Delta, and Morrow Lake.
3. Interface with Enbridge and assist with the refinement of surface and subsurface containment strategies throughout the Kalamazoo River system to prevent the continued migration of oil, oil sheen, submerged oil, and oil-containing sediments into Morrow Lake.
4. Review and comment on RI progress submittals
5. Support development of NAPL CSM.
6. Review Enbridge submittals with emphasis on compliance with state endpoints.

Documentation Unit:

1. Maintain accurate, up-to-date incident files.
2. Store files for post-incident use.

8. Special Instructions

The Winter Stand Down will begin Friday, December 21, at 1900. Report back to work Monday, January 7, 2013 or as directed by your supervisor. This stand down does not apply to the Sheen Management activities and 1 Situation Unit team. Sheen Management activities will continue during the Winter Stand Down. These activities include:

- Control Point Monitoring, Management and Cleaning;
- Sheen Sweep Crews will remain on standby and ready for rapid response.
- Operations Section Chiefs will be on call and available to direct sheen response activities as needed.

In accordance with the Fatigue Management Plan, all work permit activities will be completed no later than 1900.

SAFETY INSTRUCTIONS:

Hexane is flammable and may be harmful in contact with skin. When handling hexane and sheen test samples containing hexane, wear approved safety glasses, disposable nitrile gloves and keep away from ignition sources. Properly dispose of sheen test samples containing hexane.

9. Communications (radio and/or phone contact numbers needed for this assignment)

Incident Command Safety Office: 269-753-9347

Emergency Communications: Use IAP Medical Plan/IAP Phone list. Dial 911 for Medical Emergency.

10. Prepared by	Date/Time	11. Reviewed by (PSC),	Date/Time	12. Reviewed by (OSC),	Date/Time
A. Olson, Avery/Enbridge	12/6/2012	B. Nelson, Avery/Enbridge	12/6/2012	D. Bareham, Enbridge	12/6/2012

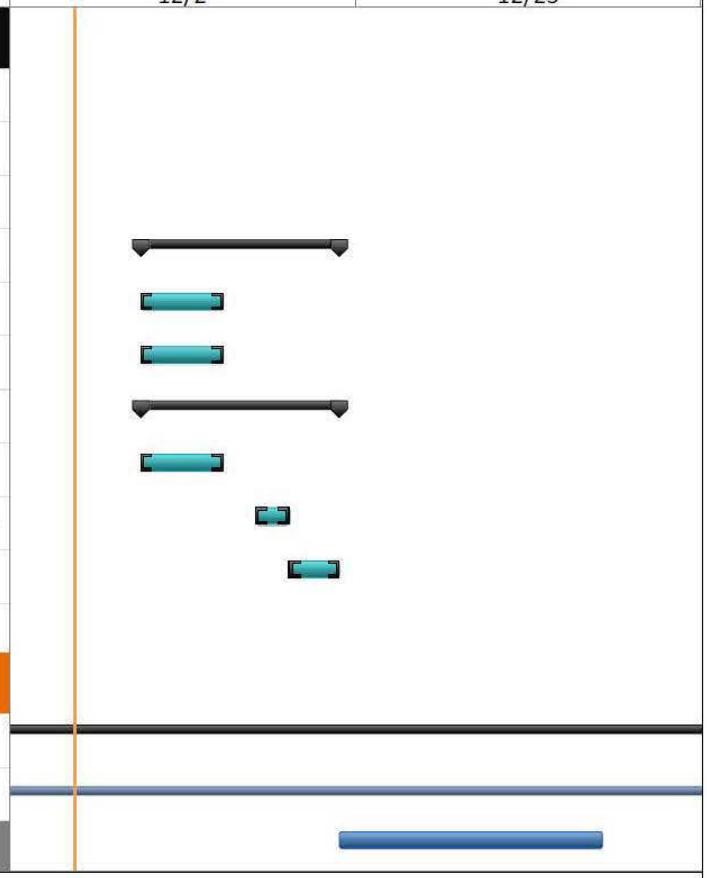
NAME	PHONE NUMBER	EMAIL ADDRESS	AGENCY / AFFILIATION	POSITION
Enbridge and Contractors				
Enbridge Marshall Office: 333 South Kalamazoo Ave Marshall MI 49068				
Adams, Rich	[redacted]		Enbridge	Operations
Albig, Brian			AECOM/Enbridge	Environment
Bareham, Dave			Enbridge	Environment
Bohrmann, John			Enbridge	Environment
Bretz, Ryan			Manpower/Enbridge	IT
Cox, Renee			Manpower/Enbridge	Documentation
Daniel, Pat			Enbridge	
Dekker, Shaun			SET/Enbridge	Waste Management
Dennis, Kate			Manpower/Enbridge	Admin Support
Doherty, Bob			Enbridge	Environment
Dryburgh, Dave			AECOM/Enbridge	Environment
Dzuck, Diane			Enbridge	Contracts
Eversole, Elijah			AECOM/Enbridge	Containment
Fuller, Mark			AECOM/Enbridge	Environment
Gross, Dale			Superior/Enbridge	Safety Officer
Hehir, Nate			Superior/Enbridge	Environment
Hummel, Rebecca			Manpower/Enbridge	Finance
Kaiser, Ken			AECOM/Enbridge	GIS Specialist
Kent, Norm			AECOM/Enbridge	Environment
Kerpash, Paul			SWAT/Enbridge	Control Point Management
Kogge, Stu			Cardno JFNEW/Enbridge	Operations
Manshum, Jason			Enbridge	Public Affairs
McKay, John			Enbridge	ROW
Nelson, Brad			Avery/Enbridge	Planning
Neumeier, Laura			Trimedia/Enbridge	Air Monitoring
Olson, Alex			Avery/Enbridge	Planning
Periard, Debora			AECOM/Enbridge	GIS Support
Pesses, David			LBG/Enbridge	Environmental Inspector
Powell, Meredith			Enbridge	Public & Govt. Affairs
Pratt, Catherine			AECOM/Enbridge	Environment
Sahara, Dean			SWAT/Enbridge	Operations
Saylor, Andy			SET/Enbridge	
Schoeff, Alison			AECOM/Enbridge	Water Monitoring Supervisor
Smith, Brian			Tulsa/ Enbridge	Project Controls
Snider, Jim			Enbridge	Environment Director
Sobojinski, John			Enbridge	Incident Commander
Standen, Joe			LBG/Enbridge	
Stiemsma, Bryan			AECOM/Enbridge	Environment Supervisor
Corrine Sullivan			Enbridge	ROW
Sumner, Matt			AECOM/Enbridge	Environment
Van Overmeiren, Rick			Enbridge	Purchasing
Wallace, John			Avery/Enbridge	Logistics / Facilities
Webb, Oliver			SWAT/Enbridge	Control Point Management
Wekseth, Mike			SWAT/Enbridge	Operations Inspector
Wiswell, Amber			Kelly Services/Enbridge	Admin. Assistant
Wolf, Mike			AECOM/Enbridge	Monitoring
Yokom, Brett			Trimedia/Enbridge	Environment
Zambetis, Mike			Cardno JFNEW/Enbridge	Restoration

NAME	PHONE NUMBER	EMAIL ADDRESS	AGENCY / AFFILIATION	POSITION
Michigan DEQ and Contractors				
DEQ Field Office: 13444 Preston Drive Marshall MI 49068				
Alexander, Mike	[redacted]		DEQ	Environmental Unit
Brettmann, Gregg			DEQ	Environmental Unit Leader
Brown , Kevin			Weston/DEQ	GIS Support
Churchill, Kim			Weston/DEQ	Environmental Unit
DelloRusso, Vincent			Weston/DEQ	Operations
DeLong, Michelle			DEQ	Incident Commander
DuCharme, Mark			DEQ	Planning Section Chief
Fizzell, Chad			DEQ	GIS Support
Giles-Smith, Carolyn			Weston/DEQ	Documentation
Jones, Susan			DEQ	Operations
Laskey, Crystal			DEQ	Planning
Lisabeth, Nicole			MSP	PIO
Noble, Steve			DEQ	Water Resources Division
Sarkipato, Ernie			DEQ	Environmental Unit
Schmitt, Ben			DEQ	Operations
Spruit, Jeff			DEQ	Environment
Taft, Bill			DEQ	Wildlife Environmental NRDA Group
Thompson, Doug			DEQ	Operations
Wurfel, Brad			DEQ	Public Information
Zacharda, Nicole			DEQ	NRDA and Compliance
US Agencies and Contractors				
EPA Field Office: 13444 Preston Drive Marshall MI 49068				
Aboulafia, Isaac	[redacted]		START/US EPA	Planning
Berecz, Karen			START/US EPA	O & M
Blanchard, Mark			START/US EPA	
Capone, Dan			START/US EPA	Operations
Deblasio, Don			US EPA	Public Information
Dollhopf, Ralph			US EPA	Incident Commander (FOSC)
Fitzpatrick, Faith			USGS	Tech Specialist
Good, Gena			START/US EPA	
Graan, Tom			START/US EPA	Submerged Oil Lead
Haak, Matt			START/US EPA	Sit Unit Leader
Hackley, Richard			US EPA	Finance
Hendrix, Kristen			START/US EPA	Operations
Hoard, Chris			USGS	USGS
Hong, Lorie			START/US EPA	Logistics
Johnson, Rex			START/US EPA	Operations
Kidder, Steven			START/US EPA	Operations SOS
Kirby-Miles, Leslie			US EPA	Legal
Lantinga, Chris			START/US EPA	Operations
Laquerre, Tim			START/US EPA	Operations
Luetke, Mindy			START/US EPA	PSC
Mehl, Rick			START/US EPA	
Moisan, Paul			START/US EPA	Documentation
Muccianti, Marcus			START/US EPA	Operationsp
Pierce, Brennan			START/US EPA	Documentation
Rader, Larry			START/US EPA	Sit Unit Leader
Ross, Shauna			START/US EPA	
Roubik, Jonathan			START/US EPA	Operations
Rutkowski, Sonny			START/US EPA	Technical Specialist
Thierry, Mike			START/US EPA	Operations
Torres, Jason			START/US EPA	GIS Specialist
Valenza, James			START/US EPA	GIS Specialist
Wahrer, Marc			START/US EPA	Operations
Wellman, John			START/US EPA	Operations
Wessling, Elizabeth			START/US EPA	PSC
Williams, Lisa			USFWS	
Zahner, Dan			START/US EPA	Operations
Zelt, Ron			USGS	Environmental Unit Leader Assistant
Local Agencies / MAC members				
Baker, Paul	[redacted]		Kalamazoo OEM	MAC
Cardiff, Deb			Kalamazoo County - Env Health	MAC
Corbin, Scott			Allegan County Emerg Mgmt	MAC
Dunham, Durk			Calhoun County EMA	MAC
Dykema, Linda			Mich Dept of Community Health	MAC
Frost, Joe			Calhoun County Health	MAC
Kosmowski, Christine			City of Battle Creek	MAC
Makoski, Paul			Calhoun County Health	MAC
McKenzie, Michael			Battle Creek Emer. Srvs.	MAC
Quiggle, Lisa			MDCH	MAC
Reber, Lt. Barry			MSP EMHSD	MAC
Rutherford, James			Calhoun County Health	MAC
Schneider, Dave			Kalamazoo County	MAC
Vail, Linda			Kalamazoo County Health	MAC
Vosburg, Cheryl			City of Marshall	MAC

Line 6B Remediation
Marshall Michigan

Project Schedule

ID	Task Name	Start	Finish
1	***FIELD ACTIVITIES***		
2	**Removal of all Buoys**	TBD	TBD
3	**Removal of the boom at Ceresco**	TBD	TBD
4	**Removal of CSDs**	TBD	TBD
5	**Bathymetry - Sediment Trap and E4**	**Mon 12/10/12**	**Fri 12/21/12**
8	**Sediment Trap Sampling**	Mon 12/10/12	Fri 12/14/12
9	**Poling downstream of Morrow Lake**	Mon 12/10/12	Fri 12/14/12
10	**Remedial Investigation (scheduled activities only)**	**Mon 12/10/12**	**Fri 12/21/12**
13	**Drinking Water Monitoring**	Mon 12/10/12	Fri 12/14/12
14	**HydroGeo 2 - August/Kzoo Muni Monitoring Wells**	Mon 12/17/12	Tue 12/18/12
15	**Surface Water & Sediment Monitoring (Monthly)**	Wed 12/19/12	Fri 12/21/12
16			
17	***OTHER ACTIVITIES***		
18	**Quantification of Oil**	**Mon 7/16/12**	**Fri 1/25/13**
29	**Air Operations**		
54	Holiday Shutdown	Sat 12/22/12	Sun 1/6/13



Project: Project Schedule 9-24
Date: Thu 12/6/12

Task		External Milestone		Manual Summary Rollup	
Split		Inactive Task		Manual Summary	
Milestone		Inactive Milestone		Start-only	
Summary		Inactive Summary		Finish-only	
Project Summary		Manual Task		Deadline	
External Tasks		Duration-only		Progress	

TRAFFIC PLAN: C 5



[redacted] Battle Creek, MI 49014

GPS Coordinates Lat: 42.304905 Long: -85.183463

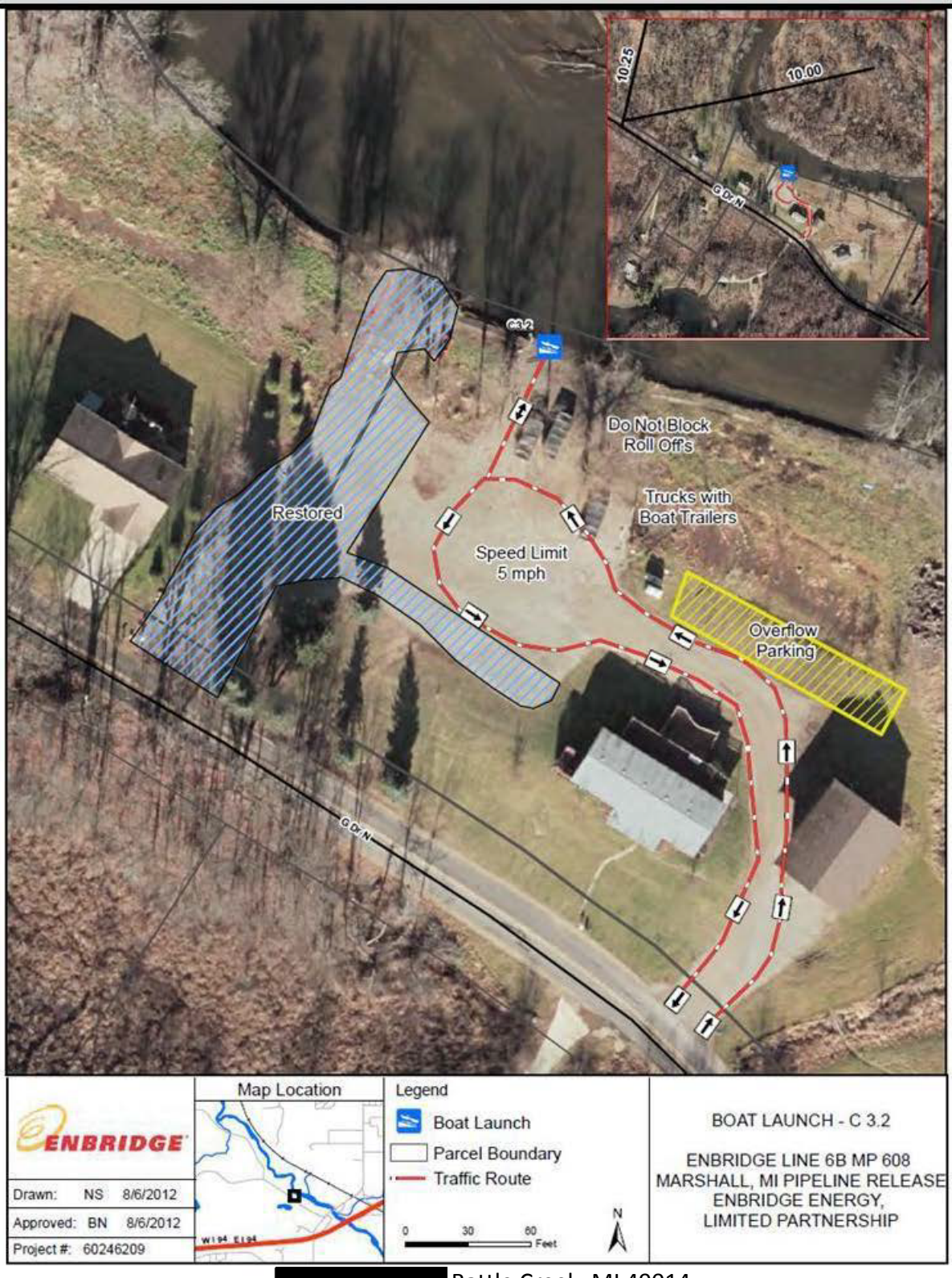
TRAFFIC PLAN: C 0.4



[redacted] Ceresco, MI 49033

GPS Coordinates: Lat: 42.265127, Long:-85.048364

TRAFFIC PLAN: C 3.2



[redacted] Battle Creek, MI 49014

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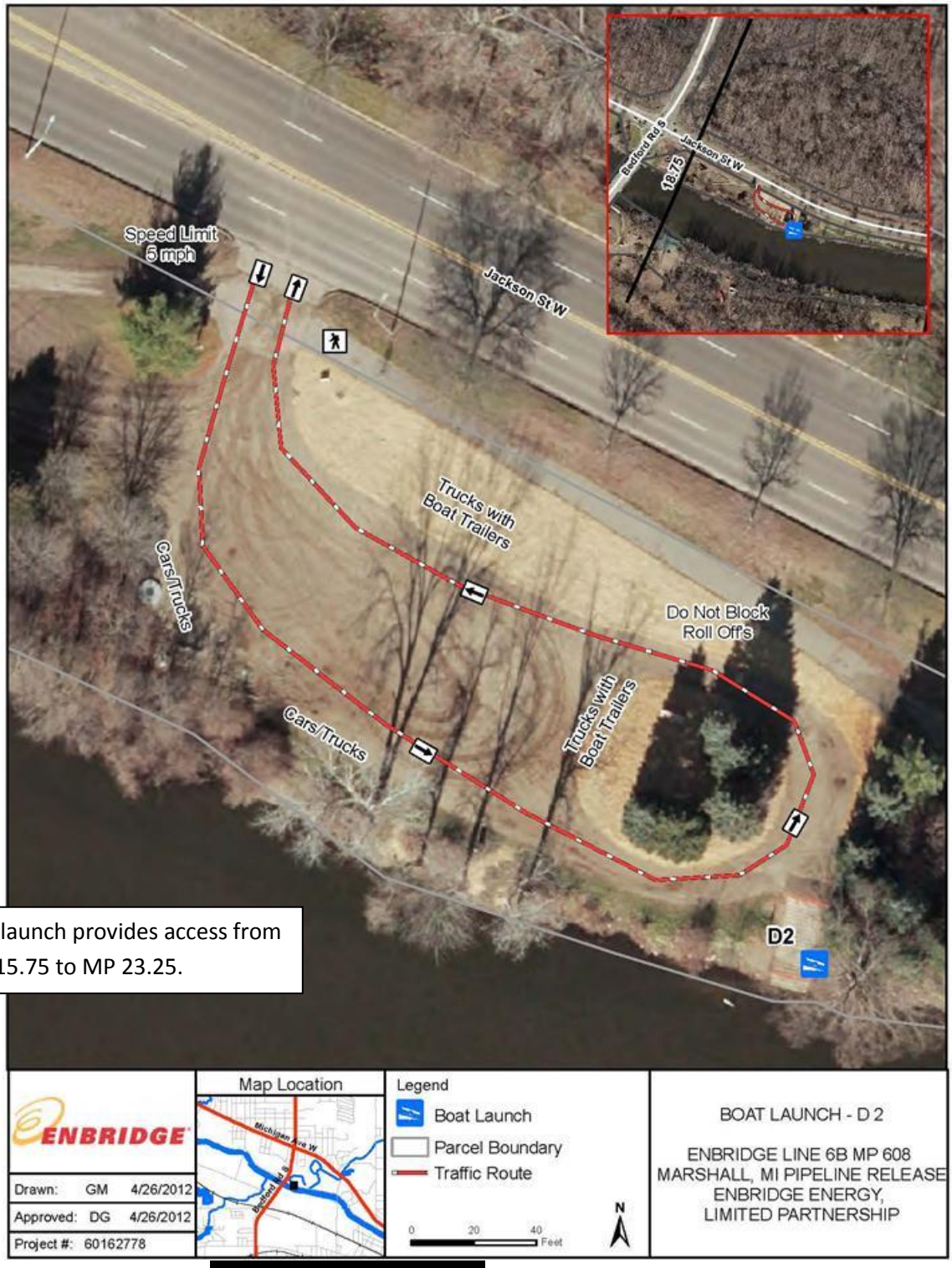
TRAFFIC PLAN: Wildlife Center



[redacted] Battle Creek, MI 49014

GPS Coordinates: Lat: 42.292173, Long: -85.123578

TRAFFIC PLAN: D2



This launch provides access from MP 15.75 to MP 23.25.

[redacted] Battle Creek, MI 49037

GPS Coordinates: Lat: 42.338427 Long:-85.232309

TRAFFIC PLAN: E 0.5



(Shady Bend Camp Ground), 15320 East Augusta Dr, Augusta, MI 49012
GPS Coordinates:Lat: 42.347408 Long: -85.3295

TRAFFIC PLAN: E 2



[redacted]Augusta, MI 49053

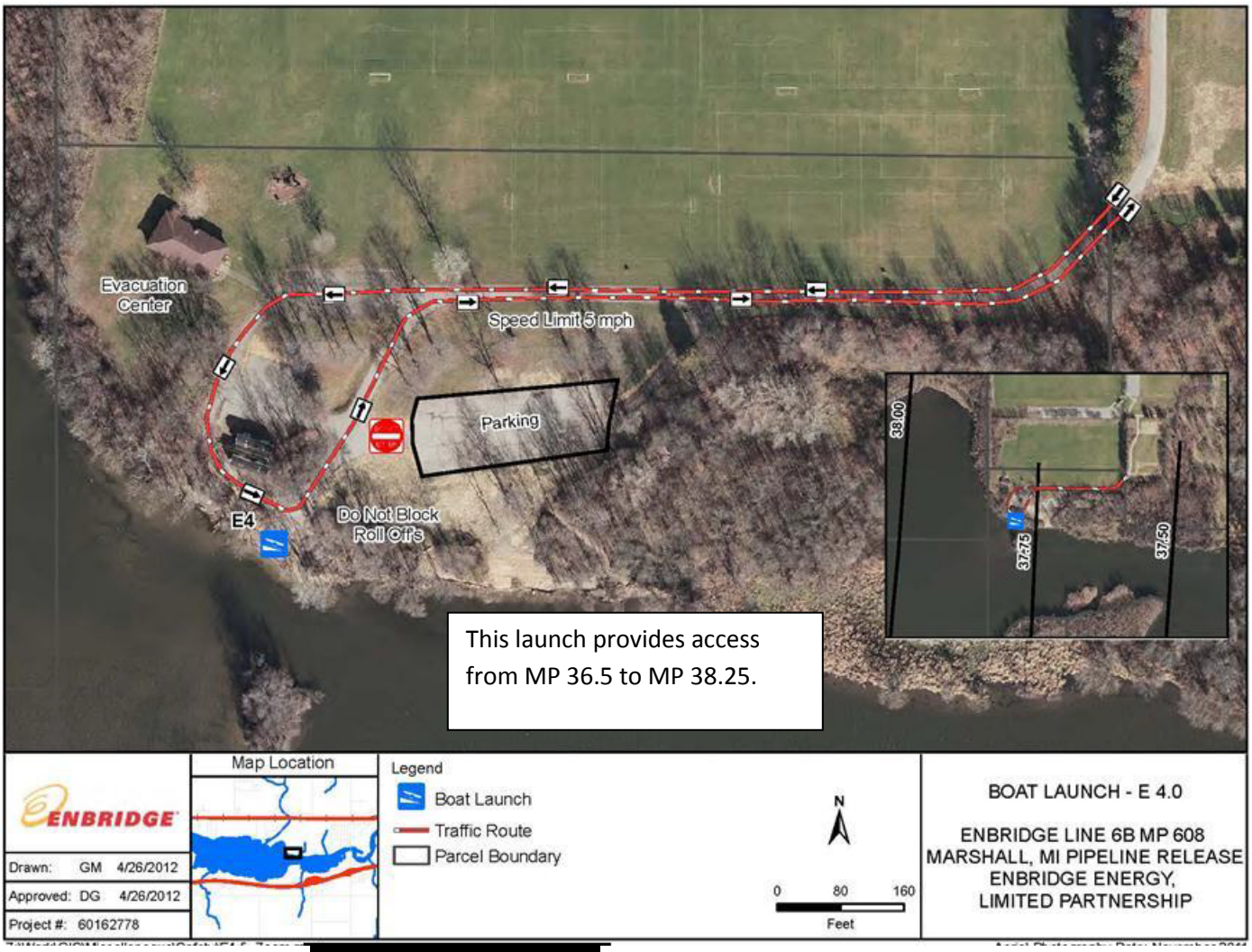
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TRAFFIC PLAN: E 3



[redacted], Galesburg, MI 49053
GPS Coordinates: Lat: 42.284663 Long: -85.412855

TRAFFIC PLAN: E 4



[redacted], Galesburg, MI 49053

GPS Coordinates: Lat: 42.278265 Long: -85.452295

MEDICAL PLAN

Transportation			
Ambulance Services			
Name	Address	Phone	Paramedics Yes / No
Lifecare Ambulance	330 West Hamblin Avenue, Battle Creek, MI 49015	9-1-1	X /
City of Marshall Fire Dept	323 West Michigan Avenue, Marshall, MI 49068	9-1-1	X /

Hospitals								
Name	Address	Travel Time Air	Travel Time Ground	Phone	Helipad Yes	Helipad No	Burn Center Yes	Burn Center No
Bronson Methodist Hospital	601 John Street Kalamazoo, MI	15 Min	50 min	269-341-7654	X		X	
Borgess Medical Center	1521 Gull Road Kalamazoo, MI	15 min	50 min	269-226-7000	X			X
Oaklawn Hospital	200 N. Madison Ave Marshall, MI		5 min	269-781-4271		X		X
Battle Creek Health System	300 North Avenue Battle Creek, MI		20 min	269-966-8000		X		X

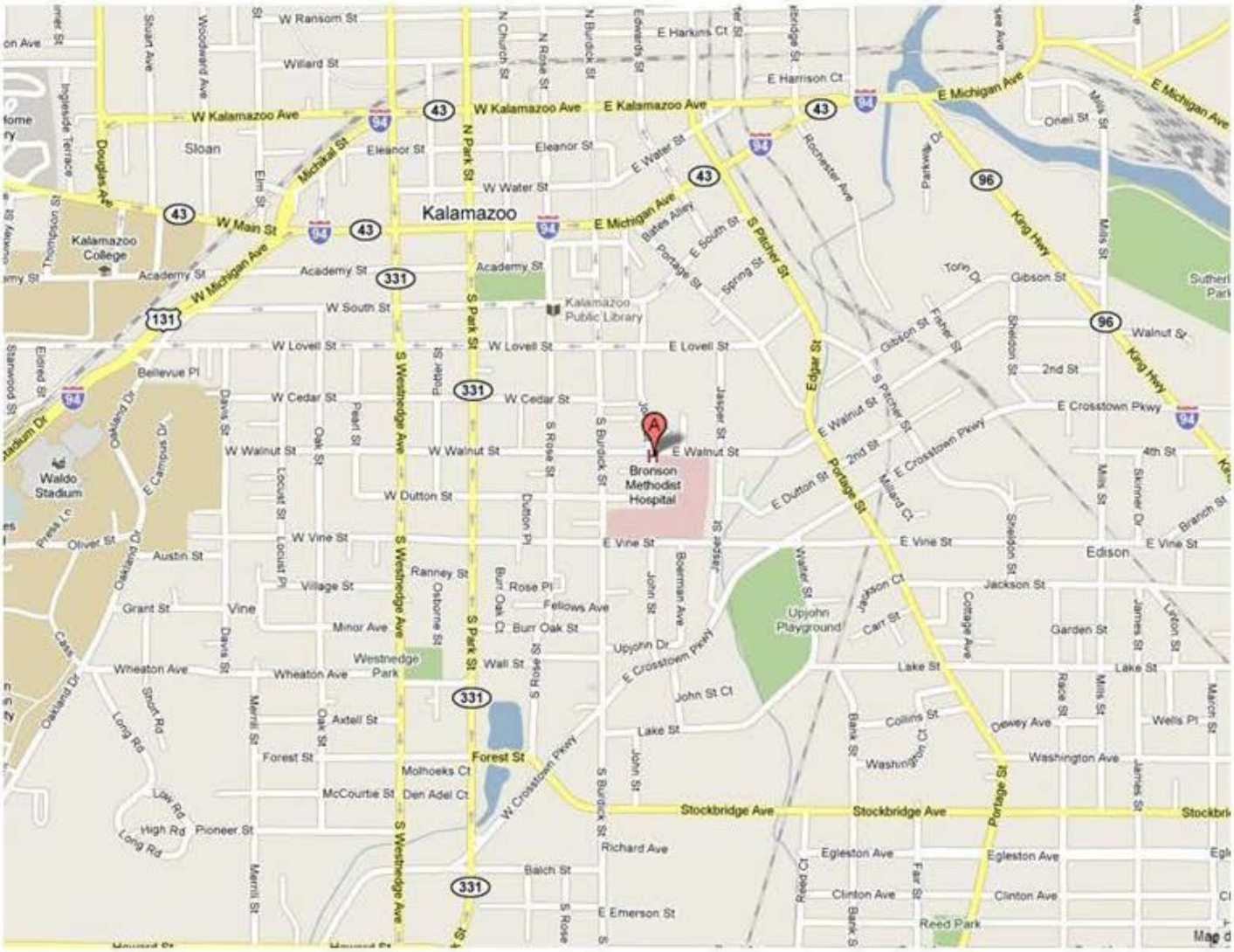
Medical Emergency Procedures

1. Dial 9-1-1 for all emergencies. Give 9-1-1 operators as much information as possible. Stay on the line and answer all questions – information may be radioed to responders. On-site personnel trained and certified in first aid should attempt to stabilize victim until fire department/EMS personnel arrive.
2. Report all incidents to the Project Safety Officer. Keep a log of events. Secure the area. Identify witnesses for later investigation.

NOTE: Suspend all operations during an actual emergency situation!

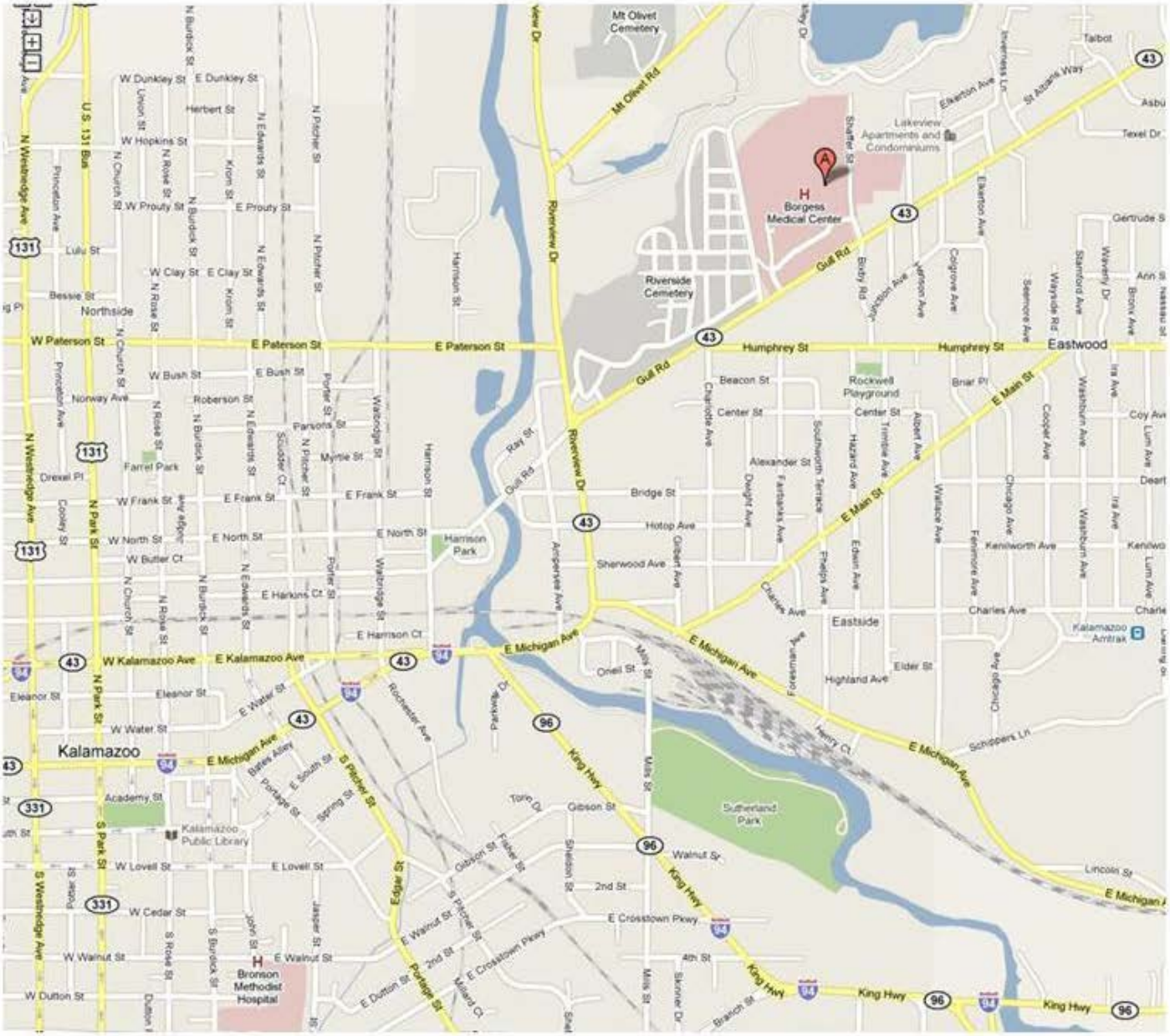
Prepared by	Reviewed by (Safety Officer)
Dale Gross 10/31/2012	Dale Gross 10/31/2012

Hospital Route Map – Bronson Methodist Hospital – Kalamazoo, MI



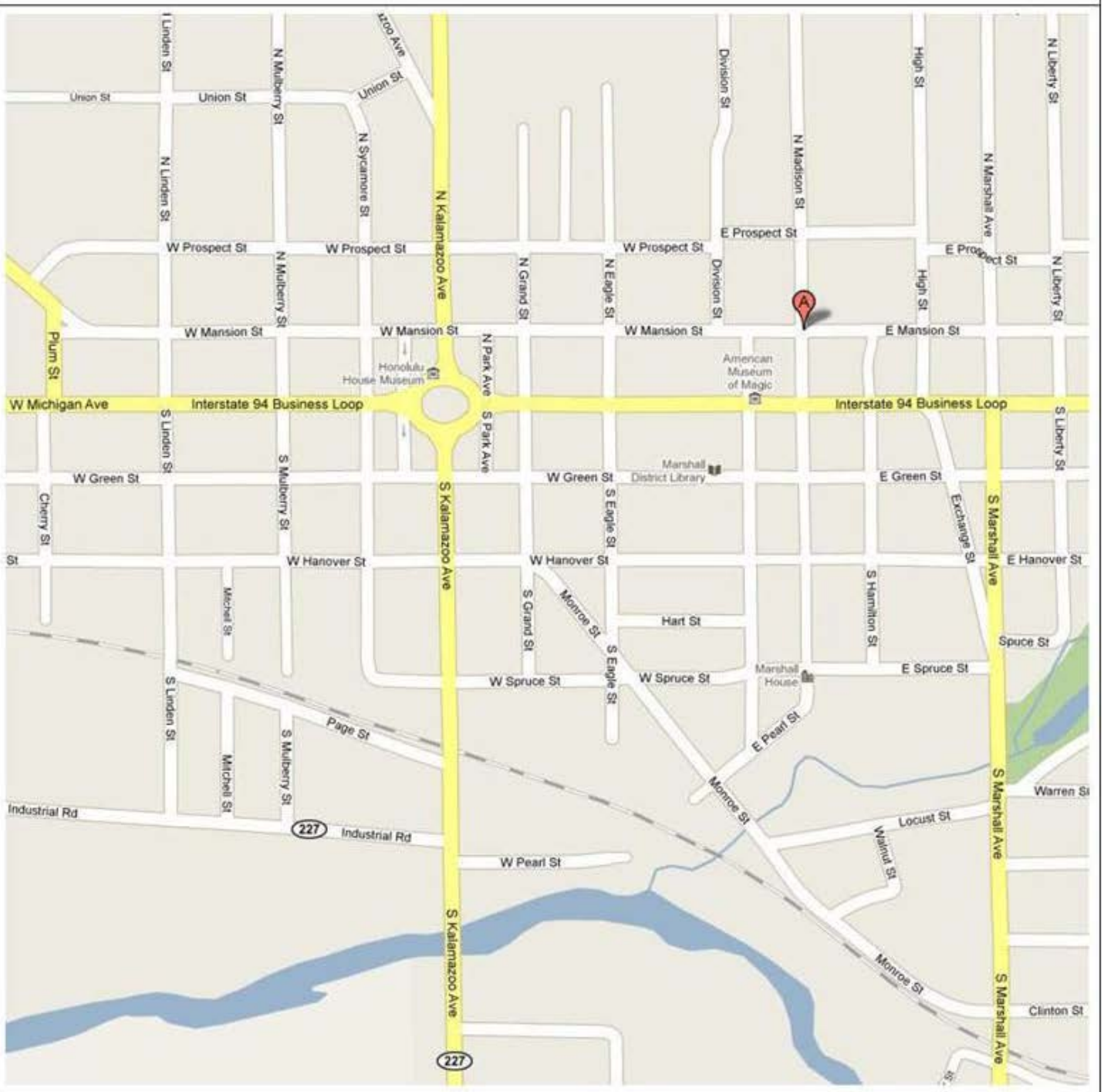
Bronson Methodist Hospital
601 John St
Kalamazoo, MI 49007
(269) 341 - 7979

Hospital Route Map – Borgess Medical Center – Kalamazoo, MI



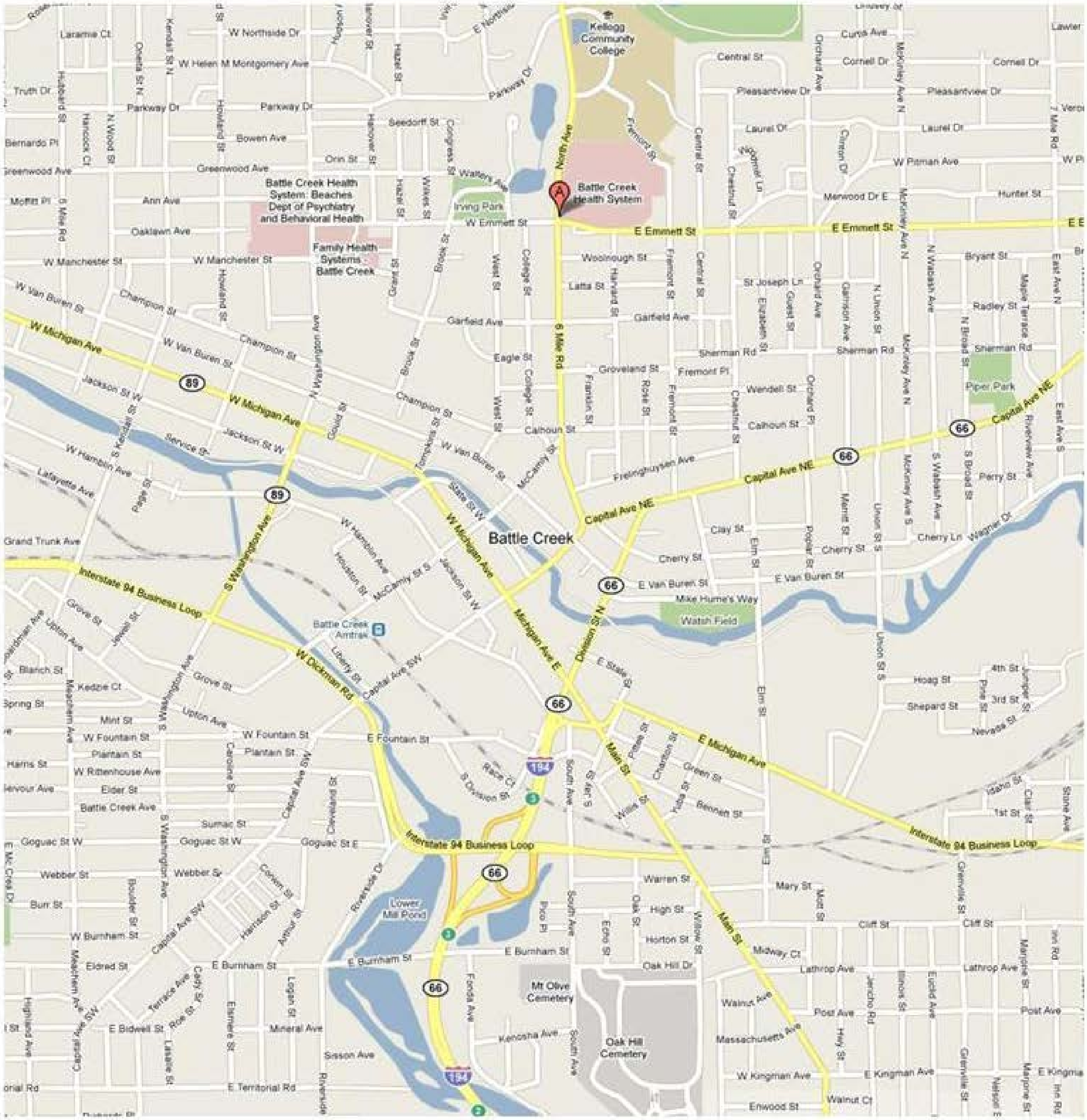
Borgess Medical Center
1521 Gull Road
Kalamazoo, MI 49048
(269) 226 - 7000

Hospital Route Map – Oaklawn Hospital – Marshall, MI



Oaklawn Hospital
200 North Madison St.
Marshall, MI
(269) 781-4271

Hospital Route Map – Battle Creek Health System – Battle Creek, MI



Battle Creek Health System
300 North Avenue
Battle Creek, MI
(269) 966-8000

Line 6B Remediation

Marshall Michigan

PROJECT CALENDAR

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Dec 2 - Dec 8	**12/2**	**12/3** 0900 Tactics 1100-1300 Focus: CSD, E4	**12/4** 1400 Kzoo River	**12/5** 1100-1300 Forensic Chem 1500 Consolidated ICS	**12/6**	**12/7**	**12/8**
Dec 9 - Dec 15	**12/9**	**12/10** 0700 IAP Brief to field (12/10-12/24)	**12/11**	**12/12** 1500 UC Ops Brief	**12/13** 0900 MAC Meeting 1100-1300 Forensic Chem 1400 Kzoo River	**12/14**	**12/15**
Dec 16 - Dec 22	**12/16**	**12/17** 0900 Tactics	**12/18**	**12/19** 1500 Consolidated ICS	**12/20** 1100-1300 Forensic Chem 1400 Kzoo River	**12/21** 0700 IAP Brief to field (12/24-1/14)	**12/22** Demob (travel day)
Dec 23 - Dec 29	**12/23**	**12/24** Christmas Eve Day	**12/25** Christmas Day	**12/26**	**12/27**	**12/28**	**12/29**
Dec 30 - Jan 5 201	**12/30**	**12/31** New Year's Eve	**1/1** New Year's Day	**1/2**	**1/3**	**1/4**	**1/5**
Dec 30 - Jan 5	**1/6** Remob (travel day)	**1/7** 0900 Objectives, Tactics	**1/8**	**1/9** 1500 Consolidated ICS	**1/10** 1100-1300 Forensic Chem 1400 Kzoo River	**1/11**	**1/12**

Color Code Key: ICS/Project | Science/Focus | Special | RI Meetings | Stand-down/holiday

1. Incident Name **Kalamazoo River/Enbridge Spill**	2. Operational Period (Date/Time) Starting: **December 24, 2012, 0700** End: **January 14, 2013, 0700**	**IAP** **Cover** **Sheet**

3. Approved by Incident Commander(s):

Ralph Dollhopf, U.S. EPA

John Sobojinski, Enbridge

INCIDENT ACTION PLAN

The items below are included in this Incident Action Plan:

- ICS 202 (Response Objectives) 1
- ICS 207 (Organizational Chart & OPS Chart) 2
- ICS 204 (Assignment List) 5
- Communications List 11
- Project Schedule 13
- Meeting Locations and Traffic Plans 14
- Medical Plan and hospital maps 23
- Meetings Schedule 28



4. Prepared By:	Date/Time
Brad Nelson, Avery/Enbridge	12/20/2012

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1. Incident Name	2. Operational Period (Date/Time)	INCIDENT OBJECTIVES
Kalamazoo River/Enbridge Spill	From: December 24, 2012 @ 0700 To: January 14, 2013 @ 0700	**ICS 202-EPA**

3. Incident Objective(s)

1. Ensure health and safety of the public and response and recovery personnel.
2. Ensure absolute containment of submerged oil and oil-containing sediments within the Delta and the Fan of Morrow Lake.
3. Ensure effective transition of regulatory oversight from EPA to Michigan DEQ jurisdiction as appropriate.
4. Perform recovery and containment of oil from affected public and private areas of river and river system.
5. Perform remediation and restoration of affected public and private areas of river and river system.
6. Maintain effective communications with cooperating and assisting agencies, the public, including regular coordination with the Multi-Agency Coordination Group (MAC).
7. Provide protection of environmentally and culturally sensitive areas including wildlife and historic properties.
8. Collect, coordinate, manage and communicate environmental and public health data including maintenance of Joint Information Center function.

4. Operational Period Command Emphasis

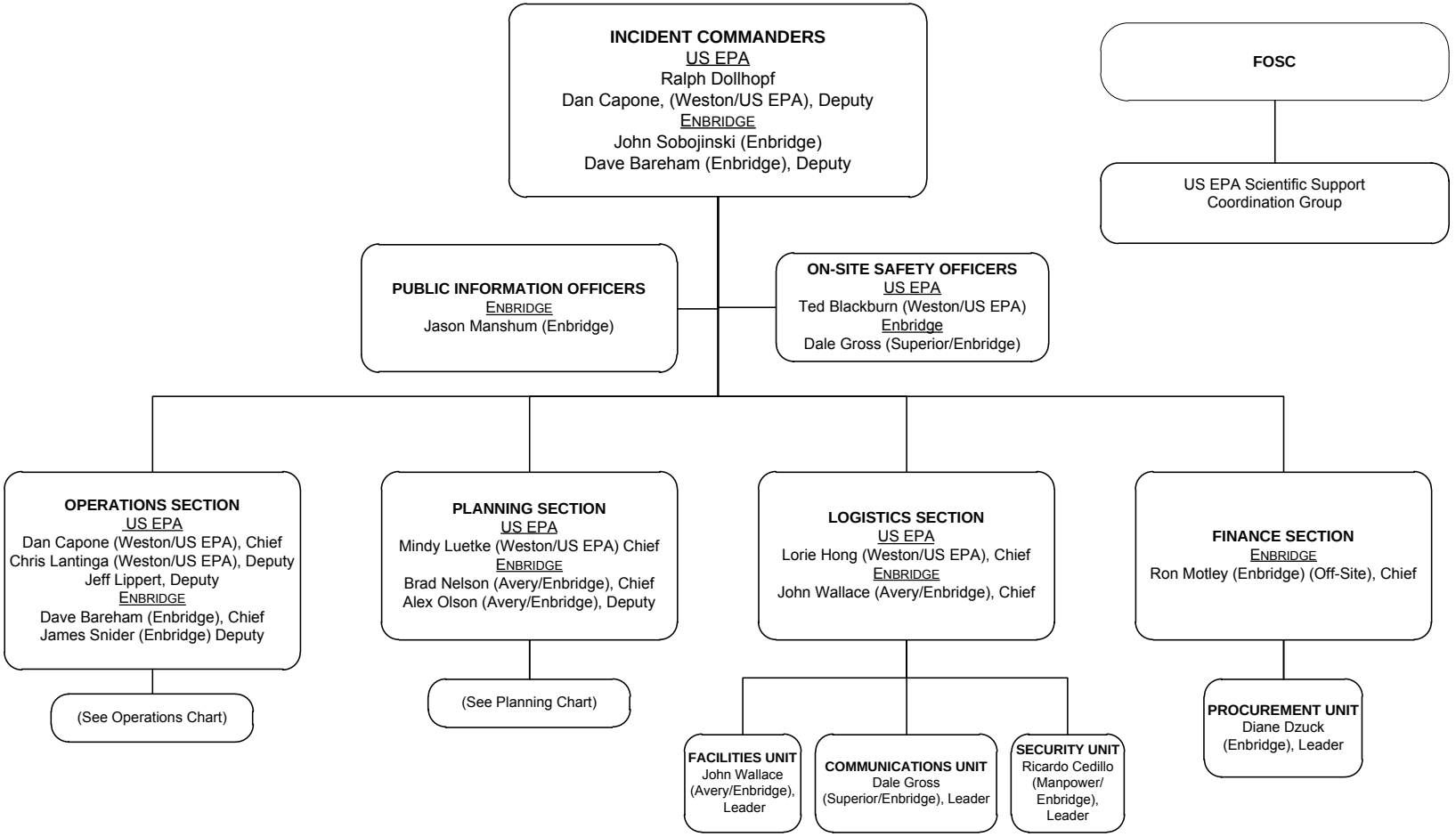
1. Respond to and document emerging oil throughout the Kalamazoo River system.

5. Safety Objectives for the Operational Period

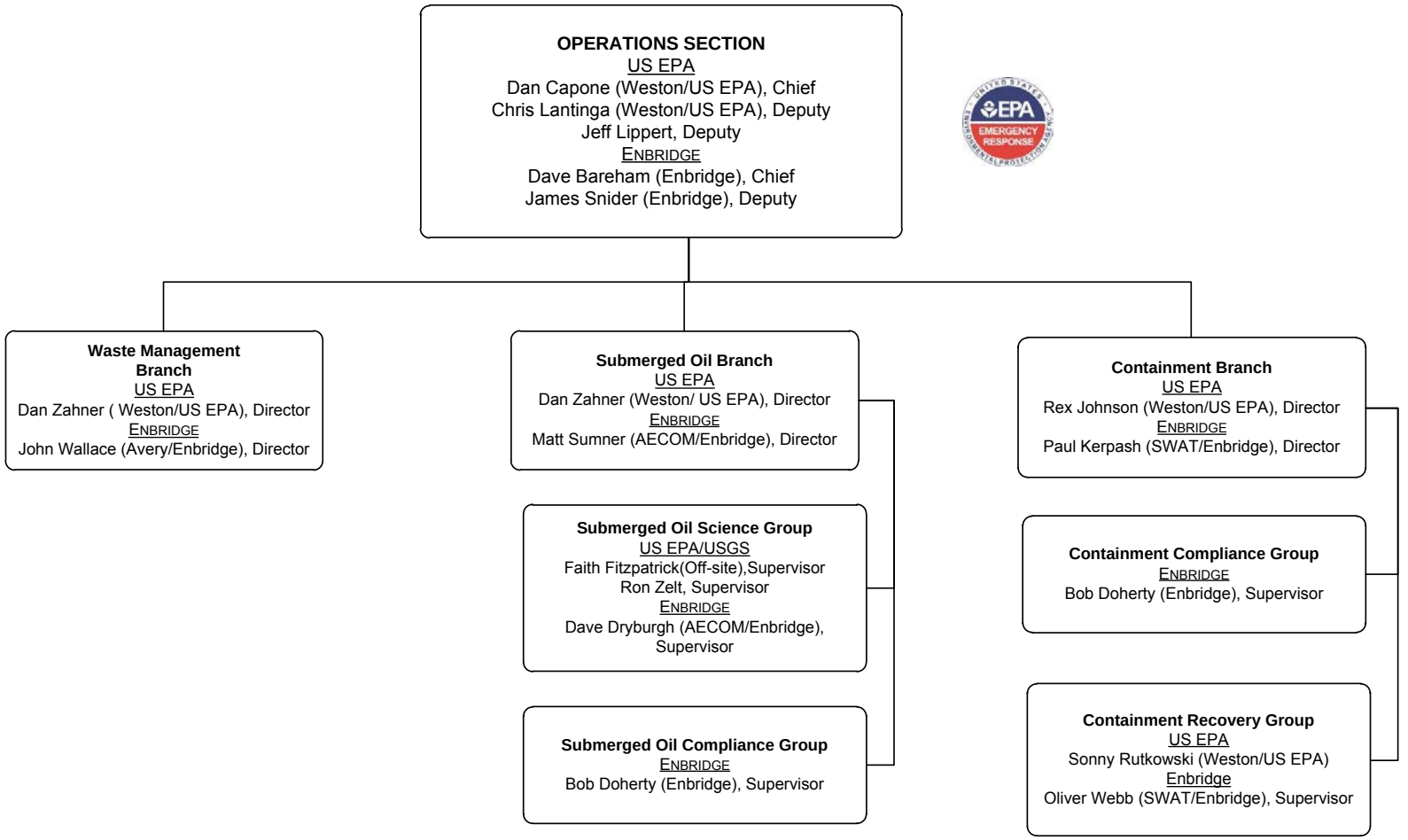
1. Emphasize safety awareness of changing work site conditions because of colder temperatures.
2. Provide annual safety orientation training to onsite response personnel.

6. Prepared by Planning Section Chief (Enbridge):	**Date/Time:**
Brad Nelson	12/20/2012 1435
8. Approved by Incident Commander (US EPA):	**Date/Time:**
Ralph Dollhopf	12/20/2012 1500
10. Approved by Incident Commander (Enbridge):	**Date/Time:**
John Sobojinski	12/20/2012 1440

Enbridge Pipelines Response Unified Command

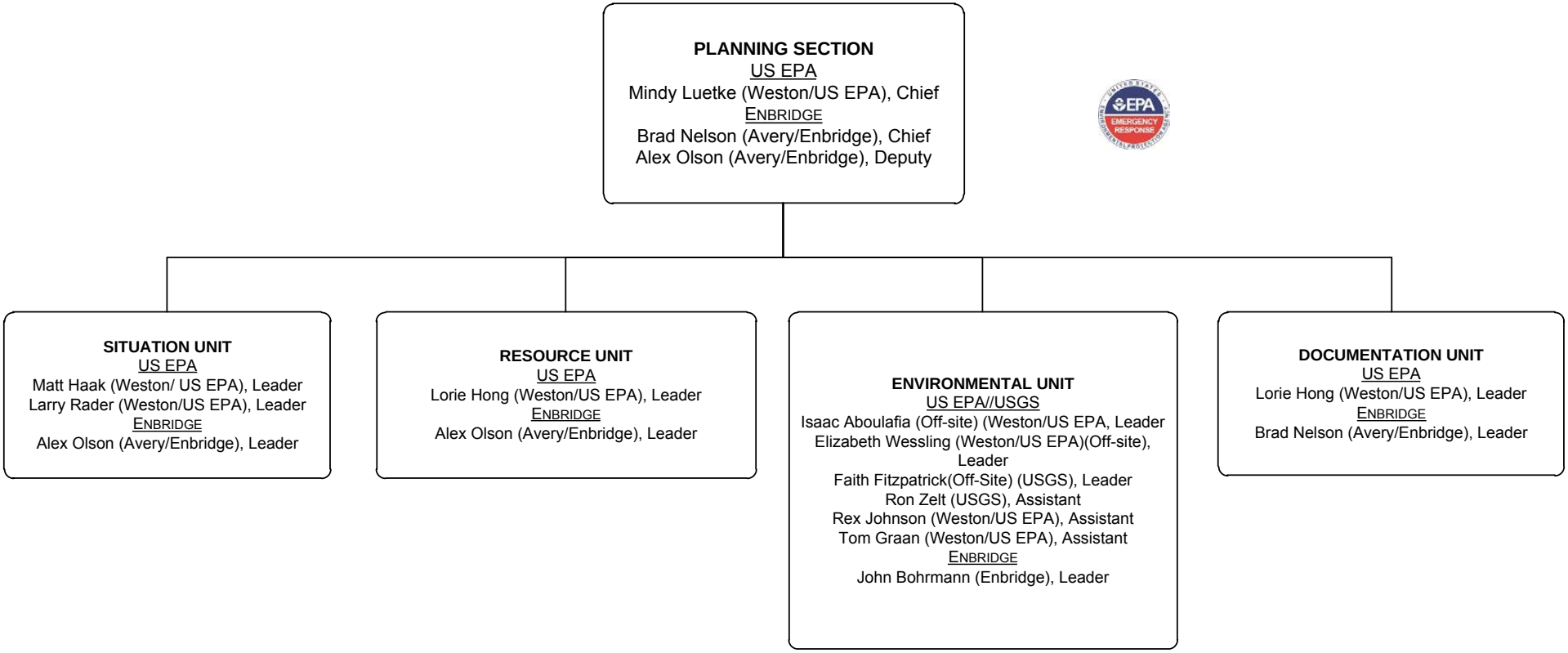


ICS 207
12/24 – 1/14/13



ENBRIDGE

ICS 207
12/24 – 1/14/13



ICS 207
12/24 – 1/14/13

1. Incident Name	2. Operational Period (Date/Time)	INCIDENT OBJECTIVES
Kalamazoo River/Enbridge Spill	From: December 24, 2012 @ 0700 To: January 14, 2013 @ 0700	**ICS 202-EPA**

3. Incident Objective(s)

1. Ensure health and safety of the public and response and recovery personnel.
2. Ensure absolute containment of submerged oil and oil-containing sediments within the Delta and the Fan of Morrow Lake.
3. Ensure effective transition of regulatory oversight from EPA to Michigan DEQ jurisdiction as appropriate.
4. Perform recovery and containment of oil from affected public and private areas of river and river system.
5. Perform remediation and restoration of affected public and private areas of river and river system.
6. Maintain effective communications with cooperating and assisting agencies, the public, including regular coordination with the Multi-Agency Coordination Group (MAC).
7. Provide protection of environmentally and culturally sensitive areas including wildlife and historic properties.
8. Collect, coordinate, manage and communicate environmental and public health data including maintenance of Joint Information Center function.

4. Operational Period Command Emphasis

1. Respond to and document emerging oil throughout the Kalamazoo River system.

5. Safety Objectives for the Operational Period

1. Emphasize safety awareness of changing work site conditions because of colder temperatures.
2. Provide annual safety orientation training to onsite response personnel.

6. Prepared by Planning Section Chief (Enbridge):	**Date/Time:**
Brad Nelson	12/20/2012 1435
8. Approved by Incident Commander (US EPA):	**Date/Time:**
Ralph Dollhopf	12/20/2012 1500
10. Approved by Incident Commander (Enbridge):	**Date/Time:**
John Sobojinski	12/20/2012 1440

1. Incident Name	2. Operational Period (Date/Time)	Assignment List
Kalamazoo River/Enbridge Spill Response	From: December 24, 2012, 0700 To: January 14, 2013, 0700	ICS 204- EPA
3. Branch Waste Management	**4. Division/Group/Staging**	

5. Operations Personnel

	Name	Affiliation	Contact # (s)
Operations Section Chief:	Dan Capone	Weston/US EPA	[redacted]
	Chris Lantinga, Deputy	Weston/US EPA	
	Jeff Lippert, Deputy	EPA	
	Dave Bareham	Enbridge	
	James Snider, Deputy	Enbridge	
Branch Director:	Dan Zahner	Weston/US EPA	
	John Wallace	Avery/Enbridge	

6. Resources Assigned

See Branch Directors			

7. Work Assignments

1. Field decon operations for: personnel, hand equipment, and boats for preparation of transport shall be installed prior to work beginning at boat launches / staging areas for individual work sites. *
2. Haul contaminated soil, water, media and debris to staging areas for waste characterization and oil recovery sampling prior to offsite disposal. *
3. Waste shall be collected as needed for direct haul to the landfill or transported to Frac Tank City (FTC) for consolidation with similar waste streams as necessary.*
4. Waste management characterization, manifesting, and coordination of transportation and disposal.*

*These activities are dependent on River and Weather safety conditions.

For US EPA/Weston:

1. Provide oversight of all waste management activities.
2. Ensure appropriate sampling, tracking and disposal is performed on oil impacted debris, water and soil.
3. Review manifests, weight tickets and bills of lading for correlation to waste stream analytical data.
4. Review weekly oil recovery.
5. Review biweekly waste disposal report.

8. Special Instructions

The Winter Stand Down will continue, report back to work Monday, January 7, 2013 or as directed by your supervisor. This stand down does not apply to the Sheen Management activities and 1 Situation Unit team. Sheen Management activities will continue during the Winter Stand Down. These activities include:

- Sheen Sweep Crews will remain on standby and ready for rapid response.
- Operations Section Chiefs will be on call and available to direct sheen response activities as needed.

Ensure all Best Management Practices (BMPs) are in place and utilized.

In accordance with the Fatigue Management Plan, all work permit activities will be completed no later than 1900.

SAFETY INSTRUCTIONS:
For vacuum truck operation guidelines, please refer the HASP.

At Frac Tank City:

- The following procedure shall be used for initial opening of hatch or rear doors of liquid vacuum trucks and hatches of vacuum excavation units:
  - Approach the hatch to be opened with a calibrated five gas monitor and a benzene monitor.
  - Personnel performing this task must wear a full face respirator with organic vapor cartridge.
  - Slightly open the hatch and take VOC, H2S, LEL, Oxygen, CO and benzene readings.
  - If readings are greater than 10 ppm H2S, 10% LEL, 25 ppm CO or 25 ppm benzene then personnel shall close the hatch and utilize SCBA prior to opening the hatch.
- Operations - Respiratory protection may be required depending on periodic monitoring results. Wear a half-mask respirator equipped with an organic vapor cartridge when 0.5 ppm benzene is detected. Wear a full-face respirator equipped with an organic vapor/acid gas cartridge when benzene is at 5 ppm to 25 ppm.

9. Communications (radio and/or phone contact numbers needed for this assignment)

Incident Command Safety Office: 269-753-9347

Emergency Communications: Use IAP Medical Plan/IAP Phone list. Dial 911 for Medical Emergency.

10. Prepared by	Date/Time	11. Reviewed by (PSC),	Date/Time	12. Reviewed by (OSC),	Date/Time
A. Olson, Avery/Enbridge	12/20/2012 1430	B. Nelson, Avery/Enbridge	12/20/2012 1435	D. Bareham, Enbridge	12/20/2012 1435

1. Incident Name	2. Operational Period (Date/Time)	Assignment List
Kalamazoo River/Enbridge Spill Response	From: December 24, 2012, 0700 To: January 14, 2013, 0700	ICS 204 - EPA
3. Branch Submerged Oil	**4. Division/Group/Staging**	

5. Operations Personnel

	Name	Affiliation	Contact # (s)
Operations Section Chief:	Dan Capone	Weston/US EPA	[redacted]
	Chris Lantinga, Deputy	Weston/US EPA	
	Jeff Lippert, Deputy	EPA	
	Dave Bareham	Enbridge	
	James Snider, Deputy	Enbridge	
Branch Director:	Dan Zahner	Weston/US EPA	
	Matt Sumner	AECOM/Enbridge	

6. Resources Assigned

Division Identifier	Leader	Contact Info. #	# of Persons
Submerged Oil Science	Faith Fitzpatrick Ron Zelt (Off Site) Dave Dryburgh (AECOM/Enbridge)	[redacted]	4 Weston/ US EPA 8 Contractors
Submerged Oil Compliance	Bob Doherty (Enbridge)		

7. Work Assignments

Submerged Oil Science

1. Conduct bathymetry on Phase I&II sediment traps.* (4 Teams)

*These activities are dependent on River and Weather safety conditions.

For US EPA/Weston:

1. Oversee and document Submerged Oil Science work activities.

Submerged Oil Compliance

1. Provide support as necessary.

8. Special Instructions

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- Sheen Sweep Crews will remain on standby and ready for rapid response.
- Operations Section Chiefs will be on call and available to direct sheen response activities as needed.

Rowe Island, MP 38.50 to MP 38.75, is a No Go Zone – Environmental Sensitive Area.

SAFETY INSTRUCTIONS:
All in water activities of workers in water depths over fifty percent (50%) of thigh height will require tethering. Please refer to the HASP for further instructions.

9. Communications (radio and/or phone contact numbers needed for this assignment)

Incident Command Safety Office: 269-753-9347

Emergency Communications: Use IAP Medical Plan/IAP Phone list. Dial 911 for Medical Emergency.

10. Prepared by	Date/Time	11. Reviewed by (PSC),	Date/Time	12. Reviewed by (OSC),	Date/Time
A. Olson, Avery/Enbridge	12/20/2012 1430	B. Nelson, Avery/Enbridge	12/20/2012 1435	D. Bareham/Enbridge	12/20/2012 1435

1. Incident Name	2. Operational Period (Date/Time)	Assignment List
Kalamazoo River/Enbridge Spill Response	From: December 24, 2012, 0700 To: January 14, 2013, 0700	ICS 204 - EPA
3. Branch Containment	**4. Division/Group/Staging**	

5. Operations Personnel

	Name	Affiliation	Contact # (s)
Operations Section Chief:	Dan Capone	Weston/US EPA	[redacted]
	Chris Lantinga, Deputy	Weston/US EPA	
	Jeff Lippert, Deputy	EPA	
	Dave Bareham	Enbridge	
	James Snider, Deputy	Enbridge	
Branch Director:	Rex Johnson	Weston/US EPA	
	Paul Kerpash	SWAT/Enbridge	

6. Resources Assigned

Division Identifier	Leader	Contact Info. #	# of Persons
Containment Compliance	Bob Doherty (Enbridge)	[redacted]	
Containment Recovery	Sonny Rutkowski (Weston/US EPA) Oliver Webb (SWAT/Enbridge)		1 Weston/US EPA 7 Contractors

7. Work Assignments

Containment Compliance

1. Provide support as necessary.

Containment Recovery

1. Perform containment strategies along the Kalamazoo River including the following tasks:
   a. Deploy and maintain shoreline containment boom as required.*
   b. Complete sheen management as required.*
2. Maintain Kalamazoo River Sediment Traps, including any cylindrical sampling devices.*

* These activities are dependent on River and Weather safety conditions.

For US EPA/Weston:

1. Oversee and document Containment Recovery activities.

8. Special Instructions

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- Sheen Sweep Crews will remain on standby and ready for rapid response.
- Operations Section Chiefs will be on call and available to direct sheen response activities as needed.

Rowe Island, MP 38.50-MP 38.75, is a No Go Zone – Environmental Sensitive Area.

9. Communications (radio and/or phone contact numbers needed for this assignment)

Incident Command Safety Office: 269-753-9347

Emergency Communications: Use IAP Medical Plan/IAP Phone list. Dial 911 for Medical Emergency.

10. Prepared by	Date/Time	11. Reviewed by (PSC),	Date/Time	12. Reviewed by (OSC),	Date/Time
A. Olson, Avery/Enbridge	12/20/2012 1430	B. Nelson, Avery/Enbridge	12/20/2012 1435	D. Bareham, Enbridge	12/20/2012 1435

1. Incident Name	2. Operational Period (Date/Time)	Assignment List ICS 204 - EPA
Kalamazoo River/Enbridge Spill Response	From: December 24, 2012, 0700 To: January 14, 2013, 0700	
3. Branch	**4. Division/Group/Staging**	
Planning Section		

5. Operations Personnel

	Name	Affiliation	Contact # (s)
Planning Section Chief:	Mindy Luetke Brad Nelson Alex Olson, Deputy	Weston/US EPA Avery/Enbridge Avery/Enbridge	[redacted]

6. Resources Assigned

Division Identifier	Leader	Contact Info. #	# of Persons
Situation Unit	Matt Haak (Weston/ US EPA) Larry Rader (Weston/ US EPA) Alex Olson (Avery/Enbridge)	[redacted]	1 Weston/EPA 1 Contractor
Resource Unit	Lorie Hong (Weston/US EPA) Alex Olson (Avery/Enbridge), Assistant		1 Contractor
Environmental Unit	Isaac Aboulafia (Weston/US EPA) (Off-site) Elizabeth Wessling (Weston/US EPA)(Off-site Faith Fitzpatrick (USGS) (Off-site) Ron Zelt (USGS), Assistant Rex Johnson (Weston/US EPA), Assistant Tom Graan (Weston/US EPA) , Assistant John Bohrmann (Enbridge)		2 Contractors
Documentation Unit	Lorie Hong (Weston/EPA) Brad Nelson (Avery/Enbridge)		1 Contractors

7. Work Assignments

Situation Unit:

1. Record and document sheen observations in main channel and overbank areas, and conduct sheen testing, if necessary. Report sheen observations back to operations section chiefs for monitoring and response.
2. Conduct weekly overflights; photo-document areas of sheen from source area to Morrow Lake dam and report observations back to operations section chiefs for monitoring and response. Additional flights will be scheduled as needed.
3. Organize field metrics, prepare for and facilitate presentations, and monitor action tracking. Maintain situational awareness around operational activities and plan for operational needs.

For US EPA/Weston:

1. Maintain situational awareness around operational activities.
2. Communicate observations to the Operations Section Chief.
3. Provide daily situational photo log summaries.
4. Conduct daily monitoring of river conditions, recording observations of sheen and/or oil.
5. Record and document sheen observations in main channel and overbank areas, and conduct sheen testing, if necessary. Report sheen observations back to operations section chiefs for monitoring and response.

Resource Unit:

1. Produce an Incident Action Plan as required by the Incident Commanders.
2. Support the planning efforts of operations and provide information to Logistics in order to properly prepare and order resources.

Environmental Unit:

1. Conduct strategic assessment, modeling, and environmental monitoring.
2. Review sheen tracking information from the field.
3. Continue submerged oil quantification for Spring 2012.

For US EPA/Weston:

1. Continue to coordinate efforts to calculate the quantity of submerged oil remaining as of Spring 2012.
2. Continue supporting the evaluation of the hydrogeomorphology of the Kalamazoo River, the Morrow Lake

Delta, and Morrow Lake.
3. Interface with Enbridge and assist with the refinement of surface and subsurface containment strategies throughout the Kalamazoo River system to prevent the continued migration of oil, oil sheen, submerged oil, and oil-containing sediments into Morrow Lake.

Documentation Unit:

1. Maintain accurate, up-to-date incident files.
2. Store files for post-incident use.

8. Special Instructions

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- Sheen Sweep Crews will remain on standby and ready for rapid response.
- Operations Section Chiefs will be on call and available to direct sheen response activities as needed.

SAFETY INSTRUCTIONS:

Hexane is flammable and may be harmful in contact with skin. When handling hexane and sheen test samples containing hexane, wear approved safety glasses, disposable nitrile gloves and keep away from ignition sources. Properly dispose of sheen test samples containing hexane.

9. Communications (radio and/or phone contact numbers needed for this assignment)

Incident Command Safety Office: 269-753-9347

Emergency Communications: Use IAP Medical Plan/IAP Phone list. Dial 911 for Medical Emergency.

10. Prepared by	Date/Time	11. Reviewed by (PSC),	Date/Time	12. Reviewed by (OSC),	Date/Time
A. Olson, Avery/Enbridge	12/20/2012 1430	B. Nelson, Avery/Enbridge	12/20/2012 1435	D. Bareham, Enbridge	12/20/2012 1435

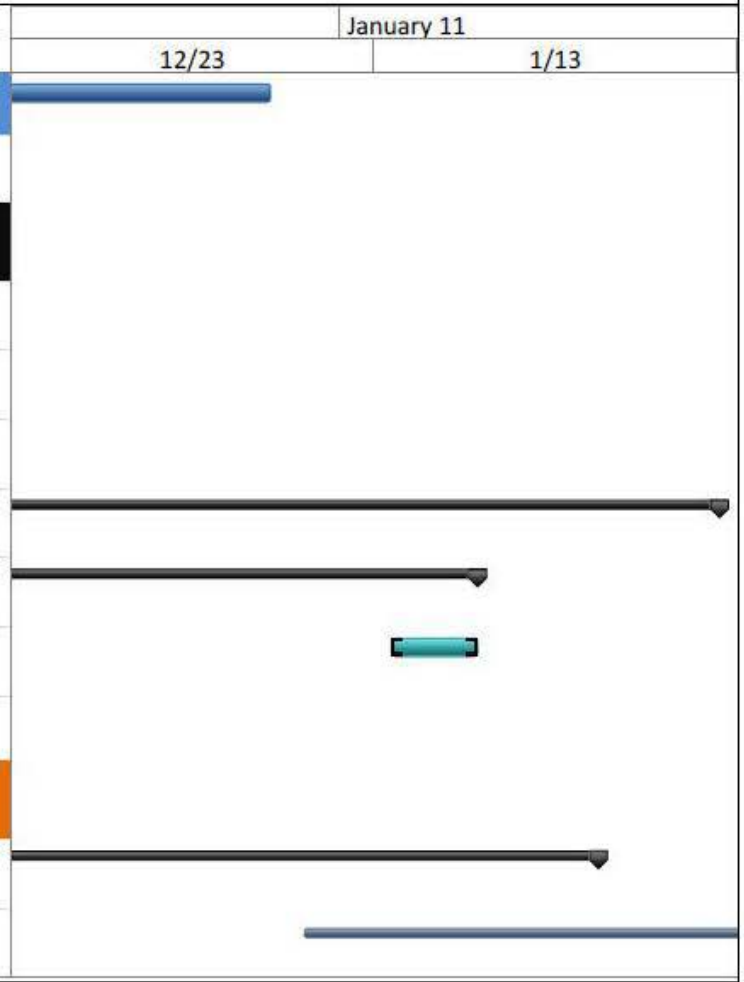
NAME	PHONE NUMBER	EMAIL ADDRESS	AGENCY / AFFILIATION	POSITION
Enbridge and Contractors				
Enbridge Marshall Office: 333 South Kalamazoo Ave Marshall MI 49068				
Adams, Rich		[redacted]	Enbridge	Operations
Albig, Brian			AECOM/Enbridge	Environment
Bareham, Dave			Enbridge	Environment
Bohrmann, John			Enbridge	Environment
Bretz, Ryan			Manpower/Enbridge	IT
Cox, Renee			Manpower/Enbridge	Documentation
Dekker, Shaun			SET/Enbridge	Waste Management
Dennis, Kate			Manpower/Enbridge	Admin Support
Doherty, Bob			Enbridge	Environment
Dryburgh, Dave			AECOM/Enbridge	Environment
Dzuck, Diane			Enbridge	Contracts
Eversole, Elijah			AECOM/Enbridge	Containment
Fuller, Mark			AECOM/Enbridge	Environment
Gross, Dale			Superior/Enbridge	Safety Officer
Hehir, Nate			Superior/Enbridge	Environment
Hummel, Rebecca			Manpower/Enbridge	Finance
Kaiser, Ken			AECOM/Enbridge	GIS Specialist
Kerpash, Paul			SWAT/Enbridge	Control Point Management
Manshum, Jason			Enbridge	Public Affairs
McKay, John			Enbridge	ROW
Nelson, Brad			Avery/Enbridge	Planning
Neumeier, Laura			Trimedia/Enbridge	Air Monitoring
Olson, Alex			Avery/Enbridge	Planning
Periard, Debora			AECOM/Enbridge	GIS Support
Pesses, David			LBG/Enbridge	Environmental Inspector
Pratt, Catherine			AECOM/Enbridge	Environment
Sahara, Dean			SWAT/Enbridge	Operations
Saylor, Andy			SET/Enbridge	
Schoeff, Alison			AECOM/Enbridge	Water Monitoring Supervisor
Smith, Brian			Tulsa/ Enbridge	Project Controls
Snider, Jim			Enbridge	Environment Director
Sobojinski, John			Enbridge	Incident Commander
Standen, Joe			LBG/Enbridge	
Stiemsma, Bryan			AECOM/Enbridge	Environment Supervisor
Corrine Sullivan			Enbridge	ROW
Sumner, Matt			AECOM/Enbridge	Environment
Wallace, John			Avery/Enbridge	Logistics / Facilities
Webb, Oliver			SWAT/Enbridge	Control Point Management
Wekseth, Mike			SWAT/Enbridge	Operations Inspector
Wiswell, Amber			Kelly Services/Enbridge	Admin. Assistant
Wolf, Mike			AECOM/Enbridge	Monitoring
Yokom, Brett			Trimedia/Enbridge	Environment
Zambetis, Mike			Cardno JFNEW/Enbridge	Restoration

NAME	PHONE NUMBER	EMAIL ADDRESS	AGENCY / AFFILIATION	POSITION
Michigan DEQ and Contractors DEQ Field Office: 13444 Preston Drive Marshall MI 49068				
Alexander, Mike	[redacted]		DEQ	Environmental Unit
Brettmann, Gregg			DEQ	Environmental Unit Leader
Brown , Kevin			Weston/DEQ	GIS Support
Churchill, Kim			Weston/DEQ	Environmental Unit
DelloRusso, Vincent			Weston/DEQ	Operations
DeLong, Michelle			DEQ	Incident Commander
DuCharme, Mark			DEQ	Planning Section Chief
Fizzell, Chad			DEQ	GIS Support
Giles-Smith, Carolyn			Weston/DEQ	Documentation
Jones, Susan			DEQ	Operations
Laskey, Crystal			DEQ	Planning
Lisabeth, Nicole			MSP	PIO
Noble, Steve			DEQ	Water Resources Division
Sarkipato, Ernie			DEQ	Environmental Unit
Schmitt, Ben			DEQ	Operations
Spruit, Jeff			DEQ	Environment
Taft, Bill			DEQ	Wildlife Environmental NRDA Group
Thompson, Doug			DEQ	Operations
Wurfel, Brad			DEQ	Public Information
Zacharda, Nicole			DEQ	NRDA and Compliance
US Agencies and Contractors EPA Field Office: 13444 Preston Drive Marshall MI 49068				
Aboulafia, Isaac	[redacted]		START/US EPA	Planning
Berecz, Karen			START/US EPA	O & M
Blanchard, Mark			START/US EPA	
Capone, Dan			START/US EPA	Operations
Deblasio, Don			US EPA	Public Information
Dollhopf, Ralph			US EPA	Incident Commander (FOSC)
Fitzpatrick, Faith			USGS	Tech Specialist
Good, Gena			START/US EPA	
Graan, Tom			START/US EPA	Submerged Oil Lead
Haak, Matt			START/US EPA	Sit Unit Leader
Hackley, Richard			US EPA	Finance
Hendrix, Kristen			START/US EPA	Operations
Hoard, Chris			USGS	USGS
Hong, Lorie			START/US EPA	Logistics
Johnson, Rex			START/US EPA	Operations
Kidder, Steven			START/US EPA	Operations SOS
Kirby-Miles, Leslie			US EPA	Legal
Lantinga, Chris			START/US EPA	Operations
Laquerre, Tim			START/US EPA	Operations
Luetke, Mindy			START/US EPA	PSC
Mehl, Rick			START/US EPA	
Moisan, Paul			START/US EPA	Documentation
Muccianti, Marcus			START/US EPA	Operationsp
Pierce, Brennan			START/US EPA	Documentation
Rader, Larry			START/US EPA	Sit Unit Leader
Ross, Shauna			START/US EPA	
Roubik, Jonathan			START/US EPA	Operations
Rutkowski, Sonny			START/US EPA	Technical Specialist
Thierry, Mike			START/US EPA	Operations
Torres, Jason			START/US EPA	GIS Specialist
Valenza, James			START/US EPA	GIS Specialist
Wahrer, Marc			START/US EPA	Operations
Wellman, John			START/US EPA	Operations
Wessling, Elizabeth			START/US EPA	PSC
Williams, Lisa			USFWS	
Zahner, Dan			START/US EPA	Operations
Zelt, Ron			USGS	Environmental Unit Leader Assistant
Local Agencies / MAC members				
Baker, Paul	[redacted]		Kalamazoo OEM	MAC
Cardiff, Deb			Kalamazoo County - Env Health	MAC
Corbin, Scott			Allegan County Emerg Mgmt	MAC
Dunham, Durk			Calhoun County EMA	MAC
Dykema, Linda			Mich Dept of Community Health	MAC
Frost, Joe			Calhoun County Health	MAC
Kosmowski, Christine			City of Battle Creek	MAC
Makoski, Paul			Calhoun County Health	MAC
McKenzie, Michael			Battle Creek Emer. Srvs.	MAC
Quiggle, Lisa			MDCH	MAC
Reber, Lt. Barry			MSP EMHSD	MAC
Rutherford, James			Calhoun County Health	MAC
Schneider, Dave			Kalamazoo County	MAC
Vail, Linda			Kalamazoo County Health	MAC
Vosburg, Cheryl			City of Marshall	MAC

Line 6B Remediation
Marshall Michigan

Project Schedule

ID	Task Name	Start	Finish
1	Holiday Shutdown	Sat 12/22/12	Sun 1/6/13
2			
3	***FIELD ACTIVITIES***		
4	**Removal of all Buoys**	TBD	TBD
5	**Removal of the boom at Ceresco**	TBD	TBD
6	**Removal of CSDs**	TBD	TBD
7	**Bathymetry - Sediment Trap and E4**	**Mon 12/10/12**	**Fri 2/1/13**
14	**Sediment Trap Sampling**	**Mon 12/10/12**	**Fri 1/18/13**
17	**Morrow Lake Monitoring**	Mon 1/14/13	Fri 1/18/13
18			
19	***OTHER ACTIVITIES***		
20	**Quantification of Oil**	**Mon 7/16/12**	**Fri 1/25/13**
31	**Air Operations**		



Project: Project Schedule 9-24
Date: Wed 12/19/12

Task		External Milestone		Manual Summary Rollup	
Split		Inactive Task		Manual Summary	
Milestone		Inactive Milestone		Start-only	
Summary		Inactive Summary		Finish-only	
Project Summary		Manual Task		Deadline	
External Tasks		Duration-only		Progress	

TRAFFIC PLAN: C 5



[redacted] Battle Creek, MI 49014

GPS Coordinates Lat: 42.304905 Long: -85.183463

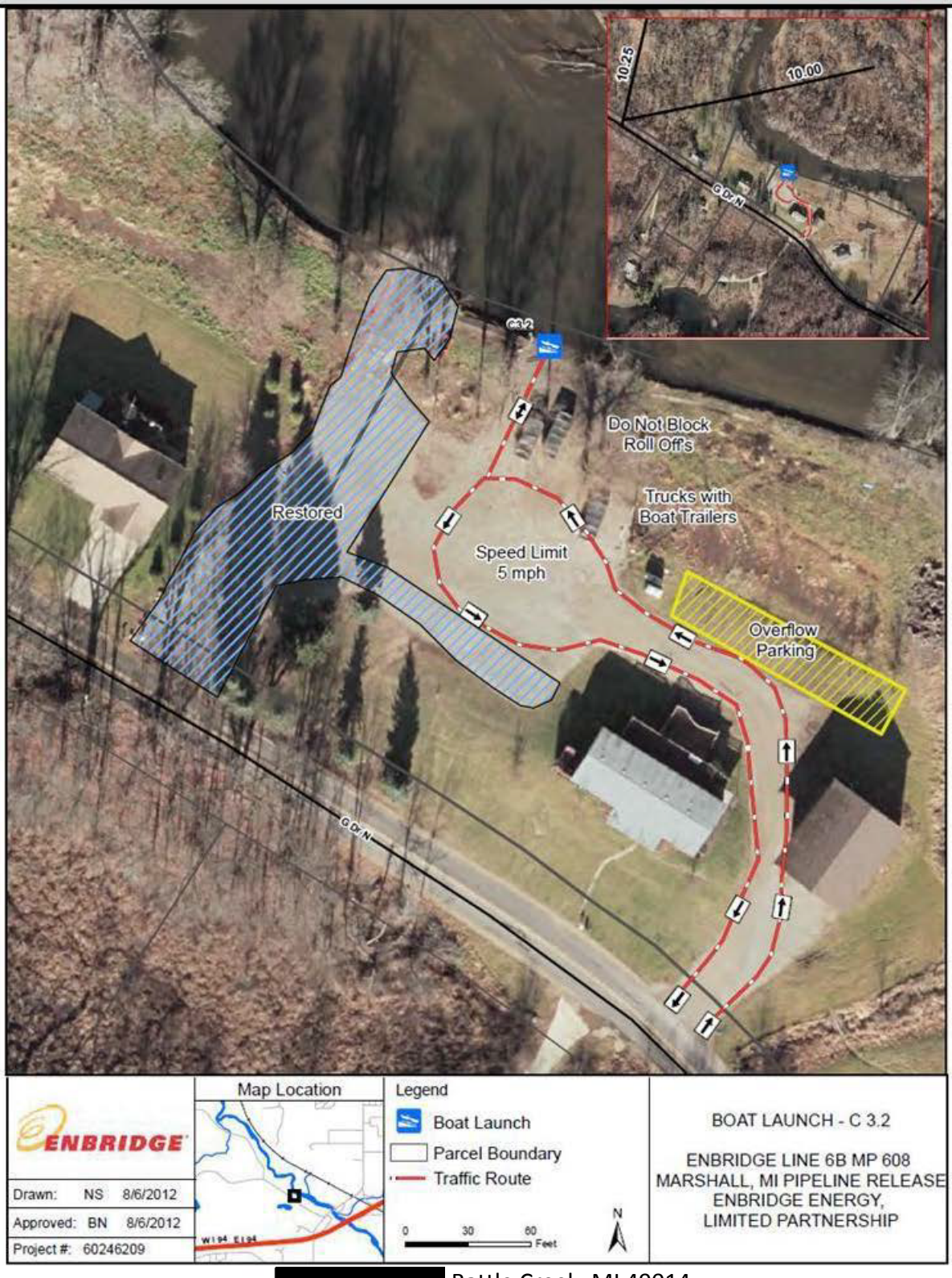
TRAFFIC PLAN: C 0.4



[redacted] Ceresco, MI 49033

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TRAFFIC PLAN: C 3.2



[redacted] Battle Creek, MI 49014

GPS Coordinates: Lat: 42.293492 Long: -85.124479

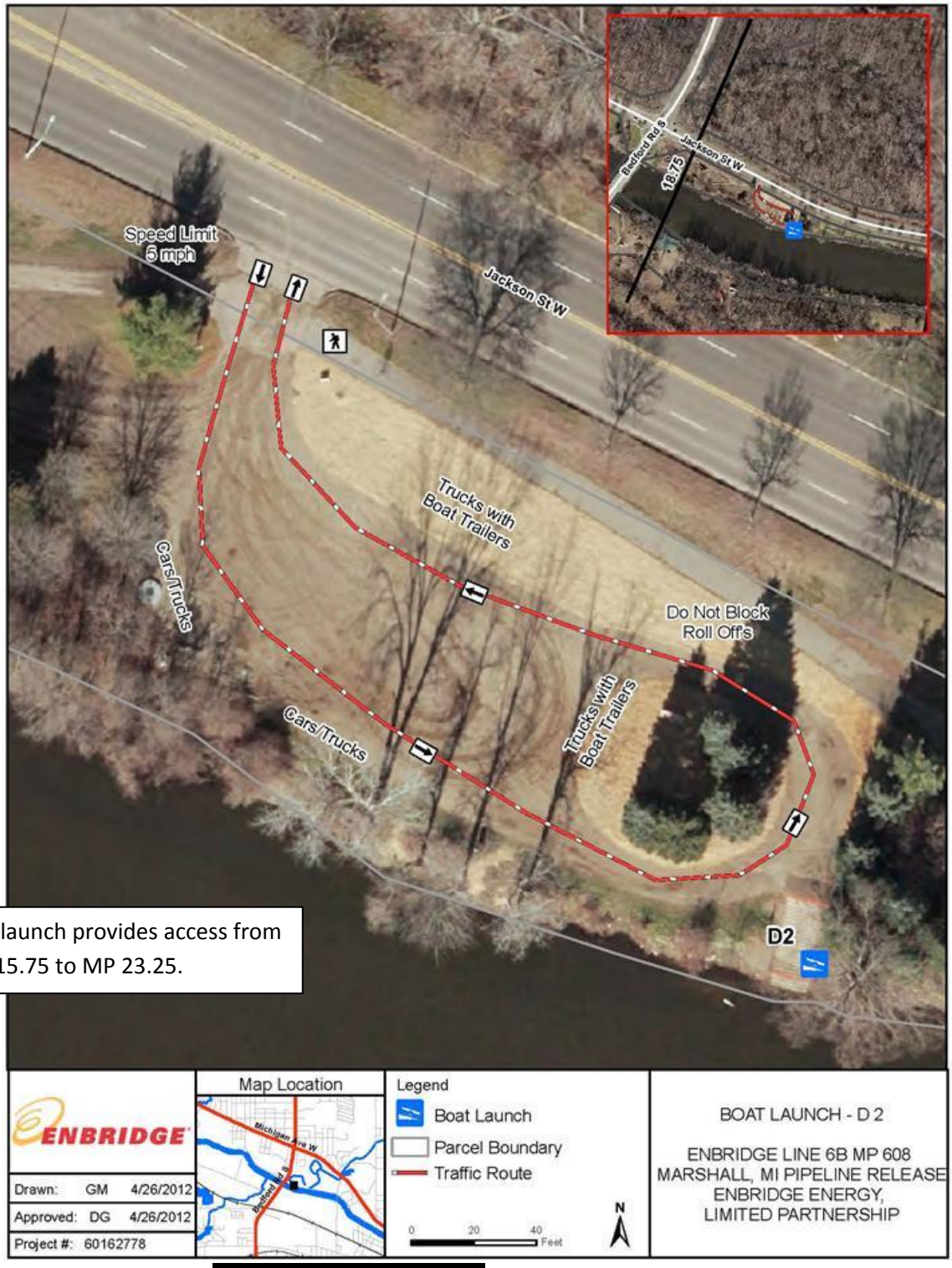
TRAFFIC PLAN: Wildlife Center



[redacted]Battle Creek, MI 49014

GPS Coordinates: Lat: 42.292173, Long: -85.123578

TRAFFIC PLAN: D2



This launch provides access from MP 15.75 to MP 23.25.

[redacted] Battle Creek, MI 49037

GPS Coordinates: Lat: 42.338427 Long:-85.232309

TRAFFIC PLAN: E 0.5



(Shady Bend Camp Ground), 15320 East Augusta Dr, Augusta, MI 49012
GPS Coordinates:Lat: 42.347408 Long: -85.3295

TRAFFIC PLAN: E 2



[redacted]Augusta, MI 49053

GPS Coordinates: Lat: 42.32412 Long: -85.358041

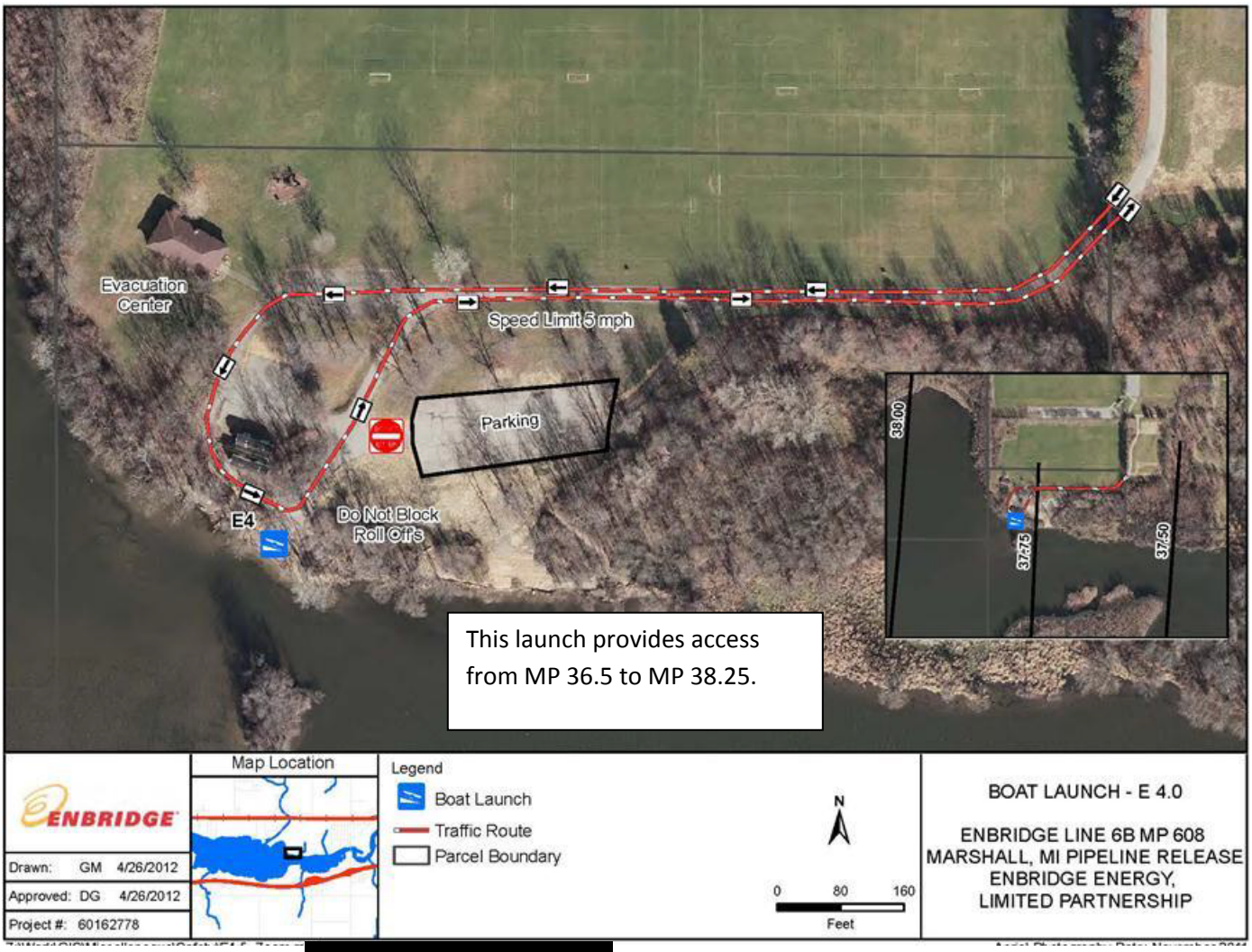
TRAFFIC PLAN: E 3



[redacted] Galesburg, MI 49053

GPS Coordinates: Lat: 42.284663 Long: -85.412855

TRAFFIC PLAN: E 4



[redacted] Galesburg, MI 49053

GPS Coordinates: Lat: 42.278265 Long: -85.452295

MEDICAL PLAN

Transportation			
Ambulance Services			
Name	Address	Phone	Paramedics Yes / No
Lifecare Ambulance	330 West Hamblin Avenue, Battle Creek, MI 49015	9-1-1	X /
City of Marshall Fire Dept	323 West Michigan Avenue, Marshall, MI 49068	9-1-1	X /

Hospitals

Name	Address	Travel Time Air	Travel Time Ground	Phone	Helipad Yes	Helipad No	Burn Center Yes	Burn Center No
Bronson Methodist Hospital	601 John Street Kalamazoo, MI	15 Min	50 min	269-341-7654	X		X	
Borgess Medical Center	1521 Gull Road Kalamazoo, MI	15 min	50 min	269-226-7000	X			X
Oaklawn Hospital	200 N. Madison Ave Marshall, MI		5 min	269-781-4271		X		X
Battle Creek Health System	300 North Avenue Battle Creek, MI		20 min	269-966-8000		X		X

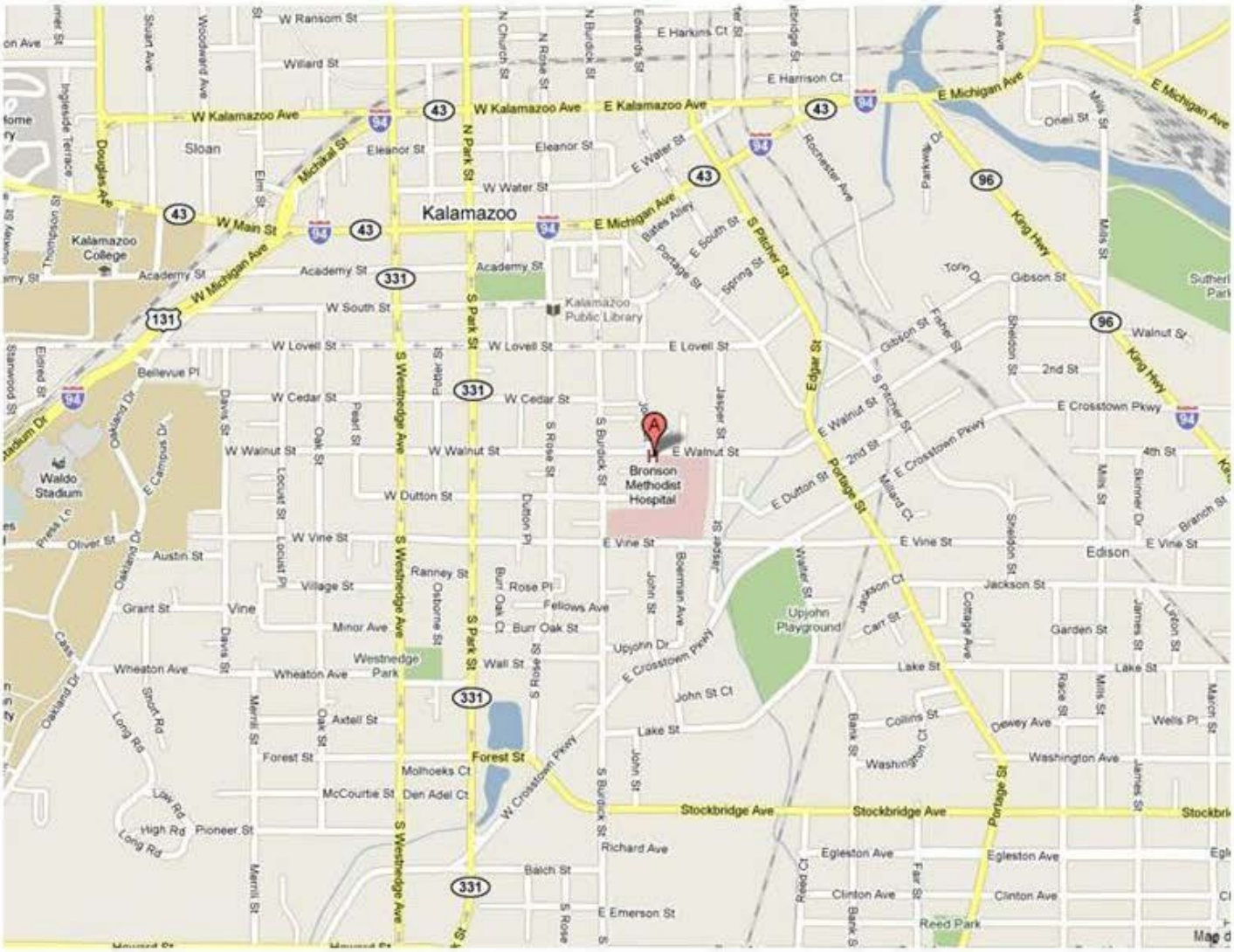
Medical Emergency Procedures

1. Dial 9-1-1 for all emergencies. Give 9-1-1 operators as much information as possible. Stay on the line and answer all questions – information may be radioed to responders. On-site personnel trained and certified in first aid should attempt to stabilize victim until fire department/EMS personnel arrive.
2. Report all incidents to the Project Safety Officer. Keep a log of events. Secure the area. Identify witnesses for later investigation.

NOTE: Suspend all operations during an actual emergency situation!

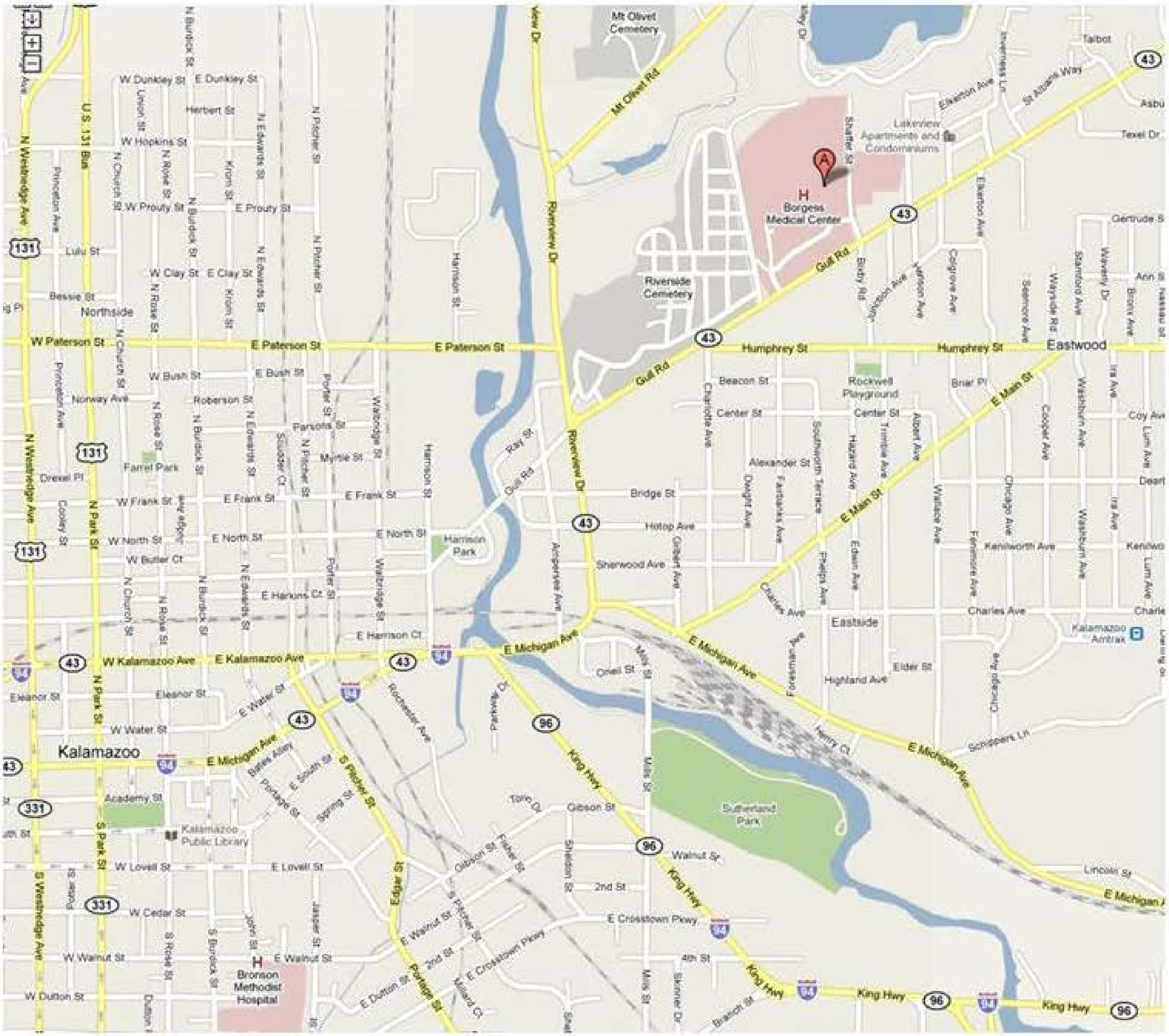
Prepared by	Reviewed by (Safety Officer)
Dale Gross 10/31/2012	Dale Gross 10/31/2012

Hospital Route Map – Bronson Methodist Hospital – Kalamazoo, MI



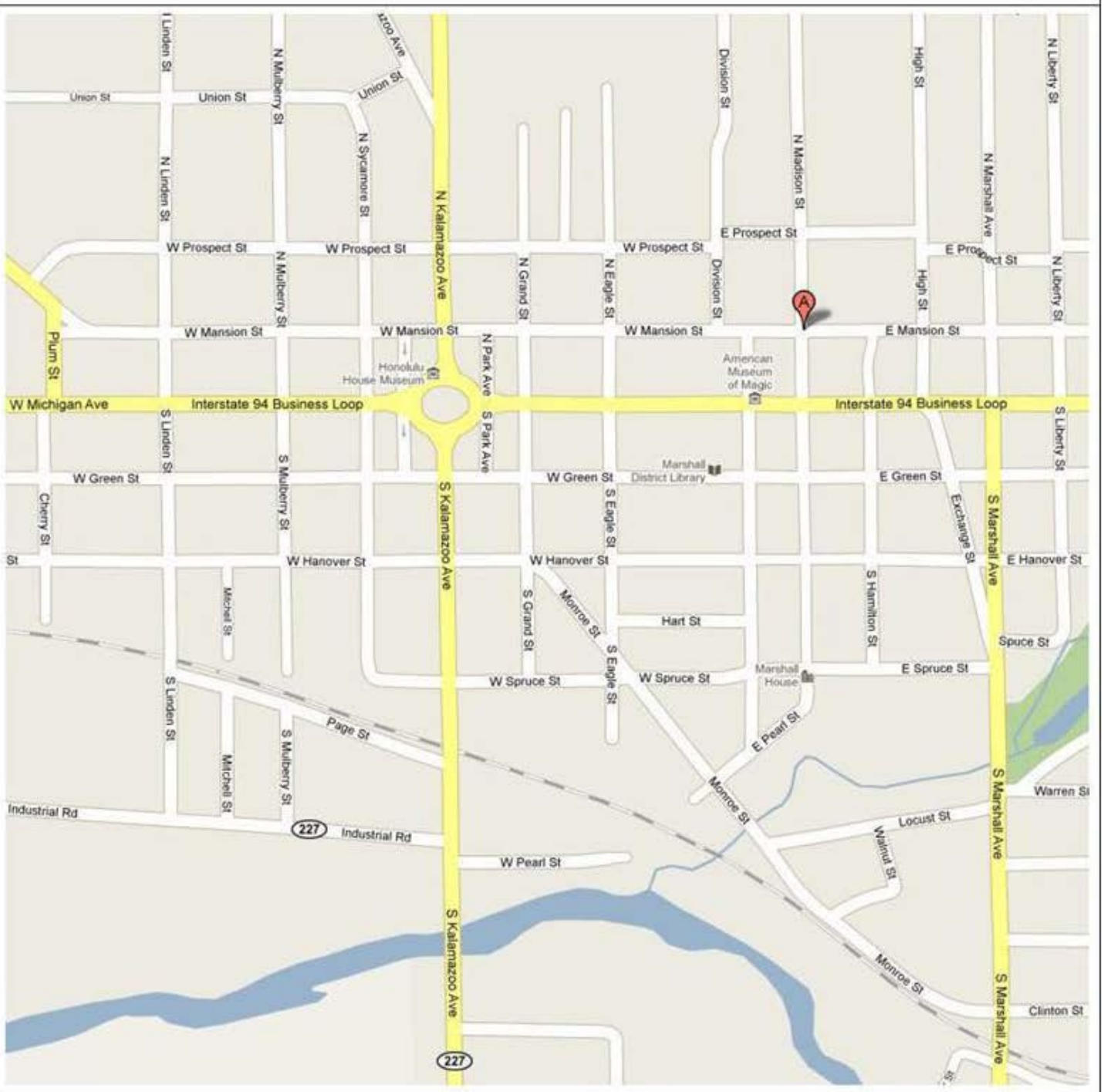
Bronson Methodist Hospital
601 John St
Kalamazoo, MI 49007
(269) 341 - 7979

Hospital Route Map – Borgess Medical Center – Kalamazoo, MI



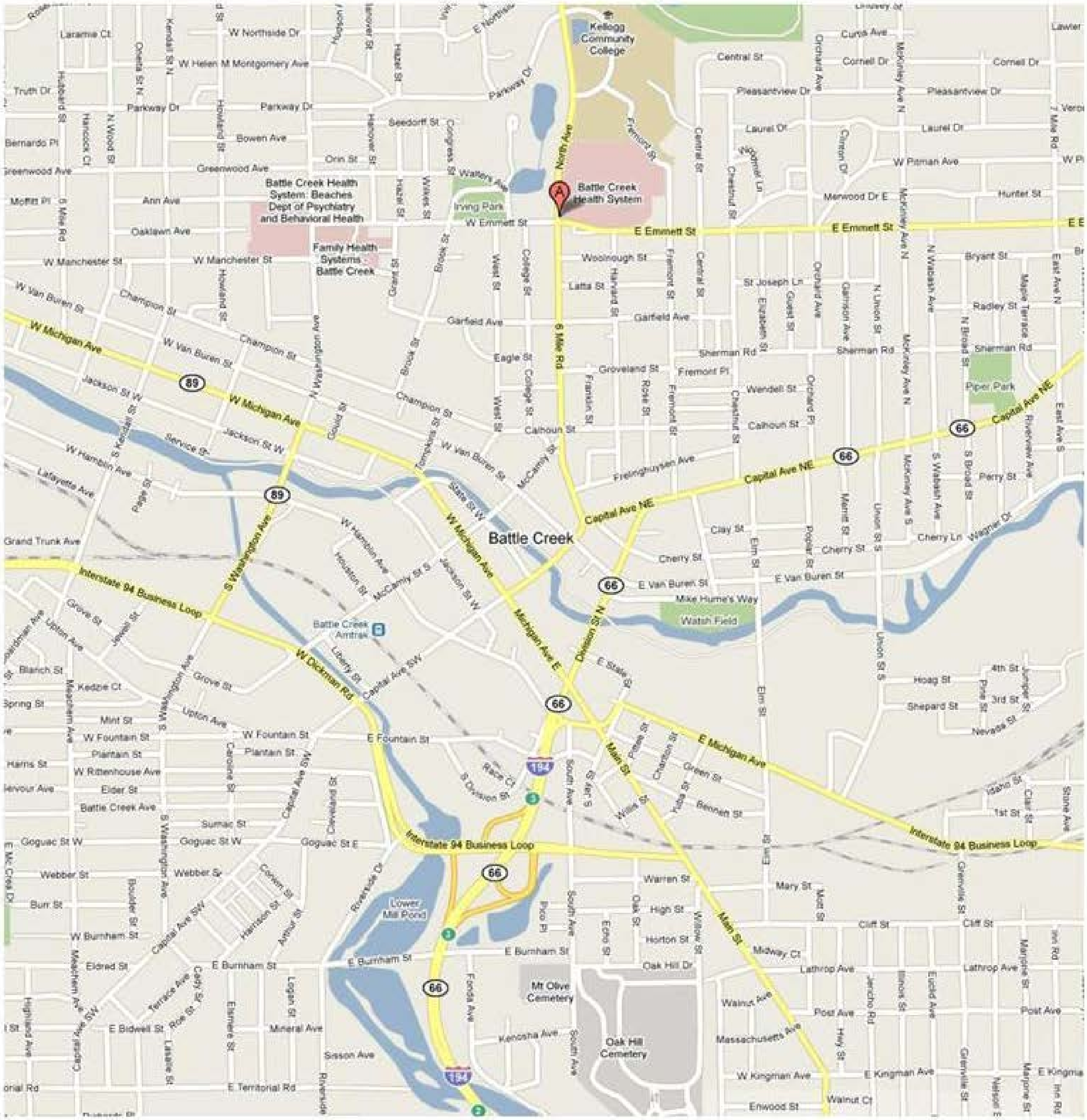
Borgess Medical Center
1521 Gull Road
Kalamazoo, MI 49048
(269) 226 - 7000

Hospital Route Map – Oaklawn Hospital – Marshall, MI



Oaklawn Hospital
200 North Madison St.
Marshall, MI
(269) 781-4271

Hospital Route Map – Battle Creek Health System – Battle Creek, MI



Battle Creek Health System
300 North Avenue
Battle Creek, MI
(269) 966-8000

Line 6B Remediation
Marshall Michigan

PROJECT CALENDAR

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Dec 16 - Dec 22	**12/16**	**12/17** 0900 Tactics	**12/18**	**12/19**	**12/20** 1300 Consolidated ICS	**12/21** 0700 IAP Brief to field (12/24-1/14) 1100-1300 Forensic Chem	**12/22** Demob (travel day)
Dec 23 - Dec 2	**12/23**	**12/24** Christmas Eve	**12/25** Christmas Day	**12/26**	**12/27**	**12/28**	**12/29**
Dec 30 - Jan 5 2013	**12/30**	**12/31** New Year's Eve	**1/1** New Year's Day	**1/2**	**1/3**	**1/4**	**1/5**
Dec 30 - Jan 5	**1/6** Remob (travel day)	**1/7** 1000 Objectives / Tactics	**1/8**	**1/9** 1500 Consolidated ICS	**1/10** 1100-1300 Forensic Chem	**1/11**	**1/12**
Jan 13 - Jan 19	**1/13**	**1/14** 0700 IAP Brief to field (1/14-1/28)	**1/15**	**1/16** 1500 UC Ops Brief	**1/17** 1100-1300 Forensic Chem	**1/18**	**1/19**

Color Code Key: ICS/Project Science/Focus Special Stand-down/holiday

Enbridge Line 6B MP 608 Pipeline Release

Marshall, Michigan

Appendix A

Planning Resources

Work Orders

Prepared for U.S. EPA and MDEQ

Enbridge Energy, Limited Partnership

Submitted: January 23, 2013

Weekly Work Orders

Line6b Remediation - Marshall MI

Tuesday November 27, 2012
thru
Friday November 30, 2012

Submerged Oil Branch

Team 1	Survey Control Points around the Sediment Traps		
Meeting Location	0700 at C3.2 Building	**Starting Field Area**	TBD
Start Date	11/27/2012	**Field Work Start Time**	0700
End Date	11/30/2012	**Field Work Stop Time**	1900
Work Site Name	Marshall, Line 6B Response	**Field Team Lead**	Ted Reckers
Task Lead	Matt Sumner		

Description of Work:
The survey team will install control points and backsite control points around the Phase I & II Sediment Traps.

Submerged Oil Branch

Teams 2 & 3	Phase I & II Sediment Trap Bathymetry		
Meeting Location	0700 at C3.2 Building	**Starting Field Area**	TBD
Start Date	11/27/2012	**Field Work Start Time**	0700
End Date	11/30/2012	**Field Work Stop Time**	1900
Work Site Name	Marshall, Line 6B Response	**Field Team Lead**	Amber McDougle Eric Celebreeze
Task Lead	Matt Sumner		

Description of Work:
The team will collect bathymetry measurements at Phase I & II Sediment Traps.

Submerged Oil Branch

Teams 4 & 5	Quantification Logging and Sampling		
Meeting Location	0700 at C3.2 Building	**Starting Field Area**	C3.2 Building
Start Date	11/27/2012	**Field Work Start Time**	0700
End Date	11/30/2012	**Field Work Stop Time**	1900
Work Site Name	Marshall, Line 6B Response	**Field Team Lead**	Reed Rector Jerry Kraemer
Task Lead	Matt Sumner		

Description of Work:
Photograph, log and sample the remaining Quantification cores. There will be two logging and sampling teams.

Weekly Work Orders

Line6b Remediation - Marshall MI

Monday December 3, 2012
thru
Friday December 7, 2012

Submerged Oil Branch

Teams 1, 2, 3 & 4	Phase I & II Sediment Trap Bathymetry		
Meeting Location	0700 at C3.2 Building	**Starting Field Area**	TBD
Start Date	12/3/2012	**Field Work Start Time**	0700
End Date	12/7/2012	**Field Work Stop Time**	1900
Work Site Name	Marshall, Line 6B Response	**Field Team Leads**	Amber McDougle Eric Celebreeze Luke Hodges Chad Khodl
Task Lead	Matt Sumner		

Description of Work:
The team will collect bathymetry measurements at Phase I & II Sediment Traps.

Submerged Oil Branch

Teams 5	Morrow Lake Monitoring		
Meeting Location	0700 at C3.2 Building	**Starting Field Area**	E4 Boat Launch
Start Date	12/3/2012	**Field Work Start Time**	0700
End Date	12/7/2012	**Field Work Stop Time**	1900
Work Site Name	Marshall, Line 6B Response	**Field Team Leads**	Russell Platte
Task Lead	Matt Sumner		

Description of Work:
Collect poling data from the fixed locations in Morrow Lake Delta and Morrow Lake.

Kalamazoo River Branch System

Team 6	Remedial Investigation		
Meeting Location	0700 at C3.2 Building	**Starting Field Area**	C3.2 Building
Start Date	12/3/2012	**Field Work Start Time**	0700
End Date	12/7/2012	**Field Work Stop Time**	1900
Work Site Name	Marshall, Line 6B Response	**Field Team Lead**	Reed Rector
Task Lead	Matt Sumner		

Description of Work:
Photograph, log, and sample cores collected for the remedial investigation.

Kalamazoo River Branch System

Team 7	Potable Sampling		
Meeting Location	0800 at C3.2 Building	**Starting Field Area**	C3.2 Building
Start Date	12/3/2012	**Field Work Start Time**	0800
End Date	12/7/2012	**Field Work Stop Time**	1900
Work Site Name	Marshall, Line 6B Response	**Field Team Lead**	Jon Carveth
Task Lead	Alison Schoeff		

Description of Work:
Collect potable samples.

Enbridge Line 6B MP 608 Pipeline Release

Marshall, Michigan

Appendix B

Potable Water Monitoring Activities

Analytical Data Reports

Prepared for U.S. EPA and MDEQ

Enbridge Energy, Limited Partnership

Submitted: January 23, 2013

12-Dec-2012

Alison Schoeff
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall Potable Water 12/3/12** Work Order: **1212172**

Dear Alison,

ALS Environmental received 11 samples on 05-Dec-2012 08:00 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 32.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

Certificate No: MN331938

ALS Group USA, Corp

Date: 12-Dec-12

Client: AECOM Environment
Project: Marshall Potable Water 12/3/12
Work Order: **1212172**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1212172-01	WPE12031030JTC1B	Potable Water		12/3/2012 10:30	12/5/2012 08:00	☐
1212172-02	WPE12031255JTC1B	Potable Water		12/3/2012 12:55	12/5/2012 08:00	☐
1212172-03	WPE12031057JTC1B	Potable Water		12/3/2012 10:57	12/5/2012 08:00	☐
1212172-04	WPE12031154JTC1B	Potable Water		12/3/2012 11:54	12/5/2012 08:00	☐
1212172-05	WPE12031425JTC1B	Potable Water		12/3/2012 14:25	12/5/2012 08:00	☐
1212172-06	WPE12031453JTC1B	Potable Water		12/3/2012 14:53	12/5/2012 08:00	☐
1212172-07	WPE12031334JTC1B	Potable Water		12/3/2012 13:34	12/5/2012 08:00	☐
1212172-08	WPE12031608JTC1B	Potable Water		12/3/2012 16:08	12/5/2012 08:00	☐
1212172-09	WPE12031405JTC1B	Potable Water		12/3/2012 14:05	12/5/2012 08:00	☐
1212172-10	WPE12031334JTC2B	Potable Water		12/3/2012 13:34	12/5/2012 08:00	☐
1212172-11	TB120312JTC5	Water		12/3/2012	12/5/2012 08:00	☐

ALS Group USA, Corp

Date: 12-Dec-12

Client: AECOM Environment
Project: Marshall Potable Water 12/3/12
Work Order: 1212172

Case Narrative

Batch 45283 MS/MSD data for Mercury is not related to this project's samples. No data requires qualification.

Batch R113652 MS/MSD data for Volatiles is not related to this project's samples. No data requires qualification.

ALS Group USA, Corp

Date: 12-Dec-12

Client: AECOM Environment
Project: Marshall Potable Water 12/3/12
WorkOrder: **1212172**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
SD	Serial Dilution
TDL	Target Detection Limit

Units Reported	Description
µg/L	Micrograms per Liter
mg/L	Milligrams per Liter

ALS Group USA, Corp

Date: *12-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPE12031030JTC1B
Work Order:	1212172	**Collection Date:**	12/3/2012 10:30:00 AM
Project:	Marshall Potable Water 12/3/12		
Lab ID:	1212172-01	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/7/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/7/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/6/2012**		Analyst: **RH**
Beryllium	ND	0.0016	0.0010		mg/L	2	12/10/2012
Iron	ND	0.20	0.20		mg/L	1	12/7/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/7/2012
Nickel	ND	0.020	0.020		mg/L	1	12/7/2012
Titanium	ND	0.0050	0		mg/L	1	12/7/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/7/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/7/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/10/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*107*	*70-125*			*%REC*	1	12/10/2012
Surr: Perylene-d12	*72.6*	*46-142*			*%REC*	1	12/10/2012
Surr: Triphenylphosphate	*115*	*77-169*			*%REC*	1	12/10/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/8/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/8/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/8/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/8/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/8/2012
Benzene	ND	1.0	1.0		µg/L	1	12/8/2012
Cyclohexane	ND	10	10		µg/L	1	12/8/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/8/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/8/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/8/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/8/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/8/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/8/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/8/2012
Toluene	ND	1.0	1.0		µg/L	1	12/8/2012
Surr: 1,2-Dichloroethane-d4	*97.4*	*70-130*			*%REC*	1	12/8/2012
Surr: 4-Bromofluorobenzene	*98.2*	*70-130*			*%REC*	1	12/8/2012
Surr: Dibromofluoromethane	*92.7*	*70-130*			*%REC*	1	12/8/2012
Surr: Toluene-d8	*97.6*	*70-130*			*%REC*	1	12/8/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPE12031255JTC1B
Work Order:	1212172	**Collection Date:**	12/3/2012 12:55:00 PM
Project:	Marshall Potable Water 12/3/12		
Lab ID:	1212172-02	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/7/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/7/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/6/2012**		Analyst: **RH**
Beryllium	ND	0.0016	0.0010		mg/L	2	12/10/2012
Iron	ND	0.20	0.20		mg/L	1	12/7/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/7/2012
Nickel	ND	0.020	0.020		mg/L	1	12/7/2012
Titanium	ND	0.0050	0		mg/L	1	12/7/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/7/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/7/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/10/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*103*	*70-125*			*%REC*	1	12/10/2012
Surr: Perylene-d12	*75.8*	*46-142*			*%REC*	1	12/10/2012
Surr: Triphenylphosphate	*116*	*77-169*			*%REC*	1	12/10/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/8/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/8/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/8/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/8/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/8/2012
Benzene	ND	1.0	1.0		µg/L	1	12/8/2012
Cyclohexane	ND	10	10		µg/L	1	12/8/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/8/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/8/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/8/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/8/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/8/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/8/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/8/2012
Toluene	ND	1.0	1.0		µg/L	1	12/8/2012
Surr: 1,2-Dichloroethane-d4	*103*	*70-130*			*%REC*	1	12/8/2012
Surr: 4-Bromofluorobenzene	*103*	*70-130*			*%REC*	1	12/8/2012
Surr: Dibromofluoromethane	*97.0*	*70-130*			*%REC*	1	12/8/2012
Surr: Toluene-d8	*99.9*	*70-130*			*%REC*	1	12/8/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPE12031057JTC1B
Work Order:	1212172	**Collection Date:**	12/3/2012 10:57:00 AM
Project:	Marshall Potable Water 12/3/12		
Lab ID:	1212172-03	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/7/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/7/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/6/2012**		Analyst: **RH**
Beryllium	ND	0.0016	0.0010		mg/L	2	12/10/2012
Iron	ND	0.20	0.20		mg/L	1	12/7/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/7/2012
Nickel	ND	0.020	0.020		mg/L	1	12/7/2012
Titanium	ND	0.0050	0		mg/L	1	12/7/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/7/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/7/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/10/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*99.8*	*70-125*			*%REC*	1	12/10/2012
Surr: Perylene-d12	*80.0*	*46-142*			*%REC*	1	12/10/2012
Surr: Triphenylphosphate	*117*	*77-169*			*%REC*	1	12/10/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/8/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/8/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/8/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/8/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/8/2012
Benzene	ND	1.0	1.0		µg/L	1	12/8/2012
Cyclohexane	ND	10	10		µg/L	1	12/8/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/8/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/8/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/8/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/8/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/8/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/8/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/8/2012
Toluene	ND	1.0	1.0		µg/L	1	12/8/2012
Surr: 1,2-Dichloroethane-d4	*105*	*70-130*			*%REC*	1	12/8/2012
Surr: 4-Bromofluorobenzene	*101*	*70-130*			*%REC*	1	12/8/2012
Surr: Dibromofluoromethane	*100*	*70-130*			*%REC*	1	12/8/2012
Surr: Toluene-d8	*101*	*70-130*			*%REC*	1	12/8/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPE12031154JTC1B
Work Order:	1212172	**Collection Date:**	12/3/2012 11:54:00 AM
Project:	Marshall Potable Water 12/3/12		
Lab ID:	1212172-04	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/7/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/7/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/6/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/7/2012
Iron	ND	0.20	0.20		mg/L	1	12/7/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/7/2012
Nickel	ND	0.020	0.020		mg/L	1	12/7/2012
Titanium	ND	0.0050	0		mg/L	1	12/7/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/7/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/7/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/10/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*102*	*70-125*			*%REC*	1	12/10/2012
Surr: Perylene-d12	*78.4*	*46-142*			*%REC*	1	12/10/2012
Surr: Triphenylphosphate	*116*	*77-169*			*%REC*	1	12/10/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/8/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/8/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/8/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/8/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/8/2012
Benzene	ND	1.0	1.0		µg/L	1	12/8/2012
Cyclohexane	ND	10	10		µg/L	1	12/8/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/8/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/8/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/8/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/8/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/8/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/8/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/8/2012
Toluene	ND	1.0	1.0		µg/L	1	12/8/2012
Surr: 1,2-Dichloroethane-d4	*104*	*70-130*			*%REC*	1	12/8/2012
Surr: 4-Bromofluorobenzene	*97.4*	*70-130*			*%REC*	1	12/8/2012
Surr: Dibromofluoromethane	*92.8*	*70-130*			*%REC*	1	12/8/2012
Surr: Toluene-d8	*97.2*	*70-130*			*%REC*	1	12/8/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPE12031425JTC1B
Work Order:	1212172	**Collection Date:**	12/3/2012 2:25:00 PM
Project:	Marshall Potable Water 12/3/12		
Lab ID:	1212172-05	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/10/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/11/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/10/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/10/2012
Iron	ND	0.20	0.20		mg/L	1	12/10/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/10/2012
Nickel	ND	0.020	0.020		mg/L	1	12/10/2012
Titanium	ND	0.0050	0		mg/L	1	12/10/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/10/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/7/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/10/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*100*	*70-125*			*%REC*	1	12/10/2012
Surr: Perylene-d12	*80.2*	*46-142*			*%REC*	1	12/10/2012
Surr: Triphenylphosphate	*116*	*77-169*			*%REC*	1	12/10/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/10/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/10/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/10/2012
Benzene	ND	1.0	1.0		µg/L	1	12/10/2012
Cyclohexane	ND	10	10		µg/L	1	12/10/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/10/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/10/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/10/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/10/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
Toluene	ND	1.0	1.0		µg/L	1	12/10/2012
Surr: 1,2-Dichloroethane-d4	*100*	*70-130*			*%REC*	1	12/10/2012
Surr: 4-Bromofluorobenzene	*99.5*	*70-130*			*%REC*	1	12/10/2012
Surr: Dibromofluoromethane	*95.6*	*70-130*			*%REC*	1	12/10/2012
Surr: Toluene-d8	*97.9*	*70-130*			*%REC*	1	12/10/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPE12031453JTC1B
Work Order:	1212172	**Collection Date:**	12/3/2012 2:53:00 PM
Project:	Marshall Potable Water 12/3/12		
Lab ID:	1212172-06	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/10/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/11/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/10/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/10/2012
Iron	**1.2**	**0.20**	**0.20**		**mg/L**	1	12/10/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/10/2012
Nickel	ND	0.020	0.020		mg/L	1	12/10/2012
Titanium	ND	0.0050	0		mg/L	1	12/10/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/10/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/7/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/10/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*104*	*70-125*			*%REC*	1	12/10/2012
Surr: Perylene-d12	*81.2*	*46-142*			*%REC*	1	12/10/2012
Surr: Triphenylphosphate	*126*	*77-169*			*%REC*	1	12/10/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/8/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/8/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/8/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/8/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/8/2012
Benzene	ND	1.0	1.0		µg/L	1	12/8/2012
Cyclohexane	ND	10	10		µg/L	1	12/8/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/8/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/8/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/8/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/8/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/8/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/8/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/8/2012
Toluene	ND	1.0	1.0		µg/L	1	12/8/2012
Surr: 1,2-Dichloroethane-d4	*102*	*70-130*			*%REC*	1	12/8/2012
Surr: 4-Bromofluorobenzene	*101*	*70-130*			*%REC*	1	12/8/2012
Surr: Dibromofluoromethane	*97.3*	*70-130*			*%REC*	1	12/8/2012
Surr: Toluene-d8	*99.4*	*70-130*			*%REC*	1	12/8/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPE12031334JTC1B
Work Order:	1212172	**Collection Date:**	12/3/2012 1:34:00 PM
Project:	Marshall Potable Water 12/3/12		
Lab ID:	1212172-07	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/10/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/11/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/10/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/10/2012
Iron	ND	0.20	0.20		mg/L	1	12/10/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/10/2012
Nickel	ND	0.020	0.020		mg/L	1	12/10/2012
Titanium	ND	0.0050	0		mg/L	1	12/10/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/10/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/7/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/10/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*106*	*70-125*			*%REC*	1	12/10/2012
Surr: Perylene-d12	*81.2*	*46-142*			*%REC*	1	12/10/2012
Surr: Triphenylphosphate	*127*	*77-169*			*%REC*	1	12/10/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/10/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/10/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/10/2012
Benzene	ND	1.0	1.0		µg/L	1	12/10/2012
Cyclohexane	ND	10	10		µg/L	1	12/10/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/10/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/10/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/10/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/10/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
Toluene	ND	1.0	1.0		µg/L	1	12/10/2012
Surr: 1,2-Dichloroethane-d4	*100*	*70-130*			*%REC*	1	12/10/2012
Surr: 4-Bromofluorobenzene	*99.4*	*70-130*			*%REC*	1	12/10/2012
Surr: Dibromofluoromethane	*96.4*	*70-130*			*%REC*	1	12/10/2012
Surr: Toluene-d8	*97.4*	*70-130*			*%REC*	1	12/10/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPE12031608JTC1B
Work Order:	1212172	**Collection Date:**	12/3/2012 4:08:00 PM
Project:	Marshall Potable Water 12/3/12		
Lab ID:	1212172-08	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/10/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/11/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/10/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/10/2012
Iron	**0.98**	**0.20**	**0.20**		**mg/L**	1	12/10/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/10/2012
Nickel	ND	0.020	0.020		mg/L	1	12/10/2012
Titanium	ND	0.0050	0		mg/L	1	12/10/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/10/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/7/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/10/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*103*	*70-125*			*%REC*	1	12/10/2012
Surr: Perylene-d12	*86.2*	*46-142*			*%REC*	1	12/10/2012
Surr: Triphenylphosphate	*133*	*77-169*			*%REC*	1	12/10/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/10/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/10/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/10/2012
Benzene	ND	1.0	1.0		µg/L	1	12/10/2012
Cyclohexane	ND	10	10		µg/L	1	12/10/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/10/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/10/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/10/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/10/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
Toluene	ND	1.0	1.0		µg/L	1	12/10/2012
Surr: 1,2-Dichloroethane-d4	*101*	*70-130*			*%REC*	1	12/10/2012
Surr: 4-Bromofluorobenzene	*96.2*	*70-130*			*%REC*	1	12/10/2012
Surr: Dibromofluoromethane	*95.2*	*70-130*			*%REC*	1	12/10/2012
Surr: Toluene-d8	*94.8*	*70-130*			*%REC*	1	12/10/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPE12031405JTC1B
Work Order:	1212172	**Collection Date:**	12/3/2012 2:05:00 PM
Project:	Marshall Potable Water 12/3/12		
Lab ID:	1212172-09	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/10/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/11/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/10/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/10/2012
Iron	ND	0.20	0.20		mg/L	1	12/10/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/10/2012
Nickel	ND	0.020	0.020		mg/L	1	12/10/2012
Titanium	ND	0.0050	0		mg/L	1	12/10/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/10/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/7/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/10/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*99.0*	*70-125*			*%REC*	1	12/10/2012
Surr: Perylene-d12	*81.6*	*46-142*			*%REC*	1	12/10/2012
Surr: Triphenylphosphate	*127*	*77-169*			*%REC*	1	12/10/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/10/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/10/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/10/2012
Benzene	ND	1.0	1.0		µg/L	1	12/10/2012
Cyclohexane	ND	10	10		µg/L	1	12/10/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/10/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/10/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/10/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/10/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
Toluene	ND	1.0	1.0		µg/L	1	12/10/2012
Surr: 1,2-Dichloroethane-d4	*98.6*	*70-130*			*%REC*	1	12/10/2012
Surr: 4-Bromofluorobenzene	*97.6*	*70-130*			*%REC*	1	12/10/2012
Surr: Dibromofluoromethane	*93.8*	*70-130*			*%REC*	1	12/10/2012
Surr: Toluene-d8	*95.2*	*70-130*			*%REC*	1	12/10/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPE12031334JTC2B
Work Order:	1212172	**Collection Date:**	12/3/2012 1:34:00 PM
Project:	Marshall Potable Water 12/3/12		
Lab ID:	1212172-10	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/10/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/11/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/10/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/10/2012
Iron	ND	0.20	0.20		mg/L	1	12/10/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/10/2012
Nickel	ND	0.020	0.020		mg/L	1	12/10/2012
Titanium	ND	0.0050	0		mg/L	1	12/10/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/10/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/7/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/10/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*105*	*70-125*			*%REC*	1	12/10/2012
Surr: Perylene-d12	*82.0*	*46-142*			*%REC*	1	12/10/2012
Surr: Triphenylphosphate	*126*	*77-169*			*%REC*	1	12/10/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/10/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/10/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/10/2012
Benzene	ND	1.0	1.0		µg/L	1	12/10/2012
Cyclohexane	ND	10	10		µg/L	1	12/10/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/10/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/10/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/10/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/10/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
Toluene	ND	1.0	1.0		µg/L	1	12/10/2012
Surr: 1,2-Dichloroethane-d4	*106*	*70-130*			*%REC*	1	12/10/2012
Surr: 4-Bromofluorobenzene	*103*	*70-130*			*%REC*	1	12/10/2012
Surr: Dibromofluoromethane	*101*	*70-130*			*%REC*	1	12/10/2012
Surr: Toluene-d8	*103*	*70-130*			*%REC*	1	12/10/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	TB120312JTC5
Work Order:	1212172	**Collection Date:**	12/3/2012
Project:	Marshall Potable Water 12/3/12		
Lab ID:	1212172-11	**Matrix:**	WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/10/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/10/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/10/2012
Benzene	ND	1.0	1.0		µg/L	1	12/10/2012
Cyclohexane	ND	10	10		µg/L	1	12/10/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/10/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/10/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/10/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/10/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
Toluene	ND	1.0	1.0		µg/L	1	12/10/2012
Surr: 1,2-Dichloroethane-d4	*105*	*70-130*			*%REC*	1	12/10/2012
Surr: 4-Bromofluorobenzene	*102*	*70-130*			*%REC*	1	12/10/2012
Surr: Dibromofluoromethane	*100*	*70-130*			*%REC*	1	12/10/2012
Surr: Toluene-d8	*102*	*70-130*			*%REC*	1	12/10/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 12-Dec-12

Client: AECOM Environment

QC BATCH REPORT

Work Order: 1212172

Project: Marshall Potable Water 12/3/12

Batch ID: **45236** Instrument ID **HG1** Method: **E245.1**

MBLK Sample ID: **MBLK-45236-45236** Units: **mg/L** Analysis Date: **12/7/2012 02:07 PM**

Client ID: Run ID: **HG1_121207A** SeqNo: **2161941** Prep Date: **12/7/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.000011	0.00020								J

LCS Sample ID: **LCS-45236-45236** Units: **mg/L** Analysis Date: **12/7/2012 02:09 PM**

Client ID: Run ID: **HG1_121207A** SeqNo: **2161942** Prep Date: **12/7/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001704	0.00020	0.002	0	85.2	85-115	0			

MS Sample ID: **1212172-01CMS** Units: **mg/L** Analysis Date: **12/7/2012 02:42 PM**

Client ID: **WPE12031030JTC1B** Run ID: **HG1_121207A** SeqNo: **2161958** Prep Date: **12/7/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001671	0.00020	0.002	0.00001	83	80-120	0			

MS Sample ID: **1212231-01BMS** Units: **mg/L** Analysis Date: **12/7/2012 03:17 PM**

Client ID: Run ID: **HG1_121207A** SeqNo: **2161975** Prep Date: **12/7/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001675	0.00020	0.002	0.000033	82.1	80-120	0			

MSD Sample ID: **1212172-01CMSD** Units: **mg/L** Analysis Date: **12/7/2012 02:44 PM**

Client ID: **WPE12031030JTC1B** Run ID: **HG1_121207A** SeqNo: **2161959** Prep Date: **12/7/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001753	0.00020	0.002	0.00001	87.2	80-120	0.001671	4.79	20	

MSD Sample ID: **1212231-01BMSD** Units: **mg/L** Analysis Date: **12/7/2012 03:19 PM**

Client ID: Run ID: **HG1_121207A** SeqNo: **2161976** Prep Date: **12/7/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001705	0.00020	0.002	0.000033	83.6	80-120	0.001675	1.78	20	

DUP Sample ID: **1212040-01ADUP** Units: **mg/L** Analysis Date: **12/7/2012 02:13 PM**

Client ID: Run ID: **HG1_121207A** SeqNo: **2161944** Prep Date: **12/7/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.000056	0.00020	0	0	0	0-0	0.000071	0	20	J

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212172
Project: Marshall Potable Water 12/3/12

QC BATCH REPORT

Batch ID: **45236** Instrument ID **HG1** Method: **E245.1**

DUP Sample ID: **1212126-01ADUP** Units: **mg/L** Analysis Date: **12/7/2012 02:36 PM**
Client ID: Run ID: **HG1_121207A** SeqNo: **2161955** Prep Date: **12/7/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.000097	0.00020	0	0	0	0-0	0.000106	0	20	J

DUP Sample ID: **1212210-01ADUP** Units: **mg/L** Analysis Date: **12/7/2012 03:00 PM**
Client ID: Run ID: **HG1_121207A** SeqNo: **2161967** Prep Date: **12/7/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.000084	0.00020	0	0	0	0-0	0.000079	0	20	J

DUP Sample ID: **1212213-03ADUP** Units: **mg/L** Analysis Date: **12/7/2012 03:09 PM**
Client ID: Run ID: **HG1_121207A** SeqNo: **2161971** Prep Date: **12/7/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.000088	0.00020	0	0	0	0-0	0.000097	0	20	J

The following samples were analyzed in this batch:

1212172-01C 1212172-02C 1212172-03C
1212172-04C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212172
Project: Marshall Potable Water 12/3/12

QC BATCH REPORT

Batch ID: **45283** Instrument ID **HG1** Method: **E245.1**

MBLK Sample ID: **MBLK-45283-45283** Units: **mg/L** Analysis Date: **12/11/2012 10:55 AM**
Client ID: Run ID: **HG1_121211A** SeqNo: **2165295** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.000019	0.00020								J

LCS Sample ID: **LCS-45283-45283** Units: **mg/L** Analysis Date: **12/11/2012 10:57 AM**
Client ID: Run ID: **HG1_121211A** SeqNo: **2165296** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001827	0.00020	0.002	0	91.4	85-115	0			

MS Sample ID: **1212173-06CMS** Units: **mg/L** Analysis Date: **12/11/2012 11:32 AM**
Client ID: Run ID: **HG1_121211A** SeqNo: **2165316** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001781	0.00020	0.002	0.000022	88	80-120	0			

MS Sample ID: **1212293-01BMS** Units: **mg/L** Analysis Date: **12/11/2012 11:49 AM**
Client ID: Run ID: **HG1_121211A** SeqNo: **2165326** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001558	0.00020	0.002	0.000114	72.2	80-120	0			S

MSD Sample ID: **1212173-06CMSD** Units: **mg/L** Analysis Date: **12/11/2012 11:34 AM**
Client ID: Run ID: **HG1_121211A** SeqNo: **2165317** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001816	0.00020	0.002	0.000022	89.7	80-120	0.001781	1.95	20	

MSD Sample ID: **1212293-01BMSD** Units: **mg/L** Analysis Date: **12/11/2012 11:51 AM**
Client ID: Run ID: **HG1_121211A** SeqNo: **2165327** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001614	0.00020	0.002	0.000114	75	80-120	0.001558	3.53	20	S

DUP Sample ID: **1212226-01BDUP** Units: **mg/L** Analysis Date: **12/11/2012 11:38 AM**
Client ID: Run ID: **HG1_121211A** SeqNo: **2165320** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.000131	0.00020	0	0	0	0-0	0.000145	0	20	J

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212172
Project: Marshall Potable Water 12/3/12

QC BATCH REPORT

Batch ID: **45283** Instrument ID **HG1** Method: **E245.1**

DUP Sample ID: **1212297-03ADUP** Units: **mg/L** Analysis Date: **12/11/2012 11:59 AM**
Client ID: Run ID: **HG1_121211A** SeqNo: **2165331** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.000112	0.00020	0	0	0	0-0	0.000129	0	20	J

The following samples were analyzed in this batch:

1212172-05C	1212172-06C	1212172-07C
1212172-08C	1212172-09C	1212172-10C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212172
Project: Marshall Potable Water 12/3/12

QC BATCH REPORT

Batch ID: **45196** Instrument ID **ICPMS2** Method: **E200.8**

MBLK Sample ID: **MBLK-45196-45196** Units: **mg/L** Analysis Date: **12/6/2012 03:01 PM**
Client ID: Run ID: **ICPMS2_121206A** SeqNo: **2160769** Prep Date: **12/6/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	0.01123	0.080								J
Molybdenum	ND	0.0050								
Nickel	ND	0.0050								
Titanium	ND	0.0050								
Vanadium	ND	0.0050								

MBLK Sample ID: **MBLK-45196-45196** Units: **mg/L** Analysis Date: **12/7/2012 08:23 AM**
Client ID: Run ID: **ICPMS2_121206A** SeqNo: **2161229** Prep Date: **12/6/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	ND	0.0020								

LCS Sample ID: **LCS-45196-45196** Units: **mg/L** Analysis Date: **12/6/2012 03:06 PM**
Client ID: Run ID: **ICPMS2_121206A** SeqNo: **2160770** Prep Date: **12/6/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	9.103	0.080	10	0	91	85-115	0			
Molybdenum	0.09509	0.0050	0.1	0	95.1	85-115	0			
Nickel	0.08902	0.0050	0.1	0	89	85-115	0			
Titanium	0.08706	0.0050	0.1	0	87.1	85-115	0			
Vanadium	0.08968	0.0050	0.1	0	89.7	85-115	0			

LCS Sample ID: **LCS-45196-45196** Units: **mg/L** Analysis Date: **12/7/2012 08:28 AM**
Client ID: Run ID: **ICPMS2_121206A** SeqNo: **2161230** Prep Date: **12/6/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.1027	0.0020	0.1	0	103	85-115	0			

MS Sample ID: **1212090-01BMS** Units: **mg/L** Analysis Date: **12/6/2012 03:37 PM**
Client ID: Run ID: **ICPMS2_121206A** SeqNo: **2160776** Prep Date: **12/6/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	9.65	0.080	10	0.2819	93.7	70-130	0			
Molybdenum	0.09804	0.0050	0.1	0.004053	94	70-130	0			
Nickel	0.09897	0.0050	0.1	0.00768	91.3	70-130	0			
Titanium	0.1047	0.0050	0.1	0.0005019	104	70-130	0			
Vanadium	0.09805	0.0050	0.1	-0.000067	98.1	70-130	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45196** Instrument ID **ICPMS2** Method: **E200.8**

MS Sample ID: **1212090-01BMS** Units: **mg/L** Analysis Date: **12/7/2012 08:38 AM**
Client ID: Run ID: **ICPMS2_121206A** SeqNo: **2161232** Prep Date: **12/6/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.09834	0.0020	0.1	0.0003837	98	70-130	0			

MS Sample ID: **1212172-04CMS** Units: **mg/L** Analysis Date: **12/7/2012 06:43 PM**
Client ID: **WPE12031154JTC1B** Run ID: **ICPMS2_121207A** SeqNo: **2162915** Prep Date: **12/6/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	9.961	0.080	10	0.05917	99	70-130	0			
Molybdenum	0.09146	0.0050	0.1	0.000405	91.1	70-130	0			
Nickel	0.09683	0.0050	0.1	0.001396	95.4	70-130	0			
Titanium	0.1127	0.0050	0.1	0.001253	111	70-130	0			
Vanadium	0.1124	0.0050	0.1	0.00009928	112	70-130	0			

MS Sample ID: **1212172-04CMS** Units: **mg/L** Analysis Date: **12/10/2012 09:11 PM**
Client ID: **WPE12031154JTC1B** Run ID: **ICPMS2_121210A** SeqNo: **2164833** Prep Date: **12/6/2012** DF: **2**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.09056	0.0040	0.1	0	90.6	70-130	0			

MSD Sample ID: **1212090-01BMSD** Units: **mg/L** Analysis Date: **12/6/2012 03:42 PM**
Client ID: Run ID: **ICPMS2_121206A** SeqNo: **2160777** Prep Date: **12/6/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	9.705	0.080	10	0.2819	94.2	70-130	9.65	0.568	20	
Molybdenum	0.09919	0.0050	0.1	0.004053	95.1	70-130	0.09804	1.17	20	
Nickel	0.09962	0.0050	0.1	0.00768	91.9	70-130	0.09897	0.655	20	
Titanium	0.1044	0.0050	0.1	0.0005019	104	70-130	0.1047	0.287	20	
Vanadium	0.09981	0.0050	0.1	-0.000067	99.9	70-130	0.09805	1.78	20	

MSD Sample ID: **1212090-01BMSD** Units: **mg/L** Analysis Date: **12/7/2012 08:43 AM**
Client ID: Run ID: **ICPMS2_121206A** SeqNo: **2161233** Prep Date: **12/6/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.0994	0.0020	0.1	0.0003837	99	70-130	0.09665	2.81	20	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45196** Instrument ID **ICPMS2** Method: **E200.8**

MSD Sample ID: **1212172-04CMSD** Units: **mg/L** Analysis Date: **12/7/2012 08:08 PM**
Client ID: **WPE12031154JTC1B** Run ID: **ICPMS2_121207A** SeqNo: **2162930** Prep Date: **12/6/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.09716	0.0020	0.1	4.381E-07	97.2	70-130	0.09592	1.28	20	
Iron	9.471	0.080	10	0.05917	94.1	70-130	9.961	5.04	20	
Molybdenum	0.09603	0.0050	0.1	0.000405	95.6	70-130	0.09146	4.87	20	
Nickel	0.09225	0.0050	0.1	0.001396	90.9	70-130	0.09683	4.84	20	
Titanium	0.1027	0.0050	0.1	0.001253	101	70-130	0.1127	9.29	20	
Vanadium	0.1032	0.0050	0.1	0.00009928	103	70-130	0.1124	8.53	20	

The following samples were analyzed in this batch: 1212172-01C 1212172-02C 1212172-03C 1212172-04C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212172
Project: Marshall Potable Water 12/3/12

QC BATCH REPORT

Batch ID: **45274** Instrument ID **ICPMS2** Method: **E200.8**

MBLK Sample ID: **MBLK-45274-45274** Units: **mg/L** Analysis Date: **12/10/2012 01:22 PM**
Client ID: Run ID: **ICPMS2_121210A** SeqNo: **2163623** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	ND	0.0020								
Iron	ND	0.080								
Molybdenum	ND	0.0050								
Nickel	ND	0.0050								
Titanium	ND	0.0050								
Vanadium	ND	0.0050								

LCS Sample ID: **LCS-45274-45274** Units: **mg/L** Analysis Date: **12/10/2012 01:27 PM**
Client ID: Run ID: **ICPMS2_121210A** SeqNo: **2163626** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.09611	0.0020	0.1	0	96.1	85-115	0			
Iron	9.707	0.080	10	0	97.1	85-115	0			
Molybdenum	0.09955	0.0050	0.1	0	99.6	85-115	0			
Nickel	0.09568	0.0050	0.1	0	95.7	85-115	0			
Titanium	0.0937	0.0050	0.1	0	93.7	85-115	0			
Vanadium	0.09652	0.0050	0.1	0	96.5	85-115	0			

MS Sample ID: **1212110-02CMS** Units: **mg/L** Analysis Date: **12/10/2012 01:47 PM**
Client ID: Run ID: **ICPMS2_121210A** SeqNo: **2163637** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.0964	0.0020	0.1	-0.00003754	96.4	70-130	0			
Iron	10.15	0.080	10	0.417	97.3	70-130	0			
Molybdenum	0.1066	0.0050	0.1	0.006049	101	70-130	0			
Nickel	0.1047	0.0050	0.1	0.008548	96.2	70-130	0			
Titanium	0.1224	0.0050	0.1	0.01958	103	70-130	0			
Vanadium	0.1051	0.0050	0.1	0.001331	104	70-130	0			

MS Sample ID: **1212173-06CMS** Units: **mg/L** Analysis Date: **12/10/2012 11:58 PM**
Client ID: Run ID: **ICPMS2_121210A** SeqNo: **2164863** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.09799	0.0020	0.1	-0.00003981	98	70-130	0			
Iron	10.61	0.080	10	0.5471	101	70-130	0			
Molybdenum	0.09704	0.0050	0.1	0.0008253	96.2	70-130	0			
Nickel	0.09556	0.0050	0.1	0.001873	93.7	70-130	0			
Titanium	0.1029	0.0050	0.1	0.001266	102	70-130	0			
Vanadium	0.1034	0.0050	0.1	-7.347E-06	103	70-130	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212172
Project: Marshall Potable Water 12/3/12

QC BATCH REPORT

Batch ID: **45274** Instrument ID **ICPMS2** Method: **E200.8**

MSD Sample ID: **1212110-02CMSD** Units: **mg/L** Analysis Date: **12/10/2012 01:52 PM**
Client ID: Run ID: **ICPMS2_121210A** SeqNo: **2163640** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.0964	0.0020	0.1	-0.00003754	96.4	70-130	0.0964	0	20	
Iron	10.01	0.080	10	0.417	95.9	70-130	10.15	1.39	20	
Molybdenum	0.1049	0.0050	0.1	0.006049	98.9	70-130	0.1066	1.61	20	
Nickel	0.1027	0.0050	0.1	0.008548	94.2	70-130	0.1047	1.93	20	
Titanium	0.1201	0.0050	0.1	0.01958	101	70-130	0.1224	1.9	20	
Vanadium	0.1036	0.0050	0.1	0.001331	102	70-130	0.1051	1.44	20	

MSD Sample ID: **1212173-06CMSD** Units: **mg/L** Analysis Date: **12/11/2012 12:03 AM**
Client ID: Run ID: **ICPMS2_121210A** SeqNo: **2164864** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.09791	0.0020	0.1	-0.00003981	97.9	70-130	0.09799	0.0817	20	
Iron	10.28	0.080	10	0.5471	97.3	70-130	10.61	3.16	20	
Molybdenum	0.09986	0.0050	0.1	0.0008253	99	70-130	0.09704	2.86	20	
Nickel	0.09744	0.0050	0.1	0.001873	95.6	70-130	0.09556	1.95	20	
Titanium	0.1042	0.0050	0.1	0.001266	103	70-130	0.1029	1.26	20	
Vanadium	0.1049	0.0050	0.1	-7.347E-06	105	70-130	0.1034	1.44	20	

The following samples were analyzed in this batch:

1212172-05C	1212172-06C	1212172-07C
1212172-08C	1212172-09C	1212172-10C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212172
Project: Marshall Potable Water 12/3/12

QC BATCH REPORT

Batch ID: **45220** Instrument ID **SVMS6** Method: **E525.2**

MBLK Sample ID: **PNBLKW1-45220-45220** Units: **µg/L** Analysis Date: **12/10/2012 12:19 PM**
Client ID: Run ID: **SVMS6_121210A** SeqNo: **2165422** Prep Date: **12/7/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenanthrene	ND	0.20								
Surr: 1,3-Dimethyl-2-Nitrobenzen	*4.84*	0.20	*5*	0	*96.8*	*70-125*	0			
Surr: Perylene-d12	*3.71*	0.20	*5*	0	*74.2*	*46-142*	0			
Surr: Triphenylphosphate	*5.65*	0.20	*5*	0	*113*	*77-169*	0			

LCS Sample ID: **PNLCSW1-45220-45220** Units: **µg/L** Analysis Date: **12/10/2012 12:53 PM**
Client ID: Run ID: **SVMS6_121210A** SeqNo: **2165423** Prep Date: **12/7/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenanthrene	5.9	0.20	5	0	118	70-130	0			
Surr: 1,3-Dimethyl-2-Nitrobenzen	*4.7*	0.20	*5*	0	*94*	*70-125*	0			
Surr: Perylene-d12	*4.13*	0.20	*5*	0	*82.6*	*46-142*	0			
Surr: Triphenylphosphate	*5.87*	0.20	*5*	0	*117*	*77-169*	0			

MS Sample ID: **1212172-01B MS** Units: **µg/L** Analysis Date: **12/10/2012 02:11 PM**
Client ID: **WPE12031030JTC1B** Run ID: **SVMS6_121210A** SeqNo: **2165424** Prep Date: **12/7/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenanthrene	60	2.0	50	0	120	70-130	0			
Surr: 1,3-Dimethyl-2-Nitrobenzen	*46.9*	2.0	*50*	0	*93.8*	*70-125*	0			
Surr: Perylene-d12	*39.1*	2.0	*50*	0	*78.2*	*46-142*	0			
Surr: Triphenylphosphate	*54.7*	2.0	*50*	0	*109*	*77-169*	0			

MSD Sample ID: **1212172-01B MSD** Units: **µg/L** Analysis Date: **12/10/2012 02:44 PM**
Client ID: **WPE12031030JTC1B** Run ID: **SVMS6_121210A** SeqNo: **2165425** Prep Date: **12/7/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenanthrene	57.2	2.0	50	0	114	70-130	60	4.78	30	
Surr: 1,3-Dimethyl-2-Nitrobenzen	*44.1*	2.0	*50*	0	*88.2*	*70-125*	46.9	*6.15*		
Surr: Perylene-d12	*41.8*	2.0	*50*	0	*83.6*	*46-142*	39.1	*6.67*		
Surr: Triphenylphosphate	*61.7*	2.0	*50*	0	*123*	*77-169*	54.7	*12*		

The following samples were analyzed in this batch:

1212172-01B	1212172-02B	1212172-03B
1212172-04B	1212172-05B	1212172-06B
1212172-07B	1212172-08B	1212172-09B
1212172-10B		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212172
Project: Marshall Potable Water 12/3/12

QC BATCH REPORT

Batch ID: **R113643** Instrument ID **VMS6** Method: **E524.2**

MBLK Sample ID: **VBLKW2-121207-R113643** Units: **µg/L** Analysis Date: **12/7/2012 11:11 PM**
Client ID: Run ID: **VMS6_121207B** SeqNo: **2163566** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,3-Trimethylbenzene	ND	0.50								
1,2,4-Trimethylbenzene	ND	0.50								
1,3,5-Trimethylbenzene	ND	0.50								
2-Methylnaphthalene	ND	2.0								
4-Isopropyltoluene	ND	0.50								
Benzene	ND	0.50								
Cyclohexane	ND	1.0								
Ethylbenzene	ND	0.50								
Isopropylbenzene	ND	0.50								
m,p-Xylene	ND	1.0								
Naphthalene	ND	0.50								
n-Propylbenzene	ND	0.50								
o-Xylene	ND	0.50								
sec-Butylbenzene	ND	0.50								
Toluene	ND	0.50								
Surr: 1,2-Dichloroethane-d4	*19.64*	0.10	*20*	0	*98.2*	*80-120*	0			
Surr: 4-Bromofluorobenzene	*19.27*	0.10	*20*	0	*96.4*	*80-120*	0			
Surr: Dibromofluoromethane	*19.23*	0.10	*20*	0	*96.2*	*80-120*	0			
Surr: Toluene-d8	*19.51*	0.10	*20*	0	*97.6*	*80-120*	0			

LCS Sample ID: **VLCSW2-121207-R113643** Units: **µg/L** Analysis Date: **12/7/2012 10:22 PM**
Client ID: Run ID: **VMS6_121207B** SeqNo: **2163564** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	4.51	0.50	5	0	90.2	70-130	0			
1,3,5-Trimethylbenzene	4.63	0.50	5	0	92.6	70-130	0			
Benzene	4.57	0.50	5	0	91.4	70-130	0			
Ethylbenzene	4.47	0.50	5	0	89.4	70-130	0			
Isopropylbenzene	4.58	0.50	5	0	91.6	70-130	0			
m,p-Xylene	9	1.0	10	0	90	70-130	0			
Naphthalene	4.99	0.50	5	0	99.8	70-130	0			
n-Propylbenzene	4.46	0.50	5	0	89.2	70-130	0			
o-Xylene	4.48	0.50	5	0	89.6	70-130	0			
sec-Butylbenzene	4.77	0.50	5	0	95.4	70-130	0			
Toluene	4.58	0.50	5	0	91.6	70-130	0			
Surr: 1,2-Dichloroethane-d4	*19.56*	0.10	*20*	0	*97.8*	*80-120*	0			
Surr: 4-Bromofluorobenzene	*19.27*	0.10	*20*	0	*96.4*	*80-120*	0			
Surr: Dibromofluoromethane	*19.34*	0.10	*20*	0	*96.7*	*80-120*	0			
Surr: Toluene-d8	*19.74*	0.10	*20*	0	*98.7*	*80-120*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212172
Project: Marshall Potable Water 12/3/12

QC BATCH REPORT

Batch ID: **R113643** Instrument ID **VMS6** Method: **E524.2**

MS Sample ID: **1212134-24A MS** Units: **µg/L** Analysis Date: **12/8/2012 07:42 AM**
Client ID: Run ID: **VMS6_121207B** SeqNo: **2163584** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	4.01	0.50	5	0	80.2	70-130	0			
1,3,5-Trimethylbenzene	4.26	0.50	5	0	85.2	70-130	0			
Benzene	4.72	0.50	5	0	94.4	70-130	0			
Ethylbenzene	4.37	0.50	5	0	87.4	70-130	0			
Isopropylbenzene	4.37	0.50	5	0	87.4	70-130	0			
m,p-Xylene	8.66	1.0	10	0	86.6	70-130	0			
Naphthalene	4.19	0.50	5	0	83.8	70-130	0			
n-Propylbenzene	4.03	0.50	5	0	80.6	70-130	0			
o-Xylene	4.32	0.50	5	0	86.4	70-130	0			
sec-Butylbenzene	4.61	0.50	5	0	92.2	70-130	0			
Toluene	4.43	0.50	5	0	88.6	70-130	0			
Surr: 1,2-Dichloroethane-d4	*19.39*	0.10	*20*	0	*97*	*80-120*	0			
Surr: 4-Bromofluorobenzene	*20.06*	0.10	*20*	0	*100*	*80-120*	0			
Surr: Dibromofluoromethane	*19.1*	0.10	*20*	0	*95.5*	*80-120*	0			
Surr: Toluene-d8	*19.51*	0.10	*20*	0	*97.6*	*80-120*	0			

MSD Sample ID: **1212134-24A MSD** Units: **µg/L** Analysis Date: **12/8/2012 08:06 AM**
Client ID: Run ID: **VMS6_121207B** SeqNo: **2163585** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	3.97	0.50	5	0	79.4	70-130	4.01	1	25	
1,3,5-Trimethylbenzene	4.1	0.50	5	0	82	70-130	4.26	3.83	25	
Benzene	4.31	0.50	5	0	86.2	70-130	4.72	9.08	25	
Ethylbenzene	3.98	0.50	5	0	79.6	70-130	4.37	9.34	25	
Isopropylbenzene	4.21	0.50	5	0	84.2	70-130	4.37	3.73	25	
m,p-Xylene	7.94	1.0	10	0	79.4	70-130	8.66	8.67	25	
Naphthalene	4.32	0.50	5	0	86.4	70-130	4.19	3.06	25	
n-Propylbenzene	3.94	0.50	5	0	78.8	70-130	4.03	2.26	25	
o-Xylene	4.04	0.50	5	0	80.8	70-130	4.32	6.7	25	
sec-Butylbenzene	4.21	0.50	5	0	84.2	70-130	4.61	9.07	25	
Toluene	4.07	0.50	5	0	81.4	70-130	4.43	8.47	25	
Surr: 1,2-Dichloroethane-d4	*18.84*	0.10	*20*	0	*94.2*	*80-120*	19.39	*2.88*		
Surr: 4-Bromofluorobenzene	*19.23*	0.10	*20*	0	*96.2*	*80-120*	20.06	*4.22*		
Surr: Dibromofluoromethane	*18.84*	0.10	*20*	0	*94.2*	*80-120*	19.1	*1.37*		
Surr: Toluene-d8	*18.99*	0.10	*20*	0	*95*	*80-120*	19.51	*2.7*		

The following samples were analyzed in this batch: 1212172-01A 1212172-02A 1212172-03A 1212172-04A 1212172-06A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212172
Project: Marshall Potable Water 12/3/12

QC BATCH REPORT

Batch ID: **R113652** Instrument ID **VMS6** Method: **E524.2**

MBLK Sample ID: **VBLKW1-121210-R113652** Units: **µg/L** Analysis Date: **12/10/2012 11:43 AM**
Client ID: Run ID: **VMS6_121210A** SeqNo: **2164454** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,3-Trimethylbenzene	ND	0.50								
1,2,4-Trimethylbenzene	ND	0.50								
1,3,5-Trimethylbenzene	ND	0.50								
2-Methylnaphthalene	ND	2.0								
4-Isopropyltoluene	ND	0.50								
Benzene	ND	0.50								
Cyclohexane	ND	1.0								
Ethylbenzene	ND	0.50								
Isopropylbenzene	ND	0.50								
m,p-Xylene	ND	1.0								
Naphthalene	ND	0.50								
n-Propylbenzene	ND	0.50								
o-Xylene	ND	0.50								
sec-Butylbenzene	ND	0.50								
Toluene	ND	0.50								
Surr: 1,2-Dichloroethane-d4	*20.22*	0.10	*20*	0	*101*	*80-120*	0			
Surr: 4-Bromofluorobenzene	*20.08*	0.10	*20*	0	*100*	*80-120*	0			
Surr: Dibromofluoromethane	*19.49*	0.10	*20*	0	*97.4*	*80-120*	0			
Surr: Toluene-d8	*19.57*	0.10	*20*	0	*97.8*	*80-120*	0			

LCS Sample ID: **VLCSW1-121210-R113652** Units: **µg/L** Analysis Date: **12/10/2012 10:39 AM**
Client ID: Run ID: **VMS6_121210A** SeqNo: **2163207** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	4.13	0.50	5	0	82.6	70-130	0			
1,3,5-Trimethylbenzene	4.25	0.50	5	0	85	70-130	0			
Benzene	4.38	0.50	5	0	87.6	70-130	0			
Ethylbenzene	4.12	0.50	5	0	82.4	70-130	0			
Isopropylbenzene	4.07	0.50	5	0	81.4	70-130	0			
m,p-Xylene	8.24	1.0	10	0	82.4	70-130	0			
Naphthalene	4.47	0.50	5	0	89.4	70-130	0			
n-Propylbenzene	4.04	0.50	5	0	80.8	70-130	0			
o-Xylene	4.28	0.50	5	0	85.6	70-130	0			
sec-Butylbenzene	4.48	0.50	5	0	89.6	70-130	0			
Toluene	4.16	0.50	5	0	83.2	70-130	0			
Surr: 1,2-Dichloroethane-d4	*19.91*	0.10	*20*	0	*99.6*	*80-120*	0			
Surr: 4-Bromofluorobenzene	*20.29*	0.10	*20*	0	*101*	*80-120*	0			
Surr: Dibromofluoromethane	*20.14*	0.10	*20*	0	*101*	*80-120*	0			
Surr: Toluene-d8	*19.67*	0.10	*20*	0	*98.4*	*80-120*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212172
Project: Marshall Potable Water 12/3/12

QC BATCH REPORT

Batch ID: **R113652** Instrument ID **VMS6** Method: **E524.2**

MS Sample ID: **1212198-03A MS** Units: **µg/L** Analysis Date: **12/10/2012 07:49 PM**
Client ID: Run ID: **VMS6_121210A** SeqNo: **2164476** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	1.88	0.50	5	0	37.6	70-130	0			S
1,3,5-Trimethylbenzene	ND	0.50	5	0	0	70-130	0			S
Benzene	4.99	0.50	5	0	99.8	70-130	0			
Ethylbenzene	4.88	0.50	5	0	97.6	70-130	0			
Isopropylbenzene	5.01	0.50	5	0	100	70-130	0			
m,p-Xylene	8.24	1.0	10	0	82.4	70-130	0			
Naphthalene	3.63	0.50	5	0	72.6	70-130	0			
n-Propylbenzene	4.79	0.50	5	0	95.8	70-130	0			
o-Xylene	4.72	0.50	5	0	94.4	70-130	0			
sec-Butylbenzene	5.1	0.50	5	0	102	70-130	0			
Toluene	4.98	0.50	5	0	99.6	70-130	0			
Surr: 1,2-Dichloroethane-d4	*19.46*	0.10	*20*	0	*97.3*	*80-120*	0			
Surr: 4-Bromofluorobenzene	*20.19*	0.10	*20*	0	*101*	*80-120*	0			
Surr: Dibromofluoromethane	*19.42*	0.10	*20*	0	*97.1*	*80-120*	0			
Surr: Toluene-d8	*19.39*	0.10	*20*	0	*97*	*80-120*	0			

MSD Sample ID: **1212198-03A MSD** Units: **µg/L** Analysis Date: **12/10/2012 08:13 PM**
Client ID: Run ID: **VMS6_121210A** SeqNo: **2164477** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	1.85	0.50	5	0	37	70-130	1.88	1.61	25	S
1,3,5-Trimethylbenzene	ND	0.50	5	0	0	70-130	0	0	25	S
Benzene	4.88	0.50	5	0	97.6	70-130	4.99	2.23	25	
Ethylbenzene	4.68	0.50	5	0	93.6	70-130	4.88	4.18	25	
Isopropylbenzene	4.68	0.50	5	0	93.6	70-130	5.01	6.81	25	
m,p-Xylene	7.42	1.0	10	0	74.2	70-130	8.24	10.5	25	
Naphthalene	4.65	0.50	5	0	93	70-130	3.63	24.6	25	
n-Propylbenzene	4.58	0.50	5	0	91.6	70-130	4.79	4.48	25	
o-Xylene	4.38	0.50	5	0	87.6	70-130	4.72	7.47	25	
sec-Butylbenzene	5.11	0.50	5	0	102	70-130	5.1	0.196	25	
Toluene	4.64	0.50	5	0	92.8	70-130	4.98	7.07	25	
Surr: 1,2-Dichloroethane-d4	*19.57*	0.10	*20*	0	*97.8*	*80-120*	19.46	*0.564*		
Surr: 4-Bromofluorobenzene	*20.4*	0.10	*20*	0	*102*	*80-120*	20.19	*1.03*		
Surr: Dibromofluoromethane	*19.41*	0.10	*20*	0	*97*	*80-120*	19.42	*0.0515*		
Surr: Toluene-d8	*19.25*	0.10	*20*	0	*96.2*	*80-120*	19.39	*0.725*		

The following samples were analyzed in this batch:

1212172-05A	1212172-07A	1212172-08A
1212172-09A	1212172-10A	1212172-11A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

1212172

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # ___ of ___

COC #: | Task: Potable B
Total # of Samples: 11 | Event Complete? N

Regular	X		Turnaround Time	5 Day	

BILLING CODE: 7.00

Lab Information:
Lab Name: ALS Laboratory Group
Address: 3352 128th Ave. Holland, MI 49424-9263
Lab PM: Ann Preston
Phone/Fax: 1-616-399-6070/1-616-399-6185
Lab PM email: ann.preston@alsglobal.com
Applicable Lab Quote #:

Project Information:
Site ID #: 33
Project #: 60162778
Site Address: 5555 Glenwood Parkway SE Suite 200
City: Grand Rapids | State, Zip: MI
Site PM Name: [redacted]
Phone/Fax: [redacted]
Site PM Email: Bryan.Stiemsma@aecom.com

Other Information:
Send Invoice to: Enbridge Energy - ATTN Accounts Payable
Address: 1100 Louisiana Suite 1100
City/State: Houson, TX | Phone #: 713-621-2000
PO #:
Send EDD to:
CC Hardcopy report:
CC Hardcopy report:

ITEM #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	MATRIX CODE	G=GRAB C=COMP	SAMPLE DATE	#OF CONTAINERS	Comments/Lab Sample I.D.	Preservative	HCl	HCl	HNO3							HNO3				Additional Notes
								Analysis	VOCs	SVOCs	TAL Metals	TPH DRO	TPH GRO	PCBs/Pesticides	TOC	TSS	Hg by EPA 245.1					
	WPE12031030JTC1B	C018776A	GW	G	12/3/2012 1030	5	C018776		X	X	X						X					
	WPE12031255JTC1B	C01948DPW1	GW	G	12/3/2012 1255	5	C01948D		X	X	X						X					
	WPE12031057JTC1B	C024723PW1	GW	G	12/3/2012 1057	5	C024723		X	X	X						X					
	WPE12031154JTC1B	C0252EDA	GW	G	12/3/2012 1154	5	C0252ED		X	X	X						X					
	WPE12031425JTC1B	C0269A6PW1	GW	G	12/3/2012 1425	5	C0269A6		X	X	X						X					
	WPE12031453JTC1B	C030917WP1	GW	G	12/3/2012 1453	5	C030917		X	X	X						X					
	WPE12031334JTC1B	C0730ACPW1	GW	G	12/3/2012 1334	5	C0730AC		X	X	X						X					
	WPE12031608JTC1B	C07824BPW1	GW	G	12/3/2012 1608	5	C07824B		X	X	X						X					
	WPE12031405JTC1B	C087736WP1	GW	G	12/3/2012 1405	5	C087736		X	X	X						X					
	WPE12031334JTC2B	C0730ACPW1	GW	G	12/3/2012 1334	5	C0730AC		X	X	X						X					DUP
	TB120312JTC5	Trip Blank	W	G	12/3/2012 0000	1	Trip Blank		X													TRIP BLANK

Additional Comments/Special Instructions:
Samplers=Jon Carveth; Lorri Lego

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
	12.4.12	0845		12-4-12	0845
	12/5/12	0800		12/5/12	0800

Sample Receipt Conditions

Temp in °C	Samples on Ice?	Sample intact?	Trip Blank?
1.4-3.0	(Y)/N	(Y)/N	(Y)/N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N

SHIPPING INFO.

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: JON CARVETH, LORRI LEGO
SIGNATURE of SAMPLER: | DATE Signed: | Time:

ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **05-Dec-12 08:00**

Work Order: **1212172** Received by: **PD**

Checklist completed by Diane Shaw (eSignature) 05-Dec-12 (Date) Reviewed by: Ann Preston (eSignature) 06-Dec-12 (Date)

Matrices: Potable Water
Carrier name: ALSHN

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	1.4-3.0 c		
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	12/5/2012 4:41:08 PM		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL

Date: 12/4/12 Time:
Name:
Company:

Seal Broken By:
Date:

2.8c

ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL

Date: 12/4/12 Time:
Name:
Company:

Seal Broken By:
Date:

2.2

ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL

Date: 12/4/12 Time:
Name:
Company:

Seal Broken By:
Date:

3.0

ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL

Date: 12-4-12 Time:
Name:
Company:

Seal Broken By:
Date:

2.4

ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL

Date: 12/4/12 Time:
Name:
Company:

Seal Broken By:
Date:

1.4

2

12-Dec-2012

Alison Schoeff
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall Potable Water 12/4/12** Work Order: **1212173**

Dear Alison,

ALS Environmental received 7 samples on 05-Dec-2012 08:00 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 21.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

Certificate No: MN331938

ALS Group USA, Corp

Date: 12-Dec-12

Client: AECOM Environment
Project: Marshall Potable Water 12/4/12
Work Order: **1212173**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1212173-01	WPE12041100JTC1B	Potable Water		12/4/2012 11:00	12/5/2012 08:00	☐
1212173-02	WPE12040945JTC1B	Potable Water		12/4/2012 09:45	12/5/2012 08:00	☐
1212173-03	WPC12041242JTC1B	Potable Water		12/4/2012 12:42	12/5/2012 08:00	☐
1212173-04	WPC12041313JTC1B	Potable Water		12/4/2012 13:13	12/5/2012 08:00	☐
1212173-05	WPC12041219JTC1B	Potable Water		12/4/2012 12:19	12/5/2012 08:00	☐
1212173-06	WPE12041110JTC1B	Potable Water		12/4/2012 11:10	12/5/2012 08:00	☐
1212173-07	TB120412JTC5	Water		12/4/2012	12/5/2012 08:00	☐

ALS Group USA, Corp

Date: 12-Dec-12

Client: AECOM Environment
Project: Marshall Potable Water 12/4/12
Work Order: 1212173

Case Narrative

Batch 45283 MS/MSD data for Mercury is not related to this project's samples. No data requires qualification.

Batch R113652 MS/MSD data for Volatiles is not related to this project's samples. No data requires qualification.

ALS Group USA, Corp

Date: 12-Dec-12

Client: AECOM Environment
Project: Marshall Potable Water 12/4/12
WorkOrder: **1212173**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
SD	Serial Dilution
TDL	Target Detection Limit

Units Reported	Description
µg/L	Micrograms per Liter
mg/L	Milligrams per Liter

ALS Group USA, Corp

Date: *12-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPE12041100JTC1B
Work Order:	1212173	**Collection Date:**	12/4/2012 11:00:00 AM
Project:	Marshall Potable Water 12/4/12		
Lab ID:	1212173-01	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/10/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/11/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/10/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/10/2012
Iron	**0.39**	**0.20**	**0.20**		**mg/L**	1	12/10/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/10/2012
Nickel	ND	0.020	0.020		mg/L	1	12/10/2012
Titanium	ND	0.0050	0		mg/L	1	12/10/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/10/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/7/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/10/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*102*	*70-125*			*%REC*	1	12/10/2012
Surr: Perylene-d12	*80.8*	*46-142*			*%REC*	1	12/10/2012
Surr: Triphenylphosphate	*126*	*77-169*			*%REC*	1	12/10/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/10/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/10/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/10/2012
Benzene	ND	1.0	1.0		µg/L	1	12/10/2012
Cyclohexane	ND	10	10		µg/L	1	12/10/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/10/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/10/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/10/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/10/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
Toluene	ND	1.0	1.0		µg/L	1	12/10/2012
Surr: 1,2-Dichloroethane-d4	*102*	*70-130*			*%REC*	1	12/10/2012
Surr: 4-Bromofluorobenzene	*101*	*70-130*			*%REC*	1	12/10/2012
Surr: Dibromofluoromethane	*99.6*	*70-130*			*%REC*	1	12/10/2012
Surr: Toluene-d8	*97.8*	*70-130*			*%REC*	1	12/10/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPE12040945JTC1B
Work Order:	1212173	**Collection Date:**	12/4/2012 9:45:00 AM
Project:	Marshall Potable Water 12/4/12		
Lab ID:	1212173-02	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/10/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/11/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/10/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/10/2012
Iron	ND	0.20	0.20		mg/L	1	12/10/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/10/2012
Nickel	ND	0.020	0.020		mg/L	1	12/10/2012
Titanium	ND	0.0050	0		mg/L	1	12/10/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/10/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/7/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/10/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*105*	*70-125*			*%REC*	1	12/10/2012
Surr: Perylene-d12	*76.4*	*46-142*			*%REC*	1	12/10/2012
Surr: Triphenylphosphate	*126*	*77-169*			*%REC*	1	12/10/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/10/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/10/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/10/2012
Benzene	ND	1.0	1.0		µg/L	1	12/10/2012
Cyclohexane	ND	10	10		µg/L	1	12/10/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/10/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/10/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/10/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/10/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
Toluene	ND	1.0	1.0		µg/L	1	12/10/2012
Surr: 1,2-Dichloroethane-d4	*104*	*70-130*			*%REC*	1	12/10/2012
Surr: 4-Bromofluorobenzene	*98.0*	*70-130*			*%REC*	1	12/10/2012
Surr: Dibromofluoromethane	*98.8*	*70-130*			*%REC*	1	12/10/2012
Surr: Toluene-d8	*97.7*	*70-130*			*%REC*	1	12/10/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12041242JTC1B
Work Order:	1212173	**Collection Date:**	12/4/2012 12:42:00 PM
Project:	Marshall Potable Water 12/4/12		
Lab ID:	1212173-03	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/10/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/11/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/10/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/10/2012
Iron	**0.88**	**0.20**	**0.20**		**mg/L**	1	12/10/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/10/2012
Nickel	ND	0.020	0.020		mg/L	1	12/10/2012
Titanium	ND	0.0050	0		mg/L	1	12/10/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/10/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/7/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/10/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*102*	*70-125*			*%REC*	1	12/10/2012
Surr: Perylene-d12	*82.8*	*46-142*			*%REC*	1	12/10/2012
Surr: Triphenylphosphate	*123*	*77-169*			*%REC*	1	12/10/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/10/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/10/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/10/2012
Benzene	ND	1.0	1.0		µg/L	1	12/10/2012
Cyclohexane	ND	10	10		µg/L	1	12/10/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/10/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/10/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/10/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/10/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
Toluene	ND	1.0	1.0		µg/L	1	12/10/2012
Surr: 1,2-Dichloroethane-d4	*97.8*	*70-130*			*%REC*	1	12/10/2012
Surr: 4-Bromofluorobenzene	*95.0*	*70-130*			*%REC*	1	12/10/2012
Surr: Dibromofluoromethane	*94.8*	*70-130*			*%REC*	1	12/10/2012
Surr: Toluene-d8	*93.6*	*70-130*			*%REC*	1	12/10/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12041313JTC1B
Work Order:	1212173	**Collection Date:**	12/4/2012 1:13:00 PM
Project:	Marshall Potable Water 12/4/12		
Lab ID:	1212173-04	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/10/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/11/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/10/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/10/2012
Iron	**0.29**	**0.20**	**0.20**		**mg/L**	1	12/10/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/10/2012
Nickel	ND	0.020	0.020		mg/L	1	12/10/2012
Titanium	ND	0.0050	0		mg/L	1	12/10/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/10/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/7/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/10/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*103*	*70-125*			*%REC*	1	12/10/2012
Surr: Perylene-d12	*82.2*	*46-142*			*%REC*	1	12/10/2012
Surr: Triphenylphosphate	*132*	*77-169*			*%REC*	1	12/10/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/10/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/10/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/10/2012
Benzene	ND	1.0	1.0		µg/L	1	12/10/2012
Cyclohexane	ND	10	10		µg/L	1	12/10/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/10/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/10/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/10/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/10/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
Toluene	ND	1.0	1.0		µg/L	1	12/10/2012
Surr: 1,2-Dichloroethane-d4	*104*	*70-130*			*%REC*	1	12/10/2012
Surr: 4-Bromofluorobenzene	*99.2*	*70-130*			*%REC*	1	12/10/2012
Surr: Dibromofluoromethane	*97.6*	*70-130*			*%REC*	1	12/10/2012
Surr: Toluene-d8	*96.2*	*70-130*			*%REC*	1	12/10/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12041219JTC1B
Work Order:	1212173	**Collection Date:**	12/4/2012 12:19:00 PM
Project:	Marshall Potable Water 12/4/12		
Lab ID:	1212173-05	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/10/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/11/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/10/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/10/2012
Iron	**0.90**	**0.20**	**0.20**		**mg/L**	1	12/10/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/10/2012
Nickel	ND	0.020	0.020		mg/L	1	12/10/2012
Titanium	ND	0.0050	0		mg/L	1	12/10/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/10/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/7/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/10/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*103*	*70-125*			*%REC*	1	12/10/2012
Surr: Perylene-d12	*80.8*	*46-142*			*%REC*	1	12/10/2012
Surr: Triphenylphosphate	*124*	*77-169*			*%REC*	1	12/10/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/10/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/10/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/10/2012
Benzene	ND	1.0	1.0		µg/L	1	12/10/2012
Cyclohexane	ND	10	10		µg/L	1	12/10/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/10/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/10/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/10/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/10/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
Toluene	ND	1.0	1.0		µg/L	1	12/10/2012
Surr: 1,2-Dichloroethane-d4	*98.2*	*70-130*			*%REC*	1	12/10/2012
Surr: 4-Bromofluorobenzene	*95.4*	*70-130*			*%REC*	1	12/10/2012
Surr: Dibromofluoromethane	*92.2*	*70-130*			*%REC*	1	12/10/2012
Surr: Toluene-d8	*93.6*	*70-130*			*%REC*	1	12/10/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPE12041110JTC1B
Work Order:	1212173	**Collection Date:**	12/4/2012 11:10:00 AM
Project:	Marshall Potable Water 12/4/12		
Lab ID:	1212173-06	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/10/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/11/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/10/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/10/2012
Iron	**0.55**	**0.20**	**0.20**		**mg/L**	1	12/10/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/10/2012
Nickel	ND	0.020	0.020		mg/L	1	12/10/2012
Titanium	ND	0.0050	0		mg/L	1	12/10/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/10/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/7/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/10/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*103*	*70-125*			*%REC*	1	12/10/2012
Surr: Perylene-d12	*82.4*	*46-142*			*%REC*	1	12/10/2012
Surr: Triphenylphosphate	*128*	*77-169*			*%REC*	1	12/10/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/10/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/10/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/10/2012
Benzene	ND	1.0	1.0		µg/L	1	12/10/2012
Cyclohexane	ND	10	10		µg/L	1	12/10/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/10/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/10/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/10/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/10/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
Toluene	ND	1.0	1.0		µg/L	1	12/10/2012
Surr: 1,2-Dichloroethane-d4	*100*	*70-130*			*%REC*	1	12/10/2012
Surr: 4-Bromofluorobenzene	*99.9*	*70-130*			*%REC*	1	12/10/2012
Surr: Dibromofluoromethane	*94.7*	*70-130*			*%REC*	1	12/10/2012
Surr: Toluene-d8	*96.6*	*70-130*			*%REC*	1	12/10/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	TB120412JTC5
Work Order:	1212173	**Collection Date:**	12/4/2012
Project:	Marshall Potable Water 12/4/12		
Lab ID:	1212173-07	**Matrix:**	WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/10/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/10/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/10/2012
Benzene	ND	1.0	1.0		µg/L	1	12/10/2012
Cyclohexane	ND	10	10		µg/L	1	12/10/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/10/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/10/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/10/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/10/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
Toluene	ND	1.0	1.0		µg/L	1	12/10/2012
Surr: 1,2-Dichloroethane-d4	*100*	*70-130*			*%REC*	1	12/10/2012
Surr: 4-Bromofluorobenzene	*98.1*	*70-130*			*%REC*	1	12/10/2012
Surr: Dibromofluoromethane	*97.6*	*70-130*			*%REC*	1	12/10/2012
Surr: Toluene-d8	*99.9*	*70-130*			*%REC*	1	12/10/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

Batch ID: **45283** Instrument ID **HG1** Method: **E245.1**

MBLK Sample ID: **MBLK-45283-45283** Units: **mg/L** Analysis Date: **12/11/2012 10:55 AM**

Client ID: Run ID: **HG1_121211A** SeqNo: **2165295** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.000019	0.00020								J

LCS Sample ID: **LCS-45283-45283** Units: **mg/L** Analysis Date: **12/11/2012 10:57 AM**

Client ID: Run ID: **HG1_121211A** SeqNo: **2165296** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001827	0.00020	0.002	0	91.4	85-115	0			

MS Sample ID: **1212173-06CMS** Units: **mg/L** Analysis Date: **12/11/2012 11:32 AM**

Client ID: **WPE12041110JTC1B** Run ID: **HG1_121211A** SeqNo: **2165316** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001781	0.00020	0.002	0.000022	88	80-120	0			

MS Sample ID: **1212293-01BMS** Units: **mg/L** Analysis Date: **12/11/2012 11:49 AM**

Client ID: Run ID: **HG1_121211A** SeqNo: **2165326** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001558	0.00020	0.002	0.000114	72.2	80-120	0			S

MSD Sample ID: **1212173-06CMSD** Units: **mg/L** Analysis Date: **12/11/2012 11:34 AM**

Client ID: **WPE12041110JTC1B** Run ID: **HG1_121211A** SeqNo: **2165317** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001816	0.00020	0.002	0.000022	89.7	80-120	0.001781	1.95	20	

MSD Sample ID: **1212293-01BMSD** Units: **mg/L** Analysis Date: **12/11/2012 11:51 AM**

Client ID: Run ID: **HG1_121211A** SeqNo: **2165327** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001614	0.00020	0.002	0.000114	75	80-120	0.001558	3.53	20	S

DUP Sample ID: **1212226-01BDUP** Units: **mg/L** Analysis Date: **12/11/2012 11:38 AM**

Client ID: Run ID: **HG1_121211A** SeqNo: **2165320** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.000131	0.00020	0	0	0	0-0	0.000145	0	20	J

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212173
Project: Marshall Potable Water 12/4/12

QC BATCH REPORT

Batch ID: **45283** Instrument ID **HG1** Method: **E245.1**

DUP Sample ID: **1212297-03ADUP** Units: **mg/L** Analysis Date: **12/11/2012 11:59 AM**
Client ID: Run ID: **HG1_121211A** SeqNo: **2165331** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.000112	0.00020	0	0	0	0-0	0.000129	0	20	J

The following samples were analyzed in this batch:

1212173-01C	1212173-02C	1212173-03C
1212173-04C	1212173-05C	1212173-06C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212173
Project: Marshall Potable Water 12/4/12

QC BATCH REPORT

Batch ID: **45274** Instrument ID **ICPMS2** Method: **E200.8**

MBLK Sample ID: **MBLK-45274-45274** Units: **mg/L** Analysis Date: **12/10/2012 01:22 PM**
Client ID: Run ID: **ICPMS2_121210A** SeqNo: **2163623** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	ND	0.0020								
Iron	ND	0.080								
Molybdenum	ND	0.0050								
Nickel	ND	0.0050								
Titanium	ND	0.0050								
Vanadium	ND	0.0050								

LCS Sample ID: **LCS-45274-45274** Units: **mg/L** Analysis Date: **12/10/2012 01:27 PM**
Client ID: Run ID: **ICPMS2_121210A** SeqNo: **2163626** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.09611	0.0020	0.1	0	96.1	85-115	0			
Iron	9.707	0.080	10	0	97.1	85-115	0			
Molybdenum	0.09955	0.0050	0.1	0	99.6	85-115	0			
Nickel	0.09568	0.0050	0.1	0	95.7	85-115	0			
Titanium	0.0937	0.0050	0.1	0	93.7	85-115	0			
Vanadium	0.09652	0.0050	0.1	0	96.5	85-115	0			

MS Sample ID: **1212110-02CMS** Units: **mg/L** Analysis Date: **12/10/2012 01:47 PM**
Client ID: Run ID: **ICPMS2_121210A** SeqNo: **2163637** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.0964	0.0020	0.1	-0.00003754	96.4	70-130	0			
Iron	10.15	0.080	10	0.417	97.3	70-130	0			
Molybdenum	0.1066	0.0050	0.1	0.006049	101	70-130	0			
Nickel	0.1047	0.0050	0.1	0.008548	96.2	70-130	0			
Titanium	0.1224	0.0050	0.1	0.01958	103	70-130	0			
Vanadium	0.1051	0.0050	0.1	0.001331	104	70-130	0			

MS Sample ID: **1212173-06CMS** Units: **mg/L** Analysis Date: **12/10/2012 11:58 PM**
Client ID: **WPE12041110JTC1B** Run ID: **ICPMS2_121210A** SeqNo: **2164863** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.09799	0.0020	0.1	-0.00003981	98	70-130	0			
Iron	10.61	0.080	10	0.5471	101	70-130	0			
Molybdenum	0.09704	0.0050	0.1	0.0008253	96.2	70-130	0			
Nickel	0.09556	0.0050	0.1	0.001873	93.7	70-130	0			
Titanium	0.1029	0.0050	0.1	0.001266	102	70-130	0			
Vanadium	0.1034	0.0050	0.1	-7.347E-06	103	70-130	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212173
Project: Marshall Potable Water 12/4/12

QC BATCH REPORT

Batch ID: **45274** Instrument ID **ICPMS2** Method: **E200.8**

MSD Sample ID: **1212110-02CMSD** Units: **mg/L** Analysis Date: **12/10/2012 01:52 PM**
Client ID: Run ID: **ICPMS2_121210A** SeqNo: **2163640** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.0964	0.0020	0.1	-0.00003754	96.4	70-130	0.0964	0	20	
Iron	10.01	0.080	10	0.417	95.9	70-130	10.15	1.39	20	
Molybdenum	0.1049	0.0050	0.1	0.006049	98.9	70-130	0.1066	1.61	20	
Nickel	0.1027	0.0050	0.1	0.008548	94.2	70-130	0.1047	1.93	20	
Titanium	0.1201	0.0050	0.1	0.01958	101	70-130	0.1224	1.9	20	
Vanadium	0.1036	0.0050	0.1	0.001331	102	70-130	0.1051	1.44	20	

MSD Sample ID: **1212173-06CMSD** Units: **mg/L** Analysis Date: **12/11/2012 12:03 AM**
Client ID: **WPE12041110JTC1B** Run ID: **ICPMS2_121210A** SeqNo: **2164864** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.09791	0.0020	0.1	-0.00003981	97.9	70-130	0.09799	0.0817	20	
Iron	10.28	0.080	10	0.5471	97.3	70-130	10.61	3.16	20	
Molybdenum	0.09986	0.0050	0.1	0.0008253	99	70-130	0.09704	2.86	20	
Nickel	0.09744	0.0050	0.1	0.001873	95.6	70-130	0.09556	1.95	20	
Titanium	0.1042	0.0050	0.1	0.001266	103	70-130	0.1029	1.26	20	
Vanadium	0.1049	0.0050	0.1	-7.347E-06	105	70-130	0.1034	1.44	20	

The following samples were analyzed in this batch:

1212173-01C	1212173-02C	1212173-03C
1212173-04C	1212173-05C	1212173-06C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212173
Project: Marshall Potable Water 12/4/12

QC BATCH REPORT

Batch ID: **45220** Instrument ID **SVMS6** Method: **E525.2**

MBLK Sample ID: **PNBLKW1-45220-45220** Units: **µg/L** Analysis Date: **12/10/2012 12:19 PM**
Client ID: Run ID: **SVMS6_121210A** SeqNo: **2165422** Prep Date: **12/7/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenanthrene	ND	0.20								
Surr: 1,3-Dimethyl-2-Nitrobenzen	*4.84*	0.20	*5*	0	*96.8*	*70-125*	0			
Surr: Perylene-d12	*3.71*	0.20	*5*	0	*74.2*	*46-142*	0			
Surr: Triphenylphosphate	*5.65*	0.20	*5*	0	*113*	*77-169*	0			

LCS Sample ID: **PNLCSW1-45220-45220** Units: **µg/L** Analysis Date: **12/10/2012 12:53 PM**
Client ID: Run ID: **SVMS6_121210A** SeqNo: **2165423** Prep Date: **12/7/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenanthrene	5.9	0.20	5	0	118	70-130	0			
Surr: 1,3-Dimethyl-2-Nitrobenzen	*4.7*	0.20	*5*	0	*94*	*70-125*	0			
Surr: Perylene-d12	*4.13*	0.20	*5*	0	*82.6*	*46-142*	0			
Surr: Triphenylphosphate	*5.87*	0.20	*5*	0	*117*	*77-169*	0			

MS Sample ID: **1212172-01B MS** Units: **µg/L** Analysis Date: **12/10/2012 02:11 PM**
Client ID: Run ID: **SVMS6_121210A** SeqNo: **2165424** Prep Date: **12/7/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenanthrene	60	2.0	50	0	120	70-130	0			
Surr: 1,3-Dimethyl-2-Nitrobenzen	*46.9*	2.0	*50*	0	*93.8*	*70-125*	0			
Surr: Perylene-d12	*39.1*	2.0	*50*	0	*78.2*	*46-142*	0			
Surr: Triphenylphosphate	*54.7*	2.0	*50*	0	*109*	*77-169*	0			

MSD Sample ID: **1212172-01B MSD** Units: **µg/L** Analysis Date: **12/10/2012 02:44 PM**
Client ID: Run ID: **SVMS6_121210A** SeqNo: **2165425** Prep Date: **12/7/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenanthrene	57.2	2.0	50	0	114	70-130	60	4.78	30	
Surr: 1,3-Dimethyl-2-Nitrobenzen	*44.1*	2.0	*50*	0	*88.2*	*70-125*	46.9	*6.15*		
Surr: Perylene-d12	*41.8*	2.0	*50*	0	*83.6*	*46-142*	39.1	*6.67*		
Surr: Triphenylphosphate	*61.7*	2.0	*50*	0	*123*	*77-169*	54.7	*12*		

The following samples were analyzed in this batch:

1212173-01B	1212173-02B	1212173-03B
1212173-04B	1212173-05B	1212173-06B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212173
Project: Marshall Potable Water 12/4/12

QC BATCH REPORT

Batch ID: **R113652** Instrument ID **VMS6** Method: **E524.2**

MBLK Sample ID: **VBLKW1-121210-R113652** Units: **µg/L** Analysis Date: **12/10/2012 11:43 AM**
Client ID: Run ID: **VMS6_121210A** SeqNo: **2164454** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,3-Trimethylbenzene	ND	0.50								
1,2,4-Trimethylbenzene	ND	0.50								
1,3,5-Trimethylbenzene	ND	0.50								
2-Methylnaphthalene	ND	2.0								
4-Isopropyltoluene	ND	0.50								
Benzene	ND	0.50								
Cyclohexane	ND	1.0								
Ethylbenzene	ND	0.50								
Isopropylbenzene	ND	0.50								
m,p-Xylene	ND	1.0								
Naphthalene	ND	0.50								
n-Propylbenzene	ND	0.50								
o-Xylene	ND	0.50								
sec-Butylbenzene	ND	0.50								
Toluene	ND	0.50								
Surr: 1,2-Dichloroethane-d4	*20.22*	0.10	*20*	0	*101*	*80-120*	0			
Surr: 4-Bromofluorobenzene	*20.08*	0.10	*20*	0	*100*	*80-120*	0			
Surr: Dibromofluoromethane	*19.49*	0.10	*20*	0	*97.4*	*80-120*	0			
Surr: Toluene-d8	*19.57*	0.10	*20*	0	*97.8*	*80-120*	0			

LCS Sample ID: **VLCSW1-121210-R113652** Units: **µg/L** Analysis Date: **12/10/2012 10:39 AM**
Client ID: Run ID: **VMS6_121210A** SeqNo: **2163207** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	4.13	0.50	5	0	82.6	70-130	0			
1,3,5-Trimethylbenzene	4.25	0.50	5	0	85	70-130	0			
Benzene	4.38	0.50	5	0	87.6	70-130	0			
Ethylbenzene	4.12	0.50	5	0	82.4	70-130	0			
Isopropylbenzene	4.07	0.50	5	0	81.4	70-130	0			
m,p-Xylene	8.24	1.0	10	0	82.4	70-130	0			
Naphthalene	4.47	0.50	5	0	89.4	70-130	0			
n-Propylbenzene	4.04	0.50	5	0	80.8	70-130	0			
o-Xylene	4.28	0.50	5	0	85.6	70-130	0			
sec-Butylbenzene	4.48	0.50	5	0	89.6	70-130	0			
Toluene	4.16	0.50	5	0	83.2	70-130	0			
Surr: 1,2-Dichloroethane-d4	*19.91*	0.10	*20*	0	*99.6*	*80-120*	0			
Surr: 4-Bromofluorobenzene	*20.29*	0.10	*20*	0	*101*	*80-120*	0			
Surr: Dibromofluoromethane	*20.14*	0.10	*20*	0	*101*	*80-120*	0			
Surr: Toluene-d8	*19.67*	0.10	*20*	0	*98.4*	*80-120*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212173
Project: Marshall Potable Water 12/4/12

QC BATCH REPORT

Batch ID: **R113652** Instrument ID **VMS6** Method: **E524.2**

MS Sample ID: **1212198-03A MS** Units: **µg/L** Analysis Date: **12/10/2012 07:49 PM**
Client ID: Run ID: **VMS6_121210A** SeqNo: **2164476** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	1.88	0.50	5	0	37.6	70-130	0			S
1,3,5-Trimethylbenzene	ND	0.50	5	0	0	70-130	0			S
Benzene	4.99	0.50	5	0	99.8	70-130	0			
Ethylbenzene	4.88	0.50	5	0	97.6	70-130	0			
Isopropylbenzene	5.01	0.50	5	0	100	70-130	0			
m,p-Xylene	8.24	1.0	10	0	82.4	70-130	0			
Naphthalene	3.63	0.50	5	0	72.6	70-130	0			
n-Propylbenzene	4.79	0.50	5	0	95.8	70-130	0			
o-Xylene	4.72	0.50	5	0	94.4	70-130	0			
sec-Butylbenzene	5.1	0.50	5	0	102	70-130	0			
Toluene	4.98	0.50	5	0	99.6	70-130	0			
Surr: 1,2-Dichloroethane-d4	*19.46*	0.10	*20*	0	*97.3*	*80-120*	0			
Surr: 4-Bromofluorobenzene	*20.19*	0.10	*20*	0	*101*	*80-120*	0			
Surr: Dibromofluoromethane	*19.42*	0.10	*20*	0	*97.1*	*80-120*	0			
Surr: Toluene-d8	*19.39*	0.10	*20*	0	*97*	*80-120*	0			

MSD Sample ID: **1212198-03A MSD** Units: **µg/L** Analysis Date: **12/10/2012 08:13 PM**
Client ID: Run ID: **VMS6_121210A** SeqNo: **2164477** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	1.85	0.50	5	0	37	70-130	1.88	1.61	25	S
1,3,5-Trimethylbenzene	ND	0.50	5	0	0	70-130	0	0	25	S
Benzene	4.88	0.50	5	0	97.6	70-130	4.99	2.23	25	
Ethylbenzene	4.68	0.50	5	0	93.6	70-130	4.88	4.18	25	
Isopropylbenzene	4.68	0.50	5	0	93.6	70-130	5.01	6.81	25	
m,p-Xylene	7.42	1.0	10	0	74.2	70-130	8.24	10.5	25	
Naphthalene	4.65	0.50	5	0	93	70-130	3.63	24.6	25	
n-Propylbenzene	4.58	0.50	5	0	91.6	70-130	4.79	4.48	25	
o-Xylene	4.38	0.50	5	0	87.6	70-130	4.72	7.47	25	
sec-Butylbenzene	5.11	0.50	5	0	102	70-130	5.1	0.196	25	
Toluene	4.64	0.50	5	0	92.8	70-130	4.98	7.07	25	
Surr: 1,2-Dichloroethane-d4	*19.57*	0.10	*20*	0	*97.8*	*80-120*	19.46	*0.564*		
Surr: 4-Bromofluorobenzene	*20.4*	0.10	*20*	0	*102*	*80-120*	20.19	*1.03*		
Surr: Dibromofluoromethane	*19.41*	0.10	*20*	0	*97*	*80-120*	19.42	*0.0515*		
Surr: Toluene-d8	*19.25*	0.10	*20*	0	*96.2*	*80-120*	19.39	*0.725*		

The following samples were analyzed in this batch:

1212173-01A	1212173-02A	1212173-03A
1212173-04A	1212173-05A	1212173-06A
1212173-07A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

1212173

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # ___ of ___

COC #
Task: Potable B
Total # of Samples: 7
Event Complete? N

Regular | X | Turnaround Time | 5 Day

BILLING CODE: 7.00

Lab Information:
Lab Name: ALS Laboratory Group
Address: 3352 128th Ave. Holland, MI 49424-9263
Lab PM: Ann Preston
Phone/Fax: 1-616-399-6070/1-616-399-6185
Lab PM email: ann.preston@alsglobal.com
Applicable Lab Quote #:

Project Information:
Site ID #: 33
Project #: 60162778
Site Address: 5555 Glenwood Parkway SE Suite 200
City: Grand Rapids State, Zip: MI
Site PM Name: [redacted]
Phone/Fax:
Site PM Email: Bryan.Stiemsma@aecom.com

Other Information:
Send Invoice to: Enbridge Energy - ATTN Accounts Payable
Address: 1100 Louisiana Suite 1100
City/State: Houson, TX Phone #: 713-821-2000
PO #
Send EDD to
CC Hardcopy report
CC Hardcopy report

ITEM #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	MATRIX CODE	G=GRAB C=COMP	SAMPLE DATE	#OF CONTAINERS	Comments/Lab Sample I.D.	Preservative:	HCl	HCl	HNO3						HNO3				
								Analysis:	VOCs	SVOCs	TAL Metals	TPH DRO	TPH GRO	PCBs/Pesticides	TOC	TSS	Hg by EPA 245.1				Additional Notes
1	WPE12041100JTC1B	C086970PW1	GW	G	12/4/2012 1100	5	C086970		X	X	X						X				
2	WPE12040945JTC1B	C0889FEWP1	GW	G	12/4/2012 0945	5	C0889FE		X	X	X						X				
3	WPC12041242JTC1B	C001311A	GW	G	12/4/2012 1242	5	C001311		X	X	X						X				
4	WPC12041313JTC1B	C0137BDA	GW	G	12/4/2012 1313	5	C0137BD		X	X	X						X				
5	WPC12041219JTC1B	C0310F2PW1	GW	G	12/4/2012 1219	5	C0310F2		X	X	X						X				
6	WPE12041110JTC1B	C086970PW2	GW	G	12/4/2012 1110	5	C086970		X	X	X						X				
7	TB120412JTC5	Trip Blank	W	G	12/4/12 0000	1	Trip Blank		X												TRIP BLANK

Additional Comments/Special Instructions:
Samplers: Jon Carveth; Lorri Lego

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Lorri Lego	12/4/12	1425	[signature]	12/4/12	1425
Jon Carveth	12/5/12	0800	[signature]	12/5/12	0800

Sample Receipt Conditions

Temp in °C	Samples on ice?	Sample intact?	Trip Blank?
1.4-3.0	(Y)N	(Y)N	(Y)N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N

SHIPPING INFO.

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: JON CARVETH, LORRI LEGO
SIGNATURE of SAMPLER: DATE Signed: Time:

ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **05-Dec-12 08:00**

Work Order: **1212173** Received by: **PD**

Checklist completed by Diane Shaw (eSignature) 05-Dec-12 (Date) Reviewed by: Ann Preston (eSignature) 06-Dec-12 (Date)

Matrices: Potable Water
Carrier name: ALSHN

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	1.4-3.0 c		
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	12/5/2012 4:47:11 PM		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL

Date: 12/4/12 Time:
Name:
Company:

Seal Broken By:
Date:

2.8c

ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL

Date: 12/4/12
Name:
Company:

Seal Broken By:
Date:

2.2

ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL

Date: 12/4/12 Time:
Name:
Company:

Seal Broken By:
Date:

3.0

ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL

Date: 12-4-12 Time:
Name:
Company:

Seal Broken By:
Date:

2.4

ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL

Date: 12/4 Time: 2108
Name:
Company:

Seal Broken By:
Date:

1.4

2

17-Dec-2012

Alison Schoeff
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall Potable Water 12/5/12** Work Order: **1212318**

Dear Alison,

ALS Environmental received 12 samples on 07-Dec-2012 03:35 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 24.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

Certificate No: MN331938

ALS Group USA, Corp

Date: 17-Dec-12

Client: AECOM Environment
Project: Marshall Potable Water 12/5/12
Work Order: **1212318**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1212318-01	WPE12051642JTC1B	Potable Water		12/5/2012 16:42	12/7/2012 15:35	☐
1212318-02	WPE12051333JTC1B	Potable Water		12/5/2012 13:33	12/7/2012 15:35	☐
1212318-03	WPE12051230JTC2B	Potable Water		12/5/2012 12:30	12/7/2012 15:35	☐
1212318-04	WPE12051230JTC1B	Potable Water		12/5/2012 12:30	12/7/2012 15:35	☐
1212318-05	WPD12051544JTC1B	Potable Water		12/5/2012 15:44	12/7/2012 15:35	☐
1212318-06	WPD12051523JTC1B	Potable Water		12/5/2012 15:23	12/7/2012 15:35	☐
1212318-07	WPE12051128JTC1B	Potable Water		12/5/2012 11:28	12/7/2012 15:35	☐
1212318-08	WPE12051405JTC1B	Potable Water		12/5/2012 14:05	12/7/2012 15:35	☐
1212318-09	WPE12051304JTC1B	Potable Water		12/5/2012 13:04	12/7/2012 15:35	☐
1212318-10	WPE12051005JTC1B	Potable Water		12/5/2012 10:05	12/7/2012 15:35	☐
1212318-11	WPE12051051JTC3B	Potable Water		12/5/2012 10:51	12/7/2012 15:35	☐
1212318-12	TB120512JTC5	Water		12/5/2012	12/7/2012 15:35	☐

ALS Group USA, Corp

Date: 17-Dec-12

Client: AECOM Environment
Project: Marshall Potable Water 12/5/12
WorkOrder: **1212318**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
SD	Serial Dilution
TDL	Target Detection Limit

Units Reported	Description
µg/L	Micrograms per Liter
mg/L	Milligrams per Liter

ALS Group USA, Corp

Date: *17-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPE12051642JTC1B
Work Order:	1212318	**Collection Date:**	12/5/2012 4:42:00 PM
Project:	Marshall Potable Water 12/5/12		
Lab ID:	1212318-01	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/11/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/11/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/12/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/12/2012
Iron	**3.8**	**0.20**	**0.20**		**mg/L**	1	12/12/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/12/2012
Nickel	ND	0.020	0.020		mg/L	1	12/12/2012
Titanium	ND	0.0050	0		mg/L	1	12/12/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/12/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/11/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/12/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*92.0*	*70-125*			*%REC*	1	12/12/2012
Surr: Perylene-d12	*91.6*	*46-142*			*%REC*	1	12/12/2012
Surr: Triphenylphosphate	*146*	*77-169*			*%REC*	1	12/12/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/10/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/10/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/10/2012
Benzene	ND	1.0	1.0		µg/L	1	12/10/2012
Cyclohexane	ND	10	10		µg/L	1	12/10/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/10/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/10/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/10/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/10/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
Toluene	ND	1.0	1.0		µg/L	1	12/10/2012
Surr: 1,2-Dichloroethane-d4	*96.8*	*70-130*			*%REC*	1	12/10/2012
Surr: 4-Bromofluorobenzene	*97.3*	*70-130*			*%REC*	1	12/10/2012
Surr: Dibromofluoromethane	*95.6*	*70-130*			*%REC*	1	12/10/2012
Surr: Toluene-d8	*97.2*	*70-130*			*%REC*	1	12/10/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPE12051333JTC1B
Work Order:	1212318	**Collection Date:**	12/5/2012 1:33:00 PM
Project:	Marshall Potable Water 12/5/12		
Lab ID:	1212318-02	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/11/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/11/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/12/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/12/2012
Iron	**1.0**	**0.20**	**0.20**		**mg/L**	1	12/12/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/12/2012
Nickel	ND	0.020	0.020		mg/L	1	12/12/2012
Titanium	ND	0.0050	0		mg/L	1	12/12/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/12/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/11/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/12/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*87.4*	*70-125*			*%REC*	1	12/12/2012
Surr: Perylene-d12	*96.2*	*46-142*			*%REC*	1	12/12/2012
Surr: Triphenylphosphate	*154*	*77-169*			*%REC*	1	12/12/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/10/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/10/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/10/2012
Benzene	ND	1.0	1.0		µg/L	1	12/10/2012
Cyclohexane	ND	10	10		µg/L	1	12/10/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/10/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/10/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/10/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/10/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/10/2012
Toluene	ND	1.0	1.0		µg/L	1	12/10/2012
Surr: 1,2-Dichloroethane-d4	*98.0*	*70-130*			*%REC*	1	12/10/2012
Surr: 4-Bromofluorobenzene	*96.8*	*70-130*			*%REC*	1	12/10/2012
Surr: Dibromofluoromethane	*95.7*	*70-130*			*%REC*	1	12/10/2012
Surr: Toluene-d8	*96.4*	*70-130*			*%REC*	1	12/10/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPE12051230JTC2B
Work Order:	1212318	**Collection Date:**	12/5/2012 12:30:00 PM
Project:	Marshall Potable Water 12/5/12		
Lab ID:	1212318-03	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/11/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/11/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/12/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/12/2012
Iron	ND	0.20	0.20		mg/L	1	12/12/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/12/2012
Nickel	ND	0.020	0.020		mg/L	1	12/12/2012
Titanium	ND	0.0050	0		mg/L	1	12/12/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/12/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/11/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/12/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*89.2*	*70-125*			*%REC*	1	12/12/2012
Surr: Perylene-d12	*96.4*	*46-142*			*%REC*	1	12/12/2012
Surr: Triphenylphosphate	*154*	*77-169*			*%REC*	1	12/12/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/11/2012
Benzene	ND	1.0	1.0		µg/L	1	12/11/2012
Cyclohexane	ND	10	10		µg/L	1	12/11/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/11/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/11/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Toluene	ND	1.0	1.0		µg/L	1	12/11/2012
Surr: 1,2-Dichloroethane-d4	*97.8*	*70-130*			*%REC*	1	12/11/2012
Surr: 4-Bromofluorobenzene	*96.4*	*70-130*			*%REC*	1	12/11/2012
Surr: Dibromofluoromethane	*94.8*	*70-130*			*%REC*	1	12/11/2012
Surr: Toluene-d8	*96.4*	*70-130*			*%REC*	1	12/11/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPE12051230JTC1B
Work Order:	1212318	**Collection Date:**	12/5/2012 12:30:00 PM
Project:	Marshall Potable Water 12/5/12		
Lab ID:	1212318-04	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/11/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/11/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/12/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/12/2012
Iron	ND	0.20	0.20		mg/L	1	12/12/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/12/2012
Nickel	ND	0.020	0.020		mg/L	1	12/12/2012
Titanium	ND	0.0050	0		mg/L	1	12/12/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/12/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/11/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/12/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*87.8*	*70-125*			*%REC*	1	12/12/2012
Surr: Perylene-d12	*95.0*	*46-142*			*%REC*	1	12/12/2012
Surr: Triphenylphosphate	*153*	*77-169*			*%REC*	1	12/12/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/11/2012
Benzene	ND	1.0	1.0		µg/L	1	12/11/2012
Cyclohexane	ND	10	10		µg/L	1	12/11/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/11/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/11/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Toluene	ND	1.0	1.0		µg/L	1	12/11/2012
Surr: 1,2-Dichloroethane-d4	*96.6*	*70-130*			*%REC*	1	12/11/2012
Surr: 4-Bromofluorobenzene	*96.2*	*70-130*			*%REC*	1	12/11/2012
Surr: Dibromofluoromethane	*94.4*	*70-130*			*%REC*	1	12/11/2012
Surr: Toluene-d8	*97.3*	*70-130*			*%REC*	1	12/11/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPD12051544JTC1B
Work Order:	1212318	**Collection Date:**	12/5/2012 3:44:00 PM
Project:	Marshall Potable Water 12/5/12		
Lab ID:	1212318-05	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/11/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/11/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/12/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/12/2012
Iron	**1.1**	**0.20**	**0.20**		**mg/L**	1	12/12/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/12/2012
Nickel	ND	0.020	0.020		mg/L	1	12/12/2012
Titanium	ND	0.0050	0		mg/L	1	12/12/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/12/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/11/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/12/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*88.6*	*70-125*			*%REC*	1	12/12/2012
Surr: Perylene-d12	*96.2*	*46-142*			*%REC*	1	12/12/2012
Surr: Triphenylphosphate	*154*	*77-169*			*%REC*	1	12/12/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/11/2012
Benzene	ND	1.0	1.0		µg/L	1	12/11/2012
Cyclohexane	ND	10	10		µg/L	1	12/11/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/11/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/11/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Toluene	ND	1.0	1.0		µg/L	1	12/11/2012
Surr: 1,2-Dichloroethane-d4	*99.2*	*70-130*			*%REC*	1	12/11/2012
Surr: 4-Bromofluorobenzene	*96.8*	*70-130*			*%REC*	1	12/11/2012
Surr: Dibromofluoromethane	*95.2*	*70-130*			*%REC*	1	12/11/2012
Surr: Toluene-d8	*96.8*	*70-130*			*%REC*	1	12/11/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPD12051523JTC1B
Work Order:	1212318	**Collection Date:**	12/5/2012 3:23:00 PM
Project:	Marshall Potable Water 12/5/12		
Lab ID:	1212318-06	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/11/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/11/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/12/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/12/2012
Iron	**1.1**	**0.20**	**0.20**		**mg/L**	1	12/12/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/12/2012
Nickel	ND	0.020	0.020		mg/L	1	12/12/2012
Titanium	ND	0.0050	0		mg/L	1	12/12/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/12/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/11/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/12/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*92.2*	*70-125*			*%REC*	1	12/12/2012
Surr: Perylene-d12	*95.8*	*46-142*			*%REC*	1	12/12/2012
Surr: Triphenylphosphate	*159*	*77-169*			*%REC*	1	12/12/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/11/2012
Benzene	ND	1.0	1.0		µg/L	1	12/11/2012
Cyclohexane	ND	10	10		µg/L	1	12/11/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/11/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/11/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Toluene	ND	1.0	1.0		µg/L	1	12/11/2012
Surr: 1,2-Dichloroethane-d4	*98.5*	*70-130*			*%REC*	1	12/11/2012
Surr: 4-Bromofluorobenzene	*97.8*	*70-130*			*%REC*	1	12/11/2012
Surr: Dibromofluoromethane	*95.8*	*70-130*			*%REC*	1	12/11/2012
Surr: Toluene-d8	*96.2*	*70-130*			*%REC*	1	12/11/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPE12051128JTC1B
Work Order:	1212318	**Collection Date:**	12/5/2012 11:28:00 AM
Project:	Marshall Potable Water 12/5/12		
Lab ID:	1212318-07	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/11/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/11/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/12/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/13/2012
Iron	ND	0.20	0.20		mg/L	1	12/13/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/13/2012
Nickel	ND	0.020	0.020		mg/L	1	12/13/2012
Titanium	ND	0.0050	0		mg/L	1	12/13/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/13/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/11/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/12/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*90.8*	*70-125*			*%REC*	1	12/12/2012
Surr: Perylene-d12	*91.4*	*46-142*			*%REC*	1	12/12/2012
Surr: Triphenylphosphate	*157*	*77-169*			*%REC*	1	12/12/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/11/2012
Benzene	ND	1.0	1.0		µg/L	1	12/11/2012
Cyclohexane	ND	10	10		µg/L	1	12/11/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/11/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/11/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Toluene	ND	1.0	1.0		µg/L	1	12/11/2012
Surr: 1,2-Dichloroethane-d4	*98.0*	*70-130*			*%REC*	1	12/11/2012
Surr: 4-Bromofluorobenzene	*98.6*	*70-130*			*%REC*	1	12/11/2012
Surr: Dibromofluoromethane	*94.2*	*70-130*			*%REC*	1	12/11/2012
Surr: Toluene-d8	*98.6*	*70-130*			*%REC*	1	12/11/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPE12051405JTC1B
Work Order:	1212318	**Collection Date:**	12/5/2012 2:05:00 PM
Project:	Marshall Potable Water 12/5/12		
Lab ID:	1212318-08	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/11/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/11/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/12/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/13/2012
Iron	**0.70**	**0.20**	**0.20**		**mg/L**	1	12/13/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/13/2012
Nickel	ND	0.020	0.020		mg/L	1	12/13/2012
Titanium	ND	0.0050	0		mg/L	1	12/13/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/13/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/11/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/12/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*88.6*	*70-125*			*%REC*	1	12/12/2012
Surr: Perylene-d12	*91.0*	*46-142*			*%REC*	1	12/12/2012
Surr: Triphenylphosphate	*151*	*77-169*			*%REC*	1	12/12/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/11/2012
Benzene	ND	1.0	1.0		µg/L	1	12/11/2012
Cyclohexane	ND	10	10		µg/L	1	12/11/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/11/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/11/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Toluene	ND	1.0	1.0		µg/L	1	12/11/2012
Surr: 1,2-Dichloroethane-d4	*96.2*	*70-130*			*%REC*	1	12/11/2012
Surr: 4-Bromofluorobenzene	*101*	*70-130*			*%REC*	1	12/11/2012
Surr: Dibromofluoromethane	*95.5*	*70-130*			*%REC*	1	12/11/2012
Surr: Toluene-d8	*99.0*	*70-130*			*%REC*	1	12/11/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPE12051304JTC1B
Work Order:	1212318	**Collection Date:**	12/5/2012 1:04:00 PM
Project:	Marshall Potable Water 12/5/12		
Lab ID:	1212318-09	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/11/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/11/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/12/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/13/2012
Iron	**0.39**	**0.20**	**0.20**		**mg/L**	1	12/13/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/13/2012
Nickel	ND	0.020	0.020		mg/L	1	12/13/2012
Titanium	ND	0.0050	0		mg/L	1	12/13/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/13/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/11/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/12/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*87.8*	*70-125*			*%REC*	1	12/12/2012
Surr: Perylene-d12	*92.4*	*46-142*			*%REC*	1	12/12/2012
Surr: Triphenylphosphate	*155*	*77-169*			*%REC*	1	12/12/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/11/2012
Benzene	ND	1.0	1.0		µg/L	1	12/11/2012
Cyclohexane	ND	10	10		µg/L	1	12/11/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/11/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/11/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Toluene	ND	1.0	1.0		µg/L	1	12/11/2012
Surr: 1,2-Dichloroethane-d4	*96.7*	*70-130*			*%REC*	1	12/11/2012
Surr: 4-Bromofluorobenzene	*93.7*	*70-130*			*%REC*	1	12/11/2012
Surr: Dibromofluoromethane	*93.4*	*70-130*			*%REC*	1	12/11/2012
Surr: Toluene-d8	*95.8*	*70-130*			*%REC*	1	12/11/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPE12051005JTC1B
Work Order:	1212318	**Collection Date:**	12/5/2012 10:05:00 AM
Project:	Marshall Potable Water 12/5/12		
Lab ID:	1212318-10	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/11/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/11/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/12/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/13/2012
Iron	ND	0.20	0.20		mg/L	1	12/13/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/13/2012
Nickel	ND	0.020	0.020		mg/L	1	12/13/2012
Titanium	ND	0.0050	0		mg/L	1	12/13/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/13/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/11/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/12/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*90.4*	*70-125*			*%REC*	1	12/12/2012
Surr: Perylene-d12	*94.8*	*46-142*			*%REC*	1	12/12/2012
Surr: Triphenylphosphate	*155*	*77-169*			*%REC*	1	12/12/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/11/2012
Benzene	ND	1.0	1.0		µg/L	1	12/11/2012
Cyclohexane	ND	10	10		µg/L	1	12/11/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/11/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/11/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Toluene	ND	1.0	1.0		µg/L	1	12/11/2012
Surr: 1,2-Dichloroethane-d4	*97.2*	*70-130*			*%REC*	1	12/11/2012
Surr: 4-Bromofluorobenzene	*94.8*	*70-130*			*%REC*	1	12/11/2012
Surr: Dibromofluoromethane	*94.2*	*70-130*			*%REC*	1	12/11/2012
Surr: Toluene-d8	*96.3*	*70-130*			*%REC*	1	12/11/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPE12051051JTC3B
Work Order:	1212318	**Collection Date:**	12/5/2012 10:51:00 AM
Project:	Marshall Potable Water 12/5/12		
Lab ID:	1212318-11	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/11/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/11/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/12/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/13/2012
Iron	**1.2**	**0.20**	**0.20**		**mg/L**	1	12/13/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/13/2012
Nickel	ND	0.020	0.020		mg/L	1	12/13/2012
Titanium	ND	0.0050	0		mg/L	1	12/13/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/13/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/11/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/12/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*90.4*	*70-125*			*%REC*	1	12/12/2012
Surr: Perylene-d12	*92.2*	*46-142*			*%REC*	1	12/12/2012
Surr: Triphenylphosphate	*148*	*77-169*			*%REC*	1	12/12/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/11/2012
Benzene	ND	1.0	1.0		µg/L	1	12/11/2012
Cyclohexane	ND	10	10		µg/L	1	12/11/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/11/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/11/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Toluene	ND	1.0	1.0		µg/L	1	12/11/2012
Surr: 1,2-Dichloroethane-d4	*98.1*	*70-130*			*%REC*	1	12/11/2012
Surr: 4-Bromofluorobenzene	*94.8*	*70-130*			*%REC*	1	12/11/2012
Surr: Dibromofluoromethane	*93.1*	*70-130*			*%REC*	1	12/11/2012
Surr: Toluene-d8	*95.8*	*70-130*			*%REC*	1	12/11/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	TB120512JTC5
Work Order:	1212318	**Collection Date:**	12/5/2012
Project:	Marshall Potable Water 12/5/12		
Lab ID:	1212318-12	**Matrix:**	WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/11/2012
Benzene	ND	1.0	1.0		µg/L	1	12/11/2012
Cyclohexane	ND	10	10		µg/L	1	12/11/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/11/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/11/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Toluene	ND	1.0	1.0		µg/L	1	12/11/2012
Surr: 1,2-Dichloroethane-d4	*97.7*	*70-130*			*%REC*	1	12/11/2012
Surr: 4-Bromofluorobenzene	*96.6*	*70-130*			*%REC*	1	12/11/2012
Surr: Dibromofluoromethane	*93.8*	*70-130*			*%REC*	1	12/11/2012
Surr: Toluene-d8	*97.0*	*70-130*			*%REC*	1	12/11/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

QC BATCH REPORT

Batch ID: **45300** Instrument ID **HG1** Method: **E245.1**

MBLK Sample ID: **MBLK-45300-45300** Units: **mg/L** Analysis Date: **12/11/2012 01:09 PM**

Client ID: Run ID: **HG1_121211A** SeqNo: **2165520** Prep Date: **12/11/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.000025	0.00020								J

LCS Sample ID: **LCS-45300-45300** Units: **mg/L** Analysis Date: **12/11/2012 01:11 PM**

Client ID: Run ID: **HG1_121211A** SeqNo: **2165521** Prep Date: **12/11/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.002	0.00020	0.002	0	100	85-115	0			

MS Sample ID: **1212318-11CMS** Units: **mg/L** Analysis Date: **12/11/2012 01:42 PM**

Client ID: **WPE12051051JTC3B** Run ID: **HG1_121211A** SeqNo: **2165552** Prep Date: **12/11/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.002038	0.00020	0.002	0.000023	101	80-120	0			

MS Sample ID: **1212319-09CMS** Units: **mg/L** Analysis Date: **12/11/2012 02:15 PM**

Client ID: Run ID: **HG1_121211A** SeqNo: **2165575** Prep Date: **12/11/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001974	0.00020	0.002	0.000014	98	80-120	0			

MSD Sample ID: **1212318-11CMSD** Units: **mg/L** Analysis Date: **12/11/2012 01:44 PM**

Client ID: **WPE12051051JTC3B** Run ID: **HG1_121211A** SeqNo: **2165554** Prep Date: **12/11/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.002034	0.00020	0.002	0.000023	101	80-120	0.002038	0.196	20	

MSD Sample ID: **1212319-09CMSD** Units: **mg/L** Analysis Date: **12/11/2012 02:17 PM**

Client ID: Run ID: **HG1_121211A** SeqNo: **2165577** Prep Date: **12/11/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001999	0.00020	0.002	0.000014	99.2	80-120	0.001974	1.26	20	

The following samples were analyzed in this batch:

1212318-01C	1212318-02C	1212318-03C
1212318-04C	1212318-05C	1212318-06C
1212318-07C	1212318-08C	1212318-09C
1212318-10C	1212318-11C	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212318
Project: Marshall Potable Water 12/5/12

QC BATCH REPORT

Batch ID: **45346** Instrument ID **ICPMS2** Method: **E200.8**

MBLK Sample ID: **MBLK-45346-45346** Units: **mg/L** Analysis Date: **12/12/2012 11:04 PM**
Client ID: Run ID: **ICPMS2_121212A** SeqNo: **2167990** Prep Date: **12/12/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	ND	0.0020								
Iron	ND	0.080								
Molybdenum	ND	0.0050								
Nickel	ND	0.0050								
Titanium	ND	0.0050								
Vanadium	ND	0.0050								

LCS Sample ID: **LCS-45346-45346** Units: **mg/L** Analysis Date: **12/12/2012 11:09 PM**
Client ID: Run ID: **ICPMS2_121212A** SeqNo: **2167991** Prep Date: **12/12/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.09822	0.0020	0.1	0	98.2	85-115	0			
Iron	9.363	0.080	10	0	93.6	85-115	0			
Molybdenum	0.09334	0.0050	0.1	0	93.3	85-115	0			
Nickel	0.0931	0.0050	0.1	0	93.1	85-115	0			
Titanium	0.09612	0.0050	0.1	0	96.1	85-115	0			
Vanadium	0.09834	0.0050	0.1	0	98.3	85-115	0			

MS Sample ID: **1212318-11CMS** Units: **mg/L** Analysis Date: **12/13/2012 12:40 AM**
Client ID: **WPE12051051JTC3B** Run ID: **ICPMS2_121212A** SeqNo: **2168019** Prep Date: **12/12/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.09061	0.0020	0.1	-0.00001341	90.6	70-130	0			
Iron	10.24	0.080	10	1.206	90.3	70-130	0			
Molybdenum	0.09339	0.0050	0.1	0.0005622	92.8	70-130	0			
Nickel	0.08884	0.0050	0.1	0.001072	87.8	70-130	0			
Titanium	0.09576	0.0050	0.1	0.001076	94.7	70-130	0			
Vanadium	0.09664	0.0050	0.1	-8.598E-06	96.6	70-130	0			

MS Sample ID: **1212319-09CMS** Units: **mg/L** Analysis Date: **12/13/2012 02:58 AM**
Client ID: Run ID: **ICPMS2_121212A** SeqNo: **2168045** Prep Date: **12/12/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.0941	0.0020	0.1	0.00001172	94.1	70-130	0			
Iron	9.228	0.080	10	0.01095	92.2	70-130	0			
Molybdenum	0.09505	0.0050	0.1	0.0004552	94.6	70-130	0			
Nickel	0.09184	0.0050	0.1	0.001306	90.5	70-130	0			
Titanium	0.09824	0.0050	0.1	0.0008296	97.4	70-130	0			
Vanadium	0.1	0.0050	0.1	0.0002069	99.8	70-130	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212318
Project: Marshall Potable Water 12/5/12

QC BATCH REPORT

Batch ID: **45346** Instrument ID **ICPMS2** Method: **E200.8**

MSD Sample ID: **1212318-11CMSD** Units: **mg/L** Analysis Date: **12/13/2012 12:45 AM**
Client ID: **WPE12051051JTC3B** Run ID: **ICPMS2_121212A** SeqNo: **2168020** Prep Date: **12/12/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.08826	0.0020	0.1	-0.00001341	88.3	70-130	0.09061	2.63	20	
Iron	10	0.080	10	1.206	87.9	70-130	10.24	2.37	20	
Molybdenum	0.09164	0.0050	0.1	0.0005622	91.1	70-130	0.09339	1.89	20	
Nickel	0.08657	0.0050	0.1	0.001072	85.5	70-130	0.08884	2.59	20	
Titanium	0.09157	0.0050	0.1	0.001076	90.5	70-130	0.09576	4.47	20	
Vanadium	0.09452	0.0050	0.1	-8.598E-06	94.5	70-130	0.09664	2.22	20	

MSD Sample ID: **1212319-09CMSD** Units: **mg/L** Analysis Date: **12/13/2012 03:03 AM**
Client ID: Run ID: **ICPMS2_121212A** SeqNo: **2168046** Prep Date: **12/12/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.09069	0.0020	0.1	0.00001172	90.7	70-130	0.0941	3.69	20	
Iron	9.024	0.080	10	0.01095	90.1	70-130	9.228	2.24	20	
Molybdenum	0.09316	0.0050	0.1	0.0004552	92.7	70-130	0.09505	2.01	20	
Nickel	0.08959	0.0050	0.1	0.001306	88.3	70-130	0.09184	2.48	20	
Titanium	0.09673	0.0050	0.1	0.0008296	95.9	70-130	0.09824	1.55	20	
Vanadium	0.09758	0.0050	0.1	0.0002069	97.4	70-130	0.1	2.45	20	

The following samples were analyzed in this batch:

1212318-01C	1212318-02C	1212318-03C
1212318-04C	1212318-05C	1212318-06C
1212318-07C	1212318-08C	1212318-09C
1212318-10C	1212318-11C	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212318
Project: Marshall Potable Water 12/5/12

QC BATCH REPORT

Batch ID: **45294** Instrument ID **SVMS6** Method: **E525.2**

MBLK Sample ID: **PNBLKW1-45294-45294** Units: **µg/L** Analysis Date: **12/12/2012 11:11 AM**
Client ID: Run ID: **SVMS6_121212A** SeqNo: **2168057** Prep Date: **12/11/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenanthrene	ND	0.20								
Surr: 1,3-Dimethyl-2-Nitrobenzen	*4.31*	0.20	*5*	0	*86.2*	*70-125*	0			
Surr: Perylene-d12	*4.05*	0.20	*5*	0	*81*	*46-142*	0			
Surr: Triphenylphosphate	*7.31*	0.20	*5*	0	*146*	*77-169*	0			

LCS Sample ID: **PNLCSW1-45294-45294** Units: **µg/L** Analysis Date: **12/12/2012 11:45 AM**
Client ID: Run ID: **SVMS6_121212A** SeqNo: **2168058** Prep Date: **12/11/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenanthrene	6.08	0.20	5	0	122	70-130	0			
Surr: 1,3-Dimethyl-2-Nitrobenzen	*4.48*	0.20	*5*	0	*89.6*	*70-125*	0			
Surr: Perylene-d12	*4.61*	0.20	*5*	0	*92.2*	*46-142*	0			
Surr: Triphenylphosphate	*7.34*	0.20	*5*	0	*147*	*77-169*	0			

MS Sample ID: **1212318-11B MS** Units: **µg/L** Analysis Date: **12/12/2012 12:18 PM**
Client ID: **WPE12051051JTC3B** Run ID: **SVMS6_121212A** SeqNo: **2168059** Prep Date: **12/11/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenanthrene	61.7	2.0	50	0	123	70-130	0			
Surr: 1,3-Dimethyl-2-Nitrobenzen	*47.2*	2.0	*50*	0	*94.4*	*70-125*	0			
Surr: Perylene-d12	*42.9*	2.0	*50*	0	*85.8*	*46-142*	0			
Surr: Triphenylphosphate	*73.2*	2.0	*50*	0	*146*	*77-169*	0			

MSD Sample ID: **1212318-11B MSD** Units: **µg/L** Analysis Date: **12/12/2012 12:52 PM**
Client ID: **WPE12051051JTC3B** Run ID: **SVMS6_121212A** SeqNo: **2168060** Prep Date: **12/11/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenanthrene	61.4	2.0	50	0	123	70-130	61.7	0.487	30	
Surr: 1,3-Dimethyl-2-Nitrobenzen	*45.5*	2.0	*50*	0	*91*	*70-125*	47.2	*3.67*		
Surr: Perylene-d12	*43.3*	2.0	*50*	0	*86.6*	*46-142*	42.9	*0.928*		
Surr: Triphenylphosphate	*74.7*	2.0	*50*	0	*149*	*77-169*	73.2	*2.03*		

The following samples were analyzed in this batch:

1212318-01B	1212318-02B	1212318-03B
1212318-04B	1212318-05B	1212318-06B
1212318-07B	1212318-08B	1212318-09B
1212318-10B	1212318-11B	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212318
Project: Marshall Potable Water 12/5/12

QC BATCH REPORT

Batch ID: **R113708** Instrument ID **VMS6** Method: **E524.2**

MBLK Sample ID: **VBLKW2-121210-R113708** Units: **µg/L** Analysis Date: **12/10/2012 11:04 PM**
Client ID: Run ID: **VMS6_121210B** SeqNo: **2164453** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,3-Trimethylbenzene	ND	0.50								
1,2,4-Trimethylbenzene	ND	0.50								
1,3,5-Trimethylbenzene	ND	0.50								
2-Methylnaphthalene	ND	2.0								
4-Isopropyltoluene	ND	0.50								
Benzene	ND	0.50								
Cyclohexane	ND	1.0								
Ethylbenzene	ND	0.50								
Isopropylbenzene	ND	0.50								
m,p-Xylene	ND	1.0								
Naphthalene	ND	0.50								
n-Propylbenzene	ND	0.50								
o-Xylene	ND	0.50								
sec-Butylbenzene	ND	0.50								
Toluene	ND	0.50								
Surr: 1,2-Dichloroethane-d4	*20.31*	0.10	*20*	0	*102*	*80-120*	0			
Surr: 4-Bromofluorobenzene	*20.17*	0.10	*20*	0	*101*	*80-120*	0			
Surr: Dibromofluoromethane	*19.88*	0.10	*20*	0	*99.4*	*80-120*	0			
Surr: Toluene-d8	*20.24*	0.10	*20*	0	*101*	*80-120*	0			

LCS Sample ID: **VLCSW2-121210-R113708** Units: **µg/L** Analysis Date: **12/10/2012 10:15 PM**
Client ID: Run ID: **VMS6_121210B** SeqNo: **2164452** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	4.73	0.50	5	0	94.6	70-130	0			
1,3,5-Trimethylbenzene	4.77	0.50	5	0	95.4	70-130	0			
Benzene	4.78	0.50	5	0	95.6	70-130	0			
Ethylbenzene	4.68	0.50	5	0	93.6	70-130	0			
Isopropylbenzene	4.77	0.50	5	0	95.4	70-130	0			
m,p-Xylene	9.51	1.0	10	0	95.1	70-130	0			
Naphthalene	4.43	0.50	5	0	88.6	70-130	0			
n-Propylbenzene	4.67	0.50	5	0	93.4	70-130	0			
o-Xylene	4.66	0.50	5	0	93.2	70-130	0			
sec-Butylbenzene	4.91	0.50	5	0	98.2	70-130	0			
Toluene	4.7	0.50	5	0	94	70-130	0			
Surr: 1,2-Dichloroethane-d4	*20.33*	0.10	*20*	0	*102*	*80-120*	0			
Surr: 4-Bromofluorobenzene	*20.08*	0.10	*20*	0	*100*	*80-120*	0			
Surr: Dibromofluoromethane	*20.29*	0.10	*20*	0	*101*	*80-120*	0			
Surr: Toluene-d8	*19.7*	0.10	*20*	0	*98.5*	*80-120*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212318
Project: Marshall Potable Water 12/5/12

QC BATCH REPORT

Batch ID: **R113708** Instrument ID **VMS6** Method: **E524.2**

MS Sample ID: **1212318-11A MS** Units: **µg/L** Analysis Date: **12/11/2012 07:32 AM**
Client ID: **WPE12051051JTC3B** Run ID: **VMS6_121210B** SeqNo: **2165053** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	4.59	0.50	5	0	91.8	70-130	0			
1,3,5-Trimethylbenzene	4.8	0.50	5	0	96	70-130	0			
Benzene	4.9	0.50	5	0	98	70-130	0			
Ethylbenzene	4.77	0.50	5	0	95.4	70-130	0			
Isopropylbenzene	4.91	0.50	5	0	98.2	70-130	0			
m,p-Xylene	9.58	1.0	10	0	95.8	70-130	0			
Naphthalene	3.9	0.50	5	0	78	70-130	0			
n-Propylbenzene	4.76	0.50	5	0	95.2	70-130	0			
o-Xylene	4.68	0.50	5	0	93.6	70-130	0			
sec-Butylbenzene	5.08	0.50	5	0	102	70-130	0			
Toluene	4.77	0.50	5	0	95.4	70-130	0			
Surr: 1,2-Dichloroethane-d4	*19.44*	0.10	*20*	0	*97.2*	*80-120*	0			
Surr: 4-Bromofluorobenzene	*20.33*	0.10	*20*	0	*102*	*80-120*	0			
Surr: Dibromofluoromethane	*19.68*	0.10	*20*	0	*98.4*	*80-120*	0			
Surr: Toluene-d8	*19.64*	0.10	*20*	0	*98.2*	*80-120*	0			

MSD Sample ID: **1212318-11A MSD** Units: **µg/L** Analysis Date: **12/11/2012 07:56 AM**
Client ID: **WPE12051051JTC3B** Run ID: **VMS6_121210B** SeqNo: **2165054** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	4.64	0.50	5	0	92.8	70-130	4.59	1.08	25	
1,3,5-Trimethylbenzene	4.94	0.50	5	0	98.8	70-130	4.8	2.87	25	
Benzene	4.76	0.50	5	0	95.2	70-130	4.9	2.9	25	
Ethylbenzene	4.69	0.50	5	0	93.8	70-130	4.77	1.69	25	
Isopropylbenzene	4.96	0.50	5	0	99.2	70-130	4.91	1.01	25	
m,p-Xylene	9.57	1.0	10	0	95.7	70-130	9.58	0.104	25	
Naphthalene	4.05	0.50	5	0	81	70-130	3.9	3.77	25	
n-Propylbenzene	4.79	0.50	5	0	95.8	70-130	4.76	0.628	25	
o-Xylene	4.61	0.50	5	0	92.2	70-130	4.68	1.51	25	
sec-Butylbenzene	5.21	0.50	5	0	104	70-130	5.08	2.53	25	
Toluene	4.77	0.50	5	0	95.4	70-130	4.77	0	25	
Surr: 1,2-Dichloroethane-d4	*18.67*	0.10	*20*	0	*93.4*	*80-120*	19.44	*4.04*		
Surr: 4-Bromofluorobenzene	*19.61*	0.10	*20*	0	*98*	*80-120*	20.33	*3.61*		
Surr: Dibromofluoromethane	*18.81*	0.10	*20*	0	*94*	*80-120*	19.68	*4.52*		
Surr: Toluene-d8	*19.08*	0.10	*20*	0	*95.4*	*80-120*	19.64	*2.89*		

The following samples were analyzed in this batch:

1212318-01A	1212318-02A	1212318-03A
1212318-04A	1212318-05A	1212318-06A
1212318-07A	1212318-08A	1212318-09A
1212318-10A	1212318-11A	1212318-12A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

12123(8

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # ___ of ___

COC #
Task: Potable B
Total # of Samples: 12
Event Complete? N

Lab Information		Project Information		Other Information	
Lab Name:	ALS Laboratory Group	Site ID #:	33	Send Invoice to:	Enbridge Energy - ATTN Accounts Payable
Address:	3352 128th Ave. Holland, MI 49424-9263	Project #	60162778	Address:	1100 Louisiana Suite 1100
		Site Address	5555 Glenwood Parkway SE Suite 200	City/State:	Houson, TX Phone #: 713-821-2000
Lab PM:	Ann Preston	City	Grand Rapids State, Zip MI	PO #	
Phone/Fax:	1-616-399-6070/1-616-399-6185	Site PM Name	[redacted]sma	Send EDD to	
Lab PM email:	ann.preston@alsglobal.com	Phone/Fax:	[redacted]	CC Hardcopy report	
Applicable Lab Quote #:		Site PM Email:	Bryan.Stemsma@aecom.com	CC Hardcopy report	

Regular | X | | Turnaround Time | 5 Day

BILLING CODE: 7.00

ITEM #	SAMPLE ID (Samples IDs MUST BE UNIQUE)	SAMPLE LOCATION	MATRIX CODE	G=GRAB C=COMP	SAMPLE DATE	#OF CONTAINERS	Comments/Lab Sample I.D.	Preservative:	HCl	HCl	HNO3						HNO3				
								Analysis:	VOCs	SVOCs	TAL Metals	TPH DRO	TPH GRO	PCBs/Pesticides	TOC	TSS	Hg by EPA 245.1				Additional Notes
1	WPE12051642JTC1B	C07198APW1	GW	G	12/5/2012 1642	5	C07198A		X	X	X						X				
2	WPE12051333JTC1B	C00856DA	GW	G	12/5/2012 1333	5	C00856D		X	X	X						X				
3	WPE12051230JTC2B	C00928FA	GW	G	12/5/2012 1230	5	C00928F		X	X	X						X				DUP
4	WPE12051230JTC1B	C00928FA	GW	G	12/5/2012 1230	5	C00928F		X	X	X						X				
5	WPD12051544JTC1B	C015322A	GW	G	12/5/2012 1544	5	C015322		X	X	X						X				
6	WPD12051523JTC1B	C023047A	GW	G	12/5/2012 1523	5	C023047		X	X	X						X				
7	WPE12051128JTC1B	C0271D5PW1	GW	G	12/5/2012 1128	5	C0271D5		X	X	X						X				
8	WPE12051405JTC1B	C0337D3WP1	GW	G	12/5/2012 1405	5	C0337D3		X	X	X						X				
9	WPE12051304JTC1B	C03429BWP1	GW	G	12/5/2012 1304	5	C03429B		X	X	X						X				
10	WPE12051005JTC1B	C1346E7WP1	GW	G	12/5/2012 1005	5	C1346E7		X	X	X						X				
11	WPE12051051JTC3B	C14332AWP1	GW	G	12/5/2012 1051	15	C14332A		X	X	X						X				MS/MSD
12	TB120512JTC5	Trip Blank	W	G	12/5/2012 0000	1	Trip Blank		X												TRIP BLANK

Additional Comments/Special Instructions:
Samplers: Jon Carveth; Lorri Lego

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
	12.6.12	0825		12-6-12	0825
	12.7.12	1535		12-7-12	1535

Sample Receipt Conditions

Temp in 0C	Samples on Ice?	Sample Intact?	Trip Blank?
30-5.1	Y/N	Y/N	Y/N
	(Y)N	(Y)N	(Y)N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N

SHIPPING INFO:

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: JON CARVETH, LORR LEGO
SIGNATURE of SAMPLER: DATE Signed: Time:

ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **07-Dec-12 15:35**

Work Order: **1212318** Received by: **PD**

Checklist completed by Diane Shaw (eSignature) 10-Dec-12 (Date) Reviewed by: Ann Preston (eSignature) 11-Dec-12 (Date)

Matrices: Potable Water
Carrier name: ALSHN

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	3.0-5.4 c		
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	12/10/2012 11:15:49 AM		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

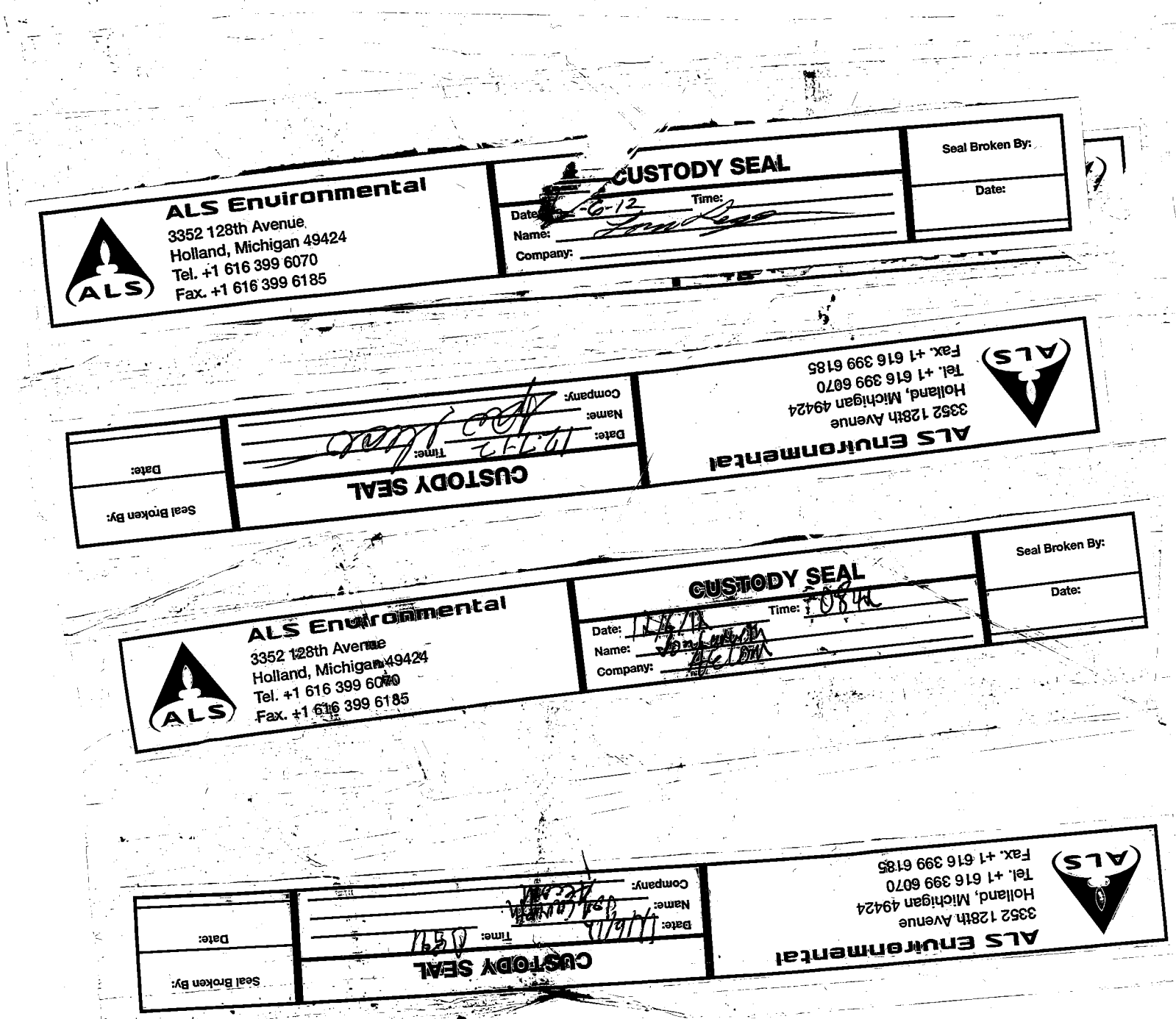
Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:


ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185
CUSTODY SEAL
Date: 4-6-12
Time:
Name:
Company:
Seal Broken By:
Date:
3.0
4.8
5.4
4.2

17-Dec-2012

Alison Schoeff
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall Potable Water 12/6/12** Work Order: **1212319**

Dear Alison,

ALS Environmental received 12 samples on 07-Dec-2012 03:35 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 32.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

Certificate No: MN331938

ALS Group USA, Corp

Date: 17-Dec-12

Client: AECOM Environment
Project: Marshall Potable Water 12/6/12
Work Order: **1212319**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1212319-01	WPD12061224JTC1B	Potable Water		12/6/2012 12:24	12/7/2012 15:35	☐
1212319-02	WPD12061156JTC1B	Potable Water		12/6/2012 11:56	12/7/2012 15:35	☐
1212319-03	WPD12060937JTC1B	Potable Water		12/6/2012 09:37	12/7/2012 15:35	☐
1212319-04	WPD12061020JTC1B	Potable Water		12/6/2012 10:20	12/7/2012 15:35	☐
1212319-05	WPD12061042JTC1B	Potable Water		12/6/2012 10:42	12/7/2012 15:35	☐
1212319-06	WPD12061000JTC1B	Potable Water		12/6/2012 10:00	12/7/2012 15:35	☐
1212319-07	WPD12061125JTC2B	Potable Water		12/6/2012 11:25	12/7/2012 15:35	☐
1212319-08	WPD12061125JTC1B	Potable Water		12/6/2012 11:25	12/7/2012 15:35	☐
1212319-09	WPD12061250JTC1B	Potable Water		12/6/2012 12:50	12/7/2012 15:35	☐
1212319-10	WPD12061500JTC1B	Potable Water		12/6/2012 15:00	12/7/2012 15:35	☐
1212319-11	WPD12061437JTC1B	Potable Water		12/6/2012 14:37	12/7/2012 15:35	☐
1212319-12	TB120612JTC5	Water		12/6/2012	12/7/2012 15:35	☐

ALS Group USA, Corp

Date: 17-Dec-12

Client: AECOM Environment
Project: Marshall Potable Water 12/6/12
WorkOrder: **1212319**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
SD	Serial Dilution
TDL	Target Detection Limit

Units Reported	Description
µg/L	Micrograms per Liter
mg/L	Milligrams per Liter

ALS Group USA, Corp

Date: *17-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPD12061224JTC1B
Work Order:	1212319	**Collection Date:**	12/6/2012 12:24:00 PM
Project:	Marshall Potable Water 12/6/12		
Lab ID:	1212319-01	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/11/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/11/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/12/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/13/2012
Iron	ND	0.20	0.20		mg/L	1	12/13/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/13/2012
Nickel	ND	0.020	0.020		mg/L	1	12/13/2012
Titanium	ND	0.0050	0		mg/L	1	12/13/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/13/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/11/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/12/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*87.8*	*70-125*			*%REC*	1	12/12/2012
Surr: Perylene-d12	*96.8*	*46-142*			*%REC*	1	12/12/2012
Surr: Triphenylphosphate	*165*	*77-169*			*%REC*	1	12/12/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/11/2012
Benzene	ND	1.0	1.0		µg/L	1	12/11/2012
Cyclohexane	ND	10	10		µg/L	1	12/11/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/11/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/11/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Toluene	ND	1.0	1.0		µg/L	1	12/11/2012
Surr: 1,2-Dichloroethane-d4	*101*	*70-130*			*%REC*	1	12/11/2012
Surr: 4-Bromofluorobenzene	*95.0*	*70-130*			*%REC*	1	12/11/2012
Surr: Dibromofluoromethane	*95.6*	*70-130*			*%REC*	1	12/11/2012
Surr: Toluene-d8	*96.8*	*70-130*			*%REC*	1	12/11/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPD12061156JTC1B
Work Order:	1212319	**Collection Date:**	12/6/2012 11:56:00 AM
Project:	Marshall Potable Water 12/6/12		
Lab ID:	1212319-02	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/11/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/11/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/12/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/13/2012
Iron	**0.61**	**0.20**	**0.20**		**mg/L**	1	12/13/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/13/2012
Nickel	ND	0.020	0.020		mg/L	1	12/13/2012
Titanium	ND	0.0050	0		mg/L	1	12/13/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/13/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/11/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/12/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*87.6*	*70-125*			*%REC*	1	12/12/2012
Surr: Perylene-d12	*96.0*	*46-142*			*%REC*	1	12/12/2012
Surr: Triphenylphosphate	*155*	*77-169*			*%REC*	1	12/12/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/11/2012
Benzene	ND	1.0	1.0		µg/L	1	12/11/2012
Cyclohexane	ND	10	10		µg/L	1	12/11/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/11/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/11/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Toluene	ND	1.0	1.0		µg/L	1	12/11/2012
Surr: 1,2-Dichloroethane-d4	*98.0*	*70-130*			*%REC*	1	12/11/2012
Surr: 4-Bromofluorobenzene	*99.7*	*70-130*			*%REC*	1	12/11/2012
Surr: Dibromofluoromethane	*96.0*	*70-130*			*%REC*	1	12/11/2012
Surr: Toluene-d8	*101*	*70-130*			*%REC*	1	12/11/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPD12060937JTC1B
Work Order:	1212319	**Collection Date:**	12/6/2012 9:37:00 AM
Project:	Marshall Potable Water 12/6/12		
Lab ID:	1212319-03	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/11/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/11/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/12/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/13/2012
Iron	**1.1**	**0.20**	**0.20**		**mg/L**	1	12/13/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/13/2012
Nickel	**0.030**	**0.020**	**0.020**		**mg/L**	1	12/13/2012
Titanium	ND	0.0050	0		mg/L	1	12/13/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/13/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/11/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/12/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*89.6*	*70-125*			*%REC*	1	12/12/2012
Surr: Perylene-d12	*93.6*	*46-142*			*%REC*	1	12/12/2012
Surr: Triphenylphosphate	*152*	*77-169*			*%REC*	1	12/12/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/11/2012
Benzene	ND	1.0	1.0		µg/L	1	12/11/2012
Cyclohexane	ND	10	10		µg/L	1	12/11/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/11/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/11/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Toluene	ND	1.0	1.0		µg/L	1	12/11/2012
Surr: 1,2-Dichloroethane-d4	*97.8*	*70-130*			*%REC*	1	12/11/2012
Surr: 4-Bromofluorobenzene	*96.2*	*70-130*			*%REC*	1	12/11/2012
Surr: Dibromofluoromethane	*95.2*	*70-130*			*%REC*	1	12/11/2012
Surr: Toluene-d8	*98.0*	*70-130*			*%REC*	1	12/11/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPD12061020JTC1B
Work Order:	1212319	**Collection Date:**	12/6/2012 10:20:00 AM
Project:	Marshall Potable Water 12/6/12		
Lab ID:	1212319-04	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/11/2012**		Analyst: **LR**
Mercury	**0.00030**	**0.00020**	**0.00020**		**mg/L**	1	12/11/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/12/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/13/2012
Iron	**1.3**	**0.20**	**0.20**		**mg/L**	1	12/13/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/13/2012
Nickel	**0.021**	**0.020**	**0.020**		**mg/L**	1	12/13/2012
Titanium	ND	0.0050	0		mg/L	1	12/13/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/13/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/11/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/12/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*86.4*	*70-125*			*%REC*	1	12/12/2012
Surr: Perylene-d12	*94.0*	*46-142*			*%REC*	1	12/12/2012
Surr: Triphenylphosphate	*152*	*77-169*			*%REC*	1	12/12/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/11/2012
Benzene	ND	1.0	1.0		µg/L	1	12/11/2012
Cyclohexane	ND	10	10		µg/L	1	12/11/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/11/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/11/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Toluene	ND	1.0	1.0		µg/L	1	12/11/2012
Surr: 1,2-Dichloroethane-d4	*95.6*	*70-130*			*%REC*	1	12/11/2012
Surr: 4-Bromofluorobenzene	*97.8*	*70-130*			*%REC*	1	12/11/2012
Surr: Dibromofluoromethane	*95.2*	*70-130*			*%REC*	1	12/11/2012
Surr: Toluene-d8	*95.6*	*70-130*			*%REC*	1	12/11/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPD12061042JTC1B
Work Order:	1212319	**Collection Date:**	12/6/2012 10:42:00 AM
Project:	Marshall Potable Water 12/6/12		
Lab ID:	1212319-05	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/11/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/11/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/12/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/13/2012
Iron	**0.41**	**0.20**	**0.20**		**mg/L**	1	12/13/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/13/2012
Nickel	ND	0.020	0.020		mg/L	1	12/13/2012
Titanium	ND	0.0050	0		mg/L	1	12/13/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/13/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/11/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/12/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*88.4*	*70-125*			*%REC*	1	12/12/2012
Surr: Perylene-d12	*89.4*	*46-142*			*%REC*	1	12/12/2012
Surr: Triphenylphosphate	*152*	*77-169*			*%REC*	1	12/12/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/11/2012
Benzene	ND	1.0	1.0		µg/L	1	12/11/2012
Cyclohexane	ND	10	10		µg/L	1	12/11/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/11/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/11/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Toluene	ND	1.0	1.0		µg/L	1	12/11/2012
Surr: 1,2-Dichloroethane-d4	*98.2*	*70-130*			*%REC*	1	12/11/2012
Surr: 4-Bromofluorobenzene	*94.7*	*70-130*			*%REC*	1	12/11/2012
Surr: Dibromofluoromethane	*94.3*	*70-130*			*%REC*	1	12/11/2012
Surr: Toluene-d8	*95.9*	*70-130*			*%REC*	1	12/11/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPD12061000JTC1B
Work Order:	1212319	**Collection Date:**	12/6/2012 10:00:00 AM
Project:	Marshall Potable Water 12/6/12		
Lab ID:	1212319-06	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/11/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/11/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/12/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/13/2012
Iron	**1.6**	**0.20**	**0.20**		**mg/L**	1	12/13/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/13/2012
Nickel	ND	0.020	0.020		mg/L	1	12/13/2012
Titanium	ND	0.0050	0		mg/L	1	12/13/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/13/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/11/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/12/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*86.6*	*70-125*			*%REC*	1	12/12/2012
Surr: Perylene-d12	*93.8*	*46-142*			*%REC*	1	12/12/2012
Surr: Triphenylphosphate	*156*	*77-169*			*%REC*	1	12/12/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/11/2012
Benzene	ND	1.0	1.0		µg/L	1	12/11/2012
Cyclohexane	ND	10	10		µg/L	1	12/11/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/11/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/11/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Toluene	ND	1.0	1.0		µg/L	1	12/11/2012
Surr: 1,2-Dichloroethane-d4	*96.6*	*70-130*			*%REC*	1	12/11/2012
Surr: 4-Bromofluorobenzene	*98.6*	*70-130*			*%REC*	1	12/11/2012
Surr: Dibromofluoromethane	*95.0*	*70-130*			*%REC*	1	12/11/2012
Surr: Toluene-d8	*98.8*	*70-130*			*%REC*	1	12/11/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

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Date: *17-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPD12061125JTC2B
Work Order:	1212319	**Collection Date:**	12/6/2012 11:25:00 AM
Project:	Marshall Potable Water 12/6/12		
Lab ID:	1212319-07	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/11/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/11/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/12/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/13/2012
Iron	ND	0.20	0.20		mg/L	1	12/13/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/13/2012
Nickel	ND	0.020	0.020		mg/L	1	12/13/2012
Titanium	ND	0.0050	0		mg/L	1	12/13/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/13/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/11/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/12/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*89.6*	*70-125*			*%REC*	1	12/12/2012
Surr: Perylene-d12	*92.2*	*46-142*			*%REC*	1	12/12/2012
Surr: Triphenylphosphate	*156*	*77-169*			*%REC*	1	12/12/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/11/2012
Benzene	ND	1.0	1.0		µg/L	1	12/11/2012
Cyclohexane	ND	10	10		µg/L	1	12/11/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/11/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/11/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Toluene	ND	1.0	1.0		µg/L	1	12/11/2012
Surr: 1,2-Dichloroethane-d4	*99.0*	*70-130*			*%REC*	1	12/11/2012
Surr: 4-Bromofluorobenzene	*97.8*	*70-130*			*%REC*	1	12/11/2012
Surr: Dibromofluoromethane	*94.5*	*70-130*			*%REC*	1	12/11/2012
Surr: Toluene-d8	*96.6*	*70-130*			*%REC*	1	12/11/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

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Date: *17-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPD12061125JTC1B
Work Order:	1212319	**Collection Date:**	12/6/2012 11:25:00 AM
Project:	Marshall Potable Water 12/6/12		
Lab ID:	1212319-08	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/11/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/11/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/12/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/13/2012
Iron	ND	0.20	0.20		mg/L	1	12/13/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/13/2012
Nickel	ND	0.020	0.020		mg/L	1	12/13/2012
Titanium	ND	0.0050	0		mg/L	1	12/13/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/13/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/11/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/13/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*89.8*	*70-125*			*%REC*	1	12/13/2012
Surr: Perylene-d12	*91.2*	*46-142*			*%REC*	1	12/13/2012
Surr: Triphenylphosphate	*156*	*77-169*			*%REC*	1	12/13/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **RS**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/11/2012
Benzene	ND	1.0	1.0		µg/L	1	12/11/2012
Cyclohexane	ND	10	10		µg/L	1	12/11/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/11/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/11/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Toluene	ND	1.0	1.0		µg/L	1	12/11/2012
Surr: 1,2-Dichloroethane-d4	*97.1*	*70-130*			*%REC*	1	12/11/2012
Surr: 4-Bromofluorobenzene	*96.0*	*70-130*			*%REC*	1	12/11/2012
Surr: Dibromofluoromethane	*92.6*	*70-130*			*%REC*	1	12/11/2012
Surr: Toluene-d8	*96.6*	*70-130*			*%REC*	1	12/11/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPD12061250JTC1B
Work Order:	1212319	**Collection Date:**	12/6/2012 12:50:00 PM
Project:	Marshall Potable Water 12/6/12		
Lab ID:	1212319-09	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/11/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/11/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/12/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/13/2012
Iron	ND	0.20	0.20		mg/L	1	12/13/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/13/2012
Nickel	ND	0.020	0.020		mg/L	1	12/13/2012
Titanium	ND	0.0050	0		mg/L	1	12/13/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/13/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/11/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/13/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*85.2*	*70-125*			*%REC*	1	12/13/2012
Surr: Perylene-d12	*94.2*	*46-142*			*%REC*	1	12/13/2012
Surr: Triphenylphosphate	*156*	*77-169*			*%REC*	1	12/13/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **RS**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/11/2012
Benzene	ND	1.0	1.0		µg/L	1	12/11/2012
Cyclohexane	ND	10	10		µg/L	1	12/11/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/11/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/11/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Toluene	ND	1.0	1.0		µg/L	1	12/11/2012
Surr: 1,2-Dichloroethane-d4	*95.1*	*70-130*			*%REC*	1	12/11/2012
Surr: 4-Bromofluorobenzene	*97.0*	*70-130*			*%REC*	1	12/11/2012
Surr: Dibromofluoromethane	*92.6*	*70-130*			*%REC*	1	12/11/2012
Surr: Toluene-d8	*97.0*	*70-130*			*%REC*	1	12/11/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPD12061500JTC1B
Work Order:	1212319	**Collection Date:**	12/6/2012 3:00:00 PM
Project:	Marshall Potable Water 12/6/12		
Lab ID:	1212319-10	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/13/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/13/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/13/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/13/2012
Iron	**2.6**	**0.20**	**0.20**		**mg/L**	1	12/13/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/13/2012
Nickel	ND	0.020	0.020		mg/L	1	12/14/2012
Titanium	ND	0.0050	0		mg/L	1	12/13/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/13/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/12/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/13/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*90.4*	*70-125*			*%REC*	1	12/13/2012
Surr: Perylene-d12	*94.8*	*46-142*			*%REC*	1	12/13/2012
Surr: Triphenylphosphate	*154*	*77-169*			*%REC*	1	12/13/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **RS**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/11/2012
Benzene	ND	1.0	1.0		µg/L	1	12/11/2012
Cyclohexane	ND	10	10		µg/L	1	12/11/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/11/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/11/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Toluene	ND	1.0	1.0		µg/L	1	12/11/2012
Surr: 1,2-Dichloroethane-d4	*97.3*	*70-130*			*%REC*	1	12/11/2012
Surr: 4-Bromofluorobenzene	*94.2*	*70-130*			*%REC*	1	12/11/2012
Surr: Dibromofluoromethane	*91.4*	*70-130*			*%REC*	1	12/11/2012
Surr: Toluene-d8	*94.8*	*70-130*			*%REC*	1	12/11/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPD12061437JTC1B
Work Order:	1212319	**Collection Date:**	12/6/2012 2:37:00 PM
Project:	Marshall Potable Water 12/6/12		
Lab ID:	1212319-11	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/13/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/13/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/13/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/14/2012
Iron	**2.8**	**0.20**	**0.20**		**mg/L**	1	12/14/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/14/2012
Nickel	ND	0.020	0.020		mg/L	1	12/14/2012
Titanium	ND	0.0050	0		mg/L	1	12/14/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/14/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/12/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/13/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*91.4*	*70-125*			*%REC*	1	12/13/2012
Surr: Perylene-d12	*107*	*46-142*			*%REC*	1	12/13/2012
Surr: Triphenylphosphate	*168*	*77-169*			*%REC*	1	12/13/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **RS**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/11/2012
Benzene	ND	1.0	1.0		µg/L	1	12/11/2012
Cyclohexane	ND	10	10		µg/L	1	12/11/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/11/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/11/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Toluene	ND	1.0	1.0		µg/L	1	12/11/2012
Surr: 1,2-Dichloroethane-d4	*96.9*	*70-130*			*%REC*	1	12/11/2012
Surr: 4-Bromofluorobenzene	*96.8*	*70-130*			*%REC*	1	12/11/2012
Surr: Dibromofluoromethane	*90.9*	*70-130*			*%REC*	1	12/11/2012
Surr: Toluene-d8	*95.6*	*70-130*			*%REC*	1	12/11/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	TB120612JTC5
Work Order:	1212319	**Collection Date:**	12/6/2012
Project:	Marshall Potable Water 12/6/12		
Lab ID:	1212319-12	**Matrix:**	WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **RS**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/11/2012
Benzene	ND	1.0	1.0		µg/L	1	12/11/2012
Cyclohexane	ND	10	10		µg/L	1	12/11/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/11/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/11/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Toluene	ND	1.0	1.0		µg/L	1	12/11/2012
Surr: 1,2-Dichloroethane-d4	*98.4*	*70-130*			*%REC*	1	12/11/2012
Surr: 4-Bromofluorobenzene	*97.1*	*70-130*			*%REC*	1	12/11/2012
Surr: Dibromofluoromethane	*93.2*	*70-130*			*%REC*	1	12/11/2012
Surr: Toluene-d8	*97.6*	*70-130*			*%REC*	1	12/11/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

QC BATCH REPORT

Batch ID: **45300** Instrument ID **HG1** Method: **E245.1**

MBLK Sample ID: **MBLK-45300-45300** Units: **mg/L** Analysis Date: **12/11/2012 01:09 PM**

Client ID: Run ID: **HG1_121211A** SeqNo: **2165520** Prep Date: **12/11/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.000025	0.00020								J

LCS Sample ID: **LCS-45300-45300** Units: **mg/L** Analysis Date: **12/11/2012 01:11 PM**

Client ID: Run ID: **HG1_121211A** SeqNo: **2165521** Prep Date: **12/11/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.002	0.00020	0.002	0	100	85-115	0			

MS Sample ID: **1212318-11CMS** Units: **mg/L** Analysis Date: **12/11/2012 01:42 PM**

Client ID: Run ID: **HG1_121211A** SeqNo: **2165552** Prep Date: **12/11/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.002038	0.00020	0.002	0.000023	101	80-120	0			

MS Sample ID: **1212319-09CMS** Units: **mg/L** Analysis Date: **12/11/2012 02:15 PM**

Client ID: **WPD12061250JTC1B** Run ID: **HG1_121211A** SeqNo: **2165575** Prep Date: **12/11/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001974	0.00020	0.002	0.000014	98	80-120	0			

MSD Sample ID: **1212318-11CMSD** Units: **mg/L** Analysis Date: **12/11/2012 01:44 PM**

Client ID: Run ID: **HG1_121211A** SeqNo: **2165554** Prep Date: **12/11/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.002034	0.00020	0.002	0.000023	101	80-120	0.002038	0.196	20	

MSD Sample ID: **1212319-09CMSD** Units: **mg/L** Analysis Date: **12/11/2012 02:17 PM**

Client ID: **WPD12061250JTC1B** Run ID: **HG1_121211A** SeqNo: **2165577** Prep Date: **12/11/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001999	0.00020	0.002	0.000014	99.2	80-120	0.001974	1.26	20	

The following samples were analyzed in this batch:

1212319-01C	1212319-02C	1212319-03C
1212319-04C	1212319-05C	1212319-06C
1212319-07C	1212319-08C	1212319-09C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212319
Project: Marshall Potable Water 12/6/12

QC BATCH REPORT

Batch ID: **45379** Instrument ID **HG1** Method: **E245.1**

MBLK Sample ID: **MBLK-45379-45379** Units: **mg/L** Analysis Date: **12/13/2012 02:50 PM**
Client ID: Run ID: **HG1_121213A** SeqNo: **2168482** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00001	0.00020								J

LCS Sample ID: **LCS-45379-45379** Units: **mg/L** Analysis Date: **12/13/2012 02:52 PM**
Client ID: Run ID: **HG1_121213A** SeqNo: **2168483** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00189	0.00020	0.002	0	94.5	85-115	0			

MS Sample ID: **1212320-08CMS** Units: **mg/L** Analysis Date: **12/13/2012 03:23 PM**
Client ID: Run ID: **HG1_121213A** SeqNo: **2168498** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001826	0.00020	0.002	0.000012	90.7	80-120	0			

MS Sample ID: **1212394-01BMS** Units: **mg/L** Analysis Date: **12/13/2012 04:15 PM**
Client ID: Run ID: **HG1_121213A** SeqNo: **2168768** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001783	0.00020	0.002	0.000141	82.1	80-120	0			

MSD Sample ID: **1212320-08CMSD** Units: **mg/L** Analysis Date: **12/13/2012 03:25 PM**
Client ID: Run ID: **HG1_121213A** SeqNo: **2168499** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001821	0.00020	0.002	0.000012	90.4	80-120	0.001826	0.274	20	

MSD Sample ID: **1212394-01BMSD** Units: **mg/L** Analysis Date: **12/13/2012 04:17 PM**
Client ID: Run ID: **HG1_121213A** SeqNo: **2168769** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00174	0.00020	0.002	0.000141	80	80-120	0.001783	2.44	20	S

DUP Sample ID: **1212335-01ADUP** Units: **mg/L** Analysis Date: **12/13/2012 03:32 PM**
Client ID: Run ID: **HG1_121213A** SeqNo: **2168501** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.000105	0.00020	0	0	0	0-0	0.000098	0	20	J

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212319
Project: Marshall Potable Water 12/6/12

QC BATCH REPORT

Batch ID: **45379** Instrument ID **HG1** Method: **E245.1**

DUP Sample ID: **1212338-03ADUP** Units: **mg/L** Analysis Date: **12/13/2012 04:07 PM**
Client ID: Run ID: **HG1_121213A** SeqNo: **2168764** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.000051	0.00020	0	0	0	0-0	0.000057	0	20	J

DUP Sample ID: **1212394-01BDUP** Units: **mg/L** Analysis Date: **12/13/2012 04:13 PM**
Client ID: Run ID: **HG1_121213A** SeqNo: **2168767** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00013	0.00020	0	0	0	0-0	0.000141	0	20	J

DUP Sample ID: **1212395-01ADUP** Units: **mg/L** Analysis Date: **12/13/2012 04:22 PM**
Client ID: Run ID: **HG1_121213A** SeqNo: **2168771** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.000031	0.00020	0	0	0	0-0	0.000034	0	20	J

DUP Sample ID: **1212439-01ADUP** Units: **mg/L** Analysis Date: **12/13/2012 04:34 PM**
Client ID: Run ID: **HG1_121213A** SeqNo: **2168777** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.000066	0.00020	0	0	0	0-0	0.000053	0	20	J

The following samples were analyzed in this batch: 1212319-10C 1212319-11C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212319
Project: Marshall Potable Water 12/6/12

QC BATCH REPORT

Batch ID: **45346** Instrument ID **ICPMS2** Method: **E200.8**

MBLK Sample ID: **MBLK-45346-45346** Units: **mg/L** Analysis Date: **12/12/2012 11:04 PM**
Client ID: Run ID: **ICPMS2_121212A** SeqNo: **2167990** Prep Date: **12/12/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	ND	0.0020								
Iron	ND	0.080								
Molybdenum	ND	0.0050								
Nickel	ND	0.0050								
Titanium	ND	0.0050								
Vanadium	ND	0.0050								

LCS Sample ID: **LCS-45346-45346** Units: **mg/L** Analysis Date: **12/12/2012 11:09 PM**
Client ID: Run ID: **ICPMS2_121212A** SeqNo: **2167991** Prep Date: **12/12/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.09822	0.0020	0.1	0	98.2	85-115	0			
Iron	9.363	0.080	10	0	93.6	85-115	0			
Molybdenum	0.09334	0.0050	0.1	0	93.3	85-115	0			
Nickel	0.0931	0.0050	0.1	0	93.1	85-115	0			
Titanium	0.09612	0.0050	0.1	0	96.1	85-115	0			
Vanadium	0.09834	0.0050	0.1	0	98.3	85-115	0			

MS Sample ID: **1212318-11CMS** Units: **mg/L** Analysis Date: **12/13/2012 12:40 AM**
Client ID: Run ID: **ICPMS2_121212A** SeqNo: **2168019** Prep Date: **12/12/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.09061	0.0020	0.1	-0.00001341	90.6	70-130	0			
Iron	10.24	0.080	10	1.206	90.3	70-130	0			
Molybdenum	0.09339	0.0050	0.1	0.0005622	92.8	70-130	0			
Nickel	0.08884	0.0050	0.1	0.001072	87.8	70-130	0			
Titanium	0.09576	0.0050	0.1	0.001076	94.7	70-130	0			
Vanadium	0.09664	0.0050	0.1	-8.598E-06	96.6	70-130	0			

MS Sample ID: **1212319-09CMS** Units: **mg/L** Analysis Date: **12/13/2012 02:58 AM**
Client ID: **WPD12061250JTC1B** Run ID: **ICPMS2_121212A** SeqNo: **2168045** Prep Date: **12/12/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.0941	0.0020	0.1	0.00001172	94.1	70-130	0			
Iron	9.228	0.080	10	0.01095	92.2	70-130	0			
Molybdenum	0.09505	0.0050	0.1	0.0004552	94.6	70-130	0			
Nickel	0.09184	0.0050	0.1	0.001306	90.5	70-130	0			
Titanium	0.09824	0.0050	0.1	0.0008296	97.4	70-130	0			
Vanadium	0.1	0.0050	0.1	0.0002069	99.8	70-130	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212319
Project: Marshall Potable Water 12/6/12

QC BATCH REPORT

Batch ID: **45346** Instrument ID **ICPMS2** Method: **E200.8**

MSD Sample ID: **1212318-11CMSD** Units: **mg/L** Analysis Date: **12/13/2012 12:45 AM**
Client ID: Run ID: **ICPMS2_121212A** SeqNo: **2168020** Prep Date: **12/12/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.08826	0.0020	0.1	-0.00001341	88.3	70-130	0.09061	2.63	20	
Iron	10	0.080	10	1.206	87.9	70-130	10.24	2.37	20	
Molybdenum	0.09164	0.0050	0.1	0.0005622	91.1	70-130	0.09339	1.89	20	
Nickel	0.08657	0.0050	0.1	0.001072	85.5	70-130	0.08884	2.59	20	
Titanium	0.09157	0.0050	0.1	0.001076	90.5	70-130	0.09576	4.47	20	
Vanadium	0.09452	0.0050	0.1	-8.598E-06	94.5	70-130	0.09664	2.22	20	

MSD Sample ID: **1212319-09CMSD** Units: **mg/L** Analysis Date: **12/13/2012 03:03 AM**
Client ID: **WPD12061250JTC1B** Run ID: **ICPMS2_121212A** SeqNo: **2168046** Prep Date: **12/12/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.09069	0.0020	0.1	0.00001172	90.7	70-130	0.0941	3.69	20	
Iron	9.024	0.080	10	0.01095	90.1	70-130	9.228	2.24	20	
Molybdenum	0.09316	0.0050	0.1	0.0004552	92.7	70-130	0.09505	2.01	20	
Nickel	0.08959	0.0050	0.1	0.001306	88.3	70-130	0.09184	2.48	20	
Titanium	0.09673	0.0050	0.1	0.0008296	95.9	70-130	0.09824	1.55	20	
Vanadium	0.09758	0.0050	0.1	0.0002069	97.4	70-130	0.1	2.45	20	

The following samples were analyzed in this batch:

1212319-01C	1212319-02C	1212319-03C
1212319-04C	1212319-05C	1212319-06C
1212319-07C	1212319-08C	1212319-09C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212319
Project: Marshall Potable Water 12/6/12

QC BATCH REPORT

Batch ID: **45372** Instrument ID **ICPMS2** Method: **E200.8**

MBLK Sample ID: **MBLK-45372-45372** Units: **mg/L** Analysis Date: **12/13/2012 02:46 PM**
Client ID: Run ID: **ICPMS2_121213A** SeqNo: **2168403** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	ND	0.0020								
Iron	ND	0.080								
Molybdenum	ND	0.0050								
Nickel	ND	0.0050								
Titanium	ND	0.0050								
Vanadium	ND	0.0050								

LCS Sample ID: **LCS-45372-45372** Units: **mg/L** Analysis Date: **12/13/2012 02:51 PM**
Client ID: Run ID: **ICPMS2_121213A** SeqNo: **2168404** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.09381	0.0020	0.1	0	93.8	85-115	0			
Iron	9.025	0.080	10	0	90.2	85-115	0			
Molybdenum	0.08976	0.0050	0.1	0	89.8	85-115	0			
Nickel	0.08918	0.0050	0.1	0	89.2	85-115	0			
Titanium	0.09268	0.0050	0.1	0	92.7	85-115	0			
Vanadium	0.09517	0.0050	0.1	0	95.2	85-115	0			

MS Sample ID: **1212319-10CMS** Units: **mg/L** Analysis Date: **12/13/2012 03:17 PM**
Client ID: **WPD12061500JTC1B** Run ID: **ICPMS2_121213A** SeqNo: **2168524** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.09136	0.0020	0.1	-0.0001089	91.5	70-130	0			
Iron	11.37	0.080	10	2.57	88	70-130	0			
Molybdenum	0.09158	0.0050	0.1	0.0005256	91.1	70-130	0			
Nickel	0.08851	0.0050	0.1	-0.001318	89.8	70-130	0			
Titanium	0.09507	0.0050	0.1	0.0002486	94.8	70-130	0			
Vanadium	0.09632	0.0050	0.1	-0.00002074	96.3	70-130	0			

MS Sample ID: **1212320-08CMS** Units: **mg/L** Analysis Date: **12/15/2012 09:22 PM**
Client ID: Run ID: **ICPMS2_121215A** SeqNo: **2170292** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.103	0.0020	0.1	-0.00003436	103	70-130	0			
Iron	9.593	0.080	10	0.02469	95.7	70-130	0			
Molybdenum	0.09281	0.0050	0.1	0.0001536	92.7	70-130	0			
Nickel	0.09466	0.0050	0.1	0.001016	93.6	70-130	0			
Titanium	0.1086	0.0050	0.1	0.0006037	108	70-130	0			
Vanadium	0.1012	0.0050	0.1	0.00002983	101	70-130	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212319
Project: Marshall Potable Water 12/6/12

QC BATCH REPORT

Batch ID: **45372** Instrument ID **ICPMS2** Method: **E200.8**

MSD Sample ID: **1212319-10CMSD** Units: **mg/L** Analysis Date: **12/13/2012 03:22 PM**
Client ID: **WPD12061500JTC1B** Run ID: **ICPMS2_121213A** SeqNo: **2168526** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.09124	0.0020	0.1	-0.0001089	91.3	70-130	0.09136	0.131	20	
Iron	11.56	0.080	10	2.57	89.9	70-130	11.37	1.66	20	
Molybdenum	0.09289	0.0050	0.1	0.0005256	92.4	70-130	0.09158	1.42	20	
Nickel	0.08903	0.0050	0.1	-0.001318	90.3	70-130	0.08851	0.586	20	
Titanium	0.09544	0.0050	0.1	0.0002486	95.2	70-130	0.09507	0.388	20	
Vanadium	0.09894	0.0050	0.1	-0.00002074	99	70-130	0.09632	2.68	20	

MSD Sample ID: **1212320-08CMSD** Units: **mg/L** Analysis Date: **12/15/2012 09:27 PM**
Client ID: Run ID: **ICPMS2_121215A** SeqNo: **2170293** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.09888	0.0020	0.1	-0.00003436	98.9	70-130	0.103	4.08	20	
Iron	9.524	0.080	10	0.02469	95	70-130	9.593	0.722	20	
Molybdenum	0.09137	0.0050	0.1	0.0001536	91.2	70-130	0.09281	1.56	20	
Nickel	0.09335	0.0050	0.1	0.001016	92.3	70-130	0.09466	1.39	20	
Titanium	0.1062	0.0050	0.1	0.0006037	106	70-130	0.1086	2.23	20	
Vanadium	0.1051	0.0050	0.1	0.00002983	105	70-130	0.1012	3.78	20	

The following samples were analyzed in this batch: 1212319-10C 1212319-11C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212319
Project: Marshall Potable Water 12/6/12

QC BATCH REPORT

Batch ID: **45294** Instrument ID **SVMS6** Method: **E525.2**

MBLK Sample ID: **PNBLKW1-45294-45294** Units: **µg/L** Analysis Date: **12/12/2012 11:11 AM**
Client ID: Run ID: **SVMS6_121212A** SeqNo: **2168057** Prep Date: **12/11/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenanthrene	ND	0.20								
Surr: 1,3-Dimethyl-2-Nitrobenzen	*4.31*	0.20	*5*	0	*86.2*	*70-125*	0			
Surr: Perylene-d12	*4.05*	0.20	*5*	0	*81*	*46-142*	0			
Surr: Triphenylphosphate	*7.31*	0.20	*5*	0	*146*	*77-169*	0			

LCS Sample ID: **PNLCSW1-45294-45294** Units: **µg/L** Analysis Date: **12/12/2012 11:45 AM**
Client ID: Run ID: **SVMS6_121212A** SeqNo: **2168058** Prep Date: **12/11/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenanthrene	6.08	0.20	5	0	122	70-130	0			
Surr: 1,3-Dimethyl-2-Nitrobenzen	*4.48*	0.20	*5*	0	*89.6*	*70-125*	0			
Surr: Perylene-d12	*4.61*	0.20	*5*	0	*92.2*	*46-142*	0			
Surr: Triphenylphosphate	*7.34*	0.20	*5*	0	*147*	*77-169*	0			

MS Sample ID: **1212318-11B MS** Units: **µg/L** Analysis Date: **12/12/2012 12:18 PM**
Client ID: Run ID: **SVMS6_121212A** SeqNo: **2168059** Prep Date: **12/11/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenanthrene	61.7	2.0	50	0	123	70-130	0			
Surr: 1,3-Dimethyl-2-Nitrobenzen	*47.2*	2.0	*50*	0	*94.4*	*70-125*	0			
Surr: Perylene-d12	*42.9*	2.0	*50*	0	*85.8*	*46-142*	0			
Surr: Triphenylphosphate	*73.2*	2.0	*50*	0	*146*	*77-169*	0			

MSD Sample ID: **1212318-11B MSD** Units: **µg/L** Analysis Date: **12/12/2012 12:52 PM**
Client ID: Run ID: **SVMS6_121212A** SeqNo: **2168060** Prep Date: **12/11/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenanthrene	61.4	2.0	50	0	123	70-130	61.7	0.487	30	
Surr: 1,3-Dimethyl-2-Nitrobenzen	*45.5*	2.0	*50*	0	*91*	*70-125*	47.2	*3.67*		
Surr: Perylene-d12	*43.3*	2.0	*50*	0	*86.6*	*46-142*	42.9	*0.928*		
Surr: Triphenylphosphate	*74.7*	2.0	*50*	0	*149*	*77-169*	73.2	*2.03*		

The following samples were analyzed in this batch:

1212319-01B	1212319-02B	1212319-03B
1212319-04B	1212319-05B	1212319-06B
1212319-07B	1212319-08B	1212319-09B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212319
Project: Marshall Potable Water 12/6/12

QC BATCH REPORT

Batch ID: **45334** Instrument ID **SVMS6** Method: **E525.2**

MBLK Sample ID: **PNBLKW1-45334-45334** Units: **µg/L** Analysis Date: **12/13/2012 01:21 AM**
Client ID: Run ID: **SVMS6_121212A** SeqNo: **2168079** Prep Date: **12/12/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenanthrene	ND	0.20								
Surr: 1,3-Dimethyl-2-Nitrobenzen	*4.19*	0.20	*5*	0	*83.8*	*70-125*	0			
Surr: Perylene-d12	*4.53*	0.20	*5*	0	*90.6*	*46-142*	0			
Surr: Triphenylphosphate	*7.71*	0.20	*5*	0	*154*	*77-169*	0			

LCS Sample ID: **PNLCSW1-45334-45334** Units: **µg/L** Analysis Date: **12/13/2012 01:54 AM**
Client ID: Run ID: **SVMS6_121212A** SeqNo: **2168080** Prep Date: **12/12/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenanthrene	5.4	0.20	5	0	108	70-130	0			
Surr: 1,3-Dimethyl-2-Nitrobenzen	*4.46*	0.20	*5*	0	*89.2*	*70-125*	0			
Surr: Perylene-d12	*4.82*	0.20	*5*	0	*96.4*	*46-142*	0			
Surr: Triphenylphosphate	*7.58*	0.20	*5*	0	*152*	*77-169*	0			

MS Sample ID: **1212320-08B MS** Units: **µg/L** Analysis Date: **12/13/2012 02:28 AM**
Client ID: Run ID: **SVMS6_121212A** SeqNo: **2168081** Prep Date: **12/12/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenanthrene	52.9	2.0	50	0	106	70-130	0			
Surr: 1,3-Dimethyl-2-Nitrobenzen	*45*	2.0	*50*	0	*90*	*70-125*	0			
Surr: Perylene-d12	*49*	2.0	*50*	0	*98*	*46-142*	0			
Surr: Triphenylphosphate	*76.2*	2.0	*50*	0	*152*	*77-169*	0			

MSD Sample ID: **1212320-08B MSD** Units: **µg/L** Analysis Date: **12/13/2012 03:01 AM**
Client ID: Run ID: **SVMS6_121212A** SeqNo: **2168082** Prep Date: **12/12/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenanthrene	52.5	2.0	50	0	105	70-130	52.9	0.759	30	
Surr: 1,3-Dimethyl-2-Nitrobenzen	*42.6*	2.0	*50*	0	*85.2*	*70-125*	45	*5.48*		
Surr: Perylene-d12	*51.1*	2.0	*50*	0	*102*	*46-142*	49	*4.2*		
Surr: Triphenylphosphate	*77.4*	2.0	*50*	0	*155*	*77-169*	76.2	*1.56*		

The following samples were analyzed in this batch: 1212319-10B 1212319-11B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212319
Project: Marshall Potable Water 12/6/12

QC BATCH REPORT

Batch ID: **R113708** Instrument ID **VMS6** Method: **E524.2**

MBLK Sample ID: **VBLKW2-121210-R113708** Units: **µg/L** Analysis Date: **12/10/2012 11:04 PM**
Client ID: Run ID: **VMS6_121210B** SeqNo: **2164453** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,3-Trimethylbenzene	ND	0.50								
1,2,4-Trimethylbenzene	ND	0.50								
1,3,5-Trimethylbenzene	ND	0.50								
2-Methylnaphthalene	ND	2.0								
4-Isopropyltoluene	ND	0.50								
Benzene	ND	0.50								
Cyclohexane	ND	1.0								
Ethylbenzene	ND	0.50								
Isopropylbenzene	ND	0.50								
m,p-Xylene	ND	1.0								
Naphthalene	ND	0.50								
n-Propylbenzene	ND	0.50								
o-Xylene	ND	0.50								
sec-Butylbenzene	ND	0.50								
Toluene	ND	0.50								
Surr: 1,2-Dichloroethane-d4	*20.31*	0.10	*20*	0	*102*	*80-120*	0			
Surr: 4-Bromofluorobenzene	*20.17*	0.10	*20*	0	*101*	*80-120*	0			
Surr: Dibromofluoromethane	*19.88*	0.10	*20*	0	*99.4*	*80-120*	0			
Surr: Toluene-d8	*20.24*	0.10	*20*	0	*101*	*80-120*	0			

LCS Sample ID: **VLCSW2-121210-R113708** Units: **µg/L** Analysis Date: **12/10/2012 10:15 PM**
Client ID: Run ID: **VMS6_121210B** SeqNo: **2164452** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	4.73	0.50	5	0	94.6	70-130	0			
1,3,5-Trimethylbenzene	4.77	0.50	5	0	95.4	70-130	0			
Benzene	4.78	0.50	5	0	95.6	70-130	0			
Ethylbenzene	4.68	0.50	5	0	93.6	70-130	0			
Isopropylbenzene	4.77	0.50	5	0	95.4	70-130	0			
m,p-Xylene	9.51	1.0	10	0	95.1	70-130	0			
Naphthalene	4.43	0.50	5	0	88.6	70-130	0			
n-Propylbenzene	4.67	0.50	5	0	93.4	70-130	0			
o-Xylene	4.66	0.50	5	0	93.2	70-130	0			
sec-Butylbenzene	4.91	0.50	5	0	98.2	70-130	0			
Toluene	4.7	0.50	5	0	94	70-130	0			
Surr: 1,2-Dichloroethane-d4	*20.33*	0.10	*20*	0	*102*	*80-120*	0			
Surr: 4-Bromofluorobenzene	*20.08*	0.10	*20*	0	*100*	*80-120*	0			
Surr: Dibromofluoromethane	*20.29*	0.10	*20*	0	*101*	*80-120*	0			
Surr: Toluene-d8	*19.7*	0.10	*20*	0	*98.5*	*80-120*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212319
Project: Marshall Potable Water 12/6/12

QC BATCH REPORT

Batch ID: **R113708** Instrument ID **VMS6** Method: **E524.2**

MS Sample ID: **1212318-11A MS** Units: **µg/L** Analysis Date: **12/11/2012 07:32 AM**
Client ID: Run ID: **VMS6_121210B** SeqNo: **2165053** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	4.59	0.50	5	0	91.8	70-130	0			
1,3,5-Trimethylbenzene	4.8	0.50	5	0	96	70-130	0			
Benzene	4.9	0.50	5	0	98	70-130	0			
Ethylbenzene	4.77	0.50	5	0	95.4	70-130	0			
Isopropylbenzene	4.91	0.50	5	0	98.2	70-130	0			
m,p-Xylene	9.58	1.0	10	0	95.8	70-130	0			
Naphthalene	3.9	0.50	5	0	78	70-130	0			
n-Propylbenzene	4.76	0.50	5	0	95.2	70-130	0			
o-Xylene	4.68	0.50	5	0	93.6	70-130	0			
sec-Butylbenzene	5.08	0.50	5	0	102	70-130	0			
Toluene	4.77	0.50	5	0	95.4	70-130	0			
Surr: 1,2-Dichloroethane-d4	*19.44*	0.10	*20*	0	*97.2*	*80-120*	0			
Surr: 4-Bromofluorobenzene	*20.33*	0.10	*20*	0	*102*	*80-120*	0			
Surr: Dibromofluoromethane	*19.68*	0.10	*20*	0	*98.4*	*80-120*	0			
Surr: Toluene-d8	*19.64*	0.10	*20*	0	*98.2*	*80-120*	0			

MSD Sample ID: **1212318-11A MSD** Units: **µg/L** Analysis Date: **12/11/2012 07:56 AM**
Client ID: Run ID: **VMS6_121210B** SeqNo: **2165054** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	4.64	0.50	5	0	92.8	70-130	4.59	1.08	25	
1,3,5-Trimethylbenzene	4.94	0.50	5	0	98.8	70-130	4.8	2.87	25	
Benzene	4.76	0.50	5	0	95.2	70-130	4.9	2.9	25	
Ethylbenzene	4.69	0.50	5	0	93.8	70-130	4.77	1.69	25	
Isopropylbenzene	4.96	0.50	5	0	99.2	70-130	4.91	1.01	25	
m,p-Xylene	9.57	1.0	10	0	95.7	70-130	9.58	0.104	25	
Naphthalene	4.05	0.50	5	0	81	70-130	3.9	3.77	25	
n-Propylbenzene	4.79	0.50	5	0	95.8	70-130	4.76	0.628	25	
o-Xylene	4.61	0.50	5	0	92.2	70-130	4.68	1.51	25	
sec-Butylbenzene	5.21	0.50	5	0	104	70-130	5.08	2.53	25	
Toluene	4.77	0.50	5	0	95.4	70-130	4.77	0	25	
Surr: 1,2-Dichloroethane-d4	*18.67*	0.10	*20*	0	*93.4*	*80-120*	19.44	*4.04*		
Surr: 4-Bromofluorobenzene	*19.61*	0.10	*20*	0	*98*	*80-120*	20.33	*3.61*		
Surr: Dibromofluoromethane	*18.81*	0.10	*20*	0	*94*	*80-120*	19.68	*4.52*		
Surr: Toluene-d8	*19.08*	0.10	*20*	0	*95.4*	*80-120*	19.64	*2.89*		

The following samples were analyzed in this batch:

1212319-01A	1212319-02A	1212319-03A
1212319-04A	1212319-05A	1212319-06A
1212319-07A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212319
Project: Marshall Potable Water 12/6/12

QC BATCH REPORT

Batch ID: **R113728** Instrument ID **VMS6** Method: **E524.2**

MBLK Sample ID: **VBLKW1-121211-R113728** Units: **µg/L** Analysis Date: **12/11/2012 12:55 PM**
Client ID: Run ID: **VMS6_121211A** SeqNo: **2166305** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,3-Trimethylbenzene	ND	0.50								
1,2,4-Trimethylbenzene	ND	0.50								
1,3,5-Trimethylbenzene	ND	0.50								
2-Methylnaphthalene	ND	2.0								
4-Isopropyltoluene	ND	0.50								
Benzene	ND	0.50								
Cyclohexane	ND	1.0								
Ethylbenzene	ND	0.50								
Isopropylbenzene	ND	0.50								
m,p-Xylene	ND	1.0								
Naphthalene	ND	0.50								
n-Propylbenzene	ND	0.50								
o-Xylene	ND	0.50								
sec-Butylbenzene	ND	0.50								
Toluene	ND	0.50								
Surr: 1,2-Dichloroethane-d4	*19.79*	0.10	*20*	0	*99*	*80-120*	0			
Surr: 4-Bromofluorobenzene	*19.72*	0.10	*20*	0	*98.6*	*80-120*	0			
Surr: Dibromofluoromethane	*18.87*	0.10	*20*	0	*94.4*	*80-120*	0			
Surr: Toluene-d8	*19.57*	0.10	*20*	0	*97.8*	*80-120*	0			

LCS Sample ID: **VLCSW1-121211-R113728** Units: **µg/L** Analysis Date: **12/11/2012 11:56 AM**
Client ID: Run ID: **VMS6_121211A** SeqNo: **2166304** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	4.56	0.50	5	0	91.2	70-130	0			
1,3,5-Trimethylbenzene	4.7	0.50	5	0	94	70-130	0			
Benzene	4.72	0.50	5	0	94.4	70-130	0			
Ethylbenzene	4.54	0.50	5	0	90.8	70-130	0			
Isopropylbenzene	4.55	0.50	5	0	91	70-130	0			
m,p-Xylene	9.13	1.0	10	0	91.3	70-130	0			
Naphthalene	3.86	0.50	5	0	77.2	70-130	0			
n-Propylbenzene	4.39	0.50	5	0	87.8	70-130	0			
o-Xylene	4.6	0.50	5	0	92	70-130	0			
sec-Butylbenzene	4.83	0.50	5	0	96.6	70-130	0			
Toluene	4.63	0.50	5	0	92.6	70-130	0			
Surr: 1,2-Dichloroethane-d4	*20.09*	0.10	*20*	0	*100*	*80-120*	0			
Surr: 4-Bromofluorobenzene	*20.13*	0.10	*20*	0	*101*	*80-120*	0			
Surr: Dibromofluoromethane	*19.99*	0.10	*20*	0	*100*	*80-120*	0			
Surr: Toluene-d8	*19.67*	0.10	*20*	0	*98.4*	*80-120*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212319
Project: Marshall Potable Water 12/6/12

QC BATCH REPORT

Batch ID: **R113728** Instrument ID **VMS6** Method: **E524.2**

MS Sample ID: **1212198-01A MS** Units: **µg/L** Analysis Date: **12/11/2012 07:23 PM**
Client ID: Run ID: **VMS6_121211A** SeqNo: **2166330** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	4.73	0.50	5	0	94.6	70-130	0			
1,3,5-Trimethylbenzene	4.9	0.50	5	0	98	70-130	0			
Benzene	4.93	0.50	5	0	98.6	70-130	0			
Ethylbenzene	4.87	0.50	5	0	97.4	70-130	0			
Isopropylbenzene	4.92	0.50	5	0	98.4	70-130	0			
m,p-Xylene	9.69	1.0	10	0	96.9	70-130	0			
Naphthalene	3.89	0.50	5	0	77.8	70-130	0			
n-Propylbenzene	4.71	0.50	5	0	94.2	70-130	0			
o-Xylene	4.74	0.50	5	0	94.8	70-130	0			
sec-Butylbenzene	5.16	0.50	5	0	103	70-130	0			
Toluene	4.96	0.50	5	0	99.2	70-130	0			
Surr: 1,2-Dichloroethane-d4	*19.33*	0.10	*20*	0	*96.6*	*80-120*	0			
Surr: 4-Bromofluorobenzene	*19.73*	0.10	*20*	0	*98.6*	*80-120*	0			
Surr: Dibromofluoromethane	*19.28*	0.10	*20*	0	*96.4*	*80-120*	0			
Surr: Toluene-d8	*19.35*	0.10	*20*	0	*96.8*	*80-120*	0			

MS Sample ID: **1212320-08A MS** Units: **µg/L** Analysis Date: **12/11/2012 08:11 PM**
Client ID: Run ID: **VMS6_121211A** SeqNo: **2166333** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	4.52	0.50	5	0	90.4	70-130	0			
1,3,5-Trimethylbenzene	4.66	0.50	5	0	93.2	70-130	0			
Benzene	4.75	0.50	5	0	95	70-130	0			
Ethylbenzene	4.67	0.50	5	0	93.4	70-130	0			
Isopropylbenzene	4.81	0.50	5	0	96.2	70-130	0			
m,p-Xylene	9.28	1.0	10	0	92.8	70-130	0			
Naphthalene	3.94	0.50	5	0	78.8	70-130	0			
n-Propylbenzene	4.74	0.50	5	0	94.8	70-130	0			
o-Xylene	4.56	0.50	5	0	91.2	70-130	0			
sec-Butylbenzene	4.96	0.50	5	0	99.2	70-130	0			
Toluene	4.6	0.50	5	0	92	70-130	0			
Surr: 1,2-Dichloroethane-d4	*19.86*	0.10	*20*	0	*99.3*	*80-120*	0			
Surr: 4-Bromofluorobenzene	*19.73*	0.10	*20*	0	*98.6*	*80-120*	0			
Surr: Dibromofluoromethane	*19.62*	0.10	*20*	0	*98.1*	*80-120*	0			
Surr: Toluene-d8	*19.46*	0.10	*20*	0	*97.3*	*80-120*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212319
Project: Marshall Potable Water 12/6/12

QC BATCH REPORT

Batch ID: **R113728** Instrument ID **VMS6** Method: **E524.2**

MSD Sample ID: **1212198-01A MSD** Units: **µg/L** Analysis Date: **12/11/2012 07:47 PM**
Client ID: Run ID: **VMS6_121211A** SeqNo: **2166331** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	4.76	0.50	5	0	95.2	70-130	4.73	0.632	25	
1,3,5-Trimethylbenzene	5.01	0.50	5	0	100	70-130	4.9	2.22	25	
Benzene	4.9	0.50	5	0	98	70-130	4.93	0.61	25	
Ethylbenzene	4.79	0.50	5	0	95.8	70-130	4.87	1.66	25	
Isopropylbenzene	5.03	0.50	5	0	101	70-130	4.92	2.21	25	
m,p-Xylene	9.62	1.0	10	0	96.2	70-130	9.69	0.725	25	
Naphthalene	4.12	0.50	5	0	82.4	70-130	3.89	5.74	25	
n-Propylbenzene	4.76	0.50	5	0	95.2	70-130	4.71	1.06	25	
o-Xylene	4.79	0.50	5	0	95.8	70-130	4.74	1.05	25	
sec-Butylbenzene	5.28	0.50	5	0	106	70-130	5.16	2.3	25	
Toluene	4.79	0.50	5	0	95.8	70-130	4.96	3.49	25	
Surr: 1,2-Dichloroethane-d4	*19.03*	0.10	*20*	0	*95.2*	*80-120*	19.33	*1.56*		
Surr: 4-Bromofluorobenzene	*19.97*	0.10	*20*	0	*99.8*	*80-120*	19.73	*1.21*		
Surr: Dibromofluoromethane	*18.83*	0.10	*20*	0	*94.2*	*80-120*	19.28	*2.36*		
Surr: Toluene-d8	*19.28*	0.10	*20*	0	*96.4*	*80-120*	19.35	*0.362*		

MSD Sample ID: **1212320-08A MSD** Units: **µg/L** Analysis Date: **12/11/2012 08:35 PM**
Client ID: Run ID: **VMS6_121211A** SeqNo: **2166334** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	4.31	0.50	5	0	86.2	70-130	4.52	4.76	25	
1,3,5-Trimethylbenzene	4.53	0.50	5	0	90.6	70-130	4.66	2.83	25	
Benzene	4.53	0.50	5	0	90.6	70-130	4.75	4.74	25	
Ethylbenzene	4.38	0.50	5	0	87.6	70-130	4.67	6.41	25	
Isopropylbenzene	4.59	0.50	5	0	91.8	70-130	4.81	4.68	25	
m,p-Xylene	9	1.0	10	0	90	70-130	9.28	3.06	25	
Naphthalene	3.97	0.50	5	0	79.4	70-130	3.94	0.759	25	
n-Propylbenzene	4.48	0.50	5	0	89.6	70-130	4.74	5.64	25	
o-Xylene	4.37	0.50	5	0	87.4	70-130	4.56	4.26	25	
sec-Butylbenzene	4.85	0.50	5	0	97	70-130	4.96	2.24	25	
Toluene	4.47	0.50	5	0	89.4	70-130	4.6	2.87	25	
Surr: 1,2-Dichloroethane-d4	*19.56*	0.10	*20*	0	*97.8*	*80-120*	19.86	*1.52*		
Surr: 4-Bromofluorobenzene	*19.24*	0.10	*20*	0	*96.2*	*80-120*	19.73	*2.51*		
Surr: Dibromofluoromethane	*19.17*	0.10	*20*	0	*95.8*	*80-120*	19.62	*2.32*		
Surr: Toluene-d8	*19.3*	0.10	*20*	0	*96.5*	*80-120*	19.46	*0.826*		

The following samples were analyzed in this batch:

1212319-08A	1212319-09A	1212319-10A
1212319-11A	1212319-12A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

1212319

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # ___ of ___

COC #: | Task: Potable B
Total # of Samples: 12 | Event Complete? N
Regular: X | Turnaround Time: 5 Day

BILLING CODE: 7.00

Lab Information:
Lab Name: ALS Laboratory Group
Address: 3352 128th Ave. Holland, MI 49424-9263
Lab PM: Ann Preston
Phone/Fax: 1-616-399-6070/1-616-399-6185
Lab PM email: ann.preston@alsglobal.com
Applicable Lab Quote #:

Project Information:
Site ID #: 33
Project #: 60162778
Site Address: 5555 Glenwood Parkway SE Suite 200
City: Grand Rapids | State, Zip: MI
Site PM Name: [redacted]
Phone/Fax: 616-940-4424
Site PM Email: Bryan.Stiemsma@aecom.com

Other Information:
Send Invoice to: Enbridge Energy - ATTN Accounts Payable
Address: 1100 Louisiana Suite 1100
City/State: Houson, TX | Phone #: 713-821-2000
PO #:
Send EDD to:
CC Hardcopy report:
CC Hardcopy report:

ITEM #	SAMPLE ID (Samples IDs MUST BE UNIQUE)	SAMPLE LOCATION	MATRIX CODE	G=GRAB C=COMP	SAMPLE DATE	#OF CONTAINERS	Comments/Lab Sample I.D.	Preservative	HCl	HCl	HNO3							HNO3				
								Analysis	VOCs	SVOCs	TAL Metals	TPH DRO	TPH GRO	PCBs/Pesticides	TOC	TSS	Hg by EPA 245.1				Additional Notes
1	WPD12061224JTC1B	C0048DCA	GW	G	12/6/2012 1224	5	C0048DC		X	X	X						X				
2	WPD12061156JTC1B	C00589DA	GW	G	12/6/2012 1156	5	C00589D		X	X	X						X				
3	WPD12060937JTC1B	C015481A	GW	G	12/6/2012 0937	5	C015481		X	X	X						X				
4	WPD12061020JTC1B	C0156ADA	GW	G	12/6/2012 1020	5	C0156AD		X	X	X						X				
5	WPD12061042JTC1B	C01573BA	GW	G	12/6/2012 1042	5	C01573B		X	X	X						X				
6	WPD12061000JTC1B	C0231D1A	GW	G	12/6/2012 1000	5	C0231D1		X	X	X						X				
7	WPD12061125JTC2B	C046713WP1	GW	G	12/6/2012 1125	5	C046713		X	X	X						X				DUP
8	WPD12061125JTC1B	C046713WP1	GW	G	12/6/2012 1125	5	C046713		X	X	X						X				
9	WPD12061250JTC1B	C0920E7PW1	GW	G	12/6/2012 1250	5	C0920E7		X	X	X						X				
10	WPD12061500JTC1B	C14123EWP1	GW	G	12/6/2012 1500	5	C14123E		X	X	X						X				
11	WPD12061437JTC1B	C1509C0WP1	GW	G	12/6/2012 1437	5	C1509C0		X	X	X						X				
12	TB120612JTC5	Trip Blank	W	G	12/6/2012 0000	1	Trip Blank		X												TRIP BLANK

Additional Comments/Special Instructions:
Samplers: Jon Carveth; Lorri Lego

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
[signature]	12-7-12	1100	[signature]	12-7-12	1100
[signature]	12-7-12	1535	[signature]	12-7-12	1535

Sample Receipt Conditions

Temp in °C	Samples on Ice?	Sample Intact?	Trip Blank?
3.8-5.2c	Y/N	Y/N	Y/N
	(Y)N	(Y)N	(Y)N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N

SHIPPING INFO:
SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: JON CARVETH, LORRI LEGO
SIGNATURE of SAMPLER: [signature] DATE Signed: Time:

ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **07-Dec-12 15:35**

Work Order: **1212319** Received by: **PD**

Checklist completed by Diane Shaw (eSignature) 10-Dec-12 (Date) Reviewed by: Ann Preston (eSignature) 11-Dec-12 (Date)

Matrices: Potable Water
Carrier name: ALSHN

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	3.8-5.2 c		
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	12/10/2012 11:22:03 AM		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

4.0

ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL
Date: 12-7-12 Time:
Name:
Company:

Seal Broken By:
Date:

3.8

ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL
Date: 12-7-12 Time:
Name:
Company:

Seal Broken By:
Date:

5.2

ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL
Date: 12-7-12 Time:
Name:
Company:

Seal Broken By:
Date:

17-Dec-2012

Alison Schoeff
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall Potable Water 12/7/12** Work Order: **1212320**

Dear Alison,

ALS Environmental received 9 samples on 07-Dec-2012 03:35 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 23.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

Certificate No: MN331938

ALS Group USA, Corp

Date: 17-Dec-12

Client: AECOM Environment
Project: Marshall Potable Water 12/7/12
Work Order: **1212320**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1212320-01	WPC12071314JTC2B	Potable Water		12/7/2012 13:14	12/7/2012 15:35	☐
1212320-02	WPC12071314JTC1B	Potable Water		12/7/2012 13:14	12/7/2012 15:35	☐
1212320-03	WPC12071340JTC1B	Potable Water		12/7/2012 13:40	12/7/2012 15:35	☐
1212320-04	WPC12071136JTC1B	Potable Water		12/7/2012 11:36	12/7/2012 15:35	☐
1212320-05	WPC12071244JTC1B	Potable Water		12/7/2012 12:44	12/7/2012 15:35	☐
1212320-06	WPD12071207JTC1B	Potable Water		12/7/2012 12:07	12/7/2012 15:35	☐
1212320-07	WPD12071011JTC1B	Potable Water		12/7/2012 10:11	12/7/2012 15:35	☐
1212320-08	WPD12071040JTC3B	Potable Water		12/7/2012 10:40	12/7/2012 15:35	☐
1212320-09	TB120712JTC5	Water		12/7/2012	12/7/2012 15:35	☐

ALS Group USA, Corp

Date: 17-Dec-12

Client: AECOM Environment
Project: Marshall Potable Water 12/7/12
WorkOrder: **1212320**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
SD	Serial Dilution
TDL	Target Detection Limit

Units Reported	Description
µg/L	Micrograms per Liter
mg/L	Milligrams per Liter

ALS Group USA, Corp

Date: *17-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12071314JTC2B
Work Order:	1212320	**Collection Date:**	12/7/2012 1:14:00 PM
Project:	Marshall Potable Water 12/7/12		
Lab ID:	1212320-01	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/13/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/13/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/13/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/14/2012
Iron	**0.53**	**0.20**	**0.20**		**mg/L**	1	12/14/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/14/2012
Nickel	ND	0.020	0.020		mg/L	1	12/14/2012
Titanium	ND	0.0050	0		mg/L	1	12/14/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/14/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/12/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/13/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*91.2*	*70-125*			*%REC*	1	12/13/2012
Surr: Perylene-d12	*91.2*	*46-142*			*%REC*	1	12/13/2012
Surr: Triphenylphosphate	*155*	*77-169*			*%REC*	1	12/13/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **RS**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/11/2012
Benzene	ND	1.0	1.0		µg/L	1	12/11/2012
Cyclohexane	ND	10	10		µg/L	1	12/11/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/11/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/11/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Toluene	ND	1.0	1.0		µg/L	1	12/11/2012
Surr: 1,2-Dichloroethane-d4	*96.2*	*70-130*			*%REC*	1	12/11/2012
Surr: 4-Bromofluorobenzene	*95.9*	*70-130*			*%REC*	1	12/11/2012
Surr: Dibromofluoromethane	*92.6*	*70-130*			*%REC*	1	12/11/2012
Surr: Toluene-d8	*97.8*	*70-130*			*%REC*	1	12/11/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12071314JTC1B
Work Order:	1212320	**Collection Date:**	12/7/2012 1:14:00 PM
Project:	Marshall Potable Water 12/7/12		
Lab ID:	1212320-02	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/13/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/13/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/13/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/15/2012
Iron	**0.53**	**0.20**	**0.20**		**mg/L**	1	12/15/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/15/2012
Nickel	ND	0.020	0.020		mg/L	1	12/15/2012
Titanium	ND	0.0050	0		mg/L	1	12/15/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/15/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/12/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/13/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*89.8*	*70-125*			*%REC*	1	12/13/2012
Surr: Perylene-d12	*96.4*	*46-142*			*%REC*	1	12/13/2012
Surr: Triphenylphosphate	*161*	*77-169*			*%REC*	1	12/13/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **RS**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/11/2012
Benzene	ND	1.0	1.0		µg/L	1	12/11/2012
Cyclohexane	ND	10	10		µg/L	1	12/11/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/11/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/11/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Toluene	ND	1.0	1.0		µg/L	1	12/11/2012
Surr: 1,2-Dichloroethane-d4	*97.6*	*70-130*			*%REC*	1	12/11/2012
Surr: 4-Bromofluorobenzene	*98.4*	*70-130*			*%REC*	1	12/11/2012
Surr: Dibromofluoromethane	*94.4*	*70-130*			*%REC*	1	12/11/2012
Surr: Toluene-d8	*98.2*	*70-130*			*%REC*	1	12/11/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12071340JTC1B
Work Order:	1212320	**Collection Date:**	12/7/2012 1:40:00 PM
Project:	Marshall Potable Water 12/7/12		
Lab ID:	1212320-03	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/13/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/13/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/13/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/15/2012
Iron	**0.51**	**0.20**	**0.20**		**mg/L**	1	12/15/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/15/2012
Nickel	ND	0.020	0.020		mg/L	1	12/15/2012
Titanium	ND	0.0050	0		mg/L	1	12/15/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/15/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/12/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/13/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*89.2*	*70-125*			*%REC*	1	12/13/2012
Surr: Perylene-d12	*94.8*	*46-142*			*%REC*	1	12/13/2012
Surr: Triphenylphosphate	*159*	*77-169*			*%REC*	1	12/13/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **RS**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/11/2012
Benzene	ND	1.0	1.0		µg/L	1	12/11/2012
Cyclohexane	ND	10	10		µg/L	1	12/11/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/11/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/11/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Toluene	ND	1.0	1.0		µg/L	1	12/11/2012
Surr: 1,2-Dichloroethane-d4	*96.2*	*70-130*			*%REC*	1	12/11/2012
Surr: 4-Bromofluorobenzene	*97.0*	*70-130*			*%REC*	1	12/11/2012
Surr: Dibromofluoromethane	*91.2*	*70-130*			*%REC*	1	12/11/2012
Surr: Toluene-d8	*97.5*	*70-130*			*%REC*	1	12/11/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12071136JTC1B
Work Order:	1212320	**Collection Date:**	12/7/2012 11:36:00 AM
Project:	Marshall Potable Water 12/7/12		
Lab ID:	1212320-04	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/13/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/13/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/13/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/15/2012
Iron	**1.4**	**0.20**	**0.20**		**mg/L**	1	12/15/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/15/2012
Nickel	ND	0.020	0.020		mg/L	1	12/15/2012
Titanium	ND	0.0050	0		mg/L	1	12/15/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/15/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/12/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/13/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*90.6*	*70-125*			*%REC*	1	12/13/2012
Surr: Perylene-d12	*98.4*	*46-142*			*%REC*	1	12/13/2012
Surr: Triphenylphosphate	*163*	*77-169*			*%REC*	1	12/13/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **RS**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/11/2012
Benzene	ND	1.0	1.0		µg/L	1	12/11/2012
Cyclohexane	ND	10	10		µg/L	1	12/11/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/11/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/11/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Toluene	ND	1.0	1.0		µg/L	1	12/11/2012
Surr: 1,2-Dichloroethane-d4	*96.8*	*70-130*			*%REC*	1	12/11/2012
Surr: 4-Bromofluorobenzene	*96.8*	*70-130*			*%REC*	1	12/11/2012
Surr: Dibromofluoromethane	*92.9*	*70-130*			*%REC*	1	12/11/2012
Surr: Toluene-d8	*96.2*	*70-130*			*%REC*	1	12/11/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12071244JTC1B
Work Order:	1212320	**Collection Date:**	12/7/2012 12:44:00 PM
Project:	Marshall Potable Water 12/7/12		
Lab ID:	1212320-05	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/13/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/13/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/13/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/15/2012
Iron	**1.8**	**0.20**	**0.20**		**mg/L**	1	12/15/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/15/2012
Nickel	ND	0.020	0.020		mg/L	1	12/15/2012
Titanium	ND	0.0050	0		mg/L	1	12/15/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/15/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/12/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/13/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*88.2*	*70-125*			*%REC*	1	12/13/2012
Surr: Perylene-d12	*94.4*	*46-142*			*%REC*	1	12/13/2012
Surr: Triphenylphosphate	*161*	*77-169*			*%REC*	1	12/13/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **RS**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/11/2012
Benzene	ND	1.0	1.0		µg/L	1	12/11/2012
Cyclohexane	ND	10	10		µg/L	1	12/11/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/11/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/11/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Toluene	ND	1.0	1.0		µg/L	1	12/11/2012
Surr: 1,2-Dichloroethane-d4	*97.4*	*70-130*			*%REC*	1	12/11/2012
Surr: 4-Bromofluorobenzene	*97.0*	*70-130*			*%REC*	1	12/11/2012
Surr: Dibromofluoromethane	*94.6*	*70-130*			*%REC*	1	12/11/2012
Surr: Toluene-d8	*97.5*	*70-130*			*%REC*	1	12/11/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPD12071207JTC1B
Work Order:	1212320	**Collection Date:**	12/7/2012 12:07:00 PM
Project:	Marshall Potable Water 12/7/12		
Lab ID:	1212320-06	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/13/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/13/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/13/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/15/2012
Iron	**3.6**	**0.20**	**0.20**		**mg/L**	1	12/15/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/15/2012
Nickel	ND	0.020	0.020		mg/L	1	12/15/2012
Titanium	ND	0.0050	0		mg/L	1	12/15/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/15/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/12/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/13/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*87.8*	*70-125*			*%REC*	1	12/13/2012
Surr: Perylene-d12	*87.6*	*46-142*			*%REC*	1	12/13/2012
Surr: Triphenylphosphate	*156*	*77-169*			*%REC*	1	12/13/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **RS**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/11/2012
Benzene	ND	1.0	1.0		µg/L	1	12/11/2012
Cyclohexane	ND	10	10		µg/L	1	12/11/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/11/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/11/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Toluene	ND	1.0	1.0		µg/L	1	12/11/2012
Surr: 1,2-Dichloroethane-d4	*99.9*	*70-130*			*%REC*	1	12/11/2012
Surr: 4-Bromofluorobenzene	*99.1*	*70-130*			*%REC*	1	12/11/2012
Surr: Dibromofluoromethane	*94.6*	*70-130*			*%REC*	1	12/11/2012
Surr: Toluene-d8	*100*	*70-130*			*%REC*	1	12/11/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPD12071011JTC1B
Work Order:	1212320	**Collection Date:**	12/7/2012 10:11:00 AM
Project:	Marshall Potable Water 12/7/12		
Lab ID:	1212320-07	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/13/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/13/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/13/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/15/2012
Iron	**2.4**	**0.20**	**0.20**		**mg/L**	1	12/15/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/15/2012
Nickel	ND	0.020	0.020		mg/L	1	12/15/2012
Titanium	ND	0.0050	0		mg/L	1	12/15/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/15/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/12/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/13/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*88.4*	*70-125*			*%REC*	1	12/13/2012
Surr: Perylene-d12	*83.6*	*46-142*			*%REC*	1	12/13/2012
Surr: Triphenylphosphate	*157*	*77-169*			*%REC*	1	12/13/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **RS**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/11/2012
Benzene	ND	1.0	1.0		µg/L	1	12/11/2012
Cyclohexane	ND	10	10		µg/L	1	12/11/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/11/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/11/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Toluene	ND	1.0	1.0		µg/L	1	12/11/2012
Surr: 1,2-Dichloroethane-d4	*94.9*	*70-130*			*%REC*	1	12/11/2012
Surr: 4-Bromofluorobenzene	*96.4*	*70-130*			*%REC*	1	12/11/2012
Surr: Dibromofluoromethane	*93.4*	*70-130*			*%REC*	1	12/11/2012
Surr: Toluene-d8	*96.2*	*70-130*			*%REC*	1	12/11/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPD12071040JTC3B
Work Order:	1212320	**Collection Date:**	12/7/2012 10:40:00 AM
Project:	Marshall Potable Water 12/7/12		
Lab ID:	1212320-08	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/13/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/13/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/13/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/15/2012
Iron	ND	0.20	0.20		mg/L	1	12/15/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/15/2012
Nickel	ND	0.020	0.020		mg/L	1	12/15/2012
Titanium	ND	0.0050	0		mg/L	1	12/15/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/15/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/12/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/13/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*87.8*	*70-125*			*%REC*	1	12/13/2012
Surr: Perylene-d12	*91.6*	*46-142*			*%REC*	1	12/13/2012
Surr: Triphenylphosphate	*153*	*77-169*			*%REC*	1	12/13/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **RS**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/11/2012
Benzene	ND	1.0	1.0		µg/L	1	12/11/2012
Cyclohexane	ND	10	10		µg/L	1	12/11/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/11/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/11/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Toluene	ND	1.0	1.0		µg/L	1	12/11/2012
Surr: 1,2-Dichloroethane-d4	*98.3*	*70-130*			*%REC*	1	12/11/2012
Surr: 4-Bromofluorobenzene	*99.1*	*70-130*			*%REC*	1	12/11/2012
Surr: Dibromofluoromethane	*95.6*	*70-130*			*%REC*	1	12/11/2012
Surr: Toluene-d8	*98.6*	*70-130*			*%REC*	1	12/11/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	TB120712JTC5
Work Order:	1212320	**Collection Date:**	12/7/2012
Project:	Marshall Potable Water 12/7/12		
Lab ID:	1212320-09	**Matrix:**	WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **RS**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/11/2012
Benzene	ND	1.0	1.0		µg/L	1	12/11/2012
Cyclohexane	ND	10	10		µg/L	1	12/11/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/11/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/11/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/11/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/11/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/11/2012
Toluene	ND	1.0	1.0		µg/L	1	12/11/2012
Surr: 1,2-Dichloroethane-d4	*96.8*	*70-130*			*%REC*	1	12/11/2012
Surr: 4-Bromofluorobenzene	*98.7*	*70-130*			*%REC*	1	12/11/2012
Surr: Dibromofluoromethane	*94.2*	*70-130*			*%REC*	1	12/11/2012
Surr: Toluene-d8	*98.3*	*70-130*			*%REC*	1	12/11/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

Batch ID: **45379** Instrument ID **HG1** Method: **E245.1**

MBLK Sample ID: **MBLK-45379-45379** Units: **mg/L** Analysis Date: **12/13/2012 02:50 PM**
Client ID: Run ID: **HG1_121213A** SeqNo: **2168482** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00001	0.00020								J

LCS Sample ID: **LCS-45379-45379** Units: **mg/L** Analysis Date: **12/13/2012 02:52 PM**
Client ID: Run ID: **HG1_121213A** SeqNo: **2168483** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00189	0.00020	0.002	0	94.5	85-115	0			

MS Sample ID: **1212320-08CMS** Units: **mg/L** Analysis Date: **12/13/2012 03:23 PM**
Client ID: **WPD12071040JTC3B** Run ID: **HG1_121213A** SeqNo: **2168498** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001826	0.00020	0.002	0.000012	90.7	80-120	0			

MS Sample ID: **1212394-01BMS** Units: **mg/L** Analysis Date: **12/13/2012 04:15 PM**
Client ID: Run ID: **HG1_121213A** SeqNo: **2168768** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001783	0.00020	0.002	0.000141	82.1	80-120	0			

MSD Sample ID: **1212320-08CMSD** Units: **mg/L** Analysis Date: **12/13/2012 03:25 PM**
Client ID: **WPD12071040JTC3B** Run ID: **HG1_121213A** SeqNo: **2168499** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001821	0.00020	0.002	0.000012	90.4	80-120	0.001826	0.274	20	

MSD Sample ID: **1212394-01BMSD** Units: **mg/L** Analysis Date: **12/13/2012 04:17 PM**
Client ID: Run ID: **HG1_121213A** SeqNo: **2168769** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00174	0.00020	0.002	0.000141	80	80-120	0.001783	2.44	20	S

DUP Sample ID: **1212335-01ADUP** Units: **mg/L** Analysis Date: **12/13/2012 03:32 PM**
Client ID: Run ID: **HG1_121213A** SeqNo: **2168501** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.000105	0.00020	0	0	0	0-0	0.000098	0	20	J

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212320
Project: Marshall Potable Water 12/7/12

QC BATCH REPORT

Batch ID: **45379** Instrument ID **HG1** Method: **E245.1**

DUP Sample ID: **1212338-03ADUP** Units: **mg/L** Analysis Date: **12/13/2012 04:07 PM**
Client ID: Run ID: **HG1_121213A** SeqNo: **2168764** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.000051	0.00020	0	0	0	0-0	0.000057	0	20	J

DUP Sample ID: **1212394-01BDUP** Units: **mg/L** Analysis Date: **12/13/2012 04:13 PM**
Client ID: Run ID: **HG1_121213A** SeqNo: **2168767** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00013	0.00020	0	0	0	0-0	0.000141	0	20	J

DUP Sample ID: **1212395-01ADUP** Units: **mg/L** Analysis Date: **12/13/2012 04:22 PM**
Client ID: Run ID: **HG1_121213A** SeqNo: **2168771** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.000031	0.00020	0	0	0	0-0	0.000034	0	20	J

DUP Sample ID: **1212439-01ADUP** Units: **mg/L** Analysis Date: **12/13/2012 04:34 PM**
Client ID: Run ID: **HG1_121213A** SeqNo: **2168777** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.000066	0.00020	0	0	0	0-0	0.000053	0	20	J

The following samples were analyzed in this batch:

1212320-01C	1212320-02C	1212320-03C
1212320-04C	1212320-05C	1212320-06C
1212320-07C	1212320-08C	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212320
Project: Marshall Potable Water 12/7/12

QC BATCH REPORT

Batch ID: **45372** Instrument ID **ICPMS2** Method: **E200.8**

MBLK Sample ID: **MBLK-45372-45372** Units: **mg/L** Analysis Date: **12/13/2012 02:46 PM**
Client ID: Run ID: **ICPMS2_121213A** SeqNo: **2168403** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	ND	0.0020								
Iron	ND	0.080								
Molybdenum	ND	0.0050								
Nickel	ND	0.0050								
Titanium	ND	0.0050								
Vanadium	ND	0.0050								

LCS Sample ID: **LCS-45372-45372** Units: **mg/L** Analysis Date: **12/13/2012 02:51 PM**
Client ID: Run ID: **ICPMS2_121213A** SeqNo: **2168404** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.09381	0.0020	0.1	0	93.8	85-115	0			
Iron	9.025	0.080	10	0	90.2	85-115	0			
Molybdenum	0.08976	0.0050	0.1	0	89.8	85-115	0			
Nickel	0.08918	0.0050	0.1	0	89.2	85-115	0			
Titanium	0.09268	0.0050	0.1	0	92.7	85-115	0			
Vanadium	0.09517	0.0050	0.1	0	95.2	85-115	0			

MS Sample ID: **1212319-10CMS** Units: **mg/L** Analysis Date: **12/13/2012 03:17 PM**
Client ID: Run ID: **ICPMS2_121213A** SeqNo: **2168524** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.09136	0.0020	0.1	-0.0001089	91.5	70-130	0			
Iron	11.37	0.080	10	2.57	88	70-130	0			
Molybdenum	0.09158	0.0050	0.1	0.0005256	91.1	70-130	0			
Nickel	0.08851	0.0050	0.1	-0.001318	89.8	70-130	0			
Titanium	0.09507	0.0050	0.1	0.0002486	94.8	70-130	0			
Vanadium	0.09632	0.0050	0.1	-0.00002074	96.3	70-130	0			

MS Sample ID: **1212320-08CMS** Units: **mg/L** Analysis Date: **12/15/2012 09:22 PM**
Client ID: **WPD12071040JTC3B** Run ID: **ICPMS2_121215A** SeqNo: **2170292** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.103	0.0020	0.1	-0.00003436	103	70-130	0			
Iron	9.593	0.080	10	0.02469	95.7	70-130	0			
Molybdenum	0.09281	0.0050	0.1	0.0001536	92.7	70-130	0			
Nickel	0.09466	0.0050	0.1	0.001016	93.6	70-130	0			
Titanium	0.1086	0.0050	0.1	0.0006037	108	70-130	0			
Vanadium	0.1012	0.0050	0.1	0.00002983	101	70-130	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212320
Project: Marshall Potable Water 12/7/12

QC BATCH REPORT

Batch ID: **45372** Instrument ID **ICPMS2** Method: **E200.8**

MSD Sample ID: **1212319-10CMSD** Units: **mg/L** Analysis Date: **12/13/2012 03:22 PM**
Client ID: Run ID: **ICPMS2_121213A** SeqNo: **2168526** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.09124	0.0020	0.1	-0.0001089	91.3	70-130	0.09136	0.131	20	
Iron	11.56	0.080	10	2.57	89.9	70-130	11.37	1.66	20	
Molybdenum	0.09289	0.0050	0.1	0.0005256	92.4	70-130	0.09158	1.42	20	
Nickel	0.08903	0.0050	0.1	-0.001318	90.3	70-130	0.08851	0.586	20	
Titanium	0.09544	0.0050	0.1	0.0002486	95.2	70-130	0.09507	0.388	20	
Vanadium	0.09894	0.0050	0.1	-0.00002074	99	70-130	0.09632	2.68	20	

MSD Sample ID: **1212320-08CMSD** Units: **mg/L** Analysis Date: **12/15/2012 09:27 PM**
Client ID: **WPD12071040JTC3B** Run ID: **ICPMS2_121215A** SeqNo: **2170293** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.09888	0.0020	0.1	-0.00003436	98.9	70-130	0.103	4.08	20	
Iron	9.524	0.080	10	0.02469	95	70-130	9.593	0.722	20	
Molybdenum	0.09137	0.0050	0.1	0.0001536	91.2	70-130	0.09281	1.56	20	
Nickel	0.09335	0.0050	0.1	0.001016	92.3	70-130	0.09466	1.39	20	
Titanium	0.1062	0.0050	0.1	0.0006037	106	70-130	0.1086	2.23	20	
Vanadium	0.1051	0.0050	0.1	0.00002983	105	70-130	0.1012	3.78	20	

The following samples were analyzed in this batch:

1212320-01C	1212320-02C	1212320-03C
1212320-04C	1212320-05C	1212320-06C
1212320-07C	1212320-08C	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212320
Project: Marshall Potable Water 12/7/12

QC BATCH REPORT

Batch ID: **45334** Instrument ID **SVMS6** Method: **E525.2**

MBLK Sample ID: **PNBLKW1-45334-45334** Units: **µg/L** Analysis Date: **12/13/2012 01:21 AM**
Client ID: Run ID: **SVMS6_121212A** SeqNo: **2168079** Prep Date: **12/12/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenanthrene	ND	0.20								
Surr: 1,3-Dimethyl-2-Nitrobenzen	*4.19*	0.20	*5*	0	*83.8*	*70-125*	0			
Surr: Perylene-d12	*4.53*	0.20	*5*	0	*90.6*	*46-142*	0			
Surr: Triphenylphosphate	*7.71*	0.20	*5*	0	*154*	*77-169*	0			

LCS Sample ID: **PNLCSW1-45334-45334** Units: **µg/L** Analysis Date: **12/13/2012 01:54 AM**
Client ID: Run ID: **SVMS6_121212A** SeqNo: **2168080** Prep Date: **12/12/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenanthrene	5.4	0.20	5	0	108	70-130	0			
Surr: 1,3-Dimethyl-2-Nitrobenzen	*4.46*	0.20	*5*	0	*89.2*	*70-125*	0			
Surr: Perylene-d12	*4.82*	0.20	*5*	0	*96.4*	*46-142*	0			
Surr: Triphenylphosphate	*7.58*	0.20	*5*	0	*152*	*77-169*	0			

MS Sample ID: **1212320-08B MS** Units: **µg/L** Analysis Date: **12/13/2012 02:28 AM**
Client ID: **WPD12071040JTC3B** Run ID: **SVMS6_121212A** SeqNo: **2168081** Prep Date: **12/12/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenanthrene	52.9	2.0	50	0	106	70-130	0			
Surr: 1,3-Dimethyl-2-Nitrobenzen	*45*	2.0	*50*	0	*90*	*70-125*	0			
Surr: Perylene-d12	*49*	2.0	*50*	0	*98*	*46-142*	0			
Surr: Triphenylphosphate	*76.2*	2.0	*50*	0	*152*	*77-169*	0			

MSD Sample ID: **1212320-08B MSD** Units: **µg/L** Analysis Date: **12/13/2012 03:01 AM**
Client ID: **WPD12071040JTC3B** Run ID: **SVMS6_121212A** SeqNo: **2168082** Prep Date: **12/12/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenanthrene	52.5	2.0	50	0	105	70-130	52.9	0.759	30	
Surr: 1,3-Dimethyl-2-Nitrobenzen	*42.6*	2.0	*50*	0	*85.2*	*70-125*	45	*5.48*		
Surr: Perylene-d12	*51.1*	2.0	*50*	0	*102*	*46-142*	49	*4.2*		
Surr: Triphenylphosphate	*77.4*	2.0	*50*	0	*155*	*77-169*	76.2	*1.56*		

The following samples were analyzed in this batch:

1212320-01B	1212320-02B	1212320-03B
1212320-04B	1212320-05B	1212320-06B
1212320-07B	1212320-08B	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212320
Project: Marshall Potable Water 12/7/12

QC BATCH REPORT

Batch ID: **R113728** Instrument ID **VMS6** Method: **E524.2**

MBLK Sample ID: **VBLKW1-121211-R113728** Units: **µg/L** Analysis Date: **12/11/2012 12:55 PM**
Client ID: Run ID: **VMS6_121211A** SeqNo: **2166305** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,3-Trimethylbenzene	ND	0.50								
1,2,4-Trimethylbenzene	ND	0.50								
1,3,5-Trimethylbenzene	ND	0.50								
2-Methylnaphthalene	ND	2.0								
4-Isopropyltoluene	ND	0.50								
Benzene	ND	0.50								
Cyclohexane	ND	1.0								
Ethylbenzene	ND	0.50								
Isopropylbenzene	ND	0.50								
m,p-Xylene	ND	1.0								
Naphthalene	ND	0.50								
n-Propylbenzene	ND	0.50								
o-Xylene	ND	0.50								
sec-Butylbenzene	ND	0.50								
Toluene	ND	0.50								
Surr: 1,2-Dichloroethane-d4	*19.79*	0.10	*20*	0	*99*	*80-120*	0			
Surr: 4-Bromofluorobenzene	*19.72*	0.10	*20*	0	*98.6*	*80-120*	0			
Surr: Dibromofluoromethane	*18.87*	0.10	*20*	0	*94.4*	*80-120*	0			
Surr: Toluene-d8	*19.57*	0.10	*20*	0	*97.8*	*80-120*	0			

LCS Sample ID: **VLCSW1-121211-R113728** Units: **µg/L** Analysis Date: **12/11/2012 11:56 AM**
Client ID: Run ID: **VMS6_121211A** SeqNo: **2166304** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	4.56	0.50	5	0	91.2	70-130	0			
1,3,5-Trimethylbenzene	4.7	0.50	5	0	94	70-130	0			
Benzene	4.72	0.50	5	0	94.4	70-130	0			
Ethylbenzene	4.54	0.50	5	0	90.8	70-130	0			
Isopropylbenzene	4.55	0.50	5	0	91	70-130	0			
m,p-Xylene	9.13	1.0	10	0	91.3	70-130	0			
Naphthalene	3.86	0.50	5	0	77.2	70-130	0			
n-Propylbenzene	4.39	0.50	5	0	87.8	70-130	0			
o-Xylene	4.6	0.50	5	0	92	70-130	0			
sec-Butylbenzene	4.83	0.50	5	0	96.6	70-130	0			
Toluene	4.63	0.50	5	0	92.6	70-130	0			
Surr: 1,2-Dichloroethane-d4	*20.09*	0.10	*20*	0	*100*	*80-120*	0			
Surr: 4-Bromofluorobenzene	*20.13*	0.10	*20*	0	*101*	*80-120*	0			
Surr: Dibromofluoromethane	*19.99*	0.10	*20*	0	*100*	*80-120*	0			
Surr: Toluene-d8	*19.67*	0.10	*20*	0	*98.4*	*80-120*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212320
Project: Marshall Potable Water 12/7/12

QC BATCH REPORT

Batch ID: **R113728** Instrument ID **VMS6** Method: **E524.2**

MS Sample ID: **1212198-01A MS** Units: **µg/L** Analysis Date: **12/11/2012 07:23 PM**
Client ID: Run ID: **VMS6_121211A** SeqNo: **2166330** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	4.73	0.50	5	0	94.6	70-130	0			
1,3,5-Trimethylbenzene	4.9	0.50	5	0	98	70-130	0			
Benzene	4.93	0.50	5	0	98.6	70-130	0			
Ethylbenzene	4.87	0.50	5	0	97.4	70-130	0			
Isopropylbenzene	4.92	0.50	5	0	98.4	70-130	0			
m,p-Xylene	9.69	1.0	10	0	96.9	70-130	0			
Naphthalene	3.89	0.50	5	0	77.8	70-130	0			
n-Propylbenzene	4.71	0.50	5	0	94.2	70-130	0			
o-Xylene	4.74	0.50	5	0	94.8	70-130	0			
sec-Butylbenzene	5.16	0.50	5	0	103	70-130	0			
Toluene	4.96	0.50	5	0	99.2	70-130	0			
Surr: 1,2-Dichloroethane-d4	*19.33*	0.10	*20*	0	*96.6*	*80-120*	0			
Surr: 4-Bromofluorobenzene	*19.73*	0.10	*20*	0	*98.6*	*80-120*	0			
Surr: Dibromofluoromethane	*19.28*	0.10	*20*	0	*96.4*	*80-120*	0			
Surr: Toluene-d8	*19.35*	0.10	*20*	0	*96.8*	*80-120*	0			

MS Sample ID: **1212320-08A MS** Units: **µg/L** Analysis Date: **12/11/2012 08:11 PM**
Client ID: **WPD12071040JTC3B** Run ID: **VMS6_121211A** SeqNo: **2166333** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	4.52	0.50	5	0	90.4	70-130	0			
1,3,5-Trimethylbenzene	4.66	0.50	5	0	93.2	70-130	0			
Benzene	4.75	0.50	5	0	95	70-130	0			
Ethylbenzene	4.67	0.50	5	0	93.4	70-130	0			
Isopropylbenzene	4.81	0.50	5	0	96.2	70-130	0			
m,p-Xylene	9.28	1.0	10	0	92.8	70-130	0			
Naphthalene	3.94	0.50	5	0	78.8	70-130	0			
n-Propylbenzene	4.74	0.50	5	0	94.8	70-130	0			
o-Xylene	4.56	0.50	5	0	91.2	70-130	0			
sec-Butylbenzene	4.96	0.50	5	0	99.2	70-130	0			
Toluene	4.6	0.50	5	0	92	70-130	0			
Surr: 1,2-Dichloroethane-d4	*19.86*	0.10	*20*	0	*99.3*	*80-120*	0			
Surr: 4-Bromofluorobenzene	*19.73*	0.10	*20*	0	*98.6*	*80-120*	0			
Surr: Dibromofluoromethane	*19.62*	0.10	*20*	0	*98.1*	*80-120*	0			
Surr: Toluene-d8	*19.46*	0.10	*20*	0	*97.3*	*80-120*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212320
Project: Marshall Potable Water 12/7/12

QC BATCH REPORT

Batch ID: **R113728** Instrument ID **VMS6** Method: **E524.2**

MSD Sample ID: **1212198-01A MSD** Units: **µg/L** Analysis Date: **12/11/2012 07:47 PM**
Client ID: Run ID: **VMS6_121211A** SeqNo: **2166331** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	4.76	0.50	5	0	95.2	70-130	4.73	0.632	25	
1,3,5-Trimethylbenzene	5.01	0.50	5	0	100	70-130	4.9	2.22	25	
Benzene	4.9	0.50	5	0	98	70-130	4.93	0.61	25	
Ethylbenzene	4.79	0.50	5	0	95.8	70-130	4.87	1.66	25	
Isopropylbenzene	5.03	0.50	5	0	101	70-130	4.92	2.21	25	
m,p-Xylene	9.62	1.0	10	0	96.2	70-130	9.69	0.725	25	
Naphthalene	4.12	0.50	5	0	82.4	70-130	3.89	5.74	25	
n-Propylbenzene	4.76	0.50	5	0	95.2	70-130	4.71	1.06	25	
o-Xylene	4.79	0.50	5	0	95.8	70-130	4.74	1.05	25	
sec-Butylbenzene	5.28	0.50	5	0	106	70-130	5.16	2.3	25	
Toluene	4.79	0.50	5	0	95.8	70-130	4.96	3.49	25	
Surr: 1,2-Dichloroethane-d4	*19.03*	0.10	*20*	0	*95.2*	*80-120*	19.33	*1.56*		
Surr: 4-Bromofluorobenzene	*19.97*	0.10	*20*	0	*99.8*	*80-120*	19.73	*1.21*		
Surr: Dibromofluoromethane	*18.83*	0.10	*20*	0	*94.2*	*80-120*	19.28	*2.36*		
Surr: Toluene-d8	*19.28*	0.10	*20*	0	*96.4*	*80-120*	19.35	*0.362*		

MSD Sample ID: **1212320-08A MSD** Units: **µg/L** Analysis Date: **12/11/2012 08:35 PM**
Client ID: **WPD12071040JTC3B** Run ID: **VMS6_121211A** SeqNo: **2166334** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	4.31	0.50	5	0	86.2	70-130	4.52	4.76	25	
1,3,5-Trimethylbenzene	4.53	0.50	5	0	90.6	70-130	4.66	2.83	25	
Benzene	4.53	0.50	5	0	90.6	70-130	4.75	4.74	25	
Ethylbenzene	4.38	0.50	5	0	87.6	70-130	4.67	6.41	25	
Isopropylbenzene	4.59	0.50	5	0	91.8	70-130	4.81	4.68	25	
m,p-Xylene	9	1.0	10	0	90	70-130	9.28	3.06	25	
Naphthalene	3.97	0.50	5	0	79.4	70-130	3.94	0.759	25	
n-Propylbenzene	4.48	0.50	5	0	89.6	70-130	4.74	5.64	25	
o-Xylene	4.37	0.50	5	0	87.4	70-130	4.56	4.26	25	
sec-Butylbenzene	4.85	0.50	5	0	97	70-130	4.96	2.24	25	
Toluene	4.47	0.50	5	0	89.4	70-130	4.6	2.87	25	
Surr: 1,2-Dichloroethane-d4	*19.56*	0.10	*20*	0	*97.8*	*80-120*	19.86	*1.52*		
Surr: 4-Bromofluorobenzene	*19.24*	0.10	*20*	0	*96.2*	*80-120*	19.73	*2.51*		
Surr: Dibromofluoromethane	*19.17*	0.10	*20*	0	*95.8*	*80-120*	19.62	*2.32*		
Surr: Toluene-d8	*19.3*	0.10	*20*	0	*96.5*	*80-120*	19.46	*0.826*		

The following samples were analyzed in this batch:

1212320-01A	1212320-02A	1212320-03A
1212320-04A	1212320-05A	1212320-06A
1212320-07A	1212320-08A	1212320-09A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

12123 20

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 0
Cooler # ___ of ___

COC #: | Task: Potable B
Total # of Samples: 9 | Event Complete? N

Regular	X		Turnaround Time	5 Day	

BILLING CODE: 7.00

Lab Information:

Lab Name:	ALS Laboratory Group
Address:	3352 128th Ave. Holland, MI 49424-9263
Lab PM:	Ann Preston
Phone/Fax:	1-616-399-6070/1-616-399-6185
Lab PM email	ann.preston@alsglobal.com
Applicable Lab Quote #:	

Project Information:

Site ID #:	33
Project #	60162778
Site Address	5555 Glenwood Parkway SE Suite 200
City	Grand Rapids
State, Zip	MI
Site PM Name	Bryan Stiemsma
Phone/Fax:	[redacted]
Site PM Email:	Bryan.Stiemsma@aecom.com

Other Information:

Send Invoice to:	Enbridge Energy - ATTN Accounts Payable
Address:	1100 Louisiana Suite 1100
City/State:	Houson, TX
Phone #:	713-821-2000
PO #	
Send EDD to	
CC Hardcopy repor	
CC Hardcopy repor	

ITEM #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	MATRIX CODE	G=GRAB C=COMP	SAMPLE DATE	#OF CONTAINERS	Comments/Lab Sample I.D.	Preservative	HCl	HCl	HNO3						HNO3				Additional Notes
								Analysis	VOCs	SVOCs	TAL Metals	TPH DRO	TPH GRO	PCBs/Pesticides	TOC	TSS	Hg by EPA 245.1				
1	WPC12071314JTC2B	C0042C2A	GW	G	12/7/2012 1314	5	C0042C2		X	X	X						X				DUP
2	WPC12071314JTC1B	C0042C2A	GW	G	12/7/2012 1314	5	C0042C2		X	X	X						X				
3	WPC12071340JTC1B	C00474DA	GW	G	12/7/2012 1340	5	C00474D		X	X	X						X				
4	WPC12071136JTC1B	C017595PW1	GW	G	12/7/2012 1136	5	C017595		X	X	X						X				
5	WPC12071244JTC1B	C0177B9A	GW	G	12/7/2012 1244	5	C0177B9		X	X	X						X				
6	WPD12071207JTC1B	C053761WP1	GW	G	12/7/2012 1207	5	C053761		X	X	X						X				
7	WPD12071011JTC1B	C0876A0WP1	GW	G	12/7/2012 1011	5	C0876A0		X	X	X						X				
8	WPD12071040JTC3B	C1520E6WP1	GW	G	12/7/2012 1040	15	C1520E6		X	X	X						X				MS/MSD
9	TB120712JTC5		W		12/7/12 0:00	1	TRIP BLANK		X												TRIP BLANK

Additional Comments/Special Instructions:

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
	12-7-12	1415		12-7-12	1415
	12-7-12	1535		12-7-12	1535

Sample Receipt Conditions

Temp in °C	Samples on Ice?	Sample Intact?	Trip Blank?
	Y/N	Y/N	Y/N
5.4°C	(Y)N	(Y)N	(Y)N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N

SHIPPING INFO.

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: JON CARVETH, LORRI LEGO

SIGNATURE of SAMPLER: DATE Signed: Time:

ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **07-Dec-12 15:35**

Work Order: **1212320** Received by: **PD**

Checklist completed by Diane Shaw (eSignature) 10-Dec-12 (Date) Reviewed by: Ann Preston (eSignature) 11-Dec-12 (Date)

Matrices: Potable Water
Carrier name: ALSHN

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	5.4 c		
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	12/10/2012 11:30:09 AM		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL

Date: 12-7-13 Time:
Name: Tom Lear
Company:

Seal Broken By:

Date:

5.4

19-Dec-2012

Alison Schoeff
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall Potable Water 12/11/12** Work Order: **1212420**

Dear Alison,

ALS Environmental received 12 samples on 12-Dec-2012 08:10 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 27.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

Certificate No: MN331938

ALS Group USA, Corp

Date: 19-Dec-12

Client: AECOM Environment
Project: Marshall Potable Water 12/11/12
Work Order: **1212420**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1212420-01	WPC12110934JTC1B	Potable Water		12/11/2012 09:34	12/12/2012 08:10	☐
1212420-02	WPC12111215JTC3B	Potable Water		12/11/2012 12:15	12/12/2012 08:10	☐
1212420-03	WPC12111012JTC1B	Potable Water		12/11/2012 10:12	12/12/2012 08:10	☐
1212420-04	WPC12111325JTC1B	Potable Water		12/11/2012 13:25	12/12/2012 08:10	☐
1212420-05	WPC12111646JTC1B	Potable Water		12/11/2012 16:46	12/12/2012 08:10	☐
1212420-06	WPC12111055JTC1B	Potable Water		12/11/2012 10:55	12/12/2012 08:10	☐
1212420-07	WPC12111147JTC1B	Potable Water		12/11/2012 11:47	12/12/2012 08:10	☐
1212420-08	WPC12111354JTC1B	Potable Water		12/11/2012 13:54	12/12/2012 08:10	☐
1212420-09	WPC12111354JTC2B	Potable Water		12/11/2012 13:54	12/12/2012 08:10	☐
1212420-10	WPC12111437JTC1B	Potable Water		12/11/2012 14:37	12/12/2012 08:10	☐
1212420-11	WPC12111515JTC1B	Potable Water		12/11/2012 15:15	12/12/2012 08:10	☐
1212420-12	TB121112JTC5	Water		12/11/2012	12/12/2012 08:10	☐

ALS Group USA, Corp

Date: 19-Dec-12

Client: AECOM Environment
Project: Marshall Potable Water 12/11/12
WorkOrder: **1212420**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
SD	Serial Dilution
TDL	Target Detection Limit

Units Reported	Description
µg/L	Micrograms per Liter
mg/L	Milligrams per Liter

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12110934JTC1B
Work Order:	1212420	**Collection Date:**	12/11/2012 9:34:00 AM
Project:	Marshall Potable Water 12/11/12		
Lab ID:	1212420-01	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/17/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/17/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/17/2012**		Analyst: **CES**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/18/2012
Iron	ND	0.20	0.20		mg/L	1	12/17/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/17/2012
Nickel	ND	0.020	0.020		mg/L	1	12/17/2012
Titanium	ND	0.0050	0		mg/L	1	12/18/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/17/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/12/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/13/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*87.2*	*70-125*			*%REC*	1	12/13/2012
Surr: Perylene-d12	*97.6*	*46-142*			*%REC*	1	12/13/2012
Surr: Triphenylphosphate	*167*	*77-169*			*%REC*	1	12/13/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/12/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/12/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/12/2012
Benzene	ND	1.0	1.0		µg/L	1	12/12/2012
Cyclohexane	ND	10	10		µg/L	1	12/12/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/12/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/12/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/12/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/12/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
Toluene	ND	1.0	1.0		µg/L	1	12/12/2012
Surr: 1,2-Dichloroethane-d4	*96.1*	*70-130*			*%REC*	1	12/12/2012
Surr: 4-Bromofluorobenzene	*99.4*	*70-130*			*%REC*	1	12/12/2012
Surr: Dibromofluoromethane	*94.8*	*70-130*			*%REC*	1	12/12/2012
Surr: Toluene-d8	*98.9*	*70-130*			*%REC*	1	12/12/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12111215JTC3B
Work Order:	1212420	**Collection Date:**	12/11/2012 12:15:00 PM
Project:	Marshall Potable Water 12/11/12		
Lab ID:	1212420-02	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/17/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/17/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/17/2012**		Analyst: **CES**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/18/2012
Iron	**1.8**	**0.20**	**0.20**		**mg/L**	1	12/17/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/17/2012
Nickel	ND	0.020	0.020		mg/L	1	12/17/2012
Titanium	ND	0.0050	0		mg/L	1	12/18/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/17/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/14/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/17/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*93.0*	*70-125*			*%REC*	1	12/17/2012
Surr: Perylene-d12	*90.8*	*46-142*			*%REC*	1	12/17/2012
Surr: Triphenylphosphate	*156*	*77-169*			*%REC*	1	12/17/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/12/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/12/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/12/2012
Benzene	ND	1.0	1.0		µg/L	1	12/12/2012
Cyclohexane	ND	10	10		µg/L	1	12/12/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/12/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/12/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/12/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/12/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
Toluene	ND	1.0	1.0		µg/L	1	12/12/2012
Surr: 1,2-Dichloroethane-d4	*97.6*	*70-130*			*%REC*	1	12/12/2012
Surr: 4-Bromofluorobenzene	*96.8*	*70-130*			*%REC*	1	12/12/2012
Surr: Dibromofluoromethane	*95.8*	*70-130*			*%REC*	1	12/12/2012
Surr: Toluene-d8	*95.6*	*70-130*			*%REC*	1	12/12/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12111012JTC1B
Work Order:	1212420	**Collection Date:**	12/11/2012 10:12:00 AM
Project:	Marshall Potable Water 12/11/12		
Lab ID:	1212420-03	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/17/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/17/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/17/2012**		Analyst: **CES**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/18/2012
Iron	**7.1**	**0.20**	**0.20**		**mg/L**	1	12/17/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/17/2012
Nickel	ND	0.020	0.020		mg/L	1	12/17/2012
Titanium	ND	0.0050	0		mg/L	1	12/18/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/17/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/12/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/17/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*94.6*	*70-125*			*%REC*	1	12/17/2012
Surr: Perylene-d12	*89.6*	*46-142*			*%REC*	1	12/17/2012
Surr: Triphenylphosphate	*154*	*77-169*			*%REC*	1	12/17/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/12/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/12/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/12/2012
Benzene	ND	1.0	1.0		µg/L	1	12/12/2012
Cyclohexane	ND	10	10		µg/L	1	12/12/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/12/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/12/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/12/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/12/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
Toluene	ND	1.0	1.0		µg/L	1	12/12/2012
Surr: 1,2-Dichloroethane-d4	*97.3*	*70-130*			*%REC*	1	12/12/2012
Surr: 4-Bromofluorobenzene	*98.0*	*70-130*			*%REC*	1	12/12/2012
Surr: Dibromofluoromethane	*93.0*	*70-130*			*%REC*	1	12/12/2012
Surr: Toluene-d8	*98.4*	*70-130*			*%REC*	1	12/12/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12111325JTC1B
Work Order:	1212420	**Collection Date:**	12/11/2012 1:25:00 PM
Project:	Marshall Potable Water 12/11/12		
Lab ID:	1212420-04	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/17/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/17/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/17/2012**		Analyst: **CES**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/18/2012
Iron	ND	0.20	0.20		mg/L	1	12/17/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/17/2012
Nickel	ND	0.020	0.020		mg/L	1	12/17/2012
Titanium	ND	0.0050	0		mg/L	1	12/18/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/17/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/12/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/17/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*92.8*	*70-125*			*%REC*	1	12/17/2012
Surr: Perylene-d12	*92.8*	*46-142*			*%REC*	1	12/17/2012
Surr: Triphenylphosphate	*154*	*77-169*			*%REC*	1	12/17/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/12/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/12/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/12/2012
Benzene	ND	1.0	1.0		µg/L	1	12/12/2012
Cyclohexane	ND	10	10		µg/L	1	12/12/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/12/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/12/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/12/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/12/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
Toluene	ND	1.0	1.0		µg/L	1	12/12/2012
Surr: 1,2-Dichloroethane-d4	*97.4*	*70-130*			*%REC*	1	12/12/2012
Surr: 4-Bromofluorobenzene	*96.6*	*70-130*			*%REC*	1	12/12/2012
Surr: Dibromofluoromethane	*92.2*	*70-130*			*%REC*	1	12/12/2012
Surr: Toluene-d8	*95.9*	*70-130*			*%REC*	1	12/12/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12111646JTC1B
Work Order:	1212420	**Collection Date:**	12/11/2012 4:46:00 PM
Project:	Marshall Potable Water 12/11/12		
Lab ID:	1212420-05	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/17/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/17/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/17/2012**		Analyst: **CES**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/18/2012
Iron	ND	0.20	0.20		mg/L	1	12/17/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/17/2012
Nickel	ND	0.020	0.020		mg/L	1	12/17/2012
Titanium	ND	0.0050	0		mg/L	1	12/18/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/17/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/12/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/17/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*92.0*	*70-125*			*%REC*	1	12/17/2012
Surr: Perylene-d12	*87.2*	*46-142*			*%REC*	1	12/17/2012
Surr: Triphenylphosphate	*148*	*77-169*			*%REC*	1	12/17/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/12/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/12/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/12/2012
Benzene	ND	1.0	1.0		µg/L	1	12/12/2012
Cyclohexane	ND	10	10		µg/L	1	12/12/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/12/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/12/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/12/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/12/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
Toluene	ND	1.0	1.0		µg/L	1	12/12/2012
Surr: 1,2-Dichloroethane-d4	*98.6*	*70-130*			*%REC*	1	12/12/2012
Surr: 4-Bromofluorobenzene	*99.5*	*70-130*			*%REC*	1	12/12/2012
Surr: Dibromofluoromethane	*93.8*	*70-130*			*%REC*	1	12/12/2012
Surr: Toluene-d8	*98.2*	*70-130*			*%REC*	1	12/12/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12111055JTC1B
Work Order:	1212420	**Collection Date:**	12/11/2012 10:55:00 AM
Project:	Marshall Potable Water 12/11/12		
Lab ID:	1212420-06	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/17/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/17/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/17/2012**		Analyst: **CES**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/18/2012
Iron	**5.3**	**0.20**	**0.20**		**mg/L**	1	12/17/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/17/2012
Nickel	ND	0.020	0.020		mg/L	1	12/17/2012
Titanium	ND	0.0050	0		mg/L	1	12/18/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/17/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/14/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/17/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*86.2*	*70-125*			*%REC*	1	12/17/2012
Surr: Perylene-d12	*94.2*	*46-142*			*%REC*	1	12/17/2012
Surr: Triphenylphosphate	*161*	*77-169*			*%REC*	1	12/17/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/12/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/12/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/12/2012
Benzene	ND	1.0	1.0		µg/L	1	12/12/2012
Cyclohexane	ND	10	10		µg/L	1	12/12/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/12/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/12/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/12/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/12/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
Toluene	ND	1.0	1.0		µg/L	1	12/12/2012
Surr: 1,2-Dichloroethane-d4	*101*	*70-130*			*%REC*	1	12/12/2012
Surr: 4-Bromofluorobenzene	*100*	*70-130*			*%REC*	1	12/12/2012
Surr: Dibromofluoromethane	*97.2*	*70-130*			*%REC*	1	12/12/2012
Surr: Toluene-d8	*97.6*	*70-130*			*%REC*	1	12/12/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12111147JTC1B
Work Order:	1212420	**Collection Date:**	12/11/2012 11:47:00 AM
Project:	Marshall Potable Water 12/11/12		
Lab ID:	1212420-07	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/17/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/17/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/17/2012**		Analyst: **CES**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/18/2012
Iron	**0.65**	**0.20**	**0.20**		**mg/L**	1	12/17/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/17/2012
Nickel	ND	0.020	0.020		mg/L	1	12/17/2012
Titanium	ND	0.0050	0		mg/L	1	12/18/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/17/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/14/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/17/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*95.6*	*70-125*			*%REC*	1	12/17/2012
Surr: Perylene-d12	*98.8*	*46-142*			*%REC*	1	12/17/2012
Surr: Triphenylphosphate	*163*	*77-169*			*%REC*	1	12/17/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/12/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/12/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/12/2012
Benzene	ND	1.0	1.0		µg/L	1	12/12/2012
Cyclohexane	ND	10	10		µg/L	1	12/12/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/12/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/12/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/12/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/12/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
Toluene	ND	1.0	1.0		µg/L	1	12/12/2012
Surr: 1,2-Dichloroethane-d4	*97.2*	*70-130*			*%REC*	1	12/12/2012
Surr: 4-Bromofluorobenzene	*99.8*	*70-130*			*%REC*	1	12/12/2012
Surr: Dibromofluoromethane	*93.4*	*70-130*			*%REC*	1	12/12/2012
Surr: Toluene-d8	*96.0*	*70-130*			*%REC*	1	12/12/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12111354JTC1B
Work Order:	1212420	**Collection Date:**	12/11/2012 1:54:00 PM
Project:	Marshall Potable Water 12/11/12		
Lab ID:	1212420-08	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/17/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/17/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/17/2012**		Analyst: **CES**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/18/2012
Iron	ND	0.20	0.20		mg/L	1	12/17/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/17/2012
Nickel	ND	0.020	0.020		mg/L	1	12/17/2012
Titanium	ND	0.0050	0		mg/L	1	12/18/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/17/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/14/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/17/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*96.6*	*70-125*			*%REC*	1	12/17/2012
Surr: Perylene-d12	*98.8*	*46-142*			*%REC*	1	12/17/2012
Surr: Triphenylphosphate	*164*	*77-169*			*%REC*	1	12/17/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/12/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/12/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/12/2012
Benzene	ND	1.0	1.0		µg/L	1	12/12/2012
Cyclohexane	ND	10	10		µg/L	1	12/12/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/12/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/12/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/12/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/12/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
Toluene	ND	1.0	1.0		µg/L	1	12/12/2012
Surr: 1,2-Dichloroethane-d4	*93.2*	*70-130*			*%REC*	1	12/12/2012
Surr: 4-Bromofluorobenzene	*96.4*	*70-130*			*%REC*	1	12/12/2012
Surr: Dibromofluoromethane	*92.3*	*70-130*			*%REC*	1	12/12/2012
Surr: Toluene-d8	*94.8*	*70-130*			*%REC*	1	12/12/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12111354JTC2B
Work Order:	1212420	**Collection Date:**	12/11/2012 1:54:00 PM
Project:	Marshall Potable Water 12/11/12		
Lab ID:	1212420-09	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/17/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/17/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/17/2012**		Analyst: **CES**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/18/2012
Iron	ND	0.20	0.20		mg/L	1	12/17/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/17/2012
Nickel	ND	0.020	0.020		mg/L	1	12/17/2012
Titanium	ND	0.0050	0		mg/L	1	12/18/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/17/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/14/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/17/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*97.8*	*70-125*			*%REC*	1	12/17/2012
Surr: Perylene-d12	*91.8*	*46-142*			*%REC*	1	12/17/2012
Surr: Triphenylphosphate	*158*	*77-169*			*%REC*	1	12/17/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/12/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/12/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/12/2012
Benzene	ND	1.0	1.0		µg/L	1	12/12/2012
Cyclohexane	ND	10	10		µg/L	1	12/12/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/12/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/12/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/12/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/12/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
Toluene	ND	1.0	1.0		µg/L	1	12/12/2012
Surr: 1,2-Dichloroethane-d4	*99.5*	*70-130*			*%REC*	1	12/12/2012
Surr: 4-Bromofluorobenzene	*99.8*	*70-130*			*%REC*	1	12/12/2012
Surr: Dibromofluoromethane	*94.2*	*70-130*			*%REC*	1	12/12/2012
Surr: Toluene-d8	*98.0*	*70-130*			*%REC*	1	12/12/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12111437JTC1B
Work Order:	1212420	**Collection Date:**	12/11/2012 2:37:00 PM
Project:	Marshall Potable Water 12/11/12		
Lab ID:	1212420-10	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/17/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/17/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/17/2012**		Analyst: **CES**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/18/2012
Iron	**0.90**	**0.20**	**0.20**		**mg/L**	1	12/17/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/17/2012
Nickel	ND	0.020	0.020		mg/L	1	12/17/2012
Titanium	ND	0.0050	0		mg/L	1	12/18/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/17/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/14/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/17/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*93.0*	*70-125*			*%REC*	1	12/17/2012
Surr: Perylene-d12	*100*	*46-142*			*%REC*	1	12/17/2012
Surr: Triphenylphosphate	*162*	*77-169*			*%REC*	1	12/17/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/12/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/12/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/12/2012
Benzene	ND	1.0	1.0		µg/L	1	12/12/2012
Cyclohexane	ND	10	10		µg/L	1	12/12/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/12/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/12/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/12/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/12/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
Toluene	ND	1.0	1.0		µg/L	1	12/12/2012
Surr: 1,2-Dichloroethane-d4	*97.5*	*70-130*			*%REC*	1	12/12/2012
Surr: 4-Bromofluorobenzene	*98.4*	*70-130*			*%REC*	1	12/12/2012
Surr: Dibromofluoromethane	*93.1*	*70-130*			*%REC*	1	12/12/2012
Surr: Toluene-d8	*95.2*	*70-130*			*%REC*	1	12/12/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12111515JTC1B
Work Order:	1212420	**Collection Date:**	12/11/2012 3:15:00 PM
Project:	Marshall Potable Water 12/11/12		
Lab ID:	1212420-11	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/17/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/17/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/17/2012**		Analyst: **CES**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/18/2012
Iron	**0.32**	**0.20**	**0.20**		**mg/L**	1	12/17/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/17/2012
Nickel	ND	0.020	0.020		mg/L	1	12/17/2012
Titanium	ND	0.0050	0		mg/L	1	12/18/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/17/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/14/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/17/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*93.2*	*70-125*			*%REC*	1	12/17/2012
Surr: Perylene-d12	*96.4*	*46-142*			*%REC*	1	12/17/2012
Surr: Triphenylphosphate	*159*	*77-169*			*%REC*	1	12/17/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/12/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/12/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/12/2012
Benzene	ND	1.0	1.0		µg/L	1	12/12/2012
Cyclohexane	ND	10	10		µg/L	1	12/12/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/12/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/12/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/12/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/12/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
Toluene	ND	1.0	1.0		µg/L	1	12/12/2012
Surr: 1,2-Dichloroethane-d4	*98.6*	*70-130*			*%REC*	1	12/12/2012
Surr: 4-Bromofluorobenzene	*101*	*70-130*			*%REC*	1	12/12/2012
Surr: Dibromofluoromethane	*96.0*	*70-130*			*%REC*	1	12/12/2012
Surr: Toluene-d8	*97.8*	*70-130*			*%REC*	1	12/12/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	TB121112JTC5
Work Order:	1212420	**Collection Date:**	12/11/2012
Project:	Marshall Potable Water 12/11/12		
Lab ID:	1212420-12	**Matrix:**	WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/12/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/12/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/12/2012
Benzene	ND	1.0	1.0		µg/L	1	12/12/2012
Cyclohexane	ND	10	10		µg/L	1	12/12/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/12/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/12/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/12/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/12/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
Toluene	ND	1.0	1.0		µg/L	1	12/12/2012
Surr: 1,2-Dichloroethane-d4	*97.4*	*70-130*			*%REC*	1	12/12/2012
Surr: 4-Bromofluorobenzene	*99.2*	*70-130*			*%REC*	1	12/12/2012
Surr: Dibromofluoromethane	*94.2*	*70-130*			*%REC*	1	12/12/2012
Surr: Toluene-d8	*99.2*	*70-130*			*%REC*	1	12/12/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 19-Dec-12

Client: AECOM Environment

QC BATCH REPORT

Work Order: 1212420

Project: Marshall Potable Water 12/11/12

Batch ID: **45443** Instrument ID **HG1** Method: **E245.1**

MBLK Sample ID: **MBLK-45443-45443** Units: **mg/L** Analysis Date: **12/17/2012 02:00 PM**

Client ID: Run ID: **HG1_121217A** SeqNo: **2171593** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.00020								

LCS Sample ID: **LCS-45443-45443** Units: **mg/L** Analysis Date: **12/17/2012 02:02 PM**

Client ID: Run ID: **HG1_121217A** SeqNo: **2171594** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001773	0.00020	0.002	0	88.6	85-115	0			

MS Sample ID: **1212420-02CMS** Units: **mg/L** Analysis Date: **12/17/2012 02:08 PM**

Client ID: **WPC12111215JTC3B** Run ID: **HG1_121217A** SeqNo: **2171597** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001724	0.00020	0.002	0.000005	86	80-120	0			

MS Sample ID: **1212421-07CMS** Units: **mg/L** Analysis Date: **12/17/2012 03:00 PM**

Client ID: Run ID: **HG1_121217A** SeqNo: **2171622** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001737	0.00020	0.002	0.00001	86.4	80-120	0			

MSD Sample ID: **1212420-02CMSD** Units: **mg/L** Analysis Date: **12/17/2012 02:10 PM**

Client ID: **WPC12111215JTC3B** Run ID: **HG1_121217A** SeqNo: **2171598** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001701	0.00020	0.002	0.000005	84.8	80-120	0.001724	1.34	20	

MSD Sample ID: **1212421-07CMSD** Units: **mg/L** Analysis Date: **12/17/2012 03:02 PM**

Client ID: Run ID: **HG1_121217A** SeqNo: **2171623** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001707	0.00020	0.002	0.00001	84.8	80-120	0.001737	1.74	20	

The following samples were analyzed in this batch:

1212420-01C	1212420-02C	1212420-03C
1212420-04C	1212420-05C	1212420-06C
1212420-07C	1212420-08C	1212420-09C
1212420-10C	1212420-11C	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212420
Project: Marshall Potable Water 12/11/12

QC BATCH REPORT

Batch ID: **45429** Instrument ID **ICPMS2** Method: **E200.8**

MBLK Sample ID: **MBLK-45429-45429** Units: **mg/L** Analysis Date: **12/17/2012 08:15 PM**
Client ID: Run ID: **ICPMS2_121217A** SeqNo: **2172305** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	ND	0.080								
Molybdenum	ND	0.0050								
Nickel	ND	0.0050								
Vanadium	ND	0.0050								

MBLK Sample ID: **MBLK-45429-45429** Units: **mg/L** Analysis Date: **12/18/2012 07:52 PM**
Client ID: Run ID: **ICPMS1_121218B** SeqNo: **2173737** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	ND	0.0020								
Titanium	ND	0.0050								

LCS Sample ID: **LCS-45429-45429** Units: **mg/L** Analysis Date: **12/17/2012 08:21 PM**
Client ID: Run ID: **ICPMS2_121217A** SeqNo: **2172307** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	10.4	0.080	10	0	104	85-115	0			
Molybdenum	0.1045	0.0050	0.1	0	104	85-115	0			
Nickel	0.1061	0.0050	0.1	0	106	85-115	0			
Vanadium	0.1	0.0050	0.1	0	100	85-115	0			

LCS Sample ID: **LCS-45429-45429** Units: **mg/L** Analysis Date: **12/18/2012 07:58 PM**
Client ID: Run ID: **ICPMS1_121218B** SeqNo: **2173738** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.1013	0.0020	0.1	0	101	85-115	0			
Titanium	0.1015	0.0050	0.1	0	102	85-115	0			

MS Sample ID: **1212420-02CMS** Units: **mg/L** Analysis Date: **12/17/2012 08:36 PM**
Client ID: **WPC12111215JTC3B** Run ID: **ICPMS2_121217A** SeqNo: **2172315** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	12.13	0.080	10	1.821	103	70-130	0			
Molybdenum	0.1021	0.0050	0.1	0.0005746	102	70-130	0			
Nickel	0.1017	0.0050	0.1	0.002525	99.2	70-130	0			
Vanadium	0.1015	0.0050	0.1	-0.0003301	102	70-130	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212420
Project: Marshall Potable Water 12/11/12

QC BATCH REPORT

Batch ID: **45429** Instrument ID **ICPMS2** Method: **E200.8**

MS Sample ID: **1212421-03CMS** Units: **mg/L** Analysis Date: **12/17/2012 10:05 PM**
Client ID: Run ID: **ICPMS2_121217A** SeqNo: **2172349** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	10.87	0.080	10	0.6133	103	70-130	0			
Molybdenum	0.1029	0.0050	0.1	0.0006764	102	70-130	0			
Nickel	0.1005	0.0050	0.1	0.0008937	99.6	70-130	0			
Vanadium	0.0981	0.0050	0.1	-0.00009941	98.2	70-130	0			

MS Sample ID: **1212420-02CMS** Units: **mg/L** Analysis Date: **12/18/2012 08:16 PM**
Client ID: **WPC12111215JTC3B** Run ID: **ICPMS1_121218B** SeqNo: **2173741** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.09065	0.0020	0.1	0.00001819	90.6	70-130	0			
Titanium	0.09759	0.0050	0.1	0.0007676	96.8	70-130	0			

MS Sample ID: **1212421-03CMS** Units: **mg/L** Analysis Date: **12/18/2012 11:58 PM**
Client ID: Run ID: **ICPMS1_121218B** SeqNo: **2173804** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.09775	0.0020	0.1	0.00002039	97.7	70-130	0			
Titanium	0.09913	0.0050	0.1	0.0005963	98.5	70-130	0			

MSD Sample ID: **1212420-02CMSD** Units: **mg/L** Analysis Date: **12/17/2012 08:41 PM**
Client ID: **WPC12111215JTC3B** Run ID: **ICPMS2_121217A** SeqNo: **2172318** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	11.8	0.080	10	1.821	99.8	70-130	12.13	2.76	20	
Molybdenum	0.1029	0.0050	0.1	0.0005746	102	70-130	0.1021	0.78	20	
Nickel	0.1015	0.0050	0.1	0.002525	99	70-130	0.1017	0.197	20	
Vanadium	0.1004	0.0050	0.1	-0.0003301	101	70-130	0.1015	1.09	20	

MSD Sample ID: **1212421-03CMSD** Units: **mg/L** Analysis Date: **12/17/2012 10:10 PM**
Client ID: Run ID: **ICPMS2_121217A** SeqNo: **2172350** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	10.9	0.080	10	0.6133	103	70-130	10.87	0.276	20	
Molybdenum	0.1047	0.0050	0.1	0.0006764	104	70-130	0.1029	1.73	20	
Nickel	0.1011	0.0050	0.1	0.0008937	100	70-130	0.1005	0.595	20	
Vanadium	0.09904	0.0050	0.1	-0.00009941	99.1	70-130	0.0981	0.954	20	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212420
Project: Marshall Potable Water 12/11/12

QC BATCH REPORT

Batch ID: **45429** Instrument ID **ICPMS2** Method: **E200.8**

MSD Sample ID: **1212420-02CMSD** Units: **mg/L** Analysis Date: **12/18/2012 08:22 PM**
Client ID: **WPC12111215JTC3B** Run ID: **ICPMS1_121218B** SeqNo: **2173742** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.09143	0.0020	0.1	0.00001819	91.4	70-130	0.09065	0.857	20	
Titanium	0.09471	0.0050	0.1	0.0007676	93.9	70-130	0.09759	3	20	

MSD Sample ID: **1212421-03CMSD** Units: **mg/L** Analysis Date: **12/19/2012 12:04 AM**
Client ID: Run ID: **ICPMS1_121218B** SeqNo: **2173805** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.09965	0.0020	0.1	0.00002039	99.6	70-130	0.09775	1.93	20	
Titanium	0.1003	0.0050	0.1	0.0005963	99.7	70-130	0.09913	1.17	20	

The following samples were analyzed in this batch:

1212420-01C	1212420-02C	1212420-03C
1212420-04C	1212420-05C	1212420-06C
1212420-07C	1212420-08C	1212420-09C
1212420-10C	1212420-11C	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212420
Project: Marshall Potable Water 12/11/12

QC BATCH REPORT

Batch ID: **45334** Instrument ID **SVMS6** Method: **E525.2**

MBLK Sample ID: **PNBLKW1-45334-45334** Units: **µg/L** Analysis Date: **12/13/2012 01:21 AM**
Client ID: Run ID: **SVMS6_121212A** SeqNo: **2168079** Prep Date: **12/12/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenanthrene	ND	0.20								
Surr: 1,3-Dimethyl-2-Nitrobenzen	*4.19*	0.20	*5*	0	*83.8*	*70-125*	0			
Surr: Perylene-d12	*4.53*	0.20	*5*	0	*90.6*	*46-142*	0			
Surr: Triphenylphosphate	*7.71*	0.20	*5*	0	*154*	*77-169*	0			

LCS Sample ID: **PNLCSW1-45334-45334** Units: **µg/L** Analysis Date: **12/13/2012 01:54 AM**
Client ID: Run ID: **SVMS6_121212A** SeqNo: **2168080** Prep Date: **12/12/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenanthrene	5.4	0.20	5	0	108	70-130	0			
Surr: 1,3-Dimethyl-2-Nitrobenzen	*4.46*	0.20	*5*	0	*89.2*	*70-125*	0			
Surr: Perylene-d12	*4.82*	0.20	*5*	0	*96.4*	*46-142*	0			
Surr: Triphenylphosphate	*7.58*	0.20	*5*	0	*152*	*77-169*	0			

MS Sample ID: **1212320-08B MS** Units: **µg/L** Analysis Date: **12/13/2012 02:28 AM**
Client ID: Run ID: **SVMS6_121212A** SeqNo: **2168081** Prep Date: **12/12/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenanthrene	52.9	2.0	50	0	106	70-130	0			
Surr: 1,3-Dimethyl-2-Nitrobenzen	*45*	2.0	*50*	0	*90*	*70-125*	0			
Surr: Perylene-d12	*49*	2.0	*50*	0	*98*	*46-142*	0			
Surr: Triphenylphosphate	*76.2*	2.0	*50*	0	*152*	*77-169*	0			

MSD Sample ID: **1212320-08B MSD** Units: **µg/L** Analysis Date: **12/13/2012 03:01 AM**
Client ID: Run ID: **SVMS6_121212A** SeqNo: **2168082** Prep Date: **12/12/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenanthrene	52.5	2.0	50	0	105	70-130	52.9	0.759	30	
Surr: 1,3-Dimethyl-2-Nitrobenzen	*42.6*	2.0	*50*	0	*85.2*	*70-125*	45	*5.48*		
Surr: Perylene-d12	*51.1*	2.0	*50*	0	*102*	*46-142*	49	*4.2*		
Surr: Triphenylphosphate	*77.4*	2.0	*50*	0	*155*	*77-169*	76.2	*1.56*		

The following samples were analyzed in this batch: 1212420-01B 1212420-03B 1212420-04B 1212420-05B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212420
Project: Marshall Potable Water 12/11/12

QC BATCH REPORT

Batch ID: **45385** Instrument ID **SVMS6** Method: **E525.2**

MBLK Sample ID: **PNBLKW1-45385-45385** Units: **µg/L** Analysis Date: **12/17/2012 10:43 AM**
Client ID: Run ID: **SVMS6_121217A** SeqNo: **2172978** Prep Date: **12/14/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenanthrene	ND	0.20								
Surr: 1,3-Dimethyl-2-Nitrobenzen	*4.28*	0.20	*5*	0	*85.6*	*70-125*	0			
Surr: Perylene-d12	*4.37*	0.20	*5*	0	*87.4*	*46-142*	0			
Surr: Triphenylphosphate	*7.35*	0.20	*5*	0	*147*	*77-169*	0			

LCS Sample ID: **PNLCSW1-45385-45385** Units: **µg/L** Analysis Date: **12/17/2012 11:16 AM**
Client ID: Run ID: **SVMS6_121217A** SeqNo: **2172979** Prep Date: **12/14/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenanthrene	4.59	0.20	5	0	91.8	70-130	0			
Surr: 1,3-Dimethyl-2-Nitrobenzen	*3.52*	0.20	*5*	0	*70.4*	*70-125*	0			
Surr: Perylene-d12	*4.55*	0.20	*5*	0	*91*	*46-142*	0			
Surr: Triphenylphosphate	*7.16*	0.20	*5*	0	*143*	*77-169*	0			

MS Sample ID: **1212420-02B MS** Units: **µg/L** Analysis Date: **12/17/2012 11:50 AM**
Client ID: **WPC12111215JTC3B** Run ID: **SVMS6_121217A** SeqNo: **2172980** Prep Date: **12/14/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenanthrene	54.6	2.0	50	0	109	70-130	0			
Surr: 1,3-Dimethyl-2-Nitrobenzen	*37.2*	2.0	*50*	0	*74.4*	*70-125*	0			
Surr: Perylene-d12	*39.9*	2.0	*50*	0	*79.8*	*46-142*	0			
Surr: Triphenylphosphate	*72*	2.0	*50*	0	*144*	*77-169*	0			

MSD Sample ID: **1212420-02B MSD** Units: **µg/L** Analysis Date: **12/17/2012 12:24 PM**
Client ID: **WPC12111215JTC3B** Run ID: **SVMS6_121217A** SeqNo: **2172981** Prep Date: **12/14/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenanthrene	54.9	2.0	50	0	110	70-130	54.6	0.548	30	
Surr: 1,3-Dimethyl-2-Nitrobenzen	*36.3*	2.0	*50*	0	*72.6*	*70-125*	37.2	*2.45*		
Surr: Perylene-d12	*41.5*	2.0	*50*	0	*83*	*46-142*	39.9	*3.93*		
Surr: Triphenylphosphate	*74.4*	2.0	*50*	0	*149*	*77-169*	72	*3.28*		

The following samples were analyzed in this batch:

1212420-02B	1212420-06B	1212420-07B
1212420-08B	1212420-09B	1212420-10B
1212420-11B		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212420
Project: Marshall Potable Water 12/11/12

QC BATCH REPORT

Batch ID: **R113836** Instrument ID **VMS6** Method: **E524.2**

MBLK Sample ID: **VBLKW1-121212-R113836** Units: **µg/L** Analysis Date: **12/12/2012 04:18 PM**
Client ID: Run ID: **VMS6_121212A** SeqNo: **2167630** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,3-Trimethylbenzene	ND	0.50								
1,2,4-Trimethylbenzene	ND	0.50								
1,3,5-Trimethylbenzene	ND	0.50								
2-Methylnaphthalene	ND	2.0								
4-Isopropyltoluene	ND	0.50								
Benzene	ND	0.50								
Cyclohexane	ND	1.0								
Ethylbenzene	ND	0.50								
Isopropylbenzene	ND	0.50								
m,p-Xylene	ND	1.0								
Naphthalene	ND	0.50								
n-Propylbenzene	ND	0.50								
o-Xylene	ND	0.50								
sec-Butylbenzene	ND	0.50								
Toluene	ND	0.50								
Surr: 1,2-Dichloroethane-d4	*19.12*	0.10	*20*	0	*95.6*	*80-120*	0			
Surr: 4-Bromofluorobenzene	*19.06*	0.10	*20*	0	*95.3*	*80-120*	0			
Surr: Dibromofluoromethane	*18.66*	0.10	*20*	0	*93.3*	*80-120*	0			
Surr: Toluene-d8	*19.29*	0.10	*20*	0	*96.4*	*80-120*	0			

LCS Sample ID: **VLCSW1-121212-R113836** Units: **µg/L** Analysis Date: **12/12/2012 03:19 PM**
Client ID: Run ID: **VMS6_121212A** SeqNo: **2167269** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	4.92	0.50	5	0	98.4	70-130	0			
1,3,5-Trimethylbenzene	5.05	0.50	5	0	101	70-130	0			
Benzene	4.89	0.50	5	0	97.8	70-130	0			
Ethylbenzene	4.9	0.50	5	0	98	70-130	0			
Isopropylbenzene	5	0.50	5	0	100	70-130	0			
m,p-Xylene	9.76	1.0	10	0	97.6	70-130	0			
Naphthalene	4.39	0.50	5	0	87.8	70-130	0			
n-Propylbenzene	4.83	0.50	5	0	96.6	70-130	0			
o-Xylene	4.8	0.50	5	0	96	70-130	0			
sec-Butylbenzene	5.12	0.50	5	0	102	70-130	0			
Toluene	4.81	0.50	5	0	96.2	70-130	0			
Surr: 1,2-Dichloroethane-d4	*19.34*	0.10	*20*	0	*96.7*	*80-120*	0			
Surr: 4-Bromofluorobenzene	*19.94*	0.10	*20*	0	*99.7*	*80-120*	0			
Surr: Dibromofluoromethane	*19.29*	0.10	*20*	0	*96.4*	*80-120*	0			
Surr: Toluene-d8	*19.04*	0.10	*20*	0	*95.2*	*80-120*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212420
Project: Marshall Potable Water 12/11/12

QC BATCH REPORT

Batch ID: **R113836** Instrument ID **VMS6** Method: **E524.2**

MS Sample ID: **1212420-02A MS** Units: **µg/L** Analysis Date: **12/13/2012 12:47 PM**
Client ID: **WPC12111215JTC3B** Run ID: **VMS6_121212A** SeqNo: **2167652** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	5.29	0.50	5	0	106	70-130	0			
1,3,5-Trimethylbenzene	5.39	0.50	5	0	108	70-130	0			
Benzene	5.56	0.50	5	0	111	70-130	0			
Ethylbenzene	5.45	0.50	5	0	109	70-130	0			
Isopropylbenzene	5.55	0.50	5	0	111	70-130	0			
m,p-Xylene	10.98	1.0	10	0	110	70-130	0			
Naphthalene	4.41	0.50	5	0	88.2	70-130	0			
n-Propylbenzene	5.37	0.50	5	0	107	70-130	0			
o-Xylene	5.35	0.50	5	0	107	70-130	0			
sec-Butylbenzene	5.67	0.50	5	0	113	70-130	0			
Toluene	5.52	0.50	5	0	110	70-130	0			
Surr: 1,2-Dichloroethane-d4	*19.27*	0.10	*20*	0	*96.4*	*80-120*	0			
Surr: 4-Bromofluorobenzene	*20.03*	0.10	*20*	0	*100*	*80-120*	0			
Surr: Dibromofluoromethane	*19.52*	0.10	*20*	0	*97.6*	*80-120*	0			
Surr: Toluene-d8	*19.48*	0.10	*20*	0	*97.4*	*80-120*	0			

MSD Sample ID: **1212420-02A MSD** Units: **µg/L** Analysis Date: **12/13/2012 01:11 AM**
Client ID: **WPC12111215JTC3B** Run ID: **VMS6_121212A** SeqNo: **2167650** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	5.34	0.50	5	0	107	70-130	5.29	0.941	25	
1,3,5-Trimethylbenzene	5.55	0.50	5	0	111	70-130	5.39	2.93	25	
Benzene	5.42	0.50	5	0	108	70-130	5.56	2.55	25	
Ethylbenzene	5.51	0.50	5	0	110	70-130	5.45	1.09	25	
Isopropylbenzene	5.71	0.50	5	0	114	70-130	5.55	2.84	25	
m,p-Xylene	10.88	1.0	10	0	109	70-130	10.98	0.915	25	
Naphthalene	4.66	0.50	5	0	93.2	70-130	4.41	5.51	25	
n-Propylbenzene	5.44	0.50	5	0	109	70-130	5.37	1.3	25	
o-Xylene	5.34	0.50	5	0	107	70-130	5.35	0.187	25	
sec-Butylbenzene	6.05	0.50	5	0	121	70-130	5.67	6.48	25	
Toluene	5.49	0.50	5	0	110	70-130	5.52	0.545	25	
Surr: 1,2-Dichloroethane-d4	*18.83*	0.10	*20*	0	*94.2*	*80-120*	19.27	*2.31*		
Surr: 4-Bromofluorobenzene	*19.77*	0.10	*20*	0	*98.8*	*80-120*	20.03	*1.31*		
Surr: Dibromofluoromethane	*18.83*	0.10	*20*	0	*94.2*	*80-120*	19.52	*3.6*		
Surr: Toluene-d8	*19.02*	0.10	*20*	0	*95.1*	*80-120*	19.48	*2.39*		

The following samples were analyzed in this batch:

1212420-01A	1212420-02A	1212420-03A
1212420-04A	1212420-05A	1212420-06A
1212420-07A	1212420-08A	1212420-09A
1212420-10A	1212420-11A	1212420-12A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

1212420

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # ___ of ___

COC # | Task: Potable B
Total # of Samples: 12 | Event Complete? N
Regular | X | | Turnaround Time | 5 Day |

Lab Information:		Project Information:		Other Information:	
Lab Name:	ALS Laboratory Group	Site ID #:	33	Send Invoice to:	Enbridge Energy - ATTN Accounts Payable
Address:	3352 128th Ave. Holland, MI 49424-9263	Project #	60162778	Address:	1100 Louisiana Suite 1100
		Site Address	5555 Glenwood Parkway SE Suite 200	City/State	Houson, TX
Lab PM:	Ann Preston	City	Grand Rapids	State, Zip	MI
Phone/Fax:	1-616-399-6070/1-616-399-6185	Site PM Name	Bryan Stiemsma	Send EDD to	
Lab PM email	ann.preston@alsglobal.com	Phone/Fax:	[redacted]	CC Hardcopy report	
Applicable Lab Quote #:		Site PM Email:	Bryan.Stiemsma@aecom.com	CC Hardcopy report	

ITEM #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	MATRIX CODE	G=GRAB C=COMP	SAMPLE DATE	#OF CONTAINERS	Comments/Lab Sample I.D.	Preservative	HCl	HCl	HNO3						HNO3				Additional Notes
								Analysis	VOCs List B	SVOCs List B	PAL Metals List B	TPH DRO	TPH GRO	PCBs/Pesticides	TOC	TSS	Hg by EPA 245.1				
1	WPC12110934JTC1B	C0165D4PW1	GW	G	12/11/2012 0934	5	C0165D4M		X	X	X						X				
2	WPC12111215JTC3B	C0180D5A	GW	G	12/11/2012 1215	15	C0180D5		X	X	X						X				MS/MSD
3	WPC12111012JTC1B	C0572EAWP1	GW	G	12/11/2012 1012	5	C0572EA		X	X	X						X				
4	WPC12111325JTC1B	C0574DFWP1	GW	G	12/11/2012 1325	5	C0574DF		X	X	X						X				
5	WPC12111646JTC1B	C059451PW1	GW	G	12/11/2012 1646	5	C059451		X	X	X						X				
6	WPC12111055JTC1B	C06162CPW1	GW	G	12/11/2012 1055	5	C06162C		X	X	X						X				
7	WPC12111147JTC1B	C0949C5WP1	GW	G	12/11/2012 1147	5	C0949C5		X	X	X						X				
8	WPC12111354JTC1B	C145623WP1	GW	G	12/11/2012 1354	5	C145623		X	X	X						X				
9	WPC12111354JTC2B	C145623WP1	GW	G	12/11/2012 1354	5	C145623		X	X	X						X				DUP
10	WPC12111437JTC1B	C145599A	GW	G	12/11/2012 1437	5	C145599		X	X	X						X				
11	WPC12111515JTC1B	C0693ABPW1	GW	G	12/11/2012 1515	5	C0693AB		X	X	X						X				
12	TB121112JTC5	Trip Blank	W	G	12/11/2012 0000	1	Trip Blanks		X												TRIP BLANK

Additional Comments/Special Instructions:
Samplers: Jon Carveth; Lorri Lego

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
[signature]	12-11-12	1745	[signature]	12-11-12	1745
[signature]	12/12/12	0810	[signature]	12-12-12	0810

SHIPPING INFO.

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: Jon Carveth
SIGNATURE of SAMPLER: [signature] DATE Signed: ___ Time: ___

Sample Receipt Conditions				
Temp in °C	Samples on Ice?		Sample intact?	Trip Blank?
2.2-3.2°C	Y/N (Y)		Y/N (Y)	Y/N (Y)
	Y/N		Y/N	Y/N
	Y/N		Y/N	Y/N

ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **12-Dec-12 08:10**

Work Order: **1212420** Received by: **PD**

Checklist completed by Keith Wierenga (eSignature) 12-Dec-12 (Date) Reviewed by: Ann Preston (eSignature) 13-Dec-12 (Date)

Matrices: Potable Water
Carrier name: ALSHN

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.2-3.2 C		
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	12/12/2012 11:45:10 AM		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL

Date: 12/11/12 Time: 1730
Name: VanLaeken
Company: AECOM

Seal Broken By:

Date:

2.2°

ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL

Date: 12-11-12 Time:
Name: Kim Legg
Company:

Seal Broken By:

Date:

3.0°

ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL

Date: 12/11/12 Time: 1740
Name: VanLaeken
Company: AECOM

Seal Broken By:

Date:

3.2°

ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL

Date: 12/11/12 Time: 0730
Name: VanLaruth
Company: AECOM

Seal Broken By:

Date:

2.2°

ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL

Date: 12-11-12 Time:
Name: Kim Legg
Company:

Seal Broken By:

Date:

3.0°

ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL

Date: 12/11/12 Time: 0740
Name: VanLaruth
Company: AECOM

Seal Broken By:

Date:

3.2°

19-Dec-2012

Alison Schoeff
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall Potable Water 12/10/12** Work Order: **1212421**

Dear Alison,

ALS Environmental received 12 samples on 12-Dec-2012 08:10 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 32.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

Certificate No: MN331938

ALS Group USA, Corp

Date: 19-Dec-12

Client: AECOM Environment
Project: Marshall Potable Water 12/10/12
Work Order: **1212421**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1212421-01	WPC12101527JTC2B	Potable Water		12/10/2012 15:27	12/12/2012 08:10	☐
1212421-02	WPC12101527JTC1B	Potable Water		12/10/2012 15:27	12/12/2012 08:10	☐
1212421-03	WPC12101642JTC1B	Potable Water		12/10/2012 16:42	12/12/2012 08:10	☐
1212421-04	WPC12101505JTC1B	Potable Water		12/10/2012 15:05	12/12/2012 08:10	☐
1212421-05	WPC12101553JTC1B	Potable Water		12/10/2012 15:53	12/12/2012 08:10	☐
1212421-06	WPC12101617JTC1B	Potable Water		12/10/2012 16:17	12/12/2012 08:10	☐
1212421-07	WPC12101400JTC1B	Potable Water		12/10/2012 14:00	12/12/2012 08:10	☐
1212421-08	WPC12101008JTC1B	Potable Water		12/10/2012 10:08	12/12/2012 08:10	☐
1212421-09	WPC12101418JTC1B	Potable Water		12/10/2012 14:18	12/12/2012 08:10	☐
1212421-10	WPC12101320JTC1B	Potable Water		12/10/2012 13:20	12/12/2012 08:10	☐
1212421-11	WPC12101028JTC1B	Potable Water		12/10/2012 10:28	12/12/2012 08:10	☐
1212421-12	TB121012JTC5	Water		12/10/2012	12/12/2012 08:10	☐

ALS Group USA, Corp

Date: 19-Dec-12

Client: AECOM Environment
Project: Marshall Potable Water 12/10/12
Work Order: 1212421

Case Narrative

Batch 45385 sample 1212421-03 PAH surrogate recovery was above the upper control limits. The sample was non-detect, therefore, no qualification is needed.

ALS Group USA, Corp

Date: 19-Dec-12

Client: AECOM Environment
Project: Marshall Potable Water 12/10/12
WorkOrder: **1212421**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
SD	Serial Dilution
TDL	Target Detection Limit

Units Reported	Description
µg/L	Micrograms per Liter
mg/L	Milligrams per Liter

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12101527JTC2B
Work Order:	1212421	**Collection Date:**	12/10/2012 3:27:00 PM
Project:	Marshall Potable Water 12/10/12		
Lab ID:	1212421-01	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/17/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/17/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/17/2012**		Analyst: **CES**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/18/2012
Iron	**2.1**	**0.20**	**0.20**		**mg/L**	1	12/17/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/17/2012
Nickel	ND	0.020	0.020		mg/L	1	12/17/2012
Titanium	ND	0.0050	0		mg/L	1	12/18/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/17/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/14/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/17/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*93.8*	*70-125*			*%REC*	1	12/17/2012
Surr: Perylene-d12	*94.4*	*46-142*			*%REC*	1	12/17/2012
Surr: Triphenylphosphate	*156*	*77-169*			*%REC*	1	12/17/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/12/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/12/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/12/2012
Benzene	ND	1.0	1.0		µg/L	1	12/12/2012
Cyclohexane	ND	10	10		µg/L	1	12/12/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/12/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/12/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/12/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/12/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
Toluene	ND	1.0	1.0		µg/L	1	12/12/2012
Surr: 1,2-Dichloroethane-d4	*96.2*	*70-130*			*%REC*	1	12/12/2012
Surr: 4-Bromofluorobenzene	*99.6*	*70-130*			*%REC*	1	12/12/2012
Surr: Dibromofluoromethane	*94.8*	*70-130*			*%REC*	1	12/12/2012
Surr: Toluene-d8	*96.8*	*70-130*			*%REC*	1	12/12/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12101527JTC1B
Work Order:	1212421	**Collection Date:**	12/10/2012 3:27:00 PM
Project:	Marshall Potable Water 12/10/12		
Lab ID:	1212421-02	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/17/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/17/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/17/2012**		Analyst: **CES**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/18/2012
Iron	**1.3**	**0.20**	**0.20**		**mg/L**	1	12/17/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/17/2012
Nickel	ND	0.020	0.020		mg/L	1	12/17/2012
Titanium	ND	0.0050	0		mg/L	1	12/18/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/17/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/14/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/17/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*91.2*	*70-125*			*%REC*	1	12/17/2012
Surr: Perylene-d12	*94.8*	*46-142*			*%REC*	1	12/17/2012
Surr: Triphenylphosphate	*161*	*77-169*			*%REC*	1	12/17/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/12/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/12/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/12/2012
Benzene	ND	1.0	1.0		µg/L	1	12/12/2012
Cyclohexane	ND	10	10		µg/L	1	12/12/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/12/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/12/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/12/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/12/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
Toluene	ND	1.0	1.0		µg/L	1	12/12/2012
Surr: 1,2-Dichloroethane-d4	*98.9*	*70-130*			*%REC*	1	12/12/2012
Surr: 4-Bromofluorobenzene	*95.8*	*70-130*			*%REC*	1	12/12/2012
Surr: Dibromofluoromethane	*95.8*	*70-130*			*%REC*	1	12/12/2012
Surr: Toluene-d8	*96.0*	*70-130*			*%REC*	1	12/12/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12101642JTC1B
Work Order:	1212421	**Collection Date:**	12/10/2012 4:42:00 PM
Project:	Marshall Potable Water 12/10/12		
Lab ID:	1212421-03	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/17/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/17/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/17/2012**		Analyst: **CES**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/18/2012
Iron	**0.61**	**0.20**	**0.20**		**mg/L**	1	12/17/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/17/2012
Nickel	ND	0.020	0.020		mg/L	1	12/17/2012
Titanium	ND	0.0050	0		mg/L	1	12/18/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/17/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/14/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/17/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*84.4*	*70-125*			*%REC*	1	12/17/2012
Surr: Perylene-d12	*51.0*	*46-142*			*%REC*	1	12/17/2012
Surr: Triphenylphosphate	*185*	*77-169*		S	*%REC*	1	12/17/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/12/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/12/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/12/2012
Benzene	ND	1.0	1.0		µg/L	1	12/12/2012
Cyclohexane	ND	10	10		µg/L	1	12/12/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/12/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/12/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/12/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/12/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
Toluene	ND	1.0	1.0		µg/L	1	12/12/2012
Surr: 1,2-Dichloroethane-d4	*95.6*	*70-130*			*%REC*	1	12/12/2012
Surr: 4-Bromofluorobenzene	*96.7*	*70-130*			*%REC*	1	12/12/2012
Surr: Dibromofluoromethane	*91.9*	*70-130*			*%REC*	1	12/12/2012
Surr: Toluene-d8	*94.0*	*70-130*			*%REC*	1	12/12/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12101505JTC1B
Work Order:	1212421	**Collection Date:**	12/10/2012 3:05:00 PM
Project:	Marshall Potable Water 12/10/12		
Lab ID:	1212421-04	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/17/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/17/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/17/2012**		Analyst: **CES**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/19/2012
Iron	ND	0.20	0.20		mg/L	1	12/17/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/17/2012
Nickel	ND	0.020	0.020		mg/L	1	12/17/2012
Titanium	ND	0.0050	0		mg/L	1	12/19/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/17/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/14/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/17/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*92.6*	*70-125*			*%REC*	1	12/17/2012
Surr: Perylene-d12	*91.4*	*46-142*			*%REC*	1	12/17/2012
Surr: Triphenylphosphate	*156*	*77-169*			*%REC*	1	12/17/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/12/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/12/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/12/2012
Benzene	ND	1.0	1.0		µg/L	1	12/12/2012
Cyclohexane	ND	10	10		µg/L	1	12/12/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/12/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/12/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/12/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/12/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
Toluene	ND	1.0	1.0		µg/L	1	12/12/2012
Surr: 1,2-Dichloroethane-d4	*94.8*	*70-130*			*%REC*	1	12/12/2012
Surr: 4-Bromofluorobenzene	*97.6*	*70-130*			*%REC*	1	12/12/2012
Surr: Dibromofluoromethane	*91.8*	*70-130*			*%REC*	1	12/12/2012
Surr: Toluene-d8	*96.9*	*70-130*			*%REC*	1	12/12/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12101553JTC1B
Work Order:	1212421	**Collection Date:**	12/10/2012 3:53:00 PM
Project:	Marshall Potable Water 12/10/12		
Lab ID:	1212421-05	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/17/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/17/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/17/2012**		Analyst: **CES**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/19/2012
Iron	**1.2**	**0.20**	**0.20**		**mg/L**	1	12/17/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/17/2012
Nickel	ND	0.020	0.020		mg/L	1	12/17/2012
Titanium	ND	0.0050	0		mg/L	1	12/19/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/17/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/14/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/17/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*89.6*	*70-125*			*%REC*	1	12/17/2012
Surr: Perylene-d12	*92.8*	*46-142*			*%REC*	1	12/17/2012
Surr: Triphenylphosphate	*148*	*77-169*			*%REC*	1	12/17/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/12/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/12/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/12/2012
Benzene	ND	1.0	1.0		µg/L	1	12/12/2012
Cyclohexane	ND	10	10		µg/L	1	12/12/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/12/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/12/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/12/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/12/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
Toluene	ND	1.0	1.0		µg/L	1	12/12/2012
Surr: 1,2-Dichloroethane-d4	*95.2*	*70-130*			*%REC*	1	12/12/2012
Surr: 4-Bromofluorobenzene	*96.6*	*70-130*			*%REC*	1	12/12/2012
Surr: Dibromofluoromethane	*92.7*	*70-130*			*%REC*	1	12/12/2012
Surr: Toluene-d8	*96.2*	*70-130*			*%REC*	1	12/12/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12101617JTC1B
Work Order:	1212421	**Collection Date:**	12/10/2012 4:17:00 PM
Project:	Marshall Potable Water 12/10/12		
Lab ID:	1212421-06	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/17/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/17/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/17/2012**		Analyst: **CES**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/19/2012
Iron	**0.41**	**0.20**	**0.20**		**mg/L**	1	12/17/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/17/2012
Nickel	ND	0.020	0.020		mg/L	1	12/17/2012
Titanium	ND	0.0050	0		mg/L	1	12/19/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/17/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/14/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/17/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*98.0*	*70-125*			*%REC*	1	12/17/2012
Surr: Perylene-d12	*90.6*	*46-142*			*%REC*	1	12/17/2012
Surr: Triphenylphosphate	*155*	*77-169*			*%REC*	1	12/17/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/12/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/12/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/12/2012
Benzene	ND	1.0	1.0		µg/L	1	12/12/2012
Cyclohexane	ND	10	10		µg/L	1	12/12/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/12/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/12/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/12/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/12/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
Toluene	ND	1.0	1.0		µg/L	1	12/12/2012
Surr: 1,2-Dichloroethane-d4	*96.9*	*70-130*			*%REC*	1	12/12/2012
Surr: 4-Bromofluorobenzene	*96.4*	*70-130*			*%REC*	1	12/12/2012
Surr: Dibromofluoromethane	*95.2*	*70-130*			*%REC*	1	12/12/2012
Surr: Toluene-d8	*96.0*	*70-130*			*%REC*	1	12/12/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12101400JTC1B
Work Order:	1212421	**Collection Date:**	12/10/2012 2:00:00 PM
Project:	Marshall Potable Water 12/10/12		
Lab ID:	1212421-07	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/17/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/17/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/17/2012**		Analyst: **CES**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/19/2012
Iron	**2.6**	**0.20**	**0.20**		**mg/L**	1	12/17/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/17/2012
Nickel	ND	0.020	0.020		mg/L	1	12/17/2012
Titanium	ND	0.0050	0		mg/L	1	12/19/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/17/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/14/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/17/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*96.4*	*70-125*			*%REC*	1	12/17/2012
Surr: Perylene-d12	*90.6*	*46-142*			*%REC*	1	12/17/2012
Surr: Triphenylphosphate	*159*	*77-169*			*%REC*	1	12/17/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/12/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/12/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/12/2012
Benzene	ND	1.0	1.0		µg/L	1	12/12/2012
Cyclohexane	ND	10	10		µg/L	1	12/12/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/12/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/12/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/12/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/12/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/12/2012
Toluene	ND	1.0	1.0		µg/L	1	12/12/2012
Surr: 1,2-Dichloroethane-d4	*100*	*70-130*			*%REC*	1	12/12/2012
Surr: 4-Bromofluorobenzene	*102*	*70-130*			*%REC*	1	12/12/2012
Surr: Dibromofluoromethane	*94.8*	*70-130*			*%REC*	1	12/12/2012
Surr: Toluene-d8	*96.8*	*70-130*			*%REC*	1	12/12/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12101008JTC1B
Work Order:	1212421	**Collection Date:**	12/10/2012 10:08:00 AM
Project:	Marshall Potable Water 12/10/12		
Lab ID:	1212421-08	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/17/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/17/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/17/2012**		Analyst: **CES**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/19/2012
Iron	**1.7**	**0.20**	**0.20**		**mg/L**	1	12/17/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/17/2012
Nickel	ND	0.020	0.020		mg/L	1	12/17/2012
Titanium	ND	0.0050	0		mg/L	1	12/19/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/17/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/14/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/18/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*92.2*	*70-125*			*%REC*	1	12/18/2012
Surr: Perylene-d12	*96.2*	*46-142*			*%REC*	1	12/18/2012
Surr: Triphenylphosphate	*154*	*77-169*			*%REC*	1	12/18/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/13/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/13/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/13/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/13/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/13/2012
Benzene	ND	1.0	1.0		µg/L	1	12/13/2012
Cyclohexane	ND	10	10		µg/L	1	12/13/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/13/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/13/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/13/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/13/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/13/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/13/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/13/2012
Toluene	ND	1.0	1.0		µg/L	1	12/13/2012
Surr: 1,2-Dichloroethane-d4	*95.7*	*70-130*			*%REC*	1	12/13/2012
Surr: 4-Bromofluorobenzene	*98.0*	*70-130*			*%REC*	1	12/13/2012
Surr: Dibromofluoromethane	*92.6*	*70-130*			*%REC*	1	12/13/2012
Surr: Toluene-d8	*95.6*	*70-130*			*%REC*	1	12/13/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12101418JTC1B
Work Order:	1212421	**Collection Date:**	12/10/2012 2:18:00 PM
Project:	Marshall Potable Water 12/10/12		
Lab ID:	1212421-09	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/17/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/17/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/17/2012**		Analyst: **CES**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/19/2012
Iron	**2.6**	**0.20**	**0.20**		**mg/L**	1	12/17/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/17/2012
Nickel	ND	0.020	0.020		mg/L	1	12/17/2012
Titanium	ND	0.0050	0		mg/L	1	12/19/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/17/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/14/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/18/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*94.4*	*70-125*			*%REC*	1	12/18/2012
Surr: Perylene-d12	*90.2*	*46-142*			*%REC*	1	12/18/2012
Surr: Triphenylphosphate	*158*	*77-169*			*%REC*	1	12/18/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/13/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/13/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/13/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/13/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/13/2012
Benzene	ND	1.0	1.0		µg/L	1	12/13/2012
Cyclohexane	ND	10	10		µg/L	1	12/13/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/13/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/13/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/13/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/13/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/13/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/13/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/13/2012
Toluene	ND	1.0	1.0		µg/L	1	12/13/2012
Surr: 1,2-Dichloroethane-d4	*99.3*	*70-130*			*%REC*	1	12/13/2012
Surr: 4-Bromofluorobenzene	*99.3*	*70-130*			*%REC*	1	12/13/2012
Surr: Dibromofluoromethane	*92.1*	*70-130*			*%REC*	1	12/13/2012
Surr: Toluene-d8	*97.7*	*70-130*			*%REC*	1	12/13/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12101320JTC1B
Work Order:	1212421	**Collection Date:**	12/10/2012 1:20:00 PM
Project:	Marshall Potable Water 12/10/12		
Lab ID:	1212421-10	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/18/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/18/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/17/2012**		Analyst: **CES**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/18/2012
Iron	**2.0**	**0.20**	**0.20**		**mg/L**	1	12/18/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/18/2012
Nickel	ND	0.020	0.020		mg/L	1	12/18/2012
Titanium	ND	0.0050	0		mg/L	1	12/18/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/18/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/14/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/18/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*89.6*	*70-125*			*%REC*	1	12/18/2012
Surr: Perylene-d12	*92.8*	*46-142*			*%REC*	1	12/18/2012
Surr: Triphenylphosphate	*159*	*77-169*			*%REC*	1	12/18/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/13/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/13/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/13/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/13/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/13/2012
Benzene	ND	1.0	1.0		µg/L	1	12/13/2012
Cyclohexane	ND	10	10		µg/L	1	12/13/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/13/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/13/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/13/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/13/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/13/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/13/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/13/2012
Toluene	ND	1.0	1.0		µg/L	1	12/13/2012
Surr: 1,2-Dichloroethane-d4	*95.4*	*70-130*			*%REC*	1	12/13/2012
Surr: 4-Bromofluorobenzene	*98.2*	*70-130*			*%REC*	1	12/13/2012
Surr: Dibromofluoromethane	*93.6*	*70-130*			*%REC*	1	12/13/2012
Surr: Toluene-d8	*96.2*	*70-130*			*%REC*	1	12/13/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12101028JTC1B
Work Order:	1212421	**Collection Date:**	12/10/2012 10:28:00 AM
Project:	Marshall Potable Water 12/10/12		
Lab ID:	1212421-11	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/18/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/18/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/17/2012**		Analyst: **CES**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/18/2012
Iron	**1.6**	**0.20**	**0.20**		**mg/L**	1	12/18/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/18/2012
Nickel	ND	0.020	0.020		mg/L	1	12/18/2012
Titanium	ND	0.0050	0		mg/L	1	12/18/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/18/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/14/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/18/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*93.4*	*70-125*			*%REC*	1	12/18/2012
Surr: Perylene-d12	*90.4*	*46-142*			*%REC*	1	12/18/2012
Surr: Triphenylphosphate	*155*	*77-169*			*%REC*	1	12/18/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/13/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/13/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/13/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/13/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/13/2012
Benzene	ND	1.0	1.0		µg/L	1	12/13/2012
Cyclohexane	ND	10	10		µg/L	1	12/13/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/13/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/13/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/13/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/13/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/13/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/13/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/13/2012
Toluene	ND	1.0	1.0		µg/L	1	12/13/2012
Surr: 1,2-Dichloroethane-d4	*97.8*	*70-130*			*%REC*	1	12/13/2012
Surr: 4-Bromofluorobenzene	*98.7*	*70-130*			*%REC*	1	12/13/2012
Surr: Dibromofluoromethane	*94.8*	*70-130*			*%REC*	1	12/13/2012
Surr: Toluene-d8	*94.8*	*70-130*			*%REC*	1	12/13/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	TB121012JTC5
Work Order:	1212421	**Collection Date:**	12/10/2012
Project:	Marshall Potable Water 12/10/12		
Lab ID:	1212421-12	**Matrix:**	WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/13/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/13/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/13/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/13/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/13/2012
Benzene	ND	1.0	1.0		µg/L	1	12/13/2012
Cyclohexane	ND	10	10		µg/L	1	12/13/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/13/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/13/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/13/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/13/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/13/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/13/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/13/2012
Toluene	ND	1.0	1.0		µg/L	1	12/13/2012
Surr: 1,2-Dichloroethane-d4	*99.6*	*70-130*			*%REC*	1	12/13/2012
Surr: 4-Bromofluorobenzene	*100*	*70-130*			*%REC*	1	12/13/2012
Surr: Dibromofluoromethane	*96.0*	*70-130*			*%REC*	1	12/13/2012
Surr: Toluene-d8	*97.4*	*70-130*			*%REC*	1	12/13/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 19-Dec-12

Client: AECOM Environment

QC BATCH REPORT

Work Order: 1212421

Project: Marshall Potable Water 12/10/12

Batch ID: **45443** Instrument ID **HG1** Method: **E245.1**

MBLK Sample ID: **MBLK-45443-45443** Units: **mg/L** Analysis Date: **12/17/2012 02:00 PM**

Client ID: Run ID: **HG1_121217A** SeqNo: **2171593** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.00020								

LCS Sample ID: **LCS-45443-45443** Units: **mg/L** Analysis Date: **12/17/2012 02:02 PM**

Client ID: Run ID: **HG1_121217A** SeqNo: **2171594** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001773	0.00020	0.002	0	88.6	85-115	0			

MS Sample ID: **1212420-02CMS** Units: **mg/L** Analysis Date: **12/17/2012 02:08 PM**

Client ID: Run ID: **HG1_121217A** SeqNo: **2171597** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001724	0.00020	0.002	0.000005	86	80-120	0			

MS Sample ID: **1212421-07CMS** Units: **mg/L** Analysis Date: **12/17/2012 03:00 PM**

Client ID: **WPC12101400JTC1B** Run ID: **HG1_121217A** SeqNo: **2171622** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001737	0.00020	0.002	0.00001	86.4	80-120	0			

MSD Sample ID: **1212420-02CMSD** Units: **mg/L** Analysis Date: **12/17/2012 02:10 PM**

Client ID: Run ID: **HG1_121217A** SeqNo: **2171598** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001701	0.00020	0.002	0.000005	84.8	80-120	0.001724	1.34	20	

MSD Sample ID: **1212421-07CMSD** Units: **mg/L** Analysis Date: **12/17/2012 03:02 PM**

Client ID: **WPC12101400JTC1B** Run ID: **HG1_121217A** SeqNo: **2171623** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001707	0.00020	0.002	0.00001	84.8	80-120	0.001737	1.74	20	

The following samples were analyzed in this batch:

1212421-01C	1212421-02C	1212421-03C
1212421-04C	1212421-05C	1212421-06C
1212421-07C	1212421-08C	1212421-09C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212421
Project: Marshall Potable Water 12/10/12

QC BATCH REPORT

Batch ID: **45472** Instrument ID **HG1** Method: **E245.1**

MBLK Sample ID: **MBLK-45472-45472** Units: **mg/L** Analysis Date: **12/18/2012 01:41 PM**
Client ID: Run ID: **HG1_121218A** SeqNo: **2173120** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.00020								

LCS Sample ID: **LCS-45472-45472** Units: **mg/L** Analysis Date: **12/18/2012 01:43 PM**
Client ID: Run ID: **HG1_121218A** SeqNo: **2173121** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001831	0.00020	0.002	0	91.6	85-115	0			

MS Sample ID: **1212421-10CMS** Units: **mg/L** Analysis Date: **12/18/2012 01:49 PM**
Client ID: **WPC12101320JTC1B** Run ID: **HG1_121218A** SeqNo: **2173124** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001733	0.00020	0.002	0.000003	86.5	80-120	0			

MS Sample ID: **1212543-07CMS** Units: **mg/L** Analysis Date: **12/18/2012 02:49 PM**
Client ID: Run ID: **HG1_121218A** SeqNo: **2173173** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001686	0.00020	0.002	-0.000011	84.8	80-120	0			

MSD Sample ID: **1212421-10CMSD** Units: **mg/L** Analysis Date: **12/18/2012 01:51 PM**
Client ID: **WPC12101320JTC1B** Run ID: **HG1_121218A** SeqNo: **2173125** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001776	0.00020	0.002	0.000003	88.6	80-120	0.001733	2.45	20	

MSD Sample ID: **1212543-07CMSD** Units: **mg/L** Analysis Date: **12/18/2012 02:51 PM**
Client ID: Run ID: **HG1_121218A** SeqNo: **2173175** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001744	0.00020	0.002	-0.000011	87.8	80-120	0.001686	3.38	20	

DUP Sample ID: **1212438-01BDUP** Units: **mg/L** Analysis Date: **12/18/2012 01:57 PM**
Client ID: Run ID: **HG1_121218A** SeqNo: **2173128** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.000114	0.00020	0	0	0	0-0	0.000135	0	20	J

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212421
Project: Marshall Potable Water 12/10/12

QC BATCH REPORT

Batch ID: **45472** Instrument ID **HG1** Method: **E245.1**

DUP Sample ID: **1212442-03ADUP** Units: **mg/L** Analysis Date: **12/18/2012 02:12 PM**
Client ID: Run ID: **HG1_121218A** SeqNo: **2173135** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.000032	0.00020	0	0	0	0-0	0.000052	0	20	J

DUP Sample ID: **1212485-01BDUP** Units: **mg/L** Analysis Date: **12/18/2012 02:20 PM**
Client ID: Run ID: **HG1_121218A** SeqNo: **2173139** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.000076	0.00020	0	0	0	0-0	0.000083	0	20	J

DUP Sample ID: **1212540-01BDUP** Units: **mg/L** Analysis Date: **12/18/2012 02:26 PM**
Client ID: Run ID: **HG1_121218A** SeqNo: **2173142** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.000056	0.00020	0	0	0	0-0	0.000063	0	20	J

The following samples were analyzed in this batch: 1212421-10C 1212421-11C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45429** Instrument ID **ICPMS2** Method: **E200.8**

MBLK Sample ID: **MBLK-45429-45429** Units: **mg/L** Analysis Date: **12/17/2012 08:15 PM**
Client ID: Run ID: **ICPMS2_121217A** SeqNo: **2172305** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	ND	0.080								
Molybdenum	ND	0.0050								
Nickel	ND	0.0050								
Vanadium	ND	0.0050								

MBLK Sample ID: **MBLK-45429-45429** Units: **mg/L** Analysis Date: **12/18/2012 07:52 PM**
Client ID: Run ID: **ICPMS1_121218B** SeqNo: **2173737** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	ND	0.0020								
Titanium	ND	0.0050								

LCS Sample ID: **LCS-45429-45429** Units: **mg/L** Analysis Date: **12/17/2012 08:21 PM**
Client ID: Run ID: **ICPMS2_121217A** SeqNo: **2172307** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	10.4	0.080	10	0	104	85-115	0			
Molybdenum	0.1045	0.0050	0.1	0	104	85-115	0			
Nickel	0.1061	0.0050	0.1	0	106	85-115	0			
Vanadium	0.1	0.0050	0.1	0	100	85-115	0			

LCS Sample ID: **LCS-45429-45429** Units: **mg/L** Analysis Date: **12/18/2012 07:58 PM**
Client ID: Run ID: **ICPMS1_121218B** SeqNo: **2173738** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.1013	0.0020	0.1	0	101	85-115	0			
Titanium	0.1015	0.0050	0.1	0	102	85-115	0			

MS Sample ID: **1212420-02CMS** Units: **mg/L** Analysis Date: **12/17/2012 08:36 PM**
Client ID: Run ID: **ICPMS2_121217A** SeqNo: **2172315** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	12.13	0.080	10	1.821	103	70-130	0			
Molybdenum	0.1021	0.0050	0.1	0.0005746	102	70-130	0			
Nickel	0.1017	0.0050	0.1	0.002525	99.2	70-130	0			
Vanadium	0.1015	0.0050	0.1	-0.0003301	102	70-130	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212421
Project: Marshall Potable Water 12/10/12

QC BATCH REPORT

Batch ID: **45429** Instrument ID **ICPMS2** Method: **E200.8**

MS Sample ID: **1212421-03CMS** Units: **mg/L** Analysis Date: **12/17/2012 10:05 PM**
Client ID: **WPC12101642JTC1B** Run ID: **ICPMS2_121217A** SeqNo: **2172349** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	10.87	0.080	10	0.6133	103	70-130	0			
Molybdenum	0.1029	0.0050	0.1	0.0006764	102	70-130	0			
Nickel	0.1005	0.0050	0.1	0.0008937	99.6	70-130	0			
Vanadium	0.0981	0.0050	0.1	-0.00009941	98.2	70-130	0			

MS Sample ID: **1212420-02CMS** Units: **mg/L** Analysis Date: **12/18/2012 08:16 PM**
Client ID: Run ID: **ICPMS1_121218B** SeqNo: **2173741** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.09065	0.0020	0.1	0.00001819	90.6	70-130	0			
Titanium	0.09759	0.0050	0.1	0.0007676	96.8	70-130	0			

MS Sample ID: **1212421-03CMS** Units: **mg/L** Analysis Date: **12/18/2012 11:58 PM**
Client ID: **WPC12101642JTC1B** Run ID: **ICPMS1_121218B** SeqNo: **2173804** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.09775	0.0020	0.1	0.00002039	97.7	70-130	0			
Titanium	0.09913	0.0050	0.1	0.0005963	98.5	70-130	0			

MSD Sample ID: **1212420-02CMSD** Units: **mg/L** Analysis Date: **12/17/2012 08:41 PM**
Client ID: Run ID: **ICPMS2_121217A** SeqNo: **2172318** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	11.8	0.080	10	1.821	99.8	70-130	12.13	2.76	20	
Molybdenum	0.1029	0.0050	0.1	0.0005746	102	70-130	0.1021	0.78	20	
Nickel	0.1015	0.0050	0.1	0.002525	99	70-130	0.1017	0.197	20	
Vanadium	0.1004	0.0050	0.1	-0.0003301	101	70-130	0.1015	1.09	20	

MSD Sample ID: **1212421-03CMSD** Units: **mg/L** Analysis Date: **12/17/2012 10:10 PM**
Client ID: **WPC12101642JTC1B** Run ID: **ICPMS2_121217A** SeqNo: **2172350** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	10.9	0.080	10	0.6133	103	70-130	10.87	0.276	20	
Molybdenum	0.1047	0.0050	0.1	0.0006764	104	70-130	0.1029	1.73	20	
Nickel	0.1011	0.0050	0.1	0.0008937	100	70-130	0.1005	0.595	20	
Vanadium	0.09904	0.0050	0.1	-0.00009941	99.1	70-130	0.0981	0.954	20	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212421
Project: Marshall Potable Water 12/10/12

QC BATCH REPORT

Batch ID: **45429** Instrument ID **ICPMS2** Method: **E200.8**

MSD Sample ID: **1212420-02CMSD** Units: **mg/L** Analysis Date: **12/18/2012 08:22 PM**
Client ID: Run ID: **ICPMS1_121218B** SeqNo: **2173742** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.09143	0.0020	0.1	0.00001819	91.4	70-130	0.09065	0.857	20	
Titanium	0.09471	0.0050	0.1	0.0007676	93.9	70-130	0.09759	3	20	

MSD Sample ID: **1212421-03CMSD** Units: **mg/L** Analysis Date: **12/19/2012 12:04 AM**
Client ID: **WPC12101642JTC1B** Run ID: **ICPMS1_121218B** SeqNo: **2173805** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.09965	0.0020	0.1	0.00002039	99.6	70-130	0.09775	1.93	20	
Titanium	0.1003	0.0050	0.1	0.0005963	99.7	70-130	0.09913	1.17	20	

The following samples were analyzed in this batch:

1212421-01C	1212421-02C	1212421-03C
1212421-04C	1212421-05C	1212421-06C
1212421-07C	1212421-08C	1212421-09C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212421
Project: Marshall Potable Water 12/10/12

QC BATCH REPORT

Batch ID: **45446** Instrument ID **ICPMS2** Method: **E200.8**

MBLK Sample ID: **MBLK-45446-45446** Units: **mg/L** Analysis Date: **12/17/2012 11:18 PM**
Client ID: Run ID: **ICPMS2_121217A** SeqNo: **2172366** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	ND	0.080								
Molybdenum	ND	0.0050								
Nickel	ND	0.0050								
Vanadium	ND	0.0050								

LCS Sample ID: **LCS-45446-45446** Units: **mg/L** Analysis Date: **12/17/2012 11:39 PM**
Client ID: Run ID: **ICPMS2_121217A** SeqNo: **2172373** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	10.28	0.080	10	0	103	85-115	0			
Molybdenum	0.103	0.0050	0.1	0	103	85-115	0			
Nickel	0.1009	0.0050	0.1	0	101	85-115	0			
Vanadium	0.09952	0.0050	0.1	0	99.5	85-115	0			

MS Sample ID: **1212421-11CMS** Units: **mg/L** Analysis Date: **12/18/2012 12:47 AM**
Client ID: **WPC12101028JTC1B** Run ID: **ICPMS2_121217A** SeqNo: **2172398** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Molybdenum	0.1044	0.0050	0.1	0.0003162	104	70-130	0			

MS Sample ID: **1212513-01CMS** Units: **mg/L** Analysis Date: **12/18/2012 01:54 AM**
Client ID: Run ID: **ICPMS2_121217A** SeqNo: **2172423** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Molybdenum	0.1183	0.0050	0.1	0.01558	103	70-130	0			

MS Sample ID: **1212421-11CMS** Units: **mg/L** Analysis Date: **12/18/2012 07:40 PM**
Client ID: **WPC12101028JTC1B** Run ID: **ICPMS1_121218B** SeqNo: **2173735** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.09175	0.0020	0.1	0.00002526	91.7	70-130	0			
Titanium	0.09827	0.0050	0.1	0.0006236	97.6	70-130	0			

MSD Sample ID: **1212421-11CMSD** Units: **mg/L** Analysis Date: **12/18/2012 12:52 AM**
Client ID: **WPC12101028JTC1B** Run ID: **ICPMS2_121217A** SeqNo: **2172400** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Molybdenum	0.1013	0.0050	0.1	0.0003162	101	70-130	0.1044	3.01	20	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212421
Project: Marshall Potable Water 12/10/12

QC BATCH REPORT

Batch ID: **45446** Instrument ID **ICPMS2** Method: **E200.8**

MSD Sample ID: **1212513-01CMSD** Units: **mg/L** Analysis Date: **12/18/2012 01:59 AM**
Client ID: Run ID: **ICPMS2_121217A** SeqNo: **2172425** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Molybdenum	0.1191	0.0050	0.1	0.01558	104	70-130	0.1183	0.674	20	

MSD Sample ID: **1212421-11CMSD** Units: **mg/L** Analysis Date: **12/18/2012 07:46 PM**
Client ID: **WPC12101028JTC1B** Run ID: **ICPMS1_121218B** SeqNo: **2173736** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.0896	0.0020	0.1	0.00002526	89.6	70-130	0.09175	2.37	20	
Titanium	0.09498	0.0050	0.1	0.0006236	94.4	70-130	0.09827	3.4	20	

The following samples were analyzed in this batch: 1212421-10C 1212421-11C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212421
Project: Marshall Potable Water 12/10/12

QC BATCH REPORT

Batch ID: **45385** Instrument ID **SVMS6** Method: **E525.2**

MBLK Sample ID: **PNBLKW1-45385-45385** Units: **µg/L** Analysis Date: **12/17/2012 10:43 AM**
Client ID: Run ID: **SVMS6_121217A** SeqNo: **2172978** Prep Date: **12/14/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenanthrene	ND	0.20								
Surr: 1,3-Dimethyl-2-Nitrobenzen	*4.28*	0.20	*5*	0	*85.6*	*70-125*	0			
Surr: Perylene-d12	*4.37*	0.20	*5*	0	*87.4*	*46-142*	0			
Surr: Triphenylphosphate	*7.35*	0.20	*5*	0	*147*	*77-169*	0			

LCS Sample ID: **PNLCSW1-45385-45385** Units: **µg/L** Analysis Date: **12/17/2012 11:16 AM**
Client ID: Run ID: **SVMS6_121217A** SeqNo: **2172979** Prep Date: **12/14/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenanthrene	4.59	0.20	5	0	91.8	70-130	0			
Surr: 1,3-Dimethyl-2-Nitrobenzen	*3.52*	0.20	*5*	0	*70.4*	*70-125*	0			
Surr: Perylene-d12	*4.55*	0.20	*5*	0	*91*	*46-142*	0			
Surr: Triphenylphosphate	*7.16*	0.20	*5*	0	*143*	*77-169*	0			

MS Sample ID: **1212420-02B MS** Units: **µg/L** Analysis Date: **12/17/2012 11:50 AM**
Client ID: Run ID: **SVMS6_121217A** SeqNo: **2172980** Prep Date: **12/14/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenanthrene	54.6	2.0	50	0	109	70-130	0			
Surr: 1,3-Dimethyl-2-Nitrobenzen	*37.2*	2.0	*50*	0	*74.4*	*70-125*	0			
Surr: Perylene-d12	*39.9*	2.0	*50*	0	*79.8*	*46-142*	0			
Surr: Triphenylphosphate	*72*	2.0	*50*	0	*144*	*77-169*	0			

MSD Sample ID: **1212420-02B MSD** Units: **µg/L** Analysis Date: **12/17/2012 12:24 PM**
Client ID: Run ID: **SVMS6_121217A** SeqNo: **2172981** Prep Date: **12/14/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenanthrene	54.9	2.0	50	0	110	70-130	54.6	0.548	30	
Surr: 1,3-Dimethyl-2-Nitrobenzen	*36.3*	2.0	*50*	0	*72.6*	*70-125*	37.2	*2.45*		
Surr: Perylene-d12	*41.5*	2.0	*50*	0	*83*	*46-142*	39.9	*3.93*		
Surr: Triphenylphosphate	*74.4*	2.0	*50*	0	*149*	*77-169*	72	*3.28*		

The following samples were analyzed in this batch:

1212421-01B	1212421-02B	1212421-03B
1212421-04B	1212421-05B	1212421-06B
1212421-07B	1212421-08B	1212421-09B
1212421-10B	1212421-11B	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212421
Project: Marshall Potable Water 12/10/12

QC BATCH REPORT

Batch ID: **R113836** Instrument ID **VMS6** Method: **E524.2**

MBLK Sample ID: **VBLKW1-121212-R113836** Units: **µg/L** Analysis Date: **12/12/2012 04:18 PM**
Client ID: Run ID: **VMS6_121212A** SeqNo: **2167630** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,3-Trimethylbenzene	ND	0.50								
1,2,4-Trimethylbenzene	ND	0.50								
1,3,5-Trimethylbenzene	ND	0.50								
2-Methylnaphthalene	ND	2.0								
4-Isopropyltoluene	ND	0.50								
Benzene	ND	0.50								
Cyclohexane	ND	1.0								
Ethylbenzene	ND	0.50								
Isopropylbenzene	ND	0.50								
m,p-Xylene	ND	1.0								
Naphthalene	ND	0.50								
n-Propylbenzene	ND	0.50								
o-Xylene	ND	0.50								
sec-Butylbenzene	ND	0.50								
Toluene	ND	0.50								
Surr: 1,2-Dichloroethane-d4	*19.12*	0.10	*20*	0	*95.6*	*80-120*	0			
Surr: 4-Bromofluorobenzene	*19.06*	0.10	*20*	0	*95.3*	*80-120*	0			
Surr: Dibromofluoromethane	*18.66*	0.10	*20*	0	*93.3*	*80-120*	0			
Surr: Toluene-d8	*19.29*	0.10	*20*	0	*96.4*	*80-120*	0			

LCS Sample ID: **VLCSW1-121212-R113836** Units: **µg/L** Analysis Date: **12/12/2012 03:19 PM**
Client ID: Run ID: **VMS6_121212A** SeqNo: **2167269** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	4.92	0.50	5	0	98.4	70-130	0			
1,3,5-Trimethylbenzene	5.05	0.50	5	0	101	70-130	0			
Benzene	4.89	0.50	5	0	97.8	70-130	0			
Ethylbenzene	4.9	0.50	5	0	98	70-130	0			
Isopropylbenzene	5	0.50	5	0	100	70-130	0			
m,p-Xylene	9.76	1.0	10	0	97.6	70-130	0			
Naphthalene	4.39	0.50	5	0	87.8	70-130	0			
n-Propylbenzene	4.83	0.50	5	0	96.6	70-130	0			
o-Xylene	4.8	0.50	5	0	96	70-130	0			
sec-Butylbenzene	5.12	0.50	5	0	102	70-130	0			
Toluene	4.81	0.50	5	0	96.2	70-130	0			
Surr: 1,2-Dichloroethane-d4	*19.34*	0.10	*20*	0	*96.7*	*80-120*	0			
Surr: 4-Bromofluorobenzene	*19.94*	0.10	*20*	0	*99.7*	*80-120*	0			
Surr: Dibromofluoromethane	*19.29*	0.10	*20*	0	*96.4*	*80-120*	0			
Surr: Toluene-d8	*19.04*	0.10	*20*	0	*95.2*	*80-120*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212421
Project: Marshall Potable Water 12/10/12

QC BATCH REPORT

Batch ID: **R113836** Instrument ID **VMS6** Method: **E524.2**

MS Sample ID: **1212420-02A MS** Units: **µg/L** Analysis Date: **12/13/2012 12:47 PM**
Client ID: Run ID: **VMS6_121212A** SeqNo: **2167652** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	5.29	0.50	5	0	106	70-130	0			
1,3,5-Trimethylbenzene	5.39	0.50	5	0	108	70-130	0			
Benzene	5.56	0.50	5	0	111	70-130	0			
Ethylbenzene	5.45	0.50	5	0	109	70-130	0			
Isopropylbenzene	5.55	0.50	5	0	111	70-130	0			
m,p-Xylene	10.98	1.0	10	0	110	70-130	0			
Naphthalene	4.41	0.50	5	0	88.2	70-130	0			
n-Propylbenzene	5.37	0.50	5	0	107	70-130	0			
o-Xylene	5.35	0.50	5	0	107	70-130	0			
sec-Butylbenzene	5.67	0.50	5	0	113	70-130	0			
Toluene	5.52	0.50	5	0	110	70-130	0			
Surr: 1,2-Dichloroethane-d4	*19.27*	0.10	*20*	0	*96.4*	*80-120*	0			
Surr: 4-Bromofluorobenzene	*20.03*	0.10	*20*	0	*100*	*80-120*	0			
Surr: Dibromofluoromethane	*19.52*	0.10	*20*	0	*97.6*	*80-120*	0			
Surr: Toluene-d8	*19.48*	0.10	*20*	0	*97.4*	*80-120*	0			

MSD Sample ID: **1212420-02A MSD** Units: **µg/L** Analysis Date: **12/13/2012 01:11 AM**
Client ID: Run ID: **VMS6_121212A** SeqNo: **2167650** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	5.34	0.50	5	0	107	70-130	5.29	0.941	25	
1,3,5-Trimethylbenzene	5.55	0.50	5	0	111	70-130	5.39	2.93	25	
Benzene	5.42	0.50	5	0	108	70-130	5.56	2.55	25	
Ethylbenzene	5.51	0.50	5	0	110	70-130	5.45	1.09	25	
Isopropylbenzene	5.71	0.50	5	0	114	70-130	5.55	2.84	25	
m,p-Xylene	10.88	1.0	10	0	109	70-130	10.98	0.915	25	
Naphthalene	4.66	0.50	5	0	93.2	70-130	4.41	5.51	25	
n-Propylbenzene	5.44	0.50	5	0	109	70-130	5.37	1.3	25	
o-Xylene	5.34	0.50	5	0	107	70-130	5.35	0.187	25	
sec-Butylbenzene	6.05	0.50	5	0	121	70-130	5.67	6.48	25	
Toluene	5.49	0.50	5	0	110	70-130	5.52	0.545	25	
Surr: 1,2-Dichloroethane-d4	*18.83*	0.10	*20*	0	*94.2*	*80-120*	19.27	*2.31*		
Surr: 4-Bromofluorobenzene	*19.77*	0.10	*20*	0	*98.8*	*80-120*	20.03	*1.31*		
Surr: Dibromofluoromethane	*18.83*	0.10	*20*	0	*94.2*	*80-120*	19.52	*3.6*		
Surr: Toluene-d8	*19.02*	0.10	*20*	0	*95.1*	*80-120*	19.48	*2.39*		

The following samples were analyzed in this batch:

1212421-01A	1212421-02A	1212421-03A
1212421-04A	1212421-05A	1212421-06A
1212421-07A	1212421-08A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212421
Project: Marshall Potable Water 12/10/12

QC BATCH REPORT

Batch ID: **R113859** Instrument ID **VMS6** Method: **E524.2**

MBLK Sample ID: **VBLKW2-121212-R113859** Units: **µg/L** Analysis Date: **12/13/2012 04:02 AM**
Client ID: Run ID: **VMS6_121212B** SeqNo: **2167509** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,3-Trimethylbenzene	ND	0.50								
1,2,4-Trimethylbenzene	ND	0.50								
1,3,5-Trimethylbenzene	ND	0.50								
2-Methylnaphthalene	ND	2.0								
4-Isopropyltoluene	ND	0.50								
Benzene	ND	0.50								
Cyclohexane	ND	1.0								
Ethylbenzene	ND	0.50								
Isopropylbenzene	ND	0.50								
m,p-Xylene	ND	1.0								
Naphthalene	ND	0.50								
n-Propylbenzene	ND	0.50								
o-Xylene	ND	0.50								
sec-Butylbenzene	ND	0.50								
Toluene	ND	0.50								
Surr: 1,2-Dichloroethane-d4	*19.22*	0.10	*20*	0	*96.1*	*80-120*	0			
Surr: 4-Bromofluorobenzene	*19.49*	0.10	*20*	0	*97.4*	*80-120*	0			
Surr: Dibromofluoromethane	*18.42*	0.10	*20*	0	*92.1*	*80-120*	0			
Surr: Toluene-d8	*19.12*	0.10	*20*	0	*95.6*	*80-120*	0			

LCS Sample ID: **VLCSW2-121212-R113859** Units: **µg/L** Analysis Date: **12/13/2012 03:13 AM**
Client ID: Run ID: **VMS6_121212B** SeqNo: **2167508** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	4.68	0.50	5	0	93.6	70-130	0			
1,3,5-Trimethylbenzene	4.79	0.50	5	0	95.8	70-130	0			
Benzene	4.79	0.50	5	0	95.8	70-130	0			
Ethylbenzene	4.73	0.50	5	0	94.6	70-130	0			
Isopropylbenzene	4.77	0.50	5	0	95.4	70-130	0			
m,p-Xylene	9.18	1.0	10	0	91.8	70-130	0			
Naphthalene	4.54	0.50	5	0	90.8	70-130	0			
n-Propylbenzene	4.55	0.50	5	0	91	70-130	0			
o-Xylene	4.62	0.50	5	0	92.4	70-130	0			
sec-Butylbenzene	4.91	0.50	5	0	98.2	70-130	0			
Toluene	4.65	0.50	5	0	93	70-130	0			
Surr: 1,2-Dichloroethane-d4	*19.39*	0.10	*20*	0	*97*	*80-120*	0			
Surr: 4-Bromofluorobenzene	*20.06*	0.10	*20*	0	*100*	*80-120*	0			
Surr: Dibromofluoromethane	*19.41*	0.10	*20*	0	*97*	*80-120*	0			
Surr: Toluene-d8	*19.16*	0.10	*20*	0	*95.8*	*80-120*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212421
Project: Marshall Potable Water 12/10/12

QC BATCH REPORT

Batch ID: **R113859** Instrument ID **VMS6** Method: **E524.2**

MS Sample ID: **1212421-11A MS** Units: **µg/L** Analysis Date: **12/13/2012 06:02 AM**
Client ID: **WPC12101028JTC1B** Run ID: **VMS6_121212B** SeqNo: **2167702** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	4.89	0.50	5	0	97.8	70-130	0			
1,3,5-Trimethylbenzene	4.99	0.50	5	0	99.8	70-130	0			
Benzene	5.2	0.50	5	0	104	70-130	0			
Ethylbenzene	5.01	0.50	5	0	100	70-130	0			
Isopropylbenzene	5.16	0.50	5	0	103	70-130	0			
m,p-Xylene	9.95	1.0	10	0	99.5	70-130	0			
Naphthalene	3.99	0.50	5	0	79.8	70-130	0			
n-Propylbenzene	4.87	0.50	5	0	97.4	70-130	0			
o-Xylene	4.87	0.50	5	0	97.4	70-130	0			
sec-Butylbenzene	5.2	0.50	5	0	104	70-130	0			
Toluene	4.97	0.50	5	0	99.4	70-130	0			
Surr: 1,2-Dichloroethane-d4	*18.94*	0.10	*20*	0	*94.7*	*80-120*	0			
Surr: 4-Bromofluorobenzene	*19.84*	0.10	*20*	0	*99.2*	*80-120*	0			
Surr: Dibromofluoromethane	*18.94*	0.10	*20*	0	*94.7*	*80-120*	0			
Surr: Toluene-d8	*19.08*	0.10	*20*	0	*95.4*	*80-120*	0			

MSD Sample ID: **1212421-11A MSD** Units: **µg/L** Analysis Date: **12/13/2012 06:27 AM**
Client ID: **WPC12101028JTC1B** Run ID: **VMS6_121212B** SeqNo: **2167704** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	4.74	0.50	5	0	94.8	70-130	4.89	3.12	25	
1,3,5-Trimethylbenzene	4.91	0.50	5	0	98.2	70-130	4.99	1.62	25	
Benzene	4.98	0.50	5	0	99.6	70-130	5.2	4.32	25	
Ethylbenzene	4.67	0.50	5	0	93.4	70-130	5.01	7.02	25	
Isopropylbenzene	4.94	0.50	5	0	98.8	70-130	5.16	4.36	25	
m,p-Xylene	9.54	1.0	10	0	95.4	70-130	9.95	4.21	25	
Naphthalene	3.95	0.50	5	0	79	70-130	3.99	1.01	25	
n-Propylbenzene	4.76	0.50	5	0	95.2	70-130	4.87	2.28	25	
o-Xylene	4.71	0.50	5	0	94.2	70-130	4.87	3.34	25	
sec-Butylbenzene	5.16	0.50	5	0	103	70-130	5.2	0.772	25	
Toluene	4.81	0.50	5	0	96.2	70-130	4.97	3.27	25	
Surr: 1,2-Dichloroethane-d4	*18.07*	0.10	*20*	0	*90.4*	*80-120*	18.94	*4.7*		
Surr: 4-Bromofluorobenzene	*19.29*	0.10	*20*	0	*96.4*	*80-120*	19.84	*2.81*		
Surr: Dibromofluoromethane	*18.59*	0.10	*20*	0	*93*	*80-120*	18.94	*1.87*		
Surr: Toluene-d8	*18.68*	0.10	*20*	0	*93.4*	*80-120*	19.08	*2.12*		

The following samples were analyzed in this batch: 1212421-09A 1212421-10A 1212421-11A 1212421-12A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

1212421

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # ___ of ___

COC #
Task: Potable B
Total # of Samples: 12
Event Complete? N

Regular | X | Turnaround Time | 5 Day

Billing Code=7.00

Lab Information:
Lab Name: ALS Laboratory Group
Address: 3352 128th Ave. Holland, MI 49424-9263
Lab PM: Ann Preston
Phone/Fax: 1-616-399-6070/1-616-399-6185
Lab PM email: ann.preston@alsglobal.com
Applicable Lab Quote #:

Project Information:
Site ID #: 33
Project #: 60162778
Site Address: 5555 Glenwood Parkway SE Suite 200
City: Grand Rapids | State, Zip: MI
Site PM Name: Bryan Stiemsma
Phone/Fax: [redacted]
Site PM Email: Bryan.Stiemsma@aecom.com

Other Information:
Send Invoice to: Enbridge Energy - ATTN Accounts Payable
Address: 1100 Louisiana Suite 1100
City/State: Houson, TX | Phone #: 713-821-2000
PO #
Send EDD to
CC Hardcopy report to
CC Hardcopy report to

ITEM #	SAMPLE ID (Samples IDs MUST BE UNIQUE)	SAMPLE LOCATION	MATRIX CODE	G=GRAB C=COMP	SAMPLE DATE	#OF CONTAINERS	Comments/Lab Sample I.D.	Preservative	HCl	HCl	HNO3							HNO3				Additional Notes
								Analysis	VOCs List B	SVOCs List B	TAL Metals List B	TPH DRO	TPH GRO	PCBs/Pesticides	TOC	TSS	Hg by EPA 245.1				
	WPC12101527JTC2B	C011485A	GW	G	12/10/2012 1527	5	C011485		X	X	X						X					DUP
	WPC12101527JTC1B	C011485A	GW	G	12/10/2012 1527	5	C011485		X	X	X						X					
	WPC12101642JTC1B	C0273F9WP1	GW	G	12/10/2012 1642	5	C0273F9		X	X	X						X					
	WPC12101505JTC1B	C03868EWP1	GW	G	12/10/2012 1505	5	C03868E		X	X	X						X					
	WPC12101553JTC1B	C0881CCWP1	GW	G	12/10/2012 1553	5	C0881CC		X	X	X						X					
	WPC12101617JTC1B	C088276WP1	GW	G	12/10/2012 1617	5	C088276		X	X	X						X					
	WPC12101400JTC1B	C0229A2A	GW	G	12/10/2012 1400	5	C0229A2M		X	X	X						X					
	WPC12101008JTC1B	C0298FFWP1	GW	G	12/10/2012 1008	5	C0298FF		X	X	X						X					
	WPC12101418JTC1B	C04879DWP1	GW	G	12/10/2012 1418	5	C04879DM		X	X	X						X					
	WPC12101320JTC1B	C05354DA	GW	G	12/10/2012 1320	5	C05354D		X	X	X						X					
	WPC12101028JTC1B	C0298FFWP2	GW	G	12/10/2012 1028	5	C0298FF		X	X	X						X					
	TB121012JTC5	Trip Blank	W	G	12/10/2012 0000	1	Trip Blank		X													TRIP BLANK

Additional Comments/Special Instructions:
Samplers: Jon Carveth; Lorri Lego

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
	12-11-12	0800		12-11-12	0800
	12-12-12	0818		12-12-12	0818

Sample Receipt Conditions

	Y/N		Y/N		Y/N
2.4-3.2°C	Y/N		Y/N		Y/N
	Y/N		Y/N		Y/N
	Y/N		Y/N		Y/N
Temp in °C	Samples on ice?		Sample intact?		Trip Blank?

SHIPPING INFO.
SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: Jon Carveth
SIGNATURE of SAMPLER:
DATE Signed:
Time:

ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **12-Dec-12 08:10**

Work Order: **1212421** Received by: **PD**

Checklist completed by Keith Wierenga (eSignature) 12-Dec-12 (Date) Reviewed by: Ann Preston (eSignature) 13-Dec-12 (Date)

Matrices: Potable Water
Carrier name: ALSHN

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.4-3.2 C		
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	12/12/2012 1:13:16 PM		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL
Date: 12/11/12 Time: 1045
Name: Jon Carlson
Company: ALS

Seal Broken By:
Date:

2.4°C

ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL
Date: 12-11-12 Time:
Name: Jon Lee
Company:

Seal Broken By:
Date:

3.2°C

ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL
Date: Time:
Name:
Company:

Seal Broken By:
Date:

2.8°C

27-Dec-2012

Alison Schoeff
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall Potable Water 12/13/12** Work Order: **1212543**

Dear Alison,

ALS Environmental received 9 samples on 14-Dec-2012 03:45 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 27.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

Certificate No: MN331938

ALS Group USA, Corp

Date: 27-Dec-12

Client: AECOM Environment
Project: Marshall Potable Water 12/13/12
Work Order: **1212543**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1212543-01	WPC12131218JTC1B	Potable Water		12/13/2012 12:18	12/14/2012 15:45	☐
1212543-02	WPA12131009JTC1B	Potable Water		12/13/2012 10:09	12/14/2012 15:45	☐
1212543-03	WPA12130946JTC1B	Potable Water		12/13/2012 09:46	12/14/2012 15:45	☐
1212543-04	WPD12131328JTC1B	Potable Water		12/13/2012 13:28	12/14/2012 15:45	☐
1212543-05	WPC12131505JTC2B	Potable Water		12/13/2012 15:05	12/14/2012 15:45	☐
1212543-06	WPC12131505JTC1B	Potable Water		12/13/2012 15:05	12/14/2012 15:45	☐
1212543-07	WPC12131117JTC3B	Potable Water		12/13/2012 11:17	12/14/2012 15:45	☐
1212543-08	WPC12131035JTC1B	Potable Water		12/13/2012 10:35	12/14/2012 15:45	☐
1212543-09	TB121312JTC5	Water		12/13/2012	12/14/2012 15:45	☐

ALS Group USA, Corp

Date: 27-Dec-12

Client: AECOM Environment
Project: Marshall Potable Water 12/13/12
WorkOrder: **1212543**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
SD	Serial Dilution
TDL	Target Detection Limit

Units Reported	Description
µg/L	Micrograms per Liter
mg/L	Milligrams per Liter

ALS Group USA, Corp

Date: *27-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12131218JTC1B
Work Order:	1212543	**Collection Date:**	12/13/2012 12:18:00 PM
Project:	Marshall Potable Water 12/13/12		
Lab ID:	1212543-01	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/18/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/18/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/18/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/26/2012
Iron	ND	0.20	0.20		mg/L	1	12/21/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/21/2012
Nickel	ND	0.020	0.020		mg/L	1	12/21/2012
Titanium	ND	0.0050	0		mg/L	1	12/21/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/21/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/19/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/22/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*86.2*	*70-125*			*%REC*	1	12/22/2012
Surr: Perylene-d12	*76.0*	*46-142*			*%REC*	1	12/22/2012
Surr: Triphenylphosphate	*114*	*77-169*			*%REC*	1	12/22/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **AK**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/21/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/21/2012
Benzene	ND	1.0	1.0		µg/L	1	12/21/2012
Cyclohexane	ND	10	10		µg/L	1	12/21/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/21/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/21/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/21/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
Toluene	ND	1.0	1.0		µg/L	1	12/21/2012
Surr: 1,2-Dichloroethane-d4	*103*	*70-130*			*%REC*	1	12/21/2012
Surr: 4-Bromofluorobenzene	*101*	*70-130*			*%REC*	1	12/21/2012
Surr: Dibromofluoromethane	*98.1*	*70-130*			*%REC*	1	12/21/2012
Surr: Toluene-d8	*101*	*70-130*			*%REC*	1	12/21/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPA12131009JTC1B
Work Order:	1212543	**Collection Date:**	12/13/2012 10:09:00 AM
Project:	Marshall Potable Water 12/13/12		
Lab ID:	1212543-02	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/18/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/18/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/18/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/27/2012
Iron	**3.2**	**0.20**	**0.20**		**mg/L**	1	12/21/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/21/2012
Nickel	**0.36**	**0.020**	**0.020**		**mg/L**	1	12/21/2012
Titanium	ND	0.0050	0		mg/L	1	12/21/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/21/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/19/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/22/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*92.0*	*70-125*			*%REC*	1	12/22/2012
Surr: Perylene-d12	*80.8*	*46-142*			*%REC*	1	12/22/2012
Surr: Triphenylphosphate	*118*	*77-169*			*%REC*	1	12/22/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **AK**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/21/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/21/2012
Benzene	ND	1.0	1.0		µg/L	1	12/21/2012
Cyclohexane	ND	10	10		µg/L	1	12/21/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/21/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/21/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/21/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
Toluene	ND	1.0	1.0		µg/L	1	12/21/2012
Surr: 1,2-Dichloroethane-d4	*105*	*70-130*			*%REC*	1	12/21/2012
Surr: 4-Bromofluorobenzene	*97.2*	*70-130*			*%REC*	1	12/21/2012
Surr: Dibromofluoromethane	*102*	*70-130*			*%REC*	1	12/21/2012
Surr: Toluene-d8	*99.6*	*70-130*			*%REC*	1	12/21/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPA12130946JTC1B
Work Order:	1212543	**Collection Date:**	12/13/2012 9:46:00 AM
Project:	Marshall Potable Water 12/13/12		
Lab ID:	1212543-03	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/18/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/18/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/18/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/27/2012
Iron	ND	0.20	0.20		mg/L	1	12/21/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/21/2012
Nickel	ND	0.020	0.020		mg/L	1	12/21/2012
Titanium	ND	0.0050	0		mg/L	1	12/21/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/21/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/19/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/22/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*96.4*	*70-125*			*%REC*	1	12/22/2012
Surr: Perylene-d12	*80.8*	*46-142*			*%REC*	1	12/22/2012
Surr: Triphenylphosphate	*116*	*77-169*			*%REC*	1	12/22/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **AK**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/21/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/21/2012
Benzene	ND	1.0	1.0		µg/L	1	12/21/2012
Cyclohexane	ND	10	10		µg/L	1	12/21/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/21/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/21/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/21/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
Toluene	ND	1.0	1.0		µg/L	1	12/21/2012
Surr: 1,2-Dichloroethane-d4	*105*	*70-130*			*%REC*	1	12/21/2012
Surr: 4-Bromofluorobenzene	*97.6*	*70-130*			*%REC*	1	12/21/2012
Surr: Dibromofluoromethane	*102*	*70-130*			*%REC*	1	12/21/2012
Surr: Toluene-d8	*101*	*70-130*			*%REC*	1	12/21/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPD12131328JTC1B
Work Order:	1212543	**Collection Date:**	12/13/2012 1:28:00 PM
Project:	Marshall Potable Water 12/13/12		
Lab ID:	1212543-04	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/18/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/18/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/18/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/27/2012
Iron	**1.7**	**0.20**	**0.20**		**mg/L**	1	12/21/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/21/2012
Nickel	ND	0.020	0.020		mg/L	1	12/21/2012
Titanium	ND	0.0050	0		mg/L	1	12/21/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/21/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/19/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/22/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*88.8*	*70-125*			*%REC*	1	12/22/2012
Surr: Perylene-d12	*80.2*	*46-142*			*%REC*	1	12/22/2012
Surr: Triphenylphosphate	*114*	*77-169*			*%REC*	1	12/22/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **CW**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/22/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/22/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/22/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/22/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/22/2012
Benzene	ND	1.0	1.0		µg/L	1	12/22/2012
Cyclohexane	ND	10	10		µg/L	1	12/22/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/22/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/22/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/22/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/22/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/22/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/22/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/22/2012
Toluene	ND	1.0	1.0		µg/L	1	12/22/2012
Surr: 1,2-Dichloroethane-d4	*111*	*70-130*			*%REC*	1	12/22/2012
Surr: 4-Bromofluorobenzene	*99.8*	*70-130*			*%REC*	1	12/22/2012
Surr: Dibromofluoromethane	*103*	*70-130*			*%REC*	1	12/22/2012
Surr: Toluene-d8	*101*	*70-130*			*%REC*	1	12/22/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12131505JTC2B
Work Order:	1212543	**Collection Date:**	12/13/2012 3:05:00 PM
Project:	Marshall Potable Water 12/13/12		
Lab ID:	1212543-05	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/18/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/18/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/18/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/27/2012
Iron	**2.3**	**0.20**	**0.20**		**mg/L**	1	12/21/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/21/2012
Nickel	ND	0.020	0.020		mg/L	1	12/21/2012
Titanium	ND	0.0050	0		mg/L	1	12/21/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/21/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/19/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/22/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*82.8*	*70-125*			*%REC*	1	12/22/2012
Surr: Perylene-d12	*82.8*	*46-142*			*%REC*	1	12/22/2012
Surr: Triphenylphosphate	*120*	*77-169*			*%REC*	1	12/22/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **AK**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/21/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/21/2012
Benzene	ND	1.0	1.0		µg/L	1	12/21/2012
Cyclohexane	ND	10	10		µg/L	1	12/21/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/21/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/21/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/21/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
Toluene	ND	1.0	1.0		µg/L	1	12/21/2012
Surr: 1,2-Dichloroethane-d4	*103*	*70-130*			*%REC*	1	12/21/2012
Surr: 4-Bromofluorobenzene	*98.7*	*70-130*			*%REC*	1	12/21/2012
Surr: Dibromofluoromethane	*97.4*	*70-130*			*%REC*	1	12/21/2012
Surr: Toluene-d8	*100*	*70-130*			*%REC*	1	12/21/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12131505JTC1B
Work Order:	1212543	**Collection Date:**	12/13/2012 3:05:00 PM
Project:	Marshall Potable Water 12/13/12		
Lab ID:	1212543-06	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/18/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/18/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/19/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/27/2012
Iron	**2.3**	**0.20**	**0.20**		**mg/L**	1	12/21/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/21/2012
Nickel	ND	0.020	0.020		mg/L	1	12/21/2012
Titanium	ND	0.0050	0		mg/L	1	12/21/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/21/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/19/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/22/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*89.4*	*70-125*			*%REC*	1	12/22/2012
Surr: Perylene-d12	*84.4*	*46-142*			*%REC*	1	12/22/2012
Surr: Triphenylphosphate	*127*	*77-169*			*%REC*	1	12/22/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **AK**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/21/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/21/2012
Benzene	ND	1.0	1.0		µg/L	1	12/21/2012
Cyclohexane	ND	10	10		µg/L	1	12/21/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/21/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/21/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/21/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
Toluene	ND	1.0	1.0		µg/L	1	12/21/2012
Surr: 1,2-Dichloroethane-d4	*107*	*70-130*			*%REC*	1	12/21/2012
Surr: 4-Bromofluorobenzene	*100*	*70-130*			*%REC*	1	12/21/2012
Surr: Dibromofluoromethane	*104*	*70-130*			*%REC*	1	12/21/2012
Surr: Toluene-d8	*101*	*70-130*			*%REC*	1	12/21/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12131117JTC3B
Work Order:	1212543	**Collection Date:**	12/13/2012 11:17:00 AM
Project:	Marshall Potable Water 12/13/12		
Lab ID:	1212543-07	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/18/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/18/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/19/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/21/2012
Iron	ND	0.20	0.20		mg/L	1	12/21/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/21/2012
Nickel	ND	0.020	0.020		mg/L	1	12/21/2012
Titanium	ND	0.0050	0		mg/L	1	12/21/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/21/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/19/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/22/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*80.4*	*70-125*			*%REC*	1	12/22/2012
Surr: Perylene-d12	*75.8*	*46-142*			*%REC*	1	12/22/2012
Surr: Triphenylphosphate	*109*	*77-169*			*%REC*	1	12/22/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **AK**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/21/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/21/2012
Benzene	ND	1.0	1.0		µg/L	1	12/21/2012
Cyclohexane	ND	10	10		µg/L	1	12/21/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/21/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/21/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/21/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
Toluene	ND	1.0	1.0		µg/L	1	12/21/2012
Surr: 1,2-Dichloroethane-d4	*105*	*70-130*			*%REC*	1	12/21/2012
Surr: 4-Bromofluorobenzene	*99.7*	*70-130*			*%REC*	1	12/21/2012
Surr: Dibromofluoromethane	*98.4*	*70-130*			*%REC*	1	12/21/2012
Surr: Toluene-d8	*101*	*70-130*			*%REC*	1	12/21/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12131035JTC1B
Work Order:	1212543	**Collection Date:**	12/13/2012 10:35:00 AM
Project:	Marshall Potable Water 12/13/12		
Lab ID:	1212543-08	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/18/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/18/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/19/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/27/2012
Iron	ND	0.20	0.20		mg/L	1	12/21/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/21/2012
Nickel	ND	0.020	0.020		mg/L	1	12/21/2012
Titanium	ND	0.0050	0		mg/L	1	12/21/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/21/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/19/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/22/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*90.0*	*70-125*			*%REC*	1	12/22/2012
Surr: Perylene-d12	*84.0*	*46-142*			*%REC*	1	12/22/2012
Surr: Triphenylphosphate	*122*	*77-169*			*%REC*	1	12/22/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **AK**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/21/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/21/2012
Benzene	ND	1.0	1.0		µg/L	1	12/21/2012
Cyclohexane	ND	10	10		µg/L	1	12/21/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/21/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/21/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/21/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
Toluene	ND	1.0	1.0		µg/L	1	12/21/2012
Surr: 1,2-Dichloroethane-d4	*105*	*70-130*			*%REC*	1	12/21/2012
Surr: 4-Bromofluorobenzene	*101*	*70-130*			*%REC*	1	12/21/2012
Surr: Dibromofluoromethane	*101*	*70-130*			*%REC*	1	12/21/2012
Surr: Toluene-d8	*99.2*	*70-130*			*%REC*	1	12/21/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	TB121312JTC5
Work Order:	1212543	**Collection Date:**	12/13/2012
Project:	Marshall Potable Water 12/13/12		
Lab ID:	1212543-09	**Matrix:**	WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **AK**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/21/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/21/2012
Benzene	ND	1.0	1.0		µg/L	1	12/21/2012
Cyclohexane	ND	10	10		µg/L	1	12/21/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/21/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/21/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/21/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
Toluene	ND	1.0	1.0		µg/L	1	12/21/2012
Surr: 1,2-Dichloroethane-d4	*103*	*70-130*			*%REC*	1	12/21/2012
Surr: 4-Bromofluorobenzene	*99.1*	*70-130*			*%REC*	1	12/21/2012
Surr: Dibromofluoromethane	*99.6*	*70-130*			*%REC*	1	12/21/2012
Surr: Toluene-d8	*100*	*70-130*			*%REC*	1	12/21/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 27-Dec-12

Client: AECOM Environment

QC BATCH REPORT

Work Order: 1212543

Project: Marshall Potable Water 12/13/12

Batch ID: **45472** Instrument ID **HG1** Method: **E245.1**

MBLK Sample ID: **MBLK-45472-45472** Units: **mg/L** Analysis Date: **12/18/2012 01:41 PM**

Client ID: Run ID: **HG1_121218A** SeqNo: **2173120** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.00020								

LCS Sample ID: **LCS-45472-45472** Units: **mg/L** Analysis Date: **12/18/2012 01:43 PM**

Client ID: Run ID: **HG1_121218A** SeqNo: **2173121** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001831	0.00020	0.002	0	91.6	85-115	0			

MS Sample ID: **1212421-10CMS** Units: **mg/L** Analysis Date: **12/18/2012 01:49 PM**

Client ID: Run ID: **HG1_121218A** SeqNo: **2173124** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001733	0.00020	0.002	0.000003	86.5	80-120	0			

MS Sample ID: **1212543-07CMS** Units: **mg/L** Analysis Date: **12/18/2012 02:49 PM**

Client ID: **WPC12131117JTC3B** Run ID: **HG1_121218A** SeqNo: **2173173** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001686	0.00020	0.002	-0.000011	84.8	80-120	0			

MSD Sample ID: **1212421-10CMSD** Units: **mg/L** Analysis Date: **12/18/2012 01:51 PM**

Client ID: Run ID: **HG1_121218A** SeqNo: **2173125** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001776	0.00020	0.002	0.000003	88.6	80-120	0.001733	2.45	20	

MSD Sample ID: **1212543-07CMSD** Units: **mg/L** Analysis Date: **12/18/2012 02:51 PM**

Client ID: **WPC12131117JTC3B** Run ID: **HG1_121218A** SeqNo: **2173175** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001744	0.00020	0.002	-0.000011	87.8	80-120	0.001686	3.38	20	

DUP Sample ID: **1212438-01BDUP** Units: **mg/L** Analysis Date: **12/18/2012 01:57 PM**

Client ID: Run ID: **HG1_121218A** SeqNo: **2173128** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.000114	0.00020	0	0	0	0-0	0.000135	0	20	J

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212543
Project: Marshall Potable Water 12/13/12

QC BATCH REPORT

Batch ID: **45472** Instrument ID **HG1** Method: **E245.1**

DUP Sample ID: **1212442-03ADUP** Units: **mg/L** Analysis Date: **12/18/2012 02:12 PM**
Client ID: Run ID: **HG1_121218A** SeqNo: **2173135** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.000032	0.00020	0	0	0	0-0	0.000052	0	20	J

DUP Sample ID: **1212485-01BDUP** Units: **mg/L** Analysis Date: **12/18/2012 02:20 PM**
Client ID: Run ID: **HG1_121218A** SeqNo: **2173139** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.000076	0.00020	0	0	0	0-0	0.000083	0	20	J

DUP Sample ID: **1212540-01BDUP** Units: **mg/L** Analysis Date: **12/18/2012 02:26 PM**
Client ID: Run ID: **HG1_121218A** SeqNo: **2173142** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.000056	0.00020	0	0	0	0-0	0.000063	0	20	J

The following samples were analyzed in this batch:

1212543-01C	1212543-02C	1212543-03C
1212543-04C	1212543-05C	1212543-06C
1212543-07C	1212543-08C	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212543
Project: Marshall Potable Water 12/13/12

QC BATCH REPORT

Batch ID: **45466** Instrument ID **ICPMS2** Method: **E200.8**

MBLK Sample ID: **MBLK-45466-45466** Units: **mg/L** Analysis Date: **12/18/2012 02:23 PM**
Client ID: Run ID: **ICPMS2_121218A** SeqNo: **2173380** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Molybdenum	ND	0.0050								

MBLK Sample ID: **MBLK-45466-45466** Units: **mg/L** Analysis Date: **12/21/2012 05:50 PM**
Client ID: Run ID: **ICPMS2_121221A** SeqNo: **2177154** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	ND	0.0020								
Iron	0.009088	0.080								J
Nickel	ND	0.0050								
Titanium	0.0001278	0.0050								J
Vanadium	ND	0.0050								

LCS Sample ID: **LCS-45466-45466** Units: **mg/L** Analysis Date: **12/18/2012 02:28 PM**
Client ID: Run ID: **ICPMS2_121218A** SeqNo: **2173381** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Molybdenum	0.1004	0.0050	0.1	0	100	85-115	0			

LCS Sample ID: **LCS-45466-45466** Units: **mg/L** Analysis Date: **12/21/2012 05:55 PM**
Client ID: Run ID: **ICPMS2_121221A** SeqNo: **2177155** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.1094	0.0020	0.1	0	109	85-115	0			
Iron	10.37	0.080	10	0	104	85-115	0			
Nickel	0.1036	0.0050	0.1	0	104	85-115	0			
Titanium	0.1084	0.0050	0.1	0	108	85-115	0			
Vanadium	0.1075	0.0050	0.1	0	108	85-115	0			

MS Sample ID: **1212527-01AMS** Units: **mg/L** Analysis Date: **12/18/2012 02:53 PM**
Client ID: Run ID: **ICPMS2_121218A** SeqNo: **2173386** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Molybdenum	0.1124	0.0050	0.1	0.008895	104	70-130	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212543
Project: Marshall Potable Water 12/13/12

QC BATCH REPORT

Batch ID: **45466** Instrument ID **ICPMS2** Method: **E200.8**

MS Sample ID: **1212527-01AMS** Units: **mg/L** Analysis Date: **12/21/2012 06:04 PM**
Client ID: Run ID: **ICPMS2_121221A** SeqNo: **2177157** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.1056	0.0020	0.1	0.00002084	106	70-130	0			
Iron	10.9	0.080	10	0.3184	106	70-130	0			
Nickel	0.1081	0.0050	0.1	0.005482	103	70-130	0			
Titanium	0.1199	0.0050	0.1	0.002085	118	70-130	0			
Vanadium	0.1183	0.0050	0.1	0.0003143	118	70-130	0			

MS Sample ID: **1212543-01CMS** Units: **mg/L** Analysis Date: **12/21/2012 06:34 PM**
Client ID: **WPC12131218JTC1B** Run ID: **ICPMS2_121221A** SeqNo: **2177163** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	10.81	0.080	10	0.04269	108	70-130	0			
Molybdenum	0.1019	0.0050	0.1	0.0002811	102	70-130	0			
Nickel	0.1045	0.0050	0.1	0.001422	103	70-130	0			
Titanium	0.115	0.0050	0.1	0.0006243	114	70-130	0			
Vanadium	0.1152	0.0050	0.1	-0.00006139	115	70-130	0			

MS Sample ID: **1212543-01CMS** Units: **mg/L** Analysis Date: **12/26/2012 03:53 PM**
Client ID: **WPC12131218JTC1B** Run ID: **ICPMS2_121226A** SeqNo: **2178898** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.09791	0.0020	0.1	0.00002435	97.9	70-130	0			

MSD Sample ID: **1212527-01AMSD** Units: **mg/L** Analysis Date: **12/18/2012 02:58 PM**
Client ID: Run ID: **ICPMS2_121218A** SeqNo: **2173387** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Molybdenum	0.1119	0.0050	0.1	0.008895	103	70-130	0.1124	0.446	20	

MSD Sample ID: **1212527-01AMSD** Units: **mg/L** Analysis Date: **12/21/2012 05:59 PM**
Client ID: Run ID: **ICPMS2_121221A** SeqNo: **2177156** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.1073	0.0020	0.1	0.00002084	107	70-130	0.1073	0	20	
Iron	11.31	0.080	10	0.3184	110	70-130	11.31	0	20	
Nickel	0.1103	0.0050	0.1	0.005482	105	70-130	0.1103	0	20	
Titanium	0.1217	0.0050	0.1	0.002085	120	70-130	0.1217	0	20	
Vanadium	0.1199	0.0050	0.1	0.0003143	120	70-130	0.1199	0	20	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45466** Instrument ID **ICPMS2** Method: **E200.8**

MSD Sample ID: **1212543-01CMSD** Units: **mg/L** Analysis Date: **12/21/2012 06:38 PM**
Client ID: **WPC12131218JTC1B** Run ID: **ICPMS2_121221A** SeqNo: **2177164** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	10.76	0.080	10	0.04269	107	70-130	10.81	0.464	20	
Molybdenum	0.1024	0.0050	0.1	0.0002811	102	70-130	0.1019	0.489	20	
Nickel	0.1048	0.0050	0.1	0.001422	103	70-130	0.1045	0.287	20	
Titanium	0.1158	0.0050	0.1	0.0006243	115	70-130	0.115	0.693	20	
Vanadium	0.1148	0.0050	0.1	-0.00006139	115	70-130	0.1152	0.348	20	

MSD Sample ID: **1212543-01CMSD** Units: **mg/L** Analysis Date: **12/26/2012 03:58 PM**
Client ID: **WPC12131218JTC1B** Run ID: **ICPMS2_121226A** SeqNo: **2178899** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.09585	0.0020	0.1	0.00002435	95.8	70-130	0.09791	2.13	20	

The following samples were analyzed in this batch:

1212543-01C	1212543-02C	1212543-03C
1212543-04C	1212543-05C	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212543
Project: Marshall Potable Water 12/13/12

QC BATCH REPORT

Batch ID: **45503** Instrument ID **ICPMS2** Method: **E200.8**

MBLK Sample ID: **MBLK-45503-45503** Units: **mg/L** Analysis Date: **12/21/2012 03:41 PM**
Client ID: Run ID: **ICPMS2_121221A** SeqNo: **2177023** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	ND	0.0020								
Iron	0.007133	0.080								J
Molybdenum	ND	0.0050								
Nickel	ND	0.0050								
Titanium	ND	0.0050								
Vanadium	ND	0.0050								

LCS Sample ID: **LCS-45503-45503** Units: **mg/L** Analysis Date: **12/21/2012 03:46 PM**
Client ID: Run ID: **ICPMS2_121221A** SeqNo: **2177024** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.1108	0.0020	0.1	0	111	85-115	0			
Iron	10.78	0.080	10	0	108	85-115	0			
Molybdenum	0.1038	0.0050	0.1	0	104	85-115	0			
Nickel	0.1055	0.0050	0.1	0	106	85-115	0			
Titanium	0.1114	0.0050	0.1	0	111	85-115	0			
Vanadium	0.111	0.0050	0.1	0	111	85-115	0			

MS Sample ID: **1212543-07CMS** Units: **mg/L** Analysis Date: **12/21/2012 03:56 PM**
Client ID: **WPC12131117JTC3B** Run ID: **ICPMS2_121221A** SeqNo: **2177026** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.1068	0.0020	0.1	0	107	70-130	0			
Iron	10.76	0.080	10	0.04367	107	70-130	0			
Molybdenum	0.1004	0.0050	0.1	0.0004494	100	70-130	0			
Nickel	0.1048	0.0050	0.1	0.0007011	104	70-130	0			
Titanium	0.1156	0.0050	0.1	0.0009675	115	70-130	0			
Vanadium	0.1145	0.0050	0.1	0	114	70-130	0			

MS Sample ID: **1212555-11CMS** Units: **mg/L** Analysis Date: **12/21/2012 10:33 PM**
Client ID: Run ID: **ICPMS2_121221A** SeqNo: **2177208** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.1008	0.0020	0.1	-6.507E-06	101	70-130	0			
Iron	10.39	0.080	10	0.04339	103	70-130	0			
Molybdenum	0.09872	0.0050	0.1	0.000224	98.5	70-130	0			
Nickel	0.1015	0.0050	0.1	0.001707	99.8	70-130	0			
Titanium	0.1082	0.0050	0.1	0.0006054	108	70-130	0			
Vanadium	0.1079	0.0050	0.1	-3.404E-06	108	70-130	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212543
Project: Marshall Potable Water 12/13/12

QC BATCH REPORT

Batch ID: **45503** Instrument ID **ICPMS2** Method: **E200.8**

MSD Sample ID: **1212543-07CMSD** Units: **mg/L** Analysis Date: **12/21/2012 04:01 PM**
Client ID: **WPC12131117JTC3B** Run ID: **ICPMS2_121221A** SeqNo: **2177027** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.1053	0.0020	0.1	0	105	70-130	0.1068	1.41	20	
Iron	10.55	0.080	10	0.04367	105	70-130	10.76	1.97	20	
Molybdenum	0.09952	0.0050	0.1	0.0004494	99.1	70-130	0.1004	0.88	20	
Nickel	0.1036	0.0050	0.1	0.0007011	103	70-130	0.1048	1.15	20	
Titanium	0.1155	0.0050	0.1	0.0009675	115	70-130	0.1156	0.0865	20	
Vanadium	0.1134	0.0050	0.1	0	113	70-130	0.1145	0.965	20	

MSD Sample ID: **1212555-11CMSD** Units: **mg/L** Analysis Date: **12/21/2012 10:53 PM**
Client ID: Run ID: **ICPMS2_121221A** SeqNo: **2177212** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	10.49	0.080	10	0.04339	104	70-130	10.39	0.958	20	
Molybdenum	0.1004	0.0050	0.1	0.000224	100	70-130	0.09872	1.69	20	
Nickel	0.1016	0.0050	0.1	0.001707	99.9	70-130	0.1015	0.0985	20	
Titanium	0.1101	0.0050	0.1	0.0006054	109	70-130	0.1082	1.74	20	
Vanadium	0.1105	0.0050	0.1	-3.404E-06	111	70-130	0.1079	2.38	20	

MSD Sample ID: **1212555-11CMSD** Units: **mg/L** Analysis Date: **12/26/2012 08:03 PM**
Client ID: Run ID: **ICPMS2_121226A** SeqNo: **2179054** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.09848	0.0020	0.1	0	98.5	70-130	0.1008	2.33	20	

The following samples were analyzed in this batch: 1212543-06C 1212543-07C 1212543-08C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212543
Project: Marshall Potable Water 12/13/12

QC BATCH REPORT

Batch ID: **45491** Instrument ID **SVMS6** Method: **E525.2**

MBLK Sample ID: **PNBLKW1-45491-45491** Units: **µg/L** Analysis Date: **12/22/2012 03:59 PM**
Client ID: Run ID: **SVMS6_121222A** SeqNo: **2178984** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenanthrene	ND	0.20								
Surr: 1,3-Dimethyl-2-Nitrobenzen	*4.46*	0.20	*5*	0	*89.2*	*70-125*	0			
Surr: Perylene-d12	*3.65*	0.20	*5*	0	*73*	*46-142*	0			
Surr: Triphenylphosphate	*5.29*	0.20	*5*	0	*106*	*77-169*	0			

LCS Sample ID: **PNLCSW1-45491-45491** Units: **µg/L** Analysis Date: **12/22/2012 04:33 PM**
Client ID: Run ID: **SVMS6_121222A** SeqNo: **2178985** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenanthrene	5.02	0.20	5	0	100	70-130	0			
Surr: 1,3-Dimethyl-2-Nitrobenzen	*4.94*	0.20	*5*	0	*98.8*	*70-125*	0			
Surr: Perylene-d12	*4.35*	0.20	*5*	0	*87*	*46-142*	0			
Surr: Triphenylphosphate	*5.45*	0.20	*5*	0	*109*	*77-169*	0			

MS Sample ID: **1212543-07B MS** Units: **µg/L** Analysis Date: **12/22/2012 05:06 PM**
Client ID: **WPC12131117JTC3B** Run ID: **SVMS6_121222A** SeqNo: **2178986** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenanthrene	52	2.0	50	0	104	70-130	0			
Surr: 1,3-Dimethyl-2-Nitrobenzen	*42.7*	2.0	*50*	0	*85.4*	*70-125*	0			
Surr: Perylene-d12	*43.2*	2.0	*50*	0	*86.4*	*46-142*	0			
Surr: Triphenylphosphate	*54.5*	2.0	*50*	0	*109*	*77-169*	0			

MSD Sample ID: **1212543-07B MSD** Units: **µg/L** Analysis Date: **12/22/2012 05:40 PM**
Client ID: **WPC12131117JTC3B** Run ID: **SVMS6_121222A** SeqNo: **2178987** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenanthrene	53	2.0	50	0	106	70-130	52	1.9	30	
Surr: 1,3-Dimethyl-2-Nitrobenzen	*40.8*	2.0	*50*	0	*81.6*	*70-125*	42.7	*4.55*		
Surr: Perylene-d12	*43.9*	2.0	*50*	0	*87.8*	*46-142*	43.2	*1.61*		
Surr: Triphenylphosphate	*52.7*	2.0	*50*	0	*105*	*77-169*	54.5	*3.36*		

The following samples were analyzed in this batch:

1212543-01B	1212543-02B	1212543-03B
1212543-04B	1212543-05B	1212543-06B
1212543-07B	1212543-08B	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **R114255** Instrument ID **VMS5** Method: **E524.2**

MBLK Sample ID: **VBLKW3-121220-R114255** Units: **µg/L** Analysis Date: **12/21/2012 04:30 AM**
Client ID: Run ID: **VMS5_121220B** SeqNo: **2177305** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,3-Trimethylbenzene	ND	0.50								
1,2,4-Trimethylbenzene	ND	0.50								
1,3,5-Trimethylbenzene	ND	0.50								
2-Methylnaphthalene	ND	2.0								
4-Isopropyltoluene	ND	0.50								
Benzene	ND	0.50								
Cyclohexane	ND	1.0								
Ethylbenzene	ND	0.50								
Isopropylbenzene	ND	0.50								
m,p-Xylene	ND	1.0								
Naphthalene	ND	0.50								
n-Propylbenzene	ND	0.50								
o-Xylene	ND	0.50								
sec-Butylbenzene	ND	0.50								
Toluene	ND	0.50								
Surr: 1,2-Dichloroethane-d4	*20.47*	0.10	*20*	0	*102*	*80-120*	0			
Surr: 4-Bromofluorobenzene	*19.57*	0.10	*20*	0	*97.8*	*80-120*	0			
Surr: Dibromofluoromethane	*19.92*	0.10	*20*	0	*99.6*	*80-120*	0			
Surr: Toluene-d8	*19.98*	0.10	*20*	0	*99.9*	*80-120*	0			

LCS Sample ID: **VLCSW2-121220-R114255** Units: **µg/L** Analysis Date: **12/21/2012 03:42 AM**
Client ID: Run ID: **VMS5_121220B** SeqNo: **2177304** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	4.91	0.50	5	0	98.2	70-130	0			
1,3,5-Trimethylbenzene	5.18	0.50	5	0	104	70-130	0			
Benzene	5.05	0.50	5	0	101	70-130	0			
Cyclohexane	6.23	1.0	5	0	125	70-130	0			
Ethylbenzene	5.09	0.50	5	0	102	70-130	0			
Isopropylbenzene	5.21	0.50	5	0	104	70-130	0			
m,p-Xylene	10.18	1.0	10	0	102	70-130	0			
Naphthalene	5.74	0.50	5	0	115	70-130	0			
n-Propylbenzene	5.03	0.50	5	0	101	70-130	0			
o-Xylene	5.27	0.50	5	0	105	70-130	0			
sec-Butylbenzene	5.07	0.50	5	0	101	70-130	0			
Toluene	4.94	0.50	5	0	98.8	70-130	0			
Surr: 1,2-Dichloroethane-d4	*20.63*	0.10	*20*	0	*103*	*80-120*	0			
Surr: 4-Bromofluorobenzene	*19.79*	0.10	*20*	0	*99*	*80-120*	0			
Surr: Dibromofluoromethane	*20.44*	0.10	*20*	0	*102*	*80-120*	0			
Surr: Toluene-d8	*19.73*	0.10	*20*	0	*98.6*	*80-120*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212543
Project: Marshall Potable Water 12/13/12

QC BATCH REPORT

Batch ID: **R114255** Instrument ID **VMS5** Method: **E524.2**

MS Sample ID: **1212543-07A MS** Units: **µg/L** Analysis Date: **12/21/2012 12:59 PM**
Client ID: **WPC12131117JTC3B** Run ID: **VMS5_121220B** SeqNo: **2177326** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	4.64	0.50	5	0	92.8	70-130	0			
1,3,5-Trimethylbenzene	5.22	0.50	5	0	104	70-130	0			
Benzene	5.11	0.50	5	0	102	70-130	0			
Ethylbenzene	5.39	0.50	5	0	108	70-130	0			
Isopropylbenzene	5.35	0.50	5	0	107	70-130	0			
m,p-Xylene	10.1	1.0	10	0	101	70-130	0			
Naphthalene	4.88	0.50	5	0	97.6	70-130	0			
n-Propylbenzene	5.06	0.50	5	0	101	70-130	0			
o-Xylene	5.25	0.50	5	0	105	70-130	0			
sec-Butylbenzene	5.47	0.50	5	0	109	70-130	0			
Toluene	5.03	0.50	5	0	101	70-130	0			
Surr: 1,2-Dichloroethane-d4	*20.82*	0.10	*20*	0	*104*	*80-120*	0			
Surr: 4-Bromofluorobenzene	*19.3*	0.10	*20*	0	*96.5*	*80-120*	0			
Surr: Dibromofluoromethane	*20.45*	0.10	*20*	0	*102*	*80-120*	0			
Surr: Toluene-d8	*19.78*	0.10	*20*	0	*98.9*	*80-120*	0			

MSD Sample ID: **1212543-07A MSD** Units: **µg/L** Analysis Date: **12/21/2012 01:23 PM**
Client ID: **WPC12131117JTC3B** Run ID: **VMS5_121220B** SeqNo: **2177327** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	5.02	0.50	5	0	100	70-130	4.64	7.87	25	
1,3,5-Trimethylbenzene	5.58	0.50	5	0	112	70-130	5.22	6.67	25	
Benzene	5.11	0.50	5	0	102	70-130	5.11	0	25	
Ethylbenzene	5.53	0.50	5	0	111	70-130	5.39	2.56	25	
Isopropylbenzene	5.77	0.50	5	0	115	70-130	5.35	7.55	25	
m,p-Xylene	10.65	1.0	10	0	106	70-130	10.1	5.3	25	
Naphthalene	5.39	0.50	5	0	108	70-130	4.88	9.93	25	
n-Propylbenzene	5.55	0.50	5	0	111	70-130	5.06	9.24	25	
o-Xylene	5.49	0.50	5	0	110	70-130	5.25	4.47	25	
sec-Butylbenzene	5.77	0.50	5	0	115	70-130	5.47	5.34	25	
Toluene	5.33	0.50	5	0	107	70-130	5.03	5.79	25	
Surr: 1,2-Dichloroethane-d4	*21.51*	0.10	*20*	0	*108*	*80-120*	20.82	*3.26*		
Surr: 4-Bromofluorobenzene	*19.7*	0.10	*20*	0	*98.5*	*80-120*	19.3	*2.05*		
Surr: Dibromofluoromethane	*20.64*	0.10	*20*	0	*103*	*80-120*	20.45	*0.925*		
Surr: Toluene-d8	*20.6*	0.10	*20*	0	*103*	*80-120*	19.78	*4.06*		

The following samples were analyzed in this batch:

1212543-01A	1212543-02A	1212543-03A
1212543-05A	1212543-06A	1212543-07A
1212543-08A	1212543-09A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212543
Project: Marshall Potable Water 12/13/12

QC BATCH REPORT

Batch ID: **R114306** Instrument ID **VMS5** Method: **E524.2**

MBLK Sample ID: **VBLKW2-121221-R114306** Units: **µg/L** Analysis Date: **12/22/2012 03:58 AM**
Client ID: Run ID: **VMS5_121221A** SeqNo: **2177134** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,3-Trimethylbenzene	ND	0.50								
1,2,4-Trimethylbenzene	ND	0.50								
1,3,5-Trimethylbenzene	ND	0.50								
2-Methylnaphthalene	ND	2.0								
4-Isopropyltoluene	ND	0.50								
Benzene	ND	0.50								
Cyclohexane	ND	1.0								
Ethylbenzene	ND	0.50								
Isopropylbenzene	ND	0.50								
m,p-Xylene	ND	1.0								
Naphthalene	ND	0.50								
n-Propylbenzene	ND	0.50								
o-Xylene	ND	0.50								
sec-Butylbenzene	ND	0.50								
Toluene	ND	0.50								
Surr: 1,2-Dichloroethane-d4	*21.97*	0.10	*20*	0	*110*	*80-120*	0			
Surr: 4-Bromofluorobenzene	*20.1*	0.10	*20*	0	*100*	*80-120*	0			
Surr: Dibromofluoromethane	*20.66*	0.10	*20*	0	*103*	*80-120*	0			
Surr: Toluene-d8	*20.07*	0.10	*20*	0	*100*	*80-120*	0			

LCS Sample ID: **VLCSW2-121221-R114306** Units: **µg/L** Analysis Date: **12/22/2012 03:09 AM**
Client ID: Run ID: **VMS5_121221A** SeqNo: **2177133** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	4.9	0.50	5	0	98	70-130	0			
1,3,5-Trimethylbenzene	5.5	0.50	5	0	110	70-130	0			
Benzene	5.27	0.50	5	0	105	70-130	0			
Ethylbenzene	5.43	0.50	5	0	109	70-130	0			
Isopropylbenzene	5.51	0.50	5	0	110	70-130	0			
m,p-Xylene	10.92	1.0	10	0	109	70-130	0			
Naphthalene	6.27	0.50	5	0	125	70-130	0			
n-Propylbenzene	5.4	0.50	5	0	108	70-130	0			
o-Xylene	5.51	0.50	5	0	110	70-130	0			
sec-Butylbenzene	5.42	0.50	5	0	108	70-130	0			
Toluene	5.45	0.50	5	0	109	70-130	0			
Surr: 1,2-Dichloroethane-d4	*22.17*	0.10	*20*	0	*111*	*80-120*	0			
Surr: 4-Bromofluorobenzene	*20.44*	0.10	*20*	0	*102*	*80-120*	0			
Surr: Dibromofluoromethane	*21.09*	0.10	*20*	0	*105*	*80-120*	0			
Surr: Toluene-d8	*20.26*	0.10	*20*	0	*101*	*80-120*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212543
Project: Marshall Potable Water 12/13/12

QC BATCH REPORT

Batch ID: **R114306** Instrument ID **VMS5** Method: **E524.2**

MS Sample ID: **1212737-04A MS** Units: **µg/L** Analysis Date: **12/22/2012 07:34 AM**
Client ID: Run ID: **VMS5_121221A** SeqNo: **2177145** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	4.69	0.50	5	0	93.8	70-130	0			
1,3,5-Trimethylbenzene	5.12	0.50	5	0	102	70-130	0			
Benzene	5.14	0.50	5	0	103	70-130	0			
Ethylbenzene	5.11	0.50	5	0	102	70-130	0			
Isopropylbenzene	5.29	0.50	5	0	106	70-130	0			
m,p-Xylene	10.36	1.0	10	0	104	70-130	0			
Naphthalene	5.42	0.50	5	0	108	70-130	0			
n-Propylbenzene	4.95	0.50	5	0	99	70-130	0			
o-Xylene	5.18	0.50	5	0	104	70-130	0			
sec-Butylbenzene	5.51	0.50	5	0	110	70-130	0			
Toluene	5.12	0.50	5	0	102	70-130	0			
Surr: 1,2-Dichloroethane-d4	*21.73*	0.10	*20*	0	*109*	*80-120*	0			
Surr: 4-Bromofluorobenzene	*20.68*	0.10	*20*	0	*103*	*80-120*	0			
Surr: Dibromofluoromethane	*21.19*	0.10	*20*	0	*106*	*80-120*	0			
Surr: Toluene-d8	*20.11*	0.10	*20*	0	*101*	*80-120*	0			

MSD Sample ID: **1212737-04A MSD** Units: **µg/L** Analysis Date: **12/22/2012 07:59 AM**
Client ID: Run ID: **VMS5_121221A** SeqNo: **2177146** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	4.51	0.50	5	0	90.2	70-130	4.69	3.91	25	
1,3,5-Trimethylbenzene	5.18	0.50	5	0	104	70-130	5.12	1.17	25	
Benzene	5	0.50	5	0	100	70-130	5.14	2.76	25	
Ethylbenzene	5.24	0.50	5	0	105	70-130	5.11	2.51	25	
Isopropylbenzene	5.3	0.50	5	0	106	70-130	5.29	0.189	25	
m,p-Xylene	10.18	1.0	10	0	102	70-130	10.36	1.75	25	
Naphthalene	6.01	0.50	5	0	120	70-130	5.42	10.3	25	
n-Propylbenzene	5.18	0.50	5	0	104	70-130	4.95	4.54	25	
o-Xylene	5.11	0.50	5	0	102	70-130	5.18	1.36	25	
sec-Butylbenzene	5.45	0.50	5	0	109	70-130	5.51	1.09	25	
Toluene	4.92	0.50	5	0	98.4	70-130	5.12	3.98	25	
Surr: 1,2-Dichloroethane-d4	*23.14*	0.10	*20*	0	*116*	*80-120*	21.73	*6.28*		
Surr: 4-Bromofluorobenzene	*20.69*	0.10	*20*	0	*103*	*80-120*	20.68	*0.0483*		
Surr: Dibromofluoromethane	*21*	0.10	*20*	0	*105*	*80-120*	21.19	*0.901*		
Surr: Toluene-d8	*20.76*	0.10	*20*	0	*104*	*80-120*	20.11	*3.18*		

The following samples were analyzed in this batch: 1212543-04A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

1212543

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # ___ of ___

COC #
Task: Potable B
Total # of Samples: 9
Event Complete? N

Lab Information:		Project Information:		Other Information:			
Lab Name:	ALS Laboratory Group	Site ID #:	33	Send Invoice to:	Enbridge Energy - ATTN Accounts Payable		
Address:	3352 128th Ave. Holland, MI 49424-9263	Project #	60162778	Address:	1100 Louisiana Suite 1100		
		Site Address	5555 Glenwood Parkway SE Suite 200	City/State.	Houson, TX	Phone #:	713-821-2000
Lab PM:	Ann Preston	City	Grand Rapids	State, Zip	MI	PO #	
Phone/Fax:	1-616-399-6070/1-616-399-6185	Site PM Name	Bryan Stiemsma	Send EDD to			
Lab PM email	ann.preston@alsglobal.com	Phone/Fax:	[redacted]	CC Hardcopy report			
Applicable Lab Quote #:		Site PM Email:	Bryan.Stiemsma@aecom.com	CC Hardcopy report			

Regular | X | Turnaround Time | 5 Day

ITEM #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	MATRIX CODE	G=GRAB C=COMP	SAMPLE DATE	#OF CONTAINERS	Comments/Lab Sample I.D.
1	WPC12131218JTC1B	C0029CCWP1	GW	G	12/13/2012 1218	5	C0029CC
2	WPA12131009JTC1B	C0223BCA	GW	G	12/13/2012 1009	5	C0223BC
3	WPA12130946JTC1B	C135093WP1	GW	G	12/13/2012 0946	5	C135093
4	WPD12131328JTC1B	C000749A	GW	G	12/13/2012 1328	5	C000749
5	WPC12131505JTC2B	C0491E9PW1	GW	G	12/13/2012 1505	5	C0491E9
6	WPC12131505JTC1B	C0491E9PW1	GW	G	12/13/2012 1505	5	C0491E9
7	WPC12131117JTC3B	C052927WP1	GW	G	12/13/2012 1117	15	C052927
8	WPC12131035JTC1B	C0668ECA	GW	G	12/13/2012 1035	5	C0668EC
9	TB121312JTC5	Trip Blank	W	G	12/13/2012 0000	1	Trip Blank

Preservative														
	HCl	HCl	HNO3						HNO3					
Analysis	VOCs	SVOCs	TAL Metals	TPH DRO	TPH GRO	PCBs/Pesticides	TOC	TSS	Hg by EPA 245.1					Additional Notes
1	X	X	X						X					
2	X	X	X						X					
3	X	X	X						X					
4	X	X	X						X					
5	X	X	X						X					DUP
6	X	X	X						X					
7	X	X	X						X					MS/MSD
8	X	X	X						X					
9	X													TRIP BLANK

Additional Comments/Special Instructions:
Samplers: Jon Carveth; Lorri Lego

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
	12-13-12	1620		12-13-12	1618
	12/14/12	1545		12/14/12	1545

Sample Receipt Conditions

Temp in 0C	Samples on Ice?	Sample Intact?	Trip Blank?
	Y/N	Y/N	Y/N
	(Y)/N	(Y)/N	(Y)/N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N

SHIPPING INFO

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: Jon Carveth
SIGNATURE of SAMPLER:
DATE Signed
Time:

ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **14-Dec-12 15:45**

Work Order: **1212543** Received by: **PD**

Checklist completed by Keith Wierenga (eSignature) 17-Dec-12 (Date) Reviewed by: Ann Preston (eSignature) 17-Dec-12 (Date)

Matrices: Potable Water
Carrier name: ALSHN

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.6 - 3.2 C		
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	12/17/2012 10:34:03 AM		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL
Date:
Name:
Company:
Time:

Seal Broken By:
Date:

2.8°C

ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL
Date:
Name:
Company:
Time:

Seal Broken By:
Date:

3.2°C

ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL
Date:
Name:
Company:
Time:

Seal Broken By:
Date:

2.6°C

27-Dec-2012

Alison Schoeff
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall Potable Water 12/12/12** Work Order: **1212555**

Dear Alison,

ALS Environmental received 12 samples on 14-Dec-2012 03:45 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 26.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

Certificate No: MN331938

ALS Group USA, Corp

Date: 27-Dec-12

Client: AECOM Environment
Project: Marshall Potable Water 12/12/12
Work Order: **1212555**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1212555-01	WPC12121413JTC1B	Potable Water		12/12/2012 14:13	12/14/2012 15:45	☐
1212555-02	WPC12121212JTC1B	Potable Water		12/12/2012 12:12	12/14/2012 15:45	☐
1212555-03	WPC12121125JTC1B	Potable Water		12/12/2012 11:25	12/14/2012 15:45	☐
1212555-04	WPC12121509JTC1B	Potable Water		12/12/2012 15:09	12/14/2012 15:45	☐
1212555-05	WPC12121530JTC1B	Potable Water		12/12/2012 15:30	12/14/2012 15:45	☐
1212555-06	WPC12121552JTC1B	Potable Water		12/12/2012 15:52	12/14/2012 15:45	☐
1212555-07	WPC12121058JTC1B	Potable Water		12/12/2012 10:58	12/14/2012 15:45	☐
1212555-08	WPC12121147JTC1B	Potable Water		12/12/2012 11:47	12/14/2012 15:45	☐
1212555-09	WPC12121233JTC2B	Potable Water		12/12/2012 12:33	12/14/2012 15:45	☐
1212555-10	WPC12121233JTC1B	Potable Water		12/12/2012 12:33	12/14/2012 15:45	☐
1212555-11	WPC12121257JTC1B	Potable Water		12/12/2012 12:57	12/14/2012 15:45	☐
1212555-12	TB121212JTC5	Water		12/12/2012	12/14/2012 15:45	☐

ALS Group USA, Corp

Date: 27-Dec-12

Client: AECOM Environment
Project: Marshall Potable Water 12/12/12
Work Order: 1212555

Case Narrative

Batch 45461 samples 1212555-09 and 1212555-10 one PAH surrogate recovery for each sample was below the lower control limits. The samples' reporting limits for Phenanthrene may be biased low.

ALS Group USA, Corp

Date: 27-Dec-12

Client: AECOM Environment
Project: Marshall Potable Water 12/12/12
WorkOrder: **1212555**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
SD	Serial Dilution
TDL	Target Detection Limit

Units Reported	Description
µg/L	Micrograms per Liter
mg/L	Milligrams per Liter

ALS Group USA, Corp

Date: *27-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12121413JTC1B
Work Order:	1212555	**Collection Date:**	12/12/2012 2:13:00 PM
Project:	Marshall Potable Water 12/12/12		
Lab ID:	1212555-01	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/19/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/19/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/19/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/27/2012
Iron	**0.63**	**0.20**	**0.20**		**mg/L**	1	12/21/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/21/2012
Nickel	ND	0.020	0.020		mg/L	1	12/21/2012
Titanium	ND	0.0050	0		mg/L	1	12/21/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/21/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/18/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/23/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*91.2*	*70-125*			*%REC*	1	12/23/2012
Surr: Perylene-d12	*74.2*	*46-142*			*%REC*	1	12/23/2012
Surr: Triphenylphosphate	*115*	*77-169*			*%REC*	1	12/23/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **AK**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/21/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/21/2012
Benzene	ND	1.0	1.0		µg/L	1	12/21/2012
Cyclohexane	ND	10	10		µg/L	1	12/21/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/21/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/21/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/21/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
Toluene	ND	1.0	1.0		µg/L	1	12/21/2012
Surr: 1,2-Dichloroethane-d4	*102*	*70-130*			*%REC*	1	12/21/2012
Surr: 4-Bromofluorobenzene	*98.0*	*70-130*			*%REC*	1	12/21/2012
Surr: Dibromofluoromethane	*101*	*70-130*			*%REC*	1	12/21/2012
Surr: Toluene-d8	*96.9*	*70-130*			*%REC*	1	12/21/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12121212JTC1B
Work Order:	1212555	**Collection Date:**	12/12/2012 12:12:00 PM
Project:	Marshall Potable Water 12/12/12		
Lab ID:	1212555-02	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/19/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/19/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/19/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/27/2012
Iron	ND	0.20	0.20		mg/L	1	12/21/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/21/2012
Nickel	ND	0.020	0.020		mg/L	1	12/21/2012
Titanium	ND	0.0050	0		mg/L	1	12/21/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/21/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/18/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/23/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*91.6*	*70-125*			*%REC*	1	12/23/2012
Surr: Perylene-d12	*72.2*	*46-142*			*%REC*	1	12/23/2012
Surr: Triphenylphosphate	*116*	*77-169*			*%REC*	1	12/23/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **AK**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/21/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/21/2012
Benzene	ND	1.0	1.0		µg/L	1	12/21/2012
Cyclohexane	ND	10	10		µg/L	1	12/21/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/21/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/21/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/21/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
Toluene	ND	1.0	1.0		µg/L	1	12/21/2012
Surr: 1,2-Dichloroethane-d4	*104*	*70-130*			*%REC*	1	12/21/2012
Surr: 4-Bromofluorobenzene	*95.3*	*70-130*			*%REC*	1	12/21/2012
Surr: Dibromofluoromethane	*102*	*70-130*			*%REC*	1	12/21/2012
Surr: Toluene-d8	*99.6*	*70-130*			*%REC*	1	12/21/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12121125JTC1B
Work Order:	1212555	**Collection Date:**	12/12/2012 11:25:00 AM
Project:	Marshall Potable Water 12/12/12		
Lab ID:	1212555-03	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/19/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/19/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/19/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/21/2012
Iron	**0.97**	**0.20**	**0.20**		**mg/L**	1	12/21/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/21/2012
Nickel	ND	0.020	0.020		mg/L	1	12/21/2012
Titanium	ND	0.0050	0		mg/L	1	12/21/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/21/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/18/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/23/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*97.0*	*70-125*			*%REC*	1	12/23/2012
Surr: Perylene-d12	*73.8*	*46-142*			*%REC*	1	12/23/2012
Surr: Triphenylphosphate	*117*	*77-169*			*%REC*	1	12/23/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **AK**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/21/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/21/2012
Benzene	ND	1.0	1.0		µg/L	1	12/21/2012
Cyclohexane	ND	10	10		µg/L	1	12/21/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/21/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/21/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/21/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
Toluene	ND	1.0	1.0		µg/L	1	12/21/2012
Surr: 1,2-Dichloroethane-d4	*103*	*70-130*			*%REC*	1	12/21/2012
Surr: 4-Bromofluorobenzene	*98.2*	*70-130*			*%REC*	1	12/21/2012
Surr: Dibromofluoromethane	*103*	*70-130*			*%REC*	1	12/21/2012
Surr: Toluene-d8	*99.6*	*70-130*			*%REC*	1	12/21/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12121509JTC1B
Work Order:	1212555	**Collection Date:**	12/12/2012 3:09:00 PM
Project:	Marshall Potable Water 12/12/12		
Lab ID:	1212555-04	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/19/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/19/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/19/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/21/2012
Iron	ND	0.20	0.20		mg/L	1	12/21/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/21/2012
Nickel	ND	0.020	0.020		mg/L	1	12/21/2012
Titanium	ND	0.0050	0		mg/L	1	12/21/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/21/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/18/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/23/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*98.8*	*70-125*			*%REC*	1	12/23/2012
Surr: Perylene-d12	*73.4*	*46-142*			*%REC*	1	12/23/2012
Surr: Triphenylphosphate	*113*	*77-169*			*%REC*	1	12/23/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **AK**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/21/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/21/2012
Benzene	ND	1.0	1.0		µg/L	1	12/21/2012
Cyclohexane	ND	10	10		µg/L	1	12/21/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/21/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/21/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/21/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
Toluene	ND	1.0	1.0		µg/L	1	12/21/2012
Surr: 1,2-Dichloroethane-d4	*104*	*70-130*			*%REC*	1	12/21/2012
Surr: 4-Bromofluorobenzene	*98.9*	*70-130*			*%REC*	1	12/21/2012
Surr: Dibromofluoromethane	*97.4*	*70-130*			*%REC*	1	12/21/2012
Surr: Toluene-d8	*101*	*70-130*			*%REC*	1	12/21/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12121530JTC1B
Work Order:	1212555	**Collection Date:**	12/12/2012 3:30:00 PM
Project:	Marshall Potable Water 12/12/12		
Lab ID:	1212555-05	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/19/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/19/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/19/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/21/2012
Iron	ND	0.20	0.20		mg/L	1	12/21/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/21/2012
Nickel	ND	0.020	0.020		mg/L	1	12/21/2012
Titanium	ND	0.0050	0		mg/L	1	12/21/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/21/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/18/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/23/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*96.0*	*70-125*			*%REC*	1	12/23/2012
Surr: Perylene-d12	*71.8*	*46-142*			*%REC*	1	12/23/2012
Surr: Triphenylphosphate	*108*	*77-169*			*%REC*	1	12/23/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **AK**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/21/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/21/2012
Benzene	ND	1.0	1.0		µg/L	1	12/21/2012
Cyclohexane	ND	10	10		µg/L	1	12/21/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/21/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/21/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/21/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
Toluene	ND	1.0	1.0		µg/L	1	12/21/2012
Surr: 1,2-Dichloroethane-d4	*108*	*70-130*			*%REC*	1	12/21/2012
Surr: 4-Bromofluorobenzene	*99.2*	*70-130*			*%REC*	1	12/21/2012
Surr: Dibromofluoromethane	*98.0*	*70-130*			*%REC*	1	12/21/2012
Surr: Toluene-d8	*101*	*70-130*			*%REC*	1	12/21/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12121552JTC1B
Work Order:	1212555	**Collection Date:**	12/12/2012 3:52:00 PM
Project:	Marshall Potable Water 12/12/12		
Lab ID:	1212555-06	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/19/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/19/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/19/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/21/2012
Iron	ND	0.20	0.20		mg/L	1	12/21/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/21/2012
Nickel	ND	0.020	0.020		mg/L	1	12/21/2012
Titanium	ND	0.0050	0		mg/L	1	12/21/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/21/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/18/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/23/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*95.8*	*70-125*			*%REC*	1	12/23/2012
Surr: Perylene-d12	*76.2*	*46-142*			*%REC*	1	12/23/2012
Surr: Triphenylphosphate	*119*	*77-169*			*%REC*	1	12/23/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **AK**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/21/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/21/2012
Benzene	ND	1.0	1.0		µg/L	1	12/21/2012
Cyclohexane	ND	10	10		µg/L	1	12/21/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/21/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/21/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/21/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
Toluene	ND	1.0	1.0		µg/L	1	12/21/2012
Surr: 1,2-Dichloroethane-d4	*104*	*70-130*			*%REC*	1	12/21/2012
Surr: 4-Bromofluorobenzene	*95.4*	*70-130*			*%REC*	1	12/21/2012
Surr: Dibromofluoromethane	*103*	*70-130*			*%REC*	1	12/21/2012
Surr: Toluene-d8	*99.1*	*70-130*			*%REC*	1	12/21/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12121058JTC1B
Work Order:	1212555	**Collection Date:**	12/12/2012 10:58:00 AM
Project:	Marshall Potable Water 12/12/12		
Lab ID:	1212555-07	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/19/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/19/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/19/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/21/2012
Iron	**1.5**	**0.20**	**0.20**		**mg/L**	1	12/21/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/21/2012
Nickel	ND	0.020	0.020		mg/L	1	12/21/2012
Titanium	ND	0.0050	0		mg/L	1	12/21/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/21/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/18/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/23/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*92.8*	*70-125*			*%REC*	1	12/23/2012
Surr: Perylene-d12	*58.8*	*46-142*			*%REC*	1	12/23/2012
Surr: Triphenylphosphate	*113*	*77-169*			*%REC*	1	12/23/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **AK**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/21/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/21/2012
Benzene	ND	1.0	1.0		µg/L	1	12/21/2012
Cyclohexane	ND	10	10		µg/L	1	12/21/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/21/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/21/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/21/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
Toluene	ND	1.0	1.0		µg/L	1	12/21/2012
Surr: 1,2-Dichloroethane-d4	*105*	*70-130*			*%REC*	1	12/21/2012
Surr: 4-Bromofluorobenzene	*98.8*	*70-130*			*%REC*	1	12/21/2012
Surr: Dibromofluoromethane	*102*	*70-130*			*%REC*	1	12/21/2012
Surr: Toluene-d8	*101*	*70-130*			*%REC*	1	12/21/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12121147JTC1B
Work Order:	1212555	**Collection Date:**	12/12/2012 11:47:00 AM
Project:	Marshall Potable Water 12/12/12		
Lab ID:	1212555-08	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/19/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/19/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/19/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/21/2012
Iron	**0.85**	**0.20**	**0.20**		**mg/L**	1	12/21/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/21/2012
Nickel	ND	0.020	0.020		mg/L	1	12/21/2012
Titanium	ND	0.0050	0		mg/L	1	12/21/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/21/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/18/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/23/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*92.2*	*70-125*			*%REC*	1	12/23/2012
Surr: Perylene-d12	*72.6*	*46-142*			*%REC*	1	12/23/2012
Surr: Triphenylphosphate	*119*	*77-169*			*%REC*	1	12/23/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **AK**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/21/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/21/2012
Benzene	ND	1.0	1.0		µg/L	1	12/21/2012
Cyclohexane	ND	10	10		µg/L	1	12/21/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/21/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/21/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/21/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
Toluene	ND	1.0	1.0		µg/L	1	12/21/2012
Surr: 1,2-Dichloroethane-d4	*105*	*70-130*			*%REC*	1	12/21/2012
Surr: 4-Bromofluorobenzene	*97.3*	*70-130*			*%REC*	1	12/21/2012
Surr: Dibromofluoromethane	*99.4*	*70-130*			*%REC*	1	12/21/2012
Surr: Toluene-d8	*99.8*	*70-130*			*%REC*	1	12/21/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12121233JTC2B
Work Order:	1212555	**Collection Date:**	12/12/2012 12:33:00 PM
Project:	Marshall Potable Water 12/12/12		
Lab ID:	1212555-09	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/19/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/19/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/19/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/21/2012
Iron	**2.9**	**0.20**	**0.20**		**mg/L**	1	12/21/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/21/2012
Nickel	ND	0.020	0.020		mg/L	1	12/21/2012
Titanium	**0.019**	**0.0050**	**0**		**mg/L**	1	12/21/2012
Vanadium	**0.0048**	**0.0040**	**0.0040**		**mg/L**	1	12/21/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/18/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/23/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*74.6*	*70-125*			*%REC*	1	12/23/2012
Surr: Perylene-d12	*36.2*	*46-142*		S	*%REC*	1	12/23/2012
Surr: Triphenylphosphate	*112*	*77-169*			*%REC*	1	12/23/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **AK**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/21/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/21/2012
Benzene	ND	1.0	1.0		µg/L	1	12/21/2012
Cyclohexane	ND	10	10		µg/L	1	12/21/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/21/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/21/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/21/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
Toluene	ND	1.0	1.0		µg/L	1	12/21/2012
Surr: 1,2-Dichloroethane-d4	*105*	*70-130*			*%REC*	1	12/21/2012
Surr: 4-Bromofluorobenzene	*98.3*	*70-130*			*%REC*	1	12/21/2012
Surr: Dibromofluoromethane	*100*	*70-130*			*%REC*	1	12/21/2012
Surr: Toluene-d8	*99.4*	*70-130*			*%REC*	1	12/21/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12121233JTC1B
Work Order:	1212555	**Collection Date:**	12/12/2012 12:33:00 PM
Project:	Marshall Potable Water 12/12/12		
Lab ID:	1212555-10	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/19/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/19/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/19/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/21/2012
Iron	**4.0**	**0.20**	**0.20**		**mg/L**	1	12/21/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/21/2012
Nickel	ND	0.020	0.020		mg/L	1	12/21/2012
Titanium	**0.026**	**0.0050**	**0**		**mg/L**	1	12/21/2012
Vanadium	**0.0065**	**0.0040**	**0.0040**		**mg/L**	1	12/21/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/18/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/23/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*89.6*	*70-125*			*%REC*	1	12/23/2012
Surr: Perylene-d12	*34.8*	*46-142*		S	*%REC*	1	12/23/2012
Surr: Triphenylphosphate	*107*	*77-169*			*%REC*	1	12/23/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **AK**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/21/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/21/2012
Benzene	ND	1.0	1.0		µg/L	1	12/21/2012
Cyclohexane	ND	10	10		µg/L	1	12/21/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/21/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/21/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/21/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
Toluene	ND	1.0	1.0		µg/L	1	12/21/2012
Surr: 1,2-Dichloroethane-d4	*105*	*70-130*			*%REC*	1	12/21/2012
Surr: 4-Bromofluorobenzene	*98.1*	*70-130*			*%REC*	1	12/21/2012
Surr: Dibromofluoromethane	*102*	*70-130*			*%REC*	1	12/21/2012
Surr: Toluene-d8	*99.6*	*70-130*			*%REC*	1	12/21/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	WPC12121257JTC1B
Work Order:	1212555	**Collection Date:**	12/12/2012 12:57:00 PM
Project:	Marshall Potable Water 12/12/12		
Lab ID:	1212555-11	**Matrix:**	POTABLE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**E245.1**		Prep Date: **12/19/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/19/2012
METALS BY ICP-MS			**E200.8**		Prep Date: **12/19/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	12/21/2012
Iron	ND	0.20	0.20		mg/L	1	12/21/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/21/2012
Nickel	ND	0.020	0.020		mg/L	1	12/21/2012
Titanium	ND	0.0050	0		mg/L	1	12/21/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	12/21/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**E525.2**		Prep Date: **12/18/2012**		Analyst: **RM**
Phenanthrene	ND	2.0	2.0		µg/L	1	12/22/2012
Surr: 1,3-Dimethyl-2-Nitrobenzene	*91.4*	*70-125*			*%REC*	1	12/22/2012
Surr: Perylene-d12	*76.4*	*46-142*			*%REC*	1	12/22/2012
Surr: Triphenylphosphate	*112*	*77-169*			*%REC*	1	12/22/2012
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **AK**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/21/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/21/2012
Benzene	ND	1.0	1.0		µg/L	1	12/21/2012
Cyclohexane	ND	10	10		µg/L	1	12/21/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/21/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/21/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/21/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
Toluene	ND	1.0	1.0		µg/L	1	12/21/2012
Surr: 1,2-Dichloroethane-d4	*107*	*70-130*			*%REC*	1	12/21/2012
Surr: 4-Bromofluorobenzene	*101*	*70-130*			*%REC*	1	12/21/2012
Surr: Dibromofluoromethane	*100*	*70-130*			*%REC*	1	12/21/2012
Surr: Toluene-d8	*101*	*70-130*			*%REC*	1	12/21/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	TB121212JTC5
Work Order:	1212555	**Collection Date:**	12/12/2012
Project:	Marshall Potable Water 12/12/12		
Lab ID:	1212555-12	**Matrix:**	WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**E524.2**				Analyst: **AK**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/21/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
4-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/21/2012
Benzene	ND	1.0	1.0		µg/L	1	12/21/2012
Cyclohexane	ND	10	10		µg/L	1	12/21/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/21/2012
m,p-Xylene	ND	2.0	2.0		µg/L	1	12/21/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
o-Xylene	ND	1.0	1.0		µg/L	1	12/21/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/21/2012
Toluene	ND	1.0	1.0		µg/L	1	12/21/2012
Surr: 1,2-Dichloroethane-d4	*106*	*70-130*			*%REC*	1	12/21/2012
Surr: 4-Bromofluorobenzene	*99.2*	*70-130*			*%REC*	1	12/21/2012
Surr: Dibromofluoromethane	*100*	*70-130*			*%REC*	1	12/21/2012
Surr: Toluene-d8	*100*	*70-130*			*%REC*	1	12/21/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 27-Dec-12

Client: AECOM Environment

QC BATCH REPORT

Work Order: 1212555

Project: Marshall Potable Water 12/12/12

Batch ID: **45507** Instrument ID **HG1** Method: **E245.1**

MBLK Sample ID: **MBLK-45507-45507** Units: **mg/L** Analysis Date: **12/19/2012 02:59 PM**

Client ID: Run ID: **HG1_121219A** SeqNo: **2174336** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.00020								

LCS Sample ID: **LCS-45507-45507** Units: **mg/L** Analysis Date: **12/19/2012 03:01 PM**

Client ID: Run ID: **HG1_121219A** SeqNo: **2174337** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00184	0.00020	0.002	0	92	85-115	0			

MS Sample ID: **1212555-01CMS** Units: **mg/L** Analysis Date: **12/19/2012 03:18 PM**

Client ID: **WPC12121413JTC1B** Run ID: **HG1_121219A** SeqNo: **2174362** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001896	0.00020	0.002	-0.000004	95	80-120	0			

MS Sample ID: **1212555-11CMS** Units: **mg/L** Analysis Date: **12/19/2012 03:55 PM**

Client ID: **WPC12121257JTC1B** Run ID: **HG1_121219A** SeqNo: **2174441** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001775	0.00020	0.002	-0.000013	89.4	80-120	0			

MSD Sample ID: **1212555-01CMSD** Units: **mg/L** Analysis Date: **12/19/2012 03:20 PM**

Client ID: **WPC12121413JTC1B** Run ID: **HG1_121219A** SeqNo: **2174363** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001891	0.00020	0.002	-0.000004	94.8	80-120	0.001896	0.264	20	

MSD Sample ID: **1212555-11CMSD** Units: **mg/L** Analysis Date: **12/19/2012 03:57 PM**

Client ID: **WPC12121257JTC1B** Run ID: **HG1_121219A** SeqNo: **2174442** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001846	0.00020	0.002	-0.000013	93	80-120	0.001775	3.92	20	

DUP Sample ID: **1212550-03ADUP** Units: **mg/L** Analysis Date: **12/19/2012 03:13 PM**

Client ID: Run ID: **HG1_121219A** SeqNo: **2174344** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.000046	0.00020	0	0	0	0-0	0.000067	0	20	J

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212555
Project: Marshall Potable Water 12/12/12

QC BATCH REPORT

Batch ID: **45507** Instrument ID **HG1** Method: **E245.1**

DUP Sample ID: **1212553-03ADUP** Units: **mg/L** Analysis Date: **12/19/2012 04:19 PM**
Client ID: Run ID: **HG1_121219A** SeqNo: **2174452** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.000021	0.00020	0	0	0	0-0	0.000033	0	20	J

The following samples were analyzed in this batch:

1212555-01C	1212555-02C	1212555-03C
1212555-04C	1212555-05C	1212555-06C
1212555-07C	1212555-08C	1212555-09C
1212555-10C	1212555-11C	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212555
Project: Marshall Potable Water 12/12/12

QC BATCH REPORT

Batch ID: **45503** Instrument ID **ICPMS2** Method: **E200.8**

MBLK Sample ID: **MBLK-45503-45503** Units: **mg/L** Analysis Date: **12/21/2012 03:41 PM**
Client ID: Run ID: **ICPMS2_121221A** SeqNo: **2177023** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	ND	0.0020								
Iron	0.007133	0.080								J
Molybdenum	ND	0.0050								
Nickel	ND	0.0050								
Titanium	ND	0.0050								
Vanadium	ND	0.0050								

LCS Sample ID: **LCS-45503-45503** Units: **mg/L** Analysis Date: **12/21/2012 03:46 PM**
Client ID: Run ID: **ICPMS2_121221A** SeqNo: **2177024** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.1108	0.0020	0.1	0	111	85-115	0			
Iron	10.78	0.080	10	0	108	85-115	0			
Molybdenum	0.1038	0.0050	0.1	0	104	85-115	0			
Nickel	0.1055	0.0050	0.1	0	106	85-115	0			
Titanium	0.1114	0.0050	0.1	0	111	85-115	0			
Vanadium	0.111	0.0050	0.1	0	111	85-115	0			

MS Sample ID: **1212543-07CMS** Units: **mg/L** Analysis Date: **12/21/2012 03:56 PM**
Client ID: Run ID: **ICPMS2_121221A** SeqNo: **2177026** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.1068	0.0020	0.1	0	107	70-130	0			
Iron	10.76	0.080	10	0.04367	107	70-130	0			
Molybdenum	0.1004	0.0050	0.1	0.0004494	100	70-130	0			
Nickel	0.1048	0.0050	0.1	0.0007011	104	70-130	0			
Titanium	0.1156	0.0050	0.1	0.0009675	115	70-130	0			
Vanadium	0.1145	0.0050	0.1	0	114	70-130	0			

MS Sample ID: **1212555-11CMS** Units: **mg/L** Analysis Date: **12/21/2012 10:33 PM**
Client ID: **WPC12121257JTC1B** Run ID: **ICPMS2_121221A** SeqNo: **2177208** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.1008	0.0020	0.1	-6.507E-06	101	70-130	0			
Iron	10.39	0.080	10	0.04339	103	70-130	0			
Molybdenum	0.09872	0.0050	0.1	0.000224	98.5	70-130	0			
Nickel	0.1015	0.0050	0.1	0.001707	99.8	70-130	0			
Titanium	0.1082	0.0050	0.1	0.0006054	108	70-130	0			
Vanadium	0.1079	0.0050	0.1	-3.404E-06	108	70-130	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212555
Project: Marshall Potable Water 12/12/12

QC BATCH REPORT

Batch ID: **45503** Instrument ID **ICPMS2** Method: **E200.8**

MSD Sample ID: **1212543-07CMSD** Units: **mg/L** Analysis Date: **12/21/2012 04:01 PM**
Client ID: Run ID: **ICPMS2_121221A** SeqNo: **2177027** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.1053	0.0020	0.1	0	105	70-130	0.1068	1.41	20	
Iron	10.55	0.080	10	0.04367	105	70-130	10.76	1.97	20	
Molybdenum	0.09952	0.0050	0.1	0.0004494	99.1	70-130	0.1004	0.88	20	
Nickel	0.1036	0.0050	0.1	0.0007011	103	70-130	0.1048	1.15	20	
Titanium	0.1155	0.0050	0.1	0.0009675	115	70-130	0.1156	0.0865	20	
Vanadium	0.1134	0.0050	0.1	0	113	70-130	0.1145	0.965	20	

MSD Sample ID: **1212555-11CMSD** Units: **mg/L** Analysis Date: **12/21/2012 10:53 PM**
Client ID: **WPC12121257JTC1B** Run ID: **ICPMS2_121221A** SeqNo: **2177212** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	10.49	0.080	10	0.04339	104	70-130	10.39	0.958	20	
Molybdenum	0.1004	0.0050	0.1	0.000224	100	70-130	0.09872	1.69	20	
Nickel	0.1016	0.0050	0.1	0.001707	99.9	70-130	0.1015	0.0985	20	
Titanium	0.1101	0.0050	0.1	0.0006054	109	70-130	0.1082	1.74	20	
Vanadium	0.1105	0.0050	0.1	-3.404E-06	111	70-130	0.1079	2.38	20	

MSD Sample ID: **1212555-11CMSD** Units: **mg/L** Analysis Date: **12/26/2012 08:03 PM**
Client ID: **WPC12121257JTC1B** Run ID: **ICPMS2_121226A** SeqNo: **2179054** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.09848	0.0020	0.1	0	98.5	70-130	0.1008	2.33	20	

The following samples were analyzed in this batch:

1212555-01C	1212555-02C	1212555-03C
1212555-04C	1212555-05C	1212555-06C
1212555-07C	1212555-08C	1212555-09C
1212555-10C	1212555-11C	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212555
Project: Marshall Potable Water 12/12/12

QC BATCH REPORT

Batch ID: **45461** Instrument ID **SVMS6** Method: **E525.2**

MBLK Sample ID: **PNBLKW1-45461-45461** Units: **µg/L** Analysis Date: **12/22/2012 11:58 PM**
Client ID: Run ID: **SVMS6_121222A** SeqNo: **2178997** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenanthrene	ND	0.20								
Surr: 1,3-Dimethyl-2-Nitrobenzen	*3.95*	0.20	*5*	0	*79*	*70-125*	0			
Surr: Perylene-d12	*3.83*	0.20	*5*	0	*76.6*	*46-142*	0			
Surr: Triphenylphosphate	*5.83*	0.20	*5*	0	*117*	*77-169*	0			

LCS Sample ID: **PNLCSW1-45461-45461** Units: **µg/L** Analysis Date: **12/23/2012 12:31 PM**
Client ID: Run ID: **SVMS6_121222A** SeqNo: **2179010** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenanthrene	5.2	0.20	5	0	104	70-130	0			
Surr: 1,3-Dimethyl-2-Nitrobenzen	*5.19*	0.20	*5*	0	*104*	*70-125*	0			
Surr: Perylene-d12	*4.58*	0.20	*5*	0	*91.6*	*46-142*	0			
Surr: Triphenylphosphate	*6*	0.20	*5*	0	*120*	*77-169*	0			

MS Sample ID: **1212555-01B MS** Units: **µg/L** Analysis Date: **12/23/2012 01:04 AM**
Client ID: **WPC12121413JTC1B** Run ID: **SVMS6_121222A** SeqNo: **2178998** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenanthrene	54.1	2.0	50	0	108	70-130	0			
Surr: 1,3-Dimethyl-2-Nitrobenzen	*48.6*	2.0	*50*	0	*97.2*	*70-125*	0			
Surr: Perylene-d12	*43.4*	2.0	*50*	0	*86.8*	*46-142*	0			
Surr: Triphenylphosphate	*57.6*	2.0	*50*	0	*115*	*77-169*	0			

MSD Sample ID: **1212555-01B MSD** Units: **µg/L** Analysis Date: **12/23/2012 01:38 AM**
Client ID: **WPC12121413JTC1B** Run ID: **SVMS6_121222A** SeqNo: **2178999** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenanthrene	54.8	2.0	50	0	110	70-130	54.1	1.29	30	
Surr: 1,3-Dimethyl-2-Nitrobenzen	*53*	2.0	*50*	0	*106*	*70-125*	48.6	*8.66*		
Surr: Perylene-d12	*41.7*	2.0	*50*	0	*83.4*	*46-142*	43.4	*4*		
Surr: Triphenylphosphate	*59.7*	2.0	*50*	0	*119*	*77-169*	57.6	*3.58*		

The following samples were analyzed in this batch:

1212555-01B	1212555-02B	1212555-03B
1212555-04B	1212555-05B	1212555-06B
1212555-07B	1212555-08B	1212555-09B
1212555-10B	1212555-11B	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212555
Project: Marshall Potable Water 12/12/12

QC BATCH REPORT

Batch ID: **R114255** Instrument ID **VMS5** Method: **E524.2**

MBLK Sample ID: **VBLKW3-121220-R114255** Units: **µg/L** Analysis Date: **12/21/2012 04:30 AM**
Client ID: Run ID: **VMS5_121220B** SeqNo: **2177305** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,3-Trimethylbenzene	ND	0.50								
1,2,4-Trimethylbenzene	ND	0.50								
1,3,5-Trimethylbenzene	ND	0.50								
2-Methylnaphthalene	ND	2.0								
4-Isopropyltoluene	ND	0.50								
Benzene	ND	0.50								
Cyclohexane	ND	1.0								
Ethylbenzene	ND	0.50								
Isopropylbenzene	ND	0.50								
m,p-Xylene	ND	1.0								
Naphthalene	ND	0.50								
n-Propylbenzene	ND	0.50								
o-Xylene	ND	0.50								
sec-Butylbenzene	ND	0.50								
Toluene	ND	0.50								
Surr: 1,2-Dichloroethane-d4	*20.47*	0.10	*20*	0	*102*	*80-120*	0			
Surr: 4-Bromofluorobenzene	*19.57*	0.10	*20*	0	*97.8*	*80-120*	0			
Surr: Dibromofluoromethane	*19.92*	0.10	*20*	0	*99.6*	*80-120*	0			
Surr: Toluene-d8	*19.98*	0.10	*20*	0	*99.9*	*80-120*	0			

LCS Sample ID: **VLCSW2-121220-R114255** Units: **µg/L** Analysis Date: **12/21/2012 03:42 AM**
Client ID: Run ID: **VMS5_121220B** SeqNo: **2177304** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	4.91	0.50	5	0	98.2	70-130	0			
1,3,5-Trimethylbenzene	5.18	0.50	5	0	104	70-130	0			
Benzene	5.05	0.50	5	0	101	70-130	0			
Cyclohexane	6.23	1.0	5	0	125	70-130	0			
Ethylbenzene	5.09	0.50	5	0	102	70-130	0			
Isopropylbenzene	5.21	0.50	5	0	104	70-130	0			
m,p-Xylene	10.18	1.0	10	0	102	70-130	0			
Naphthalene	5.74	0.50	5	0	115	70-130	0			
n-Propylbenzene	5.03	0.50	5	0	101	70-130	0			
o-Xylene	5.27	0.50	5	0	105	70-130	0			
sec-Butylbenzene	5.07	0.50	5	0	101	70-130	0			
Toluene	4.94	0.50	5	0	98.8	70-130	0			
Surr: 1,2-Dichloroethane-d4	*20.63*	0.10	*20*	0	*103*	*80-120*	0			
Surr: 4-Bromofluorobenzene	*19.79*	0.10	*20*	0	*99*	*80-120*	0			
Surr: Dibromofluoromethane	*20.44*	0.10	*20*	0	*102*	*80-120*	0			
Surr: Toluene-d8	*19.73*	0.10	*20*	0	*98.6*	*80-120*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212555
Project: Marshall Potable Water 12/12/12

QC BATCH REPORT

Batch ID: **R114255** Instrument ID **VMS5** Method: **E524.2**

MS Sample ID: **1212543-07A MS** Units: **µg/L** Analysis Date: **12/21/2012 12:59 PM**
Client ID: Run ID: **VMS5_121220B** SeqNo: **2177326** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	4.64	0.50	5	0	92.8	70-130	0			
1,3,5-Trimethylbenzene	5.22	0.50	5	0	104	70-130	0			
Benzene	5.11	0.50	5	0	102	70-130	0			
Ethylbenzene	5.39	0.50	5	0	108	70-130	0			
Isopropylbenzene	5.35	0.50	5	0	107	70-130	0			
m,p-Xylene	10.1	1.0	10	0	101	70-130	0			
Naphthalene	4.88	0.50	5	0	97.6	70-130	0			
n-Propylbenzene	5.06	0.50	5	0	101	70-130	0			
o-Xylene	5.25	0.50	5	0	105	70-130	0			
sec-Butylbenzene	5.47	0.50	5	0	109	70-130	0			
Toluene	5.03	0.50	5	0	101	70-130	0			
Surr: 1,2-Dichloroethane-d4	*20.82*	0.10	*20*	0	*104*	*80-120*	0			
Surr: 4-Bromofluorobenzene	*19.3*	0.10	*20*	0	*96.5*	*80-120*	0			
Surr: Dibromofluoromethane	*20.45*	0.10	*20*	0	*102*	*80-120*	0			
Surr: Toluene-d8	*19.78*	0.10	*20*	0	*98.9*	*80-120*	0			

MSD Sample ID: **1212543-07A MSD** Units: **µg/L** Analysis Date: **12/21/2012 01:23 PM**
Client ID: Run ID: **VMS5_121220B** SeqNo: **2177327** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	5.02	0.50	5	0	100	70-130	4.64	7.87	25	
1,3,5-Trimethylbenzene	5.58	0.50	5	0	112	70-130	5.22	6.67	25	
Benzene	5.11	0.50	5	0	102	70-130	5.11	0	25	
Ethylbenzene	5.53	0.50	5	0	111	70-130	5.39	2.56	25	
Isopropylbenzene	5.77	0.50	5	0	115	70-130	5.35	7.55	25	
m,p-Xylene	10.65	1.0	10	0	106	70-130	10.1	5.3	25	
Naphthalene	5.39	0.50	5	0	108	70-130	4.88	9.93	25	
n-Propylbenzene	5.55	0.50	5	0	111	70-130	5.06	9.24	25	
o-Xylene	5.49	0.50	5	0	110	70-130	5.25	4.47	25	
sec-Butylbenzene	5.77	0.50	5	0	115	70-130	5.47	5.34	25	
Toluene	5.33	0.50	5	0	107	70-130	5.03	5.79	25	
Surr: 1,2-Dichloroethane-d4	*21.51*	0.10	*20*	0	*108*	*80-120*	20.82	*3.26*		
Surr: 4-Bromofluorobenzene	*19.7*	0.10	*20*	0	*98.5*	*80-120*	19.3	*2.05*		
Surr: Dibromofluoromethane	*20.64*	0.10	*20*	0	*103*	*80-120*	20.45	*0.925*		
Surr: Toluene-d8	*20.6*	0.10	*20*	0	*103*	*80-120*	19.78	*4.06*		

The following samples were analyzed in this batch:

1212555-01A	1212555-02A	1212555-03A
1212555-04A	1212555-05A	1212555-06A
1212555-07A	1212555-08A	1212555-09A
1212555-10A	1212555-11A	1212555-12A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

1212555

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CHAIN-OF-CUSTODY / Analytical Request Document
The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # ___ of ___

COC # | Task: Potable B
Total # of Samples: 12 | Event Complete? N

Lab Information:		Project Information:		Other Information:			
Lab Name:	ALS Laboratory Group	Site ID #:	33	Send Invoice to:	Enbridge Energy - ATTN Accounts Payable		
Address:	3352 128th Ave. Holland, MI 49424-9263	Project #	60162778	Address:	1100 Louisiana Suite 1100		
		Site Address	5555 Glenwood Parkway SE Suite 200	City/State:	Houson, TX	Phone #:	713-821-2000
Lab PM:	Ann Preston	City	Grand Rapids	State, Zip	MI	PO #	
Phone/Fax:	1-616-399-6070/1-616-399-6185	Site PM Name	Bryan Stiemsma	Send EDD to			
Lab PM email	ann.preston@alsglobal.com	Phone/Fax:	[redacted]	CC Hardcopy report			
Applicable Lab Quote #:		Site PM Email:	Bryan.Stiemsma@aecom.com	CC Hardcopy report			

Regular: X | Turnaround Time: 5 Day

ITEM #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	MATRIX CODE	G=GRAB C=COMP	SAMPLE DATE	#OF CONTAINERS	Comments/Lab Sample I.D.	Preservative	HCl	HCl List B	HNO3								HNO3				Additional Notes
								Analysis	VOCs	SVOCs	TAL Metals List B	TPH DRO	TPH GRO	PCBs/Pesticides	TOC	TSS	Hg by EPA 245.1					
1	WPC12121413JTC1B	C0002C6A	GW	G	12/12/2012 1413	5	C0002C6		X	X	X						X					
2	WPC12121212JTC1B	C005315A	GW	G	12/12/2012 1212	5	C005315		X	X	X						X					
3	WPC12121125JTC1B	C0254D8	GW	G	12/12/2012 1125	5	C0254D8		X	X	X						X					
4	WPC12121509JTC1B	C030309WP1	GW	G	12/12/2012 1509	5	C030309		X	X	X						X					
5	WPC12121530JTC1B	C031751PW1	GW	G	12/12/2012 1530	5	C031751		X	X	X						X					
6	WPC12121552JTC1B	C0377D7A	GW	G	12/12/2012 1552	5	C0377D7		X	X	X						X					
7	WPC12121058JTC1B	C10619FWP1	GW	G	12/12/2012 1058	5	C10619F		X	X	X						X					
8	WPC12121147JTC1B	C152569WP1	GW	G	12/12/2012 1147	5	C152569		X	X	X						X					
9	WPC12121233JTC2B	C1528D4PW1	GW	G	12/12/2012 1233	5	C1528D4		X	X	X						X					DUP
10	WPC12121233JTC1B	C1528D4PW1	GW	G	12/12/2012 1233	5	C1528D4		X	X	X						X					
11	WPC12121257JTC1B	C153895PW1	GW	G	12/12/2012 1257	5	C153895		X	X	X						X					
12	TB121212JTC5	Trip Blank	GW	W	12/12/2012 0000	1	Trip Blank		X													TRIP BLANK

Additional Comments/Special Instructions:
Samplers: Jon Carveth; Lorri Lego

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
[signature]	12-13-12	0815	[signature]	12-13-12	0815
[signature]	12/14/12	1545	[signature]	12/14/12	1545

Sample Receipt Conditions: 1.8-2.6°C

SHIPPING INFO:	SAMPLER NAME AND SIGNATURE				
	PRINT Name of SAMPLER:	Jon Carveth			
	SIGNATURE of SAMPLER:		DATE Signed		Time:

Temp in °C	Samples on Ice?	Sample Intact?	Trip Blank?
	Y/N	Y/N	Y/N
	(Y)/N	(Y)/N	(Y)/N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N

ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **14-Dec-12 15:45**

Work Order: **1212555** Received by: **PD**

Checklist completed by Keith Wierenga (eSignature) 17-Dec-12 (Date) Reviewed by: Ann Preston (eSignature) 17-Dec-12 (Date)

Matrices: Potable Water
Carrier name: ALSHN

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	1.8 - 2.6 C		
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	12/17/2012 10:35:48 AM		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

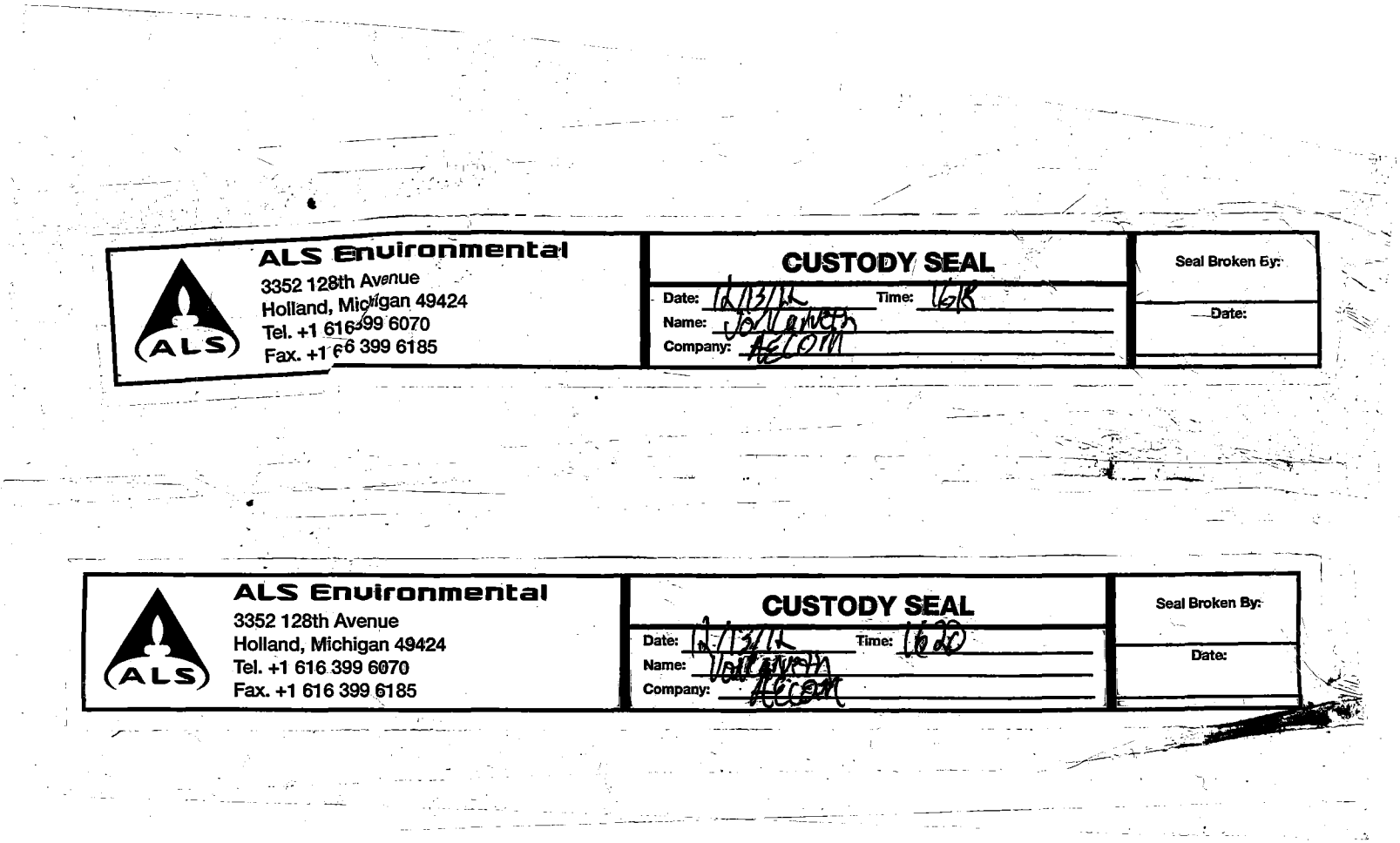
Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:



ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL
Date: 12/13/12 Time: 1618
Name: Jon Lamers
Company: AECOM

Seal Broken By:
Date:

1.8°c

ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL
Date: 12/13/12 Time: 1620
Name: Jon Lamers
Company: AECOM

Seal Broken By:
Date:

2.6°c

28-Dec-2012

Mike Wolf
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall Hydrogeo2 Kalamazoo 12/17/12** Work Order: **1212694**

Dear Mike,

ALS Environmental received 7 samples on 19-Dec-2012 08:00 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 20.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

Certificate No: MN331938

ALS Group USA, Corp

Date: 28-Dec-12

Client: AECOM Environment
Project: Marshall Hydrogeo2 Kalamazoo 12/17/12
Work Order: **1212694**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1212694-01	MWKR3776L01S121712GX	Groundwater		12/17/2012 12:45	12/19/2012 08:00	☐
1212694-02	MWKR3780L01S121712GX	Groundwater		12/17/2012 14:45	12/19/2012 08:00	☐
1212694-03	MWKR3780L02S121712GX	Groundwater		12/17/2012 13:40	12/19/2012 08:00	☐
1212694-04	MWKR3780L02D121712GX	Groundwater		12/17/2012 13:40	12/19/2012 08:00	☐
1212694-05	MWKR3780L03S121712GX	Groundwater		12/17/2012 12:20	12/19/2012 08:00	☐
1212694-06	MWKR3780L03T121712WX	Water		12/17/2012	12/19/2012 08:00	☐
1212694-07	MWKR3782L01S121712GX	Groundwater		12/17/2012 14:15	12/19/2012 08:00	☐

ALS Group USA, Corp

Date: 28-Dec-12

Client: AECOM Environment
Project: Marshall Hydrogeo2 Kalamazoo 12/17/12
WorkOrder: **1212694**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
SD	Serial Dilution
TDL	Target Detection Limit

Units Reported	Description
µg/L	Micrograms per Liter
mg/L	Milligrams per Liter

ALS Group USA, Corp

Date: *28-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	MWKR3776L01S121712GX
Work Order:	1212694	**Collection Date:**	12/17/2012 12:45:00 PM
Project:	Marshall Hydrogeo2 Kalamazoo 12/17/12		
Lab ID:	1212694-01	**Matrix:**	GROUNDWATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**SW7470**		Prep Date: **12/21/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/21/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/21/2012**		Analyst: **RH**
Beryllium	ND	0.0020	0.0010		mg/L	1	12/26/2012
Iron	ND	0.20	0.20		mg/L	1	12/26/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/26/2012
Nickel	ND	0.020	0.020		mg/L	1	12/26/2012
Titanium	ND	0.0050	0		mg/L	1	12/26/2012
Vanadium	ND	0.0050	0.0040		mg/L	1	12/26/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/20/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/20/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/20/2012
Phenanthrene	ND	2.0	2.0		µg/L	1	12/20/2012
Surr: 2-Fluorobiphenyl	*56.9*	*32-100*			*%REC*	1	12/20/2012
Surr: 4-Terphenyl-d14	*47.8*	*23-112*			*%REC*	1	12/20/2012
Surr: Nitrobenzene-d5	*72.1*	*31-93*			*%REC*	1	12/20/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**				Analyst: **AK**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/23/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/23/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/23/2012
Benzene	ND	1.0	1.0		µg/L	1	12/23/2012
Cyclohexane	ND	5.0	5.0		µg/L	1	12/23/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/23/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/23/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/23/2012
p-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/23/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/23/2012
Toluene	ND	1.0	1.0		µg/L	1	12/23/2012
Xylenes, Total	ND	3.0	3.0		µg/L	1	12/23/2012
Surr: 1,2-Dichloroethane-d4	*100*	*70-120*			*%REC*	1	12/23/2012
Surr: 4-Bromofluorobenzene	*102*	*75-120*			*%REC*	1	12/23/2012
Surr: Dibromofluoromethane	*104*	*85-115*			*%REC*	1	12/23/2012
Surr: Toluene-d8	*102*	*85-120*			*%REC*	1	12/23/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	MWKR3780L01S121712GX
Work Order:	1212694	**Collection Date:**	12/17/2012 2:45:00 PM
Project:	Marshall Hydrogeo2 Kalamazoo 12/17/12		
Lab ID:	1212694-02	**Matrix:**	GROUNDWATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**SW7470**		Prep Date: **12/21/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/21/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/21/2012**		Analyst: **RH**
Beryllium	ND	0.0020	0.0010		mg/L	1	12/26/2012
Iron	**4.8**	**0.20**	**0.20**		**mg/L**	1	12/26/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/26/2012
Nickel	ND	0.020	0.020		mg/L	1	12/26/2012
Titanium	ND	0.0050	0		mg/L	1	12/26/2012
Vanadium	ND	0.0050	0.0040		mg/L	1	12/26/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/20/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/20/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/20/2012
Phenanthrene	ND	2.0	2.0		µg/L	1	12/20/2012
Surr: 2-Fluorobiphenyl	*59.0*	*32-100*			*%REC*	1	12/20/2012
Surr: 4-Terphenyl-d14	*79.1*	*23-112*			*%REC*	1	12/20/2012
Surr: Nitrobenzene-d5	*74.5*	*31-93*			*%REC*	1	12/20/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**				Analyst: **AK**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/23/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/23/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/23/2012
Benzene	ND	1.0	1.0		µg/L	1	12/23/2012
Cyclohexane	ND	5.0	5.0		µg/L	1	12/23/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/23/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/23/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/23/2012
p-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/23/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/23/2012
Toluene	ND	1.0	1.0		µg/L	1	12/23/2012
Xylenes, Total	ND	3.0	3.0		µg/L	1	12/23/2012
Surr: 1,2-Dichloroethane-d4	*107*	*70-120*			*%REC*	1	12/23/2012
Surr: 4-Bromofluorobenzene	*99.9*	*75-120*			*%REC*	1	12/23/2012
Surr: Dibromofluoromethane	*105*	*85-115*			*%REC*	1	12/23/2012
Surr: Toluene-d8	*100*	*85-120*			*%REC*	1	12/23/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	MWKR3780L02S121712GX
Work Order:	1212694	**Collection Date:**	12/17/2012 1:40:00 PM
Project:	Marshall Hydrogeo2 Kalamazoo 12/17/12		
Lab ID:	1212694-03	**Matrix:**	GROUNDWATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**SW7470**		Prep Date: **12/21/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/21/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/21/2012**		Analyst: **RH**
Beryllium	ND	0.0020	0.0010		mg/L	1	12/26/2012
Iron	**3.9**	**0.20**	**0.20**		**mg/L**	1	12/26/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/26/2012
Nickel	ND	0.020	0.020		mg/L	1	12/26/2012
Titanium	ND	0.0050	0		mg/L	1	12/26/2012
Vanadium	ND	0.0050	0.0040		mg/L	1	12/26/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/20/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/20/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/20/2012
Phenanthrene	ND	2.0	2.0		µg/L	1	12/20/2012
Surr: 2-Fluorobiphenyl	*57.1*	*32-100*			*%REC*	1	12/20/2012
Surr: 4-Terphenyl-d14	*73.1*	*23-112*			*%REC*	1	12/20/2012
Surr: Nitrobenzene-d5	*71.2*	*31-93*			*%REC*	1	12/20/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**				Analyst: **AK**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/23/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/23/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/23/2012
Benzene	ND	1.0	1.0		µg/L	1	12/23/2012
Cyclohexane	ND	5.0	5.0		µg/L	1	12/23/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/23/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/23/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/23/2012
p-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/23/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/23/2012
Toluene	ND	1.0	1.0		µg/L	1	12/23/2012
Xylenes, Total	ND	3.0	3.0		µg/L	1	12/23/2012
Surr: 1,2-Dichloroethane-d4	*105*	*70-120*			*%REC*	1	12/23/2012
Surr: 4-Bromofluorobenzene	*103*	*75-120*			*%REC*	1	12/23/2012
Surr: Dibromofluoromethane	*104*	*85-115*			*%REC*	1	12/23/2012
Surr: Toluene-d8	*103*	*85-120*			*%REC*	1	12/23/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	MWKR3780L02D121712GX
Work Order:	1212694	**Collection Date:**	12/17/2012 1:40:00 PM
Project:	Marshall Hydrogeo2 Kalamazoo 12/17/12		
Lab ID:	1212694-04	**Matrix:**	GROUNDWATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**SW7470**		Prep Date: **12/21/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/21/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/21/2012**		Analyst: **RH**
Beryllium	ND	0.0020	0.0010		mg/L	1	12/26/2012
Iron	**3.8**	**0.20**	**0.20**		**mg/L**	1	12/26/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/26/2012
Nickel	ND	0.020	0.020		mg/L	1	12/26/2012
Titanium	ND	0.0050	0		mg/L	1	12/26/2012
Vanadium	ND	0.0050	0.0040		mg/L	1	12/26/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/20/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/20/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/20/2012
Phenanthrene	ND	2.0	2.0		µg/L	1	12/20/2012
Surr: 2-Fluorobiphenyl	*54.7*	*32-100*			*%REC*	1	12/20/2012
Surr: 4-Terphenyl-d14	*77.7*	*23-112*			*%REC*	1	12/20/2012
Surr: Nitrobenzene-d5	*67.0*	*31-93*			*%REC*	1	12/20/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**				Analyst: **AK**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/23/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/23/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/23/2012
Benzene	ND	1.0	1.0		µg/L	1	12/23/2012
Cyclohexane	ND	5.0	5.0		µg/L	1	12/23/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/23/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/23/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/23/2012
p-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/23/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/23/2012
Toluene	ND	1.0	1.0		µg/L	1	12/23/2012
Xylenes, Total	ND	3.0	3.0		µg/L	1	12/23/2012
Surr: 1,2-Dichloroethane-d4	*104*	*70-120*			*%REC*	1	12/23/2012
Surr: 4-Bromofluorobenzene	*102*	*75-120*			*%REC*	1	12/23/2012
Surr: Dibromofluoromethane	*101*	*85-115*			*%REC*	1	12/23/2012
Surr: Toluene-d8	*102*	*85-120*			*%REC*	1	12/23/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	MWKR3780L03S121712GX
Work Order:	1212694	**Collection Date:**	12/17/2012 12:20:00 PM
Project:	Marshall Hydrogeo2 Kalamazoo 12/17/12		
Lab ID:	1212694-05	**Matrix:**	GROUNDWATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**SW7470**		Prep Date: **12/21/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/21/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/21/2012**		Analyst: **RH**
Beryllium	ND	0.0020	0.0010		mg/L	1	12/26/2012
Iron	ND	0.20	0.20		mg/L	1	12/26/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/26/2012
Nickel	ND	0.020	0.020		mg/L	1	12/26/2012
Titanium	ND	0.0050	0		mg/L	1	12/26/2012
Vanadium	ND	0.0050	0.0040		mg/L	1	12/26/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/20/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/20/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/20/2012
Phenanthrene	ND	2.0	2.0		µg/L	1	12/20/2012
Surr: 2-Fluorobiphenyl	*57.7*	*32-100*			*%REC*	1	12/20/2012
Surr: 4-Terphenyl-d14	*83.2*	*23-112*			*%REC*	1	12/20/2012
Surr: Nitrobenzene-d5	*70.2*	*31-93*			*%REC*	1	12/20/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**				Analyst: **AK**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/23/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/23/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/23/2012
Benzene	ND	1.0	1.0		µg/L	1	12/23/2012
Cyclohexane	ND	5.0	5.0		µg/L	1	12/23/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/23/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/23/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/23/2012
p-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/23/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/23/2012
Toluene	ND	1.0	1.0		µg/L	1	12/23/2012
Xylenes, Total	ND	3.0	3.0		µg/L	1	12/23/2012
Surr: 1,2-Dichloroethane-d4	*98.8*	*70-120*			*%REC*	1	12/23/2012
Surr: 4-Bromofluorobenzene	*102*	*75-120*			*%REC*	1	12/23/2012
Surr: Dibromofluoromethane	*100*	*85-115*			*%REC*	1	12/23/2012
Surr: Toluene-d8	*101*	*85-120*			*%REC*	1	12/23/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	MWKR3780L03T121712WX
Work Order:	1212694	**Collection Date:**	12/17/2012
Project:	Marshall Hydrogeo2 Kalamazoo 12/17/12		
Lab ID:	1212694-06	**Matrix:**	WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**SW8260**				Analyst: **AK**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/23/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/23/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/23/2012
Benzene	ND	1.0	1.0		µg/L	1	12/23/2012
Cyclohexane	ND	5.0	5.0		µg/L	1	12/23/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/23/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/23/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/23/2012
p-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/23/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/23/2012
Toluene	ND	1.0	1.0		µg/L	1	12/23/2012
Xylenes, Total	ND	3.0	3.0		µg/L	1	12/23/2012
Surr: 1,2-Dichloroethane-d4	*101*	*70-120*			*%REC*	1	12/23/2012
Surr: 4-Bromofluorobenzene	*99.6*	*75-120*			*%REC*	1	12/23/2012
Surr: Dibromofluoromethane	*99.8*	*85-115*			*%REC*	1	12/23/2012
Surr: Toluene-d8	*103*	*85-120*			*%REC*	1	12/23/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	MWKR3782L01S121712GX
Work Order:	1212694	**Collection Date:**	12/17/2012 2:15:00 PM
Project:	Marshall Hydrogeo2 Kalamazoo 12/17/12		
Lab ID:	1212694-07	**Matrix:**	GROUNDWATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**SW7470**		Prep Date: **12/21/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/21/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/21/2012**		Analyst: **RH**
Beryllium	ND	0.0020	0.0010		mg/L	1	12/26/2012
Iron	ND	0.20	0.20		mg/L	1	12/26/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/26/2012
Nickel	ND	0.020	0.020		mg/L	1	12/26/2012
Titanium	ND	0.0050	0		mg/L	1	12/26/2012
Vanadium	ND	0.0050	0.0040		mg/L	1	12/26/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/20/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/20/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/20/2012
Phenanthrene	ND	2.0	2.0		µg/L	1	12/20/2012
Surr: 2-Fluorobiphenyl	*51.2*	*32-100*			*%REC*	1	12/20/2012
Surr: 4-Terphenyl-d14	*80.3*	*23-112*			*%REC*	1	12/20/2012
Surr: Nitrobenzene-d5	*66.2*	*31-93*			*%REC*	1	12/20/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**				Analyst: **AK**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/23/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/23/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/23/2012
Benzene	ND	1.0	1.0		µg/L	1	12/23/2012
Cyclohexane	ND	5.0	5.0		µg/L	1	12/23/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/23/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/23/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/23/2012
p-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/23/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/23/2012
Toluene	ND	1.0	1.0		µg/L	1	12/23/2012
Xylenes, Total	ND	3.0	3.0		µg/L	1	12/23/2012
Surr: 1,2-Dichloroethane-d4	*100*	*70-120*			*%REC*	1	12/23/2012
Surr: 4-Bromofluorobenzene	*96.3*	*75-120*			*%REC*	1	12/23/2012
Surr: Dibromofluoromethane	*101*	*85-115*			*%REC*	1	12/23/2012
Surr: Toluene-d8	*99.6*	*85-120*			*%REC*	1	12/23/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 28-Dec-12

Client: AECOM Environment

QC BATCH REPORT

Work Order: 1212694

Project: Marshall Hydrogeo2 Kalamazoo 12/17/12

Batch ID: **45565** Instrument ID **HG1** Method: **SW7470**

MBLK Sample ID: **MBLK-45565-45565** Units: **mg/L** Analysis Date: **12/21/2012 01:49 PM**

Client ID: Run ID: **HG1_121221A** SeqNo: **2176781** Prep Date: **12/21/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.00020								

LCS Sample ID: **LCS-45565-45565** Units: **mg/L** Analysis Date: **12/21/2012 01:51 PM**

Client ID: Run ID: **HG1_121221A** SeqNo: **2176782** Prep Date: **12/21/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001864	0.00020	0.002	0	93.2	80-120	0			

MS Sample ID: **1212694-05AMS** Units: **mg/L** Analysis Date: **12/21/2012 02:05 PM**

Client ID: **MWKR3780L03S121712GX** Run ID: **HG1_121221A** SeqNo: **2176790** Prep Date: **12/21/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00171	0.00020	0.002	0.000009	85	75-125	0			

MSD Sample ID: **1212694-05AMSD** Units: **mg/L** Analysis Date: **12/21/2012 02:07 PM**

Client ID: **MWKR3780L03S121712GX** Run ID: **HG1_121221A** SeqNo: **2176792** Prep Date: **12/21/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001749	0.00020	0.002	0.000009	87	75-125	0.00171	2.25	20	

The following samples were analyzed in this batch:

1212694-01A	1212694-02A	1212694-03A
1212694-04A	1212694-05A	1212694-07A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212694
Project: Marshall Hydrogeo2 Kalamazoo 12/17/12

QC BATCH REPORT

Batch ID: **45571** Instrument ID **ICPMS2** Method: **SW6020A**

MBLK Sample ID: **MBLK-45571-45571** Units: **mg/L** Analysis Date: **12/26/2012 04:59 PM**
Client ID: Run ID: **ICPMS2_121226A** SeqNo: **2179017** Prep Date: **12/21/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	ND	0.0020								
Iron	ND	0.080								
Molybdenum	ND	0.0050								
Nickel	0.000232	0.0050								J
Titanium	ND	0.0050								
Vanadium	ND	0.0050								

LCS Sample ID: **LCS-45571-45571** Units: **mg/L** Analysis Date: **12/26/2012 05:04 PM**
Client ID: Run ID: **ICPMS2_121226A** SeqNo: **2179018** Prep Date: **12/21/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.09775	0.0020	0.1	0	97.8	80-120	0			
Iron	9.273	0.080	10	0	92.7	80-120	0			
Molybdenum	0.09402	0.0050	0.1	0	94	80-120	0			
Nickel	0.09178	0.0050	0.1	0	91.8	80-120	0			
Titanium	0.09132	0.0050	0.1	0	91.3	80-120	0			
Vanadium	0.09181	0.0050	0.1	0	91.8	80-120	0			

MS Sample ID: **1212694-05AMS** Units: **mg/L** Analysis Date: **12/26/2012 05:14 PM**
Client ID: **MWKR3780L03S121712GX** Run ID: **ICPMS2_121226A** SeqNo: **2179020** Prep Date: **12/21/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.09707	0.0020	0.1	0.00001718	97.1	75-125	0			
Iron	9.31	0.080	10	0.01203	93	75-125	0			
Molybdenum	0.09692	0.0050	0.1	0.0004609	96.5	75-125	0			
Nickel	0.09204	0.0050	0.1	0.001381	90.7	75-125	0			
Titanium	0.09366	0.0050	0.1	0.0006998	93	75-125	0			
Vanadium	0.09545	0.0050	0.1	0.0001698	95.3	75-125	0			

MSD Sample ID: **1212694-05AMSD** Units: **mg/L** Analysis Date: **12/26/2012 05:19 PM**
Client ID: **MWKR3780L03S121712GX** Run ID: **ICPMS2_121226A** SeqNo: **2179021** Prep Date: **12/21/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.09787	0.0020	0.1	0.00001718	97.9	75-125	0.09707	0.821	20	
Iron	9.675	0.080	10	0.01203	96.6	75-125	9.31	3.85	20	
Molybdenum	0.0984	0.0050	0.1	0.0004609	97.9	75-125	0.09692	1.52	20	
Nickel	0.09328	0.0050	0.1	0.001381	91.9	75-125	0.09204	1.34	20	
Titanium	0.09592	0.0050	0.1	0.0006998	95.2	75-125	0.09366	2.38	20	
Vanadium	0.09845	0.0050	0.1	0.0001698	98.3	75-125	0.09545	3.09	20	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212694
Project: Marshall Hydrogeo2 Kalamazoo 12/17/12

QC BATCH REPORT

Batch ID: **45571** Instrument ID **ICPMS2** Method: **SW6020A**

The following samples were analyzed in this batch:

1212694-01A	1212694-02A	1212694-03A
1212694-04A	1212694-05A	1212694-07A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212694
Project: Marshall Hydrogeo2 Kalamazoo 12/17/12

QC BATCH REPORT

Batch ID: **45523** Instrument ID **SVMS6** Method: **SW8270**

MBLK Sample ID: **SBLKW1-45523-45523** Units: **µg/L** Analysis Date: **12/20/2012 12:06 PM**
Client ID: Run ID: **SVMS6_121220A** SeqNo: **2176500** Prep Date: **12/20/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	ND	5.0								
Naphthalene	ND	5.0								
Phenanthrene	ND	5.0								
Surr: 2-Fluorobiphenyl	*29.5*	0	*50*	0	*59*	*32-100*	0			
Surr: 4-Terphenyl-d14	*42.28*	0	*50*	0	*84.6*	*23-112*	0			
Surr: Nitrobenzene-d5	*36.51*	0	*50*	0	*73*	*31-93*	0			

LCS Sample ID: **SLCSW1-45523-45523** Units: **µg/L** Analysis Date: **12/20/2012 10:25 AM**
Client ID: Run ID: **SVMS6_121220A** SeqNo: **2176496** Prep Date: **12/20/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	13.79	5.0	20	0	69	45-105	0			
Naphthalene	13.77	5.0	20	0	68.8	40-100	0			
Phenanthrene	15.44	5.0	20	0	77.2	50-115	0			
Surr: 2-Fluorobiphenyl	*30.35*	0	*50*	0	*60.7*	*32-100*	0			
Surr: 4-Terphenyl-d14	*40.65*	0	*50*	0	*81.3*	*23-112*	0			
Surr: Nitrobenzene-d5	*36.84*	0	*50*	0	*73.7*	*31-93*	0			

MS Sample ID: **1212694-05B MS** Units: **µg/L** Analysis Date: **12/20/2012 10:50 AM**
Client ID: **MWKR3780L03S121712GX** Run ID: **SVMS6_121220A** SeqNo: **2176497** Prep Date: **12/20/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	128.3	50	200	0	64.2	45-105	0			
Naphthalene	129.7	50	200	0	64.8	40-100	0			
Phenanthrene	149.1	50	200	0	74.6	50-115	0			
Surr: 2-Fluorobiphenyl	*280.9*	0	*500*	0	*56.2*	*32-100*	0			
Surr: 4-Terphenyl-d14	*380.8*	0	*500*	0	*76.2*	*23-112*	0			
Surr: Nitrobenzene-d5	*344.3*	0	*500*	0	*68.9*	*31-93*	0			

MS Sample ID: **1212697-06B MS** Units: **µg/L** Analysis Date: **12/20/2012 12:31 PM**
Client ID: Run ID: **SVMS6_121220A** SeqNo: **2176501** Prep Date: **12/20/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	131.6	50	200	0	65.8	45-105	0			
Naphthalene	130	50	200	0	65	40-100	0			
Phenanthrene	146	50	200	0	73	50-115	0			
Surr: 2-Fluorobiphenyl	*278.5*	0	*500*	0	*55.7*	*32-100*	0			
Surr: 4-Terphenyl-d14	*397.6*	0	*500*	0	*79.5*	*23-112*	0			
Surr: Nitrobenzene-d5	*350*	0	*500*	0	*70*	*31-93*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212694
Project: Marshall Hydrogeo2 Kalamazoo 12/17/12

QC BATCH REPORT

Batch ID: **45523** Instrument ID **SVMS6** Method: **SW8270**

MSD Sample ID: **1212694-05B MSD** Units: **µg/L** Analysis Date: **12/20/2012 11:15 AM**
Client ID: **MWKR3780L03S121712GX** Run ID: **SVMS6_121220A** SeqNo: **2176498** Prep Date: **12/20/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	123.2	50	200	0	61.6	45-105	128.3	4.06	30	
Naphthalene	124.5	50	200	0	62.2	40-100	129.7	4.09	30	
Phenanthrene	132.7	50	200	0	66.4	50-115	149.1	11.6	30	
Surr: 2-Fluorobiphenyl	*262.3*	0	*500*	0	*52.5*	*32-100*	280.9	*6.85*	*40*	
Surr: 4-Terphenyl-d14	*299.1*	0	*500*	0	*59.8*	*23-112*	380.8	*24*	*40*	
Surr: Nitrobenzene-d5	*328.6*	0	*500*	0	*65.7*	*31-93*	344.3	*4.67*	*40*	

MSD Sample ID: **1212697-06B MSD** Units: **µg/L** Analysis Date: **12/20/2012 12:57 PM**
Client ID: Run ID: **SVMS6_121220A** SeqNo: **2176502** Prep Date: **12/20/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	125.9	50	200	0	63	45-105	131.6	4.43	30	
Naphthalene	123.1	50	200	0	61.6	40-100	130	5.45	30	
Phenanthrene	140	50	200	0	70	50-115	146	4.2	30	
Surr: 2-Fluorobiphenyl	*273.8*	0	*500*	0	*54.8*	*32-100*	278.5	*1.7*	*40*	
Surr: 4-Terphenyl-d14	*360.4*	0	*500*	0	*72.1*	*23-112*	397.6	*9.82*	*40*	
Surr: Nitrobenzene-d5	*335*	0	*500*	0	*67*	*31-93*	350	*4.38*	*40*	

The following samples were analyzed in this batch:

1212694-01B	1212694-02B	1212694-03B
1212694-04B	1212694-05B	1212694-07B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **R114348A** Instrument ID **VMS8** Method: **SW8260**

MBLK Sample ID: **VBLKW2-121222-R114348A** Units: **µg/L** Analysis Date: **12/23/2012 12:55 PM**
Client ID: Run ID: **VMS8_121222A** SeqNo: **2178621** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,3-Trimethylbenzene	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
Benzene	ND	1.0								
Cyclohexane	ND	5.0								
Ethylbenzene	ND	1.0								
Isopropylbenzene	ND	1.0								
n-Propylbenzene	ND	1.0								
p-Isopropyltoluene	ND	2.0								
sec-Butylbenzene	ND	2.0								
Toluene	ND	1.0								
Xylenes, Total	ND	3.0								
Surr: 1,2-Dichloroethane-d4	*20.84*	0	*20*	0	*104*	*70-120*	0			
Surr: 4-Bromofluorobenzene	*20.34*	0	*20*	0	*102*	*75-120*	0			
Surr: Dibromofluoromethane	*20.26*	0	*20*	0	*101*	*85-115*	0			
Surr: Toluene-d8	*20.88*	0	*20*	0	*104*	*85-120*	0			

LCS Sample ID: **VLCSW1-121222-R114348A** Units: **µg/L** Analysis Date: **12/23/2012 12:07 PM**
Client ID: Run ID: **VMS8_121222A** SeqNo: **2178620** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	20.44	1.0	20	0	102	75-130	0			
1,3,5-Trimethylbenzene	20.89	1.0	20	0	104	75-130	0			
Benzene	20.77	1.0	20	0	104	80-120	0			
Ethylbenzene	21.21	1.0	20	0	106	75-125	0			
Isopropylbenzene	20.85	1.0	20	0	104	75-125	0			
n-Propylbenzene	20.61	1.0	20	0	103	70-130	0			
p-Isopropyltoluene	18.44	2.0	20	0	92.2	75-130	0			
sec-Butylbenzene	19.17	2.0	20	0	95.8	70-125	0			
Toluene	20.53	1.0	20	0	103	75-120	0			
Xylenes, Total	62.58	3.0	60	0	104	75-130	0			
Surr: 1,2-Dichloroethane-d4	*21.49*	0	*20*	0	*107*	*70-120*	0			
Surr: 4-Bromofluorobenzene	*20.17*	0	*20*	0	*101*	*75-120*	0			
Surr: Dibromofluoromethane	*21.08*	0	*20*	0	*105*	*85-115*	0			
Surr: Toluene-d8	*19.75*	0	*20*	0	*98.8*	*85-120*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212694
Project: Marshall Hydrogeo2 Kalamazoo 12/17/12

QC BATCH REPORT

Batch ID: **R114348A** Instrument ID **VMS8** Method: **SW8260**

MS Sample ID: **1212694-05C MS** Units: **µg/L** Analysis Date: **12/23/2012 10:27 AM**
Client ID: **MWKR3780L03S121712GX** Run ID: **VMS8_121222A** SeqNo: **2178618** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	20.31	1.0	20	0	102	75-130	0			
1,3,5-Trimethylbenzene	20.91	1.0	20	0	105	75-130	0			
Benzene	19.33	1.0	20	0	96.6	80-120	0			
Ethylbenzene	20.93	1.0	20	0	105	75-125	0			
Isopropylbenzene	20.52	1.0	20	0	103	75-125	0			
n-Propylbenzene	20.44	1.0	20	0	102	70-130	0			
p-Isopropyltoluene	18.18	2.0	20	0	90.9	75-130	0			
sec-Butylbenzene	19.18	2.0	20	0	95.9	70-125	0			
Toluene	20.5	1.0	20	0	102	75-120	0			
Xylenes, Total	62.33	3.0	60	0	104	75-130	0			
Surr: 1,2-Dichloroethane-d4	*19.85*	0	*20*	0	*99.2*	*70-120*	0			
Surr: 4-Bromofluorobenzene	*20.2*	0	*20*	0	*101*	*75-120*	0			
Surr: Dibromofluoromethane	*19.56*	0	*20*	0	*97.8*	*85-115*	0			
Surr: Toluene-d8	*20.01*	0	*20*	0	*100*	*85-120*	0			

MSD Sample ID: **1212694-05C MSD** Units: **µg/L** Analysis Date: **12/23/2012 10:50 AM**
Client ID: **MWKR3780L03S121712GX** Run ID: **VMS8_121222A** SeqNo: **2178619** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	21.12	1.0	20	0	106	75-130	20.31	3.91	30	
1,3,5-Trimethylbenzene	22.47	1.0	20	0	112	75-130	20.91	7.19	30	
Benzene	20.35	1.0	20	0	102	80-120	19.33	5.14	30	
Ethylbenzene	21.58	1.0	20	0	108	75-125	20.93	3.06	30	
Isopropylbenzene	21.95	1.0	20	0	110	75-125	20.52	6.73	30	
n-Propylbenzene	21.39	1.0	20	0	107	70-130	20.44	4.54	30	
p-Isopropyltoluene	18.01	2.0	20	0	90	75-130	18.18	0.939	30	
sec-Butylbenzene	20.63	2.0	20	0	103	70-125	19.18	7.28	30	
Toluene	21.63	1.0	20	0	108	75-120	20.5	5.36	30	
Xylenes, Total	64.38	3.0	60	0	107	75-130	62.33	3.24	30	
Surr: 1,2-Dichloroethane-d4	*20.09*	0	*20*	0	*100*	*70-120*	19.85	*1.2*	*30*	
Surr: 4-Bromofluorobenzene	*21.26*	0	*20*	0	*106*	*75-120*	20.2	*5.11*	*30*	
Surr: Dibromofluoromethane	*20.85*	0	*20*	0	*104*	*85-115*	19.56	*6.38*	*30*	
Surr: Toluene-d8	*21.32*	0	*20*	0	*107*	*85-120*	20.01	*6.34*	*30*	

The following samples were analyzed in this batch:

1212694-01C	1212694-02C	1212694-03C
1212694-04C	1212694-05C	1212694-06B
1212694-07C		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

12126694

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

COC #	ENBRIDGE_121712_JTC1	Task: HYDROGEO2_KALAMAZOO MUNICIPA
	Total # of Samples: 7	Event Complete?
Turn Around Time	5 Day	Rush: No
BILLING CODE: 7.00		

Lab Information:

Lab Name:	ALS Laboratory Group
Address:	3352 128th Ave. Holland, MI 49424-9263
Lab PM:	Ann Preston
Phone/Fax:	1-616-399-6070/1-616-399-6185
Lab PM email	ann.preston@alsglobal.com
Applicable Lab Quote #:	

Project Information:

Site ID #:	
Project #	60162778
Site Address	5555 Glenwood Parkway SE Suite 200
City	Grand Rapids
State, Zip	MI
Site PM Name	[redacted]
Phone/Fax:	[redacted]
Site PM Email:	Bryan.Sliemsma@aecom.com

Other Information:

Send Invoice to:	Enbridge Energy - ATTN Accounts Payable
Address:	1100 Louisiana Suite 1100
City/State:	Houson, TX
Phone #:	713-821-2000
PO #	
Send EDD to	
CC Hardcopy report	
CC Hardcopy report	

ITEM #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	MATRIX CODE	G=GRAB C=COMP	SAMPLE DATE	#OF CONTAINERS	Comments/Lab Sample I.D.	Preservative: HNO3	HNO3	None	HCl	Analysis: Be,Fe,Mo,Ni,Ti,V	Mercury	PNAs by 8270	VOC by 5035/8260
1	MWKR3776L01S121712GX	MWKR3776L01	WG	G	12/17/2012 12:45	6						X	X	X	X
2	MWKR3780L01S121712GX	MWKR3780L01	WG	G	12/17/2012 14:45	6						X	X	X	X
3	MWKR3780L02S121712GX	MWKR3780L02	WG	G	12/17/2012 13:40	6						X	X	X	X
4	MWKR3780L02D121712GX	MWKR3780L02	WG	G	12/17/2012 13:40	6	DUPLICATE					X	X	X	X
5	MWKR3780L03S121712GX	MWKR3780L03	WG	G	12/17/2012 12:20	18	MS/MSD					X	X	X	X
6	MWKR3780L03T121712WX	MWKR3780L03	WQ	G	12/17/2012 00:00	3	TRIP BLANK					X	X	X	X
7	MWKR3782L01S121712GX	MWKR3782L01	WG	G	12/17/2012 14:15	6						X	X	X	X

Additional Comments/Special Instructions:

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
	12-17-12	1640		12-17-12	1640
	12-19-12	0800		12-19-12	0800

Sample Receipt Conditions

Temp in OC	Samples on Ice?	Sample Intact?	Trip Blank?
3.4° 5.0°	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N

SHIPPING INFO.
Company:
Tracking #:

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: JON CARVETH, LORRI LEGO
SIGNATURE of SAMPLER:
DATE Signed:
Time:

ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **19-Dec-12 08:00**

Work Order: **1212694** Received by: **PD**

Checklist completed by Keith Wierenga eSignature 19-Dec-12 Date Reviewed by: Ann Preston eSignature 19-Dec-12 Date

Matrices: Groundwater
Carrier name: ALSHN

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	3.4, 5.0 C		
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	12/19/2012 2:28:00 PM		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

3.4°C

ALS Environmental 3352 128th Avenue Holland, Michigan 49424 Tel. +1 616 399 6070 Fax. +1 616 399 6185	CUSTODY SEAL Date: 12-17-12 Time: Name: Company:	Seal Broken By: Date:

5.0°C

ALS Environmental 3352 128th Avenue Holland, Michigan 49424 Tel. +1 616 399 6070 Fax. +1 616 399 6185	CUSTODY SEAL Date: 12-17-12 Time: Name: Jason Legge Company:	Seal Broken By: Date:

28-Dec-2012

Mike Wolf
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall Hydrogeo2 Augusta 12/18/12** Work Order: **1212697**

Dear Mike,

ALS Environmental received 7 samples on 19-Dec-2012 08:00 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 24.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

Certificate No: MN331938

ALS Group USA, Corp

Date: 28-Dec-12

Client: AECOM Environment
Project: Marshall Hydrogeo2 Augusta 12/18/12
Work Order: **1212697**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1212697-01	MWKR2875R01S121812GX	Groundwater		12/18/2012 13:30	12/19/2012 08:00	☐
1212697-02	MWKR2875R01D121812GX	Groundwater		12/18/2012 13:30	12/19/2012 08:00	☐
1212697-03	MWKR2875R02S121812GX	Groundwater		12/18/2012 13:05	12/19/2012 08:00	☐
1212697-04	MWKR2875R02T121812WX	Water		12/18/2012	12/19/2012 08:00	☐
1212697-05	MWKR2875R03S121812GX	Groundwater		12/18/2012 12:00	12/19/2012 08:00	☐
1212697-06	MWKR2875R04S121812GX	Groundwater		12/18/2012 11:55	12/19/2012 08:00	☐
1212697-07	MWKR2875R05S121812GX	Groundwater		12/18/2012 14:30	12/19/2012 08:00	☐

ALS Group USA, Corp

Date: 28-Dec-12

Client: AECOM Environment
Project: Marshall Hydrogeo2 Augusta 12/18/12
WorkOrder: **1212697**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
SD	Serial Dilution
TDL	Target Detection Limit

Units Reported	Description
µg/L	Micrograms per Liter
mg/L	Milligrams per Liter

ALS Group USA, Corp

Date: *28-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	MWKR2875R01S121812GX
Work Order:	1212697	**Collection Date:**	12/18/2012 1:30:00 PM
Project:	Marshall Hydrogeo2 Augusta 12/18/12		
Lab ID:	1212697-01	**Matrix:**	GROUNDWATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**SW7470**		Prep Date: **12/21/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/21/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/26/2012**		Analyst: **RH**
Beryllium	ND	0.0020	0.0010		mg/L	1	12/27/2012
Iron	ND	0.20	0.20		mg/L	1	12/27/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/27/2012
Nickel	ND	0.020	0.020		mg/L	1	12/27/2012
Titanium	ND	0.0050	0		mg/L	1	12/27/2012
Vanadium	ND	0.0050	0.0040		mg/L	1	12/27/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/20/2012**		Analyst: **HL**
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
Phenanthrene	ND	2.0	2.0		µg/L	1	12/21/2012
Surr: 2-Fluorobiphenyl	*62.4*	*32-100*			*%REC*	1	12/21/2012
Surr: 4-Terphenyl-d14	*98.4*	*23-112*			*%REC*	1	12/21/2012
Surr: Nitrobenzene-d5	*66.0*	*31-93*			*%REC*	1	12/21/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**				Analyst: **AK**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/26/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/26/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/26/2012
Benzene	ND	1.0	1.0		µg/L	1	12/26/2012
Cyclohexane	ND	5.0	5.0		µg/L	1	12/26/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/26/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/26/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/26/2012
p-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/26/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/26/2012
Toluene	ND	1.0	1.0		µg/L	1	12/26/2012
Xylenes, Total	ND	3.0	3.0		µg/L	1	12/26/2012
Surr: 1,2-Dichloroethane-d4	*99.0*	*70-120*			*%REC*	1	12/26/2012
Surr: 4-Bromofluorobenzene	*98.4*	*75-120*			*%REC*	1	12/26/2012
Surr: Dibromofluoromethane	*99.2*	*85-115*			*%REC*	1	12/26/2012
Surr: Toluene-d8	*101*	*85-120*			*%REC*	1	12/26/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	MWKR2875R01D121812GX
Work Order:	1212697	**Collection Date:**	12/18/2012 1:30:00 PM
Project:	Marshall Hydrogeo2 Augusta 12/18/12		
Lab ID:	1212697-02	**Matrix:**	GROUNDWATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**SW7470**		Prep Date: **12/21/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/21/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/26/2012**		Analyst: **RH**
Beryllium	ND	0.0020	0.0010		mg/L	1	12/27/2012
Iron	ND	0.20	0.20		mg/L	1	12/27/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/27/2012
Nickel	ND	0.020	0.020		mg/L	1	12/27/2012
Titanium	ND	0.0050	0		mg/L	1	12/27/2012
Vanadium	ND	0.0050	0.0040		mg/L	1	12/27/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/20/2012**		Analyst: **HL**
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/20/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/20/2012
Phenanthrene	ND	2.0	2.0		µg/L	1	12/20/2012
Surr: 2-Fluorobiphenyl	*67.3*	*32-100*			*%REC*	1	12/20/2012
Surr: 4-Terphenyl-d14	*97.0*	*23-112*			*%REC*	1	12/20/2012
Surr: Nitrobenzene-d5	*76.2*	*31-93*			*%REC*	1	12/20/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**				Analyst: **AK**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/26/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/26/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/26/2012
Benzene	ND	1.0	1.0		µg/L	1	12/26/2012
Cyclohexane	ND	5.0	5.0		µg/L	1	12/26/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/26/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/26/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/26/2012
p-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/26/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/26/2012
Toluene	ND	1.0	1.0		µg/L	1	12/26/2012
Xylenes, Total	ND	3.0	3.0		µg/L	1	12/26/2012
Surr: 1,2-Dichloroethane-d4	*99.7*	*70-120*			*%REC*	1	12/26/2012
Surr: 4-Bromofluorobenzene	*99.1*	*75-120*			*%REC*	1	12/26/2012
Surr: Dibromofluoromethane	*98.1*	*85-115*			*%REC*	1	12/26/2012
Surr: Toluene-d8	*97.0*	*85-120*			*%REC*	1	12/26/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	MWKR2875R02S121812GX
Work Order:	1212697	**Collection Date:**	12/18/2012 1:05:00 PM
Project:	Marshall Hydrogeo2 Augusta 12/18/12		
Lab ID:	1212697-03	**Matrix:**	GROUNDWATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**SW7470**		Prep Date: **12/21/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/21/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/26/2012**		Analyst: **RH**
Beryllium	ND	0.0020	0.0010		mg/L	1	12/27/2012
Iron	ND	0.20	0.20		mg/L	1	12/27/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/27/2012
Nickel	ND	0.020	0.020		mg/L	1	12/27/2012
Titanium	ND	0.0050	0		mg/L	1	12/27/2012
Vanadium	ND	0.0050	0.0040		mg/L	1	12/27/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/20/2012**		Analyst: **HL**
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
Phenanthrene	ND	2.0	2.0		µg/L	1	12/21/2012
Surr: 2-Fluorobiphenyl	*64.1*	*32-100*			*%REC*	1	12/21/2012
Surr: 4-Terphenyl-d14	*77.5*	*23-112*			*%REC*	1	12/21/2012
Surr: Nitrobenzene-d5	*71.9*	*31-93*			*%REC*	1	12/21/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**				Analyst: **AK**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/26/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/26/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/26/2012
Benzene	ND	1.0	1.0		µg/L	1	12/26/2012
Cyclohexane	ND	5.0	5.0		µg/L	1	12/26/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/26/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/26/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/26/2012
p-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/26/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/26/2012
Toluene	ND	1.0	1.0		µg/L	1	12/26/2012
Xylenes, Total	ND	3.0	3.0		µg/L	1	12/26/2012
Surr: 1,2-Dichloroethane-d4	*103*	*70-120*			*%REC*	1	12/26/2012
Surr: 4-Bromofluorobenzene	*106*	*75-120*			*%REC*	1	12/26/2012
Surr: Dibromofluoromethane	*105*	*85-115*			*%REC*	1	12/26/2012
Surr: Toluene-d8	*103*	*85-120*			*%REC*	1	12/26/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	MWKR2875R02T121812WX
Work Order:	1212697	**Collection Date:**	12/18/2012
Project:	Marshall Hydrogeo2 Augusta 12/18/12		
Lab ID:	1212697-04	**Matrix:**	WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**SW8260**				Analyst: **AK**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/26/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/26/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/26/2012
Benzene	ND	1.0	1.0		µg/L	1	12/26/2012
Cyclohexane	ND	5.0	5.0		µg/L	1	12/26/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/26/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/26/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/26/2012
p-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/26/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/26/2012
Toluene	ND	1.0	1.0		µg/L	1	12/26/2012
Xylenes, Total	ND	3.0	3.0		µg/L	1	12/26/2012
Surr: 1,2-Dichloroethane-d4	*105*	*70-120*			*%REC*	1	12/26/2012
Surr: 4-Bromofluorobenzene	*98.5*	*75-120*			*%REC*	1	12/26/2012
Surr: Dibromofluoromethane	*104*	*85-115*			*%REC*	1	12/26/2012
Surr: Toluene-d8	*98.6*	*85-120*			*%REC*	1	12/26/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	MWKR2875R03S121812GX
Work Order:	1212697	**Collection Date:**	12/18/2012 12:00:00 PM
Project:	Marshall Hydrogeo2 Augusta 12/18/12		
Lab ID:	1212697-05	**Matrix:**	GROUNDWATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**SW7470**		Prep Date: **12/21/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/21/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/26/2012**		Analyst: **RH**
Beryllium	ND	0.0020	0.0010		mg/L	1	12/27/2012
Iron	**0.27**	**0.20**	**0.20**		**mg/L**	1	12/27/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/27/2012
Nickel	ND	0.020	0.020		mg/L	1	12/27/2012
Titanium	ND	0.0050	0		mg/L	1	12/27/2012
Vanadium	ND	0.0050	0.0040		mg/L	1	12/27/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/20/2012**		Analyst: **HL**
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
Phenanthrene	ND	2.0	2.0		µg/L	1	12/21/2012
Surr: 2-Fluorobiphenyl	*67.3*	*32-100*			*%REC*	1	12/21/2012
Surr: 4-Terphenyl-d14	*97.5*	*23-112*			*%REC*	1	12/21/2012
Surr: Nitrobenzene-d5	*75.6*	*31-93*			*%REC*	1	12/21/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**				Analyst: **AK**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/26/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/26/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/26/2012
Benzene	ND	1.0	1.0		µg/L	1	12/26/2012
Cyclohexane	ND	5.0	5.0		µg/L	1	12/26/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/26/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/26/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/26/2012
p-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/26/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/26/2012
Toluene	ND	1.0	1.0		µg/L	1	12/26/2012
Xylenes, Total	ND	3.0	3.0		µg/L	1	12/26/2012
Surr: 1,2-Dichloroethane-d4	*102*	*70-120*			*%REC*	1	12/26/2012
Surr: 4-Bromofluorobenzene	*96.4*	*75-120*			*%REC*	1	12/26/2012
Surr: Dibromofluoromethane	*96.6*	*85-115*			*%REC*	1	12/26/2012
Surr: Toluene-d8	*97.0*	*85-120*			*%REC*	1	12/26/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	MWKR2875R04S121812GX
Work Order:	1212697	**Collection Date:**	12/18/2012 11:55:00 AM
Project:	Marshall Hydrogeo2 Augusta 12/18/12		
Lab ID:	1212697-06	**Matrix:**	GROUNDWATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**SW7470**		Prep Date: **12/26/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/26/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/26/2012**		Analyst: **RH**
Beryllium	ND	0.0020	0.0010		mg/L	1	12/27/2012
Iron	ND	0.20	0.20		mg/L	1	12/27/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/27/2012
Nickel	ND	0.020	0.020		mg/L	1	12/27/2012
Titanium	ND	0.0050	0		mg/L	1	12/27/2012
Vanadium	ND	0.0050	0.0040		mg/L	1	12/27/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/20/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/20/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/20/2012
Phenanthrene	ND	2.0	2.0		µg/L	1	12/20/2012
Surr: 2-Fluorobiphenyl	*57.4*	*32-100*			*%REC*	1	12/20/2012
Surr: 4-Terphenyl-d14	*86.9*	*23-112*			*%REC*	1	12/20/2012
Surr: Nitrobenzene-d5	*70.9*	*31-93*			*%REC*	1	12/20/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/28/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/28/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/28/2012
Benzene	ND	1.0	1.0		µg/L	1	12/28/2012
Cyclohexane	ND	5.0	5.0		µg/L	1	12/28/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/28/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/28/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/28/2012
p-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/28/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/28/2012
Toluene	ND	1.0	1.0		µg/L	1	12/28/2012
Xylenes, Total	ND	3.0	3.0		µg/L	1	12/28/2012
Surr: 1,2-Dichloroethane-d4	*101*	*70-120*			*%REC*	1	12/28/2012
Surr: 4-Bromofluorobenzene	*100*	*75-120*			*%REC*	1	12/28/2012
Surr: Dibromofluoromethane	*98.2*	*85-115*			*%REC*	1	12/28/2012
Surr: Toluene-d8	*102*	*85-120*			*%REC*	1	12/28/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	MWKR2875R05S121812GX
Work Order:	1212697	**Collection Date:**	12/18/2012 2:30:00 PM
Project:	Marshall Hydrogeo2 Augusta 12/18/12		
Lab ID:	1212697-07	**Matrix:**	GROUNDWATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**SW7470**		Prep Date: **12/26/2012**		Analyst: **LR**
Mercury	ND	0.00020	0.00020		mg/L	1	12/26/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/26/2012**		Analyst: **RH**
Beryllium	ND	0.0020	0.0010		mg/L	1	12/27/2012
Iron	**0.30**	**0.20**	**0.20**		**mg/L**	1	12/27/2012
Molybdenum	ND	0.050	0.050		mg/L	1	12/27/2012
Nickel	**0.024**	**0.020**	**0.020**		**mg/L**	1	12/27/2012
Titanium	ND	0.0050	0		mg/L	1	12/27/2012
Vanadium	ND	0.0050	0.0040		mg/L	1	12/27/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/20/2012**		Analyst: **HL**
2-Methylnaphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
Naphthalene	ND	5.0	5.0		µg/L	1	12/21/2012
Phenanthrene	ND	2.0	2.0		µg/L	1	12/21/2012
Surr: 2-Fluorobiphenyl	*71.8*	*32-100*			*%REC*	1	12/21/2012
Surr: 4-Terphenyl-d14	*105*	*23-112*			*%REC*	1	12/21/2012
Surr: Nitrobenzene-d5	*79.0*	*31-93*			*%REC*	1	12/21/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**				Analyst: **BG**
1,2,3-Trimethylbenzene	ND	5.0	5.0		µg/L	1	12/27/2012
1,2,4-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/27/2012
1,3,5-Trimethylbenzene	ND	1.0	1.0		µg/L	1	12/27/2012
Benzene	ND	1.0	1.0		µg/L	1	12/27/2012
Cyclohexane	ND	5.0	5.0		µg/L	1	12/27/2012
Ethylbenzene	ND	1.0	1.0		µg/L	1	12/27/2012
Isopropylbenzene	ND	5.0	5.0		µg/L	1	12/27/2012
n-Propylbenzene	ND	1.0	1.0		µg/L	1	12/27/2012
p-Isopropyltoluene	ND	5.0	5.0		µg/L	1	12/27/2012
sec-Butylbenzene	ND	1.0	1.0		µg/L	1	12/27/2012
Toluene	ND	1.0	1.0		µg/L	1	12/27/2012
Xylenes, Total	ND	3.0	3.0		µg/L	1	12/27/2012
Surr: 1,2-Dichloroethane-d4	*111*	*70-120*			*%REC*	1	12/27/2012
Surr: 4-Bromofluorobenzene	*99.2*	*75-120*			*%REC*	1	12/27/2012
Surr: Dibromofluoromethane	*100*	*85-115*			*%REC*	1	12/27/2012
Surr: Toluene-d8	*99.8*	*85-120*			*%REC*	1	12/27/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 28-Dec-12

Client: AECOM Environment

QC BATCH REPORT

Work Order: 1212697

Project: Marshall Hydrogeo2 Augusta 12/18/12

Batch ID: **45565** Instrument ID **HG1** Method: **SW7470**

MBLK Sample ID: **MBLK-45565-45565** Units: **mg/L** Analysis Date: **12/21/2012 01:49 PM**

Client ID: Run ID: **HG1_121221A** SeqNo: **2176781** Prep Date: **12/21/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.00020								

LCS Sample ID: **LCS-45565-45565** Units: **mg/L** Analysis Date: **12/21/2012 01:51 PM**

Client ID: Run ID: **HG1_121221A** SeqNo: **2176782** Prep Date: **12/21/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001864	0.00020	0.002	0	93.2	80-120	0			

MS Sample ID: **1212694-05AMS** Units: **mg/L** Analysis Date: **12/21/2012 02:05 PM**

Client ID: Run ID: **HG1_121221A** SeqNo: **2176790** Prep Date: **12/21/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00171	0.00020	0.002	0.000009	85	75-125	0			

MSD Sample ID: **1212694-05AMSD** Units: **mg/L** Analysis Date: **12/21/2012 02:07 PM**

Client ID: Run ID: **HG1_121221A** SeqNo: **2176792** Prep Date: **12/21/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001749	0.00020	0.002	0.000009	87	75-125	0.00171	2.25	20	

The following samples were analyzed in this batch:

1212697-01A 1212697-02A 1212697-03A
1212697-05A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212697
Project: Marshall Hydrogeo2 Augusta 12/18/12

QC BATCH REPORT

Batch ID: **45598** Instrument ID **HG1** Method: **SW7470**

MBLK Sample ID: **MBLK-45598-45598** Units: **mg/L** Analysis Date: **12/26/2012 02:46 PM**
Client ID: Run ID: **HG1_121226A** SeqNo: **2178661** Prep Date: **12/26/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.00020								

LCS Sample ID: **LCS-45598-45598** Units: **mg/L** Analysis Date: **12/26/2012 02:48 PM**
Client ID: Run ID: **HG1_121226A** SeqNo: **2178662** Prep Date: **12/26/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001781	0.00020	0.002	0	89	80-120	0			

MS Sample ID: **1212697-06AMS** Units: **mg/L** Analysis Date: **12/26/2012 02:52 PM**
Client ID: **MWKR2875R04S121812GX** Run ID: **HG1_121226A** SeqNo: **2178664** Prep Date: **12/26/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001902	0.00020	0.002	-0.000005	95.4	75-125	0			

MSD Sample ID: **1212697-06AMSD** Units: **mg/L** Analysis Date: **12/26/2012 02:54 PM**
Client ID: **MWKR2875R04S121812GX** Run ID: **HG1_121226A** SeqNo: **2178665** Prep Date: **12/26/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001863	0.00020	0.002	-0.000005	93.4	75-125	0.001902	2.07	20	

The following samples were analyzed in this batch: 1212697-06A 1212697-07A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212697
Project: Marshall Hydrogeo2 Augusta 12/18/12

QC BATCH REPORT

Batch ID: **45600** Instrument ID **ICPMS2** Method: **SW6020A**

MBLK Sample ID: **MBLK-45600-45600** Units: **mg/L** Analysis Date: **12/27/2012 12:52 PM**
Client ID: Run ID: **ICPMS2_121226A** SeqNo: **2179991** Prep Date: **12/26/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	ND	0.0020								
Iron	ND	0.080								
Molybdenum	ND	0.0050								
Nickel	ND	0.0050								
Titanium	0.0001417	0.0050								J
Vanadium	ND	0.0050								

LCS Sample ID: **LCS-45600-45600** Units: **mg/L** Analysis Date: **12/27/2012 12:57 PM**
Client ID: Run ID: **ICPMS2_121226A** SeqNo: **2179992** Prep Date: **12/26/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.1053	0.0020	0.1	0	105	80-120	0			
Iron	10.04	0.080	10	0	100	80-120	0			
Molybdenum	0.09775	0.0050	0.1	0	97.8	80-120	0			
Nickel	0.09775	0.0050	0.1	0	97.8	80-120	0			
Titanium	0.1009	0.0050	0.1	0	101	80-120	0			
Vanadium	0.1	0.0050	0.1	0	100	80-120	0			

MS Sample ID: **1212697-06AMS** Units: **mg/L** Analysis Date: **12/27/2012 01:07 PM**
Client ID: **MWKR2875R04S121812GX** Run ID: **ICPMS2_121226A** SeqNo: **2179996** Prep Date: **12/26/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.1012	0.0020	0.1	0.00002609	101	75-125	0			
Iron	10.19	0.080	10	0.08328	101	75-125	0			
Molybdenum	0.1005	0.0050	0.1	0.0005093	100	75-125	0			
Nickel	0.09812	0.0050	0.1	0.002455	95.7	75-125	0			
Titanium	0.1036	0.0050	0.1	0.00086	103	75-125	0			
Vanadium	0.1023	0.0050	0.1	0.00009635	102	75-125	0			

MSD Sample ID: **1212697-06AMSD** Units: **mg/L** Analysis Date: **12/27/2012 01:12 PM**
Client ID: **MWKR2875R04S121812GX** Run ID: **ICPMS2_121226A** SeqNo: **2179999** Prep Date: **12/26/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.1012	0.0020	0.1	0.00002609	101	75-125	0.1012	0	20	
Iron	9.909	0.080	10	0.08328	98.3	75-125	10.19	2.8	20	
Molybdenum	0.09876	0.0050	0.1	0.0005093	98.3	75-125	0.1005	1.75	20	
Nickel	0.09635	0.0050	0.1	0.002455	93.9	75-125	0.09812	1.82	20	
Titanium	0.1012	0.0050	0.1	0.00086	100	75-125	0.1036	2.34	20	
Vanadium	0.1016	0.0050	0.1	0.00009635	102	75-125	0.1023	0.687	20	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212697
Project: Marshall Hydrogeo2 Augusta 12/18/12

QC BATCH REPORT

Batch ID: **45600** Instrument ID **ICPMS2** Method: **SW6020A**

The following samples were analyzed in this batch:

1212697-01A	1212697-02A	1212697-03A
1212697-05A	1212697-06A	1212697-07A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212697
Project: Marshall Hydrogeo2 Augusta 12/18/12

QC BATCH REPORT

Batch ID: **45523** Instrument ID **SVMS6** Method: **SW8270**

MBLK Sample ID: **SBLKW1-45523-45523** Units: **µg/L** Analysis Date: **12/20/2012 12:06 PM**
Client ID: Run ID: **SVMS6_121220A** SeqNo: **2176500** Prep Date: **12/20/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	ND	5.0								
Naphthalene	ND	5.0								
Phenanthrene	ND	5.0								
Surr: 2-Fluorobiphenyl	*29.5*	0	*50*	0	*59*	*32-100*	0			
Surr: 4-Terphenyl-d14	*42.28*	0	*50*	0	*84.6*	*23-112*	0			
Surr: Nitrobenzene-d5	*36.51*	0	*50*	0	*73*	*31-93*	0			

LCS Sample ID: **SLCSW1-45523-45523** Units: **µg/L** Analysis Date: **12/20/2012 10:25 AM**
Client ID: Run ID: **SVMS6_121220A** SeqNo: **2176496** Prep Date: **12/20/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	13.79	5.0	20	0	69	45-105	0			
Naphthalene	13.77	5.0	20	0	68.8	40-100	0			
Phenanthrene	15.44	5.0	20	0	77.2	50-115	0			
Surr: 2-Fluorobiphenyl	*30.35*	0	*50*	0	*60.7*	*32-100*	0			
Surr: 4-Terphenyl-d14	*40.65*	0	*50*	0	*81.3*	*23-112*	0			
Surr: Nitrobenzene-d5	*36.84*	0	*50*	0	*73.7*	*31-93*	0			

MS Sample ID: **1212694-05B MS** Units: **µg/L** Analysis Date: **12/20/2012 10:50 AM**
Client ID: Run ID: **SVMS6_121220A** SeqNo: **2176497** Prep Date: **12/20/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	128.3	50	200	0	64.2	45-105	0			
Naphthalene	129.7	50	200	0	64.8	40-100	0			
Phenanthrene	149.1	50	200	0	74.6	50-115	0			
Surr: 2-Fluorobiphenyl	*280.9*	0	*500*	0	*56.2*	*32-100*	0			
Surr: 4-Terphenyl-d14	*380.8*	0	*500*	0	*76.2*	*23-112*	0			
Surr: Nitrobenzene-d5	*344.3*	0	*500*	0	*68.9*	*31-93*	0			

MS Sample ID: **1212697-06B MS** Units: **µg/L** Analysis Date: **12/20/2012 12:31 PM**
Client ID: **MWKR2875R04S121812GX** Run ID: **SVMS6_121220A** SeqNo: **2176501** Prep Date: **12/20/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	131.6	50	200	0	65.8	45-105	0			
Naphthalene	130	50	200	0	65	40-100	0			
Phenanthrene	146	50	200	0	73	50-115	0			
Surr: 2-Fluorobiphenyl	*278.5*	0	*500*	0	*55.7*	*32-100*	0			
Surr: 4-Terphenyl-d14	*397.6*	0	*500*	0	*79.5*	*23-112*	0			
Surr: Nitrobenzene-d5	*350*	0	*500*	0	*70*	*31-93*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212697
Project: Marshall Hydrogeo2 Augusta 12/18/12

QC BATCH REPORT

Batch ID: **45523** Instrument ID **SVMS6** Method: **SW8270**

MSD Sample ID: **1212694-05B MSD** Units: **µg/L** Analysis Date: **12/20/2012 11:15 AM**
Client ID: Run ID: **SVMS6_121220A** SeqNo: **2176498** Prep Date: **12/20/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	123.2	50	200	0	61.6	45-105	128.3	4.06	30	
Naphthalene	124.5	50	200	0	62.2	40-100	129.7	4.09	30	
Phenanthrene	132.7	50	200	0	66.4	50-115	149.1	11.6	30	
Surr: 2-Fluorobiphenyl	*262.3*	0	*500*	0	*52.5*	*32-100*	280.9	*6.85*	*40*	
Surr: 4-Terphenyl-d14	*299.1*	0	*500*	0	*59.8*	*23-112*	380.8	*24*	*40*	
Surr: Nitrobenzene-d5	*328.6*	0	*500*	0	*65.7*	*31-93*	344.3	*4.67*	*40*	

MSD Sample ID: **1212697-06B MSD** Units: **µg/L** Analysis Date: **12/20/2012 12:57 PM**
Client ID: **MWKR2875R04S121812GX** Run ID: **SVMS6_121220A** SeqNo: **2176502** Prep Date: **12/20/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	125.9	50	200	0	63	45-105	131.6	4.43	30	
Naphthalene	123.1	50	200	0	61.6	40-100	130	5.45	30	
Phenanthrene	140	50	200	0	70	50-115	146	4.2	30	
Surr: 2-Fluorobiphenyl	*273.8*	0	*500*	0	*54.8*	*32-100*	278.5	*1.7*	*40*	
Surr: 4-Terphenyl-d14	*360.4*	0	*500*	0	*72.1*	*23-112*	397.6	*9.82*	*40*	
Surr: Nitrobenzene-d5	*335*	0	*500*	0	*67*	*31-93*	350	*4.38*	*40*	

The following samples were analyzed in this batch:

1212697-01B	1212697-02B	1212697-03B
1212697-05B	1212697-06B	1212697-07B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212697
Project: Marshall Hydrogeo2 Augusta 12/18/12

QC BATCH REPORT

Batch ID: **R114375A** Instrument ID **VMS8** Method: **SW8260**

MBLK Sample ID: **VBLKW1-121226-R114375A** Units: **µg/L** Analysis Date: **12/26/2012 02:57 PM**
Client ID: Run ID: **VMS8_121226A** SeqNo: **2179268** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,3-Trimethylbenzene	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
Benzene	ND	1.0								
Cyclohexane	ND	5.0								
Ethylbenzene	ND	1.0								
Isopropylbenzene	ND	1.0								
n-Propylbenzene	ND	1.0								
p-Isopropyltoluene	ND	2.0								
sec-Butylbenzene	ND	2.0								
Toluene	ND	1.0								
Xylenes, Total	ND	3.0								
Surr: 1,2-Dichloroethane-d4	*20.52*	0	*20*	0	*103*	*70-120*	0			
Surr: 4-Bromofluorobenzene	*20.39*	0	*20*	0	*102*	*75-120*	0			
Surr: Dibromofluoromethane	*20.49*	0	*20*	0	*102*	*85-115*	0			
Surr: Toluene-d8	*20.01*	0	*20*	0	*100*	*85-120*	0			

LCS Sample ID: **VLCSW1-121226-R114375A** Units: **µg/L** Analysis Date: **12/26/2012 02:09 PM**
Client ID: Run ID: **VMS8_121226A** SeqNo: **2178581** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	23.21	1.0	20	0	116	75-130	0			
1,3,5-Trimethylbenzene	23.64	1.0	20	0	118	75-130	0			
Benzene	22.12	1.0	20	0	111	80-120	0			
Ethylbenzene	22.86	1.0	20	0	114	75-125	0			
Isopropylbenzene	22.98	1.0	20	0	115	75-125	0			
n-Propylbenzene	23.07	1.0	20	0	115	70-130	0			
p-Isopropyltoluene	21.27	2.0	20	0	106	75-130	0			
sec-Butylbenzene	21.84	2.0	20	0	109	70-125	0			
Toluene	22.65	1.0	20	0	113	75-120	0			
Xylenes, Total	67.33	3.0	60	0	112	75-130	0			
Surr: 1,2-Dichloroethane-d4	*20.11*	0	*20*	0	*101*	*70-120*	0			
Surr: 4-Bromofluorobenzene	*20.54*	0	*20*	0	*103*	*75-120*	0			
Surr: Dibromofluoromethane	*20.53*	0	*20*	0	*103*	*85-115*	0			
Surr: Toluene-d8	*20.06*	0	*20*	0	*100*	*85-120*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212697
Project: Marshall Hydrogeo2 Augusta 12/18/12

QC BATCH REPORT

Batch ID: **R114375A** Instrument ID **VMS8** Method: **SW8260**

MS Sample ID: **1212756-02A MS** Units: **µg/L** Analysis Date: **12/26/2012 11:45 PM**
Client ID: Run ID: **VMS8_121226A** SeqNo: **2179294** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	21.07	1.0	20	0	105	75-130	0			
1,3,5-Trimethylbenzene	21.73	1.0	20	0	109	75-130	0			
Benzene	28.26	1.0	20	7.76	102	80-120	0			
Ethylbenzene	21.5	1.0	20	0	108	75-125	0			
Isopropylbenzene	21.19	1.0	20	0	106	75-125	0			
n-Propylbenzene	20.75	1.0	20	0	104	70-130	0			
p-Isopropyltoluene	18.21	2.0	20	0	91	75-130	0			
sec-Butylbenzene	19.35	2.0	20	0	96.8	70-125	0			
Toluene	21.17	1.0	20	0	106	75-120	0			
Xylenes, Total	61.87	3.0	60	0	103	75-130	0			
Surr: 1,2-Dichloroethane-d4	*20.22*	0	*20*	0	*101*	*70-120*	0			
Surr: 4-Bromofluorobenzene	*21.26*	0	*20*	0	*106*	*75-120*	0			
Surr: Dibromofluoromethane	*20.57*	0	*20*	0	*103*	*85-115*	0			
Surr: Toluene-d8	*20.27*	0	*20*	0	*101*	*85-120*	0			

MSD Sample ID: **1212756-02A MSD** Units: **µg/L** Analysis Date: **12/27/2012 12:09 PM**
Client ID: Run ID: **VMS8_121226A** SeqNo: **2179295** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	21.12	1.0	20	0	106	75-130	21.07	0.237	30	
1,3,5-Trimethylbenzene	21.53	1.0	20	0	108	75-130	21.73	0.925	30	
Benzene	28.53	1.0	20	7.76	104	80-120	28.26	0.951	30	
Ethylbenzene	21.57	1.0	20	0	108	75-125	21.5	0.325	30	
Isopropylbenzene	21.17	1.0	20	0	106	75-125	21.19	0.0944	30	
n-Propylbenzene	21.26	1.0	20	0	106	70-130	20.75	2.43	30	
p-Isopropyltoluene	19.78	2.0	20	0	98.9	75-130	18.21	8.27	30	
sec-Butylbenzene	20.19	2.0	20	0	101	70-125	19.35	4.25	30	
Toluene	21.77	1.0	20	0	109	75-120	21.17	2.79	30	
Xylenes, Total	63.69	3.0	60	0	106	75-130	61.87	2.9	30	
Surr: 1,2-Dichloroethane-d4	*19.64*	0	*20*	0	*98.2*	*70-120*	20.22	*2.91*	*30*	
Surr: 4-Bromofluorobenzene	*20.8*	0	*20*	0	*104*	*75-120*	21.26	*2.19*	*30*	
Surr: Dibromofluoromethane	*20.53*	0	*20*	0	*103*	*85-115*	20.57	*0.195*	*30*	
Surr: Toluene-d8	*20.32*	0	*20*	0	*102*	*85-120*	20.27	*0.246*	*30*	

The following samples were analyzed in this batch:

1212697-01C	1212697-02C	1212697-03C
1212697-04A	1212697-05C	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212697
Project: Marshall Hydrogeo2 Augusta 12/18/12

QC BATCH REPORT

Batch ID: **R114469** Instrument ID **VMS5** Method: **SW8260**

MBLK Sample ID: **VBLKW2-121227-R114469** Units: **µg/L** Analysis Date: **12/27/2012 06:36 PM**
Client ID: Run ID: **VMS5_121227A** SeqNo: **2181113** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,3-Trimethylbenzene	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
Benzene	ND	1.0								
Cyclohexane	ND	5.0								
Ethylbenzene	ND	1.0								
Isopropylbenzene	ND	1.0								
n-Propylbenzene	ND	1.0								
p-Isopropyltoluene	ND	2.0								
sec-Butylbenzene	ND	2.0								
Toluene	ND	1.0								
Xylenes, Total	ND	3.0								
Surr: 1,2-Dichloroethane-d4	*19.79*	0	*20*	0	*99*	*70-120*	0			
Surr: 4-Bromofluorobenzene	*20.23*	0	*20*	0	*101*	*75-120*	0			
Surr: Dibromofluoromethane	*19.59*	0	*20*	0	*98*	*85-115*	0			
Surr: Toluene-d8	*20.14*	0	*20*	0	*101*	*85-120*	0			

LCS Sample ID: **VLCSW1-121227-R114469** Units: **µg/L** Analysis Date: **12/27/2012 05:47 PM**
Client ID: Run ID: **VMS5_121227A** SeqNo: **2181112** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	18.3	1.0	20	0	91.5	75-130	0			
1,3,5-Trimethylbenzene	18.62	1.0	20	0	93.1	75-130	0			
Benzene	18.71	1.0	20	0	93.6	80-120	0			
Ethylbenzene	18.38	1.0	20	0	91.9	75-125	0			
Isopropylbenzene	18.42	1.0	20	0	92.1	75-125	0			
n-Propylbenzene	18	1.0	20	0	90	70-130	0			
p-Isopropyltoluene	18.47	2.0	20	0	92.4	75-130	0			
sec-Butylbenzene	18.86	2.0	20	0	94.3	70-125	0			
Toluene	18.88	1.0	20	0	94.4	75-120	0			
Xylenes, Total	55.06	3.0	60	0	91.8	75-130	0			
Surr: 1,2-Dichloroethane-d4	*20.12*	0	*20*	0	*101*	*70-120*	0			
Surr: 4-Bromofluorobenzene	*19.69*	0	*20*	0	*98.4*	*75-120*	0			
Surr: Dibromofluoromethane	*20.49*	0	*20*	0	*102*	*85-115*	0			
Surr: Toluene-d8	*19.96*	0	*20*	0	*99.8*	*85-120*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212697
Project: Marshall Hydrogeo2 Augusta 12/18/12

QC BATCH REPORT

Batch ID: **R114469** Instrument ID **VMS5** Method: **SW8260**

MS Sample ID: **1212697-06C MS** Units: **µg/L** Analysis Date: **12/28/2012 03:36 AM**
Client ID: **MWKR2875R04S121812GX** Run ID: **VMS5_121227A** SeqNo: **2181132** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	19.49	1.0	20	0	97.4	75-130	0			
1,3,5-Trimethylbenzene	19.93	1.0	20	0	99.6	75-130	0			
Benzene	19.82	1.0	20	0	99.1	80-120	0			
Ethylbenzene	20.12	1.0	20	0	101	75-125	0			
Isopropylbenzene	20.07	1.0	20	0	100	75-125	0			
n-Propylbenzene	19.79	1.0	20	0	99	70-130	0			
p-Isopropyltoluene	20	2.0	20	0	100	75-130	0			
sec-Butylbenzene	20.59	2.0	20	0	103	70-125	0			
Toluene	20.74	1.0	20	0	104	75-120	0			
Xylenes, Total	58.78	3.0	60	0	98	75-130	0			
Surr: 1,2-Dichloroethane-d4	*19.64*	0	*20*	0	*98.2*	*70-120*	0			
Surr: 4-Bromofluorobenzene	*20.48*	0	*20*	0	*102*	*75-120*	0			
Surr: Dibromofluoromethane	*19.57*	0	*20*	0	*97.8*	*85-115*	0			
Surr: Toluene-d8	*20.36*	0	*20*	0	*102*	*85-120*	0			

MSD Sample ID: **1212697-06C MSD** Units: **µg/L** Analysis Date: **12/28/2012 04:01 AM**
Client ID: **MWKR2875R04S121812GX** Run ID: **VMS5_121227A** SeqNo: **2181133** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	19.14	1.0	20	0	95.7	75-130	19.49	1.81	30	
1,3,5-Trimethylbenzene	19.66	1.0	20	0	98.3	75-130	19.93	1.36	30	
Benzene	19.43	1.0	20	0	97.2	80-120	19.82	1.99	30	
Ethylbenzene	18.94	1.0	20	0	94.7	75-125	20.12	6.04	30	
Isopropylbenzene	19.73	1.0	20	0	98.6	75-125	20.07	1.71	30	
n-Propylbenzene	19.45	1.0	20	0	97.2	70-130	19.79	1.73	30	
p-Isopropyltoluene	19.47	2.0	20	0	97.4	75-130	20	2.69	30	
sec-Butylbenzene	20.28	2.0	20	0	101	70-125	20.59	1.52	30	
Toluene	21.41	1.0	20	0	107	75-120	20.74	3.18	30	
Xylenes, Total	56.65	3.0	60	0	94.4	75-130	58.78	3.69	30	
Surr: 1,2-Dichloroethane-d4	*20.13*	0	*20*	0	*101*	*70-120*	19.64	*2.46*	*30*	
Surr: 4-Bromofluorobenzene	*19.86*	0	*20*	0	*99.3*	*75-120*	20.48	*3.07*	*30*	
Surr: Dibromofluoromethane	*19.68*	0	*20*	0	*98.4*	*85-115*	19.57	*0.561*	*30*	
Surr: Toluene-d8	*21.52*	0	*20*	0	*108*	*85-120*	20.36	*5.54*	*30*	

The following samples were analyzed in this batch: 1212697-06C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212697
Project: Marshall Hydrogeo2 Augusta 12/18/12

QC BATCH REPORT

Batch ID: **R114473** Instrument ID **VMS6** Method: **SW8260**

MBLK Sample ID: **VBLKW2-121227-R114473** Units: **µg/L** Analysis Date: **12/27/2012 07:51 PM**
Client ID: Run ID: **VMS6_121227A** SeqNo: **2180697** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,3-Trimethylbenzene	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
Benzene	ND	1.0								
Cyclohexane	ND	5.0								
Ethylbenzene	ND	1.0								
Isopropylbenzene	ND	1.0								
n-Propylbenzene	ND	1.0								
p-Isopropyltoluene	ND	2.0								
sec-Butylbenzene	ND	2.0								
Toluene	ND	1.0								
Xylenes, Total	ND	3.0								
Surr: 1,2-Dichloroethane-d4	*20.56*	0	*20*	0	*103*	*70-120*	0			
Surr: 4-Bromofluorobenzene	*19.61*	0	*20*	0	*98*	*75-120*	0			
Surr: Dibromofluoromethane	*19.87*	0	*20*	0	*99.4*	*85-115*	0			
Surr: Toluene-d8	*20.11*	0	*20*	0	*101*	*85-120*	0			

LCS Sample ID: **VLCSW1-121227-R114473** Units: **µg/L** Analysis Date: **12/27/2012 07:02 PM**
Client ID: Run ID: **VMS6_121227A** SeqNo: **2180696** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	19.32	1.0	20	0	96.6	75-130	0			
1,3,5-Trimethylbenzene	19.63	1.0	20	0	98.2	75-130	0			
Benzene	18.91	1.0	20	0	94.6	80-120	0			
Ethylbenzene	18.96	1.0	20	0	94.8	75-125	0			
Isopropylbenzene	19.26	1.0	20	0	96.3	75-125	0			
n-Propylbenzene	18.5	1.0	20	0	92.5	70-130	0			
p-Isopropyltoluene	19.62	2.0	20	0	98.1	75-130	0			
sec-Butylbenzene	19.41	2.0	20	0	97	70-125	0			
Toluene	18.97	1.0	20	0	94.8	75-120	0			
Xylenes, Total	57.28	3.0	60	0	95.5	75-130	0			
Surr: 1,2-Dichloroethane-d4	*20.09*	0	*20*	0	*100*	*70-120*	0			
Surr: 4-Bromofluorobenzene	*19.93*	0	*20*	0	*99.6*	*75-120*	0			
Surr: Dibromofluoromethane	*20.25*	0	*20*	0	*101*	*85-115*	0			
Surr: Toluene-d8	*19.75*	0	*20*	0	*98.8*	*85-120*	0			

The following samples were analyzed in this batch: 1212697-07C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

12126097

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

COC #	ENBRIDGE_121812_JTC1	Task:	HYDROGEO2_AUGUSTA MUNICIPAL V
Total # of Samples: 7			Event Complete?
Turn Around Time	5 Day	Rush	No
BILLING CODE: 7.00			

Lab Information:
Lab Name: ALS Laboratory Group
Address: 3352 128th Ave. Holland, MI 49424-9263
Lab PM: Ann Preston
Phone/Fax: 1-616-399-6070/1-616-399-6185
Lab PM email: ann.preston@alsglobal.com
Applicable Lab Quote #:

Project Information:
Site ID #:
Project #: 60162778
Site Address: 5555 Glenwood Parkway SE Suite 200
City: Grand Rapids State, Zip: MI
Site PM Name: Bryan Stiemsma
Phone/Fax: [redacted]
Site PM Email: Bryan.Stiemsma@aecom.com

Other Information:
Send Invoice to: Enbridge Energy - ATTN Accounts Payable
Address: 1100 Louisiana Suite 1100
City/State: Houson, TX Phone #: 713-821-2000
PO #:
Send EDD to:
CC Hardcopy report:
CC Hardcopy report:

ITEM #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	MATRIX CODE	G=GRAB C=COMP	SAMPLE DATE	#OF CONTAINERS	Comments/Lab Sample I.D.	Preservative: HNO3	HNO3	None	HCl	Analysis: Be,Fe,Mo,Ni,Ti,V	Mercury	PNAs by 8270	VOC by 5035/8260
1	MWKR2875R01S121812GX	MWKR2875R01	WG	G	12/18/2012 13:30	6						X	X	X	X
2	MWKR2875R01D121812GX	MWKR2875R01	WG	G	12/18/2012 13:30	6	DUPLICATE					X	X	X	X
3	MWKR2875R02S121812GX	MWKR2875R02	WG	G	12/18/2012 13:05	6						X	X	X	X
4	MWKR2875R02T121812WX	MWKR2875R02	WQ	G	12/18/2012 00:00	3	TRIP BLANK								X
5	MWKR2875R03S121812GX	MWKR2875R03	WG	G	12/18/2012 12:00	6						X	X	X	X
6	MWKR2875R04S121812GX	MWKR2875R04	WG	G	12/18/2012 11:55	18	MS/MSD					X	X	X	X
7	MWKR2875R05S121812GX	MWKR2875R05	WG	G	12/18/2012 14:30	6						X	X	X	X

Additional Comments/Special Instructions:

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
	12.18.12	1635		12.18.12	1635
	12-19-12	0900		12-19-12	0800

Sample Receipt Conditions

Temp in °C	Samples on Ice?	Sample Intact?	Trip Blank?
0.8°, 2.8°	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N

SHIPPING INFO
Company:
Tracking #:

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: JON CARVETH, LORRI LEGO
SIGNATURE of SAMPLER:
DATE Signed:
Time:

ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **19-Dec-12 08:00**

Work Order: **1212697** Received by: **PD**

Checklist completed by Keith Wierenga eSignature 19-Dec-12 Date Reviewed by: Ann Preston eSignature 19-Dec-12 Date

Matrices: Groundwater
Carrier name: ALSHN

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	0.8, 2.8 C		
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	12/19/2012 2:29:00 PM		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

0.8°C

ALS Environmental	CUSTODY SEAL	Seal Broken By:
3352 128th Avenue Holland, Michigan 49424 Tel. +1 616 399 6070 Fax. +1 616 399 6185	Date: 12-18-12 Time: Name: Toni Legg Company:	Date:

2.8°C

ALS Environmental	CUSTODY SEAL	Seal Broken By:
3352 128th Avenue Holland, Michigan 49424 Tel. +1 616 399 6070 Fax. +1 616 399 6185	Date: 12-18-12 Time: Name: Toni Legg Company:	Date:

Enbridge Line 6B MP 608 Pipeline Release

Marshall, Michigan

Appendix B

Submerged Oil Assessment & Recovery Activities

Analytical Data Reports

Prepared for U.S. EPA and MDEQ

Enbridge Energy, Limited Partnership

Submitted: January 23, 2013

DRIESENGA & ASSOCIATES, INC.
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455 East 8th Street, Suite 100
Holland, Michigan 49423
Ph. (616) 396-0255 • Fax (616) 396-0100
www.driesenga.com

BULK DENSITY/POROSITY OF SOILS

VOLUMETRIC METHOD - B

(ASTM D7263)

Project: ALS - 1212055 Project No.: 1210359.4G

Technician: Dan Marlor Date: 12/10/12

Sample No.	Sample Description	Sample Depth (ft)	Ht Water Column (in)	Total Length (in)	Prepped Length (in)	Vol. (cc)	Wet Wt. (g)	Dry Wt. (g)	Wet Bulk Density (lb/ft^3)	Dry Bulk Density (lb/ft^3)	Specific Gravity	Porosity (%)	Water Content (%)
1212055-01A	Black Peat	0-0.5	*	19.0	5.82	505.7408	689.9	202.0	85.1604	24.9346	1.35	44.49	241.5347
1212055-02A	Brownish-Black Peat w/ Sand	0-0.5	*	15.0	4.92	427.5335	608.3	309.1	88.8233	45.1345	2.45	11.31	96.7972
1212055-03A	Brown Peat, Some Silt	0-0.5	*	34.0	6.26	543.9755	506.3	203.7	58.1043	23.3771	2.43	25.74	148.5518
1212055-04A	Black Peat, Some Silt	0-0.5	*	21.0	5.91	513.5615	640.6	208.4	77.8707	25.3329	2.45	24.25	207.3896
1212055-05A	Black Sandy Peat	0-0.5	*	21.0	5.91	513.5615	605.7	203.3	73.6283	24.7129	2.49	24.26	197.9341
1212055-06A	Brown Fine, Med, & Coarse Sand, Trace Fines	0-0.5	*	21.0	5.71	496.1821	1031.9	863.9	129.8303	108.6930	2.48	29.88	19.4467
1212055-07A	Brownish-Black Peat, Little Silt & Sand	0-0.5	*	22.0	6.1	530.0720	819.2	487.6	96.4794	57.4260	2.58	3.11	68.0066
1212055-08A	Dk. Brown Peat w/ Sand, Gravel, & Silt	0-0.5	*	17.0	5.98	519.6443	681.5	349.2	81.87	41.95	2.48	13.23	95.1604
1212055-09A	Black Peat, Some Sand & Silt, Trace Gravel	0-0.5	*	12.0	5.51	478.8027	838.3	568.7	109.3005	74.1491	2.59	7.25	47.41
1212055-10A	Brown Fine Sand, Trace Fines	0-0.5	*	20.0	4.92	427.5335	740.3	649.9	108.0978	94.8977	2.67	19.48	13.9098
1212055-11A	Black Peat, Some Silt	0-0.7	*	25.0	5.51	478.8027	532.3	151.9	69.4032	19.8053	2.49	27.42	250.4279
1212055-12A	Black Peat, Some Sand & Silt	0-0.5	*	26.0	5.51	478.8027	533.7	146.3	69.5857	19.0751	2.19	31.71	264.7984

Remarks: Test was performed on undisturbed sample provided by client in a sample tube

*Height of the water column was not measured on these samples

11-Dec-2012

Brian Albig
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall Quantification Study Sediment 7/27-8/7/12** Work Order: **1212055**

Dear Brian,

ALS Environmental received 12 samples on 04-Dec-2012 09:45 AM for the analyses presented in the following report.

The analytical data provided relates directly to the results received by ALS Environmental and for only the analyses requested. The report from the subcontract laboratory is included in its entirety.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 7.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

Certificate No: MN331938

ALS Group USA, Corp

Date: 11-Dec-12

Client: AECOM Environment
Project: Marshall Quantification Study Sediment 7/27-8/7/12
Work Order: **1212055**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1212055-01	SEKR2875C701S080612D005	Sediment		8/6/2012	12/4/2012 09:45	☐
1212055-02	SEKR3700C701S072712D005	Sediment		8/7/2012	12/4/2012 09:45	☐
1212055-03	SEKR3750C704S072712D005	Sediment		8/7/2012	12/4/2012 09:45	☐
1212055-04	SEKR3750C707S072712D005	Sediment		8/7/2012	12/4/2012 09:45	☐
1212055-05	SEKR3750C708S080712D005	Sediment		8/6/2012	12/4/2012 09:45	☐
1212055-06	SEKR3725C704S072712D005	Sediment		8/6/2012	12/4/2012 09:45	☐
1212055-07	SEKR3725C705S072712D005	Sediment		7/27/2012	12/4/2012 09:45	☐
1212055-08	SEKR1100C701S080612D005	Sediment		7/27/2012	12/4/2012 09:45	☐
1212055-09	SEKR2150C705S080612D005	Sediment		8/7/2012	12/4/2012 09:45	☐
1212055-10	SEKR3075C702S080712D005	Sediment		7/27/2012	12/4/2012 09:45	☐
1212055-11	SEKR1550C701S080712D007	Sediment		7/27/2012	12/4/2012 09:45	☐
1212055-12	SEKR0575C702S080712D005	Sediment		7/27/2012	12/4/2012 09:45	☐

ALS Group USA, Corp

Date: 11-Dec-12

Client: AECOM Environment
Project: Marshall Quantification Study Sediment 7/27-8/7/12
WorkOrder: **1212055**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
SD	Serial Dilution
TDL	Target Detection Limit

Units Reported	Description
%	Percent
cc	
g	grams
lbs/ft³	Pounds per Cubic Foot
none	

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BULK DENSITY/POROSITY OF SOILS

VOLUMETRIC METHOD - B

(ASTM D7263)

Project: ALS - 1212055 Project No.: 1210359.4G

Technician: Dan Marlor Date: 12/10/12

Sample No.	Sample Description	Sample Depth (ft)	Ht Water Column (in)	Total Length (in)	Prepped Length (in)	Vol. (cc)	Wet Wt. (g)	Dry Wt. (g)	Wet Bulk Density (lb/ft^3)	Dry Bulk Density (lb/ft^3)	Specific Gravity	Porosity (%)	Water Content (%)
1212055-01A	Black Peat	0-0.5	*	19.0	5.82	505.7408	689.9	202.0	85.1604	24.9346	1.35	44.49	241.5347
1212055-02A	Brownish-Black Peat w/ Sand	0-0.5	*	15.0	4.92	427.5335	608.3	309.1	88.8233	45.1345	2.45	11.31	96.7972
1212055-03A	Brown Peat, Some Silt	0-0.5	*	34.0	6.26	543.9755	506.3	203.7	58.1043	23.3771	2.43	25.74	148.5518
1212055-04A	Black Peat, Some Silt	0-0.5	*	21.0	5.91	513.5615	640.6	208.4	77.8707	25.3329	2.45	24.25	207.3896
1212055-05A	Black Sandy Peat	0-0.5	*	21.0	5.91	513.5615	605.7	203.3	73.6283	24.7129	2.49	24.26	197.9341
1212055-06A	Brown Fine, Med, & Coarse Sand, Trace Fines	0-0.5	*	21.0	5.71	496.1821	1031.9	863.9	129.8303	108.6930	2.48	29.88	19.4467
1212055-07A	Brownish-Black Peat, Little Silt & Sand	0-0.5	*	22.0	6.1	530.0720	819.2	487.6	96.4794	57.4260	2.58	3.11	68.0066
1212055-08A	Dk. Brown Peat w/ Sand, Gravel, & Silt	0-0.5	*	17.0	5.98	519.6443	681.5	349.2	81.87	41.95	2.48	13.23	95.1604
1212055-09A	Black Peat, Some Sand & Silt, Trace Gravel	0-0.5	*	12.0	5.51	478.8027	838.3	568.7	109.3005	74.1491	2.59	7.25	47.41
1212055-10A	Brown Fine Sand, Trace Fines	0-0.5	*	20.0	4.92	427.5335	740.3	649.9	108.0978	94.8977	2.67	19.48	13.9098
1212055-11A	Black Peat, Some Silt	0-0.7	*	25.0	5.51	478.8027	532.3	151.9	69.4032	19.8053	2.49	27.42	250.4279
1212055-12A	Black Peat, Some Sand & Silt	0-0.5	*	26.0	5.51	478.8027	533.7	146.3	69.5857	19.0751	2.19	31.71	264.7984

Remarks: Test was performed on undisturbed sample provided by client in a sample tube

*Height of the water column was not measured on these samples

1212055

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

COC # ENBRIDGE_072412_RAR_BD | Task: QUANITIFICATION STUDY
Total # of Samples: 12 | Event Complete?

Lab Information:		Project Information:		Other Information:	
Lab Name	ALS Laboratory Group	Site ID #:		Send Invoice to	Enbridge Energy - ATTN Accounts Payable
Address	3352 128th Ave. Holland, Mi 49424-9263	Project #	60162778	Address	1100 Louisiana Suite 1100
		Site Address	5555 Glenwood Parkway SE Suite 200	City/State	Houson, TX
Lab PM	Ann Preston	City	Grand Rapids	State, Zip	MI
Phone/Fax	1-616-399-6070/1-616-399-6185	Site PM Name	[redacted]	Send EDD to	
Lab PM email	ann.preston@alsglobal.com	Phone/Fax:	[redacted]	CC Hardcopy report	
Applicable Lab Quote #:		Site PM Email:	Bryan.Stiemsma@aecom.com	CC Hardcopy report	

Turn Around Time	5 Day	Rush	No	
BILLING CODE: 9,045				

ITEM #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	MATRIX CODE	G=GRAB C=COMP	SAMPLE DATE	#OF CONTAINERS	Comments/Lab Sample I.D.	Preservative: None	Analysis: Bulk Density and Porosity
1	SEKR2875C701S080612D005	SEKR2875C701	SE	G	8/6/2012	1	NO IMPACT (0"-6")		X
2	SEKR3700C701S072712D005	SEKR3700C701	SE	G	7/27/2012	1	NO IMPACT (0"-6")		X
3	SEKR3750C704S072712D005	SEKR3750C704	SE	G	7/27/2012	1	NO IMPACT (0"-6")		X
4	SEKR3750C707S072712D005	SEKR3750C707	SE	G	7/27/2012	1	NO IMPACT (0"-6")		X
	SEKR3750C708S080712D005	SEKR3750C708	SE	G	8/7/2012	1	NO IMPACT (0"-6")		X
	SEKR3725C704S072712D005	SEKR3725C704	SE	G	7/27/2012	1	NO IMPACT (0"-6")		X
	SEKR3725C705S072712D005	SEKR3725C705	SE	G	7/27/2012	1	NO IMPACT (0"-6")		X
	SEKR1100C701S080612D005	SEKR1100C701	SE	G	8/6/2012	1	NO IMPACT (0"-6")		X
	SEKR2150C705S080612D005	SEKR2150C705	SE	G	8/6/2012	1	NO IMPACT (0"-6")		X
	SEKR3075C702S080712D005	SEKR3075C702	SE	G	8/7/2012	1	NO IMPACT (0"-6")		X
	SEKR1550C701S080712D007	SEKR1550C701	SE	G	8/7/2012	1	IMPACT (0"-8")		X
	SEKR0575C702S080712D005	SEKR0575C702	SE	G	8/7/2012	1	NO IMPACT (0"-6")		X

Additional Comments/Special Instructions:

PROCEDURE FOR THIS QUANTIFICATION OF OIL WORK PLAN IS TO RUN SAMPLES FOR BULK DENSITY IN THE FOLLOWING PRIORITY: 1.) INTERVAL EXHIBITING IMPACT, 2) IF NO IMPACT OBSERVED, 0"-6". THE DESIRED INTERVAL FOR ANALYSIS AND OBSERVATION OF IMPACT OR LACK THEREOF WILL BE NOTED IN THE COMMENTS SECTION. CALL BRIAN ALBIG (412) 559 2310 IF YOU HAVE ANY QUESTIONS.

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Herald Kraemer	11-30-12	1430	[signature]	11-30-12	1430

Sample Receipt Conditions

	Y/N		Y/N	Y/N
	Y/N		Y/N	Y/N
	Y/N		Y/N	Y/N
	Y/N		Y/N	Y/N
Temp in OC	Samples on Ice?		Sample intact?	Trip Blank?

SHIPPING INFO

Company:

Tracking #:

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: REED RECTOR, CHAD KHODL

SIGNATURE of SAMPLER: | DATE Signed: | Title:

ALS Environmental

Subcontractor:
Driesenga & Associates, Inc
455 8th Street
Suite 100
Holland, MI 49423

TEL: (616) 396-0255
FAX:
Acct #:

Salesperson **Alex Csaszar**

CHAIN-OF-CUSTODY RECORD

Date: 04-Dec-12
COC ID: 3902
Due D **10-Dec-12**

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	1212055	A	Subcontracted Analyses (SUBCONTRACT)
Work Order		Project Number		B	
Company Name	ALS Group USA, Corp	Bill To Company	ALS Group USA, Corp	C	
Send Report To	Ann Preston	Inv Attn	Accounts Payable	D	
Address	3352 128th Avenue	Address	3352 128th Avenue	E	
				F	
City/State/Zip	Holland, Michigan 49424-9263	City/State/Zip	Holland, Michigan 49424-9263	G	
Phone	(616) 399-6070	Phone	(616) 399-6070	H	
Fax	(616) 399-6185	Fax	(616) 399-6185	I	
eMail Address	ann.preston@alsglobal.com	eMail CC		J	

ALS Sample ID	Client Sample ID	Matrix	Collection Date 24hr	Bottle	A	B	C	D	E	F	G	H	I	J
1212055-01A	SEKR2875C701S080612D005	Sediment	6/Aug/2012	(0) MISC	X									
1212055-02A	SEKR3700C701S072712D005	Sediment	7/Aug/2012	(0) MISC	X									
1212055-03A	SEKR3750C704S072712D005	Sediment	7/Aug/2012	(0) MISC	X									
1212055-04A	SEKR3750C707S072712D005	Sediment	7/Aug/2012	(0) MISC	X									
1212055-05A	SEKR3750C708S080712D005	Sediment	6/Aug/2012	(0) MISC	X									
1212055-06A	SEKR3725C704S072712D005	Sediment	6/Aug/2012	(0) MISC	X									
1212055-07A	SEKR3725C705S072712D005	Sediment	27/Jul/2012	(0) MISC	X									
1212055-08A	SEKR1100C701S080612D005	Sediment	27/Jul/2012	(0) MISC	X									

Comments:

Please analyze these samples for Bulk Density and Porosity and indicated turnaround requirements. Please include all QC with data. If any samples remains, the samples need to be returned to ALS,.

Relinquished by:	Date/Time	Received by:	Date/Time	Cooler IDs	Report/QC Level
					Std
Relinquished by:	Date/Time	Received by:	Date/Time		

ALS Environmental

Subcontractor:
Driesenga & Associates, Inc
455 8th Street
Suite 100
Holland, MI 49423

TEL: (616) 396-0255
FAX:
Acct #:

Salesperson **Alex Csaszar**

CHAIN-OF-CUSTODY RECORD

Date: 04-Dec-12
COC ID: 3902
Due D 10-Dec-12

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	1212055	A	Subcontracted Analyses (SUBCONTRACT)
Work Order		Project Number		B	
Company Name	ALS Group USA, Corp	Bill To Company	ALS Group USA, Corp	C	
Send Report To	Ann Preston	Inv Attn	Accounts Payable	D	
Address	3352 128th Avenue	Address	3352 128th Avenue	E	
				F	
City/State/Zip	Holland, Michigan 49424-9263	City/State/Zip	Holland, Michigan 49424-9263	G	
Phone	(616) 399-6070	Phone	(616) 399-6070	H	
Fax	(616) 399-6185	Fax	(616) 399-6185	I	
eMail Address	ann.preston@alsglobal.com	eMail CC		J	

ALS Sample ID	Client Sample ID	Matrix	Collection Date 24hr	Bottle	A	B	C	D	E	F	G	H	I	J
1212055-09A	SEKR2150C705S080612D005	Sediment	7/Aug/2012	(0) MISC	X									
1212055-10A	SEKR3075C702S080712D005	Sediment	27/Jul/2012	(0) MISC	X									
1212055-11A	SEKR1550C701S080712D007	Sediment	27/Jul/2012	(0) MISC	X									
1212055-12A	SEKR0575C702S080712D005	Sediment	27/Jul/2012	(0) MISC	X									

Comments:

Please analyze these samples for Bulk Density and Porosity and indicated turnaround requirements. Please include all QC with data. If any samples remains, the samples need to be returned to ALS,.

Relinquished by:	Date/Time	Received by:	Date/Time	Cooler IDs	Report/QC Level
					Std
Relinquished by:	Date/Time	Received by:	Date/Time		

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www.driesenga.com

BULK DENSITY/POROSITY OF SOILS

VOLUMETRIC METHOD - B

(ASTM D7263)

Project: ALS - 1212327 Project No.: 1210359.4H

Technician: Dan Marlor Date: 12/10/12

Sample No.	Sample Description	Sample Depth (ft)	Ht Water Column (in)	Total Length (in)	Prepped Length (in)	Vol. (cc)	Wet Wt. (g)	Dry Wt. (g)	Wet Bulk Density (lb/ft^3)	Dry Bulk Density (lb/ft^3)	Specific Gravity	Porosity (%)	Water Content (%)
1212327-01A	Brownish-Black Peat, Trace Silt	0-0.5	1.5	19.0	5.50	477.9338	601.7	220.0	78.5944	28.7365	2.47	21.85	173.5000

Remarks: Test was performed on undisturbed sample provided by client in a sample tube

17-Dec-2012

Bryan Stiemsma
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall Quantification Study Sediment 12/7/12** Work Order: **1212327**

Dear Bryan,

ALS Environmental received 1 sample on 07-Dec-2012 for the analyses presented in the following report.

The analytical data provided relates directly to the results received by ALS Environmental and for only the analyses requested. The report from the subcontract laboratory is included in its entirety.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 8.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

Certificate No: MN331938

ALS Group USA, Corp

Date: 17-Dec-12

Client: AECOM Environment
Project: Marshall Quantification Study Sediment 12/7/12
Work Order: **1212327**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1212327-01	SE3333C701BS120712D006	Sediment		12/7/2012 11:33	12/7/2012	☐

ALS Group USA, Corp

Date: 17-Dec-12

Client: AECOM Environment
Project: Marshall Quantification Study Sediment 12/7/12
Work Order: 1212327

Case Narrative

Samples were subcontracted to Driesenga and Associates for Bulk Density and Porosity.

ALS Group USA, Corp

Date: 17-Dec-12

Client: AECOM Environment
Project: Marshall Quantification Study Sediment 12/7/12
WorkOrder: **1212327**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
SD	Serial Dilution
TDL	Target Detection Limit

Units Reported	Description
cc	
g	grams
lbs/ft³	Pounds per Cubic Foot

ALS Group USA, Corp

Date: *17-Dec-12*

Client: AECOM Environment

Project: Marshall Quantification Study Sediment 12/7/12 **Work Order:** 1212327

Sample ID: SE3333C701BS120712D006 **Lab ID:** 1212327-01

Collection Date: 12/7/2012 11:33 AM **Matrix:** SEDIMENT

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BULK DENSITY/POROSITY OF SOILS			**D7263**			Analyst: **D&A**
Dry Bulk Density	**28.73650**			**lbs/ft³**	1	12/10/2012
Dry Weight	**220.0000**			**g**	1	12/10/2012
Porosity	**21.85000**			**%**	1	12/10/2012
Specific Gravity	**2.470000**			**none**	1	12/10/2012
Volume	**477.9338**			**cc**	1	12/10/2012
Wet Bulk Density	**78.59440**			**lbs/ft³**	1	12/10/2012
Wet Weight	**601.7000**			**g**	1	12/10/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

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BULK DENSITY/POROSITY OF SOILS

VOLUMETRIC METHOD - B

(ASTM D7263)

Project: ALS - 1212327 Project No.: 1210359.4H

Technician: Dan Marlor Date: 12/10/12

Sample No.	Sample Description	Sample Depth (ft)	Ht Water Column (in)	Total Length (in)	Prepped Length (in)	Vol. (cc)	Wet Wt. (g)	Dry Wt. (g)	Wet Bulk Density (lb/ft^3)	Dry Bulk Density (lb/ft^3)	Specific Gravity	Porosity (%)	Water Content (%)
1212327-01A	Brownish-Black Peat, Trace Silt	0-0.5	1.5	19.0	5.50	477.9338	601.7	220.0	78.5944	28.7365	2.47	21.85	173.5000

Remarks: Test was performed on undisturbed sample provided by client in a sample tube

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

COC # ENBRIDGE_120712_GMK2_BD | Task: QUANTIFICATION STUDY
Total # of Samples: 1 | Event Complete?

Lab Information:		Project Information:		Other Information:	
Lab Name:	ALS Laboratory Group	Site ID #		Send Invoice to:	Enbridge Energy - ATTN Accounts Payable
Address:	3352 128th Ave. Holland, MI 49424-9263	Project #	60162778	Address:	1100 Louisiana Suite 1100
		Site Address	5555 Glenwood Parkway SE Suite 200	City/State:	Houson, TX
Lab PM:	Ann Preston	City	Grand Rapids	State, Zip	MI
Phone/Fax:	1-616-399-6070/1-616-399-6185	Site PM Name	[redacted]	Send EDD to	
Lab PM email	ann.preston@alsglobal.com	Phone/Fax:		CC Hardcopy report	
Applicable Lab Quote #:		Site PM Email:	Bryan.Stiemsma@aecom.com	CC Hardcopy report	

Phone #: 713-821-2000

Turn Around Time	5 Day	Rush	No	

BILLING CODE: 9.045

ITEM #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	MATRIX CODE	G=GRAB C=COMP	SAMPLE DATE	#OF CONTAINERS	Comments/Lab Sample I.D.	Preservative: None	Analysis: Bulk Density and Porosity
1	SE3333C701BS120712D006	SE3333C701B	SE	G	12/07/2012 11:33	1	NO IMPACT (0" - 6")		X

Additional Comments/Special Instructions:

PROCEDURE FOR THIS QUANTIFICATION OF OIL WORK PLAN IS TO RUN SAMPLES FOR BULK DENSITY IN THE FOLLOWING PRIORITY: 1.) INTERVAL EXHIBITING IMPACT, 2) IF NO IMPACT OBSERVED, 0"-6". THE DESIRED INTERVAL FOR ANALYSIS AND OBSERVATION OF IMPACT OR LACK THEREOF WILL BE NOTED IN THE COMMENTS SECTION. CALL BRIAN ALBIG (412) 559 2310 IF YOU HAVE ANY QUESTIONS.

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
K. Kramer	12-7-12	1400		12-7-12	1400
[illegible]	12-7-12	1455		12-7-12	1455

Sample Receipt Conditions

Temp in 0C		Samples on Ice?		Sample Intact?		Trip Blank?
	Y / N		Y / N		Y / N	
	Y / N		Y / N		Y / N	
	Y / N		Y / N		Y / N	
	Y / N		Y / N		Y / N	

SHIPPING INFO:
Company:
Tracking #:

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: GERRY KRAMER (GMK1)
SIGNATURE of SAMPLER: DATE Signed: Time:

ALS Environmental

Subcontractor:
Driesenga & Associates, Inc
455 8th Street
Suite 100
Holland, MI 49423

TEL: (616) 396-0255
FAX:
Acct #:

Salesperson **Alex Csaszar**

CHAIN-OF-CUSTODY RECORD

Date: **10-Dec-12**
COC ID: **3920**
Due D **13-Dec-12**

Customer Information		Project Information		Parameter/Method Request for Analysis
Purchase Order		Project Name	1212327	A Bulk Density/Porosity of Soils (D7263)
Work Order		Project Number		B
Company Name	ALS Group USA, Corp	Bill To Company	ALS Group USA, Corp	C
Send Report To	Ann Preston	Inv Attn	Accounts Payable	D
Address	3352 128th Avenue	Address	3352 128th Avenue	E
				F
City/State/Zip	Holland, Michigan 49424-9263	City/State/Zip	Holland, Michigan 49424-9263	G
Phone	(616) 399-6070	Phone	(616) 399-6070	H
Fax	(616) 399-6185	Fax	(616) 399-6185	I
eMail Address	ann.preston@alsglobal.com	eMail CC		J

ALS Sample ID	Client Sample ID	Matrix	Collection Date 24hr	Bottle	A	B	C	D	E	F	G	H	I	J
1212327-01A	SE3333C701BS120712D006	Sediment	7/Dec/2012 11:33	(0) MISC	X									

Comments:

Please analyze these samples per our instructions and indicated turnaround requirements. Please include all QC with data. The samples do not need to be returned and can be disposed after 30 days.

Relinquished by:	Date/Time	Received by:	Date/Time	Cooler IDs	Report/QC Level
					Std
Relinquished by:	Date/Time	Received by:	Date/Time		

17-Dec-2012

Bryan Stiemsma
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall Agitation Study Sediment 12/5-12/6/12** Work Order: **1212328**

Dear Bryan,

ALS Environmental received 4 samples on 07-Dec-2012 for the analyses presented in the following report.

The analytical data provided relates directly to the results received by ALS Environmental and for only the analyses requested. The report from the subcontract laboratory is included in its entirety.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 11.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

Certificate No: MN331938

ALS Group USA, Corp

Date: 17-Dec-12

Client: AECOM Environment
Project: Marshall Agitation Study Sediment 12/5-12/6/12
Work Order: **1212328**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1212328-01	SEKR0550C604S120612D011	Sediment		12/6/2012 13:17	12/7/2012	☐
1212328-02	SEKR0550C612S120612D011	Sediment		12/6/2012 13:52	12/7/2012	☐
1212328-03	SEKR3745C604S120512D010	Sediment		12/5/2012 17:00	12/7/2012	☐
1212328-04	SEKR3745C612S120512D010	Sediment		12/5/2012 15:57	12/7/2012	☐

ALS Group USA, Corp

Date: 17-Dec-12

Client: AECOM Environment
Project: Marshall Agitation Study Sediment 12/5-12/6/12
Work Order: 1212328

Case Narrative

Samples were subcontracted to Driesenga and Associates for Wet and Dry Bulk Density.

ALS Group USA, Corp

Date: 17-Dec-12

Client: AECOM Environment
Project: Marshall Agitation Study Sediment 12/5-12/6/12
WorkOrder: **1212328**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
SD	Serial Dilution
TDL	Target Detection Limit

Units Reported	Description
cc	
g	grams
lbs/ft³	Pounds per Cubic Foot

ALS Group USA, Corp

Date: *17-Dec-12*

Client: AECOM Environment

Project: Marshall Agitation Study Sediment 12/5-12/6/12 **Work Order:** 1212328

Sample ID: SEKR0550C604S120612D011 **Lab ID:** 1212328-01

Collection Date: 12/6/2012 01:17 PM **Matrix:** SEDIMENT

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BULK DENSITY/POROSITY OF SOILS			**D7263**			Analyst: **D&A**
Dry Bulk Density	**16.45720**			**lbs/ft³**	1	12/10/2012
Dry Weight	**297.8000**			**g**	1	12/10/2012
Volume	**1,129.662**			**cc**	1	12/10/2012
Wet Bulk Density	**68.30450**			**lbs/ft³**	1	12/10/2012
Wet Weight	**1,236.000**			**g**	1	12/10/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-12*

Client: AECOM Environment

Project: Marshall Agitation Study Sediment 12/5-12/6/12 **Work Order:** 1212328

Sample ID: SEKR0550C612S120612D011 **Lab ID:** 1212328-02

Collection Date: 12/6/2012 01:52 PM **Matrix:** SEDIMENT

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BULK DENSITY/POROSITY OF SOILS			**D7263**			Analyst: **D&A**
Dry Bulk Density	**15.89350**			**lbs/ft³**	1	12/10/2012
Dry Weight	**287.6000**			**g**	1	12/10/2012
Volume	**1,129.662**			**cc**	1	12/10/2012
Wet Bulk Density	**71.85790**			**lbs/ft³**	1	12/10/2012
Wet Weight	**1,300.300**			**g**	1	12/10/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-12*

Client: AECOM Environment

Project: Marshall Agitation Study Sediment 12/5-12/6/12 **Work Order:** 1212328

Sample ID: SEKR3745C604S120512D010 **Lab ID:** 1212328-03

Collection Date: 12/5/2012 05:00 PM **Matrix:** SEDIMENT

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BULK DENSITY/POROSITY OF SOILS			**D7263**			Analyst: **D&A**
Dry Bulk Density	**24.43220**			**lbs/ft³**	1	12/10/2012
Dry Weight	**394.5000**			**g**	1	12/10/2012
Volume	**1,008.006**			**cc**	1	12/10/2012
Wet Bulk Density	**74.77690**			**lbs/ft³**	1	12/10/2012
Wet Weight	**1,207.400**			**g**	1	12/10/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-12*

Client: AECOM Environment

Project: Marshall Agitation Study Sediment 12/5-12/6/12 **Work Order:** 1212328

Sample ID: SEKR3745C612S120512D010 **Lab ID:** 1212328-04

Collection Date: 12/5/2012 03:57 PM **Matrix:** SEDIMENT

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BULK DENSITY/POROSITY OF SOILS			**D7263**			Analyst: **D&A**
Dry Bulk Density	**35.04120**			**lbs/ft³**	1	12/10/2012
Dry Weight	**565.8000**			**g**	1	12/10/2012
Volume	**1,008.006**			**cc**	1	12/10/2012
Wet Bulk Density	**80.19600**			**lbs/ft³**	1	12/10/2012
Wet Weight	**1,294.900**			**g**	1	12/10/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

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BULK DENSITY/POROSITY OF SOILS

VOLUMETRIC METHOD - B

(ASTM D7263)

Project: ALS - 1212328 Project No.: 1210359.4I

Technician: Dan Marlor Date: 12/10/12

Sample No.	Sample Description	Sample Depth (ft)	Ht Water Column (in)	Total Length (in)	Prepped Length (in)	Vol. (cc)	Wet Wt. (g)	Dry Wt. (g)	Wet Bulk Density (lb/ft^3)	Dry Bulk Density (lb/ft^3)	Specific Gravity	Porosity (%)	Water Content (%)
1212328-01A	Black/Brown Peat, Trace Silt	0-1.1	19.0	26.5	13.00	1129.6616	1236.0	297.8	68.3045	16.4572	NA	NA	315.0437
1212328-02A	Black/Brown Peat, Trace Silt	0-1.1	16	30.0	13.00	1129.6616	1300.3	287.6	71.8579	15.8935	NA	NA	352.1210
1212328-03A	Brownish-Black Peat, Trace Silt	0-1.0	10	35.0	11.60	1008.0057	1207.4	394.5	74.7769	24.4322	NA	NA	206.0583
1212328-04A	Brownish-Black Peat, Trace Silt	0-1.0	7	37.0	11.60	1008.0057	1294.9	565.8	80.1960	35.0412	NA	NA	128.8618

Remarks: Test was performed on undisturbed sample provided by client in a sample tube

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

COC # ENBRIDGE_120712_GMK1_BD | Task: AGITATION STUDY
Total # of Samples: 4 | Event Complete?

Lab Information:		Project Information:		Other Information:	
Lab Name:	ALS Laboratory Group	Site ID #:		Send Invoice to:	Enbridge Energy - ATTN Accounts Payable
Address:	3352 128th Ave. Holland, MI 49424-9263	Project #:	60162778	Address:	1100 Louisiana Suite 1100
		Site Address:	5555 Glenwood Parkway SE Suite 200	City/State:	Houson, TX
Lab PM:	Ann Preston	City:	Grand Rapids	State, Zip:	MI
Phone/Fax:	1-616-399-6070/1-616-399-6185	Site PM Name:	Bryan Stiemsma	Send EDD to:	
Lab PM email:	ann.preston@alsglobal.com	Phone/Fax:	[redacted]	CC Hardcopy report:	
Applicable Lab Quote #:		Site PM Email:	Bryan.Stiemsma@aecom.com	CC Hardcopy report:	

Phone #: 713-821-2000

Turn Around Time: 5 Day | Rush: No

BILLING CODE: 9.045

ITEM #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	MATRIX CODE	G=GRAB C=COMP	SAMPLE DATE	#OF CONTAINERS	Comments/Lab Sample I.D.	Preservative: None	Analysis: WET AND DRY BULK DENSITY
1	SEKR0550C604S120612D011	SEKR0550C604	SE	G	12/06/2012 13:17	1	INTERVAL (0.0 - 1.1')		X
2	SEKR0550C612S120612D011	SEKR0550C612	SE	G	12/06/2012 13:52	1	INTERVAL (0.0 - 1.1')		X
3	SEKR3745C604S120512D010	SEKR3745C604	SE	G	12/05/2012 17:00	1	INTERVAL (0.0 - 1.0')		X
4	SEKR3745C612S120512D010	SEKR3745C612	SE	G	12/05/2012 15:57	1	INTERVAL (0.0 - 1.0')		X

Additional Comments/Special Instructions:

THE DESIRED INTERVAL FOR ANALYSIS IS NOTED IN THE COMMENTS SECTION. IF YOU HAVE ANY QUESTIONS CONTACT MATT SUMNER (517) - 515-9358.

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
G. Kramer	12.7.12	1400		12-7-12	1400
	12-7-12	1455		12-7-12	1455

Sample Receipt Conditions

	Y/N		Y/N	Y/N
	Y/N		Y/N	Y/N
	Y/N		Y/N	Y/N
	Y/N		Y/N	Y/N
Temp in ºC	Samples on Ice?		Sample intact?	Trip Blank?

SHIPPING INFO: Company: | Tracking #:

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: GERRY KRAMER (GMK1)
SIGNATURE of SAMPLER: | DATE Signed: | Time:

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Date: 10-Dec-12
COC ID: 3922
Due D 13-Dec-12

Subcontractor:
Driesenga & Associates, Inc
455 8th Street
Suite 100
Holland, MI 49423

TEL: (616) 396-0255
FAX:
Acct #:

Salesperson **Alex Csaszar**

Customer Information		Project Information		Parameter/Method Request for Analysis
Purchase Order		Project Name	1212328	A Bulk Density/Porosity of Soils (D7263)
Work Order		Project Number		B
Company Name	ALS Group USA, Corp	Bill To Company	ALS Group USA, Corp	C
Send Report To	Ann Preston	Inv Attn	Accounts Payable	D
Address	3352 128th Avenue	Address	3352 128th Avenue	E
				F
City/State/Zip	Holland, Michigan 49424-9263	City/State/Zip	Holland, Michigan 49424-9263	G
Phone	(616) 399-6070	Phone	(616) 399-6070	H
Fax	(616) 399-6185	Fax	(616) 399-6185	I
eMail Address	ann.preston@alsglobal.com	eMail CC		J

ALS Sample ID	Client Sample ID	Matrix	Collection Date 24hr	Bottle	A	B	C	D	E	F	G	H	I	J
1212328-01A	SEKR0550C604S120612D011	Sediment	6/Dec/2012 13:17	(0) MISC	X									
1212328-02A	SEKR0550C612S120612D011	Sediment	6/Dec/2012 13:52	(0) MISC	X									
1212328-03A	SEKR3745C604S120512D010	Sediment	5/Dec/2012 17:00	(0) MISC	X									
1212328-04A	SEKR3745C612S120512D010	Sediment	5/Dec/2012 15:57	(0) MISC	X									

Comments:

Please analyze these samples per our instructions and indicated turnaround requirements. Please include all QC with data. The samples do not need to be returned and can be disposed after 30 days.

Relinquished by:	Date/Time	Received by:	Date/Time	Cooler IDs	Report/QC Level
					Std
Relinquished by:	Date/Time	Received by:	Date/Time		

Enbridge Line 6B MP 608 Pipeline Release

Marshall, Michigan

Appendix B

Remedial Investigation Activities

Analytical Data Reports

Prepared for U.S. EPA and MDEQ

Enbridge Energy, Limited Partnership

Submitted: January 23, 2013

05-Dec-2012

Mike Wolf
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall KRRI 1025R,1125R SPLP Nov. 2012** Work Order: **1211711**

Dear Mike,

ALS Environmental received 6 samples on 23-Nov-2012 for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 20.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

Certificate No: MN331938

ALS Group USA, Corp

Date: 05-Dec-12

Client: AECOM Environment
Project: Marshall KRRI 1025R,1125R SPLP Nov. 2012
Work Order: **1211711**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1211711-01	SBKR1025R507S110912S009	Splp Extract		11/9/2012 09:05	11/23/2012	☐
1211711-02	SBKR1125R501S111512S009	Splp Extract		11/15/2012 14:36	11/23/2012	☐
1211711-03	SBKR1025R512S111312S007	Splp Extract		11/13/2012 09:30	11/23/2012	☐
1211711-04	SBKR1025R514S111312S004	Splp Extract		11/13/2012 11:24	11/23/2012	☐
1211711-05	SBKR1025R516D111312S005	Splp Extract		11/13/2012 14:01	11/23/2012	☐
1211711-06	SBKR1025R516S111312S005	Splp Extract		11/13/2012 14:01	11/23/2012	☐

ALS Group USA, Corp

Date: 05-Dec-12

Client: AECOM Environment
Project: Marshall KRRI 1025R,1125R SPLP Nov. 2012
WorkOrder: **1211711**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
SD	Serial Dilution
TDL	Target Detection Limit

Units Reported	Description
mg/L	Milligrams per Liter

ALS Group USA, Corp

Date: *05-Dec-12*

Client: AECOM Environment
Project: Marshall KRRI 1025R,1125R SPLP Nov. 2012
Work Order: 1211711
Sample ID: SBKR1025R507S110912S009
Lab ID: 1211711-01
Collection Date: 11/9/2012 09:05 AM
Matrix: SPLP EXTRACT

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/3/2012**	Analyst: **RH**
Molybdenum	ND		0.0050	mg/L	1	12/4/2012 12:05 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *05-Dec-12*

Client: AECOM Environment
Project: Marshall KRRI 1025R,1125R SPLP Nov. 2012
Work Order: 1211711
Sample ID: SBKR1125R501S111512S009
Lab ID: 1211711-02
Collection Date: 11/15/2012 02:36 PM
Matrix: SPLP EXTRACT

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/3/2012**	Analyst: **RH**
Molybdenum	ND		0.0050	mg/L	1	12/4/2012 12:10 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *05-Dec-12*

Client: AECOM Environment
Project: Marshall KRRI 1025R,1125R SPLP Nov. 2012
Work Order: 1211711
Sample ID: SBKR1025R512S111312S007
Lab ID: 1211711-03
Collection Date: 11/13/2012 09:30 AM
Matrix: SPLP EXTRACT

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/3/2012**	Analyst: **RH**
Molybdenum	ND		0.0050	mg/L	1	12/4/2012 12:15 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *05-Dec-12*

Client: AECOM Environment
Project: Marshall KRRI 1025R,1125R SPLP Nov. 2012
Work Order: 1211711
Sample ID: SBKR1025R514S111312S004
Lab ID: 1211711-04
Collection Date: 11/13/2012 11:24 AM
Matrix: SPLP EXTRACT

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/3/2012**	Analyst: **RH**
Molybdenum	**0.0065**		**0.0050**	**mg/L**	1	12/3/2012 10:25 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *05-Dec-12*

Client: AECOM Environment
Project: Marshall KRRI 1025R,1125R SPLP Nov. 2012
Work Order: 1211711
Sample ID: SBKR1025R516D111312S005
Lab ID: 1211711-05
Collection Date: 11/13/2012 02:01 PM
Matrix: SPLP EXTRACT

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/3/2012**	Analyst: **RH**
Molybdenum	ND		0.0050	mg/L	1	12/3/2012 10:30 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *05-Dec-12*

Client: AECOM Environment
Project: Marshall KRRI 1025R,1125R SPLP Nov. 2012
Work Order: 1211711
Sample ID: SBKR1025R516S111312S005
Lab ID: 1211711-06
Collection Date: 11/13/2012 02:01 PM
Matrix: SPLP EXTRACT

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/3/2012**	Analyst: **RH**
Molybdenum	ND		0.0050	mg/L	1	12/3/2012 10:35 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 05-Dec-12

Client: AECOM Environment

QC BATCH REPORT

Work Order: 1211711

Project: Marshall KRRI 1025R,1125R SPLP Nov. 2012

Batch ID: **45097** Instrument ID **ICPMS2** Method: **SW6020A**

MBLK Sample ID: **MBLK-45097-45097** Units: **mg/L** Analysis Date: **12/3/2012 05:22 PM**

Client ID: Run ID: **ICPMS2_121203A** SeqNo: **2156890** Prep Date: **12/3/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Molybdenum	ND	0.0050								

LCS Sample ID: **LCS-45097-45097** Units: **mg/L** Analysis Date: **12/3/2012 05:27 PM**

Client ID: Run ID: **ICPMS2_121203A** SeqNo: **2156895** Prep Date: **12/3/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Molybdenum	0.101	0.0050	0.1	0	101	80-120	0			

MS Sample ID: **1211693-43AMS** Units: **mg/L** Analysis Date: **12/3/2012 07:04 PM**

Client ID: Run ID: **ICPMS2_121203A** SeqNo: **2156962** Prep Date: **12/3/2012** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Molybdenum	0.965	0.25	1	0.0001306	96.5	75-125	0			

MSD Sample ID: **1211693-43AMSD** Units: **mg/L** Analysis Date: **12/3/2012 07:09 PM**

Client ID: Run ID: **ICPMS2_121203A** SeqNo: **2156964** Prep Date: **12/3/2012** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Molybdenum	0.8975	0.25	1	0.0001306	89.7	75-125	0.965	7.25	20	

The following samples were analyzed in this batch:

1211711-01A	1211711-02A	1211711-03A
1211711-04A	1211711-05A	1211711-06A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

1211351

1211711

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler #

COC #	ENBRIDGE_110912_GMK1	Task: KRRI_1025-1050
Total # of Samples: 10		Event Complete?
Turn Around Time	5 Day	Rush: No
BILLING CODE: 6.00		

Lab Information:
Lab Name: ALS Laboratory Group
Address: 3352 128th Ave. Holland, MI 49424-9263
Lab PM: Ann Preston
Phone/Fax: 1-616-399-6070/1-616-399-6185
Lab PM email: ann.preston@alsglobal.com
Applicable Lab Quote #:

Project Information:
Site ID #:
Project #: 60162778
Site Address: 5555 Glenwood Parkway SE Suite 200
City: Grand Rapids State, Zip: MI
Site PM Name: [redacted]
Phone/Fax:
Site PM Email: Bryan.Stiemsma@aecom.com

Other Information:
Send Invoice to: Enbridge Energy - ATTN Accounts Payable
Address: 1100 Louisiana Suite 1100
City/State: Houson, TX Phone #: 713-821-2000
PO #:
Send EDD to
CC Hardcopy report
CC Hardcopy report

ITEM #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	MATRIX CODE	G=GRAB C=COMP	SAMPLE DATE	#OF CONTAINERS	Comments/Lab Sample I.D.	Preservative	None	None	None	None	MeOH										
								Analyses	% Moisture	Be,Mo,V,Ni by 6020	ORO,DRO	PNAs by 8270	VOC by 5035/8260										
1	SBKR1025R506S110912S006	SBKR1025R506	SO	G	11/09/2012 08:21	3			X	X	X	X	X										
2	SBKR1025R507S110912S009	SBKR1025R507	SO	G	11/09/2012 09:05	3			X	X	X	X	X										
3	SBKR1025R508D110912S007	SBKR1025R508	SO	G	11/09/2012 10:10	3	DUPLICATE		X	X	X	X	X										
4	SBKR1025R508S110912S007	SBKR1025R508	SO	G	11/09/2012 10:10	3			X	X	X	X	X										
5	SBKR1025R509S110912S006	SBKR1025R509	SO	G	11/09/2012 11:08	6	MS/MSD		X	X	X	X	X										
6	SBKR1050L522S110912S004	SBKR1050L522	SO	G	11/09/2012 14:05	3			X	X	X	X	X										
7	SBKR1050L523S110912S004	SBKR1050L523	SO	G	11/09/2012 14:59	3			X	X	X	X	X										
8	SBKR1050L524S110912S004	SBKR1050L524	SO	G	11/09/2012 16:01	3			X	X	X	X	X										
9	SBKR1050L524T110912MX	SBKR1050L524	SQ	G	11/09/2012 00:00	1	TRIP BLANK						X										
10	SBKR1050L526S110912S007	SBKR1050L526	SO	G	11/09/2012 13:23	3			X	X	X	X	X										

01

Additional Comments/Special Instructions:

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
[signature]	11-12-12	1035	[signature]	11-12-12	1035
[signature]	11-12-12	1050	[signature]	11-12-12	1050

SHIPPING INFO: Company: Tracking #:

SAMPLER NAME AND SIGNATURE: PRINT Name of SAMPLER: GERRY KRAMER (GMK1) SIGNATURE of SAMPLER: DATE Signed: Time:

Sample Receipt Conditions

Temp in °C	Samples on Ice?	Sample Intact?	Trip Blank?
3.6 °C	(Y)/N	(Y)/N	(Y)/N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N

1211518
1211711

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CHAIN-OF-CUSTODY / Analytical Request Document

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Page: 1 of 1
Cooler # of

COC #	ENBRIDGE_111512_GMK1	Task: KRRI_1050-1125
Total # of Samples: 11		Event Complete?
Turn Around Time	6 Day	Rush: No
BILLING CODE: 6.00		

Lab Information		Project Information		Other Information	
Lab Name:	ALS Laboratory Group	Site ID #:		Send Invoice to:	Enbridge Energy - ATTN Accounts Payable
Address:	3352 128th Ave. Holland, MI 49424-9263	Project #	60162778	Address:	1100 Louisiana Suite 1100
		Site Address	5555 Glenwood Parkway SE Suite 200	City/State, Phone #:	Houson, TX 713-821-2000
Lab PM:	Ann Preston	City: Grand Rapids	State, Zip: MI	PO #	
Phone/Fax:	1-616-399-6070/1-616-399-6185	Site PM Name	Bryan Stiemsma	Send EDD to	
Lab PM email	ann.preston@alsglobal.com	Phone/Fax:	[redacted]	CC Hardcopy report	
Applicable Lab Quote #:		Site PM Email:	Bryan.Stiemsma@aecom.com	CC Hardcopy report	

ITEM #	SAMPLE ID (Samples IDs MUST BE UNIQUE)	SAMPLE LOCATION	MATRIX CODE	G=GRAB C=COMP	SAMPLE DATE	#OF CONTAINERS	Comments/Lab Sample I.D.	% Moisture	Be,Mo,V,Ni by 6020	ORO,DRO	PNAs by 8270	VOC by 5035/8260		SPLP Mo								
Analysis								None	None	None	None	MeOH										
1	SBKR1125I502T111512MX	SBKR1125I502	SQ	G	11/15/2012 00:00	1	TRIP BLANK					X										
2	SBKR1050R506S111512S006	SBKR1050R506	SO	G	11/15/2012 08:35	3		X	X	X	X	X										
3	SBKR1050R506D111512S006	SBKR1050R506	SO	G	11/15/2012 08:35	3	DUPLICATE	X	X	X	X	X										
4	SBKR1050I501S111512S006	SBKR1050I501	SO	G	11/15/2012 09:19	3		X	X	X	X	X										
5	SBKR1100L518S111512S005	SBKR1100L518	SO	G	11/15/2012 10:03	3		X	X	X	X	X										
6	SBKR1100L519S111512S005	SBKR1100L519	SO	G	11/15/2012 10:53	3		X	X	X	X	X										
7	SBKR1100L520S111512S005	SBKR1100L520	SO	G	11/15/2012 11:35	3		X	X	X	X	X										
8	SBKR1100L521S111512S007	SBKR1100L521	SO	G	11/15/2012 13:55	3		X	X	X	X	X										
9	SBKR1125R501S111512S009	SBKR1125R501	SO	G	11/15/2012 14:36	3		X	X	X	X	X	X									
10	SBKR1125I502S111512S005	SBKR1125I502	SO	G	11/15/2012 15:25	3		X	X	X	X	X										
11	SBKR1125I502S111512S013	SBKR1125I502	SO	G	11/15/2012 15:30	3		X	X	X	X	X										

Additional Comments/Special Instructions:

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
A. Kramer	11-15-12	1700		11-15-12	1600
	11-15-12	1610	FedEx	11/16/12	1000

Sample Receipt Conditions			
Temp in °C	Samples on Ice?	Sample Intact?	Trip Blank?
	Y/N	Y/N	Y/N
4.2°C	(Y)N	(Y)N	(Y)N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N

SHIPPING INFO
Company:
Tracking #:

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: GERRY KRAMER (GMK1)
SIGNATURE of SAMPLER:
DATE Signed:
Time:

1211711
1211466
~~121177~~

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

COC #	ENBRIDGE_111312_GMK1	Task: KRRI_1026R
	Total # of Samples: 10	Event Complete?
Turn Around Time	5 Day	Rush: No
BILLING CODE: 6.00		

Lab Information:

Lab Name:	ALS Laboratory Group
Address:	3352 126th Ave Holland, MI 49424-9263
Lab PM:	Ann Preston
Phone/Fax:	1-616-399-6070/1-616-399-6185
Lab PM email:	ann.preston@alsglobal.com
Applicable Lab Quote #:	

Project Information:

Site ID #:	
Project #:	60162778
Site Address:	5555 Glenwood Parkway SE Suite 200
City:	Grand Rapids
State, Zip:	MI
Site PM Name:	[redacted]sma
Phone/Fax:	[redacted]
Site PM Email:	Bryan.Stiemsma@aecom.com

Other Information:

Send Invoice to:	Enbridge Energy - ATTN Accounts Payable
Address:	1100 Louisiana Suite 1100
City/State:	Houson, TX
Phone #:	713-821-2000
PO #	
Send EDD to	
CC Hardcopy report	
CC Hardcopy report	

ITEM #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	MATRIX CODE	G=GRAB C=COMP	SAMPLE DATE	#OF CONTAINERS	Comments/Lab Sample I.D.	Preservative	None	None	None	None	MeOH											
Analysis									% Moisture	Be,Mo,V,Ni by 6020	ORO,DRO	PNAs by 8270	VOC by 5035/8260		SALPMO									
1	SBKR1025R511S111312S007	SBKR1025R511	SO	G	11/13/2012 08:25	3			X	X	X	X	X											
2	SBKR1025R512S111312S007	SBKR1025R512	SO	G	11/13/2012 09:30	3			X	X	X	X	X		X									
3	SBKR1025R513S111312S006	SBKR1025R513	SO	G	11/13/2012 10:25	3			X	X	X	X	X											
4	SBKR1025R514S111312S004	SBKR1025R514	SO	G	11/13/2012 11:24	3			X	X	X	X	X		X									
5	SBKR1025R516D111312S005	SBKR1025R516	SO	G	11/13/2012 14:01	3	DUPLICATE		X	X	X	X	X		X									
6	SBKR1025R516S111312S005	SBKR1025R516	SO	G	11/13/2012 14:01	3			X	X	X	X	X		X									
7	SBKR1025R517S111312S006	SBKR1025R517	SO	G	11/13/2012 15:08	6	MS/MSD		X	X	X	X	X											
8	SBKR1025R518S111312S005	SBKR1025R518	SO	G	11/13/2012 16:06	3			X	X	X	X	X											
9	SBKR1025R518T111312MX	SBKR1025R518	SQ	G	11/13/2012 00:00	1	TRIP BLANK						X											
10	SBKR1025R515S111312S003	SBKR1025R515	SO	G	11/13/2012 13:14	3			X	X	X	X	X											

03
04
05
10

Additional Comment/Special Instructions:

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
G. Kramer	11-13-12	1115		11-14-12	1115
	11-14-12	1500		11/14/12	1700

Sample Receipt Conditions

Temp in °C	Samples on Ice?	Sample Intact?	Trip Blank?
4.2°C	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N

SHIPPING INFO
Company:
Tracking #:

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: GERRY KRAMER (GMK1)
SIGNATURE of SAMPLER:
DATE Signed:
Time:

Ann Preston

From: Wolf, Michael G. [Michael.Wolf@aecom.com]
Sent: Wednesday, November 21, 2012 12:26 PM
To: Ann Preston
Subject: RE: 1211351 Marshall KRRI 1025R,1050L 11/9/12

Hi Ann – Please run MO SPLP on 1211351-02

Thanks

Mike Wolf, CPG
Sr. Hydrogeologist
AECOM Environment
D (616)-940-4408 C [redacted]
michael.wolf@aecom.com

AECOM
5555 Glenwood Hills Pkwy SE, Ste 300
Grand Rapids, MI 49512
Telephone (616)-942-9600 Fax (616)-940-4396

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From: Ann Preston [mailto:Ann.Preston@alsglobal.com]
Sent: Wednesday, November 21, 2012 11:31 AM
To: Wolf, Michael G.
Subject: 1211351 Marshall KRRI 1025R,1050L 11/9/12

Dear Mike,
Analytical results for the Enbridge-Marshall KRRI samples we received for 11/9/12 are attached. This e-report is complete. A hard copy of the invoice will be sent to Enbridge. AECOM's Share Point has been copied on this data.

Regards,

Ann

Register now for a FREE ONLINE WebTrieve™ Webinar!

Ann Preston

From: Wolf, Michael G. [Michael.Wolf@aecom.com]
Sent: Wednesday, November 28, 2012 9:40 AM
To: Ann Preston
Subject: 1211518 SPLP

Hi Ann – One more sample for SPLP Mo
1211518-09

- 1211711-02

Thanks

Mike

Mike Wolf, CPG
Sr. Hydrogeologist
AECOM Environment
D (616)-940-4408 C [redacted]
michael.wolf@aecom.com

AECOM
5555 Glenwood Hills Pkwy SE, Ste 300
Grand Rapids, MI 49512
Telephone (616)-942-9600 Fax (616)-940-4396

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Ann Preston

From: Wolf, Michael G. [Michael.Wolf@aecom.com]
Sent: Tuesday, November 27, 2012 3:47 PM
To: Ann Preston
Subject: 1211466 SPLP

Hi Ann please add the following for MO SPLP
1211466-02, 04, 05, 06

Thanks 1211711-03
-04
-05
-06

711 -

Mike

Mike Wolf, CPG
Sr. Hydrogeologist
AECOM Environment
D (616)-940-4408 C [redacted]
michael.wolf@aecom.com

AECOM
5555 Glenwood Hills Pkwy SE, Ste 300
Grand Rapids, MI 49512
Telephone (616)-942-9600 Fax (616)-940-4396

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ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **23-Nov-12 00:00**

Work Order: **1211711** Received by: **AP**

Checklist completed by Ann Preston (eSignature) 23-Nov-12 (Date) Reviewed by: Ann Preston (eSignature) 23-Nov-12 (Date)

Matrices: Soil
Carrier name: Client

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	4.0C		
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:			
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:	-		

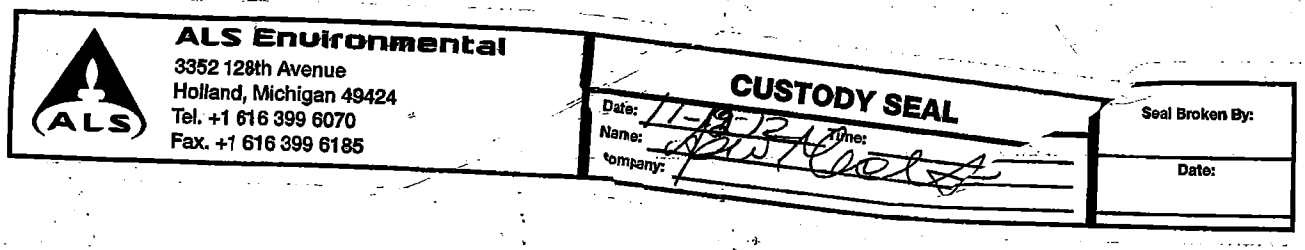
Login Notes: Reactivated from refrigerated ALS storage

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:


ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185
ALS
CUSTODY SEAL
Date: 11-12-13
Time:
Name:
Company:
Seal Broken By:
Date:

ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel: +1 616 399 6070
Fax: +1 616 399 6185

CUSTODY SEAL
Date: 11/15/12 Time: 1610
Name:
Company:

Seal Broken By:
Date:

FedEx US Airbill
Express

FedEx Tracking Number 8741 9029 5467 0200 Form ID No.

FedEx Retrieval Copy

1 From
Date 11/15/12 Sender's FedEx Account Number 2138-5929-3
Sender's Name April Medert Phone [redacted]
Company Superior Environmental Corp
Address 1680 Marquette Ave SW Ste 2 Dept/Floor/Suite/Room
City Bay City State MI ZIP 48706-4178

2 Your Internal Billing Reference 60359.00 Task 6.05

3 To
Recipient's Name Laboratory Phone 616 738-7346
Company ALS Environmental
Address 3352 128th Ave. Dept/Floor/Suite/Room
We cannot deliver to P.O. boxes or P.O. ZIP codes.
Address Use this line for the HOLD location address or for continuation of your shipping address.
City Holland State MI ZIP 49424

01 ☐ HOLD Weekday FedEx location address REQUIRED. NOT available for FedEx First Overnight.
01 ☐ HOLD Saturday FedEx location address REQUIRED. Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations.

8741 9029 5467

4a Express Package Service * To most locations. Packages up to 150 lbs.
01 ☐ FedEx Priority Overnight — Next business morning.* Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
05 ☐ FedEx Standard Overnight — Next business afternoon.* Saturday Delivery NOT available.
06 ☐ FedEx First Overnight — Earliest next business morning delivery to select locations.*
03 ☐ FedEx 2Day — Second business day.* Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
20 ☐ FedEx Express Saver — Third business day.* Saturday Delivery NOT available.

4b Express Freight Service ** To most locations. Packages over 150 lbs.
70 ☐ FedEx 1Day Freight — Next business day.** Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected. FedEx 1Day Freight Tracking No.
80 ☐ FedEx 2Day Freight — Second business day.** Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
83 ☐ FedEx 3Day Freight — Third business day.** Saturday Delivery NOT available.

5 Packaging * Declared value limit $500.
00 ☐ FedEx Envelope* 02 ☐ FedEx Pak* — Includes FedEx Small Pak and FedEx Large Pak. 03 ☐ FedEx Box 04 ☐ FedEx Tube 01 ☒ Other

6 Special Handling and Delivery Signature Options
03 ☐ **SATURDAY DELIVERY**
☐ No Signature Required — Package may be left without obtaining a signature for delivery.
10 ☐ Direct Signature — Someone at recipient's address may sign for delivery. Fee applies.
34 ☐ Indirect Signature — If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only. Fee applies.

Does this shipment contain dangerous goods?
One box must be checked.
☒ No 04 ☐ Yes — As per attached Shipper's Declaration. ☐ Yes — Shipper's Declaration not required. 06 ☐ Dry Ice — Dry Ice, 9, UN 1845 ____ x ____ kg
Dangerous goods (including dry ice) cannot be shipped in FedEx packaging or placed in a FedEx Express Drop Box. ☐ Cargo Aircraft Only

7 Payment *Bill to:*
Sender Acct. No. in Section 1 will be billed. 2 ☐ Recipient 3 ☐ Third Party 4 ☐ Credit Card 5 ☐ Cash/Check
Obtain recip. Acct. No. ☐
[redacted] Enter FedEx Acct. No. or Credit Card No. below.
Total Packages ____ Total Weight ____ lbs. [redacted] Credit Card Auth.

† Our liability is limited to $100 unless you declare a higher value. See the current FedEx Service Guide for details.

606

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ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL

Date: 11-14-12 Time: AM
Name:
Company:

Seal Broken By:

Date:

Soil

4.2°C

12-Dec-2012

Bryan Stiemsma
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall KRRI 1075L, 1150R 12/3/12** Work Order: **1212170**

Dear Bryan,

ALS Environmental received 6 samples on 05-Dec-2012 08:00 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 43.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

Certificate No: MN331938

ALS Group USA, Corp

Date: 12-Dec-12

Client: AECOM Environment
Project: Marshall KRRI 1075L, 1150R 12/3/12
Work Order: **1212170**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1212170-01	SBKR1075L522S120312S005	Soil		12/3/2012 15:40	12/5/2012 08:00	☐
1212170-02	SBKR1075L523S120312S005	Soil		12/3/2012 14:28	12/5/2012 08:00	☐
1212170-03	SBKR1075L523D120312S005	Soil		12/3/2012 14:28	12/5/2012 08:00	☐
1212170-04	SBKR1075L524S120312S004	Soil		12/3/2012 15:36	12/5/2012 08:00	☐
1212170-05	SBKR1150R501S120312S004	Soil		12/3/2012 16:35	12/5/2012 08:00	☐
1212170-06	SBKR1150R501T120312MX	Soil		12/3/2012	12/5/2012 08:00	☐

ALS Group USA, Corp

Date: 12-Dec-12

Client: AECOM Environment
Project: Marshall KRRI 1075L, 1150R 12/3/12
Work Order: 1212170

Case Narrative

The extraction procedure used to prepare the soil samples for DRO and PAH analyses in this work order was a modification of the standard 3541 procedure. At the request of the client, a 10 gram sample aliquot dried with hydromatrix is used for extraction as outlined in ALS SOP HN-EXT-003(EN)-R01. All samples extracted starting on 10/1/2011 were prepared using this modified SOP.

Batch 45280 sample SBKR1075L524S120312S004 MSD recovery for Vanadium was above control limits. Both the MS recovery and RPD met quality control criteria. No data requires qualification.

Batch 45273 LCS recovery for MTBE was above control limits, but all samples in this quality control batch were ND for this compound. No data requires qualification. Sample SBKR1075L525S120312S004 MS/MSD recoveries for Acetone, MTBE and THF were above control limits. The parent sample was ND for these compounds. No data requires qualification. The MSD recovery for Chloroethane was below control limits. Both the MS recovery and RPD met quality control criteria. No data requires qualification.

ALS Group USA, Corp

Date: 12-Dec-12

Client: AECOM Environment
Project: Marshall KRRI 1075L, 1150R 12/3/12
WorkOrder: **1212170**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
SD	Serial Dilution
TDL	Target Detection Limit

Units Reported	Description
% of sample	Percent of Sample
µg/Kg	Micrograms per Kilogram
µg/Kg-dry	Micrograms per Kilogram Dry Weight
mg/Kg-dry	Milligrams per Kilogram Dry Weight

ALS Group USA, Corp

Date: *12-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1075L522S120312S005
Work Order:	1212170	**Collection Date:**	12/3/2012 3:40:00 PM
Project:	Marshall KRRI 1075L, 1150R 12/3/12		
Lab ID:	1212170-01	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/10/2012**		Analyst: **CW**
DRO (C10-C20)	**96**	**45**	**4.0**		**mg/Kg-dry**	1	12/11/2012
ORO (C20-C34)	**840**	**90**	**4.0**		**mg/Kg-dry**	1	12/11/2012
Surr: 4-Terphenyl-d14	*84.4*	*39-115*			*%REC*	1	12/11/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/10/2012**		Analyst: **CES**
Beryllium	ND	2.9	0.50		mg/Kg-dry	4	12/11/2012
Molybdenum	ND	7.2	1.0		mg/Kg-dry	4	12/10/2012
Nickel	**18**	**7.2**	**1.0**		**mg/Kg-dry**	4	12/10/2012
Vanadium	**33**	**7.2**	**1.0**		**mg/Kg-dry**	4	12/10/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/10/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/10/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/10/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/10/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/10/2012
Benzo(a)anthracene	ND	330	330		µg/Kg-dry	1	12/10/2012
Benzo(a)pyrene	ND	330	330		µg/Kg-dry	1	12/10/2012
Benzo(b)fluoranthene	ND	330	330		µg/Kg-dry	1	12/10/2012
Benzo(g,h,i)perylene	ND	330	330		µg/Kg-dry	1	12/10/2012
Benzo(k)fluoranthene	ND	330	330		µg/Kg-dry	1	12/10/2012
Chrysene	ND	330	330		µg/Kg-dry	1	12/10/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/10/2012
Fluoranthene	ND	330	330		µg/Kg-dry	1	12/10/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/10/2012
Indeno(1,2,3-cd)pyrene	ND	330	330		µg/Kg-dry	1	12/10/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/10/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/10/2012
Pyrene	ND	330	330		µg/Kg-dry	1	12/10/2012
Surr: 2,4,6-Tribromophenol	*104*	*34-140*			*%REC*	1	12/10/2012
Surr: 2-Fluorobiphenyl	*82.5*	*12-100*			*%REC*	1	12/10/2012
Surr: 2-Fluorophenol	*94.7*	*33-117*			*%REC*	1	12/10/2012
Surr: 4-Terphenyl-d14	*105*	*25-137*			*%REC*	1	12/10/2012
Surr: Nitrobenzene-d5	*85.4*	*37-107*			*%REC*	1	12/10/2012
Surr: Phenol-d6	*91.2*	*40-106*			*%REC*	1	12/10/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/7/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	140	100		µg/Kg-dry	1	12/8/2012
1,1,1-Trichloroethane	ND	140	50		µg/Kg-dry	1	12/8/2012
1,1,2,2-Tetrachloroethane	ND	140	50		µg/Kg-dry	1	12/8/2012
1,1,2-Trichloroethane	ND	140	50		µg/Kg-dry	1	12/8/2012
1,1-Dichloroethane	ND	140	50		µg/Kg-dry	1	12/8/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client: AECOM Environment
Client Sample ID: SBKR1075L522S120312S005
Work Order: 1212170
Collection Date: 12/3/2012 3:40:00 PM
Project: Marshall KRRI 1075L, 1150R 12/3/12
Lab ID: 1212170-01
Matrix: SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	140	50		µg/Kg-dry	1	12/8/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
1,2,3-Trichloropropane	ND	140	100		µg/Kg-dry	1	12/8/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
1,2,4-Trimethylbenzene	ND	140	100		µg/Kg-dry	1	12/8/2012
1,2-Dibromo-3-chloropropane	ND	140	10		µg/Kg-dry	1	12/8/2012
1,2-Dibromoethane	ND	140	20		µg/Kg-dry	1	12/8/2012
1,2-Dichlorobenzene	ND	140	100		µg/Kg-dry	1	12/8/2012
1,2-Dichloroethane	ND	140	50		µg/Kg-dry	1	12/8/2012
1,2-Dichloropropane	ND	140	50		µg/Kg-dry	1	12/8/2012
1,3,5-Trimethylbenzene	ND	140	100		µg/Kg-dry	1	12/8/2012
1,3-Dichlorobenzene	ND	140	100		µg/Kg-dry	1	12/8/2012
1,4-Dichlorobenzene	ND	140	100		µg/Kg-dry	1	12/8/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/8/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/8/2012
2-Methylnaphthalene	ND	470	330		µg/Kg-dry	1	12/8/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/8/2012
Acetone	ND	1,200	1,000		µg/Kg-dry	1	12/8/2012
Acrylonitrile	ND	140	100		µg/Kg-dry	1	12/8/2012
Benzene	ND	140	50		µg/Kg-dry	1	12/8/2012
Bromobenzene	ND	140	100		µg/Kg-dry	1	12/8/2012
Bromochloromethane	ND	140	100		µg/Kg-dry	1	12/8/2012
Bromodichloromethane	ND	140	100		µg/Kg-dry	1	12/8/2012
Bromoform	ND	140	100		µg/Kg-dry	1	12/8/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/8/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/8/2012
Carbon tetrachloride	ND	140	50		µg/Kg-dry	1	12/8/2012
Chlorobenzene	ND	140	50		µg/Kg-dry	1	12/8/2012
Chloroethane	ND	470	250		µg/Kg-dry	1	12/8/2012
Chloroform	ND	140	50		µg/Kg-dry	1	12/8/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/8/2012
cis-1,2-Dichloroethene	ND	140	50		µg/Kg-dry	1	12/8/2012
cis-1,3-Dichloropropene	ND	140	50		µg/Kg-dry	1	12/8/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/8/2012
Dibromochloromethane	ND	140	100		µg/Kg-dry	1	12/8/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/8/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/8/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/8/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/8/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/8/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: AECOM Environment
Client Sample ID: SBKR1075L522S120312S005
Work Order: 1212170
Collection Date: 12/3/2012 3:40:00 PM
Project: Marshall KRRI 1075L, 1150R 12/3/12
Lab ID: 1212170-01
Matrix: SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	140	50		µg/Kg-dry	1	12/8/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/8/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
m,p-Xylene	ND	280	100		µg/Kg-dry	1	12/8/2012
Methyl iodide	ND	140	100		µg/Kg-dry	1	12/8/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/8/2012
Methylene chloride	ND	140	100		µg/Kg-dry	1	12/8/2012
Naphthalene	ND	470	330		µg/Kg-dry	1	12/8/2012
n-Butylbenzene	ND	140	50		µg/Kg-dry	1	12/8/2012
n-Propylbenzene	ND	140	100		µg/Kg-dry	1	12/8/2012
o-Xylene	ND	140	50		µg/Kg-dry	1	12/8/2012
p-Isopropyltoluene	ND	140	100		µg/Kg-dry	1	12/8/2012
sec-Butylbenzene	ND	140	50		µg/Kg-dry	1	12/8/2012
Styrene	ND	140	50		µg/Kg-dry	1	12/8/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/8/2012
tert-Butylbenzene	ND	140	50		µg/Kg-dry	1	12/8/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/8/2012
Tetrachloroethene	ND	140	50		µg/Kg-dry	1	12/8/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/8/2012
Toluene	ND	140	100		µg/Kg-dry	1	12/8/2012
trans-1,2-Dichloroethene	ND	140	50		µg/Kg-dry	1	12/8/2012
trans-1,3-Dichloropropene	ND	140	50		µg/Kg-dry	1	12/8/2012
trans-1,4-Dichloro-2-butene	ND	140	50		µg/Kg-dry	1	12/8/2012
Trichloroethene	ND	140	50		µg/Kg-dry	1	12/8/2012
Trichlorofluoromethane	ND	140	100		µg/Kg-dry	1	12/8/2012
Vinyl chloride	ND	140	40		µg/Kg-dry	1	12/8/2012
Surr: 1,2-Dichloroethane-d4	*96.0*	*70-130*			*%REC*	1	12/8/2012
Surr: 4-Bromofluorobenzene	*102*	*70-130*			*%REC*	1	12/8/2012
Surr: Dibromofluoromethane	*92.2*	*70-130*			*%REC*	1	12/8/2012
Surr: Toluene-d8	*90.1*	*70-130*			*%REC*	1	12/8/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**79**	**0.050**	**0**		**% of sample**	1	12/10/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1075L523S120312S005
Work Order:	1212170	**Collection Date:**	12/3/2012 2:28:00 PM
Project:	Marshall KRRI 1075L, 1150R 12/3/12		
Lab ID:	1212170-02	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/10/2012**		Analyst: **CW**
DRO (C10-C20)	**100**	**34**	**4.0**		**mg/Kg-dry**	1	12/11/2012
ORO (C20-C34)	**690**	**67**	**4.0**		**mg/Kg-dry**	1	12/11/2012
Surr: 4-Terphenyl-d14	*81.3*	*39-115*			*%REC*	1	12/11/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/10/2012**		Analyst: **CES**
Beryllium	ND	2.2	0.50		mg/Kg-dry	4	12/11/2012
Molybdenum	ND	5.5	1.0		mg/Kg-dry	4	12/10/2012
Nickel	**15**	**5.5**	**1.0**		**mg/Kg-dry**	4	12/10/2012
Vanadium	**25**	**5.5**	**1.0**		**mg/Kg-dry**	4	12/10/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/10/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/10/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/10/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/10/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/10/2012
Benzo(a)anthracene	ND	330	330		µg/Kg-dry	1	12/10/2012
Benzo(a)pyrene	ND	330	330		µg/Kg-dry	1	12/10/2012
Benzo(b)fluoranthene	ND	330	330		µg/Kg-dry	1	12/10/2012
Benzo(g,h,i)perylene	ND	330	330		µg/Kg-dry	1	12/10/2012
Benzo(k)fluoranthene	ND	330	330		µg/Kg-dry	1	12/10/2012
Chrysene	ND	330	330		µg/Kg-dry	1	12/10/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/10/2012
Fluoranthene	ND	330	330		µg/Kg-dry	1	12/10/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/10/2012
Indeno(1,2,3-cd)pyrene	ND	330	330		µg/Kg-dry	1	12/10/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/10/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/10/2012
Pyrene	ND	330	330		µg/Kg-dry	1	12/10/2012
Surr: 2,4,6-Tribromophenol	*98.9*	*34-140*			*%REC*	1	12/10/2012
Surr: 2-Fluorobiphenyl	*77.5*	*12-100*			*%REC*	1	12/10/2012
Surr: 2-Fluorophenol	*91.6*	*33-117*			*%REC*	1	12/10/2012
Surr: 4-Terphenyl-d14	*99.7*	*25-137*			*%REC*	1	12/10/2012
Surr: Nitrobenzene-d5	*81.8*	*37-107*			*%REC*	1	12/10/2012
Surr: Phenol-d6	*87.4*	*40-106*			*%REC*	1	12/10/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/7/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	110	100		µg/Kg-dry	1	12/8/2012
1,1,1-Trichloroethane	ND	110	50		µg/Kg-dry	1	12/8/2012
1,1,2,2-Tetrachloroethane	ND	110	50		µg/Kg-dry	1	12/8/2012
1,1,2-Trichloroethane	ND	110	50		µg/Kg-dry	1	12/8/2012
1,1-Dichloroethane	ND	110	50		µg/Kg-dry	1	12/8/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client: AECOM Environment
Client Sample ID: SBKR1075L523S120312S005
Work Order: 1212170
Collection Date: 12/3/2012 2:28:00 PM
Project: Marshall KRRI 1075L, 1150R 12/3/12
Lab ID: 1212170-02
Matrix: SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	110	50		µg/Kg-dry	1	12/8/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
1,2,3-Trichloropropane	ND	110	100		µg/Kg-dry	1	12/8/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
1,2,4-Trimethylbenzene	ND	110	100		µg/Kg-dry	1	12/8/2012
1,2-Dibromo-3-chloropropane	ND	110	10		µg/Kg-dry	1	12/8/2012
1,2-Dibromoethane	ND	110	20		µg/Kg-dry	1	12/8/2012
1,2-Dichlorobenzene	ND	110	100		µg/Kg-dry	1	12/8/2012
1,2-Dichloroethane	ND	110	50		µg/Kg-dry	1	12/8/2012
1,2-Dichloropropane	ND	110	50		µg/Kg-dry	1	12/8/2012
1,3,5-Trimethylbenzene	ND	110	100		µg/Kg-dry	1	12/8/2012
1,3-Dichlorobenzene	ND	110	100		µg/Kg-dry	1	12/8/2012
1,4-Dichlorobenzene	ND	110	100		µg/Kg-dry	1	12/8/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/8/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/8/2012
2-Methylnaphthalene	ND	360	330		µg/Kg-dry	1	12/8/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/8/2012
Acetone	ND	1,000	1,000		µg/Kg-dry	1	12/8/2012
Acrylonitrile	ND	110	100		µg/Kg-dry	1	12/8/2012
Benzene	ND	110	50		µg/Kg-dry	1	12/8/2012
Bromobenzene	ND	110	100		µg/Kg-dry	1	12/8/2012
Bromochloromethane	ND	110	100		µg/Kg-dry	1	12/8/2012
Bromodichloromethane	ND	110	100		µg/Kg-dry	1	12/8/2012
Bromoform	ND	110	100		µg/Kg-dry	1	12/8/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/8/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/8/2012
Carbon tetrachloride	ND	110	50		µg/Kg-dry	1	12/8/2012
Chlorobenzene	ND	110	50		µg/Kg-dry	1	12/8/2012
Chloroethane	ND	360	250		µg/Kg-dry	1	12/8/2012
Chloroform	ND	110	50		µg/Kg-dry	1	12/8/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/8/2012
cis-1,2-Dichloroethene	ND	110	50		µg/Kg-dry	1	12/8/2012
cis-1,3-Dichloropropene	ND	110	50		µg/Kg-dry	1	12/8/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/8/2012
Dibromochloromethane	ND	110	100		µg/Kg-dry	1	12/8/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/8/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/8/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/8/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/8/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/8/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client:	AECOM Environment	**Client Sample ID:**	SBKR1075L523S120312S005
Work Order:	1212170	**Collection Date:**	12/3/2012 2:28:00 PM
Project:	Marshall KRRI 1075L, 1150R 12/3/12		
Lab ID:	1212170-02	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	110	50		µg/Kg-dry	1	12/8/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/8/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
m,p-Xylene	ND	220	100		µg/Kg-dry	1	12/8/2012
Methyl iodide	ND	110	100		µg/Kg-dry	1	12/8/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/8/2012
Methylene chloride	ND	110	100		µg/Kg-dry	1	12/8/2012
Naphthalene	ND	360	330		µg/Kg-dry	1	12/8/2012
n-Butylbenzene	ND	110	50		µg/Kg-dry	1	12/8/2012
n-Propylbenzene	ND	110	100		µg/Kg-dry	1	12/8/2012
o-Xylene	ND	110	50		µg/Kg-dry	1	12/8/2012
p-Isopropyltoluene	ND	110	100		µg/Kg-dry	1	12/8/2012
sec-Butylbenzene	ND	110	50		µg/Kg-dry	1	12/8/2012
Styrene	ND	110	50		µg/Kg-dry	1	12/8/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/8/2012
tert-Butylbenzene	ND	110	50		µg/Kg-dry	1	12/8/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/8/2012
Tetrachloroethene	ND	110	50		µg/Kg-dry	1	12/8/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/8/2012
Toluene	ND	110	100		µg/Kg-dry	1	12/8/2012
trans-1,2-Dichloroethene	ND	110	50		µg/Kg-dry	1	12/8/2012
trans-1,3-Dichloropropene	ND	110	50		µg/Kg-dry	1	12/8/2012
trans-1,4-Dichloro-2-butene	ND	110	50		µg/Kg-dry	1	12/8/2012
Trichloroethene	ND	110	50		µg/Kg-dry	1	12/8/2012
Trichlorofluoromethane	ND	110	100		µg/Kg-dry	1	12/8/2012
Vinyl chloride	ND	110	40		µg/Kg-dry	1	12/8/2012
Surr: 1,2-Dichloroethane-d4	*98.9*	*70-130*			*%REC*	1	12/8/2012
Surr: 4-Bromofluorobenzene	*101*	*70-130*			*%REC*	1	12/8/2012
Surr: Dibromofluoromethane	*91.6*	*70-130*			*%REC*	1	12/8/2012
Surr: Toluene-d8	*88.6*	*70-130*			*%REC*	1	12/8/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**72**	**0.050**	**0**		**% of sample**	1	12/10/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1075L523D120312S005
Work Order:	1212170	**Collection Date:**	12/3/2012 2:28:00 PM
Project:	Marshall KRRI 1075L, 1150R 12/3/12		
Lab ID:	1212170-03	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/10/2012**		Analyst: **CW**
DRO (C10-C20)	**110**	**36**	**4.0**		**mg/Kg-dry**	1	12/11/2012
ORO (C20-C34)	**950**	**73**	**4.0**		**mg/Kg-dry**	1	12/11/2012
Surr: 4-Terphenyl-d14	*89.6*	*39-115*			*%REC*	1	12/11/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/10/2012**		Analyst: **CES**
Beryllium	ND	2.0	0.50		mg/Kg-dry	4	12/11/2012
Molybdenum	ND	5.1	1.0		mg/Kg-dry	4	12/10/2012
Nickel	**9.9**	**5.1**	**1.0**		**mg/Kg-dry**	4	12/10/2012
Vanadium	**14**	**5.1**	**1.0**		**mg/Kg-dry**	4	12/10/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/10/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/10/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/10/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/10/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/10/2012
Benzo(a)anthracene	ND	330	330		µg/Kg-dry	1	12/10/2012
Benzo(a)pyrene	ND	330	330		µg/Kg-dry	1	12/10/2012
Benzo(b)fluoranthene	ND	330	330		µg/Kg-dry	1	12/10/2012
Benzo(g,h,i)perylene	ND	330	330		µg/Kg-dry	1	12/10/2012
Benzo(k)fluoranthene	ND	330	330		µg/Kg-dry	1	12/10/2012
Chrysene	ND	330	330		µg/Kg-dry	1	12/10/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/10/2012
Fluoranthene	ND	330	330		µg/Kg-dry	1	12/10/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/10/2012
Indeno(1,2,3-cd)pyrene	ND	330	330		µg/Kg-dry	1	12/10/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/10/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/10/2012
Pyrene	ND	330	330		µg/Kg-dry	1	12/10/2012
Surr: 2,4,6-Tribromophenol	*100*	*34-140*			*%REC*	1	12/10/2012
Surr: 2-Fluorobiphenyl	*82.3*	*12-100*			*%REC*	1	12/10/2012
Surr: 2-Fluorophenol	*88.1*	*33-117*			*%REC*	1	12/10/2012
Surr: 4-Terphenyl-d14	*109*	*25-137*			*%REC*	1	12/10/2012
Surr: Nitrobenzene-d5	*87.6*	*37-107*			*%REC*	1	12/10/2012
Surr: Phenol-d6	*82.4*	*40-106*			*%REC*	1	12/10/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/7/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	120	100		µg/Kg-dry	1	12/8/2012
1,1,1-Trichloroethane	ND	120	50		µg/Kg-dry	1	12/8/2012
1,1,2,2-Tetrachloroethane	ND	120	50		µg/Kg-dry	1	12/8/2012
1,1,2-Trichloroethane	ND	120	50		µg/Kg-dry	1	12/8/2012
1,1-Dichloroethane	ND	120	50		µg/Kg-dry	1	12/8/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client: AECOM Environment
Client Sample ID: SBKR1075L523D120312S005
Work Order: 1212170
Collection Date: 12/3/2012 2:28:00 PM
Project: Marshall KRRI 1075L, 1150R 12/3/12
Lab ID: 1212170-03
Matrix: SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	120	50		µg/Kg-dry	1	12/8/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
1,2,3-Trichloropropane	ND	120	100		µg/Kg-dry	1	12/8/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
1,2,4-Trimethylbenzene	ND	120	100		µg/Kg-dry	1	12/8/2012
1,2-Dibromo-3-chloropropane	ND	120	10		µg/Kg-dry	1	12/8/2012
1,2-Dibromoethane	ND	120	20		µg/Kg-dry	1	12/8/2012
1,2-Dichlorobenzene	ND	120	100		µg/Kg-dry	1	12/8/2012
1,2-Dichloroethane	ND	120	50		µg/Kg-dry	1	12/8/2012
1,2-Dichloropropane	ND	120	50		µg/Kg-dry	1	12/8/2012
1,3,5-Trimethylbenzene	ND	120	100		µg/Kg-dry	1	12/8/2012
1,3-Dichlorobenzene	ND	120	100		µg/Kg-dry	1	12/8/2012
1,4-Dichlorobenzene	ND	120	100		µg/Kg-dry	1	12/8/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/8/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/8/2012
2-Methylnaphthalene	ND	390	330		µg/Kg-dry	1	12/8/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/8/2012
Acetone	ND	1,000	1,000		µg/Kg-dry	1	12/8/2012
Acrylonitrile	ND	120	100		µg/Kg-dry	1	12/8/2012
Benzene	ND	120	50		µg/Kg-dry	1	12/8/2012
Bromobenzene	ND	120	100		µg/Kg-dry	1	12/8/2012
Bromochloromethane	ND	120	100		µg/Kg-dry	1	12/8/2012
Bromodichloromethane	ND	120	100		µg/Kg-dry	1	12/8/2012
Bromoform	ND	120	100		µg/Kg-dry	1	12/8/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/8/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/8/2012
Carbon tetrachloride	ND	120	50		µg/Kg-dry	1	12/8/2012
Chlorobenzene	ND	120	50		µg/Kg-dry	1	12/8/2012
Chloroethane	ND	390	250		µg/Kg-dry	1	12/8/2012
Chloroform	ND	120	50		µg/Kg-dry	1	12/8/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/8/2012
cis-1,2-Dichloroethene	ND	120	50		µg/Kg-dry	1	12/8/2012
cis-1,3-Dichloropropene	ND	120	50		µg/Kg-dry	1	12/8/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/8/2012
Dibromochloromethane	ND	120	100		µg/Kg-dry	1	12/8/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/8/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/8/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/8/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/8/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/8/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: AECOM Environment
Client Sample ID: SBKR1075L523D120312S005
Work Order: 1212170
Collection Date: 12/3/2012 2:28:00 PM
Project: Marshall KRRI 1075L, 1150R 12/3/12
Lab ID: 1212170-03
Matrix: SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	120	50		µg/Kg-dry	1	12/8/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/8/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
m,p-Xylene	ND	230	100		µg/Kg-dry	1	12/8/2012
Methyl iodide	ND	120	100		µg/Kg-dry	1	12/8/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/8/2012
Methylene chloride	ND	120	100		µg/Kg-dry	1	12/8/2012
Naphthalene	ND	390	330		µg/Kg-dry	1	12/8/2012
n-Butylbenzene	ND	120	50		µg/Kg-dry	1	12/8/2012
n-Propylbenzene	ND	120	100		µg/Kg-dry	1	12/8/2012
o-Xylene	ND	120	50		µg/Kg-dry	1	12/8/2012
p-Isopropyltoluene	ND	120	100		µg/Kg-dry	1	12/8/2012
sec-Butylbenzene	ND	120	50		µg/Kg-dry	1	12/8/2012
Styrene	ND	120	50		µg/Kg-dry	1	12/8/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/8/2012
tert-Butylbenzene	ND	120	50		µg/Kg-dry	1	12/8/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/8/2012
Tetrachloroethene	ND	120	50		µg/Kg-dry	1	12/8/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/8/2012
Toluene	ND	120	100		µg/Kg-dry	1	12/8/2012
trans-1,2-Dichloroethene	ND	120	50		µg/Kg-dry	1	12/8/2012
trans-1,3-Dichloropropene	ND	120	50		µg/Kg-dry	1	12/8/2012
trans-1,4-Dichloro-2-butene	ND	120	50		µg/Kg-dry	1	12/8/2012
Trichloroethene	ND	120	50		µg/Kg-dry	1	12/8/2012
Trichlorofluoromethane	ND	120	100		µg/Kg-dry	1	12/8/2012
Vinyl chloride	ND	120	40		µg/Kg-dry	1	12/8/2012
Surr: 1,2-Dichloroethane-d4	*97.0*	*70-130*			*%REC*	1	12/8/2012
Surr: 4-Bromofluorobenzene	*101*	*70-130*			*%REC*	1	12/8/2012
Surr: Dibromofluoromethane	*91.8*	*70-130*			*%REC*	1	12/8/2012
Surr: Toluene-d8	*88.8*	*70-130*			*%REC*	1	12/8/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**74**	**0.050**	**0**		**% of sample**	1	12/10/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1075L524S120312S004
Work Order:	1212170	**Collection Date:**	12/3/2012 3:36:00 PM
Project:	Marshall KRRI 1075L, 1150R 12/3/12		
Lab ID:	1212170-04	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/10/2012**		Analyst: **CW**
DRO (C10-C20)	ND	49	4.0		mg/Kg-dry	1	12/11/2012
ORO (C20-C34)	**490**	**98**	**4.0**		**mg/Kg-dry**	1	12/11/2012
Surr: 4-Terphenyl-d14	*80.3*	*39-115*			*%REC*	1	12/11/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/10/2012**		Analyst: **CES**
Beryllium	ND	3.1	0.50		mg/Kg-dry	4	12/11/2012
Molybdenum	ND	7.7	1.0		mg/Kg-dry	4	12/10/2012
Nickel	**20**	**7.7**	**1.0**		**mg/Kg-dry**	4	12/10/2012
Vanadium	**31**	**7.7**	**1.0**		**mg/Kg-dry**	4	12/10/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/10/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/10/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/10/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/10/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/10/2012
Benzo(a)anthracene	ND	330	330		µg/Kg-dry	1	12/10/2012
Benzo(a)pyrene	**360**	**330**	**330**		**µg/Kg-dry**	1	12/10/2012
Benzo(b)fluoranthene	ND	330	330		µg/Kg-dry	1	12/10/2012
Benzo(g,h,i)perylene	ND	330	330		µg/Kg-dry	1	12/10/2012
Benzo(k)fluoranthene	ND	330	330		µg/Kg-dry	1	12/10/2012
Chrysene	ND	330	330		µg/Kg-dry	1	12/10/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/10/2012
Fluoranthene	ND	330	330		µg/Kg-dry	1	12/10/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/10/2012
Indeno(1,2,3-cd)pyrene	ND	330	330		µg/Kg-dry	1	12/10/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/10/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/10/2012
Pyrene	ND	330	330		µg/Kg-dry	1	12/10/2012
Surr: 2,4,6-Tribromophenol	*102*	*34-140*			*%REC*	1	12/10/2012
Surr: 2-Fluorobiphenyl	*76.8*	*12-100*			*%REC*	1	12/10/2012
Surr: 2-Fluorophenol	*83.8*	*33-117*			*%REC*	1	12/10/2012
Surr: 4-Terphenyl-d14	*97.8*	*25-137*			*%REC*	1	12/10/2012
Surr: Nitrobenzene-d5	*74.1*	*37-107*			*%REC*	1	12/10/2012
Surr: Phenol-d6	*79.9*	*40-106*			*%REC*	1	12/10/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/7/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	150	100		µg/Kg-dry	1	12/8/2012
1,1,1-Trichloroethane	ND	150	50		µg/Kg-dry	1	12/8/2012
1,1,2,2-Tetrachloroethane	ND	150	50		µg/Kg-dry	1	12/8/2012
1,1,2-Trichloroethane	ND	150	50		µg/Kg-dry	1	12/8/2012
1,1-Dichloroethane	ND	150	50		µg/Kg-dry	1	12/8/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1075L524S120312S004
Work Order:	1212170	**Collection Date:**	12/3/2012 3:36:00 PM
Project:	Marshall KRRI 1075L, 1150R 12/3/12		
Lab ID:	1212170-04	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	150	50		µg/Kg-dry	1	12/8/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
1,2,3-Trichloropropane	ND	150	100		µg/Kg-dry	1	12/8/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
1,2,4-Trimethylbenzene	ND	150	100		µg/Kg-dry	1	12/8/2012
1,2-Dibromo-3-chloropropane	ND	150	10		µg/Kg-dry	1	12/8/2012
1,2-Dibromoethane	ND	150	20		µg/Kg-dry	1	12/8/2012
1,2-Dichlorobenzene	ND	150	100		µg/Kg-dry	1	12/8/2012
1,2-Dichloroethane	ND	150	50		µg/Kg-dry	1	12/8/2012
1,2-Dichloropropane	ND	150	50		µg/Kg-dry	1	12/8/2012
1,3,5-Trimethylbenzene	ND	150	100		µg/Kg-dry	1	12/8/2012
1,3-Dichlorobenzene	ND	150	100		µg/Kg-dry	1	12/8/2012
1,4-Dichlorobenzene	ND	150	100		µg/Kg-dry	1	12/8/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/8/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/8/2012
2-Methylnaphthalene	ND	500	330		µg/Kg-dry	1	12/8/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/8/2012
Acetone	ND	1,300	1,000		µg/Kg-dry	1	12/8/2012
Acrylonitrile	ND	150	100		µg/Kg-dry	1	12/8/2012
Benzene	ND	150	50		µg/Kg-dry	1	12/8/2012
Bromobenzene	ND	150	100		µg/Kg-dry	1	12/8/2012
Bromochloromethane	ND	150	100		µg/Kg-dry	1	12/8/2012
Bromodichloromethane	ND	150	100		µg/Kg-dry	1	12/8/2012
Bromoform	ND	150	100		µg/Kg-dry	1	12/8/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/8/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/8/2012
Carbon tetrachloride	ND	150	50		µg/Kg-dry	1	12/8/2012
Chlorobenzene	ND	150	50		µg/Kg-dry	1	12/8/2012
Chloroethane	ND	500	250		µg/Kg-dry	1	12/8/2012
Chloroform	ND	150	50		µg/Kg-dry	1	12/8/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/8/2012
cis-1,2-Dichloroethene	ND	150	50		µg/Kg-dry	1	12/8/2012
cis-1,3-Dichloropropene	ND	150	50		µg/Kg-dry	1	12/8/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/8/2012
Dibromochloromethane	ND	150	100		µg/Kg-dry	1	12/8/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/8/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/8/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/8/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/8/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/8/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1075L524S120312S004
Work Order:	1212170	**Collection Date:**	12/3/2012 3:36:00 PM
Project:	Marshall KRRI 1075L, 1150R 12/3/12		
Lab ID:	1212170-04	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	150	50		µg/Kg-dry	1	12/8/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/8/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
m,p-Xylene	ND	300	100		µg/Kg-dry	1	12/8/2012
Methyl iodide	ND	150	100		µg/Kg-dry	1	12/8/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/8/2012
Methylene chloride	ND	150	100		µg/Kg-dry	1	12/8/2012
Naphthalene	ND	500	330		µg/Kg-dry	1	12/8/2012
n-Butylbenzene	ND	150	50		µg/Kg-dry	1	12/8/2012
n-Propylbenzene	ND	150	100		µg/Kg-dry	1	12/8/2012
o-Xylene	ND	150	50		µg/Kg-dry	1	12/8/2012
p-Isopropyltoluene	ND	150	100		µg/Kg-dry	1	12/8/2012
sec-Butylbenzene	ND	150	50		µg/Kg-dry	1	12/8/2012
Styrene	ND	150	50		µg/Kg-dry	1	12/8/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/8/2012
tert-Butylbenzene	ND	150	50		µg/Kg-dry	1	12/8/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/8/2012
Tetrachloroethene	ND	150	50		µg/Kg-dry	1	12/8/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/8/2012
Toluene	ND	150	100		µg/Kg-dry	1	12/8/2012
trans-1,2-Dichloroethene	ND	150	50		µg/Kg-dry	1	12/8/2012
trans-1,3-Dichloropropene	ND	150	50		µg/Kg-dry	1	12/8/2012
trans-1,4-Dichloro-2-butene	ND	150	50		µg/Kg-dry	1	12/8/2012
Trichloroethene	ND	150	50		µg/Kg-dry	1	12/8/2012
Trichlorofluoromethane	ND	150	100		µg/Kg-dry	1	12/8/2012
Vinyl chloride	ND	150	40		µg/Kg-dry	1	12/8/2012
Surr: 1,2-Dichloroethane-d4	*95.9*	*70-130*			*%REC*	1	12/8/2012
Surr: 4-Bromofluorobenzene	*101*	*70-130*			*%REC*	1	12/8/2012
Surr: Dibromofluoromethane	*92.1*	*70-130*			*%REC*	1	12/8/2012
Surr: Toluene-d8	*87.6*	*70-130*			*%REC*	1	12/8/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**80**	**0.050**	**0**		**% of sample**	1	12/10/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1150R501S120312S004
Work Order:	1212170	**Collection Date:**	12/3/2012 4:35:00 PM
Project:	Marshall KRRI 1075L, 1150R 12/3/12		
Lab ID:	1212170-05	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/10/2012**		Analyst: **CW**
DRO (C10-C20)	**44**	**21**	**4.0**		**mg/Kg-dry**	1	12/11/2012
ORO (C20-C34)	**540**	**41**	**4.0**		**mg/Kg-dry**	1	12/11/2012
Surr: 4-Terphenyl-d14	*79.3*	*39-115*			*%REC*	1	12/11/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/10/2012**		Analyst: **CES**
Beryllium	ND	1.1	0.50		mg/Kg-dry	4	12/10/2012
Molybdenum	ND	2.7	1.0		mg/Kg-dry	4	12/10/2012
Nickel	**16**	**2.7**	**1.0**		**mg/Kg-dry**	4	12/10/2012
Vanadium	**19**	**2.7**	**1.0**		**mg/Kg-dry**	4	12/10/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/10/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/10/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/10/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/10/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/10/2012
Benzo(a)anthracene	ND	330	330		µg/Kg-dry	1	12/10/2012
Benzo(a)pyrene	**470**	**330**	**330**		**µg/Kg-dry**	1	12/10/2012
Benzo(b)fluoranthene	**560**	**330**	**330**		**µg/Kg-dry**	1	12/10/2012
Benzo(g,h,i)perylene	ND	330	330		µg/Kg-dry	1	12/10/2012
Benzo(k)fluoranthene	ND	330	330		µg/Kg-dry	1	12/10/2012
Chrysene	**380**	**330**	**330**		**µg/Kg-dry**	1	12/10/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/10/2012
Fluoranthene	**500**	**330**	**330**		**µg/Kg-dry**	1	12/10/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/10/2012
Indeno(1,2,3-cd)pyrene	ND	330	330		µg/Kg-dry	1	12/10/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/10/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/10/2012
Pyrene	**510**	**330**	**330**		**µg/Kg-dry**	1	12/10/2012
Surr: 2,4,6-Tribromophenol	*97.1*	*34-140*			*%REC*	1	12/10/2012
Surr: 2-Fluorobiphenyl	*77.0*	*12-100*			*%REC*	1	12/10/2012
Surr: 2-Fluorophenol	*86.7*	*33-117*			*%REC*	1	12/10/2012
Surr: 4-Terphenyl-d14	*104*	*25-137*			*%REC*	1	12/10/2012
Surr: Nitrobenzene-d5	*78.9*	*37-107*			*%REC*	1	12/10/2012
Surr: Phenol-d6	*77.6*	*40-106*			*%REC*	1	12/10/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/7/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	100	100		µg/Kg-dry	1	12/8/2012
1,1,1-Trichloroethane	ND	63	50		µg/Kg-dry	1	12/8/2012
1,1,2,2-Tetrachloroethane	ND	63	50		µg/Kg-dry	1	12/8/2012
1,1,2-Trichloroethane	ND	63	50		µg/Kg-dry	1	12/8/2012
1,1-Dichloroethane	ND	63	50		µg/Kg-dry	1	12/8/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client: AECOM Environment
Client Sample ID: SBKR1150R501S120312S004
Work Order: 1212170
Collection Date: 12/3/2012 4:35:00 PM
Project: Marshall KRRI 1075L, 1150R 12/3/12
Lab ID: 1212170-05
Matrix: SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	63	50		µg/Kg-dry	1	12/8/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
1,2,3-Trichloropropane	ND	100	100		µg/Kg-dry	1	12/8/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
1,2,4-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/8/2012
1,2-Dibromo-3-chloropropane	ND	63	10		µg/Kg-dry	1	12/8/2012
1,2-Dibromoethane	ND	63	20		µg/Kg-dry	1	12/8/2012
1,2-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/8/2012
1,2-Dichloroethane	ND	63	50		µg/Kg-dry	1	12/8/2012
1,2-Dichloropropane	ND	63	50		µg/Kg-dry	1	12/8/2012
1,3,5-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/8/2012
1,3-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/8/2012
1,4-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/8/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/8/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/8/2012
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/8/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/8/2012
Acetone	ND	1,000	1,000		µg/Kg-dry	1	12/8/2012
Acrylonitrile	ND	100	100		µg/Kg-dry	1	12/8/2012
Benzene	ND	63	50		µg/Kg-dry	1	12/8/2012
Bromobenzene	ND	100	100		µg/Kg-dry	1	12/8/2012
Bromochloromethane	ND	100	100		µg/Kg-dry	1	12/8/2012
Bromodichloromethane	ND	100	100		µg/Kg-dry	1	12/8/2012
Bromoform	ND	100	100		µg/Kg-dry	1	12/8/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/8/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/8/2012
Carbon tetrachloride	ND	63	50		µg/Kg-dry	1	12/8/2012
Chlorobenzene	ND	63	50		µg/Kg-dry	1	12/8/2012
Chloroethane	ND	250	250		µg/Kg-dry	1	12/8/2012
Chloroform	ND	63	50		µg/Kg-dry	1	12/8/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/8/2012
cis-1,2-Dichloroethene	ND	63	50		µg/Kg-dry	1	12/8/2012
cis-1,3-Dichloropropene	ND	63	50		µg/Kg-dry	1	12/8/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/8/2012
Dibromochloromethane	ND	100	100		µg/Kg-dry	1	12/8/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/8/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/8/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/8/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/8/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/8/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: AECOM Environment **Client Sample ID:** SBKR1150R501S120312S004
Work Order: 1212170 **Collection Date:** 12/3/2012 4:35:00 PM
Project: Marshall KRRI 1075L, 1150R 12/3/12
Lab ID: 1212170-05 **Matrix:** SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	63	50		µg/Kg-dry	1	12/8/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/8/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
m,p-Xylene	ND	130	100		µg/Kg-dry	1	12/8/2012
Methyl iodide	ND	100	100		µg/Kg-dry	1	12/8/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/8/2012
Methylene chloride	ND	100	100		µg/Kg-dry	1	12/8/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/8/2012
n-Butylbenzene	ND	63	50		µg/Kg-dry	1	12/8/2012
n-Propylbenzene	ND	100	100		µg/Kg-dry	1	12/8/2012
o-Xylene	ND	63	50		µg/Kg-dry	1	12/8/2012
p-Isopropyltoluene	ND	100	100		µg/Kg-dry	1	12/8/2012
sec-Butylbenzene	ND	63	50		µg/Kg-dry	1	12/8/2012
Styrene	ND	63	50		µg/Kg-dry	1	12/8/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/8/2012
tert-Butylbenzene	ND	63	50		µg/Kg-dry	1	12/8/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/8/2012
Tetrachloroethene	ND	63	50		µg/Kg-dry	1	12/8/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/8/2012
Toluene	ND	100	100		µg/Kg-dry	1	12/8/2012
trans-1,2-Dichloroethene	ND	63	50		µg/Kg-dry	1	12/8/2012
trans-1,3-Dichloropropene	ND	63	50		µg/Kg-dry	1	12/8/2012
trans-1,4-Dichloro-2-butene	ND	63	50		µg/Kg-dry	1	12/8/2012
Trichloroethene	ND	63	50		µg/Kg-dry	1	12/8/2012
Trichlorofluoromethane	ND	100	100		µg/Kg-dry	1	12/8/2012
Vinyl chloride	ND	63	40		µg/Kg-dry	1	12/8/2012
Surr: 1,2-Dichloroethane-d4	*96.6*	*70-130*			*%REC*	1	12/8/2012
Surr: 4-Bromofluorobenzene	*99.9*	*70-130*			*%REC*	1	12/8/2012
Surr: Dibromofluoromethane	*90.4*	*70-130*			*%REC*	1	12/8/2012
Surr: Toluene-d8	*88.8*	*70-130*			*%REC*	1	12/8/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**52**	**0.050**	**0**		**% of sample**	1	12/10/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1150R501T120312MX
Work Order:	1212170	**Collection Date:**	12/3/2012
Project:	Marshall KRRI 1075L, 1150R 12/3/12		
Lab ID:	1212170-06	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/7/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	100	100		µg/Kg	1	12/8/2012
1,1,1-Trichloroethane	ND	50	50		µg/Kg	1	12/8/2012
1,1,2,2-Tetrachloroethane	ND	50	50		µg/Kg	1	12/8/2012
1,1,2-Trichloroethane	ND	50	50		µg/Kg	1	12/8/2012
1,1-Dichloroethane	ND	50	50		µg/Kg	1	12/8/2012
1,1-Dichloroethene	ND	50	50		µg/Kg	1	12/8/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg	1	12/8/2012
1,2,3-Trichloropropane	ND	100	100		µg/Kg	1	12/8/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg	1	12/8/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg	1	12/8/2012
1,2,4-Trimethylbenzene	ND	100	100		µg/Kg	1	12/8/2012
1,2-Dibromo-3-chloropropane	ND	30	10		µg/Kg	1	12/8/2012
1,2-Dibromoethane	ND	30	20		µg/Kg	1	12/8/2012
1,2-Dichlorobenzene	ND	100	100		µg/Kg	1	12/8/2012
1,2-Dichloroethane	ND	50	50		µg/Kg	1	12/8/2012
1,2-Dichloropropane	ND	50	50		µg/Kg	1	12/8/2012
1,3,5-Trimethylbenzene	ND	100	100		µg/Kg	1	12/8/2012
1,3-Dichlorobenzene	ND	100	100		µg/Kg	1	12/8/2012
1,4-Dichlorobenzene	ND	100	100		µg/Kg	1	12/8/2012
2-Butanone	ND	750	750		µg/Kg	1	12/8/2012
2-Hexanone	ND	2,500	2,500		µg/Kg	1	12/8/2012
2-Methylnaphthalene	ND	330	330		µg/Kg	1	12/8/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg	1	12/8/2012
Acetone	ND	1,000	1,000		µg/Kg	1	12/8/2012
Acrylonitrile	ND	100	100		µg/Kg	1	12/8/2012
Benzene	ND	50	50		µg/Kg	1	12/8/2012
Bromobenzene	ND	100	100		µg/Kg	1	12/8/2012
Bromochloromethane	ND	100	100		µg/Kg	1	12/8/2012
Bromodichloromethane	ND	100	100		µg/Kg	1	12/8/2012
Bromoform	ND	100	100		µg/Kg	1	12/8/2012
Bromomethane	ND	200	200		µg/Kg	1	12/8/2012
Carbon disulfide	ND	250	250		µg/Kg	1	12/8/2012
Carbon tetrachloride	ND	50	50		µg/Kg	1	12/8/2012
Chlorobenzene	ND	50	50		µg/Kg	1	12/8/2012
Chloroethane	ND	250	250		µg/Kg	1	12/8/2012
Chloroform	ND	50	50		µg/Kg	1	12/8/2012
Chloromethane	ND	250	250		µg/Kg	1	12/8/2012
cis-1,2-Dichloroethene	ND	50	50		µg/Kg	1	12/8/2012
cis-1,3-Dichloropropene	ND	50	50		µg/Kg	1	12/8/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1150R501T120312MX
Work Order:	1212170	**Collection Date:**	12/3/2012
Project:	Marshall KRRI 1075L, 1150R 12/3/12		
Lab ID:	1212170-06	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Cyclohexane	ND	500	500		µg/Kg	1	12/8/2012
Dibromochloromethane	ND	100	100		µg/Kg	1	12/8/2012
Dibromomethane	ND	250	250		µg/Kg	1	12/8/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg	1	12/8/2012
Diethyl ether	ND	200	200		µg/Kg	1	12/8/2012
Diisopropyl ether	ND	250	250		µg/Kg	1	12/8/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg	1	12/8/2012
Ethylbenzene	ND	50	50		µg/Kg	1	12/8/2012
Hexachloroethane	ND	300	300		µg/Kg	1	12/8/2012
Isopropylbenzene	ND	250	250		µg/Kg	1	12/8/2012
m,p-Xylene	ND	100	100		µg/Kg	1	12/8/2012
Methyl iodide	ND	100	100		µg/Kg	1	12/8/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg	1	12/8/2012
Methylene chloride	ND	100	100		µg/Kg	1	12/8/2012
Naphthalene	ND	330	330		µg/Kg	1	12/8/2012
n-Butylbenzene	ND	50	50		µg/Kg	1	12/8/2012
n-Propylbenzene	ND	100	100		µg/Kg	1	12/8/2012
o-Xylene	ND	50	50		µg/Kg	1	12/8/2012
p-Isopropyltoluene	ND	100	100		µg/Kg	1	12/8/2012
sec-Butylbenzene	ND	50	50		µg/Kg	1	12/8/2012
Styrene	ND	50	50		µg/Kg	1	12/8/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg	1	12/8/2012
tert-Butylbenzene	ND	50	50		µg/Kg	1	12/8/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg	1	12/8/2012
Tetrachloroethene	ND	50	50		µg/Kg	1	12/8/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg	1	12/8/2012
Toluene	ND	100	100		µg/Kg	1	12/8/2012
trans-1,2-Dichloroethene	ND	50	50		µg/Kg	1	12/8/2012
trans-1,3-Dichloropropene	ND	50	50		µg/Kg	1	12/8/2012
trans-1,4-Dichloro-2-butene	ND	50	50		µg/Kg	1	12/8/2012
Trichloroethene	ND	50	50		µg/Kg	1	12/8/2012
Trichlorofluoromethane	ND	100	100		µg/Kg	1	12/8/2012
Vinyl chloride	ND	40	40		µg/Kg	1	12/8/2012
Surr: 1,2-Dichloroethane-d4	*93.2*	*70-130*			*%REC*	1	12/8/2012
Surr: 4-Bromofluorobenzene	*101*	*70-130*			*%REC*	1	12/8/2012
Surr: Dibromofluoromethane	*89.0*	*70-130*			*%REC*	1	12/8/2012
Surr: Toluene-d8	*84.7*	*70-130*			*%REC*	1	12/8/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 12-Dec-12

Client: AECOM Environment

QC BATCH REPORT

Work Order: 1212170

Project: Marshall KRRI 1075L, 1150R 12/3/12

Batch ID: **45257** Instrument ID **GC8** Method: **SW8015M**

MBLK Sample ID: **DBLKS1-45257-45257** Units: **mg/Kg** Analysis Date: **12/11/2012 11:49 AM**

Client ID: Run ID: **GC8_121211A** SeqNo: **2165976** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	ND	10								
ORO (C20-C34)	ND	20								
Surr: 4-Terphenyl-d14	*4.434*	0	*5*	0	*88.7*	*39-115*	0			

LCS Sample ID: **DLCSS1-45257-45257** Units: **mg/Kg** Analysis Date: **12/11/2012 12:14 PM**

Client ID: Run ID: **GC8_121211A** SeqNo: **2165977** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	371.9	10	500	0	74.4	49-124	0			
ORO (C20-C34)	365.6	20	500	0	73.1	60-130	0			
Surr: 4-Terphenyl-d14	*4.413*	0	*5*	0	*88.3*	*39-115*	0			

MS Sample ID: **1212170-04B MS** Units: **mg/Kg** Analysis Date: **12/11/2012 12:40 PM**

Client ID: **SBKR1075L524S120312S004** Run ID: **GC8_121211A** SeqNo: **2165978** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	351.9	9.3	464.8	8.48	73.9	60-130	0			
ORO (C20-C34)	382.2	19	464.8	97.72	61.2	60-130	0			
Surr: 4-Terphenyl-d14	*3.697*	0	*4.648*	0	*79.5*	*39-115*	0			

MSD Sample ID: **1212170-04B MSD** Units: **mg/Kg** Analysis Date: **12/11/2012 01:05 PM**

Client ID: **SBKR1075L524S120312S004** Run ID: **GC8_121211A** SeqNo: **2165979** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	374.6	9.8	489.7	8.48	74.8	60-130	351.9	6.25	30	
ORO (C20-C34)	408.9	20	489.7	97.72	63.5	60-130	382.2	6.76	30	
Surr: 4-Terphenyl-d14	*4.054*	0	*4.897*	0	*82.8*	*39-115*	3.697	*9.23*	*30*	

The following samples were analyzed in this batch:

1212170-01B	1212170-02B	1212170-03B
1212170-04B	1212170-05B	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212170
Project: Marshall KRRI 1075L, 1150R 12/3/12

QC BATCH REPORT

Batch ID: **45280** Instrument ID **ICPMS1** Method: **SW6020A**

MBLK Sample ID: **MBLK-45280-45280** Units: **mg/Kg** Analysis Date: **12/10/2012 06:36 PM**
Client ID: Run ID: **ICPMS1_121210A** SeqNo: **2164664** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	ND	0.10								
Molybdenum	ND	0.25								
Nickel	ND	0.25								
Vanadium	ND	0.25								

LCS Sample ID: **LCS-45280-45280** Units: **mg/Kg** Analysis Date: **12/10/2012 06:42 PM**
Client ID: Run ID: **ICPMS1_121210A** SeqNo: **2164665** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	5.185	0.10	5	0	104	80-120	0			
Molybdenum	4.977	0.25	5	0	99.5	80-120	0			
Nickel	4.85	0.25	5	0	97	80-120	0			
Vanadium	5.08	0.25	5	0	102	80-120	0			

MS Sample ID: **1212170-04BMS** Units: **mg/Kg** Analysis Date: **12/10/2012 10:13 PM**
Client ID: **SBKR1075L524S120312S004** Run ID: **ICPMS1_121210A** SeqNo: **2164694** Prep Date: **12/10/2012** DF: **4**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	7.936	0.61	7.564	0.1456	103	75-125	0			
Molybdenum	7.806	1.5	7.564	0.4479	97.3	75-125	0			
Nickel	12.29	1.5	7.564	3.926	111	75-125	0			
Vanadium	15.49	1.5	7.564	6.258	122	75-125	0			

MSD Sample ID: **1212170-04BMSD** Units: **mg/Kg** Analysis Date: **12/10/2012 10:19 PM**
Client ID: **SBKR1075L524S120312S004** Run ID: **ICPMS1_121210A** SeqNo: **2164695** Prep Date: **12/10/2012** DF: **4**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	8.199	0.62	7.788	0.1456	103	75-125	7.936	3.26	25	
Molybdenum	8.159	1.6	7.788	0.4479	99	75-125	7.806	4.42	25	
Nickel	12.77	1.6	7.788	3.926	114	75-125	12.29	3.82	25	
Vanadium	16.52	1.6	7.788	6.258	132	75-125	15.49	6.43	25	S

The following samples were analyzed in this batch: 1212170-01B 1212170-02B 1212170-03B 1212170-04B 1212170-05B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212170
Project: Marshall KRRI 1075L, 1150R 12/3/12

QC BATCH REPORT

Batch ID: **45256** Instrument ID **SVMS5** Method: **SW8270**

MBLK Sample ID: **SBLKS1-45256-45256** Units: **µg/Kg** Analysis Date: **12/10/2012 04:05 PM**
Client ID: Run ID: **SVMS5_121210A** SeqNo: **2165141** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	ND	50								
Acenaphthene	ND	50								
Acenaphthylene	ND	50								
Anthracene	ND	50								
Benzo(a)anthracene	ND	50								
Benzo(a)pyrene	ND	50								
Benzo(b)fluoranthene	ND	50								
Benzo(g,h,i)perylene	ND	50								
Benzo(k)fluoranthene	ND	50								
Chrysene	ND	50								
Dibenzo(a,h)anthracene	ND	50								
Fluoranthene	ND	50								
Fluorene	ND	50								
Indeno(1,2,3-cd)pyrene	ND	50								
Naphthalene	ND	50								
Phenanthrene	ND	50								
Pyrene	ND	50								
Surr: 2,4,6-Tribromophenol	*4761*	0	*5000*	0	*95.2*	*34-140*	0			
Surr: 2-Fluorobiphenyl	*4322*	0	*5000*	0	*86.4*	*12-100*	0			
Surr: 2-Fluorophenol	*5224*	0	*5000*	0	*104*	*33-117*	0			
Surr: 4-Terphenyl-d14	*5380*	0	*5000*	0	*108*	*25-137*	0			
Surr: Nitrobenzene-d5	*4467*	0	*5000*	0	*89.3*	*37-107*	0			
Surr: Phenol-d6	*4575*	0	*5000*	0	*91.5*	*40-106*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212170
Project: Marshall KRRI 1075L, 1150R 12/3/12

QC BATCH REPORT

Batch ID: **45256** Instrument ID **SVMS5** Method: **SW8270**

LCS Sample ID: **SLCSS1-45256-45256** Units: **µg/Kg** Analysis Date: **12/10/2012 04:36 PM**
Client ID: Run ID: **SVMS5_121210A** SeqNo: **2165143** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	1636	50	2000	0	81.8	45-105	0			
Acenaphthene	1653	50	2000	0	82.6	45-110	0			
Acenaphthylene	1723	50	2000	0	86.2	45-105	0			
Anthracene	1819	50	2000	0	91	55-105	0			
Benzo(a)anthracene	1756	50	2000	0	87.8	50-110	0			
Benzo(a)pyrene	1766	50	2000	0	88.3	50-110	0			
Benzo(b)fluoranthene	1659	50	2000	0	83	45-115	0			
Benzo(g,h,i)perylene	1986	50	2000	0	99.3	40-125	0			
Benzo(k)fluoranthene	1876	50	2000	0	93.8	45-115	0			
Chrysene	1972	50	2000	0	98.6	55-110	0			
Dibenzo(a,h)anthracene	1819	50	2000	0	91	40-125	0			
Fluoranthene	1801	50	2000	0	90	55-115	0			
Fluorene	1677	50	2000	0	83.8	50-110	0			
Indeno(1,2,3-cd)pyrene	1867	50	2000	0	93.4	40-120	0			
Naphthalene	1597	50	2000	0	79.8	40-105	0			
Phenanthrene	1744	50	2000	0	87.2	50-110	0			
Pyrene	1882	50	2000	0	94.1	45-125	0			
Surr: 2,4,6-Tribromophenol	*4807*	0	*5000*	0	*96.1*	*34-140*	0			
Surr: 2-Fluorobiphenyl	*3712*	0	*5000*	0	*74.2*	*12-100*	0			
Surr: 2-Fluorophenol	*4483*	0	*5000*	0	*89.7*	*33-117*	0			
Surr: 4-Terphenyl-d14	*4972*	0	*5000*	0	*99.4*	*25-137*	0			
Surr: Nitrobenzene-d5	*3965*	0	*5000*	0	*79.3*	*37-107*	0			
Surr: Phenol-d6	*3914*	0	*5000*	0	*78.3*	*40-106*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212170
Project: Marshall KRRI 1075L, 1150R 12/3/12

QC BATCH REPORT

Batch ID: **45256** Instrument ID **SVMS5** Method: **SW8270**

MS Sample ID: **1212170-04B MS** Units: **µg/Kg** Analysis Date: **12/10/2012 05:06 PM**
Client ID: **SBKR1075L524S120312S004** Run ID: **SVMS5_121210A** SeqNo: **2165145** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	1551	50	1999	0	77.6	45-105	0			
Acenaphthene	1604	50	1999	0	80.2	45-110	0			
Acenaphthylene	1666	50	1999	0	83.4	45-105	0			
Anthracene	1767	50	1999	0	88.4	55-105	0			
Benzo(a)anthracene	1748	50	1999	0	87.4	50-110	0			
Benzo(a)pyrene	1766	50	1999	71.23	84.8	50-110	0			
Benzo(b)fluoranthene	1729	50	1999	0	86.5	45-115	0			
Benzo(g,h,i)perylene	1571	50	1999	0	78.6	40-125	0			
Benzo(k)fluoranthene	1971	50	1999	0	98.6	45-115	0			
Chrysene	1916	50	1999	0	95.8	55-110	0			
Dibenzo(a,h)anthracene	1551	50	1999	0	77.6	40-125	0			
Fluoranthene	1787	50	1999	52.69	86.8	55-115	0			
Fluorene	1666	50	1999	0	83.4	50-110	0			
Indeno(1,2,3-cd)pyrene	1617	50	1999	0	80.9	40-120	0			
Naphthalene	1491	50	1999	0	74.6	40-105	0			
Phenanthrene	1755	50	1999	0	87.8	50-110	0			
Pyrene	1807	50	1999	54.64	87.7	45-125	0			
Surr: 2,4,6-Tribromophenol	*4880*	0	*4997*	0	*97.7*	*34-140*	0			
Surr: 2-Fluorobiphenyl	*3676*	0	*4997*	0	*73.6*	*12-100*	0			
Surr: 2-Fluorophenol	*4077*	0	*4997*	0	*81.6*	*33-117*	0			
Surr: 4-Terphenyl-d14	*4554*	0	*4997*	0	*91.1*	*25-137*	0			
Surr: Nitrobenzene-d5	*3684*	0	*4997*	0	*73.7*	*37-107*	0			
Surr: Phenol-d6	*3730*	0	*4997*	0	*74.7*	*40-106*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212170
Project: Marshall KRRI 1075L, 1150R 12/3/12

QC BATCH REPORT

Batch ID: **45256** Instrument ID **SVMS5** Method: **SW8270**

MSD Sample ID: **1212170-04B MSD** Units: **µg/Kg** Analysis Date: **12/10/2012 05:36 PM**
Client ID: **SBKR1075L524S120312S004** Run ID: **SVMS5_121210A** SeqNo: **2165148** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	1646	50	1982	0	83	45-105	1551	5.96	30	
Acenaphthene	1655	50	1982	0	83.5	45-110	1604	3.14	30	
Acenaphthylene	1742	50	1982	0	87.9	45-105	1666	4.49	30	
Anthracene	1861	50	1982	0	93.9	55-105	1767	5.21	30	
Benzo(a)anthracene	1833	50	1982	0	92.5	50-110	1748	4.79	30	
Benzo(a)pyrene	1787	50	1982	71.23	86.6	50-110	1766	1.19	30	
Benzo(b)fluoranthene	2027	50	1982	0	102	45-115	1729	15.9	30	
Benzo(g,h,i)perylene	1299	50	1982	0	65.6	40-125	1571	18.9	30	
Benzo(k)fluoranthene	1943	50	1982	0	98	45-115	1971	1.44	30	
Chrysene	1926	50	1982	0	97.2	55-110	1916	0.521	30	
Dibenzo(a,h)anthracene	1379	50	1982	0	69.6	40-125	1551	11.8	30	
Fluoranthene	1844	50	1982	52.69	90.4	55-115	1787	3.18	30	
Fluorene	1745	50	1982	0	88	50-110	1666	4.66	30	
Indeno(1,2,3-cd)pyrene	1423	50	1982	0	71.8	40-120	1617	12.7	30	
Naphthalene	1606	50	1982	0	81	40-105	1491	7.4	30	
Phenanthrene	1814	50	1982	0	91.5	50-110	1755	3.3	30	
Pyrene	1839	50	1982	54.64	90	45-125	1807	1.79	30	
Surr: 2,4,6-Tribromophenol	*5025*	0	*4955*	0	*101*	*34-140*	4880	*2.93*	*40*	
Surr: 2-Fluorobiphenyl	*3827*	0	*4955*	0	*77.2*	*12-100*	3676	*4*	*40*	
Surr: 2-Fluorophenol	*4272*	0	*4955*	0	*86.2*	*33-117*	4077	*4.66*	*40*	
Surr: 4-Terphenyl-d14	*4875*	0	*4955*	0	*98.4*	*25-137*	4554	*6.82*	*40*	
Surr: Nitrobenzene-d5	*3960*	0	*4955*	0	*79.9*	*37-107*	3684	*7.22*	*40*	
Surr: Phenol-d6	*4056*	0	*4955*	0	*81.9*	*40-106*	3730	*8.38*	*40*	

The following samples were analyzed in this batch:

1212170-01B	1212170-02B	1212170-03B
1212170-04B	1212170-05B	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212170
Project: Marshall KRRI 1075L, 1150R 12/3/12

QC BATCH REPORT

Batch ID: **45273** Instrument ID **VMS9** Method: **SW8260**

MBLK Sample ID: **MBLK-45273-45273** Units: **µg/Kg** Analysis Date: **12/7/2012 11:58 PM**
Client ID: Run ID: **VMS9_121207B** SeqNo: **2162854** Prep Date: **12/7/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	30								
1,1,1-Trichloroethane	ND	30								
1,1,2,2-Tetrachloroethane	ND	30								
1,1,2-Trichloroethane	ND	30								
1,1-Dichloroethane	ND	30								
1,1-Dichloroethene	ND	30								
1,2,3-Trichlorobenzene	ND	30								
1,2,3-Trichloropropane	ND	30								
1,2,3-Trimethylbenzene	ND	30								
1,2,4-Trichlorobenzene	ND	30								
1,2,4-Trimethylbenzene	ND	30								
1,2-Dibromo-3-chloropropane	ND	30								
1,2-Dibromoethane	ND	30								
1,2-Dichlorobenzene	ND	30								
1,2-Dichloroethane	ND	30								
1,2-Dichloropropane	ND	30								
1,3,5-Trimethylbenzene	ND	30								
1,3-Dichlorobenzene	ND	30								
1,4-Dichlorobenzene	ND	30								
2-Butanone	ND	200								
2-Hexanone	ND	30								
2-Methylnaphthalene	ND	100								
4-Methyl-2-pentanone	ND	30								
Acetone	ND	100								
Acrylonitrile	ND	100								
Benzene	ND	30								
Bromobenzene	ND	30								
Bromochloromethane	ND	30								
Bromodichloromethane	ND	30								
Bromoform	ND	30								
Bromomethane	ND	75								
Carbon disulfide	ND	30								
Carbon tetrachloride	ND	30								
Chlorobenzene	ND	30								
Chloroethane	ND	100								
Chloroform	ND	30								
Chloromethane	ND	100								
cis-1,2-Dichloroethene	ND	30								
cis-1,3-Dichloropropene	ND	30								
Cyclohexane	ND	30								
Dibromochloromethane	ND	30								
Dibromomethane	ND	30								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45273** Instrument ID **VMS9** Method: **SW8260**

Dichlorodifluoromethane	ND	30					
Diethyl ether	ND	30					
Diisopropyl ether	ND	30					
Ethyl tert butyl ether	ND	30					
Ethylbenzene	ND	30					
Hexachloroethane	ND	30					
Isopropylbenzene	ND	30					
m,p-Xylene	ND	60					
Methyl iodide	ND	75					
Methyl tert-butyl ether	ND	30					
Methylene chloride	ND	30					
Naphthalene	19.5	100					J
n-Butylbenzene	ND	30					
n-Propylbenzene	ND	30					
o-Xylene	ND	30					
p-Isopropyltoluene	ND	30					
sec-Butylbenzene	ND	30					
Styrene	ND	30					
tert-Butyl alcohol	ND	200					
tert-Butylbenzene	ND	30					
Tertiaryamylmethylether	ND	30					
Tetrachloroethene	ND	30					
Tetrahydrofuran	ND	200					
Toluene	ND	30					
trans-1,2-Dichloroethene	ND	30					
trans-1,3-Dichloropropene	ND	30					
trans-1,4-Dichloro-2-butene	ND	30					
Trichloroethene	ND	30					
Trichlorofluoromethane	ND	30					
Vinyl chloride	ND	30					
Surr: 1,2-Dichloroethane-d4	*949*	0	*1000*	0	*94.9*	*70-130*	0
Surr: 4-Bromofluorobenzene	*992.5*	0	*1000*	0	*99.2*	*70-130*	0
Surr: Dibromofluoromethane	*902.5*	0	*1000*	0	*90.2*	*70-130*	0
Surr: Toluene-d8	*863.5*	0	*1000*	0	*86.4*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212170
Project: Marshall KRRI 1075L, 1150R 12/3/12

QC BATCH REPORT

Batch ID: **45273** Instrument ID **VMS9** Method: **SW8260**

MBLK Sample ID: **MBLK-45273-45273** Units: **µg/Kg** Analysis Date: **12/7/2012 11:58 PM**
Client ID: Run ID: **VMS7_121207B** SeqNo: **2163313** Prep Date: **12/7/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	30								
1,1,1-Trichloroethane	ND	30								
1,1,2,2-Tetrachloroethane	ND	30								
1,1,2-Trichloroethane	ND	30								
1,1-Dichloroethane	ND	30								
1,1-Dichloroethene	ND	30								
1,2,3-Trichlorobenzene	ND	30								
1,2,3-Trichloropropane	ND	30								
1,2,3-Trimethylbenzene	ND	30								
1,2,4-Trichlorobenzene	ND	30								
1,2,4-Trimethylbenzene	ND	30								
1,2-Dibromo-3-chloropropane	ND	30								
1,2-Dibromoethane	ND	30								
1,2-Dichlorobenzene	ND	30								
1,2-Dichloroethane	ND	30								
1,2-Dichloropropane	ND	30								
1,3,5-Trimethylbenzene	ND	30								
1,3-Dichlorobenzene	ND	30								
1,4-Dichlorobenzene	ND	30								
2-Butanone	ND	200								
2-Hexanone	ND	30								
2-Methylnaphthalene	ND	100								
4-Methyl-2-pentanone	ND	30								
Acetone	ND	100								
Acrylonitrile	ND	100								
Benzene	ND	30								
Bromobenzene	ND	30								
Bromochloromethane	ND	30								
Bromodichloromethane	ND	30								
Bromoform	ND	30								
Bromomethane	ND	75								
Carbon disulfide	ND	30								
Carbon tetrachloride	ND	30								
Chlorobenzene	ND	30								
Chloroethane	ND	100								
Chloroform	ND	30								
Chloromethane	ND	100								
cis-1,2-Dichloroethene	ND	30								
cis-1,3-Dichloropropene	ND	30								
Cyclohexane	ND	30								
Dibromochloromethane	ND	30								
Dibromomethane	ND	30								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45273** Instrument ID **VMS9** Method: **SW8260**

Dichlorodifluoromethane	ND	30					
Diethyl ether	ND	30					
Diisopropyl ether	ND	30					
Ethyl tert butyl ether	ND	30					
Ethylbenzene	ND	30					
Hexachloroethane	ND	30					
Isopropylbenzene	ND	30					
m,p-Xylene	ND	60					
Methyl iodide	146.5	75					
Methyl tert-butyl ether	ND	30					
Methylene chloride	ND	30					
Naphthalene	ND	100					
n-Butylbenzene	ND	30					
n-Propylbenzene	ND	30					
o-Xylene	ND	30					
p-Isopropyltoluene	ND	30					
sec-Butylbenzene	ND	30					
Styrene	ND	30					
tert-Butyl alcohol	ND	200					
tert-Butylbenzene	ND	30					
Tertiaryamylmethylether	ND	30					
Tetrachloroethene	ND	30					
Tetrahydrofuran	ND	200					
Toluene	ND	30					
trans-1,2-Dichloroethene	ND	30					
trans-1,3-Dichloropropene	ND	30					
trans-1,4-Dichloro-2-butene	ND	30					
Trichloroethene	ND	30					
Trichlorofluoromethane	ND	30					
Vinyl chloride	ND	30					
Surr: 1,2-Dichloroethane-d4	*1024*	0	*1000*	0	*102*	*70-130*	0
Surr: 4-Bromofluorobenzene	*1004*	0	*1000*	0	*100*	*70-130*	0
Surr: Dibromofluoromethane	*956*	0	*1000*	0	*95.6*	*70-130*	0
Surr: Toluene-d8	*973.5*	0	*1000*	0	*97.4*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212170
Project: Marshall KRRI 1075L, 1150R 12/3/12

QC BATCH REPORT

Batch ID: **45273** Instrument ID **VMS9** Method: **SW8260**

LCS Sample ID: **LCS-45273-45273** Units: **µg/Kg** Analysis Date: **12/7/2012 10:41 PM**
Client ID: Run ID: **VMS9_121207B** SeqNo: **2162853** Prep Date: **12/7/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	1020	30	1000	0	102	75-125	0			
1,1,1-Trichloroethane	1154	30	1000	0	115	70-135	0			
1,1,2,2-Tetrachloroethane	1006	30	1000	0	101	55-130	0			
1,1,2-Trichloroethane	948	30	1000	0	94.8	60-125	0			
1,1-Dichloroethane	1202	30	1000	0	120	75-125	0			
1,1-Dichloroethene	1308	30	1000	0	131	65-135	0			
1,2,3-Trichlorobenzene	953	30	1000	0	95.3	60-135	0			
1,2,3-Trichloropropane	973.5	30	1000	0	97.4	65-130	0			
1,2,4-Trichlorobenzene	964	30	1000	0	96.4	65-130	0			
1,2,4-Trimethylbenzene	1086	30	1000	0	109	65-135	0			
1,2-Dibromo-3-chloropropane	906	30	1000	0	90.6	40-135	0			
1,2-Dibromoethane	1010	30	1000	0	101	70-125	0			
1,2-Dichlorobenzene	940.5	30	1000	0	94	75-120	0			
1,2-Dichloroethane	1068	30	1000	0	107	70-135	0			
1,2-Dichloropropane	1088	30	1000	0	109	70-120	0			
1,3,5-Trimethylbenzene	1114	30	1000	0	111	65-135	0			
1,3-Dichlorobenzene	932.5	30	1000	0	93.2	70-125	0			
1,4-Dichlorobenzene	935	30	1000	0	93.5	70-125	0			
2-Butanone	1140	200	1000	0	114	30-160	0			
2-Hexanone	1084	30	1000	0	108	45-145	0			
4-Methyl-2-pentanone	1250	30	1000	0	125	45-145	0			
Acetone	1476	100	1000	0	148	20-160	0			
Acrylonitrile	1200	100	1000	0	120	70-135	0			
Benzene	1088	30	1000	0	109	75-125	0			
Bromobenzene	998	30	1000	0	99.8	65-120	0			
Bromochloromethane	1227	30	1000	0	123	70-125	0			
Bromodichloromethane	1091	30	1000	0	109	70-130	0			
Bromoform	997.5	30	1000	0	99.8	55-135	0			
Bromomethane	1359	75	1000	0	136	30-160	0			
Carbon disulfide	1446	30	1000	0	145	45-160	0			
Carbon tetrachloride	1145	30	1000	0	114	65-135	0			
Chlorobenzene	993.5	30	1000	0	99.4	75-125	0			
Chloroethane	1217	100	1000	0	122	40-155	0			
Chloroform	1221	30	1000	0	122	70-125	0			
Chloromethane	950.5	100	1000	0	95	50-130	0			
cis-1,2-Dichloroethene	1229	30	1000	0	123	65-125	0			
cis-1,3-Dichloropropene	979	30	1000	0	97.9	70-125	0			
Dibromochloromethane	843	30	1000	0	84.3	65-135	0			
Dibromomethane	1102	30	1000	0	110	75-130	0			
Dichlorodifluoromethane	1066	30	1000	0	107	35-135	0			
Ethylbenzene	1018	30	1000	0	102	75-125	0			
Hexachloroethane	959	30	1000	0	95.9	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45273** Instrument ID **VMS9** Method: **SW8260**

Isopropylbenzene	1068	30	1000	0	107	75-130	0	
m,p-Xylene	2110	60	2000	0	106	80-125	0	
Methyl tert-butyl ether	1310	30	1000	0	131	75-125	0	S
Methylene chloride	1312	30	1000	0	131	55-145	0	
Naphthalene	996	100	1000	0	99.6	40-140	0	
n-Butylbenzene	1000	30	1000	0	100	65-140	0	
n-Propylbenzene	1015	30	1000	0	102	65-135	0	
o-Xylene	1054	30	1000	0	105	75-125	0	
p-Isopropyltoluene	997.5	30	1000	0	99.8	75-135	0	
sec-Butylbenzene	1114	30	1000	0	111	65-130	0	
Styrene	1080	30	1000	0	108	75-125	0	
tert-Butylbenzene	1093	30	1000	0	109	65-130	0	
Tetrachloroethene	950	30	1000	0	95	64-140	0	
Tetrahydrofuran	1349	200	1000	0	135	70-135	0	
Toluene	988	30	1000	0	98.8	70-125	0	
trans-1,2-Dichloroethene	1264	30	1000	0	126	65-135	0	
trans-1,3-Dichloropropene	931	30	1000	0	93.1	65-125	0	
trans-1,4-Dichloro-2-butene	979.5	30	1000	0	98	70-135	0	
Trichloroethene	1042	30	1000	0	104	75-125	0	
Trichlorofluoromethane	1225	30	1000	0	122	25-185	0	
Vinyl chloride	1199	30	1000	0	120	60-125	0	
Surr: 1,2-Dichloroethane-d4	*954.5*	0	*1000*	0	*95.4*	*70-130*	0	
Surr: 4-Bromofluorobenzene	*1040*	0	*1000*	0	*104*	*70-130*	0	
Surr: Dibromofluoromethane	*1008*	0	*1000*	0	*101*	*70-130*	0	
Surr: Toluene-d8	*912.5*	0	*1000*	0	*91.2*	*70-130*	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212170
Project: Marshall KRRI 1075L, 1150R 12/3/12

QC BATCH REPORT

Batch ID: **45273** Instrument ID **VMS9** Method: **SW8260**

LCS Sample ID: **LCS-45273-45273** Units: **µg/Kg** Analysis Date: **12/7/2012 10:43 PM**
Client ID: Run ID: **VMS7_121207B** SeqNo: **2163312** Prep Date: **12/7/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	1040	30	1000	0	104	75-125	0			
1,1,1-Trichloroethane	1062	30	1000	0	106	70-135	0			
1,1,2,2-Tetrachloroethane	1002	30	1000	0	100	55-130	0			
1,1,2-Trichloroethane	968.5	30	1000	0	96.8	60-125	0			
1,1-Dichloroethane	962.5	30	1000	0	96.2	75-125	0			
1,1-Dichloroethene	1062	30	1000	0	106	65-135	0			
1,2,3-Trichlorobenzene	1038	30	1000	0	104	60-135	0			
1,2,3-Trichloropropane	1057	30	1000	0	106	65-130	0			
1,2,4-Trichlorobenzene	1060	30	1000	0	106	65-130	0			
1,2,4-Trimethylbenzene	1053	30	1000	0	105	65-135	0			
1,2-Dibromo-3-chloropropane	1026	30	1000	0	103	40-135	0			
1,2-Dibromoethane	1040	30	1000	0	104	70-125	0			
1,2-Dichlorobenzene	1004	30	1000	0	100	75-120	0			
1,2-Dichloroethane	982.5	30	1000	0	98.2	70-135	0			
1,2-Dichloropropane	972.5	30	1000	0	97.2	70-120	0			
1,3,5-Trimethylbenzene	1034	30	1000	0	103	65-135	0			
1,3-Dichlorobenzene	1022	30	1000	0	102	70-125	0			
1,4-Dichlorobenzene	1044	30	1000	0	104	70-125	0			
2-Butanone	984.5	200	1000	0	98.4	30-160	0			
2-Hexanone	1062	30	1000	0	106	45-145	0			
4-Methyl-2-pentanone	1300	30	1000	0	130	45-145	0			
Acetone	964	100	1000	0	96.4	20-160	0			
Acrylonitrile	877.5	100	1000	0	87.8	70-135	0			
Benzene	978.5	30	1000	0	97.8	75-125	0			
Bromobenzene	1004	30	1000	0	100	65-120	0			
Bromochloromethane	1008	30	1000	0	101	70-125	0			
Bromodichloromethane	987.5	30	1000	0	98.8	70-130	0			
Bromoform	1035	30	1000	0	104	55-135	0			
Bromomethane	1344	75	1000	0	134	30-160	0			
Carbon disulfide	1161	30	1000	0	116	45-160	0			
Carbon tetrachloride	1166	30	1000	0	117	65-135	0			
Chlorobenzene	992.5	30	1000	0	99.2	75-125	0			
Chloroethane	1102	100	1000	0	110	40-155	0			
Chloroform	950.5	30	1000	0	95	70-125	0			
Chloromethane	984	100	1000	0	98.4	50-130	0			
cis-1,2-Dichloroethene	1002	30	1000	0	100	65-125	0			
cis-1,3-Dichloropropene	984.5	30	1000	0	98.4	70-125	0			
Dibromochloromethane	990.5	30	1000	0	99	65-135	0			
Dibromomethane	940.5	30	1000	0	94	75-130	0			
Dichlorodifluoromethane	1115	30	1000	0	112	35-135	0			
Ethylbenzene	1022	30	1000	0	102	75-125	0			
Hexachloroethane	1084	30	1000	0	108	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45273** Instrument ID **VMS9** Method: **SW8260**

Isopropylbenzene	1030	30	1000	0	103	75-130	0
m,p-Xylene	2018	60	2000	0	101	80-125	0
Methyl tert-butyl ether	924.5	30	1000	0	92.4	75-125	0
Methylene chloride	1012	30	1000	0	101	55-145	0
Naphthalene	1000	100	1000	0	100	40-140	0
n-Butylbenzene	1036	30	1000	0	104	65-140	0
n-Propylbenzene	1008	30	1000	0	101	65-135	0
o-Xylene	1008	30	1000	0	101	75-125	0
p-Isopropyltoluene	994.5	30	1000	0	99.4	75-135	0
sec-Butylbenzene	1038	30	1000	0	104	65-130	0
Styrene	1024	30	1000	0	102	75-125	0
tert-Butylbenzene	1024	30	1000	0	102	65-130	0
Tetrachloroethene	1062	30	1000	0	106	64-140	0
Tetrahydrofuran	1010	200	1000	0	101	70-135	0
Toluene	1010	30	1000	0	101	70-125	0
trans-1,2-Dichloroethene	1032	30	1000	0	103	65-135	0
trans-1,3-Dichloropropene	1010	30	1000	0	101	65-125	0
trans-1,4-Dichloro-2-butene	1018	30	1000	0	102	70-135	0
Trichloroethene	986	30	1000	0	98.6	75-125	0
Trichlorofluoromethane	1192	30	1000	0	119	25-185	0
Vinyl chloride	1109	30	1000	0	111	60-125	0
Surr: 1,2-Dichloroethane-d4	*1004*	0	*1000*	0	*100*	*70-130*	0
Surr: 4-Bromofluorobenzene	*1010*	0	*1000*	0	*101*	*70-130*	0
Surr: Dibromofluoromethane	*1008*	0	*1000*	0	*101*	*70-130*	0
Surr: Toluene-d8	*996.5*	0	*1000*	0	*99.6*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212170
Project: Marshall KRRI 1075L, 1150R 12/3/12

QC BATCH REPORT

Batch ID: **45273** Instrument ID **VMS9** Method: **SW8260**

MS Sample ID: **1212170-04A MS** Units: **µg/Kg** Analysis Date: **12/8/2012 08:57 AM**
Client ID: **SBKR1075L524S120312S004** Run ID: **VMS9_121207B** SeqNo: **2162836** Prep Date: **12/7/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	850.5	30	1000	0	85	75-125	0			
1,1,1-Trichloroethane	1044	30	1000	0	104	70-135	0			
1,1,2,2-Tetrachloroethane	924.5	30	1000	0	92.4	55-130	0			
1,1,2-Trichloroethane	860.5	30	1000	0	86	60-125	0			
1,1-Dichloroethane	1180	30	1000	0	118	75-125	0			
1,1-Dichloroethene	1278	30	1000	0	128	65-135	0			
1,2,3-Trichlorobenzene	730.5	30	1000	0	73	60-135	0			
1,2,3-Trichloropropane	899.5	30	1000	0	90	65-130	0			
1,2,4-Trichlorobenzene	730.5	30	1000	0	73	65-130	0			
1,2,4-Trimethylbenzene	964.5	30	1000	0	96.4	65-135	0			
1,2-Dibromo-3-chloropropane	689	30	1000	0	68.9	40-135	0			
1,2-Dibromoethane	915	30	1000	0	91.5	70-125	0			
1,2-Dichlorobenzene	794	30	1000	0	79.4	75-120	0			
1,2-Dichloroethane	1039	30	1000	0	104	70-135	0			
1,2-Dichloropropane	1048	30	1000	0	105	70-120	0			
1,3,5-Trimethylbenzene	1008	30	1000	0	101	65-135	0			
1,3-Dichlorobenzene	790.5	30	1000	0	79	70-125	0			
1,4-Dichlorobenzene	785	30	1000	0	78.5	70-125	0			
2-Butanone	1249	200	1000	0	125	30-160	0			
2-Hexanone	989.5	30	1000	0	99	45-145	0			
4-Methyl-2-pentanone	1198	30	1000	0	120	45-145	0			
Acetone	2044	100	1000	207.5	184	20-160	0			S
Acrylonitrile	1214	100	1000	0	121	70-135	0			
Benzene	1070	30	1000	0	107	75-125	0			
Bromobenzene	901.5	30	1000	0	90.2	65-120	0			
Bromochloromethane	1212	30	1000	0	121	70-125	0			
Bromodichloromethane	908.5	30	1000	0	90.8	70-130	0			
Bromoform	794.5	30	1000	0	79.4	55-135	0			
Bromomethane	1190	75	1000	0	119	30-160	0			
Carbon disulfide	1126	30	1000	0	113	45-160	0			
Carbon tetrachloride	1010	30	1000	0	101	65-135	0			
Chlorobenzene	891	30	1000	0	89.1	75-125	0			
Chloroethane	415	100	1000	0	41.5	40-155	0			
Chloroform	1188	30	1000	0	119	70-125	0			
Chloromethane	1058	100	1000	0	106	50-130	0			
cis-1,2-Dichloroethene	1162	30	1000	0	116	65-125	0			
cis-1,3-Dichloropropene	830.5	30	1000	0	83	70-125	0			
Dibromochloromethane	672.5	30	1000	0	67.2	65-135	0			
Dibromomethane	1034	30	1000	0	103	75-130	0			
Dichlorodifluoromethane	1096	30	1000	0	110	35-135	0			
Ethylbenzene	920.5	30	1000	0	92	75-125	0			
Hexachloroethane	713	30	1000	0	71.3	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45273** Instrument ID **VMS9** Method: **SW8260**

Isopropylbenzene	948	30	1000	0	94.8	75-130	0	
m,p-Xylene	1886	60	2000	0	94.3	80-125	0	
Methyl tert-butyl ether	1340	30	1000	0	134	75-125	0	S
Methylene chloride	1348	30	1000	0	135	55-145	0	
Naphthalene	748.5	100	1000	0	74.8	40-140	0	
n-Butylbenzene	781.5	30	1000	0	78.2	65-140	0	
n-Propylbenzene	908	30	1000	0	90.8	65-135	0	
o-Xylene	937.5	30	1000	0	93.8	75-125	0	
p-Isopropyltoluene	856.5	30	1000	0	85.6	75-135	0	
sec-Butylbenzene	1002	30	1000	0	100	65-130	0	
Styrene	963.5	30	1000	0	96.4	75-125	0	
tert-Butylbenzene	988.5	30	1000	0	98.8	65-130	0	
Tetrachloroethene	870.5	30	1000	0	87	64-140	0	
Tetrahydrofuran	1420	200	1000	0	142	70-135	0	S
Toluene	901.5	30	1000	0	90.2	70-125	0	
trans-1,2-Dichloroethene	1214	30	1000	0	121	65-135	0	
trans-1,3-Dichloropropene	751	30	1000	0	75.1	65-125	0	
trans-1,4-Dichloro-2-butene	814	30	1000	0	81.4	70-135	0	
Trichloroethene	1014	30	1000	0	101	75-125	0	
Trichlorofluoromethane	1263	30	1000	0	126	25-185	0	
Vinyl chloride	1234	30	1000	0	123	60-125	0	
Surr: 1,2-Dichloroethane-d4	*951*	0	*1000*	0	*95.1*	*70-130*	0	
Surr: 4-Bromofluorobenzene	*1085*	0	*1000*	0	*108*	*70-130*	0	
Surr: Dibromofluoromethane	*986.5*	0	*1000*	0	*98.6*	*70-130*	0	
Surr: Toluene-d8	*867.5*	0	*1000*	0	*86.8*	*70-130*	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212170
Project: Marshall KRRI 1075L, 1150R 12/3/12

QC BATCH REPORT

Batch ID: **45273** Instrument ID **VMS9** Method: **SW8260**

MSD Sample ID: **1212170-04A MSD** Units: **µg/Kg** Analysis Date: **12/8/2012 09:22 AM**
Client ID: **SBKR1075L524S120312S004** Run ID: **VMS9_121207B** SeqNo: **2162837** Prep Date: **12/7/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	857.5	30	1000	0	85.8	75-125	850.5	0.82	30	
1,1,1-Trichloroethane	1028	30	1000	0	103	70-135	1044	1.59	30	
1,1,2,2-Tetrachloroethane	914	30	1000	0	91.4	55-130	924.5	1.14	30	
1,1,2-Trichloroethane	854	30	1000	0	85.4	60-125	860.5	0.758	30	
1,1-Dichloroethane	1153	30	1000	0	115	75-125	1180	2.27	30	
1,1-Dichloroethene	1220	30	1000	0	122	65-135	1278	4.65	30	
1,2,3-Trichlorobenzene	787.5	30	1000	0	78.8	60-135	730.5	7.51	30	
1,2,3-Trichloropropane	894	30	1000	0	89.4	65-130	899.5	0.613	30	
1,2,4-Trichlorobenzene	789.5	30	1000	0	79	65-130	730.5	7.76	30	
1,2,4-Trimethylbenzene	943	30	1000	0	94.3	65-135	964.5	2.25	30	
1,2-Dibromo-3-chloropropane	710	30	1000	0	71	40-135	689	3	30	
1,2-Dibromoethane	899	30	1000	0	89.9	70-125	915	1.76	30	
1,2-Dichlorobenzene	825.5	30	1000	0	82.6	75-120	794	3.89	30	
1,2-Dichloroethane	1008	30	1000	0	101	70-135	1039	2.98	30	
1,2-Dichloropropane	1017	30	1000	0	102	70-120	1048	3	30	
1,3,5-Trimethylbenzene	982.5	30	1000	0	98.2	65-135	1008	2.61	30	
1,3-Dichlorobenzene	821	30	1000	0	82.1	70-125	790.5	3.79	30	
1,4-Dichlorobenzene	827	30	1000	0	82.7	70-125	785	5.21	30	
2-Butanone	1253	200	1000	0	125	30-160	1249	0.32	30	
2-Hexanone	995	30	1000	0	99.5	45-145	989.5	0.554	30	
4-Methyl-2-pentanone	1189	30	1000	0	119	45-145	1198	0.796	30	
Acetone	1962	100	1000	207.5	175	20-160	2044	4.09	30	S
Acrylonitrile	1204	100	1000	0	120	70-135	1214	0.744	30	
Benzene	1028	30	1000	0	103	75-125	1070	4	30	
Bromobenzene	893.5	30	1000	0	89.4	65-120	901.5	0.891	30	
Bromochloromethane	1174	30	1000	0	117	70-125	1212	3.27	30	
Bromodichloromethane	909	30	1000	0	90.9	70-130	908.5	0.055	30	
Bromoform	821.5	30	1000	0	82.2	55-135	794.5	3.34	30	
Bromomethane	1184	75	1000	0	118	30-160	1190	0.548	30	
Carbon disulfide	1099	30	1000	0	110	45-160	1126	2.47	30	
Carbon tetrachloride	1002	30	1000	0	100	65-135	1010	0.795	30	
Chlorobenzene	880.5	30	1000	0	88	75-125	891	1.19	30	
Chloroethane	384.5	100	1000	0	38.4	40-155	415	7.63	30	S
Chloroform	1143	30	1000	0	114	70-125	1188	3.9	30	
Chloromethane	977	100	1000	0	97.7	50-130	1058	8.01	30	
cis-1,2-Dichloroethene	1120	30	1000	0	112	65-125	1162	3.64	30	
cis-1,3-Dichloropropene	834	30	1000	0	83.4	70-125	830.5	0.421	30	
Dibromochloromethane	693.5	30	1000	0	69.4	65-135	672.5	3.07	30	
Dibromomethane	1051	30	1000	0	105	75-130	1034	1.63	30	
Dichlorodifluoromethane	1036	30	1000	0	104	35-135	1096	5.58	30	
Ethylbenzene	898.5	30	1000	0	89.8	75-125	920.5	2.42	30	
Hexachloroethane	748.5	30	1000	0	74.8	70-135	713	4.86	30	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45273** Instrument ID **VMS9** Method: **SW8260**

Isopropylbenzene	942	30	1000	0	94.2	75-130	948	0.635	30	
m,p-Xylene	1850	60	2000	0	92.5	80-125	1886	1.9	30	
Methyl tert-butyl ether	1258	30	1000	0	126	75-125	1340	6.31	30	S
Methylene chloride	1272	30	1000	0	127	55-145	1348	5.73	30	
Naphthalene	848	100	1000	0	84.8	40-140	748.5	12.5	30	
n-Butylbenzene	822	30	1000	0	82.2	65-140	781.5	5.05	30	
n-Propylbenzene	891.5	30	1000	0	89.2	65-135	908	1.83	30	
o-Xylene	919.5	30	1000	0	92	75-125	937.5	1.94	30	
p-Isopropyltoluene	889.5	30	1000	0	89	75-135	856.5	3.78	30	
sec-Butylbenzene	965.5	30	1000	0	96.6	65-130	1002	3.66	30	
Styrene	945.5	30	1000	0	94.6	75-125	963.5	1.89	30	
tert-Butylbenzene	962	30	1000	0	96.2	65-130	988.5	2.72	30	
Tetrachloroethene	845	30	1000	0	84.5	64-140	870.5	2.97	30	
Tetrahydrofuran	1368	200	1000	0	137	70-135	1420	3.73	30	S
Toluene	894.5	30	1000	0	89.4	70-125	901.5	0.78	30	
trans-1,2-Dichloroethene	1130	30	1000	0	113	65-135	1214	7.17	30	
trans-1,3-Dichloropropene	775	30	1000	0	77.5	65-125	751	3.15	30	
trans-1,4-Dichloro-2-butene	815.5	30	1000	0	81.6	70-135	814	0.184	30	
Trichloroethene	952	30	1000	0	95.2	75-125	1014	6.31	30	
Trichlorofluoromethane	1206	30	1000	0	121	25-185	1263	4.62	30	
Vinyl chloride	1176	30	1000	0	118	60-125	1234	4.73	30	
Surr: 1,2-Dichloroethane-d4	*929.5*	0	*1000*	0	*93*	*70-130*	951	*2.29*	*30*	
Surr: 4-Bromofluorobenzene	*1044*	0	*1000*	0	*104*	*70-130*	1085	*3.85*	*30*	
Surr: Dibromofluoromethane	*1011*	0	*1000*	0	*101*	*70-130*	986.5	*2.45*	*30*	
Surr: Toluene-d8	*871.5*	0	*1000*	0	*87.2*	*70-130*	867.5	*0.46*	*30*	

The following samples were analyzed in this batch:

1212170-01A	1212170-02A	1212170-03A
1212170-04A	1212170-05A	1212170-06A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212170
Project: Marshall KRRI 1075L, 1150R 12/3/12

QC BATCH REPORT

Batch ID: **R113715** Instrument ID **MOIST** Method: **A2540 G**

MBLK Sample ID: **WBLKS1-R113715** Units: **% of sample** Analysis Date: **12/10/2012 03:00 PM**
Client ID: Run ID: **MOIST_121210A** SeqNo: **2164598** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	ND	0.050								

LCS Sample ID: **LCS-R113715** Units: **% of sample** Analysis Date: **12/10/2012 03:00 PM**
Client ID: Run ID: **MOIST_121210A** SeqNo: **2164594** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	100	0.050	100	0	100	99.5-100.5	0			

DUP Sample ID: **1212170-04B DUP** Units: **% of sample** Analysis Date: **12/10/2012 03:00 PM**
Client ID: **SBKR1075L524S120312S004** Run ID: **MOIST_121210A** SeqNo: **2164575** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	79.73	0.050	0	0	0	0-0	80.02	0.363	20	

DUP Sample ID: **1212288-02B DUP** Units: **% of sample** Analysis Date: **12/10/2012 03:00 PM**
Client ID: Run ID: **MOIST_121210A** SeqNo: **2166289** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	15.18	0.050	0	0	0	0-0	15.19	0.0659	20	

The following samples were analyzed in this batch:

1212170-01B	1212170-02B	1212170-03B
1212170-04B	1212170-05B	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

121270

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

COC #	ENBRIDGE_120312_GMK1	Task: KRRI_1075, 1150
Total # of Samples: 6		Event Complete?

Lab Information:

Lab Name:	ALS Laboratory Group
Address:	3352 128th Ave. Holland, MI 49424-9263
Lab PM:	Ann Preston
Phone/Fax:	1-616-399-6070/1-616-399-6185
Lab PM email	ann.preston@alsglobal.com
Applicable Lab Quote #:	

Project Information:

Site ID #:	
Project #	60162778
Site Address	5555 Glenwood Parkway SE Suite 200
City	Grand Rapids
State, Zip	MI
Site PM Name	[redacted]
Phone/Fax:	[redacted]
Site PM Email:	Bryan.Stiemsma@aecom.com

Other Information:

Send Invoice to:	Enbridge Energy - ATTN Accounts Payable
Address:	1100 Louisiana Suite 1100
City/State.	Houson, TX
Phone #:	713-821-2000
PO #	
Send EDD to	
CC Hardcopy report	
CC Hardcopy report	

Turn Around Time	5 Day	Rush	No

BILLING CODE: 6.00

ITEM #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	MATRIX CODE	G=GRAB C=COMP	SAMPLE DATE	#OF CONTAINERS	Comments/Lab Sample I.D.	Preservative	None	None	None	None	MeOH									
								Analysis	% Moisture	Be,Mo,V,Ni by 6020	ORO,DRO	PNAs by 8270	VOC by 5035/8260									
1	SBKR1075L522S120312S005	SBKR1075L522	SO	G	12/03/2012 15:40	3			X	X	X	X	X									
2	SBKR1075L523S120312S005	SBKR1075L523	SO	G	12/03/2012 14:28	3			X	X	X	X	X									
3	SBKR1075L523D120312S005	SBKR1075L523	SO	G	12/03/2012 14:28	3	DUPLICATE		X	X	X	X	X									
4	SBKR1075L524S120312S004	SBKR1075L524	SO	G	12/03/2012 15:36	6	MS/MSD		X	X	X	X	X									
5	SBKR1150R501S120312S004	SBKR1150R501	SO	G	12/03/2012 16:35	3			X	X	X	X	X									
6	SBKR1150R501T120312MX	SBKR1150R501	SQ	G	12/03/2012 00:00	1	TRIP BLANK						X									

Additional Comments/Special Instructions:

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
[signature]	12/4/12	0920	[signature]	12-4-12	0926
[signature]	12/5/12	0800	[signature]	12/5/12	0800

Sample Receipt Conditions

Temp in OC	Samples on Ice?	Sample intact?	Trip Blank?
2.0	(Y)/N	(Y)/N	(Y)/N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N

SHIPPING INFO:
Company:
Tracking #:

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: GERRY KRAMER (GMK1)
SIGNATURE of SAMPLER:
DATE Signed
Time:

ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **05-Dec-12 08:00**

Work Order: **1212170** Received by: **PD**

Checklist completed by Diane Shaw (eSignature) 05-Dec-12 (Date) Reviewed by: Ann Preston (eSignature) 06-Dec-12 (Date)

Matrices: Soil
Carrier name: ALSHN

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.0 c		
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	12/5/2012 4:14:59 PM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL

Date: 12-5-12 Time: 0800

Name: Doug Lamb

Company:

Seal Broken By:

Date:

2.0c

S20(c)

12-Dec-2012

Bryan Stiemsma
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall KRRI 1125-1150R 12/4/12** Work Order: **1212171**

Dear Bryan,

ALS Environmental received 9 samples on 05-Dec-2012 08:00 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 56.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

Certificate No: MN331938

ALS Group USA, Corp

Date: 12-Dec-12

Client: AECOM Environment
Project: Marshall KRRI 1125-1150R 12/4/12
Work Order: **1212171**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1212171-01	SBKR1125R502S120412S007	Soil		12/4/2012 16:20	12/5/2012 08:00	☐
1212171-02	SBKR1125R502T120412MX	Soil		12/4/2012	12/5/2012 08:00	☐
1212171-03	SBKR1150R502S120412S007	Soil		12/4/2012 08:13	12/5/2012 08:00	☐
1212171-04	SBKR1150R503S120412S007	Soil		12/4/2012 09:02	12/5/2012 08:00	☐
1212171-05	SBKR1150R504S120412S006	Soil		12/4/2012 10:22	12/5/2012 08:00	☐
1212171-06	SBKR1150R505S120412S006	Soil		12/4/2012 11:16	12/5/2012 08:00	☐
1212171-07	SBKR1150R506S120412S006	Soil		12/4/2012 14:05	12/5/2012 08:00	☐
1212171-08	SBKR1150R506S120412S014	Soil		12/4/2012 14:12	12/5/2012 08:00	☐
1212171-09	SBKR1150R507S120412S005	Soil		12/4/2012 15:20	12/5/2012 08:00	☐

ALS Group USA, Corp

Date: 12-Dec-12

Client: AECOM Environment
Project: Marshall KRRI 1125-1150R 12/4/12
Work Order: 1212171

Case Narrative

Batch 45256 samples 1212171-01, 1212171-03 through 1212171-09 PAH internal standard recoveries were below the lower control limit, but >20%. Per the client's request, the results associated with the IS are being reported and should be considered as estimated for the analytes marked with an asterisk.

Batch 45256 samples 1212171-07, 1212171-08, and 1212171-09 each had a high PAH surrogate recovery. The sample were non-detect, therefore, no qualification is needed.

Batch 45273 LCS recovery for MTBE was outside of the upper control limit. All samples in this quality control batch were ND for MTBE. No qualification is necessary for this analyte. The MS/MSD data for Volatiles is not related to this project's samples. No data requires qualification.

Batch 45280 MS/MSD data for Metals is not related to this project's samples. No data requires qualification.

ALS Group USA, Corp

Date: 12-Dec-12

Client: AECOM Environment
Project: Marshall KRRI 1125-1150R 12/4/12
WorkOrder: **1212171**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
SD	Serial Dilution
TDL	Target Detection Limit

Units Reported	Description
% of sample	Percent of Sample
µg/Kg	Micrograms per Kilogram
µg/Kg-dry	Micrograms per Kilogram Dry Weight
mg/Kg-dry	Milligrams per Kilogram Dry Weight

ALS Group USA, Corp

Date: *12-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1125R502S120412S007
Work Order:	1212171	**Collection Date:**	12/4/2012 4:20:00 PM
Project:	Marshall KRRI 1125-1150R 12/4/12		
Lab ID:	1212171-01	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/10/2012**		Analyst: **CW**
DRO (C10-C20)	**93**	**60**	**4.0**		**mg/Kg-dry**	1	12/11/2012
ORO (C20-C34)	**1,500**	**120**	**4.0**		**mg/Kg-dry**	1	12/11/2012
Surr: 4-Terphenyl-d14	*81.4*	*39-115*			*%REC*	1	12/11/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/10/2012**		Analyst: **CES**
Beryllium	ND	4.1	0.50		mg/Kg-dry	4	12/10/2012
Molybdenum	ND	10	1.0		mg/Kg-dry	4	12/10/2012
Nickel	ND	10	1.0		mg/Kg-dry	4	12/10/2012
Vanadium	**11**	**10**	**1.0**		**mg/Kg-dry**	4	12/10/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/10/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/10/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/10/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/10/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/10/2012
Benzo(a)anthracene	ND	330	330		µg/Kg-dry	1	12/10/2012
Benzo(a)pyrene	ND	330	330	*	µg/Kg-dry	1	12/10/2012
Benzo(b)fluoranthene	ND	330	330	*	µg/Kg-dry	1	12/10/2012
Benzo(g,h,i)perylene	ND	330	330	*	µg/Kg-dry	1	12/10/2012
Benzo(k)fluoranthene	ND	330	330	*	µg/Kg-dry	1	12/10/2012
Chrysene	ND	330	330		µg/Kg-dry	1	12/10/2012
Dibenzo(a,h)anthracene	ND	330	330	*	µg/Kg-dry	1	12/10/2012
Fluoranthene	ND	330	330		µg/Kg-dry	1	12/10/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/10/2012
Indeno(1,2,3-cd)pyrene	ND	330	330	*	µg/Kg-dry	1	12/10/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/10/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/10/2012
Pyrene	ND	330	330		µg/Kg-dry	1	12/10/2012
Surr: 2,4,6-Tribromophenol	*101*	*34-140*			*%REC*	1	12/10/2012
Surr: 2-Fluorobiphenyl	*79.7*	*12-100*			*%REC*	1	12/10/2012
Surr: 2-Fluorophenol	*95.5*	*33-117*			*%REC*	1	12/10/2012
Surr: 4-Terphenyl-d14	*104*	*25-137*			*%REC*	1	12/10/2012
Surr: Nitrobenzene-d5	*84.0*	*37-107*			*%REC*	1	12/10/2012
Surr: Phenol-d6	*89.8*	*40-106*			*%REC*	1	12/10/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/7/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	200	100		µg/Kg-dry	1	12/8/2012
1,1,1-Trichloroethane	ND	200	50		µg/Kg-dry	1	12/8/2012
1,1,2,2-Tetrachloroethane	ND	200	50		µg/Kg-dry	1	12/8/2012
1,1,2-Trichloroethane	ND	200	50		µg/Kg-dry	1	12/8/2012
1,1-Dichloroethane	ND	200	50		µg/Kg-dry	1	12/8/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client: AECOM Environment
Client Sample ID: SBKR1125R502S120412S007
Work Order: 1212171
Collection Date: 12/4/2012 4:20:00 PM
Project: Marshall KRRI 1125-1150R 12/4/12
Lab ID: 1212171-01
Matrix: SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	200	50		µg/Kg-dry	1	12/8/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
1,2,3-Trichloropropane	ND	200	100		µg/Kg-dry	1	12/8/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
1,2,4-Trimethylbenzene	ND	200	100		µg/Kg-dry	1	12/8/2012
1,2-Dibromo-3-chloropropane	ND	200	10		µg/Kg-dry	1	12/8/2012
1,2-Dibromoethane	ND	200	20		µg/Kg-dry	1	12/8/2012
1,2-Dichlorobenzene	ND	200	100		µg/Kg-dry	1	12/8/2012
1,2-Dichloroethane	ND	200	50		µg/Kg-dry	1	12/8/2012
1,2-Dichloropropane	ND	200	50		µg/Kg-dry	1	12/8/2012
1,3,5-Trimethylbenzene	ND	200	100		µg/Kg-dry	1	12/8/2012
1,3-Dichlorobenzene	ND	200	100		µg/Kg-dry	1	12/8/2012
1,4-Dichlorobenzene	ND	200	100		µg/Kg-dry	1	12/8/2012
2-Butanone	ND	1,100	750		µg/Kg-dry	1	12/8/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/8/2012
2-Methylnaphthalene	ND	660	330		µg/Kg-dry	1	12/8/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/8/2012
Acetone	ND	2,000	1,000		µg/Kg-dry	1	12/8/2012
Acrylonitrile	ND	200	100		µg/Kg-dry	1	12/8/2012
Benzene	ND	200	50		µg/Kg-dry	1	12/8/2012
Bromobenzene	ND	200	100		µg/Kg-dry	1	12/8/2012
Bromochloromethane	ND	200	100		µg/Kg-dry	1	12/8/2012
Bromodichloromethane	ND	200	100		µg/Kg-dry	1	12/8/2012
Bromoform	ND	200	100		µg/Kg-dry	1	12/8/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/8/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/8/2012
Carbon tetrachloride	ND	200	50		µg/Kg-dry	1	12/8/2012
Chlorobenzene	ND	200	50		µg/Kg-dry	1	12/8/2012
Chloroethane	ND	660	250		µg/Kg-dry	1	12/8/2012
Chloroform	ND	200	50		µg/Kg-dry	1	12/8/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/8/2012
cis-1,2-Dichloroethene	ND	200	50		µg/Kg-dry	1	12/8/2012
cis-1,3-Dichloropropene	ND	200	50		µg/Kg-dry	1	12/8/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/8/2012
Dibromochloromethane	ND	200	100		µg/Kg-dry	1	12/8/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/8/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/8/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/8/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/8/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/8/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: AECOM Environment
Client Sample ID: SBKR1125R502S120412S007
Work Order: 1212171
Collection Date: 12/4/2012 4:20:00 PM
Project: Marshall KRRI 1125-1150R 12/4/12
Lab ID: 1212171-01
Matrix: SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	200	50		µg/Kg-dry	1	12/8/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/8/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
m,p-Xylene	ND	400	100		µg/Kg-dry	1	12/8/2012
Methyl iodide	ND	200	100		µg/Kg-dry	1	12/8/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/8/2012
Methylene chloride	ND	200	100		µg/Kg-dry	1	12/8/2012
Naphthalene	ND	660	330		µg/Kg-dry	1	12/8/2012
n-Butylbenzene	ND	200	50		µg/Kg-dry	1	12/8/2012
n-Propylbenzene	ND	200	100		µg/Kg-dry	1	12/8/2012
o-Xylene	ND	200	50		µg/Kg-dry	1	12/8/2012
p-Isopropyltoluene	ND	200	100		µg/Kg-dry	1	12/8/2012
sec-Butylbenzene	ND	200	50		µg/Kg-dry	1	12/8/2012
Styrene	ND	200	50		µg/Kg-dry	1	12/8/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/8/2012
tert-Butylbenzene	ND	200	50		µg/Kg-dry	1	12/8/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/8/2012
Tetrachloroethene	ND	200	50		µg/Kg-dry	1	12/8/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/8/2012
Toluene	ND	200	100		µg/Kg-dry	1	12/8/2012
trans-1,2-Dichloroethene	ND	200	50		µg/Kg-dry	1	12/8/2012
trans-1,3-Dichloropropene	ND	200	50		µg/Kg-dry	1	12/8/2012
trans-1,4-Dichloro-2-butene	ND	200	50		µg/Kg-dry	1	12/8/2012
Trichloroethene	ND	200	50		µg/Kg-dry	1	12/8/2012
Trichlorofluoromethane	ND	200	100		µg/Kg-dry	1	12/8/2012
Vinyl chloride	ND	200	40		µg/Kg-dry	1	12/8/2012
Surr: 1,2-Dichloroethane-d4	*100*	*70-130*			*%REC*	1	12/8/2012
Surr: 4-Bromofluorobenzene	*99.6*	*70-130*			*%REC*	1	12/8/2012
Surr: Dibromofluoromethane	*91.2*	*70-130*			*%REC*	1	12/8/2012
Surr: Toluene-d8	*86.8*	*70-130*			*%REC*	1	12/8/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**84**	**0.050**	**0**		**% of sample**	1	12/10/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1125R502T120412MX
Work Order:	1212171	**Collection Date:**	12/4/2012
Project:	Marshall KRRI 1125-1150R 12/4/12		
Lab ID:	1212171-02	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/7/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	100	100		µg/Kg	1	12/8/2012
1,1,1-Trichloroethane	ND	50	50		µg/Kg	1	12/8/2012
1,1,2,2-Tetrachloroethane	ND	50	50		µg/Kg	1	12/8/2012
1,1,2-Trichloroethane	ND	50	50		µg/Kg	1	12/8/2012
1,1-Dichloroethane	ND	50	50		µg/Kg	1	12/8/2012
1,1-Dichloroethene	ND	50	50		µg/Kg	1	12/8/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg	1	12/8/2012
1,2,3-Trichloropropane	ND	100	100		µg/Kg	1	12/8/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg	1	12/8/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg	1	12/8/2012
1,2,4-Trimethylbenzene	ND	100	100		µg/Kg	1	12/8/2012
1,2-Dibromo-3-chloropropane	ND	30	10		µg/Kg	1	12/8/2012
1,2-Dibromoethane	ND	30	20		µg/Kg	1	12/8/2012
1,2-Dichlorobenzene	ND	100	100		µg/Kg	1	12/8/2012
1,2-Dichloroethane	ND	50	50		µg/Kg	1	12/8/2012
1,2-Dichloropropane	ND	50	50		µg/Kg	1	12/8/2012
1,3,5-Trimethylbenzene	ND	100	100		µg/Kg	1	12/8/2012
1,3-Dichlorobenzene	ND	100	100		µg/Kg	1	12/8/2012
1,4-Dichlorobenzene	ND	100	100		µg/Kg	1	12/8/2012
2-Butanone	ND	750	750		µg/Kg	1	12/8/2012
2-Hexanone	ND	2,500	2,500		µg/Kg	1	12/8/2012
2-Methylnaphthalene	ND	330	330		µg/Kg	1	12/8/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg	1	12/8/2012
Acetone	ND	1,000	1,000		µg/Kg	1	12/8/2012
Acrylonitrile	ND	100	100		µg/Kg	1	12/8/2012
Benzene	ND	50	50		µg/Kg	1	12/8/2012
Bromobenzene	ND	100	100		µg/Kg	1	12/8/2012
Bromochloromethane	ND	100	100		µg/Kg	1	12/8/2012
Bromodichloromethane	ND	100	100		µg/Kg	1	12/8/2012
Bromoform	ND	100	100		µg/Kg	1	12/8/2012
Bromomethane	ND	200	200		µg/Kg	1	12/8/2012
Carbon disulfide	ND	250	250		µg/Kg	1	12/8/2012
Carbon tetrachloride	ND	50	50		µg/Kg	1	12/8/2012
Chlorobenzene	ND	50	50		µg/Kg	1	12/8/2012
Chloroethane	ND	250	250		µg/Kg	1	12/8/2012
Chloroform	ND	50	50		µg/Kg	1	12/8/2012
Chloromethane	ND	250	250		µg/Kg	1	12/8/2012
cis-1,2-Dichloroethene	ND	50	50		µg/Kg	1	12/8/2012
cis-1,3-Dichloropropene	ND	50	50		µg/Kg	1	12/8/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1125R502T120412MX
Work Order:	1212171	**Collection Date:**	12/4/2012
Project:	Marshall KRRI 1125-1150R 12/4/12		
Lab ID:	1212171-02	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Cyclohexane	ND	500	500		µg/Kg	1	12/8/2012
Dibromochloromethane	ND	100	100		µg/Kg	1	12/8/2012
Dibromomethane	ND	250	250		µg/Kg	1	12/8/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg	1	12/8/2012
Diethyl ether	ND	200	200		µg/Kg	1	12/8/2012
Diisopropyl ether	ND	250	250		µg/Kg	1	12/8/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg	1	12/8/2012
Ethylbenzene	ND	50	50		µg/Kg	1	12/8/2012
Hexachloroethane	ND	300	300		µg/Kg	1	12/8/2012
Isopropylbenzene	ND	250	250		µg/Kg	1	12/8/2012
m,p-Xylene	ND	100	100		µg/Kg	1	12/8/2012
Methyl iodide	ND	100	100		µg/Kg	1	12/8/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg	1	12/8/2012
Methylene chloride	ND	100	100		µg/Kg	1	12/8/2012
Naphthalene	ND	330	330		µg/Kg	1	12/8/2012
n-Butylbenzene	ND	50	50		µg/Kg	1	12/8/2012
n-Propylbenzene	ND	100	100		µg/Kg	1	12/8/2012
o-Xylene	ND	50	50		µg/Kg	1	12/8/2012
p-Isopropyltoluene	ND	100	100		µg/Kg	1	12/8/2012
sec-Butylbenzene	ND	50	50		µg/Kg	1	12/8/2012
Styrene	ND	50	50		µg/Kg	1	12/8/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg	1	12/8/2012
tert-Butylbenzene	ND	50	50		µg/Kg	1	12/8/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg	1	12/8/2012
Tetrachloroethene	ND	50	50		µg/Kg	1	12/8/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg	1	12/8/2012
Toluene	ND	100	100		µg/Kg	1	12/8/2012
trans-1,2-Dichloroethene	ND	50	50		µg/Kg	1	12/8/2012
trans-1,3-Dichloropropene	ND	50	50		µg/Kg	1	12/8/2012
trans-1,4-Dichloro-2-butene	ND	50	50		µg/Kg	1	12/8/2012
Trichloroethene	ND	50	50		µg/Kg	1	12/8/2012
Trichlorofluoromethane	ND	100	100		µg/Kg	1	12/8/2012
Vinyl chloride	ND	40	40		µg/Kg	1	12/8/2012
Surr: 1,2-Dichloroethane-d4	*95.6*	*70-130*			*%REC*	1	12/8/2012
Surr: 4-Bromofluorobenzene	*102*	*70-130*			*%REC*	1	12/8/2012
Surr: Dibromofluoromethane	*87.6*	*70-130*			*%REC*	1	12/8/2012
Surr: Toluene-d8	*85.2*	*70-130*			*%REC*	1	12/8/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1150R502S120412S007
Work Order:	1212171	**Collection Date:**	12/4/2012 8:13:00 AM
Project:	Marshall KRRI 1125-1150R 12/4/12		
Lab ID:	1212171-03	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/10/2012**		Analyst: **CW**
DRO (C10-C20)	**24**	**16**	**4.0**		**mg/Kg-dry**	1	12/11/2012
ORO (C20-C34)	**360**	**31**	**4.0**		**mg/Kg-dry**	1	12/11/2012
Surr: 4-Terphenyl-d14	*80.2*	*39-115*			*%REC*	1	12/11/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/10/2012**		Analyst: **CES**
Beryllium	ND	0.84	0.50		mg/Kg-dry	4	12/10/2012
Molybdenum	ND	2.1	1.0		mg/Kg-dry	4	12/10/2012
Nickel	**16**	**2.1**	**1.0**		**mg/Kg-dry**	4	12/10/2012
Vanadium	**19**	**2.1**	**1.0**		**mg/Kg-dry**	4	12/10/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/10/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/11/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/11/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/11/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/11/2012
Benzo(a)anthracene	**370**	**330**	**330**		**µg/Kg-dry**	1	12/11/2012
Benzo(a)pyrene	**560**	**330**	**330**	*	**µg/Kg-dry**	1	12/11/2012
Benzo(b)fluoranthene	**680**	**330**	**330**	*	**µg/Kg-dry**	1	12/11/2012
Benzo(g,h,i)perylene	ND	330	330	*	µg/Kg-dry	1	12/11/2012
Benzo(k)fluoranthene	ND	330	330	*	µg/Kg-dry	1	12/11/2012
Chrysene	**460**	**330**	**330**		**µg/Kg-dry**	1	12/11/2012
Dibenzo(a,h)anthracene	ND	330	330	*	µg/Kg-dry	1	12/11/2012
Fluoranthene	**600**	**330**	**330**		**µg/Kg-dry**	1	12/11/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/11/2012
Indeno(1,2,3-cd)pyrene	ND	330	330	*	µg/Kg-dry	1	12/11/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/11/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/11/2012
Pyrene	**640**	**330**	**330**		**µg/Kg-dry**	1	12/11/2012
Surr: 2,4,6-Tribromophenol	*93.2*	*34-140*			*%REC*	1	12/11/2012
Surr: 2-Fluorobiphenyl	*77.4*	*12-100*			*%REC*	1	12/11/2012
Surr: 2-Fluorophenol	*87.7*	*33-117*			*%REC*	1	12/11/2012
Surr: 4-Terphenyl-d14	*103*	*25-137*			*%REC*	1	12/11/2012
Surr: Nitrobenzene-d5	*80.8*	*37-107*			*%REC*	1	12/11/2012
Surr: Phenol-d6	*79.7*	*40-106*			*%REC*	1	12/11/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/7/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	100	100		µg/Kg-dry	1	12/8/2012
1,1,1-Trichloroethane	ND	50	50		µg/Kg-dry	1	12/8/2012
1,1,2,2-Tetrachloroethane	ND	50	50		µg/Kg-dry	1	12/8/2012
1,1,2-Trichloroethane	ND	50	50		µg/Kg-dry	1	12/8/2012
1,1-Dichloroethane	ND	50	50		µg/Kg-dry	1	12/8/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1150R502S120412S007
Work Order:	1212171	**Collection Date:**	12/4/2012 8:13:00 AM
Project:	Marshall KRRI 1125-1150R 12/4/12		
Lab ID:	1212171-03	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	50	50		µg/Kg-dry	1	12/8/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
1,2,3-Trichloropropane	ND	100	100		µg/Kg-dry	1	12/8/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
1,2,4-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/8/2012
1,2-Dibromo-3-chloropropane	ND	50	10		µg/Kg-dry	1	12/8/2012
1,2-Dibromoethane	ND	50	20		µg/Kg-dry	1	12/8/2012
1,2-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/8/2012
1,2-Dichloroethane	ND	50	50		µg/Kg-dry	1	12/8/2012
1,2-Dichloropropane	ND	50	50		µg/Kg-dry	1	12/8/2012
1,3,5-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/8/2012
1,3-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/8/2012
1,4-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/8/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/8/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/8/2012
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/8/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/8/2012
Acetone	ND	1,000	1,000		µg/Kg-dry	1	12/8/2012
Acrylonitrile	ND	100	100		µg/Kg-dry	1	12/8/2012
Benzene	ND	50	50		µg/Kg-dry	1	12/8/2012
Bromobenzene	ND	100	100		µg/Kg-dry	1	12/8/2012
Bromochloromethane	ND	100	100		µg/Kg-dry	1	12/8/2012
Bromodichloromethane	ND	100	100		µg/Kg-dry	1	12/8/2012
Bromoform	ND	100	100		µg/Kg-dry	1	12/8/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/8/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/8/2012
Carbon tetrachloride	ND	50	50		µg/Kg-dry	1	12/8/2012
Chlorobenzene	ND	50	50		µg/Kg-dry	1	12/8/2012
Chloroethane	ND	250	250		µg/Kg-dry	1	12/8/2012
Chloroform	ND	50	50		µg/Kg-dry	1	12/8/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/8/2012
cis-1,2-Dichloroethene	ND	50	50		µg/Kg-dry	1	12/8/2012
cis-1,3-Dichloropropene	ND	50	50		µg/Kg-dry	1	12/8/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/8/2012
Dibromochloromethane	ND	100	100		µg/Kg-dry	1	12/8/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/8/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/8/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/8/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/8/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/8/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client:	AECOM Environment	**Client Sample ID:**	SBKR1150R502S120412S007
Work Order:	1212171	**Collection Date:**	12/4/2012 8:13:00 AM
Project:	Marshall KRRI 1125-1150R 12/4/12		
Lab ID:	1212171-03	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	50	50		µg/Kg-dry	1	12/8/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/8/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
m,p-Xylene	ND	100	100		µg/Kg-dry	1	12/8/2012
Methyl iodide	ND	100	100		µg/Kg-dry	1	12/8/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/8/2012
Methylene chloride	ND	100	100		µg/Kg-dry	1	12/8/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/8/2012
n-Butylbenzene	ND	50	50		µg/Kg-dry	1	12/8/2012
n-Propylbenzene	ND	100	100		µg/Kg-dry	1	12/8/2012
o-Xylene	ND	50	50		µg/Kg-dry	1	12/8/2012
p-Isopropyltoluene	ND	100	100		µg/Kg-dry	1	12/8/2012
sec-Butylbenzene	ND	50	50		µg/Kg-dry	1	12/8/2012
Styrene	ND	50	50		µg/Kg-dry	1	12/8/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/8/2012
tert-Butylbenzene	ND	50	50		µg/Kg-dry	1	12/8/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/8/2012
Tetrachloroethene	ND	50	50		µg/Kg-dry	1	12/8/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/8/2012
Toluene	ND	100	100		µg/Kg-dry	1	12/8/2012
trans-1,2-Dichloroethene	ND	50	50		µg/Kg-dry	1	12/8/2012
trans-1,3-Dichloropropene	ND	50	50		µg/Kg-dry	1	12/8/2012
trans-1,4-Dichloro-2-butene	ND	50	50		µg/Kg-dry	1	12/8/2012
Trichloroethene	ND	50	50		µg/Kg-dry	1	12/8/2012
Trichlorofluoromethane	ND	100	100		µg/Kg-dry	1	12/8/2012
Vinyl chloride	ND	50	40		µg/Kg-dry	1	12/8/2012
Surr: 1,2-Dichloroethane-d4	*96.0*	*70-130*			*%REC*	1	12/8/2012
Surr: 4-Bromofluorobenzene	*98.6*	*70-130*			*%REC*	1	12/8/2012
Surr: Dibromofluoromethane	*89.0*	*70-130*			*%REC*	1	12/8/2012
Surr: Toluene-d8	*87.3*	*70-130*			*%REC*	1	12/8/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**38**	**0.050**	**0**		**% of sample**	1	12/10/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1150R503S120412S007
Work Order:	1212171	**Collection Date:**	12/4/2012 9:02:00 AM
Project:	Marshall KRRI 1125-1150R 12/4/12		
Lab ID:	1212171-04	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/10/2012**		Analyst: **CW**
DRO (C10-C20)	**27**	**18**	**4.0**		**mg/Kg-dry**	1	12/11/2012
ORO (C20-C34)	**320**	**36**	**4.0**		**mg/Kg-dry**	1	12/11/2012
Surr: 4-Terphenyl-d14	*85.7*	*39-115*			*%REC*	1	12/11/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/10/2012**		Analyst: **CES**
Beryllium	ND	1.2	0.50		mg/Kg-dry	4	12/10/2012
Molybdenum	ND	3.0	1.0		mg/Kg-dry	4	12/10/2012
Nickel	**17**	**3.0**	**1.0**		**mg/Kg-dry**	4	12/10/2012
Vanadium	**20**	**3.0**	**1.0**		**mg/Kg-dry**	4	12/10/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/10/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/11/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/11/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/11/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/11/2012
Benzo(a)anthracene	**350**	**330**	**330**		**µg/Kg-dry**	1	12/11/2012
Benzo(a)pyrene	**510**	**330**	**330**	*	**µg/Kg-dry**	1	12/11/2012
Benzo(b)fluoranthene	**560**	**330**	**330**	*	**µg/Kg-dry**	1	12/11/2012
Benzo(g,h,i)perylene	ND	330	330	*	µg/Kg-dry	1	12/11/2012
Benzo(k)fluoranthene	**350**	**330**	**330**	*	**µg/Kg-dry**	1	12/11/2012
Chrysene	**410**	**330**	**330**		**µg/Kg-dry**	1	12/11/2012
Dibenzo(a,h)anthracene	ND	330	330	*	µg/Kg-dry	1	12/11/2012
Fluoranthene	**560**	**330**	**330**		**µg/Kg-dry**	1	12/11/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/11/2012
Indeno(1,2,3-cd)pyrene	ND	330	330	*	µg/Kg-dry	1	12/11/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/11/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/11/2012
Pyrene	**580**	**330**	**330**		**µg/Kg-dry**	1	12/11/2012
Surr: 2,4,6-Tribromophenol	*97.5*	*34-140*			*%REC*	1	12/11/2012
Surr: 2-Fluorobiphenyl	*80.2*	*12-100*			*%REC*	1	12/11/2012
Surr: 2-Fluorophenol	*91.5*	*33-117*			*%REC*	1	12/11/2012
Surr: 4-Terphenyl-d14	*107*	*25-137*			*%REC*	1	12/11/2012
Surr: Nitrobenzene-d5	*84.7*	*37-107*			*%REC*	1	12/11/2012
Surr: Phenol-d6	*84.7*	*40-106*			*%REC*	1	12/11/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/7/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	100	100		µg/Kg-dry	1	12/8/2012
1,1,1-Trichloroethane	ND	60	50		µg/Kg-dry	1	12/8/2012
1,1,2,2-Tetrachloroethane	ND	60	50		µg/Kg-dry	1	12/8/2012
1,1,2-Trichloroethane	ND	60	50		µg/Kg-dry	1	12/8/2012
1,1-Dichloroethane	ND	60	50		µg/Kg-dry	1	12/8/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1150R503S120412S007
Work Order:	1212171	**Collection Date:**	12/4/2012 9:02:00 AM
Project:	Marshall KRRI 1125-1150R 12/4/12		
Lab ID:	1212171-04	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	60	50		µg/Kg-dry	1	12/8/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
1,2,3-Trichloropropane	ND	100	100		µg/Kg-dry	1	12/8/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
1,2,4-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/8/2012
1,2-Dibromo-3-chloropropane	ND	60	10		µg/Kg-dry	1	12/8/2012
1,2-Dibromoethane	ND	60	20		µg/Kg-dry	1	12/8/2012
1,2-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/8/2012
1,2-Dichloroethane	ND	60	50		µg/Kg-dry	1	12/8/2012
1,2-Dichloropropane	ND	60	50		µg/Kg-dry	1	12/8/2012
1,3,5-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/8/2012
1,3-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/8/2012
1,4-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/8/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/8/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/8/2012
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/8/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/8/2012
Acetone	ND	1,000	1,000		µg/Kg-dry	1	12/8/2012
Acrylonitrile	ND	100	100		µg/Kg-dry	1	12/8/2012
Benzene	ND	60	50		µg/Kg-dry	1	12/8/2012
Bromobenzene	ND	100	100		µg/Kg-dry	1	12/8/2012
Bromochloromethane	ND	100	100		µg/Kg-dry	1	12/8/2012
Bromodichloromethane	ND	100	100		µg/Kg-dry	1	12/8/2012
Bromoform	ND	100	100		µg/Kg-dry	1	12/8/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/8/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/8/2012
Carbon tetrachloride	ND	60	50		µg/Kg-dry	1	12/8/2012
Chlorobenzene	ND	60	50		µg/Kg-dry	1	12/8/2012
Chloroethane	ND	250	250		µg/Kg-dry	1	12/8/2012
Chloroform	ND	60	50		µg/Kg-dry	1	12/8/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/8/2012
cis-1,2-Dichloroethene	ND	60	50		µg/Kg-dry	1	12/8/2012
cis-1,3-Dichloropropene	ND	60	50		µg/Kg-dry	1	12/8/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/8/2012
Dibromochloromethane	ND	100	100		µg/Kg-dry	1	12/8/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/8/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/8/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/8/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/8/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/8/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: AECOM Environment
Client Sample ID: SBKR1150R503S120412S007
Work Order: 1212171
Collection Date: 12/4/2012 9:02:00 AM
Project: Marshall KRRI 1125-1150R 12/4/12
Lab ID: 1212171-04
Matrix: SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	60	50		µg/Kg-dry	1	12/8/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/8/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
m,p-Xylene	ND	120	100		µg/Kg-dry	1	12/8/2012
Methyl iodide	ND	100	100		µg/Kg-dry	1	12/8/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/8/2012
Methylene chloride	ND	100	100		µg/Kg-dry	1	12/8/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/8/2012
n-Butylbenzene	ND	60	50		µg/Kg-dry	1	12/8/2012
n-Propylbenzene	ND	100	100		µg/Kg-dry	1	12/8/2012
o-Xylene	ND	60	50		µg/Kg-dry	1	12/8/2012
p-Isopropyltoluene	ND	100	100		µg/Kg-dry	1	12/8/2012
sec-Butylbenzene	ND	60	50		µg/Kg-dry	1	12/8/2012
Styrene	ND	60	50		µg/Kg-dry	1	12/8/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/8/2012
tert-Butylbenzene	ND	60	50		µg/Kg-dry	1	12/8/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/8/2012
Tetrachloroethene	ND	60	50		µg/Kg-dry	1	12/8/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/8/2012
Toluene	ND	100	100		µg/Kg-dry	1	12/8/2012
trans-1,2-Dichloroethene	ND	60	50		µg/Kg-dry	1	12/8/2012
trans-1,3-Dichloropropene	ND	60	50		µg/Kg-dry	1	12/8/2012
trans-1,4-Dichloro-2-butene	ND	60	50		µg/Kg-dry	1	12/8/2012
Trichloroethene	ND	60	50		µg/Kg-dry	1	12/8/2012
Trichlorofluoromethane	ND	100	100		µg/Kg-dry	1	12/8/2012
Vinyl chloride	ND	60	40		µg/Kg-dry	1	12/8/2012
Surr: 1,2-Dichloroethane-d4	*96.8*	*70-130*			*%REC*	1	12/8/2012
Surr: 4-Bromofluorobenzene	*98.0*	*70-130*			*%REC*	1	12/8/2012
Surr: Dibromofluoromethane	*87.2*	*70-130*			*%REC*	1	12/8/2012
Surr: Toluene-d8	*87.8*	*70-130*			*%REC*	1	12/8/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**46**	**0.050**	**0**		**% of sample**	1	12/10/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1150R504S120412S006
Work Order:	1212171	**Collection Date:**	12/4/2012 10:22:00 AM
Project:	Marshall KRRI 1125-1150R 12/4/12		
Lab ID:	1212171-05	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/10/2012**		Analyst: **CW**
DRO (C10-C20)	**57**	**30**	**4.0**		**mg/Kg-dry**	1	12/11/2012
ORO (C20-C34)	**730**	**59**	**4.0**		**mg/Kg-dry**	1	12/11/2012
Surr: 4-Terphenyl-d14	*83.6*	*39-115*			*%REC*	1	12/11/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/10/2012**		Analyst: **CES**
Beryllium	ND	1.8	0.50		mg/Kg-dry	4	12/10/2012
Molybdenum	ND	4.6	1.0		mg/Kg-dry	4	12/10/2012
Nickel	**18**	**4.6**	**1.0**		**mg/Kg-dry**	4	12/10/2012
Vanadium	**29**	**4.6**	**1.0**		**mg/Kg-dry**	4	12/10/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/10/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/11/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/11/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/11/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/11/2012
Benzo(a)anthracene	ND	330	330		µg/Kg-dry	1	12/11/2012
Benzo(a)pyrene	**460**	**330**	**330**	*	**µg/Kg-dry**	1	12/11/2012
Benzo(b)fluoranthene	**480**	**330**	**330**	*	**µg/Kg-dry**	1	12/11/2012
Benzo(g,h,i)perylene	ND	330	330	*	µg/Kg-dry	1	12/11/2012
Benzo(k)fluoranthene	ND	330	330	*	µg/Kg-dry	1	12/11/2012
Chrysene	**340**	**330**	**330**		**µg/Kg-dry**	1	12/11/2012
Dibenzo(a,h)anthracene	ND	330	330	*	µg/Kg-dry	1	12/11/2012
Fluoranthene	**360**	**330**	**330**		**µg/Kg-dry**	1	12/11/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/11/2012
Indeno(1,2,3-cd)pyrene	ND	330	330	*	µg/Kg-dry	1	12/11/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/11/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/11/2012
Pyrene	**420**	**330**	**330**		**µg/Kg-dry**	1	12/11/2012
Surr: 2,4,6-Tribromophenol	*98.8*	*34-140*			*%REC*	1	12/11/2012
Surr: 2-Fluorobiphenyl	*80.0*	*12-100*			*%REC*	1	12/11/2012
Surr: 2-Fluorophenol	*88.0*	*33-117*			*%REC*	1	12/11/2012
Surr: 4-Terphenyl-d14	*109*	*25-137*			*%REC*	1	12/11/2012
Surr: Nitrobenzene-d5	*80.2*	*37-107*			*%REC*	1	12/11/2012
Surr: Phenol-d6	*80.5*	*40-106*			*%REC*	1	12/11/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/7/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	100	100		µg/Kg-dry	1	12/8/2012
1,1,1-Trichloroethane	ND	93	50		µg/Kg-dry	1	12/8/2012
1,1,2,2-Tetrachloroethane	ND	93	50		µg/Kg-dry	1	12/8/2012
1,1,2-Trichloroethane	ND	93	50		µg/Kg-dry	1	12/8/2012
1,1-Dichloroethane	ND	93	50		µg/Kg-dry	1	12/8/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1150R504S120412S006
Work Order:	1212171	**Collection Date:**	12/4/2012 10:22:00 AM
Project:	Marshall KRRI 1125-1150R 12/4/12		
Lab ID:	1212171-05	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	93	50		µg/Kg-dry	1	12/8/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
1,2,3-Trichloropropane	ND	100	100		µg/Kg-dry	1	12/8/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
1,2,4-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/8/2012
1,2-Dibromo-3-chloropropane	ND	93	10		µg/Kg-dry	1	12/8/2012
1,2-Dibromoethane	ND	93	20		µg/Kg-dry	1	12/8/2012
1,2-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/8/2012
1,2-Dichloroethane	ND	93	50		µg/Kg-dry	1	12/8/2012
1,2-Dichloropropane	ND	93	50		µg/Kg-dry	1	12/8/2012
1,3,5-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/8/2012
1,3-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/8/2012
1,4-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/8/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/8/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/8/2012
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/8/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/8/2012
Acetone	ND	1,100	1,000		µg/Kg-dry	1	12/8/2012
Acrylonitrile	ND	100	100		µg/Kg-dry	1	12/8/2012
Benzene	ND	93	50		µg/Kg-dry	1	12/8/2012
Bromobenzene	ND	100	100		µg/Kg-dry	1	12/8/2012
Bromochloromethane	ND	100	100		µg/Kg-dry	1	12/8/2012
Bromodichloromethane	ND	100	100		µg/Kg-dry	1	12/8/2012
Bromoform	ND	100	100		µg/Kg-dry	1	12/8/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/8/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/8/2012
Carbon tetrachloride	ND	93	50		µg/Kg-dry	1	12/8/2012
Chlorobenzene	ND	93	50		µg/Kg-dry	1	12/8/2012
Chloroethane	ND	310	250		µg/Kg-dry	1	12/8/2012
Chloroform	ND	93	50		µg/Kg-dry	1	12/8/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/8/2012
cis-1,2-Dichloroethene	ND	93	50		µg/Kg-dry	1	12/8/2012
cis-1,3-Dichloropropene	ND	93	50		µg/Kg-dry	1	12/8/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/8/2012
Dibromochloromethane	ND	100	100		µg/Kg-dry	1	12/8/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/8/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/8/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/8/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/8/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/8/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: AECOM Environment
Client Sample ID: SBKR1150R504S120412S006
Work Order: 1212171
Collection Date: 12/4/2012 10:22:00 AM
Project: Marshall KRRI 1125-1150R 12/4/12
Lab ID: 1212171-05
Matrix: SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	93	50		µg/Kg-dry	1	12/8/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/8/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
m,p-Xylene	ND	190	100		µg/Kg-dry	1	12/8/2012
Methyl iodide	ND	100	100		µg/Kg-dry	1	12/8/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/8/2012
Methylene chloride	ND	100	100		µg/Kg-dry	1	12/8/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/8/2012
n-Butylbenzene	ND	93	50		µg/Kg-dry	1	12/8/2012
n-Propylbenzene	ND	100	100		µg/Kg-dry	1	12/8/2012
o-Xylene	ND	93	50		µg/Kg-dry	1	12/8/2012
p-Isopropyltoluene	ND	100	100		µg/Kg-dry	1	12/8/2012
sec-Butylbenzene	ND	93	50		µg/Kg-dry	1	12/8/2012
Styrene	ND	93	50		µg/Kg-dry	1	12/8/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/8/2012
tert-Butylbenzene	ND	93	50		µg/Kg-dry	1	12/8/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/8/2012
Tetrachloroethene	ND	93	50		µg/Kg-dry	1	12/8/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/8/2012
Toluene	ND	100	100		µg/Kg-dry	1	12/8/2012
trans-1,2-Dichloroethene	ND	93	50		µg/Kg-dry	1	12/8/2012
trans-1,3-Dichloropropene	ND	93	50		µg/Kg-dry	1	12/8/2012
trans-1,4-Dichloro-2-butene	ND	93	50		µg/Kg-dry	1	12/8/2012
Trichloroethene	ND	93	50		µg/Kg-dry	1	12/8/2012
Trichlorofluoromethane	ND	100	100		µg/Kg-dry	1	12/8/2012
Vinyl chloride	ND	93	40		µg/Kg-dry	1	12/8/2012
Surr: 1,2-Dichloroethane-d4	*96.2*	*70-130*			*%REC*	1	12/8/2012
Surr: 4-Bromofluorobenzene	*100*	*70-130*			*%REC*	1	12/8/2012
Surr: Dibromofluoromethane	*91.6*	*70-130*			*%REC*	1	12/8/2012
Surr: Toluene-d8	*87.4*	*70-130*			*%REC*	1	12/8/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**68**	**0.050**	**0**		**% of sample**	1	12/10/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1150R505S120412S006
Work Order:	1212171	**Collection Date:**	12/4/2012 11:16:00 AM
Project:	Marshall KRRI 1125-1150R 12/4/12		
Lab ID:	1212171-06	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/10/2012**		Analyst: **CW**
DRO (C10-C20)	ND	27	4.0		mg/Kg-dry	1	12/11/2012
ORO (C20-C34)	**270**	**54**	**4.0**		**mg/Kg-dry**	1	12/11/2012
Surr: 4-Terphenyl-d14	*70.2*	*39-115*			*%REC*	1	12/11/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/10/2012**		Analyst: **CES**
Beryllium	ND	1.7	0.50		mg/Kg-dry	4	12/10/2012
Molybdenum	ND	4.2	1.0		mg/Kg-dry	4	12/10/2012
Nickel	**18**	**4.2**	**1.0**		**mg/Kg-dry**	4	12/10/2012
Vanadium	**31**	**4.2**	**1.0**		**mg/Kg-dry**	4	12/10/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/10/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/11/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/11/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/11/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/11/2012
Benzo(a)anthracene	ND	330	330		µg/Kg-dry	1	12/11/2012
Benzo(a)pyrene	ND	330	330	*	µg/Kg-dry	1	12/11/2012
Benzo(b)fluoranthene	ND	330	330	*	µg/Kg-dry	1	12/11/2012
Benzo(g,h,i)perylene	ND	330	330	*	µg/Kg-dry	1	12/11/2012
Benzo(k)fluoranthene	ND	330	330	*	µg/Kg-dry	1	12/11/2012
Chrysene	ND	330	330		µg/Kg-dry	1	12/11/2012
Dibenzo(a,h)anthracene	ND	330	330	*	µg/Kg-dry	1	12/11/2012
Fluoranthene	ND	330	330		µg/Kg-dry	1	12/11/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/11/2012
Indeno(1,2,3-cd)pyrene	ND	330	330	*	µg/Kg-dry	1	12/11/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/11/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/11/2012
Pyrene	ND	330	330		µg/Kg-dry	1	12/11/2012
Surr: 2,4,6-Tribromophenol	*82.5*	*34-140*			*%REC*	1	12/11/2012
Surr: 2-Fluorobiphenyl	*65.7*	*12-100*			*%REC*	1	12/11/2012
Surr: 2-Fluorophenol	*75.3*	*33-117*			*%REC*	1	12/11/2012
Surr: 4-Terphenyl-d14	*94.0*	*25-137*			*%REC*	1	12/11/2012
Surr: Nitrobenzene-d5	*69.4*	*37-107*			*%REC*	1	12/11/2012
Surr: Phenol-d6	*68.4*	*40-106*			*%REC*	1	12/11/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/7/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	100	100		µg/Kg-dry	1	12/8/2012
1,1,1-Trichloroethane	ND	84	50		µg/Kg-dry	1	12/8/2012
1,1,2,2-Tetrachloroethane	ND	84	50		µg/Kg-dry	1	12/8/2012
1,1,2-Trichloroethane	ND	84	50		µg/Kg-dry	1	12/8/2012
1,1-Dichloroethane	ND	84	50		µg/Kg-dry	1	12/8/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1150R505S120412S006
Work Order:	1212171	**Collection Date:**	12/4/2012 11:16:00 AM
Project:	Marshall KRRI 1125-1150R 12/4/12		
Lab ID:	1212171-06	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	84	50		µg/Kg-dry	1	12/8/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
1,2,3-Trichloropropane	ND	100	100		µg/Kg-dry	1	12/8/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
1,2,4-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/8/2012
1,2-Dibromo-3-chloropropane	ND	84	10		µg/Kg-dry	1	12/8/2012
1,2-Dibromoethane	ND	84	20		µg/Kg-dry	1	12/8/2012
1,2-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/8/2012
1,2-Dichloroethane	ND	84	50		µg/Kg-dry	1	12/8/2012
1,2-Dichloropropane	ND	84	50		µg/Kg-dry	1	12/8/2012
1,3,5-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/8/2012
1,3-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/8/2012
1,4-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/8/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/8/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/8/2012
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/8/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/8/2012
Acetone	ND	1,000	1,000		µg/Kg-dry	1	12/8/2012
Acrylonitrile	ND	100	100		µg/Kg-dry	1	12/8/2012
Benzene	ND	84	50		µg/Kg-dry	1	12/8/2012
Bromobenzene	ND	100	100		µg/Kg-dry	1	12/8/2012
Bromochloromethane	ND	100	100		µg/Kg-dry	1	12/8/2012
Bromodichloromethane	ND	100	100		µg/Kg-dry	1	12/8/2012
Bromoform	ND	100	100		µg/Kg-dry	1	12/8/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/8/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/8/2012
Carbon tetrachloride	ND	84	50		µg/Kg-dry	1	12/8/2012
Chlorobenzene	ND	84	50		µg/Kg-dry	1	12/8/2012
Chloroethane	ND	280	250		µg/Kg-dry	1	12/8/2012
Chloroform	ND	84	50		µg/Kg-dry	1	12/8/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/8/2012
cis-1,2-Dichloroethene	ND	84	50		µg/Kg-dry	1	12/8/2012
cis-1,3-Dichloropropene	ND	84	50		µg/Kg-dry	1	12/8/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/8/2012
Dibromochloromethane	ND	100	100		µg/Kg-dry	1	12/8/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/8/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/8/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/8/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/8/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/8/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: AECOM Environment
Client Sample ID: SBKR1150R505S120412S006
Work Order: 1212171
Collection Date: 12/4/2012 11:16:00 AM
Project: Marshall KRRI 1125-1150R 12/4/12
Lab ID: 1212171-06
Matrix: SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	84	50		µg/Kg-dry	1	12/8/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/8/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
m,p-Xylene	ND	170	100		µg/Kg-dry	1	12/8/2012
Methyl iodide	ND	100	100		µg/Kg-dry	1	12/8/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/8/2012
Methylene chloride	ND	100	100		µg/Kg-dry	1	12/8/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/8/2012
n-Butylbenzene	ND	84	50		µg/Kg-dry	1	12/8/2012
n-Propylbenzene	ND	100	100		µg/Kg-dry	1	12/8/2012
o-Xylene	ND	84	50		µg/Kg-dry	1	12/8/2012
p-Isopropyltoluene	ND	100	100		µg/Kg-dry	1	12/8/2012
sec-Butylbenzene	ND	84	50		µg/Kg-dry	1	12/8/2012
Styrene	ND	84	50		µg/Kg-dry	1	12/8/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/8/2012
tert-Butylbenzene	ND	84	50		µg/Kg-dry	1	12/8/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/8/2012
Tetrachloroethene	ND	84	50		µg/Kg-dry	1	12/8/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/8/2012
Toluene	ND	100	100		µg/Kg-dry	1	12/8/2012
trans-1,2-Dichloroethene	ND	84	50		µg/Kg-dry	1	12/8/2012
trans-1,3-Dichloropropene	ND	84	50		µg/Kg-dry	1	12/8/2012
trans-1,4-Dichloro-2-butene	ND	84	50		µg/Kg-dry	1	12/8/2012
Trichloroethene	ND	84	50		µg/Kg-dry	1	12/8/2012
Trichlorofluoromethane	ND	100	100		µg/Kg-dry	1	12/8/2012
Vinyl chloride	ND	84	40		µg/Kg-dry	1	12/8/2012
Surr: 1,2-Dichloroethane-d4	*96.8*	*70-130*			*%REC*	1	12/8/2012
Surr: 4-Bromofluorobenzene	*99.5*	*70-130*			*%REC*	1	12/8/2012
Surr: Dibromofluoromethane	*87.6*	*70-130*			*%REC*	1	12/8/2012
Surr: Toluene-d8	*86.1*	*70-130*			*%REC*	1	12/8/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**64**	**0.050**	**0**		**% of sample**	1	12/10/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1150R506S120412S006
Work Order:	1212171	**Collection Date:**	12/4/2012 2:05:00 PM
Project:	Marshall KRRI 1125-1150R 12/4/12		
Lab ID:	1212171-07	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/10/2012**		Analyst: **CW**
DRO (C10-C20)	**2,600**	**310**	**4.0**		**mg/Kg-dry**	10	12/11/2012
ORO (C20-C34)	**29,000**	**610**	**4.0**		**mg/Kg-dry**	10	12/11/2012
Surr: 4-Terphenyl-d14	*85.4*	*39-115*			*%REC*	10	12/11/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/10/2012**		Analyst: **CES**
Beryllium	ND	1.9	0.50		mg/Kg-dry	4	12/10/2012
Molybdenum	ND	4.7	1.0		mg/Kg-dry	4	12/10/2012
Nickel	**23**	**4.7**	**1.0**		**mg/Kg-dry**	4	12/10/2012
Vanadium	**41**	**4.7**	**1.0**		**mg/Kg-dry**	4	12/10/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/10/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/11/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/11/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/11/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/11/2012
Benzo(a)anthracene	ND	330	330	*	µg/Kg-dry	1	12/11/2012
Benzo(a)pyrene	ND	330	330	*	µg/Kg-dry	1	12/11/2012
Benzo(b)fluoranthene	ND	330	330	*	µg/Kg-dry	1	12/11/2012
Benzo(g,h,i)perylene	ND	330	330	*	µg/Kg-dry	1	12/11/2012
Benzo(k)fluoranthene	ND	330	330	*	µg/Kg-dry	1	12/11/2012
Chrysene	ND	330	330	*	µg/Kg-dry	1	12/11/2012
Dibenzo(a,h)anthracene	ND	330	330	*	µg/Kg-dry	1	12/11/2012
Fluoranthene	ND	330	330		µg/Kg-dry	1	12/11/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/11/2012
Indeno(1,2,3-cd)pyrene	ND	330	330	*	µg/Kg-dry	1	12/11/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/11/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/11/2012
Pyrene	ND	330	330	*	µg/Kg-dry	1	12/11/2012
Surr: 2,4,6-Tribromophenol	*94.4*	*34-140*			*%REC*	1	12/11/2012
Surr: 2-Fluorobiphenyl	*71.4*	*12-100*			*%REC*	1	12/11/2012
Surr: 2-Fluorophenol	*84.6*	*33-117*			*%REC*	1	12/11/2012
Surr: 4-Terphenyl-d14	*181*	*25-137*		S*	*%REC*	1	12/11/2012
Surr: Nitrobenzene-d5	*80.3*	*37-107*			*%REC*	1	12/11/2012
Surr: Phenol-d6	*86.7*	*40-106*			*%REC*	1	12/11/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/7/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	100	100		µg/Kg-dry	1	12/8/2012
1,1,1-Trichloroethane	ND	96	50		µg/Kg-dry	1	12/8/2012
1,1,2,2-Tetrachloroethane	ND	96	50		µg/Kg-dry	1	12/8/2012
1,1,2-Trichloroethane	ND	96	50		µg/Kg-dry	1	12/8/2012
1,1-Dichloroethane	ND	96	50		µg/Kg-dry	1	12/8/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1150R506S120412S006
Work Order:	1212171	**Collection Date:**	12/4/2012 2:05:00 PM
Project:	Marshall KRRI 1125-1150R 12/4/12		
Lab ID:	1212171-07	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	96	50		µg/Kg-dry	1	12/8/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
1,2,3-Trichloropropane	ND	100	100		µg/Kg-dry	1	12/8/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
1,2,4-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/8/2012
1,2-Dibromo-3-chloropropane	ND	96	10		µg/Kg-dry	1	12/8/2012
1,2-Dibromoethane	ND	96	20		µg/Kg-dry	1	12/8/2012
1,2-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/8/2012
1,2-Dichloroethane	ND	96	50		µg/Kg-dry	1	12/8/2012
1,2-Dichloropropane	ND	96	50		µg/Kg-dry	1	12/8/2012
1,3,5-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/8/2012
1,3-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/8/2012
1,4-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/8/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/8/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/8/2012
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/8/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/8/2012
Acetone	ND	1,000	1,000		µg/Kg-dry	1	12/8/2012
Acrylonitrile	ND	100	100		µg/Kg-dry	1	12/8/2012
Benzene	ND	96	50		µg/Kg-dry	1	12/8/2012
Bromobenzene	ND	100	100		µg/Kg-dry	1	12/8/2012
Bromochloromethane	ND	100	100		µg/Kg-dry	1	12/8/2012
Bromodichloromethane	ND	100	100		µg/Kg-dry	1	12/8/2012
Bromoform	ND	100	100		µg/Kg-dry	1	12/8/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/8/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/8/2012
Carbon tetrachloride	ND	96	50		µg/Kg-dry	1	12/8/2012
Chlorobenzene	ND	96	50		µg/Kg-dry	1	12/8/2012
Chloroethane	ND	320	250		µg/Kg-dry	1	12/8/2012
Chloroform	ND	96	50		µg/Kg-dry	1	12/8/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/8/2012
cis-1,2-Dichloroethene	ND	96	50		µg/Kg-dry	1	12/8/2012
cis-1,3-Dichloropropene	ND	96	50		µg/Kg-dry	1	12/8/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/8/2012
Dibromochloromethane	ND	100	100		µg/Kg-dry	1	12/8/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/8/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/8/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/8/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/8/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/8/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: AECOM Environment **Client Sample ID:** SBKR1150R506S120412S006
Work Order: 1212171 **Collection Date:** 12/4/2012 2:05:00 PM
Project: Marshall KRRI 1125-1150R 12/4/12
Lab ID: 1212171-07 **Matrix:** SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	96	50		µg/Kg-dry	1	12/8/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/8/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
m,p-Xylene	ND	190	100		µg/Kg-dry	1	12/8/2012
Methyl iodide	ND	100	100		µg/Kg-dry	1	12/8/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/8/2012
Methylene chloride	ND	100	100		µg/Kg-dry	1	12/8/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/8/2012
n-Butylbenzene	ND	96	50		µg/Kg-dry	1	12/8/2012
n-Propylbenzene	ND	100	100		µg/Kg-dry	1	12/8/2012
o-Xylene	ND	96	50		µg/Kg-dry	1	12/8/2012
p-Isopropyltoluene	ND	100	100		µg/Kg-dry	1	12/8/2012
sec-Butylbenzene	ND	96	50		µg/Kg-dry	1	12/8/2012
Styrene	ND	96	50		µg/Kg-dry	1	12/8/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/8/2012
tert-Butylbenzene	ND	96	50		µg/Kg-dry	1	12/8/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/8/2012
Tetrachloroethene	ND	96	50		µg/Kg-dry	1	12/8/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/8/2012
Toluene	ND	100	100		µg/Kg-dry	1	12/8/2012
trans-1,2-Dichloroethene	ND	96	50		µg/Kg-dry	1	12/8/2012
trans-1,3-Dichloropropene	ND	96	50		µg/Kg-dry	1	12/8/2012
trans-1,4-Dichloro-2-butene	ND	96	50		µg/Kg-dry	1	12/8/2012
Trichloroethene	ND	96	50		µg/Kg-dry	1	12/8/2012
Trichlorofluoromethane	ND	100	100		µg/Kg-dry	1	12/8/2012
Vinyl chloride	ND	96	40		µg/Kg-dry	1	12/8/2012
Surr: 1,2-Dichloroethane-d4	*97.0*	*70-130*			*%REC*	1	12/8/2012
Surr: 4-Bromofluorobenzene	*98.6*	*70-130*			*%REC*	1	12/8/2012
Surr: Dibromofluoromethane	*90.8*	*70-130*			*%REC*	1	12/8/2012
Surr: Toluene-d8	*85.4*	*70-130*			*%REC*	1	12/8/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**69**	**0.050**	**0**		**% of sample**	1	12/10/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1150R506S120412S014
Work Order:	1212171	**Collection Date:**	12/4/2012 2:12:00 PM
Project:	Marshall KRRI 1125-1150R 12/4/12		
Lab ID:	1212171-08	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/10/2012**		Analyst: **CW**
DRO (C10-C20)	**140**	**44**	**4.0**		**mg/Kg-dry**	1	12/11/2012
ORO (C20-C34)	**950**	**88**	**4.0**		**mg/Kg-dry**	1	12/11/2012
Surr: 4-Terphenyl-d14	*90.8*	*39-115*			*%REC*	1	12/11/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/10/2012**		Analyst: **CES**
Beryllium	ND	2.7	0.50		mg/Kg-dry	4	12/10/2012
Molybdenum	ND	6.7	1.0		mg/Kg-dry	4	12/10/2012
Nickel	**14**	**6.7**	**1.0**		**mg/Kg-dry**	4	12/10/2012
Vanadium	**40**	**6.7**	**1.0**		**mg/Kg-dry**	4	12/10/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/10/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/11/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/11/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/11/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/11/2012
Benzo(a)anthracene	ND	330	330		µg/Kg-dry	1	12/11/2012
Benzo(a)pyrene	ND	330	330	*	µg/Kg-dry	1	12/11/2012
Benzo(b)fluoranthene	ND	330	330	*	µg/Kg-dry	1	12/11/2012
Benzo(g,h,i)perylene	ND	330	330	*	µg/Kg-dry	1	12/11/2012
Benzo(k)fluoranthene	ND	330	330	*	µg/Kg-dry	1	12/11/2012
Chrysene	ND	330	330		µg/Kg-dry	1	12/11/2012
Dibenzo(a,h)anthracene	ND	330	330	*	µg/Kg-dry	1	12/11/2012
Fluoranthene	ND	330	330		µg/Kg-dry	1	12/11/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/11/2012
Indeno(1,2,3-cd)pyrene	ND	330	330	*	µg/Kg-dry	1	12/11/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/11/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/11/2012
Pyrene	ND	330	330		µg/Kg-dry	1	12/11/2012
Surr: 2,4,6-Tribromophenol	*106*	*34-140*			*%REC*	1	12/11/2012
Surr: 2-Fluorobiphenyl	*80.5*	*12-100*			*%REC*	1	12/11/2012
Surr: 2-Fluorophenol	*93.6*	*33-117*			*%REC*	1	12/11/2012
Surr: 4-Terphenyl-d14	*176*	*25-137*		S	*%REC*	1	12/11/2012
Surr: Nitrobenzene-d5	*80.2*	*37-107*			*%REC*	1	12/11/2012
Surr: Phenol-d6	*88.3*	*40-106*			*%REC*	1	12/11/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/7/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	140	100		µg/Kg-dry	1	12/8/2012
1,1,1-Trichloroethane	ND	140	50		µg/Kg-dry	1	12/8/2012
1,1,2,2-Tetrachloroethane	ND	140	50		µg/Kg-dry	1	12/8/2012
1,1,2-Trichloroethane	ND	140	50		µg/Kg-dry	1	12/8/2012
1,1-Dichloroethane	ND	140	50		µg/Kg-dry	1	12/8/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1150R506S120412S014
Work Order:	1212171	**Collection Date:**	12/4/2012 2:12:00 PM
Project:	Marshall KRRI 1125-1150R 12/4/12		
Lab ID:	1212171-08	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	140	50		µg/Kg-dry	1	12/8/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
1,2,3-Trichloropropane	ND	140	100		µg/Kg-dry	1	12/8/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
1,2,4-Trimethylbenzene	ND	140	100		µg/Kg-dry	1	12/8/2012
1,2-Dibromo-3-chloropropane	ND	140	10		µg/Kg-dry	1	12/8/2012
1,2-Dibromoethane	ND	140	20		µg/Kg-dry	1	12/8/2012
1,2-Dichlorobenzene	ND	140	100		µg/Kg-dry	1	12/8/2012
1,2-Dichloroethane	ND	140	50		µg/Kg-dry	1	12/8/2012
1,2-Dichloropropane	ND	140	50		µg/Kg-dry	1	12/8/2012
1,3,5-Trimethylbenzene	ND	140	100		µg/Kg-dry	1	12/8/2012
1,3-Dichlorobenzene	ND	140	100		µg/Kg-dry	1	12/8/2012
1,4-Dichlorobenzene	ND	140	100		µg/Kg-dry	1	12/8/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/8/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/8/2012
2-Methylnaphthalene	ND	470	330		µg/Kg-dry	1	12/8/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/8/2012
Acetone	ND	1,600	1,000		µg/Kg-dry	1	12/8/2012
Acrylonitrile	ND	140	100		µg/Kg-dry	1	12/8/2012
Benzene	ND	140	50		µg/Kg-dry	1	12/8/2012
Bromobenzene	ND	140	100		µg/Kg-dry	1	12/8/2012
Bromochloromethane	ND	140	100		µg/Kg-dry	1	12/8/2012
Bromodichloromethane	ND	140	100		µg/Kg-dry	1	12/8/2012
Bromoform	ND	140	100		µg/Kg-dry	1	12/8/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/8/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/8/2012
Carbon tetrachloride	ND	140	50		µg/Kg-dry	1	12/8/2012
Chlorobenzene	ND	140	50		µg/Kg-dry	1	12/8/2012
Chloroethane	ND	470	250		µg/Kg-dry	1	12/8/2012
Chloroform	ND	140	50		µg/Kg-dry	1	12/8/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/8/2012
cis-1,2-Dichloroethene	ND	140	50		µg/Kg-dry	1	12/8/2012
cis-1,3-Dichloropropene	ND	140	50		µg/Kg-dry	1	12/8/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/8/2012
Dibromochloromethane	ND	140	100		µg/Kg-dry	1	12/8/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/8/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/8/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/8/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/8/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/8/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: AECOM Environment **Client Sample ID:** SBKR1150R506S120412S014
Work Order: 1212171 **Collection Date:** 12/4/2012 2:12:00 PM
Project: Marshall KRRI 1125-1150R 12/4/12
Lab ID: 1212171-08 **Matrix:** SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	140	50		µg/Kg-dry	1	12/8/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/8/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
m,p-Xylene	ND	280	100		µg/Kg-dry	1	12/8/2012
Methyl iodide	ND	140	100		µg/Kg-dry	1	12/8/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/8/2012
Methylene chloride	ND	140	100		µg/Kg-dry	1	12/8/2012
Naphthalene	ND	470	330		µg/Kg-dry	1	12/8/2012
n-Butylbenzene	ND	140	50		µg/Kg-dry	1	12/8/2012
n-Propylbenzene	ND	140	100		µg/Kg-dry	1	12/8/2012
o-Xylene	ND	140	50		µg/Kg-dry	1	12/8/2012
p-Isopropyltoluene	ND	140	100		µg/Kg-dry	1	12/8/2012
sec-Butylbenzene	ND	140	50		µg/Kg-dry	1	12/8/2012
Styrene	ND	140	50		µg/Kg-dry	1	12/8/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/8/2012
tert-Butylbenzene	ND	140	50		µg/Kg-dry	1	12/8/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/8/2012
Tetrachloroethene	ND	140	50		µg/Kg-dry	1	12/8/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/8/2012
Toluene	ND	140	100		µg/Kg-dry	1	12/8/2012
trans-1,2-Dichloroethene	ND	140	50		µg/Kg-dry	1	12/8/2012
trans-1,3-Dichloropropene	ND	140	50		µg/Kg-dry	1	12/8/2012
trans-1,4-Dichloro-2-butene	ND	140	50		µg/Kg-dry	1	12/8/2012
Trichloroethene	ND	140	50		µg/Kg-dry	1	12/8/2012
Trichlorofluoromethane	ND	140	100		µg/Kg-dry	1	12/8/2012
Vinyl chloride	ND	140	40		µg/Kg-dry	1	12/8/2012
Surr: 1,2-Dichloroethane-d4	*94.6*	*70-130*			*%REC*	1	12/8/2012
Surr: 4-Bromofluorobenzene	*98.6*	*70-130*			*%REC*	1	12/8/2012
Surr: Dibromofluoromethane	*88.8*	*70-130*			*%REC*	1	12/8/2012
Surr: Toluene-d8	*86.0*	*70-130*			*%REC*	1	12/8/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**78**	**0.050**	**0**		**% of sample**	1	12/10/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1150R507S120412S005
Work Order:	1212171	**Collection Date:**	12/4/2012 3:20:00 PM
Project:	Marshall KRRI 1125-1150R 12/4/12		
Lab ID:	1212171-09	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/10/2012**		Analyst: **CW**
DRO (C10-C20)	**95**	**79**	**4.0**		**mg/Kg-dry**	1	12/11/2012
ORO (C20-C34)	**1,700**	**160**	**4.0**		**mg/Kg-dry**	1	12/11/2012
Surr: 4-Terphenyl-d14	*83.8*	*39-115*			*%REC*	1	12/11/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/10/2012**		Analyst: **CES**
Beryllium	ND	4.0	0.50		mg/Kg-dry	4	12/10/2012
Molybdenum	ND	10	1.0		mg/Kg-dry	4	12/10/2012
Nickel	**15**	**10**	**1.0**		**mg/Kg-dry**	4	12/10/2012
Vanadium	**22**	**10**	**1.0**		**mg/Kg-dry**	4	12/10/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/10/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	390	330		µg/Kg-dry	1	12/11/2012
Acenaphthene	ND	390	330		µg/Kg-dry	1	12/11/2012
Acenaphthylene	ND	390	330		µg/Kg-dry	1	12/11/2012
Anthracene	ND	390	330		µg/Kg-dry	1	12/11/2012
Benzo(a)anthracene	ND	390	330		µg/Kg-dry	1	12/11/2012
Benzo(a)pyrene	ND	390	330	*	µg/Kg-dry	1	12/11/2012
Benzo(b)fluoranthene	ND	390	330	*	µg/Kg-dry	1	12/11/2012
Benzo(g,h,i)perylene	ND	390	330	*	µg/Kg-dry	1	12/11/2012
Benzo(k)fluoranthene	ND	390	330	*	µg/Kg-dry	1	12/11/2012
Chrysene	ND	390	330		µg/Kg-dry	1	12/11/2012
Dibenzo(a,h)anthracene	ND	390	330	*	µg/Kg-dry	1	12/11/2012
Fluoranthene	ND	390	330		µg/Kg-dry	1	12/11/2012
Fluorene	ND	390	330		µg/Kg-dry	1	12/11/2012
Indeno(1,2,3-cd)pyrene	ND	390	330	*	µg/Kg-dry	1	12/11/2012
Naphthalene	ND	390	330		µg/Kg-dry	1	12/11/2012
Phenanthrene	ND	390	330		µg/Kg-dry	1	12/11/2012
Pyrene	ND	390	330		µg/Kg-dry	1	12/11/2012
Surr: 2,4,6-Tribromophenol	*99.2*	*34-140*			*%REC*	1	12/11/2012
Surr: 2-Fluorobiphenyl	*75.9*	*12-100*			*%REC*	1	12/11/2012
Surr: 2-Fluorophenol	*90.9*	*33-117*			*%REC*	1	12/11/2012
Surr: 4-Terphenyl-d14	*168*	*25-137*		S	*%REC*	1	12/11/2012
Surr: Nitrobenzene-d5	*80.5*	*37-107*			*%REC*	1	12/11/2012
Surr: Phenol-d6	*80.7*	*40-106*			*%REC*	1	12/11/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/7/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	250	100		µg/Kg-dry	1	12/8/2012
1,1,1-Trichloroethane	ND	250	50		µg/Kg-dry	1	12/8/2012
1,1,2,2-Tetrachloroethane	ND	250	50		µg/Kg-dry	1	12/8/2012
1,1,2-Trichloroethane	ND	250	50		µg/Kg-dry	1	12/8/2012
1,1-Dichloroethane	ND	250	50		µg/Kg-dry	1	12/8/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1150R507S120412S005
Work Order:	1212171	**Collection Date:**	12/4/2012 3:20:00 PM
Project:	Marshall KRRI 1125-1150R 12/4/12		
Lab ID:	1212171-09	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	250	50		µg/Kg-dry	1	12/8/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
1,2,3-Trichloropropane	ND	250	100		µg/Kg-dry	1	12/8/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
1,2,4-Trimethylbenzene	ND	250	100		µg/Kg-dry	1	12/8/2012
1,2-Dibromo-3-chloropropane	ND	250	10		µg/Kg-dry	1	12/8/2012
1,2-Dibromoethane	ND	250	20		µg/Kg-dry	1	12/8/2012
1,2-Dichlorobenzene	ND	250	100		µg/Kg-dry	1	12/8/2012
1,2-Dichloroethane	ND	250	50		µg/Kg-dry	1	12/8/2012
1,2-Dichloropropane	ND	250	50		µg/Kg-dry	1	12/8/2012
1,3,5-Trimethylbenzene	ND	250	100		µg/Kg-dry	1	12/8/2012
1,3-Dichlorobenzene	ND	250	100		µg/Kg-dry	1	12/8/2012
1,4-Dichlorobenzene	ND	250	100		µg/Kg-dry	1	12/8/2012
2-Butanone	ND	1,200	750		µg/Kg-dry	1	12/8/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/8/2012
2-Methylnaphthalene	ND	820	330		µg/Kg-dry	1	12/8/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/8/2012
Acetone	ND	2,200	1,000		µg/Kg-dry	1	12/8/2012
Acrylonitrile	ND	250	100		µg/Kg-dry	1	12/8/2012
Benzene	ND	250	50		µg/Kg-dry	1	12/8/2012
Bromobenzene	ND	250	100		µg/Kg-dry	1	12/8/2012
Bromochloromethane	ND	250	100		µg/Kg-dry	1	12/8/2012
Bromodichloromethane	ND	250	100		µg/Kg-dry	1	12/8/2012
Bromoform	ND	250	100		µg/Kg-dry	1	12/8/2012
Bromomethane	ND	250	200		µg/Kg-dry	1	12/8/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/8/2012
Carbon tetrachloride	ND	250	50		µg/Kg-dry	1	12/8/2012
Chlorobenzene	ND	250	50		µg/Kg-dry	1	12/8/2012
Chloroethane	ND	820	250		µg/Kg-dry	1	12/8/2012
Chloroform	ND	250	50		µg/Kg-dry	1	12/8/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/8/2012
cis-1,2-Dichloroethene	ND	250	50		µg/Kg-dry	1	12/8/2012
cis-1,3-Dichloropropene	ND	250	50		µg/Kg-dry	1	12/8/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/8/2012
Dibromochloromethane	ND	250	100		µg/Kg-dry	1	12/8/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/8/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/8/2012
Diethyl ether	ND	250	200		µg/Kg-dry	1	12/8/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/8/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/8/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *12-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1150R507S120412S005
Work Order:	1212171	**Collection Date:**	12/4/2012 3:20:00 PM
Project:	Marshall KRRI 1125-1150R 12/4/12		
Lab ID:	1212171-09	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	250	50		µg/Kg-dry	1	12/8/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/8/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/8/2012
m,p-Xylene	ND	490	100		µg/Kg-dry	1	12/8/2012
Methyl iodide	ND	250	100		µg/Kg-dry	1	12/8/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/8/2012
Methylene chloride	ND	250	100		µg/Kg-dry	1	12/8/2012
Naphthalene	ND	820	330		µg/Kg-dry	1	12/8/2012
n-Butylbenzene	ND	250	50		µg/Kg-dry	1	12/8/2012
n-Propylbenzene	ND	250	100		µg/Kg-dry	1	12/8/2012
o-Xylene	ND	250	50		µg/Kg-dry	1	12/8/2012
p-Isopropyltoluene	ND	250	100		µg/Kg-dry	1	12/8/2012
sec-Butylbenzene	ND	250	50		µg/Kg-dry	1	12/8/2012
Styrene	ND	250	50		µg/Kg-dry	1	12/8/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/8/2012
tert-Butylbenzene	ND	250	50		µg/Kg-dry	1	12/8/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/8/2012
Tetrachloroethene	ND	250	50		µg/Kg-dry	1	12/8/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/8/2012
Toluene	ND	250	100		µg/Kg-dry	1	12/8/2012
trans-1,2-Dichloroethene	ND	250	50		µg/Kg-dry	1	12/8/2012
trans-1,3-Dichloropropene	ND	250	50		µg/Kg-dry	1	12/8/2012
trans-1,4-Dichloro-2-butene	ND	250	50		µg/Kg-dry	1	12/8/2012
Trichloroethene	ND	250	50		µg/Kg-dry	1	12/8/2012
Trichlorofluoromethane	ND	250	100		µg/Kg-dry	1	12/8/2012
Vinyl chloride	ND	250	40		µg/Kg-dry	1	12/8/2012
Surr: 1,2-Dichloroethane-d4	*99.6*	*70-130*			*%REC*	1	12/8/2012
Surr: 4-Bromofluorobenzene	*98.0*	*70-130*			*%REC*	1	12/8/2012
Surr: Dibromofluoromethane	*89.5*	*70-130*			*%REC*	1	12/8/2012
Surr: Toluene-d8	*86.0*	*70-130*			*%REC*	1	12/8/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**88**	**0.050**	**0**		**% of sample**	1	12/10/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 12-Dec-12

Client: AECOM Environment

QC BATCH REPORT

Work Order: 1212171

Project: Marshall KRRI 1125-1150R 12/4/12

Batch ID: **45257** Instrument ID **GC8** Method: **SW8015M**

MBLK Sample ID: **DBLKS1-45257-45257** Units: **mg/Kg** Analysis Date: **12/11/2012 11:49 AM**

Client ID: Run ID: **GC8_121211A** SeqNo: **2165976** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	ND	10								
ORO (C20-C34)	ND	20								
Surr: 4-Terphenyl-d14	*4.434*	0	*5*	0	*88.7*	*39-115*	0			

LCS Sample ID: **DLCSS1-45257-45257** Units: **mg/Kg** Analysis Date: **12/11/2012 12:14 PM**

Client ID: Run ID: **GC8_121211A** SeqNo: **2165977** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	371.9	10	500	0	74.4	49-124	0			
ORO (C20-C34)	365.6	20	500	0	73.1	60-130	0			
Surr: 4-Terphenyl-d14	*4.413*	0	*5*	0	*88.3*	*39-115*	0			

MS Sample ID: **1212170-04B MS** Units: **mg/Kg** Analysis Date: **12/11/2012 12:40 PM**

Client ID: Run ID: **GC8_121211A** SeqNo: **2165978** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	351.9	9.3	464.8	8.48	73.9	60-130	0			
ORO (C20-C34)	382.2	19	464.8	97.72	61.2	60-130	0			
Surr: 4-Terphenyl-d14	*3.697*	0	*4.648*	0	*79.5*	*39-115*	0			

MSD Sample ID: **1212170-04B MSD** Units: **mg/Kg** Analysis Date: **12/11/2012 01:05 PM**

Client ID: Run ID: **GC8_121211A** SeqNo: **2165979** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	374.6	9.8	489.7	8.48	74.8	60-130	351.9	6.25	30	
ORO (C20-C34)	408.9	20	489.7	97.72	63.5	60-130	382.2	6.76	30	
Surr: 4-Terphenyl-d14	*4.054*	0	*4.897*	0	*82.8*	*39-115*	3.697	*9.23*	*30*	

The following samples were analyzed in this batch:

1212171-01B	1212171-03B	1212171-04B
1212171-05B	1212171-06B	1212171-07B
1212171-08B	1212171-09B	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212171
Project: Marshall KRRI 1125-1150R 12/4/12

QC BATCH REPORT

Batch ID: **45280** Instrument ID **ICPMS1** Method: **SW6020A**

MBLK Sample ID: **MBLK-45280-45280** Units: **mg/Kg** Analysis Date: **12/10/2012 06:36 PM**
Client ID: Run ID: **ICPMS1_121210A** SeqNo: **2164664** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	ND	0.10								
Molybdenum	ND	0.25								
Nickel	ND	0.25								
Vanadium	ND	0.25								

LCS Sample ID: **LCS-45280-45280** Units: **mg/Kg** Analysis Date: **12/10/2012 06:42 PM**
Client ID: Run ID: **ICPMS1_121210A** SeqNo: **2164665** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	5.185	0.10	5	0	104	80-120	0			
Molybdenum	4.977	0.25	5	0	99.5	80-120	0			
Nickel	4.85	0.25	5	0	97	80-120	0			
Vanadium	5.08	0.25	5	0	102	80-120	0			

MS Sample ID: **1212170-04BMS** Units: **mg/Kg** Analysis Date: **12/10/2012 10:13 PM**
Client ID: Run ID: **ICPMS1_121210A** SeqNo: **2164694** Prep Date: **12/10/2012** DF: **4**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	7.936	0.61	7.564	0.1456	103	75-125	0			
Molybdenum	7.806	1.5	7.564	0.4479	97.3	75-125	0			
Nickel	12.29	1.5	7.564	3.926	111	75-125	0			
Vanadium	15.49	1.5	7.564	6.258	122	75-125	0			

MSD Sample ID: **1212170-04BMSD** Units: **mg/Kg** Analysis Date: **12/10/2012 10:19 PM**
Client ID: Run ID: **ICPMS1_121210A** SeqNo: **2164695** Prep Date: **12/10/2012** DF: **4**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	8.199	0.62	7.788	0.1456	103	75-125	7.936	3.26	25	
Molybdenum	8.159	1.6	7.788	0.4479	99	75-125	7.806	4.42	25	
Nickel	12.77	1.6	7.788	3.926	114	75-125	12.29	3.82	25	
Vanadium	16.52	1.6	7.788	6.258	132	75-125	15.49	6.43	25	S

The following samples were analyzed in this batch:

1212171-01B	1212171-03B	1212171-04B
1212171-05B	1212171-06B	1212171-07B
1212171-08B	1212171-09B	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212171
Project: Marshall KRRI 1125-1150R 12/4/12

QC BATCH REPORT

Batch ID: **45256** Instrument ID **SVMS5** Method: **SW8270**

MBLK Sample ID: **SBLKS1-45256-45256** Units: **µg/Kg** Analysis Date: **12/10/2012 04:05 PM**
Client ID: Run ID: **SVMS5_121210A** SeqNo: **2165141** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	ND	50								
Acenaphthene	ND	50								
Acenaphthylene	ND	50								
Anthracene	ND	50								
Benzo(a)anthracene	ND	50								
Benzo(a)pyrene	ND	50								
Benzo(b)fluoranthene	ND	50								
Benzo(g,h,i)perylene	ND	50								
Benzo(k)fluoranthene	ND	50								
Chrysene	ND	50								
Dibenzo(a,h)anthracene	ND	50								
Fluoranthene	ND	50								
Fluorene	ND	50								
Indeno(1,2,3-cd)pyrene	ND	50								
Naphthalene	ND	50								
Phenanthrene	ND	50								
Pyrene	ND	50								
Surr: 2,4,6-Tribromophenol	*4761*	0	*5000*	0	*95.2*	*34-140*	0			
Surr: 2-Fluorobiphenyl	*4322*	0	*5000*	0	*86.4*	*12-100*	0			
Surr: 2-Fluorophenol	*5224*	0	*5000*	0	*104*	*33-117*	0			
Surr: 4-Terphenyl-d14	*5380*	0	*5000*	0	*108*	*25-137*	0			
Surr: Nitrobenzene-d5	*4467*	0	*5000*	0	*89.3*	*37-107*	0			
Surr: Phenol-d6	*4575*	0	*5000*	0	*91.5*	*40-106*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45256** Instrument ID **SVMS5** Method: **SW8270**

LCS Sample ID: **SLCSS1-45256-45256** Units: **µg/Kg** Analysis Date: **12/10/2012 04:36 PM**
Client ID: Run ID: **SVMS5_121210A** SeqNo: **2165143** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	1636	50	2000	0	81.8	45-105	0			
Acenaphthene	1653	50	2000	0	82.6	45-110	0			
Acenaphthylene	1723	50	2000	0	86.2	45-105	0			
Anthracene	1819	50	2000	0	91	55-105	0			
Benzo(a)anthracene	1756	50	2000	0	87.8	50-110	0			
Benzo(a)pyrene	1766	50	2000	0	88.3	50-110	0			
Benzo(b)fluoranthene	1659	50	2000	0	83	45-115	0			
Benzo(g,h,i)perylene	1986	50	2000	0	99.3	40-125	0			
Benzo(k)fluoranthene	1876	50	2000	0	93.8	45-115	0			
Chrysene	1972	50	2000	0	98.6	55-110	0			
Dibenzo(a,h)anthracene	1819	50	2000	0	91	40-125	0			
Fluoranthene	1801	50	2000	0	90	55-115	0			
Fluorene	1677	50	2000	0	83.8	50-110	0			
Indeno(1,2,3-cd)pyrene	1867	50	2000	0	93.4	40-120	0			
Naphthalene	1597	50	2000	0	79.8	40-105	0			
Phenanthrene	1744	50	2000	0	87.2	50-110	0			
Pyrene	1882	50	2000	0	94.1	45-125	0			
Surr: 2,4,6-Tribromophenol	*4807*	0	*5000*	0	*96.1*	*34-140*	0			
Surr: 2-Fluorobiphenyl	*3712*	0	*5000*	0	*74.2*	*12-100*	0			
Surr: 2-Fluorophenol	*4483*	0	*5000*	0	*89.7*	*33-117*	0			
Surr: 4-Terphenyl-d14	*4972*	0	*5000*	0	*99.4*	*25-137*	0			
Surr: Nitrobenzene-d5	*3965*	0	*5000*	0	*79.3*	*37-107*	0			
Surr: Phenol-d6	*3914*	0	*5000*	0	*78.3*	*40-106*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45256** Instrument ID **SVMS5** Method: **SW8270**

MS Sample ID: **1212170-04B MS** Units: **µg/Kg** Analysis Date: **12/10/2012 05:06 PM**
Client ID: Run ID: **SVMS5_121210A** SeqNo: **2165145** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	1551	50	1999	0	77.6	45-105	0			
Acenaphthene	1604	50	1999	0	80.2	45-110	0			
Acenaphthylene	1666	50	1999	0	83.4	45-105	0			
Anthracene	1767	50	1999	0	88.4	55-105	0			
Benzo(a)anthracene	1748	50	1999	0	87.4	50-110	0			
Benzo(a)pyrene	1766	50	1999	71.23	84.8	50-110	0			
Benzo(b)fluoranthene	1729	50	1999	0	86.5	45-115	0			
Benzo(g,h,i)perylene	1571	50	1999	0	78.6	40-125	0			
Benzo(k)fluoranthene	1971	50	1999	0	98.6	45-115	0			
Chrysene	1916	50	1999	0	95.8	55-110	0			
Dibenzo(a,h)anthracene	1551	50	1999	0	77.6	40-125	0			
Fluoranthene	1787	50	1999	52.69	86.8	55-115	0			
Fluorene	1666	50	1999	0	83.4	50-110	0			
Indeno(1,2,3-cd)pyrene	1617	50	1999	0	80.9	40-120	0			
Naphthalene	1491	50	1999	0	74.6	40-105	0			
Phenanthrene	1755	50	1999	0	87.8	50-110	0			
Pyrene	1807	50	1999	54.64	87.7	45-125	0			
Surr: 2,4,6-Tribromophenol	*4880*	0	*4997*	0	*97.7*	*34-140*	0			
Surr: 2-Fluorobiphenyl	*3676*	0	*4997*	0	*73.6*	*12-100*	0			
Surr: 2-Fluorophenol	*4077*	0	*4997*	0	*81.6*	*33-117*	0			
Surr: 4-Terphenyl-d14	*4554*	0	*4997*	0	*91.1*	*25-137*	0			
Surr: Nitrobenzene-d5	*3684*	0	*4997*	0	*73.7*	*37-107*	0			
Surr: Phenol-d6	*3730*	0	*4997*	0	*74.7*	*40-106*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212171
Project: Marshall KRRI 1125-1150R 12/4/12

QC BATCH REPORT

Batch ID: **45256** Instrument ID **SVMS5** Method: **SW8270**

MSD Sample ID: **1212170-04B MSD** Units: **µg/Kg** Analysis Date: **12/10/2012 05:36 PM**
Client ID: Run ID: **SVMS5_121210A** SeqNo: **2165148** Prep Date: **12/10/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	1646	50	1982	0	83	45-105	1551	5.96	30	
Acenaphthene	1655	50	1982	0	83.5	45-110	1604	3.14	30	
Acenaphthylene	1742	50	1982	0	87.9	45-105	1666	4.49	30	
Anthracene	1861	50	1982	0	93.9	55-105	1767	5.21	30	
Benzo(a)anthracene	1833	50	1982	0	92.5	50-110	1748	4.79	30	
Benzo(a)pyrene	1787	50	1982	71.23	86.6	50-110	1766	1.19	30	
Benzo(b)fluoranthene	2027	50	1982	0	102	45-115	1729	15.9	30	
Benzo(g,h,i)perylene	1299	50	1982	0	65.6	40-125	1571	18.9	30	
Benzo(k)fluoranthene	1943	50	1982	0	98	45-115	1971	1.44	30	
Chrysene	1926	50	1982	0	97.2	55-110	1916	0.521	30	
Dibenzo(a,h)anthracene	1379	50	1982	0	69.6	40-125	1551	11.8	30	
Fluoranthene	1844	50	1982	52.69	90.4	55-115	1787	3.18	30	
Fluorene	1745	50	1982	0	88	50-110	1666	4.66	30	
Indeno(1,2,3-cd)pyrene	1423	50	1982	0	71.8	40-120	1617	12.7	30	
Naphthalene	1606	50	1982	0	81	40-105	1491	7.4	30	
Phenanthrene	1814	50	1982	0	91.5	50-110	1755	3.3	30	
Pyrene	1839	50	1982	54.64	90	45-125	1807	1.79	30	
Surr: 2,4,6-Tribromophenol	*5025*	0	*4955*	0	*101*	*34-140*	4880	*2.93*	*40*	
Surr: 2-Fluorobiphenyl	*3827*	0	*4955*	0	*77.2*	*12-100*	3676	*4*	*40*	
Surr: 2-Fluorophenol	*4272*	0	*4955*	0	*86.2*	*33-117*	4077	*4.66*	*40*	
Surr: 4-Terphenyl-d14	*4875*	0	*4955*	0	*98.4*	*25-137*	4554	*6.82*	*40*	
Surr: Nitrobenzene-d5	*3960*	0	*4955*	0	*79.9*	*37-107*	3684	*7.22*	*40*	
Surr: Phenol-d6	*4056*	0	*4955*	0	*81.9*	*40-106*	3730	*8.38*	*40*	

The following samples were analyzed in this batch:

1212171-01B	1212171-03B	1212171-04B
1212171-05B	1212171-06B	1212171-07B
1212171-08B	1212171-09B	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45273** Instrument ID **VMS9** Method: **SW8260**

MBLK Sample ID: **MBLK-45273-45273** Units: **µg/Kg** Analysis Date: **12/7/2012 11:58 PM**
Client ID: Run ID: **VMS9_121207B** SeqNo: **2162854** Prep Date: **12/7/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	30								
1,1,1-Trichloroethane	ND	30								
1,1,2,2-Tetrachloroethane	ND	30								
1,1,2-Trichloroethane	ND	30								
1,1-Dichloroethane	ND	30								
1,1-Dichloroethene	ND	30								
1,2,3-Trichlorobenzene	ND	30								
1,2,3-Trichloropropane	ND	30								
1,2,3-Trimethylbenzene	ND	30								
1,2,4-Trichlorobenzene	ND	30								
1,2,4-Trimethylbenzene	ND	30								
1,2-Dibromo-3-chloropropane	ND	30								
1,2-Dibromoethane	ND	30								
1,2-Dichlorobenzene	ND	30								
1,2-Dichloroethane	ND	30								
1,2-Dichloropropane	ND	30								
1,3,5-Trimethylbenzene	ND	30								
1,3-Dichlorobenzene	ND	30								
1,4-Dichlorobenzene	ND	30								
2-Butanone	ND	200								
2-Hexanone	ND	30								
2-Methylnaphthalene	ND	100								
4-Methyl-2-pentanone	ND	30								
Acetone	ND	100								
Acrylonitrile	ND	100								
Benzene	ND	30								
Bromobenzene	ND	30								
Bromochloromethane	ND	30								
Bromodichloromethane	ND	30								
Bromoform	ND	30								
Bromomethane	ND	75								
Carbon disulfide	ND	30								
Carbon tetrachloride	ND	30								
Chlorobenzene	ND	30								
Chloroethane	ND	100								
Chloroform	ND	30								
Chloromethane	ND	100								
cis-1,2-Dichloroethene	ND	30								
cis-1,3-Dichloropropene	ND	30								
Cyclohexane	ND	30								
Dibromochloromethane	ND	30								
Dibromomethane	ND	30								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45273** Instrument ID **VMS9** Method: **SW8260**

Dichlorodifluoromethane	ND	30						
Diethyl ether	ND	30						
Diisopropyl ether	ND	30						
Ethyl tert butyl ether	ND	30						
Ethylbenzene	ND	30						
Hexachloroethane	ND	30						
Isopropylbenzene	ND	30						
m,p-Xylene	ND	60						
Methyl iodide	ND	75						
Methyl tert-butyl ether	ND	30						
Methylene chloride	ND	30						
Naphthalene	19.5	100						J
n-Butylbenzene	ND	30						
n-Propylbenzene	ND	30						
o-Xylene	ND	30						
p-Isopropyltoluene	ND	30						
sec-Butylbenzene	ND	30						
Styrene	ND	30						
tert-Butyl alcohol	ND	200						
tert-Butylbenzene	ND	30						
Tertiaryamylmethylether	ND	30						
Tetrachloroethene	ND	30						
Tetrahydrofuran	ND	200						
Toluene	ND	30						
trans-1,2-Dichloroethene	ND	30						
trans-1,3-Dichloropropene	ND	30						
trans-1,4-Dichloro-2-butene	ND	30						
Trichloroethene	ND	30						
Trichlorofluoromethane	ND	30						
Vinyl chloride	ND	30						
Surr: 1,2-Dichloroethane-d4	*949*	0	*1000*	0	*94.9*	*70-130*	0	
Surr: 4-Bromofluorobenzene	*992.5*	0	*1000*	0	*99.2*	*70-130*	0	
Surr: Dibromofluoromethane	*902.5*	0	*1000*	0	*90.2*	*70-130*	0	
Surr: Toluene-d8	*863.5*	0	*1000*	0	*86.4*	*70-130*	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212171
Project: Marshall KRRI 1125-1150R 12/4/12

QC BATCH REPORT

Batch ID: **45273** Instrument ID **VMS9** Method: **SW8260**

MBLK Sample ID: **MBLK-45273-45273** Units: **µg/Kg** Analysis Date: **12/7/2012 11:58 PM**
Client ID: Run ID: **VMS7_121207B** SeqNo: **2163313** Prep Date: **12/7/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	30								
1,1,1-Trichloroethane	ND	30								
1,1,2,2-Tetrachloroethane	ND	30								
1,1,2-Trichloroethane	ND	30								
1,1-Dichloroethane	ND	30								
1,1-Dichloroethene	ND	30								
1,2,3-Trichlorobenzene	ND	30								
1,2,3-Trichloropropane	ND	30								
1,2,3-Trimethylbenzene	ND	30								
1,2,4-Trichlorobenzene	ND	30								
1,2,4-Trimethylbenzene	ND	30								
1,2-Dibromo-3-chloropropane	ND	30								
1,2-Dibromoethane	ND	30								
1,2-Dichlorobenzene	ND	30								
1,2-Dichloroethane	ND	30								
1,2-Dichloropropane	ND	30								
1,3,5-Trimethylbenzene	ND	30								
1,3-Dichlorobenzene	ND	30								
1,4-Dichlorobenzene	ND	30								
2-Butanone	ND	200								
2-Hexanone	ND	30								
2-Methylnaphthalene	ND	100								
4-Methyl-2-pentanone	ND	30								
Acetone	ND	100								
Acrylonitrile	ND	100								
Benzene	ND	30								
Bromobenzene	ND	30								
Bromochloromethane	ND	30								
Bromodichloromethane	ND	30								
Bromoform	ND	30								
Bromomethane	ND	75								
Carbon disulfide	ND	30								
Carbon tetrachloride	ND	30								
Chlorobenzene	ND	30								
Chloroethane	ND	100								
Chloroform	ND	30								
Chloromethane	ND	100								
cis-1,2-Dichloroethene	ND	30								
cis-1,3-Dichloropropene	ND	30								
Cyclohexane	ND	30								
Dibromochloromethane	ND	30								
Dibromomethane	ND	30								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45273** Instrument ID **VMS9** Method: **SW8260**

Dichlorodifluoromethane	ND	30					
Diethyl ether	ND	30					
Diisopropyl ether	ND	30					
Ethyl tert butyl ether	ND	30					
Ethylbenzene	ND	30					
Hexachloroethane	ND	30					
Isopropylbenzene	ND	30					
m,p-Xylene	ND	60					
Methyl iodide	146.5	75					
Methyl tert-butyl ether	ND	30					
Methylene chloride	ND	30					
Naphthalene	ND	100					
n-Butylbenzene	ND	30					
n-Propylbenzene	ND	30					
o-Xylene	ND	30					
p-Isopropyltoluene	ND	30					
sec-Butylbenzene	ND	30					
Styrene	ND	30					
tert-Butyl alcohol	ND	200					
tert-Butylbenzene	ND	30					
Tertiaryamylmethylether	ND	30					
Tetrachloroethene	ND	30					
Tetrahydrofuran	ND	200					
Toluene	ND	30					
trans-1,2-Dichloroethene	ND	30					
trans-1,3-Dichloropropene	ND	30					
trans-1,4-Dichloro-2-butene	ND	30					
Trichloroethene	ND	30					
Trichlorofluoromethane	ND	30					
Vinyl chloride	ND	30					
Surr: 1,2-Dichloroethane-d4	*1024*	0	*1000*	0	*102*	*70-130*	0
Surr: 4-Bromofluorobenzene	*1004*	0	*1000*	0	*100*	*70-130*	0
Surr: Dibromofluoromethane	*956*	0	*1000*	0	*95.6*	*70-130*	0
Surr: Toluene-d8	*973.5*	0	*1000*	0	*97.4*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212171
Project: Marshall KRRI 1125-1150R 12/4/12

QC BATCH REPORT

Batch ID: **45273** Instrument ID **VMS9** Method: **SW8260**

MBLK Sample ID: **MBLK-45273-45273** Units: **µg/Kg** Analysis Date: **12/11/2012 01:34 PM**
Client ID: Run ID: **VMS7_121211A** SeqNo: **2166139** Prep Date: **12/7/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	30								
1,1,1-Trichloroethane	ND	30								
1,1,2,2-Tetrachloroethane	ND	30								
1,1,2-Trichloroethane	ND	30								
1,1-Dichloroethane	ND	30								
1,1-Dichloroethene	ND	30								
1,2,3-Trichlorobenzene	ND	30								
1,2,3-Trichloropropane	ND	30								
1,2,3-Trimethylbenzene	ND	30								
1,2,4-Trichlorobenzene	ND	30								
1,2,4-Trimethylbenzene	ND	30								
1,2-Dibromo-3-chloropropane	ND	30								
1,2-Dibromoethane	ND	30								
1,2-Dichlorobenzene	ND	30								
1,2-Dichloroethane	ND	30								
1,2-Dichloropropane	ND	30								
1,3,5-Trimethylbenzene	ND	30								
1,3-Dichlorobenzene	ND	30								
1,4-Dichlorobenzene	ND	30								
2-Butanone	ND	200								
2-Hexanone	ND	30								
2-Methylnaphthalene	ND	100								
4-Methyl-2-pentanone	ND	30								
Acetone	ND	100								
Acrylonitrile	ND	100								
Benzene	ND	30								
Bromobenzene	ND	30								
Bromochloromethane	ND	30								
Bromodichloromethane	ND	30								
Bromoform	ND	30								
Bromomethane	ND	75								
Carbon disulfide	ND	30								
Carbon tetrachloride	ND	30								
Chlorobenzene	ND	30								
Chloroethane	ND	100								
Chloroform	ND	30								
Chloromethane	ND	100								
cis-1,2-Dichloroethene	ND	30								
cis-1,3-Dichloropropene	ND	30								
Cyclohexane	ND	30								
Dibromochloromethane	ND	30								
Dibromomethane	ND	30								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45273** Instrument ID **VMS9** Method: **SW8260**

Dichlorodifluoromethane	ND	30					
Diethyl ether	ND	30					
Diisopropyl ether	ND	30					
Ethyl tert butyl ether	ND	30					
Ethylbenzene	ND	30					
Hexachloroethane	ND	30					
Isopropylbenzene	ND	30					
m,p-Xylene	ND	60					
Methyl iodide	223.5	75					
Methyl tert-butyl ether	ND	30					
Methylene chloride	ND	30					
Naphthalene	ND	100					
n-Butylbenzene	ND	30					
n-Propylbenzene	ND	30					
o-Xylene	ND	30					
p-Isopropyltoluene	ND	30					
sec-Butylbenzene	ND	30					
Styrene	ND	30					
tert-Butyl alcohol	ND	200					
tert-Butylbenzene	ND	30					
Tertiaryamylmethylether	ND	30					
Tetrachloroethene	ND	30					
Tetrahydrofuran	ND	200					
Toluene	ND	30					
trans-1,2-Dichloroethene	ND	30					
trans-1,3-Dichloropropene	ND	30					
trans-1,4-Dichloro-2-butene	ND	30					
Trichloroethene	ND	30					
Trichlorofluoromethane	ND	30					
Vinyl chloride	ND	30					
Surr: 1,2-Dichloroethane-d4	*987.5*	0	*1000*	0	*98.8*	*70-130*	0
Surr: 4-Bromofluorobenzene	*1018*	0	*1000*	0	*102*	*70-130*	0
Surr: Dibromofluoromethane	*970*	0	*1000*	0	*97*	*70-130*	0
Surr: Toluene-d8	*970.5*	0	*1000*	0	*97*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212171
Project: Marshall KRRI 1125-1150R 12/4/12

QC BATCH REPORT

Batch ID: **45273** Instrument ID **VMS9** Method: **SW8260**

LCS Sample ID: **LCS-45273-45273** Units: **µg/Kg** Analysis Date: **12/7/2012 10:41 PM**
Client ID: Run ID: **VMS9_121207B** SeqNo: **2162853** Prep Date: **12/7/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	1020	30	1000	0	102	75-125	0			
1,1,1-Trichloroethane	1154	30	1000	0	115	70-135	0			
1,1,2,2-Tetrachloroethane	1006	30	1000	0	101	55-130	0			
1,1,2-Trichloroethane	948	30	1000	0	94.8	60-125	0			
1,1-Dichloroethane	1202	30	1000	0	120	75-125	0			
1,1-Dichloroethene	1308	30	1000	0	131	65-135	0			
1,2,3-Trichlorobenzene	953	30	1000	0	95.3	60-135	0			
1,2,3-Trichloropropane	973.5	30	1000	0	97.4	65-130	0			
1,2,4-Trichlorobenzene	964	30	1000	0	96.4	65-130	0			
1,2,4-Trimethylbenzene	1086	30	1000	0	109	65-135	0			
1,2-Dibromo-3-chloropropane	906	30	1000	0	90.6	40-135	0			
1,2-Dibromoethane	1010	30	1000	0	101	70-125	0			
1,2-Dichlorobenzene	940.5	30	1000	0	94	75-120	0			
1,2-Dichloroethane	1068	30	1000	0	107	70-135	0			
1,2-Dichloropropane	1088	30	1000	0	109	70-120	0			
1,3,5-Trimethylbenzene	1114	30	1000	0	111	65-135	0			
1,3-Dichlorobenzene	932.5	30	1000	0	93.2	70-125	0			
1,4-Dichlorobenzene	935	30	1000	0	93.5	70-125	0			
2-Butanone	1140	200	1000	0	114	30-160	0			
2-Hexanone	1084	30	1000	0	108	45-145	0			
4-Methyl-2-pentanone	1250	30	1000	0	125	45-145	0			
Acetone	1476	100	1000	0	148	20-160	0			
Acrylonitrile	1200	100	1000	0	120	70-135	0			
Benzene	1088	30	1000	0	109	75-125	0			
Bromobenzene	998	30	1000	0	99.8	65-120	0			
Bromochloromethane	1227	30	1000	0	123	70-125	0			
Bromodichloromethane	1091	30	1000	0	109	70-130	0			
Bromoform	997.5	30	1000	0	99.8	55-135	0			
Bromomethane	1359	75	1000	0	136	30-160	0			
Carbon disulfide	1446	30	1000	0	145	45-160	0			
Carbon tetrachloride	1145	30	1000	0	114	65-135	0			
Chlorobenzene	993.5	30	1000	0	99.4	75-125	0			
Chloroethane	1217	100	1000	0	122	40-155	0			
Chloroform	1221	30	1000	0	122	70-125	0			
Chloromethane	950.5	100	1000	0	95	50-130	0			
cis-1,2-Dichloroethene	1229	30	1000	0	123	65-125	0			
cis-1,3-Dichloropropene	979	30	1000	0	97.9	70-125	0			
Dibromochloromethane	843	30	1000	0	84.3	65-135	0			
Dibromomethane	1102	30	1000	0	110	75-130	0			
Dichlorodifluoromethane	1066	30	1000	0	107	35-135	0			
Ethylbenzene	1018	30	1000	0	102	75-125	0			
Hexachloroethane	959	30	1000	0	95.9	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45273** Instrument ID **VMS9** Method: **SW8260**

Isopropylbenzene	1068	30	1000	0	107	75-130	0	
m,p-Xylene	2110	60	2000	0	106	80-125	0	
Methyl tert-butyl ether	1310	30	1000	0	131	75-125	0	S
Methylene chloride	1312	30	1000	0	131	55-145	0	
Naphthalene	996	100	1000	0	99.6	40-140	0	
n-Butylbenzene	1000	30	1000	0	100	65-140	0	
n-Propylbenzene	1015	30	1000	0	102	65-135	0	
o-Xylene	1054	30	1000	0	105	75-125	0	
p-Isopropyltoluene	997.5	30	1000	0	99.8	75-135	0	
sec-Butylbenzene	1114	30	1000	0	111	65-130	0	
Styrene	1080	30	1000	0	108	75-125	0	
tert-Butylbenzene	1093	30	1000	0	109	65-130	0	
Tetrachloroethene	950	30	1000	0	95	64-140	0	
Tetrahydrofuran	1349	200	1000	0	135	70-135	0	
Toluene	988	30	1000	0	98.8	70-125	0	
trans-1,2-Dichloroethene	1264	30	1000	0	126	65-135	0	
trans-1,3-Dichloropropene	931	30	1000	0	93.1	65-125	0	
trans-1,4-Dichloro-2-butene	979.5	30	1000	0	98	70-135	0	
Trichloroethene	1042	30	1000	0	104	75-125	0	
Trichlorofluoromethane	1225	30	1000	0	122	25-185	0	
Vinyl chloride	1199	30	1000	0	120	60-125	0	
Surr: 1,2-Dichloroethane-d4	*954.5*	0	*1000*	0	*95.4*	*70-130*	0	
Surr: 4-Bromofluorobenzene	*1040*	0	*1000*	0	*104*	*70-130*	0	
Surr: Dibromofluoromethane	*1008*	0	*1000*	0	*101*	*70-130*	0	
Surr: Toluene-d8	*912.5*	0	*1000*	0	*91.2*	*70-130*	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212171
Project: Marshall KRRI 1125-1150R 12/4/12

QC BATCH REPORT

Batch ID: **45273** Instrument ID **VMS9** Method: **SW8260**

LCS Sample ID: **LCS-45273-45273** Units: **µg/Kg** Analysis Date: **12/7/2012 10:43 PM**
Client ID: Run ID: **VMS7_121207B** SeqNo: **2163312** Prep Date: **12/7/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	1040	30	1000	0	104	75-125	0			
1,1,1-Trichloroethane	1062	30	1000	0	106	70-135	0			
1,1,2,2-Tetrachloroethane	1002	30	1000	0	100	55-130	0			
1,1,2-Trichloroethane	968.5	30	1000	0	96.8	60-125	0			
1,1-Dichloroethane	962.5	30	1000	0	96.2	75-125	0			
1,1-Dichloroethene	1062	30	1000	0	106	65-135	0			
1,2,3-Trichlorobenzene	1038	30	1000	0	104	60-135	0			
1,2,3-Trichloropropane	1057	30	1000	0	106	65-130	0			
1,2,4-Trichlorobenzene	1060	30	1000	0	106	65-130	0			
1,2,4-Trimethylbenzene	1053	30	1000	0	105	65-135	0			
1,2-Dibromo-3-chloropropane	1026	30	1000	0	103	40-135	0			
1,2-Dibromoethane	1040	30	1000	0	104	70-125	0			
1,2-Dichlorobenzene	1004	30	1000	0	100	75-120	0			
1,2-Dichloroethane	982.5	30	1000	0	98.2	70-135	0			
1,2-Dichloropropane	972.5	30	1000	0	97.2	70-120	0			
1,3,5-Trimethylbenzene	1034	30	1000	0	103	65-135	0			
1,3-Dichlorobenzene	1022	30	1000	0	102	70-125	0			
1,4-Dichlorobenzene	1044	30	1000	0	104	70-125	0			
2-Butanone	984.5	200	1000	0	98.4	30-160	0			
2-Hexanone	1062	30	1000	0	106	45-145	0			
4-Methyl-2-pentanone	1300	30	1000	0	130	45-145	0			
Acetone	964	100	1000	0	96.4	20-160	0			
Acrylonitrile	877.5	100	1000	0	87.8	70-135	0			
Benzene	978.5	30	1000	0	97.8	75-125	0			
Bromobenzene	1004	30	1000	0	100	65-120	0			
Bromochloromethane	1008	30	1000	0	101	70-125	0			
Bromodichloromethane	987.5	30	1000	0	98.8	70-130	0			
Bromoform	1035	30	1000	0	104	55-135	0			
Bromomethane	1344	75	1000	0	134	30-160	0			
Carbon disulfide	1161	30	1000	0	116	45-160	0			
Carbon tetrachloride	1166	30	1000	0	117	65-135	0			
Chlorobenzene	992.5	30	1000	0	99.2	75-125	0			
Chloroethane	1102	100	1000	0	110	40-155	0			
Chloroform	950.5	30	1000	0	95	70-125	0			
Chloromethane	984	100	1000	0	98.4	50-130	0			
cis-1,2-Dichloroethene	1002	30	1000	0	100	65-125	0			
cis-1,3-Dichloropropene	984.5	30	1000	0	98.4	70-125	0			
Dibromochloromethane	990.5	30	1000	0	99	65-135	0			
Dibromomethane	940.5	30	1000	0	94	75-130	0			
Dichlorodifluoromethane	1115	30	1000	0	112	35-135	0			
Ethylbenzene	1022	30	1000	0	102	75-125	0			
Hexachloroethane	1084	30	1000	0	108	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45273** Instrument ID **VMS9** Method: **SW8260**

Isopropylbenzene	1030	30	1000	0	103	75-130	0
m,p-Xylene	2018	60	2000	0	101	80-125	0
Methyl tert-butyl ether	924.5	30	1000	0	92.4	75-125	0
Methylene chloride	1012	30	1000	0	101	55-145	0
Naphthalene	1000	100	1000	0	100	40-140	0
n-Butylbenzene	1036	30	1000	0	104	65-140	0
n-Propylbenzene	1008	30	1000	0	101	65-135	0
o-Xylene	1008	30	1000	0	101	75-125	0
p-Isopropyltoluene	994.5	30	1000	0	99.4	75-135	0
sec-Butylbenzene	1038	30	1000	0	104	65-130	0
Styrene	1024	30	1000	0	102	75-125	0
tert-Butylbenzene	1024	30	1000	0	102	65-130	0
Tetrachloroethene	1062	30	1000	0	106	64-140	0
Tetrahydrofuran	1010	200	1000	0	101	70-135	0
Toluene	1010	30	1000	0	101	70-125	0
trans-1,2-Dichloroethene	1032	30	1000	0	103	65-135	0
trans-1,3-Dichloropropene	1010	30	1000	0	101	65-125	0
trans-1,4-Dichloro-2-butene	1018	30	1000	0	102	70-135	0
Trichloroethene	986	30	1000	0	98.6	75-125	0
Trichlorofluoromethane	1192	30	1000	0	119	25-185	0
Vinyl chloride	1109	30	1000	0	111	60-125	0
Surr: 1,2-Dichloroethane-d4	*1004*	0	*1000*	0	*100*	*70-130*	0
Surr: 4-Bromofluorobenzene	*1010*	0	*1000*	0	*101*	*70-130*	0
Surr: Dibromofluoromethane	*1008*	0	*1000*	0	*101*	*70-130*	0
Surr: Toluene-d8	*996.5*	0	*1000*	0	*99.6*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212171
Project: Marshall KRRI 1125-1150R 12/4/12

QC BATCH REPORT

Batch ID: **45273** Instrument ID **VMS9** Method: **SW8260**

LCS Sample ID: **LCS-45273-45273** Units: **µg/Kg** Analysis Date: **12/11/2012 12:18 PM**
Client ID: Run ID: **VMS7_121211A** SeqNo: **2166136** Prep Date: **12/7/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	1098	30	1000	0	110	75-125	0			
1,1,1-Trichloroethane	1093	30	1000	0	109	70-135	0			
1,1,2,2-Tetrachloroethane	922	30	1000	0	92.2	55-130	0			
1,1,2-Trichloroethane	943	30	1000	0	94.3	60-125	0			
1,1-Dichloroethane	959.5	30	1000	0	96	75-125	0			
1,1-Dichloroethene	1107	30	1000	0	111	65-135	0			
1,2,3-Trichlorobenzene	1012	30	1000	0	101	60-135	0			
1,2,3-Trichloropropane	973	30	1000	0	97.3	65-130	0			
1,2,4-Trichlorobenzene	1057	30	1000	0	106	65-130	0			
1,2,4-Trimethylbenzene	1074	30	1000	0	107	65-135	0			
1,2-Dibromo-3-chloropropane	970.5	30	1000	0	97	40-135	0			
1,2-Dibromoethane	983	30	1000	0	98.3	70-125	0			
1,2-Dichlorobenzene	981	30	1000	0	98.1	75-120	0			
1,2-Dichloroethane	968.5	30	1000	0	96.8	70-135	0			
1,2-Dichloropropane	995.5	30	1000	0	99.6	70-120	0			
1,3,5-Trimethylbenzene	1053	30	1000	0	105	65-135	0			
1,3-Dichlorobenzene	1022	30	1000	0	102	70-125	0			
1,4-Dichlorobenzene	1005	30	1000	0	100	70-125	0			
2-Butanone	823.5	200	1000	0	82.4	30-160	0			
2-Hexanone	911.5	30	1000	0	91.2	45-145	0			
4-Methyl-2-pentanone	1113	30	1000	0	111	45-145	0			
Acetone	815.5	100	1000	0	81.6	20-160	0			
Acrylonitrile	763	100	1000	0	76.3	70-135	0			
Benzene	986.5	30	1000	0	98.6	75-125	0			
Bromobenzene	1004	30	1000	0	100	65-120	0			
Bromochloromethane	1026	30	1000	0	103	70-125	0			
Bromodichloromethane	1063	30	1000	0	106	70-130	0			
Bromoform	1074	30	1000	0	107	55-135	0			
Bromomethane	1682	75	1000	0	168	30-160	0			S
Carbon disulfide	1232	30	1000	0	123	45-160	0			
Carbon tetrachloride	1235	30	1000	0	124	65-135	0			
Chlorobenzene	984.5	30	1000	0	98.4	75-125	0			
Chloroethane	1110	100	1000	0	111	40-155	0			
Chloroform	956	30	1000	0	95.6	70-125	0			
Chloromethane	970.5	100	1000	0	97	50-130	0			
cis-1,2-Dichloroethene	1010	30	1000	0	101	65-125	0			
cis-1,3-Dichloropropene	1046	30	1000	0	105	70-125	0			
Dibromochloromethane	1058	30	1000	0	106	65-135	0			
Dibromomethane	965.5	30	1000	0	96.6	75-130	0			
Dichlorodifluoromethane	1144	30	1000	0	114	35-135	0			
Ethylbenzene	1016	30	1000	0	102	75-125	0			
Hexachloroethane	1226	30	1000	0	123	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45273** Instrument ID **VMS9** Method: **SW8260**

Isopropylbenzene	1042	30	1000	0	104	75-130	0
m,p-Xylene	2029	60	2000	0	101	80-125	0
Methyl tert-butyl ether	864.5	30	1000	0	86.4	75-125	0
Methylene chloride	976.5	30	1000	0	97.6	55-145	0
Naphthalene	928.5	100	1000	0	92.8	40-140	0
n-Butylbenzene	1084	30	1000	0	108	65-140	0
n-Propylbenzene	1018	30	1000	0	102	65-135	0
o-Xylene	1010	30	1000	0	101	75-125	0
p-Isopropyltoluene	1028	30	1000	0	103	75-135	0
sec-Butylbenzene	1102	30	1000	0	110	65-130	0
Styrene	1008	30	1000	0	101	75-125	0
tert-Butylbenzene	1066	30	1000	0	107	65-130	0
Tetrachloroethene	1063	30	1000	0	106	64-140	0
Tetrahydrofuran	853.5	200	1000	0	85.4	70-135	0
Toluene	1008	30	1000	0	101	70-125	0
trans-1,2-Dichloroethene	1016	30	1000	0	102	65-135	0
trans-1,3-Dichloropropene	1031	30	1000	0	103	65-125	0
trans-1,4-Dichloro-2-butene	1025	30	1000	0	102	70-135	0
Trichloroethene	1015	30	1000	0	102	75-125	0
Trichlorofluoromethane	1162	30	1000	0	116	25-185	0
Vinyl chloride	1080	30	1000	0	108	60-125	0
Surr: 1,2-Dichloroethane-d4	*966.5*	0	*1000*	0	*96.6*	*70-130*	0
Surr: 4-Bromofluorobenzene	*1027*	0	*1000*	0	*103*	*70-130*	0
Surr: Dibromofluoromethane	*1021*	0	*1000*	0	*102*	*70-130*	0
Surr: Toluene-d8	*981.5*	0	*1000*	0	*98.2*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212171
Project: Marshall KRRI 1125-1150R 12/4/12

QC BATCH REPORT

Batch ID: **45273** Instrument ID **VMS9** Method: **SW8260**

MS Sample ID: **1212170-04A MS** Units: **µg/Kg** Analysis Date: **12/8/2012 08:57 AM**
Client ID: Run ID: **VMS9_121207B** SeqNo: **2162836** Prep Date: **12/7/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	850.5	30	1000	0	85	75-125	0			
1,1,1-Trichloroethane	1044	30	1000	0	104	70-135	0			
1,1,2,2-Tetrachloroethane	924.5	30	1000	0	92.4	55-130	0			
1,1,2-Trichloroethane	860.5	30	1000	0	86	60-125	0			
1,1-Dichloroethane	1180	30	1000	0	118	75-125	0			
1,1-Dichloroethene	1278	30	1000	0	128	65-135	0			
1,2,3-Trichlorobenzene	730.5	30	1000	0	73	60-135	0			
1,2,3-Trichloropropane	899.5	30	1000	0	90	65-130	0			
1,2,4-Trichlorobenzene	730.5	30	1000	0	73	65-130	0			
1,2,4-Trimethylbenzene	964.5	30	1000	0	96.4	65-135	0			
1,2-Dibromo-3-chloropropane	689	30	1000	0	68.9	40-135	0			
1,2-Dibromoethane	915	30	1000	0	91.5	70-125	0			
1,2-Dichlorobenzene	794	30	1000	0	79.4	75-120	0			
1,2-Dichloroethane	1039	30	1000	0	104	70-135	0			
1,2-Dichloropropane	1048	30	1000	0	105	70-120	0			
1,3,5-Trimethylbenzene	1008	30	1000	0	101	65-135	0			
1,3-Dichlorobenzene	790.5	30	1000	0	79	70-125	0			
1,4-Dichlorobenzene	785	30	1000	0	78.5	70-125	0			
2-Butanone	1249	200	1000	0	125	30-160	0			
2-Hexanone	989.5	30	1000	0	99	45-145	0			
4-Methyl-2-pentanone	1198	30	1000	0	120	45-145	0			
Acetone	2044	100	1000	207.5	184	20-160	0			S
Acrylonitrile	1214	100	1000	0	121	70-135	0			
Benzene	1070	30	1000	0	107	75-125	0			
Bromobenzene	901.5	30	1000	0	90.2	65-120	0			
Bromochloromethane	1212	30	1000	0	121	70-125	0			
Bromodichloromethane	908.5	30	1000	0	90.8	70-130	0			
Bromoform	794.5	30	1000	0	79.4	55-135	0			
Bromomethane	1190	75	1000	0	119	30-160	0			
Carbon disulfide	1126	30	1000	0	113	45-160	0			
Carbon tetrachloride	1010	30	1000	0	101	65-135	0			
Chlorobenzene	891	30	1000	0	89.1	75-125	0			
Chloroethane	415	100	1000	0	41.5	40-155	0			
Chloroform	1188	30	1000	0	119	70-125	0			
Chloromethane	1058	100	1000	0	106	50-130	0			
cis-1,2-Dichloroethene	1162	30	1000	0	116	65-125	0			
cis-1,3-Dichloropropene	830.5	30	1000	0	83	70-125	0			
Dibromochloromethane	672.5	30	1000	0	67.2	65-135	0			
Dibromomethane	1034	30	1000	0	103	75-130	0			
Dichlorodifluoromethane	1096	30	1000	0	110	35-135	0			
Ethylbenzene	920.5	30	1000	0	92	75-125	0			
Hexachloroethane	713	30	1000	0	71.3	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45273** Instrument ID **VMS9** Method: **SW8260**

Isopropylbenzene	948	30	1000	0	94.8	75-130	0	
m,p-Xylene	1886	60	2000	0	94.3	80-125	0	
Methyl tert-butyl ether	1340	30	1000	0	134	75-125	0	S
Methylene chloride	1348	30	1000	0	135	55-145	0	
Naphthalene	748.5	100	1000	0	74.8	40-140	0	
n-Butylbenzene	781.5	30	1000	0	78.2	65-140	0	
n-Propylbenzene	908	30	1000	0	90.8	65-135	0	
o-Xylene	937.5	30	1000	0	93.8	75-125	0	
p-Isopropyltoluene	856.5	30	1000	0	85.6	75-135	0	
sec-Butylbenzene	1002	30	1000	0	100	65-130	0	
Styrene	963.5	30	1000	0	96.4	75-125	0	
tert-Butylbenzene	988.5	30	1000	0	98.8	65-130	0	
Tetrachloroethene	870.5	30	1000	0	87	64-140	0	
Tetrahydrofuran	1420	200	1000	0	142	70-135	0	S
Toluene	901.5	30	1000	0	90.2	70-125	0	
trans-1,2-Dichloroethene	1214	30	1000	0	121	65-135	0	
trans-1,3-Dichloropropene	751	30	1000	0	75.1	65-125	0	
trans-1,4-Dichloro-2-butene	814	30	1000	0	81.4	70-135	0	
Trichloroethene	1014	30	1000	0	101	75-125	0	
Trichlorofluoromethane	1263	30	1000	0	126	25-185	0	
Vinyl chloride	1234	30	1000	0	123	60-125	0	
Surr: 1,2-Dichloroethane-d4	*951*	0	*1000*	0	*95.1*	*70-130*	0	
Surr: 4-Bromofluorobenzene	*1085*	0	*1000*	0	*108*	*70-130*	0	
Surr: Dibromofluoromethane	*986.5*	0	*1000*	0	*98.6*	*70-130*	0	
Surr: Toluene-d8	*867.5*	0	*1000*	0	*86.8*	*70-130*	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212171
Project: Marshall KRRI 1125-1150R 12/4/12

QC BATCH REPORT

Batch ID: **45273** Instrument ID **VMS9** Method: **SW8260**

MSD	Sample ID: **1212170-04A MSD**				Units: **µg/Kg**		Analysis Date: **12/8/2012 09:22 AM**			
Client ID:		Run ID: **VMS9_121207B**			SeqNo: **2162837**		Prep Date: **12/7/2012**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	857.5	30	1000	0	85.8	75-125	850.5	0.82	30	
1,1,1-Trichloroethane	1028	30	1000	0	103	70-135	1044	1.59	30	
1,1,2,2-Tetrachloroethane	914	30	1000	0	91.4	55-130	924.5	1.14	30	
1,1,2-Trichloroethane	854	30	1000	0	85.4	60-125	860.5	0.758	30	
1,1-Dichloroethane	1153	30	1000	0	115	75-125	1180	2.27	30	
1,1-Dichloroethene	1220	30	1000	0	122	65-135	1278	4.65	30	
1,2,3-Trichlorobenzene	787.5	30	1000	0	78.8	60-135	730.5	7.51	30	
1,2,3-Trichloropropane	894	30	1000	0	89.4	65-130	899.5	0.613	30	
1,2,4-Trichlorobenzene	789.5	30	1000	0	79	65-130	730.5	7.76	30	
1,2,4-Trimethylbenzene	943	30	1000	0	94.3	65-135	964.5	2.25	30	
1,2-Dibromo-3-chloropropane	710	30	1000	0	71	40-135	689	3	30	
1,2-Dibromoethane	899	30	1000	0	89.9	70-125	915	1.76	30	
1,2-Dichlorobenzene	825.5	30	1000	0	82.6	75-120	794	3.89	30	
1,2-Dichloroethane	1008	30	1000	0	101	70-135	1039	2.98	30	
1,2-Dichloropropane	1017	30	1000	0	102	70-120	1048	3	30	
1,3,5-Trimethylbenzene	982.5	30	1000	0	98.2	65-135	1008	2.61	30	
1,3-Dichlorobenzene	821	30	1000	0	82.1	70-125	790.5	3.79	30	
1,4-Dichlorobenzene	827	30	1000	0	82.7	70-125	785	5.21	30	
2-Butanone	1253	200	1000	0	125	30-160	1249	0.32	30	
2-Hexanone	995	30	1000	0	99.5	45-145	989.5	0.554	30	
4-Methyl-2-pentanone	1189	30	1000	0	119	45-145	1198	0.796	30	
Acetone	1962	100	1000	207.5	175	20-160	2044	4.09	30	S
Acrylonitrile	1204	100	1000	0	120	70-135	1214	0.744	30	
Benzene	1028	30	1000	0	103	75-125	1070	4	30	
Bromobenzene	893.5	30	1000	0	89.4	65-120	901.5	0.891	30	
Bromochloromethane	1174	30	1000	0	117	70-125	1212	3.27	30	
Bromodichloromethane	909	30	1000	0	90.9	70-130	908.5	0.055	30	
Bromoform	821.5	30	1000	0	82.2	55-135	794.5	3.34	30	
Bromomethane	1184	75	1000	0	118	30-160	1190	0.548	30	
Carbon disulfide	1099	30	1000	0	110	45-160	1126	2.47	30	
Carbon tetrachloride	1002	30	1000	0	100	65-135	1010	0.795	30	
Chlorobenzene	880.5	30	1000	0	88	75-125	891	1.19	30	
Chloroethane	384.5	100	1000	0	38.4	40-155	415	7.63	30	S
Chloroform	1143	30	1000	0	114	70-125	1188	3.9	30	
Chloromethane	977	100	1000	0	97.7	50-130	1058	8.01	30	
cis-1,2-Dichloroethene	1120	30	1000	0	112	65-125	1162	3.64	30	
cis-1,3-Dichloropropene	834	30	1000	0	83.4	70-125	830.5	0.421	30	
Dibromochloromethane	693.5	30	1000	0	69.4	65-135	672.5	3.07	30	
Dibromomethane	1051	30	1000	0	105	75-130	1034	1.63	30	
Dichlorodifluoromethane	1036	30	1000	0	104	35-135	1096	5.58	30	
Ethylbenzene	898.5	30	1000	0	89.8	75-125	920.5	2.42	30	
Hexachloroethane	748.5	30	1000	0	74.8	70-135	713	4.86	30	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45273** Instrument ID **VMS9** Method: **SW8260**

Isopropylbenzene	942	30	1000	0	94.2	75-130	948	0.635	30	
m,p-Xylene	1850	60	2000	0	92.5	80-125	1886	1.9	30	
Methyl tert-butyl ether	1258	30	1000	0	126	75-125	1340	6.31	30	S
Methylene chloride	1272	30	1000	0	127	55-145	1348	5.73	30	
Naphthalene	848	100	1000	0	84.8	40-140	748.5	12.5	30	
n-Butylbenzene	822	30	1000	0	82.2	65-140	781.5	5.05	30	
n-Propylbenzene	891.5	30	1000	0	89.2	65-135	908	1.83	30	
o-Xylene	919.5	30	1000	0	92	75-125	937.5	1.94	30	
p-Isopropyltoluene	889.5	30	1000	0	89	75-135	856.5	3.78	30	
sec-Butylbenzene	965.5	30	1000	0	96.6	65-130	1002	3.66	30	
Styrene	945.5	30	1000	0	94.6	75-125	963.5	1.89	30	
tert-Butylbenzene	962	30	1000	0	96.2	65-130	988.5	2.72	30	
Tetrachloroethene	845	30	1000	0	84.5	64-140	870.5	2.97	30	
Tetrahydrofuran	1368	200	1000	0	137	70-135	1420	3.73	30	S
Toluene	894.5	30	1000	0	89.4	70-125	901.5	0.78	30	
trans-1,2-Dichloroethene	1130	30	1000	0	113	65-135	1214	7.17	30	
trans-1,3-Dichloropropene	775	30	1000	0	77.5	65-125	751	3.15	30	
trans-1,4-Dichloro-2-butene	815.5	30	1000	0	81.6	70-135	814	0.184	30	
Trichloroethene	952	30	1000	0	95.2	75-125	1014	6.31	30	
Trichlorofluoromethane	1206	30	1000	0	121	25-185	1263	4.62	30	
Vinyl chloride	1176	30	1000	0	118	60-125	1234	4.73	30	
Surr: 1,2-Dichloroethane-d4	*929.5*	0	*1000*	0	*93*	*70-130*	951	*2.29*	*30*	
Surr: 4-Bromofluorobenzene	*1044*	0	*1000*	0	*104*	*70-130*	1085	*3.85*	*30*	
Surr: Dibromofluoromethane	*1011*	0	*1000*	0	*101*	*70-130*	986.5	*2.45*	*30*	
Surr: Toluene-d8	*871.5*	0	*1000*	0	*87.2*	*70-130*	867.5	*0.46*	*30*	

The following samples were analyzed in this batch:

1212171-01A	1212171-02A	1212171-03A
1212171-04A	1212171-05A	1212171-06A
1212171-07A	1212171-08A	1212171-09A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212171
Project: Marshall KRRI 1125-1150R 12/4/12

QC BATCH REPORT

Batch ID: **R113715** Instrument ID **MOIST** Method: **A2540 G**

MBLK Sample ID: **WBLKS1-R113715** Units: **% of sample** Analysis Date: **12/10/2012 03:00 PM**
Client ID: Run ID: **MOIST_121210A** SeqNo: **2164598** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	ND	0.050								

LCS Sample ID: **LCS-R113715** Units: **% of sample** Analysis Date: **12/10/2012 03:00 PM**
Client ID: Run ID: **MOIST_121210A** SeqNo: **2164594** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	100	0.050	100	0	100	99.5-100.5	0			

DUP Sample ID: **1212170-04B DUP** Units: **% of sample** Analysis Date: **12/10/2012 03:00 PM**
Client ID: Run ID: **MOIST_121210A** SeqNo: **2164575** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	79.73	0.050	0	0	0	0-0	80.02	0.363	20	

DUP Sample ID: **1212288-02B DUP** Units: **% of sample** Analysis Date: **12/10/2012 03:00 PM**
Client ID: Run ID: **MOIST_121210A** SeqNo: **2166289** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	15.18	0.050	0	0	0	0-0	15.19	0.0659	20	

The following samples were analyzed in this batch:

1212171-01B	1212171-03B	1212171-04B
1212171-05B	1212171-06B	1212171-07B
1212171-08B	1212171-09B	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

1212171

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

COC # ENBRIDGE_120412_GMK1 | Task: KRRI_1125,1150
Total # of Samples: 9 | Event Complete?

Lab Information		Project Information		Other Information	
Lab Name:	ALS Laboratory Group	Site ID #:		Send Invoice to:	Enbridge Energy - ATTN Accounts Payable
Address:	3352 128th Ave. Holland, MI 49424-9263	Project #	60162778	Address:	1100 Louisiana Suite 1100
		Site Address	5555 Glenwood Parkway SE Suite 200	City/State:	Houson, TX — Phone #: 713-821-2000
Lab PM:	Ann Preston	City	Grand Rapids — State, Zip: MI	PO #	
Phone/Fax:	1-616-399-6070/1-616-399-6185	Site PM Name	[redacted]	Send EDD to	
Lab PM email	ann.preston@alsglobal.com	Phone/Fax:	[redacted]	CC Hardcopy report	
Applicable Lab Quote #:		Site PM Email:	Bryan.Stiemsma@aecom.com	CC Hardcopy report	

Turn Around Time: 5 Day | Rush: No

BILING CODE: 6.00

ITEM #	SAMPLE ID (Samples IDs MUST BE UNIQUE)	SAMPLE LOCATION	MATRIX CODE	G=GRAB C=COMP	SAMPLE DATE	#OF CONTAINERS	Comments/Lab Sample I.D.	Preservative	None	None	None	None	MeOH										
								Analysis	% Moisture	Be,Mo,V,Ni by 6020	ORO,DRO	PNAs by 8270	VOC by 5035/8260										
1	SBKR1125R502S120412S007	SBKR1125R502	SO	G	12/04/2012 16:20	3			X	X	X	X	X										
2	SBKR1125R502T120412MX	SBKR1125R502	SQ	G	12/04/2012 00:00	1	TRIP BLANK						X										
3	SBKR1150R502S120412S007	SBKR1150R502	SO	G	12/04/2012 08:13	3			X	X	X	X	X										
4	SBKR1150R503S120412S007	SBKR1150R503	SO	G	12/04/2012 09:02	3			X	X	X	X	X										
5	SBKR1150R504S120412S006	SBKR1150R504	SO	G	12/04/2012 10:22	3			X	X	X	X	X										
6	SBKR1150R505S120412S006	SBKR1150R505	SO	G	12/04/2012 11:16	3			X	X	X	X	X										
7	SBKR1150R506S120412S006	SBKR1150R506	SO	G	12/04/2012 14:05	3			X	X	X	X	X										
8	SBKR1150R506S120412S014	SBKR1150R506	SO	G	12/04/2012 14:12	3			X	X	X	X	X										
9	SBKR1150R507S120412S005	SBKR1150R507	SO	G	12/04/2012 15:20	3			X	X	X	X	X										

Additional Comments/Special Instructions:

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
[signature]	12/5/12	0755	[signature]	12-5-12	0755
[signature]	12/5/12	0800	[signature]	12/5/12	0800

Sample Receipt Conditions: 2.0°C

	Temp in °C	Samples on Ice?	Sample Intact?	Trip Blank?
		(Y)/N	(Y)/N	(Y)/N
		Y/N	Y/N	Y/N
		Y/N	Y/N	Y/N
		Y/N	Y/N	Y/N

SHIPPING INFO: Company: | Tracking #:

SAMPLER NAME AND SIGNATURE: PRINT Name of SAMPLER: GERRY KRAMER (GMK1) | SIGNATURE of SAMPLER: | DATE Signed: | Time:

ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **05-Dec-12 08:00**

Work Order: **1212171** Received by: **PD**

Checklist completed by Diane Shaw (eSignature) 05-Dec-12 (Date) Reviewed by: Ann Preston (eSignature) 06-Dec-12 (Date)

Matrices: Soil
Carrier name: ALSHN

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.0 c		
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	12/5/2012 4:22:05 PM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL

Date: 12-5-12 Time: 8:00

Name:

Company:

Seal Broken By:

Date:

2.0c

S01(c)

10-Dec-2012

Mike Wolf
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall KRRI 2075R SPLP 4/30/12** Work Order: **1212205**

Dear Mike,

ALS Environmental received 1 sample on 06-Dec-2012 for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 10.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

Certificate No: MN331938

ALS Group USA, Corp

Date: 10-Dec-12

Client: AECOM Environment
Project: Marshall KRRI 2075R SPLP 4/30/12
Work Order: **1212205**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1212205-01	SBKR2075R515S043012S003	Splp Extract		4/30/2012 16:16	12/6/2012	☐

ALS Group USA, Corp

Date: 10-Dec-12

Client: AECOM Environment
Project: Marshall KRRI 2075R SPLP 4/30/12
Work Order: 1212205

Case Narrative

Batch 45230 sample 1212205-01 was activated for SPLP Molybdenum after the hold time had expired. Results should be considered as estimated.

ALS Group USA, Corp

Date: 10-Dec-12

Client: AECOM Environment
Project: Marshall KRRI 2075R SPLP 4/30/12
WorkOrder: **1212205**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
SD	Serial Dilution
TDL	Target Detection Limit

Units Reported	Description
mg/L	Milligrams per Liter

ALS Group USA, Corp

Date: *10-Dec-12*

Client: AECOM Environment
Project: Marshall KRRI 2075R SPLP 4/30/12
Work Order: 1212205
Sample ID: SBKR2075R515S043012S003
Lab ID: 1212205-01
Collection Date: 4/30/2012 04:16 PM
Matrix: SPLP EXTRACT

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/7/2012**	Analyst: **RH**
Molybdenum	ND	H	0.0050	mg/L	1	12/8/2012 03:10 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 10-Dec-12

Client: AECOM Environment

QC BATCH REPORT

Work Order: 1212205

Project: Marshall KRRI 2075R SPLP 4/30/12

Batch ID: **45230** Instrument ID **ICPMS2** Method: **SW6020A**

MBLK Sample ID: **MBLK-45230-45230** Units: **mg/L** Analysis Date: **12/7/2012 02:48 PM**

Client ID: Run ID: **ICPMS2_121207A** SeqNo: **2161998** Prep Date: **12/7/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Molybdenum	ND	0.0050								

LCS Sample ID: **LCS-45230-45230** Units: **mg/L** Analysis Date: **12/7/2012 02:54 PM**

Client ID: Run ID: **ICPMS2_121207A** SeqNo: **2161999** Prep Date: **12/7/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Molybdenum	0.09284	0.0050	0.1	0	92.8	80-120	0			

MS Sample ID: **1212169-02AMS** Units: **mg/L** Analysis Date: **12/7/2012 03:04 PM**

Client ID: Run ID: **ICPMS2_121207A** SeqNo: **2162001** Prep Date: **12/7/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Molybdenum	0.9596	0.050	1	0.00125	95.8	75-125	0			

MSD Sample ID: **1212169-02AMSD** Units: **mg/L** Analysis Date: **12/7/2012 03:09 PM**

Client ID: Run ID: **ICPMS2_121207A** SeqNo: **2162002** Prep Date: **12/7/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Molybdenum	0.9484	0.050	1	0.00125	94.7	75-125	0.9596	1.17	20	

The following samples were analyzed in this batch: 1212205-01A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

1212205
1005037

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

COC #	ENBRIDGE_043012_ADM1	Task: KRRI_1450L, 2075R
	Total # of Samples: 15	Event Complete?

Lab Information:
Lab Name: ALS Laboratory Group
Address: 3352 128th Ave. Holland, MI 49424-9263
Lab PM: Ann Preston
Phone/Fax: 1-616-399-6070/1-616-399-6185
Lab PM email: ann.preston@alsglobal.com
Applicable Lab Quote #:

Project Information:
Site ID #:
Project #: 60162778
Site Address: 5555 Glenwood Parkway SE Suite 200
City: Grand Rapids State, Zip: MI
Site PM Name: [redacted]
Phone/Fax:
Site PM Email: Bryan.Stiemsma@aecom.com

Other Information:
Send Invoice to: Enbridge Energy - ATTN Accounts Payable
Address: 1100 Louisiana Suite 1100
City/State: Houson, TX Phone #: 713-821-2000
PO #:
Send EDD to:
CC Hardcopy report:
CC Hardcopy report:

Turn Around Time: 5 Day | Rush: No

BILLING CODE: 6.00

ITEM #	SAMPLE ID (Samples IDs MUST BE UNIQUE)	SAMPLE LOCATION	MATRIX CODE	G=GRAB C=COMP	SAMPLE DATE	#OF CONTAINERS	Comments/Lab Sample I.D.	Analysis: % Moisture	Be,Mo,V,Ni by 6020	ORO,DRO	PNAs by 8270										
	Preservative:							None	None	None	None										
1	SBKR1450L501S043012S005	SBKR1450L501	SO	G	04/30/2012 13:38	1		X	X	X	X										
2	SBKR1450L501D043012S005	SBKR1450L501	SO	G	04/30/2012 13:38	1	DUPLICATE	X	X	X	X										
3	SBKR1450L502S043012S004	SBKR1450L502	SO	G	04/30/2012 13:55	2	MS/MD	X	X	X	X										
4	SBKR1450L503S043012S005	SBKR1450L503	SO	G	04/30/2012 15:45	1		X	X	X	X										
5	SBKR1450L504S043012S005	SBKR1450L504	SO	G	04/30/2012 16:00	1		X	X	X	X										
6	SBKR2075R507S043012S006	SBKR2075R507	SO	G	04/30/2012 10:25	1		X	X	X	X										
7	SBKR2075R508S043012S005	SBKR2075R508	SO	G	04/30/2012 10:43	1		X	X	X	X										
8	SBKR2075R509S043012S006	SBKR2075R509	SO	G	04/30/2012 10:53	1		X	X	X	X										
9	SBKR2075R510S043012S005	SBKR2075R510	SO	G	04/30/2012 11:08	1		X	X	X	X										
10	SBKR2075R511S043012S007	SBKR2075R511	SO	G	04/30/2012 13:17	1		X	X	X	X										
11	SBKR2075R512S043012S006	SBKR2075R512	SO	G	04/30/2012 14:57	1		X	X	X	X										
12	SBKR2075R513S043012S005	SBKR2075R513	SO	G	04/30/2012 15:12	1		X	X	X	X										
13	SBKR2075R514S043012S005	SBKR2075R514	SO	G	04/30/2012 15:27	1		X	X	X	X										
14	SBKR2075R515S043012S003	SBKR2075R515	SO	G	04/30/2012 16:16	1		X	X	X	X	X									
15	SBKR2075R516S043012S008	SBKR2075R516	SO	G	04/30/2012 16:30	1	MDEQ SPLIT	X	X	X	X										

SPLIT w 1012/12

Additional Comments/Special Instructions:

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
[signature]	4-30-12	1705	[signature]	4-30-12	1705
[signature]	5-1-12	1130	[signature]	5-1-12	1130

Sample Receipt Conditions

Temp in °C	Samples on Ice?	Sample Intact?	Trip Blank?
3.4	(Y)/N	(Y)/N	(Y)/N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N

SHIPPING INFO
Company:
Tracking #:

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: AMBER MCDOUGLE (ADM1)
SIGNATURE of SAMPLER:
DATE Signed:
Time:

Ann Preston

From: Wolf, Michael G. [Michael.Wolf@aecom.com]
Sent: Thursday, December 06, 2012 9:16 AM
To: Ann Preston
Subject: RE: Parcels KN-D-296 & 297 Soil SPLP

Hi Ann - The AECOM id is SBKR2075R515S043012S003 with a molybdenum result of 4.5 mg/Kg. The ALS id is 1205037-14.

Thanks

Mike

-----Original Message-----
From: Ann Preston [mailto:Ann.Preston@ALSGlobal.com]
Sent: Wednesday, December 05, 2012 6:44 PM
To: Wolf, Michael G.
Subject: Re: Parcels KN-D-296 & 297 Soil SPLP

Please send me an email confirmation with the real ID and ALS ID. I will include it with the paperwork. I am not trusting me anymore to remember correctly or record it correctly!

Sent from my iPhone

On Dec 5, 2012, at 3:00 PM, "Wolf, Michael G." <Michael.Wolf@aecom.com> wrote:

> You mean 1205037-14 not -15, right?
>
> -----Original Message-----
> From: Ann Preston [mailto:Ann.Preston@ALSGlobal.com]
> Sent: Wednesday, December 05, 2012 2:44 PM
> To: Freed, Ralph; Wolf, Michael G.
> Subject: RE: Parcels KN-D-296 & 297 Soil SPLP
>
> The fault is mine. Mike asked for sample 1205037-14, and I wrote down 1205037-04. Totally my fault, but we ran the wrong sample. Do you still want us to run 1205037-15, no charge. The sample is past the 6 months hold time though.
>
> Ann
>
> -----Original Message-----
> From: Freed, Ralph [mailto:Ralph.Freed@aecom.com]
> Sent: Wednesday, December 05, 2012 1:26 PM
> To: Wolf, Michael G.; Ann Preston
> Subject: FW: Parcels KN-D-296 & 297 Soil SPLP
>
> Any idea why we did not do SPLP for SBKR2075R 515S 043012S003 @ 4.5 mg/kg when we did SPLP for SBKR2075R 502S 043012S007 @ 1.7, SBKR2075R 504S 043012S004 @ 2.2, and SBKR2075R 518S 043012S005 @ 2.1??
>
> -----Original Message-----
> From: Doyle, Conan
> Sent: Wednesday, December 05, 2012 10:56 AM
> To: Freed, Ralph
> Subject: Parcels KN-D-296 & 297 Soil SPLP
>
> Ralph,
> I have SPLP data for the three of the four.
> No SPLP was run on Sample ID "SBKR2075R 515S 043012S003".
> I'll shoot the table over to you shortly for review.
> Thank you,
> Conan

ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **06-Dec-12 00:00**

Work Order: **1212205** Received by: **AP**

Checklist completed by Ann Preston (eSignature) 06-Dec-12 (Date) Reviewed by: Ann Preston (eSignature) 06-Dec-12 (Date)

Matrices: soil
Carrier name: ALSHN

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	4°C		
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:			
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:	-		

Login Notes: Reactivated from off-site storage

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

34°C

ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL

Date: 4/30/12 Time: 1715
Name: Cindy McCarty
Company: AECOM

Seal Broken By:

Date:

17-Dec-2012

Bryan Stiemsma
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall KRRI 1150R 12/5/12** Work Order: **1212321**

Dear Bryan,

ALS Environmental received 5 samples on 07-Dec-2012 03:35 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 52.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

Certificate No: MN331938

ALS Group USA, Corp

Date: 17-Dec-12

Client: AECOM Environment
Project: Marshall KRRI 1150R 12/5/12
Work Order: **1212321**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1212321-01	SBKR1150R508S120512S007	Soil		12/5/2012 08:20	12/7/2012 15:35	☐
1212321-02	SBKR1150R508D120512S007	Soil		12/5/2012 08:20	12/7/2012 15:35	☐
1212321-03	SBKR1150R509S120512S006	Soil		12/5/2012 09:32	12/7/2012 15:35	☐
1212321-04	SBKR1150R510S120512S006	Soil		12/5/2012 10:39	12/7/2012 15:35	☐
1212321-05	SBKR1150R510T120512MX	Soil		12/5/2012	12/7/2012 15:35	☐

ALS Group USA, Corp

Date: 17-Dec-12

Client: AECOM Environment
Project: Marshall KRRI 1150R 12/5/12
Work Order: 1212321

Case Narrative

The extraction procedure used to prepare the soil samples for DRO and PAH analyses in this work order was a modification of the standard 3541 procedure. At the request of the client, a 10 gram sample aliquot dried with hydromatrix is used for extraction as outlined in ALS SOP HN-EXT-003(EN)-R01. All samples extracted starting on 10/1/2011 were prepared using this modified SOP.

Batch 45312B MS/MSD data for DRO/ORO is not related to this project's samples. No data requires qualification.

Batch 45353 sample SBKR1150R510S120512S006 MS recovery for Vanadium was above control limits. Both the MSD recovery and RPD met quality control criteria. No data requires qualification.

Batch 45356 LCS recoveries for Chloromethane, MTBE, and Vinyl Chloride were above control limits, but all samples in this quality control batch were ND for these compounds. No data requires qualification.

Batch 45311sample 1212321-01 through 1212321-04 PAH internal standard recoveries were below the lower control limit, but >20%. Per the client’s request, the results associated with the IS are being reported and should be considered as estimated for the PAH compounds marked with an asterisk.

ALS Group USA, Corp

Date: 17-Dec-12

Client: AECOM Environment
Project: Marshall KRRI 1150R 12/5/12
WorkOrder: **1212321**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
SD	Serial Dilution
TDL	Target Detection Limit

Units Reported	Description
% of sample	Percent of Sample
µg/Kg	Micrograms per Kilogram
µg/Kg-dry	Micrograms per Kilogram Dry Weight
mg/Kg-dry	Milligrams per Kilogram Dry Weight

ALS Group USA, Corp

Date: *17-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1150R508S120512S007
Work Order:	1212321	**Collection Date:**	12/5/2012 8:20:00 AM
Project:	Marshall KRRI 1150R 12/5/12		
Lab ID:	1212321-01	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/11/2012**		Analyst: **CW**
DRO (C10-C20)	**99**	**50**	**4.0**		**mg/Kg-dry**	1	12/12/2012
ORO (C20-C34)	**440**	**99**	**4.0**		**mg/Kg-dry**	1	12/12/2012
Surr: 4-Terphenyl-d14	*82.2*	*39-115*			*%REC*	1	12/12/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/12/2012**		Analyst: **CES**
Beryllium	ND	3.0	0.50		mg/Kg-dry	4	12/12/2012
Molybdenum	ND	7.6	1.0		mg/Kg-dry	4	12/12/2012
Nickel	**16**	**7.6**	**1.0**		**mg/Kg-dry**	4	12/12/2012
Vanadium	**17**	**7.6**	**1.0**		**mg/Kg-dry**	4	12/12/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/11/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/12/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/12/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/12/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/12/2012
Benzo(a)anthracene	ND	330	330		µg/Kg-dry	1	12/12/2012
Benzo(a)pyrene	ND	330	330	*	µg/Kg-dry	1	12/12/2012
Benzo(b)fluoranthene	ND	330	330	*	µg/Kg-dry	1	12/12/2012
Benzo(g,h,i)perylene	ND	330	330	*	µg/Kg-dry	1	12/12/2012
Benzo(k)fluoranthene	ND	330	330	*	µg/Kg-dry	1	12/12/2012
Chrysene	ND	330	330		µg/Kg-dry	1	12/12/2012
Dibenzo(a,h)anthracene	ND	330	330	*	µg/Kg-dry	1	12/12/2012
Fluoranthene	**380**	**330**	**330**		**µg/Kg-dry**	1	12/12/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/12/2012
Indeno(1,2,3-cd)pyrene	ND	330	330	*	µg/Kg-dry	1	12/12/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/12/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/12/2012
Pyrene	**400**	**330**	**330**		**µg/Kg-dry**	1	12/12/2012
Surr: 2,4,6-Tribromophenol	*104*	*34-140*			*%REC*	1	12/12/2012
Surr: 2-Fluorobiphenyl	*82.1*	*12-100*			*%REC*	1	12/12/2012
Surr: 2-Fluorophenol	*91.3*	*33-117*			*%REC*	1	12/12/2012
Surr: 4-Terphenyl-d14	*122*	*25-137*			*%REC*	1	12/12/2012
Surr: Nitrobenzene-d5	*80.9*	*37-107*			*%REC*	1	12/12/2012
Surr: Phenol-d6	*74.6*	*40-106*			*%REC*	1	12/12/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/12/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	160	100		µg/Kg-dry	1	12/12/2012
1,1,1-Trichloroethane	ND	160	50		µg/Kg-dry	1	12/12/2012
1,1,2,2-Tetrachloroethane	ND	160	50		µg/Kg-dry	1	12/12/2012
1,1,2-Trichloroethane	ND	160	50		µg/Kg-dry	1	12/12/2012
1,1-Dichloroethane	ND	160	50		µg/Kg-dry	1	12/12/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-12*

Client: AECOM Environment
Work Order: 1212321
Project: Marshall KRRI 1150R 12/5/12
Lab ID: 1212321-01

Client Sample ID: SBKR1150R508S120512S007
Collection Date: 12/5/2012 8:20:00 AM
Matrix: SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	160	50		µg/Kg-dry	1	12/12/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/12/2012
1,2,3-Trichloropropane	ND	160	100		µg/Kg-dry	1	12/12/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/12/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/12/2012
1,2,4-Trimethylbenzene	ND	160	100		µg/Kg-dry	1	12/12/2012
1,2-Dibromo-3-chloropropane	ND	160	10		µg/Kg-dry	1	12/12/2012
1,2-Dibromoethane	ND	160	20		µg/Kg-dry	1	12/12/2012
1,2-Dichlorobenzene	ND	160	100		µg/Kg-dry	1	12/12/2012
1,2-Dichloroethane	ND	160	50		µg/Kg-dry	1	12/12/2012
1,2-Dichloropropane	ND	160	50		µg/Kg-dry	1	12/12/2012
1,3,5-Trimethylbenzene	ND	160	100		µg/Kg-dry	1	12/12/2012
1,3-Dichlorobenzene	ND	160	100		µg/Kg-dry	1	12/12/2012
1,4-Dichlorobenzene	ND	160	100		µg/Kg-dry	1	12/12/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/12/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/12/2012
2-Methylnaphthalene	ND	550	330		µg/Kg-dry	1	12/12/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/12/2012
Acetone	ND	1,400	1,000		µg/Kg-dry	1	12/12/2012
Acrylonitrile	ND	160	100		µg/Kg-dry	1	12/12/2012
Benzene	ND	160	50		µg/Kg-dry	1	12/12/2012
Bromobenzene	ND	160	100		µg/Kg-dry	1	12/12/2012
Bromochloromethane	ND	160	100		µg/Kg-dry	1	12/12/2012
Bromodichloromethane	ND	160	100		µg/Kg-dry	1	12/12/2012
Bromoform	ND	160	100		µg/Kg-dry	1	12/12/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/12/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/12/2012
Carbon tetrachloride	ND	160	50		µg/Kg-dry	1	12/12/2012
Chlorobenzene	ND	160	50		µg/Kg-dry	1	12/12/2012
Chloroethane	ND	550	250		µg/Kg-dry	1	12/12/2012
Chloroform	ND	160	50		µg/Kg-dry	1	12/12/2012
Chloromethane	ND	270	250		µg/Kg-dry	1	12/12/2012
cis-1,2-Dichloroethene	ND	160	50		µg/Kg-dry	1	12/12/2012
cis-1,3-Dichloropropene	ND	160	50		µg/Kg-dry	1	12/12/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/12/2012
Dibromochloromethane	ND	160	100		µg/Kg-dry	1	12/12/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/12/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/12/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/12/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/12/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/12/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1150R508S120512S007
Work Order:	1212321	**Collection Date:**	12/5/2012 8:20:00 AM
Project:	Marshall KRRI 1150R 12/5/12		
Lab ID:	1212321-01	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	160	50		µg/Kg-dry	1	12/12/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/12/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/12/2012
m,p-Xylene	ND	330	100		µg/Kg-dry	1	12/12/2012
Methyl iodide	ND	160	100		µg/Kg-dry	1	12/12/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/12/2012
Methylene chloride	ND	380	100		µg/Kg-dry	1	12/12/2012
Naphthalene	ND	550	330		µg/Kg-dry	1	12/12/2012
n-Butylbenzene	ND	160	50		µg/Kg-dry	1	12/12/2012
n-Propylbenzene	ND	160	100		µg/Kg-dry	1	12/12/2012
o-Xylene	ND	160	50		µg/Kg-dry	1	12/12/2012
p-Isopropyltoluene	ND	160	100		µg/Kg-dry	1	12/12/2012
sec-Butylbenzene	ND	160	50		µg/Kg-dry	1	12/12/2012
Styrene	ND	160	50		µg/Kg-dry	1	12/12/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/12/2012
tert-Butylbenzene	ND	160	50		µg/Kg-dry	1	12/12/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/12/2012
Tetrachloroethene	ND	160	50		µg/Kg-dry	1	12/12/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/12/2012
Toluene	ND	160	100		µg/Kg-dry	1	12/12/2012
trans-1,2-Dichloroethene	ND	160	50		µg/Kg-dry	1	12/12/2012
trans-1,3-Dichloropropene	ND	160	50		µg/Kg-dry	1	12/12/2012
trans-1,4-Dichloro-2-butene	ND	160	50		µg/Kg-dry	1	12/12/2012
Trichloroethene	ND	160	50		µg/Kg-dry	1	12/12/2012
Trichlorofluoromethane	ND	160	100		µg/Kg-dry	1	12/12/2012
Vinyl chloride	ND	160	40		µg/Kg-dry	1	12/12/2012
Surr: 1,2-Dichloroethane-d4	*100*	*70-130*			*%REC*	1	12/12/2012
Surr: 4-Bromofluorobenzene	*90.6*	*70-130*			*%REC*	1	12/12/2012
Surr: Dibromofluoromethane	*97.8*	*70-130*			*%REC*	1	12/12/2012
Surr: Toluene-d8	*98.8*	*70-130*			*%REC*	1	12/12/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**82**	**0.050**	**0**		**% of sample**	1	12/11/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1150R508D120512S007
Work Order:	1212321	**Collection Date:**	12/5/2012 8:20:00 AM
Project:	Marshall KRRI 1150R 12/5/12		
Lab ID:	1212321-02	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/11/2012**		Analyst: **CW**
DRO (C10-C20)	**61**	**53**	**4.0**		**mg/Kg-dry**	1	12/12/2012
ORO (C20-C34)	**720**	**110**	**4.0**		**mg/Kg-dry**	1	12/12/2012
Surr: 4-Terphenyl-d14	*83.8*	*39-115*			*%REC*	1	12/12/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/12/2012**		Analyst: **CES**
Beryllium	ND	3.1	0.50		mg/Kg-dry	4	12/12/2012
Molybdenum	ND	7.8	1.0		mg/Kg-dry	4	12/12/2012
Nickel	**15**	**7.8**	**1.0**		**mg/Kg-dry**	4	12/12/2012
Vanadium	**15**	**7.8**	**1.0**		**mg/Kg-dry**	4	12/12/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/11/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/12/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/12/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/12/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/12/2012
Benzo(a)anthracene	ND	330	330		µg/Kg-dry	1	12/12/2012
Benzo(a)pyrene	ND	330	330	*	µg/Kg-dry	1	12/12/2012
Benzo(b)fluoranthene	ND	330	330	*	µg/Kg-dry	1	12/12/2012
Benzo(g,h,i)perylene	ND	330	330	*	µg/Kg-dry	1	12/12/2012
Benzo(k)fluoranthene	ND	330	330	*	µg/Kg-dry	1	12/12/2012
Chrysene	ND	330	330		µg/Kg-dry	1	12/12/2012
Dibenzo(a,h)anthracene	ND	330	330	*	µg/Kg-dry	1	12/12/2012
Fluoranthene	**360**	**330**	**330**		**µg/Kg-dry**	1	12/12/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/12/2012
Indeno(1,2,3-cd)pyrene	ND	330	330	*	µg/Kg-dry	1	12/12/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/12/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/12/2012
Pyrene	**400**	**330**	**330**		**µg/Kg-dry**	1	12/12/2012
Surr: 2,4,6-Tribromophenol	*109*	*34-140*			*%REC*	1	12/12/2012
Surr: 2-Fluorobiphenyl	*89.9*	*12-100*			*%REC*	1	12/12/2012
Surr: 2-Fluorophenol	*98.8*	*33-117*			*%REC*	1	12/12/2012
Surr: 4-Terphenyl-d14	*123*	*25-137*			*%REC*	1	12/12/2012
Surr: Nitrobenzene-d5	*86.1*	*37-107*			*%REC*	1	12/12/2012
Surr: Phenol-d6	*79.0*	*40-106*			*%REC*	1	12/12/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/12/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	160	100		µg/Kg-dry	1	12/12/2012
1,1,1-Trichloroethane	ND	160	50		µg/Kg-dry	1	12/12/2012
1,1,2,2-Tetrachloroethane	ND	160	50		µg/Kg-dry	1	12/12/2012
1,1,2-Trichloroethane	ND	160	50		µg/Kg-dry	1	12/12/2012
1,1-Dichloroethane	ND	160	50		µg/Kg-dry	1	12/12/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1150R508D120512S007
Work Order:	1212321	**Collection Date:**	12/5/2012 8:20:00 AM
Project:	Marshall KRRI 1150R 12/5/12		
Lab ID:	1212321-02	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	160	50		µg/Kg-dry	1	12/12/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/12/2012
1,2,3-Trichloropropane	ND	160	100		µg/Kg-dry	1	12/12/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/12/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/12/2012
1,2,4-Trimethylbenzene	ND	160	100		µg/Kg-dry	1	12/12/2012
1,2-Dibromo-3-chloropropane	ND	160	10		µg/Kg-dry	1	12/12/2012
1,2-Dibromoethane	ND	160	20		µg/Kg-dry	1	12/12/2012
1,2-Dichlorobenzene	ND	160	100		µg/Kg-dry	1	12/12/2012
1,2-Dichloroethane	ND	160	50		µg/Kg-dry	1	12/12/2012
1,2-Dichloropropane	ND	160	50		µg/Kg-dry	1	12/12/2012
1,3,5-Trimethylbenzene	ND	160	100		µg/Kg-dry	1	12/12/2012
1,3-Dichlorobenzene	ND	160	100		µg/Kg-dry	1	12/12/2012
1,4-Dichlorobenzene	ND	160	100		µg/Kg-dry	1	12/12/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/12/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/12/2012
2-Methylnaphthalene	ND	550	330		µg/Kg-dry	1	12/12/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/12/2012
Acetone	ND	1,400	1,000		µg/Kg-dry	1	12/12/2012
Acrylonitrile	ND	160	100		µg/Kg-dry	1	12/12/2012
Benzene	ND	160	50		µg/Kg-dry	1	12/12/2012
Bromobenzene	ND	160	100		µg/Kg-dry	1	12/12/2012
Bromochloromethane	ND	160	100		µg/Kg-dry	1	12/12/2012
Bromodichloromethane	ND	160	100		µg/Kg-dry	1	12/12/2012
Bromoform	ND	160	100		µg/Kg-dry	1	12/12/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/12/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/12/2012
Carbon tetrachloride	ND	160	50		µg/Kg-dry	1	12/12/2012
Chlorobenzene	ND	160	50		µg/Kg-dry	1	12/12/2012
Chloroethane	ND	550	250		µg/Kg-dry	1	12/12/2012
Chloroform	ND	160	50		µg/Kg-dry	1	12/12/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/12/2012
cis-1,2-Dichloroethene	ND	160	50		µg/Kg-dry	1	12/12/2012
cis-1,3-Dichloropropene	ND	160	50		µg/Kg-dry	1	12/12/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/12/2012
Dibromochloromethane	ND	160	100		µg/Kg-dry	1	12/12/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/12/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/12/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/12/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/12/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/12/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: AECOM Environment **Client Sample ID:** SBKR1150R508D120512S007
Work Order: 1212321 **Collection Date:** 12/5/2012 8:20:00 AM
Project: Marshall KRRI 1150R 12/5/12
Lab ID: 1212321-02 **Matrix:** SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	160	50		µg/Kg-dry	1	12/12/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/12/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/12/2012
m,p-Xylene	ND	330	100		µg/Kg-dry	1	12/12/2012
Methyl iodide	ND	160	100		µg/Kg-dry	1	12/12/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/12/2012
Methylene chloride	ND	160	100		µg/Kg-dry	1	12/12/2012
Naphthalene	ND	550	330		µg/Kg-dry	1	12/12/2012
n-Butylbenzene	ND	160	50		µg/Kg-dry	1	12/12/2012
n-Propylbenzene	ND	160	100		µg/Kg-dry	1	12/12/2012
o-Xylene	ND	160	50		µg/Kg-dry	1	12/12/2012
p-Isopropyltoluene	ND	160	100		µg/Kg-dry	1	12/12/2012
sec-Butylbenzene	ND	160	50		µg/Kg-dry	1	12/12/2012
Styrene	ND	160	50		µg/Kg-dry	1	12/12/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/12/2012
tert-Butylbenzene	ND	160	50		µg/Kg-dry	1	12/12/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/12/2012
Tetrachloroethene	ND	160	50		µg/Kg-dry	1	12/12/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/12/2012
Toluene	ND	160	100		µg/Kg-dry	1	12/12/2012
trans-1,2-Dichloroethene	ND	160	50		µg/Kg-dry	1	12/12/2012
trans-1,3-Dichloropropene	ND	160	50		µg/Kg-dry	1	12/12/2012
trans-1,4-Dichloro-2-butene	ND	160	50		µg/Kg-dry	1	12/12/2012
Trichloroethene	ND	160	50		µg/Kg-dry	1	12/12/2012
Trichlorofluoromethane	ND	160	100		µg/Kg-dry	1	12/12/2012
Vinyl chloride	ND	160	40		µg/Kg-dry	1	12/12/2012
Surr: 1,2-Dichloroethane-d4	*98.0*	*70-130*			*%REC*	1	12/12/2012
Surr: 4-Bromofluorobenzene	*91.0*	*70-130*			*%REC*	1	12/12/2012
Surr: Dibromofluoromethane	*95.0*	*70-130*			*%REC*	1	12/12/2012
Surr: Toluene-d8	*96.5*	*70-130*			*%REC*	1	12/12/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**82**	**0.050**	**0**		**% of sample**	1	12/11/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1150R509S120512S006
Work Order:	1212321	**Collection Date:**	12/5/2012 9:32:00 AM
Project:	Marshall KRRI 1150R 12/5/12		
Lab ID:	1212321-03	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/11/2012**		Analyst: **CW**
DRO (C10-C20)	**54**	**50**	**4.0**		**mg/Kg-dry**	1	12/12/2012
ORO (C20-C34)	**660**	**100**	**4.0**		**mg/Kg-dry**	1	12/12/2012
Surr: 4-Terphenyl-d14	*83.1*	*39-115*			*%REC*	1	12/12/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/12/2012**		Analyst: **CES**
Beryllium	ND	3.2	0.50		mg/Kg-dry	4	12/12/2012
Molybdenum	ND	8.1	1.0		mg/Kg-dry	4	12/12/2012
Nickel	**22**	**8.1**	**1.0**		**mg/Kg-dry**	4	12/12/2012
Vanadium	**35**	**8.1**	**1.0**		**mg/Kg-dry**	4	12/12/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/11/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/12/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/12/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/12/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/12/2012
Benzo(a)anthracene	**530**	**330**	**330**		**µg/Kg-dry**	1	12/12/2012
Benzo(a)pyrene	ND	330	330	*	µg/Kg-dry	1	12/12/2012
Benzo(b)fluoranthene	ND	330	330	*	µg/Kg-dry	1	12/12/2012
Benzo(g,h,i)perylene	ND	330	330	*	µg/Kg-dry	1	12/12/2012
Benzo(k)fluoranthene	ND	330	330	*	µg/Kg-dry	1	12/12/2012
Chrysene	**610**	**330**	**330**		**µg/Kg-dry**	1	12/12/2012
Dibenzo(a,h)anthracene	ND	330	330	*	µg/Kg-dry	1	12/12/2012
Fluoranthene	**640**	**330**	**330**		**µg/Kg-dry**	1	12/12/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/12/2012
Indeno(1,2,3-cd)pyrene	ND	330	330	*	µg/Kg-dry	1	12/12/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/12/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/12/2012
Pyrene	**870**	**330**	**330**		**µg/Kg-dry**	1	12/12/2012
Surr: 2,4,6-Tribromophenol	*107*	*34-140*			*%REC*	1	12/12/2012
Surr: 2-Fluorobiphenyl	*78.1*	*12-100*			*%REC*	1	12/12/2012
Surr: 2-Fluorophenol	*87.1*	*33-117*			*%REC*	1	12/12/2012
Surr: 4-Terphenyl-d14	*122*	*25-137*			*%REC*	1	12/12/2012
Surr: Nitrobenzene-d5	*78.0*	*37-107*			*%REC*	1	12/12/2012
Surr: Phenol-d6	*79.9*	*40-106*			*%REC*	1	12/12/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/12/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	160	100		µg/Kg-dry	1	12/12/2012
1,1,1-Trichloroethane	ND	160	50		µg/Kg-dry	1	12/12/2012
1,1,2,2-Tetrachloroethane	ND	160	50		µg/Kg-dry	1	12/12/2012
1,1,2-Trichloroethane	ND	160	50		µg/Kg-dry	1	12/12/2012
1,1-Dichloroethane	ND	160	50		µg/Kg-dry	1	12/12/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1150R509S120512S006
Work Order:	1212321	**Collection Date:**	12/5/2012 9:32:00 AM
Project:	Marshall KRRI 1150R 12/5/12		
Lab ID:	1212321-03	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	160	50		µg/Kg-dry	1	12/12/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/12/2012
1,2,3-Trichloropropane	ND	160	100		µg/Kg-dry	1	12/12/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/12/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/12/2012
1,2,4-Trimethylbenzene	ND	160	100		µg/Kg-dry	1	12/12/2012
1,2-Dibromo-3-chloropropane	ND	160	10		µg/Kg-dry	1	12/12/2012
1,2-Dibromoethane	ND	160	20		µg/Kg-dry	1	12/12/2012
1,2-Dichlorobenzene	ND	160	100		µg/Kg-dry	1	12/12/2012
1,2-Dichloroethane	ND	160	50		µg/Kg-dry	1	12/12/2012
1,2-Dichloropropane	ND	160	50		µg/Kg-dry	1	12/12/2012
1,3,5-Trimethylbenzene	ND	160	100		µg/Kg-dry	1	12/12/2012
1,3-Dichlorobenzene	ND	160	100		µg/Kg-dry	1	12/12/2012
1,4-Dichlorobenzene	ND	160	100		µg/Kg-dry	1	12/12/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/12/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/12/2012
2-Methylnaphthalene	ND	540	330		µg/Kg-dry	1	12/12/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/12/2012
Acetone	ND	1,400	1,000		µg/Kg-dry	1	12/12/2012
Acrylonitrile	ND	160	100		µg/Kg-dry	1	12/12/2012
Benzene	ND	160	50		µg/Kg-dry	1	12/12/2012
Bromobenzene	ND	160	100		µg/Kg-dry	1	12/12/2012
Bromochloromethane	ND	160	100		µg/Kg-dry	1	12/12/2012
Bromodichloromethane	ND	160	100		µg/Kg-dry	1	12/12/2012
Bromoform	ND	160	100		µg/Kg-dry	1	12/12/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/12/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/12/2012
Carbon tetrachloride	ND	160	50		µg/Kg-dry	1	12/12/2012
Chlorobenzene	ND	160	50		µg/Kg-dry	1	12/12/2012
Chloroethane	ND	540	250		µg/Kg-dry	1	12/12/2012
Chloroform	ND	160	50		µg/Kg-dry	1	12/12/2012
Chloromethane	ND	270	250		µg/Kg-dry	1	12/12/2012
cis-1,2-Dichloroethene	ND	160	50		µg/Kg-dry	1	12/12/2012
cis-1,3-Dichloropropene	ND	160	50		µg/Kg-dry	1	12/12/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/12/2012
Dibromochloromethane	ND	160	100		µg/Kg-dry	1	12/12/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/12/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/12/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/12/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/12/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/12/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1150R509S120512S006
Work Order:	1212321	**Collection Date:**	12/5/2012 9:32:00 AM
Project:	Marshall KRRI 1150R 12/5/12		
Lab ID:	1212321-03	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	160	50		µg/Kg-dry	1	12/12/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/12/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/12/2012
m,p-Xylene	ND	330	100		µg/Kg-dry	1	12/12/2012
Methyl iodide	ND	160	100		µg/Kg-dry	1	12/12/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/12/2012
Methylene chloride	ND	160	100		µg/Kg-dry	1	12/12/2012
Naphthalene	ND	540	330		µg/Kg-dry	1	12/12/2012
n-Butylbenzene	ND	160	50		µg/Kg-dry	1	12/12/2012
n-Propylbenzene	ND	160	100		µg/Kg-dry	1	12/12/2012
o-Xylene	ND	160	50		µg/Kg-dry	1	12/12/2012
p-Isopropyltoluene	ND	160	100		µg/Kg-dry	1	12/12/2012
sec-Butylbenzene	ND	160	50		µg/Kg-dry	1	12/12/2012
Styrene	ND	160	50		µg/Kg-dry	1	12/12/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/12/2012
tert-Butylbenzene	ND	160	50		µg/Kg-dry	1	12/12/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/12/2012
Tetrachloroethene	ND	160	50		µg/Kg-dry	1	12/12/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/12/2012
Toluene	ND	160	100		µg/Kg-dry	1	12/12/2012
trans-1,2-Dichloroethene	ND	160	50		µg/Kg-dry	1	12/12/2012
trans-1,3-Dichloropropene	ND	160	50		µg/Kg-dry	1	12/12/2012
trans-1,4-Dichloro-2-butene	ND	160	50		µg/Kg-dry	1	12/12/2012
Trichloroethene	ND	160	50		µg/Kg-dry	1	12/12/2012
Trichlorofluoromethane	ND	160	100		µg/Kg-dry	1	12/12/2012
Vinyl chloride	ND	160	40		µg/Kg-dry	1	12/12/2012
Surr: 1,2-Dichloroethane-d4	*98.8*	*70-130*			*%REC*	1	12/12/2012
Surr: 4-Bromofluorobenzene	*96.4*	*70-130*			*%REC*	1	12/12/2012
Surr: Dibromofluoromethane	*95.8*	*70-130*			*%REC*	1	12/12/2012
Surr: Toluene-d8	*94.6*	*70-130*			*%REC*	1	12/12/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**81**	**0.050**	**0**		**% of sample**	1	12/11/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1150R510S120512S006
Work Order:	1212321	**Collection Date:**	12/5/2012 10:39:00 AM
Project:	Marshall KRRI 1150R 12/5/12		
Lab ID:	1212321-04	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/11/2012**		Analyst: **CW**
DRO (C10-C20)	**47**	**27**	**4.0**		**mg/Kg-dry**	1	12/12/2012
ORO (C20-C34)	**390**	**54**	**4.0**		**mg/Kg-dry**	1	12/12/2012
Surr: 4-Terphenyl-d14	*81.8*	*39-115*			*%REC*	1	12/12/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/12/2012**		Analyst: **CES**
Beryllium	ND	1.6	0.50		mg/Kg-dry	4	12/12/2012
Molybdenum	ND	4.1	1.0		mg/Kg-dry	4	12/12/2012
Nickel	**21**	**4.1**	**1.0**		**mg/Kg-dry**	4	12/12/2012
Vanadium	**25**	**4.1**	**1.0**		**mg/Kg-dry**	4	12/12/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/11/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/12/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/12/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/12/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/12/2012
Benzo(a)anthracene	ND	330	330		µg/Kg-dry	1	12/12/2012
Benzo(a)pyrene	ND	330	330	*	µg/Kg-dry	1	12/12/2012
Benzo(b)fluoranthene	ND	330	330	*	µg/Kg-dry	1	12/12/2012
Benzo(g,h,i)perylene	ND	330	330	*	µg/Kg-dry	1	12/12/2012
Benzo(k)fluoranthene	ND	330	330	*	µg/Kg-dry	1	12/12/2012
Chrysene	**380**	**330**	**330**		**µg/Kg-dry**	1	12/12/2012
Dibenzo(a,h)anthracene	ND	330	330	*	µg/Kg-dry	1	12/12/2012
Fluoranthene	**490**	**330**	**330**		**µg/Kg-dry**	1	12/12/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/12/2012
Indeno(1,2,3-cd)pyrene	ND	330	330	*	µg/Kg-dry	1	12/12/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/12/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/12/2012
Pyrene	**580**	**330**	**330**		**µg/Kg-dry**	1	12/12/2012
Surr: 2,4,6-Tribromophenol	*103*	*34-140*			*%REC*	1	12/12/2012
Surr: 2-Fluorobiphenyl	*81.0*	*12-100*			*%REC*	1	12/12/2012
Surr: 2-Fluorophenol	*87.9*	*33-117*			*%REC*	1	12/12/2012
Surr: 4-Terphenyl-d14	*122*	*25-137*			*%REC*	1	12/12/2012
Surr: Nitrobenzene-d5	*80.1*	*37-107*			*%REC*	1	12/12/2012
Surr: Phenol-d6	*82.6*	*40-106*			*%REC*	1	12/12/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/12/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	100	100		µg/Kg-dry	1	12/12/2012
1,1,1-Trichloroethane	ND	81	50		µg/Kg-dry	1	12/12/2012
1,1,2,2-Tetrachloroethane	ND	81	50		µg/Kg-dry	1	12/12/2012
1,1,2-Trichloroethane	ND	81	50		µg/Kg-dry	1	12/12/2012
1,1-Dichloroethane	ND	81	50		µg/Kg-dry	1	12/12/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1150R510S120512S006
Work Order:	1212321	**Collection Date:**	12/5/2012 10:39:00 AM
Project:	Marshall KRRI 1150R 12/5/12		
Lab ID:	1212321-04	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	81	50		µg/Kg-dry	1	12/12/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/12/2012
1,2,3-Trichloropropane	ND	100	100		µg/Kg-dry	1	12/12/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/12/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/12/2012
1,2,4-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/12/2012
1,2-Dibromo-3-chloropropane	ND	81	10		µg/Kg-dry	1	12/12/2012
1,2-Dibromoethane	ND	81	20		µg/Kg-dry	1	12/12/2012
1,2-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/12/2012
1,2-Dichloroethane	ND	81	50		µg/Kg-dry	1	12/12/2012
1,2-Dichloropropane	ND	81	50		µg/Kg-dry	1	12/12/2012
1,3,5-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/12/2012
1,3-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/12/2012
1,4-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/12/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/12/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/12/2012
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/12/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/12/2012
Acetone	ND	1,000	1,000		µg/Kg-dry	1	12/12/2012
Acrylonitrile	ND	100	100		µg/Kg-dry	1	12/12/2012
Benzene	ND	81	50		µg/Kg-dry	1	12/12/2012
Bromobenzene	ND	100	100		µg/Kg-dry	1	12/12/2012
Bromochloromethane	ND	100	100		µg/Kg-dry	1	12/12/2012
Bromodichloromethane	ND	100	100		µg/Kg-dry	1	12/12/2012
Bromoform	ND	100	100		µg/Kg-dry	1	12/12/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/12/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/12/2012
Carbon tetrachloride	ND	81	50		µg/Kg-dry	1	12/12/2012
Chlorobenzene	ND	81	50		µg/Kg-dry	1	12/12/2012
Chloroethane	ND	270	250		µg/Kg-dry	1	12/12/2012
Chloroform	ND	81	50		µg/Kg-dry	1	12/12/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/12/2012
cis-1,2-Dichloroethene	ND	81	50		µg/Kg-dry	1	12/12/2012
cis-1,3-Dichloropropene	ND	81	50		µg/Kg-dry	1	12/12/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/12/2012
Dibromochloromethane	ND	100	100		µg/Kg-dry	1	12/12/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/12/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/12/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/12/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/12/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/12/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1150R510S120512S006
Work Order:	1212321	**Collection Date:**	12/5/2012 10:39:00 AM
Project:	Marshall KRRI 1150R 12/5/12		
Lab ID:	1212321-04	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	81	50		µg/Kg-dry	1	12/12/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/12/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/12/2012
m,p-Xylene	ND	160	100		µg/Kg-dry	1	12/12/2012
Methyl iodide	ND	100	100		µg/Kg-dry	1	12/12/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/12/2012
Methylene chloride	ND	100	100		µg/Kg-dry	1	12/12/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/12/2012
n-Butylbenzene	ND	81	50		µg/Kg-dry	1	12/12/2012
n-Propylbenzene	ND	100	100		µg/Kg-dry	1	12/12/2012
o-Xylene	ND	81	50		µg/Kg-dry	1	12/12/2012
p-Isopropyltoluene	ND	100	100		µg/Kg-dry	1	12/12/2012
sec-Butylbenzene	ND	81	50		µg/Kg-dry	1	12/12/2012
Styrene	ND	81	50		µg/Kg-dry	1	12/12/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/12/2012
tert-Butylbenzene	ND	81	50		µg/Kg-dry	1	12/12/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/12/2012
Tetrachloroethene	ND	81	50		µg/Kg-dry	1	12/12/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/12/2012
Toluene	ND	100	100		µg/Kg-dry	1	12/12/2012
trans-1,2-Dichloroethene	ND	81	50		µg/Kg-dry	1	12/12/2012
trans-1,3-Dichloropropene	ND	81	50		µg/Kg-dry	1	12/12/2012
trans-1,4-Dichloro-2-butene	ND	81	50		µg/Kg-dry	1	12/12/2012
Trichloroethene	ND	81	50		µg/Kg-dry	1	12/12/2012
Trichlorofluoromethane	ND	100	100		µg/Kg-dry	1	12/12/2012
Vinyl chloride	ND	81	40		µg/Kg-dry	1	12/12/2012
Surr: 1,2-Dichloroethane-d4	*101*	*70-130*			*%REC*	1	12/12/2012
Surr: 4-Bromofluorobenzene	*94.0*	*70-130*			*%REC*	1	12/12/2012
Surr: Dibromofluoromethane	*95.2*	*70-130*			*%REC*	1	12/12/2012
Surr: Toluene-d8	*96.6*	*70-130*			*%REC*	1	12/12/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**63**	**0.050**	**0**		**% of sample**	1	12/11/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1150R510T120512MX
Work Order:	1212321	**Collection Date:**	12/5/2012
Project:	Marshall KRRI 1150R 12/5/12		
Lab ID:	1212321-05	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/12/2012**		Analyst: **AK**
1,1,1,2-Tetrachloroethane	ND	100	100		µg/Kg	1	12/12/2012
1,1,1-Trichloroethane	ND	50	50		µg/Kg	1	12/12/2012
1,1,2,2-Tetrachloroethane	ND	50	50		µg/Kg	1	12/12/2012
1,1,2-Trichloroethane	ND	50	50		µg/Kg	1	12/12/2012
1,1-Dichloroethane	ND	50	50		µg/Kg	1	12/12/2012
1,1-Dichloroethene	ND	50	50		µg/Kg	1	12/12/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg	1	12/12/2012
1,2,3-Trichloropropane	ND	100	100		µg/Kg	1	12/12/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg	1	12/12/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg	1	12/12/2012
1,2,4-Trimethylbenzene	ND	100	100		µg/Kg	1	12/12/2012
1,2-Dibromo-3-chloropropane	ND	30	10		µg/Kg	1	12/12/2012
1,2-Dibromoethane	ND	30	20		µg/Kg	1	12/12/2012
1,2-Dichlorobenzene	ND	100	100		µg/Kg	1	12/12/2012
1,2-Dichloroethane	ND	50	50		µg/Kg	1	12/12/2012
1,2-Dichloropropane	ND	50	50		µg/Kg	1	12/12/2012
1,3,5-Trimethylbenzene	ND	100	100		µg/Kg	1	12/12/2012
1,3-Dichlorobenzene	ND	100	100		µg/Kg	1	12/12/2012
1,4-Dichlorobenzene	ND	100	100		µg/Kg	1	12/12/2012
2-Butanone	ND	750	750		µg/Kg	1	12/12/2012
2-Hexanone	ND	2,500	2,500		µg/Kg	1	12/12/2012
2-Methylnaphthalene	ND	330	330		µg/Kg	1	12/12/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg	1	12/12/2012
Acetone	ND	1,000	1,000		µg/Kg	1	12/12/2012
Acrylonitrile	ND	100	100		µg/Kg	1	12/12/2012
Benzene	ND	50	50		µg/Kg	1	12/12/2012
Bromobenzene	ND	100	100		µg/Kg	1	12/12/2012
Bromochloromethane	ND	100	100		µg/Kg	1	12/12/2012
Bromodichloromethane	ND	100	100		µg/Kg	1	12/12/2012
Bromoform	ND	100	100		µg/Kg	1	12/12/2012
Bromomethane	ND	200	200		µg/Kg	1	12/12/2012
Carbon disulfide	ND	250	250		µg/Kg	1	12/12/2012
Carbon tetrachloride	ND	50	50		µg/Kg	1	12/12/2012
Chlorobenzene	ND	50	50		µg/Kg	1	12/12/2012
Chloroethane	ND	250	250		µg/Kg	1	12/12/2012
Chloroform	ND	50	50		µg/Kg	1	12/12/2012
Chloromethane	ND	250	250		µg/Kg	1	12/12/2012
cis-1,2-Dichloroethene	ND	50	50		µg/Kg	1	12/12/2012
cis-1,3-Dichloropropene	ND	50	50		µg/Kg	1	12/12/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *17-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1150R510T120512MX
Work Order:	1212321	**Collection Date:**	12/5/2012
Project:	Marshall KRRI 1150R 12/5/12		
Lab ID:	1212321-05	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Cyclohexane	ND	500	500		µg/Kg	1	12/12/2012
Dibromochloromethane	ND	100	100		µg/Kg	1	12/12/2012
Dibromomethane	ND	250	250		µg/Kg	1	12/12/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg	1	12/12/2012
Diethyl ether	ND	200	200		µg/Kg	1	12/12/2012
Diisopropyl ether	ND	250	250		µg/Kg	1	12/12/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg	1	12/12/2012
Ethylbenzene	ND	50	50		µg/Kg	1	12/12/2012
Hexachloroethane	ND	300	300		µg/Kg	1	12/12/2012
Isopropylbenzene	ND	250	250		µg/Kg	1	12/12/2012
m,p-Xylene	ND	100	100		µg/Kg	1	12/12/2012
Methyl iodide	ND	100	100		µg/Kg	1	12/12/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg	1	12/12/2012
Methylene chloride	ND	100	100		µg/Kg	1	12/12/2012
Naphthalene	ND	330	330		µg/Kg	1	12/12/2012
n-Butylbenzene	ND	50	50		µg/Kg	1	12/12/2012
n-Propylbenzene	ND	100	100		µg/Kg	1	12/12/2012
o-Xylene	ND	50	50		µg/Kg	1	12/12/2012
p-Isopropyltoluene	ND	100	100		µg/Kg	1	12/12/2012
sec-Butylbenzene	ND	50	50		µg/Kg	1	12/12/2012
Styrene	ND	50	50		µg/Kg	1	12/12/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg	1	12/12/2012
tert-Butylbenzene	ND	50	50		µg/Kg	1	12/12/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg	1	12/12/2012
Tetrachloroethene	ND	50	50		µg/Kg	1	12/12/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg	1	12/12/2012
Toluene	ND	100	100		µg/Kg	1	12/12/2012
trans-1,2-Dichloroethene	ND	50	50		µg/Kg	1	12/12/2012
trans-1,3-Dichloropropene	ND	50	50		µg/Kg	1	12/12/2012
trans-1,4-Dichloro-2-butene	ND	50	50		µg/Kg	1	12/12/2012
Trichloroethene	ND	50	50		µg/Kg	1	12/12/2012
Trichlorofluoromethane	ND	100	100		µg/Kg	1	12/12/2012
Vinyl chloride	ND	40	40		µg/Kg	1	12/12/2012
Surr: 1,2-Dichloroethane-d4	*88.2*	*70-130*			*%REC*	1	12/12/2012
Surr: 4-Bromofluorobenzene	*97.0*	*70-130*			*%REC*	1	12/12/2012
Surr: Dibromofluoromethane	*92.6*	*70-130*			*%REC*	1	12/12/2012
Surr: Toluene-d8	*95.5*	*70-130*			*%REC*	1	12/12/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 17-Dec-12

Client: AECOM Environment

QC BATCH REPORT

Work Order: 1212321

Project: Marshall KRRI 1150R 12/5/12

Batch ID: **45312B** Instrument ID **GC8** Method: **SW8015M**

MBLK Sample ID: **DBLKS1-45312-45312B** Units: **mg/Kg** Analysis Date: **12/11/2012 09:04 PM**

Client ID: Run ID: **GC8_121211A** SeqNo: **2166147** Prep Date: **12/11/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	ND	10								
ORO (C20-C34)	ND	20								
Surr: 4-Terphenyl-d14	*4.43*	0	*5*	0	*88.6*	*39-115*	0			

LCS Sample ID: **DLCSS1-45312-45312B** Units: **mg/Kg** Analysis Date: **12/11/2012 09:29 PM**

Client ID: Run ID: **GC8_121211A** SeqNo: **2166148** Prep Date: **12/11/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	351	10	500	0	70.2	49-124	0			
ORO (C20-C34)	346.1	20	500	0	69.2	60-130	0			
Surr: 4-Terphenyl-d14	*4.385*	0	*5*	0	*87.7*	*39-115*	0			

MS Sample ID: **1212344-01B MS** Units: **mg/Kg** Analysis Date: **12/11/2012 07:23 PM**

Client ID: Run ID: **GC8_121211A** SeqNo: **2166144** Prep Date: **12/11/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	757.1	9.4	468.4	535.8	47.2	60-130	0			S
ORO (C20-C34)	1114	19	468.4	925.4	40.3	60-130	0			S
Surr: 4-Terphenyl-d14	*4.989*	0	*4.684*	0	*106*	*39-115*	0			

MSD Sample ID: **1212344-01B MSD** Units: **mg/Kg** Analysis Date: **12/11/2012 07:48 PM**

Client ID: Run ID: **GC8_121211A** SeqNo: **2166145** Prep Date: **12/11/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	952.6	9.3	466	535.8	89.4	60-130	757.1	22.9	30	
ORO (C20-C34)	1436	19	466	925.4	110	60-130	1114	25.2	30	
Surr: 4-Terphenyl-d14	*5.212*	0	*4.66*	0	*112*	*39-115*	4.989	*4.37*	*30*	

The following samples were analyzed in this batch: 1212321-01B 1212321-02B 1212321-03B 1212321-04B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212321
Project: Marshall KRRI 1150R 12/5/12

QC BATCH REPORT

Batch ID: **45353** Instrument ID **ICPMS1** Method: **SW6020A**

MBLK Sample ID: **MBLK-45353-45353** Units: **mg/Kg** Analysis Date: **12/12/2012 05:41 PM**
Client ID: Run ID: **ICPMS1_121211A** SeqNo: **2167860** Prep Date: **12/12/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	ND	0.10								
Molybdenum	ND	0.25								
Nickel	ND	0.25								
Vanadium	ND	0.25								

LCS Sample ID: **LCS-45353-45353** Units: **mg/Kg** Analysis Date: **12/12/2012 05:47 PM**
Client ID: Run ID: **ICPMS1_121211A** SeqNo: **2167861** Prep Date: **12/12/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	4.808	0.10	5	0	96.2	80-120	0			
Molybdenum	4.958	0.25	5	0	99.2	80-120	0			
Nickel	4.602	0.25	5	0	92	80-120	0			
Vanadium	4.686	0.25	5	0	93.7	80-120	0			

MS Sample ID: **1212321-04BMS** Units: **mg/Kg** Analysis Date: **12/12/2012 08:09 PM**
Client ID: **SBKR1150R510S120512S006** Run ID: **ICPMS1_121211A** SeqNo: **2167880** Prep Date: **12/12/2012** DF: **4**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	7.552	0.59	7.418	0.2493	98.4	75-125	0			
Molybdenum	7.579	1.5	7.418	0.4963	95.5	75-125	0			
Nickel	15.77	1.5	7.418	7.707	109	75-125	0			
Vanadium	19.36	1.5	7.418	9.405	134	75-125	0			S

MSD Sample ID: **1212321-04BMSD** Units: **mg/Kg** Analysis Date: **12/12/2012 08:14 PM**
Client ID: **SBKR1150R510S120512S006** Run ID: **ICPMS1_121211A** SeqNo: **2167881** Prep Date: **12/12/2012** DF: **4**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	7.629	0.60	7.474	0.2493	98.7	75-125	7.552	1.02	25	
Molybdenum	7.719	1.5	7.474	0.4963	96.6	75-125	7.579	1.83	25	
Nickel	15.06	1.5	7.474	7.707	98.4	75-125	15.77	4.55	25	
Vanadium	18.22	1.5	7.474	9.405	118	75-125	19.36	6.06	25	

The following samples were analyzed in this batch: 1212321-01B 1212321-02B 1212321-03B 1212321-04B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212321
Project: Marshall KRRI 1150R 12/5/12

QC BATCH REPORT

Batch ID: **45311** Instrument ID **SVMS5** Method: **SW8270**

MBLK Sample ID: **SBLKS1-45311-45311** Units: **µg/Kg** Analysis Date: **12/11/2012 05:36 PM**
Client ID: Run ID: **SVMS5_121211A** SeqNo: **2166972** Prep Date: **12/11/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	ND	50								
Acenaphthene	ND	50								
Acenaphthylene	ND	50								
Anthracene	ND	50								
Benzo(a)anthracene	ND	50								
Benzo(a)pyrene	ND	50								
Benzo(b)fluoranthene	ND	50								
Benzo(g,h,i)perylene	ND	50								
Benzo(k)fluoranthene	ND	50								
Chrysene	ND	50								
Dibenzo(a,h)anthracene	ND	50								
Fluoranthene	ND	50								
Fluorene	ND	50								
Indeno(1,2,3-cd)pyrene	ND	50								
Naphthalene	ND	50								
Phenanthrene	ND	50								
Pyrene	ND	50								
Surr: 2,4,6-Tribromophenol	*4097*	0	*5000*	0	*81.9*	*34-140*	0			
Surr: 2-Fluorobiphenyl	*4141*	0	*5000*	0	*82.8*	*12-100*	0			
Surr: 2-Fluorophenol	*4620*	0	*5000*	0	*92.4*	*33-117*	0			
Surr: 4-Terphenyl-d14	*5310*	0	*5000*	0	*106*	*25-137*	0			
Surr: Nitrobenzene-d5	*4293*	0	*5000*	0	*85.9*	*37-107*	0			
Surr: Phenol-d6	*4116*	0	*5000*	0	*82.3*	*40-106*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45311** Instrument ID **SVMS5** Method: **SW8270**

LCS Sample ID: **SLCSS1-45311-45311** Units: **µg/Kg** Analysis Date: **12/11/2012 06:06 PM**
Client ID: Run ID: **SVMS5_121211A** SeqNo: **2166973** Prep Date: **12/11/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	1680	50	2000	0	84	45-105	0			
Acenaphthene	1679	50	2000	0	84	45-110	0			
Acenaphthylene	1780	50	2000	0	89	45-105	0			
Anthracene	1814	50	2000	0	90.7	55-105	0			
Benzo(a)anthracene	1821	50	2000	0	91	50-110	0			
Benzo(a)pyrene	1821	50	2000	0	91	50-110	0			
Benzo(b)fluoranthene	1778	50	2000	0	88.9	45-115	0			
Benzo(g,h,i)perylene	2057	50	2000	0	103	40-125	0			
Benzo(k)fluoranthene	2031	50	2000	0	102	45-115	0			
Chrysene	1974	50	2000	0	98.7	55-110	0			
Dibenzo(a,h)anthracene	1980	50	2000	0	99	40-125	0			
Fluoranthene	1902	50	2000	0	95.1	55-115	0			
Fluorene	1775	50	2000	0	88.8	50-110	0			
Indeno(1,2,3-cd)pyrene	1990	50	2000	0	99.5	40-120	0			
Naphthalene	1632	50	2000	0	81.6	40-105	0			
Phenanthrene	1746	50	2000	0	87.3	50-110	0			
Pyrene	1814	50	2000	0	90.7	45-125	0			
Surr: 2,4,6-Tribromophenol	*3944*	0	*5000*	0	*78.9*	*34-140*	0			
Surr: 2-Fluorobiphenyl	*3995*	0	*5000*	0	*79.9*	*12-100*	0			
Surr: 2-Fluorophenol	*4373*	0	*5000*	0	*87.5*	*33-117*	0			
Surr: 4-Terphenyl-d14	*4961*	0	*5000*	0	*99.2*	*25-137*	0			
Surr: Nitrobenzene-d5	*4194*	0	*5000*	0	*83.9*	*37-107*	0			
Surr: Phenol-d6	*3924*	0	*5000*	0	*78.5*	*40-106*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212321
Project: Marshall KRRI 1150R 12/5/12

QC BATCH REPORT

Batch ID: **45311** Instrument ID **SVMS5** Method: **SW8270**

MS Sample ID: **1212347-01B MS** Units: **µg/Kg** Analysis Date: **12/11/2012 06:36 PM**
Client ID: Run ID: **SVMS5_121211A** SeqNo: **2166974** Prep Date: **12/11/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	1008	32	1270	0	79.4	45-105	0			
Acenaphthene	1027	32	1270	0	80.8	45-110	0			
Acenaphthylene	1077	32	1270	0	84.8	45-105	0			
Anthracene	1135	32	1270	0	89.4	55-105	0			
Benzo(a)anthracene	1138	32	1270	0	89.6	50-110	0			
Benzo(a)pyrene	1082	32	1270	0	85.2	50-110	0			
Benzo(b)fluoranthene	1150	32	1270	0	90.6	45-115	0			
Benzo(g,h,i)perylene	1177	32	1270	18.48	91.2	40-125	0			
Benzo(k)fluoranthene	1027	32	1270	0	80.8	45-115	0			
Chrysene	1202	32	1270	0	94.7	55-110	0			
Dibenzo(a,h)anthracene	1102	32	1270	0	86.8	40-125	0			
Fluoranthene	1165	32	1270	0	91.8	55-115	0			
Fluorene	1078	32	1270	0	84.9	50-110	0			
Indeno(1,2,3-cd)pyrene	1123	32	1270	0	88.4	40-120	0			
Naphthalene	968.2	32	1270	0	76.2	40-105	0			
Phenanthrene	1092	32	1270	0	86	50-110	0			
Pyrene	1098	32	1270	0	86.4	45-125	0			
Surr: 2,4,6-Tribromophenol	*2785*	0	*3174*	0	*87.7*	*34-140*	0			
Surr: 2-Fluorobiphenyl	*2388*	0	*3174*	0	*75.2*	*12-100*	0			
Surr: 2-Fluorophenol	*2618*	0	*3174*	0	*82.5*	*33-117*	0			
Surr: 4-Terphenyl-d14	*2877*	0	*3174*	0	*90.6*	*25-137*	0			
Surr: Nitrobenzene-d5	*2459*	0	*3174*	0	*77.5*	*37-107*	0			
Surr: Phenol-d6	*2369*	0	*3174*	0	*74.6*	*40-106*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212321
Project: Marshall KRRI 1150R 12/5/12

QC BATCH REPORT

Batch ID: **45311** Instrument ID **SVMS5** Method: **SW8270**

MSD Sample ID: **1212347-01B MSD** Units: **µg/Kg** Analysis Date: **12/11/2012 07:07 PM**
Client ID: Run ID: **SVMS5_121211A** SeqNo: **2166975** Prep Date: **12/11/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	1094	32	1299	0	84.2	45-105	1008	8.16	30	
Acenaphthene	1100	32	1299	0	84.6	45-110	1027	6.89	30	
Acenaphthylene	1154	32	1299	0	88.8	45-105	1077	6.85	30	
Anthracene	1199	32	1299	0	92.3	55-105	1135	5.49	30	
Benzo(a)anthracene	1188	32	1299	0	91.4	50-110	1138	4.34	30	
Benzo(a)pyrene	1149	32	1299	0	88.4	50-110	1082	5.93	30	
Benzo(b)fluoranthene	1215	32	1299	0	93.6	45-115	1150	5.5	30	
Benzo(g,h,i)perylene	1207	32	1299	18.48	91.5	40-125	1177	2.51	30	
Benzo(k)fluoranthene	1063	32	1299	0	81.8	45-115	1027	3.47	30	
Chrysene	1264	32	1299	0	97.2	55-110	1202	4.96	30	
Dibenzo(a,h)anthracene	1141	32	1299	0	87.8	40-125	1102	3.5	30	
Fluoranthene	1209	32	1299	0	93	55-115	1165	3.71	30	
Fluorene	1147	32	1299	0	88.3	50-110	1078	6.22	30	
Indeno(1,2,3-cd)pyrene	1152	32	1299	0	88.7	40-120	1123	2.58	30	
Naphthalene	1047	32	1299	0	80.6	40-105	968.2	7.78	30	
Phenanthrene	1154	32	1299	0	88.8	50-110	1092	5.5	30	
Pyrene	1166	32	1299	0	89.8	45-125	1098	6.04	30	
Surr: 2,4,6-Tribromophenol	*2834*	0	*3248*	0	*87.3*	*34-140*	2785	*1.75*	*40*	
Surr: 2-Fluorobiphenyl	*2578*	0	*3248*	0	*79.4*	*12-100*	2388	*7.65*	*40*	
Surr: 2-Fluorophenol	*2849*	0	*3248*	0	*87.7*	*33-117*	2618	*8.43*	*40*	
Surr: 4-Terphenyl-d14	*3041*	0	*3248*	0	*93.6*	*25-137*	2877	*5.53*	*40*	
Surr: Nitrobenzene-d5	*2669*	0	*3248*	0	*82.2*	*37-107*	2459	*8.19*	*40*	
Surr: Phenol-d6	*2616*	0	*3248*	0	*80.5*	*40-106*	2369	*9.93*	*40*	

The following samples were analyzed in this batch: 1212321-01B 1212321-02B 1212321-03B 1212321-04B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45356** Instrument ID **VMS8** Method: **SW8260**

MBLK Sample ID: **MBLK-45356-45356** Units: **µg/Kg** Analysis Date: **12/12/2012 03:16 PM**
Client ID: Run ID: **VMS8_121212A** SeqNo: **2167566** Prep Date: **12/12/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	30								
1,1,1-Trichloroethane	ND	30								
1,1,2,2-Tetrachloroethane	ND	30								
1,1,2-Trichloroethane	ND	30								
1,1-Dichloroethane	ND	30								
1,1-Dichloroethene	ND	30								
1,2,3-Trichlorobenzene	ND	30								
1,2,3-Trichloropropane	ND	30								
1,2,3-Trimethylbenzene	ND	30								
1,2,4-Trichlorobenzene	ND	30								
1,2,4-Trimethylbenzene	ND	30								
1,2-Dibromo-3-chloropropane	ND	30								
1,2-Dibromoethane	ND	30								
1,2-Dichlorobenzene	ND	30								
1,2-Dichloroethane	ND	30								
1,2-Dichloropropane	ND	30								
1,3,5-Trimethylbenzene	ND	30								
1,3-Dichlorobenzene	ND	30								
1,4-Dichlorobenzene	ND	30								
2-Butanone	ND	200								
2-Hexanone	ND	30								
2-Methylnaphthalene	ND	100								
4-Methyl-2-pentanone	ND	30								
Acetone	ND	100								
Acrylonitrile	ND	100								
Benzene	ND	30								
Bromobenzene	ND	30								
Bromochloromethane	ND	30								
Bromodichloromethane	ND	30								
Bromoform	ND	30								
Bromomethane	ND	75								
Carbon disulfide	ND	30								
Carbon tetrachloride	ND	30								
Chlorobenzene	ND	30								
Chloroethane	ND	100								
Chloroform	ND	30								
Chloromethane	ND	100								
cis-1,2-Dichloroethene	ND	30								
cis-1,3-Dichloropropene	ND	30								
Cyclohexane	ND	30								
Dibromochloromethane	ND	30								
Dibromomethane	ND	30								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45356** Instrument ID **VMS8** Method: **SW8260**

Dichlorodifluoromethane	ND	30					
Diethyl ether	ND	30					
Diisopropyl ether	ND	30					
Ethyl tert butyl ether	ND	30					
Ethylbenzene	ND	30					
Hexachloroethane	ND	30					
Isopropylbenzene	ND	30					
m,p-Xylene	ND	60					
Methyl iodide	ND	75					
Methyl tert-butyl ether	ND	30					
Methylene chloride	ND	30					
Naphthalene	ND	100					
n-Butylbenzene	ND	30					
n-Propylbenzene	ND	30					
o-Xylene	ND	30					
p-Isopropyltoluene	ND	30					
sec-Butylbenzene	ND	30					
Styrene	ND	30					
tert-Butyl alcohol	ND	200					
tert-Butylbenzene	ND	30					
Tertiaryamylmethylether	ND	30					
Tetrachloroethene	ND	30					
Tetrahydrofuran	ND	200					
Toluene	ND	30					
trans-1,2-Dichloroethene	ND	30					
trans-1,3-Dichloropropene	ND	30					
trans-1,4-Dichloro-2-butene	ND	30					
Trichloroethene	ND	30					
Trichlorofluoromethane	ND	30					
Vinyl chloride	ND	30					
Surr: 1,2-Dichloroethane-d4	*898.5*	0	*1000*	0	*89.8*	*70-130*	0
Surr: 4-Bromofluorobenzene	*971*	0	*1000*	0	*97.1*	*70-130*	0
Surr: Dibromofluoromethane	*921*	0	*1000*	0	*92.1*	*70-130*	0
Surr: Toluene-d8	*930*	0	*1000*	0	*93*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212321
Project: Marshall KRRI 1150R 12/5/12

QC BATCH REPORT

Batch ID: **45356** Instrument ID **VMS8** Method: **SW8260**

MBLK Sample ID: **MBLK-45356-45356** Units: **µg/Kg** Analysis Date: **12/12/2012 05:00 PM**
Client ID: Run ID: **VMS9_121212A** SeqNo: **2167629** Prep Date: **12/12/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	30								
1,1,1-Trichloroethane	ND	30								
1,1,2,2-Tetrachloroethane	ND	30								
1,1,2-Trichloroethane	ND	30								
1,1-Dichloroethane	ND	30								
1,1-Dichloroethene	ND	30								
1,2,3-Trichlorobenzene	ND	30								
1,2,3-Trichloropropane	ND	30								
1,2,3-Trimethylbenzene	ND	30								
1,2,4-Trichlorobenzene	ND	30								
1,2,4-Trimethylbenzene	ND	30								
1,2-Dibromo-3-chloropropane	ND	30								
1,2-Dibromoethane	ND	30								
1,2-Dichlorobenzene	ND	30								
1,2-Dichloroethane	ND	30								
1,2-Dichloropropane	ND	30								
1,3,5-Trimethylbenzene	ND	30								
1,3-Dichlorobenzene	ND	30								
1,4-Dichlorobenzene	ND	30								
2-Butanone	ND	200								
2-Hexanone	ND	30								
2-Methylnaphthalene	ND	100								
4-Methyl-2-pentanone	ND	30								
Acetone	ND	100								
Acrylonitrile	ND	100								
Benzene	ND	30								
Bromobenzene	ND	30								
Bromochloromethane	ND	30								
Bromodichloromethane	ND	30								
Bromoform	ND	30								
Bromomethane	ND	75								
Carbon disulfide	ND	30								
Carbon tetrachloride	ND	30								
Chlorobenzene	ND	30								
Chloroethane	ND	100								
Chloroform	ND	30								
Chloromethane	31.5	100								J
cis-1,2-Dichloroethene	ND	30								
cis-1,3-Dichloropropene	ND	30								
Cyclohexane	ND	30								
Dibromochloromethane	ND	30								
Dibromomethane	ND	30								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45356** Instrument ID **VMS8** Method: **SW8260**

Dichlorodifluoromethane	ND	30					
Diethyl ether	ND	30					
Diisopropyl ether	ND	30					
Ethyl tert butyl ether	ND	30					
Ethylbenzene	ND	30					
Hexachloroethane	ND	30					
Isopropylbenzene	ND	30					
m,p-Xylene	ND	60					
Methyl iodide	ND	75					
Methyl tert-butyl ether	ND	30					
Methylene chloride	ND	30					
Naphthalene	19	100					J
n-Butylbenzene	ND	30					
n-Propylbenzene	ND	30					
o-Xylene	ND	30					
p-Isopropyltoluene	ND	30					
sec-Butylbenzene	ND	30					
Styrene	ND	30					
tert-Butyl alcohol	ND	200					
tert-Butylbenzene	ND	30					
Tertiaryamylmethylether	ND	30					
Tetrachloroethene	ND	30					
Tetrahydrofuran	ND	200					
Toluene	ND	30					
trans-1,2-Dichloroethene	ND	30					
trans-1,3-Dichloropropene	ND	30					
trans-1,4-Dichloro-2-butene	ND	30					
Trichloroethene	ND	30					
Trichlorofluoromethane	ND	30					
Vinyl chloride	ND	30					
Surr: 1,2-Dichloroethane-d4	*993.5*	0	*1000*	0	*99.4*	*70-130*	0
Surr: 4-Bromofluorobenzene	*957*	0	*1000*	0	*95.7*	*70-130*	0
Surr: Dibromofluoromethane	*961*	0	*1000*	0	*96.1*	*70-130*	0
Surr: Toluene-d8	*979*	0	*1000*	0	*97.9*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212321
Project: Marshall KRRI 1150R 12/5/12

QC BATCH REPORT

Batch ID: **45356** Instrument ID **VMS8** Method: **SW8260**

MBLK Sample ID: **MBLK-45356-45356** Units: **µg/Kg** Analysis Date: **12/13/2012 01:04 PM**
Client ID: Run ID: **VMS6_121213A** SeqNo: **2169075** Prep Date: **12/12/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	30								
1,1,1-Trichloroethane	ND	30								
1,1,2,2-Tetrachloroethane	ND	30								
1,1,2-Trichloroethane	ND	30								
1,1-Dichloroethane	ND	30								
1,1-Dichloroethene	ND	30								
1,2,3-Trichlorobenzene	ND	30								
1,2,3-Trichloropropane	ND	30								
1,2,3-Trimethylbenzene	ND	30								
1,2,4-Trichlorobenzene	ND	30								
1,2,4-Trimethylbenzene	ND	30								
1,2-Dibromo-3-chloropropane	ND	30								
1,2-Dibromoethane	ND	30								
1,2-Dichlorobenzene	ND	30								
1,2-Dichloroethane	ND	30								
1,2-Dichloropropane	ND	30								
1,3,5-Trimethylbenzene	ND	30								
1,3-Dichlorobenzene	ND	30								
1,4-Dichlorobenzene	ND	30								
2-Butanone	ND	200								
2-Hexanone	ND	30								
2-Methylnaphthalene	ND	100								
4-Methyl-2-pentanone	ND	30								
Acetone	ND	100								
Acrylonitrile	ND	100								
Benzene	ND	30								
Bromobenzene	ND	30								
Bromochloromethane	ND	30								
Bromodichloromethane	ND	30								
Bromoform	ND	30								
Bromomethane	ND	75								
Carbon disulfide	ND	30								
Carbon tetrachloride	ND	30								
Chlorobenzene	ND	30								
Chloroethane	ND	100								
Chloroform	ND	30								
Chloromethane	ND	100								
cis-1,2-Dichloroethene	ND	30								
cis-1,3-Dichloropropene	ND	30								
Cyclohexane	ND	30								
Dibromochloromethane	ND	30								
Dibromomethane	ND	30								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45356** Instrument ID **VMS8** Method: **SW8260**

Dichlorodifluoromethane	ND	30					
Diethyl ether	ND	30					
Diisopropyl ether	ND	30					
Ethyl tert butyl ether	ND	30					
Ethylbenzene	ND	30					
Hexachloroethane	ND	30					
Isopropylbenzene	ND	30					
m,p-Xylene	ND	60					
Methyl iodide	ND	75					
Methyl tert-butyl ether	ND	30					
Methylene chloride	ND	30					
Naphthalene	ND	100					
n-Butylbenzene	ND	30					
n-Propylbenzene	ND	30					
o-Xylene	ND	30					
p-Isopropyltoluene	ND	30					
sec-Butylbenzene	ND	30					
Styrene	ND	30					
tert-Butyl alcohol	ND	200					
tert-Butylbenzene	ND	30					
Tertiaryamylmethylether	ND	30					
Tetrachloroethene	ND	30					
Tetrahydrofuran	ND	200					
Toluene	ND	30					
trans-1,2-Dichloroethene	ND	30					
trans-1,3-Dichloropropene	ND	30					
trans-1,4-Dichloro-2-butene	ND	30					
Trichloroethene	ND	30					
Trichlorofluoromethane	ND	30					
Vinyl chloride	ND	30					
Surr: 1,2-Dichloroethane-d4	*982.5*	0	*1000*	0	*98.2*	*70-130*	0
Surr: 4-Bromofluorobenzene	*967*	0	*1000*	0	*96.7*	*70-130*	0
Surr: Dibromofluoromethane	*948*	0	*1000*	0	*94.8*	*70-130*	0
Surr: Toluene-d8	*973.5*	0	*1000*	0	*97.4*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212321
Project: Marshall KRRI 1150R 12/5/12

QC BATCH REPORT

Batch ID: **45356** Instrument ID **VMS8** Method: **SW8260**

MBLK Sample ID: **MBLK-45356-45356** Units: **µg/Kg** Analysis Date: **12/14/2012 01:27 AM**
Client ID: Run ID: **VMS9_121213B** SeqNo: **2169292** Prep Date: **12/12/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	30								
1,1,1-Trichloroethane	ND	30								
1,1,2,2-Tetrachloroethane	ND	30								
1,1,2-Trichloroethane	ND	30								
1,1-Dichloroethane	ND	30								
1,1-Dichloroethene	ND	30								
1,2,3-Trichlorobenzene	ND	30								
1,2,3-Trichloropropane	ND	30								
1,2,3-Trimethylbenzene	ND	30								
1,2,4-Trichlorobenzene	ND	30								
1,2,4-Trimethylbenzene	ND	30								
1,2-Dibromo-3-chloropropane	ND	30								
1,2-Dibromoethane	ND	30								
1,2-Dichlorobenzene	ND	30								
1,2-Dichloroethane	ND	30								
1,2-Dichloropropane	ND	30								
1,3,5-Trimethylbenzene	ND	30								
1,3-Dichlorobenzene	ND	30								
1,4-Dichlorobenzene	ND	30								
2-Butanone	ND	200								
2-Hexanone	ND	30								
2-Methylnaphthalene	ND	100								
4-Methyl-2-pentanone	ND	30								
Acetone	ND	100								
Acrylonitrile	ND	100								
Benzene	ND	30								
Bromobenzene	ND	30								
Bromochloromethane	ND	30								
Bromodichloromethane	ND	30								
Bromoform	ND	30								
Bromomethane	ND	75								
Carbon disulfide	ND	30								
Carbon tetrachloride	ND	30								
Chlorobenzene	ND	30								
Chloroethane	ND	100								
Chloroform	ND	30								
Chloromethane	29	100								J
cis-1,2-Dichloroethene	ND	30								
cis-1,3-Dichloropropene	ND	30								
Cyclohexane	ND	30								
Dibromochloromethane	ND	30								
Dibromomethane	ND	30								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45356** Instrument ID **VMS8** Method: **SW8260**

Dichlorodifluoromethane	ND	30					
Diethyl ether	ND	30					
Diisopropyl ether	ND	30					
Ethyl tert butyl ether	ND	30					
Ethylbenzene	ND	30					
Hexachloroethane	ND	30					
Isopropylbenzene	ND	30					
m,p-Xylene	ND	60					
Methyl iodide	ND	75					
Methyl tert-butyl ether	ND	30					
Methylene chloride	ND	30					
Naphthalene	15.5	100					J
n-Butylbenzene	ND	30					
n-Propylbenzene	ND	30					
o-Xylene	ND	30					
p-Isopropyltoluene	ND	30					
sec-Butylbenzene	ND	30					
Styrene	ND	30					
tert-Butyl alcohol	ND	200					
tert-Butylbenzene	ND	30					
Tertiaryamylmethylether	ND	30					
Tetrachloroethene	ND	30					
Tetrahydrofuran	ND	200					
Toluene	ND	30					
trans-1,2-Dichloroethene	ND	30					
trans-1,3-Dichloropropene	ND	30					
trans-1,4-Dichloro-2-butene	ND	30					
Trichloroethene	ND	30					
Trichlorofluoromethane	ND	30					
Vinyl chloride	ND	30					
Surr: 1,2-Dichloroethane-d4	*964.5*	0	*1000*	0	*96.4*	*70-130*	0
Surr: 4-Bromofluorobenzene	*997*	0	*1000*	0	*99.7*	*70-130*	0
Surr: Dibromofluoromethane	*961.5*	0	*1000*	0	*96.2*	*70-130*	0
Surr: Toluene-d8	*896.5*	0	*1000*	0	*89.6*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45356** Instrument ID **VMS8** Method: **SW8260**

MBLK Sample ID: **MBLK-45356-45356** Units: **µg/Kg** Analysis Date: **12/14/2012 01:59 PM**
Client ID: Run ID: **VMS9_121214A** SeqNo: **2170437** Prep Date: **12/12/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	30								
1,1,1-Trichloroethane	ND	30								
1,1,2,2-Tetrachloroethane	ND	30								
1,1,2-Trichloroethane	ND	30								
1,1-Dichloroethane	ND	30								
1,1-Dichloroethene	ND	30								
1,2,3-Trichlorobenzene	ND	30								
1,2,3-Trichloropropane	ND	30								
1,2,3-Trimethylbenzene	ND	30								
1,2,4-Trichlorobenzene	ND	30								
1,2,4-Trimethylbenzene	ND	30								
1,2-Dibromo-3-chloropropane	ND	30								
1,2-Dibromoethane	ND	30								
1,2-Dichlorobenzene	ND	30								
1,2-Dichloroethane	ND	30								
1,2-Dichloropropane	ND	30								
1,3,5-Trimethylbenzene	ND	30								
1,3-Dichlorobenzene	ND	30								
1,4-Dichlorobenzene	ND	30								
2-Butanone	ND	200								
2-Hexanone	ND	30								
2-Methylnaphthalene	ND	100								
4-Methyl-2-pentanone	ND	30								
Acetone	ND	100								
Acrylonitrile	ND	100								
Benzene	ND	30								
Bromobenzene	ND	30								
Bromochloromethane	ND	30								
Bromodichloromethane	ND	30								
Bromoform	ND	30								
Bromomethane	ND	75								
Carbon disulfide	ND	30								
Carbon tetrachloride	ND	30								
Chlorobenzene	ND	30								
Chloroethane	ND	100								
Chloroform	ND	30								
Chloromethane	ND	100								
cis-1,2-Dichloroethene	ND	30								
cis-1,3-Dichloropropene	ND	30								
Cyclohexane	ND	30								
Dibromochloromethane	ND	30								
Dibromomethane	ND	30								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45356** Instrument ID **VMS8** Method: **SW8260**

Dichlorodifluoromethane	ND	30					
Diethyl ether	ND	30					
Diisopropyl ether	ND	30					
Ethyl tert butyl ether	ND	30					
Ethylbenzene	ND	30					
Hexachloroethane	ND	30					
Isopropylbenzene	ND	30					
m,p-Xylene	ND	60					
Methyl iodide	ND	75					
Methyl tert-butyl ether	ND	30					
Methylene chloride	ND	30					
Naphthalene	ND	100					
n-Butylbenzene	ND	30					
n-Propylbenzene	ND	30					
o-Xylene	ND	30					
p-Isopropyltoluene	ND	30					
sec-Butylbenzene	ND	30					
Styrene	ND	30					
tert-Butyl alcohol	ND	200					
tert-Butylbenzene	ND	30					
Tertiaryamylmethylether	ND	30					
Tetrachloroethene	ND	30					
Tetrahydrofuran	ND	200					
Toluene	ND	30					
trans-1,2-Dichloroethene	ND	30					
trans-1,3-Dichloropropene	ND	30					
trans-1,4-Dichloro-2-butene	ND	30					
Trichloroethene	ND	30					
Trichlorofluoromethane	ND	30					
Vinyl chloride	ND	30					
Surr: 1,2-Dichloroethane-d4	*970.5*	0	*1000*	0	*97*	*70-130*	0
Surr: 4-Bromofluorobenzene	*1007*	0	*1000*	0	*101*	*70-130*	0
Surr: Dibromofluoromethane	*954*	0	*1000*	0	*95.4*	*70-130*	0
Surr: Toluene-d8	*888.5*	0	*1000*	0	*88.8*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212321
Project: Marshall KRRI 1150R 12/5/12

QC BATCH REPORT

Batch ID: **45356** Instrument ID **VMS8** Method: **SW8260**

LCS Sample ID: **LCS-45356-45356** Units: **µg/Kg** Analysis Date: **12/12/2012 02:04 PM**
Client ID: Run ID: **VMS8_121212A** SeqNo: **2167565** Prep Date: **12/12/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	1047	30	1000	0	105	75-125	0			
1,1,1-Trichloroethane	1064	30	1000	0	106	70-135	0			
1,1,2,2-Tetrachloroethane	859.5	30	1000	0	86	55-130	0			
1,1,2-Trichloroethane	866.5	30	1000	0	86.6	60-125	0			
1,1-Dichloroethane	930.5	30	1000	0	93	75-125	0			
1,1-Dichloroethene	1041	30	1000	0	104	65-135	0			
1,2,3-Trichlorobenzene	1118	30	1000	0	112	60-135	0			
1,2,3-Trichloropropane	856.5	30	1000	0	85.6	65-130	0			
1,2,4-Trichlorobenzene	1172	30	1000	0	117	65-130	0			
1,2,4-Trimethylbenzene	998.5	30	1000	0	99.8	65-135	0			
1,2-Dibromo-3-chloropropane	903.5	30	1000	0	90.4	40-135	0			
1,2-Dibromoethane	960	30	1000	0	96	70-125	0			
1,2-Dichlorobenzene	970.5	30	1000	0	97	75-120	0			
1,2-Dichloroethane	909	30	1000	0	90.9	70-135	0			
1,2-Dichloropropane	934	30	1000	0	93.4	70-120	0			
1,3,5-Trimethylbenzene	1088	30	1000	0	109	65-135	0			
1,3-Dichlorobenzene	1024	30	1000	0	102	70-125	0			
1,4-Dichlorobenzene	1024	30	1000	0	102	70-125	0			
2-Butanone	796	200	1000	0	79.6	30-160	0			
2-Hexanone	808.5	30	1000	0	80.8	45-145	0			
4-Methyl-2-pentanone	1052	30	1000	0	105	45-145	0			
Acetone	845.5	100	1000	0	84.6	20-160	0			
Acrylonitrile	784.5	100	1000	0	78.4	70-135	0			
Benzene	984.5	30	1000	0	98.4	75-125	0			
Bromobenzene	928.5	30	1000	0	92.8	65-120	0			
Bromochloromethane	891	30	1000	0	89.1	70-125	0			
Bromodichloromethane	941	30	1000	0	94.1	70-130	0			
Bromoform	939.5	30	1000	0	94	55-135	0			
Bromomethane	1078	75	1000	0	108	30-160	0			
Carbon disulfide	1154	30	1000	0	115	45-160	0			
Carbon tetrachloride	1118	30	1000	0	112	65-135	0			
Chlorobenzene	1006	30	1000	0	101	75-125	0			
Chloroethane	658	100	1000	0	65.8	40-155	0			
Chloroform	944.5	30	1000	0	94.4	70-125	0			
Chloromethane	742.5	100	1000	0	74.2	50-130	0			
cis-1,2-Dichloroethene	927.5	30	1000	0	92.8	65-125	0			
cis-1,3-Dichloropropene	968	30	1000	0	96.8	70-125	0			
Dibromochloromethane	939.5	30	1000	0	94	65-135	0			
Dibromomethane	939	30	1000	0	93.9	75-130	0			
Dichlorodifluoromethane	759.5	30	1000	0	76	35-135	0			
Ethylbenzene	1019	30	1000	0	102	75-125	0			
Hexachloroethane	1095	30	1000	0	110	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45356** Instrument ID **VMS8** Method: **SW8260**

Isopropylbenzene	1056	30	1000	0	106	75-130	0
m,p-Xylene	2034	60	2000	0	102	80-125	0
Methyl tert-butyl ether	910	30	1000	0	91	75-125	0
Methylene chloride	956.5	30	1000	0	95.6	55-145	0
Naphthalene	1154	100	1000	0	115	40-140	0
n-Butylbenzene	1047	30	1000	0	105	65-140	0
n-Propylbenzene	1011	30	1000	0	101	65-135	0
o-Xylene	1032	30	1000	0	103	75-125	0
p-Isopropyltoluene	1039	30	1000	0	104	75-135	0
sec-Butylbenzene	1114	30	1000	0	111	65-130	0
Styrene	1070	30	1000	0	107	75-125	0
tert-Butylbenzene	1045	30	1000	0	104	65-130	0
Tetrachloroethene	1055	30	1000	0	106	64-140	0
Tetrahydrofuran	735	200	1000	0	73.5	70-135	0
Toluene	1013	30	1000	0	101	70-125	0
trans-1,2-Dichloroethene	990	30	1000	0	99	65-135	0
trans-1,3-Dichloropropene	968.5	30	1000	0	96.8	65-125	0
trans-1,4-Dichloro-2-butene	854.5	30	1000	0	85.4	70-135	0
Trichloroethene	1036	30	1000	0	104	75-125	0
Trichlorofluoromethane	976	30	1000	0	97.6	25-185	0
Vinyl chloride	894.5	30	1000	0	89.4	60-125	0
Surr: 1,2-Dichloroethane-d4	*881*	0	*1000*	0	*88.1*	*70-130*	0
Surr: 4-Bromofluorobenzene	*952*	0	*1000*	0	*95.2*	*70-130*	0
Surr: Dibromofluoromethane	*964.5*	0	*1000*	0	*96.4*	*70-130*	0
Surr: Toluene-d8	*956*	0	*1000*	0	*95.6*	*70-130*	0

Client: AECOM Environment
Work Order: 1212321
Project: Marshall KRRI 1150R 12/5/12

QC BATCH REPORT

Batch ID: **45356** Instrument ID **VMS8** Method: **SW8260**

LCS Sample ID: **LCS-45356-45356** Units: **µg/Kg** Analysis Date: **12/12/2012 03:43 PM**
Client ID: Run ID: **VMS9_121212A** SeqNo: **2167628** Prep Date: **12/12/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	906	30	1000	0	90.6	75-125	0			
1,1,1-Trichloroethane	900	30	1000	0	90	70-135	0			
1,1,2,2-Tetrachloroethane	860	30	1000	0	86	55-130	0			
1,1,2-Trichloroethane	805	30	1000	0	80.5	60-125	0			
1,1-Dichloroethane	963	30	1000	0	96.3	75-125	0			
1,1-Dichloroethene	1062	30	1000	0	106	65-135	0			
1,2,3-Trichlorobenzene	931.5	30	1000	0	93.2	60-135	0			
1,2,3-Trichloropropane	771	30	1000	0	77.1	65-130	0			
1,2,4-Trichlorobenzene	1004	30	1000	0	100	65-130	0			
1,2,4-Trimethylbenzene	958.5	30	1000	0	95.8	65-135	0			
1,2-Dibromo-3-chloropropane	962	30	1000	0	96.2	40-135	0			
1,2-Dibromoethane	872.5	30	1000	0	87.2	70-125	0			
1,2-Dichlorobenzene	850.5	30	1000	0	85	75-120	0			
1,2-Dichloroethane	836	30	1000	0	83.6	70-135	0			
1,2-Dichloropropane	838	30	1000	0	83.8	70-120	0			
1,3,5-Trimethylbenzene	936	30	1000	0	93.6	65-135	0			
1,3-Dichlorobenzene	870	30	1000	0	87	70-125	0			
1,4-Dichlorobenzene	854.5	30	1000	0	85.4	70-125	0			
2-Butanone	998.5	200	1000	0	99.8	30-160	0			
2-Hexanone	960.5	30	1000	0	96	45-145	0			
4-Methyl-2-pentanone	1058	30	1000	0	106	45-145	0			
Acetone	1003	100	1000	0	100	20-160	0			
Acrylonitrile	934	100	1000	0	93.4	70-135	0			
Benzene	881.5	30	1000	0	88.2	75-125	0			
Bromobenzene	851.5	30	1000	0	85.2	65-120	0			
Bromochloromethane	974	30	1000	0	97.4	70-125	0			
Bromodichloromethane	871	30	1000	0	87.1	70-130	0			
Bromoform	882	30	1000	0	88.2	55-135	0			
Bromomethane	749	75	1000	0	74.9	30-160	0			
Carbon disulfide	1242	30	1000	0	124	45-160	0			
Carbon tetrachloride	891.5	30	1000	0	89.2	65-135	0			
Chlorobenzene	854.5	30	1000	0	85.4	75-125	0			
Chloroethane	982.5	100	1000	0	98.2	40-155	0			
Chloroform	936	30	1000	0	93.6	70-125	0			
Chloromethane	1044	100	1000	0	104	50-130	0			
cis-1,2-Dichloroethene	1014	30	1000	0	101	65-125	0			
cis-1,3-Dichloropropene	905.5	30	1000	0	90.6	70-125	0			
Dibromochloromethane	894	30	1000	0	89.4	65-135	0			
Dibromomethane	866.5	30	1000	0	86.6	75-130	0			
Dichlorodifluoromethane	839	30	1000	0	83.9	35-135	0			
Ethylbenzene	913	30	1000	0	91.3	75-125	0			
Hexachloroethane	1024	30	1000	0	102	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45356** Instrument ID **VMS8** Method: **SW8260**

Isopropylbenzene	931.5	30	1000	0	93.2	75-130	0
m,p-Xylene	1848	60	2000	0	92.4	80-125	0
Methyl tert-butyl ether	1046	30	1000	0	105	75-125	0
Methylene chloride	933.5	30	1000	0	93.4	55-145	0
Naphthalene	942.5	100	1000	0	94.2	40-140	0
n-Butylbenzene	1028	30	1000	0	103	65-140	0
n-Propylbenzene	918	30	1000	0	91.8	65-135	0
o-Xylene	918.5	30	1000	0	91.8	75-125	0
p-Isopropyltoluene	944.5	30	1000	0	94.4	75-135	0
sec-Butylbenzene	989	30	1000	0	98.9	65-130	0
Styrene	941	30	1000	0	94.1	75-125	0
tert-Butylbenzene	922	30	1000	0	92.2	65-130	0
Tetrachloroethene	737.5	30	1000	0	73.8	64-140	0
Tetrahydrofuran	992.5	200	1000	0	99.2	70-135	0
Toluene	892.5	30	1000	0	89.2	70-125	0
trans-1,2-Dichloroethene	1028	30	1000	0	103	65-135	0
trans-1,3-Dichloropropene	957	30	1000	0	95.7	65-125	0
trans-1,4-Dichloro-2-butene	858.5	30	1000	0	85.8	70-135	0
Trichloroethene	814	30	1000	0	81.4	75-125	0
Trichlorofluoromethane	1002	30	1000	0	100	25-185	0
Vinyl chloride	992.5	30	1000	0	99.2	60-125	0
Surr: 1,2-Dichloroethane-d4	*953.5*	0	*1000*	0	*95.4*	*70-130*	0
Surr: 4-Bromofluorobenzene	*1006*	0	*1000*	0	*101*	*70-130*	0
Surr: Dibromofluoromethane	*1028*	0	*1000*	0	*103*	*70-130*	0
Surr: Toluene-d8	*1006*	0	*1000*	0	*101*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212321
Project: Marshall KRRI 1150R 12/5/12

QC BATCH REPORT

Batch ID: **45356** Instrument ID **VMS8** Method: **SW8260**

LCS Sample ID: **LCS-45356-45356** Units: **µg/Kg** Analysis Date: **12/13/2012 11:52 AM**
Client ID: Run ID: **VMS6_121213A** SeqNo: **2169074** Prep Date: **12/12/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	940.5	30	1000	0	94	75-125	0			
1,1,1-Trichloroethane	947	30	1000	0	94.7	70-135	0			
1,1,2,2-Tetrachloroethane	841.5	30	1000	0	84.2	55-130	0			
1,1,2-Trichloroethane	792.5	30	1000	0	79.2	60-125	0			
1,1-Dichloroethane	870	30	1000	0	87	75-125	0			
1,1-Dichloroethene	991	30	1000	0	99.1	65-135	0			
1,2,3-Trichlorobenzene	897.5	30	1000	0	89.8	60-135	0			
1,2,3-Trichloropropane	806.5	30	1000	0	80.6	65-130	0			
1,2,4-Trichlorobenzene	975.5	30	1000	0	97.6	65-130	0			
1,2,4-Trimethylbenzene	945.5	30	1000	0	94.6	65-135	0			
1,2-Dibromo-3-chloropropane	993	30	1000	0	99.3	40-135	0			
1,2-Dibromoethane	876	30	1000	0	87.6	70-125	0			
1,2-Dichlorobenzene	866.5	30	1000	0	86.6	75-120	0			
1,2-Dichloroethane	926.5	30	1000	0	92.6	70-135	0			
1,2-Dichloropropane	917	30	1000	0	91.7	70-120	0			
1,3,5-Trimethylbenzene	948	30	1000	0	94.8	65-135	0			
1,3-Dichlorobenzene	870.5	30	1000	0	87	70-125	0			
1,4-Dichlorobenzene	844.5	30	1000	0	84.4	70-125	0			
2-Butanone	936.5	200	1000	0	93.6	30-160	0			
2-Hexanone	907	30	1000	0	90.7	45-145	0			
4-Methyl-2-pentanone	1115	30	1000	0	112	45-145	0			
Acetone	866.5	100	1000	0	86.6	20-160	0			
Acrylonitrile	872.5	100	1000	0	87.2	70-135	0			
Benzene	897.5	30	1000	0	89.8	75-125	0			
Bromobenzene	846.5	30	1000	0	84.6	65-120	0			
Bromochloromethane	933	30	1000	0	93.3	70-125	0			
Bromodichloromethane	906	30	1000	0	90.6	70-130	0			
Bromoform	882	30	1000	0	88.2	55-135	0			
Bromomethane	1128	75	1000	0	113	30-160	0			
Carbon disulfide	1477	30	1000	0	148	45-160	0			
Carbon tetrachloride	962.5	30	1000	0	96.2	65-135	0			
Chlorobenzene	881.5	30	1000	0	88.2	75-125	0			
Chloroethane	908.5	100	1000	0	90.8	40-155	0			
Chloroform	838.5	30	1000	0	83.8	70-125	0			
Chloromethane	967	100	1000	0	96.7	50-130	0			
cis-1,2-Dichloroethene	894	30	1000	0	89.4	65-125	0			
cis-1,3-Dichloropropene	993	30	1000	0	99.3	70-125	0			
Dibromochloromethane	956.5	30	1000	0	95.6	65-135	0			
Dibromomethane	843	30	1000	0	84.3	75-130	0			
Dichlorodifluoromethane	814.5	30	1000	0	81.4	35-135	0			
Ethylbenzene	903.5	30	1000	0	90.4	75-125	0			
Hexachloroethane	929	30	1000	0	92.9	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45356** Instrument ID **VMS8** Method: **SW8260**

Isopropylbenzene	918	30	1000	0	91.8	75-130	0
m,p-Xylene	1846	60	2000	0	92.3	80-125	0
Methyl tert-butyl ether	943	30	1000	0	94.3	75-125	0
Methylene chloride	970	30	1000	0	97	55-145	0
Naphthalene	928.5	100	1000	0	92.8	40-140	0
n-Butylbenzene	987.5	30	1000	0	98.8	65-140	0
n-Propylbenzene	904.5	30	1000	0	90.4	65-135	0
o-Xylene	886.5	30	1000	0	88.6	75-125	0
p-Isopropyltoluene	948	30	1000	0	94.8	75-135	0
sec-Butylbenzene	976	30	1000	0	97.6	65-130	0
Styrene	942	30	1000	0	94.2	75-125	0
tert-Butylbenzene	978	30	1000	0	97.8	65-130	0
Tetrachloroethene	919	30	1000	0	91.9	64-140	0
Tetrahydrofuran	836.5	200	1000	0	83.6	70-135	0
Toluene	885	30	1000	0	88.5	70-125	0
trans-1,2-Dichloroethene	976	30	1000	0	97.6	65-135	0
trans-1,3-Dichloropropene	970.5	30	1000	0	97	65-125	0
trans-1,4-Dichloro-2-butene	904	30	1000	0	90.4	70-135	0
Trichloroethene	888	30	1000	0	88.8	75-125	0
Trichlorofluoromethane	950.5	30	1000	0	95	25-185	0
Vinyl chloride	1010	30	1000	0	101	60-125	0
Surr: 1,2-Dichloroethane-d4	*975.5*	0	*1000*	0	*97.6*	*70-130*	0
Surr: 4-Bromofluorobenzene	*970*	0	*1000*	0	*97*	*70-130*	0
Surr: Dibromofluoromethane	*1016*	0	*1000*	0	*102*	*70-130*	0
Surr: Toluene-d8	*952*	0	*1000*	0	*95.2*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212321
Project: Marshall KRRI 1150R 12/5/12

QC BATCH REPORT

Batch ID: **45356** Instrument ID **VMS8** Method: **SW8260**

LCS Sample ID: **LCS-45356-45356** Units: **µg/Kg** Analysis Date: **12/14/2012 12:10 PM**
Client ID: Run ID: **VMS9_121213B** SeqNo: **2169300** Prep Date: **12/12/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	920	30	1000	0	92	75-125	0			
1,1,1-Trichloroethane	1004	30	1000	0	100	70-135	0			
1,1,2,2-Tetrachloroethane	935	30	1000	0	93.5	55-130	0			
1,1,2-Trichloroethane	821.5	30	1000	0	82.2	60-125	0			
1,1-Dichloroethane	1054	30	1000	0	105	75-125	0			
1,1-Dichloroethene	1213	30	1000	0	121	65-135	0			
1,2,3-Trichlorobenzene	937.5	30	1000	0	93.8	60-135	0			
1,2,3-Trichloropropane	890	30	1000	0	89	65-130	0			
1,2,4-Trichlorobenzene	966.5	30	1000	0	96.6	65-130	0			
1,2,4-Trimethylbenzene	948.5	30	1000	0	94.8	65-135	0			
1,2-Dibromo-3-chloropropane	1034	30	1000	0	103	40-135	0			
1,2-Dibromoethane	902	30	1000	0	90.2	70-125	0			
1,2-Dichlorobenzene	846.5	30	1000	0	84.6	75-120	0			
1,2-Dichloroethane	902	30	1000	0	90.2	70-135	0			
1,2-Dichloropropane	909.5	30	1000	0	91	70-120	0			
1,3,5-Trimethylbenzene	937	30	1000	0	93.7	65-135	0			
1,3-Dichlorobenzene	867.5	30	1000	0	86.8	70-125	0			
1,4-Dichlorobenzene	839.5	30	1000	0	84	70-125	0			
2-Butanone	1228	200	1000	0	123	30-160	0			
2-Hexanone	1132	30	1000	0	113	45-145	0			
4-Methyl-2-pentanone	1207	30	1000	0	121	45-145	0			
Acetone	1388	100	1000	0	139	20-160	0			
Acrylonitrile	1166	100	1000	0	117	70-135	0			
Benzene	952.5	30	1000	0	95.2	75-125	0			
Bromobenzene	857	30	1000	0	85.7	65-120	0			
Bromochloromethane	1078	30	1000	0	108	70-125	0			
Bromodichloromethane	940.5	30	1000	0	94	70-130	0			
Bromoform	924	30	1000	0	92.4	55-135	0			
Bromomethane	933.5	75	1000	0	93.4	30-160	0			
Carbon disulfide	1321	30	1000	0	132	45-160	0			
Carbon tetrachloride	984.5	30	1000	0	98.4	65-135	0			
Chlorobenzene	857.5	30	1000	0	85.8	75-125	0			
Chloroethane	1108	100	1000	0	111	40-155	0			
Chloroform	1033	30	1000	0	103	70-125	0			
Chloromethane	1162	100	1000	0	116	50-130	0			
cis-1,2-Dichloroethene	1061	30	1000	0	106	65-125	0			
cis-1,3-Dichloropropene	954	30	1000	0	95.4	70-125	0			
Dibromochloromethane	896.5	30	1000	0	89.6	65-135	0			
Dibromomethane	955.5	30	1000	0	95.6	75-130	0			
Dichlorodifluoromethane	966.5	30	1000	0	96.6	35-135	0			
Ethylbenzene	901.5	30	1000	0	90.2	75-125	0			
Hexachloroethane	965	30	1000	0	96.5	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45356** Instrument ID **VMS8** Method: **SW8260**

Isopropylbenzene	925.5	30	1000	0	92.6	75-130	0
m,p-Xylene	1827	60	2000	0	91.4	80-125	0
Methyl tert-butyl ether	1206	30	1000	0	121	75-125	0
Methylene chloride	1046	30	1000	0	105	55-145	0
Naphthalene	1056	100	1000	0	106	40-140	0
n-Butylbenzene	968	30	1000	0	96.8	65-140	0
n-Propylbenzene	907.5	30	1000	0	90.8	65-135	0
o-Xylene	912.5	30	1000	0	91.2	75-125	0
p-Isopropyltoluene	933	30	1000	0	93.3	75-135	0
sec-Butylbenzene	968	30	1000	0	96.8	65-130	0
Styrene	939	30	1000	0	93.9	75-125	0
tert-Butylbenzene	929.5	30	1000	0	93	65-130	0
Tetrachloroethene	747	30	1000	0	74.7	64-140	0
Tetrahydrofuran	1246	200	1000	0	125	70-135	0
Toluene	890.5	30	1000	0	89	70-125	0
trans-1,2-Dichloroethene	1129	30	1000	0	113	65-135	0
trans-1,3-Dichloropropene	917	30	1000	0	91.7	65-125	0
trans-1,4-Dichloro-2-butene	932	30	1000	0	93.2	70-135	0
Trichloroethene	879	30	1000	0	87.9	75-125	0
Trichlorofluoromethane	1146	30	1000	0	115	25-185	0
Vinyl chloride	1138	30	1000	0	114	60-125	0
Surr: 1,2-Dichloroethane-d4	*966.5*	0	*1000*	0	*96.6*	*70-130*	0
Surr: 4-Bromofluorobenzene	*1016*	0	*1000*	0	*102*	*70-130*	0
Surr: Dibromofluoromethane	*1025*	0	*1000*	0	*102*	*70-130*	0
Surr: Toluene-d8	*944*	0	*1000*	0	*94.4*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212321
Project: Marshall KRRI 1150R 12/5/12

QC BATCH REPORT

Batch ID: **45356** Instrument ID **VMS8** Method: **SW8260**

LCS Sample ID: **LCS-45356-45356** Units: **µg/Kg** Analysis Date: **12/14/2012 12:42 PM**
Client ID: Run ID: **VMS9_121214A** SeqNo: **2170436** Prep Date: **12/12/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	960.5	30	1000	0	96	75-125	0			
1,1,1-Trichloroethane	1096	30	1000	0	110	70-135	0			
1,1,2,2-Tetrachloroethane	908	30	1000	0	90.8	55-130	0			
1,1,2-Trichloroethane	865.5	30	1000	0	86.6	60-125	0			
1,1-Dichloroethane	1146	30	1000	0	115	75-125	0			
1,1-Dichloroethene	1328	30	1000	0	133	65-135	0			
1,2,3-Trichlorobenzene	952	30	1000	0	95.2	60-135	0			
1,2,3-Trichloropropane	848	30	1000	0	84.8	65-130	0			
1,2,4-Trichlorobenzene	1004	30	1000	0	100	65-130	0			
1,2,4-Trimethylbenzene	993	30	1000	0	99.3	65-135	0			
1,2-Dibromo-3-chloropropane	937.5	30	1000	0	93.8	40-135	0			
1,2-Dibromoethane	929	30	1000	0	92.9	70-125	0			
1,2-Dichlorobenzene	871.5	30	1000	0	87.2	75-120	0			
1,2-Dichloroethane	1022	30	1000	0	102	70-135	0			
1,2-Dichloropropane	1020	30	1000	0	102	70-120	0			
1,3,5-Trimethylbenzene	995	30	1000	0	99.5	65-135	0			
1,3-Dichlorobenzene	897.5	30	1000	0	89.8	70-125	0			
1,4-Dichlorobenzene	884.5	30	1000	0	88.4	70-125	0			
2-Butanone	1253	200	1000	0	125	30-160	0			
2-Hexanone	1012	30	1000	0	101	45-145	0			
4-Methyl-2-pentanone	1113	30	1000	0	111	45-145	0			
Acetone	1250	100	1000	0	125	20-160	0			
Acrylonitrile	1156	100	1000	0	116	70-135	0			
Benzene	1070	30	1000	0	107	75-125	0			
Bromobenzene	903.5	30	1000	0	90.4	65-120	0			
Bromochloromethane	1218	30	1000	0	122	70-125	0			
Bromodichloromethane	1043	30	1000	0	104	70-130	0			
Bromoform	896.5	30	1000	0	89.6	55-135	0			
Bromomethane	1096	75	1000	0	110	30-160	0			
Carbon disulfide	1454	30	1000	0	145	45-160	0			
Carbon tetrachloride	1094	30	1000	0	109	65-135	0			
Chlorobenzene	909	30	1000	0	90.9	75-125	0			
Chloroethane	1191	100	1000	0	119	40-155	0			
Chloroform	1164	30	1000	0	116	70-125	0			
Chloromethane	1372	100	1000	0	137	50-130	0			S
cis-1,2-Dichloroethene	1212	30	1000	0	121	65-125	0			
cis-1,3-Dichloropropene	1078	30	1000	0	108	70-125	0			
Dibromochloromethane	903	30	1000	0	90.3	65-135	0			
Dibromomethane	1062	30	1000	0	106	75-130	0			
Dichlorodifluoromethane	1340	30	1000	0	134	35-135	0			
Ethylbenzene	963.5	30	1000	0	96.4	75-125	0			
Hexachloroethane	1002	30	1000	0	100	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45356** Instrument ID **VMS8** Method: **SW8260**

Isopropylbenzene	984	30	1000	0	98.4	75-130	0	
m,p-Xylene	1944	60	2000	0	97.2	80-125	0	
Methyl tert-butyl ether	1303	30	1000	0	130	75-125	0	S
Methylene chloride	1176	30	1000	0	118	55-145	0	
Naphthalene	954.5	100	1000	0	95.4	40-140	0	
n-Butylbenzene	1037	30	1000	0	104	65-140	0	
n-Propylbenzene	959.5	30	1000	0	96	65-135	0	
o-Xylene	969	30	1000	0	96.9	75-125	0	
p-Isopropyltoluene	960.5	30	1000	0	96	75-135	0	
sec-Butylbenzene	1053	30	1000	0	105	65-130	0	
Styrene	993	30	1000	0	99.3	75-125	0	
tert-Butylbenzene	976	30	1000	0	97.6	65-130	0	
Tetrachloroethene	810.5	30	1000	0	81	64-140	0	
Tetrahydrofuran	1141	200	1000	0	114	70-135	0	
Toluene	928.5	30	1000	0	92.8	70-125	0	
trans-1,2-Dichloroethene	1272	30	1000	0	127	65-135	0	
trans-1,3-Dichloropropene	984.5	30	1000	0	98.4	65-125	0	
trans-1,4-Dichloro-2-butene	858	30	1000	0	85.8	70-135	0	
Trichloroethene	982	30	1000	0	98.2	75-125	0	
Trichlorofluoromethane	1342	30	1000	0	134	25-185	0	
Vinyl chloride	1362	30	1000	0	136	60-125	0	S
Surr: 1,2-Dichloroethane-d4	*972*	0	*1000*	0	*97.2*	*70-130*	0	
Surr: 4-Bromofluorobenzene	*1025*	0	*1000*	0	*102*	*70-130*	0	
Surr: Dibromofluoromethane	*1046*	0	*1000*	0	*105*	*70-130*	0	
Surr: Toluene-d8	*905*	0	*1000*	0	*90.5*	*70-130*	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212321
Project: Marshall KRRI 1150R 12/5/12

QC BATCH REPORT

Batch ID: **45356** Instrument ID **VMS8** Method: **SW8260**

MS Sample ID: **1212321-03A MS** Units: **µg/Kg** Analysis Date: **12/13/2012 01:07 AM**
Client ID: **SBKR1150R509S120512S006** Run ID: **VMS9_121212A** SeqNo: **2167622** Prep Date: **12/12/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	1037	30	1008	0	103	75-125	0			
1,1,1-Trichloroethane	1135	30	1008	0	113	70-135	0			
1,1,2,2-Tetrachloroethane	1052	30	1008	0	104	55-130	0			
1,1,2-Trichloroethane	927.9	30	1008	0	92	60-125	0			
1,1-Dichloroethane	1152	30	1008	0	114	75-125	0			
1,1-Dichloroethene	1359	30	1008	0	135	65-135	0			
1,2,3-Trichlorobenzene	954.1	30	1008	0	94.6	60-135	0			
1,2,3-Trichloropropane	1004	30	1008	0	99.6	65-130	0			
1,2,4-Trichlorobenzene	996.5	30	1008	0	98.8	65-130	0			
1,2,4-Trimethylbenzene	1158	30	1008	0	115	65-135	0			
1,2-Dibromo-3-chloropropane	1085	30	1008	0	108	40-135	0			
1,2-Dibromoethane	1039	30	1008	0	103	70-125	0			
1,2-Dichlorobenzene	955.6	30	1008	0	94.8	75-120	0			
1,2-Dichloroethane	1008	30	1008	0	100	70-135	0			
1,2-Dichloropropane	1026	30	1008	0	102	70-120	0			
1,3,5-Trimethylbenzene	1133	30	1008	0	112	65-135	0			
1,3-Dichlorobenzene	958.7	30	1008	0	95.1	70-125	0			
1,4-Dichlorobenzene	946.6	30	1008	0	93.9	70-125	0			
2-Butanone	1385	200	1008	0	137	30-160	0			
2-Hexanone	1282	30	1008	0	127	45-145	0			
4-Methyl-2-pentanone	1378	30	1008	0	137	45-145	0			
Acetone	1545	100	1008	0	153	20-160	0			
Acrylonitrile	1139	100	1008	0	113	70-135	0			
Benzene	1095	30	1008	0	109	75-125	0			
Bromobenzene	1018	30	1008	0	101	65-120	0			
Bromochloromethane	1163	30	1008	0	115	70-125	0			
Bromodichloromethane	1026	30	1008	0	102	70-130	0			
Bromoform	1025	30	1008	0	102	55-135	0			
Bromomethane	576.6	76	1008	0	57.2	30-160	0			
Carbon disulfide	1348	30	1008	0	134	45-160	0			
Carbon tetrachloride	1206	30	1008	0	120	65-135	0			
Chlorobenzene	991.9	30	1008	0	98.4	75-125	0			
Chloroethane	410.3	100	1008	0	40.7	40-155	0			
Chloroform	1113	30	1008	0	110	70-125	0			
Chloromethane	1338	100	1008	33.27	129	50-130	0			
cis-1,2-Dichloroethene	1156	30	1008	0	115	65-125	0			
cis-1,3-Dichloropropene	1056	30	1008	0	105	70-125	0			
Dibromochloromethane	984.4	30	1008	0	97.6	65-135	0			
Dibromomethane	1060	30	1008	0	105	75-130	0			
Dichlorodifluoromethane	1211	30	1008	0	120	35-135	0			
Ethylbenzene	1086	30	1008	0	108	75-125	0			
Hexachloroethane	1050	30	1008	0	104	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45356** Instrument ID **VMS8** Method: **SW8260**

Isopropylbenzene	1139	30	1008	0	113	75-130	0	
m,p-Xylene	2215	60	2016	0	110	80-125	0	
Methyl tert-butyl ether	1290	30	1008	0	128	75-125	0	S
Methylene chloride	1164	30	1008	0	116	55-145	0	
Naphthalene	1129	100	1008	0	112	40-140	0	
n-Butylbenzene	1112	30	1008	0	110	65-140	0	
n-Propylbenzene	1160	30	1008	0	115	65-135	0	
o-Xylene	1085	30	1008	0	108	75-125	0	
p-Isopropyltoluene	1084	30	1008	0	108	75-135	0	
sec-Butylbenzene	1157	30	1008	0	115	65-130	0	
Styrene	1074	30	1008	0	106	75-125	0	
tert-Butylbenzene	1104	30	1008	0	110	65-130	0	
Tetrachloroethene	850.8	30	1008	0	84.4	64-140	0	
Tetrahydrofuran	1379	200	1008	0	137	70-135	0	S
Toluene	1010	30	1008	0	100	70-125	0	
trans-1,2-Dichloroethene	1244	30	1008	0	123	65-135	0	
trans-1,3-Dichloropropene	1018	30	1008	0	101	65-125	0	
trans-1,4-Dichloro-2-butene	812.5	30	1008	0	80.6	70-135	0	
Trichloroethene	992.9	30	1008	0	98.5	75-125	0	
Trichlorofluoromethane	1338	30	1008	0	133	25-185	0	
Vinyl chloride	1333	30	1008	0	132	60-125	0	S
Surr: 1,2-Dichloroethane-d4	*964.2*	0	*1008*	0	*95.6*	*70-130*	0	
Surr: 4-Bromofluorobenzene	*1046*	0	*1008*	0	*104*	*70-130*	0	
Surr: Dibromofluoromethane	*1034*	0	*1008*	0	*103*	*70-130*	0	
Surr: Toluene-d8	*960.2*	0	*1008*	0	*95.2*	*70-130*	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212321
Project: Marshall KRRI 1150R 12/5/12

QC BATCH REPORT

Batch ID: **45356** Instrument ID **VMS8** Method: **SW8260**

MSD Sample ID: **1212321-03A MSD** Units: **µg/Kg** Analysis Date: **12/13/2012 01:32 AM**
Client ID: **SBKR1150R509S120512S006** Run ID: **VMS9_121212A** SeqNo: **2167623** Prep Date: **12/12/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	987.4	30	1008	0	98	75-125	1037	4.93	30	
1,1,1-Trichloroethane	1064	30	1008	0	106	70-135	1135	6.42	30	
1,1,2,2-Tetrachloroethane	1054	30	1008	0	105	55-130	1052	0.144	30	
1,1,2-Trichloroethane	914.8	30	1008	0	90.8	60-125	927.9	1.42	30	
1,1-Dichloroethane	1081	30	1008	0	107	75-125	1152	6.37	30	
1,1-Dichloroethene	1258	30	1008	0	125	65-135	1359	7.74	30	
1,2,3-Trichlorobenzene	990.9	30	1008	0	98.3	60-135	954.1	3.78	30	
1,2,3-Trichloropropane	998	30	1008	0	99	65-130	1004	0.554	30	
1,2,4-Trichlorobenzene	1032	30	1008	0	102	65-130	996.5	3.53	30	
1,2,4-Trimethylbenzene	1111	30	1008	0	110	65-135	1158	4.18	30	
1,2-Dibromo-3-chloropropane	1129	30	1008	0	112	40-135	1085	3.96	30	
1,2-Dibromoethane	995.5	30	1008	0	98.8	70-125	1039	4.31	30	
1,2-Dichlorobenzene	943.5	30	1008	0	93.6	75-120	955.6	1.27	30	
1,2-Dichloroethane	971.8	30	1008	0	96.4	70-135	1008	3.62	30	
1,2-Dichloropropane	971.8	30	1008	0	96.4	70-120	1026	5.45	30	
1,3,5-Trimethylbenzene	1093	30	1008	0	108	65-135	1133	3.53	30	
1,3-Dichlorobenzene	957.7	30	1008	0	95	70-125	958.7	0.105	30	
1,4-Dichlorobenzene	950.1	30	1008	0	94.2	70-125	946.6	0.372	30	
2-Butanone	1413	200	1008	0	140	30-160	1385	2.02	30	
2-Hexanone	1331	30	1008	0	132	45-145	1282	3.74	30	
4-Methyl-2-pentanone	1408	30	1008	0	140	45-145	1378	2.17	30	
Acetone	1537	100	1008	0	152	20-160	1545	0.491	30	
Acrylonitrile	1243	100	1008	0	123	70-135	1139	8.72	30	
Benzene	1021	30	1008	0	101	75-125	1095	6.96	30	
Bromobenzene	983.9	30	1008	0	97.6	65-120	1018	3.42	30	
Bromochloromethane	1118	30	1008	0	111	70-125	1163	3.89	30	
Bromodichloromethane	988.4	30	1008	0	98	70-130	1026	3.75	30	
Bromoform	998	30	1008	0	99	55-135	1025	2.64	30	
Bromomethane	637.1	76	1008	0	63.2	30-160	576.6	9.97	30	
Carbon disulfide	1245	30	1008	0	124	45-160	1348	7.97	30	
Carbon tetrachloride	1154	30	1008	0	114	65-135	1206	4.36	30	
Chlorobenzene	952.1	30	1008	0	94.4	75-125	991.9	4.1	30	
Chloroethane	311.5	100	1008	0	30.9	40-155	410.3	27.4	30	S
Chloroform	1050	30	1008	0	104	70-125	1113	5.82	30	
Chloromethane	1287	100	1008	33.27	124	50-130	1338	3.88	30	
cis-1,2-Dichloroethene	1106	30	1008	0	110	65-125	1156	4.41	30	
cis-1,3-Dichloropropene	996	30	1008	0	98.8	70-125	1056	5.89	30	
Dibromochloromethane	960.7	30	1008	0	95.3	65-135	984.4	2.44	30	
Dibromomethane	1014	30	1008	0	101	75-130	1060	4.47	30	
Dichlorodifluoromethane	776.2	30	1008	0	77	35-135	1211	43.7	30	R
Ethylbenzene	1023	30	1008	0	101	75-125	1086	5.98	30	
Hexachloroethane	1048	30	1008	0	104	70-135	1050	0.24	30	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45356** Instrument ID **VMS8** Method: **SW8260**

Isopropylbenzene	1084	30	1008	0	108	75-130	1139	4.99	30	
m,p-Xylene	2069	60	2016	0	103	80-125	2215	6.82	30	
Methyl tert-butyl ether	1238	30	1008	0	123	75-125	1290	4.11	30	
Methylene chloride	1086	30	1008	0	108	55-145	1164	6.99	30	
Naphthalene	1151	100	1008	0	114	40-140	1129	1.95	30	
n-Butylbenzene	1115	30	1008	0	111	65-140	1112	0.317	30	
n-Propylbenzene	1097	30	1008	0	109	65-135	1160	5.58	30	
o-Xylene	1039	30	1008	0	103	75-125	1085	4.27	30	
p-Isopropyltoluene	1072	30	1008	0	106	75-135	1084	1.08	30	
sec-Butylbenzene	1117	30	1008	0	111	65-130	1157	3.5	30	
Styrene	1027	30	1008	0	102	75-125	1074	4.46	30	
tert-Butylbenzene	1062	30	1008	0	105	65-130	1104	3.86	30	
Tetrachloroethene	802.4	30	1008	0	79.6	64-140	850.8	5.85	30	
Tetrahydrofuran	1282	200	1008	0	127	70-135	1379	7.28	30	
Toluene	965.7	30	1008	0	95.8	70-125	1010	4.49	30	
trans-1,2-Dichloroethene	1150	30	1008	0	114	65-135	1244	7.87	30	
trans-1,3-Dichloropropene	991.9	30	1008	0	98.4	65-125	1018	2.56	30	
trans-1,4-Dichloro-2-butene	798.4	30	1008	0	79.2	70-135	812.5	1.75	30	
Trichloroethene	940	30	1008	0	93.2	75-125	992.9	5.48	30	
Trichlorofluoromethane	1232	30	1008	0	122	25-185	1338	8.2	30	
Vinyl chloride	883.1	30	1008	0	87.6	60-125	1333	40.6	30	R
Surr: 1,2-Dichloroethane-d4	*977.8*	0	*1008*	0	*97*	*70-130*	964.2	*1.4*	*30*	
Surr: 4-Bromofluorobenzene	*1049*	0	*1008*	0	*104*	*70-130*	1046	*0.241*	*30*	
Surr: Dibromofluoromethane	*1020*	0	*1008*	0	*101*	*70-130*	1034	*1.37*	*30*	
Surr: Toluene-d8	*946.6*	0	*1008*	0	*93.9*	*70-130*	960.2	*1.43*	*30*	

The following samples were analyzed in this batch:

1212321-01A	1212321-02A	1212321-03A
1212321-04A	1212321-05A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212321
Project: Marshall KRRI 1150R 12/5/12

QC BATCH REPORT

Batch ID: **R113816** Instrument ID **MOIST** Method: **A2540 G**

MBLK Sample ID: **WBLKS1-R113816** Units: **% of sample** Analysis Date: **12/11/2012 12:30 PM**
Client ID: Run ID: **MOIST_121211C** SeqNo: **2166891** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	ND	0.050								

LCS Sample ID: **LCS-R113816** Units: **% of sample** Analysis Date: **12/11/2012 12:30 PM**
Client ID: Run ID: **MOIST_121211C** SeqNo: **2166887** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	100	0.050	100	0	100	99.5-100.5	0			

DUP Sample ID: **1212321-04B DUP** Units: **% of sample** Analysis Date: **12/11/2012 12:30 PM**
Client ID: **SBKR1150R510S120512S006** Run ID: **MOIST_121211C** SeqNo: **2166863** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	62.04	0.050	0	0	0	0-0	62.99	1.52	20	

DUP Sample ID: **1212344-03B DUP** Units: **% of sample** Analysis Date: **12/11/2012 12:30 PM**
Client ID: Run ID: **MOIST_121211C** SeqNo: **2166881** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	13.65	0.050	0	0	0	0-0	14.08	3.1	20	

The following samples were analyzed in this batch: 1212321-01B 1212321-02B 1212321-03B 1212321-04B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

1212321

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

COC #	ENBRIDGE_120512_GMK1	Task: KRRI_1150	
Total # of Samples: 5			Event Complete?
Turn Around Time	5 Day	Rush	No

BILLING CODE: 6.00

Lab Information:
Lab Name: ALS Laboratory Group
Address: 3352 128th Ave. Holland, MI 49424-9263
Lab PM: Ann Preston
Phone/Fax: 1-616-399-6070/1-616-399-6185
Lab PM email: ann.preston@alsglobal.com
Applicable Lab Quote #:

Project Information:
Site ID #:
Project #: 60162778
Site Address: 5555 Glenwood Parkway SE Suite 200
City: Grand Rapids State, Zip: MI
Site PM Name: [redacted]
Phone/Fax:
Site PM Email: Bryan.Stiemsma@aecom.com

Other Information:
Send Invoice to: Enbridge Energy - ATTN Accounts Payable
Address: 1100 Louisiana Suite 1100
City/State: Houson, TX Phone #: 713-821-2000
PO #
Send EDD to
CC Hardcopy report
CC Hardcopy report

ITEM #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	MATRIX CODE	G=GRAB C=COMP	SAMPLE DATE	#OF CONTAINERS	Comments/Lab Sample I.D.	Preservative	None	None	None	None	MeOH										
								Analysis	% Moisture	Be,Mo,V,Ni by 6020	ORO,DRO	PNAs by 8270	VOC by 5035/8260										
1	SBKR1150R508S120512S007	SBKR1150R508	SO	G	12/05/2012 08:20	3			X	X	X	X	X										
2	SBKR1150R508D120512S007	SBKR1150R508	SO	G	12/05/2012 08:20	3	DUPLICATE		X	X	X	X	X										
3	SBKR1150R509S120512S006	SBKR1150R509	SO	G	12/05/2012 09:32	3			X	X	X	X	X										
4	SBKR1150R510S120512S006	SBKR1150R510	SO	G	12/05/2012 10:39	3			X	X	X	X	X										
5	SBKR1150R510T120512MX	SBKR1150R510	SQ	G	12/05/2012 00:00	1	TRIP BLANK		X	X	X	X	X										

Additional Comments/Special Instructions:

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
G. Kramer	12-6-12	0852		12-6-12	0852
	12-7-12	1535		12-7-12	1535

Sample Receipt Conditions

Temp in 0C	Samples on Ice?	Sample intact?	Trip Blank?
4.8°C	Y/N	Y/N	Y/N
	(Y)N	(Y)N	(Y)N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N

SHIPPING INFO
Company:
Tracking #:

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: GERRY KRAMER (GMK1)
SIGNATURE of SAMPLER:
DATE Signed:
Time:

ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **07-Dec-12 15:35**

Work Order: **1212321** Received by: **PD**

Checklist completed by Diane Shaw (eSignature) 10-Dec-12 (Date) Reviewed by: Ann Preston (eSignature) 11-Dec-12 (Date)

Matrices: Soil
Carrier name: ALSHN

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	4.8 c		
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	12/10/2012 11:57:32 AM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:	-		

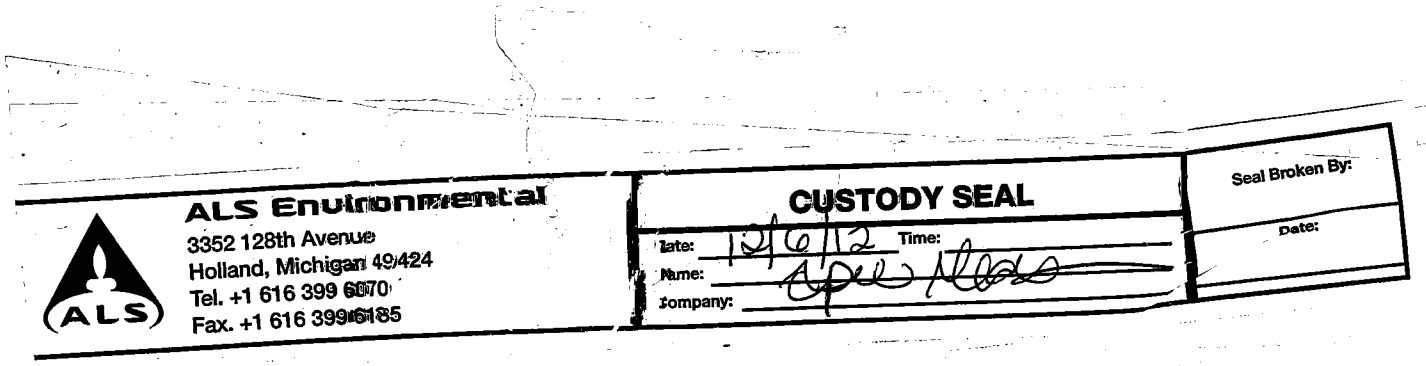
Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:



ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL

Date: 12/6/12 Time:
Name:
Company:

Seal Broken By:

Date:

19-Dec-2012

Bryan Stiemsma
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall KRRI 1200I, 1200R 12/11/12** Work Order: **1212419**

Dear Bryan,

ALS Environmental received 10 samples on 12-Dec-2012 08:10 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 58.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

Certificate No: MN331938

ALS Group USA, Corp

Date: 19-Dec-12

Client: AECOM Environment
Project: Marshall KRRI 1200I, 1200R 12/11/12
Work Order: **1212419**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1212419-01	SBKR1200I501S121112S007	Soil		12/11/2012 14:50	12/12/2012 08:10	☐
1212419-02	SBKR1200R504S121112S005	Soil		12/11/2012 08:19	12/12/2012 08:10	☐
1212419-03	SBKR1200R504D121112S005	Soil		12/11/2012 08:19	12/12/2012 08:10	☐
1212419-04	SBKR1200R505S121112S007	Soil		12/11/2012 09:25	12/12/2012 08:10	☐
1212419-05	SBKR1200R506S121112S004	Soil		12/11/2012 10:32	12/12/2012 08:10	☐
1212419-06	SBKR1200R507S121112S005	Soil		12/11/2012 11:24	12/12/2012 08:10	☐
1212419-07	SBKR1200R508S121112S006	Soil		12/11/2012 13:06	12/12/2012 08:10	☐
1212419-08	SBKR1200R509S121112S007	Soil		12/11/2012 14:02	12/12/2012 08:10	☐
1212419-09	SBKR1200R510S121112S005	Soil		12/11/2012 15:50	12/12/2012 08:10	☐
1212419-10	SBKR1200R510T121112MX	Soil		12/11/2012	12/12/2012 08:10	☐

Client: AECOM Environment
Project: Marshall KRRI 1200I, 1200R 12/11/12
Work Order: 1212419

Case Narrative

The extraction procedure used to prepare the soil samples for DRO and PAH analyses in this work order was a modification of the standard 3541 procedure. At the request of the client, a 10 gram sample aliquot dried with hydromatrix is used for extraction as outlined in ALS SOP HN-EXT-003(EN)-R01. All samples extracted starting on 10/1/2011 were prepared using this modified SOP.

Batch 45396A sample SBKR1200R510S121112S005 MS recovery for ORO was slightly below control limits. Both the MSD recovery and RPD met quality control criteria. No data requires qualification for ORO.

Batch 45358 sample SBKR1200R505S121112S007 MSD recovery for Tetrahydrofuran was slightly below control limits. Both the MSD recovery and RPD met quality control criteria. No data requires qualification for this compound. The MS/MSD recoveries for 1,2,3-TMB were below control limits. The corresponding reporting limit in the parent sample may be biased low for 1,2,3-TMB.

Batch 45367 samples 1212419-05 and1212419-06 PAH internal standard recoveries were below the lower control limit, but >20%. Per the client's request, the results associated with the IS are being reported and should be considered as estimated for the compounds marked with an asterisk.

Batch 45453 sample SBKR1200R505S121112S007 MS/MSD recoveries for Vanadium were above control limits. The corresponding result in the parent sample may be biased high for Vanadium.

ALS Group USA, Corp

Date: 19-Dec-12

Client: AECOM Environment
Project: Marshall KRRI 1200I, 1200R 12/11/12
WorkOrder: **1212419**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
SD	Serial Dilution
TDL	Target Detection Limit

Units Reported	Description
% of sample	Percent of Sample
µg/Kg	Micrograms per Kilogram
µg/Kg-dry	Micrograms per Kilogram Dry Weight
mg/Kg-dry	Milligrams per Kilogram Dry Weight

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1200I501S121112S007
Work Order:	1212419	**Collection Date:**	12/11/2012 2:50:00 PM
Project:	Marshall KRRI 1200I, 1200R 12/11/12		
Lab ID:	1212419-01	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/13/2012**		Analyst: **CW**
DRO (C10-C20)	**18**	**17**	**4.0**		**mg/Kg-dry**	1	12/14/2012
ORO (C20-C34)	**480**	**34**	**4.0**		**mg/Kg-dry**	1	12/14/2012
Surr: 4-Terphenyl-d14	*79.4*	*39-115*			*%REC*	1	12/14/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/17/2012**		Analyst: **CES**
Beryllium	ND	0.90	0.50		mg/Kg-dry	4	12/19/2012
Molybdenum	ND	2.2	1.0		mg/Kg-dry	4	12/19/2012
Nickel	**19**	**2.2**	**1.0**		**mg/Kg-dry**	4	12/19/2012
Vanadium	**15**	**2.2**	**1.0**		**mg/Kg-dry**	4	12/19/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/13/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/13/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/13/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/13/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/13/2012
Benzo(a)anthracene	**940**	**330**	**330**		**µg/Kg-dry**	1	12/13/2012
Benzo(a)pyrene	**1,200**	**330**	**330**		**µg/Kg-dry**	1	12/13/2012
Benzo(b)fluoranthene	**1,400**	**330**	**330**		**µg/Kg-dry**	1	12/13/2012
Benzo(g,h,i)perylene	**480**	**330**	**330**		**µg/Kg-dry**	1	12/13/2012
Benzo(k)fluoranthene	**870**	**330**	**330**		**µg/Kg-dry**	1	12/13/2012
Chrysene	**1,200**	**330**	**330**		**µg/Kg-dry**	1	12/13/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/13/2012
Fluoranthene	**1,800**	**330**	**330**		**µg/Kg-dry**	1	12/13/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/13/2012
Indeno(1,2,3-cd)pyrene	**420**	**330**	**330**		**µg/Kg-dry**	1	12/13/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/13/2012
Phenanthrene	**600**	**330**	**330**		**µg/Kg-dry**	1	12/13/2012
Pyrene	**1,700**	**330**	**330**		**µg/Kg-dry**	1	12/13/2012
Surr: 2,4,6-Tribromophenol	*77.8*	*34-140*			*%REC*	1	12/13/2012
Surr: 2-Fluorobiphenyl	*74.6*	*12-100*			*%REC*	1	12/13/2012
Surr: 2-Fluorophenol	*83.2*	*33-117*			*%REC*	1	12/13/2012
Surr: 4-Terphenyl-d14	*96.3*	*25-137*			*%REC*	1	12/13/2012
Surr: Nitrobenzene-d5	*76.9*	*37-107*			*%REC*	1	12/13/2012
Surr: Phenol-d6	*73.3*	*40-106*			*%REC*	1	12/13/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/12/2012**		Analyst: **BG**
1,1,1,2-Tetrachloroethane	ND	130	100		µg/Kg-dry	1	12/13/2012
1,1,1-Trichloroethane	ND	130	50		µg/Kg-dry	1	12/13/2012
1,1,2,2-Tetrachloroethane	ND	130	50		µg/Kg-dry	1	12/13/2012
1,1,2-Trichloroethane	ND	130	50		µg/Kg-dry	1	12/13/2012
1,1-Dichloroethane	ND	130	50		µg/Kg-dry	1	12/13/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client: AECOM Environment
Client Sample ID: SBKR1200I501S121112S007
Work Order: 1212419
Collection Date: 12/11/2012 2:50:00 PM
Project: Marshall KRRI 1200I, 1200R 12/11/12
Lab ID: 1212419-01
Matrix: SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	130	50		µg/Kg-dry	1	12/13/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
1,2,3-Trichloropropane	ND	130	100		µg/Kg-dry	1	12/13/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
1,2,4-Trimethylbenzene	ND	130	100		µg/Kg-dry	1	12/13/2012
1,2-Dibromo-3-chloropropane	ND	130	10		µg/Kg-dry	1	12/13/2012
1,2-Dibromoethane	ND	130	20		µg/Kg-dry	1	12/13/2012
1,2-Dichlorobenzene	ND	130	100		µg/Kg-dry	1	12/13/2012
1,2-Dichloroethane	ND	130	50		µg/Kg-dry	1	12/13/2012
1,2-Dichloropropane	ND	130	50		µg/Kg-dry	1	12/13/2012
1,3,5-Trimethylbenzene	ND	130	100		µg/Kg-dry	1	12/13/2012
1,3-Dichlorobenzene	ND	130	100		µg/Kg-dry	1	12/13/2012
1,4-Dichlorobenzene	ND	130	100		µg/Kg-dry	1	12/13/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/13/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
2-Methylnaphthalene	ND	420	330		µg/Kg-dry	1	12/13/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
Acetone	ND	1,100	1,000		µg/Kg-dry	1	12/13/2012
Acrylonitrile	ND	130	100		µg/Kg-dry	1	12/13/2012
Benzene	ND	130	50		µg/Kg-dry	1	12/13/2012
Bromobenzene	ND	130	100		µg/Kg-dry	1	12/13/2012
Bromochloromethane	ND	130	100		µg/Kg-dry	1	12/13/2012
Bromodichloromethane	ND	130	100		µg/Kg-dry	1	12/13/2012
Bromoform	ND	130	100		µg/Kg-dry	1	12/13/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/13/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/13/2012
Carbon tetrachloride	ND	130	50		µg/Kg-dry	1	12/13/2012
Chlorobenzene	ND	130	50		µg/Kg-dry	1	12/13/2012
Chloroethane	ND	420	250		µg/Kg-dry	1	12/13/2012
Chloroform	ND	130	50		µg/Kg-dry	1	12/13/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/13/2012
cis-1,2-Dichloroethene	ND	130	50		µg/Kg-dry	1	12/13/2012
cis-1,3-Dichloropropene	ND	130	50		µg/Kg-dry	1	12/13/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/13/2012
Dibromochloromethane	ND	130	100		µg/Kg-dry	1	12/13/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/13/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/13/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/13/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/13/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/13/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: AECOM Environment
Client Sample ID: SBKR1200I501S121112S007
Work Order: 1212419
Collection Date: 12/11/2012 2:50:00 PM
Project: Marshall KRRI 1200I, 1200R 12/11/12
Lab ID: 1212419-01
Matrix: SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	130	50		µg/Kg-dry	1	12/13/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/13/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
m,p-Xylene	ND	250	100		µg/Kg-dry	1	12/13/2012
Methyl iodide	ND	130	100		µg/Kg-dry	1	12/13/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/13/2012
Methylene chloride	ND	130	100		µg/Kg-dry	1	12/13/2012
Naphthalene	ND	420	330		µg/Kg-dry	1	12/13/2012
n-Butylbenzene	ND	130	50		µg/Kg-dry	1	12/13/2012
n-Propylbenzene	ND	130	100		µg/Kg-dry	1	12/13/2012
o-Xylene	ND	130	50		µg/Kg-dry	1	12/13/2012
p-Isopropyltoluene	ND	130	100		µg/Kg-dry	1	12/13/2012
sec-Butylbenzene	ND	130	50		µg/Kg-dry	1	12/13/2012
Styrene	ND	130	50		µg/Kg-dry	1	12/13/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
tert-Butylbenzene	ND	130	50		µg/Kg-dry	1	12/13/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/13/2012
Tetrachloroethene	ND	130	50		µg/Kg-dry	1	12/13/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/13/2012
Toluene	ND	130	100		µg/Kg-dry	1	12/13/2012
trans-1,2-Dichloroethene	ND	130	50		µg/Kg-dry	1	12/13/2012
trans-1,3-Dichloropropene	ND	130	50		µg/Kg-dry	1	12/13/2012
trans-1,4-Dichloro-2-butene	ND	130	50		µg/Kg-dry	1	12/13/2012
Trichloroethene	ND	130	50		µg/Kg-dry	1	12/13/2012
Trichlorofluoromethane	ND	130	100		µg/Kg-dry	1	12/13/2012
Vinyl chloride	ND	130	40		µg/Kg-dry	1	12/13/2012
Surr: 1,2-Dichloroethane-d4	*87.9*	*70-130*			*%REC*	1	12/13/2012
Surr: 4-Bromofluorobenzene	*96.7*	*70-130*			*%REC*	1	12/13/2012
Surr: Dibromofluoromethane	*94.3*	*70-130*			*%REC*	1	12/13/2012
Surr: Toluene-d8	*95.2*	*70-130*			*%REC*	1	12/13/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**42**	**0.050**	**0**		**% of sample**	1	12/14/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1200R504S121112S005
Work Order:	1212419	**Collection Date:**	12/11/2012 8:19:00 AM
Project:	Marshall KRRI 1200I, 1200R 12/11/12		
Lab ID:	1212419-02	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/13/2012**		Analyst: **CW**
DRO (C10-C20)	ND	20	4.0		mg/Kg-dry	1	12/14/2012
ORO (C20-C34)	**210**	**40**	**4.0**		**mg/Kg-dry**	1	12/14/2012
Surr: 4-Terphenyl-d14	*84.7*	*39-115*			*%REC*	1	12/14/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/17/2012**		Analyst: **CES**
Beryllium	ND	1.2	0.50		mg/Kg-dry	4	12/19/2012
Molybdenum	ND	2.9	1.0		mg/Kg-dry	4	12/19/2012
Nickel	**21**	**2.9**	**1.0**		**mg/Kg-dry**	4	12/19/2012
Vanadium	**26**	**2.9**	**1.0**		**mg/Kg-dry**	4	12/19/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/13/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/13/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/13/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/13/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/13/2012
Benzo(a)anthracene	**360**	**330**	**330**		**µg/Kg-dry**	1	12/13/2012
Benzo(a)pyrene	**510**	**330**	**330**		**µg/Kg-dry**	1	12/13/2012
Benzo(b)fluoranthene	**520**	**330**	**330**		**µg/Kg-dry**	1	12/13/2012
Benzo(g,h,i)perylene	ND	330	330		µg/Kg-dry	1	12/13/2012
Benzo(k)fluoranthene	ND	330	330		µg/Kg-dry	1	12/13/2012
Chrysene	**420**	**330**	**330**		**µg/Kg-dry**	1	12/13/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/13/2012
Fluoranthene	**490**	**330**	**330**		**µg/Kg-dry**	1	12/13/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/13/2012
Indeno(1,2,3-cd)pyrene	ND	330	330		µg/Kg-dry	1	12/13/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/13/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/13/2012
Pyrene	**580**	**330**	**330**		**µg/Kg-dry**	1	12/13/2012
Surr: 2,4,6-Tribromophenol	*79.4*	*34-140*			*%REC*	1	12/13/2012
Surr: 2-Fluorobiphenyl	*77.1*	*12-100*			*%REC*	1	12/13/2012
Surr: 2-Fluorophenol	*86.0*	*33-117*			*%REC*	1	12/13/2012
Surr: 4-Terphenyl-d14	*104*	*25-137*			*%REC*	1	12/13/2012
Surr: Nitrobenzene-d5	*83.4*	*37-107*			*%REC*	1	12/13/2012
Surr: Phenol-d6	*82.3*	*40-106*			*%REC*	1	12/13/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/12/2012**		Analyst: **BG**
1,1,1,2-Tetrachloroethane	ND	180	100		µg/Kg-dry	1	12/13/2012
1,1,1-Trichloroethane	ND	180	50		µg/Kg-dry	1	12/13/2012
1,1,2,2-Tetrachloroethane	ND	180	50		µg/Kg-dry	1	12/13/2012
1,1,2-Trichloroethane	ND	180	50		µg/Kg-dry	1	12/13/2012
1,1-Dichloroethane	ND	180	50		µg/Kg-dry	1	12/13/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1200R504S121112S005
Work Order:	1212419	**Collection Date:**	12/11/2012 8:19:00 AM
Project:	Marshall KRRI 1200I, 1200R 12/11/12		
Lab ID:	1212419-02	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	180	50		µg/Kg-dry	1	12/13/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
1,2,3-Trichloropropane	ND	180	100		µg/Kg-dry	1	12/13/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
1,2,4-Trimethylbenzene	ND	180	100		µg/Kg-dry	1	12/13/2012
1,2-Dibromo-3-chloropropane	ND	180	10		µg/Kg-dry	1	12/13/2012
1,2-Dibromoethane	ND	180	20		µg/Kg-dry	1	12/13/2012
1,2-Dichlorobenzene	ND	180	100		µg/Kg-dry	1	12/13/2012
1,2-Dichloroethane	ND	180	50		µg/Kg-dry	1	12/13/2012
1,2-Dichloropropane	ND	180	50		µg/Kg-dry	1	12/13/2012
1,3,5-Trimethylbenzene	ND	180	100		µg/Kg-dry	1	12/13/2012
1,3-Dichlorobenzene	ND	180	100		µg/Kg-dry	1	12/13/2012
1,4-Dichlorobenzene	ND	180	100		µg/Kg-dry	1	12/13/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/13/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
2-Methylnaphthalene	ND	610	330		µg/Kg-dry	1	12/13/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
Acetone	ND	1,500	1,000		µg/Kg-dry	1	12/13/2012
Acrylonitrile	ND	180	100		µg/Kg-dry	1	12/13/2012
Benzene	ND	180	50		µg/Kg-dry	1	12/13/2012
Bromobenzene	ND	180	100		µg/Kg-dry	1	12/13/2012
Bromochloromethane	ND	180	100		µg/Kg-dry	1	12/13/2012
Bromodichloromethane	ND	180	100		µg/Kg-dry	1	12/13/2012
Bromoform	ND	180	100		µg/Kg-dry	1	12/13/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/13/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/13/2012
Carbon tetrachloride	ND	180	50		µg/Kg-dry	1	12/13/2012
Chlorobenzene	ND	180	50		µg/Kg-dry	1	12/13/2012
Chloroethane	ND	610	250		µg/Kg-dry	1	12/13/2012
Chloroform	ND	180	50		µg/Kg-dry	1	12/13/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/13/2012
cis-1,2-Dichloroethene	ND	180	50		µg/Kg-dry	1	12/13/2012
cis-1,3-Dichloropropene	ND	180	50		µg/Kg-dry	1	12/13/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/13/2012
Dibromochloromethane	ND	180	100		µg/Kg-dry	1	12/13/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/13/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/13/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/13/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/13/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/13/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: AECOM Environment
Client Sample ID: SBKR1200R504S121112S005
Work Order: 1212419
Collection Date: 12/11/2012 8:19:00 AM
Project: Marshall KRRI 1200I, 1200R 12/11/12
Lab ID: 1212419-02
Matrix: SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	180	50		µg/Kg-dry	1	12/13/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/13/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
m,p-Xylene	ND	360	100		µg/Kg-dry	1	12/13/2012
Methyl iodide	ND	180	100		µg/Kg-dry	1	12/13/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/13/2012
Methylene chloride	ND	180	100		µg/Kg-dry	1	12/13/2012
Naphthalene	ND	610	330		µg/Kg-dry	1	12/13/2012
n-Butylbenzene	ND	180	50		µg/Kg-dry	1	12/13/2012
n-Propylbenzene	ND	180	100		µg/Kg-dry	1	12/13/2012
o-Xylene	ND	180	50		µg/Kg-dry	1	12/13/2012
p-Isopropyltoluene	ND	180	100		µg/Kg-dry	1	12/13/2012
sec-Butylbenzene	ND	180	50		µg/Kg-dry	1	12/13/2012
Styrene	ND	180	50		µg/Kg-dry	1	12/13/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
tert-Butylbenzene	ND	180	50		µg/Kg-dry	1	12/13/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/13/2012
Tetrachloroethene	ND	180	50		µg/Kg-dry	1	12/13/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/13/2012
Toluene	ND	180	100		µg/Kg-dry	1	12/13/2012
trans-1,2-Dichloroethene	ND	180	50		µg/Kg-dry	1	12/13/2012
trans-1,3-Dichloropropene	ND	180	50		µg/Kg-dry	1	12/13/2012
trans-1,4-Dichloro-2-butene	ND	180	50		µg/Kg-dry	1	12/13/2012
Trichloroethene	ND	180	50		µg/Kg-dry	1	12/13/2012
Trichlorofluoromethane	ND	180	100		µg/Kg-dry	1	12/13/2012
Vinyl chloride	ND	180	40		µg/Kg-dry	1	12/13/2012
Surr: 1,2-Dichloroethane-d4	*85.2*	*70-130*			*%REC*	1	12/13/2012
Surr: 4-Bromofluorobenzene	*95.5*	*70-130*			*%REC*	1	12/13/2012
Surr: Dibromofluoromethane	*90.6*	*70-130*			*%REC*	1	12/13/2012
Surr: Toluene-d8	*95.2*	*70-130*			*%REC*	1	12/13/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**50**	**0.050**	**0**		**% of sample**	1	12/14/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1200R504D121112S005
Work Order:	1212419	**Collection Date:**	12/11/2012 8:19:00 AM
Project:	Marshall KRRI 1200I, 1200R 12/11/12		
Lab ID:	1212419-03	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/13/2012**		Analyst: **CW**
DRO (C10-C20)	ND	20	4.0		mg/Kg-dry	1	12/14/2012
ORO (C20-C34)	**180**	**41**	**4.0**		**mg/Kg-dry**	1	12/14/2012
Surr: 4-Terphenyl-d14	*85.5*	*39-115*			*%REC*	1	12/14/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/17/2012**		Analyst: **CES**
Beryllium	ND	1.1	0.50		mg/Kg-dry	4	12/19/2012
Molybdenum	ND	2.7	1.0		mg/Kg-dry	4	12/19/2012
Nickel	**21**	**2.7**	**1.0**		**mg/Kg-dry**	4	12/19/2012
Vanadium	**26**	**2.7**	**1.0**		**mg/Kg-dry**	4	12/19/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/13/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/14/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/14/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/14/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/14/2012
Benzo(a)anthracene	**350**	**330**	**330**		**µg/Kg-dry**	1	12/14/2012
Benzo(a)pyrene	**500**	**330**	**330**		**µg/Kg-dry**	1	12/14/2012
Benzo(b)fluoranthene	**450**	**330**	**330**		**µg/Kg-dry**	1	12/14/2012
Benzo(g,h,i)perylene	ND	330	330		µg/Kg-dry	1	12/14/2012
Benzo(k)fluoranthene	**400**	**330**	**330**		**µg/Kg-dry**	1	12/14/2012
Chrysene	**470**	**330**	**330**		**µg/Kg-dry**	1	12/14/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/14/2012
Fluoranthene	**490**	**330**	**330**		**µg/Kg-dry**	1	12/14/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/14/2012
Indeno(1,2,3-cd)pyrene	ND	330	330		µg/Kg-dry	1	12/14/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/14/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/14/2012
Pyrene	**610**	**330**	**330**		**µg/Kg-dry**	1	12/14/2012
Surr: 2,4,6-Tribromophenol	*79.3*	*34-140*			*%REC*	1	12/14/2012
Surr: 2-Fluorobiphenyl	*79.1*	*12-100*			*%REC*	1	12/14/2012
Surr: 2-Fluorophenol	*89.0*	*33-117*			*%REC*	1	12/14/2012
Surr: 4-Terphenyl-d14	*104*	*25-137*			*%REC*	1	12/14/2012
Surr: Nitrobenzene-d5	*85.1*	*37-107*			*%REC*	1	12/14/2012
Surr: Phenol-d6	*84.6*	*40-106*			*%REC*	1	12/14/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/12/2012**		Analyst: **BG**
1,1,1,2-Tetrachloroethane	ND	200	100		µg/Kg-dry	1	12/13/2012
1,1,1-Trichloroethane	ND	200	50		µg/Kg-dry	1	12/13/2012
1,1,2,2-Tetrachloroethane	ND	200	50		µg/Kg-dry	1	12/13/2012
1,1,2-Trichloroethane	ND	200	50		µg/Kg-dry	1	12/13/2012
1,1-Dichloroethane	ND	200	50		µg/Kg-dry	1	12/13/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1200R504D121112S005
Work Order:	1212419	**Collection Date:**	12/11/2012 8:19:00 AM
Project:	Marshall KRRI 1200I, 1200R 12/11/12		
Lab ID:	1212419-03	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	200	50		µg/Kg-dry	1	12/13/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
1,2,3-Trichloropropane	ND	200	100		µg/Kg-dry	1	12/13/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
1,2,4-Trimethylbenzene	ND	200	100		µg/Kg-dry	1	12/13/2012
1,2-Dibromo-3-chloropropane	ND	200	10		µg/Kg-dry	1	12/13/2012
1,2-Dibromoethane	ND	200	20		µg/Kg-dry	1	12/13/2012
1,2-Dichlorobenzene	ND	200	100		µg/Kg-dry	1	12/13/2012
1,2-Dichloroethane	ND	200	50		µg/Kg-dry	1	12/13/2012
1,2-Dichloropropane	ND	200	50		µg/Kg-dry	1	12/13/2012
1,3,5-Trimethylbenzene	ND	200	100		µg/Kg-dry	1	12/13/2012
1,3-Dichlorobenzene	ND	200	100		µg/Kg-dry	1	12/13/2012
1,4-Dichlorobenzene	ND	200	100		µg/Kg-dry	1	12/13/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/13/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
2-Methylnaphthalene	ND	660	330		µg/Kg-dry	1	12/13/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
Acetone	ND	1,600	1,000		µg/Kg-dry	1	12/13/2012
Acrylonitrile	ND	200	100		µg/Kg-dry	1	12/13/2012
Benzene	ND	200	50		µg/Kg-dry	1	12/13/2012
Bromobenzene	ND	200	100		µg/Kg-dry	1	12/13/2012
Bromochloromethane	ND	200	100		µg/Kg-dry	1	12/13/2012
Bromodichloromethane	ND	200	100		µg/Kg-dry	1	12/13/2012
Bromoform	ND	200	100		µg/Kg-dry	1	12/13/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/13/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/13/2012
Carbon tetrachloride	ND	200	50		µg/Kg-dry	1	12/13/2012
Chlorobenzene	ND	200	50		µg/Kg-dry	1	12/13/2012
Chloroethane	ND	660	250		µg/Kg-dry	1	12/13/2012
Chloroform	ND	200	50		µg/Kg-dry	1	12/13/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/13/2012
cis-1,2-Dichloroethene	ND	200	50		µg/Kg-dry	1	12/13/2012
cis-1,3-Dichloropropene	ND	200	50		µg/Kg-dry	1	12/13/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/13/2012
Dibromochloromethane	ND	200	100		µg/Kg-dry	1	12/13/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/13/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/13/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/13/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/13/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/13/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: AECOM Environment
Client Sample ID: SBKR1200R504D121112S005
Work Order: 1212419
Collection Date: 12/11/2012 8:19:00 AM
Project: Marshall KRRI 1200I, 1200R 12/11/12
Lab ID: 1212419-03
Matrix: SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	200	50		µg/Kg-dry	1	12/13/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/13/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
m,p-Xylene	ND	390	100		µg/Kg-dry	1	12/13/2012
Methyl iodide	ND	200	100		µg/Kg-dry	1	12/13/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/13/2012
Methylene chloride	ND	200	100		µg/Kg-dry	1	12/13/2012
Naphthalene	ND	660	330		µg/Kg-dry	1	12/13/2012
n-Butylbenzene	ND	200	50		µg/Kg-dry	1	12/13/2012
n-Propylbenzene	ND	200	100		µg/Kg-dry	1	12/13/2012
o-Xylene	ND	200	50		µg/Kg-dry	1	12/13/2012
p-Isopropyltoluene	ND	200	100		µg/Kg-dry	1	12/13/2012
sec-Butylbenzene	ND	200	50		µg/Kg-dry	1	12/13/2012
Styrene	ND	200	50		µg/Kg-dry	1	12/13/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
tert-Butylbenzene	ND	200	50		µg/Kg-dry	1	12/13/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/13/2012
Tetrachloroethene	ND	200	50		µg/Kg-dry	1	12/13/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/13/2012
Toluene	ND	200	100		µg/Kg-dry	1	12/13/2012
trans-1,2-Dichloroethene	ND	200	50		µg/Kg-dry	1	12/13/2012
trans-1,3-Dichloropropene	ND	200	50		µg/Kg-dry	1	12/13/2012
trans-1,4-Dichloro-2-butene	ND	200	50		µg/Kg-dry	1	12/13/2012
Trichloroethene	ND	200	50		µg/Kg-dry	1	12/13/2012
Trichlorofluoromethane	ND	200	100		µg/Kg-dry	1	12/13/2012
Vinyl chloride	ND	200	40		µg/Kg-dry	1	12/13/2012
Surr: 1,2-Dichloroethane-d4	*87.4*	*70-130*			*%REC*	1	12/13/2012
Surr: 4-Bromofluorobenzene	*99.1*	*70-130*			*%REC*	1	12/13/2012
Surr: Dibromofluoromethane	*91.6*	*70-130*			*%REC*	1	12/13/2012
Surr: Toluene-d8	*97.1*	*70-130*			*%REC*	1	12/13/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**52**	**0.050**	**0**		**% of sample**	1	12/14/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1200R505S121112S007
Work Order:	1212419	**Collection Date:**	12/11/2012 9:25:00 AM
Project:	Marshall KRRI 1200I, 1200R 12/11/12		
Lab ID:	1212419-04	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/13/2012**		Analyst: **CW**
DRO (C10-C20)	ND	16	4.0		mg/Kg-dry	1	12/13/2012
ORO (C20-C34)	**220**	**32**	**4.0**		**mg/Kg-dry**	1	12/13/2012
Surr: 4-Terphenyl-d14	*81.5*	*39-115*			*%REC*	1	12/13/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/17/2012**		Analyst: **CES**
Beryllium	ND	0.91	0.50		mg/Kg-dry	4	12/19/2012
Molybdenum	ND	2.3	1.0		mg/Kg-dry	4	12/19/2012
Nickel	**15**	**2.3**	**1.0**		**mg/Kg-dry**	4	12/19/2012
Vanadium	**22**	**2.3**	**1.0**		**mg/Kg-dry**	4	12/19/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/13/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/14/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/14/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/14/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/14/2012
Benzo(a)anthracene	**340**	**330**	**330**		**µg/Kg-dry**	1	12/14/2012
Benzo(a)pyrene	**460**	**330**	**330**		**µg/Kg-dry**	1	12/14/2012
Benzo(b)fluoranthene	**500**	**330**	**330**		**µg/Kg-dry**	1	12/14/2012
Benzo(g,h,i)perylene	ND	330	330		µg/Kg-dry	1	12/14/2012
Benzo(k)fluoranthene	ND	330	330		µg/Kg-dry	1	12/14/2012
Chrysene	**400**	**330**	**330**		**µg/Kg-dry**	1	12/14/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/14/2012
Fluoranthene	**510**	**330**	**330**		**µg/Kg-dry**	1	12/14/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/14/2012
Indeno(1,2,3-cd)pyrene	ND	330	330		µg/Kg-dry	1	12/14/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/14/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/14/2012
Pyrene	**570**	**330**	**330**		**µg/Kg-dry**	1	12/14/2012
Surr: 2,4,6-Tribromophenol	*84.0*	*34-140*			*%REC*	1	12/14/2012
Surr: 2-Fluorobiphenyl	*78.6*	*12-100*			*%REC*	1	12/14/2012
Surr: 2-Fluorophenol	*88.3*	*33-117*			*%REC*	1	12/14/2012
Surr: 4-Terphenyl-d14	*108*	*25-137*			*%REC*	1	12/14/2012
Surr: Nitrobenzene-d5	*83.9*	*37-107*			*%REC*	1	12/14/2012
Surr: Phenol-d6	*84.0*	*40-106*			*%REC*	1	12/14/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/12/2012**		Analyst: **BG**
1,1,1,2-Tetrachloroethane	ND	110	100		µg/Kg-dry	1	12/13/2012
1,1,1-Trichloroethane	ND	110	50		µg/Kg-dry	1	12/13/2012
1,1,2,2-Tetrachloroethane	ND	110	50		µg/Kg-dry	1	12/13/2012
1,1,2-Trichloroethane	ND	110	50		µg/Kg-dry	1	12/13/2012
1,1-Dichloroethane	ND	110	50		µg/Kg-dry	1	12/13/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1200R505S121112S007
Work Order:	1212419	**Collection Date:**	12/11/2012 9:25:00 AM
Project:	Marshall KRRI 1200I, 1200R 12/11/12		
Lab ID:	1212419-04	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	110	50		µg/Kg-dry	1	12/13/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
1,2,3-Trichloropropane	ND	110	100		µg/Kg-dry	1	12/13/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
1,2,4-Trimethylbenzene	ND	110	100		µg/Kg-dry	1	12/13/2012
1,2-Dibromo-3-chloropropane	ND	110	10		µg/Kg-dry	1	12/13/2012
1,2-Dibromoethane	ND	110	20		µg/Kg-dry	1	12/13/2012
1,2-Dichlorobenzene	ND	110	100		µg/Kg-dry	1	12/13/2012
1,2-Dichloroethane	ND	110	50		µg/Kg-dry	1	12/13/2012
1,2-Dichloropropane	ND	110	50		µg/Kg-dry	1	12/13/2012
1,3,5-Trimethylbenzene	ND	110	100		µg/Kg-dry	1	12/13/2012
1,3-Dichlorobenzene	ND	110	100		µg/Kg-dry	1	12/13/2012
1,4-Dichlorobenzene	ND	110	100		µg/Kg-dry	1	12/13/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/13/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
2-Methylnaphthalene	ND	360	330		µg/Kg-dry	1	12/13/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
Acetone	ND	1,000	1,000		µg/Kg-dry	1	12/13/2012
Acrylonitrile	ND	110	100		µg/Kg-dry	1	12/13/2012
Benzene	ND	110	50		µg/Kg-dry	1	12/13/2012
Bromobenzene	ND	110	100		µg/Kg-dry	1	12/13/2012
Bromochloromethane	ND	110	100		µg/Kg-dry	1	12/13/2012
Bromodichloromethane	ND	110	100		µg/Kg-dry	1	12/13/2012
Bromoform	ND	110	100		µg/Kg-dry	1	12/13/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/13/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/13/2012
Carbon tetrachloride	ND	110	50		µg/Kg-dry	1	12/13/2012
Chlorobenzene	ND	110	50		µg/Kg-dry	1	12/13/2012
Chloroethane	ND	360	250		µg/Kg-dry	1	12/13/2012
Chloroform	ND	110	50		µg/Kg-dry	1	12/13/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/13/2012
cis-1,2-Dichloroethene	ND	110	50		µg/Kg-dry	1	12/13/2012
cis-1,3-Dichloropropene	ND	110	50		µg/Kg-dry	1	12/13/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/13/2012
Dibromochloromethane	ND	110	100		µg/Kg-dry	1	12/13/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/13/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/13/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/13/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/13/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/13/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1200R505S121112S007
Work Order:	1212419	**Collection Date:**	12/11/2012 9:25:00 AM
Project:	Marshall KRRI 1200I, 1200R 12/11/12		
Lab ID:	1212419-04	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	110	50		µg/Kg-dry	1	12/13/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/13/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
m,p-Xylene	ND	220	100		µg/Kg-dry	1	12/13/2012
Methyl iodide	ND	110	100		µg/Kg-dry	1	12/13/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/13/2012
Methylene chloride	ND	110	100		µg/Kg-dry	1	12/13/2012
Naphthalene	ND	360	330		µg/Kg-dry	1	12/13/2012
n-Butylbenzene	ND	110	50		µg/Kg-dry	1	12/13/2012
n-Propylbenzene	ND	110	100		µg/Kg-dry	1	12/13/2012
o-Xylene	ND	110	50		µg/Kg-dry	1	12/13/2012
p-Isopropyltoluene	ND	110	100		µg/Kg-dry	1	12/13/2012
sec-Butylbenzene	ND	110	50		µg/Kg-dry	1	12/13/2012
Styrene	ND	110	50		µg/Kg-dry	1	12/13/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
tert-Butylbenzene	ND	110	50		µg/Kg-dry	1	12/13/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/13/2012
Tetrachloroethene	ND	110	50		µg/Kg-dry	1	12/13/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/13/2012
Toluene	ND	110	100		µg/Kg-dry	1	12/13/2012
trans-1,2-Dichloroethene	ND	110	50		µg/Kg-dry	1	12/13/2012
trans-1,3-Dichloropropene	ND	110	50		µg/Kg-dry	1	12/13/2012
trans-1,4-Dichloro-2-butene	ND	110	50		µg/Kg-dry	1	12/13/2012
Trichloroethene	ND	110	50		µg/Kg-dry	1	12/13/2012
Trichlorofluoromethane	ND	110	100		µg/Kg-dry	1	12/13/2012
Vinyl chloride	ND	110	40		µg/Kg-dry	1	12/13/2012
Surr: 1,2-Dichloroethane-d4	*90.8*	*70-130*			*%REC*	1	12/13/2012
Surr: 4-Bromofluorobenzene	*96.6*	*70-130*			*%REC*	1	12/13/2012
Surr: Dibromofluoromethane	*94.2*	*70-130*			*%REC*	1	12/13/2012
Surr: Toluene-d8	*96.8*	*70-130*			*%REC*	1	12/13/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**38**	**0.050**	**0**		**% of sample**	1	12/14/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1200R506S121112S004
Work Order:	1212419	**Collection Date:**	12/11/2012 10:32:00 AM
Project:	Marshall KRRI 1200I, 1200R 12/11/12		
Lab ID:	1212419-05	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/13/2012**		Analyst: **CW**
DRO (C10-C20)	**21**	**17**	**4.0**		**mg/Kg-dry**	1	12/14/2012
ORO (C20-C34)	**230**	**34**	**4.0**		**mg/Kg-dry**	1	12/14/2012
Surr: 4-Terphenyl-d14	*81.2*	*39-115*			*%REC*	1	12/14/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/17/2012**		Analyst: **CES**
Beryllium	ND	1.1	0.50		mg/Kg-dry	4	12/19/2012
Molybdenum	ND	2.7	1.0		mg/Kg-dry	4	12/19/2012
Nickel	**16**	**2.7**	**1.0**		**mg/Kg-dry**	4	12/19/2012
Vanadium	**24**	**2.7**	**1.0**		**mg/Kg-dry**	4	12/19/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/13/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/14/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/14/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/14/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/14/2012
Benzo(a)anthracene	**430**	**330**	**330**		**µg/Kg-dry**	1	12/14/2012
Benzo(a)pyrene	**610**	**330**	**330**	*	**µg/Kg-dry**	1	12/14/2012
Benzo(b)fluoranthene	**620**	**330**	**330**	*	**µg/Kg-dry**	1	12/14/2012
Benzo(g,h,i)perylene	ND	330	330	*	µg/Kg-dry	1	12/14/2012
Benzo(k)fluoranthene	**440**	**330**	**330**	*	**µg/Kg-dry**	1	12/14/2012
Chrysene	**510**	**330**	**330**		**µg/Kg-dry**	1	12/14/2012
Dibenzo(a,h)anthracene	ND	330	330	*	µg/Kg-dry	1	12/14/2012
Fluoranthene	**630**	**330**	**330**		**µg/Kg-dry**	1	12/14/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/14/2012
Indeno(1,2,3-cd)pyrene	ND	330	330	*	µg/Kg-dry	1	12/14/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/14/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/14/2012
Pyrene	**710**	**330**	**330**		**µg/Kg-dry**	1	12/14/2012
Surr: 2,4,6-Tribromophenol	*83.5*	*34-140*			*%REC*	1	12/14/2012
Surr: 2-Fluorobiphenyl	*81.9*	*12-100*			*%REC*	1	12/14/2012
Surr: 2-Fluorophenol	*78.8*	*33-117*			*%REC*	1	12/14/2012
Surr: 4-Terphenyl-d14	*104*	*25-137*			*%REC*	1	12/14/2012
Surr: Nitrobenzene-d5	*87.3*	*37-107*			*%REC*	1	12/14/2012
Surr: Phenol-d6	*85.0*	*40-106*			*%REC*	1	12/14/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/12/2012**		Analyst: **BG**
1,1,1,2-Tetrachloroethane	ND	130	100		µg/Kg-dry	1	12/13/2012
1,1,1-Trichloroethane	ND	130	50		µg/Kg-dry	1	12/13/2012
1,1,2,2-Tetrachloroethane	ND	130	50		µg/Kg-dry	1	12/13/2012
1,1,2-Trichloroethane	ND	130	50		µg/Kg-dry	1	12/13/2012
1,1-Dichloroethane	ND	130	50		µg/Kg-dry	1	12/13/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1200R506S121112S004
Work Order:	1212419	**Collection Date:**	12/11/2012 10:32:00 AM
Project:	Marshall KRRI 1200I, 1200R 12/11/12		
Lab ID:	1212419-05	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	130	50		µg/Kg-dry	1	12/13/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
1,2,3-Trichloropropane	ND	130	100		µg/Kg-dry	1	12/13/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
1,2,4-Trimethylbenzene	ND	130	100		µg/Kg-dry	1	12/13/2012
1,2-Dibromo-3-chloropropane	ND	130	10		µg/Kg-dry	1	12/13/2012
1,2-Dibromoethane	ND	130	20		µg/Kg-dry	1	12/13/2012
1,2-Dichlorobenzene	ND	130	100		µg/Kg-dry	1	12/13/2012
1,2-Dichloroethane	ND	130	50		µg/Kg-dry	1	12/13/2012
1,2-Dichloropropane	ND	130	50		µg/Kg-dry	1	12/13/2012
1,3,5-Trimethylbenzene	ND	130	100		µg/Kg-dry	1	12/13/2012
1,3-Dichlorobenzene	ND	130	100		µg/Kg-dry	1	12/13/2012
1,4-Dichlorobenzene	ND	130	100		µg/Kg-dry	1	12/13/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/13/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
2-Methylnaphthalene	ND	440	330		µg/Kg-dry	1	12/13/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
Acetone	ND	1,100	1,000		µg/Kg-dry	1	12/13/2012
Acrylonitrile	ND	130	100		µg/Kg-dry	1	12/13/2012
Benzene	ND	130	50		µg/Kg-dry	1	12/13/2012
Bromobenzene	ND	130	100		µg/Kg-dry	1	12/13/2012
Bromochloromethane	ND	130	100		µg/Kg-dry	1	12/13/2012
Bromodichloromethane	ND	130	100		µg/Kg-dry	1	12/13/2012
Bromoform	ND	130	100		µg/Kg-dry	1	12/13/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/13/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/13/2012
Carbon tetrachloride	ND	130	50		µg/Kg-dry	1	12/13/2012
Chlorobenzene	ND	130	50		µg/Kg-dry	1	12/13/2012
Chloroethane	ND	440	250		µg/Kg-dry	1	12/13/2012
Chloroform	ND	130	50		µg/Kg-dry	1	12/13/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/13/2012
cis-1,2-Dichloroethene	ND	130	50		µg/Kg-dry	1	12/13/2012
cis-1,3-Dichloropropene	ND	130	50		µg/Kg-dry	1	12/13/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/13/2012
Dibromochloromethane	ND	130	100		µg/Kg-dry	1	12/13/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/13/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/13/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/13/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/13/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/13/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client:	AECOM Environment	**Client Sample ID:**	SBKR1200R506S121112S004
Work Order:	1212419	**Collection Date:**	12/11/2012 10:32:00 AM
Project:	Marshall KRRI 1200I, 1200R 12/11/12		
Lab ID:	1212419-05	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	130	50		µg/Kg-dry	1	12/13/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/13/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
m,p-Xylene	ND	260	100		µg/Kg-dry	1	12/13/2012
Methyl iodide	ND	130	100		µg/Kg-dry	1	12/13/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/13/2012
Methylene chloride	ND	310	100		µg/Kg-dry	1	12/13/2012
Naphthalene	ND	440	330		µg/Kg-dry	1	12/13/2012
n-Butylbenzene	ND	130	50		µg/Kg-dry	1	12/13/2012
n-Propylbenzene	ND	130	100		µg/Kg-dry	1	12/13/2012
o-Xylene	ND	130	50		µg/Kg-dry	1	12/13/2012
p-Isopropyltoluene	ND	130	100		µg/Kg-dry	1	12/13/2012
sec-Butylbenzene	ND	130	50		µg/Kg-dry	1	12/13/2012
Styrene	ND	130	50		µg/Kg-dry	1	12/13/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
tert-Butylbenzene	ND	130	50		µg/Kg-dry	1	12/13/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/13/2012
Tetrachloroethene	ND	130	50		µg/Kg-dry	1	12/13/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/13/2012
Toluene	ND	130	100		µg/Kg-dry	1	12/13/2012
trans-1,2-Dichloroethene	ND	130	50		µg/Kg-dry	1	12/13/2012
trans-1,3-Dichloropropene	ND	130	50		µg/Kg-dry	1	12/13/2012
trans-1,4-Dichloro-2-butene	ND	130	50		µg/Kg-dry	1	12/13/2012
Trichloroethene	ND	130	50		µg/Kg-dry	1	12/13/2012
Trichlorofluoromethane	ND	130	100		µg/Kg-dry	1	12/13/2012
Vinyl chloride	ND	130	40		µg/Kg-dry	1	12/13/2012
Surr: 1,2-Dichloroethane-d4	*91.7*	*70-130*			*%REC*	1	12/13/2012
Surr: 4-Bromofluorobenzene	*100*	*70-130*			*%REC*	1	12/13/2012
Surr: Dibromofluoromethane	*95.5*	*70-130*			*%REC*	1	12/13/2012
Surr: Toluene-d8	*97.0*	*70-130*			*%REC*	1	12/13/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**43**	**0.050**	**0**		**% of sample**	1	12/14/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1200R507S121112S005
Work Order:	1212419	**Collection Date:**	12/11/2012 11:24:00 AM
Project:	Marshall KRRI 1200I, 1200R 12/11/12		
Lab ID:	1212419-06	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/13/2012**		Analyst: **CW**
DRO (C10-C20)	**20**	**16**	**4.0**		**mg/Kg-dry**	1	12/14/2012
ORO (C20-C34)	**240**	**32**	**4.0**		**mg/Kg-dry**	1	12/14/2012
Surr: 4-Terphenyl-d14	*74.9*	*39-115*			*%REC*	1	12/14/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/17/2012**		Analyst: **CES**
Beryllium	ND	1.1	0.50		mg/Kg-dry	4	12/19/2012
Molybdenum	ND	2.7	1.0		mg/Kg-dry	4	12/19/2012
Nickel	**17**	**2.7**	**1.0**		**mg/Kg-dry**	4	12/19/2012
Vanadium	**21**	**2.7**	**1.0**		**mg/Kg-dry**	4	12/19/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/13/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/14/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/14/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/14/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/14/2012
Benzo(a)anthracene	**390**	**330**	**330**		**µg/Kg-dry**	1	12/14/2012
Benzo(a)pyrene	**540**	**330**	**330**	*	**µg/Kg-dry**	1	12/14/2012
Benzo(b)fluoranthene	**600**	**330**	**330**	*	**µg/Kg-dry**	1	12/14/2012
Benzo(g,h,i)perylene	ND	330	330	*	µg/Kg-dry	1	12/14/2012
Benzo(k)fluoranthene	**430**	**330**	**330**	*	**µg/Kg-dry**	1	12/14/2012
Chrysene	**500**	**330**	**330**		**µg/Kg-dry**	1	12/14/2012
Dibenzo(a,h)anthracene	ND	330	330	*	µg/Kg-dry	1	12/14/2012
Fluoranthene	**690**	**330**	**330**		**µg/Kg-dry**	1	12/14/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/14/2012
Indeno(1,2,3-cd)pyrene	ND	330	330	*	µg/Kg-dry	1	12/14/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/14/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/14/2012
Pyrene	**700**	**330**	**330**		**µg/Kg-dry**	1	12/14/2012
Surr: 2,4,6-Tribromophenol	*74.2*	*34-140*			*%REC*	1	12/14/2012
Surr: 2-Fluorobiphenyl	*69.6*	*12-100*			*%REC*	1	12/14/2012
Surr: 2-Fluorophenol	*78.3*	*33-117*			*%REC*	1	12/14/2012
Surr: 4-Terphenyl-d14	*93.0*	*25-137*			*%REC*	1	12/14/2012
Surr: Nitrobenzene-d5	*74.7*	*37-107*			*%REC*	1	12/14/2012
Surr: Phenol-d6	*62.0*	*40-106*			*%REC*	1	12/14/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/12/2012**		Analyst: **BG**
1,1,1,2-Tetrachloroethane	ND	130	100		µg/Kg-dry	1	12/13/2012
1,1,1-Trichloroethane	ND	130	50		µg/Kg-dry	1	12/13/2012
1,1,2,2-Tetrachloroethane	ND	130	50		µg/Kg-dry	1	12/13/2012
1,1,2-Trichloroethane	ND	130	50		µg/Kg-dry	1	12/13/2012
1,1-Dichloroethane	ND	130	50		µg/Kg-dry	1	12/13/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1200R507S121112S005
Work Order:	1212419	**Collection Date:**	12/11/2012 11:24:00 AM
Project:	Marshall KRRI 1200I, 1200R 12/11/12		
Lab ID:	1212419-06	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	130	50		µg/Kg-dry	1	12/13/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
1,2,3-Trichloropropane	ND	130	100		µg/Kg-dry	1	12/13/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
1,2,4-Trimethylbenzene	ND	130	100		µg/Kg-dry	1	12/13/2012
1,2-Dibromo-3-chloropropane	ND	130	10		µg/Kg-dry	1	12/13/2012
1,2-Dibromoethane	ND	130	20		µg/Kg-dry	1	12/13/2012
1,2-Dichlorobenzene	ND	130	100		µg/Kg-dry	1	12/13/2012
1,2-Dichloroethane	ND	130	50		µg/Kg-dry	1	12/13/2012
1,2-Dichloropropane	ND	130	50		µg/Kg-dry	1	12/13/2012
1,3,5-Trimethylbenzene	ND	130	100		µg/Kg-dry	1	12/13/2012
1,3-Dichlorobenzene	ND	130	100		µg/Kg-dry	1	12/13/2012
1,4-Dichlorobenzene	ND	130	100		µg/Kg-dry	1	12/13/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/13/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
2-Methylnaphthalene	ND	420	330		µg/Kg-dry	1	12/13/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
Acetone	ND	1,100	1,000		µg/Kg-dry	1	12/13/2012
Acrylonitrile	ND	130	100		µg/Kg-dry	1	12/13/2012
Benzene	ND	130	50		µg/Kg-dry	1	12/13/2012
Bromobenzene	ND	130	100		µg/Kg-dry	1	12/13/2012
Bromochloromethane	ND	130	100		µg/Kg-dry	1	12/13/2012
Bromodichloromethane	ND	130	100		µg/Kg-dry	1	12/13/2012
Bromoform	ND	130	100		µg/Kg-dry	1	12/13/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/13/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/13/2012
Carbon tetrachloride	ND	130	50		µg/Kg-dry	1	12/13/2012
Chlorobenzene	ND	130	50		µg/Kg-dry	1	12/13/2012
Chloroethane	ND	420	250		µg/Kg-dry	1	12/13/2012
Chloroform	ND	130	50		µg/Kg-dry	1	12/13/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/13/2012
cis-1,2-Dichloroethene	ND	130	50		µg/Kg-dry	1	12/13/2012
cis-1,3-Dichloropropene	ND	130	50		µg/Kg-dry	1	12/13/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/13/2012
Dibromochloromethane	ND	130	100		µg/Kg-dry	1	12/13/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/13/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/13/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/13/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/13/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/13/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1200R507S121112S005
Work Order:	1212419	**Collection Date:**	12/11/2012 11:24:00 AM
Project:	Marshall KRRI 1200I, 1200R 12/11/12		
Lab ID:	1212419-06	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	130	50		µg/Kg-dry	1	12/13/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/13/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
m,p-Xylene	ND	250	100		µg/Kg-dry	1	12/13/2012
Methyl iodide	ND	130	100		µg/Kg-dry	1	12/13/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/13/2012
Methylene chloride	ND	130	100		µg/Kg-dry	1	12/13/2012
Naphthalene	ND	420	330		µg/Kg-dry	1	12/13/2012
n-Butylbenzene	ND	130	50		µg/Kg-dry	1	12/13/2012
n-Propylbenzene	ND	130	100		µg/Kg-dry	1	12/13/2012
o-Xylene	ND	130	50		µg/Kg-dry	1	12/13/2012
p-Isopropyltoluene	ND	130	100		µg/Kg-dry	1	12/13/2012
sec-Butylbenzene	ND	130	50		µg/Kg-dry	1	12/13/2012
Styrene	ND	130	50		µg/Kg-dry	1	12/13/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
tert-Butylbenzene	ND	130	50		µg/Kg-dry	1	12/13/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/13/2012
Tetrachloroethene	ND	130	50		µg/Kg-dry	1	12/13/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/13/2012
Toluene	ND	130	100		µg/Kg-dry	1	12/13/2012
trans-1,2-Dichloroethene	ND	130	50		µg/Kg-dry	1	12/13/2012
trans-1,3-Dichloropropene	ND	130	50		µg/Kg-dry	1	12/13/2012
trans-1,4-Dichloro-2-butene	ND	130	50		µg/Kg-dry	1	12/13/2012
Trichloroethene	ND	130	50		µg/Kg-dry	1	12/13/2012
Trichlorofluoromethane	ND	130	100		µg/Kg-dry	1	12/13/2012
Vinyl chloride	ND	130	40		µg/Kg-dry	1	12/13/2012
Surr: 1,2-Dichloroethane-d4	*91.1*	*70-130*			*%REC*	1	12/13/2012
Surr: 4-Bromofluorobenzene	*98.4*	*70-130*			*%REC*	1	12/13/2012
Surr: Dibromofluoromethane	*95.4*	*70-130*			*%REC*	1	12/13/2012
Surr: Toluene-d8	*98.3*	*70-130*			*%REC*	1	12/13/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**42**	**0.050**	**0**		**% of sample**	1	12/14/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1200R508S121112S006
Work Order:	1212419	**Collection Date:**	12/11/2012 1:06:00 PM
Project:	Marshall KRRI 1200I, 1200R 12/11/12		
Lab ID:	1212419-07	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/14/2012**		Analyst: **CW**
DRO (C10-C20)	ND	19	4.0		mg/Kg-dry	1	12/14/2012
ORO (C20-C34)	**110**	**38**	**4.0**		**mg/Kg-dry**	1	12/14/2012
Surr: 4-Terphenyl-d14	*79.2*	*39-115*			*%REC*	1	12/14/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/17/2012**		Analyst: **CES**
Beryllium	ND	1.1	0.50		mg/Kg-dry	4	12/19/2012
Molybdenum	ND	2.9	1.0		mg/Kg-dry	4	12/19/2012
Nickel	**18**	**2.9**	**1.0**		**mg/Kg-dry**	4	12/19/2012
Vanadium	**23**	**2.9**	**1.0**		**mg/Kg-dry**	4	12/19/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/14/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/14/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/14/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/14/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/14/2012
Benzo(a)anthracene	ND	330	330		µg/Kg-dry	1	12/14/2012
Benzo(a)pyrene	ND	330	330		µg/Kg-dry	1	12/14/2012
Benzo(b)fluoranthene	ND	330	330		µg/Kg-dry	1	12/14/2012
Benzo(g,h,i)perylene	ND	330	330		µg/Kg-dry	1	12/14/2012
Benzo(k)fluoranthene	ND	330	330		µg/Kg-dry	1	12/14/2012
Chrysene	ND	330	330		µg/Kg-dry	1	12/14/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/14/2012
Fluoranthene	**350**	**330**	**330**		**µg/Kg-dry**	1	12/14/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/14/2012
Indeno(1,2,3-cd)pyrene	ND	330	330		µg/Kg-dry	1	12/14/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/14/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/14/2012
Pyrene	**400**	**330**	**330**		**µg/Kg-dry**	1	12/14/2012
Surr: 2,4,6-Tribromophenol	*77.7*	*34-140*			*%REC*	1	12/14/2012
Surr: 2-Fluorobiphenyl	*78.9*	*12-100*			*%REC*	1	12/14/2012
Surr: 2-Fluorophenol	*87.7*	*33-117*			*%REC*	1	12/14/2012
Surr: 4-Terphenyl-d14	*101*	*25-137*			*%REC*	1	12/14/2012
Surr: Nitrobenzene-d5	*85.0*	*37-107*			*%REC*	1	12/14/2012
Surr: Phenol-d6	*60.6*	*40-106*			*%REC*	1	12/14/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/12/2012**		Analyst: **BG**
1,1,1,2-Tetrachloroethane	ND	160	100		µg/Kg-dry	1	12/13/2012
1,1,1-Trichloroethane	ND	160	50		µg/Kg-dry	1	12/13/2012
1,1,2,2-Tetrachloroethane	ND	160	50		µg/Kg-dry	1	12/13/2012
1,1,2-Trichloroethane	ND	160	50		µg/Kg-dry	1	12/13/2012
1,1-Dichloroethane	ND	160	50		µg/Kg-dry	1	12/13/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1200R508S121112S006
Work Order:	1212419	**Collection Date:**	12/11/2012 1:06:00 PM
Project:	Marshall KRRI 1200I, 1200R 12/11/12		
Lab ID:	1212419-07	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	160	50		µg/Kg-dry	1	12/13/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
1,2,3-Trichloropropane	ND	160	100		µg/Kg-dry	1	12/13/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
1,2,4-Trimethylbenzene	ND	160	100		µg/Kg-dry	1	12/13/2012
1,2-Dibromo-3-chloropropane	ND	160	10		µg/Kg-dry	1	12/13/2012
1,2-Dibromoethane	ND	160	20		µg/Kg-dry	1	12/13/2012
1,2-Dichlorobenzene	ND	160	100		µg/Kg-dry	1	12/13/2012
1,2-Dichloroethane	ND	160	50		µg/Kg-dry	1	12/13/2012
1,2-Dichloropropane	ND	160	50		µg/Kg-dry	1	12/13/2012
1,3,5-Trimethylbenzene	ND	160	100		µg/Kg-dry	1	12/13/2012
1,3-Dichlorobenzene	ND	160	100		µg/Kg-dry	1	12/13/2012
1,4-Dichlorobenzene	ND	160	100		µg/Kg-dry	1	12/13/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/13/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
2-Methylnaphthalene	ND	540	330		µg/Kg-dry	1	12/13/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
Acetone	ND	1,400	1,000		µg/Kg-dry	1	12/13/2012
Acrylonitrile	ND	160	100		µg/Kg-dry	1	12/13/2012
Benzene	ND	160	50		µg/Kg-dry	1	12/13/2012
Bromobenzene	ND	160	100		µg/Kg-dry	1	12/13/2012
Bromochloromethane	ND	160	100		µg/Kg-dry	1	12/13/2012
Bromodichloromethane	ND	160	100		µg/Kg-dry	1	12/13/2012
Bromoform	ND	160	100		µg/Kg-dry	1	12/13/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/13/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/13/2012
Carbon tetrachloride	ND	160	50		µg/Kg-dry	1	12/13/2012
Chlorobenzene	ND	160	50		µg/Kg-dry	1	12/13/2012
Chloroethane	ND	540	250		µg/Kg-dry	1	12/13/2012
Chloroform	ND	160	50		µg/Kg-dry	1	12/13/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/13/2012
cis-1,2-Dichloroethene	ND	160	50		µg/Kg-dry	1	12/13/2012
cis-1,3-Dichloropropene	ND	160	50		µg/Kg-dry	1	12/13/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/13/2012
Dibromochloromethane	ND	160	100		µg/Kg-dry	1	12/13/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/13/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/13/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/13/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/13/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/13/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: AECOM Environment **Client Sample ID:** SBKR1200R508S121112S006
Work Order: 1212419 **Collection Date:** 12/11/2012 1:06:00 PM
Project: Marshall KRRI 1200I, 1200R 12/11/12
Lab ID: 1212419-07 **Matrix:** SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	160	50		µg/Kg-dry	1	12/13/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/13/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
m,p-Xylene	ND	330	100		µg/Kg-dry	1	12/13/2012
Methyl iodide	ND	160	100		µg/Kg-dry	1	12/13/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/13/2012
Methylene chloride	ND	160	100		µg/Kg-dry	1	12/13/2012
Naphthalene	ND	540	330		µg/Kg-dry	1	12/13/2012
n-Butylbenzene	ND	160	50		µg/Kg-dry	1	12/13/2012
n-Propylbenzene	ND	160	100		µg/Kg-dry	1	12/13/2012
o-Xylene	ND	160	50		µg/Kg-dry	1	12/13/2012
p-Isopropyltoluene	ND	160	100		µg/Kg-dry	1	12/13/2012
sec-Butylbenzene	ND	160	50		µg/Kg-dry	1	12/13/2012
Styrene	ND	160	50		µg/Kg-dry	1	12/13/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
tert-Butylbenzene	ND	160	50		µg/Kg-dry	1	12/13/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/13/2012
Tetrachloroethene	ND	160	50		µg/Kg-dry	1	12/13/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/13/2012
Toluene	ND	160	100		µg/Kg-dry	1	12/13/2012
trans-1,2-Dichloroethene	ND	160	50		µg/Kg-dry	1	12/13/2012
trans-1,3-Dichloropropene	ND	160	50		µg/Kg-dry	1	12/13/2012
trans-1,4-Dichloro-2-butene	ND	160	50		µg/Kg-dry	1	12/13/2012
Trichloroethene	ND	160	50		µg/Kg-dry	1	12/13/2012
Trichlorofluoromethane	ND	160	100		µg/Kg-dry	1	12/13/2012
Vinyl chloride	ND	160	40		µg/Kg-dry	1	12/13/2012
Surr: 1,2-Dichloroethane-d4	*91.2*	*70-130*			*%REC*	1	12/13/2012
Surr: 4-Bromofluorobenzene	*98.9*	*70-130*			*%REC*	1	12/13/2012
Surr: Dibromofluoromethane	*91.8*	*70-130*			*%REC*	1	12/13/2012
Surr: Toluene-d8	*96.8*	*70-130*			*%REC*	1	12/13/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**48**	**0.050**	**0**		**% of sample**	1	12/14/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1200R509S121112S007
Work Order:	1212419	**Collection Date:**	12/11/2012 2:02:00 PM
Project:	Marshall KRRI 1200I, 1200R 12/11/12		
Lab ID:	1212419-08	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/14/2012**		Analyst: **CW**
DRO (C10-C20)	**45**	**24**	**4.0**		**mg/Kg-dry**	1	12/14/2012
ORO (C20-C34)	**750**	**49**	**4.0**		**mg/Kg-dry**	1	12/14/2012
Surr: 4-Terphenyl-d14	*81.9*	*39-115*			*%REC*	1	12/14/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/17/2012**		Analyst: **CES**
Beryllium	ND	1.4	0.50		mg/Kg-dry	4	12/19/2012
Molybdenum	ND	3.6	1.0		mg/Kg-dry	4	12/19/2012
Nickel	**24**	**3.6**	**1.0**		**mg/Kg-dry**	4	12/19/2012
Vanadium	**16**	**3.6**	**1.0**		**mg/Kg-dry**	4	12/19/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/14/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/14/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/14/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/14/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/14/2012
Benzo(a)anthracene	**710**	**330**	**330**		**µg/Kg-dry**	1	12/14/2012
Benzo(a)pyrene	**910**	**330**	**330**		**µg/Kg-dry**	1	12/14/2012
Benzo(b)fluoranthene	**1,200**	**330**	**330**		**µg/Kg-dry**	1	12/14/2012
Benzo(g,h,i)perylene	**360**	**330**	**330**		**µg/Kg-dry**	1	12/14/2012
Benzo(k)fluoranthene	**730**	**330**	**330**		**µg/Kg-dry**	1	12/14/2012
Chrysene	**910**	**330**	**330**		**µg/Kg-dry**	1	12/14/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/14/2012
Fluoranthene	**1,400**	**330**	**330**		**µg/Kg-dry**	1	12/14/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/14/2012
Indeno(1,2,3-cd)pyrene	ND	330	330		µg/Kg-dry	1	12/14/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/14/2012
Phenanthrene	**480**	**330**	**330**		**µg/Kg-dry**	1	12/14/2012
Pyrene	**1,300**	**330**	**330**		**µg/Kg-dry**	1	12/14/2012
Surr: 2,4,6-Tribromophenol	*82.7*	*34-140*			*%REC*	1	12/14/2012
Surr: 2-Fluorobiphenyl	*73.6*	*12-100*			*%REC*	1	12/14/2012
Surr: 2-Fluorophenol	*73.5*	*33-117*			*%REC*	1	12/14/2012
Surr: 4-Terphenyl-d14	*101*	*25-137*			*%REC*	1	12/14/2012
Surr: Nitrobenzene-d5	*73.3*	*37-107*			*%REC*	1	12/14/2012
Surr: Phenol-d6	*73.8*	*40-106*			*%REC*	1	12/14/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/12/2012**		Analyst: **BG**
1,1,1,2-Tetrachloroethane	ND	300	100		µg/Kg-dry	1	12/13/2012
1,1,1-Trichloroethane	ND	300	50		µg/Kg-dry	1	12/13/2012
1,1,2,2-Tetrachloroethane	ND	300	50		µg/Kg-dry	1	12/13/2012
1,1,2-Trichloroethane	ND	300	50		µg/Kg-dry	1	12/13/2012
1,1-Dichloroethane	ND	300	50		µg/Kg-dry	1	12/13/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1200R509S121112S007
Work Order:	1212419	**Collection Date:**	12/11/2012 2:02:00 PM
Project:	Marshall KRRI 1200I, 1200R 12/11/12		
Lab ID:	1212419-08	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	300	50		µg/Kg-dry	1	12/13/2012
1,2,3-Trichlorobenzene	ND	300	250		µg/Kg-dry	1	12/13/2012
1,2,3-Trichloropropane	ND	300	100		µg/Kg-dry	1	12/13/2012
1,2,3-Trimethylbenzene	ND	300	250		µg/Kg-dry	1	12/13/2012
1,2,4-Trichlorobenzene	ND	300	250		µg/Kg-dry	1	12/13/2012
1,2,4-Trimethylbenzene	ND	300	100		µg/Kg-dry	1	12/13/2012
1,2-Dibromo-3-chloropropane	ND	300	10		µg/Kg-dry	1	12/13/2012
1,2-Dibromoethane	ND	300	20		µg/Kg-dry	1	12/13/2012
1,2-Dichlorobenzene	ND	300	100		µg/Kg-dry	1	12/13/2012
1,2-Dichloroethane	ND	300	50		µg/Kg-dry	1	12/13/2012
1,2-Dichloropropane	ND	300	50		µg/Kg-dry	1	12/13/2012
1,3,5-Trimethylbenzene	ND	300	100		µg/Kg-dry	1	12/13/2012
1,3-Dichlorobenzene	ND	300	100		µg/Kg-dry	1	12/13/2012
1,4-Dichlorobenzene	ND	300	100		µg/Kg-dry	1	12/13/2012
2-Butanone	ND	1,000	750		µg/Kg-dry	1	12/13/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
2-Methylnaphthalene	ND	1,000	330		µg/Kg-dry	1	12/13/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
Acetone	ND	2,500	1,000		µg/Kg-dry	1	12/13/2012
Acrylonitrile	ND	300	100		µg/Kg-dry	1	12/13/2012
Benzene	ND	300	50		µg/Kg-dry	1	12/13/2012
Bromobenzene	ND	300	100		µg/Kg-dry	1	12/13/2012
Bromochloromethane	ND	300	100		µg/Kg-dry	1	12/13/2012
Bromodichloromethane	ND	300	100		µg/Kg-dry	1	12/13/2012
Bromoform	ND	300	100		µg/Kg-dry	1	12/13/2012
Bromomethane	ND	300	200		µg/Kg-dry	1	12/13/2012
Carbon disulfide	ND	300	250		µg/Kg-dry	1	12/13/2012
Carbon tetrachloride	ND	300	50		µg/Kg-dry	1	12/13/2012
Chlorobenzene	ND	300	50		µg/Kg-dry	1	12/13/2012
Chloroethane	ND	1,000	250		µg/Kg-dry	1	12/13/2012
Chloroform	ND	300	50		µg/Kg-dry	1	12/13/2012
Chloromethane	ND	300	250		µg/Kg-dry	1	12/13/2012
cis-1,2-Dichloroethene	ND	300	50		µg/Kg-dry	1	12/13/2012
cis-1,3-Dichloropropene	ND	300	50		µg/Kg-dry	1	12/13/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/13/2012
Dibromochloromethane	ND	300	100		µg/Kg-dry	1	12/13/2012
Dibromomethane	ND	300	250		µg/Kg-dry	1	12/13/2012
Dichlorodifluoromethane	ND	300	250		µg/Kg-dry	1	12/13/2012
Diethyl ether	ND	300	200		µg/Kg-dry	1	12/13/2012
Diisopropyl ether	ND	300	250		µg/Kg-dry	1	12/13/2012
Ethyl tert butyl ether	ND	300	250		µg/Kg-dry	1	12/13/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1200R509S121112S007
Work Order:	1212419	**Collection Date:**	12/11/2012 2:02:00 PM
Project:	Marshall KRRI 1200I, 1200R 12/11/12		
Lab ID:	1212419-08	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	300	50		µg/Kg-dry	1	12/13/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/13/2012
Isopropylbenzene	ND	300	250		µg/Kg-dry	1	12/13/2012
m,p-Xylene	ND	600	100		µg/Kg-dry	1	12/13/2012
Methyl iodide	ND	300	100		µg/Kg-dry	1	12/13/2012
Methyl tert-butyl ether	ND	300	250		µg/Kg-dry	1	12/13/2012
Methylene chloride	ND	300	100		µg/Kg-dry	1	12/13/2012
Naphthalene	ND	1,000	330		µg/Kg-dry	1	12/13/2012
n-Butylbenzene	ND	300	50		µg/Kg-dry	1	12/13/2012
n-Propylbenzene	ND	300	100		µg/Kg-dry	1	12/13/2012
o-Xylene	ND	300	50		µg/Kg-dry	1	12/13/2012
p-Isopropyltoluene	ND	300	100		µg/Kg-dry	1	12/13/2012
sec-Butylbenzene	ND	300	50		µg/Kg-dry	1	12/13/2012
Styrene	ND	300	50		µg/Kg-dry	1	12/13/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
tert-Butylbenzene	ND	300	50		µg/Kg-dry	1	12/13/2012
Tertiaryamylmethylether	ND	300	250		µg/Kg-dry	1	12/13/2012
Tetrachloroethene	ND	300	50		µg/Kg-dry	1	12/13/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/13/2012
Toluene	ND	300	100		µg/Kg-dry	1	12/13/2012
trans-1,2-Dichloroethene	ND	300	50		µg/Kg-dry	1	12/13/2012
trans-1,3-Dichloropropene	ND	300	50		µg/Kg-dry	1	12/13/2012
trans-1,4-Dichloro-2-butene	ND	300	50		µg/Kg-dry	1	12/13/2012
Trichloroethene	ND	300	50		µg/Kg-dry	1	12/13/2012
Trichlorofluoromethane	ND	300	100		µg/Kg-dry	1	12/13/2012
Vinyl chloride	ND	300	40		µg/Kg-dry	1	12/13/2012
Surr: 1,2-Dichloroethane-d4	*89.2*	*70-130*			*%REC*	1	12/13/2012
Surr: 4-Bromofluorobenzene	*100*	*70-130*			*%REC*	1	12/13/2012
Surr: Dibromofluoromethane	*92.5*	*70-130*			*%REC*	1	12/13/2012
Surr: Toluene-d8	*98.1*	*70-130*			*%REC*	1	12/13/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**60**	**0.050**	**0**		**% of sample**	1	12/14/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1200R510S121112S005
Work Order:	1212419	**Collection Date:**	12/11/2012 3:50:00 PM
Project:	Marshall KRRI 1200I, 1200R 12/11/12		
Lab ID:	1212419-09	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/14/2012**		Analyst: **CW**
DRO (C10-C20)	ND	11	4.0		mg/Kg-dry	1	12/14/2012
ORO (C20-C34)	ND	22	4.0		mg/Kg-dry	1	12/14/2012
Surr: 4-Terphenyl-d14	*73.6*	*39-115*			*%REC*	1	12/14/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/17/2012**		Analyst: **CES**
Beryllium	ND	0.61	0.50		mg/Kg-dry	4	12/19/2012
Molybdenum	ND	1.5	1.0		mg/Kg-dry	4	12/19/2012
Nickel	**7.4**	**1.5**	**1.0**		**mg/Kg-dry**	4	12/19/2012
Vanadium	**6.5**	**1.5**	**1.0**		**mg/Kg-dry**	4	12/19/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/14/2012**		Analyst: **HL**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/14/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/14/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/14/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/14/2012
Benzo(a)anthracene	ND	330	330		µg/Kg-dry	1	12/14/2012
Benzo(a)pyrene	ND	330	330		µg/Kg-dry	1	12/14/2012
Benzo(b)fluoranthene	ND	330	330		µg/Kg-dry	1	12/14/2012
Benzo(g,h,i)perylene	ND	330	330		µg/Kg-dry	1	12/14/2012
Benzo(k)fluoranthene	ND	330	330		µg/Kg-dry	1	12/14/2012
Chrysene	ND	330	330		µg/Kg-dry	1	12/14/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/14/2012
Fluoranthene	ND	330	330		µg/Kg-dry	1	12/14/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/14/2012
Indeno(1,2,3-cd)pyrene	ND	330	330		µg/Kg-dry	1	12/14/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/14/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/14/2012
Pyrene	ND	330	330		µg/Kg-dry	1	12/14/2012
Surr: 2,4,6-Tribromophenol	*85.4*	*34-140*			*%REC*	1	12/14/2012
Surr: 2-Fluorobiphenyl	*61.7*	*12-100*			*%REC*	1	12/14/2012
Surr: 2-Fluorophenol	*75.3*	*33-117*			*%REC*	1	12/14/2012
Surr: 4-Terphenyl-d14	*75.3*	*25-137*			*%REC*	1	12/14/2012
Surr: Nitrobenzene-d5	*67.7*	*37-107*			*%REC*	1	12/14/2012
Surr: Phenol-d6	*76.4*	*40-106*			*%REC*	1	12/14/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/12/2012**		Analyst: **BG**
1,1,1,2-Tetrachloroethane	ND	100	100		µg/Kg-dry	1	12/13/2012
1,1,1-Trichloroethane	ND	50	50		µg/Kg-dry	1	12/13/2012
1,1,2,2-Tetrachloroethane	ND	50	50		µg/Kg-dry	1	12/13/2012
1,1,2-Trichloroethane	ND	50	50		µg/Kg-dry	1	12/13/2012
1,1-Dichloroethane	ND	50	50		µg/Kg-dry	1	12/13/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1200R510S121112S005
Work Order:	1212419	**Collection Date:**	12/11/2012 3:50:00 PM
Project:	Marshall KRRI 1200I, 1200R 12/11/12		
Lab ID:	1212419-09	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	50	50		µg/Kg-dry	1	12/13/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
1,2,3-Trichloropropane	ND	100	100		µg/Kg-dry	1	12/13/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
1,2,4-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/13/2012
1,2-Dibromo-3-chloropropane	ND	42	10		µg/Kg-dry	1	12/13/2012
1,2-Dibromoethane	ND	42	20		µg/Kg-dry	1	12/13/2012
1,2-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/13/2012
1,2-Dichloroethane	ND	50	50		µg/Kg-dry	1	12/13/2012
1,2-Dichloropropane	ND	50	50		µg/Kg-dry	1	12/13/2012
1,3,5-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/13/2012
1,3-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/13/2012
1,4-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/13/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/13/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/13/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
Acetone	ND	1,000	1,000		µg/Kg-dry	1	12/13/2012
Acrylonitrile	ND	100	100		µg/Kg-dry	1	12/13/2012
Benzene	ND	50	50		µg/Kg-dry	1	12/13/2012
Bromobenzene	ND	100	100		µg/Kg-dry	1	12/13/2012
Bromochloromethane	ND	100	100		µg/Kg-dry	1	12/13/2012
Bromodichloromethane	ND	100	100		µg/Kg-dry	1	12/13/2012
Bromoform	ND	100	100		µg/Kg-dry	1	12/13/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/13/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/13/2012
Carbon tetrachloride	ND	50	50		µg/Kg-dry	1	12/13/2012
Chlorobenzene	ND	50	50		µg/Kg-dry	1	12/13/2012
Chloroethane	ND	250	250		µg/Kg-dry	1	12/13/2012
Chloroform	ND	50	50		µg/Kg-dry	1	12/13/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/13/2012
cis-1,2-Dichloroethene	ND	50	50		µg/Kg-dry	1	12/13/2012
cis-1,3-Dichloropropene	ND	50	50		µg/Kg-dry	1	12/13/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/13/2012
Dibromochloromethane	ND	100	100		µg/Kg-dry	1	12/13/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/13/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/13/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/13/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/13/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/13/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: AECOM Environment **Client Sample ID:** SBKR1200R510S121112S005
Work Order: 1212419 **Collection Date:** 12/11/2012 3:50:00 PM
Project: Marshall KRRI 1200I, 1200R 12/11/12
Lab ID: 1212419-09 **Matrix:** SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	50	50		µg/Kg-dry	1	12/13/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/13/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
m,p-Xylene	ND	100	100		µg/Kg-dry	1	12/13/2012
Methyl iodide	ND	100	100		µg/Kg-dry	1	12/13/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/13/2012
Methylene chloride	ND	100	100		µg/Kg-dry	1	12/13/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/13/2012
n-Butylbenzene	ND	50	50		µg/Kg-dry	1	12/13/2012
n-Propylbenzene	ND	100	100		µg/Kg-dry	1	12/13/2012
o-Xylene	ND	50	50		µg/Kg-dry	1	12/13/2012
p-Isopropyltoluene	ND	100	100		µg/Kg-dry	1	12/13/2012
sec-Butylbenzene	ND	50	50		µg/Kg-dry	1	12/13/2012
Styrene	ND	50	50		µg/Kg-dry	1	12/13/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
tert-Butylbenzene	ND	50	50		µg/Kg-dry	1	12/13/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/13/2012
Tetrachloroethene	ND	50	50		µg/Kg-dry	1	12/13/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/13/2012
Toluene	ND	100	100		µg/Kg-dry	1	12/13/2012
trans-1,2-Dichloroethene	ND	50	50		µg/Kg-dry	1	12/13/2012
trans-1,3-Dichloropropene	ND	50	50		µg/Kg-dry	1	12/13/2012
trans-1,4-Dichloro-2-butene	ND	50	50		µg/Kg-dry	1	12/13/2012
Trichloroethene	ND	50	50		µg/Kg-dry	1	12/13/2012
Trichlorofluoromethane	ND	100	100		µg/Kg-dry	1	12/13/2012
Vinyl chloride	ND	42	40		µg/Kg-dry	1	12/13/2012
Surr: 1,2-Dichloroethane-d4	*86.4*	*70-130*			*%REC*	1	12/13/2012
Surr: 4-Bromofluorobenzene	*95.2*	*70-130*			*%REC*	1	12/13/2012
Surr: Dibromofluoromethane	*91.6*	*70-130*			*%REC*	1	12/13/2012
Surr: Toluene-d8	*93.5*	*70-130*			*%REC*	1	12/13/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**11**	**0.050**	**0**		**% of sample**	1	12/14/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1200R510T121112MX
Work Order:	1212419	**Collection Date:**	12/11/2012
Project:	Marshall KRRI 1200I, 1200R 12/11/12		
Lab ID:	1212419-10	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/12/2012**		Analyst: **BG**
1,1,1,2-Tetrachloroethane	ND	100	100		µg/Kg	1	12/13/2012
1,1,1-Trichloroethane	ND	50	50		µg/Kg	1	12/13/2012
1,1,2,2-Tetrachloroethane	ND	50	50		µg/Kg	1	12/13/2012
1,1,2-Trichloroethane	ND	50	50		µg/Kg	1	12/13/2012
1,1-Dichloroethane	ND	50	50		µg/Kg	1	12/13/2012
1,1-Dichloroethene	ND	50	50		µg/Kg	1	12/13/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg	1	12/13/2012
1,2,3-Trichloropropane	ND	100	100		µg/Kg	1	12/13/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg	1	12/13/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg	1	12/13/2012
1,2,4-Trimethylbenzene	ND	100	100		µg/Kg	1	12/13/2012
1,2-Dibromo-3-chloropropane	ND	30	10		µg/Kg	1	12/13/2012
1,2-Dibromoethane	ND	30	20		µg/Kg	1	12/13/2012
1,2-Dichlorobenzene	ND	100	100		µg/Kg	1	12/13/2012
1,2-Dichloroethane	ND	50	50		µg/Kg	1	12/13/2012
1,2-Dichloropropane	ND	50	50		µg/Kg	1	12/13/2012
1,3,5-Trimethylbenzene	ND	100	100		µg/Kg	1	12/13/2012
1,3-Dichlorobenzene	ND	100	100		µg/Kg	1	12/13/2012
1,4-Dichlorobenzene	ND	100	100		µg/Kg	1	12/13/2012
2-Butanone	ND	750	750		µg/Kg	1	12/13/2012
2-Hexanone	ND	2,500	2,500		µg/Kg	1	12/13/2012
2-Methylnaphthalene	ND	330	330		µg/Kg	1	12/13/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg	1	12/13/2012
Acetone	ND	1,000	1,000		µg/Kg	1	12/13/2012
Acrylonitrile	ND	100	100		µg/Kg	1	12/13/2012
Benzene	ND	50	50		µg/Kg	1	12/13/2012
Bromobenzene	ND	100	100		µg/Kg	1	12/13/2012
Bromochloromethane	ND	100	100		µg/Kg	1	12/13/2012
Bromodichloromethane	ND	100	100		µg/Kg	1	12/13/2012
Bromoform	ND	100	100		µg/Kg	1	12/13/2012
Bromomethane	ND	200	200		µg/Kg	1	12/13/2012
Carbon disulfide	ND	250	250		µg/Kg	1	12/13/2012
Carbon tetrachloride	ND	50	50		µg/Kg	1	12/13/2012
Chlorobenzene	ND	50	50		µg/Kg	1	12/13/2012
Chloroethane	ND	250	250		µg/Kg	1	12/13/2012
Chloroform	ND	50	50		µg/Kg	1	12/13/2012
Chloromethane	ND	250	250		µg/Kg	1	12/13/2012
cis-1,2-Dichloroethene	ND	50	50		µg/Kg	1	12/13/2012
cis-1,3-Dichloropropene	ND	50	50		µg/Kg	1	12/13/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1200R510T121112MX
Work Order:	1212419	**Collection Date:**	12/11/2012
Project:	Marshall KRRI 1200I, 1200R 12/11/12		
Lab ID:	1212419-10	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Cyclohexane	ND	500	500		µg/Kg	1	12/13/2012
Dibromochloromethane	ND	100	100		µg/Kg	1	12/13/2012
Dibromomethane	ND	250	250		µg/Kg	1	12/13/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg	1	12/13/2012
Diethyl ether	ND	200	200		µg/Kg	1	12/13/2012
Diisopropyl ether	ND	250	250		µg/Kg	1	12/13/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg	1	12/13/2012
Ethylbenzene	ND	50	50		µg/Kg	1	12/13/2012
Hexachloroethane	ND	300	300		µg/Kg	1	12/13/2012
Isopropylbenzene	ND	250	250		µg/Kg	1	12/13/2012
m,p-Xylene	ND	100	100		µg/Kg	1	12/13/2012
Methyl iodide	ND	100	100		µg/Kg	1	12/13/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg	1	12/13/2012
Methylene chloride	ND	100	100		µg/Kg	1	12/13/2012
Naphthalene	ND	330	330		µg/Kg	1	12/13/2012
n-Butylbenzene	ND	50	50		µg/Kg	1	12/13/2012
n-Propylbenzene	ND	100	100		µg/Kg	1	12/13/2012
o-Xylene	ND	50	50		µg/Kg	1	12/13/2012
p-Isopropyltoluene	ND	100	100		µg/Kg	1	12/13/2012
sec-Butylbenzene	ND	50	50		µg/Kg	1	12/13/2012
Styrene	ND	50	50		µg/Kg	1	12/13/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg	1	12/13/2012
tert-Butylbenzene	ND	50	50		µg/Kg	1	12/13/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg	1	12/13/2012
Tetrachloroethene	ND	50	50		µg/Kg	1	12/13/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg	1	12/13/2012
Toluene	ND	100	100		µg/Kg	1	12/13/2012
trans-1,2-Dichloroethene	ND	50	50		µg/Kg	1	12/13/2012
trans-1,3-Dichloropropene	ND	50	50		µg/Kg	1	12/13/2012
trans-1,4-Dichloro-2-butene	ND	50	50		µg/Kg	1	12/13/2012
Trichloroethene	ND	50	50		µg/Kg	1	12/13/2012
Trichlorofluoromethane	ND	100	100		µg/Kg	1	12/13/2012
Vinyl chloride	ND	40	40		µg/Kg	1	12/13/2012
Surr: 1,2-Dichloroethane-d4	*90.6*	*70-130*			*%REC*	1	12/13/2012
Surr: 4-Bromofluorobenzene	*95.9*	*70-130*			*%REC*	1	12/13/2012
Surr: Dibromofluoromethane	*93.4*	*70-130*			*%REC*	1	12/13/2012
Surr: Toluene-d8	*95.0*	*70-130*			*%REC*	1	12/13/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

QC BATCH REPORT

Batch ID: **45368A** Instrument ID **GC8** Method: **SW8015M**

MBLK Sample ID: **DBLKS1-45368-45368A** Units: **mg/Kg** Analysis Date: **12/13/2012 05:44 PM**

Client ID: Run ID: **GC8_121213A** SeqNo: **2168877** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	ND	10								
Surr: 4-Terphenyl-d14	*4.253*	0	*5*	0	*85.1*	*39-115*	0			

LCS Sample ID: **DLCSS1-45368-45368A** Units: **mg/Kg** Analysis Date: **12/13/2012 06:09 PM**

Client ID: Run ID: **GC8_121213A** SeqNo: **2168878** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	351.4	10	500	0	70.3	49-124	0			
Surr: 4-Terphenyl-d14	*4.59*	0	*5*	0	*91.8*	*39-115*	0			

MS Sample ID: **1212419-04A MS** Units: **mg/Kg** Analysis Date: **12/13/2012 06:35 PM**

Client ID: **SBKR1200R505S121112S007** Run ID: **GC8_121213A** SeqNo: **2168879** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	353	9.9	494.2	0	71.4	60-130	0			
Surr: 4-Terphenyl-d14	*4.613*	0	*4.942*	0	*93.3*	*39-115*	0			

MSD Sample ID: **1212419-04A MSD** Units: **mg/Kg** Analysis Date: **12/13/2012 07:00 PM**

Client ID: **SBKR1200R505S121112S007** Run ID: **GC8_121213A** SeqNo: **2168880** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	307.2	9.3	462.6	0	66.4	60-130	356.8	14.9	30	
Surr: 4-Terphenyl-d14	*4.16*	0	*4.626*	0	*89.9*	*39-115*	4.058	*2.49*	*30*	

The following samples were analyzed in this batch: 1212419-04A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212419
Project: Marshall KRRI 1200I, 1200R 12/11/12

QC BATCH REPORT

Batch ID: **45368B** Instrument ID **GC8** Method: **SW8015M**

MBLK Sample ID: **DBLKS1-45368-45368B** Units: **mg/Kg** Analysis Date: **12/13/2012 05:44 PM**
Client ID: Run ID: **GC8_121213A** SeqNo: **2168898** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	ND	10								
ORO (C20-C34)	ND	20								
Surr: 4-Terphenyl-d14	*3.723*	0	*5*	0	*74.5*	*39-115*	0			

LCS Sample ID: **DLCSS1-45368-45368B** Units: **mg/Kg** Analysis Date: **12/13/2012 06:09 PM**
Client ID: Run ID: **GC8_121213A** SeqNo: **2168899** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	359	10	500	0	71.8	49-124	0			
ORO (C20-C34)	352.7	20	500	0	70.5	60-130	0			
Surr: 4-Terphenyl-d14	*4.032*	0	*5*	0	*80.6*	*39-115*	0			

MS Sample ID: **1212419-04A MS** Units: **mg/Kg** Analysis Date: **12/13/2012 06:35 PM**
Client ID: **SBKR1200R505S121112S007** Run ID: **GC8_121213A** SeqNo: **2168900** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	356.8	9.9	494.2	2.787	71.6	60-130	0			
ORO (C20-C34)	470.3	20	494.2	132.7	68.3	60-130	0			
Surr: 4-Terphenyl-d14	*4.058*	0	*4.942*	0	*82.1*	*39-115*	0			

MSD Sample ID: **1212419-04A MSD** Units: **mg/Kg** Analysis Date: **12/13/2012 07:00 PM**
Client ID: **SBKR1200R505S121112S007** Run ID: **GC8_121213A** SeqNo: **2168901** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	313.1	9.3	462.6	2.787	67.1	60-130	356.8	13	30	
ORO (C20-C34)	421.6	19	462.6	132.7	62.5	60-130	470.3	10.9	30	
Surr: 4-Terphenyl-d14	*3.664*	0	*4.626*	0	*79.2*	*39-115*	4.058	*10.2*	*30*	

The following samples were analyzed in this batch:

1212419-01A	1212419-02A	1212419-03A
1212419-04A	1212419-05A	1212419-06A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212419
Project: Marshall KRRI 1200I, 1200R 12/11/12

QC BATCH REPORT

Batch ID: **45396A** Instrument ID **GC8** Method: **SW8015M**

MBLK Sample ID: **DBLKS1-45396-45396A** Units: **mg/Kg** Analysis Date: **12/14/2012 04:03 PM**
Client ID: Run ID: **GC8_121214A** SeqNo: **2170176** Prep Date: **12/14/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	ND	10								
ORO (C20-C34)	ND	20								
Surr: 4-Terphenyl-d14	*3.947*	0	*5*	0	*78.9*	*39-115*	0			

LCS Sample ID: **DLCSS1-45396-45396A** Units: **mg/Kg** Analysis Date: **12/14/2012 04:28 PM**
Client ID: Run ID: **GC8_121214A** SeqNo: **2170177** Prep Date: **12/14/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	357.6	10	500	0	71.5	49-124	0			
ORO (C20-C34)	341.3	20	500	0	68.3	60-130	0			
Surr: 4-Terphenyl-d14	*4.181*	0	*5*	0	*83.6*	*39-115*	0			

MS Sample ID: **1212419-09A MS** Units: **mg/Kg** Analysis Date: **12/14/2012 04:53 PM**
Client ID: **SBKR1200R510S121112S005** Run ID: **GC8_121214A** SeqNo: **2170178** Prep Date: **12/14/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	309	9.8	491.2	0	62.9	60-130	0			
ORO (C20-C34)	295.2	20	491.2	7.283	58.6	60-130	0			S
Surr: 4-Terphenyl-d14	*3.543*	0	*4.912*	0	*72.1*	*39-115*	0			

MSD Sample ID: **1212419-09A MSD** Units: **mg/Kg** Analysis Date: **12/14/2012 05:18 PM**
Client ID: **SBKR1200R510S121112S005** Run ID: **GC8_121214A** SeqNo: **2170179** Prep Date: **12/14/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	324.7	9.4	471.8	0	68.8	60-130	312.7	3.78	30	
ORO (C20-C34)	334.2	19	471.8	7.283	69.3	60-130	295.2	12.4	30	
Surr: 4-Terphenyl-d14	*3.995*	0	*4.718*	0	*84.7*	*39-115*	4.031	*0.92*	*30*	

The following samples were analyzed in this batch: 1212419-07A 1212419-08A 1212419-09A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212419
Project: Marshall KRRI 1200I, 1200R 12/11/12

QC BATCH REPORT

Batch ID: **45396B** Instrument ID **GC8** Method: **SW8015M**

MBLK Sample ID: **DBLKS1-45396-45396B** Units: **mg/Kg** Analysis Date: **12/14/2012 04:03 PM**
Client ID: Run ID: **GC8_121214A** SeqNo: **2170199** Prep Date: **12/14/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	ND	10								
Surr: 4-Terphenyl-d14	*4.518*	0	*5*	0	*90.4*	*39-115*	0			

LCS Sample ID: **DLCSS1-45396-45396B** Units: **mg/Kg** Analysis Date: **12/14/2012 04:28 PM**
Client ID: Run ID: **GC8_121214A** SeqNo: **2170200** Prep Date: **12/14/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	349	10	500	0	69.8	49-124	0			
Surr: 4-Terphenyl-d14	*4.788*	0	*5*	0	*95.8*	*39-115*	0			

MS Sample ID: **1212419-09A MS** Units: **mg/Kg** Analysis Date: **12/14/2012 04:53 PM**
Client ID: **SBKR1200R510S121112S005** Run ID: **GC8_121214A** SeqNo: **2170201** Prep Date: **12/14/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	312.7	9.8	491.2	0	63.7	60-130	0			
Surr: 4-Terphenyl-d14	*4.031*	0	*4.912*	0	*82.1*	*39-115*	0			

MSD Sample ID: **1212419-09A MSD** Units: **mg/Kg** Analysis Date: **12/14/2012 05:18 PM**
Client ID: **SBKR1200R510S121112S005** Run ID: **GC8_121214A** SeqNo: **2170202** Prep Date: **12/14/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	320	9.4	471.8	0	67.8	60-130	312.7	2.31	30	
Surr: 4-Terphenyl-d14	*4.569*	0	*4.718*	0	*96.8*	*39-115*	4.031	*12.5*	*30*	

The following samples were analyzed in this batch: 1212419-09A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212419
Project: Marshall KRRI 1200I, 1200R 12/11/12

QC BATCH REPORT

Batch ID: **45453** Instrument ID **ICPMS1** Method: **SW6020A**

MBLK Sample ID: **MBLK-45453-45453** Units: **mg/Kg** Analysis Date: **12/19/2012 08:47 AM**
Client ID: Run ID: **ICPMS1_121218A** SeqNo: **2173598** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	ND	0.10								
Molybdenum	ND	0.25								
Nickel	ND	0.25								
Vanadium	ND	0.25								

LCS Sample ID: **LCS-45453-45453** Units: **mg/Kg** Analysis Date: **12/19/2012 09:02 AM**
Client ID: Run ID: **ICPMS1_121218A** SeqNo: **2173600** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	5.17	0.10	5	0	103	80-120	0			
Molybdenum	5.08	0.25	5	0	102	80-120	0			
Nickel	5.04	0.25	5	0	101	80-120	0			
Vanadium	5.25	0.25	5	0	105	80-120	0			

MS Sample ID: **1212419-04AMS** Units: **mg/Kg** Analysis Date: **12/19/2012 09:55 AM**
Client ID: **SBKR1200R505S121112S007** Run ID: **ICPMS1_121218A** SeqNo: **2173866** Prep Date: **12/17/2012** DF: **4**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	7.15	0.57	7.153	0.2901	95.9	75-125	0			
Molybdenum	7.894	1.4	7.153	0.6976	101	75-125	0			
Nickel	17.02	1.4	7.153	9.329	108	75-125	0			
Vanadium	23.8	1.4	7.153	13.67	142	75-125	0			S

MSD Sample ID: **1212419-04AMSD** Units: **mg/Kg** Analysis Date: **12/19/2012 10:01 AM**
Client ID: **SBKR1200R505S121112S007** Run ID: **ICPMS1_121218A** SeqNo: **2173867** Prep Date: **12/17/2012** DF: **4**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	6.887	0.55	6.821	0.2901	96.7	75-125	7.15	3.75	25	
Molybdenum	7.651	1.4	6.821	0.6976	102	75-125	7.894	3.13	25	
Nickel	16.64	1.4	6.821	9.329	107	75-125	17.02	2.31	25	
Vanadium	23.55	1.4	6.821	13.67	145	75-125	23.8	1.08	25	S

The following samples were analyzed in this batch:

1212419-01A	1212419-02A	1212419-03A
1212419-04A	1212419-05A	1212419-06A
1212419-07A	1212419-08A	1212419-09A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45367** Instrument ID **SVMS6** Method: **SW8270**

MBLK Sample ID: **SBLKS1-45367-45367** Units: **µg/Kg** Analysis Date: **12/13/2012 02:39 PM**

Client ID: Run ID: **SVMS6_121213A** SeqNo: **2169098** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	ND	50								
Acenaphthene	ND	50								
Acenaphthylene	ND	50								
Anthracene	ND	50								
Benzo(a)anthracene	ND	50								
Benzo(a)pyrene	ND	50								
Benzo(b)fluoranthene	ND	50								
Benzo(g,h,i)perylene	ND	50								
Benzo(k)fluoranthene	ND	50								
Chrysene	ND	50								
Dibenzo(a,h)anthracene	ND	50								
Fluoranthene	ND	50								
Fluorene	ND	50								
Indeno(1,2,3-cd)pyrene	ND	50								
Naphthalene	ND	50								
Phenanthrene	ND	50								
Pyrene	ND	50								
Surr: 2,4,6-Tribromophenol	*3294*	0	*5000*	0	*65.9*	*34-140*	0			
Surr: 2-Fluorobiphenyl	*3817*	0	*5000*	0	*76.3*	*12-100*	0			
Surr: 2-Fluorophenol	*4631*	0	*5000*	0	*92.6*	*33-117*	0			
Surr: 4-Terphenyl-d14	*4940*	0	*5000*	0	*98.8*	*25-137*	0			
Surr: Nitrobenzene-d5	*4212*	0	*5000*	0	*84.2*	*37-107*	0			
Surr: Phenol-d6	*4351*	0	*5000*	0	*87*	*40-106*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212419
Project: Marshall KRRI 1200I, 1200R 12/11/12

QC BATCH REPORT

Batch ID: **45367** Instrument ID **SVMS6** Method: **SW8270**

LCS Sample ID: **SLCSS1-45367-45367** Units: **µg/Kg** Analysis Date: **12/13/2012 03:04 PM**
Client ID: Run ID: **SVMS6_121213A** SeqNo: **2169099** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	1751	50	2000	0	87.6	45-105	0			
Acenaphthene	1790	50	2000	0	89.5	45-110	0			
Acenaphthylene	1884	50	2000	0	94.2	45-105	0			
Anthracene	1902	50	2000	0	95.1	55-105	0			
Benzo(a)anthracene	1808	50	2000	0	90.4	50-110	0			
Benzo(a)pyrene	2014	50	2000	0	101	50-110	0			
Benzo(b)fluoranthene	1674	50	2000	0	83.7	45-115	0			
Benzo(g,h,i)perylene	2092	50	2000	0	105	40-125	0			
Benzo(k)fluoranthene	2188	50	2000	0	109	45-115	0			
Chrysene	1993	50	2000	0	99.6	55-110	0			
Dibenzo(a,h)anthracene	2047	50	2000	0	102	40-125	0			
Fluoranthene	1939	50	2000	0	97	55-115	0			
Fluorene	1769	50	2000	0	88.4	50-110	0			
Indeno(1,2,3-cd)pyrene	2054	50	2000	0	103	40-120	0			
Naphthalene	1764	50	2000	0	88.2	40-105	0			
Phenanthrene	1846	50	2000	0	92.3	50-110	0			
Pyrene	2016	50	2000	0	101	45-125	0			
Surr: 2,4,6-Tribromophenol	*3713*	0	*5000*	0	*74.3*	*34-140*	0			
Surr: 2-Fluorobiphenyl	*3875*	0	*5000*	0	*77.5*	*12-100*	0			
Surr: 2-Fluorophenol	*4493*	0	*5000*	0	*89.9*	*33-117*	0			
Surr: 4-Terphenyl-d14	*4883*	0	*5000*	0	*97.7*	*25-137*	0			
Surr: Nitrobenzene-d5	*4222*	0	*5000*	0	*84.4*	*37-107*	0			
Surr: Phenol-d6	*4296*	0	*5000*	0	*85.9*	*40-106*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45367** Instrument ID **SVMS6** Method: **SW8270**

MS Sample ID: **1212419-04A MS** Units: **µg/Kg** Analysis Date: **12/13/2012 03:29 PM**
Client ID: **SBKR1200R505S121112S007** Run ID: **SVMS6_121213A** SeqNo: **2169100** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	1595	48	1908	0	83.6	45-105	0			
Acenaphthene	1669	48	1908	0	87.4	45-110	0			
Acenaphthylene	1778	48	1908	0	93.2	45-105	0			
Anthracene	1821	48	1908	0	95.4	55-105	0			
Benzo(a)anthracene	1914	48	1908	211	89.2	50-110	0			
Benzo(a)pyrene	2073	48	1908	284.3	93.8	50-110	0			
Benzo(b)fluoranthene	2133	48	1908	310.1	95.5	45-115	0			
Benzo(g,h,i)perylene	1990	48	1908	119.9	98	40-125	0			
Benzo(k)fluoranthene	1889	48	1908	200.1	88.5	45-115	0			
Chrysene	2043	48	1908	248.7	94	55-110	0			
Dibenzo(a,h)anthracene	1828	48	1908	0	95.8	40-125	0			
Fluoranthene	2141	48	1908	312.1	95.8	55-115	0			
Fluorene	1694	48	1908	0	88.8	50-110	0			
Indeno(1,2,3-cd)pyrene	1953	48	1908	92.13	97.5	40-120	0			
Naphthalene	1609	48	1908	0	84.3	40-105	0			
Phenanthrene	1871	48	1908	102	92.7	50-110	0			
Pyrene	2202	48	1908	348.7	97.1	45-125	0			
Surr: 2,4,6-Tribromophenol	*3728*	0	*4771*	0	*78.1*	*34-140*	0			
Surr: 2-Fluorobiphenyl	*3644*	0	*4771*	0	*76.4*	*12-100*	0			
Surr: 2-Fluorophenol	*4151*	0	*4771*	0	*87*	*33-117*	0			
Surr: 4-Terphenyl-d14	*4570*	0	*4771*	0	*95.8*	*25-137*	0			
Surr: Nitrobenzene-d5	*3938*	0	*4771*	0	*82.5*	*37-107*	0			
Surr: Phenol-d6	*4061*	0	*4771*	0	*85.1*	*40-106*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212419
Project: Marshall KRRI 1200I, 1200R 12/11/12

QC BATCH REPORT

Batch ID: **45367** Instrument ID **SVMS6** Method: **SW8270**

MSD Sample ID: **1212419-04A MSD** Units: **µg/Kg** Analysis Date: **12/13/2012 03:54 PM**
Client ID: **SBKR1200R505S121112S007** Run ID: **SVMS6_121213A** SeqNo: **2169101** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	1648	50	1996	0	82.6	45-105	1595	3.21	30	
Acenaphthene	1681	50	1996	0	84.2	45-110	1669	0.751	30	
Acenaphthylene	1820	50	1996	0	91.2	45-105	1778	2.36	30	
Anthracene	1817	50	1996	0	91	55-105	1821	0.188	30	
Benzo(a)anthracene	1843	50	1996	211	81.8	50-110	1914	3.78	30	
Benzo(a)pyrene	2011	50	1996	284.3	86.5	50-110	2073	3.07	30	
Benzo(b)fluoranthene	2061	50	1996	310.1	87.7	45-115	2133	3.43	30	
Benzo(g,h,i)perylene	1851	50	1996	119.9	86.7	40-125	1990	7.21	30	
Benzo(k)fluoranthene	1900	50	1996	200.1	85.2	45-115	1889	0.565	30	
Chrysene	1965	50	1996	248.7	86	55-110	2043	3.9	30	
Dibenzo(a,h)anthracene	1770	50	1996	0	88.7	40-125	1828	3.22	30	
Fluoranthene	2053	50	1996	312.1	87.2	55-115	2141	4.22	30	
Fluorene	1730	50	1996	0	86.7	50-110	1694	2.14	30	
Indeno(1,2,3-cd)pyrene	1872	50	1996	92.13	89.2	40-120	1953	4.24	30	
Naphthalene	1642	50	1996	0	82.2	40-105	1609	2.02	30	
Phenanthrene	1864	50	1996	102	88.3	50-110	1871	0.38	30	
Pyrene	2083	50	1996	348.7	86.9	45-125	2202	5.59	30	
Surr: 2,4,6-Tribromophenol	*4189*	0	*4990*	0	*84*	*34-140*	3728	*11.6*	*40*	
Surr: 2-Fluorobiphenyl	*3728*	0	*4990*	0	*74.7*	*12-100*	3644	*2.28*	*40*	
Surr: 2-Fluorophenol	*4256*	0	*4990*	0	*85.3*	*33-117*	4151	*2.51*	*40*	
Surr: 4-Terphenyl-d14	*4609*	0	*4990*	0	*92.4*	*25-137*	4570	*0.864*	*40*	
Surr: Nitrobenzene-d5	*4050*	0	*4990*	0	*81.2*	*37-107*	3938	*2.82*	*40*	
Surr: Phenol-d6	*4133*	0	*4990*	0	*82.8*	*40-106*	4061	*1.76*	*40*	

The following samples were analyzed in this batch:

1212419-01A	1212419-02A	1212419-03A
1212419-04A	1212419-05A	1212419-06A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45395** Instrument ID **SVMS7** Method: **SW8270**

MBLK Sample ID: **SBLKS1-45395-45395** Units: **µg/Kg** Analysis Date: **12/14/2012 02:13 PM**
Client ID: Run ID: **SVMS7_121214A** SeqNo: **2170020** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	ND	50								
Acenaphthene	ND	50								
Acenaphthylene	ND	50								
Anthracene	ND	50								
Benzo(a)anthracene	ND	50								
Benzo(a)pyrene	ND	50								
Benzo(b)fluoranthene	ND	50								
Benzo(g,h,i)perylene	ND	50								
Benzo(k)fluoranthene	ND	50								
Chrysene	ND	50								
Dibenzo(a,h)anthracene	ND	50								
Fluoranthene	ND	50								
Fluorene	ND	50								
Indeno(1,2,3-cd)pyrene	ND	50								
Naphthalene	ND	50								
Phenanthrene	ND	50								
Pyrene	ND	50								
Surr: 2,4,6-Tribromophenol	*4301*	0	*5000*	0	*86*	*34-140*	0			
Surr: 2-Fluorobiphenyl	*3324*	0	*5000*	0	*66.5*	*12-100*	0			
Surr: 2-Fluorophenol	*4101*	0	*5000*	0	*82*	*33-117*	0			
Surr: 4-Terphenyl-d14	*3961*	0	*5000*	0	*79.2*	*25-137*	0			
Surr: Nitrobenzene-d5	*3405*	0	*5000*	0	*68.1*	*37-107*	0			
Surr: Phenol-d6	*4245*	0	*5000*	0	*84.9*	*40-106*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212419
Project: Marshall KRRI 1200I, 1200R 12/11/12

QC BATCH REPORT

Batch ID: **45395** Instrument ID **SVMS7** Method: **SW8270**

LCS Sample ID: **SLCSS1-45395-45395** Units: **µg/Kg** Analysis Date: **12/17/2012 01:39 PM**
Client ID: Run ID: **SVMS7_121217A** SeqNo: **2171504** Prep Date: **12/14/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	1717	50	2000	0	85.8	45-105	0			
Acenaphthene	1666	50	2000	0	83.3	45-110	0			
Acenaphthylene	1701	50	2000	0	85	45-105	0			
Anthracene	1752	50	2000	0	87.6	55-105	0			
Benzo(a)anthracene	1772	50	2000	0	88.6	50-110	0			
Benzo(a)pyrene	1915	50	2000	0	95.8	50-110	0			
Benzo(b)fluoranthene	1675	50	2000	0	83.8	45-115	0			
Benzo(g,h,i)perylene	2077	50	2000	0	104	40-125	0			
Benzo(k)fluoranthene	2021	50	2000	0	101	45-115	0			
Chrysene	1768	50	2000	0	88.4	55-110	0			
Dibenzo(a,h)anthracene	2041	50	2000	0	102	40-125	0			
Fluoranthene	1809	50	2000	0	90.4	55-115	0			
Fluorene	1726	50	2000	0	86.3	50-110	0			
Indeno(1,2,3-cd)pyrene	2063	50	2000	0	103	40-120	0			
Naphthalene	1677	50	2000	0	83.8	40-105	0			
Phenanthrene	1761	50	2000	0	88	50-110	0			
Pyrene	1809	50	2000	0	90.4	45-125	0			
Surr: 2,4,6-Tribromophenol	*4110*	0	*5000*	0	*82.2*	*34-140*	0			
Surr: 2-Fluorobiphenyl	*3121*	0	*5000*	0	*62.4*	*12-100*	0			
Surr: 2-Fluorophenol	*3767*	0	*5000*	0	*75.3*	*33-117*	0			
Surr: 4-Terphenyl-d14	*3941*	0	*5000*	0	*78.8*	*25-137*	0			
Surr: Nitrobenzene-d5	*3647*	0	*5000*	0	*72.9*	*37-107*	0			
Surr: Phenol-d6	*3894*	0	*5000*	0	*77.9*	*40-106*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212419
Project: Marshall KRRI 1200I, 1200R 12/11/12

QC BATCH REPORT

Batch ID: **45395** Instrument ID **SVMS7** Method: **SW8270**

MS Sample ID: **1212419-09A MS** Units: **µg/Kg** Analysis Date: **12/14/2012 05:09 PM**
Client ID: **SBKR1200R510S121112S005** Run ID: **SVMS7_121214A** SeqNo: **2171428** Prep Date: **12/14/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	1694	48	1909	0	88.8	45-105	0			
Acenaphthene	1327	48	1909	0	69.5	45-110	0			
Acenaphthylene	1963	48	1909	0	103	45-105	0			
Anthracene	1659	48	1909	0	86.9	55-105	0			
Benzo(a)anthracene	1642	48	1909	0	86	50-110	0			
Benzo(a)pyrene	1817	48	1909	0	95.2	50-110	0			
Benzo(b)fluoranthene	1732	48	1909	0	90.8	45-115	0			
Benzo(g,h,i)perylene	1597	48	1909	0	83.6	40-125	0			
Benzo(k)fluoranthene	1877	48	1909	0	98.4	45-115	0			
Chrysene	1688	48	1909	0	88.4	55-110	0			
Dibenzo(a,h)anthracene	1683	48	1909	0	88.2	40-125	0			
Fluoranthene	1729	48	1909	0	90.6	55-115	0			
Fluorene	1400	48	1909	0	73.4	50-110	0			
Indeno(1,2,3-cd)pyrene	1674	48	1909	0	87.7	40-120	0			
Naphthalene	1526	48	1909	0	80	40-105	0			
Phenanthrene	1663	48	1909	0	87.2	50-110	0			
Pyrene	1674	48	1909	0	87.7	45-125	0			
Surr: 2,4,6-Tribromophenol	*3446*	0	*4772*	0	*72.2*	*34-140*	0			
Surr: 2-Fluorobiphenyl	*3746*	0	*4772*	0	*78.5*	*12-100*	0			
Surr: 2-Fluorophenol	*3358*	0	*4772*	0	*70.4*	*33-117*	0			
Surr: 4-Terphenyl-d14	*3773*	0	*4772*	0	*79.1*	*25-137*	0			
Surr: Nitrobenzene-d5	*3147*	0	*4772*	0	*65.9*	*37-107*	0			
Surr: Phenol-d6	*3588*	0	*4772*	0	*75.2*	*40-106*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212419
Project: Marshall KRRI 1200I, 1200R 12/11/12

QC BATCH REPORT

Batch ID: **45395** Instrument ID **SVMS7** Method: **SW8270**

MSD Sample ID: **1212419-09A MSD** Units: **µg/Kg** Analysis Date: **12/14/2012 04:37 PM**
Client ID: **SBKR1200R510S121112S005** Run ID: **SVMS7_121214A** SeqNo: **2171429** Prep Date: **12/14/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	1609	46	1846	0	87.2	45-105	1694	5.16	30	
Acenaphthene	1592	46	1846	0	86.2	45-110	1327	18.2	30	
Acenaphthylene	1660	46	1846	0	89.9	45-105	1963	16.8	30	
Anthracene	1684	46	1846	0	91.2	55-105	1659	1.49	30	
Benzo(a)anthracene	1660	46	1846	0	89.9	50-110	1642	1.09	30	
Benzo(a)pyrene	1819	46	1846	0	98.6	50-110	1817	0.117	30	
Benzo(b)fluoranthene	1723	46	1846	0	93.4	45-115	1732	0.516	30	
Benzo(g,h,i)perylene	1553	46	1846	0	84.2	40-125	1597	2.75	30	
Benzo(k)fluoranthene	1877	46	1846	0	102	45-115	1877	0.00832	30	
Chrysene	1689	46	1846	0	91.5	55-110	1688	0.049	30	
Dibenzo(a,h)anthracene	1640	46	1846	0	88.8	40-125	1683	2.55	30	
Fluoranthene	1712	46	1846	0	92.8	55-115	1729	0.996	30	
Fluorene	1689	46	1846	0	91.5	50-110	1400	18.7	30	
Indeno(1,2,3-cd)pyrene	1639	46	1846	0	88.8	40-120	1674	2.09	30	
Naphthalene	1558	46	1846	0	84.4	40-105	1526	2.08	30	
Phenanthrene	1700	46	1846	0	92.1	50-110	1663	2.18	30	
Pyrene	1692	46	1846	0	91.6	45-125	1674	1.06	30	
Surr: 2,4,6-Tribromophenol	*4080*	0	*4615*	0	*88.4*	*34-140*	3446	*16.8*	*40*	
Surr: 2-Fluorobiphenyl	*3037*	0	*4615*	0	*65.8*	*12-100*	3746	*20.9*	*40*	
Surr: 2-Fluorophenol	*3459*	0	*4615*	0	*75*	*33-117*	3358	*2.96*	*40*	
Surr: 4-Terphenyl-d14	*3730*	0	*4615*	0	*80.8*	*25-137*	3773	*1.14*	*40*	
Surr: Nitrobenzene-d5	*3301*	0	*4615*	0	*71.5*	*37-107*	3147	*4.78*	*40*	
Surr: Phenol-d6	*3659*	0	*4615*	0	*79.3*	*40-106*	3588	*1.97*	*40*	

The following samples were analyzed in this batch: 1212419-07A 1212419-08A 1212419-09A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212419
Project: Marshall KRRI 1200I, 1200R 12/11/12

QC BATCH REPORT

Batch ID: **45358** Instrument ID **VMS8** Method: **SW8260**

MBLK Sample ID: **MBLK-45358-45358** Units: **µg/Kg** Analysis Date: **12/13/2012 03:13 AM**
Client ID: Run ID: **VMS8_121212B** SeqNo: **2168195** Prep Date: **12/12/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	30								
1,1,1-Trichloroethane	ND	30								
1,1,2,2-Tetrachloroethane	ND	30								
1,1,2-Trichloroethane	ND	30								
1,1-Dichloroethane	ND	30								
1,1-Dichloroethene	ND	30								
1,2,3-Trichlorobenzene	ND	30								
1,2,3-Trichloropropane	ND	30								
1,2,3-Trimethylbenzene	ND	30								
1,2,4-Trichlorobenzene	ND	30								
1,2,4-Trimethylbenzene	ND	30								
1,2-Dibromo-3-chloropropane	ND	30								
1,2-Dibromoethane	ND	30								
1,2-Dichlorobenzene	ND	30								
1,2-Dichloroethane	ND	30								
1,2-Dichloropropane	ND	30								
1,3,5-Trimethylbenzene	ND	30								
1,3-Dichlorobenzene	ND	30								
1,4-Dichlorobenzene	ND	30								
2-Butanone	ND	200								
2-Hexanone	ND	30								
2-Methylnaphthalene	ND	100								
4-Methyl-2-pentanone	ND	30								
Acetone	ND	100								
Acrylonitrile	ND	100								
Benzene	ND	30								
Bromobenzene	ND	30								
Bromochloromethane	ND	30								
Bromodichloromethane	ND	30								
Bromoform	ND	30								
Bromomethane	ND	75								
Carbon disulfide	ND	30								
Carbon tetrachloride	ND	30								
Chlorobenzene	ND	30								
Chloroethane	ND	100								
Chloroform	ND	30								
Chloromethane	ND	100								
cis-1,2-Dichloroethene	ND	30								
cis-1,3-Dichloropropene	ND	30								
Cyclohexane	ND	30								
Dibromochloromethane	ND	30								
Dibromomethane	ND	30								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45358** Instrument ID **VMS8** Method: **SW8260**

Dichlorodifluoromethane	ND	30					
Diethyl ether	ND	30					
Diisopropyl ether	ND	30					
Ethyl tert butyl ether	ND	30					
Ethylbenzene	ND	30					
Hexachloroethane	ND	30					
Isopropylbenzene	ND	30					
m,p-Xylene	ND	60					
Methyl iodide	ND	75					
Methyl tert-butyl ether	ND	30					
Methylene chloride	ND	30					
Naphthalene	ND	100					
n-Butylbenzene	ND	30					
n-Propylbenzene	ND	30					
o-Xylene	ND	30					
p-Isopropyltoluene	ND	30					
sec-Butylbenzene	ND	30					
Styrene	ND	30					
tert-Butyl alcohol	ND	200					
tert-Butylbenzene	ND	30					
Tertiaryamylmethylether	ND	30					
Tetrachloroethene	ND	30					
Tetrahydrofuran	ND	200					
Toluene	ND	30					
trans-1,2-Dichloroethene	ND	30					
trans-1,3-Dichloropropene	ND	30					
trans-1,4-Dichloro-2-butene	ND	30					
Trichloroethene	ND	30					
Trichlorofluoromethane	ND	30					
Vinyl chloride	ND	30					
Surr: 1,2-Dichloroethane-d4	*869.5*	0	*1000*	0	*87*	*70-130*	0
Surr: 4-Bromofluorobenzene	*974*	0	*1000*	0	*97.4*	*70-130*	0
Surr: Dibromofluoromethane	*926*	0	*1000*	0	*92.6*	*70-130*	0
Surr: Toluene-d8	*945*	0	*1000*	0	*94.5*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212419
Project: Marshall KRRI 1200I, 1200R 12/11/12

QC BATCH REPORT

Batch ID: **45358** Instrument ID **VMS8** Method: **SW8260**

LCS Sample ID: **LCS-45358-45358** Units: **µg/Kg** Analysis Date: **12/13/2012 02:02 AM**
Client ID: Run ID: **VMS8_121212B** SeqNo: **2168194** Prep Date: **12/12/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	1002	30	1000	0	100	75-125	0			
1,1,1-Trichloroethane	995	30	1000	0	99.5	70-135	0			
1,1,2,2-Tetrachloroethane	1001	30	1000	0	100	55-130	0			
1,1,2-Trichloroethane	919	30	1000	0	91.9	60-125	0			
1,1-Dichloroethane	856.5	30	1000	0	85.6	75-125	0			
1,1-Dichloroethene	785	30	1000	0	78.5	65-135	0			
1,2,3-Trichlorobenzene	1064	30	1000	0	106	60-135	0			
1,2,3-Trichloropropane	1048	30	1000	0	105	65-130	0			
1,2,4-Trichlorobenzene	1110	30	1000	0	111	65-130	0			
1,2,4-Trimethylbenzene	965.5	30	1000	0	96.6	65-135	0			
1,2-Dibromo-3-chloropropane	1200	30	1000	0	120	40-135	0			
1,2-Dibromoethane	1032	30	1000	0	103	70-125	0			
1,2-Dichlorobenzene	937	30	1000	0	93.7	75-120	0			
1,2-Dichloroethane	865.5	30	1000	0	86.6	70-135	0			
1,2-Dichloropropane	893	30	1000	0	89.3	70-120	0			
1,3,5-Trimethylbenzene	1003	30	1000	0	100	65-135	0			
1,3-Dichlorobenzene	950.5	30	1000	0	95	70-125	0			
1,4-Dichlorobenzene	967.5	30	1000	0	96.8	70-125	0			
2-Butanone	950.5	200	1000	0	95	30-160	0			
2-Hexanone	1064	30	1000	0	106	45-145	0			
4-Methyl-2-pentanone	1357	30	1000	0	136	45-145	0			
Acetone	911	100	1000	0	91.1	20-160	0			
Acrylonitrile	920.5	100	1000	0	92	70-135	0			
Benzene	937.5	30	1000	0	93.8	75-125	0			
Bromobenzene	893	30	1000	0	89.3	65-120	0			
Bromochloromethane	845.5	30	1000	0	84.6	70-125	0			
Bromodichloromethane	903	30	1000	0	90.3	70-130	0			
Bromoform	1100	30	1000	0	110	55-135	0			
Bromomethane	847	75	1000	0	84.7	30-160	0			
Carbon disulfide	983.5	30	1000	0	98.4	45-160	0			
Carbon tetrachloride	1018	30	1000	0	102	65-135	0			
Chlorobenzene	952.5	30	1000	0	95.2	75-125	0			
Chloroethane	499.5	100	1000	0	50	40-155	0			
Chloroform	898	30	1000	0	89.8	70-125	0			
Chloromethane	687.5	100	1000	0	68.8	50-130	0			
cis-1,2-Dichloroethene	863.5	30	1000	0	86.4	65-125	0			
cis-1,3-Dichloropropene	900	30	1000	0	90	70-125	0			
Dibromochloromethane	955.5	30	1000	0	95.6	65-135	0			
Dibromomethane	937.5	30	1000	0	93.8	75-130	0			
Dichlorodifluoromethane	682.5	30	1000	0	68.2	35-135	0			
Ethylbenzene	965.5	30	1000	0	96.6	75-125	0			
Hexachloroethane	1032	30	1000	0	103	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45358** Instrument ID **VMS8** Method: **SW8260**

Isopropylbenzene	996.5	30	1000	0	99.6	75-130	0
m,p-Xylene	1959	60	2000	0	98	80-125	0
Methyl tert-butyl ether	972.5	30	1000	0	97.2	75-125	0
Methylene chloride	877.5	30	1000	0	87.8	55-145	0
Naphthalene	1300	100	1000	0	130	40-140	0
n-Butylbenzene	921	30	1000	0	92.1	65-140	0
n-Propylbenzene	945.5	30	1000	0	94.6	65-135	0
o-Xylene	967.5	30	1000	0	96.8	75-125	0
p-Isopropyltoluene	948	30	1000	0	94.8	75-135	0
sec-Butylbenzene	1001	30	1000	0	100	65-130	0
Styrene	1030	30	1000	0	103	75-125	0
tert-Butylbenzene	951	30	1000	0	95.1	65-130	0
Tetrachloroethene	991.5	30	1000	0	99.2	64-140	0
Tetrahydrofuran	912	200	1000	0	91.2	70-135	0
Toluene	958	30	1000	0	95.8	70-125	0
trans-1,2-Dichloroethene	939	30	1000	0	93.9	65-135	0
trans-1,3-Dichloropropene	899	30	1000	0	89.9	65-125	0
trans-1,4-Dichloro-2-butene	981	30	1000	0	98.1	70-135	0
Trichloroethene	971.5	30	1000	0	97.2	75-125	0
Trichlorofluoromethane	860	30	1000	0	86	25-185	0
Vinyl chloride	784.5	30	1000	0	78.4	60-125	0
Surr: 1,2-Dichloroethane-d4	*902.5*	0	*1000*	0	*90.2*	*70-130*	0
Surr: 4-Bromofluorobenzene	*957.5*	0	*1000*	0	*95.8*	*70-130*	0
Surr: Dibromofluoromethane	*926*	0	*1000*	0	*92.6*	*70-130*	0
Surr: Toluene-d8	*951*	0	*1000*	0	*95.1*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212419
Project: Marshall KRRI 1200I, 1200R 12/11/12

QC BATCH REPORT

Batch ID: **45358** Instrument ID **VMS8** Method: **SW8260**

MS Sample ID: **1212419-04B MS** Units: **µg/Kg** Analysis Date: **12/13/2012 10:46 AM**
Client ID: **SBKR1200R505S121112S007** Run ID: **VMS8_121212B** SeqNo: **2168214** Prep Date: **12/12/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	2141	67	2226	0	96.2	75-125	0			
1,1,1-Trichloroethane	2142	67	2226	0	96.2	70-135	0			
1,1,2,2-Tetrachloroethane	1887	67	2226	0	84.8	55-130	0			
1,1,2-Trichloroethane	1935	67	2226	0	87	60-125	0			
1,1-Dichloroethane	1909	67	2226	0	85.8	75-125	0			
1,1-Dichloroethene	1826	67	2226	0	82	65-135	0			
1,2,3-Trichlorobenzene	1701	67	2226	0	76.4	60-135	0			
1,2,3-Trichloropropane	2063	67	2226	0	92.7	65-130	0			
1,2,3-Trimethylbenzene	52.31	67	2226	0	2.35	65-135	0			JS
1,2,4-Trichlorobenzene	1956	67	2226	0	87.9	65-130	0			
1,2,4-Trimethylbenzene	2018	67	2226	0	90.6	65-135	0			
1,2-Dibromo-3-chloropropane	1820	67	2226	0	81.8	40-135	0			
1,2-Dibromoethane	2119	67	2226	0	95.2	70-125	0			
1,2-Dichlorobenzene	1922	67	2226	0	86.4	75-120	0			
1,2-Dichloroethane	1918	67	2226	0	86.2	70-135	0			
1,2-Dichloropropane	1962	67	2226	0	88.2	70-120	0			
1,3,5-Trimethylbenzene	2142	67	2226	0	96.2	65-135	0			
1,3-Dichlorobenzene	2003	67	2226	0	90	70-125	0			
1,4-Dichlorobenzene	1997	67	2226	0	89.7	70-125	0			
2-Butanone	1369	220	2226	0	61.5	30-160	0			
2-Hexanone	1978	67	2226	0	88.8	45-145	0			
4-Methyl-2-pentanone	2594	67	2226	0	117	45-145	0			
Acetone	1547	220	2226	0	69.5	20-160	0			
Acrylonitrile	1943	67	2226	0	87.3	70-135	0			
Benzene	2017	67	2226	0	90.6	75-125	0			
Bromobenzene	1923	67	2226	0	86.4	65-120	0			
Bromochloromethane	1790	67	2226	0	80.4	70-125	0			
Bromodichloromethane	1919	67	2226	0	86.2	70-130	0			
Bromoform	2058	67	2226	0	92.4	55-135	0			
Bromomethane	1725	67	2226	0	77.5	30-160	0			
Carbon disulfide	1885	67	2226	0	84.7	45-160	0			
Carbon tetrachloride	2246	67	2226	0	101	65-135	0			
Chlorobenzene	2044	67	2226	0	91.8	75-125	0			
Chloroethane	1140	220	2226	0	51.2	40-155	0			
Chloroform	1920	67	2226	0	86.2	70-125	0			
Chloromethane	1384	67	2226	0	62.2	50-130	0			
cis-1,2-Dichloroethene	1944	67	2226	0	87.4	65-125	0			
cis-1,3-Dichloropropene	1924	67	2226	0	86.4	70-125	0			
Dibromochloromethane	1974	67	2226	0	88.7	65-135	0			
Dibromomethane	1984	67	2226	0	89.2	75-130	0			
Dichlorodifluoromethane	1384	67	2226	0	62.2	35-135	0			
Ethylbenzene	2097	67	2226	0	94.2	75-125	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45358** Instrument ID **VMS8** Method: **SW8260**

Hexachloroethane	2135	67	2226	0	95.9	70-135	0
Isopropylbenzene	2122	67	2226	0	95.4	75-130	0
m,p-Xylene	4179	130	4452	0	93.9	80-125	0
Methyl tert-butyl ether	2061	67	2226	0	92.6	75-125	0
Methylene chloride	1786	67	2226	0	80.2	55-145	0
Naphthalene	1940	220	2226	0	87.2	40-140	0
n-Butylbenzene	1735	67	2226	0	78	65-140	0
n-Propylbenzene	1972	67	2226	0	88.6	65-135	0
o-Xylene	2071	67	2226	0	93	75-125	0
p-Isopropyltoluene	1958	67	2226	0	88	75-135	0
sec-Butylbenzene	2073	67	2226	0	93.2	65-130	0
Styrene	2140	67	2226	0	96.2	75-125	0
tert-Butylbenzene	2080	67	2226	0	93.4	65-130	0
Tetrachloroethene	2097	67	2226	0	94.2	64-140	0
Tetrahydrofuran	1820	220	2226	0	81.8	70-135	0
Toluene	2030	67	2226	0	91.2	70-125	0
trans-1,2-Dichloroethene	1949	67	2226	0	87.6	65-135	0
trans-1,3-Dichloropropene	1890	67	2226	0	84.9	65-125	0
trans-1,4-Dichloro-2-butene	1802	67	2226	0	81	70-135	0
Trichloroethene	2052	67	2226	0	92.2	75-125	0
Trichlorofluoromethane	1389	67	2226	0	62.4	25-185	0
Vinyl chloride	1613	67	2226	0	72.4	60-125	0
Surr: 1,2-Dichloroethane-d4	*1952*	0	*2226*	0	*87.7*	*70-130*	0
Surr: 4-Bromofluorobenzene	*2190*	0	*2226*	0	*98.4*	*70-130*	0
Surr: Dibromofluoromethane	*2189*	0	*2226*	0	*98.4*	*70-130*	0
Surr: Toluene-d8	*2129*	0	*2226*	0	*95.6*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212419
Project: Marshall KRRI 1200I, 1200R 12/11/12

QC BATCH REPORT

Batch ID: **45358** Instrument ID **VMS8** Method: **SW8260**

MSD Sample ID: **1212419-04B MSD** Units: **µg/Kg** Analysis Date: **12/13/2012 11:10 AM**
Client ID: **SBKR1200R505S121112S007** Run ID: **VMS8_121212B** SeqNo: **2168215** Prep Date: **12/12/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	2064	67	2226	0	92.8	75-125	2141	3.65	30	
1,1,1-Trichloroethane	2088	67	2226	0	93.8	70-135	2142	2.58	30	
1,1,2,2-Tetrachloroethane	1869	67	2226	0	84	55-130	1887	1.01	30	
1,1,2-Trichloroethane	1843	67	2226	0	82.8	60-125	1935	4.89	30	
1,1-Dichloroethane	1891	67	2226	0	85	75-125	1909	0.937	30	
1,1-Dichloroethene	1835	67	2226	0	82.4	65-135	1826	0.486	30	
1,2,3-Trichlorobenzene	1794	67	2226	0	80.6	60-135	1701	5.35	30	
1,2,3-Trichloropropane	1893	67	2226	0	85	65-130	2063	8.61	30	
1,2,3-Trimethylbenzene	48.97	67	2226	0	2.2	65-135	52.31	0	30	JS
1,2,4-Trichlorobenzene	1991	67	2226	0	89.4	65-130	1956	1.75	30	
1,2,4-Trimethylbenzene	2000	67	2226	0	89.8	65-135	2018	0.886	30	
1,2-Dibromo-3-chloropropane	1818	67	2226	0	81.7	40-135	1820	0.0612	30	
1,2-Dibromoethane	2056	67	2226	0	92.4	70-125	2119	3.04	30	
1,2-Dichlorobenzene	1978	67	2226	0	88.8	75-120	1922	2.85	30	
1,2-Dichloroethane	1882	67	2226	0	84.6	70-135	1918	1.87	30	
1,2-Dichloropropane	1971	67	2226	0	88.6	70-120	1962	0.453	30	
1,3,5-Trimethylbenzene	2102	67	2226	0	94.4	65-135	2142	1.89	30	
1,3-Dichlorobenzene	1999	67	2226	0	89.8	70-125	2003	0.222	30	
1,4-Dichlorobenzene	2010	67	2226	0	90.3	70-125	1997	0.667	30	
2-Butanone	1344	220	2226	0	60.4	30-160	1369	1.8	30	
2-Hexanone	1844	67	2226	0	82.8	45-145	1978	6.99	30	
4-Methyl-2-pentanone	2473	67	2226	0	111	45-145	2594	4.79	30	
Acetone	2071	220	2226	0	93	20-160	1547	29	30	
Acrylonitrile	1960	67	2226	0	88	70-135	1943	0.855	30	
Benzene	2021	67	2226	0	90.8	75-125	2017	0.221	30	
Bromobenzene	1876	67	2226	0	84.3	65-120	1923	2.46	30	
Bromochloromethane	1856	67	2226	0	83.4	70-125	1790	3.66	30	
Bromodichloromethane	1857	67	2226	0	83.4	70-130	1919	3.24	30	
Bromoform	1871	67	2226	0	84	55-135	2058	9.52	30	
Bromomethane	1662	67	2226	0	74.6	30-160	1725	3.75	30	
Carbon disulfide	1815	67	2226	0	81.6	45-160	1885	3.79	30	
Carbon tetrachloride	2099	67	2226	0	94.3	65-135	2246	6.76	30	
Chlorobenzene	1943	67	2226	0	87.3	75-125	2044	5.08	30	
Chloroethane	1206	220	2226	0	54.2	40-155	1140	5.69	30	
Chloroform	1899	67	2226	0	85.3	70-125	1920	1.11	30	
Chloromethane	1383	67	2226	0	62.2	50-130	1384	0.0804	30	
cis-1,2-Dichloroethene	1945	67	2226	0	87.4	65-125	1944	0.0572	30	
cis-1,3-Dichloropropene	1908	67	2226	0	85.7	70-125	1924	0.871	30	
Dibromochloromethane	1887	67	2226	0	84.8	65-135	1974	4.5	30	
Dibromomethane	2023	67	2226	0	90.9	75-130	1984	1.94	30	
Dichlorodifluoromethane	1334	67	2226	0	60	35-135	1384	3.68	30	
Ethylbenzene	1999	67	2226	0	89.8	75-125	2097	4.78	30	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45358** Instrument ID **VMS8** Method: **SW8260**

Hexachloroethane	1941	67	2226	0	87.2	70-135	2135	9.5	30	
Isopropylbenzene	2103	67	2226	0	94.5	75-130	2122	0.895	30	
m,p-Xylene	4058	130	4452	0	91.2	80-125	4179	2.95	30	
Methyl tert-butyl ether	2057	67	2226	0	92.4	75-125	2061	0.216	30	
Methylene chloride	1768	67	2226	0	79.4	55-145	1786	1	30	
Naphthalene	2084	220	2226	0	93.6	40-140	1940	7.19	30	
n-Butylbenzene	1847	67	2226	0	83	65-140	1735	6.28	30	
n-Propylbenzene	1960	67	2226	0	88	65-135	1972	0.623	30	
o-Xylene	2050	67	2226	0	92.1	75-125	2071	1.03	30	
p-Isopropyltoluene	2000	67	2226	0	89.8	75-135	1958	2.14	30	
sec-Butylbenzene	2112	67	2226	0	94.9	65-130	2073	1.86	30	
Styrene	2097	67	2226	0	94.2	75-125	2140	2.05	30	
tert-Butylbenzene	2043	67	2226	0	91.8	65-130	2080	1.78	30	
Tetrachloroethene	2048	67	2226	0	92	64-140	2097	2.36	30	
Tetrahydrofuran	1504	220	2226	0	67.6	70-135	1820	19	30	S
Toluene	1992	67	2226	0	89.5	70-125	2030	1.88	30	
trans-1,2-Dichloroethene	1936	67	2226	0	87	65-135	1949	0.63	30	
trans-1,3-Dichloropropene	1798	67	2226	0	80.8	65-125	1890	4.95	30	
trans-1,4-Dichloro-2-butene	1785	67	2226	0	80.2	70-135	1802	0.931	30	
Trichloroethene	2056	67	2226	0	92.4	75-125	2052	0.163	30	
Trichlorofluoromethane	1401	67	2226	0	63	25-185	1389	0.878	30	
Vinyl chloride	1586	67	2226	0	71.2	60-125	1613	1.67	30	
Surr: 1,2-Dichloroethane-d4	*2058*	0	*2226*	0	*92.4*	*70-130*	1952	*5.27*	*30*	
Surr: 4-Bromofluorobenzene	*2148*	0	*2226*	0	*96.5*	*70-130*	2190	*1.95*	*30*	
Surr: Dibromofluoromethane	*2208*	0	*2226*	0	*99.2*	*70-130*	2189	*0.861*	*30*	
Surr: Toluene-d8	*2125*	0	*2226*	0	*95.4*	*70-130*	2129	*0.209*	*30*	

The following samples were analyzed in this batch:

1212419-01B	1212419-02B	1212419-03B
1212419-04B	1212419-05B	1212419-06B
1212419-07B	1212419-08B	1212419-09B
1212419-10A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212419
Project: Marshall KRRI 1200I, 1200R 12/11/12

QC BATCH REPORT

Batch ID: **R113987** Instrument ID **MOIST** Method: **A2540 G**

MBLK Sample ID: **WBLKS1-R113987** Units: **% of sample** Analysis Date: **12/14/2012 04:30 PM**
Client ID: Run ID: **MOIST_121214B** SeqNo: **2170268** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	ND	0.050								

LCS Sample ID: **LCS-R113987** Units: **% of sample** Analysis Date: **12/14/2012 04:30 PM**
Client ID: Run ID: **MOIST_121214B** SeqNo: **2170264** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	100	0.050	100	0	100	99.5-100.5	0			

DUP Sample ID: **1212419-04A DUP** Units: **% of sample** Analysis Date: **12/14/2012 04:30 PM**
Client ID: **SBKR1200R505S121112S007** Run ID: **MOIST_121214B** SeqNo: **2170245** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	39.06	0.050	0	0	0	0-0	38.47	1.52	20	

DUP Sample ID: **1212422-07A DUP** Units: **% of sample** Analysis Date: **12/14/2012 04:30 PM**
Client ID: Run ID: **MOIST_121214B** SeqNo: **2170258** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	41.28	0.050	0	0	0	0-0	41.17	0.267	20	

The following samples were analyzed in this batch:

1212419-01A	1212419-02A	1212419-03A
1212419-04A	1212419-05A	1212419-06A
1212419-07A	1212419-08A	1212419-09A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

1212419

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

COC #	ENBRIDGE_121112_GMK1	Task: KRRI_1200
Total # of Samples: 10		Event Complete?
Turn Around Time	5 Day	Rush: No
BILLING CODE: 6.00		

Lab Information:

Lab Name:	ALS Laboratory Group
Address:	3352 128th Ave. Holland, MI 49424-9263
Lab PM:	Ann Preston
Phone/Fax:	1-616-399-6070/1-616-399-6185
Lab PM email	ann.preston@alsglobal.com
Applicable Lab Quote #:	

Project Information:

Site ID #:	
Project #	60162778
Site Address	5555 Glenwood Parkway SE Suite 200
City	Grand Rapids
State, Zip	MI
Site PM Name	[redacted]
Phone/Fax:	[redacted]
Site PM Email:	Bryan.Sliemsma@aecom.com

Other Information:

Send Invoice to:	Enbridge Energy - ATTN Accounts Payable
Address:	1100 Louisiana Suite 1100
City/State:	Houson, TX
Phone #:	713-821-2000
PO #	
Send EDD to	
CC Hardcopy report	
CC Hardcopy report	

ITEM #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	MATRIX CODE	G=GRAB C=COMP	SAMPLE DATE	#OF CONTAINERS	Comments/Lab Sample I.D.	Preservative	None	None	None	None	MeOH											
								Analysis	% Moisture	Be,Mo,V,Ni by 6020	ORO,DRO	PNAs by 8270	VOC by 5035/8260											
1	SBKR1200I501S121112S007	SBKR1200I501	SO	G	12/11/2012 14:50	3			X	X	X	X	X											
2	SBKR1200R504S121112S005	SBKR1200R504	SO	G	12/11/2012 08:19	3			X	X	X	X	X											
3	SBKR1200R504D121112S005	SBKR1200R504	SO	G	12/11/2012 08:19	3	DUPLICATE		X	X	X	X	X											
4	SBKR1200R505S121112S007	SBKR1200R505	SO	G	12/11/2012 09:25	6	MS/MSD		X	X	X	X	X											
5	SBKR1200R506S121112S004	SBKR1200R506	SO	G	12/11/2012 10:32	3			X	X	X	X	X											
6	SBKR1200R507S121112S005	SBKR1200R507	SO	G	12/11/2012 11:24	3			X	X	X	X	X											
7	SBKR1200R508S121112S006	SBKR1200R508	SO	G	12/11/2012 13:06	3			X	X	X	X	X											
8	SBKR1200R509S121112S007	SBKR1200R509	SO	G	12/11/2012 14:02	3			X	X	X	X	X											
9	SBKR1200R510S121112S005	SBKR1200R510	SO	G	12/11/2012 15:50	3			X	X	X	X	X											
10	SBKR1200R510T121112MX	SBKR1200R510	SQ	G	12/11/2012 00:00	1	TRIP BLANK						X											

Additional Comments/Special Instructions:

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
[signature]	12-11-12	1720	[signature]	12-11-12	1720
[signature]	12/12/12	0810	[signature]	12-12-12	0810

Sample Receipt Conditions

Temp in OC	Samples on Ice?	Sample intact?	Trip Blank?
4.0°C	Y/N (Y) N	Y/N (Y) N	Y/N (Y) N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N

SHIPPING INFO
Company:
Tracking #:

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: GERRY KRAMER (GMK1)
SIGNATURE of SAMPLER:
DATE Signed
Time:

ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **12-Dec-12 08:10**

Work Order: **1212419** Received by: **PD**

Checklist completed by Keith Wierenga (eSignature) 12-Dec-12 (Date) Reviewed by: Ann Preston (eSignature) 13-Dec-12 (Date)

Matrices: Soil
Carrier name: ALSHN

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	4.0 C		
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	12/12/2012 1:53:39 PM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL	Seal Broken By:
Date: 12-11-13 Time:	Date:
Name:	
Company:	

4.0 °C

10 soils

19-Dec-2012

Bryan Stiemsma
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall KRRI 1175R 12/10/12** Work Order: **1212422**

Dear Bryan,

ALS Environmental received 8 samples on 12-Dec-2012 08:10 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 45.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston
Project Manager

Certificate No: MN331938

ALS Group USA, Corp

Date: 19-Dec-12

Client: AECOM Environment
Project: Marshall KRRI 1175R 12/10/12
Work Order: **1212422**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1212422-01	SBKR1175R501S121012S004	Soil		12/10/2012 11:22	12/12/2012 08:10	☐
1212422-02	SBKR1175R502S121012S005	Soil		12/10/2012 13:32	12/12/2012 08:10	☐
1212422-03	SBKR1175R502S121012S020	Soil		12/10/2012 13:38	12/12/2012 08:10	☐
1212422-04	SBKR1175R502S121012S032	Soil		12/10/2012 13:42	12/12/2012 08:10	☐
1212422-05	SBKR1175R502S121012S040	Soil		12/10/2012 13:46	12/12/2012 08:10	☐
1212422-06	SBKR1175R503S121012S006	Soil		12/10/2012 14:55	12/12/2012 08:10	☐
1212422-07	SBKR1175R504S121012S006	Soil		12/10/2012 16:00	12/12/2012 08:10	☐
1212422-08	SBKR1175R504T121012MX	Soil		12/10/2012	12/12/2012 08:10	☐

ALS Group USA, Corp

Date: 19-Dec-12

Client: AECOM Environment
Project: Marshall KRRI 1175R 12/10/12
Work Order: 1212422

Case Narrative

The extraction procedure used to prepare the soil samples for DRO and PAH analyses in this work order was a modification of the standard 3541 procedure. At the request of the client, a 10 gram sample aliquot dried with hydromatrix is used for extraction as outlined in ALS SOP HN-EXT-003(EN)-R01. All samples extracted starting on 10/1/2011 were prepared using this modified SOP.

Batch 45453 MS/MSD data for Metals is not related to this project's samples. No data requires qualification.

Batch 45358 MS/MSD data for Volatiles is not related to this project's samples. No data requires qualification.

Batch 45395 sample 1212422-02 PAH reporting limit were elevated due to dilution for high concentrations of non-target analytes. Samples 1212422-04, 1212422-05, 1212422-06 and 1212422-07 PAH internal standard recoveries were below the lower control limit, but >20%. Per the client's request, the results associated with the IS are being reported and should be considered as estimated for the compounds marked with an asterisk.

ALS Group USA, Corp

Date: 19-Dec-12

Client: AECOM Environment
Project: Marshall KRRI 1175R 12/10/12
WorkOrder: **1212422**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
SD	Serial Dilution
TDL	Target Detection Limit

Units Reported	Description
% of sample	Percent of Sample
µg/Kg	Micrograms per Kilogram
µg/Kg-dry	Micrograms per Kilogram Dry Weight
mg/Kg-dry	Milligrams per Kilogram Dry Weight

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1175R501S121012S004
Work Order:	1212422	**Collection Date:**	12/10/2012 11:22:00 AM
Project:	Marshall KRRI 1175R 12/10/12		
Lab ID:	1212422-01	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/14/2012**		Analyst: **CW**
DRO (C10-C20)	ND	59	4.0		mg/Kg-dry	1	12/14/2012
ORO (C20-C34)	**320**	**120**	**4.0**		**mg/Kg-dry**	1	12/14/2012
Surr: 4-Terphenyl-d14	*79.0*	*39-115*			*%REC*	1	12/14/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/17/2012**		Analyst: **CES**
Beryllium	ND	3.5	0.50		mg/Kg-dry	4	12/19/2012
Molybdenum	ND	8.9	1.0		mg/Kg-dry	4	12/19/2012
Nickel	**12**	**8.9**	**1.0**		**mg/Kg-dry**	4	12/19/2012
Vanadium	**20**	**8.9**	**1.0**		**mg/Kg-dry**	4	12/19/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/14/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/14/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/14/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/14/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/14/2012
Benzo(a)anthracene	ND	330	330		µg/Kg-dry	1	12/14/2012
Benzo(a)pyrene	ND	330	330		µg/Kg-dry	1	12/14/2012
Benzo(b)fluoranthene	ND	330	330		µg/Kg-dry	1	12/14/2012
Benzo(g,h,i)perylene	ND	330	330		µg/Kg-dry	1	12/14/2012
Benzo(k)fluoranthene	ND	330	330		µg/Kg-dry	1	12/14/2012
Chrysene	ND	330	330		µg/Kg-dry	1	12/14/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/14/2012
Fluoranthene	ND	330	330		µg/Kg-dry	1	12/14/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/14/2012
Indeno(1,2,3-cd)pyrene	ND	330	330		µg/Kg-dry	1	12/14/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/14/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/14/2012
Pyrene	ND	330	330	J	µg/Kg-dry	1	12/14/2012
Surr: 2,4,6-Tribromophenol	*80.5*	*34-140*			*%REC*	1	12/14/2012
Surr: 2-Fluorobiphenyl	*78.8*	*12-100*			*%REC*	1	12/14/2012
Surr: 2-Fluorophenol	*92.1*	*33-117*			*%REC*	1	12/14/2012
Surr: 4-Terphenyl-d14	*98.2*	*25-137*			*%REC*	1	12/14/2012
Surr: Nitrobenzene-d5	*86.2*	*37-107*			*%REC*	1	12/14/2012
Surr: Phenol-d6	*81.3*	*40-106*			*%REC*	1	12/14/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/12/2012**		Analyst: **BG**
1,1,1,2-Tetrachloroethane	ND	2,100	100		µg/Kg-dry	1	12/13/2012
1,1,1-Trichloroethane	ND	2,100	50		µg/Kg-dry	1	12/13/2012
1,1,2,2-Tetrachloroethane	ND	2,100	50		µg/Kg-dry	1	12/13/2012
1,1,2-Trichloroethane	ND	2,100	50		µg/Kg-dry	1	12/13/2012
1,1-Dichloroethane	ND	2,100	50		µg/Kg-dry	1	12/13/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1175R501S121012S004
Work Order:	1212422	**Collection Date:**	12/10/2012 11:22:00 AM
Project:	Marshall KRRI 1175R 12/10/12		
Lab ID:	1212422-01	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	2,100	50		µg/Kg-dry	1	12/13/2012
1,2,3-Trichlorobenzene	ND	2,100	250		µg/Kg-dry	1	12/13/2012
1,2,3-Trichloropropane	ND	2,100	100		µg/Kg-dry	1	12/13/2012
1,2,3-Trimethylbenzene	ND	2,100	250		µg/Kg-dry	1	12/13/2012
1,2,4-Trichlorobenzene	ND	2,100	250		µg/Kg-dry	1	12/13/2012
1,2,4-Trimethylbenzene	ND	2,100	100		µg/Kg-dry	1	12/13/2012
1,2-Dibromo-3-chloropropane	ND	2,100	10		µg/Kg-dry	1	12/13/2012
1,2-Dibromoethane	ND	2,100	20		µg/Kg-dry	1	12/13/2012
1,2-Dichlorobenzene	ND	2,100	100		µg/Kg-dry	1	12/13/2012
1,2-Dichloroethane	ND	2,100	50		µg/Kg-dry	1	12/13/2012
1,2-Dichloropropane	ND	2,100	50		µg/Kg-dry	1	12/13/2012
1,3,5-Trimethylbenzene	ND	2,100	100		µg/Kg-dry	1	12/13/2012
1,3-Dichlorobenzene	ND	2,100	100		µg/Kg-dry	1	12/13/2012
1,4-Dichlorobenzene	ND	2,100	100		µg/Kg-dry	1	12/13/2012
2-Butanone	ND	7,000	750		µg/Kg-dry	1	12/13/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
2-Methylnaphthalene	ND	7,000	330		µg/Kg-dry	1	12/13/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
Acetone	ND	17,000	1,000		µg/Kg-dry	1	12/13/2012
Acrylonitrile	ND	2,100	100		µg/Kg-dry	1	12/13/2012
Benzene	ND	2,100	50		µg/Kg-dry	1	12/13/2012
Bromobenzene	ND	2,100	100		µg/Kg-dry	1	12/13/2012
Bromochloromethane	ND	2,100	100		µg/Kg-dry	1	12/13/2012
Bromodichloromethane	ND	2,100	100		µg/Kg-dry	1	12/13/2012
Bromoform	ND	2,100	100		µg/Kg-dry	1	12/13/2012
Bromomethane	ND	2,100	200		µg/Kg-dry	1	12/13/2012
Carbon disulfide	ND	2,100	250		µg/Kg-dry	1	12/13/2012
Carbon tetrachloride	ND	2,100	50		µg/Kg-dry	1	12/13/2012
Chlorobenzene	ND	2,100	50		µg/Kg-dry	1	12/13/2012
Chloroethane	ND	7,000	250		µg/Kg-dry	1	12/13/2012
Chloroform	ND	2,100	50		µg/Kg-dry	1	12/13/2012
Chloromethane	ND	2,100	250		µg/Kg-dry	1	12/13/2012
cis-1,2-Dichloroethene	ND	2,100	50		µg/Kg-dry	1	12/13/2012
cis-1,3-Dichloropropene	ND	2,100	50		µg/Kg-dry	1	12/13/2012
Cyclohexane	ND	2,100	500		µg/Kg-dry	1	12/13/2012
Dibromochloromethane	ND	2,100	100		µg/Kg-dry	1	12/13/2012
Dibromomethane	ND	2,100	250		µg/Kg-dry	1	12/13/2012
Dichlorodifluoromethane	ND	2,100	250		µg/Kg-dry	1	12/13/2012
Diethyl ether	ND	2,100	200		µg/Kg-dry	1	12/13/2012
Diisopropyl ether	ND	2,100	250		µg/Kg-dry	1	12/13/2012
Ethyl tert butyl ether	ND	2,100	250		µg/Kg-dry	1	12/13/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client:	AECOM Environment	**Client Sample ID:**	SBKR1175R501S121012S004
Work Order:	1212422	**Collection Date:**	12/10/2012 11:22:00 AM
Project:	Marshall KRRI 1175R 12/10/12		
Lab ID:	1212422-01	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	2,100	50		µg/Kg-dry	1	12/13/2012
Hexachloroethane	ND	2,100	300		µg/Kg-dry	1	12/13/2012
Isopropylbenzene	ND	2,100	250		µg/Kg-dry	1	12/13/2012
m,p-Xylene	ND	4,200	100		µg/Kg-dry	1	12/13/2012
Methyl iodide	ND	2,100	100		µg/Kg-dry	1	12/13/2012
Methyl tert-butyl ether	ND	2,100	250		µg/Kg-dry	1	12/13/2012
Methylene chloride	ND	4,900	100		µg/Kg-dry	1	12/13/2012
Naphthalene	ND	7,000	330		µg/Kg-dry	1	12/13/2012
n-Butylbenzene	ND	2,100	50		µg/Kg-dry	1	12/13/2012
n-Propylbenzene	ND	2,100	100		µg/Kg-dry	1	12/13/2012
o-Xylene	ND	2,100	50		µg/Kg-dry	1	12/13/2012
p-Isopropyltoluene	ND	2,100	100		µg/Kg-dry	1	12/13/2012
sec-Butylbenzene	ND	2,100	50		µg/Kg-dry	1	12/13/2012
Styrene	ND	2,100	50		µg/Kg-dry	1	12/13/2012
tert-Butyl alcohol	ND	7,000	2,500		µg/Kg-dry	1	12/13/2012
tert-Butylbenzene	ND	2,100	50		µg/Kg-dry	1	12/13/2012
Tertiaryamylmethylether	ND	2,100	250		µg/Kg-dry	1	12/13/2012
Tetrachloroethene	ND	2,100	50		µg/Kg-dry	1	12/13/2012
Tetrahydrofuran	ND	7,000	1,000		µg/Kg-dry	1	12/13/2012
Toluene	ND	2,100	100		µg/Kg-dry	1	12/13/2012
trans-1,2-Dichloroethene	ND	2,100	50		µg/Kg-dry	1	12/13/2012
trans-1,3-Dichloropropene	ND	2,100	50		µg/Kg-dry	1	12/13/2012
trans-1,4-Dichloro-2-butene	ND	2,100	50		µg/Kg-dry	1	12/13/2012
Trichloroethene	ND	2,100	50		µg/Kg-dry	1	12/13/2012
Trichlorofluoromethane	ND	2,100	100		µg/Kg-dry	1	12/13/2012
Vinyl chloride	ND	2,100	40		µg/Kg-dry	1	12/13/2012
Surr: 1,2-Dichloroethane-d4	*88.8*	*70-130*			*%REC*	1	12/13/2012
Surr: 4-Bromofluorobenzene	*97.2*	*70-130*			*%REC*	1	12/13/2012
Surr: Dibromofluoromethane	*92.4*	*70-130*			*%REC*	1	12/13/2012
Surr: Toluene-d8	*96.2*	*70-130*			*%REC*	1	12/13/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**84**	**0.050**	**0**		**% of sample**	1	12/14/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1175R502S121012S005
Work Order:	1212422	**Collection Date:**	12/10/2012 1:32:00 PM
Project:	Marshall KRRI 1175R 12/10/12		
Lab ID:	1212422-02	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/14/2012**		Analyst: **CW**
DRO (C10-C20)	**2,600**	**400**	**4.0**		**mg/Kg-dry**	20	12/14/2012
ORO (C20-C34)	**20,000**	**790**	**4.0**		**mg/Kg-dry**	20	12/14/2012
Surr: 4-Terphenyl-d14	*112*	*39-115*			*%REC*	20	12/14/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/17/2012**		Analyst: **CES**
Beryllium	ND	1.3	0.50		mg/Kg-dry	4	12/19/2012
Molybdenum	ND	3.2	1.0		mg/Kg-dry	4	12/19/2012
Nickel	**26**	**3.2**	**1.0**		**mg/Kg-dry**	4	12/19/2012
Vanadium	**32**	**3.2**	**1.0**		**mg/Kg-dry**	4	12/19/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/14/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	2,000	330		µg/Kg-dry	20	12/18/2012
Acenaphthene	ND	2,000	330		µg/Kg-dry	20	12/18/2012
Acenaphthylene	ND	2,000	330		µg/Kg-dry	20	12/18/2012
Anthracene	ND	2,000	330		µg/Kg-dry	20	12/18/2012
Benzo(a)anthracene	ND	2,000	330		µg/Kg-dry	20	12/18/2012
Benzo(a)pyrene	ND	2,000	330		µg/Kg-dry	20	12/18/2012
Benzo(b)fluoranthene	ND	2,000	330		µg/Kg-dry	20	12/18/2012
Benzo(g,h,i)perylene	ND	2,000	330		µg/Kg-dry	20	12/18/2012
Benzo(k)fluoranthene	ND	2,000	330		µg/Kg-dry	20	12/18/2012
Chrysene	ND	2,000	330		µg/Kg-dry	20	12/18/2012
Dibenzo(a,h)anthracene	ND	2,000	330		µg/Kg-dry	20	12/18/2012
Fluoranthene	ND	2,000	330		µg/Kg-dry	20	12/18/2012
Fluorene	ND	2,000	330		µg/Kg-dry	20	12/18/2012
Indeno(1,2,3-cd)pyrene	ND	2,000	330		µg/Kg-dry	20	12/18/2012
Naphthalene	ND	2,000	330		µg/Kg-dry	20	12/18/2012
Phenanthrene	ND	2,000	330		µg/Kg-dry	20	12/18/2012
Pyrene	ND	2,000	330		µg/Kg-dry	20	12/18/2012
Surr: 2,4,6-Tribromophenol	*46.0*	*34-140*			*%REC*	20	12/18/2012
Surr: 2-Fluorobiphenyl	*70.8*	*12-100*			*%REC*	20	12/18/2012
Surr: 2-Fluorophenol	*81.6*	*33-117*			*%REC*	20	12/18/2012
Surr: 4-Terphenyl-d14	*89.2*	*25-137*			*%REC*	20	12/18/2012
Surr: Nitrobenzene-d5	*84.0*	*37-107*			*%REC*	20	12/18/2012
Surr: Phenol-d6	*55.6*	*40-106*			*%REC*	20	12/18/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/12/2012**		Analyst: **BG**
1,1,1,2-Tetrachloroethane	ND	190	100		µg/Kg-dry	1	12/13/2012
1,1,1-Trichloroethane	ND	190	50		µg/Kg-dry	1	12/13/2012
1,1,2,2-Tetrachloroethane	ND	190	50		µg/Kg-dry	1	12/13/2012
1,1,2-Trichloroethane	ND	190	50		µg/Kg-dry	1	12/13/2012
1,1-Dichloroethane	ND	190	50		µg/Kg-dry	1	12/13/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1175R502S121012S005
Work Order:	1212422	**Collection Date:**	12/10/2012 1:32:00 PM
Project:	Marshall KRRI 1175R 12/10/12		
Lab ID:	1212422-02	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	190	50		µg/Kg-dry	1	12/13/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
1,2,3-Trichloropropane	ND	190	100		µg/Kg-dry	1	12/13/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
1,2,4-Trimethylbenzene	ND	190	100		µg/Kg-dry	1	12/13/2012
1,2-Dibromo-3-chloropropane	ND	190	10		µg/Kg-dry	1	12/13/2012
1,2-Dibromoethane	ND	190	20		µg/Kg-dry	1	12/13/2012
1,2-Dichlorobenzene	ND	190	100		µg/Kg-dry	1	12/13/2012
1,2-Dichloroethane	ND	190	50		µg/Kg-dry	1	12/13/2012
1,2-Dichloropropane	ND	190	50		µg/Kg-dry	1	12/13/2012
1,3,5-Trimethylbenzene	ND	190	100		µg/Kg-dry	1	12/13/2012
1,3-Dichlorobenzene	ND	190	100		µg/Kg-dry	1	12/13/2012
1,4-Dichlorobenzene	ND	190	100		µg/Kg-dry	1	12/13/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/13/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
2-Methylnaphthalene	ND	620	330		µg/Kg-dry	1	12/13/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
Acetone	ND	1,600	1,000		µg/Kg-dry	1	12/13/2012
Acrylonitrile	ND	190	100		µg/Kg-dry	1	12/13/2012
Benzene	ND	190	50		µg/Kg-dry	1	12/13/2012
Bromobenzene	ND	190	100		µg/Kg-dry	1	12/13/2012
Bromochloromethane	ND	190	100		µg/Kg-dry	1	12/13/2012
Bromodichloromethane	ND	190	100		µg/Kg-dry	1	12/13/2012
Bromoform	ND	190	100		µg/Kg-dry	1	12/13/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/13/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/13/2012
Carbon tetrachloride	ND	190	50		µg/Kg-dry	1	12/13/2012
Chlorobenzene	ND	190	50		µg/Kg-dry	1	12/13/2012
Chloroethane	ND	620	250		µg/Kg-dry	1	12/13/2012
Chloroform	ND	190	50		µg/Kg-dry	1	12/13/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/13/2012
cis-1,2-Dichloroethene	ND	190	50		µg/Kg-dry	1	12/13/2012
cis-1,3-Dichloropropene	ND	190	50		µg/Kg-dry	1	12/13/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/13/2012
Dibromochloromethane	ND	190	100		µg/Kg-dry	1	12/13/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/13/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/13/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/13/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/13/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/13/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client:	AECOM Environment	**Client Sample ID:**	SBKR1175R502S121012S005
Work Order:	1212422	**Collection Date:**	12/10/2012 1:32:00 PM
Project:	Marshall KRRI 1175R 12/10/12		
Lab ID:	1212422-02	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	190	50		µg/Kg-dry	1	12/13/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/13/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
m,p-Xylene	ND	370	100		µg/Kg-dry	1	12/13/2012
Methyl iodide	ND	190	100		µg/Kg-dry	1	12/13/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/13/2012
Methylene chloride	ND	190	100		µg/Kg-dry	1	12/13/2012
Naphthalene	ND	620	330		µg/Kg-dry	1	12/13/2012
n-Butylbenzene	ND	190	50		µg/Kg-dry	1	12/13/2012
n-Propylbenzene	ND	190	100		µg/Kg-dry	1	12/13/2012
o-Xylene	ND	190	50		µg/Kg-dry	1	12/13/2012
p-Isopropyltoluene	ND	190	100		µg/Kg-dry	1	12/13/2012
sec-Butylbenzene	ND	190	50		µg/Kg-dry	1	12/13/2012
Styrene	ND	190	50		µg/Kg-dry	1	12/13/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
tert-Butylbenzene	ND	190	50		µg/Kg-dry	1	12/13/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/13/2012
Tetrachloroethene	ND	190	50		µg/Kg-dry	1	12/13/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/13/2012
Toluene	ND	190	100		µg/Kg-dry	1	12/13/2012
trans-1,2-Dichloroethene	ND	190	50		µg/Kg-dry	1	12/13/2012
trans-1,3-Dichloropropene	ND	190	50		µg/Kg-dry	1	12/13/2012
trans-1,4-Dichloro-2-butene	ND	190	50		µg/Kg-dry	1	12/13/2012
Trichloroethene	ND	190	50		µg/Kg-dry	1	12/13/2012
Trichlorofluoromethane	ND	190	100		µg/Kg-dry	1	12/13/2012
Vinyl chloride	ND	190	40		µg/Kg-dry	1	12/13/2012
Surr: 1,2-Dichloroethane-d4	*90.4*	*70-130*			*%REC*	1	12/13/2012
Surr: 4-Bromofluorobenzene	*96.1*	*70-130*			*%REC*	1	12/13/2012
Surr: Dibromofluoromethane	*93.2*	*70-130*			*%REC*	1	12/13/2012
Surr: Toluene-d8	*96.0*	*70-130*			*%REC*	1	12/13/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**51**	**0.050**	**0**		**% of sample**	1	12/14/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1175R502S121012S020
Work Order:	1212422	**Collection Date:**	12/10/2012 1:38:00 PM
Project:	Marshall KRRI 1175R 12/10/12		
Lab ID:	1212422-03	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/14/2012**		Analyst: **CW**
DRO (C10-C20)	ND	23	4.0		mg/Kg-dry	1	12/14/2012
ORO (C20-C34)	**81**	**45**	**4.0**		**mg/Kg-dry**	1	12/14/2012
Surr: 4-Terphenyl-d14	*82.4*	*39-115*			*%REC*	1	12/14/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/17/2012**		Analyst: **CES**
Beryllium	ND	1.4	0.50		mg/Kg-dry	4	12/19/2012
Molybdenum	ND	3.5	1.0		mg/Kg-dry	4	12/19/2012
Nickel	**6.4**	**3.5**	**1.0**		**mg/Kg-dry**	4	12/19/2012
Vanadium	**12**	**3.5**	**1.0**		**mg/Kg-dry**	4	12/19/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/14/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/14/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/14/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/14/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/14/2012
Benzo(a)anthracene	ND	330	330		µg/Kg-dry	1	12/14/2012
Benzo(a)pyrene	ND	330	330		µg/Kg-dry	1	12/14/2012
Benzo(b)fluoranthene	ND	330	330		µg/Kg-dry	1	12/14/2012
Benzo(g,h,i)perylene	ND	330	330		µg/Kg-dry	1	12/14/2012
Benzo(k)fluoranthene	ND	330	330		µg/Kg-dry	1	12/14/2012
Chrysene	ND	330	330		µg/Kg-dry	1	12/14/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/14/2012
Fluoranthene	ND	330	330		µg/Kg-dry	1	12/14/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/14/2012
Indeno(1,2,3-cd)pyrene	ND	330	330		µg/Kg-dry	1	12/14/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/14/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/14/2012
Pyrene	ND	330	330		µg/Kg-dry	1	12/14/2012
Surr: 2,4,6-Tribromophenol	*81.1*	*34-140*			*%REC*	1	12/14/2012
Surr: 2-Fluorobiphenyl	*75.1*	*12-100*			*%REC*	1	12/14/2012
Surr: 2-Fluorophenol	*90.0*	*33-117*			*%REC*	1	12/14/2012
Surr: 4-Terphenyl-d14	*104*	*25-137*			*%REC*	1	12/14/2012
Surr: Nitrobenzene-d5	*82.5*	*37-107*			*%REC*	1	12/14/2012
Surr: Phenol-d6	*80.0*	*40-106*			*%REC*	1	12/14/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/12/2012**		Analyst: **BG**
1,1,1,2-Tetrachloroethane	ND	260	100		µg/Kg-dry	1	12/13/2012
1,1,1-Trichloroethane	ND	260	50		µg/Kg-dry	1	12/13/2012
1,1,2,2-Tetrachloroethane	ND	260	50		µg/Kg-dry	1	12/13/2012
1,1,2-Trichloroethane	ND	260	50		µg/Kg-dry	1	12/13/2012
1,1-Dichloroethane	ND	260	50		µg/Kg-dry	1	12/13/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1175R502S121012S020
Work Order:	1212422	**Collection Date:**	12/10/2012 1:38:00 PM
Project:	Marshall KRRI 1175R 12/10/12		
Lab ID:	1212422-03	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	260	50		µg/Kg-dry	1	12/13/2012
1,2,3-Trichlorobenzene	ND	260	250		µg/Kg-dry	1	12/13/2012
1,2,3-Trichloropropane	ND	260	100		µg/Kg-dry	1	12/13/2012
1,2,3-Trimethylbenzene	ND	260	250		µg/Kg-dry	1	12/13/2012
1,2,4-Trichlorobenzene	ND	260	250		µg/Kg-dry	1	12/13/2012
1,2,4-Trimethylbenzene	ND	260	100		µg/Kg-dry	1	12/13/2012
1,2-Dibromo-3-chloropropane	ND	260	10		µg/Kg-dry	1	12/13/2012
1,2-Dibromoethane	ND	260	20		µg/Kg-dry	1	12/13/2012
1,2-Dichlorobenzene	ND	260	100		µg/Kg-dry	1	12/13/2012
1,2-Dichloroethane	ND	260	50		µg/Kg-dry	1	12/13/2012
1,2-Dichloropropane	ND	260	50		µg/Kg-dry	1	12/13/2012
1,3,5-Trimethylbenzene	ND	260	100		µg/Kg-dry	1	12/13/2012
1,3-Dichlorobenzene	ND	260	100		µg/Kg-dry	1	12/13/2012
1,4-Dichlorobenzene	ND	260	100		µg/Kg-dry	1	12/13/2012
2-Butanone	ND	860	750		µg/Kg-dry	1	12/13/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
2-Methylnaphthalene	ND	860	330		µg/Kg-dry	1	12/13/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
Acetone	ND	2,100	1,000		µg/Kg-dry	1	12/13/2012
Acrylonitrile	ND	260	100		µg/Kg-dry	1	12/13/2012
Benzene	ND	260	50		µg/Kg-dry	1	12/13/2012
Bromobenzene	ND	260	100		µg/Kg-dry	1	12/13/2012
Bromochloromethane	ND	260	100		µg/Kg-dry	1	12/13/2012
Bromodichloromethane	ND	260	100		µg/Kg-dry	1	12/13/2012
Bromoform	ND	260	100		µg/Kg-dry	1	12/13/2012
Bromomethane	ND	260	200		µg/Kg-dry	1	12/13/2012
Carbon disulfide	ND	260	250		µg/Kg-dry	1	12/13/2012
Carbon tetrachloride	ND	260	50		µg/Kg-dry	1	12/13/2012
Chlorobenzene	ND	260	50		µg/Kg-dry	1	12/13/2012
Chloroethane	ND	860	250		µg/Kg-dry	1	12/13/2012
Chloroform	ND	260	50		µg/Kg-dry	1	12/13/2012
Chloromethane	ND	260	250		µg/Kg-dry	1	12/13/2012
cis-1,2-Dichloroethene	ND	260	50		µg/Kg-dry	1	12/13/2012
cis-1,3-Dichloropropene	ND	260	50		µg/Kg-dry	1	12/13/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/13/2012
Dibromochloromethane	ND	260	100		µg/Kg-dry	1	12/13/2012
Dibromomethane	ND	260	250		µg/Kg-dry	1	12/13/2012
Dichlorodifluoromethane	ND	260	250		µg/Kg-dry	1	12/13/2012
Diethyl ether	ND	260	200		µg/Kg-dry	1	12/13/2012
Diisopropyl ether	ND	260	250		µg/Kg-dry	1	12/13/2012
Ethyl tert butyl ether	ND	260	250		µg/Kg-dry	1	12/13/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client:	AECOM Environment	**Client Sample ID:**	SBKR1175R502S121012S020
Work Order:	1212422	**Collection Date:**	12/10/2012 1:38:00 PM
Project:	Marshall KRRI 1175R 12/10/12		
Lab ID:	1212422-03	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	260	50		µg/Kg-dry	1	12/13/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/13/2012
Isopropylbenzene	ND	260	250		µg/Kg-dry	1	12/13/2012
m,p-Xylene	ND	510	100		µg/Kg-dry	1	12/13/2012
Methyl iodide	ND	260	100		µg/Kg-dry	1	12/13/2012
Methyl tert-butyl ether	ND	260	250		µg/Kg-dry	1	12/13/2012
Methylene chloride	ND	600	100		µg/Kg-dry	1	12/13/2012
Naphthalene	ND	860	330		µg/Kg-dry	1	12/13/2012
n-Butylbenzene	ND	260	50		µg/Kg-dry	1	12/13/2012
n-Propylbenzene	ND	260	100		µg/Kg-dry	1	12/13/2012
o-Xylene	ND	260	50		µg/Kg-dry	1	12/13/2012
p-Isopropyltoluene	ND	260	100		µg/Kg-dry	1	12/13/2012
sec-Butylbenzene	ND	260	50		µg/Kg-dry	1	12/13/2012
Styrene	ND	260	50		µg/Kg-dry	1	12/13/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
tert-Butylbenzene	ND	260	50		µg/Kg-dry	1	12/13/2012
Tertiaryamylmethylether	ND	260	250		µg/Kg-dry	1	12/13/2012
Tetrachloroethene	ND	260	50		µg/Kg-dry	1	12/13/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/13/2012
Toluene	ND	260	100		µg/Kg-dry	1	12/13/2012
trans-1,2-Dichloroethene	ND	260	50		µg/Kg-dry	1	12/13/2012
trans-1,3-Dichloropropene	ND	260	50		µg/Kg-dry	1	12/13/2012
trans-1,4-Dichloro-2-butene	ND	260	50		µg/Kg-dry	1	12/13/2012
Trichloroethene	ND	260	50		µg/Kg-dry	1	12/13/2012
Trichlorofluoromethane	ND	260	100		µg/Kg-dry	1	12/13/2012
Vinyl chloride	ND	260	40		µg/Kg-dry	1	12/13/2012
Surr: 1,2-Dichloroethane-d4	*91.5*	*70-130*			*%REC*	1	12/13/2012
Surr: 4-Bromofluorobenzene	*95.6*	*70-130*			*%REC*	1	12/13/2012
Surr: Dibromofluoromethane	*90.6*	*70-130*			*%REC*	1	12/13/2012
Surr: Toluene-d8	*94.8*	*70-130*			*%REC*	1	12/13/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**57**	**0.050**	**0**		**% of sample**	1	12/14/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1175R502S121012S032
Work Order:	1212422	**Collection Date:**	12/10/2012 1:42:00 PM
Project:	Marshall KRRI 1175R 12/10/12		
Lab ID:	1212422-04	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/14/2012**		Analyst: **CW**
DRO (C10-C20)	**140**	**15**	**4.0**		**mg/Kg-dry**	1	12/14/2012
ORO (C20-C34)	**970**	**30**	**4.0**		**mg/Kg-dry**	1	12/14/2012
Surr: 4-Terphenyl-d14	*79.3*	*39-115*			*%REC*	1	12/14/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/17/2012**		Analyst: **CES**
Beryllium	ND	0.97	0.50		mg/Kg-dry	4	12/19/2012
Molybdenum	ND	2.4	1.0		mg/Kg-dry	4	12/19/2012
Nickel	**4.5**	**2.4**	**1.0**		**mg/Kg-dry**	4	12/19/2012
Vanadium	**8.5**	**2.4**	**1.0**		**mg/Kg-dry**	4	12/19/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/14/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/14/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/14/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/14/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/14/2012
Benzo(a)anthracene	ND	330	330		µg/Kg-dry	1	12/14/2012
Benzo(a)pyrene	ND	330	330	*	µg/Kg-dry	1	12/14/2012
Benzo(b)fluoranthene	ND	330	330	*	µg/Kg-dry	1	12/14/2012
Benzo(g,h,i)perylene	ND	330	330	*	µg/Kg-dry	1	12/14/2012
Benzo(k)fluoranthene	ND	330	330	*	µg/Kg-dry	1	12/14/2012
Chrysene	ND	330	330		µg/Kg-dry	1	12/14/2012
Dibenzo(a,h)anthracene	ND	330	330	*	µg/Kg-dry	1	12/14/2012
Fluoranthene	ND	330	330		µg/Kg-dry	1	12/14/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/14/2012
Indeno(1,2,3-cd)pyrene	ND	330	330	*	µg/Kg-dry	1	12/14/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/14/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/14/2012
Pyrene	ND	330	330		µg/Kg-dry	1	12/14/2012
Surr: 2,4,6-Tribromophenol	*77.5*	*34-140*			*%REC*	1	12/14/2012
Surr: 2-Fluorobiphenyl	*74.2*	*12-100*			*%REC*	1	12/14/2012
Surr: 2-Fluorophenol	*75.5*	*33-117*			*%REC*	1	12/14/2012
Surr: 4-Terphenyl-d14	*100*	*25-137*			*%REC*	1	12/14/2012
Surr: Nitrobenzene-d5	*71.3*	*37-107*			*%REC*	1	12/14/2012
Surr: Phenol-d6	*74.6*	*40-106*			*%REC*	1	12/14/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/12/2012**		Analyst: **BG**
1,1,1,2-Tetrachloroethane	ND	100	100		µg/Kg-dry	1	12/13/2012
1,1,1-Trichloroethane	ND	100	50		µg/Kg-dry	1	12/13/2012
1,1,2,2-Tetrachloroethane	ND	100	50		µg/Kg-dry	1	12/13/2012
1,1,2-Trichloroethane	ND	100	50		µg/Kg-dry	1	12/13/2012
1,1-Dichloroethane	ND	100	50		µg/Kg-dry	1	12/13/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1175R502S121012S032
Work Order:	1212422	**Collection Date:**	12/10/2012 1:42:00 PM
Project:	Marshall KRRI 1175R 12/10/12		
Lab ID:	1212422-04	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	100	50		µg/Kg-dry	1	12/13/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
1,2,3-Trichloropropane	ND	100	100		µg/Kg-dry	1	12/13/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
1,2,4-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/13/2012
1,2-Dibromo-3-chloropropane	ND	100	10		µg/Kg-dry	1	12/13/2012
1,2-Dibromoethane	ND	100	20		µg/Kg-dry	1	12/13/2012
1,2-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/13/2012
1,2-Dichloroethane	ND	100	50		µg/Kg-dry	1	12/13/2012
1,2-Dichloropropane	ND	100	50		µg/Kg-dry	1	12/13/2012
1,3,5-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/13/2012
1,3-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/13/2012
1,4-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/13/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/13/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
2-Methylnaphthalene	ND	350	330		µg/Kg-dry	1	12/13/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
Acetone	ND	1,000	1,000		µg/Kg-dry	1	12/13/2012
Acrylonitrile	ND	100	100		µg/Kg-dry	1	12/13/2012
Benzene	ND	100	50		µg/Kg-dry	1	12/13/2012
Bromobenzene	ND	100	100		µg/Kg-dry	1	12/13/2012
Bromochloromethane	ND	100	100		µg/Kg-dry	1	12/13/2012
Bromodichloromethane	ND	100	100		µg/Kg-dry	1	12/13/2012
Bromoform	ND	100	100		µg/Kg-dry	1	12/13/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/13/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/13/2012
Carbon tetrachloride	ND	100	50		µg/Kg-dry	1	12/13/2012
Chlorobenzene	ND	100	50		µg/Kg-dry	1	12/13/2012
Chloroethane	ND	350	250		µg/Kg-dry	1	12/13/2012
Chloroform	ND	100	50		µg/Kg-dry	1	12/13/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/13/2012
cis-1,2-Dichloroethene	ND	100	50		µg/Kg-dry	1	12/13/2012
cis-1,3-Dichloropropene	ND	100	50		µg/Kg-dry	1	12/13/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/13/2012
Dibromochloromethane	ND	100	100		µg/Kg-dry	1	12/13/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/13/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/13/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/13/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/13/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/13/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1175R502S121012S032
Work Order:	1212422	**Collection Date:**	12/10/2012 1:42:00 PM
Project:	Marshall KRRI 1175R 12/10/12		
Lab ID:	1212422-04	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	100	50		µg/Kg-dry	1	12/13/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/13/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
m,p-Xylene	ND	210	100		µg/Kg-dry	1	12/13/2012
Methyl iodide	ND	100	100		µg/Kg-dry	1	12/13/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/13/2012
Methylene chloride	ND	170	100		µg/Kg-dry	1	12/13/2012
Naphthalene	ND	350	330		µg/Kg-dry	1	12/13/2012
n-Butylbenzene	ND	100	50		µg/Kg-dry	1	12/13/2012
n-Propylbenzene	ND	100	100		µg/Kg-dry	1	12/13/2012
o-Xylene	ND	100	50		µg/Kg-dry	1	12/13/2012
p-Isopropyltoluene	ND	100	100		µg/Kg-dry	1	12/13/2012
sec-Butylbenzene	ND	100	50		µg/Kg-dry	1	12/13/2012
Styrene	ND	100	50		µg/Kg-dry	1	12/13/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
tert-Butylbenzene	ND	100	50		µg/Kg-dry	1	12/13/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/13/2012
Tetrachloroethene	ND	100	50		µg/Kg-dry	1	12/13/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/13/2012
Toluene	ND	100	100		µg/Kg-dry	1	12/13/2012
trans-1,2-Dichloroethene	ND	100	50		µg/Kg-dry	1	12/13/2012
trans-1,3-Dichloropropene	ND	100	50		µg/Kg-dry	1	12/13/2012
trans-1,4-Dichloro-2-butene	ND	100	50		µg/Kg-dry	1	12/13/2012
Trichloroethene	ND	100	50		µg/Kg-dry	1	12/13/2012
Trichlorofluoromethane	ND	100	100		µg/Kg-dry	1	12/13/2012
Vinyl chloride	ND	100	40		µg/Kg-dry	1	12/13/2012
Surr: 1,2-Dichloroethane-d4	*93.4*	*70-130*			*%REC*	1	12/13/2012
Surr: 4-Bromofluorobenzene	*96.5*	*70-130*			*%REC*	1	12/13/2012
Surr: Dibromofluoromethane	*90.6*	*70-130*			*%REC*	1	12/13/2012
Surr: Toluene-d8	*93.2*	*70-130*			*%REC*	1	12/13/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**37**	**0.050**	**0**		**% of sample**	1	12/14/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1175R502S121012S040
Work Order:	1212422	**Collection Date:**	12/10/2012 1:46:00 PM
Project:	Marshall KRRI 1175R 12/10/12		
Lab ID:	1212422-05	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/14/2012**		Analyst: **CW**
DRO (C10-C20)	ND	18	4.0		mg/Kg-dry	1	12/14/2012
ORO (C20-C34)	**100**	**35**	**4.0**		**mg/Kg-dry**	1	12/14/2012
Surr: 4-Terphenyl-d14	*77.8*	*39-115*			*%REC*	1	12/14/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/17/2012**		Analyst: **CES**
Beryllium	ND	1.2	0.50		mg/Kg-dry	4	12/19/2012
Molybdenum	ND	2.9	1.0		mg/Kg-dry	4	12/19/2012
Nickel	**4.0**	**2.9**	**1.0**		**mg/Kg-dry**	4	12/19/2012
Vanadium	**8.1**	**2.9**	**1.0**		**mg/Kg-dry**	4	12/19/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/14/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/14/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/14/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/14/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/14/2012
Benzo(a)anthracene	ND	330	330		µg/Kg-dry	1	12/14/2012
Benzo(a)pyrene	ND	330	330	*	µg/Kg-dry	1	12/14/2012
Benzo(b)fluoranthene	ND	330	330	*	µg/Kg-dry	1	12/14/2012
Benzo(g,h,i)perylene	ND	330	330	*	µg/Kg-dry	1	12/14/2012
Benzo(k)fluoranthene	ND	330	330	*	µg/Kg-dry	1	12/14/2012
Chrysene	ND	330	330		µg/Kg-dry	1	12/14/2012
Dibenzo(a,h)anthracene	ND	330	330	*	µg/Kg-dry	1	12/14/2012
Fluoranthene	ND	330	330		µg/Kg-dry	1	12/14/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/14/2012
Indeno(1,2,3-cd)pyrene	ND	330	330	*	µg/Kg-dry	1	12/14/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/14/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/14/2012
Pyrene	ND	330	330		µg/Kg-dry	1	12/14/2012
Surr: 2,4,6-Tribromophenol	*76.5*	*34-140*			*%REC*	1	12/14/2012
Surr: 2-Fluorobiphenyl	*72.1*	*12-100*			*%REC*	1	12/14/2012
Surr: 2-Fluorophenol	*84.2*	*33-117*			*%REC*	1	12/14/2012
Surr: 4-Terphenyl-d14	*100*	*25-137*			*%REC*	1	12/14/2012
Surr: Nitrobenzene-d5	*79.0*	*37-107*			*%REC*	1	12/14/2012
Surr: Phenol-d6	*67.0*	*40-106*			*%REC*	1	12/14/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/12/2012**		Analyst: **BG**
1,1,1,2-Tetrachloroethane	ND	150	100		µg/Kg-dry	1	12/13/2012
1,1,1-Trichloroethane	ND	150	50		µg/Kg-dry	1	12/13/2012
1,1,2,2-Tetrachloroethane	ND	150	50		µg/Kg-dry	1	12/13/2012
1,1,2-Trichloroethane	ND	150	50		µg/Kg-dry	1	12/13/2012
1,1-Dichloroethane	ND	150	50		µg/Kg-dry	1	12/13/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1175R502S121012S040
Work Order:	1212422	**Collection Date:**	12/10/2012 1:46:00 PM
Project:	Marshall KRRI 1175R 12/10/12		
Lab ID:	1212422-05	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	150	50		µg/Kg-dry	1	12/13/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
1,2,3-Trichloropropane	ND	150	100		µg/Kg-dry	1	12/13/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
1,2,4-Trimethylbenzene	ND	150	100		µg/Kg-dry	1	12/13/2012
1,2-Dibromo-3-chloropropane	ND	150	10		µg/Kg-dry	1	12/13/2012
1,2-Dibromoethane	ND	150	20		µg/Kg-dry	1	12/13/2012
1,2-Dichlorobenzene	ND	150	100		µg/Kg-dry	1	12/13/2012
1,2-Dichloroethane	ND	150	50		µg/Kg-dry	1	12/13/2012
1,2-Dichloropropane	ND	150	50		µg/Kg-dry	1	12/13/2012
1,3,5-Trimethylbenzene	ND	150	100		µg/Kg-dry	1	12/13/2012
1,3-Dichlorobenzene	ND	150	100		µg/Kg-dry	1	12/13/2012
1,4-Dichlorobenzene	ND	150	100		µg/Kg-dry	1	12/13/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/13/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
2-Methylnaphthalene	ND	510	330		µg/Kg-dry	1	12/13/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
Acetone	ND	1,300	1,000		µg/Kg-dry	1	12/13/2012
Acrylonitrile	ND	150	100		µg/Kg-dry	1	12/13/2012
Benzene	ND	150	50		µg/Kg-dry	1	12/13/2012
Bromobenzene	ND	150	100		µg/Kg-dry	1	12/13/2012
Bromochloromethane	ND	150	100		µg/Kg-dry	1	12/13/2012
Bromodichloromethane	ND	150	100		µg/Kg-dry	1	12/13/2012
Bromoform	ND	150	100		µg/Kg-dry	1	12/13/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/13/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/13/2012
Carbon tetrachloride	ND	150	50		µg/Kg-dry	1	12/13/2012
Chlorobenzene	ND	150	50		µg/Kg-dry	1	12/13/2012
Chloroethane	ND	510	250		µg/Kg-dry	1	12/13/2012
Chloroform	ND	150	50		µg/Kg-dry	1	12/13/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/13/2012
cis-1,2-Dichloroethene	ND	150	50		µg/Kg-dry	1	12/13/2012
cis-1,3-Dichloropropene	ND	150	50		µg/Kg-dry	1	12/13/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/13/2012
Dibromochloromethane	ND	150	100		µg/Kg-dry	1	12/13/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/13/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/13/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/13/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/13/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/13/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1175R502S121012S040
Work Order:	1212422	**Collection Date:**	12/10/2012 1:46:00 PM
Project:	Marshall KRRI 1175R 12/10/12		
Lab ID:	1212422-05	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	150	50		µg/Kg-dry	1	12/13/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/13/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
m,p-Xylene	ND	310	100		µg/Kg-dry	1	12/13/2012
Methyl iodide	ND	150	100		µg/Kg-dry	1	12/13/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/13/2012
Methylene chloride	ND	150	100		µg/Kg-dry	1	12/13/2012
Naphthalene	ND	510	330		µg/Kg-dry	1	12/13/2012
n-Butylbenzene	ND	150	50		µg/Kg-dry	1	12/13/2012
n-Propylbenzene	ND	150	100		µg/Kg-dry	1	12/13/2012
o-Xylene	ND	150	50		µg/Kg-dry	1	12/13/2012
p-Isopropyltoluene	ND	150	100		µg/Kg-dry	1	12/13/2012
sec-Butylbenzene	ND	150	50		µg/Kg-dry	1	12/13/2012
Styrene	ND	150	50		µg/Kg-dry	1	12/13/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
tert-Butylbenzene	ND	150	50		µg/Kg-dry	1	12/13/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/13/2012
Tetrachloroethene	ND	150	50		µg/Kg-dry	1	12/13/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/13/2012
Toluene	ND	150	100		µg/Kg-dry	1	12/13/2012
trans-1,2-Dichloroethene	ND	150	50		µg/Kg-dry	1	12/13/2012
trans-1,3-Dichloropropene	ND	150	50		µg/Kg-dry	1	12/13/2012
trans-1,4-Dichloro-2-butene	ND	150	50		µg/Kg-dry	1	12/13/2012
Trichloroethene	ND	150	50		µg/Kg-dry	1	12/13/2012
Trichlorofluoromethane	ND	150	100		µg/Kg-dry	1	12/13/2012
Vinyl chloride	ND	150	40		µg/Kg-dry	1	12/13/2012
Surr: 1,2-Dichloroethane-d4	*90.3*	*70-130*			*%REC*	1	12/13/2012
Surr: 4-Bromofluorobenzene	*94.8*	*70-130*			*%REC*	1	12/13/2012
Surr: Dibromofluoromethane	*91.5*	*70-130*			*%REC*	1	12/13/2012
Surr: Toluene-d8	*96.1*	*70-130*			*%REC*	1	12/13/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**45**	**0.050**	**0**		**% of sample**	1	12/14/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1175R503S121012S006
Work Order:	1212422	**Collection Date:**	12/10/2012 2:55:00 PM
Project:	Marshall KRRI 1175R 12/10/12		
Lab ID:	1212422-06	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/14/2012**		Analyst: **CW**
DRO (C10-C20)	**83**	**59**	**4.0**		**mg/Kg-dry**	1	12/14/2012
ORO (C20-C34)	**600**	**120**	**4.0**		**mg/Kg-dry**	1	12/14/2012
Surr: 4-Terphenyl-d14	*80.2*	*39-115*			*%REC*	1	12/14/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/17/2012**		Analyst: **CES**
Beryllium	ND	3.3	0.50		mg/Kg-dry	4	12/19/2012
Molybdenum	ND	8.2	1.0		mg/Kg-dry	4	12/19/2012
Nickel	**21**	**8.2**	**1.0**		**mg/Kg-dry**	4	12/19/2012
Vanadium	**20**	**8.2**	**1.0**		**mg/Kg-dry**	4	12/19/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/14/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/14/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/14/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/14/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/14/2012
Benzo(a)anthracene	ND	330	330		µg/Kg-dry	1	12/14/2012
Benzo(a)pyrene	ND	330	330	*	µg/Kg-dry	1	12/14/2012
Benzo(b)fluoranthene	ND	330	330	*	µg/Kg-dry	1	12/14/2012
Benzo(g,h,i)perylene	ND	330	330	*	µg/Kg-dry	1	12/14/2012
Benzo(k)fluoranthene	ND	330	330	*	µg/Kg-dry	1	12/14/2012
Chrysene	ND	330	330		µg/Kg-dry	1	12/14/2012
Dibenzo(a,h)anthracene	ND	330	330	*	µg/Kg-dry	1	12/14/2012
Fluoranthene	ND	330	330		µg/Kg-dry	1	12/14/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/14/2012
Indeno(1,2,3-cd)pyrene	ND	330	330	*	µg/Kg-dry	1	12/14/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/14/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/14/2012
Pyrene	ND	330	330		µg/Kg-dry	1	12/14/2012
Surr: 2,4,6-Tribromophenol	*79.5*	*34-140*			*%REC*	1	12/14/2012
Surr: 2-Fluorobiphenyl	*73.4*	*12-100*			*%REC*	1	12/14/2012
Surr: 2-Fluorophenol	*78.1*	*33-117*			*%REC*	1	12/14/2012
Surr: 4-Terphenyl-d14	*102*	*25-137*			*%REC*	1	12/14/2012
Surr: Nitrobenzene-d5	*76.5*	*37-107*			*%REC*	1	12/14/2012
Surr: Phenol-d6	*68.4*	*40-106*			*%REC*	1	12/14/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/12/2012**		Analyst: **BG**
1,1,1,2-Tetrachloroethane	ND	2,100	100		µg/Kg-dry	1	12/13/2012
1,1,1-Trichloroethane	ND	2,100	50		µg/Kg-dry	1	12/13/2012
1,1,2,2-Tetrachloroethane	ND	2,100	50		µg/Kg-dry	1	12/13/2012
1,1,2-Trichloroethane	ND	2,100	50		µg/Kg-dry	1	12/13/2012
1,1-Dichloroethane	ND	2,100	50		µg/Kg-dry	1	12/13/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1175R503S121012S006
Work Order:	1212422	**Collection Date:**	12/10/2012 2:55:00 PM
Project:	Marshall KRRI 1175R 12/10/12		
Lab ID:	1212422-06	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	2,100	50		µg/Kg-dry	1	12/13/2012
1,2,3-Trichlorobenzene	ND	2,100	250		µg/Kg-dry	1	12/13/2012
1,2,3-Trichloropropane	ND	2,100	100		µg/Kg-dry	1	12/13/2012
1,2,3-Trimethylbenzene	ND	2,100	250		µg/Kg-dry	1	12/13/2012
1,2,4-Trichlorobenzene	ND	2,100	250		µg/Kg-dry	1	12/13/2012
1,2,4-Trimethylbenzene	ND	2,100	100		µg/Kg-dry	1	12/13/2012
1,2-Dibromo-3-chloropropane	ND	2,100	10		µg/Kg-dry	1	12/13/2012
1,2-Dibromoethane	ND	2,100	20		µg/Kg-dry	1	12/13/2012
1,2-Dichlorobenzene	ND	2,100	100		µg/Kg-dry	1	12/13/2012
1,2-Dichloroethane	ND	2,100	50		µg/Kg-dry	1	12/13/2012
1,2-Dichloropropane	ND	2,100	50		µg/Kg-dry	1	12/13/2012
1,3,5-Trimethylbenzene	ND	2,100	100		µg/Kg-dry	1	12/13/2012
1,3-Dichlorobenzene	ND	2,100	100		µg/Kg-dry	1	12/13/2012
1,4-Dichlorobenzene	ND	2,100	100		µg/Kg-dry	1	12/13/2012
2-Butanone	ND	7,000	750		µg/Kg-dry	1	12/13/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
2-Methylnaphthalene	ND	7,000	330		µg/Kg-dry	1	12/13/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
Acetone	ND	18,000	1,000		µg/Kg-dry	1	12/13/2012
Acrylonitrile	ND	2,100	100		µg/Kg-dry	1	12/13/2012
Benzene	ND	2,100	50		µg/Kg-dry	1	12/13/2012
Bromobenzene	ND	2,100	100		µg/Kg-dry	1	12/13/2012
Bromochloromethane	ND	2,100	100		µg/Kg-dry	1	12/13/2012
Bromodichloromethane	ND	2,100	100		µg/Kg-dry	1	12/13/2012
Bromoform	ND	2,100	100		µg/Kg-dry	1	12/13/2012
Bromomethane	ND	2,100	200		µg/Kg-dry	1	12/13/2012
Carbon disulfide	ND	2,100	250		µg/Kg-dry	1	12/13/2012
Carbon tetrachloride	ND	2,100	50		µg/Kg-dry	1	12/13/2012
Chlorobenzene	ND	2,100	50		µg/Kg-dry	1	12/13/2012
Chloroethane	ND	7,000	250		µg/Kg-dry	1	12/13/2012
Chloroform	ND	2,100	50		µg/Kg-dry	1	12/13/2012
Chloromethane	ND	2,100	250		µg/Kg-dry	1	12/13/2012
cis-1,2-Dichloroethene	ND	2,100	50		µg/Kg-dry	1	12/13/2012
cis-1,3-Dichloropropene	ND	2,100	50		µg/Kg-dry	1	12/13/2012
Cyclohexane	ND	2,100	500		µg/Kg-dry	1	12/13/2012
Dibromochloromethane	ND	2,100	100		µg/Kg-dry	1	12/13/2012
Dibromomethane	ND	2,100	250		µg/Kg-dry	1	12/13/2012
Dichlorodifluoromethane	ND	2,100	250		µg/Kg-dry	1	12/13/2012
Diethyl ether	ND	2,100	200		µg/Kg-dry	1	12/13/2012
Diisopropyl ether	ND	2,100	250		µg/Kg-dry	1	12/13/2012
Ethyl tert butyl ether	ND	2,100	250		µg/Kg-dry	1	12/13/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1175R503S121012S006
Work Order:	1212422	**Collection Date:**	12/10/2012 2:55:00 PM
Project:	Marshall KRRI 1175R 12/10/12		
Lab ID:	1212422-06	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	2,100	50		µg/Kg-dry	1	12/13/2012
Hexachloroethane	ND	2,100	300		µg/Kg-dry	1	12/13/2012
Isopropylbenzene	ND	2,100	250		µg/Kg-dry	1	12/13/2012
m,p-Xylene	ND	4,200	100		µg/Kg-dry	1	12/13/2012
Methyl iodide	ND	2,100	100		µg/Kg-dry	1	12/13/2012
Methyl tert-butyl ether	ND	2,100	250		µg/Kg-dry	1	12/13/2012
Methylene chloride	ND	2,100	100		µg/Kg-dry	1	12/13/2012
Naphthalene	ND	7,000	330		µg/Kg-dry	1	12/13/2012
n-Butylbenzene	ND	2,100	50		µg/Kg-dry	1	12/13/2012
n-Propylbenzene	ND	2,100	100		µg/Kg-dry	1	12/13/2012
o-Xylene	ND	2,100	50		µg/Kg-dry	1	12/13/2012
p-Isopropyltoluene	ND	2,100	100		µg/Kg-dry	1	12/13/2012
sec-Butylbenzene	ND	2,100	50		µg/Kg-dry	1	12/13/2012
Styrene	ND	2,100	50		µg/Kg-dry	1	12/13/2012
tert-Butyl alcohol	ND	7,000	2,500		µg/Kg-dry	1	12/13/2012
tert-Butylbenzene	ND	2,100	50		µg/Kg-dry	1	12/13/2012
Tertiaryamylmethylether	ND	2,100	250		µg/Kg-dry	1	12/13/2012
Tetrachloroethene	ND	2,100	50		µg/Kg-dry	1	12/13/2012
Tetrahydrofuran	ND	7,000	1,000		µg/Kg-dry	1	12/13/2012
Toluene	ND	2,100	100		µg/Kg-dry	1	12/13/2012
trans-1,2-Dichloroethene	ND	2,100	50		µg/Kg-dry	1	12/13/2012
trans-1,3-Dichloropropene	ND	2,100	50		µg/Kg-dry	1	12/13/2012
trans-1,4-Dichloro-2-butene	ND	2,100	50		µg/Kg-dry	1	12/13/2012
Trichloroethene	ND	2,100	50		µg/Kg-dry	1	12/13/2012
Trichlorofluoromethane	ND	2,100	100		µg/Kg-dry	1	12/13/2012
Vinyl chloride	ND	2,100	40		µg/Kg-dry	1	12/13/2012
Surr: 1,2-Dichloroethane-d4	*86.6*	*70-130*			*%REC*	1	12/13/2012
Surr: 4-Bromofluorobenzene	*98.4*	*70-130*			*%REC*	1	12/13/2012
Surr: Dibromofluoromethane	*91.4*	*70-130*			*%REC*	1	12/13/2012
Surr: Toluene-d8	*97.0*	*70-130*			*%REC*	1	12/13/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**84**	**0.050**	**0**		**% of sample**	1	12/14/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1175R504S121012S006
Work Order:	1212422	**Collection Date:**	12/10/2012 4:00:00 PM
Project:	Marshall KRRI 1175R 12/10/12		
Lab ID:	1212422-07	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/14/2012**		Analyst: **CW**
DRO (C10-C20)	ND	16	4.0		mg/Kg-dry	1	12/14/2012
ORO (C20-C34)	**300**	**31**	**4.0**		**mg/Kg-dry**	1	12/14/2012
Surr: 4-Terphenyl-d14	*78.7*	*39-115*			*%REC*	1	12/14/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/17/2012**		Analyst: **CES**
Beryllium	ND	0.98	0.50		mg/Kg-dry	4	12/19/2012
Molybdenum	ND	2.5	1.0		mg/Kg-dry	4	12/19/2012
Nickel	**18**	**2.5**	**1.0**		**mg/Kg-dry**	4	12/19/2012
Vanadium	**20**	**2.5**	**1.0**		**mg/Kg-dry**	4	12/19/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/14/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/15/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/15/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/15/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/15/2012
Benzo(a)anthracene	**550**	**330**	**330**		**µg/Kg-dry**	1	12/15/2012
Benzo(a)pyrene	**770**	**330**	**330**	*	**µg/Kg-dry**	1	12/15/2012
Benzo(b)fluoranthene	**790**	**330**	**330**	*	**µg/Kg-dry**	1	12/15/2012
Benzo(g,h,i)perylene	ND	330	330	*	µg/Kg-dry	1	12/15/2012
Benzo(k)fluoranthene	**690**	**330**	**330**	*	**µg/Kg-dry**	1	12/15/2012
Chrysene	**650**	**330**	**330**		**µg/Kg-dry**	1	12/15/2012
Dibenzo(a,h)anthracene	ND	330	330	*	µg/Kg-dry	1	12/15/2012
Fluoranthene	**970**	**330**	**330**		**µg/Kg-dry**	1	12/15/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/15/2012
Indeno(1,2,3-cd)pyrene	ND	330	330	*	µg/Kg-dry	1	12/15/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/15/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/15/2012
Pyrene	**980**	**330**	**330**		**µg/Kg-dry**	1	12/15/2012
Surr: 2,4,6-Tribromophenol	*74.0*	*34-140*			*%REC*	1	12/15/2012
Surr: 2-Fluorobiphenyl	*69.2*	*12-100*			*%REC*	1	12/15/2012
Surr: 2-Fluorophenol	*69.9*	*33-117*			*%REC*	1	12/15/2012
Surr: 4-Terphenyl-d14	*96.4*	*25-137*			*%REC*	1	12/15/2012
Surr: Nitrobenzene-d5	*71.7*	*37-107*			*%REC*	1	12/15/2012
Surr: Phenol-d6	*67.4*	*40-106*			*%REC*	1	12/15/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/12/2012**		Analyst: **BG**
1,1,1,2-Tetrachloroethane	ND	120	100		µg/Kg-dry	1	12/13/2012
1,1,1-Trichloroethane	ND	120	50		µg/Kg-dry	1	12/13/2012
1,1,2,2-Tetrachloroethane	ND	120	50		µg/Kg-dry	1	12/13/2012
1,1,2-Trichloroethane	ND	120	50		µg/Kg-dry	1	12/13/2012
1,1-Dichloroethane	ND	120	50		µg/Kg-dry	1	12/13/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1175R504S121012S006
Work Order:	1212422	**Collection Date:**	12/10/2012 4:00:00 PM
Project:	Marshall KRRI 1175R 12/10/12		
Lab ID:	1212422-07	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	120	50		µg/Kg-dry	1	12/13/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
1,2,3-Trichloropropane	ND	120	100		µg/Kg-dry	1	12/13/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
1,2,4-Trimethylbenzene	ND	120	100		µg/Kg-dry	1	12/13/2012
1,2-Dibromo-3-chloropropane	ND	120	10		µg/Kg-dry	1	12/13/2012
1,2-Dibromoethane	ND	120	20		µg/Kg-dry	1	12/13/2012
1,2-Dichlorobenzene	ND	120	100		µg/Kg-dry	1	12/13/2012
1,2-Dichloroethane	ND	120	50		µg/Kg-dry	1	12/13/2012
1,2-Dichloropropane	ND	120	50		µg/Kg-dry	1	12/13/2012
1,3,5-Trimethylbenzene	ND	120	100		µg/Kg-dry	1	12/13/2012
1,3-Dichlorobenzene	ND	120	100		µg/Kg-dry	1	12/13/2012
1,4-Dichlorobenzene	ND	120	100		µg/Kg-dry	1	12/13/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/13/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
2-Methylnaphthalene	ND	410	330		µg/Kg-dry	1	12/13/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
Acetone	ND	1,000	1,000		µg/Kg-dry	1	12/13/2012
Acrylonitrile	ND	120	100		µg/Kg-dry	1	12/13/2012
Benzene	ND	120	50		µg/Kg-dry	1	12/13/2012
Bromobenzene	ND	120	100		µg/Kg-dry	1	12/13/2012
Bromochloromethane	ND	120	100		µg/Kg-dry	1	12/13/2012
Bromodichloromethane	ND	120	100		µg/Kg-dry	1	12/13/2012
Bromoform	ND	120	100		µg/Kg-dry	1	12/13/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/13/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/13/2012
Carbon tetrachloride	ND	120	50		µg/Kg-dry	1	12/13/2012
Chlorobenzene	ND	120	50		µg/Kg-dry	1	12/13/2012
Chloroethane	ND	410	250		µg/Kg-dry	1	12/13/2012
Chloroform	ND	120	50		µg/Kg-dry	1	12/13/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/13/2012
cis-1,2-Dichloroethene	ND	120	50		µg/Kg-dry	1	12/13/2012
cis-1,3-Dichloropropene	ND	120	50		µg/Kg-dry	1	12/13/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/13/2012
Dibromochloromethane	ND	120	100		µg/Kg-dry	1	12/13/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/13/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/13/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/13/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/13/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/13/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1175R504S121012S006
Work Order:	1212422	**Collection Date:**	12/10/2012 4:00:00 PM
Project:	Marshall KRRI 1175R 12/10/12		
Lab ID:	1212422-07	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	120	50		µg/Kg-dry	1	12/13/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/13/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/13/2012
m,p-Xylene	ND	250	100		µg/Kg-dry	1	12/13/2012
Methyl iodide	ND	120	100		µg/Kg-dry	1	12/13/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/13/2012
Methylene chloride	ND	410	100		µg/Kg-dry	1	12/13/2012
Naphthalene	ND	410	330		µg/Kg-dry	1	12/13/2012
n-Butylbenzene	ND	120	50		µg/Kg-dry	1	12/13/2012
n-Propylbenzene	ND	120	100		µg/Kg-dry	1	12/13/2012
o-Xylene	ND	120	50		µg/Kg-dry	1	12/13/2012
p-Isopropyltoluene	ND	120	100		µg/Kg-dry	1	12/13/2012
sec-Butylbenzene	ND	120	50		µg/Kg-dry	1	12/13/2012
Styrene	ND	120	50		µg/Kg-dry	1	12/13/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/13/2012
tert-Butylbenzene	ND	120	50		µg/Kg-dry	1	12/13/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/13/2012
Tetrachloroethene	ND	120	50		µg/Kg-dry	1	12/13/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/13/2012
Toluene	ND	120	100		µg/Kg-dry	1	12/13/2012
trans-1,2-Dichloroethene	ND	120	50		µg/Kg-dry	1	12/13/2012
trans-1,3-Dichloropropene	ND	120	50		µg/Kg-dry	1	12/13/2012
trans-1,4-Dichloro-2-butene	ND	120	50		µg/Kg-dry	1	12/13/2012
Trichloroethene	ND	120	50		µg/Kg-dry	1	12/13/2012
Trichlorofluoromethane	ND	120	100		µg/Kg-dry	1	12/13/2012
Vinyl chloride	ND	120	40		µg/Kg-dry	1	12/13/2012
Surr: 1,2-Dichloroethane-d4	*89.0*	*70-130*			*%REC*	1	12/13/2012
Surr: 4-Bromofluorobenzene	*94.7*	*70-130*			*%REC*	1	12/13/2012
Surr: Dibromofluoromethane	*93.7*	*70-130*			*%REC*	1	12/13/2012
Surr: Toluene-d8	*94.8*	*70-130*			*%REC*	1	12/13/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**41**	**0.050**	**0**		**% of sample**	1	12/14/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1175R504T121012MX
Work Order:	1212422	**Collection Date:**	12/10/2012
Project:	Marshall KRRI 1175R 12/10/12		
Lab ID:	1212422-08	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/12/2012**		Analyst: **BG**
1,1,1,2-Tetrachloroethane	ND	100	100		µg/Kg	1	12/13/2012
1,1,1-Trichloroethane	ND	50	50		µg/Kg	1	12/13/2012
1,1,2,2-Tetrachloroethane	ND	50	50		µg/Kg	1	12/13/2012
1,1,2-Trichloroethane	ND	50	50		µg/Kg	1	12/13/2012
1,1-Dichloroethane	ND	50	50		µg/Kg	1	12/13/2012
1,1-Dichloroethene	ND	50	50		µg/Kg	1	12/13/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg	1	12/13/2012
1,2,3-Trichloropropane	ND	100	100		µg/Kg	1	12/13/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg	1	12/13/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg	1	12/13/2012
1,2,4-Trimethylbenzene	ND	100	100		µg/Kg	1	12/13/2012
1,2-Dibromo-3-chloropropane	ND	30	10		µg/Kg	1	12/13/2012
1,2-Dibromoethane	ND	30	20		µg/Kg	1	12/13/2012
1,2-Dichlorobenzene	ND	100	100		µg/Kg	1	12/13/2012
1,2-Dichloroethane	ND	50	50		µg/Kg	1	12/13/2012
1,2-Dichloropropane	ND	50	50		µg/Kg	1	12/13/2012
1,3,5-Trimethylbenzene	ND	100	100		µg/Kg	1	12/13/2012
1,3-Dichlorobenzene	ND	100	100		µg/Kg	1	12/13/2012
1,4-Dichlorobenzene	ND	100	100		µg/Kg	1	12/13/2012
2-Butanone	ND	750	750		µg/Kg	1	12/13/2012
2-Hexanone	ND	2,500	2,500		µg/Kg	1	12/13/2012
2-Methylnaphthalene	ND	330	330		µg/Kg	1	12/13/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg	1	12/13/2012
Acetone	ND	1,000	1,000		µg/Kg	1	12/13/2012
Acrylonitrile	ND	100	100		µg/Kg	1	12/13/2012
Benzene	ND	50	50		µg/Kg	1	12/13/2012
Bromobenzene	ND	100	100		µg/Kg	1	12/13/2012
Bromochloromethane	ND	100	100		µg/Kg	1	12/13/2012
Bromodichloromethane	ND	100	100		µg/Kg	1	12/13/2012
Bromoform	ND	100	100		µg/Kg	1	12/13/2012
Bromomethane	ND	200	200		µg/Kg	1	12/13/2012
Carbon disulfide	ND	250	250		µg/Kg	1	12/13/2012
Carbon tetrachloride	ND	50	50		µg/Kg	1	12/13/2012
Chlorobenzene	ND	50	50		µg/Kg	1	12/13/2012
Chloroethane	ND	250	250		µg/Kg	1	12/13/2012
Chloroform	ND	50	50		µg/Kg	1	12/13/2012
Chloromethane	ND	250	250		µg/Kg	1	12/13/2012
cis-1,2-Dichloroethene	ND	50	50		µg/Kg	1	12/13/2012
cis-1,3-Dichloropropene	ND	50	50		µg/Kg	1	12/13/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1175R504T121012MX
Work Order:	1212422	**Collection Date:**	12/10/2012
Project:	Marshall KRRI 1175R 12/10/12		
Lab ID:	1212422-08	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Cyclohexane	ND	500	500		µg/Kg	1	12/13/2012
Dibromochloromethane	ND	100	100		µg/Kg	1	12/13/2012
Dibromomethane	ND	250	250		µg/Kg	1	12/13/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg	1	12/13/2012
Diethyl ether	ND	200	200		µg/Kg	1	12/13/2012
Diisopropyl ether	ND	250	250		µg/Kg	1	12/13/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg	1	12/13/2012
Ethylbenzene	ND	50	50		µg/Kg	1	12/13/2012
Hexachloroethane	ND	300	300		µg/Kg	1	12/13/2012
Isopropylbenzene	ND	250	250		µg/Kg	1	12/13/2012
m,p-Xylene	ND	100	100		µg/Kg	1	12/13/2012
Methyl iodide	ND	100	100		µg/Kg	1	12/13/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg	1	12/13/2012
Methylene chloride	ND	100	100		µg/Kg	1	12/13/2012
Naphthalene	ND	330	330		µg/Kg	1	12/13/2012
n-Butylbenzene	ND	50	50		µg/Kg	1	12/13/2012
n-Propylbenzene	ND	100	100		µg/Kg	1	12/13/2012
o-Xylene	ND	50	50		µg/Kg	1	12/13/2012
p-Isopropyltoluene	ND	100	100		µg/Kg	1	12/13/2012
sec-Butylbenzene	ND	50	50		µg/Kg	1	12/13/2012
Styrene	ND	50	50		µg/Kg	1	12/13/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg	1	12/13/2012
tert-Butylbenzene	ND	50	50		µg/Kg	1	12/13/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg	1	12/13/2012
Tetrachloroethene	ND	50	50		µg/Kg	1	12/13/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg	1	12/13/2012
Toluene	ND	100	100		µg/Kg	1	12/13/2012
trans-1,2-Dichloroethene	ND	50	50		µg/Kg	1	12/13/2012
trans-1,3-Dichloropropene	ND	50	50		µg/Kg	1	12/13/2012
trans-1,4-Dichloro-2-butene	ND	50	50		µg/Kg	1	12/13/2012
Trichloroethene	ND	50	50		µg/Kg	1	12/13/2012
Trichlorofluoromethane	ND	100	100		µg/Kg	1	12/13/2012
Vinyl chloride	ND	40	40		µg/Kg	1	12/13/2012
Surr: 1,2-Dichloroethane-d4	*90.0*	*70-130*			*%REC*	1	12/13/2012
Surr: 4-Bromofluorobenzene	*97.2*	*70-130*			*%REC*	1	12/13/2012
Surr: Dibromofluoromethane	*93.8*	*70-130*			*%REC*	1	12/13/2012
Surr: Toluene-d8	*96.2*	*70-130*			*%REC*	1	12/13/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 19-Dec-12

Client: AECOM Environment

QC BATCH REPORT

Work Order: 1212422

Project: Marshall KRRI 1175R 12/10/12

Batch ID: **45396A** Instrument ID **GC8** Method: **SW8015M**

MBLK Sample ID: **DBLKS1-45396-45396A** Units: **mg/Kg** Analysis Date: **12/14/2012 04:03 PM**

Client ID: Run ID: **GC8_121214A** SeqNo: **2170176** Prep Date: **12/14/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	ND	10								
ORO (C20-C34)	ND	20								
Surr: 4-Terphenyl-d14	*3.947*	0	*5*	0	*78.9*	*39-115*	0			

LCS Sample ID: **DLCSS1-45396-45396A** Units: **mg/Kg** Analysis Date: **12/14/2012 04:28 PM**

Client ID: Run ID: **GC8_121214A** SeqNo: **2170177** Prep Date: **12/14/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	357.6	10	500	0	71.5	49-124	0			
ORO (C20-C34)	341.3	20	500	0	68.3	60-130	0			
Surr: 4-Terphenyl-d14	*4.181*	0	*5*	0	*83.6*	*39-115*	0			

MS Sample ID: **1212419-09A MS** Units: **mg/Kg** Analysis Date: **12/14/2012 04:53 PM**

Client ID: Run ID: **GC8_121214A** SeqNo: **2170178** Prep Date: **12/14/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	309	9.8	491.2	0	62.9	60-130	0			
ORO (C20-C34)	295.2	20	491.2	7.283	58.6	60-130	0			S
Surr: 4-Terphenyl-d14	*3.543*	0	*4.912*	0	*72.1*	*39-115*	0			

MSD Sample ID: **1212419-09A MSD** Units: **mg/Kg** Analysis Date: **12/14/2012 05:18 PM**

Client ID: Run ID: **GC8_121214A** SeqNo: **2170179** Prep Date: **12/14/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	324.7	9.4	471.8	0	68.8	60-130	312.7	3.78	30	
ORO (C20-C34)	334.2	19	471.8	7.283	69.3	60-130	295.2	12.4	30	
Surr: 4-Terphenyl-d14	*3.995*	0	*4.718*	0	*84.7*	*39-115*	4.031	*0.92*	*30*	

The following samples were analyzed in this batch:

1212422-01A	1212422-02A	1212422-03A
1212422-04A	1212422-05A	1212422-06A
1212422-07A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212422
Project: Marshall KRRI 1175R 12/10/12

QC BATCH REPORT

Batch ID: **45453** Instrument ID **ICPMS1** Method: **SW6020A**

MBLK Sample ID: **MBLK-45453-45453** Units: **mg/Kg** Analysis Date: **12/19/2012 08:47 AM**
Client ID: Run ID: **ICPMS1_121218A** SeqNo: **2173598** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	ND	0.10								
Molybdenum	ND	0.25								
Nickel	ND	0.25								
Vanadium	ND	0.25								

LCS Sample ID: **LCS-45453-45453** Units: **mg/Kg** Analysis Date: **12/19/2012 09:02 AM**
Client ID: Run ID: **ICPMS1_121218A** SeqNo: **2173600** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	5.17	0.10	5	0	103	80-120	0			
Molybdenum	5.08	0.25	5	0	102	80-120	0			
Nickel	5.04	0.25	5	0	101	80-120	0			
Vanadium	5.25	0.25	5	0	105	80-120	0			

MS Sample ID: **1212419-04AMS** Units: **mg/Kg** Analysis Date: **12/19/2012 09:55 AM**
Client ID: Run ID: **ICPMS1_121218A** SeqNo: **2173866** Prep Date: **12/17/2012** DF: **4**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	7.15	0.57	7.153	0.2901	95.9	75-125	0			
Molybdenum	7.894	1.4	7.153	0.6976	101	75-125	0			
Nickel	17.02	1.4	7.153	9.329	108	75-125	0			
Vanadium	23.8	1.4	7.153	13.67	142	75-125	0			S

MSD Sample ID: **1212419-04AMSD** Units: **mg/Kg** Analysis Date: **12/19/2012 10:01 AM**
Client ID: Run ID: **ICPMS1_121218A** SeqNo: **2173867** Prep Date: **12/17/2012** DF: **4**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	6.887	0.55	6.821	0.2901	96.7	75-125	7.15	3.75	25	
Molybdenum	7.651	1.4	6.821	0.6976	102	75-125	7.894	3.13	25	
Nickel	16.64	1.4	6.821	9.329	107	75-125	17.02	2.31	25	
Vanadium	23.55	1.4	6.821	13.67	145	75-125	23.8	1.08	25	S

The following samples were analyzed in this batch:

1212422-01A	1212422-02A	1212422-03A
1212422-04A	1212422-05A	1212422-06A
1212422-07A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212422
Project: Marshall KRRI 1175R 12/10/12

QC BATCH REPORT

Batch ID: **45395** Instrument ID **SVMS7** Method: **SW8270**

MBLK Sample ID: **SBLKS1-45395-45395** Units: **µg/Kg** Analysis Date: **12/14/2012 02:13 PM**
Client ID: Run ID: **SVMS7_121214A** SeqNo: **2170020** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	ND	50								
Acenaphthene	ND	50								
Acenaphthylene	ND	50								
Anthracene	ND	50								
Benzo(a)anthracene	ND	50								
Benzo(a)pyrene	ND	50								
Benzo(b)fluoranthene	ND	50								
Benzo(g,h,i)perylene	ND	50								
Benzo(k)fluoranthene	ND	50								
Chrysene	ND	50								
Dibenzo(a,h)anthracene	ND	50								
Fluoranthene	ND	50								
Fluorene	ND	50								
Indeno(1,2,3-cd)pyrene	ND	50								
Naphthalene	ND	50								
Phenanthrene	ND	50								
Pyrene	ND	50								
Surr: 2,4,6-Tribromophenol	*4301*	0	*5000*	0	*86*	*34-140*	0			
Surr: 2-Fluorobiphenyl	*3324*	0	*5000*	0	*66.5*	*12-100*	0			
Surr: 2-Fluorophenol	*4101*	0	*5000*	0	*82*	*33-117*	0			
Surr: 4-Terphenyl-d14	*3961*	0	*5000*	0	*79.2*	*25-137*	0			
Surr: Nitrobenzene-d5	*3405*	0	*5000*	0	*68.1*	*37-107*	0			
Surr: Phenol-d6	*4245*	0	*5000*	0	*84.9*	*40-106*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45395** Instrument ID **SVMS7** Method: **SW8270**

LCS Sample ID: **SLCSS1-45395-45395** Units: **µg/Kg** Analysis Date: **12/17/2012 01:39 PM**
Client ID: Run ID: **SVMS7_121217A** SeqNo: **2171504** Prep Date: **12/14/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	1717	50	2000	0	85.8	45-105	0			
Acenaphthene	1666	50	2000	0	83.3	45-110	0			
Acenaphthylene	1701	50	2000	0	85	45-105	0			
Anthracene	1752	50	2000	0	87.6	55-105	0			
Benzo(a)anthracene	1772	50	2000	0	88.6	50-110	0			
Benzo(a)pyrene	1915	50	2000	0	95.8	50-110	0			
Benzo(b)fluoranthene	1675	50	2000	0	83.8	45-115	0			
Benzo(g,h,i)perylene	2077	50	2000	0	104	40-125	0			
Benzo(k)fluoranthene	2021	50	2000	0	101	45-115	0			
Chrysene	1768	50	2000	0	88.4	55-110	0			
Dibenzo(a,h)anthracene	2041	50	2000	0	102	40-125	0			
Fluoranthene	1809	50	2000	0	90.4	55-115	0			
Fluorene	1726	50	2000	0	86.3	50-110	0			
Indeno(1,2,3-cd)pyrene	2063	50	2000	0	103	40-120	0			
Naphthalene	1677	50	2000	0	83.8	40-105	0			
Phenanthrene	1761	50	2000	0	88	50-110	0			
Pyrene	1809	50	2000	0	90.4	45-125	0			
Surr: 2,4,6-Tribromophenol	*4110*	0	*5000*	0	*82.2*	*34-140*	0			
Surr: 2-Fluorobiphenyl	*3121*	0	*5000*	0	*62.4*	*12-100*	0			
Surr: 2-Fluorophenol	*3767*	0	*5000*	0	*75.3*	*33-117*	0			
Surr: 4-Terphenyl-d14	*3941*	0	*5000*	0	*78.8*	*25-137*	0			
Surr: Nitrobenzene-d5	*3647*	0	*5000*	0	*72.9*	*37-107*	0			
Surr: Phenol-d6	*3894*	0	*5000*	0	*77.9*	*40-106*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45395** Instrument ID **SVMS7** Method: **SW8270**

MS Sample ID: **1212419-09A MS** Units: **µg/Kg** Analysis Date: **12/14/2012 05:09 PM**
Client ID: Run ID: **SVMS7_121214A** SeqNo: **2171428** Prep Date: **12/14/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	1694	48	1909	0	88.8	45-105	0			
Acenaphthene	1327	48	1909	0	69.5	45-110	0			
Acenaphthylene	1963	48	1909	0	103	45-105	0			
Anthracene	1659	48	1909	0	86.9	55-105	0			
Benzo(a)anthracene	1642	48	1909	0	86	50-110	0			
Benzo(a)pyrene	1817	48	1909	0	95.2	50-110	0			
Benzo(b)fluoranthene	1732	48	1909	0	90.8	45-115	0			
Benzo(g,h,i)perylene	1597	48	1909	0	83.6	40-125	0			
Benzo(k)fluoranthene	1877	48	1909	0	98.4	45-115	0			
Chrysene	1688	48	1909	0	88.4	55-110	0			
Dibenzo(a,h)anthracene	1683	48	1909	0	88.2	40-125	0			
Fluoranthene	1729	48	1909	0	90.6	55-115	0			
Fluorene	1400	48	1909	0	73.4	50-110	0			
Indeno(1,2,3-cd)pyrene	1674	48	1909	0	87.7	40-120	0			
Naphthalene	1526	48	1909	0	80	40-105	0			
Phenanthrene	1663	48	1909	0	87.2	50-110	0			
Pyrene	1674	48	1909	0	87.7	45-125	0			
Surr: 2,4,6-Tribromophenol	*3446*	0	*4772*	0	*72.2*	*34-140*	0			
Surr: 2-Fluorobiphenyl	*3746*	0	*4772*	0	*78.5*	*12-100*	0			
Surr: 2-Fluorophenol	*3358*	0	*4772*	0	*70.4*	*33-117*	0			
Surr: 4-Terphenyl-d14	*3773*	0	*4772*	0	*79.1*	*25-137*	0			
Surr: Nitrobenzene-d5	*3147*	0	*4772*	0	*65.9*	*37-107*	0			
Surr: Phenol-d6	*3588*	0	*4772*	0	*75.2*	*40-106*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212422
Project: Marshall KRRI 1175R 12/10/12

QC BATCH REPORT

Batch ID: **45395** Instrument ID **SVMS7** Method: **SW8270**

MSD Sample ID: **1212419-09A MSD** Units: **µg/Kg** Analysis Date: **12/14/2012 04:37 PM**
Client ID: Run ID: **SVMS7_121214A** SeqNo: **2171429** Prep Date: **12/14/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	1609	46	1846	0	87.2	45-105	1694	5.16	30	
Acenaphthene	1592	46	1846	0	86.2	45-110	1327	18.2	30	
Acenaphthylene	1660	46	1846	0	89.9	45-105	1963	16.8	30	
Anthracene	1684	46	1846	0	91.2	55-105	1659	1.49	30	
Benzo(a)anthracene	1660	46	1846	0	89.9	50-110	1642	1.09	30	
Benzo(a)pyrene	1819	46	1846	0	98.6	50-110	1817	0.117	30	
Benzo(b)fluoranthene	1723	46	1846	0	93.4	45-115	1732	0.516	30	
Benzo(g,h,i)perylene	1553	46	1846	0	84.2	40-125	1597	2.75	30	
Benzo(k)fluoranthene	1877	46	1846	0	102	45-115	1877	0.00832	30	
Chrysene	1689	46	1846	0	91.5	55-110	1688	0.049	30	
Dibenzo(a,h)anthracene	1640	46	1846	0	88.8	40-125	1683	2.55	30	
Fluoranthene	1712	46	1846	0	92.8	55-115	1729	0.996	30	
Fluorene	1689	46	1846	0	91.5	50-110	1400	18.7	30	
Indeno(1,2,3-cd)pyrene	1639	46	1846	0	88.8	40-120	1674	2.09	30	
Naphthalene	1558	46	1846	0	84.4	40-105	1526	2.08	30	
Phenanthrene	1700	46	1846	0	92.1	50-110	1663	2.18	30	
Pyrene	1692	46	1846	0	91.6	45-125	1674	1.06	30	
Surr: 2,4,6-Tribromophenol	*4080*	0	*4615*	0	*88.4*	*34-140*	3446	*16.8*	*40*	
Surr: 2-Fluorobiphenyl	*3037*	0	*4615*	0	*65.8*	*12-100*	3746	*20.9*	*40*	
Surr: 2-Fluorophenol	*3459*	0	*4615*	0	*75*	*33-117*	3358	*2.96*	*40*	
Surr: 4-Terphenyl-d14	*3730*	0	*4615*	0	*80.8*	*25-137*	3773	*1.14*	*40*	
Surr: Nitrobenzene-d5	*3301*	0	*4615*	0	*71.5*	*37-107*	3147	*4.78*	*40*	
Surr: Phenol-d6	*3659*	0	*4615*	0	*79.3*	*40-106*	3588	*1.97*	*40*	

The following samples were analyzed in this batch:

1212422-01A	1212422-02A	1212422-03A
1212422-04A	1212422-05A	1212422-06A
1212422-07A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45358** Instrument ID **VMS8** Method: **SW8260**

MBLK Sample ID: **MBLK-45358-45358** Units: **µg/Kg** Analysis Date: **12/13/2012 03:13 AM**
Client ID: Run ID: **VMS8_121212B** SeqNo: **2168195** Prep Date: **12/12/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	30								
1,1,1-Trichloroethane	ND	30								
1,1,2,2-Tetrachloroethane	ND	30								
1,1,2-Trichloroethane	ND	30								
1,1-Dichloroethane	ND	30								
1,1-Dichloroethene	ND	30								
1,2,3-Trichlorobenzene	ND	30								
1,2,3-Trichloropropane	ND	30								
1,2,3-Trimethylbenzene	ND	30								
1,2,4-Trichlorobenzene	ND	30								
1,2,4-Trimethylbenzene	ND	30								
1,2-Dibromo-3-chloropropane	ND	30								
1,2-Dibromoethane	ND	30								
1,2-Dichlorobenzene	ND	30								
1,2-Dichloroethane	ND	30								
1,2-Dichloropropane	ND	30								
1,3,5-Trimethylbenzene	ND	30								
1,3-Dichlorobenzene	ND	30								
1,4-Dichlorobenzene	ND	30								
2-Butanone	ND	200								
2-Hexanone	ND	30								
2-Methylnaphthalene	ND	100								
4-Methyl-2-pentanone	ND	30								
Acetone	ND	100								
Acrylonitrile	ND	100								
Benzene	ND	30								
Bromobenzene	ND	30								
Bromochloromethane	ND	30								
Bromodichloromethane	ND	30								
Bromoform	ND	30								
Bromomethane	ND	75								
Carbon disulfide	ND	30								
Carbon tetrachloride	ND	30								
Chlorobenzene	ND	30								
Chloroethane	ND	100								
Chloroform	ND	30								
Chloromethane	ND	100								
cis-1,2-Dichloroethene	ND	30								
cis-1,3-Dichloropropene	ND	30								
Cyclohexane	ND	30								
Dibromochloromethane	ND	30								
Dibromomethane	ND	30								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45358** Instrument ID **VMS8** Method: **SW8260**

Dichlorodifluoromethane	ND	30					
Diethyl ether	ND	30					
Diisopropyl ether	ND	30					
Ethyl tert butyl ether	ND	30					
Ethylbenzene	ND	30					
Hexachloroethane	ND	30					
Isopropylbenzene	ND	30					
m,p-Xylene	ND	60					
Methyl iodide	ND	75					
Methyl tert-butyl ether	ND	30					
Methylene chloride	ND	30					
Naphthalene	ND	100					
n-Butylbenzene	ND	30					
n-Propylbenzene	ND	30					
o-Xylene	ND	30					
p-Isopropyltoluene	ND	30					
sec-Butylbenzene	ND	30					
Styrene	ND	30					
tert-Butyl alcohol	ND	200					
tert-Butylbenzene	ND	30					
Tertiaryamylmethylether	ND	30					
Tetrachloroethene	ND	30					
Tetrahydrofuran	ND	200					
Toluene	ND	30					
trans-1,2-Dichloroethene	ND	30					
trans-1,3-Dichloropropene	ND	30					
trans-1,4-Dichloro-2-butene	ND	30					
Trichloroethene	ND	30					
Trichlorofluoromethane	ND	30					
Vinyl chloride	ND	30					
Surr: 1,2-Dichloroethane-d4	*869.5*	0	*1000*	0	*87*	*70-130*	0
Surr: 4-Bromofluorobenzene	*974*	0	*1000*	0	*97.4*	*70-130*	0
Surr: Dibromofluoromethane	*926*	0	*1000*	0	*92.6*	*70-130*	0
Surr: Toluene-d8	*945*	0	*1000*	0	*94.5*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212422
Project: Marshall KRRI 1175R 12/10/12

QC BATCH REPORT

Batch ID: **45358** Instrument ID **VMS8** Method: **SW8260**

LCS Sample ID: **LCS-45358-45358** Units: **µg/Kg** Analysis Date: **12/13/2012 02:02 AM**
Client ID: Run ID: **VMS8_121212B** SeqNo: **2168194** Prep Date: **12/12/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	1002	30	1000	0	100	75-125	0			
1,1,1-Trichloroethane	995	30	1000	0	99.5	70-135	0			
1,1,2,2-Tetrachloroethane	1001	30	1000	0	100	55-130	0			
1,1,2-Trichloroethane	919	30	1000	0	91.9	60-125	0			
1,1-Dichloroethane	856.5	30	1000	0	85.6	75-125	0			
1,1-Dichloroethene	785	30	1000	0	78.5	65-135	0			
1,2,3-Trichlorobenzene	1064	30	1000	0	106	60-135	0			
1,2,3-Trichloropropane	1048	30	1000	0	105	65-130	0			
1,2,4-Trichlorobenzene	1110	30	1000	0	111	65-130	0			
1,2,4-Trimethylbenzene	965.5	30	1000	0	96.6	65-135	0			
1,2-Dibromo-3-chloropropane	1200	30	1000	0	120	40-135	0			
1,2-Dibromoethane	1032	30	1000	0	103	70-125	0			
1,2-Dichlorobenzene	937	30	1000	0	93.7	75-120	0			
1,2-Dichloroethane	865.5	30	1000	0	86.6	70-135	0			
1,2-Dichloropropane	893	30	1000	0	89.3	70-120	0			
1,3,5-Trimethylbenzene	1003	30	1000	0	100	65-135	0			
1,3-Dichlorobenzene	950.5	30	1000	0	95	70-125	0			
1,4-Dichlorobenzene	967.5	30	1000	0	96.8	70-125	0			
2-Butanone	950.5	200	1000	0	95	30-160	0			
2-Hexanone	1064	30	1000	0	106	45-145	0			
4-Methyl-2-pentanone	1357	30	1000	0	136	45-145	0			
Acetone	911	100	1000	0	91.1	20-160	0			
Acrylonitrile	920.5	100	1000	0	92	70-135	0			
Benzene	937.5	30	1000	0	93.8	75-125	0			
Bromobenzene	893	30	1000	0	89.3	65-120	0			
Bromochloromethane	845.5	30	1000	0	84.6	70-125	0			
Bromodichloromethane	903	30	1000	0	90.3	70-130	0			
Bromoform	1100	30	1000	0	110	55-135	0			
Bromomethane	847	75	1000	0	84.7	30-160	0			
Carbon disulfide	983.5	30	1000	0	98.4	45-160	0			
Carbon tetrachloride	1018	30	1000	0	102	65-135	0			
Chlorobenzene	952.5	30	1000	0	95.2	75-125	0			
Chloroethane	499.5	100	1000	0	50	40-155	0			
Chloroform	898	30	1000	0	89.8	70-125	0			
Chloromethane	687.5	100	1000	0	68.8	50-130	0			
cis-1,2-Dichloroethene	863.5	30	1000	0	86.4	65-125	0			
cis-1,3-Dichloropropene	900	30	1000	0	90	70-125	0			
Dibromochloromethane	955.5	30	1000	0	95.6	65-135	0			
Dibromomethane	937.5	30	1000	0	93.8	75-130	0			
Dichlorodifluoromethane	682.5	30	1000	0	68.2	35-135	0			
Ethylbenzene	965.5	30	1000	0	96.6	75-125	0			
Hexachloroethane	1032	30	1000	0	103	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45358** Instrument ID **VMS8** Method: **SW8260**

Isopropylbenzene	996.5	30	1000	0	99.6	75-130	0
m,p-Xylene	1959	60	2000	0	98	80-125	0
Methyl tert-butyl ether	972.5	30	1000	0	97.2	75-125	0
Methylene chloride	877.5	30	1000	0	87.8	55-145	0
Naphthalene	1300	100	1000	0	130	40-140	0
n-Butylbenzene	921	30	1000	0	92.1	65-140	0
n-Propylbenzene	945.5	30	1000	0	94.6	65-135	0
o-Xylene	967.5	30	1000	0	96.8	75-125	0
p-Isopropyltoluene	948	30	1000	0	94.8	75-135	0
sec-Butylbenzene	1001	30	1000	0	100	65-130	0
Styrene	1030	30	1000	0	103	75-125	0
tert-Butylbenzene	951	30	1000	0	95.1	65-130	0
Tetrachloroethene	991.5	30	1000	0	99.2	64-140	0
Tetrahydrofuran	912	200	1000	0	91.2	70-135	0
Toluene	958	30	1000	0	95.8	70-125	0
trans-1,2-Dichloroethene	939	30	1000	0	93.9	65-135	0
trans-1,3-Dichloropropene	899	30	1000	0	89.9	65-125	0
trans-1,4-Dichloro-2-butene	981	30	1000	0	98.1	70-135	0
Trichloroethene	971.5	30	1000	0	97.2	75-125	0
Trichlorofluoromethane	860	30	1000	0	86	25-185	0
Vinyl chloride	784.5	30	1000	0	78.4	60-125	0
Surr: 1,2-Dichloroethane-d4	*902.5*	0	*1000*	0	*90.2*	*70-130*	0
Surr: 4-Bromofluorobenzene	*957.5*	0	*1000*	0	*95.8*	*70-130*	0
Surr: Dibromofluoromethane	*926*	0	*1000*	0	*92.6*	*70-130*	0
Surr: Toluene-d8	*951*	0	*1000*	0	*95.1*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212422
Project: Marshall KRRI 1175R 12/10/12

QC BATCH REPORT

Batch ID: **45358** Instrument ID **VMS8** Method: **SW8260**

MS Sample ID: **1212419-04B MS** Units: **µg/Kg** Analysis Date: **12/13/2012 10:46 AM**
Client ID: Run ID: **VMS8_121212B** SeqNo: **2168214** Prep Date: **12/12/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	2141	67	2226	0	96.2	75-125	0			
1,1,1-Trichloroethane	2142	67	2226	0	96.2	70-135	0			
1,1,2,2-Tetrachloroethane	1887	67	2226	0	84.8	55-130	0			
1,1,2-Trichloroethane	1935	67	2226	0	87	60-125	0			
1,1-Dichloroethane	1909	67	2226	0	85.8	75-125	0			
1,1-Dichloroethene	1826	67	2226	0	82	65-135	0			
1,2,3-Trichlorobenzene	1701	67	2226	0	76.4	60-135	0			
1,2,3-Trichloropropane	2063	67	2226	0	92.7	65-130	0			
1,2,3-Trimethylbenzene	52.31	67	2226	0	2.35	65-135	0			JS
1,2,4-Trichlorobenzene	1956	67	2226	0	87.9	65-130	0			
1,2,4-Trimethylbenzene	2018	67	2226	0	90.6	65-135	0			
1,2-Dibromo-3-chloropropane	1820	67	2226	0	81.8	40-135	0			
1,2-Dibromoethane	2119	67	2226	0	95.2	70-125	0			
1,2-Dichlorobenzene	1922	67	2226	0	86.4	75-120	0			
1,2-Dichloroethane	1918	67	2226	0	86.2	70-135	0			
1,2-Dichloropropane	1962	67	2226	0	88.2	70-120	0			
1,3,5-Trimethylbenzene	2142	67	2226	0	96.2	65-135	0			
1,3-Dichlorobenzene	2003	67	2226	0	90	70-125	0			
1,4-Dichlorobenzene	1997	67	2226	0	89.7	70-125	0			
2-Butanone	1369	220	2226	0	61.5	30-160	0			
2-Hexanone	1978	67	2226	0	88.8	45-145	0			
4-Methyl-2-pentanone	2594	67	2226	0	117	45-145	0			
Acetone	1547	220	2226	0	69.5	20-160	0			
Acrylonitrile	1943	67	2226	0	87.3	70-135	0			
Benzene	2017	67	2226	0	90.6	75-125	0			
Bromobenzene	1923	67	2226	0	86.4	65-120	0			
Bromochloromethane	1790	67	2226	0	80.4	70-125	0			
Bromodichloromethane	1919	67	2226	0	86.2	70-130	0			
Bromoform	2058	67	2226	0	92.4	55-135	0			
Bromomethane	1725	67	2226	0	77.5	30-160	0			
Carbon disulfide	1885	67	2226	0	84.7	45-160	0			
Carbon tetrachloride	2246	67	2226	0	101	65-135	0			
Chlorobenzene	2044	67	2226	0	91.8	75-125	0			
Chloroethane	1140	220	2226	0	51.2	40-155	0			
Chloroform	1920	67	2226	0	86.2	70-125	0			
Chloromethane	1384	67	2226	0	62.2	50-130	0			
cis-1,2-Dichloroethene	1944	67	2226	0	87.4	65-125	0			
cis-1,3-Dichloropropene	1924	67	2226	0	86.4	70-125	0			
Dibromochloromethane	1974	67	2226	0	88.7	65-135	0			
Dibromomethane	1984	67	2226	0	89.2	75-130	0			
Dichlorodifluoromethane	1384	67	2226	0	62.2	35-135	0			
Ethylbenzene	2097	67	2226	0	94.2	75-125	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45358** Instrument ID **VMS8** Method: **SW8260**

Hexachloroethane	2135	67	2226	0	95.9	70-135	0
Isopropylbenzene	2122	67	2226	0	95.4	75-130	0
m,p-Xylene	4179	130	4452	0	93.9	80-125	0
Methyl tert-butyl ether	2061	67	2226	0	92.6	75-125	0
Methylene chloride	1786	67	2226	0	80.2	55-145	0
Naphthalene	1940	220	2226	0	87.2	40-140	0
n-Butylbenzene	1735	67	2226	0	78	65-140	0
n-Propylbenzene	1972	67	2226	0	88.6	65-135	0
o-Xylene	2071	67	2226	0	93	75-125	0
p-Isopropyltoluene	1958	67	2226	0	88	75-135	0
sec-Butylbenzene	2073	67	2226	0	93.2	65-130	0
Styrene	2140	67	2226	0	96.2	75-125	0
tert-Butylbenzene	2080	67	2226	0	93.4	65-130	0
Tetrachloroethene	2097	67	2226	0	94.2	64-140	0
Tetrahydrofuran	1820	220	2226	0	81.8	70-135	0
Toluene	2030	67	2226	0	91.2	70-125	0
trans-1,2-Dichloroethene	1949	67	2226	0	87.6	65-135	0
trans-1,3-Dichloropropene	1890	67	2226	0	84.9	65-125	0
trans-1,4-Dichloro-2-butene	1802	67	2226	0	81	70-135	0
Trichloroethene	2052	67	2226	0	92.2	75-125	0
Trichlorofluoromethane	1389	67	2226	0	62.4	25-185	0
Vinyl chloride	1613	67	2226	0	72.4	60-125	0
Surr: 1,2-Dichloroethane-d4	*1952*	0	*2226*	0	*87.7*	*70-130*	0
Surr: 4-Bromofluorobenzene	*2190*	0	*2226*	0	*98.4*	*70-130*	0
Surr: Dibromofluoromethane	*2189*	0	*2226*	0	*98.4*	*70-130*	0
Surr: Toluene-d8	*2129*	0	*2226*	0	*95.6*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212422
Project: Marshall KRRI 1175R 12/10/12

QC BATCH REPORT

Batch ID: **45358** Instrument ID **VMS8** Method: **SW8260**

MSD	Sample ID: **1212419-04B MSD**				Units: **µg/Kg**			Analysis Date: **12/13/2012 11:10 AM**			
Client ID:		Run ID: **VMS8_121212B**			SeqNo: **2168215**			Prep Date: **12/12/2012**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	2064	67	2226	0	92.8	75-125	2141	3.65	30	
1,1,1-Trichloroethane	2088	67	2226	0	93.8	70-135	2142	2.58	30	
1,1,2,2-Tetrachloroethane	1869	67	2226	0	84	55-130	1887	1.01	30	
1,1,2-Trichloroethane	1843	67	2226	0	82.8	60-125	1935	4.89	30	
1,1-Dichloroethane	1891	67	2226	0	85	75-125	1909	0.937	30	
1,1-Dichloroethene	1835	67	2226	0	82.4	65-135	1826	0.486	30	
1,2,3-Trichlorobenzene	1794	67	2226	0	80.6	60-135	1701	5.35	30	
1,2,3-Trichloropropane	1893	67	2226	0	85	65-130	2063	8.61	30	
1,2,3-Trimethylbenzene	48.97	67	2226	0	2.2	65-135	52.31	0	30	JS
1,2,4-Trichlorobenzene	1991	67	2226	0	89.4	65-130	1956	1.75	30	
1,2,4-Trimethylbenzene	2000	67	2226	0	89.8	65-135	2018	0.886	30	
1,2-Dibromo-3-chloropropane	1818	67	2226	0	81.7	40-135	1820	0.0612	30	
1,2-Dibromoethane	2056	67	2226	0	92.4	70-125	2119	3.04	30	
1,2-Dichlorobenzene	1978	67	2226	0	88.8	75-120	1922	2.85	30	
1,2-Dichloroethane	1882	67	2226	0	84.6	70-135	1918	1.87	30	
1,2-Dichloropropane	1971	67	2226	0	88.6	70-120	1962	0.453	30	
1,3,5-Trimethylbenzene	2102	67	2226	0	94.4	65-135	2142	1.89	30	
1,3-Dichlorobenzene	1999	67	2226	0	89.8	70-125	2003	0.222	30	
1,4-Dichlorobenzene	2010	67	2226	0	90.3	70-125	1997	0.667	30	
2-Butanone	1344	220	2226	0	60.4	30-160	1369	1.8	30	
2-Hexanone	1844	67	2226	0	82.8	45-145	1978	6.99	30	
4-Methyl-2-pentanone	2473	67	2226	0	111	45-145	2594	4.79	30	
Acetone	2071	220	2226	0	93	20-160	1547	29	30	
Acrylonitrile	1960	67	2226	0	88	70-135	1943	0.855	30	
Benzene	2021	67	2226	0	90.8	75-125	2017	0.221	30	
Bromobenzene	1876	67	2226	0	84.3	65-120	1923	2.46	30	
Bromochloromethane	1856	67	2226	0	83.4	70-125	1790	3.66	30	
Bromodichloromethane	1857	67	2226	0	83.4	70-130	1919	3.24	30	
Bromoform	1871	67	2226	0	84	55-135	2058	9.52	30	
Bromomethane	1662	67	2226	0	74.6	30-160	1725	3.75	30	
Carbon disulfide	1815	67	2226	0	81.6	45-160	1885	3.79	30	
Carbon tetrachloride	2099	67	2226	0	94.3	65-135	2246	6.76	30	
Chlorobenzene	1943	67	2226	0	87.3	75-125	2044	5.08	30	
Chloroethane	1206	220	2226	0	54.2	40-155	1140	5.69	30	
Chloroform	1899	67	2226	0	85.3	70-125	1920	1.11	30	
Chloromethane	1383	67	2226	0	62.2	50-130	1384	0.0804	30	
cis-1,2-Dichloroethene	1945	67	2226	0	87.4	65-125	1944	0.0572	30	
cis-1,3-Dichloropropene	1908	67	2226	0	85.7	70-125	1924	0.871	30	
Dibromochloromethane	1887	67	2226	0	84.8	65-135	1974	4.5	30	
Dibromomethane	2023	67	2226	0	90.9	75-130	1984	1.94	30	
Dichlorodifluoromethane	1334	67	2226	0	60	35-135	1384	3.68	30	
Ethylbenzene	1999	67	2226	0	89.8	75-125	2097	4.78	30	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45358** Instrument ID **VMS8** Method: **SW8260**

Hexachloroethane	1941	67	2226	0	87.2	70-135	2135	9.5	30	
Isopropylbenzene	2103	67	2226	0	94.5	75-130	2122	0.895	30	
m,p-Xylene	4058	130	4452	0	91.2	80-125	4179	2.95	30	
Methyl tert-butyl ether	2057	67	2226	0	92.4	75-125	2061	0.216	30	
Methylene chloride	1768	67	2226	0	79.4	55-145	1786	1	30	
Naphthalene	2084	220	2226	0	93.6	40-140	1940	7.19	30	
n-Butylbenzene	1847	67	2226	0	83	65-140	1735	6.28	30	
n-Propylbenzene	1960	67	2226	0	88	65-135	1972	0.623	30	
o-Xylene	2050	67	2226	0	92.1	75-125	2071	1.03	30	
p-Isopropyltoluene	2000	67	2226	0	89.8	75-135	1958	2.14	30	
sec-Butylbenzene	2112	67	2226	0	94.9	65-130	2073	1.86	30	
Styrene	2097	67	2226	0	94.2	75-125	2140	2.05	30	
tert-Butylbenzene	2043	67	2226	0	91.8	65-130	2080	1.78	30	
Tetrachloroethene	2048	67	2226	0	92	64-140	2097	2.36	30	
Tetrahydrofuran	1504	220	2226	0	67.6	70-135	1820	19	30	S
Toluene	1992	67	2226	0	89.5	70-125	2030	1.88	30	
trans-1,2-Dichloroethene	1936	67	2226	0	87	65-135	1949	0.63	30	
trans-1,3-Dichloropropene	1798	67	2226	0	80.8	65-125	1890	4.95	30	
trans-1,4-Dichloro-2-butene	1785	67	2226	0	80.2	70-135	1802	0.931	30	
Trichloroethene	2056	67	2226	0	92.4	75-125	2052	0.163	30	
Trichlorofluoromethane	1401	67	2226	0	63	25-185	1389	0.878	30	
Vinyl chloride	1586	67	2226	0	71.2	60-125	1613	1.67	30	
Surr: 1,2-Dichloroethane-d4	*2058*	0	*2226*	0	*92.4*	*70-130*	1952	*5.27*	*30*	
Surr: 4-Bromofluorobenzene	*2148*	0	*2226*	0	*96.5*	*70-130*	2190	*1.95*	*30*	
Surr: Dibromofluoromethane	*2208*	0	*2226*	0	*99.2*	*70-130*	2189	*0.861*	*30*	
Surr: Toluene-d8	*2125*	0	*2226*	0	*95.4*	*70-130*	2129	*0.209*	*30*	

The following samples were analyzed in this batch:

1212422-01B	1212422-02B	1212422-03B
1212422-04B	1212422-05B	1212422-06B
1212422-07B	1212422-08A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212422
Project: Marshall KRRI 1175R 12/10/12

QC BATCH REPORT

Batch ID: **R113987** Instrument ID **MOIST** Method: **A2540 G**

MBLK Sample ID: **WBLKS1-R113987** Units: **% of sample** Analysis Date: **12/14/2012 04:30 PM**
Client ID: Run ID: **MOIST_121214B** SeqNo: **2170268** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	ND	0.050								

LCS Sample ID: **LCS-R113987** Units: **% of sample** Analysis Date: **12/14/2012 04:30 PM**
Client ID: Run ID: **MOIST_121214B** SeqNo: **2170264** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	100	0.050	100	0	100	99.5-100.5	0			

DUP Sample ID: **1212419-04A DUP** Units: **% of sample** Analysis Date: **12/14/2012 04:30 PM**
Client ID: Run ID: **MOIST_121214B** SeqNo: **2170245** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	39.06	0.050	0	0	0	0-0	38.47	1.52	20	

DUP Sample ID: **1212422-07A DUP** Units: **% of sample** Analysis Date: **12/14/2012 04:30 PM**
Client ID: **SBKR1175R504S121012S006** Run ID: **MOIST_121214B** SeqNo: **2170258** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	41.28	0.050	0	0	0	0-0	41.17	0.267	20	

The following samples were analyzed in this batch:

1212422-01A	1212422-02A	1212422-03A
1212422-04A	1212422-05A	1212422-06A
1212422-07A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

1212422

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

COC # ENBRIDGE_121012_GMK2 | Task: KRRI_1175
Total # of Samples: 8 | Event Complete?
Turn Around Time: 5 Day | Rush: No

BILLING CODE: 6.00

Lab Information:
Lab Name: ALS Laboratory Group
Address: 3352 128th Ave. Holland, MI 49424-9263
Lab PM: Ann Preston
Phone/Fax: 1-616-399-6070/1-616-399-6185
Lab PM email: ann.preston@alsglobal.com
Applicable Lab Quote #:

Project Information:
Site ID #:
Project #: 60162778
Site Address: 5555 Glenwood Parkway SE Suite 200
City: Grand Rapids | State, Zip: MI
Site PM Name:
Phone/Fax: [redacted]
Site PM Email: Bryan.Sliemsma@aecom.com

Other Information:
Send Invoice to: Enbridge Energy - ATTN Accounts Payable
Address: 1100 Louisiana Suite 1100
City/State: Houson, TX | Phone #: 713-821-2000
PO #:
Send EDD to:
CC Hardcopy report:
CC Hardcopy report:

ITEM #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	MATRIX CODE	G=GRAB C=COMP	SAMPLE DATE	#OF CONTAINERS	Comments/Lab Sample I.D.	% Moisture	Be,Mo,V,Ni by 6020	ORO,DRO	PNAs by 8270	VOC by 5035/8260
Preservative								None	None	None	None	MeOH
Analysis												
1	SBKR1175R501S121012S004	SBKR1175R501	SO	G	12/10/2012 11:22	3		X	X	X	X	X
2	SBKR1175R502S121012S005	SBKR1175R502	SO	G	12/10/2012 13:32	3		X	X	X	X	X
3	SBKR1175R502S121012S020	SBKR1175R502	SO	G	12/10/2012 13:38	3		X	X	X	X	X
4	SBKR1175R502S121012S032	SBKR1175R502	SO	G	12/10/2012 13:42	3		X	X	X	X	X
5	SBKR1175R502S121012S040	SBKR1175R502	SO	G	12/10/2012 13:46	3		X	X	X	X	X
6	SBKR1175R503S121012S006	SBKR1175R503	SO	G	12/10/2012 14:55	3		X	X	X	X	X
7	SBKR1175R504S121012S006	SBKR1175R504	SO	G	12/10/2012 16:00	3		X	X	X	X	X
8	SBKR1175R504T121012MX	SBKR1175R504	SQ	G	12/10/2012 00:00	1	TRIP BLANK					X

Additional Comments/Special Instructions:

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Gerry Kramer	12-11-12	0758	[signature]	12-11-12	0758
[signature]	12/12/12	0810	[signature]	12-12-12	0810

Sample Receipt Conditions

Temp in OC	Samples on Ice?	Sample intact?	Trip Blank?
	Y/N	Y/N	Y/N
3.2°C	(Y)N	(Y)N	(Y)N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N

SHIPPING INFO
Company:
Tracking #:

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: GERRY KRAMER (GMK2)
SIGNATURE of SAMPLER:
DATE Signed:
Time:

ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **12-Dec-12 08:10**

Work Order: **1212422** Received by: **PD**

Checklist completed by Keith Wierenga (eSignature) 12-Dec-12 (Date) Reviewed by: Ann Preston (eSignature) 13-Dec-12 (Date)

Matrices: Soil
Carrier name: ALSHN

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	3.2 C		
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	12/12/2012 2:00:54 PM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL

Date: 12-11-12 Time: 0850

Name:

Company:

Seal Broken By:

Date:

3.2 C

7 soils
12/10/12

19-Dec-2012

Bryan Stiemsma
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall KRRI 1150-1175R Sediment 12/10/12** Work Order: **1212423**

Dear Bryan,

ALS Environmental received 3 samples on 12-Dec-2012 08:10 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 18.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

Certificate No: MN331938

ALS Group USA, Corp

Date: 19-Dec-12

Client: AECOM Environment
Project: Marshall KRRI 1150-1175R Sediment 12/10/12
Work Order: **1212423**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1212423-01	SEKR1150R501S121012D006	Sediment		12/10/2012 10:43	12/12/2012 08:10	☐
1212423-02	SEKR1175R501S121012D004	Sediment		12/10/2012 16:52	12/12/2012 08:10	☐
1212423-03	SEKR1175R501D121012D004	Sediment		12/10/2012 16:52	12/12/2012 08:10	☐

ALS Group USA, Corp

Date: 19-Dec-12

Client: AECOM Environment
Project: Marshall KRRI 1150-1175R Sediment 12/10/12
Work Order: 1212423

Case Narrative

The extraction procedure used to prepare the soil samples for DRO and PAH analyses in this work order was a modification of the standard 3541 procedure. At the request of the client, a 10 gram sample aliquot dried with hydromatrix is used for extraction as outlined in ALS SOP HN-EXT-003(EN)-R01. All samples extracted starting on 10/1/2011 were prepared using this modified SOP.

Batch 45395 samples 1212423-01, 1212423-02, and 1212423-03 PAH internal standard recoveries were below the lower control limit, but >20%. Per the client's request, the results associated with the IS are being reported and should be considered as estimated for the compounds marked with an asterisk.

Batch 45396A MS/MSD data for DRO is not related to this project's samples. No data requires qualification.

Batch 45453 MS/MSD data for Metals is not related to this project's samples. No data requires qualification.

ALS Group USA, Corp

Date: 19-Dec-12

Client: AECOM Environment
Project: Marshall KRRI 1150-1175R Sediment 12/10/12
WorkOrder: **1212423**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
SD	Serial Dilution
TDL	Target Detection Limit

Units Reported	Description
% of sample	Percent of Sample
µg/Kg-dry	Micrograms per Kilogram Dry Weight
mg/Kg-dry	Milligrams per Kilogram Dry Weight

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SEKR1150R501S121012D006
Work Order:	1212423	**Collection Date:**	12/10/2012 10:43:00 AM
Project:	Marshall KRRI 1150-1175R Sediment 12/10/12		
Lab ID:	1212423-01	**Matrix:**	SEDIMENT

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/14/2012**		Analyst: **CW**
DRO (C10-C20)	ND	54	4.0		mg/Kg-dry	1	12/14/2012
ORO (C20-C34)	**290**	**110**	**4.0**		**mg/Kg-dry**	1	12/14/2012
Surr: 4-Terphenyl-d14	*73.9*	*39-115*			*%REC*	1	12/14/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/17/2012**		Analyst: **CES**
Beryllium	ND	3.4	0.50		mg/Kg-dry	4	12/19/2012
Molybdenum	ND	8.5	1.0		mg/Kg-dry	4	12/19/2012
Nickel	**12**	**8.5**	**1.0**		**mg/Kg-dry**	4	12/19/2012
Vanadium	**20**	**8.5**	**1.0**		**mg/Kg-dry**	4	12/19/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/14/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/15/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/15/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/15/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/15/2012
Benzo(a)anthracene	ND	330	330		µg/Kg-dry	1	12/15/2012
Benzo(a)pyrene	ND	330	330	*	µg/Kg-dry	1	12/15/2012
Benzo(b)fluoranthene	ND	330	330	*	µg/Kg-dry	1	12/15/2012
Benzo(g,h,i)perylene	ND	330	330	*	µg/Kg-dry	1	12/15/2012
Benzo(k)fluoranthene	ND	330	330	*	µg/Kg-dry	1	12/15/2012
Chrysene	ND	330	330		µg/Kg-dry	1	12/15/2012
Dibenzo(a,h)anthracene	ND	330	330	*	µg/Kg-dry	1	12/15/2012
Fluoranthene	ND	330	330		µg/Kg-dry	1	12/15/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/15/2012
Indeno(1,2,3-cd)pyrene	ND	330	330	*	µg/Kg-dry	1	12/15/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/15/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/15/2012
Pyrene	ND	330	330		µg/Kg-dry	1	12/15/2012
Surr: 2,4,6-Tribromophenol	*74.8*	*34-140*			*%REC*	1	12/15/2012
Surr: 2-Fluorobiphenyl	*66.4*	*12-100*			*%REC*	1	12/15/2012
Surr: 2-Fluorophenol	*77.4*	*33-117*			*%REC*	1	12/15/2012
Surr: 4-Terphenyl-d14	*96.3*	*25-137*			*%REC*	1	12/15/2012
Surr: Nitrobenzene-d5	*72.3*	*37-107*			*%REC*	1	12/15/2012
Surr: Phenol-d6	*56.8*	*40-106*			*%REC*	1	12/15/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**82**	**0.050**	**0**		**% of sample**	1	12/13/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SEKR1175R501S121012D004
Work Order:	1212423	**Collection Date:**	12/10/2012 4:52:00 PM
Project:	Marshall KRRI 1150-1175R Sediment 12/10/12		
Lab ID:	1212423-02	**Matrix:**	SEDIMENT

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/14/2012**		Analyst: **CW**
DRO (C10-C20)	ND	24	4.0		mg/Kg-dry	1	12/14/2012
ORO (C20-C34)	**290**	**49**	**4.0**		**mg/Kg-dry**	1	12/14/2012
Surr: 4-Terphenyl-d14	*77.7*	*39-115*			*%REC*	1	12/14/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/17/2012**		Analyst: **CES**
Beryllium	ND	1.3	0.50		mg/Kg-dry	4	12/19/2012
Molybdenum	ND	3.2	1.0		mg/Kg-dry	4	12/19/2012
Nickel	**8.2**	**3.2**	**1.0**		**mg/Kg-dry**	4	12/19/2012
Vanadium	**13**	**3.2**	**1.0**		**mg/Kg-dry**	4	12/19/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/14/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/15/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/15/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/15/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/15/2012
Benzo(a)anthracene	ND	330	330		µg/Kg-dry	1	12/15/2012
Benzo(a)pyrene	ND	330	330	*	µg/Kg-dry	1	12/15/2012
Benzo(b)fluoranthene	ND	330	330	*	µg/Kg-dry	1	12/15/2012
Benzo(g,h,i)perylene	ND	330	330	*	µg/Kg-dry	1	12/15/2012
Benzo(k)fluoranthene	ND	330	330	*	µg/Kg-dry	1	12/15/2012
Chrysene	ND	330	330		µg/Kg-dry	1	12/15/2012
Dibenzo(a,h)anthracene	ND	330	330	*	µg/Kg-dry	1	12/15/2012
Fluoranthene	ND	330	330		µg/Kg-dry	1	12/15/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/15/2012
Indeno(1,2,3-cd)pyrene	ND	330	330	*	µg/Kg-dry	1	12/15/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/15/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/15/2012
Pyrene	ND	330	330		µg/Kg-dry	1	12/15/2012
Surr: 2,4,6-Tribromophenol	*73.6*	*34-140*			*%REC*	1	12/15/2012
Surr: 2-Fluorobiphenyl	*68.1*	*12-100*			*%REC*	1	12/15/2012
Surr: 2-Fluorophenol	*70.3*	*33-117*			*%REC*	1	12/15/2012
Surr: 4-Terphenyl-d14	*97.6*	*25-137*			*%REC*	1	12/15/2012
Surr: Nitrobenzene-d5	*68.0*	*37-107*			*%REC*	1	12/15/2012
Surr: Phenol-d6	*73.3*	*40-106*			*%REC*	1	12/15/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**59**	**0.050**	**0**		**% of sample**	1	12/13/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SEKR1175R501D121012D004
Work Order:	1212423	**Collection Date:**	12/10/2012 4:52:00 PM
Project:	Marshall KRRI 1150-1175R Sediment 12/10/12		
Lab ID:	1212423-03	**Matrix:**	SEDIMENT

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/17/2012**		Analyst: **CW**
DRO (C10-C20)	ND	18	4.0		mg/Kg-dry	1	12/17/2012
ORO (C20-C34)	**55**	**36**	**4.0**		**mg/Kg-dry**	1	12/17/2012
Surr: 4-Terphenyl-d14	*76.2*	*39-115*			*%REC*	1	12/17/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/17/2012**		Analyst: **CES**
Beryllium	ND	1.0	0.50		mg/Kg-dry	4	12/19/2012
Molybdenum	ND	2.6	1.0		mg/Kg-dry	4	12/19/2012
Nickel	**4.3**	**2.6**	**1.0**		**mg/Kg-dry**	4	12/19/2012
Vanadium	**8.6**	**2.6**	**1.0**		**mg/Kg-dry**	4	12/19/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/14/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/15/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/15/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/15/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/15/2012
Benzo(a)anthracene	ND	330	330		µg/Kg-dry	1	12/15/2012
Benzo(a)pyrene	ND	330	330	*	µg/Kg-dry	1	12/15/2012
Benzo(b)fluoranthene	ND	330	330	*	µg/Kg-dry	1	12/15/2012
Benzo(g,h,i)perylene	ND	330	330	*	µg/Kg-dry	1	12/15/2012
Benzo(k)fluoranthene	ND	330	330	*	µg/Kg-dry	1	12/15/2012
Chrysene	ND	330	330		µg/Kg-dry	1	12/15/2012
Dibenzo(a,h)anthracene	ND	330	330	*	µg/Kg-dry	1	12/15/2012
Fluoranthene	ND	330	330		µg/Kg-dry	1	12/15/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/15/2012
Indeno(1,2,3-cd)pyrene	ND	330	330	*	µg/Kg-dry	1	12/15/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/15/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/15/2012
Pyrene	ND	330	330		µg/Kg-dry	1	12/15/2012
Surr: 2,4,6-Tribromophenol	*78.4*	*34-140*			*%REC*	1	12/15/2012
Surr: 2-Fluorobiphenyl	*73.6*	*12-100*			*%REC*	1	12/15/2012
Surr: 2-Fluorophenol	*88.0*	*33-117*			*%REC*	1	12/15/2012
Surr: 4-Terphenyl-d14	*104*	*25-137*			*%REC*	1	12/15/2012
Surr: Nitrobenzene-d5	*82.3*	*37-107*			*%REC*	1	12/15/2012
Surr: Phenol-d6	*72.6*	*40-106*			*%REC*	1	12/15/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**45**	**0.050**	**0**		**% of sample**	1	12/13/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

Batch ID: **45396A** Instrument ID **GC8** Method: **SW8015M**

MBLK Sample ID: **DBLKS1-45396-45396A** Units: **mg/Kg** Analysis Date: **12/14/2012 04:03 PM**

Client ID: Run ID: **GC8_121214A** SeqNo: **2170176** Prep Date: **12/14/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	ND	10								
ORO (C20-C34)	ND	20								
Surr: 4-Terphenyl-d14	*3.947*	0	*5*	0	*78.9*	*39-115*	0			

LCS Sample ID: **DLCSS1-45396-45396A** Units: **mg/Kg** Analysis Date: **12/14/2012 04:28 PM**

Client ID: Run ID: **GC8_121214A** SeqNo: **2170177** Prep Date: **12/14/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	357.6	10	500	0	71.5	49-124	0			
ORO (C20-C34)	341.3	20	500	0	68.3	60-130	0			
Surr: 4-Terphenyl-d14	*4.181*	0	*5*	0	*83.6*	*39-115*	0			

MS Sample ID: **1212419-09A MS** Units: **mg/Kg** Analysis Date: **12/14/2012 04:53 PM**

Client ID: Run ID: **GC8_121214A** SeqNo: **2170178** Prep Date: **12/14/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	309	9.8	491.2	0	62.9	60-130	0			
ORO (C20-C34)	295.2	20	491.2	7.283	58.6	60-130	0			S
Surr: 4-Terphenyl-d14	*3.543*	0	*4.912*	0	*72.1*	*39-115*	0			

MSD Sample ID: **1212419-09A MSD** Units: **mg/Kg** Analysis Date: **12/14/2012 05:18 PM**

Client ID: Run ID: **GC8_121214A** SeqNo: **2170179** Prep Date: **12/14/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	324.7	9.4	471.8	0	68.8	60-130	312.7	3.78	30	
ORO (C20-C34)	334.2	19	471.8	7.283	69.3	60-130	295.2	12.4	30	
Surr: 4-Terphenyl-d14	*3.995*	0	*4.718*	0	*84.7*	*39-115*	4.031	*0.92*	*30*	

The following samples were analyzed in this batch: 1212423-01A 1212423-02A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212423
Project: Marshall KRRI 1150-1175R Sediment 12/10/12

QC BATCH REPORT

Batch ID: **45435B** Instrument ID **GC8** Method: **SW8015M**

MBLK Sample ID: **DBLKS1-45435-45435B** Units: **mg/Kg** Analysis Date: **12/17/2012 04:49 PM**
Client ID: Run ID: **GC8_121217A** SeqNo: **2172728** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	ND	10								
ORO (C20-C34)	ND	20								
Surr: 4-Terphenyl-d14	*3.953*	0	*5*	0	*79.1*	*39-115*	0			

LCS Sample ID: **DLCSS1-45435-45435B** Units: **mg/Kg** Analysis Date: **12/17/2012 05:14 PM**
Client ID: Run ID: **GC8_121217A** SeqNo: **2172729** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	362	10	500	0	72.4	49-124	0			
ORO (C20-C34)	337.6	20	500	0	67.5	60-130	0			
Surr: 4-Terphenyl-d14	*4.344*	0	*5*	0	*86.9*	*39-115*	0			

MS Sample ID: **1212562-05A MS** Units: **mg/Kg** Analysis Date: **12/17/2012 05:39 PM**
Client ID: Run ID: **GC8_121217A** SeqNo: **2172730** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	756.3	9.8	488.2	323	88.8	60-130	0			
ORO (C20-C34)	996	20	488.2	513.5	98.8	60-130	0			
Surr: 4-Terphenyl-d14	*5.007*	0	*4.882*	0	*103*	*39-115*	0			

MSD Sample ID: **1212562-05A MSD** Units: **mg/Kg** Analysis Date: **12/17/2012 06:05 PM**
Client ID: Run ID: **GC8_121217A** SeqNo: **2172731** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	789.5	9.6	481.9	323	96.8	60-130	756.3	4.29	30	
ORO (C20-C34)	1044	19	481.9	513.5	110	60-130	996	4.74	30	
Surr: 4-Terphenyl-d14	*4.93*	0	*4.819*	0	*102*	*39-115*	5.007	*1.55*	*30*	

The following samples were analyzed in this batch: 1212423-03A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212423
Project: Marshall KRRI 1150-1175R Sediment 12/10/12

QC BATCH REPORT

Batch ID: **45453** Instrument ID **ICPMS1** Method: **SW6020A**

MBLK Sample ID: **MBLK-45453-45453** Units: **mg/Kg** Analysis Date: **12/19/2012 08:47 AM**
Client ID: Run ID: **ICPMS1_121218A** SeqNo: **2173598** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	ND	0.10								
Molybdenum	ND	0.25								
Nickel	ND	0.25								
Vanadium	ND	0.25								

LCS Sample ID: **LCS-45453-45453** Units: **mg/Kg** Analysis Date: **12/19/2012 09:02 AM**
Client ID: Run ID: **ICPMS1_121218A** SeqNo: **2173600** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	5.17	0.10	5	0	103	80-120	0			
Molybdenum	5.08	0.25	5	0	102	80-120	0			
Nickel	5.04	0.25	5	0	101	80-120	0			
Vanadium	5.25	0.25	5	0	105	80-120	0			

MS Sample ID: **1212419-04AMS** Units: **mg/Kg** Analysis Date: **12/19/2012 09:55 AM**
Client ID: Run ID: **ICPMS1_121218A** SeqNo: **2173866** Prep Date: **12/17/2012** DF: **4**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	7.15	0.57	7.153	0.2901	95.9	75-125	0			
Molybdenum	7.894	1.4	7.153	0.6976	101	75-125	0			
Nickel	17.02	1.4	7.153	9.329	108	75-125	0			
Vanadium	23.8	1.4	7.153	13.67	142	75-125	0			S

MSD Sample ID: **1212419-04AMSD** Units: **mg/Kg** Analysis Date: **12/19/2012 10:01 AM**
Client ID: Run ID: **ICPMS1_121218A** SeqNo: **2173867** Prep Date: **12/17/2012** DF: **4**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	6.887	0.55	6.821	0.2901	96.7	75-125	7.15	3.75	25	
Molybdenum	7.651	1.4	6.821	0.6976	102	75-125	7.894	3.13	25	
Nickel	16.64	1.4	6.821	9.329	107	75-125	17.02	2.31	25	
Vanadium	23.55	1.4	6.821	13.67	145	75-125	23.8	1.08	25	S

The following samples were analyzed in this batch: 1212423-01A 1212423-02A 1212423-03A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45395** Instrument ID **SVMS7** Method: **SW8270**

MBLK Sample ID: **SBLKS1-45395-45395** Units: **µg/Kg** Analysis Date: **12/14/2012 02:13 PM**
Client ID: Run ID: **SVMS7_121214A** SeqNo: **2170020** Prep Date: **12/13/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	ND	50								
Acenaphthene	ND	50								
Acenaphthylene	ND	50								
Anthracene	ND	50								
Benzo(a)anthracene	ND	50								
Benzo(a)pyrene	ND	50								
Benzo(b)fluoranthene	ND	50								
Benzo(g,h,i)perylene	ND	50								
Benzo(k)fluoranthene	ND	50								
Chrysene	ND	50								
Dibenzo(a,h)anthracene	ND	50								
Fluoranthene	ND	50								
Fluorene	ND	50								
Indeno(1,2,3-cd)pyrene	ND	50								
Naphthalene	ND	50								
Phenanthrene	ND	50								
Pyrene	ND	50								
Surr: 2,4,6-Tribromophenol	*4301*	0	*5000*	0	*86*	*34-140*	0			
Surr: 2-Fluorobiphenyl	*3324*	0	*5000*	0	*66.5*	*12-100*	0			
Surr: 2-Fluorophenol	*4101*	0	*5000*	0	*82*	*33-117*	0			
Surr: 4-Terphenyl-d14	*3961*	0	*5000*	0	*79.2*	*25-137*	0			
Surr: Nitrobenzene-d5	*3405*	0	*5000*	0	*68.1*	*37-107*	0			
Surr: Phenol-d6	*4245*	0	*5000*	0	*84.9*	*40-106*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212423
Project: Marshall KRRI 1150-1175R Sediment 12/10/12

QC BATCH REPORT

Batch ID: **45395** Instrument ID **SVMS7** Method: **SW8270**

LCS Sample ID: **SLCSS1-45395-45395** Units: **µg/Kg** Analysis Date: **12/17/2012 01:39 PM**
Client ID: Run ID: **SVMS7_121217A** SeqNo: **2171504** Prep Date: **12/14/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	1717	50	2000	0	85.8	45-105	0			
Acenaphthene	1666	50	2000	0	83.3	45-110	0			
Acenaphthylene	1701	50	2000	0	85	45-105	0			
Anthracene	1752	50	2000	0	87.6	55-105	0			
Benzo(a)anthracene	1772	50	2000	0	88.6	50-110	0			
Benzo(a)pyrene	1915	50	2000	0	95.8	50-110	0			
Benzo(b)fluoranthene	1675	50	2000	0	83.8	45-115	0			
Benzo(g,h,i)perylene	2077	50	2000	0	104	40-125	0			
Benzo(k)fluoranthene	2021	50	2000	0	101	45-115	0			
Chrysene	1768	50	2000	0	88.4	55-110	0			
Dibenzo(a,h)anthracene	2041	50	2000	0	102	40-125	0			
Fluoranthene	1809	50	2000	0	90.4	55-115	0			
Fluorene	1726	50	2000	0	86.3	50-110	0			
Indeno(1,2,3-cd)pyrene	2063	50	2000	0	103	40-120	0			
Naphthalene	1677	50	2000	0	83.8	40-105	0			
Phenanthrene	1761	50	2000	0	88	50-110	0			
Pyrene	1809	50	2000	0	90.4	45-125	0			
Surr: 2,4,6-Tribromophenol	*4110*	0	*5000*	0	*82.2*	*34-140*	0			
Surr: 2-Fluorobiphenyl	*3121*	0	*5000*	0	*62.4*	*12-100*	0			
Surr: 2-Fluorophenol	*3767*	0	*5000*	0	*75.3*	*33-117*	0			
Surr: 4-Terphenyl-d14	*3941*	0	*5000*	0	*78.8*	*25-137*	0			
Surr: Nitrobenzene-d5	*3647*	0	*5000*	0	*72.9*	*37-107*	0			
Surr: Phenol-d6	*3894*	0	*5000*	0	*77.9*	*40-106*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212423
Project: Marshall KRRI 1150-1175R Sediment 12/10/12

QC BATCH REPORT

Batch ID: **45395** Instrument ID **SVMS7** Method: **SW8270**

MS Sample ID: **1212419-09A MS** Units: **µg/Kg** Analysis Date: **12/14/2012 05:09 PM**
Client ID: Run ID: **SVMS7_121214A** SeqNo: **2171428** Prep Date: **12/14/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	1694	48	1909	0	88.8	45-105	0			
Acenaphthene	1327	48	1909	0	69.5	45-110	0			
Acenaphthylene	1963	48	1909	0	103	45-105	0			
Anthracene	1659	48	1909	0	86.9	55-105	0			
Benzo(a)anthracene	1642	48	1909	0	86	50-110	0			
Benzo(a)pyrene	1817	48	1909	0	95.2	50-110	0			
Benzo(b)fluoranthene	1732	48	1909	0	90.8	45-115	0			
Benzo(g,h,i)perylene	1597	48	1909	0	83.6	40-125	0			
Benzo(k)fluoranthene	1877	48	1909	0	98.4	45-115	0			
Chrysene	1688	48	1909	0	88.4	55-110	0			
Dibenzo(a,h)anthracene	1683	48	1909	0	88.2	40-125	0			
Fluoranthene	1729	48	1909	0	90.6	55-115	0			
Fluorene	1400	48	1909	0	73.4	50-110	0			
Indeno(1,2,3-cd)pyrene	1674	48	1909	0	87.7	40-120	0			
Naphthalene	1526	48	1909	0	80	40-105	0			
Phenanthrene	1663	48	1909	0	87.2	50-110	0			
Pyrene	1674	48	1909	0	87.7	45-125	0			
Surr: 2,4,6-Tribromophenol	*3446*	0	*4772*	0	*72.2*	*34-140*	0			
Surr: 2-Fluorobiphenyl	*3746*	0	*4772*	0	*78.5*	*12-100*	0			
Surr: 2-Fluorophenol	*3358*	0	*4772*	0	*70.4*	*33-117*	0			
Surr: 4-Terphenyl-d14	*3773*	0	*4772*	0	*79.1*	*25-137*	0			
Surr: Nitrobenzene-d5	*3147*	0	*4772*	0	*65.9*	*37-107*	0			
Surr: Phenol-d6	*3588*	0	*4772*	0	*75.2*	*40-106*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212423
Project: Marshall KRRI 1150-1175R Sediment 12/10/12

QC BATCH REPORT

Batch ID: **45395** Instrument ID **SVMS7** Method: **SW8270**

MSD Sample ID: **1212419-09A MSD** Units: **µg/Kg** Analysis Date: **12/14/2012 04:37 PM**
Client ID: Run ID: **SVMS7_121214A** SeqNo: **2171429** Prep Date: **12/14/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	1609	46	1846	0	87.2	45-105	1694	5.16	30	
Acenaphthene	1592	46	1846	0	86.2	45-110	1327	18.2	30	
Acenaphthylene	1660	46	1846	0	89.9	45-105	1963	16.8	30	
Anthracene	1684	46	1846	0	91.2	55-105	1659	1.49	30	
Benzo(a)anthracene	1660	46	1846	0	89.9	50-110	1642	1.09	30	
Benzo(a)pyrene	1819	46	1846	0	98.6	50-110	1817	0.117	30	
Benzo(b)fluoranthene	1723	46	1846	0	93.4	45-115	1732	0.516	30	
Benzo(g,h,i)perylene	1553	46	1846	0	84.2	40-125	1597	2.75	30	
Benzo(k)fluoranthene	1877	46	1846	0	102	45-115	1877	0.00832	30	
Chrysene	1689	46	1846	0	91.5	55-110	1688	0.049	30	
Dibenzo(a,h)anthracene	1640	46	1846	0	88.8	40-125	1683	2.55	30	
Fluoranthene	1712	46	1846	0	92.8	55-115	1729	0.996	30	
Fluorene	1689	46	1846	0	91.5	50-110	1400	18.7	30	
Indeno(1,2,3-cd)pyrene	1639	46	1846	0	88.8	40-120	1674	2.09	30	
Naphthalene	1558	46	1846	0	84.4	40-105	1526	2.08	30	
Phenanthrene	1700	46	1846	0	92.1	50-110	1663	2.18	30	
Pyrene	1692	46	1846	0	91.6	45-125	1674	1.06	30	
Surr: 2,4,6-Tribromophenol	*4080*	0	*4615*	0	*88.4*	*34-140*	3446	*16.8*	*40*	
Surr: 2-Fluorobiphenyl	*3037*	0	*4615*	0	*65.8*	*12-100*	3746	*20.9*	*40*	
Surr: 2-Fluorophenol	*3459*	0	*4615*	0	*75*	*33-117*	3358	*2.96*	*40*	
Surr: 4-Terphenyl-d14	*3730*	0	*4615*	0	*80.8*	*25-137*	3773	*1.14*	*40*	
Surr: Nitrobenzene-d5	*3301*	0	*4615*	0	*71.5*	*37-107*	3147	*4.78*	*40*	
Surr: Phenol-d6	*3659*	0	*4615*	0	*79.3*	*40-106*	3588	*1.97*	*40*	

The following samples were analyzed in this batch: 1212423-01A 1212423-02A 1212423-03A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212423
Project: Marshall KRRI 1150-1175R Sediment 12/10/12

QC BATCH REPORT

Batch ID: **R113939** Instrument ID **MOIST** Method: **A2540 G**

MBLK Sample ID: **WBLKS1-R113939** Units: **% of sample** Analysis Date: **12/13/2012 07:30 PM**
Client ID: Run ID: **MOIST_121213C** SeqNo: **2169365** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	ND	0.050								

LCS Sample ID: **LCS-R113939** Units: **% of sample** Analysis Date: **12/13/2012 07:30 PM**
Client ID: Run ID: **MOIST_121213C** SeqNo: **2169361** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	100	0.050	100	0	100	99.5-100.5	0			

DUP Sample ID: **1212436-06B DUP** Units: **% of sample** Analysis Date: **12/13/2012 07:30 PM**
Client ID: Run ID: **MOIST_121213C** SeqNo: **2169351** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	5.32	0.050	0	0	0	0-0	5.21	2.09	20	

DUP Sample ID: **1212462-01A DUP** Units: **% of sample** Analysis Date: **12/13/2012 07:30 PM**
Client ID: Run ID: **MOIST_121213C** SeqNo: **2169358** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	25.11	0.050	0	0	0	0-0	26.19	4.21	20	

The following samples were analyzed in this batch: 1212423-01A 1212423-02A 1212423-03A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

1212423

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

COC # ENBRIDGE_121012_GMK1 | Task: KRRI_SED 1150,1175
Total # of Samples: 3 | Event Complete?
Turn Around Time: 5 Day | Rush: No

BILLING CODE: 6.00

Lab Information		Project Information		Other Information	
Lab Name:	ALS Laboratory Group	Site ID #:		Send Invoice to:	Enbridge Energy - ATTN Accounts Payable
Address:	3352 128th Ave. Holland, MI 49424-9263	Project #	60162778	Address:	1100 Louisiana Suite 1100
		Site Address	5555 Glenwood Parkway SE Suite 200	City/State:	Houson, TX
Lab PM:	Ann Preston	City	Grand Rapids	State, Zip	MI
Phone/Fax:	1-616-399-6070/1-616-399-6185	Site PM Name	Bryan Stiemsma	Send EDD to	
Lab PM email	ann.preston@alsglobal.com	Phone/Fax:	[redacted]	CC Hardcopy report	
Applicable Lab Quote #:		Site PM Email:	Bryan.Stiemsma@aecom.com	CC Hardcopy report	

ITEM #	SAMPLE ID (Samples IDs MUST BE UNIQUE)	SAMPLE LOCATION	MATRIX CODE	G=GRAB C=COMP	SAMPLE DATE	#OF CONTAINERS	Comments/Lab Sample I.D.	Preservative	None	None	None	None
								Analysis	% Moisture	Be,Mo,V,Ni by 6020	ORO,DRO	PNAs by 8270
1	SEKR1150R501S121012D006	SEKR1150R501	SE	G	12/10/2012 10:43	1			X	X	X	X
2	SEKR1175R501S121012D004	SEKR1175R501	SE	G	12/10/2012 16:52	1			X	X	X	X
3	SEKR1175R501D121012D004	SEKR1175R501	SE	G	12/10/2012 16:52	1	DUPLICATE		X	X	X	X

Additional Comments/Special Instructions:

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
[signature]	12-11-12	0943	[signature]	12-11-12	0943
[signature]	12-12-12	0880	[signature]	12-12-12	0880

Sample Receipt Conditions

Temp in OC	Samples on Ice?	Sample intact?	Trip Blank?
3.8°C	Y/N	Y/N	Y/N
	(Y)N	(Y)N	(Y)N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N

SHIPPING INFO
Company:
Tracking #:

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: GERRY KRAMER (GMK1)
SIGNATURE of SAMPLER:
DATE Signed:
Time:

ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **12-Dec-12 08:10**

Work Order: **1212423** Received by: **PD**

Checklist completed by Keith Wierenga (eSignature) 12-Dec-12 (Date) Reviewed by: Ann Preston (eSignature) 13-Dec-12 (Date)

Matrices: Sediment
Carrier name: ALSHN

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	3.8 C		
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	12/12/2012 2:05:10 PM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL

Date: 12.11.12 Time: 0745

Name:

Company:

Seal Broken By:

Date:

3.8°C

3 SOILS

22-Dec-2012

Bryan Stiemsma
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall KRRI 1250I,1250L 12/13/12** Work Order: **1212554**

Dear Bryan,

ALS Environmental received 10 samples on 14-Dec-2012 03:45 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 73.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

Certificate No: MN331938

ALS Group USA, Corp

Date: 22-Dec-12

Client: AECOM Environment
Project: Marshall KRRI 1250I,1250L 12/13/12
Work Order: **1212554**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1212554-01	SBKR1250I501S121312S005	Soil		12/13/2012 10:37	12/14/2012 15:45	☐
1212554-02	SBKR1250I502S121312S004	Soil		12/13/2012 11:42	12/14/2012 15:45	☐
1212554-03	SBKR1250I502S121312S017	Soil		12/13/2012 11:47	12/14/2012 15:45	☐
1212554-04	SBKR1250I503S121312S004	Soil		12/13/2012 13:22	12/14/2012 15:45	☐
1212554-05	SBKR1250I504S121312S005	Soil		12/13/2012 14:37	12/14/2012 15:45	☐
1212554-06	SBKR1250I504D121312S005	Soil		12/13/2012 14:37	12/14/2012 15:45	☐
1212554-07	SBKR1250I505S121312S003	Soil		12/13/2012 15:36	12/14/2012 15:45	☐
1212554-08	SBKR1250I506S121312S004	Soil		12/13/2012 16:25	12/14/2012 15:45	☐
1212554-09	SBKR1250I506T121312MX	Soil		12/13/2012	12/14/2012 15:45	☐
1212554-10	SBKR1250L506S121312S005	Soil		12/13/2012 09:38	12/14/2012 15:45	☐

ALS Group USA, Corp

Date: 22-Dec-12

Client: AECOM Environment
Project: Marshall KRRI 1250I,1250L 12/13/12
Work Order: 1212554

Case Narrative

The extraction procedure used to prepare the soil samples for DRO and PAH analyses in this work order was a modification of the standard 3541 procedure. At the request of the client, a 10 gram sample aliquot dried with hydromatrix is used for extraction as outlined in ALS SOP HN-EXT-003(EN)-R01. All samples extracted starting on 10/1/2011 were prepared using this modified SOP.

Batch 45493 sample SBKR1250I506S121312S004 MS recovery for ORO was below control limits. Both the MSD recovery and RPD met quality control criteria. No data requires qualification.

Batch 45473 LCS/LCSD recoveries for a few Volatile compounds were above control limits, but all samples in this quality control batch were ND for these compounds. No data requires qualification. Sample SBKR1250I506S121312S004 MS/MSD recoveries for a few Volatile compounds were above control limits. The parent sample was ND for these compounds. No data requires qualification. The MS/MSD recoveries for trans-1,40Dichloro-2-butene were below control limits. The corresponding reporting limit in the parent sample may be biased low for trans-1,4-Dichloro-2-butene.

Batch 45510 sample SBKR1250I506S121312S004 MS/MSD recoveries for Vanadium were above the upper control limit. The corresponding result in the parent sample may be biased high for Vanadium.

ALS Group USA, Corp

Date: 22-Dec-12

Client: AECOM Environment
Project: Marshall KRRI 1250I,1250L 12/13/12
WorkOrder: **1212554**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
SD	Serial Dilution
TDL	Target Detection Limit

Units Reported	Description
% of sample	Percent of Sample
µg/Kg	Micrograms per Kilogram
µg/Kg-dry	Micrograms per Kilogram Dry Weight
mg/Kg-dry	Milligrams per Kilogram Dry Weight

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I501S121312S005
Work Order:	1212554	**Collection Date:**	12/13/2012 10:37:00 AM
Project:	Marshall KRRI 1250I,1250L 12/13/12		
Lab ID:	1212554-01	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/18/2012**		Analyst: **CW**
DRO (C10-C20)	ND	21	4.0		mg/Kg-dry	1	12/18/2012
ORO (C20-C34)	**340**	**41**	**4.0**		**mg/Kg-dry**	1	12/18/2012
Surr: 4-Terphenyl-d14	*68.1*	*39-115*			*%REC*	1	12/18/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/19/2012**		Analyst: **CES**
Beryllium	ND	1.1	0.50		mg/Kg-dry	4	12/20/2012
Molybdenum	ND	2.8	1.0		mg/Kg-dry	4	12/20/2012
Nickel	**17**	**2.8**	**1.0**		**mg/Kg-dry**	4	12/20/2012
Vanadium	**15**	**2.8**	**1.0**		**mg/Kg-dry**	4	12/20/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/18/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/19/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/19/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/19/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/19/2012
Benzo(a)anthracene	**750**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Benzo(a)pyrene	**940**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Benzo(b)fluoranthene	**1,000**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Benzo(g,h,i)perylene	**370**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Benzo(k)fluoranthene	**650**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Chrysene	**900**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/19/2012
Fluoranthene	**1,200**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/19/2012
Indeno(1,2,3-cd)pyrene	**330**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/19/2012
Phenanthrene	**400**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Pyrene	**1,300**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Surr: 2,4,6-Tribromophenol	*50.7*	*34-140*			*%REC*	1	12/19/2012
Surr: 2-Fluorobiphenyl	*59.1*	*12-100*			*%REC*	1	12/19/2012
Surr: 2-Fluorophenol	*76.8*	*33-117*			*%REC*	1	12/19/2012
Surr: 4-Terphenyl-d14	*85.5*	*25-137*			*%REC*	1	12/19/2012
Surr: Nitrobenzene-d5	*70.2*	*37-107*			*%REC*	1	12/19/2012
Surr: Phenol-d6	*72.9*	*40-106*			*%REC*	1	12/19/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/17/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	210	100		µg/Kg-dry	1	12/18/2012
1,1,1-Trichloroethane	ND	210	50		µg/Kg-dry	1	12/18/2012
1,1,2,2-Tetrachloroethane	ND	210	50		µg/Kg-dry	1	12/18/2012
1,1,2-Trichloroethane	ND	210	50		µg/Kg-dry	1	12/18/2012
1,1-Dichloroethane	ND	210	50		µg/Kg-dry	1	12/18/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I501S121312S005
Work Order:	1212554	**Collection Date:**	12/13/2012 10:37:00 AM
Project:	Marshall KRRI 1250I,1250L 12/13/12		
Lab ID:	1212554-01	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	210	50		µg/Kg-dry	1	12/18/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,3-Trichloropropane	ND	210	100		µg/Kg-dry	1	12/18/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,4-Trimethylbenzene	ND	210	100		µg/Kg-dry	1	12/18/2012
1,2-Dibromo-3-chloropropane	ND	210	10		µg/Kg-dry	1	12/18/2012
1,2-Dibromoethane	ND	210	20		µg/Kg-dry	1	12/18/2012
1,2-Dichlorobenzene	ND	210	100		µg/Kg-dry	1	12/18/2012
1,2-Dichloroethane	ND	210	50		µg/Kg-dry	1	12/18/2012
1,2-Dichloropropane	ND	210	50		µg/Kg-dry	1	12/18/2012
1,3,5-Trimethylbenzene	ND	210	100		µg/Kg-dry	1	12/18/2012
1,3-Dichlorobenzene	ND	210	100		µg/Kg-dry	1	12/18/2012
1,4-Dichlorobenzene	ND	210	100		µg/Kg-dry	1	12/18/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/18/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
2-Methylnaphthalene	ND	700	330		µg/Kg-dry	1	12/18/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
Acetone	ND	1,700	1,000		µg/Kg-dry	1	12/18/2012
Acrylonitrile	ND	210	100		µg/Kg-dry	1	12/18/2012
Benzene	ND	210	50		µg/Kg-dry	1	12/18/2012
Bromobenzene	ND	210	100		µg/Kg-dry	1	12/18/2012
Bromochloromethane	ND	210	100		µg/Kg-dry	1	12/18/2012
Bromodichloromethane	ND	210	100		µg/Kg-dry	1	12/18/2012
Bromoform	ND	210	100		µg/Kg-dry	1	12/18/2012
Bromomethane	ND	210	200		µg/Kg-dry	1	12/18/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/18/2012
Carbon tetrachloride	ND	210	50		µg/Kg-dry	1	12/18/2012
Chlorobenzene	ND	210	50		µg/Kg-dry	1	12/18/2012
Chloroethane	ND	700	250		µg/Kg-dry	1	12/18/2012
Chloroform	ND	210	50		µg/Kg-dry	1	12/18/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/18/2012
cis-1,2-Dichloroethene	ND	210	50		µg/Kg-dry	1	12/18/2012
cis-1,3-Dichloropropene	ND	210	50		µg/Kg-dry	1	12/18/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/18/2012
Dibromochloromethane	ND	210	100		µg/Kg-dry	1	12/18/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/18/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/18/2012
Diethyl ether	ND	210	200		µg/Kg-dry	1	12/18/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I501S121312S005
Work Order:	1212554	**Collection Date:**	12/13/2012 10:37:00 AM
Project:	Marshall KRRI 1250I,1250L 12/13/12		
Lab ID:	1212554-01	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	210	50		µg/Kg-dry	1	12/18/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/18/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
m,p-Xylene	ND	420	100		µg/Kg-dry	1	12/18/2012
Methyl iodide	ND	210	100		µg/Kg-dry	1	12/18/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012
Methylene chloride	ND	210	100		µg/Kg-dry	1	12/18/2012
Naphthalene	ND	700	330		µg/Kg-dry	1	12/18/2012
n-Butylbenzene	ND	210	50		µg/Kg-dry	1	12/18/2012
n-Propylbenzene	ND	210	100		µg/Kg-dry	1	12/18/2012
o-Xylene	ND	210	50		µg/Kg-dry	1	12/18/2012
p-Isopropyltoluene	ND	210	100		µg/Kg-dry	1	12/18/2012
sec-Butylbenzene	ND	210	50		µg/Kg-dry	1	12/18/2012
Styrene	ND	210	50		µg/Kg-dry	1	12/18/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
tert-Butylbenzene	ND	210	50		µg/Kg-dry	1	12/18/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/18/2012
Tetrachloroethene	ND	210	50		µg/Kg-dry	1	12/18/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/18/2012
Toluene	ND	210	100		µg/Kg-dry	1	12/18/2012
trans-1,2-Dichloroethene	ND	210	50		µg/Kg-dry	1	12/18/2012
trans-1,3-Dichloropropene	ND	210	50		µg/Kg-dry	1	12/18/2012
trans-1,4-Dichloro-2-butene	ND	210	50		µg/Kg-dry	1	12/18/2012
Trichloroethene	ND	210	50		µg/Kg-dry	1	12/18/2012
Trichlorofluoromethane	ND	210	100		µg/Kg-dry	1	12/18/2012
Vinyl chloride	ND	210	40		µg/Kg-dry	1	12/18/2012
Surr: 1,2-Dichloroethane-d4	*97.2*	*70-130*			*%REC*	1	12/18/2012
Surr: 4-Bromofluorobenzene	*99.8*	*70-130*			*%REC*	1	12/18/2012
Surr: Dibromofluoromethane	*95.2*	*70-130*			*%REC*	1	12/18/2012
Surr: Toluene-d8	*89.0*	*70-130*			*%REC*	1	12/18/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**53**	**0.050**	**0**		**% of sample**	1	12/17/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I502S121312S004
Work Order:	1212554	**Collection Date:**	12/13/2012 11:42:00 AM
Project:	Marshall KRRI 1250I,1250L 12/13/12		
Lab ID:	1212554-02	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/18/2012**		Analyst: **CW**
DRO (C10-C20)	**120**	**15**	**4.0**		**mg/Kg-dry**	1	12/18/2012
ORO (C20-C34)	**1,600**	**31**	**4.0**		**mg/Kg-dry**	1	12/18/2012
Surr: 4-Terphenyl-d14	*74.6*	*39-115*			*%REC*	1	12/18/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/19/2012**		Analyst: **CES**
Beryllium	ND	0.82	0.50		mg/Kg-dry	4	12/20/2012
Molybdenum	ND	2.1	1.0		mg/Kg-dry	4	12/20/2012
Nickel	**13**	**2.1**	**1.0**		**mg/Kg-dry**	4	12/20/2012
Vanadium	**13**	**2.1**	**1.0**		**mg/Kg-dry**	4	12/20/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/18/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/19/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/19/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/19/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/19/2012
Benzo(a)anthracene	ND	330	330		µg/Kg-dry	1	12/19/2012
Benzo(a)pyrene	**330**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Benzo(b)fluoranthene	**480**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Benzo(g,h,i)perylene	ND	330	330		µg/Kg-dry	1	12/19/2012
Benzo(k)fluoranthene	**460**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Chrysene	**360**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/19/2012
Fluoranthene	**400**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/19/2012
Indeno(1,2,3-cd)pyrene	ND	330	330		µg/Kg-dry	1	12/19/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/19/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/19/2012
Pyrene	**500**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Surr: 2,4,6-Tribromophenol	*55.4*	*34-140*			*%REC*	1	12/19/2012
Surr: 2-Fluorobiphenyl	*71.0*	*12-100*			*%REC*	1	12/19/2012
Surr: 2-Fluorophenol	*79.1*	*33-117*			*%REC*	1	12/19/2012
Surr: 4-Terphenyl-d14	*104*	*25-137*			*%REC*	1	12/19/2012
Surr: Nitrobenzene-d5	*74.0*	*37-107*			*%REC*	1	12/19/2012
Surr: Phenol-d6	*85.9*	*40-106*			*%REC*	1	12/19/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/17/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	110	100		µg/Kg-dry	1	12/18/2012
1,1,1-Trichloroethane	ND	110	50		µg/Kg-dry	1	12/18/2012
1,1,2,2-Tetrachloroethane	ND	110	50		µg/Kg-dry	1	12/18/2012
1,1,2-Trichloroethane	ND	110	50		µg/Kg-dry	1	12/18/2012
1,1-Dichloroethane	ND	110	50		µg/Kg-dry	1	12/18/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I502S121312S004
Work Order:	1212554	**Collection Date:**	12/13/2012 11:42:00 AM
Project:	Marshall KRRI 1250I,1250L 12/13/12		
Lab ID:	1212554-02	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	110	50		µg/Kg-dry	1	12/18/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,3-Trichloropropane	ND	110	100		µg/Kg-dry	1	12/18/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,4-Trimethylbenzene	ND	110	100		µg/Kg-dry	1	12/18/2012
1,2-Dibromo-3-chloropropane	ND	110	10		µg/Kg-dry	1	12/18/2012
1,2-Dibromoethane	ND	110	20		µg/Kg-dry	1	12/18/2012
1,2-Dichlorobenzene	ND	110	100		µg/Kg-dry	1	12/18/2012
1,2-Dichloroethane	ND	110	50		µg/Kg-dry	1	12/18/2012
1,2-Dichloropropane	ND	110	50		µg/Kg-dry	1	12/18/2012
1,3,5-Trimethylbenzene	ND	110	100		µg/Kg-dry	1	12/18/2012
1,3-Dichlorobenzene	ND	110	100		µg/Kg-dry	1	12/18/2012
1,4-Dichlorobenzene	ND	110	100		µg/Kg-dry	1	12/18/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/18/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
2-Methylnaphthalene	ND	360	330		µg/Kg-dry	1	12/18/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
Acetone	ND	1,000	1,000		µg/Kg-dry	1	12/18/2012
Acrylonitrile	ND	110	100		µg/Kg-dry	1	12/18/2012
Benzene	ND	110	50		µg/Kg-dry	1	12/18/2012
Bromobenzene	ND	110	100		µg/Kg-dry	1	12/18/2012
Bromochloromethane	ND	110	100		µg/Kg-dry	1	12/18/2012
Bromodichloromethane	ND	110	100		µg/Kg-dry	1	12/18/2012
Bromoform	ND	110	100		µg/Kg-dry	1	12/18/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/18/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/18/2012
Carbon tetrachloride	ND	110	50		µg/Kg-dry	1	12/18/2012
Chlorobenzene	ND	110	50		µg/Kg-dry	1	12/18/2012
Chloroethane	ND	360	250		µg/Kg-dry	1	12/18/2012
Chloroform	ND	110	50		µg/Kg-dry	1	12/18/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/18/2012
cis-1,2-Dichloroethene	ND	110	50		µg/Kg-dry	1	12/18/2012
cis-1,3-Dichloropropene	ND	110	50		µg/Kg-dry	1	12/18/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/18/2012
Dibromochloromethane	ND	110	100		µg/Kg-dry	1	12/18/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/18/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/18/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/18/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I502S121312S004
Work Order:	1212554	**Collection Date:**	12/13/2012 11:42:00 AM
Project:	Marshall KRRI 1250I,1250L 12/13/12		
Lab ID:	1212554-02	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	110	50		µg/Kg-dry	1	12/18/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/18/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
m,p-Xylene	ND	210	100		µg/Kg-dry	1	12/18/2012
Methyl iodide	ND	110	100		µg/Kg-dry	1	12/18/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012
Methylene chloride	ND	110	100		µg/Kg-dry	1	12/18/2012
Naphthalene	ND	360	330		µg/Kg-dry	1	12/18/2012
n-Butylbenzene	ND	110	50		µg/Kg-dry	1	12/18/2012
n-Propylbenzene	ND	110	100		µg/Kg-dry	1	12/18/2012
o-Xylene	ND	110	50		µg/Kg-dry	1	12/18/2012
p-Isopropyltoluene	ND	110	100		µg/Kg-dry	1	12/18/2012
sec-Butylbenzene	ND	110	50		µg/Kg-dry	1	12/18/2012
Styrene	ND	110	50		µg/Kg-dry	1	12/18/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
tert-Butylbenzene	ND	110	50		µg/Kg-dry	1	12/18/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/18/2012
Tetrachloroethene	ND	110	50		µg/Kg-dry	1	12/18/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/18/2012
Toluene	ND	110	100		µg/Kg-dry	1	12/18/2012
trans-1,2-Dichloroethene	ND	110	50		µg/Kg-dry	1	12/18/2012
trans-1,3-Dichloropropene	ND	110	50		µg/Kg-dry	1	12/18/2012
trans-1,4-Dichloro-2-butene	ND	110	50		µg/Kg-dry	1	12/18/2012
Trichloroethene	ND	110	50		µg/Kg-dry	1	12/18/2012
Trichlorofluoromethane	ND	110	100		µg/Kg-dry	1	12/18/2012
Vinyl chloride	ND	110	40		µg/Kg-dry	1	12/18/2012
Surr: 1,2-Dichloroethane-d4	*98.9*	*70-130*			*%REC*	1	12/18/2012
Surr: 4-Bromofluorobenzene	*100*	*70-130*			*%REC*	1	12/18/2012
Surr: Dibromofluoromethane	*96.9*	*70-130*			*%REC*	1	12/18/2012
Surr: Toluene-d8	*88.0*	*70-130*			*%REC*	1	12/18/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**38**	**0.050**	**0**		**% of sample**	1	12/17/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I502S121312S017
Work Order:	1212554	**Collection Date:**	12/13/2012 11:47:00 AM
Project:	Marshall KRRI 1250I,1250L 12/13/12		
Lab ID:	1212554-03	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/18/2012**		Analyst: **CW**
DRO (C10-C20)	ND	13	4.0		mg/Kg-dry	1	12/18/2012
ORO (C20-C34)	**66**	**25**	**4.0**		**mg/Kg-dry**	1	12/18/2012
Surr: 4-Terphenyl-d14	*72.2*	*39-115*			*%REC*	1	12/18/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/19/2012**		Analyst: **CES**
Beryllium	ND	0.77	0.50		mg/Kg-dry	4	12/20/2012
Molybdenum	ND	1.9	1.0		mg/Kg-dry	4	12/20/2012
Nickel	**5.0**	**1.9**	**1.0**		**mg/Kg-dry**	4	12/20/2012
Vanadium	**6.1**	**1.9**	**1.0**		**mg/Kg-dry**	4	12/20/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/18/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/19/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/19/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/19/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/19/2012
Benzo(a)anthracene	ND	330	330		µg/Kg-dry	1	12/19/2012
Benzo(a)pyrene	ND	330	330		µg/Kg-dry	1	12/19/2012
Benzo(b)fluoranthene	ND	330	330		µg/Kg-dry	1	12/19/2012
Benzo(g,h,i)perylene	ND	330	330		µg/Kg-dry	1	12/19/2012
Benzo(k)fluoranthene	ND	330	330		µg/Kg-dry	1	12/19/2012
Chrysene	ND	330	330		µg/Kg-dry	1	12/19/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/19/2012
Fluoranthene	ND	330	330		µg/Kg-dry	1	12/19/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/19/2012
Indeno(1,2,3-cd)pyrene	ND	330	330		µg/Kg-dry	1	12/19/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/19/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/19/2012
Pyrene	ND	330	330		µg/Kg-dry	1	12/19/2012
Surr: 2,4,6-Tribromophenol	*52.5*	*34-140*			*%REC*	1	12/19/2012
Surr: 2-Fluorobiphenyl	*66.8*	*12-100*			*%REC*	1	12/19/2012
Surr: 2-Fluorophenol	*82.2*	*33-117*			*%REC*	1	12/19/2012
Surr: 4-Terphenyl-d14	*97.3*	*25-137*			*%REC*	1	12/19/2012
Surr: Nitrobenzene-d5	*77.5*	*37-107*			*%REC*	1	12/19/2012
Surr: Phenol-d6	*83.1*	*40-106*			*%REC*	1	12/19/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/17/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	100	100		µg/Kg-dry	1	12/18/2012
1,1,1-Trichloroethane	ND	69	50		µg/Kg-dry	1	12/18/2012
1,1,2,2-Tetrachloroethane	ND	69	50		µg/Kg-dry	1	12/18/2012
1,1,2-Trichloroethane	ND	69	50		µg/Kg-dry	1	12/18/2012
1,1-Dichloroethane	ND	69	50		µg/Kg-dry	1	12/18/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I502S121312S017
Work Order:	1212554	**Collection Date:**	12/13/2012 11:47:00 AM
Project:	Marshall KRRI 1250I,1250L 12/13/12		
Lab ID:	1212554-03	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	69	50		µg/Kg-dry	1	12/18/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,3-Trichloropropane	ND	100	100		µg/Kg-dry	1	12/18/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,4-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/18/2012
1,2-Dibromo-3-chloropropane	ND	69	10		µg/Kg-dry	1	12/18/2012
1,2-Dibromoethane	ND	69	20		µg/Kg-dry	1	12/18/2012
1,2-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/18/2012
1,2-Dichloroethane	ND	69	50		µg/Kg-dry	1	12/18/2012
1,2-Dichloropropane	ND	69	50		µg/Kg-dry	1	12/18/2012
1,3,5-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/18/2012
1,3-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/18/2012
1,4-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/18/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/18/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/18/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
Acetone	ND	1,000	1,000		µg/Kg-dry	1	12/18/2012
Acrylonitrile	ND	100	100		µg/Kg-dry	1	12/18/2012
Benzene	ND	69	50		µg/Kg-dry	1	12/18/2012
Bromobenzene	ND	100	100		µg/Kg-dry	1	12/18/2012
Bromochloromethane	ND	100	100		µg/Kg-dry	1	12/18/2012
Bromodichloromethane	ND	100	100		µg/Kg-dry	1	12/18/2012
Bromoform	ND	100	100		µg/Kg-dry	1	12/18/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/18/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/18/2012
Carbon tetrachloride	ND	69	50		µg/Kg-dry	1	12/18/2012
Chlorobenzene	ND	69	50		µg/Kg-dry	1	12/18/2012
Chloroethane	ND	250	250		µg/Kg-dry	1	12/18/2012
Chloroform	ND	69	50		µg/Kg-dry	1	12/18/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/18/2012
cis-1,2-Dichloroethene	ND	69	50		µg/Kg-dry	1	12/18/2012
cis-1,3-Dichloropropene	ND	69	50		µg/Kg-dry	1	12/18/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/18/2012
Dibromochloromethane	ND	100	100		µg/Kg-dry	1	12/18/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/18/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/18/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/18/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I502S121312S017
Work Order:	1212554	**Collection Date:**	12/13/2012 11:47:00 AM
Project:	Marshall KRRI 1250I,1250L 12/13/12		
Lab ID:	1212554-03	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	69	50		µg/Kg-dry	1	12/18/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/18/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
m,p-Xylene	ND	140	100		µg/Kg-dry	1	12/18/2012
Methyl iodide	ND	100	100		µg/Kg-dry	1	12/18/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012
Methylene chloride	ND	100	100		µg/Kg-dry	1	12/18/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/18/2012
n-Butylbenzene	ND	69	50		µg/Kg-dry	1	12/18/2012
n-Propylbenzene	ND	100	100		µg/Kg-dry	1	12/18/2012
o-Xylene	ND	69	50		µg/Kg-dry	1	12/18/2012
p-Isopropyltoluene	ND	100	100		µg/Kg-dry	1	12/18/2012
sec-Butylbenzene	ND	69	50		µg/Kg-dry	1	12/18/2012
Styrene	ND	69	50		µg/Kg-dry	1	12/18/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
tert-Butylbenzene	ND	69	50		µg/Kg-dry	1	12/18/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/18/2012
Tetrachloroethene	ND	69	50		µg/Kg-dry	1	12/18/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/18/2012
Toluene	ND	100	100		µg/Kg-dry	1	12/18/2012
trans-1,2-Dichloroethene	ND	69	50		µg/Kg-dry	1	12/18/2012
trans-1,3-Dichloropropene	ND	69	50		µg/Kg-dry	1	12/18/2012
trans-1,4-Dichloro-2-butene	ND	69	50		µg/Kg-dry	1	12/18/2012
Trichloroethene	ND	69	50		µg/Kg-dry	1	12/18/2012
Trichlorofluoromethane	ND	100	100		µg/Kg-dry	1	12/18/2012
Vinyl chloride	ND	69	40		µg/Kg-dry	1	12/18/2012
Surr: 1,2-Dichloroethane-d4	*99.1*	*70-130*			*%REC*	1	12/18/2012
Surr: 4-Bromofluorobenzene	*99.9*	*70-130*			*%REC*	1	12/18/2012
Surr: Dibromofluoromethane	*96.0*	*70-130*			*%REC*	1	12/18/2012
Surr: Toluene-d8	*87.3*	*70-130*			*%REC*	1	12/18/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**26**	**0.050**	**0**		**% of sample**	1	12/17/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I503S121312S004
Work Order:	1212554	**Collection Date:**	12/13/2012 1:22:00 PM
Project:	Marshall KRRI 1250I,1250L 12/13/12		
Lab ID:	1212554-04	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/18/2012**		Analyst: **CW**
DRO (C10-C20)	**18**	**15**	**4.0**		**mg/Kg-dry**	1	12/18/2012
ORO (C20-C34)	**400**	**31**	**4.0**		**mg/Kg-dry**	1	12/18/2012
Surr: 4-Terphenyl-d14	*82.1*	*39-115*			*%REC*	1	12/18/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/19/2012**		Analyst: **CES**
Beryllium	ND	1.0	0.50		mg/Kg-dry	4	12/20/2012
Molybdenum	ND	2.5	1.0		mg/Kg-dry	4	12/20/2012
Nickel	**16**	**2.5**	**1.0**		**mg/Kg-dry**	4	12/20/2012
Vanadium	**14**	**2.5**	**1.0**		**mg/Kg-dry**	4	12/20/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/18/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/19/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/19/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/19/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/19/2012
Benzo(a)anthracene	**870**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Benzo(a)pyrene	**1,200**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Benzo(b)fluoranthene	**1,400**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Benzo(g,h,i)perylene	**360**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Benzo(k)fluoranthene	**680**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Chrysene	**1,100**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/19/2012
Fluoranthene	**1,300**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/19/2012
Indeno(1,2,3-cd)pyrene	ND	330	330		µg/Kg-dry	1	12/19/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/19/2012
Phenanthrene	**400**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Pyrene	**1,500**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Surr: 2,4,6-Tribromophenol	*59.5*	*34-140*			*%REC*	1	12/19/2012
Surr: 2-Fluorobiphenyl	*66.2*	*12-100*			*%REC*	1	12/19/2012
Surr: 2-Fluorophenol	*83.5*	*33-117*			*%REC*	1	12/19/2012
Surr: 4-Terphenyl-d14	*100*	*25-137*			*%REC*	1	12/19/2012
Surr: Nitrobenzene-d5	*75.2*	*37-107*			*%REC*	1	12/19/2012
Surr: Phenol-d6	*70.9*	*40-106*			*%REC*	1	12/19/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/17/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	100	100		µg/Kg-dry	1	12/18/2012
1,1,1-Trichloroethane	ND	100	50		µg/Kg-dry	1	12/18/2012
1,1,2,2-Tetrachloroethane	ND	100	50		µg/Kg-dry	1	12/18/2012
1,1,2-Trichloroethane	ND	100	50		µg/Kg-dry	1	12/18/2012
1,1-Dichloroethane	ND	100	50		µg/Kg-dry	1	12/18/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I503S121312S004
Work Order:	1212554	**Collection Date:**	12/13/2012 1:22:00 PM
Project:	Marshall KRRI 1250I,1250L 12/13/12		
Lab ID:	1212554-04	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	100	50		µg/Kg-dry	1	12/18/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,3-Trichloropropane	ND	100	100		µg/Kg-dry	1	12/18/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,4-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/18/2012
1,2-Dibromo-3-chloropropane	ND	100	10		µg/Kg-dry	1	12/18/2012
1,2-Dibromoethane	ND	100	20		µg/Kg-dry	1	12/18/2012
1,2-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/18/2012
1,2-Dichloroethane	ND	100	50		µg/Kg-dry	1	12/18/2012
1,2-Dichloropropane	ND	100	50		µg/Kg-dry	1	12/18/2012
1,3,5-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/18/2012
1,3-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/18/2012
1,4-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/18/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/18/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
2-Methylnaphthalene	ND	350	330		µg/Kg-dry	1	12/18/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
Acetone	ND	1,000	1,000		µg/Kg-dry	1	12/18/2012
Acrylonitrile	ND	100	100		µg/Kg-dry	1	12/18/2012
Benzene	ND	100	50		µg/Kg-dry	1	12/18/2012
Bromobenzene	ND	100	100		µg/Kg-dry	1	12/18/2012
Bromochloromethane	ND	100	100		µg/Kg-dry	1	12/18/2012
Bromodichloromethane	ND	100	100		µg/Kg-dry	1	12/18/2012
Bromoform	ND	100	100		µg/Kg-dry	1	12/18/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/18/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/18/2012
Carbon tetrachloride	ND	100	50		µg/Kg-dry	1	12/18/2012
Chlorobenzene	ND	100	50		µg/Kg-dry	1	12/18/2012
Chloroethane	ND	350	250		µg/Kg-dry	1	12/18/2012
Chloroform	ND	100	50		µg/Kg-dry	1	12/18/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/18/2012
cis-1,2-Dichloroethene	ND	100	50		µg/Kg-dry	1	12/18/2012
cis-1,3-Dichloropropene	ND	100	50		µg/Kg-dry	1	12/18/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/18/2012
Dibromochloromethane	ND	100	100		µg/Kg-dry	1	12/18/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/18/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/18/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/18/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: AECOM Environment
Client Sample ID: SBKR1250I503S121312S004
Work Order: 1212554
Collection Date: 12/13/2012 1:22:00 PM
Project: Marshall KRRI 1250I,1250L 12/13/12
Lab ID: 1212554-04
Matrix: SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	100	50		µg/Kg-dry	1	12/18/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/18/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
m,p-Xylene	ND	210	100		µg/Kg-dry	1	12/18/2012
Methyl iodide	ND	100	100		µg/Kg-dry	1	12/18/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012
Methylene chloride	ND	100	100		µg/Kg-dry	1	12/18/2012
Naphthalene	ND	350	330		µg/Kg-dry	1	12/18/2012
n-Butylbenzene	ND	100	50		µg/Kg-dry	1	12/18/2012
n-Propylbenzene	ND	100	100		µg/Kg-dry	1	12/18/2012
o-Xylene	ND	100	50		µg/Kg-dry	1	12/18/2012
p-Isopropyltoluene	ND	100	100		µg/Kg-dry	1	12/18/2012
sec-Butylbenzene	ND	100	50		µg/Kg-dry	1	12/18/2012
Styrene	ND	100	50		µg/Kg-dry	1	12/18/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
tert-Butylbenzene	ND	100	50		µg/Kg-dry	1	12/18/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/18/2012
Tetrachloroethene	ND	100	50		µg/Kg-dry	1	12/18/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/18/2012
Toluene	ND	100	100		µg/Kg-dry	1	12/18/2012
trans-1,2-Dichloroethene	ND	100	50		µg/Kg-dry	1	12/18/2012
trans-1,3-Dichloropropene	ND	100	50		µg/Kg-dry	1	12/18/2012
trans-1,4-Dichloro-2-butene	ND	100	50		µg/Kg-dry	1	12/18/2012
Trichloroethene	ND	100	50		µg/Kg-dry	1	12/18/2012
Trichlorofluoromethane	ND	100	100		µg/Kg-dry	1	12/18/2012
Vinyl chloride	ND	100	40		µg/Kg-dry	1	12/18/2012
Surr: 1,2-Dichloroethane-d4	*98.4*	*70-130*			*%REC*	1	12/18/2012
Surr: 4-Bromofluorobenzene	*97.7*	*70-130*			*%REC*	1	12/18/2012
Surr: Dibromofluoromethane	*92.4*	*70-130*			*%REC*	1	12/18/2012
Surr: Toluene-d8	*87.3*	*70-130*			*%REC*	1	12/18/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**37**	**0.050**	**0**		**% of sample**	1	12/17/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I504S121312S005
Work Order:	1212554	**Collection Date:**	12/13/2012 2:37:00 PM
Project:	Marshall KRRI 1250I,1250L 12/13/12		
Lab ID:	1212554-05	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/18/2012**		Analyst: **CW**
DRO (C10-C20)	ND	18	4.0		mg/Kg-dry	1	12/18/2012
ORO (C20-C34)	**120**	**37**	**4.0**		**mg/Kg-dry**	1	12/18/2012
Surr: 4-Terphenyl-d14	*75.4*	*39-115*			*%REC*	1	12/18/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/19/2012**		Analyst: **CES**
Beryllium	ND	1.2	0.50		mg/Kg-dry	4	12/20/2012
Molybdenum	ND	2.9	1.0		mg/Kg-dry	4	12/20/2012
Nickel	**8.6**	**2.9**	**1.0**		**mg/Kg-dry**	4	12/20/2012
Vanadium	**16**	**2.9**	**1.0**		**mg/Kg-dry**	4	12/20/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/18/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/19/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/19/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/19/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/19/2012
Benzo(a)anthracene	ND	330	330		µg/Kg-dry	1	12/19/2012
Benzo(a)pyrene	ND	330	330		µg/Kg-dry	1	12/19/2012
Benzo(b)fluoranthene	ND	330	330		µg/Kg-dry	1	12/19/2012
Benzo(g,h,i)perylene	ND	330	330		µg/Kg-dry	1	12/19/2012
Benzo(k)fluoranthene	ND	330	330		µg/Kg-dry	1	12/19/2012
Chrysene	ND	330	330		µg/Kg-dry	1	12/19/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/19/2012
Fluoranthene	ND	330	330		µg/Kg-dry	1	12/19/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/19/2012
Indeno(1,2,3-cd)pyrene	ND	330	330		µg/Kg-dry	1	12/19/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/19/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/19/2012
Pyrene	ND	330	330		µg/Kg-dry	1	12/19/2012
Surr: 2,4,6-Tribromophenol	*50.4*	*34-140*			*%REC*	1	12/19/2012
Surr: 2-Fluorobiphenyl	*64.1*	*12-100*			*%REC*	1	12/19/2012
Surr: 2-Fluorophenol	*78.8*	*33-117*			*%REC*	1	12/19/2012
Surr: 4-Terphenyl-d14	*93.4*	*25-137*			*%REC*	1	12/19/2012
Surr: Nitrobenzene-d5	*75.4*	*37-107*			*%REC*	1	12/19/2012
Surr: Phenol-d6	*81.5*	*40-106*			*%REC*	1	12/19/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/17/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	160	100		µg/Kg-dry	1	12/18/2012
1,1,1-Trichloroethane	ND	160	50		µg/Kg-dry	1	12/18/2012
1,1,2,2-Tetrachloroethane	ND	160	50		µg/Kg-dry	1	12/18/2012
1,1,2-Trichloroethane	ND	160	50		µg/Kg-dry	1	12/18/2012
1,1-Dichloroethane	ND	160	50		µg/Kg-dry	1	12/18/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I504S121312S005
Work Order:	1212554	**Collection Date:**	12/13/2012 2:37:00 PM
Project:	Marshall KRRI 1250I,1250L 12/13/12		
Lab ID:	1212554-05	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	160	50		µg/Kg-dry	1	12/18/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,3-Trichloropropane	ND	160	100		µg/Kg-dry	1	12/18/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,4-Trimethylbenzene	ND	160	100		µg/Kg-dry	1	12/18/2012
1,2-Dibromo-3-chloropropane	ND	160	10		µg/Kg-dry	1	12/18/2012
1,2-Dibromoethane	ND	160	20		µg/Kg-dry	1	12/18/2012
1,2-Dichlorobenzene	ND	160	100		µg/Kg-dry	1	12/18/2012
1,2-Dichloroethane	ND	160	50		µg/Kg-dry	1	12/18/2012
1,2-Dichloropropane	ND	160	50		µg/Kg-dry	1	12/18/2012
1,3,5-Trimethylbenzene	ND	160	100		µg/Kg-dry	1	12/18/2012
1,3-Dichlorobenzene	ND	160	100		µg/Kg-dry	1	12/18/2012
1,4-Dichlorobenzene	ND	160	100		µg/Kg-dry	1	12/18/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/18/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
2-Methylnaphthalene	ND	530	330		µg/Kg-dry	1	12/18/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
Acetone	ND	1,300	1,000		µg/Kg-dry	1	12/18/2012
Acrylonitrile	ND	160	100		µg/Kg-dry	1	12/18/2012
Benzene	ND	160	50		µg/Kg-dry	1	12/18/2012
Bromobenzene	ND	160	100		µg/Kg-dry	1	12/18/2012
Bromochloromethane	ND	160	100		µg/Kg-dry	1	12/18/2012
Bromodichloromethane	ND	160	100		µg/Kg-dry	1	12/18/2012
Bromoform	ND	160	100		µg/Kg-dry	1	12/18/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/18/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/18/2012
Carbon tetrachloride	ND	160	50		µg/Kg-dry	1	12/18/2012
Chlorobenzene	ND	160	50		µg/Kg-dry	1	12/18/2012
Chloroethane	ND	530	250		µg/Kg-dry	1	12/18/2012
Chloroform	ND	160	50		µg/Kg-dry	1	12/18/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/18/2012
cis-1,2-Dichloroethene	ND	160	50		µg/Kg-dry	1	12/18/2012
cis-1,3-Dichloropropene	ND	160	50		µg/Kg-dry	1	12/18/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/18/2012
Dibromochloromethane	ND	160	100		µg/Kg-dry	1	12/18/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/18/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/18/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/18/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I504S121312S005
Work Order:	1212554	**Collection Date:**	12/13/2012 2:37:00 PM
Project:	Marshall KRRI 1250I,1250L 12/13/12		
Lab ID:	1212554-05	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	160	50		µg/Kg-dry	1	12/18/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/18/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
m,p-Xylene	ND	320	100		µg/Kg-dry	1	12/18/2012
Methyl iodide	ND	160	100		µg/Kg-dry	1	12/18/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012
Methylene chloride	ND	160	100		µg/Kg-dry	1	12/18/2012
Naphthalene	ND	530	330		µg/Kg-dry	1	12/18/2012
n-Butylbenzene	ND	160	50		µg/Kg-dry	1	12/18/2012
n-Propylbenzene	ND	160	100		µg/Kg-dry	1	12/18/2012
o-Xylene	ND	160	50		µg/Kg-dry	1	12/18/2012
p-Isopropyltoluene	ND	160	100		µg/Kg-dry	1	12/18/2012
sec-Butylbenzene	ND	160	50		µg/Kg-dry	1	12/18/2012
Styrene	ND	160	50		µg/Kg-dry	1	12/18/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
tert-Butylbenzene	ND	160	50		µg/Kg-dry	1	12/18/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/18/2012
Tetrachloroethene	ND	160	50		µg/Kg-dry	1	12/18/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/18/2012
Toluene	ND	160	100		µg/Kg-dry	1	12/18/2012
trans-1,2-Dichloroethene	ND	160	50		µg/Kg-dry	1	12/18/2012
trans-1,3-Dichloropropene	ND	160	50		µg/Kg-dry	1	12/18/2012
trans-1,4-Dichloro-2-butene	ND	160	50		µg/Kg-dry	1	12/18/2012
Trichloroethene	ND	160	50		µg/Kg-dry	1	12/18/2012
Trichlorofluoromethane	ND	160	100		µg/Kg-dry	1	12/18/2012
Vinyl chloride	ND	160	40		µg/Kg-dry	1	12/18/2012
Surr: 1,2-Dichloroethane-d4	*99.2*	*70-130*			*%REC*	1	12/18/2012
Surr: 4-Bromofluorobenzene	*98.2*	*70-130*			*%REC*	1	12/18/2012
Surr: Dibromofluoromethane	*92.5*	*70-130*			*%REC*	1	12/18/2012
Surr: Toluene-d8	*87.2*	*70-130*			*%REC*	1	12/18/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**47**	**0.050**	**0**		**% of sample**	1	12/17/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I504D121312S005
Work Order:	1212554	**Collection Date:**	12/13/2012 2:37:00 PM
Project:	Marshall KRRI 1250I,1250L 12/13/12		
Lab ID:	1212554-06	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/18/2012**		Analyst: **CW**
DRO (C10-C20)	**30**	**19**	**4.0**		**mg/Kg-dry**	1	12/18/2012
ORO (C20-C34)	**510**	**38**	**4.0**		**mg/Kg-dry**	1	12/18/2012
Surr: 4-Terphenyl-d14	*77.9*	*39-115*			*%REC*	1	12/18/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/19/2012**		Analyst: **CES**
Beryllium	ND	1.2	0.50		mg/Kg-dry	4	12/20/2012
Molybdenum	ND	2.9	1.0		mg/Kg-dry	4	12/20/2012
Nickel	**18**	**2.9**	**1.0**		**mg/Kg-dry**	4	12/20/2012
Vanadium	**18**	**2.9**	**1.0**		**mg/Kg-dry**	4	12/20/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/18/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/19/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/19/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/19/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/19/2012
Benzo(a)anthracene	**1,300**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Benzo(a)pyrene	**1,500**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Benzo(b)fluoranthene	**1,600**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Benzo(g,h,i)perylene	**610**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Benzo(k)fluoranthene	**900**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Chrysene	**1,300**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/19/2012
Fluoranthene	**1,900**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/19/2012
Indeno(1,2,3-cd)pyrene	**540**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/19/2012
Phenanthrene	**670**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Pyrene	**2,200**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Surr: 2,4,6-Tribromophenol	*54.8*	*34-140*			*%REC*	1	12/19/2012
Surr: 2-Fluorobiphenyl	*63.5*	*12-100*			*%REC*	1	12/19/2012
Surr: 2-Fluorophenol	*77.3*	*33-117*			*%REC*	1	12/19/2012
Surr: 4-Terphenyl-d14	*92.3*	*25-137*			*%REC*	1	12/19/2012
Surr: Nitrobenzene-d5	*70.7*	*37-107*			*%REC*	1	12/19/2012
Surr: Phenol-d6	*72.2*	*40-106*			*%REC*	1	12/19/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/17/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	160	100		µg/Kg-dry	1	12/18/2012
1,1,1-Trichloroethane	ND	160	50		µg/Kg-dry	1	12/18/2012
1,1,2,2-Tetrachloroethane	ND	160	50		µg/Kg-dry	1	12/18/2012
1,1,2-Trichloroethane	ND	160	50		µg/Kg-dry	1	12/18/2012
1,1-Dichloroethane	ND	160	50		µg/Kg-dry	1	12/18/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I504D121312S005
Work Order:	1212554	**Collection Date:**	12/13/2012 2:37:00 PM
Project:	Marshall KRRI 1250I,1250L 12/13/12		
Lab ID:	1212554-06	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	160	50		µg/Kg-dry	1	12/18/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,3-Trichloropropane	ND	160	100		µg/Kg-dry	1	12/18/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,4-Trimethylbenzene	ND	160	100		µg/Kg-dry	1	12/18/2012
1,2-Dibromo-3-chloropropane	ND	160	10		µg/Kg-dry	1	12/18/2012
1,2-Dibromoethane	ND	160	20		µg/Kg-dry	1	12/18/2012
1,2-Dichlorobenzene	ND	160	100		µg/Kg-dry	1	12/18/2012
1,2-Dichloroethane	ND	160	50		µg/Kg-dry	1	12/18/2012
1,2-Dichloropropane	ND	160	50		µg/Kg-dry	1	12/18/2012
1,3,5-Trimethylbenzene	ND	160	100		µg/Kg-dry	1	12/18/2012
1,3-Dichlorobenzene	ND	160	100		µg/Kg-dry	1	12/18/2012
1,4-Dichlorobenzene	ND	160	100		µg/Kg-dry	1	12/18/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/18/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
2-Methylnaphthalene	ND	540	330		µg/Kg-dry	1	12/18/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
Acetone	ND	1,400	1,000		µg/Kg-dry	1	12/18/2012
Acrylonitrile	ND	160	100		µg/Kg-dry	1	12/18/2012
Benzene	ND	160	50		µg/Kg-dry	1	12/18/2012
Bromobenzene	ND	160	100		µg/Kg-dry	1	12/18/2012
Bromochloromethane	ND	160	100		µg/Kg-dry	1	12/18/2012
Bromodichloromethane	ND	160	100		µg/Kg-dry	1	12/18/2012
Bromoform	ND	160	100		µg/Kg-dry	1	12/18/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/18/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/18/2012
Carbon tetrachloride	ND	160	50		µg/Kg-dry	1	12/18/2012
Chlorobenzene	ND	160	50		µg/Kg-dry	1	12/18/2012
Chloroethane	ND	540	250		µg/Kg-dry	1	12/18/2012
Chloroform	ND	160	50		µg/Kg-dry	1	12/18/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/18/2012
cis-1,2-Dichloroethene	ND	160	50		µg/Kg-dry	1	12/18/2012
cis-1,3-Dichloropropene	ND	160	50		µg/Kg-dry	1	12/18/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/18/2012
Dibromochloromethane	ND	160	100		µg/Kg-dry	1	12/18/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/18/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/18/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/18/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I504D121312S005
Work Order:	1212554	**Collection Date:**	12/13/2012 2:37:00 PM
Project:	Marshall KRRI 1250I,1250L 12/13/12		
Lab ID:	1212554-06	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	160	50		µg/Kg-dry	1	12/18/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/18/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
m,p-Xylene	ND	330	100		µg/Kg-dry	1	12/18/2012
Methyl iodide	ND	160	100		µg/Kg-dry	1	12/18/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012
Methylene chloride	ND	160	100		µg/Kg-dry	1	12/18/2012
Naphthalene	ND	540	330		µg/Kg-dry	1	12/18/2012
n-Butylbenzene	ND	160	50		µg/Kg-dry	1	12/18/2012
n-Propylbenzene	ND	160	100		µg/Kg-dry	1	12/18/2012
o-Xylene	ND	160	50		µg/Kg-dry	1	12/18/2012
p-Isopropyltoluene	ND	160	100		µg/Kg-dry	1	12/18/2012
sec-Butylbenzene	ND	160	50		µg/Kg-dry	1	12/18/2012
Styrene	ND	160	50		µg/Kg-dry	1	12/18/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
tert-Butylbenzene	ND	160	50		µg/Kg-dry	1	12/18/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/18/2012
Tetrachloroethene	ND	160	50		µg/Kg-dry	1	12/18/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/18/2012
Toluene	ND	160	100		µg/Kg-dry	1	12/18/2012
trans-1,2-Dichloroethene	ND	160	50		µg/Kg-dry	1	12/18/2012
trans-1,3-Dichloropropene	ND	160	50		µg/Kg-dry	1	12/18/2012
trans-1,4-Dichloro-2-butene	ND	160	50		µg/Kg-dry	1	12/18/2012
Trichloroethene	ND	160	50		µg/Kg-dry	1	12/18/2012
Trichlorofluoromethane	ND	160	100		µg/Kg-dry	1	12/18/2012
Vinyl chloride	ND	160	40		µg/Kg-dry	1	12/18/2012
Surr: 1,2-Dichloroethane-d4	*98.8*	*70-130*			*%REC*	1	12/18/2012
Surr: 4-Bromofluorobenzene	*98.3*	*70-130*			*%REC*	1	12/18/2012
Surr: Dibromofluoromethane	*93.8*	*70-130*			*%REC*	1	12/18/2012
Surr: Toluene-d8	*88.3*	*70-130*			*%REC*	1	12/18/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**48**	**0.050**	**0**		**% of sample**	1	12/17/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I505S121312S003
Work Order:	1212554	**Collection Date:**	12/13/2012 3:36:00 PM
Project:	Marshall KRRI 1250I,1250L 12/13/12		
Lab ID:	1212554-07	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/18/2012**		Analyst: **CW**
DRO (C10-C20)	ND	15	4.0		mg/Kg-dry	1	12/19/2012
ORO (C20-C34)	**220**	**31**	**4.0**		**mg/Kg-dry**	1	12/19/2012
Surr: 4-Terphenyl-d14	*75.2*	*39-115*			*%REC*	1	12/19/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/19/2012**		Analyst: **CES**
Beryllium	ND	0.90	0.50		mg/Kg-dry	4	12/20/2012
Molybdenum	ND	2.3	1.0		mg/Kg-dry	4	12/20/2012
Nickel	**15**	**2.3**	**1.0**		**mg/Kg-dry**	4	12/20/2012
Vanadium	**28**	**2.3**	**1.0**		**mg/Kg-dry**	4	12/20/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/18/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/19/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/19/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/19/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/19/2012
Benzo(a)anthracene	ND	330	330		µg/Kg-dry	1	12/19/2012
Benzo(a)pyrene	**380**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Benzo(b)fluoranthene	**400**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Benzo(g,h,i)perylene	ND	330	330		µg/Kg-dry	1	12/19/2012
Benzo(k)fluoranthene	ND	330	330		µg/Kg-dry	1	12/19/2012
Chrysene	**330**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/19/2012
Fluoranthene	**340**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/19/2012
Indeno(1,2,3-cd)pyrene	ND	330	330		µg/Kg-dry	1	12/19/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/19/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/19/2012
Pyrene	**450**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Surr: 2,4,6-Tribromophenol	*54.4*	*34-140*			*%REC*	1	12/19/2012
Surr: 2-Fluorobiphenyl	*62.7*	*12-100*			*%REC*	1	12/19/2012
Surr: 2-Fluorophenol	*80.3*	*33-117*			*%REC*	1	12/19/2012
Surr: 4-Terphenyl-d14	*92.2*	*25-137*			*%REC*	1	12/19/2012
Surr: Nitrobenzene-d5	*73.2*	*37-107*			*%REC*	1	12/19/2012
Surr: Phenol-d6	*72.7*	*40-106*			*%REC*	1	12/19/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/17/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	110	100		µg/Kg-dry	1	12/18/2012
1,1,1-Trichloroethane	ND	110	50		µg/Kg-dry	1	12/18/2012
1,1,2,2-Tetrachloroethane	ND	110	50		µg/Kg-dry	1	12/18/2012
1,1,2-Trichloroethane	ND	110	50		µg/Kg-dry	1	12/18/2012
1,1-Dichloroethane	ND	110	50		µg/Kg-dry	1	12/18/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I505S121312S003
Work Order:	1212554	**Collection Date:**	12/13/2012 3:36:00 PM
Project:	Marshall KRRI 1250I,1250L 12/13/12		
Lab ID:	1212554-07	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	110	50		µg/Kg-dry	1	12/18/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,3-Trichloropropane	ND	110	100		µg/Kg-dry	1	12/18/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,4-Trimethylbenzene	ND	110	100		µg/Kg-dry	1	12/18/2012
1,2-Dibromo-3-chloropropane	ND	110	10		µg/Kg-dry	1	12/18/2012
1,2-Dibromoethane	ND	110	20		µg/Kg-dry	1	12/18/2012
1,2-Dichlorobenzene	ND	110	100		µg/Kg-dry	1	12/18/2012
1,2-Dichloroethane	ND	110	50		µg/Kg-dry	1	12/18/2012
1,2-Dichloropropane	ND	110	50		µg/Kg-dry	1	12/18/2012
1,3,5-Trimethylbenzene	ND	110	100		µg/Kg-dry	1	12/18/2012
1,3-Dichlorobenzene	ND	110	100		µg/Kg-dry	1	12/18/2012
1,4-Dichlorobenzene	ND	110	100		µg/Kg-dry	1	12/18/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/18/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
2-Methylnaphthalene	ND	360	330		µg/Kg-dry	1	12/18/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
Acetone	ND	1,000	1,000		µg/Kg-dry	1	12/18/2012
Acrylonitrile	ND	110	100		µg/Kg-dry	1	12/18/2012
Benzene	ND	110	50		µg/Kg-dry	1	12/18/2012
Bromobenzene	ND	110	100		µg/Kg-dry	1	12/18/2012
Bromochloromethane	ND	110	100		µg/Kg-dry	1	12/18/2012
Bromodichloromethane	ND	110	100		µg/Kg-dry	1	12/18/2012
Bromoform	ND	110	100		µg/Kg-dry	1	12/18/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/18/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/18/2012
Carbon tetrachloride	ND	110	50		µg/Kg-dry	1	12/18/2012
Chlorobenzene	ND	110	50		µg/Kg-dry	1	12/18/2012
Chloroethane	ND	360	250		µg/Kg-dry	1	12/18/2012
Chloroform	ND	110	50		µg/Kg-dry	1	12/18/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/18/2012
cis-1,2-Dichloroethene	ND	110	50		µg/Kg-dry	1	12/18/2012
cis-1,3-Dichloropropene	ND	110	50		µg/Kg-dry	1	12/18/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/18/2012
Dibromochloromethane	ND	110	100		µg/Kg-dry	1	12/18/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/18/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/18/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/18/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I505S121312S003
Work Order:	1212554	**Collection Date:**	12/13/2012 3:36:00 PM
Project:	Marshall KRRI 1250I,1250L 12/13/12		
Lab ID:	1212554-07	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	110	50		µg/Kg-dry	1	12/18/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/18/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
m,p-Xylene	ND	210	100		µg/Kg-dry	1	12/18/2012
Methyl iodide	ND	110	100		µg/Kg-dry	1	12/18/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012
Methylene chloride	ND	110	100		µg/Kg-dry	1	12/18/2012
Naphthalene	ND	360	330		µg/Kg-dry	1	12/18/2012
n-Butylbenzene	ND	110	50		µg/Kg-dry	1	12/18/2012
n-Propylbenzene	ND	110	100		µg/Kg-dry	1	12/18/2012
o-Xylene	ND	110	50		µg/Kg-dry	1	12/18/2012
p-Isopropyltoluene	ND	110	100		µg/Kg-dry	1	12/18/2012
sec-Butylbenzene	ND	110	50		µg/Kg-dry	1	12/18/2012
Styrene	ND	110	50		µg/Kg-dry	1	12/18/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
tert-Butylbenzene	ND	110	50		µg/Kg-dry	1	12/18/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/18/2012
Tetrachloroethene	ND	110	50		µg/Kg-dry	1	12/18/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/18/2012
Toluene	ND	110	100		µg/Kg-dry	1	12/18/2012
trans-1,2-Dichloroethene	ND	110	50		µg/Kg-dry	1	12/18/2012
trans-1,3-Dichloropropene	ND	110	50		µg/Kg-dry	1	12/18/2012
trans-1,4-Dichloro-2-butene	ND	110	50		µg/Kg-dry	1	12/18/2012
Trichloroethene	ND	110	50		µg/Kg-dry	1	12/18/2012
Trichlorofluoromethane	ND	110	100		µg/Kg-dry	1	12/18/2012
Vinyl chloride	ND	110	40		µg/Kg-dry	1	12/18/2012
Surr: 1,2-Dichloroethane-d4	*95.8*	*70-130*			*%REC*	1	12/18/2012
Surr: 4-Bromofluorobenzene	*96.6*	*70-130*			*%REC*	1	12/18/2012
Surr: Dibromofluoromethane	*93.4*	*70-130*			*%REC*	1	12/18/2012
Surr: Toluene-d8	*86.4*	*70-130*			*%REC*	1	12/18/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**38**	**0.050**	**0**		**% of sample**	1	12/17/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I506S121312S004
Work Order:	1212554	**Collection Date:**	12/13/2012 4:25:00 PM
Project:	Marshall KRRI 1250I,1250L 12/13/12		
Lab ID:	1212554-08	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/19/2012**		Analyst: **CW**
DRO (C10-C20)	ND	18	4.0		mg/Kg-dry	1	12/19/2012
ORO (C20-C34)	**220**	**35**	**4.0**		**mg/Kg-dry**	1	12/19/2012
Surr: 4-Terphenyl-d14	*73.1*	*39-115*			*%REC*	1	12/19/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/19/2012**		Analyst: **CES**
Beryllium	ND	1.1	0.50		mg/Kg-dry	4	12/20/2012
Molybdenum	ND	2.8	1.0		mg/Kg-dry	4	12/20/2012
Nickel	**12**	**2.8**	**1.0**		**mg/Kg-dry**	4	12/20/2012
Vanadium	**15**	**2.8**	**1.0**		**mg/Kg-dry**	4	12/20/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/19/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/19/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/19/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/19/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/19/2012
Benzo(a)anthracene	ND	330	330		µg/Kg-dry	1	12/19/2012
Benzo(a)pyrene	**430**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Benzo(b)fluoranthene	**430**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Benzo(g,h,i)perylene	ND	330	330		µg/Kg-dry	1	12/19/2012
Benzo(k)fluoranthene	ND	330	330		µg/Kg-dry	1	12/19/2012
Chrysene	**390**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/19/2012
Fluoranthene	**520**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/19/2012
Indeno(1,2,3-cd)pyrene	ND	330	330		µg/Kg-dry	1	12/19/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/19/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/19/2012
Pyrene	**590**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Surr: 2,4,6-Tribromophenol	*56.1*	*34-140*			*%REC*	1	12/19/2012
Surr: 2-Fluorobiphenyl	*64.7*	*12-100*			*%REC*	1	12/19/2012
Surr: 2-Fluorophenol	*79.7*	*33-117*			*%REC*	1	12/19/2012
Surr: 4-Terphenyl-d14	*92.2*	*25-137*			*%REC*	1	12/19/2012
Surr: Nitrobenzene-d5	*74.0*	*37-107*			*%REC*	1	12/19/2012
Surr: Phenol-d6	*77.8*	*40-106*			*%REC*	1	12/19/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/17/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	130	100		µg/Kg-dry	1	12/18/2012
1,1,1-Trichloroethane	ND	130	50		µg/Kg-dry	1	12/18/2012
1,1,2,2-Tetrachloroethane	ND	130	50		µg/Kg-dry	1	12/18/2012
1,1,2-Trichloroethane	ND	130	50		µg/Kg-dry	1	12/18/2012
1,1-Dichloroethane	ND	130	50		µg/Kg-dry	1	12/18/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I506S121312S004
Work Order:	1212554	**Collection Date:**	12/13/2012 4:25:00 PM
Project:	Marshall KRRI 1250I,1250L 12/13/12		
Lab ID:	1212554-08	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	130	50		µg/Kg-dry	1	12/18/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,3-Trichloropropane	ND	130	100		µg/Kg-dry	1	12/18/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,4-Trimethylbenzene	ND	130	100		µg/Kg-dry	1	12/18/2012
1,2-Dibromo-3-chloropropane	ND	130	10		µg/Kg-dry	1	12/18/2012
1,2-Dibromoethane	ND	130	20		µg/Kg-dry	1	12/18/2012
1,2-Dichlorobenzene	ND	130	100		µg/Kg-dry	1	12/18/2012
1,2-Dichloroethane	ND	130	50		µg/Kg-dry	1	12/18/2012
1,2-Dichloropropane	ND	130	50		µg/Kg-dry	1	12/18/2012
1,3,5-Trimethylbenzene	ND	130	100		µg/Kg-dry	1	12/18/2012
1,3-Dichlorobenzene	ND	130	100		µg/Kg-dry	1	12/18/2012
1,4-Dichlorobenzene	ND	130	100		µg/Kg-dry	1	12/18/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/18/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
2-Methylnaphthalene	ND	430	330		µg/Kg-dry	1	12/18/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
Acetone	ND	1,100	1,000		µg/Kg-dry	1	12/18/2012
Acrylonitrile	ND	130	100		µg/Kg-dry	1	12/18/2012
Benzene	ND	130	50		µg/Kg-dry	1	12/18/2012
Bromobenzene	ND	130	100		µg/Kg-dry	1	12/18/2012
Bromochloromethane	ND	130	100		µg/Kg-dry	1	12/18/2012
Bromodichloromethane	ND	130	100		µg/Kg-dry	1	12/18/2012
Bromoform	ND	130	100		µg/Kg-dry	1	12/18/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/18/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/18/2012
Carbon tetrachloride	ND	130	50		µg/Kg-dry	1	12/18/2012
Chlorobenzene	ND	130	50		µg/Kg-dry	1	12/18/2012
Chloroethane	ND	430	250		µg/Kg-dry	1	12/18/2012
Chloroform	ND	130	50		µg/Kg-dry	1	12/18/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/18/2012
cis-1,2-Dichloroethene	ND	130	50		µg/Kg-dry	1	12/18/2012
cis-1,3-Dichloropropene	ND	130	50		µg/Kg-dry	1	12/18/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/18/2012
Dibromochloromethane	ND	130	100		µg/Kg-dry	1	12/18/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/18/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/18/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/18/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I506S121312S004
Work Order:	1212554	**Collection Date:**	12/13/2012 4:25:00 PM
Project:	Marshall KRRI 1250I,1250L 12/13/12		
Lab ID:	1212554-08	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	130	50		µg/Kg-dry	1	12/18/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/18/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
m,p-Xylene	ND	260	100		µg/Kg-dry	1	12/18/2012
Methyl iodide	ND	130	100		µg/Kg-dry	1	12/18/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012
Methylene chloride	ND	130	100		µg/Kg-dry	1	12/18/2012
Naphthalene	ND	430	330		µg/Kg-dry	1	12/18/2012
n-Butylbenzene	ND	130	50		µg/Kg-dry	1	12/18/2012
n-Propylbenzene	ND	130	100		µg/Kg-dry	1	12/18/2012
o-Xylene	ND	130	50		µg/Kg-dry	1	12/18/2012
p-Isopropyltoluene	ND	130	100		µg/Kg-dry	1	12/18/2012
sec-Butylbenzene	ND	130	50		µg/Kg-dry	1	12/18/2012
Styrene	ND	130	50		µg/Kg-dry	1	12/18/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
tert-Butylbenzene	ND	130	50		µg/Kg-dry	1	12/18/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/18/2012
Tetrachloroethene	ND	130	50		µg/Kg-dry	1	12/18/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/18/2012
Toluene	ND	130	100		µg/Kg-dry	1	12/18/2012
trans-1,2-Dichloroethene	ND	130	50		µg/Kg-dry	1	12/18/2012
trans-1,3-Dichloropropene	ND	130	50		µg/Kg-dry	1	12/18/2012
trans-1,4-Dichloro-2-butene	ND	130	50		µg/Kg-dry	1	12/18/2012
Trichloroethene	ND	130	50		µg/Kg-dry	1	12/18/2012
Trichlorofluoromethane	ND	130	100		µg/Kg-dry	1	12/18/2012
Vinyl chloride	ND	130	40		µg/Kg-dry	1	12/18/2012
Surr: 1,2-Dichloroethane-d4	*97.4*	*70-130*			*%REC*	1	12/18/2012
Surr: 4-Bromofluorobenzene	*95.0*	*70-130*			*%REC*	1	12/18/2012
Surr: Dibromofluoromethane	*91.9*	*70-130*			*%REC*	1	12/18/2012
Surr: Toluene-d8	*86.9*	*70-130*			*%REC*	1	12/18/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**46**	**0.050**	**0**		**% of sample**	1	12/17/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I506T121312MX
Work Order:	1212554	**Collection Date:**	12/13/2012
Project:	Marshall KRRI 1250I,1250L 12/13/12		
Lab ID:	1212554-09	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/17/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	100	100		µg/Kg	1	12/18/2012
1,1,1-Trichloroethane	ND	50	50		µg/Kg	1	12/18/2012
1,1,2,2-Tetrachloroethane	ND	50	50		µg/Kg	1	12/18/2012
1,1,2-Trichloroethane	ND	50	50		µg/Kg	1	12/18/2012
1,1-Dichloroethane	ND	50	50		µg/Kg	1	12/18/2012
1,1-Dichloroethene	ND	50	50		µg/Kg	1	12/18/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg	1	12/18/2012
1,2,3-Trichloropropane	ND	100	100		µg/Kg	1	12/18/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg	1	12/18/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg	1	12/18/2012
1,2,4-Trimethylbenzene	ND	100	100		µg/Kg	1	12/18/2012
1,2-Dibromo-3-chloropropane	ND	30	10		µg/Kg	1	12/18/2012
1,2-Dibromoethane	ND	30	20		µg/Kg	1	12/18/2012
1,2-Dichlorobenzene	ND	100	100		µg/Kg	1	12/18/2012
1,2-Dichloroethane	ND	50	50		µg/Kg	1	12/18/2012
1,2-Dichloropropane	ND	50	50		µg/Kg	1	12/18/2012
1,3,5-Trimethylbenzene	ND	100	100		µg/Kg	1	12/18/2012
1,3-Dichlorobenzene	ND	100	100		µg/Kg	1	12/18/2012
1,4-Dichlorobenzene	ND	100	100		µg/Kg	1	12/18/2012
2-Butanone	ND	750	750		µg/Kg	1	12/18/2012
2-Hexanone	ND	2,500	2,500		µg/Kg	1	12/18/2012
2-Methylnaphthalene	ND	330	330		µg/Kg	1	12/18/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg	1	12/18/2012
Acetone	ND	1,000	1,000		µg/Kg	1	12/18/2012
Acrylonitrile	ND	100	100		µg/Kg	1	12/18/2012
Benzene	ND	50	50		µg/Kg	1	12/18/2012
Bromobenzene	ND	100	100		µg/Kg	1	12/18/2012
Bromochloromethane	ND	100	100		µg/Kg	1	12/18/2012
Bromodichloromethane	ND	100	100		µg/Kg	1	12/18/2012
Bromoform	ND	100	100		µg/Kg	1	12/18/2012
Bromomethane	ND	200	200		µg/Kg	1	12/18/2012
Carbon disulfide	ND	250	250		µg/Kg	1	12/18/2012
Carbon tetrachloride	ND	50	50		µg/Kg	1	12/18/2012
Chlorobenzene	ND	50	50		µg/Kg	1	12/18/2012
Chloroethane	ND	250	250		µg/Kg	1	12/18/2012
Chloroform	ND	50	50		µg/Kg	1	12/18/2012
Chloromethane	ND	250	250		µg/Kg	1	12/18/2012
cis-1,2-Dichloroethene	ND	50	50		µg/Kg	1	12/18/2012
cis-1,3-Dichloropropene	ND	50	50		µg/Kg	1	12/18/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I506T121312MX
Work Order:	1212554	**Collection Date:**	12/13/2012
Project:	Marshall KRRI 1250I,1250L 12/13/12		
Lab ID:	1212554-09	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Cyclohexane	ND	500	500		µg/Kg	1	12/18/2012
Dibromochloromethane	ND	100	100		µg/Kg	1	12/18/2012
Dibromomethane	ND	250	250		µg/Kg	1	12/18/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg	1	12/18/2012
Diethyl ether	ND	200	200		µg/Kg	1	12/18/2012
Diisopropyl ether	ND	250	250		µg/Kg	1	12/18/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg	1	12/18/2012
Ethylbenzene	ND	50	50		µg/Kg	1	12/18/2012
Hexachloroethane	ND	300	300		µg/Kg	1	12/18/2012
Isopropylbenzene	ND	250	250		µg/Kg	1	12/18/2012
m,p-Xylene	ND	100	100		µg/Kg	1	12/18/2012
Methyl iodide	ND	100	100		µg/Kg	1	12/18/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg	1	12/18/2012
Methylene chloride	ND	100	100		µg/Kg	1	12/18/2012
Naphthalene	ND	330	330		µg/Kg	1	12/18/2012
n-Butylbenzene	ND	50	50		µg/Kg	1	12/18/2012
n-Propylbenzene	ND	100	100		µg/Kg	1	12/18/2012
o-Xylene	ND	50	50		µg/Kg	1	12/18/2012
p-Isopropyltoluene	ND	100	100		µg/Kg	1	12/18/2012
sec-Butylbenzene	ND	50	50		µg/Kg	1	12/18/2012
Styrene	ND	50	50		µg/Kg	1	12/18/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg	1	12/18/2012
tert-Butylbenzene	ND	50	50		µg/Kg	1	12/18/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg	1	12/18/2012
Tetrachloroethene	ND	50	50		µg/Kg	1	12/18/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg	1	12/18/2012
Toluene	ND	100	100		µg/Kg	1	12/18/2012
trans-1,2-Dichloroethene	ND	50	50		µg/Kg	1	12/18/2012
trans-1,3-Dichloropropene	ND	50	50		µg/Kg	1	12/18/2012
trans-1,4-Dichloro-2-butene	ND	50	50		µg/Kg	1	12/18/2012
Trichloroethene	ND	50	50		µg/Kg	1	12/18/2012
Trichlorofluoromethane	ND	100	100		µg/Kg	1	12/18/2012
Vinyl chloride	ND	40	40		µg/Kg	1	12/18/2012
Surr: 1,2-Dichloroethane-d4	*99.4*	*70-130*			*%REC*	1	12/18/2012
Surr: 4-Bromofluorobenzene	*97.8*	*70-130*			*%REC*	1	12/18/2012
Surr: Dibromofluoromethane	*92.9*	*70-130*			*%REC*	1	12/18/2012
Surr: Toluene-d8	*83.8*	*70-130*			*%REC*	1	12/18/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250L506S121312S005
Work Order:	1212554	**Collection Date:**	12/13/2012 9:38:00 AM
Project:	Marshall KRRI 1250I,1250L 12/13/12		
Lab ID:	1212554-10	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/18/2012**		Analyst: **CW**
DRO (C10-C20)	ND	22	4.0		mg/Kg-dry	1	12/19/2012
ORO (C20-C34)	**160**	**44**	**4.0**		**mg/Kg-dry**	1	12/19/2012
Surr: 4-Terphenyl-d14	*80.2*	*39-115*			*%REC*	1	12/19/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/19/2012**		Analyst: **CES**
Beryllium	ND	1.3	0.50		mg/Kg-dry	4	12/20/2012
Molybdenum	ND	3.2	1.0		mg/Kg-dry	4	12/20/2012
Nickel	**21**	**3.2**	**1.0**		**mg/Kg-dry**	4	12/20/2012
Vanadium	**39**	**3.2**	**1.0**		**mg/Kg-dry**	4	12/20/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/18/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/19/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/19/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/19/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/19/2012
Benzo(a)anthracene	**350**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Benzo(a)pyrene	**470**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Benzo(b)fluoranthene	**440**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Benzo(g,h,i)perylene	**330**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Benzo(k)fluoranthene	ND	330	330		µg/Kg-dry	1	12/19/2012
Chrysene	**360**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/19/2012
Fluoranthene	**380**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/19/2012
Indeno(1,2,3-cd)pyrene	ND	330	330		µg/Kg-dry	1	12/19/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/19/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/19/2012
Pyrene	**580**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Surr: 2,4,6-Tribromophenol	*52.6*	*34-140*			*%REC*	1	12/19/2012
Surr: 2-Fluorobiphenyl	*62.8*	*12-100*			*%REC*	1	12/19/2012
Surr: 2-Fluorophenol	*80.4*	*33-117*			*%REC*	1	12/19/2012
Surr: 4-Terphenyl-d14	*100*	*25-137*			*%REC*	1	12/19/2012
Surr: Nitrobenzene-d5	*74.8*	*37-107*			*%REC*	1	12/19/2012
Surr: Phenol-d6	*81.6*	*40-106*			*%REC*	1	12/19/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/17/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	230	100		µg/Kg-dry	1	12/18/2012
1,1,1-Trichloroethane	ND	230	50		µg/Kg-dry	1	12/18/2012
1,1,2,2-Tetrachloroethane	ND	230	50		µg/Kg-dry	1	12/18/2012
1,1,2-Trichloroethane	ND	230	50		µg/Kg-dry	1	12/18/2012
1,1-Dichloroethane	ND	230	50		µg/Kg-dry	1	12/18/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250L506S121312S005
Work Order:	1212554	**Collection Date:**	12/13/2012 9:38:00 AM
Project:	Marshall KRRI 1250I,1250L 12/13/12		
Lab ID:	1212554-10	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	230	50		µg/Kg-dry	1	12/18/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,3-Trichloropropane	ND	230	100		µg/Kg-dry	1	12/18/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,4-Trimethylbenzene	ND	230	100		µg/Kg-dry	1	12/18/2012
1,2-Dibromo-3-chloropropane	ND	230	10		µg/Kg-dry	1	12/18/2012
1,2-Dibromoethane	ND	230	20		µg/Kg-dry	1	12/18/2012
1,2-Dichlorobenzene	ND	230	100		µg/Kg-dry	1	12/18/2012
1,2-Dichloroethane	ND	230	50		µg/Kg-dry	1	12/18/2012
1,2-Dichloropropane	ND	230	50		µg/Kg-dry	1	12/18/2012
1,3,5-Trimethylbenzene	ND	230	100		µg/Kg-dry	1	12/18/2012
1,3-Dichlorobenzene	ND	230	100		µg/Kg-dry	1	12/18/2012
1,4-Dichlorobenzene	ND	230	100		µg/Kg-dry	1	12/18/2012
2-Butanone	ND	760	750		µg/Kg-dry	1	12/18/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
2-Methylnaphthalene	ND	760	330		µg/Kg-dry	1	12/18/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
Acetone	ND	1,900	1,000		µg/Kg-dry	1	12/18/2012
Acrylonitrile	ND	230	100		µg/Kg-dry	1	12/18/2012
Benzene	ND	230	50		µg/Kg-dry	1	12/18/2012
Bromobenzene	ND	230	100		µg/Kg-dry	1	12/18/2012
Bromochloromethane	ND	230	100		µg/Kg-dry	1	12/18/2012
Bromodichloromethane	ND	230	100		µg/Kg-dry	1	12/18/2012
Bromoform	ND	230	100		µg/Kg-dry	1	12/18/2012
Bromomethane	ND	230	200		µg/Kg-dry	1	12/18/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/18/2012
Carbon tetrachloride	ND	230	50		µg/Kg-dry	1	12/18/2012
Chlorobenzene	ND	230	50		µg/Kg-dry	1	12/18/2012
Chloroethane	ND	760	250		µg/Kg-dry	1	12/18/2012
Chloroform	ND	230	50		µg/Kg-dry	1	12/18/2012
Chloromethane	ND	380	250		µg/Kg-dry	1	12/18/2012
cis-1,2-Dichloroethene	ND	230	50		µg/Kg-dry	1	12/18/2012
cis-1,3-Dichloropropene	ND	230	50		µg/Kg-dry	1	12/18/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/18/2012
Dibromochloromethane	ND	230	100		µg/Kg-dry	1	12/18/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/18/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/18/2012
Diethyl ether	ND	230	200		µg/Kg-dry	1	12/18/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250L506S121312S005
Work Order:	1212554	**Collection Date:**	12/13/2012 9:38:00 AM
Project:	Marshall KRRI 1250I,1250L 12/13/12		
Lab ID:	1212554-10	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	230	50		µg/Kg-dry	1	12/18/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/18/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
m,p-Xylene	ND	460	100		µg/Kg-dry	1	12/18/2012
Methyl iodide	ND	230	100		µg/Kg-dry	1	12/18/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012
Methylene chloride	ND	760	100		µg/Kg-dry	1	12/18/2012
Naphthalene	ND	760	330		µg/Kg-dry	1	12/18/2012
n-Butylbenzene	ND	230	50		µg/Kg-dry	1	12/18/2012
n-Propylbenzene	ND	230	100		µg/Kg-dry	1	12/18/2012
o-Xylene	ND	230	50		µg/Kg-dry	1	12/18/2012
p-Isopropyltoluene	ND	230	100		µg/Kg-dry	1	12/18/2012
sec-Butylbenzene	ND	230	50		µg/Kg-dry	1	12/18/2012
Styrene	ND	230	50		µg/Kg-dry	1	12/18/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
tert-Butylbenzene	ND	230	50		µg/Kg-dry	1	12/18/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/18/2012
Tetrachloroethene	ND	230	50		µg/Kg-dry	1	12/18/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/18/2012
Toluene	ND	230	100		µg/Kg-dry	1	12/18/2012
trans-1,2-Dichloroethene	ND	230	50		µg/Kg-dry	1	12/18/2012
trans-1,3-Dichloropropene	ND	230	50		µg/Kg-dry	1	12/18/2012
trans-1,4-Dichloro-2-butene	ND	230	50		µg/Kg-dry	1	12/18/2012
Trichloroethene	ND	230	50		µg/Kg-dry	1	12/18/2012
Trichlorofluoromethane	ND	230	100		µg/Kg-dry	1	12/18/2012
Vinyl chloride	ND	230	40		µg/Kg-dry	1	12/18/2012
Surr: 1,2-Dichloroethane-d4	*96.5*	*70-130*			*%REC*	1	12/18/2012
Surr: 4-Bromofluorobenzene	*98.9*	*70-130*			*%REC*	1	12/18/2012
Surr: Dibromofluoromethane	*96.6*	*70-130*			*%REC*	1	12/18/2012
Surr: Toluene-d8	*84.2*	*70-130*			*%REC*	1	12/18/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**55**	**0.050**	**0**		**% of sample**	1	12/17/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 22-Dec-12

Client: AECOM Environment

QC BATCH REPORT

Work Order: 1212554

Project: Marshall KRRI 1250I,1250L 12/13/12

Batch ID: **45463** Instrument ID **GC8** Method: **SW8015M**

MBLK Sample ID: **DBLKS1-45463-45463** Units: **mg/Kg** Analysis Date: **12/18/2012 06:33 PM**

Client ID: Run ID: **GC8_121218A** SeqNo: **2174202** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	ND	10								
ORO (C20-C34)	ND	20								
Surr: 4-Terphenyl-d14	*3.615*	0	*5*	0	*72.3*	*39-115*	0			

LCS Sample ID: **DLCSS1-45463-45463** Units: **mg/Kg** Analysis Date: **12/18/2012 06:58 PM**

Client ID: Run ID: **GC8_121218A** SeqNo: **2174203** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	352.1	10	500	0	70.4	49-124	0			
ORO (C20-C34)	352.7	20	500	0	70.5	60-130	0			
Surr: 4-Terphenyl-d14	*4.074*	0	*5*	0	*81.5*	*39-115*	0			

MS Sample ID: **1212554-03B MS** Units: **mg/Kg** Analysis Date: **12/18/2012 07:23 PM**

Client ID: **SBKR1250I502S121312S017** Run ID: **GC8_121218A** SeqNo: **2174204** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	345.2	9.9	495.8	0	69.6	60-130	0			
ORO (C20-C34)	347.3	20	495.8	48.57	60.2	60-130	0			
Surr: 4-Terphenyl-d14	*3.904*	0	*4.958*	0	*78.7*	*39-115*	0			

MSD Sample ID: **1212554-03B MSD** Units: **mg/Kg** Analysis Date: **12/18/2012 07:49 PM**

Client ID: **SBKR1250I502S121312S017** Run ID: **GC8_121218A** SeqNo: **2174205** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	330	9.2	460.7	0	71.6	60-130	345.2	4.52	30	
ORO (C20-C34)	369.4	18	460.7	48.57	69.6	60-130	347.3	6.17	30	
Surr: 4-Terphenyl-d14	*3.796*	0	*4.607*	0	*82.4*	*39-115*	3.904	*2.81*	*30*	

The following samples were analyzed in this batch:

1212554-01B	1212554-02B	1212554-03B
1212554-04B	1212554-05B	1212554-06B
1212554-07B	1212554-10B	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212554
Project: Marshall KRRI 1250I,1250L 12/13/12

QC BATCH REPORT

Batch ID: **45463A** Instrument ID **GC8** Method: **SW8015M**

MBLK Sample ID: **DBLKS1-45463-45463A** Units: **mg/Kg** Analysis Date: **12/18/2012 06:33 PM**
Client ID: Run ID: **GC8_121218A** SeqNo: **2173873** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	ND	10								
Surr: 4-Terphenyl-d14	*4.107*	0	*5*	0	*82.1*	*39-115*	0			

LCS Sample ID: **DLCSS1-45463-45463A** Units: **mg/Kg** Analysis Date: **12/18/2012 06:58 PM**
Client ID: Run ID: **GC8_121218A** SeqNo: **2173874** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	349.1	10	500	0	69.8	49-124	0			
Surr: 4-Terphenyl-d14	*4.638*	0	*5*	0	*92.8*	*39-115*	0			

MS Sample ID: **1212554-03B MS** Units: **mg/Kg** Analysis Date: **12/18/2012 07:23 PM**
Client ID: **SBKR1250I502S121312S017** Run ID: **GC8_121218A** SeqNo: **2173875** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	327.9	9.9	495.8	0	66.1	60-130	0			
Surr: 4-Terphenyl-d14	*4.457*	0	*4.958*	0	*89.9*	*39-115*	0			

MSD Sample ID: **1212554-03B MSD** Units: **mg/Kg** Analysis Date: **12/18/2012 07:49 PM**
Client ID: **SBKR1250I502S121312S017** Run ID: **GC8_121218A** SeqNo: **2173876** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	319.8	9.2	460.7	0	69.4	60-130	327.9	2.5	30	
Surr: 4-Terphenyl-d14	*4.334*	0	*4.607*	0	*94.1*	*39-115*	4.457	*2.79*	*30*	

The following samples were analyzed in this batch: 1212554-03B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212554
Project: Marshall KRRI 1250I,1250L 12/13/12

QC BATCH REPORT

Batch ID: **45493** Instrument ID **GC8** Method: **SW8015M**

MBLK Sample ID: **DBLKS1-45493-45493** Units: **mg/Kg** Analysis Date: **12/19/2012 04:14 PM**
Client ID: Run ID: **GC8_121219A** SeqNo: **2175231** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	ND	10								
ORO (C20-C34)	ND	20								
Surr: 4-Terphenyl-d14	*3.782*	0	*5*	0	*75.6*	*39-115*	0			

LCS Sample ID: **DLCSS1-45493-45493** Units: **mg/Kg** Analysis Date: **12/19/2012 04:39 PM**
Client ID: Run ID: **GC8_121219A** SeqNo: **2175236** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	331.1	10	500	0	66.2	49-124	0			
ORO (C20-C34)	311.7	20	500	0	62.3	60-130	0			
Surr: 4-Terphenyl-d14	*4.128*	0	*5*	0	*82.6*	*39-115*	0			

MS Sample ID: **1212554-08B MS** Units: **mg/Kg** Analysis Date: **12/19/2012 05:05 PM**
Client ID: **SBKR1250I506S121312S004** Run ID: **GC8_121219A** SeqNo: **2175237** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	299.8	9.4	470.4	0.6337	63.6	60-130	0			
ORO (C20-C34)	389.3	19	470.4	117.4	57.8	60-130	0			S
Surr: 4-Terphenyl-d14	*3.693*	0	*4.704*	0	*78.5*	*39-115*	0			

MSD Sample ID: **1212554-08B MSD** Units: **mg/Kg** Analysis Date: **12/19/2012 05:30 PM**
Client ID: **SBKR1250I506S121312S004** Run ID: **GC8_121219A** SeqNo: **2175238** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	315.1	9.6	480.6	0.6337	65.4	60-130	299.8	4.98	30	
ORO (C20-C34)	419	19	480.6	117.4	62.8	60-130	389.3	7.34	30	
Surr: 4-Terphenyl-d14	*4.012*	0	*4.806*	0	*83.5*	*39-115*	3.693	*8.28*	*30*	

The following samples were analyzed in this batch: 1212554-08B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212554
Project: Marshall KRRI 1250I,1250L 12/13/12

QC BATCH REPORT

Batch ID: **45510** Instrument ID **ICPMS1** Method: **SW6020A**

MBLK Sample ID: **MBLK-45510-45510** Units: **mg/Kg** Analysis Date: **12/20/2012 09:01 PM**
Client ID: Run ID: **ICPMS1_121220A** SeqNo: **2176111** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	ND	0.10								
Molybdenum	ND	0.25								
Nickel	ND	0.25								
Vanadium	ND	0.25								

LCS Sample ID: **LCS-45510-45510** Units: **mg/Kg** Analysis Date: **12/20/2012 09:07 PM**
Client ID: Run ID: **ICPMS1_121220A** SeqNo: **2176114** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	4.89	0.10	5	0	97.8	80-120	0			
Molybdenum	4.969	0.25	5	0	99.4	80-120	0			
Nickel	5.345	0.25	5	0	107	80-120	0			
Vanadium	5.54	0.25	5	0	111	80-120	0			

MS Sample ID: **1212554-08BMS** Units: **mg/Kg** Analysis Date: **12/20/2012 06:30 AM**
Client ID: **SBKR1250I506S121312S004** Run ID: **ICPMS1_121219A** SeqNo: **2174894** Prep Date: **12/19/2012** DF: **4**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	7.262	0.58	7.289	0.1995	96.9	75-125	0			
Molybdenum	7.723	1.5	7.289	0.4445	99.9	75-125	0			
Nickel	14.3	1.5	7.289	6.602	106	75-125	0			
Vanadium	17.87	1.5	7.289	8.354	131	75-125	0			S

MSD Sample ID: **1212554-08BMSD** Units: **mg/Kg** Analysis Date: **12/20/2012 06:36 AM**
Client ID: **SBKR1250I506S121312S004** Run ID: **ICPMS1_121219A** SeqNo: **2174895** Prep Date: **12/19/2012** DF: **4**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	7.59	0.61	7.599	0.1995	97.3	75-125	7.262	4.41	25	
Molybdenum	8.131	1.5	7.599	0.4445	101	75-125	7.723	5.14	25	
Nickel	14.78	1.5	7.599	6.602	108	75-125	14.3	3.33	25	
Vanadium	18.55	1.5	7.599	8.354	134	75-125	17.87	3.73	25	S

The following samples were analyzed in this batch:

1212554-01B	1212554-02B	1212554-03B
1212554-04B	1212554-05B	1212554-06B
1212554-07B	1212554-08B	1212554-10B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212554
Project: Marshall KRRI 1250I,1250L 12/13/12

QC BATCH REPORT

Batch ID: **45462** Instrument ID **SVMS5** Method: **SW8270**

MBLK Sample ID: **SBLKS1-45462-45462** Units: **µg/Kg** Analysis Date: **12/19/2012 11:50 AM**
Client ID: Run ID: **SVMS5_121219A** SeqNo: **2174221** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	ND	50								
Acenaphthylene	ND	50								
Anthracene	ND	50								
Benzo(a)anthracene	ND	50								
Benzo(a)pyrene	ND	50								
Benzo(b)fluoranthene	ND	50								
Benzo(g,h,i)perylene	ND	50								
Benzo(k)fluoranthene	ND	50								
Chrysene	ND	50								
Dibenzo(a,h)anthracene	ND	50								
Fluoranthene	ND	50								
Fluorene	ND	50								
Indeno(1,2,3-cd)pyrene	ND	50								
Naphthalene	ND	50								
Phenanthrene	ND	50								
Pyrene	ND	50								
Surr: 2,4,6-Tribromophenol	*3885*	0	*5000*	0	*77.7*	*34-140*	0			
Surr: 2-Fluorobiphenyl	*4018*	0	*5000*	0	*80.4*	*12-100*	0			
Surr: 2-Fluorophenol	*4747*	0	*5000*	0	*94.9*	*33-117*	0			
Surr: 4-Terphenyl-d14	*4961*	0	*5000*	0	*99.2*	*25-137*	0			
Surr: Nitrobenzene-d5	*4224*	0	*5000*	0	*84.5*	*37-107*	0			
Surr: Phenol-d6	*4050*	0	*5000*	0	*81*	*40-106*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212554
Project: Marshall KRRI 1250I,1250L 12/13/12

QC BATCH REPORT

Batch ID: **45462** Instrument ID **SVMS5** Method: **SW8270**

LCS Sample ID: **SLCSS1-45462-45462** Units: **µg/Kg** Analysis Date: **12/19/2012 09:32 AM**
Client ID: Run ID: **SVMS5_121219A** SeqNo: **2174214** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1511	50	2000	0	75.6	45-110	0			
Acenaphthylene	1557	50	2000	0	77.8	45-105	0			
Anthracene	1729	50	2000	0	86.4	55-105	0			
Benzo(a)anthracene	1699	50	2000	0	85	50-110	0			
Benzo(a)pyrene	1673	50	2000	0	83.6	50-110	0			
Benzo(b)fluoranthene	1655	50	2000	0	82.8	45-115	0			
Benzo(g,h,i)perylene	1692	50	2000	0	84.6	40-125	0			
Benzo(k)fluoranthene	1776	50	2000	0	88.8	45-115	0			
Chrysene	1889	50	2000	0	94.4	55-110	0			
Dibenzo(a,h)anthracene	1613	50	2000	0	80.6	40-125	0			
Fluoranthene	1827	50	2000	0	91.4	55-115	0			
Fluorene	1587	50	2000	0	79.4	50-110	0			
Indeno(1,2,3-cd)pyrene	1652	50	2000	0	82.6	40-120	0			
Naphthalene	1481	50	2000	0	74	40-105	0			
Phenanthrene	1666	50	2000	0	83.3	50-110	0			
Pyrene	1728	50	2000	0	86.4	45-125	0			
Surr: 2,4,6-Tribromophenol	*4386*	0	*5000*	0	*87.7*	*34-140*	0			
Surr: 2-Fluorobiphenyl	*3640*	0	*5000*	0	*72.8*	*12-100*	0			
Surr: 2-Fluorophenol	*4207*	0	*5000*	0	*84.1*	*33-117*	0			
Surr: 4-Terphenyl-d14	*4668*	0	*5000*	0	*93.4*	*25-137*	0			
Surr: Nitrobenzene-d5	*3753*	0	*5000*	0	*75.1*	*37-107*	0			
Surr: Phenol-d6	*3491*	0	*5000*	0	*69.8*	*40-106*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212554
Project: Marshall KRRI 1250I,1250L 12/13/12

QC BATCH REPORT

Batch ID: **45462** Instrument ID **SVMS5** Method: **SW8270**

MS Sample ID: **1212467-31B MS** Units: **µg/Kg** Analysis Date: **12/19/2012 10:49 AM**
Client ID: Run ID: **SVMS5_121219A** SeqNo: **2174217** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1531	49	1945	0	78.7	45-110	0			
Acenaphthylene	1588	49	1945	0	81.6	45-105	0			
Anthracene	1708	49	1945	0	87.8	55-105	0			
Benzo(a)anthracene	1684	49	1945	0	86.6	50-110	0			
Benzo(a)pyrene	1655	49	1945	0	85.1	50-110	0			
Benzo(b)fluoranthene	1657	49	1945	0	85.2	45-115	0			
Benzo(g,h,i)perylene	1502	49	1945	0	77.2	40-125	0			
Benzo(k)fluoranthene	1773	49	1945	0	91.2	45-115	0			
Chrysene	1831	49	1945	0	94.2	55-110	0			
Dibenzo(a,h)anthracene	1523	49	1945	0	78.3	40-125	0			
Fluoranthene	1769	49	1945	0	91	55-115	0			
Fluorene	1667	49	1945	0	85.7	50-110	0			
Indeno(1,2,3-cd)pyrene	1512	49	1945	0	77.8	40-120	0			
Naphthalene	1507	49	1945	0	77.5	40-105	0			
Phenanthrene	1667	49	1945	0	85.7	50-110	0			
Pyrene	1699	49	1945	0	87.4	45-125	0			
Surr: 2,4,6-Tribromophenol	*4610*	0	*4863*	0	*94.8*	*34-140*	0			
Surr: 2-Fluorobiphenyl	*3617*	0	*4863*	0	*74.4*	*12-100*	0			
Surr: 2-Fluorophenol	*4358*	0	*4863*	0	*89.6*	*33-117*	0			
Surr: 4-Terphenyl-d14	*4636*	0	*4863*	0	*95.3*	*25-137*	0			
Surr: Nitrobenzene-d5	*3658*	0	*4863*	0	*75.2*	*37-107*	0			
Surr: Phenol-d6	*3564*	0	*4863*	0	*73.3*	*40-106*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212554
Project: Marshall KRRI 1250I,1250L 12/13/12

QC BATCH REPORT

Batch ID: **45462** Instrument ID **SVMS5** Method: **SW8270**

MSD Sample ID: **1212467-31B MSD** Units: **µg/Kg** Analysis Date: **12/19/2012 10:19 AM**
Client ID: Run ID: **SVMS5_121219A** SeqNo: **2174215** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1473	49	1950	0	75.6	45-110	1531	3.82	30	
Acenaphthylene	1531	49	1950	0	78.5	45-105	1588	3.67	30	
Anthracene	1707	49	1950	0	87.6	55-105	1708	0.0222	30	
Benzo(a)anthracene	1631	49	1950	0	83.6	50-110	1684	3.2	30	
Benzo(a)pyrene	1644	49	1950	0	84.3	50-110	1655	0.682	30	
Benzo(b)fluoranthene	1697	49	1950	0	87	45-115	1657	2.35	30	
Benzo(g,h,i)perylene	1620	49	1950	0	83	40-125	1502	7.56	30	
Benzo(k)fluoranthene	1646	49	1950	0	84.4	45-115	1773	7.43	30	
Chrysene	1786	49	1950	0	91.6	55-110	1831	2.48	30	
Dibenzo(a,h)anthracene	1557	49	1950	0	79.8	40-125	1523	2.22	30	
Fluoranthene	1775	49	1950	0	91	55-115	1769	0.318	30	
Fluorene	1608	49	1950	0	82.4	50-110	1667	3.6	30	
Indeno(1,2,3-cd)pyrene	1570	49	1950	0	80.5	40-120	1512	3.74	30	
Naphthalene	1448	49	1950	0	74.2	40-105	1507	4.02	30	
Phenanthrene	1645	49	1950	0	84.4	50-110	1667	1.32	30	
Pyrene	1659	49	1950	0	85	45-125	1699	2.41	30	
Surr: 2,4,6-Tribromophenol	*4507*	0	*4876*	0	*92.4*	*34-140*	4610	*2.26*	*40*	
Surr: 2-Fluorobiphenyl	*3494*	0	*4876*	0	*71.7*	*12-100*	3617	*3.46*	*40*	
Surr: 2-Fluorophenol	*4093*	0	*4876*	0	*83.9*	*33-117*	4358	*6.28*	*40*	
Surr: 4-Terphenyl-d14	*4459*	0	*4876*	0	*91.5*	*25-137*	4636	*3.89*	*40*	
Surr: Nitrobenzene-d5	*3510*	0	*4876*	0	*72*	*37-107*	3658	*4.14*	*40*	
Surr: Phenol-d6	*3352*	0	*4876*	0	*68.7*	*40-106*	3564	*6.13*	*40*	

The following samples were analyzed in this batch:

1212554-01B	1212554-02B	1212554-03B
1212554-04B	1212554-05B	1212554-06B
1212554-07B	1212554-10B	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45492** Instrument ID **SVMS6** Method: **SW8270**

MBLK Sample ID: **SBLKS1-45492-45492** Units: **µg/Kg** Analysis Date: **12/19/2012 06:23 PM**
Client ID: Run ID: **SVMS6_121219A** SeqNo: **2174818** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	ND	50								
Acenaphthene	ND	50								
Acenaphthylene	ND	50								
Anthracene	ND	50								
Benzo(a)anthracene	ND	50								
Benzo(a)pyrene	ND	50								
Benzo(b)fluoranthene	ND	50								
Benzo(g,h,i)perylene	ND	50								
Benzo(k)fluoranthene	ND	50								
Chrysene	ND	50								
Dibenzo(a,h)anthracene	ND	50								
Fluoranthene	ND	50								
Fluorene	ND	50								
Indeno(1,2,3-cd)pyrene	ND	50								
Naphthalene	ND	50								
Phenanthrene	ND	50								
Pyrene	ND	50								
Surr: 2,4,6-Tribromophenol	*2545*	0	*5000*	0	*50.9*	*34-140*	0			
Surr: 2-Fluorobiphenyl	*3742*	0	*5000*	0	*74.8*	*12-100*	0			
Surr: 2-Fluorophenol	*5001*	0	*5000*	0	*100*	*33-117*	0			
Surr: 4-Terphenyl-d14	*5026*	0	*5000*	0	*101*	*25-137*	0			
Surr: Nitrobenzene-d5	*4592*	0	*5000*	0	*91.8*	*37-107*	0			
Surr: Phenol-d6	*4817*	0	*5000*	0	*96.3*	*40-106*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212554
Project: Marshall KRRI 1250I,1250L 12/13/12

QC BATCH REPORT

Batch ID: **45492** Instrument ID **SVMS6** Method: **SW8270**

LCS Sample ID: **SLCSS1-45492-45492** Units: **µg/Kg** Analysis Date: **12/19/2012 05:41 PM**
Client ID: Run ID: **SVMS6_121219A** SeqNo: **2174814** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	1582	50	2000	0	79.1	45-105	0			
Acenaphthene	1657	50	2000	0	82.8	45-110	0			
Acenaphthylene	1756	50	2000	0	87.8	45-105	0			
Anthracene	1882	50	2000	0	94.1	55-105	0			
Benzo(a)anthracene	1918	50	2000	0	95.9	50-110	0			
Benzo(a)pyrene	2105	50	2000	0	105	50-110	0			
Benzo(b)fluoranthene	1815	50	2000	0	90.8	45-115	0			
Benzo(g,h,i)perylene	1972	50	2000	0	98.6	40-125	0			
Benzo(k)fluoranthene	2275	50	2000	0	114	45-115	0			
Chrysene	2048	50	2000	0	102	55-110	0			
Dibenzo(a,h)anthracene	2008	50	2000	0	100	40-125	0			
Fluoranthene	1898	50	2000	0	94.9	55-115	0			
Fluorene	1644	50	2000	0	82.2	50-110	0			
Indeno(1,2,3-cd)pyrene	2003	50	2000	0	100	40-120	0			
Naphthalene	1618	50	2000	0	80.9	40-105	0			
Phenanthrene	1824	50	2000	0	91.2	50-110	0			
Pyrene	2095	50	2000	0	105	45-125	0			
Surr: 2,4,6-Tribromophenol	*2919*	0	*5000*	0	*58.4*	*34-140*	0			
Surr: 2-Fluorobiphenyl	*3482*	0	*5000*	0	*69.6*	*12-100*	0			
Surr: 2-Fluorophenol	*4514*	0	*5000*	0	*90.3*	*33-117*	0			
Surr: 4-Terphenyl-d14	*5058*	0	*5000*	0	*101*	*25-137*	0			
Surr: Nitrobenzene-d5	*4299*	0	*5000*	0	*86*	*37-107*	0			
Surr: Phenol-d6	*4397*	0	*5000*	0	*87.9*	*40-106*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212554
Project: Marshall KRRI 1250I,1250L 12/13/12

QC BATCH REPORT

Batch ID: **45492** Instrument ID **SVMS6** Method: **SW8270**

MS Sample ID: **1212554-08B MS** Units: **µg/Kg** Analysis Date: **12/19/2012 06:07 PM**
Client ID: **SBKR1250I506S121312S004** Run ID: **SVMS6_121219A** SeqNo: **2174815** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	1380	47	1869	0	73.8	45-105	0			
Acenaphthene	1584	47	1869	0	84.8	45-110	0			
Acenaphthylene	1666	47	1869	0	89.2	45-105	0			
Anthracene	1769	47	1869	0	94.6	55-105	0			
Benzo(a)anthracene	1933	47	1869	171.6	94.3	50-110	0			
Benzo(a)pyrene	2096	47	1869	230.1	99.8	50-110	0			
Benzo(b)fluoranthene	2052	47	1869	233	97.3	45-115	0			
Benzo(g,h,i)perylene	1577	47	1869	122.7	77.8	40-125	0			
Benzo(k)fluoranthene	2123	47	1869	165.9	105	45-115	0			
Chrysene	1952	47	1869	212.8	93.1	55-110	0			
Dibenzo(a,h)anthracene	1587	47	1869	0	84.9	40-125	0			
Fluoranthene	1986	47	1869	283.8	91.1	55-115	0			
Fluorene	1593	47	1869	0	85.2	50-110	0			
Indeno(1,2,3-cd)pyrene	1692	47	1869	92.99	85.6	40-120	0			
Naphthalene	1335	47	1869	0	71.4	40-105	0			
Phenanthrene	1821	47	1869	106.4	91.8	50-110	0			
Pyrene	2187	47	1869	321.2	99.8	45-125	0			
Surr: 2,4,6-Tribromophenol	*2851*	0	*4672*	0	*61*	*34-140*	0			
Surr: 2-Fluorobiphenyl	*3136*	0	*4672*	0	*67.1*	*12-100*	0			
Surr: 2-Fluorophenol	*3510*	0	*4672*	0	*75.1*	*33-117*	0			
Surr: 4-Terphenyl-d14	*4491*	0	*4672*	0	*96.1*	*25-137*	0			
Surr: Nitrobenzene-d5	*3233*	0	*4672*	0	*69.2*	*37-107*	0			
Surr: Phenol-d6	*3606*	0	*4672*	0	*77.2*	*40-106*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212554
Project: Marshall KRRI 1250I,1250L 12/13/12

QC BATCH REPORT

Batch ID: **45492** Instrument ID **SVMS6** Method: **SW8270**

MSD Sample ID: **1212554-08B MSD** Units: **µg/Kg** Analysis Date: **12/19/2012 05:32 PM**
Client ID: **SBKR1250I506S121312S004** Run ID: **SVMS6_121219A** SeqNo: **2174816** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	1274	48	1908	0	66.8	45-105	1380	8.03	30	
Acenaphthene	1510	48	1908	0	79.2	45-110	1584	4.76	30	
Acenaphthylene	1577	48	1908	0	82.6	45-105	1666	5.49	30	
Anthracene	1692	48	1908	0	88.7	55-105	1769	4.41	30	
Benzo(a)anthracene	1643	48	1908	171.6	77.1	50-110	1933	16.2	30	
Benzo(a)pyrene	1968	48	1908	230.1	91.1	50-110	2096	6.29	30	
Benzo(b)fluoranthene	2052	48	1908	233	95.3	45-115	2052	0.00665	30	
Benzo(g,h,i)perylene	1296	48	1908	122.7	61.5	40-125	1577	19.6	30	
Benzo(k)fluoranthene	2011	48	1908	165.9	96.7	45-115	2123	5.41	30	
Chrysene	1917	48	1908	212.8	89.3	55-110	1952	1.83	30	
Dibenzo(a,h)anthracene	1382	48	1908	0	72.4	40-125	1587	13.8	30	
Fluoranthene	1900	48	1908	283.8	84.7	55-115	1986	4.39	30	
Fluorene	1524	48	1908	0	79.8	50-110	1593	4.47	30	
Indeno(1,2,3-cd)pyrene	1465	48	1908	92.99	71.9	40-120	1692	14.4	30	
Naphthalene	1270	48	1908	0	66.6	40-105	1335	5.03	30	
Phenanthrene	1736	48	1908	106.4	85.4	50-110	1821	4.77	30	
Pyrene	2083	48	1908	321.2	92.3	45-125	2187	4.87	30	
Surr: 2,4,6-Tribromophenol	*2698*	0	*4770*	0	*56.6*	*34-140*	2851	*5.51*	*40*	
Surr: 2-Fluorobiphenyl	*2861*	0	*4770*	0	*60*	*12-100*	3136	*9.16*	*40*	
Surr: 2-Fluorophenol	*3518*	0	*4770*	0	*73.8*	*33-117*	3510	*0.25*	*40*	
Surr: 4-Terphenyl-d14	*4187*	0	*4770*	0	*87.8*	*25-137*	4491	*7*	*40*	
Surr: Nitrobenzene-d5	*3312*	0	*4770*	0	*69.4*	*37-107*	3233	*2.42*	*40*	
Surr: Phenol-d6	*3295*	0	*4770*	0	*69.1*	*40-106*	3606	*9*	*40*	

The following samples were analyzed in this batch: 1212554-08B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212554
Project: Marshall KRRI 1250I,1250L 12/13/12

QC BATCH REPORT

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

MBLK Sample ID: **MBLK-45473-45473** Units: **µg/Kg** Analysis Date: **12/17/2012 04:43 PM**
Client ID: Run ID: **VMS5_121217A** SeqNo: **2172236** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	30								
1,1,1-Trichloroethane	ND	30								
1,1,2,2-Tetrachloroethane	ND	30								
1,1,2-Trichloroethane	ND	30								
1,1-Dichloroethane	ND	30								
1,1-Dichloroethene	ND	30								
1,2,3-Trichlorobenzene	ND	30								
1,2,3-Trichloropropane	ND	30								
1,2,3-Trimethylbenzene	ND	30								
1,2,4-Trichlorobenzene	ND	30								
1,2,4-Trimethylbenzene	ND	30								
1,2-Dibromo-3-chloropropane	ND	30								
1,2-Dibromoethane	ND	30								
1,2-Dichlorobenzene	ND	30								
1,2-Dichloroethane	ND	30								
1,2-Dichloropropane	ND	30								
1,3,5-Trimethylbenzene	ND	30								
1,3-Dichlorobenzene	ND	30								
1,4-Dichlorobenzene	ND	30								
2-Butanone	ND	200								
2-Hexanone	ND	30								
2-Methylnaphthalene	ND	100								
4-Methyl-2-pentanone	ND	30								
Acetone	ND	100								
Acrylonitrile	ND	100								
Benzene	ND	30								
Bromobenzene	ND	30								
Bromochloromethane	ND	30								
Bromodichloromethane	ND	30								
Bromoform	ND	30								
Bromomethane	ND	75								
Carbon disulfide	ND	30								
Carbon tetrachloride	ND	30								
Chlorobenzene	ND	30								
Chloroethane	ND	100								
Chloroform	ND	30								
Chloromethane	ND	100								
cis-1,2-Dichloroethene	ND	30								
cis-1,3-Dichloropropene	ND	30								
Cyclohexane	ND	30								
Dibromochloromethane	ND	30								
Dibromomethane	ND	30								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

Dichlorodifluoromethane	ND	30					
Diethyl ether	ND	30					
Diisopropyl ether	ND	30					
Ethyl tert butyl ether	ND	30					
Ethylbenzene	ND	30					
Hexachloroethane	ND	30					
Isopropylbenzene	ND	30					
m,p-Xylene	ND	60					
Methyl iodide	ND	75					
Methyl tert-butyl ether	ND	30					
Methylene chloride	ND	30					
Naphthalene	ND	100					
n-Butylbenzene	ND	30					
n-Propylbenzene	ND	30					
o-Xylene	ND	30					
p-Isopropyltoluene	ND	30					
sec-Butylbenzene	ND	30					
Styrene	ND	30					
tert-Butyl alcohol	ND	200					
tert-Butylbenzene	ND	30					
Tertiaryamylmethylether	ND	30					
Tetrachloroethene	ND	30					
Tetrahydrofuran	ND	200					
Toluene	ND	30					
trans-1,2-Dichloroethene	ND	30					
trans-1,3-Dichloropropene	ND	30					
trans-1,4-Dichloro-2-butene	ND	30					
Trichloroethene	ND	30					
Trichlorofluoromethane	ND	30					
Vinyl chloride	ND	30					
Surr: 1,2-Dichloroethane-d4	*1036*	0	*1000*	0	*104*	*70-130*	0
Surr: 4-Bromofluorobenzene	*1014*	0	*1000*	0	*101*	*70-130*	0
Surr: Dibromofluoromethane	*1005*	0	*1000*	0	*100*	*70-130*	0
Surr: Toluene-d8	*967.5*	0	*1000*	0	*96.8*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

MBLK Sample ID: **MBLK-45473-45473** Units: **µg/Kg** Analysis Date: **12/18/2012 01:57 AM**
Client ID: Run ID: **VMS9_121217B** SeqNo: **2172808** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	30								
1,1,1-Trichloroethane	ND	30								
1,1,2,2-Tetrachloroethane	ND	30								
1,1,2-Trichloroethane	ND	30								
1,1-Dichloroethane	ND	30								
1,1-Dichloroethene	ND	30								
1,2,3-Trichlorobenzene	ND	30								
1,2,3-Trichloropropane	ND	30								
1,2,3-Trimethylbenzene	ND	30								
1,2,4-Trichlorobenzene	ND	30								
1,2,4-Trimethylbenzene	ND	30								
1,2-Dibromo-3-chloropropane	ND	30								
1,2-Dibromoethane	ND	30								
1,2-Dichlorobenzene	ND	30								
1,2-Dichloroethane	ND	30								
1,2-Dichloropropane	ND	30								
1,3,5-Trimethylbenzene	ND	30								
1,3-Dichlorobenzene	ND	30								
1,4-Dichlorobenzene	ND	30								
2-Butanone	ND	200								
2-Hexanone	ND	30								
2-Methylnaphthalene	ND	100								
4-Methyl-2-pentanone	ND	30								
Acetone	215.5	100								
Acrylonitrile	ND	100								
Benzene	ND	30								
Bromobenzene	ND	30								
Bromochloromethane	ND	30								
Bromodichloromethane	ND	30								
Bromoform	ND	30								
Bromomethane	ND	75								
Carbon disulfide	ND	30								
Carbon tetrachloride	ND	30								
Chlorobenzene	ND	30								
Chloroethane	ND	100								
Chloroform	ND	30								
Chloromethane	ND	100								
cis-1,2-Dichloroethene	ND	30								
cis-1,3-Dichloropropene	ND	30								
Cyclohexane	ND	30								
Dibromochloromethane	ND	30								
Dibromomethane	ND	30								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

Dichlorodifluoromethane	ND	30						
Diethyl ether	ND	30						
Diisopropyl ether	ND	30						
Ethyl tert butyl ether	ND	30						
Ethylbenzene	ND	30						
Hexachloroethane	ND	30						
Isopropylbenzene	ND	30						
m,p-Xylene	ND	60						
Methyl iodide	ND	75						
Methyl tert-butyl ether	ND	30						
Methylene chloride	ND	30						
Naphthalene	17.5	100						J
n-Butylbenzene	ND	30						
n-Propylbenzene	ND	30						
o-Xylene	ND	30						
p-Isopropyltoluene	ND	30						
sec-Butylbenzene	ND	30						
Styrene	ND	30						
tert-Butyl alcohol	ND	200						
tert-Butylbenzene	ND	30						
Tertiaryamylmethylether	ND	30						
Tetrachloroethene	ND	30						
Tetrahydrofuran	ND	200						
Toluene	ND	30						
trans-1,2-Dichloroethene	ND	30						
trans-1,3-Dichloropropene	ND	30						
trans-1,4-Dichloro-2-butene	ND	30						
Trichloroethene	ND	30						
Trichlorofluoromethane	ND	30						
Vinyl chloride	ND	30						
Surr: 1,2-Dichloroethane-d4	*972*	0	*1000*	0	*97.2*	*70-130*	0	
Surr: 4-Bromofluorobenzene	*975.5*	0	*1000*	0	*97.6*	*70-130*	0	
Surr: Dibromofluoromethane	*930.5*	0	*1000*	0	*93*	*70-130*	0	
Surr: Toluene-d8	*881.5*	0	*1000*	0	*88.2*	*70-130*	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212554
Project: Marshall KRRI 1250I,1250L 12/13/12

QC BATCH REPORT

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

MBLK Sample ID: **MBLK-45473-45473** Units: **µg/Kg** Analysis Date: **12/18/2012 04:49 AM**
Client ID: Run ID: **VMS5_121217B** SeqNo: **2173088** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	30								
1,1,1-Trichloroethane	ND	30								
1,1,2,2-Tetrachloroethane	ND	30								
1,1,2-Trichloroethane	ND	30								
1,1-Dichloroethane	ND	30								
1,1-Dichloroethene	ND	30								
1,2,3-Trichlorobenzene	ND	30								
1,2,3-Trichloropropane	ND	30								
1,2,3-Trimethylbenzene	ND	30								
1,2,4-Trichlorobenzene	ND	30								
1,2,4-Trimethylbenzene	ND	30								
1,2-Dibromo-3-chloropropane	ND	30								
1,2-Dibromoethane	ND	30								
1,2-Dichlorobenzene	ND	30								
1,2-Dichloroethane	ND	30								
1,2-Dichloropropane	ND	30								
1,3,5-Trimethylbenzene	ND	30								
1,3-Dichlorobenzene	ND	30								
1,4-Dichlorobenzene	ND	30								
2-Butanone	ND	200								
2-Hexanone	ND	30								
2-Methylnaphthalene	ND	100								
4-Methyl-2-pentanone	ND	30								
Acetone	97.5	100								J
Acrylonitrile	ND	100								
Benzene	ND	30								
Bromobenzene	ND	30								
Bromochloromethane	ND	30								
Bromodichloromethane	ND	30								
Bromoform	ND	30								
Bromomethane	ND	75								
Carbon disulfide	ND	30								
Carbon tetrachloride	ND	30								
Chlorobenzene	ND	30								
Chloroethane	ND	100								
Chloroform	ND	30								
Chloromethane	ND	100								
cis-1,2-Dichloroethene	ND	30								
cis-1,3-Dichloropropene	ND	30								
Cyclohexane	ND	30								
Dibromochloromethane	ND	30								
Dibromomethane	ND	30								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

Dichlorodifluoromethane	ND	30					
Diethyl ether	ND	30					
Diisopropyl ether	ND	30					
Ethyl tert butyl ether	ND	30					
Ethylbenzene	ND	30					
Hexachloroethane	ND	30					
Isopropylbenzene	ND	30					
m,p-Xylene	ND	60					
Methyl iodide	ND	75					
Methyl tert-butyl ether	ND	30					
Methylene chloride	ND	30					
Naphthalene	ND	100					
n-Butylbenzene	ND	30					
n-Propylbenzene	ND	30					
o-Xylene	ND	30					
p-Isopropyltoluene	ND	30					
sec-Butylbenzene	ND	30					
Styrene	ND	30					
tert-Butyl alcohol	ND	200					
tert-Butylbenzene	ND	30					
Tertiaryamylmethylether	ND	30					
Tetrachloroethene	ND	30					
Tetrahydrofuran	ND	200					
Toluene	ND	30					
trans-1,2-Dichloroethene	ND	30					
trans-1,3-Dichloropropene	ND	30					
trans-1,4-Dichloro-2-butene	ND	30					
Trichloroethene	ND	30					
Trichlorofluoromethane	ND	30					
Vinyl chloride	ND	30					
Surr: 1,2-Dichloroethane-d4	*1043*	0	*1000*	0	*104*	*70-130*	0
Surr: 4-Bromofluorobenzene	*948.5*	0	*1000*	0	*94.8*	*70-130*	0
Surr: Dibromofluoromethane	*1024*	0	*1000*	0	*102*	*70-130*	0
Surr: Toluene-d8	*1048*	0	*1000*	0	*105*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212554
Project: Marshall KRRI 1250I,1250L 12/13/12

QC BATCH REPORT

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

MBLK Sample ID: **MBLK-45473-45473** Units: **µg/Kg** Analysis Date: **12/18/2012 02:23 PM**
Client ID: Run ID: **VMS9_121218A** SeqNo: **2173834** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	30								
1,1,1-Trichloroethane	ND	30								
1,1,2,2-Tetrachloroethane	ND	30								
1,1,2-Trichloroethane	ND	30								
1,1-Dichloroethane	ND	30								
1,1-Dichloroethene	ND	30								
1,2,3-Trichlorobenzene	ND	30								
1,2,3-Trichloropropane	ND	30								
1,2,3-Trimethylbenzene	ND	30								
1,2,4-Trichlorobenzene	ND	30								
1,2,4-Trimethylbenzene	ND	30								
1,2-Dibromo-3-chloropropane	ND	30								
1,2-Dibromoethane	ND	30								
1,2-Dichlorobenzene	ND	30								
1,2-Dichloroethane	ND	30								
1,2-Dichloropropane	ND	30								
1,3,5-Trimethylbenzene	ND	30								
1,3-Dichlorobenzene	ND	30								
1,4-Dichlorobenzene	ND	30								
2-Butanone	ND	200								
2-Hexanone	ND	30								
2-Methylnaphthalene	ND	100								
4-Methyl-2-pentanone	ND	30								
Acetone	249.5	100								
Acrylonitrile	ND	100								
Benzene	ND	30								
Bromobenzene	ND	30								
Bromochloromethane	ND	30								
Bromodichloromethane	ND	30								
Bromoform	ND	30								
Bromomethane	ND	75								
Carbon disulfide	ND	30								
Carbon tetrachloride	ND	30								
Chlorobenzene	ND	30								
Chloroethane	ND	100								
Chloroform	ND	30								
Chloromethane	ND	100								
cis-1,2-Dichloroethene	ND	30								
cis-1,3-Dichloropropene	ND	30								
Cyclohexane	ND	30								
Dibromochloromethane	ND	30								
Dibromomethane	ND	30								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

Dichlorodifluoromethane	ND	30						
Diethyl ether	ND	30						
Diisopropyl ether	ND	30						
Ethyl tert butyl ether	ND	30						
Ethylbenzene	ND	30						
Hexachloroethane	ND	30						
Isopropylbenzene	ND	30						
m,p-Xylene	ND	60						
Methyl iodide	ND	75						
Methyl tert-butyl ether	ND	30						
Methylene chloride	ND	30						
Naphthalene	16.5	100						J
n-Butylbenzene	ND	30						
n-Propylbenzene	ND	30						
o-Xylene	ND	30						
p-Isopropyltoluene	ND	30						
sec-Butylbenzene	ND	30						
Styrene	ND	30						
tert-Butyl alcohol	ND	200						
tert-Butylbenzene	ND	30						
Tertiaryamylmethylether	ND	30						
Tetrachloroethene	ND	30						
Tetrahydrofuran	ND	200						
Toluene	ND	30						
trans-1,2-Dichloroethene	ND	30						
trans-1,3-Dichloropropene	ND	30						
trans-1,4-Dichloro-2-butene	ND	30						
Trichloroethene	ND	30						
Trichlorofluoromethane	ND	30						
Vinyl chloride	ND	30						
Surr: 1,2-Dichloroethane-d4	*976.5*	0	*1000*	0	*97.6*	*70-130*	0	
Surr: 4-Bromofluorobenzene	*983.5*	0	*1000*	0	*98.4*	*70-130*	0	
Surr: Dibromofluoromethane	*929*	0	*1000*	0	*92.9*	*70-130*	0	
Surr: Toluene-d8	*856*	0	*1000*	0	*85.6*	*70-130*	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212554
Project: Marshall KRRI 1250I,1250L 12/13/12

QC BATCH REPORT

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

MBLK Sample ID: **MBLK-45473-45473** Units: **µg/Kg** Analysis Date: **12/19/2012 02:40 AM**
Client ID: Run ID: **VMS8_121218B** SeqNo: **2174355** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	30								
1,1,1-Trichloroethane	ND	30								
1,1,2,2-Tetrachloroethane	ND	30								
1,1,2-Trichloroethane	ND	30								
1,1-Dichloroethane	ND	30								
1,1-Dichloroethene	ND	30								
1,2,3-Trichlorobenzene	ND	30								
1,2,3-Trichloropropane	ND	30								
1,2,3-Trimethylbenzene	ND	30								
1,2,4-Trichlorobenzene	ND	30								
1,2,4-Trimethylbenzene	ND	30								
1,2-Dibromo-3-chloropropane	ND	30								
1,2-Dibromoethane	ND	30								
1,2-Dichlorobenzene	ND	30								
1,2-Dichloroethane	ND	30								
1,2-Dichloropropane	ND	30								
1,3,5-Trimethylbenzene	ND	30								
1,3-Dichlorobenzene	ND	30								
1,4-Dichlorobenzene	ND	30								
2-Butanone	ND	200								
2-Hexanone	ND	30								
2-Methylnaphthalene	104	100								
4-Methyl-2-pentanone	ND	30								
Acetone	252.5	100								
Acrylonitrile	ND	100								
Benzene	ND	30								
Bromobenzene	ND	30								
Bromochloromethane	ND	30								
Bromodichloromethane	ND	30								
Bromoform	ND	30								
Bromomethane	ND	75								
Carbon disulfide	ND	30								
Carbon tetrachloride	ND	30								
Chlorobenzene	ND	30								
Chloroethane	ND	100								
Chloroform	ND	30								
Chloromethane	ND	100								
cis-1,2-Dichloroethene	ND	30								
cis-1,3-Dichloropropene	ND	30								
Cyclohexane	ND	30								
Dibromochloromethane	ND	30								
Dibromomethane	ND	30								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

Dichlorodifluoromethane	ND	30					
Diethyl ether	ND	30					
Diisopropyl ether	ND	30					
Ethyl tert butyl ether	ND	30					
Ethylbenzene	ND	30					
Hexachloroethane	ND	30					
Isopropylbenzene	ND	30					
m,p-Xylene	ND	60					
Methyl iodide	ND	75					
Methyl tert-butyl ether	ND	30					
Methylene chloride	ND	30					
Naphthalene	ND	100					
n-Butylbenzene	ND	30					
n-Propylbenzene	ND	30					
o-Xylene	ND	30					
p-Isopropyltoluene	ND	30					
sec-Butylbenzene	ND	30					
Styrene	ND	30					
tert-Butyl alcohol	ND	200					
tert-Butylbenzene	ND	30					
Tertiaryamylmethylether	ND	30					
Tetrachloroethene	ND	30					
Tetrahydrofuran	ND	200					
Toluene	ND	30					
trans-1,2-Dichloroethene	ND	30					
trans-1,3-Dichloropropene	ND	30					
trans-1,4-Dichloro-2-butene	ND	30					
Trichloroethene	ND	30					
Trichlorofluoromethane	ND	30					
Vinyl chloride	ND	30					
Surr: 1,2-Dichloroethane-d4	*918*	0	*1000*	0	*91.8*	*70-130*	0
Surr: 4-Bromofluorobenzene	*1024*	0	*1000*	0	*102*	*70-130*	0
Surr: Dibromofluoromethane	*878*	0	*1000*	0	*87.8*	*70-130*	0
Surr: Toluene-d8	*936*	0	*1000*	0	*93.6*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212554
Project: Marshall KRRI 1250I,1250L 12/13/12

QC BATCH REPORT

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

LCS Sample ID: **LCS-45473-45473** Units: **µg/Kg** Analysis Date: **12/17/2012 03:31 PM**
Client ID: Run ID: **VMS5_121217A** SeqNo: **2172233** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	985.5	30	1000	0	98.6	75-125	0			
1,1,1-Trichloroethane	1026	30	1000	0	103	70-135	0			
1,1,2,2-Tetrachloroethane	806	30	1000	0	80.6	55-130	0			
1,1,2-Trichloroethane	866	30	1000	0	86.6	60-125	0			
1,1-Dichloroethane	1027	30	1000	0	103	75-125	0			
1,1-Dichloroethene	1146	30	1000	0	115	65-135	0			
1,2,3-Trichlorobenzene	898.5	30	1000	0	89.8	60-135	0			
1,2,3-Trichloropropane	771	30	1000	0	77.1	65-130	0			
1,2,4-Trichlorobenzene	1026	30	1000	0	103	65-130	0			
1,2,4-Trimethylbenzene	937.5	30	1000	0	93.8	65-135	0			
1,2-Dibromo-3-chloropropane	705	30	1000	0	70.5	40-135	0			
1,2-Dibromoethane	913	30	1000	0	91.3	70-125	0			
1,2-Dichlorobenzene	964.5	30	1000	0	96.4	75-120	0			
1,2-Dichloroethane	938.5	30	1000	0	93.8	70-135	0			
1,2-Dichloropropane	987	30	1000	0	98.7	70-120	0			
1,3,5-Trimethylbenzene	1004	30	1000	0	100	65-135	0			
1,3-Dichlorobenzene	972	30	1000	0	97.2	70-125	0			
1,4-Dichlorobenzene	954.5	30	1000	0	95.4	70-125	0			
2-Butanone	677.5	200	1000	0	67.8	30-160	0			
2-Hexanone	656	30	1000	0	65.6	45-145	0			
4-Methyl-2-pentanone	714	30	1000	0	71.4	45-145	0			
Acetone	692	100	1000	0	69.2	20-160	0			
Acrylonitrile	825	100	1000	0	82.5	70-135	0			
Benzene	981	30	1000	0	98.1	75-125	0			
Bromobenzene	961.5	30	1000	0	96.2	65-120	0			
Bromochloromethane	1083	30	1000	0	108	70-125	0			
Bromodichloromethane	986	30	1000	0	98.6	70-130	0			
Bromoform	824	30	1000	0	82.4	55-135	0			
Bromomethane	1485	75	1000	0	148	30-160	0			
Carbon disulfide	1325	30	1000	0	132	45-160	0			
Carbon tetrachloride	1019	30	1000	0	102	65-135	0			
Chlorobenzene	1000	30	1000	0	100	75-125	0			
Chloroethane	1024	100	1000	0	102	40-155	0			
Chloroform	1031	30	1000	0	103	70-125	0			
Chloromethane	936.5	100	1000	0	93.6	50-130	0			
cis-1,2-Dichloroethene	1094	30	1000	0	109	65-125	0			
cis-1,3-Dichloropropene	1037	30	1000	0	104	70-125	0			
Dibromochloromethane	887	30	1000	0	88.7	65-135	0			
Dibromomethane	933	30	1000	0	93.3	75-130	0			
Dichlorodifluoromethane	875	30	1000	0	87.5	35-135	0			
Ethylbenzene	1028	30	1000	0	103	75-125	0			
Hexachloroethane	1074	30	1000	0	107	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

Isopropylbenzene	1024	30	1000	0	102	75-130	0
m,p-Xylene	2029	60	2000	0	101	80-125	0
Methyl tert-butyl ether	905	30	1000	0	90.5	75-125	0
Methylene chloride	1032	30	1000	0	103	55-145	0
Naphthalene	799	100	1000	0	79.9	40-140	0
n-Butylbenzene	1060	30	1000	0	106	65-140	0
n-Propylbenzene	988	30	1000	0	98.8	65-135	0
o-Xylene	987.5	30	1000	0	98.8	75-125	0
p-Isopropyltoluene	1047	30	1000	0	105	75-135	0
sec-Butylbenzene	1002	30	1000	0	100	65-130	0
Styrene	1018	30	1000	0	102	75-125	0
tert-Butylbenzene	1036	30	1000	0	104	65-130	0
Tetrachloroethene	960	30	1000	0	96	64-140	0
Tetrahydrofuran	704	200	1000	0	70.4	70-135	0
Toluene	932.5	30	1000	0	93.2	70-125	0
trans-1,2-Dichloroethene	1077	30	1000	0	108	65-135	0
trans-1,3-Dichloropropene	997.5	30	1000	0	99.8	65-125	0
trans-1,4-Dichloro-2-butene	733.5	30	1000	0	73.4	70-135	0
Trichloroethene	979	30	1000	0	97.9	75-125	0
Trichlorofluoromethane	987.5	30	1000	0	98.8	25-185	0
Vinyl chloride	1058	30	1000	0	106	60-125	0
Surr: 1,2-Dichloroethane-d4	*940*	0	*1000*	0	*94*	*70-130*	0
Surr: 4-Bromofluorobenzene	*1013*	0	*1000*	0	*101*	*70-130*	0
Surr: Dibromofluoromethane	*987*	0	*1000*	0	*98.7*	*70-130*	0
Surr: Toluene-d8	*983*	0	*1000*	0	*98.3*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212554
Project: Marshall KRRI 1250I,1250L 12/13/12

QC BATCH REPORT

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

LCS Sample ID: **LCS-45473-45473** Units: **µg/Kg** Analysis Date: **12/18/2012 12:40 PM**
Client ID: Run ID: **VMS9_121217B** SeqNo: **2172811** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	1032	30	1000	0	103	75-125	0			
1,1,1-Trichloroethane	1160	30	1000	0	116	70-135	0			
1,1,2,2-Tetrachloroethane	979	30	1000	0	97.9	55-130	0			
1,1,2-Trichloroethane	933	30	1000	0	93.3	60-125	0			
1,1-Dichloroethane	1150	30	1000	0	115	75-125	0			
1,1-Dichloroethene	1224	30	1000	0	122	65-135	0			
1,2,3-Trichlorobenzene	965.5	30	1000	0	96.6	60-135	0			
1,2,3-Trichloropropane	985.5	30	1000	0	98.6	65-130	0			
1,2,4-Trichlorobenzene	947.5	30	1000	0	94.8	65-130	0			
1,2,4-Trimethylbenzene	996	30	1000	0	99.6	65-135	0			
1,2-Dibromo-3-chloropropane	1032	30	1000	0	103	40-135	0			
1,2-Dibromoethane	985	30	1000	0	98.5	70-125	0			
1,2-Dichlorobenzene	898	30	1000	0	89.8	75-120	0			
1,2-Dichloroethane	989	30	1000	0	98.9	70-135	0			
1,2-Dichloropropane	1037	30	1000	0	104	70-120	0			
1,3,5-Trimethylbenzene	1008	30	1000	0	101	65-135	0			
1,3-Dichlorobenzene	904.5	30	1000	0	90.4	70-125	0			
1,4-Dichlorobenzene	908.5	30	1000	0	90.8	70-125	0			
2-Butanone	1151	200	1000	0	115	30-160	0			
2-Hexanone	1104	30	1000	0	110	45-145	0			
4-Methyl-2-pentanone	1252	30	1000	0	125	45-145	0			
Acetone	1448	100	1000	0	145	20-160	0			B
Acrylonitrile	1100	100	1000	0	110	70-135	0			
Benzene	1052	30	1000	0	105	75-125	0			
Bromobenzene	956.5	30	1000	0	95.6	65-120	0			
Bromochloromethane	1128	30	1000	0	113	70-125	0			
Bromodichloromethane	1120	30	1000	0	112	70-130	0			
Bromoform	996	30	1000	0	99.6	55-135	0			
Bromomethane	1402	75	1000	0	140	30-160	0			
Carbon disulfide	1470	30	1000	0	147	45-160	0			
Carbon tetrachloride	1176	30	1000	0	118	65-135	0			
Chlorobenzene	955	30	1000	0	95.5	75-125	0			
Chloroethane	1256	100	1000	0	126	40-155	0			
Chloroform	1150	30	1000	0	115	70-125	0			
Chloromethane	1334	100	1000	0	133	50-130	0			S
cis-1,2-Dichloroethene	1133	30	1000	0	113	65-125	0			
cis-1,3-Dichloropropene	1078	30	1000	0	108	70-125	0			
Dibromochloromethane	1002	30	1000	0	100	65-135	0			
Dibromomethane	1090	30	1000	0	109	75-130	0			
Dichlorodifluoromethane	1356	30	1000	0	136	35-135	0			S
Ethylbenzene	963.5	30	1000	0	96.4	75-125	0			
Hexachloroethane	1018	30	1000	0	102	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

Isopropylbenzene	1007	30	1000	0	101	75-130	0	
m,p-Xylene	1994	60	2000	0	99.7	80-125	0	
Methyl tert-butyl ether	1265	30	1000	0	126	75-125	0	S
Methylene chloride	1098	30	1000	0	110	55-145	0	
Naphthalene	1003	100	1000	0	100	40-140	0	
n-Butylbenzene	935.5	30	1000	0	93.6	65-140	0	
n-Propylbenzene	973.5	30	1000	0	97.4	65-135	0	
o-Xylene	997	30	1000	0	99.7	75-125	0	
p-Isopropyltoluene	976	30	1000	0	97.6	75-135	0	
sec-Butylbenzene	1038	30	1000	0	104	65-130	0	
Styrene	1034	30	1000	0	103	75-125	0	
tert-Butylbenzene	985.5	30	1000	0	98.6	65-130	0	
Tetrachloroethene	956	30	1000	0	95.6	64-140	0	
Tetrahydrofuran	1264	200	1000	0	126	70-135	0	
Toluene	971	30	1000	0	97.1	70-125	0	
trans-1,2-Dichloroethene	1168	30	1000	0	117	65-135	0	
trans-1,3-Dichloropropene	990.5	30	1000	0	99	65-125	0	
trans-1,4-Dichloro-2-butene	945.5	30	1000	0	94.6	70-135	0	
Trichloroethene	1048	30	1000	0	105	75-125	0	
Trichlorofluoromethane	1272	30	1000	0	127	25-185	0	
Vinyl chloride	1332	30	1000	0	133	60-125	0	S
Surr: 1,2-Dichloroethane-d4	*971*	0	*1000*	0	*97.1*	*70-130*	0	
Surr: 4-Bromofluorobenzene	*1008*	0	*1000*	0	*101*	*70-130*	0	
Surr: Dibromofluoromethane	*1062*	0	*1000*	0	*106*	*70-130*	0	
Surr: Toluene-d8	*935*	0	*1000*	0	*93.5*	*70-130*	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212554
Project: Marshall KRRI 1250I,1250L 12/13/12

QC BATCH REPORT

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

LCS Sample ID: **LCS-45473-45473** Units: **µg/Kg** Analysis Date: **12/18/2012 03:37 AM**
Client ID: Run ID: **VMS5_121217B** SeqNo: **2173087** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	1056	30	1000	0	106	75-125	0			
1,1,1-Trichloroethane	997	30	1000	0	99.7	70-135	0			
1,1,2,2-Tetrachloroethane	1044	30	1000	0	104	55-130	0			
1,1,2-Trichloroethane	1018	30	1000	0	102	60-125	0			
1,1-Dichloroethane	998	30	1000	0	99.8	75-125	0			
1,1-Dichloroethene	1089	30	1000	0	109	65-135	0			
1,2,3-Trichlorobenzene	973	30	1000	0	97.3	60-135	0			
1,2,3-Trichloropropane	1002	30	1000	0	100	65-130	0			
1,2,4-Trichlorobenzene	1142	30	1000	0	114	65-130	0			
1,2,4-Trimethylbenzene	1057	30	1000	0	106	65-135	0			
1,2-Dibromo-3-chloropropane	1014	30	1000	0	101	40-135	0			
1,2-Dibromoethane	1066	30	1000	0	107	70-125	0			
1,2-Dichlorobenzene	1158	30	1000	0	116	75-120	0			
1,2-Dichloroethane	917.5	30	1000	0	91.8	70-135	0			
1,2-Dichloropropane	963	30	1000	0	96.3	70-120	0			
1,3,5-Trimethylbenzene	1102	30	1000	0	110	65-135	0			
1,3-Dichlorobenzene	1148	30	1000	0	115	70-125	0			
1,4-Dichlorobenzene	1146	30	1000	0	115	70-125	0			
2-Butanone	835.5	200	1000	0	83.6	30-160	0			
2-Hexanone	910.5	30	1000	0	91	45-145	0			
4-Methyl-2-pentanone	944.5	30	1000	0	94.4	45-145	0			
Acetone	960.5	100	1000	0	96	20-160	0			
Acrylonitrile	967.5	100	1000	0	96.8	70-135	0			
Benzene	981.5	30	1000	0	98.2	75-125	0			
Bromobenzene	1111	30	1000	0	111	65-120	0			
Bromochloromethane	1024	30	1000	0	102	70-125	0			
Bromodichloromethane	951.5	30	1000	0	95.2	70-130	0			
Bromoform	1042	30	1000	0	104	55-135	0			
Bromomethane	1389	75	1000	0	139	30-160	0			
Carbon disulfide	1218	30	1000	0	122	45-160	0			
Carbon tetrachloride	993.5	30	1000	0	99.4	65-135	0			
Chlorobenzene	1132	30	1000	0	113	75-125	0			
Chloroethane	1006	100	1000	0	101	40-155	0			
Chloroform	962.5	30	1000	0	96.2	70-125	0			
Chloromethane	936	100	1000	0	93.6	50-130	0			
cis-1,2-Dichloroethene	982	30	1000	0	98.2	65-125	0			
cis-1,3-Dichloropropene	970	30	1000	0	97	70-125	0			
Dibromochloromethane	1028	30	1000	0	103	65-135	0			
Dibromomethane	938.5	30	1000	0	93.8	75-130	0			
Dichlorodifluoromethane	852	30	1000	0	85.2	35-135	0			
Ethylbenzene	1130	30	1000	0	113	75-125	0			
Hexachloroethane	1104	30	1000	0	110	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

Isopropylbenzene	1116	30	1000	0	112	75-130	0
m,p-Xylene	2258	60	2000	0	113	80-125	0
Methyl tert-butyl ether	929	30	1000	0	92.9	75-125	0
Methylene chloride	967	30	1000	0	96.7	55-145	0
Naphthalene	917.5	100	1000	0	91.8	40-140	0
n-Butylbenzene	1140	30	1000	0	114	65-140	0
n-Propylbenzene	1067	30	1000	0	107	65-135	0
o-Xylene	1096	30	1000	0	110	75-125	0
p-Isopropyltoluene	1152	30	1000	0	115	75-135	0
sec-Butylbenzene	1063	30	1000	0	106	65-130	0
Styrene	1129	30	1000	0	113	75-125	0
tert-Butylbenzene	1136	30	1000	0	114	65-130	0
Tetrachloroethene	1079	30	1000	0	108	64-140	0
Tetrahydrofuran	948	200	1000	0	94.8	70-135	0
Toluene	1007	30	1000	0	101	70-125	0
trans-1,2-Dichloroethene	1020	30	1000	0	102	65-135	0
trans-1,3-Dichloropropene	1077	30	1000	0	108	65-125	0
trans-1,4-Dichloro-2-butene	821.5	30	1000	0	82.2	70-135	0
Trichloroethene	952.5	30	1000	0	95.2	75-125	0
Trichlorofluoromethane	912.5	30	1000	0	91.2	25-185	0
Vinyl chloride	1052	30	1000	0	105	60-125	0
Surr: 1,2-Dichloroethane-d4	*1024*	0	*1000*	0	*102*	*70-130*	0
Surr: 4-Bromofluorobenzene	*959*	0	*1000*	0	*95.9*	*70-130*	0
Surr: Dibromofluoromethane	*1035*	0	*1000*	0	*104*	*70-130*	0
Surr: Toluene-d8	*1057*	0	*1000*	0	*106*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212554
Project: Marshall KRRI 1250I,1250L 12/13/12

QC BATCH REPORT

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

LCS Sample ID: **LCS-45473-45473** Units: **µg/Kg** Analysis Date: **12/18/2012 01:07 PM**
Client ID: Run ID: **VMS9_121218A** SeqNo: **2173832** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	971.5	30	1000	0	97.2	75-125	0			
1,1,1-Trichloroethane	1158	30	1000	0	116	70-135	0			
1,1,2,2-Tetrachloroethane	884.5	30	1000	0	88.4	55-130	0			
1,1,2-Trichloroethane	873	30	1000	0	87.3	60-125	0			
1,1-Dichloroethane	1145	30	1000	0	114	75-125	0			
1,1-Dichloroethene	1304	30	1000	0	130	65-135	0			
1,2,3-Trichlorobenzene	897	30	1000	0	89.7	60-135	0			
1,2,3-Trichloropropane	878	30	1000	0	87.8	65-130	0			
1,2,4-Trichlorobenzene	906	30	1000	0	90.6	65-130	0			
1,2,4-Trimethylbenzene	969	30	1000	0	96.9	65-135	0			
1,2-Dibromo-3-chloropropane	861.5	30	1000	0	86.2	40-135	0			
1,2-Dibromoethane	908.5	30	1000	0	90.8	70-125	0			
1,2-Dichlorobenzene	863.5	30	1000	0	86.4	75-120	0			
1,2-Dichloroethane	987	30	1000	0	98.7	70-135	0			
1,2-Dichloropropane	1036	30	1000	0	104	70-120	0			
1,3,5-Trimethylbenzene	1002	30	1000	0	100	65-135	0			
1,3-Dichlorobenzene	871.5	30	1000	0	87.2	70-125	0			
1,4-Dichlorobenzene	894	30	1000	0	89.4	70-125	0			
2-Butanone	1150	200	1000	0	115	30-160	0			
2-Hexanone	969	30	1000	0	96.9	45-145	0			
4-Methyl-2-pentanone	1086	30	1000	0	109	45-145	0			
Acetone	1336	100	1000	0	134	20-160	0			B
Acrylonitrile	1098	100	1000	0	110	70-135	0			
Benzene	1037	30	1000	0	104	75-125	0			
Bromobenzene	910	30	1000	0	91	65-120	0			
Bromochloromethane	1173	30	1000	0	117	70-125	0			
Bromodichloromethane	1071	30	1000	0	107	70-130	0			
Bromoform	892.5	30	1000	0	89.2	55-135	0			
Bromomethane	1479	75	1000	0	148	30-160	0			
Carbon disulfide	1523	30	1000	0	152	45-160	0			
Carbon tetrachloride	1160	30	1000	0	116	65-135	0			
Chlorobenzene	907.5	30	1000	0	90.8	75-125	0			
Chloroethane	1292	100	1000	0	129	40-155	0			
Chloroform	1166	30	1000	0	117	70-125	0			
Chloromethane	1303	100	1000	0	130	50-130	0			S
cis-1,2-Dichloroethene	1194	30	1000	0	119	65-125	0			
cis-1,3-Dichloropropene	1084	30	1000	0	108	70-125	0			
Dibromochloromethane	902	30	1000	0	90.2	65-135	0			
Dibromomethane	1066	30	1000	0	107	75-130	0			
Dichlorodifluoromethane	1410	30	1000	0	141	35-135	0			S
Ethylbenzene	940	30	1000	0	94	75-125	0			
Hexachloroethane	999.5	30	1000	0	100	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

Isopropylbenzene	993.5	30	1000	0	99.4	75-130	0	
m,p-Xylene	1931	60	2000	0	96.6	80-125	0	
Methyl tert-butyl ether	1280	30	1000	0	128	75-125	0	S
Methylene chloride	1146	30	1000	0	115	55-145	0	
Naphthalene	845.5	100	1000	0	84.6	40-140	0	
n-Butylbenzene	983	30	1000	0	98.3	65-140	0	
n-Propylbenzene	967	30	1000	0	96.7	65-135	0	
o-Xylene	947.5	30	1000	0	94.8	75-125	0	
p-Isopropyltoluene	955.5	30	1000	0	95.6	75-135	0	
sec-Butylbenzene	1079	30	1000	0	108	65-130	0	
Styrene	982.5	30	1000	0	98.2	75-125	0	
tert-Butylbenzene	997.5	30	1000	0	99.8	65-130	0	
Tetrachloroethene	963	30	1000	0	96.3	64-140	0	
Tetrahydrofuran	1184	200	1000	0	118	70-135	0	
Toluene	923.5	30	1000	0	92.4	70-125	0	
trans-1,2-Dichloroethene	1221	30	1000	0	122	65-135	0	
trans-1,3-Dichloropropene	960	30	1000	0	96	65-125	0	
trans-1,4-Dichloro-2-butene	885	30	1000	0	88.5	70-135	0	
Trichloroethene	1063	30	1000	0	106	75-125	0	
Trichlorofluoromethane	1401	30	1000	0	140	25-185	0	
Vinyl chloride	1372	30	1000	0	137	60-125	0	S
Surr: 1,2-Dichloroethane-d4	*975.5*	0	*1000*	0	*97.6*	*70-130*	0	
Surr: 4-Bromofluorobenzene	*1024*	0	*1000*	0	*102*	*70-130*	0	
Surr: Dibromofluoromethane	*1030*	0	*1000*	0	*103*	*70-130*	0	
Surr: Toluene-d8	*894.5*	0	*1000*	0	*89.4*	*70-130*	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212554
Project: Marshall KRRI 1250I,1250L 12/13/12

QC BATCH REPORT

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

LCS Sample ID: **LCS-45473-45473** Units: **µg/Kg** Analysis Date: **12/19/2012 01:29 AM**
Client ID: Run ID: **VMS8_121218B** SeqNo: **2174354** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	1014	30	1000	0	101	75-125	0			
1,1,1-Trichloroethane	1039	30	1000	0	104	70-135	0			
1,1,2,2-Tetrachloroethane	908	30	1000	0	90.8	55-130	0			
1,1,2-Trichloroethane	916	30	1000	0	91.6	60-125	0			
1,1-Dichloroethane	1033	30	1000	0	103	75-125	0			
1,1-Dichloroethene	1005	30	1000	0	100	65-135	0			
1,2,3-Trichlorobenzene	1026	30	1000	0	103	60-135	0			
1,2,3-Trichloropropane	934	30	1000	0	93.4	65-130	0			
1,2,4-Trichlorobenzene	1045	30	1000	0	104	65-130	0			
1,2,4-Trimethylbenzene	999	30	1000	0	99.9	65-135	0			
1,2-Dibromo-3-chloropropane	968	30	1000	0	96.8	40-135	0			
1,2-Dibromoethane	1008	30	1000	0	101	70-125	0			
1,2-Dichlorobenzene	942.5	30	1000	0	94.2	75-120	0			
1,2-Dichloroethane	961	30	1000	0	96.1	70-135	0			
1,2-Dichloropropane	1008	30	1000	0	101	70-120	0			
1,3,5-Trimethylbenzene	1034	30	1000	0	103	65-135	0			
1,3-Dichlorobenzene	958	30	1000	0	95.8	70-125	0			
1,4-Dichlorobenzene	965.5	30	1000	0	96.6	70-125	0			
2-Butanone	882.5	200	1000	0	88.2	30-160	0			
2-Hexanone	1024	30	1000	0	102	45-145	0			
4-Methyl-2-pentanone	1330	30	1000	0	133	45-145	0			
Acetone	969	100	1000	0	96.9	20-160	0			B
Acrylonitrile	919.5	100	1000	0	92	70-135	0			
Benzene	1020	30	1000	0	102	75-125	0			
Bromobenzene	971.5	30	1000	0	97.2	65-120	0			
Bromochloromethane	1024	30	1000	0	102	70-125	0			
Bromodichloromethane	956.5	30	1000	0	95.6	70-130	0			
Bromoform	927.5	30	1000	0	92.8	55-135	0			
Bromomethane	1010	75	1000	0	101	30-160	0			
Carbon disulfide	1110	30	1000	0	111	45-160	0			
Carbon tetrachloride	1052	30	1000	0	105	65-135	0			
Chlorobenzene	977.5	30	1000	0	97.8	75-125	0			
Chloroethane	1124	100	1000	0	112	40-155	0			
Chloroform	1049	30	1000	0	105	70-125	0			
Chloromethane	831.5	100	1000	0	83.2	50-130	0			
cis-1,2-Dichloroethene	1042	30	1000	0	104	65-125	0			
cis-1,3-Dichloropropene	993.5	30	1000	0	99.4	70-125	0			
Dibromochloromethane	952	30	1000	0	95.2	65-135	0			
Dibromomethane	987	30	1000	0	98.7	75-130	0			
Dichlorodifluoromethane	825	30	1000	0	82.5	35-135	0			
Ethylbenzene	997.5	30	1000	0	99.8	75-125	0			
Hexachloroethane	1143	30	1000	0	114	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

Isopropylbenzene	1029	30	1000	0	103	75-130	0
m,p-Xylene	2052	60	2000	0	103	80-125	0
Methyl tert-butyl ether	1074	30	1000	0	107	75-125	0
Methylene chloride	1008	30	1000	0	101	55-145	0
Naphthalene	1275	100	1000	0	128	40-140	0
n-Butylbenzene	1020	30	1000	0	102	65-140	0
n-Propylbenzene	954	30	1000	0	95.4	65-135	0
o-Xylene	992.5	30	1000	0	99.2	75-125	0
p-Isopropyltoluene	1028	30	1000	0	103	75-135	0
sec-Butylbenzene	1014	30	1000	0	101	65-130	0
Styrene	1050	30	1000	0	105	75-125	0
tert-Butylbenzene	999.5	30	1000	0	100	65-130	0
Tetrachloroethene	941	30	1000	0	94.1	64-140	0
Tetrahydrofuran	891	200	1000	0	89.1	70-135	0
Toluene	1022	30	1000	0	102	70-125	0
trans-1,2-Dichloroethene	1115	30	1000	0	112	65-135	0
trans-1,3-Dichloropropene	997.5	30	1000	0	99.8	65-125	0
trans-1,4-Dichloro-2-butene	986	30	1000	0	98.6	70-135	0
Trichloroethene	1018	30	1000	0	102	75-125	0
Trichlorofluoromethane	840	30	1000	0	84	25-185	0
Vinyl chloride	929.5	30	1000	0	93	60-125	0
Surr: 1,2-Dichloroethane-d4	*911*	0	*1000*	0	*91.1*	*70-130*	0
Surr: 4-Bromofluorobenzene	*977.5*	0	*1000*	0	*97.8*	*70-130*	0
Surr: Dibromofluoromethane	*928.5*	0	*1000*	0	*92.8*	*70-130*	0
Surr: Toluene-d8	*952.5*	0	*1000*	0	*95.2*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212554
Project: Marshall KRRI 1250I,1250L 12/13/12

QC BATCH REPORT

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

MS Sample ID: **1212554-08A MS** Units: **µg/Kg** Analysis Date: **12/18/2012 09:39 AM**
Client ID: **SBKR1250I506S121312S004** Run ID: **VMS9_121217B** SeqNo: **2172809** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	2184	70	2333	0	93.6	75-125	0			
1,1,1-Trichloroethane	2666	70	2333	0	114	70-135	0			
1,1,2,2-Tetrachloroethane	2171	70	2333	0	93	55-130	0			
1,1,2-Trichloroethane	2067	70	2333	0	88.6	60-125	0			
1,1-Dichloroethane	2627	70	2333	0	113	75-125	0			
1,1-Dichloroethene	2890	70	2333	0	124	65-135	0			
1,2,3-Trichlorobenzene	1864	70	2333	0	79.9	60-135	0			
1,2,3-Trichloropropane	2210	70	2333	0	94.7	65-130	0			
1,2,4-Trichlorobenzene	1882	70	2333	0	80.6	65-130	0			
1,2,4-Trimethylbenzene	2358	70	2333	0	101	65-135	0			
1,2-Dibromo-3-chloropropane	1912	70	2333	0	82	40-135	0			
1,2-Dibromoethane	2199	70	2333	0	94.2	70-125	0			
1,2-Dichlorobenzene	1958	70	2333	0	83.9	75-120	0			
1,2-Dichloroethane	2459	70	2333	0	105	70-135	0			
1,2-Dichloropropane	2488	70	2333	0	107	70-120	0			
1,3,5-Trimethylbenzene	2435	70	2333	0	104	65-135	0			
1,3-Dichlorobenzene	2007	70	2333	0	86	70-125	0			
1,4-Dichlorobenzene	1995	70	2333	0	85.5	70-125	0			
2-Butanone	3053	470	2333	0	131	30-160	0			
2-Hexanone	2558	70	2333	0	110	45-145	0			
4-Methyl-2-pentanone	2843	70	2333	0	122	45-145	0			
Acetone	3891	230	2333	0	167	20-160	0			BS
Acrylonitrile	2864	230	2333	0	123	70-135	0			
Benzene	2511	70	2333	0	108	75-125	0			
Bromobenzene	2230	70	2333	0	95.6	65-120	0			
Bromochloromethane	2744	70	2333	0	118	70-125	0			
Bromodichloromethane	2418	70	2333	0	104	70-130	0			
Bromoform	1881	70	2333	0	80.6	55-135	0			
Bromomethane	2656	180	2333	0	114	30-160	0			
Carbon disulfide	2774	70	2333	0	119	45-160	0			
Carbon tetrachloride	2780	70	2333	0	119	65-135	0			
Chlorobenzene	2171	70	2333	0	93	75-125	0			
Chloroethane	1097	230	2333	0	47	40-155	0			
Chloroform	2694	70	2333	0	115	70-125	0			
Chloromethane	3533	230	2333	127.2	146	50-130	0			S
cis-1,2-Dichloroethene	2641	70	2333	0	113	65-125	0			
cis-1,3-Dichloropropene	2329	70	2333	0	99.8	70-125	0			
Dibromochloromethane	1954	70	2333	0	83.8	65-135	0			
Dibromomethane	2553	70	2333	0	109	75-130	0			
Dichlorodifluoromethane	3136	70	2333	0	134	35-135	0			
Ethylbenzene	2241	70	2333	0	96	75-125	0			
Hexachloroethane	2007	70	2333	0	86	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

Isopropylbenzene	2398	70	2333	0	103	75-130	0	
m,p-Xylene	4610	140	4667	0	98.8	80-125	0	
Methyl tert-butyl ether	3004	70	2333	0	129	75-125	0	S
Methylene chloride	2771	70	2333	0	119	55-145	0	
Naphthalene	1810	230	2333	0	77.6	40-140	0	
n-Butylbenzene	2063	70	2333	0	88.4	65-140	0	
n-Propylbenzene	2346	70	2333	0	101	65-135	0	
o-Xylene	2325	70	2333	0	99.6	75-125	0	
p-Isopropyltoluene	2214	70	2333	0	94.9	75-135	0	
sec-Butylbenzene	2513	70	2333	0	108	65-130	0	
Styrene	2389	70	2333	0	102	75-125	0	
tert-Butylbenzene	2406	70	2333	0	103	65-130	0	
Tetrachloroethene	2191	70	2333	0	93.9	64-140	0	
Tetrahydrofuran	3023	470	2333	0	130	70-135	0	
Toluene	2130	70	2333	0	91.3	70-125	0	
trans-1,2-Dichloroethene	2726	70	2333	0	117	65-135	0	
trans-1,3-Dichloropropene	1979	70	2333	0	84.8	65-125	0	
trans-1,4-Dichloro-2-butene	1548	70	2333	0	66.4	70-135	0	S
Trichloroethene	2506	70	2333	0	107	75-125	0	
Trichlorofluoromethane	3095	70	2333	0	133	25-185	0	
Vinyl chloride	3187	70	2333	0	137	60-125	0	S
Surr: 1,2-Dichloroethane-d4	*2317*	0	*2333*	0	*99.3*	*70-130*	0	
Surr: 4-Bromofluorobenzene	*2465*	0	*2333*	0	*106*	*70-130*	0	
Surr: Dibromofluoromethane	*2375*	0	*2333*	0	*102*	*70-130*	0	
Surr: Toluene-d8	*2015*	0	*2333*	0	*86.4*	*70-130*	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212554
Project: Marshall KRRI 1250I,1250L 12/13/12

QC BATCH REPORT

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

MSD Sample ID: **1212554-08A MSD** Units: **µg/Kg** Analysis Date: **12/18/2012 10:04 AM**
Client ID: **SBKR1250I506S121312S004** Run ID: **VMS9_121217B** SeqNo: **2172810** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	2176	70	2333	0	93.2	75-125	2184	0.375	30	
1,1,1-Trichloroethane	2637	70	2333	0	113	70-135	2666	1.1	30	
1,1,2,2-Tetrachloroethane	2140	70	2333	0	91.7	55-130	2171	1.46	30	
1,1,2-Trichloroethane	2070	70	2333	0	88.7	60-125	2067	0.113	30	
1,1-Dichloroethane	2779	70	2333	0	119	75-125	2627	5.61	30	
1,1-Dichloroethene	2945	70	2333	0	126	65-135	2890	1.88	30	
1,2,3-Trichlorobenzene	1967	70	2333	0	84.3	60-135	1864	5.36	30	
1,2,3-Trichloropropane	2158	70	2333	0	92.5	65-130	2210	2.35	30	
1,2,4-Trichlorobenzene	1931	70	2333	0	82.8	65-130	1882	2.57	30	
1,2,4-Trimethylbenzene	2338	70	2333	0	100	65-135	2358	0.845	30	
1,2-Dibromo-3-chloropropane	1928	70	2333	0	82.6	40-135	1912	0.851	30	
1,2-Dibromoethane	2134	70	2333	0	91.4	70-125	2199	3.02	30	
1,2-Dichlorobenzene	2011	70	2333	0	86.2	75-120	1958	2.7	30	
1,2-Dichloroethane	2394	70	2333	0	103	70-135	2459	2.69	30	
1,2-Dichloropropane	2480	70	2333	0	106	70-120	2488	0.329	30	
1,3,5-Trimethylbenzene	2424	70	2333	0	104	65-135	2435	0.432	30	
1,3-Dichlorobenzene	2026	70	2333	0	86.8	70-125	2007	0.984	30	
1,4-Dichlorobenzene	2046	70	2333	0	87.7	70-125	1995	2.54	30	
2-Butanone	3009	470	2333	0	129	30-160	3053	1.46	30	
2-Hexanone	2510	70	2333	0	108	45-145	2558	1.93	30	
4-Methyl-2-pentanone	2714	70	2333	0	116	45-145	2843	4.66	30	
Acetone	3764	230	2333	0	161	20-160	3891	3.32	30	BS
Acrylonitrile	2866	230	2333	0	123	70-135	2864	0.0814	30	
Benzene	2487	70	2333	0	107	75-125	2511	0.934	30	
Bromobenzene	2206	70	2333	0	94.6	65-120	2230	1.05	30	
Bromochloromethane	2750	70	2333	0	118	70-125	2744	0.212	30	
Bromodichloromethane	2420	70	2333	0	104	70-130	2418	0.0482	30	
Bromoform	1926	70	2333	0	82.6	55-135	1881	2.39	30	
Bromomethane	2975	180	2333	0	128	30-160	2656	11.3	30	
Carbon disulfide	2870	70	2333	0	123	45-160	2774	3.39	30	
Carbon tetrachloride	2709	70	2333	0	116	65-135	2780	2.59	30	
Chlorobenzene	2151	70	2333	0	92.2	75-125	2171	0.918	30	
Chloroethane	1115	230	2333	0	47.8	40-155	1097	1.69	30	
Chloroform	2762	70	2333	0	118	70-125	2694	2.48	30	
Chloromethane	3563	230	2333	127.2	147	50-130	3533	0.855	30	S
cis-1,2-Dichloroethene	2674	70	2333	0	115	65-125	2641	1.23	30	
cis-1,3-Dichloropropene	2323	70	2333	0	99.6	70-125	2329	0.251	30	
Dibromochloromethane	1973	70	2333	0	84.6	65-135	1954	0.951	30	
Dibromomethane	2510	70	2333	0	108	75-130	2553	1.71	30	
Dichlorodifluoromethane	3104	70	2333	0	133	35-135	3136	1.01	30	
Ethylbenzene	2211	70	2333	0	94.8	75-125	2241	1.36	30	
Hexachloroethane	2046	70	2333	0	87.7	70-135	2007	1.96	30	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

Isopropylbenzene	2361	70	2333	0	101	75-130	2398	1.52	30	
m,p-Xylene	4541	140	4667	0	97.3	80-125	4610	1.5	30	
Methyl tert-butyl ether	3061	70	2333	0	131	75-125	3004	1.88	30	S
Methylene chloride	2846	70	2333	0	122	55-145	2771	2.66	30	
Naphthalene	1970	230	2333	0	84.4	40-140	1810	8.52	30	
n-Butylbenzene	2124	70	2333	0	91	65-140	2063	2.95	30	
n-Propylbenzene	2297	70	2333	0	98.4	65-135	2346	2.11	30	
o-Xylene	2303	70	2333	0	98.7	75-125	2325	0.958	30	
p-Isopropyltoluene	2212	70	2333	0	94.8	75-135	2214	0.105	30	
sec-Butylbenzene	2494	70	2333	0	107	65-130	2513	0.746	30	
Styrene	2395	70	2333	0	103	75-125	2389	0.244	30	
tert-Butylbenzene	2375	70	2333	0	102	65-130	2406	1.27	30	
Tetrachloroethene	2155	70	2333	0	92.4	64-140	2191	1.66	30	
Tetrahydrofuran	2938	470	2333	0	126	70-135	3023	2.86	30	
Toluene	2107	70	2333	0	90.3	70-125	2130	1.1	30	
trans-1,2-Dichloroethene	2770	70	2333	0	119	65-135	2726	1.57	30	
trans-1,3-Dichloropropene	1936	70	2333	0	83	65-125	1979	2.21	30	
trans-1,4-Dichloro-2-butene	1493	70	2333	0	64	70-135	1548	3.61	30	S
Trichloroethene	2482	70	2333	0	106	75-125	2506	0.982	30	
Trichlorofluoromethane	3116	70	2333	0	134	25-185	3095	0.676	30	
Vinyl chloride	3322	70	2333	0	142	60-125	3187	4.12	30	S
Surr: 1,2-Dichloroethane-d4	*2248*	0	*2333*	0	*96.4*	*70-130*	2317	*3.02*	*30*	
Surr: 4-Bromofluorobenzene	*2448*	0	*2333*	0	*105*	*70-130*	2465	*0.712*	*30*	
Surr: Dibromofluoromethane	*2417*	0	*2333*	0	*104*	*70-130*	2375	*1.75*	*30*	
Surr: Toluene-d8	*2009*	0	*2333*	0	*86.1*	*70-130*	2015	*0.29*	*30*	

The following samples were analyzed in this batch:

1212554-01A	1212554-02A	1212554-03A
1212554-04A	1212554-05A	1212554-06A
1212554-07A	1212554-08A	1212554-09A
1212554-10A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212554
Project: Marshall KRRI 1250I,1250L 12/13/12

QC BATCH REPORT

Batch ID: **R114082** Instrument ID **MOIST** Method: **A2540 G**

MBLK Sample ID: **WBLKS1-R114082** Units: **% of sample** Analysis Date: **12/17/2012 05:20 PM**
Client ID: Run ID: **MOIST_121217C** SeqNo: **2172627** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	ND	0.050								

LCS Sample ID: **LCS-R114082** Units: **% of sample** Analysis Date: **12/17/2012 05:20 PM**
Client ID: Run ID: **MOIST_121217C** SeqNo: **2172619** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	100	0.050	100	0	100	99.5-100.5	0			

DUP Sample ID: **1212554-08B DUP** Units: **% of sample** Analysis Date: **12/17/2012 05:20 PM**
Client ID: **SBKR1250I506S121312S004** Run ID: **MOIST_121217C** SeqNo: **2172571** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	45.78	0.050	0	0	0	0-0	40.11	0	20	

DUP Sample ID: **1212556-04A DUP** Units: **% of sample** Analysis Date: **12/17/2012 05:20 PM**
Client ID: Run ID: **MOIST_121217C** SeqNo: **2172579** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	35.28	0.050	0	0	0	0-0	35.34	0.17	20	

The following samples were analyzed in this batch:

1212554-01B	1212554-02B	1212554-03B
1212554-04B	1212554-05B	1212554-06B
1212554-07B	1212554-08B	1212554-10B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

1212554

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

COC #	ENBRIDGE_121312_GMK1	Task: KRRI_1250
	Total # of Samples: 10	Event Complete?
Turn Around Time	5 Day	Rush: No
BILLING CODE: 6.00		

Lab Information:
Lab Name: ALS Laboratory Group
Address: 3352 128th Ave, Holland, MI 49424-9263
Lab PM: Ann Preston
Phone/Fax: 1-616-399-6070/1-616-399-6185
Lab PM email: ann.preston@alsglobal.com
Applicable Lab Quote #:

Project Information:
Site ID #:
Project #: 60162778
Site Address: 5555 Glenwood Parkway SE Suite 200
City: Grand Rapids State, Zip: MI
Site PM Name: [redacted]
Phone/Fax: [redacted]
Site PM Email: Bryan.Stiemsma@aecom.com

Other Information:
Send Invoice to: Enbridge Energy - ATTN Accounts Payable
Address: 1100 Louisiana Suite 1100
City/State: Houson, TX Phone #: 713-821-2000
PO #:
Send EDD to:
CC Hardcopy report:
CC Hardcopy report:

ITEM #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	MATRIX CODE	G=GRAB C=COMP	SAMPLE DATE	#OF CONTAINERS	Comments/Lab Sample I.D.	Preservative	None	None	None	None	MeOH										
								Analysis	% Moisture	Be,Mo,V,Ni by 6020	ORO,DRO	PNAs by 8270	VOC by 5035/8260										
1	SBKR1250I501S121312S005	SBKR1250I501	SO	G	12/13/2012 10:37	3			X	X	X	X	X										
2	SBKR1250I502S121312S004	SBKR1250I502	SO	G	12/13/2012 11:42	3			X	X	X	X	X										
3	SBKR1250I502S121312S017	SBKR1250I502	SO	G	12/13/2012 11:47	3			X	X	X	X	X										
4	SBKR1250I503S121312S004	SBKR1250I503	SO	G	12/13/2012 13:22	3			X	X	X	X	X										
5	SBKR1250I504S121312S005	SBKR1250I504	SO	G	12/13/2012 14:37	3			X	X	X	X	X										
6	SBKR1250I504D121312S005	SBKR1250I504	SO	G	12/13/2012 14:37	3	DUPLICATE		X	X	X	X	X										
7	SBKR1250I505S121312S003	SBKR1250I505	SO	G	12/13/2012 15:36	3			X	X	X	X	X										
8	SBKR1250I506S121312S004	SBKR1250I506	SO	G	12/13/2012 16:25	6	MS/MSD		X	X	X	X	X										
9	SBKR1250I506T121312MX	SBKR1250I506	SQ	G	12/13/2012 00:00	1	TRIP BLANK						X										
10	SBKR1250L506S121312S005	SBKR1250L506	SO	G	12/13/2012 09:38	3			X	X	X	X	X										

Additional Comments/Special Instructions:

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
G Kramer	12-13-12	1645	[signature]	12-13-12	1645
[signature]	12/14/12	1545	[signature]	12/14/12	1545

Sample Receipt Conditions

Temp in °C	Samples on ice?	Sample intact?	Trip Blank?
3.2 °C	(Y) N	(Y) N	(Y) N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N

SHIPPING INFO
Company:
Tracking #:

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: GERRY KRAMER (GMK1)
SIGNATURE of SAMPLER:
DATE Signed:
Time:

ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **14-Dec-12 15:45**

Work Order: **1212554** Received by: **PD**

Checklist completed by Diane Shaw (eSignature) 17-Dec-12 (Date) Reviewed by: Ann Preston (eSignature) 17-Dec-12 (Date)

Matrices: Soil
Carrier name: ALSHN

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	3.2 c		
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	12/17/2012 10:24:07 AM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL

Date: 12-13-12 Time: 1645
Name: [illegible]
Company:

Seal Broken By:

Date:

3.2°C

22-Dec-2012

Bryan Stiemsma
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall KRRI 1225-1250L,1225R 12/12/12** Work Order: **1212556**

Dear Bryan,

ALS Environmental received 9 samples on 14-Dec-2012 03:45 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 92.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

Certificate No: MN331938

ALS Group USA, Corp

Date: 22-Dec-12

Client: AECOM Environment
Project: Marshall KRRI 1225-1250L,1225R 12/12/12
Work Order: **1212556**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1212556-01	SBKR1225L510S121212S007	Soil		12/12/2012 09:13	12/14/2012 15:45	☐
1212556-02	SBKR1225R504S121212S005	Soil		12/12/2012 08:18	12/14/2012 15:45	☐
1212556-03	SBKR1250L501S121212S005	Soil		12/12/2012 10:20	12/14/2012 15:45	☐
1212556-04	SBKR1250L501D121212S005	Soil		12/12/2012 10:20	12/14/2012 15:45	☐
1212556-05	SBKR1250L502S121212S004	Soil		12/12/2012 11:35	12/14/2012 15:45	☐
1212556-06	SBKR1250L503S121212S005	Soil		12/12/2012 13:35	12/14/2012 15:45	☐
1212556-07	SBKR1250L504S121212S007	Soil		12/12/2012 14:31	12/14/2012 15:45	☐
1212556-08	SBKR1250L505S121212S004	Soil		12/12/2012 15:39	12/14/2012 15:45	☐
1212556-09	SBKR1250L505T121212MX	Soil		12/12/2012	12/14/2012 15:45	☐

ALS Group USA, Corp

Date: 22-Dec-12

Client: AECOM Environment
Project: Marshall KRRI 1225-1250L,1225R 12/12/12
Work Order: 1212556

Case Narrative

The extraction procedure used to prepare the soil samples for DRO and PAH analyses in this work order was a modification of the standard 3541 procedure. At the request of the client, a 10 gram sample aliquot dried with hydromatrix is used for extraction as outlined in ALS SOP HN-EXT-003(EN)-R01. All samples extracted starting on 10/1/2011 were prepared using this modified SOP.

Batch 45493 MS/MSD data for ORO is not related to this project's samples. No data requires qualification.

Batches 49473 and 45482 LCS/LCSD recoveries for several Volatile compounds were above control limits, but all samples in this quality control batch were ND for these compounds. No data requires qualification. The MS/MSD data for Volatiles is not related to this project's samples. No data requires qualification.

Batch 45484 sample SBKR1250L501S121212S005 MS/MSD recoveries for Vanadium were above the upper control limit. The corresponding result in the parent sample may be biased high for Vanadium.

ALS Group USA, Corp

Date: 22-Dec-12

Client: AECOM Environment
Project: Marshall KRRI 1225-1250L,1225R 12/12/12
WorkOrder: **1212556**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
SD	Serial Dilution
TDL	Target Detection Limit

Units Reported	Description
% of sample	Percent of Sample
µg/Kg	Micrograms per Kilogram
µg/Kg-dry	Micrograms per Kilogram Dry Weight
mg/Kg-dry	Milligrams per Kilogram Dry Weight

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1225L510S121212S007
Work Order:	1212556	**Collection Date:**	12/12/2012 9:13:00 AM
Project:	Marshall KRRI 1225-1250L,1225R 12/12/12		
Lab ID:	1212556-01	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/19/2012**		Analyst: **CW**
DRO (C10-C20)	ND	26	4.0		mg/Kg-dry	1	12/19/2012
ORO (C20-C34)	**380**	**53**	**4.0**		**mg/Kg-dry**	1	12/19/2012
Surr: 4-Terphenyl-d14	*75.9*	*39-115*			*%REC*	1	12/19/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/18/2012**		Analyst: **CES**
Beryllium	ND	1.5	0.50		mg/Kg-dry	4	12/19/2012
Molybdenum	ND	3.8	1.0		mg/Kg-dry	4	12/19/2012
Nickel	**18**	**3.8**	**1.0**		**mg/Kg-dry**	4	12/19/2012
Vanadium	**16**	**3.8**	**1.0**		**mg/Kg-dry**	4	12/19/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/19/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/19/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/19/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/19/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/19/2012
Benzo(a)anthracene	**490**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Benzo(a)pyrene	**660**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Benzo(b)fluoranthene	**690**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Benzo(g,h,i)perylene	**330**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Benzo(k)fluoranthene	**550**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Chrysene	**650**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/19/2012
Fluoranthene	**850**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/19/2012
Indeno(1,2,3-cd)pyrene	ND	330	330		µg/Kg-dry	1	12/19/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/19/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/19/2012
Pyrene	**950**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Surr: 2,4,6-Tribromophenol	*60.8*	*34-140*			*%REC*	1	12/19/2012
Surr: 2-Fluorobiphenyl	*62.4*	*12-100*			*%REC*	1	12/19/2012
Surr: 2-Fluorophenol	*78.5*	*33-117*			*%REC*	1	12/19/2012
Surr: 4-Terphenyl-d14	*98.4*	*25-137*			*%REC*	1	12/19/2012
Surr: Nitrobenzene-d5	*71.5*	*37-107*			*%REC*	1	12/19/2012
Surr: Phenol-d6	*67.6*	*40-106*			*%REC*	1	12/19/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/17/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	380	100		µg/Kg-dry	1	12/18/2012
1,1,1-Trichloroethane	ND	380	50		µg/Kg-dry	1	12/18/2012
1,1,2,2-Tetrachloroethane	ND	380	50		µg/Kg-dry	1	12/18/2012
1,1,2-Trichloroethane	ND	380	50		µg/Kg-dry	1	12/18/2012
1,1-Dichloroethane	ND	380	50		µg/Kg-dry	1	12/18/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1225L510S121212S007
Work Order:	1212556	**Collection Date:**	12/12/2012 9:13:00 AM
Project:	Marshall KRRI 1225-1250L,1225R 12/12/12		
Lab ID:	1212556-01	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	380	50		µg/Kg-dry	1	12/18/2012
1,2,3-Trichlorobenzene	ND	380	250		µg/Kg-dry	1	12/18/2012
1,2,3-Trichloropropane	ND	380	100		µg/Kg-dry	1	12/18/2012
1,2,3-Trimethylbenzene	ND	380	250		µg/Kg-dry	1	12/18/2012
1,2,4-Trichlorobenzene	ND	380	250		µg/Kg-dry	1	12/18/2012
1,2,4-Trimethylbenzene	ND	380	100		µg/Kg-dry	1	12/18/2012
1,2-Dibromo-3-chloropropane	ND	380	10		µg/Kg-dry	1	12/18/2012
1,2-Dibromoethane	ND	380	20		µg/Kg-dry	1	12/18/2012
1,2-Dichlorobenzene	ND	380	100		µg/Kg-dry	1	12/18/2012
1,2-Dichloroethane	ND	380	50		µg/Kg-dry	1	12/18/2012
1,2-Dichloropropane	ND	380	50		µg/Kg-dry	1	12/18/2012
1,3,5-Trimethylbenzene	ND	380	100		µg/Kg-dry	1	12/18/2012
1,3-Dichlorobenzene	ND	380	100		µg/Kg-dry	1	12/18/2012
1,4-Dichlorobenzene	ND	380	100		µg/Kg-dry	1	12/18/2012
2-Butanone	ND	1,300	750		µg/Kg-dry	1	12/18/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
2-Methylnaphthalene	ND	1,300	330		µg/Kg-dry	1	12/18/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
Acetone	ND	3,100	1,000		µg/Kg-dry	1	12/18/2012
Acrylonitrile	ND	380	100		µg/Kg-dry	1	12/18/2012
Benzene	ND	380	50		µg/Kg-dry	1	12/18/2012
Bromobenzene	ND	380	100		µg/Kg-dry	1	12/18/2012
Bromochloromethane	ND	380	100		µg/Kg-dry	1	12/18/2012
Bromodichloromethane	ND	380	100		µg/Kg-dry	1	12/18/2012
Bromoform	ND	380	100		µg/Kg-dry	1	12/18/2012
Bromomethane	ND	380	200		µg/Kg-dry	1	12/18/2012
Carbon disulfide	ND	380	250		µg/Kg-dry	1	12/18/2012
Carbon tetrachloride	ND	380	50		µg/Kg-dry	1	12/18/2012
Chlorobenzene	ND	380	50		µg/Kg-dry	1	12/18/2012
Chloroethane	ND	1,300	250		µg/Kg-dry	1	12/18/2012
Chloroform	ND	380	50		µg/Kg-dry	1	12/18/2012
Chloromethane	ND	630	250		µg/Kg-dry	1	12/18/2012
cis-1,2-Dichloroethene	ND	380	50		µg/Kg-dry	1	12/18/2012
cis-1,3-Dichloropropene	ND	380	50		µg/Kg-dry	1	12/18/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/18/2012
Dibromochloromethane	ND	380	100		µg/Kg-dry	1	12/18/2012
Dibromomethane	ND	380	250		µg/Kg-dry	1	12/18/2012
Dichlorodifluoromethane	ND	380	250		µg/Kg-dry	1	12/18/2012
Diethyl ether	ND	380	200		µg/Kg-dry	1	12/18/2012
Diisopropyl ether	ND	380	250		µg/Kg-dry	1	12/18/2012
Ethyl tert butyl ether	ND	380	250		µg/Kg-dry	1	12/18/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client:	AECOM Environment	**Client Sample ID:**	SBKR1225L510S121212S007
Work Order:	1212556	**Collection Date:**	12/12/2012 9:13:00 AM
Project:	Marshall KRRI 1225-1250L,1225R 12/12/12		
Lab ID:	1212556-01	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	380	50		µg/Kg-dry	1	12/18/2012
Hexachloroethane	ND	380	300		µg/Kg-dry	1	12/18/2012
Isopropylbenzene	ND	380	250		µg/Kg-dry	1	12/18/2012
m,p-Xylene	ND	750	100		µg/Kg-dry	1	12/18/2012
Methyl iodide	ND	380	100		µg/Kg-dry	1	12/18/2012
Methyl tert-butyl ether	ND	380	250		µg/Kg-dry	1	12/18/2012
Methylene chloride	ND	1,300	100		µg/Kg-dry	1	12/18/2012
Naphthalene	ND	1,300	330		µg/Kg-dry	1	12/18/2012
n-Butylbenzene	ND	380	50		µg/Kg-dry	1	12/18/2012
n-Propylbenzene	ND	380	100		µg/Kg-dry	1	12/18/2012
o-Xylene	ND	380	50		µg/Kg-dry	1	12/18/2012
p-Isopropyltoluene	ND	380	100		µg/Kg-dry	1	12/18/2012
sec-Butylbenzene	ND	380	50		µg/Kg-dry	1	12/18/2012
Styrene	ND	380	50		µg/Kg-dry	1	12/18/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
tert-Butylbenzene	ND	380	50		µg/Kg-dry	1	12/18/2012
Tertiaryamylmethylether	ND	380	250		µg/Kg-dry	1	12/18/2012
Tetrachloroethene	ND	380	50		µg/Kg-dry	1	12/18/2012
Tetrahydrofuran	ND	1,300	1,000		µg/Kg-dry	1	12/18/2012
Toluene	ND	380	100		µg/Kg-dry	1	12/18/2012
trans-1,2-Dichloroethene	ND	380	50		µg/Kg-dry	1	12/18/2012
trans-1,3-Dichloropropene	ND	380	50		µg/Kg-dry	1	12/18/2012
trans-1,4-Dichloro-2-butene	ND	380	50		µg/Kg-dry	1	12/18/2012
Trichloroethene	ND	380	50		µg/Kg-dry	1	12/18/2012
Trichlorofluoromethane	ND	380	100		µg/Kg-dry	1	12/18/2012
Vinyl chloride	ND	380	40		µg/Kg-dry	1	12/18/2012
Surr: 1,2-Dichloroethane-d4	*99.3*	*70-130*			*%REC*	1	12/18/2012
Surr: 4-Bromofluorobenzene	*100*	*70-130*			*%REC*	1	12/18/2012
Surr: Dibromofluoromethane	*97.2*	*70-130*			*%REC*	1	12/18/2012
Surr: Toluene-d8	*83.8*	*70-130*			*%REC*	1	12/18/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**64**	**0.050**	**0**		**% of sample**	1	12/17/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1225R504S121212S005
Work Order:	1212556	**Collection Date:**	12/12/2012 8:18:00 AM
Project:	Marshall KRRI 1225-1250L,1225R 12/12/12		
Lab ID:	1212556-02	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/19/2012**		Analyst: **CW**
DRO (C10-C20)	ND	15	4.0		mg/Kg-dry	1	12/19/2012
ORO (C20-C34)	**260**	**30**	**4.0**		**mg/Kg-dry**	1	12/19/2012
Surr: 4-Terphenyl-d14	*79.8*	*39-115*			*%REC*	1	12/19/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/18/2012**		Analyst: **CES**
Beryllium	ND	0.94	0.50		mg/Kg-dry	4	12/19/2012
Molybdenum	ND	2.3	1.0		mg/Kg-dry	4	12/19/2012
Nickel	**17**	**2.3**	**1.0**		**mg/Kg-dry**	4	12/19/2012
Vanadium	**18**	**2.3**	**1.0**		**mg/Kg-dry**	4	12/19/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/19/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/19/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/19/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/19/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/19/2012
Benzo(a)anthracene	**480**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Benzo(a)pyrene	**680**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Benzo(b)fluoranthene	**820**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Benzo(g,h,i)perylene	ND	330	330		µg/Kg-dry	1	12/19/2012
Benzo(k)fluoranthene	**440**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Chrysene	**650**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/19/2012
Fluoranthene	**850**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/19/2012
Indeno(1,2,3-cd)pyrene	ND	330	330		µg/Kg-dry	1	12/19/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/19/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/19/2012
Pyrene	**940**	**330**	**330**		**µg/Kg-dry**	1	12/19/2012
Surr: 2,4,6-Tribromophenol	*58.4*	*34-140*			*%REC*	1	12/19/2012
Surr: 2-Fluorobiphenyl	*62.9*	*12-100*			*%REC*	1	12/19/2012
Surr: 2-Fluorophenol	*80.3*	*33-117*			*%REC*	1	12/19/2012
Surr: 4-Terphenyl-d14	*97.3*	*25-137*			*%REC*	1	12/19/2012
Surr: Nitrobenzene-d5	*74.0*	*37-107*			*%REC*	1	12/19/2012
Surr: Phenol-d6	*64.7*	*40-106*			*%REC*	1	12/19/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/17/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	100	100		µg/Kg-dry	1	12/18/2012
1,1,1-Trichloroethane	ND	100	50		µg/Kg-dry	1	12/18/2012
1,1,2,2-Tetrachloroethane	ND	100	50		µg/Kg-dry	1	12/18/2012
1,1,2-Trichloroethane	ND	100	50		µg/Kg-dry	1	12/18/2012
1,1-Dichloroethane	ND	100	50		µg/Kg-dry	1	12/18/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client: AECOM Environment
Client Sample ID: SBKR1225R504S121212S005
Work Order: 1212556
Collection Date: 12/12/2012 8:18:00 AM
Project: Marshall KRRI 1225-1250L,1225R 12/12/12
Lab ID: 1212556-02
Matrix: SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	100	50		µg/Kg-dry	1	12/18/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,3-Trichloropropane	ND	100	100		µg/Kg-dry	1	12/18/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,4-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/18/2012
1,2-Dibromo-3-chloropropane	ND	100	10		µg/Kg-dry	1	12/18/2012
1,2-Dibromoethane	ND	100	20		µg/Kg-dry	1	12/18/2012
1,2-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/18/2012
1,2-Dichloroethane	ND	100	50		µg/Kg-dry	1	12/18/2012
1,2-Dichloropropane	ND	100	50		µg/Kg-dry	1	12/18/2012
1,3,5-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/18/2012
1,3-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/18/2012
1,4-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/18/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/18/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
2-Methylnaphthalene	ND	350	330		µg/Kg-dry	1	12/18/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
Acetone	ND	1,000	1,000		µg/Kg-dry	1	12/18/2012
Acrylonitrile	ND	100	100		µg/Kg-dry	1	12/18/2012
Benzene	ND	100	50		µg/Kg-dry	1	12/18/2012
Bromobenzene	ND	100	100		µg/Kg-dry	1	12/18/2012
Bromochloromethane	ND	100	100		µg/Kg-dry	1	12/18/2012
Bromodichloromethane	ND	100	100		µg/Kg-dry	1	12/18/2012
Bromoform	ND	100	100		µg/Kg-dry	1	12/18/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/18/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/18/2012
Carbon tetrachloride	ND	100	50		µg/Kg-dry	1	12/18/2012
Chlorobenzene	ND	100	50		µg/Kg-dry	1	12/18/2012
Chloroethane	ND	350	250		µg/Kg-dry	1	12/18/2012
Chloroform	ND	100	50		µg/Kg-dry	1	12/18/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/18/2012
cis-1,2-Dichloroethene	ND	100	50		µg/Kg-dry	1	12/18/2012
cis-1,3-Dichloropropene	ND	100	50		µg/Kg-dry	1	12/18/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/18/2012
Dibromochloromethane	ND	100	100		µg/Kg-dry	1	12/18/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/18/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/18/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/18/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client:	AECOM Environment	**Client Sample ID:**	SBKR1225R504S121212S005
Work Order:	1212556	**Collection Date:**	12/12/2012 8:18:00 AM
Project:	Marshall KRRI 1225-1250L,1225R 12/12/12		
Lab ID:	1212556-02	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	100	50		µg/Kg-dry	1	12/18/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/18/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
m,p-Xylene	ND	210	100		µg/Kg-dry	1	12/18/2012
Methyl iodide	ND	100	100		µg/Kg-dry	1	12/18/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012
Methylene chloride	ND	100	100		µg/Kg-dry	1	12/18/2012
Naphthalene	ND	350	330		µg/Kg-dry	1	12/18/2012
n-Butylbenzene	ND	100	50		µg/Kg-dry	1	12/18/2012
n-Propylbenzene	ND	100	100		µg/Kg-dry	1	12/18/2012
o-Xylene	ND	100	50		µg/Kg-dry	1	12/18/2012
p-Isopropyltoluene	ND	100	100		µg/Kg-dry	1	12/18/2012
sec-Butylbenzene	ND	100	50		µg/Kg-dry	1	12/18/2012
Styrene	ND	100	50		µg/Kg-dry	1	12/18/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
tert-Butylbenzene	ND	100	50		µg/Kg-dry	1	12/18/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/18/2012
Tetrachloroethene	ND	100	50		µg/Kg-dry	1	12/18/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/18/2012
Toluene	ND	100	100		µg/Kg-dry	1	12/18/2012
trans-1,2-Dichloroethene	ND	100	50		µg/Kg-dry	1	12/18/2012
trans-1,3-Dichloropropene	ND	100	50		µg/Kg-dry	1	12/18/2012
trans-1,4-Dichloro-2-butene	ND	100	50		µg/Kg-dry	1	12/18/2012
Trichloroethene	ND	100	50		µg/Kg-dry	1	12/18/2012
Trichlorofluoromethane	ND	100	100		µg/Kg-dry	1	12/18/2012
Vinyl chloride	ND	100	40		µg/Kg-dry	1	12/18/2012
Surr: 1,2-Dichloroethane-d4	*95.9*	*70-130*			*%REC*	1	12/18/2012
Surr: 4-Bromofluorobenzene	*98.8*	*70-130*			*%REC*	1	12/18/2012
Surr: Dibromofluoromethane	*94.0*	*70-130*			*%REC*	1	12/18/2012
Surr: Toluene-d8	*84.4*	*70-130*			*%REC*	1	12/18/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**37**	**0.050**	**0**		**% of sample**	1	12/17/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250L501S121212S005
Work Order:	1212556	**Collection Date:**	12/12/2012 10:20:00 AM
Project:	Marshall KRRI 1225-1250L,1225R 12/12/12		
Lab ID:	1212556-03	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/19/2012**		Analyst: **CW**
DRO (C10-C20)	ND	15	4.0		mg/Kg-dry	1	12/19/2012
ORO (C20-C34)	**210**	**30**	**4.0**		**mg/Kg-dry**	1	12/19/2012
Surr: 4-Terphenyl-d14	*73.3*	*39-115*			*%REC*	1	12/19/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/18/2012**		Analyst: **CES**
Beryllium	ND	0.86	0.50		mg/Kg-dry	4	12/19/2012
Molybdenum	ND	2.2	1.0		mg/Kg-dry	4	12/19/2012
Nickel	**17**	**2.2**	**1.0**		**mg/Kg-dry**	4	12/19/2012
Vanadium	**32**	**2.2**	**1.0**		**mg/Kg-dry**	4	12/19/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/19/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/19/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/19/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/19/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/19/2012
Benzo(a)anthracene	ND	330	330		µg/Kg-dry	1	12/19/2012
Benzo(a)pyrene	ND	330	330		µg/Kg-dry	1	12/19/2012
Benzo(b)fluoranthene	ND	330	330		µg/Kg-dry	1	12/19/2012
Benzo(g,h,i)perylene	ND	330	330		µg/Kg-dry	1	12/19/2012
Benzo(k)fluoranthene	ND	330	330		µg/Kg-dry	1	12/19/2012
Chrysene	ND	330	330		µg/Kg-dry	1	12/19/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/19/2012
Fluoranthene	ND	330	330		µg/Kg-dry	1	12/19/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/19/2012
Indeno(1,2,3-cd)pyrene	ND	330	330		µg/Kg-dry	1	12/19/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/19/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/19/2012
Pyrene	ND	330	330		µg/Kg-dry	1	12/19/2012
Surr: 2,4,6-Tribromophenol	*55.7*	*34-140*			*%REC*	1	12/19/2012
Surr: 2-Fluorobiphenyl	*60.6*	*12-100*			*%REC*	1	12/19/2012
Surr: 2-Fluorophenol	*77.7*	*33-117*			*%REC*	1	12/19/2012
Surr: 4-Terphenyl-d14	*93.1*	*25-137*			*%REC*	1	12/19/2012
Surr: Nitrobenzene-d5	*70.6*	*37-107*			*%REC*	1	12/19/2012
Surr: Phenol-d6	*67.6*	*40-106*			*%REC*	1	12/19/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/17/2012**		Analyst: **AK**
1,1,1,2-Tetrachloroethane	ND	100	100		µg/Kg-dry	1	12/19/2012
1,1,1-Trichloroethane	ND	100	50		µg/Kg-dry	1	12/19/2012
1,1,2,2-Tetrachloroethane	ND	100	50		µg/Kg-dry	1	12/19/2012
1,1,2-Trichloroethane	ND	100	50		µg/Kg-dry	1	12/19/2012
1,1-Dichloroethane	ND	100	50		µg/Kg-dry	1	12/19/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250L501S121212S005
Work Order:	1212556	**Collection Date:**	12/12/2012 10:20:00 AM
Project:	Marshall KRRI 1225-1250L,1225R 12/12/12		
Lab ID:	1212556-03	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	100	50		µg/Kg-dry	1	12/19/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/19/2012
1,2,3-Trichloropropane	ND	100	100		µg/Kg-dry	1	12/19/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/19/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/19/2012
1,2,4-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/19/2012
1,2-Dibromo-3-chloropropane	ND	100	10		µg/Kg-dry	1	12/19/2012
1,2-Dibromoethane	ND	100	20		µg/Kg-dry	1	12/19/2012
1,2-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/19/2012
1,2-Dichloroethane	ND	100	50		µg/Kg-dry	1	12/19/2012
1,2-Dichloropropane	ND	100	50		µg/Kg-dry	1	12/19/2012
1,3,5-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/19/2012
1,3-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/19/2012
1,4-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/19/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/19/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/19/2012
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/19/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/19/2012
Acetone	ND	1,000	1,000		µg/Kg-dry	1	12/19/2012
Acrylonitrile	ND	100	100		µg/Kg-dry	1	12/19/2012
Benzene	ND	100	50		µg/Kg-dry	1	12/19/2012
Bromobenzene	ND	100	100		µg/Kg-dry	1	12/19/2012
Bromochloromethane	ND	100	100		µg/Kg-dry	1	12/19/2012
Bromodichloromethane	ND	100	100		µg/Kg-dry	1	12/19/2012
Bromoform	ND	100	100		µg/Kg-dry	1	12/19/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/19/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/19/2012
Carbon tetrachloride	ND	100	50		µg/Kg-dry	1	12/19/2012
Chlorobenzene	ND	100	50		µg/Kg-dry	1	12/19/2012
Chloroethane	ND	330	250		µg/Kg-dry	1	12/19/2012
Chloroform	ND	100	50		µg/Kg-dry	1	12/19/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/19/2012
cis-1,2-Dichloroethene	ND	100	50		µg/Kg-dry	1	12/19/2012
cis-1,3-Dichloropropene	ND	100	50		µg/Kg-dry	1	12/19/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/19/2012
Dibromochloromethane	ND	100	100		µg/Kg-dry	1	12/19/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/19/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/19/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/19/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/19/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/19/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250L501S121212S005
Work Order:	1212556	**Collection Date:**	12/12/2012 10:20:00 AM
Project:	Marshall KRRI 1225-1250L,1225R 12/12/12		
Lab ID:	1212556-03	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	100	50		µg/Kg-dry	1	12/19/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/19/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/19/2012
m,p-Xylene	ND	200	100		µg/Kg-dry	1	12/19/2012
Methyl iodide	ND	100	100		µg/Kg-dry	1	12/19/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/19/2012
Methylene chloride	ND	330	100		µg/Kg-dry	1	12/19/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/19/2012
n-Butylbenzene	ND	100	50		µg/Kg-dry	1	12/19/2012
n-Propylbenzene	ND	100	100		µg/Kg-dry	1	12/19/2012
o-Xylene	ND	100	50		µg/Kg-dry	1	12/19/2012
p-Isopropyltoluene	ND	100	100		µg/Kg-dry	1	12/19/2012
sec-Butylbenzene	ND	100	50		µg/Kg-dry	1	12/19/2012
Styrene	ND	100	50		µg/Kg-dry	1	12/19/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/19/2012
tert-Butylbenzene	ND	100	50		µg/Kg-dry	1	12/19/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/19/2012
Tetrachloroethene	ND	100	50		µg/Kg-dry	1	12/19/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/19/2012
Toluene	ND	100	100		µg/Kg-dry	1	12/19/2012
trans-1,2-Dichloroethene	ND	100	50		µg/Kg-dry	1	12/19/2012
trans-1,3-Dichloropropene	ND	100	50		µg/Kg-dry	1	12/19/2012
trans-1,4-Dichloro-2-butene	ND	100	50		µg/Kg-dry	1	12/19/2012
Trichloroethene	ND	100	50		µg/Kg-dry	1	12/19/2012
Trichlorofluoromethane	ND	100	100		µg/Kg-dry	1	12/19/2012
Vinyl chloride	ND	100	40		µg/Kg-dry	1	12/19/2012
Surr: 1,2-Dichloroethane-d4	*88.4*	*70-130*			*%REC*	1	12/19/2012
Surr: 4-Bromofluorobenzene	*103*	*70-130*			*%REC*	1	12/19/2012
Surr: Dibromofluoromethane	*89.0*	*70-130*			*%REC*	1	12/19/2012
Surr: Toluene-d8	*93.8*	*70-130*			*%REC*	1	12/19/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**36**	**0.050**	**0**		**% of sample**	1	12/17/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250L501D121212S005
Work Order:	1212556	**Collection Date:**	12/12/2012 10:20:00 AM
Project:	Marshall KRRI 1225-1250L,1225R 12/12/12		
Lab ID:	1212556-04	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/19/2012**		Analyst: **CW**
DRO (C10-C20)	ND	15	4.0		mg/Kg-dry	1	12/19/2012
ORO (C20-C34)	**180**	**29**	**4.0**		**mg/Kg-dry**	1	12/19/2012
Surr: 4-Terphenyl-d14	*74.9*	*39-115*			*%REC*	1	12/19/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/18/2012**		Analyst: **CES**
Beryllium	ND	0.82	0.50		mg/Kg-dry	4	12/19/2012
Molybdenum	ND	2.1	1.0		mg/Kg-dry	4	12/19/2012
Nickel	**16**	**2.1**	**1.0**		**mg/Kg-dry**	4	12/19/2012
Vanadium	**29**	**2.1**	**1.0**		**mg/Kg-dry**	4	12/19/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/19/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/20/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/20/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/20/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/20/2012
Benzo(a)anthracene	ND	330	330		µg/Kg-dry	1	12/20/2012
Benzo(a)pyrene	ND	330	330		µg/Kg-dry	1	12/20/2012
Benzo(b)fluoranthene	ND	330	330		µg/Kg-dry	1	12/20/2012
Benzo(g,h,i)perylene	ND	330	330		µg/Kg-dry	1	12/20/2012
Benzo(k)fluoranthene	ND	330	330		µg/Kg-dry	1	12/20/2012
Chrysene	ND	330	330		µg/Kg-dry	1	12/20/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/20/2012
Fluoranthene	ND	330	330		µg/Kg-dry	1	12/20/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/20/2012
Indeno(1,2,3-cd)pyrene	ND	330	330		µg/Kg-dry	1	12/20/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/20/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/20/2012
Pyrene	ND	330	330		µg/Kg-dry	1	12/20/2012
Surr: 2,4,6-Tribromophenol	*53.5*	*34-140*			*%REC*	1	12/20/2012
Surr: 2-Fluorobiphenyl	*62.7*	*12-100*			*%REC*	1	12/20/2012
Surr: 2-Fluorophenol	*78.9*	*33-117*			*%REC*	1	12/20/2012
Surr: 4-Terphenyl-d14	*95.7*	*25-137*			*%REC*	1	12/20/2012
Surr: Nitrobenzene-d5	*73.3*	*37-107*			*%REC*	1	12/20/2012
Surr: Phenol-d6	*61.9*	*40-106*			*%REC*	1	12/20/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/17/2012**		Analyst: **AK**
1,1,1,2-Tetrachloroethane	ND	100	100		µg/Kg-dry	1	12/19/2012
1,1,1-Trichloroethane	ND	96	50		µg/Kg-dry	1	12/19/2012
1,1,2,2-Tetrachloroethane	ND	96	50		µg/Kg-dry	1	12/19/2012
1,1,2-Trichloroethane	ND	96	50		µg/Kg-dry	1	12/19/2012
1,1-Dichloroethane	ND	96	50		µg/Kg-dry	1	12/19/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250L501D121212S005
Work Order:	1212556	**Collection Date:**	12/12/2012 10:20:00 AM
Project:	Marshall KRRI 1225-1250L,1225R 12/12/12		
Lab ID:	1212556-04	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	96	50		µg/Kg-dry	1	12/19/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/19/2012
1,2,3-Trichloropropane	ND	100	100		µg/Kg-dry	1	12/19/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/19/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/19/2012
1,2,4-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/19/2012
1,2-Dibromo-3-chloropropane	ND	96	10		µg/Kg-dry	1	12/19/2012
1,2-Dibromoethane	ND	96	20		µg/Kg-dry	1	12/19/2012
1,2-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/19/2012
1,2-Dichloroethane	ND	96	50		µg/Kg-dry	1	12/19/2012
1,2-Dichloropropane	ND	96	50		µg/Kg-dry	1	12/19/2012
1,3,5-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/19/2012
1,3-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/19/2012
1,4-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/19/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/19/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/19/2012
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/19/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/19/2012
Acetone	ND	1,000	1,000		µg/Kg-dry	1	12/19/2012
Acrylonitrile	ND	100	100		µg/Kg-dry	1	12/19/2012
Benzene	ND	96	50		µg/Kg-dry	1	12/19/2012
Bromobenzene	ND	100	100		µg/Kg-dry	1	12/19/2012
Bromochloromethane	ND	100	100		µg/Kg-dry	1	12/19/2012
Bromodichloromethane	ND	100	100		µg/Kg-dry	1	12/19/2012
Bromoform	ND	100	100		µg/Kg-dry	1	12/19/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/19/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/19/2012
Carbon tetrachloride	ND	96	50		µg/Kg-dry	1	12/19/2012
Chlorobenzene	ND	96	50		µg/Kg-dry	1	12/19/2012
Chloroethane	ND	320	250		µg/Kg-dry	1	12/19/2012
Chloroform	ND	96	50		µg/Kg-dry	1	12/19/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/19/2012
cis-1,2-Dichloroethene	ND	96	50		µg/Kg-dry	1	12/19/2012
cis-1,3-Dichloropropene	ND	96	50		µg/Kg-dry	1	12/19/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/19/2012
Dibromochloromethane	ND	100	100		µg/Kg-dry	1	12/19/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/19/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/19/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/19/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/19/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/19/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250L501D121212S005
Work Order:	1212556	**Collection Date:**	12/12/2012 10:20:00 AM
Project:	Marshall KRRI 1225-1250L,1225R 12/12/12		
Lab ID:	1212556-04	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	96	50		µg/Kg-dry	1	12/19/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/19/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/19/2012
m,p-Xylene	ND	190	100		µg/Kg-dry	1	12/19/2012
Methyl iodide	ND	100	100		µg/Kg-dry	1	12/19/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/19/2012
Methylene chloride	ND	320	100		µg/Kg-dry	1	12/19/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/19/2012
n-Butylbenzene	ND	96	50		µg/Kg-dry	1	12/19/2012
n-Propylbenzene	ND	100	100		µg/Kg-dry	1	12/19/2012
o-Xylene	ND	96	50		µg/Kg-dry	1	12/19/2012
p-Isopropyltoluene	ND	100	100		µg/Kg-dry	1	12/19/2012
sec-Butylbenzene	ND	96	50		µg/Kg-dry	1	12/19/2012
Styrene	ND	96	50		µg/Kg-dry	1	12/19/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/19/2012
tert-Butylbenzene	ND	96	50		µg/Kg-dry	1	12/19/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/19/2012
Tetrachloroethene	ND	96	50		µg/Kg-dry	1	12/19/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/19/2012
Toluene	ND	100	100		µg/Kg-dry	1	12/19/2012
trans-1,2-Dichloroethene	ND	96	50		µg/Kg-dry	1	12/19/2012
trans-1,3-Dichloropropene	ND	96	50		µg/Kg-dry	1	12/19/2012
trans-1,4-Dichloro-2-butene	ND	96	50		µg/Kg-dry	1	12/19/2012
Trichloroethene	ND	96	50		µg/Kg-dry	1	12/19/2012
Trichlorofluoromethane	ND	100	100		µg/Kg-dry	1	12/19/2012
Vinyl chloride	ND	96	40		µg/Kg-dry	1	12/19/2012
Surr: 1,2-Dichloroethane-d4	*90.6*	*70-130*			*%REC*	1	12/19/2012
Surr: 4-Bromofluorobenzene	*103*	*70-130*			*%REC*	1	12/19/2012
Surr: Dibromofluoromethane	*89.8*	*70-130*			*%REC*	1	12/19/2012
Surr: Toluene-d8	*95.1*	*70-130*			*%REC*	1	12/19/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**35**	**0.050**	**0**		**% of sample**	1	12/17/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250L502S121212S004
Work Order:	1212556	**Collection Date:**	12/12/2012 11:35:00 AM
Project:	Marshall KRRI 1225-1250L,1225R 12/12/12		
Lab ID:	1212556-05	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/19/2012**		Analyst: **CW**
DRO (C10-C20)	ND	16	4.0		mg/Kg-dry	1	12/19/2012
ORO (C20-C34)	**210**	**32**	**4.0**		**mg/Kg-dry**	1	12/19/2012
Surr: 4-Terphenyl-d14	*78.9*	*39-115*			*%REC*	1	12/19/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/18/2012**		Analyst: **CES**
Beryllium	ND	1.0	0.50		mg/Kg-dry	4	12/19/2012
Molybdenum	ND	2.6	1.0		mg/Kg-dry	4	12/19/2012
Nickel	**21**	**2.6**	**1.0**		**mg/Kg-dry**	4	12/19/2012
Vanadium	**35**	**2.6**	**1.0**		**mg/Kg-dry**	4	12/19/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/19/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/20/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/20/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/20/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/20/2012
Benzo(a)anthracene	ND	330	330		µg/Kg-dry	1	12/20/2012
Benzo(a)pyrene	**440**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Benzo(b)fluoranthene	**440**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Benzo(g,h,i)perylene	ND	330	330		µg/Kg-dry	1	12/20/2012
Benzo(k)fluoranthene	ND	330	330		µg/Kg-dry	1	12/20/2012
Chrysene	**360**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/20/2012
Fluoranthene	**410**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/20/2012
Indeno(1,2,3-cd)pyrene	ND	330	330		µg/Kg-dry	1	12/20/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/20/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/20/2012
Pyrene	**520**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Surr: 2,4,6-Tribromophenol	*59.2*	*34-140*			*%REC*	1	12/20/2012
Surr: 2-Fluorobiphenyl	*65.1*	*12-100*			*%REC*	1	12/20/2012
Surr: 2-Fluorophenol	*78.7*	*33-117*			*%REC*	1	12/20/2012
Surr: 4-Terphenyl-d14	*100*	*25-137*			*%REC*	1	12/20/2012
Surr: Nitrobenzene-d5	*73.5*	*37-107*			*%REC*	1	12/20/2012
Surr: Phenol-d6	*62.5*	*40-106*			*%REC*	1	12/20/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/17/2012**		Analyst: **AK**
1,1,1,2-Tetrachloroethane	ND	120	100		µg/Kg-dry	1	12/19/2012
1,1,1-Trichloroethane	ND	120	50		µg/Kg-dry	1	12/19/2012
1,1,2,2-Tetrachloroethane	ND	120	50		µg/Kg-dry	1	12/19/2012
1,1,2-Trichloroethane	ND	120	50		µg/Kg-dry	1	12/19/2012
1,1-Dichloroethane	ND	120	50		µg/Kg-dry	1	12/19/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250L502S121212S004
Work Order:	1212556	**Collection Date:**	12/12/2012 11:35:00 AM
Project:	Marshall KRRI 1225-1250L,1225R 12/12/12		
Lab ID:	1212556-05	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	120	50		µg/Kg-dry	1	12/19/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/19/2012
1,2,3-Trichloropropane	ND	120	100		µg/Kg-dry	1	12/19/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/19/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/19/2012
1,2,4-Trimethylbenzene	ND	120	100		µg/Kg-dry	1	12/19/2012
1,2-Dibromo-3-chloropropane	ND	120	10		µg/Kg-dry	1	12/19/2012
1,2-Dibromoethane	ND	120	20		µg/Kg-dry	1	12/19/2012
1,2-Dichlorobenzene	ND	120	100		µg/Kg-dry	1	12/19/2012
1,2-Dichloroethane	ND	120	50		µg/Kg-dry	1	12/19/2012
1,2-Dichloropropane	ND	120	50		µg/Kg-dry	1	12/19/2012
1,3,5-Trimethylbenzene	ND	120	100		µg/Kg-dry	1	12/19/2012
1,3-Dichlorobenzene	ND	120	100		µg/Kg-dry	1	12/19/2012
1,4-Dichlorobenzene	ND	120	100		µg/Kg-dry	1	12/19/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/19/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/19/2012
2-Methylnaphthalene	ND	390	330		µg/Kg-dry	1	12/19/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/19/2012
Acetone	ND	1,000	1,000		µg/Kg-dry	1	12/19/2012
Acrylonitrile	ND	120	100		µg/Kg-dry	1	12/19/2012
Benzene	ND	120	50		µg/Kg-dry	1	12/19/2012
Bromobenzene	ND	120	100		µg/Kg-dry	1	12/19/2012
Bromochloromethane	ND	120	100		µg/Kg-dry	1	12/19/2012
Bromodichloromethane	ND	120	100		µg/Kg-dry	1	12/19/2012
Bromoform	ND	120	100		µg/Kg-dry	1	12/19/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/19/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/19/2012
Carbon tetrachloride	ND	120	50		µg/Kg-dry	1	12/19/2012
Chlorobenzene	ND	120	50		µg/Kg-dry	1	12/19/2012
Chloroethane	ND	390	250		µg/Kg-dry	1	12/19/2012
Chloroform	ND	120	50		µg/Kg-dry	1	12/19/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/19/2012
cis-1,2-Dichloroethene	ND	120	50		µg/Kg-dry	1	12/19/2012
cis-1,3-Dichloropropene	ND	120	50		µg/Kg-dry	1	12/19/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/19/2012
Dibromochloromethane	ND	120	100		µg/Kg-dry	1	12/19/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/19/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/19/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/19/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/19/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/19/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250L502S121212S004
Work Order:	1212556	**Collection Date:**	12/12/2012 11:35:00 AM
Project:	Marshall KRRI 1225-1250L,1225R 12/12/12		
Lab ID:	1212556-05	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	120	50		µg/Kg-dry	1	12/19/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/19/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/19/2012
m,p-Xylene	ND	230	100		µg/Kg-dry	1	12/19/2012
Methyl iodide	ND	120	100		µg/Kg-dry	1	12/19/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/19/2012
Methylene chloride	ND	390	100		µg/Kg-dry	1	12/19/2012
Naphthalene	ND	390	330		µg/Kg-dry	1	12/19/2012
n-Butylbenzene	ND	120	50		µg/Kg-dry	1	12/19/2012
n-Propylbenzene	ND	120	100		µg/Kg-dry	1	12/19/2012
o-Xylene	ND	120	50		µg/Kg-dry	1	12/19/2012
p-Isopropyltoluene	ND	120	100		µg/Kg-dry	1	12/19/2012
sec-Butylbenzene	ND	120	50		µg/Kg-dry	1	12/19/2012
Styrene	ND	120	50		µg/Kg-dry	1	12/19/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/19/2012
tert-Butylbenzene	ND	120	50		µg/Kg-dry	1	12/19/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/19/2012
Tetrachloroethene	ND	120	50		µg/Kg-dry	1	12/19/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/19/2012
Toluene	ND	120	100		µg/Kg-dry	1	12/19/2012
trans-1,2-Dichloroethene	ND	120	50		µg/Kg-dry	1	12/19/2012
trans-1,3-Dichloropropene	ND	120	50		µg/Kg-dry	1	12/19/2012
trans-1,4-Dichloro-2-butene	ND	120	50		µg/Kg-dry	1	12/19/2012
Trichloroethene	ND	120	50		µg/Kg-dry	1	12/19/2012
Trichlorofluoromethane	ND	120	100		µg/Kg-dry	1	12/19/2012
Vinyl chloride	ND	120	40		µg/Kg-dry	1	12/19/2012
Surr: 1,2-Dichloroethane-d4	*90.4*	*70-130*			*%REC*	1	12/19/2012
Surr: 4-Bromofluorobenzene	*102*	*70-130*			*%REC*	1	12/19/2012
Surr: Dibromofluoromethane	*92.4*	*70-130*			*%REC*	1	12/19/2012
Surr: Toluene-d8	*94.9*	*70-130*			*%REC*	1	12/19/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**40**	**0.050**	**0**		**% of sample**	1	12/17/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250L503S121212S005
Work Order:	1212556	**Collection Date:**	12/12/2012 1:35:00 PM
Project:	Marshall KRRI 1225-1250L,1225R 12/12/12		
Lab ID:	1212556-06	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/19/2012**		Analyst: **CW**
DRO (C10-C20)	ND	26	4.0		mg/Kg-dry	1	12/19/2012
ORO (C20-C34)	**280**	**51**	**4.0**		**mg/Kg-dry**	1	12/19/2012
Surr: 4-Terphenyl-d14	*76.6*	*39-115*			*%REC*	1	12/19/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/18/2012**		Analyst: **CES**
Beryllium	ND	1.7	0.50		mg/Kg-dry	4	12/20/2012
Molybdenum	ND	4.2	1.0		mg/Kg-dry	4	12/20/2012
Nickel	**18**	**4.2**	**1.0**		**mg/Kg-dry**	4	12/20/2012
Vanadium	**28**	**4.2**	**1.0**		**mg/Kg-dry**	4	12/20/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/19/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/20/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/20/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/20/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/20/2012
Benzo(a)anthracene	ND	330	330		µg/Kg-dry	1	12/20/2012
Benzo(a)pyrene	**390**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Benzo(b)fluoranthene	**380**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Benzo(g,h,i)perylene	ND	330	330		µg/Kg-dry	1	12/20/2012
Benzo(k)fluoranthene	ND	330	330		µg/Kg-dry	1	12/20/2012
Chrysene	**370**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/20/2012
Fluoranthene	**380**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/20/2012
Indeno(1,2,3-cd)pyrene	ND	330	330		µg/Kg-dry	1	12/20/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/20/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/20/2012
Pyrene	**490**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Surr: 2,4,6-Tribromophenol	*55.8*	*34-140*			*%REC*	1	12/20/2012
Surr: 2-Fluorobiphenyl	*64.8*	*12-100*			*%REC*	1	12/20/2012
Surr: 2-Fluorophenol	*77.6*	*33-117*			*%REC*	1	12/20/2012
Surr: 4-Terphenyl-d14	*96.1*	*25-137*			*%REC*	1	12/20/2012
Surr: Nitrobenzene-d5	*77.5*	*37-107*			*%REC*	1	12/20/2012
Surr: Phenol-d6	*79.5*	*40-106*			*%REC*	1	12/20/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/17/2012**		Analyst: **AK**
1,1,1,2-Tetrachloroethane	ND	350	100		µg/Kg-dry	1	12/19/2012
1,1,1-Trichloroethane	ND	350	50		µg/Kg-dry	1	12/19/2012
1,1,2,2-Tetrachloroethane	ND	350	50		µg/Kg-dry	1	12/19/2012
1,1,2-Trichloroethane	ND	350	50		µg/Kg-dry	1	12/19/2012
1,1-Dichloroethane	ND	350	50		µg/Kg-dry	1	12/19/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250L503S121212S005
Work Order:	1212556	**Collection Date:**	12/12/2012 1:35:00 PM
Project:	Marshall KRRI 1225-1250L,1225R 12/12/12		
Lab ID:	1212556-06	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	350	50		µg/Kg-dry	1	12/19/2012
1,2,3-Trichlorobenzene	ND	350	250		µg/Kg-dry	1	12/19/2012
1,2,3-Trichloropropane	ND	350	100		µg/Kg-dry	1	12/19/2012
1,2,3-Trimethylbenzene	ND	350	250		µg/Kg-dry	1	12/19/2012
1,2,4-Trichlorobenzene	ND	350	250		µg/Kg-dry	1	12/19/2012
1,2,4-Trimethylbenzene	ND	350	100		µg/Kg-dry	1	12/19/2012
1,2-Dibromo-3-chloropropane	ND	350	10		µg/Kg-dry	1	12/19/2012
1,2-Dibromoethane	ND	350	20		µg/Kg-dry	1	12/19/2012
1,2-Dichlorobenzene	ND	350	100		µg/Kg-dry	1	12/19/2012
1,2-Dichloroethane	ND	350	50		µg/Kg-dry	1	12/19/2012
1,2-Dichloropropane	ND	350	50		µg/Kg-dry	1	12/19/2012
1,3,5-Trimethylbenzene	ND	350	100		µg/Kg-dry	1	12/19/2012
1,3-Dichlorobenzene	ND	350	100		µg/Kg-dry	1	12/19/2012
1,4-Dichlorobenzene	ND	350	100		µg/Kg-dry	1	12/19/2012
2-Butanone	ND	1,200	750		µg/Kg-dry	1	12/19/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/19/2012
2-Methylnaphthalene	ND	1,200	330		µg/Kg-dry	1	12/19/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/19/2012
Acetone	ND	2,900	1,000		µg/Kg-dry	1	12/19/2012
Acrylonitrile	ND	350	100		µg/Kg-dry	1	12/19/2012
Benzene	ND	350	50		µg/Kg-dry	1	12/19/2012
Bromobenzene	ND	350	100		µg/Kg-dry	1	12/19/2012
Bromochloromethane	ND	350	100		µg/Kg-dry	1	12/19/2012
Bromodichloromethane	ND	350	100		µg/Kg-dry	1	12/19/2012
Bromoform	ND	350	100		µg/Kg-dry	1	12/19/2012
Bromomethane	ND	350	200		µg/Kg-dry	1	12/19/2012
Carbon disulfide	ND	350	250		µg/Kg-dry	1	12/19/2012
Carbon tetrachloride	ND	350	50		µg/Kg-dry	1	12/19/2012
Chlorobenzene	ND	350	50		µg/Kg-dry	1	12/19/2012
Chloroethane	ND	1,200	250		µg/Kg-dry	1	12/19/2012
Chloroform	ND	350	50		µg/Kg-dry	1	12/19/2012
Chloromethane	ND	350	250		µg/Kg-dry	1	12/19/2012
cis-1,2-Dichloroethene	ND	350	50		µg/Kg-dry	1	12/19/2012
cis-1,3-Dichloropropene	ND	350	50		µg/Kg-dry	1	12/19/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/19/2012
Dibromochloromethane	ND	350	100		µg/Kg-dry	1	12/19/2012
Dibromomethane	ND	350	250		µg/Kg-dry	1	12/19/2012
Dichlorodifluoromethane	ND	350	250		µg/Kg-dry	1	12/19/2012
Diethyl ether	ND	350	200		µg/Kg-dry	1	12/19/2012
Diisopropyl ether	ND	350	250		µg/Kg-dry	1	12/19/2012
Ethyl tert butyl ether	ND	350	250		µg/Kg-dry	1	12/19/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250L503S121212S005
Work Order:	1212556	**Collection Date:**	12/12/2012 1:35:00 PM
Project:	Marshall KRRI 1225-1250L,1225R 12/12/12		
Lab ID:	1212556-06	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	350	50		µg/Kg-dry	1	12/19/2012
Hexachloroethane	ND	350	300		µg/Kg-dry	1	12/19/2012
Isopropylbenzene	ND	350	250		µg/Kg-dry	1	12/19/2012
m,p-Xylene	ND	710	100		µg/Kg-dry	1	12/19/2012
Methyl iodide	ND	350	100		µg/Kg-dry	1	12/19/2012
Methyl tert-butyl ether	ND	350	250		µg/Kg-dry	1	12/19/2012
Methylene chloride	ND	1,200	100		µg/Kg-dry	1	12/19/2012
Naphthalene	ND	1,200	330		µg/Kg-dry	1	12/19/2012
n-Butylbenzene	ND	350	50		µg/Kg-dry	1	12/19/2012
n-Propylbenzene	ND	350	100		µg/Kg-dry	1	12/19/2012
o-Xylene	ND	350	50		µg/Kg-dry	1	12/19/2012
p-Isopropyltoluene	ND	350	100		µg/Kg-dry	1	12/19/2012
sec-Butylbenzene	ND	350	50		µg/Kg-dry	1	12/19/2012
Styrene	ND	350	50		µg/Kg-dry	1	12/19/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/19/2012
tert-Butylbenzene	ND	350	50		µg/Kg-dry	1	12/19/2012
Tertiaryamylmethylether	ND	350	250		µg/Kg-dry	1	12/19/2012
Tetrachloroethene	ND	350	50		µg/Kg-dry	1	12/19/2012
Tetrahydrofuran	ND	1,200	1,000		µg/Kg-dry	1	12/19/2012
Toluene	ND	350	100		µg/Kg-dry	1	12/19/2012
trans-1,2-Dichloroethene	ND	350	50		µg/Kg-dry	1	12/19/2012
trans-1,3-Dichloropropene	ND	350	50		µg/Kg-dry	1	12/19/2012
trans-1,4-Dichloro-2-butene	ND	350	50		µg/Kg-dry	1	12/19/2012
Trichloroethene	ND	350	50		µg/Kg-dry	1	12/19/2012
Trichlorofluoromethane	ND	350	100		µg/Kg-dry	1	12/19/2012
Vinyl chloride	ND	350	40		µg/Kg-dry	1	12/19/2012
Surr: 1,2-Dichloroethane-d4	*88.4*	*70-130*			*%REC*	1	12/19/2012
Surr: 4-Bromofluorobenzene	*101*	*70-130*			*%REC*	1	12/19/2012
Surr: Dibromofluoromethane	*88.3*	*70-130*			*%REC*	1	12/19/2012
Surr: Toluene-d8	*94.1*	*70-130*			*%REC*	1	12/19/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**63**	**0.050**	**0**		**% of sample**	1	12/17/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250L504S121212S007
Work Order:	1212556	**Collection Date:**	12/12/2012 2:31:00 PM
Project:	Marshall KRRI 1225-1250L,1225R 12/12/12		
Lab ID:	1212556-07	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/19/2012**		Analyst: **CW**
DRO (C10-C20)	ND	13	4.0		mg/Kg-dry	1	12/19/2012
ORO (C20-C34)	**120**	**26**	**4.0**		**mg/Kg-dry**	1	12/19/2012
Surr: 4-Terphenyl-d14	*77.2*	*39-115*			*%REC*	1	12/19/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/18/2012**		Analyst: **CES**
Beryllium	ND	0.80	0.50		mg/Kg-dry	4	12/20/2012
Molybdenum	ND	2.0	1.0		mg/Kg-dry	4	12/20/2012
Nickel	**7.5**	**2.0**	**1.0**		**mg/Kg-dry**	4	12/20/2012
Vanadium	**10**	**2.0**	**1.0**		**mg/Kg-dry**	4	12/20/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/19/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/20/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/20/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/20/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/20/2012
Benzo(a)anthracene	ND	330	330		µg/Kg-dry	1	12/20/2012
Benzo(a)pyrene	ND	330	330		µg/Kg-dry	1	12/20/2012
Benzo(b)fluoranthene	ND	330	330		µg/Kg-dry	1	12/20/2012
Benzo(g,h,i)perylene	ND	330	330		µg/Kg-dry	1	12/20/2012
Benzo(k)fluoranthene	ND	330	330		µg/Kg-dry	1	12/20/2012
Chrysene	ND	330	330		µg/Kg-dry	1	12/20/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/20/2012
Fluoranthene	ND	330	330		µg/Kg-dry	1	12/20/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/20/2012
Indeno(1,2,3-cd)pyrene	ND	330	330		µg/Kg-dry	1	12/20/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/20/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/20/2012
Pyrene	ND	330	330		µg/Kg-dry	1	12/20/2012
Surr: 2,4,6-Tribromophenol	*58.5*	*34-140*			*%REC*	1	12/20/2012
Surr: 2-Fluorobiphenyl	*66.4*	*12-100*			*%REC*	1	12/20/2012
Surr: 2-Fluorophenol	*87.9*	*33-117*			*%REC*	1	12/20/2012
Surr: 4-Terphenyl-d14	*97.3*	*25-137*			*%REC*	1	12/20/2012
Surr: Nitrobenzene-d5	*79.2*	*37-107*			*%REC*	1	12/20/2012
Surr: Phenol-d6	*87.2*	*40-106*			*%REC*	1	12/20/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/17/2012**		Analyst: **AK**
1,1,1,2-Tetrachloroethane	ND	100	100		µg/Kg-dry	1	12/19/2012
1,1,1-Trichloroethane	ND	74	50		µg/Kg-dry	1	12/19/2012
1,1,2,2-Tetrachloroethane	ND	74	50		µg/Kg-dry	1	12/19/2012
1,1,2-Trichloroethane	ND	74	50		µg/Kg-dry	1	12/19/2012
1,1-Dichloroethane	ND	74	50		µg/Kg-dry	1	12/19/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250L504S121212S007
Work Order:	1212556	**Collection Date:**	12/12/2012 2:31:00 PM
Project:	Marshall KRRI 1225-1250L,1225R 12/12/12		
Lab ID:	1212556-07	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	74	50		µg/Kg-dry	1	12/19/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/19/2012
1,2,3-Trichloropropane	ND	100	100		µg/Kg-dry	1	12/19/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/19/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/19/2012
1,2,4-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/19/2012
1,2-Dibromo-3-chloropropane	ND	74	10		µg/Kg-dry	1	12/19/2012
1,2-Dibromoethane	ND	74	20		µg/Kg-dry	1	12/19/2012
1,2-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/19/2012
1,2-Dichloroethane	ND	74	50		µg/Kg-dry	1	12/19/2012
1,2-Dichloropropane	ND	74	50		µg/Kg-dry	1	12/19/2012
1,3,5-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/19/2012
1,3-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/19/2012
1,4-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/19/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/19/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/19/2012
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/19/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/19/2012
Acetone	ND	1,000	1,000		µg/Kg-dry	1	12/19/2012
Acrylonitrile	ND	100	100		µg/Kg-dry	1	12/19/2012
Benzene	ND	74	50		µg/Kg-dry	1	12/19/2012
Bromobenzene	ND	100	100		µg/Kg-dry	1	12/19/2012
Bromochloromethane	ND	100	100		µg/Kg-dry	1	12/19/2012
Bromodichloromethane	ND	100	100		µg/Kg-dry	1	12/19/2012
Bromoform	ND	100	100		µg/Kg-dry	1	12/19/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/19/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/19/2012
Carbon tetrachloride	ND	74	50		µg/Kg-dry	1	12/19/2012
Chlorobenzene	ND	74	50		µg/Kg-dry	1	12/19/2012
Chloroethane	ND	250	250		µg/Kg-dry	1	12/19/2012
Chloroform	ND	74	50		µg/Kg-dry	1	12/19/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/19/2012
cis-1,2-Dichloroethene	ND	74	50		µg/Kg-dry	1	12/19/2012
cis-1,3-Dichloropropene	ND	74	50		µg/Kg-dry	1	12/19/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/19/2012
Dibromochloromethane	ND	100	100		µg/Kg-dry	1	12/19/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/19/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/19/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/19/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/19/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/19/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250L504S121212S007
Work Order:	1212556	**Collection Date:**	12/12/2012 2:31:00 PM
Project:	Marshall KRRI 1225-1250L,1225R 12/12/12		
Lab ID:	1212556-07	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	74	50		µg/Kg-dry	1	12/19/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/19/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/19/2012
m,p-Xylene	ND	150	100		µg/Kg-dry	1	12/19/2012
Methyl iodide	ND	100	100		µg/Kg-dry	1	12/19/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/19/2012
Methylene chloride	ND	170	100		µg/Kg-dry	1	12/19/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/19/2012
n-Butylbenzene	ND	74	50		µg/Kg-dry	1	12/19/2012
n-Propylbenzene	ND	100	100		µg/Kg-dry	1	12/19/2012
o-Xylene	ND	74	50		µg/Kg-dry	1	12/19/2012
p-Isopropyltoluene	ND	100	100		µg/Kg-dry	1	12/19/2012
sec-Butylbenzene	ND	74	50		µg/Kg-dry	1	12/19/2012
Styrene	ND	74	50		µg/Kg-dry	1	12/19/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/19/2012
tert-Butylbenzene	ND	74	50		µg/Kg-dry	1	12/19/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/19/2012
Tetrachloroethene	ND	74	50		µg/Kg-dry	1	12/19/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/19/2012
Toluene	ND	100	100		µg/Kg-dry	1	12/19/2012
trans-1,2-Dichloroethene	ND	74	50		µg/Kg-dry	1	12/19/2012
trans-1,3-Dichloropropene	ND	74	50		µg/Kg-dry	1	12/19/2012
trans-1,4-Dichloro-2-butene	ND	74	50		µg/Kg-dry	1	12/19/2012
Trichloroethene	ND	74	50		µg/Kg-dry	1	12/19/2012
Trichlorofluoromethane	ND	100	100		µg/Kg-dry	1	12/19/2012
Vinyl chloride	ND	74	40		µg/Kg-dry	1	12/19/2012
Surr: 1,2-Dichloroethane-d4	*90.0*	*70-130*			*%REC*	1	12/19/2012
Surr: 4-Bromofluorobenzene	*103*	*70-130*			*%REC*	1	12/19/2012
Surr: Dibromofluoromethane	*87.2*	*70-130*			*%REC*	1	12/19/2012
Surr: Toluene-d8	*92.8*	*70-130*			*%REC*	1	12/19/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**28**	**0.050**	**0**		**% of sample**	1	12/17/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250L505S121212S004
Work Order:	1212556	**Collection Date:**	12/12/2012 3:39:00 PM
Project:	Marshall KRRI 1225-1250L,1225R 12/12/12		
Lab ID:	1212556-08	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/19/2012**		Analyst: **CW**
DRO (C10-C20)	ND	15	4.0		mg/Kg-dry	1	12/19/2012
ORO (C20-C34)	**210**	**31**	**4.0**		**mg/Kg-dry**	1	12/19/2012
Surr: 4-Terphenyl-d14	*78.9*	*39-115*			*%REC*	1	12/19/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/18/2012**		Analyst: **CES**
Beryllium	ND	0.88	0.50		mg/Kg-dry	4	12/20/2012
Molybdenum	ND	2.2	1.0		mg/Kg-dry	4	12/20/2012
Nickel	**18**	**2.2**	**1.0**		**mg/Kg-dry**	4	12/20/2012
Vanadium	**33**	**2.2**	**1.0**		**mg/Kg-dry**	4	12/20/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/19/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/20/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/20/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/20/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/20/2012
Benzo(a)anthracene	**460**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Benzo(a)pyrene	**680**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Benzo(b)fluoranthene	**620**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Benzo(g,h,i)perylene	ND	330	330		µg/Kg-dry	1	12/20/2012
Benzo(k)fluoranthene	**440**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Chrysene	**550**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/20/2012
Fluoranthene	**500**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/20/2012
Indeno(1,2,3-cd)pyrene	ND	330	330		µg/Kg-dry	1	12/20/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/20/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/20/2012
Pyrene	**710**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Surr: 2,4,6-Tribromophenol	*60.6*	*34-140*			*%REC*	1	12/20/2012
Surr: 2-Fluorobiphenyl	*65.2*	*12-100*			*%REC*	1	12/20/2012
Surr: 2-Fluorophenol	*82.1*	*33-117*			*%REC*	1	12/20/2012
Surr: 4-Terphenyl-d14	*101*	*25-137*			*%REC*	1	12/20/2012
Surr: Nitrobenzene-d5	*75.9*	*37-107*			*%REC*	1	12/20/2012
Surr: Phenol-d6	*65.7*	*40-106*			*%REC*	1	12/20/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/17/2012**		Analyst: **AK**
1,1,1,2-Tetrachloroethane	ND	140	100		µg/Kg-dry	1	12/19/2012
1,1,1-Trichloroethane	ND	140	50		µg/Kg-dry	1	12/19/2012
1,1,2,2-Tetrachloroethane	ND	140	50		µg/Kg-dry	1	12/19/2012
1,1,2-Trichloroethane	ND	140	50		µg/Kg-dry	1	12/19/2012
1,1-Dichloroethane	ND	140	50		µg/Kg-dry	1	12/19/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250L505S121212S004
Work Order:	1212556	**Collection Date:**	12/12/2012 3:39:00 PM
Project:	Marshall KRRI 1225-1250L,1225R 12/12/12		
Lab ID:	1212556-08	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	140	50		µg/Kg-dry	1	12/19/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/19/2012
1,2,3-Trichloropropane	ND	140	100		µg/Kg-dry	1	12/19/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/19/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/19/2012
1,2,4-Trimethylbenzene	ND	140	100		µg/Kg-dry	1	12/19/2012
1,2-Dibromo-3-chloropropane	ND	140	10		µg/Kg-dry	1	12/19/2012
1,2-Dibromoethane	ND	140	20		µg/Kg-dry	1	12/19/2012
1,2-Dichlorobenzene	ND	140	100		µg/Kg-dry	1	12/19/2012
1,2-Dichloroethane	ND	140	50		µg/Kg-dry	1	12/19/2012
1,2-Dichloropropane	ND	140	50		µg/Kg-dry	1	12/19/2012
1,3,5-Trimethylbenzene	ND	140	100		µg/Kg-dry	1	12/19/2012
1,3-Dichlorobenzene	ND	140	100		µg/Kg-dry	1	12/19/2012
1,4-Dichlorobenzene	ND	140	100		µg/Kg-dry	1	12/19/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/19/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/19/2012
2-Methylnaphthalene	ND	460	330		µg/Kg-dry	1	12/19/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/19/2012
Acetone	ND	1,400	1,000		µg/Kg-dry	1	12/19/2012
Acrylonitrile	ND	140	100		µg/Kg-dry	1	12/19/2012
Benzene	ND	140	50		µg/Kg-dry	1	12/19/2012
Bromobenzene	ND	140	100		µg/Kg-dry	1	12/19/2012
Bromochloromethane	ND	140	100		µg/Kg-dry	1	12/19/2012
Bromodichloromethane	ND	140	100		µg/Kg-dry	1	12/19/2012
Bromoform	ND	140	100		µg/Kg-dry	1	12/19/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/19/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/19/2012
Carbon tetrachloride	ND	140	50		µg/Kg-dry	1	12/19/2012
Chlorobenzene	ND	140	50		µg/Kg-dry	1	12/19/2012
Chloroethane	ND	460	250		µg/Kg-dry	1	12/19/2012
Chloroform	ND	140	50		µg/Kg-dry	1	12/19/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/19/2012
cis-1,2-Dichloroethene	ND	140	50		µg/Kg-dry	1	12/19/2012
cis-1,3-Dichloropropene	ND	140	50		µg/Kg-dry	1	12/19/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/19/2012
Dibromochloromethane	ND	140	100		µg/Kg-dry	1	12/19/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/19/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/19/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/19/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/19/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/19/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250L505S121212S004
Work Order:	1212556	**Collection Date:**	12/12/2012 3:39:00 PM
Project:	Marshall KRRI 1225-1250L,1225R 12/12/12		
Lab ID:	1212556-08	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	140	50		µg/Kg-dry	1	12/19/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/19/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/19/2012
m,p-Xylene	ND	280	100		µg/Kg-dry	1	12/19/2012
Methyl iodide	ND	140	100		µg/Kg-dry	1	12/19/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/19/2012
Methylene chloride	ND	460	100		µg/Kg-dry	1	12/19/2012
Naphthalene	ND	460	330		µg/Kg-dry	1	12/19/2012
n-Butylbenzene	ND	140	50		µg/Kg-dry	1	12/19/2012
n-Propylbenzene	ND	140	100		µg/Kg-dry	1	12/19/2012
o-Xylene	ND	140	50		µg/Kg-dry	1	12/19/2012
p-Isopropyltoluene	ND	140	100		µg/Kg-dry	1	12/19/2012
sec-Butylbenzene	ND	140	50		µg/Kg-dry	1	12/19/2012
Styrene	ND	140	50		µg/Kg-dry	1	12/19/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/19/2012
tert-Butylbenzene	ND	140	50		µg/Kg-dry	1	12/19/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/19/2012
Tetrachloroethene	ND	140	50		µg/Kg-dry	1	12/19/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/19/2012
Toluene	ND	140	100		µg/Kg-dry	1	12/19/2012
trans-1,2-Dichloroethene	ND	140	50		µg/Kg-dry	1	12/19/2012
trans-1,3-Dichloropropene	ND	140	50		µg/Kg-dry	1	12/19/2012
trans-1,4-Dichloro-2-butene	ND	140	50		µg/Kg-dry	1	12/19/2012
Trichloroethene	ND	140	50		µg/Kg-dry	1	12/19/2012
Trichlorofluoromethane	ND	140	100		µg/Kg-dry	1	12/19/2012
Vinyl chloride	ND	140	40		µg/Kg-dry	1	12/19/2012
Surr: 1,2-Dichloroethane-d4	*94.6*	*70-130*			*%REC*	1	12/19/2012
Surr: 4-Bromofluorobenzene	*98.0*	*70-130*			*%REC*	1	12/19/2012
Surr: Dibromofluoromethane	*88.6*	*70-130*			*%REC*	1	12/19/2012
Surr: Toluene-d8	*93.8*	*70-130*			*%REC*	1	12/19/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**40**	**0.050**	**0**		**% of sample**	1	12/17/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250L505T121212MX
Work Order:	1212556	**Collection Date:**	12/12/2012
Project:	Marshall KRRI 1225-1250L,1225R 12/12/12		
Lab ID:	1212556-09	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/17/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	100	100		µg/Kg	1	12/18/2012
1,1,1-Trichloroethane	ND	50	50		µg/Kg	1	12/18/2012
1,1,2,2-Tetrachloroethane	ND	50	50		µg/Kg	1	12/18/2012
1,1,2-Trichloroethane	ND	50	50		µg/Kg	1	12/18/2012
1,1-Dichloroethane	ND	50	50		µg/Kg	1	12/18/2012
1,1-Dichloroethene	ND	50	50		µg/Kg	1	12/18/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg	1	12/18/2012
1,2,3-Trichloropropane	ND	100	100		µg/Kg	1	12/18/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg	1	12/18/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg	1	12/18/2012
1,2,4-Trimethylbenzene	ND	100	100		µg/Kg	1	12/18/2012
1,2-Dibromo-3-chloropropane	ND	30	10		µg/Kg	1	12/18/2012
1,2-Dibromoethane	ND	30	20		µg/Kg	1	12/18/2012
1,2-Dichlorobenzene	ND	100	100		µg/Kg	1	12/18/2012
1,2-Dichloroethane	ND	50	50		µg/Kg	1	12/18/2012
1,2-Dichloropropane	ND	50	50		µg/Kg	1	12/18/2012
1,3,5-Trimethylbenzene	ND	100	100		µg/Kg	1	12/18/2012
1,3-Dichlorobenzene	ND	100	100		µg/Kg	1	12/18/2012
1,4-Dichlorobenzene	ND	100	100		µg/Kg	1	12/18/2012
2-Butanone	ND	750	750		µg/Kg	1	12/18/2012
2-Hexanone	ND	2,500	2,500		µg/Kg	1	12/18/2012
2-Methylnaphthalene	ND	330	330		µg/Kg	1	12/18/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg	1	12/18/2012
Acetone	ND	1,000	1,000		µg/Kg	1	12/18/2012
Acrylonitrile	ND	100	100		µg/Kg	1	12/18/2012
Benzene	ND	50	50		µg/Kg	1	12/18/2012
Bromobenzene	ND	100	100		µg/Kg	1	12/18/2012
Bromochloromethane	ND	100	100		µg/Kg	1	12/18/2012
Bromodichloromethane	ND	100	100		µg/Kg	1	12/18/2012
Bromoform	ND	100	100		µg/Kg	1	12/18/2012
Bromomethane	ND	200	200		µg/Kg	1	12/18/2012
Carbon disulfide	ND	250	250		µg/Kg	1	12/18/2012
Carbon tetrachloride	ND	50	50		µg/Kg	1	12/18/2012
Chlorobenzene	ND	50	50		µg/Kg	1	12/18/2012
Chloroethane	ND	250	250		µg/Kg	1	12/18/2012
Chloroform	ND	50	50		µg/Kg	1	12/18/2012
Chloromethane	ND	250	250		µg/Kg	1	12/18/2012
cis-1,2-Dichloroethene	ND	50	50		µg/Kg	1	12/18/2012
cis-1,3-Dichloropropene	ND	50	50		µg/Kg	1	12/18/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250L505T121212MX
Work Order:	1212556	**Collection Date:**	12/12/2012
Project:	Marshall KRRI 1225-1250L,1225R 12/12/12		
Lab ID:	1212556-09	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Cyclohexane	ND	500	500		µg/Kg	1	12/18/2012
Dibromochloromethane	ND	100	100		µg/Kg	1	12/18/2012
Dibromomethane	ND	250	250		µg/Kg	1	12/18/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg	1	12/18/2012
Diethyl ether	ND	200	200		µg/Kg	1	12/18/2012
Diisopropyl ether	ND	250	250		µg/Kg	1	12/18/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg	1	12/18/2012
Ethylbenzene	ND	50	50		µg/Kg	1	12/18/2012
Hexachloroethane	ND	300	300		µg/Kg	1	12/18/2012
Isopropylbenzene	ND	250	250		µg/Kg	1	12/18/2012
m,p-Xylene	ND	100	100		µg/Kg	1	12/18/2012
Methyl iodide	ND	100	100		µg/Kg	1	12/18/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg	1	12/18/2012
Methylene chloride	ND	100	100		µg/Kg	1	12/18/2012
Naphthalene	ND	330	330		µg/Kg	1	12/18/2012
n-Butylbenzene	ND	50	50		µg/Kg	1	12/18/2012
n-Propylbenzene	ND	100	100		µg/Kg	1	12/18/2012
o-Xylene	ND	50	50		µg/Kg	1	12/18/2012
p-Isopropyltoluene	ND	100	100		µg/Kg	1	12/18/2012
sec-Butylbenzene	ND	50	50		µg/Kg	1	12/18/2012
Styrene	ND	50	50		µg/Kg	1	12/18/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg	1	12/18/2012
tert-Butylbenzene	ND	50	50		µg/Kg	1	12/18/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg	1	12/18/2012
Tetrachloroethene	ND	50	50		µg/Kg	1	12/18/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg	1	12/18/2012
Toluene	ND	100	100		µg/Kg	1	12/18/2012
trans-1,2-Dichloroethene	ND	50	50		µg/Kg	1	12/18/2012
trans-1,3-Dichloropropene	ND	50	50		µg/Kg	1	12/18/2012
trans-1,4-Dichloro-2-butene	ND	50	50		µg/Kg	1	12/18/2012
Trichloroethene	ND	50	50		µg/Kg	1	12/18/2012
Trichlorofluoromethane	ND	100	100		µg/Kg	1	12/18/2012
Vinyl chloride	ND	40	40		µg/Kg	1	12/18/2012
Surr: 1,2-Dichloroethane-d4	*98.3*	*70-130*			*%REC*	1	12/18/2012
Surr: 4-Bromofluorobenzene	*97.1*	*70-130*			*%REC*	1	12/18/2012
Surr: Dibromofluoromethane	*95.6*	*70-130*			*%REC*	1	12/18/2012
Surr: Toluene-d8	*87.4*	*70-130*			*%REC*	1	12/18/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 22-Dec-12

Client: AECOM Environment

QC BATCH REPORT

Work Order: 1212556

Project: Marshall KRRI 1225-1250L,1225R 12/12/12

Batch ID: **45493** Instrument ID **GC8** Method: **SW8015M**

MBLK Sample ID: **DBLKS1-45493-45493** Units: **mg/Kg** Analysis Date: **12/19/2012 04:14 PM**

Client ID: Run ID: **GC8_121219A** SeqNo: **2175231** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	ND	10								
ORO (C20-C34)	ND	20								
Surr: 4-Terphenyl-d14	*3.782*	0	*5*	0	*75.6*	*39-115*	0			

LCS Sample ID: **DLCSS1-45493-45493** Units: **mg/Kg** Analysis Date: **12/19/2012 04:39 PM**

Client ID: Run ID: **GC8_121219A** SeqNo: **2175236** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	331.1	10	500	0	66.2	49-124	0			
ORO (C20-C34)	311.7	20	500	0	62.3	60-130	0			
Surr: 4-Terphenyl-d14	*4.128*	0	*5*	0	*82.6*	*39-115*	0			

MS Sample ID: **1212554-08B MS** Units: **mg/Kg** Analysis Date: **12/19/2012 05:05 PM**

Client ID: Run ID: **GC8_121219A** SeqNo: **2175237** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	299.8	9.4	470.4	0.6337	63.6	60-130	0			
ORO (C20-C34)	389.3	19	470.4	117.4	57.8	60-130	0			S
Surr: 4-Terphenyl-d14	*3.693*	0	*4.704*	0	*78.5*	*39-115*	0			

MSD Sample ID: **1212554-08B MSD** Units: **mg/Kg** Analysis Date: **12/19/2012 05:30 PM**

Client ID: Run ID: **GC8_121219A** SeqNo: **2175238** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	315.1	9.6	480.6	0.6337	65.4	60-130	299.8	4.98	30	
ORO (C20-C34)	419	19	480.6	117.4	62.8	60-130	389.3	7.34	30	
Surr: 4-Terphenyl-d14	*4.012*	0	*4.806*	0	*83.5*	*39-115*	3.693	*8.28*	*30*	

The following samples were analyzed in this batch:

1212556-01A	1212556-02A	1212556-03A
1212556-04A	1212556-05A	1212556-06A
1212556-07A	1212556-08A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212556
Project: Marshall KRRI 1225-1250L,1225R 12/12/12

QC BATCH REPORT

Batch ID: **45484** Instrument ID **ICPMS1** Method: **SW6020A**

MBLK Sample ID: **MBLK-45484-45484** Units: **mg/Kg** Analysis Date: **12/19/2012 10:34 PM**
Client ID: Run ID: **ICPMS1_121219A** SeqNo: **2174824** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	ND	0.10								
Molybdenum	ND	0.25								
Nickel	ND	0.25								
Vanadium	ND	0.25								

LCS Sample ID: **LCS-45484-45484** Units: **mg/Kg** Analysis Date: **12/19/2012 10:41 PM**
Client ID: Run ID: **ICPMS1_121219A** SeqNo: **2174825** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	5.135	0.10	5	0	103	80-120	0			
Molybdenum	5.05	0.25	5	0	101	80-120	0			
Nickel	5.085	0.25	5	0	102	80-120	0			
Vanadium	5.435	0.25	5	0	109	80-120	0			

MS Sample ID: **1212556-03AMS** Units: **mg/Kg** Analysis Date: **12/19/2012 11:40 PM**
Client ID: **SBKR1250L501S121212S005** Run ID: **ICPMS1_121219A** SeqNo: **2174832** Prep Date: **12/18/2012** DF: **4**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	6.721	0.54	6.775	0.3725	93.7	75-125	0			
Molybdenum	7.575	1.4	6.775	0.9906	97.2	75-125	0			
Nickel	17.46	1.4	6.775	10.79	98.4	75-125	0			
Vanadium	30.38	1.4	6.775	20.31	149	75-125	0			S

MSD Sample ID: **1212556-03AMSD** Units: **mg/Kg** Analysis Date: **12/19/2012 11:46 PM**
Client ID: **SBKR1250L501S121212S005** Run ID: **ICPMS1_121219A** SeqNo: **2174833** Prep Date: **12/18/2012** DF: **4**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	6.94	0.56	6.974	0.3725	94.2	75-125	6.721	3.21	25	
Molybdenum	7.59	1.4	6.974	0.9906	94.6	75-125	7.575	0.204	25	
Nickel	17.76	1.4	6.974	10.79	100	75-125	17.46	1.73	25	
Vanadium	30.66	1.4	6.974	20.31	148	75-125	30.38	0.905	25	S

The following samples were analyzed in this batch:

1212556-01A	1212556-02A	1212556-03A
1212556-04A	1212556-05A	1212556-06A
1212556-07A	1212556-08A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45492** Instrument ID **SVMS6** Method: **SW8270**

MBLK Sample ID: **SBLKS1-45492-45492** Units: **µg/Kg** Analysis Date: **12/19/2012 06:23 PM**
Client ID: Run ID: **SVMS6_121219A** SeqNo: **2174818** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	ND	50								
Acenaphthene	ND	50								
Acenaphthylene	ND	50								
Anthracene	ND	50								
Benzo(a)anthracene	ND	50								
Benzo(a)pyrene	ND	50								
Benzo(b)fluoranthene	ND	50								
Benzo(g,h,i)perylene	ND	50								
Benzo(k)fluoranthene	ND	50								
Chrysene	ND	50								
Dibenzo(a,h)anthracene	ND	50								
Fluoranthene	ND	50								
Fluorene	ND	50								
Indeno(1,2,3-cd)pyrene	ND	50								
Naphthalene	ND	50								
Phenanthrene	ND	50								
Pyrene	ND	50								
Surr: 2,4,6-Tribromophenol	*2545*	0	*5000*	0	*50.9*	*34-140*	0			
Surr: 2-Fluorobiphenyl	*3742*	0	*5000*	0	*74.8*	*12-100*	0			
Surr: 2-Fluorophenol	*5001*	0	*5000*	0	*100*	*33-117*	0			
Surr: 4-Terphenyl-d14	*5026*	0	*5000*	0	*101*	*25-137*	0			
Surr: Nitrobenzene-d5	*4592*	0	*5000*	0	*91.8*	*37-107*	0			
Surr: Phenol-d6	*4817*	0	*5000*	0	*96.3*	*40-106*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212556
Project: Marshall KRRI 1225-1250L,1225R 12/12/12

QC BATCH REPORT

Batch ID: **45492** Instrument ID **SVMS6** Method: **SW8270**

LCS Sample ID: **SLCSS1-45492-45492** Units: **µg/Kg** Analysis Date: **12/19/2012 05:41 PM**
Client ID: Run ID: **SVMS6_121219A** SeqNo: **2174814** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	1582	50	2000	0	79.1	45-105	0			
Acenaphthene	1657	50	2000	0	82.8	45-110	0			
Acenaphthylene	1756	50	2000	0	87.8	45-105	0			
Anthracene	1882	50	2000	0	94.1	55-105	0			
Benzo(a)anthracene	1918	50	2000	0	95.9	50-110	0			
Benzo(a)pyrene	2105	50	2000	0	105	50-110	0			
Benzo(b)fluoranthene	1815	50	2000	0	90.8	45-115	0			
Benzo(g,h,i)perylene	1972	50	2000	0	98.6	40-125	0			
Benzo(k)fluoranthene	2275	50	2000	0	114	45-115	0			
Chrysene	2048	50	2000	0	102	55-110	0			
Dibenzo(a,h)anthracene	2008	50	2000	0	100	40-125	0			
Fluoranthene	1898	50	2000	0	94.9	55-115	0			
Fluorene	1644	50	2000	0	82.2	50-110	0			
Indeno(1,2,3-cd)pyrene	2003	50	2000	0	100	40-120	0			
Naphthalene	1618	50	2000	0	80.9	40-105	0			
Phenanthrene	1824	50	2000	0	91.2	50-110	0			
Pyrene	2095	50	2000	0	105	45-125	0			
Surr: 2,4,6-Tribromophenol	*2919*	0	*5000*	0	*58.4*	*34-140*	0			
Surr: 2-Fluorobiphenyl	*3482*	0	*5000*	0	*69.6*	*12-100*	0			
Surr: 2-Fluorophenol	*4514*	0	*5000*	0	*90.3*	*33-117*	0			
Surr: 4-Terphenyl-d14	*5058*	0	*5000*	0	*101*	*25-137*	0			
Surr: Nitrobenzene-d5	*4299*	0	*5000*	0	*86*	*37-107*	0			
Surr: Phenol-d6	*4397*	0	*5000*	0	*87.9*	*40-106*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212556
Project: Marshall KRRI 1225-1250L,1225R 12/12/12

QC BATCH REPORT

Batch ID: **45492** Instrument ID **SVMS6** Method: **SW8270**

MS Sample ID: **1212554-08B MS** Units: **µg/Kg** Analysis Date: **12/19/2012 06:07 PM**
Client ID: Run ID: **SVMS6_121219A** SeqNo: **2174815** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	1380	47	1869	0	73.8	45-105	0			
Acenaphthene	1584	47	1869	0	84.8	45-110	0			
Acenaphthylene	1666	47	1869	0	89.2	45-105	0			
Anthracene	1769	47	1869	0	94.6	55-105	0			
Benzo(a)anthracene	1933	47	1869	171.6	94.3	50-110	0			
Benzo(a)pyrene	2096	47	1869	230.1	99.8	50-110	0			
Benzo(b)fluoranthene	2052	47	1869	233	97.3	45-115	0			
Benzo(g,h,i)perylene	1577	47	1869	122.7	77.8	40-125	0			
Benzo(k)fluoranthene	2123	47	1869	165.9	105	45-115	0			
Chrysene	1952	47	1869	212.8	93.1	55-110	0			
Dibenzo(a,h)anthracene	1587	47	1869	0	84.9	40-125	0			
Fluoranthene	1986	47	1869	283.8	91.1	55-115	0			
Fluorene	1593	47	1869	0	85.2	50-110	0			
Indeno(1,2,3-cd)pyrene	1692	47	1869	92.99	85.6	40-120	0			
Naphthalene	1335	47	1869	0	71.4	40-105	0			
Phenanthrene	1821	47	1869	106.4	91.8	50-110	0			
Pyrene	2187	47	1869	321.2	99.8	45-125	0			
Surr: 2,4,6-Tribromophenol	*2851*	0	*4672*	0	*61*	*34-140*	0			
Surr: 2-Fluorobiphenyl	*3136*	0	*4672*	0	*67.1*	*12-100*	0			
Surr: 2-Fluorophenol	*3510*	0	*4672*	0	*75.1*	*33-117*	0			
Surr: 4-Terphenyl-d14	*4491*	0	*4672*	0	*96.1*	*25-137*	0			
Surr: Nitrobenzene-d5	*3233*	0	*4672*	0	*69.2*	*37-107*	0			
Surr: Phenol-d6	*3606*	0	*4672*	0	*77.2*	*40-106*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212556
Project: Marshall KRRI 1225-1250L,1225R 12/12/12

QC BATCH REPORT

Batch ID: **45492** Instrument ID **SVMS6** Method: **SW8270**

MSD Sample ID: **1212554-08B MSD** Units: **µg/Kg** Analysis Date: **12/19/2012 05:32 PM**
Client ID: Run ID: **SVMS6_121219A** SeqNo: **2174816** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	1274	48	1908	0	66.8	45-105	1380	8.03	30	
Acenaphthene	1510	48	1908	0	79.2	45-110	1584	4.76	30	
Acenaphthylene	1577	48	1908	0	82.6	45-105	1666	5.49	30	
Anthracene	1692	48	1908	0	88.7	55-105	1769	4.41	30	
Benzo(a)anthracene	1643	48	1908	171.6	77.1	50-110	1933	16.2	30	
Benzo(a)pyrene	1968	48	1908	230.1	91.1	50-110	2096	6.29	30	
Benzo(b)fluoranthene	2052	48	1908	233	95.3	45-115	2052	0.00665	30	
Benzo(g,h,i)perylene	1296	48	1908	122.7	61.5	40-125	1577	19.6	30	
Benzo(k)fluoranthene	2011	48	1908	165.9	96.7	45-115	2123	5.41	30	
Chrysene	1917	48	1908	212.8	89.3	55-110	1952	1.83	30	
Dibenzo(a,h)anthracene	1382	48	1908	0	72.4	40-125	1587	13.8	30	
Fluoranthene	1900	48	1908	283.8	84.7	55-115	1986	4.39	30	
Fluorene	1524	48	1908	0	79.8	50-110	1593	4.47	30	
Indeno(1,2,3-cd)pyrene	1465	48	1908	92.99	71.9	40-120	1692	14.4	30	
Naphthalene	1270	48	1908	0	66.6	40-105	1335	5.03	30	
Phenanthrene	1736	48	1908	106.4	85.4	50-110	1821	4.77	30	
Pyrene	2083	48	1908	321.2	92.3	45-125	2187	4.87	30	
Surr: 2,4,6-Tribromophenol	*2698*	0	*4770*	0	*56.6*	*34-140*	2851	*5.51*	*40*	
Surr: 2-Fluorobiphenyl	*2861*	0	*4770*	0	*60*	*12-100*	3136	*9.16*	*40*	
Surr: 2-Fluorophenol	*3518*	0	*4770*	0	*73.8*	*33-117*	3510	*0.25*	*40*	
Surr: 4-Terphenyl-d14	*4187*	0	*4770*	0	*87.8*	*25-137*	4491	*7*	*40*	
Surr: Nitrobenzene-d5	*3312*	0	*4770*	0	*69.4*	*37-107*	3233	*2.42*	*40*	
Surr: Phenol-d6	*3295*	0	*4770*	0	*69.1*	*40-106*	3606	*9*	*40*	

The following samples were analyzed in this batch:

1212556-01A	1212556-02A	1212556-03A
1212556-04A	1212556-05A	1212556-06A
1212556-07A	1212556-08A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

MBLK Sample ID: **MBLK-45473-45473** Units: **µg/Kg** Analysis Date: **12/17/2012 04:43 PM**
Client ID: Run ID: **VMS5_121217A** SeqNo: **2172236** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	30								
1,1,1-Trichloroethane	ND	30								
1,1,2,2-Tetrachloroethane	ND	30								
1,1,2-Trichloroethane	ND	30								
1,1-Dichloroethane	ND	30								
1,1-Dichloroethene	ND	30								
1,2,3-Trichlorobenzene	ND	30								
1,2,3-Trichloropropane	ND	30								
1,2,3-Trimethylbenzene	ND	30								
1,2,4-Trichlorobenzene	ND	30								
1,2,4-Trimethylbenzene	ND	30								
1,2-Dibromo-3-chloropropane	ND	30								
1,2-Dibromoethane	ND	30								
1,2-Dichlorobenzene	ND	30								
1,2-Dichloroethane	ND	30								
1,2-Dichloropropane	ND	30								
1,3,5-Trimethylbenzene	ND	30								
1,3-Dichlorobenzene	ND	30								
1,4-Dichlorobenzene	ND	30								
2-Butanone	ND	200								
2-Hexanone	ND	30								
2-Methylnaphthalene	ND	100								
4-Methyl-2-pentanone	ND	30								
Acetone	ND	100								
Acrylonitrile	ND	100								
Benzene	ND	30								
Bromobenzene	ND	30								
Bromochloromethane	ND	30								
Bromodichloromethane	ND	30								
Bromoform	ND	30								
Bromomethane	ND	75								
Carbon disulfide	ND	30								
Carbon tetrachloride	ND	30								
Chlorobenzene	ND	30								
Chloroethane	ND	100								
Chloroform	ND	30								
Chloromethane	ND	100								
cis-1,2-Dichloroethene	ND	30								
cis-1,3-Dichloropropene	ND	30								
Cyclohexane	ND	30								
Dibromochloromethane	ND	30								
Dibromomethane	ND	30								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

Dichlorodifluoromethane	ND	30					
Diethyl ether	ND	30					
Diisopropyl ether	ND	30					
Ethyl tert butyl ether	ND	30					
Ethylbenzene	ND	30					
Hexachloroethane	ND	30					
Isopropylbenzene	ND	30					
m,p-Xylene	ND	60					
Methyl iodide	ND	75					
Methyl tert-butyl ether	ND	30					
Methylene chloride	ND	30					
Naphthalene	ND	100					
n-Butylbenzene	ND	30					
n-Propylbenzene	ND	30					
o-Xylene	ND	30					
p-Isopropyltoluene	ND	30					
sec-Butylbenzene	ND	30					
Styrene	ND	30					
tert-Butyl alcohol	ND	200					
tert-Butylbenzene	ND	30					
Tertiaryamylmethylether	ND	30					
Tetrachloroethene	ND	30					
Tetrahydrofuran	ND	200					
Toluene	ND	30					
trans-1,2-Dichloroethene	ND	30					
trans-1,3-Dichloropropene	ND	30					
trans-1,4-Dichloro-2-butene	ND	30					
Trichloroethene	ND	30					
Trichlorofluoromethane	ND	30					
Vinyl chloride	ND	30					
Surr: 1,2-Dichloroethane-d4	*1036*	0	*1000*	0	*104*	*70-130*	0
Surr: 4-Bromofluorobenzene	*1014*	0	*1000*	0	*101*	*70-130*	0
Surr: Dibromofluoromethane	*1005*	0	*1000*	0	*100*	*70-130*	0
Surr: Toluene-d8	*967.5*	0	*1000*	0	*96.8*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212556
Project: Marshall KRRI 1225-1250L,1225R 12/12/12

QC BATCH REPORT

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

MBLK Sample ID: **MBLK-45473-45473** Units: **µg/Kg** Analysis Date: **12/18/2012 01:57 AM**
Client ID: Run ID: **VMS9_121217B** SeqNo: **2172808** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	30								
1,1,1-Trichloroethane	ND	30								
1,1,2,2-Tetrachloroethane	ND	30								
1,1,2-Trichloroethane	ND	30								
1,1-Dichloroethane	ND	30								
1,1-Dichloroethene	ND	30								
1,2,3-Trichlorobenzene	ND	30								
1,2,3-Trichloropropane	ND	30								
1,2,3-Trimethylbenzene	ND	30								
1,2,4-Trichlorobenzene	ND	30								
1,2,4-Trimethylbenzene	ND	30								
1,2-Dibromo-3-chloropropane	ND	30								
1,2-Dibromoethane	ND	30								
1,2-Dichlorobenzene	ND	30								
1,2-Dichloroethane	ND	30								
1,2-Dichloropropane	ND	30								
1,3,5-Trimethylbenzene	ND	30								
1,3-Dichlorobenzene	ND	30								
1,4-Dichlorobenzene	ND	30								
2-Butanone	ND	200								
2-Hexanone	ND	30								
2-Methylnaphthalene	ND	100								
4-Methyl-2-pentanone	ND	30								
Acetone	215.5	100								
Acrylonitrile	ND	100								
Benzene	ND	30								
Bromobenzene	ND	30								
Bromochloromethane	ND	30								
Bromodichloromethane	ND	30								
Bromoform	ND	30								
Bromomethane	ND	75								
Carbon disulfide	ND	30								
Carbon tetrachloride	ND	30								
Chlorobenzene	ND	30								
Chloroethane	ND	100								
Chloroform	ND	30								
Chloromethane	ND	100								
cis-1,2-Dichloroethene	ND	30								
cis-1,3-Dichloropropene	ND	30								
Cyclohexane	ND	30								
Dibromochloromethane	ND	30								
Dibromomethane	ND	30								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

Dichlorodifluoromethane	ND	30						
Diethyl ether	ND	30						
Diisopropyl ether	ND	30						
Ethyl tert butyl ether	ND	30						
Ethylbenzene	ND	30						
Hexachloroethane	ND	30						
Isopropylbenzene	ND	30						
m,p-Xylene	ND	60						
Methyl iodide	ND	75						
Methyl tert-butyl ether	ND	30						
Methylene chloride	ND	30						
Naphthalene	17.5	100						J
n-Butylbenzene	ND	30						
n-Propylbenzene	ND	30						
o-Xylene	ND	30						
p-Isopropyltoluene	ND	30						
sec-Butylbenzene	ND	30						
Styrene	ND	30						
tert-Butyl alcohol	ND	200						
tert-Butylbenzene	ND	30						
Tertiaryamylmethylether	ND	30						
Tetrachloroethene	ND	30						
Tetrahydrofuran	ND	200						
Toluene	ND	30						
trans-1,2-Dichloroethene	ND	30						
trans-1,3-Dichloropropene	ND	30						
trans-1,4-Dichloro-2-butene	ND	30						
Trichloroethene	ND	30						
Trichlorofluoromethane	ND	30						
Vinyl chloride	ND	30						
Surr: 1,2-Dichloroethane-d4	*972*	0	*1000*	0	*97.2*	*70-130*	0	
Surr: 4-Bromofluorobenzene	*975.5*	0	*1000*	0	*97.6*	*70-130*	0	
Surr: Dibromofluoromethane	*930.5*	0	*1000*	0	*93*	*70-130*	0	
Surr: Toluene-d8	*881.5*	0	*1000*	0	*88.2*	*70-130*	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212556
Project: Marshall KRRI 1225-1250L,1225R 12/12/12

QC BATCH REPORT

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

MBLK Sample ID: **MBLK-45473-45473** Units: **µg/Kg** Analysis Date: **12/18/2012 04:49 AM**
Client ID: Run ID: **VMS5_121217B** SeqNo: **2173088** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	30								
1,1,1-Trichloroethane	ND	30								
1,1,2,2-Tetrachloroethane	ND	30								
1,1,2-Trichloroethane	ND	30								
1,1-Dichloroethane	ND	30								
1,1-Dichloroethene	ND	30								
1,2,3-Trichlorobenzene	ND	30								
1,2,3-Trichloropropane	ND	30								
1,2,3-Trimethylbenzene	ND	30								
1,2,4-Trichlorobenzene	ND	30								
1,2,4-Trimethylbenzene	ND	30								
1,2-Dibromo-3-chloropropane	ND	30								
1,2-Dibromoethane	ND	30								
1,2-Dichlorobenzene	ND	30								
1,2-Dichloroethane	ND	30								
1,2-Dichloropropane	ND	30								
1,3,5-Trimethylbenzene	ND	30								
1,3-Dichlorobenzene	ND	30								
1,4-Dichlorobenzene	ND	30								
2-Butanone	ND	200								
2-Hexanone	ND	30								
2-Methylnaphthalene	ND	100								
4-Methyl-2-pentanone	ND	30								
Acetone	97.5	100								J
Acrylonitrile	ND	100								
Benzene	ND	30								
Bromobenzene	ND	30								
Bromochloromethane	ND	30								
Bromodichloromethane	ND	30								
Bromoform	ND	30								
Bromomethane	ND	75								
Carbon disulfide	ND	30								
Carbon tetrachloride	ND	30								
Chlorobenzene	ND	30								
Chloroethane	ND	100								
Chloroform	ND	30								
Chloromethane	ND	100								
cis-1,2-Dichloroethene	ND	30								
cis-1,3-Dichloropropene	ND	30								
Cyclohexane	ND	30								
Dibromochloromethane	ND	30								
Dibromomethane	ND	30								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

Dichlorodifluoromethane	ND	30					
Diethyl ether	ND	30					
Diisopropyl ether	ND	30					
Ethyl tert butyl ether	ND	30					
Ethylbenzene	ND	30					
Hexachloroethane	ND	30					
Isopropylbenzene	ND	30					
m,p-Xylene	ND	60					
Methyl iodide	ND	75					
Methyl tert-butyl ether	ND	30					
Methylene chloride	ND	30					
Naphthalene	ND	100					
n-Butylbenzene	ND	30					
n-Propylbenzene	ND	30					
o-Xylene	ND	30					
p-Isopropyltoluene	ND	30					
sec-Butylbenzene	ND	30					
Styrene	ND	30					
tert-Butyl alcohol	ND	200					
tert-Butylbenzene	ND	30					
Tertiaryamylmethylether	ND	30					
Tetrachloroethene	ND	30					
Tetrahydrofuran	ND	200					
Toluene	ND	30					
trans-1,2-Dichloroethene	ND	30					
trans-1,3-Dichloropropene	ND	30					
trans-1,4-Dichloro-2-butene	ND	30					
Trichloroethene	ND	30					
Trichlorofluoromethane	ND	30					
Vinyl chloride	ND	30					
Surr: 1,2-Dichloroethane-d4	*1043*	0	*1000*	0	*104*	*70-130*	0
Surr: 4-Bromofluorobenzene	*948.5*	0	*1000*	0	*94.8*	*70-130*	0
Surr: Dibromofluoromethane	*1024*	0	*1000*	0	*102*	*70-130*	0
Surr: Toluene-d8	*1048*	0	*1000*	0	*105*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212556
Project: Marshall KRRI 1225-1250L,1225R 12/12/12

QC BATCH REPORT

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

MBLK Sample ID: **MBLK-45473-45473** Units: **µg/Kg** Analysis Date: **12/18/2012 02:23 PM**
Client ID: Run ID: **VMS9_121218A** SeqNo: **2173834** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	30								
1,1,1-Trichloroethane	ND	30								
1,1,2,2-Tetrachloroethane	ND	30								
1,1,2-Trichloroethane	ND	30								
1,1-Dichloroethane	ND	30								
1,1-Dichloroethene	ND	30								
1,2,3-Trichlorobenzene	ND	30								
1,2,3-Trichloropropane	ND	30								
1,2,3-Trimethylbenzene	ND	30								
1,2,4-Trichlorobenzene	ND	30								
1,2,4-Trimethylbenzene	ND	30								
1,2-Dibromo-3-chloropropane	ND	30								
1,2-Dibromoethane	ND	30								
1,2-Dichlorobenzene	ND	30								
1,2-Dichloroethane	ND	30								
1,2-Dichloropropane	ND	30								
1,3,5-Trimethylbenzene	ND	30								
1,3-Dichlorobenzene	ND	30								
1,4-Dichlorobenzene	ND	30								
2-Butanone	ND	200								
2-Hexanone	ND	30								
2-Methylnaphthalene	ND	100								
4-Methyl-2-pentanone	ND	30								
Acetone	249.5	100								
Acrylonitrile	ND	100								
Benzene	ND	30								
Bromobenzene	ND	30								
Bromochloromethane	ND	30								
Bromodichloromethane	ND	30								
Bromoform	ND	30								
Bromomethane	ND	75								
Carbon disulfide	ND	30								
Carbon tetrachloride	ND	30								
Chlorobenzene	ND	30								
Chloroethane	ND	100								
Chloroform	ND	30								
Chloromethane	ND	100								
cis-1,2-Dichloroethene	ND	30								
cis-1,3-Dichloropropene	ND	30								
Cyclohexane	ND	30								
Dibromochloromethane	ND	30								
Dibromomethane	ND	30								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

Dichlorodifluoromethane	ND	30						
Diethyl ether	ND	30						
Diisopropyl ether	ND	30						
Ethyl tert butyl ether	ND	30						
Ethylbenzene	ND	30						
Hexachloroethane	ND	30						
Isopropylbenzene	ND	30						
m,p-Xylene	ND	60						
Methyl iodide	ND	75						
Methyl tert-butyl ether	ND	30						
Methylene chloride	ND	30						
Naphthalene	16.5	100						J
n-Butylbenzene	ND	30						
n-Propylbenzene	ND	30						
o-Xylene	ND	30						
p-Isopropyltoluene	ND	30						
sec-Butylbenzene	ND	30						
Styrene	ND	30						
tert-Butyl alcohol	ND	200						
tert-Butylbenzene	ND	30						
Tertiaryamylmethylether	ND	30						
Tetrachloroethene	ND	30						
Tetrahydrofuran	ND	200						
Toluene	ND	30						
trans-1,2-Dichloroethene	ND	30						
trans-1,3-Dichloropropene	ND	30						
trans-1,4-Dichloro-2-butene	ND	30						
Trichloroethene	ND	30						
Trichlorofluoromethane	ND	30						
Vinyl chloride	ND	30						
Surr: 1,2-Dichloroethane-d4	*976.5*	0	*1000*	0	*97.6*	*70-130*	0	
Surr: 4-Bromofluorobenzene	*983.5*	0	*1000*	0	*98.4*	*70-130*	0	
Surr: Dibromofluoromethane	*929*	0	*1000*	0	*92.9*	*70-130*	0	
Surr: Toluene-d8	*856*	0	*1000*	0	*85.6*	*70-130*	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212556
Project: Marshall KRRI 1225-1250L,1225R 12/12/12

QC BATCH REPORT

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

MBLK Sample ID: **MBLK-45473-45473** Units: **µg/Kg** Analysis Date: **12/19/2012 02:40 AM**
Client ID: Run ID: **VMS8_121218B** SeqNo: **2174355** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	30								
1,1,1-Trichloroethane	ND	30								
1,1,2,2-Tetrachloroethane	ND	30								
1,1,2-Trichloroethane	ND	30								
1,1-Dichloroethane	ND	30								
1,1-Dichloroethene	ND	30								
1,2,3-Trichlorobenzene	ND	30								
1,2,3-Trichloropropane	ND	30								
1,2,3-Trimethylbenzene	ND	30								
1,2,4-Trichlorobenzene	ND	30								
1,2,4-Trimethylbenzene	ND	30								
1,2-Dibromo-3-chloropropane	ND	30								
1,2-Dibromoethane	ND	30								
1,2-Dichlorobenzene	ND	30								
1,2-Dichloroethane	ND	30								
1,2-Dichloropropane	ND	30								
1,3,5-Trimethylbenzene	ND	30								
1,3-Dichlorobenzene	ND	30								
1,4-Dichlorobenzene	ND	30								
2-Butanone	ND	200								
2-Hexanone	ND	30								
2-Methylnaphthalene	104	100								
4-Methyl-2-pentanone	ND	30								
Acetone	252.5	100								
Acrylonitrile	ND	100								
Benzene	ND	30								
Bromobenzene	ND	30								
Bromochloromethane	ND	30								
Bromodichloromethane	ND	30								
Bromoform	ND	30								
Bromomethane	ND	75								
Carbon disulfide	ND	30								
Carbon tetrachloride	ND	30								
Chlorobenzene	ND	30								
Chloroethane	ND	100								
Chloroform	ND	30								
Chloromethane	ND	100								
cis-1,2-Dichloroethene	ND	30								
cis-1,3-Dichloropropene	ND	30								
Cyclohexane	ND	30								
Dibromochloromethane	ND	30								
Dibromomethane	ND	30								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

Dichlorodifluoromethane	ND	30					
Diethyl ether	ND	30					
Diisopropyl ether	ND	30					
Ethyl tert butyl ether	ND	30					
Ethylbenzene	ND	30					
Hexachloroethane	ND	30					
Isopropylbenzene	ND	30					
m,p-Xylene	ND	60					
Methyl iodide	ND	75					
Methyl tert-butyl ether	ND	30					
Methylene chloride	ND	30					
Naphthalene	ND	100					
n-Butylbenzene	ND	30					
n-Propylbenzene	ND	30					
o-Xylene	ND	30					
p-Isopropyltoluene	ND	30					
sec-Butylbenzene	ND	30					
Styrene	ND	30					
tert-Butyl alcohol	ND	200					
tert-Butylbenzene	ND	30					
Tertiaryamylmethylether	ND	30					
Tetrachloroethene	ND	30					
Tetrahydrofuran	ND	200					
Toluene	ND	30					
trans-1,2-Dichloroethene	ND	30					
trans-1,3-Dichloropropene	ND	30					
trans-1,4-Dichloro-2-butene	ND	30					
Trichloroethene	ND	30					
Trichlorofluoromethane	ND	30					
Vinyl chloride	ND	30					
Surr: 1,2-Dichloroethane-d4	*918*	0	*1000*	0	*91.8*	*70-130*	0
Surr: 4-Bromofluorobenzene	*1024*	0	*1000*	0	*102*	*70-130*	0
Surr: Dibromofluoromethane	*878*	0	*1000*	0	*87.8*	*70-130*	0
Surr: Toluene-d8	*936*	0	*1000*	0	*93.6*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212556
Project: Marshall KRRI 1225-1250L,1225R 12/12/12

QC BATCH REPORT

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

LCS Sample ID: **LCS-45473-45473** Units: **µg/Kg** Analysis Date: **12/17/2012 03:31 PM**
Client ID: Run ID: **VMS5_121217A** SeqNo: **2172233** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	985.5	30	1000	0	98.6	75-125	0			
1,1,1-Trichloroethane	1026	30	1000	0	103	70-135	0			
1,1,2,2-Tetrachloroethane	806	30	1000	0	80.6	55-130	0			
1,1,2-Trichloroethane	866	30	1000	0	86.6	60-125	0			
1,1-Dichloroethane	1027	30	1000	0	103	75-125	0			
1,1-Dichloroethene	1146	30	1000	0	115	65-135	0			
1,2,3-Trichlorobenzene	898.5	30	1000	0	89.8	60-135	0			
1,2,3-Trichloropropane	771	30	1000	0	77.1	65-130	0			
1,2,4-Trichlorobenzene	1026	30	1000	0	103	65-130	0			
1,2,4-Trimethylbenzene	937.5	30	1000	0	93.8	65-135	0			
1,2-Dibromo-3-chloropropane	705	30	1000	0	70.5	40-135	0			
1,2-Dibromoethane	913	30	1000	0	91.3	70-125	0			
1,2-Dichlorobenzene	964.5	30	1000	0	96.4	75-120	0			
1,2-Dichloroethane	938.5	30	1000	0	93.8	70-135	0			
1,2-Dichloropropane	987	30	1000	0	98.7	70-120	0			
1,3,5-Trimethylbenzene	1004	30	1000	0	100	65-135	0			
1,3-Dichlorobenzene	972	30	1000	0	97.2	70-125	0			
1,4-Dichlorobenzene	954.5	30	1000	0	95.4	70-125	0			
2-Butanone	677.5	200	1000	0	67.8	30-160	0			
2-Hexanone	656	30	1000	0	65.6	45-145	0			
4-Methyl-2-pentanone	714	30	1000	0	71.4	45-145	0			
Acetone	692	100	1000	0	69.2	20-160	0			
Acrylonitrile	825	100	1000	0	82.5	70-135	0			
Benzene	981	30	1000	0	98.1	75-125	0			
Bromobenzene	961.5	30	1000	0	96.2	65-120	0			
Bromochloromethane	1083	30	1000	0	108	70-125	0			
Bromodichloromethane	986	30	1000	0	98.6	70-130	0			
Bromoform	824	30	1000	0	82.4	55-135	0			
Bromomethane	1485	75	1000	0	148	30-160	0			
Carbon disulfide	1325	30	1000	0	132	45-160	0			
Carbon tetrachloride	1019	30	1000	0	102	65-135	0			
Chlorobenzene	1000	30	1000	0	100	75-125	0			
Chloroethane	1024	100	1000	0	102	40-155	0			
Chloroform	1031	30	1000	0	103	70-125	0			
Chloromethane	936.5	100	1000	0	93.6	50-130	0			
cis-1,2-Dichloroethene	1094	30	1000	0	109	65-125	0			
cis-1,3-Dichloropropene	1037	30	1000	0	104	70-125	0			
Dibromochloromethane	887	30	1000	0	88.7	65-135	0			
Dibromomethane	933	30	1000	0	93.3	75-130	0			
Dichlorodifluoromethane	875	30	1000	0	87.5	35-135	0			
Ethylbenzene	1028	30	1000	0	103	75-125	0			
Hexachloroethane	1074	30	1000	0	107	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

Isopropylbenzene	1024	30	1000	0	102	75-130	0
m,p-Xylene	2029	60	2000	0	101	80-125	0
Methyl tert-butyl ether	905	30	1000	0	90.5	75-125	0
Methylene chloride	1032	30	1000	0	103	55-145	0
Naphthalene	799	100	1000	0	79.9	40-140	0
n-Butylbenzene	1060	30	1000	0	106	65-140	0
n-Propylbenzene	988	30	1000	0	98.8	65-135	0
o-Xylene	987.5	30	1000	0	98.8	75-125	0
p-Isopropyltoluene	1047	30	1000	0	105	75-135	0
sec-Butylbenzene	1002	30	1000	0	100	65-130	0
Styrene	1018	30	1000	0	102	75-125	0
tert-Butylbenzene	1036	30	1000	0	104	65-130	0
Tetrachloroethene	960	30	1000	0	96	64-140	0
Tetrahydrofuran	704	200	1000	0	70.4	70-135	0
Toluene	932.5	30	1000	0	93.2	70-125	0
trans-1,2-Dichloroethene	1077	30	1000	0	108	65-135	0
trans-1,3-Dichloropropene	997.5	30	1000	0	99.8	65-125	0
trans-1,4-Dichloro-2-butene	733.5	30	1000	0	73.4	70-135	0
Trichloroethene	979	30	1000	0	97.9	75-125	0
Trichlorofluoromethane	987.5	30	1000	0	98.8	25-185	0
Vinyl chloride	1058	30	1000	0	106	60-125	0
Surr: 1,2-Dichloroethane-d4	*940*	0	*1000*	0	*94*	*70-130*	0
Surr: 4-Bromofluorobenzene	*1013*	0	*1000*	0	*101*	*70-130*	0
Surr: Dibromofluoromethane	*987*	0	*1000*	0	*98.7*	*70-130*	0
Surr: Toluene-d8	*983*	0	*1000*	0	*98.3*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212556
Project: Marshall KRRI 1225-1250L,1225R 12/12/12

QC BATCH REPORT

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

LCS Sample ID: **LCS-45473-45473** Units: **µg/Kg** Analysis Date: **12/18/2012 12:40 PM**
Client ID: Run ID: **VMS9_121217B** SeqNo: **2172811** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	1032	30	1000	0	103	75-125	0			
1,1,1-Trichloroethane	1160	30	1000	0	116	70-135	0			
1,1,2,2-Tetrachloroethane	979	30	1000	0	97.9	55-130	0			
1,1,2-Trichloroethane	933	30	1000	0	93.3	60-125	0			
1,1-Dichloroethane	1150	30	1000	0	115	75-125	0			
1,1-Dichloroethene	1224	30	1000	0	122	65-135	0			
1,2,3-Trichlorobenzene	965.5	30	1000	0	96.6	60-135	0			
1,2,3-Trichloropropane	985.5	30	1000	0	98.6	65-130	0			
1,2,4-Trichlorobenzene	947.5	30	1000	0	94.8	65-130	0			
1,2,4-Trimethylbenzene	996	30	1000	0	99.6	65-135	0			
1,2-Dibromo-3-chloropropane	1032	30	1000	0	103	40-135	0			
1,2-Dibromoethane	985	30	1000	0	98.5	70-125	0			
1,2-Dichlorobenzene	898	30	1000	0	89.8	75-120	0			
1,2-Dichloroethane	989	30	1000	0	98.9	70-135	0			
1,2-Dichloropropane	1037	30	1000	0	104	70-120	0			
1,3,5-Trimethylbenzene	1008	30	1000	0	101	65-135	0			
1,3-Dichlorobenzene	904.5	30	1000	0	90.4	70-125	0			
1,4-Dichlorobenzene	908.5	30	1000	0	90.8	70-125	0			
2-Butanone	1151	200	1000	0	115	30-160	0			
2-Hexanone	1104	30	1000	0	110	45-145	0			
4-Methyl-2-pentanone	1252	30	1000	0	125	45-145	0			
Acetone	1448	100	1000	0	145	20-160	0			B
Acrylonitrile	1100	100	1000	0	110	70-135	0			
Benzene	1052	30	1000	0	105	75-125	0			
Bromobenzene	956.5	30	1000	0	95.6	65-120	0			
Bromochloromethane	1128	30	1000	0	113	70-125	0			
Bromodichloromethane	1120	30	1000	0	112	70-130	0			
Bromoform	996	30	1000	0	99.6	55-135	0			
Bromomethane	1402	75	1000	0	140	30-160	0			
Carbon disulfide	1470	30	1000	0	147	45-160	0			
Carbon tetrachloride	1176	30	1000	0	118	65-135	0			
Chlorobenzene	955	30	1000	0	95.5	75-125	0			
Chloroethane	1256	100	1000	0	126	40-155	0			
Chloroform	1150	30	1000	0	115	70-125	0			
Chloromethane	1334	100	1000	0	133	50-130	0			S
cis-1,2-Dichloroethene	1133	30	1000	0	113	65-125	0			
cis-1,3-Dichloropropene	1078	30	1000	0	108	70-125	0			
Dibromochloromethane	1002	30	1000	0	100	65-135	0			
Dibromomethane	1090	30	1000	0	109	75-130	0			
Dichlorodifluoromethane	1356	30	1000	0	136	35-135	0			S
Ethylbenzene	963.5	30	1000	0	96.4	75-125	0			
Hexachloroethane	1018	30	1000	0	102	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

Isopropylbenzene	1007	30	1000	0	101	75-130	0	
m,p-Xylene	1994	60	2000	0	99.7	80-125	0	
Methyl tert-butyl ether	1265	30	1000	0	126	75-125	0	S
Methylene chloride	1098	30	1000	0	110	55-145	0	
Naphthalene	1003	100	1000	0	100	40-140	0	
n-Butylbenzene	935.5	30	1000	0	93.6	65-140	0	
n-Propylbenzene	973.5	30	1000	0	97.4	65-135	0	
o-Xylene	997	30	1000	0	99.7	75-125	0	
p-Isopropyltoluene	976	30	1000	0	97.6	75-135	0	
sec-Butylbenzene	1038	30	1000	0	104	65-130	0	
Styrene	1034	30	1000	0	103	75-125	0	
tert-Butylbenzene	985.5	30	1000	0	98.6	65-130	0	
Tetrachloroethene	956	30	1000	0	95.6	64-140	0	
Tetrahydrofuran	1264	200	1000	0	126	70-135	0	
Toluene	971	30	1000	0	97.1	70-125	0	
trans-1,2-Dichloroethene	1168	30	1000	0	117	65-135	0	
trans-1,3-Dichloropropene	990.5	30	1000	0	99	65-125	0	
trans-1,4-Dichloro-2-butene	945.5	30	1000	0	94.6	70-135	0	
Trichloroethene	1048	30	1000	0	105	75-125	0	
Trichlorofluoromethane	1272	30	1000	0	127	25-185	0	
Vinyl chloride	1332	30	1000	0	133	60-125	0	S
Surr: 1,2-Dichloroethane-d4	*971*	0	*1000*	0	*97.1*	*70-130*	0	
Surr: 4-Bromofluorobenzene	*1008*	0	*1000*	0	*101*	*70-130*	0	
Surr: Dibromofluoromethane	*1062*	0	*1000*	0	*106*	*70-130*	0	
Surr: Toluene-d8	*935*	0	*1000*	0	*93.5*	*70-130*	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212556
Project: Marshall KRRI 1225-1250L,1225R 12/12/12

QC BATCH REPORT

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

LCS Sample ID: **LCS-45473-45473** Units: **µg/Kg** Analysis Date: **12/18/2012 03:37 AM**
Client ID: Run ID: **VMS5_121217B** SeqNo: **2173087** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	1056	30	1000	0	106	75-125	0			
1,1,1-Trichloroethane	997	30	1000	0	99.7	70-135	0			
1,1,2,2-Tetrachloroethane	1044	30	1000	0	104	55-130	0			
1,1,2-Trichloroethane	1018	30	1000	0	102	60-125	0			
1,1-Dichloroethane	998	30	1000	0	99.8	75-125	0			
1,1-Dichloroethene	1089	30	1000	0	109	65-135	0			
1,2,3-Trichlorobenzene	973	30	1000	0	97.3	60-135	0			
1,2,3-Trichloropropane	1002	30	1000	0	100	65-130	0			
1,2,4-Trichlorobenzene	1142	30	1000	0	114	65-130	0			
1,2,4-Trimethylbenzene	1057	30	1000	0	106	65-135	0			
1,2-Dibromo-3-chloropropane	1014	30	1000	0	101	40-135	0			
1,2-Dibromoethane	1066	30	1000	0	107	70-125	0			
1,2-Dichlorobenzene	1158	30	1000	0	116	75-120	0			
1,2-Dichloroethane	917.5	30	1000	0	91.8	70-135	0			
1,2-Dichloropropane	963	30	1000	0	96.3	70-120	0			
1,3,5-Trimethylbenzene	1102	30	1000	0	110	65-135	0			
1,3-Dichlorobenzene	1148	30	1000	0	115	70-125	0			
1,4-Dichlorobenzene	1146	30	1000	0	115	70-125	0			
2-Butanone	835.5	200	1000	0	83.6	30-160	0			
2-Hexanone	910.5	30	1000	0	91	45-145	0			
4-Methyl-2-pentanone	944.5	30	1000	0	94.4	45-145	0			
Acetone	960.5	100	1000	0	96	20-160	0			
Acrylonitrile	967.5	100	1000	0	96.8	70-135	0			
Benzene	981.5	30	1000	0	98.2	75-125	0			
Bromobenzene	1111	30	1000	0	111	65-120	0			
Bromochloromethane	1024	30	1000	0	102	70-125	0			
Bromodichloromethane	951.5	30	1000	0	95.2	70-130	0			
Bromoform	1042	30	1000	0	104	55-135	0			
Bromomethane	1389	75	1000	0	139	30-160	0			
Carbon disulfide	1218	30	1000	0	122	45-160	0			
Carbon tetrachloride	993.5	30	1000	0	99.4	65-135	0			
Chlorobenzene	1132	30	1000	0	113	75-125	0			
Chloroethane	1006	100	1000	0	101	40-155	0			
Chloroform	962.5	30	1000	0	96.2	70-125	0			
Chloromethane	936	100	1000	0	93.6	50-130	0			
cis-1,2-Dichloroethene	982	30	1000	0	98.2	65-125	0			
cis-1,3-Dichloropropene	970	30	1000	0	97	70-125	0			
Dibromochloromethane	1028	30	1000	0	103	65-135	0			
Dibromomethane	938.5	30	1000	0	93.8	75-130	0			
Dichlorodifluoromethane	852	30	1000	0	85.2	35-135	0			
Ethylbenzene	1130	30	1000	0	113	75-125	0			
Hexachloroethane	1104	30	1000	0	110	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

Isopropylbenzene	1116	30	1000	0	112	75-130	0
m,p-Xylene	2258	60	2000	0	113	80-125	0
Methyl tert-butyl ether	929	30	1000	0	92.9	75-125	0
Methylene chloride	967	30	1000	0	96.7	55-145	0
Naphthalene	917.5	100	1000	0	91.8	40-140	0
n-Butylbenzene	1140	30	1000	0	114	65-140	0
n-Propylbenzene	1067	30	1000	0	107	65-135	0
o-Xylene	1096	30	1000	0	110	75-125	0
p-Isopropyltoluene	1152	30	1000	0	115	75-135	0
sec-Butylbenzene	1063	30	1000	0	106	65-130	0
Styrene	1129	30	1000	0	113	75-125	0
tert-Butylbenzene	1136	30	1000	0	114	65-130	0
Tetrachloroethene	1079	30	1000	0	108	64-140	0
Tetrahydrofuran	948	200	1000	0	94.8	70-135	0
Toluene	1007	30	1000	0	101	70-125	0
trans-1,2-Dichloroethene	1020	30	1000	0	102	65-135	0
trans-1,3-Dichloropropene	1077	30	1000	0	108	65-125	0
trans-1,4-Dichloro-2-butene	821.5	30	1000	0	82.2	70-135	0
Trichloroethene	952.5	30	1000	0	95.2	75-125	0
Trichlorofluoromethane	912.5	30	1000	0	91.2	25-185	0
Vinyl chloride	1052	30	1000	0	105	60-125	0
Surr: 1,2-Dichloroethane-d4	*1024*	0	*1000*	0	*102*	*70-130*	0
Surr: 4-Bromofluorobenzene	*959*	0	*1000*	0	*95.9*	*70-130*	0
Surr: Dibromofluoromethane	*1035*	0	*1000*	0	*104*	*70-130*	0
Surr: Toluene-d8	*1057*	0	*1000*	0	*106*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212556
Project: Marshall KRRI 1225-1250L,1225R 12/12/12

QC BATCH REPORT

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

LCS Sample ID: **LCS-45473-45473** Units: **µg/Kg** Analysis Date: **12/18/2012 01:07 PM**
Client ID: Run ID: **VMS9_121218A** SeqNo: **2173832** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	971.5	30	1000	0	97.2	75-125	0			
1,1,1-Trichloroethane	1158	30	1000	0	116	70-135	0			
1,1,2,2-Tetrachloroethane	884.5	30	1000	0	88.4	55-130	0			
1,1,2-Trichloroethane	873	30	1000	0	87.3	60-125	0			
1,1-Dichloroethane	1145	30	1000	0	114	75-125	0			
1,1-Dichloroethene	1304	30	1000	0	130	65-135	0			
1,2,3-Trichlorobenzene	897	30	1000	0	89.7	60-135	0			
1,2,3-Trichloropropane	878	30	1000	0	87.8	65-130	0			
1,2,4-Trichlorobenzene	906	30	1000	0	90.6	65-130	0			
1,2,4-Trimethylbenzene	969	30	1000	0	96.9	65-135	0			
1,2-Dibromo-3-chloropropane	861.5	30	1000	0	86.2	40-135	0			
1,2-Dibromoethane	908.5	30	1000	0	90.8	70-125	0			
1,2-Dichlorobenzene	863.5	30	1000	0	86.4	75-120	0			
1,2-Dichloroethane	987	30	1000	0	98.7	70-135	0			
1,2-Dichloropropane	1036	30	1000	0	104	70-120	0			
1,3,5-Trimethylbenzene	1002	30	1000	0	100	65-135	0			
1,3-Dichlorobenzene	871.5	30	1000	0	87.2	70-125	0			
1,4-Dichlorobenzene	894	30	1000	0	89.4	70-125	0			
2-Butanone	1150	200	1000	0	115	30-160	0			
2-Hexanone	969	30	1000	0	96.9	45-145	0			
4-Methyl-2-pentanone	1086	30	1000	0	109	45-145	0			
Acetone	1336	100	1000	0	134	20-160	0			B
Acrylonitrile	1098	100	1000	0	110	70-135	0			
Benzene	1037	30	1000	0	104	75-125	0			
Bromobenzene	910	30	1000	0	91	65-120	0			
Bromochloromethane	1173	30	1000	0	117	70-125	0			
Bromodichloromethane	1071	30	1000	0	107	70-130	0			
Bromoform	892.5	30	1000	0	89.2	55-135	0			
Bromomethane	1479	75	1000	0	148	30-160	0			
Carbon disulfide	1523	30	1000	0	152	45-160	0			
Carbon tetrachloride	1160	30	1000	0	116	65-135	0			
Chlorobenzene	907.5	30	1000	0	90.8	75-125	0			
Chloroethane	1292	100	1000	0	129	40-155	0			
Chloroform	1166	30	1000	0	117	70-125	0			
Chloromethane	1303	100	1000	0	130	50-130	0			S
cis-1,2-Dichloroethene	1194	30	1000	0	119	65-125	0			
cis-1,3-Dichloropropene	1084	30	1000	0	108	70-125	0			
Dibromochloromethane	902	30	1000	0	90.2	65-135	0			
Dibromomethane	1066	30	1000	0	107	75-130	0			
Dichlorodifluoromethane	1410	30	1000	0	141	35-135	0			S
Ethylbenzene	940	30	1000	0	94	75-125	0			
Hexachloroethane	999.5	30	1000	0	100	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

Isopropylbenzene	993.5	30	1000	0	99.4	75-130	0	
m,p-Xylene	1931	60	2000	0	96.6	80-125	0	
Methyl tert-butyl ether	1280	30	1000	0	128	75-125	0	S
Methylene chloride	1146	30	1000	0	115	55-145	0	
Naphthalene	845.5	100	1000	0	84.6	40-140	0	
n-Butylbenzene	983	30	1000	0	98.3	65-140	0	
n-Propylbenzene	967	30	1000	0	96.7	65-135	0	
o-Xylene	947.5	30	1000	0	94.8	75-125	0	
p-Isopropyltoluene	955.5	30	1000	0	95.6	75-135	0	
sec-Butylbenzene	1079	30	1000	0	108	65-130	0	
Styrene	982.5	30	1000	0	98.2	75-125	0	
tert-Butylbenzene	997.5	30	1000	0	99.8	65-130	0	
Tetrachloroethene	963	30	1000	0	96.3	64-140	0	
Tetrahydrofuran	1184	200	1000	0	118	70-135	0	
Toluene	923.5	30	1000	0	92.4	70-125	0	
trans-1,2-Dichloroethene	1221	30	1000	0	122	65-135	0	
trans-1,3-Dichloropropene	960	30	1000	0	96	65-125	0	
trans-1,4-Dichloro-2-butene	885	30	1000	0	88.5	70-135	0	
Trichloroethene	1063	30	1000	0	106	75-125	0	
Trichlorofluoromethane	1401	30	1000	0	140	25-185	0	
Vinyl chloride	1372	30	1000	0	137	60-125	0	S
Surr: 1,2-Dichloroethane-d4	*975.5*	0	*1000*	0	*97.6*	*70-130*	0	
Surr: 4-Bromofluorobenzene	*1024*	0	*1000*	0	*102*	*70-130*	0	
Surr: Dibromofluoromethane	*1030*	0	*1000*	0	*103*	*70-130*	0	
Surr: Toluene-d8	*894.5*	0	*1000*	0	*89.4*	*70-130*	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

LCS Sample ID: **LCS-45473-45473** Units: **µg/Kg** Analysis Date: **12/19/2012 01:29 AM**
Client ID: Run ID: **VMS8_121218B** SeqNo: **2174354** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	1014	30	1000	0	101	75-125	0			
1,1,1-Trichloroethane	1039	30	1000	0	104	70-135	0			
1,1,2,2-Tetrachloroethane	908	30	1000	0	90.8	55-130	0			
1,1,2-Trichloroethane	916	30	1000	0	91.6	60-125	0			
1,1-Dichloroethane	1033	30	1000	0	103	75-125	0			
1,1-Dichloroethene	1005	30	1000	0	100	65-135	0			
1,2,3-Trichlorobenzene	1026	30	1000	0	103	60-135	0			
1,2,3-Trichloropropane	934	30	1000	0	93.4	65-130	0			
1,2,4-Trichlorobenzene	1045	30	1000	0	104	65-130	0			
1,2,4-Trimethylbenzene	999	30	1000	0	99.9	65-135	0			
1,2-Dibromo-3-chloropropane	968	30	1000	0	96.8	40-135	0			
1,2-Dibromoethane	1008	30	1000	0	101	70-125	0			
1,2-Dichlorobenzene	942.5	30	1000	0	94.2	75-120	0			
1,2-Dichloroethane	961	30	1000	0	96.1	70-135	0			
1,2-Dichloropropane	1008	30	1000	0	101	70-120	0			
1,3,5-Trimethylbenzene	1034	30	1000	0	103	65-135	0			
1,3-Dichlorobenzene	958	30	1000	0	95.8	70-125	0			
1,4-Dichlorobenzene	965.5	30	1000	0	96.6	70-125	0			
2-Butanone	882.5	200	1000	0	88.2	30-160	0			
2-Hexanone	1024	30	1000	0	102	45-145	0			
4-Methyl-2-pentanone	1330	30	1000	0	133	45-145	0			
Acetone	969	100	1000	0	96.9	20-160	0			B
Acrylonitrile	919.5	100	1000	0	92	70-135	0			
Benzene	1020	30	1000	0	102	75-125	0			
Bromobenzene	971.5	30	1000	0	97.2	65-120	0			
Bromochloromethane	1024	30	1000	0	102	70-125	0			
Bromodichloromethane	956.5	30	1000	0	95.6	70-130	0			
Bromoform	927.5	30	1000	0	92.8	55-135	0			
Bromomethane	1010	75	1000	0	101	30-160	0			
Carbon disulfide	1110	30	1000	0	111	45-160	0			
Carbon tetrachloride	1052	30	1000	0	105	65-135	0			
Chlorobenzene	977.5	30	1000	0	97.8	75-125	0			
Chloroethane	1124	100	1000	0	112	40-155	0			
Chloroform	1049	30	1000	0	105	70-125	0			
Chloromethane	831.5	100	1000	0	83.2	50-130	0			
cis-1,2-Dichloroethene	1042	30	1000	0	104	65-125	0			
cis-1,3-Dichloropropene	993.5	30	1000	0	99.4	70-125	0			
Dibromochloromethane	952	30	1000	0	95.2	65-135	0			
Dibromomethane	987	30	1000	0	98.7	75-130	0			
Dichlorodifluoromethane	825	30	1000	0	82.5	35-135	0			
Ethylbenzene	997.5	30	1000	0	99.8	75-125	0			
Hexachloroethane	1143	30	1000	0	114	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

Isopropylbenzene	1029	30	1000	0	103	75-130	0
m,p-Xylene	2052	60	2000	0	103	80-125	0
Methyl tert-butyl ether	1074	30	1000	0	107	75-125	0
Methylene chloride	1008	30	1000	0	101	55-145	0
Naphthalene	1275	100	1000	0	128	40-140	0
n-Butylbenzene	1020	30	1000	0	102	65-140	0
n-Propylbenzene	954	30	1000	0	95.4	65-135	0
o-Xylene	992.5	30	1000	0	99.2	75-125	0
p-Isopropyltoluene	1028	30	1000	0	103	75-135	0
sec-Butylbenzene	1014	30	1000	0	101	65-130	0
Styrene	1050	30	1000	0	105	75-125	0
tert-Butylbenzene	999.5	30	1000	0	100	65-130	0
Tetrachloroethene	941	30	1000	0	94.1	64-140	0
Tetrahydrofuran	891	200	1000	0	89.1	70-135	0
Toluene	1022	30	1000	0	102	70-125	0
trans-1,2-Dichloroethene	1115	30	1000	0	112	65-135	0
trans-1,3-Dichloropropene	997.5	30	1000	0	99.8	65-125	0
trans-1,4-Dichloro-2-butene	986	30	1000	0	98.6	70-135	0
Trichloroethene	1018	30	1000	0	102	75-125	0
Trichlorofluoromethane	840	30	1000	0	84	25-185	0
Vinyl chloride	929.5	30	1000	0	93	60-125	0
Surr: 1,2-Dichloroethane-d4	*911*	0	*1000*	0	*91.1*	*70-130*	0
Surr: 4-Bromofluorobenzene	*977.5*	0	*1000*	0	*97.8*	*70-130*	0
Surr: Dibromofluoromethane	*928.5*	0	*1000*	0	*92.8*	*70-130*	0
Surr: Toluene-d8	*952.5*	0	*1000*	0	*95.2*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212556
Project: Marshall KRRI 1225-1250L,1225R 12/12/12

QC BATCH REPORT

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

MS Sample ID: **1212554-08A MS** Units: **µg/Kg** Analysis Date: **12/18/2012 09:39 AM**
Client ID: Run ID: **VMS9_121217B** SeqNo: **2172809** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	2184	70	2333	0	93.6	75-125	0			
1,1,1-Trichloroethane	2666	70	2333	0	114	70-135	0			
1,1,2,2-Tetrachloroethane	2171	70	2333	0	93	55-130	0			
1,1,2-Trichloroethane	2067	70	2333	0	88.6	60-125	0			
1,1-Dichloroethane	2627	70	2333	0	113	75-125	0			
1,1-Dichloroethene	2890	70	2333	0	124	65-135	0			
1,2,3-Trichlorobenzene	1864	70	2333	0	79.9	60-135	0			
1,2,3-Trichloropropane	2210	70	2333	0	94.7	65-130	0			
1,2,4-Trichlorobenzene	1882	70	2333	0	80.6	65-130	0			
1,2,4-Trimethylbenzene	2358	70	2333	0	101	65-135	0			
1,2-Dibromo-3-chloropropane	1912	70	2333	0	82	40-135	0			
1,2-Dibromoethane	2199	70	2333	0	94.2	70-125	0			
1,2-Dichlorobenzene	1958	70	2333	0	83.9	75-120	0			
1,2-Dichloroethane	2459	70	2333	0	105	70-135	0			
1,2-Dichloropropane	2488	70	2333	0	107	70-120	0			
1,3,5-Trimethylbenzene	2435	70	2333	0	104	65-135	0			
1,3-Dichlorobenzene	2007	70	2333	0	86	70-125	0			
1,4-Dichlorobenzene	1995	70	2333	0	85.5	70-125	0			
2-Butanone	3053	470	2333	0	131	30-160	0			
2-Hexanone	2558	70	2333	0	110	45-145	0			
4-Methyl-2-pentanone	2843	70	2333	0	122	45-145	0			
Acetone	3891	230	2333	0	167	20-160	0			BS
Acrylonitrile	2864	230	2333	0	123	70-135	0			
Benzene	2511	70	2333	0	108	75-125	0			
Bromobenzene	2230	70	2333	0	95.6	65-120	0			
Bromochloromethane	2744	70	2333	0	118	70-125	0			
Bromodichloromethane	2418	70	2333	0	104	70-130	0			
Bromoform	1881	70	2333	0	80.6	55-135	0			
Bromomethane	2656	180	2333	0	114	30-160	0			
Carbon disulfide	2774	70	2333	0	119	45-160	0			
Carbon tetrachloride	2780	70	2333	0	119	65-135	0			
Chlorobenzene	2171	70	2333	0	93	75-125	0			
Chloroethane	1097	230	2333	0	47	40-155	0			
Chloroform	2694	70	2333	0	115	70-125	0			
Chloromethane	3533	230	2333	127.2	146	50-130	0			S
cis-1,2-Dichloroethene	2641	70	2333	0	113	65-125	0			
cis-1,3-Dichloropropene	2329	70	2333	0	99.8	70-125	0			
Dibromochloromethane	1954	70	2333	0	83.8	65-135	0			
Dibromomethane	2553	70	2333	0	109	75-130	0			
Dichlorodifluoromethane	3136	70	2333	0	134	35-135	0			
Ethylbenzene	2241	70	2333	0	96	75-125	0			
Hexachloroethane	2007	70	2333	0	86	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

Isopropylbenzene	2398	70	2333	0	103	75-130	0	
m,p-Xylene	4610	140	4667	0	98.8	80-125	0	
Methyl tert-butyl ether	3004	70	2333	0	129	75-125	0	S
Methylene chloride	2771	70	2333	0	119	55-145	0	
Naphthalene	1810	230	2333	0	77.6	40-140	0	
n-Butylbenzene	2063	70	2333	0	88.4	65-140	0	
n-Propylbenzene	2346	70	2333	0	101	65-135	0	
o-Xylene	2325	70	2333	0	99.6	75-125	0	
p-Isopropyltoluene	2214	70	2333	0	94.9	75-135	0	
sec-Butylbenzene	2513	70	2333	0	108	65-130	0	
Styrene	2389	70	2333	0	102	75-125	0	
tert-Butylbenzene	2406	70	2333	0	103	65-130	0	
Tetrachloroethene	2191	70	2333	0	93.9	64-140	0	
Tetrahydrofuran	3023	470	2333	0	130	70-135	0	
Toluene	2130	70	2333	0	91.3	70-125	0	
trans-1,2-Dichloroethene	2726	70	2333	0	117	65-135	0	
trans-1,3-Dichloropropene	1979	70	2333	0	84.8	65-125	0	
trans-1,4-Dichloro-2-butene	1548	70	2333	0	66.4	70-135	0	S
Trichloroethene	2506	70	2333	0	107	75-125	0	
Trichlorofluoromethane	3095	70	2333	0	133	25-185	0	
Vinyl chloride	3187	70	2333	0	137	60-125	0	S
Surr: 1,2-Dichloroethane-d4	*2317*	0	*2333*	0	*99.3*	*70-130*	0	
Surr: 4-Bromofluorobenzene	*2465*	0	*2333*	0	*106*	*70-130*	0	
Surr: Dibromofluoromethane	*2375*	0	*2333*	0	*102*	*70-130*	0	
Surr: Toluene-d8	*2015*	0	*2333*	0	*86.4*	*70-130*	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212556
Project: Marshall KRRI 1225-1250L,1225R 12/12/12

QC BATCH REPORT

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

MSD Sample ID: **1212554-08A MSD** Units: **µg/Kg** Analysis Date: **12/18/2012 10:04 AM**
Client ID: Run ID: **VMS9_121217B** SeqNo: **2172810** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	2176	70	2333	0	93.2	75-125	2184	0.375	30	
1,1,1-Trichloroethane	2637	70	2333	0	113	70-135	2666	1.1	30	
1,1,2,2-Tetrachloroethane	2140	70	2333	0	91.7	55-130	2171	1.46	30	
1,1,2-Trichloroethane	2070	70	2333	0	88.7	60-125	2067	0.113	30	
1,1-Dichloroethane	2779	70	2333	0	119	75-125	2627	5.61	30	
1,1-Dichloroethene	2945	70	2333	0	126	65-135	2890	1.88	30	
1,2,3-Trichlorobenzene	1967	70	2333	0	84.3	60-135	1864	5.36	30	
1,2,3-Trichloropropane	2158	70	2333	0	92.5	65-130	2210	2.35	30	
1,2,4-Trichlorobenzene	1931	70	2333	0	82.8	65-130	1882	2.57	30	
1,2,4-Trimethylbenzene	2338	70	2333	0	100	65-135	2358	0.845	30	
1,2-Dibromo-3-chloropropane	1928	70	2333	0	82.6	40-135	1912	0.851	30	
1,2-Dibromoethane	2134	70	2333	0	91.4	70-125	2199	3.02	30	
1,2-Dichlorobenzene	2011	70	2333	0	86.2	75-120	1958	2.7	30	
1,2-Dichloroethane	2394	70	2333	0	103	70-135	2459	2.69	30	
1,2-Dichloropropane	2480	70	2333	0	106	70-120	2488	0.329	30	
1,3,5-Trimethylbenzene	2424	70	2333	0	104	65-135	2435	0.432	30	
1,3-Dichlorobenzene	2026	70	2333	0	86.8	70-125	2007	0.984	30	
1,4-Dichlorobenzene	2046	70	2333	0	87.7	70-125	1995	2.54	30	
2-Butanone	3009	470	2333	0	129	30-160	3053	1.46	30	
2-Hexanone	2510	70	2333	0	108	45-145	2558	1.93	30	
4-Methyl-2-pentanone	2714	70	2333	0	116	45-145	2843	4.66	30	
Acetone	3764	230	2333	0	161	20-160	3891	3.32	30	BS
Acrylonitrile	2866	230	2333	0	123	70-135	2864	0.0814	30	
Benzene	2487	70	2333	0	107	75-125	2511	0.934	30	
Bromobenzene	2206	70	2333	0	94.6	65-120	2230	1.05	30	
Bromochloromethane	2750	70	2333	0	118	70-125	2744	0.212	30	
Bromodichloromethane	2420	70	2333	0	104	70-130	2418	0.0482	30	
Bromoform	1926	70	2333	0	82.6	55-135	1881	2.39	30	
Bromomethane	2975	180	2333	0	128	30-160	2656	11.3	30	
Carbon disulfide	2870	70	2333	0	123	45-160	2774	3.39	30	
Carbon tetrachloride	2709	70	2333	0	116	65-135	2780	2.59	30	
Chlorobenzene	2151	70	2333	0	92.2	75-125	2171	0.918	30	
Chloroethane	1115	230	2333	0	47.8	40-155	1097	1.69	30	
Chloroform	2762	70	2333	0	118	70-125	2694	2.48	30	
Chloromethane	3563	230	2333	127.2	147	50-130	3533	0.855	30	S
cis-1,2-Dichloroethene	2674	70	2333	0	115	65-125	2641	1.23	30	
cis-1,3-Dichloropropene	2323	70	2333	0	99.6	70-125	2329	0.251	30	
Dibromochloromethane	1973	70	2333	0	84.6	65-135	1954	0.951	30	
Dibromomethane	2510	70	2333	0	108	75-130	2553	1.71	30	
Dichlorodifluoromethane	3104	70	2333	0	133	35-135	3136	1.01	30	
Ethylbenzene	2211	70	2333	0	94.8	75-125	2241	1.36	30	
Hexachloroethane	2046	70	2333	0	87.7	70-135	2007	1.96	30	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45473** Instrument ID **VMS5** Method: **SW8260**

Isopropylbenzene	2361	70	2333	0	101	75-130	2398	1.52	30	
m,p-Xylene	4541	140	4667	0	97.3	80-125	4610	1.5	30	
Methyl tert-butyl ether	3061	70	2333	0	131	75-125	3004	1.88	30	S
Methylene chloride	2846	70	2333	0	122	55-145	2771	2.66	30	
Naphthalene	1970	230	2333	0	84.4	40-140	1810	8.52	30	
n-Butylbenzene	2124	70	2333	0	91	65-140	2063	2.95	30	
n-Propylbenzene	2297	70	2333	0	98.4	65-135	2346	2.11	30	
o-Xylene	2303	70	2333	0	98.7	75-125	2325	0.958	30	
p-Isopropyltoluene	2212	70	2333	0	94.8	75-135	2214	0.105	30	
sec-Butylbenzene	2494	70	2333	0	107	65-130	2513	0.746	30	
Styrene	2395	70	2333	0	103	75-125	2389	0.244	30	
tert-Butylbenzene	2375	70	2333	0	102	65-130	2406	1.27	30	
Tetrachloroethene	2155	70	2333	0	92.4	64-140	2191	1.66	30	
Tetrahydrofuran	2938	470	2333	0	126	70-135	3023	2.86	30	
Toluene	2107	70	2333	0	90.3	70-125	2130	1.1	30	
trans-1,2-Dichloroethene	2770	70	2333	0	119	65-135	2726	1.57	30	
trans-1,3-Dichloropropene	1936	70	2333	0	83	65-125	1979	2.21	30	
trans-1,4-Dichloro-2-butene	1493	70	2333	0	64	70-135	1548	3.61	30	S
Trichloroethene	2482	70	2333	0	106	75-125	2506	0.982	30	
Trichlorofluoromethane	3116	70	2333	0	134	25-185	3095	0.676	30	
Vinyl chloride	3322	70	2333	0	142	60-125	3187	4.12	30	S
Surr: 1,2-Dichloroethane-d4	*2248*	0	*2333*	0	*96.4*	*70-130*	2317	*3.02*	*30*	
Surr: 4-Bromofluorobenzene	*2448*	0	*2333*	0	*105*	*70-130*	2465	*0.712*	*30*	
Surr: Dibromofluoromethane	*2417*	0	*2333*	0	*104*	*70-130*	2375	*1.75*	*30*	
Surr: Toluene-d8	*2009*	0	*2333*	0	*86.1*	*70-130*	2015	*0.29*	*30*	

The following samples were analyzed in this batch:

1212556-01B	1212556-02B	1212556-03B
1212556-04B	1212556-05B	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212556
Project: Marshall KRRI 1225-1250L,1225R 12/12/12

QC BATCH REPORT

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

MBLK Sample ID: **MBLK-45482-45482** Units: **µg/Kg** Analysis Date: **12/18/2012 01:57 AM**
Client ID: Run ID: **VMS9_121217B** SeqNo: **2172821** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	30								
1,1,1-Trichloroethane	ND	30								
1,1,2,2-Tetrachloroethane	ND	30								
1,1,2-Trichloroethane	ND	30								
1,1-Dichloroethane	ND	30								
1,1-Dichloroethene	ND	30								
1,2,3-Trichlorobenzene	ND	30								
1,2,3-Trichloropropane	ND	30								
1,2,3-Trimethylbenzene	ND	30								
1,2,4-Trichlorobenzene	ND	30								
1,2,4-Trimethylbenzene	ND	30								
1,2-Dibromo-3-chloropropane	ND	30								
1,2-Dibromoethane	ND	30								
1,2-Dichlorobenzene	ND	30								
1,2-Dichloroethane	ND	30								
1,2-Dichloropropane	ND	30								
1,3,5-Trimethylbenzene	ND	30								
1,3-Dichlorobenzene	ND	30								
1,4-Dichlorobenzene	ND	30								
2-Butanone	ND	200								
2-Hexanone	ND	30								
2-Methylnaphthalene	ND	100								
4-Methyl-2-pentanone	ND	30								
Acetone	215.5	100								
Acrylonitrile	ND	100								
Benzene	ND	30								
Bromobenzene	ND	30								
Bromochloromethane	ND	30								
Bromodichloromethane	ND	30								
Bromoform	ND	30								
Bromomethane	ND	75								
Carbon disulfide	ND	30								
Carbon tetrachloride	ND	30								
Chlorobenzene	ND	30								
Chloroethane	ND	100								
Chloroform	ND	30								
Chloromethane	ND	100								
cis-1,2-Dichloroethene	ND	30								
cis-1,3-Dichloropropene	ND	30								
Cyclohexane	ND	30								
Dibromochloromethane	ND	30								
Dibromomethane	ND	30								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

Dichlorodifluoromethane	ND	30						
Diethyl ether	ND	30						
Diisopropyl ether	ND	30						
Ethyl tert butyl ether	ND	30						
Ethylbenzene	ND	30						
Hexachloroethane	ND	30						
Isopropylbenzene	ND	30						
m,p-Xylene	ND	60						
Methyl iodide	ND	75						
Methyl tert-butyl ether	ND	30						
Methylene chloride	ND	30						
Naphthalene	17.5	100						J
n-Butylbenzene	ND	30						
n-Propylbenzene	ND	30						
o-Xylene	ND	30						
p-Isopropyltoluene	ND	30						
sec-Butylbenzene	ND	30						
Styrene	ND	30						
tert-Butyl alcohol	ND	200						
tert-Butylbenzene	ND	30						
Tertiaryamylmethylether	ND	30						
Tetrachloroethene	ND	30						
Tetrahydrofuran	ND	200						
Toluene	ND	30						
trans-1,2-Dichloroethene	ND	30						
trans-1,3-Dichloropropene	ND	30						
trans-1,4-Dichloro-2-butene	ND	30						
Trichloroethene	ND	30						
Trichlorofluoromethane	ND	30						
Vinyl chloride	ND	30						
Surr: 1,2-Dichloroethane-d4	*972*	0	*1000*	0	*97.2*	*70-130*	0	
Surr: 4-Bromofluorobenzene	*975.5*	0	*1000*	0	*97.6*	*70-130*	0	
Surr: Dibromofluoromethane	*930.5*	0	*1000*	0	*93*	*70-130*	0	
Surr: Toluene-d8	*881.5*	0	*1000*	0	*88.2*	*70-130*	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212556
Project: Marshall KRRI 1225-1250L,1225R 12/12/12

QC BATCH REPORT

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

MBLK Sample ID: **MBLK-45482-45482** Units: **µg/Kg** Analysis Date: **12/18/2012 01:23 AM**
Client ID: Run ID: **VMS8_121217B** SeqNo: **2173029** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	30								
1,1,1-Trichloroethane	ND	30								
1,1,2,2-Tetrachloroethane	ND	30								
1,1,2-Trichloroethane	ND	30								
1,1-Dichloroethane	ND	30								
1,1-Dichloroethene	ND	30								
1,2,3-Trichlorobenzene	ND	30								
1,2,3-Trichloropropane	ND	30								
1,2,3-Trimethylbenzene	ND	30								
1,2,4-Trichlorobenzene	ND	30								
1,2,4-Trimethylbenzene	ND	30								
1,2-Dibromo-3-chloropropane	ND	30								
1,2-Dibromoethane	ND	30								
1,2-Dichlorobenzene	ND	30								
1,2-Dichloroethane	ND	30								
1,2-Dichloropropane	ND	30								
1,3,5-Trimethylbenzene	ND	30								
1,3-Dichlorobenzene	ND	30								
1,4-Dichlorobenzene	ND	30								
2-Butanone	ND	200								
2-Hexanone	ND	30								
2-Methylnaphthalene	ND	100								
4-Methyl-2-pentanone	ND	30								
Acetone	292	100								
Acrylonitrile	ND	100								
Benzene	ND	30								
Bromobenzene	ND	30								
Bromochloromethane	ND	30								
Bromodichloromethane	ND	30								
Bromoform	ND	30								
Bromomethane	ND	75								
Carbon disulfide	ND	30								
Carbon tetrachloride	ND	30								
Chlorobenzene	ND	30								
Chloroethane	ND	100								
Chloroform	ND	30								
Chloromethane	ND	100								
cis-1,2-Dichloroethene	ND	30								
cis-1,3-Dichloropropene	ND	30								
Cyclohexane	ND	30								
Dibromochloromethane	ND	30								
Dibromomethane	ND	30								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

Dichlorodifluoromethane	ND	30					
Diethyl ether	ND	30					
Diisopropyl ether	ND	30					
Ethyl tert butyl ether	ND	30					
Ethylbenzene	ND	30					
Hexachloroethane	ND	30					
Isopropylbenzene	ND	30					
m,p-Xylene	ND	60					
Methyl iodide	ND	75					
Methyl tert-butyl ether	ND	30					
Methylene chloride	ND	30					
Naphthalene	ND	100					
n-Butylbenzene	ND	30					
n-Propylbenzene	ND	30					
o-Xylene	ND	30					
p-Isopropyltoluene	ND	30					
sec-Butylbenzene	ND	30					
Styrene	ND	30					
tert-Butyl alcohol	ND	200					
tert-Butylbenzene	ND	30					
Tertiaryamylmethylether	ND	30					
Tetrachloroethene	ND	30					
Tetrahydrofuran	ND	200					
Toluene	ND	30					
trans-1,2-Dichloroethene	ND	30					
trans-1,3-Dichloropropene	ND	30					
trans-1,4-Dichloro-2-butene	ND	30					
Trichloroethene	ND	30					
Trichlorofluoromethane	ND	30					
Vinyl chloride	ND	30					
Surr: 1,2-Dichloroethane-d4	*983.5*	0	*1000*	0	*98.4*	*70-130*	0
Surr: 4-Bromofluorobenzene	*1044*	0	*1000*	0	*104*	*70-130*	0
Surr: Dibromofluoromethane	*984*	0	*1000*	0	*98.4*	*70-130*	0
Surr: Toluene-d8	*993.5*	0	*1000*	0	*99.4*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

MBLK Sample ID: **MBLK-45482-45482** Units: **µg/Kg** Analysis Date: **12/18/2012 04:49 AM**
Client ID: Run ID: **VMS5_121217B** SeqNo: **2173095** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	30								
1,1,1-Trichloroethane	ND	30								
1,1,2,2-Tetrachloroethane	ND	30								
1,1,2-Trichloroethane	ND	30								
1,1-Dichloroethane	ND	30								
1,1-Dichloroethene	ND	30								
1,2,3-Trichlorobenzene	ND	30								
1,2,3-Trichloropropane	ND	30								
1,2,3-Trimethylbenzene	ND	30								
1,2,4-Trichlorobenzene	ND	30								
1,2,4-Trimethylbenzene	ND	30								
1,2-Dibromo-3-chloropropane	ND	30								
1,2-Dibromoethane	ND	30								
1,2-Dichlorobenzene	ND	30								
1,2-Dichloroethane	ND	30								
1,2-Dichloropropane	ND	30								
1,3,5-Trimethylbenzene	ND	30								
1,3-Dichlorobenzene	ND	30								
1,4-Dichlorobenzene	ND	30								
2-Butanone	ND	200								
2-Hexanone	ND	30								
2-Methylnaphthalene	ND	100								
4-Methyl-2-pentanone	ND	30								
Acetone	97.5	100								J
Acrylonitrile	ND	100								
Benzene	ND	30								
Bromobenzene	ND	30								
Bromochloromethane	ND	30								
Bromodichloromethane	ND	30								
Bromoform	ND	30								
Bromomethane	ND	75								
Carbon disulfide	ND	30								
Carbon tetrachloride	ND	30								
Chlorobenzene	ND	30								
Chloroethane	ND	100								
Chloroform	ND	30								
Chloromethane	ND	100								
cis-1,2-Dichloroethene	ND	30								
cis-1,3-Dichloropropene	ND	30								
Cyclohexane	ND	30								
Dibromochloromethane	ND	30								
Dibromomethane	ND	30								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

Dichlorodifluoromethane	ND	30					
Diethyl ether	ND	30					
Diisopropyl ether	ND	30					
Ethyl tert butyl ether	ND	30					
Ethylbenzene	ND	30					
Hexachloroethane	ND	30					
Isopropylbenzene	ND	30					
m,p-Xylene	ND	60					
Methyl iodide	ND	75					
Methyl tert-butyl ether	ND	30					
Methylene chloride	ND	30					
Naphthalene	ND	100					
n-Butylbenzene	ND	30					
n-Propylbenzene	ND	30					
o-Xylene	ND	30					
p-Isopropyltoluene	ND	30					
sec-Butylbenzene	ND	30					
Styrene	ND	30					
tert-Butyl alcohol	ND	200					
tert-Butylbenzene	ND	30					
Tertiaryamylmethylether	ND	30					
Tetrachloroethene	ND	30					
Tetrahydrofuran	ND	200					
Toluene	ND	30					
trans-1,2-Dichloroethene	ND	30					
trans-1,3-Dichloropropene	ND	30					
trans-1,4-Dichloro-2-butene	ND	30					
Trichloroethene	ND	30					
Trichlorofluoromethane	ND	30					
Vinyl chloride	ND	30					
Surr: 1,2-Dichloroethane-d4	*1043*	0	*1000*	0	*104*	*70-130*	0
Surr: 4-Bromofluorobenzene	*948.5*	0	*1000*	0	*94.8*	*70-130*	0
Surr: Dibromofluoromethane	*1024*	0	*1000*	0	*102*	*70-130*	0
Surr: Toluene-d8	*1048*	0	*1000*	0	*105*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212556
Project: Marshall KRRI 1225-1250L,1225R 12/12/12

QC BATCH REPORT

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

MBLK Sample ID: **MBLK-45482-45482** Units: **µg/Kg** Analysis Date: **12/18/2012 02:23 PM**
Client ID: Run ID: **VMS9_121218A** SeqNo: **2173807** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	30								
1,1,1-Trichloroethane	ND	30								
1,1,2,2-Tetrachloroethane	ND	30								
1,1,2-Trichloroethane	ND	30								
1,1-Dichloroethane	ND	30								
1,1-Dichloroethene	ND	30								
1,2,3-Trichlorobenzene	ND	30								
1,2,3-Trichloropropane	ND	30								
1,2,3-Trimethylbenzene	ND	30								
1,2,4-Trichlorobenzene	ND	30								
1,2,4-Trimethylbenzene	ND	30								
1,2-Dibromo-3-chloropropane	ND	30								
1,2-Dibromoethane	ND	30								
1,2-Dichlorobenzene	ND	30								
1,2-Dichloroethane	ND	30								
1,2-Dichloropropane	ND	30								
1,3,5-Trimethylbenzene	ND	30								
1,3-Dichlorobenzene	ND	30								
1,4-Dichlorobenzene	ND	30								
2-Butanone	ND	200								
2-Hexanone	ND	30								
2-Methylnaphthalene	ND	100								
4-Methyl-2-pentanone	ND	30								
Acetone	249.5	100								
Acrylonitrile	ND	100								
Benzene	ND	30								
Bromobenzene	ND	30								
Bromochloromethane	ND	30								
Bromodichloromethane	ND	30								
Bromoform	ND	30								
Bromomethane	ND	75								
Carbon disulfide	ND	30								
Carbon tetrachloride	ND	30								
Chlorobenzene	ND	30								
Chloroethane	ND	100								
Chloroform	ND	30								
Chloromethane	ND	100								
cis-1,2-Dichloroethene	ND	30								
cis-1,3-Dichloropropene	ND	30								
Cyclohexane	ND	30								
Dibromochloromethane	ND	30								
Dibromomethane	ND	30								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

Dichlorodifluoromethane	ND	30						
Diethyl ether	ND	30						
Diisopropyl ether	ND	30						
Ethyl tert butyl ether	ND	30						
Ethylbenzene	ND	30						
Hexachloroethane	ND	30						
Isopropylbenzene	ND	30						
m,p-Xylene	ND	60						
Methyl iodide	ND	75						
Methyl tert-butyl ether	ND	30						
Methylene chloride	ND	30						
Naphthalene	16.5	100						J
n-Butylbenzene	ND	30						
n-Propylbenzene	ND	30						
o-Xylene	ND	30						
p-Isopropyltoluene	ND	30						
sec-Butylbenzene	ND	30						
Styrene	ND	30						
tert-Butyl alcohol	ND	200						
tert-Butylbenzene	ND	30						
Tertiaryamylmethylether	ND	30						
Tetrachloroethene	ND	30						
Tetrahydrofuran	ND	200						
Toluene	ND	30						
trans-1,2-Dichloroethene	ND	30						
trans-1,3-Dichloropropene	ND	30						
trans-1,4-Dichloro-2-butene	ND	30						
Trichloroethene	ND	30						
Trichlorofluoromethane	ND	30						
Vinyl chloride	ND	30						
Surr: 1,2-Dichloroethane-d4	*976.5*	0	*1000*	0	*97.6*	*70-130*	0	
Surr: 4-Bromofluorobenzene	*983.5*	0	*1000*	0	*98.4*	*70-130*	0	
Surr: Dibromofluoromethane	*929*	0	*1000*	0	*92.9*	*70-130*	0	
Surr: Toluene-d8	*856*	0	*1000*	0	*85.6*	*70-130*	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212556
Project: Marshall KRRI 1225-1250L,1225R 12/12/12

QC BATCH REPORT

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

MBLK Sample ID: **MBLK-45482-45482** Units: **µg/Kg** Analysis Date: **12/18/2012 02:21 PM**
Client ID: Run ID: **VMS8_121218A** SeqNo: **2174137** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	30								
1,1,1-Trichloroethane	ND	30								
1,1,2,2-Tetrachloroethane	ND	30								
1,1,2-Trichloroethane	ND	30								
1,1-Dichloroethane	ND	30								
1,1-Dichloroethene	ND	30								
1,2,3-Trichlorobenzene	ND	30								
1,2,3-Trichloropropane	ND	30								
1,2,3-Trimethylbenzene	ND	30								
1,2,4-Trichlorobenzene	ND	30								
1,2,4-Trimethylbenzene	ND	30								
1,2-Dibromo-3-chloropropane	ND	30								
1,2-Dibromoethane	ND	30								
1,2-Dichlorobenzene	ND	30								
1,2-Dichloroethane	ND	30								
1,2-Dichloropropane	ND	30								
1,3,5-Trimethylbenzene	ND	30								
1,3-Dichlorobenzene	ND	30								
1,4-Dichlorobenzene	ND	30								
2-Butanone	ND	200								
2-Hexanone	ND	30								
2-Methylnaphthalene	ND	100								
4-Methyl-2-pentanone	ND	30								
Acetone	ND	100								
Acrylonitrile	ND	100								
Benzene	ND	30								
Bromobenzene	ND	30								
Bromochloromethane	ND	30								
Bromodichloromethane	ND	30								
Bromoform	ND	30								
Bromomethane	ND	75								
Carbon disulfide	ND	30								
Carbon tetrachloride	ND	30								
Chlorobenzene	ND	30								
Chloroethane	ND	100								
Chloroform	ND	30								
Chloromethane	ND	100								
cis-1,2-Dichloroethene	ND	30								
cis-1,3-Dichloropropene	ND	30								
Cyclohexane	ND	30								
Dibromochloromethane	ND	30								
Dibromomethane	ND	30								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

Dichlorodifluoromethane	ND	30					
Diethyl ether	ND	30					
Diisopropyl ether	ND	30					
Ethyl tert butyl ether	ND	30					
Ethylbenzene	ND	30					
Hexachloroethane	ND	30					
Isopropylbenzene	ND	30					
m,p-Xylene	ND	60					
Methyl iodide	ND	75					
Methyl tert-butyl ether	ND	30					
Methylene chloride	ND	30					
Naphthalene	ND	100					
n-Butylbenzene	ND	30					
n-Propylbenzene	ND	30					
o-Xylene	ND	30					
p-Isopropyltoluene	ND	30					
sec-Butylbenzene	ND	30					
Styrene	ND	30					
tert-Butyl alcohol	ND	200					
tert-Butylbenzene	ND	30					
Tertiaryamylmethylether	ND	30					
Tetrachloroethene	ND	30					
Tetrahydrofuran	ND	200					
Toluene	ND	30					
trans-1,2-Dichloroethene	ND	30					
trans-1,3-Dichloropropene	ND	30					
trans-1,4-Dichloro-2-butene	ND	30					
Trichloroethene	ND	30					
Trichlorofluoromethane	ND	30					
Vinyl chloride	ND	30					
Surr: 1,2-Dichloroethane-d4	*969*	0	*1000*	0	*96.9*	*70-130*	0
Surr: 4-Bromofluorobenzene	*1032*	0	*1000*	0	*103*	*70-130*	0
Surr: Dibromofluoromethane	*929*	0	*1000*	0	*92.9*	*70-130*	0
Surr: Toluene-d8	*982.5*	0	*1000*	0	*98.2*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212556
Project: Marshall KRRI 1225-1250L,1225R 12/12/12

QC BATCH REPORT

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

MBLK Sample ID: **MBLK-45482-45482** Units: **µg/Kg** Analysis Date: **12/19/2012 02:40 AM**
Client ID: Run ID: **VMS8_121218B** SeqNo: **2174382** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	30								
1,1,1-Trichloroethane	ND	30								
1,1,2,2-Tetrachloroethane	ND	30								
1,1,2-Trichloroethane	ND	30								
1,1-Dichloroethane	ND	30								
1,1-Dichloroethene	ND	30								
1,2,3-Trichlorobenzene	ND	30								
1,2,3-Trichloropropane	ND	30								
1,2,3-Trimethylbenzene	ND	30								
1,2,4-Trichlorobenzene	ND	30								
1,2,4-Trimethylbenzene	ND	30								
1,2-Dibromo-3-chloropropane	ND	30								
1,2-Dibromoethane	ND	30								
1,2-Dichlorobenzene	ND	30								
1,2-Dichloroethane	ND	30								
1,2-Dichloropropane	ND	30								
1,3,5-Trimethylbenzene	ND	30								
1,3-Dichlorobenzene	ND	30								
1,4-Dichlorobenzene	ND	30								
2-Butanone	ND	200								
2-Hexanone	ND	30								
2-Methylnaphthalene	104	100								
4-Methyl-2-pentanone	ND	30								
Acetone	252.5	100								
Acrylonitrile	ND	100								
Benzene	ND	30								
Bromobenzene	ND	30								
Bromochloromethane	ND	30								
Bromodichloromethane	ND	30								
Bromoform	ND	30								
Bromomethane	ND	75								
Carbon disulfide	ND	30								
Carbon tetrachloride	ND	30								
Chlorobenzene	ND	30								
Chloroethane	ND	100								
Chloroform	ND	30								
Chloromethane	ND	100								
cis-1,2-Dichloroethene	ND	30								
cis-1,3-Dichloropropene	ND	30								
Cyclohexane	ND	30								
Dibromochloromethane	ND	30								
Dibromomethane	ND	30								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

Dichlorodifluoromethane	ND	30					
Diethyl ether	ND	30					
Diisopropyl ether	ND	30					
Ethyl tert butyl ether	ND	30					
Ethylbenzene	ND	30					
Hexachloroethane	ND	30					
Isopropylbenzene	ND	30					
m,p-Xylene	ND	60					
Methyl iodide	ND	75					
Methyl tert-butyl ether	ND	30					
Methylene chloride	ND	30					
Naphthalene	ND	100					
n-Butylbenzene	ND	30					
n-Propylbenzene	ND	30					
o-Xylene	ND	30					
p-Isopropyltoluene	ND	30					
sec-Butylbenzene	ND	30					
Styrene	ND	30					
tert-Butyl alcohol	ND	200					
tert-Butylbenzene	ND	30					
Tertiaryamylmethylether	ND	30					
Tetrachloroethene	ND	30					
Tetrahydrofuran	ND	200					
Toluene	ND	30					
trans-1,2-Dichloroethene	ND	30					
trans-1,3-Dichloropropene	ND	30					
trans-1,4-Dichloro-2-butene	ND	30					
Trichloroethene	ND	30					
Trichlorofluoromethane	ND	30					
Vinyl chloride	ND	30					
Surr: 1,2-Dichloroethane-d4	*918*	0	*1000*	0	*91.8*	*70-130*	0
Surr: 4-Bromofluorobenzene	*1024*	0	*1000*	0	*102*	*70-130*	0
Surr: Dibromofluoromethane	*878*	0	*1000*	0	*87.8*	*70-130*	0
Surr: Toluene-d8	*936*	0	*1000*	0	*93.6*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212556
Project: Marshall KRRI 1225-1250L,1225R 12/12/12

QC BATCH REPORT

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

LCS Sample ID: **LCS-45482-45482** Units: **µg/Kg** Analysis Date: **12/18/2012 12:40 PM**
Client ID: Run ID: **VMS9_121217B** SeqNo: **2172824** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	1032	30	1000	0	103	75-125	0			
1,1,1-Trichloroethane	1160	30	1000	0	116	70-135	0			
1,1,2,2-Tetrachloroethane	979	30	1000	0	97.9	55-130	0			
1,1,2-Trichloroethane	933	30	1000	0	93.3	60-125	0			
1,1-Dichloroethane	1150	30	1000	0	115	75-125	0			
1,1-Dichloroethene	1224	30	1000	0	122	65-135	0			
1,2,3-Trichlorobenzene	965.5	30	1000	0	96.6	60-135	0			
1,2,3-Trichloropropane	985.5	30	1000	0	98.6	65-130	0			
1,2,4-Trichlorobenzene	947.5	30	1000	0	94.8	65-130	0			
1,2,4-Trimethylbenzene	996	30	1000	0	99.6	65-135	0			
1,2-Dibromo-3-chloropropane	1032	30	1000	0	103	40-135	0			
1,2-Dibromoethane	985	30	1000	0	98.5	70-125	0			
1,2-Dichlorobenzene	898	30	1000	0	89.8	75-120	0			
1,2-Dichloroethane	989	30	1000	0	98.9	70-135	0			
1,2-Dichloropropane	1037	30	1000	0	104	70-120	0			
1,3,5-Trimethylbenzene	1008	30	1000	0	101	65-135	0			
1,3-Dichlorobenzene	904.5	30	1000	0	90.4	70-125	0			
1,4-Dichlorobenzene	908.5	30	1000	0	90.8	70-125	0			
2-Butanone	1151	200	1000	0	115	30-160	0			
2-Hexanone	1104	30	1000	0	110	45-145	0			
4-Methyl-2-pentanone	1252	30	1000	0	125	45-145	0			
Acetone	1448	100	1000	0	145	20-160	0			B
Acrylonitrile	1100	100	1000	0	110	70-135	0			
Benzene	1052	30	1000	0	105	75-125	0			
Bromobenzene	956.5	30	1000	0	95.6	65-120	0			
Bromochloromethane	1128	30	1000	0	113	70-125	0			
Bromodichloromethane	1120	30	1000	0	112	70-130	0			
Bromoform	996	30	1000	0	99.6	55-135	0			
Bromomethane	1402	75	1000	0	140	30-160	0			
Carbon disulfide	1470	30	1000	0	147	45-160	0			
Carbon tetrachloride	1176	30	1000	0	118	65-135	0			
Chlorobenzene	955	30	1000	0	95.5	75-125	0			
Chloroethane	1256	100	1000	0	126	40-155	0			
Chloroform	1150	30	1000	0	115	70-125	0			
Chloromethane	1334	100	1000	0	133	50-130	0			S
cis-1,2-Dichloroethene	1133	30	1000	0	113	65-125	0			
cis-1,3-Dichloropropene	1078	30	1000	0	108	70-125	0			
Dibromochloromethane	1002	30	1000	0	100	65-135	0			
Dibromomethane	1090	30	1000	0	109	75-130	0			
Dichlorodifluoromethane	1356	30	1000	0	136	35-135	0			S
Ethylbenzene	963.5	30	1000	0	96.4	75-125	0			
Hexachloroethane	1018	30	1000	0	102	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

Isopropylbenzene	1007	30	1000	0	101	75-130	0	
m,p-Xylene	1994	60	2000	0	99.7	80-125	0	
Methyl tert-butyl ether	1265	30	1000	0	126	75-125	0	S
Methylene chloride	1098	30	1000	0	110	55-145	0	
Naphthalene	1003	100	1000	0	100	40-140	0	
n-Butylbenzene	935.5	30	1000	0	93.6	65-140	0	
n-Propylbenzene	973.5	30	1000	0	97.4	65-135	0	
o-Xylene	997	30	1000	0	99.7	75-125	0	
p-Isopropyltoluene	976	30	1000	0	97.6	75-135	0	
sec-Butylbenzene	1038	30	1000	0	104	65-130	0	
Styrene	1034	30	1000	0	103	75-125	0	
tert-Butylbenzene	985.5	30	1000	0	98.6	65-130	0	
Tetrachloroethene	956	30	1000	0	95.6	64-140	0	
Tetrahydrofuran	1264	200	1000	0	126	70-135	0	
Toluene	971	30	1000	0	97.1	70-125	0	
trans-1,2-Dichloroethene	1168	30	1000	0	117	65-135	0	
trans-1,3-Dichloropropene	990.5	30	1000	0	99	65-125	0	
trans-1,4-Dichloro-2-butene	945.5	30	1000	0	94.6	70-135	0	
Trichloroethene	1048	30	1000	0	105	75-125	0	
Trichlorofluoromethane	1272	30	1000	0	127	25-185	0	
Vinyl chloride	1332	30	1000	0	133	60-125	0	S
Surr: 1,2-Dichloroethane-d4	*971*	0	*1000*	0	*97.1*	*70-130*	0	
Surr: 4-Bromofluorobenzene	*1008*	0	*1000*	0	*101*	*70-130*	0	
Surr: Dibromofluoromethane	*1062*	0	*1000*	0	*106*	*70-130*	0	
Surr: Toluene-d8	*935*	0	*1000*	0	*93.5*	*70-130*	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212556
Project: Marshall KRRI 1225-1250L,1225R 12/12/12

QC BATCH REPORT

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

LCS Sample ID: **LCS-45482-45482** Units: **µg/Kg** Analysis Date: **12/18/2012 12:12 PM**
Client ID: Run ID: **VMS8_121217B** SeqNo: **2173034** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	991	30	1000	0	99.1	75-125	0			
1,1,1-Trichloroethane	1032	30	1000	0	103	70-135	0			
1,1,2,2-Tetrachloroethane	971	30	1000	0	97.1	55-130	0			
1,1,2-Trichloroethane	952	30	1000	0	95.2	60-125	0			
1,1-Dichloroethane	1064	30	1000	0	106	75-125	0			
1,1-Dichloroethene	1002	30	1000	0	100	65-135	0			
1,2,3-Trichlorobenzene	1021	30	1000	0	102	60-135	0			
1,2,3-Trichloropropane	910.5	30	1000	0	91	65-130	0			
1,2,4-Trichlorobenzene	1036	30	1000	0	104	65-130	0			
1,2,4-Trimethylbenzene	937.5	30	1000	0	93.8	65-135	0			
1,2-Dibromo-3-chloropropane	1034	30	1000	0	103	40-135	0			
1,2-Dibromoethane	1016	30	1000	0	102	70-125	0			
1,2-Dichlorobenzene	922	30	1000	0	92.2	75-120	0			
1,2-Dichloroethane	1014	30	1000	0	101	70-135	0			
1,2-Dichloropropane	1040	30	1000	0	104	70-120	0			
1,3,5-Trimethylbenzene	977	30	1000	0	97.7	65-135	0			
1,3-Dichlorobenzene	957	30	1000	0	95.7	70-125	0			
1,4-Dichlorobenzene	985.5	30	1000	0	98.6	70-125	0			
2-Butanone	781	200	1000	0	78.1	30-160	0			
2-Hexanone	1100	30	1000	0	110	45-145	0			
4-Methyl-2-pentanone	1462	30	1000	0	146	45-145	0			S
Acetone	1294	100	1000	0	129	20-160	0			B
Acrylonitrile	976	100	1000	0	97.6	70-135	0			
Benzene	1026	30	1000	0	103	75-125	0			
Bromobenzene	947	30	1000	0	94.7	65-120	0			
Bromochloromethane	1084	30	1000	0	108	70-125	0			
Bromodichloromethane	1004	30	1000	0	100	70-130	0			
Bromoform	935	30	1000	0	93.5	55-135	0			
Bromomethane	1152	75	1000	0	115	30-160	0			
Carbon disulfide	1091	30	1000	0	109	45-160	0			
Carbon tetrachloride	1035	30	1000	0	104	65-135	0			
Chlorobenzene	941	30	1000	0	94.1	75-125	0			
Chloroethane	833.5	100	1000	0	83.4	40-155	0			
Chloroform	1014	30	1000	0	101	70-125	0			
Chloromethane	851.5	100	1000	0	85.2	50-130	0			
cis-1,2-Dichloroethene	1074	30	1000	0	107	65-125	0			
cis-1,3-Dichloropropene	991.5	30	1000	0	99.2	70-125	0			
Dibromochloromethane	954.5	30	1000	0	95.4	65-135	0			
Dibromomethane	1004	30	1000	0	100	75-130	0			
Dichlorodifluoromethane	840.5	30	1000	0	84	35-135	0			
Ethylbenzene	975	30	1000	0	97.5	75-125	0			
Hexachloroethane	1103	30	1000	0	110	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

Isopropylbenzene	987	30	1000	0	98.7	75-130	0
m,p-Xylene	2006	60	2000	0	100	80-125	0
Methyl tert-butyl ether	1088	30	1000	0	109	75-125	0
Methylene chloride	1130	30	1000	0	113	55-145	0
Naphthalene	1236	100	1000	0	124	40-140	0
n-Butylbenzene	1036	30	1000	0	104	65-140	0
n-Propylbenzene	954	30	1000	0	95.4	65-135	0
o-Xylene	1004	30	1000	0	100	75-125	0
p-Isopropyltoluene	943	30	1000	0	94.3	75-135	0
sec-Butylbenzene	1006	30	1000	0	101	65-130	0
Styrene	1021	30	1000	0	102	75-125	0
tert-Butylbenzene	977	30	1000	0	97.7	65-130	0
Tetrachloroethene	896	30	1000	0	89.6	64-140	0
Tetrahydrofuran	969	200	1000	0	96.9	70-135	0
Toluene	985.5	30	1000	0	98.6	70-125	0
trans-1,2-Dichloroethene	1113	30	1000	0	111	65-135	0
trans-1,3-Dichloropropene	981	30	1000	0	98.1	65-125	0
trans-1,4-Dichloro-2-butene	1014	30	1000	0	101	70-135	0
Trichloroethene	970	30	1000	0	97	75-125	0
Trichlorofluoromethane	954	30	1000	0	95.4	25-185	0
Vinyl chloride	957.5	30	1000	0	95.8	60-125	0
Surr: 1,2-Dichloroethane-d4	*975*	0	*1000*	0	*97.5*	*70-130*	0
Surr: 4-Bromofluorobenzene	*1023*	0	*1000*	0	*102*	*70-130*	0
Surr: Dibromofluoromethane	*953*	0	*1000*	0	*95.3*	*70-130*	0
Surr: Toluene-d8	*963.5*	0	*1000*	0	*96.4*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212556
Project: Marshall KRRI 1225-1250L,1225R 12/12/12

QC BATCH REPORT

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

LCS Sample ID: **LCS-45482-45482** Units: **µg/Kg** Analysis Date: **12/18/2012 03:37 AM**
Client ID: Run ID: **VMS5_121217B** SeqNo: **2173094** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	1056	30	1000	0	106	75-125	0			
1,1,1-Trichloroethane	997	30	1000	0	99.7	70-135	0			
1,1,2,2-Tetrachloroethane	1044	30	1000	0	104	55-130	0			
1,1,2-Trichloroethane	1018	30	1000	0	102	60-125	0			
1,1-Dichloroethane	998	30	1000	0	99.8	75-125	0			
1,1-Dichloroethene	1089	30	1000	0	109	65-135	0			
1,2,3-Trichlorobenzene	973	30	1000	0	97.3	60-135	0			
1,2,3-Trichloropropane	1002	30	1000	0	100	65-130	0			
1,2,4-Trichlorobenzene	1142	30	1000	0	114	65-130	0			
1,2,4-Trimethylbenzene	1057	30	1000	0	106	65-135	0			
1,2-Dibromo-3-chloropropane	1014	30	1000	0	101	40-135	0			
1,2-Dibromoethane	1066	30	1000	0	107	70-125	0			
1,2-Dichlorobenzene	1158	30	1000	0	116	75-120	0			
1,2-Dichloroethane	917.5	30	1000	0	91.8	70-135	0			
1,2-Dichloropropane	963	30	1000	0	96.3	70-120	0			
1,3,5-Trimethylbenzene	1102	30	1000	0	110	65-135	0			
1,3-Dichlorobenzene	1148	30	1000	0	115	70-125	0			
1,4-Dichlorobenzene	1146	30	1000	0	115	70-125	0			
2-Butanone	835.5	200	1000	0	83.6	30-160	0			
2-Hexanone	910.5	30	1000	0	91	45-145	0			
4-Methyl-2-pentanone	944.5	30	1000	0	94.4	45-145	0			
Acetone	960.5	100	1000	0	96	20-160	0			
Acrylonitrile	967.5	100	1000	0	96.8	70-135	0			
Benzene	981.5	30	1000	0	98.2	75-125	0			
Bromobenzene	1111	30	1000	0	111	65-120	0			
Bromochloromethane	1024	30	1000	0	102	70-125	0			
Bromodichloromethane	951.5	30	1000	0	95.2	70-130	0			
Bromoform	1042	30	1000	0	104	55-135	0			
Bromomethane	1389	75	1000	0	139	30-160	0			
Carbon disulfide	1218	30	1000	0	122	45-160	0			
Carbon tetrachloride	993.5	30	1000	0	99.4	65-135	0			
Chlorobenzene	1132	30	1000	0	113	75-125	0			
Chloroethane	1006	100	1000	0	101	40-155	0			
Chloroform	962.5	30	1000	0	96.2	70-125	0			
Chloromethane	936	100	1000	0	93.6	50-130	0			
cis-1,2-Dichloroethene	982	30	1000	0	98.2	65-125	0			
cis-1,3-Dichloropropene	970	30	1000	0	97	70-125	0			
Dibromochloromethane	1028	30	1000	0	103	65-135	0			
Dibromomethane	938.5	30	1000	0	93.8	75-130	0			
Dichlorodifluoromethane	852	30	1000	0	85.2	35-135	0			
Ethylbenzene	1130	30	1000	0	113	75-125	0			
Hexachloroethane	1104	30	1000	0	110	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

Isopropylbenzene	1116	30	1000	0	112	75-130	0
m,p-Xylene	2258	60	2000	0	113	80-125	0
Methyl tert-butyl ether	929	30	1000	0	92.9	75-125	0
Methylene chloride	967	30	1000	0	96.7	55-145	0
Naphthalene	917.5	100	1000	0	91.8	40-140	0
n-Butylbenzene	1140	30	1000	0	114	65-140	0
n-Propylbenzene	1067	30	1000	0	107	65-135	0
o-Xylene	1096	30	1000	0	110	75-125	0
p-Isopropyltoluene	1152	30	1000	0	115	75-135	0
sec-Butylbenzene	1063	30	1000	0	106	65-130	0
Styrene	1129	30	1000	0	113	75-125	0
tert-Butylbenzene	1136	30	1000	0	114	65-130	0
Tetrachloroethene	1079	30	1000	0	108	64-140	0
Tetrahydrofuran	948	200	1000	0	94.8	70-135	0
Toluene	1007	30	1000	0	101	70-125	0
trans-1,2-Dichloroethene	1020	30	1000	0	102	65-135	0
trans-1,3-Dichloropropene	1077	30	1000	0	108	65-125	0
trans-1,4-Dichloro-2-butene	821.5	30	1000	0	82.2	70-135	0
Trichloroethene	952.5	30	1000	0	95.2	75-125	0
Trichlorofluoromethane	912.5	30	1000	0	91.2	25-185	0
Vinyl chloride	1052	30	1000	0	105	60-125	0
Surr: 1,2-Dichloroethane-d4	*1024*	0	*1000*	0	*102*	*70-130*	0
Surr: 4-Bromofluorobenzene	*959*	0	*1000*	0	*95.9*	*70-130*	0
Surr: Dibromofluoromethane	*1035*	0	*1000*	0	*104*	*70-130*	0
Surr: Toluene-d8	*1057*	0	*1000*	0	*106*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212556
Project: Marshall KRRI 1225-1250L,1225R 12/12/12

QC BATCH REPORT

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

LCS Sample ID: **LCS-45482-45482** Units: **µg/Kg** Analysis Date: **12/18/2012 01:07 PM**
Client ID: Run ID: **VMS9_121218A** SeqNo: **2173806** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	971.5	30	1000	0	97.2	75-125	0			
1,1,1-Trichloroethane	1158	30	1000	0	116	70-135	0			
1,1,2,2-Tetrachloroethane	884.5	30	1000	0	88.4	55-130	0			
1,1,2-Trichloroethane	873	30	1000	0	87.3	60-125	0			
1,1-Dichloroethane	1145	30	1000	0	114	75-125	0			
1,1-Dichloroethene	1304	30	1000	0	130	65-135	0			
1,2,3-Trichlorobenzene	897	30	1000	0	89.7	60-135	0			
1,2,3-Trichloropropane	878	30	1000	0	87.8	65-130	0			
1,2,4-Trichlorobenzene	906	30	1000	0	90.6	65-130	0			
1,2,4-Trimethylbenzene	969	30	1000	0	96.9	65-135	0			
1,2-Dibromo-3-chloropropane	861.5	30	1000	0	86.2	40-135	0			
1,2-Dibromoethane	908.5	30	1000	0	90.8	70-125	0			
1,2-Dichlorobenzene	863.5	30	1000	0	86.4	75-120	0			
1,2-Dichloroethane	987	30	1000	0	98.7	70-135	0			
1,2-Dichloropropane	1036	30	1000	0	104	70-120	0			
1,3,5-Trimethylbenzene	1002	30	1000	0	100	65-135	0			
1,3-Dichlorobenzene	871.5	30	1000	0	87.2	70-125	0			
1,4-Dichlorobenzene	894	30	1000	0	89.4	70-125	0			
2-Butanone	1150	200	1000	0	115	30-160	0			
2-Hexanone	969	30	1000	0	96.9	45-145	0			
4-Methyl-2-pentanone	1086	30	1000	0	109	45-145	0			
Acetone	1336	100	1000	0	134	20-160	0			B
Acrylonitrile	1098	100	1000	0	110	70-135	0			
Benzene	1037	30	1000	0	104	75-125	0			
Bromobenzene	910	30	1000	0	91	65-120	0			
Bromochloromethane	1173	30	1000	0	117	70-125	0			
Bromodichloromethane	1071	30	1000	0	107	70-130	0			
Bromoform	892.5	30	1000	0	89.2	55-135	0			
Bromomethane	1479	75	1000	0	148	30-160	0			
Carbon disulfide	1523	30	1000	0	152	45-160	0			
Carbon tetrachloride	1160	30	1000	0	116	65-135	0			
Chlorobenzene	907.5	30	1000	0	90.8	75-125	0			
Chloroethane	1292	100	1000	0	129	40-155	0			
Chloroform	1166	30	1000	0	117	70-125	0			
Chloromethane	1303	100	1000	0	130	50-130	0			S
cis-1,2-Dichloroethene	1194	30	1000	0	119	65-125	0			
cis-1,3-Dichloropropene	1084	30	1000	0	108	70-125	0			
Dibromochloromethane	902	30	1000	0	90.2	65-135	0			
Dibromomethane	1066	30	1000	0	107	75-130	0			
Dichlorodifluoromethane	1410	30	1000	0	141	35-135	0			S
Ethylbenzene	940	30	1000	0	94	75-125	0			
Hexachloroethane	999.5	30	1000	0	100	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

Isopropylbenzene	993.5	30	1000	0	99.4	75-130	0	
m,p-Xylene	1931	60	2000	0	96.6	80-125	0	
Methyl tert-butyl ether	1280	30	1000	0	128	75-125	0	S
Methylene chloride	1146	30	1000	0	115	55-145	0	
Naphthalene	845.5	100	1000	0	84.6	40-140	0	
n-Butylbenzene	983	30	1000	0	98.3	65-140	0	
n-Propylbenzene	967	30	1000	0	96.7	65-135	0	
o-Xylene	947.5	30	1000	0	94.8	75-125	0	
p-Isopropyltoluene	955.5	30	1000	0	95.6	75-135	0	
sec-Butylbenzene	1079	30	1000	0	108	65-130	0	
Styrene	982.5	30	1000	0	98.2	75-125	0	
tert-Butylbenzene	997.5	30	1000	0	99.8	65-130	0	
Tetrachloroethene	963	30	1000	0	96.3	64-140	0	
Tetrahydrofuran	1184	200	1000	0	118	70-135	0	
Toluene	923.5	30	1000	0	92.4	70-125	0	
trans-1,2-Dichloroethene	1221	30	1000	0	122	65-135	0	
trans-1,3-Dichloropropene	960	30	1000	0	96	65-125	0	
trans-1,4-Dichloro-2-butene	885	30	1000	0	88.5	70-135	0	
Trichloroethene	1063	30	1000	0	106	75-125	0	
Trichlorofluoromethane	1401	30	1000	0	140	25-185	0	
Vinyl chloride	1372	30	1000	0	137	60-125	0	S
Surr: 1,2-Dichloroethane-d4	*975.5*	0	*1000*	0	*97.6*	*70-130*	0	
Surr: 4-Bromofluorobenzene	*1024*	0	*1000*	0	*102*	*70-130*	0	
Surr: Dibromofluoromethane	*1030*	0	*1000*	0	*103*	*70-130*	0	
Surr: Toluene-d8	*894.5*	0	*1000*	0	*89.4*	*70-130*	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212556
Project: Marshall KRRI 1225-1250L,1225R 12/12/12

QC BATCH REPORT

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

LCS Sample ID: **LCS-45482-45482** Units: **µg/Kg** Analysis Date: **12/18/2012 01:09 PM**
Client ID: Run ID: **VMS8_121218A** SeqNo: **2174136** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	932	30	1000	0	93.2	75-125	0			
1,1,1-Trichloroethane	981.5	30	1000	0	98.2	70-135	0			
1,1,2,2-Tetrachloroethane	830	30	1000	0	83	55-130	0			
1,1,2-Trichloroethane	894	30	1000	0	89.4	60-125	0			
1,1-Dichloroethane	999	30	1000	0	99.9	75-125	0			
1,1-Dichloroethene	1051	30	1000	0	105	65-135	0			
1,2,3-Trichlorobenzene	957.5	30	1000	0	95.8	60-135	0			
1,2,3-Trichloropropane	803.5	30	1000	0	80.4	65-130	0			
1,2,4-Trichlorobenzene	994	30	1000	0	99.4	65-130	0			
1,2,4-Trimethylbenzene	929.5	30	1000	0	93	65-135	0			
1,2-Dibromo-3-chloropropane	835	30	1000	0	83.5	40-135	0			
1,2-Dibromoethane	933	30	1000	0	93.3	70-125	0			
1,2-Dichlorobenzene	864	30	1000	0	86.4	75-120	0			
1,2-Dichloroethane	925.5	30	1000	0	92.6	70-135	0			
1,2-Dichloropropane	947	30	1000	0	94.7	70-120	0			
1,3,5-Trimethylbenzene	978.5	30	1000	0	97.8	65-135	0			
1,3-Dichlorobenzene	920.5	30	1000	0	92	70-125	0			
1,4-Dichlorobenzene	906.5	30	1000	0	90.6	70-125	0			
2-Butanone	1206	200	1000	0	121	30-160	0			
2-Hexanone	939.5	30	1000	0	94	45-145	0			
4-Methyl-2-pentanone	1223	30	1000	0	122	45-145	0			
Acetone	990.5	100	1000	0	99	20-160	0			
Acrylonitrile	900.5	100	1000	0	90	70-135	0			
Benzene	968	30	1000	0	96.8	75-125	0			
Bromobenzene	914.5	30	1000	0	91.4	65-120	0			
Bromochloromethane	984	30	1000	0	98.4	70-125	0			
Bromodichloromethane	924.5	30	1000	0	92.4	70-130	0			
Bromoform	838.5	30	1000	0	83.8	55-135	0			
Bromomethane	1112	75	1000	0	111	30-160	0			
Carbon disulfide	1114	30	1000	0	111	45-160	0			
Carbon tetrachloride	1003	30	1000	0	100	65-135	0			
Chlorobenzene	923.5	30	1000	0	92.4	75-125	0			
Chloroethane	960	100	1000	0	96	40-155	0			
Chloroform	969	30	1000	0	96.9	70-125	0			
Chloromethane	844	100	1000	0	84.4	50-130	0			
cis-1,2-Dichloroethene	999.5	30	1000	0	100	65-125	0			
cis-1,3-Dichloropropene	946.5	30	1000	0	94.6	70-125	0			
Dibromochloromethane	892	30	1000	0	89.2	65-135	0			
Dibromomethane	894.5	30	1000	0	89.4	75-130	0			
Dichlorodifluoromethane	825	30	1000	0	82.5	35-135	0			
Ethylbenzene	958.5	30	1000	0	95.8	75-125	0			
Hexachloroethane	1111	30	1000	0	111	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

Isopropylbenzene	997	30	1000	0	99.7	75-130	0
m,p-Xylene	1942	60	2000	0	97.1	80-125	0
Methyl tert-butyl ether	958	30	1000	0	95.8	75-125	0
Methylene chloride	1005	30	1000	0	100	55-145	0
Naphthalene	1028	100	1000	0	103	40-140	0
n-Butylbenzene	1107	30	1000	0	111	65-140	0
n-Propylbenzene	957	30	1000	0	95.7	65-135	0
o-Xylene	954.5	30	1000	0	95.4	75-125	0
p-Isopropyltoluene	995.5	30	1000	0	99.6	75-135	0
sec-Butylbenzene	1050	30	1000	0	105	65-130	0
Styrene	975.5	30	1000	0	97.6	75-125	0
tert-Butylbenzene	974.5	30	1000	0	97.4	65-130	0
Tetrachloroethene	926	30	1000	0	92.6	64-140	0
Tetrahydrofuran	809	200	1000	0	80.9	70-135	0
Toluene	974.5	30	1000	0	97.4	70-125	0
trans-1,2-Dichloroethene	1055	30	1000	0	106	65-135	0
trans-1,3-Dichloropropene	970.5	30	1000	0	97	65-125	0
trans-1,4-Dichloro-2-butene	941.5	30	1000	0	94.2	70-135	0
Trichloroethene	916.5	30	1000	0	91.6	75-125	0
Trichlorofluoromethane	884.5	30	1000	0	88.4	25-185	0
Vinyl chloride	931	30	1000	0	93.1	60-125	0
Surr: 1,2-Dichloroethane-d4	*977.5*	0	*1000*	0	*97.8*	*70-130*	0
Surr: 4-Bromofluorobenzene	*1042*	0	*1000*	0	*104*	*70-130*	0
Surr: Dibromofluoromethane	*962.5*	0	*1000*	0	*96.2*	*70-130*	0
Surr: Toluene-d8	*1012*	0	*1000*	0	*101*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212556
Project: Marshall KRRI 1225-1250L,1225R 12/12/12

QC BATCH REPORT

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

LCS Sample ID: **LCS-45482-45482** Units: **µg/Kg** Analysis Date: **12/19/2012 01:29 AM**
Client ID: Run ID: **VMS8_121218B** SeqNo: **2174381** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	1014	30	1000	0	101	75-125	0			
1,1,1-Trichloroethane	1039	30	1000	0	104	70-135	0			
1,1,2,2-Tetrachloroethane	908	30	1000	0	90.8	55-130	0			
1,1,2-Trichloroethane	916	30	1000	0	91.6	60-125	0			
1,1-Dichloroethane	1033	30	1000	0	103	75-125	0			
1,1-Dichloroethene	1005	30	1000	0	100	65-135	0			
1,2,3-Trichlorobenzene	1026	30	1000	0	103	60-135	0			
1,2,3-Trichloropropane	934	30	1000	0	93.4	65-130	0			
1,2,4-Trichlorobenzene	1045	30	1000	0	104	65-130	0			
1,2,4-Trimethylbenzene	999	30	1000	0	99.9	65-135	0			
1,2-Dibromo-3-chloropropane	968	30	1000	0	96.8	40-135	0			
1,2-Dibromoethane	1008	30	1000	0	101	70-125	0			
1,2-Dichlorobenzene	942.5	30	1000	0	94.2	75-120	0			
1,2-Dichloroethane	961	30	1000	0	96.1	70-135	0			
1,2-Dichloropropane	1008	30	1000	0	101	70-120	0			
1,3,5-Trimethylbenzene	1034	30	1000	0	103	65-135	0			
1,3-Dichlorobenzene	958	30	1000	0	95.8	70-125	0			
1,4-Dichlorobenzene	965.5	30	1000	0	96.6	70-125	0			
2-Butanone	882.5	200	1000	0	88.2	30-160	0			
2-Hexanone	1024	30	1000	0	102	45-145	0			
4-Methyl-2-pentanone	1330	30	1000	0	133	45-145	0			
Acetone	969	100	1000	0	96.9	20-160	0			B
Acrylonitrile	919.5	100	1000	0	92	70-135	0			
Benzene	1020	30	1000	0	102	75-125	0			
Bromobenzene	971.5	30	1000	0	97.2	65-120	0			
Bromochloromethane	1024	30	1000	0	102	70-125	0			
Bromodichloromethane	956.5	30	1000	0	95.6	70-130	0			
Bromoform	927.5	30	1000	0	92.8	55-135	0			
Bromomethane	1010	75	1000	0	101	30-160	0			
Carbon disulfide	1110	30	1000	0	111	45-160	0			
Carbon tetrachloride	1052	30	1000	0	105	65-135	0			
Chlorobenzene	977.5	30	1000	0	97.8	75-125	0			
Chloroethane	1124	100	1000	0	112	40-155	0			
Chloroform	1049	30	1000	0	105	70-125	0			
Chloromethane	831.5	100	1000	0	83.2	50-130	0			
cis-1,2-Dichloroethene	1042	30	1000	0	104	65-125	0			
cis-1,3-Dichloropropene	993.5	30	1000	0	99.4	70-125	0			
Dibromochloromethane	952	30	1000	0	95.2	65-135	0			
Dibromomethane	987	30	1000	0	98.7	75-130	0			
Dichlorodifluoromethane	825	30	1000	0	82.5	35-135	0			
Ethylbenzene	997.5	30	1000	0	99.8	75-125	0			
Hexachloroethane	1143	30	1000	0	114	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

Isopropylbenzene	1029	30	1000	0	103	75-130	0
m,p-Xylene	2052	60	2000	0	103	80-125	0
Methyl tert-butyl ether	1074	30	1000	0	107	75-125	0
Methylene chloride	1008	30	1000	0	101	55-145	0
Naphthalene	1275	100	1000	0	128	40-140	0
n-Butylbenzene	1020	30	1000	0	102	65-140	0
n-Propylbenzene	954	30	1000	0	95.4	65-135	0
o-Xylene	992.5	30	1000	0	99.2	75-125	0
p-Isopropyltoluene	1028	30	1000	0	103	75-135	0
sec-Butylbenzene	1014	30	1000	0	101	65-130	0
Styrene	1050	30	1000	0	105	75-125	0
tert-Butylbenzene	999.5	30	1000	0	100	65-130	0
Tetrachloroethene	941	30	1000	0	94.1	64-140	0
Tetrahydrofuran	891	200	1000	0	89.1	70-135	0
Toluene	1022	30	1000	0	102	70-125	0
trans-1,2-Dichloroethene	1115	30	1000	0	112	65-135	0
trans-1,3-Dichloropropene	997.5	30	1000	0	99.8	65-125	0
trans-1,4-Dichloro-2-butene	986	30	1000	0	98.6	70-135	0
Trichloroethene	1018	30	1000	0	102	75-125	0
Trichlorofluoromethane	840	30	1000	0	84	25-185	0
Vinyl chloride	929.5	30	1000	0	93	60-125	0
Surr: 1,2-Dichloroethane-d4	*911*	0	*1000*	0	*91.1*	*70-130*	0
Surr: 4-Bromofluorobenzene	*977.5*	0	*1000*	0	*97.8*	*70-130*	0
Surr: Dibromofluoromethane	*928.5*	0	*1000*	0	*92.8*	*70-130*	0
Surr: Toluene-d8	*952.5*	0	*1000*	0	*95.2*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212556
Project: Marshall KRRI 1225-1250L,1225R 12/12/12

QC BATCH REPORT

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

MS Sample ID: **1212557-01A MS** Units: **µg/Kg** Analysis Date: **12/18/2012 09:20 AM**
Client ID: Run ID: **VMS8_121217B** SeqNo: **2173032** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	2338	73	2448	0	95.5	75-125	0			
1,1,1-Trichloroethane	2366	73	2448	0	96.6	70-135	0			
1,1,2,2-Tetrachloroethane	2382	73	2448	0	97.3	55-130	0			
1,1,2-Trichloroethane	2336	73	2448	0	95.4	60-125	0			
1,1-Dichloroethane	2588	73	2448	0	106	75-125	0			
1,1-Dichloroethene	2605	73	2448	0	106	65-135	0			
1,2,3-Trichlorobenzene	1905	73	2448	0	77.8	60-135	0			
1,2,3-Trichloropropane	2352	73	2448	0	96	65-130	0			
1,2,4-Trichlorobenzene	2061	73	2448	0	84.2	65-130	0			
1,2,4-Trimethylbenzene	2259	73	2448	0	92.2	65-135	0			
1,2-Dibromo-3-chloropropane	2238	73	2448	0	91.4	40-135	0			
1,2-Dibromoethane	2496	73	2448	0	102	70-125	0			
1,2-Dichlorobenzene	2265	73	2448	0	92.5	75-120	0			
1,2-Dichloroethane	2450	73	2448	0	100	70-135	0			
1,2-Dichloropropane	2452	73	2448	0	100	70-120	0			
1,3,5-Trimethylbenzene	2445	73	2448	0	99.8	65-135	0			
1,3-Dichlorobenzene	2283	73	2448	0	93.2	70-125	0			
1,4-Dichlorobenzene	2263	73	2448	0	92.4	70-125	0			
2-Butanone	2426	490	2448	0	99.1	30-160	0			
2-Hexanone	2910	73	2448	0	119	45-145	0			
4-Methyl-2-pentanone	3772	73	2448	0	154	45-145	0			S
Acetone	2776	240	2448	0	113	20-160	0			B
Acrylonitrile	2458	240	2448	0	100	70-135	0			
Benzene	2390	73	2448	0	97.6	75-125	0			
Bromobenzene	2317	73	2448	0	94.6	65-120	0			
Bromochloromethane	2671	73	2448	0	109	70-125	0			
Bromodichloromethane	2233	73	2448	0	91.2	70-130	0			
Bromoform	2148	73	2448	0	87.8	55-135	0			
Bromomethane	2432	180	2448	0	99.4	30-160	0			
Carbon disulfide	2396	73	2448	0	97.8	45-160	0			
Carbon tetrachloride	2303	73	2448	0	94	65-135	0			
Chlorobenzene	2364	73	2448	0	96.6	75-125	0			
Chloroethane	2306	240	2448	0	94.2	40-155	0			
Chloroform	2509	73	2448	0	102	70-125	0			
Chloromethane	2075	240	2448	0	84.8	50-130	0			
cis-1,2-Dichloroethene	2645	73	2448	0	108	65-125	0			
cis-1,3-Dichloropropene	2309	73	2448	0	94.3	70-125	0			
Dibromochloromethane	2169	73	2448	0	88.6	65-135	0			
Dibromomethane	2464	73	2448	0	101	75-130	0			
Dichlorodifluoromethane	2016	73	2448	0	82.4	35-135	0			
Ethylbenzene	2437	73	2448	0	99.6	75-125	0			
Hexachloroethane	2538	73	2448	0	104	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

Isopropylbenzene	2453	73	2448	0	100	75-130	0
m,p-Xylene	4879	150	4897	0	99.6	80-125	0
Methyl tert-butyl ether	2819	73	2448	0	115	75-125	0
Methylene chloride	2545	73	2448	0	104	55-145	0
Naphthalene	2320	240	2448	0	94.8	40-140	0
n-Butylbenzene	2202	73	2448	0	90	65-140	0
n-Propylbenzene	2366	73	2448	0	96.6	65-135	0
o-Xylene	2468	73	2448	0	101	75-125	0
p-Isopropyltoluene	2290	73	2448	0	93.6	75-135	0
sec-Butylbenzene	2353	73	2448	0	96.1	65-130	0
Styrene	2443	73	2448	0	99.8	75-125	0
tert-Butylbenzene	2407	73	2448	0	98.3	65-130	0
Tetrachloroethene	2192	73	2448	0	89.6	64-140	0
Tetrahydrofuran	2354	490	2448	0	96.2	70-135	0
Toluene	2423	73	2448	0	99	70-125	0
trans-1,2-Dichloroethene	2644	73	2448	0	108	65-135	0
trans-1,3-Dichloropropene	2303	73	2448	0	94	65-125	0
trans-1,4-Dichloro-2-butene	2692	73	2448	0	110	70-135	0
Trichloroethene	2336	73	2448	0	95.4	75-125	0
Trichlorofluoromethane	2126	73	2448	0	86.8	25-185	0
Vinyl chloride	2221	73	2448	0	90.7	60-125	0
Surr: 1,2-Dichloroethane-d4	*2326*	0	*2448*	0	*95*	*70-130*	0
Surr: 4-Bromofluorobenzene	*2497*	0	*2448*	0	*102*	*70-130*	0
Surr: Dibromofluoromethane	*2279*	0	*2448*	0	*93.1*	*70-130*	0
Surr: Toluene-d8	*2419*	0	*2448*	0	*98.8*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212556
Project: Marshall KRRI 1225-1250L,1225R 12/12/12

QC BATCH REPORT

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

MSD Sample ID: **1212557-01A MSD** Units: **µg/Kg** Analysis Date: **12/18/2012 09:44 AM**
Client ID: Run ID: **VMS8_121217B** SeqNo: **2173033** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	2301	73	2448	0	94	75-125	2338	1.58	30	
1,1,1-Trichloroethane	2378	73	2448	0	97.2	70-135	2366	0.516	30	
1,1,2,2-Tetrachloroethane	2299	73	2448	0	93.9	55-130	2382	3.56	30	
1,1,2-Trichloroethane	2270	73	2448	0	92.7	60-125	2336	2.87	30	
1,1-Dichloroethane	2583	73	2448	0	106	75-125	2588	0.189	30	
1,1-Dichloroethene	1957	73	2448	0	80	65-135	2605	28.4	30	
1,2,3-Trichlorobenzene	1973	73	2448	0	80.6	60-135	1905	3.54	30	
1,2,3-Trichloropropane	2308	73	2448	0	94.2	65-130	2352	1.89	30	
1,2,4-Trichlorobenzene	2200	73	2448	0	89.8	65-130	2061	6.49	30	
1,2,4-Trimethylbenzene	2290	73	2448	0	93.6	65-135	2259	1.4	30	
1,2-Dibromo-3-chloropropane	2020	73	2448	0	82.5	40-135	2238	10.2	30	
1,2-Dibromoethane	2434	73	2448	0	99.4	70-125	2496	2.53	30	
1,2-Dichlorobenzene	2287	73	2448	0	93.4	75-120	2265	0.968	30	
1,2-Dichloroethane	2383	73	2448	0	97.4	70-135	2450	2.74	30	
1,2-Dichloropropane	2431	73	2448	0	99.3	70-120	2452	0.852	30	
1,3,5-Trimethylbenzene	2366	73	2448	0	96.6	65-135	2445	3.26	30	
1,3-Dichlorobenzene	2311	73	2448	0	94.4	70-125	2283	1.23	30	
1,4-Dichlorobenzene	2308	73	2448	0	94.2	70-125	2263	1.93	30	
2-Butanone	2397	490	2448	0	97.9	30-160	2426	1.22	30	
2-Hexanone	2645	73	2448	0	108	45-145	2910	9.52	30	
4-Methyl-2-pentanone	3446	73	2448	0	141	45-145	3772	9.02	30	
Acetone	2371	240	2448	0	96.8	20-160	2776	15.7	30	B
Acrylonitrile	2530	240	2448	0	103	70-135	2458	2.9	30	
Benzene	2382	73	2448	0	97.3	75-125	2390	0.308	30	
Bromobenzene	2268	73	2448	0	92.6	65-120	2317	2.14	30	
Bromochloromethane	2572	73	2448	0	105	70-125	2671	3.78	30	
Bromodichloromethane	2202	73	2448	0	90	70-130	2233	1.38	30	
Bromoform	2094	73	2448	0	85.6	55-135	2148	2.54	30	
Bromomethane	2001	180	2448	0	81.8	30-160	2432	19.4	30	
Carbon disulfide	2248	73	2448	0	91.8	45-160	2396	6.38	30	
Carbon tetrachloride	2374	73	2448	0	97	65-135	2303	3.04	30	
Chlorobenzene	2282	73	2448	0	93.2	75-125	2364	3.53	30	
Chloroethane	2397	240	2448	0	97.9	40-155	2306	3.85	30	
Chloroform	2465	73	2448	0	101	70-125	2509	1.77	30	
Chloromethane	1948	240	2448	0	79.6	50-130	2075	6.33	30	
cis-1,2-Dichloroethene	2615	73	2448	0	107	65-125	2645	1.16	30	
cis-1,3-Dichloropropene	2352	73	2448	0	96	70-125	2309	1.84	30	
Dibromochloromethane	2088	73	2448	0	85.3	65-135	2169	3.8	30	
Dibromomethane	2399	73	2448	0	98	75-130	2464	2.67	30	
Dichlorodifluoromethane	1973	73	2448	0	80.6	35-135	2016	2.15	30	
Ethylbenzene	2350	73	2448	0	96	75-125	2437	3.63	30	
Hexachloroethane	2610	73	2448	0	107	70-135	2538	2.81	30	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

Isopropylbenzene	2387	73	2448	0	97.5	75-130	2453	2.73	30
m,p-Xylene	4788	150	4897	0	97.8	80-125	4879	1.9	30
Methyl tert-butyl ether	2671	73	2448	0	109	75-125	2819	5.4	30
Methylene chloride	2759	73	2448	0	113	55-145	2545	8.08	30
Naphthalene	2437	240	2448	0	99.6	40-140	2320	4.94	30
n-Butylbenzene	2315	73	2448	0	94.6	65-140	2202	4.99	30
n-Propylbenzene	2290	73	2448	0	93.6	65-135	2366	3.26	30
o-Xylene	2358	73	2448	0	96.3	75-125	2468	4.57	30
p-Isopropyltoluene	2317	73	2448	0	94.6	75-135	2290	1.17	30
sec-Butylbenzene	2385	73	2448	0	97.4	65-130	2353	1.34	30
Styrene	2425	73	2448	0	99	75-125	2443	0.754	30
tert-Butylbenzene	2293	73	2448	0	93.6	65-130	2407	4.85	30
Tetrachloroethene	2195	73	2448	0	89.6	64-140	2192	0.112	30
Tetrahydrofuran	2700	490	2448	0	110	70-135	2354	13.7	30
Toluene	2337	73	2448	0	95.4	70-125	2423	3.6	30
trans-1,2-Dichloroethene	2550	73	2448	0	104	65-135	2644	3.63	30
trans-1,3-Dichloropropene	2296	73	2448	0	93.8	65-125	2303	0.266	30
trans-1,4-Dichloro-2-butene	2359	73	2448	0	96.4	70-135	2692	13.2	30
Trichloroethene	2278	73	2448	0	93	75-125	2336	2.49	30
Trichlorofluoromethane	2049	73	2448	0	83.7	25-185	2126	3.69	30
Vinyl chloride	2114	73	2448	0	86.4	60-125	2221	4.91	30
Surr: 1,2-Dichloroethane-d4	*2332*	0	*2448*	0	*95.2*	*70-130*	2326	*0.263*	*30*
Surr: 4-Bromofluorobenzene	*2523*	0	*2448*	0	*103*	*70-130*	2497	*1.02*	*30*
Surr: Dibromofluoromethane	*2301*	0	*2448*	0	*94*	*70-130*	2279	*0.962*	*30*
Surr: Toluene-d8	*2316*	0	*2448*	0	*94.6*	*70-130*	2419	*4.34*	*30*

The following samples were analyzed in this batch: 1212556-06B 1212556-07B 1212556-08B 1212556-09A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212556
Project: Marshall KRRI 1225-1250L,1225R 12/12/12

QC BATCH REPORT

Batch ID: **R114082** Instrument ID **MOIST** Method: **A2540 G**

MBLK Sample ID: **WBLKS1-R114082** Units: **% of sample** Analysis Date: **12/17/2012 05:20 PM**
Client ID: Run ID: **MOIST_121217C** SeqNo: **2172627** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	ND	0.050								

LCS Sample ID: **LCS-R114082** Units: **% of sample** Analysis Date: **12/17/2012 05:20 PM**
Client ID: Run ID: **MOIST_121217C** SeqNo: **2172619** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	100	0.050	100	0	100	99.5-100.5	0			

DUP Sample ID: **1212554-08B DUP** Units: **% of sample** Analysis Date: **12/17/2012 05:20 PM**
Client ID: Run ID: **MOIST_121217C** SeqNo: **2172571** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	45.78	0.050	0	0	0	0-0	40.11	0	20	

DUP Sample ID: **1212556-04A DUP** Units: **% of sample** Analysis Date: **12/17/2012 05:20 PM**
Client ID: **SBKR1250L501D121212S005** Run ID: **MOIST_121217C** SeqNo: **2172579** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	35.28	0.050	0	0	0	0-0	35.34	0.17	20	

The following samples were analyzed in this batch:

1212556-01A	1212556-02A	1212556-03A
1212556-04A	1212556-05A	1212556-06A
1212556-07A	1212556-08A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

1212556

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

COC #	ENBRIDGE_121212_GMK1	Task: KRRI_1225-1250
Total # of Samples: 9		Event Complete?
Turn Around Time	5 Day	Rush: No
BILLING CODE: 6.00		

Lab Information:
Lab Name: ALS Laboratory Group
Address: 3352 128th Ave. Holland, MI 49424-9263
Lab PM: Ann Preston
Phone/Fax: 1-616-399-6070/1-616-399-6185
Lab PM email: ann.preston@alsglobal.com
Applicable Lab Quote #:

Project Information:
Site ID #:
Project #: 60162778
Site Address: 5555 Glenwood Parkway SE Suite 200
City: Grand Rapids State, Zip: MI
Site PM Name: [redacted]
Phone/Fax: [redacted]
Site PM Email: Bryan.Stiemsma@aecom.com

Other Information:
Send Invoice to: Enbridge Energy - ATTN Accounts Payable
Address: 1100 Louisiana Suite 1100
City/State: Houson, TX Phone #: 713-821-2000
PO #:
Send EDD to:
CC Hardcopy report:
CC Hardcopy report:

ITEM #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	MATRIX CODE	G=GRAB C=COMP	SAMPLE DATE	#OF CONTAINERS	Comments/Lab Sample I.D.	Preservative	None	None	None	None	MeOH										
								Analysis	% Moisture	Be,Mo,V,Ni by 6020	ORO,DRO	PNAs by 8270	VOC by 5035/8260										
1	SBKR1225L510S121212S007	SBKR1225L510	SO	G	12/12/2012 09:13	3			X	X	X	X	X										
2	SBKR1225R504S121212S005	SBKR1225R504	SO	G	12/12/2012 08:18	3			X	X	X	X	X										
3	SBKR1250L501S121212S005	SBKR1250L501	SO	G	12/12/2012 10:20	3			X	X	X	X	X										
4	SBKR1250L501D121212S005	SBKR1250L501	SO	G	12/12/2012 10:20	3	DUPLICATE		X	X	X	X	X										
5	SBKR1250L502S121212S004	SBKR1250L502	SO	G	12/12/2012 11:35	3			X	X	X	X	X										
6	SBKR1250L503S121212S005	SBKR1250L503	SO	G	12/12/2012 13:35	3			X	X	X	X	X										
7	SBKR1250L504S121212S007	SBKR1250L504	SO	G	12/12/2012 14:31	3			X	X	X	X	X										
8	SBKR1250L505S121212S004	SBKR1250L505	SO	G	12/12/2012 15:39	3			X	X	X	X	X										
9	SBKR1250L505T121212MX	SBKR1250L505	SQ	G	12/12/2012 00:00	1	TRIP BLANK						X										

Additional Comments/Special Instructions:

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
G Kramer	12/13/12	1605	[illegible]	12-13-12	1605
[illegible]	12/14/12	1545	[illegible]	12/14/12	1545

Sample Receipt Conditions

Temp in OC	Samples on Ice?	Sample intact?	Trip Blank?
3.2°C	Y/N	Y/N	Y/N
	(Y)/N	(Y)/N	(Y)/N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N

SHIPPING INFO
Company:
Tracking #:

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: GERRY KRAMER (GMK1)
SIGNATURE of SAMPLER:
DATE Signed:
Time:

ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **14-Dec-12 15:45**

Work Order: **1212556** Received by: **PD**

Checklist completed by Keith Wierenga (eSignature) 17-Dec-12 (Date) Reviewed by: Ann Preston (eSignature) 17-Dec-12 (Date)

Matrices: Soil
Carrier name: ALSHN

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	3.2 C		
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	12/17/2012 10:16:01 AM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:	-		

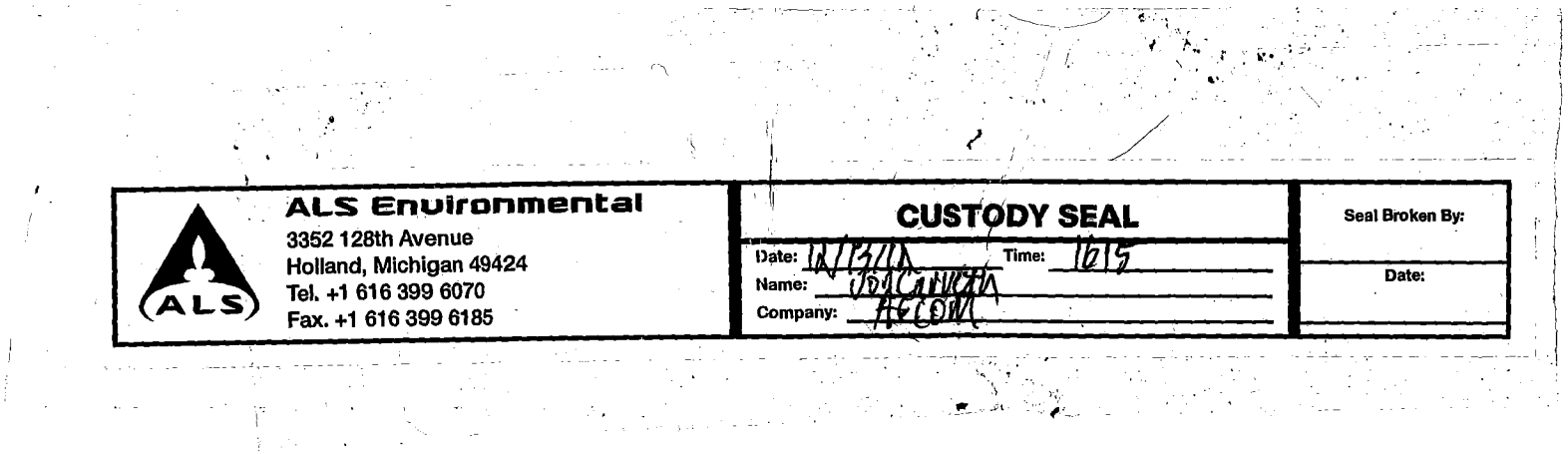
Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:



ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL

Date: 12/13/10 Time: 1615
Name: Jon Carmichael
Company: AECOM

Seal Broken By:

Date:

24-Dec-2012

Bryan Stiemsma
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall KRRI 1250I 12/14/12** Work Order: **1212557**

Dear Bryan,

ALS Environmental received 10 samples on 14-Dec-2012 04:00 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 71.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

Certificate No: MN331938

ALS Group USA, Corp

Date: 24-Dec-12

Client: AECOM Environment
Project: Marshall KRRI 1250I 12/14/12
Work Order: **1212557**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1212557-01	SBKR1250I507S121412S004	Soil		12/14/2012 08:15	12/14/2012 16:00	☐
1212557-02	SBKR1250I508S121412S005	Soil		12/14/2012 09:30	12/14/2012 16:00	☐
1212557-03	SBKR1250I510S121412S005	Soil		12/14/2012 11:35	12/14/2012 16:00	☐
1212557-04	SBKR1250I510S121412S013	Soil		12/14/2012 11:43	12/14/2012 16:00	☐
1212557-05	SBKR1250I511S121412S018	Soil		12/14/2012 13:52	12/14/2012 16:00	☐
1212557-06	SBKR1250I512D121412S005	Soil		12/14/2012 15:00	12/14/2012 16:00	☐
1212557-07	SBKR1250I512S121412S005	Soil		12/14/2012 15:00	12/14/2012 16:00	☐
1212557-08	SBKR1250I512T121412MX	Soil		12/14/2012	12/14/2012 16:00	☐
1212557-09	SBKR1250I509S121412S005	Soil		12/14/2012 10:28	12/14/2012 16:00	☐
1212557-10	SBKR1250I511S121412S005	Soil		12/14/2012 13:44	12/14/2012 16:00	☐

ALS Group USA, Corp

Date: 24-Dec-12

Client: AECOM Environment
Project: Marshall KRRI 1250I 12/14/12
Work Order: 1212557

Case Narrative

The extraction procedure used to prepare the soil samples for DRO and PAH analyses in this work order was a modification of the standard 3541 procedure. At the request of the client, a 10 gram sample aliquot dried with hydromatrix is used for extraction as outlined in ALS SOP HN-EXT-003(EN)-R01. All samples extracted starting on 10/1/2011 were prepared using this modified SOP.

Batch 45493 data for ORO is not related to this project's samples. No data requires qualification.

Batch 45484 MS/MSD data for Vanadium is not related to this project's samples. No data requires qualification.

Batch 45482 LCS/LCSD recoveries for several Volatile compounds were above control limits, but all samples in this quality control batch were ND for these compounds. No data requires qualification. Sample SBKR1250I507S121412S004 MS recovery for 4-Methyl-2-pentanone was above control limits. Both the MSD recovery and RPD met quality control criteria. No data requires qualification.

Batch 45492 sample 1212557-03 PAH reporting limits are elevated due to dilution for high concentrations of non-target analytes. Samples 1212557-03, 1212557-08. and 1212557-10 PAH internal standard recoveries were below the lower control limit, but >20%. Per the client's request, the results associated with the IS are being reported and should be considered as estimated for the compounds marked with an asterisk. Sample 1212557-10 surrogate recoveries are unavailable due to dilution below the calibration range. Sample 1212557-10 PAH reporting limits are elevated due to not being able to concentrate the sample extract down to the desired final volume.

ALS Group USA, Corp

Date: 24-Dec-12

Client: AECOM Environment
Project: Marshall KRRI 1250I 12/14/12
WorkOrder: **1212557**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
SD	Serial Dilution
TDL	Target Detection Limit

Units Reported	Description
% of sample	Percent of Sample
µg/Kg	Micrograms per Kilogram
µg/Kg-dry	Micrograms per Kilogram Dry Weight
mg/Kg-dry	Milligrams per Kilogram Dry Weight

ALS Group USA, Corp

Date: *24-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I507S121412S004
Work Order:	1212557	**Collection Date:**	12/14/2012 8:15:00 AM
Project:	Marshall KRRI 1250I 12/14/12		
Lab ID:	1212557-01	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/19/2012**		Analyst: **CW**
DRO (C10-C20)	ND	16	4.0		mg/Kg-dry	1	12/19/2012
ORO (C20-C34)	**140**	**32**	**4.0**		**mg/Kg-dry**	1	12/19/2012
Surr: 4-Terphenyl-d14	*76.7*	*39-115*			*%REC*	1	12/19/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/18/2012**		Analyst: **CES**
Beryllium	ND	1.0	0.50		mg/Kg-dry	4	12/20/2012
Molybdenum	ND	2.6	1.0		mg/Kg-dry	4	12/20/2012
Nickel	**18**	**2.6**	**1.0**		**mg/Kg-dry**	4	12/20/2012
Vanadium	**31**	**2.6**	**1.0**		**mg/Kg-dry**	4	12/20/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/19/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/20/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/20/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/20/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/20/2012
Benzo(a)anthracene	**620**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Benzo(a)pyrene	**940**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Benzo(b)fluoranthene	**850**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Benzo(g,h,i)perylene	**380**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Benzo(k)fluoranthene	**470**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Chrysene	**710**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/20/2012
Fluoranthene	**580**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/20/2012
Indeno(1,2,3-cd)pyrene	ND	330	330		µg/Kg-dry	1	12/20/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/20/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/20/2012
Pyrene	**900**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Surr: 2,4,6-Tribromophenol	*56.9*	*34-140*			*%REC*	1	12/20/2012
Surr: 2-Fluorobiphenyl	*57.9*	*12-100*			*%REC*	1	12/20/2012
Surr: 2-Fluorophenol	*74.4*	*33-117*			*%REC*	1	12/20/2012
Surr: 4-Terphenyl-d14	*96.6*	*25-137*			*%REC*	1	12/20/2012
Surr: Nitrobenzene-d5	*69.1*	*37-107*			*%REC*	1	12/20/2012
Surr: Phenol-d6	*71.1*	*40-106*			*%REC*	1	12/20/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/17/2012**		Analyst: **BG**
1,1,1,2-Tetrachloroethane	ND	130	100		µg/Kg-dry	1	12/18/2012
1,1,1-Trichloroethane	ND	130	50		µg/Kg-dry	1	12/18/2012
1,1,2,2-Tetrachloroethane	ND	130	50		µg/Kg-dry	1	12/18/2012
1,1,2-Trichloroethane	ND	130	50		µg/Kg-dry	1	12/18/2012
1,1-Dichloroethane	ND	130	50		µg/Kg-dry	1	12/18/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *24-Dec-12*

Client: AECOM Environment
Work Order: 1212557
Project: Marshall KRRI 1250I 12/14/12
Lab ID: 1212557-01

Client Sample ID: SBKR1250I507S121412S004
Collection Date: 12/14/2012 8:15:00 AM
Matrix: SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	130	50		µg/Kg-dry	1	12/18/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,3-Trichloropropane	ND	130	100		µg/Kg-dry	1	12/18/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,4-Trimethylbenzene	ND	130	100		µg/Kg-dry	1	12/18/2012
1,2-Dibromo-3-chloropropane	ND	130	10		µg/Kg-dry	1	12/18/2012
1,2-Dibromoethane	ND	130	20		µg/Kg-dry	1	12/18/2012
1,2-Dichlorobenzene	ND	130	100		µg/Kg-dry	1	12/18/2012
1,2-Dichloroethane	ND	130	50		µg/Kg-dry	1	12/18/2012
1,2-Dichloropropane	ND	130	50		µg/Kg-dry	1	12/18/2012
1,3,5-Trimethylbenzene	ND	130	100		µg/Kg-dry	1	12/18/2012
1,3-Dichlorobenzene	ND	130	100		µg/Kg-dry	1	12/18/2012
1,4-Dichlorobenzene	ND	130	100		µg/Kg-dry	1	12/18/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/18/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
2-Methylnaphthalene	ND	420	330		µg/Kg-dry	1	12/18/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
Acetone	ND	1,100	1,000		µg/Kg-dry	1	12/18/2012
Acrylonitrile	ND	130	100		µg/Kg-dry	1	12/18/2012
Benzene	ND	130	50		µg/Kg-dry	1	12/18/2012
Bromobenzene	ND	130	100		µg/Kg-dry	1	12/18/2012
Bromochloromethane	ND	130	100		µg/Kg-dry	1	12/18/2012
Bromodichloromethane	ND	130	100		µg/Kg-dry	1	12/18/2012
Bromoform	ND	130	100		µg/Kg-dry	1	12/18/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/18/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/18/2012
Carbon tetrachloride	ND	130	50		µg/Kg-dry	1	12/18/2012
Chlorobenzene	ND	130	50		µg/Kg-dry	1	12/18/2012
Chloroethane	ND	420	250		µg/Kg-dry	1	12/18/2012
Chloroform	ND	130	50		µg/Kg-dry	1	12/18/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/18/2012
cis-1,2-Dichloroethene	ND	130	50		µg/Kg-dry	1	12/18/2012
cis-1,3-Dichloropropene	ND	130	50		µg/Kg-dry	1	12/18/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/18/2012
Dibromochloromethane	ND	130	100		µg/Kg-dry	1	12/18/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/18/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/18/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/18/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I507S121412S004
Work Order:	1212557	**Collection Date:**	12/14/2012 8:15:00 AM
Project:	Marshall KRRI 1250I 12/14/12		
Lab ID:	1212557-01	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	130	50		µg/Kg-dry	1	12/18/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/18/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
m,p-Xylene	ND	250	100		µg/Kg-dry	1	12/18/2012
Methyl iodide	ND	130	100		µg/Kg-dry	1	12/18/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012
Methylene chloride	ND	130	100		µg/Kg-dry	1	12/18/2012
Naphthalene	ND	420	330		µg/Kg-dry	1	12/18/2012
n-Butylbenzene	ND	130	50		µg/Kg-dry	1	12/18/2012
n-Propylbenzene	ND	130	100		µg/Kg-dry	1	12/18/2012
o-Xylene	ND	130	50		µg/Kg-dry	1	12/18/2012
p-Isopropyltoluene	ND	130	100		µg/Kg-dry	1	12/18/2012
sec-Butylbenzene	ND	130	50		µg/Kg-dry	1	12/18/2012
Styrene	ND	130	50		µg/Kg-dry	1	12/18/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
tert-Butylbenzene	ND	130	50		µg/Kg-dry	1	12/18/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/18/2012
Tetrachloroethene	ND	130	50		µg/Kg-dry	1	12/18/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/18/2012
Toluene	ND	130	100		µg/Kg-dry	1	12/18/2012
trans-1,2-Dichloroethene	ND	130	50		µg/Kg-dry	1	12/18/2012
trans-1,3-Dichloropropene	ND	130	50		µg/Kg-dry	1	12/18/2012
trans-1,4-Dichloro-2-butene	ND	130	50		µg/Kg-dry	1	12/18/2012
Trichloroethene	ND	130	50		µg/Kg-dry	1	12/18/2012
Trichlorofluoromethane	ND	130	100		µg/Kg-dry	1	12/18/2012
Vinyl chloride	ND	130	40		µg/Kg-dry	1	12/18/2012
Surr: 1,2-Dichloroethane-d4	*96.8*	*70-130*			*%REC*	1	12/18/2012
Surr: 4-Bromofluorobenzene	*103*	*70-130*			*%REC*	1	12/18/2012
Surr: Dibromofluoromethane	*92.6*	*70-130*			*%REC*	1	12/18/2012
Surr: Toluene-d8	*94.1*	*70-130*			*%REC*	1	12/18/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**42**	**0.050**	**0**		**% of sample**	1	12/17/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *24-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I508S121412S005
Work Order:	1212557	**Collection Date:**	12/14/2012 9:30:00 AM
Project:	Marshall KRRI 1250I 12/14/12		
Lab ID:	1212557-02	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/19/2012**		Analyst: **CW**
DRO (C10-C20)	ND	17	4.0		mg/Kg-dry	1	12/19/2012
ORO (C20-C34)	**200**	**34**	**4.0**		**mg/Kg-dry**	1	12/19/2012
Surr: 4-Terphenyl-d14	*76.9*	*39-115*			*%REC*	1	12/19/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/18/2012**		Analyst: **CES**
Beryllium	ND	1.2	0.50		mg/Kg-dry	4	12/20/2012
Molybdenum	ND	3.0	1.0		mg/Kg-dry	4	12/20/2012
Nickel	**16**	**3.0**	**1.0**		**mg/Kg-dry**	4	12/20/2012
Vanadium	**26**	**3.0**	**1.0**		**mg/Kg-dry**	4	12/20/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/19/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/20/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/20/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/20/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/20/2012
Benzo(a)anthracene	ND	330	330		µg/Kg-dry	1	12/20/2012
Benzo(a)pyrene	**470**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Benzo(b)fluoranthene	**460**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Benzo(g,h,i)perylene	ND	330	330		µg/Kg-dry	1	12/20/2012
Benzo(k)fluoranthene	ND	330	330		µg/Kg-dry	1	12/20/2012
Chrysene	**380**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/20/2012
Fluoranthene	**400**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/20/2012
Indeno(1,2,3-cd)pyrene	ND	330	330		µg/Kg-dry	1	12/20/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/20/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/20/2012
Pyrene	**530**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Surr: 2,4,6-Tribromophenol	*56.5*	*34-140*			*%REC*	1	12/20/2012
Surr: 2-Fluorobiphenyl	*63.0*	*12-100*			*%REC*	1	12/20/2012
Surr: 2-Fluorophenol	*83.9*	*33-117*			*%REC*	1	12/20/2012
Surr: 4-Terphenyl-d14	*95.0*	*25-137*			*%REC*	1	12/20/2012
Surr: Nitrobenzene-d5	*76.3*	*37-107*			*%REC*	1	12/20/2012
Surr: Phenol-d6	*84.2*	*40-106*			*%REC*	1	12/20/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/17/2012**		Analyst: **AK**
1,1,1,2-Tetrachloroethane	ND	160	100		µg/Kg-dry	1	12/19/2012
1,1,1-Trichloroethane	ND	160	50		µg/Kg-dry	1	12/19/2012
1,1,2,2-Tetrachloroethane	ND	160	50		µg/Kg-dry	1	12/19/2012
1,1,2-Trichloroethane	ND	160	50		µg/Kg-dry	1	12/19/2012
1,1-Dichloroethane	ND	160	50		µg/Kg-dry	1	12/19/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *24-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I508S121412S005
Work Order:	1212557	**Collection Date:**	12/14/2012 9:30:00 AM
Project:	Marshall KRRI 1250I 12/14/12		
Lab ID:	1212557-02	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	160	50		µg/Kg-dry	1	12/19/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/19/2012
1,2,3-Trichloropropane	ND	160	100		µg/Kg-dry	1	12/19/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/19/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/19/2012
1,2,4-Trimethylbenzene	ND	160	100		µg/Kg-dry	1	12/19/2012
1,2-Dibromo-3-chloropropane	ND	160	10		µg/Kg-dry	1	12/19/2012
1,2-Dibromoethane	ND	160	20		µg/Kg-dry	1	12/19/2012
1,2-Dichlorobenzene	ND	160	100		µg/Kg-dry	1	12/19/2012
1,2-Dichloroethane	ND	160	50		µg/Kg-dry	1	12/19/2012
1,2-Dichloropropane	ND	160	50		µg/Kg-dry	1	12/19/2012
1,3,5-Trimethylbenzene	ND	160	100		µg/Kg-dry	1	12/19/2012
1,3-Dichlorobenzene	ND	160	100		µg/Kg-dry	1	12/19/2012
1,4-Dichlorobenzene	ND	160	100		µg/Kg-dry	1	12/19/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/19/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/19/2012
2-Methylnaphthalene	ND	520	330		µg/Kg-dry	1	12/19/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/19/2012
Acetone	ND	1,300	1,000		µg/Kg-dry	1	12/19/2012
Acrylonitrile	ND	160	100		µg/Kg-dry	1	12/19/2012
Benzene	ND	160	50		µg/Kg-dry	1	12/19/2012
Bromobenzene	ND	160	100		µg/Kg-dry	1	12/19/2012
Bromochloromethane	ND	160	100		µg/Kg-dry	1	12/19/2012
Bromodichloromethane	ND	160	100		µg/Kg-dry	1	12/19/2012
Bromoform	ND	160	100		µg/Kg-dry	1	12/19/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/19/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/19/2012
Carbon tetrachloride	ND	160	50		µg/Kg-dry	1	12/19/2012
Chlorobenzene	ND	160	50		µg/Kg-dry	1	12/19/2012
Chloroethane	ND	520	250		µg/Kg-dry	1	12/19/2012
Chloroform	ND	160	50		µg/Kg-dry	1	12/19/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/19/2012
cis-1,2-Dichloroethene	ND	160	50		µg/Kg-dry	1	12/19/2012
cis-1,3-Dichloropropene	ND	160	50		µg/Kg-dry	1	12/19/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/19/2012
Dibromochloromethane	ND	160	100		µg/Kg-dry	1	12/19/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/19/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/19/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/19/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/19/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/19/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: AECOM Environment **Client Sample ID:** SBKR1250I508S121412S005
Work Order: 1212557 **Collection Date:** 12/14/2012 9:30:00 AM
Project: Marshall KRRI 1250I 12/14/12
Lab ID: 1212557-02 **Matrix:** SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	160	50		µg/Kg-dry	1	12/19/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/19/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/19/2012
m,p-Xylene	ND	310	100		µg/Kg-dry	1	12/19/2012
Methyl iodide	ND	160	100		µg/Kg-dry	1	12/19/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/19/2012
Methylene chloride	ND	360	100		µg/Kg-dry	1	12/19/2012
Naphthalene	ND	520	330		µg/Kg-dry	1	12/19/2012
n-Butylbenzene	ND	160	50		µg/Kg-dry	1	12/19/2012
n-Propylbenzene	ND	160	100		µg/Kg-dry	1	12/19/2012
o-Xylene	ND	160	50		µg/Kg-dry	1	12/19/2012
p-Isopropyltoluene	ND	160	100		µg/Kg-dry	1	12/19/2012
sec-Butylbenzene	ND	160	50		µg/Kg-dry	1	12/19/2012
Styrene	ND	160	50		µg/Kg-dry	1	12/19/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/19/2012
tert-Butylbenzene	ND	160	50		µg/Kg-dry	1	12/19/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/19/2012
Tetrachloroethene	ND	160	50		µg/Kg-dry	1	12/19/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/19/2012
Toluene	ND	160	100		µg/Kg-dry	1	12/19/2012
trans-1,2-Dichloroethene	ND	160	50		µg/Kg-dry	1	12/19/2012
trans-1,3-Dichloropropene	ND	160	50		µg/Kg-dry	1	12/19/2012
trans-1,4-Dichloro-2-butene	ND	160	50		µg/Kg-dry	1	12/19/2012
Trichloroethene	ND	160	50		µg/Kg-dry	1	12/19/2012
Trichlorofluoromethane	ND	160	100		µg/Kg-dry	1	12/19/2012
Vinyl chloride	ND	160	40		µg/Kg-dry	1	12/19/2012
Surr: 1,2-Dichloroethane-d4	*88.8*	*70-130*			*%REC*	1	12/19/2012
Surr: 4-Bromofluorobenzene	*100*	*70-130*			*%REC*	1	12/19/2012
Surr: Dibromofluoromethane	*87.6*	*70-130*			*%REC*	1	12/19/2012
Surr: Toluene-d8	*92.7*	*70-130*			*%REC*	1	12/19/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**47**	**0.050**	**0**		**% of sample**	1	12/17/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *24-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I510S121412S005
Work Order:	1212557	**Collection Date:**	12/14/2012 11:35:00 AM
Project:	Marshall KRRI 1250I 12/14/12		
Lab ID:	1212557-03	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/19/2012**		Analyst: **CW**
DRO (C10-C20)	**2,200**	**420**	**4.0**		**mg/Kg-dry**	20	12/19/2012
ORO (C20-C34)	**19,000**	**850**	**4.0**		**mg/Kg-dry**	20	12/19/2012
Surr: 4-Terphenyl-d14	*99.2*	*39-115*			*%REC*	20	12/19/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/18/2012**		Analyst: **CES**
Beryllium	ND	1.3	0.50		mg/Kg-dry	4	12/20/2012
Molybdenum	ND	3.2	1.0		mg/Kg-dry	4	12/20/2012
Nickel	**21**	**3.2**	**1.0**		**mg/Kg-dry**	4	12/20/2012
Vanadium	**34**	**3.2**	**1.0**		**mg/Kg-dry**	4	12/20/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/19/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	2,100	330		µg/Kg-dry	20	12/20/2012
Acenaphthene	ND	2,100	330		µg/Kg-dry	20	12/20/2012
Acenaphthylene	ND	2,100	330		µg/Kg-dry	20	12/20/2012
Anthracene	ND	2,100	330		µg/Kg-dry	20	12/20/2012
Benzo(a)anthracene	ND	2,100	330		µg/Kg-dry	20	12/20/2012
Benzo(a)pyrene	ND	2,100	330	*	µg/Kg-dry	20	12/20/2012
Benzo(b)fluoranthene	ND	2,100	330	*	µg/Kg-dry	20	12/20/2012
Benzo(g,h,i)perylene	ND	2,100	330	*	µg/Kg-dry	20	12/20/2012
Benzo(k)fluoranthene	ND	2,100	330	*	µg/Kg-dry	20	12/20/2012
Chrysene	ND	2,100	330		µg/Kg-dry	20	12/20/2012
Dibenzo(a,h)anthracene	ND	2,100	330	*	µg/Kg-dry	20	12/20/2012
Fluoranthene	ND	2,100	330		µg/Kg-dry	20	12/20/2012
Fluorene	ND	2,100	330		µg/Kg-dry	20	12/20/2012
Indeno(1,2,3-cd)pyrene	ND	2,100	330	*	µg/Kg-dry	20	12/20/2012
Naphthalene	ND	2,100	330		µg/Kg-dry	20	12/20/2012
Phenanthrene	ND	2,100	330		µg/Kg-dry	20	12/20/2012
Pyrene	ND	2,100	330		µg/Kg-dry	20	12/20/2012
Surr: 2,4,6-Tribromophenol	*36.8*	*34-140*			*%REC*	20	12/20/2012
Surr: 2-Fluorobiphenyl	*64.4*	*12-100*			*%REC*	20	12/20/2012
Surr: 2-Fluorophenol	*70.8*	*33-117*			*%REC*	20	12/20/2012
Surr: 4-Terphenyl-d14	*94.8*	*25-137*			*%REC*	20	12/20/2012
Surr: Nitrobenzene-d5	*75.2*	*37-107*			*%REC*	20	12/20/2012
Surr: Phenol-d6	*57.2*	*40-106*			*%REC*	20	12/20/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/17/2012**		Analyst: **BG**
1,1,1,2-Tetrachloroethane	ND	230	100		µg/Kg-dry	1	12/18/2012
1,1,1-Trichloroethane	ND	230	50		µg/Kg-dry	1	12/18/2012
1,1,2,2-Tetrachloroethane	ND	230	50		µg/Kg-dry	1	12/18/2012
1,1,2-Trichloroethane	ND	230	50		µg/Kg-dry	1	12/18/2012
1,1-Dichloroethane	ND	230	50		µg/Kg-dry	1	12/18/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *24-Dec-12*

Client: AECOM Environment
Client Sample ID: SBKR1250I510S121412S005
Work Order: 1212557
Collection Date: 12/14/2012 11:35:00 AM
Project: Marshall KRRI 1250I 12/14/12
Lab ID: 1212557-03
Matrix: SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	230	50		µg/Kg-dry	1	12/18/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,3-Trichloropropane	ND	230	100		µg/Kg-dry	1	12/18/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,4-Trimethylbenzene	ND	230	100		µg/Kg-dry	1	12/18/2012
1,2-Dibromo-3-chloropropane	ND	230	10		µg/Kg-dry	1	12/18/2012
1,2-Dibromoethane	ND	230	20		µg/Kg-dry	1	12/18/2012
1,2-Dichlorobenzene	ND	230	100		µg/Kg-dry	1	12/18/2012
1,2-Dichloroethane	ND	230	50		µg/Kg-dry	1	12/18/2012
1,2-Dichloropropane	ND	230	50		µg/Kg-dry	1	12/18/2012
1,3,5-Trimethylbenzene	ND	230	100		µg/Kg-dry	1	12/18/2012
1,3-Dichlorobenzene	ND	230	100		µg/Kg-dry	1	12/18/2012
1,4-Dichlorobenzene	ND	230	100		µg/Kg-dry	1	12/18/2012
2-Butanone	ND	770	750		µg/Kg-dry	1	12/18/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
2-Methylnaphthalene	ND	770	330		µg/Kg-dry	1	12/18/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
Acetone	ND	1,900	1,000		µg/Kg-dry	1	12/18/2012
Acrylonitrile	ND	230	100		µg/Kg-dry	1	12/18/2012
Benzene	ND	230	50		µg/Kg-dry	1	12/18/2012
Bromobenzene	ND	230	100		µg/Kg-dry	1	12/18/2012
Bromochloromethane	ND	230	100		µg/Kg-dry	1	12/18/2012
Bromodichloromethane	ND	230	100		µg/Kg-dry	1	12/18/2012
Bromoform	ND	230	100		µg/Kg-dry	1	12/18/2012
Bromomethane	ND	230	200		µg/Kg-dry	1	12/18/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/18/2012
Carbon tetrachloride	ND	230	50		µg/Kg-dry	1	12/18/2012
Chlorobenzene	ND	230	50		µg/Kg-dry	1	12/18/2012
Chloroethane	ND	770	250		µg/Kg-dry	1	12/18/2012
Chloroform	ND	230	50		µg/Kg-dry	1	12/18/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/18/2012
cis-1,2-Dichloroethene	ND	230	50		µg/Kg-dry	1	12/18/2012
cis-1,3-Dichloropropene	ND	230	50		µg/Kg-dry	1	12/18/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/18/2012
Dibromochloromethane	ND	230	100		µg/Kg-dry	1	12/18/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/18/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/18/2012
Diethyl ether	ND	230	200		µg/Kg-dry	1	12/18/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *24-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I510S121412S005
Work Order:	1212557	**Collection Date:**	12/14/2012 11:35:00 AM
Project:	Marshall KRRI 1250I 12/14/12		
Lab ID:	1212557-03	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	230	50		µg/Kg-dry	1	12/18/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/18/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
m,p-Xylene	ND	460	100		µg/Kg-dry	1	12/18/2012
Methyl iodide	ND	230	100		µg/Kg-dry	1	12/18/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012
Methylene chloride	ND	230	100		µg/Kg-dry	1	12/18/2012
Naphthalene	ND	770	330		µg/Kg-dry	1	12/18/2012
n-Butylbenzene	ND	230	50		µg/Kg-dry	1	12/18/2012
n-Propylbenzene	ND	230	100		µg/Kg-dry	1	12/18/2012
o-Xylene	ND	230	50		µg/Kg-dry	1	12/18/2012
p-Isopropyltoluene	ND	230	100		µg/Kg-dry	1	12/18/2012
sec-Butylbenzene	ND	230	50		µg/Kg-dry	1	12/18/2012
Styrene	ND	230	50		µg/Kg-dry	1	12/18/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
tert-Butylbenzene	ND	230	50		µg/Kg-dry	1	12/18/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/18/2012
Tetrachloroethene	ND	230	50		µg/Kg-dry	1	12/18/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/18/2012
Toluene	ND	230	100		µg/Kg-dry	1	12/18/2012
trans-1,2-Dichloroethene	ND	230	50		µg/Kg-dry	1	12/18/2012
trans-1,3-Dichloropropene	ND	230	50		µg/Kg-dry	1	12/18/2012
trans-1,4-Dichloro-2-butene	ND	230	50		µg/Kg-dry	1	12/18/2012
Trichloroethene	ND	230	50		µg/Kg-dry	1	12/18/2012
Trichlorofluoromethane	ND	230	100		µg/Kg-dry	1	12/18/2012
Vinyl chloride	ND	230	40		µg/Kg-dry	1	12/18/2012
Surr: 1,2-Dichloroethane-d4	*96.6*	*70-130*			*%REC*	1	12/18/2012
Surr: 4-Bromofluorobenzene	*105*	*70-130*			*%REC*	1	12/18/2012
Surr: Dibromofluoromethane	*92.0*	*70-130*			*%REC*	1	12/18/2012
Surr: Toluene-d8	*97.0*	*70-130*			*%REC*	1	12/18/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**55**	**0.050**	**0**		**% of sample**	1	12/17/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *24-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I510S121412S013
Work Order:	1212557	**Collection Date:**	12/14/2012 11:43:00 AM
Project:	Marshall KRRI 1250I 12/14/12		
Lab ID:	1212557-04	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/19/2012**		Analyst: **CW**
DRO (C10-C20)	ND	21	4.0		mg/Kg-dry	1	12/19/2012
ORO (C20-C34)	**130**	**42**	**4.0**		**mg/Kg-dry**	1	12/19/2012
Surr: 4-Terphenyl-d14	*82.6*	*39-115*			*%REC*	1	12/19/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/18/2012**		Analyst: **CES**
Beryllium	ND	1.3	0.50		mg/Kg-dry	4	12/20/2012
Molybdenum	ND	3.3	1.0		mg/Kg-dry	4	12/20/2012
Nickel	**15**	**3.3**	**1.0**		**mg/Kg-dry**	4	12/20/2012
Vanadium	**32**	**3.3**	**1.0**		**mg/Kg-dry**	4	12/20/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/19/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/20/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/20/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/20/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/20/2012
Benzo(a)anthracene	ND	330	330		µg/Kg-dry	1	12/20/2012
Benzo(a)pyrene	**410**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Benzo(b)fluoranthene	**390**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Benzo(g,h,i)perylene	ND	330	330		µg/Kg-dry	1	12/20/2012
Benzo(k)fluoranthene	ND	330	330		µg/Kg-dry	1	12/20/2012
Chrysene	ND	330	330		µg/Kg-dry	1	12/20/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/20/2012
Fluoranthene	ND	330	330		µg/Kg-dry	1	12/20/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/20/2012
Indeno(1,2,3-cd)pyrene	ND	330	330		µg/Kg-dry	1	12/20/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/20/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/20/2012
Pyrene	**450**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Surr: 2,4,6-Tribromophenol	*61.1*	*34-140*			*%REC*	1	12/20/2012
Surr: 2-Fluorobiphenyl	*71.2*	*12-100*			*%REC*	1	12/20/2012
Surr: 2-Fluorophenol	*91.2*	*33-117*			*%REC*	1	12/20/2012
Surr: 4-Terphenyl-d14	*104*	*25-137*			*%REC*	1	12/20/2012
Surr: Nitrobenzene-d5	*86.2*	*37-107*			*%REC*	1	12/20/2012
Surr: Phenol-d6	*93.7*	*40-106*			*%REC*	1	12/20/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/17/2012**		Analyst: **AK**
1,1,1,2-Tetrachloroethane	ND	220	100		µg/Kg-dry	1	12/19/2012
1,1,1-Trichloroethane	ND	220	50		µg/Kg-dry	1	12/19/2012
1,1,2,2-Tetrachloroethane	ND	220	50		µg/Kg-dry	1	12/19/2012
1,1,2-Trichloroethane	ND	220	50		µg/Kg-dry	1	12/19/2012
1,1-Dichloroethane	ND	220	50		µg/Kg-dry	1	12/19/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *24-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I510S121412S013
Work Order:	1212557	**Collection Date:**	12/14/2012 11:43:00 AM
Project:	Marshall KRRI 1250I 12/14/12		
Lab ID:	1212557-04	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	220	50		µg/Kg-dry	1	12/19/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/19/2012
1,2,3-Trichloropropane	ND	220	100		µg/Kg-dry	1	12/19/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/19/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/19/2012
1,2,4-Trimethylbenzene	ND	220	100		µg/Kg-dry	1	12/19/2012
1,2-Dibromo-3-chloropropane	ND	220	10		µg/Kg-dry	1	12/19/2012
1,2-Dibromoethane	ND	220	20		µg/Kg-dry	1	12/19/2012
1,2-Dichlorobenzene	ND	220	100		µg/Kg-dry	1	12/19/2012
1,2-Dichloroethane	ND	220	50		µg/Kg-dry	1	12/19/2012
1,2-Dichloropropane	ND	220	50		µg/Kg-dry	1	12/19/2012
1,3,5-Trimethylbenzene	ND	220	100		µg/Kg-dry	1	12/19/2012
1,3-Dichlorobenzene	ND	220	100		µg/Kg-dry	1	12/19/2012
1,4-Dichlorobenzene	ND	220	100		µg/Kg-dry	1	12/19/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/19/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/19/2012
2-Methylnaphthalene	ND	730	330		µg/Kg-dry	1	12/19/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/19/2012
Acetone	ND	1,800	1,000		µg/Kg-dry	1	12/19/2012
Acrylonitrile	ND	220	100		µg/Kg-dry	1	12/19/2012
Benzene	ND	220	50		µg/Kg-dry	1	12/19/2012
Bromobenzene	ND	220	100		µg/Kg-dry	1	12/19/2012
Bromochloromethane	ND	220	100		µg/Kg-dry	1	12/19/2012
Bromodichloromethane	ND	220	100		µg/Kg-dry	1	12/19/2012
Bromoform	ND	220	100		µg/Kg-dry	1	12/19/2012
Bromomethane	ND	220	200		µg/Kg-dry	1	12/19/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/19/2012
Carbon tetrachloride	ND	220	50		µg/Kg-dry	1	12/19/2012
Chlorobenzene	ND	220	50		µg/Kg-dry	1	12/19/2012
Chloroethane	ND	730	250		µg/Kg-dry	1	12/19/2012
Chloroform	ND	220	50		µg/Kg-dry	1	12/19/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/19/2012
cis-1,2-Dichloroethene	ND	220	50		µg/Kg-dry	1	12/19/2012
cis-1,3-Dichloropropene	ND	220	50		µg/Kg-dry	1	12/19/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/19/2012
Dibromochloromethane	ND	220	100		µg/Kg-dry	1	12/19/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/19/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/19/2012
Diethyl ether	ND	220	200		µg/Kg-dry	1	12/19/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/19/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/19/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *24-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I510S121412S013
Work Order:	1212557	**Collection Date:**	12/14/2012 11:43:00 AM
Project:	Marshall KRRI 1250I 12/14/12		
Lab ID:	1212557-04	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	220	50		µg/Kg-dry	1	12/19/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/19/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/19/2012
m,p-Xylene	ND	440	100		µg/Kg-dry	1	12/19/2012
Methyl iodide	ND	220	100		µg/Kg-dry	1	12/19/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/19/2012
Methylene chloride	ND	220	100		µg/Kg-dry	1	12/19/2012
Naphthalene	ND	730	330		µg/Kg-dry	1	12/19/2012
n-Butylbenzene	ND	220	50		µg/Kg-dry	1	12/19/2012
n-Propylbenzene	ND	220	100		µg/Kg-dry	1	12/19/2012
o-Xylene	ND	220	50		µg/Kg-dry	1	12/19/2012
p-Isopropyltoluene	ND	220	100		µg/Kg-dry	1	12/19/2012
sec-Butylbenzene	ND	220	50		µg/Kg-dry	1	12/19/2012
Styrene	ND	220	50		µg/Kg-dry	1	12/19/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/19/2012
tert-Butylbenzene	ND	220	50		µg/Kg-dry	1	12/19/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/19/2012
Tetrachloroethene	ND	220	50		µg/Kg-dry	1	12/19/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/19/2012
Toluene	ND	220	100		µg/Kg-dry	1	12/19/2012
trans-1,2-Dichloroethene	ND	220	50		µg/Kg-dry	1	12/19/2012
trans-1,3-Dichloropropene	ND	220	50		µg/Kg-dry	1	12/19/2012
trans-1,4-Dichloro-2-butene	ND	220	50		µg/Kg-dry	1	12/19/2012
Trichloroethene	ND	220	50		µg/Kg-dry	1	12/19/2012
Trichlorofluoromethane	ND	220	100		µg/Kg-dry	1	12/19/2012
Vinyl chloride	ND	220	40		µg/Kg-dry	1	12/19/2012
Surr: 1,2-Dichloroethane-d4	*89.9*	*70-130*			*%REC*	1	12/19/2012
Surr: 4-Bromofluorobenzene	*99.0*	*70-130*			*%REC*	1	12/19/2012
Surr: Dibromofluoromethane	*89.8*	*70-130*			*%REC*	1	12/19/2012
Surr: Toluene-d8	*94.2*	*70-130*			*%REC*	1	12/19/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**54**	**0.050**	**0**		**% of sample**	1	12/17/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *24-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I511S121412S018
Work Order:	1212557	**Collection Date:**	12/14/2012 1:52:00 PM
Project:	Marshall KRRI 1250I 12/14/12		
Lab ID:	1212557-05	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/19/2012**		Analyst: **CW**
DRO (C10-C20)	**26**	**17**	**4.0**		**mg/Kg-dry**	1	12/20/2012
ORO (C20-C34)	**400**	**35**	**4.0**		**mg/Kg-dry**	1	12/20/2012
Surr: 4-Terphenyl-d14	*75.7*	*39-115*			*%REC*	1	12/20/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/18/2012**		Analyst: **CES**
Beryllium	ND	1.0	0.50		mg/Kg-dry	4	12/20/2012
Molybdenum	ND	2.6	1.0		mg/Kg-dry	4	12/20/2012
Nickel	**16**	**2.6**	**1.0**		**mg/Kg-dry**	4	12/20/2012
Vanadium	**18**	**2.6**	**1.0**		**mg/Kg-dry**	4	12/20/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/19/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/20/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/20/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/20/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/20/2012
Benzo(a)anthracene	**790**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Benzo(a)pyrene	**1,000**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Benzo(b)fluoranthene	**1,200**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Benzo(g,h,i)perylene	**390**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Benzo(k)fluoranthene	**720**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Chrysene	**980**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/20/2012
Fluoranthene	**1,300**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/20/2012
Indeno(1,2,3-cd)pyrene	ND	330	330		µg/Kg-dry	1	12/20/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/20/2012
Phenanthrene	**470**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Pyrene	**1,500**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Surr: 2,4,6-Tribromophenol	*55.6*	*34-140*			*%REC*	1	12/20/2012
Surr: 2-Fluorobiphenyl	*63.0*	*12-100*			*%REC*	1	12/20/2012
Surr: 2-Fluorophenol	*82.8*	*33-117*			*%REC*	1	12/20/2012
Surr: 4-Terphenyl-d14	*94.0*	*25-137*			*%REC*	1	12/20/2012
Surr: Nitrobenzene-d5	*74.5*	*37-107*			*%REC*	1	12/20/2012
Surr: Phenol-d6	*82.8*	*40-106*			*%REC*	1	12/20/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/17/2012**		Analyst: **AK**
1,1,1,2-Tetrachloroethane	ND	140	100		µg/Kg-dry	1	12/19/2012
1,1,1-Trichloroethane	ND	140	50		µg/Kg-dry	1	12/19/2012
1,1,2,2-Tetrachloroethane	ND	140	50		µg/Kg-dry	1	12/19/2012
1,1,2-Trichloroethane	ND	140	50		µg/Kg-dry	1	12/19/2012
1,1-Dichloroethane	ND	140	50		µg/Kg-dry	1	12/19/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *24-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I511S121412S018
Work Order:	1212557	**Collection Date:**	12/14/2012 1:52:00 PM
Project:	Marshall KRRI 1250I 12/14/12		
Lab ID:	1212557-05	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	140	50		µg/Kg-dry	1	12/19/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/19/2012
1,2,3-Trichloropropane	ND	140	100		µg/Kg-dry	1	12/19/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/19/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/19/2012
1,2,4-Trimethylbenzene	ND	140	100		µg/Kg-dry	1	12/19/2012
1,2-Dibromo-3-chloropropane	ND	140	10		µg/Kg-dry	1	12/19/2012
1,2-Dibromoethane	ND	140	20		µg/Kg-dry	1	12/19/2012
1,2-Dichlorobenzene	ND	140	100		µg/Kg-dry	1	12/19/2012
1,2-Dichloroethane	ND	140	50		µg/Kg-dry	1	12/19/2012
1,2-Dichloropropane	ND	140	50		µg/Kg-dry	1	12/19/2012
1,3,5-Trimethylbenzene	ND	140	100		µg/Kg-dry	1	12/19/2012
1,3-Dichlorobenzene	ND	140	100		µg/Kg-dry	1	12/19/2012
1,4-Dichlorobenzene	ND	140	100		µg/Kg-dry	1	12/19/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/19/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/19/2012
2-Methylnaphthalene	ND	460	330		µg/Kg-dry	1	12/19/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/19/2012
Acetone	**1,800**	**1,400**	**1,000**		**µg/Kg-dry**	1	12/19/2012
Acrylonitrile	ND	140	100		µg/Kg-dry	1	12/19/2012
Benzene	ND	140	50		µg/Kg-dry	1	12/19/2012
Bromobenzene	ND	140	100		µg/Kg-dry	1	12/19/2012
Bromochloromethane	ND	140	100		µg/Kg-dry	1	12/19/2012
Bromodichloromethane	ND	140	100		µg/Kg-dry	1	12/19/2012
Bromoform	ND	140	100		µg/Kg-dry	1	12/19/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/19/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/19/2012
Carbon tetrachloride	ND	140	50		µg/Kg-dry	1	12/19/2012
Chlorobenzene	ND	140	50		µg/Kg-dry	1	12/19/2012
Chloroethane	ND	460	250		µg/Kg-dry	1	12/19/2012
Chloroform	ND	140	50		µg/Kg-dry	1	12/19/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/19/2012
cis-1,2-Dichloroethene	ND	140	50		µg/Kg-dry	1	12/19/2012
cis-1,3-Dichloropropene	ND	140	50		µg/Kg-dry	1	12/19/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/19/2012
Dibromochloromethane	ND	140	100		µg/Kg-dry	1	12/19/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/19/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/19/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/19/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/19/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/19/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *24-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I511S121412S018
Work Order:	1212557	**Collection Date:**	12/14/2012 1:52:00 PM
Project:	Marshall KRRI 1250I 12/14/12		
Lab ID:	1212557-05	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	140	50		µg/Kg-dry	1	12/19/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/19/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/19/2012
m,p-Xylene	ND	280	100		µg/Kg-dry	1	12/19/2012
Methyl iodide	ND	140	100		µg/Kg-dry	1	12/19/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/19/2012
Methylene chloride	ND	140	100		µg/Kg-dry	1	12/19/2012
Naphthalene	ND	460	330		µg/Kg-dry	1	12/19/2012
n-Butylbenzene	ND	140	50		µg/Kg-dry	1	12/19/2012
n-Propylbenzene	ND	140	100		µg/Kg-dry	1	12/19/2012
o-Xylene	ND	140	50		µg/Kg-dry	1	12/19/2012
p-Isopropyltoluene	ND	140	100		µg/Kg-dry	1	12/19/2012
sec-Butylbenzene	ND	140	50		µg/Kg-dry	1	12/19/2012
Styrene	ND	140	50		µg/Kg-dry	1	12/19/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/19/2012
tert-Butylbenzene	ND	140	50		µg/Kg-dry	1	12/19/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/19/2012
Tetrachloroethene	ND	140	50		µg/Kg-dry	1	12/19/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/19/2012
Toluene	ND	140	100		µg/Kg-dry	1	12/19/2012
trans-1,2-Dichloroethene	ND	140	50		µg/Kg-dry	1	12/19/2012
trans-1,3-Dichloropropene	ND	140	50		µg/Kg-dry	1	12/19/2012
trans-1,4-Dichloro-2-butene	ND	140	50		µg/Kg-dry	1	12/19/2012
Trichloroethene	ND	140	50		µg/Kg-dry	1	12/19/2012
Trichlorofluoromethane	ND	140	100		µg/Kg-dry	1	12/19/2012
Vinyl chloride	ND	140	40		µg/Kg-dry	1	12/19/2012
Surr: 1,2-Dichloroethane-d4	*89.4*	*70-130*			*%REC*	1	12/19/2012
Surr: 4-Bromofluorobenzene	*100*	*70-130*			*%REC*	1	12/19/2012
Surr: Dibromofluoromethane	*87.6*	*70-130*			*%REC*	1	12/19/2012
Surr: Toluene-d8	*94.8*	*70-130*			*%REC*	1	12/19/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**44**	**0.050**	**0**		**% of sample**	1	12/17/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *24-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I512D121412S005
Work Order:	1212557	**Collection Date:**	12/14/2012 3:00:00 PM
Project:	Marshall KRRI 1250I 12/14/12		
Lab ID:	1212557-06	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/19/2012**		Analyst: **CW**
DRO (C10-C20)	ND	17	4.0		mg/Kg-dry	1	12/20/2012
ORO (C20-C34)	**91**	**35**	**4.0**		**mg/Kg-dry**	1	12/20/2012
Surr: 4-Terphenyl-d14	*77.3*	*39-115*			*%REC*	1	12/20/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/18/2012**		Analyst: **CES**
Beryllium	ND	1.1	0.50		mg/Kg-dry	4	12/20/2012
Molybdenum	ND	2.7	1.0		mg/Kg-dry	4	12/20/2012
Nickel	**16**	**2.7**	**1.0**		**mg/Kg-dry**	4	12/20/2012
Vanadium	**29**	**2.7**	**1.0**		**mg/Kg-dry**	4	12/20/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/19/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/20/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/20/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/20/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/20/2012
Benzo(a)anthracene	ND	330	330		µg/Kg-dry	1	12/20/2012
Benzo(a)pyrene	ND	330	330		µg/Kg-dry	1	12/20/2012
Benzo(b)fluoranthene	ND	330	330		µg/Kg-dry	1	12/20/2012
Benzo(g,h,i)perylene	ND	330	330		µg/Kg-dry	1	12/20/2012
Benzo(k)fluoranthene	ND	330	330		µg/Kg-dry	1	12/20/2012
Chrysene	ND	330	330		µg/Kg-dry	1	12/20/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/20/2012
Fluoranthene	ND	330	330		µg/Kg-dry	1	12/20/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/20/2012
Indeno(1,2,3-cd)pyrene	ND	330	330		µg/Kg-dry	1	12/20/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/20/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/20/2012
Pyrene	**390**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Surr: 2,4,6-Tribromophenol	*54.5*	*34-140*			*%REC*	1	12/20/2012
Surr: 2-Fluorobiphenyl	*67.2*	*12-100*			*%REC*	1	12/20/2012
Surr: 2-Fluorophenol	*86.5*	*33-117*			*%REC*	1	12/20/2012
Surr: 4-Terphenyl-d14	*96.2*	*25-137*			*%REC*	1	12/20/2012
Surr: Nitrobenzene-d5	*79.8*	*37-107*			*%REC*	1	12/20/2012
Surr: Phenol-d6	*83.3*	*40-106*			*%REC*	1	12/20/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/17/2012**		Analyst: **BG**
1,1,1,2-Tetrachloroethane	ND	130	100		µg/Kg-dry	1	12/18/2012
1,1,1-Trichloroethane	ND	130	50		µg/Kg-dry	1	12/18/2012
1,1,2,2-Tetrachloroethane	ND	130	50		µg/Kg-dry	1	12/18/2012
1,1,2-Trichloroethane	ND	130	50		µg/Kg-dry	1	12/18/2012
1,1-Dichloroethane	ND	130	50		µg/Kg-dry	1	12/18/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *24-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I512D121412S005
Work Order:	1212557	**Collection Date:**	12/14/2012 3:00:00 PM
Project:	Marshall KRRI 1250I 12/14/12		
Lab ID:	1212557-06	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	130	50		µg/Kg-dry	1	12/18/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,3-Trichloropropane	ND	130	100		µg/Kg-dry	1	12/18/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,4-Trimethylbenzene	ND	130	100		µg/Kg-dry	1	12/18/2012
1,2-Dibromo-3-chloropropane	ND	130	10		µg/Kg-dry	1	12/18/2012
1,2-Dibromoethane	ND	130	20		µg/Kg-dry	1	12/18/2012
1,2-Dichlorobenzene	ND	130	100		µg/Kg-dry	1	12/18/2012
1,2-Dichloroethane	ND	130	50		µg/Kg-dry	1	12/18/2012
1,2-Dichloropropane	ND	130	50		µg/Kg-dry	1	12/18/2012
1,3,5-Trimethylbenzene	ND	130	100		µg/Kg-dry	1	12/18/2012
1,3-Dichlorobenzene	ND	130	100		µg/Kg-dry	1	12/18/2012
1,4-Dichlorobenzene	ND	130	100		µg/Kg-dry	1	12/18/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/18/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
2-Methylnaphthalene	ND	440	330		µg/Kg-dry	1	12/18/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
Acetone	ND	1,100	1,000		µg/Kg-dry	1	12/18/2012
Acrylonitrile	ND	130	100		µg/Kg-dry	1	12/18/2012
Benzene	ND	130	50		µg/Kg-dry	1	12/18/2012
Bromobenzene	ND	130	100		µg/Kg-dry	1	12/18/2012
Bromochloromethane	ND	130	100		µg/Kg-dry	1	12/18/2012
Bromodichloromethane	ND	130	100		µg/Kg-dry	1	12/18/2012
Bromoform	ND	130	100		µg/Kg-dry	1	12/18/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/18/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/18/2012
Carbon tetrachloride	ND	130	50		µg/Kg-dry	1	12/18/2012
Chlorobenzene	ND	130	50		µg/Kg-dry	1	12/18/2012
Chloroethane	ND	440	250		µg/Kg-dry	1	12/18/2012
Chloroform	ND	130	50		µg/Kg-dry	1	12/18/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/18/2012
cis-1,2-Dichloroethene	ND	130	50		µg/Kg-dry	1	12/18/2012
cis-1,3-Dichloropropene	ND	130	50		µg/Kg-dry	1	12/18/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/18/2012
Dibromochloromethane	ND	130	100		µg/Kg-dry	1	12/18/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/18/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/18/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/18/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I512D121412S005
Work Order:	1212557	**Collection Date:**	12/14/2012 3:00:00 PM
Project:	Marshall KRRI 1250I 12/14/12		
Lab ID:	1212557-06	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	130	50		µg/Kg-dry	1	12/18/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/18/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
m,p-Xylene	ND	260	100		µg/Kg-dry	1	12/18/2012
Methyl iodide	ND	130	100		µg/Kg-dry	1	12/18/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012
Methylene chloride	ND	130	100		µg/Kg-dry	1	12/18/2012
Naphthalene	ND	440	330		µg/Kg-dry	1	12/18/2012
n-Butylbenzene	ND	130	50		µg/Kg-dry	1	12/18/2012
n-Propylbenzene	ND	130	100		µg/Kg-dry	1	12/18/2012
o-Xylene	ND	130	50		µg/Kg-dry	1	12/18/2012
p-Isopropyltoluene	ND	130	100		µg/Kg-dry	1	12/18/2012
sec-Butylbenzene	ND	130	50		µg/Kg-dry	1	12/18/2012
Styrene	ND	130	50		µg/Kg-dry	1	12/18/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
tert-Butylbenzene	ND	130	50		µg/Kg-dry	1	12/18/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/18/2012
Tetrachloroethene	ND	130	50		µg/Kg-dry	1	12/18/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/18/2012
Toluene	ND	130	100		µg/Kg-dry	1	12/18/2012
trans-1,2-Dichloroethene	ND	130	50		µg/Kg-dry	1	12/18/2012
trans-1,3-Dichloropropene	ND	130	50		µg/Kg-dry	1	12/18/2012
trans-1,4-Dichloro-2-butene	ND	130	50		µg/Kg-dry	1	12/18/2012
Trichloroethene	ND	130	50		µg/Kg-dry	1	12/18/2012
Trichlorofluoromethane	ND	130	100		µg/Kg-dry	1	12/18/2012
Vinyl chloride	ND	130	40		µg/Kg-dry	1	12/18/2012
Surr: 1,2-Dichloroethane-d4	*102*	*70-130*			*%REC*	1	12/18/2012
Surr: 4-Bromofluorobenzene	*107*	*70-130*			*%REC*	1	12/18/2012
Surr: Dibromofluoromethane	*93.6*	*70-130*			*%REC*	1	12/18/2012
Surr: Toluene-d8	*98.8*	*70-130*			*%REC*	1	12/18/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**43**	**0.050**	**0**		**% of sample**	1	12/17/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *24-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I512S121412S005
Work Order:	1212557	**Collection Date:**	12/14/2012 3:00:00 PM
Project:	Marshall KRRI 1250I 12/14/12		
Lab ID:	1212557-07	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/19/2012**		Analyst: **CW**
DRO (C10-C20)	ND	18	4.0		mg/Kg-dry	1	12/20/2012
ORO (C20-C34)	**93**	**35**	**4.0**		**mg/Kg-dry**	1	12/20/2012
Surr: 4-Terphenyl-d14	*77.2*	*39-115*			*%REC*	1	12/20/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/18/2012**		Analyst: **CES**
Beryllium	ND	0.97	0.50		mg/Kg-dry	4	12/20/2012
Molybdenum	ND	2.4	1.0		mg/Kg-dry	4	12/20/2012
Nickel	**17**	**2.4**	**1.0**		**mg/Kg-dry**	4	12/20/2012
Vanadium	**30**	**2.4**	**1.0**		**mg/Kg-dry**	4	12/20/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/19/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/20/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/20/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/20/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/20/2012
Benzo(a)anthracene	ND	330	330		µg/Kg-dry	1	12/20/2012
Benzo(a)pyrene	**370**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Benzo(b)fluoranthene	**400**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Benzo(g,h,i)perylene	ND	330	330		µg/Kg-dry	1	12/20/2012
Benzo(k)fluoranthene	ND	330	330		µg/Kg-dry	1	12/20/2012
Chrysene	ND	330	330		µg/Kg-dry	1	12/20/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/20/2012
Fluoranthene	**450**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/20/2012
Indeno(1,2,3-cd)pyrene	ND	330	330		µg/Kg-dry	1	12/20/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/20/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/20/2012
Pyrene	**520**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Surr: 2,4,6-Tribromophenol	*53.1*	*34-140*			*%REC*	1	12/20/2012
Surr: 2-Fluorobiphenyl	*69.7*	*12-100*			*%REC*	1	12/20/2012
Surr: 2-Fluorophenol	*91.1*	*33-117*			*%REC*	1	12/20/2012
Surr: 4-Terphenyl-d14	*96.1*	*25-137*			*%REC*	1	12/20/2012
Surr: Nitrobenzene-d5	*82.7*	*37-107*			*%REC*	1	12/20/2012
Surr: Phenol-d6	*90.5*	*40-106*			*%REC*	1	12/20/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/17/2012**		Analyst: **BG**
1,1,1,2-Tetrachloroethane	ND	140	100		µg/Kg-dry	1	12/18/2012
1,1,1-Trichloroethane	ND	140	50		µg/Kg-dry	1	12/18/2012
1,1,2,2-Tetrachloroethane	ND	140	50		µg/Kg-dry	1	12/18/2012
1,1,2-Trichloroethane	ND	140	50		µg/Kg-dry	1	12/18/2012
1,1-Dichloroethane	ND	140	50		µg/Kg-dry	1	12/18/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *24-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I512S121412S005
Work Order:	1212557	**Collection Date:**	12/14/2012 3:00:00 PM
Project:	Marshall KRRI 1250I 12/14/12		
Lab ID:	1212557-07	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	140	50		µg/Kg-dry	1	12/18/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,3-Trichloropropane	ND	140	100		µg/Kg-dry	1	12/18/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,4-Trimethylbenzene	ND	140	100		µg/Kg-dry	1	12/18/2012
1,2-Dibromo-3-chloropropane	ND	140	10		µg/Kg-dry	1	12/18/2012
1,2-Dibromoethane	ND	140	20		µg/Kg-dry	1	12/18/2012
1,2-Dichlorobenzene	ND	140	100		µg/Kg-dry	1	12/18/2012
1,2-Dichloroethane	ND	140	50		µg/Kg-dry	1	12/18/2012
1,2-Dichloropropane	ND	140	50		µg/Kg-dry	1	12/18/2012
1,3,5-Trimethylbenzene	ND	140	100		µg/Kg-dry	1	12/18/2012
1,3-Dichlorobenzene	ND	140	100		µg/Kg-dry	1	12/18/2012
1,4-Dichlorobenzene	ND	140	100		µg/Kg-dry	1	12/18/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/18/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
2-Methylnaphthalene	ND	480	330		µg/Kg-dry	1	12/18/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
Acetone	ND	1,200	1,000		µg/Kg-dry	1	12/18/2012
Acrylonitrile	ND	140	100		µg/Kg-dry	1	12/18/2012
Benzene	ND	140	50		µg/Kg-dry	1	12/18/2012
Bromobenzene	ND	140	100		µg/Kg-dry	1	12/18/2012
Bromochloromethane	ND	140	100		µg/Kg-dry	1	12/18/2012
Bromodichloromethane	ND	140	100		µg/Kg-dry	1	12/18/2012
Bromoform	ND	140	100		µg/Kg-dry	1	12/18/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/18/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/18/2012
Carbon tetrachloride	ND	140	50		µg/Kg-dry	1	12/18/2012
Chlorobenzene	ND	140	50		µg/Kg-dry	1	12/18/2012
Chloroethane	ND	480	250		µg/Kg-dry	1	12/18/2012
Chloroform	ND	140	50		µg/Kg-dry	1	12/18/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/18/2012
cis-1,2-Dichloroethene	ND	140	50		µg/Kg-dry	1	12/18/2012
cis-1,3-Dichloropropene	ND	140	50		µg/Kg-dry	1	12/18/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/18/2012
Dibromochloromethane	ND	140	100		µg/Kg-dry	1	12/18/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/18/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/18/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/18/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *24-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I512S121412S005
Work Order:	1212557	**Collection Date:**	12/14/2012 3:00:00 PM
Project:	Marshall KRRI 1250I 12/14/12		
Lab ID:	1212557-07	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	140	50		µg/Kg-dry	1	12/18/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/18/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
m,p-Xylene	ND	290	100		µg/Kg-dry	1	12/18/2012
Methyl iodide	ND	140	100		µg/Kg-dry	1	12/18/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012
Methylene chloride	ND	140	100		µg/Kg-dry	1	12/18/2012
Naphthalene	ND	480	330		µg/Kg-dry	1	12/18/2012
n-Butylbenzene	ND	140	50		µg/Kg-dry	1	12/18/2012
n-Propylbenzene	ND	140	100		µg/Kg-dry	1	12/18/2012
o-Xylene	ND	140	50		µg/Kg-dry	1	12/18/2012
p-Isopropyltoluene	ND	140	100		µg/Kg-dry	1	12/18/2012
sec-Butylbenzene	ND	140	50		µg/Kg-dry	1	12/18/2012
Styrene	ND	140	50		µg/Kg-dry	1	12/18/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
tert-Butylbenzene	ND	140	50		µg/Kg-dry	1	12/18/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/18/2012
Tetrachloroethene	ND	140	50		µg/Kg-dry	1	12/18/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/18/2012
Toluene	ND	140	100		µg/Kg-dry	1	12/18/2012
trans-1,2-Dichloroethene	ND	140	50		µg/Kg-dry	1	12/18/2012
trans-1,3-Dichloropropene	ND	140	50		µg/Kg-dry	1	12/18/2012
trans-1,4-Dichloro-2-butene	ND	140	50		µg/Kg-dry	1	12/18/2012
Trichloroethene	ND	140	50		µg/Kg-dry	1	12/18/2012
Trichlorofluoromethane	ND	140	100		µg/Kg-dry	1	12/18/2012
Vinyl chloride	ND	140	40		µg/Kg-dry	1	12/18/2012
Surr: 1,2-Dichloroethane-d4	*99.2*	*70-130*			*%REC*	1	12/18/2012
Surr: 4-Bromofluorobenzene	*98.8*	*70-130*			*%REC*	1	12/18/2012
Surr: Dibromofluoromethane	*92.0*	*70-130*			*%REC*	1	12/18/2012
Surr: Toluene-d8	*95.1*	*70-130*			*%REC*	1	12/18/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**45**	**0.050**	**0**		**% of sample**	1	12/17/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *24-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I512T121412MX
Work Order:	1212557	**Collection Date:**	12/14/2012
Project:	Marshall KRRI 1250I 12/14/12		
Lab ID:	1212557-08	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/17/2012**		Analyst: **BG**
1,1,1,2-Tetrachloroethane	ND	100	100		µg/Kg	1	12/18/2012
1,1,1-Trichloroethane	ND	50	50		µg/Kg	1	12/18/2012
1,1,2,2-Tetrachloroethane	ND	50	50		µg/Kg	1	12/18/2012
1,1,2-Trichloroethane	ND	50	50		µg/Kg	1	12/18/2012
1,1-Dichloroethane	ND	50	50		µg/Kg	1	12/18/2012
1,1-Dichloroethene	ND	50	50		µg/Kg	1	12/18/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg	1	12/18/2012
1,2,3-Trichloropropane	ND	100	100		µg/Kg	1	12/18/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg	1	12/18/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg	1	12/18/2012
1,2,4-Trimethylbenzene	ND	100	100		µg/Kg	1	12/18/2012
1,2-Dibromo-3-chloropropane	ND	30	10		µg/Kg	1	12/18/2012
1,2-Dibromoethane	ND	30	20		µg/Kg	1	12/18/2012
1,2-Dichlorobenzene	ND	100	100		µg/Kg	1	12/18/2012
1,2-Dichloroethane	ND	50	50		µg/Kg	1	12/18/2012
1,2-Dichloropropane	ND	50	50		µg/Kg	1	12/18/2012
1,3,5-Trimethylbenzene	ND	100	100		µg/Kg	1	12/18/2012
1,3-Dichlorobenzene	ND	100	100		µg/Kg	1	12/18/2012
1,4-Dichlorobenzene	ND	100	100		µg/Kg	1	12/18/2012
2-Butanone	ND	750	750		µg/Kg	1	12/18/2012
2-Hexanone	ND	2,500	2,500		µg/Kg	1	12/18/2012
2-Methylnaphthalene	ND	330	330		µg/Kg	1	12/18/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg	1	12/18/2012
Acetone	ND	1,000	1,000		µg/Kg	1	12/18/2012
Acrylonitrile	ND	100	100		µg/Kg	1	12/18/2012
Benzene	ND	50	50		µg/Kg	1	12/18/2012
Bromobenzene	ND	100	100		µg/Kg	1	12/18/2012
Bromochloromethane	ND	100	100		µg/Kg	1	12/18/2012
Bromodichloromethane	ND	100	100		µg/Kg	1	12/18/2012
Bromoform	ND	100	100		µg/Kg	1	12/18/2012
Bromomethane	ND	200	200		µg/Kg	1	12/18/2012
Carbon disulfide	ND	250	250		µg/Kg	1	12/18/2012
Carbon tetrachloride	ND	50	50		µg/Kg	1	12/18/2012
Chlorobenzene	ND	50	50		µg/Kg	1	12/18/2012
Chloroethane	ND	250	250		µg/Kg	1	12/18/2012
Chloroform	ND	50	50		µg/Kg	1	12/18/2012
Chloromethane	ND	250	250		µg/Kg	1	12/18/2012
cis-1,2-Dichloroethene	ND	50	50		µg/Kg	1	12/18/2012
cis-1,3-Dichloropropene	ND	50	50		µg/Kg	1	12/18/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *24-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I512T121412MX
Work Order:	1212557	**Collection Date:**	12/14/2012
Project:	Marshall KRRI 1250I 12/14/12		
Lab ID:	1212557-08	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Cyclohexane	ND	500	500		µg/Kg	1	12/18/2012
Dibromochloromethane	ND	100	100		µg/Kg	1	12/18/2012
Dibromomethane	ND	250	250		µg/Kg	1	12/18/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg	1	12/18/2012
Diethyl ether	ND	200	200		µg/Kg	1	12/18/2012
Diisopropyl ether	ND	250	250		µg/Kg	1	12/18/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg	1	12/18/2012
Ethylbenzene	ND	50	50		µg/Kg	1	12/18/2012
Hexachloroethane	ND	300	300		µg/Kg	1	12/18/2012
Isopropylbenzene	ND	250	250		µg/Kg	1	12/18/2012
m,p-Xylene	ND	100	100		µg/Kg	1	12/18/2012
Methyl iodide	ND	100	100		µg/Kg	1	12/18/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg	1	12/18/2012
Methylene chloride	ND	100	100		µg/Kg	1	12/18/2012
Naphthalene	ND	330	330		µg/Kg	1	12/18/2012
n-Butylbenzene	ND	50	50		µg/Kg	1	12/18/2012
n-Propylbenzene	ND	100	100		µg/Kg	1	12/18/2012
o-Xylene	ND	50	50		µg/Kg	1	12/18/2012
p-Isopropyltoluene	ND	100	100		µg/Kg	1	12/18/2012
sec-Butylbenzene	ND	50	50		µg/Kg	1	12/18/2012
Styrene	ND	50	50		µg/Kg	1	12/18/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg	1	12/18/2012
tert-Butylbenzene	ND	50	50		µg/Kg	1	12/18/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg	1	12/18/2012
Tetrachloroethene	ND	50	50		µg/Kg	1	12/18/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg	1	12/18/2012
Toluene	ND	100	100		µg/Kg	1	12/18/2012
trans-1,2-Dichloroethene	ND	50	50		µg/Kg	1	12/18/2012
trans-1,3-Dichloropropene	ND	50	50		µg/Kg	1	12/18/2012
trans-1,4-Dichloro-2-butene	ND	50	50		µg/Kg	1	12/18/2012
Trichloroethene	ND	50	50		µg/Kg	1	12/18/2012
Trichlorofluoromethane	ND	100	100		µg/Kg	1	12/18/2012
Vinyl chloride	ND	40	40		µg/Kg	1	12/18/2012
Surr: 1,2-Dichloroethane-d4	*92.9*	*70-130*			*%REC*	1	12/18/2012
Surr: 4-Bromofluorobenzene	*100*	*70-130*			*%REC*	1	12/18/2012
Surr: Dibromofluoromethane	*90.0*	*70-130*			*%REC*	1	12/18/2012
Surr: Toluene-d8	*95.2*	*70-130*			*%REC*	1	12/18/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *24-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I509S121412S005
Work Order:	1212557	**Collection Date:**	12/14/2012 10:28:00 AM
Project:	Marshall KRRI 1250I 12/14/12		
Lab ID:	1212557-09	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/19/2012**		Analyst: **CW**
DRO (C10-C20)	**53**	**20**	**4.0**		**mg/Kg-dry**	1	12/20/2012
ORO (C20-C34)	**630**	**39**	**4.0**		**mg/Kg-dry**	1	12/20/2012
Surr: 4-Terphenyl-d14	*78.2*	*39-115*			*%REC*	1	12/20/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/18/2012**		Analyst: **CES**
Beryllium	ND	1.1	0.50		mg/Kg-dry	4	12/20/2012
Molybdenum	ND	2.7	1.0		mg/Kg-dry	4	12/20/2012
Nickel	**19**	**2.7**	**1.0**		**mg/Kg-dry**	4	12/20/2012
Vanadium	**21**	**2.7**	**1.0**		**mg/Kg-dry**	4	12/20/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/19/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/20/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/20/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/20/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/20/2012
Benzo(a)anthracene	**810**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Benzo(a)pyrene	**1,000**	**330**	**330**	*	**µg/Kg-dry**	1	12/20/2012
Benzo(b)fluoranthene	**1,300**	**330**	**330**	*	**µg/Kg-dry**	1	12/20/2012
Benzo(g,h,i)perylene	ND	330	330	*	µg/Kg-dry	1	12/20/2012
Benzo(k)fluoranthene	**840**	**330**	**330**	*	**µg/Kg-dry**	1	12/20/2012
Chrysene	**880**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Dibenzo(a,h)anthracene	ND	330	330	*	µg/Kg-dry	1	12/20/2012
Fluoranthene	**1,200**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/20/2012
Indeno(1,2,3-cd)pyrene	ND	330	330	*	µg/Kg-dry	1	12/20/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/20/2012
Phenanthrene	**440**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Pyrene	**1,500**	**330**	**330**		**µg/Kg-dry**	1	12/20/2012
Surr: 2,4,6-Tribromophenol	*56.4*	*34-140*			*%REC*	1	12/20/2012
Surr: 2-Fluorobiphenyl	*64.4*	*12-100*			*%REC*	1	12/20/2012
Surr: 2-Fluorophenol	*77.0*	*33-117*			*%REC*	1	12/20/2012
Surr: 4-Terphenyl-d14	*97.1*	*25-137*			*%REC*	1	12/20/2012
Surr: Nitrobenzene-d5	*69.9*	*37-107*			*%REC*	1	12/20/2012
Surr: Phenol-d6	*77.5*	*40-106*			*%REC*	1	12/20/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/17/2012**		Analyst: **BG**
1,1,1,2-Tetrachloroethane	ND	180	100		µg/Kg-dry	1	12/18/2012
1,1,1-Trichloroethane	ND	180	50		µg/Kg-dry	1	12/18/2012
1,1,2,2-Tetrachloroethane	ND	180	50		µg/Kg-dry	1	12/18/2012
1,1,2-Trichloroethane	ND	180	50		µg/Kg-dry	1	12/18/2012
1,1-Dichloroethane	ND	180	50		µg/Kg-dry	1	12/18/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *24-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I509S121412S005
Work Order:	1212557	**Collection Date:**	12/14/2012 10:28:00 AM
Project:	Marshall KRRI 1250I 12/14/12		
Lab ID:	1212557-09	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	180	50		µg/Kg-dry	1	12/18/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,3-Trichloropropane	ND	180	100		µg/Kg-dry	1	12/18/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,4-Trimethylbenzene	ND	180	100		µg/Kg-dry	1	12/18/2012
1,2-Dibromo-3-chloropropane	ND	180	10		µg/Kg-dry	1	12/18/2012
1,2-Dibromoethane	ND	180	20		µg/Kg-dry	1	12/18/2012
1,2-Dichlorobenzene	ND	180	100		µg/Kg-dry	1	12/18/2012
1,2-Dichloroethane	ND	180	50		µg/Kg-dry	1	12/18/2012
1,2-Dichloropropane	ND	180	50		µg/Kg-dry	1	12/18/2012
1,3,5-Trimethylbenzene	ND	180	100		µg/Kg-dry	1	12/18/2012
1,3-Dichlorobenzene	ND	180	100		µg/Kg-dry	1	12/18/2012
1,4-Dichlorobenzene	ND	180	100		µg/Kg-dry	1	12/18/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/18/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
2-Methylnaphthalene	ND	600	330		µg/Kg-dry	1	12/18/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
Acetone	ND	1,500	1,000		µg/Kg-dry	1	12/18/2012
Acrylonitrile	ND	180	100		µg/Kg-dry	1	12/18/2012
Benzene	ND	180	50		µg/Kg-dry	1	12/18/2012
Bromobenzene	ND	180	100		µg/Kg-dry	1	12/18/2012
Bromochloromethane	ND	180	100		µg/Kg-dry	1	12/18/2012
Bromodichloromethane	ND	180	100		µg/Kg-dry	1	12/18/2012
Bromoform	ND	180	100		µg/Kg-dry	1	12/18/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/18/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/18/2012
Carbon tetrachloride	ND	180	50		µg/Kg-dry	1	12/18/2012
Chlorobenzene	ND	180	50		µg/Kg-dry	1	12/18/2012
Chloroethane	ND	600	250		µg/Kg-dry	1	12/18/2012
Chloroform	ND	180	50		µg/Kg-dry	1	12/18/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/18/2012
cis-1,2-Dichloroethene	ND	180	50		µg/Kg-dry	1	12/18/2012
cis-1,3-Dichloropropene	ND	180	50		µg/Kg-dry	1	12/18/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/18/2012
Dibromochloromethane	ND	180	100		µg/Kg-dry	1	12/18/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/18/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/18/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/18/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I509S121412S005
Work Order:	1212557	**Collection Date:**	12/14/2012 10:28:00 AM
Project:	Marshall KRRI 1250I 12/14/12		
Lab ID:	1212557-09	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	180	50		µg/Kg-dry	1	12/18/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/18/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
m,p-Xylene	ND	360	100		µg/Kg-dry	1	12/18/2012
Methyl iodide	ND	180	100		µg/Kg-dry	1	12/18/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012
Methylene chloride	ND	180	100		µg/Kg-dry	1	12/18/2012
Naphthalene	ND	600	330		µg/Kg-dry	1	12/18/2012
n-Butylbenzene	ND	180	50		µg/Kg-dry	1	12/18/2012
n-Propylbenzene	ND	180	100		µg/Kg-dry	1	12/18/2012
o-Xylene	ND	180	50		µg/Kg-dry	1	12/18/2012
p-Isopropyltoluene	ND	180	100		µg/Kg-dry	1	12/18/2012
sec-Butylbenzene	ND	180	50		µg/Kg-dry	1	12/18/2012
Styrene	ND	180	50		µg/Kg-dry	1	12/18/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
tert-Butylbenzene	ND	180	50		µg/Kg-dry	1	12/18/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/18/2012
Tetrachloroethene	ND	180	50		µg/Kg-dry	1	12/18/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/18/2012
Toluene	ND	180	100		µg/Kg-dry	1	12/18/2012
trans-1,2-Dichloroethene	ND	180	50		µg/Kg-dry	1	12/18/2012
trans-1,3-Dichloropropene	ND	180	50		µg/Kg-dry	1	12/18/2012
trans-1,4-Dichloro-2-butene	ND	180	50		µg/Kg-dry	1	12/18/2012
Trichloroethene	ND	180	50		µg/Kg-dry	1	12/18/2012
Trichlorofluoromethane	ND	180	100		µg/Kg-dry	1	12/18/2012
Vinyl chloride	ND	180	40		µg/Kg-dry	1	12/18/2012
Surr: 1,2-Dichloroethane-d4	*102*	*70-130*			*%REC*	1	12/18/2012
Surr: 4-Bromofluorobenzene	*106*	*70-130*			*%REC*	1	12/18/2012
Surr: Dibromofluoromethane	*93.6*	*70-130*			*%REC*	1	12/18/2012
Surr: Toluene-d8	*100*	*70-130*			*%REC*	1	12/18/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**50**	**0.050**	**0**		**% of sample**	1	12/17/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *24-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I511S121412S005
Work Order:	1212557	**Collection Date:**	12/14/2012 1:44:00 PM
Project:	Marshall KRRI 1250I 12/14/12		
Lab ID:	1212557-10	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/19/2012**		Analyst: **CW**
DRO (C10-C20)	**2,600**	**170**	**4.0**		**mg/Kg-dry**	1	12/20/2012
ORO (C20-C34)	**19,000**	**340**	**4.0**		**mg/Kg-dry**	1	12/20/2012
Surr: 4-Terphenyl-d14	*81.6*	*39-115*			*%REC*	1	12/20/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/18/2012**		Analyst: **CES**
Beryllium	ND	1.0	0.50		mg/Kg-dry	4	12/20/2012
Molybdenum	ND	2.6	1.0		mg/Kg-dry	4	12/20/2012
Nickel	**21**	**2.6**	**1.0**		**mg/Kg-dry**	4	12/20/2012
Vanadium	**33**	**2.6**	**1.0**		**mg/Kg-dry**	4	12/20/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/19/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	8,500	330		µg/Kg-dry	10	12/20/2012
Acenaphthene	ND	8,500	330		µg/Kg-dry	10	12/20/2012
Acenaphthylene	ND	8,500	330		µg/Kg-dry	10	12/20/2012
Anthracene	ND	8,500	330		µg/Kg-dry	10	12/20/2012
Benzo(a)anthracene	ND	8,500	330		µg/Kg-dry	10	12/20/2012
Benzo(a)pyrene	ND	8,500	330	*	µg/Kg-dry	10	12/20/2012
Benzo(b)fluoranthene	ND	8,500	330	*	µg/Kg-dry	10	12/20/2012
Benzo(g,h,i)perylene	ND	8,500	330	*	µg/Kg-dry	10	12/20/2012
Benzo(k)fluoranthene	ND	8,500	330	*	µg/Kg-dry	10	12/20/2012
Chrysene	ND	8,500	330		µg/Kg-dry	10	12/20/2012
Dibenzo(a,h)anthracene	ND	8,500	330	*	µg/Kg-dry	10	12/20/2012
Fluoranthene	ND	8,500	330		µg/Kg-dry	10	12/20/2012
Fluorene	ND	8,500	330		µg/Kg-dry	10	12/20/2012
Indeno(1,2,3-cd)pyrene	ND	8,500	330	*	µg/Kg-dry	10	12/20/2012
Naphthalene	ND	8,500	330		µg/Kg-dry	10	12/20/2012
Phenanthrene	ND	8,500	330		µg/Kg-dry	10	12/20/2012
Pyrene	ND	8,500	330		µg/Kg-dry	10	12/20/2012
Surr: 2,4,6-Tribromophenol	*0*	*34-140*		S	*%REC*	10	12/20/2012
Surr: 2-Fluorobiphenyl	*66.0*	*12-100*			*%REC*	10	12/20/2012
Surr: 2-Fluorophenol	*0*	*33-117*		S	*%REC*	10	12/20/2012
Surr: 4-Terphenyl-d14	*106*	*25-137*			*%REC*	10	12/20/2012
Surr: Nitrobenzene-d5	*80.0*	*37-107*			*%REC*	10	12/20/2012
Surr: Phenol-d6	*0*	*40-106*		S	*%REC*	10	12/20/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/17/2012**		Analyst: **BG**
1,1,1,2-Tetrachloroethane	ND	130	100		µg/Kg-dry	1	12/18/2012
1,1,1-Trichloroethane	ND	130	50		µg/Kg-dry	1	12/18/2012
1,1,2,2-Tetrachloroethane	ND	130	50		µg/Kg-dry	1	12/18/2012
1,1,2-Trichloroethane	ND	130	50		µg/Kg-dry	1	12/18/2012
1,1-Dichloroethane	ND	130	50		µg/Kg-dry	1	12/18/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *24-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I511S121412S005
Work Order:	1212557	**Collection Date:**	12/14/2012 1:44:00 PM
Project:	Marshall KRRI 1250I 12/14/12		
Lab ID:	1212557-10	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	130	50		µg/Kg-dry	1	12/18/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,3-Trichloropropane	ND	130	100		µg/Kg-dry	1	12/18/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
1,2,4-Trimethylbenzene	ND	130	100		µg/Kg-dry	1	12/18/2012
1,2-Dibromo-3-chloropropane	ND	130	10		µg/Kg-dry	1	12/18/2012
1,2-Dibromoethane	ND	130	20		µg/Kg-dry	1	12/18/2012
1,2-Dichlorobenzene	ND	130	100		µg/Kg-dry	1	12/18/2012
1,2-Dichloroethane	ND	130	50		µg/Kg-dry	1	12/18/2012
1,2-Dichloropropane	ND	130	50		µg/Kg-dry	1	12/18/2012
1,3,5-Trimethylbenzene	ND	130	100		µg/Kg-dry	1	12/18/2012
1,3-Dichlorobenzene	ND	130	100		µg/Kg-dry	1	12/18/2012
1,4-Dichlorobenzene	ND	130	100		µg/Kg-dry	1	12/18/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/18/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
2-Methylnaphthalene	ND	430	330		µg/Kg-dry	1	12/18/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
Acetone	ND	1,100	1,000		µg/Kg-dry	1	12/18/2012
Acrylonitrile	ND	130	100		µg/Kg-dry	1	12/18/2012
Benzene	ND	130	50		µg/Kg-dry	1	12/18/2012
Bromobenzene	ND	130	100		µg/Kg-dry	1	12/18/2012
Bromochloromethane	ND	130	100		µg/Kg-dry	1	12/18/2012
Bromodichloromethane	ND	130	100		µg/Kg-dry	1	12/18/2012
Bromoform	ND	130	100		µg/Kg-dry	1	12/18/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/18/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/18/2012
Carbon tetrachloride	ND	130	50		µg/Kg-dry	1	12/18/2012
Chlorobenzene	ND	130	50		µg/Kg-dry	1	12/18/2012
Chloroethane	ND	430	250		µg/Kg-dry	1	12/18/2012
Chloroform	ND	130	50		µg/Kg-dry	1	12/18/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/18/2012
cis-1,2-Dichloroethene	ND	130	50		µg/Kg-dry	1	12/18/2012
cis-1,3-Dichloropropene	ND	130	50		µg/Kg-dry	1	12/18/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/18/2012
Dibromochloromethane	ND	130	100		µg/Kg-dry	1	12/18/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/18/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/18/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/18/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *24-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I511S121412S005
Work Order:	1212557	**Collection Date:**	12/14/2012 1:44:00 PM
Project:	Marshall KRRI 1250I 12/14/12		
Lab ID:	1212557-10	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	130	50		µg/Kg-dry	1	12/18/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/18/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/18/2012
m,p-Xylene	ND	260	100		µg/Kg-dry	1	12/18/2012
Methyl iodide	ND	130	100		µg/Kg-dry	1	12/18/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/18/2012
Methylene chloride	ND	130	100		µg/Kg-dry	1	12/18/2012
Naphthalene	ND	430	330		µg/Kg-dry	1	12/18/2012
n-Butylbenzene	ND	130	50		µg/Kg-dry	1	12/18/2012
n-Propylbenzene	ND	130	100		µg/Kg-dry	1	12/18/2012
o-Xylene	ND	130	50		µg/Kg-dry	1	12/18/2012
p-Isopropyltoluene	ND	130	100		µg/Kg-dry	1	12/18/2012
sec-Butylbenzene	ND	130	50		µg/Kg-dry	1	12/18/2012
Styrene	ND	130	50		µg/Kg-dry	1	12/18/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/18/2012
tert-Butylbenzene	ND	130	50		µg/Kg-dry	1	12/18/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/18/2012
Tetrachloroethene	ND	130	50		µg/Kg-dry	1	12/18/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/18/2012
Toluene	ND	130	100		µg/Kg-dry	1	12/18/2012
trans-1,2-Dichloroethene	ND	130	50		µg/Kg-dry	1	12/18/2012
trans-1,3-Dichloropropene	ND	130	50		µg/Kg-dry	1	12/18/2012
trans-1,4-Dichloro-2-butene	ND	130	50		µg/Kg-dry	1	12/18/2012
Trichloroethene	ND	130	50		µg/Kg-dry	1	12/18/2012
Trichlorofluoromethane	ND	130	100		µg/Kg-dry	1	12/18/2012
Vinyl chloride	ND	130	40		µg/Kg-dry	1	12/18/2012
Surr: 1,2-Dichloroethane-d4	*98.4*	*70-130*			*%REC*	1	12/18/2012
Surr: 4-Bromofluorobenzene	*104*	*70-130*			*%REC*	1	12/18/2012
Surr: Dibromofluoromethane	*93.2*	*70-130*			*%REC*	1	12/18/2012
Surr: Toluene-d8	*98.3*	*70-130*			*%REC*	1	12/18/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**42**	**0.050**	**0**		**% of sample**	1	12/17/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 24-Dec-12

Client: AECOM Environment

QC BATCH REPORT

Work Order: 1212557

Project: Marshall KRRI 1250I 12/14/12

Batch ID: **45493** Instrument ID **GC8** Method: **SW8015M**

MBLK Sample ID: **DBLKS1-45493-45493** Units: **mg/Kg** Analysis Date: **12/19/2012 04:14 PM**

Client ID: Run ID: **GC8_121219A** SeqNo: **2175231** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	ND	10								
ORO (C20-C34)	ND	20								
Surr: 4-Terphenyl-d14	*3.782*	0	*5*	0	*75.6*	*39-115*	0			

LCS Sample ID: **DLCSS1-45493-45493** Units: **mg/Kg** Analysis Date: **12/19/2012 04:39 PM**

Client ID: Run ID: **GC8_121219A** SeqNo: **2175236** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	331.1	10	500	0	66.2	49-124	0			
ORO (C20-C34)	311.7	20	500	0	62.3	60-130	0			
Surr: 4-Terphenyl-d14	*4.128*	0	*5*	0	*82.6*	*39-115*	0			

MS Sample ID: **1212554-08B MS** Units: **mg/Kg** Analysis Date: **12/19/2012 05:05 PM**

Client ID: Run ID: **GC8_121219A** SeqNo: **2175237** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	299.8	9.4	470.4	0.6337	63.6	60-130	0			
ORO (C20-C34)	389.3	19	470.4	117.4	57.8	60-130	0			S
Surr: 4-Terphenyl-d14	*3.693*	0	*4.704*	0	*78.5*	*39-115*	0			

MSD Sample ID: **1212554-08B MSD** Units: **mg/Kg** Analysis Date: **12/19/2012 05:30 PM**

Client ID: Run ID: **GC8_121219A** SeqNo: **2175238** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	315.1	9.6	480.6	0.6337	65.4	60-130	299.8	4.98	30	
ORO (C20-C34)	419	19	480.6	117.4	62.8	60-130	389.3	7.34	30	
Surr: 4-Terphenyl-d14	*4.012*	0	*4.806*	0	*83.5*	*39-115*	3.693	*8.28*	*30*	

The following samples were analyzed in this batch:

1212557-01B	1212557-02B	1212557-03B
1212557-04B	1212557-05B	1212557-06B
1212557-07B	1212557-09B	1212557-10B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212557
Project: Marshall KRRI 1250I 12/14/12

QC BATCH REPORT

Batch ID: **45484** Instrument ID **ICPMS1** Method: **SW6020A**

MBLK Sample ID: **MBLK-45484-45484** Units: **mg/Kg** Analysis Date: **12/19/2012 10:34 PM**
Client ID: Run ID: **ICPMS1_121219A** SeqNo: **2174824** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	ND	0.10								
Molybdenum	ND	0.25								
Nickel	ND	0.25								
Vanadium	ND	0.25								

LCS Sample ID: **LCS-45484-45484** Units: **mg/Kg** Analysis Date: **12/19/2012 10:41 PM**
Client ID: Run ID: **ICPMS1_121219A** SeqNo: **2174825** Prep Date: **12/18/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	5.135	0.10	5	0	103	80-120	0			
Molybdenum	5.05	0.25	5	0	101	80-120	0			
Nickel	5.085	0.25	5	0	102	80-120	0			
Vanadium	5.435	0.25	5	0	109	80-120	0			

MS Sample ID: **1212556-03AMS** Units: **mg/Kg** Analysis Date: **12/19/2012 11:40 PM**
Client ID: Run ID: **ICPMS1_121219A** SeqNo: **2174832** Prep Date: **12/18/2012** DF: **4**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	6.721	0.54	6.775	0.3725	93.7	75-125	0			
Molybdenum	7.575	1.4	6.775	0.9906	97.2	75-125	0			
Nickel	17.46	1.4	6.775	10.79	98.4	75-125	0			
Vanadium	30.38	1.4	6.775	20.31	149	75-125	0			S

MSD Sample ID: **1212556-03AMSD** Units: **mg/Kg** Analysis Date: **12/19/2012 11:46 PM**
Client ID: Run ID: **ICPMS1_121219A** SeqNo: **2174833** Prep Date: **12/18/2012** DF: **4**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	6.94	0.56	6.974	0.3725	94.2	75-125	6.721	3.21	25	
Molybdenum	7.59	1.4	6.974	0.9906	94.6	75-125	7.575	0.204	25	
Nickel	17.76	1.4	6.974	10.79	100	75-125	17.46	1.73	25	
Vanadium	30.66	1.4	6.974	20.31	148	75-125	30.38	0.905	25	S

The following samples were analyzed in this batch:

1212557-01B	1212557-02B	1212557-03B
1212557-04B	1212557-05B	1212557-06B
1212557-07B	1212557-09B	1212557-10B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212557
Project: Marshall KRRI 1250I 12/14/12

QC BATCH REPORT

Batch ID: **45492** Instrument ID **SVMS6** Method: **SW8270**

MBLK Sample ID: **SBLKS1-45492-45492** Units: **µg/Kg** Analysis Date: **12/19/2012 06:23 PM**
Client ID: Run ID: **SVMS6_121219A** SeqNo: **2174818** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	ND	50								
Acenaphthene	ND	50								
Acenaphthylene	ND	50								
Anthracene	ND	50								
Benzo(a)anthracene	ND	50								
Benzo(a)pyrene	ND	50								
Benzo(b)fluoranthene	ND	50								
Benzo(g,h,i)perylene	ND	50								
Benzo(k)fluoranthene	ND	50								
Chrysene	ND	50								
Dibenzo(a,h)anthracene	ND	50								
Fluoranthene	ND	50								
Fluorene	ND	50								
Indeno(1,2,3-cd)pyrene	ND	50								
Naphthalene	ND	50								
Phenanthrene	ND	50								
Pyrene	ND	50								
Surr: 2,4,6-Tribromophenol	*2545*	0	*5000*	0	*50.9*	*34-140*	0			
Surr: 2-Fluorobiphenyl	*3742*	0	*5000*	0	*74.8*	*12-100*	0			
Surr: 2-Fluorophenol	*5001*	0	*5000*	0	*100*	*33-117*	0			
Surr: 4-Terphenyl-d14	*5026*	0	*5000*	0	*101*	*25-137*	0			
Surr: Nitrobenzene-d5	*4592*	0	*5000*	0	*91.8*	*37-107*	0			
Surr: Phenol-d6	*4817*	0	*5000*	0	*96.3*	*40-106*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45492** Instrument ID **SVMS6** Method: **SW8270**

LCS Sample ID: **SLCSS1-45492-45492** Units: **µg/Kg** Analysis Date: **12/19/2012 05:41 PM**
Client ID: Run ID: **SVMS6_121219A** SeqNo: **2174814** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	1582	50	2000	0	79.1	45-105	0			
Acenaphthene	1657	50	2000	0	82.8	45-110	0			
Acenaphthylene	1756	50	2000	0	87.8	45-105	0			
Anthracene	1882	50	2000	0	94.1	55-105	0			
Benzo(a)anthracene	1918	50	2000	0	95.9	50-110	0			
Benzo(a)pyrene	2105	50	2000	0	105	50-110	0			
Benzo(b)fluoranthene	1815	50	2000	0	90.8	45-115	0			
Benzo(g,h,i)perylene	1972	50	2000	0	98.6	40-125	0			
Benzo(k)fluoranthene	2275	50	2000	0	114	45-115	0			
Chrysene	2048	50	2000	0	102	55-110	0			
Dibenzo(a,h)anthracene	2008	50	2000	0	100	40-125	0			
Fluoranthene	1898	50	2000	0	94.9	55-115	0			
Fluorene	1644	50	2000	0	82.2	50-110	0			
Indeno(1,2,3-cd)pyrene	2003	50	2000	0	100	40-120	0			
Naphthalene	1618	50	2000	0	80.9	40-105	0			
Phenanthrene	1824	50	2000	0	91.2	50-110	0			
Pyrene	2095	50	2000	0	105	45-125	0			
Surr: 2,4,6-Tribromophenol	*2919*	0	*5000*	0	*58.4*	*34-140*	0			
Surr: 2-Fluorobiphenyl	*3482*	0	*5000*	0	*69.6*	*12-100*	0			
Surr: 2-Fluorophenol	*4514*	0	*5000*	0	*90.3*	*33-117*	0			
Surr: 4-Terphenyl-d14	*5058*	0	*5000*	0	*101*	*25-137*	0			
Surr: Nitrobenzene-d5	*4299*	0	*5000*	0	*86*	*37-107*	0			
Surr: Phenol-d6	*4397*	0	*5000*	0	*87.9*	*40-106*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212557
Project: Marshall KRRI 1250I 12/14/12

QC BATCH REPORT

Batch ID: **45492** Instrument ID **SVMS6** Method: **SW8270**

MS Sample ID: **1212554-08B MS** Units: **µg/Kg** Analysis Date: **12/19/2012 06:07 PM**
Client ID: Run ID: **SVMS6_121219A** SeqNo: **2174815** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	1380	47	1869	0	73.8	45-105	0			
Acenaphthene	1584	47	1869	0	84.8	45-110	0			
Acenaphthylene	1666	47	1869	0	89.2	45-105	0			
Anthracene	1769	47	1869	0	94.6	55-105	0			
Benzo(a)anthracene	1933	47	1869	171.6	94.3	50-110	0			
Benzo(a)pyrene	2096	47	1869	230.1	99.8	50-110	0			
Benzo(b)fluoranthene	2052	47	1869	233	97.3	45-115	0			
Benzo(g,h,i)perylene	1577	47	1869	122.7	77.8	40-125	0			
Benzo(k)fluoranthene	2123	47	1869	165.9	105	45-115	0			
Chrysene	1952	47	1869	212.8	93.1	55-110	0			
Dibenzo(a,h)anthracene	1587	47	1869	0	84.9	40-125	0			
Fluoranthene	1986	47	1869	283.8	91.1	55-115	0			
Fluorene	1593	47	1869	0	85.2	50-110	0			
Indeno(1,2,3-cd)pyrene	1692	47	1869	92.99	85.6	40-120	0			
Naphthalene	1335	47	1869	0	71.4	40-105	0			
Phenanthrene	1821	47	1869	106.4	91.8	50-110	0			
Pyrene	2187	47	1869	321.2	99.8	45-125	0			
Surr: 2,4,6-Tribromophenol	*2851*	0	*4672*	0	*61*	*34-140*	0			
Surr: 2-Fluorobiphenyl	*3136*	0	*4672*	0	*67.1*	*12-100*	0			
Surr: 2-Fluorophenol	*3510*	0	*4672*	0	*75.1*	*33-117*	0			
Surr: 4-Terphenyl-d14	*4491*	0	*4672*	0	*96.1*	*25-137*	0			
Surr: Nitrobenzene-d5	*3233*	0	*4672*	0	*69.2*	*37-107*	0			
Surr: Phenol-d6	*3606*	0	*4672*	0	*77.2*	*40-106*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212557
Project: Marshall KRRI 1250I 12/14/12

QC BATCH REPORT

Batch ID: **45492** Instrument ID **SVMS6** Method: **SW8270**

MSD Sample ID: **1212554-08B MSD** Units: **µg/Kg** Analysis Date: **12/19/2012 05:32 PM**
Client ID: Run ID: **SVMS6_121219A** SeqNo: **2174816** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	1274	48	1908	0	66.8	45-105	1380	8.03	30	
Acenaphthene	1510	48	1908	0	79.2	45-110	1584	4.76	30	
Acenaphthylene	1577	48	1908	0	82.6	45-105	1666	5.49	30	
Anthracene	1692	48	1908	0	88.7	55-105	1769	4.41	30	
Benzo(a)anthracene	1643	48	1908	171.6	77.1	50-110	1933	16.2	30	
Benzo(a)pyrene	1968	48	1908	230.1	91.1	50-110	2096	6.29	30	
Benzo(b)fluoranthene	2052	48	1908	233	95.3	45-115	2052	0.00665	30	
Benzo(g,h,i)perylene	1296	48	1908	122.7	61.5	40-125	1577	19.6	30	
Benzo(k)fluoranthene	2011	48	1908	165.9	96.7	45-115	2123	5.41	30	
Chrysene	1917	48	1908	212.8	89.3	55-110	1952	1.83	30	
Dibenzo(a,h)anthracene	1382	48	1908	0	72.4	40-125	1587	13.8	30	
Fluoranthene	1900	48	1908	283.8	84.7	55-115	1986	4.39	30	
Fluorene	1524	48	1908	0	79.8	50-110	1593	4.47	30	
Indeno(1,2,3-cd)pyrene	1465	48	1908	92.99	71.9	40-120	1692	14.4	30	
Naphthalene	1270	48	1908	0	66.6	40-105	1335	5.03	30	
Phenanthrene	1736	48	1908	106.4	85.4	50-110	1821	4.77	30	
Pyrene	2083	48	1908	321.2	92.3	45-125	2187	4.87	30	
Surr: 2,4,6-Tribromophenol	*2698*	0	*4770*	0	*56.6*	*34-140*	2851	*5.51*	*40*	
Surr: 2-Fluorobiphenyl	*2861*	0	*4770*	0	*60*	*12-100*	3136	*9.16*	*40*	
Surr: 2-Fluorophenol	*3518*	0	*4770*	0	*73.8*	*33-117*	3510	*0.25*	*40*	
Surr: 4-Terphenyl-d14	*4187*	0	*4770*	0	*87.8*	*25-137*	4491	*7*	*40*	
Surr: Nitrobenzene-d5	*3312*	0	*4770*	0	*69.4*	*37-107*	3233	*2.42*	*40*	
Surr: Phenol-d6	*3295*	0	*4770*	0	*69.1*	*40-106*	3606	*9*	*40*	

The following samples were analyzed in this batch:

1212557-01B	1212557-02B	1212557-03B
1212557-04B	1212557-05B	1212557-06B
1212557-07B	1212557-09B	1212557-10B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

MBLK Sample ID: **MBLK-45482-45482** Units: **µg/Kg** Analysis Date: **12/18/2012 01:57 AM**
Client ID: Run ID: **VMS9_121217B** SeqNo: **2172821** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	30								
1,1,1-Trichloroethane	ND	30								
1,1,2,2-Tetrachloroethane	ND	30								
1,1,2-Trichloroethane	ND	30								
1,1-Dichloroethane	ND	30								
1,1-Dichloroethene	ND	30								
1,2,3-Trichlorobenzene	ND	30								
1,2,3-Trichloropropane	ND	30								
1,2,3-Trimethylbenzene	ND	30								
1,2,4-Trichlorobenzene	ND	30								
1,2,4-Trimethylbenzene	ND	30								
1,2-Dibromo-3-chloropropane	ND	30								
1,2-Dibromoethane	ND	30								
1,2-Dichlorobenzene	ND	30								
1,2-Dichloroethane	ND	30								
1,2-Dichloropropane	ND	30								
1,3,5-Trimethylbenzene	ND	30								
1,3-Dichlorobenzene	ND	30								
1,4-Dichlorobenzene	ND	30								
2-Butanone	ND	200								
2-Hexanone	ND	30								
2-Methylnaphthalene	ND	100								
4-Methyl-2-pentanone	ND	30								
Acetone	215.5	100								
Acrylonitrile	ND	100								
Benzene	ND	30								
Bromobenzene	ND	30								
Bromochloromethane	ND	30								
Bromodichloromethane	ND	30								
Bromoform	ND	30								
Bromomethane	ND	75								
Carbon disulfide	ND	30								
Carbon tetrachloride	ND	30								
Chlorobenzene	ND	30								
Chloroethane	ND	100								
Chloroform	ND	30								
Chloromethane	ND	100								
cis-1,2-Dichloroethene	ND	30								
cis-1,3-Dichloropropene	ND	30								
Cyclohexane	ND	30								
Dibromochloromethane	ND	30								
Dibromomethane	ND	30								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

Dichlorodifluoromethane	ND	30						
Diethyl ether	ND	30						
Diisopropyl ether	ND	30						
Ethyl tert butyl ether	ND	30						
Ethylbenzene	ND	30						
Hexachloroethane	ND	30						
Isopropylbenzene	ND	30						
m,p-Xylene	ND	60						
Methyl iodide	ND	75						
Methyl tert-butyl ether	ND	30						
Methylene chloride	ND	30						
Naphthalene	17.5	100						J
n-Butylbenzene	ND	30						
n-Propylbenzene	ND	30						
o-Xylene	ND	30						
p-Isopropyltoluene	ND	30						
sec-Butylbenzene	ND	30						
Styrene	ND	30						
tert-Butyl alcohol	ND	200						
tert-Butylbenzene	ND	30						
Tertiaryamylmethylether	ND	30						
Tetrachloroethene	ND	30						
Tetrahydrofuran	ND	200						
Toluene	ND	30						
trans-1,2-Dichloroethene	ND	30						
trans-1,3-Dichloropropene	ND	30						
trans-1,4-Dichloro-2-butene	ND	30						
Trichloroethene	ND	30						
Trichlorofluoromethane	ND	30						
Vinyl chloride	ND	30						
Surr: 1,2-Dichloroethane-d4	*972*	0	*1000*	0	*97.2*	*70-130*	0	
Surr: 4-Bromofluorobenzene	*975.5*	0	*1000*	0	*97.6*	*70-130*	0	
Surr: Dibromofluoromethane	*930.5*	0	*1000*	0	*93*	*70-130*	0	
Surr: Toluene-d8	*881.5*	0	*1000*	0	*88.2*	*70-130*	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212557
Project: Marshall KRRI 1250I 12/14/12

QC BATCH REPORT

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

MBLK Sample ID: **MBLK-45482-45482** Units: **µg/Kg** Analysis Date: **12/18/2012 01:23 AM**
Client ID: Run ID: **VMS8_121217B** SeqNo: **2173029** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	30								
1,1,1-Trichloroethane	ND	30								
1,1,2,2-Tetrachloroethane	ND	30								
1,1,2-Trichloroethane	ND	30								
1,1-Dichloroethane	ND	30								
1,1-Dichloroethene	ND	30								
1,2,3-Trichlorobenzene	ND	30								
1,2,3-Trichloropropane	ND	30								
1,2,3-Trimethylbenzene	ND	30								
1,2,4-Trichlorobenzene	ND	30								
1,2,4-Trimethylbenzene	ND	30								
1,2-Dibromo-3-chloropropane	ND	30								
1,2-Dibromoethane	ND	30								
1,2-Dichlorobenzene	ND	30								
1,2-Dichloroethane	ND	30								
1,2-Dichloropropane	ND	30								
1,3,5-Trimethylbenzene	ND	30								
1,3-Dichlorobenzene	ND	30								
1,4-Dichlorobenzene	ND	30								
2-Butanone	ND	200								
2-Hexanone	ND	30								
2-Methylnaphthalene	ND	100								
4-Methyl-2-pentanone	ND	30								
Acetone	292	100								
Acrylonitrile	ND	100								
Benzene	ND	30								
Bromobenzene	ND	30								
Bromochloromethane	ND	30								
Bromodichloromethane	ND	30								
Bromoform	ND	30								
Bromomethane	ND	75								
Carbon disulfide	ND	30								
Carbon tetrachloride	ND	30								
Chlorobenzene	ND	30								
Chloroethane	ND	100								
Chloroform	ND	30								
Chloromethane	ND	100								
cis-1,2-Dichloroethene	ND	30								
cis-1,3-Dichloropropene	ND	30								
Cyclohexane	ND	30								
Dibromochloromethane	ND	30								
Dibromomethane	ND	30								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

Dichlorodifluoromethane	ND	30					
Diethyl ether	ND	30					
Diisopropyl ether	ND	30					
Ethyl tert butyl ether	ND	30					
Ethylbenzene	ND	30					
Hexachloroethane	ND	30					
Isopropylbenzene	ND	30					
m,p-Xylene	ND	60					
Methyl iodide	ND	75					
Methyl tert-butyl ether	ND	30					
Methylene chloride	ND	30					
Naphthalene	ND	100					
n-Butylbenzene	ND	30					
n-Propylbenzene	ND	30					
o-Xylene	ND	30					
p-Isopropyltoluene	ND	30					
sec-Butylbenzene	ND	30					
Styrene	ND	30					
tert-Butyl alcohol	ND	200					
tert-Butylbenzene	ND	30					
Tertiaryamylmethylether	ND	30					
Tetrachloroethene	ND	30					
Tetrahydrofuran	ND	200					
Toluene	ND	30					
trans-1,2-Dichloroethene	ND	30					
trans-1,3-Dichloropropene	ND	30					
trans-1,4-Dichloro-2-butene	ND	30					
Trichloroethene	ND	30					
Trichlorofluoromethane	ND	30					
Vinyl chloride	ND	30					
Surr: 1,2-Dichloroethane-d4	*983.5*	0	*1000*	0	*98.4*	*70-130*	0
Surr: 4-Bromofluorobenzene	*1044*	0	*1000*	0	*104*	*70-130*	0
Surr: Dibromofluoromethane	*984*	0	*1000*	0	*98.4*	*70-130*	0
Surr: Toluene-d8	*993.5*	0	*1000*	0	*99.4*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212557
Project: Marshall KRRI 1250I 12/14/12

QC BATCH REPORT

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

MBLK Sample ID: **MBLK-45482-45482** Units: **µg/Kg** Analysis Date: **12/18/2012 04:49 AM**
Client ID: Run ID: **VMS5_121217B** SeqNo: **2173095** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	30								
1,1,1-Trichloroethane	ND	30								
1,1,2,2-Tetrachloroethane	ND	30								
1,1,2-Trichloroethane	ND	30								
1,1-Dichloroethane	ND	30								
1,1-Dichloroethene	ND	30								
1,2,3-Trichlorobenzene	ND	30								
1,2,3-Trichloropropane	ND	30								
1,2,3-Trimethylbenzene	ND	30								
1,2,4-Trichlorobenzene	ND	30								
1,2,4-Trimethylbenzene	ND	30								
1,2-Dibromo-3-chloropropane	ND	30								
1,2-Dibromoethane	ND	30								
1,2-Dichlorobenzene	ND	30								
1,2-Dichloroethane	ND	30								
1,2-Dichloropropane	ND	30								
1,3,5-Trimethylbenzene	ND	30								
1,3-Dichlorobenzene	ND	30								
1,4-Dichlorobenzene	ND	30								
2-Butanone	ND	200								
2-Hexanone	ND	30								
2-Methylnaphthalene	ND	100								
4-Methyl-2-pentanone	ND	30								
Acetone	97.5	100								J
Acrylonitrile	ND	100								
Benzene	ND	30								
Bromobenzene	ND	30								
Bromochloromethane	ND	30								
Bromodichloromethane	ND	30								
Bromoform	ND	30								
Bromomethane	ND	75								
Carbon disulfide	ND	30								
Carbon tetrachloride	ND	30								
Chlorobenzene	ND	30								
Chloroethane	ND	100								
Chloroform	ND	30								
Chloromethane	ND	100								
cis-1,2-Dichloroethene	ND	30								
cis-1,3-Dichloropropene	ND	30								
Cyclohexane	ND	30								
Dibromochloromethane	ND	30								
Dibromomethane	ND	30								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

Dichlorodifluoromethane	ND	30					
Diethyl ether	ND	30					
Diisopropyl ether	ND	30					
Ethyl tert butyl ether	ND	30					
Ethylbenzene	ND	30					
Hexachloroethane	ND	30					
Isopropylbenzene	ND	30					
m,p-Xylene	ND	60					
Methyl iodide	ND	75					
Methyl tert-butyl ether	ND	30					
Methylene chloride	ND	30					
Naphthalene	ND	100					
n-Butylbenzene	ND	30					
n-Propylbenzene	ND	30					
o-Xylene	ND	30					
p-Isopropyltoluene	ND	30					
sec-Butylbenzene	ND	30					
Styrene	ND	30					
tert-Butyl alcohol	ND	200					
tert-Butylbenzene	ND	30					
Tertiaryamylmethylether	ND	30					
Tetrachloroethene	ND	30					
Tetrahydrofuran	ND	200					
Toluene	ND	30					
trans-1,2-Dichloroethene	ND	30					
trans-1,3-Dichloropropene	ND	30					
trans-1,4-Dichloro-2-butene	ND	30					
Trichloroethene	ND	30					
Trichlorofluoromethane	ND	30					
Vinyl chloride	ND	30					
Surr: 1,2-Dichloroethane-d4	*1043*	0	*1000*	0	*104*	*70-130*	0
Surr: 4-Bromofluorobenzene	*948.5*	0	*1000*	0	*94.8*	*70-130*	0
Surr: Dibromofluoromethane	*1024*	0	*1000*	0	*102*	*70-130*	0
Surr: Toluene-d8	*1048*	0	*1000*	0	*105*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212557
Project: Marshall KRRI 1250I 12/14/12

QC BATCH REPORT

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

MBLK Sample ID: **MBLK-45482-45482** Units: **µg/Kg** Analysis Date: **12/18/2012 02:23 PM**
Client ID: Run ID: **VMS9_121218A** SeqNo: **2173807** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	30								
1,1,1-Trichloroethane	ND	30								
1,1,2,2-Tetrachloroethane	ND	30								
1,1,2-Trichloroethane	ND	30								
1,1-Dichloroethane	ND	30								
1,1-Dichloroethene	ND	30								
1,2,3-Trichlorobenzene	ND	30								
1,2,3-Trichloropropane	ND	30								
1,2,3-Trimethylbenzene	ND	30								
1,2,4-Trichlorobenzene	ND	30								
1,2,4-Trimethylbenzene	ND	30								
1,2-Dibromo-3-chloropropane	ND	30								
1,2-Dibromoethane	ND	30								
1,2-Dichlorobenzene	ND	30								
1,2-Dichloroethane	ND	30								
1,2-Dichloropropane	ND	30								
1,3,5-Trimethylbenzene	ND	30								
1,3-Dichlorobenzene	ND	30								
1,4-Dichlorobenzene	ND	30								
2-Butanone	ND	200								
2-Hexanone	ND	30								
2-Methylnaphthalene	ND	100								
4-Methyl-2-pentanone	ND	30								
Acetone	249.5	100								
Acrylonitrile	ND	100								
Benzene	ND	30								
Bromobenzene	ND	30								
Bromochloromethane	ND	30								
Bromodichloromethane	ND	30								
Bromoform	ND	30								
Bromomethane	ND	75								
Carbon disulfide	ND	30								
Carbon tetrachloride	ND	30								
Chlorobenzene	ND	30								
Chloroethane	ND	100								
Chloroform	ND	30								
Chloromethane	ND	100								
cis-1,2-Dichloroethene	ND	30								
cis-1,3-Dichloropropene	ND	30								
Cyclohexane	ND	30								
Dibromochloromethane	ND	30								
Dibromomethane	ND	30								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

Dichlorodifluoromethane	ND	30						
Diethyl ether	ND	30						
Diisopropyl ether	ND	30						
Ethyl tert butyl ether	ND	30						
Ethylbenzene	ND	30						
Hexachloroethane	ND	30						
Isopropylbenzene	ND	30						
m,p-Xylene	ND	60						
Methyl iodide	ND	75						
Methyl tert-butyl ether	ND	30						
Methylene chloride	ND	30						
Naphthalene	16.5	100						J
n-Butylbenzene	ND	30						
n-Propylbenzene	ND	30						
o-Xylene	ND	30						
p-Isopropyltoluene	ND	30						
sec-Butylbenzene	ND	30						
Styrene	ND	30						
tert-Butyl alcohol	ND	200						
tert-Butylbenzene	ND	30						
Tertiaryamylmethylether	ND	30						
Tetrachloroethene	ND	30						
Tetrahydrofuran	ND	200						
Toluene	ND	30						
trans-1,2-Dichloroethene	ND	30						
trans-1,3-Dichloropropene	ND	30						
trans-1,4-Dichloro-2-butene	ND	30						
Trichloroethene	ND	30						
Trichlorofluoromethane	ND	30						
Vinyl chloride	ND	30						
Surr: 1,2-Dichloroethane-d4	*976.5*	0	*1000*	0	*97.6*	*70-130*	0	
Surr: 4-Bromofluorobenzene	*983.5*	0	*1000*	0	*98.4*	*70-130*	0	
Surr: Dibromofluoromethane	*929*	0	*1000*	0	*92.9*	*70-130*	0	
Surr: Toluene-d8	*856*	0	*1000*	0	*85.6*	*70-130*	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212557
Project: Marshall KRRI 1250I 12/14/12

QC BATCH REPORT

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

MBLK Sample ID: **MBLK-45482-45482** Units: **µg/Kg** Analysis Date: **12/18/2012 02:21 PM**
Client ID: Run ID: **VMS8_121218A** SeqNo: **2174137** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	30								
1,1,1-Trichloroethane	ND	30								
1,1,2,2-Tetrachloroethane	ND	30								
1,1,2-Trichloroethane	ND	30								
1,1-Dichloroethane	ND	30								
1,1-Dichloroethene	ND	30								
1,2,3-Trichlorobenzene	ND	30								
1,2,3-Trichloropropane	ND	30								
1,2,3-Trimethylbenzene	ND	30								
1,2,4-Trichlorobenzene	ND	30								
1,2,4-Trimethylbenzene	ND	30								
1,2-Dibromo-3-chloropropane	ND	30								
1,2-Dibromoethane	ND	30								
1,2-Dichlorobenzene	ND	30								
1,2-Dichloroethane	ND	30								
1,2-Dichloropropane	ND	30								
1,3,5-Trimethylbenzene	ND	30								
1,3-Dichlorobenzene	ND	30								
1,4-Dichlorobenzene	ND	30								
2-Butanone	ND	200								
2-Hexanone	ND	30								
2-Methylnaphthalene	ND	100								
4-Methyl-2-pentanone	ND	30								
Acetone	ND	100								
Acrylonitrile	ND	100								
Benzene	ND	30								
Bromobenzene	ND	30								
Bromochloromethane	ND	30								
Bromodichloromethane	ND	30								
Bromoform	ND	30								
Bromomethane	ND	75								
Carbon disulfide	ND	30								
Carbon tetrachloride	ND	30								
Chlorobenzene	ND	30								
Chloroethane	ND	100								
Chloroform	ND	30								
Chloromethane	ND	100								
cis-1,2-Dichloroethene	ND	30								
cis-1,3-Dichloropropene	ND	30								
Cyclohexane	ND	30								
Dibromochloromethane	ND	30								
Dibromomethane	ND	30								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

Dichlorodifluoromethane	ND	30					
Diethyl ether	ND	30					
Diisopropyl ether	ND	30					
Ethyl tert butyl ether	ND	30					
Ethylbenzene	ND	30					
Hexachloroethane	ND	30					
Isopropylbenzene	ND	30					
m,p-Xylene	ND	60					
Methyl iodide	ND	75					
Methyl tert-butyl ether	ND	30					
Methylene chloride	ND	30					
Naphthalene	ND	100					
n-Butylbenzene	ND	30					
n-Propylbenzene	ND	30					
o-Xylene	ND	30					
p-Isopropyltoluene	ND	30					
sec-Butylbenzene	ND	30					
Styrene	ND	30					
tert-Butyl alcohol	ND	200					
tert-Butylbenzene	ND	30					
Tertiaryamylmethylether	ND	30					
Tetrachloroethene	ND	30					
Tetrahydrofuran	ND	200					
Toluene	ND	30					
trans-1,2-Dichloroethene	ND	30					
trans-1,3-Dichloropropene	ND	30					
trans-1,4-Dichloro-2-butene	ND	30					
Trichloroethene	ND	30					
Trichlorofluoromethane	ND	30					
Vinyl chloride	ND	30					
Surr: 1,2-Dichloroethane-d4	*969*	0	*1000*	0	*96.9*	*70-130*	0
Surr: 4-Bromofluorobenzene	*1032*	0	*1000*	0	*103*	*70-130*	0
Surr: Dibromofluoromethane	*929*	0	*1000*	0	*92.9*	*70-130*	0
Surr: Toluene-d8	*982.5*	0	*1000*	0	*98.2*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212557
Project: Marshall KRRI 1250I 12/14/12

QC BATCH REPORT

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

MBLK Sample ID: **MBLK-45482-45482** Units: **µg/Kg** Analysis Date: **12/19/2012 02:40 AM**
Client ID: Run ID: **VMS8_121218B** SeqNo: **2174382** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	30								
1,1,1-Trichloroethane	ND	30								
1,1,2,2-Tetrachloroethane	ND	30								
1,1,2-Trichloroethane	ND	30								
1,1-Dichloroethane	ND	30								
1,1-Dichloroethene	ND	30								
1,2,3-Trichlorobenzene	ND	30								
1,2,3-Trichloropropane	ND	30								
1,2,3-Trimethylbenzene	ND	30								
1,2,4-Trichlorobenzene	ND	30								
1,2,4-Trimethylbenzene	ND	30								
1,2-Dibromo-3-chloropropane	ND	30								
1,2-Dibromoethane	ND	30								
1,2-Dichlorobenzene	ND	30								
1,2-Dichloroethane	ND	30								
1,2-Dichloropropane	ND	30								
1,3,5-Trimethylbenzene	ND	30								
1,3-Dichlorobenzene	ND	30								
1,4-Dichlorobenzene	ND	30								
2-Butanone	ND	200								
2-Hexanone	ND	30								
2-Methylnaphthalene	104	100								
4-Methyl-2-pentanone	ND	30								
Acetone	252.5	100								
Acrylonitrile	ND	100								
Benzene	ND	30								
Bromobenzene	ND	30								
Bromochloromethane	ND	30								
Bromodichloromethane	ND	30								
Bromoform	ND	30								
Bromomethane	ND	75								
Carbon disulfide	ND	30								
Carbon tetrachloride	ND	30								
Chlorobenzene	ND	30								
Chloroethane	ND	100								
Chloroform	ND	30								
Chloromethane	ND	100								
cis-1,2-Dichloroethene	ND	30								
cis-1,3-Dichloropropene	ND	30								
Cyclohexane	ND	30								
Dibromochloromethane	ND	30								
Dibromomethane	ND	30								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

Dichlorodifluoromethane	ND	30					
Diethyl ether	ND	30					
Diisopropyl ether	ND	30					
Ethyl tert butyl ether	ND	30					
Ethylbenzene	ND	30					
Hexachloroethane	ND	30					
Isopropylbenzene	ND	30					
m,p-Xylene	ND	60					
Methyl iodide	ND	75					
Methyl tert-butyl ether	ND	30					
Methylene chloride	ND	30					
Naphthalene	ND	100					
n-Butylbenzene	ND	30					
n-Propylbenzene	ND	30					
o-Xylene	ND	30					
p-Isopropyltoluene	ND	30					
sec-Butylbenzene	ND	30					
Styrene	ND	30					
tert-Butyl alcohol	ND	200					
tert-Butylbenzene	ND	30					
Tertiaryamylmethylether	ND	30					
Tetrachloroethene	ND	30					
Tetrahydrofuran	ND	200					
Toluene	ND	30					
trans-1,2-Dichloroethene	ND	30					
trans-1,3-Dichloropropene	ND	30					
trans-1,4-Dichloro-2-butene	ND	30					
Trichloroethene	ND	30					
Trichlorofluoromethane	ND	30					
Vinyl chloride	ND	30					
Surr: 1,2-Dichloroethane-d4	*918*	0	*1000*	0	*91.8*	*70-130*	0
Surr: 4-Bromofluorobenzene	*1024*	0	*1000*	0	*102*	*70-130*	0
Surr: Dibromofluoromethane	*878*	0	*1000*	0	*87.8*	*70-130*	0
Surr: Toluene-d8	*936*	0	*1000*	0	*93.6*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212557
Project: Marshall KRRI 1250I 12/14/12

QC BATCH REPORT

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

LCS Sample ID: **LCS-45482-45482** Units: **µg/Kg** Analysis Date: **12/18/2012 12:40 PM**
Client ID: Run ID: **VMS9_121217B** SeqNo: **2172824** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	1032	30	1000	0	103	75-125	0			
1,1,1-Trichloroethane	1160	30	1000	0	116	70-135	0			
1,1,2,2-Tetrachloroethane	979	30	1000	0	97.9	55-130	0			
1,1,2-Trichloroethane	933	30	1000	0	93.3	60-125	0			
1,1-Dichloroethane	1150	30	1000	0	115	75-125	0			
1,1-Dichloroethene	1224	30	1000	0	122	65-135	0			
1,2,3-Trichlorobenzene	965.5	30	1000	0	96.6	60-135	0			
1,2,3-Trichloropropane	985.5	30	1000	0	98.6	65-130	0			
1,2,4-Trichlorobenzene	947.5	30	1000	0	94.8	65-130	0			
1,2,4-Trimethylbenzene	996	30	1000	0	99.6	65-135	0			
1,2-Dibromo-3-chloropropane	1032	30	1000	0	103	40-135	0			
1,2-Dibromoethane	985	30	1000	0	98.5	70-125	0			
1,2-Dichlorobenzene	898	30	1000	0	89.8	75-120	0			
1,2-Dichloroethane	989	30	1000	0	98.9	70-135	0			
1,2-Dichloropropane	1037	30	1000	0	104	70-120	0			
1,3,5-Trimethylbenzene	1008	30	1000	0	101	65-135	0			
1,3-Dichlorobenzene	904.5	30	1000	0	90.4	70-125	0			
1,4-Dichlorobenzene	908.5	30	1000	0	90.8	70-125	0			
2-Butanone	1151	200	1000	0	115	30-160	0			
2-Hexanone	1104	30	1000	0	110	45-145	0			
4-Methyl-2-pentanone	1252	30	1000	0	125	45-145	0			
Acetone	1448	100	1000	0	145	20-160	0			B
Acrylonitrile	1100	100	1000	0	110	70-135	0			
Benzene	1052	30	1000	0	105	75-125	0			
Bromobenzene	956.5	30	1000	0	95.6	65-120	0			
Bromochloromethane	1128	30	1000	0	113	70-125	0			
Bromodichloromethane	1120	30	1000	0	112	70-130	0			
Bromoform	996	30	1000	0	99.6	55-135	0			
Bromomethane	1402	75	1000	0	140	30-160	0			
Carbon disulfide	1470	30	1000	0	147	45-160	0			
Carbon tetrachloride	1176	30	1000	0	118	65-135	0			
Chlorobenzene	955	30	1000	0	95.5	75-125	0			
Chloroethane	1256	100	1000	0	126	40-155	0			
Chloroform	1150	30	1000	0	115	70-125	0			
Chloromethane	1334	100	1000	0	133	50-130	0			S
cis-1,2-Dichloroethene	1133	30	1000	0	113	65-125	0			
cis-1,3-Dichloropropene	1078	30	1000	0	108	70-125	0			
Dibromochloromethane	1002	30	1000	0	100	65-135	0			
Dibromomethane	1090	30	1000	0	109	75-130	0			
Dichlorodifluoromethane	1356	30	1000	0	136	35-135	0			S
Ethylbenzene	963.5	30	1000	0	96.4	75-125	0			
Hexachloroethane	1018	30	1000	0	102	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

Isopropylbenzene	1007	30	1000	0	101	75-130	0	
m,p-Xylene	1994	60	2000	0	99.7	80-125	0	
Methyl tert-butyl ether	1265	30	1000	0	126	75-125	0	S
Methylene chloride	1098	30	1000	0	110	55-145	0	
Naphthalene	1003	100	1000	0	100	40-140	0	
n-Butylbenzene	935.5	30	1000	0	93.6	65-140	0	
n-Propylbenzene	973.5	30	1000	0	97.4	65-135	0	
o-Xylene	997	30	1000	0	99.7	75-125	0	
p-Isopropyltoluene	976	30	1000	0	97.6	75-135	0	
sec-Butylbenzene	1038	30	1000	0	104	65-130	0	
Styrene	1034	30	1000	0	103	75-125	0	
tert-Butylbenzene	985.5	30	1000	0	98.6	65-130	0	
Tetrachloroethene	956	30	1000	0	95.6	64-140	0	
Tetrahydrofuran	1264	200	1000	0	126	70-135	0	
Toluene	971	30	1000	0	97.1	70-125	0	
trans-1,2-Dichloroethene	1168	30	1000	0	117	65-135	0	
trans-1,3-Dichloropropene	990.5	30	1000	0	99	65-125	0	
trans-1,4-Dichloro-2-butene	945.5	30	1000	0	94.6	70-135	0	
Trichloroethene	1048	30	1000	0	105	75-125	0	
Trichlorofluoromethane	1272	30	1000	0	127	25-185	0	
Vinyl chloride	1332	30	1000	0	133	60-125	0	S
Surr: 1,2-Dichloroethane-d4	*971*	0	*1000*	0	*97.1*	*70-130*	0	
Surr: 4-Bromofluorobenzene	*1008*	0	*1000*	0	*101*	*70-130*	0	
Surr: Dibromofluoromethane	*1062*	0	*1000*	0	*106*	*70-130*	0	
Surr: Toluene-d8	*935*	0	*1000*	0	*93.5*	*70-130*	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212557
Project: Marshall KRRI 1250I 12/14/12

QC BATCH REPORT

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

LCS Sample ID: **LCS-45482-45482** Units: **µg/Kg** Analysis Date: **12/18/2012 12:12 PM**
Client ID: Run ID: **VMS8_121217B** SeqNo: **2173034** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	991	30	1000	0	99.1	75-125	0			
1,1,1-Trichloroethane	1032	30	1000	0	103	70-135	0			
1,1,2,2-Tetrachloroethane	971	30	1000	0	97.1	55-130	0			
1,1,2-Trichloroethane	952	30	1000	0	95.2	60-125	0			
1,1-Dichloroethane	1064	30	1000	0	106	75-125	0			
1,1-Dichloroethene	1002	30	1000	0	100	65-135	0			
1,2,3-Trichlorobenzene	1021	30	1000	0	102	60-135	0			
1,2,3-Trichloropropane	910.5	30	1000	0	91	65-130	0			
1,2,4-Trichlorobenzene	1036	30	1000	0	104	65-130	0			
1,2,4-Trimethylbenzene	937.5	30	1000	0	93.8	65-135	0			
1,2-Dibromo-3-chloropropane	1034	30	1000	0	103	40-135	0			
1,2-Dibromoethane	1016	30	1000	0	102	70-125	0			
1,2-Dichlorobenzene	922	30	1000	0	92.2	75-120	0			
1,2-Dichloroethane	1014	30	1000	0	101	70-135	0			
1,2-Dichloropropane	1040	30	1000	0	104	70-120	0			
1,3,5-Trimethylbenzene	977	30	1000	0	97.7	65-135	0			
1,3-Dichlorobenzene	957	30	1000	0	95.7	70-125	0			
1,4-Dichlorobenzene	985.5	30	1000	0	98.6	70-125	0			
2-Butanone	781	200	1000	0	78.1	30-160	0			
2-Hexanone	1100	30	1000	0	110	45-145	0			
4-Methyl-2-pentanone	1462	30	1000	0	146	45-145	0			S
Acetone	1294	100	1000	0	129	20-160	0			B
Acrylonitrile	976	100	1000	0	97.6	70-135	0			
Benzene	1026	30	1000	0	103	75-125	0			
Bromobenzene	947	30	1000	0	94.7	65-120	0			
Bromochloromethane	1084	30	1000	0	108	70-125	0			
Bromodichloromethane	1004	30	1000	0	100	70-130	0			
Bromoform	935	30	1000	0	93.5	55-135	0			
Bromomethane	1152	75	1000	0	115	30-160	0			
Carbon disulfide	1091	30	1000	0	109	45-160	0			
Carbon tetrachloride	1035	30	1000	0	104	65-135	0			
Chlorobenzene	941	30	1000	0	94.1	75-125	0			
Chloroethane	833.5	100	1000	0	83.4	40-155	0			
Chloroform	1014	30	1000	0	101	70-125	0			
Chloromethane	851.5	100	1000	0	85.2	50-130	0			
cis-1,2-Dichloroethene	1074	30	1000	0	107	65-125	0			
cis-1,3-Dichloropropene	991.5	30	1000	0	99.2	70-125	0			
Dibromochloromethane	954.5	30	1000	0	95.4	65-135	0			
Dibromomethane	1004	30	1000	0	100	75-130	0			
Dichlorodifluoromethane	840.5	30	1000	0	84	35-135	0			
Ethylbenzene	975	30	1000	0	97.5	75-125	0			
Hexachloroethane	1103	30	1000	0	110	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

Isopropylbenzene	987	30	1000	0	98.7	75-130	0
m,p-Xylene	2006	60	2000	0	100	80-125	0
Methyl tert-butyl ether	1088	30	1000	0	109	75-125	0
Methylene chloride	1130	30	1000	0	113	55-145	0
Naphthalene	1236	100	1000	0	124	40-140	0
n-Butylbenzene	1036	30	1000	0	104	65-140	0
n-Propylbenzene	954	30	1000	0	95.4	65-135	0
o-Xylene	1004	30	1000	0	100	75-125	0
p-Isopropyltoluene	943	30	1000	0	94.3	75-135	0
sec-Butylbenzene	1006	30	1000	0	101	65-130	0
Styrene	1021	30	1000	0	102	75-125	0
tert-Butylbenzene	977	30	1000	0	97.7	65-130	0
Tetrachloroethene	896	30	1000	0	89.6	64-140	0
Tetrahydrofuran	969	200	1000	0	96.9	70-135	0
Toluene	985.5	30	1000	0	98.6	70-125	0
trans-1,2-Dichloroethene	1113	30	1000	0	111	65-135	0
trans-1,3-Dichloropropene	981	30	1000	0	98.1	65-125	0
trans-1,4-Dichloro-2-butene	1014	30	1000	0	101	70-135	0
Trichloroethene	970	30	1000	0	97	75-125	0
Trichlorofluoromethane	954	30	1000	0	95.4	25-185	0
Vinyl chloride	957.5	30	1000	0	95.8	60-125	0
Surr: 1,2-Dichloroethane-d4	*975*	0	*1000*	0	*97.5*	*70-130*	0
Surr: 4-Bromofluorobenzene	*1023*	0	*1000*	0	*102*	*70-130*	0
Surr: Dibromofluoromethane	*953*	0	*1000*	0	*95.3*	*70-130*	0
Surr: Toluene-d8	*963.5*	0	*1000*	0	*96.4*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212557
Project: Marshall KRRI 1250I 12/14/12

QC BATCH REPORT

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

LCS Sample ID: **LCS-45482-45482** Units: **µg/Kg** Analysis Date: **12/18/2012 03:37 AM**
Client ID: Run ID: **VMS5_121217B** SeqNo: **2173094** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	1056	30	1000	0	106	75-125	0			
1,1,1-Trichloroethane	997	30	1000	0	99.7	70-135	0			
1,1,2,2-Tetrachloroethane	1044	30	1000	0	104	55-130	0			
1,1,2-Trichloroethane	1018	30	1000	0	102	60-125	0			
1,1-Dichloroethane	998	30	1000	0	99.8	75-125	0			
1,1-Dichloroethene	1089	30	1000	0	109	65-135	0			
1,2,3-Trichlorobenzene	973	30	1000	0	97.3	60-135	0			
1,2,3-Trichloropropane	1002	30	1000	0	100	65-130	0			
1,2,4-Trichlorobenzene	1142	30	1000	0	114	65-130	0			
1,2,4-Trimethylbenzene	1057	30	1000	0	106	65-135	0			
1,2-Dibromo-3-chloropropane	1014	30	1000	0	101	40-135	0			
1,2-Dibromoethane	1066	30	1000	0	107	70-125	0			
1,2-Dichlorobenzene	1158	30	1000	0	116	75-120	0			
1,2-Dichloroethane	917.5	30	1000	0	91.8	70-135	0			
1,2-Dichloropropane	963	30	1000	0	96.3	70-120	0			
1,3,5-Trimethylbenzene	1102	30	1000	0	110	65-135	0			
1,3-Dichlorobenzene	1148	30	1000	0	115	70-125	0			
1,4-Dichlorobenzene	1146	30	1000	0	115	70-125	0			
2-Butanone	835.5	200	1000	0	83.6	30-160	0			
2-Hexanone	910.5	30	1000	0	91	45-145	0			
4-Methyl-2-pentanone	944.5	30	1000	0	94.4	45-145	0			
Acetone	960.5	100	1000	0	96	20-160	0			
Acrylonitrile	967.5	100	1000	0	96.8	70-135	0			
Benzene	981.5	30	1000	0	98.2	75-125	0			
Bromobenzene	1111	30	1000	0	111	65-120	0			
Bromochloromethane	1024	30	1000	0	102	70-125	0			
Bromodichloromethane	951.5	30	1000	0	95.2	70-130	0			
Bromoform	1042	30	1000	0	104	55-135	0			
Bromomethane	1389	75	1000	0	139	30-160	0			
Carbon disulfide	1218	30	1000	0	122	45-160	0			
Carbon tetrachloride	993.5	30	1000	0	99.4	65-135	0			
Chlorobenzene	1132	30	1000	0	113	75-125	0			
Chloroethane	1006	100	1000	0	101	40-155	0			
Chloroform	962.5	30	1000	0	96.2	70-125	0			
Chloromethane	936	100	1000	0	93.6	50-130	0			
cis-1,2-Dichloroethene	982	30	1000	0	98.2	65-125	0			
cis-1,3-Dichloropropene	970	30	1000	0	97	70-125	0			
Dibromochloromethane	1028	30	1000	0	103	65-135	0			
Dibromomethane	938.5	30	1000	0	93.8	75-130	0			
Dichlorodifluoromethane	852	30	1000	0	85.2	35-135	0			
Ethylbenzene	1130	30	1000	0	113	75-125	0			
Hexachloroethane	1104	30	1000	0	110	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

Isopropylbenzene	1116	30	1000	0	112	75-130	0
m,p-Xylene	2258	60	2000	0	113	80-125	0
Methyl tert-butyl ether	929	30	1000	0	92.9	75-125	0
Methylene chloride	967	30	1000	0	96.7	55-145	0
Naphthalene	917.5	100	1000	0	91.8	40-140	0
n-Butylbenzene	1140	30	1000	0	114	65-140	0
n-Propylbenzene	1067	30	1000	0	107	65-135	0
o-Xylene	1096	30	1000	0	110	75-125	0
p-Isopropyltoluene	1152	30	1000	0	115	75-135	0
sec-Butylbenzene	1063	30	1000	0	106	65-130	0
Styrene	1129	30	1000	0	113	75-125	0
tert-Butylbenzene	1136	30	1000	0	114	65-130	0
Tetrachloroethene	1079	30	1000	0	108	64-140	0
Tetrahydrofuran	948	200	1000	0	94.8	70-135	0
Toluene	1007	30	1000	0	101	70-125	0
trans-1,2-Dichloroethene	1020	30	1000	0	102	65-135	0
trans-1,3-Dichloropropene	1077	30	1000	0	108	65-125	0
trans-1,4-Dichloro-2-butene	821.5	30	1000	0	82.2	70-135	0
Trichloroethene	952.5	30	1000	0	95.2	75-125	0
Trichlorofluoromethane	912.5	30	1000	0	91.2	25-185	0
Vinyl chloride	1052	30	1000	0	105	60-125	0
Surr: 1,2-Dichloroethane-d4	*1024*	0	*1000*	0	*102*	*70-130*	0
Surr: 4-Bromofluorobenzene	*959*	0	*1000*	0	*95.9*	*70-130*	0
Surr: Dibromofluoromethane	*1035*	0	*1000*	0	*104*	*70-130*	0
Surr: Toluene-d8	*1057*	0	*1000*	0	*106*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212557
Project: Marshall KRRI 1250I 12/14/12

QC BATCH REPORT

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

LCS Sample ID: **LCS-45482-45482** Units: **µg/Kg** Analysis Date: **12/18/2012 01:07 PM**
Client ID: Run ID: **VMS9_121218A** SeqNo: **2173806** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	971.5	30	1000	0	97.2	75-125	0			
1,1,1-Trichloroethane	1158	30	1000	0	116	70-135	0			
1,1,2,2-Tetrachloroethane	884.5	30	1000	0	88.4	55-130	0			
1,1,2-Trichloroethane	873	30	1000	0	87.3	60-125	0			
1,1-Dichloroethane	1145	30	1000	0	114	75-125	0			
1,1-Dichloroethene	1304	30	1000	0	130	65-135	0			
1,2,3-Trichlorobenzene	897	30	1000	0	89.7	60-135	0			
1,2,3-Trichloropropane	878	30	1000	0	87.8	65-130	0			
1,2,4-Trichlorobenzene	906	30	1000	0	90.6	65-130	0			
1,2,4-Trimethylbenzene	969	30	1000	0	96.9	65-135	0			
1,2-Dibromo-3-chloropropane	861.5	30	1000	0	86.2	40-135	0			
1,2-Dibromoethane	908.5	30	1000	0	90.8	70-125	0			
1,2-Dichlorobenzene	863.5	30	1000	0	86.4	75-120	0			
1,2-Dichloroethane	987	30	1000	0	98.7	70-135	0			
1,2-Dichloropropane	1036	30	1000	0	104	70-120	0			
1,3,5-Trimethylbenzene	1002	30	1000	0	100	65-135	0			
1,3-Dichlorobenzene	871.5	30	1000	0	87.2	70-125	0			
1,4-Dichlorobenzene	894	30	1000	0	89.4	70-125	0			
2-Butanone	1150	200	1000	0	115	30-160	0			
2-Hexanone	969	30	1000	0	96.9	45-145	0			
4-Methyl-2-pentanone	1086	30	1000	0	109	45-145	0			
Acetone	1336	100	1000	0	134	20-160	0			B
Acrylonitrile	1098	100	1000	0	110	70-135	0			
Benzene	1037	30	1000	0	104	75-125	0			
Bromobenzene	910	30	1000	0	91	65-120	0			
Bromochloromethane	1173	30	1000	0	117	70-125	0			
Bromodichloromethane	1071	30	1000	0	107	70-130	0			
Bromoform	892.5	30	1000	0	89.2	55-135	0			
Bromomethane	1479	75	1000	0	148	30-160	0			
Carbon disulfide	1523	30	1000	0	152	45-160	0			
Carbon tetrachloride	1160	30	1000	0	116	65-135	0			
Chlorobenzene	907.5	30	1000	0	90.8	75-125	0			
Chloroethane	1292	100	1000	0	129	40-155	0			
Chloroform	1166	30	1000	0	117	70-125	0			
Chloromethane	1303	100	1000	0	130	50-130	0			S
cis-1,2-Dichloroethene	1194	30	1000	0	119	65-125	0			
cis-1,3-Dichloropropene	1084	30	1000	0	108	70-125	0			
Dibromochloromethane	902	30	1000	0	90.2	65-135	0			
Dibromomethane	1066	30	1000	0	107	75-130	0			
Dichlorodifluoromethane	1410	30	1000	0	141	35-135	0			S
Ethylbenzene	940	30	1000	0	94	75-125	0			
Hexachloroethane	999.5	30	1000	0	100	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45482**	Instrument ID **VMS9**		Method: **SW8260**					
Isopropylbenzene	993.5	30	1000	0	99.4	75-130	0	
m,p-Xylene	1931	60	2000	0	96.6	80-125	0	
Methyl tert-butyl ether	1280	30	1000	0	128	75-125	0	S
Methylene chloride	1146	30	1000	0	115	55-145	0	
Naphthalene	845.5	100	1000	0	84.6	40-140	0	
n-Butylbenzene	983	30	1000	0	98.3	65-140	0	
n-Propylbenzene	967	30	1000	0	96.7	65-135	0	
o-Xylene	947.5	30	1000	0	94.8	75-125	0	
p-Isopropyltoluene	955.5	30	1000	0	95.6	75-135	0	
sec-Butylbenzene	1079	30	1000	0	108	65-130	0	
Styrene	982.5	30	1000	0	98.2	75-125	0	
tert-Butylbenzene	997.5	30	1000	0	99.8	65-130	0	
Tetrachloroethene	963	30	1000	0	96.3	64-140	0	
Tetrahydrofuran	1184	200	1000	0	118	70-135	0	
Toluene	923.5	30	1000	0	92.4	70-125	0	
trans-1,2-Dichloroethene	1221	30	1000	0	122	65-135	0	
trans-1,3-Dichloropropene	960	30	1000	0	96	65-125	0	
trans-1,4-Dichloro-2-butene	885	30	1000	0	88.5	70-135	0	
Trichloroethene	1063	30	1000	0	106	75-125	0	
Trichlorofluoromethane	1401	30	1000	0	140	25-185	0	
Vinyl chloride	1372	30	1000	0	137	60-125	0	S
Surr: 1,2-Dichloroethane-d4	*975.5*	0	*1000*	0	*97.6*	*70-130*	0	
Surr: 4-Bromofluorobenzene	*1024*	0	*1000*	0	*102*	*70-130*	0	
Surr: Dibromofluoromethane	*1030*	0	*1000*	0	*103*	*70-130*	0	
Surr: Toluene-d8	*894.5*	0	*1000*	0	*89.4*	*70-130*	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212557
Project: Marshall KRRI 1250I 12/14/12

QC BATCH REPORT

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

LCS Sample ID: **LCS-45482-45482** Units: **µg/Kg** Analysis Date: **12/18/2012 01:09 PM**
Client ID: Run ID: **VMS8_121218A** SeqNo: **2174136** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	932	30	1000	0	93.2	75-125	0			
1,1,1-Trichloroethane	981.5	30	1000	0	98.2	70-135	0			
1,1,2,2-Tetrachloroethane	830	30	1000	0	83	55-130	0			
1,1,2-Trichloroethane	894	30	1000	0	89.4	60-125	0			
1,1-Dichloroethane	999	30	1000	0	99.9	75-125	0			
1,1-Dichloroethene	1051	30	1000	0	105	65-135	0			
1,2,3-Trichlorobenzene	957.5	30	1000	0	95.8	60-135	0			
1,2,3-Trichloropropane	803.5	30	1000	0	80.4	65-130	0			
1,2,4-Trichlorobenzene	994	30	1000	0	99.4	65-130	0			
1,2,4-Trimethylbenzene	929.5	30	1000	0	93	65-135	0			
1,2-Dibromo-3-chloropropane	835	30	1000	0	83.5	40-135	0			
1,2-Dibromoethane	933	30	1000	0	93.3	70-125	0			
1,2-Dichlorobenzene	864	30	1000	0	86.4	75-120	0			
1,2-Dichloroethane	925.5	30	1000	0	92.6	70-135	0			
1,2-Dichloropropane	947	30	1000	0	94.7	70-120	0			
1,3,5-Trimethylbenzene	978.5	30	1000	0	97.8	65-135	0			
1,3-Dichlorobenzene	920.5	30	1000	0	92	70-125	0			
1,4-Dichlorobenzene	906.5	30	1000	0	90.6	70-125	0			
2-Butanone	1206	200	1000	0	121	30-160	0			
2-Hexanone	939.5	30	1000	0	94	45-145	0			
4-Methyl-2-pentanone	1223	30	1000	0	122	45-145	0			
Acetone	990.5	100	1000	0	99	20-160	0			
Acrylonitrile	900.5	100	1000	0	90	70-135	0			
Benzene	968	30	1000	0	96.8	75-125	0			
Bromobenzene	914.5	30	1000	0	91.4	65-120	0			
Bromochloromethane	984	30	1000	0	98.4	70-125	0			
Bromodichloromethane	924.5	30	1000	0	92.4	70-130	0			
Bromoform	838.5	30	1000	0	83.8	55-135	0			
Bromomethane	1112	75	1000	0	111	30-160	0			
Carbon disulfide	1114	30	1000	0	111	45-160	0			
Carbon tetrachloride	1003	30	1000	0	100	65-135	0			
Chlorobenzene	923.5	30	1000	0	92.4	75-125	0			
Chloroethane	960	100	1000	0	96	40-155	0			
Chloroform	969	30	1000	0	96.9	70-125	0			
Chloromethane	844	100	1000	0	84.4	50-130	0			
cis-1,2-Dichloroethene	999.5	30	1000	0	100	65-125	0			
cis-1,3-Dichloropropene	946.5	30	1000	0	94.6	70-125	0			
Dibromochloromethane	892	30	1000	0	89.2	65-135	0			
Dibromomethane	894.5	30	1000	0	89.4	75-130	0			
Dichlorodifluoromethane	825	30	1000	0	82.5	35-135	0			
Ethylbenzene	958.5	30	1000	0	95.8	75-125	0			
Hexachloroethane	1111	30	1000	0	111	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

Isopropylbenzene	997	30	1000	0	99.7	75-130	0
m,p-Xylene	1942	60	2000	0	97.1	80-125	0
Methyl tert-butyl ether	958	30	1000	0	95.8	75-125	0
Methylene chloride	1005	30	1000	0	100	55-145	0
Naphthalene	1028	100	1000	0	103	40-140	0
n-Butylbenzene	1107	30	1000	0	111	65-140	0
n-Propylbenzene	957	30	1000	0	95.7	65-135	0
o-Xylene	954.5	30	1000	0	95.4	75-125	0
p-Isopropyltoluene	995.5	30	1000	0	99.6	75-135	0
sec-Butylbenzene	1050	30	1000	0	105	65-130	0
Styrene	975.5	30	1000	0	97.6	75-125	0
tert-Butylbenzene	974.5	30	1000	0	97.4	65-130	0
Tetrachloroethene	926	30	1000	0	92.6	64-140	0
Tetrahydrofuran	809	200	1000	0	80.9	70-135	0
Toluene	974.5	30	1000	0	97.4	70-125	0
trans-1,2-Dichloroethene	1055	30	1000	0	106	65-135	0
trans-1,3-Dichloropropene	970.5	30	1000	0	97	65-125	0
trans-1,4-Dichloro-2-butene	941.5	30	1000	0	94.2	70-135	0
Trichloroethene	916.5	30	1000	0	91.6	75-125	0
Trichlorofluoromethane	884.5	30	1000	0	88.4	25-185	0
Vinyl chloride	931	30	1000	0	93.1	60-125	0
Surr: 1,2-Dichloroethane-d4	*977.5*	0	*1000*	0	*97.8*	*70-130*	0
Surr: 4-Bromofluorobenzene	*1042*	0	*1000*	0	*104*	*70-130*	0
Surr: Dibromofluoromethane	*962.5*	0	*1000*	0	*96.2*	*70-130*	0
Surr: Toluene-d8	*1012*	0	*1000*	0	*101*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

LCS Sample ID: **LCS-45482-45482** Units: **µg/Kg** Analysis Date: **12/19/2012 01:29 AM**
Client ID: Run ID: **VMS8_121218B** SeqNo: **2174381** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	1014	30	1000	0	101	75-125	0			
1,1,1-Trichloroethane	1039	30	1000	0	104	70-135	0			
1,1,2,2-Tetrachloroethane	908	30	1000	0	90.8	55-130	0			
1,1,2-Trichloroethane	916	30	1000	0	91.6	60-125	0			
1,1-Dichloroethane	1033	30	1000	0	103	75-125	0			
1,1-Dichloroethene	1005	30	1000	0	100	65-135	0			
1,2,3-Trichlorobenzene	1026	30	1000	0	103	60-135	0			
1,2,3-Trichloropropane	934	30	1000	0	93.4	65-130	0			
1,2,4-Trichlorobenzene	1045	30	1000	0	104	65-130	0			
1,2,4-Trimethylbenzene	999	30	1000	0	99.9	65-135	0			
1,2-Dibromo-3-chloropropane	968	30	1000	0	96.8	40-135	0			
1,2-Dibromoethane	1008	30	1000	0	101	70-125	0			
1,2-Dichlorobenzene	942.5	30	1000	0	94.2	75-120	0			
1,2-Dichloroethane	961	30	1000	0	96.1	70-135	0			
1,2-Dichloropropane	1008	30	1000	0	101	70-120	0			
1,3,5-Trimethylbenzene	1034	30	1000	0	103	65-135	0			
1,3-Dichlorobenzene	958	30	1000	0	95.8	70-125	0			
1,4-Dichlorobenzene	965.5	30	1000	0	96.6	70-125	0			
2-Butanone	882.5	200	1000	0	88.2	30-160	0			
2-Hexanone	1024	30	1000	0	102	45-145	0			
4-Methyl-2-pentanone	1330	30	1000	0	133	45-145	0			
Acetone	969	100	1000	0	96.9	20-160	0			B
Acrylonitrile	919.5	100	1000	0	92	70-135	0			
Benzene	1020	30	1000	0	102	75-125	0			
Bromobenzene	971.5	30	1000	0	97.2	65-120	0			
Bromochloromethane	1024	30	1000	0	102	70-125	0			
Bromodichloromethane	956.5	30	1000	0	95.6	70-130	0			
Bromoform	927.5	30	1000	0	92.8	55-135	0			
Bromomethane	1010	75	1000	0	101	30-160	0			
Carbon disulfide	1110	30	1000	0	111	45-160	0			
Carbon tetrachloride	1052	30	1000	0	105	65-135	0			
Chlorobenzene	977.5	30	1000	0	97.8	75-125	0			
Chloroethane	1124	100	1000	0	112	40-155	0			
Chloroform	1049	30	1000	0	105	70-125	0			
Chloromethane	831.5	100	1000	0	83.2	50-130	0			
cis-1,2-Dichloroethene	1042	30	1000	0	104	65-125	0			
cis-1,3-Dichloropropene	993.5	30	1000	0	99.4	70-125	0			
Dibromochloromethane	952	30	1000	0	95.2	65-135	0			
Dibromomethane	987	30	1000	0	98.7	75-130	0			
Dichlorodifluoromethane	825	30	1000	0	82.5	35-135	0			
Ethylbenzene	997.5	30	1000	0	99.8	75-125	0			
Hexachloroethane	1143	30	1000	0	114	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

Isopropylbenzene	1029	30	1000	0	103	75-130	0
m,p-Xylene	2052	60	2000	0	103	80-125	0
Methyl tert-butyl ether	1074	30	1000	0	107	75-125	0
Methylene chloride	1008	30	1000	0	101	55-145	0
Naphthalene	1275	100	1000	0	128	40-140	0
n-Butylbenzene	1020	30	1000	0	102	65-140	0
n-Propylbenzene	954	30	1000	0	95.4	65-135	0
o-Xylene	992.5	30	1000	0	99.2	75-125	0
p-Isopropyltoluene	1028	30	1000	0	103	75-135	0
sec-Butylbenzene	1014	30	1000	0	101	65-130	0
Styrene	1050	30	1000	0	105	75-125	0
tert-Butylbenzene	999.5	30	1000	0	100	65-130	0
Tetrachloroethene	941	30	1000	0	94.1	64-140	0
Tetrahydrofuran	891	200	1000	0	89.1	70-135	0
Toluene	1022	30	1000	0	102	70-125	0
trans-1,2-Dichloroethene	1115	30	1000	0	112	65-135	0
trans-1,3-Dichloropropene	997.5	30	1000	0	99.8	65-125	0
trans-1,4-Dichloro-2-butene	986	30	1000	0	98.6	70-135	0
Trichloroethene	1018	30	1000	0	102	75-125	0
Trichlorofluoromethane	840	30	1000	0	84	25-185	0
Vinyl chloride	929.5	30	1000	0	93	60-125	0
Surr: 1,2-Dichloroethane-d4	*911*	0	*1000*	0	*91.1*	*70-130*	0
Surr: 4-Bromofluorobenzene	*977.5*	0	*1000*	0	*97.8*	*70-130*	0
Surr: Dibromofluoromethane	*928.5*	0	*1000*	0	*92.8*	*70-130*	0
Surr: Toluene-d8	*952.5*	0	*1000*	0	*95.2*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212557
Project: Marshall KRRI 1250I 12/14/12

QC BATCH REPORT

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

MS Sample ID: **1212557-01A MS** Units: **µg/Kg** Analysis Date: **12/18/2012 09:20 AM**
Client ID: **SBKR1250I507S121412S004** Run ID: **VMS8_121217B** SeqNo: **2173032** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	2338	73	2448	0	95.5	75-125	0			
1,1,1-Trichloroethane	2366	73	2448	0	96.6	70-135	0			
1,1,2,2-Tetrachloroethane	2382	73	2448	0	97.3	55-130	0			
1,1,2-Trichloroethane	2336	73	2448	0	95.4	60-125	0			
1,1-Dichloroethane	2588	73	2448	0	106	75-125	0			
1,1-Dichloroethene	2605	73	2448	0	106	65-135	0			
1,2,3-Trichlorobenzene	1905	73	2448	0	77.8	60-135	0			
1,2,3-Trichloropropane	2352	73	2448	0	96	65-130	0			
1,2,4-Trichlorobenzene	2061	73	2448	0	84.2	65-130	0			
1,2,4-Trimethylbenzene	2259	73	2448	0	92.2	65-135	0			
1,2-Dibromo-3-chloropropane	2238	73	2448	0	91.4	40-135	0			
1,2-Dibromoethane	2496	73	2448	0	102	70-125	0			
1,2-Dichlorobenzene	2265	73	2448	0	92.5	75-120	0			
1,2-Dichloroethane	2450	73	2448	0	100	70-135	0			
1,2-Dichloropropane	2452	73	2448	0	100	70-120	0			
1,3,5-Trimethylbenzene	2445	73	2448	0	99.8	65-135	0			
1,3-Dichlorobenzene	2283	73	2448	0	93.2	70-125	0			
1,4-Dichlorobenzene	2263	73	2448	0	92.4	70-125	0			
2-Butanone	2426	490	2448	0	99.1	30-160	0			
2-Hexanone	2910	73	2448	0	119	45-145	0			
4-Methyl-2-pentanone	3772	73	2448	0	154	45-145	0			S
Acetone	2776	240	2448	0	113	20-160	0			B
Acrylonitrile	2458	240	2448	0	100	70-135	0			
Benzene	2390	73	2448	0	97.6	75-125	0			
Bromobenzene	2317	73	2448	0	94.6	65-120	0			
Bromochloromethane	2671	73	2448	0	109	70-125	0			
Bromodichloromethane	2233	73	2448	0	91.2	70-130	0			
Bromoform	2148	73	2448	0	87.8	55-135	0			
Bromomethane	2432	180	2448	0	99.4	30-160	0			
Carbon disulfide	2396	73	2448	0	97.8	45-160	0			
Carbon tetrachloride	2303	73	2448	0	94	65-135	0			
Chlorobenzene	2364	73	2448	0	96.6	75-125	0			
Chloroethane	2306	240	2448	0	94.2	40-155	0			
Chloroform	2509	73	2448	0	102	70-125	0			
Chloromethane	2075	240	2448	0	84.8	50-130	0			
cis-1,2-Dichloroethene	2645	73	2448	0	108	65-125	0			
cis-1,3-Dichloropropene	2309	73	2448	0	94.3	70-125	0			
Dibromochloromethane	2169	73	2448	0	88.6	65-135	0			
Dibromomethane	2464	73	2448	0	101	75-130	0			
Dichlorodifluoromethane	2016	73	2448	0	82.4	35-135	0			
Ethylbenzene	2437	73	2448	0	99.6	75-125	0			
Hexachloroethane	2538	73	2448	0	104	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

Isopropylbenzene	2453	73	2448	0	100	75-130	0
m,p-Xylene	4879	150	4897	0	99.6	80-125	0
Methyl tert-butyl ether	2819	73	2448	0	115	75-125	0
Methylene chloride	2545	73	2448	0	104	55-145	0
Naphthalene	2320	240	2448	0	94.8	40-140	0
n-Butylbenzene	2202	73	2448	0	90	65-140	0
n-Propylbenzene	2366	73	2448	0	96.6	65-135	0
o-Xylene	2468	73	2448	0	101	75-125	0
p-Isopropyltoluene	2290	73	2448	0	93.6	75-135	0
sec-Butylbenzene	2353	73	2448	0	96.1	65-130	0
Styrene	2443	73	2448	0	99.8	75-125	0
tert-Butylbenzene	2407	73	2448	0	98.3	65-130	0
Tetrachloroethene	2192	73	2448	0	89.6	64-140	0
Tetrahydrofuran	2354	490	2448	0	96.2	70-135	0
Toluene	2423	73	2448	0	99	70-125	0
trans-1,2-Dichloroethene	2644	73	2448	0	108	65-135	0
trans-1,3-Dichloropropene	2303	73	2448	0	94	65-125	0
trans-1,4-Dichloro-2-butene	2692	73	2448	0	110	70-135	0
Trichloroethene	2336	73	2448	0	95.4	75-125	0
Trichlorofluoromethane	2126	73	2448	0	86.8	25-185	0
Vinyl chloride	2221	73	2448	0	90.7	60-125	0
Surr: 1,2-Dichloroethane-d4	*2326*	0	*2448*	0	*95*	*70-130*	0
Surr: 4-Bromofluorobenzene	*2497*	0	*2448*	0	*102*	*70-130*	0
Surr: Dibromofluoromethane	*2279*	0	*2448*	0	*93.1*	*70-130*	0
Surr: Toluene-d8	*2419*	0	*2448*	0	*98.8*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212557
Project: Marshall KRRI 1250I 12/14/12

QC BATCH REPORT

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

MSD Sample ID: **1212557-01A MSD** Units: **µg/Kg** Analysis Date: **12/18/2012 09:44 AM**
Client ID: **SBKR1250I507S121412S004** Run ID: **VMS8_121217B** SeqNo: **2173033** Prep Date: **12/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	2301	73	2448	0	94	75-125	2338	1.58	30	
1,1,1-Trichloroethane	2378	73	2448	0	97.2	70-135	2366	0.516	30	
1,1,2,2-Tetrachloroethane	2299	73	2448	0	93.9	55-130	2382	3.56	30	
1,1,2-Trichloroethane	2270	73	2448	0	92.7	60-125	2336	2.87	30	
1,1-Dichloroethane	2583	73	2448	0	106	75-125	2588	0.189	30	
1,1-Dichloroethene	1957	73	2448	0	80	65-135	2605	28.4	30	
1,2,3-Trichlorobenzene	1973	73	2448	0	80.6	60-135	1905	3.54	30	
1,2,3-Trichloropropane	2308	73	2448	0	94.2	65-130	2352	1.89	30	
1,2,4-Trichlorobenzene	2200	73	2448	0	89.8	65-130	2061	6.49	30	
1,2,4-Trimethylbenzene	2290	73	2448	0	93.6	65-135	2259	1.4	30	
1,2-Dibromo-3-chloropropane	2020	73	2448	0	82.5	40-135	2238	10.2	30	
1,2-Dibromoethane	2434	73	2448	0	99.4	70-125	2496	2.53	30	
1,2-Dichlorobenzene	2287	73	2448	0	93.4	75-120	2265	0.968	30	
1,2-Dichloroethane	2383	73	2448	0	97.4	70-135	2450	2.74	30	
1,2-Dichloropropane	2431	73	2448	0	99.3	70-120	2452	0.852	30	
1,3,5-Trimethylbenzene	2366	73	2448	0	96.6	65-135	2445	3.26	30	
1,3-Dichlorobenzene	2311	73	2448	0	94.4	70-125	2283	1.23	30	
1,4-Dichlorobenzene	2308	73	2448	0	94.2	70-125	2263	1.93	30	
2-Butanone	2397	490	2448	0	97.9	30-160	2426	1.22	30	
2-Hexanone	2645	73	2448	0	108	45-145	2910	9.52	30	
4-Methyl-2-pentanone	3446	73	2448	0	141	45-145	3772	9.02	30	
Acetone	2371	240	2448	0	96.8	20-160	2776	15.7	30	B
Acrylonitrile	2530	240	2448	0	103	70-135	2458	2.9	30	
Benzene	2382	73	2448	0	97.3	75-125	2390	0.308	30	
Bromobenzene	2268	73	2448	0	92.6	65-120	2317	2.14	30	
Bromochloromethane	2572	73	2448	0	105	70-125	2671	3.78	30	
Bromodichloromethane	2202	73	2448	0	90	70-130	2233	1.38	30	
Bromoform	2094	73	2448	0	85.6	55-135	2148	2.54	30	
Bromomethane	2001	180	2448	0	81.8	30-160	2432	19.4	30	
Carbon disulfide	2248	73	2448	0	91.8	45-160	2396	6.38	30	
Carbon tetrachloride	2374	73	2448	0	97	65-135	2303	3.04	30	
Chlorobenzene	2282	73	2448	0	93.2	75-125	2364	3.53	30	
Chloroethane	2397	240	2448	0	97.9	40-155	2306	3.85	30	
Chloroform	2465	73	2448	0	101	70-125	2509	1.77	30	
Chloromethane	1948	240	2448	0	79.6	50-130	2075	6.33	30	
cis-1,2-Dichloroethene	2615	73	2448	0	107	65-125	2645	1.16	30	
cis-1,3-Dichloropropene	2352	73	2448	0	96	70-125	2309	1.84	30	
Dibromochloromethane	2088	73	2448	0	85.3	65-135	2169	3.8	30	
Dibromomethane	2399	73	2448	0	98	75-130	2464	2.67	30	
Dichlorodifluoromethane	1973	73	2448	0	80.6	35-135	2016	2.15	30	
Ethylbenzene	2350	73	2448	0	96	75-125	2437	3.63	30	
Hexachloroethane	2610	73	2448	0	107	70-135	2538	2.81	30	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45482** Instrument ID **VMS9** Method: **SW8260**

Isopropylbenzene	2387	73	2448	0	97.5	75-130	2453	2.73	30
m,p-Xylene	4788	150	4897	0	97.8	80-125	4879	1.9	30
Methyl tert-butyl ether	2671	73	2448	0	109	75-125	2819	5.4	30
Methylene chloride	2759	73	2448	0	113	55-145	2545	8.08	30
Naphthalene	2437	240	2448	0	99.6	40-140	2320	4.94	30
n-Butylbenzene	2315	73	2448	0	94.6	65-140	2202	4.99	30
n-Propylbenzene	2290	73	2448	0	93.6	65-135	2366	3.26	30
o-Xylene	2358	73	2448	0	96.3	75-125	2468	4.57	30
p-Isopropyltoluene	2317	73	2448	0	94.6	75-135	2290	1.17	30
sec-Butylbenzene	2385	73	2448	0	97.4	65-130	2353	1.34	30
Styrene	2425	73	2448	0	99	75-125	2443	0.754	30
tert-Butylbenzene	2293	73	2448	0	93.6	65-130	2407	4.85	30
Tetrachloroethene	2195	73	2448	0	89.6	64-140	2192	0.112	30
Tetrahydrofuran	2700	490	2448	0	110	70-135	2354	13.7	30
Toluene	2337	73	2448	0	95.4	70-125	2423	3.6	30
trans-1,2-Dichloroethene	2550	73	2448	0	104	65-135	2644	3.63	30
trans-1,3-Dichloropropene	2296	73	2448	0	93.8	65-125	2303	0.266	30
trans-1,4-Dichloro-2-butene	2359	73	2448	0	96.4	70-135	2692	13.2	30
Trichloroethene	2278	73	2448	0	93	75-125	2336	2.49	30
Trichlorofluoromethane	2049	73	2448	0	83.7	25-185	2126	3.69	30
Vinyl chloride	2114	73	2448	0	86.4	60-125	2221	4.91	30
Surr: 1,2-Dichloroethane-d4	*2332*	0	*2448*	0	*95.2*	*70-130*	2326	*0.263*	*30*
Surr: 4-Bromofluorobenzene	*2523*	0	*2448*	0	*103*	*70-130*	2497	*1.02*	*30*
Surr: Dibromofluoromethane	*2301*	0	*2448*	0	*94*	*70-130*	2279	*0.962*	*30*
Surr: Toluene-d8	*2316*	0	*2448*	0	*94.6*	*70-130*	2419	*4.34*	*30*

The following samples were analyzed in this batch:

1212557-01A	1212557-02A	1212557-03A
1212557-04A	1212557-05A	1212557-06A
1212557-07A	1212557-08A	1212557-09A
1212557-10A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212557
Project: Marshall KRRI 1250I 12/14/12

QC BATCH REPORT

Batch ID: **R114083** Instrument ID **MOIST** Method: **A2540 G**

MBLK Sample ID: **WBLKS1-R114083** Units: **% of sample** Analysis Date: **12/17/2012 05:20 PM**
Client ID: Run ID: **MOIST_121217D** SeqNo: **2172624** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	ND	0.050								

LCS Sample ID: **LCS-R114083** Units: **% of sample** Analysis Date: **12/17/2012 05:20 PM**
Client ID: Run ID: **MOIST_121217D** SeqNo: **2172615** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	100	0.050	100	0	100	99.5-100.5	0			

DUP Sample ID: **1212533-03B DUP** Units: **% of sample** Analysis Date: **12/17/2012 05:20 PM**
Client ID: Run ID: **MOIST_121217D** SeqNo: **2172600** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	4.68	0.050	0	0	0	0-0	4.77	1.9	20	

DUP Sample ID: **1212557-09B DUP** Units: **% of sample** Analysis Date: **12/17/2012 05:20 PM**
Client ID: **SBKR1250I509S121412S005** Run ID: **MOIST_121217D** SeqNo: **2172612** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	50.33	0.050	0	0	0	0-0	49.97	0.718	20	

The following samples were analyzed in this batch:

1212557-01B	1212557-02B	1212557-03B
1212557-04B	1212557-05B	1212557-06B
1212557-07B	1212557-09B	1212557-10B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

1212557

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate

Page: 1 of 1
Cooler # of

COC #	ENBRIDGE_121412_GMK1	Task: KRRI_1250-1275
	Total # of Samples: 10	Event Complete?
Turn Around Time	5 Day	Rush: No
BILLING CODE: 6.00		

Lab Information:

Lab Name:	ALS Laboratory Group
Address:	3352 128th Ave. Holland, MI 49424-9263
Lab PM:	Ann Preston
Phone/Fax:	1-616-399-6070/1-616-399-6185
Lab PM email	ann.preston@alsglobal.com
Applicable Lab Quote #:	

Project Information:

Site ID #:	
Project #	60162778
Site Address	5555 Glenwood Parkway SE Suite 200
City	Grand Rapids
State, Zip	MI
Site PM Name	Bryan Stiemsma
Phone/Fax:	[redacted]
Site PM Email:	Bryan.Stiemsma@aecom.com

Other Information:

Send Invoice to:	Enbridge Energy - ATTN Accounts Payable
Address:	1100 Louisiana Suite 1100
City/State.	Houson, TX
Phone #.	713-821-2000
PO #	
Send EDD to	
CC Hardcopy report	
CC Hardcopy report	

ITEM #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	MATRIX CODE	G=GRAB C=COMP	SAMPLE DATE	#OF CONTAINERS	Comments/Lab Sample I.D.	Preservative	None	None	None	None	MeOH										
								Analysis	% Moisture	Be,Mo,V,Ni by 6020	ORO,DRO	PNAs by 8270	VOC by 5035/8260										
1	SBKR1250I507S121412S004	SBKR1250I507	SO	G	12/14/2012 08:15	3			X	X	X	X	X										
2	SBKR1250I508S121412S005	SBKR1250I508	SO	G	12/14/2012 09:30	3			X	X	X	X	X										
3	SBKR1250I510S121412S005	SBKR1250I510	SO	G	12/14/2012 11:35	3			X	X	X	X	X										
4	SBKR1250I510S121412S013	SBKR1250I510	SO	G	12/14/2012 11:43	3			X	X	X	X	X										
5	SBKR1250I511S121412S018	SBKR1250I511	SO	G	12/14/2012 13:52	3			X	X	X	X	X										
6	SBKR1250I512D121412S005	SBKR1250I512	SO	G	12/14/2012 15:00	3	DUPLICATE		X	X	X	X	X										
7	SBKR1250I512S121412S005	SBKR1250I512	SO	G	12/14/2012 15:00	3			X	X	X	X	X										
8	SBKR1250I512T121412MX	SBKR1250I512	SQ	G	12/14/2012 00:00	1	TRIP BLANK						X										
9	SBKR1250I509S121412S005	SBKR1250I509	SO	G	12/14/2012 10:28	3			X	X	X	X	X										
10	SBKR1250I511S121412S005	SBKR1250I511	SO	G	12/14/2012 13:44	3			X	X	X	X	X										

Additional Comments/Special Instructions:

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
[signature]	12.14.12	1555	[signature]	12.14.12	1555
[signature]	12.14.12	1600	[signature]	12.14.12	1600

Sample Receipt Conditions

Temp in °C	Samples on Ice?	Sample intact?	Trip Blank?
5.2°C	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N

SHIPPING INFO
Company:
Tracking #:

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: GERRY KRAMER (GMK1)
SIGNATURE of SAMPLER:
DATE Signed:
Time:

ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **14-Dec-12 16:00**

Work Order: **1212557** Received by: **PD**

Checklist completed by Diane Shaw eSignature 17-Dec-12 Date Reviewed by: Ann Preston eSignature 17-Dec-12 Date

Matrices: Soil
Carrier name: ALSHN

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	5.2 c		
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	12/17/2012 10:35:26 AM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL

Date: 12-14-11 Time:

Name:

Company:

Seal Broken By:

Date:

5.2°C

28-Dec-2012

Bryan Stiemsma
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall KRRI 1275L 12/18/12** Work Order: **1212695**

Dear Bryan,

ALS Environmental received 5 samples on 19-Dec-2012 08:00 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 44.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

Certificate No: MN331938

ALS Group USA, Corp

Date: 28-Dec-12

Client: AECOM Environment
Project: Marshall KRRI 1275L 12/18/12
Work Order: **1212695**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1212695-01	SBKR1275L501S121812S004	Soil		12/18/2012 13:45	12/19/2012 08:00	☐
1212695-02	SBKR1275L502S121812S004	Soil		12/18/2012 14:43	12/19/2012 08:00	☐
1212695-03	SBKR1275L502D121812S004	Soil		12/18/2012 14:43	12/19/2012 08:00	☐
1212695-04	SBKR1275L503S121812S005	Soil		12/18/2012 15:54	12/19/2012 08:00	☐
1212695-05	SBKR1275L503T121812MX	Soil		12/18/2012	12/19/2012 08:00	☐

ALS Group USA, Corp

Date: 28-Dec-12

Client: AECOM Environment
Project: Marshall KRRI 1275L 12/18/12
Work Order: 1212695

Case Narrative

The extraction procedure used to prepare the soil samples for DRO and PAH analyses in this work order was a modification of the standard 3541 procedure. At the request of the client, a 10 gram sample aliquot dried with hydromatrix is used for extraction as outlined in ALS SOP HN-EXT-003(EN)-R01. All samples extracted starting on 10/1/2011 were prepared using this modified SOP.

Batch 45512 MS/MSD data for Volatiles is not related to this project's samples. No data requires qualification.

ALS Group USA, Corp

Date: 28-Dec-12

Client: AECOM Environment
Project: Marshall KRRI 1275L 12/18/12
WorkOrder: **1212695**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
SD	Serial Dilution
TDL	Target Detection Limit

Units Reported	Description
% of sample	Percent of Sample
µg/Kg	Micrograms per Kilogram
µg/Kg-dry	Micrograms per Kilogram Dry Weight
mg/Kg-dry	Milligrams per Kilogram Dry Weight

ALS Group USA, Corp

Date: *28-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1275L501S121812S004
Work Order:	1212695	**Collection Date:**	12/18/2012 1:45:00 PM
Project:	Marshall KRRI 1275L 12/18/12		
Lab ID:	1212695-01	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/21/2012**		Analyst: **CW**
DRO (C10-C20)	ND	23	4.0		mg/Kg-dry	1	12/21/2012
ORO (C20-C34)	**350**	**45**	**4.0**		**mg/Kg-dry**	1	12/21/2012
Surr: 4-Terphenyl-d14	*71.6*	*39-115*			*%REC*	1	12/21/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/21/2012**		Analyst: **CES**
Beryllium	ND	1.4	0.50		mg/Kg-dry	4	12/22/2012
Molybdenum	ND	3.5	1.0		mg/Kg-dry	4	12/22/2012
Nickel	**16**	**3.5**	**1.0**		**mg/Kg-dry**	4	12/22/2012
Vanadium	**22**	**3.5**	**1.0**		**mg/Kg-dry**	4	12/22/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/21/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/21/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/21/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/21/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/21/2012
Benzo(a)anthracene	ND	330	330		µg/Kg-dry	1	12/21/2012
Benzo(a)pyrene	**480**	**330**	**330**		**µg/Kg-dry**	1	12/21/2012
Benzo(b)fluoranthene	**460**	**330**	**330**		**µg/Kg-dry**	1	12/21/2012
Benzo(g,h,i)perylene	ND	330	330		µg/Kg-dry	1	12/21/2012
Benzo(k)fluoranthene	ND	330	330		µg/Kg-dry	1	12/21/2012
Chrysene	**370**	**330**	**330**		**µg/Kg-dry**	1	12/21/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/21/2012
Fluoranthene	**340**	**330**	**330**		**µg/Kg-dry**	1	12/21/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/21/2012
Indeno(1,2,3-cd)pyrene	ND	330	330		µg/Kg-dry	1	12/21/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/21/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/21/2012
Pyrene	**470**	**330**	**330**		**µg/Kg-dry**	1	12/21/2012
Surr: 2,4,6-Tribromophenol	*78.2*	*34-140*			*%REC*	1	12/21/2012
Surr: 2-Fluorobiphenyl	*64.7*	*12-100*			*%REC*	1	12/21/2012
Surr: 2-Fluorophenol	*77.3*	*33-117*			*%REC*	1	12/21/2012
Surr: 4-Terphenyl-d14	*83.4*	*25-137*			*%REC*	1	12/21/2012
Surr: Nitrobenzene-d5	*71.4*	*37-107*			*%REC*	1	12/21/2012
Surr: Phenol-d6	*84.0*	*40-106*			*%REC*	1	12/21/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/19/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	100	100		µg/Kg-dry	1	12/23/2012
1,1,1-Trichloroethane	ND	74	50		µg/Kg-dry	1	12/23/2012
1,1,2,2-Tetrachloroethane	ND	74	50		µg/Kg-dry	1	12/23/2012
1,1,2-Trichloroethane	ND	74	50		µg/Kg-dry	1	12/23/2012
1,1-Dichloroethane	ND	74	50		µg/Kg-dry	1	12/23/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Dec-12*

Client: AECOM Environment
Work Order: 1212695
Project: Marshall KRRI 1275L 12/18/12
Lab ID: 1212695-01

Client Sample ID: SBKR1275L501S121812S004
Collection Date: 12/18/2012 1:45:00 PM
Matrix: SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	74	50		µg/Kg-dry	1	12/23/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
1,2,3-Trichloropropane	ND	100	100		µg/Kg-dry	1	12/23/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
1,2,4-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,2-Dibromo-3-chloropropane	ND	74	10		µg/Kg-dry	1	12/23/2012
1,2-Dibromoethane	ND	74	20		µg/Kg-dry	1	12/23/2012
1,2-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,2-Dichloroethane	ND	74	50		µg/Kg-dry	1	12/23/2012
1,2-Dichloropropane	ND	74	50		µg/Kg-dry	1	12/23/2012
1,3,5-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,3-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,4-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/23/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/23/2012
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/23/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/23/2012
Acetone	ND	1,000	1,000		µg/Kg-dry	1	12/23/2012
Acrylonitrile	ND	100	100		µg/Kg-dry	1	12/23/2012
Benzene	ND	74	50		µg/Kg-dry	1	12/23/2012
Bromobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromochloromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromodichloromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromoform	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/23/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/23/2012
Carbon tetrachloride	ND	74	50		µg/Kg-dry	1	12/23/2012
Chlorobenzene	ND	74	50		µg/Kg-dry	1	12/23/2012
Chloroethane	ND	250	250		µg/Kg-dry	1	12/23/2012
Chloroform	ND	74	50		µg/Kg-dry	1	12/23/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/23/2012
cis-1,2-Dichloroethene	ND	74	50		µg/Kg-dry	1	12/23/2012
cis-1,3-Dichloropropene	ND	74	50		µg/Kg-dry	1	12/23/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/23/2012
Dibromochloromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/23/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/23/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/23/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/23/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/23/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Dec-12*

Client: AECOM Environment
Client Sample ID: SBKR1275L501S121812S004
Work Order: 1212695
Collection Date: 12/18/2012 1:45:00 PM
Project: Marshall KRRI 1275L 12/18/12
Lab ID: 1212695-01
Matrix: SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	74	50		µg/Kg-dry	1	12/23/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/23/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
m,p-Xylene	ND	150	100		µg/Kg-dry	1	12/23/2012
Methyl iodide	ND	100	100		µg/Kg-dry	1	12/23/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/23/2012
Methylene chloride	ND	100	100		µg/Kg-dry	1	12/23/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/23/2012
n-Butylbenzene	ND	74	50		µg/Kg-dry	1	12/23/2012
n-Propylbenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
o-Xylene	ND	74	50		µg/Kg-dry	1	12/23/2012
p-Isopropyltoluene	ND	100	100		µg/Kg-dry	1	12/23/2012
sec-Butylbenzene	ND	74	50		µg/Kg-dry	1	12/23/2012
Styrene	ND	74	50		µg/Kg-dry	1	12/23/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/23/2012
tert-Butylbenzene	ND	74	50		µg/Kg-dry	1	12/23/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/23/2012
Tetrachloroethene	ND	74	50		µg/Kg-dry	1	12/23/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/23/2012
Toluene	ND	100	100		µg/Kg-dry	1	12/23/2012
trans-1,2-Dichloroethene	ND	74	50		µg/Kg-dry	1	12/23/2012
trans-1,3-Dichloropropene	ND	74	50		µg/Kg-dry	1	12/23/2012
trans-1,4-Dichloro-2-butene	ND	74	50		µg/Kg-dry	1	12/23/2012
Trichloroethene	ND	74	50		µg/Kg-dry	1	12/23/2012
Trichlorofluoromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Vinyl chloride	ND	74	40		µg/Kg-dry	1	12/23/2012
Surr: 1,2-Dichloroethane-d4	*106*	*70-130*			*%REC*	1	12/23/2012
Surr: 4-Bromofluorobenzene	*94.8*	*70-130*			*%REC*	1	12/23/2012
Surr: Dibromofluoromethane	*90.3*	*70-130*			*%REC*	1	12/23/2012
Surr: Toluene-d8	*93.2*	*70-130*			*%REC*	1	12/23/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**59**	**0.050**	**0**		**% of sample**	1	12/21/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1275L502S121812S004
Work Order:	1212695	**Collection Date:**	12/18/2012 2:43:00 PM
Project:	Marshall KRRI 1275L 12/18/12		
Lab ID:	1212695-02	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/21/2012**		Analyst: **CW**
DRO (C10-C20)	ND	16	4.0		mg/Kg-dry	1	12/21/2012
ORO (C20-C34)	**260**	**32**	**4.0**		**mg/Kg-dry**	1	12/21/2012
Surr: 4-Terphenyl-d14	*78.4*	*39-115*			*%REC*	1	12/21/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/21/2012**		Analyst: **CES**
Beryllium	ND	0.99	0.50		mg/Kg-dry	4	12/26/2012
Molybdenum	ND	2.5	1.0		mg/Kg-dry	4	12/26/2012
Nickel	**18**	**2.5**	**1.0**		**mg/Kg-dry**	4	12/26/2012
Vanadium	**25**	**2.5**	**1.0**		**mg/Kg-dry**	4	12/26/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/21/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/21/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/21/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/21/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/21/2012
Benzo(a)anthracene	**490**	**330**	**330**		**µg/Kg-dry**	1	12/21/2012
Benzo(a)pyrene	**830**	**330**	**330**		**µg/Kg-dry**	1	12/21/2012
Benzo(b)fluoranthene	**750**	**330**	**330**		**µg/Kg-dry**	1	12/21/2012
Benzo(g,h,i)perylene	**560**	**330**	**330**		**µg/Kg-dry**	1	12/21/2012
Benzo(k)fluoranthene	**330**	**330**	**330**		**µg/Kg-dry**	1	12/21/2012
Chrysene	**640**	**330**	**330**		**µg/Kg-dry**	1	12/21/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/21/2012
Fluoranthene	**590**	**330**	**330**		**µg/Kg-dry**	1	12/21/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/21/2012
Indeno(1,2,3-cd)pyrene	**440**	**330**	**330**		**µg/Kg-dry**	1	12/21/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/21/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/21/2012
Pyrene	**770**	**330**	**330**		**µg/Kg-dry**	1	12/21/2012
Surr: 2,4,6-Tribromophenol	*75.5*	*34-140*			*%REC*	1	12/21/2012
Surr: 2-Fluorobiphenyl	*65.5*	*12-100*			*%REC*	1	12/21/2012
Surr: 2-Fluorophenol	*77.5*	*33-117*			*%REC*	1	12/21/2012
Surr: 4-Terphenyl-d14	*83.9*	*25-137*			*%REC*	1	12/21/2012
Surr: Nitrobenzene-d5	*72.3*	*37-107*			*%REC*	1	12/21/2012
Surr: Phenol-d6	*83.6*	*40-106*			*%REC*	1	12/21/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/19/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	100	100		µg/Kg-dry	1	12/23/2012
1,1,1-Trichloroethane	ND	50	50		µg/Kg-dry	1	12/23/2012
1,1,2,2-Tetrachloroethane	ND	50	50		µg/Kg-dry	1	12/23/2012
1,1,2-Trichloroethane	ND	50	50		µg/Kg-dry	1	12/23/2012
1,1-Dichloroethane	ND	50	50		µg/Kg-dry	1	12/23/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Dec-12*

Client: AECOM Environment
Client Sample ID: SBKR1275L502S121812S004
Work Order: 1212695
Collection Date: 12/18/2012 2:43:00 PM
Project: Marshall KRRI 1275L 12/18/12
Lab ID: 1212695-02
Matrix: SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	50	50		µg/Kg-dry	1	12/23/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
1,2,3-Trichloropropane	ND	100	100		µg/Kg-dry	1	12/23/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
1,2,4-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,2-Dibromo-3-chloropropane	ND	49	10		µg/Kg-dry	1	12/23/2012
1,2-Dibromoethane	ND	49	20		µg/Kg-dry	1	12/23/2012
1,2-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,2-Dichloroethane	ND	50	50		µg/Kg-dry	1	12/23/2012
1,2-Dichloropropane	ND	50	50		µg/Kg-dry	1	12/23/2012
1,3,5-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,3-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,4-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/23/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/23/2012
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/23/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/23/2012
Acetone	ND	1,000	1,000		µg/Kg-dry	1	12/23/2012
Acrylonitrile	ND	100	100		µg/Kg-dry	1	12/23/2012
Benzene	ND	50	50		µg/Kg-dry	1	12/23/2012
Bromobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromochloromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromodichloromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromoform	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/23/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/23/2012
Carbon tetrachloride	ND	50	50		µg/Kg-dry	1	12/23/2012
Chlorobenzene	ND	50	50		µg/Kg-dry	1	12/23/2012
Chloroethane	ND	250	250		µg/Kg-dry	1	12/23/2012
Chloroform	ND	50	50		µg/Kg-dry	1	12/23/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/23/2012
cis-1,2-Dichloroethene	ND	50	50		µg/Kg-dry	1	12/23/2012
cis-1,3-Dichloropropene	ND	50	50		µg/Kg-dry	1	12/23/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/23/2012
Dibromochloromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/23/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/23/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/23/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/23/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/23/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client:	AECOM Environment	**Client Sample ID:**	SBKR1275L502S121812S004
Work Order:	1212695	**Collection Date:**	12/18/2012 2:43:00 PM
Project:	Marshall KRRI 1275L 12/18/12		
Lab ID:	1212695-02	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	50	50		µg/Kg-dry	1	12/23/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/23/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
m,p-Xylene	ND	100	100		µg/Kg-dry	1	12/23/2012
Methyl iodide	ND	100	100		µg/Kg-dry	1	12/23/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/23/2012
Methylene chloride	ND	100	100		µg/Kg-dry	1	12/23/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/23/2012
n-Butylbenzene	ND	50	50		µg/Kg-dry	1	12/23/2012
n-Propylbenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
o-Xylene	ND	50	50		µg/Kg-dry	1	12/23/2012
p-Isopropyltoluene	ND	100	100		µg/Kg-dry	1	12/23/2012
sec-Butylbenzene	ND	50	50		µg/Kg-dry	1	12/23/2012
Styrene	ND	50	50		µg/Kg-dry	1	12/23/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/23/2012
tert-Butylbenzene	ND	50	50		µg/Kg-dry	1	12/23/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/23/2012
Tetrachloroethene	ND	50	50		µg/Kg-dry	1	12/23/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/23/2012
Toluene	ND	100	100		µg/Kg-dry	1	12/23/2012
trans-1,2-Dichloroethene	ND	50	50		µg/Kg-dry	1	12/23/2012
trans-1,3-Dichloropropene	ND	50	50		µg/Kg-dry	1	12/23/2012
trans-1,4-Dichloro-2-butene	ND	50	50		µg/Kg-dry	1	12/23/2012
Trichloroethene	ND	50	50		µg/Kg-dry	1	12/23/2012
Trichlorofluoromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Vinyl chloride	ND	49	40		µg/Kg-dry	1	12/23/2012
Surr: 1,2-Dichloroethane-d4	*107*	*70-130*			*%REC*	1	12/23/2012
Surr: 4-Bromofluorobenzene	*95.0*	*70-130*			*%REC*	1	12/23/2012
Surr: Dibromofluoromethane	*93.0*	*70-130*			*%REC*	1	12/23/2012
Surr: Toluene-d8	*98.4*	*70-130*			*%REC*	1	12/23/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**39**	**0.050**	**0**		**% of sample**	1	12/21/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1275L502D121812S004
Work Order:	1212695	**Collection Date:**	12/18/2012 2:43:00 PM
Project:	Marshall KRRI 1275L 12/18/12		
Lab ID:	1212695-03	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/21/2012**		Analyst: **CW**
DRO (C10-C20)	**18**	**16**	**4.0**		**mg/Kg-dry**	1	12/21/2012
ORO (C20-C34)	**330**	**33**	**4.0**		**mg/Kg-dry**	1	12/21/2012
Surr: 4-Terphenyl-d14	*74.0*	*39-115*			*%REC*	1	12/21/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/21/2012**		Analyst: **CES**
Beryllium	ND	0.88	0.50		mg/Kg-dry	4	12/26/2012
Molybdenum	ND	2.2	1.0		mg/Kg-dry	4	12/26/2012
Nickel	**17**	**2.2**	**1.0**		**mg/Kg-dry**	4	12/26/2012
Vanadium	**25**	**2.2**	**1.0**		**mg/Kg-dry**	4	12/26/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/21/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/21/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/21/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/21/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/21/2012
Benzo(a)anthracene	**450**	**330**	**330**		**µg/Kg-dry**	1	12/21/2012
Benzo(a)pyrene	**790**	**330**	**330**		**µg/Kg-dry**	1	12/21/2012
Benzo(b)fluoranthene	**710**	**330**	**330**		**µg/Kg-dry**	1	12/21/2012
Benzo(g,h,i)perylene	**500**	**330**	**330**		**µg/Kg-dry**	1	12/21/2012
Benzo(k)fluoranthene	**340**	**330**	**330**		**µg/Kg-dry**	1	12/21/2012
Chrysene	**610**	**330**	**330**		**µg/Kg-dry**	1	12/21/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/21/2012
Fluoranthene	**560**	**330**	**330**		**µg/Kg-dry**	1	12/21/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/21/2012
Indeno(1,2,3-cd)pyrene	**400**	**330**	**330**		**µg/Kg-dry**	1	12/21/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/21/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/21/2012
Pyrene	**740**	**330**	**330**		**µg/Kg-dry**	1	12/21/2012
Surr: 2,4,6-Tribromophenol	*77.9*	*34-140*			*%REC*	1	12/21/2012
Surr: 2-Fluorobiphenyl	*64.3*	*12-100*			*%REC*	1	12/21/2012
Surr: 2-Fluorophenol	*75.5*	*33-117*			*%REC*	1	12/21/2012
Surr: 4-Terphenyl-d14	*83.8*	*25-137*			*%REC*	1	12/21/2012
Surr: Nitrobenzene-d5	*69.1*	*37-107*			*%REC*	1	12/21/2012
Surr: Phenol-d6	*65.1*	*40-106*			*%REC*	1	12/21/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/19/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	100	100		µg/Kg-dry	1	12/23/2012
1,1,1-Trichloroethane	ND	50	50		µg/Kg-dry	1	12/23/2012
1,1,2,2-Tetrachloroethane	ND	50	50		µg/Kg-dry	1	12/23/2012
1,1,2-Trichloroethane	ND	50	50		µg/Kg-dry	1	12/23/2012
1,1-Dichloroethane	ND	50	50		µg/Kg-dry	1	12/23/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1275L502D121812S004
Work Order:	1212695	**Collection Date:**	12/18/2012 2:43:00 PM
Project:	Marshall KRRI 1275L 12/18/12		
Lab ID:	1212695-03	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	50	50		µg/Kg-dry	1	12/23/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
1,2,3-Trichloropropane	ND	100	100		µg/Kg-dry	1	12/23/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
1,2,4-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,2-Dibromo-3-chloropropane	ND	50	10		µg/Kg-dry	1	12/23/2012
1,2-Dibromoethane	ND	50	20		µg/Kg-dry	1	12/23/2012
1,2-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,2-Dichloroethane	ND	50	50		µg/Kg-dry	1	12/23/2012
1,2-Dichloropropane	ND	50	50		µg/Kg-dry	1	12/23/2012
1,3,5-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,3-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,4-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/23/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/23/2012
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/23/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/23/2012
Acetone	ND	1,000	1,000		µg/Kg-dry	1	12/23/2012
Acrylonitrile	ND	100	100		µg/Kg-dry	1	12/23/2012
Benzene	ND	50	50		µg/Kg-dry	1	12/23/2012
Bromobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromochloromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromodichloromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromoform	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/23/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/23/2012
Carbon tetrachloride	ND	50	50		µg/Kg-dry	1	12/23/2012
Chlorobenzene	ND	50	50		µg/Kg-dry	1	12/23/2012
Chloroethane	ND	250	250		µg/Kg-dry	1	12/23/2012
Chloroform	ND	50	50		µg/Kg-dry	1	12/23/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/23/2012
cis-1,2-Dichloroethene	ND	50	50		µg/Kg-dry	1	12/23/2012
cis-1,3-Dichloropropene	ND	50	50		µg/Kg-dry	1	12/23/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/23/2012
Dibromochloromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/23/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/23/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/23/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/23/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/23/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: AECOM Environment **Client Sample ID:** SBKR1275L502D121812S004
Work Order: 1212695 **Collection Date:** 12/18/2012 2:43:00 PM
Project: Marshall KRRI 1275L 12/18/12
Lab ID: 1212695-03 **Matrix:** SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	50	50		µg/Kg-dry	1	12/23/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/23/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
m,p-Xylene	ND	100	100		µg/Kg-dry	1	12/23/2012
Methyl iodide	ND	100	100		µg/Kg-dry	1	12/23/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/23/2012
Methylene chloride	ND	100	100		µg/Kg-dry	1	12/23/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/23/2012
n-Butylbenzene	ND	50	50		µg/Kg-dry	1	12/23/2012
n-Propylbenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
o-Xylene	ND	50	50		µg/Kg-dry	1	12/23/2012
p-Isopropyltoluene	ND	100	100		µg/Kg-dry	1	12/23/2012
sec-Butylbenzene	ND	50	50		µg/Kg-dry	1	12/23/2012
Styrene	ND	50	50		µg/Kg-dry	1	12/23/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/23/2012
tert-Butylbenzene	ND	50	50		µg/Kg-dry	1	12/23/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/23/2012
Tetrachloroethene	ND	50	50		µg/Kg-dry	1	12/23/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/23/2012
Toluene	ND	100	100		µg/Kg-dry	1	12/23/2012
trans-1,2-Dichloroethene	ND	50	50		µg/Kg-dry	1	12/23/2012
trans-1,3-Dichloropropene	ND	50	50		µg/Kg-dry	1	12/23/2012
trans-1,4-Dichloro-2-butene	ND	50	50		µg/Kg-dry	1	12/23/2012
Trichloroethene	ND	50	50		µg/Kg-dry	1	12/23/2012
Trichlorofluoromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Vinyl chloride	ND	50	40		µg/Kg-dry	1	12/23/2012
Surr: 1,2-Dichloroethane-d4	*105*	*70-130*			*%REC*	1	12/23/2012
Surr: 4-Bromofluorobenzene	*97.9*	*70-130*			*%REC*	1	12/23/2012
Surr: Dibromofluoromethane	*92.0*	*70-130*			*%REC*	1	12/23/2012
Surr: Toluene-d8	*97.4*	*70-130*			*%REC*	1	12/23/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**40**	**0.050**	**0**		**% of sample**	1	12/21/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1275L503S121812S005
Work Order:	1212695	**Collection Date:**	12/18/2012 3:54:00 PM
Project:	Marshall KRRI 1275L 12/18/12		
Lab ID:	1212695-04	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/21/2012**		Analyst: **CW**
DRO (C10-C20)	**32**	**24**	**4.0**		**mg/Kg-dry**	1	12/21/2012
ORO (C20-C34)	**270**	**49**	**4.0**		**mg/Kg-dry**	1	12/21/2012
Surr: 4-Terphenyl-d14	*73.9*	*39-115*			*%REC*	1	12/21/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/21/2012**		Analyst: **CES**
Beryllium	ND	1.5	0.50		mg/Kg-dry	4	12/26/2012
Molybdenum	ND	3.8	1.0		mg/Kg-dry	4	12/26/2012
Nickel	**18**	**3.8**	**1.0**		**mg/Kg-dry**	4	12/26/2012
Vanadium	**25**	**3.8**	**1.0**		**mg/Kg-dry**	4	12/26/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/21/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/21/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/21/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/21/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/21/2012
Benzo(a)anthracene	ND	330	330		µg/Kg-dry	1	12/21/2012
Benzo(a)pyrene	**340**	**330**	**330**		**µg/Kg-dry**	1	12/21/2012
Benzo(b)fluoranthene	ND	330	330		µg/Kg-dry	1	12/21/2012
Benzo(g,h,i)perylene	ND	330	330		µg/Kg-dry	1	12/21/2012
Benzo(k)fluoranthene	ND	330	330		µg/Kg-dry	1	12/21/2012
Chrysene	ND	330	330		µg/Kg-dry	1	12/21/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/21/2012
Fluoranthene	ND	330	330		µg/Kg-dry	1	12/21/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/21/2012
Indeno(1,2,3-cd)pyrene	ND	330	330		µg/Kg-dry	1	12/21/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/21/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/21/2012
Pyrene	**410**	**330**	**330**		**µg/Kg-dry**	1	12/21/2012
Surr: 2,4,6-Tribromophenol	*78.6*	*34-140*			*%REC*	1	12/21/2012
Surr: 2-Fluorobiphenyl	*58.2*	*12-100*			*%REC*	1	12/21/2012
Surr: 2-Fluorophenol	*66.8*	*33-117*			*%REC*	1	12/21/2012
Surr: 4-Terphenyl-d14	*82.1*	*25-137*			*%REC*	1	12/21/2012
Surr: Nitrobenzene-d5	*62.0*	*37-107*			*%REC*	1	12/21/2012
Surr: Phenol-d6	*72.4*	*40-106*			*%REC*	1	12/21/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/19/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	100	100		µg/Kg-dry	1	12/23/2012
1,1,1-Trichloroethane	ND	76	50		µg/Kg-dry	1	12/23/2012
1,1,2,2-Tetrachloroethane	ND	76	50		µg/Kg-dry	1	12/23/2012
1,1,2-Trichloroethane	ND	76	50		µg/Kg-dry	1	12/23/2012
1,1-Dichloroethane	ND	76	50		µg/Kg-dry	1	12/23/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Dec-12*

Client: AECOM Environment
Work Order: 1212695
Project: Marshall KRRI 1275L 12/18/12
Lab ID: 1212695-04

Client Sample ID: SBKR1275L503S121812S005
Collection Date: 12/18/2012 3:54:00 PM
Matrix: SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	76	50		µg/Kg-dry	1	12/23/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
1,2,3-Trichloropropane	ND	100	100		µg/Kg-dry	1	12/23/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
1,2,4-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,2-Dibromo-3-chloropropane	ND	76	10		µg/Kg-dry	1	12/23/2012
1,2-Dibromoethane	ND	76	20		µg/Kg-dry	1	12/23/2012
1,2-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,2-Dichloroethane	ND	76	50		µg/Kg-dry	1	12/23/2012
1,2-Dichloropropane	ND	76	50		µg/Kg-dry	1	12/23/2012
1,3,5-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,3-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,4-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/23/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/23/2012
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/23/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/23/2012
Acetone	ND	1,000	1,000		µg/Kg-dry	1	12/23/2012
Acrylonitrile	ND	100	100		µg/Kg-dry	1	12/23/2012
Benzene	ND	76	50		µg/Kg-dry	1	12/23/2012
Bromobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromochloromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromodichloromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromoform	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/23/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/23/2012
Carbon tetrachloride	ND	76	50		µg/Kg-dry	1	12/23/2012
Chlorobenzene	ND	76	50		µg/Kg-dry	1	12/23/2012
Chloroethane	ND	250	250		µg/Kg-dry	1	12/23/2012
Chloroform	ND	76	50		µg/Kg-dry	1	12/23/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/23/2012
cis-1,2-Dichloroethene	ND	76	50		µg/Kg-dry	1	12/23/2012
cis-1,3-Dichloropropene	ND	76	50		µg/Kg-dry	1	12/23/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/23/2012
Dibromochloromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/23/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/23/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/23/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/23/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/23/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: AECOM Environment **Client Sample ID:** SBKR1275L503S121812S005
Work Order: 1212695 **Collection Date:** 12/18/2012 3:54:00 PM
Project: Marshall KRRI 1275L 12/18/12
Lab ID: 1212695-04 **Matrix:** SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	76	50		µg/Kg-dry	1	12/23/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/23/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
m,p-Xylene	ND	150	100		µg/Kg-dry	1	12/23/2012
Methyl iodide	ND	100	100		µg/Kg-dry	1	12/23/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/23/2012
Methylene chloride	ND	100	100		µg/Kg-dry	1	12/23/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/23/2012
n-Butylbenzene	ND	76	50		µg/Kg-dry	1	12/23/2012
n-Propylbenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
o-Xylene	ND	76	50		µg/Kg-dry	1	12/23/2012
p-Isopropyltoluene	ND	100	100		µg/Kg-dry	1	12/23/2012
sec-Butylbenzene	ND	76	50		µg/Kg-dry	1	12/23/2012
Styrene	ND	76	50		µg/Kg-dry	1	12/23/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/23/2012
tert-Butylbenzene	ND	76	50		µg/Kg-dry	1	12/23/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/23/2012
Tetrachloroethene	ND	76	50		µg/Kg-dry	1	12/23/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/23/2012
Toluene	ND	100	100		µg/Kg-dry	1	12/23/2012
trans-1,2-Dichloroethene	ND	76	50		µg/Kg-dry	1	12/23/2012
trans-1,3-Dichloropropene	ND	76	50		µg/Kg-dry	1	12/23/2012
trans-1,4-Dichloro-2-butene	ND	76	50		µg/Kg-dry	1	12/23/2012
Trichloroethene	ND	76	50		µg/Kg-dry	1	12/23/2012
Trichlorofluoromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Vinyl chloride	ND	76	40		µg/Kg-dry	1	12/23/2012
Surr: 1,2-Dichloroethane-d4	*106*	*70-130*			*%REC*	1	12/23/2012
Surr: 4-Bromofluorobenzene	*96.8*	*70-130*			*%REC*	1	12/23/2012
Surr: Dibromofluoromethane	*89.4*	*70-130*			*%REC*	1	12/23/2012
Surr: Toluene-d8	*95.6*	*70-130*			*%REC*	1	12/23/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**60**	**0.050**	**0**		**% of sample**	1	12/21/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1275L503T121812MX
Work Order:	1212695	**Collection Date:**	12/18/2012
Project:	Marshall KRRI 1275L 12/18/12		
Lab ID:	1212695-05	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/19/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	100	100		µg/Kg	1	12/23/2012
1,1,1-Trichloroethane	ND	50	50		µg/Kg	1	12/23/2012
1,1,2,2-Tetrachloroethane	ND	50	50		µg/Kg	1	12/23/2012
1,1,2-Trichloroethane	ND	50	50		µg/Kg	1	12/23/2012
1,1-Dichloroethane	ND	50	50		µg/Kg	1	12/23/2012
1,1-Dichloroethene	ND	50	50		µg/Kg	1	12/23/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg	1	12/23/2012
1,2,3-Trichloropropane	ND	100	100		µg/Kg	1	12/23/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg	1	12/23/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg	1	12/23/2012
1,2,4-Trimethylbenzene	ND	100	100		µg/Kg	1	12/23/2012
1,2-Dibromo-3-chloropropane	ND	30	10		µg/Kg	1	12/23/2012
1,2-Dibromoethane	ND	30	20		µg/Kg	1	12/23/2012
1,2-Dichlorobenzene	ND	100	100		µg/Kg	1	12/23/2012
1,2-Dichloroethane	ND	50	50		µg/Kg	1	12/23/2012
1,2-Dichloropropane	ND	50	50		µg/Kg	1	12/23/2012
1,3,5-Trimethylbenzene	ND	100	100		µg/Kg	1	12/23/2012
1,3-Dichlorobenzene	ND	100	100		µg/Kg	1	12/23/2012
1,4-Dichlorobenzene	ND	100	100		µg/Kg	1	12/23/2012
2-Butanone	ND	750	750		µg/Kg	1	12/23/2012
2-Hexanone	ND	2,500	2,500		µg/Kg	1	12/23/2012
2-Methylnaphthalene	ND	330	330		µg/Kg	1	12/23/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg	1	12/23/2012
Acetone	ND	1,000	1,000		µg/Kg	1	12/23/2012
Acrylonitrile	ND	100	100		µg/Kg	1	12/23/2012
Benzene	ND	50	50		µg/Kg	1	12/23/2012
Bromobenzene	ND	100	100		µg/Kg	1	12/23/2012
Bromochloromethane	ND	100	100		µg/Kg	1	12/23/2012
Bromodichloromethane	ND	100	100		µg/Kg	1	12/23/2012
Bromoform	ND	100	100		µg/Kg	1	12/23/2012
Bromomethane	ND	200	200		µg/Kg	1	12/23/2012
Carbon disulfide	ND	250	250		µg/Kg	1	12/23/2012
Carbon tetrachloride	ND	50	50		µg/Kg	1	12/23/2012
Chlorobenzene	ND	50	50		µg/Kg	1	12/23/2012
Chloroethane	ND	250	250		µg/Kg	1	12/23/2012
Chloroform	ND	50	50		µg/Kg	1	12/23/2012
Chloromethane	ND	250	250		µg/Kg	1	12/23/2012
cis-1,2-Dichloroethene	ND	50	50		µg/Kg	1	12/23/2012
cis-1,3-Dichloropropene	ND	50	50		µg/Kg	1	12/23/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1275L503T121812MX
Work Order:	1212695	**Collection Date:**	12/18/2012
Project:	Marshall KRRI 1275L 12/18/12		
Lab ID:	1212695-05	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Cyclohexane	ND	500	500		µg/Kg	1	12/23/2012
Dibromochloromethane	ND	100	100		µg/Kg	1	12/23/2012
Dibromomethane	ND	250	250		µg/Kg	1	12/23/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg	1	12/23/2012
Diethyl ether	ND	200	200		µg/Kg	1	12/23/2012
Diisopropyl ether	ND	250	250		µg/Kg	1	12/23/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg	1	12/23/2012
Ethylbenzene	ND	50	50		µg/Kg	1	12/23/2012
Hexachloroethane	ND	300	300		µg/Kg	1	12/23/2012
Isopropylbenzene	ND	250	250		µg/Kg	1	12/23/2012
m,p-Xylene	ND	100	100		µg/Kg	1	12/23/2012
Methyl iodide	ND	100	100		µg/Kg	1	12/23/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg	1	12/23/2012
Methylene chloride	ND	100	100		µg/Kg	1	12/23/2012
Naphthalene	ND	330	330		µg/Kg	1	12/23/2012
n-Butylbenzene	ND	50	50		µg/Kg	1	12/23/2012
n-Propylbenzene	ND	100	100		µg/Kg	1	12/23/2012
o-Xylene	ND	50	50		µg/Kg	1	12/23/2012
p-Isopropyltoluene	ND	100	100		µg/Kg	1	12/23/2012
sec-Butylbenzene	ND	50	50		µg/Kg	1	12/23/2012
Styrene	ND	50	50		µg/Kg	1	12/23/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg	1	12/23/2012
tert-Butylbenzene	ND	50	50		µg/Kg	1	12/23/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg	1	12/23/2012
Tetrachloroethene	ND	50	50		µg/Kg	1	12/23/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg	1	12/23/2012
Toluene	ND	100	100		µg/Kg	1	12/23/2012
trans-1,2-Dichloroethene	ND	50	50		µg/Kg	1	12/23/2012
trans-1,3-Dichloropropene	ND	50	50		µg/Kg	1	12/23/2012
trans-1,4-Dichloro-2-butene	ND	50	50		µg/Kg	1	12/23/2012
Trichloroethene	ND	50	50		µg/Kg	1	12/23/2012
Trichlorofluoromethane	ND	100	100		µg/Kg	1	12/23/2012
Vinyl chloride	ND	40	40		µg/Kg	1	12/23/2012
Surr: 1,2-Dichloroethane-d4	*106*	*70-130*			*%REC*	1	12/23/2012
Surr: 4-Bromofluorobenzene	*99.4*	*70-130*			*%REC*	1	12/23/2012
Surr: Dibromofluoromethane	*90.2*	*70-130*			*%REC*	1	12/23/2012
Surr: Toluene-d8	*95.5*	*70-130*			*%REC*	1	12/23/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 28-Dec-12

Client: AECOM Environment

QC BATCH REPORT

Work Order: 1212695

Project: Marshall KRRI 1275L 12/18/12

Batch ID: **45552** Instrument ID **GC8** Method: **SW8015M**

MBLK Sample ID: **DBLKS1-45552-45552** Units: **mg/Kg** Analysis Date: **12/21/2012 06:15 PM**

Client ID: Run ID: **GC8_121221A** SeqNo: **2177815** Prep Date: **12/21/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	ND	10								
ORO (C20-C34)	ND	20								
Surr: 4-Terphenyl-d14	*3.584*	0	*5*	0	*71.7*	*39-115*	0			

LCS Sample ID: **DLCSS1-45552-45552** Units: **mg/Kg** Analysis Date: **12/21/2012 06:40 PM**

Client ID: Run ID: **GC8_121221A** SeqNo: **2177816** Prep Date: **12/21/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	332.6	10	500	0	66.5	49-124	0			
ORO (C20-C34)	333	20	500	0	66.6	60-130	0			
Surr: 4-Terphenyl-d14	*3.927*	0	*5*	0	*78.5*	*39-115*	0			

MS Sample ID: **1212734-01A MS** Units: **mg/Kg** Analysis Date: **12/21/2012 07:05 PM**

Client ID: Run ID: **GC8_121221A** SeqNo: **2177818** Prep Date: **12/21/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	335	9.7	486.8	0.9974	68.6	60-130	0			
ORO (C20-C34)	414	19	486.8	91.47	66.2	60-130	0			
Surr: 4-Terphenyl-d14	*4.041*	0	*4.868*	0	*83*	*39-115*	0			

MSD Sample ID: **1212734-01A MSD** Units: **mg/Kg** Analysis Date: **12/21/2012 07:30 PM**

Client ID: Run ID: **GC8_121221A** SeqNo: **2177819** Prep Date: **12/21/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	328.5	9.7	486.2	0.9974	67.4	60-130	335	1.95	30	
ORO (C20-C34)	445.9	19	486.2	91.47	72.9	60-130	414	7.43	30	
Surr: 4-Terphenyl-d14	*4.208*	0	*4.862*	0	*86.5*	*39-115*	4.041	*4.03*	*30*	

The following samples were analyzed in this batch: 1212695-01A 1212695-02A 1212695-03A 1212695-04A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212695
Project: Marshall KRRI 1275L 12/18/12

QC BATCH REPORT

Batch ID: **45573** Instrument ID **ICPMS1** Method: **SW6020A**

MBLK Sample ID: **MBLK-45573-45573** Units: **mg/Kg** Analysis Date: **12/22/2012 12:26 AM**
Client ID: Run ID: **ICPMS1_121220A** SeqNo: **2178371** Prep Date: **12/21/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	ND	0.10								
Molybdenum	ND	0.25								
Nickel	0.004936	0.25								J
Vanadium	ND	0.25								

LCS Sample ID: **LCS-45573-45573** Units: **mg/Kg** Analysis Date: **12/22/2012 12:32 AM**
Client ID: Run ID: **ICPMS1_121220A** SeqNo: **2178372** Prep Date: **12/21/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	4.58	0.10	5	0	91.6	80-120	0			
Molybdenum	4.824	0.25	5	0	96.5	80-120	0			
Nickel	4.319	0.25	5	0	86.4	80-120	0			
Vanadium	4.59	0.25	5	0	91.8	80-120	0			

MS Sample ID: **1212775-16BMS** Units: **mg/Kg** Analysis Date: **12/22/2012 04:11 AM**
Client ID: Run ID: **ICPMS1_121220A** SeqNo: **2178410** Prep Date: **12/21/2012** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	7.098	0.69	6.935	0.05992	101	75-125	0			
Molybdenum	6.661	1.7	6.935	0.2148	93	75-125	0			
Nickel	9.938	1.7	6.935	3.225	96.8	75-125	0			
Vanadium	13.63	1.7	6.935	5.536	117	75-125	0			

MSD Sample ID: **1212775-16BMSD** Units: **mg/Kg** Analysis Date: **12/22/2012 04:17 AM**
Client ID: Run ID: **ICPMS1_121220A** SeqNo: **2178411** Prep Date: **12/21/2012** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	6.557	0.67	6.684	0.05992	97.2	75-125	7.098	7.91	25	
Molybdenum	6.474	1.7	6.684	0.2148	93.6	75-125	6.661	2.85	25	
Nickel	9.502	1.7	6.684	3.225	93.9	75-125	9.938	4.48	25	
Vanadium	13.85	1.7	6.684	5.536	124	75-125	13.63	1.63	25	

The following samples were analyzed in this batch: 1212695-01A 1212695-02A 1212695-03A 1212695-04A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212695
Project: Marshall KRRI 1275L 12/18/12

QC BATCH REPORT

Batch ID: **45551** Instrument ID **SVMS7** Method: **SW8270**

MBLK Sample ID: **SBLKS1-45551-45551** Units: **µg/Kg** Analysis Date: **12/21/2012 05:58 PM**
Client ID: Run ID: **SVMS7_121221A** SeqNo: **2177275** Prep Date: **12/21/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	ND	50								
Acenaphthylene	ND	50								
Anthracene	ND	50								
Benzo(a)anthracene	ND	50								
Benzo(a)pyrene	ND	50								
Benzo(b)fluoranthene	ND	50								
Benzo(g,h,i)perylene	ND	50								
Benzo(k)fluoranthene	ND	50								
Chrysene	ND	50								
Dibenzo(a,h)anthracene	ND	50								
Fluoranthene	ND	50								
Fluorene	ND	50								
Indeno(1,2,3-cd)pyrene	ND	50								
Naphthalene	ND	50								
Phenanthrene	ND	50								
Pyrene	ND	50								
Surr: 2,4,6-Tribromophenol	*2507*	0	*5000*	0	*50.1*	*34-140*	0			
Surr: 2-Fluorobiphenyl	*3402*	0	*5000*	0	*68*	*12-100*	0			
Surr: 2-Fluorophenol	*4034*	0	*5000*	0	*80.7*	*33-117*	0			
Surr: 4-Terphenyl-d14	*3971*	0	*5000*	0	*79.4*	*25-137*	0			
Surr: Nitrobenzene-d5	*3843*	0	*5000*	0	*76.9*	*37-107*	0			
Surr: Phenol-d6	*4191*	0	*5000*	0	*83.8*	*40-106*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212695
Project: Marshall KRRI 1275L 12/18/12

QC BATCH REPORT

Batch ID: **45551** Instrument ID **SVMS7** Method: **SW8270**

LCS Sample ID: **SLCSS1-45551-45551** Units: **µg/Kg** Analysis Date: **12/21/2012 04:06 PM**
Client ID: Run ID: **SVMS7_121221A** SeqNo: **2177271** Prep Date: **12/21/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1754	50	2000	0	87.7	45-110	0			
Acenaphthylene	1817	50	2000	0	90.8	45-105	0			
Anthracene	1884	50	2000	0	94.2	55-105	0			
Benzo(a)anthracene	1869	50	2000	0	93.4	50-110	0			
Benzo(a)pyrene	1954	50	2000	0	97.7	50-110	0			
Benzo(b)fluoranthene	1836	50	2000	0	91.8	45-115	0			
Benzo(g,h,i)perylene	2260	50	2000	0	113	40-125	0			
Benzo(k)fluoranthene	1944	50	2000	0	97.2	45-115	0			
Chrysene	1751	50	2000	0	87.6	55-110	0			
Dibenzo(a,h)anthracene	2230	50	2000	0	112	40-125	0			
Fluoranthene	1841	50	2000	0	92	55-115	0			
Fluorene	1840	50	2000	0	92	50-110	0			
Indeno(1,2,3-cd)pyrene	2237	50	2000	0	112	40-120	0			
Naphthalene	1687	50	2000	0	84.4	40-105	0			
Phenanthrene	1921	50	2000	0	96	50-110	0			
Pyrene	1952	50	2000	0	97.6	45-125	0			
Surr: 2,4,6-Tribromophenol	*3168*	0	*5000*	0	*63.4*	*34-140*	0			
Surr: 2-Fluorobiphenyl	*3609*	0	*5000*	0	*72.2*	*12-100*	0			
Surr: 2-Fluorophenol	*4052*	0	*5000*	0	*81*	*33-117*	0			
Surr: 4-Terphenyl-d14	*4780*	0	*5000*	0	*95.6*	*25-137*	0			
Surr: Nitrobenzene-d5	*3835*	0	*5000*	0	*76.7*	*37-107*	0			
Surr: Phenol-d6	*4232*	0	*5000*	0	*84.6*	*40-106*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212695
Project: Marshall KRRI 1275L 12/18/12

QC BATCH REPORT

Batch ID: **45551** Instrument ID **SVMS7** Method: **SW8270**

MS Sample ID: **1212710-32B MS** Units: **µg/Kg** Analysis Date: **12/21/2012 04:34 PM**
Client ID: Run ID: **SVMS7_121221A** SeqNo: **2177272** Prep Date: **12/21/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1567	46	1855	0	84.5	45-110	0			
Acenaphthylene	1600	46	1855	0	86.2	45-105	0			
Anthracene	1750	46	1855	0	94.4	55-105	0			
Benzo(a)anthracene	1776	46	1855	0	95.8	50-110	0			
Benzo(a)pyrene	1845	46	1855	0	99.5	50-110	0			
Benzo(b)fluoranthene	1733	46	1855	0	93.4	45-115	0			
Benzo(g,h,i)perylene	1806	46	1855	0	97.4	40-125	0			
Benzo(k)fluoranthene	1863	46	1855	0	100	45-115	0			
Chrysene	1690	46	1855	0	91.1	55-110	0			
Dibenzo(a,h)anthracene	1856	46	1855	0	100	40-125	0			
Fluoranthene	1794	46	1855	0	96.8	55-115	0			
Fluorene	1656	46	1855	0	89.3	50-110	0			
Indeno(1,2,3-cd)pyrene	1841	46	1855	0	99.2	40-120	0			
Naphthalene	1436	46	1855	0	77.4	40-105	0			
Phenanthrene	1828	46	1855	0	98.6	50-110	0			
Pyrene	1685	46	1855	0	90.8	45-125	0			
Surr: 2,4,6-Tribromophenol	*3270*	0	*4636*	0	*70.5*	*34-140*	0			
Surr: 2-Fluorobiphenyl	*3067*	0	*4636*	0	*66.1*	*12-100*	0			
Surr: 2-Fluorophenol	*3450*	0	*4636*	0	*74.4*	*33-117*	0			
Surr: 4-Terphenyl-d14	*4011*	0	*4636*	0	*86.5*	*25-137*	0			
Surr: Nitrobenzene-d5	*3345*	0	*4636*	0	*72.1*	*37-107*	0			
Surr: Phenol-d6	*3654*	0	*4636*	0	*78.8*	*40-106*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212695
Project: Marshall KRRI 1275L 12/18/12

QC BATCH REPORT

Batch ID: **45551** Instrument ID **SVMS7** Method: **SW8270**

MSD Sample ID: **1212710-32B MSD** Units: **µg/Kg** Analysis Date: **12/21/2012 05:02 PM**
Client ID: Run ID: **SVMS7_121221A** SeqNo: **2177273** Prep Date: **12/21/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1517	47	1869	0	81.2	45-110	1567	3.28	30	
Acenaphthylene	1531	47	1869	0	82	45-105	1600	4.35	30	
Anthracene	1771	47	1869	0	94.8	55-105	1750	1.19	30	
Benzo(a)anthracene	1753	47	1869	0	93.8	50-110	1776	1.29	30	
Benzo(a)pyrene	1853	47	1869	0	99.2	50-110	1845	0.411	30	
Benzo(b)fluoranthene	1684	47	1869	0	90.1	45-115	1733	2.89	30	
Benzo(g,h,i)perylene	1826	47	1869	0	97.7	40-125	1806	1.07	30	
Benzo(k)fluoranthene	1993	47	1869	0	107	45-115	1863	6.75	30	
Chrysene	1717	47	1869	0	91.9	55-110	1690	1.64	30	
Dibenzo(a,h)anthracene	1888	47	1869	0	101	40-125	1856	1.76	30	
Fluoranthene	1716	47	1869	0	91.8	55-115	1794	4.49	30	
Fluorene	1709	47	1869	0	91.4	50-110	1656	3.14	30	
Indeno(1,2,3-cd)pyrene	1869	47	1869	0	100	40-120	1841	1.52	30	
Naphthalene	1377	47	1869	0	73.7	40-105	1436	4.2	30	
Phenanthrene	1849	47	1869	0	99	50-110	1828	1.17	30	
Pyrene	1635	47	1869	0	87.5	45-125	1685	2.99	30	
Surr: 2,4,6-Tribromophenol	*3397*	0	*4672*	0	*72.7*	*34-140*	3270	*3.83*	*40*	
Surr: 2-Fluorobiphenyl	*3069*	0	*4672*	0	*65.7*	*12-100*	3067	*0.0654*	*40*	
Surr: 2-Fluorophenol	*3325*	0	*4672*	0	*71.2*	*33-117*	3450	*3.69*	*40*	
Surr: 4-Terphenyl-d14	*3872*	0	*4672*	0	*82.9*	*25-137*	4011	*3.51*	*40*	
Surr: Nitrobenzene-d5	*3258*	0	*4672*	0	*69.7*	*37-107*	3345	*2.62*	*40*	
Surr: Phenol-d6	*3546*	0	*4672*	0	*75.9*	*40-106*	3654	*3.01*	*40*	

The following samples were analyzed in this batch: 1212695-01A 1212695-02A 1212695-03A 1212695-04A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45512** Instrument ID **VMS5** Method: **SW8260**

MBLK Sample ID: **MBLK-45512-45512** Units: **µg/Kg** Analysis Date: **12/22/2012 07:52 PM**
Client ID: Run ID: **VMS5_121222A** SeqNo: **2177850** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	30								
1,1,1-Trichloroethane	ND	30								
1,1,2,2-Tetrachloroethane	ND	30								
1,1,2-Trichloroethane	ND	30								
1,1-Dichloroethane	ND	30								
1,1-Dichloroethene	ND	30								
1,2,3-Trichlorobenzene	ND	30								
1,2,3-Trichloropropane	ND	30								
1,2,3-Trimethylbenzene	ND	30								
1,2,4-Trichlorobenzene	ND	30								
1,2,4-Trimethylbenzene	ND	30								
1,2-Dibromo-3-chloropropane	ND	30								
1,2-Dibromoethane	ND	30								
1,2-Dichlorobenzene	ND	30								
1,2-Dichloroethane	ND	30								
1,2-Dichloropropane	ND	30								
1,3,5-Trimethylbenzene	ND	30								
1,3-Dichlorobenzene	ND	30								
1,4-Dichlorobenzene	ND	30								
2-Butanone	ND	200								
2-Hexanone	ND	30								
2-Methylnaphthalene	ND	100								
4-Methyl-2-pentanone	ND	30								
Acetone	ND	100								
Acrylonitrile	ND	100								
Benzene	ND	30								
Bromobenzene	ND	30								
Bromochloromethane	ND	30								
Bromodichloromethane	ND	30								
Bromoform	ND	30								
Bromomethane	ND	75								
Carbon disulfide	ND	30								
Carbon tetrachloride	ND	30								
Chlorobenzene	ND	30								
Chloroethane	ND	100								
Chloroform	ND	30								
Chloromethane	ND	100								
cis-1,2-Dichloroethene	ND	30								
cis-1,3-Dichloropropene	ND	30								
Cyclohexane	ND	30								
Dibromochloromethane	ND	30								
Dibromomethane	ND	30								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45512** Instrument ID **VMS5** Method: **SW8260**

Dichlorodifluoromethane	ND	30					
Diethyl ether	ND	30					
Diisopropyl ether	ND	30					
Ethyl tert butyl ether	ND	30					
Ethylbenzene	ND	30					
Hexachloroethane	ND	30					
Isopropylbenzene	ND	30					
m,p-Xylene	ND	60					
Methyl iodide	ND	75					
Methyl tert-butyl ether	ND	30					
Methylene chloride	ND	30					
Naphthalene	ND	100					
n-Butylbenzene	ND	30					
n-Propylbenzene	ND	30					
o-Xylene	ND	30					
p-Isopropyltoluene	ND	30					
sec-Butylbenzene	ND	30					
Styrene	ND	30					
tert-Butyl alcohol	ND	200					
tert-Butylbenzene	ND	30					
Tertiaryamylmethylether	ND	30					
Tetrachloroethene	ND	30					
Tetrahydrofuran	ND	200					
Toluene	ND	30					
trans-1,2-Dichloroethene	ND	30					
trans-1,3-Dichloropropene	ND	30					
trans-1,4-Dichloro-2-butene	ND	30					
Trichloroethene	ND	30					
Trichlorofluoromethane	ND	30					
Vinyl chloride	ND	30					
Surr: 1,2-Dichloroethane-d4	*1005*	0	*1000*	0	*100*	*70-130*	0
Surr: 4-Bromofluorobenzene	*997.5*	0	*1000*	0	*99.8*	*70-130*	0
Surr: Dibromofluoromethane	*1014*	0	*1000*	0	*101*	*70-130*	0
Surr: Toluene-d8	*999*	0	*1000*	0	*99.9*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45512** Instrument ID **VMS5** Method: **SW8260**

MBLK Sample ID: **MBLK-45512-45512** Units: **µg/Kg** Analysis Date: **12/23/2012 01:15 AM**
Client ID: Run ID: **VMS9_121222B** SeqNo: **2178472** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	30								
1,1,1-Trichloroethane	ND	30								
1,1,2,2-Tetrachloroethane	ND	30								
1,1,2-Trichloroethane	ND	30								
1,1-Dichloroethane	ND	30								
1,1-Dichloroethene	ND	30								
1,2,3-Trichlorobenzene	ND	30								
1,2,3-Trichloropropane	ND	30								
1,2,3-Trimethylbenzene	ND	30								
1,2,4-Trichlorobenzene	ND	30								
1,2,4-Trimethylbenzene	ND	30								
1,2-Dibromo-3-chloropropane	ND	30								
1,2-Dibromoethane	ND	30								
1,2-Dichlorobenzene	ND	30								
1,2-Dichloroethane	ND	30								
1,2-Dichloropropane	ND	30								
1,3,5-Trimethylbenzene	ND	30								
1,3-Dichlorobenzene	ND	30								
1,4-Dichlorobenzene	ND	30								
2-Butanone	ND	200								
2-Hexanone	ND	30								
2-Methylnaphthalene	ND	100								
4-Methyl-2-pentanone	ND	30								
Acetone	109	100								
Acrylonitrile	ND	100								
Benzene	ND	30								
Bromobenzene	ND	30								
Bromochloromethane	ND	30								
Bromodichloromethane	ND	30								
Bromoform	ND	30								
Bromomethane	ND	75								
Carbon disulfide	ND	30								
Carbon tetrachloride	ND	30								
Chlorobenzene	ND	30								
Chloroethane	ND	100								
Chloroform	ND	30								
Chloromethane	ND	100								
cis-1,2-Dichloroethene	ND	30								
cis-1,3-Dichloropropene	ND	30								
Cyclohexane	ND	30								
Dibromochloromethane	ND	30								
Dibromomethane	ND	30								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45512** Instrument ID **VMS5** Method: **SW8260**

Dichlorodifluoromethane	ND	30					
Diethyl ether	ND	30					
Diisopropyl ether	ND	30					
Ethyl tert butyl ether	ND	30					
Ethylbenzene	ND	30					
Hexachloroethane	ND	30					
Isopropylbenzene	ND	30					
m,p-Xylene	ND	60					
Methyl iodide	ND	75					
Methyl tert-butyl ether	ND	30					
Methylene chloride	ND	30					
Naphthalene	22	100					J
n-Butylbenzene	ND	30					
n-Propylbenzene	ND	30					
o-Xylene	ND	30					
p-Isopropyltoluene	ND	30					
sec-Butylbenzene	ND	30					
Styrene	ND	30					
tert-Butyl alcohol	ND	200					
tert-Butylbenzene	ND	30					
Tertiaryamylmethylether	ND	30					
Tetrachloroethene	ND	30					
Tetrahydrofuran	ND	200					
Toluene	ND	30					
trans-1,2-Dichloroethene	ND	30					
trans-1,3-Dichloropropene	ND	30					
trans-1,4-Dichloro-2-butene	ND	30					
Trichloroethene	ND	30					
Trichlorofluoromethane	ND	30					
Vinyl chloride	ND	30					
Surr: 1,2-Dichloroethane-d4	*1024*	0	*1000*	0	*102*	*70-130*	0
Surr: 4-Bromofluorobenzene	*950.5*	0	*1000*	0	*95*	*70-130*	0
Surr: Dibromofluoromethane	*960.5*	0	*1000*	0	*96*	*70-130*	0
Surr: Toluene-d8	*960.5*	0	*1000*	0	*96*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212695
Project: Marshall KRRI 1275L 12/18/12

QC BATCH REPORT

Batch ID: **45512** Instrument ID **VMS5** Method: **SW8260**

MBLK Sample ID: **MBLK-45512-45512** Units: **µg/Kg** Analysis Date: **12/26/2012 04:13 PM**
Client ID: Run ID: **VMS9_121226A** SeqNo: **2179287** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	30								
1,1,1-Trichloroethane	ND	30								
1,1,2,2-Tetrachloroethane	ND	30								
1,1,2-Trichloroethane	ND	30								
1,1-Dichloroethane	ND	30								
1,1-Dichloroethene	ND	30								
1,2,3-Trichlorobenzene	ND	30								
1,2,3-Trichloropropane	ND	30								
1,2,3-Trimethylbenzene	ND	30								
1,2,4-Trichlorobenzene	ND	30								
1,2,4-Trimethylbenzene	ND	30								
1,2-Dibromo-3-chloropropane	ND	30								
1,2-Dibromoethane	ND	30								
1,2-Dichlorobenzene	ND	30								
1,2-Dichloroethane	ND	30								
1,2-Dichloropropane	ND	30								
1,3,5-Trimethylbenzene	ND	30								
1,3-Dichlorobenzene	ND	30								
1,4-Dichlorobenzene	ND	30								
2-Butanone	133	200								J
2-Hexanone	ND	30								
2-Methylnaphthalene	ND	100								
4-Methyl-2-pentanone	ND	30								
Acetone	102	100								
Acrylonitrile	ND	100								
Benzene	ND	30								
Bromobenzene	ND	30								
Bromochloromethane	ND	30								
Bromodichloromethane	ND	30								
Bromoform	ND	30								
Bromomethane	ND	75								
Carbon disulfide	ND	30								
Carbon tetrachloride	ND	30								
Chlorobenzene	ND	30								
Chloroethane	ND	100								
Chloroform	ND	30								
Chloromethane	ND	100								
cis-1,2-Dichloroethene	ND	30								
cis-1,3-Dichloropropene	ND	30								
Cyclohexane	ND	30								
Dibromochloromethane	ND	30								
Dibromomethane	ND	30								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45512** Instrument ID **VMS5** Method: **SW8260**

Dichlorodifluoromethane	ND	30						
Diethyl ether	ND	30						
Diisopropyl ether	ND	30						
Ethyl tert butyl ether	ND	30						
Ethylbenzene	ND	30						
Hexachloroethane	ND	30						
Isopropylbenzene	ND	30						
m,p-Xylene	ND	60						
Methyl iodide	ND	75						
Methyl tert-butyl ether	ND	30						
Methylene chloride	ND	30						
Naphthalene	20.5	100						J
n-Butylbenzene	ND	30						
n-Propylbenzene	ND	30						
o-Xylene	ND	30						
p-Isopropyltoluene	ND	30						
sec-Butylbenzene	ND	30						
Styrene	ND	30						
tert-Butyl alcohol	ND	200						
tert-Butylbenzene	ND	30						
Tertiaryamylmethylether	ND	30						
Tetrachloroethene	ND	30						
Tetrahydrofuran	ND	200						
Toluene	ND	30						
trans-1,2-Dichloroethene	ND	30						
trans-1,3-Dichloropropene	ND	30						
trans-1,4-Dichloro-2-butene	ND	30						
Trichloroethene	ND	30						
Trichlorofluoromethane	ND	30						
Vinyl chloride	ND	30						
Surr: 1,2-Dichloroethane-d4	*1040*	0	*1000*	0	*104*	*70-130*	0	
Surr: 4-Bromofluorobenzene	*955*	0	*1000*	0	*95.5*	*70-130*	0	
Surr: Dibromofluoromethane	*962*	0	*1000*	0	*96.2*	*70-130*	0	
Surr: Toluene-d8	*962*	0	*1000*	0	*96.2*	*70-130*	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212695
Project: Marshall KRRI 1275L 12/18/12

QC BATCH REPORT

Batch ID: **45512** Instrument ID **VMS5** Method: **SW8260**

LCS Sample ID: **LCS-45512-45512** Units: **µg/Kg** Analysis Date: **12/22/2012 06:39 PM**
Client ID: Run ID: **VMS5_121222A** SeqNo: **2177849** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	957	30	1000	0	95.7	75-125	0			
1,1,1-Trichloroethane	1031	30	1000	0	103	70-135	0			
1,1,2,2-Tetrachloroethane	961	30	1000	0	96.1	55-130	0			
1,1,2-Trichloroethane	961.5	30	1000	0	96.2	60-125	0			
1,1-Dichloroethane	989	30	1000	0	98.9	75-125	0			
1,1-Dichloroethene	1070	30	1000	0	107	65-135	0			
1,2,3-Trichlorobenzene	1019	30	1000	0	102	60-135	0			
1,2,3-Trichloropropane	1052	30	1000	0	105	65-130	0			
1,2,4-Trichlorobenzene	1018	30	1000	0	102	65-130	0			
1,2,4-Trimethylbenzene	969.5	30	1000	0	97	65-135	0			
1,2-Dibromo-3-chloropropane	994	30	1000	0	99.4	40-135	0			
1,2-Dibromoethane	980.5	30	1000	0	98	70-125	0			
1,2-Dichlorobenzene	1006	30	1000	0	101	75-120	0			
1,2-Dichloroethane	969	30	1000	0	96.9	70-135	0			
1,2-Dichloropropane	980.5	30	1000	0	98	70-120	0			
1,3,5-Trimethylbenzene	1048	30	1000	0	105	65-135	0			
1,3-Dichlorobenzene	1042	30	1000	0	104	70-125	0			
1,4-Dichlorobenzene	967.5	30	1000	0	96.8	70-125	0			
2-Butanone	1033	200	1000	0	103	30-160	0			
2-Hexanone	1042	30	1000	0	104	45-145	0			
4-Methyl-2-pentanone	1028	30	1000	0	103	45-145	0			
Acetone	953	100	1000	0	95.3	20-160	0			
Acrylonitrile	929	100	1000	0	92.9	70-135	0			
Benzene	990.5	30	1000	0	99	75-125	0			
Bromobenzene	1014	30	1000	0	101	65-120	0			
Bromochloromethane	1044	30	1000	0	104	70-125	0			
Bromodichloromethane	998	30	1000	0	99.8	70-130	0			
Bromoform	862.5	30	1000	0	86.2	55-135	0			
Bromomethane	1350	75	1000	0	135	30-160	0			
Carbon disulfide	1140	30	1000	0	114	45-160	0			
Carbon tetrachloride	1028	30	1000	0	103	65-135	0			
Chlorobenzene	1008	30	1000	0	101	75-125	0			
Chloroethane	1053	100	1000	0	105	40-155	0			
Chloroform	992.5	30	1000	0	99.2	70-125	0			
Chloromethane	976	100	1000	0	97.6	50-130	0			
cis-1,2-Dichloroethene	1039	30	1000	0	104	65-125	0			
cis-1,3-Dichloropropene	1031	30	1000	0	103	70-125	0			
Dibromochloromethane	977.5	30	1000	0	97.8	65-135	0			
Dibromomethane	963	30	1000	0	96.3	75-130	0			
Dichlorodifluoromethane	879.5	30	1000	0	88	35-135	0			
Ethylbenzene	1031	30	1000	0	103	75-125	0			
Hexachloroethane	1090	30	1000	0	109	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45512** Instrument ID **VMS5** Method: **SW8260**

Isopropylbenzene	1044	30	1000	0	104	75-130	0
m,p-Xylene	2039	60	2000	0	102	80-125	0
Methyl tert-butyl ether	1090	30	1000	0	109	75-125	0
Methylene chloride	947.5	30	1000	0	94.8	55-145	0
Naphthalene	998	100	1000	0	99.8	40-140	0
n-Butylbenzene	1042	30	1000	0	104	65-140	0
n-Propylbenzene	1014	30	1000	0	101	65-135	0
o-Xylene	1014	30	1000	0	101	75-125	0
p-Isopropyltoluene	1040	30	1000	0	104	75-135	0
sec-Butylbenzene	1012	30	1000	0	101	65-130	0
Styrene	1054	30	1000	0	105	75-125	0
tert-Butylbenzene	1073	30	1000	0	107	65-130	0
Tetrachloroethene	1045	30	1000	0	104	64-140	0
Tetrahydrofuran	833.5	200	1000	0	83.4	70-135	0
Toluene	1006	30	1000	0	101	70-125	0
trans-1,2-Dichloroethene	1050	30	1000	0	105	65-135	0
trans-1,3-Dichloropropene	979.5	30	1000	0	98	65-125	0
trans-1,4-Dichloro-2-butene	851.5	30	1000	0	85.2	70-135	0
Trichloroethene	962	30	1000	0	96.2	75-125	0
Trichlorofluoromethane	1017	30	1000	0	102	25-185	0
Vinyl chloride	1084	30	1000	0	108	60-125	0
Surr: 1,2-Dichloroethane-d4	*1024*	0	*1000*	0	*102*	*70-130*	0
Surr: 4-Bromofluorobenzene	*1009*	0	*1000*	0	*101*	*70-130*	0
Surr: Dibromofluoromethane	*1040*	0	*1000*	0	*104*	*70-130*	0
Surr: Toluene-d8	*992*	0	*1000*	0	*99.2*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212695
Project: Marshall KRRI 1275L 12/18/12

QC BATCH REPORT

Batch ID: **45512** Instrument ID **VMS5** Method: **SW8260**

LCS	Sample ID: **LCS-45512-45512**				Units: **µg/Kg**		Analysis Date: **12/22/2012 11:58 PM**			
Client ID:		Run ID: **VMS9_121222B**			SeqNo: **2178471**		Prep Date: **12/19/2012**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	898	30	1000	0	89.8	75-125	0			
1,1,1-Trichloroethane	961	30	1000	0	96.1	70-135	0			
1,1,2,2-Tetrachloroethane	1016	30	1000	0	102	55-130	0			
1,1,2-Trichloroethane	946.5	30	1000	0	94.6	60-125	0			
1,1-Dichloroethane	1078	30	1000	0	108	75-125	0			
1,1-Dichloroethene	1132	30	1000	0	113	65-135	0			
1,2,3-Trichlorobenzene	1040	30	1000	0	104	60-135	0			
1,2,3-Trichloropropane	987	30	1000	0	98.7	65-130	0			
1,2,4-Trichlorobenzene	1006	30	1000	0	101	65-130	0			
1,2,4-Trimethylbenzene	1017	30	1000	0	102	65-135	0			
1,2-Dibromo-3-chloropropane	969.5	30	1000	0	97	40-135	0			
1,2-Dibromoethane	920.5	30	1000	0	92	70-125	0			
1,2-Dichlorobenzene	970	30	1000	0	97	75-120	0			
1,2-Dichloroethane	1006	30	1000	0	101	70-135	0			
1,2-Dichloropropane	1027	30	1000	0	103	70-120	0			
1,3,5-Trimethylbenzene	1039	30	1000	0	104	65-135	0			
1,3-Dichlorobenzene	1006	30	1000	0	101	70-125	0			
1,4-Dichlorobenzene	981.5	30	1000	0	98.2	70-125	0			
2-Butanone	1222	200	1000	0	122	30-160	0			
2-Hexanone	1078	30	1000	0	108	45-145	0			
4-Methyl-2-pentanone	1268	30	1000	0	127	45-145	0			
Acetone	1310	100	1000	0	131	20-160	0			B
Acrylonitrile	1188	100	1000	0	119	70-135	0			
Benzene	1038	30	1000	0	104	75-125	0			
Bromobenzene	1017	30	1000	0	102	65-120	0			
Bromochloromethane	1110	30	1000	0	111	70-125	0			
Bromodichloromethane	959	30	1000	0	95.9	70-130	0			
Bromoform	996.5	30	1000	0	99.6	55-135	0			
Bromomethane	1132	75	1000	0	113	30-160	0			
Carbon disulfide	1176	30	1000	0	118	45-160	0			
Carbon tetrachloride	965.5	30	1000	0	96.6	65-135	0			
Chlorobenzene	998	30	1000	0	99.8	75-125	0			
Chloroethane	1083	100	1000	0	108	40-155	0			
Chloroform	1102	30	1000	0	110	70-125	0			
Chloromethane	1078	100	1000	0	108	50-130	0			
cis-1,2-Dichloroethene	1088	30	1000	0	109	65-125	0			
cis-1,3-Dichloropropene	881	30	1000	0	88.1	70-125	0			
Dibromochloromethane	968.5	30	1000	0	96.8	65-135	0			
Dibromomethane	1028	30	1000	0	103	75-130	0			
Dichlorodifluoromethane	831.5	30	1000	0	83.2	35-135	0			
Ethylbenzene	985	30	1000	0	98.5	75-125	0			
Hexachloroethane	1015	30	1000	0	102	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45512** Instrument ID **VMS5** Method: **SW8260**

Isopropylbenzene	933	30	1000	0	93.3	75-130	0
m,p-Xylene	2014	60	2000	0	101	80-125	0
Methyl tert-butyl ether	1080	30	1000	0	108	75-125	0
Methylene chloride	1074	30	1000	0	107	55-145	0
Naphthalene	1060	100	1000	0	106	40-140	0
n-Butylbenzene	978.5	30	1000	0	97.8	65-140	0
n-Propylbenzene	975.5	30	1000	0	97.6	65-135	0
o-Xylene	985.5	30	1000	0	98.6	75-125	0
p-Isopropyltoluene	1009	30	1000	0	101	75-135	0
sec-Butylbenzene	1027	30	1000	0	103	65-130	0
Styrene	931	30	1000	0	93.1	75-125	0
tert-Butylbenzene	1028	30	1000	0	103	65-130	0
Tetrachloroethene	1027	30	1000	0	103	64-140	0
Tetrahydrofuran	1122	200	1000	0	112	70-135	0
Toluene	980	30	1000	0	98	70-125	0
trans-1,2-Dichloroethene	1128	30	1000	0	113	65-135	0
trans-1,3-Dichloropropene	939	30	1000	0	93.9	65-125	0
trans-1,4-Dichloro-2-butene	979	30	1000	0	97.9	70-135	0
Trichloroethene	969.5	30	1000	0	97	75-125	0
Trichlorofluoromethane	1056	30	1000	0	106	25-185	0
Vinyl chloride	1079	30	1000	0	108	60-125	0
Surr: 1,2-Dichloroethane-d4	*1034*	0	*1000*	0	*103*	*70-130*	0
Surr: 4-Bromofluorobenzene	*1011*	0	*1000*	0	*101*	*70-130*	0
Surr: Dibromofluoromethane	*1068*	0	*1000*	0	*107*	*70-130*	0
Surr: Toluene-d8	*989*	0	*1000*	0	*98.9*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212695
Project: Marshall KRRI 1275L 12/18/12

QC BATCH REPORT

Batch ID: **45512** Instrument ID **VMS5** Method: **SW8260**

LCS Sample ID: **LCS-45512-45512** Units: **µg/Kg** Analysis Date: **12/26/2012 02:56 PM**
Client ID: Run ID: **VMS9_121226A** SeqNo: **2179285** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	804	30	1000	0	80.4	75-125	0			
1,1,1-Trichloroethane	905	30	1000	0	90.5	70-135	0			
1,1,2,2-Tetrachloroethane	819	30	1000	0	81.9	55-130	0			
1,1,2-Trichloroethane	822.5	30	1000	0	82.2	60-125	0			
1,1-Dichloroethane	1040	30	1000	0	104	75-125	0			
1,1-Dichloroethene	1120	30	1000	0	112	65-135	0			
1,2,3-Trichlorobenzene	903	30	1000	0	90.3	60-135	0			
1,2,3-Trichloropropane	808	30	1000	0	80.8	65-130	0			
1,2,4-Trichlorobenzene	888.5	30	1000	0	88.8	65-130	0			
1,2,4-Trimethylbenzene	906	30	1000	0	90.6	65-135	0			
1,2-Dibromo-3-chloropropane	776.5	30	1000	0	77.6	40-135	0			
1,2-Dibromoethane	793.5	30	1000	0	79.4	70-125	0			
1,2-Dichlorobenzene	864	30	1000	0	86.4	75-120	0			
1,2-Dichloroethane	891.5	30	1000	0	89.2	70-135	0			
1,2-Dichloropropane	921	30	1000	0	92.1	70-120	0			
1,3,5-Trimethylbenzene	932.5	30	1000	0	93.2	65-135	0			
1,3-Dichlorobenzene	916.5	30	1000	0	91.6	70-125	0			
1,4-Dichlorobenzene	888.5	30	1000	0	88.8	70-125	0			
2-Butanone	1022	200	1000	0	102	30-160	0			
2-Hexanone	798	30	1000	0	79.8	45-145	0			
4-Methyl-2-pentanone	945	30	1000	0	94.5	45-145	0			
Acetone	1012	100	1000	0	101	20-160	0			B
Acrylonitrile	989	100	1000	0	98.9	70-135	0			
Benzene	941.5	30	1000	0	94.2	75-125	0			
Bromobenzene	895.5	30	1000	0	89.6	65-120	0			
Bromochloromethane	1030	30	1000	0	103	70-125	0			
Bromodichloromethane	870	30	1000	0	87	70-130	0			
Bromoform	844	30	1000	0	84.4	55-135	0			
Bromomethane	1034	75	1000	0	103	30-160	0			
Carbon disulfide	1186	30	1000	0	119	45-160	0			
Carbon tetrachloride	929	30	1000	0	92.9	65-135	0			
Chlorobenzene	897.5	30	1000	0	89.8	75-125	0			
Chloroethane	1020	100	1000	0	102	40-155	0			
Chloroform	1059	30	1000	0	106	70-125	0			
Chloromethane	1061	100	1000	0	106	50-130	0			
cis-1,2-Dichloroethene	1052	30	1000	0	105	65-125	0			
cis-1,3-Dichloropropene	842	30	1000	0	84.2	70-125	0			
Dibromochloromethane	843	30	1000	0	84.3	65-135	0			
Dibromomethane	886	30	1000	0	88.6	75-130	0			
Dichlorodifluoromethane	910	30	1000	0	91	35-135	0			
Ethylbenzene	908	30	1000	0	90.8	75-125	0			
Hexachloroethane	951	30	1000	0	95.1	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45512** Instrument ID **VMS5** Method: **SW8260**

Isopropylbenzene	835	30	1000	0	83.5	75-130	0
m,p-Xylene	1834	60	2000	0	91.7	80-125	0
Methyl tert-butyl ether	963.5	30	1000	0	96.4	75-125	0
Methylene chloride	1012	30	1000	0	101	55-145	0
Naphthalene	821.5	100	1000	0	82.2	40-140	0
n-Butylbenzene	970	30	1000	0	97	65-140	0
n-Propylbenzene	870.5	30	1000	0	87	65-135	0
o-Xylene	878.5	30	1000	0	87.8	75-125	0
p-Isopropyltoluene	936.5	30	1000	0	93.6	75-135	0
sec-Butylbenzene	964.5	30	1000	0	96.4	65-130	0
Styrene	805.5	30	1000	0	80.6	75-125	0
tert-Butylbenzene	939	30	1000	0	93.9	65-130	0
Tetrachloroethene	927	30	1000	0	92.7	64-140	0
Tetrahydrofuran	898.5	200	1000	0	89.8	70-135	0
Toluene	899	30	1000	0	89.9	70-125	0
trans-1,2-Dichloroethene	1096	30	1000	0	110	65-135	0
trans-1,3-Dichloropropene	898.5	30	1000	0	89.8	65-125	0
trans-1,4-Dichloro-2-butene	845	30	1000	0	84.5	70-135	0
Trichloroethene	904	30	1000	0	90.4	75-125	0
Trichlorofluoromethane	1041	30	1000	0	104	25-185	0
Vinyl chloride	1076	30	1000	0	108	60-125	0
Surr: 1,2-Dichloroethane-d4	*1028*	0	*1000*	0	*103*	*70-130*	0
Surr: 4-Bromofluorobenzene	*974.5*	0	*1000*	0	*97.4*	*70-130*	0
Surr: Dibromofluoromethane	*1046*	0	*1000*	0	*105*	*70-130*	0
Surr: Toluene-d8	*986*	0	*1000*	0	*98.6*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212695
Project: Marshall KRRI 1275L 12/18/12

QC BATCH REPORT

Batch ID: **45512** Instrument ID **VMS5** Method: **SW8260**

MS Sample ID: **1212696-08B MS** Units: **µg/Kg** Analysis Date: **12/23/2012 09:22 AM**
Client ID: Run ID: **VMS9_121222B** SeqNo: **2178477** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	798.5	30	1000	0	79.8	75-125	0			
1,1,1-Trichloroethane	846	30	1000	0	84.6	70-135	0			
1,1,2,2-Tetrachloroethane	1002	30	1000	0	100	55-130	0			
1,1,2-Trichloroethane	920	30	1000	0	92	60-125	0			
1,1-Dichloroethane	1127	30	1000	0	113	75-125	0			
1,1-Dichloroethene	1036	30	1000	0	104	65-135	0			
1,2,3-Trichlorobenzene	771.5	30	1000	0	77.2	60-135	0			
1,2,3-Trichloropropane	1008	30	1000	0	101	65-130	0			
1,2,4-Trichlorobenzene	741.5	30	1000	0	74.2	65-130	0			
1,2,4-Trimethylbenzene	969	30	1000	0	96.9	65-135	0			
1,2-Dibromo-3-chloropropane	744.5	30	1000	0	74.4	40-135	0			
1,2-Dibromoethane	883	30	1000	0	88.3	70-125	0			
1,2-Dichlorobenzene	861.5	30	1000	0	86.2	75-120	0			
1,2-Dichloroethane	999.5	30	1000	0	100	70-135	0			
1,2-Dichloropropane	981	30	1000	0	98.1	70-120	0			
1,3,5-Trimethylbenzene	1008	30	1000	0	101	65-135	0			
1,3-Dichlorobenzene	886.5	30	1000	0	88.6	70-125	0			
1,4-Dichlorobenzene	865	30	1000	0	86.5	70-125	0			
2-Butanone	1236	200	1000	0	124	30-160	0			
2-Hexanone	1062	30	1000	0	106	45-145	0			
4-Methyl-2-pentanone	1220	30	1000	0	122	45-145	0			
Acetone	1712	100	1000	71.5	164	20-160	0			BS
Acrylonitrile	1236	100	1000	0	124	70-135	0			
Benzene	1002	30	1000	0	100	75-125	0			
Bromobenzene	1001	30	1000	0	100	65-120	0			
Bromochloromethane	1087	30	1000	0	109	70-125	0			
Bromodichloromethane	792	30	1000	0	79.2	70-130	0			
Bromoform	812.5	30	1000	0	81.2	55-135	0			
Bromomethane	806.5	75	1000	0	80.6	30-160	0			
Carbon disulfide	837.5	30	1000	0	83.8	45-160	0			
Carbon tetrachloride	836	30	1000	0	83.6	65-135	0			
Chlorobenzene	966.5	30	1000	0	96.6	75-125	0			
Chloroethane	466	100	1000	0	46.6	40-155	0			
Chloroform	1080	30	1000	0	108	70-125	0			
Chloromethane	1265	100	1000	12.5	125	50-130	0			
cis-1,2-Dichloroethene	1024	30	1000	0	102	65-125	0			
cis-1,3-Dichloropropene	737.5	30	1000	0	73.8	70-125	0			
Dibromochloromethane	790	30	1000	0	79	65-135	0			
Dibromomethane	962.5	30	1000	0	96.2	75-130	0			
Dichlorodifluoromethane	888	30	1000	0	88.8	35-135	0			
Ethylbenzene	940.5	30	1000	0	94	75-125	0			
Hexachloroethane	762.5	30	1000	0	76.2	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45512**	Instrument ID **VMS5**		Method: **SW8260**					
Isopropylbenzene	890.5	30	1000	0	89	75-130	0	
m,p-Xylene	1936	60	2000	0	96.8	80-125	0	
Methyl tert-butyl ether	1070	30	1000	0	107	75-125	0	
Methylene chloride	1123	30	1000	0	112	55-145	0	
Naphthalene	747	100	1000	0	74.7	40-140	0	
n-Butylbenzene	786.5	30	1000	0	78.6	65-140	0	
n-Propylbenzene	911	30	1000	0	91.1	65-135	0	
o-Xylene	970	30	1000	0	97	75-125	0	
p-Isopropyltoluene	888.5	30	1000	0	88.8	75-135	0	
sec-Butylbenzene	976	30	1000	0	97.6	65-130	0	
Styrene	745.5	30	1000	0	74.6	75-125	0	S
tert-Butylbenzene	997	30	1000	0	99.7	65-130	0	
Tetrachloroethene	934	30	1000	0	93.4	64-140	0	
Tetrahydrofuran	1190	200	1000	0	119	70-135	0	
Toluene	930	30	1000	0	93	70-125	0	
trans-1,2-Dichloroethene	1064	30	1000	0	106	65-135	0	
trans-1,3-Dichloropropene	789	30	1000	0	78.9	65-125	0	
trans-1,4-Dichloro-2-butene	700.5	30	1000	0	70	70-135	0	
Trichloroethene	877.5	30	1000	0	87.8	75-125	0	
Trichlorofluoromethane	970.5	30	1000	0	97	25-185	0	
Vinyl chloride	1088	30	1000	0	109	60-125	0	
Surr: 1,2-Dichloroethane-d4	*1050*	0	*1000*	0	*105*	*70-130*	0	
Surr: 4-Bromofluorobenzene	*1066*	0	*1000*	0	*107*	*70-130*	0	
Surr: Dibromofluoromethane	*1009*	0	*1000*	0	*101*	*70-130*	0	
Surr: Toluene-d8	*972*	0	*1000*	0	*97.2*	*70-130*	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212695
Project: Marshall KRRI 1275L 12/18/12

QC BATCH REPORT

Batch ID: **45512** Instrument ID **VMS5** Method: **SW8260**

MSD	Sample ID: **1212696-08B MSD**				Units: **µg/Kg**			Analysis Date: **12/23/2012 09:48 AM**		
Client ID:		Run ID: **VMS9_121222B**			SeqNo: **2178478**		Prep Date: **12/19/2012**		DF: **1**	

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	771.5	30	1000	0	77.2	75-125	798.5	3.44	30	
1,1,1-Trichloroethane	794.5	30	1000	0	79.4	70-135	846	6.28	30	
1,1,2,2-Tetrachloroethane	989.5	30	1000	0	99	55-130	1002	1.21	30	
1,1,2-Trichloroethane	896.5	30	1000	0	89.6	60-125	920	2.59	30	
1,1-Dichloroethane	1060	30	1000	0	106	75-125	1127	6.13	30	
1,1-Dichloroethene	990	30	1000	0	99	65-135	1036	4.59	30	
1,2,3-Trichlorobenzene	812.5	30	1000	0	81.2	60-135	771.5	5.18	30	
1,2,3-Trichloropropane	980	30	1000	0	98	65-130	1008	2.87	30	
1,2,4-Trichlorobenzene	759.5	30	1000	0	76	65-130	741.5	2.4	30	
1,2,4-Trimethylbenzene	951	30	1000	0	95.1	65-135	969	1.88	30	
1,2-Dibromo-3-chloropropane	762.5	30	1000	0	76.2	40-135	744.5	2.39	30	
1,2-Dibromoethane	860.5	30	1000	0	86	70-125	883	2.58	30	
1,2-Dichlorobenzene	843.5	30	1000	0	84.4	75-120	861.5	2.11	30	
1,2-Dichloroethane	958.5	30	1000	0	95.8	70-135	999.5	4.19	30	
1,2-Dichloropropane	964.5	30	1000	0	96.4	70-120	981	1.7	30	
1,3,5-Trimethylbenzene	973	30	1000	0	97.3	65-135	1008	3.53	30	
1,3-Dichlorobenzene	860.5	30	1000	0	86	70-125	886.5	2.98	30	
1,4-Dichlorobenzene	848	30	1000	0	84.8	70-125	865	1.98	30	
2-Butanone	1268	200	1000	0	127	30-160	1236	2.64	30	
2-Hexanone	1078	30	1000	0	108	45-145	1062	1.59	30	
4-Methyl-2-pentanone	1253	30	1000	0	125	45-145	1220	2.63	30	
Acetone	1716	100	1000	71.5	164	20-160	1712	0.263	30	BS
Acrylonitrile	1224	100	1000	0	122	70-135	1236	0.976	30	
Benzene	947.5	30	1000	0	94.8	75-125	1002	5.59	30	
Bromobenzene	973.5	30	1000	0	97.4	65-120	1001	2.79	30	
Bromochloromethane	1050	30	1000	0	105	70-125	1087	3.51	30	
Bromodichloromethane	783.5	30	1000	0	78.4	70-130	792	1.08	30	
Bromoform	786	30	1000	0	78.6	55-135	812.5	3.32	30	
Bromomethane	796.5	75	1000	0	79.6	30-160	806.5	1.25	30	
Carbon disulfide	811.5	30	1000	0	81.2	45-160	837.5	3.15	30	
Carbon tetrachloride	807.5	30	1000	0	80.8	65-135	836	3.47	30	
Chlorobenzene	915	30	1000	0	91.5	75-125	966.5	5.47	30	
Chloroethane	391.5	100	1000	0	39.2	40-155	466	17.4	30	S
Chloroform	1027	30	1000	0	103	70-125	1080	4.98	30	
Chloromethane	1186	100	1000	12.5	117	50-130	1265	6.45	30	
cis-1,2-Dichloroethene	967	30	1000	0	96.7	65-125	1024	5.68	30	
cis-1,3-Dichloropropene	722.5	30	1000	0	72.2	70-125	737.5	2.05	30	
Dibromochloromethane	788	30	1000	0	78.8	65-135	790	0.253	30	
Dibromomethane	948.5	30	1000	0	94.8	75-130	962.5	1.47	30	
Dichlorodifluoromethane	852.5	30	1000	0	85.2	35-135	888	4.08	30	
Ethylbenzene	882.5	30	1000	0	88.2	75-125	940.5	6.36	30	
Hexachloroethane	739	30	1000	0	73.9	70-135	762.5	3.13	30	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45512** Instrument ID **VMS5** Method: **SW8260**

Isopropylbenzene	853	30	1000	0	85.3	75-130	890.5	4.3	30	
m,p-Xylene	1831	60	2000	0	91.6	80-125	1936	5.57	30	
Methyl tert-butyl ether	1033	30	1000	0	103	75-125	1070	3.52	30	
Methylene chloride	1084	30	1000	0	108	55-145	1123	3.58	30	
Naphthalene	850.5	100	1000	0	85	40-140	747	13	30	
n-Butylbenzene	783.5	30	1000	0	78.4	65-140	786.5	0.382	30	
n-Propylbenzene	882	30	1000	0	88.2	65-135	911	3.23	30	
o-Xylene	927	30	1000	0	92.7	75-125	970	4.53	30	
p-Isopropyltoluene	863	30	1000	0	86.3	75-135	888.5	2.91	30	
sec-Butylbenzene	946	30	1000	0	94.6	65-130	976	3.12	30	
Styrene	725.5	30	1000	0	72.6	75-125	745.5	2.72	30	S
tert-Butylbenzene	954.5	30	1000	0	95.4	65-130	997	4.36	30	
Tetrachloroethene	864.5	30	1000	0	86.4	64-140	934	7.73	30	
Tetrahydrofuran	1175	200	1000	0	118	70-135	1190	1.27	30	
Toluene	878.5	30	1000	0	87.8	70-125	930	5.7	30	
trans-1,2-Dichloroethene	1001	30	1000	0	100	65-135	1064	6.1	30	
trans-1,3-Dichloropropene	764.5	30	1000	0	76.4	65-125	789	3.15	30	
trans-1,4-Dichloro-2-butene	709	30	1000	0	70.9	70-135	700.5	1.21	30	
Trichloroethene	841.5	30	1000	0	84.2	75-125	877.5	4.19	30	
Trichlorofluoromethane	927	30	1000	0	92.7	25-185	970.5	4.58	30	
Vinyl chloride	1039	30	1000	0	104	60-125	1088	4.65	30	
Surr: 1,2-Dichloroethane-d4	*1058*	0	*1000*	0	*106*	*70-130*	1050	*0.759*	*30*	
Surr: 4-Bromofluorobenzene	*1070*	0	*1000*	0	*107*	*70-130*	1066	*0.375*	*30*	
Surr: Dibromofluoromethane	*1002*	0	*1000*	0	*100*	*70-130*	1009	*0.696*	*30*	
Surr: Toluene-d8	*969.5*	0	*1000*	0	*97*	*70-130*	972	*0.258*	*30*	

The following samples were analyzed in this batch:

1212695-01B	1212695-02B	1212695-03B
1212695-04B	1212695-05A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212695
Project: Marshall KRRI 1275L 12/18/12

QC BATCH REPORT

Batch ID: **R114360** Instrument ID **MOIST** Method: **A2540 G**

MBLK Sample ID: **WBLKS1-R114360** Units: **% of sample** Analysis Date: **12/21/2012 05:55 PM**
Client ID: Run ID: **MOIST_121221B** SeqNo: **2177954** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	ND	0.050								

LCS Sample ID: **LCS-R114360** Units: **% of sample** Analysis Date: **12/21/2012 05:55 PM**
Client ID: Run ID: **MOIST_121221B** SeqNo: **2177950** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	100	0.050	100	0	100	99.5-100.5	0			

DUP Sample ID: **1212719-02B DUP** Units: **% of sample** Analysis Date: **12/21/2012 05:55 PM**
Client ID: Run ID: **MOIST_121221B** SeqNo: **2177905** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	7.39	0.050	0	0	0	0-0	7.83	5.78	20	

DUP Sample ID: **1212791-10A DUP** Units: **% of sample** Analysis Date: **12/21/2012 05:55 PM**
Client ID: Run ID: **MOIST_121221B** SeqNo: **2177938** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	29.44	0.050	0	0	0	0-0	0			

The following samples were analyzed in this batch:

1212695-01A 1212695-02A 1212695-03A
1212695-04A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

1212695

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

COC #	ENBRIDGE_121812_GMK1	Task: KRRI_1275
Total # of Samples: 6		Event Complete?
Turn Around Time	5 Day	Rush: No
BILLING CODE: 6.00		

Lab Information:

Lab Name:	ALS Laboratory Group
Address:	3352 128th Ave. Holland, MI 49424-9263
Lab PM:	Ann Preston
Phone/Fax:	1-616-399-6070/1-616-399-6185
Lab PM email	ann.preston@alsglobal.com
Applicable Lab Quote #:	

Project Information:

Site ID #:	
Project #	60162778
Site Address	5555 Glenwood Parkway SE Suite 200
City	Grand Rapids
State, Zip	MI
Site PM Name	[redacted]
Phone/Fax:	[redacted]
Site PM Email:	Bryan.Sliemsma@aecom.com

Other Information:

Send Invoice to:	Enbridge Energy - ATTN Accounts Payable
Address:	1100 Louisiana Suite 1100
City/State:	Houson, TX
Phone #:	713-821-2000
PO #	
Send EDD to	
CC Hardcopy report	
CC Hardcopy report	

ITEM #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	MATRIX CODE	G=GRAB C=COMP	SAMPLE DATE	#OF CONTAINERS	Comments/Lab Sample I.D.	Analysis / Preservative: % Moisture / None	Be,Mo,V,Ni by 6020 / None	ORO,DRO / None	PNAs by 8270 / None	VOC by 5035/8260 / MeOH
1	SBKR1275L501S121812S004	SBKR1275L501	SO	G	12/18/2012 13:45	3		X	X	X	X	X
2	SBKR1275L502S121812S004	SBKR1275L502	SO	G	12/18/2012 14:43	3		X	X	X	X	X
3	SBKR1275L502D121812S004	SBKR1275L502	SO	G	12/18/2012 14:43	3	DUPLICATE	X	X	X	X	X
4	SBKR1275L503S121812S005	SBKR1275L503	SO	G	12/18/2012 15:54	3		X	X	X	X	X
5	SBKR1275L503T121812MX	SBKR1275L503	SQ	G	12/18/2012 00:00	1	TRIP BLANK					X

Additional Comments/Special Instructions:

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
	12-19-12	0730		12-19-12	0730
	12-19-12	0800		12-19-12	0800

Sample Receipt Conditions				
Temp in °C	Samples on Ice?		Sample intact?	Trip Blank?
2.6°C	Y/N		Y/N	Y/N
	(Y)N		(Y)N	(Y)N
	Y/N		Y/N	Y/N
	Y/N		Y/N	Y/N

SHIPPING INFO

Company:

Tracking #:

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: GERRY KRAMER (GMK1)

SIGNATURE of SAMPLER:

DATE Signed

Time:

ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **19-Dec-12 08:00**

Work Order: **1212695** Received by: **PD**

Checklist completed by Keith Wierenga eSignature 19-Dec-12 Date Reviewed by: Ann Preston eSignature 19-Dec-12 Date

Matrices: Soil
Carrier name: ALSHN

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.6 C		
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	12/19/2012 1:47:17 PM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SE

Date: 12-19-18 Time:

Name: G. Kraemer

Company:

Seal Broken By:

Date:

28-Dec-2012

Bryan Stiemsma
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall KRRI 1250-1275I,1300L 12/17/12** Work Order: **1212696**

Dear Bryan,

ALS Environmental received 9 samples on 19-Dec-2012 08:00 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 58.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

Certificate No: MN331938

ALS Group USA, Corp

Date: 28-Dec-12

Client: AECOM Environment
Project: Marshall KRRI 1250-1275I,1300L 12/17/12
Work Order: **1212696**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1212696-01	SBKR1250I513S121712S006	Soil		12/17/2012 13:58	12/19/2012 08:00	☐
1212696-02	SBKR1250I514S121712S005	Soil		12/17/2012 14:55	12/19/2012 08:00	☐
1212696-03	SBKR1275I506S121712S004	Soil		12/17/2012 08:17	12/19/2012 08:00	☐
1212696-04	SBKR1275I507S121712S005	Soil		12/17/2012 09:15	12/19/2012 08:00	☐
1212696-05	SBKR1275I508S121712S004	Soil		12/17/2012 10:12	12/19/2012 08:00	☐
1212696-06	SBKR1275I509S121712S004	Soil		12/17/2012 11:20	12/19/2012 08:00	☐
1212696-07	SBKR1300L501S121712S006	Soil		12/17/2012 15:52	12/19/2012 08:00	☐
1212696-08	SBKR1275I510S121712S005	Soil		12/17/2012 13:05	12/19/2012 08:00	☐
1212696-09	SBKR1300L501T121712SNX	Soil		12/17/2012	12/19/2012 08:00	☐

ALS Group USA, Corp

Date: 28-Dec-12

Client: AECOM Environment
Project: Marshall KRRI 1250-1275I,1300L 12/17/12
Work Order: 1212696

Case Narrative

The extraction procedure used to prepare the soil samples for DRO and PAH analyses in this work order was a modification of the standard 3541 procedure. At the request of the client, a 10 gram sample aliquot dried with hydromatrix is used for extraction as outlined in ALS SOP HN-EXT-003(EN)-R01. All samples extracted starting on 10/1/2011 were prepared using this modified SOP.

Batch 45512 sample SBKR1275I510S121712S005 MS/MSD recoveries for Acetone were above control limits. The corresponding result in the parent sample was non-detect. No qualification is required for Acetone. The MS/MSD recoveries for Styrene and MSD recovery for Chloroethane were below control limits. The corresponding reporting limit for Styrene in the parent sample may be biased low. The MS recovery and RPD for Chloroethane met quality control criteria. No qualification is required for Chloroethane.

ALS Group USA, Corp

Date: 28-Dec-12

Client: AECOM Environment
Project: Marshall KRRI 1250-1275I,1300L 12/17/12
WorkOrder: **1212696**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
SD	Serial Dilution
TDL	Target Detection Limit

Units Reported	Description
% of sample	Percent of Sample
µg/Kg	Micrograms per Kilogram
µg/Kg-dry	Micrograms per Kilogram Dry Weight
mg/Kg-dry	Milligrams per Kilogram Dry Weight

ALS Group USA, Corp

Date: *28-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I513S121712S006
Work Order:	1212696	**Collection Date:**	12/17/2012 1:58:00 PM
Project:	Marshall KRRI 1250-1275I,1300L 12/17/12		
Lab ID:	1212696-01	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/21/2012**		Analyst: **CW**
DRO (C10-C20)	ND	17	4.0		mg/Kg-dry	1	12/21/2012
ORO (C20-C34)	**340**	**35**	**4.0**		**mg/Kg-dry**	1	12/21/2012
Surr: 4-Terphenyl-d14	*73.0*	*39-115*			*%REC*	1	12/21/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/21/2012**		Analyst: **CES**
Beryllium	ND	0.90	0.50		mg/Kg-dry	4	12/26/2012
Molybdenum	ND	2.3	1.0		mg/Kg-dry	4	12/26/2012
Nickel	**14**	**2.3**	**1.0**		**mg/Kg-dry**	4	12/26/2012
Vanadium	**11**	**2.3**	**1.0**		**mg/Kg-dry**	4	12/26/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/21/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/22/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/22/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/22/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/22/2012
Benzo(a)anthracene	**890**	**330**	**330**		**µg/Kg-dry**	1	12/22/2012
Benzo(a)pyrene	**1,100**	**330**	**330**		**µg/Kg-dry**	1	12/22/2012
Benzo(b)fluoranthene	**1,100**	**330**	**330**		**µg/Kg-dry**	1	12/22/2012
Benzo(g,h,i)perylene	**490**	**330**	**330**		**µg/Kg-dry**	1	12/22/2012
Benzo(k)fluoranthene	**550**	**330**	**330**		**µg/Kg-dry**	1	12/22/2012
Chrysene	**970**	**330**	**330**		**µg/Kg-dry**	1	12/22/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/22/2012
Fluoranthene	**1,500**	**330**	**330**		**µg/Kg-dry**	1	12/22/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/22/2012
Indeno(1,2,3-cd)pyrene	**470**	**330**	**330**		**µg/Kg-dry**	1	12/22/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/22/2012
Phenanthrene	**470**	**330**	**330**		**µg/Kg-dry**	1	12/22/2012
Pyrene	**1,500**	**330**	**330**		**µg/Kg-dry**	1	12/22/2012
Surr: 2,4,6-Tribromophenol	*76.9*	*34-140*			*%REC*	1	12/22/2012
Surr: 2-Fluorobiphenyl	*60.6*	*12-100*			*%REC*	1	12/22/2012
Surr: 2-Fluorophenol	*72.0*	*33-117*			*%REC*	1	12/22/2012
Surr: 4-Terphenyl-d14	*85.8*	*25-137*			*%REC*	1	12/22/2012
Surr: Nitrobenzene-d5	*66.7*	*37-107*			*%REC*	1	12/22/2012
Surr: Phenol-d6	*78.1*	*40-106*			*%REC*	1	12/22/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/19/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	100	100		µg/Kg-dry	1	12/23/2012
1,1,1-Trichloroethane	ND	53	50		µg/Kg-dry	1	12/23/2012
1,1,2,2-Tetrachloroethane	ND	53	50		µg/Kg-dry	1	12/23/2012
1,1,2-Trichloroethane	ND	53	50		µg/Kg-dry	1	12/23/2012
1,1-Dichloroethane	ND	53	50		µg/Kg-dry	1	12/23/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I513S121712S006
Work Order:	1212696	**Collection Date:**	12/17/2012 1:58:00 PM
Project:	Marshall KRRI 1250-1275I,1300L 12/17/12		
Lab ID:	1212696-01	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	53	50		µg/Kg-dry	1	12/23/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
1,2,3-Trichloropropane	ND	100	100		µg/Kg-dry	1	12/23/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
1,2,4-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,2-Dibromo-3-chloropropane	ND	53	10		µg/Kg-dry	1	12/23/2012
1,2-Dibromoethane	ND	53	20		µg/Kg-dry	1	12/23/2012
1,2-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,2-Dichloroethane	ND	53	50		µg/Kg-dry	1	12/23/2012
1,2-Dichloropropane	ND	53	50		µg/Kg-dry	1	12/23/2012
1,3,5-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,3-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,4-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/23/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/23/2012
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/23/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/23/2012
Acetone	ND	1,000	1,000		µg/Kg-dry	1	12/23/2012
Acrylonitrile	ND	100	100		µg/Kg-dry	1	12/23/2012
Benzene	ND	53	50		µg/Kg-dry	1	12/23/2012
Bromobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromochloromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromodichloromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromoform	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/23/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/23/2012
Carbon tetrachloride	ND	53	50		µg/Kg-dry	1	12/23/2012
Chlorobenzene	ND	53	50		µg/Kg-dry	1	12/23/2012
Chloroethane	ND	250	250		µg/Kg-dry	1	12/23/2012
Chloroform	ND	53	50		µg/Kg-dry	1	12/23/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/23/2012
cis-1,2-Dichloroethene	ND	53	50		µg/Kg-dry	1	12/23/2012
cis-1,3-Dichloropropene	ND	53	50		µg/Kg-dry	1	12/23/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/23/2012
Dibromochloromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/23/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/23/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/23/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/23/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/23/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: AECOM Environment
Client Sample ID: SBKR1250I513S121712S006
Work Order: 1212696
Collection Date: 12/17/2012 1:58:00 PM
Project: Marshall KRRI 1250-1275I,1300L 12/17/12
Lab ID: 1212696-01
Matrix: SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	53	50		µg/Kg-dry	1	12/23/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/23/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
m,p-Xylene	ND	110	100		µg/Kg-dry	1	12/23/2012
Methyl iodide	ND	100	100		µg/Kg-dry	1	12/23/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/23/2012
Methylene chloride	ND	100	100		µg/Kg-dry	1	12/23/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/23/2012
n-Butylbenzene	ND	53	50		µg/Kg-dry	1	12/23/2012
n-Propylbenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
o-Xylene	ND	53	50		µg/Kg-dry	1	12/23/2012
p-Isopropyltoluene	ND	100	100		µg/Kg-dry	1	12/23/2012
sec-Butylbenzene	ND	53	50		µg/Kg-dry	1	12/23/2012
Styrene	ND	53	50		µg/Kg-dry	1	12/23/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/23/2012
tert-Butylbenzene	ND	53	50		µg/Kg-dry	1	12/23/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/23/2012
Tetrachloroethene	ND	53	50		µg/Kg-dry	1	12/23/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/23/2012
Toluene	ND	100	100		µg/Kg-dry	1	12/23/2012
trans-1,2-Dichloroethene	ND	53	50		µg/Kg-dry	1	12/23/2012
trans-1,3-Dichloropropene	ND	53	50		µg/Kg-dry	1	12/23/2012
trans-1,4-Dichloro-2-butene	ND	53	50		µg/Kg-dry	1	12/23/2012
Trichloroethene	ND	53	50		µg/Kg-dry	1	12/23/2012
Trichlorofluoromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Vinyl chloride	ND	53	40		µg/Kg-dry	1	12/23/2012
Surr: 1,2-Dichloroethane-d4	*104*	*70-130*			*%REC*	1	12/23/2012
Surr: 4-Bromofluorobenzene	*100*	*70-130*			*%REC*	1	12/23/2012
Surr: Dibromofluoromethane	*97.4*	*70-130*			*%REC*	1	12/23/2012
Surr: Toluene-d8	*97.2*	*70-130*			*%REC*	1	12/23/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**44**	**0.050**	**0**		**% of sample**	1	12/21/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I514S121712S005
Work Order:	1212696	**Collection Date:**	12/17/2012 2:55:00 PM
Project:	Marshall KRRI 1250-1275I,1300L 12/17/12		
Lab ID:	1212696-02	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/21/2012**		Analyst: **CW**
DRO (C10-C20)	ND	26	4.0		mg/Kg-dry	1	12/21/2012
ORO (C20-C34)	**520**	**52**	**4.0**		**mg/Kg-dry**	1	12/21/2012
Surr: 4-Terphenyl-d14	*71.8*	*39-115*			*%REC*	1	12/21/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/21/2012**		Analyst: **CES**
Beryllium	ND	1.6	0.50		mg/Kg-dry	4	12/26/2012
Molybdenum	ND	4.1	1.0		mg/Kg-dry	4	12/26/2012
Nickel	**17**	**4.1**	**1.0**		**mg/Kg-dry**	4	12/26/2012
Vanadium	**12**	**4.1**	**1.0**		**mg/Kg-dry**	4	12/26/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/21/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/21/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/21/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/21/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/21/2012
Benzo(a)anthracene	ND	330	330		µg/Kg-dry	1	12/21/2012
Benzo(a)pyrene	ND	330	330		µg/Kg-dry	1	12/21/2012
Benzo(b)fluoranthene	**380**	**330**	**330**		**µg/Kg-dry**	1	12/21/2012
Benzo(g,h,i)perylene	ND	330	330		µg/Kg-dry	1	12/21/2012
Benzo(k)fluoranthene	ND	330	330		µg/Kg-dry	1	12/21/2012
Chrysene	ND	330	330		µg/Kg-dry	1	12/21/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/21/2012
Fluoranthene	**400**	**330**	**330**		**µg/Kg-dry**	1	12/21/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/21/2012
Indeno(1,2,3-cd)pyrene	ND	330	330		µg/Kg-dry	1	12/21/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/21/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/21/2012
Pyrene	**440**	**330**	**330**		**µg/Kg-dry**	1	12/21/2012
Surr: 2,4,6-Tribromophenol	*74.0*	*34-140*			*%REC*	1	12/21/2012
Surr: 2-Fluorobiphenyl	*58.5*	*12-100*			*%REC*	1	12/21/2012
Surr: 2-Fluorophenol	*68.7*	*33-117*			*%REC*	1	12/21/2012
Surr: 4-Terphenyl-d14	*80.0*	*25-137*			*%REC*	1	12/21/2012
Surr: Nitrobenzene-d5	*62.0*	*37-107*			*%REC*	1	12/21/2012
Surr: Phenol-d6	*74.0*	*40-106*			*%REC*	1	12/21/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/19/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	100	100		µg/Kg-dry	1	12/23/2012
1,1,1-Trichloroethane	ND	78	50		µg/Kg-dry	1	12/23/2012
1,1,2,2-Tetrachloroethane	ND	78	50		µg/Kg-dry	1	12/23/2012
1,1,2-Trichloroethane	ND	78	50		µg/Kg-dry	1	12/23/2012
1,1-Dichloroethane	ND	78	50		µg/Kg-dry	1	12/23/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I514S121712S005
Work Order:	1212696	**Collection Date:**	12/17/2012 2:55:00 PM
Project:	Marshall KRRI 1250-1275I,1300L 12/17/12		
Lab ID:	1212696-02	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	78	50		µg/Kg-dry	1	12/23/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
1,2,3-Trichloropropane	ND	100	100		µg/Kg-dry	1	12/23/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
1,2,4-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,2-Dibromo-3-chloropropane	ND	78	10		µg/Kg-dry	1	12/23/2012
1,2-Dibromoethane	ND	78	20		µg/Kg-dry	1	12/23/2012
1,2-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,2-Dichloroethane	ND	78	50		µg/Kg-dry	1	12/23/2012
1,2-Dichloropropane	ND	78	50		µg/Kg-dry	1	12/23/2012
1,3,5-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,3-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,4-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/23/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/23/2012
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/23/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/23/2012
Acetone	ND	1,000	1,000		µg/Kg-dry	1	12/23/2012
Acrylonitrile	ND	100	100		µg/Kg-dry	1	12/23/2012
Benzene	ND	78	50		µg/Kg-dry	1	12/23/2012
Bromobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromochloromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromodichloromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromoform	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/23/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/23/2012
Carbon tetrachloride	ND	78	50		µg/Kg-dry	1	12/23/2012
Chlorobenzene	ND	78	50		µg/Kg-dry	1	12/23/2012
Chloroethane	ND	260	250		µg/Kg-dry	1	12/23/2012
Chloroform	ND	78	50		µg/Kg-dry	1	12/23/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/23/2012
cis-1,2-Dichloroethene	ND	78	50		µg/Kg-dry	1	12/23/2012
cis-1,3-Dichloropropene	ND	78	50		µg/Kg-dry	1	12/23/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/23/2012
Dibromochloromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/23/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/23/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/23/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/23/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/23/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client:	AECOM Environment	**Client Sample ID:**	SBKR1250I514S121712S005
Work Order:	1212696	**Collection Date:**	12/17/2012 2:55:00 PM
Project:	Marshall KRRI 1250-1275I,1300L 12/17/12		
Lab ID:	1212696-02	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	78	50		µg/Kg-dry	1	12/23/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/23/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
m,p-Xylene	ND	160	100		µg/Kg-dry	1	12/23/2012
Methyl iodide	ND	100	100		µg/Kg-dry	1	12/23/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/23/2012
Methylene chloride	ND	100	100		µg/Kg-dry	1	12/23/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/23/2012
n-Butylbenzene	ND	78	50		µg/Kg-dry	1	12/23/2012
n-Propylbenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
o-Xylene	ND	78	50		µg/Kg-dry	1	12/23/2012
p-Isopropyltoluene	ND	100	100		µg/Kg-dry	1	12/23/2012
sec-Butylbenzene	ND	78	50		µg/Kg-dry	1	12/23/2012
Styrene	ND	78	50		µg/Kg-dry	1	12/23/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/23/2012
tert-Butylbenzene	ND	78	50		µg/Kg-dry	1	12/23/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/23/2012
Tetrachloroethene	ND	78	50		µg/Kg-dry	1	12/23/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/23/2012
Toluene	ND	100	100		µg/Kg-dry	1	12/23/2012
trans-1,2-Dichloroethene	ND	78	50		µg/Kg-dry	1	12/23/2012
trans-1,3-Dichloropropene	ND	78	50		µg/Kg-dry	1	12/23/2012
trans-1,4-Dichloro-2-butene	ND	78	50		µg/Kg-dry	1	12/23/2012
Trichloroethene	ND	78	50		µg/Kg-dry	1	12/23/2012
Trichlorofluoromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Vinyl chloride	ND	78	40		µg/Kg-dry	1	12/23/2012
Surr: 1,2-Dichloroethane-d4	*105*	*70-130*			*%REC*	1	12/23/2012
Surr: 4-Bromofluorobenzene	*93.1*	*70-130*			*%REC*	1	12/23/2012
Surr: Dibromofluoromethane	*93.5*	*70-130*			*%REC*	1	12/23/2012
Surr: Toluene-d8	*96.4*	*70-130*			*%REC*	1	12/23/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**62**	**0.050**	**0**		**% of sample**	1	12/21/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1275I506S121712S004
Work Order:	1212696	**Collection Date:**	12/17/2012 8:17:00 AM
Project:	Marshall KRRI 1250-1275I,1300L 12/17/12		
Lab ID:	1212696-03	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/21/2012**		Analyst: **CW**
DRO (C10-C20)	ND	23	4.0		mg/Kg-dry	1	12/21/2012
ORO (C20-C34)	**350**	**46**	**4.0**		**mg/Kg-dry**	1	12/21/2012
Surr: 4-Terphenyl-d14	*81.5*	*39-115*			*%REC*	1	12/21/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/26/2012**		Analyst: **CES**
Beryllium	ND	1.4	0.50		mg/Kg-dry	4	12/27/2012
Molybdenum	ND	3.6	1.0		mg/Kg-dry	4	12/27/2012
Nickel	**18**	**3.6**	**1.0**		**mg/Kg-dry**	4	12/27/2012
Vanadium	**19**	**3.6**	**1.0**		**mg/Kg-dry**	4	12/27/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/21/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/21/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/21/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/21/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/21/2012
Benzo(a)anthracene	**350**	**330**	**330**		**µg/Kg-dry**	1	12/21/2012
Benzo(a)pyrene	**520**	**330**	**330**		**µg/Kg-dry**	1	12/21/2012
Benzo(b)fluoranthene	**550**	**330**	**330**		**µg/Kg-dry**	1	12/21/2012
Benzo(g,h,i)perylene	ND	330	330		µg/Kg-dry	1	12/21/2012
Benzo(k)fluoranthene	ND	330	330		µg/Kg-dry	1	12/21/2012
Chrysene	**510**	**330**	**330**		**µg/Kg-dry**	1	12/21/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/21/2012
Fluoranthene	**750**	**330**	**330**		**µg/Kg-dry**	1	12/21/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/21/2012
Indeno(1,2,3-cd)pyrene	ND	330	330		µg/Kg-dry	1	12/21/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/21/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/21/2012
Pyrene	**750**	**330**	**330**		**µg/Kg-dry**	1	12/21/2012
Surr: 2,4,6-Tribromophenol	*81.7*	*34-140*			*%REC*	1	12/21/2012
Surr: 2-Fluorobiphenyl	*64.3*	*12-100*			*%REC*	1	12/21/2012
Surr: 2-Fluorophenol	*76.0*	*33-117*			*%REC*	1	12/21/2012
Surr: 4-Terphenyl-d14	*88.3*	*25-137*			*%REC*	1	12/21/2012
Surr: Nitrobenzene-d5	*69.5*	*37-107*			*%REC*	1	12/21/2012
Surr: Phenol-d6	*83.0*	*40-106*			*%REC*	1	12/21/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/19/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	100	100		µg/Kg-dry	1	12/23/2012
1,1,1-Trichloroethane	ND	69	50		µg/Kg-dry	1	12/23/2012
1,1,2,2-Tetrachloroethane	ND	69	50		µg/Kg-dry	1	12/23/2012
1,1,2-Trichloroethane	ND	69	50		µg/Kg-dry	1	12/23/2012
1,1-Dichloroethane	ND	69	50		µg/Kg-dry	1	12/23/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1275I506S121712S004
Work Order:	1212696	**Collection Date:**	12/17/2012 8:17:00 AM
Project:	Marshall KRRI 1250-1275I,1300L 12/17/12		
Lab ID:	1212696-03	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	69	50		µg/Kg-dry	1	12/23/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
1,2,3-Trichloropropane	ND	100	100		µg/Kg-dry	1	12/23/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
1,2,4-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,2-Dibromo-3-chloropropane	ND	69	10		µg/Kg-dry	1	12/23/2012
1,2-Dibromoethane	ND	69	20		µg/Kg-dry	1	12/23/2012
1,2-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,2-Dichloroethane	ND	69	50		µg/Kg-dry	1	12/23/2012
1,2-Dichloropropane	ND	69	50		µg/Kg-dry	1	12/23/2012
1,3,5-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,3-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,4-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/23/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/23/2012
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/23/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/23/2012
Acetone	ND	1,000	1,000		µg/Kg-dry	1	12/23/2012
Acrylonitrile	ND	100	100		µg/Kg-dry	1	12/23/2012
Benzene	ND	69	50		µg/Kg-dry	1	12/23/2012
Bromobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromochloromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromodichloromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromoform	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/23/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/23/2012
Carbon tetrachloride	ND	69	50		µg/Kg-dry	1	12/23/2012
Chlorobenzene	ND	69	50		µg/Kg-dry	1	12/23/2012
Chloroethane	ND	250	250		µg/Kg-dry	1	12/23/2012
Chloroform	ND	69	50		µg/Kg-dry	1	12/23/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/23/2012
cis-1,2-Dichloroethene	ND	69	50		µg/Kg-dry	1	12/23/2012
cis-1,3-Dichloropropene	ND	69	50		µg/Kg-dry	1	12/23/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/23/2012
Dibromochloromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/23/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/23/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/23/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/23/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/23/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client:	AECOM Environment	**Client Sample ID:**	SBKR1275I506S121712S004
Work Order:	1212696	**Collection Date:**	12/17/2012 8:17:00 AM
Project:	Marshall KRRI 1250-1275I,1300L 12/17/12		
Lab ID:	1212696-03	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	69	50		µg/Kg-dry	1	12/23/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/23/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
m,p-Xylene	ND	140	100		µg/Kg-dry	1	12/23/2012
Methyl iodide	ND	100	100		µg/Kg-dry	1	12/23/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/23/2012
Methylene chloride	ND	100	100		µg/Kg-dry	1	12/23/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/23/2012
n-Butylbenzene	ND	69	50		µg/Kg-dry	1	12/23/2012
n-Propylbenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
o-Xylene	ND	69	50		µg/Kg-dry	1	12/23/2012
p-Isopropyltoluene	ND	100	100		µg/Kg-dry	1	12/23/2012
sec-Butylbenzene	ND	69	50		µg/Kg-dry	1	12/23/2012
Styrene	ND	69	50		µg/Kg-dry	1	12/23/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/23/2012
tert-Butylbenzene	ND	69	50		µg/Kg-dry	1	12/23/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/23/2012
Tetrachloroethene	ND	69	50		µg/Kg-dry	1	12/23/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/23/2012
Toluene	ND	100	100		µg/Kg-dry	1	12/23/2012
trans-1,2-Dichloroethene	ND	69	50		µg/Kg-dry	1	12/23/2012
trans-1,3-Dichloropropene	ND	69	50		µg/Kg-dry	1	12/23/2012
trans-1,4-Dichloro-2-butene	ND	69	50		µg/Kg-dry	1	12/23/2012
Trichloroethene	ND	69	50		µg/Kg-dry	1	12/23/2012
Trichlorofluoromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Vinyl chloride	ND	69	40		µg/Kg-dry	1	12/23/2012
Surr: 1,2-Dichloroethane-d4	*105*	*70-130*			*%REC*	1	12/23/2012
Surr: 4-Bromofluorobenzene	*98.6*	*70-130*			*%REC*	1	12/23/2012
Surr: Dibromofluoromethane	*96.2*	*70-130*			*%REC*	1	12/23/2012
Surr: Toluene-d8	*95.4*	*70-130*			*%REC*	1	12/23/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**57**	**0.050**	**0**		**% of sample**	1	12/21/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1275I507S121712S005
Work Order:	1212696	**Collection Date:**	12/17/2012 9:15:00 AM
Project:	Marshall KRRI 1250-1275I,1300L 12/17/12		
Lab ID:	1212696-04	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/21/2012**		Analyst: **CW**
DRO (C10-C20)	ND	20	4.0		mg/Kg-dry	1	12/21/2012
ORO (C20-C34)	**280**	**40**	**4.0**		**mg/Kg-dry**	1	12/21/2012
Surr: 4-Terphenyl-d14	*78.2*	*39-115*			*%REC*	1	12/21/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/26/2012**		Analyst: **CES**
Beryllium	ND	1.2	0.50		mg/Kg-dry	4	12/27/2012
Molybdenum	ND	3.0	1.0		mg/Kg-dry	4	12/27/2012
Nickel	**15**	**3.0**	**1.0**		**mg/Kg-dry**	4	12/27/2012
Vanadium	**18**	**3.0**	**1.0**		**mg/Kg-dry**	4	12/27/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/21/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/21/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/21/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/21/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/21/2012
Benzo(a)anthracene	**470**	**330**	**330**		**µg/Kg-dry**	1	12/21/2012
Benzo(a)pyrene	**710**	**330**	**330**		**µg/Kg-dry**	1	12/21/2012
Benzo(b)fluoranthene	**650**	**330**	**330**		**µg/Kg-dry**	1	12/21/2012
Benzo(g,h,i)perylene	**380**	**330**	**330**		**µg/Kg-dry**	1	12/21/2012
Benzo(k)fluoranthene	**360**	**330**	**330**		**µg/Kg-dry**	1	12/21/2012
Chrysene	**640**	**330**	**330**		**µg/Kg-dry**	1	12/21/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/21/2012
Fluoranthene	**790**	**330**	**330**		**µg/Kg-dry**	1	12/21/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/21/2012
Indeno(1,2,3-cd)pyrene	ND	330	330		µg/Kg-dry	1	12/21/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/21/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/21/2012
Pyrene	**920**	**330**	**330**		**µg/Kg-dry**	1	12/21/2012
Surr: 2,4,6-Tribromophenol	*80.6*	*34-140*			*%REC*	1	12/21/2012
Surr: 2-Fluorobiphenyl	*63.0*	*12-100*			*%REC*	1	12/21/2012
Surr: 2-Fluorophenol	*75.6*	*33-117*			*%REC*	1	12/21/2012
Surr: 4-Terphenyl-d14	*87.5*	*25-137*			*%REC*	1	12/21/2012
Surr: Nitrobenzene-d5	*68.9*	*37-107*			*%REC*	1	12/21/2012
Surr: Phenol-d6	*81.6*	*40-106*			*%REC*	1	12/21/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/19/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	100	100		µg/Kg-dry	1	12/23/2012
1,1,1-Trichloroethane	ND	60	50		µg/Kg-dry	1	12/23/2012
1,1,2,2-Tetrachloroethane	ND	60	50		µg/Kg-dry	1	12/23/2012
1,1,2-Trichloroethane	ND	60	50		µg/Kg-dry	1	12/23/2012
1,1-Dichloroethane	ND	60	50		µg/Kg-dry	1	12/23/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1275I507S121712S005
Work Order:	1212696	**Collection Date:**	12/17/2012 9:15:00 AM
Project:	Marshall KRRI 1250-1275I,1300L 12/17/12		
Lab ID:	1212696-04	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	60	50		µg/Kg-dry	1	12/23/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
1,2,3-Trichloropropane	ND	100	100		µg/Kg-dry	1	12/23/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
1,2,4-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,2-Dibromo-3-chloropropane	ND	60	10		µg/Kg-dry	1	12/23/2012
1,2-Dibromoethane	ND	60	20		µg/Kg-dry	1	12/23/2012
1,2-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,2-Dichloroethane	ND	60	50		µg/Kg-dry	1	12/23/2012
1,2-Dichloropropane	ND	60	50		µg/Kg-dry	1	12/23/2012
1,3,5-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,3-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,4-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/23/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/23/2012
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/23/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/23/2012
Acetone	ND	1,000	1,000		µg/Kg-dry	1	12/23/2012
Acrylonitrile	ND	100	100		µg/Kg-dry	1	12/23/2012
Benzene	ND	60	50		µg/Kg-dry	1	12/23/2012
Bromobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromochloromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromodichloromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromoform	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/23/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/23/2012
Carbon tetrachloride	ND	60	50		µg/Kg-dry	1	12/23/2012
Chlorobenzene	ND	60	50		µg/Kg-dry	1	12/23/2012
Chloroethane	ND	250	250		µg/Kg-dry	1	12/23/2012
Chloroform	ND	60	50		µg/Kg-dry	1	12/23/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/23/2012
cis-1,2-Dichloroethene	ND	60	50		µg/Kg-dry	1	12/23/2012
cis-1,3-Dichloropropene	ND	60	50		µg/Kg-dry	1	12/23/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/23/2012
Dibromochloromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/23/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/23/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/23/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/23/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/23/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client:	AECOM Environment	**Client Sample ID:**	SBKR1275I507S121712S005
Work Order:	1212696	**Collection Date:**	12/17/2012 9:15:00 AM
Project:	Marshall KRRI 1250-1275I,1300L 12/17/12		
Lab ID:	1212696-04	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	60	50		µg/Kg-dry	1	12/23/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/23/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
m,p-Xylene	ND	120	100		µg/Kg-dry	1	12/23/2012
Methyl iodide	ND	100	100		µg/Kg-dry	1	12/23/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/23/2012
Methylene chloride	ND	100	100		µg/Kg-dry	1	12/23/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/23/2012
n-Butylbenzene	ND	60	50		µg/Kg-dry	1	12/23/2012
n-Propylbenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
o-Xylene	ND	60	50		µg/Kg-dry	1	12/23/2012
p-Isopropyltoluene	ND	100	100		µg/Kg-dry	1	12/23/2012
sec-Butylbenzene	ND	60	50		µg/Kg-dry	1	12/23/2012
Styrene	ND	60	50		µg/Kg-dry	1	12/23/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/23/2012
tert-Butylbenzene	ND	60	50		µg/Kg-dry	1	12/23/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/23/2012
Tetrachloroethene	ND	60	50		µg/Kg-dry	1	12/23/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/23/2012
Toluene	ND	100	100		µg/Kg-dry	1	12/23/2012
trans-1,2-Dichloroethene	ND	60	50		µg/Kg-dry	1	12/23/2012
trans-1,3-Dichloropropene	ND	60	50		µg/Kg-dry	1	12/23/2012
trans-1,4-Dichloro-2-butene	ND	60	50		µg/Kg-dry	1	12/23/2012
Trichloroethene	ND	60	50		µg/Kg-dry	1	12/23/2012
Trichlorofluoromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Vinyl chloride	ND	60	40		µg/Kg-dry	1	12/23/2012
Surr: 1,2-Dichloroethane-d4	*105*	*70-130*			*%REC*	1	12/23/2012
Surr: 4-Bromofluorobenzene	*96.8*	*70-130*			*%REC*	1	12/23/2012
Surr: Dibromofluoromethane	*93.8*	*70-130*			*%REC*	1	12/23/2012
Surr: Toluene-d8	*97.6*	*70-130*			*%REC*	1	12/23/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**50**	**0.050**	**0**		**% of sample**	1	12/21/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1275I508S121712S004
Work Order:	1212696	**Collection Date:**	12/17/2012 10:12:00 AM
Project:	Marshall KRRI 1250-1275I,1300L 12/17/12		
Lab ID:	1212696-05	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/21/2012**		Analyst: **CW**
DRO (C10-C20)	ND	17	4.0		mg/Kg-dry	1	12/22/2012
ORO (C20-C34)	**280**	**35**	**4.0**		**mg/Kg-dry**	1	12/22/2012
Surr: 4-Terphenyl-d14	*76.6*	*39-115*			*%REC*	1	12/22/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/26/2012**		Analyst: **CES**
Beryllium	ND	1.1	0.50		mg/Kg-dry	4	12/27/2012
Molybdenum	ND	2.7	1.0		mg/Kg-dry	4	12/27/2012
Nickel	**15**	**2.7**	**1.0**		**mg/Kg-dry**	4	12/27/2012
Vanadium	**22**	**2.7**	**1.0**		**mg/Kg-dry**	4	12/27/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/21/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/22/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/22/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/22/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/22/2012
Benzo(a)anthracene	ND	330	330		µg/Kg-dry	1	12/22/2012
Benzo(a)pyrene	**500**	**330**	**330**		**µg/Kg-dry**	1	12/22/2012
Benzo(b)fluoranthene	**550**	**330**	**330**		**µg/Kg-dry**	1	12/22/2012
Benzo(g,h,i)perylene	ND	330	330		µg/Kg-dry	1	12/22/2012
Benzo(k)fluoranthene	ND	330	330		µg/Kg-dry	1	12/22/2012
Chrysene	**440**	**330**	**330**		**µg/Kg-dry**	1	12/22/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/22/2012
Fluoranthene	**550**	**330**	**330**		**µg/Kg-dry**	1	12/22/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/22/2012
Indeno(1,2,3-cd)pyrene	ND	330	330		µg/Kg-dry	1	12/22/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/22/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/22/2012
Pyrene	**630**	**330**	**330**		**µg/Kg-dry**	1	12/22/2012
Surr: 2,4,6-Tribromophenol	*80.3*	*34-140*			*%REC*	1	12/22/2012
Surr: 2-Fluorobiphenyl	*60.1*	*12-100*			*%REC*	1	12/22/2012
Surr: 2-Fluorophenol	*72.9*	*33-117*			*%REC*	1	12/22/2012
Surr: 4-Terphenyl-d14	*86.8*	*25-137*			*%REC*	1	12/22/2012
Surr: Nitrobenzene-d5	*67.1*	*37-107*			*%REC*	1	12/22/2012
Surr: Phenol-d6	*78.9*	*40-106*			*%REC*	1	12/22/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/19/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	100	100		µg/Kg-dry	1	12/23/2012
1,1,1-Trichloroethane	ND	53	50		µg/Kg-dry	1	12/23/2012
1,1,2,2-Tetrachloroethane	ND	53	50		µg/Kg-dry	1	12/23/2012
1,1,2-Trichloroethane	ND	53	50		µg/Kg-dry	1	12/23/2012
1,1-Dichloroethane	ND	53	50		µg/Kg-dry	1	12/23/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1275I508S121712S004
Work Order:	1212696	**Collection Date:**	12/17/2012 10:12:00 AM
Project:	Marshall KRRI 1250-1275I,1300L 12/17/12		
Lab ID:	1212696-05	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	53	50		µg/Kg-dry	1	12/23/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
1,2,3-Trichloropropane	ND	100	100		µg/Kg-dry	1	12/23/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
1,2,4-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,2-Dibromo-3-chloropropane	ND	53	10		µg/Kg-dry	1	12/23/2012
1,2-Dibromoethane	ND	53	20		µg/Kg-dry	1	12/23/2012
1,2-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,2-Dichloroethane	ND	53	50		µg/Kg-dry	1	12/23/2012
1,2-Dichloropropane	ND	53	50		µg/Kg-dry	1	12/23/2012
1,3,5-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,3-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,4-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/23/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/23/2012
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/23/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/23/2012
Acetone	ND	1,000	1,000		µg/Kg-dry	1	12/23/2012
Acrylonitrile	ND	100	100		µg/Kg-dry	1	12/23/2012
Benzene	ND	53	50		µg/Kg-dry	1	12/23/2012
Bromobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromochloromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromodichloromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromoform	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/23/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/23/2012
Carbon tetrachloride	ND	53	50		µg/Kg-dry	1	12/23/2012
Chlorobenzene	ND	53	50		µg/Kg-dry	1	12/23/2012
Chloroethane	ND	250	250		µg/Kg-dry	1	12/23/2012
Chloroform	ND	53	50		µg/Kg-dry	1	12/23/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/23/2012
cis-1,2-Dichloroethene	ND	53	50		µg/Kg-dry	1	12/23/2012
cis-1,3-Dichloropropene	ND	53	50		µg/Kg-dry	1	12/23/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/23/2012
Dibromochloromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/23/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/23/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/23/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/23/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/23/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client:	AECOM Environment	**Client Sample ID:**	SBKR1275I508S121712S004
Work Order:	1212696	**Collection Date:**	12/17/2012 10:12:00 AM
Project:	Marshall KRRI 1250-1275I,1300L 12/17/12		
Lab ID:	1212696-05	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	53	50		µg/Kg-dry	1	12/23/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/23/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
m,p-Xylene	ND	110	100		µg/Kg-dry	1	12/23/2012
Methyl iodide	ND	100	100		µg/Kg-dry	1	12/23/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/23/2012
Methylene chloride	ND	100	100		µg/Kg-dry	1	12/23/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/23/2012
n-Butylbenzene	ND	53	50		µg/Kg-dry	1	12/23/2012
n-Propylbenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
o-Xylene	ND	53	50		µg/Kg-dry	1	12/23/2012
p-Isopropyltoluene	ND	100	100		µg/Kg-dry	1	12/23/2012
sec-Butylbenzene	ND	53	50		µg/Kg-dry	1	12/23/2012
Styrene	ND	53	50		µg/Kg-dry	1	12/23/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/23/2012
tert-Butylbenzene	ND	53	50		µg/Kg-dry	1	12/23/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/23/2012
Tetrachloroethene	ND	53	50		µg/Kg-dry	1	12/23/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/23/2012
Toluene	ND	100	100		µg/Kg-dry	1	12/23/2012
trans-1,2-Dichloroethene	ND	53	50		µg/Kg-dry	1	12/23/2012
trans-1,3-Dichloropropene	ND	53	50		µg/Kg-dry	1	12/23/2012
trans-1,4-Dichloro-2-butene	ND	53	50		µg/Kg-dry	1	12/23/2012
Trichloroethene	ND	53	50		µg/Kg-dry	1	12/23/2012
Trichlorofluoromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Vinyl chloride	ND	53	40		µg/Kg-dry	1	12/23/2012
Surr: 1,2-Dichloroethane-d4	*104*	*70-130*			*%REC*	1	12/23/2012
Surr: 4-Bromofluorobenzene	*95.6*	*70-130*			*%REC*	1	12/23/2012
Surr: Dibromofluoromethane	*94.3*	*70-130*			*%REC*	1	12/23/2012
Surr: Toluene-d8	*95.8*	*70-130*			*%REC*	1	12/23/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**43**	**0.050**	**0**		**% of sample**	1	12/21/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1275I509S121712S004
Work Order:	1212696	**Collection Date:**	12/17/2012 11:20:00 AM
Project:	Marshall KRRI 1250-1275I,1300L 12/17/12		
Lab ID:	1212696-06	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/21/2012**		Analyst: **CW**
DRO (C10-C20)	ND	17	4.0		mg/Kg-dry	1	12/22/2012
ORO (C20-C34)	**280**	**35**	**4.0**		**mg/Kg-dry**	1	12/22/2012
Surr: 4-Terphenyl-d14	*75.7*	*39-115*			*%REC*	1	12/22/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/26/2012**		Analyst: **CES**
Beryllium	ND	0.92	0.50		mg/Kg-dry	4	12/28/2012
Molybdenum	ND	2.3	1.0		mg/Kg-dry	4	12/28/2012
Nickel	**19**	**2.3**	**1.0**		**mg/Kg-dry**	4	12/28/2012
Vanadium	**30**	**2.3**	**1.0**		**mg/Kg-dry**	4	12/28/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/21/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/22/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/22/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/22/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/22/2012
Benzo(a)anthracene	**470**	**330**	**330**		**µg/Kg-dry**	1	12/22/2012
Benzo(a)pyrene	**790**	**330**	**330**		**µg/Kg-dry**	1	12/22/2012
Benzo(b)fluoranthene	**720**	**330**	**330**		**µg/Kg-dry**	1	12/22/2012
Benzo(g,h,i)perylene	**360**	**330**	**330**		**µg/Kg-dry**	1	12/22/2012
Benzo(k)fluoranthene	**350**	**330**	**330**		**µg/Kg-dry**	1	12/22/2012
Chrysene	**620**	**330**	**330**		**µg/Kg-dry**	1	12/22/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/22/2012
Fluoranthene	**550**	**330**	**330**		**µg/Kg-dry**	1	12/22/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/22/2012
Indeno(1,2,3-cd)pyrene	ND	330	330		µg/Kg-dry	1	12/22/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/22/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/22/2012
Pyrene	**770**	**330**	**330**		**µg/Kg-dry**	1	12/22/2012
Surr: 2,4,6-Tribromophenol	*80.6*	*34-140*			*%REC*	1	12/22/2012
Surr: 2-Fluorobiphenyl	*61.5*	*12-100*			*%REC*	1	12/22/2012
Surr: 2-Fluorophenol	*73.1*	*33-117*			*%REC*	1	12/22/2012
Surr: 4-Terphenyl-d14	*87.3*	*25-137*			*%REC*	1	12/22/2012
Surr: Nitrobenzene-d5	*66.9*	*37-107*			*%REC*	1	12/22/2012
Surr: Phenol-d6	*79.3*	*40-106*			*%REC*	1	12/22/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/19/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	100	100		µg/Kg-dry	1	12/23/2012
1,1,1-Trichloroethane	ND	53	50		µg/Kg-dry	1	12/23/2012
1,1,2,2-Tetrachloroethane	ND	53	50		µg/Kg-dry	1	12/23/2012
1,1,2-Trichloroethane	ND	53	50		µg/Kg-dry	1	12/23/2012
1,1-Dichloroethane	ND	53	50		µg/Kg-dry	1	12/23/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Dec-12*

Client: AECOM Environment
Client Sample ID: SBKR1275I509S121712S004
Work Order: 1212696
Collection Date: 12/17/2012 11:20:00 AM
Project: Marshall KRRI 1250-1275I,1300L 12/17/12
Lab ID: 1212696-06
Matrix: SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	53	50		µg/Kg-dry	1	12/23/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
1,2,3-Trichloropropane	ND	100	100		µg/Kg-dry	1	12/23/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
1,2,4-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,2-Dibromo-3-chloropropane	ND	53	10		µg/Kg-dry	1	12/23/2012
1,2-Dibromoethane	ND	53	20		µg/Kg-dry	1	12/23/2012
1,2-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,2-Dichloroethane	ND	53	50		µg/Kg-dry	1	12/23/2012
1,2-Dichloropropane	ND	53	50		µg/Kg-dry	1	12/23/2012
1,3,5-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,3-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,4-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/23/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/23/2012
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/23/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/23/2012
Acetone	ND	1,000	1,000		µg/Kg-dry	1	12/23/2012
Acrylonitrile	ND	100	100		µg/Kg-dry	1	12/23/2012
Benzene	ND	53	50		µg/Kg-dry	1	12/23/2012
Bromobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromochloromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromodichloromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromoform	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/23/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/23/2012
Carbon tetrachloride	ND	53	50		µg/Kg-dry	1	12/23/2012
Chlorobenzene	ND	53	50		µg/Kg-dry	1	12/23/2012
Chloroethane	ND	250	250		µg/Kg-dry	1	12/23/2012
Chloroform	ND	53	50		µg/Kg-dry	1	12/23/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/23/2012
cis-1,2-Dichloroethene	ND	53	50		µg/Kg-dry	1	12/23/2012
cis-1,3-Dichloropropene	ND	53	50		µg/Kg-dry	1	12/23/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/23/2012
Dibromochloromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/23/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/23/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/23/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/23/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/23/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1275I509S121712S004
Work Order:	1212696	**Collection Date:**	12/17/2012 11:20:00 AM
Project:	Marshall KRRI 1250-1275I,1300L 12/17/12		
Lab ID:	1212696-06	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	53	50		µg/Kg-dry	1	12/23/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/23/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
m,p-Xylene	ND	110	100		µg/Kg-dry	1	12/23/2012
Methyl iodide	ND	100	100		µg/Kg-dry	1	12/23/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/23/2012
Methylene chloride	ND	100	100		µg/Kg-dry	1	12/23/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/23/2012
n-Butylbenzene	ND	53	50		µg/Kg-dry	1	12/23/2012
n-Propylbenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
o-Xylene	ND	53	50		µg/Kg-dry	1	12/23/2012
p-Isopropyltoluene	ND	100	100		µg/Kg-dry	1	12/23/2012
sec-Butylbenzene	ND	53	50		µg/Kg-dry	1	12/23/2012
Styrene	ND	53	50		µg/Kg-dry	1	12/23/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/23/2012
tert-Butylbenzene	ND	53	50		µg/Kg-dry	1	12/23/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/23/2012
Tetrachloroethene	ND	53	50		µg/Kg-dry	1	12/23/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/23/2012
Toluene	ND	100	100		µg/Kg-dry	1	12/23/2012
trans-1,2-Dichloroethene	ND	53	50		µg/Kg-dry	1	12/23/2012
trans-1,3-Dichloropropene	ND	53	50		µg/Kg-dry	1	12/23/2012
trans-1,4-Dichloro-2-butene	ND	53	50		µg/Kg-dry	1	12/23/2012
Trichloroethene	ND	53	50		µg/Kg-dry	1	12/23/2012
Trichlorofluoromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Vinyl chloride	ND	53	40		µg/Kg-dry	1	12/23/2012
Surr: 1,2-Dichloroethane-d4	*106*	*70-130*			*%REC*	1	12/23/2012
Surr: 4-Bromofluorobenzene	*95.6*	*70-130*			*%REC*	1	12/23/2012
Surr: Dibromofluoromethane	*92.6*	*70-130*			*%REC*	1	12/23/2012
Surr: Toluene-d8	*96.1*	*70-130*			*%REC*	1	12/23/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**43**	**0.050**	**0**		**% of sample**	1	12/21/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1300L501S121712S006
Work Order:	1212696	**Collection Date:**	12/17/2012 3:52:00 PM
Project:	Marshall KRRI 1250-1275I,1300L 12/17/12		
Lab ID:	1212696-07	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/21/2012**		Analyst: **CW**
DRO (C10-C20)	ND	18	4.0		mg/Kg-dry	1	12/22/2012
ORO (C20-C34)	**220**	**35**	**4.0**		**mg/Kg-dry**	1	12/22/2012
Surr: 4-Terphenyl-d14	*75.4*	*39-115*			*%REC*	1	12/22/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/26/2012**		Analyst: **CES**
Beryllium	ND	1.1	0.50		mg/Kg-dry	4	12/28/2012
Molybdenum	ND	2.9	1.0		mg/Kg-dry	4	12/28/2012
Nickel	**17**	**2.9**	**1.0**		**mg/Kg-dry**	4	12/28/2012
Vanadium	**24**	**2.9**	**1.0**		**mg/Kg-dry**	4	12/28/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/21/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/22/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/22/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/22/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/22/2012
Benzo(a)anthracene	ND	330	330		µg/Kg-dry	1	12/22/2012
Benzo(a)pyrene	**450**	**330**	**330**		**µg/Kg-dry**	1	12/22/2012
Benzo(b)fluoranthene	**420**	**330**	**330**		**µg/Kg-dry**	1	12/22/2012
Benzo(g,h,i)perylene	ND	330	330		µg/Kg-dry	1	12/22/2012
Benzo(k)fluoranthene	ND	330	330		µg/Kg-dry	1	12/22/2012
Chrysene	**380**	**330**	**330**		**µg/Kg-dry**	1	12/22/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/22/2012
Fluoranthene	**370**	**330**	**330**		**µg/Kg-dry**	1	12/22/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/22/2012
Indeno(1,2,3-cd)pyrene	ND	330	330		µg/Kg-dry	1	12/22/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/22/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/22/2012
Pyrene	**480**	**330**	**330**		**µg/Kg-dry**	1	12/22/2012
Surr: 2,4,6-Tribromophenol	*81.8*	*34-140*			*%REC*	1	12/22/2012
Surr: 2-Fluorobiphenyl	*65.3*	*12-100*			*%REC*	1	12/22/2012
Surr: 2-Fluorophenol	*78.1*	*33-117*			*%REC*	1	12/22/2012
Surr: 4-Terphenyl-d14	*87.2*	*25-137*			*%REC*	1	12/22/2012
Surr: Nitrobenzene-d5	*72.6*	*37-107*			*%REC*	1	12/22/2012
Surr: Phenol-d6	*84.3*	*40-106*			*%REC*	1	12/22/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/19/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	100	100		µg/Kg-dry	1	12/23/2012
1,1,1-Trichloroethane	ND	54	50		µg/Kg-dry	1	12/23/2012
1,1,2,2-Tetrachloroethane	ND	54	50		µg/Kg-dry	1	12/23/2012
1,1,2-Trichloroethane	ND	54	50		µg/Kg-dry	1	12/23/2012
1,1-Dichloroethane	ND	54	50		µg/Kg-dry	1	12/23/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1300L501S121712S006
Work Order:	1212696	**Collection Date:**	12/17/2012 3:52:00 PM
Project:	Marshall KRRI 1250-1275I,1300L 12/17/12		
Lab ID:	1212696-07	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	54	50		µg/Kg-dry	1	12/23/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
1,2,3-Trichloropropane	ND	100	100		µg/Kg-dry	1	12/23/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
1,2,4-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,2-Dibromo-3-chloropropane	ND	54	10		µg/Kg-dry	1	12/23/2012
1,2-Dibromoethane	ND	54	20		µg/Kg-dry	1	12/23/2012
1,2-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,2-Dichloroethane	ND	54	50		µg/Kg-dry	1	12/23/2012
1,2-Dichloropropane	ND	54	50		µg/Kg-dry	1	12/23/2012
1,3,5-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,3-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,4-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/23/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/23/2012
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/23/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/23/2012
Acetone	ND	1,000	1,000		µg/Kg-dry	1	12/23/2012
Acrylonitrile	ND	100	100		µg/Kg-dry	1	12/23/2012
Benzene	ND	54	50		µg/Kg-dry	1	12/23/2012
Bromobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromochloromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromodichloromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromoform	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/23/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/23/2012
Carbon tetrachloride	ND	54	50		µg/Kg-dry	1	12/23/2012
Chlorobenzene	ND	54	50		µg/Kg-dry	1	12/23/2012
Chloroethane	ND	250	250		µg/Kg-dry	1	12/23/2012
Chloroform	ND	54	50		µg/Kg-dry	1	12/23/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/23/2012
cis-1,2-Dichloroethene	ND	54	50		µg/Kg-dry	1	12/23/2012
cis-1,3-Dichloropropene	ND	54	50		µg/Kg-dry	1	12/23/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/23/2012
Dibromochloromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/23/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/23/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/23/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/23/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/23/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client:	AECOM Environment	**Client Sample ID:**	SBKR1300L501S121712S006
Work Order:	1212696	**Collection Date:**	12/17/2012 3:52:00 PM
Project:	Marshall KRRI 1250-1275I,1300L 12/17/12		
Lab ID:	1212696-07	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	54	50		µg/Kg-dry	1	12/23/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/23/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
m,p-Xylene	ND	110	100		µg/Kg-dry	1	12/23/2012
Methyl iodide	ND	100	100		µg/Kg-dry	1	12/23/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/23/2012
Methylene chloride	ND	100	100		µg/Kg-dry	1	12/23/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/23/2012
n-Butylbenzene	ND	54	50		µg/Kg-dry	1	12/23/2012
n-Propylbenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
o-Xylene	ND	54	50		µg/Kg-dry	1	12/23/2012
p-Isopropyltoluene	ND	100	100		µg/Kg-dry	1	12/23/2012
sec-Butylbenzene	ND	54	50		µg/Kg-dry	1	12/23/2012
Styrene	ND	54	50		µg/Kg-dry	1	12/23/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/23/2012
tert-Butylbenzene	ND	54	50		µg/Kg-dry	1	12/23/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/23/2012
Tetrachloroethene	ND	54	50		µg/Kg-dry	1	12/23/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/23/2012
Toluene	ND	100	100		µg/Kg-dry	1	12/23/2012
trans-1,2-Dichloroethene	ND	54	50		µg/Kg-dry	1	12/23/2012
trans-1,3-Dichloropropene	ND	54	50		µg/Kg-dry	1	12/23/2012
trans-1,4-Dichloro-2-butene	ND	54	50		µg/Kg-dry	1	12/23/2012
Trichloroethene	ND	54	50		µg/Kg-dry	1	12/23/2012
Trichlorofluoromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Vinyl chloride	ND	54	40		µg/Kg-dry	1	12/23/2012
Surr: 1,2-Dichloroethane-d4	*107*	*70-130*			*%REC*	1	12/23/2012
Surr: 4-Bromofluorobenzene	*95.6*	*70-130*			*%REC*	1	12/23/2012
Surr: Dibromofluoromethane	*95.4*	*70-130*			*%REC*	1	12/23/2012
Surr: Toluene-d8	*95.4*	*70-130*			*%REC*	1	12/23/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**45**	**0.050**	**0**		**% of sample**	1	12/21/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1275I510S121712S005
Work Order:	1212696	**Collection Date:**	12/17/2012 1:05:00 PM
Project:	Marshall KRRI 1250-1275I,1300L 12/17/12		
Lab ID:	1212696-08	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep Date: **12/21/2012**		Analyst: **CW**
DRO (C10-C20)	ND	16	4.0		mg/Kg-dry	1	12/22/2012
ORO (C20-C34)	**140**	**33**	**4.0**		**mg/Kg-dry**	1	12/22/2012
Surr: 4-Terphenyl-d14	*70.7*	*39-115*			*%REC*	1	12/22/2012
METALS BY ICP-MS			**SW6020A**		Prep Date: **12/26/2012**		Analyst: **CES**
Beryllium	ND	1.0	0.50		mg/Kg-dry	4	12/28/2012
Molybdenum	ND	2.6	1.0		mg/Kg-dry	4	12/28/2012
Nickel	**20**	**2.6**	**1.0**		**mg/Kg-dry**	4	12/28/2012
Vanadium	**33**	**2.6**	**1.0**		**mg/Kg-dry**	4	12/28/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **12/21/2012**		Analyst: **RM**
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/22/2012
Acenaphthene	ND	330	330		µg/Kg-dry	1	12/22/2012
Acenaphthylene	ND	330	330		µg/Kg-dry	1	12/22/2012
Anthracene	ND	330	330		µg/Kg-dry	1	12/22/2012
Benzo(a)anthracene	**350**	**330**	**330**		**µg/Kg-dry**	1	12/22/2012
Benzo(a)pyrene	**570**	**330**	**330**		**µg/Kg-dry**	1	12/22/2012
Benzo(b)fluoranthene	**510**	**330**	**330**		**µg/Kg-dry**	1	12/22/2012
Benzo(g,h,i)perylene	ND	330	330		µg/Kg-dry	1	12/22/2012
Benzo(k)fluoranthene	ND	330	330		µg/Kg-dry	1	12/22/2012
Chrysene	**490**	**330**	**330**		**µg/Kg-dry**	1	12/22/2012
Dibenzo(a,h)anthracene	ND	330	330		µg/Kg-dry	1	12/22/2012
Fluoranthene	**500**	**330**	**330**		**µg/Kg-dry**	1	12/22/2012
Fluorene	ND	330	330		µg/Kg-dry	1	12/22/2012
Indeno(1,2,3-cd)pyrene	ND	330	330		µg/Kg-dry	1	12/22/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/22/2012
Phenanthrene	ND	330	330		µg/Kg-dry	1	12/22/2012
Pyrene	**630**	**330**	**330**		**µg/Kg-dry**	1	12/22/2012
Surr: 2,4,6-Tribromophenol	*70.4*	*34-140*			*%REC*	1	12/22/2012
Surr: 2-Fluorobiphenyl	*60.2*	*12-100*			*%REC*	1	12/22/2012
Surr: 2-Fluorophenol	*71.4*	*33-117*			*%REC*	1	12/22/2012
Surr: 4-Terphenyl-d14	*80.0*	*25-137*			*%REC*	1	12/22/2012
Surr: Nitrobenzene-d5	*68.3*	*37-107*			*%REC*	1	12/22/2012
Surr: Phenol-d6	*76.7*	*40-106*			*%REC*	1	12/22/2012
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/19/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	100	100		µg/Kg-dry	1	12/23/2012
1,1,1-Trichloroethane	ND	53	50		µg/Kg-dry	1	12/23/2012
1,1,2,2-Tetrachloroethane	ND	53	50		µg/Kg-dry	1	12/23/2012
1,1,2-Trichloroethane	ND	53	50		µg/Kg-dry	1	12/23/2012
1,1-Dichloroethane	ND	53	50		µg/Kg-dry	1	12/23/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1275I510S121712S005
Work Order:	1212696	**Collection Date:**	12/17/2012 1:05:00 PM
Project:	Marshall KRRI 1250-1275I,1300L 12/17/12		
Lab ID:	1212696-08	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
1,1-Dichloroethene	ND	53	50		µg/Kg-dry	1	12/23/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
1,2,3-Trichloropropane	ND	100	100		µg/Kg-dry	1	12/23/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
1,2,4-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,2-Dibromo-3-chloropropane	ND	53	10		µg/Kg-dry	1	12/23/2012
1,2-Dibromoethane	ND	53	20		µg/Kg-dry	1	12/23/2012
1,2-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,2-Dichloroethane	ND	53	50		µg/Kg-dry	1	12/23/2012
1,2-Dichloropropane	ND	53	50		µg/Kg-dry	1	12/23/2012
1,3,5-Trimethylbenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,3-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
1,4-Dichlorobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
2-Butanone	ND	750	750		µg/Kg-dry	1	12/23/2012
2-Hexanone	ND	2,500	2,500		µg/Kg-dry	1	12/23/2012
2-Methylnaphthalene	ND	330	330		µg/Kg-dry	1	12/23/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg-dry	1	12/23/2012
Acetone	ND	1,000	1,000		µg/Kg-dry	1	12/23/2012
Acrylonitrile	ND	100	100		µg/Kg-dry	1	12/23/2012
Benzene	ND	53	50		µg/Kg-dry	1	12/23/2012
Bromobenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromochloromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromodichloromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromoform	ND	100	100		µg/Kg-dry	1	12/23/2012
Bromomethane	ND	200	200		µg/Kg-dry	1	12/23/2012
Carbon disulfide	ND	250	250		µg/Kg-dry	1	12/23/2012
Carbon tetrachloride	ND	53	50		µg/Kg-dry	1	12/23/2012
Chlorobenzene	ND	53	50		µg/Kg-dry	1	12/23/2012
Chloroethane	ND	250	250		µg/Kg-dry	1	12/23/2012
Chloroform	ND	53	50		µg/Kg-dry	1	12/23/2012
Chloromethane	ND	250	250		µg/Kg-dry	1	12/23/2012
cis-1,2-Dichloroethene	ND	53	50		µg/Kg-dry	1	12/23/2012
cis-1,3-Dichloropropene	ND	53	50		µg/Kg-dry	1	12/23/2012
Cyclohexane	ND	500	500		µg/Kg-dry	1	12/23/2012
Dibromochloromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Dibromomethane	ND	250	250		µg/Kg-dry	1	12/23/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg-dry	1	12/23/2012
Diethyl ether	ND	200	200		µg/Kg-dry	1	12/23/2012
Diisopropyl ether	ND	250	250		µg/Kg-dry	1	12/23/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg-dry	1	12/23/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: AECOM Environment
Client Sample ID: SBKR1275I510S121712S005
Work Order: 1212696
Collection Date: 12/17/2012 1:05:00 PM
Project: Marshall KRRI 1250-1275I,1300L 12/17/12
Lab ID: 1212696-08
Matrix: SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Ethylbenzene	ND	53	50		µg/Kg-dry	1	12/23/2012
Hexachloroethane	ND	300	300		µg/Kg-dry	1	12/23/2012
Isopropylbenzene	ND	250	250		µg/Kg-dry	1	12/23/2012
m,p-Xylene	ND	110	100		µg/Kg-dry	1	12/23/2012
Methyl iodide	ND	100	100		µg/Kg-dry	1	12/23/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg-dry	1	12/23/2012
Methylene chloride	ND	100	100		µg/Kg-dry	1	12/23/2012
Naphthalene	ND	330	330		µg/Kg-dry	1	12/23/2012
n-Butylbenzene	ND	53	50		µg/Kg-dry	1	12/23/2012
n-Propylbenzene	ND	100	100		µg/Kg-dry	1	12/23/2012
o-Xylene	ND	53	50		µg/Kg-dry	1	12/23/2012
p-Isopropyltoluene	ND	100	100		µg/Kg-dry	1	12/23/2012
sec-Butylbenzene	ND	53	50		µg/Kg-dry	1	12/23/2012
Styrene	ND	53	50		µg/Kg-dry	1	12/23/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg-dry	1	12/23/2012
tert-Butylbenzene	ND	53	50		µg/Kg-dry	1	12/23/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg-dry	1	12/23/2012
Tetrachloroethene	ND	53	50		µg/Kg-dry	1	12/23/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg-dry	1	12/23/2012
Toluene	ND	100	100		µg/Kg-dry	1	12/23/2012
trans-1,2-Dichloroethene	ND	53	50		µg/Kg-dry	1	12/23/2012
trans-1,3-Dichloropropene	ND	53	50		µg/Kg-dry	1	12/23/2012
trans-1,4-Dichloro-2-butene	ND	53	50		µg/Kg-dry	1	12/23/2012
Trichloroethene	ND	53	50		µg/Kg-dry	1	12/23/2012
Trichlorofluoromethane	ND	100	100		µg/Kg-dry	1	12/23/2012
Vinyl chloride	ND	53	40		µg/Kg-dry	1	12/23/2012
Surr: 1,2-Dichloroethane-d4	*105*	*70-130*			*%REC*	1	12/23/2012
Surr: 4-Bromofluorobenzene	*96.0*	*70-130*			*%REC*	1	12/23/2012
Surr: Dibromofluoromethane	*93.4*	*70-130*			*%REC*	1	12/23/2012
Surr: Toluene-d8	*94.7*	*70-130*			*%REC*	1	12/23/2012
MOISTURE			**A2540 G**				Analyst: **LR**
Moisture	**43**	**0.050**	**0**		**% of sample**	1	12/21/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1300L501T121712SNX
Work Order:	1212696	**Collection Date:**	12/17/2012
Project:	Marshall KRRI 1250-1275I,1300L 12/17/12		
Lab ID:	1212696-09	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**SW8260**		Prep Date: **12/19/2012**		Analyst: **RS**
1,1,1,2-Tetrachloroethane	ND	100	100		µg/Kg	1	12/23/2012
1,1,1-Trichloroethane	ND	50	50		µg/Kg	1	12/23/2012
1,1,2,2-Tetrachloroethane	ND	50	50		µg/Kg	1	12/23/2012
1,1,2-Trichloroethane	ND	50	50		µg/Kg	1	12/23/2012
1,1-Dichloroethane	ND	50	50		µg/Kg	1	12/23/2012
1,1-Dichloroethene	ND	50	50		µg/Kg	1	12/23/2012
1,2,3-Trichlorobenzene	ND	250	250		µg/Kg	1	12/23/2012
1,2,3-Trichloropropane	ND	100	100		µg/Kg	1	12/23/2012
1,2,3-Trimethylbenzene	ND	250	250		µg/Kg	1	12/23/2012
1,2,4-Trichlorobenzene	ND	250	250		µg/Kg	1	12/23/2012
1,2,4-Trimethylbenzene	ND	100	100		µg/Kg	1	12/23/2012
1,2-Dibromo-3-chloropropane	ND	30	10		µg/Kg	1	12/23/2012
1,2-Dibromoethane	ND	30	20		µg/Kg	1	12/23/2012
1,2-Dichlorobenzene	ND	100	100		µg/Kg	1	12/23/2012
1,2-Dichloroethane	ND	50	50		µg/Kg	1	12/23/2012
1,2-Dichloropropane	ND	50	50		µg/Kg	1	12/23/2012
1,3,5-Trimethylbenzene	ND	100	100		µg/Kg	1	12/23/2012
1,3-Dichlorobenzene	ND	100	100		µg/Kg	1	12/23/2012
1,4-Dichlorobenzene	ND	100	100		µg/Kg	1	12/23/2012
2-Butanone	ND	750	750		µg/Kg	1	12/23/2012
2-Hexanone	ND	2,500	2,500		µg/Kg	1	12/23/2012
2-Methylnaphthalene	ND	330	330		µg/Kg	1	12/23/2012
4-Methyl-2-pentanone	ND	2,500	2,500		µg/Kg	1	12/23/2012
Acetone	ND	1,000	1,000		µg/Kg	1	12/23/2012
Acrylonitrile	ND	100	100		µg/Kg	1	12/23/2012
Benzene	ND	50	50		µg/Kg	1	12/23/2012
Bromobenzene	ND	100	100		µg/Kg	1	12/23/2012
Bromochloromethane	ND	100	100		µg/Kg	1	12/23/2012
Bromodichloromethane	ND	100	100		µg/Kg	1	12/23/2012
Bromoform	ND	100	100		µg/Kg	1	12/23/2012
Bromomethane	ND	200	200		µg/Kg	1	12/23/2012
Carbon disulfide	ND	250	250		µg/Kg	1	12/23/2012
Carbon tetrachloride	ND	50	50		µg/Kg	1	12/23/2012
Chlorobenzene	ND	50	50		µg/Kg	1	12/23/2012
Chloroethane	ND	250	250		µg/Kg	1	12/23/2012
Chloroform	ND	50	50		µg/Kg	1	12/23/2012
Chloromethane	ND	250	250		µg/Kg	1	12/23/2012
cis-1,2-Dichloroethene	ND	50	50		µg/Kg	1	12/23/2012
cis-1,3-Dichloropropene	ND	50	50		µg/Kg	1	12/23/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *28-Dec-12*

Client:	AECOM Environment	**Client Sample ID:**	SBKR1300L501T121712SNX
Work Order:	1212696	**Collection Date:**	12/17/2012
Project:	Marshall KRRI 1250-1275I,1300L 12/17/12		
Lab ID:	1212696-09	**Matrix:**	SOIL

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
Cyclohexane	ND	500	500		µg/Kg	1	12/23/2012
Dibromochloromethane	ND	100	100		µg/Kg	1	12/23/2012
Dibromomethane	ND	250	250		µg/Kg	1	12/23/2012
Dichlorodifluoromethane	ND	250	250		µg/Kg	1	12/23/2012
Diethyl ether	ND	200	200		µg/Kg	1	12/23/2012
Diisopropyl ether	ND	250	250		µg/Kg	1	12/23/2012
Ethyl tert butyl ether	ND	250	250		µg/Kg	1	12/23/2012
Ethylbenzene	ND	50	50		µg/Kg	1	12/23/2012
Hexachloroethane	ND	300	300		µg/Kg	1	12/23/2012
Isopropylbenzene	ND	250	250		µg/Kg	1	12/23/2012
m,p-Xylene	ND	100	100		µg/Kg	1	12/23/2012
Methyl iodide	ND	100	100		µg/Kg	1	12/23/2012
Methyl tert-butyl ether	ND	250	250		µg/Kg	1	12/23/2012
Methylene chloride	ND	100	100		µg/Kg	1	12/23/2012
Naphthalene	ND	330	330		µg/Kg	1	12/23/2012
n-Butylbenzene	ND	50	50		µg/Kg	1	12/23/2012
n-Propylbenzene	ND	100	100		µg/Kg	1	12/23/2012
o-Xylene	ND	50	50		µg/Kg	1	12/23/2012
p-Isopropyltoluene	ND	100	100		µg/Kg	1	12/23/2012
sec-Butylbenzene	ND	50	50		µg/Kg	1	12/23/2012
Styrene	ND	50	50		µg/Kg	1	12/23/2012
tert-Butyl alcohol	ND	2,500	2,500		µg/Kg	1	12/23/2012
tert-Butylbenzene	ND	50	50		µg/Kg	1	12/23/2012
Tertiaryamylmethylether	ND	250	250		µg/Kg	1	12/23/2012
Tetrachloroethene	ND	50	50		µg/Kg	1	12/23/2012
Tetrahydrofuran	ND	1,000	1,000		µg/Kg	1	12/23/2012
Toluene	ND	100	100		µg/Kg	1	12/23/2012
trans-1,2-Dichloroethene	ND	50	50		µg/Kg	1	12/23/2012
trans-1,3-Dichloropropene	ND	50	50		µg/Kg	1	12/23/2012
trans-1,4-Dichloro-2-butene	ND	50	50		µg/Kg	1	12/23/2012
Trichloroethene	ND	50	50		µg/Kg	1	12/23/2012
Trichlorofluoromethane	ND	100	100		µg/Kg	1	12/23/2012
Vinyl chloride	ND	40	40		µg/Kg	1	12/23/2012
Surr: 1,2-Dichloroethane-d4	*105*	*70-130*			*%REC*	1	12/23/2012
Surr: 4-Bromofluorobenzene	*97.6*	*70-130*			*%REC*	1	12/23/2012
Surr: Dibromofluoromethane	*94.0*	*70-130*			*%REC*	1	12/23/2012
Surr: Toluene-d8	*94.0*	*70-130*			*%REC*	1	12/23/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 28-Dec-12

Client: AECOM Environment

QC BATCH REPORT

Work Order: 1212696

Project: Marshall KRRI 1250-1275I,1300L 12/17/12

Batch ID: **45552** Instrument ID **GC8** Method: **SW8015M**

MBLK Sample ID: **DBLKS1-45552-45552** Units: **mg/Kg** Analysis Date: **12/21/2012 06:15 PM**

Client ID: Run ID: **GC8_121221A** SeqNo: **2177815** Prep Date: **12/21/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	ND	10								
ORO (C20-C34)	ND	20								
Surr: 4-Terphenyl-d14	*3.584*	0	*5*	0	*71.7*	*39-115*	0			

LCS Sample ID: **DLCSS1-45552-45552** Units: **mg/Kg** Analysis Date: **12/21/2012 06:40 PM**

Client ID: Run ID: **GC8_121221A** SeqNo: **2177816** Prep Date: **12/21/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	332.6	10	500	0	66.5	49-124	0			
ORO (C20-C34)	333	20	500	0	66.6	60-130	0			
Surr: 4-Terphenyl-d14	*3.927*	0	*5*	0	*78.5*	*39-115*	0			

MS Sample ID: **1212734-01A MS** Units: **mg/Kg** Analysis Date: **12/21/2012 07:05 PM**

Client ID: Run ID: **GC8_121221A** SeqNo: **2177818** Prep Date: **12/21/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	335	9.7	486.8	0.9974	68.6	60-130	0			
ORO (C20-C34)	414	19	486.8	91.47	66.2	60-130	0			
Surr: 4-Terphenyl-d14	*4.041*	0	*4.868*	0	*83*	*39-115*	0			

MSD Sample ID: **1212734-01A MSD** Units: **mg/Kg** Analysis Date: **12/21/2012 07:30 PM**

Client ID: Run ID: **GC8_121221A** SeqNo: **2177819** Prep Date: **12/21/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C20)	328.5	9.7	486.2	0.9974	67.4	60-130	335	1.95	30	
ORO (C20-C34)	445.9	19	486.2	91.47	72.9	60-130	414	7.43	30	
Surr: 4-Terphenyl-d14	*4.208*	0	*4.862*	0	*86.5*	*39-115*	4.041	*4.03*	*30*	

The following samples were analyzed in this batch:

1212696-01A	1212696-02A	1212696-03A
1212696-04A	1212696-05A	1212696-06A
1212696-07A	1212696-08A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212696
Project: Marshall KRRI 1250-1275I,1300L 12/17/12

QC BATCH REPORT

Batch ID: **45573** Instrument ID **ICPMS1** Method: **SW6020A**

MBLK Sample ID: **MBLK-45573-45573** Units: **mg/Kg** Analysis Date: **12/22/2012 12:26 AM**
Client ID: Run ID: **ICPMS1_121220A** SeqNo: **2178371** Prep Date: **12/21/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	ND	0.10								
Molybdenum	ND	0.25								
Nickel	0.004936	0.25								J
Vanadium	ND	0.25								

LCS Sample ID: **LCS-45573-45573** Units: **mg/Kg** Analysis Date: **12/22/2012 12:32 AM**
Client ID: Run ID: **ICPMS1_121220A** SeqNo: **2178372** Prep Date: **12/21/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	4.58	0.10	5	0	91.6	80-120	0			
Molybdenum	4.824	0.25	5	0	96.5	80-120	0			
Nickel	4.319	0.25	5	0	86.4	80-120	0			
Vanadium	4.59	0.25	5	0	91.8	80-120	0			

MS Sample ID: **1212775-16BMS** Units: **mg/Kg** Analysis Date: **12/22/2012 04:11 AM**
Client ID: Run ID: **ICPMS1_121220A** SeqNo: **2178410** Prep Date: **12/21/2012** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	7.098	0.69	6.935	0.05992	101	75-125	0			
Molybdenum	6.661	1.7	6.935	0.2148	93	75-125	0			
Nickel	9.938	1.7	6.935	3.225	96.8	75-125	0			
Vanadium	13.63	1.7	6.935	5.536	117	75-125	0			

MSD Sample ID: **1212775-16BMSD** Units: **mg/Kg** Analysis Date: **12/22/2012 04:17 AM**
Client ID: Run ID: **ICPMS1_121220A** SeqNo: **2178411** Prep Date: **12/21/2012** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	6.557	0.67	6.684	0.05992	97.2	75-125	7.098	7.91	25	
Molybdenum	6.474	1.7	6.684	0.2148	93.6	75-125	6.661	2.85	25	
Nickel	9.502	1.7	6.684	3.225	93.9	75-125	9.938	4.48	25	
Vanadium	13.85	1.7	6.684	5.536	124	75-125	13.63	1.63	25	

The following samples were analyzed in this batch: 1212696-01A 1212696-02A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212696
Project: Marshall KRRI 1250-1275I,1300L 12/17/12

QC BATCH REPORT

Batch ID: **45608** Instrument ID **ICPMS1** Method: **SW6020A**

MBLK Sample ID: **MBLK-45608-45608** Units: **mg/Kg** Analysis Date: **12/27/2012 11:45 AM**
Client ID: Run ID: **ICPMS1_121227A** SeqNo: **2179860** Prep Date: **12/26/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	ND	0.10								
Molybdenum	ND	0.25								
Nickel	0.003245	0.25								J
Vanadium	ND	0.25								

LCS Sample ID: **LCS-45608-45608** Units: **mg/Kg** Analysis Date: **12/27/2012 11:51 AM**
Client ID: Run ID: **ICPMS1_121227A** SeqNo: **2179861** Prep Date: **12/26/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	4.256	0.10	5	0	85.1	80-120	0			
Molybdenum	4.896	0.25	5	0	97.9	80-120	0			
Nickel	4.761	0.25	5	0	95.2	80-120	0			
Vanadium	4.816	0.25	5	0	96.3	80-120	0			

MS Sample ID: **1212775-13BMS** Units: **mg/Kg** Analysis Date: **12/27/2012 12:14 PM**
Client ID: Run ID: **ICPMS1_121227A** SeqNo: **2179865** Prep Date: **12/26/2012** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	6.3	0.69	6.878	0.1031	90.1	75-125	0			
Molybdenum	7.531	1.7	6.878	0.649	100	75-125	0			
Nickel	12.5	1.7	6.878	5.694	99	75-125	0			
Vanadium	15.61	1.7	6.878	7.539	117	75-125	0			

MSD Sample ID: **1212775-13BMSD** Units: **mg/Kg** Analysis Date: **12/27/2012 12:20 PM**
Client ID: Run ID: **ICPMS1_121227A** SeqNo: **2179866** Prep Date: **12/26/2012** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	6.551	0.72	7.163	0.1031	90	75-125	6.3	3.91	25	
Molybdenum	7.783	1.8	7.163	0.649	99.6	75-125	7.531	3.29	25	
Nickel	12.37	1.8	7.163	5.694	93.2	75-125	12.5	1.06	25	
Vanadium	15.65	1.8	7.163	7.539	113	75-125	15.61	0.254	25	

The following samples were analyzed in this batch:

1212696-03A	1212696-04A	1212696-05A
1212696-06A	1212696-07A	1212696-08A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212696
Project: Marshall KRRI 1250-1275I,1300L 12/17/12

QC BATCH REPORT

Batch ID: **45551** Instrument ID **SVMS7** Method: **SW8270**

MBLK Sample ID: **SBLKS1-45551-45551** Units: **µg/Kg** Analysis Date: **12/21/2012 05:58 PM**
Client ID: Run ID: **SVMS7_121221A** SeqNo: **2177275** Prep Date: **12/21/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	ND	50								
Acenaphthylene	ND	50								
Anthracene	ND	50								
Benzo(a)anthracene	ND	50								
Benzo(a)pyrene	ND	50								
Benzo(b)fluoranthene	ND	50								
Benzo(g,h,i)perylene	ND	50								
Benzo(k)fluoranthene	ND	50								
Chrysene	ND	50								
Dibenzo(a,h)anthracene	ND	50								
Fluoranthene	ND	50								
Fluorene	ND	50								
Indeno(1,2,3-cd)pyrene	ND	50								
Naphthalene	ND	50								
Phenanthrene	ND	50								
Pyrene	ND	50								
Surr: 2,4,6-Tribromophenol	*2507*	0	*5000*	0	*50.1*	*34-140*	0			
Surr: 2-Fluorobiphenyl	*3402*	0	*5000*	0	*68*	*12-100*	0			
Surr: 2-Fluorophenol	*4034*	0	*5000*	0	*80.7*	*33-117*	0			
Surr: 4-Terphenyl-d14	*3971*	0	*5000*	0	*79.4*	*25-137*	0			
Surr: Nitrobenzene-d5	*3843*	0	*5000*	0	*76.9*	*37-107*	0			
Surr: Phenol-d6	*4191*	0	*5000*	0	*83.8*	*40-106*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212696
Project: Marshall KRRI 1250-1275I,1300L 12/17/12

QC BATCH REPORT

Batch ID: **45551** Instrument ID **SVMS7** Method: **SW8270**

LCS Sample ID: **SLCSS1-45551-45551** Units: **µg/Kg** Analysis Date: **12/21/2012 04:06 PM**
Client ID: Run ID: **SVMS7_121221A** SeqNo: **2177271** Prep Date: **12/21/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1754	50	2000	0	87.7	45-110	0			
Acenaphthylene	1817	50	2000	0	90.8	45-105	0			
Anthracene	1884	50	2000	0	94.2	55-105	0			
Benzo(a)anthracene	1869	50	2000	0	93.4	50-110	0			
Benzo(a)pyrene	1954	50	2000	0	97.7	50-110	0			
Benzo(b)fluoranthene	1836	50	2000	0	91.8	45-115	0			
Benzo(g,h,i)perylene	2260	50	2000	0	113	40-125	0			
Benzo(k)fluoranthene	1944	50	2000	0	97.2	45-115	0			
Chrysene	1751	50	2000	0	87.6	55-110	0			
Dibenzo(a,h)anthracene	2230	50	2000	0	112	40-125	0			
Fluoranthene	1841	50	2000	0	92	55-115	0			
Fluorene	1840	50	2000	0	92	50-110	0			
Indeno(1,2,3-cd)pyrene	2237	50	2000	0	112	40-120	0			
Naphthalene	1687	50	2000	0	84.4	40-105	0			
Phenanthrene	1921	50	2000	0	96	50-110	0			
Pyrene	1952	50	2000	0	97.6	45-125	0			
Surr: 2,4,6-Tribromophenol	*3168*	0	*5000*	0	*63.4*	*34-140*	0			
Surr: 2-Fluorobiphenyl	*3609*	0	*5000*	0	*72.2*	*12-100*	0			
Surr: 2-Fluorophenol	*4052*	0	*5000*	0	*81*	*33-117*	0			
Surr: 4-Terphenyl-d14	*4780*	0	*5000*	0	*95.6*	*25-137*	0			
Surr: Nitrobenzene-d5	*3835*	0	*5000*	0	*76.7*	*37-107*	0			
Surr: Phenol-d6	*4232*	0	*5000*	0	*84.6*	*40-106*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212696
Project: Marshall KRRI 1250-1275I,1300L 12/17/12

QC BATCH REPORT

Batch ID: **45551** Instrument ID **SVMS7** Method: **SW8270**

MS Sample ID: **1212710-32B MS** Units: **µg/Kg** Analysis Date: **12/21/2012 04:34 PM**
Client ID: Run ID: **SVMS7_121221A** SeqNo: **2177272** Prep Date: **12/21/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1567	46	1855	0	84.5	45-110	0			
Acenaphthylene	1600	46	1855	0	86.2	45-105	0			
Anthracene	1750	46	1855	0	94.4	55-105	0			
Benzo(a)anthracene	1776	46	1855	0	95.8	50-110	0			
Benzo(a)pyrene	1845	46	1855	0	99.5	50-110	0			
Benzo(b)fluoranthene	1733	46	1855	0	93.4	45-115	0			
Benzo(g,h,i)perylene	1806	46	1855	0	97.4	40-125	0			
Benzo(k)fluoranthene	1863	46	1855	0	100	45-115	0			
Chrysene	1690	46	1855	0	91.1	55-110	0			
Dibenzo(a,h)anthracene	1856	46	1855	0	100	40-125	0			
Fluoranthene	1794	46	1855	0	96.8	55-115	0			
Fluorene	1656	46	1855	0	89.3	50-110	0			
Indeno(1,2,3-cd)pyrene	1841	46	1855	0	99.2	40-120	0			
Naphthalene	1436	46	1855	0	77.4	40-105	0			
Phenanthrene	1828	46	1855	0	98.6	50-110	0			
Pyrene	1685	46	1855	0	90.8	45-125	0			
Surr: 2,4,6-Tribromophenol	*3270*	0	*4636*	0	*70.5*	*34-140*	0			
Surr: 2-Fluorobiphenyl	*3067*	0	*4636*	0	*66.1*	*12-100*	0			
Surr: 2-Fluorophenol	*3450*	0	*4636*	0	*74.4*	*33-117*	0			
Surr: 4-Terphenyl-d14	*4011*	0	*4636*	0	*86.5*	*25-137*	0			
Surr: Nitrobenzene-d5	*3345*	0	*4636*	0	*72.1*	*37-107*	0			
Surr: Phenol-d6	*3654*	0	*4636*	0	*78.8*	*40-106*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212696
Project: Marshall KRRI 1250-1275I,1300L 12/17/12

QC BATCH REPORT

Batch ID: **45551** Instrument ID **SVMS7** Method: **SW8270**

MSD Sample ID: **1212710-32B MSD** Units: **µg/Kg** Analysis Date: **12/21/2012 05:02 PM**
Client ID: Run ID: **SVMS7_121221A** SeqNo: **2177273** Prep Date: **12/21/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1517	47	1869	0	81.2	45-110	1567	3.28	30	
Acenaphthylene	1531	47	1869	0	82	45-105	1600	4.35	30	
Anthracene	1771	47	1869	0	94.8	55-105	1750	1.19	30	
Benzo(a)anthracene	1753	47	1869	0	93.8	50-110	1776	1.29	30	
Benzo(a)pyrene	1853	47	1869	0	99.2	50-110	1845	0.411	30	
Benzo(b)fluoranthene	1684	47	1869	0	90.1	45-115	1733	2.89	30	
Benzo(g,h,i)perylene	1826	47	1869	0	97.7	40-125	1806	1.07	30	
Benzo(k)fluoranthene	1993	47	1869	0	107	45-115	1863	6.75	30	
Chrysene	1717	47	1869	0	91.9	55-110	1690	1.64	30	
Dibenzo(a,h)anthracene	1888	47	1869	0	101	40-125	1856	1.76	30	
Fluoranthene	1716	47	1869	0	91.8	55-115	1794	4.49	30	
Fluorene	1709	47	1869	0	91.4	50-110	1656	3.14	30	
Indeno(1,2,3-cd)pyrene	1869	47	1869	0	100	40-120	1841	1.52	30	
Naphthalene	1377	47	1869	0	73.7	40-105	1436	4.2	30	
Phenanthrene	1849	47	1869	0	99	50-110	1828	1.17	30	
Pyrene	1635	47	1869	0	87.5	45-125	1685	2.99	30	
Surr: 2,4,6-Tribromophenol	*3397*	0	*4672*	0	*72.7*	*34-140*	3270	*3.83*	*40*	
Surr: 2-Fluorobiphenyl	*3069*	0	*4672*	0	*65.7*	*12-100*	3067	*0.0654*	*40*	
Surr: 2-Fluorophenol	*3325*	0	*4672*	0	*71.2*	*33-117*	3450	*3.69*	*40*	
Surr: 4-Terphenyl-d14	*3872*	0	*4672*	0	*82.9*	*25-137*	4011	*3.51*	*40*	
Surr: Nitrobenzene-d5	*3258*	0	*4672*	0	*69.7*	*37-107*	3345	*2.62*	*40*	
Surr: Phenol-d6	*3546*	0	*4672*	0	*75.9*	*40-106*	3654	*3.01*	*40*	

The following samples were analyzed in this batch:

1212696-01A	1212696-02A	1212696-03A
1212696-04A	1212696-05A	1212696-06A
1212696-07A	1212696-08A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212696
Project: Marshall KRRI 1250-1275I,1300L 12/17/12

QC BATCH REPORT

Batch ID: **45512** Instrument ID **VMS5** Method: **SW8260**

MBLK Sample ID: **MBLK-45512-45512** Units: **µg/Kg** Analysis Date: **12/22/2012 07:52 PM**
Client ID: Run ID: **VMS5_121222A** SeqNo: **2177850** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	30								
1,1,1-Trichloroethane	ND	30								
1,1,2,2-Tetrachloroethane	ND	30								
1,1,2-Trichloroethane	ND	30								
1,1-Dichloroethane	ND	30								
1,1-Dichloroethene	ND	30								
1,2,3-Trichlorobenzene	ND	30								
1,2,3-Trichloropropane	ND	30								
1,2,3-Trimethylbenzene	ND	30								
1,2,4-Trichlorobenzene	ND	30								
1,2,4-Trimethylbenzene	ND	30								
1,2-Dibromo-3-chloropropane	ND	30								
1,2-Dibromoethane	ND	30								
1,2-Dichlorobenzene	ND	30								
1,2-Dichloroethane	ND	30								
1,2-Dichloropropane	ND	30								
1,3,5-Trimethylbenzene	ND	30								
1,3-Dichlorobenzene	ND	30								
1,4-Dichlorobenzene	ND	30								
2-Butanone	ND	200								
2-Hexanone	ND	30								
2-Methylnaphthalene	ND	100								
4-Methyl-2-pentanone	ND	30								
Acetone	ND	100								
Acrylonitrile	ND	100								
Benzene	ND	30								
Bromobenzene	ND	30								
Bromochloromethane	ND	30								
Bromodichloromethane	ND	30								
Bromoform	ND	30								
Bromomethane	ND	75								
Carbon disulfide	ND	30								
Carbon tetrachloride	ND	30								
Chlorobenzene	ND	30								
Chloroethane	ND	100								
Chloroform	ND	30								
Chloromethane	ND	100								
cis-1,2-Dichloroethene	ND	30								
cis-1,3-Dichloropropene	ND	30								
Cyclohexane	ND	30								
Dibromochloromethane	ND	30								
Dibromomethane	ND	30								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45512** Instrument ID **VMS5** Method: **SW8260**

Dichlorodifluoromethane	ND	30					
Diethyl ether	ND	30					
Diisopropyl ether	ND	30					
Ethyl tert butyl ether	ND	30					
Ethylbenzene	ND	30					
Hexachloroethane	ND	30					
Isopropylbenzene	ND	30					
m,p-Xylene	ND	60					
Methyl iodide	ND	75					
Methyl tert-butyl ether	ND	30					
Methylene chloride	ND	30					
Naphthalene	ND	100					
n-Butylbenzene	ND	30					
n-Propylbenzene	ND	30					
o-Xylene	ND	30					
p-Isopropyltoluene	ND	30					
sec-Butylbenzene	ND	30					
Styrene	ND	30					
tert-Butyl alcohol	ND	200					
tert-Butylbenzene	ND	30					
Tertiaryamylmethylether	ND	30					
Tetrachloroethene	ND	30					
Tetrahydrofuran	ND	200					
Toluene	ND	30					
trans-1,2-Dichloroethene	ND	30					
trans-1,3-Dichloropropene	ND	30					
trans-1,4-Dichloro-2-butene	ND	30					
Trichloroethene	ND	30					
Trichlorofluoromethane	ND	30					
Vinyl chloride	ND	30					
Surr: 1,2-Dichloroethane-d4	*1005*	0	*1000*	0	*100*	*70-130*	0
Surr: 4-Bromofluorobenzene	*997.5*	0	*1000*	0	*99.8*	*70-130*	0
Surr: Dibromofluoromethane	*1014*	0	*1000*	0	*101*	*70-130*	0
Surr: Toluene-d8	*999*	0	*1000*	0	*99.9*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212696
Project: Marshall KRRI 1250-1275I,1300L 12/17/12

QC BATCH REPORT

Batch ID: **45512** Instrument ID **VMS5** Method: **SW8260**

MBLK Sample ID: **MBLK-45512-45512** Units: **µg/Kg** Analysis Date: **12/23/2012 01:15 AM**
Client ID: Run ID: **VMS9_121222B** SeqNo: **2178472** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	30								
1,1,1-Trichloroethane	ND	30								
1,1,2,2-Tetrachloroethane	ND	30								
1,1,2-Trichloroethane	ND	30								
1,1-Dichloroethane	ND	30								
1,1-Dichloroethene	ND	30								
1,2,3-Trichlorobenzene	ND	30								
1,2,3-Trichloropropane	ND	30								
1,2,3-Trimethylbenzene	ND	30								
1,2,4-Trichlorobenzene	ND	30								
1,2,4-Trimethylbenzene	ND	30								
1,2-Dibromo-3-chloropropane	ND	30								
1,2-Dibromoethane	ND	30								
1,2-Dichlorobenzene	ND	30								
1,2-Dichloroethane	ND	30								
1,2-Dichloropropane	ND	30								
1,3,5-Trimethylbenzene	ND	30								
1,3-Dichlorobenzene	ND	30								
1,4-Dichlorobenzene	ND	30								
2-Butanone	ND	200								
2-Hexanone	ND	30								
2-Methylnaphthalene	ND	100								
4-Methyl-2-pentanone	ND	30								
Acetone	109	100								
Acrylonitrile	ND	100								
Benzene	ND	30								
Bromobenzene	ND	30								
Bromochloromethane	ND	30								
Bromodichloromethane	ND	30								
Bromoform	ND	30								
Bromomethane	ND	75								
Carbon disulfide	ND	30								
Carbon tetrachloride	ND	30								
Chlorobenzene	ND	30								
Chloroethane	ND	100								
Chloroform	ND	30								
Chloromethane	ND	100								
cis-1,2-Dichloroethene	ND	30								
cis-1,3-Dichloropropene	ND	30								
Cyclohexane	ND	30								
Dibromochloromethane	ND	30								
Dibromomethane	ND	30								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45512** Instrument ID **VMS5** Method: **SW8260**

Dichlorodifluoromethane	ND	30					
Diethyl ether	ND	30					
Diisopropyl ether	ND	30					
Ethyl tert butyl ether	ND	30					
Ethylbenzene	ND	30					
Hexachloroethane	ND	30					
Isopropylbenzene	ND	30					
m,p-Xylene	ND	60					
Methyl iodide	ND	75					
Methyl tert-butyl ether	ND	30					
Methylene chloride	ND	30					
Naphthalene	22	100					J
n-Butylbenzene	ND	30					
n-Propylbenzene	ND	30					
o-Xylene	ND	30					
p-Isopropyltoluene	ND	30					
sec-Butylbenzene	ND	30					
Styrene	ND	30					
tert-Butyl alcohol	ND	200					
tert-Butylbenzene	ND	30					
Tertiaryamylmethylether	ND	30					
Tetrachloroethene	ND	30					
Tetrahydrofuran	ND	200					
Toluene	ND	30					
trans-1,2-Dichloroethene	ND	30					
trans-1,3-Dichloropropene	ND	30					
trans-1,4-Dichloro-2-butene	ND	30					
Trichloroethene	ND	30					
Trichlorofluoromethane	ND	30					
Vinyl chloride	ND	30					
Surr: 1,2-Dichloroethane-d4	*1024*	0	*1000*	0	*102*	*70-130*	0
Surr: 4-Bromofluorobenzene	*950.5*	0	*1000*	0	*95*	*70-130*	0
Surr: Dibromofluoromethane	*960.5*	0	*1000*	0	*96*	*70-130*	0
Surr: Toluene-d8	*960.5*	0	*1000*	0	*96*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212696
Project: Marshall KRRI 1250-1275I,1300L 12/17/12

QC BATCH REPORT

Batch ID: **45512** Instrument ID **VMS5** Method: **SW8260**

MBLK Sample ID: **MBLK-45512-45512** Units: **µg/Kg** Analysis Date: **12/26/2012 04:13 PM**
Client ID: Run ID: **VMS9_121226A** SeqNo: **2179287** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	30								
1,1,1-Trichloroethane	ND	30								
1,1,2,2-Tetrachloroethane	ND	30								
1,1,2-Trichloroethane	ND	30								
1,1-Dichloroethane	ND	30								
1,1-Dichloroethene	ND	30								
1,2,3-Trichlorobenzene	ND	30								
1,2,3-Trichloropropane	ND	30								
1,2,3-Trimethylbenzene	ND	30								
1,2,4-Trichlorobenzene	ND	30								
1,2,4-Trimethylbenzene	ND	30								
1,2-Dibromo-3-chloropropane	ND	30								
1,2-Dibromoethane	ND	30								
1,2-Dichlorobenzene	ND	30								
1,2-Dichloroethane	ND	30								
1,2-Dichloropropane	ND	30								
1,3,5-Trimethylbenzene	ND	30								
1,3-Dichlorobenzene	ND	30								
1,4-Dichlorobenzene	ND	30								
2-Butanone	133	200								J
2-Hexanone	ND	30								
2-Methylnaphthalene	ND	100								
4-Methyl-2-pentanone	ND	30								
Acetone	102	100								
Acrylonitrile	ND	100								
Benzene	ND	30								
Bromobenzene	ND	30								
Bromochloromethane	ND	30								
Bromodichloromethane	ND	30								
Bromoform	ND	30								
Bromomethane	ND	75								
Carbon disulfide	ND	30								
Carbon tetrachloride	ND	30								
Chlorobenzene	ND	30								
Chloroethane	ND	100								
Chloroform	ND	30								
Chloromethane	ND	100								
cis-1,2-Dichloroethene	ND	30								
cis-1,3-Dichloropropene	ND	30								
Cyclohexane	ND	30								
Dibromochloromethane	ND	30								
Dibromomethane	ND	30								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45512** Instrument ID **VMS5** Method: **SW8260**

Dichlorodifluoromethane	ND	30						
Diethyl ether	ND	30						
Diisopropyl ether	ND	30						
Ethyl tert butyl ether	ND	30						
Ethylbenzene	ND	30						
Hexachloroethane	ND	30						
Isopropylbenzene	ND	30						
m,p-Xylene	ND	60						
Methyl iodide	ND	75						
Methyl tert-butyl ether	ND	30						
Methylene chloride	ND	30						
Naphthalene	20.5	100						J
n-Butylbenzene	ND	30						
n-Propylbenzene	ND	30						
o-Xylene	ND	30						
p-Isopropyltoluene	ND	30						
sec-Butylbenzene	ND	30						
Styrene	ND	30						
tert-Butyl alcohol	ND	200						
tert-Butylbenzene	ND	30						
Tertiaryamylmethylether	ND	30						
Tetrachloroethene	ND	30						
Tetrahydrofuran	ND	200						
Toluene	ND	30						
trans-1,2-Dichloroethene	ND	30						
trans-1,3-Dichloropropene	ND	30						
trans-1,4-Dichloro-2-butene	ND	30						
Trichloroethene	ND	30						
Trichlorofluoromethane	ND	30						
Vinyl chloride	ND	30						
Surr: 1,2-Dichloroethane-d4	*1040*	0	*1000*	0	*104*	*70-130*	0	
Surr: 4-Bromofluorobenzene	*955*	0	*1000*	0	*95.5*	*70-130*	0	
Surr: Dibromofluoromethane	*962*	0	*1000*	0	*96.2*	*70-130*	0	
Surr: Toluene-d8	*962*	0	*1000*	0	*96.2*	*70-130*	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212696
Project: Marshall KRRI 1250-1275I,1300L 12/17/12

QC BATCH REPORT

Batch ID: **45512** Instrument ID **VMS5** Method: **SW8260**

LCS Sample ID: **LCS-45512-45512** Units: **µg/Kg** Analysis Date: **12/22/2012 06:39 PM**
Client ID: Run ID: **VMS5_121222A** SeqNo: **2177849** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	957	30	1000	0	95.7	75-125	0			
1,1,1-Trichloroethane	1031	30	1000	0	103	70-135	0			
1,1,2,2-Tetrachloroethane	961	30	1000	0	96.1	55-130	0			
1,1,2-Trichloroethane	961.5	30	1000	0	96.2	60-125	0			
1,1-Dichloroethane	989	30	1000	0	98.9	75-125	0			
1,1-Dichloroethene	1070	30	1000	0	107	65-135	0			
1,2,3-Trichlorobenzene	1019	30	1000	0	102	60-135	0			
1,2,3-Trichloropropane	1052	30	1000	0	105	65-130	0			
1,2,4-Trichlorobenzene	1018	30	1000	0	102	65-130	0			
1,2,4-Trimethylbenzene	969.5	30	1000	0	97	65-135	0			
1,2-Dibromo-3-chloropropane	994	30	1000	0	99.4	40-135	0			
1,2-Dibromoethane	980.5	30	1000	0	98	70-125	0			
1,2-Dichlorobenzene	1006	30	1000	0	101	75-120	0			
1,2-Dichloroethane	969	30	1000	0	96.9	70-135	0			
1,2-Dichloropropane	980.5	30	1000	0	98	70-120	0			
1,3,5-Trimethylbenzene	1048	30	1000	0	105	65-135	0			
1,3-Dichlorobenzene	1042	30	1000	0	104	70-125	0			
1,4-Dichlorobenzene	967.5	30	1000	0	96.8	70-125	0			
2-Butanone	1033	200	1000	0	103	30-160	0			
2-Hexanone	1042	30	1000	0	104	45-145	0			
4-Methyl-2-pentanone	1028	30	1000	0	103	45-145	0			
Acetone	953	100	1000	0	95.3	20-160	0			
Acrylonitrile	929	100	1000	0	92.9	70-135	0			
Benzene	990.5	30	1000	0	99	75-125	0			
Bromobenzene	1014	30	1000	0	101	65-120	0			
Bromochloromethane	1044	30	1000	0	104	70-125	0			
Bromodichloromethane	998	30	1000	0	99.8	70-130	0			
Bromoform	862.5	30	1000	0	86.2	55-135	0			
Bromomethane	1350	75	1000	0	135	30-160	0			
Carbon disulfide	1140	30	1000	0	114	45-160	0			
Carbon tetrachloride	1028	30	1000	0	103	65-135	0			
Chlorobenzene	1008	30	1000	0	101	75-125	0			
Chloroethane	1053	100	1000	0	105	40-155	0			
Chloroform	992.5	30	1000	0	99.2	70-125	0			
Chloromethane	976	100	1000	0	97.6	50-130	0			
cis-1,2-Dichloroethene	1039	30	1000	0	104	65-125	0			
cis-1,3-Dichloropropene	1031	30	1000	0	103	70-125	0			
Dibromochloromethane	977.5	30	1000	0	97.8	65-135	0			
Dibromomethane	963	30	1000	0	96.3	75-130	0			
Dichlorodifluoromethane	879.5	30	1000	0	88	35-135	0			
Ethylbenzene	1031	30	1000	0	103	75-125	0			
Hexachloroethane	1090	30	1000	0	109	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **45512** Instrument ID **VMS5** Method: **SW8260**

Isopropylbenzene	1044	30	1000	0	104	75-130	0
m,p-Xylene	2039	60	2000	0	102	80-125	0
Methyl tert-butyl ether	1090	30	1000	0	109	75-125	0
Methylene chloride	947.5	30	1000	0	94.8	55-145	0
Naphthalene	998	100	1000	0	99.8	40-140	0
n-Butylbenzene	1042	30	1000	0	104	65-140	0
n-Propylbenzene	1014	30	1000	0	101	65-135	0
o-Xylene	1014	30	1000	0	101	75-125	0
p-Isopropyltoluene	1040	30	1000	0	104	75-135	0
sec-Butylbenzene	1012	30	1000	0	101	65-130	0
Styrene	1054	30	1000	0	105	75-125	0
tert-Butylbenzene	1073	30	1000	0	107	65-130	0
Tetrachloroethene	1045	30	1000	0	104	64-140	0
Tetrahydrofuran	833.5	200	1000	0	83.4	70-135	0
Toluene	1006	30	1000	0	101	70-125	0
trans-1,2-Dichloroethene	1050	30	1000	0	105	65-135	0
trans-1,3-Dichloropropene	979.5	30	1000	0	98	65-125	0
trans-1,4-Dichloro-2-butene	851.5	30	1000	0	85.2	70-135	0
Trichloroethene	962	30	1000	0	96.2	75-125	0
Trichlorofluoromethane	1017	30	1000	0	102	25-185	0
Vinyl chloride	1084	30	1000	0	108	60-125	0
Surr: 1,2-Dichloroethane-d4	*1024*	0	*1000*	0	*102*	*70-130*	0
Surr: 4-Bromofluorobenzene	*1009*	0	*1000*	0	*101*	*70-130*	0
Surr: Dibromofluoromethane	*1040*	0	*1000*	0	*104*	*70-130*	0
Surr: Toluene-d8	*992*	0	*1000*	0	*99.2*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212696
Project: Marshall KRRI 1250-1275I,1300L 12/17/12

QC BATCH REPORT

Batch ID: **45512** Instrument ID **VMS5** Method: **SW8260**

LCS Sample ID: **LCS-45512-45512** Units: **µg/Kg** Analysis Date: **12/22/2012 11:58 PM**
Client ID: Run ID: **VMS9_121222B** SeqNo: **2178471** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	898	30	1000	0	89.8	75-125	0			
1,1,1-Trichloroethane	961	30	1000	0	96.1	70-135	0			
1,1,2,2-Tetrachloroethane	1016	30	1000	0	102	55-130	0			
1,1,2-Trichloroethane	946.5	30	1000	0	94.6	60-125	0			
1,1-Dichloroethane	1078	30	1000	0	108	75-125	0			
1,1-Dichloroethene	1132	30	1000	0	113	65-135	0			
1,2,3-Trichlorobenzene	1040	30	1000	0	104	60-135	0			
1,2,3-Trichloropropane	987	30	1000	0	98.7	65-130	0			
1,2,4-Trichlorobenzene	1006	30	1000	0	101	65-130	0			
1,2,4-Trimethylbenzene	1017	30	1000	0	102	65-135	0			
1,2-Dibromo-3-chloropropane	969.5	30	1000	0	97	40-135	0			
1,2-Dibromoethane	920.5	30	1000	0	92	70-125	0			
1,2-Dichlorobenzene	970	30	1000	0	97	75-120	0			
1,2-Dichloroethane	1006	30	1000	0	101	70-135	0			
1,2-Dichloropropane	1027	30	1000	0	103	70-120	0			
1,3,5-Trimethylbenzene	1039	30	1000	0	104	65-135	0			
1,3-Dichlorobenzene	1006	30	1000	0	101	70-125	0			
1,4-Dichlorobenzene	981.5	30	1000	0	98.2	70-125	0			
2-Butanone	1222	200	1000	0	122	30-160	0			
2-Hexanone	1078	30	1000	0	108	45-145	0			
4-Methyl-2-pentanone	1268	30	1000	0	127	45-145	0			
Acetone	1310	100	1000	0	131	20-160	0			B
Acrylonitrile	1188	100	1000	0	119	70-135	0			
Benzene	1038	30	1000	0	104	75-125	0			
Bromobenzene	1017	30	1000	0	102	65-120	0			
Bromochloromethane	1110	30	1000	0	111	70-125	0			
Bromodichloromethane	959	30	1000	0	95.9	70-130	0			
Bromoform	996.5	30	1000	0	99.6	55-135	0			
Bromomethane	1132	75	1000	0	113	30-160	0			
Carbon disulfide	1176	30	1000	0	118	45-160	0			
Carbon tetrachloride	965.5	30	1000	0	96.6	65-135	0			
Chlorobenzene	998	30	1000	0	99.8	75-125	0			
Chloroethane	1083	100	1000	0	108	40-155	0			
Chloroform	1102	30	1000	0	110	70-125	0			
Chloromethane	1078	100	1000	0	108	50-130	0			
cis-1,2-Dichloroethene	1088	30	1000	0	109	65-125	0			
cis-1,3-Dichloropropene	881	30	1000	0	88.1	70-125	0			
Dibromochloromethane	968.5	30	1000	0	96.8	65-135	0			
Dibromomethane	1028	30	1000	0	103	75-130	0			
Dichlorodifluoromethane	831.5	30	1000	0	83.2	35-135	0			
Ethylbenzene	985	30	1000	0	98.5	75-125	0			
Hexachloroethane	1015	30	1000	0	102	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45512** Instrument ID **VMS5** Method: **SW8260**

Isopropylbenzene	933	30	1000	0	93.3	75-130	0
m,p-Xylene	2014	60	2000	0	101	80-125	0
Methyl tert-butyl ether	1080	30	1000	0	108	75-125	0
Methylene chloride	1074	30	1000	0	107	55-145	0
Naphthalene	1060	100	1000	0	106	40-140	0
n-Butylbenzene	978.5	30	1000	0	97.8	65-140	0
n-Propylbenzene	975.5	30	1000	0	97.6	65-135	0
o-Xylene	985.5	30	1000	0	98.6	75-125	0
p-Isopropyltoluene	1009	30	1000	0	101	75-135	0
sec-Butylbenzene	1027	30	1000	0	103	65-130	0
Styrene	931	30	1000	0	93.1	75-125	0
tert-Butylbenzene	1028	30	1000	0	103	65-130	0
Tetrachloroethene	1027	30	1000	0	103	64-140	0
Tetrahydrofuran	1122	200	1000	0	112	70-135	0
Toluene	980	30	1000	0	98	70-125	0
trans-1,2-Dichloroethene	1128	30	1000	0	113	65-135	0
trans-1,3-Dichloropropene	939	30	1000	0	93.9	65-125	0
trans-1,4-Dichloro-2-butene	979	30	1000	0	97.9	70-135	0
Trichloroethene	969.5	30	1000	0	97	75-125	0
Trichlorofluoromethane	1056	30	1000	0	106	25-185	0
Vinyl chloride	1079	30	1000	0	108	60-125	0
Surr: 1,2-Dichloroethane-d4	*1034*	0	*1000*	0	*103*	*70-130*	0
Surr: 4-Bromofluorobenzene	*1011*	0	*1000*	0	*101*	*70-130*	0
Surr: Dibromofluoromethane	*1068*	0	*1000*	0	*107*	*70-130*	0
Surr: Toluene-d8	*989*	0	*1000*	0	*98.9*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212696
Project: Marshall KRRI 1250-1275I,1300L 12/17/12

QC BATCH REPORT

Batch ID: **45512** Instrument ID **VMS5** Method: **SW8260**

LCS Sample ID: **LCS-45512-45512** Units: **µg/Kg** Analysis Date: **12/26/2012 02:56 PM**
Client ID: Run ID: **VMS9_121226A** SeqNo: **2179285** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	804	30	1000	0	80.4	75-125	0			
1,1,1-Trichloroethane	905	30	1000	0	90.5	70-135	0			
1,1,2,2-Tetrachloroethane	819	30	1000	0	81.9	55-130	0			
1,1,2-Trichloroethane	822.5	30	1000	0	82.2	60-125	0			
1,1-Dichloroethane	1040	30	1000	0	104	75-125	0			
1,1-Dichloroethene	1120	30	1000	0	112	65-135	0			
1,2,3-Trichlorobenzene	903	30	1000	0	90.3	60-135	0			
1,2,3-Trichloropropane	808	30	1000	0	80.8	65-130	0			
1,2,4-Trichlorobenzene	888.5	30	1000	0	88.8	65-130	0			
1,2,4-Trimethylbenzene	906	30	1000	0	90.6	65-135	0			
1,2-Dibromo-3-chloropropane	776.5	30	1000	0	77.6	40-135	0			
1,2-Dibromoethane	793.5	30	1000	0	79.4	70-125	0			
1,2-Dichlorobenzene	864	30	1000	0	86.4	75-120	0			
1,2-Dichloroethane	891.5	30	1000	0	89.2	70-135	0			
1,2-Dichloropropane	921	30	1000	0	92.1	70-120	0			
1,3,5-Trimethylbenzene	932.5	30	1000	0	93.2	65-135	0			
1,3-Dichlorobenzene	916.5	30	1000	0	91.6	70-125	0			
1,4-Dichlorobenzene	888.5	30	1000	0	88.8	70-125	0			
2-Butanone	1022	200	1000	0	102	30-160	0			
2-Hexanone	798	30	1000	0	79.8	45-145	0			
4-Methyl-2-pentanone	945	30	1000	0	94.5	45-145	0			
Acetone	1012	100	1000	0	101	20-160	0			B
Acrylonitrile	989	100	1000	0	98.9	70-135	0			
Benzene	941.5	30	1000	0	94.2	75-125	0			
Bromobenzene	895.5	30	1000	0	89.6	65-120	0			
Bromochloromethane	1030	30	1000	0	103	70-125	0			
Bromodichloromethane	870	30	1000	0	87	70-130	0			
Bromoform	844	30	1000	0	84.4	55-135	0			
Bromomethane	1034	75	1000	0	103	30-160	0			
Carbon disulfide	1186	30	1000	0	119	45-160	0			
Carbon tetrachloride	929	30	1000	0	92.9	65-135	0			
Chlorobenzene	897.5	30	1000	0	89.8	75-125	0			
Chloroethane	1020	100	1000	0	102	40-155	0			
Chloroform	1059	30	1000	0	106	70-125	0			
Chloromethane	1061	100	1000	0	106	50-130	0			
cis-1,2-Dichloroethene	1052	30	1000	0	105	65-125	0			
cis-1,3-Dichloropropene	842	30	1000	0	84.2	70-125	0			
Dibromochloromethane	843	30	1000	0	84.3	65-135	0			
Dibromomethane	886	30	1000	0	88.6	75-130	0			
Dichlorodifluoromethane	910	30	1000	0	91	35-135	0			
Ethylbenzene	908	30	1000	0	90.8	75-125	0			
Hexachloroethane	951	30	1000	0	95.1	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45512** Instrument ID **VMS5** Method: **SW8260**

Isopropylbenzene	835	30	1000	0	83.5	75-130	0
m,p-Xylene	1834	60	2000	0	91.7	80-125	0
Methyl tert-butyl ether	963.5	30	1000	0	96.4	75-125	0
Methylene chloride	1012	30	1000	0	101	55-145	0
Naphthalene	821.5	100	1000	0	82.2	40-140	0
n-Butylbenzene	970	30	1000	0	97	65-140	0
n-Propylbenzene	870.5	30	1000	0	87	65-135	0
o-Xylene	878.5	30	1000	0	87.8	75-125	0
p-Isopropyltoluene	936.5	30	1000	0	93.6	75-135	0
sec-Butylbenzene	964.5	30	1000	0	96.4	65-130	0
Styrene	805.5	30	1000	0	80.6	75-125	0
tert-Butylbenzene	939	30	1000	0	93.9	65-130	0
Tetrachloroethene	927	30	1000	0	92.7	64-140	0
Tetrahydrofuran	898.5	200	1000	0	89.8	70-135	0
Toluene	899	30	1000	0	89.9	70-125	0
trans-1,2-Dichloroethene	1096	30	1000	0	110	65-135	0
trans-1,3-Dichloropropene	898.5	30	1000	0	89.8	65-125	0
trans-1,4-Dichloro-2-butene	845	30	1000	0	84.5	70-135	0
Trichloroethene	904	30	1000	0	90.4	75-125	0
Trichlorofluoromethane	1041	30	1000	0	104	25-185	0
Vinyl chloride	1076	30	1000	0	108	60-125	0
Surr: 1,2-Dichloroethane-d4	*1028*	0	*1000*	0	*103*	*70-130*	0
Surr: 4-Bromofluorobenzene	*974.5*	0	*1000*	0	*97.4*	*70-130*	0
Surr: Dibromofluoromethane	*1046*	0	*1000*	0	*105*	*70-130*	0
Surr: Toluene-d8	*986*	0	*1000*	0	*98.6*	*70-130*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212696
Project: Marshall KRRI 1250-1275I,1300L 12/17/12

QC BATCH REPORT

Batch ID: **45512** Instrument ID **VMS5** Method: **SW8260**

MS Sample ID: **1212696-08B MS** Units: **µg/Kg** Analysis Date: **12/23/2012 09:22 AM**
Client ID: **SBKR1275I510S121712S005** Run ID: **VMS9_121222B** SeqNo: **2178477** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	798.5	30	1000	0	79.8	75-125	0			
1,1,1-Trichloroethane	846	30	1000	0	84.6	70-135	0			
1,1,2,2-Tetrachloroethane	1002	30	1000	0	100	55-130	0			
1,1,2-Trichloroethane	920	30	1000	0	92	60-125	0			
1,1-Dichloroethane	1127	30	1000	0	113	75-125	0			
1,1-Dichloroethene	1036	30	1000	0	104	65-135	0			
1,2,3-Trichlorobenzene	771.5	30	1000	0	77.2	60-135	0			
1,2,3-Trichloropropane	1008	30	1000	0	101	65-130	0			
1,2,4-Trichlorobenzene	741.5	30	1000	0	74.2	65-130	0			
1,2,4-Trimethylbenzene	969	30	1000	0	96.9	65-135	0			
1,2-Dibromo-3-chloropropane	744.5	30	1000	0	74.4	40-135	0			
1,2-Dibromoethane	883	30	1000	0	88.3	70-125	0			
1,2-Dichlorobenzene	861.5	30	1000	0	86.2	75-120	0			
1,2-Dichloroethane	999.5	30	1000	0	100	70-135	0			
1,2-Dichloropropane	981	30	1000	0	98.1	70-120	0			
1,3,5-Trimethylbenzene	1008	30	1000	0	101	65-135	0			
1,3-Dichlorobenzene	886.5	30	1000	0	88.6	70-125	0			
1,4-Dichlorobenzene	865	30	1000	0	86.5	70-125	0			
2-Butanone	1236	200	1000	0	124	30-160	0			
2-Hexanone	1062	30	1000	0	106	45-145	0			
4-Methyl-2-pentanone	1220	30	1000	0	122	45-145	0			
Acetone	1712	100	1000	71.5	164	20-160	0			BS
Acrylonitrile	1236	100	1000	0	124	70-135	0			
Benzene	1002	30	1000	0	100	75-125	0			
Bromobenzene	1001	30	1000	0	100	65-120	0			
Bromochloromethane	1087	30	1000	0	109	70-125	0			
Bromodichloromethane	792	30	1000	0	79.2	70-130	0			
Bromoform	812.5	30	1000	0	81.2	55-135	0			
Bromomethane	806.5	75	1000	0	80.6	30-160	0			
Carbon disulfide	837.5	30	1000	0	83.8	45-160	0			
Carbon tetrachloride	836	30	1000	0	83.6	65-135	0			
Chlorobenzene	966.5	30	1000	0	96.6	75-125	0			
Chloroethane	466	100	1000	0	46.6	40-155	0			
Chloroform	1080	30	1000	0	108	70-125	0			
Chloromethane	1265	100	1000	12.5	125	50-130	0			
cis-1,2-Dichloroethene	1024	30	1000	0	102	65-125	0			
cis-1,3-Dichloropropene	737.5	30	1000	0	73.8	70-125	0			
Dibromochloromethane	790	30	1000	0	79	65-135	0			
Dibromomethane	962.5	30	1000	0	96.2	75-130	0			
Dichlorodifluoromethane	888	30	1000	0	88.8	35-135	0			
Ethylbenzene	940.5	30	1000	0	94	75-125	0			
Hexachloroethane	762.5	30	1000	0	76.2	70-135	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45512** Instrument ID **VMS5** Method: **SW8260**

Isopropylbenzene	890.5	30	1000	0	89	75-130	0	
m,p-Xylene	1936	60	2000	0	96.8	80-125	0	
Methyl tert-butyl ether	1070	30	1000	0	107	75-125	0	
Methylene chloride	1123	30	1000	0	112	55-145	0	
Naphthalene	747	100	1000	0	74.7	40-140	0	
n-Butylbenzene	786.5	30	1000	0	78.6	65-140	0	
n-Propylbenzene	911	30	1000	0	91.1	65-135	0	
o-Xylene	970	30	1000	0	97	75-125	0	
p-Isopropyltoluene	888.5	30	1000	0	88.8	75-135	0	
sec-Butylbenzene	976	30	1000	0	97.6	65-130	0	
Styrene	745.5	30	1000	0	74.6	75-125	0	S
tert-Butylbenzene	997	30	1000	0	99.7	65-130	0	
Tetrachloroethene	934	30	1000	0	93.4	64-140	0	
Tetrahydrofuran	1190	200	1000	0	119	70-135	0	
Toluene	930	30	1000	0	93	70-125	0	
trans-1,2-Dichloroethene	1064	30	1000	0	106	65-135	0	
trans-1,3-Dichloropropene	789	30	1000	0	78.9	65-125	0	
trans-1,4-Dichloro-2-butene	700.5	30	1000	0	70	70-135	0	
Trichloroethene	877.5	30	1000	0	87.8	75-125	0	
Trichlorofluoromethane	970.5	30	1000	0	97	25-185	0	
Vinyl chloride	1088	30	1000	0	109	60-125	0	
Surr: 1,2-Dichloroethane-d4	*1050*	0	*1000*	0	*105*	*70-130*	0	
Surr: 4-Bromofluorobenzene	*1066*	0	*1000*	0	*107*	*70-130*	0	
Surr: Dibromofluoromethane	*1009*	0	*1000*	0	*101*	*70-130*	0	
Surr: Toluene-d8	*972*	0	*1000*	0	*97.2*	*70-130*	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212696
Project: Marshall KRRI 1250-1275I,1300L 12/17/12

QC BATCH REPORT

Batch ID: **45512** Instrument ID **VMS5** Method: **SW8260**

MSD Sample ID: **1212696-08B MSD** Units: **µg/Kg** Analysis Date: **12/23/2012 09:48 AM**
Client ID: **SBKR1275I510S121712S005** Run ID: **VMS9_121222B** SeqNo: **2178478** Prep Date: **12/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	771.5	30	1000	0	77.2	75-125	798.5	3.44	30	
1,1,1-Trichloroethane	794.5	30	1000	0	79.4	70-135	846	6.28	30	
1,1,2,2-Tetrachloroethane	989.5	30	1000	0	99	55-130	1002	1.21	30	
1,1,2-Trichloroethane	896.5	30	1000	0	89.6	60-125	920	2.59	30	
1,1-Dichloroethane	1060	30	1000	0	106	75-125	1127	6.13	30	
1,1-Dichloroethene	990	30	1000	0	99	65-135	1036	4.59	30	
1,2,3-Trichlorobenzene	812.5	30	1000	0	81.2	60-135	771.5	5.18	30	
1,2,3-Trichloropropane	980	30	1000	0	98	65-130	1008	2.87	30	
1,2,4-Trichlorobenzene	759.5	30	1000	0	76	65-130	741.5	2.4	30	
1,2,4-Trimethylbenzene	951	30	1000	0	95.1	65-135	969	1.88	30	
1,2-Dibromo-3-chloropropane	762.5	30	1000	0	76.2	40-135	744.5	2.39	30	
1,2-Dibromoethane	860.5	30	1000	0	86	70-125	883	2.58	30	
1,2-Dichlorobenzene	843.5	30	1000	0	84.4	75-120	861.5	2.11	30	
1,2-Dichloroethane	958.5	30	1000	0	95.8	70-135	999.5	4.19	30	
1,2-Dichloropropane	964.5	30	1000	0	96.4	70-120	981	1.7	30	
1,3,5-Trimethylbenzene	973	30	1000	0	97.3	65-135	1008	3.53	30	
1,3-Dichlorobenzene	860.5	30	1000	0	86	70-125	886.5	2.98	30	
1,4-Dichlorobenzene	848	30	1000	0	84.8	70-125	865	1.98	30	
2-Butanone	1268	200	1000	0	127	30-160	1236	2.64	30	
2-Hexanone	1078	30	1000	0	108	45-145	1062	1.59	30	
4-Methyl-2-pentanone	1253	30	1000	0	125	45-145	1220	2.63	30	
Acetone	1716	100	1000	71.5	164	20-160	1712	0.263	30	BS
Acrylonitrile	1224	100	1000	0	122	70-135	1236	0.976	30	
Benzene	947.5	30	1000	0	94.8	75-125	1002	5.59	30	
Bromobenzene	973.5	30	1000	0	97.4	65-120	1001	2.79	30	
Bromochloromethane	1050	30	1000	0	105	70-125	1087	3.51	30	
Bromodichloromethane	783.5	30	1000	0	78.4	70-130	792	1.08	30	
Bromoform	786	30	1000	0	78.6	55-135	812.5	3.32	30	
Bromomethane	796.5	75	1000	0	79.6	30-160	806.5	1.25	30	
Carbon disulfide	811.5	30	1000	0	81.2	45-160	837.5	3.15	30	
Carbon tetrachloride	807.5	30	1000	0	80.8	65-135	836	3.47	30	
Chlorobenzene	915	30	1000	0	91.5	75-125	966.5	5.47	30	
Chloroethane	391.5	100	1000	0	39.2	40-155	466	17.4	30	S
Chloroform	1027	30	1000	0	103	70-125	1080	4.98	30	
Chloromethane	1186	100	1000	12.5	117	50-130	1265	6.45	30	
cis-1,2-Dichloroethene	967	30	1000	0	96.7	65-125	1024	5.68	30	
cis-1,3-Dichloropropene	722.5	30	1000	0	72.2	70-125	737.5	2.05	30	
Dibromochloromethane	788	30	1000	0	78.8	65-135	790	0.253	30	
Dibromomethane	948.5	30	1000	0	94.8	75-130	962.5	1.47	30	
Dichlorodifluoromethane	852.5	30	1000	0	85.2	35-135	888	4.08	30	
Ethylbenzene	882.5	30	1000	0	88.2	75-125	940.5	6.36	30	
Hexachloroethane	739	30	1000	0	73.9	70-135	762.5	3.13	30	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **45512** Instrument ID **VMS5** Method: **SW8260**

Isopropylbenzene	853	30	1000	0	85.3	75-130	890.5	4.3	30	
m,p-Xylene	1831	60	2000	0	91.6	80-125	1936	5.57	30	
Methyl tert-butyl ether	1033	30	1000	0	103	75-125	1070	3.52	30	
Methylene chloride	1084	30	1000	0	108	55-145	1123	3.58	30	
Naphthalene	850.5	100	1000	0	85	40-140	747	13	30	
n-Butylbenzene	783.5	30	1000	0	78.4	65-140	786.5	0.382	30	
n-Propylbenzene	882	30	1000	0	88.2	65-135	911	3.23	30	
o-Xylene	927	30	1000	0	92.7	75-125	970	4.53	30	
p-Isopropyltoluene	863	30	1000	0	86.3	75-135	888.5	2.91	30	
sec-Butylbenzene	946	30	1000	0	94.6	65-130	976	3.12	30	
Styrene	725.5	30	1000	0	72.6	75-125	745.5	2.72	30	S
tert-Butylbenzene	954.5	30	1000	0	95.4	65-130	997	4.36	30	
Tetrachloroethene	864.5	30	1000	0	86.4	64-140	934	7.73	30	
Tetrahydrofuran	1175	200	1000	0	118	70-135	1190	1.27	30	
Toluene	878.5	30	1000	0	87.8	70-125	930	5.7	30	
trans-1,2-Dichloroethene	1001	30	1000	0	100	65-135	1064	6.1	30	
trans-1,3-Dichloropropene	764.5	30	1000	0	76.4	65-125	789	3.15	30	
trans-1,4-Dichloro-2-butene	709	30	1000	0	70.9	70-135	700.5	1.21	30	
Trichloroethene	841.5	30	1000	0	84.2	75-125	877.5	4.19	30	
Trichlorofluoromethane	927	30	1000	0	92.7	25-185	970.5	4.58	30	
Vinyl chloride	1039	30	1000	0	104	60-125	1088	4.65	30	
Surr: 1,2-Dichloroethane-d4	*1058*	0	*1000*	0	*106*	*70-130*	1050	*0.759*	*30*	
Surr: 4-Bromofluorobenzene	*1070*	0	*1000*	0	*107*	*70-130*	1066	*0.375*	*30*	
Surr: Dibromofluoromethane	*1002*	0	*1000*	0	*100*	*70-130*	1009	*0.696*	*30*	
Surr: Toluene-d8	*969.5*	0	*1000*	0	*97*	*70-130*	972	*0.258*	*30*	

The following samples were analyzed in this batch:

1212696-01B	1212696-02B	1212696-03B
1212696-04B	1212696-05B	1212696-06B
1212696-07B	1212696-08B	1212696-09A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212696
Project: Marshall KRRI 1250-1275I,1300L 12/17/12

QC BATCH REPORT

Batch ID: **R114360** Instrument ID **MOIST** Method: **A2540 G**

MBLK Sample ID: **WBLKS1-R114360** Units: **% of sample** Analysis Date: **12/21/2012 05:55 PM**
Client ID: Run ID: **MOIST_121221B** SeqNo: **2177954** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	ND	0.050								

LCS Sample ID: **LCS-R114360** Units: **% of sample** Analysis Date: **12/21/2012 05:55 PM**
Client ID: Run ID: **MOIST_121221B** SeqNo: **2177950** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	100	0.050	100	0	100	99.5-100.5	0			

DUP Sample ID: **1212719-02B DUP** Units: **% of sample** Analysis Date: **12/21/2012 05:55 PM**
Client ID: Run ID: **MOIST_121221B** SeqNo: **2177905** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	7.39	0.050	0	0	0	0-0	7.83	5.78	20	

DUP Sample ID: **1212791-10A DUP** Units: **% of sample** Analysis Date: **12/21/2012 05:55 PM**
Client ID: Run ID: **MOIST_121221B** SeqNo: **2177938** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	29.44	0.050	0	0	0	0-0	0			

The following samples were analyzed in this batch: 1212696-01A 1212696-02A 1212696-03A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212696
Project: Marshall KRRI 1250-1275I,1300L 12/17/12

QC BATCH REPORT

Batch ID: **R114362** Instrument ID **MOIST** Method: **A2540 G**

MBLK Sample ID: **WBLKS1-R114362** Units: **% of sample** Analysis Date: **12/21/2012 06:00 PM**
Client ID: Run ID: **MOIST_121221C** SeqNo: **2177947** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	ND	0.050								

LCS Sample ID: **LCS-R114362** Units: **% of sample** Analysis Date: **12/21/2012 06:00 PM**
Client ID: Run ID: **MOIST_121221C** SeqNo: **2177939** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	100	0.050	100	0	100	99.5-100.5	0			

DUP Sample ID: **1212696-08A DUP** Units: **% of sample** Analysis Date: **12/21/2012 06:00 PM**
Client ID: **SBKR1275I510S121712S005** Run ID: **MOIST_121221C** SeqNo: **2177936** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	39.44	0.050	0	0	0	0-0	43.06	8.78	20	

The following samples were analyzed in this batch:

1212696-04A	1212696-05A	1212696-06A
1212696-07A	1212696-08A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

12126096

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

COC #	ENBRIDGE_121712_GMK1	Task: KRRI_1250-1300	
	Total # of Samples: 9		Event Complete?
Turn Around Time	5 Day	Rush	No
BILLNG CODE: 6.00			

Lab Information:

Lab Name:	ALS Laboratory Group
Address:	3352 128th Ave. Holland, MI 49424-9263
Lab PM:	Ann Preston
Phone/Fax:	1-616-399-6070/1-616-399-6185
Lab PM email	ann.preston@alsglobal.com
Applicable Lab Quote #:	

Project Information:

Site ID #:	
Project #	60162778
Site Address	5555 Glenwood Parkway SE Suite 200
City	Grand Rapids
State, Zip	MI
Site PM Name	Bryan Stiemsma
Phone/Fax:	[redacted]
Site PM Email:	Bryan.Stiemsma@aecom.com

Other Information:

Send Invoice to:	Enbridge Energy - ATTN Accounts Payable
Address:	1100 Louisiana Suite 1100
City/State.	Houson, TX
Phone #:	713-821-2000
PO #	
Send EDD to	
CC Hardcopy report	
CC Hardcopy report	

ITEM #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	MATRIX CODE	G=GRAB C=COMP	SAMPLE DATE	#OF CONTAINERS	Comments/Lab Sample I.D.	Preservative	None	None	None	MeOH	None										
								Analysis	Be,Mo,V,Ni by 6020	ORO,DRO	PNAs by 8270	VOC by 5035/8260	% Moisture										
1	SBKR1250I513S121712S006	SBKR1250I513	SO	G	12/17/2012 13:58	3			X	X	X	X	X										
2	SBKR1250I514S121712S005	SBKR1250I514	SO	G	12/17/2012 14:55	3			X	X	X	X	X										
3	SBKR1275I506S121712S004	SBKR1275I506	SO	G	12/17/2012 08:17	3			X	X	X	X	X										
4	SBKR1275I507S121712S005	SBKR1275I507	SO	G	12/17/2012 09:15	3			X	X	X	X	X										
5	SBKR1275I508S121712S004	SBKR1275I508	SO	G	12/17/2012 10:12	3			X	X	X	X	X										
6	SBKR1275I509S121712S004	SBKR1275I509	SO	G	12/17/2012 11:20	3			X	X	X	X	X										
7	SBKR1275I510S121712S005	SBKR1275I510	SO	G	12/17/2012 13:05	6			X	X	X	X	X										
8	SBKR1300L501S121712S006	SBKR1300L501	SO	G	12/17/2012 15:52	3			X	X	X	X	X										
9	SBKR1300L501T121712MX	SBKR1300L501	SQ	G	12/17/2012 00:00	1	TRIP BLANK					X											

Additional Comments/Special Instructions:

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
G. Kramer	12-19-12	0740	[illegible]	12-19-12	0740
[illegible]	12-19-12	0800	[illegible]	12-19-12	0800

Sample Receipt Conditions

Temp in °C	Samples on ice?	Sample intact?	Trip Blank?
2.6°C	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N

SHIPPING INFO	SAMPLER NAME AND SIGNATURE			
Company:	PRINT Name of SAMPLER:	GERRY KRAMER (GMK1)		
Tracking #:	SIGNATURE of SAMPLER:	DATE Signed	Time:	

ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **19-Dec-12 08:00**

Work Order: **1212696** Received by: **PD**

Checklist completed by Keith Wierenga (eSignature) 19-Dec-12 (Date) Reviewed by: Ann Preston (eSignature) 19-Dec-12 (Date)

Matrices: Soil
Carrier name: ALSHN

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.6 C		
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	12/19/2012 1:47:41 PM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel: +1 616 399 6070
Fax: +1 616 399 6185

CUSTODY SEAL

Date: 12-13-12 Time: 0735
Name: [illegible]
Company:

Seal Broken By:

Date:

Enbridge Line 6B MP 608 Pipeline Release

Marshall, Michigan

Appendix B

Waste Management Activities

Analytical Data Reports

Prepared for U.S. EPA and MDEQ

Enbridge Energy, Limited Partnership

Submitted: January 23, 2013

11-Dec-2012

Alison Schoeff
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall FTC Sump 12/7/12** Work Order: **1212305**

Dear Alison,

ALS Environmental received 1 sample on 07-Dec-2012 03:35 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 10.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

Certificate No: MN331938

ALS Group USA, Corp

Date: 11-Dec-12

Client: AECOM Environment
Project: Marshall FTC Sump 12/7/12
Work Order: **1212305**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1212305-01	WWFTCSUMP1S120712	Wastewater		12/7/2012 08:25	12/7/2012 15:35	☐

Client: AECOM Environment
Project: Marshall FTC Sump 12/7/12
WorkOrder: **1212305**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
SD	Serial Dilution
TDL	Target Detection Limit

Units Reported	Description
µg/L	Micrograms per Liter
mg/L	Milligrams per Liter
s.u.	Standard Units

ALS Group USA, Corp

Date: *11-Dec-12*

Client: AECOM Environment
Project: Marshall FTC Sump 12/7/12 **Work Order:** 1212305
Sample ID: WWFTCSUMP1S120712 **Lab ID:** 1212305-01
Collection Date: 12/7/2012 08:25 AM **Matrix:** WASTEWATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**SW8260**			Analyst: **RS**
Benzene	ND		1.0	µg/L	1	12/9/2012 11:58 AM
Surr: 1,2-Dichloroethane-d4	*99.2*		*70-120*	*%REC*	1	12/9/2012 11:58 AM
Surr: 4-Bromofluorobenzene	*97.8*		*75-120*	*%REC*	1	12/9/2012 11:58 AM
Surr: Dibromofluoromethane	*102*		*85-115*	*%REC*	1	12/9/2012 11:58 AM
Surr: Toluene-d8	*95.9*		*85-120*	*%REC*	1	12/9/2012 11:58 AM
OIL AND GREASE			**E1664MM**			Analyst: **BAS**
Oil and Grease	ND		5.0	mg/L	1	12/11/2012 01:30 PM
PH			**SW9040**			Analyst: **ED**
pH	**7.55**			**s.u.**	1	12/8/2012 12:45 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 11-Dec-12

Client: AECOM Environment

Work Order: 1212305

Project: Marshall FTC Sump 12/7/12

QC BATCH REPORT

Batch ID: **R113641** Instrument ID **VMS5** Method: **SW8260**

MBLK Sample ID: **VBLKW1-121209-R113641** Units: **µg/L** Analysis Date: **12/9/2012 10:45 AM**

Client ID: Run ID: **VMS5_121209A** SeqNo: **2162655** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	ND	1.0								
Surr: 1,2-Dichloroethane-d4	*19.19*	0	*20*	0	*96*	*70-120*	0			
Surr: 4-Bromofluorobenzene	*19.53*	0	*20*	0	*97.6*	*75-120*	0			
Surr: Dibromofluoromethane	*19.48*	0	*20*	0	*97.4*	*85-115*	0			
Surr: Toluene-d8	*19.18*	0	*20*	0	*95.9*	*85-120*	0			

LCS Sample ID: **VLCSW1-121209-R113641** Units: **µg/L** Analysis Date: **12/9/2012 09:56 AM**

Client ID: Run ID: **VMS5_121209A** SeqNo: **2162654** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	19.13	1.0	20	0	95.6	80-120	0			
Surr: 1,2-Dichloroethane-d4	*19.03*	0	*20*	0	*95.2*	*70-120*	0			
Surr: 4-Bromofluorobenzene	*19.66*	0	*20*	0	*98.3*	*75-120*	0			
Surr: Dibromofluoromethane	*20.09*	0	*20*	0	*100*	*85-115*	0			
Surr: Toluene-d8	*19.61*	0	*20*	0	*98*	*85-120*	0			

MS Sample ID: **1212305-01A MS** Units: **µg/L** Analysis Date: **12/9/2012 02:48 PM**

Client ID: **WWFTCSUMP1S120712** Run ID: **VMS5_121209A** SeqNo: **2162658** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	18.96	1.0	20	0	94.8	80-120	0			
Surr: 1,2-Dichloroethane-d4	*18.67*	0	*20*	0	*93.4*	*70-120*	0			
Surr: 4-Bromofluorobenzene	*19.46*	0	*20*	0	*97.3*	*75-120*	0			
Surr: Dibromofluoromethane	*19.79*	0	*20*	0	*99*	*85-115*	0			
Surr: Toluene-d8	*19.22*	0	*20*	0	*96.1*	*85-120*	0			

MSD Sample ID: **1212305-01A MSD** Units: **µg/L** Analysis Date: **12/9/2012 03:13 PM**

Client ID: **WWFTCSUMP1S120712** Run ID: **VMS5_121209A** SeqNo: **2162659** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	18.76	1.0	20	0	93.8	80-120	18.96	1.06	30	
Surr: 1,2-Dichloroethane-d4	*19.53*	0	*20*	0	*97.6*	*70-120*	18.67	*4.5*	*30*	
Surr: 4-Bromofluorobenzene	*18.99*	0	*20*	0	*95*	*75-120*	19.46	*2.44*	*30*	
Surr: Dibromofluoromethane	*20.48*	0	*20*	0	*102*	*85-115*	19.79	*3.43*	*30*	
Surr: Toluene-d8	*18.89*	0	*20*	0	*94.4*	*85-120*	19.22	*1.73*	*30*	

The following samples were analyzed in this batch: 1212305-01A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212305
Project: Marshall FTC Sump 12/7/12

QC BATCH REPORT

Batch ID: **R113637** Instrument ID **WETCHEM** Method: **SW9040**

LCS Sample ID: **WLCSW1-121208-R113637** Units: **s.u.** Analysis Date: **12/8/2012 12:45 PM**
Client ID: Run ID: **WETCHEM_121208B** SeqNo: **2162622** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	4.3	0	4.4	0	97.7	90-110	0			

DUP Sample ID: **1212305-01BDUP** Units: **s.u.** Analysis Date: **12/8/2012 12:45 PM**
Client ID: **WWFTCSUMP1S120712** Run ID: **WETCHEM_121208B** SeqNo: **2162626** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	7.55	0	0	0	0	0-0	7.55	0	20	

The following samples were analyzed in this batch: 1212305-01B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1212305
Project: Marshall FTC Sump 12/7/12

QC BATCH REPORT

Batch ID: **R113767** Instrument ID **O&GMOD** Method: **E1664MM**

MBLK Sample ID: **MB-R113767-R113767** Units: **mg/L** Analysis Date: **12/11/2012 01:30 PM**
Client ID: Run ID: **O&GMOD_121211A** SeqNo: **2165792** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Oil and Grease	ND	5.0								

LCS Sample ID: **LCS-R113767-R113767** Units: **mg/L** Analysis Date: **12/11/2012 01:30 PM**
Client ID: Run ID: **O&GMOD_121211A** SeqNo: **2165793** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Oil and Grease	70.1	5.0	80	0	87.6	50-150	0			

The following samples were analyzed in this batch: 1212305-01C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

☐ ALS Environmental
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

Chain of Custody Form

Page 1 of 1

COC ID: 20094

☐ ALS Environmental
3352 128th Ave.
Holland, MI 49424-9263
Tel: +1 616 399 6070
Fax: +1 616 399 6185

ALS Project Manager: | ALS Work Order #: 12.12305

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order	BILLING CODE: 9.05	Project Name	FTC SUMP	A	O+G
Work Order		Project Number		B	BENZENE
Company Name	AECOM Environment	Bill To Company	Enbridge Energy	C	PH
Send Report To		Invoice Attn	Accounts Payable	D	
Address	5555 Glenwood Parkway SE	Address	1100 Louisiana Suite 1100	E	
				F	
City/State/Zip	Grand Rapids, MI 49512	City/State/Zip	Houston, TX 77002	G	
Phone	(616) 942-9600	Phone		H	
Fax		Fax		I	
E-Mail Address		e-Mail Address		J	

Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
WWFTCSUMP1S 120712	12-7-12	0825	Waste Water	1,3,7	5	X	X	X								

AKM 12-7-12

Sampler(s) Please Print & Sign: ADAM LEGO, JON CARNETH

Shipment Method:

Required Turnaround Time: (Check Box) ☐ Std 10 WK Days ☐ 5 WK Days ☐ 2 WK Days ☐ 24 Hour ☒ Other 72 HOURS

Results Due Date: TUES 12-11-12

Relinquished by: Lora Lego	Date: 12-7-12	Time: 1421	Received by:	
Relinquished by:	Date: 12-7-12	Time: 1535	Received by (Laboratory):	
Logged by (Laboratory): DS	Date: 12/8/12	Time: 1130	Checked by (Laboratory):	

Notes:

Cooler ID	Cooler Temp.
	3.0°C

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP CheckList
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other _____

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

Copyright 2010 by ALS Environmental.

ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **07-Dec-12 15:35**

Work Order: **1212305** Received by: **PD**

Checklist completed by Diane Shaw eSignature 08-Dec-12 Date Reviewed by: Ann Preston eSignature 08-Dec-12 Date

Matrices: Wastewater
Carrier name: ALSHN

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	3.0 c		
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	12/8/2012 11:43:54 AM		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

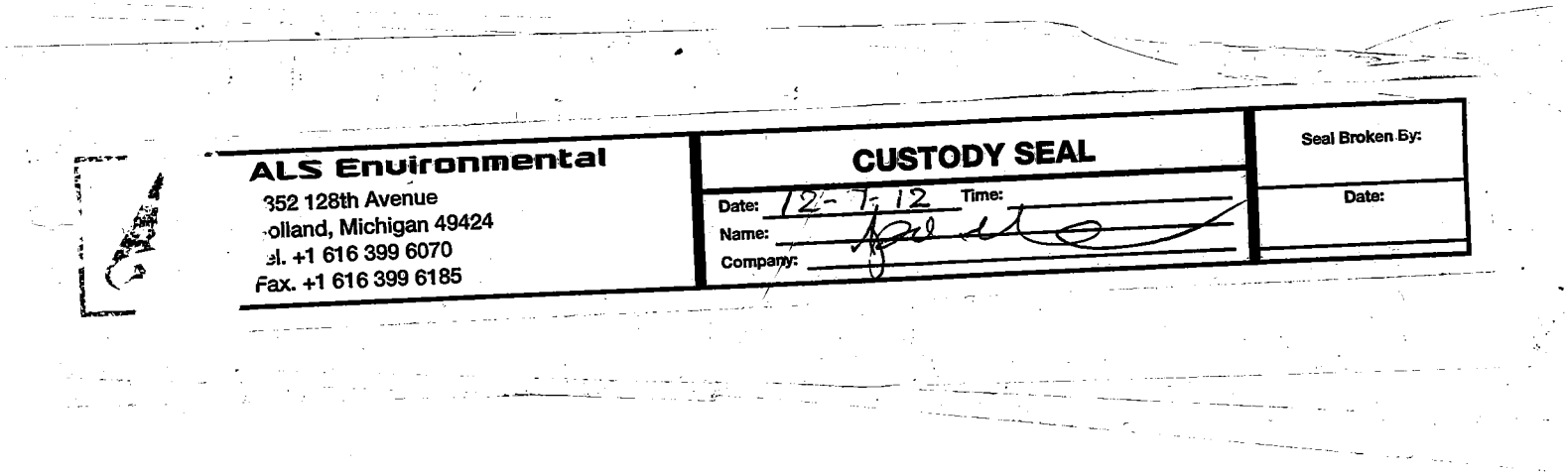
Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:



ALS Environmental
352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL
Date: 12-7-12 Time:
Name:
Company:

Seal Broken By:
Date:

Enbridge Line 6B MP 608 Pipeline Release

Marshall, Michigan

Appendix B

Alpha Analytical

Analytical Data Reports

Prepared for U.S. EPA and MDEQ

Enbridge Energy, Limited Partnership

Submitted: January 23, 2013

ANALYTICAL REPORT

Prepared for:
AECOM
250 Apollo Drive
Chelmsford, MA 01824

Project:	Enbridge Line 6B MP 608
ETR:	1212022
Report Date:	December 28, 2012

Certifications and Accreditations
Massachusetts M-MA030
Connecticut PH-0141
New Hampshire 2206
Rhode Island LAO00289
New Jersey MA015
Maine MA0030
New York 11627
Louisiana 03090
Florida E87814
Pennsylvania 68-02089
Army Corps of Engineers
Department of the Navy

This report shall not be reproduced except in full, without written approval from the laboratory.

Sample ID Cross Reference

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**

Lab Code: **MA00030**
ETR: **1212022**

Lab Sample ID	Client Sample ID	Matrix
1212022-01	SEKR0000R024AS121312D006	Sediment
1212022-02	SEKR0000R024AS121312D010	Sediment
1212022-03	SEKR0000R024AD121312D010	Sediment
1212022-04	SEKR0000R024AS121312D013	Sediment

Certificate/Approval Program Summary

Method numbers assume the most recent EPA revisions. For a complete listing of analytes for the referenced methods please contact your Alpha Woods Hole Lab Project Manager or the Quality Assurance Manager.

Connecticut Department of Public Health Certificate/Lab ID : PH-0141 - *Wastewater* (General Chemistry: EPA 120.1, 150.1, 160.1, 160.2, 180.1, 300.0, 310.1, 335.2, 365.2; Metals: 200.8, 245.1; Organics: 608, 624, 625, ETPH) *Solid Waste/Soil* (General Chemistry: 1010, 9010/9014, 9045, 9060; Metals: 6020, 7470, 7471; Organics: 8081, 8082, 8260, 8270, ETPH).

Florida Department of Health Certificate/Lab ID : E87814 - Primary NELAP Accreditation Authority for Air & Emissions. Secondary NELAP Accreditation for Wastwater and Solid & Hazardous Waste. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 335.2, 365.2, SM2320B, SM2340B, SM2540G, SM4500NH3; Metals: 245.1; Organics: 608, 624, 625). *Solid and Hazardous Waste* (General Chemistry: 9010/9014, 9045, 9050, 9056, 9065, Reactivity 7.3; Metals: 6020, 7470, 7471; Organics: 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

Louisiana Department of Environmental Quality Certificate/Lab ID : 03090 - Primary NELAP Accrediting Authority for Wastewater, Solid & Hazardous Waste. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 365.2, 376.2, 9010/9014, 9056, SM2540G; Metals: 200.8, 245.1, 6020; Organics: 608, 624, 625, 8015-DRO/GRO, 8081, 8082, 8260, 8270). *Solid and Hazardous Waste* (General Chemistry: 1010, 1311, 9010/9014, 9040, 9045, 9056, 9060, Reactivity 7.3; Metals: 6020, 7196, 7470, 7471; Organics: 8015-DRO/GRO, 8081, 8082, 8260, 8270).

Maine Department of Human Services Certificate/Lab ID : MA0030 - *Wastewater* (General Chemistry: EPA 120.1/ SM2510B, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 335.2, 365.2; Metals: EPA 245.1; Organics: 608, 624).

Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA030 - *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 335.2, 365.2; Metals: EPA 245.1; Organics: EPA 608, 624).

New Hampshire Department of Environmental Services Certificate/Lab ID: 2206 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 365.2, 376.2, SM2540G; Metals: 200.8, 245.4; Organics: 608, 624, 625).

New Jersey Department of Environmental Protection Certificate/Lab ID : MA015 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 376.2, 9010/9014, 9056, SM2540G; Metals: 200.8, 245.1 6020; Organics: 608, 624, 625, 8081, 8082, 8260, 8270). *Solid & Hazardous Waste* (General Chemistry: EPA 1010, 1311, 9010/9014, 9040, 9045, 9056, 9060; Metals: 6020, 7196, 7470, 7471; Organics: 8015-DRO/GRO, 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

New York Department of Health Certificate/Lab ID : 11627 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 365.2, 376.2; Metals: 245.1; Organics: 608, 624, 625). *Solid and Hazardous Waste* (General Chemistry: EPA 1010, 1311; : 245.1; 6020, 7041; Organics: 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

Rhode Island Department of Health Certificate/Lab ID : LAO00289 - Chemistry: *Organic and Inorganic in Non-Poratable Water, Wastewater/Sewage and Soil* (Refer to LADEQ and MADEP certificates for method numbers.)

Pennsylvania Department of Environmental Protection Certificate/Lab ID : 68-02089 - Registered laboratory

U.S. Army Corps of Engineers

Department of the Navy

CASE NARRATIVE
Alpha Analytical

ETR: 1212022
Project: AECOM Enbridge Line 6B MP 608

All analyses were performed according to the Alpha Analytical quality assurance program and documented Standard Operating Procedures (SOPs). The analytical results contained in this report were performed within holding time, and with appropriate quality control measures, except where noted. A summary of all state and federal accreditations is provided within this report. Blank correction of results is not performed in the laboratory for any parameter. Alpha Analytical certifies that the test results within meet all of the requirements of NELAC, for all NELAC accredited parameters.

Sample Receipt

Samples (1212022-01 through -04) were received in good condition, between 2° and 6°C, and without discrepancies. Samples were released for analysis on 12-14-2012. Samples were frozen until scheduled for analysis. Per the customer's request, all samples (1212022-01 through -04) were analyzed for PAH/BIO, SHC and TOC.

Sample Preparation and Extraction

Samples were extracted on 12-20-2012 (prep batch 1212022X). The extraction and preparation procedure was performed according to the Alpha Analytical SOP (stated below) with the following deviations:

1. All samples were spiked with 500uL of the extraction surrogate solution because of the potential of a high final volume and matrix interference.

2. During the sample homogenization prior to extraction it was noted that all samples contained shells and rocks making the homogenization procedure difficult.

3. Sample 1212022-04 was noted to have a strong hydrocarbon odor.

The observations noted on the *Forensic Preparation Checklist* should neither have any adverse affect on the analysis nor should they impact data quality for samples in this ETR.

Alkylated Polynuclear Aromatic Hydrocarbons, Steranes, Triterpanes, and Triaromatic Steroids – Sediments

Polynuclear aromatic hydrocarbons and geochemical biomarkers were analyzed following Alpha Analytical SOP *Analysis of Parent and Alkylated Polynuclear Aromatic Hydrocarbons, Selected Heterocyclic Compounds, Steranes, Triterpanes, and Triaromatic Steroids by Gas Chromatography/Mass Spectrometry with Selected Ion Monitoring (SOP 2247, Rev. 4, 08/10/2012)*. Sediment samples are spiked with surrogate compounds and extracted by *Shaker Table Extraction (SOP 2261, Rev. 3, 09/06/2012)*. Solvent extracts are dried over sodium sulfate and concentrated to a 4mL volume. A 2mL aliquot of the extract is processed through a silica column (*Silica Gel Cleanup Preparation (Manual), SOP 2267, Rev. 2, 03/21/2012*) and concentrated to a 900uL volume. A 450uL aliquot is taken and spiked with internal standard for instrument analysis. The average weight of all samples included in the extraction batch is used as the weight for the blank, laboratory control sample, and laboratory control sample duplicate. The final value is rounded accordingly. Qualitative identifications are confirmed by analyzing standards under the same conditions used for samples, comparing mass spectra, GC retention times, and patterns generated from reference oils. Quantification is based on response factors derived from a multi-level initial calibration using internal standard techniques. Alkyl homologues are quantified using the response factor of the parent PAH compound. Target triterpane biomarker concentrations are quantified using the response factor of Hopane and the steranes and steroids are quantified using the response factor of 5β(H)Cholane. All enclosed data was evaluated below the reporting limits to three times signal to noise. The sample specific method detection limit is the value reported for all compounds which are not

detected ("U" qualified). Any sample preparation method deviations can be found in the "Sample Preparation and Extraction" section of this document or noted on the *Forensics Preparation Checklist* located in the sample preparation document.

1. The evaluation of the mass ion spectra on 12/22/2012 indicated that ions 219 and 502 had relative abundances slightly above the acceptance criteria. The continuing calibration standards and all samples were acquired under these same instrument conditions.

2. The method blank SS121812B06 contained low-level target compounds. The single component compounds were detected at less than 5x the sample specific method detection limit (MDL) with the exception of Biphenyl and Phenanthrene which are "B" qualified on the Quantitation Report; the multi-component compounds were detected at less than 10x the MDL of the associated single component compound. It was further determined that Biphenyl and Phenanthrene were introduced into the samples through the surrogate solution. As a corrective action, that surrogate solution was removed from the laboratory and was discarded. The method blank met the acceptance criteria (with no more than two compounds outside criteria). Associated field sample results are flagged with "B" qualifiers if the concentration of the analyte in the sample is less than 10x the concentration in the blank.

3. The matrix spike and matrix spike duplicate for sample 1212022-02 recovered low and outside the acceptance criteria (50-125%) for several compounds. Additionally, the relative percent difference (RPD) for Phenanthrene exceeded the limit (30%) at 48%. This variability of the results could be attributed to the heterogeneous nature of the samples and the high concentration of the spiking compounds in the native sample. The LCS/LCSD recoveries passed acceptance criteria for these compounds demonstrating accuracy of the method. The integrations and calculations were reviewed and found to be accurate. See Spike Recovery Summary for individual compounds affected. No further corrective action was taken.

4. The relative percent difference (RPD) for sample 1212022-03 and its duplicate 1212022-03D exceeded the limit (30%) for thirty three (33) compounds with reported concentrations that are greater than the QL in either the native or duplicate extract. The RPD's for the LCS/LCSD met the criteria for all monitored analytes showing that precision of the method was established. This variability of the results could be attributed to the heterogeneous nature of the samples. No further corrective action was taken. See Duplicate Summary Report for individual compounds affected.

5. Sample 1212022-04 required a 2X dilution due to over-calibration concentrations of target compounds. The diluted analyses are only quantified for the compounds that were over the calibration range of the analytical instrument in the un-diluted analyses. Dilutions are reported with a sample name suffix "E" on all forms and electronic data. The sample name in the analytical data (Quantitation Report and Injection Log) may be entered with a suffix "RE" as a keyword requirement for LIMS data transfer.

6. Concentrations for compounds flagged with "G" qualifiers may be biased high due to matrix interference included in the quantitation.

7. The continuing calibration verifications associated with the dilution of sample 1212022-04 were at a concentration of 250ng/mL rather than the customary 500ng/mL. Sample results are not affected

Total Saturated Hydrocarbons and Total Petroleum Hydrocarbons by GC/FID – Sediments

Samples for total saturated hydrocarbons and total petroleum hydrocarbons were analyzed following the procedures in Alpha Analytical SOP *Total Petroleum and Saturated Hydrocarbons by Gas Chromatography/Flame Ionization Detector (SOP 2246, Rev. 4, 04/11/2012)* Method 8100/8015mod. Samples were prepared as stated above for the PAH analysis. A portion of the final extract was analyzed for GC/FID (gas chromatography with flame ionization detection). A multi-level initial calibration over the n-alkane range from C9-C40 was evaluated and quantified using internal standard techniques prior to sample analysis. All enclosed data was evaluated below the reporting limits to three times signal to noise. The sample specific method detection limit is the value reported for all compounds which are not detected ("U" qualified). Any sample preparation method deviations can be found in the "Sample Preparation and Extraction" section of this document or noted on the *Forensics Preparation Checklist* located in the sample preparation document.

The following compounds co-elute with PAH surrogates and/or internal standards which potentially bias the results high: n-Octadecane (C18) - Phenanthrene-d10, n-Pentacosane (C25) - Chrysene-d12, n-Octacosane (C28) – Benzo[b]fluoranthene-d12 and n-Nonacosane (C29) - Benzo[a]pyrene-d12. If a positive bias is determined to be present the compounds will be reported with a "C" qualifier.

1. The method blank SS121812B06 contained low-level target compounds detected at less than 5x the sample specific method detection limit (MDL). The method blank met the acceptance criteria (with no more than two compounds outside criteria) therefore no corrective action was required. Associated field sample results are flagged with "B" qualifiers if the concentration of the analyte in the sample is less than 10x the concentration in the blank.

2. The relative percent difference (RPD) for sample 1212022-03 and its duplicate 1212022-03D exceeded the limit (30%) for n-Octadecane (C18) with reported concentration that is greater than the QL in both the native and duplicate extract, at 56%. The RPD's for the LCS/LCSD and MS/MSD met the criteria for all monitored analytes showing that precision of the method was established. No further corrective action was taken.

Total Organic Carbon by 9060

Total organic carbon was analyzed following Alpha Analytical SOP *Total Organic Carbon and Soot in Soil, Sediment (SOP 2182, Rev. 6, 10/05/2012)* modified from Method 9060 for reporting Total Organic Carbon as the average of two replicate analyses. The samples (approximately 2-5mg) were dried, acidified with phosphoric acid, loaded into an aluminum tin and introduced into a furnace for combustion in a pure oxygen environment. CO_2 was produced in the combustion zone and non-target elements were removed by scrubbing reagents. The resulting CO_2 gas was de-pressurized through a column where it was detected as a function of its thermal conductivity. The amount of CO_2 derived from the sample is directly proportional to the concentration of organic carbonaceous material in the sample.

The analysis for samples may be performed on a larger sample size than the method specified representative aliquot to maximize the detection signal.

1. The initial analyses of samples 1212022-01 and -02 replicate burns exceeded the QC limit (20%) at 60.30% and 59.41% respectively. A double-burn re-analysis was performed with confirming results. The average result is reported only from the initial analyses. No further action was taken.

2. The initial analysis of sample 1212022-03D was rejected because the RPD between the replicate burns exceeded the QC limit (20%). A double-burn re-analysis was performed with all quality control parameters within acceptance criteria. The average result is reported only from the re-analysis. No further action was taken.

3. The relative percent difference (RPD), for the second replicate burn, between sample 1212022-03 and its duplicate 1212022-03D exceeded the limit (25%) at 29%. This may be due to the heterogeneous nature of the sample. The average relative percent difference (RPD) was within QC limits. No further corrective action was taken.

The enclosed results of analyses are representative of the samples as received by the laboratory. Alpha Analytical makes no representations or certifications as to the method of sample collection, sample identification, or transporting/handling procedures used prior to the receipt of samples by Alpha Analytical. To the best of my knowledge, the information contained in this report is accurate and complete. For any questions regarding this report, please contact the signatory below at 508-822-9300.

Approved by: Normand Lauranno Jr. Title: **Technical Representative** Date: 12/28/2012

Normand Lauranno, Jr.

Alkylated Polynuclear Aromatic Hydrocarbons, Steranes, Triterpanes, and Triaromatic Steroids By GC/MS-SIM

Form II
Surrogate Recovery
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **AECOM** Lab Code: **MA00030**

Project: **Enbridge Line 6B MP 608** ETR: **1212022**

Matrix: **Sediment**

Case: **N/A** SDG: **N/A**

Client ID	Lab ID	Naphthalene-d8	Phenanthrene-d10	Benzo[a]pyrene-d12	5B(H)Cholane
Blank	SS121812B06	68	82	75	77
LCS	SS121812LCS06	73	85	74	72
LCSD	SS121812LCSD06	67	79	68	66
SRM 1941b	SS121812C41BN02	51	71	61	66
SEKR0000R024AS121312D006	1212022-01	64	82	75	82
SEKR0000R024AS121312D010	1212022-02	67	84	74	83
SEKR0000R024AS121312D010	1212022-02 M	71	82	73	77
SEKR0000R024AS121312D010	1212022-02 S	70	82	72	77
SEKR0000R024AD121312D010	1212022-03	65	83	74	76
SEKR0000R024AD121312D010	1212022-03 D	62	82	74	76
SEKR0000R024AS121312D013	1212022-04	64	84	78	78
SEKR0000R024AS121312D013	1212022-04E	59	77	66	68

N/A - Not Applicable

Surrogate	QC Limit
Naphthalene-d8	40-120
Phenanthrene-d10	40-120
Benzo[a]pyrene-d12	40-120
5B(H)Cholane	50-130

Form III
Spike Recovery Summary
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Laboratory Control Sample**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **See Below**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
N/A	N/A	12/20/12	100	PS

Lab ID: SS121812B06 SS121812LCS06 SS121812LCSD06

Parameter	Blank Conc.		LCS Conc.	LCS % Recovery	LCSD Conc.	LCSD % Recovery	% RPD	RPD Limit	% Recovery Limits
Naphthalene	0.0483		48.4	73	44.9	67	7	30	50-125
Acenaphthylene	0.0455	U	47.2	71	43.8	66	7	30	50-125
Acenaphthene	0.0537	U	49.3	74	45.8	69	7	30	50-125
Fluorene	0.0805		50.1	75	46.8	70	7	30	50-125
Anthracene	0.106		51.8	78	48.3	72	7	30	50-125
Phenanthrene	1.07		52.2	78	49.1	74	6	30	50-125
Fluoranthene	0.0221		51.4	77	48.5	73	6	30	50-125
Pyrene	0.0269		53.1	80	49.9	75	6	30	50-125
Benz[a]anthracene	0.130	U	46.9	70	43.8	66	7	30	50-125
Chrysene/Triphenylene	0.0267		49.6	74	47.0	71	5	30	50-125
Benzo[b]fluoranthene	0.168	U	48.4	73	45.3	68	7	30	50-125
Benzo[j]fluoranthene/ Benzo[k]fluoranthene	0.119	U	52.4	79	49.1	74	6	30	50-125
Benzo[a]pyrene	0.137	U	51.5	77	47.3	71	9	30	50-125
Indeno[1,2,3-cd]pyrene	0.284	U	45.5	68	41.9	63	8	30	50-125
Dibenz[ah]anthracene/ Dibenz[ac]anthracene	0.275	U	48.4	73	44.9	67	7	30	50-125
Benzo[g,h,i]perylene	0.173	U	47.4	71	44.0	66	7	30	50-125

Surrogate	% Recovery		Acceptance Range (%)
Naphthalene-d8	73	67	40-120
Phenanthrene-d10	85	79	40-120
Benzo[a]pyrene-d12	74	68	40-120
5B(H)Cholane	72	66	50-130

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded result.

Form III
Spike Recovery Summary
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AS121312D010**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **See Below**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
12/13/12	12/14/12	12/20/12	79.5	PS

Lab ID:		1212022-02		1212022-02				
Parameter	**Sample Conc.**	**Matrix Spike Conc.**	**% Recovery**	**Matrix Spike Dup. Conc.**	**% Recovery**	**% RPD**	**RPD Limit**	**% Recovery Limits**
Naphthalene	66.3	365	72	311	59	16	30	50-125
Acenaphthylene	116	383	65	380	63	1	30	50-125
Acenaphthene	44.6	334	70	324	67	3	30	50-125
Fluorene	57.2	373	76	338	68	10	30	50-125
Anthracene	265	606	83	446	44[a]	30	30	50-125
Phenanthrene	778	996	53	608	0[a]	48[a]	30	50-125
Fluoranthene	2290	1680	0[a]	1510	0[a]	11	30	50-125
Pyrene	2190	1770	0[a]	1730	0[a]	2	30	50-125
Benz[a]anthracene	978	1010	8[a]	973	0[a]	4	30	50-125
Chrysene/Triphenylene	1030	970	0[a]	961	0[a]	1	30	50-125
Benzo[b]fluoranthene	811	898	21[a]	754	0[a]	17	30	50-125
Benzo[j]fluoranthene/ Benzo[k]fluoranthene	929	865	0[a]	838	0[a]	3	30	50-125
Benzo[a]pyrene	1100	1080	0[a]	970	0[a]	10	30	50-125
Indeno[1,2,3-cd]pyrene	636	796	39[a]	695	14[a]	14	30	50-125
Dibenz[ah]anthracene/ Dibenz[ac]anthracene	177	436	63	420	59	4	30	50-125
Benzo[g,h,i]perylene	612	784	42[a]	686	18[a]	13	30	50-125

Surrogate	% Recovery		Acceptance Range (%)
Naphthalene-d8	71	70	40-120
Phenanthrene-d10	82	82	40-120
Benzo[a]pyrene-d12	73	72	40-120
5B(H)Cholane	77	77	50-130

N/A - Not Applicable
[a] - Value outside of QC Limits.

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded result.

Standard Reference Material 1941b
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SRM 1941b**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS121812C41BN02**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	12/20/12	12/22/12	97.6	5.00	2	1	PS

Parameter	True Conc.	Conc.	Low Limit	High Limit
Naphthalene	848	852	527	1230
Fluorene	85.0	46.1	42.0	140
Anthracene	184	151	116	263
Phenanthrene	406	372	253	585
Fluoranthene	651	610	421	911
Pyrene	581	501	379	806
Benz[a]anthracene	335	256	217	468
Chrysene/Triphenylene	399	364	254	566
Benzo[b]fluoranthene	453	458	302	616
Benzo[e]pyrene	325	346	210	455
Benzo[a]pyrene	358	288	239	488
Perylene	397	314	246	575
Indeno[1,2,3-cd]pyrene	341	268	199	517
Dibenz[ah]anthracene/Dibenz[ac]anthracene	89.7	77.5	52.2	136
Benzo[g,h,i]perylene	307	260	183	458

Reference material has been surrogate corrected.

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	51	40-120
Phenanthrene-d10	71	40-120
Benzo[a]pyrene-d12	61	40-120

N/A - Not Applicable

Form III
Spike Recovery Summary
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS122712ANC03**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
N/A	N/A	N/A	100	PS

Parameter	True Conc.	Conc.	% Recovery	% Recovery Limits
cis/trans-Decalin	479.2	466	97	65-135
C1-Decalins	728.9	790	108	65-135
C2-Decalins	635.5	716	113	65-135
C3-Decalins	329.8	405	123	65-135
C4-Decalins	326.5	436	134	65-135
Benzothiophene	5.4	5.63	104	65-135
C1-Benzo(b)thiophenes	28.9	34.1	118	65-135
C2-Benzo(b)thiophenes	49.6	52.6	106	65-135
C3-Benzo(b)thiophenes	99.0	115	116	65-135
C4-Benzo(b)thiophenes	87.1	103	119	65-135
Naphthalene	555.8	549	99	65-135
C1-Naphthalenes	1167.3	1210	103	65-135
C2-Naphthalenes	1409.7	1560	111	65-135
C3-Naphthalenes	1035.9	1220	117	65-135
C4-Naphthalenes	561.1	718	128	65-135
Biphenyl	145.7	134	92	65-135
Dibenzofuran	51.2	50.7	99	65-135
Acenaphthylene	6.5	6.87	106	65-135
Acenaphthene	18.7	14.8	79	65-135
Fluorene	74.6	72.0	96	65-135
C1-Fluorenes	170.2	175	103	65-135
C2-Fluorenes	255.4	289	113	65-135
C3-Fluorenes	238.5	281	118	65-135
Phenanthrene	212.2	205	97	65-135
C1-Phenanthrenes/Anthracenes	432.7	452	104	65-135
C2-Phenanthrenes/Anthracenes	465.9	522	112	65-135
C3-Phenanthrenes/Anthracenes	317.4	380	120	65-135
C4-Phenanthrenes/Anthracenes	129	152	118	65-135
Dibenzothiophene	138.9	138	100	65-135
C1-Dibenzothiophenes	278.6	286	102	65-135
C2-Dibenzothiophenes	377.5	411	109	65-135
C3-Dibenzothiophenes	341.4	376	110	65-135
C4-Dibenzothiophenes	183.4	207	113	65-135

Form III
Spike Recovery Summary
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS122712ANC03**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
N/A	N/A	N/A	100	PS

Parameter	True Conc.	Conc.	% Recovery	% Recovery Limits
Fluoranthene	4.00	3.96	99	65-135
Pyrene	13.0	12.7	98	65-135
C1-Fluoranthenes/Pyrenes	63.1	62.8	99	65-135
C2-Fluoranthenes/Pyrenes	102.2	97.5	95	65-135
C3-Fluoranthenes/Pyrenes	119.6	116	97	65-135
C4-Fluoranthenes/Pyrenes	104	97.7	94	65-135
Naphthobenzothiophenes	43.8	39.8	91	65-135
C1-Naphthobenzothiophenes	117.2	111	94	65-135
C2-Naphthobenzothiophenes	163.3	142	87	65-135
C3-Naphthobenzothiophenes	128.7	107	83	65-135
C4-Naphthobenzothiophenes	89.0	80.7	91	65-135
Benz[a]anthracene	2.1	2.02	96	65-135
Chrysene/Triphenylene	35.2	36.8	105	65-135
C1-Chrysenes	62.8	70.1	112	65-135
C2-Chrysenes	86.0	92.3	107	65-135
C3-Chrysenes	97.6	107	109	65-135
C4-Chrysenes	59.4	61.8	104	65-135
Benzo[b]fluoranthene	5.2	5.18	100	65-135
Benzo[e]pyrene	9.8	9.36	96	65-135
Benzo[a]pyrene	1.9	1.42	75	65-135
Perylene	2.8	2.09	75	65-135
Benzo[g,h,i]perylene	3.1	2.99	96	65-135

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded result.

Form III
Spike Recovery Summary
Carbazole

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS122712ANC03**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
N/A	N/A	N/A	100	PS

Parameter	True Conc.	Conc.	% Recovery	% Recovery Limits
Carbazole	6.00	5.68	95	65-135

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded result.

Form III
Spike Recovery Summary
Polynuclear Aromatic Hydrocarbons Isomers

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS122712ANC03**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
N/A	N/A	N/A	100	PS

Parameter	True Conc.	Conc.	% Recovery	% Recovery Limits
4-Methyldibenzothiophene	131.8	140	106	65-135
2/3-Methyldibenzothiophene	97.5	97.5	100	65-135
1-Methyldibenzothiophene	44.2	44.4	100	65-135
3-Methylphenanthrene	89.4	93.8	105	65-135
2-Methylphenanthrene	97.7	103	105	65-135
2-Methylanthracene	3.2	3.48	109	65-135
9/4-Methylphenanthrene	141.2	144	102	65-135
1-Methylphenanthrene	97.4	104	107	65-135
2-Methylnaphthalene	1081.8	1090	101	65-135
1-Methylnaphthalene	784.8	783	100	65-135
2,6-Dimethylnaphthalene	649.9	630	97	65-135
2,3,5-Trimethylnaphthalene	152	139	92	65-135

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded result.

Form III
Spike Recovery Summary
Steranes and Triterpanes

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS122712ANC03**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
N/A	N/A	N/A	100	PS

Parameter	True Conc.	Conc.	% Recovery	% Recovery Limits
C23 Tricyclic Terpane	67.3	60.7	90	65-135
C24 Tricyclic Terpane	43.0	36.1	84	65-135
C25 Tricyclic Terpane	42.0	36.8	88	65-135
C24 Tetracyclic Terpane	14.8	12.3	83	65-135
C26 Tricyclic Terpane-22S	17.7	14.1	80	65-135
C26 Tricyclic Terpane-22R	15.4	14.0	91	65-135
C28 Tricyclic Terpane-22S	16.8	13.0	77	65-135
C28 Tricyclic Terpane-22R	18.1	14.3	79	65-135
C29 Tricyclic Terpane-22S	20.8	18.7	90	65-135
C29 Tricyclic Terpane-22R	22.6	17.6	78	65-135
18a-22,29,30-Trisnorneohopane-TS	31.3	26.2	84	65-135
C30 Tricyclic Terpane-22S	16.2	14.8	91	65-135
C30 Tricyclic Terpane-22R	16.4	14.1	86	65-135
17a(H)-22,29,30-Trisnorhopane-TM	37.8	30.8	81	65-135
17a/b,21b/a 28,30-Bisnorhopane	7.00	7.68	110	65-135
17a(H),21b(H)-25-Norhopane	8.7	7.84	90	65-135
30-Norhopane	99.7	85.0	85	65-135
18a(H)-30-Norneohopane-C29Ts	25.2	21.2	84	65-135
17a(H)-Diahopane	14.2	11.7	83	65-135
30-Normoretane	11.6	9.89	85	65-135
Hopane	173.6	143	82	65-135
Moretane	17.5	14.1	80	65-135
30-Homohopane-22S	75.1	61.9	82	65-135
30-Homohopane-22R	64.1	52.5	82	65-135
30,31-Bishomohopane-22S	53.6	44.0	82	65-135
30,31-Bishomohopane-22R	39.6	31.4	79	65-135
30,31-Trishomohopane-22S	41.8	34.2	82	65-135
30,31-Trishomohopane-22R	27.2	23.2	85	65-135
Tetrakishomohopane-22S	29.8	26.0	87	65-135
Tetrakishomohopane-22R	21.2	17.8	84	65-135
Pentakishomohopane-22S	30.2	25.6	85	65-135
Pentakishomohopane-22R	23.5	18.6	79	65-135
13b(H),17a(H)-20S-Diacholestane	50.0	47.8	96	65-135

Form III
Spike Recovery Summary
Steranes and Triterpanes

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS122712ANC03**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
N/A	N/A	N/A	100	PS

Parameter	True Conc.	Conc.	% Recovery	% Recovery Limits
13b(H),17a(H)-20R-Diacholestane	26.3	26.8	102	65-135
13b,17a-20S-Methyldiacholestane	25.7	23.8	93	65-135
14a(H),17a(H)-20S-Cholestane/ 13b(H),17a(H)-20S-Ethyldiacholestane (S12)	65.0	65.9	101	65-135
14a(H),17a(H)-20R-Cholestane/ 13b(H),17a(H)-20R-Ethyldiacholestane (S17)	75.8	74.5	98	65-135
Unknown Sterane (S18)	21.3	19.4	91	65-135
13a,17b-20S-Ethyldiacholestane	3.9	4.40	113	65-135
14a,17a-20S-Methylcholestane	37.3	35.1	94	65-135
14a,17a-20R-Methylcholestane	34.5	30.3	88	65-135
14a(H),17a(H)-20S-Ethylcholestane	51.0	46.7	91	65-135
14a(H),17a(H)-20R-Ethylcholestane	39.5	40.5	103	65-135
14b(H),17b(H)-20R-Cholestane	41.5	42.0	101	65-135
14b(H),17b(H)-20S-Cholestane	42.5	42.3	100	65-135
14b,17b-20R-Methylcholestane	44.8	45.4	101	65-135
14b,17b-20S-Methylcholestane	55.4	56.0	101	65-135
14b(H),17b(H)-20R-Ethylcholestane	60.9	60.0	99	65-135
14b(H),17b(H)-20S-Ethylcholestane	40.3	36.1	90	65-135
C26,20R- +C27,20S- triaromatic steroid	293.9	244	83	65-135
C28,20S-triaromatic steroid	187.6	151	80	65-135
C27,20R-triaromatic steroid	180.2	148	82	65-135
C28,20R-triaromatic steroid	150.5	127	84	65-135

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded result.

Form III
Spike Recovery Summary
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS122712ANC04**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
N/A	N/A	N/A	100	PS

Parameter	True Conc.	Conc.	% Recovery	% Recovery Limits
cis/trans-Decalin	479.2	479	100	65-135
C1-Decalins	728.9	817	112	65-135
C2-Decalins	635.5	738	116	65-135
C3-Decalins	329.8	436	132	65-135
C4-Decalins	326.5	432	132	65-135
Benzothiophene	5.4	5.99	111	65-135
C1-Benzo(b)thiophenes	28.9	35.4	123	65-135
C2-Benzo(b)thiophenes	49.6	52.7	106	65-135
C3-Benzo(b)thiophenes	99.0	117	118	65-135
C4-Benzo(b)thiophenes	87.1	105	121	65-135
Naphthalene	555.8	560	101	65-135
C1-Naphthalenes	1167.3	1220	105	65-135
C2-Naphthalenes	1409.7	1570	111	65-135
C3-Naphthalenes	1035.9	1220	118	65-135
C4-Naphthalenes	561.1	717	128	65-135
Biphenyl	145.7	138	95	65-135
Dibenzofuran	51.2	51.5	101	65-135
Acenaphthylene	6.5	6.95	107	65-135
Acenaphthene	18.7	14.9	80	65-135
Fluorene	74.6	74.9	100	65-135
C1-Fluorenes	170.2	177	104	65-135
C2-Fluorenes	255.4	292	114	65-135
C3-Fluorenes	238.5	276	116	65-135
Phenanthrene	212.2	207	97	65-135
C1-Phenanthrenes/Anthracenes	432.7	448	104	65-135
C2-Phenanthrenes/Anthracenes	465.9	525	113	65-135
C3-Phenanthrenes/Anthracenes	317.4	377	119	65-135
C4-Phenanthrenes/Anthracenes	129	146	113	65-135
Dibenzothiophene	138.9	140	101	65-135
C1-Dibenzothiophenes	278.6	285	102	65-135
C2-Dibenzothiophenes	377.5	408	108	65-135
C3-Dibenzothiophenes	341.4	368	108	65-135
C4-Dibenzothiophenes	183.4	200	109	65-135

Form III
Spike Recovery Summary
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS122712ANC04**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
N/A	N/A	N/A	100	PS

Parameter	True Conc.	Conc.	% Recovery	% Recovery Limits
Fluoranthene	4.00	4.14	103	65-135
Pyrene	13.0	13.6	105	65-135
C1-Fluoranthenes/Pyrenes	63.1	60.4	96	65-135
C2-Fluoranthenes/Pyrenes	102.2	98.0	96	65-135
C3-Fluoranthenes/Pyrenes	119.6	114	96	65-135
C4-Fluoranthenes/Pyrenes	104	100	96	65-135
Naphthobenzothiophenes	43.8	40.6	93	65-135
C1-Naphthobenzothiophenes	117.2	112	96	65-135
C2-Naphthobenzothiophenes	163.3	145	89	65-135
C3-Naphthobenzothiophenes	128.7	108	84	65-135
C4-Naphthobenzothiophenes	89.0	77.1	87	65-135
Benz[a]anthracene	2.1	2.22	106	65-135
Chrysene/Triphenylene	35.2	36.9	105	65-135
C1-Chrysenes	62.8	69.1	110	65-135
C2-Chrysenes	86.0	84.5	98	65-135
C3-Chrysenes	97.6	107	110	65-135
C4-Chrysenes	59.4	58.8	99	65-135
Benzo[b]fluoranthene	5.2	4.96	95	65-135
Benzo[e]pyrene	9.8	9.60	98	65-135
Benzo[a]pyrene	1.9	1.51	79	65-135
Perylene	2.8	2.63	94	65-135
Benzo[g,h,i]perylene	3.1	3.24	104	65-135

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded result.

Form III
Spike Recovery Summary
Carbazole

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS122712ANC04**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
N/A	N/A	N/A	100	PS

Parameter	True Conc.	Conc.	% Recovery	% Recovery Limits
Carbazole	6.00	6.92	115	65-135

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded result.

Form III
Spike Recovery Summary
Polynuclear Aromatic Hydrocarbons Isomers

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS122712ANC04**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
N/A	N/A	N/A	100	PS

Parameter	True Conc.	Conc.	% Recovery	% Recovery Limits
4-Methyldibenzothiophene	131.8	137	104	65-135
2/3-Methyldibenzothiophene	97.5	97.4	100	65-135
1-Methyldibenzothiophene	44.2	43.7	99	65-135
3-Methylphenanthrene	89.4	93.5	105	65-135
2-Methylphenanthrene	97.7	103	106	65-135
2-Methylanthracene	3.2	3.37	105	65-135
9/4-Methylphenanthrene	141.2	144	102	65-135
1-Methylphenanthrene	97.4	104	106	65-135
2-Methylnaphthalene	1081.8	1090	101	65-135
1-Methylnaphthalene	784.8	791	101	65-135
2,6-Dimethylnaphthalene	649.9	635	98	65-135
2,3,5-Trimethylnaphthalene	152	161	106	65-135

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded result.

Form III
Spike Recovery Summary
Steranes and Triterpanes

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS122712ANC04**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
N/A	N/A	N/A	100	PS

Parameter	True Conc.	Conc.	% Recovery	% Recovery Limits
C23 Tricyclic Terpane	67.3	60.3	90	65-135
C24 Tricyclic Terpane	43.0	36.2	84	65-135
C25 Tricyclic Terpane	42.0	38.1	91	65-135
C24 Tetracyclic Terpane	14.8	12.7	86	65-135
C26 Tricyclic Terpane-22S	17.7	15.0	85	65-135
C26 Tricyclic Terpane-22R	15.4	13.7	89	65-135
C28 Tricyclic Terpane-22S	16.8	12.0	71	65-135
C28 Tricyclic Terpane-22R	18.1	14.7	81	65-135
C29 Tricyclic Terpane-22S	20.8	19.0	91	65-135
C29 Tricyclic Terpane-22R	22.6	17.9	79	65-135
18a-22,29,30-Trisnorneohopane-TS	31.3	23.6	75	65-135
C30 Tricyclic Terpane-22S	16.2	12.2	76	65-135
C30 Tricyclic Terpane-22R	16.4	14.7	90	65-135
17a(H)-22,29,30-Trisnorhopane-TM	37.8	29.7	79	65-135
17a/b,21b/a 28,30-Bisnorhopane	7.00	7.07	101	65-135
17a(H),21b(H)-25-Norhopane	8.7	8.27	95	65-135
30-Norhopane	99.7	87.6	88	65-135
18a(H)-30-Norneohopane-C29Ts	25.2	22.5	89	65-135
17a(H)-Diahopane	14.2	13.6	96	65-135
30-Normoretane	11.6	11.2	96	65-135
Hopane	173.6	144	83	65-135
Moretane	17.5	13.3	76	65-135
30-Homohopane-22S	75.1	61.2	81	65-135
30-Homohopane-22R	64.1	52.1	81	65-135
30,31-Bishomohopane-22S	53.6	44.5	83	65-135
30,31-Bishomohopane-22R	39.6	34.7	88	65-135
30,31-Trishomohopane-22S	41.8	35.7	85	65-135
30,31-Trishomohopane-22R	27.2	22.2	81	65-135
Tetrakishomohopane-22S	29.8	25.1	84	65-135
Tetrakishomohopane-22R	21.2	17.1	81	65-135
Pentakishomohopane-22S	30.2	26.7	88	65-135
Pentakishomohopane-22R	23.5	21.0	90	65-135
13b(H),17a(H)-20S-Diacholestane	50.0	46.3	93	65-135

Form III
Spike Recovery Summary
Steranes and Triterpanes

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS122712ANC04**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
N/A	N/A	N/A	100	PS

Parameter	True Conc.	Conc.	% Recovery	% Recovery Limits
13b(H),17a(H)-20R-Diacholestane	26.3	26.5	101	65-135
13b,17a-20S-Methyldiacholestane	25.7	24.6	96	65-135
14a(H),17a(H)-20S-Cholestane/ 13b(H),17a(H)-20S-Ethyldiacholestane (S12)	65.0	64.5	99	65-135
14a(H),17a(H)-20R-Cholestane/ 13b(H),17a(H)-20R-Ethyldiacholestane (S17)	75.8	74.4	98	65-135
Unknown Sterane (S18)	21.3	19.6	92	65-135
13a,17b-20S-Ethyldiacholestane	3.9	4.07	104	65-135
14a,17a-20S-Methylcholestane	37.3	32.4	87	65-135
14a,17a-20R-Methylcholestane	34.5	31.2	90	65-135
14a(H),17a(H)-20S-Ethylcholestane	51.0	48.1	94	65-135
14a(H),17a(H)-20R-Ethylcholestane	39.5	41.4	105	65-135
14b(H),17b(H)-20R-Cholestane	41.5	39.8	96	65-135
14b(H),17b(H)-20S-Cholestane	42.5	40.4	95	65-135
14b,17b-20R-Methylcholestane	44.8	42.5	95	65-135
14b,17b-20S-Methylcholestane	55.4	55.0	99	65-135
14b(H),17b(H)-20R-Ethylcholestane	60.9	55.4	91	65-135
14b(H),17b(H)-20S-Ethylcholestane	40.3	38.2	95	65-135
C26,20R- +C27,20S- triaromatic steroid	293.9	244	83	65-135
C28,20S-triaromatic steroid	187.6	148	79	65-135
C27,20R-triaromatic steroid	180.2	148	82	65-135
C28,20R-triaromatic steroid	150.5	126	83	65-135

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded result.

12/28/12 09:12

Form III
Spike Recovery Summary
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **ST120612ANC03**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
N/A	N/A	N/A	100	PS

Parameter	True Conc.	Conc.	% Recovery	% Recovery Limits
cis/trans-Decalin	479.2	461	96	65-135
C1-Decalins	728.9	774	106	65-135
C2-Decalins	635.5	691	109	65-135
C3-Decalins	329.8	406	123	65-135
C4-Decalins	326.5	430	132	65-135
Benzothiophene	5.4	5.41	100	65-135
C1-Benzo(b)thiophenes	28.9	33.5	116	65-135
C2-Benzo(b)thiophenes	49.6	51.0	103	65-135
C3-Benzo(b)thiophenes	99.0	111	112	65-135
C4-Benzo(b)thiophenes	87.1	98.4	113	65-135
Naphthalene	555.8	530	95	65-135
C1-Naphthalenes	1167.3	1200	102	65-135
C2-Naphthalenes	1409.7	1540	109	65-135
C3-Naphthalenes	1035.9	1200	115	65-135
C4-Naphthalenes	561.1	682	122	65-135
Biphenyl	145.7	139	95	65-135
Dibenzofuran	51.2	49.9	98	65-135
Acenaphthylene	6.5	6.65	102	65-135
Acenaphthene	18.7	16.4	88	65-135
Fluorene	74.6	72.2	97	65-135
C1-Fluorenes	170.2	171	100	65-135
C2-Fluorenes	255.4	274	107	65-135
C3-Fluorenes	238.5	263	110	65-135
Phenanthrene	212.2	201	95	65-135
C1-Phenanthrenes/Anthracenes	432.7	438	101	65-135
C2-Phenanthrenes/Anthracenes	465.9	491	105	65-135
C3-Phenanthrenes/Anthracenes	317.4	335	106	65-135
C4-Phenanthrenes/Anthracenes	129	128	99	65-135
Dibenzothiophene	138.9	136	98	65-135
C1-Dibenzothiophenes	278.6	279	100	65-135
C2-Dibenzothiophenes	377.5	386	102	65-135
C3-Dibenzothiophenes	341.4	347	102	65-135
C4-Dibenzothiophenes	183.4	183	100	65-135

Form III
Spike Recovery Summary
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **ST120612ANC03**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
N/A	N/A	N/A	100	PS

Parameter	True Conc.	Conc.	% Recovery	% Recovery Limits
Fluoranthene	4.00	4.15	104	65-135
Pyrene	13.0	13.1	100	65-135
C1-Fluoranthenes/Pyrenes	63.1	58.5	93	65-135
C2-Fluoranthenes/Pyrenes	102.2	88.0	86	65-135
C3-Fluoranthenes/Pyrenes	119.6	106	88	65-135
C4-Fluoranthenes/Pyrenes	104	88.2	85	65-135
Naphthobenzothiophenes	43.8	40.3	92	65-135
C1-Naphthobenzothiophenes	117.2	104	88	65-135
C2-Naphthobenzothiophenes	163.3	134	82	65-135
C3-Naphthobenzothiophenes	128.7	100	78	65-135
C4-Naphthobenzothiophenes	89.0	72.6	82	65-135
Benz[a]anthracene	2.1	2.27	108	65-135
Chrysene/Triphenylene	35.2	36.8	104	65-135
C1-Chrysenes	62.8	67.6	108	65-135
C2-Chrysenes	86.0	86.5	101	65-135
C3-Chrysenes	97.6	98.9	101	65-135
C4-Chrysenes	59.4	55.0	93	65-135
Benzo[b]fluoranthene	5.2	4.94	95	65-135
Benzo[e]pyrene	9.8	10.2	104	65-135
Benzo[a]pyrene	1.9	1.97	104	65-135
Perylene	2.8	3.31	118	65-135
Benzo[g,h,i]perylene	3.1	3.53	114	65-135

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded result.

Form III
Spike Recovery Summary
Carbazole

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **ST120612ANC03**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
N/A	N/A	N/A	100	PS

Parameter	True Conc.	Conc.	% Recovery	% Recovery Limits
Carbazole	6.00	5.61	93	65-135

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded result.

Form III
Spike Recovery Summary
Polynuclear Aromatic Hydrocarbons Isomers

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **ST120612ANC03**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
N/A	N/A	N/A	100	PS

Parameter	True Conc.	Conc.	% Recovery	% Recovery Limits
4-Methyldibenzothiophene	131.8	132	100	65-135
2/3-Methyldibenzothiophene	97.5	97.8	100	65-135
1-Methyldibenzothiophene	44.2	42.9	97	65-135
3-Methylphenanthrene	89.4	90.8	102	65-135
2-Methylphenanthrene	97.7	97.7	100	65-135
2-Methylanthracene	3.2	2.75	86	65-135
9/4-Methylphenanthrene	141.2	146	103	65-135
1-Methylphenanthrene	97.4	94.0	97	65-135
2-Methylnaphthalene	1081.8	1070	99	65-135
1-Methylnaphthalene	784.8	776	99	65-135
2,6-Dimethylnaphthalene	649.9	620	95	65-135
2,3,5-Trimethylnaphthalene	152	145	95	65-135

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded result.

Form III
Spike Recovery Summary
Steranes and Triterpanes

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **ST120612ANC03**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
N/A	N/A	N/A	100	PS

Parameter	True Conc.	Conc.	% Recovery	% Recovery Limits
C23 Tricyclic Terpane	67.3	61.2	91	65-135
C24 Tricyclic Terpane	43.0	39.6	92	65-135
C25 Tricyclic Terpane	42.0	37.4	89	65-135
C24 Tetracyclic Terpane	14.8	12.5	84	65-135
C26 Tricyclic Terpane-22S	17.7	14.8	83	65-135
C26 Tricyclic Terpane-22R	15.4	13.5	88	65-135
C28 Tricyclic Terpane-22S	16.8	14.6	87	65-135
C28 Tricyclic Terpane-22R	18.1	15.8	88	65-135
C29 Tricyclic Terpane-22S	20.8	19.1	92	65-135
C29 Tricyclic Terpane-22R	22.6	19.8	87	65-135
18a-22,29,30-Trisnorneohopane-TS	31.3	28.7	92	65-135
C30 Tricyclic Terpane-22S	16.2	15.0	93	65-135
C30 Tricyclic Terpane-22R	16.4	15.1	92	65-135
17a(H)-22,29,30-Trisnorhopane-TM	37.8	33.6	89	65-135
17a/b,21b/a 28,30-Bisnorhopane	7.00	6.29	90	65-135
17a(H),21b(H)-25-Norhopane	8.7	7.55	87	65-135
30-Norhopane	99.7	94.0	94	65-135
18a(H)-30-Norneohopane-C29Ts	25.2	23.5	93	65-135
17a(H)-Diahopane	14.2	14.1	99	65-135
30-Normoretane	11.6	11.2	96	65-135
Hopane	173.6	156	90	65-135
Moretane	17.5	16.6	95	65-135
30-Homohopane-22S	75.1	66.8	89	65-135
30-Homohopane-22R	64.1	57.2	89	65-135
30,31-Bishomohopane-22S	53.6	48.3	90	65-135
30,31-Bishomohopane-22R	39.6	37.0	94	65-135
30,31-Trishomohopane-22S	41.8	38.2	91	65-135
30,31-Trishomohopane-22R	27.2	26.2	96	65-135
Tetrakishomohopane-22S	29.8	26.8	90	65-135
Tetrakishomohopane-22R	21.2	18.8	89	65-135
Pentakishomohopane-22S	30.2	28.6	95	65-135
Pentakishomohopane-22R	23.5	23.3	99	65-135
13b(H),17a(H)-20S-Diacholestane	50.0	50.7	101	65-135

Form III
Spike Recovery Summary
Steranes and Triterpanes

ALPHA ANALYTICAL

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **ST120612ANC03**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
N/A	N/A	N/A	100	PS

Parameter	True Conc.	Conc.	% Recovery	% Recovery Limits
13b(H),17a(H)-20R-Diacholestane	26.3	25.0	95	65-135
13b,17a-20S-Methyldiacholestane	25.7	23.6	92	65-135
14a(H),17a(H)-20S-Cholestane/ 13b(H),17a(H)-20S-Ethyldiacholestane (S12)	65.0	61.0	94	65-135
14a(H),17a(H)-20R-Cholestane/ 13b(H),17a(H)-20R-Ethyldiacholestane (S17)	75.8	72.9	96	65-135
Unknown Sterane (S18)	21.3	20.4	96	65-135
13a,17b-20S-Ethyldiacholestane	3.9	3.86	99	65-135
14a,17a-20S-Methylcholestane	37.3	31.8	85	65-135
14a,17a-20R-Methylcholestane	34.5	32.7	95	65-135
14a(H),17a(H)-20S-Ethylcholestane	51.0	52.1	102	65-135
14a(H),17a(H)-20R-Ethylcholestane	39.5	38.6	98	65-135
14b(H),17b(H)-20R-Cholestane	41.5	40.6	98	65-135
14b(H),17b(H)-20S-Cholestane	42.5	41.3	97	65-135
14b,17b-20R-Methylcholestane	44.8	45.6	102	65-135
14b,17b-20S-Methylcholestane	55.4	54.9	99	65-135
14b(H),17b(H)-20R-Ethylcholestane	60.9	59.9	98	65-135
14b(H),17b(H)-20S-Ethylcholestane	40.3	40.0	99	65-135
C26,20R- +C27,20S- triaromatic steroid	293.9	247	84	65-135
C28,20S-triaromatic steroid	187.6	156	83	65-135
C27,20R-triaromatic steroid	180.2	148	82	65-135
C28,20R-triaromatic steroid	150.5	127	84	65-135

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded result.

Duplicate
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AD121312D010**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-03**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
12/13/12	12/14/12	12/20/12	79.0	PS

Parameter	Sample Result	Duplicate Result	RPD	RPD Limit
cis/trans-Decalin	0.518 J	0.508 J	2	30
C1-Decalins	1.86	1.97	6	30
C2-Decalins	4.33	4.48	3	30
C3-Decalins	5.79	4.50	25	30
C4-Decalins	8.91	7.77	14	30
Benzothiophene	1.82	1.67	9	30
C1-Benzo(b)thiophenes	1.71	1.89	10	30
C2-Benzo(b)thiophenes	3.14	3.43	9	30
C3-Benzo(b)thiophenes	7.37	6.82	8	30
C4-Benzo(b)thiophenes	5.29	4.95	7	30
Naphthalene	39.5	49.2	22	30
C1-Naphthalenes	16.2	37.2	79[a]	30
C2-Naphthalenes	44.1	70.4	46[a]	30
C3-Naphthalenes	76.3	84.0	10	30
C4-Naphthalenes	54.8	53.3	3	30
Biphenyl	10.1	16.8	49[a]	30
Dibenzofuran	21.0	77.9	115[a]	30
Acenaphthylene	71.4	70.9	1	30
Acenaphthene	40.3	119	98[a]	30
Fluorene	56.9	128	77[a]	30
C1-Fluorenes	67.7	78.9	15	30
C2-Fluorenes	78.5	85.6	9	30
C3-Fluorenes	52.6	67.8	25	30
Anthracene	275	336	20	30
Phenanthrene	707	1330	61[a]	30
C1-Phenanthrenes/Anthracenes	567	642	12	30
C2-Phenanthrenes/Anthracenes	370	388	5	30
C3-Phenanthrenes/Anthracenes	148	147	1	30
C4-Phenanthrenes/Anthracenes	47.1	45.2	4	30
Retene	0.134 U	0.134 U	N/A	30
Dibenzothiophene	40.5	74.8	59[a]	30
C1-Dibenzothiophenes	54.4	86.1	45[a]	30
C2-Dibenzothiophenes	61.7	122	65[a]	30
C3-Dibenzothiophenes	37.4	67.4	57[a]	30
C4-Dibenzothiophenes	14.7	19.8	29	30

N/A - Not Applicable
[a] - Value outside of QC Limits.
J - Estimated value, below quantitation limit.
U - The analyte was analyzed for but not detected at the sample specific level reported.

Duplicate
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AD121312D010**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-03**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
12/13/12	12/14/12	12/20/12	79.0	PS

Parameter	Sample Result	Duplicate Result	RPD	RPD Limit
Benzo(b)fluorene	268	270	1	30
Fluoranthene	1930	2370	21	30
Pyrene	1860	2200	17	30
C1-Fluoranthenes/Pyrenes	991	1060	7	30
C2-Fluoranthenes/Pyrenes	333	384	14	30
C3-Fluoranthenes/Pyrenes	130	141	8	30
C4-Fluoranthenes/Pyrenes	71.8	78.2	9	30
Naphthobenzothiophenes	171	270	45[a]	30
C1-Naphthobenzothiophenes	104	237	78[a]	30
C2-Naphthobenzothiophenes	53.0	113	73[a]	30
C3-Naphthobenzothiophenes	27.0	43.2	46[a]	30
C4-Naphthobenzothiophenes	12.5	17.3	32[a]	30
Benz[a]anthracene	1000	1050	5	30
Chrysene/Triphenylene	922	984	7	30
C1-Chrysenes	435	459	5	30
C2-Chrysenes	185	191	3	30
C3-Chrysenes	117	115	2	30
C4-Chrysenes	38.8	37.9	3	30
Benzo[b]fluoranthene	747	769	3	30
Benzo[j]fluoranthene/Benzo[k]fluoranthene	815	861	6	30
Benzo[a]fluoranthene	216	210	3	30
Benzo[e]pyrene	605	624	3	30
Benzo[a]pyrene	1030	1060	2	30
Perylene	255	261	2	30
Indeno[1,2,3-cd]pyrene	602	606	1	30
Dibenz[ah]anthracene/Dibenz[ac]anthracene	175	172	2	30
Benzo[g,h,i]perylene	604	595	2	30

Surrogate	% Recovery		Acceptance Range (%)
Naphthalene-d8	65	62	40-120
Phenanthrene-d10	83	82	40-120
Benzo[a]pyrene-d12	74	74	40-120

N/A - Not Applicable
[a] - Value outside of QC Limits.

Concentrations reported as calculated values, which includes rounding for significant figures. RPD values are reported based on the unrounded calculated result.

Duplicate
Carbazole

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AD121312D010**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-03**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
12/13/12	12/14/12	12/20/12	79.0	PS

Parameter	Sample Result	Duplicate Result	RPD	RPD Limit
Carbazole	**19.6**	**84.1**	124[a]	30

Surrogate	% Recovery		Acceptance Range (%)
Naphthalene-d8	65	62	40-120
Phenanthrene-d10	83	82	40-120
Benzo[a]pyrene-d12	74	74	40-120

N/A - Not Applicable
[a] - Value outside of QC Limits.

Concentrations reported as calculated values, which includes rounding for significant figures. RPD values are reported based on the unrounded calculated result.

Duplicate
Polynuclear Aromatic Hydrocarbons Isomers

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AD121312D010**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-03**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
12/13/12	12/14/12	12/20/12	79.0	PS

Parameter	Sample Result	Duplicate Result	RPD	RPD Limit
4-Methyldibenzothiophene	17.3	31.8	59[a]	30
2/3-Methyldibenzothiophene	18.8	31.9	52[a]	30
1-Methyldibenzothiophene	6.89	8.76	24	30
3-Methylphenanthrene	112	130	16	30
2-Methylphenanthrene	139	164	16	30
2-Methylanthracene	89.4	81.8	9	30
9/4-Methylphenanthrene	128	148	14	30
1-Methylphenanthrene	89.6	108	18	30
2-Methylnaphthalene	14.6	32.1	75[a]	30
1-Methylnaphthalene	9.79	26.3	91[a]	30
2,6-Dimethylnaphthalene	15.0	23.9	46[a]	30
2,3,5-Trimethylnaphthalene	11.9	12.7	6	30
Naphthobenzothiophene-2,1-D	108	178	48[a]	30
Naphthobenzothiophene-1,2-D	25.2	32.8	26	30
Naphthobenzothiophene-2,3-D	37.3	59.3	46[a]	30

Surrogate	% Recovery		Acceptance Range (%)
Naphthalene-d8	65	62	40-120
Phenanthrene-d10	83	82	40-120
Benzo[a]pyrene-d12	74	74	40-120

N/A - Not Applicable
[a] - Value outside of QC Limits.

Concentrations reported as calculated values, which includes rounding for significant figures. RPD values are reported based on the unrounded calculated result.

Duplicate
Steranes and Triterpanes

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AD121312D010**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-03**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
12/13/12	12/14/12	12/20/12	79.0	PS

Parameter	Sample Result	Duplicate Result	RPD	RPD Limit
C23 Tricyclic Terpane	5.14	5.57	8	30
C24 Tricyclic Terpane	3.87	4.24	9	30
C25 Tricyclic Terpane	7.61 G	7.74 G	2	30
C24 Tetracyclic Terpane	3.72	4.15	11	30
C26 Tricyclic Terpane-22S	2.90	3.80	27	30
C26 Tricyclic Terpane-22R	1.72	2.60	40[a]	30
C28 Tricyclic Terpane-22S	1.74	2.18	22	30
C28 Tricyclic Terpane-22R	2.66	3.45	26	30
C29 Tricyclic Terpane-22S	2.39	3.30	32[a]	30
C29 Tricyclic Terpane-22R	1.87	2.91	43[a]	30
18a-22,29,30-Trisnorneohopane-TS	9.39	10.6	12	30
C30 Tricyclic Terpane-22S	2.45	3.96	47[a]	30
C30 Tricyclic Terpane-22R	2.19	2.94	29	30
17a(H)-22,29,30-Trisnorhopane-TM	11.6	13.1	12	30
17a/b,21b/a 28,30-Bisnorhopane	1.85	2.15	15	30
17a(H),21b(H)-25-Norhopane	1.82	2.74	40[a]	30
30-Norhopane	32.7	33.7	3	30
18a(H)-30-Norneohopane-C29Ts	9.57	9.89	3	30
17a(H)-Diahopane	3.81	3.74	2	30
30-Normoretane	5.22	5.79	10	30
18a(H)&18b(H)-Oleananes	3.35	3.82	13	30
Hopane	46.0	48.9	6	30
Moretane	8.35	7.17	15	30
30-Homohopane-22S	16.7	17.3	4	30
30-Homohopane-22R	12.9	16.3	23	30
T22a-Gammacerane/C32-diahopane	4.70	3.90	19	30
30,31-Bishomohopane-22S	31.1 G	35.5 G	13	30
30,31-Bishomohopane-22R	7.41	8.36	12	30
30,31-Trishomohopane-22S	8.50	9.37	10	30
30,31-Trishomohopane-22R	4.38	4.94	12	30
Tetrakishomohopane-22S	4.90	7.60	43[a]	30
Tetrakishomohopane-22R	7.04 G	21.2 G	100[a]	30
Pentakishomohopane-22S	3.83	4.21	9	30
Pentakishomohopane-22R	3.74	3.16	17	30
13b(H),17a(H)-20S-Diacholestane	7.36	8.91	19	30

N/A - Not Applicable
[a] - Value outside of QC Limits.
G - Matrix Interference

Duplicate
Steranes and Triterpanes

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AD121312D010**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-03**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
12/13/12	12/14/12	12/20/12	79.0	PS

Parameter	Sample Result	Duplicate Result	RPD	RPD Limit
13b(H),17a(H)-20R-Diacholestane	**3.85**	**4.94**	25	30
13b,17a-20S-Methyldiacholestane	**5.50**	**5.64**	2	30
14a(H),17a(H)-20S-Cholestane/ 13b(H),17a(H)-20S-Ethyldiacholestane (S12)	**15.1**	**18.9**	22	30
14a(H),17a(H)-20R-Cholestane/ 13b(H),17a(H)-20R-Ethyldiacholestane (S17)	**14.9**	**17.8**	18	30
Unknown Sterane (S18)	**3.82**	**4.95**	26	30
13a,17b-20S-Ethyldiacholestane	**0.488** J	**0.597** J	20	30
14a,17a-20S-Methylcholestane	**7.27**	**8.30**	13	30
14a,17a-20R-Methylcholestane	**5.17**	**5.89**	13	30
14a(H),17a(H)-20S-Ethylcholestane	**9.10**	**9.93**	9	30
14a(H),17a(H)-20R-Ethylcholestane	**8.09**	**10.4**	25	30
14b(H),17b(H)-20R-Cholestane	**5.55**	**7.82**	34[a]	30
14b(H),17b(H)-20S-Cholestane	**6.20**	**8.62**	33[a]	30
14b,17b-20R-Methylcholestane	**7.73**	**8.94**	15	30
14b,17b-20S-Methylcholestane	**11.8**	**14.8**	23	30
14b(H),17b(H)-20R-Ethylcholestane	**15.6**	**19.0**	20	30
14b(H),17b(H)-20S-Ethylcholestane	**10.6**	**14.0**	27	30
C26,20R- +C27,20S- triaromatic steroid	**12.1**	**11.3**	6	30
C28,20S-triaromatic steroid	**16.9**	**15.7**	7	30
C27,20R-triaromatic steroid	**8.45**	**7.75**	9	30
C28,20R-triaromatic steroid	**11.9**	**10.3**	14	30

Surrogate	% Recovery		Acceptance Range (%)
5B(H)Cholane	76	76	50-130

N/A - Not Applicable
[a] - Value outside of QC Limits.
J - Estimated value, below quantitation limit.

Concentrations reported as calculated values, which includes rounding for significant figures. RPD values are reported based on the unrounded calculated result.

Form IV
Method Blank Summary
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**

Case: **N/A** SDG: **N/A**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS121812B06**
Date Analyzed: **12/22/12 16:03**

Client ID	Lab ID	Date/Time Analyzed
LCS	SS121812LCS06	12/22/12 17:27
LCSD	SS121812LCSD06	12/22/12 18:52
SRM 1941b	SS121812C41BN02	12/22/12 20:16
SEKR0000R024AS121312D006	1212022-01	12/23/12 04:44
SEKR0000R024AS121312D010	1212022-02	12/23/12 06:09
SEKR0000R024AS121312D010	1212022-02 M	12/23/12 07:33
SEKR0000R024AS121312D010	1212022-02 S	12/23/12 08:58
SEKR0000R024AD121312D010	1212022-03	12/23/12 10:22
SEKR0000R024AD121312D010	1212022-03 D	12/23/12 11:47
SEKR0000R024AS121312D013	1212022-04	12/23/12 13:12
SEKR0000R024AS121312D013	1212022-04E	12/26/12 21:24

N/A - Not Applicable

Form VIII
Internal Standard Summary
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **C912221201**

Case: **N/A** SDG: **N/A**

		Chrysene-d12		Acenaphthene-d10	
		Area	**RT**	**Area**	**RT**
Standard:		128366	42.56	68298	26.16
Upper Limit:		256732	43.06	136596	26.66
Lower Limit:		64183	42.06	34149	25.66
Client ID	**Lab ID**				
Blank	SS121812B06	110962	42.56	60861	26.16
LCS	SS121812LCS06	118972	42.56	62102	26.16
LCSD	SS121812LCSD06	119353	42.56	61901	26.16
SRM 1941b	SS121812C41BN02	118898	42.55	61844	26.16
CCV	C912221202	139545	42.56	73430	26.16

N/A - Not Applicable

Area Upper Limit = +100% of internal standard.
Area Lower Limit = -50% of internal standard.
RT = Retention Time.
RT Upper Limit = +0.5 minutes of internal standard RT.
RT Lower Limit = -0.5 minutes of internal standard RT.

Form VIII
Internal Standard Summary
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **AECOM** Lab Code: **MA00030**

Project: **Enbridge Line 6B MP 608** ETR: **1212022**

Lab ID: **C912221202**

Case: **N/A** SDG: **N/A**

		Chrysene-d12		Acenaphthene-d10	
		Area	RT	Area	RT
Standard:		139545	42.56	73430	26.16
Upper Limit:		279090	43.06	146860	26.66
Lower Limit:		69772	42.06	36715	25.66
Client ID	**Lab ID**				
SEKR0000R024AS121312D006	1212022-01	128108	42.56	68487	26.16
SEKR0000R024AS121312D010	1212022-02	121367	42.56	64600	26.16
SEKR0000R024AS121312D010	1212022-02 M	121949	42.56	65184	26.16
SEKR0000R024AS121312D010	1212022-02 S	122291	42.56	64876	26.16
SEKR0000R024AD121312D010	1212022-03	125525	42.56	66179	26.16
SEKR0000R024AD121312D010	1212022-03 D	124368	42.56	66885	26.16
SEKR0000R024AS121312D013	1212022-04	127701	42.57	68010	26.16
CCV	C912221203	147905	42.56	77006	26.16

N/A - Not Applicable

Area Upper Limit = +100% of internal standard.
Area Lower Limit = -50% of internal standard.
RT = Retention Time.
RT Upper Limit = +0.5 minutes of internal standard RT.
RT Lower Limit = -0.5 minutes of internal standard RT.

Form VIII
Internal Standard Summary
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **C912261202**

Case: **N/A** SDG: **N/A**

		Chrysene-d12		Acenaphthene-d10	
		Area	RT	Area	RT
Standard:		102349	42.46	57717	26.06
Upper Limit:		204698	42.96	115434	26.56
Lower Limit:		51174	41.96	28858	25.56
Client ID	**Lab ID**				
SEKR0000R024AS121312D013	1212022-04E	180853	42.47	94634	26.06
CCV	C912261203	101243	42.46	54255	26.06

N/A - Not Applicable

Area Upper Limit = +100% of internal standard.
Area Lower Limit = -50% of internal standard.
RT = Retention Time.
RT Upper Limit = +0.5 minutes of internal standard RT.
RT Lower Limit = -0.5 minutes of internal standard RT.

Form I
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AS121312D006**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-01**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
12/13/12	12/14/12	12/20/12	12/23/12	78.2	15.95	2	1	PS

Parameter	Result	
cis/trans-Decalin	0.397	J
C1-Decalins	1.44	J
C2-Decalins	3.83	
C3-Decalins	3.67	
C4-Decalins	5.98	
Benzothiophene	1.41	J
C1-Benzo(b)thiophenes	1.50	J
C2-Benzo(b)thiophenes	2.32	
C3-Benzo(b)thiophenes	5.67	
C4-Benzo(b)thiophenes	4.13	
Naphthalene	29.6	
C1-Naphthalenes	10.4	
C2-Naphthalenes	27.2	
C3-Naphthalenes	52.3	
C4-Naphthalenes	37.6	
Biphenyl	8.52	
Dibenzofuran	13.6	
Acenaphthylene	57.1	
Acenaphthene	33.3	
Fluorene	36.0	
C1-Fluorenes	50.8	
C2-Fluorenes	50.4	
C3-Fluorenes	32.0	
Anthracene	167	
Phenanthrene	428	
C1-Phenanthrenes/Anthracenes	340	
C2-Phenanthrenes/Anthracenes	221	
C3-Phenanthrenes/Anthracenes	89.3	
C4-Phenanthrenes/Anthracenes	30.7	
Retene	0.131	U
Dibenzothiophene	24.8	
C1-Dibenzothiophenes	32.7	
C2-Dibenzothiophenes	37.2	
C3-Dibenzothiophenes	24.8	
C4-Dibenzothiophenes	10.4	
Benzo(b)fluorene	160	
Fluoranthene	1220	
Pyrene	1200	
C1-Fluoranthenes/Pyrenes	597	
C2-Fluoranthenes/Pyrenes	195	
C3-Fluoranthenes/Pyrenes	77.7	
C4-Fluoranthenes/Pyrenes	41.5	
Naphthobenzothiophenes	94.5	
C1-Naphthobenzothiophenes	58.4	
C2-Naphthobenzothiophenes	32.8	
C3-Naphthobenzothiophenes	18.9	
C4-Naphthobenzothiophenes	10.8	
Benz[a]anthracene	576	
Chrysene/Triphenylene	524	
C1-Chrysenes	246	
C2-Chrysenes	114	
C3-Chrysenes	74.2	
C4-Chrysenes	27.5	
Benzo[b]fluoranthene	450	
Benzo[j]fluoranthene/Benzo[k]fluoranthene	463	
Benzo[a]fluoranthene	130	
Benzo[e]pyrene	360	
Benzo[a]pyrene	628	
Perylene	156	
Indeno[1,2,3-cd]pyrene	351	
Dibenz[ah]anthracene/Dibenz[ac]anthracene	93.1	
Benzo[g,h,i]perylene	350	

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	64	40-120
Phenanthrene-d10	82	40-120
Benzo[a]pyrene-d12	75	40-120

N/A - Not Applicable
J - Estimated value, below quantitation limit.
U - The analyte was analyzed for but not detected at the sample specific level reported.

Form I
Carbazole

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AS121312D006**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-01**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
12/13/12	12/14/12	12/20/12	12/23/12	78.2	15.95	2	1	PS

Parameter	Result
Carbazole	7.96

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	64	40-120
Phenanthrene-d10	82	40-120
Benzo[a]pyrene-d12	75	40-120

N/A - Not Applicable

Form I
Polynuclear Aromatic Hydrocarbons Isomers

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AS121312D006**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-01**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
12/13/12	12/14/12	12/20/12	12/23/12	78.2	15.95	2	1	PS

Parameter	Result
4-Methyldibenzothiophene	**10.2**
2/3-Methyldibenzothiophene	**11.7**
1-Methyldibenzothiophene	**4.33**
3-Methylphenanthrene	**65.4**
2-Methylphenanthrene	**77.8**
2-Methylanthracene	**52.8**
9/4-Methylphenanthrene	**82.4**
1-Methylphenanthrene	**55.0**
2-Methylnaphthalene	**10.6**
1-Methylnaphthalene	**5.83**
2,6-Dimethylnaphthalene	**9.52**
2,3,5-Trimethylnaphthalene	7.74
Naphthobenzothiophene-2,1-D	**59.2**
Naphthobenzothiophene-1,2-D	**13.9**
Naphthobenzothiophene-2,3-D	**21.4**

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	64	40-120
Phenanthrene-d10	82	40-120
Benzo[a]pyrene-d12	75	40-120

N/A - Not Applicable

Form I
Steranes and Triterpanes

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AS121312D006**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-01**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
12/13/12	12/14/12	12/20/12	12/23/12	78.2	15.95	2	1	PS

Parameter	Result		Parameter	Result	
C23 Tricyclic Terpane	**5.73**		30,31-Trishomohopane-22S	**10.6**	
C24 Tricyclic Terpane	**3.80**		30,31-Trishomohopane-22R	**4.75**	
C25 Tricyclic Terpane	**79.6**	G	Tetrakishomohopane-22S	**18.3**	G
C24 Tetracyclic Terpane	**4.24**		Tetrakishomohopane-22R	**18.8**	G
C26 Tricyclic Terpane-22S	**3.38**		Pentakishomohopane-22S	**5.38**	
C26 Tricyclic Terpane-22R	**2.16**		Pentakishomohopane-22R	**3.60**	
C28 Tricyclic Terpane-22S	**1.91**		13b(H),17a(H)-20S-Diacholestane	**7.97**	
C28 Tricyclic Terpane-22R	**2.46**		13b(H),17a(H)-20R-Diacholestane	**5.25**	
C29 Tricyclic Terpane-22S	**3.08**		13b,17a-20S-Methyldiacholestane	**5.65**	
C29 Tricyclic Terpane-22R	**2.01**		14a(H),17a(H)-20S-Cholestane/ 13b(H),17a(H)-20S-Ethyldiacholestane (S12)	**15.8**	
18a-22,29,30-Trisnorneohopane-TS	**10.2**		14a(H),17a(H)-20R-Cholestane/ 13b(H),17a(H)-20R-Ethyldiacholestane (S17)	**15.3**	
C30 Tricyclic Terpane-22S	**3.60**		Unknown Sterane (S18)	**4.51**	
C30 Tricyclic Terpane-22R	**1.74**		13a,17b-20S-Ethyldiacholestane	**0.650**	J
17a(H)-22,29,30-Trisnorhopane-TM	**13.4**		14a,17a-20S-Methylcholestane	**7.18**	
17a/b,21b/a 28,30-Bisnorhopane	**2.01**		14a,17a-20R-Methylcholestane	**5.31**	
17a(H),21b(H)-25-Norhopane	**4.67**		14a(H),17a(H)-20S-Ethylcholestane	**8.65**	
30-Norhopane	**37.3**		14a(H),17a(H)-20R-Ethylcholestane	**8.40**	
18a(H)-30-Norneohopane-C29Ts	**9.91**		14b(H),17b(H)-20R-Cholestane	**6.95**	
17a(H)-Diahopane	**3.59**		14b(H),17b(H)-20S-Cholestane	**7.52**	
30-Normoretane	**6.46**		14b,17b-20R-Methylcholestane	**8.03**	
18a(H)&18b(H)-Oleananes	**3.67**		14b,17b-20S-Methylcholestane	**12.1**	
Hopane	**50.0**		14b(H),17b(H)-20R-Ethylcholestane	**16.7**	
Moretane	**8.15**		14b(H),17b(H)-20S-Ethylcholestane	**12.5**	
30-Homohopane-22S	**18.9**		C26,20R- +C27,20S- triaromatic steroid	**10.1**	
30-Homohopane-22R	**17.1**		C28,20S-triaromatic steroid	**13.3**	
T22a-Gammacerane/C32-diahopane	**4.92**		C27,20R-triaromatic steroid	**7.62**	
30,31-Bishomohopane-22S	**50.1**	G	C28,20R-triaromatic steroid	**9.09**	
30,31-Bishomohopane-22R	**9.20**				

Surrogate	% Recovery	Acceptance Range (%)
5B(H)Cholane	82	50-130

N/A - Not Applicable
J - Estimated value, below quantitation limit.
G - Matrix Interference

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009586.D
Acq On : 23 Dec 2012 4:44 am
Operator : ps
Sample : 1212022-01
Misc : 1X
ALS Vial : 15 Sample Multiplier: 1

KW tmmjs 12/27/12

Quant Time: Dec 27 16:07:18 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.156	164	68487	500.000	ng/mL	0.00
74) Chrysene-d12	42.558	240	128108	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.230	136	421932	1602.871	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 160.29%#			
42) Phenanthrene-d10	31.995	188	509401	2062.134	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 206.21%#			
83) Benzo[b]fluoranthene-d12	46.451	264	466155	1979.536	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 197.95%#			
88) Benzo[a]pyrene-d12	47.576	264	444729	1883.962	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 188.40%#			
129) 5B(H)Cholane - Surr	43.188	217	110303	2051.008	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 205.10%#			
Target Compounds						Qvalue
3) trans-Decalin	15.899	138	149M4	2.475	ng/mL	
5) C1-Decalins	17.824	152	540M5	8.969	ng/mL	
6) C2-Decalins	19.138	166	1438M5	23.883	ng/mL	
7) C3-Decalins	21.593	180	1378M5	22.886	ng/mL	
8) C4-Decalins	24.960	194	2247M5	37.319	ng/mL	
10) Naphthalene	19.303	128	49796	184.339	ng/mL#	100
11) C1-Naphthalenes	21.995	142	17588M5	65.109	ng/mL	
12) C2-Naphthalenes	24.814	156	45885M5	169.861	ng/mL	
13) C3-Naphthalenes	27.141	170	88078M5	326.055	ng/mL	
14) C4-Naphthalenes	31.138	184	63342M5	234.485	ng/mL	
16) 2-Methylnaphthalene	21.995	142	11642	65.901	ng/mL#	100
17) 1-Methylnaphthalene	22.405	142	6232	36.351	ng/mL#	100
18) Benzothiophene	19.531	134	1986M4	8.785	ng/mL	
19) C1-Benzo(b)thiophenes	22.168	148	2121M5	9.382	ng/mL	
20) C2-Benzo(b)thiophenes	24.532	162	3276M5	14.492	ng/mL	
21) C3-Benzo(b)thiophenes	26.621	176	7990M5	35.344	ng/mL	
22) C4-Benzo(b)thiophenes	29.067	190	5826M5	25.772	ng/mL	
23) Biphenyl	23.865	154	12292	53.171	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.477	156	9866	59.411	ng/mL#	100
25) Dibenzofuran	26.931	168	20944M4	84.940	ng/mL	
26) Acenaphthylene	25.544	152	99005	356.279	ng/mL#	100
27) Acenaphthene	26.274	153	36335	207.962	ng/mL	100
28) 2,3,5-Trimethylnaphthalen	27.835	170	7369M3	48.266	ng/mL	
29) Fluorene	28.291	166	43034M4	224.287	ng/mL	
30) C1-Fluorenes	30.508	180	60749M5	316.615	ng/mL	
31) C2-Fluorenes	32.844	194	60330M5	314.431	ng/mL	
32) C3-Fluorenes	35.345	208	38359M5	199.921	ng/mL	
33) Dibenzothiophene	31.594	184	41815	154.929	ng/mL#	87
34) 4-Methyldibenzothiophene(	33.364	198	17246	63.898	ng/mL#	100
35) 2/3-Methyldibenzothiophen	33.720	198	19631M1	72.735	ng/mL	
36) 1-Methyldibenzothiophene(	34.131	198	7283	26.984	ng/mL#	100
37) OTP	33.811	198	63997	237.115	ng/mL#	100
38) C1-Dibenzothiophenes	33.811	198	118978M5	440.825	ng/mL	
38) C1-Dibenzothiophenes BS	33.811	198	54981m	203.710	ng/mL	
39) C2-Dibenzothiophenes	35.044	212	62715M5	232.365	ng/mL	
40) C3-Dibenzothiophenes	36.842	226	41706M5	154.525	ng/mL	
41) C4-Dibenzothiophenes	38.531	240	17560M5	65.062	ng/mL	

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009586.D
Acq On : 23 Dec 2012 4:44 am
Operator : ps
Sample : 1212022-01
Misc : 1X
ALS Vial : 15 Sample Multiplier: 1

12/27/12

Quant Time: Dec 27 16:07:18 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
43) Phenanthrene	32.086	178	743861	2667.728	ng/mL	100
44) 3-Methylphenanthrene(3MP)	34.049	192	113713	407.812	ng/mL	97
45) 2-Methylphenanthrene(2MP)	34.158	192	135315	485.284	ng/mL	97
46) 2-Methylanthracene(2MA)	34.322	192	91869	329.472	ng/mL#	35
47) 9/4-Methylphenanthrene(9M	34.505	192	143401M3	514.283	ng/mL	
48) 1-Methylphenanthrene(1MP)	34.587	192	95711	343.251	ng/mL	96
49) C1-Phenanthrenes/Anthrace	34.158	192	590441M5	2117.514	ng/mL	
50) C2-Phenanthrenes/Anthrace	36.312	206	383997M5	1377.139	ng/mL	
50) C2-Phenanthrenes/Anthr BS	36.312	206	383997m	1377.139	ng/mL	
52) C3-Phenanthrenes/Anthrace	38.148	220	155344M5	557.114	ng/mL	
53) C4-Phenanthrenes/Anthrace	40.348	234	53471M5	191.764	ng/mL	
55) Anthracene	32.269	178	270471M4	1044.563	ng/mL	
56) Carbazole	32.953	167	12169M4	49.680	ng/mL	
57) 1-Methylphenanthrene	34.587	192	95711	465.238	ng/mL	100
58) Fluoranthene	36.851	202	2372745	7617.419	ng/mL	99
59) Benzo(b)fluorene	39.362	216	184472M3	995.827	ng/mL	
60) Pyrene	37.728	202	2370959	7460.901	ng/mL	100
61) C1-Fluoranthenes/Pyrenes	39.116	216	1183751M5	3725.011	ng/mL	
62) C2-Fluoranthenes/Pyrenes	40.850	230	386471M5	1216.142	ng/mL	
63) C3-Fluoranthenes/Pyrenes	43.051	244	153980M5	484.542	ng/mL	
64) C4-Fluoranthenes/Pyrenes	43.334	258	82298M5	258.974	ng/mL	
66) Naphthobenzothiophene	41.562	234	101824	369.271	ng/ml	97
67) Naphthobenzothiophene-2,1	41.562	234	101824	369.271	ng/mL	97
68) Naphthobenzothiophene-1,2	41.900	234	23879M3	86.599	ng/mL	
69) Naphthobenzothiophene-2,3	42.201	234	36893M3	133.795	ng/mL	
70) C1-Naphthobenzothiophenes	42.968	248	100431M5	364.219	ng/ml	
71) C2-Naphthobenzothiophenes	44.466	262	56440M5	204.683	ng/ml	
72) C3-Naphthobenzothiophenes	46.350	276	32570M5	118.117	ng/ml	
73) C4-Naphthobenzothiophenes	47.612	290	18544M5	67.251	ng/ml	
75) Benz[a]anthracene	42.494	228	1056049M3	3593.867	ng/mL	
77) Chrysene/Triphenylene	42.658	228	943911M4	3266.054	ng/mL	
78) C1-Chrysenes	44.128	242	444096M5	1536.629	ng/mL	
79) C2-Chrysenes	45.545	256	223881M5	774.657	ng/mL	
79) C2-Chrysenes BS	45.545	256	205976m	712.703	ng/mL	
80) BBF-d12 Surr BKGD	46.451	256	17905	61.954	ng/mL	100
81) C3-Chrysenes	46.871	270	133774M5	462.875	ng/mL	
82) C4-Chrysenes	48.316	284	49578M5	171.546	ng/mL	
84) Benzo[b]fluoranthene	46.533	252	855058	2806.443	ng/mL	94
85) Benzo[j]+[k]fluoranthene	46.597	252	864631	2888.234	ng/mL	92
86) Benzo[a]fluoranthene	46.899	252	241774	807.628	ng/mL#	1
87) Benzo[e]pyrene	47.484	252	649689	2245.632	ng/mL	91
89) Benzo[a]pyrene	47.667	252	1073469	3917.817	ng/mL	90
90) Perylene	47.951	252	284064M3	971.401	ng/mL	
91) Indeno[1,2,3-cd]pyrene	52.157	276	665060M4	2191.640	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.194	278	173680M4	581.008	ng/mL	
93) Benzo[g,h,i]perylene	53.345	276	651449	2184.623	ng/mL	100
94) Hopane (T19)	51.325	191	35100M4	311.643	ng/mL	
96) C23 Tricyclic Terpane (T4	40.211	191	4029	35.772	ng/ml	100
97) C24 Tricyclic Terpane (T5	40.942	191	2667M4	23.680	ng/ml	
98) C25 Tricyclic Terpane (T6	42.503	191G	55941	496.684	ng/ml	100
99) C24 Tetracyclic Terpane (	43.735	191	2981M4	26.467	ng/ml	
100) C26 Tricyclic Terpane-22S	43.489	191	2373M4	21.069	ng/ml	
101) C26 Tricyclic Terpane-22R	43.580	191	1516	13.460	ng/ml	100
102) C28 Tricyclic Terpane-22S	45.865	191	1342M4	11.915	ng/ml	

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009586.D
Acq On : 23 Dec 2012 4:44 am
Operator : ps
Sample : 1212022-01
Misc : 1X
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Dec 27 16:07:18 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
103) C28 Tricyclic Terpane-22R	46.030	191	1725	15.316	ng/ml	100
104) C29 Tricyclic Terpane-22S	46.551	191	2161	19.187	ng/ml	100
105) C29 Tricyclic Terpane-22R	46.743	191	1413M4	12.546	ng/ml	
106) 18a-22,29,30-Trisnorneoho	47.786	191	7180	63.749	ng/ml	100
107) C30 Tricyclic Terpane-22S	47.896	191	2533M4	22.490	ng/mL	
108) C30 Tricyclic Terpane-22R	48.133	191	1222M3	10.850	ng/mL	
109) 17a(H)-22,29,30-Trisnorho	48.298	191	9380M4	83.282	ng/ml	
110) 17a/b,21b/a 28,30-Bisnorh	49.414	191	1413	12.546	ng/ml	100
111) 17a(H),21b(H)-25-Norhopan	49.222	191	3284M4	29.158	ng/ml	
112) 30-Norhopane (T15)	50.045	191	26219M4	232.791	ng/ml	
113) 18a(H)-30-Norneohopane-C2	50.146	191	6960	61.796	ng/ml	100
114) 17a(H)-Diahopane (X)	50.264	191	2524M4	22.410	ng/ml	
115) 30-Normoretane (T17)	50.777	191	4538	40.292	ng/ml	100
116) 18a(H)&18b(H)-Oleananes (	51.152	191	2578M4	22.889	ng/ml	
117) Moretane (T20)	51.947	191	5725M4	50.831	ng/ml	
118) 30-Homohopane-22S (T21)	52.980	191	13269M4	117.812	ng/ml	
119) 30-Homohopane-22R (T22)	53.181	191	12022	106.740	ng/ml	100
120) Gammacerane/C32-diahopane	53.693	191	3454	30.667	ng/mL	100
121) 30,31-Bishomohopane-22S (	54.360	191G	35211M4	312.629	ng/ml	
122) 30,31-Bishomohopane-22R (	54.762	191	6466	57.410	ng/ml	100
123) 30,31-Trishomohopane-22S	56.370	191	7456M4	66.200	ng/ml	
124) 30,31-Trishomohopane-22R	56.936	191	3335M4	29.611	ng/ml	
125) Tetrakishomohopane-22S (T	58.837	191G	12874	114.305	ng/ml	100
126) Tetrakishomohopane-22R (T	59.522	191G	13235	117.510	ng/ml	100
127) Pentakishomohopane-22S (T	61.633	191	3777	33.535	ng/ml	100
128) Pentakishomohopane-22R (T	62.821	191	2532M4	22.481	ng/ml	
130) 13b(H),17a(H)-20S-Diachol	44.703	217	2673	49.703	ng/ml	100
131) 13b(H),17a(H)-20R-Diachol	45.124	217	1760	32.726	ng/ml	100
132) 13b,17a-20S-Methyldiachol	45.829	217	1896M4	35.255	ng/ml	
133) 14a,17a-20S-Chol/13b,17a-	46.679	217	5289	98.345	ng/ml	100
134) 14a,17a-20R-Chol/13b,17a-	47.173	217	5147	95.705	ng/ml	100
135) Unknown Sterane (S18)	47.438	217	1514	28.152	ng/ml	100
136) 13a,17b-20S-Ethyldiachole	47.685	217	218	4.054	ng/ml	100
137) 14a,17a-20S-Methylcholest	47.841	217	2409M4	44.794	ng/ml	
138) 14a,17a-20R-Methylcholest	48.518	217	1780	33.098	ng/ml	100
139) 14a(H),17a(H)-20S-Ethylch	48.838	217	2903M4	53.979	ng/ml	
140) 14a(H),17a(H)-20R-Ethylch	49.688	217	2817M4	52.380	ng/ml	
141) 14b(H),17b(H)-20R-Cholest	46.771	218	2333M4	43.381	ng/ml	
142) 14b(H),17b(H)-20S-Cholest	46.844	218	2521M4	46.876	ng/ml	
143) 14b,17b-20R-Methylcholest	47.996	218	2694M4	50.093	ng/ml	
144) 14b,17b-20S-Methylcholest	48.069	218	4048M4	75.270	ng/ml	
145) 14b(H),17b(H)-20R-Ethylch	49.075	218	5595	104.035	ng/ml	100
146) 14b(H),17b(H)-20S-Ethylch	49.112	218	4181M3	77.743	ng/ml	
147) C26,20R- +C27,20S- triaro	48.792	231	3401M4	63.239	ng/mL	
148) C28,20S-triaromatic stero	49.606	231	4453M4	82.800	ng/mL	
149) C27,20R-triaromatic stero	50.027	231	2558M4	47.564	ng/mL	
150) C28,20R-triaromatic stero	51.143	231	3048M4	56.675	ng/mL	

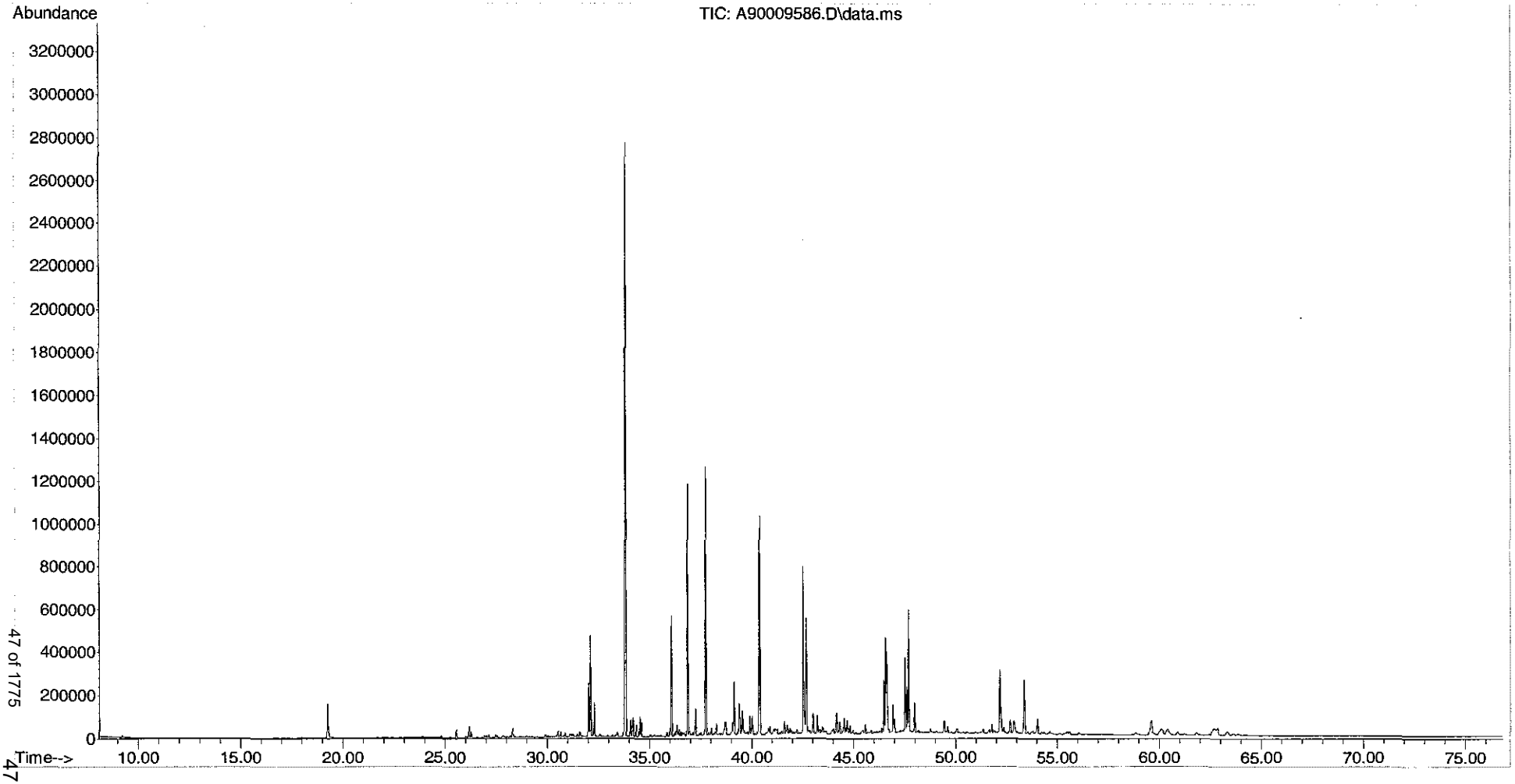
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009586.D
Acq On : 23 Dec 2012 4:44 am
Operator : ps
Sample : 1212022-01
Misc : 1X
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Dec 27 16:07:18 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES



Form I
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AS121312D010**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-02**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
12/13/12	12/14/12	12/20/12	12/23/12	79.5	15.11	2	1	PS

Parameter	Result		Parameter	Result
cis/trans-Decalin	**1.17**	J	C3-Dibenzothiophenes	**41.9**
C1-Decalins	**2.54**		C4-Dibenzothiophenes	**15.2**
C2-Decalins	**5.32**		Benzo(b)fluorene	**268**
C3-Decalins	**5.49**		Fluoranthene	**2290**
C4-Decalins	**10.6**		Pyrene	**2190**
Benzothiophene	**3.78**		C1-Fluoranthenes/Pyrenes	**1090**
C1-Benzo(b)thiophenes	**1.90**		C2-Fluoranthenes/Pyrenes	**398**
C2-Benzo(b)thiophenes	**2.52**		C3-Fluoranthenes/Pyrenes	**156**
C3-Benzo(b)thiophenes	**6.91**		C4-Fluoranthenes/Pyrenes	**93.0**
C4-Benzo(b)thiophenes	**5.50**		Naphthobenzothiophenes	**186**
Naphthalene	**66.3**		C1-Naphthobenzothiophenes	**112**
C1-Naphthalenes	**21.5**		C2-Naphthobenzothiophenes	**56.3**
C2-Naphthalenes	**51.3**		C3-Naphthobenzothiophenes	**29.1**
C3-Naphthalenes	**93.8**		C4-Naphthobenzothiophenes	**14.2**
C4-Naphthalenes	**66.4**		Benz[a]anthracene	**978**
Biphenyl	**11.8**		Chrysene/Triphenylene	**1030**
Dibenzofuran	**23.5**		C1-Chrysenes	**474**
Acenaphthylene	**116**		C2-Chrysenes	**204**
Acenaphthene	**44.6**		C3-Chrysenes	**132**
Fluorene	**57.2**		C4-Chrysenes	**46.3**
C1-Fluorenes	**79.6**		Benzo[b]fluoranthene	**811**
C2-Fluorenes	**93.4**		Benzo[j]fluoranthene/Benzo[k]fluoranthene	**929**
C3-Fluorenes	**59.1**		Benzo[a]fluoranthene	**215**
Anthracene	**265**		Benzo[e]pyrene	**664**
Phenanthrene	**778**		Benzo[a]pyrene	**1100**
C1-Phenanthrenes/Anthracenes	**681**		Perylene	**246**
C2-Phenanthrenes/Anthracenes	**436**		Indeno[1,2,3-cd]pyrene	**636**
C3-Phenanthrenes/Anthracenes	**173**		Dibenz[ah]anthracene/Dibenz[ac]anthracene	**177**
C4-Phenanthrenes/Anthracenes	**55.2**		Benzo[g,h,i]perylene	**612**
Retene	0.136	U		
Dibenzothiophene	**41.6**			
C1-Dibenzothiophenes	**73.2**			
C2-Dibenzothiophenes	**76.9**			

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	67	40-120
Phenanthrene-d10	84	40-120
Benzo[a]pyrene-d12	74	40-120

N/A - Not Applicable
J - Estimated value, below quantitation limit.
U - The analyte was analyzed for but not detected at the sample specific level reported.

Form I
Carbazole

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AS121312D010**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-02**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
12/13/12	12/14/12	12/20/12	12/23/12	79.5	15.11	2	1	PS

Parameter	Result
Carbazole	**13.5**

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	67	40-120
Phenanthrene-d10	84	40-120
Benzo[a]pyrene-d12	74	40-120

N/A - Not Applicable

Form I
Polynuclear Aromatic Hydrocarbons Isomers

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AS121312D010**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-02**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
12/13/12	12/14/12	12/20/12	12/23/12	79.5	15.11	2	1	PS

Parameter	Result
4-Methyldibenzothiophene	**23.9**
2/3-Methyldibenzothiophene	**26.3**
1-Methyldibenzothiophene	**7.90**
3-Methylphenanthrene	**139**
2-Methylphenanthrene	**166**
2-Methylanthracene	**86.4**
9/4-Methylphenanthrene	**161**
1-Methylphenanthrene	**116**
2-Methylnaphthalene	**20.3**
1-Methylnaphthalene	**12.9**
2,6-Dimethylnaphthalene	**16.1**
2,3,5-Trimethylnaphthalene	**15.1**
Naphthobenzothiophene-2,1-D	**112**
Naphthobenzothiophene-1,2-D	**27.5**
Naphthobenzothiophene-2,3-D	**45.9**

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	67	40-120
Phenanthrene-d10	84	40-120
Benzo[a]pyrene-d12	74	40-120

N/A - Not Applicable

Form I
Steranes and Triterpanes

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AS121312D010**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-02**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
12/13/12	12/14/12	12/20/12	12/23/12	79.5	15.11	2	1	PS

Parameter	Result		Parameter	Result	
C23 Tricyclic Terpane	**4.13**		30,31-Trishomohopane-22S	**6.76**	
C24 Tricyclic Terpane	**3.26**		30,31-Trishomohopane-22R	**3.58**	
C25 Tricyclic Terpane	**8.14**	G	Tetrakishomohopane-22S	**4.16**	
C24 Tetracyclic Terpane	**2.79**		Tetrakishomohopane-22R	**3.93**	G
C26 Tricyclic Terpane-22S	**2.89**		Pentakishomohopane-22S	**4.34**	
C26 Tricyclic Terpane-22R	**1.53**	J	Pentakishomohopane-22R	**3.54**	
C28 Tricyclic Terpane-22S	**1.64**	J	13b(H),17a(H)-20S-Diacholestane	**6.05**	
C28 Tricyclic Terpane-22R	**2.29**		13b(H),17a(H)-20R-Diacholestane	**3.04**	
C29 Tricyclic Terpane-22S	**1.85**		13b,17a-20S-Methyldiacholestane	**3.69**	
C29 Tricyclic Terpane-22R	**1.94**		14a(H),17a(H)-20S-Cholestane/ 13b(H),17a(H)-20S-Ethyldiacholestane (S12)	**11.7**	
18a-22,29,30-Trisnorneohopane-TS	**6.95**		14a(H),17a(H)-20R-Cholestane/ 13b(H),17a(H)-20R-Ethyldiacholestane (S17)	**11.4**	
C30 Tricyclic Terpane-22S	**1.67**		Unknown Sterane (S18)	**3.36**	
C30 Tricyclic Terpane-22R	**1.84**		13a,17b-20S-Ethyldiacholestane	**0.506**	J
17a(H)-22,29,30-Trisnorhopane-TM	**10.5**		14a,17a-20S-Methylcholestane	**5.62**	
17a/b,21b/a 28,30-Bisnorhopane	**1.71**		14a,17a-20R-Methylcholestane	**4.05**	
17a(H),21b(H)-25-Norhopane	**2.49**		14a(H),17a(H)-20S-Ethylcholestane	**6.91**	
30-Norhopane	**25.9**		14a(H),17a(H)-20R-Ethylcholestane	**6.17**	
18a(H)-30-Norneohopane-C29Ts	**6.90**		14b(H),17b(H)-20R-Cholestane	**4.02**	
17a(H)-Diahopane	**2.50**		14b(H),17b(H)-20S-Cholestane	**4.58**	
30-Normoretane	**4.88**		14b,17b-20R-Methylcholestane	**5.26**	
18a(H)&18b(H)-Oleananes	**2.45**		14b,17b-20S-Methylcholestane	**8.26**	
Hopane	**34.4**		14b(H),17b(H)-20R-Ethylcholestane	**11.6**	
Moretane	**5.83**		14b(H),17b(H)-20S-Ethylcholestane	**8.57**	
30-Homohopane-22S	**13.7**		C26,20R- +C27,20S- triaromatic steroid	**10.1**	
30-Homohopane-22R	**10.5**		C28,20S-triaromatic steroid	**13.9**	
T22a-Gammacerane/C32-diahopane	**3.88**		C27,20R-triaromatic steroid	**6.81**	
30,31-Bishomohopane-22S	**28.2**	G	C28,20R-triaromatic steroid	**9.91**	
30,31-Bishomohopane-22R	**7.33**				

Surrogate	% Recovery	Acceptance Range (%)
5B(H)Cholane	83	50-130

N/A - Not Applicable
J - Estimated value, below quantitation limit.
G - Matrix Interference

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009587.D
Acq On : 23 Dec 2012 6:09 am
Operator : ps
Sample : 1212022-02
Misc : 1X
ALS Vial : 16 Sample Multiplier: 1

12/27/12

Quant Time: Dec 27 16:09:16 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.156	164	64600	500.000	ng/mL	0.00
74) Chrysene-d12	42.557	240	121367	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.229	136	417522	1681.555	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 168.16%#			
42) Phenanthrene-d10	31.995	188	488191	2095.186	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 209.52%#			
83) Benzo[b]fluoranthene-d12	46.450	264	453585	2033.140	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 203.31%#			
88) Benzo[a]pyrene-d12	47.585	264	413556	1849.212	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 184.92%#			
129) 5B(H)Cholane - Surr	43.187	217	106143	2083.277	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 208.33%#			
Target Compounds						Qvalue
3) trans-Decalin	15.908	138	400	7.043	ng/mL	100
5) C1-Decalins	17.377	152	867M5	15.266	ng/mL	
6) C2-Decalins	20.242	166	1815M5	31.958	ng/mL	
7) C3-Decalins	21.985	180	1872M5	32.962	ng/mL	
8) C4-Decalins	24.960	194	3624M5	63.811	ng/mL	
10) Naphthalene	19.302	128	101543	398.519	ng/mL#	100
11) C1-Naphthalenes	21.994	142	32897M5	129.109	ng/mL	
12) C2-Naphthalenes	24.814	156	78512M5	308.130	ng/mL	
13) C3-Naphthalenes	27.141	170	143632M5	563.702	ng/mL	
14) C4-Naphthalenes	31.137	184	101695M5	399.115	ng/mL	
16) 2-Methylnaphthalene	21.994	142	20308	121.873	ng/mL#	100
17) 1-Methylnaphthalene	22.405	142	12494	77.261	ng/mL#	100
18) Benzothiophene	19.531	134	4845	22.722	ng/mL	100
19) C1-Benzo(b)thiophenes	22.168	148	2436M5	11.424	ng/mL	
20) C2-Benzo(b)thiophenes	24.531	162	3222M5	15.110	ng/mL	
21) C3-Benzo(b)thiophenes	26.621	176	8851M5	41.509	ng/mL	
22) C4-Benzo(b)thiophenes	29.066	190	7044M5	33.034	ng/mL	
23) Biphenyl	23.865	154	15458	70.889	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.486	156	15161	96.790	ng/mL#	100
25) Dibenzofuran	26.922	168	32838M4	141.190	ng/mL	
26) Acenaphthylene	25.544	152	183017	698.233	ng/mL#	100
27) Acenaphthene	26.274	153	44161	267.962	ng/mL	99
28) 2,3,5-Trimethylnaphthalen	27.835	170	13077M3	90.806	ng/mL	
29) Fluorene	28.291	166	62164M4	343.484	ng/mL	
30) C1-Fluorenes	30.508	180	86510M5	478.006	ng/mL	
31) C2-Fluorenes	32.844	194	101575M5	561.247	ng/mL	
32) C3-Fluorenes	35.345	208	64267M5	355.104	ng/mL	
33) Dibenzothiophene	31.594	184	63580	249.744	ng/mL#	85
34) 4-Methyldibenzothiophene(	33.364	198	36584	143.703	ng/mL#	100
35) 2/3-Methyldibenzothiophen	33.711	198	40179M1	157.824	ng/mL	
36) 1-Methyldibenzothiophene(	34.131	198	12092	47.498	ng/mL#	100
37) OTP	33.811	198	56574	222.225	ng/mL#	100
38) C1-Dibenzothiophenes	33.811	198	168462M5	661.724	ng/mL	
38) C1-Dibenzothiophenes BS	33.811	198	111888m	439.500	ng/mL	
39) C2-Dibenzothiophenes	35.043	212	117576M5	461.843	ng/mL	
40) C3-Dibenzothiophenes	36.842	226	64116M5	251.850	ng/mL	
41) C4-Dibenzothiophenes	38.531	240	23167M5	91.001	ng/mL	

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009587.D
Acq On : 23 Dec 2012 6:09 am
Operator : ps
Sample : 1212022-02
Misc : 1X
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Dec 27 16:09:16 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
43) Phenanthrene	32.086	178	1228944	4672.588	ng/mL	100
44) 3-Methylphenanthrene(3MP)	34.048	192	219778	835.622	ng/mL	97
45) 2-Methylphenanthrene(2MP)	34.158	192	262422	997.759	ng/mL	96
46) 2-Methylanthracene(2MA)	34.322	192	136548M3	519.171	ng/mL	
47) 9/4-Methylphenanthrene(9M	34.505	192	255063M3	969.779	ng/mL	
48) 1-Methylphenanthrene(1MP)	34.587	192	183814	698.882	ng/mL	96
49) C1-Phenanthrenes/Anthrace	34.158	192	1075599M5	4089.553	ng/mL	
50) C2-Phenanthrenes/Anthrace	36.312	206	689817M5	2622.765	ng/mL	
50) C2-Phenanthrenes/Anthr BS	36.312	206	689817m	2622.765	ng/mL	
52) C3-Phenanthrenes/Anthrace	38.138	220	273762M5	1040.875	ng/mL	
53) C4-Phenanthrenes/Anthrace	40.348	234	87269M5	331.807	ng/mL	
55) Anthracene	32.269	178	388283M4	1589.783	ng/mL	
56) Carbazole	32.953	167	18700	80.936	ng/mL#	88
57) 1-Methylphenanthrene	34.587	192	183820	947.287	ng/mL	100
58) Fluoranthene	36.851	202	4041361	13754.983	ng/mL	98
59) Benzo(b)fluorene	39.362	216	280978M3	1608.057	ng/mL	
60) Pyrene	37.727	202	3945404	13162.378	ng/mL	99
61) C1-Fluoranthenes/Pyrenes	39.115	216	1955316M5	6523.187	ng/mL	
62) C2-Fluoranthenes/Pyrenes	41.160	230	716060M5	2388.869	ng/mL	
63) C3-Fluoranthenes/Pyrenes	43.041	244	281114M5	937.833	ng/mL	
64) C4-Fluoranthenes/Pyrenes	43.334	258	167461M5	558.672	ng/mL	
66) Naphthobenzothiophene	41.562	234	175861	676.145	ng/ml#	94
67) Naphthobenzothiophene-2,1	41.562	234	175861	676.145	ng/mL#	94
68) Naphthobenzothiophene-1,2	41.909	234	42907	164.968	ng/mL#	25
69) Naphthobenzothiophene-2,3	42.201	234	71706M3	275.693	ng/mL	
70) C1-Naphthobenzothiophenes	42.968	248	175817M5	675.976	ng/ml	
71) C2-Naphthobenzothiophenes	44.466	262	87989M5	338.297	ng/ml	
72) C3-Naphthobenzothiophenes	46.350	276	45431M5	174.672	ng/ml	
73) C4-Naphthobenzothiophenes	49.011	290	22205M5	85.373	ng/mL	
75) Benz[a]anthracene	42.503	228	1635034M3	5873.275	ng/mL	
77) Chrysene/Triphenylene	42.658	228	1699882	6208.500	ng/mL	99
78) C1-Chrysenes	44.128	242	779305M5	2846.265	ng/mL	
79) C2-Chrysenes	45.838	256	353679M5	1291.746	ng/mL	
79) C2-Chrysenes BS	45.838	256	335423m	1225.070	ng/mL	
80) BBF-d12 Surr BKGD	46.450	256	18256	66.677	ng/mL	100
81) C3-Chrysenes	46.862	270	217524M5	794.466	ng/mL	
82) C4-Chrysenes	48.325	284	76165M5	278.178	ng/mL	
84) Benzo[b]fluoranthene	46.542	252	1406459	4872.629	ng/mL	94
85) Benzo[j]+[k]fluoranthene	46.615	252	1582608	5580.211	ng/mL	93
86) Benzo[a]fluoranthene	46.899	252	366183	1291.146	ng/mL#	1
87) Benzo[e]pyrene	47.493	252	1092776	3986.942	ng/mL	91
89) Benzo[a]pyrene	47.667	252	1715511	6608.818	ng/mL	90
90) Perylene	47.960	252	409888M3	1479.528	ng/mL	
91) Indeno[1,2,3-cd]pyrene	52.157	276	1099344M4	3823.998	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.194	278	300602M4	1061.451	ng/mL	
93) Benzo[g,h,i]perylene	53.363	276	1038301	3675.319	ng/mL	100
94) Hopane (T19)	51.325	191	22028M3	206.443	ng/mL	
96) C23 Tricyclic Terpane (T4	40.211	191	2649	24.826	ng/ml	100
97) C24 Tricyclic Terpane (T5	40.941	191	2088M4	19.568	ng/ml	
98) C25 Tricyclic Terpane (T6	42.503	191G	5222M1	48.940	ng/ml	
99) C24 Tetracyclic Terpane (	43.735	191	1791	16.785	ng/ml	100
100) C26 Tricyclic Terpane-22S	43.489	191	1851M4	17.347	ng/ml	
101) C26 Tricyclic Terpane-22R	43.580	191	982M4	9.203	ng/ml	
102) C28 Tricyclic Terpane-22S	45.874	191	1053M4	9.869	ng/ml	

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009587.D
Acq On : 23 Dec 2012 6:09 am
Operator : ps
Sample : 1212022-02
Misc : 1X
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Dec 27 16:09:16 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
103) C28 Tricyclic Terpane-22R	46.030	191	1467M4	13.749	ng/ml	
104) C29 Tricyclic Terpane-22S	46.551	191	1188M4	11.134	ng/ml	
105) C29 Tricyclic Terpane-22R	46.743	191	1247M4	11.687	ng/ml	
106) 18a-22,29,30-Trisnorneoho	47.786	191	4457M4	41.770	ng/ml	
107) C30 Tricyclic Terpane-22S	47.905	191	1068M4	10.009	ng/mL	
108) C30 Tricyclic Terpane-22R	48.142	191	1180M3	11.059	ng/mL	
109) 17a(H)-22,29,30-Trisnorho	48.298	191	6707M4	62.857	ng/ml	
110) 17a/b,21b/a 28,30-Bisnorh	49.414	191	1099M4	10.300	ng/ml	
111) 17a(H),21b(H)-25-Norhopan	49.249	191	1595	14.948	ng/ml	100
112) 30-Norhopane (T15)	50.045	191	16589	155.470	ng/ml	100
113) 18a(H)-30-Norneohopane-C2	50.145	191	4427M4	41.489	ng/ml	
114) 17a(H)-Diahopane (X)	50.255	191	1605M4	15.042	ng/ml	
115) 30-Normoretane (T17)	50.776	191	3131	29.343	ng/ml	100
116) 18a(H)&18b(H)-Oleananes (	51.151	191	1570M4	14.714	ng/ml	
117) Moretane (T20)	51.947	191	3736M4	35.013	ng/ml	
118) 30-Homohopane-22S (T21)	52.970	191	8762	82.116	ng/ml	100
119) 30-Homohopane-22R (T22)	53.190	191	6703M4	62.820	ng/ml	
120) Gammacerane/C32-diahopane	53.692	191	2490M4	23.336	ng/mL	
121) 30,31-Bishomohopane-22S (	54.350	191G	18088	169.518	ng/ml	100
122) 30,31-Bishomohopane-22R (	54.761	191	4701M4	44.057	ng/ml	
123) 30,31-Trishomohopane-22S	56.370	191	4335M4	40.627	ng/ml	
124) 30,31-Trishomohopane-22R	56.927	191	2292M4	21.480	ng/ml	
125) Tetrakishomohopane-22S (T	58.782	191	2666M4	24.985	ng/ml	
126) Tetrakishomohopane-22R (T	59.541	191G	2520M4	23.617	ng/ml	
127) Pentakishomohopane-22S (T	61.615	191	2782M4	26.073	ng/ml	
128) Pentakishomohopane-22R (T	62.839	191	2269M1	21.265	ng/ml	
130) 13b(H),17a(H)-20S-Diachol	44.703	217	1853M4	36.369	ng/ml	
131) 13b(H),17a(H)-20R-Diachol	45.124	217	932	18.292	ng/ml	100
132) 13b,17a-20S-Methyldiachol	45.828	217	1130M4	22.179	ng/ml	
133) 14a,17a-20S-Chol/13b,17a-	46.679	217	3577	70.206	ng/ml	100
134) 14a,17a-20R-Chol/13b,17a-	47.173	217	3494M4	68.577	ng/ml	
135) Unknown Sterane (S18)	47.438	217	1030	20.216	ng/ml	100
136) 13a,17b-20S-Ethyldiachole	47.676	217	155M4	3.042	ng/ml	
137) 14a,17a-20S-Methylcholest	47.841	217	1721M4	33.778	ng/ml	
138) 14a,17a-20R-Methylcholest	48.508	217	1240M4	24.338	ng/ml	
139) 14a(H),17a(H)-20S-Ethylch	48.838	217	2115M4	41.511	ng/ml	
140) 14a(H),17a(H)-20R-Ethylch	49.697	217	1890M4	37.095	ng/ml	
141) 14b(H),17b(H)-20R-Cholest	46.770	218	1232M4	24.181	ng/ml	
142) 14b(H),17b(H)-20S-Cholest	46.853	218	1402M4	27.517	ng/ml	
143) 14b,17b-20R-Methylcholest	47.996	218	1610M4	31.600	ng/ml	
144) 14b,17b-20S-Methylcholest	48.069	218	2530M4	49.656	ng/ml	
145) 14b(H),17b(H)-20R-Ethylch	49.075	218	3537	69.421	ng/ml	100
146) 14b(H),17b(H)-20S-Ethylch	49.112	218	2624M3	51.501	ng/ml	
147) C26,20R- +C27,20S- triaro	48.792	231	3097M4	60.785	ng/mL	
148) C28,20S-triaromatic stero	49.606	231	4247M4	83.356	ng/mL	
149) C27,20R-triaromatic stero	50.027	231	2085M4	40.922	ng/mL	
150) C28,20R-triaromatic stero	51.142	231	3034	59.549	ng/mL	100

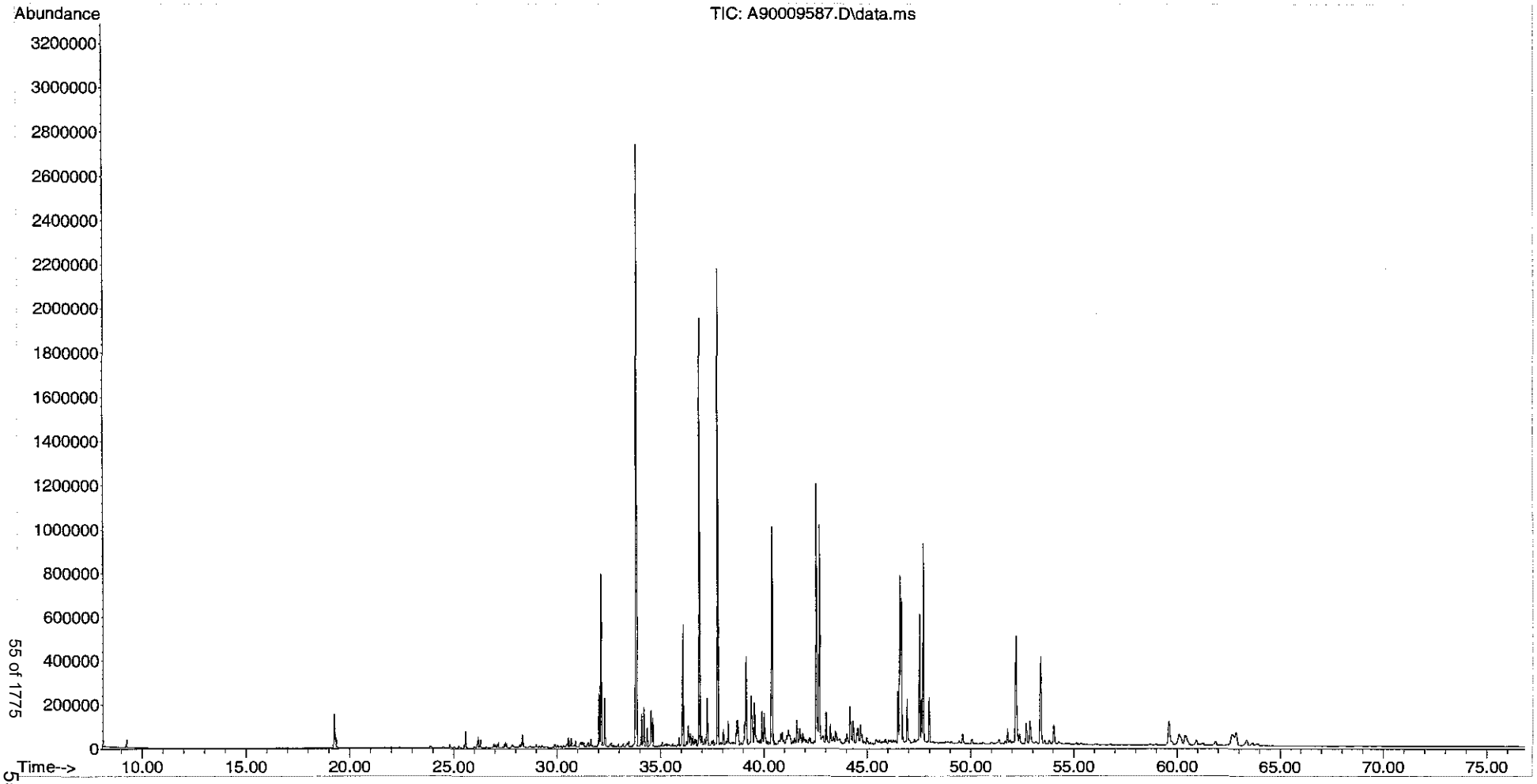
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009587.D
Acq On : 23 Dec 2012 6:09 am
Operator : ps
Sample : 1212022-02
Misc : 1X
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Dec 27 16:09:16 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES



Form I
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AD121312D010**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-03**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
12/13/12	12/14/12	12/20/12	12/23/12	79.0	15.46	2	1	PS

Parameter	Result		Parameter	Result
cis/trans-Decalin	**0.518**	J	C3-Dibenzothiophenes	**37.4**
C1-Decalins	**1.86**		C4-Dibenzothiophenes	**14.7**
C2-Decalins	**4.33**		Benzo(b)fluorene	**268**
C3-Decalins	**5.79**		Fluoranthene	**1930**
C4-Decalins	**8.91**		Pyrene	**1860**
Benzothiophene	**1.82**		C1-Fluoranthenes/Pyrenes	**991**
C1-Benzo(b)thiophenes	**1.71**		C2-Fluoranthenes/Pyrenes	**333**
C2-Benzo(b)thiophenes	**3.14**		C3-Fluoranthenes/Pyrenes	**130**
C3-Benzo(b)thiophenes	**7.37**		C4-Fluoranthenes/Pyrenes	**71.8**
C4-Benzo(b)thiophenes	**5.29**		Naphthobenzothiophenes	**171**
Naphthalene	**39.5**		C1-Naphthobenzothiophenes	**104**
C1-Naphthalenes	**16.2**		C2-Naphthobenzothiophenes	**53.0**
C2-Naphthalenes	**44.1**		C3-Naphthobenzothiophenes	**27.0**
C3-Naphthalenes	**76.3**		C4-Naphthobenzothiophenes	**12.5**
C4-Naphthalenes	**54.8**		Benz[a]anthracene	**1000**
Biphenyl	**10.1**		Chrysene/Triphenylene	**922**
Dibenzofuran	**21.0**		C1-Chrysenes	**435**
Acenaphthylene	**71.4**		C2-Chrysenes	**185**
Acenaphthene	**40.3**		C3-Chrysenes	**117**
Fluorene	**56.9**		C4-Chrysenes	**38.8**
C1-Fluorenes	**67.7**		Benzo[b]fluoranthene	**747**
C2-Fluorenes	**78.5**		Benzo[j]fluoranthene/Benzo[k]fluoranthene	**815**
C3-Fluorenes	**52.6**		Benzo[a]fluoranthene	**216**
Anthracene	**275**		Benzo[e]pyrene	**605**
Phenanthrene	**707**		Benzo[a]pyrene	**1030**
C1-Phenanthrenes/Anthracenes	**567**		Perylene	**255**
C2-Phenanthrenes/Anthracenes	**370**		Indeno[1,2,3-cd]pyrene	**602**
C3-Phenanthrenes/Anthracenes	**148**		Dibenz[ah]anthracene/Dibenz[ac]anthracene	**175**
C4-Phenanthrenes/Anthracenes	**47.1**		Benzo[g,h,i]perylene	**604**
Retene	0.134	U		
Dibenzothiophene	**40.5**			
C1-Dibenzothiophenes	**54.4**			
C2-Dibenzothiophenes	**61.7**			

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	65	40-120
Phenanthrene-d10	83	40-120
Benzo[a]pyrene-d12	74	40-120

N/A - Not Applicable
J - Estimated value, below quantitation limit.
U - The analyte was analyzed for but not detected at the sample specific level reported.

Form I
Carbazole

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AD121312D010**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-03**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
12/13/12	12/14/12	12/20/12	12/23/12	79.0	15.46	2	1	PS

Parameter	Result
Carbazole	**19.6**

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	65	40-120
Phenanthrene-d10	83	40-120
Benzo[a]pyrene-d12	74	40-120

N/A - Not Applicable

Form I
Polynuclear Aromatic Hydrocarbons Isomers

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AD121312D010**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-03**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
12/13/12	12/14/12	12/20/12	12/23/12	79.0	15.46	2	1	PS

Parameter	Result
4-Methyldibenzothiophene	**17.3**
2/3-Methyldibenzothiophene	**18.8**
1-Methyldibenzothiophene	**6.89**
3-Methylphenanthrene	**112**
2-Methylphenanthrene	**139**
2-Methylanthracene	**89.4**
9/4-Methylphenanthrene	**128**
1-Methylphenanthrene	**89.6**
2-Methylnaphthalene	**14.6**
1-Methylnaphthalene	**9.79**
2,6-Dimethylnaphthalene	**15.0**
2,3,5-Trimethylnaphthalene	**11.9**
Naphthobenzothiophene-2,1-D	**108**
Naphthobenzothiophene-1,2-D	**25.2**
Naphthobenzothiophene-2,3-D	**37.3**

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	65	40-120
Phenanthrene-d10	83	40-120
Benzo[a]pyrene-d12	74	40-120

N/A - Not Applicable

Form I
Steranes and Triterpanes

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AD121312D010**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-03**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
12/13/12	12/14/12	12/20/12	12/23/12	79.0	15.46	2	1	PS

Parameter	Result		Parameter	Result	
C23 Tricyclic Terpane	**5.14**		30,31-Trishomohopane-22S	**8.50**	
C24 Tricyclic Terpane	**3.87**		30,31-Trishomohopane-22R	**4.38**	
C25 Tricyclic Terpane	**7.61**	G	Tetrakishomohopane-22S	**4.90**	
C24 Tetracyclic Terpane	**3.72**		Tetrakishomohopane-22R	**7.04**	G
C26 Tricyclic Terpane-22S	**2.90**		Pentakishomohopane-22S	**3.83**	
C26 Tricyclic Terpane-22R	**1.72**		Pentakishomohopane-22R	**3.74**	
C28 Tricyclic Terpane-22S	**1.74**		13b(H),17a(H)-20S-Diacholestane	**7.36**	
C28 Tricyclic Terpane-22R	**2.66**		13b(H),17a(H)-20R-Diacholestane	**3.85**	
C29 Tricyclic Terpane-22S	**2.39**		13b,17a-20S-Methyldiacholestane	**5.50**	
C29 Tricyclic Terpane-22R	**1.87**		14a(H),17a(H)-20S-Cholestane/ 13b(H),17a(H)-20S-Ethyldiacholestane (S12)	**15.1**	
18a-22,29,30-Trisnorneohopane-TS	**9.39**		14a(H),17a(H)-20R-Cholestane/ 13b(H),17a(H)-20R-Ethyldiacholestane (S17)	**14.9**	
C30 Tricyclic Terpane-22S	**2.45**		Unknown Sterane (S18)	**3.82**	
C30 Tricyclic Terpane-22R	**2.19**		13a,17b-20S-Ethyldiacholestane	**0.488**	J
17a(H)-22,29,30-Trisnorhopane-TM	**11.6**		14a,17a-20S-Methylcholestane	**7.27**	
17a/b,21b/a 28,30-Bisnorhopane	**1.85**		14a,17a-20R-Methylcholestane	**5.17**	
17a(H),21b(H)-25-Norhopane	**1.82**		14a(H),17a(H)-20S-Ethylcholestane	**9.10**	
30-Norhopane	**32.7**		14a(H),17a(H)-20R-Ethylcholestane	**8.09**	
18a(H)-30-Norneohopane-C29Ts	**9.57**		14b(H),17b(H)-20R-Cholestane	**5.55**	
17a(H)-Diahopane	**3.81**		14b(H),17b(H)-20S-Cholestane	**6.20**	
30-Normoretane	**5.22**		14b,17b-20R-Methylcholestane	**7.73**	
18a(H)&18b(H)-Oleananes	**3.35**		14b,17b-20S-Methylcholestane	**11.8**	
Hopane	**46.0**		14b(H),17b(H)-20R-Ethylcholestane	**15.6**	
Moretane	**8.35**		14b(H),17b(H)-20S-Ethylcholestane	**10.6**	
30-Homohopane-22S	**16.7**		C26,20R- +C27,20S- triaromatic steroid	**12.1**	
30-Homohopane-22R	**12.9**		C28,20S-triaromatic steroid	**16.9**	
T22a-Gammacerane/C32-diahopane	**4.70**		C27,20R-triaromatic steroid	**8.45**	
30,31-Bishomohopane-22S	**31.1**	G	C28,20R-triaromatic steroid	**11.9**	
30,31-Bishomohopane-22R	**7.41**				

Surrogate	% Recovery	Acceptance Range (%)
5B(H)Cholane	76	50-130

N/A - Not Applicable
J - Estimated value, below quantitation limit.
G - Matrix Interference

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009590.D
Acq On : 23 Dec 2012 10:22 am
Operator : ps
Sample : 1212022-03
Misc : 1X
ALS Vial : 19 Sample Multiplier: 1

DKS 12/27/12

Quant Time: Dec 27 14:19:25 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.156	164	66179	500.000	ng/mL	0.00
74) Chrysene-d12	42.557	240	125525	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.229	136	415028	1631.629	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 163.16%#			
42) Phenanthrene-d10	31.995	188	497405	2083.796	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 208.38%#			
83) Benzo[b]fluoranthene-d12	46.450	264	466866	2023.351	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 202.34%#			
88) Benzo[a]pyrene-d12	47.585	264	425397	1839.150	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 183.92%#			
129) 5B(H)Cholane - Surr	43.187	217	100430	1905.853	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 190.59%#			
Target Compounds						Qvalue
3) trans-Decalin	15.908	138	184	3.163	ng/mL	100
5) C1-Decalins	17.377	152	660M5	11.344	ng/mL	
6) C2-Decalins	19.667	166	1537M5	26.417	ng/mL	
7) C3-Decalins	21.137	180	2058M5	35.372	ng/mL	
8) C4-Decalins	24.960	194	3164M5	54.382	ng/mL	
10) Naphthalene	19.302	128	62897	240.958	ng/mL#	100
11) C1-Naphthalenes	21.994	142	25743M5	98.621	ng/mL	
12) C2-Naphthalenes	24.814	156	70322M5	269.403	ng/mL	
13) C3-Naphthalenes	27.141	170	121603M5	465.860	ng/mL	
14) C4-Naphthalenes	31.137	184	87352M5	334.645	ng/mL	
16) 2-Methylnaphthalene	21.994	142	15267	89.435	ng/mL#	100
17) 1-Methylnaphthalene	22.405	142	9899	59.753	ng/mL#	100
18) Benzothiophene	19.531	134	2427M4	11.110	ng/mL	
19) C1-Benzo(b)thiophenes	22.159	148	2283M5	10.451	ng/mL	
20) C2-Benzo(b)thiophenes	24.531	162	4194M5	19.199	ng/mL	
21) C3-Benzo(b)thiophenes	26.621	176	9831M5	45.005	ng/mL	
22) C4-Benzo(b)thiophenes	29.066	190	7057M5	32.306	ng/mL	
23) Biphenyl	23.865	154	13834	61.928	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.486	156	14716	91.707	ng/mL#	100
25) Dibenzofuran	26.931	168	30520M4	128.092	ng/mL	
26) Acenaphthylene	25.544	152	117055	435.925	ng/mL#	100
27) Acenaphthene	26.274	153	41579	246.275	ng/mL	99
28) 2,3,5-Trimethylnaphthalen	27.835	170	10687M3	72.439	ng/mL	
29) Fluorene	28.291	166	64377M4	347.225	ng/mL	
30) C1-Fluorenes	30.508	180	76683M5	413.598	ng/mL	
31) C2-Fluorenes	32.844	194	88911M5	479.552	ng/mL	
32) C3-Fluorenes	35.345	208	59605M5	321.486	ng/mL	
33) Dibenzothiophene	31.594	184	64530	247.428	ng/mL#	86
34) 4-Methyldibenzothiophene(	33.364	198	27502	105.451	ng/mL#	100
35) 2/3-Methyldibenzothiophen	33.711	198	29923M1	114.734	ng/mL	
36) 1-Methyldibenzothiophene(	34.131	198	10979	42.097	ng/mL#	100
37) OTP	33.811	198	62981	241.489	ng/mL#	100
38) C1-Dibenzothiophenes	33.811	198	149617M5	573.678	ng/mL	
38) C1-Dibenzothiophenes BS	33.811	198	86636m	332.190	ng/mL	
39) C2-Dibenzothiophenes	35.043	212	98317M5	376.978	ng/mL	
40) C3-Dibenzothiophenes	36.842	226	59538M5	228.287	ng/mL	
41) C4-Dibenzothiophenes	38.531	240	23480M5	90.030	ng/mL	

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009590.D
Acq On : 23 Dec 2012 10:22 am
Operator : ps
Sample : 1212022-03
Misc : 1X
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Dec 27 14:19:25 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
43) Phenanthrene	32.086	178	1163769	4319.212 ng/mL	100
44) 3-Methylphenanthrene(3MP)	34.048	192	183396	680.656 ng/mL	97
45) 2-Methylphenanthrene(2MP)	34.158	192	228378	847.602 ng/mL	96
46) 2-Methylanthracene(2MA)	34.322	192	147136M3	546.081 ng/mL	
47) 9/4-Methylphenanthrene(9M	34.505	192	210818M3	782.430 ng/mL	
48) 1-Methylphenanthrene(1MP)	34.587	192	147352	546.882 ng/mL	96
49) C1-Phenanthrenes/Anthrace	34.158	192	932873M5	3462.265 ng/mL	
50) C2-Phenanthrenes/Anthrace	36.312	206	608243M5	2257.433 ng/mL	
50) C2-Phenanthrenes/Anthr BS	36.312	206	608243m	2257.433 ng/mL	
52) C3-Phenanthrenes/Anthrace	38.138	220	243724M5	904.557 ng/mL	
53) C4-Phenanthrenes/Anthrace	40.339	234	77433M5	287.385 ng/mL	
55) Anthracene	32.260	178	419512	1676.664 ng/mL	100
56) Carbazole	32.953	167	28328	119.682 ng/mL#	93
57) 1-Methylphenanthrene	34.587	192	147358	741.267 ng/mL	100
58) Fluoranthene	36.851	202	3543010	11771.102 ng/mL	98
59) Benzo(b)fluorene	39.362	216	292675M3	1635.035 ng/mL	
60) Pyrene	37.727	202	3492511	11373.469 ng/mL	99
61) C1-Fluoranthenes/Pyrenes	39.115	216	1858590M5	6052.555 ng/mL	
62) C2-Fluoranthenes/Pyrenes	41.151	230	623880M5	2031.684 ng/mL	
63) C3-Fluoranthenes/Pyrenes	43.050	244	242948M5	791.168 ng/mL	
64) C4-Fluoranthenes/Pyrenes	43.334	258	134529M5	438.098 ng/mL	
66) Naphthobenzothiophene	41.562	234	176456	662.246 ng/ml#	95
67) Naphthobenzothiophene-2,1	41.562	234	176456	662.246 ng/mL#	95
68) Naphthobenzothiophene-1,2	41.900	234	40992	153.844 ng/mL#	13
69) Naphthobenzothiophene-2,3	42.201	234	60674M3	227.712 ng/mL	
70) C1-Naphthobenzothiophenes	42.959	248	169597M5	636.503 ng/ml	
71) C2-Naphthobenzothiophenes	44.466	262	86207M5	323.538 ng/ml	
72) C3-Naphthobenzothiophenes	46.350	276	43871M5	164.649 ng/ml	
73) C4-Naphthobenzothiophenes	49.011	290	20297M5	76.175 ng/mL	
75) Benz[a]anthracene	42.503	228	1757394M3	6103.698 ng/mL	
77) Chrysene/Triphenylene	42.658	228	1593697	5627.870 ng/mL	99
78) C1-Chrysenes	44.128	242	752879M5	2658.664 ng/mL	
79) C2-Chrysenes	45.838	256	337933M5	1193.353 ng/mL	
79) C2-Chrysenes BS	45.838	256	319204m	1127.215 ng/mL	
80) BBF-d12 Surr BKGD	46.450	256	18729	66.138 ng/mL	100
81) C3-Chrysenes	46.871	270	202128M5	713.781 ng/mL	
82) C4-Chrysenes	48.325	284	67179M5	237.231 ng/mL	
84) Benzo[b]fluoranthene	46.542	252	1362249	4563.133 ng/mL	94
85) Benzo[j]+[k]fluoranthene	46.615	252	1459989	4977.339 ng/mL	93
86) Benzo[a]fluoranthene	46.899	252	386095	1316.260 ng/mL#	1
87) Benzo[e]pyrene	47.493	252	1047592	3695.484 ng/mL	91
89) Benzo[a]pyrene	47.667	252	1693567	6308.166 ng/mL	90
90) Perylene	47.950	252	446388M3	1557.905 ng/mL	
91) Indeno[1,2,3-cd]pyrene	52.157	276	1093660M4	3678.212 ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.194	278	313564	1070.544 ng/mL	99
93) Benzo[g,h,i]perylene	53.354	276	1078470	3691.053 ng/mL	100
94) Hopane (T19)	51.316	191	30963M4	280.569 ng/mL	
96) C23 Tricyclic Terpane (T4	40.211	191	3467	31.416 ng/ml	100
97) C24 Tricyclic Terpane (T5	40.941	191	2609	23.641 ng/ml	100
98) C25 Tricyclic Terpane (T6	42.493	191G	5125M1	46.440 ng/ml	
99) C24 Tetracyclic Terpane (	43.726	191	2510M4	22.744 ng/ml	
100) C26 Tricyclic Terpane-22S	43.480	191	1957M4	17.733 ng/ml	
101) C26 Tricyclic Terpane-22R	43.580	191	1162	10.529 ng/ml	100
102) C28 Tricyclic Terpane-22S	45.874	191	1175M4	10.647 ng/ml	

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009590.D
Acq On : 23 Dec 2012 10:22 am
Operator : ps
Sample : 1212022-03
Misc : 1X
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Dec 27 14:19:25 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
103) C28 Tricyclic Terpane-22R	46.039	191	1792M4	16.238	ng/ml	
104) C29 Tricyclic Terpane-22S	46.551	191	1612M4	14.607	ng/ml	
105) C29 Tricyclic Terpane-22R	46.743	191	1260M4	11.417	ng/ml	
106) 18a-22,29,30-Trisnorneoho	47.786	191	6326	57.323	ng/ml	100
107) C30 Tricyclic Terpane-22S	47.905	191	1653M4	14.979	ng/mL	
108) C30 Tricyclic Terpane-22R	48.142	191	1479M3	13.402	ng/mL	
109) 17a(H)-22,29,30-Trisnorho	48.298	191	7797	70.652	ng/ml	100
110) 17a/b,21b/a 28,30-Bisnorh	49.414	191	1245	11.281	ng/ml	100
111) 17a(H),21b(H)-25-Norhopan	49.249	191	1226	11.109	ng/ml	100
112) 30-Norhopane (T15)	50.045	191	22061M4	199.904	ng/ml	
113) 18a(H)-30-Norneohopane-C2	50.145	191	6452M4	58.464	ng/ml	
114) 17a(H)-Diahopane (X)	50.264	191	2568M4	23.270	ng/ml	
115) 30-Normoretane (T17)	50.777	191	3514M4	31.842	ng/ml	
116) 18a(H)&18b(H)-Oleananes (	51.142	191	2256M4	20.443	ng/ml	
117) Moretane (T20)	51.947	191	5623M4	50.952	ng/ml	
118) 30-Homohopane-22S (T21)	52.970	191	11252	101.959	ng/ml	100
119) 30-Homohopane-22R (T22)	53.190	191	8686M4	78.708	ng/ml	
120) Gammacerane/C32-diahopane	53.683	191	3170	28.725	ng/mL	100
121) 30,31-Bishomohopane-22S (	54.359	191G	20947	189.810	ng/ml	100
122) 30,31-Bishomohopane-22R (	54.761	191	4995	45.262	ng/ml	100
123) 30,31-Trishomohopane-22S	56.361	191	5729	51.913	ng/ml	100
124) 30,31-Trishomohopane-22R	56.918	191	2950	26.731	ng/ml	100
125) Tetrakishomohopane-22S (T	58.782	191	3299	29.894	ng/ml	100
126) Tetrakishomohopane-22R (T	59.531	191G	4743M4	42.978	ng/ml	
127) Pentakishomohopane-22S (T	61.633	191	2583	23.406	ng/ml	100
128) Pentakishomohopane-22R (T	62.812	191	2520	22.835	ng/ml	100
130) 13b(H),17a(H)-20S-Diachol	44.703	217	2369M4	44.956	ng/ml	
131) 13b(H),17a(H)-20R-Diachol	45.124	217	1239	23.512	ng/ml	100
132) 13b,17a-20S-Methyldiachol	45.819	217	1771M4	33.608	ng/ml	
133) 14a,17a-20S-Chol/13b,17a-	46.688	217	4868	92.380	ng/ml	100
134) 14a,17a-20R-Chol/13b,17a-	47.164	217	4781	90.729	ng/ml	100
135) Unknown Sterane (S18)	47.438	217	1228	23.304	ng/ml	100
136) 13a,17b-20S-Ethyldiachole	47.685	217	157	2.979	ng/ml	100
137) 14a,17a-20S-Methylcholest	47.831	217	2339M4	44.387	ng/ml	
138) 14a,17a-20R-Methylcholest	48.499	217	1663M4	31.559	ng/ml	
139) 14a(H),17a(H)-20S-Ethylch	48.838	217	2927M4	55.545	ng/ml	
140) 14a(H),17a(H)-20R-Ethylch	49.697	217	2602M4	49.378	ng/ml	
141) 14b(H),17b(H)-20R-Cholest	46.761	218	1785M4	33.874	ng/ml	
142) 14b(H),17b(H)-20S-Cholest	46.844	218	1996M4	37.878	ng/ml	
143) 14b,17b-20R-Methylcholest	47.996	218	2486	47.177	ng/ml	100
144) 14b,17b-20S-Methylcholest	48.069	218	3786M4	71.847	ng/ml	
145) 14b(H),17b(H)-20R-Ethylch	49.075	218	5025	95.359	ng/ml	100
146) 14b(H),17b(H)-20S-Ethylch	49.112	218	3418M3	64.863	ng/ml	
147) C26,20R- +C27,20S- triaro	48.792	231	3887M4	73.763	ng/mL	
148) C28,20S-triaromatic stero	49.597	231	5443	103.291	ng/mL	100
149) C27,20R-triaromatic stero	50.027	231	2720M4	51.617	ng/mL	
150) C28,20R-triaromatic stero	51.142	231	3816M4	72.416	ng/mL	

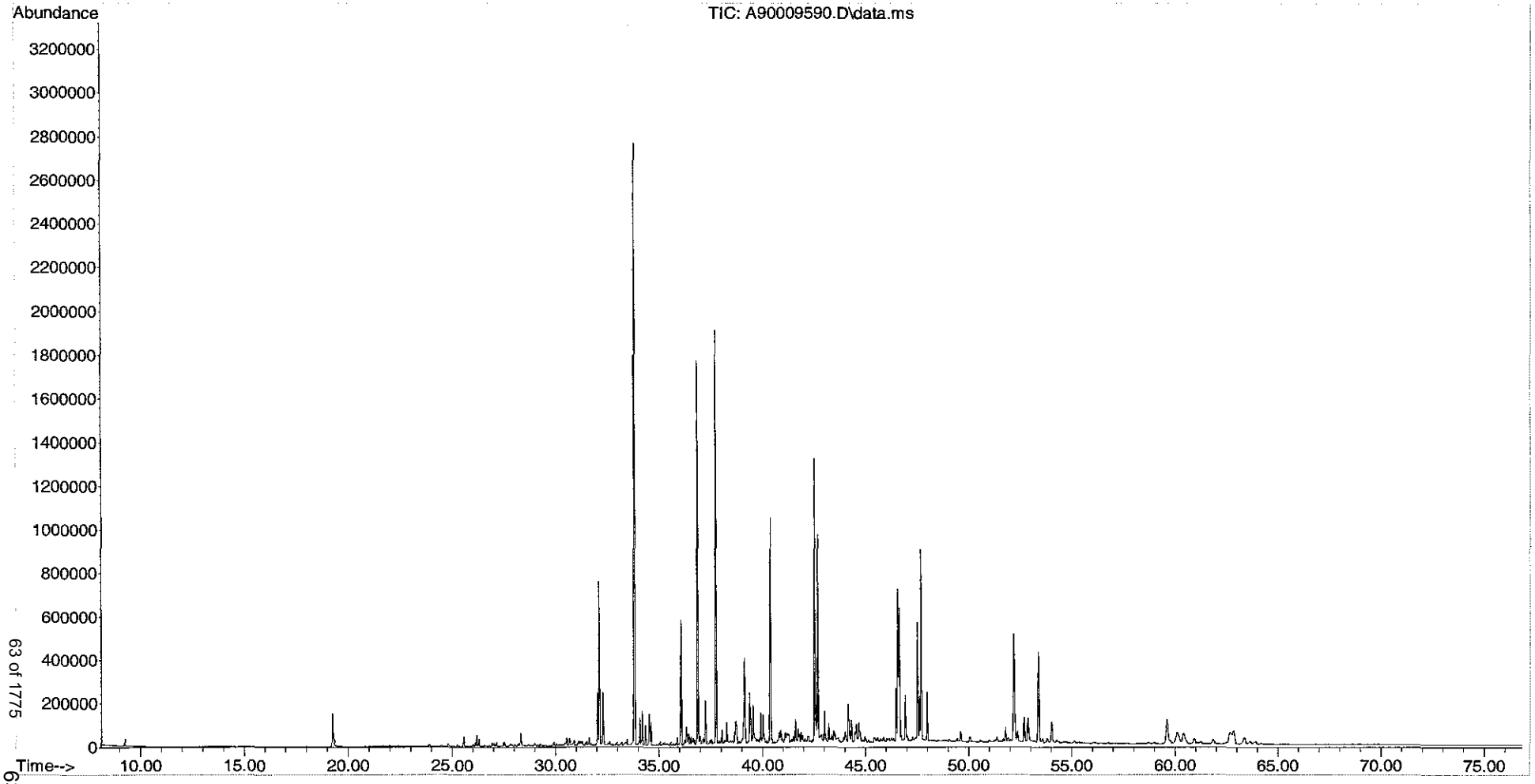
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009590.D
Acq On : 23 Dec 2012 10:22 am
Operator : ps
Sample : 1212022-03
Misc : 1X
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Dec 27 14:19:25 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES



Form I
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AS121312D013**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-04**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
12/13/12	12/14/12	12/20/12	12/23/12	74.6	15.18	2	1	PS

Parameter	Result		Parameter	Result	
cis/trans-Decalin	0.794	J	C3-Dibenzothiophenes	77.4	
C1-Decalins	2.86		C4-Dibenzothiophenes	30.4	
C2-Decalins	6.40		Benzo(b)fluorene	616	
C3-Decalins	7.76		Fluoranthene	5250	E
C4-Decalins	13.8		Pyrene	4860	E
Benzothiophene	5.65		C1-Fluoranthenes/Pyrenes	2330	
C1-Benzo(b)thiophenes	4.04		C2-Fluoranthenes/Pyrenes	773	
C2-Benzo(b)thiophenes	5.57		C3-Fluoranthenes/Pyrenes	291	
C3-Benzo(b)thiophenes	12.4		C4-Fluoranthenes/Pyrenes	166	
C4-Benzo(b)thiophenes	9.17		Naphthobenzothiophenes	422	
Naphthalene	173		C1-Naphthobenzothiophenes	221	
C1-Naphthalenes	69.5		C2-Naphthobenzothiophenes	110	
C2-Naphthalenes	120		C3-Naphthobenzothiophenes	61.1	
C3-Naphthalenes	190		C4-Naphthobenzothiophenes	31.4	
C4-Naphthalenes	120		Benz[a]anthracene	2410	
Biphenyl	29.7		Chrysene/Triphenylene	2240	
Dibenzofuran	102		C1-Chrysenes	971	
Acenaphthylene	206		C2-Chrysenes	420	
Acenaphthene	148		C3-Chrysenes	256	
Fluorene	233		C4-Chrysenes	86.1	
C1-Fluorenes	182		Benzo[b]fluoranthene	1870	
C2-Fluorenes	184		Benzo[j]fluoranthene/Benzo[k]fluoranthene	1930	
C3-Fluorenes	119		Benzo[a]fluoranthene	536	
Anthracene	855		Benzo[e]pyrene	1450	
Phenanthrene	2420		Benzo[a]pyrene	2580	
C1-Phenanthrenes/Anthracenes	1430		Perylene	642	
C2-Phenanthrenes/Anthracenes	814		Indeno[1,2,3-cd]pyrene	1460	
C3-Phenanthrenes/Anthracenes	315		Dibenz[ah]anthracene/Dibenz[ac]anthracene	426	
C4-Phenanthrenes/Anthracenes	96.5		Benzo[g,h,i]perylene	1410	
Retene	0.144	U			
Dibenzothiophene	138				
C1-Dibenzothiophenes	126				
C2-Dibenzothiophenes	127				

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	64	40-120
Phenanthrene-d10	84	40-120
Benzo[a]pyrene-d12	78	40-120

N/A - Not Applicable
E - Estimated value, exceeds the upper limit of calibration.
J - Estimated value, below quantitation limit.
U - The analyte was analyzed for but not detected at the sample specific level reported.

Form I
Carbazole

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AS121312D013**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-04**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
12/13/12	12/14/12	12/20/12	12/23/12	74.6	15.18	2	1	PS

Parameter	Result
Carbazole	**135**

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	64	40-120
Phenanthrene-d10	84	40-120
Benzo[a]pyrene-d12	78	40-120

N/A - Not Applicable

Form I
Polynuclear Aromatic Hydrocarbons Isomers

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AS121312D013**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-04**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
12/13/12	12/14/12	12/20/12	12/23/12	74.6	15.18	2	1	PS

Parameter	Result
4-Methyldibenzothiophene	**38.2**
2/3-Methyldibenzothiophene	**45.6**
1-Methyldibenzothiophene	**15.7**
3-Methylphenanthrene	**298**
2-Methylphenanthrene	**356**
2-Methylanthracene	**214**
9/4-Methylphenanthrene	**312**
1-Methylphenanthrene	**227**
2-Methylnaphthalene	**65.5**
1-Methylnaphthalene	**42.4**
2,6-Dimethylnaphthalene	**46.3**
2,3,5-Trimethylnaphthalene	**30.0**
Naphthobenzothiophene-2,1-D	**264**
Naphthobenzothiophene-1,2-D	**61.7**
Naphthobenzothiophene-2,3-D	**96.2**

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	64	40-120
Phenanthrene-d10	84	40-120
Benzo[a]pyrene-d12	78	40-120

N/A - Not Applicable

Form I
Steranes and Triterpanes

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AS121312D013**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-04**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
12/13/12	12/14/12	12/20/12	12/23/12	74.6	15.18	2	1	PS

Parameter	Result	
C23 Tricyclic Terpane	**11.3**	
C24 Tricyclic Terpane	**8.32**	
C25 Tricyclic Terpane	**91.4**	G
C24 Tetracyclic Terpane	**8.29**	
C26 Tricyclic Terpane-22S	**8.10**	
C26 Tricyclic Terpane-22R	**4.28**	
C28 Tricyclic Terpane-22S	**4.39**	
C28 Tricyclic Terpane-22R	**5.91**	
C29 Tricyclic Terpane-22S	**6.00**	
C29 Tricyclic Terpane-22R	**5.20**	
18a-22,29,30-Trisnorneohopane-TS	**21.2**	
C30 Tricyclic Terpane-22S	**5.66**	
C30 Tricyclic Terpane-22R	**4.62**	
17a(H)-22,29,30-Trisnorhopane-TM	**26.7**	
17a/b,21b/a 28,30-Bisnorhopane	**3.84**	
17a(H),21b(H)-25-Norhopane	**9.39**	
30-Norhopane	**79.0**	
18a(H)-30-Norneohopane-C29Ts	**22.0**	
17a(H)-Diahopane	**6.72**	
30-Normoretane	**12.8**	
18a(H)&18b(H)-Oleananes	**7.98**	
Hopane	**105**	
Moretane	**18.5**	
30-Homohopane-22S	**40.4**	
30-Homohopane-22R	**34.2**	
T22a-Gammacerane/C32-diahopane	**11.7**	
30,31-Bishomohopane-22S	**79.0**	G
30,31-Bishomohopane-22R	**18.8**	

Parameter	Result	
30,31-Trishomohopane-22S	**21.0**	
30,31-Trishomohopane-22R	**10.2**	
Tetrakishomohopane-22S	**17.2**	
Tetrakishomohopane-22R	**49.6**	G
Pentakishomohopane-22S	**12.2**	
Pentakishomohopane-22R	**8.21**	
13b(H),17a(H)-20S-Diacholestane	**17.9**	
13b(H),17a(H)-20R-Diacholestane	**9.25**	
13b,17a-20S-Methyldiacholestane	**10.9**	
14a(H),17a(H)-20S-Cholestane/ 13b(H),17a(H)-20S-Ethyldiacholestane (S12)	**33.0**	
14a(H),17a(H)-20R-Cholestane/ 13b(H),17a(H)-20R-Ethyldiacholestane (S17)	**31.2**	
Unknown Sterane (S18)	**7.61**	
13a,17b-20S-Ethyldiacholestane	**1.60**	J
14a,17a-20S-Methylcholestane	**16.6**	
14a,17a-20R-Methylcholestane	**10.5**	
14a(H),17a(H)-20S-Ethylcholestane	**18.4**	
14a(H),17a(H)-20R-Ethylcholestane	**18.1**	
14b(H),17b(H)-20R-Cholestane	**15.2**	
14b(H),17b(H)-20S-Cholestane	**16.3**	
14b,17b-20R-Methylcholestane	**17.9**	
14b,17b-20S-Methylcholestane	**25.1**	
14b(H),17b(H)-20R-Ethylcholestane	**36.8**	
14b(H),17b(H)-20S-Ethylcholestane	**21.3**	
C26,20R- +C27,20S- triaromatic steroid	**26.3**	
C28,20S-triaromatic steroid	**33.4**	
C27,20R-triaromatic steroid	**18.9**	
C28,20R-triaromatic steroid	**23.0**	

Surrogate	% Recovery	Acceptance Range (%)
5B(H)Cholane	78	50-130

N/A - Not Applicable
J - Estimated value, below quantitation limit.
G - Matrix Interference

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009592.D
Acq On : 23 Dec 2012 1:12 pm
Operator : ps
Sample : 1212022-04
Misc : 1X
ALS Vial : 21 Sample Multiplier: 1

12/27/12

Quant Time: Dec 27 14:19:37 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.156	164	68010	500.000	ng/mL	0.00
74) Chrysene-d12	42.566	240	127701	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.229	136	417928	1598.796	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 159.88%#			
42) Phenanthrene-d10	31.995	188	515085	2099.769	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 209.98%#			
83) Benzo[b]fluoranthene-d12	46.459	264	476964	2031.892	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 203.19%#			
88) Benzo[a]pyrene-d12	47.594	264	459796	1953.996	ng/mL	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 195.40%#			
129) 5B(H)Cholane - Surr	43.187	217	104918	1957.095	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 195.71%#			
Target Compounds						Qvalue
3) trans-Decalin	15.908	138	269	4.499	ng/mL	100
5) C1-Decalins	17.377	152	968M5	16.190	ng/mL	
6) C2-Decalins	19.138	166	2168M5	36.260	ng/mL	
7) C3-Decalins	21.146	180	2630M5	43.987	ng/mL	
8) C4-Decalins	24.960	194	4657M5	77.888	ng/mL	
10) Naphthalene	19.302	128	262375	978.094	ng/mL#	100
11) C1-Naphthalenes	21.985	142	105575M5	393.568	ng/mL	
12) C2-Naphthalenes	24.814	156	183158M5	682.785	ng/mL	
13) C3-Naphthalenes	27.141	170	288952M5	1077.170	ng/mL	
14) C4-Naphthalenes	31.137	184	181811M5	677.764	ng/mL	
16) 2-Methylnaphthalene	21.985	142	65047	370.790	ng/mL#	100
17) 1-Methylnaphthalene	22.405	142	40934	240.438	ng/mL#	100
18) Benzothiophene	19.531	134	7181M4	31.988	ng/mL	
19) C1-Benzo(b)thiophenes	22.168	148	5142M5	22.906	ng/mL	
20) C2-Benzo(b)thiophenes	24.522	162	7086M5	31.565	ng/mL	
21) C3-Benzo(b)thiophenes	26.621	176	15780M5	70.293	ng/mL	
22) C4-Benzo(b)thiophenes	29.066	190	11663M5	51.954	ng/mL	
23) Biphenyl	23.865	154	38621	168.232	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.477	156	43233	262.167	ng/mL#	100
25) Dibenzofuran	26.922	168	141707M4	578.732	ng/mL	
26) Acenaphthylene	25.544	152	322847	1169.945	ng/mL#	100
27) Acenaphthene	26.274	153	145365	837.826	ng/mL	100
28) 2,3,5-Trimethylnaphthalen	27.825	170	25781M3	170.046	ng/mL	
29) Fluorene	28.291	166	251098M4	1317.864	ng/mL	
30) C1-Fluorenes	30.508	180	196500M5	1031.311	ng/mL	
31) C2-Fluorenes	32.843	194	199077M5	1044.836	ng/mL	
32) C3-Fluorenes	35.336	208	128246M5	673.087	ng/mL	
33) Dibenzothiophene	31.584	184	208815	779.106	ng/mL#	90
34) 4-Methyldibenzothiophene(	33.364	198	57985	216.347	ng/mL#	100
35) 2/3-Methyldibenzothiophen	33.674	198	69271	258.456	ng/mL#	100
36) 1-Methyldibenzothiophene(	34.131	198	23851	88.990	ng/mL#	100
37) OTP	33.811	198	64223	239.621	ng/mL#	100
38) C1-Dibenzothiophenes	33.364	198	256037M5	955.295	ng/mL	
38) C1-Dibenzothiophenes BS	33.364	198	191814m	715.674	ng/mL	
39) C2-Dibenzothiophenes	35.043	212	192182M5	717.047	ng/mL	
40) C3-Dibenzothiophenes	36.851	226	117584M5	438.716	ng/mL	
41) C4-Dibenzothiophenes	38.531	240	46125M5	172.096	ng/mL	

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009592.D
Acq On : 23 Dec 2012 1:12 pm
Operator : ps
Sample : 1212022-04
Misc : 1X
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Dec 27 14:19:37 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
43) Phenanthrene	32.095	178	3795891	13708.783 ng/mL	100
44) 3-Methylphenanthrene(3MP)	34.048	192	467951	1689.996 ng/mL	97
45) 2-Methylphenanthrene(2MP)	34.158	192	558085	2015.513 ng/mL	97
46) 2-Methylanthracene(2MA)	34.322	192	335983	1213.396 ng/mL#	35
47) 9/4-Methylphenanthrene(9M	34.505	192	489024M3	1766.100 ng/mL	
48) 1-Methylphenanthrene(1MP)	34.587	192	356663	1288.081 ng/mL	96
49) C1-Phenanthrenes/Anthrace	34.158	192	2236453M5	8076.905 ng/mL	
50) C2-Phenanthrenes/Anthrace	36.312	206	1277074M5	4612.127 ng/mL	
50) C2-Phenanthrenes/Anthr BS	36.312	206	1277074m	4612.127 ng/mL	
52) C3-Phenanthrenes/Anthrace	38.147	220	494385M5	1785.461 ng/mL	
53) C4-Phenanthrenes/Anthrace	40.348	234	151413M5	546.825 ng/mL	
55) Anthracene	32.269	178	1245501	4843.879 ng/mL	100
56) Carbazole	32.944	167	185710	763.477 ng/mL	99
57) 1-Methylphenanthrene	34.587	192	356663	1745.848 ng/mL	100
58) Fluoranthene	36.869	202E	9196239	29730.513 ng/mL	98
59) Benzo(b)fluorene	39.362	216	641733M3	3488.537 ng/mL	
60) Pyrene	37.746	202E	8691775	27542.990 ng/mL	99
61) C1-Fluoranthenes/Pyrenes	39.124	216	4171042M5	13217.435 ng/mL	
62) C2-Fluoranthenes/Pyrenes	41.160	230	1381699M5	4378.406 ng/mL	
63) C3-Fluoranthenes/Pyrenes	43.050	244	520391M5	1649.045 ng/mL	
64) C4-Fluoranthenes/Pyrenes	43.333	258	296756M5	940.377 ng/mL	
66) Naphthobenzothiophene	41.571	234	408839	1493.078 ng/ml	95
67) Naphthobenzothiophene-2,1	41.571	234	408839	1493.078 ng/mL	95
68) Naphthobenzothiophene-1,2	41.909	234	95704M3	349.510 ng/mL	
69) Naphthobenzothiophene-2,3	42.201	234	149207M3	544.903 ng/mL	
70) C1-Naphthobenzothiophenes	42.968	248	343152M5	1253.189 ng/ml	
71) C2-Naphthobenzothiophenes	44.466	262	171336M5	625.718 ng/ml	
72) C3-Naphthobenzothiophenes	46.359	276	94716M5	345.902 ng/ml	
73) C4-Naphthobenzothiophenes	49.020	290	48767M5	178.097 ng/mL	
75) Benz[a]anthracene	42.512	228	4005376M3	13674.238 ng/mL	
77) Chrysene/Triphenylene	42.676	228	3656642	12692.777 ng/mL	98
78) C1-Chrysenes	44.137	242	1583896M5	5497.951 ng/mL	
79) C2-Chrysenes	45.837	256	705028M5	2447.263 ng/mL	
79) C2-Chrysenes BS	45.837	256	684970m	2377.638 ng/mL	
80) BBF-d12 Surr BKGD	46.459	256	20058	69.624 ng/mL	100
81) C3-Chrysenes	46.880	270	416877M5	1447.045 ng/mL	
82) C4-Chrysenes	48.334	284	140545M5	487.854 ng/mL	
84) Benzo[b]fluoranthene	46.560	252	3219632	10601.048 ng/mL	94
85) Benzo[j]+[k]fluoranthene	46.633	252	3256498	10912.755 ng/mL	93
86) Benzo[a]fluoranthene	46.908	252	906647	3038.238 ng/mL#	1
87) Benzo[e]pyrene	47.511	252	2367343	8208.736 ng/mL	91
89) Benzo[a]pyrene	47.694	252	3993686	14622.127 ng/mL	90
90) Perylene	47.969	252	1060938M3	3639.606 ng/mL	
91) Indeno[1,2,3-cd]pyrene	52.194	276	2495984M4	8251.486 ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.203	278	719443	2414.408 ng/mL	98
93) Benzo[g,h,i]perylene	53.400	276	2375201	7990.583 ng/mL	99
94) Hopane (T19)	51.325	191	66642M4	593.581 ng/mL	
96) C23 Tricyclic Terpane (T4	40.220	191	7171	63.872 ng/ml	100
97) C24 Tricyclic Terpane (T5	40.941	191	5289M4	47.109 ng/ml	
98) C25 Tricyclic Terpane (T6	42.512	191G	58125M1	517.720 ng/ml	
99) C24 Tetracyclic Terpane (	43.735	191	5271	46.949 ng/ml	100
100) C26 Tricyclic Terpane-22S	43.489	191	5153	45.898 ng/ml	100
101) C26 Tricyclic Terpane-22R	43.589	191	2723	24.254 ng/ml	100
102) C28 Tricyclic Terpane-22S	45.883	191	2795M4	24.895 ng/ml	

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009592.D
Acq On : 23 Dec 2012 1:12 pm
Operator : ps
Sample : 1212022-04
Misc : 1X
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Dec 27 14:19:37 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

	Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
103)	C28 Tricyclic Terpane-22R	46.039	191	3759	33.481	ng/ml	100
104)	C29 Tricyclic Terpane-22S	46.560	191	3815M4	33.980	ng/ml	
105)	C29 Tricyclic Terpane-22R	46.752	191	3308	29.464	ng/ml	100
106)	18a-22,29,30-Trisnorneoho	47.786	191	13488	120.138	ng/ml	100
107)	C30 Tricyclic Terpane-22S	47.905	191	3601M4	32.074	ng/mL	
108)	C30 Tricyclic Terpane-22R	48.142	191	2941M3	26.196	ng/mL	
109)	17a(H)-22,29,30-Trisnorho	48.307	191	16997M4	151.393	ng/ml	
110)	17a/b,21b/a 28,30-Bisnorh	49.423	191	2439M4	21.724	ng/ml	
111)	17a(H),21b(H)-25-Norhopan	49.231	191	5970	53.175	ng/ml	100
112)	30-Norhopane (T15)	50.054	191	50253	447.604	ng/ml	100
113)	18a(H)-30-Norneohopane-C2	50.145	191	13981M4	124.529	ng/ml	
114)	17a(H)-Diahopane (X)	50.273	191	4275M4	38.078	ng/ml	
115)	30-Normoretane (T17)	50.776	191	8169	72.761	ng/ml	100
116)	18a(H)&18b(H)-Oleananes (	51.151	191	5077	45.221	ng/ml	100
117)	Moretane (T20)	51.965	191	11742M4	104.586	ng/ml	
118)	30-Homohopane-22S (T21)	52.989	191	25701	228.919	ng/ml	100
119)	30-Homohopane-22R (T22)	53.199	191	21768	193.888	ng/ml	100
120)	Gammacerane/C32-diahopane	53.701	191	7460	66.446	ng/mL	100
121)	30,31-Bishomohopane-22S (	54.369	191G	50206	447.186	ng/ml	100
122)	30,31-Bishomohopane-22R (	54.761	191	11946	106.403	ng/ml	100
123)	30,31-Trishomohopane-22S	56.370	191	13368	119.069	ng/ml	100
124)	30,31-Trishomohopane-22R	56.927	191	6465M4	57.584	ng/ml	
125)	Tetrakishomohopane-22S (T	58.800	191	10967	97.683	ng/ml	100
126)	Tetrakishomohopane-22R (T	59.541	191G	31549	281.008	ng/ml	100
127)	Pentakishomohopane-22S (T	61.651	191	7784M4	69.332	ng/ml	
128)	Pentakishomohopane-22R (T	62.821	191	5223M4	46.521	ng/ml	
130)	13b(H),17a(H)-20S-Diachol	44.703	217	5437M4	101.419	ng/ml	
131)	13b(H),17a(H)-20R-Diachol	45.124	217	2810	52.417	ng/ml	100
132)	13b,17a-20S-Methyldiachol	45.828	217	3317M4	61.874	ng/ml	
133)	14a,17a-20S-Chol/13b,17a-	46.688	217	10021	186.927	ng/ml	100
134)	14a,17a-20R-Chol/13b,17a-	47.173	217	9491	177.041	ng/ml	100
135)	Unknown Sterane (S18)	47.447	217	2312	43.127	ng/ml	100
136)	13a,17b-20S-Ethyldiachole	47.685	217	486	9.066	ng/ml	100
137)	14a,17a-20S-Methylcholest	47.841	217	5056M4	94.312	ng/ml	
138)	14a,17a-20R-Methylcholest	48.508	217	3193	59.561	ng/ml	100
139)	14a(H),17a(H)-20S-Ethylch	48.838	217	5600M4	104.460	ng/ml	
140)	14a(H),17a(H)-20R-Ethylch	49.697	217	5492M4	102.445	ng/ml	
141)	14b(H),17b(H)-20R-Cholest	46.770	218	4623M4	86.235	ng/ml	
142)	14b(H),17b(H)-20S-Cholest	46.853	218	4955M4	92.428	ng/ml	
143)	14b,17b-20R-Methylcholest	47.996	218	5445M4	101.569	ng/ml	
144)	14b,17b-20S-Methylcholest	48.078	218	7629M4	142.308	ng/ml	
145)	14b(H),17b(H)-20R-Ethylch	49.075	218	11166	208.286	ng/ml	100
146)	14b(H),17b(H)-20S-Ethylch	49.121	218	6472M3	120.726	ng/ml	
147)	C26,20R- +C27,20S- triaro	48.801	231	7997M4	149.173	ng/mL	
148)	C28,20S-triaromatic stero	49.606	231	10138	189.110	ng/mL	100
149)	C27,20R-triaromatic stero	50.036	231	5743M4	107.127	ng/mL	
150)	C28,20R-triaromatic stero	51.151	231	6983M4	130.258	ng/mL	

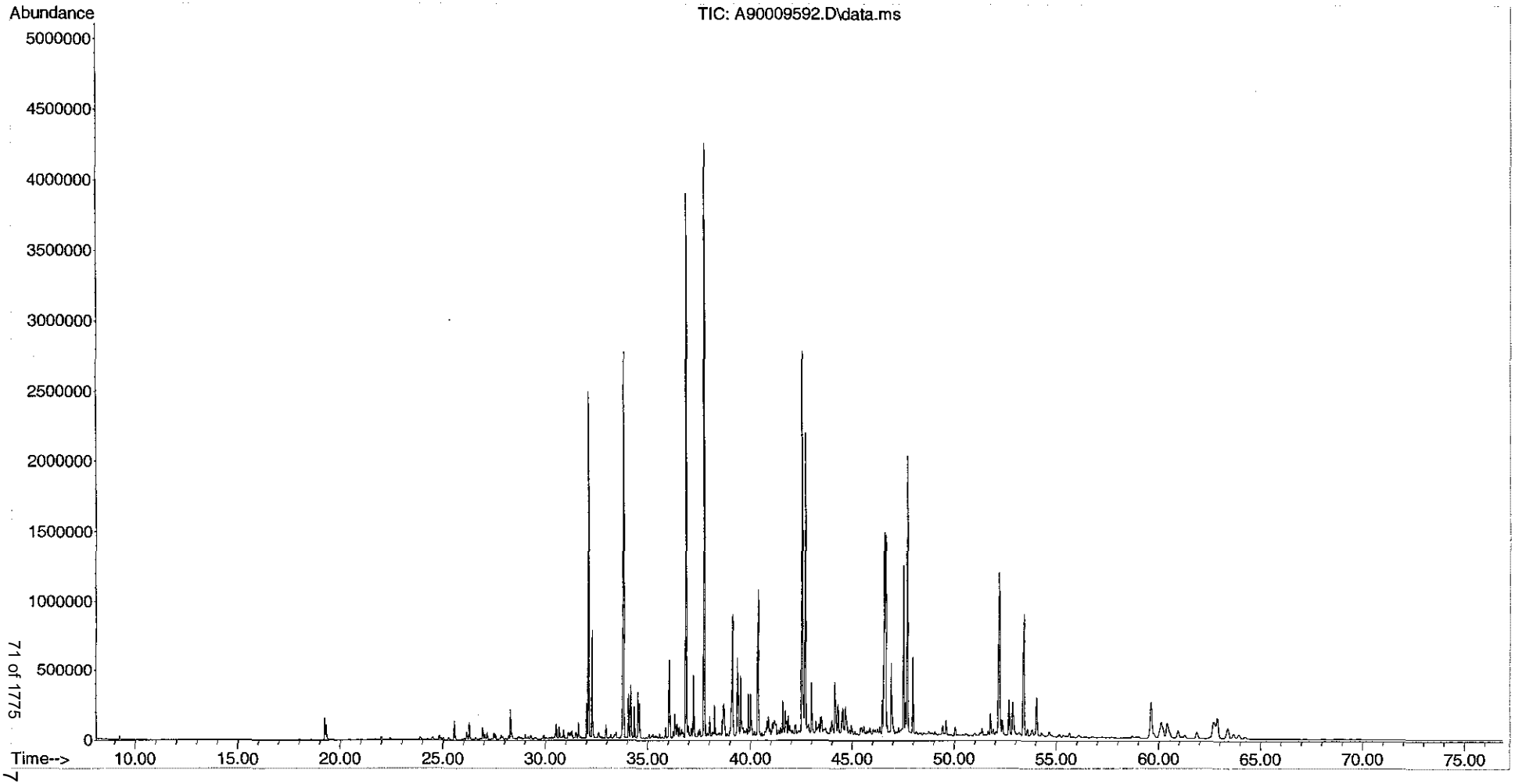
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009592.D
Acq On : 23 Dec 2012 1:12 pm
Operator : ps
Sample : 1212022-04
Misc : 1X
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Dec 27 14:19:37 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES



Form I
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AS121312D013**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-04E**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
12/13/12	12/14/12	12/20/12	12/26/12	74.6	15.18	2	2	PS

Parameter	Result		Parameter	Result	
cis/trans-Decalin	0.505	U	C3-Dibenzothiophenes	0.154	U
C1-Decalins	0.505	U	C4-Dibenzothiophenes	0.154	U
C2-Decalins	0.505	U	Benzo(b)fluorene	0.318	U
C3-Decalins	0.505	U	Fluoranthene	**4790**	
C4-Decalins	0.505	U	Pyrene	**4420**	
Benzothiophene	0.410	U	C1-Fluoranthenes/Pyrenes	0.263	U
C1-Benzo(b)thiophenes	0.410	U	C2-Fluoranthenes/Pyrenes	0.263	U
C2-Benzo(b)thiophenes	0.410	U	C3-Fluoranthenes/Pyrenes	0.263	U
C3-Benzo(b)thiophenes	0.410	U	C4-Fluoranthenes/Pyrenes	0.263	U
C4-Benzo(b)thiophenes	0.410	U	Naphthobenzothiophenes	0.171	U
Naphthalene	0.344	U	C1-Naphthobenzothiophenes	0.171	U
C1-Naphthalenes	0.344	U	C2-Naphthobenzothiophenes	0.171	U
C2-Naphthalenes	0.344	U	C3-Naphthobenzothiophenes	0.171	U
C3-Naphthalenes	0.344	U	C4-Naphthobenzothiophenes	0.171	U
C4-Naphthalenes	0.344	U	Benz[a]anthracene	0.345	U
Biphenyl	0.160	U	Chrysene/Triphenylene	0.275	U
Dibenzofuran	0.150	U	C1-Chrysenes	0.275	U
Acenaphthylene	0.120	U	C2-Chrysenes	0.275	U
Acenaphthene	0.142	U	C3-Chrysenes	0.275	U
Fluorene	0.169	U	C4-Chrysenes	0.275	U
C1-Fluorenes	0.169	U	Benzo[b]fluoranthene	0.445	U
C2-Fluorenes	0.169	U	Benzo[j]fluoranthene/Benzo[k]fluoranthene	0.314	U
C3-Fluorenes	0.169	U	Benzo[a]fluoranthene	0.314	U
Anthracene	0.248	U	Benzo[e]pyrene	0.284	U
Phenanthrene	0.299	U	Benzo[a]pyrene	0.364	U
C1-Phenanthrenes/Anthracenes	0.299	U	Perylene	0.576	U
C2-Phenanthrenes/Anthracenes	0.299	U	Indeno[1,2,3-cd]pyrene	0.752	U
C3-Phenanthrenes/Anthracenes	0.299	U	Dibenz[ah]anthracene/Dibenz[ac]anthracene	0.727	U
C4-Phenanthrenes/Anthracenes	0.299	U	Benzo[g,h,i]perylene	0.459	U
Retene	0.288	U			
Dibenzothiophene	0.154	U			
C1-Dibenzothiophenes	0.154	U			
C2-Dibenzothiophenes	0.154	U			

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	59	40-120
Phenanthrene-d10	77	40-120
Benzo[a]pyrene-d12	66	40-120

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

Form I
Carbazole

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AS121312D013**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-04E**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
12/13/12	12/14/12	12/20/12	12/26/12	74.6	15.18	2	2	PS

Parameter	Result
Carbazole	0.333 U

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	59	40-120
Phenanthrene-d10	77	40-120
Benzo[a]pyrene-d12	66	40-120

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

Form I
Polynuclear Aromatic Hydrocarbons Isomers

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AS121312D013**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-04E**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
12/13/12	12/14/12	12/20/12	12/26/12	74.6	15.18	2	2	PS

Parameter	Result
4-Methyldibenzothiophene	0.154 U
2/3-Methyldibenzothiophene	0.154 U
1-Methyldibenzothiophene	0.154 U
3-Methylphenanthrene	0.299 U
2-Methylphenanthrene	0.299 U
2-Methylanthracene	0.299 U
9/4-Methylphenanthrene	0.299 U
1-Methylphenanthrene	0.299 U
2-Methylnaphthalene	0.228 U
1-Methylnaphthalene	0.229 U
2,6-Dimethylnaphthalene	0.242 U
2,3,5-Trimethylnaphthalene	0.191 U
Naphthobenzothiophene-2,1-D	0.171 U
Naphthobenzothiophene-1,2-D	0.171 U
Naphthobenzothiophene-2,3-D	0.171 U

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	59	40-120
Phenanthrene-d10	77	40-120
Benzo[a]pyrene-d12	66	40-120

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

Form I
Steranes and Triterpanes

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AS121312D013**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-04E**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
12/13/12	12/14/12	12/20/12	12/26/12	74.6	15.18	2	2	PS

Parameter	Result		Parameter	Result	
C23 Tricyclic Terpane	2.82	U	30,31-Trishomohopane-22S	2.82	U
C24 Tricyclic Terpane	2.82	U	30,31-Trishomohopane-22R	2.82	U
C25 Tricyclic Terpane	2.82	U	Tetrakishomohopane-22S	2.82	U
C24 Tetracyclic Terpane	2.82	U	Tetrakishomohopane-22R	2.82	U
C26 Tricyclic Terpane-22S	2.82	U	Pentakishomohopane-22S	2.82	U
C26 Tricyclic Terpane-22R	2.82	U	Pentakishomohopane-22R	2.82	U
C28 Tricyclic Terpane-22S	2.82	U	13b(H),17a(H)-20S-Diacholestane	2.82	U
C28 Tricyclic Terpane-22R	2.82	U	13b(H),17a(H)-20R-Diacholestane	2.82	U
C29 Tricyclic Terpane-22S	2.82	U	13b,17a-20S-Methyldiacholestane	2.82	U
C29 Tricyclic Terpane-22R	2.82	U	14a(H),17a(H)-20S-Cholestane/ 13b(H),17a(H)-20S-Ethyldiacholestane (S12)	2.82	U
18a-22,29,30-Trisnorneohopane-TS	2.82	U	14a(H),17a(H)-20R-Cholestane/ 13b(H),17a(H)-20R-Ethyldiacholestane (S17)	2.82	U
C30 Tricyclic Terpane-22S	2.82	U	Unknown Sterane (S18)	2.82	U
C30 Tricyclic Terpane-22R	2.82	U	13a,17b-20S-Ethyldiacholestane	2.82	U
17a(H)-22,29,30-Trisnorhopane-TM	2.82	U	14a,17a-20S-Methylcholestane	2.82	U
17a/b,21b/a 28,30-Bisnorhopane	2.82	U	14a,17a-20R-Methylcholestane	2.82	U
17a(H),21b(H)-25-Norhopane	2.82	U	14a(H),17a(H)-20S-Ethylcholestane	2.82	U
30-Norhopane	2.82	U	14a(H),17a(H)-20R-Ethylcholestane	2.82	U
18a(H)-30-Norneohopane-C29Ts	2.82	U	14b(H),17b(H)-20R-Cholestane	2.82	U
17a(H)-Diahopane	2.82	U	14b(H),17b(H)-20S-Cholestane	2.82	U
30-Normoretane	2.82	U	14b,17b-20R-Methylcholestane	2.82	U
18a(H)&18b(H)-Oleananes	2.82	U	14b,17b-20S-Methylcholestane	2.82	U
Hopane	2.82	U	14b(H),17b(H)-20R-Ethylcholestane	2.82	U
Moretane	2.82	U	14b(H),17b(H)-20S-Ethylcholestane	2.82	U
30-Homohopane-22S	2.82	U	C26,20R- +C27,20S- triaromatic steroid	2.82	U
30-Homohopane-22R	2.82	U	C28,20S-triaromatic steroid	2.82	U
T22a-Gammacerane/C32-diahopane	2.82	U	C27,20R-triaromatic steroid	2.82	U
30,31-Bishomohopane-22S	2.82	U	C28,20R-triaromatic steroid	2.82	U
30,31-Bishomohopane-22R	2.82	U			

Surrogate	% Recovery	Acceptance Range (%)
5B(H)Cholane	68	50-130

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\
Data File : A90009637.D
Acq On : 26 Dec 2012 9:24 pm
Operator : ps
Sample : 1212022-04-RE
Misc : 2X
ALS Vial : 7 Sample Multiplier: 1

12/27/12

Quant Time: Dec 27 14:20:56 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Dec 27 11:30:11 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.064	164	94634	500.000	ng/mL	0.00
74) Chrysene-d12	42.466	240	180853	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.147	136	266040	731.415	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 73.14%			
42) Phenanthrene-d10	31.904	188	327802	960.350	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 96.03%			
83) Benzo[b]fluoranthene-d12	46.359	264	287513	864.850	ng/mL	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 86.48%			
88) Benzo[a]pyrene-d12	47.475	264	275211	825.834	ng/mL	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 82.58%			
129) 5B(H)Cholane - Surr	43.096	217	64149	844.929	ng/ml	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 84.49%			
Target Compounds						Qvalue
58) Fluoranthene	36.760	202	5841315	13571.516	ng/mL	99
60) Pyrene	37.636	202	5496381	12517.137	ng/mL	100

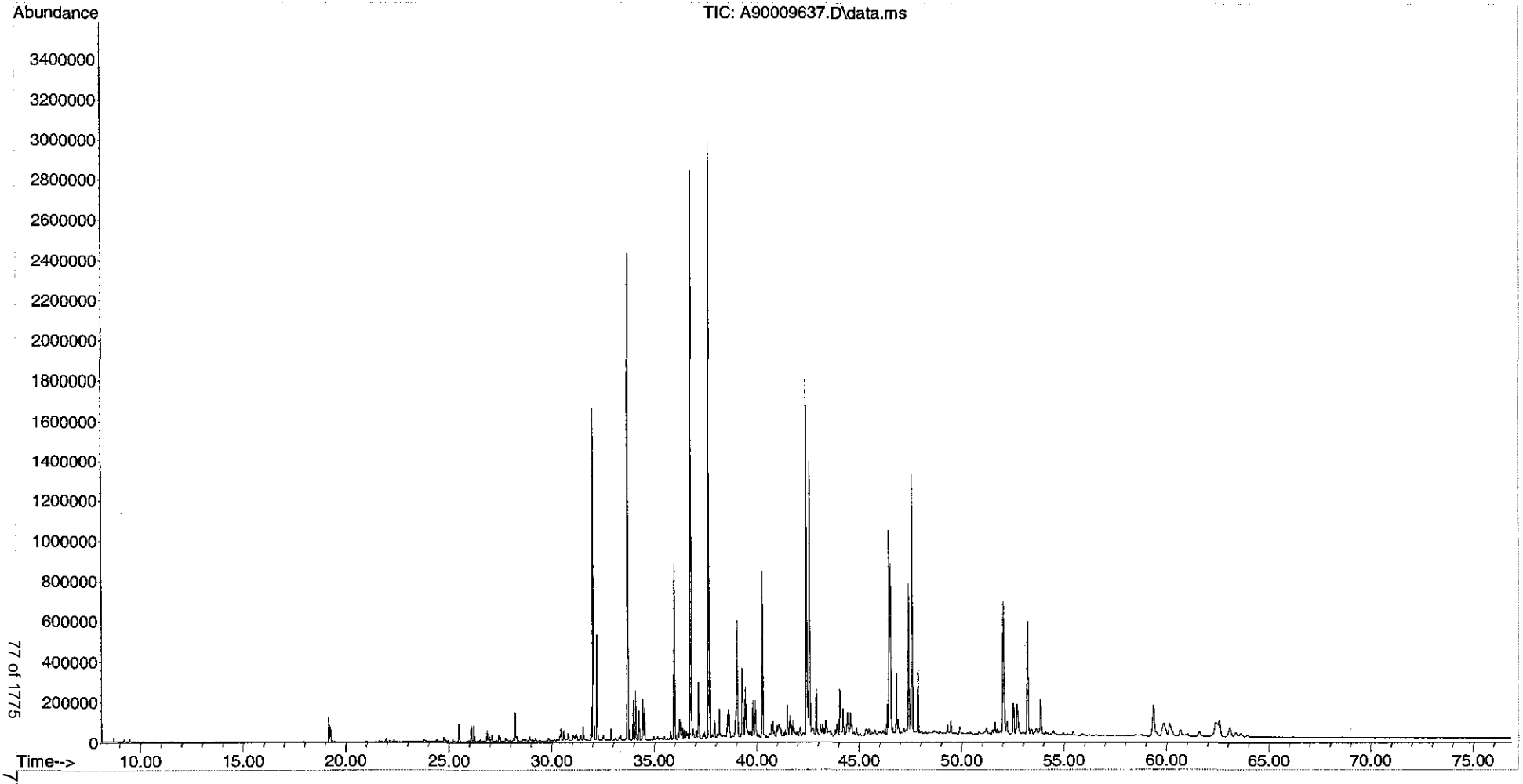
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\
Data File : A90009637.D
Acq On : 26 Dec 2012 9:24 pm
Operator : ps
Sample : 1212022-04-RE
Misc : 2X
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Dec 27 14:20:56 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Dec 27 11:30:11 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES



Response Factor Report PAH 9

Method Path : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\
Method File : PAH9120412.M
Title : Decalins & Alkylated PAH's
Last Update : Wed Dec 05 12:38:00 2012
Response Via : Initial Calibration

JJK (12/07/12)

Calibration Files
10 =A90009332.D 25 =A90009333.D 100 =A90009334.D 500 =A90009335.D 5000=A90009336.D 1e4 =A90009337.D 2e4 =A90009338.D

		Compound	10	25	100	500	5000	1e4	2e4	Avg	%RSD
1)	i	Acenaphthene-d10	----------ISTD----------								
2)	t	2-butoxyethanol	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.00
3)	A1	trans-Decalin	0.506	0.440	0.424	0.423	0.445	0.426	0.413	0.440	7.08
4)	t	cis-Decalin	0.408	0.335	0.334	0.331	0.347	0.332	0.322	0.344	8.41
5)	A2	C1-Decalins	0.506	0.440	0.424	0.423	0.445	0.426	0.413	0.440	7.08
6)	A2	C2-Decalins	0.506	0.440	0.424	0.423	0.445	0.426	0.413	0.440	7.08
7)	A2	C3-Decalins	0.506	0.440	0.424	0.423	0.445	0.426	0.413	0.440	7.08
8)	A2	C4-Decalins	0.506	0.440	0.424	0.423	0.445	0.426	0.413	0.440	7.08
9)	s	Naphthalene-d8	2.073	1.958	1.966	2.010	1.791	1.820	1.835	1.922	5.59
10)	A1	Naphthalene	2.038	2.038	1.969	1.987	2.038	1.923	1.811	1.972	4.22
11)	A2	C1-Naphthalenes	2.038	2.038	1.969	1.987	2.038	1.923	1.811	1.972	4.22
12)	A2	C2-Naphthalenes	2.038	2.038	1.969	1.987	2.038	1.923	1.811	1.972	4.22
13)	A2	C3-Naphthalenes	2.038	2.038	1.969	1.987	2.038	1.923	1.811	1.972	4.22
14)	A2	C4-Naphthalenes	2.038	2.038	1.969	1.987	2.038	1.923	1.811	1.972	4.22
15)	t	Glycol Ether I...	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.00
16)	t	2-Methylnaphth...	1.324	1.262	1.263	1.286	1.364	1.294	1.235	1.290	3.34
17)	t	1-Methylnaphth...	1.320	1.232	1.218	1.252	1.311	1.245	1.184	1.252	3.90
18)	A1	Benzothiophene	1.773	1.672	1.620	1.643	1.706	1.612	1.527	1.650	4.71
19)	A2	C1-Benzo(b)thi...	1.773	1.672	1.620	1.643	1.706	1.612	1.527	1.650	4.71
20)	A2	C2-Benzo(b)thi...	1.773	1.672	1.620	1.643	1.706	1.612	1.527	1.650	4.71
21)	A2	C3-Benzo(b)thi...	1.773	1.672	1.620	1.643	1.706	1.612	1.527	1.650	4.71
22)	A2	C4-Benzo(b)thi...	1.773	1.672	1.620	1.643	1.706	1.612	1.527	1.650	4.71
23)	t	Biphenyl	1.816	1.613	1.641	1.679	1.780	1.684	1.600	1.688	4.86
24)	t	2,6-Dimethylna...	1.292	1.145	1.155	1.198	1.296	1.230	1.171	1.212	5.14
25)	t	Dibenzofuran	1.763	1.641	1.740	1.834	1.968	1.872	1.782	1.800	5.78
26)	t	Acenaphthylene	1.964	1.903	1.926	2.014	2.243	2.130	2.021	2.029	5.95
27)	t	Acenaphthene	1.285	1.243	1.260	1.287	1.355	1.285	1.214	1.276	3.46
28)	t	2,3,5-Trimethy...	1.115	1.059	1.062	1.107	1.207	1.152	1.099	1.115	4.65
29)	A1	Fluorene	1.352	1.295	1.325	1.407	1.550	1.471	1.406	1.401	6.28
30)	A2	C1-Fluorenes	1.352	1.295	1.325	1.407	1.550	1.471	1.406	1.401	6.28
31)	A2	C2-Fluorenes	1.352	1.295	1.325	1.407	1.550	1.471	1.406	1.401	6.28
32)	A2	C3-Fluorenes	1.352	1.295	1.325	1.407	1.550	1.471	1.406	1.401	6.28
33)	A1	Dibenzothiophene	1.867	1.739	1.843	2.014	2.208	2.111	2.011	1.970	8.30
34)	A2	4-Methyldibenz...	1.867	1.739	1.843	2.014	2.208	2.111	2.011	1.970	8.30
35)	A2	2/3-Methyldibe...	1.867	1.739	1.843	2.014	2.208	2.111	2.011	1.970	8.30
36)	A2	1-Methyldibenz...	1.867	1.739	1.843	2.014	2.208	2.111	2.011	1.970	8.30
37)	A2	OTP	1.867	1.739	1.843	2.014	2.208	2.111	2.011	1.970	8.30
38)	A2	C1-Dibenzothio...	1.867	1.739	1.843	2.014	2.208	2.111	2.011	1.970	8.30
39)	A2	C2-Dibenzothio...	1.867	1.739	1.843	2.014	2.208	2.111	2.011	1.970	8.30
40)	A2	C3-Dibenzothio...	1.867	1.739	1.843	2.014	2.208	2.111	2.011	1.970	8.30
41)	A2	C4-Dibenzothio...	1.867	1.739	1.843	2.014	2.208	2.111	2.011	1.970	8.30

Method Path : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\ JJK (12/07/12)
Method File : PAH9120412.M

42)	s	Phenanthrene-d10	1.657	1.649	1.747	1.938	1.830	1.889	1.914	1.803	6.68
43)	A1	Phenanthrene	1.943	1.828	1.916	2.107	2.267	2.151	2.039	2.036	7.44
44)	A2	3-Methylphenan...	1.943	1.828	1.916	2.107	2.267	2.151	2.039	2.036	7.44
45)	A2	2-Methylphenan...	1.943	1.828	1.916	2.107	2.267	2.151	2.039	2.036	7.44
46)	A2	2-Methylanthra...	1.943	1.828	1.916	2.107	2.267	2.151	2.039	2.036	7.44
47)	A2	9/4-Methylphen...	1.943	1.828	1.916	2.107	2.267	2.151	2.039	2.036	7.44
48)	A2	1-Methylphenan...	1.943	1.828	1.916	2.107	2.267	2.151	2.039	2.036	7.44
49)	A2	C1-Phenanthren...	1.943	1.828	1.916	2.107	2.267	2.151	2.039	2.036	7.44
50)	A2	C2-Phenanthren...	1.943	1.828	1.916	2.107	2.267	2.151	2.039	2.036	7.44
51)	A2	5AA IS BKGD	1.943	1.828	1.916	2.107	2.267	2.151	2.039	2.036	7.44
52)	A2	C3-Phenanthren...	1.943	1.828	1.916	2.107	2.267	2.151	2.039	2.036	7.44
53)	A2	C4-Phenanthren...	1.943	1.828	1.916	2.107	2.267	2.151	2.039	2.036	7.44
54)	t	Retene	0.544	0.508	0.495	0.541	0.629	0.610	0.589	0.560	9.15
55)	t	Anthracene	1.632	1.619	1.762	2.007	2.212	2.081	1.920	1.890	12.04
56)	t	Carbazole	1.573	1.399	1.422	1.815	2.193	2.100	2.016	1.788	18.33
57)	t	1-Methylphenan...	1.398	1.311	1.376	1.519	1.708	1.640	1.562	1.502	9.75
58)	A1	Fluoranthene	2.147	2.080	2.091	2.274	2.554	2.445	2.327	2.274	7.99
59)	t	Benzo(b)fluorene	1.291	1.184	1.200	1.327	1.552	1.491	1.423	1.352	10.46
60)	A1	Pyrene	2.290	2.122	2.133	2.306	2.581	2.462	2.346	2.320	7.12
61)	A2	C1-Fluoranthen...	2.290	2.122	2.133	2.306	2.581	2.462	2.346	2.320	7.12
62)	A2	C2-Fluoranthen...	2.290	2.122	2.133	2.306	2.581	2.462	2.346	2.320	7.12
63)	A2	C3-Fluoranthen...	2.290	2.122	2.133	2.306	2.581	2.462	2.346	2.320	7.12
64)	A2	C4-Fluoranthen...	2.290	2.122	2.133	2.306	2.581	2.462	2.346	2.320	7.12
65)	t	Bis-(2-ethylhe...	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.00
66)	A1	Naphthobenzoth...	1.919	1.855	1.866	1.998	2.248	2.150	2.055	2.013	7.34
67)	A2	Naphthobenzoth...	1.919	1.855	1.866	1.998	2.248	2.150	2.055	2.013	7.34
68)	A2	Naphthobenzoth...	1.919	1.855	1.866	1.998	2.248	2.150	2.055	2.013	7.34
69)	A2	Naphthobenzoth...	1.919	1.855	1.866	1.998	2.248	2.150	2.055	2.013	7.34
70)	A2	C1-Naphthobenz...	1.919	1.855	1.866	1.998	2.248	2.150	2.055	2.013	7.34
71)	A2	C2-Naphthobenz...	1.919	1.855	1.866	1.998	2.248	2.150	2.055	2.013	7.34
72)	A2	C3-Naphthobenz...	1.919	1.855	1.866	1.998	2.248	2.150	2.055	2.013	7.34
73)	A2	C4-Naphthobenz...	1.919	1.855	1.866	1.998	2.248	2.150	2.055	2.013	7.34
74)	i	Chrysene-d12	----------ISTD----------								
75)	t	Benz[a]anthracene	1.123	1.066	1.083	1.130	1.272	1.212	1.142	1.147	6.30
76)	A1	Chrysene	1.109	1.058	1.110	1.152	1.226	1.158	1.083	1.128	4.94
77)	A2	Chrysene/Triph...	1.109	1.058	1.110	1.152	1.226	1.158	1.083	1.128	4.94
78)	A2	C1-Chrysenes	1.109	1.058	1.110	1.152	1.226	1.158	1.083	1.128	4.94
79)	A2	C2-Chrysenes	1.109	1.058	1.110	1.152	1.226	1.158	1.083	1.128	4.94
80)	A2	BBF-d12 Surr BKGD	1.109	1.058	1.110	1.152	1.226	1.158	1.083	1.128	4.94
81)	A2	C3-Chrysenes	1.109	1.058	1.110	1.152	1.226	1.158	1.083	1.128	4.94
82)	A2	C4-Chrysenes	1.109	1.058	1.110	1.152	1.226	1.158	1.083	1.128	4.94
83)	S	Benzo[b]fluora...	1.021	0.914	0.902	0.920	0.864	0.895	0.918	0.919	5.32
84)	t	Benzo[b]fluora...	1.228	1.142	1.125	1.161	1.284	1.218	1.167	1.189	4.73
85)	A1	Benzo[j]+[k]fl...	1.199	1.117	1.157	1.178	1.247	1.179	1.102	1.168	4.21
86)	A2	Benzo[a]fluora...	1.199	1.117	1.157	1.178	1.247	1.179	1.102	1.168	4.21
87)	t	Benzo[e]pyrene	1.234	1.120	1.085	1.094	1.177	1.122	1.073	1.129	5.09
88)	s	Benzo[a]pyrene...	0.940	0.875	0.868	0.955	0.909	0.941	0.961	0.921	4.10
89)	t	Benzo[a]pyrene	1.084	1.030	1.018	1.056	1.155	1.096	1.046	1.069	4.38
90)	t	Perylene	1.162	1.128	1.089	1.105	1.225	1.167	1.114	1.141	4.10
91)	t	Indeno[1,2,3-c...	1.235	1.161	1.102	1.113	1.248	1.207	1.224	1.184	5.00

Method Path : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\

Method File : PAH9120412.M

JPK (12/07/12)

92)	t	Dibenz[ah]+[ac...	1.166	1.129	1.108	1.146	1.258	1.206	1.155	1.167	4.33
93)	t	Benzo[g,h,i]pe...	1.190	1.140	1.118	1.122	1.235	1.193	1.150	1.164	3.72
94)	A1	Hopane (T19)	0.488	0.473	0.457	0.393	0.410	0.417		0.440	8.74
95)	A2	17a(H),21B(H)-...	0.488	0.473	0.457	0.393	0.410	0.417		0.440	8.74
96)	A2	C23 Tricyclic ...	0.488	0.473	0.457	0.393	0.410	0.417		0.440	8.74
97)	A2	C24 Tricyclic ...	0.488	0.473	0.457	0.393	0.410	0.417		0.440	8.74
98)	A2	C25 Tricyclic ...	0.488	0.473	0.457	0.393	0.410	0.417		0.440	8.74
99)	A2	C24 Tetracycli...	0.488	0.473	0.457	0.393	0.410	0.417		0.440	8.74
100)	A2	C26 Tricyclic ...	0.488	0.473	0.457	0.393	0.410	0.417		0.440	8.74
101)	A2	C26 Tricyclic ...	0.488	0.473	0.457	0.393	0.410	0.417		0.440	8.74
102)	A2	C28 Tricyclic ...	0.488	0.473	0.457	0.393	0.410	0.417		0.440	8.74
103)	A2	C28 Tricyclic ...	0.488	0.473	0.457	0.393	0.410	0.417		0.440	8.74
104)	A2	C29 Tricyclic ...	0.488	0.473	0.457	0.393	0.410	0.417		0.440	8.74
105)	A2	C29 Tricyclic ...	0.488	0.473	0.457	0.393	0.410	0.417		0.440	8.74
106)	A2	18a-22,29,30-T...	0.488	0.473	0.457	0.393	0.410	0.417		0.440	8.74
107)	A2	C30 Tricyclic ...	0.488	0.473	0.457	0.393	0.410	0.417		0.440	8.74
108)	A2	C30 Tricyclic ...	0.488	0.473	0.457	0.393	0.410	0.417		0.440	8.74
109)	A2	17a(H)-22,29,3...	0.488	0.473	0.457	0.393	0.410	0.417		0.440	8.74
110)	A2	17a/b,21b/a 28...	0.488	0.473	0.457	0.393	0.410	0.417		0.440	8.74
111)	A2	17a(H),21b(H)-...	0.488	0.473	0.457	0.393	0.410	0.417		0.440	8.74
112)	A2	30-Norhopane (...	0.488	0.473	0.457	0.393	0.410	0.417		0.440	8.74
113)	A2	18a(H)-30-Norn...	0.488	0.473	0.457	0.393	0.410	0.417		0.440	8.74
114)	A2	17a(H)-Diahopa...	0.488	0.473	0.457	0.393	0.410	0.417		0.440	8.74
115)	A2	30-Normoretane...	0.488	0.473	0.457	0.393	0.410	0.417		0.440	8.74
116)	A2	18a(H)&18b(H)-...	0.488	0.473	0.457	0.393	0.410	0.417		0.440	8.74
117)	A2	Moretane (T20)	0.488	0.473	0.457	0.393	0.410	0.417		0.440	8.74
118)	A2	30-Homohopane-...	0.488	0.473	0.457	0.393	0.410	0.417		0.440	8.74
119)	A2	30-Homohopane-...	0.488	0.473	0.457	0.393	0.410	0.417		0.440	8.74
120)	A2	Gammacerane/C3...	0.488	0.473	0.457	0.393	0.410	0.417		0.440	8.74
121)	A2	30,31-Bishomoh...	0.488	0.473	0.457	0.393	0.410	0.417		0.440	8.74
122)	A2	30,31-Bishomoh...	0.488	0.473	0.457	0.393	0.410	0.417		0.440	8.74
123)	A2	30,31-Trishomo...	0.488	0.473	0.457	0.393	0.410	0.417		0.440	8.74
124)	A2	30,31-Trishomo...	0.488	0.473	0.457	0.393	0.410	0.417		0.440	8.74
125)	A2	Tetrakishomoho...	0.488	0.473	0.457	0.393	0.410	0.417		0.440	8.74
126)	A2	Tetrakishomoho...	0.488	0.473	0.457	0.393	0.410	0.417		0.440	8.74
127)	A2	Pentakishomoho...	0.488	0.473	0.457	0.393	0.410	0.417		0.440	8.74
128)	A2	Pentakishomoho...	0.488	0.473	0.457	0.393	0.410	0.417		0.440	8.74
129)	SA1	5B(H)Cholane -...	0.223	0.198	0.195	0.205	0.220	0.218	0.210	0.210	5.23
130)	A2	13b(H),17a(H)-...	0.223	0.198	0.195	0.205	0.220	0.218	0.210	0.210	5.23
131)	A2	13b(H),17a(H)-...	0.223	0.198	0.195	0.205	0.220	0.218	0.210	0.210	5.23
132)	A2	13b,17a-20S-Me...	0.223	0.198	0.195	0.205	0.220	0.218	0.210	0.210	5.23
133)	A2	14a,17a-20S-Ch...	0.223	0.198	0.195	0.205	0.220	0.218	0.210	0.210	5.23
134)	A2	14a,17a-20R-Ch...	0.223	0.198	0.195	0.205	0.220	0.218	0.210	0.210	5.23
135)	A2	Unknown Steran...	0.223	0.198	0.195	0.205	0.220	0.218	0.210	0.210	5.23
136)	A2	13a,17b-20S-Et...	0.223	0.198	0.195	0.205	0.220	0.218	0.210	0.210	5.23
137)	A2	14a,17a-20S-Me...	0.223	0.198	0.195	0.205	0.220	0.218	0.210	0.210	5.23
138)	A2	14a,17a-20R-Me...	0.223	0.198	0.195	0.205	0.220	0.218	0.210	0.210	5.23
139)	A2	14a(H),17a(H)-...	0.223	0.198	0.195	0.205	0.220	0.218	0.210	0.210	5.23
140)	A2	14a(H),17a(H)-...	0.223	0.198	0.195	0.205	0.220	0.218	0.210	0.210	5.23
141)	A2	14b(H),17b(H)-...	0.223	0.198	0.195	0.205	0.220	0.218	0.210	0.210	5.23
142)	A2	14b(H),17b(H)-...	0.223	0.198	0.195	0.205	0.220	0.218	0.210	0.210	5.23

Response Factor Report PAH 9

Method Path : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\
Method File : PAH9120412.M

143)	A2	14b,17b-20R-Me...	0.223	0.198	0.195	0.205	0.220	0.218	0.210	0.210	5.23
144)	A2	14b,17b-20S-Me...	0.223	0.198	0.195	0.205	0.220	0.218	0.210	0.210	5.23
145)	A2	14b(H),17b(H)-...	0.223	0.198	0.195	0.205	0.220	0.218	0.210	0.210	5.23
146)	A2	14b(H),17b(H)-...	0.223	0.198	0.195	0.205	0.220	0.218	0.210	0.210	5.23
147)	A2	C26,20R- +C27,...	0.223	0.198	0.195	0.205	0.220	0.218	0.210	0.210	5.23
148)	A2	C28,20S-triaro...	0.223	0.198	0.195	0.205	0.220	0.218	0.210	0.210	5.23
149)	A2	C27,20R-triaro...	0.223	0.198	0.195	0.205	0.220	0.218	0.210	0.210	5.23
150)	A2	C28,20R-triaro...	0.223	0.198	0.195	0.205	0.220	0.218	0.210	0.210	5.23

(#) = Out of Range

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\
Data File : A90009332.D
Acq On : 5 Dec 2012 12:58 am
Operator : PS
Sample : I912041201
Misc : WHAQ83@10ng/ml
ALS Vial : 4 Sample Multiplier: 1

RKH 12/6/12

Quant Time: Dec 06 10:35:00 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 09:30:42 2012
Response via : Initial Calibration

JGK (12/07/12)

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.557	164	67219	500.000	ng/mL	0.00
74) Chrysene-d12	42.959	240	109897	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.622	136	2787	12.642	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 1.26%#			
42) Phenanthrene-d10	32.406	188	2228	8.621	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 0.86%#			
83) Benzo[b]fluoranthene-d12	46.852	264	2244	12.452	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 1.25%#			
88) Benzo[a]pyrene-d12	48.014	264	2067	12.240	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 1.22%#			
129) 5B(H)Cholane - Surr	43.598	217	491	10.549	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 1.05%#			
Target Compounds						Qvalue
3) trans-Decalin	16.291	138	340M6	6.924	ng/mL	
4) cis-Decalin	17.505	138	274M6	7.294	ng/mL	
10) Naphthalene	19.695	128	2740	12.092	ng/mL#	100
16) 2-Methylnaphthalene	22.378	142	1780	11.155	ng/mL#	100
17) 1-Methylnaphthalene	22.798	142	1774	11.568	ng/mL#	100
18) Benzothiophene	19.914	134	2384	12.640	ng/mL	100
23) Biphenyl	24.258	154	2441	11.615	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.860	156	1737	11.050	ng/mL#	100
25) Dibenzofuran	27.324	168	2370	9.917	ng/mL	96
26) Acenaphthylene	25.946	152	2640	10.750	ng/mL#	100
27) Acenaphthene	26.685	153	1728	11.181	ng/mL	97
28) 2,3,5-Trimethylnaphthalen	28.236	170	1499	10.559	ng/mL	89
29) Fluorene	28.693	166	1817	9.326	ng/mL	96
33) Dibenzothiophene	32.004	184	2510	9.057	ng/mL	96
43) Phenanthrene	32.497	178	2612	9.232	ng/mL	98
54) Retene	39.471	234	732	8.989	ng/mL	100
55) Anthracene	32.670	178	2194M4	8.482	ng/mL	
56) Carbazole	33.346	167	2115M4	9.047	ng/mL	
57) 1-Methylphenanthrene	34.989	192	1879M4	8.704	ng/mL	
58) Fluoranthene	37.253	202	2887	9.039	ng/mL	98
59) Benzo(b)fluorene	39.764	216	1735	8.314	ng/mL	95
60) Pyrene	38.129	202	3078	9.489	ng/mL	100
66) Naphthobenzothiophene	41.973	234	2580	8.777	ng/ml#	87
67) Naphthobenzothiophene-2,1	41.973	234	2580	8.777	ng/mL#	87
75) Benz[a]anthracene	42.895	228	2469M4	9.580	ng/mL	
76) Chrysene	43.060	228	2438	9.809	ng/mL	100
77) Chrysene/Triphenylene	43.060	228	2438	9.809	ng/mL	100
84) Benzo[b]fluoranthene	46.934	252	2700	11.493	ng/mL#	88
85) Benzo[j]+[k]fluoranthene	47.017	252	2636M4	11.562	ng/mL	
87) Benzo[e]pyrene	47.913	252	2713	12.554	ng/mL	94
89) Benzo[a]pyrene	48.096	252	2383	11.658	ng/mL#	78
90) Perylene	48.398	252	2553	11.765	ng/mL	90
91) Indeno[1,2,3-cd]pyrene	52.751	276	2714M6	12.787	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.815	278	2562	12.145	ng/mL	96
93) Benzo[g,h,i]perylene	53.994	276	2615	12.369	ng/mL	96
94) Hopane (T19)	51.928	191	1073	14.652	ng/mL#	53

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\
Data File : A90009332.D
Acq On : 5 Dec 2012 12:58 am
Operator : PS
Sample : I912041201
Misc : WHAQ83@10ng/ml
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Dec 06 10:35:00 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 09:30:42 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
95) 17a(H),21B(H)-hopane - C3	51.928	191	1073	14.652	ng/mL#	53

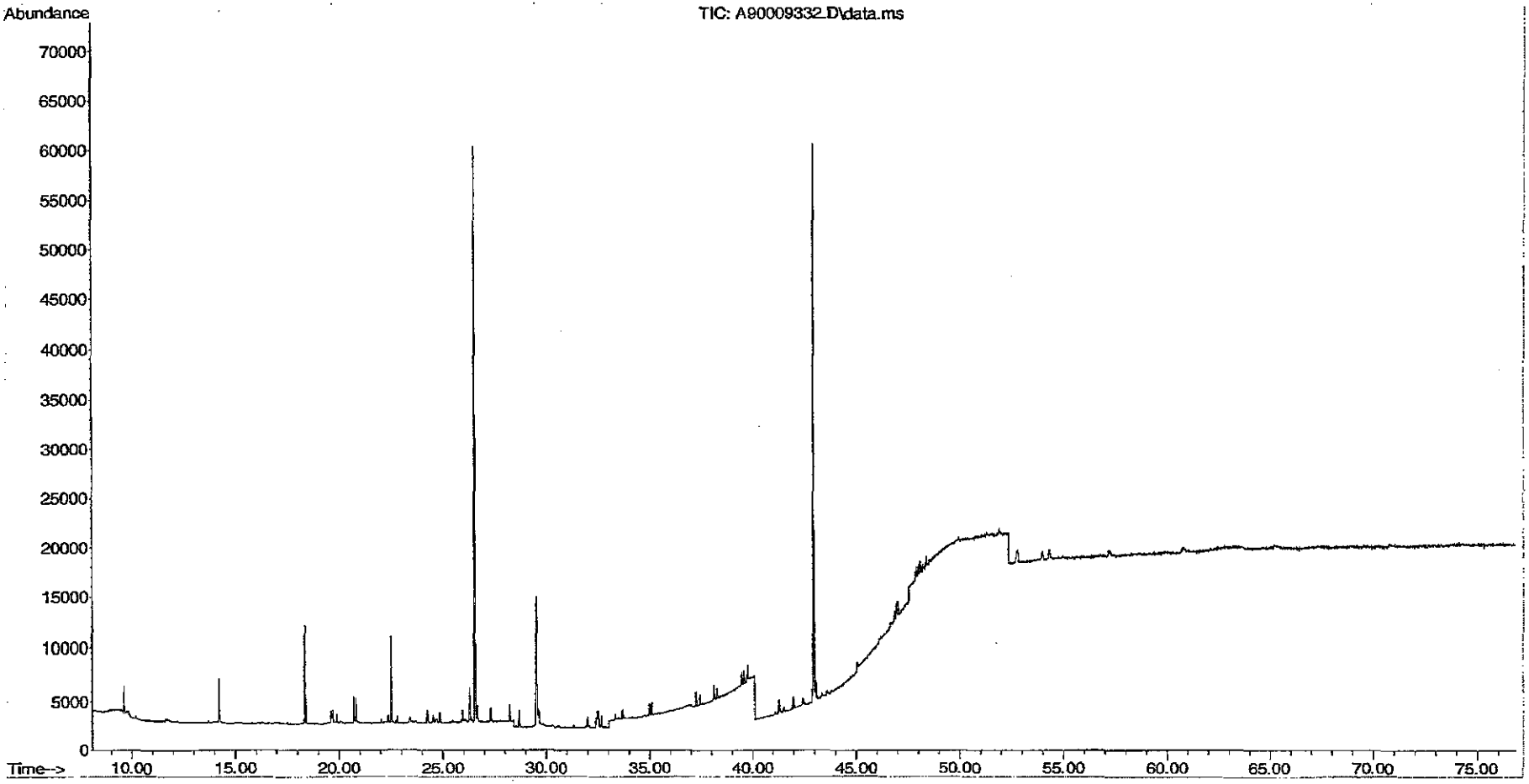
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\
Data File : A90009332.D
Acq On : 5 Dec 2012 12:58 am
Operator : PS
Sample : I912041201
Misc : WHAQ83@10ng/ml
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Dec 06 10:35:00 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 09:30:42 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\
Data File : A90009333.D
Acq On : 5 Dec 2012 2:22 am
Operator : PS
Sample : I912041202
Misc : WHAQ84@25ng/ml
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Dec 06 10:35:07 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 09:47:55 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.557	164	64925	500.000	ng/mL	0.00
74) Chrysene-d12	42.959	240	106384	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.622	136	6357	28.815	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery =	2.88%#		
42) Phenanthrene-d10	32.406	188	5352	21.698	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery =	2.17%#		
83) Benzo[b]fluoranthene-d12	46.852	264	4860	26.939	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery =	2.69%#		
88) Benzo[a]pyrene-d12	48.014	264	4655	27.716	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery =	2.77%#		
129) 5B(H)Cholane - Surr	43.598	217	1054	23.570	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery =	2.36%#		
Target Compounds						Qvalue
3) trans-Decalin	16.291	138	714	14.413	ng/mL	100
4) cis-Decalin	17.496	138	543	14.191	ng/mL	100
10) Naphthalene	19.695	128	6617	29.402	ng/mL#	100
16) 2-Methylnaphthalene	22.378	142	4098	25.978	ng/mL#	100
17) 1-Methylnaphthalene	22.798	142	3999	26.377	ng/mL#	100
18) Benzothiophene	19.914	134	5427	28.686	ng/mL	100
23) Biphenyl	24.258	154	5237	25.210	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.860	156	3716	24.150	ng/mL#	100
25) Dibenzofuran	27.324	168	5328	23.083	ng/mL	98
26) Acenaphthylene	25.946	152	6176	25.549	ng/mL#	100
27) Acenaphthene	26.685	153	4034	26.546	ng/mL	99
28) 2,3,5-Trimethylnaphthalen	28.236	170	3439	24.701	ng/mL	93
29) Fluorene	28.692	166	4204	22.460	ng/mL	95
33) Dibenzothiophene	32.004	184	5646	21.198	ng/mL	98
43) Phenanthrene	32.497	178	5933	21.817	ng/mL	99
54) Retene	39.471	234	1649	21.056	ng/mL	95
55) Anthracene	32.670	178	5257M4	21.382	ng/mL	
56) Carbazole	33.346	167	4541M4	20.317	ng/mL	
57) 1-Methylphenanthrene	34.989	192	4256	20.574	ng/mL	100
58) Fluoranthene	37.253	202	6751	21.878	ng/mL	100
59) Benzo(b)fluorene	39.764	216	3843	19.253	ng/mL	100
60) Pyrene	38.129	202	6890	21.993	ng/mL	99
66) Naphthobenzothiophene	41.973	234	6023	21.299	ng/ml	95
67) Naphthobenzothiophene-2,1	41.973	234	6023	21.299	ng/mL	95
75) Benz[a]anthracene	42.895	228	5670M6	22.741	ng/mL	
76) Chrysene	43.059	228	5627	23.307	ng/mL	97
77) Chrysene/Triphenylene	43.059	228	5627	23.307	ng/mL	97
84) Benzo[b]fluoranthene	46.934	252	6072	26.086	ng/mL	100
85) Benzo[j]+[k]fluoranthene	47.017	252	5939M6	26.294	ng/mL	
87) Benzo[e]pyrene	47.913	252	5955	27.642	ng/mL	100
89) Benzo[a]pyrene	48.096	252	5481M2	27.088	ng/mL	
90) Perylene	48.398	252	5998M2	27.863	ng/mL	
91) Indeno[1,2,3-cd]pyrene	52.751	276	6178M6	28.721	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.806	278	6003	28.280	ng/mL	97
93) Benzo[g,h,i]perylene	53.994	276	6063	28.701	ng/mL	99
94) Hopane (T19)	51.910	191	2517M6	33.703	ng/mL	

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\
Data File : A90009333.D
Acq On : 5 Dec 2012 2:22 am
Operator : PS
Sample : I912041202
Misc : WHAQ84@25ng/ml
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Dec 06 10:35:07 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 09:47:55 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
95) 17a(H),21B(H)-hopane - C3	51.910	191	2484M6	33.261	ng/mL	

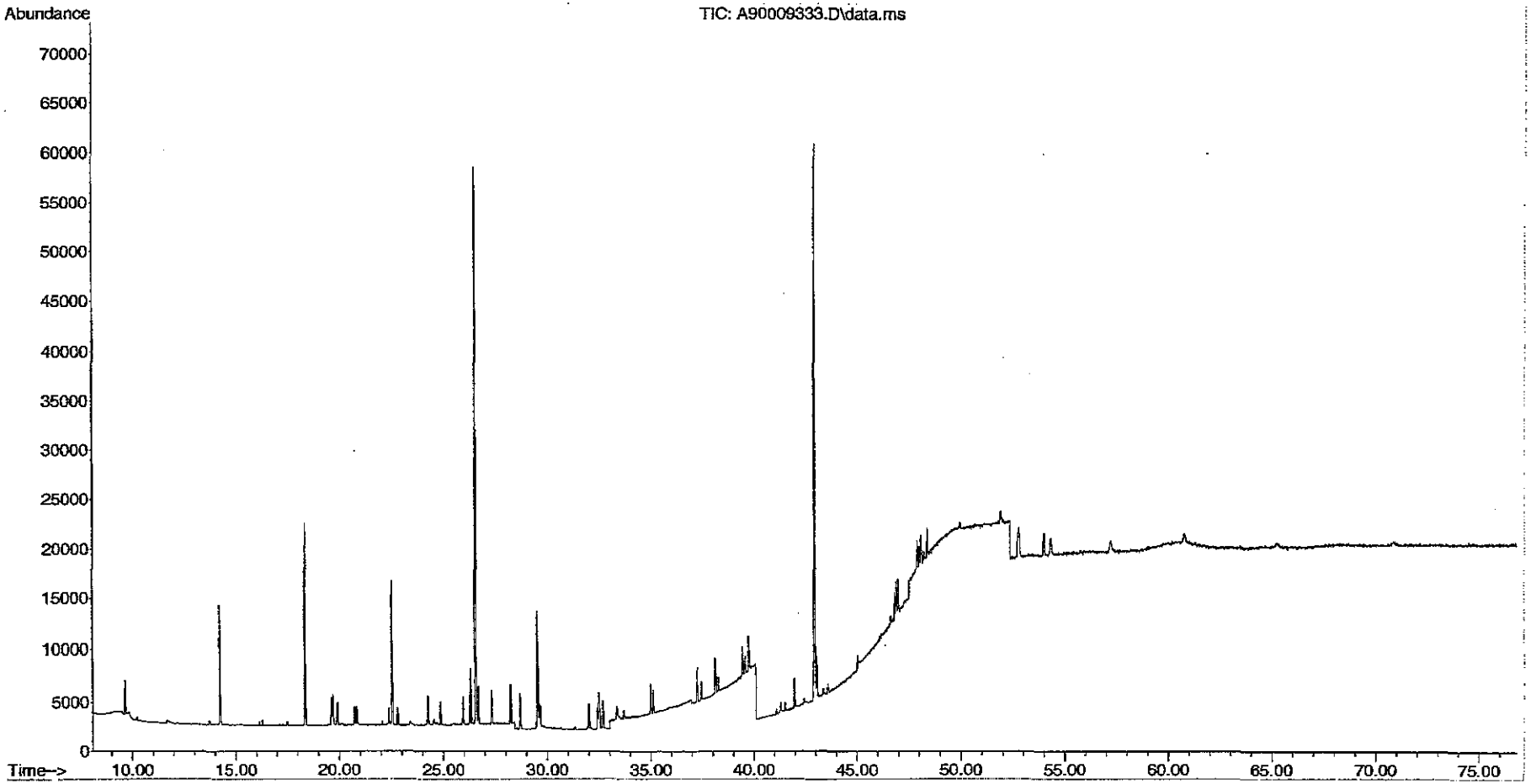
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\
Data File : A90009333.D
Acq On : 5 Dec 2012 2:22 am
Operator : PS
Sample : I912041202
Misc : WHAQ84@25ng/ml
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Dec 06 10:35:07 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 09:47:55 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\
Data File : A90009334.D
Acq On : 5 Dec 2012 3:47 am
Operator : PS
Sample : I912041203
Misc : WHAQ85@100ng/ml
ALS Vial : 6 Sample Multiplier: 1

BZM 12/6/12

Quant Time: Dec 06 10:35:13 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 09:50:00 2012
Response via : Initial Calibration

JGK (12/07/12)

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.557	164	66685	500.000	ng/mL	0.00
74) Chrysene-d12	42.959	240	109399	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.622	136	26221	113.255	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery =	11.33%#		
42) Phenanthrene-d10	32.405	188	23294	93.463	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery =	9.35%#		
83) Benzo[b]fluoranthene-d12	46.852	264	19742	104.200	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery =	10.42%#		
88) Benzo[a]pyrene-d12	48.004	264	19000	107.532	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery =	10.75%#		
129) 5B(H)Cholane - Surr	43.598	217	4274	93.608	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery =	9.36%#		
Target Compounds						Qvalue
3) trans-Decalin	16.291	138	2830	54.297	ng/mL	100
4) cis-Decalin	17.495	138	2228	54.938	ng/mL	100
10) Naphthalene	19.695	128	26266	110.458	ng/mL#	100
16) 2-Methylnaphthalene	22.377	142	16847	103.059	ng/mL#	100
17) 1-Methylnaphthalene	22.797	142	16238	103.183	ng/mL#	100
18) Benzothiophene	19.914	134	21606	108.390	ng/mL	100
23) Biphenyl	24.248	154	21888	102.322	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.860	156	15402	97.324	ng/mL#	100
25) Dibenzofuran	27.323	168	23213	98.573	ng/mL	99
26) Acenaphthylene	25.945	152	25688	101.897	ng/mL#	100
27) Acenaphthene	26.685	153	16801	106.120	ng/mL	97
28) 2,3,5-Trimethylnaphthalen	28.236	170	14168	98.893	ng/mL	97
29) Fluorene	28.692	166	17678	93.261	ng/mL	100
33) Dibenzothiophene	32.004	184	24574	91.128	ng/mL	99
43) Phenanthrene	32.487	178	25559	92.643	ng/mL	99
54) Retene	39.471	234	6599	82.744	ng/mL	94
55) Anthracene	32.670	178	23496M4	94.505	ng/mL	
56) Carbazole	33.345	167	18971	84.289	ng/mL	99
57) 1-Methylphenanthrene	34.988	192	18350	87.480	ng/mL	99
58) Fluoranthene	37.252	202	27887	88.420	ng/mL	99
59) Benzo(b)fluorene	39.763	216	16004	79.632	ng/mL	99
60) Pyrene	38.129	202	28452	88.872	ng/mL	100
66) Naphthobenzothiophene	41.973	234	24893	86.635	ng/ml	99
67) Naphthobenzothiophene-2,1	41.973	234	24893	86.635	ng/mL	99
75) Benz[a]anthracene	42.895	228	23704	92.889	ng/mL	100
76) Chrysene	43.059	228	24283	98.297	ng/mL	99
77) Chrysene/Triphenylene	43.059	228	24283	98.297	ng/mL	99
84) Benzo[b]fluoranthene	46.934	252	24621	101.212	ng/mL	92
85) Benzo[j]+[k]fluoranthene	47.016	252	25307M2	107.318	ng/mL	
87) Benzo[e]pyrene	47.913	252	23739	104.422	ng/mL	92
89) Benzo[a]pyrene	48.096	252	22270	104.614	ng/mL	92
90) Perylene	48.397	252	23828	104.858	ng/mL	90
91) Indeno[1,2,3-cd]pyrene	52.741	276	24121M6	105.214	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.805	278	24241	107.971	ng/mL	99
93) Benzo[g,h,i]perylene	53.993	276	24452	109.481	ng/mL	100
94) Hopane (T19)	51.919	191	9992	122.578	ng/mL#	80

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\
Data File : A90009334.D
Acq On : 5 Dec 2012 3:47 am
Operator : PS
Sample : I912041203
Misc : WHAQ85@100ng/ml
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Dec 06 10:35:13 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 09:50:00 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
95) 17a(H),21B(H)-hopane - C3	51.919	191	9992	122.919	ng/mL#	80

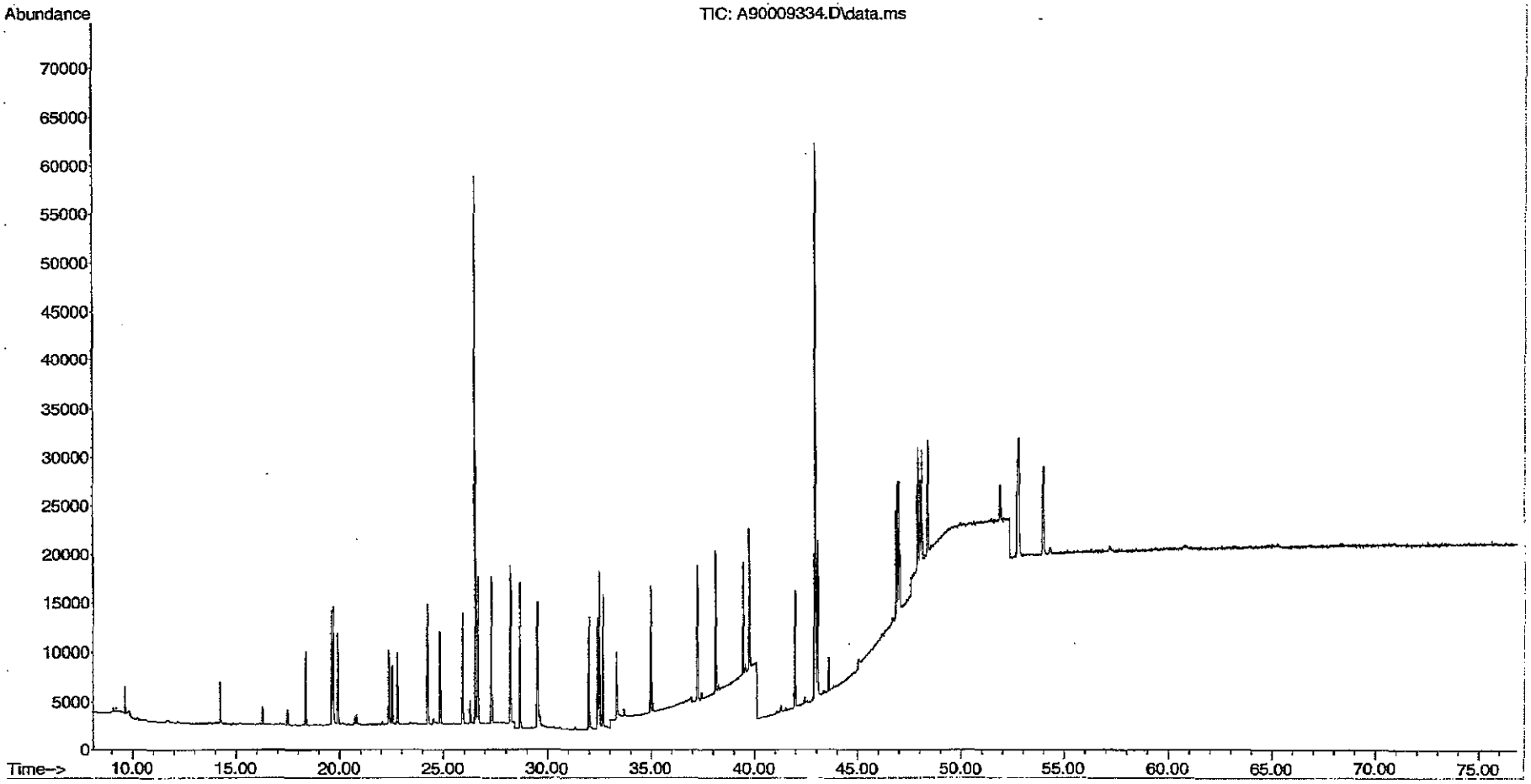
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\
Data File : A90009334.D
Acq On : 5 Dec 2012 3:47 am
Operator : PS
Sample : I912041203
Misc : WHAQ85@100ng/ml
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Dec 06 10:35:13 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 09:50:00 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\
Data File : A90009335.D
Acq On : 5 Dec 2012 5:12 am
Operator : PS
Sample : I912041204
Misc : WHAQ86@500ng/ml
ALS Vial : 7 Sample Multiplier: 1

RB 12/6/12

Quant Time: Dec 06 10:35:20 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 09:51:33 2012
Response via : Initial Calibration

JJK (12/07/12)

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.557	164	68951	500.000	ng/mL	0.00
74) Chrysene-d12	42.959	240	116229	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.622	136	138589	564.824	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 56.48%			
42) Phenanthrene-d10	32.406	188	133650	523.843	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 52.38%			
83) Benzo[b]fluoranthene-d12	46.852	264	106936	522.137	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 52.21%			
88) Benzo[a]pyrene-d12	48.014	264	111053	579.233	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 57.92%			
129) 5B(H)Cholane - Surr	43.598	217	23773	491.301	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 49.13%#			
Target Compounds						Qvalue
3) trans-Decalin	16.291	138	14573	263.695	ng/mL	100
4) cis-Decalin	17.496	138	11396	263.967	ng/mL	100
10) Naphthalene	19.695	128	137010	544.472	ng/mL#	100
16) 2-Methylnaphthalene	22.378	142	88693	518.827	ng/mL#	100
17) 1-Methylnaphthalene	22.798	142	86329	524.137	ng/mL#	100
18) Benzothiophene	19.914	134	113253	537.980	ng/mL	100
23) Biphenyl	24.249	154	115788	518.551	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.860	156	82629	503.139	ng/mL#	100
25) Dibenzofuran	27.324	168	126487	519.426	ng/mL	99
26) Acenaphthylene	25.946	152	138854	523.976	ng/mL#	100
27) Acenaphthene	26.685	153	88773	533.419	ng/mL	99
28) 2,3,5-Trimethylnaphthalen	28.236	170	76318	510.734	ng/mL	97
29) Fluorene	28.692	166	96985	497.747	ng/mL	100
33) Dibenzothiophene	31.995	184	138836	501.362	ng/mL	99
43) Phenanthrene	32.497	178	145250	512.509	ng/mL	100
54) Retene	39.471	234	37321	457.319	ng/mL	94
55) Anthracene	32.670	178	138399M4	541.376	ng/mL	
56) Carbazole	33.346	167	125139	543.935	ng/mL	98
57) 1-Methylphenanthrene	34.989	192	104769	487.562	ng/mL	99
58) Fluoranthene	37.252	202	156787	483.176	ng/mL	100
59) Benzo(b)fluorene	39.764	216	91509	448.542	ng/mL	99
60) Pyrene	38.129	202	158979	482.594	ng/mL	100
66) Naphthobenzothiophene	41.973	234	137768	467.881	ng/ml	99
67) Naphthobenzothiophene-2,1	41.973	234	137768	467.881	ng/mL	99
75) Benz[a]anthracene	42.895	228	131312	486.440	ng/mL	100
76) Chrysene	43.059	228	133903	510.215	ng/mL	100
77) Chrysene/Triphenylene	43.059	228	133903	510.215	ng/mL	100
84) Benzo[b]fluoranthene	46.934	252	134890	514.329	ng/mL	93
85) Benzo[j]+[k]fluoranthene	47.017	252	136944	535.239	ng/mL	90
87) Benzo[e]pyrene	47.913	252	127112	515.857	ng/mL	91
89) Benzo[a]pyrene	48.096	252	122761	532.885	ng/mL#	87
90) Perylene	48.398	252	128383	520.544	ng/mL#	89
91) Indeno[1,2,3-cd]pyrene	52.751	276	129334M6	517.076	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.806	278	133214	544.086	ng/mL	99
93) Benzo[g,h,i]perylene	53.994	276	130423	534.038	ng/mL	99
94) Hopane (T19)	51.919	191	45663	497.247	ng/mL#	78

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\
Data File : A90009335.D
Acq On : 5 Dec 2012 5:12 am
Operator : PS
Sample : I912041204
Misc : WHAQ86@500ng/ml
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Dec 06 10:35:20 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 09:51:33 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
95) 17a(H),21B(H)-hopane - C3	51.919	191	45663	498.552 ng/mL#	78

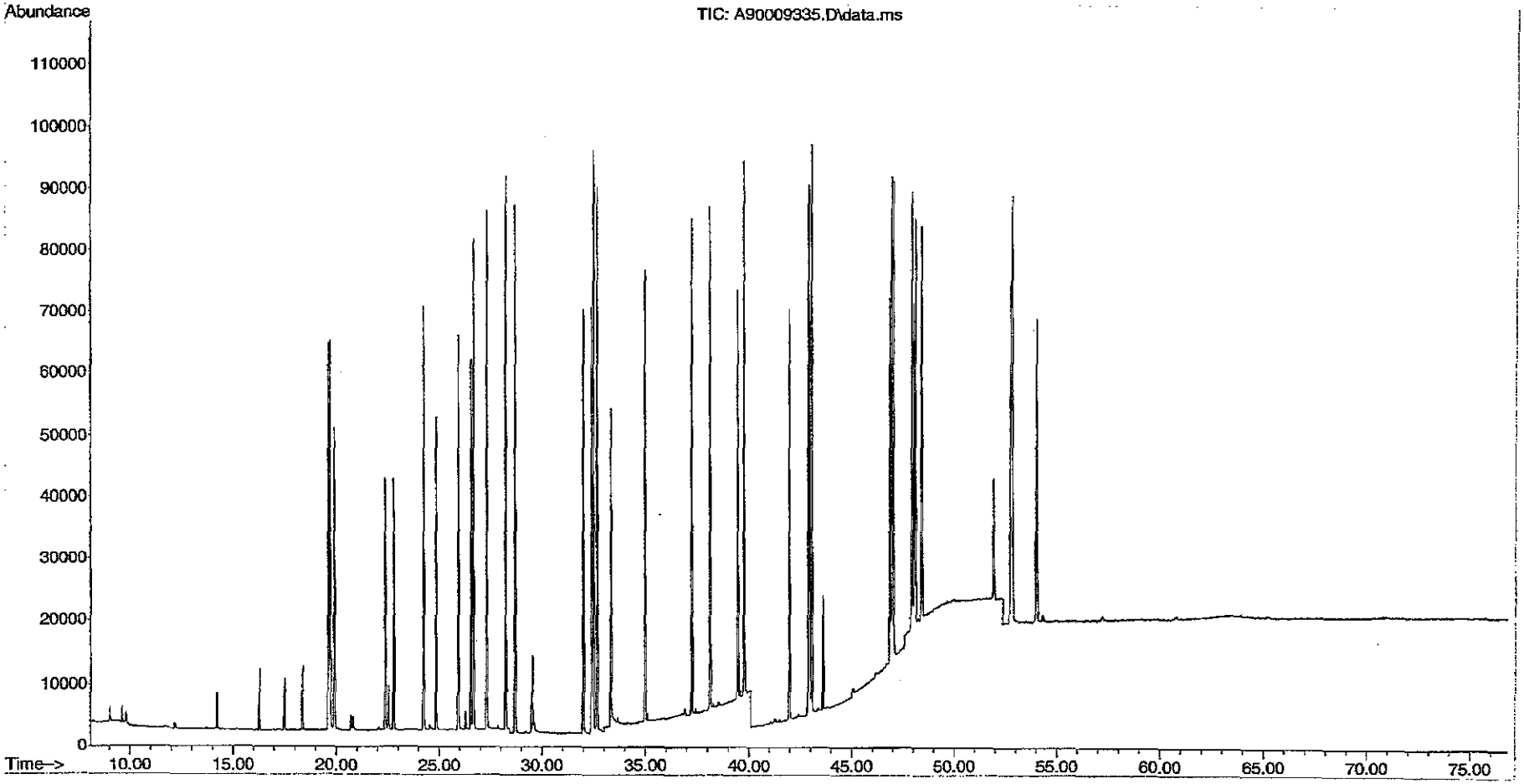
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\
Data File : A90009335.D
Acq On : 5 Dec 2012 5:12 am
Operator : PS
Sample : I912041204
Misc : WHAQ86@500ng/ml
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Dec 06 10:35:20 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 09:51:33 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\
Data File : A90009336.D
Acq On : 5 Dec 2012 6:36 am
Operator : PS
Sample : I912041205
Misc : WHAQ87@5000ng/ml
ALS Vial : 8 Sample Multiplier: 1

DZM 6/12

Quant Time: Dec 06 10:35:27 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 09:53:06 2012
Response via : Initial Calibration

JJK (12/07/12)

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) Acenaphthene-d10	26.557	164	73870	500.000 ng/mL	0.00
74) Chrysene-d12	42.968	240	126799	500.000 ng/mL	0.00
System Monitoring Compounds					
9) Naphthalene-d8	19.622	136	1322669	4871.149 ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 487.11%#		
42) Phenanthrene-d10	32.406	188	1351620	4920.356 ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 492.04%#		
83) Benzo[b]fluoranthene-d12	46.861	264	1094920	4777.862 ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 477.79%#		
88) Benzo[a]pyrene-d12	48.023	264	1152181	5278.972 ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 527.90%#		
129) 5B(H)Cholane - Surr	43.598	217	278629	5259.034 ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 525.90%#		
Target Compounds					Qvalue
3) trans-Decalin	16.282	138	164331	2711.634 ng/mL	100
4) cis-Decalin	17.496	138	128277	2703.825 ng/mL	100
10) Naphthalene	19.695	128	1505120	5459.710 ng/mL#	100
16) 2-Methylnaphthalene	22.378	142	1007417	5433.044 ng/mL#	100
17) 1-Methylnaphthalene	22.798	142	968591	5413.661 ng/mL#	100
18) Benzothiophene	19.914	134	1260013	5471.294 ng/mL	100
23) Biphenyl	24.249	154	1315090	5438.978 ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.860	156	957062	5404.056 ng/mL#	100
25) Dibenzofuran	27.324	168	1453450	5550.997 ng/mL	99
26) Acenaphthylene	25.946	152	1657205M4	5747.157 ng/mL	
27) Acenaphthene	26.685	153	1000665	5521.590 ng/mL	100
28) 2,3,5-Trimethylnaphthalen	28.236	170	891880	5514.589 ng/mL	96
29) Fluorene	28.693	166	1144868	5497.611 ng/mL	99
33) Dibenzothiophene	32.004	184	1631245	5515.209 ng/mL	99
43) Phenanthrene	32.497	178	1674427	5523.362 ng/mL	100
54) Retene	39.471	234	464826	5361.062 ng/mL	94
55) Anthracene	32.679	178	1633983M4	5922.421 ng/mL	
56) Carbazole	33.346	167	1619877	6509.516 ng/mL	99
57) 1-Methylphenanthrene	34.998	192	1261945	5511.517 ng/mL	100
58) Fluoranthene	37.253	202	1886725M4	5449.974 ng/mL	
59) Benzo(b)fluorene	39.773	216	1146314	5335.623 ng/mL	98
60) Pyrene	38.138	202	1906384	5420.492 ng/mL	100
66) Naphthobenzothiophene	41.973	234	1660799	5313.794 ng/ml	99
67) Naphthobenzothiophene-2,1	41.973	234	1660799	5313.794 ng/mL	99
75) Benz[a]anthracene	42.904	228	1612840	5479.153 ng/mL	100
76) Chrysene	43.069	228	1554217	5411.022 ng/mL	100
77) Chrysene/Triphenylene	43.069	228	1554217	5411.022 ng/mL	100
84) Benzo[b]fluoranthene	46.944	252	1627505	5586.524 ng/mL	92
85) Benzo[j]+[k]fluoranthene	47.026	252	1580777	5540.707 ng/mL	91
87) Benzo[e]pyrene	47.931	252	1492105	5432.420 ng/mL#	89
89) Benzo[a]pyrene	48.114	252	1464576	5684.935 ng/mL#	87
90) Perylene	48.416	252	1553911	5643.425 ng/mL#	86
91) Indeno[1,2,3-cd]pyrene	52.769	276	1582184M6	5634.278 ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.824	278	1594933	5784.937 ng/mL	99
93) Benzo[g,h,i]perylene	54.021	276	1566410	5701.157 ng/mL	99
94) Hopane (T19)	51.919	191	519450	4974.126 ng/mL#	74

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\
Data File : A90009336.D
Acq On : 5 Dec 2012 6:36 am
Operator : PS
Sample : I912041205
Misc : WHAQ87@5000ng/ml
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Dec 06 10:35:27 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 09:53:06 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
95) 17a(H),21B(H)-hopane - C3	51.919	191	519450	4986.647	ng/mL#	74

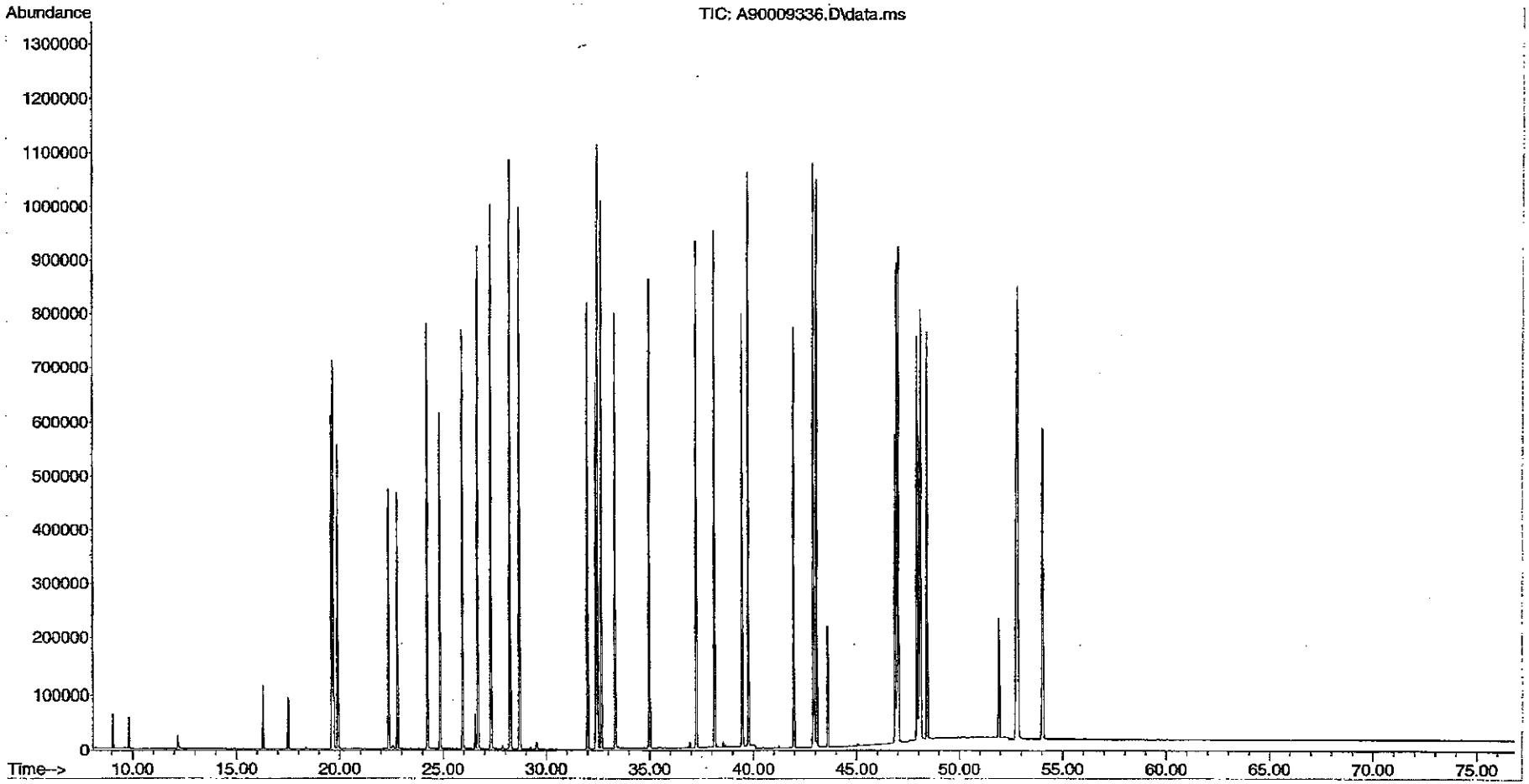
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\
Data File : A90009336.D
Acq On : 5 Dec 2012 6:36 am
Operator : PS
Sample : I912041205
Misc : WHAQ87@5000ng/ml
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Dec 06 10:35:27 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 09:53:06 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\
Data File : A90009337.D
Acq On : 5 Dec 2012 8:01 am
Operator : PS
Sample : I912041206
Misc : WHAQ88@10000ng/ml
ALS Vial : 9 Sample Multiplier: 1

12/6/12

Quant Time: Dec 06 10:35:31 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 09:56:52 2012
Response via : Initial Calibration

JJK (12/07/12)

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) Acenaphthene-d10	26.557	164	69970	500.000 ng/mL	0.00
74) Chrysene-d12	42.968	240	121212	500.000 ng/mL	0.00
System Monitoring Compounds					
9) Naphthalene-d8	19.622	136	2546638	9714.434 ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130			Recovery = 971.44%#	
42) Phenanthrene-d10	32.415	188	2644037	10230.185 ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130			Recovery = 1023.02%#	
83) Benzo[b]fluoranthene-d12	46.870	264	2170812	9803.816 ng/mL	0.02
Spiked Amount 1000.000	Range 50 - 130			Recovery = 980.38%#	
88) Benzo[a]pyrene-d12	48.041	264	2280323	10638.825 ng/mL	0.03
Spiked Amount 1000.000	Range 50 - 130			Recovery = 1063.88%#	
129) 5B(H)Cholane - Surr	43.607	217	528529	10416.695 ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130			Recovery = 1041.67%#	
Target Compounds					Qvalue
3) trans-Decalin	16.282	138	298268	5055.466 ng/mL	100
4) cis-Decalin	17.496	138	232533	5032.490 ng/mL	100
10) Naphthalene	19.695	128	2691166	10067.326 ng/mL#	100
16) 2-Methylnaphthalene	22.378	142	1810167	10166.266 ng/mL#	100
17) 1-Methylnaphthalene	22.798	142	1742535	10124.330 ng/mL#	100
18) Benzothiophene	19.914	134	2256392	10100.148 ng/mL	100
23) Biphenyl	24.258	154	2357152	10143.403 ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.860	156	1720818	10174.439 ng/mL#	100
25) Dibenzofuran	27.324	168	2619839	10477.432 ng/mL	99
26) Acenaphthylene	25.955	152	2981104M4	10729.954 ng/mL	
27) Acenaphthene	26.685	153	1798517	10299.168 ng/mL	100
28) 2,3,5-Trimethylnaphthalen	28.236	170	1612609	10418.756 ng/mL	97
29) Fluorene	28.702	166	2057880	10418.896 ng/mL	99
33) Dibenzothiophene	32.004	184	2954226	10574.412 ng/mL	99
43) Phenanthrene	32.506	178	3009810	10473.887 ng/mL	100
54) Retene	39.481	234	854300	10538.385 ng/mL	94
55) Anthracene	32.679	178	2911774M4	11121.988 ng/mL	
56) Carbazole	33.355	167	2938381	11876.798 ng/mL	100
57) 1-Methylphenanthrene	34.998	192	2294326	10658.504 ng/mL	99
58) Fluoranthene	37.262	202	3421936M4	10512.388 ng/mL	
59) Benzo(b)fluorene	39.782	216	2086031	10475.488 ng/mL	98
60) Pyrene	38.138	202	3445578	10406.048 ng/mL	100
66) Naphthobenzothiophene	41.982	234	3008173	10301.157 ng/ml	99
67) Naphthobenzothiophene-2,1	41.982	234	3008173	10301.157 ng/mL	99
75) Benz[a]anthracene	42.913	228	2938544M4	10442.235 ng/mL	
76) Chrysene	43.078	228	2806910	10186.893 ng/mL	100
77) Chrysene/Triphenylene	43.078	228	2806910	10186.893 ng/mL	100
84) Benzo[b]fluoranthene	46.962	252	2952567	10386.880 ng/mL	92
85) Benzo[j]+[k]fluoranthene	47.044	252	2858687	10295.741 ng/mL	91
87) Benzo[e]pyrene	47.941	252	2720002	10160.395 ng/mL#	89
89) Benzo[a]pyrene	48.124	252	2656767	10540.702 ng/mL#	87
90) Perylene	48.425	252	2828095	10500.105 ng/mL#	86
91) Indeno[1,2,3-cd]pyrene	52.788	276	2926201M4	10607.194 ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.842	278	2923552	10748.396 ng/mL	99
93) Benzo[g,h,i]perylene	54.049	276	2890978	10687.910 ng/mL	100
94) Hopane (T19)	51.928	191	1010727	9820.048 ng/mL#	74

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\
Data File : A90009337.D
Acq On : 5 Dec 2012 8:01 am
Operator : PS
Sample : I912041206
Misc : WHAQ88@10000ng/ml
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Dec 06 10:35:31 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 09:56:52 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
95) 17a(H),21B(H)-hopane - C3	51.928	191	1010727	9844.022	ng/mL#	74

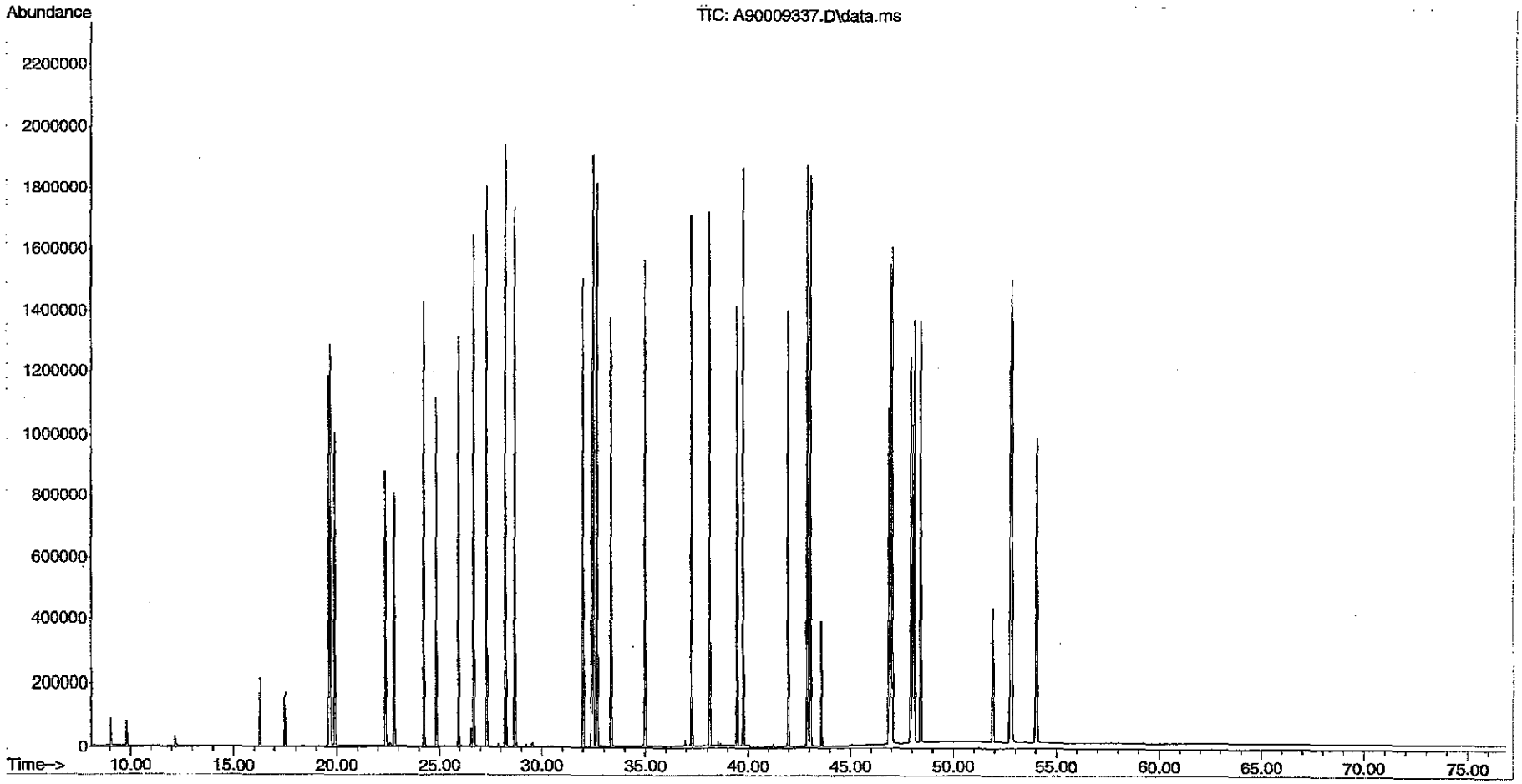
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\
Data File : A90009337.D
Acq On : 5 Dec 2012 8:01 am
Operator : PS
Sample : I912041206
Misc : WHAQ88@10000ng/ml
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Dec 06 10:35:31 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 09:56:52 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\
Data File : A90009338.D
Acq On : 5 Dec 2012 9:26 am
Operator : PS
Sample : I912041207
Misc : WHAQ89@20000ng/ml
ALS Vial : 10 Sample Multiplier: 1

BJH 12/6/12

Quant Time: Dec 06 10:35:40 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 12:34:12 2012
Response via : Initial Calibration

JJK (12/07/12)

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) Acenaphthene-d10	26.557	164	74295	500.000 ng/mL	0.00
74) Chrysene-d12	42.977	240	130115	500.000 ng/mL	0.02
System Monitoring Compounds					
9) Naphthalene-d8	19.622	136	5452802	19434.637 ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130			Recovery = 1943.46%#	
42) Phenanthrene-d10	32.424	188	5688582	21114.215 ng/mL	0.02
Spiked Amount 1000.000	Range 50 - 130			Recovery = 2111.42%#	
83) Benzo[b]fluoranthene-d12	46.888	264	4776443	20147.593 ng/mL	0.04
Spiked Amount 1000.000	Range 50 - 130			Recovery = 2014.76%#	
88) Benzo[a]pyrene-d12	48.068	264	4999701	21356.877 ng/mL	0.05
Spiked Amount 1000.000	Range 50 - 130			Recovery = 2135.69%#	
129) 5B(H)Cholane - Surr	43.616	217	1093635	19899.360 ng/ml	0.02
Spiked Amount 1000.000	Range 50 - 130			Recovery = 1989.94%#	
Target Compounds					Qvalue
3) trans-Decalin	16.282	138	613733	9557.478 ng/mL	100
4) cis-Decalin	17.496	138	479087	9527.626 ng/mL	100
10) Naphthalene	19.704	128	5383319	18566.474 ng/mL#	100
16) 2-Methylnaphthalene	22.387	142	3669728	19182.523 ng/mL#	100
17) 1-Methylnaphthalene	22.807	142	3518771	18994.195 ng/mL#	100
18) Benzothiophene	19.914	134	4538178	18719.886 ng/mL	100
23) Biphenyl	24.258	154	4755855	19022.622 ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.869	156	3481024	19251.717 ng/mL#	100
25) Dibenzofuran	27.333	168	5296633	19781.282 ng/mL	98
26) Acenaphthylene	25.955	152	6007364M4	20026.970 ng/mL	
27) Acenaphthene	26.694	153	3607509	19135.078 ng/mL	99
28) 2,3,5-Trimethylnaphthalen	28.245	170	3266491	19697.178 ng/mL	97
29) Fluorene	28.711	166	4179619	19903.277 ng/mL	98
33) Dibenzothiophene	32.013	184	5977361	20173.945 ng/mL	99
43) Phenanthrene	32.515	178	6058963	19837.182 ng/mL	100
54) Retene	39.489	234	1750863	20581.730 ng/mL	95
55) Anthracene	32.688	178	5704716M4	20221.199 ng/mL	
56) Carbazole	33.364	167	5991083	22555.041 ng/mL	100
57) 1-Methylphenanthrene	35.007	192	4640727	20427.389 ng/mL	99
58) Fluoranthene	37.271	202	6915983M4	20134.243 ng/mL	
59) Benzo(b)fluorene	39.791	216	4228551	20380.455 ng/mL	97
60) Pyrene	38.156	202	6972922	19934.980 ng/mL	99
66) Naphthobenzothiophene	42.000	234	6106694	19945.717 ng/ml	98
67) Naphthobenzothiophene-2,1	42.000	234	6106694	19945.717 ng/mL	98
75) Benz[a]anthracene	42.922	228	5941501M4	19663.824 ng/mL	
76) Chrysene	43.096	228	5638105	19019.449 ng/mL	100
77) Chrysene/Triphenylene	43.096	228	5638105	19019.449 ng/mL	100
84) Benzo[b]fluoranthene	46.980	252	6072365	19629.314 ng/mL	92
85) Benzo[j]+[k]fluoranthene	47.062	252	5736680	18944.947 ng/mL	92
87) Benzo[e]pyrene	47.959	252	5584478	19123.704 ng/mL#	89
89) Benzo[a]pyrene	48.160	252	5444936	19697.212 ng/mL#	88
90) Perylene	48.453	252	5800344	19664.408 ng/mL#	86
91) Indeno[1,2,3-cd]pyrene	52.824	276	6371851M4	21060.660 ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.879	278	6010745	20058.229 ng/mL	100
93) Benzo[g,h,i]perylene	54.094	276	5984340	20076.525 ng/mL	100

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\
Data File : A90009338.D
Acq On : 5 Dec 2012 9:26 am
Operator : PS
Sample : I912041207
Misc : WHAQ89@20000ng/ml
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Dec 06 10:35:40 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 12:34:12 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

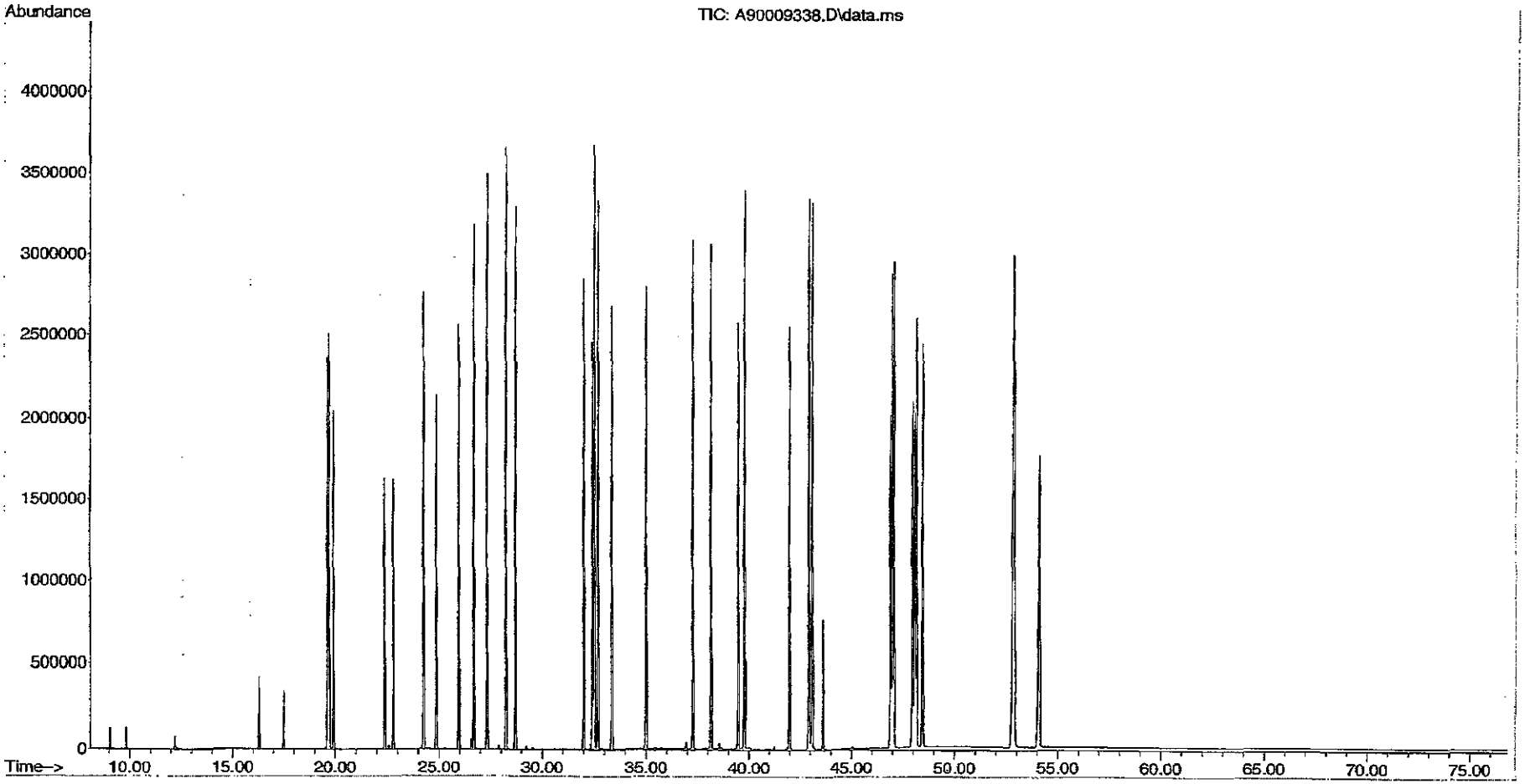
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\
Data File : A90009338.D
Acq On : 5 Dec 2012 9:26 am
Operator : PS
Sample : I912041207
Misc : WHAQ89@20000ng/ml
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Dec 06 10:35:40 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 12:34:12 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates



Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\
Data File : A90009340.D
Acq On : 5 Dec 2012 12:16 pm
Operator : PS
Sample : Q912041201
Misc : WHAQ50@500ng/ml
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Dec 06 10:35:45 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 12:42:35 2012
Response via : Initial Calibration

JgK (12/07/12)

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	i	Acenaphthene-d10	1.000	1.000	0.0	112	0.00
3	A1	trans-Decalin	0.440	0.410	6.8	109	0.00
4	t	cis-Decalin	0.344	0.318	7.6	108	0.00
9	s	Naphthalene-d8	1.922	1.799	6.4	101	0.00
10	A1	Naphthalene	1.972	1.926	2.3	109	0.00
16	t	2-Methylnaphthalene	1.290	1.212	6.0	106	0.00
17	t	1-Methylnaphthalene	1.252	1.234	1.4	111	0.00
18	A1	Benzothiophene	1.650	1.583	4.1	108	0.00
23	t	Biphenyl	1.688	1.673	0.9	112	0.00
24	t	2,6-Dimethylnaphthalene	1.212	1.168	3.6	110	0.00
25	t	Dibenzofuran	1.800	1.823	-1.3	112	0.00
26	t	Acenaphthylene	2.029	1.905	6.1	106	0.00
27	t	Acenaphthene	1.276	1.245	2.4	109	0.00
28	t	2,3,5-Trimethylnaphthalene	1.115	1.070	4.0	109	0.00
29	A1	Fluorene	1.401	1.376	1.8	110	0.00
33	A1	Dibenzothiophene	1.970	1.972	-0.1	110	0.00
42	s	Phenanthrene-d10	1.803	1.767	2.0	103	0.00
43	A1	Phenanthrene	2.036	2.064	-1.4	110	0.00
54	t	Retene	0.560	0.588	-5.0	122	0.00
55	t	Anthracene	1.890	1.920	-1.6	108	0.00
56	t	Carbazole	1.788	1.721	3.7	107	0.00
57	t	1-Methylphenanthrene	1.502	1.461	2.7	108	0.00
58	A1	Fluoranthene	2.274	2.194	3.5	108	0.00
59	t	Benzo(b)fluorene	1.352	1.259	6.9	107	0.00
60	A1	Pyrene	2.320	2.233	3.7	109	0.00
66	A1	Naphthobenzothiophene	2.013	1.931	4.1	109	0.00
67	A2	Naphthobenzothiophene-2,1-D	2.013	1.931	4.1	109	0.00
74	i	Chrysene-d12	1.000	1.000	0.0	114	0.00
75	t	Benz[a]anthracene	1.147	1.072	6.5	108	0.00
76	A1	Chrysene	1.128	1.129	-0.1	111	0.00
77	A2	Chrysene/Triphenylene	1.128	1.129	-0.1	111	0.00
83	S	Benzo[b]fluoranthene-d12	0.919	0.846	7.9	105	0.00
84	t	Benzo[b]fluoranthene	1.189	1.106	7.0	108	0.00
85	A1	Benzo[j]+[k]fluoranthene	1.168	1.133	3.0	109	0.00
87	t	Benzo[e]pyrene	1.129	1.051	6.9	109	0.00
88	s	Benzo[a]pyrene-d12	0.921	0.797	13.5	95	0.00
89	t	Benzo[a]pyrene	1.069	1.022	4.4	110	0.00
90	t	Perylene	1.141	1.040	8.9	107	0.00
91	t	Indeno[1,2,3-cd]pyrene	1.184	1.033	12.8	106	0.00
92	t	Dibenz[ah]+[ac]anthracene	1.167	1.095	6.2	109	0.00
93	t	Benzo[g,h,i]perylene	1.164	1.075	7.6	109	0.00
94	A1	Hopane (T19)	0.440	0.000#	100.0#	0#	-51.92#
95	A2	17a(H),21B(H)-hopane - C30H	0.440	0.000#	100.0#	0#	-51.92#
129	SA1	5B(H)Cholane - Surr	0.210	0.000#	100.0#	0#	-43.60#

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Mass Discrimination (Concentration)	Ratio	Range Limits

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\
Data File : A90009340.D
Acq On : 5 Dec 2012 12:16 pm
Operator : PS
Sample : Q912041201
Misc : WHAQ50@500ng/ml
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Dec 06 10:35:45 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 12:42:35 2012
Response via : Initial Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
Benzo[g,h,i]perylene to Phenanthrene			0.91	0.70 - 1.30	

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\
Data File : A90009340.D
Acq On : 5 Dec 2012 12:16 pm
Operator : PS
Sample : Q912041201
Misc : WHAQ50@500ng/ml
ALS Vial : 12 Sample Multiplier: 1

PM 12/6/12

Quant Time: Dec 06 10:35:45 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 12:42:35 2012
Response via : Initial Calibration

JJK (12/07/12)

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.557	164	77522	500.000	ng/mL	0.00
74) Chrysene-d12	42.959	240	132184	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.622	136	139493	468.157	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 46.82%#			
42) Phenanthrene-d10	32.406	188	136997	489.950	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 48.99%#			
83) Benzo[b]fluoranthene-d12	46.852	264	111879	460.446	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 46.04%#			
88) Benzo[a]pyrene-d12	48.014	264	105398	432.719	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 43.27%#			
129) 5B(H)Cholane - Surr	0.000	217	0	0.000	ng/ml	
Spiked Amount 1000.000	Range 50 - 130		Recovery = 0.00%#			
Target Compounds						Qvalue
3) trans-Decalin	16.282	138	15902	233.326	ng/mL	100
4) cis-Decalin	17.496	138	12343	231.339	ng/mL	100
10) Naphthalene	19.695	128	149292	488.250	ng/mL#	100
16) 2-Methylnaphthalene	22.378	142	93956	469.865	ng/mL#	100
17) 1-Methylnaphthalene	22.798	142	95652	492.902	ng/mL#	100
18) Benzothiophene	19.914	134	122730	479.630	ng/mL	100
23) Biphenyl	24.258	154	129687	495.597	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.860	156	90558	481.766	ng/mL#	100
25) Dibenzofuran	27.324	168	141331	506.374	ng/mL	100
26) Acenaphthylene	25.946	152	147690	469.535	ng/mL#	100
27) Acenaphthene	26.685	153	96552	488.206	ng/mL	99
28) 2,3,5-Trimethylnaphthalen	28.236	170	82933	479.889	ng/mL	97
29) Fluorene	28.692	166	106698	491.282	ng/mL	100
33) Dibenzothiophene	31.995	184	152901	500.487	ng/mL	98
43) Phenanthrene	32.488	178	159972	506.847	ng/mL	99
54) Retene	39.462	234	45546	524.923	ng/mL	94
55) Anthracene	32.670	178	148873M4	507.941	ng/mL	
56) Carbazole	33.345	167	133378	481.053	ng/mL	100
57) 1-Methylphenanthrene	34.989	192	113223	486.218	ng/mL	99
58) Fluoranthene	37.252	202	170050	482.299	ng/mL	100
59) Benzo(b)fluorene	39.763	216	97587	465.403	ng/mL	99
60) Pyrene	38.129	202	173089	481.194	ng/mL	100
66) Naphthobenzothiophene	41.973	234	149664	479.507	ng/ml	100
67) Naphthobenzothiophene-2,1	41.973	234	149664	479.507	ng/mL	100
75) Benz[a]anthracene	42.895	228	141695	467.337	ng/mL	100
76) Chrysene	43.059	228	149215	500.382	ng/mL	100
77) Chrysene/Triphenylene	43.059	228	149215	500.382	ng/mL	100
84) Benzo[b]fluoranthene	46.934	252	146172	464.967	ng/mL	94
85) Benzo[j]+[k]fluoranthene	47.017	252	149701	484.645	ng/mL	91
87) Benzo[e]pyrene	47.913	252	138981	465.571	ng/mL	90
89) Benzo[a]pyrene	48.096	252	135079	477.793	ng/mL#	87
90) Perylene	48.398	252	137432	455.478	ng/mL#	87
91) Indeno[1,2,3-cd]pyrene	52.751	276	136513M6	435.993	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.806	278	144769	469.359	ng/mL	99
93) Benzo[g,h,i]perylene	53.994	276	142158	462.024	ng/mL	99

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\
Data File : A90009340.D
Acq On : 5 Dec 2012 12:16 pm
Operator : PS
Sample : Q912041201
Misc : WHAQ50@500ng/ml
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Dec 06 10:35:45 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 12:42:35 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

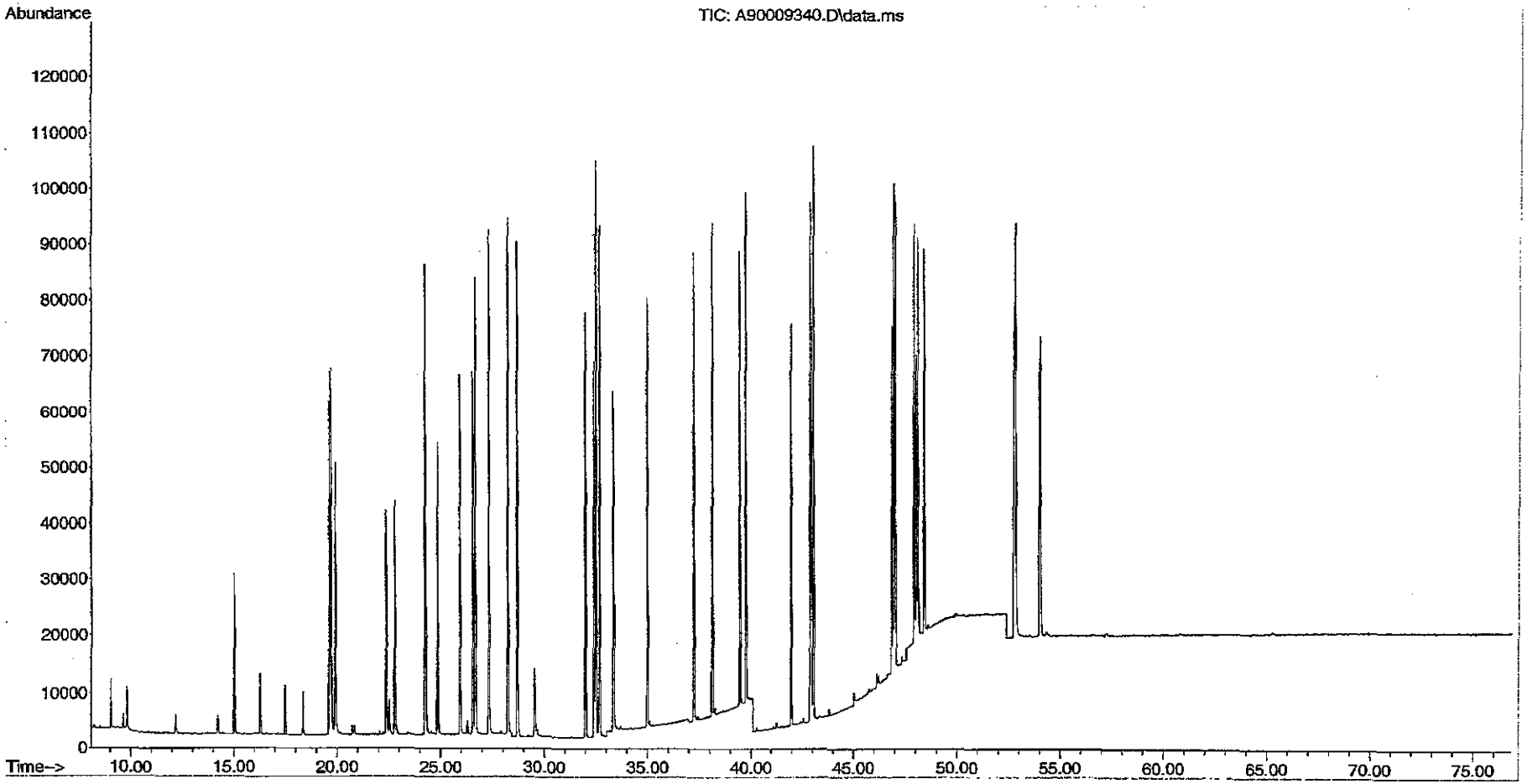
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\
Data File : A90009340.D
Acq On : 5 Dec 2012 12:16 pm
Operator : PS
Sample : Q912041201
Misc : WHAQ50@500ng/ml
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Dec 06 10:35:45 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 12:42:35 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates



Evaluate Continuing Calibration Report

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009572.D
Acq On : 22 Dec 2012 8:52 am
Operator : ps
Sample : C912221201
Misc : WHAQ46:5.076mg/kg
ALS Vial : 1 Sample Multiplier: 1

DKG 12/27/12

Quant Time: Dec 27 14:55:22 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC22\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Dec 22 11:35:35 2012
Response via : Initial Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	i	Acenaphthene-d10	1.000	1.000	0.0	99	0.00
3	A1	trans-Decalin	0.440	0.435	1.1	102	0.00
4	t	cis-Decalin	0.344	0.340	1.2	102	0.00
9	s	Naphthalene-d8	1.922	2.015	-4.8	99	0.00
10	A1	Naphthalene	1.972	1.964	0.4	98	0.00
16	t	2-Methylnaphthalene	1.290	1.263	2.1	97	0.00
17	t	1-Methylnaphthalene	1.252	1.222	2.4	97	0.00
18	A1	Benzothiophene	1.650	1.639	0.7	99	0.00
23	t	Biphenyl	1.688	1.683	0.3	99	0.00
24	t	2,6-Dimethylnaphthalene	1.212	1.198	1.2	99	0.00
25	t	Dibenzofuran	1.800	1.867	-3.7	101	0.00
26	t	Acenaphthylene	2.029	1.997	1.6	98	0.00
27	t	Acenaphthene	1.276	1.241	2.7	95	0.00
28	t	2,3,5-Trimethylnaphthalene	1.115	1.120	-0.4	100	0.00
29	A1	Fluorene	1.401	1.426	-1.8	100	0.00
33	A1	Dibenzothiophene	1.970	2.073	-5.2	102	0.00
42	s	Phenanthrene-d10	1.803	2.047	-13.5	105	0.00
43	A1	Phenanthrene	2.036	2.129	-4.6	100	0.00
54	t	Retene	0.560	0.610	-8.9	112	0.00
55	t	Anthracene	1.890	2.068	-9.4	102	0.00
56	t	Carbazole	1.788	1.924	-7.6	105	0.00
57	t	1-Methylphenanthrene	1.502	1.583	-5.4	103	0.00
58	A1	Fluoranthene	2.274	2.394	-5.3	104	0.00
59	t	Benzo(b)fluorene	1.352	1.424	-5.3	106	0.00
60	A1	Pyrene	2.320	2.407	-3.8	103	0.00
66	A1	Naphthobenzothiophene	2.013	2.149	-6.8	107	0.00
67	A2	Naphthobenzothiophene-2,1-D	2.013	2.149	-6.8	107	0.00
74	i	Chrysene-d12	1.000	1.000	0.0	110	0.00
75	t	Benz[a]anthracene	1.147	1.099	4.2	107	0.00
76	A1	Chrysene	1.128	1.103	2.2	106	0.00
77	A2	Chrysene/Triphenylene	1.128	1.103	2.2	106	0.00
83	S	Benzo[b]fluoranthene-d12	0.919	0.929	-1.1	112	0.00
84	t	Benzo[b]fluoranthene	1.189	1.134	4.6	108	0.00
85	A1	Benzo[j]+[k]fluoranthene	1.168	1.131	3.2	106	0.00
87	t	Benzo[e]pyrene	1.129	1.056	6.5	107	0.00
88	s	Benzo[a]pyrene-d12	0.921	0.958	-4.0	111	0.00
89	t	Benzo[a]pyrene	1.069	1.017	4.9	106	0.00
90	t	Perylene	1.141	1.073	6.0	107	0.00
91	t	Indeno[1,2,3-cd]pyrene	1.184	1.109	6.3	110	0.00
92	t	Dibenz[ah]+[ac]anthracene	1.167	1.122	3.9	108	0.00
93	t	Benzo[g,h,i]perylene	1.164	1.098	5.7	108	0.00
94	A1	Hopane (T19)	0.440	0.359	18.4	101	0.00
95	A2	17a(H),21B(H)-hopane - C30H	0.440	0.358	18.6	101	0.00
129	SA1	5B(H)Cholane - Surr	0.210	0.202	3.8	109	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0

✓

Mass Discrimination (Concentration)	Ratio	Range Limits
Benzo[g,h,i]perylene to Phenanthrene	0.90	0.70 - 1.30

Evaluate Continuing Calibration Report

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009572.D
Acq On : 22 Dec 2012 8:52 am
Operator : ps
Sample : C912221201
Misc : WHAQ46:5.076mg/kg
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 27 14:55:22 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC22\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Dec 22 11:35:35 2012
Response via : Initial Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

Compound	AvgRF	CCRF	%Dev	Area% Dev(min)

Mass Discrimination (Response)	Ratio	Range Limits
Benzo[g,h,i]perylene to Phenanthrene	0.97	0.70 - 2.00

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009572.D
Acq On : 22 Dec 2012 8:52 am
Operator : ps
Sample : C912221201
Misc : WHAQ46:5.076mg/kg
ALS Vial : 1 Sample Multiplier: 1

DKG 12/27/12

Quant Time: Dec 27 14:55:22 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC22\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Dec 22 11:35:35 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.156	164	68298	500.000	ng/mL	0.00
74) Chrysene-d12	42.557	240	128366	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.229	136	137651	524.367	ng/mL	-0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 52.44%			
42) Phenanthrene-d10	31.995	188	139785	567.437	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 56.74%			
83) Benzo[b]fluoranthene-d12	46.450	264	119285	505.528	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 50.55%			
88) Benzo[a]pyrene-d12	47.575	264	122951	519.798	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 51.98%			
129) 5B(H)Cholane - Surr	43.187	217	25870	480.068	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 48.01%#			
Target Compounds						Qvalue
3) trans-Decalin	15.908	138	14864	247.551	ng/mL	100
4) cis-Decalin	17.103	138	11615	247.095	ng/mL	100
10) Naphthalene	19.302	128	134158	498.012	ng/mL#	100
16) 2-Methylnaphthalene	21.985	142	86258	489.627	ng/mL#	100
17) 1-Methylnaphthalene	22.405	142	83485	488.306	ng/mL#	100
18) Benzothiophene	19.521	134	111948	496.580	ng/mL	100
23) Biphenyl	23.856	154	114974	498.710	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.458	156	81808	493.995	ng/mL#	100
25) Dibenzofuran	26.922	168	127524	518.613	ng/mL	99
26) Acenaphthylene	25.544	152	136359	492.059	ng/mL#	100
27) Acenaphthene	26.274	153	84741	486.354	ng/mL	100
28) 2,3,5-Trimethylnaphthalen	27.835	170	76527	502.626	ng/mL	99
29) Fluorene	28.291	166	97419	509.138	ng/mL	100
33) Dibenzothiophene	31.593	184	141596	526.079	ng/mL	100
43) Phenanthrene	32.086	178	145394	522.873	ng/mL	100
54) Retene	39.061	234	41688	545.347	ng/mL	100
55) Anthracene	32.260	178	141219M4	546.899	ng/mL	
56) Carbazole	32.944	167	131388	537.875	ng/mL	100
57) 1-Methylphenanthrene	34.578	192	108105M4	526.937	ng/mL	
58) Fluoranthene	36.842	202	163494M4	526.331	ng/mL	
59) Benzo(b)fluorene	39.353	216	97277	526.579	ng/mL	99
60) Pyrene	37.718	202	164388	518.725	ng/mL	99
66) Naphthobenzothiophene	41.562	234	146762	533.714	ng/ml	99
67) Naphthobenzothiophene-2,1	41.562	234	146762	533.714	ng/mL	99
75) Benz[a]anthracene	42.493	228	141062	479.087	ng/mL	99
76) Chrysene	42.649	228	141548	488.790	ng/mL	100
77) Chrysene/Triphenylene	42.649	228	141548	488.790	ng/mL	100
84) Benzo[b]fluoranthene	46.533	252	145585	476.874	ng/mL	96
85) Benzo[j]+[k]fluoranthene	46.615	252	145207	484.078	ng/mL	95
87) Benzo[e]pyrene	47.484	252	135527	467.504	ng/mL	95
89) Benzo[a]pyrene	47.658	252	130503M4	475.337	ng/mL	
90) Perylene	47.950	252	137780	470.213	ng/mL	93
91) Indeno[1,2,3-cd]pyrene	52.148	276	142419M4	468.385	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.203	278	143971	480.655	ng/mL	99
93) Benzo[g,h,i]perylene	53.336	276	140919	471.620	ng/mL	100
94) Hopane (T19)	51.325	191	46035M4	407.910	ng/mL	
95) 17a(H),21B(H)-hopane - C3	51.325	191	45921M4	406.900	ng/mL	

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009572.D
Acq On : 22 Dec 2012 8:52 am
Operator : ps
Sample : C912221201
Misc : WHAQ46:5.076mg/kg
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 27 14:55:22 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC22\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Dec 22 11:35:35 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

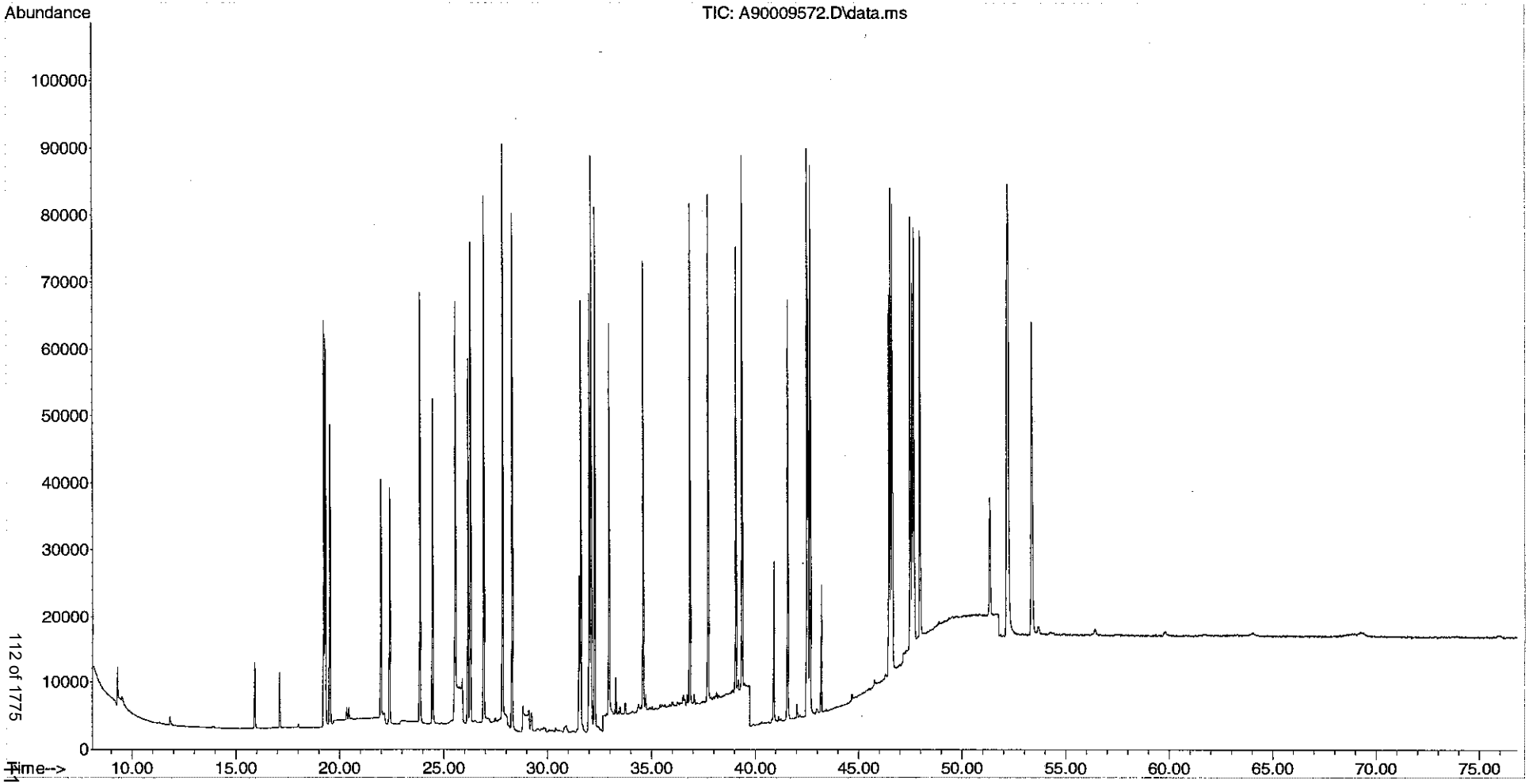
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009572.D
Acq On : 22 Dec 2012 8:52 am
Operator : ps
Sample : C912221201
Misc : WHAQ46:5.076mg/kg
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 27 14:55:22 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC22\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Dec 22 11:35:35 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates



Evaluate Continuing Calibration Report

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009581.D
Acq On : 22 Dec 2012 9:41 pm
Operator : ps
Sample : C912221202
Misc : WHAQ86@500ng/ml
ALS Vial : 10 Sample Multiplier: 1

12/27/12

Quant Time: Dec 27 14:58:21 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	i	Acenaphthene-d10	1.000	1.000	0.0	106	0.00
3	A1	trans-Decalin	0.440	0.409	7.0	103	0.00
4	t	cis-Decalin	0.344	0.314	8.7	101	0.00
9	s	Naphthalene-d8	1.922	1.863	3.1	99	0.00
10	A1	Naphthalene	1.972	1.858	5.8	100	0.00
16	t	2-Methylnaphthalene	1.290	1.207	6.4	100	0.00
17	t	1-Methylnaphthalene	1.252	1.189	5.0	101	0.00
18	A1	Benzothiophene	1.650	1.531	7.2	99	0.00
23	t	Biphenyl	1.688	1.621	4.0	103	0.00
24	t	2,6-Dimethylnaphthalene	1.212	1.150	5.1	102	0.00
25	t	Dibenzofuran	1.800	1.805	-0.3	105	0.00
26	t	Acenaphthylene	2.029	1.911	5.8	101	0.00
27	t	Acenaphthene	1.276	1.235	3.2	102	0.00
28	t	2,3,5-Trimethylnaphthalene	1.115	1.085	2.7	104	0.00
29	A1	Fluorene	1.401	1.377	1.7	104	0.00
33	A1	Dibenzothiophene	1.970	2.013	-2.2	106	0.00
42	s	Phenanthrene-d10	1.803	2.013	-11.6	111	0.00
43	A1	Phenanthrene	2.036	2.085	-2.4	105	0.00
54	t	Retene	0.560	0.591	-5.5	116	0.00
55	t	Anthracene	1.890	1.989	-5.2	106	0.00
56	t	Carbazole	1.788	1.818	-1.7	107	0.00
57	t	1-Methylphenanthrene	1.502	1.514	-0.8	106	0.00
58	A1	Fluoranthene	2.274	2.308	-1.5	108	0.00
59	t	Benzo(b)fluorene	1.352	1.374	-1.6	110	0.00
60	A1	Pyrene	2.320	2.338	-0.8	108	0.00
66	A1	Naphthobenzothiophene	2.013	2.097	-4.2	112	0.00
67	A2	Naphthobenzothiophene-2,1-D	2.013	2.097	-4.2	112	0.00
74	i	Chrysene-d12	1.000	1.000	0.0	120	0.00
75	t	Benz[a]anthracene	1.147	1.051	8.4	112	0.00
76	A1	Chrysene	1.128	1.098	2.7	114	0.00
77	A2	Chrysene/Triphenylene	1.128	1.098	2.7	114	0.00
83	S	Benzo[b]fluoranthene-d12	0.919	0.932	-1.4	122	0.00
84	t	Benzo[b]fluoranthene	1.189	1.095	7.9	113	0.00
85	A1	Benzo[j]+[k]fluoranthene	1.168	1.151	1.5	117	0.00
87	t	Benzo[e]pyrene	1.129	1.046	7.4	115	0.00
88	s	Benzo[a]pyrene-d12	0.921	0.952	-3.4	120	0.00
89	t	Benzo[a]pyrene	1.069	1.001	6.4	114	0.00
90	t	Perylene	1.141	1.045	8.4	114	0.00
91	t	Indeno[1,2,3-cd]pyrene	1.184	1.070	9.6	115	0.00
92	t	Dibenz[ah]+[ac]anthracene	1.167	1.096	6.1	115	0.00
93	t	Benzo[g,h,i]perylene	1.164	1.065	8.5	114	0.00
94	A1	Hopane (T19)	0.440	0.334	24.1	102	0.00
95	A2	17a(H),21B(H)-hopane - C30H	0.440	0.334	24.1	102	0.00
129	SA1	5B(H)Cholane - Surr	0.210	0.194	7.6	114	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Mass Discrimination (Concentration)	Ratio	Range Limits
Benzo[g,h,i]perylene to Phenanthrene	0.89	0.70 - 1.30

Evaluate Continuing Calibration Report

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009581.D
Acq On : 22 Dec 2012 9:41 pm
Operator : ps
Sample : C912221202
Misc : WHAQ86@500ng/ml
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Dec 27 14:58:21 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)

Mass Discrimination (Response)	Ratio	Range Limits
Benzo[g,h,i]perylene to Phenanthrene	0.97	0.70 - 2.00

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009581.D
Acq On : 22 Dec 2012 9:41 pm
Operator : ps
Sample : C912221202
Misc : WHAQ86@500ng/ml
ALS Vial : 10 Sample Multiplier: 1

12/27/12

Quant Time: Dec 27 14:58:21 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.156	164	73430	500.000	ng/mL	0.00
74) Chrysene-d12	42.558	240	139545	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.230	136	136822	484.782	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 48.48%#			
42) Phenanthrene-d10	31.995	188	147823	558.128	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 55.81%			
83) Benzo[b]fluoranthene-d12	46.451	264	130021	506.884	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 50.69%			
88) Benzo[a]pyrene-d12	47.576	264	132816	516.522	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 51.65%			
129) 5B(H)Cholane - Surr	43.188	217	27034	461.479	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 46.15%#			
Target Compounds						Qvalue
3) trans-Decalin	15.899	138	15034	232.883	ng/mL	100
4) cis-Decalin	17.103	138	11523	228.005	ng/mL	100
10) Naphthalene	19.303	128	136404	470.961	ng/mL#	100
16) 2-Methylnaphthalene	21.986	142	88634	467.951	ng/mL#	100
17) 1-Methylnaphthalene	22.405	142	87322M4	475.052	ng/mL	
18) Benzothiophene	19.522	134	112418	463.813	ng/mL	100
23) Biphenyl	23.865	154	119005	480.119	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.468	156	84438	474.241	ng/mL#	100
25) Dibenzofuran	26.931	168	132564	501.431	ng/mL	99
26) Acenaphthylene	25.544	152	140349M4	471.061	ng/mL	
27) Acenaphthene	26.274	153	90712	484.237	ng/mL	100
28) 2,3,5-Trimethylnaphthalen	27.835	170	79680	486.759	ng/mL	100
29) Fluorene	28.291	166	101077	491.336	ng/mL	100
33) Dibenzothiophene	31.594	184	147851	510.927	ng/mL	98
43) Phenanthrene	32.086	178	153096	512.092	ng/mL	100
54) Retene	39.061	234	43364	527.626	ng/mL	99
55) Anthracene	32.269	178	146040M4	526.042	ng/mL	
56) Carbazole	32.953	167	133501	508.329	ng/mL	99
57) 1-Methylphenanthrene	34.587	192	111155	503.937	ng/mL	99
58) Fluoranthene	36.842	202	169472	507.445	ng/mL	100
59) Benzo(b)fluorene	39.362	216	100868	507.857	ng/mL	100
60) Pyrene	37.718	202	171656	503.803	ng/mL	100
66) Naphthobenzothiophene	41.562	234	153991	520.864	ng/ml	99
67) Naphthobenzothiophene-2,1	41.562	234	153991	520.864	ng/mL	99
75) Benz[a]anthracene	42.494	228	146613	458.049	ng/mL	100
76) Chrysene	42.649	228	153210	486.678	ng/mL	99
77) Chrysene/Triphenylene	42.649	228	153210	486.678	ng/mL	99
84) Benzo[b]fluoranthene	46.533	252	152819	460.468	ng/mL	93
85) Benzo[j]+[k]fluoranthene	46.606	252	160664	492.700	ng/mL	92
87) Benzo[e]pyrene	47.475	252	146017	463.339	ng/mL	91
89) Benzo[a]pyrene	47.658	252	139690M3	468.039	ng/mL	
90) Perylene	47.951	252	145833	457.826	ng/mL#	89
91) Indeno[1,2,3-cd]pyrene	52.148	276	149283M3	451.628	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.203	278	152979	469.814	ng/mL	98
93) Benzo[g,h,i]perylene	53.345	276	148685	457.747	ng/mL	100
94) Hopane (T19)	51.316	191	46650	380.245	ng/mL#	77
95) 17a(H),21B(H)-hopane - C3	51.316	191	46650	380.245	ng/mL#	77

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009581.D
Acq On : 22 Dec 2012 9:41 pm
Operator : ps
Sample : C912221202
Misc : WHAQ86@500ng/ml
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Dec 27 14:58:21 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

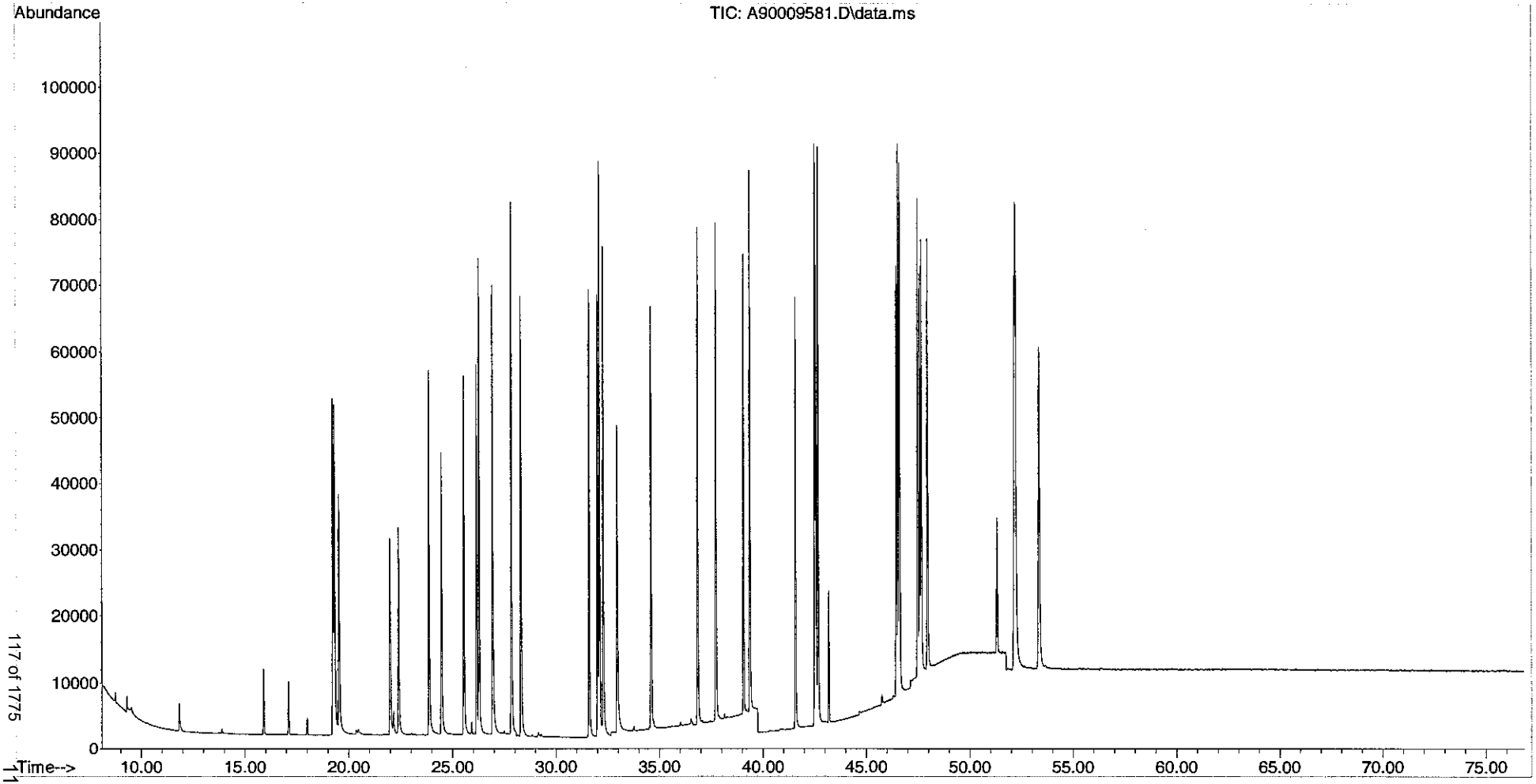
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009581.D
Acq On : 22 Dec 2012 9:41 pm
Operator : ps
Sample : C912221202
Misc : WHAQ86@500ng/ml
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Dec 27 14:58:21 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates



Evaluate Continuing Calibration Report

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009593.D
Acq On : 23 Dec 2012 2:36 pm
Operator : ps
Sample : C912221203
Misc : WHAQ86@500ng/ml
ALS Vial : 22 Sample Multiplier: 1

12/21/12

Quant Time: Dec 27 15:11:24 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	i	Acenaphthene-d10	1.000	1.000	0.0	112	0.00
3	A1	trans-Decalin	0.440	0.384	12.7	101	0.00
4	t	cis-Decalin	0.344	0.293	14.8	99	0.00
9	s	Naphthalene-d8	1.922	1.808	5.9	100	0.00
10	A1	Naphthalene	1.972	1.812	8.1	102	0.00
16	t	2-Methylnaphthalene	1.290	1.190	7.8	103	0.00
17	t	1-Methylnaphthalene	1.252	1.153	7.9	103	0.00
18	A1	Benzothiophene	1.650	1.486	9.9	101	0.00
23	t	Biphenyl	1.688	1.611	4.6	107	0.02
24	t	2,6-Dimethylnaphthalene	1.212	1.149	5.2	107	0.02
25	t	Dibenzofuran	1.800	1.799	0.1	110	0.00
26	t	Acenaphthylene	2.029	1.950	3.9	108	0.00
27	t	Acenaphthene	1.276	1.242	2.7	108	0.00
28	t	2,3,5-Trimethylnaphthalene	1.115	1.095	1.8	110	0.00
29	A1	Fluorene	1.401	1.389	0.9	110	0.00
33	A1	Dibenzothiophene	1.970	2.025	-2.8	112	0.00
42	s	Phenanthrene-d10	1.803	2.022	-12.1	116	0.00
43	A1	Phenanthrene	2.036	2.064	-1.4	109	0.00
54	t	Retene	0.560	0.634	-13.2	131	0.00
55	t	Anthracene	1.890	1.989	-5.2	111	0.02
56	t	Carbazole	1.788	1.877	-5.0	116	0.02
57	t	1-Methylphenanthrene	1.502	1.552	-3.3	114	0.02
58	A1	Fluoranthene	2.274	2.396	-5.4	118	0.00
59	t	Benzo(b)fluorene	1.352	1.444	-6.8	121	0.02
60	A1	Pyrene	2.320	2.399	-3.4	116	0.00
66	A1	Naphthobenzothiophene	2.013	2.148	-6.7	120	0.00
67	A2	Naphthobenzothiophene-2,1-D	2.013	2.148	-6.7	120	0.00
74	i	Chrysene-d12	1.000	1.000	0.0	127	0.00
75	t	Benz[a]anthracene	1.147	1.098	4.3	124	0.00
76	A1	Chrysene	1.128	1.098	2.7	121	0.00
77	A2	Chrysene/Triphenylene	1.128	1.098	2.7	121	0.00
83	S	Benzo[b]fluoranthene-d12	0.919	0.949	-3.3	131	0.00
84	t	Benzo[b]fluoranthene	1.189	1.089	8.4	119	0.00
85	A1	Benzo[j]+[k]fluoranthene	1.168	1.182	-1.2	128	0.00
87	t	Benzo[e]pyrene	1.129	1.052	6.8	122	0.00
88	s	Benzo[a]pyrene-d12	0.921	0.973	-5.6	130	0.00
89	t	Benzo[a]pyrene	1.069	1.011	5.4	122	0.00
90	t	Perylene	1.141	1.070	6.2	123	0.00
91	t	Indeno[1,2,3-cd]pyrene	1.184	1.160	2.0	133	0.00
92	t	Dibenz[ah]+[ac]anthracene	1.167	1.146	1.8	127	0.00
93	t	Benzo[g,h,i]perylene	1.164	1.107	4.9	126	0.02
94	A1	Hopane (T19)	0.440	0.343	22.0	111	0.00
95	A2	17a(H),21B(H)-hopane - C30H	0.440	0.343	22.0	111	0.00
129	SA1	5B(H)Cholane - Surr	0.210	0.202	3.8	126	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Mass Discrimination (Concentration)	Ratio	Range Limits
Benzo[g,h,i]perylene to Phenanthrene	0.94	0.70 - 1.30

Evaluate Continuing Calibration Report

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009593.D
Acq On : 23 Dec 2012 2:36 pm
Operator : ps
Sample : C912221203
Misc : WHAQ86@500ng/ml
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Dec 27 15:11:24 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

Compound	AvgRF	CCRF	%Dev	Area% Dev(min)

Mass Discrimination (Response)	Ratio	Range Limits
Benzo[g,h,i]perylene to Phenanthrene	1.03	0.70 - 2.00

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009593.D
Acq On : 23 Dec 2012 2:36 pm
Operator : ps
Sample : C912221203
Misc : WHAQ86@500ng/ml
ALS Vial : 22 Sample Multiplier: 1

12/27/12

Quant Time: Dec 27 15:11:24 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.156	164	77006	500.000	ng/mL	0.00
74) Chrysene-d12	42.558	240	147905	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.239	136	139247	470.463	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 47.05%#			
42) Phenanthrene-d10	32.004	188	155679	560.494	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 56.05%			
83) Benzo[b]fluoranthene-d12	46.451	264	140382	516.342	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 51.63%			
88) Benzo[a]pyrene-d12	47.576	264	143864	527.864	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 52.79%			
129) 5B(H)Cholane - Surr	43.178	217	29853	480.797	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 48.08%#			
Target Compounds						Qvalue
3) trans-Decalin	15.899	138	14773	218.213	ng/mL	100
4) cis-Decalin	17.103	138	11292	213.058	ng/mL	100
10) Naphthalene	19.312	128	139510	459.316	ng/mL#	100
16) 2-Methylnaphthalene	21.995	142	91633	461.319	ng/mL#	100
17) 1-Methylnaphthalene	22.405	142	88779	460.550	ng/mL#	100
18) Benzothiophene	19.531	134	114401	450.076	ng/mL	100
23) Biphenyl	23.875	154	124080	477.347	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.477	156	88501	473.978	ng/mL#	100
25) Dibenzofuran	26.932	168	138551	499.740	ng/mL	99
26) Acenaphthylene	25.554	152	150127M4	480.481	ng/mL	
27) Acenaphthene	26.284	153	95621	486.738	ng/mL	100
28) 2,3,5-Trimethylnaphthalen	27.835	170	84320	491.184	ng/mL	100
29) Fluorene	28.300	166	106976	495.863	ng/mL	100
33) Dibenzothiophene	31.603	184	155974	513.967	ng/mL	98
43) Phenanthrene	32.096	178	158912	506.862	ng/mL	100
54) Retene	39.061	234	48819	566.414	ng/mL	99
55) Anthracene	32.278	178	153138M4	525.993	ng/mL	
56) Carbazole	32.962	167	144542	524.811	ng/mL	99
57) 1-Methylphenanthrene	34.596	192	119520M4	516.698	ng/mL	
58) Fluoranthene	36.851	202	184510M4	526.818	ng/mL	
59) Benzo(b)fluorene	39.371	216	111162	533.695	ng/mL	100
60) Pyrene	37.728	202	184725	516.983	ng/mL	99
66) Naphthobenzothiophene	41.572	234	165425	533.555	ng/ml	100
67) Naphthobenzothiophene-2,1	41.572	234	165425	533.555	ng/mL	100
75) Benz[a]anthracene	42.494	228	162409	478.720	ng/mL	98
76) Chrysene	42.658	228	162331	486.505	ng/mL	100
77) Chrysene/Triphenylene	42.658	228	162331	486.505	ng/mL	100
84) Benzo[b]fluoranthene	46.533	252	161063	457.878	ng/mL	92
85) Benzo[j]+[k]fluoranthene	46.615	252	174897	506.031	ng/mL	92
87) Benzo[e]pyrene	47.484	252	155636	465.947	ng/mL	91
89) Benzo[a]pyrene	47.658	252	149603M4	472.921	ng/mL	
90) Perylene	47.960	252	158278	468.809	ng/mL#	89
91) Indeno[1,2,3-cd]pyrene	52.157	276	171616M3	489.846	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.203	278	169501	491.132	ng/mL	98
93) Benzo[g,h,i]perylene	53.354	276	163692	475.463	ng/mL	100
94) Hopane (T19)	51.316	191	50762	390.375	ng/mL#	78
95) 17a(H),21B(H)-hopane - C3	51.316	191	50762	390.375	ng/mL#	78

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009593.D
Acq On : 23 Dec 2012 2:36 pm
Operator : ps
Sample : C912221203
Misc : WHAQ86@500ng/ml
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Dec 27 15:11:24 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

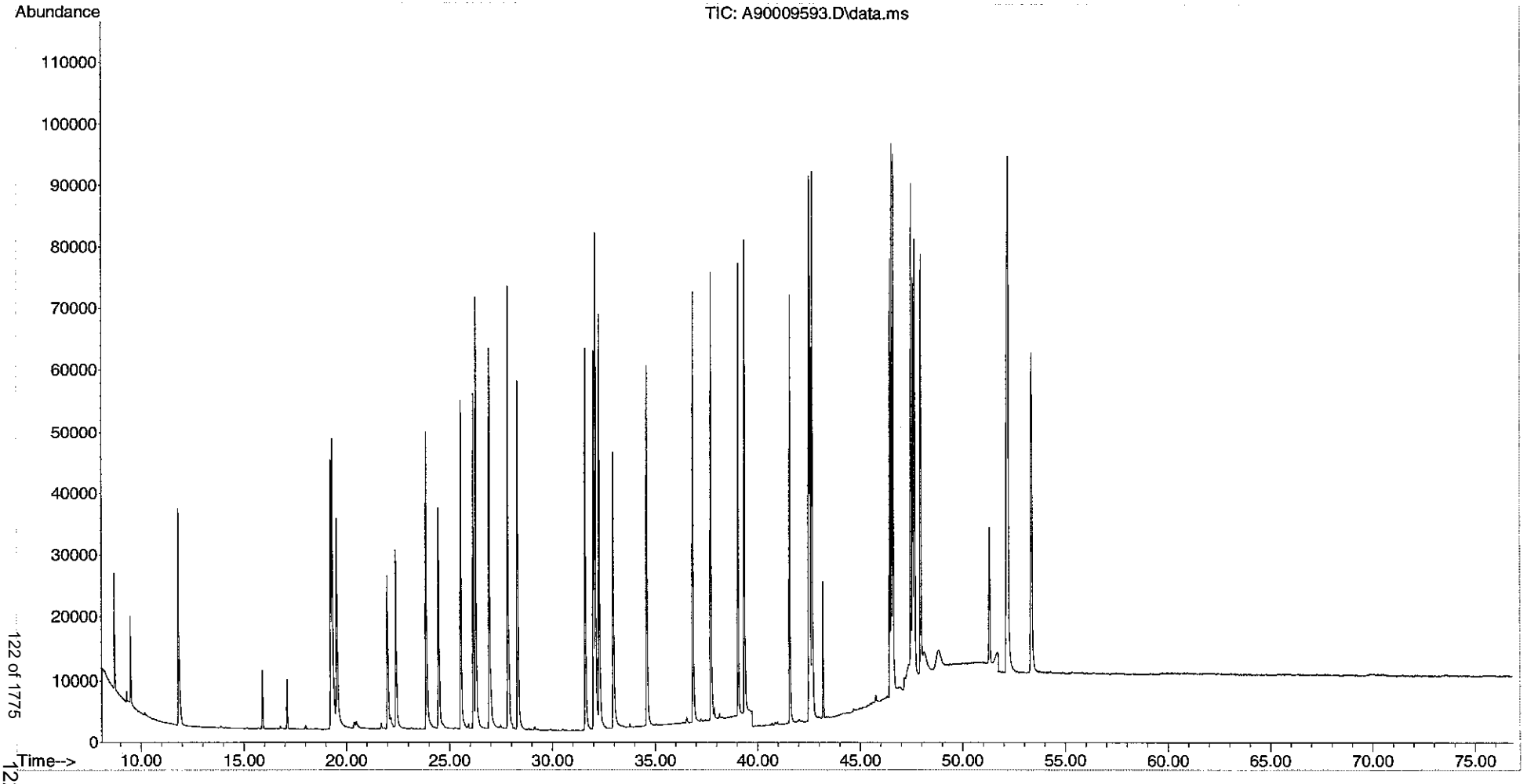
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009593.D
Acq On : 23 Dec 2012 2:36 pm
Operator : ps
Sample : C912221203
Misc : WHAQ86@500ng/ml
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Dec 27 15:11:24 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates



Evaluate Continuing Calibration Report

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\
Data File : A90009632.D
Acq On : 26 Dec 2012 1:53 pm
Operator : ps
Sample : C912261202 250 12-28-12
Misc : WHAR30@500ng/ml
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Dec 28 11:59:22 2012
Quant Method : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Fri Dec 28 11:59:09 2012
Response via : Initial Calibration

12-28-12

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	i	Acenaphthene-d10	1.000	1.000	0.0	84	0.00
3	A1	trans-Decalin	0.220	0.223	-1.4	88	0.00
4	t	cis-Decalin	0.172	0.173	-0.6	88	0.00
9	s	Naphthalene-d8	0.961	0.876	8.8	73	0.00
10	A1	Naphthalene	0.986	1.005	-1.9	85	0.00
16	t	2-Methylnaphthalene	0.645	0.655	-1.6	85	0.00
17	t	1-Methylnaphthalene	0.626	0.630	-0.6	84	0.00
18	A1	Benzothiophene	0.825	0.836	-1.3	85	0.00
23	t	Biphenyl	0.844	0.882	-4.5	88	0.00
24	t	2,6-Dimethylnaphthalene	0.606	0.612	-1.0	86	0.00
25	t	Dibenzofuran	0.900	0.960	-6.7	88	0.00
26	t	Acenaphthylene	1.014	1.007	0.7	84	0.00
27	t	Acenaphthene	0.638	0.655	-2.7	85	0.00
28	t	2,3,5-Trimethylnaphthalene	0.557	0.570	-2.3	86	0.00
29	A1	Fluorene	0.700	0.725	-3.6	86	0.00
33	A1	Dibenzothiophene	0.985	1.056	-7.2	88	0.00
42	s	Phenanthrene-d10	0.902	0.901	0.1	78	0.00
43	A1	Phenanthrene	1.018	1.099	-8.0	87	0.00
54	t	Retene	0.280	0.304	-8.6	94	0.00
55	t	Anthracene	0.945	1.034	-9.4	86	0.00
56	t	Carbazole	0.894	0.961	-7.5	89	0.00
57	t	1-Methylphenanthrene	0.751	0.782	-4.1	86	0.00
58	A1	Fluoranthene	1.137	1.202	-5.7	88	0.00
59	t	Benzo(b)fluorene	0.676	0.714	-5.6	90	0.00
60	A1	Pyrene	1.160	1.216	-4.8	88	0.00
66	A1	Naphthobenzothiophene	1.007	1.034	-2.7	87	0.00
67	A2	Naphthobenzothiophene-2,1-D	1.007	1.034	-2.7	87	0.00
74	i	Chrysene-d12	1.000	1.000	0.0	88	0.00
75	t	Benz[a]anthracene	0.573	0.564	1.6	88	0.00
76	A1	Chrysene	0.564	0.570	-1.1	87	0.00
77	A2	Chrysene/Triphenylene	0.564	0.570	-1.1	87	0.00
83	S	Benzo[b]fluoranthene-d12	0.460	0.403	12.4	77	0.00
84	t	Benzo[b]fluoranthene	0.595	0.559	6.1	85	0.00
85	A1	Benzo[j]+[k]fluoranthene	0.584	0.578	1.0	86	0.00
87	t	Benzo[e]pyrene	0.565	0.533	5.7	86	0.00
88	s	Benzo[a]pyrene-d12	0.461	0.414	10.2	76	0.00
89	t	Benzo[a]pyrene	0.535	0.511	4.5	85	0.00
90	t	Perylene	0.571	0.532	6.8	85	0.00
91	t	Indeno[1,2,3-cd]pyrene	0.592	0.556	6.1	88	0.00
92	t	Dibenz[ah]+[ac]anthracene	0.583	0.571	2.1	88	0.00
93	t	Benzo[g,h,i]perylene	0.582	0.563	3.3	88	0.00
94	A1	Hopane (T19)	0.220	0.178	19.1	80	0.00
95	A2	17a(H),21B(H)-hopane - C30H	0.220	0.177	19.5	80	0.00
129	SA1	5B(H)Cholane - Surr	0.105	0.098	6.7	84	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Mass Discrimination (Concentration)	Ratio	Range Limits

Evaluate Continuing Calibration Report

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\
Data File : A90009632.D
Acq On : 26 Dec 2012 1:53 pm
Operator : ps
Sample : C912261202 250 12-28-12 lb
Misc : WHAR30@500ng/ml
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Dec 28 11:59:22 2012
Quant Method : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Fri Dec 28 11:59:09 2012
Response via : Initial Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

Compound	AvgRF	CCRF	%Dev	Area% Dev(min)
Benzo[g,h,i]perylene to Phenanthrene			0.90	0.70 - 1.30

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\
Data File : A90009632.D
Acq On : 26 Dec 2012 1:53 pm
Operator : ps
Sample : C912261202 250 12.28.12 BD
Misc : WHAR30@500ng/ml
ALS Vial : 2 Sample Multiplier: 1

12.28.12 BD

Quant Time: Dec 28 11:59:22 2012
Quant Method : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Fri Dec 28 11:59:09 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.064	164	57717	250.000	ng/mL	0.00
74) Chrysene-d12	42.457	240	102349	250.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.147	136	101159	228.000	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 22.80%#			
42) Phenanthrene-d10	31.904	188	104005	249.796	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 24.98%#			
83) Benzo[b]fluoranthene-d12	46.350	264	82414	219.026	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 21.90%#			
88) Benzo[a]pyrene-d12	47.466	264	84801	224.823	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 22.48%#			
129) 5B(H)Cholane - Surr	43.087	217	20014	232.904	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 23.29%#			
Target Compounds						Qvalue
3) trans-Decalin	15.826	138	12845	126.572	ng/mL	100
4) cis-Decalin	17.030	138	9983	125.655	ng/mL	100
10) Naphthalene	19.220	128	115964	254.695	ng/mL#	100
16) 2-Methylnaphthalene	21.903	142	75560M6	253.765	ng/mL	
17) 1-Methylnaphthalene	22.314	142	72693M6	251.565	ng/mL	
18) Benzothiophene	19.439	134	96521	253.320	ng/mL	100
23) Biphenyl	23.774	154	101816	261.300	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.376	156	70702M6	252.600	ng/mL	
25) Dibenzofuran	26.831	168	110835	266.687	ng/mL	99
26) Acenaphthylene	25.462	152	116220	248.135	ng/mL#	100
27) Acenaphthene	26.192	153	75566	256.602	ng/mL	98
28) 2,3,5-Trimethylnaphtha...	27.743	170	65847	255.883	ng/mL	99
29) Fluorene	28.200	166	83692	258.792	ng/mL	99
33) Dibenzothiophene	31.502	184	121954	268.083	ng/mL	99
43) Phenanthrene	31.995	178	126916M6	270.048	ng/mL	
54) Retene	38.969	234	35121M6	271.834	ng/mL	
55) Anthracene	32.177	178	119344M4	273.457	ng/mL	
56) Carbazole	32.853	167	110940	268.713	ng/mL	99
57) 1-Methylphenanthrene	34.487	192	90288M4	260.386	ng/mL	
58) Fluoranthene	36.751	202	138708M4	264.200	ng/mL	
59) Benzo(b)fluorene	39.262	216	82379	263.842	ng/mL	99
60) Pyrene	37.618	202	140360	262.051	ng/mL	99
66) Naphthobenzothiophene	41.462	234	119410	256.927	ng/ml	99
67) Naphthobenzothiophene-...	41.462	234	119410	256.927	ng/mL	99
75) Benz[a]anthracene	42.393	228	115460	245.908	ng/mL	100
76) Chrysene	42.548	228	116644M4	252.591	ng/mL	
77) Chrysene/Triphenylene	42.548	228	116601M4	252.498	ng/mL	
84) Benzo[b]fluoranthene	46.432	252	114389M4	234.967	ng/mL	
85) Benzo[j]+[k]fluoranthene	46.505	252	118412M4	247.548	ng/mL	
87) Benzo[e]pyrene	47.374	252	109029	235.851	ng/mL#	85
89) Benzo[a]pyrene	47.548	252	104666M4	239.069	ng/mL	
90) Perylene	47.841	252	108885	233.031	ng/mL#	84
91) Indeno[1,2,3-cd]pyrene	51.993	276	113733M6	234.562	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.048	278	116785	244.502	ng/mL	98
93) Benzo[g,h,i]perylene	53.172	276	115207	241.790	ng/mL	99
94) Hopane (T19)	51.170	191	36346M6	201.962	ng/mL	

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\
Data File : A90009632.D
Acq On : 26 Dec 2012 1:53 pm
Operator : ps
Sample : C912261202 250 12.28.12
Misc : WHAR30@500ng/ml
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Dec 28 11:59:22 2012
Quant Method : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Fri Dec 28 11:59:09 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

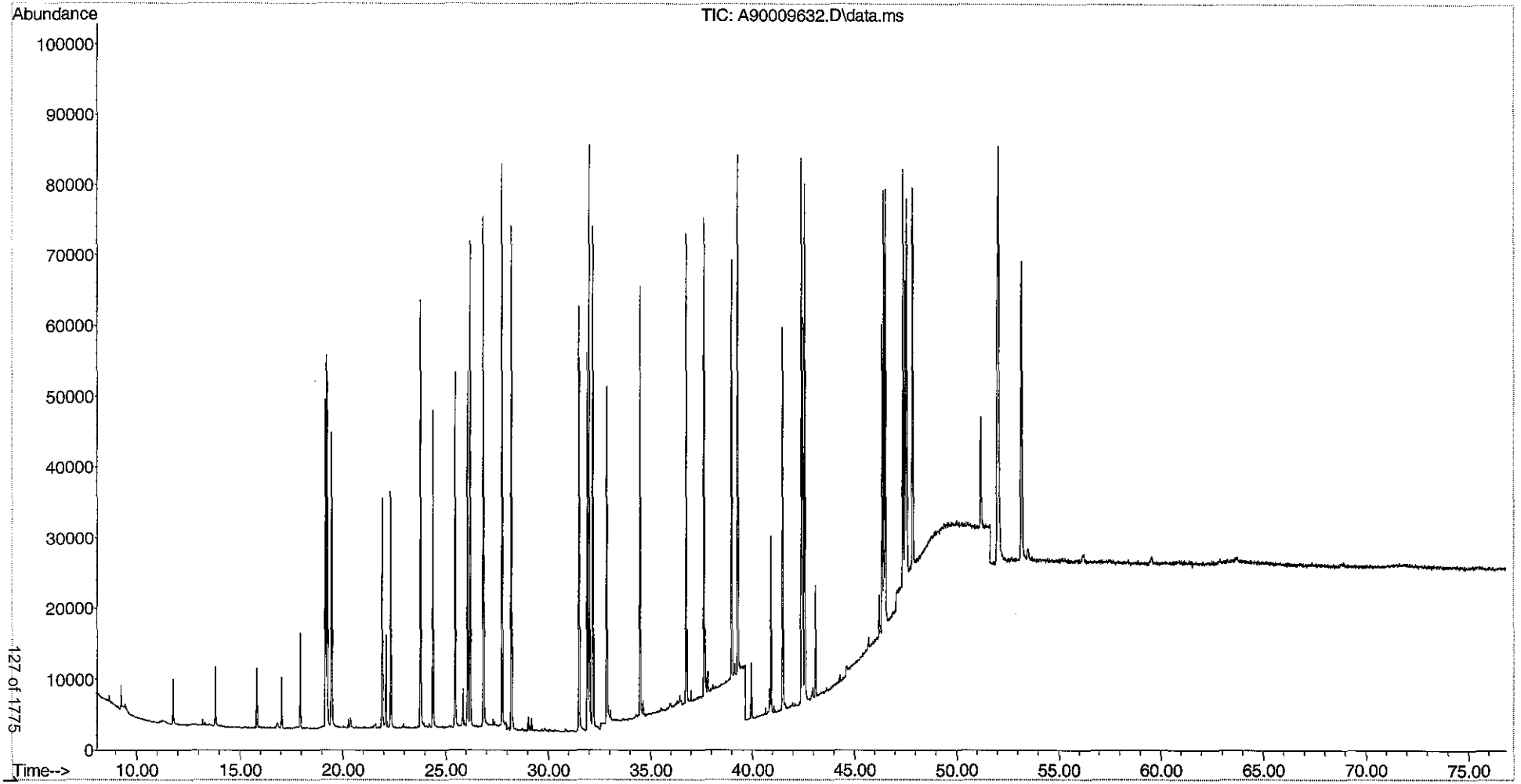
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
95) 17a(H),21B(H)-hopane -...	51.170	191	36316M6	201.795	ng/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\
Data File : A90009632.D
Acq On : 26 Dec 2012 1:53 pm
Operator : ps
Sample : C912261202 250 12/28/12
Misc : WHAR30@500ng/ml
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Dec 28 11:59:22 2012
Quant Method : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Fri Dec 28 11:59:09 2012
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\
Data File : A90009638.D
Acq On : 26 Dec 2012 10:48 pm
Operator : ps
Sample : C912261203 250 12-28-12
Misc : WHAR30@500ng/ml
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Dec 28 12:00:57 2012
Quant Method : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\PAH9120412.M 12-28-12
Quant Title : Decalins & Alkylated PAH's
QLast Update : Fri Dec 28 12:00:44 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.064	164	54255	250.000	ng/mL	0.00
74) Chrysene-d12	42.457	240	101243	250.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.147	136	91764	220.022	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 22.00%#			
42) Phenanthrene-d10	31.904	188	96491	246.537	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 24.65%#			
83) Benzo[b]fluoranthene-d12	46.350	264	83628	224.681	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 22.47%#			
88) Benzo[a]pyrene-d12	47.466	264	86434	231.655	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 23.17%#			
129) 5B(H)Cholane - Surr	43.087	217	20470	240.813	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 24.08%#			
Target Compounds						Qvalue
3) trans-Decalin	15.816	138	11840	124.113	ng/mL	100
4) cis-Decalin	17.021	138	9222	123.483	ng/mL	100
10) Naphthalene	19.220	128	104332	243.769	ng/mL#	100
16) 2-Methylnaphthalene	21.894	142	68552	244.920	ng/mL#	100
17) 1-Methylnaphthalene	22.314	142	67087	246.979	ng/mL#	100
18) Benzothiophene	19.439	134	87135	243.278	ng/mL	100
23) Biphenyl	23.774	154	92224	251.786	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.376	156	65579	249.247	ng/mL#	100
25) Dibenzofuran	26.831	168	101762	260.480	ng/mL	99
26) Acenaphthylene	25.453	152	111990	254.361	ng/mL#	100
27) Acenaphthene	26.183	153	70505	254.693	ng/mL	99
28) 2,3,5-Trimethylnaphtha...	27.743	170	62372	257.845	ng/mL	99
29) Fluorene	28.200	166	78143	257.052	ng/mL	99
33) Dibenzothiophene	31.502	184	112520	263.128	ng/mL	99
43) Phenanthrene	31.995	178	116626	263.988	ng/mL	99
54) Retene	38.960	234	34261	282.098	ng/mL	96
55) Anthracene	32.177	178	113497M4	276.654	ng/mL	
56) Carbazole	32.862	167	100663	259.378	ng/mL	98
57) 1-Methylphenanthrene	34.487	192	87013	266.953	ng/mL	99
58) Fluoranthene	36.750	202	132744	268.974	ng/mL	99
59) Benzo(b)fluorene	39.262	216	80398	273.929	ng/mL	99
60) Pyrene	37.627	202	133847	265.836	ng/mL	98
66) Naphthobenzothiophene	41.462	234	119635	273.836	ng/ml	99
67) Naphthobenzothiophene-...	41.462	234	119635	273.836	ng/mL	99
75) Benz[a]anthracene	42.393	228	115670	249.046	ng/mL	98
76) Chrysene	42.557	228	115328	252.469	ng/mL	98
77) Chrysene/Triphenylene	42.557	228	115328	252.469	ng/mL	98
84) Benzo[b]fluoranthene	46.432	252	118464	245.996	ng/mL#	87
85) Benzo[j]+[k]fluoranthene	46.515	252	114572	242.137	ng/mL#	85
87) Benzo[e]pyrene	47.374	252	108377	237.002	ng/mL#	84
89) Benzo[a]pyrene	47.548	252	105858	244.433	ng/mL#	80
90) Perylene	47.841	252	110148	238.309	ng/mL#	82
91) Indeno[1,2,3-cd]pyrene	52.002	276	118054M4	246.133	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.048	278	115850	245.194	ng/mL	97
93) Benzo[g,h,i]perylene	53.181	276	111563	236.700	ng/mL	99
94) Hopane (T19)	51.179	191	35823M4	201.230	ng/mL	

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\
Data File : A90009638.D
Acq On : 26 Dec 2012 10:48 pm
Operator : ps
Sample : C912261203 250 12·28·12 80
Misc : WHAR30@500ng/ml
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Dec 28 12:00:57 2012
Quant Method : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Fri Dec 28 12:00:44 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

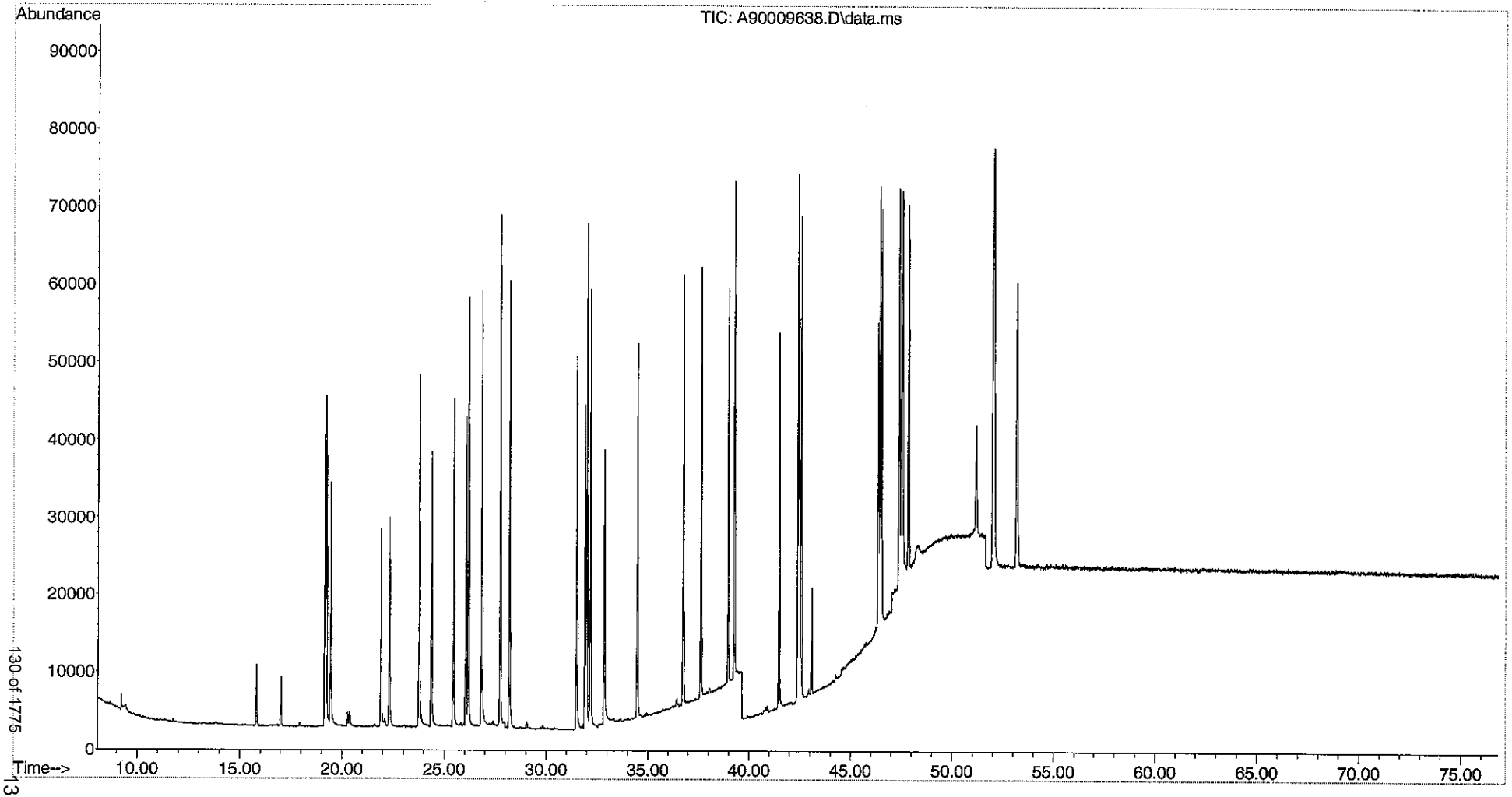
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
95) 17a(H),21B(H)-hopane -...	51.179	191	35799M4	201.096	ng/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\
Data File : A90009638.D
Acq On : 26 Dec 2012 10:48 pm
Operator : ps
Sample : C912261203 250 12/28/12
Misc : WHAR30@500ng/ml
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Dec 28 12:00:57 2012
Quant Method : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Fri Dec 28 12:00:44 2012
Response via : Initial Calibration



Evaluate Continuing Calibration Report

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\
Data File : A90009638.D
Acq On : 26 Dec 2012 10:48 pm
Operator : ps
Sample : C912261203 250 12.28.12
Misc : WHAR30@500ng/ml
ALS Vial : 8 Sample Multiplier: 1

12.28.12

Quant Time: Dec 28 12:00:57 2012
Quant Method : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Fri Dec 28 12:00:44 2012
Response via : Initial Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	i	Acenaphthene-d10	1.000	1.000	0.0	79	0.00
3	A1	trans-Decalin	0.220	0.218	0.9	81	0.00
4	t	cis-Decalin	0.172	0.170	1.2	81	0.00
9	s	Naphthalene-d8	0.961	0.846	12.0	66	0.00
10	A1	Naphthalene	0.986	0.961	2.5	76	0.00
16	t	2-Methylnaphthalene	0.645	0.632	2.0	77	0.00
17	t	1-Methylnaphthalene	0.626	0.618	1.3	78	0.00
18	A1	Benzothiophene	0.825	0.803	2.7	77	0.00
23	t	Biphenyl	0.844	0.850	-0.7	80	0.00
24	t	2,6-Dimethylnaphthalene	0.606	0.604	0.3	79	0.00
25	t	Dibenzofuran	0.900	0.938	-4.2	80	0.00
26	t	Acenaphthylene	1.014	1.032	-1.8	81	0.00
27	t	Acenaphthene	0.638	0.650	-1.9	79	0.00
28	t	2,3,5-Trimethylnaphthalene	0.557	0.575	-3.2	82	0.00
29	A1	Fluorene	0.700	0.720	-2.9	81	0.00
33	A1	Dibenzothiophene	0.985	1.037	-5.3	81	0.00
42	s	Phenanthrene-d10	0.902	0.889	1.4	72	0.00
43	A1	Phenanthrene	1.018	1.075	-5.6	80	0.00
54	t	Retene	0.280	0.316	-12.9	92	0.00
55	t	Anthracene	0.945	1.046	-10.7	82	0.00
56	t	Carbazole	0.894	0.928	-3.8	80	0.00
57	t	1-Methylphenanthrene	0.751	0.802	-6.8	83	0.00
58	A1	Fluoranthene	1.137	1.223	-7.6	85	0.00
59	t	Benzo(b)fluorene	0.676	0.741	-9.6	88	0.00
60	A1	Pyrene	1.160	1.233	-6.3	84	0.00
66	A1	Naphthobenzothiophene	1.007	1.103	-9.5	87	0.00
67	A2	Naphthobenzothiophene-2,1-D	1.007	1.103	-9.5	87	0.00
74	i	Chrysene-d12	1.000	1.000	0.0	87	0.00
75	t	Benz[a]anthracene	0.573	0.571	0.3	88	0.00
76	A1	Chrysene	0.564	0.570	-1.1	86	0.00
77	A2	Chrysene/Triphenylene	0.564	0.570	-1.1	86	0.00
83	S	Benzo[b]fluoranthene-d12	0.460	0.413	10.2	78	0.00
84	t	Benzo[b]fluoranthene	0.595	0.585	1.7	88	0.00
85	A1	Benzo[j]+[k]fluoranthene	0.584	0.566	3.1	84	0.00
87	t	Benzo[e]pyrene	0.565	0.535	5.3	85	0.00
88	s	Benzo[a]pyrene-d12	0.461	0.427	7.4	78	0.00
89	t	Benzo[a]pyrene	0.535	0.523	2.2	86	0.00
90	t	Perylene	0.571	0.544	4.7	86	0.00
91	t	Indeno[1,2,3-cd]pyrene	0.592	0.583	1.5	91	0.00
92	t	Dibenz[ah]+[ac]anthracene	0.583	0.572	1.9	87	0.00
93	t	Benzo[g,h,i]perylene	0.582	0.551	5.3	86	0.00
94	A1	Hopane (T19)	0.220	0.177	19.5	78	0.00
95	A2	17a(H),21B(H)-hopane - C30H	0.220	0.177	19.5	78	0.00
129	SA1	5B(H)Cholane - Surr	0.105	0.101	3.8	86	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Mass Discrimination (Concentration)	Ratio	Range Limits

Evaluate Continuing Calibration Report

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\
Data File : A90009638.D
Acq On : 26 Dec 2012 10:48 pm
Operator : ps
Sample : C912261203 250 12.28.12 ld
Misc : WHAR30@500ng/ml
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Dec 28 12:00:57 2012
Quant Method : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Fri Dec 28 12:00:44 2012
Response via : Initial Calibration

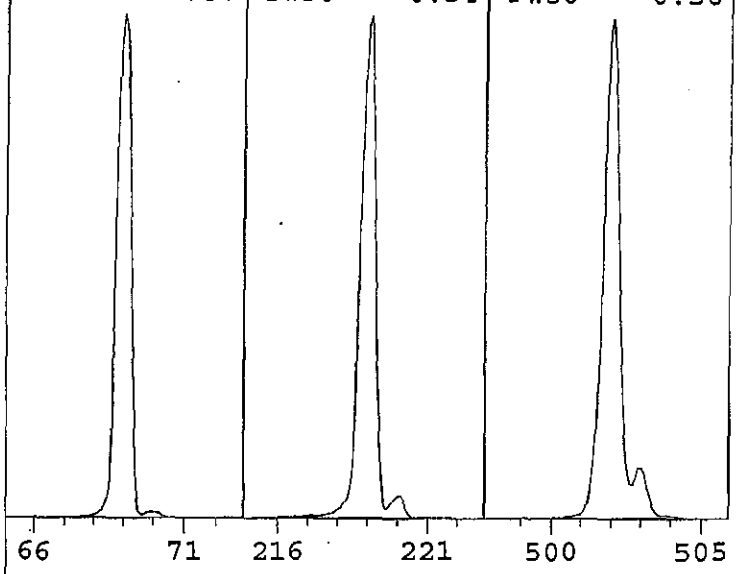
Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
Benzo[g,h,i]perylene to Phenanthrene			0.90		0.70 - 1.30

Tue Dec 04 17:41:46 2012
C:\msdchem\1\5975\pftbaALT.U

Instrument: PAH 9
US10163301

Mass	69.00	Mass	219.10	Mass	502.00
Ab	680941	Ab	382031	Ab	76220
Pw50	0.56	Pw50	0.54	Pw50	0.56

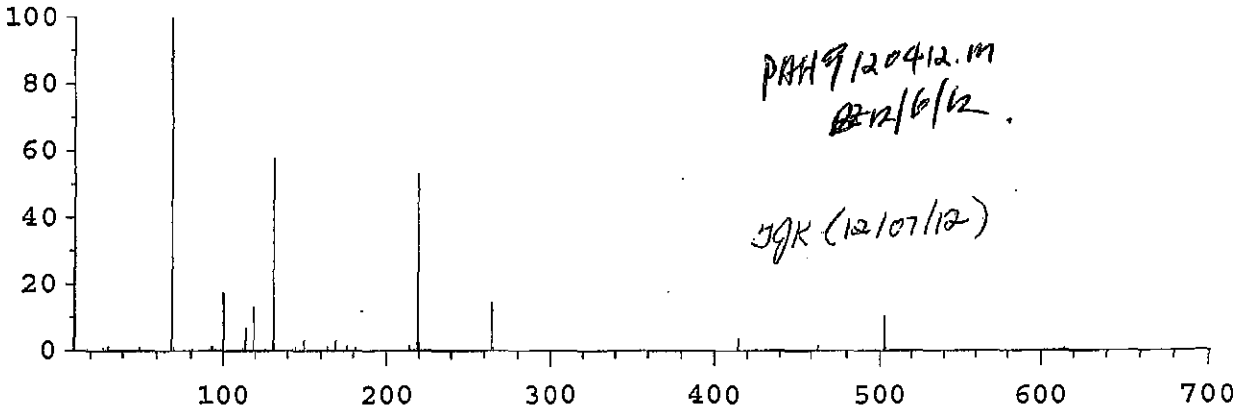


Ion Pol	Pos	MassGain	-780
		MassOffs	-43
Emission	34.6	AmuGain	1723
EIEnrgy	69.9	AmuOffs	126.75
Filament	1	Wid219	-0.034
		DC Pol	Pos
Repeller	29.79		
IonFcus	90.2	HEDEnab	On
EntLens	0.0	EMVolts	1847
EntOffs	Var		
		Samples	8
PFTBA	Open	Averages	3
		Stepsize	0.10

Temperatures and Pressures:

MS Source	230	TurboSpd	100
MS Quad	150	HiVac	1.18e05

Scan: 10.00 - 701.00 Samples: 8 Thresh: 100 Step: 0.10
160 peaks Base: 69.00 Abundance: 651712



PAH9/120412.M
12/6/12.

JJK (12/07/12)

Mass	Abund	Rel Abund	Iso Mass	Iso Abund	Iso Ratio
69.00	651712	100.00	70.00	7523	1.15
219.00	346368	53.15	220.00	16181	4.67
502.00	69120	10.61	503.00	6863	9.93

Air/Water Check: H2O~0.62% N2~0.75% O2~0.27% CO2~0.23% N2/H2O~121.78%

Ramp Criteria:
Ion Focus Maximum 90 volts using ion 502; EM Gain 161383
Repeller Maximum 30 volts using ion 219; Gain Factor 1.61

MassGain Values(Samples): -780(3) -771(2) -764(1) -745(0) -684(FS)

TARGET MASS:	50	69	131	219	414	502	1050
Amu Offset:	126.8	126.8	126.8	126.8	126.8	126.8	126.8
Entrance Lens Offset:	7.8	8.8	10.0	11.3	15.6	27.1	27.1
Target Abund(%):	1.0	100.0	55.0	55.0	3.5	10.0	
Actual Tune Abund(%):	1.0	100.0	57.8	53.1	3.5	10.6	

Instrument: PAH 9
Sat Dec 22 14:28:00 2012 C:\msdchem\1\5975\pftbaALT.U

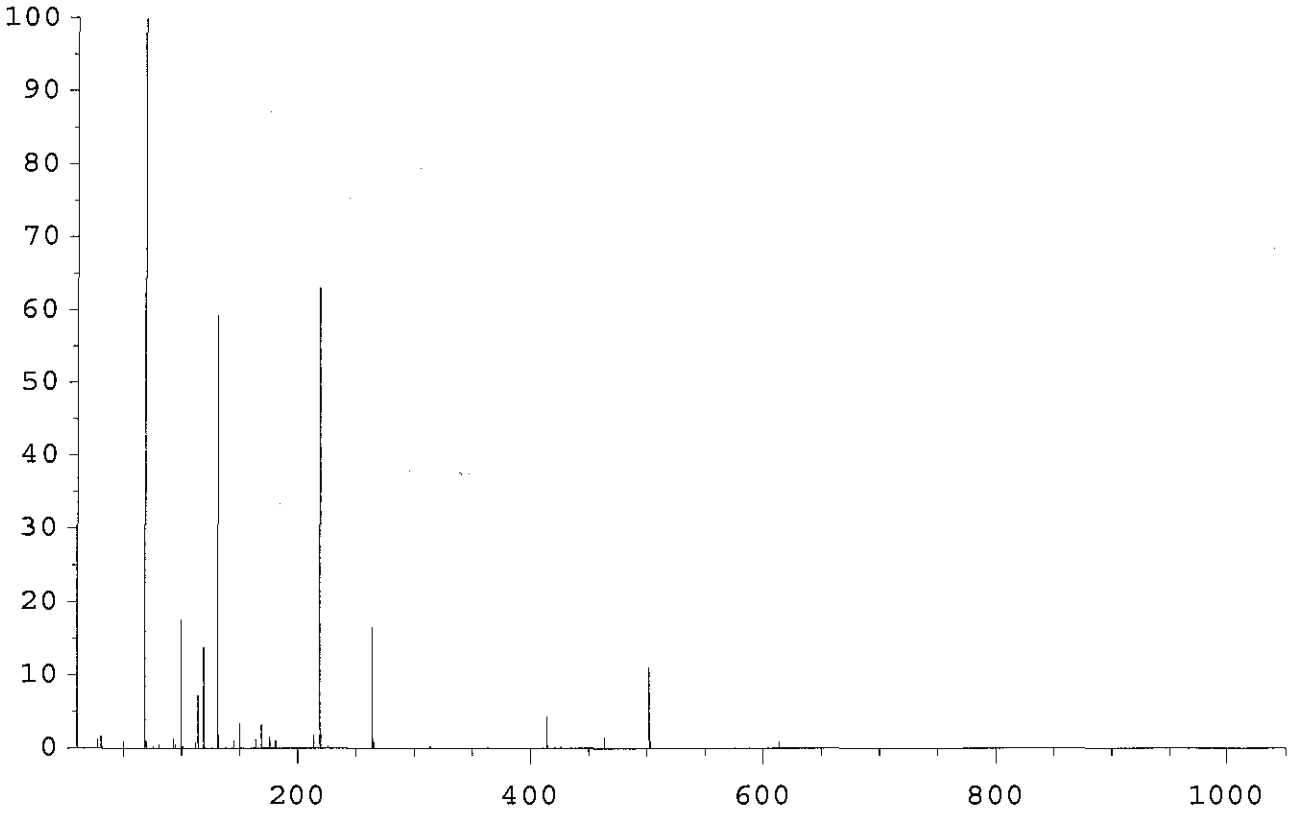
kmm for mt
12/28/12

Ion Pol	Pos	MassGain	-780
		MassOffs	-43
Emission	34.6	AmuGain	1723
EIEnrgy	69.9	AmuOffs	126.75
Filament	1	Wid219	-0.034
		DC Pol	Pos
Repeller	29.79		
IonFcus	90.2	HEDEnab	On
EntLens	0.0	EMVolts	1824
EntOffs	Var		
		Samples	8
PFTBA	Open	Averages	3
		Stepsize	0.10

Temperatures and Pressures:

MS Source	230	TurboSpd	100
MS Quad	150	HiVac	1.11e05

Scan: 10.00 - 1050.00 Samples: 8 Thresh: 100 Step: 0.10
162 peaks Base: 69.00 Abundance: 670912



Mass	Abund	Rel Abund	Iso Mass	Iso Abund	Iso Ratio
69.00	670912	100.00	70.00	7404	1.10
219.00	422656	63.00	220.00	18656	4.41
502.00	74280	11.07	503.00	7298	9.82

PAH9/DEC26/A90009632

Ken for MT
12/28/12

```
[targets]
base=69
masses=5
mass1=50
mass2=131
mass3=219
mass4=414
mass5=502
target1=1
target2=45
target3=55
target4=2.5
target5=2
[atune.cnorm]
masses=5
69=560064
50=7779
131=211904
219=194496
414=11529
502=9533
[dftpp.cnorm]
masses=5
69=490688
50=4806
131=242560
219=286912
414=12943
502=10915
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masses=5
69=513984
50=4545
131=281344
219=280512
414=16872
502=46992
[target.cnorm]
masses=5
69=470208
50=5016
131=265344
219=251264
414=17088
502=51288
[pftbaALT.cnorm]
masses=5
69=1096192
50=11897
131=636608
219=732416
414=50456
502=122064
[pftbaBIO.cnorm]
masses=5
69=384448
50=4180
131=228288
219=216256
414=12790
502=32856
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Form I
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Blank**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS121812B06**
Associated Blank: **N/A**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	12/20/12	12/22/12	100	15.00	2	1	PS

Parameter	Result		Parameter	Result	
cis/trans-Decalin	0.191	U	C3-Dibenzothiophenes	0.0580	U
C1-Decalins	0.191	U	C4-Dibenzothiophenes	0.0580	U
C2-Decalins	0.191	U	Benzo(b)fluorene	0.120	U
C3-Decalins	0.191	U	Fluoranthene	**0.0221**	J
C4-Decalins	0.191	U	Pyrene	**0.0269**	J
Benzothiophene	0.155	U	C1-Fluoranthenes/Pyrenes	0.0993	U
C1-Benzo(b)thiophenes	0.155	U	C2-Fluoranthenes/Pyrenes	0.0993	U
C2-Benzo(b)thiophenes	0.155	U	C3-Fluoranthenes/Pyrenes	0.0993	U
C3-Benzo(b)thiophenes	0.155	U	C4-Fluoranthenes/Pyrenes	0.0993	U
C4-Benzo(b)thiophenes	0.155	U	Naphthobenzothiophenes	0.0645	U
Naphthalene	**0.0483**	J	C1-Naphthobenzothiophenes	0.0645	U
C1-Naphthalenes	0.130	U	C2-Naphthobenzothiophenes	0.0645	U
C2-Naphthalenes	0.130	U	C3-Naphthobenzothiophenes	0.0645	U
C3-Naphthalenes	0.130	U	C4-Naphthobenzothiophenes	0.0645	U
C4-Naphthalenes	0.130	U	Benz[a]anthracene	0.130	U
Biphenyl	**0.777**	J	Chrysene/Triphenylene	**0.0267**	J
Dibenzofuran	**0.0408**	J	C1-Chrysenes	0.104	U
Acenaphthylene	0.0455	U	C2-Chrysenes	0.104	U
Acenaphthene	0.0537	U	C3-Chrysenes	0.104	U
Fluorene	**0.0805**	J	C4-Chrysenes	0.104	U
C1-Fluorenes	0.0637	U	Benzo[b]fluoranthene	0.168	U
C2-Fluorenes	0.0637	U	Benzo[j]fluoranthene/Benzo[k]fluoranthene	0.119	U
C3-Fluorenes	0.0637	U	Benzo[a]fluoranthene	0.119	U
Anthracene	**0.106**	J	Benzo[e]pyrene	0.107	U
Phenanthrene	**1.07**	J	Benzo[a]pyrene	0.137	U
C1-Phenanthrenes/Anthracenes	**0.257**	J	Perylene	0.217	U
C2-Phenanthrenes/Anthracenes	0.113	U	Indeno[1,2,3-cd]pyrene	0.284	U
C3-Phenanthrenes/Anthracenes	0.113	U	Dibenz[ah]anthracene/Dibenz[ac]anthracene	0.275	U
C4-Phenanthrenes/Anthracenes	0.113	U	Benzo[g,h,i]perylene	0.173	U
Retene	0.109	U			
Dibenzothiophene	**0.0361**	J			
C1-Dibenzothiophenes	0.0580	U			
C2-Dibenzothiophenes	0.0580	U			

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	68	40-120
Phenanthrene-d10	82	40-120
Benzo[a]pyrene-d12	75	40-120

N/A - Not Applicable
J - Estimated value, below quantitation limit.
U - The analyte was analyzed for but not detected at the sample specific level reported.

Form I
Carbazole

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Blank**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS121812B06**
Associated Blank: **N/A**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	12/20/12	12/22/12	100	15.00	2	1	PS

Parameter	Result
Carbazole	0.126 U

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	68	40-120
Phenanthrene-d10	82	40-120
Benzo[a]pyrene-d12	75	40-120

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

Form I
Polynuclear Aromatic Hydrocarbons Isomers

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Blank**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS121812B06**
Associated Blank: **N/A**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	12/20/12	12/22/12	100	15.00	2	1	PS

Parameter	Result
4-Methyldibenzothiophene	0.0580 U
2/3-Methyldibenzothiophene	0.0580 U
1-Methyldibenzothiophene	0.0580 U
3-Methylphenanthrene	0.113 U
2-Methylphenanthrene	0.113 U
2-Methylanthracene	0.113 U
9/4-Methylphenanthrene	**0.0705** J
1-Methylphenanthrene	0.113 U
2-Methylnaphthalene	0.0863 U
1-Methylnaphthalene	0.0864 U
2,6-Dimethylnaphthalene	0.0913 U
2,3,5-Trimethylnaphthalene	0.0720 U
Naphthobenzothiophene-2,1-D	0.0645 U
Naphthobenzothiophene-1,2-D	0.0645 U
Naphthobenzothiophene-2,3-D	0.0645 U

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	68	40-120
Phenanthrene-d10	82	40-120
Benzo[a]pyrene-d12	75	40-120

N/A - Not Applicable
J - Estimated value, below quantitation limit.
U - The analyte was analyzed for but not detected at the sample specific level reported.

Form I
Steranes and Triterpanes

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Blank**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS121812B06**
Associated Blank: **N/A**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	12/20/12	12/22/12	100	15.00	2	1	PS

Parameter	Result		Parameter	Result	
C23 Tricyclic Terpane	1.06	U	30,31-Trishomohopane-22S	1.06	U
C24 Tricyclic Terpane	1.06	U	30,31-Trishomohopane-22R	1.06	U
C25 Tricyclic Terpane	1.06	U	Tetrakishomohopane-22S	1.06	U
C24 Tetracyclic Terpane	1.06	U	Tetrakishomohopane-22R	1.06	U
C26 Tricyclic Terpane-22S	1.06	U	Pentakishomohopane-22S	1.06	U
C26 Tricyclic Terpane-22R	1.06	U	Pentakishomohopane-22R	1.06	U
C28 Tricyclic Terpane-22S	1.06	U	13b(H),17a(H)-20S-Diacholestane	1.06	U
C28 Tricyclic Terpane-22R	1.06	U	13b(H),17a(H)-20R-Diacholestane	1.06	U
C29 Tricyclic Terpane-22S	1.06	U	13b,17a-20S-Methyldiacholestane	1.06	U
C29 Tricyclic Terpane-22R	1.06	U	14a(H),17a(H)-20S-Cholestane/ 13b(H),17a(H)-20S-Ethyldiacholestane (S12)	1.06	U
18a-22,29,30-Trisnorneohopane-TS	1.06	U	14a(H),17a(H)-20R-Cholestane/ 13b(H),17a(H)-20R-Ethyldiacholestane (S17)	1.06	U
C30 Tricyclic Terpane-22S	1.06	U	Unknown Sterane (S18)	1.06	U
C30 Tricyclic Terpane-22R	1.06	U	13a,17b-20S-Ethyldiacholestane	1.06	U
17a(H)-22,29,30-Trisnorhopane-TM	1.06	U	14a,17a-20S-Methylcholestane	1.06	U
17a/b,21b/a 28,30-Bisnorhopane	1.06	U	14a,17a-20R-Methylcholestane	1.06	U
17a(H),21b(H)-25-Norhopane	1.06	U	14a(H),17a(H)-20S-Ethylcholestane	1.06	U
30-Norhopane	1.06	U	14a(H),17a(H)-20R-Ethylcholestane	1.06	U
18a(H)-30-Norneohopane-C29Ts	1.06	U	14b(H),17b(H)-20R-Cholestane	1.06	U
17a(H)-Diahopane	1.06	U	14b(H),17b(H)-20S-Cholestane	1.06	U
30-Normoretane	1.06	U	14b,17b-20R-Methylcholestane	1.06	U
18a(H)&18b(H)-Oleananes	1.06	U	14b,17b-20S-Methylcholestane	1.06	U
Hopane	1.06	U	14b(H),17b(H)-20R-Ethylcholestane	1.06	U
Moretane	1.06	U	14b(H),17b(H)-20S-Ethylcholestane	1.06	U
30-Homohopane-22S	1.06	U	C26,20R- +C27,20S- triaromatic steroid	1.06	U
30-Homohopane-22R	1.06	U	C28,20S-triaromatic steroid	1.06	U
T22a-Gammacerane/C32-diahopane	1.06	U	C27,20R-triaromatic steroid	1.06	U
30,31-Bishomohopane-22S	1.06	U	C28,20R-triaromatic steroid	1.06	U
30,31-Bishomohopane-22R	1.06	U			

Surrogate	% Recovery	Acceptance Range (%)
5B(H)Cholane	77	50-130

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009577.D
Acq On : 22 Dec 2012 4:03 pm
Operator : ps
Sample : SS121812B06
Misc : 1X
ALS Vial : 6 Sample Multiplier: 1

12/27/12

Quant Time: Dec 27 14:18:28 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.156	164	60861	500.000	ng/mL	0.00
74) Chrysene-d12	42.557	240	110962	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.239	136	79007	337.746	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 33.77%#			
42) Phenanthrene-d10	32.004	188	89729	408.751	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 40.88%#			
83) Benzo[b]fluoranthene-d12	46.450	264	83956	411.611	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 41.16%#			
88) Benzo[a]pyrene-d12	47.575	264	76619	374.727	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 37.47%#			
129) 5B(H)Cholane - Surr	43.187	217	17925	384.805	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 38.48%#			
Target Compounds						Qvalue
10) Naphthalene	19.312	128	87M4	0.362	ng/mL	
23) Biphenyl	23.883	154B	1197	5.827	ng/mL#	100
25) Dibenzofuran	26.959	168	67M2	0.306	ng/mL	
29) Fluorene	28.327	166	103M3	0.604	ng/mL	
33) Dibenzothiophene	31.593	184	65M3	0.271	ng/mL	
43) Phenanthrene	32.095	178B	1985	8.011	ng/mL	99
47) 9/4-Methylphenanthrene(9M	34.496	192	131	0.529	ng/mL#	24
49) C1-Phenanthrenes/Anthrace	34.496	192	477M5	1.925	ng/mL	
55) Anthracene	32.287	178	183M3	0.795	ng/mL	
58) Fluoranthene	36.869	202	46M3	0.166	ng/mL	
60) Pyrene	37.737	202	57M4	0.202	ng/mL	
77) Chrysene/Triphenylene	42.649	228	50M3	0.200	ng/mL	

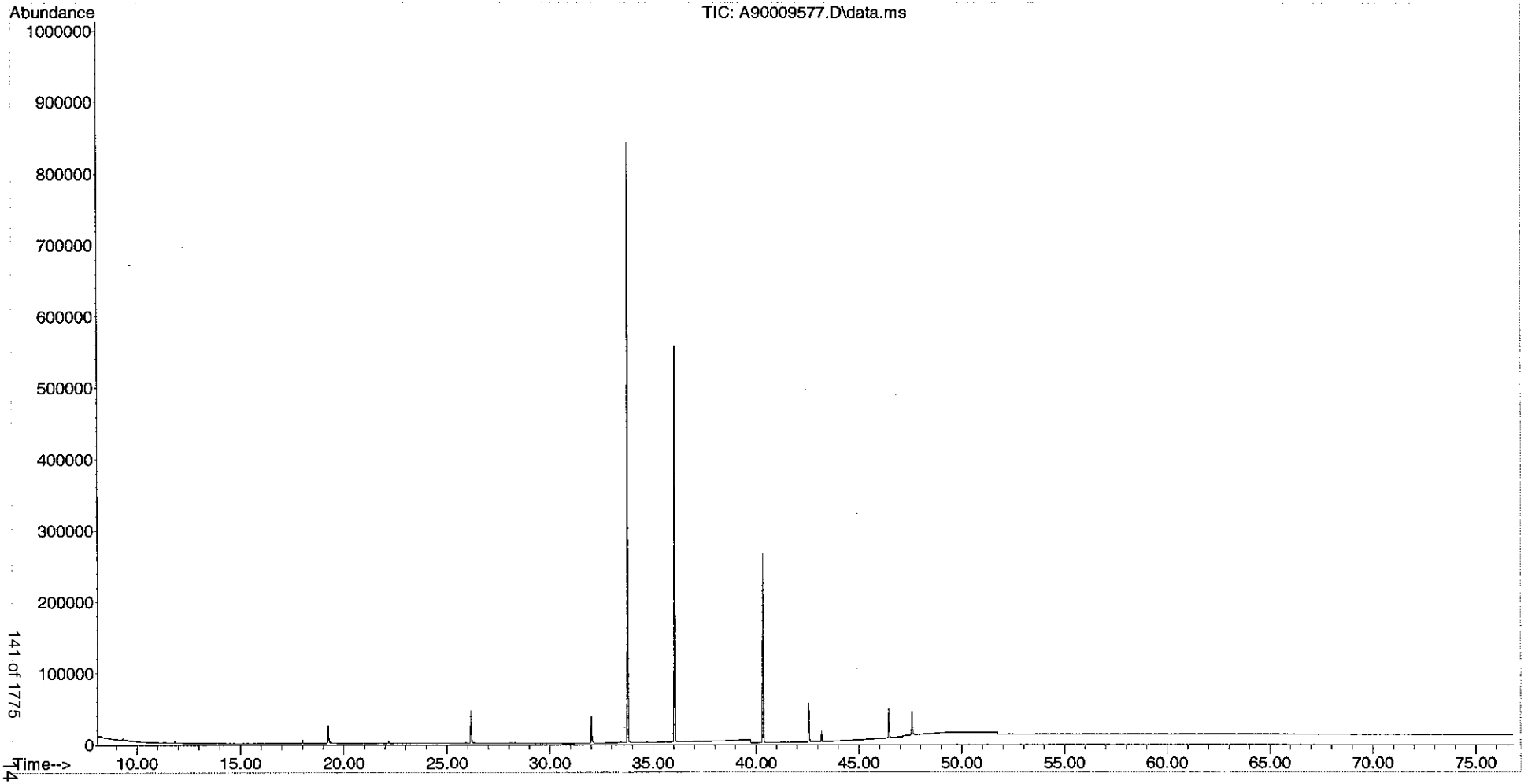
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009577.D
Acq On : 22 Dec 2012 4:03 pm
Operator : ps
Sample : SS121812B06
Misc : 1X
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Dec 27 14:18:28 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES



Form I
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Laboratory Control Sample**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS121812LCS06**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	12/20/12	12/22/12	100	15.00	2	1	PS

Parameter	Result		Parameter	Result	
cis/trans-Decalin	0.191	U	C3-Dibenzothiophenes	0.0580	U
C1-Decalins	0.191	U	C4-Dibenzothiophenes	0.0580	U
C2-Decalins	0.191	U	Benzo(b)fluorene	0.120	U
C3-Decalins	0.191	U	Fluoranthene	**51.4**	S
C4-Decalins	0.191	U	Pyrene	**53.1**	S
Benzothiophene	0.155	U	C1-Fluoranthenes/Pyrenes	0.0993	U
C1-Benzo(b)thiophenes	0.155	U	C2-Fluoranthenes/Pyrenes	0.0993	U
C2-Benzo(b)thiophenes	0.155	U	C3-Fluoranthenes/Pyrenes	0.0993	U
C3-Benzo(b)thiophenes	0.155	U	C4-Fluoranthenes/Pyrenes	0.0993	U
C4-Benzo(b)thiophenes	0.155	U	Naphthobenzothiophenes	0.0645	U
Naphthalene	**48.4**	S	C1-Naphthobenzothiophenes	0.0645	U
C1-Naphthalenes	0.130	U	C2-Naphthobenzothiophenes	0.0645	U
C2-Naphthalenes	0.130	U	C3-Naphthobenzothiophenes	0.0645	U
C3-Naphthalenes	0.130	U	C4-Naphthobenzothiophenes	0.0645	U
C4-Naphthalenes	0.130	U	Benz[a]anthracene	**46.9**	S
Biphenyl	0.0604	U	Chrysene/Triphenylene	**49.6**	S
Dibenzofuran	0.0567	U	C1-Chrysenes	0.104	U
Acenaphthylene	**47.2**	S	C2-Chrysenes	0.104	U
Acenaphthene	**49.3**	S	C3-Chrysenes	0.104	U
Fluorene	**50.1**	S	C4-Chrysenes	0.104	U
C1-Fluorenes	0.0637	U	Benzo[b]fluoranthene	**48.4**	S
C2-Fluorenes	0.0637	U	Benzo[j]fluoranthene/Benzo[k]fluoranthene	**52.4**	S
C3-Fluorenes	0.0637	U	Benzo[a]fluoranthene	0.119	U
Anthracene	**51.8**	S	Benzo[e]pyrene	0.107	U
Phenanthrene	**52.2**	S	Benzo[a]pyrene	**51.5**	S
C1-Phenanthrenes/Anthracenes	0.113	U	Perylene	0.217	U
C2-Phenanthrenes/Anthracenes	0.113	U	Indeno[1,2,3-cd]pyrene	**45.5**	S
C3-Phenanthrenes/Anthracenes	0.113	U	Dibenz[ah]anthracene/Dibenz[ac]anthracene	**48.4**	S
C4-Phenanthrenes/Anthracenes	0.113	U	Benzo[g,h,i]perylene	**47.4**	S
Retene	0.109	U			
Dibenzothiophene	0.0580	U			
C1-Dibenzothiophenes	0.0580	U			
C2-Dibenzothiophenes	0.0580	U			

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	73	40-120
Phenanthrene-d10	85	40-120
Benzo[a]pyrene-d12	74	40-120

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.
S - Spike compound.

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Form I
Carbazole

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Laboratory Control Sample**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS121812LCS06**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	12/20/12	12/22/12	100	15.00	2	1	PS

Parameter	Result
Carbazole	0.126 U

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	73	40-120
Phenanthrene-d10	85	40-120
Benzo[a]pyrene-d12	74	40-120

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

Form I
Polynuclear Aromatic Hydrocarbons Isomers

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Laboratory Control Sample**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS121812LCS06**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	12/20/12	12/22/12	100	15.00	2	1	PS

Parameter	Result	
4-Methyldibenzothiophene	0.0580	U
2/3-Methyldibenzothiophene	0.0580	U
1-Methyldibenzothiophene	0.0580	U
3-Methylphenanthrene	0.113	U
2-Methylphenanthrene	0.113	U
2-Methylanthracene	0.113	U
9/4-Methylphenanthrene	0.113	U
1-Methylphenanthrene	0.113	U
2-Methylnaphthalene	**49.2**	
1-Methylnaphthalene	0.0864	U
2,6-Dimethylnaphthalene	0.0913	U
2,3,5-Trimethylnaphthalene	0.0720	U
Naphthobenzothiophene-2,1-D	0.0645	U
Naphthobenzothiophene-1,2-D	0.0645	U
Naphthobenzothiophene-2,3-D	0.0645	U

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	73	40-120
Phenanthrene-d10	85	40-120
Benzo[a]pyrene-d12	74	40-120

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Form I
Steranes and Triterpanes

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Laboratory Control Sample**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS121812LCS06**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	12/20/12	12/22/12	100	15.00	2	1	PS

Parameter	Result		Parameter	Result	
C23 Tricyclic Terpane	1.06	U	30,31-Trishomohopane-22S	1.06	U
C24 Tricyclic Terpane	1.06	U	30,31-Trishomohopane-22R	1.06	U
C25 Tricyclic Terpane	1.06	U	Tetrakishomohopane-22S	1.06	U
C24 Tetracyclic Terpane	1.06	U	Tetrakishomohopane-22R	1.06	U
C26 Tricyclic Terpane-22S	1.06	U	Pentakishomohopane-22S	1.06	U
C26 Tricyclic Terpane-22R	1.06	U	Pentakishomohopane-22R	1.06	U
C28 Tricyclic Terpane-22S	1.06	U	13b(H),17a(H)-20S-Diacholestane	1.06	U
C28 Tricyclic Terpane-22R	1.06	U	13b(H),17a(H)-20R-Diacholestane	1.06	U
C29 Tricyclic Terpane-22S	1.06	U	13b,17a-20S-Methyldiacholestane	1.06	U
C29 Tricyclic Terpane-22R	1.06	U	14a(H),17a(H)-20S-Cholestane/ 13b(H),17a(H)-20S-Ethyldiacholestane (S12)	1.06	U
18a-22,29,30-Trisnorneohopane-TS	1.06	U	14a(H),17a(H)-20R-Cholestane/ 13b(H),17a(H)-20R-Ethyldiacholestane (S17)	1.06	U
C30 Tricyclic Terpane-22S	1.06	U	Unknown Sterane (S18)	1.06	U
C30 Tricyclic Terpane-22R	1.06	U	13a,17b-20S-Ethyldiacholestane	1.06	U
17a(H)-22,29,30-Trisnorhopane-TM	1.06	U	14a,17a-20S-Methylcholestane	1.06	U
17a/b,21b/a 28,30-Bisnorhopane	1.06	U	14a,17a-20R-Methylcholestane	1.06	U
17a(H),21b(H)-25-Norhopane	1.06	U	14a(H),17a(H)-20S-Ethylcholestane	1.06	U
30-Norhopane	1.06	U	14a(H),17a(H)-20R-Ethylcholestane	1.06	U
18a(H)-30-Norneohopane-C29Ts	1.06	U	14b(H),17b(H)-20R-Cholestane	1.06	U
17a(H)-Diahopane	1.06	U	14b(H),17b(H)-20S-Cholestane	1.06	U
30-Normoretane	1.06	U	14b,17b-20R-Methylcholestane	1.06	U
18a(H)&18b(H)-Oleananes	1.06	U	14b,17b-20S-Methylcholestane	1.06	U
Hopane	1.06	U	14b(H),17b(H)-20R-Ethylcholestane	1.06	U
Moretane	1.06	U	14b(H),17b(H)-20S-Ethylcholestane	1.06	U
30-Homohopane-22S	1.06	U	C26,20R- +C27,20S- triaromatic steroid	1.06	U
30-Homohopane-22R	1.06	U	C28,20S-triaromatic steroid	1.06	U
T22a-Gammacerane/C32-diahopane	1.06	U	C27,20R-triaromatic steroid	1.06	U
30,31-Bishomohopane-22S	1.06	U	C28,20R-triaromatic steroid	1.06	U
30,31-Bishomohopane-22R	1.06	U			

Surrogate	% Recovery	Acceptance Range (%)
5B(H)Cholane	72	50-130

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009578.D
Acq On : 22 Dec 2012 5:27 pm
Operator : ps
Sample : SS121812LCS06
Misc : 1X
ALS Vial : 7 Sample Multiplier: 1

12/27/12

Quant Time: Dec 27 15:50:12 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.156	164	62102	500.000	ng/mL	0.00
74) Chrysene-d12	42.557	240	118972	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.230	136	87097	364.890	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 36.49%#			
42) Phenanthrene-d10	31.995	188	95092	424.525	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 42.45%#			
83) Benzo[b]fluoranthene-d12	46.450	264	88024	402.500	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 40.25%#			
88) Benzo[a]pyrene-d12	47.576	264	80716	368.186	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 36.82%#			
129) 5B(H)Cholane - Surr	43.188	217	18043	361.260	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 36.13%#			
Target Compounds						Qvalue
10) Naphthalene	19.303	128	88838	362.681	ng/mL#	100
16) 2-Methylnaphthalene	21.985	142	59053	368.646	ng/mL#	100
26) Acenaphthylene	25.544	152	89108	353.633	ng/mL#	100
27) Acenaphthene	26.274	153	58558	369.613	ng/mL	100
29) Fluorene	28.291	166	65369	375.722	ng/mL	100
43) Phenanthrene	32.086	178	99076	391.851	ng/mL	100
55) Anthracene	32.269	178	91293M4	388.825	ng/mL	
58) Fluoranthene	36.842	202	108911	385.595	ng/mL	100
60) Pyrene	37.718	202	114833	398.508	ng/mL	100
75) Benz[a]anthracene	42.494	228	96058	352.000	ng/mL	99
77) Chrysene/Triphenylene	42.658	228	99825	371.932	ng/mL	99
84) Benzo[b]fluoranthene	46.533	252	102827	363.412	ng/mL	94
85) Benzo[j]+[k]fluoranthene	46.615	252	109161	392.645	ng/mL	91
89) Benzo[a]pyrene	47.658	252	98278	386.227	ng/mL#	88
91) Indeno[1,2,3-cd]pyrene	52.148	276	96200M3	341.362	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.203	278	100691	362.706	ng/mL	99
93) Benzo[g,h,i]perylene	53.345	276	98366	355.200	ng/mL	100

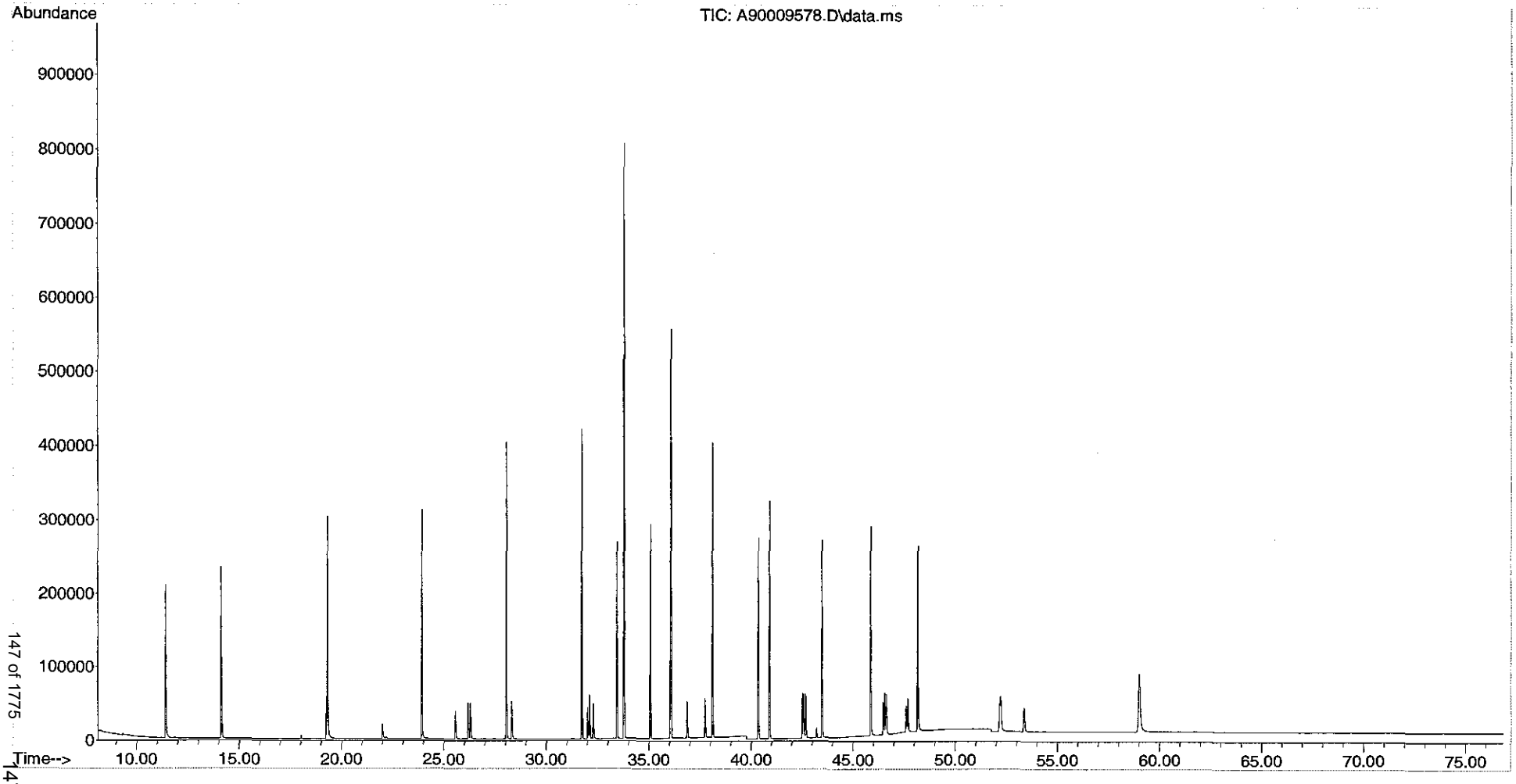
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009578.D
Acq On : 22 Dec 2012 5:27 pm
Operator : ps
Sample : SS121812LCS06
Misc : 1X
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Dec 27 15:50:12 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES



Form I
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Laboratory Control Sample Dup**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS121812LCSD06**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	12/20/12	12/22/12	100	15.00	2	1	PS

Parameter	Result		Parameter	Result	
cis/trans-Decalin	0.191	U	C3-Dibenzothiophenes	0.0580	U
C1-Decalins	0.191	U	C4-Dibenzothiophenes	0.0580	U
C2-Decalins	0.191	U	Benzo(b)fluorene	0.120	U
C3-Decalins	0.191	U	Fluoranthene	**48.5**	S
C4-Decalins	0.191	U	Pyrene	**49.9**	S
Benzothiophene	0.155	U	C1-Fluoranthenes/Pyrenes	0.0993	U
C1-Benzo(b)thiophenes	0.155	U	C2-Fluoranthenes/Pyrenes	0.0993	U
C2-Benzo(b)thiophenes	0.155	U	C3-Fluoranthenes/Pyrenes	0.0993	U
C3-Benzo(b)thiophenes	0.155	U	C4-Fluoranthenes/Pyrenes	0.0993	U
C4-Benzo(b)thiophenes	0.155	U	Naphthobenzothiophenes	0.0645	U
Naphthalene	**44.9**	S	C1-Naphthobenzothiophenes	0.0645	U
C1-Naphthalenes	0.130	U	C2-Naphthobenzothiophenes	0.0645	U
C2-Naphthalenes	0.130	U	C3-Naphthobenzothiophenes	0.0645	U
C3-Naphthalenes	0.130	U	C4-Naphthobenzothiophenes	0.0645	U
C4-Naphthalenes	0.130	U	Benz[a]anthracene	**43.8**	S
Biphenyl	0.0604	U	Chrysene/Triphenylene	**47.0**	S
Dibenzofuran	0.0567	U	C1-Chrysenes	0.104	U
Acenaphthylene	**43.8**	S	C2-Chrysenes	0.104	U
Acenaphthene	**45.8**	S	C3-Chrysenes	0.104	U
Fluorene	**46.8**	S	C4-Chrysenes	0.104	U
C1-Fluorenes	0.0637	U	Benzo[b]fluoranthene	**45.3**	S
C2-Fluorenes	0.0637	U	Benzo[j]fluoranthene/Benzo[k]fluoranthene	**49.1**	S
C3-Fluorenes	0.0637	U	Benzo[a]fluoranthene	0.119	U
Anthracene	**48.3**	S	Benzo[e]pyrene	0.107	U
Phenanthrene	**49.1**	S	Benzo[a]pyrene	**47.3**	S
C1-Phenanthrenes/Anthracenes	0.113	U	Perylene	0.217	U
C2-Phenanthrenes/Anthracenes	0.113	U	Indeno[1,2,3-cd]pyrene	**41.9**	S
C3-Phenanthrenes/Anthracenes	0.113	U	Dibenz[ah]anthracene/Dibenz[ac]anthracene	**44.9**	S
C4-Phenanthrenes/Anthracenes	0.113	U	Benzo[g,h,i]perylene	**44.0**	S
Retene	0.109	U			
Dibenzothiophene	0.0580	U			
C1-Dibenzothiophenes	0.0580	U			
C2-Dibenzothiophenes	0.0580	U			

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	67	40-120
Phenanthrene-d10	79	40-120
Benzo[a]pyrene-d12	68	40-120

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.
S - Spike compound.

Form I
Carbazole

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Laboratory Control Sample Dup**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS121812LCSD06**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	12/20/12	12/22/12	100	15.00	2	1	PS

Parameter	Result
Carbazole	0.126 U

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	67	40-120
Phenanthrene-d10	79	40-120
Benzo[a]pyrene-d12	68	40-120

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

Form I
Polynuclear Aromatic Hydrocarbons Isomers

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Laboratory Control Sample Dup**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS121812LCSD06**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	12/20/12	12/22/12	100	15.00	2	1	PS

Parameter	Result	
4-Methyldibenzothiophene	0.0580	U
2/3-Methyldibenzothiophene	0.0580	U
1-Methyldibenzothiophene	0.0580	U
3-Methylphenanthrene	0.113	U
2-Methylphenanthrene	0.113	U
2-Methylanthracene	0.113	U
9/4-Methylphenanthrene	0.113	U
1-Methylphenanthrene	0.113	U
2-Methylnaphthalene	**45.6**	
1-Methylnaphthalene	0.0864	U
2,6-Dimethylnaphthalene	0.0913	U
2,3,5-Trimethylnaphthalene	0.0720	U
Naphthobenzothiophene-2,1-D	0.0645	U
Naphthobenzothiophene-1,2-D	0.0645	U
Naphthobenzothiophene-2,3-D	0.0645	U

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	67	40-120
Phenanthrene-d10	79	40-120
Benzo[a]pyrene-d12	68	40-120

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

Form I
Steranes and Triterpanes

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Laboratory Control Sample Dup**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS121812LCSD06**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	12/20/12	12/22/12	100	15.00	2	1	PS

Parameter	Result		Parameter	Result	
C23 Tricyclic Terpane	1.06	U	30,31-Trishomohopane-22S	1.06	U
C24 Tricyclic Terpane	1.06	U	30,31-Trishomohopane-22R	1.06	U
C25 Tricyclic Terpane	1.06	U	Tetrakishomohopane-22S	1.06	U
C24 Tetracyclic Terpane	1.06	U	Tetrakishomohopane-22R	1.06	U
C26 Tricyclic Terpane-22S	1.06	U	Pentakishomohopane-22S	1.06	U
C26 Tricyclic Terpane-22R	1.06	U	Pentakishomohopane-22R	1.06	U
C28 Tricyclic Terpane-22S	1.06	U	13b(H),17a(H)-20S-Diacholestane	1.06	U
C28 Tricyclic Terpane-22R	1.06	U	13b(H),17a(H)-20R-Diacholestane	1.06	U
C29 Tricyclic Terpane-22S	1.06	U	13b,17a-20S-Methyldiacholestane	1.06	U
C29 Tricyclic Terpane-22R	1.06	U	14a(H),17a(H)-20S-Cholestane/ 13b(H),17a(H)-20S-Ethyldiacholestane (S12)	1.06	U
18a-22,29,30-Trisnorneohopane-TS	1.06	U	14a(H),17a(H)-20R-Cholestane/ 13b(H),17a(H)-20R-Ethyldiacholestane (S17)	1.06	U
C30 Tricyclic Terpane-22S	1.06	U	Unknown Sterane (S18)	1.06	U
C30 Tricyclic Terpane-22R	1.06	U	13a,17b-20S-Ethyldiacholestane	1.06	U
17a(H)-22,29,30-Trisnorhopane-TM	1.06	U	14a,17a-20S-Methylcholestane	1.06	U
17a/b,21b/a 28,30-Bisnorhopane	1.06	U	14a,17a-20R-Methylcholestane	1.06	U
17a(H),21b(H)-25-Norhopane	1.06	U	14a(H),17a(H)-20S-Ethylcholestane	1.06	U
30-Norhopane	1.06	U	14a(H),17a(H)-20R-Ethylcholestane	1.06	U
18a(H)-30-Norneohopane-C29Ts	1.06	U	14b(H),17b(H)-20R-Cholestane	1.06	U
17a(H)-Diahopane	1.06	U	14b(H),17b(H)-20S-Cholestane	1.06	U
30-Normoretane	1.06	U	14b,17b-20R-Methylcholestane	1.06	U
18a(H)&18b(H)-Oleananes	1.06	U	14b,17b-20S-Methylcholestane	1.06	U
Hopane	1.06	U	14b(H),17b(H)-20R-Ethylcholestane	1.06	U
Moretane	1.06	U	14b(H),17b(H)-20S-Ethylcholestane	1.06	U
30-Homohopane-22S	1.06	U	C26,20R- +C27,20S- triaromatic steroid	1.06	U
30-Homohopane-22R	1.06	U	C28,20S-triaromatic steroid	1.06	U
T22a-Gammacerane/C32-diahopane	1.06	U	C27,20R-triaromatic steroid	1.06	U
30,31-Bishomohopane-22S	1.06	U	C28,20R-triaromatic steroid	1.06	U
30,31-Bishomohopane-22R	1.06	U			

Surrogate	% Recovery	Acceptance Range (%)
5B(H)Cholane	66	50-130

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009579.D
Acq On : 22 Dec 2012 6:52 pm
Operator : ps
Sample : SS121812LCSD06
Misc : 1X
ALS Vial : 8 Sample Multiplier: 1

12/27/12

Quant Time: Dec 27 15:52:10 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.156	164	61901	500.000	ng/mL	0.00
74) Chrysene-d12	42.557	240	119353	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.229	136	79666	334.842	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery =	33.48%#		
42) Phenanthrene-d10	31.995	188	88401	395.936	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery =	39.59%#		
83) Benzo[b]fluoranthene-d12	46.450	264	82367	375.430	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery =	37.54%#		
88) Benzo[a]pyrene-d12	47.575	264	74312	337.892	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery =	33.79%#		
129) 5B(H)Cholane - Surr	43.187	217	16641	332.126	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery =	33.21%#		
Target Compounds						Qvalue
10) Naphthalene	19.311	128	82152	336.474	ng/mL#	100
16) 2-Methylnaphthalene	21.994	142	54569	341.761	ng/mL#	100
26) Acenaphthylene	25.544	152	82522	328.559	ng/mL#	100
27) Acenaphthene	26.283	153	54264	343.622	ng/mL	99
29) Fluorene	28.291	166	60820	350.710	ng/mL	100
43) Phenanthrene	32.086	178	92729	367.939	ng/mL	100
55) Anthracene	32.269	178	84779M4	362.253	ng/mL	
58) Fluoranthene	36.842	202	102436	363.848	ng/mL	100
60) Pyrene	37.718	202	107542	374.417	ng/mL	99
75) Benz[a]anthracene	42.493	228	89880	328.310	ng/mL	100
77) Chrysene/Triphenylene	42.649	228	94925	352.546	ng/mL	99
84) Benzo[b]fluoranthene	46.533	252	96367	339.494	ng/mL	93
85) Benzo[j]+[k]fluoranthene	46.615	252	102724	368.312	ng/mL	92
89) Benzo[a]pyrene	47.658	252	90527	354.630	ng/mL	90
91) Indeno[1,2,3-cd]pyrene	52.148	276	88854M3	314.288	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.203	278	93768	336.690	ng/mL	98
93) Benzo[g,h,i]perylene	53.345	276	91734	330.194	ng/mL	100

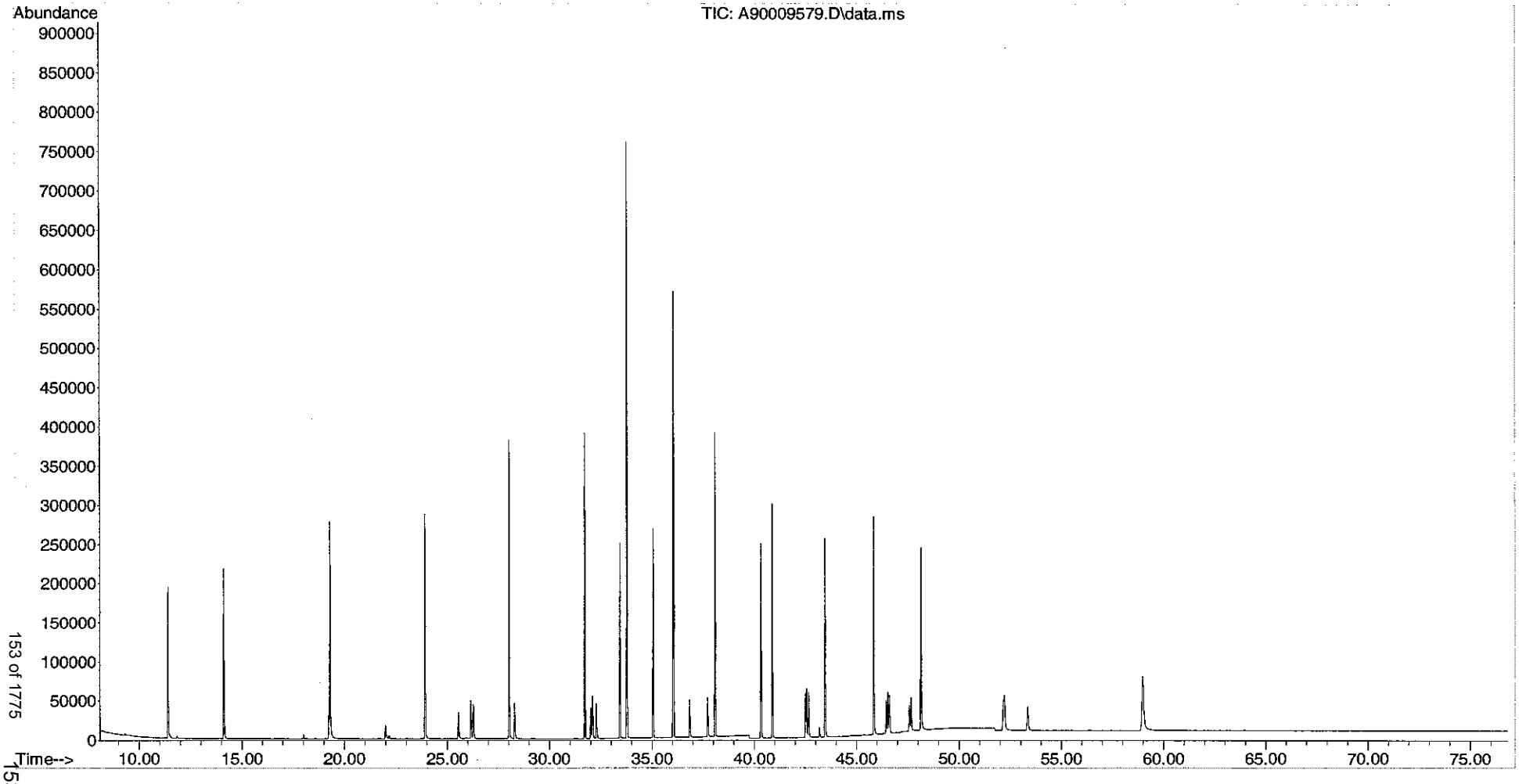
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009579.D
Acq On : 22 Dec 2012 6:52 pm
Operator : ps
Sample : SS121812LCSD06
Misc : 1X
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Dec 27 15:52:10 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES



153 of 1775

1533

Form I
Matrix Spike
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AS121312D010**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-02 M**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
12/13/12	12/14/12	12/20/12	12/23/12	79.5	15.22	2	1	PS

Parameter	Result		Parameter	Result	
cis/trans-Decalin	1.07	J	C3-Dibenzothiophenes	69.7	
C1-Decalins	2.47		C4-Dibenzothiophenes	20.9	
C2-Decalins	5.30		Benzo(b)fluorene	210	
C3-Decalins	5.30		Fluoranthene	1680	S
C4-Decalins	12.2		Pyrene	1770	S
Benzothiophene	3.74		C1-Fluoranthenes/Pyrenes	831	
C1-Benzo(b)thiophenes	4.90		C2-Fluoranthenes/Pyrenes	256	
C2-Benzo(b)thiophenes	3.06		C3-Fluoranthenes/Pyrenes	95.1	
C3-Benzo(b)thiophenes	7.50		C4-Fluoranthenes/Pyrenes	48.0	
C4-Benzo(b)thiophenes	6.02		Naphthobenzothiophenes	186	
Naphthalene	365	S	C1-Naphthobenzothiophenes	142	
C1-Naphthalenes	227		C2-Naphthobenzothiophenes	60.0	
C2-Naphthalenes	53.0		C3-Naphthobenzothiophenes	24.4	
C3-Naphthalenes	102		C4-Naphthobenzothiophenes	12.5	
C4-Naphthalenes	58.4		Benz[a]anthracene	1010	S
Biphenyl	18.8		Chrysene/Triphenylene	970	S
Dibenzofuran	34.3		C1-Chrysenes	312	
Acenaphthylene	383	S	C2-Chrysenes	135	
Acenaphthene	334	S	C3-Chrysenes	85.4	
Fluorene	373	S	C4-Chrysenes	30.0	
C1-Fluorenes	103		Benzo[b]fluoranthene	898	S
C2-Fluorenes	109		Benzo[j]fluoranthene/Benzo[k]fluoranthene	865	S
C3-Fluorenes	62.6		Benzo[a]fluoranthene	171	
Anthracene	606	S	Benzo[e]pyrene	450	
Phenanthrene	996	S	Benzo[a]pyrene	1080	S
C1-Phenanthrenes/Anthracenes	674		Perylene	196	
C2-Phenanthrenes/Anthracenes	365		Indeno[1,2,3-cd]pyrene	796	S
C3-Phenanthrenes/Anthracenes	118		Dibenz[ah]anthracene/Dibenz[ac]anthracene	436	S
C4-Phenanthrenes/Anthracenes	34.0		Benzo[g,h,i]perylene	784	S
Retene	0.135	U			
Dibenzothiophene	58.2				
C1-Dibenzothiophenes	167				
C2-Dibenzothiophenes	183				

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	71	40-120
Phenanthrene-d10	82	40-120
Benzo[a]pyrene-d12	73	40-120

N/A - Not Applicable
J - Estimated value, below quantitation limit.
U - The analyte was analyzed for but not detected at the sample specific level reported.
S - Spike compound.

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Form I
Matrix Spike
Carbazole

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AS121312D010**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-02 M**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
12/13/12	12/14/12	12/20/12	12/23/12	79.5	15.22	2	1	PS

Parameter	Result
Carbazole	**11.6**

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	71	40-120
Phenanthrene-d10	82	40-120
Benzo[a]pyrene-d12	73	40-120

N/A - Not Applicable

Form I
Matrix Spike
Polynuclear Aromatic Hydrocarbons Isomers

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AS121312D010**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-02 M**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
12/13/12	12/14/12	12/20/12	12/23/12	79.5	15.22	2	1	PS

Parameter	Result
4-Methyldibenzothiophene	**74.8**
2/3-Methyldibenzothiophene	**61.1**
1-Methyldibenzothiophene	**12.5**
3-Methylphenanthrene	**127**
2-Methylphenanthrene	**146**
2-Methylanthracene	**87.7**
9/4-Methylphenanthrene	**180**
1-Methylphenanthrene	**125**
2-Methylnaphthalene	**332**
1-Methylnaphthalene	**15.9**
2,6-Dimethylnaphthalene	**24.8**
2,3,5-Trimethylnaphthalene	**13.9**
Naphthobenzothiophene-2,1-D	**125**
Naphthobenzothiophene-1,2-D	**22.0**
Naphthobenzothiophene-2,3-D	**39.4**

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	71	40-120
Phenanthrene-d10	82	40-120
Benzo[a]pyrene-d12	73	40-120

N/A - Not Applicable

Form I
Matrix Spike
Steranes and Triterpanes

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AS121312D010**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-02 M**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
12/13/12	12/14/12	12/20/12	12/23/12	79.5	15.22	2	1	PS

Parameter	Result		Parameter	Result	
C23 Tricyclic Terpane	**4.12**		30,31-Trishomohopane-22S	**7.20**	
C24 Tricyclic Terpane	**3.16**		30,31-Trishomohopane-22R	**4.03**	
C25 Tricyclic Terpane	**6.09**	G	Tetrakishomohopane-22S	**4.89**	
C24 Tetracyclic Terpane	**3.12**		Tetrakishomohopane-22R	**6.03**	G
C26 Tricyclic Terpane-22S	**2.90**		Pentakishomohopane-22S	**3.21**	
C26 Tricyclic Terpane-22R	**1.76**		Pentakishomohopane-22R	**2.56**	
C28 Tricyclic Terpane-22S	**2.87**		13b(H),17a(H)-20S-Diacholestane	**5.57**	
C28 Tricyclic Terpane-22R	**2.12**		13b(H),17a(H)-20R-Diacholestane	**3.68**	
C29 Tricyclic Terpane-22S	**2.11**		13b,17a-20S-Methyldiacholestane	**4.45**	
C29 Tricyclic Terpane-22R	**1.66**		14a(H),17a(H)-20S-Cholestane/ 13b(H),17a(H)-20S-Ethyldiacholestane (S12)	**12.7**	
18a-22,29,30-Trisnorneohopane-TS	**6.73**		14a(H),17a(H)-20R-Cholestane/ 13b(H),17a(H)-20R-Ethyldiacholestane (S17)	**12.3**	
C30 Tricyclic Terpane-22S	**2.25**		Unknown Sterane (S18)	**3.45**	
C30 Tricyclic Terpane-22R	**1.76**		13a,17b-20S-Ethyldiacholestane	1.32	U
17a(H)-22,29,30-Trisnorhopane-TM	**9.93**		14a,17a-20S-Methylcholestane	**6.11**	
17a/b,21b/a 28,30-Bisnorhopane	**1.83**		14a,17a-20R-Methylcholestane	**4.26**	
17a(H),21b(H)-25-Norhopane	**1.21**	J	14a(H),17a(H)-20S-Ethylcholestane	**7.06**	
30-Norhopane	**26.3**		14a(H),17a(H)-20R-Ethylcholestane	**7.42**	
18a(H)-30-Norneohopane-C29Ts	**7.58**		14b(H),17b(H)-20R-Cholestane	**4.52**	
17a(H)-Diahopane	**3.23**		14b(H),17b(H)-20S-Cholestane	**4.97**	
30-Normoretane	**4.82**		14b,17b-20R-Methylcholestane	**6.11**	
18a(H)&18b(H)-Oleananes	**2.61**		14b,17b-20S-Methylcholestane	**9.90**	
Hopane	**35.8**		14b(H),17b(H)-20R-Ethylcholestane	**14.2**	
Moretane	**5.40**		14b(H),17b(H)-20S-Ethylcholestane	**7.38**	
30-Homohopane-22S	**13.8**		C26,20R- +C27,20S- triaromatic steroid	**10.9**	
30-Homohopane-22R	**12.1**		C28,20S-triaromatic steroid	**13.9**	
T22a-Gammacerane/C32-diahopane	**3.47**		C27,20R-triaromatic steroid	**7.38**	
30,31-Bishomohopane-22S	**27.6**	G	C28,20R-triaromatic steroid	**9.99**	
30,31-Bishomohopane-22R	**7.26**				

Surrogate	% Recovery	Acceptance Range (%)
5B(H)Cholane	77	50-130

N/A - Not Applicable
J - Estimated value, below quantitation limit.
U - The analyte was analyzed for but not detected at the sample specific level reported.
G - Matrix Interference

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009588.D
Acq On : 23 Dec 2012 7:33 am
Operator : ps
Sample : 1212022-02M
Misc : 1X
ALS Vial : 17 Sample Multiplier: 1

12/27/12

Quant Time: Dec 27 14:19:12 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.156	164	65184	500.000	ng/mL	0.00
74) Chrysene-d12	42.558	240	121949	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.230	136	442868	1767.655	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 176.77%#			
42) Phenanthrene-d10	31.995	188	483522	2056.556	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 205.66%#			
83) Benzo[b]fluoranthene-d12	46.451	264	453486	2022.995	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 202.30%#			
88) Benzo[a]pyrene-d12	47.585	264	409236	1821.162	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 182.12%#			
129) 5B(H)Cholane - Surr	43.188	217	98117	1916.559	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 191.66%#			
Target Compounds						Qvalue
3) trans-Decalin	15.908	138	371	6.474	ng/mL	100
5) C1-Decalins	17.377	152	857M5	14.955	ng/mL	
6) C2-Decalins	19.193	166	1839M5	32.091	ng/mL	
7) C3-Decalins	21.602	180	1839M5	32.091	ng/mL	
8) C4-Decalins	24.951	194	4242M5	74.023	ng/mL	
10) Naphthalene	19.303	128	568656	2211.769	ng/mL#	100
11) C1-Naphthalenes	21.986	142	353177M5	1373.670	ng/mL	
12) C2-Naphthalenes	24.814	156	82530M5	320.998	ng/mL	
13) C3-Naphthalenes	27.141	170	158125M5	615.022	ng/mL	
14) C4-Naphthalenes	29.897	184	90814M5	353.218	ng/mL	
16) 2-Methylnaphthalene	21.986	142	337659	2008.219	ng/mL#	100
17) 1-Methylnaphthalene	22.405	142	15667	96.014	ng/mL#	100
18) Benzothiophene	19.522	134	4868M4	22.625	ng/mL	
19) C1-Benzo(b)thiophenes	22.004	148	6385M5	29.676	ng/mL	
20) C2-Benzo(b)thiophenes	24.532	162	3988M5	18.535	ng/mL	
21) C3-Benzo(b)thiophenes	26.977	176	9764M5	45.380	ng/mL	
22) C4-Benzo(b)thiophenes	29.076	190	7838M5	36.429	ng/mL	
23) Biphenyl	23.865	154	25067	113.925	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.477	156	23695	149.917	ng/mL#	100
25) Dibenzofuran	26.922	168	48717M4	207.586	ng/mL	
26) Acenaphthylene	25.544	152	612734M4	2316.715	ng/mL	
27) Acenaphthene	26.275	153	336506	2023.571	ng/mL	100
28) 2,3,5-Trimethylnaphthalen	27.835	170	12193M3	83.909	ng/mL	
29) Fluorene	28.291	166	412379M4	2258.164	ng/mL	
30) C1-Fluorenes	30.508	180	114064M5	624.608	ng/mL	
31) C2-Fluorenes	32.844	194	120512M5	659.917	ng/mL	
32) C3-Fluorenes	35.345	208	69233M5	379.116	ng/mL	
33) Dibenzothiophene	31.594	184	90499	352.298	ng/mL#	91
34) 4-Methyldibenzothiophene(	33.364	198	116377	453.037	ng/mL#	100
35) 2/3-Methyldibenzothiophen	33.711	198	94923	369.520	ng/mL#	100
36) 1-Methyldibenzothiophene(	34.131	198	19456	75.739	ng/mL#	100
37) OTP	33.811	198	59857	233.014	ng/mL#	100
38) C1-Dibenzothiophenes	33.364	198	318948M5	1241.614	ng/mL	
38) C1-Dibenzothiophenes BS	33.364	198	259091m	1008.600	ng/mL	
39) C2-Dibenzothiophenes	35.053	212	285144M5	1110.020	ng/mL	
40) C3-Dibenzothiophenes	36.851	226	108329M5	421.708	ng/mL	
41) C4-Dibenzothiophenes	38.111	240	32546M5	126.696	ng/mL	

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009588.D
Acq On : 23 Dec 2012 7:33 am
Operator : ps
Sample : 1212022-02M
Misc : 1X
ALS Vial : 17 Sample Multiplier: 1

Quant Time: Dec 27 14:19:12 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
43) Phenanthrene	32.086	178	1598914	6024.792	ng/mL	100
44) 3-Methylphenanthrene(3MP)	34.049	192	204546	770.740	ng/mL	97
45) 2-Methylphenanthrene(2MP)	34.158	192	234738	884.505	ng/mL	97
46) 2-Methylanthracene(2MA)	34.322	192	140906M3	530.941	ng/mL	
47) 9/4-Methylphenanthrene(9M	34.505	192	289664M3	1091.469	ng/mL	
48) 1-Methylphenanthrene(1MP)	34.587	192	199971	753.501	ng/mL	96
49) C1-Phenanthrenes/Anthrace	34.505	192	1082939M5	4080.571	ng/mL	
50) C2-Phenanthrenes/Anthrace	36.312	206	586895M5	2211.451	ng/mL	
50) C2-Phenanthrenes/Anthr BS	36.312	206	586895m	2211.451	ng/mL	
52) C3-Phenanthrenes/Anthrace	38.148	220	190408M5	717.467	ng/mL	
53) C4-Phenanthrenes/Anthrace	40.348	234	54523M5	205.446	ng/mL	
55) Anthracene	32.269	178	904514	3670.255	ng/mL	100
56) Carbazole	32.953	167	16298	69.908	ng/mL#	86
57) 1-Methylphenanthrene	34.587	192	199971	1021.285	ng/mL	100
58) Fluoranthene	36.851	202	3015987M4	10173.102	ng/mL	
59) Benzo(b)fluorene	39.362	216	223633M3	1268.401	ng/mL	
60) Pyrene	37.728	202	3232376	10687.011	ng/mL	99
61) C1-Fluoranthenes/Pyrenes	39.116	216	1520648M5	5027.627	ng/mL	
62) C2-Fluoranthenes/Pyrenes	40.850	230	469306M5	1551.638	ng/mL	
63) C3-Fluoranthenes/Pyrenes	43.051	244	174004M5	575.299	ng/mL	
64) C4-Fluoranthenes/Pyrenes	43.334	258	87949M5	290.781	ng/mL	
66) Naphthobenzothiophene	41.562	234	197797	753.670	ng/ml	98
67) Naphthobenzothiophene-2,1	41.562	234	197797	753.670	ng/mL	98
68) Naphthobenzothiophene-1,2	41.900	234	34958	133.201	ng/mL#	23
69) Naphthobenzothiophene-2,3	42.201	234	62662M3	238.762	ng/mL	
70) C1-Naphthobenzothiophenes	42.968	248	225020M5	857.399	ng/ml	
71) C2-Naphthobenzothiophenes	44.466	262	95288M5	363.078	ng/ml	
72) C3-Naphthobenzothiophenes	46.359	276	38804M5	147.856	ng/ml	
73) C4-Naphthobenzothiophenes	47.594	290	19935M5	75.959	ng/mL	
75) Benz[a]anthracene	42.503	228	1713330M3	6125.153	ng/mL	
77) Chrysene/Triphenylene	42.658	228	1614376	5868.066	ng/mL	99
78) C1-Chrysenes	44.137	242	519664M5	1888.917	ng/mL	
79) C2-Chrysenes	45.838	256	242750M5	882.368	ng/mL	
79) C2-Chrysenes BS	45.838	256	224803m	817.132	ng/mL	
80) BBF-d12 Surr BKGD	46.451	256	17947	65.235	ng/mL	100
81) C3-Chrysenes	46.871	270	142175M5	516.789	ng/mL	
82) C4-Chrysenes	48.326	284	49999M5	181.740	ng/mL	
84) Benzo[b]fluoranthene	46.542	252	1576243	5434.778	ng/mL	90
85) Benzo[j]+[k]fluoranthene	46.615	252	1491439	5233.655	ng/mL	92
86) Benzo[a]fluoranthene	46.899	252	295672	1037.552	ng/mL#	1
87) Benzo[e]pyrene	47.493	252	750404	2724.748	ng/mL	91
89) Benzo[a]pyrene	47.667	252	1699045	6514.147	ng/mL	90
90) Perylene	47.960	252	329340	1183.109	ng/mL#	88
91) Indeno[1,2,3-cd]pyrene	52.167	276	1392032M3	4818.986	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.203	278	751658	2641.500	ng/mL	99
93) Benzo[g,h,i]perylene	53.364	276	1346218	4742.524	ng/mL	100
94) Hopane (T19)	51.316	191	23264M3	216.987	ng/mL	
96) C23 Tricyclic Terpane (T4	40.220	191	2676	24.959	ng/ml	100
97) C24 Tricyclic Terpane (T5	40.942	191	2050M4	19.121	ng/ml	
98) C25 Tricyclic Terpane (T6	42.494	191G	3949M1	36.833	ng/ml	
99) C24 Tetracyclic Terpane (	43.735	191	2024M4	18.878	ng/ml	
100) C26 Tricyclic Terpane-22S	43.489	191	1881M4	17.544	ng/ml	
101) C26 Tricyclic Terpane-22R	43.580	191	1139M4	10.624	ng/ml	
102) C28 Tricyclic Terpane-22S	45.865	191	1862	17.367	ng/ml	100

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009588.D
Acq On : 23 Dec 2012 7:33 am
Operator : ps
Sample : 1212022-02M
Misc : 1X
ALS Vial : 17 Sample Multiplier: 1

Quant Time: Dec 27 14:19:12 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
103) C28 Tricyclic Terpane-22R	46.030	191	1375M4	12.825	ng/ml	
104) C29 Tricyclic Terpane-22S	46.551	191	1372	12.797	ng/ml	100
105) C29 Tricyclic Terpane-22R	46.743	191	1076M4	10.036	ng/ml	
106) 18a-22,29,30-Trisnorneoho	47.786	191	4368M4	40.741	ng/ml	
107) C30 Tricyclic Terpane-22S	47.905	191	1462M4	13.636	ng/mL	
108) C30 Tricyclic Terpane-22R	48.133	191	1144M3	10.670	ng/mL	
109) 17a(H)-22,29,30-Trisnorho	48.298	191	6445M4	60.113	ng/ml	
110) 17a/b,21b/a 28,30-Bisnorh	49.414	191	1187	11.071	ng/ml	100
111) 17a(H),21b(H)-25-Norhopan	49.231	191	787M4	7.340	ng/ml	
112) 30-Norhopane (T15)	50.045	191	17086M4	159.363	ng/ml	
113) 18a(H)-30-Norneohopane-C2	50.146	191	4919M4	45.880	ng/ml	
114) 17a(H)-Diahopane (X)	50.265	191	2094M4	19.531	ng/ml	
115) 30-Normoretane (T17)	50.777	191	3126	29.157	ng/ml	100
116) 18a(H)&18b(H)-Oleananes (	51.152	191	1692M4	15.782	ng/ml	
117) Moretane (T20)	51.956	191	3506M4	32.701	ng/ml	
118) 30-Homohopane-22S (T21)	52.980	191	8955M4	83.525	ng/ml	
119) 30-Homohopane-22R (T22)	53.190	191	7875M4	73.451	ng/ml	
120) Gammacerane/C32-diahopane	53.693	191	2250M4	20.986	ng/mL	
121) 30,31-Bishomohopane-22S (	54.360	191G	17874	166.713	ng/ml	100
122) 30,31-Bishomohopane-22R (	54.753	191	4708	43.912	ng/ml	100
123) 30,31-Trishomohopane-22S	56.370	191	4672	43.576	ng/ml	100
124) 30,31-Trishomohopane-22R	56.927	191	2612	24.362	ng/ml	100
125) Tetrakishomohopane-22S (T	58.782	191	3176M4	29.623	ng/ml	
126) Tetrakishomohopane-22R (T	59.586	191G	3911M4	36.478	ng/ml	
127) Pentakishomohopane-22S (T	61.633	191	2082M4	19.419	ng/ml	
128) Pentakishomohopane-22R (T	62.812	191	1660M4	15.483	ng/ml	
130) 13b(H),17a(H)-20S-Diachol	44.703	217	1726	33.715	ng/ml	100
131) 13b(H),17a(H)-20R-Diachol	45.124	217	1140M4	22.268	ng/ml	
132) 13b,17a-20S-Methyldiachol	45.829	217	1380M4	26.956	ng/ml	
133) 14a,17a-20S-Chol/13b,17a-	46.688	217	3947	77.098	ng/ml	100
134) 14a,17a-20R-Chol/13b,17a-	47.173	217	3821M4	74.637	ng/ml	
135) Unknown Sterane (S18)	47.438	217	1070	20.901	ng/ml	100
137) 14a,17a-20S-Methylcholest	47.841	217	1894M4	36.996	ng/ml	
138) 14a,17a-20R-Methylcholest	48.508	217	1320	25.784	ng/ml	100
139) 14a(H),17a(H)-20S-Ethylch	48.838	217	2187M4	42.720	ng/ml	
140) 14a(H),17a(H)-20R-Ethylch	49.697	217	2298M4	44.888	ng/ml	
141) 14b(H),17b(H)-20R-Cholest	46.771	218	1400M4	27.347	ng/ml	
142) 14b(H),17b(H)-20S-Cholest	46.853	218	1539M4	30.062	ng/ml	
143) 14b,17b-20R-Methylcholest	48.005	218	1894	36.996	ng/ml	100
144) 14b,17b-20S-Methylcholest	48.079	218	3067M4	59.909	ng/ml	
145) 14b(H),17b(H)-20R-Ethylch	49.076	218	4412	86.181	ng/ml	100
146) 14b(H),17b(H)-20S-Ethylch	49.121	218	2287M3	44.673	ng/ml	
147) C26,20R- +C27,20S- triaro	48.801	231	3389	66.199	ng/mL	100
148) C28,20S-triaromatic stero	49.615	231	4294	83.876	ng/mL	100
149) C27,20R-triaromatic stero	50.027	231	2285	44.634	ng/mL	100
150) C28,20R-triaromatic stero	51.152	231	3094	60.436	ng/mL	100

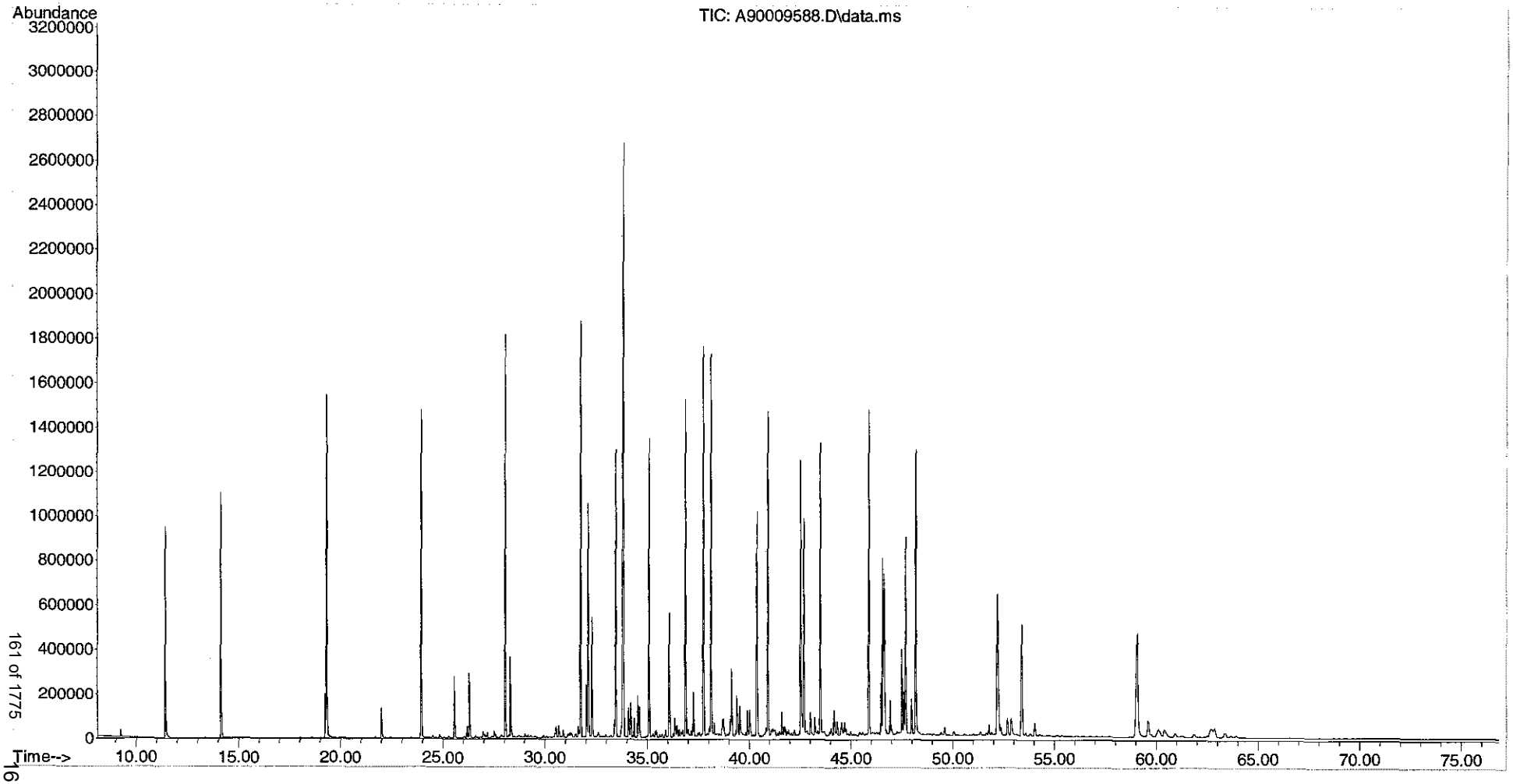
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009588.D
Acq On : 23 Dec 2012 7:33 am
Operator : ps
Sample : 1212022-02M
Misc : 1X
ALS Vial : 17 Sample Multiplier: 1

Quant Time: Dec 27 14:19:12 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES



Form I
Matrix Spike Duplicate
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AS121312D010**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-02 S**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
12/13/12	12/14/12	12/20/12	12/23/12	79.5	15.13	2	1	PS

Parameter	Result		Parameter	Result	
cis/trans-Decalin	**0.868**	J	C3-Dibenzothiophenes	**36.2**	
C1-Decalins	**3.48**		C4-Dibenzothiophenes	**18.0**	
C2-Decalins	**6.56**		Benzo(b)fluorene	**173**	
C3-Decalins	**5.54**		Fluoranthene	**1510**	S
C4-Decalins	**10.8**		Pyrene	**1730**	S
Benzothiophene	**1.46**	J	C1-Fluoranthenes/Pyrenes	**748**	
C1-Benzo(b)thiophenes	**4.46**		C2-Fluoranthenes/Pyrenes	**238**	
C2-Benzo(b)thiophenes	**1.91**		C3-Fluoranthenes/Pyrenes	**85.9**	
C3-Benzo(b)thiophenes	**5.08**		C4-Fluoranthenes/Pyrenes	**41.7**	
C4-Benzo(b)thiophenes	**4.60**		Naphthobenzothiophenes	**123**	
Naphthalene	**311**	S	C1-Naphthobenzothiophenes	**75.9**	
C1-Naphthalenes	**209**		C2-Naphthobenzothiophenes	**36.7**	
C2-Naphthalenes	**20.7**		C3-Naphthobenzothiophenes	**21.7**	
C3-Naphthalenes	**49.0**		C4-Naphthobenzothiophenes	**11.6**	
C4-Naphthalenes	**43.7**		Benz[a]anthracene	**973**	S
Biphenyl	**7.40**	B	Chrysene/Triphenylene	**961**	S
Dibenzofuran	**10.3**		C1-Chrysenes	**316**	
Acenaphthylene	**380**	S	C2-Chrysenes	**133**	
Acenaphthene	**324**	S	C3-Chrysenes	**73.8**	
Fluorene	**338**	S	C4-Chrysenes	**26.1**	
C1-Fluorenes	**40.8**		Benzo[b]fluoranthene	**754**	S
C2-Fluorenes	**59.4**		Benzo[j]fluoranthene/Benzo[k]fluoranthene	**838**	S
C3-Fluorenes	**39.4**		Benzo[a]fluoranthene	**136**	
Anthracene	**446**	S	Benzo[e]pyrene	**394**	
Phenanthrene	**608**	S	Benzo[a]pyrene	**970**	S
C1-Phenanthrenes/Anthracenes	**379**		Perylene	**144**	
C2-Phenanthrenes/Anthracenes	**276**		Indeno[1,2,3-cd]pyrene	**695**	S
C3-Phenanthrenes/Anthracenes	**110**		Dibenz[ah]anthracene/Dibenz[ac]anthracene	**420**	S
C4-Phenanthrenes/Anthracenes	**32.6**		Benzo[g,h,i]perylene	**686**	S
Retene	0.136	U			
Dibenzothiophene	**19.5**				
C1-Dibenzothiophenes	**40.1**				
C2-Dibenzothiophenes	**52.7**				

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	70	40-120
Phenanthrene-d10	82	40-120
Benzo[a]pyrene-d12	72	40-120

N/A - Not Applicable
B - Found in associated blank as well as sample.
J - Estimated value, below quantitation limit.
U - The analyte was analyzed for but not detected at the sample specific level reported.
S - Spike compound.

Form I
Matrix Spike Duplicate
Carbazole

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AS121312D010**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-02 S**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
12/13/12	12/14/12	12/20/12	12/23/12	79.5	15.13	2	1	PS

Parameter	Result
Carbazole	**4.29**

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	70	40-120
Phenanthrene-d10	82	40-120
Benzo[a]pyrene-d12	72	40-120

N/A - Not Applicable

Form I
Matrix Spike Duplicate
Polynuclear Aromatic Hydrocarbons Isomers

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AS121312D010**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-02 S**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
12/13/12	12/14/12	12/20/12	12/23/12	79.5	15.13	2	1	PS

Parameter	Result
4-Methyldibenzothiophene	**12.0**
2/3-Methyldibenzothiophene	**11.4**
1-Methyldibenzothiophene	**4.22**
3-Methylphenanthrene	**66.4**
2-Methylphenanthrene	**82.0**
2-Methylanthracene	**56.2**
9/4-Methylphenanthrene	**103**
1-Methylphenanthrene	**64.2**
2-Methylnaphthalene	**312**
1-Methylnaphthalene	**7.70**
2,6-Dimethylnaphthalene	**7.56**
2,3,5-Trimethylnaphthalene	**6.03**
Naphthobenzothiophene-2,1-D	**74.2**
Naphthobenzothiophene-1,2-D	**17.4**
Naphthobenzothiophene-2,3-D	**31.6**

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	70	40-120
Phenanthrene-d10	82	40-120
Benzo[a]pyrene-d12	72	40-120

N/A - Not Applicable

Form I
Matrix Spike Duplicate
Steranes and Triterpanes

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AS121312D010**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-02 S**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
12/13/12	12/14/12	12/20/12	12/23/12	79.5	15.13	2	1	PS

Parameter	Result	
C23 Tricyclic Terpane	**4.19**	
C24 Tricyclic Terpane	**3.13**	
C25 Tricyclic Terpane	**6.03**	G
C24 Tetracyclic Terpane	**3.08**	
C26 Tricyclic Terpane-22S	**2.65**	
C26 Tricyclic Terpane-22R	**1.41**	J
C28 Tricyclic Terpane-22S	**2.68**	
C28 Tricyclic Terpane-22R	**2.26**	
C29 Tricyclic Terpane-22S	**2.41**	
C29 Tricyclic Terpane-22R	**1.62**	J
18a-22,29,30-Trisnorneohopane-TS	**7.44**	
C30 Tricyclic Terpane-22S	**2.19**	
C30 Tricyclic Terpane-22R	**2.68**	
17a(H)-22,29,30-Trisnorhopane-TM	**9.17**	
17a/b,21b/a 28,30-Bisnorhopane	**1.66**	J
17a(H),21b(H)-25-Norhopane	**1.60**	J
30-Norhopane	**27.0**	
18a(H)-30-Norneohopane-C29Ts	**7.33**	
17a(H)-Diahopane	**2.68**	
30-Normoretane	**4.26**	
18a(H)&18b(H)-Oleananes	**2.57**	
Hopane	**36.8**	
Moretane	**5.45**	
30-Homohopane-22S	**13.4**	
30-Homohopane-22R	**11.9**	
T22a-Gammacerane/C32-diahopane	**3.85**	
30,31-Bishomohopane-22S	**28.3**	G
30,31-Bishomohopane-22R	**6.81**	

Parameter	Result	
30,31-Trishomohopane-22S	**7.39**	
30,31-Trishomohopane-22R	**4.11**	
Tetrakishomohopane-22S	**4.99**	
Tetrakishomohopane-22R	**5.68**	G
Pentakishomohopane-22S	**4.02**	
Pentakishomohopane-22R	**2.68**	
13b(H),17a(H)-20S-Diacholestane	**6.22**	
13b(H),17a(H)-20R-Diacholestane	**3.01**	
13b,17a-20S-Methyldiacholestane	**4.74**	
14a(H),17a(H)-20S-Cholestane/ 13b(H),17a(H)-20S-Ethyldiacholestane (S12)	**12.3**	
14a(H),17a(H)-20R-Cholestane/ 13b(H),17a(H)-20R-Ethyldiacholestane (S17)	**11.8**	
Unknown Sterane (S18)	**3.28**	
13a,17b-20S-Ethyldiacholestane	1.33	U
14a,17a-20S-Methylcholestane	**5.48**	
14a,17a-20R-Methylcholestane	**3.96**	
14a(H),17a(H)-20S-Ethylcholestane	**6.72**	
14a(H),17a(H)-20R-Ethylcholestane	**6.44**	
14b(H),17b(H)-20R-Cholestane	**4.91**	
14b(H),17b(H)-20S-Cholestane	**5.12**	
14b,17b-20R-Methylcholestane	**5.88**	
14b,17b-20S-Methylcholestane	**10.0**	
14b(H),17b(H)-20R-Ethylcholestane	**12.2**	
14b(H),17b(H)-20S-Ethylcholestane	**9.31**	
C26,20R- +C27,20S- triaromatic steroid	**10.1**	
C28,20S-triaromatic steroid	**13.5**	
C27,20R-triaromatic steroid	**6.72**	
C28,20R-triaromatic steroid	**8.95**	

Surrogate	% Recovery	Acceptance Range (%)
5B(H)Cholane	77	50-130

N/A - Not Applicable
J - Estimated value, below quantitation limit.
U - The analyte was analyzed for but not detected at the sample specific level reported.
G - Matrix Interference

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009589.D
Acq On : 23 Dec 2012 8:58 am
Operator : ps
Sample : 1212022-02S
Misc : 1X
ALS Vial : 18 Sample Multiplier: 1

12/27/12

Quant Time: Dec 27 16:11:01 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 12:38:00 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) Acenaphthene-d10	26.156	164	64876	500.000 ng/mL	0.00
74) Chrysene-d12	42.557	240	122291	500.000 ng/mL	0.00
System Monitoring Compounds					
9) Naphthalene-d8	19.229	136	438694	1759.308 ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 175.93%#		
42) Phenanthrene-d10	31.995	188	480450	2053.192 ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 205.32%#		
83) Benzo[b]fluoranthene-d12	46.450	264	453535	2017.556 ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 201.76%#		
88) Benzo[a]pyrene-d12	47.585	264	403418	1790.250 ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 179.02%#		
129) 5B(H)Cholane - Surr	43.187	217	98537	1919.380 ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 191.94%#		
Target Compounds					Qvalue
3) trans-Decalin	15.908	138	298	5.225 ng/mL	100
5) C1-Decalins	17.377	152	1195M5	20.952 ng/mL	
6) C2-Decalins	19.138	166	2251M5	39.466 ng/mL	
7) C3-Decalins	21.602	180	1900M5	33.312 ng/mL	
8) C4-Decalins	24.960	194	3722M5	65.257 ng/mL	
10) Naphthalene	19.302	128	479424	1873.557 ng/mL#	100
11) C1-Naphthalenes	21.985	142	321658M5	1257.018 ng/mL	
12) C2-Naphthalenes	24.814	156	31809M5	124.307 ng/mL	
13) C3-Naphthalenes	28.045	170	75412M5	294.705 ng/mL	
14) C4-Naphthalenes	28.054	184	67235M5	262.750 ng/mL	
16) 2-Methylnaphthalene	21.985	142	314098	1876.959 ng/mL#	100
17) 1-Methylnaphthalene	22.405	142	7519	46.299 ng/mL#	100
18) Benzothiophene	19.521	134	1875M4	8.756 ng/mL	
19) C1-Benzo(b)thiophenes	22.168	148	5752M5	26.861 ng/mL	
20) C2-Benzo(b)thiophenes	24.148	162	2457M5	11.474 ng/mL	
21) C3-Benzo(b)thiophenes	26.785	176	6542M5	30.550 ng/mL	
22) C4-Benzo(b)thiophenes	29.066	190	5921M5	27.650 ng/mL	
23) Biphenyl	23.865	154	9743	44.490 ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.486	156	7155	45.484 ng/mL#	100
25) Dibenzofuran	26.931	168	14542M4	62.259 ng/mL	
26) Acenaphthylene	25.544	152	601814M4	2286.229 ng/mL	
27) Acenaphthene	26.274	153	322430	1948.130 ng/mL	99
28) 2,3,5-Trimethylnaphthalen	27.835	170	5250M3	36.301 ng/mL	
29) Fluorene	28.291	166	369496	2032.945 ng/mL	99
30) C1-Fluorenes	30.508	180	44655M5	245.689 ng/mL	
31) C2-Fluorenes	32.844	194	64969M5	357.456 ng/mL	
32) C3-Fluorenes	35.345	208	43136M5	237.332 ng/mL	
33) Dibenzothiophene	31.594	184	30047	117.524 ng/mL#	85
34) 4-Methyldibenzothiophene(	33.364	198	18500	72.359 ng/mL#	100
35) 2/3-Methyldibenzothiophen	33.711	198	17457M1	68.280 ng/mL	
36) 1-Methyldibenzothiophene(	34.131	198	6491	25.388 ng/mL#	100
37) OTP	33.811	198	61039	238.743 ng/mL#	100
38) C1-Dibenzothiophenes	33.811	198	122766M5	480.177 ng/mL	
38) C1-Dibenzothiophenes BS	33.811	198	61727m	241.434 ng/mL	
39) C2-Dibenzothiophenes	35.053	212	81117M5	317.275 ng/mL	
40) C3-Dibenzothiophenes	38.111	226	55752M5	218.064 ng/mL	
41) C4-Dibenzothiophenes	38.111	240	27771M5	108.621 ng/mL	

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009589.D
Acq On : 23 Dec 2012 8:58 am
Operator : ps
Sample : 1212022-02S
Misc : 1X
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Dec 27 16:11:01 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 12:38:00 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
43) Phenanthrene	32.086	178	966031	3657.337	ng/mL	100
44) 3-Methylphenanthrene(3MP)	34.048	192	105560	399.644	ng/mL	97
45) 2-Methylphenanthrene(2MP)	34.158	192	130384	493.626	ng/mL	97
46) 2-Methylanthracene(2MA)	34.322	192	89302M3	338.092	ng/mL	
47) 9/4-Methylphenanthrene(9M	34.505	192	164481M3	622.715	ng/mL	
48) 1-Methylphenanthrene(1MP)	34.587	192	102105	386.564	ng/mL	97
49) C1-Phenanthrenes/Anthrace	34.505	192	602457M5	2280.867	ng/mL	
50) C2-Phenanthrenes/Anthrace	36.312	206	438158M5	1658.841	ng/mL	
50) C2-Phenanthrenes/Anthr BS	36.312	206	438158m	1658.841	ng/mL	
52) C3-Phenanthrenes/Anthrace	38.148	220	174443M5	660.431	ng/mL	
53) C4-Phenanthrenes/Anthrace	40.348	234	51723M5	195.820	ng/mL	
55) Anthracene	32.269	178	658811M4	2685.955	ng/mL	
56) Carbazole	32.953	167	5992	25.824	ng/mL#	73
57) 1-Methylphenanthrene	34.587	192	102284	524.862	ng/mL	100
58) Fluoranthene	36.851	202	2679153	9079.844	ng/mL	98
59) Benzo(b)fluorene	39.362	216	182942M3	1042.536	ng/mL	
60) Pyrene	37.727	202	3131059	10401.179	ng/mL	99
61) C1-Fluoranthenes/Pyrenes	39.115	216	1355481M5	4502.822	ng/mL	
62) C2-Fluoranthenes/Pyrenes	40.859	230	430069M5	1428.662	ng/mL	
63) C3-Fluoranthenes/Pyrenes	43.050	244	155599M5	516.890	ng/mL	
64) C4-Fluoranthenes/Pyrenes	43.334	258	75555M5	250.989	ng/mL	
66) Naphthobenzothiophene	41.562	234	116553	446.213	ng/ml	97
67) Naphthobenzothiophene-2,1	41.562	234	116553	446.213	ng/mL	97
68) Naphthobenzothiophene-1,2	41.900	234	27295	104.497	ng/mL#	26
69) Naphthobenzothiophene-2,3	42.201	234	49589M3	189.847	ng/mL	
70) C1-Naphthobenzothiophenes	42.968	248	119219M5	456.420	ng/ml	
71) C2-Naphthobenzothiophenes	44.466	262	57650M5	220.708	ng/ml	
72) C3-Naphthobenzothiophenes	46.350	276	34117M5	130.614	ng/ml	
73) C4-Naphthobenzothiophenes	47.594	290	18173M5	69.574	ng/mL	
75) Benz[a]anthracene	42.503	228	1642060M3	5853.946	ng/mL	
77) Chrysene/Triphenylene	42.658	228	1595492	5783.206	ng/mL	99
78) C1-Chrysenes	44.137	242	523892M5	1898.960	ng/mL	
79) C2-Chrysenes	45.838	256	237831M5	862.070	ng/mL	
79) C2-Chrysenes BS	45.838	256	220064m	797.670	ng/mL	
80) BBF-d12 Surr BKGD	46.450	256	17767	64.400	ng/mL	100
81) C3-Chrysenes	46.871	270	122407M5	443.691	ng/mL	
82) C4-Chrysenes	48.325	284	43316M5	157.008	ng/mL	
84) Benzo[b]fluoranthene	46.542	252	1320244	4539.380	ng/mL	93
85) Benzo[j]+[k]fluoranthene	46.615	252	1440743	5041.617	ng/mL	93
86) Benzo[a]fluoranthene	46.899	252	234715	821.342	ng/mL#	1
87) Benzo[e]pyrene	47.484	252	654668	2370.478	ng/mL	91
89) Benzo[a]pyrene	47.667	252	1526102M3	5834.720	ng/mL	
90) Perylene	47.950	252	241227	864.152	ng/mL#	88
91) Indeno[1,2,3-cd]pyrene	52.166	276	1211748M3	4183.141	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.203	278	720741	2525.767	ng/mL	99
93) Benzo[g,h,i]perylene	53.363	276	1175639	4130.018	ng/mL	100
94) Hopane (T19)	51.316	191	23780M3	221.179	ng/mL	
96) C23 Tricyclic Terpane (T4	40.211	191	2711	25.215	ng/ml	100
97) C24 Tricyclic Terpane (T5	40.941	191	2025M4	18.835	ng/ml	
98) C25 Tricyclic Terpane (T6	42.493	191G	3903M1	36.302	ng/ml	
99) C24 Tetracyclic Terpane (	43.735	191	1990	18.509	ng/ml	100
100) C26 Tricyclic Terpane-22S	43.480	191	1713M4	15.933	ng/ml	
101) C26 Tricyclic Terpane-22R	43.580	191	911M4	8.473	ng/ml	
102) C28 Tricyclic Terpane-22S	45.874	191	1733M4	16.119	ng/ml	

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009589.D
Acq On : 23 Dec 2012 8:58 am
Operator : ps
Sample : 1212022-02S
Misc : 1X
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Dec 27 16:11:01 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 12:38:00 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

	Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
103)	C28 Tricyclic Terpane-22R	46.039	191	1459	13.570	ng/ml	100
104)	C29 Tricyclic Terpane-22S	46.551	191	1560	14.510	ng/ml	100
105)	C29 Tricyclic Terpane-22R	46.743	191	1045M4	9.720	ng/ml	
106)	18a-22,29,30-Trisnorneoho	47.786	191	4816	44.794	ng/ml	100
107)	C30 Tricyclic Terpane-22S	47.905	191	1418M4	13.189	ng/mL	
108)	C30 Tricyclic Terpane-22R	48.142	191	1733M3	16.119	ng/mL	
109)	17a(H)-22,29,30-Trisnorho	48.298	191	5934M4	55.192	ng/ml	
110)	17a/b,21b/a 28,30-Bisnorh	49.414	191	1074M4	9.989	ng/ml	
111)	17a(H),21b(H)-25-Norhopan	49.249	191	1032M4	9.599	ng/ml	
112)	30-Norhopane (T15)	50.045	191	17472	162.508	ng/ml	100
113)	18a(H)-30-Norneohopane-C2	50.145	191	4742	44.106	ng/ml	100
114)	17a(H)-Diahopane (X)	50.264	191	1733M4	16.119	ng/ml	
115)	30-Normoretane (T17)	50.777	191	2754M4	25.615	ng/ml	
116)	18a(H)&18b(H)-Oleananes (	51.152	191	1664M4	15.477	ng/ml	
117)	Moretane (T20)	51.956	191	3528M4	32.814	ng/ml	
118)	30-Homohopane-22S (T21)	52.980	191	8645M4	80.408	ng/ml	
119)	30-Homohopane-22R (T22)	53.190	191	7681	71.441	ng/ml	100
120)	Gammacerane/C32-diahopane	53.692	191	2488	23.141	ng/mL	100
121)	30,31-Bishomohopane-22S (	54.359	191G	18295	170.163	ng/ml	100
122)	30,31-Bishomohopane-22R (	54.761	191	4404	40.962	ng/ml	100
123)	30,31-Trishomohopane-22S	56.361	191	4778M4	44.440	ng/ml	
124)	30,31-Trishomohopane-22R	56.909	191	2660	24.741	ng/ml	100
125)	Tetrakishomohopane-22S (T	58.773	191	3230M4	30.042	ng/ml	
126)	Tetrakishomohopane-22R (T	59.577	191G	3672M4	34.153	ng/ml	
127)	Pentakishomohopane-22S (T	61.633	191	2601	24.192	ng/ml	100
128)	Pentakishomohopane-22R (T	62.812	191	1732	16.109	ng/ml	100
130)	13b(H),17a(H)-20S-Diachol	44.694	217	1921	37.419	ng/ml	100
131)	13b(H),17a(H)-20R-Diachol	45.124	217	929	18.096	ng/ml	100
132)	13b,17a-20S-Methyldiachol	45.828	217	1464M4	28.517	ng/ml	
133)	14a,17a-20S-Chol/13b,17a-	46.679	217	3808	74.175	ng/ml	100
134)	14a,17a-20R-Chol/13b,17a-	47.173	217	3649	71.078	ng/ml	100
135)	Unknown Sterane (S18)	47.438	217	1012	19.713	ng/ml	100
137)	14a,17a-20S-Methylcholest	47.841	217	1691M3	32.939	ng/ml	
138)	14a,17a-20R-Methylcholest	48.517	217	1222M4	23.803	ng/ml	
139)	14a(H),17a(H)-20S-Ethylch	48.838	217	2075M4	40.418	ng/ml	
140)	14a(H),17a(H)-20R-Ethylch	49.688	217	1990M4	38.763	ng/ml	
141)	14b(H),17b(H)-20R-Cholest	46.771	218	1516	29.530	ng/ml	100
142)	14b(H),17b(H)-20S-Cholest	46.844	218	1582	30.815	ng/ml	100
143)	14b,17b-20R-Methylcholest	47.996	218	1817M4	35.393	ng/ml	
144)	14b,17b-20S-Methylcholest	48.078	218	3089M4	60.170	ng/ml	
145)	14b(H),17b(H)-20R-Ethylch	49.075	218	3779	73.610	ng/ml	100
146)	14b(H),17b(H)-20S-Ethylch	49.112	218	2876M3	56.021	ng/ml	
147)	C26,20R- +C27,20S- triaro	48.801	231	3124M4	60.852	ng/mL	
148)	C28,20S-triaromatic stero	49.606	231	4178	81.382	ng/mL	100
149)	C27,20R-triaromatic stero	50.027	231	2075M4	40.418	ng/mL	
150)	C28,20R-triaromatic stero	51.152	231	2764M4	53.839	ng/mL	

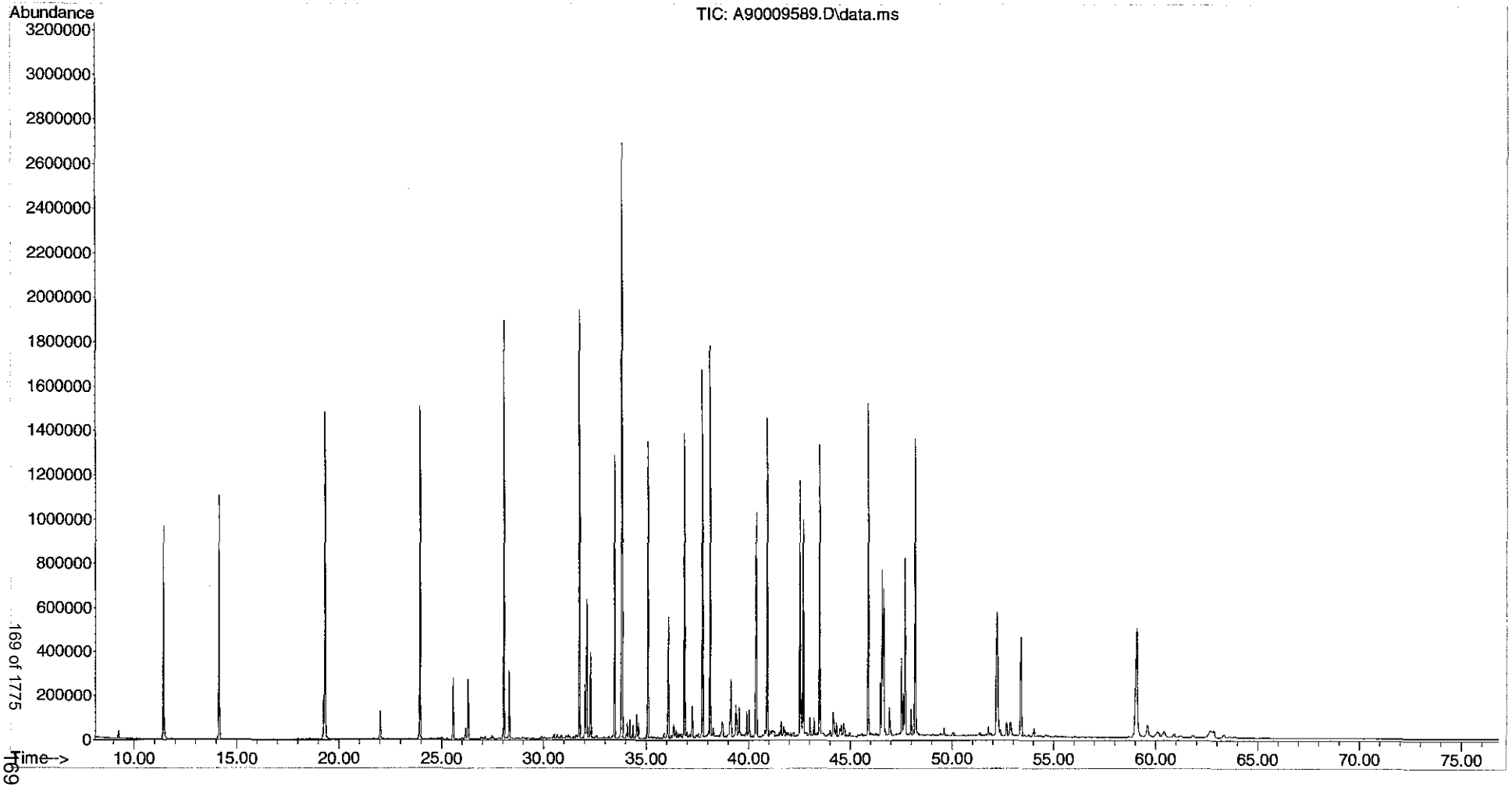
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009589.D
Acq On : 23 Dec 2012 8:58 am
Operator : ps
Sample : 1212022-02S
Misc : 1X
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Dec 27 16:11:01 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 12:38:00 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES



Form I
Duplicate
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AD121312D010**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-03 D**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
12/13/12	12/14/12	12/20/12	12/23/12	79.0	15.44	2	1	PS

Parameter	Result		Parameter	Result
cis/trans-Decalin	**0.508**	J	C3-Dibenzothiophenes	**67.4**
C1-Decalins	**1.97**		C4-Dibenzothiophenes	**19.8**
C2-Decalins	**4.48**		Benzo(b)fluorene	**270**
C3-Decalins	**4.50**		Fluoranthene	**2370**
C4-Decalins	**7.77**		Pyrene	**2200**
Benzothiophene	**1.67**		C1-Fluoranthenes/Pyrenes	**1060**
C1-Benzo(b)thiophenes	**1.89**		C2-Fluoranthenes/Pyrenes	**384**
C2-Benzo(b)thiophenes	**3.43**		C3-Fluoranthenes/Pyrenes	**141**
C3-Benzo(b)thiophenes	**6.82**		C4-Fluoranthenes/Pyrenes	**78.2**
C4-Benzo(b)thiophenes	**4.95**		Naphthobenzothiophenes	**270**
Naphthalene	**49.2**		C1-Naphthobenzothiophenes	**237**
C1-Naphthalenes	**37.2**		C2-Naphthobenzothiophenes	**113**
C2-Naphthalenes	**70.4**		C3-Naphthobenzothiophenes	**43.2**
C3-Naphthalenes	**84.0**		C4-Naphthobenzothiophenes	**17.3**
C4-Naphthalenes	**53.3**		Benz[a]anthracene	**1050**
Biphenyl	**16.8**		Chrysene/Triphenylene	**984**
Dibenzofuran	**77.9**		C1-Chrysenes	**459**
Acenaphthylene	**70.9**		C2-Chrysenes	**191**
Acenaphthene	**119**		C3-Chrysenes	**115**
Fluorene	**128**		C4-Chrysenes	**37.9**
C1-Fluorenes	**78.9**		Benzo[b]fluoranthene	**769**
C2-Fluorenes	**85.6**		Benzo[j]fluoranthene/Benzo[k]fluoranthene	**861**
C3-Fluorenes	**67.8**		Benzo[a]fluoranthene	**210**
Anthracene	**336**		Benzo[e]pyrene	**624**
Phenanthrene	**1330**		Benzo[a]pyrene	**1060**
C1-Phenanthrenes/Anthracenes	**642**		Perylene	**261**
C2-Phenanthrenes/Anthracenes	**388**		Indeno[1,2,3-cd]pyrene	**606**
C3-Phenanthrenes/Anthracenes	**147**		Dibenz[ah]anthracene/Dibenz[ac]anthracene	**172**
C4-Phenanthrenes/Anthracenes	**45.2**		Benzo[g,h,i]perylene	**595**
Retene	0.134	U		
Dibenzothiophene	**74.8**			
C1-Dibenzothiophenes	**86.1**			
C2-Dibenzothiophenes	**122**			

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	62	40-120
Phenanthrene-d10	82	40-120
Benzo[a]pyrene-d12	74	40-120

N/A - Not Applicable
J - Estimated value, below quantitation limit.
U - The analyte was analyzed for but not detected at the sample specific level reported.

Form I
Duplicate
Carbazole

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AD121312D010**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-03 D**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
12/13/12	12/14/12	12/20/12	12/23/12	79.0	15.44	2	1	PS

Parameter	Result
Carbazole	**84.1**

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	62	40-120
Phenanthrene-d10	82	40-120
Benzo[a]pyrene-d12	74	40-120

N/A - Not Applicable

Form I
Duplicate
Polynuclear Aromatic Hydrocarbons Isomers

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AD121312D010**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-03 D**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
12/13/12	12/14/12	12/20/12	12/23/12	79.0	15.44	2	1	PS

Parameter	Result
4-Methyldibenzothiophene	**31.8**
2/3-Methyldibenzothiophene	**31.9**
1-Methyldibenzothiophene	**8.76**
3-Methylphenanthrene	**130**
2-Methylphenanthrene	**164**
2-Methylanthracene	**81.8**
9/4-Methylphenanthrene	**148**
1-Methylphenanthrene	**108**
2-Methylnaphthalene	**32.1**
1-Methylnaphthalene	**26.3**
2,6-Dimethylnaphthalene	**23.9**
2,3,5-Trimethylnaphthalene	**12.7**
Naphthobenzothiophene-2,1-D	**178**
Naphthobenzothiophene-1,2-D	**32.8**
Naphthobenzothiophene-2,3-D	**59.3**

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	62	40-120
Phenanthrene-d10	82	40-120
Benzo[a]pyrene-d12	74	40-120

N/A - Not Applicable

Form I
Duplicate
Steranes and Triterpanes

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AD121312D010**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-03 D**
Associated Blank: **SS121812B06**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
12/13/12	12/14/12	12/20/12	12/23/12	79.0	15.44	2	1	PS

Parameter	Result	
C23 Tricyclic Terpane	5.57	
C24 Tricyclic Terpane	4.24	
C25 Tricyclic Terpane	7.74	G
C24 Tetracyclic Terpane	4.15	
C26 Tricyclic Terpane-22S	3.80	
C26 Tricyclic Terpane-22R	2.60	
C28 Tricyclic Terpane-22S	2.18	
C28 Tricyclic Terpane-22R	3.45	
C29 Tricyclic Terpane-22S	3.30	
C29 Tricyclic Terpane-22R	2.91	
18a-22,29,30-Trisnorneohopane-TS	10.6	
C30 Tricyclic Terpane-22S	3.96	
C30 Tricyclic Terpane-22R	2.94	
17a(H)-22,29,30-Trisnorhopane-TM	13.1	
17a/b,21b/a 28,30-Bisnorhopane	2.15	
17a(H),21b(H)-25-Norhopane	2.74	
30-Norhopane	33.7	
18a(H)-30-Norneohopane-C29Ts	9.89	
17a(H)-Diahopane	3.74	
30-Normoretane	5.79	
18a(H)&18b(H)-Oleananes	3.82	
Hopane	48.9	
Moretane	7.17	
30-Homohopane-22S	17.3	
30-Homohopane-22R	16.3	
T22a-Gammacerane/C32-diahopane	3.90	
30,31-Bishomohopane-22S	35.5	G
30,31-Bishomohopane-22R	8.36	

Parameter	Result	
30,31-Trishomohopane-22S	9.37	
30,31-Trishomohopane-22R	4.94	
Tetrakishomohopane-22S	7.60	
Tetrakishomohopane-22R	21.2	G
Pentakishomohopane-22S	4.21	
Pentakishomohopane-22R	3.16	
13b(H),17a(H)-20S-Diacholestane	8.91	
13b(H),17a(H)-20R-Diacholestane	4.94	
13b,17a-20S-Methyldiacholestane	5.64	
14a(H),17a(H)-20S-Cholestane/ 13b(H),17a(H)-20S-Ethyldiacholestane (S12)	18.9	
14a(H),17a(H)-20R-Cholestane/ 13b(H),17a(H)-20R-Ethyldiacholestane (S17)	17.8	
Unknown Sterane (S18)	4.95	
13a,17b-20S-Ethyldiacholestane	0.597	J
14a,17a-20S-Methylcholestane	8.30	
14a,17a-20R-Methylcholestane	5.89	
14a(H),17a(H)-20S-Ethylcholestane	9.93	
14a(H),17a(H)-20R-Ethylcholestane	10.4	
14b(H),17b(H)-20R-Cholestane	7.82	
14b(H),17b(H)-20S-Cholestane	8.62	
14b,17b-20R-Methylcholestane	8.94	
14b,17b-20S-Methylcholestane	14.8	
14b(H),17b(H)-20R-Ethylcholestane	19.0	
14b(H),17b(H)-20S-Ethylcholestane	14.0	
C26,20R- +C27,20S- triaromatic steroid	11.3	
C28,20S-triaromatic steroid	15.7	
C27,20R-triaromatic steroid	7.75	
C28,20R-triaromatic steroid	10.3	

Surrogate	% Recovery	Acceptance Range (%)
5B(H)Cholane	76	50-130

N/A - Not Applicable
J - Estimated value, below quantitation limit.
G - Matrix Interference

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009591.D
Acq On : 23 Dec 2012 11:47 am
Operator : ps
Sample : 1212022-03D
Misc : 1X
ALS Vial : 20 Sample Multiplier: 1

12/27/12

Quant Time: Dec 27 14:19:31 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.156	164	66885	500.000	ng/mL	0.00
74) Chrysene-d12	42.557	240	124368	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.229	136	395836	1539.752	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 153.98%#			
42) Phenanthrene-d10	31.995	188	492189	2040.180	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 204.02%#			
83) Benzo[b]fluoranthene-d12	46.450	264	459905	2011.725	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 201.17%#			
88) Benzo[a]pyrene-d12	47.584	264	422888	1845.311	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 184.53%#			
129) 5B(H)Cholane - Surr	43.187	217	99528	1906.307	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 190.63%#			
Target Compounds						Qvalue
3) trans-Decalin	15.899	138	182M4	3.095	ng/mL	
5) C1-Decalins	17.377	152	707M5	12.023	ng/mL	
6) C2-Decalins	19.667	166	1605M5	27.295	ng/mL	
7) C3-Decalins	21.593	180	1614M5	27.448	ng/mL	
8) C4-Decalins	24.960	194	2787M5	47.396	ng/mL	
10) Naphthalene	19.302	128	79105	299.852	ng/mL#	100
11) C1-Naphthalenes	21.994	142	59852M5	226.872	ng/mL	
12) C2-Naphthalenes	24.814	156	113281M5	429.397	ng/mL	
13) C3-Naphthalenes	27.141	170	135146M5	512.278	ng/mL	
14) C4-Naphthalenes	31.137	184	85792M5	325.199	ng/mL	
16) 2-Methylnaphthalene	21.994	142	33734	195.530	ng/mL#	100
17) 1-Methylnaphthalene	22.405	142	26808	160.113	ng/mL#	100
18) Benzothiophene	19.531	134	2246M4	10.173	ng/mL	
19) C1-Benzo(b)thiophenes	22.168	148	2547M5	11.537	ng/mL	
20) C2-Benzo(b)thiophenes	24.531	162	4622M5	20.935	ng/mL	
21) C3-Benzo(b)thiophenes	26.621	176	9178M5	41.572	ng/mL	
22) C4-Benzo(b)thiophenes	29.066	190	6668M5	30.203	ng/mL	
23) Biphenyl	23.865	154	23134	102.466	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.486	156	23624	145.666	ng/mL#	100
25) Dibenzofuran	26.922	168	114363	474.915	ng/mL	97
26) Acenaphthylene	25.544	152	117269	432.112	ng/mL#	100
27) Acenaphthene	26.274	153	123367	722.998	ng/mL	100
28) 2,3,5-Trimethylnaphthalen	27.835	170	11511M3	77.201	ng/mL	
29) Fluorene	28.291	166	145928M4	778.771	ng/mL	
30) C1-Fluorenes	30.508	180	90174M5	481.230	ng/mL	
31) C2-Fluorenes	32.843	194	97817M5	522.018	ng/mL	
32) C3-Fluorenes	35.335	208	77487M5	413.523	ng/mL	
33) Dibenzothiophene	31.593	184	120156	455.853	ng/mL#	92
34) 4-Methyldibenzothiophene(	33.364	198	51197	194.233	ng/mL#	100
35) 2/3-Methyldibenzothiophen	33.711	198	51229M1	194.355	ng/mL	
36) 1-Methyldibenzothiophene(	34.131	198	14076	53.402	ng/mL#	100
37) OTP	33.811	198	57001	216.253	ng/mL#	100
38) C1-Dibenzothiophenes	33.364	198	195453M5	741.517	ng/mL	
38) C1-Dibenzothiophenes BS	33.364	198	138452m	525.265	ng/mL	
39) C2-Dibenzothiophenes	35.043	212	195695M5	742.436	ng/mL	
40) C3-Dibenzothiophenes	36.842	226	108326M5	410.972	ng/mL	
41) C4-Dibenzothiophenes	38.531	240	31839M5	120.792	ng/mL	

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009591.D
Acq On : 23 Dec 2012 11:47 am
Operator : ps
Sample : 1212022-03D
Misc : 1X
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Dec 27 14:19:31 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
43) Phenanthrene	32.086	178	2204969	8097.141	ng/mL	100
44) 3-Methylphenanthrene(3MP)	34.048	192	216427	794.769	ng/mL	97
45) 2-Methylphenanthrene(2MP)	34.158	192	271858	998.324	ng/mL	96
46) 2-Methylanthracene(2MA)	34.322	192	135878M3	498.975	ng/mL	
47) 9/4-Methylphenanthrene(9M	34.505	192	244971M3	899.589	ng/mL	
48) 1-Methylphenanthrene(1MP)	34.587	192	178492	655.463	ng/mL	97
49) C1-Phenanthrenes/Anthrace	34.158	192	1065268M5	3911.903	ng/mL	
50) C2-Phenanthrenes/Anthrace	36.312	206	643481M5	2363.007	ng/mL	
50) C2-Phenanthrenes/Anthr BS	36.312	206	643481m	2363.007	ng/mL	
52) C3-Phenanthrenes/Anthrace	38.147	220	243359M5	893.669	ng/mL	
53) C4-Phenanthrenes/Anthrace	40.348	234	75002M5	275.424	ng/mL	
55) Anthracene	32.269	178	517942	2048.209	ng/mL	100
56) Carbazole	32.944	167	122725	513.024	ng/mL	100
57) 1-Methylphenanthrene	34.587	192	178492	888.405	ng/mL	100
58) Fluoranthene	36.860	202	4393375	14442.237	ng/mL	98
59) Benzo(b)fluorene	39.362	216	298375M3	1649.284	ng/mL	
60) Pyrene	37.727	202	4165011	13420.318	ng/mL	99
61) C1-Fluoranthenes/Pyrenes	39.115	216	2002351M5	6451.889	ng/mL	
62) C2-Fluoranthenes/Pyrenes	41.160	230	726938M5	2342.308	ng/mL	
63) C3-Fluoranthenes/Pyrenes	43.050	244	266078M5	857.345	ng/mL	
64) C4-Fluoranthenes/Pyrenes	43.333	258	148034M5	476.989	ng/mL	
66) Naphthobenzothiophene	41.562	234	291981	1084.248	ng/ml	98
67) Naphthobenzothiophene-2,1	41.562	234	291981	1084.248	ng/mL	98
68) Naphthobenzothiophene-1,2	41.909	234	53893M3	200.127	ng/mL	
69) Naphthobenzothiophene-2,3	42.201	234	97351M3	361.505	ng/mL	
70) C1-Naphthobenzothiophenes	42.968	248	388351M5	1442.110	ng/ml	
71) C2-Naphthobenzothiophenes	44.466	262	186292M5	691.780	ng/ml	
72) C3-Naphthobenzothiophenes	46.350	276	70900M5	263.281	ng/ml	
73) C4-Naphthobenzothiophenes	47.594	290	28399M5	105.457	ng/mL	
75) Benz[a]anthracene	42.503	228	1833680M3	6427.899	ng/mL	
77) Chrysene/Triphenylene	42.658	228	1683141	5999.021	ng/mL	99
78) C1-Chrysenes	44.128	242	784682M5	2796.749	ng/mL	
79) C2-Chrysenes	45.837	256	343851M5	1225.548	ng/mL	
79) C2-Chrysenes BS	45.837	256	326018m	1161.987	ng/mL	
80) BBF-d12 Surr BKGD	46.450	256	17833	63.560	ng/mL	100
81) C3-Chrysenes	46.871	270	196806M5	701.452	ng/mL	
82) C4-Chrysenes	48.325	284	64775M5	230.870	ng/mL	
84) Benzo[b]fluoranthene	46.542	252	1387677	4691.553	ng/mL	94
85) Benzo[j]+[k]fluoranthene	46.615	252	1526531	5252.606	ng/mL	93
86) Benzo[a]fluoranthene	46.898	252	372257	1280.891	ng/mL#	1
87) Benzo[e]pyrene	47.493	252	1069228	3806.896	ng/mL	91
89) Benzo[a]pyrene	47.676	252	1713794	6442.893	ng/mL	90
90) Perylene	47.959	252	451713	1591.155	ng/mL#	88
91) Indeno[1,2,3-cd]pyrene	52.157	276	1089252M4	3697.468	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.194	278	305074M4	1051.248	ng/mL	
93) Benzo[g,h,i]perylene	53.363	276	1050992	3630.473	ng/mL	100
94) Hopane (T19)	51.325	191	32588M3	298.041	ng/mL	
96) C23 Tricyclic Terpane (T4	40.211	191	3713M4	33.958	ng/ml	
97) C24 Tricyclic Terpane (T5	40.941	191	2824	25.828	ng/ml	100
98) C25 Tricyclic Terpane (T6	42.493	191G	5159M1	47.183	ng/ml	
99) C24 Tetracyclic Terpane (	43.735	191	2770M4	25.334	ng/ml	
100) C26 Tricyclic Terpane-22S	43.489	191	2534M4	23.175	ng/ml	
101) C26 Tricyclic Terpane-22R	43.580	191	1732	15.840	ng/ml	100
102) C28 Tricyclic Terpane-22S	45.874	191	1452M4	13.280	ng/ml	

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009591.D
Acq On : 23 Dec 2012 11:47 am
Operator : ps
Sample : 1212022-03D
Misc : 1X
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Dec 27 14:19:31 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

	Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
103)	C28 Tricyclic Terpane-22R	46.039	191	2303M4	21.063	ng/ml	
104)	C29 Tricyclic Terpane-22S	46.551	191	2199	20.111	ng/ml	100
105)	C29 Tricyclic Terpane-22R	46.743	191	1938M4	17.724	ng/ml	
106)	18a-22,29,30-Trisnorneoho	47.786	191	7073	64.688	ng/ml	100
107)	C30 Tricyclic Terpane-22S	47.905	191	2639M4	24.136	ng/mL	
108)	C30 Tricyclic Terpane-22R	48.142	191	1957M3	17.898	ng/mL	
109)	17a(H)-22,29,30-Trisnorho	48.298	191	8736M4	79.897	ng/ml	
110)	17a/b,21b/a 28,30-Bisnorh	49.414	191	1436M4	13.133	ng/ml	
111)	17a(H),21b(H)-25-Norhopan	49.258	191	1824	16.682	ng/ml	100
112)	30-Norhopane (T15)	50.045	191	22484M4	205.632	ng/ml	
113)	18a(H)-30-Norneohopane-C2	50.145	191	6592M4	60.289	ng/ml	
114)	17a(H)-Diahopane (X)	50.264	191	2493M4	22.800	ng/ml	
115)	30-Normoretane (T17)	50.767	191	3859	35.293	ng/ml	100
116)	18a(H)&18b(H)-Oleananes (	51.151	191	2550	23.322	ng/ml	100
117)	Moretane (T20)	51.956	191	4780M3	43.717	ng/ml	
118)	30-Homohopane-22S (T21)	52.980	191	11540	105.542	ng/ml	100
119)	30-Homohopane-22R (T22)	53.190	191	10857	99.295	ng/ml	100
120)	Gammacerane/C32-diahopane	53.683	191	2600	23.779	ng/mL	100
121)	30,31-Bishomohopane-22S (	54.359	191G	23673	216.507	ng/ml	100
122)	30,31-Bishomohopane-22R (	54.761	191	5575	50.987	ng/ml	100
123)	30,31-Trishomohopane-22S	56.370	191	6250M4	57.161	ng/ml	
124)	30,31-Trishomohopane-22R	56.927	191	3292M4	30.108	ng/ml	
125)	Tetrakishomohopane-22S (T	58.800	191	5068M4	46.351	ng/ml	
126)	Tetrakishomohopane-22R (T	59.513	191G	14153	129.439	ng/ml	100
127)	Pentakishomohopane-22S (T	61.642	191	2807M4	25.672	ng/ml	
128)	Pentakishomohopane-22R (T	62.821	191	2108M4	19.279	ng/ml	
130)	13b(H),17a(H)-20S-Diachol	44.703	217	2837	54.338	ng/ml	100
131)	13b(H),17a(H)-20R-Diachol	45.124	217	1572	30.109	ng/ml	100
132)	13b,17a-20S-Methyldiachol	45.819	217	1795M4	34.380	ng/ml	
133)	14a,17a-20S-Chol/13b,17a-	46.688	217	6021	115.323	ng/ml	100
134)	14a,17a-20R-Chol/13b,17a-	47.173	217	5671	108.619	ng/ml	100
135)	Unknown Sterane (S18)	47.438	217	1575	30.167	ng/ml	100
136)	13a,17b-20S-Ethyldiachole	47.676	217	190M4	3.639	ng/ml	
137)	14a,17a-20S-Methylcholest	47.841	217	2644M4	50.642	ng/ml	
138)	14a,17a-20R-Methylcholest	48.508	217	1874	35.894	ng/ml	100
139)	14a(H),17a(H)-20S-Ethylch	48.828	217	3160M4	60.525	ng/ml	
140)	14a(H),17a(H)-20R-Ethylch	49.688	217	3323M4	63.647	ng/ml	
141)	14b(H),17b(H)-20R-Cholest	46.761	218	2488M4	47.654	ng/ml	
142)	14b(H),17b(H)-20S-Cholest	46.844	218	2743M4	52.538	ng/ml	
143)	14b,17b-20R-Methylcholest	47.996	218	2846M4	54.511	ng/ml	
144)	14b,17b-20S-Methylcholest	48.078	218	4706M4	90.136	ng/ml	
145)	14b(H),17b(H)-20R-Ethylch	49.066	218	6056	115.993	ng/ml	100
146)	14b(H),17b(H)-20S-Ethylch	49.112	218	4456M3	85.348	ng/ml	
147)	C26,20R- +C27,20S- triaro	48.801	231	3607M4	69.087	ng/mL	
148)	C28,20S-triaromatic stero	49.606	231	4997M4	95.710	ng/mL	
149)	C27,20R-triaromatic stero	50.026	231	2467M4	47.252	ng/mL	
150)	C28,20R-triaromatic stero	51.142	231	3279M4	62.804	ng/mL	

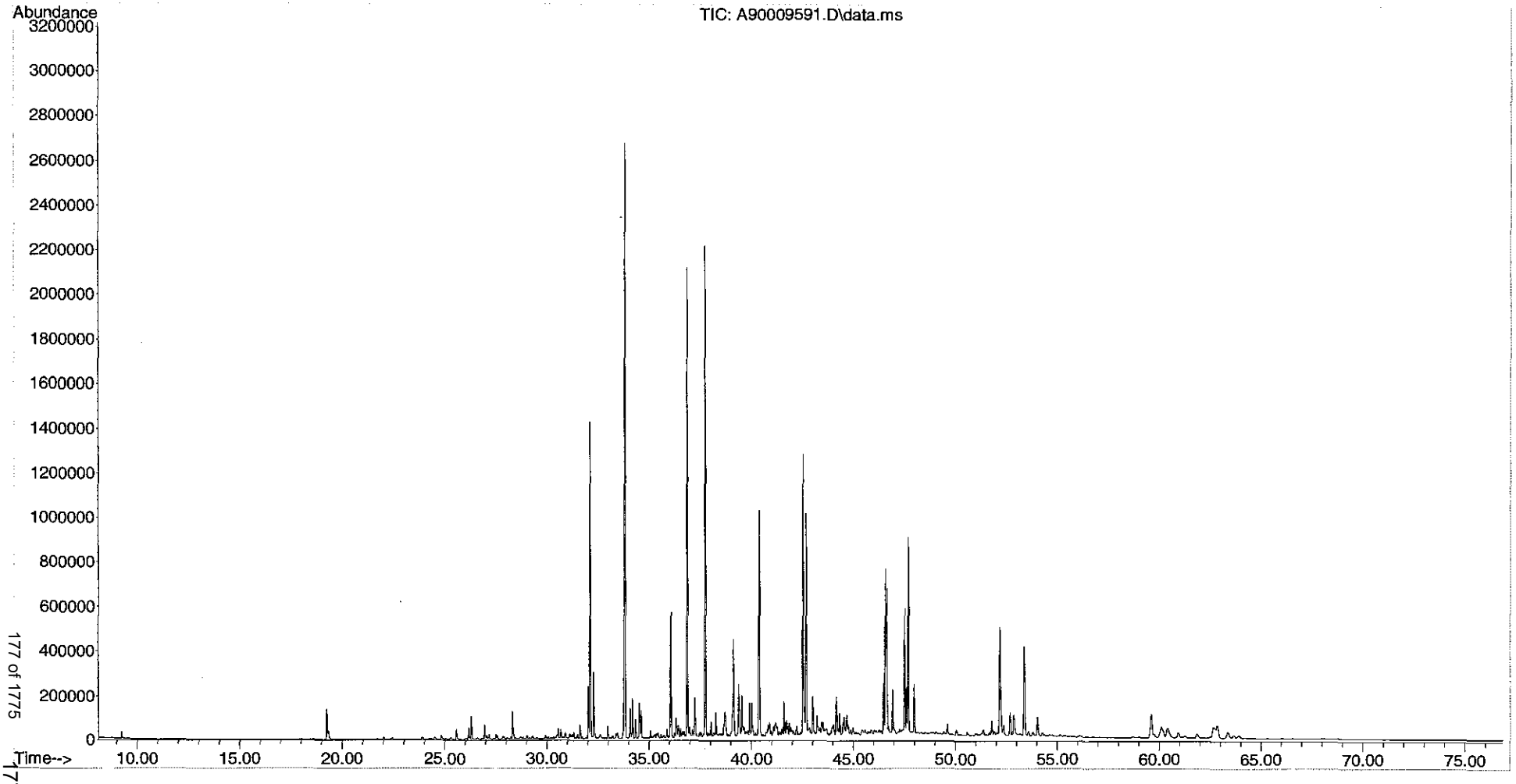
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009591.D
Acq On : 23 Dec 2012 11:47 am
Operator : ps
Sample : 1212022-03D
Misc : 1X
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Dec 27 14:19:31 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES



Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009580.D
Acq On : 22 Dec 2012 8:16 pm
Operator : ps
Sample : SS121812C41BN02
Misc : 1X
ALS Vial : 9 Sample Multiplier: 1

12/27/12

Quant Time: Dec 27 15:53:43 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : SRM1941B_REV2 - Organics in Sediment

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.156	164	61844	500.000	ng/mL	0.00
74) Chrysene-d12	42.548	240	118898	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.230	136	60536	254.672	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 25.47%#			
42) Phenanthrene-d10	31.995	188	79226	355.169	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 35.52%#			
83) Benzo[b]fluoranthene-d12	46.451	264	73390	335.793	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 33.58%#			
88) Benzo[a]pyrene-d12	47.576	264	67302	307.189	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 30.72%#			
129) 5B(H)Cholane - Surr	43.188	217	16536	331.293	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 33.13%#			
Target Compounds						Qvalue
10) Naphthalene	19.303	128	258585	1060.076	ng/mL#	100
29) Fluorene	28.291	166	13834M4	79.845	ng/mL	
43) Phenanthrene	32.086	178	162338	644.734	ng/mL	100
55) Anthracene	32.269	178	61074M4	261.205	ng/mL	
58) Fluoranthene	36.842	202	297141	1056.404	ng/mL	99
60) Pyrene	37.718	202	249026	867.806	ng/mL	100
75) Benz[a]anthracene	42.494	228	120923M3	443.393	ng/mL	
77) Chrysene/Triphenylene	42.649	228	169282	631.110	ng/mL	100
84) Benzo[b]fluoranthene	46.533	252	192595	681.094	ng/mL	93
87) Benzo[e]pyrene	47.475	252	138271	514.951	ng/mL	90
89) Benzo[a]pyrene	47.658	252	108874M4	428.135	ng/mL	
90) Perylene	47.951	252	126985M3	467.882	ng/mL	
91) Indeno[1,2,3-cd]pyrene	52.139	276	112438M3	399.230	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.194	278	32015	115.395	ng/mL	94
93) Benzo[g,h,i]perylene	53.336	276	107149	387.156	ng/mL	100

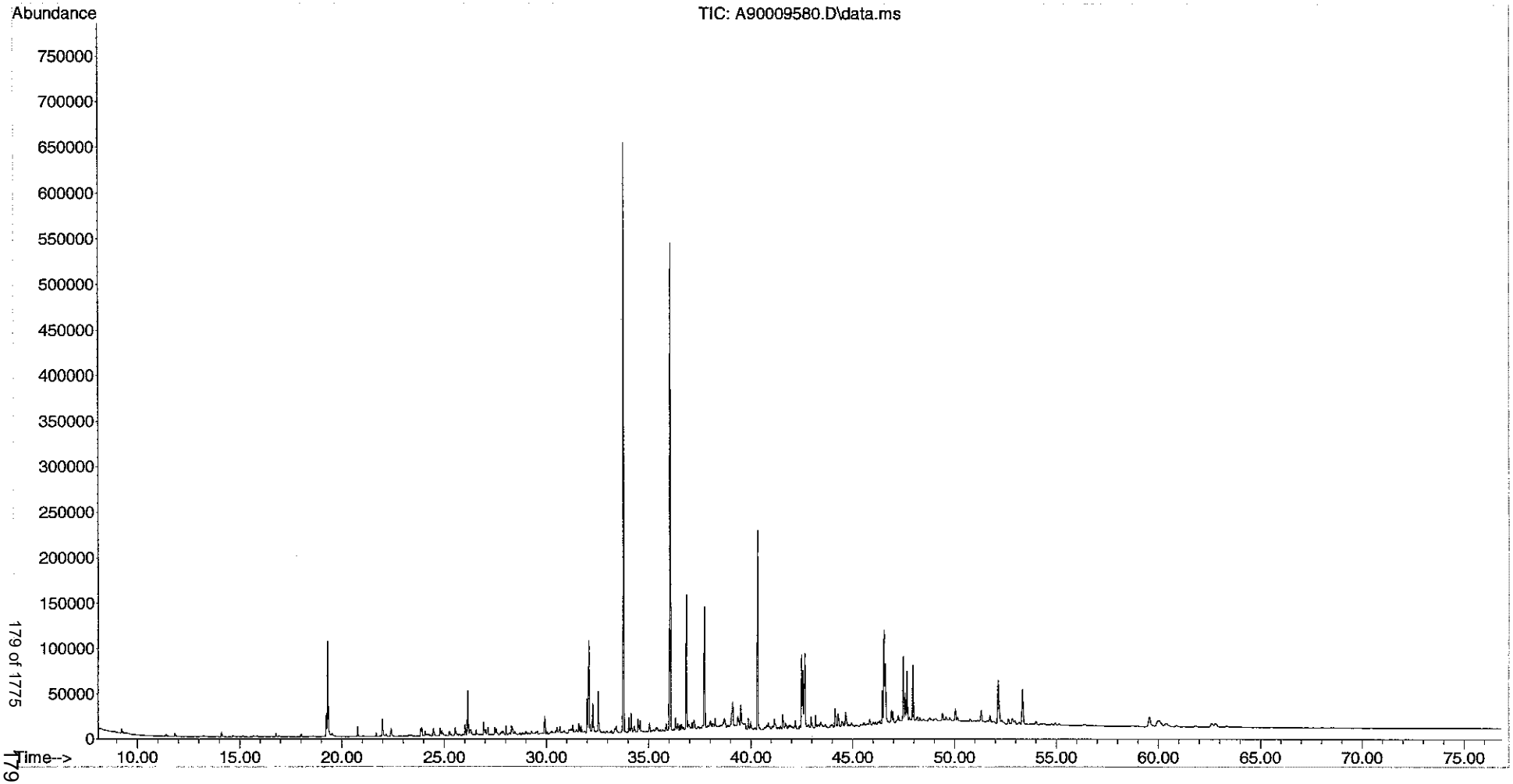
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009580.D
Acq On : 22 Dec 2012 8:16 pm
Operator : ps
Sample : SS121812C41BN02
Misc : 1X
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Dec 27 15:53:43 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : SRM1941B_REV2 - Organics in Sediment



Form I
Cold Lake Crude
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Cold Lake Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS122712CL03**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	N/A	12/22/12	100	0.05064	10	1	PS

Parameter	Result		Parameter	Result	
cis/trans-Decalin	**137**		C3-Dibenzothiophenes	**453**	
C1-Decalins	**300**		C4-Dibenzothiophenes	**321**	
C2-Decalins	**488**		Benzo(b)fluorene	1.98	U
C3-Decalins	**389**		Fluoranthene	**5.77**	
C4-Decalins	**375**		Pyrene	**18.3**	
Benzothiophene	**8.46**		C1-Fluoranthenes/Pyrenes	**64.8**	
C1-Benzo(b)thiophenes	**48.6**		C2-Fluoranthenes/Pyrenes	**88.9**	
C2-Benzo(b)thiophenes	**88.1**		C3-Fluoranthenes/Pyrenes	**108**	
C3-Benzo(b)thiophenes	**163**		C4-Fluoranthenes/Pyrenes	**102**	
C4-Benzo(b)thiophenes	**178**		Naphthobenzothiophenes	**37.6**	
Naphthalene	**63.4**		C1-Naphthobenzothiophenes	**126**	
C1-Naphthalenes	**184**		C2-Naphthobenzothiophenes	**184**	
C2-Naphthalenes	**412**		C3-Naphthobenzothiophenes	**143**	
C3-Naphthalenes	**528**		C4-Naphthobenzothiophenes	**123**	
C4-Naphthalenes	**451**		Benz[a]anthracene	**4.08**	
Biphenyl	**15.3**		Chrysene/Triphenylene	**20.1**	
Dibenzofuran	**8.47**		C1-Chrysenes	**56.9**	
Acenaphthylene	**3.10**		C2-Chrysenes	**87.0**	
Acenaphthene	**13.6**		C3-Chrysenes	**97.2**	
Fluorene	**27.7**		C4-Chrysenes	**62.9**	
C1-Fluorenes	**84.5**		Benzo[b]fluoranthene	**5.10**	
C2-Fluorenes	**191**		Benzo[j]fluoranthene/Benzo[k]fluoranthene	**1.79**	J
C3-Fluorenes	**229**		Benzo[a]fluoranthene	1.98	U
Anthracene	1.98	U	Benzo[e]pyrene	**7.92**	
Phenanthrene	**79.3**		Benzo[a]pyrene	**4.31**	
C1-Phenanthrenes/Anthracenes	**228**		Perylene	**9.65**	
C2-Phenanthrenes/Anthracenes	**353**		Indeno[1,2,3-cd]pyrene	**2.53**	
C3-Phenanthrenes/Anthracenes	**334**		Dibenz[ah]anthracene/Dibenz[ac]anthracene	**0.980**	J
C4-Phenanthrenes/Anthracenes	**152**		Benzo[g,h,i]perylene	**6.14**	
Retene	**48.7**				
Dibenzothiophene	**65.7**				
C1-Dibenzothiophenes	**218**				
C2-Dibenzothiophenes	**418**				

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	91	40-120
Phenanthrene-d10	105	40-120
Benzo[a]pyrene-d12	99	40-120

N/A - Not Applicable
J - Estimated value, below quantitation limit.
U - The analyte was analyzed for but not detected at the sample specific level reported.

Form I
Cold Lake Crude
Carbazole

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Cold Lake Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS122712CL03**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	N/A	12/22/12	100	0.05064	10	1	PS

Parameter	Result
Carbazole	**5.67**

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	91	40-120
Phenanthrene-d10	105	40-120
Benzo[a]pyrene-d12	99	40-120

N/A - Not Applicable

Form I
Cold Lake Crude
Polynuclear Aromatic Hydrocarbons Isomers

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Cold Lake Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS122712CL03**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	N/A	12/22/12	100	0.05064	10	1	PS

Parameter	Result
4-Methyldibenzothiophene	**88.0**
2/3-Methyldibenzothiophene	**68.4**
1-Methyldibenzothiophene	**46.7**
3-Methylphenanthrene	**44.0**
2-Methylphenanthrene	**50.7**
2-Methylanthracene	**6.40**
9/4-Methylphenanthrene	**76.8**
1-Methylphenanthrene	**45.2**
2-Methylnaphthalene	**167**
1-Methylnaphthalene	**118**
2,6-Dimethylnaphthalene	**166**
2,3,5-Trimethylnaphthalene	**54.9**
Naphthobenzothiophene-2,1-D	**26.0**
Naphthobenzothiophene-1,2-D	**7.17**
Naphthobenzothiophene-2,3-D	**4.47**

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	91	40-120
Phenanthrene-d10	105	40-120
Benzo[a]pyrene-d12	99	40-120

N/A - Not Applicable

Form I
Cold Lake Crude
Steranes and Triterpanes

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Cold Lake Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS122712CL03**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	N/A	12/22/12	100	0.05064	10	1	PS

Parameter	Result	
C23 Tricyclic Terpane	**98.9**	
C24 Tricyclic Terpane	**52.2**	
C25 Tricyclic Terpane	**48.2**	
C24 Tetracyclic Terpane	**18.1**	
C26 Tricyclic Terpane-22S	**18.8**	
C26 Tricyclic Terpane-22R	**18.2**	
C28 Tricyclic Terpane-22S	**20.2**	
C28 Tricyclic Terpane-22R	**21.5**	
C29 Tricyclic Terpane-22S	**26.0**	
C29 Tricyclic Terpane-22R	**24.7**	
18a-22,29,30-Trisnorneohopane-TS	**26.3**	
C30 Tricyclic Terpane-22S	**20.6**	
C30 Tricyclic Terpane-22R	**19.0**	
17a(H)-22,29,30-Trisnorhopane-TM	**63.0**	
17a/b,21b/a 28,30-Bisnorhopane	**39.1**	
17a(H),21b(H)-25-Norhopane	**11.6**	
30-Norhopane	**169**	
18a(H)-30-Norneohopane-C29Ts	**23.9**	
17a(H)-Diahopane	**8.35**	
30-Normoretane	**17.0**	
18a(H)&18b(H)-Oleananes	**1.70**	J
Hopane	**228**	
Moretane	**17.1**	
30-Homohopane-22S	**100**	
30-Homohopane-22R	**83.3**	
T22a-Gammacerane/C32-diahopane	**37.1**	
30,31-Bishomohopane-22S	**64.8**	
30,31-Bishomohopane-22R	**47.3**	

Parameter	Result
30,31-Trishomohopane-22S	**49.7**
30,31-Trishomohopane-22R	**32.2**
Tetrakishomohopane-22S	**31.4**
Tetrakishomohopane-22R	**23.2**
Pentakishomohopane-22S	**38.5**
Pentakishomohopane-22R	**26.9**
13b(H),17a(H)-20S-Diacholestane	**33.3**
13b(H),17a(H)-20R-Diacholestane	**16.4**
13b,17a-20S-Methyldiacholestane	**17.0**
14a(H),17a(H)-20S-Cholestane/ 13b(H),17a(H)-20S-Ethyldiacholestane (S12)	**57.3**
14a(H),17a(H)-20R-Cholestane/ 13b(H),17a(H)-20R-Ethyldiacholestane (S17)	**70.8**
Unknown Sterane (S18)	**13.0**
13a,17b-20S-Ethyldiacholestane	**6.54**
14a,17a-20S-Methylcholestane	**28.1**
14a,17a-20R-Methylcholestane	**25.3**
14a(H),17a(H)-20S-Ethylcholestane	**52.0**
14a(H),17a(H)-20R-Ethylcholestane	**47.3**
14b(H),17b(H)-20R-Cholestane	**47.8**
14b(H),17b(H)-20S-Cholestane	**48.3**
14b,17b-20R-Methylcholestane	**38.0**
14b,17b-20S-Methylcholestane	**53.6**
14b(H),17b(H)-20R-Ethylcholestane	**71.2**
14b(H),17b(H)-20S-Ethylcholestane	**47.8**
C26,20R- +C27,20S- triaromatic steroid	**222**
C28,20S-triaromatic steroid	**187**
C27,20R-triaromatic steroid	**148**
C28,20R-triaromatic steroid	**153**

Surrogate	% Recovery	Acceptance Range (%)
5B(H)Cholane	108	50-130

N/A - Not Applicable
J - Estimated value, below quantitation limit.

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009582.D
Acq On : 22 Dec 2012 11:06 pm
Operator : ps
Sample : SS122712CL03
Misc : WHAQ74:5.064mg/kg
ALS Vial : 11 Sample Multiplier: 1

12/27/12

Quant Time: Dec 27 15:59:19 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.156	164	63842	500.000	ng/mL	0.00
74) Chrysene-d12	42.557	240	119050	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.230	136	222470	906.628	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 90.66%			
42) Phenanthrene-d10	31.995	188	242604	1053.554	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 105.36%			
83) Benzo[b]fluoranthene-d12	46.460	264	227952	1041.653	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 104.17%			
88) Benzo[a]pyrene-d12	47.575	264	217234	990.265	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 99.03%			
129) 5B(H)Cholane - Surr	43.187	217	53835	1077.188	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 107.72%			
Target Compounds						Qvalue
3) trans-Decalin	15.908	138	36074	642.724	ng/mL	100
4) cis-Decalin	17.112	138	2328M3	52.982	ng/mL	
5) C1-Decalins	17.377	152	85233M5	1518.581	ng/mL	
6) C2-Decalins	18.791	166	138795M5	2472.885	ng/mL	
7) C3-Decalins	21.602	180	110496M5	1968.687	ng/mL	
8) C4-Decalins	24.239	194	106619M5	1899.611	ng/mL	
10) Naphthalene	19.302	128	80889	321.229	ng/mL#	100
11) C1-Naphthalenes	21.985	142	234595M5	931.630	ng/mL	
12) C2-Naphthalenes	24.805	156	525048M5	2085.084	ng/mL	
13) C3-Naphthalenes	27.479	170	672667M5	2671.313	ng/mL	
14) C4-Naphthalenes	30.216	184	574681M5	2282.188	ng/mL	
16) 2-Methylnaphthalene	21.985	142	139177	845.152	ng/mL#	100
17) 1-Methylnaphthalene	22.405	142	95336	596.543	ng/mL#	100
18) Benzothiophene	19.522	134	9029M4	42.846	ng/mL	
19) C1-Benzo(b)thiophenes	21.557	148	51904M5	246.306	ng/mL	
20) C2-Benzo(b)thiophenes	25.006	162	93989M5	446.017	ng/mL	
21) C3-Benzo(b)thiophenes	26.977	176	173645M5	824.018	ng/mL	
22) C4-Benzo(b)thiophenes	29.076	190	189462M5	899.076	ng/mL	
23) Biphenyl	23.865	154	16737	77.665	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.477	156	130113	840.522	ng/mL#	100
25) Dibenzofuran	26.931	168	9859	42.893	ng/mL#	43
26) Acenaphthylene	25.554	152	4061M4	15.677	ng/mL	
27) Acenaphthene	26.274	153	11247M4	69.055	ng/mL	
28) 2,3,5-Trimethylnaphthalen	27.835	170	39561M3	277.971	ng/mL	
29) Fluorene	28.291	166	25068M4	140.156	ng/mL	
30) C1-Fluorenes	30.645	180	76545M5	427.967	ng/mL	
31) C2-Fluorenes	32.834	194	172965M5	967.056	ng/mL	
32) C3-Fluorenes	34.669	208	207474M5	1159.998	ng/mL	
33) Dibenzothiophene	31.594	184	83651	332.485	ng/mL#	63
34) 4-Methyldibenzothiophene(	33.364	198	112061	445.406	ng/mL#	100
35) 2/3-Methyldibenzothiophen	33.711	198	87208	346.623	ng/mL#	100
36) 1-Methyldibenzothiophene(	34.131	198	59549	236.688	ng/mL#	100
37) OTP	33.793	198	31476	125.107	ng/mL#	100
38) C1-Dibenzothiophenes	33.364	198	309736M5	1231.099	ng/mL	
38) C1-Dibenzothiophenes BS	33.364	198	278260m	1105.992	ng/mL	
39) C2-Dibenzothiophenes	35.044	212	531882M5	2114.056	ng/mL	
40) C3-Dibenzothiophenes	36.851	226	576840M5	2292.750	ng/mL	

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009582.D
Acq On : 22 Dec 2012 11:06 pm
Operator : ps
Sample : SS122712CL03
Misc : WHAQ74:5.064mg/kg
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Dec 27 15:59:19 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
41) C4-Dibenzothiophenes	38.540	240	408790M5	1624.806	ng/mL	
43) Phenanthrene	32.086	178	104413M3	401.704	ng/mL	
44) 3-Methylphenanthrene(3MP)	34.049	192	57940	222.910	ng/mL	93
45) 2-Methylphenanthrene(2MP)	34.158	192	66783	256.932	ng/mL	97
46) 2-Methylanthracene(2MA)	34.322	192	8429M3	32.429	ng/mL	
47) 9/4-Methylphenanthrene(9M	34.496	192	101077	388.869	ng/mL	99
48) 1-Methylphenanthrene(1MP)	34.587	192	59442	228.689	ng/mL	98
49) C1-Phenanthrenes/Anthrace	34.496	192	299726M5	1153.124	ng/mL	
50) C2-Phenanthrenes/Anthrace	36.312	206	464231M5	1786.017	ng/mL	
50) C2-Phenanthrenes/Anthr BS	36.312	206	464231m	1786.017	ng/mL	
52) C3-Phenanthrenes/Anthrace	39.408	220	440119M5	1693.252	ng/mL	
53) C4-Phenanthrenes/Anthrace	40.321	234	200073M5	769.733	ng/mL	
54) Retene	39.061	234	17613M4	246.489	ng/mL	
56) Carbazole	32.944	167	6558M3	28.721	ng/mL	
57) 1-Methylphenanthrene	34.587	192	59245	308.934	ng/mL	99
58) Fluoranthene	36.842	202	8482M4	29.212	ng/mL	
60) Pyrene	37.728	202	27402M4	92.502	ng/mL	
61) C1-Fluoranthenes/Pyrenes	39.115	216	97253M5	328.301	ng/mL	
62) C2-Fluoranthenes/Pyrenes	40.923	230	133321M5	450.057	ng/mL	
63) C3-Fluoranthenes/Pyrenes	42.941	244	161740M5	545.992	ng/mL	
64) C4-Fluoranthenes/Pyrenes	44.292	258	153725M5	518.936	ng/mL	
66) Naphthobenzothiophene	41.571	234	33862M4	131.737	ng/ml	
67) Naphthobenzothiophene-2,1	41.571	234	33789M4	131.453	ng/mL	
68) Naphthobenzothiophene-1,2	41.909	234	9332M4	36.305	ng/mL	
69) Naphthobenzothiophene-2,3	42.210	234	5816M3	22.627	ng/mL	
70) C1-Naphthobenzothiophenes	42.968	248	164506M5	639.997	ng/ml	
71) C2-Naphthobenzothiophenes	45.014	262	239772M5	932.813	ng/ml	
72) C3-Naphthobenzothiophenes	46.578	276	186290M5	724.746	ng/ml	
73) C4-Naphthobenzothiophenes	47.603	290	160658M5	625.027	ng/mL	
75) Benz[a]anthracene	42.503	228	5646M4	20.676	ng/mL	
77) Chrysene/Triphenylene	42.649	228	27397M4	102.010	ng/mL	
78) C1-Chrysenes	44.128	242	77419M5	288.262	ng/mL	
79) C2-Chrysenes	46.213	256	126798M5	472.119	ng/mL	
79) C2-Chrysenes BS	46.213	256	118270m	440.366	ng/mL	
80) BBF-d12 Surr BKGD	46.450	256	8528	31.753	ng/mL	100
81) C3-Chrysenes	47.511	270	132169M5	492.117	ng/mL	
82) C4-Chrysenes	48.874	284	85586M5	318.670	ng/mL	
84) Benzo[b]fluoranthene	46.542	252	7316	25.839	ng/mL	97
85) Benzo[j]+[k]fluoranthene	46.606	252	2525M3	9.076	ng/mL	
87) Benzo[e]pyrene	47.484	252	10785M3	40.114	ng/mL	
89) Benzo[a]pyrene	47.667	252	5561M3	21.840	ng/mL	
90) Perylene	47.960	252	13277M3	48.857	ng/mL	
91) Indeno[1,2,3-cd]pyrene	52.157	276	3610M4	12.802	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.203	278	1379M4	4.964	ng/mL	
93) Benzo[g,h,i]perylene	53.354	276	8618	31.099	ng/mL#	71
94) Hopane (T19)	51.325	191	120916M3	1155.263	ng/mL	
96) C23 Tricyclic Terpane (T4	40.220	191	52401M4	500.653	ng/ml	
97) C24 Tricyclic Terpane (T5	40.951	191	27644M4	264.118	ng/ml	
98) C25 Tricyclic Terpane (T6	42.475	191	25536M1	243.978	ng/ml	
99) C24 Tetracyclic Terpane (	43.735	191	9606	91.778	ng/ml	100
100) C26 Tricyclic Terpane-22S	43.489	191	9970M4	95.256	ng/ml	
101) C26 Tricyclic Terpane-22R	43.589	191	9639	92.094	ng/ml	100
102) C28 Tricyclic Terpane-22S	45.874	191	10699M4	102.221	ng/ml	
103) C28 Tricyclic Terpane-22R	46.039	191	11375M4	108.680	ng/ml	

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009582.D
Acq On : 22 Dec 2012 11:06 pm
Operator : ps
Sample : SS122712CL03
Misc : WHAQ74:5.064mg/kg
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Dec 27 15:59:19 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
104) C29 Tricyclic Terpane-22S	46.551	191	13796	131.811	ng/ml	100
105) C29 Tricyclic Terpane-22R	46.743	191	13094	125.104	ng/ml	100
106) 18a-22,29,30-Trisnorneoho	47.786	191	13961	133.387	ng/ml	100
107) C30 Tricyclic Terpane-22S	47.905	191	10938M4	104.505	ng/mL	
108) C30 Tricyclic Terpane-22R	48.133	191	10090M4	96.403	ng/mL	
109) 17a(H)-22,29,30-Trisnorho	48.307	191	33406M4	319.170	ng/ml	
110) 17a/b,21b/a 28,30-Bisnorh	49.432	191	20715M4	197.917	ng/ml	
111) 17a(H),21b(H)-25-Norhopan	49.267	191	6139	58.654	ng/ml	100
112) 30-Norhopane (T15)	50.054	191	89379M4	853.951	ng/ml	
113) 18a(H)-30-Norneohopane-C2	50.155	191	12684M4	121.186	ng/ml	
114) 17a(H)-Diahopane (X)	50.274	191	4426M4	42.287	ng/ml	
115) 30-Normoretane (T17)	50.786	191	8982	85.816	ng/ml	100
116) 18a(H)&18b(H)-Oleananes (	51.152	191	899M4	8.589	ng/ml	
117) Moretane (T20)	51.965	191	9083M4	86.781	ng/ml	
118) 30-Homohopane-22S (T21)	52.980	191	53109	507.417	ng/ml	100
119) 30-Homohopane-22R (T22)	53.199	191	44133	421.658	ng/ml	100
120) Gammacerane/C32-diahopane	53.692	191	19651M4	187.751	ng/mL	
121) 30,31-Bishomohopane-22S (	54.414	191	34344	328.132	ng/ml	100
122) 30,31-Bishomohopane-22R (	54.771	191	25069	239.516	ng/ml	100
123) 30,31-Trishomohopane-22S	56.370	191	26335M4	251.612	ng/ml	
124) 30,31-Trishomohopane-22R	56.936	191	17095	163.330	ng/ml	100
125) Tetrakishomohopane-22S (T	58.782	191	16663	159.203	ng/ml	100
126) Tetrakishomohopane-22R (T	59.605	191	12275M4	117.279	ng/ml	
127) Pentakishomohopane-22S (T	61.651	191	20419M4	195.089	ng/ml	
128) Pentakishomohopane-22R (T	62.821	191	14263M4	136.272	ng/ml	
130) 13b(H),17a(H)-20S-Diachol	44.703	217	8425M4	168.576	ng/ml	
131) 13b(H),17a(H)-20R-Diachol	45.133	217	4160M4	83.238	ng/ml	
132) 13b,17a-20S-Methyldiachol	45.828	217	4300M4	86.039	ng/ml	
133) 14a,17a-20S-Chol/13b,17a-	46.679	217	14500	290.131	ng/ml	100
134) 14a,17a-20R-Chol/13b,17a-	47.173	217	17917M4	358.502	ng/ml	
135) Unknown Sterane (S18)	47.447	217	3296	65.950	ng/ml	100
136) 13a,17b-20S-Ethyldiachole	47.694	217	1656	33.135	ng/ml	100
137) 14a,17a-20S-Methylcholest	47.841	217	7106M4	142.184	ng/ml	
138) 14a,17a-20R-Methylcholest	48.517	217	6410M4	128.258	ng/ml	
139) 14a(H),17a(H)-20S-Ethylch	48.847	217	13152M4	263.159	ng/ml	
140) 14a(H),17a(H)-20R-Ethylch	49.697	217	11964M4	239.388	ng/ml	
141) 14b(H),17b(H)-20R-Cholest	46.771	218	12110M4	242.310	ng/ml	
142) 14b(H),17b(H)-20S-Cholest	46.853	218	12230M4	244.711	ng/ml	
143) 14b,17b-20R-Methylcholest	48.005	218	9613	192.347	ng/ml	100
144) 14b,17b-20S-Methylcholest	48.078	218	13554M4	271.203	ng/ml	
145) 14b(H),17b(H)-20R-Ethylch	49.075	218	18006	360.283	ng/ml	100
146) 14b(H),17b(H)-20S-Ethylch	49.121	218	12109M3	242.290	ng/ml	
147) C26,20R- +C27,20S- triaro	48.801	231	56080	1122.108	ng/mL	100
148) C28,20S-triaromatic stero	49.606	231	47398M4	948.390	ng/mL	
149) C27,20R-triaromatic stero	50.036	231	37573M4	751.801	ng/mL	
150) C28,20R-triaromatic stero	51.152	231	38723	774.811	ng/mL	100

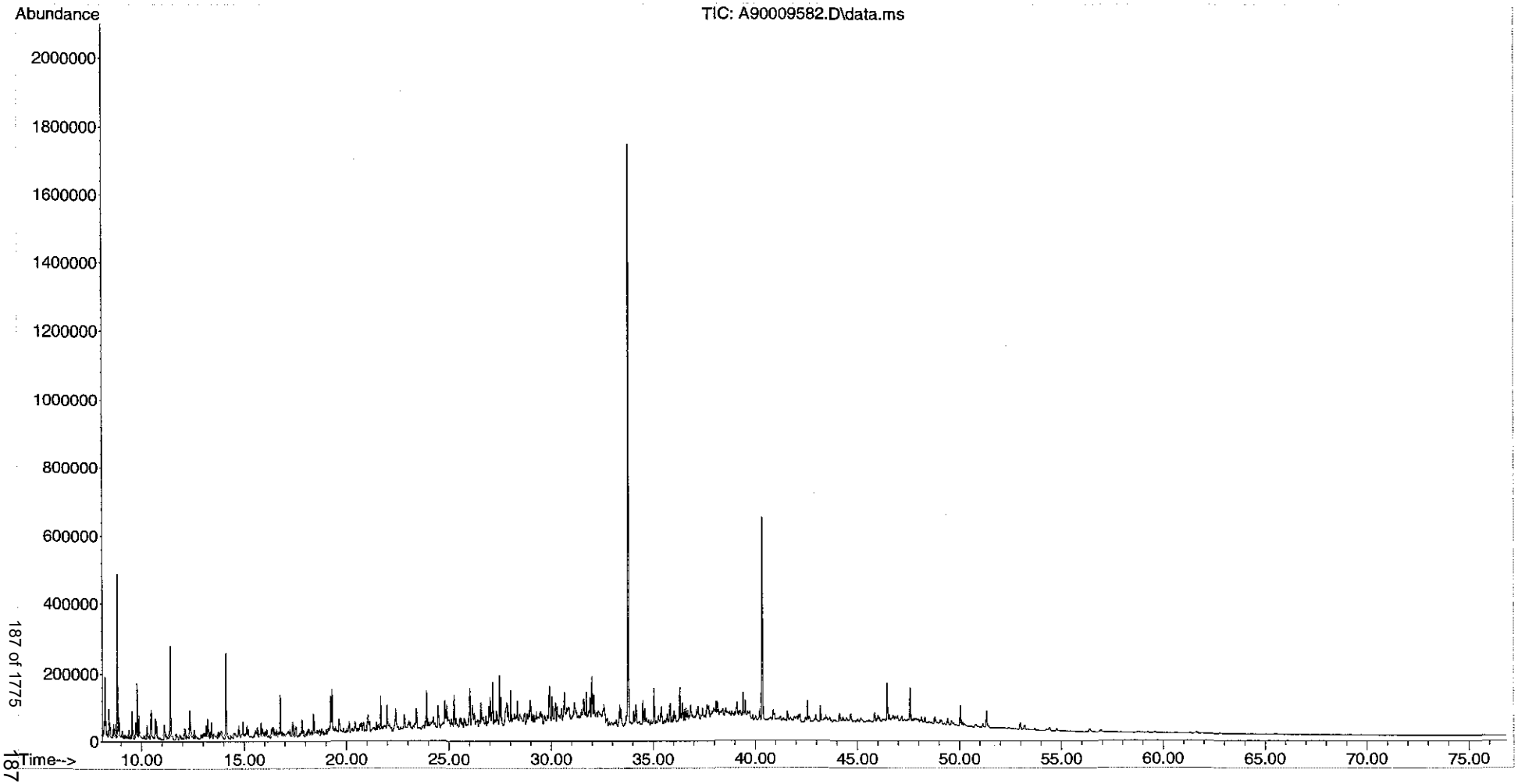
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009582.D
Acq On : 22 Dec 2012 11:06 pm
Operator : ps
Sample : SS122712CL03
Misc : WHAQ74:5.064mg/kg
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Dec 27 15:59:19 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES



187 of 1775

187

Form I
Cold Lake Crude
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Cold Lake Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS122712CL04**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	N/A	12/26/12	100	0.05064	10	1	PS

Parameter	Result	
cis/trans-Decalin	**142**	
C1-Decalins	**317**	
C2-Decalins	**485**	
C3-Decalins	**385**	
C4-Decalins	**370**	
Benzothiophene	**8.62**	
C1-Benzo(b)thiophenes	**49.5**	
C2-Benzo(b)thiophenes	**87.4**	
C3-Benzo(b)thiophenes	**162**	
C4-Benzo(b)thiophenes	**178**	
Naphthalene	**65.4**	
C1-Naphthalenes	**187**	
C2-Naphthalenes	**414**	
C3-Naphthalenes	**527**	
C4-Naphthalenes	**451**	
Biphenyl	**15.6**	
Dibenzofuran	**8.52**	
Acenaphthylene	**3.05**	
Acenaphthene	**14.5**	
Fluorene	**28.1**	
C1-Fluorenes	**84.5**	
C2-Fluorenes	**192**	
C3-Fluorenes	**230**	
Anthracene	1.98	U
Phenanthrene	**79.2**	
C1-Phenanthrenes/Anthracenes	**225**	
C2-Phenanthrenes/Anthracenes	**347**	
C3-Phenanthrenes/Anthracenes	**329**	
C4-Phenanthrenes/Anthracenes	**156**	
Retene	**53.0**	
Dibenzothiophene	**65.0**	
C1-Dibenzothiophenes	**217**	
C2-Dibenzothiophenes	**412**	
C3-Dibenzothiophenes	**446**	
C4-Dibenzothiophenes	**310**	
Benzo(b)fluorene	1.98	U
Fluoranthene	**5.42**	
Pyrene	**17.4**	
C1-Fluoranthenes/Pyrenes	**62.8**	
C2-Fluoranthenes/Pyrenes	**91.8**	
C3-Fluoranthenes/Pyrenes	**112**	
C4-Fluoranthenes/Pyrenes	**102**	
Naphthobenzothiophenes	**36.9**	
C1-Naphthobenzothiophenes	**125**	
C2-Naphthobenzothiophenes	**181**	
C3-Naphthobenzothiophenes	**152**	
C4-Naphthobenzothiophenes	**118**	
Benz[a]anthracene	**3.80**	
Chrysene/Triphenylene	**20.9**	
C1-Chrysenes	**57.9**	
C2-Chrysenes	**82.3**	
C3-Chrysenes	**107**	
C4-Chrysenes	**66.5**	
Benzo[b]fluoranthene	**4.84**	
Benzo[j]fluoranthene/Benzo[k]fluoranthene	**1.70**	J
Benzo[a]fluoranthene	1.98	U
Benzo[e]pyrene	**8.01**	
Benzo[a]pyrene	**4.64**	
Perylene	**9.80**	
Indeno[1,2,3-cd]pyrene	**2.47**	
Dibenz[ah]anthracene/Dibenz[ac]anthracene	**0.958**	J
Benzo[g,h,i]perylene	**6.06**	

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	94	40-120
Phenanthrene-d10	105	40-120
Benzo[a]pyrene-d12	99	40-120

N/A - Not Applicable
J - Estimated value, below quantitation limit.
U - The analyte was analyzed for but not detected at the sample specific level reported.

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Form I
Cold Lake Crude
Carbazole

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Cold Lake Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS122712CL04**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	N/A	12/26/12	100	0.05064	10	1	PS

Parameter	Result
Carbazole	**6.60**

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	94	40-120
Phenanthrene-d10	105	40-120
Benzo[a]pyrene-d12	99	40-120

N/A - Not Applicable

Form I
Cold Lake Crude
Polynuclear Aromatic Hydrocarbons Isomers

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Cold Lake Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS122712CL04**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	N/A	12/26/12	100	0.05064	10	1	PS

Parameter	Result
4-Methyldibenzothiophene	**87.5**
2/3-Methyldibenzothiophene	**67.9**
1-Methyldibenzothiophene	**46.6**
3-Methylphenanthrene	**43.4**
2-Methylphenanthrene	**50.6**
2-Methylanthracene	**6.05**
9/4-Methylphenanthrene	**76.0**
1-Methylphenanthrene	**44.2**
2-Methylnaphthalene	**171**
1-Methylnaphthalene	**116**
2,6-Dimethylnaphthalene	**167**
2,3,5-Trimethylnaphthalene	**63.9**
Naphthobenzothiophene-2,1-D	**25.4**
Naphthobenzothiophene-1,2-D	**6.81**
Naphthobenzothiophene-2,3-D	**4.65**

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	94	40-120
Phenanthrene-d10	105	40-120
Benzo[a]pyrene-d12	99	40-120

N/A - Not Applicable

Form I
Cold Lake Crude
Steranes and Triterpanes

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Cold Lake Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS122712CL04**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	N/A	12/26/12	100	0.05064	10	1	PS

Parameter	Result
C23 Tricyclic Terpane	**99.1**
C24 Tricyclic Terpane	**55.1**
C25 Tricyclic Terpane	**49.6**
C24 Tetracyclic Terpane	**17.5**
C26 Tricyclic Terpane-22S	**18.6**
C26 Tricyclic Terpane-22R	**18.5**
C28 Tricyclic Terpane-22S	**20.5**
C28 Tricyclic Terpane-22R	**21.3**
C29 Tricyclic Terpane-22S	**26.0**
C29 Tricyclic Terpane-22R	**26.0**
18a-22,29,30-Trisnorneohopane-TS	**27.6**
C30 Tricyclic Terpane-22S	**20.7**
C30 Tricyclic Terpane-22R	**22.4**
17a(H)-22,29,30-Trisnorhopane-TM	**65.1**
17a/b,21b/a 28,30-Bisnorhopane	**41.3**
17a(H),21b(H)-25-Norhopane	**12.9**
30-Norhopane	**170**
18a(H)-30-Norneohopane-C29Ts	**23.8**
17a(H)-Diahopane	**7.90**
30-Normoretane	**17.8**
18a(H)&18b(H)-Oleananes	**2.93**
Hopane	**235**
Moretane	**17.8**
30-Homohopane-22S	**105**
30-Homohopane-22R	**85.5**
T22a-Gammacerane/C32-diahopane	**38.7**
30,31-Bishomohopane-22S	**67.2**
30,31-Bishomohopane-22R	**49.9**

Parameter	Result
30,31-Trishomohopane-22S	**51.8**
30,31-Trishomohopane-22R	**33.7**
Tetrakishomohopane-22S	**35.2**
Tetrakishomohopane-22R	**25.6**
Pentakishomohopane-22S	**44.7**
Pentakishomohopane-22R	**27.6**
13b(H),17a(H)-20S-Diacholestane	**32.1**
13b(H),17a(H)-20R-Diacholestane	**17.5**
13b,17a-20S-Methyldiacholestane	**17.5**
14a(H),17a(H)-20S-Cholestane/ 13b(H),17a(H)-20S-Ethyldiacholestane (S12)	**58.2**
14a(H),17a(H)-20R-Cholestane/ 13b(H),17a(H)-20R-Ethyldiacholestane (S17)	**71.5**
Unknown Sterane (S18)	**13.8**
13a,17b-20S-Ethyldiacholestane	**6.65**
14a,17a-20S-Methylcholestane	**25.4**
14a,17a-20R-Methylcholestane	**24.7**
14a(H),17a(H)-20S-Ethylcholestane	**53.9**
14a(H),17a(H)-20R-Ethylcholestane	**48.1**
14b(H),17b(H)-20R-Cholestane	**48.0**
14b(H),17b(H)-20S-Cholestane	**47.2**
14b,17b-20R-Methylcholestane	**37.8**
14b,17b-20S-Methylcholestane	**56.0**
14b(H),17b(H)-20R-Ethylcholestane	**68.7**
14b(H),17b(H)-20S-Ethylcholestane	**48.7**
C26,20R- +C27,20S- triaromatic steroid	**235**
C28,20S-triaromatic steroid	**189**
C27,20R-triaromatic steroid	**151**
C28,20R-triaromatic steroid	**161**

Surrogate	% Recovery	Acceptance Range (%)
5B(H)Cholane	109	50-130

N/A - Not Applicable

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\
Data File : A90009633.D
Acq On : 26 Dec 2012 3:46 pm
Operator : ps
Sample : SS122712CL04
Misc : WHAQ74@5.064
ALS Vial : 3 Sample Multiplier: 1

12/27/12

Quant Time: Dec 27 16:18:55 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Dec 27 11:30:11 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.065	164	103514	500.000	ng/mL	0.00
74) Chrysene-d12	42.466	240	189000	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.147	136	372264	935.656	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 93.57%			
42) Phenanthrene-d10	31.904	188	392274	1050.644	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 105.06%			
83) Benzo[b]fluoranthene-d12	46.359	264	361174	1039.594	ng/mL	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 103.96%			
88) Benzo[a]pyrene-d12	47.475	264	345735	992.737	ng/mL	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 99.27%			
129) 5B(H)Cholane - Surr	43.096	217	86488	1090.060	ng/ml	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 109.01%			
Target Compounds						Qvalue
3) trans-Decalin	15.826	138	60554	665.396	ng/mL	100
4) cis-Decalin	17.021	138	3693M3	51.836	ng/mL	
5) C1-Decalins	17.295	152	145907M5	1603.296	ng/mL	
6) C2-Decalins	18.709	166	223531M5	2456.265	ng/mL	
7) C3-Decalins	21.520	180	177426M5	1949.642	ng/mL	
8) C4-Decalins	24.157	194	170514M5	1873.689	ng/mL	
10) Naphthalene	19.220	128	135261	331.287	ng/mL#	100
11) C1-Naphthalenes	21.894	142	386867M5	947.532	ng/mL	
12) C2-Naphthalenes	24.723	156	856177M5	2096.986	ng/mL	
13) C3-Naphthalenes	27.397	170	1089036M5	2667.315	ng/mL	
14) C4-Naphthalenes	30.125	184	932714M5	2284.444	ng/mL	
16) 2-Methylnaphthalene	21.894	142	231523	867.099	ng/mL#	100
17) 1-Methylnaphthalene	22.314	142	152928	590.173	ng/mL#	100
18) Benzothiophene	19.439	134	14920M4	43.667	ng/mL	
19) C1-Benzo(b)thiophenes	21.474	148	85723M5	250.888	ng/mL	
20) C2-Benzo(b)thiophenes	24.915	162	151308M5	442.837	ng/mL	
21) C3-Benzo(b)thiophenes	26.886	176	279570M5	818.224	ng/mL	
22) C4-Benzo(b)thiophenes	28.984	190	308314M5	902.350	ng/mL	
23) Biphenyl	23.774	154	27607	79.009	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.385	156	212624	847.126	ng/mL#	100
25) Dibenzofuran	26.840	168	16080	43.147	ng/mL#	44
26) Acenaphthylene	25.471	152	6484M4	15.438	ng/mL	
27) Acenaphthene	26.192	153	19365M4	73.331	ng/mL	
28) 2,3,5-Trimethylnaphthalen	27.744	170	74713M3	323.769	ng/mL	
29) Fluorene	28.200	166	41289M3	142.375	ng/mL	
30) C1-Fluorenes	30.563	180	124153M5	428.113	ng/mL	
31) C2-Fluorenes	32.752	194	281855M5	971.911	ng/mL	
32) C3-Fluorenes	34.578	208	338385M5	1166.842	ng/mL	
33) Dibenzothiophene	31.502	184	134213	329.006	ng/mL#	65
34) 4-Methyldibenzothiophene(	33.273	198	180840	443.306	ng/mL#	100
35) 2/3-Methyldibenzothiophen	33.620	198	140330	344.001	ng/mL#	100
36) 1-Methyldibenzothiophene(	34.039	198	96367	236.231	ng/mL#	100
37) OTP	33.702	198	53408	130.923	ng/mL#	100
38) C1-Dibenzothiophenes	33.273	198	501464M5	1229.273	ng/mL	
38) C1-Dibenzothiophenes BS	33.273	198	448056m	1098.351	ng/mL	
39) C2-Dibenzothiophenes	34.952	212	851631M5	2087.662	ng/mL	
40) C3-Dibenzothiophenes	36.760	226	921915M5	2259.954	ng/mL	

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Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Dec 27 11:30:11 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
41) C4-Dibenzothiophenes	38.449	240	640321M5	1569.663	ng/mL	
43) Phenanthrene	31.995	178	169045M3	401.108	ng/mL	
44) 3-Methylphenanthrene(3MP)	33.957	192	92654	219.848	ng/mL	90
45) 2-Methylphenanthrene(2MP)	34.067	192	107990	256.237	ng/mL	97
46) 2-Methylanthracene(2MA)	34.231	192	12916M4	30.647	ng/mL	
47) 9/4-Methylphenanthrene(9M	34.405	192	162313	385.134	ng/mL	99
48) 1-Methylphenanthrene(1MP)	34.496	192	94448	224.105	ng/mL	98
49) C1-Phenanthrenes/Anthrace	34.405	192	480297M5	1139.643	ng/mL	
50) C2-Phenanthrenes/Anthrace	36.221	206	741413M5	1759.216	ng/mL	
50) C2-Phenanthrenes/Anthr BS	36.221	206	741413m	1759.216	ng/mL	
52) C3-Phenanthrenes/Anthrace	39.307	220	702026M5	1665.759	ng/mL	
53) C4-Phenanthrenes/Anthrace	40.229	234	332756M5	789.559	ng/mL	
54) Retene	38.969	234	31101M4	268.439	ng/mL	
56) Carbazole	32.853	167	12364M3	33.396	ng/mL	
57) 1-Methylphenanthrene	34.496	192	94267	303.167	ng/mL	100
58) Fluoranthene	36.751	202	12918M4	27.439	ng/mL	
60) Pyrene	37.627	202	42441M4	88.361	ng/mL	
61) C1-Fluoranthenes/Pyrenes	39.024	216	152766M5	318.056	ng/mL	
62) C2-Fluoranthenes/Pyrenes	40.832	230	223207M5	464.712	ng/mL	
63) C3-Fluoranthenes/Pyrenes	42.841	244	271884M5	566.057	ng/mL	
64) C4-Fluoranthenes/Pyrenes	44.192	258	247858M5	516.035	ng/mL	
66) Naphthobenzothiophene	41.471	234	53645M4	128.716	ng/ml	
67) Naphthobenzothiophene-2,1	41.471	234	53645M4	128.716	ng/mL	
68) Naphthobenzothiophene-1,2	41.809	234	14374	34.489	ng/mL#	68
69) Naphthobenzothiophene-2,3	42.110	234	9811M3	23.541	ng/mL	
70) C1-Naphthobenzothiophenes	43.553	248	263025M5	631.104	ng/ml	
71) C2-Naphthobenzothiophenes	44.914	262	382110M5	916.837	ng/ml	
72) C3-Naphthobenzothiophenes	46.469	276	320081M5	768.004	ng/ml	
73) C4-Naphthobenzothiophenes	47.493	290	249924M5	599.669	ng/mL	
75) Benz[a]anthracene	42.402	228	8338M3	19.233	ng/mL	
77) Chrysene/Triphenylene	42.558	228	45092M4	105.756	ng/mL	
78) C1-Chrysenes	44.037	242	125040M5	293.262	ng/mL	
79) C2-Chrysenes	46.112	256	191326M5	448.725	ng/mL	
79) C2-Chrysenes BS	46.112	256	177646m	416.641	ng/mL	
80) BBF-d12 Surr BKGD	46.359	256	13680	32.084	ng/mL	100
81) C3-Chrysenes	48.664	270	231834M5	543.731	ng/mL	
82) C4-Chrysenes	48.765	284	143540M5	336.651	ng/mL	
84) Benzo[b]fluoranthene	46.442	252	11017	24.510	ng/mL	94
85) Benzo[j]+[k]fluoranthene	46.506	252	3802M3	8.609	ng/mL	
87) Benzo[e]pyrene	47.384	252	17319	40.576	ng/mL	99
89) Benzo[a]pyrene	47.557	252	9502M3	23.506	ng/mL	
90) Perylene	47.850	252	21408	49.622	ng/mL	88
91) Indeno[1,2,3-cd]pyrene	52.011	276	5609M4	12.529	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.048	278	2140M3	4.852	ng/mL	
93) Benzo[g,h,i]perylene	53.199	276	13493	30.670	ng/mL#	84
94) Hopane (T19)	51.188	191	197647M4	1189.474	ng/mL	
96) C23 Tricyclic Terpane (T4	40.129	191	83369	501.729	ng/ml	100
97) C24 Tricyclic Terpane (T5	40.850	191	46401	279.249	ng/ml	100
98) C25 Tricyclic Terpane (T6	42.338	191	41728M1	251.126	ng/ml	
99) C24 Tetracyclic Terpane (	43.635	191	14743	88.726	ng/ml	100
100) C26 Tricyclic Terpane-22S	43.398	191	15683	94.383	ng/ml	100
101) C26 Tricyclic Terpane-22R	43.498	191	15553	93.601	ng/ml	100
102) C28 Tricyclic Terpane-22S	45.783	191	17221M4	103.639	ng/ml	
103) C28 Tricyclic Terpane-22R	45.938	191	17959M4	108.080	ng/ml	

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\
Data File : A90009633.D
Acq On : 26 Dec 2012 3:46 pm
Operator : ps
Sample : SS122712CL04
Misc : WHAQ74@5.064
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Dec 27 16:18:55 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Dec 27 11:30:11 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

	Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
104)	C29 Tricyclic Terpane-22S	46.460	191	21892	131.750	ng/ml	100
105)	C29 Tricyclic Terpane-22R	46.652	191	21852	131.509	ng/ml	100
106)	18a-22,29,30-Trisnorneoho	47.676	191	23239	139.856	ng/ml	100
107)	C30 Tricyclic Terpane-22S	47.804	191	17438M4	104.945	ng/mL	
108)	C30 Tricyclic Terpane-22R	48.033	191	18857	113.485	ng/mL	100
109)	17a(H)-22,29,30-Trisnorho	48.198	191	54809M4	329.850	ng/ml	
110)	17a/b,21b/a 28,30-Bisnorh	49.304	191	34743M4	209.089	ng/ml	
111)	17a(H),21b(H)-25-Norhopan	49.149	191	10822	65.129	ng/ml	100
112)	30-Norhopane (T15)	49.926	191	143478M4	863.476	ng/ml	
113)	18a(H)-30-Norneohopane-C2	50.027	191	20041M4	120.610	ng/ml	
114)	17a(H)-Diahopane (X)	50.146	191	6643M4	39.979	ng/ml	
115)	30-Normoretane (T17)	50.649	191	14961	90.038	ng/ml	100
116)	18a(H)&18b(H)-Oleananes (	51.033	191	2462	14.817	ng/ml	100
117)	Moretane (T20)	51.819	191	15016M4	90.369	ng/ml	
118)	30-Homohopane-22S (T21)	52.825	191	88047	529.882	ng/ml	100
119)	30-Homohopane-22R (T22)	53.035	191	71973	433.146	ng/ml	100
120)	Gammacerane/C32-diahopane	53.519	191	32598	196.180	ng/mL	100
121)	30,31-Bishomohopane-22S (	54.241	191	56500	340.027	ng/ml	100
122)	30,31-Bishomohopane-22R (	54.588	191	42019	252.878	ng/ml	100
123)	30,31-Trishomohopane-22S	56.178	191	43616	262.489	ng/ml	100
124)	30,31-Trishomohopane-22R	56.745	191	28351M4	170.621	ng/ml	
125)	Tetrakishomohopane-22S (T	58.554	191	29643	178.397	ng/ml	100
126)	Tetrakishomohopane-22R (T	59.367	191	21507	129.433	ng/ml	100
127)	Pentakishomohopane-22S (T	61.377	191	37624M4	226.428	ng/ml	
128)	Pentakishomohopane-22R (T	62.547	191	23198M4	139.610	ng/ml	
130)	13b(H),17a(H)-20S-Diachol	44.612	217	12909M4	162.700	ng/ml	
131)	13b(H),17a(H)-20R-Diachol	45.033	217	7039	88.717	ng/ml	100
132)	13b,17a-20S-Methyldiachol	45.728	217	7015M4	88.414	ng/ml	
133)	14a,17a-20S-Chol/13b,17a-	46.579	217	23371	294.559	ng/ml	100
134)	14a,17a-20R-Chol/13b,17a-	47.082	217	28723	362.013	ng/ml	100
135)	Unknown Sterane (S18)	47.347	217	5528	69.673	ng/ml	100
136)	13a,17b-20S-Ethyldiachole	47.585	217	2673	33.689	ng/ml	100
137)	14a,17a-20S-Methylcholest	47.740	217	10192	128.456	ng/ml	100
138)	14a,17a-20R-Methylcholest	48.399	217	9913	124.939	ng/ml	100
139)	14a(H),17a(H)-20S-Ethylch	48.737	217	21639M4	272.729	ng/ml	
140)	14a(H),17a(H)-20R-Ethylch	49.579	217	19322M4	243.527	ng/ml	
141)	14b(H),17b(H)-20R-Cholest	46.670	218	19301M4	243.262	ng/ml	
142)	14b(H),17b(H)-20S-Cholest	46.753	218	18948M4	238.813	ng/ml	
143)	14b,17b-20R-Methylcholest	47.896	218	15205	191.638	ng/ml	100
144)	14b,17b-20S-Methylcholest	47.969	218	22503M4	283.619	ng/ml	
145)	14b(H),17b(H)-20R-Ethylch	48.966	218	27591	347.746	ng/ml	100
146)	14b(H),17b(H)-20S-Ethylch	49.003	218	19561M3	246.539	ng/ml	
147)	C26,20R- +C27,20S- triaro	48.692	231	94291	1188.405	ng/mL	100
148)	C28,20S-triaromatic stero	49.487	231	75759M4	954.836	ng/mL	
149)	C27,20R-triaromatic stero	49.908	231	60758	765.769	ng/mL	100
150)	C28,20R-triaromatic stero	51.015	231	64582	813.965	ng/mL	100

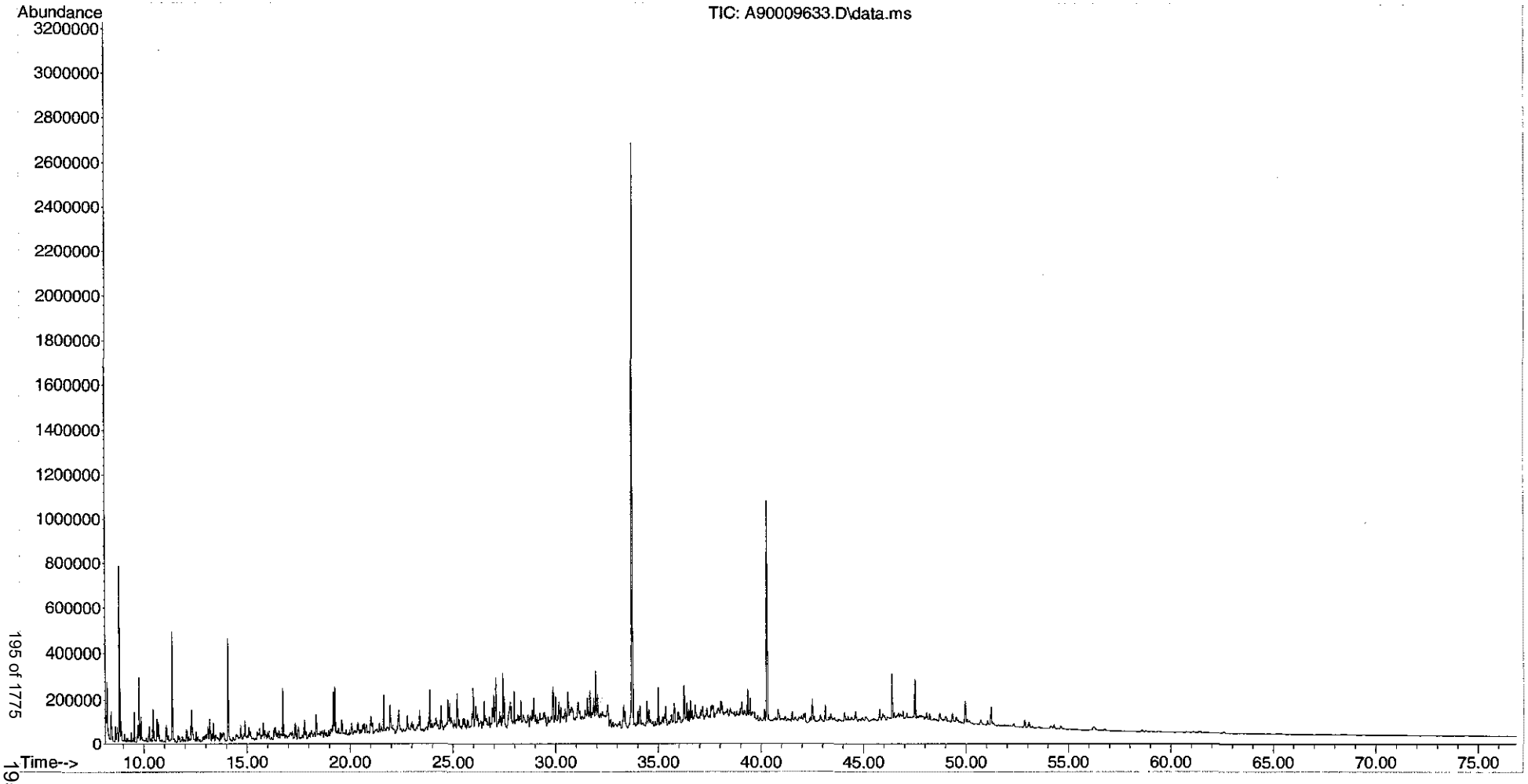
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\
Data File : A90009633.D
Acq On : 26 Dec 2012 3:46 pm
Operator : ps
Sample : SS122712CL04
Misc : WHAQ74@5.064
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Dec 27 16:18:55 2012
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Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES



Form I
Western Canadian Select
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Western Canadian Select**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS122712WCS03**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	N/A	12/23/12	100	0.05036	10	1	PS

Parameter	Result	Parameter	Result
cis/trans-Decalin	**167**	C3-Dibenzothiophenes	**407**
C1-Decalins	**348**	C4-Dibenzothiophenes	**284**
C2-Decalins	**515**	Benzo(b)fluorene	1.99 U
C3-Decalins	**410**	Fluoranthene	**6.64**
C4-Decalins	**440**	Pyrene	**22.2**
Benzothiophene	**6.28**	C1-Fluoranthenes/Pyrenes	**73.3**
C1-Benzo(b)thiophenes	**38.8**	C2-Fluoranthenes/Pyrenes	**101**
C2-Benzo(b)thiophenes	**62.9**	C3-Fluoranthenes/Pyrenes	**117**
C3-Benzo(b)thiophenes	**134**	C4-Fluoranthenes/Pyrenes	**110**
C4-Benzo(b)thiophenes	**147**	Naphthobenzothiophenes	**32.6**
Naphthalene	**68.9**	C1-Naphthobenzothiophenes	**116**
C1-Naphthalenes	**201**	C2-Naphthobenzothiophenes	**172**
C2-Naphthalenes	**513**	C3-Naphthobenzothiophenes	**143**
C3-Naphthalenes	**622**	C4-Naphthobenzothiophenes	**113**
C4-Naphthalenes	**499**	Benz[a]anthracene	**4.10**
Biphenyl	**15.6**	Chrysene/Triphenylene	**20.2**
Dibenzofuran	**8.18**	C1-Chrysenes	**61.1**
Acenaphthylene	**3.81**	C2-Chrysenes	**91.6**
Acenaphthene	**16.0**	C3-Chrysenes	**106**
Fluorene	**32.5**	C4-Chrysenes	**60.7**
C1-Fluorenes	**92.1**	Benzo[b]fluoranthene	**5.82**
C2-Fluorenes	**209**	Benzo[j]fluoranthene/Benzo[k]fluoranthene	**2.07**
C3-Fluorenes	**246**	Benzo[a]fluoranthene	1.99 U
Anthracene	1.99 U	Benzo[e]pyrene	**9.64**
Phenanthrene	**84.1**	Benzo[a]pyrene	**5.12**
C1-Phenanthrenes/Anthracenes	**232**	Perylene	**10.3**
C2-Phenanthrenes/Anthracenes	**355**	Indeno[1,2,3-cd]pyrene	**2.75**
C3-Phenanthrenes/Anthracenes	**326**	Dibenz[ah]anthracene/Dibenz[ac]anthracene	**1.32** J
C4-Phenanthrenes/Anthracenes	**158**	Benzo[g,h,i]perylene	**7.49**
Retene	**63.7**		
Dibenzothiophene	**60.2**		
C1-Dibenzothiophenes	**196**		
C2-Dibenzothiophenes	**372**		

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	93	40-120
Phenanthrene-d10	106	40-120
Benzo[a]pyrene-d12	101	40-120

N/A - Not Applicable
J - Estimated value, below quantitation limit.
U - The analyte was analyzed for but not detected at the sample specific level reported.

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Form I
Western Canadian Select
Carbazole

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Western Canadian Select**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS122712WCS03**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	N/A	12/23/12	100	0.05036	10	1	PS

Parameter	Result
Carbazole	5.35

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	93	40-120
Phenanthrene-d10	106	40-120
Benzo[a]pyrene-d12	101	40-120

N/A - Not Applicable

Form I
Western Canadian Select
Polynuclear Aromatic Hydrocarbons Isomers

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Western Canadian Select**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS122712WCS03**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	N/A	12/23/12	100	0.05036	10	1	PS

Parameter	Result
4-Methyldibenzothiophene	**79.4**
2/3-Methyldibenzothiophene	**61.0**
1-Methyldibenzothiophene	**41.5**
3-Methylphenanthrene	**46.5**
2-Methylphenanthrene	**53.4**
2-Methylanthracene	**4.94**
9/4-Methylphenanthrene	**76.5**
1-Methylphenanthrene	**47.1**
2-Methylnaphthalene	**188**
1-Methylnaphthalene	**121**
2,6-Dimethylnaphthalene	**212**
2,3,5-Trimethylnaphthalene	**81.5**
Naphthobenzothiophene-2,1-D	**22.2**
Naphthobenzothiophene-1,2-D	**6.18**
Naphthobenzothiophene-2,3-D	**4.21**

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	93	40-120
Phenanthrene-d10	106	40-120
Benzo[a]pyrene-d12	101	40-120

N/A - Not Applicable

Form I
Western Canadian Select
Steranes and Triterpanes

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Western Canadian Select**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS122712WCS03**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	N/A	12/23/12	100	0.05036	10	1	PS

Parameter	Result
C23 Tricyclic Terpane	**99.3**
C24 Tricyclic Terpane	**52.5**
C25 Tricyclic Terpane	**48.8**
C24 Tetracyclic Terpane	**17.5**
C26 Tricyclic Terpane-22S	**19.2**
C26 Tricyclic Terpane-22R	**18.5**
C28 Tricyclic Terpane-22S	**19.6**
C28 Tricyclic Terpane-22R	**21.7**
C29 Tricyclic Terpane-22S	**27.4**
C29 Tricyclic Terpane-22R	**24.5**
18a-22,29,30-Trisnorneohopane-TS	**27.2**
C30 Tricyclic Terpane-22S	**19.5**
C30 Tricyclic Terpane-22R	**19.4**
17a(H)-22,29,30-Trisnorhopane-TM	**61.5**
17a/b,21b/a 28,30-Bisnorhopane	**38.6**
17a(H),21b(H)-25-Norhopane	**11.8**
30-Norhopane	**163**
18a(H)-30-Norneohopane-C29Ts	**24.3**
17a(H)-Diahopane	**8.92**
30-Normoretane	**16.2**
18a(H)&18b(H)-Oleananes	**2.33**
Hopane	**223**
Moretane	**16.9**
30-Homohopane-22S	**99.3**
30-Homohopane-22R	**82.1**
T22a-Gammacerane/C32-diahopane	**38.0**
30,31-Bishomohopane-22S	**64.8**
30,31-Bishomohopane-22R	**45.2**

Parameter	Result
30,31-Trishomohopane-22S	**49.7**
30,31-Trishomohopane-22R	**33.6**
Tetrakishomohopane-22S	**32.6**
Tetrakishomohopane-22R	**22.3**
Pentakishomohopane-22S	**41.7**
Pentakishomohopane-22R	**26.0**
13b(H),17a(H)-20S-Diacholestane	**34.1**
13b(H),17a(H)-20R-Diacholestane	**17.6**
13b,17a-20S-Methyldiacholestane	**17.5**
14a(H),17a(H)-20S-Cholestane/ 13b(H),17a(H)-20S-Ethyldiacholestane (S12)	**57.7**
14a(H),17a(H)-20R-Cholestane/ 13b(H),17a(H)-20R-Ethyldiacholestane (S17)	**69.5**
Unknown Sterane (S18)	**14.8**
13a,17b-20S-Ethyldiacholestane	**6.33**
14a,17a-20S-Methylcholestane	**28.1**
14a,17a-20R-Methylcholestane	**24.4**
14a(H),17a(H)-20S-Ethylcholestane	**46.6**
14a(H),17a(H)-20R-Ethylcholestane	**46.4**
14b(H),17b(H)-20R-Cholestane	**44.4**
14b(H),17b(H)-20S-Cholestane	**44.7**
14b,17b-20R-Methylcholestane	**35.1**
14b,17b-20S-Methylcholestane	**50.2**
14b(H),17b(H)-20R-Ethylcholestane	**64.8**
14b(H),17b(H)-20S-Ethylcholestane	**48.4**
C26,20R- +C27,20S- triaromatic steroid	**227**
C28,20S-triaromatic steroid	**186**
C27,20R-triaromatic steroid	**150**
C28,20R-triaromatic steroid	**160**

Surrogate	% Recovery	Acceptance Range (%)
5B(H)Cholane	109	50-130

N/A - Not Applicable

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009583.D
Acq On : 23 Dec 2012 12:30 am
Operator : ps
Sample : SS122712WCS03 KMK 12/28/12
Misc : WHAQ73:~~5.000~~mg/kg 5.036
ALS Vial : 12 Sample Multiplier: 1

DKG 12/27/12

Quant Time: Dec 27 16:00:26 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.156	164	64268	500.000	ng/mL	0.00
74) Chrysene-d12	42.558	240	119312	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.230	136	229294	928.244	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 92.82%			
42) Phenanthrene-d10	31.995	188	245785	1060.293	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 106.03%			
83) Benzo[b]fluoranthene-d12	46.460	264	230556	1051.239	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 105.12%			
88) Benzo[a]pyrene-d12	47.585	264	222466	1011.888	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 101.19%			
129) 5B(H)Cholane - Surr	43.197	217	54467	1087.441	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 108.74%			
Target Compounds						Qvalue
3) trans-Decalin	15.908	138	43853	776.142	ng/mL	100
4) cis-Decalin	17.113	138	2820M3	63.754	ng/mL	
5) C1-Decalins	17.377	152	98877M5	1749.996	ng/mL	
6) C2-Decalins	18.792	166	146541M5	2593.588	ng/mL	
7) C3-Decalins	21.602	180	116637M5	2064.325	ng/mL	
8) C4-Decalins	24.960	194	125305M5	2217.738	ng/mL	
10) Naphthalene	19.303	128	87916	346.820	ng/mL#	100
11) C1-Naphthalenes	21.986	142	256178M5	1010.597	ng/mL	
12) C2-Naphthalenes	24.805	156	654479M5	2581.856	ng/mL	
13) C3-Naphthalenes	27.479	170	793995M5	3132.233	ng/mL	
14) C4-Naphthalenes	29.897	184	636579M5	2511.242	ng/mL	
16) 2-Methylnaphthalene	21.986	142	156598	944.637	ng/mL#	100
17) 1-Methylnaphthalene	22.405	142	97697	607.264	ng/mL#	100
18) Benzothiophene	19.522	134	6709M4	31.626	ng/mL	
19) C1-Benzo(b)thiophenes	21.557	148	41481M5	195.540	ng/mL	
20) C2-Benzo(b)thiophenes	25.006	162	67242M5	316.976	ng/mL	
21) C3-Benzo(b)thiophenes	26.977	176	143402M5	675.992	ng/mL	
22) C4-Benzo(b)thiophenes	29.076	190	157474M5	742.326	ng/mL	
23) Biphenyl	23.865	154	17001	78.368	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.477	156	165974	1065.074	ng/mL#	100
25) Dibenzofuran	26.922	168	9528	41.178	ng/mL#	47
26) Acenaphthylene	25.554	152	4998M4	19.167	ng/mL	
27) Acenaphthene	26.284	153	13181M3	80.393	ng/mL	
28) 2,3,5-Trimethylnaphthalen	27.835	170	58800M3	410.413	ng/mL	
29) Fluorene	28.291	166	29441M3	163.515	ng/mL	
30) C1-Fluorenes	30.645	180	83526M5	463.903	ng/mL	
31) C2-Fluorenes	32.835	194	189468M5	1052.304	ng/mL	
32) C3-Fluorenes	34.669	208	222820M5	1237.540	ng/mL	
33) Dibenzothiophene	31.594	184	76810	303.271	ng/mL#	55
34) 4-Methyldibenzothiophene(	33.364	198	101239	399.725	ng/mL#	100
35) 2/3-Methyldibenzothiophen	33.711	198	77874	307.472	ng/mL#	100
36) 1-Methyldibenzothiophene(	34.131	198	52908	208.898	ng/mL#	100
37) OTP	33.793	198	31586	124.712	ng/mL#	100
38) C1-Dibenzothiophenes	33.364	198	282241M5	1114.379	ng/mL	
38) C1-Dibenzothiophenes BS	33.364	198	250655m	989.668	ng/mL	
39) C2-Dibenzothiophenes	35.053	212	474124M5	1871.996	ng/mL	
40) C3-Dibenzothiophenes	36.851	226	518714M5	2048.052	ng/mL	

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009583.D
Acq On : 23 Dec 2012 12:30 am
Operator : ps
Sample : SS122712WCS03 umg adadir
Misc : WHAQ73:~~5.086~~mg/kg 5.036
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Dec 27 16:00:26 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
41) C4-Dibenzothiophenes	40.357	240	362669M5	1431.935	ng/mL	
43) Phenanthrene	32.086	178	110890M3	423.795	ng/mL	
44) 3-Methylphenanthrene(3MP)	34.049	192	61271	234.163	ng/mL	92
45) 2-Methylphenanthrene(2MP)	34.158	192	70313	268.719	ng/mL	97
46) 2-Methylanthracene(2MA)	34.323	192	6511M3	24.883	ng/mL	
47) 9/4-Methylphenanthrene(9M	34.496	192	100828	385.340	ng/mL	99
48) 1-Methylphenanthrene(1MP)	34.587	192	62122	237.415	ng/mL	98
49) C1-Phenanthrenes/Anthrace	34.496	192	305906M5	1169.099	ng/mL	
50) C2-Phenanthrenes/Anthrace	36.312	206	467849M5	1788.006	ng/mL	
50) C2-Phenanthrenes/Anthr BS	36.312	206	467849m	1788.006	ng/mL	
52) C3-Phenanthrenes/Anthrace	39.408	220	430267M5	1644.376	ng/mL	
53) C4-Phenanthrenes/Anthrace	39.061	234	207787M5	794.112	ng/mL	
54) Retene	39.061	234	23061M4	320.593	ng/mL	
56) Carbazole	32.944	167	6196M3	26.956	ng/mL	
57) 1-Methylphenanthrene	34.587	192	61936	320.826	ng/mL	99
58) Fluoranthene	36.842	202	9779M3	33.455	ng/mL	
60) Pyrene	37.728	202	33259M4	111.530	ng/mL	
61) C1-Fluoranthenes/Pyrenes	39.125	216	110035M5	368.987	ng/mL	
62) C2-Fluoranthenes/Pyrenes	40.923	230	151621M5	508.440	ng/mL	
63) C3-Fluoranthenes/Pyrenes	42.932	244	176272M5	591.104	ng/mL	
64) C4-Fluoranthenes/Pyrenes	44.293	258	164866M5	552.856	ng/mL	
66) Naphthobenzothiophene	41.572	234	29188M4	112.801	ng/ml	
67) Naphthobenzothiophene-2,1	41.572	234	28959M4	111.916	ng/mL	
68) Naphthobenzothiophene-1,2	41.909	234	8048M4	31.103	ng/mL	
69) Naphthobenzothiophene-2,3	42.211	234	5489M3	21.213	ng/mL	
70) C1-Naphthobenzothiophenes	43.653	248	151061M5	583.795	ng/ml	
71) C2-Naphthobenzothiophenes	45.015	262	224301M5	866.841	ng/ml	
72) C3-Naphthobenzothiophenes	46.579	276	186832M5	722.037	ng/ml	
73) C4-Naphthobenzothiophenes	47.603	290	147817M5	571.258	ng/mL	
75) Benz[a]anthracene	42.503	228	5643M3	20.620	ng/mL	
77) Chrysene/Triphenylene	42.640	228	27416M4	101.856	ng/mL	
78) C1-Chrysenes	44.137	242	82834M5	307.746	ng/mL	
79) C2-Chrysenes	46.213	256	133104M5	494.510	ng/mL	
79) C2-Chrysenes BS	46.213	256	124107m	461.085	ng/mL	
80) BBF-d12 Surr BKGD	46.460	256	8997	33.426	ng/mL	100
81) C3-Chrysenes	47.521	270	144396M5	536.463	ng/mL	
82) C4-Chrysenes	48.883	284	82248M5	305.569	ng/mL	
84) Benzo[b]fluoranthene	46.542	252	8313M4	29.296	ng/mL	
85) Benzo[j]+[k]fluoranthene	46.606	252	2903M3	10.412	ng/mL	
87) Benzo[e]pyrene	47.493	252	13084	48.559	ng/mL	96
89) Benzo[a]pyrene	47.667	252	6580M3	25.785	ng/mL	
90) Perylene	47.960	252	14187M3	52.091	ng/mL	
91) Indeno[1,2,3-cd]pyrene	52.167	276	3916M4	13.856	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.212	278	1851M3	6.649	ng/mL	
93) Benzo[g,h,i]perylene	53.364	276	10476	37.721	ng/mL#	86
94) Hopane (T19)	51.335	191	117954M4	1124.489	ng/mL	
96) C23 Tricyclic Terpane (T4	40.220	191	52473M4	500.240	ng/ml	
97) C24 Tricyclic Terpane (T5	40.951	191	27755M4	264.596	ng/ml	
98) C25 Tricyclic Terpane (T6	42.475	191	25774M1	245.711	ng/ml	
99) C24 Tetracyclic Terpane (	43.736	191	9260	88.278	ng/ml	100
100) C26 Tricyclic Terpane-22S	43.498	191	10142M4	96.687	ng/ml	
101) C26 Tricyclic Terpane-22R	43.589	191	9756	93.007	ng/ml	100
102) C28 Tricyclic Terpane-22S	45.874	191	10372M4	98.879	ng/ml	
103) C28 Tricyclic Terpane-22R	46.039	191	11486	109.499	ng/ml	100

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009583.D
Acq On : 23 Dec 2012 12:30 am
Operator : ps
Sample : SS122712WCS03 KML 12/28/12
Misc : WHAQ73:~~5.086~~ 5.036 mg/kg
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Dec 27 16:00:26 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

	Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
104)	C29 Tricyclic Terpane-22S	46.551	191	14478	138.023	ng/ml	100
105)	C29 Tricyclic Terpane-22R	46.752	191	12934	123.303	ng/ml	100
106)	18a-22,29,30-Trisnorneoho	47.795	191	14391	137.193	ng/ml	100
107)	C30 Tricyclic Terpane-22S	47.905	191	10309M4	98.279	ng/mL	
108)	C30 Tricyclic Terpane-22R	48.134	191	10222	97.449	ng/mL	100
109)	17a(H)-22,29,30-Trisnorho	48.307	191	32471M4	309.555	ng/ml	
110)	17a/b,21b/a 28,30-Bisnorh	49.432	191	20371M4	194.203	ng/ml	
111)	17a(H),21b(H)-25-Norhopan	49.268	191	6259	59.669	ng/ml	100
112)	30-Norhopane (T15)	50.063	191	85939M4	819.281	ng/ml	
113)	18a(H)-30-Norneohopane-C2	50.155	191	12823M4	122.245	ng/ml	
114)	17a(H)-Diahopane (X)	50.283	191	4712M4	44.921	ng/ml	
115)	30-Normoretane (T17)	50.786	191	8582	81.815	ng/ml	100
116)	18a(H)&18b(H)-Oleananes (	51.161	191	1231	11.735	ng/ml	100
117)	Moretane (T20)	51.966	191	8947M4	85.294	ng/ml	
118)	30-Homohopane-22S (T21)	52.989	191	52471	500.221	ng/ml	100
119)	30-Homohopane-22R (T22)	53.199	191	43378	413.535	ng/ml	100
120)	Gammacerane/C32-diahopane	53.702	191	20097	191.590	ng/mL	100
121)	30,31-Bishomohopane-22S (	54.424	191	34204	326.076	ng/ml	100
122)	30,31-Bishomohopane-22R (	54.780	191	23881	227.664	ng/ml	100
123)	30,31-Trishomohopane-22S	56.379	191	26241	250.163	ng/ml	100
124)	30,31-Trishomohopane-22R	56.946	191	17759	169.302	ng/ml	100
125)	Tetrakishomohopane-22S (T	58.801	191	17207	164.039	ng/ml	100
126)	Tetrakishomohopane-22R (T	59.614	191	11764	112.150	ng/ml	100
127)	Pentakishomohopane-22S (T	61.652	191	22006	209.789	ng/ml	100
128)	Pentakishomohopane-22R (T	62.840	191	13737M4	130.959	ng/ml	
130)	13b(H),17a(H)-20S-Diachol	44.704	217	8597M4	171.640	ng/ml	
131)	13b(H),17a(H)-20R-Diachol	45.133	217	4450	88.845	ng/ml	100
132)	13b,17a-20S-Methyldiachol	45.829	217	4414M4	88.126	ng/ml	
133)	14a,17a-20S-Chol/13b,17a-	46.679	217	14563	290.752	ng/ml	100
134)	14a,17a-20R-Chol/13b,17a-	47.182	217	17528	349.949	ng/ml	100
135)	Unknown Sterane (S18)	47.448	217	3737	74.610	ng/ml	100
136)	13a,17b-20S-Ethyldiachole	47.695	217	1596	31.864	ng/ml	100
137)	14a,17a-20S-Methylcholest	47.841	217	7091M4	141.573	ng/ml	
138)	14a,17a-20R-Methylcholest	48.518	217	6146	122.706	ng/ml	100
139)	14a(H),17a(H)-20S-Ethylch	48.847	217	11767M4	234.930	ng/ml	
140)	14a(H),17a(H)-20R-Ethylch	49.707	217	11705M4	233.692	ng/ml	
141)	14b(H),17b(H)-20R-Cholest	46.771	218	11205M4	223.709	ng/ml	
142)	14b(H),17b(H)-20S-Cholest	46.853	218	11267M4	224.947	ng/ml	
143)	14b,17b-20R-Methylcholest	48.005	218	8860	176.891	ng/ml	100
144)	14b,17b-20S-Methylcholest	48.079	218	12673M4	253.018	ng/ml	
145)	14b(H),17b(H)-20R-Ethylch	49.085	218	16337	326.170	ng/ml	100
146)	14b(H),17b(H)-20S-Ethylch	49.121	218	12220M3	243.974	ng/ml	
147)	C26,20R- +C27,20S- triaro	48.810	231	57262	1143.243	ng/mL	100
148)	C28,20S-triaromatic stero	49.615	231	47026M4	938.880	ng/mL	
149)	C27,20R-triaromatic stero	50.036	231	37960M4	757.876	ng/mL	
150)	C28,20R-triaromatic stero	51.152	231	40463	807.849	ng/mL	100

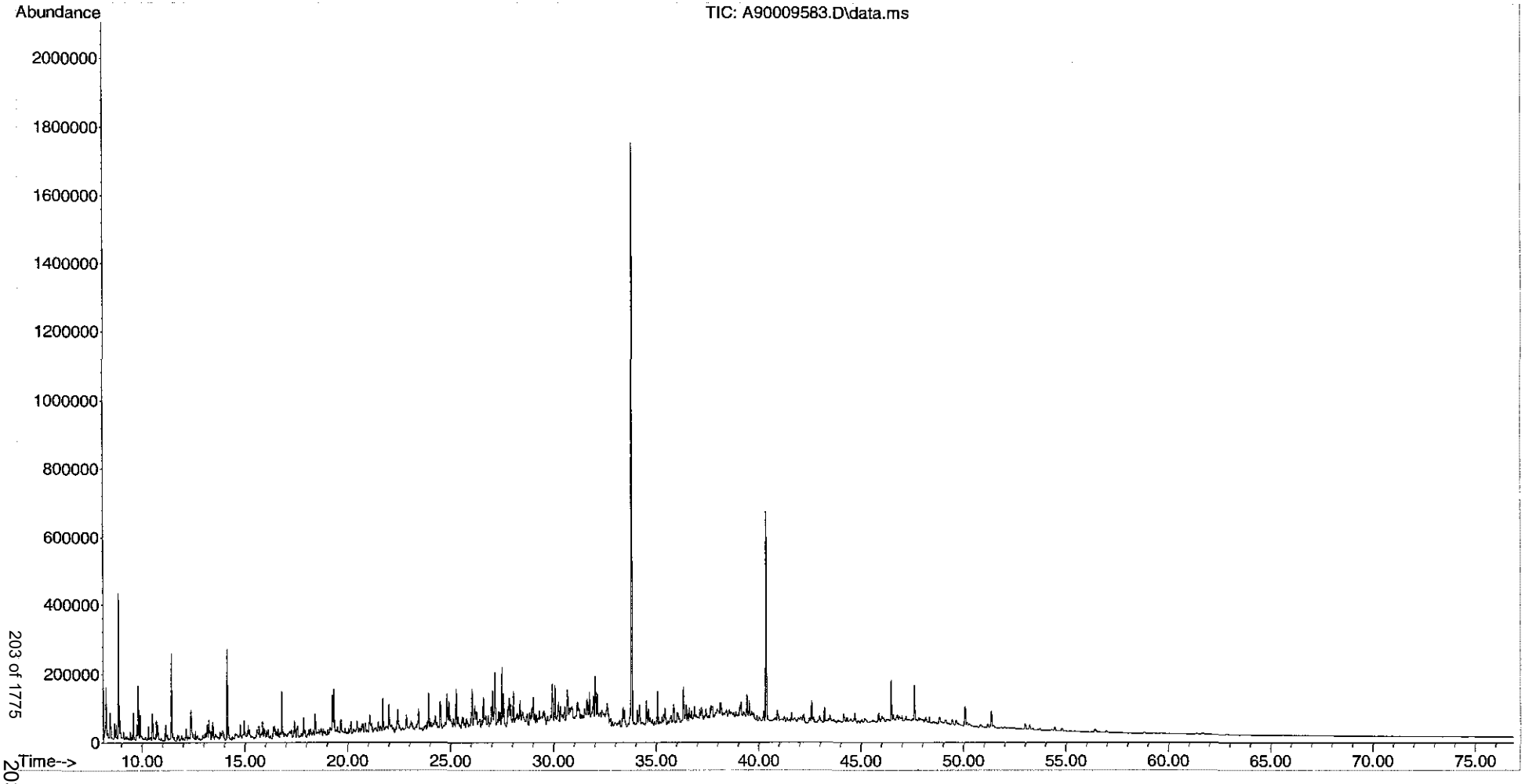
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009583.D
Acq On : 23 Dec 2012 12:30 am
Operator : ps
Sample : SS122712WCS03 KMC 12/28/12
Misc : WHAQ73:~~5.086~~mg/kg 5.036
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Dec 27 16:00:26 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES



Form I
Western Canadian Select
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Western Canadian Select**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS122712WCS04**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	N/A	12/26/12	100	0.05036	10	1	PS

Parameter	Result		Parameter	Result	
cis/trans-Decalin	**177**		C3-Dibenzothiophenes	**402**	
C1-Decalins	**372**		C4-Dibenzothiophenes	**277**	
C2-Decalins	**537**		Benzo(b)fluorene	1.99	U
C3-Decalins	**420**		Fluoranthene	**6.96**	
C4-Decalins	**449**		Pyrene	**21.9**	
Benzothiophene	**6.57**		C1-Fluoranthenes/Pyrenes	**73.6**	
C1-Benzo(b)thiophenes	**39.5**		C2-Fluoranthenes/Pyrenes	**100**	
C2-Benzo(b)thiophenes	**62.5**		C3-Fluoranthenes/Pyrenes	**120**	
C3-Benzo(b)thiophenes	**135**		C4-Fluoranthenes/Pyrenes	**115**	
C4-Benzo(b)thiophenes	**143**		Naphthobenzothiophenes	**34.5**	
Naphthalene	**73.3**		C1-Naphthobenzothiophenes	**116**	
C1-Naphthalenes	**208**		C2-Naphthobenzothiophenes	**173**	
C2-Naphthalenes	**520**		C3-Naphthobenzothiophenes	**148**	
C3-Naphthalenes	**631**		C4-Naphthobenzothiophenes	**118**	
C4-Naphthalenes	**503**		Benz[a]anthracene	**3.86**	
Biphenyl	**17.0**		Chrysene/Triphenylene	**20.2**	
Dibenzofuran	**8.41**		C1-Chrysenes	**61.6**	
Acenaphthylene	**4.37**		C2-Chrysenes	**87.8**	
Acenaphthene	**13.8**		C3-Chrysenes	**115**	
Fluorene	**32.0**		C4-Chrysenes	**73.3**	
C1-Fluorenes	**91.0**		Benzo[b]fluoranthene	**5.40**	
C2-Fluorenes	**212**		Benzo[j]fluoranthene/Benzo[k]fluoranthene	**2.05**	
C3-Fluorenes	**250**		Benzo[a]fluoranthene	1.99	U
Anthracene	1.99	U	Benzo[e]pyrene	**9.80**	
Phenanthrene	**83.7**		Benzo[a]pyrene	**5.44**	
C1-Phenanthrenes/Anthracenes	**232**		Perylene	**10.2**	
C2-Phenanthrenes/Anthracenes	**356**		Indeno[1,2,3-cd]pyrene	**2.72**	
C3-Phenanthrenes/Anthracenes	**320**		Dibenz[ah]anthracene/Dibenz[ac]anthracene	**1.24**	J
C4-Phenanthrenes/Anthracenes	**159**		Benzo[g,h,i]perylene	**7.39**	
Retene	**64.6**				
Dibenzothiophene	**60.2**				
C1-Dibenzothiophenes	**193**				
C2-Dibenzothiophenes	**364**				

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	98	40-120
Phenanthrene-d10	107	40-120
Benzo[a]pyrene-d12	102	40-120

N/A - Not Applicable
J - Estimated value, below quantitation limit.
U - The analyte was analyzed for but not detected at the sample specific level reported.

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Form I
Western Canadian Select
Carbazole

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Western Canadian Select**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS122712WCS04**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	N/A	12/26/12	100	0.05036	10	1	PS

Parameter	Result
Carbazole	6.14

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	98	40-120
Phenanthrene-d10	107	40-120
Benzo[a]pyrene-d12	102	40-120

N/A - Not Applicable

Form I
Western Canadian Select
Polynuclear Aromatic Hydrocarbons Isomers

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Western Canadian Select**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS122712WCS04**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	N/A	12/26/12	100	0.05036	10	1	PS

Parameter	Result
4-Methyldibenzothiophene	**79.5**
2/3-Methyldibenzothiophene	**62.0**
1-Methyldibenzothiophene	**41.9**
3-Methylphenanthrene	**47.5**
2-Methylphenanthrene	**53.8**
2-Methylanthracene	**4.86**
9/4-Methylphenanthrene	**76.7**
1-Methylphenanthrene	**46.3**
2-Methylnaphthalene	**195**
1-Methylnaphthalene	**124**
2,6-Dimethylnaphthalene	**216**
2,3,5-Trimethylnaphthalene	**78.4**
Naphthobenzothiophene-2,1-D	**23.3**
Naphthobenzothiophene-1,2-D	**6.63**
Naphthobenzothiophene-2,3-D	**4.55**

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	98	40-120
Phenanthrene-d10	107	40-120
Benzo[a]pyrene-d12	102	40-120

N/A - Not Applicable

Form I
Western Canadian Select
Steranes and Triterpanes

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Western Canadian Select**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS122712WCS04**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	N/A	12/26/12	100	0.05036	10	1	PS

Parameter	Result
C23 Tricyclic Terpane	**98.8**
C24 Tricyclic Terpane	**55.5**
C25 Tricyclic Terpane	**50.7**
C24 Tetracyclic Terpane	**18.7**
C26 Tricyclic Terpane-22S	**19.5**
C26 Tricyclic Terpane-22R	**19.8**
C28 Tricyclic Terpane-22S	**20.6**
C28 Tricyclic Terpane-22R	**22.2**
C29 Tricyclic Terpane-22S	**27.0**
C29 Tricyclic Terpane-22R	**25.8**
18a-22,29,30-Trisnorneohopane-TS	**30.4**
C30 Tricyclic Terpane-22S	**21.6**
C30 Tricyclic Terpane-22R	**20.8**
17a(H)-22,29,30-Trisnorhopane-TM	**63.1**
17a/b,21b/a 28,30-Bisnorhopane	**38.2**
17a(H),21b(H)-25-Norhopane	**9.85**
30-Norhopane	**165**
18a(H)-30-Norneohopane-C29Ts	**24.4**
17a(H)-Diahopane	**9.21**
30-Normoretane	**17.6**
18a(H)&18b(H)-Oleananes	**2.63**
Hopane	**223**
Moretane	**16.8**
30-Homohopane-22S	**101**
30-Homohopane-22R	**81.9**
T22a-Gammacerane/C32-diahopane	**35.0**
30,31-Bishomohopane-22S	**64.0**
30,31-Bishomohopane-22R	**49.7**

Parameter	Result
30,31-Trishomohopane-22S	**50.0**
30,31-Trishomohopane-22R	**33.6**
Tetrakishomohopane-22S	**34.3**
Tetrakishomohopane-22R	**24.0**
Pentakishomohopane-22S	**41.0**
Pentakishomohopane-22R	**27.4**
13b(H),17a(H)-20S-Diacholestane	**34.2**
13b(H),17a(H)-20R-Diacholestane	**17.5**
13b,17a-20S-Methyldiacholestane	**15.9**
14a(H),17a(H)-20S-Cholestane/ 13b(H),17a(H)-20S-Ethyldiacholestane (S12)	**60.3**
14a(H),17a(H)-20R-Cholestane/ 13b(H),17a(H)-20R-Ethyldiacholestane (S17)	**70.7**
Unknown Sterane (S18)	**13.8**
13a,17b-20S-Ethyldiacholestane	**7.31**
14a,17a-20S-Methylcholestane	**25.7**
14a,17a-20R-Methylcholestane	**24.0**
14a(H),17a(H)-20S-Ethylcholestane	**50.7**
14a(H),17a(H)-20R-Ethylcholestane	**46.4**
14b(H),17b(H)-20R-Cholestane	**43.8**
14b(H),17b(H)-20S-Cholestane	**45.4**
14b,17b-20R-Methylcholestane	**35.1**
14b,17b-20S-Methylcholestane	**53.0**
14b(H),17b(H)-20R-Ethylcholestane	**64.2**
14b(H),17b(H)-20S-Ethylcholestane	**49.7**
C26,20R- +C27,20S- triaromatic steroid	**228**
C28,20S-triaromatic steroid	**191**
C27,20R-triaromatic steroid	**150**
C28,20R-triaromatic steroid	**164**

Surrogate	% Recovery	Acceptance Range (%)
5B(H)Cholane	108	50-130

N/A - Not Applicable

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\
Data File : A90009634.D
Acq On : 26 Dec 2012 5:11 pm
Operator : ps
Sample : SS122712WCS04
Misc : WHAQ73@5.036
ALS Vial : 4 Sample Multiplier: 1

12/27/12

Quant Time: Dec 27 16:19:20 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Dec 27 11:30:11 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) Acenaphthene-d10	26.074	164	103667	500.000 ng/mL	0.00
74) Chrysene-d12	42.466	240	192892	500.000 ng/mL	0.00
System Monitoring Compounds					
9) Naphthalene-d8	19.147	136	390023	978.845 ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 97.88%		
42) Phenanthrene-d10	31.913	188	398525	1065.811 ng/mL	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 106.58%		
83) Benzo[b]fluoranthene-d12	46.359	264	373489	1053.350 ng/mL	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 105.34%		
88) Benzo[a]pyrene-d12	47.475	264	362176	1018.963 ng/mL	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 101.90%		
129) 5B(H)Cholane - Surr	43.096	217	87275	1077.784 ng/ml	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 107.78%		
Target Compounds					Qvalue
3) trans-Decalin	15.826	138	75192	825.026 ng/mL	100
4) cis-Decalin	17.021	138	4853M4	68.018 ng/mL	
5) C1-Decalins	17.295	152	170787M5	1873.919 ng/mL	
6) C2-Decalins	18.709	166	246383M5	2703.378 ng/mL	
7) C3-Decalins	21.520	180	192906M5	2116.615 ng/mL	
8) C4-Decalins	24.878	194	206172M5	2262.173 ng/mL	
10) Naphthalene	19.220	128	150911	369.072 ng/mL#	100
11) C1-Naphthalenes	21.894	142	428188M5	1047.189 ng/mL	
12) C2-Naphthalenes	24.723	156	1071174M5	2619.694 ng/mL	
13) C3-Naphthalenes	27.397	170	1299379M5	3177.799 ng/mL	
14) C4-Naphthalenes	29.805	184	1036299M5	2534.403 ng/mL	
16) 2-Methylnaphthalene	21.894	142	262234	980.668 ng/mL#	100
17) 1-Methylnaphthalene	22.314	142	162455	626.014 ng/mL#	100
18) Benzothiophene	19.439	134	11326M4	33.099 ng/mL	
19) C1-Benzo(b)thiophenes	21.474	148	68126M5	199.092 ng/mL	
20) C2-Benzo(b)thiophenes	24.915	162	107773M5	314.956 ng/mL	
21) C3-Benzo(b)thiophenes	26.886	176	232761M5	680.222 ng/mL	
22) C4-Benzo(b)thiophenes	28.984	190	245884M5	718.572 ng/mL	
23) Biphenyl	23.774	154	29895	85.431 ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.385	156	273706	1088.876 ng/mL#	100
25) Dibenzofuran	26.840	168	15817	42.378 ng/mL#	83
26) Acenaphthylene	25.471	152	9249	21.989 ng/mL#	100
27) Acenaphthene	26.192	153	18364M4	69.437 ng/mL	
28) 2,3,5-Trimethylnaphthalen	27.744	170	91216M3	394.702 ng/mL	
29) Fluorene	28.200	166	46791M3	161.110 ng/mL	
30) C1-Fluorenes	30.563	180	133139M5	458.421 ng/mL	
31) C2-Fluorenes	32.752	194	309658M5	1066.208 ng/mL	
32) C3-Fluorenes	34.578	208	364865M5	1256.295 ng/mL	
33) Dibenzothiophene	31.502	184	123757	302.926 ng/mL#	73
34) 4-Methyldibenzothiophene(	33.273	198	163655	400.587 ng/mL#	100
35) 2/3-Methyldibenzothiophen	33.620	198	127461	311.993 ng/mL#	100
36) 1-Methyldibenzothiophene(	34.039	198	86262	211.148 ng/mL#	100
37) OTP	33.711	198	53295	130.453 ng/mL#	100
38) C1-Dibenzothiophenes	33.273	198	449743M5	1100.859 ng/mL	
38) C1-Dibenzothiophenes BS	33.273	198	396448m	970.406 ng/mL	
39) C2-Dibenzothiophenes	34.961	212	749990M5	1835.789 ng/mL	
40) C3-Dibenzothiophenes	36.760	226	826746M5	2023.668 ng/mL	

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\
Data File : A90009634.D
Acq On : 26 Dec 2012 5:11 pm
Operator : ps
Sample : SS122712WCS04
Misc : WHAQ73@5.036
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Dec 27 16:19:20 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Dec 27 11:30:11 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

	Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
41)	C4-Dibenzothiophenes	38.449	240	570752M5	1397.059	ng/mL	
43)	Phenanthrene	31.995	178	177993M3	421.716	ng/mL	
44)	3-Methylphenanthrene(3MP)	33.957	192	101003	239.305	ng/mL	95
45)	2-Methylphenanthrene(2MP)	34.067	192	114300	270.809	ng/mL	97
46)	2-Methylanthracene(2MA)	34.231	192	10321M3	24.453	ng/mL	
47)	9/4-Methylphenanthrene(9M	34.414	192	163054	386.322	ng/mL	100
48)	1-Methylphenanthrene(1MP)	34.496	192	98391	233.116	ng/mL	100
49)	C1-Phenanthrenes/Anthrace	34.414	192	492841M5	1167.681	ng/mL	
50)	C2-Phenanthrenes/Anthrace	36.221	206	757541M5	1794.831	ng/mL	
50)	C2-Phenanthrenes/Anthr BS	36.221	206	757541m	1794.831	ng/mL	
52)	C3-Phenanthrenes/Anthrace	39.316	220	679068M5	1608.906	ng/mL	
53)	C4-Phenanthrenes/Anthrace	38.969	234	337745M5	800.214	ng/mL	
54)	Retene	38.969	234	37768M4	325.502	ng/mL	
56)	Carbazole	32.844	167	11465M3	30.922	ng/mL	
57)	1-Methylphenanthrene	34.496	192	98391	315.963	ng/mL	97
58)	Fluoranthene	36.751	202	16514M4	35.025	ng/mL	
60)	Pyrene	37.636	202	53092M4	110.373	ng/mL	
61)	C1-Fluoranthenes/Pyrenes	39.024	216	178415M5	370.908	ng/mL	
62)	C2-Fluoranthenes/Pyrenes	40.832	230	242442M5	504.014	ng/mL	
63)	C3-Fluoranthenes/Pyrenes	42.841	244	290731M5	604.402	ng/mL	
64)	C4-Fluoranthenes/Pyrenes	44.192	258	279034M5	580.085	ng/mL	
66)	Naphthobenzothiophene	41.471	234	48133M4	115.320	ng/ml	
67)	Naphthobenzothiophene-2,1	41.471	234	48965M4	117.314	ng/mL	
68)	Naphthobenzothiophene-1,2	41.809	234	13934	33.384	ng/mL#	1
69)	Naphthobenzothiophene-2,3	42.119	234	9569M4	22.926	ng/mL	
70)	C1-Naphthobenzothiophenes	42.868	248	243045M5	582.303	ng/ml	
71)	C2-Naphthobenzothiophenes	44.914	262	363029M5	869.768	ng/ml	
72)	C3-Naphthobenzothiophenes	46.469	276	312231M5	748.063	ng/ml	
73)	C4-Naphthobenzothiophenes	47.503	290	248662M5	595.761	ng/mL	
75)	Benz[a]anthracene	42.402	228	8606M3	19.451	ng/mL	
77)	Chrysene/Triphenylene	42.558	228	44367M4	101.956	ng/mL	
78)	C1-Chrysenes	44.037	242	134903M5	310.010	ng/mL	
79)	C2-Chrysenes	46.112	256	207019M5	475.734	ng/mL	
79)	C2-Chrysenes BS	46.112	256	192471m	442.303	ng/mL	
80)	BBF-d12 Surr BKGD	46.359	256	14548	33.432	ng/mL	100
81)	C3-Chrysenes	47.283	270	252919M5	581.214	ng/mL	
82)	C4-Chrysenes	48.774	284	160655M5	369.189	ng/mL	
84)	Benzo[b]fluoranthene	46.442	252	12470	27.182	ng/mL	92
85)	Benzo[j]+[k]fluoranthene	46.515	252	4647M3	10.309	ng/mL	
87)	Benzo[e]pyrene	47.384	252	21500	49.355	ng/mL#	84
89)	Benzo[a]pyrene	47.567	252	11299M3	27.388	ng/mL	
90)	Perylene	47.859	252	22545	51.203	ng/mL	97
91)	Indeno[1,2,3-cd]pyrene	52.020	276	6264M4	13.710	ng/mL	
92)	Dibenz[ah]+[ac]anthracene	52.039	278	2801M3	6.223	ng/mL	
93)	Benzo[g,h,i]perylene	53.199	276	16701	37.196	ng/mL#	80
94)	Hopane (T19)	51.188	191	190366M4	1122.540	ng/mL	
96)	C23 Tricyclic Terpane (T4	40.129	191	84408M4	497.733	ng/ml	
97)	C24 Tricyclic Terpane (T5	40.859	191	47434	279.706	ng/ml	100
98)	C25 Tricyclic Terpane (T6	42.384	191	43264M1	255.117	ng/ml	
99)	C24 Tetracyclic Terpane (	43.635	191	15935M4	93.965	ng/ml	
100)	C26 Tricyclic Terpane-22S	43.398	191	16676	98.334	ng/ml	100
101)	C26 Tricyclic Terpane-22R	43.498	191	16882	99.549	ng/ml	100
102)	C28 Tricyclic Terpane-22S	45.783	191	17581M4	103.671	ng/ml	
103)	C28 Tricyclic Terpane-22R	45.948	191	18975	111.891	ng/ml	100

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\
Data File : A90009634.D
Acq On : 26 Dec 2012 5:11 pm
Operator : ps
Sample : SS122712WCS04
Misc : WHAQ73@5.036
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Dec 27 16:19:20 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Dec 27 11:30:11 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

	Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
104)	C29 Tricyclic Terpane-22S	46.460	191	23024	135.767	ng/ml	100
105)	C29 Tricyclic Terpane-22R	46.652	191	21989	129.664	ng/ml	100
106)	18a-22,29,30-Trisnorneoho	47.685	191	25921	152.850	ng/ml	100
107)	C30 Tricyclic Terpane-22S	47.804	191	18411M4	108.565	ng/mL	
108)	C30 Tricyclic Terpane-22R	48.033	191	17750	104.667	ng/mL	100
109)	17a(H)-22,29,30-Trisnorho	48.198	191	53916M4	317.929	ng/ml	
110)	17a/b,21b/a 28,30-Bisnorh	49.313	191	32598M4	192.222	ng/ml	
111)	17a(H),21b(H)-25-Norhopan	49.149	191	8412M4	49.603	ng/ml	
112)	30-Norhopane (T15)	49.935	191	140700M4	829.672	ng/ml	
113)	18a(H)-30-Norneohopane-C2	50.027	191	20800M4	122.652	ng/ml	
114)	17a(H)-Diahopane (X)	50.146	191	7862M4	46.360	ng/ml	
115)	30-Normoretane (T17)	50.649	191	15051M4	88.752	ng/ml	
116)	18a(H)&18b(H)-Oleananes (	51.015	191	2245	13.238	ng/ml	100
117)	Moretane (T20)	51.819	191	14384M4	84.819	ng/ml	
118)	30-Homohopane-22S (T21)	52.825	191	86657	510.994	ng/ml	100
119)	30-Homohopane-22R (T22)	53.035	191	69915	412.271	ng/ml	100
120)	Gammacerane/C32-diahopane	53.528	191	29908M4	176.360	ng/mL	
121)	30,31-Bishomohopane-22S (	54.241	191	54664	322.340	ng/ml	100
122)	30,31-Bishomohopane-22R (	54.588	191	42466	250.411	ng/ml	100
123)	30,31-Trishomohopane-22S	56.178	191	42701	251.797	ng/ml	100
124)	30,31-Trishomohopane-22R	56.745	191	28658	168.989	ng/ml	100
125)	Tetrakishomohopane-22S (T	58.563	191	29290	172.716	ng/ml	100
126)	Tetrakishomohopane-22R (T	59.376	191	20529	121.054	ng/ml	100
127)	Pentakishomohopane-22S (T	61.377	191	34991	206.333	ng/ml	100
128)	Pentakishomohopane-22R (T	62.547	191	23408M4	138.031	ng/ml	
130)	13b(H),17a(H)-20S-Diachol	44.612	217	13963M4	172.433	ng/ml	
131)	13b(H),17a(H)-20R-Diachol	45.033	217	7148	88.273	ng/ml	100
132)	13b,17a-20S-Methyldiachol	45.728	217	6488M4	80.122	ng/ml	
133)	14a,17a-20S-Chol/13b,17a-	46.579	217	24575	303.484	ng/ml	100
134)	14a,17a-20R-Chol/13b,17a-	47.082	217	28843M4	356.191	ng/ml	
135)	Unknown Sterane (S18)	47.347	217	5629	69.514	ng/ml	100
136)	13a,17b-20S-Ethyldiachole	47.585	217	2982	36.826	ng/ml	100
137)	14a,17a-20S-Methylcholest	47.749	217	10495	129.606	ng/ml	100
138)	14a,17a-20R-Methylcholest	48.408	217	9789	120.887	ng/ml	100
139)	14a(H),17a(H)-20S-Ethylch	48.737	217	20660M4	255.136	ng/ml	
140)	14a(H),17a(H)-20R-Ethylch	49.579	217	18911M4	233.537	ng/ml	
141)	14b(H),17b(H)-20R-Cholest	46.670	218	17850M4	220.435	ng/ml	
142)	14b(H),17b(H)-20S-Cholest	46.753	218	18507M4	228.548	ng/ml	
143)	14b,17b-20R-Methylcholest	47.896	218	14316	176.792	ng/ml	100
144)	14b,17b-20S-Methylcholest	47.978	218	21619M4	266.979	ng/ml	
145)	14b(H),17b(H)-20R-Ethylch	48.966	218	26174	323.230	ng/ml	100
146)	14b(H),17b(H)-20S-Ethylch	49.003	218	20255M3	250.135	ng/ml	
147)	C26,20R- +C27,20S- triaro	48.692	231	93130	1150.089	ng/mL	100
148)	C28,20S-triaromatic stero	49.487	231	77877M4	961.726	ng/mL	
149)	C27,20R-triaromatic stero	49.908	231	61046M4	753.875	ng/mL	
150)	C28,20R-triaromatic stero	51.015	231	67074	828.316	ng/mL	100

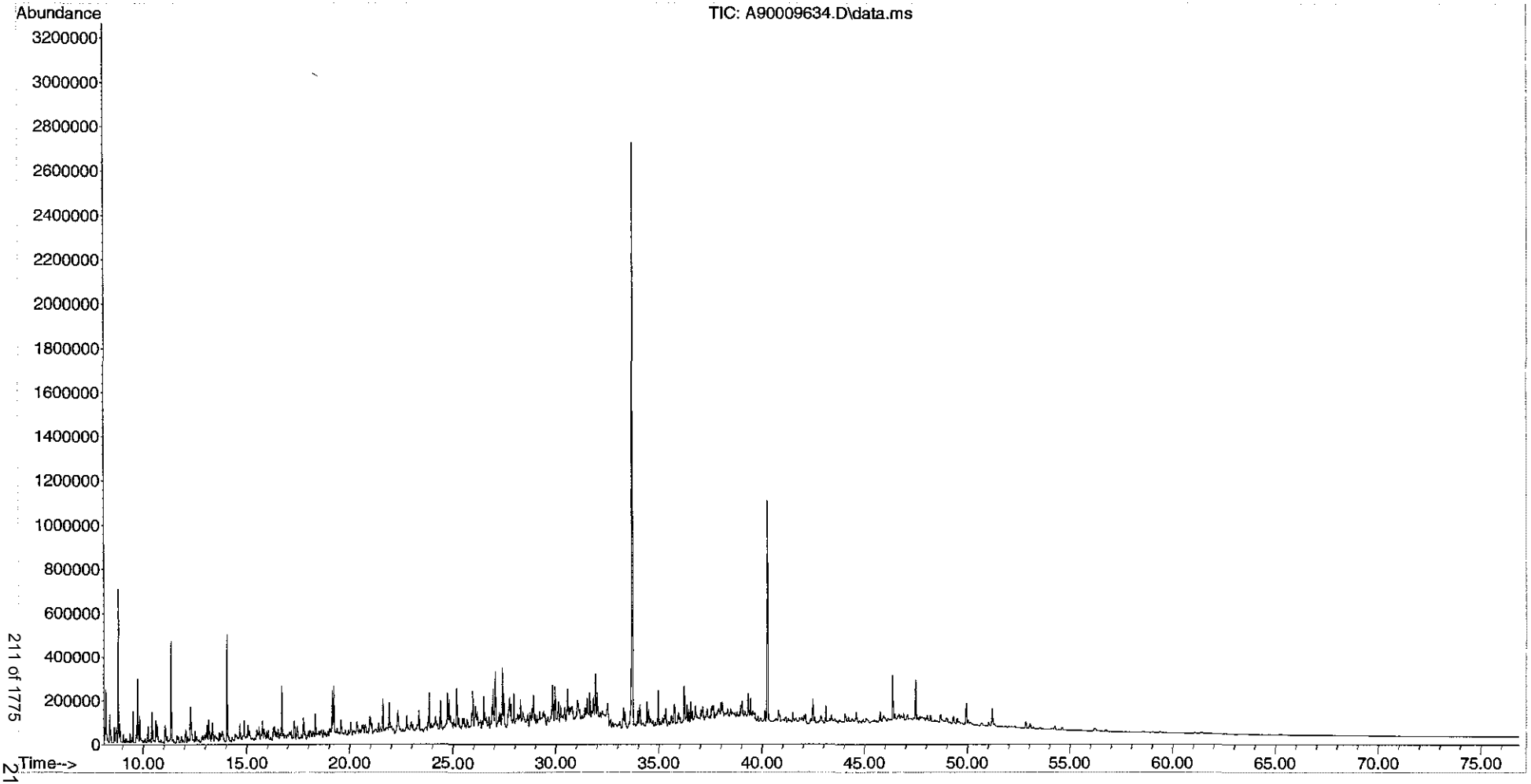
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\
Data File : A90009634.D
Acq On : 26 Dec 2012 5:11 pm
Operator : ps
Sample : SS122712WCS04
Misc : WHAQ73@5.036
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Dec 27 16:19:20 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Dec 27 11:30:11 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES



Form I
Alaska North Slope Crude
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS122712ANC03**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	N/A	12/22/12	100	0.05134	10	1	PS

Parameter	Result		Parameter	Result	
cis/trans-Decalin	**466**		C3-Dibenzothiophenes	**376**	
C1-Decalins	**790**		C4-Dibenzothiophenes	**207**	
C2-Decalins	**716**		Benzo(b)fluorene	**5.98**	
C3-Decalins	**405**		Fluoranthene	**3.96**	
C4-Decalins	**436**		Pyrene	**12.7**	
Benzothiophene	**5.63**		C1-Fluoranthenes/Pyrenes	**62.8**	
C1-Benzo(b)thiophenes	**34.1**		C2-Fluoranthenes/Pyrenes	**97.5**	
C2-Benzo(b)thiophenes	**52.6**		C3-Fluoranthenes/Pyrenes	**116**	
C3-Benzo(b)thiophenes	**115**		C4-Fluoranthenes/Pyrenes	**97.7**	
C4-Benzo(b)thiophenes	**103**		Naphthobenzothiophenes	**39.8**	
Naphthalene	**549**		C1-Naphthobenzothiophenes	**111**	
C1-Naphthalenes	**1210**		C2-Naphthobenzothiophenes	**142**	
C2-Naphthalenes	**1560**		C3-Naphthobenzothiophenes	**107**	
C3-Naphthalenes	**1220**		C4-Naphthobenzothiophenes	**80.7**	
C4-Naphthalenes	**718**		Benz[a]anthracene	**2.02**	
Biphenyl	**134**		Chrysene/Triphenylene	**36.8**	
Dibenzofuran	**50.7**		C1-Chrysenes	**70.1**	
Acenaphthylene	**6.87**		C2-Chrysenes	**92.3**	
Acenaphthene	**14.8**		C3-Chrysenes	**107**	
Fluorene	**72.0**		C4-Chrysenes	**61.8**	
C1-Fluorenes	**175**		Benzo[b]fluoranthene	**5.18**	
C2-Fluorenes	**289**		Benzo[j]fluoranthene/Benzo[k]fluoranthene	1.95	U
C3-Fluorenes	**281**		Benzo[a]fluoranthene	1.95	U
Anthracene	1.95	U	Benzo[e]pyrene	**9.36**	
Phenanthrene	**205**		Benzo[a]pyrene	**1.42**	J
C1-Phenanthrenes/Anthracenes	**452**		Perylene	**2.09**	
C2-Phenanthrenes/Anthracenes	**522**		Indeno[1,2,3-cd]pyrene	**0.768**	J
C3-Phenanthrenes/Anthracenes	**380**		Dibenz[ah]anthracene/Dibenz[ac]anthracene	**0.833**	J
C4-Phenanthrenes/Anthracenes	**152**		Benzo[g,h,i]perylene	**2.99**	
Retene	1.95	U			
Dibenzothiophene	**138**				
C1-Dibenzothiophenes	**286**				
C2-Dibenzothiophenes	**411**				

N/A - Not Applicable
J - Estimated value, below quantitation limit.
U - The analyte was analyzed for but not detected at the sample specific level reported.

Form I
Alaska North Slope Crude
Carbazole

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS122712ANC03**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	N/A	12/22/12	100	0.05134	10	1	PS

Parameter	Result
Carbazole	**5.68**

N/A - Not Applicable

Form I
Alaska North Slope Crude
Polynuclear Aromatic Hydrocarbons Isomers

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS122712ANC03**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	N/A	12/22/12	100	0.05134	10	1	PS

Parameter	Result
4-Methyldibenzothiophene	**140**
2/3-Methyldibenzothiophene	**97.5**
1-Methyldibenzothiophene	**44.4**
3-Methylphenanthrene	**93.8**
2-Methylphenanthrene	**103**
2-Methylanthracene	**3.48**
9/4-Methylphenanthrene	**144**
1-Methylphenanthrene	**104**
2-Methylnaphthalene	**1090**
1-Methylnaphthalene	**783**
2,6-Dimethylnaphthalene	**630**
2,3,5-Trimethylnaphthalene	**139**
Naphthobenzothiophene-2,1-D	**29.5**
Naphthobenzothiophene-1,2-D	**7.30**
Naphthobenzothiophene-2,3-D	**3.03**

N/A - Not Applicable

Form I
Alaska North Slope Crude
Steranes and Triterpanes

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS122712ANC03**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	N/A	12/22/12	100	0.05134	10	1	PS

Parameter	Result	
C23 Tricyclic Terpane	**60.7**	
C24 Tricyclic Terpane	**36.1**	
C25 Tricyclic Terpane	**36.8**	
C24 Tetracyclic Terpane	**12.3**	
C26 Tricyclic Terpane-22S	**14.1**	
C26 Tricyclic Terpane-22R	**14.0**	
C28 Tricyclic Terpane-22S	**13.0**	
C28 Tricyclic Terpane-22R	**14.3**	
C29 Tricyclic Terpane-22S	**18.7**	
C29 Tricyclic Terpane-22R	**17.6**	
18a-22,29,30-Trisnorneohopane-TS	**26.2**	
C30 Tricyclic Terpane-22S	**14.8**	
C30 Tricyclic Terpane-22R	**14.1**	
17a(H)-22,29,30-Trisnorhopane-TM	**30.8**	
17a/b,21b/a 28,30-Bisnorhopane	**7.68**	
17a(H),21b(H)-25-Norhopane	**7.84**	
30-Norhopane	**85.0**	
18a(H)-30-Norneohopane-C29Ts	**21.2**	
17a(H)-Diahopane	**11.7**	
30-Normoretane	**9.89**	
18a(H)&18b(H)-Oleananes	1.95	U
Hopane	**143**	
Moretane	**14.1**	
30-Homohopane-22S	**61.9**	
30-Homohopane-22R	**52.5**	
T22a-Gammacerane/C32-diahopane	**10.2**	
30,31-Bishomohopane-22S	**44.0**	
30,31-Bishomohopane-22R	**31.4**	

Parameter	Result
30,31-Trishomohopane-22S	**34.2**
30,31-Trishomohopane-22R	**23.2**
Tetrakishomohopane-22S	**26.0**
Tetrakishomohopane-22R	**17.8**
Pentakishomohopane-22S	**25.6**
Pentakishomohopane-22R	**18.6**
13b(H),17a(H)-20S-Diacholestane	**47.8**
13b(H),17a(H)-20R-Diacholestane	**26.8**
13b,17a-20S-Methyldiacholestane	**23.8**
14a(H),17a(H)-20S-Cholestane/ 13b(H),17a(H)-20S-Ethyldiacholestane (S12)	**65.9**
14a(H),17a(H)-20R-Cholestane/ 13b(H),17a(H)-20R-Ethyldiacholestane (S17)	**74.5**
Unknown Sterane (S18)	**19.4**
13a,17b-20S-Ethyldiacholestane	**4.40**
14a,17a-20S-Methylcholestane	**35.1**
14a,17a-20R-Methylcholestane	**30.3**
14a(H),17a(H)-20S-Ethylcholestane	**46.7**
14a(H),17a(H)-20R-Ethylcholestane	**40.5**
14b(H),17b(H)-20R-Cholestane	**42.0**
14b(H),17b(H)-20S-Cholestane	**42.3**
14b,17b-20R-Methylcholestane	**45.4**
14b,17b-20S-Methylcholestane	**56.0**
14b(H),17b(H)-20R-Ethylcholestane	**60.0**
14b(H),17b(H)-20S-Ethylcholestane	**36.1**
C26,20R- +C27,20S- triaromatic steroid	**244**
C28,20S-triaromatic steroid	**151**
C27,20R-triaromatic steroid	**148**
C28,20R-triaromatic steroid	**127**

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009573.D
Acq On : 22 Dec 2012 10:17 am
Operator : ps
Sample : SS122712ANC03
Misc : WHAR16:5.134mg/kg
ALS Vial : 2 Sample Multiplier: 1

AG 12/27/12

Quant Time: Dec 27 15:45:12 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC22\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Dec 22 12:27:19 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.155	164	66859	500.000	ng/mL	0.00
74) Chrysene-d12	42.557	240	114934	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.229	136	229258	892.132	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 89.21%			
42) Phenanthrene-d10	32.004	188	242178	1004.246	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 100.42%			
83) Benzo[b]fluoranthene-d12	46.459	264	223708	1058.869	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 105.89%			
88) Benzo[a]pyrene-d12	47.584	264	218326	1030.884	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 103.09%			
129) 5B(H)Cholane - Surr	43.196	217	51639M4	1070.251	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 107.03%			
Target Compounds						Qvalue
3) trans-Decalin	15.907	138	133065	2263.813	ng/mL	100
4) cis-Decalin	17.112	138	5843M4	126.978	ng/mL	
5) C1-Decalins	17.824	152	238258M5	4053.444	ng/mL	
6) C2-Decalins	19.147	166	216198M5	3678.141	ng/mL	
7) C3-Decalins	21.611	180	122340M5	2081.350	ng/mL	
8) C4-Decalins	24.969	194	131679M5	2240.233	ng/mL	
10) Naphthalene	19.302	128	743661	2819.981	ng/mL#	100
11) C1-Naphthalenes	21.985	142	1635406M5	6201.501	ng/mL	
12) C2-Naphthalenes	24.814	156	2112838M5	8011.935	ng/mL	
13) C3-Naphthalenes	27.141	170	1645851M5	6241.109	ng/mL	
14) C4-Naphthalenes	29.896	184	971947M5	3685.648	ng/mL	
16) 2-Methylnaphthalene	21.985	142	962724	5582.331	ng/mL#	100
17) 1-Methylnaphthalene	22.405	142	673054	4021.438	ng/mL#	100
18) Benzothiophene	19.530	134	6376M4	28.891	ng/mL	
19) C1-Benzo(b)thiophenes	21.556	148	38606M5	174.935	ng/mL	
20) C2-Benzo(b)thiophenes	25.006	162	59601M5	270.069	ng/mL	
21) C3-Benzo(b)thiophenes	26.977	176	130130M5	589.656	ng/mL	
22) C4-Benzo(b)thiophenes	29.075	190	117153M5	530.853	ng/mL	
23) Biphenyl	23.856	154	155705	689.921	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.476	156	523896	3231.617	ng/mL#	100
25) Dibenzofuran	26.922	168	62702	260.484	ng/mL#	83
26) Acenaphthylene	25.553	152	9565	35.259	ng/mL#	100
27) Acenaphthene	26.283	153	12956M3	75.959	ng/mL	
28) 2,3,5-Trimethylnaphthalen	27.834	170	106636M3	715.455	ng/mL	
29) Fluorene	28.291	166	69222M4	369.559	ng/mL	
30) C1-Fluorenes	30.644	180	167957M5	896.682	ng/mL	
31) C2-Fluorenes	32.843	194	278110M5	1484.762	ng/mL	
32) C3-Fluorenes	34.669	208	270589M5	1444.609	ng/mL	
33) Dibenzothiophene	31.593	184	187063	709.963	ng/mL#	89
34) 4-Methyldibenzothiophene(	33.364	198	188904	716.950	ng/mL#	100
35) 2/3-Methyldibenzothiophen	33.710	198	131943	500.765	ng/mL#	100
36) 1-Methyldibenzothiophene(	34.130	198	60018	227.787	ng/mL#	100
37) OTP	33.793	198	29783	113.036	ng/mL#	100
38) C1-Dibenzothiophenes	33.364	198	416004M5	1578.866	ng/mL	
38) C1-Dibenzothiophenes BS	33.364	198	386221m	1465.831	ng/mL	
39) C2-Dibenzothiophenes	35.052	212	556502M5	2112.101	ng/mL	
40) C3-Dibenzothiophenes	36.851	226	509094M5	1932.172	ng/mL	

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009573.D
Acq On : 22 Dec 2012 10:17 am
Operator : ps
Sample : SS122712ANC03
Misc : WHAR16:5.134mg/kg
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Dec 27 15:45:12 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC22\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Dec 22 12:27:19 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
41) C4-Dibenzothiophenes	38.540	240	279906M5	1062.332	ng/mL	
43) Phenanthrene	32.086	178	286917M4	1054.033	ng/mL	
44) 3-Methylphenanthrene(3MP)	34.048	192	131104	481.631	ng/mL	98
45) 2-Methylphenanthrene(2MP)	34.158	192	143467	527.048	ng/mL	97
46) 2-Methylanthracene(2MA)	34.322	192	4861	17.858	ng/mL	83
47) 9/4-Methylphenanthrene(9M	34.505	192	201738	741.115	ng/mL	99
48) 1-Methylphenanthrene(1MP)	34.596	192	145525	534.608	ng/mL	97
49) C1-Phenanthrenes/Anthrace	34.505	192	631258M5	2319.023	ng/mL	
50) C2-Phenanthrenes/Anthrace	36.312	206	729246M5	2678.996	ng/mL	
50) C2-Phenanthrenes/Anthr BS	36.312	206	729246m	2678.996	ng/mL	
52) C3-Phenanthrenes/Anthrace	38.147	220	531337M5	1951.948	ng/mL	
53) C4-Phenanthrenes/Anthrace	40.329	234	211888M5	778.403	ng/mL	
56) Carbazole	32.944	167	6979M3	29.185	ng/mL	
57) 1-Methylphenanthrene	34.596	192	145525	724.601	ng/mL	97
58) Fluoranthene	36.841	202	6182M4	20.330	ng/mL	
59) Benzo(b)fluorene	39.362	216	5556M4	30.723	ng/mL	
60) Pyrene	37.727	202	20300M4	65.435	ng/mL	
61) C1-Fluoranthenes/Pyrenes	39.115	216	99997M5	322.331	ng/mL	
62) C2-Fluoranthenes/Pyrenes	40.923	230	155225M5	500.354	ng/mL	
63) C3-Fluoranthenes/Pyrenes	42.941	244	184700M5	595.364	ng/mL	
64) C4-Fluoranthenes/Pyrenes	44.292	258	155585M5	501.514	ng/mL	
66) Naphthobenzothiophene	41.571	234	41248M3	153.231	ng/ml	
67) Naphthobenzothiophene-2,1	41.571	234	40718M3	151.262	ng/mL	
68) Naphthobenzothiophene-1,2	41.909	234	10093M4	37.494	ng/mL	
69) Naphthobenzothiophene-2,3	42.210	234	4191M4	15.569	ng/mL	
70) C1-Naphthobenzothiophenes	42.968	248	152888M5	567.958	ng/ml	
71) C2-Naphthobenzothiophenes	44.968	262	196797M5	731.074	ng/ml	
72) C3-Naphthobenzothiophenes	46.569	276	147369M5	547.456	ng/ml	
73) C4-Naphthobenzothiophenes	47.593	290	111515M5	414.263	ng/mL	
75) Benz[a]anthracene	42.502	228	2729M3	10.352	ng/mL	
77) Chrysene/Triphenylene	42.630	228	48980M4	188.903	ng/mL	
78) C1-Chrysenes	44.137	242	93317M5	359.899	ng/mL	
79) C2-Chrysenes	46.816	256	131731M5	508.052	ng/mL	
79) C2-Chrysenes BS	46.816	256	122865m	473.858	ng/mL	
80) BBF-d12 Surr BKGD	46.459	256	8866	34.194	ng/mL	100
81) C3-Chrysenes	48.782	270	141841M5	547.043	ng/mL	
82) C4-Chrysenes	48.883	284	82256M5	317.240	ng/mL	
84) Benzo[b]fluoranthene	46.542	252	7264	26.574	ng/mL	97
87) Benzo[e]pyrene	47.493	252	12480	48.081	ng/mL	94
89) Benzo[a]pyrene	47.676	252	1797M3	7.310	ng/mL	
90) Perylene	47.968	252	2818M4	10.741	ng/mL	
91) Indeno[1,2,3-cd]pyrene	52.175	276	1073	3.941	ng/mL#	100
92) Dibenz[ah]+[ac]anthracene	52.193	278	1147M4	4.277	ng/mL	
93) Benzo[g,h,i]perylene	53.363	276	4102	15.333	ng/mL#	85
94) Hopane (T19)	51.334	191	74032M4	732.652	ng/mL	
96) C23 Tricyclic Terpane (T4	40.229	191	31470	311.440	ng/ml	100
97) C24 Tricyclic Terpane (T5	40.950	191	18744M4	185.498	ng/ml	
98) C25 Tricyclic Terpane (T6	42.438	191	19075M4	188.774	ng/ml	
99) C24 Tetracyclic Terpane (	43.735	191	6370M4	63.040	ng/ml	
100) C26 Tricyclic Terpane-22S	43.498	191	7335M4	72.590	ng/ml	
101) C26 Tricyclic Terpane-22R	43.589	191	7290	72.145	ng/ml	100
102) C28 Tricyclic Terpane-22S	45.883	191	6728M4	66.583	ng/ml	
103) C28 Tricyclic Terpane-22R	46.048	191	7411	73.342	ng/ml	100
104) C29 Tricyclic Terpane-22S	46.560	191	9713	96.124	ng/ml	100

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009573.D
Acq On : 22 Dec 2012 10:17 am
Operator : ps
Sample : SS122712ANC03
Misc : WHAR16:5.134mg/kg
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Dec 27 15:45:12 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC22\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Dec 22 12:27:19 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

	Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
105)	C29 Tricyclic Terpane-22R	46.752	191	9119M4	90.245	ng/ml	
106)	18a-22,29,30-Trisnorneoho	47.795	191	13594	134.532	ng/ml	100
107)	C30 Tricyclic Terpane-22S	47.913	191	7663M4	75.836	ng/mL	
108)	C30 Tricyclic Terpane-22R	48.142	191	7294	72.184	ng/mL	100
109)	17a(H)-22,29,30-Trisnorho	48.316	191	15957	157.917	ng/ml	100
110)	17a/b,21b/a 28,30-Bisnorh	49.441	191	3986M4	39.447	ng/ml	
111)	17a(H),21b(H)-25-Norhopan	49.276	191	4068	40.259	ng/ml	100
112)	30-Norhopane (T15)	50.063	191	44083M4	436.264	ng/ml	
113)	18a(H)-30-Norneohopane-C2	50.163	191	10971M4	108.574	ng/ml	
114)	17a(H)-Diahopane (X)	50.282	191	6082M4	60.190	ng/ml	
115)	30-Normoretane (T17)	50.795	191	5133	50.798	ng/ml	100
117)	Moretane (T20)	51.974	191	7296M4	72.204	ng/ml	
118)	30-Homohopane-22S (T21)	52.988	191	32107M4	317.744	ng/ml	
119)	30-Homohopane-22R (T22)	53.208	191	27247	269.648	ng/ml	100
120)	Gammacerane/C32-diahopane	53.701	191	5273M4	52.184	ng/mL	
121)	30,31-Bishomohopane-22S (	54.432	191	22821	225.846	ng/ml	100
122)	30,31-Bishomohopane-22R (	54.779	191	16270	161.015	ng/ml	100
123)	30,31-Trishomohopane-22S	56.388	191	17715	175.315	ng/ml	100
124)	30,31-Trishomohopane-22R	56.954	191	12008	118.836	ng/ml	100
125)	Tetrakishomohopane-22S (T	58.800	191	13494	133.542	ng/ml	100
126)	Tetrakishomohopane-22R (T	59.623	191	9254	91.581	ng/ml	100
127)	Pentakishomohopane-22S (T	61.660	191	13309	131.711	ng/ml	100
128)	Pentakishomohopane-22R (T	62.839	191	9639M4	95.392	ng/ml	
130)	13b(H),17a(H)-20S-Diachol	44.712	217	11834M4	245.267	ng/ml	
131)	13b(H),17a(H)-20R-Diachol	45.133	217	6628M4	137.369	ng/ml	
132)	13b,17a-20S-Methyldiachol	45.828	217	5902M4	122.323	ng/ml	
133)	14a,17a-20S-Chol/13b,17a-	46.688	217	16315	338.139	ng/ml	100
134)	14a,17a-20R-Chol/13b,17a-	47.182	217	18450	382.388	ng/ml	100
135)	Unknown Sterane (S18)	47.447	217	4816	99.815	ng/ml	100
136)	13a,17b-20S-Ethyldiachole	47.703	217	1091	22.612	ng/ml	100
137)	14a,17a-20S-Methylcholest	47.849	217	8691M4	180.126	ng/m1	
138)	14a,17a-20R-Methylcholest	48.517	217	7506M4	155.567	ng/ml	
139)	14a(H),17a(H)-20S-Ethylch	48.856	217	11558M4	239.547	ng/ml	
140)	14a(H),17a(H)-20R-Ethylch	49.706	217	10043M4	208.147	ng/ml	
141)	14b(H),17b(H)-20R-Cholest	46.779	218	10394M4	215.422	ng/ml	
142)	14b(H),17b(H)-20S-Cholest	46.853	218	10482M4	217.246	ng/ml	
143)	14b,17b-20R-Methylcholest	48.005	218	11242	232.997	ng/ml	100
144)	14b,17b-20S-Methylcholest	48.087	218	13875M4	287.568	ng/ml	
145)	14b(H),17b(H)-20R-Ethylch	49.084	218	14872	308.232	ng/m1	100
146)	14b(H),17b(H)-20S-Ethylch	49.130	218	8935M3	185.183	ng/ml	
147)	C26,20R- +C27,20S- triaro	48.810	231	60331	1250.398	ng/mL	100
148)	C28,20S-triaromatic stero	49.624	231	37331	773.708	ng/mL	100
149)	C27,20R-triaromatic stero	50.035	231	36631M4	759.200	ng/mL	
150)	C28,20R-triaromatic stero	51.160	231	31353	649.811	ng/mL	100

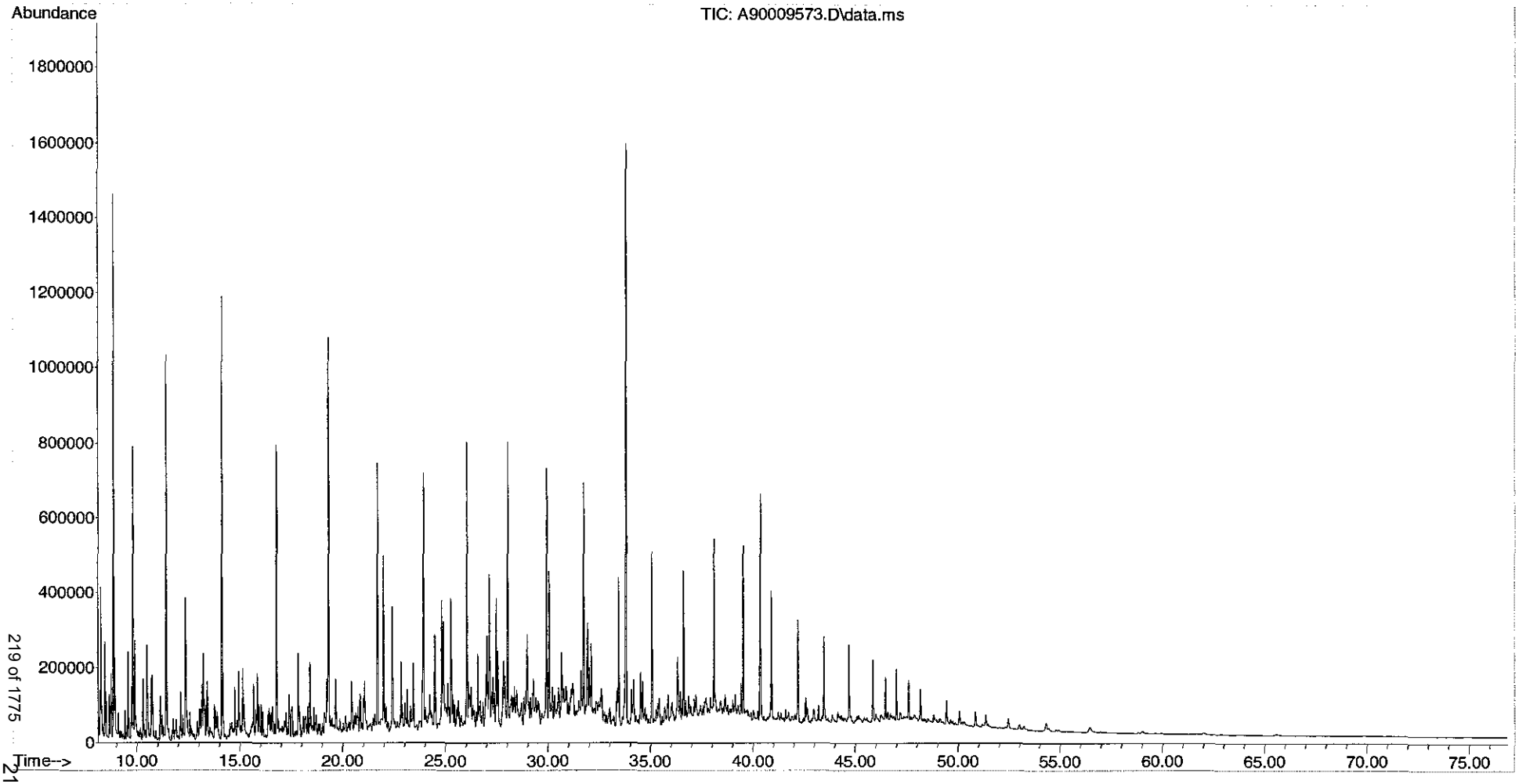
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009573.D
Acq On : 22 Dec 2012 10:17 am
Operator : ps
Sample : SS122712ANC03
Misc : WHAR16:5.134mg/kg
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Dec 27 15:45:12 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC22\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Dec 22 12:27:19 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES



Form I
Alaska North Slope Crude
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS122712ANC04**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	N/A	12/26/12	100	0.05134	10	1	PS

Parameter	Result	
cis/trans-Decalin	479	
C1-Decalins	817	
C2-Decalins	738	
C3-Decalins	436	
C4-Decalins	432	
Benzothiophene	5.99	
C1-Benzo(b)thiophenes	35.4	
C2-Benzo(b)thiophenes	52.7	
C3-Benzo(b)thiophenes	117	
C4-Benzo(b)thiophenes	105	
Naphthalene	560	
C1-Naphthalenes	1220	
C2-Naphthalenes	1570	
C3-Naphthalenes	1220	
C4-Naphthalenes	717	
Biphenyl	138	
Dibenzofuran	51.5	
Acenaphthylene	6.95	
Acenaphthene	14.9	
Fluorene	74.9	
C1-Fluorenes	177	
C2-Fluorenes	292	
C3-Fluorenes	276	
Anthracene	1.95	U
Phenanthrene	207	
C1-Phenanthrenes/Anthracenes	448	
C2-Phenanthrenes/Anthracenes	525	
C3-Phenanthrenes/Anthracenes	377	
C4-Phenanthrenes/Anthracenes	146	
Retene	1.95	U
Dibenzothiophene	140	
C1-Dibenzothiophenes	285	
C2-Dibenzothiophenes	408	
C3-Dibenzothiophenes	368	
C4-Dibenzothiophenes	200	
Benzo(b)fluorene	6.10	
Fluoranthene	4.14	
Pyrene	13.6	
C1-Fluoranthenes/Pyrenes	60.4	
C2-Fluoranthenes/Pyrenes	98.0	
C3-Fluoranthenes/Pyrenes	114	
C4-Fluoranthenes/Pyrenes	100	
Naphthobenzothiophenes	40.6	
C1-Naphthobenzothiophenes	112	
C2-Naphthobenzothiophenes	145	
C3-Naphthobenzothiophenes	108	
C4-Naphthobenzothiophenes	77.1	
Benz[a]anthracene	2.22	
Chrysene/Triphenylene	36.9	
C1-Chrysenes	69.1	
C2-Chrysenes	84.5	
C3-Chrysenes	107	
C4-Chrysenes	58.8	
Benzo[b]fluoranthene	4.96	
Benzo[j]fluoranthene/Benzo[k]fluoranthene	1.95	U
Benzo[a]fluoranthene	1.95	U
Benzo[e]pyrene	9.60	
Benzo[a]pyrene	1.51	J
Perylene	2.63	
Indeno[1,2,3-cd]pyrene	0.697	J
Dibenz[ah]anthracene/Dibenz[ac]anthracene	0.989	J
Benzo[g,h,i]perylene	3.24	

N/A - Not Applicable
J - Estimated value, below quantitation limit.
U - The analyte was analyzed for but not detected at the sample specific level reported.

Form I
Alaska North Slope Crude
Carbazole

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS122712ANC04**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	N/A	12/26/12	100	0.05134	10	1	PS

Parameter	Result
Carbazole	**6.92**

N/A - Not Applicable

Form I
Alaska North Slope Crude
Polynuclear Aromatic Hydrocarbons Isomers

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS122712ANC04**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	N/A	12/26/12	100	0.05134	10	1	PS

Parameter	Result
4-Methyldibenzothiophene	**137**
2/3-Methyldibenzothiophene	**97.4**
1-Methyldibenzothiophene	**43.7**
3-Methylphenanthrene	**93.5**
2-Methylphenanthrene	**103**
2-Methylanthracene	**3.37**
9/4-Methylphenanthrene	**144**
1-Methylphenanthrene	**104**
2-Methylnaphthalene	**1090**
1-Methylnaphthalene	**791**
2,6-Dimethylnaphthalene	**635**
2,3,5-Trimethylnaphthalene	**161**
Naphthobenzothiophene-2,1-D	**29.8**
Naphthobenzothiophene-1,2-D	**7.33**
Naphthobenzothiophene-2,3-D	**3.43**

N/A - Not Applicable

Form I
Alaska North Slope Crude
Steranes and Triterpanes

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS122712ANC04**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	N/A	12/26/12	100	0.05134	10	1	PS

Parameter	Result	
C23 Tricyclic Terpane	60.3	
C24 Tricyclic Terpane	36.2	
C25 Tricyclic Terpane	38.1	
C24 Tetracyclic Terpane	12.7	
C26 Tricyclic Terpane-22S	15.0	
C26 Tricyclic Terpane-22R	13.7	
C28 Tricyclic Terpane-22S	12.0	
C28 Tricyclic Terpane-22R	14.7	
C29 Tricyclic Terpane-22S	19.0	
C29 Tricyclic Terpane-22R	17.9	
18a-22,29,30-Trisnorneohopane-TS	23.6	
C30 Tricyclic Terpane-22S	12.2	
C30 Tricyclic Terpane-22R	14.7	
17a(H)-22,29,30-Trisnorhopane-TM	29.7	
17a/b,21b/a 28,30-Bisnorhopane	7.07	
17a(H),21b(H)-25-Norhopane	8.27	
30-Norhopane	87.6	
18a(H)-30-Norneohopane-C29Ts	22.5	
17a(H)-Diahopane	13.6	
30-Normoretane	11.2	
18a(H)&18b(H)-Oleananes	1.95	U
Hopane	144	
Moretane	13.3	
30-Homohopane-22S	61.2	
30-Homohopane-22R	52.1	
T22a-Gammacerane/C32-diahopane	10.9	
30,31-Bishomohopane-22S	44.5	
30,31-Bishomohopane-22R	34.7	

Parameter	Result
30,31-Trishomohopane-22S	35.7
30,31-Trishomohopane-22R	22.2
Tetrakishomohopane-22S	25.1
Tetrakishomohopane-22R	17.1
Pentakishomohopane-22S	26.7
Pentakishomohopane-22R	21.0
13b(H),17a(H)-20S-Diacholestane	46.3
13b(H),17a(H)-20R-Diacholestane	26.5
13b,17a-20S-Methyldiacholestane	24.6
14a(H),17a(H)-20S-Cholestane/ 13b(H),17a(H)-20S-Ethyldiacholestane (S12)	64.5
14a(H),17a(H)-20R-Cholestane/ 13b(H),17a(H)-20R-Ethyldiacholestane (S17)	74.4
Unknown Sterane (S18)	19.6
13a,17b-20S-Ethyldiacholestane	4.07
14a,17a-20S-Methylcholestane	32.4
14a,17a-20R-Methylcholestane	31.2
14a(H),17a(H)-20S-Ethylcholestane	48.1
14a(H),17a(H)-20R-Ethylcholestane	41.4
14b(H),17b(H)-20R-Cholestane	39.8
14b(H),17b(H)-20S-Cholestane	40.4
14b,17b-20R-Methylcholestane	42.5
14b,17b-20S-Methylcholestane	55.0
14b(H),17b(H)-20R-Ethylcholestane	55.4
14b(H),17b(H)-20S-Ethylcholestane	38.2
C26,20R- +C27,20S- triaromatic steroid	244
C28,20S-triaromatic steroid	148
C27,20R-triaromatic steroid	148
C28,20R-triaromatic steroid	126

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\
Data File : A90009630.D
Acq On : 26 Dec 2012 9:19 am
Operator : ps
Sample : SS122712ANC04
Misc : WHAR16:5.134mg/kg
ALS Vial : 1 Sample Multiplier: 1

NZ 12/27/12

Quant Time: Dec 27 15:37:25 2012
Quant Method : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 26 15:43:28 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.074	164	60559	500.000	ng/mL	0.00
74) Chrysene-d12	42.466	240	105548	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.147	136	214720	922.482	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 92.25%			
42) Phenanthrene-d10	31.913	188	218868	1002.003	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 100.20%			
83) Benzo[b]fluoranthene-d12	46.359	264	200908	1035.515	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 103.55%			
88) Benzo[a]pyrene-d12	47.475	264	197199	1013.929	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 101.39%			
129) 5B(H)Cholane - Surr	43.096	217	47768	1078.061	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 107.81%			
Target Compounds						Qvalue
3) trans-Decalin	15.826	138	123544M6	2320.489	ng/mL	
4) cis-Decalin	17.030	138	5738M6	137.668	ng/mL	
5) C1-Decalins	17.742	152	223295M5	4194.082	ng/mL	
6) C2-Decalins	19.065	166	201725M5	3788.939	ng/mL	
7) C3-Decalins	21.520	180	119117M5	2237.338	ng/mL	
8) C4-Decalins	24.887	194	118206M5	2220.227	ng/mL	
10) Naphthalene	19.220	128	686512	2874.091	ng/mL#	100
11) C1-Naphthalenes	21.903	142	1500422M5	6281.536	ng/mL	
12) C2-Naphthalenes	24.723	156	1922111M5	8046.942	ng/mL	
13) C3-Naphthalenes	27.059	170	1493010M5	6250.506	ng/mL	
14) C4-Naphthalenes	29.805	184	879217M5	3680.853	ng/mL	
16) 2-Methylnaphthalene	21.903	142	877667	5618.557	ng/mL#	100
17) 1-Methylnaphthalene	22.323	142	615436	4059.715	ng/mL#	100
18) Benzothiophene	19.449	134	6145M4	30.741	ng/mL	
19) C1-Benzo(b)thiophenes	21.474	148	36379M5	181.992	ng/mL	
20) C2-Benzo(b)thiophenes	24.915	162	54084M5	270.565	ng/mL	
21) C3-Benzo(b)thiophenes	26.886	176	119773M5	599.185	ng/mL	
22) C4-Benzo(b)thiophenes	28.619	190	107760M5	539.088	ng/mL	
23) Biphenyl	23.774	154	144559	707.169	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.386	156	478528	3258.842	ng/mL#	100
25) Dibenzofuran	26.840	168	57691	264.599	ng/mL#	82
26) Acenaphthylene	25.471	152	8766	35.675	ng/mL#	100
27) Acenaphthene	26.192	153	11797M4	76.359	ng/mL	
28) 2,3,5-Trimethylnaphthalen	27.744	170	111532M6	826.151	ng/mL	
29) Fluorene	28.200	166	65257M4	384.635	ng/mL	
30) C1-Fluorenes	30.563	180	154087M5	908.212	ng/mL	
31) C2-Fluorenes	32.752	194	254604M5	1500.675	ng/mL	
32) C3-Fluorenes	34.578	208	240423M5	1417.090	ng/mL	
33) Dibenzothiophene	31.502	184	171368	718.057	ng/mL#	78
34) 4-Methyldibenzothiophene(	33.273	198	168203	704.795	ng/mL#	100
35) 2/3-Methyldibenzothiophen	33.620	198	119307	499.914	ng/mL#	100
36) 1-Methyldibenzothiophene(	34.040	198	53592	224.558	ng/mL#	100
37) OTP	33.702	198	28447	119.197	ng/mL#	100
38) C1-Dibenzothiophenes	33.273	198	377959M5	1583.703	ng/mL	
38) C1-Dibenzothiophenes BS	33.273	198	349512m	1464.506	ng/mL	
39) C2-Dibenzothiophenes	34.961	212	500360M5	2096.581	ng/mL	
40) C3-Dibenzothiophenes	36.760	226	450979M5	1889.667	ng/mL	

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\
Data File : A90009630.D
Acq On : 26 Dec 2012 9:19 am
Operator : ps
Sample : SS122712ANC04
Misc : WHAR16:5.134mg/kg
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 27 15:37:25 2012
Quant Method : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 26 15:43:28 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

	Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
41)	C4-Dibenzothiophenes	38.449	240	244852M5	1025.965	ng/mL	
43)	Phenanthrene	31.995	178	261543	1060.773	ng/mL	93
44)	3-Methylphenanthrene(3MP)	33.957	192	118315	479.865	ng/mL	97
45)	2-Methylphenanthrene(2MP)	34.067	192	130485	529.224	ng/mL	97
46)	2-Methylanthracene(2MA)	34.231	192	4263	17.290	ng/mL#	66
47)	9/4-Methylphenanthrene(9M	34.405	192	182223	739.065	ng/mL	98
48)	1-Methylphenanthrene(1MP)	34.496	192	131225	532.226	ng/mL	97
49)	C1-Phenanthrenes/Anthrace	34.405	192	567409M5	2301.312	ng/mL	
50)	C2-Phenanthrenes/Anthrace	36.221	206	665118M5	2697.603	ng/mL	
50)	C2-Phenanthrenes/Anthr BS	36.221	206	665118m	2697.603	ng/mL	
52)	C3-Phenanthrenes/Anthrace	38.056	220	476819M5	1933.895	ng/mL	
53)	C4-Phenanthrenes/Anthrace	40.230	234	184784M5	749.452	ng/mL	
56)	Carbazole	32.853	167	7692M4	35.514	ng/mL	
57)	1-Methylphenanthrene	34.496	192	129975M4	714.500	ng/mL	
58)	Fluoranthene	36.751	202	5847M4	21.229	ng/mL	
59)	Benzo(b)fluorene	39.271	216	5131	31.325	ng/mL	91
60)	Pyrene	37.636	202	19659M6	69.961	ng/mL	
61)	C1-Fluoranthenes/Pyrenes	39.024	216	87209M5	310.354	ng/mL	
62)	C2-Fluoranthenes/Pyrenes	40.832	230	141340M5	502.993	ng/mL	
63)	C3-Fluoranthenes/Pyrenes	42.841	244	165128M5	587.648	ng/mL	
64)	C4-Fluoranthenes/Pyrenes	44.192	258	144450M5	514.060	ng/mL	
66)	Naphthobenzothiophene	41.471	234	37402M6	153.398	ng/ml	
67)	Naphthobenzothiophene-2,1	41.471	234	37312M6	153.029	ng/mL	
68)	Naphthobenzothiophene-1,2	41.809	234	9180M6	37.650	ng/mL	
69)	Naphthobenzothiophene-2,3	42.110	234	4296M6	17.619	ng/mL	
70)	C1-Naphthobenzothiophenes	42.868	248	140546M5	576.425	ng/ml	
71)	C2-Naphthobenzothiophenes	44.868	262	180987M5	742.286	ng/ml	
72)	C3-Naphthobenzothiophenes	46.469	276	134552M5	551.841	ng/ml	
73)	C4-Naphthobenzothiophenes	47.493	290	96539M5	395.938	ng/mL	
75)	Benz[a]anthracene	42.402	228	2762M3	11.408	ng/mL	
77)	Chrysene/Triphenylene	42.530	228	45134M4	189.549	ng/mL	
78)	C1-Chrysenes	44.037	242	84445M5	354.644	ng/mL	
79)	C2-Chrysenes	46.716	256	111906M5	469.972	ng/mL	
79)	C2-Chrysenes BS	46.716	256	103254m	433.636	ng/mL	
80)	BBF-d12 Surr BKGD	46.350	256	8652M4	36.336	ng/mL	
81)	C3-Chrysenes	48.664	270	131276M5	551.320	ng/mL	
82)	C4-Chrysenes	48.765	284	71846M5	301.732	ng/mL	
84)	Benzo[b]fluoranthene	46.442	252	6387	25.444	ng/mL	92
87)	Benzo[e]pyrene	47.384	252	11752	49.303	ng/mL	98
89)	Benzo[a]pyrene	47.557	252	1748M3	7.743	ng/mL	
90)	Perylene	47.850	252	3248M6	13.481	ng/mL	
91)	Indeno[1,2,3-cd]pyrene	52.020	276	895M6	3.580	ng/mL	
92)	Dibenz[ah]+[ac]anthracene	52.048	278	1251M3	5.079	ng/mL	
93)	Benzo[g,h,i]perylene	53.199	276	4080	16.607	ng/mL#	55
94)	Hopane (T19)	51.188	191	68661M4	739.923	ng/mL	
96)	C23 Tricyclic Terpane (T4	40.129	191	28719M4	309.490	ng/ml	
97)	C24 Tricyclic Terpane (T5	40.859	191	17223	185.603	ng/ml	100
98)	C25 Tricyclic Terpane (T6	42.338	191	18172M1	195.830	ng/ml	
99)	C24 Tetracyclic Terpane (	43.635	191	6054M6	65.241	ng/ml	
100)	C26 Tricyclic Terpane-22S	43.398	191	7126M4	76.793	ng/ml	
101)	C26 Tricyclic Terpane-22R	43.498	191	6523	70.295	ng/ml	100
102)	C28 Tricyclic Terpane-22S	45.783	191	5696M4	61.383	ng/ml	
103)	C28 Tricyclic Terpane-22R	45.948	191	7019M6	75.640	ng/ml	
104)	C29 Tricyclic Terpane-22S	46.460	191	9054	97.570	ng/ml	100

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\
Data File : A90009630.D
Acq On : 26 Dec 2012 9:19 am
Operator : ps
Sample : SS122712ANC04
Misc : WHAR16:5.134mg/kg
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 27 15:37:25 2012
Quant Method : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 26 15:43:28 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
105) C29 Tricyclic Terpane-22R	46.652	191	8527	91.891	ng/ml	100
106) 18a-22,29,30-Trisnorneoho	47.676	191	11247	121.203	ng/ml	100
107) C30 Tricyclic Terpane-22S	47.804	191	5829M4	62.816	ng/mL	
108) C30 Tricyclic Terpane-22R	48.033	191	6998	75.414	ng/mL	100
109) 17a(H)-22,29,30-Trisnorho	48.198	191	14158	152.573	ng/ml	100
110) 17a/b,21b/a 28,30-Bisnorh	49.286	191	3367M6	36.284	ng/ml	
111) 17a(H),21b(H)-25-Norhopan	49.149	191	3938	42.438	ng/ml	100
112) 30-Norhopane (T15)	49.926	191	41719	449.584	ng/ml	100
113) 18a(H)-30-Norneohopane-C2	50.027	191	10708M4	115.394	ng/ml	
114) 17a(H)-Diahopane (X)	50.137	191	6487M4	69.907	ng/ml	
115) 30-Normoretane (T17)	50.649	191	5325	57.385	ng/ml	100
117) Moretane (T20)	51.819	191	6332M6	68.237	ng/ml	
118) 30-Homohopane-22S (T21)	52.825	191	29135	313.973	ng/ml	100
119) 30-Homohopane-22R (T22)	53.035	191	24802	267.278	ng/ml	100
120) Gammacerane/C32-diahopane	53.528	191	5208	56.124	ng/mL	100
121) 30,31-Bishomohopane-22S (	54.241	191	21198	228.440	ng/ml	100
122) 30,31-Bishomohopane-22R (	54.588	191	16526	178.092	ng/ml	100
123) 30,31-Trishomohopane-22S	56.169	191	17010	183.308	ng/ml	100
124) 30,31-Trishomohopane-22R	56.726	191	10557M4	113.767	ng/ml	
125) Tetrakishomohopane-22S (T	58.572	191	11939	128.660	ng/ml	100
126) Tetrakishomohopane-22R (T	59.376	191	8136	87.677	ng/ml	100
127) Pentakishomohopane-22S (T	61.396	191	12727	137.152	ng/ml	100
128) Pentakishomohopane-22R (T	62.529	191	10025M4	108.034	ng/ml	
130) 13b(H),17a(H)-20S-Diachol	44.612	217	10524M6	237.513	ng/ml	
131) 13b(H),17a(H)-20R-Diachol	45.033	217	6019M6	135.841	ng/ml	
132) 13b,17a-20S-Methyldiachol	45.728	217	5604M4	126.475	ng/ml	
133) 14a,17a-20S-Chol/13b,17a-	46.588	217	14677	331.241	ng/ml	100
134) 14a,17a-20R-Chol/13b,17a-	47.073	217	16928	382.043	ng/ml	100
135) Unknown Sterane (S18)	47.338	217	4459	100.634	ng/ml	100
136) 13a,17b-20S-Ethyldiachole	47.594	217	926	20.899	ng/ml	100
137) 14a,17a-20S-Methylcholest	47.750	217	7381	166.579	ng/ml	100
138) 14a,17a-20R-Methylcholest	48.408	217	7101	160.260	ng/ml	100
139) 14a(H),17a(H)-20S-Ethylch	48.737	217	10941M6	246.924	ng/ml	
140) 14a(H),17a(H)-20R-Ethylch	49.570	217	9410M4	212.371	ng/ml	
141) 14b(H),17b(H)-20R-Cholest	46.670	218	9045M4	204.134	ng/ml	
142) 14b(H),17b(H)-20S-Cholest	46.753	218	9180M4	207.180	ng/ml	
143) 14b,17b-20R-Methylcholest	47.896	218	9675	218.352	ng/ml	100
144) 14b,17b-20S-Methylcholest	47.969	218	12523M4	282.628	ng/ml	
145) 14b(H),17b(H)-20R-Ethylch	48.966	218	12602	284.411	ng/ml	100
146) 14b(H),17b(H)-20S-Ethylch	49.003	218	8693M3	196.190	ng/ml	
147) C26,20R- +C27,20S- triaro	48.682	231	55414	1250.621	ng/mL	100
148) C28,20S-triaromatic stero	49.487	231	33663	759.730	ng/mL	100
149) C27,20R-triaromatic stero	49.908	231	33689	760.316	ng/mL	100
150) C28,20R-triaromatic stero	51.006	231	28571	644.810	ng/mL	100

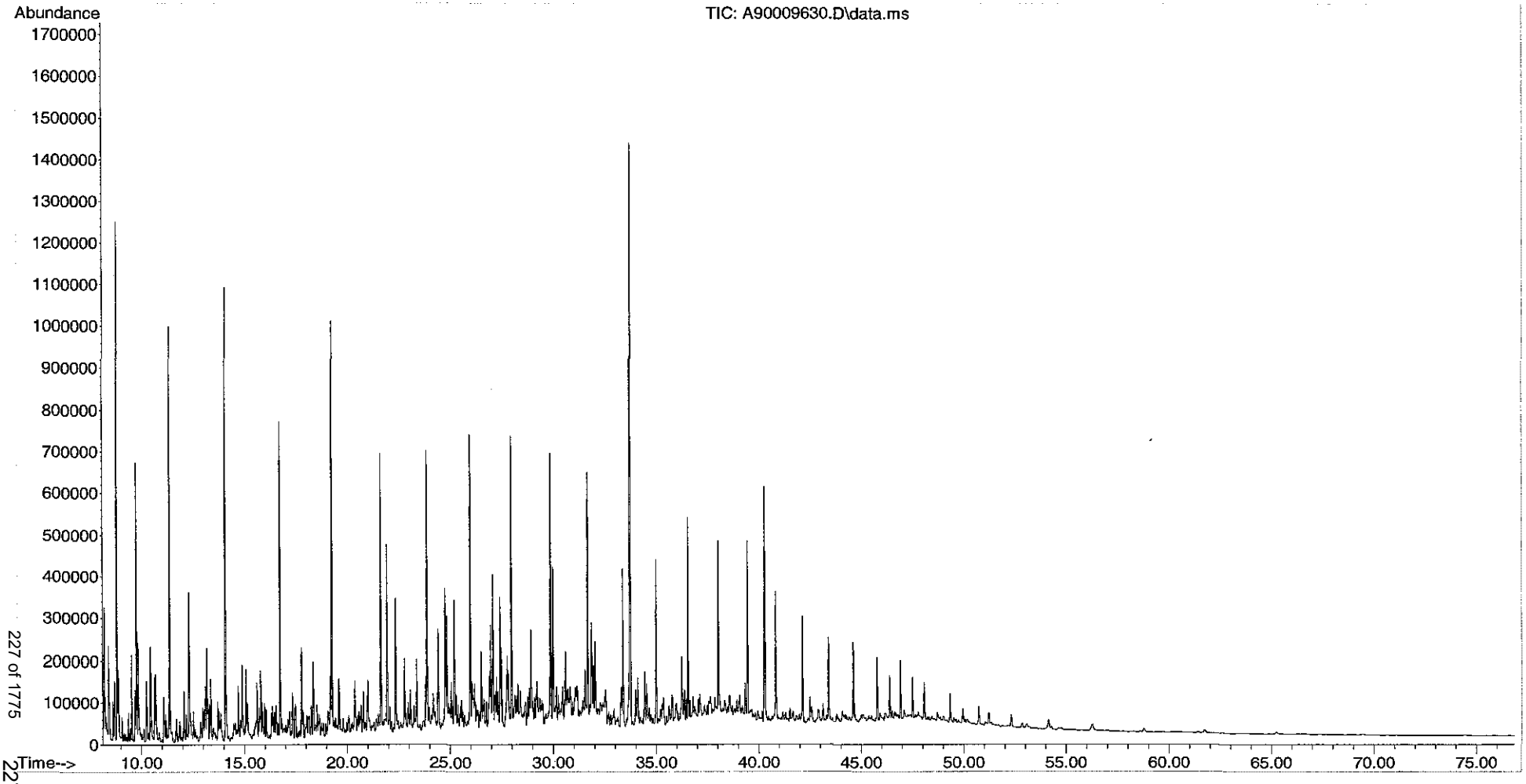
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\
Data File : A90009630.D
Acq On : 26 Dec 2012 9:19 am
Operator : ps
Sample : SS122712ANC04
Misc : WHAR16:5.134mg/kg
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 27 15:37:25 2012
Quant Method : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 26 15:43:28 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES



227 of 1775

Form I
Alaska North Slope Crude
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **ST120612ANC03**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	N/A	12/05/12	100	0.05076	10	1	PS

Parameter	Result		Parameter	Result	
cis/trans-Decalin	**461**		C3-Dibenzothiophenes	**347**	
C1-Decalins	**774**		C4-Dibenzothiophenes	**183**	
C2-Decalins	**691**		Benzo(b)fluorene	**6.70**	
C3-Decalins	**406**		Fluoranthene	**4.15**	
C4-Decalins	**430**		Pyrene	**13.1**	
Benzothiophene	**5.41**		C1-Fluoranthenes/Pyrenes	**58.5**	
C1-Benzo(b)thiophenes	**33.5**		C2-Fluoranthenes/Pyrenes	**88.0**	
C2-Benzo(b)thiophenes	**51.0**		C3-Fluoranthenes/Pyrenes	**106**	
C3-Benzo(b)thiophenes	**111**		C4-Fluoranthenes/Pyrenes	**88.2**	
C4-Benzo(b)thiophenes	**98.4**		Naphthobenzothiophenes	**40.3**	
Naphthalene	**530**		C1-Naphthobenzothiophenes	**104**	
C1-Naphthalenes	**1200**		C2-Naphthobenzothiophenes	**134**	
C2-Naphthalenes	**1540**		C3-Naphthobenzothiophenes	**100**	
C3-Naphthalenes	**1200**		C4-Naphthobenzothiophenes	**72.6**	
C4-Naphthalenes	**682**		Benz[a]anthracene	**2.27**	
Biphenyl	**139**		Chrysene/Triphenylene	**36.8**	
Dibenzofuran	**49.9**		C1-Chrysenes	**67.6**	
Acenaphthylene	**6.65**		C2-Chrysenes	**86.5**	
Acenaphthene	**16.4**		C3-Chrysenes	**98.9**	
Fluorene	**72.2**		C4-Chrysenes	**55.0**	
C1-Fluorenes	**171**		Benzo[b]fluoranthene	**4.94**	
C2-Fluorenes	**274**		Benzo[j]fluoranthene/Benzo[k]fluoranthene	1.97	U
C3-Fluorenes	**263**		Benzo[a]fluoranthene	1.97	U
Anthracene	1.97	U	Benzo[e]pyrene	**10.2**	
Phenanthrene	**201**		Benzo[a]pyrene	**1.97**	J
C1-Phenanthrenes/Anthracenes	**438**		Perylene	**3.31**	
C2-Phenanthrenes/Anthracenes	**491**		Indeno[1,2,3-cd]pyrene	**0.845**	J
C3-Phenanthrenes/Anthracenes	**335**		Dibenz[ah]anthracene/Dibenz[ac]anthracene	**1.08**	J
C4-Phenanthrenes/Anthracenes	**128**		Benzo[g,h,i]perylene	**3.53**	
Retene	1.97	U			
Dibenzothiophene	**136**				
C1-Dibenzothiophenes	**279**				
C2-Dibenzothiophenes	**386**				

N/A - Not Applicable
J - Estimated value, below quantitation limit.
U - The analyte was analyzed for but not detected at the sample specific level reported.

Form I
Alaska North Slope Crude
Carbazole

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **ST120612ANC03**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	N/A	12/05/12	100	0.05076	10	1	PS

Parameter	Result
Carbazole	**5.61**

N/A - Not Applicable

Form I
Alaska North Slope Crude
Polynuclear Aromatic Hydrocarbons Isomers

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **ST120612ANC03**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	N/A	12/05/12	100	0.05076	10	1	PS

Parameter	Result
4-Methyldibenzothiophene	**132**
2/3-Methyldibenzothiophene	**97.8**
1-Methyldibenzothiophene	**42.9**
3-Methylphenanthrene	**90.8**
2-Methylphenanthrene	**97.7**
2-Methylanthracene	**2.75**
9/4-Methylphenanthrene	**146**
1-Methylphenanthrene	**94.0**
2-Methylnaphthalene	**1070**
1-Methylnaphthalene	**776**
2,6-Dimethylnaphthalene	**620**
2,3,5-Trimethylnaphthalene	**145**
Naphthobenzothiophene-2,1-D	**29.8**
Naphthobenzothiophene-1,2-D	**7.12**
Naphthobenzothiophene-2,3-D	**3.44**

N/A - Not Applicable

Form I
Alaska North Slope Crude
Steranes and Triterpanes

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **ST120612ANC03**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	N/A	12/05/12	100	0.05076	10	1	PS

Parameter	Result	
C23 Tricyclic Terpane	**61.2**	
C24 Tricyclic Terpane	**39.6**	
C25 Tricyclic Terpane	**37.4**	
C24 Tetracyclic Terpane	**12.5**	
C26 Tricyclic Terpane-22S	**14.8**	
C26 Tricyclic Terpane-22R	**13.5**	
C28 Tricyclic Terpane-22S	**14.6**	
C28 Tricyclic Terpane-22R	**15.8**	
C29 Tricyclic Terpane-22S	**19.1**	
C29 Tricyclic Terpane-22R	**19.8**	
18a-22,29,30-Trisnorneohopane-TS	**28.7**	
C30 Tricyclic Terpane-22S	**15.0**	
C30 Tricyclic Terpane-22R	**15.1**	
17a(H)-22,29,30-Trisnorhopane-TM	**33.6**	
17a/b,21b/a 28,30-Bisnorhopane	**6.29**	
17a(H),21b(H)-25-Norhopane	**7.55**	
30-Norhopane	**94.0**	
18a(H)-30-Norneohopane-C29Ts	**23.5**	
17a(H)-Diahopane	**14.1**	
30-Normoretane	**11.2**	
18a(H)&18b(H)-Oleananes	1.97	U
Hopane	**156**	
Moretane	**16.6**	
30-Homohopane-22S	**66.8**	
30-Homohopane-22R	**57.2**	
T22a-Gammacerane/C32-diahopane	**11.9**	
30,31-Bishomohopane-22S	**48.3**	
30,31-Bishomohopane-22R	**37.0**	

Parameter	Result
30,31-Trishomohopane-22S	**38.2**
30,31-Trishomohopane-22R	**26.2**
Tetrakishomohopane-22S	**26.8**
Tetrakishomohopane-22R	**18.8**
Pentakishomohopane-22S	**28.6**
Pentakishomohopane-22R	**23.3**
13b(H),17a(H)-20S-Diacholestane	**50.7**
13b(H),17a(H)-20R-Diacholestane	**25.0**
13b,17a-20S-Methyldiacholestane	**23.6**
14a(H),17a(H)-20S-Cholestane/ 13b(H),17a(H)-20S-Ethyldiacholestane (S12)	**61.0**
14a(H),17a(H)-20R-Cholestane/ 13b(H),17a(H)-20R-Ethyldiacholestane (S17)	**72.9**
Unknown Sterane (S18)	**20.4**
13a,17b-20S-Ethyldiacholestane	**3.86**
14a,17a-20S-Methylcholestane	**31.8**
14a,17a-20R-Methylcholestane	**32.7**
14a(H),17a(H)-20S-Ethylcholestane	**52.1**
14a(H),17a(H)-20R-Ethylcholestane	**38.6**
14b(H),17b(H)-20R-Cholestane	**40.6**
14b(H),17b(H)-20S-Cholestane	**41.3**
14b,17b-20R-Methylcholestane	**45.6**
14b,17b-20S-Methylcholestane	**54.9**
14b(H),17b(H)-20R-Ethylcholestane	**59.9**
14b(H),17b(H)-20S-Ethylcholestane	**40.0**
C26,20R- +C27,20S- triaromatic steroid	**247**
C28,20S-triaromatic steroid	**156**
C27,20R-triaromatic steroid	**148**
C28,20R-triaromatic steroid	**127**

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\
Data File : A90009342.D
Acq On : 5 Dec 2012 4:08 pm
Operator : PS
Sample : ST120612ANC03
Misc : WHAQ46@5.076
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Dec 06 11:50:10 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Dec 06 08:20:21 2012
Response via : Initial Calibration

Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.557	164	96033	500.000	ng/mL	0.00
74) Chrysene-d12	42.968	240	153631	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.622	136	324880	880.170	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 88.02%			
42) Phenanthrene-d10	32.405	188	322936	932.312	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 93.23%			
83) Benzo[b]fluoranthene-d12	46.861	264	284771	1008.384	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 100.84%			
88) Benzo[a]pyrene-d12	48.023	264	278898	985.189	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 98.52%			
129) 5B(H)Cholane - Surr	43.607	217	71244	1104.652	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 110.47%			
Target Compounds						Qvalue
3) trans-Decalin	16.291	138	186009	2203.180	ng/mL	100
4) cis-Decalin	17.495	138	8991	136.032	ng/mL	100
5) C1-Decalins	18.216	152	331917M5	3931.385	ng/mL	
6) C2-Decalins	19.540	166	296316M5	3509.710	ng/mL	
7) C3-Decalins	22.003	180	174094M5	2062.053	ng/mL	
8) C4-Decalins	25.380	194	184227M5	2182.074	ng/mL	
10) Naphthalene	19.695	128	1018208	2688.111	ng/mL#	100
11) C1-Naphthalenes	22.378	142	2298440M5	6067.975	ng/mL	
12) C2-Naphthalenes	25.206	156	2952881M5	7795.726	ng/mL	
13) C3-Naphthalenes	27.542	170	2299451M5	6070.644	ng/mL	
14) C4-Naphthalenes	30.298	184	1310806M5	3460.581	ng/mL	
16) 2-Methylnaphthalene	22.378	142	1350414	5451.552	ng/mL#	100
17) 1-Methylnaphthalene	22.797	142	947322	3940.655	ng/mL#	100
18) Benzothiophene	19.914	134	8708M6	27.471	ng/mL	
19) C1-Benzo(b)thiophenes	21.949	148	53867M5	169.935	ng/mL	
20) C2-Benzo(b)thiophenes	25.407	162	82075M5	258.923	ng/mL	
21) C3-Benzo(b)thiophenes	27.378	176	178102M5	561.861	ng/mL	
22) C4-Benzo(b)thiophenes	29.112	190	158243M5	499.212	ng/mL	
23) Biphenyl	24.248	154	228429M6	704.673	ng/mL	
24) 2,6-Dimethylnaphthalene	24.869	156	733431	3149.730	ng/mL#	100
25) Dibenzofuran	27.323	168	87647	253.499	ng/mL#	83
26) Acenaphthylene	25.955	152	13158	33.768	ng/mL#	100
27) Acenaphthene	26.685	153	20452M6	83.480	ng/mL	
28) 2,3,5-Trimethylnaphthalen	28.236	170	157284M6	734.687	ng/mL	
29) Fluorene	28.692	166	98636M4	366.619	ng/mL	
30) C1-Fluorenes	31.055	180	232932M5	865.782	ng/mL	
31) C2-Fluorenes	33.245	194	374645M5	1392.514	ng/mL	
32) C3-Fluorenes	35.071	208	358747M5	1333.422	ng/mL	
33) Dibenzothiophene	32.004	184	261347	690.565	ng/mL#	89
34) 4-Methyldibenzothiophene(	33.774	198	253744	670.476	ng/mL#	100
35) 2/3-Methyldibenzothiophen	34.121	198	187800	496.230	ng/mL#	100
36) 1-Methyldibenzothiophene(	34.541	198	82398	217.723	ng/mL#	100
37) OTP	34.194	198	26884	71.036	ng/mL#	100
38) C1-Dibenzothiophenes	33.774	198	562272M5	1485.709	ng/mL	
38) C1-Dibenzothiophenes BS	33.774	198	535388m	1414.672	ng/mL	
39) C2-Dibenzothiophenes	35.454	212	741305M5	1958.773	ng/mL	

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Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Dec 06 08:20:21 2012
Response via : Initial Calibration

Sub List : Default - All compounds listed

	Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
40)	C3-Dibenzothiophenes	37.252	226	666283M5	1760.540	ng/mL	
41)	C4-Dibenzothiophenes	38.941	240	351814M5	929.609	ng/mL	
43)	Phenanthrene	32.497	178	399166	1020.918	ng/mL	94
44)	3-Methylphenanthrene(3MP)	34.459	192	180149	460.754	ng/mL	96
45)	2-Methylphenanthrene(2MP)	34.568	192	193816	495.709	ng/mL	98
46)	2-Methylanthracene(2MA)	34.724	192	5461M2	13.967	ng/mL	
47)	9/4-Methylphenanthrene(9M	34.906	192	288743	738.497	ng/mL	98
48)	1-Methylphenanthrene(1MP)	34.997	192	186665M4	477.420	ng/mL	
49)	C1-Phenanthrenes/Anthrace	34.906	192	868961M5	2222.479	ng/mL	
50)	C2-Phenanthrenes/Anthrace	36.723	206	973577M5	2490.048	ng/mL	
50)	C2-Phenanthrenes/Anthr BS	36.723	206	973577m	2490.048	ng/mL	
52)	C3-Phenanthrenes/Anthrace	38.558	220	665387M5	1701.813	ng/mL	
53)	C4-Phenanthrenes/Anthrace	40.722	234	253280M5	647.796	ng/mL	
56)	Carbazole	33.345	167	9774M4	28.457	ng/mL	
57)	1-Methylphenanthrene	34.997	192	186743M4	647.359	ng/mL	
58)	Fluoranthene	37.252	202	9198M4	21.059	ng/mL	
59)	Benzo(b)fluorene	39.772	216	8841	34.036	ng/mL	84
60)	Pyrene	38.138	202	29545M6	66.304	ng/mL	
61)	C1-Fluoranthenes/Pyrenes	39.526	216	132288M5	296.876	ng/mL	
62)	C2-Fluoranthenes/Pyrenes	41.324	230	199084M5	446.777	ng/mL	
63)	C3-Fluoranthenes/Pyrenes	43.342	244	238973M5	536.295	ng/mL	
64)	C4-Fluoranthenes/Pyrenes	44.694	258	199527M5	447.772	ng/mL	
66)	Naphthobenzothiophene	41.982	234	58391	151.018	ng/ml#	79
67)	Naphthobenzothiophene-2,1	41.982	234	58391	151.018	ng/mL#	79
68)	Naphthobenzothiophene-1,2	42.320	234	13965M6	36.118	ng/mL	
69)	Naphthobenzothiophene-2,3	42.621	234	6755M6	17.471	ng/mL	
70)	C1-Naphthobenzothiophenes	43.379	248	203475M5	526.252	ng/ml	
71)	C2-Naphthobenzothiophenes	45.379	262	263802M5	682.276	ng/ml	
72)	C3-Naphthobenzothiophenes	46.980	276	197242M5	510.131	ng/ml	
73)	C4-Naphthobenzothiophenes	48.032	290	142466M5	368.463	ng/mL	
75)	Benz[a]anthracene	42.904	228	4058M2	11.516	ng/mL	
76)	Chrysene	43.041	228	64526M4	186.176	ng/mL	
77)	Chrysene/Triphenylene	43.041	228	64658M4	186.557	ng/mL	
78)	C1-Chrysenes	44.538	242	119009M5	343.376	ng/mL	
79)	C2-Chrysenes	46.614	256	163911M5	472.931	ng/mL	
79)	C2-Chrysenes BS	46.614	256	152260m	439.314	ng/mL	
80)	BBF-d12 Surr BKGD	46.861	256	11651	33.617	ng/mL	100
81)	C3-Chrysenes	49.257	270	174005M5	502.055	ng/mL	
82)	C4-Chrysenes	49.349	284	96750M5	279.152	ng/mL	
84)	Benzo[b]fluoranthene	46.943	252	9155M4	25.056	ng/mL	
87)	Benzo[e]pyrene	47.922	252	17896M4	51.581	ng/mL	
89)	Benzo[a]pyrene	48.114	252	3282M2	9.988	ng/mL	
90)	Perylene	48.416	252	5893M6	16.804	ng/mL	
91)	Indeno[1,2,3-cd]pyrene	52.769	276	1561M6	4.290	ng/mL	
92)	Dibenz[ah]+[ac]anthracene	52.806	278	1962M4	5.473	ng/mL	
93)	Benzo[g,h,i]perylene	54.012	276	6410	17.925	ng/mL#	88
94)	Hopane (T19)	51.928	191	107329M2	794.630	ng/mL	
95)	17a(H),21B(H)-hopane - C3	51.928	191	107376M2	794.978	ng/mL	
96)	C23 Tricyclic Terpane (T4	40.631	191	41963M4	310.681	ng/ml	
97)	C24 Tricyclic Terpane (T5	41.361	191	27130	200.862	ng/ml	100
98)	C25 Tricyclic Terpane (T6	42.849	191	25641M4	189.838	ng/ml	
99)	C24 Tetracyclic Terpane (	44.155	191	8572	63.464	ng/ml	100
100)	C26 Tricyclic Terpane-22S	43.899	191	10118M4	74.910	ng/ml	

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\
Data File : A90009342.D
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Sample : ST120612ANC03
Misc : WHAQ46@5.076
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Dec 06 11:50:10 2012
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Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Dec 06 08:20:21 2012
Response via : Initial Calibration

Sub List : Default - All compounds listed

	Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
101)	C26 Tricyclic Terpane-22R	43.991	191	9258	68.543	ng/ml	100
102)	C28 Tricyclic Terpane-22S	46.285	191	10010M4	74.111	ng/ml	
103)	C28 Tricyclic Terpane-22R	46.440	191	10863	80.426	ng/ml	100
104)	C29 Tricyclic Terpane-22S	46.962	191	13096	96.959	ng/ml	100
105)	C29 Tricyclic Terpane-22R	47.154	191	13549M6	100.312	ng/ml	
106)	18a-22,29,30-Trisnorneoho	48.251	191	19668	145.616	ng/ml	100
107)	C30 Tricyclic Terpane-22S	48.352	191	10319M4	76.399	ng/mL	
108)	C30 Tricyclic Terpane-22R	48.590	191	10346M6	76.598	ng/mL	
109)	17a(H)-22,29,30-Trisnorho	48.791	191	23042	170.596	ng/ml	100
110)	17a/b,21b/a 28,30-Bisnorh	49.943	191	4310	31.910	ng/ml	100
111)	17a(H),21b(H)-25-Norhopan	49.760	191	5179	38.344	ng/ml	100
112)	30-Norhopane (T15)	50.602	191	64469	477.308	ng/ml	100
113)	18a(H)-30-Norneohopane-C2	50.702	191	16118M4	119.333	ng/ml	
114)	17a(H)-Diahopane (X)	50.821	191	9668M4	71.579	ng/ml	
115)	30-Normoretane (T17)	51.352	191	7648	56.623	ng/ml	100
117)	Moretane (T20)	52.586	191	11365M6	84.143	ng/ml	
118)	30-Homohopane-22S (T21)	53.655	191	45823	339.259	ng/ml	100
119)	30-Homohopane-22R (T22)	53.884	191	39201	290.232	ng/ml	100
120)	Gammacerane/C32-diahopane	54.405	191	8176	60.533	ng/mL	100
121)	30,31-Bishomohopane-22S (	55.163	191	33126	245.254	ng/ml	100
122)	30,31-Bishomohopane-22R (	55.529	191	25395	188.017	ng/ml	100
123)	30,31-Trishomohopane-22S	57.219	191	26174	193.784	ng/ml	100
124)	30,31-Trishomohopane-22R	57.813	191	17938	132.807	ng/ml	100
125)	Tetrakishomohopane-22S (T	59.741	191	18357	135.909	ng/ml	100
126)	Tetrakishomohopane-22R (T	60.618	191	12887	95.411	ng/ml	100
127)	Pentakishomohopane-22S (T	62.757	191	19585	145.001	ng/ml	100
128)	Pentakishomohopane-22R (T	63.999	191	15943M4	118.037	ng/ml	
130)	13b(H),17a(H)-20S-Diachol	45.114	217	16602M4	257.417	ng/ml	
131)	13b(H),17a(H)-20R-Diachol	45.535	217	8183M4	126.879	ng/ml	
132)	13b,17a-20S-Methyldiachol	46.230	217	7724M4	119.762	ng/ml	
133)	14a,17a-20S-Chol/13b,17a-	47.090	217	19957	309.437	ng/ml	100
134)	14a,17a-20R-Chol/13b,17a-	47.602	217	23854	369.861	ng/ml	100
135)	Unknown Sterane (S18)	47.876	217	6673	103.466	ng/ml	100
136)	13a,17b-20S-Ethyldiachole	48.132	217	1263	19.583	ng/ml	100
137)	14a,17a-20S-Methylcholest	48.288	217	10428	161.688	ng/ml	100
138)	14a,17a-20R-Methylcholest	48.992	217	10706M6	165.999	ng/ml	
139)	14a(H),17a(H)-20S-Ethylch	49.330	217	17068	264.643	ng/ml	100
140)	14a(H),17a(H)-20R-Ethylch	50.218	217	12646M4	196.079	ng/ml	
141)	14b(H),17b(H)-20R-Cholest	47.181	218	13274M4	205.816	ng/ml	
142)	14b(H),17b(H)-20S-Cholest	47.263	218	13517M4	209.584	ng/ml	
143)	14b,17b-20R-Methylcholest	48.462	218	14937	231.601	ng/ml	100
144)	14b,17b-20S-Methylcholest	48.535	218	17973M4	278.675	ng/ml	
145)	14b(H),17b(H)-20R-Ethylch	49.577	218	19603	303.948	ng/ml	100
146)	14b(H),17b(H)-20S-Ethylch	49.614	218	13098M2	203.087	ng/ml	
147)	C26,20R- +C27,20S- triaro	49.285	231	80824	1253.192	ng/mL	100
148)	C28,20S-triaromatic stero	50.126	231	51030	791.230	ng/mL	100
149)	C27,20R-triaromatic stero	50.556	231	48424M3	750.824	ng/mL	
150)	C28,20R-triaromatic stero	51.727	231	41563	644.443	ng/mL	100

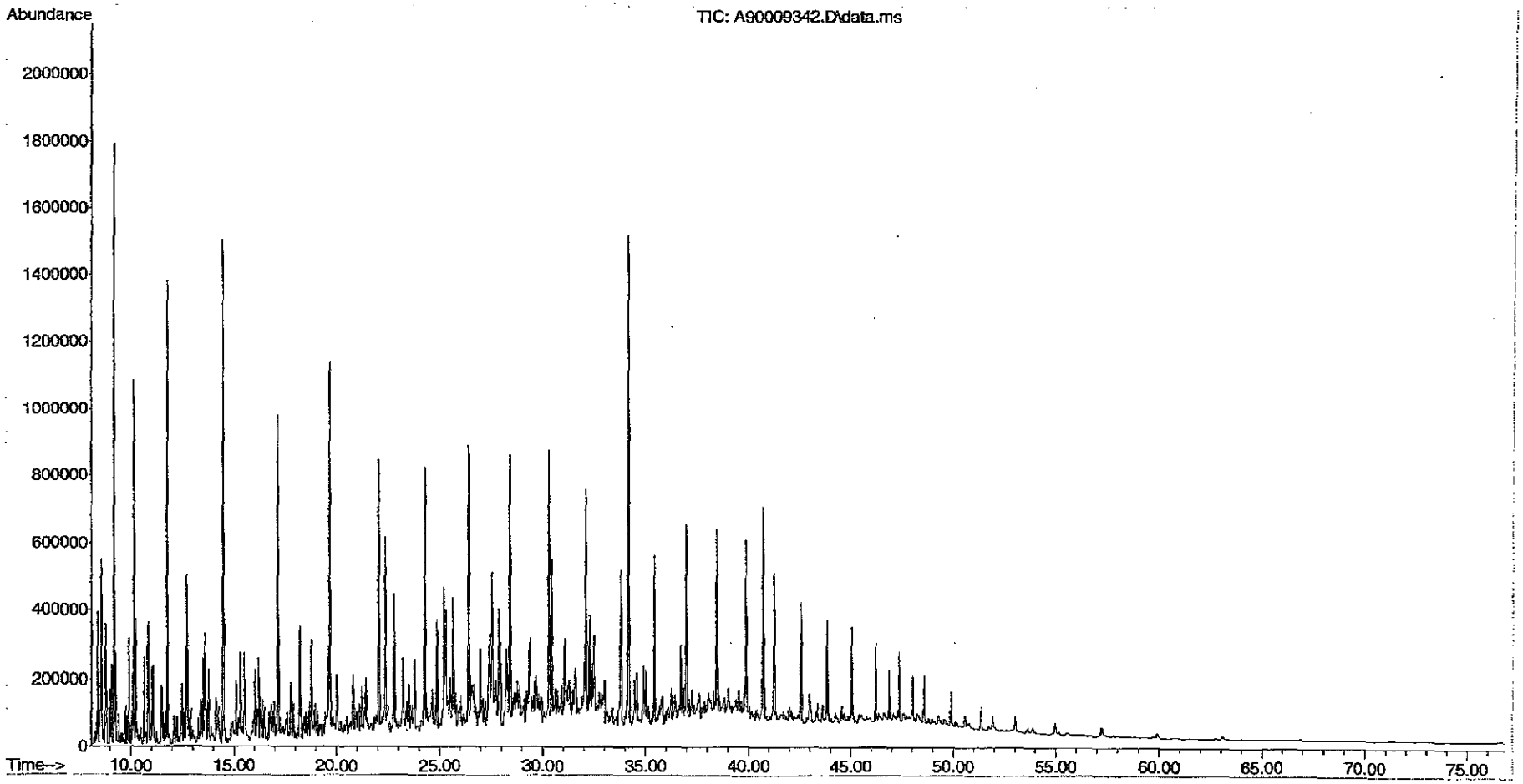
(#) = qualifier out of range (m) = manual integration (+) = signals summed

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QLast Update : Thu Dec 06 08:20:21 2012
Response via : Initial Calibration

Sub List : Default - All compounds listed



Alpha Woods Hole Lab
Batch Weight Report
12/18/2012

Lab ID	QC Type	PS1212022 - Pan Weight	PS1212022 - Wet Weight	PS1212022 - Dry Weight	PS1212022 - Dry Weight #2	PS1212022 - Dry Weight #3	Percent Solid	RPD
1212022-01	SAM	1.34	8.87	7.24	7.23		78.22	
1212022-02	SAM	1.35	10.78	8.86	8.85		79.53	
1212022-03	D	1.34	9.62	7.85	7.84		78.50	0.62%
1212022-03	SAM	1.34	9.67	7.93	7.92		78.99	
1212022-04	SAM	1.35	8.88	6.99	6.97		74.63	
PSS121812B02	B	1.34	1.34	1.33	1.33		100.00	

Initial: 12/18/2012 11:48:13 AM dm
Weight #1: 12/21/2012 4:00:17 PM amk
Weight #2: 12/26/2012 6:55:22 PM GV

Alpha Woods Hole Lab
Batch Prep Report
12/18/2012 1212022X - OP NEWFIE

Lab ID	QC Type	Prep Method	Analyst	Prep Start Date	Prep Completed	TCLP Date	Initial Amount (g or ml)	Split	PIV (ml)	Final Volume (ml)	Solvent Ex	Conc. Analyst	Conc. Date	Conc. Method	Transfer Volume (ml)	Vialed By	Vialed Date
1212022-01	SAM	Shaker	DM	12/20/2012	12/20/2012		15.95	4	0.5	2	False	DB	12/19/2012	KD Flask	0.1	GV	12/20/2012
1212022-02	M	Shaker	DM	12/20/2012	12/20/2012		15.22	4	0.5	2	False	DB	12/19/2012	KD Flask	0.1	GV	12/20/2012
1212022-02	S	Shaker	DM	12/20/2012	12/20/2012		15.13	4	0.5	2	False	DB	12/19/2012	KD Flask	0.1	GV	12/20/2012
1212022-02	SAM	Shaker	DM	12/20/2012	12/20/2012		15.11	4	0.5	2	False	DB	12/19/2012	KD Flask	0.1	GV	12/20/2012
1212022-03	D	Shaker	DM	12/20/2012	12/20/2012		15.44	4	0.5	2	False	DB	12/19/2012	KD Flask	0.1	GV	12/20/2012
1212022-03	SAM	Shaker	DM	12/20/2012	12/20/2012		15.46	4	0.5	2	False	DB	12/19/2012	KD Flask	0.1	GV	12/20/2012
1212022-04	SAM	Shaker	DM	12/20/2012	12/20/2012		15.18	4	0.5	2	False	DB	12/19/2012	KD Flask	0.1	GV	12/20/2012
SS121812B06	B	Shaker	DM	12/20/2012	12/20/2012		15	4	0.5	2	False	DB	12/19/2012	KD Flask	0.1	GV	12/20/2012
SS121812C41BN02	C41BN	Shaker	DM	12/20/2012	12/20/2012		5	4	0.5	2	False	DB	12/19/2012	KD Flask	0.1	GV	12/20/2012
SS121812LCS06	LCS	Shaker	DM	12/20/2012	12/20/2012		15	4	0.5	2	False	DB	12/19/2012	KD Flask	0.1	GV	12/20/2012
SS121812LCSD06	LCSD	Shaker	DM	12/20/2012	12/20/2012		15	4	0.5	2	False	DB	12/19/2012	KD Flask	0.1	GV	12/20/2012

Alpha Woods Hole Lab
Batch Prep Spike Report

12/18/2012 1212022X - OP NEWFIE Analyst: CTK Witness: AMK

Lab ID	QC Type	OP NEWFIE - surr	Vol OP NEWFIE - surr	Units OP NEWFIE - surr	OP NEWFIE - spk 1	Vol OP NEWFIE - spk 1	Units OP NEWFIE - spk 1	OP NEWFIE - spk 2	Vol OP NEWFIE - spk 2	Units OP NEWFIE - spk 2
1212022-01	SAM	WHAR19	500	µl	WHAQ92	500	µl			
1212022-02	M	WHAR19	500	µl	WHAQ92	500	µl	WHAR09	500	µl
1212022-02	S	WHAR19	500	µl	WHAQ92	500	µl	WHAR09	500	µl
1212022-02	SAM	WHAR19	500	µl	WHAQ92	500	µl			
1212022-03	D	WHAR19	500	µl	WHAQ92	500	µl			
1212022-03	SAM	WHAR19	500	µl	WHAQ92	500	µl			
1212022-04	SAM	WHAR19	500	µl	WHAQ92	500	µl			
SS121812B06	B	WHAR19	100	µl	WHAQ92	100	µl			
SS121812C41BN02	C41BN	WHAR19	100	µl	WHAQ92	100	µl			
SS121812LCS06	LCS	WHAR19	100	µl	WHAQ92	100	µl	WHAR09	100	µl
SS121812LCSD06	LCSD	WHAR19	100	µl	WHAQ92	100	µl	WHAR09	100	µl

STD ID	TITLE	CONTENTS	SOLVENT	LOT
WHAQ92	Biomarker Surrogate	5b(H) Cholane = 10 ug/mL	DCM	0000020593
WHAR09	PAH/SHC LCS Spike Solution	Aromatic Hydrocarbon Std (for LCS) = 10 ug/mL MA EPH Aliphatic Hydrocarbon = 200 ug/mL	DCM	0000014877
WHAR19	Surrogate PAH/SHC Solution	Custom Deuterated PAH Surrogate = 10 ug/mL n-Tetracosane = 506.7 ug/mL OTP Stock Solution = 500 ug/mL	DCM	0000014877

Alpha Woods Hole Lab
Batch Prep Spike Report

12/18/2012 1212022X - OP SHC Analyst: CTK Witness: AMK

Lab ID	QC Type	OP SHC - surr	Vol OP SHC - surr	Units OP SHC - surr	OP SHC - spk 1	Vol OP SHC - spk 1	Units OP SHC - spk 1	OP SHC - spk 2	Vol OP SHC - spk 2	Units OP SHC - spk 2
1212022-01	SAM	WHAR19	500	µl				WHAQ91	50	µl
1212022-02	M	WHAR19	500	µl	WHAR09	500	µl	WHAQ91	50	µl
1212022-02	S	WHAR19	500	µl	WHAR09	500	µl	WHAQ91	50	µl
1212022-02	SAM	WHAR19	500	µl				WHAQ91	50	µl
1212022-03	D	WHAR19	500	µl				WHAQ91	50	µl
1212022-03	SAM	WHAR19	500	µl				WHAQ91	50	µl
1212022-04	SAM	WHAR19	500	µl				WHAQ91	50	µl
SS121812B06	B	WHAR19	100	µl				WHAQ91	50	µl
SS121812C41BN02	C41BN	WHAR19	100	µl				WHAQ91	50	µl
SS121812LCS06	LCS	WHAR19	100	µl	WHAR09	100	µl	WHAQ91	50	µl
SS121812LCSD06	LCSD	WHAR19	100	µl	WHAR09	100	µl	WHAQ91	50	µl

STD ID	TITLE	CONTENTS	SOLVENT	LOT
WHAQ91	PAH/SHC RIS Spiking Solution	5 Alpha Androstane = 500 ug/mL Acenaphthene-d10, Chrysene-d12 = 5 ug/mL	DCM	. 0000020593
WHAR09	PAH/SHC LCS Spike Solution	Aromatic Hydrocarbon Std (for LCS) = 10 ug/mL MA EPH Aliphatic Hydrocarbon = 200 ug/mL	DCM	0000014877
WHAR19	Surrogate PAH/SHC Solution	Custom Deuterated PAH Surrogate = 10 ug/mL n-Tetracosane = 506.7 ug/mL OTP Stock Solution = 500 ug/mL	DCM	0000014877

Alpha Woods Hole Lab
Batch Weight Report
12/18/2012

Lab ID	QC Type	1212022X - Sample
1212022-01	SAM	15.95
1212022-02	SAM	15.11
1212022-02M	OP NEWFIE	15.22
1212022-02M	OP SHC	15.22
1212022-02S	OP NEWFIE	15.13
1212022-02S	OP SHC	15.13
1212022-03	D	15.44
1212022-03	SAM	15.46
1212022-04	SAM	15.18
SS121812B06	B	15
SS121812C41BN02	C41BN	5
SS121812LCS06LCS	OP NEWFIE	15
SS121812LCS06LCS	OP SHC	15
SS121812LCSD06LCSD	OP NEWFIE	15
SS121812LCSD06LCSD	OP SHC	15

ETR 1212022x

Analyst BA

Date 12/20/2012

Alpha Analytical

- ☐ Pre-Alumina
- ☐ Post-Alumina
- ☑ Pre-Silica
- ☐ Oily Material Prep.
- ☐ Other

ETR	Lab ID	QC	Extract Volume (µL)	Aliquot Removed (µL)	Aliquot Weight (mg)	Total Extract Weight (mg)	Volume Removed for Column (µl)	Extract Weight to Column (mg)	Split Factor	QC (%R)
	WHAR21	Gravimetric Standard	10000	50	0.251	50.20	N/A	N/A	N/A	100%
1212022	1		4000	50	0.046	3.68	2000	1.84	2.00	
1212043	2		4000	50	0.058	4.64	2000	2.32	2.00	
1212043	2ms	ms	4000	50	0.063	5.04	2000	2.52	2.00	
1212043	2msd	msd	4000	50	0.077	6.16	2000	3.08	2.00	
1212043	3D	D	4000	50	0.058	4.64	2000	2.32	2.00	13%RPD
1212043	3		4000	50	0.066	5.28	2000	2.64	2.00	
1212043	4		4000	50	0.104	8.32	2000	4.16	2.00	

Note:

Total Extract Weight (mg) = (Extract Volume ÷ Aliquot Removed) (Aliquot Weight)

Gravimetric Standard = 5 mg/mL

LCS Acceptance Criteria: 95% - 105%

Verified by: BS

Date: 12/26/12

ETR 1212022x

Analyst BA

Date 12/20/2012

Alpha Analytical

- ☐ Pre-Alumina
- ☐ Post-Alumina
- ☑ Pre-Silica
- ☐ Oily Material Prep.
- ☐ Other

ETR	Lab ID	QC	Extract Volume (µL)	Aliquot Removed (µL)	Aliquot Weight (mg)	Total Extract Weight (mg)	Volume Removed for Column (µl)	Extract Weight to Column (mg)	Split Factor	QC (%R)
	WHAR21	Gravimetric Standard	10000	50	0.251		N/A	N/A	N/A	0%
1212022	1		4000	50	0.046					
1212043	2		4000	50	0.058					
1212043	2ms	ms	4000	50	0.063					
1212043	2msd	msd	4000	50	0.077					
1212043	3D	D	4000	50	0.058					#VALUE!
1212043	3		4000	50	0.066					
1212043	4		4000	50	0.104					

Note:

Total Extract Weight (mg) = (Extract Volume ÷ Aliquot Removed) (Aliquot Weight)

Gravimetric Standard = 5 mg/mL

LCS Acceptance Criteria: 95% - 105%

Verified by: BA

Date: 12/20/12

Alpha Woods Hole Lab
Batch Clean Up Report
12/18/2012 1212022X - OP NEWFIE

Lab ID	QC Type	Clean Up Method	Analyst	Clean Up Date	Flow Rate	Coll. Start	Coll. End	Concentration Analyst	Conc. Date	Solvent Ex.	Pre Vol (ml)	Frac Amt (ml)	Frac Split	Frac Fact	Tran Vol (ml)	Active
1212022-01	SAM	3660B	WR	12/19/2012											0.1	True
1212022-02	M	3660B	WR	12/19/2012											0.1	True
1212022-02	S	3660B	WR	12/19/2012											0.1	True
1212022-02	SAM	3660B	WR	12/19/2012											0.1	True
1212022-03	D	3660B	WR	12/19/2012											0.1	True
1212022-03	SAM	3660B	WR	12/19/2012											0.1	True
1212022-04	SAM	3660B	WR	12/19/2012											0.1	True
SS121812B06	B	3660B	WR	12/19/2012											0.1	True
SS121812C41BN02	C41BN	3660B	WR	12/19/2012											0.1	True
SS121812LCS06	LCS	3660B	WR	12/19/2012											0.1	True
SS121812LCSD06	LCSD	3660B	WR	12/19/2012											0.1	True

Alpha Woods Hole Lab
Batch Clean Up Report
12/18/2012 1212022X - OP NEWFIE

Lab ID	QC Type	Clean Up Method	Analyst	Clean Up Date	Flow Rate	Coll. Start	Coll. End	Concentration Analyst	Conc. Date	Solvent Ex.	Pre Vol (ml)	Frac Amt (ml)	Frac Split	Frac Fact	Tran Vol (ml)	Active
1212022-01	SAM	3630	BA	12/20/2012				BA	12/20/2012	False	4	2	2			True
1212022-02	M	3630	BA	12/20/2012				BA	12/20/2012	False	4	2	2			True
1212022-02	S	3630	BA	12/20/2012				BA	12/20/2012	False	4	2	2			True
1212022-02	SAM	3630	BA	12/20/2012				BA	12/20/2012	False	4	2	2			True
1212022-03	D	3630	BA	12/20/2012				BA	12/20/2012	False	4	2	2			True
1212022-03	SAM	3630	BA	12/20/2012				BA	12/20/2012	False	4	2	2			True
1212022-04	SAM	3630	BA	12/20/2012				BA	12/20/2012	False	4	2	2			True
SS121812B06	B	3630	BA	12/20/2012				BA	12/20/2012	False	4	2	2			True
SS121812C41BN02	C41BN	3630	BA	12/20/2012				BA	12/20/2012	False	4	2	2			True
SS121812LCS06	LCS	3630	BA	12/20/2012				BA	12/20/2012	False	4	2	2			True
SS121812LCSD06	LCSD	3630	BA	12/20/2012				BA	12/20/2012	False	4	2	2			True

Alpha Woods Hole Lab
Batch Clean Up Report
12/18/2012 1212022X - OP NEWFIE

Lab ID	QC Type	Clean Up Method	Analyst	Clean Up Date	Flow Rate	Coll. Start	Coll. End	Concentration Analyst	Conc. Date	Solvent Ex.	Pre Vol (ml)	Frac Amt (ml)	Frac Split	Frac Fact	Tran Vol (ml)	Active
1212022-01	SAM	split	GV	12/20/2012							0.9	0.45	2			True
1212022-02	M	split	GV	12/20/2012							0.9	0.45	2			True
1212022-02	S	split	GV	12/20/2012							0.9	0.45	2			True
1212022-02	SAM	split	GV	12/20/2012							0.9	0.45	2			True
1212022-03	D	split	GV	12/20/2012							0.9	0.45	2			True
1212022-03	SAM	split	GV	12/20/2012							0.9	0.45	2			True
1212022-04	SAM	split	GV	12/20/2012							0.9	0.45	2			True
SS121812B06	B	split	GV	12/20/2012							0.9	0.45	2			True
SS121812C41BN02	C41BN	split	GV	12/20/2012							0.9	0.45	2			True
SS121812LCS06	LCS	split	GV	12/20/2012							0.9	0.45	2			True
SS121812LCSD06	LCSD	split	GV	12/20/2012							0.9	0.45	2			True

DWH Forensic Preparation Checklist

Batch ID: 1212022X **Client:** AECOM **Project:** Enbridge

Anomalies are noted in the Prep Process Notes section below.

Test(s) Spiked for:
Choose from the following:
F1B, POIB, POIH, POIHX, POITAS, TPH+A

Identify Matrix:
Filter • Filter (L) • NAPL • Net • Oil Product • PUF • Sediment • Sheen Soil • Solid • SPMD • Tissue Pom Pom • 1L Water • 4L Water • Floc Water

	Date:	Initials:
COC/ETR Check:	12/18/12	DM
1st Extraction:	12/18/12	CJK
2nd Extraction:	12/18/12	GV
3rd Extraction:	12/19/12	JM

Extraction HT:
12/13/2013

Cleanup Methods:		Date/Initials:
No Cleanup Required		
Alumina Column (3610)	~~X~~	
Silica Column (3630)	X	BA 12/20/12
Fractionation Column (3630F1)		
GPC (3640)		
Copper (3660B)	X	WR 12/19/12
Water pH<2 verified		

	Date/Initials:	ID & Amount:
RIS Spike Analyst:	12/20/12 WR	WHAQ91 Surg/SOOmL
RIS Spike Witness:	12/20/12 GV	

Prep Process Notes

- All samples weighed low and spiked high after observing first extraction. DM 12/18/12

REAGENT	LOT #
DCM	0000026979
SODIUM SULFATE	0000013404
SILICA GEL	BCBH9151V
ALUMINA	NA

REAGENT	LOT #
COPPER	QWR121912B
GLASS WOOL	34310002

BATCH COMPLETE Analyst:	GV	Date:	12/20/12
BATCH REVIEWED Analyst:	BA	Date:	12/26/12

DWH Forensic Preparation Checklist

Batch ID: 121022X **Client:** AECOM **Project:** Enbridge

Prep Process Notes								
Sample ID	Low Volume	High H2O	Plant Material	Other	Difficult to homogenize	Observable Hydrocarbon	Hydrocarbon Odor	Spiked High
1				Shells/Rocks	✓			✓
2				Shells/Rocks	✓			✓
3				Shells/Rocks	✓			✓
4				Shells/Rocks	✓		✓	✓

Present ✔

Dilution Rework Tracking
Forensics Prep.

ETR: 1212022 Instrument ID PAH9

Sample ID	Init. Sample Volume (uL)	Aliquot removed from Initial Sample Volume (uL)	Final Volume for Analysis (ul)	Diluted Sample ID	Spiked With: STD ID/ul AMT	Total Dilution of Amount	Dilution of Conc.	Date/ Initials
1210022-04	300	100	200	1210022-04-RE	WHAQ91 10uL		2	db12-26-12

Dilution Calculations Validated by: _____ **Received by:** _____

Date: _____ **Date:** _____

Note:
Dilution samples identify by suffix -RE

Analysis log File

Total Files Reported in Log : 19
Log Generated From Directory: O:\Forensics\Data\PAH9\2012\DEC12\DEC4\

No.	DATA FILE	SAMPLE NAME	MISC	DATE INJ'D
1	A90009326.D	DCM	DCM	12/4/2012 4:37 pm
2	A90009327.D	PRIME	WHAQ46@5.076	12/4/2012 5:55 pm
3	A90009328.D	PRIME	WHAQ46@5.076	12/4/2012 7:20 pm
4	A90009329.D	PRIME	WHAQ46@5.076	12/4/2012 8:44 pm
5	A90009330.D	DCM	DCM	12/4/2012 10:09 pm
6	A90009331.D	DCM	DCM	12/4/2012 11:34 pm
7	A90009332.D	I912041201 ✓	WHAQ83@10ng/ml	12/5/2012 12:58 am
8	A90009333.D	I912041202 ✓	WHAQ84@25ng/ml	12/5/2012 2:22 am
9	A90009334.D	I912041203 ✓	WHAQ85@100ng/ml	12/5/2012 3:47 am
10	A90009335.D	I912041204 ✓	WHAQ86@500ng/ml	12/5/2012 5:12 am
11	A90009336.D	I912041205 ✓	WHAQ87@5000ng/ml	12/5/2012 6:36 am
12	A90009337.D	I912041206 ✓	WHAQ88@10000ng/ml	12/5/2012 8:01 am
13	A90009338.D	I912041207 ✓	WHAQ89@20000ng/ml	12/5/2012 9:26 am
14	A90009339.D	DCM	DCM	12/5/2012 10:51 am
15	A90009340.D	Q912041201 ✓	WHAQ50@500ng/ml	12/5/2012 12:16 pm
16	A90009341.D	DCM	DCM	12/5/2012 2:43 pm
17	A90009342.D	ST120612ANC03 ✓	WHAQ46@5.076	12/5/2012 4:08 pm
18	A90009343.D	COREXIT	WHAN89	12/5/2012 5:33 pm
19	A90009344.D	MC252 ✓	WHAR05@5.250	12/5/2012 6:58 pm

PAH9120412.M
RR 12/6/12
JJK (12/07/12)

SeqLog 1.0.0.1 - (c) 2009 Abacus Database Applications

Analysis log File

Total Files Reported in Log : 58
Log Generated From Directory: O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\

No.	DATA FILE	SAMPLE NAME	MISC	DATE INJ'D
1	A90009572.D	✓C912221201 PASS	WHAQ46:5.076mg/kg	12/22/2012 8:52 am
2	A90009573.D	✓SS122712ANC03 PASS	WHAR16:5.134mg/kg	12/22/2012 10:17 am
3	A90009574.D	MC252	WHAR05:5.250mg/kg	12/22/2012 11:41 am
4	A90009575.D	DCM	DCM	12/22/2012 1:06 pm
5	A90009576.D	DCM	DCM	12/22/2012 2:38 pm
6	A90009577.D	✓SS121812B06	1X	12/22/2012 4:03 pm
7	A90009578.D	✓SS121812LCS06	1X	12/22/2012 5:27 pm
8	A90009579.D	✓SS121812LCSD06	1X	12/22/2012 6:52 pm
9	A90009580.D	✓SS121812C41BN02	1X	12/22/2012 8:16 pm
10	A90009581.D	✓C912221202 PASS	WHAQ86@500ng/ml	12/22/2012 9:41 pm
11	A90009582.D	✓SS122712CL03	WHAQ74:5.064mg/kg	12/22/2012 11:06 pm
12	A90009583.D	✓SS122712WCS03	WHAQ73:5.086mg/kg	12/23/2012 12:30 am
13	A90009584.D	DCM	DCM	12/23/2012 1:55 am
14	A90009585.D	DCM	DCM	12/23/2012 3:20 am
15	A90009586.D	✓1212022-01	1X	12/23/2012 4:44 am
16	A90009587.D	✓1212022-02	1X	12/23/2012 6:09 am
17	A90009588.D	✓1212022-02M	1X	12/23/2012 7:33 am
18	A90009589.D	✓1212022-02S	1X	12/23/2012 8:58 am
19	A90009590.D	✓1212022-03	1X	12/23/2012 10:22 am
20	A90009591.D	✓1212022-03D	1X	12/23/2012 11:47 am
21	A90009592.D	✓1212022-04 RR@2X	1X	12/23/2012 1:12 pm
22	A90009593.D	✓C912221203 PASS	WHAQ86@500ng/ml	12/23/2012 2:36 pm
23	A90009594.D	SS120512MC201	WHAR05:5.250mg/kg	12/23/2012 4:01 pm
24	A90009595.D	DCM	DCM	12/23/2012 5:25 pm
25	A90009596.D	DCM	DCM	12/23/2012 6:50 pm
26	A90009597.D	SS112812B18	1X, re-clean	12/23/2012 8:14 pm
27	A90009598.D	SS112812LCS04	1X, re-clean	12/23/2012 9:38 pm
28	A90009599.D	SS112812LCSD04	1X, re-clean	12/23/2012 11:03 pm
29	A90009600.D	SS112812C41BN13	1X, re-clean	12/24/2012 12:28 am
30	A90009601.D	1210073-02	1X, re-clean	12/24/2012 1:52 am
31	A90009602.D	1210073-03	1X, re-clean	12/24/2012 3:16 am
32	A90009603.D	1210073-04	1X, re-clean	12/24/2012 4:41 am
33	A90009604.D	1210073-05	1X, re-clean	12/24/2012 6:05 am
34	A90009605.D	1210073-05D	1X, re-clean	12/24/2012 7:30 am
35	A90009606.D	C912221204 PASS	WHAQ86@500ng/ml	12/24/2012 8:54 am
36	A90009607.D	SRM1582	WHAQ90:5.508mg/kg	12/24/2012 10:19 am
37	A90009608.D	DCM	DCM	12/24/2012 11:43 am
38	A90009609.D	1210073-06	1X, re-clean	12/24/2012 1:07 pm
39	A90009610.D	1210073-07	1X, re-clean	12/24/2012 2:32 pm
40	A90009611.D	1210073-08	1X, re-clean	12/24/2012 3:56 pm
41	A90009612.D	1210073-09	1X, re-clean	12/24/2012 5:20 pm
42	A90009613.D	1210073-10	1X, re-clean	12/24/2012 6:45 pm
43	A90009614.D	1210073-10M	1X, re-clean	12/24/2012 8:09 pm
44	A90009615.D	1210073-10S	1X, re-clean	12/24/2012 9:33 pm
45	A90009616.D	1210073-11	1X, re-clean	12/24/2012 10:57 pm
46	A90009617.D	1210073-12	1X, re-clean	12/25/2012 12:22 am
47	A90009618.D	1210073-13	1X, re-clean	12/25/2012 1:46 am
48	A90009619.D	C912171205 PASS	WHAQ86@500ng/ml	12/25/2012 3:10 am
49	A90009620.D	MC252	WHAR05@5.250	12/25/2012 4:35 am
50	A90009621.D	DCM	DCM	12/25/2012 5:59 am
51	A90009622.D	1210073-14	1X, re-clean	12/25/2012 7:24 am
52	A90009623.D	1210073-15	1X, re-clean	12/25/2012 8:48 am
53	A90009624.D	1210073-16	1X, re-clean	12/25/2012 10:12 am
54	A90009625.D	1210073-17	1X, re-clean	12/25/2012 11:36 am

Analysis log File

Total Files Reported in Log : 58
Log Generated From Directory: O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\

No.	DATA FILE	SAMPLE NAME	MISC	DATE INJ'D
55	A90009626.D	1210073-18	1X, re-clean	12/25/2012 1:01 pm
56	A90009627.D	1210073-19	1X, re-clean	12/25/2012 2:25 pm
57	A90009628.D	1210073-20	1X, re-clean	12/25/2012 3:50 pm
58	A90009629.D	C912171206 PASS	WHAQ86@500ng/ml	12/25/2012 5:14 pm

PAH9120412.M

CCV= WHAQ86@500ng/ml

DFG 12/27/12

SeqLog 1.0.0.1 - (c) 2009 Abacus Database Applications

Analysis log File

Total Files Reported in Log : 17
Log Generated From Directory: O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\

No.	DATA FILE	SAMPLE NAME	MISC	DATE INJ'D
1	A90009630.D	✓SS122712ANC04	WHAR16:5.134mg/kg	12/26/2012 9:19 am
2	A90009631.D	C912261201	WHAR30@500ng/ml 250 12.27.12	12/26/2012 10:43 am
3	A90009632.D	✓C912261202 PASS *EMV	WHAR30@500ng/ml ↓ QW	12/26/2012 1:53 pm
4	A90009633.D	✓SS122712CL04	WHAQ74@5.064	12/26/2012 3:46 pm
5	A90009634.D	✓SS122712WCS04	WHAQ73@5.036	12/26/2012 5:11 pm
6	A90009635.D	ANS	WHAR16:5.134mg/kg	12/26/2012 6:35 pm
7	A90009636.D	DCM	DCM	12/26/2012 7:59 pm
8	A90009637.D	✓1212022-04-RE	2X 250 12.28.12	12/26/2012 9:24 pm
9	A90009638.D	✓C912261203 PASS	WHAR30@500ng/ml	12/26/2012 10:48 pm
10	A90009639.D	SS120512MC201	WHAR05@5.250	12/27/2012 12:12 am
11	A90009640.D	DCM	DCM	12/27/2012 1:37 am
12	A90009641.D	SS112812B18	1X,ETR 1210073 RA	12/27/2012 3:01 am
13	A90009642.D	SS112812LCS04	1X,ETR 1210073 RA	12/27/2012 4:25 am
14	A90009643.D	SS112812LCSD04	1X,ETR 1210073 RA	12/27/2012 5:50 am
15	A90009644.D	SS112812C41BN13	1X,ETR 1210073 RA	12/27/2012 7:15 am
16	A90009645.D	1210073-07	1X,RA	12/27/2012 8:39 am
17	A90009646.D	1210073-09	1X,RA	12/27/2012 11:22 am

PAH9120412.m
CCV = WHAQ86@500ng/ml

MGN 12/27/12

Printed: 12/27/12 Page: 1

SeqLog 1.0.0.1 - (c) 2009 Abacus Database Applications

Total Saturated Hydrocarbons By GC/FID

Form II
Surrogate Recovery
Total Saturated Hydrocarbons by GC/FID

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**

Lab Code: **MA00030**
ETR: **1212022**
Matrix: **Sediment**

Case: **N/A** SDG: **N/A**

Client ID	Lab ID	ortho-Terphenyl	d50-Tetracosane
Blank	SS121812B06	79	78
LCS	SS121812LCS06	79	78
LCSD	SS121812LCSD06	74	73
SEKR0000R024AS121312D006	1212022-01	75	75
SEKR0000R024AS121312D010	1212022-02	77	77
SEKR0000R024AS121312D010	1212022-02 M	76	76
SEKR0000R024AS121312D010	1212022-02 S	76	76
SEKR0000R024AD121312D010	1212022-03	76	76
SEKR0000R024AD121312D010	1212022-03 D	75	76
SEKR0000R024AS121312D013	1212022-04	76	76

N/A - Not Applicable

Surrogate	QC Limit
ortho-Terphenyl	40-125
d50-Tetracosane	40-125

Form III
Spike Recovery Summary
Total Saturated Hydrocarbons by GC/FID

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Laboratory Control Sample**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **See Below**
Associated Blank: **SS121812B06**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
N/A	N/A	12/20/12	100	JT

Lab ID: SS121812B06 SS121812LCS06 SS121812LCSD06

Parameter	Blank Conc.	LCS Conc.	LCS % Recovery	LCSD Conc.	LCSD % Recovery	% RPD	RPD Limit	% Recovery Limits
n-Nonane (C9)	0.00240	0.842	63	0.783	59	7	30	50-125
n-Decane (C10)	0.00520	0.862	65	0.797	60	8	30	50-125
n-Dodecane (C12)	0.0188 U	0.914	69	0.917	69	0	30	50-125
n-Tetradecane (C14)	0.0139 U	1.03	77	0.960	72	7	30	50-125
n-Hexadecane (C16)	0.0128 U	1.09	82	1.04	78	5	30	50-125
n-Octadecane (C18)	0.0107 U	1.12	84	1.05	79	6	30	50-125
n-Nonadecane (C19)	0.0108 U	1.03	78	0.975	73	6	30	50-125
n-Eicosane (C20)	0.00741 U	1.05	79	0.987	74	6	30	50-125
n-Docosane (C22)	0.000667	1.07	80	1.00	75	6	30	50-125
n-Tetracosane (C24)	0.0124 U	1.07	80	1.01	76	6	30	50-125
n-Hexacosane (C26)	0.000800	1.06	80	1.00	75	6	30	50-125
n-Octacosane (C28)	0.00133	1.05	79	0.988	74	6	30	50-125
n-Triacontane (C30)	0.0133 U	1.09	81	1.02	77	6	30	50-125
n-Hexatriacontane (C36)	0.0221 U	1.03	77	0.972	73	6	30	50-125

Surrogate	% Recovery		Acceptance Range (%)
ortho-Terphenyl	79	74	40-125
d50-Tetracosane	78	73	40-125

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded result.

Form III
Spike Recovery Summary
Total Saturated Hydrocarbons by GC/FID

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AS121312D010**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **See Below**
Associated Blank: **SS121812B06**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
12/13/12	12/14/12	12/20/12	79.5	JT

Lab ID:		1212022-02		1212022-02				
Parameter	**Sample Conc.**	**Matrix Spike Conc.**	**% Recovery**	**Matrix Spike Dup. Conc.**	**% Recovery**	**% RPD**	**RPD Limit**	**% Recovery Limits**
n-Nonane (C9)	0.00333	4.57	55	4.77	57	4	30	50-125
n-Decane (C10)	0.0120	5.05	61	5.17	62	2	30	50-125
n-Dodecane (C12)	0.0256	5.66	68	5.75	69	2	30	50-125
n-Tetradecane (C14)	0.0218	6.06	73	6.18	74	2	30	50-125
n-Hexadecane (C16)	0.0637	6.68	80	6.71	80	1	30	50-125
n-Octadecane (C18)	0.907	7.55	80	7.22	76	4	30	50-125
n-Nonadecane (C19)	0.0301	6.38	77	6.48	78	1	30	50-125
n-Eicosane (C20)	0.0464	6.45	78	6.51	78	1	30	50-125
n-Docosane (C22)	0.0546	6.47	78	6.56	78	1	30	50-125
n-Tetracosane (C24)	0.0206	6.41	77	6.53	78	2	30	50-125
n-Hexacosane (C26)	0.0702	6.49	78	6.58	78	1	30	50-125
n-Octacosane (C28)	0.0408	6.38	77	6.48	78	2	30	50-125
n-Triacontane (C30)	0.0772	6.49	78	6.60	79	2	30	50-125
n-Hexatriacontane (C36)	0.0276 U	6.16	75	6.24	75	1	30	50-125

Surrogate	% Recovery		Acceptance Range (%)
ortho-Terphenyl	76	76	40-125
d50-Tetracosane	76	76	40-125

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded result.

Form III
Spike Recovery Summary
Total Saturated Hydrocarbons by GC/FID

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **TS122712ANC01**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
N/A	N/A	N/A	100	JT

Parameter	True Conc.	Conc.	% Recovery	% Recovery Limits
n-Nonane (C9)	6286	7200	114	65-135
n-Decane (C10)	5047	5640	112	65-135
n-Undecane (C11)	4703	5530	118	65-135
n-Dodecane (C12)	4155	4540	109	65-135
n-Tridecane (C13)	4058	4750	117	65-135
2,6,10 Trimethyldodecane (1380)	845	891	105	65-135
n-Tetradecane (C14)	3670	4130	113	65-135
2,6,10 Trimethyltridecane (1470)	1367	1660	122	65-135
n-Pentadecane (C15)	3660	4120	113	65-135
n-Hexadecane (C16)	3330	3800	114	65-135
Norpristane (1650)	1093	1220	112	65-135
n-Heptadecane (C17)	3012	3530	117	65-135
Pristane	2145	2380	111	65-135
n-Octadecane (C18)	2700	3130	116	65-135
Phytane	1215	1410	116	65-135
n-Nonadecane (C19)	2305	2630	114	65-135
n-Eicosane (C20)	2337	2530	108	65-135
n-Heneicosane (C21)	2044	2270	111	65-135
n-Docosane (C22)	1972	2260	115	65-135
n-Tricosane (C23)	1745	1960	112	65-135
n-Tetracosane (C24)	1641	1840	112	65-135
n-Pentacosane (C25)	1562	1700	109	65-135
n-Hexacosane (C26)	1378	1510	110	65-135
n-Heptacosane (C27)	1083	1220	113	65-135
n-Octacosane (C28)	776	960	124	65-135
n-Nonacosane (C29)	734	776	106	65-135
n-Triacontane (C30)	627	688	110	65-135
n-Hentriacontane (C31)	514	678	132	65-135
n-Dotriacontane (C32)	458	447	98	65-135
n-Tritriacontane (C33)	388	313	81	65-135
n-Tetratriacontane (C34)	347	329	95	65-135
n-Pentatriacontane (C35)	278	316	114	65-135
n-Hexatriacontane (C36)	186	211	113	65-135

Form III
Spike Recovery Summary
Total Saturated Hydrocarbons by GC/FID

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **TS122712ANC01**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
N/A	N/A	N/A	100	JT

Parameter	True Conc.	Conc.	% Recovery	% Recovery Limits
n-Heptatriacontane (C37)	152	173	114	65-135
n-Octatriacontane (C38)	131	149	113	65-135
n-Nonatriacontane (C39)	89.0	104	117	65-135
n-Tetracontane (C40)	92.0	95.4	104	65-135
Total Petroleum Hydrocarbons (C9-C44)	554993	628000	113	65-135

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded result.

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Form III
Spike Recovery Summary
Total Saturated Hydrocarbons by GC/FID

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **TS110212ANC01**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
N/A	N/A	N/A	100	JT

Parameter	True Conc.	Conc.	% Recovery	% Recovery Limits
n-Nonane (C9)	6286	6500	103	65-135
n-Decane (C10)	5047	5290	105	65-135
n-Undecane (C11)	4703	4950	105	65-135
n-Dodecane (C12)	4155	4360	105	65-135
n-Tridecane (C13)	4058	3950	97	65-135
2,6,10 Trimethyldodecane (1380)	845	906	107	65-135
n-Tetradecane (C14)	3670	3700	101	65-135
2,6,10 Trimethyltridecane (1470)	1367	1460	106	65-135
n-Pentadecane (C15)	3660	3820	104	65-135
n-Hexadecane (C16)	3330	3180	96	65-135
Norpristane (1650)	1093	1150	106	65-135
n-Heptadecane (C17)	3012	2990	99	65-135
Pristane	2145	2160	101	65-135
n-Octadecane (C18)	2700	2810	104	65-135
Phytane	1215	1210	100	65-135
n-Nonadecane (C19)	2305	2430	105	65-135
n-Eicosane (C20)	2337	2380	102	65-135
n-Heneicosane (C21)	2044	2070	101	65-135
n-Docosane (C22)	1972	2000	101	65-135
n-Tricosane (C23)	1745	1750	100	65-135
n-Tetracosane (C24)	1641	1670	102	65-135
n-Pentacosane (C25)	1562	1720	110	65-135
n-Hexacosane (C26)	1378	1400	102	65-135
n-Heptacosane (C27)	1083	1070	99	65-135
n-Octacosane (C28)	776	780	101	65-135
n-Nonacosane (C29)	734	765	104	65-135
n-Triacontane (C30)	627	610	97	65-135
n-Hentriacontane (C31)	514	478	93	65-135
n-Dotriacontane (C32)	458	545	119	65-135
n-Tritriacontane (C33)	388	389	100	65-135
n-Tetratriacontane (C34)	347	354	102	65-135
n-Pentatriacontane (C35)	278	234	84	65-135
n-Hexatriacontane (C36)	186	196	106	65-135

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Form III
Spike Recovery Summary
Total Saturated Hydrocarbons by GC/FID

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **TS110212ANC01**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
N/A	N/A	N/A	100	JT

Parameter	True Conc.	Conc.	% Recovery	% Recovery Limits
n-Heptatriacontane (C37)	152	159	105	65-135
n-Octatriacontane (C38)	131	128	98	65-135
n-Nonatriacontane (C39)	89.0	94.4	106	65-135
n-Tetracontane (C40)	92.0	99.6	108	65-135
Total Petroleum Hydrocarbons (C9-C44)	554993	579000	104	65-135

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded result.

Duplicate
Total Saturated Hydrocarbons by GC/FID

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AD121312D010**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-03**
Associated Blank: **SS121812B06**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
12/13/12	12/14/12	12/20/12	79.0	JT

Parameter	Sample Result	Duplicate Result	RPD	RPD Limit
n-Nonane (C9)	0.00344 JB	0.00279 JB	21	30
n-Decane (C10)	0.0108 JB	0.0115 JB	6	30
n-Undecane (C11)	0.00950 J	0.0110 J	15	30
n-Dodecane (C12)	0.0321 J	0.0221 J	37[a]	30
n-Tridecane (C13)	0.0229 J	0.0207 J	10	30
2,6,10 Trimethyldodecane (1380)	0.00999 J	0.00787 J	24	30
n-Tetradecane (C14)	0.0293 J	0.0198 J	39[a]	30
2,6,10 Trimethyltridecane (1470)	0.0842 GJ	0.0781 GJ	8	30
n-Pentadecane (C15)	0.0450 J	0.0330 J	31[a]	30
n-Hexadecane (C16)	0.0650 J	0.0630 J	3	30
Norpristane (1650)	0.0708 J	0.0835 J	16	30
n-Heptadecane (C17)	0.0616 J	0.0561 J	9	30
Pristane	0.0598 J	0.0551 J	8	30
n-Octadecane (C18)	0.836 G	1.49 G	56[a]	30
Phytane	0.269 G	0.345 G	25	30
n-Nonadecane (C19)	0.0349 J	0.0380 J	9	30
n-Eicosane (C20)	0.0408 J	0.0636 J	44[a]	30
n-Heneicosane (C21)	0.0326 J	0.0305 J	7	30
n-Docosane (C22)	0.0498 J	0.0520 J	4	30
n-Tricosane (C23)	0.165	0.174	6	30
n-Tetracosane (C24)	0.0133 J	0.0128 J	4	30
n-Pentacosane (C25)	1.11 G	1.15 G	3	30
n-Hexacosane (C26)	0.0613 J	0.0823 J	29	30
n-Heptacosane (C27)	0.111 J	0.0897 J	21	30
n-Octacosane (C28)	0.0398 J	0.0187 J	72[a]	30
n-Nonacosane (C29)	0.436	0.355	21	30
n-Triacontane (C30)	0.0821 J	0.0671 J	20	30
n-Hentriacontane (C31)	0.140 J	0.131 J	7	30
n-Dotriacontane (C32)	0.0360 J	0.0315 J	13	30
n-Tritriacontane (C33)	0.0744 J	0.0782 J	5	30
n-Tetratriacontane (C34)	0.0300 J	0.0307 J	2	30
n-Pentatriacontane (C35)	0.0216 J	0.0257 J	17	30
n-Hexatriacontane (C36)	0.0272 U	0.0272 U	N/A	30
n-Heptatriacontane (C37)	0.0278 U	0.0279 U	N/A	30
n-Octatriacontane (C38)	0.0370 J	0.0346 J	7	30

N/A - Not Applicable
[a] - Value outside of QC Limits.
B - Found in associated blank as well as sample.
J - Estimated value, below quantitation limit.
U - The analyte was analyzed for but not detected at the sample specific level reported.
G - Matrix Interference

Form IV
Method Blank Summary
Total Saturated Hydrocarbons by GC/FID

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Case: **N/A** SDG: **N/A**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS121812B06**
Date Analyzed: **12/21/12 18:14**

Client ID	Lab ID	Date/Time Analyzed
LCS	SS121812LCS06	12/21/12 19:43
LCSD	SS121812LCSD06	12/21/12 21:11
SEKR0000R024AS121312D006	1212022-01	12/22/12 00:08
SEKR0000R024AS121312D010	1212022-02	12/22/12 01:37
SEKR0000R024AS121312D010	1212022-02 M	12/22/12 03:05
SEKR0000R024AS121312D010	1212022-02 S	12/22/12 04:34
SEKR0000R024AD121312D010	1212022-03	12/22/12 06:02
SEKR0000R024AD121312D010	1212022-03 D	12/22/12 07:30
SEKR0000R024AS121312D013	1212022-04	12/22/12 08:59

N/A - Not Applicable

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GC QA-QC Check Report

Daily Calibration File : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\C69844
...   8.D
Time Acquired   : 21 Dec 2012   1:48 pm

C612171208R 59221500

File	Sample	Internal Standard Responses
C698454.D	SS121812B06	64110055
C698456.D	SS121812LCS06	63769781
C698458.D	SS121812LCSD06	63931023
C698462.D	1212022-01	68054211
C698464.D	1212022-02	65982005
C698466.D	1212022-02M	67022303
C698468.D	1212022-02S	66384486
C698470.D	1212022-03	68776643
C698472.D	1212022-03D	67941982
C698474.D	1212022-04	67926418
C698476.D	C612171209R	62204969

(fails) - fails 24hr time check * - fails criteria

Created: Fri Dec 28 12:34:43 2012 FID6

Form I
Total Saturated Hydrocarbons by GC/FID

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AS121312D006**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-01**
Associated Blank: **SS121812B06**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
12/13/12	12/14/12	12/20/12	12/22/12	78.2	15.95	2	1	JT

Parameter	Result		Parameter	Result	
n-Nonane (C9)	**0.00305**	JB	n-Tricosane (C23)	**0.123**	J
n-Decane (C10)	**0.00882**	JB	n-Tetracosane (C24)	**0.0186**	J
n-Undecane (C11)	**0.00561**	JB	n-Pentacosane (C25)	**1.19**	G
n-Dodecane (C12)	**0.0274**	J	n-Hexacosane (C26)	**0.0527**	J
n-Tridecane (C13)	**0.0147**	J	n-Heptacosane (C27)	**0.147**	J
2,6,10 Trimethyldodecane (1380)	**0.00577**	J	n-Octacosane (C28)	**0.0311**	J
n-Tetradecane (C14)	**0.0188**	J	n-Nonacosane (C29)	**0.581**	
2,6,10 Trimethyltridecane (1470)	**0.0622**	GJ	n-Triacontane (C30)	**0.124**	J
n-Pentadecane (C15)	**0.0337**	J	n-Hentriacontane (C31)	**0.380**	
n-Hexadecane (C16)	**0.0422**	J	n-Dotriacontane (C32)	**0.0361**	J
Norpristane (1650)	**0.0476**	J	n-Tritriacontane (C33)	**0.101**	J
n-Heptadecane (C17)	**0.0540**	J	n-Tetratriacontane (C34)	**0.0388**	J
Pristane	**0.0434**	J	n-Pentatriacontane (C35)	**0.0357**	J
n-Octadecane (C18)	**0.514**	G	n-Hexatriacontane (C36)	0.0266	U
Phytane	**0.180**	G	n-Heptatriacontane (C37)	**0.0207**	J
n-Nonadecane (C19)	**0.0256**	J	n-Octatriacontane (C38)	**0.0404**	J
n-Eicosane (C20)	**0.0255**	J	n-Nonatriacontane (C39)	0.0293	U
n-Heneicosane (C21)	**0.0289**	J	n-Tetracontane (C40)	**0.0340**	J
n-Docosane (C22)	**0.0300**	J			

Total Hydrocarbon Summary

Total Saturated Hydrocarbons	**4.13**	
Total Petroleum Hydrocarbons (C9-C44)	**90.0**	
Total Resolved Hydrocarbons	32.1	U

Surrogate	% Recovery	Acceptance Range (%)
ortho-Terphenyl	75	40-125
d50-Tetracosane	75	40-125

N/A - Not Applicable
B - Found in associated blank as well as sample.
J - Estimated value, below quantitation limit.
U - The analyte was analyzed for but not detected at the sample specific level reported.
G - Matrix Interference

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\
Data File : C698462.D
Signal(s) : FID2B.CH
Acq On : 22 Dec 2012 12:08 am
Operator : JT
Sample : 1212022-01
Misc : 1X
ALS Vial : 76 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Dec 28 05:11:30 2012
Quant Method : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Wed Dec 19 14:59:28 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB612171212R
Blank File : C698480.D

Sub List : SHC - SHC

	Compound	R.T.	Response	Conc Units
	Internal Standards			
1) I	5-alpha-androstane	30.608	68054211	50.000 ug/mL M4
	System Monitoring Compounds			
19) s	ortho-terphenyl	28.622	137262882	94.225 ug/mL M4
Spiked Amount	50.000	Range 50 - 130	Recovery =	188.45%#
24) s	d50-Tetracosane	35.346	110310886	93.269 ug/mL M4
Spiked Amount	50.000	Range 50 - 130	Recovery =	186.54%#
	Target Compounds			
3) t	n-Nonane (C9)	7.331	20706	0.019 ug/mL M4
4) t	n-Decane (C10)	9.774	63119	0.055 ug/mL M4
5) t	n-Undecane (C11)	12.262	40220	0.035 ug/mL M4
6) t	n-Dodecane (C12)	14.674	203150	0.171 ug/mL M4
7) t	n-Tridecane (C13)	16.974	109949	0.092 ug/mL M4
8) t	1380	18.651	43686	0.036 ug/mL M4
9) t	n-Tetradecane (C14)	19.149	141976	0.117 ug/mL M4
10) t	1470	20.426	469661G	0.388 ug/mL M4
11) t	n-Pentadecane (C15)	21.206	254353	0.210 ug/mL M4
12) t	n-Hexadecane (C16)	23.164	325352	0.263 ug/mL M4
13) t	1650	24.070	355358	0.297 ug/mL M4
14) t	n-Heptadecane (C17)	25.018	403244	0.337 ug/mL M4
15) t	Pristane	25.109	345459	0.271 ug/mL M4
16) t	n-Octadecane (C18)	26.755	3996893G	3.209 ug/mL M4
17) t	Phytane	26.928	1404207G	1.121 ug/mL M4
18) t	n-Nonadecane (C19)	28.464	200197	0.160 ug/mL M4
20) t	n-Eicosane (C20)	30.071	202591	0.159 ug/mL M4
21) t	n-Heneicosane (C21)	31.605	229035	0.180 ug/mL M4
22) t	n-Docosane (C22)	33.074	238545	0.187 ug/mL M4
23) t	n-Tricosane (C23)	34.482	998632	0.767 ug/mL M4
25) t	n-Tetracosane (C24)	35.849	148045	0.116 ug/mL M4
26) t	n-Pentacosane (C25)	37.117	9703475G	7.430 ug/mL M4
27) t	n-Hexacosane (C26)	38.409	425817	0.329 ug/mL M4
28) t	n-Heptacosane (C27)	39.624	1164017	0.915 ug/mL M4
29) t	n-Octacosane (C28)	40.798	251189	0.194 ug/mL M4
30) t	n-Nonacosane (C29)	41.934	4669187	3.626 ug/mL M4
31) t	n-Triacontane (C30)	43.019	987083	0.776 ug/mL M4
32) t	n-Hentriacontane (C31)	44.085	3048630	2.371 ug/mL M4
33) t	n-Dotriacontane (C32)	45.105	287978	0.225 ug/mL M4
34) t	n-Tritriacontane (C33)	46.109	769807	0.627 ug/mL M4
35) t	n-tetratriacontane (C34)	47.087	306694	0.242 ug/mL M4
36) t	n-Pentatriacontane (C35)	48.116	287870	0.223 ug/mL M4
38) t	n-Heptatriacontane (C37)	50.619	166169	0.129 ug/mL M4
39) t	n-Octatriacontane (C38)	52.227	321860	0.252 ug/mL M4

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\
Data File : C698462.D
Signal(s) : FID2B.CH
Acq On : 22 Dec 2012 12:08 am
Operator : JT
Sample : 1212022-01
Misc : 1X
ALS Vial : 76 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Dec 28 05:11:30 2012
Quant Method : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Wed Dec 19 14:59:28 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB612171212R
Blank File : C698480.D

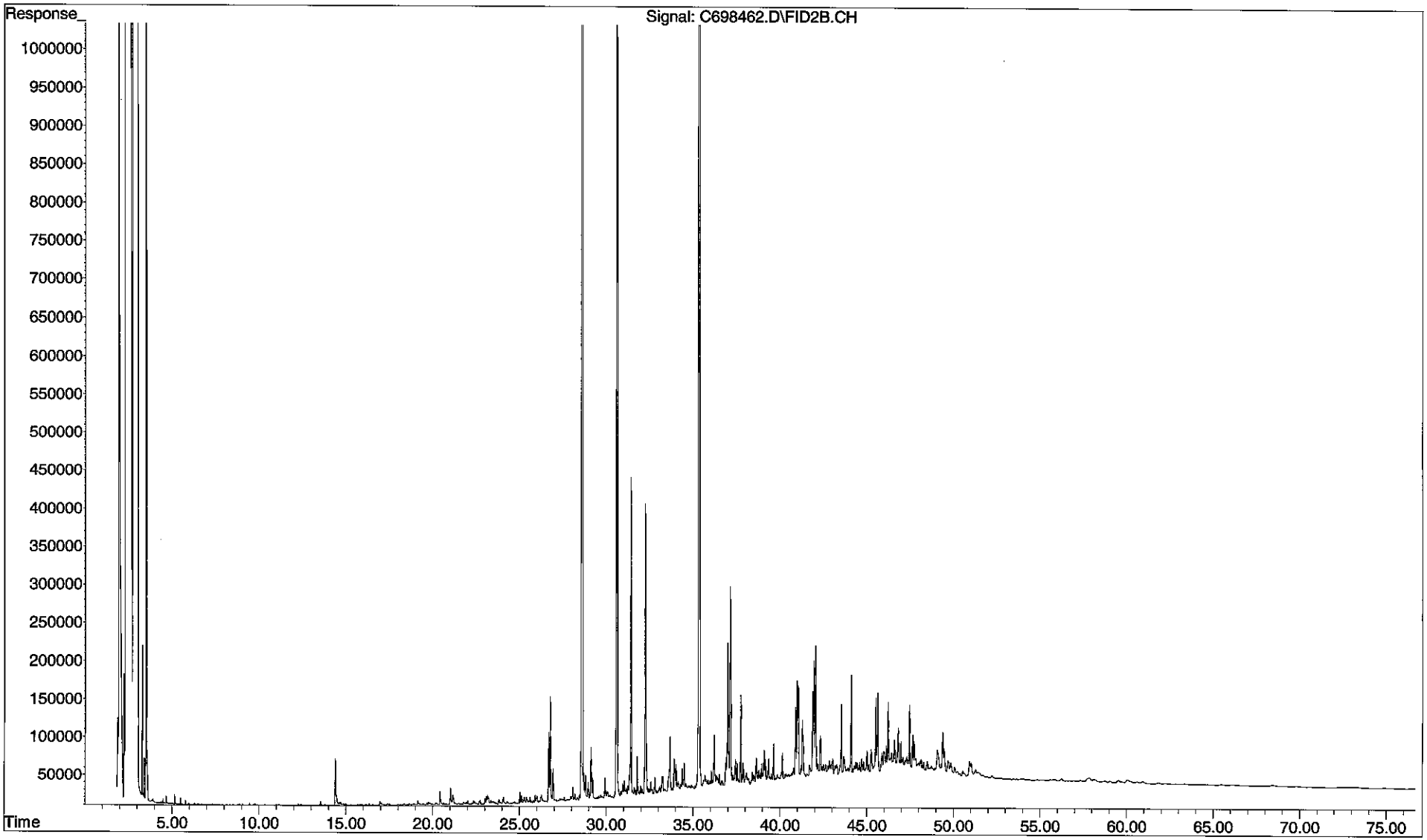
Sub List : SHC - SHC

		Compound	R.T.	Response	Conc	Units	
41)	t	n-Tetracontane (C40)	56.221	255754	0.212	ug/mL	M4
42)	h	C9-C44 Total Petroleu...	38.600	1119227194	896.302	ug/mL	M4
42)	h	C9-C44 Total Petroleu BS	38.600	701140332	561.489	ug/mL	M4
45)	h	Total Resolved Hydroc...	38.600	191318605	153.212	ug/L	m

SemiQuant Compounds - Not Calibrated on this Instrument

(f)=RT Delta > 1/2 Window (m)=manual int.

File :O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\C698462.D
Operator : JT
Acquired : 22 Dec 2012 12:08 am using AcqMethod FID6A.M
Instrument : FID6
Sample : 1212022-01
Misc Info : 1X
ALS Vial : 76



Form I
Total Saturated Hydrocarbons by GC/FID

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AS121312D010**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-02**
Associated Blank: **SS121812B06**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
12/13/12	12/14/12	12/20/12	12/22/12	79.5	15.11	2	1	JT

Parameter	Result		Parameter	Result	
n-Nonane (C9)	**0.00333**	JB	n-Tricosane (C23)	**0.179**	
n-Decane (C10)	**0.0120**	JB	n-Tetracosane (C24)	**0.0206**	J
n-Undecane (C11)	**0.00816**	JB	n-Pentacosane (C25)	**1.27**	G
n-Dodecane (C12)	**0.0256**	J	n-Hexacosane (C26)	**0.0702**	J
n-Tridecane (C13)	**0.0200**	J	n-Heptacosane (C27)	**0.0712**	J
2,6,10 Trimethyldodecane (1380)	**0.0126**	J	n-Octacosane (C28)	**0.0408**	J
n-Tetradecane (C14)	**0.0218**	J	n-Nonacosane (C29)	**0.366**	
2,6,10 Trimethyltridecane (1470)	**0.121**	GJ	n-Triacontane (C30)	**0.0772**	J
n-Pentadecane (C15)	**0.0343**	J	n-Hentriacontane (C31)	**0.111**	J
n-Hexadecane (C16)	**0.0637**	J	n-Dotriacontane (C32)	**0.0383**	J
Norpristane (1650)	**0.0806**	J	n-Tritriacontane (C33)	**0.0819**	J
n-Heptadecane (C17)	**0.0541**	J	n-Tetratriacontane (C34)	**0.0300**	J
Pristane	**0.0744**	J	n-Pentatriacontane (C35)	**0.0208**	J
n-Octadecane (C18)	**0.907**	G	n-Hexatriacontane (C36)	0.0276	U
Phytane	**0.274**	G	n-Heptatriacontane (C37)	0.0283	U
n-Nonadecane (C19)	**0.0301**	J	n-Octatriacontane (C38)	**0.0326**	J
n-Eicosane (C20)	**0.0464**	J	n-Nonatriacontane (C39)	0.0305	U
n-Heneicosane (C21)	**0.0333**	J	n-Tetracontane (C40)	**0.0439**	J
n-Docosane (C22)	**0.0546**	J			

Total Hydrocarbon Summary

Total Saturated Hydrocarbons	**4.33**
Total Petroleum Hydrocarbons (C9-C44)	**97.3**
Total Resolved Hydrocarbons	**34.6**

Surrogate	% Recovery	Acceptance Range (%)
ortho-Terphenyl	77	40-125
d50-Tetracosane	77	40-125

N/A - Not Applicable
B - Found in associated blank as well as sample.
J - Estimated value, below quantitation limit.
U - The analyte was analyzed for but not detected at the sample specific level reported.
G - Matrix Interference

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\
Data File : C698464.D
Signal(s) : FID2B.CH
Acq On : 22 Dec 2012 1:37 am
Operator : JT
Sample : 1212022-02
Misc : 1X
ALS Vial : 77 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Dec 28 05:11:32 2012
Quant Method : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Wed Dec 19 14:59:28 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB612171212R
Blank File : C698480.D

Sub List : SHC - SHC

	Compound	R.T.	Response	Conc Units
	Internal Standards			
1) I	5-alpha-androstane	30.607	65982005	50.000 ug/mL M4
	System Monitoring Compounds			
19) s	ortho-terphenyl	28.622	135088736	95.645 ug/mL M4
Spiked Amount	50.000	Range 50 - 130	Recovery =	191.29%#
24) s	d50-Tetracosane	35.346	109852716	95.799 ug/mL M4
Spiked Amount	50.000	Range 50 - 130	Recovery =	191.60%#
	Target Compounds			
2) t	n-Octane (C8)	5.188	12200	0.012 ug/mL M4
3) t	n-Nonane (C9)	7.331	20770	0.020 ug/mL M4
4) t	n-Decane (C10)	9.774	79222	0.072 ug/mL M4
5) t	n-Undecane (C11)	12.261	54010	0.049 ug/mL M4
6) t	n-Dodecane (C12)	14.674	178284	0.154 ug/mL M4
7) t	n-Tridecane (C13)	16.973	139535	0.120 ug/mL M4
8) t	1380	18.647	89316	0.076 ug/mL M4
9) t	n-Tetradecane (C14)	19.147	153877	0.131 ug/mL M4
10) t	1470	20.424	851719G	0.725 ug/mL M4
11) t	n-Pentadecane (C15)	21.206	242340	0.206 ug/mL M4
12) t	n-Hexadecane (C16)	23.167	459284	0.383 ug/mL M4
13) t	1650	24.069	561371	0.484 ug/mL M4
14) t	n-Heptadecane (C17)	25.016	377557	0.325 ug/mL M4
15) t	Pristane	25.110	551557	0.447 ug/mL M4
16) t	n-Octadecane (C18)	26.753	6583823G	5.452 ug/mL M4
17) t	Phytane	26.925	2000224G	1.647 ug/mL M4
18) t	n-Nonadecane (C19)	28.466	219668	0.181 ug/mL M4
20) t	n-Eicosane (C20)	30.066	344989	0.279 ug/mL M4
21) t	n-Heneicosane (C21)	31.602	246422	0.200 ug/mL M4
22) t	n-Docosane (C22)	33.072	405787	0.328 ug/mL M4
23) t	n-Tricosane (C23)	34.477	1359883	1.077 ug/mL M4
25) t	n-Tetracosane (C24)	35.846	153441	0.124 ug/mL M4
26) t	n-Pentacosane (C25)	37.133	9648257G	7.620 ug/mL M4
27) t	n-Hexacosane (C26)	38.406	530256	0.422 ug/mL M4
28) t	n-Heptacosane (C27)	39.623	528082	0.428 ug/mL M4
29) t	n-Octacosane (C28)	40.793	306673	0.245 ug/mL M4
30) t	n-Nonacosane (C29)	41.947	2745603	2.199 ug/mL M4
31) t	n-Triacontane (C30)	43.008	572154	0.464 ug/mL M4
32) t	n-Hentriacontane (C31)	44.082	828824	0.665 ug/mL M4
33) t	n-Dotriacontane (C32)	45.103	285689	0.230 ug/mL M4
34) t	n-Tritriacontane (C33)	46.104	585105	0.492 ug/mL M4
35) t	n-tetratriacontane (C34)	47.077	220922	0.180 ug/mL M4
36) t	n-Pentatriacontane (C35)	48.113	156675	0.125 ug/mL M4
39) t	n-Octatriacontane (C38)	52.223	242539	0.196 ug/mL M4

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\
Data File : C698464.D
Signal(s) : FID2B.CH
Acq On : 22 Dec 2012 1:37 am
Operator : JT
Sample : 1212022-02
Misc : 1X
ALS Vial : 77 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Dec 28 05:11:32 2012
Quant Method : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Wed Dec 19 14:59:28 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB612171212R
Blank File : C698480.D

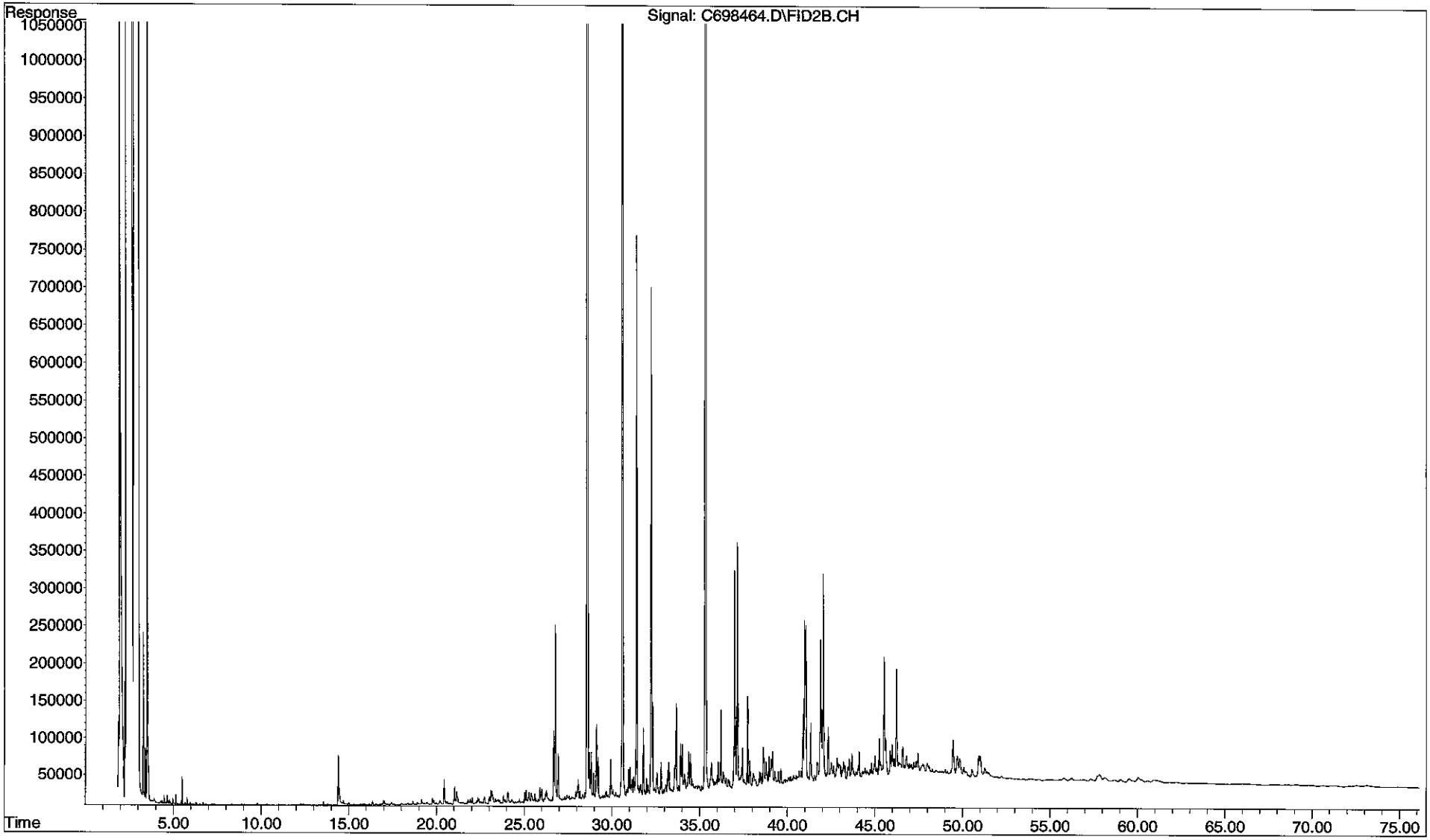
Sub List : SHC - SHC

		Compound	R.T.	Response	Conc	Units	
41)	t	n-Tetracontane (C40)	56.239	307882	0.264	ug/mL	M4
42)	h	C9-C44 Total Petroleu...	38.600	1125661972	929.766	ug/mL	M4
42)	h	C9-C44 Total Petroleu BS	38.600	707575110	584.438	ug/mL	M4
45)	h	Total Resolved Hydroc...	38.600	251792717	207.974	ug/L	m

SemiQuant Compounds - Not Calibrated on this Instrument

(f)=RT Delta > 1/2 Window (m)=manual int.

File :O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\C698464.D
Operator : JT
Acquired : 22 Dec 2012 1:37 am using AcqMethod FID6A.M
Instrument : FID6
Sample : 1212022-02
Misc Info : 1X
ALS Vial : 77



Form I
Total Saturated Hydrocarbons by GC/FID

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AD121312D010**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-03**
Associated Blank: **SS121812B06**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
12/13/12	12/14/12	12/20/12	12/22/12	79.0	15.46	2	1	JT

Parameter	Result		Parameter	Result	
n-Nonane (C9)	**0.00344**	JB	n-Tricosane (C23)	**0.165**	
n-Decane (C10)	**0.0108**	JB	n-Tetracosane (C24)	**0.0133**	J
n-Undecane (C11)	**0.00950**	J	n-Pentacosane (C25)	**1.11**	G
n-Dodecane (C12)	**0.0321**	J	n-Hexacosane (C26)	**0.0613**	J
n-Tridecane (C13)	**0.0229**	J	n-Heptacosane (C27)	**0.111**	J
2,6,10 Trimethyldodecane (1380)	**0.00999**	J	n-Octacosane (C28)	**0.0398**	J
n-Tetradecane (C14)	**0.0293**	J	n-Nonacosane (C29)	**0.436**	
2,6,10 Trimethyltridecane (1470)	**0.0842**	GJ	n-Triacontane (C30)	**0.0821**	J
n-Pentadecane (C15)	**0.0450**	J	n-Hentriacontane (C31)	**0.140**	J
n-Hexadecane (C16)	**0.0650**	J	n-Dotriacontane (C32)	**0.0360**	J
Norpristane (1650)	**0.0708**	J	n-Tritriacontane (C33)	**0.0744**	J
n-Heptadecane (C17)	**0.0616**	J	n-Tetratriacontane (C34)	**0.0300**	J
Pristane	**0.0598**	J	n-Pentatriacontane (C35)	**0.0216**	J
n-Octadecane (C18)	**0.836**	G	n-Hexatriacontane (C36)	0.0272	U
Phytane	**0.269**	G	n-Heptatriacontane (C37)	0.0278	U
n-Nonadecane (C19)	**0.0349**	J	n-Octatriacontane (C38)	**0.0370**	J
n-Eicosane (C20)	**0.0408**	J	n-Nonatriacontane (C39)	0.0300	U
n-Heneicosane (C21)	**0.0326**	J	n-Tetracontane (C40)	**0.0493**	J
n-Docosane (C22)	**0.0498**	J			

Total Hydrocarbon Summary

Total Saturated Hydrocarbons	**4.18**	
Total Petroleum Hydrocarbons (C9-C44)	**95.1**	
Total Resolved Hydrocarbons	32.8	U

Surrogate	% Recovery	Acceptance Range (%)
ortho-Terphenyl	76	40-125
d50-Tetracosane	76	40-125

N/A - Not Applicable
B - Found in associated blank as well as sample.
J - Estimated value, below quantitation limit.
U - The analyte was analyzed for but not detected at the sample specific level reported.
G - Matrix Interference

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\
Data File : C698470.D
Signal(s) : FID2B.CH
Acq On : 22 Dec 2012 6:02 am
Operator : JT
Sample : 1212022-03
Misc : 1X
ALS Vial : 80 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Dec 28 05:11:37 2012
Quant Method : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Wed Dec 19 14:59:28 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB612171212R
Blank File : C698480.D

Sub List : SHC - SHC

	Compound	R.T.	Response	Conc Units
	Internal Standards			
1) I	5-alpha-androstane	30.608	68776643	50.000 ug/mL M4
	System Monitoring Compounds			
19) s	ortho-terphenyl	28.621	139363341	94.662 ug/mL M4
Spiked Amount	50.000	Range 50 - 130	Recovery =	189.32%#
24) s	d50-Tetracosane	35.348	113718940	95.140 ug/mL M4
Spiked Amount	50.000	Range 50 - 130	Recovery =	190.28%#
	Target Compounds			
2) t	n-Octane (C8)	5.190	11744	0.011 ug/mL M4
3) t	n-Nonane (C9)	7.332	23455	0.021 ug/mL M4
4) t	n-Decane (C10)	9.774	76119	0.066 ug/mL M4
5) t	n-Undecane (C11)	12.262	67273	0.058 ug/mL M4
6) t	n-Dodecane (C12)	14.676	235709	0.196 ug/mL M4
7) t	n-Tridecane (C13)	16.972	170309	0.140 ug/mL M4
8) t	1380	18.648	75168	0.061 ug/mL M4
9) t	n-Tetradecane (C14)	19.149	218833	0.179 ug/mL M4
10) t	1470	20.424	629171G	0.514 ug/mL M4
11) t	n-Pentadecane (C15)	21.206	336860	0.275 ug/mL M4
12) t	n-Hexadecane (C16)	23.163	496014	0.397 ug/mL M4
13) t	1650	24.068	522589	0.432 ug/mL M4
14) t	n-Heptadecane (C17)	25.014	455134	0.376 ug/mL M4
15) t	Pristane	25.107	469959	0.365 ug/mL M4
16) t	n-Octadecane (C18)	26.753	6427807G	5.107 ug/mL M4
17) t	Phytane	26.926	2076757G	1.640 ug/mL M4
18) t	n-Nonadecane (C19)	28.463	268540	0.213 ug/mL M4
20) t	n-Eicosane (C20)	30.063	321093	0.249 ug/mL M4
21) t	n-Heneicosane (C21)	31.601	255673	0.199 ug/mL M4
22) t	n-Docosane (C22)	33.072	392161	0.304 ug/mL M4
23) t	n-Tricosane (C23)	34.476	1323843	1.006 ug/mL M4
25) t	n-Tetracosane (C24)	35.846	104430	0.081 ug/mL M4
26) t	n-Pentacosane (C25)	37.131	8957434G	6.787 ug/mL M4
27) t	n-Hexacosane (C26)	38.405	489682	0.374 ug/mL M4
28) t	n-Heptacosane (C27)	39.623	867590	0.675 ug/mL M4
29) t	n-Octacosane (C28)	40.794	316598	0.243 ug/mL M4
30) t	n-Nonacosane (C29)	41.937	3464784	2.663 ug/mL M4
31) t	n-Triacontane (C30)	43.000	644649	0.501 ug/mL M4
32) t	n-Hentriacontane (C31)	44.082	1109333	0.854 ug/mL M4
33) t	n-Dotriacontane (C32)	45.104	284655	0.220 ug/mL M4
34) t	n-Tritriacontane (C33)	46.106	563059	0.454 ug/mL M4
35) t	n-tetratriacontane (C34)	47.078	234837	0.183 ug/mL M4
36) t	n-Pentatriacontane (C35)	48.111	171617	0.132 ug/mL M4
39) t	n-Octatriacontane (C38)	52.209	292024	0.226 ug/mL M4

12-28-12

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\
Data File : C698470.D
Signal(s) : FID2B.CH
Acq On : 22 Dec 2012 6:02 am
Operator : JT
Sample : 1212022-03
Misc : 1X
ALS Vial : 80 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Dec 28 05:11:37 2012
Quant Method : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Wed Dec 19 14:59:28 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB612171212R
Blank File : C698480.D

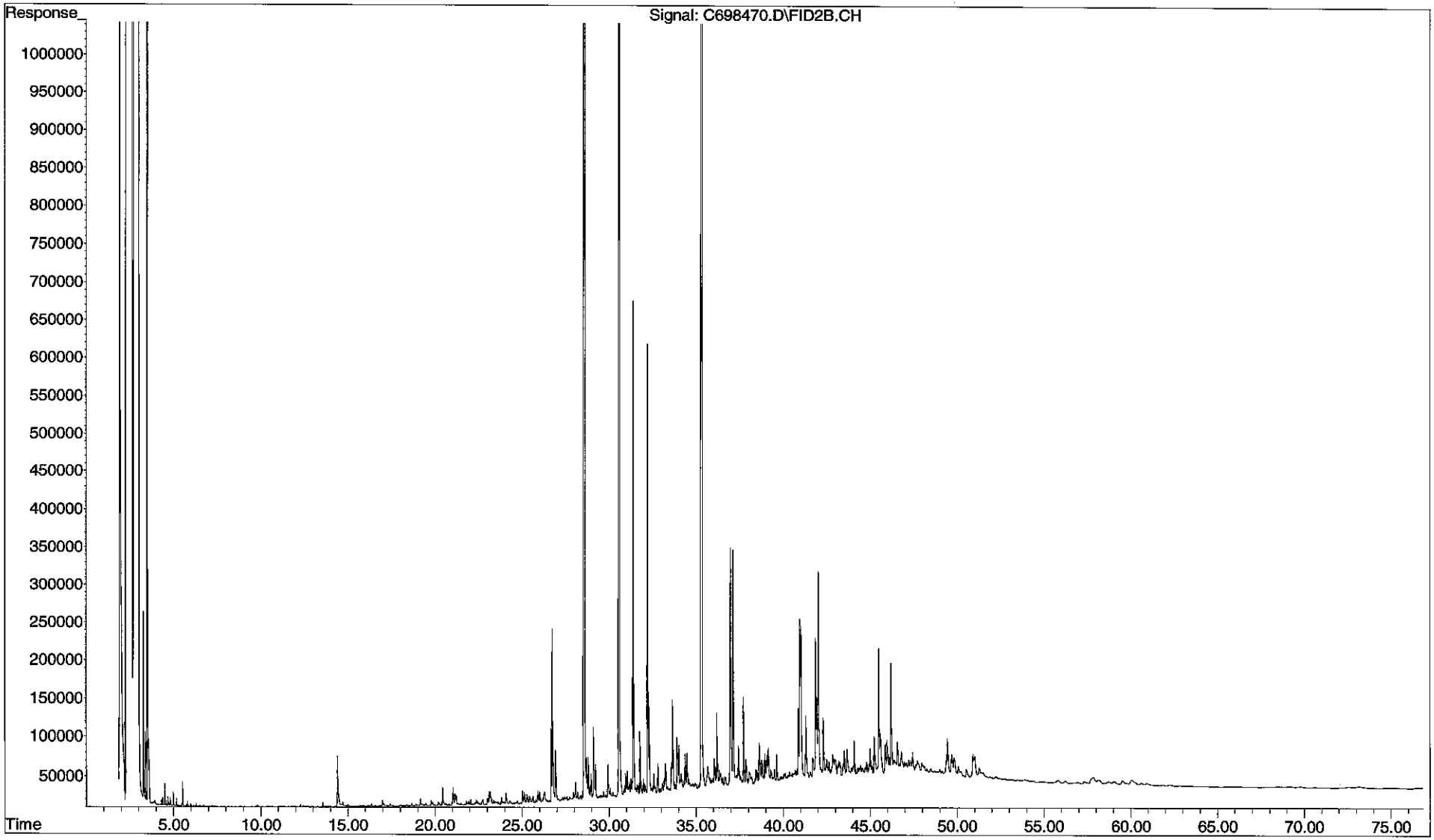
Sub List : SHC - SHC

		Compound	R.T.	Response	Conc	Units	
41)	t	n-Tetracontane (C40)	56.223	366828	0.301	ug/mL	M4
42)	h	C9-C44 Total Petroleu...	38.600	1150497695	911.666	ug/mL	M4
42)	h	C9-C44 Total Petroleu BS	38.600	732410833	580.370	ug/mL	M4
45)	h	Total Resolved Hydroc...	38.600	245747330	194.733	ug/L	m

SemiQuant Compounds - Not Calibrated on this Instrument

(f)=RT Delta > 1/2 Window (m)=manual int.

File :O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\C698470.D
Operator : JT
Acquired : 22 Dec 2012 6:02 am using AcqMethod FID6A.M
Instrument : FID6
Sample : 1212022-03
Misc Info : 1X
ALS Vial : 80



Form I
Total Saturated Hydrocarbons by GC/FID

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AS121312D013**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-04**
Associated Blank: **SS121812B06**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
12/13/12	12/14/12	12/20/12	12/22/12	74.6	15.18	2	1	JT

Parameter	Result		Parameter	Result	
n-Nonane (C9)	**0.00530**	JB	n-Tricosane (C23)	**0.360**	
n-Decane (C10)	**0.0155**	JB	n-Tetracosane (C24)	**0.0660**	J
n-Undecane (C11)	**0.0139**	J	n-Pentacosane (C25)	**3.24**	G
n-Dodecane (C12)	**0.0403**	J	n-Hexacosane (C26)	**0.195**	
n-Tridecane (C13)	**0.0328**	J	n-Heptacosane (C27)	**0.291**	
2,6,10 Trimethyldodecane (1380)	**0.0125**	J	n-Octacosane (C28)	**0.0733**	J
n-Tetradecane (C14)	**0.0378**	J	n-Nonacosane (C29)	**0.774**	
2,6,10 Trimethyltridecane (1470)	**0.206**	G	n-Triacontane (C30)	**0.189**	
n-Pentadecane (C15)	**0.0441**	J	n-Hentriacontane (C31)	**0.523**	
n-Hexadecane (C16)	**0.173**	J	n-Dotriacontane (C32)	**0.104**	J
Norpristane (1650)	**0.171**	J	n-Tritriacontane (C33)	**0.206**	
n-Heptadecane (C17)	**0.111**	J	n-Tetratriacontane (C34)	**0.0696**	J
Pristane	**0.0952**	J	n-Pentatriacontane (C35)	**0.0434**	J
n-Octadecane (C18)	**2.67**	G	n-Hexatriacontane (C36)	0.0293	U
Phytane	**0.791**	G	n-Heptatriacontane (C37)	0.0300	U
n-Nonadecane (C19)	**0.0544**	J	n-Octatriacontane (C38)	**0.0959**	J
n-Eicosane (C20)	**0.0655**	J	n-Nonatriacontane (C39)	0.0323	U
n-Heneicosane (C21)	**0.0646**	J	n-Tetracontane (C40)	**0.117**	J
n-Docosane (C22)	**0.0872**	J			

Total Hydrocarbon Summary

Total Saturated Hydrocarbons	**11.0**
Total Petroleum Hydrocarbons (C9-C44)	**225**
Total Resolved Hydrocarbons	**79.4**

Surrogate	% Recovery	Acceptance Range (%)
ortho-Terphenyl	76	40-125
d50-Tetracosane	76	40-125

N/A - Not Applicable
B - Found in associated blank as well as sample.
J - Estimated value, below quantitation limit.
U - The analyte was analyzed for but not detected at the sample specific level reported.
G - Matrix Interference

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\
Data File : C698474.D
Signal(s) : FID2B.CH
Acq On : 22 Dec 2012 8:59 am
Operator : JT
Sample : 1212022-04
Misc : 1X
ALS Vial : 82 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Dec 28 05:11:40 2012
Quant Method : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Wed Dec 19 14:59:28 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB612171212R
Blank File : C698480.D

Sub List : SHC - SHC

	Compound	R.T.	Response	Conc Units
	Internal Standards			
1) I	5-alpha-androstane	30.606	67926418	50.000 ug/mL M4
	System Monitoring Compounds			
19) s	ortho-terphenyl	28.618	137919970	94.854 ug/mL M4
Spiked Amount	50.000	Range 50 - 130	Recovery =	189.71%#
24) s	d50-Tetracosane	35.346	112423046	95.234 ug/mL M4
Spiked Amount	50.000	Range 50 - 130	Recovery =	190.47%#
	Target Compounds			
2) t	n-Octane (C8)	5.190	11504	0.011 ug/mL M4
3) t	n-Nonane (C9)	7.331	32187	0.030 ug/mL M4
4) t	n-Decane (C10)	9.774	100564	0.088 ug/mL M4
5) t	n-Undecane (C11)	12.261	90758	0.079 ug/mL M4
6) t	n-Dodecane (C12)	14.673	270552	0.228 ug/mL M4
7) t	n-Tridecane (C13)	16.970	223135	0.186 ug/mL M4
8) t	1380	18.645	86069	0.071 ug/mL M4
9) t	n-Tetradecane (C14)	19.146	258395	0.214 ug/mL M4
10) t	1470	20.420	1410512G	1.166 ug/mL M4
11) t	n-Pentadecane (C15)	21.201	302394	0.250 ug/mL M4
12) t	n-Hexadecane (C16)	23.161	1207844	0.979 ug/mL M4
13) t	1650	24.065	1158315	0.969 ug/mL M4
14) t	n-Heptadecane (C17)	25.017	749146	0.627 ug/mL M4
15) t	Pristane	25.105	684280	0.539 ug/mL M4
16) t	n-Octadecane (C18)	26.757	18819516G	15.139 ug/mL M4
17) t	Phytane	26.924	5601009G	4.479 ug/mL M4
18) t	n-Nonadecane (C19)	28.463	383384	0.308 ug/mL M4
20) t	n-Eicosane (C20)	30.065	472868	0.371 ug/mL M4
21) t	n-Heneicosane (C21)	31.601	464268	0.366 ug/mL M4
22) t	n-Docosane (C22)	33.072	630696	0.494 ug/mL M4
23) t	n-Tricosane (C23)	34.474	2648210	2.038 ug/mL M4
25) t	n-Tetracosane (C24)	35.848	476428	0.374 ug/mL M4
26) t	n-Pentacosane (C25)	37.142	23954663G	18.377 ug/mL M4
27) t	n-Hexacosane (C26)	38.404	1425741	1.103 ug/mL M4
28) t	n-Heptacosane (C27)	39.622	2092175	1.648 ug/mL M4
29) t	n-Octacosane (C28)	40.793	534413	0.415 ug/mL M4
30) t	n-Nonacosane (C29)	41.925	5631021	4.382 ug/mL M4
31) t	n-Triacontane (C30)	43.004	1362669	1.073 ug/mL M4
32) t	n-Hentriacontane (C31)	44.083	3803156	2.964 ug/mL M4
33) t	n-Dotriacontane (C32)	45.106	752994	0.588 ug/mL M4
34) t	n-Tritriacontane (C33)	46.103	1426938	1.165 ug/mL M4
35) t	n-tetratriacontane (C34)	47.081	498690	0.394 ug/mL M4
36) t	n-Pentatriacontane (C35)	48.110	316094	0.246 ug/mL M4
39) t	n-Octatriacontane (C38)	52.213	692497	0.543 ug/mL M4

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\
Data File : C698474.D
Signal(s) : FID2B.CH
Acq On : 22 Dec 2012 8:59 am
Operator : JT
Sample : 1212022-04
Misc : 1X
ALS Vial : 82 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Dec 28 05:11:40 2012
Quant Method : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Wed Dec 19 14:59:28 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB612171212R
Blank File : C698480.D

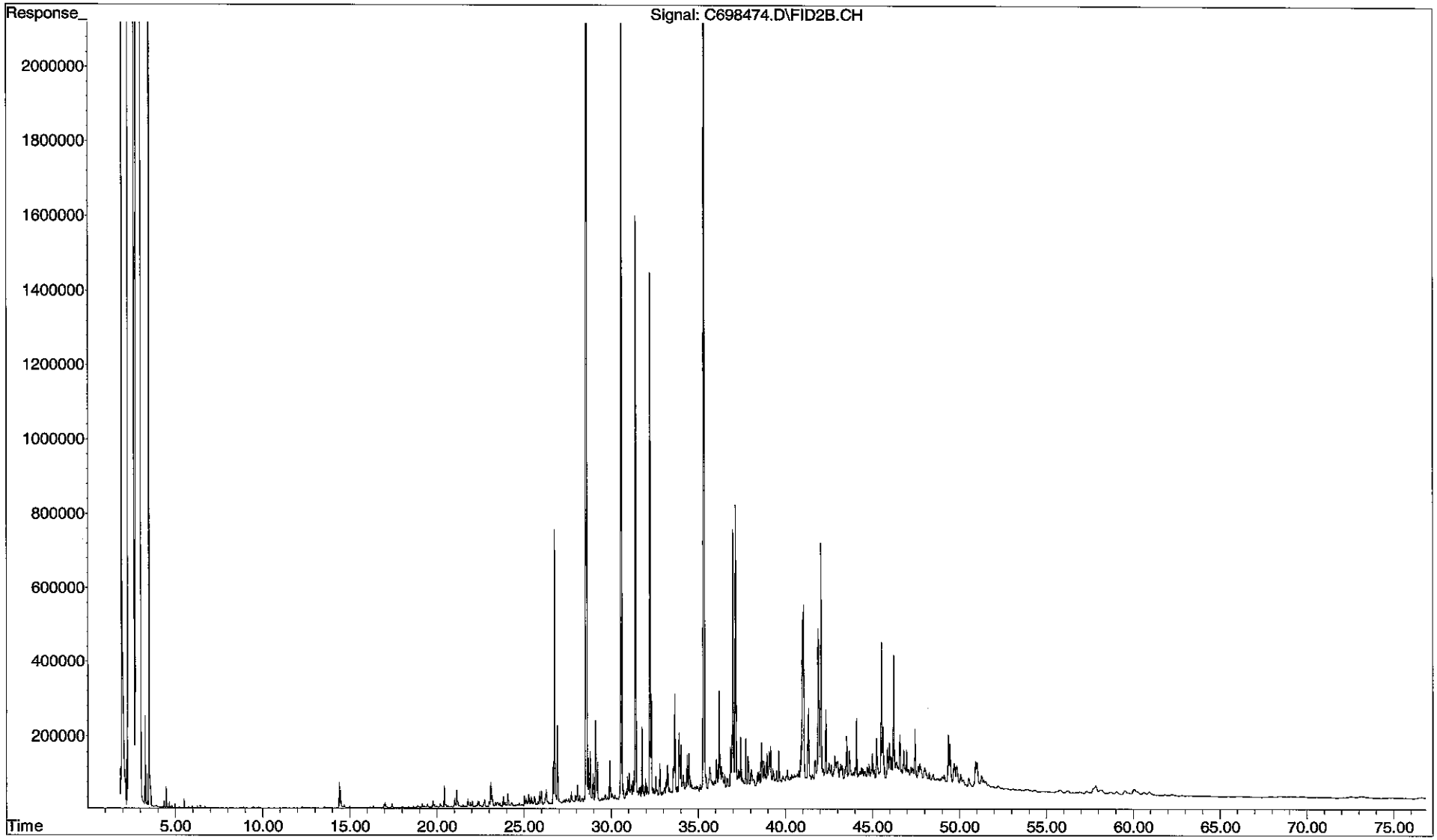
Sub List : SHC - SHC

		Compound	R.T.	Response	Conc	Units	
41)	t	n-Tetracontane (C40)	56.234	798796	0.664	ug/mL	M4
42)	h	C9-C44 Total Petroleu...	38.600	2005688175	1609.222	ug/mL	M4
42)	h	C9-C44 Total Petroleu BS	38.600	1587601313	1273.778	ug/mL	M4
45)	h	Total Resolved Hydroc...	38.600	560584988	449.774	ug/L	m

SemiQuant Compounds - Not Calibrated on this Instrument

(f)=RT Delta > 1/2 Window (m)=manual int.

File :O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\C698474.D
Operator : JT
Acquired : 22 Dec 2012 8:59 am using AcqMethod FID6A.M
Instrument : FID6
Sample : 1212022-04
Misc Info : 1X
ALS Vial : 82



Response Factor Report FID6

Method Path : O:\Forensics\Data\FID6\2012\OCT2012\OCT09.SEC\
Method File : HC6100912R.M
Title : FID Forensics
Last Update : Fri Oct 19 15:02:42 2012
Response Via : Initial Calibration

Calibration Files
1 =C696966.D 10 =C696968.D 50 =C696970.D 100 =C696972.D 200 =C696974.D 500 =C696976

		Compound	1	10	50	100	200	500	Avg	%RSD
1)	I	5-alpha-androstane	----------ISTD----------							
2)	t	n-Octane (C8)	0.774	0.780	0.810	0.800	0.761		0.785	2.52
3)	t	n-Nonane (C9)	0.785	0.797	0.823	0.819	0.784		0.801	2.31
4)	t	n-Decane (C10)	0.788	0.840	0.873	0.869	0.828		0.840	4.10
5)	t	n-Undecane (C11)	0.741	0.861	0.885	0.880	0.842		0.842	6.96
6)	t	n-Dodecane (C12)	0.844	0.872	0.903	0.897	0.861		0.875	2.83
7)	t	n-Tridecane (...	0.850	0.888	0.907	0.899	0.863		0.881	2.73
8)	t	1380	0.859	0.900	0.917	0.906	0.871		0.891	2.74
9)	t	n-Tetradecane...	0.859	0.900	0.917	0.906	0.871		0.891	2.74
10)	t	1470	0.859	0.900	0.918	0.904	0.871		0.890	2.79
11)	t	n-Pentadecane...	0.859	0.900	0.918	0.904	0.871		0.890	2.79
12)	t	n-Hexadecane ...	0.885	0.916	0.937	0.919	0.881		0.908	2.62
13)	t	1650	0.794	0.888	0.920	0.908	0.888		0.880	5.68
14)	t	n-Heptadecane...	0.794	0.888	0.920	0.908	0.888		0.880	5.68
15)	t	Pristane	0.958	0.949	0.957	0.932	0.880		0.935	3.49
16)	t	n-Octadecane ...	0.877	0.924	0.950	0.931	0.893		0.915	3.24
17)	t	Phytane	0.922	0.934	0.946	0.919	0.880		0.920	2.68
18)	t	n-Nonadecane ...	0.889	0.928	0.951	0.930	0.891		0.918	2.93
19)	s	ortho-terpheny1	1.056	1.146	1.066	1.029	0.992	1.133	1.070	5.55
20)	t	n-Eicosane (C20)	0.945	0.943	0.963	0.939	0.898		0.938	2.55
21)	t	n-Heneicosane...	0.925	0.944	0.961	0.938	0.897		0.933	2.59
22)	t	n-Docosane (C22)	0.926	0.952	0.969	0.944	0.903		0.939	2.72
23)	t	n-Tricosane (...	1.013	0.953	0.970	0.945	0.902		0.957	4.23
24)	s	d50-Tetracosane	0.860	0.948	0.886	0.824	0.793	0.902	0.869	6.41
25)	t	n-Tetracosane...	0.935	0.950	0.965	0.940	0.897		0.937	2.71
26)	t	n-Pentacosane...	0.963	0.972	0.987	0.960	0.916		0.959	2.75
27)	t	n-Hexacosane ...	0.949	0.965	0.980	0.952	0.909		0.951	2.78
28)	t	n-Heptacosane...	0.943	0.947	0.960	0.932	0.890		0.934	2.89
29)	t	n-Octacosane ...	0.972	0.961	0.970	0.943	0.899		0.949	3.17
30)	t	n-Nonacosane ...	0.952	0.960	0.972	0.944	0.902		0.946	2.82
31)	t	n-Triacontane...	0.943	0.948	0.959	0.932	0.891		0.935	2.79
32)	t	n-Hentriacont...	0.951	0.960	0.969	0.942	0.902		0.945	2.77
33)	t	n-Dotriaconta...	0.946	0.957	0.967	0.940	0.900		0.942	2.70
34)	t	n-Tritriacont...	0.908	0.916	0.924	0.900	0.861		0.902	2.70
35)	t	n-tetratriaco...	0.936	0.945	0.954	0.929	0.890		0.931	2.65
36)	t	n-Pentatriaco...	0.950	0.960	0.970	0.946	0.906		0.947	2.57
37)	t	n-Hexatriacon...	0.967	0.980	0.989	0.965	0.924		0.965	2.59
38)	t	n-Heptatriaco...	0.952	0.956	0.968	0.945	0.905		0.945	2.53
39)	t	n-Octatriacon...	0.949	0.951	0.961	0.938	0.898		0.939	2.59
40)	t	n-Nonatriacon...	0.881	0.896	0.909	0.887	0.852		0.885	2.40
41)	t	n-Tetracontan...	0.881	0.896	0.909	0.887	0.852		0.885	2.40
42)	h	C9-C44 Total ...	0.908	0.928	0.944	0.923	0.884		0.917	2.47
43)	h	C9-C40 Total ...	0.908	0.928	0.944	0.923	0.884		0.917	2.47
44)	h	C10-C28 DRO	0.908	0.928	0.944	0.923	0.884		0.917	2.47
45)	h	Total Resolve...	0.908	0.928	0.944	0.923	0.884		0.917	2.47

(#) = Out of Range

HC6100912R.M Fri Oct 19 15:03:16 2012

rfupdate

RSF Update Summary Report

Method Path.....: O:\Forensics\Data\FID6\2012\OCT2012\OCT09.SEC\
Method File.....: HC6100912R.M
Method Title.....: FID Forensics
Last Update.....: Fri Oct 19 14:54:05 2012

Generating Average Response Factor For: C9-C44 Total Petroleum Hydrocarbons

No	Compound	Level	Conc	Response
1	n-Nonane (C9)	1	1.00000	952570.638
2	n-Decane (C10)	1	1.00000	957059.146
3	n-Undecane (C11)	1	1.00000	900183.568
4	n-Dodecane (C12)	1	1.00000	1025174.672
5	n-Tridecane (C13)	1	1.00000	1032176.130
6	n-Tetradecane (C14)	1	1.00000	1043251.358
7	n-Pentadecane (C15)	1	1.00000	1042486.900
8	n-Hexadecane (C16)	1	1.00000	1074793.412
9	n-Heptadecane (C17)	1	1.00000	963753.098
10	Pristane	1	1.00000	1163151.722
11	n-Octadecane (C18)	1	1.00000	1064515.742
12	Phytane	1	1.00000	1119835.122
13	n-Nonadecane (C19)	1	1.00000	1079214.956
14	n-Eicosane (C20)	1	1.00000	1147198.247
15	n-Heneicosane (C21)	1	1.00000	1123005.138
16	n-Docosane (C22)	1	1.00000	1124809.953
17	n-Tricosane (C23)	1	1.00000	1230394.124
18	n-Tetracosane (C24)	1	1.00000	1135362.965
19	n-Pentacosane (C25)	1	1.00000	1168815.080
20	n-Hexacosane (C26)	1	1.00000	1152567.957
21	n-Heptacosane (C27)	1	1.00000	1145368.534
22	n-Octacosane (C28)	1	1.00000	1180139.273
23	n-Nonacosane (C29)	1	1.00000	1156347.051
24	n-Triacontane (C30)	1	1.00000	1145403.262
25	n-Hentriacontane (C31)	1	1.00000	1154106.282
26	n-Dotriacontane (C32)	1	1.00000	1148663.326
27	n-Tritriacontane (C33)	1	1.00000	1102137.295
28	n-tetratriacontane (C34)	1	1.00000	1136403.960
29	n-Pentatriacontane (C35)	1	1.00000	1153335.777
30	n-Hexatriacontane (C36)	1	1.00000	1174453.897
31	n-Heptatriacontane (C37)	1	1.00000	1156476.350
32	n-Octatriacontane (C38)	1	1.00000	1152786.850
33	n-Tetracontane (C40)	1	1.00000	1070073.005
Avg RSF For: C9-C44 Total Petroleum			1.00000	1102303.478
1	n-Nonane (C9)	2	10.00000	10253089.486
2	n-Decane (C10)	2	10.00000	10804933.640
3	n-Undecane (C11)	2	10.00000	11077986.906
4	n-Dodecane (C12)	2	10.00000	11212465.746
5	n-Tridecane (C13)	2	10.00000	11426207.561
6	n-Tetradecane (C14)	2	10.00000	11572787.286
7	n-Pentadecane (C15)	2	10.00000	11578361.230
8	n-Hexadecane (C16)	2	10.00000	11782083.725
9	n-Heptadecane (C17)	2	10.00000	11424635.035

rfupdate

10	Pristane	2	10.00000	12202873.850
11	n-Octadecane (C18)	2	10.00000	11882520.063
12	Phytane	2	10.00000	12015093.440
13	n-Nonadecane (C19)	2	10.00000	11941549.900
14	n-Eicosane (C20)	2	10.00000	12137362.908
15	n-Heneicosane (C21)	2	10.00000	12145661.292
16	n-Docosane (C22)	2	10.00000	12244735.649
17	n-Tricosane (C23)	2	10.00000	12262134.420
18	n-Tetracosane (C24)	2	10.00000	12222635.821
19	n-Pentacosane (C25)	2	10.00000	12510205.594
20	n-Hexacosane (C26)	2	10.00000	12419283.445
21	n-Heptacosane (C27)	2	10.00000	12186094.895
22	n-Octacosane (C28)	2	10.00000	12367866.908
23	n-Nonacosane (C29)	2	10.00000	12352693.965
24	n-Triacontane (C30)	2	10.00000	12201178.082
25	n-Hentriacontane (C31)	2	10.00000	12353361.985
26	n-Dotriacontane (C32)	2	10.00000	12308441.347
27	n-Tritriacontane (C33)	2	10.00000	11786741.965
28	n-tetratriacontane (C34)	2	10.00000	12157495.138
29	n-Pentatriacontane (C35)	2	10.00000	12352670.107
30	n-Hexatriacontane (C36)	2	10.00000	12609088.250
31	n-Heptatriacontane (C37)	2	10.00000	12299207.777
32	n-Octatriacontane (C38)	2	10.00000	12233237.320
33	n-Tetracontane (C40)	2	10.00000	11526170.660
Avg RSF For: C9-C44 Total Petroleum			10.00000	11934874.406

1	n-Nonane (C9)	3	50.00000	50478011.741
2	n-Decane (C10)	3	50.00000	53570487.449
3	n-Undecane (C11)	3	50.00000	54288067.583
4	n-Dodecane (C12)	3	50.00000	55398357.329
5	n-Tridecane (C13)	3	50.00000	55641283.439
6	n-Tetradecane (C14)	3	50.00000	56258118.165
7	n-Pentadecane (C15)	3	50.00000	56325207.150
8	n-Hexadecane (C16)	3	50.00000	57491976.033
9	n-Heptadecane (C17)	3	50.00000	56444770.653
10	Pristane	3	50.00000	58710767.480
11	n-Octadecane (C18)	3	50.00000	58286655.473
12	Phytane	3	50.00000	58026962.225
13	n-Nonadecane (C19)	3	50.00000	58308466.725
14	n-Eicosane (C20)	3	50.00000	59065870.265
15	n-Heneicosane (C21)	3	50.00000	58965963.635
16	n-Docosane (C22)	3	50.00000	59469435.737
17	n-Tricosane (C23)	3	50.00000	59521647.173
18	n-Tetracosane (C24)	3	50.00000	59212702.834
19	n-Pentacosane (C25)	3	50.00000	60517365.620
20	n-Hexacosane (C26)	3	50.00000	60097253.230
21	n-Heptacosane (C27)	3	50.00000	58897271.141
22	n-Octacosane (C28)	3	50.00000	59486733.536
23	n-Nonacosane (C29)	3	50.00000	59601829.310
24	n-Triacontane (C30)	3	50.00000	58803343.047
25	n-Hentriacontane (C31)	3	50.00000	59452857.776
26	n-Dotriacontane (C32)	3	50.00000	59293229.278
27	n-Tritriacontane (C33)	3	50.00000	56677657.812
28	n-tetratriacontane (C34)	3	50.00000	58523531.532
29	n-Pentatriacontane (C35)	3	50.00000	59519320.554
30	n-Hexatriacontane (C36)	3	50.00000	60670537.304
31	n-Heptatriacontane (C37)	3	50.00000	59374384.620
32	n-Octatriacontane (C38)	3	50.00000	58928146.193
33	n-Tetracontane (C40)	3	50.00000	55791369.112
Avg RSF For: C9-C44 Total Petroleum			50.00000	57912108.520

1	n-Nonane (C9)	4	100.00000	100809213.748
2	n-Decane (C10)	4	100.00000	106958574.326
3	n-Undecane (C11)	4	100.00000	108330692.093
4	n-Dodecane (C12)	4	100.00000	110506918.272
5	n-Tridecane (C13)	4	100.00000	110686744.537
6	n-Tetradecane (C14)	4	100.00000	111594479.217
7	n-Pentadecane (C15)	4	100.00000	111368265.440
8	n-Hexadecane (C16)	4	100.00000	113205962.753
9	n-Heptadecane (C17)	4	100.00000	111833709.159
10	Pristane	4	100.00000	114733285.872
11	n-Octadecane (C18)	4	100.00000	114695471.624
12	Phytane	4	100.00000	113216967.133
13	n-Nonadecane (C19)	4	100.00000	114522791.617
14	n-Eicosane (C20)	4	100.00000	115632947.920
15	n-Heneicosane (C21)	4	100.00000	115565232.532
16	n-Docosane (C22)	4	100.00000	116285460.109
17	n-Tricosane (C23)	4	100.00000	116325798.298
18	n-Tetracosane (C24)	4	100.00000	115717359.770
19	n-Pentacosane (C25)	4	100.00000	118190733.826
20	n-Hexacosane (C26)	4	100.00000	117273637.495
21	n-Heptacosane (C27)	4	100.00000	114770972.293
22	n-Octacosane (C28)	4	100.00000	116093912.502
23	n-Nonacosane (C29)	4	100.00000	116234850.504
24	n-Triacontane (C30)	4	100.00000	114784471.468
25	n-Hentriacontane (C31)	4	100.00000	115949348.528
26	n-Dotriacontane (C32)	4	100.00000	115812020.968
27	n-Tritriacontane (C33)	4	100.00000	110777678.053
28	n-tetratriacontane (C34)	4	100.00000	114429634.889
29	n-Pentatriacontane (C35)	4	100.00000	116541638.459
30	n-Hexatriacontane (C36)	4	100.00000	118820903.196
31	n-Heptatriacontane (C37)	4	100.00000	116325062.386
32	n-Octatriacontane (C38)	4	100.00000	115491477.168
33	n-Tetracontane (C40)	4	100.00000	109284912.750
Avg RSF For: C9-C44 Total Petroleum			100.00000	113720337.240

1	n-Nonane (C9)	5	200.00000	210212530.620
2	n-Decane (C10)	5	200.00000	222060938.494
3	n-Undecane (C11)	5	200.00000	225873785.522
4	n-Dodecane (C12)	5	200.00000	230785559.494
5	n-Tridecane (C13)	5	200.00000	231476174.276
6	n-Tetradecane (C14)	5	200.00000	233606769.484
7	n-Pentadecane (C15)	5	200.00000	233489876.250
8	n-Hexadecane (C16)	5	200.00000	236385338.129
9	n-Heptadecane (C17)	5	200.00000	238263007.075
10	Pristane	5	200.00000	235950782.465
11	n-Octadecane (C18)	5	200.00000	239542390.806
12	Phytane	5	200.00000	236109079.240
13	n-Nonadecane (C19)	5	200.00000	238930368.942
14	n-Eicosane (C20)	5	200.00000	240877144.700
15	n-Heneicosane (C21)	5	200.00000	240475117.594
16	n-Docosane (C22)	5	200.00000	242048161.002
17	n-Tricosane (C23)	5	200.00000	241890503.389
18	n-Tetracosane (C24)	5	200.00000	240562465.604
19	n-Pentacosane (C25)	5	200.00000	245679411.412
20	n-Hexacosane (C26)	5	200.00000	243745217.660
21	n-Heptacosane (C27)	5	200.00000	238593530.494
22	n-Octacosane (C28)	5	200.00000	241173582.658
23	n-Nonacosane (C29)	5	200.00000	241880209.452
24	n-Triacontane (C30)	5	200.00000	239050960.212

rfupdate

25	n-Hentriacontane (C31)	5	200.00000	241785670.829
26	n-Dotriacontane (C32)	5	200.00000	241411670.299
27	n-Tritriacontane (C33)	5	200.00000	231029794.745
28	n-tetratriacontane (C34)	5	200.00000	238683480.934
29	n-Pentatriacontane (C35)	5	200.00000	243093739.035
30	n-Hexatriacontane (C36)	5	200.00000	247778302.255
31	n-Heptatriacontane (C37)	5	200.00000	242742435.009
32	n-Octatriacontane (C38)	5	200.00000	240910122.854
33	n-Tetracontane (C40)	5	200.00000	228578622.097
Avg RSF For: C9-C44 Total Petroleum			200.00000	237111416.455

Generating Reference Response Factors

No	Compound	No	Refrence Compound
8	1380	9	n-Tetradecane (C14)
10	1470	11	n-Pentadecane (C15)
13	1650	14	n-Heptadecane (C17)
40	n-Nonatriacontane (C39)	41	n-Tetracontane (C40)
43	C9-C40 Total Petroleum Hydrocarbons	42	C9-C44 Total Petroleum Hydrocarbons
44	C10-C28 DRO	42	C9-C44 Total Petroleum Hydrocarbons
45	Total Resolved Hydrocarbons	42	C9-C44 Total Petroleum Hydrocarbons

Abacus Response Factor Update Macro Ver. 1.0

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID6\2012\OCT2012\OCT09.SEC\
Data File : C696966.D
Signal(s) : FID2B.CH
Acq On : 09 Oct 2012 3:24 pm
Operator : JT
Sample : I610091201R
Misc : WHAO93
ALS Vial : 55 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Oct 19 14:43:41 2012
Quant Method : O:\Forensics\Data\FID6\2012\OCT2012\OCT09.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Fri Oct 19 14:42:59 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

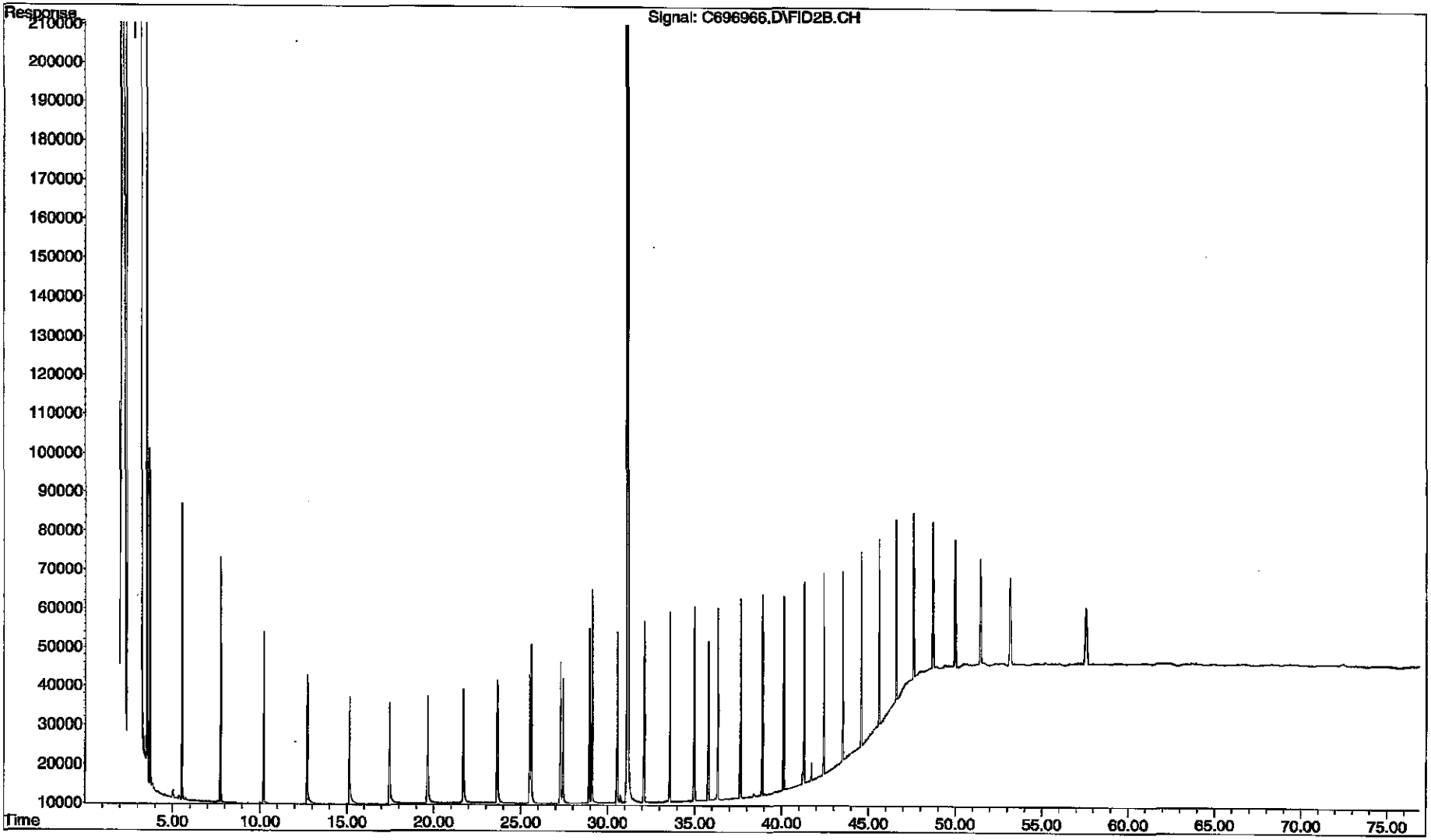
Sub List : CCAL - CCAL

10-19-12

	Compound	R.T.	Response	Conc Units
	Internal Standards			
1) I	5-alpha-androstane	31.156	60708446	50.000 ug/mL M4
	System Monitoring Compounds			
19) s	ortho-terphenyl	29.107	1281575	0.986 ug/mL M4
Spiked Amount	50.000	Range 50 - 130	Recovery =	1.97%#
24) s	d50-Tetracosane	35.789	1043789	0.989 ug/mL M4
Spiked Amount	50.000	Range 50 - 130	Recovery =	1.98%#
	Target Compounds			
2) t	n-Octane (C8)	5.538	940338	0.987 ug/mL M4
3) t	n-Nonane (C9)	7.735	952571	0.979 ug/mL M4
4) t	n-Decane (C10)	10.216	957059	0.939 ug/mL M4
5) t	n-Undecane (C11)	12.723	900184	0.881 ug/mL M4
6) t	n-Dodecane (C12)	15.148	1025175	0.965 ug/mL M4
7) t	n-Tridecane (C13)	17.453	1032176	0.964 ug/mL M4
9) t	n-Tetradecane (C14)	19.635	1043251	0.965 ug/mL M4
11) t	n-Pentadecane (C15)	21.698	1042487	0.964 ug/mL M4
12) t	n-Hexadecane (C16)	23.654	1074793	0.975 ug/mL M4
14) t	n-Heptadecane (C17)	25.507	963753	1.083 ug/mL M4
15) t	Pristane	25.608	1163152	1.025 ug/mL M4
16) t	n-Octadecane (C18)	27.270	1064516	0.958 ug/mL M4
17) t	Phytane	27.427	1119835	1.002 ug/mL M4
18) t	n-Nonadecane (C19)	28.949	1079215	0.969 ug/mL M4
20) t	n-Eicosane (C20)	30.560	1147198	1.008 ug/mL M4
21) t	n-Heneicosane (C21)	32.095	1123005	0.991 ug/mL M4
22) t	n-Docosane (C22)	33.567	1124810	0.987 ug/mL M4
23) t	n-Tricosane (C23)	34.977	1230394	1.059 ug/mL M4
25) t	n-Tetracosane (C24)	36.335	1135363	0.998 ug/mL M4
26) t	n-Pentacosane (C25)	37.638	1168815	1.003 ug/mL M4
27) t	n-Hexacosane (C26)	38.896	1152568	1.198 ug/mL M4
28) t	n-Heptacosane (C27)	40.108	1145369	1.009 ug/mL M4
29) t	n-Octacosane (C28)	41.277	1180139	1.024 ug/mL M4
30) t	n-Nonacosane (C29)	42.409	1156347	1.007 ug/mL M4
31) t	n-Triacontane (C30)	43.503	1145403	1.009 ug/mL M4
32) t	n-Hentriacontane (C31)	44.561	1154106	1.006 ug/mL M4
33) t	n-Dotriacontane (C32)	45.589	1148663	1.004 ug/mL M4
34) t	n-Tritriacontane (C33)	46.584	1102137	1.007 ug/mL M4
35) t	n-tetratriacontane (C34)	47.582	1136404	1.005 ug/mL M4
36) t	n-Pentatriacontane (C35)	48.694	1153336	1.003 ug/mL M4
37) t	n-Hexatriacontane (C36)	49.964	1174454	1.002 ug/mL M4
38) t	n-Heptatriacontane (C37)	51.436	1156476	1.008 ug/mL M4
39) t	n-Octatriacontane (C38)	53.144	1152787	1.011 ug/mL M4
41) t	n-Tetracontane (C40)	57.531	1070073	0.996 ug/mL M4

SemiQuant Compounds - Not Calibrated on this Instrument

File :O:\Forensics\Data\FID6\2012\OCT2012\OCT09.SEC\C696966.D
Operator : JT
Acquired : 09 Oct 2012 3:24 pm using AcqMethod FID6A.M
Instrument : FID6
Sample : I610091201R
Misc Info : WHAO93
ALS Vial : 55



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID6\2012\OCT2012\OCT09.SEC\
Data File : C696968.D
Signal(s) : FID2B.CH
Acq On : 09 Oct 2012 4:55 pm
Operator : JT
Sample : I610091202R
Misc : WHAP92
ALS Vial : 56 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Oct 19 14:47:41 2012
Quant Method : O:\Forensics\Data\FID6\2012\OCT2012\OCT09.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Fri Oct 19 14:42:59 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

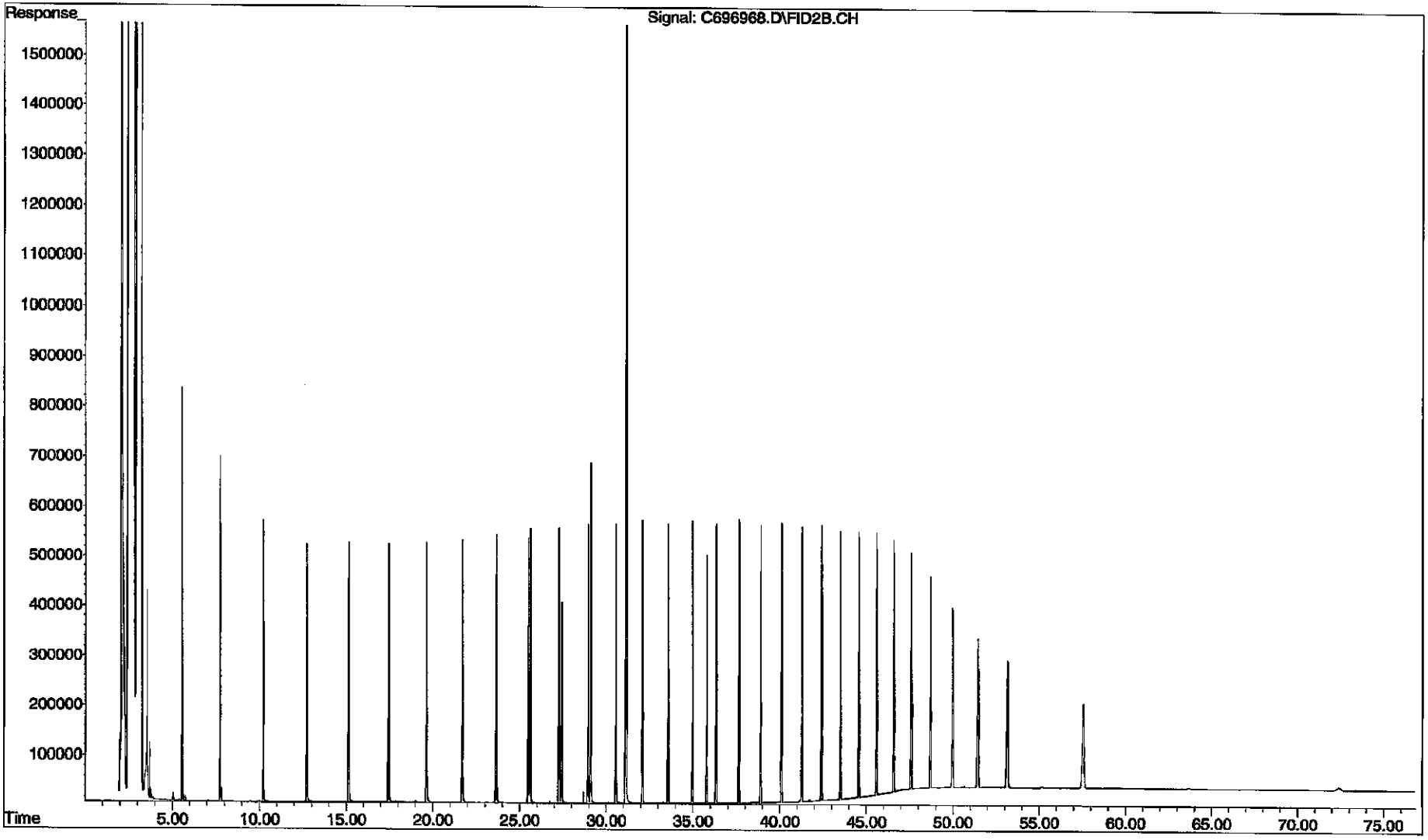
Sub List : CCAL - CCAL

GC 10-19-12

Compound	R.T.	Response	Conc Units
Internal Standards			
1) I 5-alpha-androstane	31.158	64326770	50.000 ug/mL M4
System Monitoring Compounds			
19) s ortho-terphenyl	29.115	14744508	10.708 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery = 21.42%#	
24) s d50-Tetracosane	35.791	12202414	10.915 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery = 21.83%#	
Target Compounds			
2) t n-Octane (C8)	5.546	10029553	9.931 ug/mL M4
3) t n-Nonane (C9)	7.739	10253089	9.945 ug/mL M4
4) t n-Decane (C10)	10.217	10804934	10.003 ug/mL M4
5) t n-Undecane (C11)	12.724	11077987	10.228 ug/mL M4
6) t n-Dodecane (C12)	15.147	11212466	9.956 ug/mL M4
7) t n-Tridecane (C13)	17.450	11426208	10.076 ug/mL M4
9) t n-Tetradecane (C14)	19.632	11572787	10.100 ug/mL M4
11) t n-Pentadecane (C15)	21.694	11578361	10.108 ug/mL M4
12) t n-Hexadecane (C16)	23.647	11782084	10.088 ug/mL M4
14) t n-Heptadecane (C17)	25.503	11424635	12.113 ug/mL M4
15) t Pristane	25.614	12202874	10.144 ug/mL M4
16) t n-Octadecane (C18)	27.268	11882520	10.094 ug/mL M4
17) t Phytane	27.432	12015093	10.147 ug/mL M4
18) t n-Nonadecane (C19)	28.953	11941550	10.114 ug/mL M4
20) t n-Eicosane (C20)	30.559	12137363	10.061 ug/mL M4
21) t n-Heneicosane (C21)	32.094	12145661	10.118 ug/mL M4
22) t n-Docosane (C22)	33.567	12244736	10.137 ug/mL M4
23) t n-Tricosane (C23)	34.979	12262134	9.963 ug/mL M4
25) t n-Tetracosane (C24)	36.336	12222636	10.135 ug/mL M4
26) t n-Pentacosane (C25)	37.641	12510206	10.135 ug/mL M4
27) t n-Hexacosane (C26)	38.897	12419283	12.179 ug/mL M4
28) t n-Heptacosane (C27)	40.110	12186095	10.136 ug/mL M4
29) t n-Octacosane (C28)	41.280	12367867	10.130 ug/mL M4
30) t n-Nonacosane (C29)	42.411	12352694	10.150 ug/mL M4
31) t n-Triacontane (C30)	43.505	12201178	10.146 ug/mL M4
32) t n-Hentriacontane (C31)	44.565	12353362	10.165 ug/mL M4
33) t n-Dotriacontane (C32)	45.594	12308441	10.156 ug/mL M4
34) t n-Tritriacontane (C33)	46.588	11786742	10.160 ug/mL M4
35) t n-tetratriacontane (C34)	47.587	12157495	10.152 ug/mL M4
36) t n-Pentatriacontane (C35)	48.703	12352670	10.143 ug/mL M4
37) t n-Hexatriacontane (C36)	49.974	12609088	10.156 ug/mL M4
38) t n-Heptatriacontane (C37)	51.443	12299208	10.114 ug/mL M4
39) t n-Octatriacontane (C38)	53.159	12233237	10.122 ug/mL M4
41) t n-Tetracontane (C40)	57.553	11526171	10.120 ug/mL M4

SemiQuant Compounds - Not Calibrated on this Instrument

File :O:\Forensics\Data\FID6\2012\OCT2012\OCT09.SEC\C696968.D
Operator : JT
Acquired : 09 Oct 2012 4:55 pm using AcqMethod FID6A.M
Instrument : FID6
Sample : I610091202R
Misc Info : WHAP92
ALS Vial : 56



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID6\2012\OCT2012\OCT09.SEC\
Data File : C696970.D
Signal(s) : FID2B.CH
Acq On : 09 Oct 2012 6:26 pm
Operator : JT
Sample : I610091203R
Misc : WHAQ51
ALS Vial : 57 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Oct 19 14:49:07 2012
Quant Method : O:\Forensics\Data\FID6\2012\OCT2012\OCT09.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Fri Oct 19 14:42:59 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

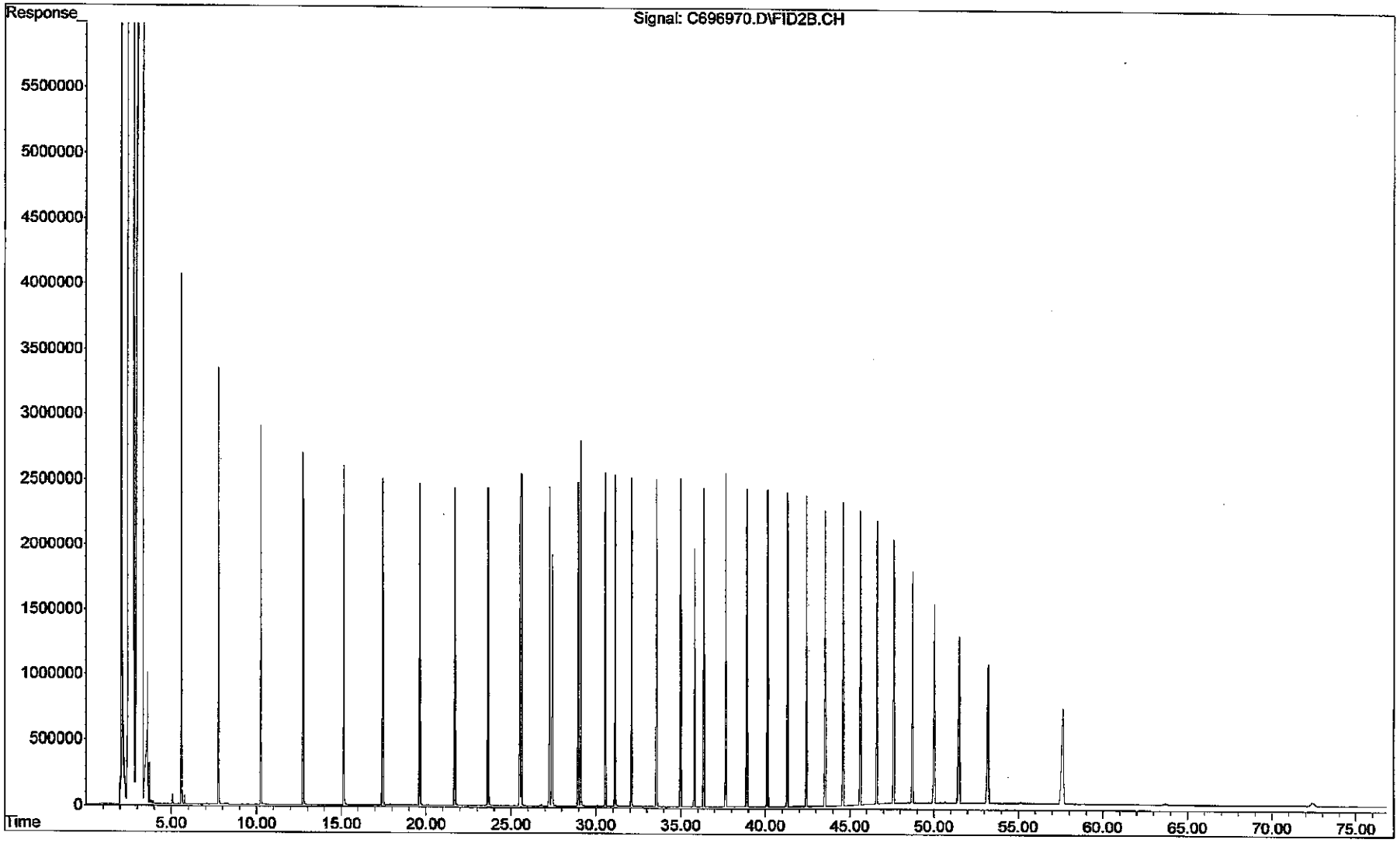
Sub List : CCAL - CCAL

10-19-12

	Compound	R.T.	Response	Conc Units
	Internal Standards			
1) I	5-alpha-androstane	31.160	61343109	50.000 ug/mL M4
	System Monitoring Compounds			
19) s	ortho-terphenyl	29.140	65409296	49.813 ug/mL M4
Spiked Amount	50.000 Range	50 - 130	Recovery =	99.63%
24) s	d50-Tetracosane	35.813	54363306	50.993 ug/mL M4
Spiked Amount	50.000 Range	50 - 130	Recovery =	101.99%
	Target Compounds			
2) t	n-Octane (C8)	5.578	49692270	51.599 ug/mL M4
3) t	n-Nonane (C9)	7.763	50478012	51.342 ug/mL M4
4) t	n-Decane (C10)	10.238	53570487	52.007 ug/mL M4
5) t	n-Undecane (C11)	12.742	54288068	52.560 ug/mL M4
6) t	n-Dodecane (C12)	15.164	55398357	51.583 ug/mL M4
7) t	n-Tridecane (C13)	17.467	55641283	51.452 ug/mL M4
9) t	n-Tetradecane (C14)	19.646	56258118	51.486 ug/mL M4
11) t	n-Pentadecane (C15)	21.711	56325207	51.564 ug/mL M4
12) t	n-Hexadecane (C16)	23.666	57491976	51.621 ug/mL M4
14) t	n-Heptadecane (C17)	25.524	56444771	62.758 ug/mL M4
15) t	Pristane	25.636	58710767	51.180 ug/mL M4
16) t	n-Octadecane (C18)	27.291	58286655	51.921 ug/mL M4
17) t	Phytane	27.457	58026962	51.388 ug/mL M4
18) t	n-Nonadecane (C19)	28.974	58308467	51.789 ug/mL M4
20) t	n-Eicosane (C20)	30.581	59065870	51.345 ug/mL M4
21) t	n-Heneicosane (C21)	32.117	58965964	51.510 ug/mL M4
22) t	n-Docosane (C22)	33.590	59469436	51.628 ug/mL M4
23) t	n-Tricosane (C23)	35.002	59521647	50.713 ug/mL M4
25) t	n-Tetracosane (C24)	36.362	59212703	51.486 ug/mL M4
26) t	n-Pentacosane (C25)	37.667	60517366	51.410 ug/mL M4
27) t	n-Hexacosane (C26)	38.923	60097253	61.803 ug/mL M4
28) t	n-Heptacosane (C27)	40.136	58897271	51.373 ug/mL M4
29) t	n-Octacosane (C28)	41.306	59486734	51.092 ug/mL M4
30) t	n-Nonacosane (C29)	42.438	59601829	51.354 ug/mL M4
31) t	n-Triacontane (C30)	43.534	58803343	51.275 ug/mL M4
32) t	n-Hentriacontane (C31)	44.592	59452858	51.301 ug/mL M4
33) t	n-Dotriacontane (C32)	45.617	59293229	51.305 ug/mL M4
34) t	n-Tritriacontane (C33)	46.615	56677658	51.229 ug/mL M4
35) t	n-tetratriacontane (C34)	47.617	58523532	51.246 ug/mL M4
36) t	n-Pentatriacontane (C35)	48.735	59519321	51.249 ug/mL M4
37) t	n-Hexatriacontane (C36)	50.016	60670537	51.243 ug/mL M4
38) t	n-Heptatriacontane (C37)	51.493	59374385	51.200 ug/mL M4
39) t	n-Octatriacontane (C38)	53.220	58928146	51.129 ug/mL M4
41) t	n-Tetracontane (C40)	57.631	55791369	51.367 ug/mL M4

SemiQuant Compounds - Not Calibrated on this Instrument

File :O:\Forensics\Data\FID6\2012\OCT2012\OCT09.SEC\C696970.D
Operator : JT
Acquired : 09 Oct 2012 6:26 pm using AcqMethod FID6A.M
Instrument : FID6
Sample : I610091203R
Misc Info : WHAQ51
ALS Vial : 57



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID6\2012\OCT2012\OCT09.SEC\
Data File : C696972.D
Signal(s) : FID2B.CH
Acq On : 09 Oct 2012 7:57 pm
Operator : JT
Sample : I610091204R
Misc : WHAO95
ALS Vial : 58 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Oct 19 14:49:52 2012
Quant Method : O:\Forensics\Data\FID6\2012\OCT2012\OCT09.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Fri Oct 19 14:42:59 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

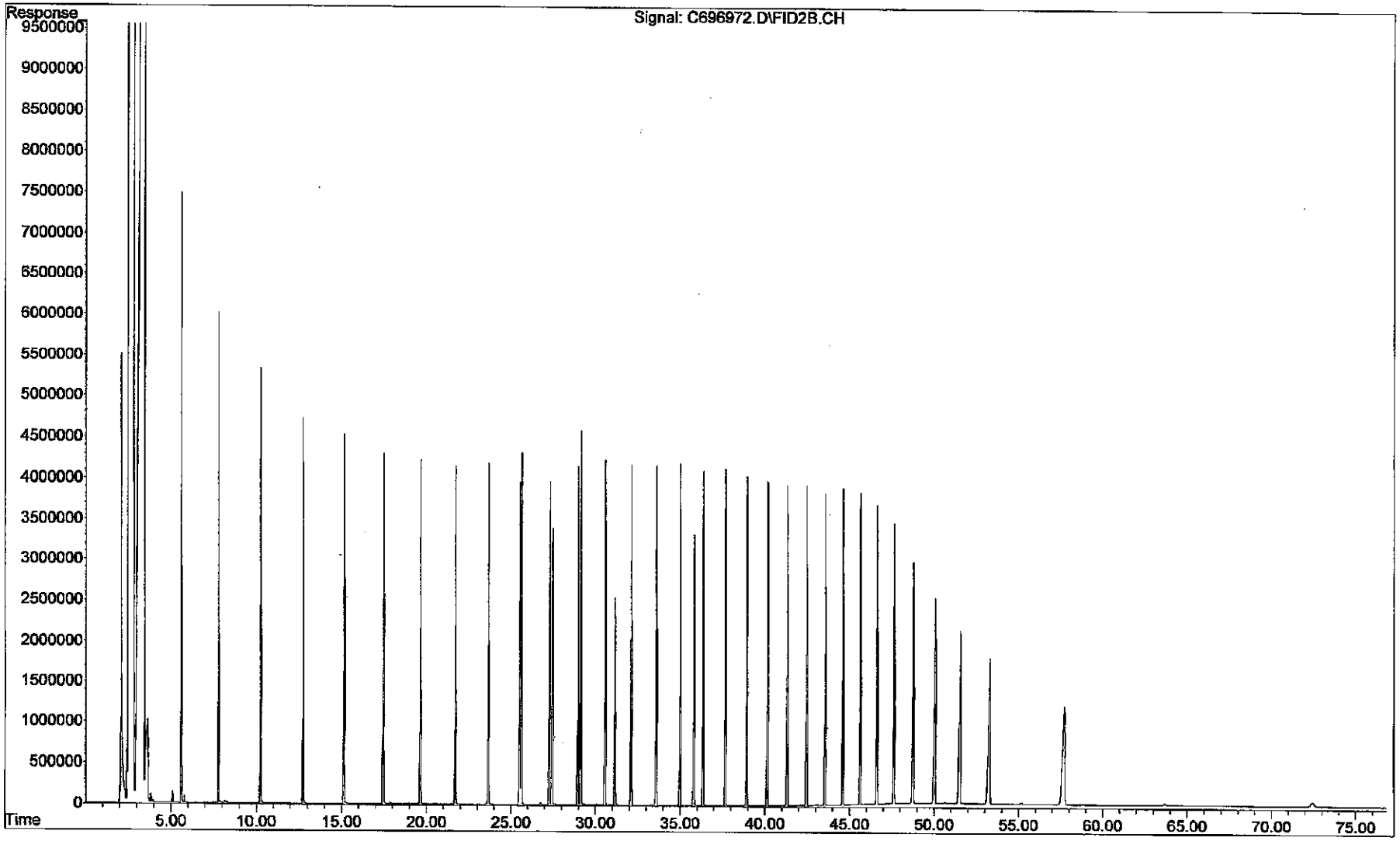
Sub List : CCAL - CCAL

10-19-12

	Compound	R.T.	Response	Conc Units
	Internal Standards			
1) I	5-alpha-androstane	31.165	61574064	50.000 ug/mL M4
	System Monitoring Compounds			
19) s	ortho-terphenyl	29.163	126694372	96.123 ug/mL M4
Spiked Amount	50.000 Range	50 - 130	Recovery =	192.25%#
24) s	d50-Tetracosane	35.833	101479927	94.832 ug/mL M4
Spiked Amount	50.000 Range	50 - 130	Recovery =	189.66%#
	Target Compounds			
2) t	n-Octane (C8)	5.605	98481473	101.877 ug/mL M4
3) t	n-Nonane (C9)	7.784	100809214	102.151 ug/mL M4
4) t	n-Decane (C10)	10.254	106958574	103.448 ug/mL M4
5) t	n-Undecane (C11)	12.757	108330692	104.490 ug/mL M4
6) t	n-Dodecane (C12)	15.180	110506918	102.510 ug/mL M4
7) t	n-Tridecane (C13)	17.483	110686745	101.969 ug/mL M4
9) t	n-Tetradecane (C14)	19.664	111594479	101.746 ug/mL M4
11) t	n-Pentadecane (C15)	21.728	111368265	101.571 ug/mL M4
12) t	n-Hexadecane (C16)	23.684	113205963	101.264 ug/mL M4
14) t	n-Heptadecane (C17)	25.543	111833709	123.876 ug/mL M4
15) t	Pristane	25.657	114733286	99.642 ug/mL M4
16) t	n-Octadecane (C18)	27.311	114695472	101.786 ug/mL M4
17) t	Phytane	27.478	113216967	99.888 ug/mL M4
18) t	n-Nonadecane (C19)	28.996	114522792	101.336 ug/mL M4
20) t	n-Eicosane (C20)	30.601	115632948	100.140 ug/mL M4
21) t	n-Heneicosane (C21)	32.137	115565233	100.574 ug/mL M4
22) t	n-Docosane (C22)	33.612	116285460	100.573 ug/mL M4
23) t	n-Tricosane (C23)	35.026	116325798	98.738 ug/mL M4
25) t	n-Tetracosane (C24)	36.384	115717360	100.239 ug/mL M4
26) t	n-Pentacosane (C25)	37.690	118190734	100.027 ug/mL M4
27) t	n-Hexacosane (C26)	38.947	117273637	120.151 ug/mL M4
28) t	n-Heptacosane (C27)	40.159	114770972	99.734 ug/mL M4
29) t	n-Octacosane (C28)	41.331	116093913	99.337 ug/mL M4
30) t	n-Nonacosane (C29)	42.463	116234851	99.775 ug/mL M4
31) t	n-Triacontane (C30)	43.556	114784471	99.714 ug/mL M4
32) t	n-Hentriacontane (C31)	44.618	115949349	99.675 ug/mL M4
33) t	n-Dotriacontane (C32)	45.646	115812021	99.834 ug/mL M4
34) t	n-Tritriacontane (C33)	46.640	110777678	99.753 ug/mL M4
35) t	n-tetratriacontane (C34)	47.646	114429635	99.824 ug/mL M4
36) t	n-Pentatriacontane (C35)	48.769	116541638	99.971 ug/mL M4
37) t	n-Hexatriacontane (C36)	50.058	118820903	99.981 ug/mL M4
38) t	n-Heptatriacontane (C37)	51.537	116325062	99.933 ug/mL M4
39) t	n-Octatriacontane (C38)	53.271	115491477	99.830 ug/mL M4
41) t	n-Tetracontane (C40)	57.700	109284913	100.240 ug/mL M4

SemiQuant Compounds - Not Calibrated on this Instrument

File :O:\Forensics\Data\FID6\2012\OCT2012\OCT09.SEC\C696972.D
Operator : JT
Acquired : 09 Oct 2012 7:57 pm using AcqMethod FID6A.M
Instrument : FID6
Sample : I610091204R
Misc Info : WHAO95
ALS Vial : 58



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID6\2012\OCT2012\OCT09.SEC\
Data File : C696974.D
Signal(s) : FID2B.CH
Acq On : 09 Oct 2012 9:28 pm
Operator : JT
Sample : I610091205R
Misc : WHAO96
ALS Vial : 59 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Oct 19 14:50:31 2012
Quant Method : O:\Forensics\Data\FID6\2012\OCT2012\OCT09.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Fri Oct 19 14:42:59 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

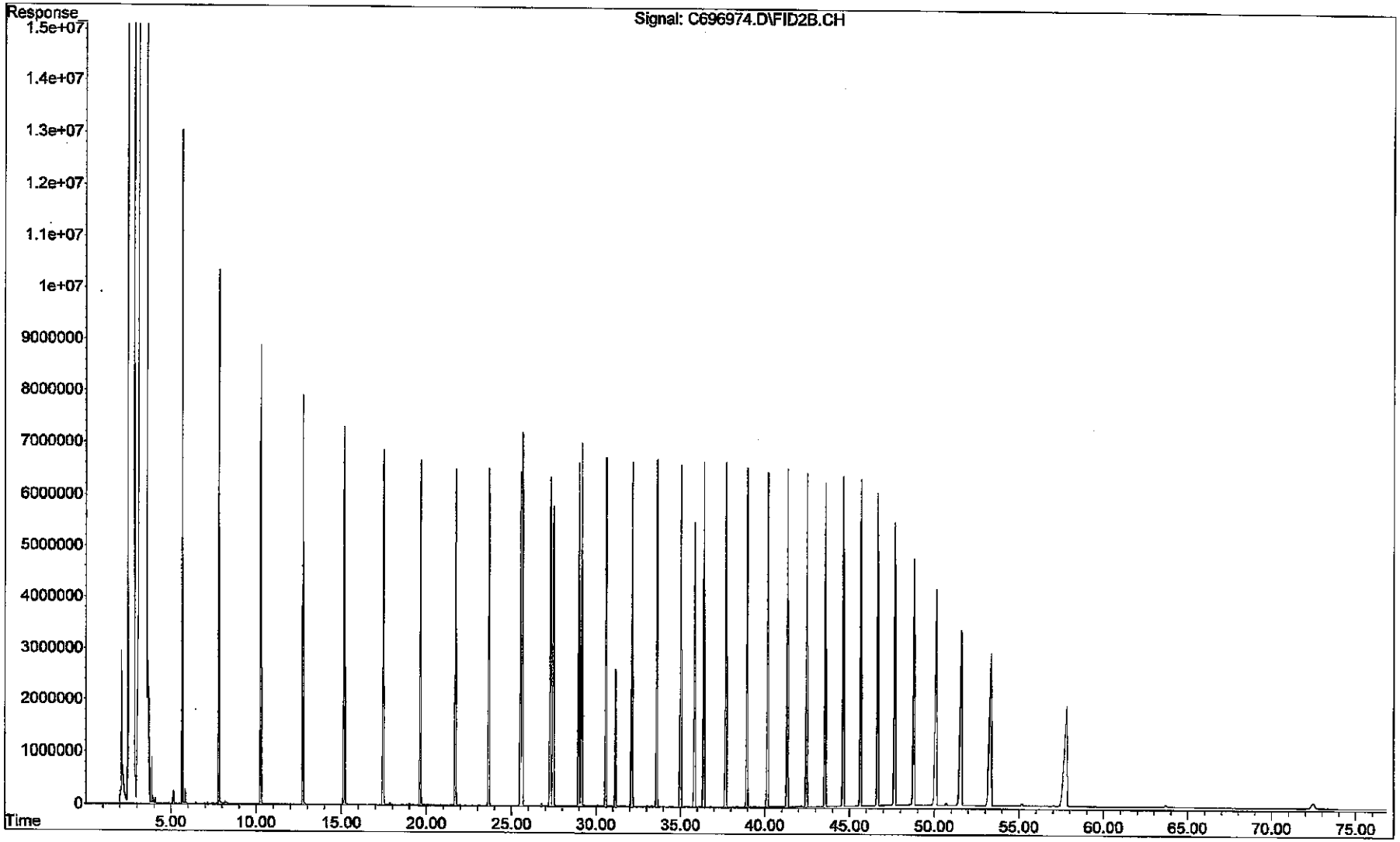
Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Sub List : CCAL - CCAL

	Compound	R.T.	Response	Conc Units
	Internal Standards			
1) I	5-alpha-androstane	31.172	67044401	50.000 ug/mL M4
	System Monitoring Compounds			
19) s	ortho-terphenyl	29.196	266130007	185.438 ug/mL M4
Spiked Amount	50.000 Range 50 - 130		Recovery = 370.88%#	
24) s	d50-Tetracosane	35.864	212783636	182.620 ug/mL M4
Spiked Amount	50.000 Range 50 - 130		Recovery = 365.24%#	
	Target Compounds			
2) t	n-Octane (C8)	5.675	204086637	193.897 ug/mL M4
3) t	n-Nonane (C9)	7.835	210212531	195.630 ug/mL M4
4) t	n-Decane (C10)	10.287	222060938	197.248 ug/mL M4
5) t	n-Undecane (C11)	12.781	225873786	200.089 ug/mL M4
6) t	n-Dodecane (C12)	15.201	230785559	196.617 ug/mL M4
7) t	n-Tridecane (C13)	17.504	231476174	195.847 ug/mL M4
9) t	n-Tetradecane (C14)	19.684	233606769	195.613 ug/mL M4
11) t	n-Pentadecane (C15)	21.749	233489876	195.575 ug/mL M4
12) t	n-Hexadecane (C16)	23.707	236385338	194.197 ug/mL M4
14) t	n-Heptadecane (C17)	25.572	238263007	242.385 ug/mL M4
15) t	Pristane	25.687	235950782	188.196 ug/mL M4
16) t	n-Octadecane (C18)	27.340	239542391	195.235 ug/mL M4
17) t	Phytane	27.509	236109079	191.315 ug/mL M4
18) t	n-Nonadecane (C19)	29.026	238930369	194.169 ug/mL M4
20) t	n-Eicosane (C20)	30.631	240877145	191.583 ug/mL m
21) t	n-Heneicosane (C21)	32.168	240475118	192.204 ug/mL M4
22) t	n-Docosane (C22)	33.644	242048161	192.262 ug/mL M4
23) t	n-Tricosane (C23)	35.056	241890503	188.566 ug/mL M4
25) t	n-Tetracosane (C24)	36.419	240562466	191.382 ug/mL M4
26) t	n-Pentacosane (C25)	37.723	245679411	190.958 ug/mL M4
27) t	n-Hexacosane (C26)	38.982	243745218	229.349 ug/mL M4
28) t	n-Heptacosane (C27)	40.196	238593530	190.416 ug/mL M4
29) t	n-Octacosane (C28)	41.367	241173583	189.524 ug/mL M4
30) t	n-Nonacosane (C29)	42.500	241880209	190.687 ug/mL M4
31) t	n-Triacontane (C30)	43.594	239050960	190.720 ug/mL M4
32) t	n-Hentriacontane (C31)	44.655	241785671	190.891 ug/mL M4
33) t	n-Dotriacontane (C32)	45.684	241411670	191.125 ug/mL M4
34) t	n-Tritriacontane (C33)	46.678	231029795	191.064 ug/mL M4
35) t	n-tetratriacontane (C34)	47.689	238683481	191.230 ug/mL M4
36) t	n-Pentatriacontane (C35)	48.820	243093739	191.515 ug/mL M4
37) t	n-Hexatriacontane (C36)	50.117f	247778302	191.481 ug/mL M4
38) t	n-Heptatriacontane (C37)	51.609	242742435	191.521 ug/mL M4
39) t	n-Octatriacontane (C38)	53.361	240910123	191.251 ug/mL M4
41) t	n-Tetracontane (C40)	57.820	228578622	192.554 ug/mL M4

SemiQuant Compounds - Not Calibrated on this Instrument

File :O:\Forensics\Data\FID6\2012\OCT2012\OCT09.SEC\C696974.D
Operator : JT
Acquired : 09 Oct 2012 9:28 pm using AcqMethod FID6A.M
Instrument : FID6
Sample : I610091205R
Misc Info : WHAO96
ALS Vial : 59



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID6\2012\OCT2012\OCT09.SEC\
Data File : C696976.D
Signal(s) : FID2B.CH
Acq On : 09 Oct 2012 10:58 pm
Operator : JT
Sample : I610091206R
Misc : WHAP58
ALS Vial : 60 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Oct 19 14:51:01 2012
Quant Method : O:\Forensics\Data\FID6\2012\OCT2012\OCT09.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Fri Oct 19 14:42:59 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

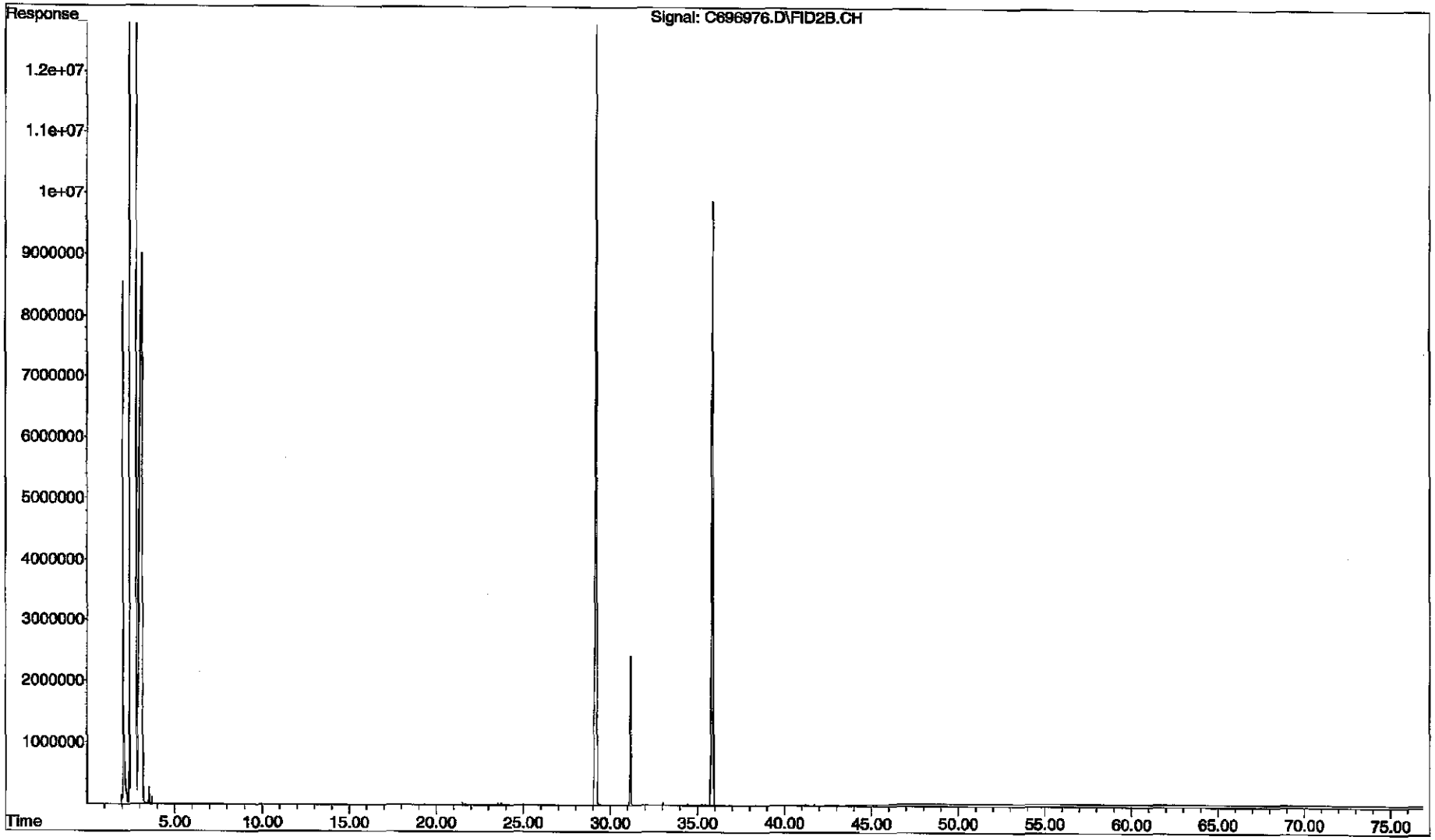
Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Sub List : CCAL - CCAL

Compound	R.T.	Response	Conc Units
Internal Standards			
1) I 5-alpha-androstane	31.160	59041533	50.000 ug/mL M4
System Monitoring Compounds			
19) s ortho-terphenyl	29.246f	668775064	529.164 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery	= 1058.33%#
24) s d50-Tetracosane	35.914f	532476815	518.939 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery	= 1037.88%#
Target Compounds			
SemiQuant Compounds - Not Calibrated on this Instrument			

(f)=RT Delta > 1/2 Window (m)=manual int.

File :O:\Forensics\Data\FID6\2012\OCT2012\OCT09.SEC\C696976.D
Operator : JT
Acquired : 09 Oct 2012 10:58 pm using AcqMethod FID6A.M
Instrument : FID6
Sample : I610091206R
Misc Info : WHAP58
ALS Vial : 60



Data Path : O:\Forensics\Data\FID6\2012\OCT2012\OCT09.SEC\
Data File : C696980.D
Signal(s) : FID2B.CH
Acq On : 10 Oct 2012 2:01 am
Operator : JT
Sample : CQ610091201R
Misc : WHAQ27
ALS Vial : 62 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Oct 19 15:26:30 2012
Quant Method : O:\Forensics\Data\FID6\2012\OCT2012\OCT09.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Fri Oct 19 15:01:24 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Min. RRF : 0.050 Min. Rel. Area : 10% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% ✓ Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(Min)
1	I	5-alpha-androstane	50.000	50.000	0.0	99	0.00
2	t	n-Octane (C8)	50.000	46.741	6.5	89	-0.01
3	t	n-Nonane (C9)	50.000	47.727	4.5	92	0.00
4	t	n-Decane (C10)	50.000	49.859	0.3	95	0.00
5	t	n-Undecane (C11)	50.000	49.472	1.1	93	0.00
6	t	n-Dodecane (C12)	50.000	48.404	3.2	93	0.00
7	t	n-Tridecane (C13)	50.000	48.259	3.5	93	0.00
9	t	n-Tetradecane (C14)	50.000	49.701	0.6	95	0.00
11	t	n-Pentadecane (C15)	50.000	49.249	1.5	94	0.00
12	t	n-Hexadecane (C16)	50.000	49.060	1.9	94	0.00
14	t	n-Heptadecane (C17)	50.000	50.555	-1.1	95	0.00
15	t	Pristane	50.000	48.289	3.4	93	0.00
16	t	n-Octadecane (C18)	50.000	48.592	2.8	92	0.00
17	t	Phytane	50.000	49.384	1.2	95	0.00
18	t	n-Nonadecane (C19)	50.000	48.294	3.4	92	0.00
19	s	ortho-terphenyl	50.000	45.842	8.3	91	0.00
20	t	n-Eicosane (C20)	50.000	47.631	4.7	92	0.00
21	t	n-Heneicosane (C21)	50.000	48.322	3.4	93	0.00
22	t	n-Docosane (C22)	50.000	48.308	3.4	92	0.00
23	t	n-Tricosane (C23)	50.000	47.534	4.9	93	0.00
24	s	d50-Tetracosane	50.000	47.103	5.8	91	0.00
25	t	n-Tetracosane (C24)	50.000	48.404	3.2	93	0.00
26	t	n-Pentacosane (C25)	50.000	47.350	5.3	91	0.00
27	t	n-Hexacosane (C26)	50.000	48.556	2.9	93	0.00
28	t	n-Heptacosane (C27)	50.000	48.813	2.4	94	0.00
29	t	n-Octacosane (C28)	50.000	48.084	3.8	93	0.00
30	t	n-Nonacosane (C29)	50.000	48.382	3.2	93	0.00
31	t	n-Triacontane (C30)	50.000	48.840	2.3	94	0.00
32	t	n-Hentriacontane (C31)	50.000	48.382	3.2	93	0.00
33	t	n-Dotriacontane (C32)	50.000	47.918	4.2	92	0.00
34	t	n-Tritriacontane (C33)	50.000	48.303	3.4	93	0.00
35	t	n-tetratriacontane (C34)	50.000	49.268	1.5	95	0.00
36	t	n-Pentatriacontane (C35)	50.000	48.353	3.3	93	0.00
37	t	n-Hexatriacontane (C36)	50.000	50.701	-1.4	98	0.00
38	t	n-Heptatriacontane (C37)	50.000	48.270	3.5	93	-0.01
39	t	n-Octatriacontane (C38)	50.000	48.299	3.4	93	-0.02
41	t	n-Tetracontane (C40)	50.000	48.594	2.8	93	-0.02

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Mass Discrimination (Response)	Ratio	Range Limits
n-Hexatriacontane (C36) to n-Eicosane (C20)	1.10	0.85 - 1.15

HC6100912R.M Fri Oct 19 15:30:40 2012

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID6\2012\OCT2012\OCT09.SEC\
Data File : C696980.D
Signal(s) : FID2B.CH
Acq On : 10 Oct 2012 2:01 am
Operator : JT
Sample : CQ610091201R
Misc : WHAQ27
ALS Vial : 62 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Oct 19 15:26:30 2012
Quant Method : O:\Forensics\Data\FID6\2012\OCT2012\OCT09.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Fri Oct 19 15:01:24 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

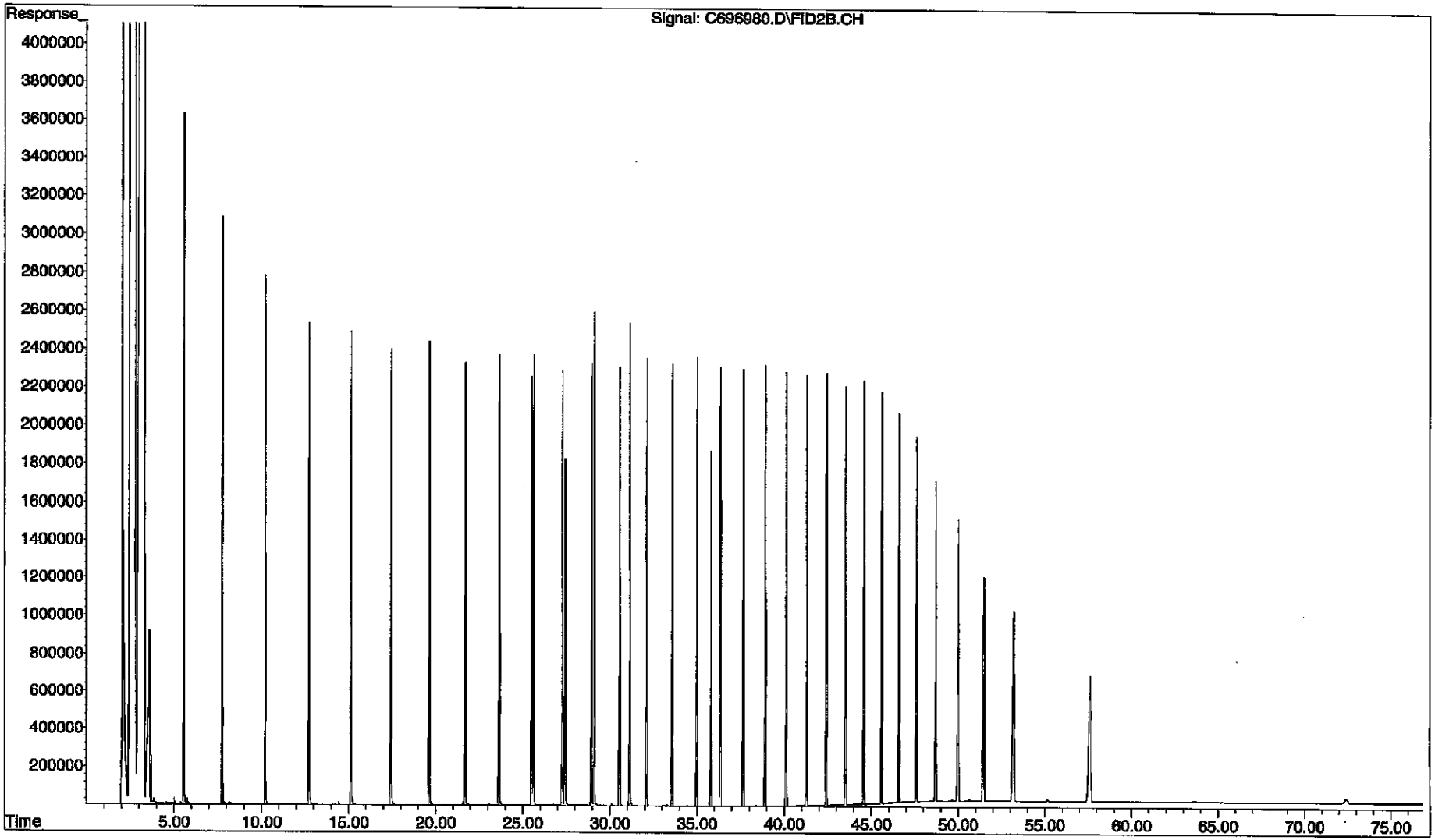
Sub List : CCAL - CCAL

10-19-12

Compound	R.T.	Response	Conc Units
Internal Standards			
1) I 5-alpha-androstane	31.155	60564000	50.000 ug/mL M4
System Monitoring Compounds			
19) s ortho-terphenyl	29.132	59430514	45.842 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery = 91.68%	
24) s d50-Tetracosane	35.807	49578010	47.103 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery = 94.21%	
Target Compounds			
2) t n-Octane (C8)	5.566	44441762	46.741 ug/mL M4
3) t n-Nonane (C9)	7.755	46327874	47.727 ug/mL M4
4) t n-Decane (C10)	10.231	50705595	49.859 ug/mL M4
5) t n-Undecane (C11)	12.735	50448617	49.472 ug/mL M4
6) t n-Dodecane (C12)	15.158	51323876	48.404 ug/mL M4
7) t n-Tridecane (C13)	17.462	51525104	48.259 ug/mL M4
9) t n-Tetradecane (C14)	19.641	53617072	49.701 ug/mL M4
11) t n-Pentadecane (C15)	21.704	53113530	49.249 ug/mL M4
12) t n-Hexadecane (C16)	23.660	53945438	49.060 ug/mL M4
14) t n-Heptadecane (C17)	25.519	53869384	50.555 ug/mL M4
15) t Pristane	25.630	54689926	48.289 ug/mL M4
16) t n-Octadecane (C18)	27.285	53856670	48.592 ug/mL M4
17) t Phytane	27.451	55055357	49.384 ug/mL M4
18) t n-Nonadecane (C19)	28.968	53683288	48.294 ug/mL M4
20) t n-Eicosane (C20)	30.575	54097417	47.631 ug/mL M4
21) t n-Heneicosane (C21)	32.112	54613399	48.322 ug/mL M4
22) t n-Docosane (C22)	33.585	54938821	48.308 ug/mL M4
23) t n-Tricosane (C23)	34.997	55082324	47.534 ug/mL M4
25) t n-Tetracosane (C24)	36.355	54961425	48.404 ug/mL M4
26) t n-Pentacosane (C25)	37.661	55030527	47.350 ug/mL M4
27) t n-Hexacosane (C26)	38.919	55938494	48.556 ug/mL M4
28) t n-Heptacosane (C27)	40.132	55251337	48.813 ug/mL M4
29) t n-Octacosane (C28)	41.301	55274116	48.084 ug/mL M4
30) t n-Nonacosane (C29)	42.433	55439156	48.382 ug/mL M4
31) t n-Triacontane (C30)	43.529	55299629	48.840 ug/mL M4
32) t n-Hentriacontane (C31)	44.586	55358128	48.382 ug/mL M4
33) t n-Dotriacontane (C32)	45.612	54675804	47.918 ug/mL M4
34) t n-Tritriacontane (C33)	46.611	52761076	48.303 ug/mL M4
35) t n-tetratriacontane (C34)	47.612	55550283	49.268 ug/mL M4
36) t n-Pentatriacontane (C35)	48.729	55442711	48.353 ug/mL M4
37) t n-Hexatriacontane (C36)	50.009	59265878	50.701 ug/mL M4
38) t n-Heptatriacontane (C37)	51.482	55265857	48.270 ug/mL M4
39) t n-Octatriacontane (C38)	53.204	54959752	48.299 ug/mL M4
41) t n-Tetracontane (C40)	57.616	52109751	48.594 ug/mL M4

SemiQuant Compounds - Not Calibrated on this Instrument

File :O:\Forensics\Data\FID6\2012\OCT2012\OCT09.SEC\C696980.D
Operator : JT
Acquired : 10 Oct 2012 2:01 am using AcqMethod FID6A.M
Instrument : FID6
Sample : CQ610091201R
Misc Info : WHAQ27
ALS Vial : 62



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID6\2012\OCT2012\OCT09.SEC\
Data File : C696982.D
Signal(s) : FID2B.CH
Acq On : 10 Oct 2012 3:31 am
Operator : JT
Sample : TS110212ANC01
Misc : WHAP13
ALS Vial : 63 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Oct 19 14:26:54 2012
Quant Method : O:\Forensics\Data\FID6\2012\OCT2012\OCT09.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Fri Oct 19 15:01:24 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB610091203R
Blank File : C696988.D

Sub List : SHC - SHC

	Compound	R.T.	Response	Conc	Units	
	Internal Standards					
1) I	5-alpha-androstane	31.169	71902143	50.000	ug/mL	M4
	System Monitoring Compounds					
19) s	ortho-terphenyl	29.145	74489747	48.397	ug/mL	M4
Spiked Amount	50.000 Range 50 - 130		Recovery = 96.79%			
24) s	d50-Tetracosane	35.821	59938415	47.966	ug/mL	M4
Spiked Amount	50.000 Range 50 - 130		Recovery = 95.93%			
	Target Compounds					
2) t	n-Octane (C8)	5.546	102111967	90.459	ug/mL	M4
3) t	n-Nonane (C9)	7.750	75297850	65.340	ug/mL	M4
4) t	n-Decane (C10)	10.233	64248776	53.214	ug/mL	M4
5) t	n-Undecane (C11)	12.741	60276355	49.788	ug/mL	M4
6) t	n-Dodecane (C12)	15.164	55167542	43.825	ug/mL	M4
7) t	n-Tridecane (C13)	17.468	50409823	39.769	ug/mL	M4
8) t	1380	19.140	11665091	9.108	ug/mL	M4
9) t	n-Tetradecane (C14)	19.648	47678202	37.226	ug/mL	M4
10) t	1470	20.930	18734391	14.632	ug/mL	M4
11) t	n-Pentadecane (C15)	21.711	49210633	38.435	ug/mL	M4
12) t	n-Hexadecane (C16)	23.663	41788595	32.011	ug/mL	M4
13) t	1650	24.567	14687246	11.610	ug/mL	M4
14) t	n-Heptadecane (C17)	25.521	38097927	30.116	ug/mL	M4
15) t	Pristane	25.616	29249207	21.753	ug/mL	M4
16) t	n-Octadecane (C18)	27.286	37205845	28.275	ug/mL	M4
17) t	Phytane	27.439	16156537	12.207	ug/mL	M4
18) t	n-Nonadecane (C19)	28.971	32238838	24.429	ug/mL	M4
20) t	n-Eicosane (C20)	30.575	32266598	23.930	ug/mL	M4
21) t	n-Heneicosane (C21)	32.111	27881047	20.779	ug/mL	M4
22) t	n-Docosane (C22)	33.584	27095249	20.068	ug/mL	M4
23) t	n-Tricosane (C23)	34.995	24171613	17.570	ug/mL	M4
25) t	n-Tetracosane (C24)	36.354	22645717	16.799	ug/mL	M4
26) t	n-Pentacosane (C25)	37.654	23904645	17.325	ug/mL	M4
27) t	n-Hexacosane (C26)	38.914	19263067	14.084	ug/mL	M4
28) t	n-Heptacosane (C27)	40.125	14429591	10.738	ug/mL	M4
29) t	n-Octacosane (C28)	41.292	10709895	7.848	ug/mL	M4
30) t	n-Nonacosane (C29)	42.426	10469133	7.696	ug/mL	m
31) t	n-Triacontane (C30)	43.517	8251301	6.138	ug/mL	M4
32) t	n-Hentriacontane (C31)	44.575	6534798	4.811	ug/mL	M4
33) t	n-Dotriacontane (C32)	45.600	7426749	5.483	ug/mL	M4
34) t	n-Tritriacontane (C33)	46.601	5068941	3.909	ug/mL	M4
35) t	n-tetratriacontane (C34)	47.594	4759824	3.556	ug/mL	M4
36) t	n-Pentatriacontane (C35)	48.709	3199516	2.350	ug/mL	M4
37) t	n-Hexatriacontane (C36)	49.978	2742042	1.976	ug/mL	m

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID6\2012\OCT2012\OCT09.SEC\
Data File : C696982.D
Signal(s) : FID2B.CH
Acq On : 10 Oct 2012 3:31 am
Operator : JT
Sample : TS110212ANC01
Misc : WHAP13
ALS Vial : 63 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Oct 19 14:26:54 2012
Quant Method : O:\Forensics\Data\FID6\2012\OCT2012\OCT09.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Fri Oct 19 15:01:24 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB610091203R
Blank File : C696988.D

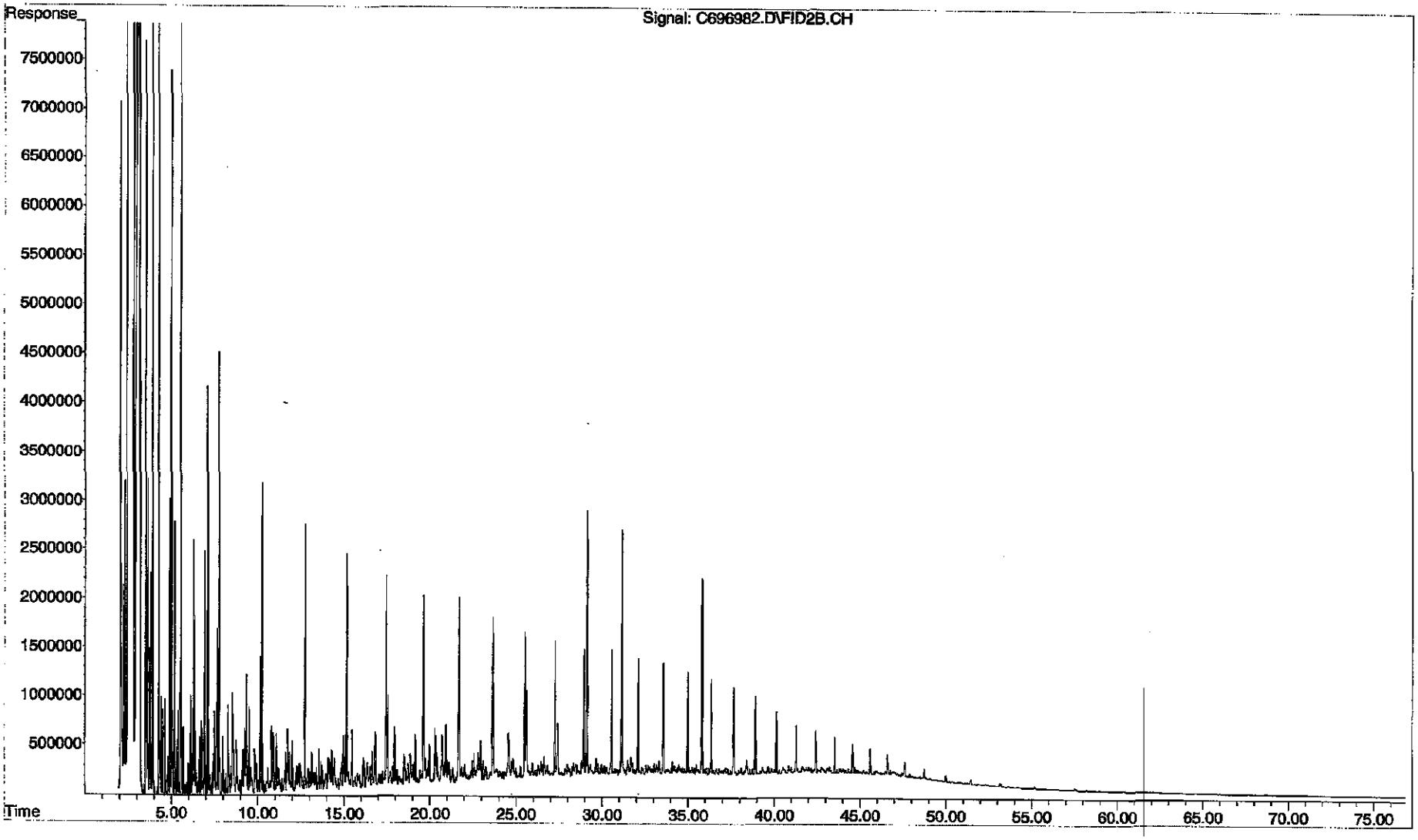
Sub List : SHC - SHC

		Compound	R.T.	Response	Conc	Units	
38)	t	n-Heptatriacontane (C37)	51.451	2177791	1.602	ug/mL	M4
39)	t	n-Octatriacontane (C38)	53.163	1735847	1.285	ug/mL	M4
40)	t	n-Nonatriacontane (C39)	55.173	1208017	0.949	ug/mL	M4
41)	t	n-Tetracontane (C40)	57.547	1275942	1.002	ug/mL	m
42)	h	C9-C44 Total Petroleu...	40.125	8407455076	6372.559	ug/mL	M4
42)	h	C9-C44 Total Petroleu BS	40.125	7680047739	5821.210	ug/mL	M4
45)	h	Total Resolved Hydroc...	40.000	2662322462	2017.948	ug/L	m

SemiQuant Compounds - Not Calibrated on this Instrument

(f)=RT Delta > 1/2 Window (m)=manual int.

File :O:\Forensics\Data\FID6\2012\OCT2012\OCT09.SEC\C696982.D
Operator : JT
Acquired : 10 Oct 2012 3:31 am using AcqMethod FID6A.M
Instrument : FID6
Sample : TS110212ANC01
Misc Info : WHAP13
ALS Vial : 63



Data Path : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\
Data File : C698386.D
Signal(s) : FID2B.CH
Acq On : 19 Dec 2012 3:44 pm
Operator : JT
Sample : C612171205R
Misc : WHAR04
ALS Vial : 88 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Dec 27 14:21:34 2012
Quant Method : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Tue Dec 18 08:55:10 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Min. RRF : 0.050 Min. Rel. Area : 10% Max. R.T. Dev 0.50min
Max. RRF Dev : 15% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(Min)
1	I	5-alpha-androstane	50.000	50.000	0.0	95	0.00
2	t	n-Octane (C8)	50.000	49.099	1.8	91	-0.01
3	t	n-Nonane (C9)	50.000	49.719	0.6	92	0.00
4	t	n-Decane (C10)	50.000	50.439	-0.9	92	0.00
5	t	n-Undecane (C11)	50.000	51.544	-3.1	93	0.00
6	t	n-Dodecane (C12)	50.000	50.907	-1.8	94	0.00
7	t	n-Tridecane (C13)	50.000	50.891	-1.8	94	0.00
9	t	n-Tetradecane (C14)	50.000	51.152	-2.3	95	0.00
11	t	n-Pentadecane (C15)	50.000	51.394	-2.8	95	0.00
12	t	n-Hexadecane (C16)	50.000	51.236	-2.5	94	0.00
14	t	n-Heptadecane (C17)	50.000	52.177	-4.4	95	0.00
15	t	Pristane	50.000	50.796	-1.6	94	0.00
16	t	n-Octadecane (C18)	50.000	51.735	-3.5	95	0.00
17	t	Phytane	50.000	51.108	-2.2	95	0.00
18	t	n-Nonadecane (C19)	50.000	51.571	-3.1	95	0.00
19	s	ortho-terphenyl	50.000	50.645	-1.3	97	0.00
20	t	n-Eicosane (C20)	50.000	50.876	-1.8	94	0.00
21	t	n-Heneicosane (C21)	50.000	51.163	-2.3	95	0.00
22	t	n-Docosane (C22)	50.000	51.152	-2.3	94	0.00
23	t	n-Tricosane (C23)	50.000	50.347	-0.7	95	0.00
24	s	d50-Tetracosane	50.000	51.446	-2.9	96	0.00
25	t	n-Tetracosane (C24)	50.000	51.032	-2.1	94	0.00
26	t	n-Pentacosane (C25)	50.000	50.970	-1.9	94	0.00
27	t	n-Hexacosane (C26)	50.000	51.042	-2.1	94	0.00
28	t	n-Heptacosane (C27)	50.000	50.919	-1.8	94	0.00
29	t	n-Octacosane (C28)	50.000	50.705	-1.4	94	0.00
30	t	n-Nonacosane (C29)	50.000	51.000	-2.0	95	0.00
31	t	n-Triacontane (C30)	50.000	50.941	-1.9	95	0.01
32	t	n-Hentriacontane (C31)	50.000	50.966	-1.9	95	0.01
33	t	n-Dotriacontane (C32)	50.000	51.046	-2.1	95	0.01
34	t	n-Tritriacontane (C33)	50.000	51.030	-2.1	95	0.01
35	t	n-tetratriacontane (C34)	50.000	51.058	-2.1	95	0.01
36	t	n-Pentatriacontane (C35)	50.000	51.040	-2.1	95	0.01
37	t	n-Hexatriacontane (C36)	50.000	51.014	-2.0	95	0.01
38	t	n-Heptatriacontane (C37)	50.000	50.884	-1.8	95	0.02
39	t	n-Octatriacontane (C38)	50.000	50.747	-1.5	94	0.02
41	t	n-Tetracontane (C40)	50.000	50.890	-1.8	94	0.03

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Mass Discrimination (Response)	Ratio	Range Limits
n-Hexatriacontane (C36) to n-Eicosane (C20)	1.03	0.85 - 1.15

HC6100912R.M Fri Dec 28 12:57:48 2012

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\
Data File : C698386.D
Signal(s) : FID2B.CH
Acq On : 19 Dec 2012 3:44 pm
Operator : JT
Sample : C612171205R
Misc : WHAR04
ALS Vial : 88 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Dec 27 14:21:34 2012
Quant Method : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Tue Dec 18 08:55:10 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

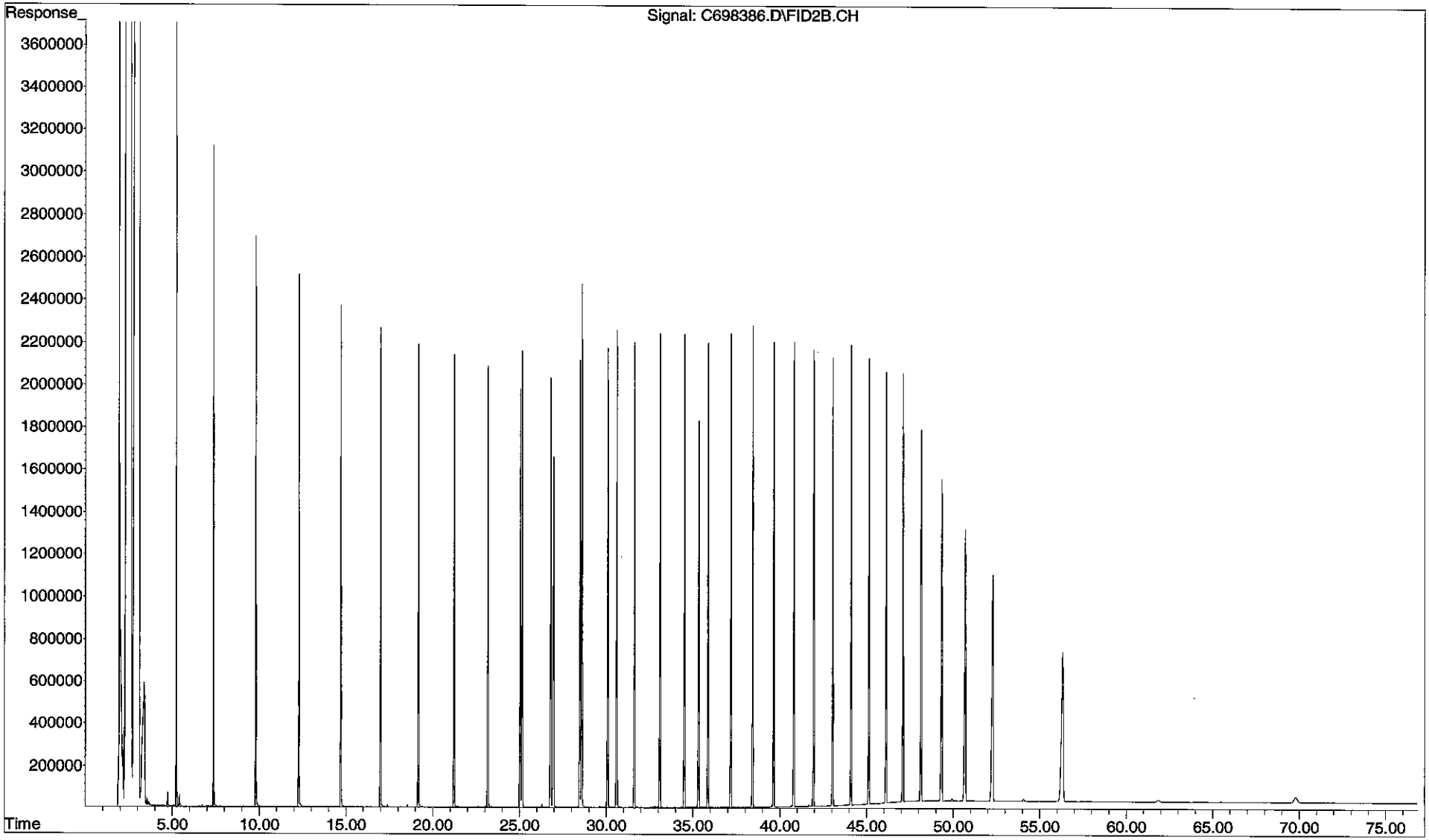
Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Sub List : CCAL - CCAL

	Compound	R.T.	Response	Conc Units
	Internal Standards			
1) I	5-alpha-androstane	30.613	58397788	50.000 ug/mL M4
	System Monitoring Compounds			
19) s	ortho-terphenyl	28.607	63308414	50.645 ug/mL M4
Spiked Amount	50.000 Range	50 - 130	Recovery =	101.29%
24) s	d50-Tetracosane	35.331	52212220	51.446 ug/mL M4
Spiked Amount	50.000 Range	50 - 130	Recovery =	102.89%
	Target Compounds			
2) t	n-Octane (C8)	5.231	45014275	49.099 ug/mL M4
3) t	n-Nonane (C9)	7.363	46535124	49.719 ug/mL M4
4) t	n-Decane (C10)	9.800	49460601	50.439 ug/mL M4
5) t	n-Undecane (C11)	12.288	50682135	51.544 ug/mL M4
6) t	n-Dodecane (C12)	14.700	52046920	50.907 ug/mL M4
7) t	n-Tridecane (C13)	16.997	52392548	50.891 ug/mL M4
9) t	n-Tetradecane (C14)	19.173	53208828	51.152 ug/mL M4
11) t	n-Pentadecane (C15)	21.232	53444706	51.394 ug/mL M4
12) t	n-Hexadecane (C16)	23.184	54323581	51.236 ug/mL M4
14) t	n-Heptadecane (C17)	25.042	53609298	52.177 ug/mL M4
15) t	Pristane	25.152	55471939	50.796 ug/mL M4
16) t	n-Octadecane (C18)	26.806	55289549	51.735 ug/mL M4
17) t	Phytane	26.966	54939229	51.108 ug/mL M4
18) t	n-Nonadecane (C19)	28.490	55275264	51.571 ug/mL M4
20) t	n-Eicosane (C20)	30.095	55716846	50.876 ug/mL M4
21) t	n-Heneicosane (C21)	31.630	55756598	51.163 ug/mL M4
22) t	n-Docosane (C22)	33.105	56092045	51.152 ug/mL M4
23) t	n-Tricosane (C23)	34.517	56254912	50.347 ug/mL M4
25) t	n-Tetracosane (C24)	35.877	55873621	51.032 ug/mL M4
26) t	n-Pentacosane (C25)	37.182	57118855	50.970 ug/mL M4
27) t	n-Hexacosane (C26)	38.440	56699874	51.042 ug/mL M4
28) t	n-Heptacosane (C27)	39.651	55573643	50.919 ug/mL M4
29) t	n-Octacosane (C28)	40.824	56201803	50.705 ug/mL M4
30) t	n-Nonacosane (C29)	41.957	56348678	51.000 ug/mL M4
31) t	n-Triacontane (C30)	43.052	55615296	50.941 ug/mL M4
32) t	n-Hentriacontane (C31)	44.112	56228505	50.966 ug/mL M4
33) t	n-Dotriacontane (C32)	45.140	56161509	51.046 ug/mL M4
34) t	n-Tritriacontane (C33)	46.137	53746853	51.030 ug/mL M4
35) t	n-tetratriacontane (C34)	47.108	55508675	51.058 ug/mL M4
36) t	n-Pentatriacontane (C35)	48.151	56430445	51.040 ug/mL M4
37) t	n-Hexatriacontane (C36)	49.332	57499167	51.014 ug/mL M4
38) t	n-Heptatriacontane (C37)	50.694	56174908	50.884 ug/mL M4
39) t	n-Octatriacontane (C38)	52.280	55679562	50.747 ug/mL M4
41) t	n-Tetracontane (C40)	56.316	52620081	50.890 ug/mL M4

SemiQuant Compounds - Not Calibrated on this Instrument

File :O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\C698386.D
Operator : JT
Acquired : 19 Dec 2012 3:44 pm using AcqMethod FID6A.M
Instrument : FID6
Sample : C612171205R
Misc Info : WHAR04
ALS Vial : 88



Data Path : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\
Data File : C698412.D
Signal(s) : FID2B.CH
Acq On : 20 Dec 2012 11:15 am
Operator : JT
Sample : C612171206R
Misc : WHAR04
ALS Vial : 51 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Dec 21 08:59:12 2012
Quant Method : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Tue Dec 18 08:55:10 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Min. RRF : 0.050 Min. Rel. Area : 10% Max. R.T. Dev 0.50min
Max. RRF Dev : 15% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(Min)
1	I	5-alpha-androstane	50.000	50.000	0.0	101	0.00
2	t	n-Octane (C8)	50.000	48.421	3.2	95	-0.01
3	t	n-Nonane (C9)	50.000	49.274	1.5	97	0.00
4	t	n-Decane (C10)	50.000	50.018	-0.0	97	0.00
5	t	n-Undecane (C11)	50.000	50.915	-1.8	98	0.00
6	t	n-Dodecane (C12)	50.000	50.633	-1.3	99	0.00
7	t	n-Tridecane (C13)	50.000	50.633	-1.3	100	0.00
9	t	n-Tetradecane (C14)	50.000	50.952	-1.9	100	0.00
11	t	n-Pentadecane (C15)	50.000	51.222	-2.4	101	0.00
12	t	n-Hexadecane (C16)	50.000	51.085	-2.2	100	0.00
14	t	n-Heptadecane (C17)	50.000	51.992	-4.0	101	0.00
15	t	Pristane	50.000	50.788	-1.6	101	0.00
16	t	n-Octadecane (C18)	50.000	51.582	-3.2	101	0.00
17	t	Phytane	50.000	50.912	-1.8	100	-0.01
18	t	n-Nonadecane (C19)	50.000	51.368	-2.7	101	0.00
19	s	ortho-terphenyl	50.000	50.620	-1.2	103	0.00
20	t	n-Eicosane (C20)	50.000	50.736	-1.5	100	0.00
21	t	n-Heneicosane (C21)	50.000	51.055	-2.1	100	0.00
22	t	n-Docosane (C22)	50.000	50.975	-2.0	100	0.00
23	t	n-Tricosane (C23)	50.000	50.116	-0.2	100	0.00
24	s	d50-Tetracosane	50.000	51.253	-2.5	102	0.00
25	t	n-Tetracosane (C24)	50.000	50.855	-1.7	100	0.00
26	t	n-Pentacosane (C25)	50.000	50.706	-1.4	100	0.00
27	t	n-Hexacosane (C26)	50.000	50.697	-1.4	100	0.00
28	t	n-Heptacosane (C27)	50.000	50.600	-1.2	100	0.00
29	t	n-Octacosane (C28)	50.000	50.434	-0.9	100	0.00
30	t	n-Nonacosane (C29)	50.000	50.674	-1.3	100	0.00
31	t	n-Triacontane (C30)	50.000	50.689	-1.4	100	0.00
32	t	n-Hentriacontane (C31)	50.000	50.753	-1.5	100	0.00
33	t	n-Dotriacontane (C32)	50.000	50.790	-1.6	100	0.00
34	t	n-Tritriacontane (C33)	50.000	50.794	-1.6	100	0.00
35	t	n-tetratriacontane (C34)	50.000	50.767	-1.5	100	0.00
36	t	n-Pentatriacontane (C35)	50.000	50.730	-1.5	100	0.00
37	t	n-Hexatriacontane (C36)	50.000	50.668	-1.3	100	0.00
38	t	n-Heptatriacontane (C37)	50.000	50.454	-0.9	100	0.00
39	t	n-Octatriacontane (C38)	50.000	50.448	-0.9	100	0.00
41	t	n-Tetracontane (C40)	50.000	50.358	-0.7	99	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Mass Discrimination (Response)	Ratio	Range Limits
n-Hexatriacontane (C36) to n-Eicosane (C20)	1.03	0.85 - 1.15

HC6100912R.M Fri Dec 28 12:58:15 2012

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\
Data File : C698412.D
Signal(s) : FID2B.CH
Acq On : 20 Dec 2012 11:15 am
Operator : JT
Sample : C612171206R
Misc : WHAR04
ALS Vial : 51 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Dec 21 08:59:12 2012
Quant Method : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Tue Dec 18 08:55:10 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

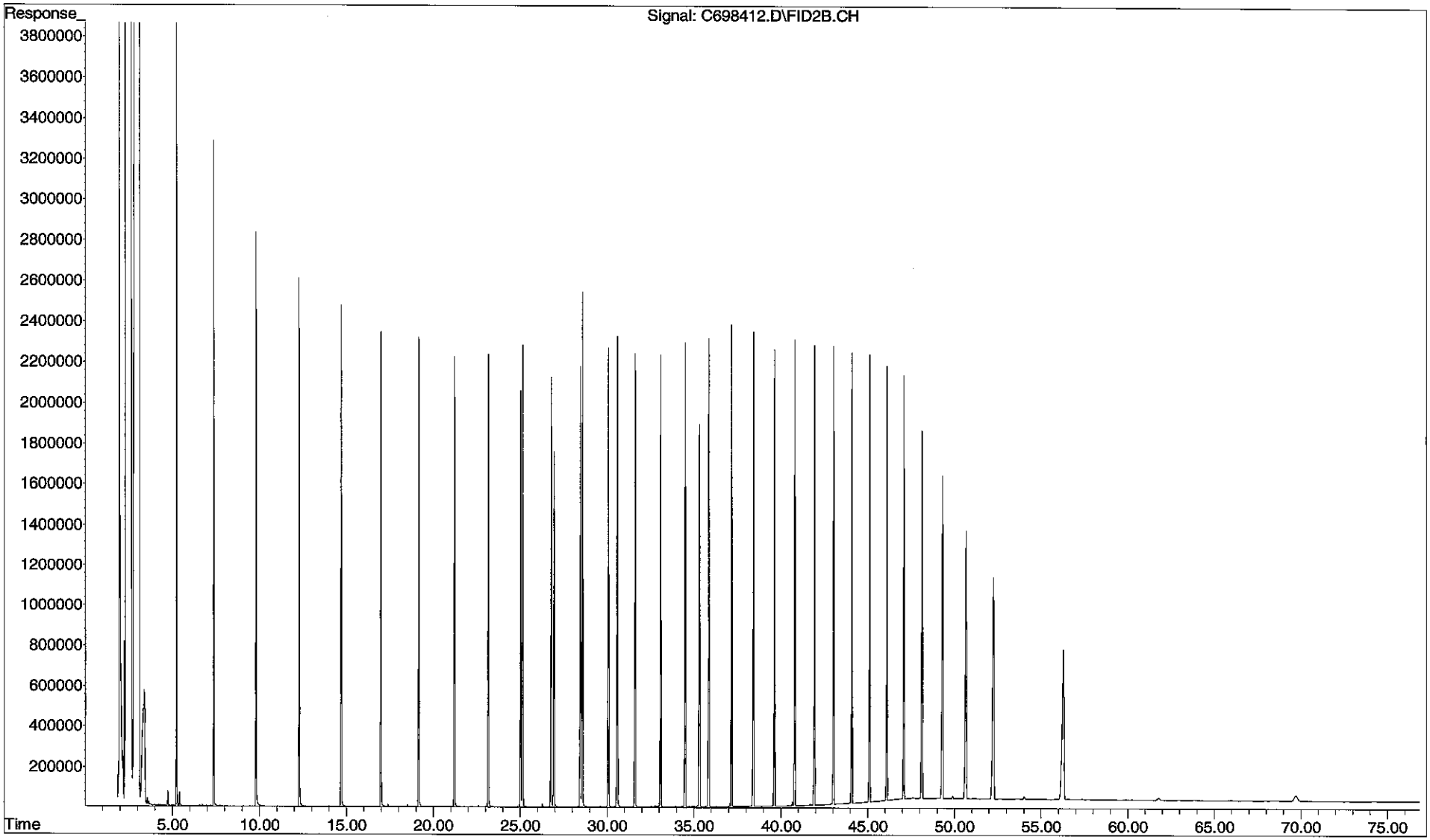
Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Sub List : CCAL - CCAL

	Compound	R.T.	Response	Conc Units
	Internal Standards			
1) I	5-alpha-androstane	30.603	62156074	50.000 ug/mL M4
	System Monitoring Compounds			
19) s	ortho-terphenyl	28.596	67349734	50.620 ug/mL M4
Spiked Amount	50.000 Range	50 - 130	Recovery =	101.24%
24) s	d50-Tetracosane	35.317	55364011	51.253 ug/mL M4
Spiked Amount	50.000 Range	50 - 130	Recovery =	102.51%
	Target Compounds			
2) t	n-Octane (C8)	5.230	47249260	48.421 ug/mL M4
3) t	n-Nonane (C9)	7.362	49086669	49.274 ug/mL M4
4) t	n-Decane (C10)	9.797	52204905	50.018 ug/mL M4
5) t	n-Undecane (C11)	12.283	53285609	50.915 ug/mL M4
6) t	n-Dodecane (C12)	14.695	55098679	50.633 ug/mL M4
7) t	n-Tridecane (C13)	16.991	55480937	50.633 ug/mL M4
9) t	n-Tetradecane (C14)	19.166	56411537	50.952 ug/mL M4
11) t	n-Pentadecane (C15)	21.225	56692912	51.222 ug/mL M4
12) t	n-Hexadecane (C16)	23.177	57649019	51.085 ug/mL M4
14) t	n-Heptadecane (C17)	25.033	56857391	51.992 ug/mL M4
15) t	Pristane	25.143	59032965	50.788 ug/mL M4
16) t	n-Octadecane (C18)	26.797	58673551	51.582 ug/mL M4
17) t	Phytane	26.955	58251531	50.912 ug/mL M4
18) t	n-Nonadecane (C19)	28.481	58601368	51.368 ug/mL M4
20) t	n-Eicosane (C20)	30.086	59138856	50.736 ug/mL M4
21) t	n-Heneicosane (C21)	31.620	59220043	51.055 ug/mL M4
22) t	n-Docosane (C22)	33.092	59495328	50.975 ug/mL M4
23) t	n-Tricosane (C23)	34.505	59600481	50.116 ug/mL M4
25) t	n-Tetracosane (C24)	35.864	59263044	50.855 ug/mL M4
26) t	n-Pentacosane (C25)	37.169	60479663	50.706 ug/mL M4
27) t	n-Hexacosane (C26)	38.427	59940934	50.697 ug/mL M4
28) t	n-Heptacosane (C27)	39.639	58780071	50.600 ug/mL M4
29) t	n-Octacosane (C28)	40.809	59499512	50.434 ug/mL M4
30) t	n-Nonacosane (C29)	41.943	59591139	50.674 ug/mL M4
31) t	n-Triacontane (C30)	43.037	58901830	50.689 ug/mL M4
32) t	n-Hentriacontane (C31)	44.097	59597840	50.753 ug/mL M4
33) t	n-Dotriacontane (C32)	45.126	59475332	50.790 ug/mL M4
34) t	n-Tritriacontane (C33)	46.121	56940628	50.794 ug/mL M4
35) t	n-tetratriacontane (C34)	47.091	58744468	50.767 ug/mL M4
36) t	n-Pentatriacontane (C35)	48.131	59697414	50.730 ug/mL M4
37) t	n-Hexatriacontane (C36)	49.313	60784342	50.668 ug/mL M4
38) t	n-Heptatriacontane (C37)	50.667	59284848	50.454 ug/mL M4
39) t	n-Octatriacontane (C38)	52.253	58913787	50.448 ug/mL M4
41) t	n-Tetracontane (C40)	56.280	55420758	50.358 ug/mL M4

SemiQuant Compounds - Not Calibrated on this Instrument

File :O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\C698412.D
Operator : JT
Acquired : 20 Dec 2012 11:15 am using AcqMethod FID6A.M
Instrument : FID6
Sample : C612171206R
Misc Info : WHAR04
ALS Vial : 51



Data Path : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\
Data File : C698448.D
Signal(s) : FID2B.CH
Acq On : 21 Dec 2012 1:48 pm
Operator : JT
Sample : C612171208R
Misc : WHAR04
ALS Vial : 69 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Dec 21 15:29:06 2012
Quant Method : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Wed Dec 19 14:59:28 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Min. RRF : 0.050 Min. Rel. Area : 10% Max. R.T. Dev 0.50min
Max. RRF Dev : 15% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(Min)
1	I	5-alpha-androstane	50.000	50.000	0.0	97	0.00
2	t	n-Octane (C8)	50.000	48.027	3.9	90	-0.02
3	t	n-Nonane (C9)	50.000	48.162	3.7	91	0.00
4	t	n-Decane (C10)	50.000	48.648	2.7	90	0.00
5	t	n-Undecane (C11)	50.000	49.928	0.1	92	0.00
6	t	n-Dodecane (C12)	50.000	50.328	-0.7	94	0.00
7	t	n-Tridecane (C13)	50.000	50.477	-1.0	95	0.00
9	t	n-Tetradecane (C14)	50.000	50.939	-1.9	96	0.00
11	t	n-Pentadecane (C15)	50.000	51.322	-2.6	96	0.00
12	t	n-Hexadecane (C16)	50.000	51.192	-2.4	96	0.00
14	t	n-Heptadecane (C17)	50.000	52.072	-4.1	96	0.00
15	t	Pristane	50.000	51.040	-2.1	96	0.00
16	t	n-Octadecane (C18)	50.000	51.810	-3.6	96	0.00
17	t	Phytane	50.000	51.152	-2.3	96	0.00
18	t	n-Nonadecane (C19)	50.000	51.598	-3.2	96	0.00
19	s	ortho-terphenyl	50.000	50.627	-1.3	98	0.00
20	t	n-Eicosane (C20)	50.000	51.116	-2.2	96	0.00
21	t	n-Heneicosane (C21)	50.000	51.279	-2.6	96	0.00
22	t	n-Docosane (C22)	50.000	51.228	-2.5	96	0.00
23	t	n-Tricosane (C23)	50.000	50.513	-1.0	96	0.01
24	s	d50-Tetracosane	50.000	51.596	-3.2	98	0.00
25	t	n-Tetracosane (C24)	50.000	51.079	-2.2	96	0.01
26	t	n-Pentacosane (C25)	50.000	51.067	-2.1	96	0.01
27	t	n-Hexacosane (C26)	50.000	51.073	-2.1	96	0.01
28	t	n-Heptacosane (C27)	50.000	50.930	-1.9	96	0.01
29	t	n-Octacosane (C28)	50.000	50.765	-1.5	96	0.01
30	t	n-Nonacosane (C29)	50.000	51.050	-2.1	96	0.02
31	t	n-Triacontane (C30)	50.000	51.020	-2.0	96	0.02
32	t	n-Hentriacontane (C31)	50.000	51.061	-2.1	96	0.02
33	t	n-Dotriacontane (C32)	50.000	51.106	-2.2	96	0.02
34	t	n-Tritriacontane (C33)	50.000	51.049	-2.1	96	0.02
35	t	n-tetratriacontane (C34)	50.000	51.054	-2.1	96	0.02
36	t	n-Pentatriacontane (C35)	50.000	51.107	-2.2	96	0.03
37	t	n-Hexatriacontane (C36)	50.000	50.929	-1.9	96	0.03
38	t	n-Heptatriacontane (C37)	50.000	50.731	-1.5	96	0.04
39	t	n-Octatriacontane (C38)	50.000	50.616	-1.2	96	0.04
41	t	n-Tetracontane (C40)	50.000	50.591	-1.2	95	0.05

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Mass Discrimination (Response)	Ratio	Range Limits
n-Hexatriacontane (C36) to n-Eicosane (C20)	1.03	0.85 - 1.15

HC6100912R.M Fri Dec 28 12:58:42 2012

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\
Data File : C698448.D
Signal(s) : FID2B.CH
Acq On : 21 Dec 2012 1:48 pm
Operator : JT
Sample : C612171208R
Misc : WHAR04
ALS Vial : 69 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Dec 21 15:29:06 2012
Quant Method : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Wed Dec 19 14:59:28 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

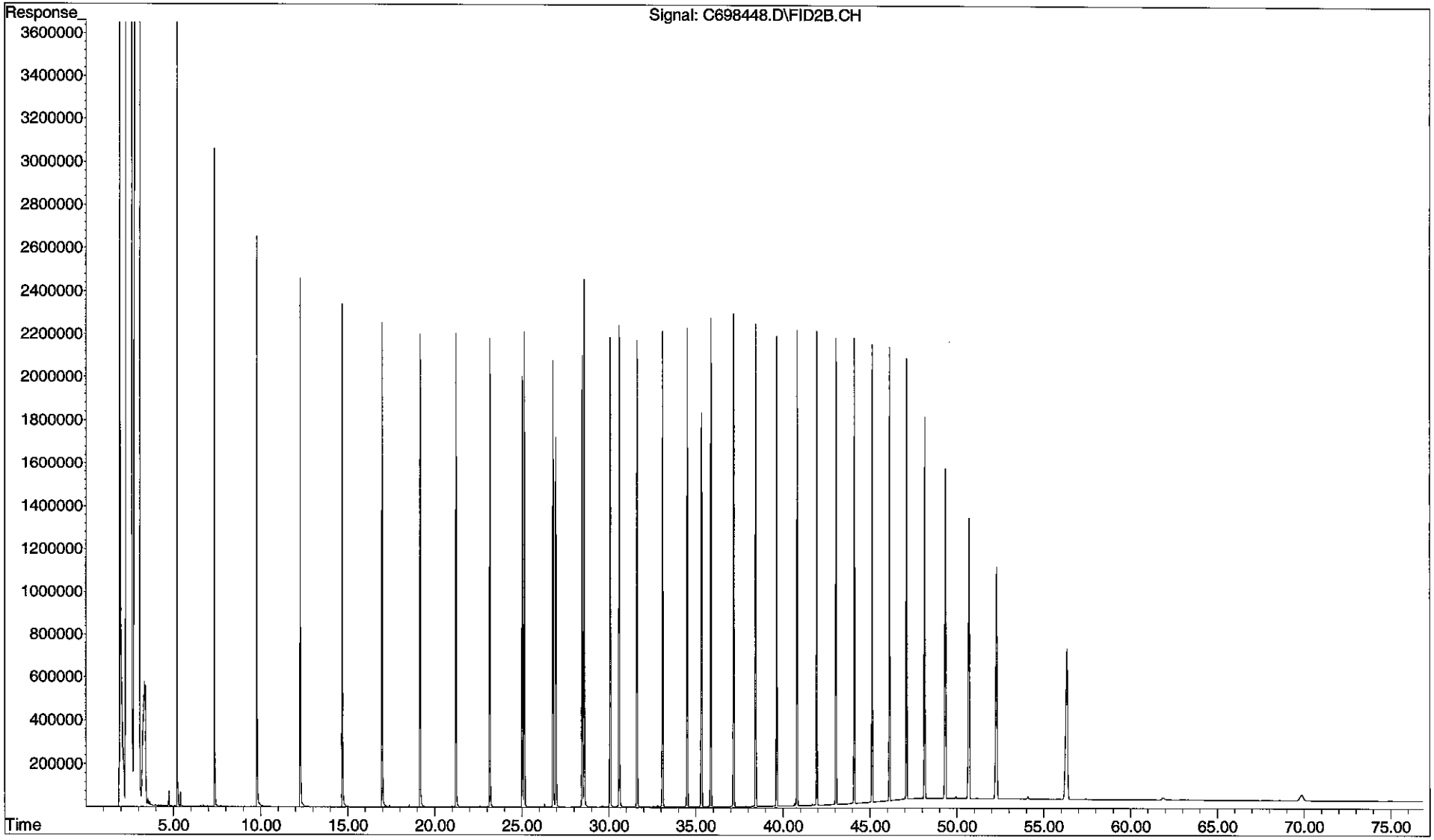
Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Sub List : CCAL - CCAL

	Compound	R.T.	Response	Conc Units
	Internal Standards			
1) I	5-alpha-androstane	30.615	59221482	50.000 ug/mL M4
	System Monitoring Compounds			
19) s	ortho-terphenyl	28.608	64178762	50.627 ug/mL M4
Spiked Amount	50.000 Range 50 - 130		Recovery = 101.25%	
24) s	d50-Tetracosane	35.334	53103752	51.596 ug/mL M4
Spiked Amount	50.000 Range 50 - 130		Recovery = 103.19%	
	Target Compounds			
2) t	n-Octane (C8)	5.220	44652395	48.027 ug/mL M4
3) t	n-Nonane (C9)	7.357	45713693	48.162 ug/mL M4
4) t	n-Decane (C10)	9.795	48376900	48.648 ug/mL M4
5) t	n-Undecane (C11)	12.283	49785372	49.928 ug/mL M4
6) t	n-Dodecane (C12)	14.698	52180799	50.328 ug/mL M4
7) t	n-Tridecane (C13)	16.996	52699004	50.477 ug/mL M4
9) t	n-Tetradecane (C14)	19.172	53735167	50.939 ug/mL M4
11) t	n-Pentadecane (C15)	21.233	54121700	51.322 ug/mL M4
12) t	n-Hexadecane (C16)	23.185	55042695	51.192 ug/mL M4
14) t	n-Heptadecane (C17)	25.043	54255674	52.072 ug/mL M4
15) t	Pristane	25.150	56524742	51.040 ug/mL
16) t	n-Octadecane (C18)	26.808	56150618	51.810 ug/mL M4
17) t	Phytane	26.966	55762614	51.152 ug/mL M4
18) t	n-Nonadecane (C19)	28.492	56083714	51.598 ug/mL M4
20) t	n-Eicosane (C20)	30.097	56768955	51.116 ug/mL M4
21) t	n-Heneicosane (C21)	31.633	56671179	51.279 ug/mL M4
22) t	n-Docosane (C22)	33.108	56968188	51.228 ug/mL M4
23) t	n-Tricosane (C23)	34.521	57236995	50.513 ug/mL M4
25) t	n-Tetracosane (C24)	35.880	56713127	51.079 ug/mL M4
26) t	n-Pentacosane (C25)	37.186	58035260	51.067 ug/mL M4
27) t	n-Hexacosane (C26)	38.445	57533772	51.073 ug/mL M4
28) t	n-Heptacosane (C27)	39.659	56369495	50.930 ug/mL M4
29) t	n-Octacosane (C28)	40.830	57062354	50.765 ug/mL M4
30) t	n-Nonacosane (C29)	41.963	57199486	51.050 ug/mL M4
31) t	n-Triacontane (C30)	43.059	56486825	51.020 ug/mL M4
32) t	n-Hentriacontane (C31)	44.122	57128529	51.061 ug/mL M4
33) t	n-Dotriacontane (C32)	45.147	57019698	51.106 ug/mL M4
34) t	n-Tritriacontane (C33)	46.146	54524396	51.049 ug/mL M4
35) t	n-tetratriacontane (C34)	47.119	56287249	51.054 ug/mL M4
36) t	n-Pentatriacontane (C35)	48.161	57302137	51.107 ug/mL M4
37) t	n-Hexatriacontane (C36)	49.348	58213234	50.929 ug/mL M4
38) t	n-Heptatriacontane (C37)	50.712	56795690	50.731 ug/mL M4
39) t	n-Octatriacontane (C38)	52.294	56318664	50.616 ug/mL M4
41) t	n-Tetracontane (C40)	56.338	53048898	50.591 ug/mL M4

SemiQuant Compounds - Not Calibrated on this Instrument

File :O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\C698448.D
Operator : JT
Acquired : 21 Dec 2012 1:48 pm using AcqMethod FID6A.M
Instrument : FID6
Sample : C612171208R
Misc Info : WHAR04
ALS Vial : 69



Data Path : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\
Data File : C698476.D
Signal(s) : FID2B.CH
Acq On : 22 Dec 2012 10:27 am
Operator : JT
Sample : C612171209R
Misc : WHAR04
ALS Vial : 83 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Dec 27 13:25:20 2012
Quant Method : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Wed Dec 19 14:59:28 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Min. RRF : 0.050 Min. Rel. Area : 10% Max. R.T. Dev 0.50min
Max. RRF Dev : 15% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(Min)
1	I	5-alpha-androstane	50.000	50.000	0.0	101	0.00
2	t	n-Octane (C8)	50.000	46.468	7.1	91	-0.02
3	t	n-Nonane (C9)	50.000	46.974	6.1	93	0.00
4	t	n-Decane (C10)	50.000	47.323	5.4	92	0.00
5	t	n-Undecane (C11)	50.000	50.018	-0.0	97	0.00
6	t	n-Dodecane (C12)	50.000	50.468	-0.9	99	0.00
7	t	n-Tridecane (C13)	50.000	50.825	-1.7	100	0.00
9	t	n-Tetradecane (C14)	50.000	50.874	-1.7	100	0.00
11	t	n-Pentadecane (C15)	50.000	51.213	-2.4	101	0.00
12	t	n-Hexadecane (C16)	50.000	50.983	-2.0	100	0.00
14	t	n-Heptadecane (C17)	50.000	51.850	-3.7	101	0.00
15	t	Pristane	50.000	50.921	-1.8	101	0.00
16	t	n-Octadecane (C18)	50.000	51.561	-3.1	101	0.00
17	t	Phytane	50.000	51.042	-2.1	101	0.00
18	t	n-Nonadecane (C19)	50.000	51.348	-2.7	101	0.00
19	s	ortho-terphenyl	50.000	50.830	-1.7	103	0.00
20	t	n-Eicosane (C20)	50.000	51.050	-2.1	101	0.00
21	t	n-Heneicosane (C21)	50.000	51.192	-2.4	101	0.00
22	t	n-Docosane (C22)	50.000	51.237	-2.5	101	0.00
23	t	n-Tricosane (C23)	50.000	50.437	-0.9	101	0.00
24	s	d50-Tetracosane	50.000	51.530	-3.1	102	0.00
25	t	n-Tetracosane (C24)	50.000	51.113	-2.2	101	0.00
26	t	n-Pentacosane (C25)	50.000	51.127	-2.3	101	0.00
27	t	n-Hexacosane (C26)	50.000	51.274	-2.5	101	0.00
28	t	n-Heptacosane (C27)	50.000	51.017	-2.0	101	0.00
29	t	n-Octacosane (C28)	50.000	50.900	-1.8	101	0.00
30	t	n-Nonacosane (C29)	50.000	51.126	-2.3	101	0.00
31	t	n-Triacontane (C30)	50.000	51.096	-2.2	101	0.00
32	t	n-Hentriacontane (C31)	50.000	51.113	-2.2	101	0.00
33	t	n-Dotriacontane (C32)	50.000	51.356	-2.7	102	0.00
34	t	n-Tritriacontane (C33)	50.000	51.109	-2.2	101	0.00
35	t	n-tetratriacontane (C34)	50.000	51.081	-2.2	101	0.01
36	t	n-Pentatriacontane (C35)	50.000	51.086	-2.2	101	0.01
37	t	n-Hexatriacontane (C36)	50.000	50.949	-1.9	101	0.02
38	t	n-Heptatriacontane (C37)	50.000	50.780	-1.6	101	0.02
39	t	n-Octatriacontane (C38)	50.000	50.665	-1.3	100	0.02
41	t	n-Tetracontane (C40)	50.000	50.717	-1.4	100	0.02

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Mass Discrimination (Response)	Ratio	Range Limits
n-Hexatriacontane (C36) to n-Eicosane (C20)	1.03	0.85 - 1.15

HC6100912R.M Fri Dec 28 12:59:06 2012

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\
Data File : C698476.D
Signal(s) : FID2B.CH
Acq On : 22 Dec 2012 10:27 am
Operator : JT
Sample : C612171209R
Misc : WHAR04
ALS Vial : 83 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Dec 27 13:25:20 2012
Quant Method : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Wed Dec 19 14:59:28 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

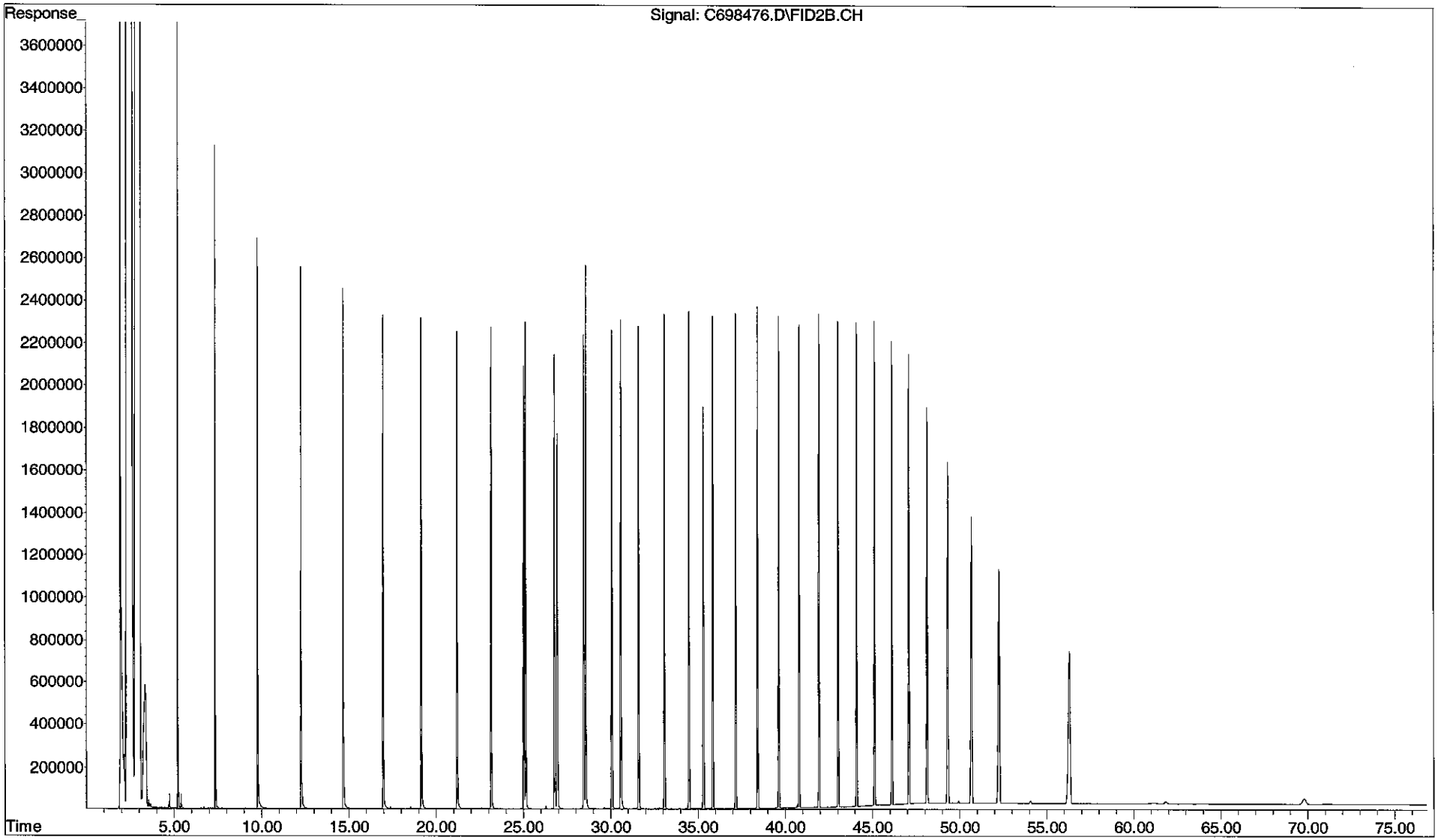
Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Sub List : CCAL - CCAL

	Compound	R.T.	Response	Conc Units
	Internal Standards			
1) I	5-alpha-androstane	30.605	62204969	50.000 ug/mL M4
	System Monitoring Compounds			
19) s	ortho-terphenyl	28.599	67682200	50.830 ug/mL M4
Spiked Amount	50.000	Range 50 - 130	Recovery =	101.66%
24) s	d50-Tetracosane	35.325	55707010	51.530 ug/mL M4
Spiked Amount	50.000	Range 50 - 130	Recovery =	103.06%
	Target Compounds			
2) t	n-Octane (C8)	5.221	45379250	46.468 ug/mL M4
3) t	n-Nonane (C9)	7.354	46831999	46.974 ug/mL M4
4) t	n-Decane (C10)	9.790	49430510	47.323 ug/mL M4
5) t	n-Undecane (C11)	12.278	52388067	50.018 ug/mL M4
6) t	n-Dodecane (C12)	14.691	54962248	50.468 ug/mL M4
7) t	n-Tridecane (C13)	16.989	55735809	50.825 ug/mL M4
9) t	n-Tetradecane (C14)	19.165	56370090	50.874 ug/mL M4
11) t	n-Pentadecane (C15)	21.224	56728108	51.213 ug/mL M4
12) t	n-Hexadecane (C16)	23.177	57578949	50.983 ug/mL M4
14) t	n-Heptadecane (C17)	25.034	56746274	51.850 ug/mL M4
15) t	Pristane	25.144	59233416	50.921 ug/mL M4
16) t	n-Octadecane (C18)	26.800	58695439	51.561 ug/mL M4
17) t	Phytane	26.959	58445937	51.042 ug/mL M4
18) t	n-Nonadecane (C19)	28.483	58624774	51.348 ug/mL M4
20) t	n-Eicosane (C20)	30.089	59552041	51.050 ug/mL M4
21) t	n-Heneicosane (C21)	31.624	59425741	51.192 ug/mL M4
22) t	n-Docosane (C22)	33.098	59848985	51.237 ug/mL M4
23) t	n-Tricosane (C23)	34.512	60029730	50.437 ug/mL M4
25) t	n-Tetracosane (C24)	35.872	59610519	51.113 ug/mL M4
26) t	n-Pentacosane (C25)	37.177	61029777	51.127 ug/mL M4
27) t	n-Hexacosane (C26)	38.436	60670241	51.274 ug/mL M4
28) t	n-Heptacosane (C27)	39.646	59311016	51.017 ug/mL M4
29) t	n-Octacosane (C28)	40.821	60095664	50.900 ug/mL M4
30) t	n-Nonacosane (C29)	41.952	60170366	51.126 ug/mL M4
31) t	n-Triacontane (C30)	43.049	59421922	51.096 ug/mL M4
32) t	n-Hentriacontane (C31)	44.109	60067398	51.113 ug/mL M4
33) t	n-Dotriacontane (C32)	45.138	60185266	51.356 ug/mL M4
34) t	n-Tritriacontane (C33)	46.133	57338860	51.109 ug/mL M4
35) t	n-tetratriacontane (C34)	47.107	59154411	51.081 ug/mL M4
36) t	n-Pentatriacontane (C35)	48.150	60163905	51.086 ug/mL M4
37) t	n-Hexatriacontane (C36)	49.334	61169197	50.949 ug/mL M4
38) t	n-Heptatriacontane (C37)	50.695	59715139	50.780 ug/mL M4
39) t	n-Octatriacontane (C38)	52.274	59213191	50.665 ug/mL M4
41) t	n-Tetracontane (C40)	56.307	55859370	50.717 ug/mL M4

SemiQuant Compounds - Not Calibrated on this Instrument

File :O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\C698476.D
Operator : JT
Acquired : 22 Dec 2012 10:27 am using AcqMethod FID6A.M
Instrument : FID6
Sample : C612171209R
Misc Info : WHAR04
ALS Vial : 83



Data Path : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\
Data File : C698488.D
Signal(s) : FID2B.CH
Acq On : 22 Dec 2012 7:17 pm
Operator : JT
Sample : C612171210R
Misc : WHAR04
ALS Vial : 89 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Dec 27 13:38:49 2012
Quant Method : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Wed Dec 19 14:59:28 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Min. RRF : 0.050 Min. Rel. Area : 10% Max. R.T. Dev 0.50min
Max. RRF Dev : 15% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(Min)
1	I	5-alpha-androstane	50.000	50.000	0.0	100	0.00
2	t	n-Octane (C8)	50.000	46.019	8.0	89	-0.03
3	t	n-Nonane (C9)	50.000	46.299	7.4	90	-0.01
4	t	n-Decane (C10)	50.000	45.983	8.0	88	-0.01
5	t	n-Undecane (C11)	50.000	49.072	1.9	93	0.00
6	t	n-Dodecane (C12)	50.000	49.822	0.4	96	0.00
7	t	n-Tridecane (C13)	50.000	50.296	-0.6	97	0.00
9	t	n-Tetradecane (C14)	50.000	50.466	-0.9	98	0.00
11	t	n-Pentadecane (C15)	50.000	50.911	-1.8	98	0.00
12	t	n-Hexadecane (C16)	50.000	50.835	-1.7	98	0.00
14	t	n-Heptadecane (C17)	50.000	51.596	-3.2	98	0.00
15	t	Pristane	50.000	50.962	-1.9	99	0.00
16	t	n-Octadecane (C18)	50.000	51.509	-3.0	99	0.00
17	t	Phytane	50.000	50.999	-2.0	99	-0.01
18	t	n-Nonadecane (C19)	50.000	51.307	-2.6	99	0.00
19	s	ortho-terphenyl	50.000	50.858	-1.7	102	-0.01
20	t	n-Eicosane (C20)	50.000	51.021	-2.0	99	0.00
21	t	n-Heneicosane (C21)	50.000	51.220	-2.4	99	0.00
22	t	n-Docosane (C22)	50.000	51.219	-2.4	99	0.00
23	t	n-Tricosane (C23)	50.000	50.304	-0.6	99	0.00
24	s	d50-Tetracosane	50.000	51.463	-2.9	101	0.00
25	t	n-Tetracosane (C24)	50.000	51.066	-2.1	99	0.00
26	t	n-Pentacosane (C25)	50.000	51.143	-2.3	99	0.00
27	t	n-Hexacosane (C26)	50.000	51.185	-2.4	99	0.00
28	t	n-Heptacosane (C27)	50.000	51.007	-2.0	99	0.00
29	t	n-Octacosane (C28)	50.000	50.904	-1.8	99	0.00
30	t	n-Nonacosane (C29)	50.000	51.182	-2.4	99	0.00
31	t	n-Triacontane (C30)	50.000	51.148	-2.3	99	0.00
32	t	n-Hentriacontane (C31)	50.000	51.103	-2.2	99	0.00
33	t	n-Dotriacontane (C32)	50.000	51.165	-2.3	99	0.00
34	t	n-Tritriacontane (C33)	50.000	51.128	-2.3	99	0.00
35	t	n-tetratriacontane (C34)	50.000	51.137	-2.3	99	0.00
36	t	n-Pentatriacontane (C35)	50.000	51.008	-2.0	99	0.00
37	t	n-Hexatriacontane (C36)	50.000	50.882	-1.8	99	0.00
38	t	n-Heptatriacontane (C37)	50.000	50.784	-1.6	99	0.00
39	t	n-Octatriacontane (C38)	50.000	50.581	-1.2	99	0.01
41	t	n-Tetracontane (C40)	50.000	50.573	-1.1	98	0.02

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Mass Discrimination (Response)	Ratio	Range Limits
n-Hexatriacontane (C36) to n-Eicosane (C20)	1.03	0.85 - 1.15

HC6100912R.M Fri Dec 28 12:59:26 2012

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\
Data File : C698488.D
Signal(s) : FID2B.CH
Acq On : 22 Dec 2012 7:17 pm
Operator : JT
Sample : C612171210R
Misc : WHAR04
ALS Vial : 89 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Dec 27 13:38:49 2012
Quant Method : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Wed Dec 19 14:59:28 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

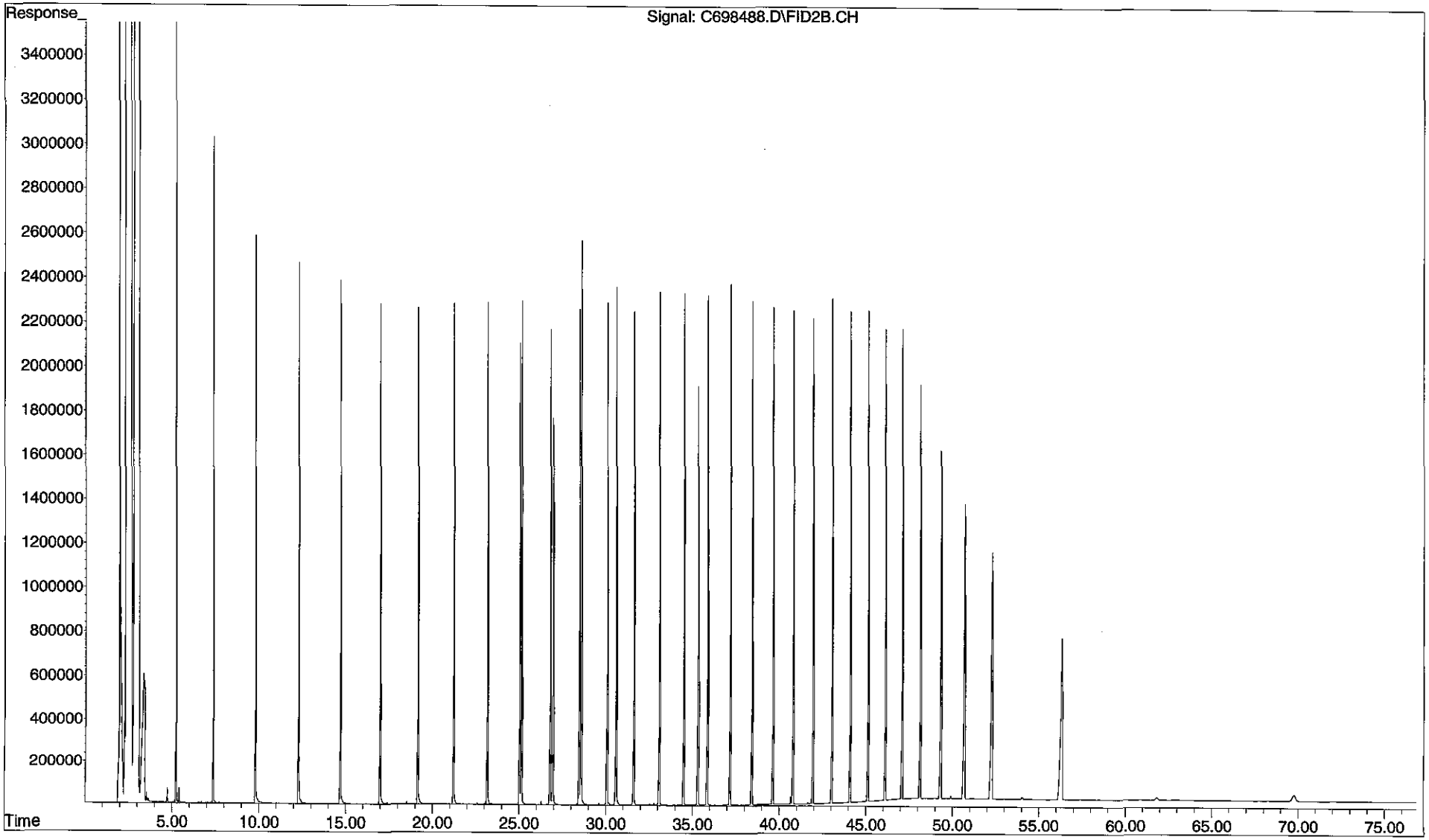
Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Sub List : CCAL - CCAL

	Compound	R.T.	Response	Conc Units
	Internal Standards			
1) I	5-alpha-androstane	30.601	61098814	50.000 ug/mL M4
	System Monitoring Compounds			
19) s	ortho-terphenyl	28.594	66515865	50.858 ug/mL M4
Spiked Amount	50.000	Range 50 - 130	Recovery =	101.72%
24) s	d50-Tetracosane	35.321	54645285	51.463 ug/mL M4
Spiked Amount	50.000	Range 50 - 130	Recovery =	102.93%
	Target Compounds			
2) t	n-Octane (C8)	5.212	44141770	46.019 ug/mL M4
3) t	n-Nonane (C9)	7.349	45338440	46.299 ug/mL M4
4) t	n-Decane (C10)	9.786	47177101	45.983 ug/mL M4
5) t	n-Undecane (C11)	12.274	50483523	49.072 ug/mL M4
6) t	n-Dodecane (C12)	14.687	53293666	49.822 ug/mL M4
7) t	n-Tridecane (C13)	16.985	54174737	50.296 ug/mL M4
9) t	n-Tetradecane (C14)	19.160	54923950	50.466 ug/mL M4
11) t	n-Pentadecane (C15)	21.221	55390619	50.911 ug/mL M4
12) t	n-Hexadecane (C16)	23.174	56391192	50.835 ug/mL M4
14) t	n-Heptadecane (C17)	25.030	55464370	51.596 ug/mL M4
15) t	Pristane	25.141	58226954	50.962 ug/mL M4
16) t	n-Octadecane (C18)	26.796	57593566	51.509 ug/mL M4
17) t	Phytane	26.953	57357578	50.999 ug/mL M4
18) t	n-Nonadecane (C19)	28.479	57536212	51.307 ug/mL M4
20) t	n-Eicosane (C20)	30.085	58459349	51.021 ug/mL M4
21) t	n-Heneicosane (C21)	31.621	58401005	51.220 ug/mL M4
22) t	n-Docosane (C22)	33.094	58763557	51.219 ug/mL M4
23) t	n-Tricosane (C23)	34.508	58807041	50.304 ug/mL M4
25) t	n-Tetracosane (C24)	35.867	58496018	51.066 ug/mL M4
26) t	n-Pentacosane (C25)	37.173	59963304	51.143 ug/mL M4
27) t	n-Hexacosane (C26)	38.430	59488090	51.185 ug/mL M4
28) t	n-Heptacosane (C27)	39.644	58244898	51.007 ug/mL M4
29) t	n-Octacosane (C28)	40.815	59031688	50.904 ug/mL M4
30) t	n-Nonacosane (C29)	41.948	59164964	51.182 ug/mL M4
31) t	n-Triacontane (C30)	43.044	58424226	51.148 ug/mL M4
32) t	n-Hentriacontane (C31)	44.106	58987423	51.103 ug/mL M4
33) t	n-Dotriacontane (C32)	45.134	58895492	51.165 ug/mL M4
34) t	n-Tritriacontane (C33)	46.130	56340024	51.128 ug/mL M4
35) t	n-tetratriacontane (C34)	47.103	58165978	51.137 ug/mL M4
36) t	n-Pentatriacontane (C35)	48.143	59003909	51.008 ug/mL M4
37) t	n-Hexatriacontane (C36)	49.323	60002494	50.882 ug/mL M4
38) t	n-Heptatriacontane (C37)	50.684	58658104	50.784 ug/mL M4
39) t	n-Octatriacontane (C38)	52.268	58064439	50.581 ug/mL M4
41) t	n-Tetracontane (C40)	56.301	54710871	50.573 ug/mL M4

SemiQuant Compounds - Not Calibrated on this Instrument

File :O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\C698488.D
Operator : JT
Acquired : 22 Dec 2012 7:17 pm using AcqMethod FID6A.M
Instrument : FID6
Sample : C612171210R
Misc Info : WHAR04
ALS Vial : 89



Instrument Blank
Raw Data

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID6\2012\OCT2012\OCT09.SEC\
Data File : C696988.D
Signal(s) : FID2B.CH
Acq On : 10 Oct 2012 8:05 am
Operator : JT
Sample : IB610091203R
Misc : DCM
ALS Vial : 66 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Oct 19 13:11:52 2012
Quant Method : O:\Forensics\Data\FID6\2012\OCT2012\OCT09.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Fri Oct 19 13:02:59 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

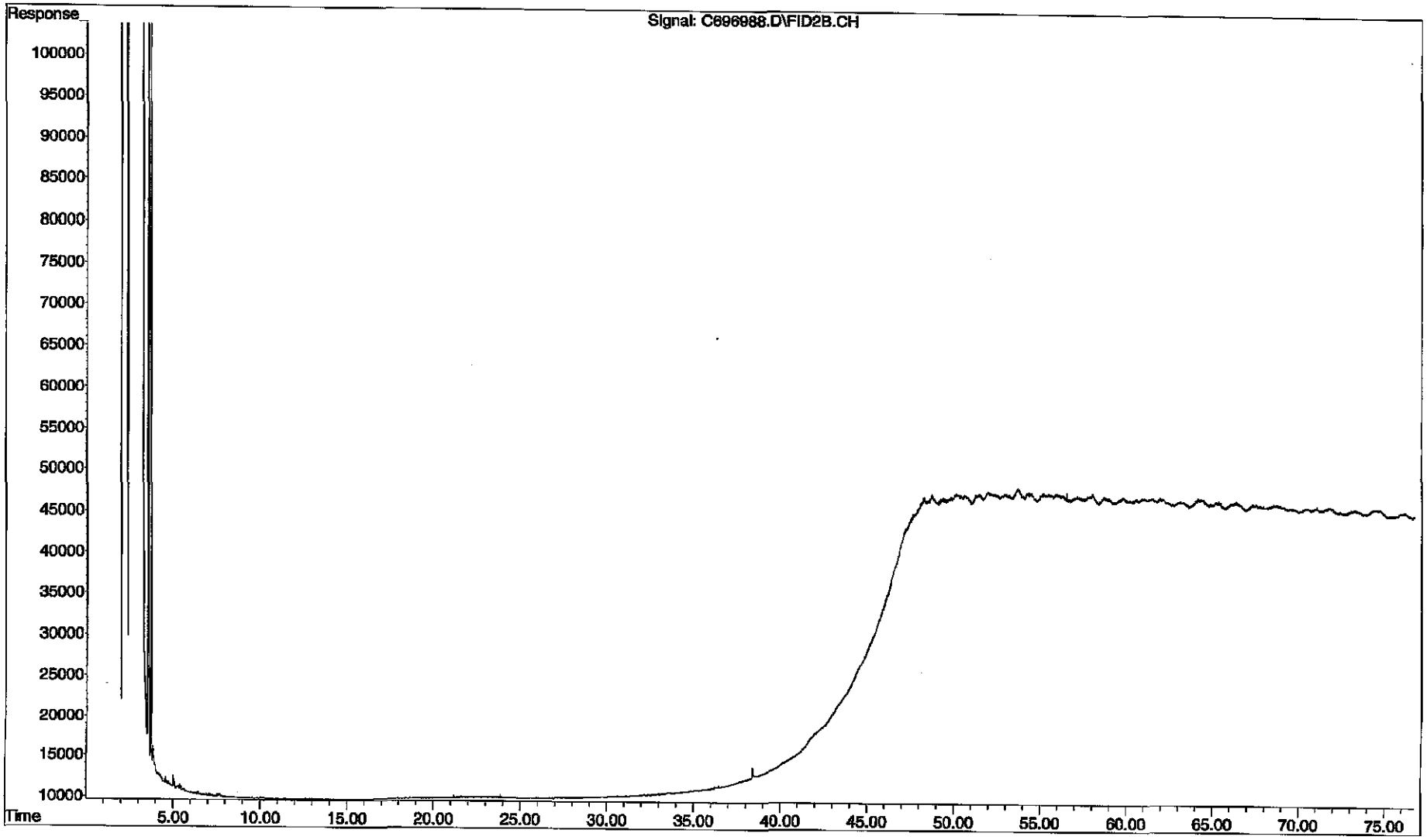
Sub List : Default - All compounds listed

10-19-12

	Compound	R.T.	Response	Conc Units
	Internal Standards			
1) I	5-alpha-androstane	31.131	2074	50.000 ug/mL M2
	System Monitoring Compounds			
	Target Compounds			
42) h	C9-C44 Total Petroleu...	40.125	727407337	19106424.086 ug/mL M5
43) h	C9-C40 Total Petroleu...	32.645	381877955	10030586.426 ug/mL M5
44) h	C10-C28 DRO	25.760	60594095	1591593.074 ug/mL M5
45) h	Total Resolved Hydroc...	40.125	3054711	80236.470 ug/L m
	SemiQuant Compounds - Not Calibrated on this Instrument			

(f)=RT Delta > 1/2 Window (m)=manual int.

File :O:\Forensics\Data\FID6\2012\OCT2012\OCT09.SEC\C696988.D
Operator : JT
Acquired : 10 Oct 2012 8:05 am using AcqMethod FID6A.M
Instrument : FID6
Sample : IB610091203R
Misc Info : DCM
ALS Vial : 66



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\
Data File : C698392.D
Signal(s) : FID2B.CH
Acq On : 19 Dec 2012 8:09 pm
Operator : JT
Sample : IB612171205R
Misc : DCM
ALS Vial : 91 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Dec 28 05:14:11 2012
Quant Method : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Wed Dec 19 14:59:28 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

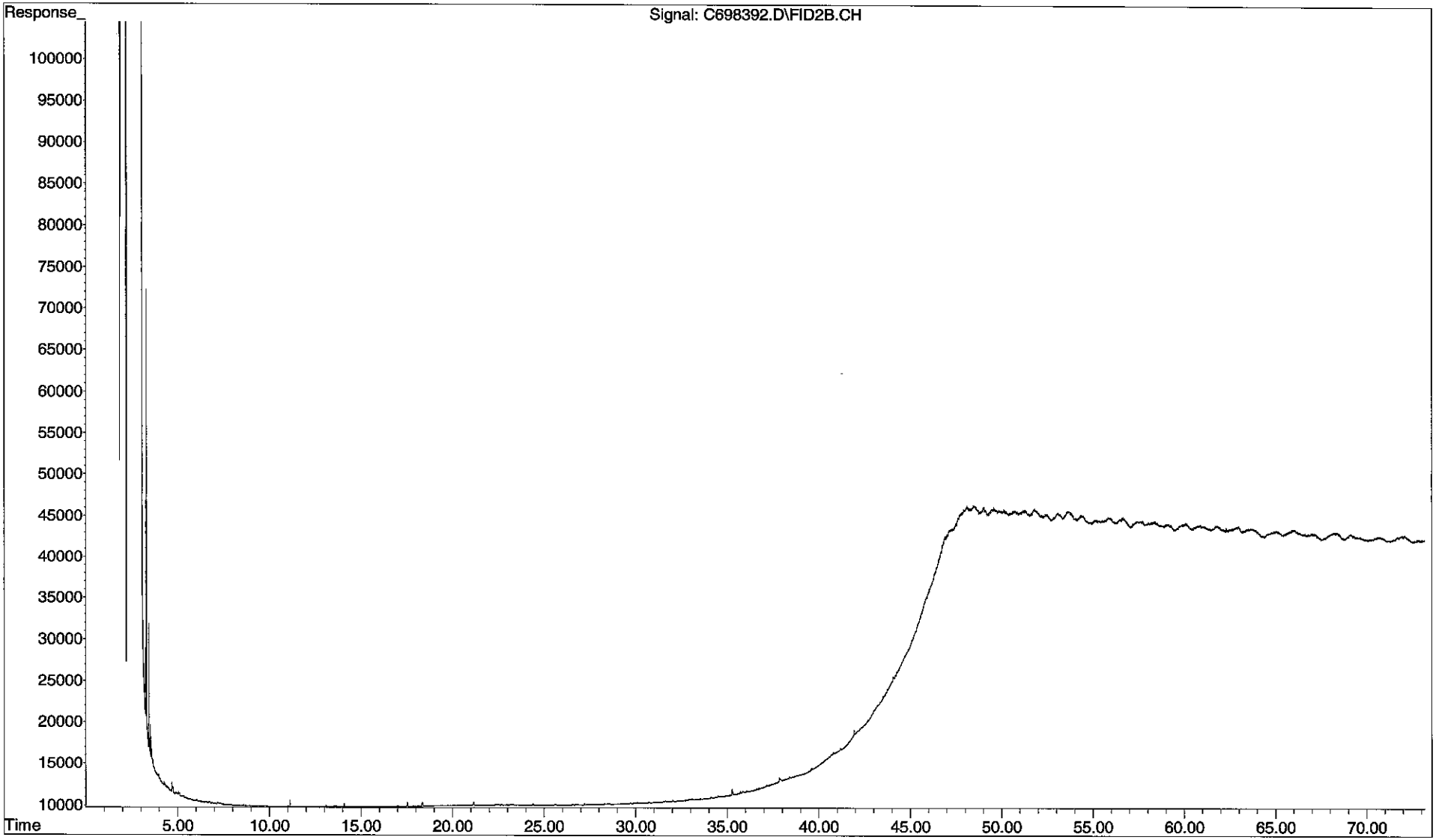
Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Sub List : TPH - TPH

	Compound	R.T.	Response	Conc Units
Internal Standards				
1) I	5-alpha-androstane	30.686	2328	50.000 ug/mL M4
System Monitoring Compounds				
Target Compounds				
42) h	C9-C44 Total Petroleu...	38.600	626975043	14676309.090 ug/mL M5
45) h	Total Resolved Hydroc...	38.600	3113806	72888.353 ug/L m
SemiQuant Compounds - Not Calibrated on this Instrument				

(f)=RT Delta > 1/2 Window (m)=manual int.

File :O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\C698392.D
Operator : JT
Acquired : 19 Dec 2012 8:09 pm using AcqMethod FID6A.M
Instrument : FID6
Sample : IB612171205R
Misc Info : DCM
ALS Vial : 91



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\
Data File : C698460.D
Signal(s) : FID2B.CH
Acq On : 21 Dec 2012 10:40 pm
Operator : JT
Sample : IB612171211R
Misc : DCM
ALS Vial : 75 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Dec 28 04:57:02 2012
Quant Method : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Wed Dec 19 14:59:28 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

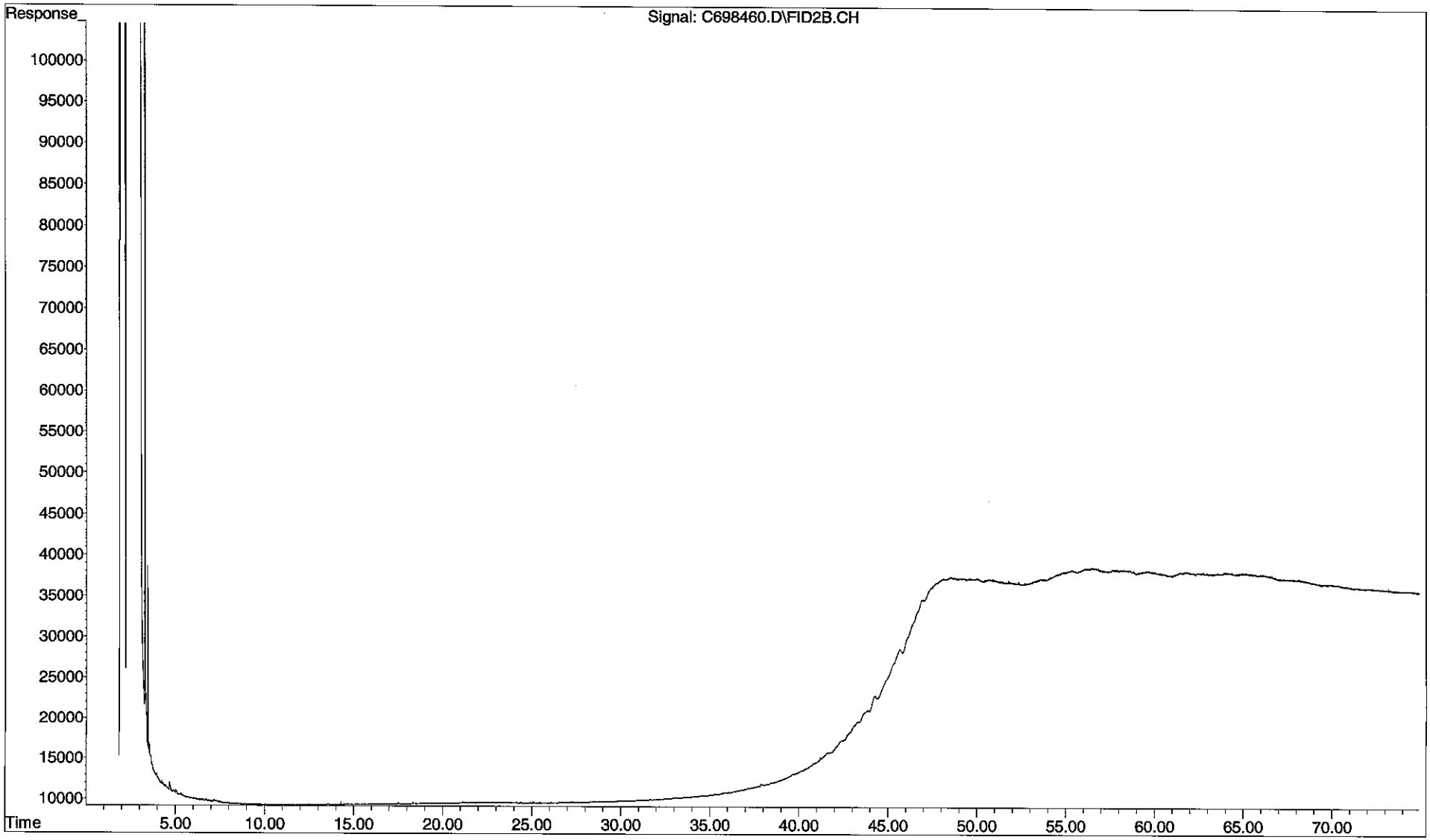
Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Sub List : TPH - TPH

	Compound	R.T.	Response	Conc Units
Internal Standards				
1) I	5-alpha-androstane	30.638	3237	50.000 ug/mL M4
System Monitoring Compounds				
Target Compounds				
42) h	C9-C44 Total Petroleu...	38.600	481094842	8100671.457 ug/mL M4
45) h	Total Resolved Hydroc...	38.600	2451282	41274.676 ug/L m
SemiQuant Compounds - Not Calibrated on this Instrument				

(f)=RT Delta > 1/2 Window (m)=manual int.

File :O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\C698460.D
Operator : JT
Acquired : 21 Dec 2012 10:40 pm using AcqMethod FID6A.M
Instrument : FID6
Sample : IB612171211R
Misc Info : DCM
ALS Vial : 75



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\
Data File : C698480.D
Signal(s) : FID2B.CH
Acq On : 22 Dec 2012 1:24 pm
Operator : JT
Sample : IB612171212R
Misc : DCM
ALS Vial : 85 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Dec 28 04:57:04 2012
Quant Method : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Wed Dec 19 14:59:28 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

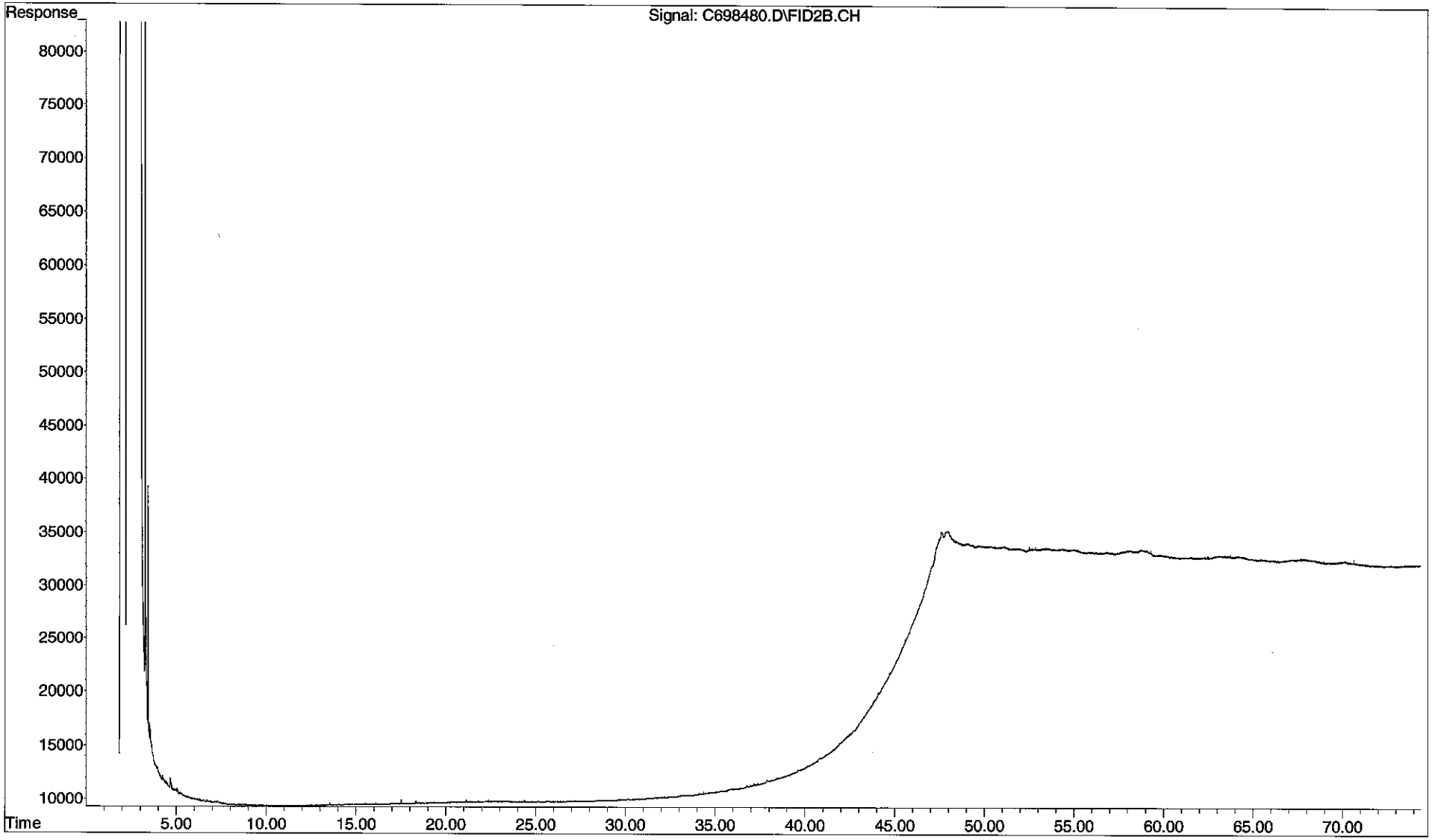
Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Sub List : TPH - TPH

	Compound	R.T.	Response	Conc	Units	
	Internal Standards					
1) I	5-alpha-androstane	30.739f	7857	50.000	ug/mL	M4
	System Monitoring Compounds					
	Target Compounds					
42) h	C9-C44 Total Petroleu...	38.600	418086862	2900195.148	ug/mL	M4
45) h	Total Resolved Hydroc...	38.600	652869	4528.840	ug/L	m
	SemiQuant Compounds - Not Calibrated on this Instrument					

(f)=RT Delta > 1/2 Window (m)=manual int.

File :O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\C698480.D
Operator : JT
Acquired : 22 Dec 2012 1:24 pm using AcqMethod FID6A.M
Instrument : FID6
Sample : IB612171212R
Misc Info : DCM
ALS Vial : 85



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\
Data File : C698492.D
Signal(s) : FID2B.CH
Acq On : 22 Dec 2012 10:13 pm
Operator : JT
Sample : IB612171213R
Misc : DCM
ALS Vial : 91 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Dec 28 04:57:05 2012
Quant Method : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Wed Dec 19 14:59:28 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

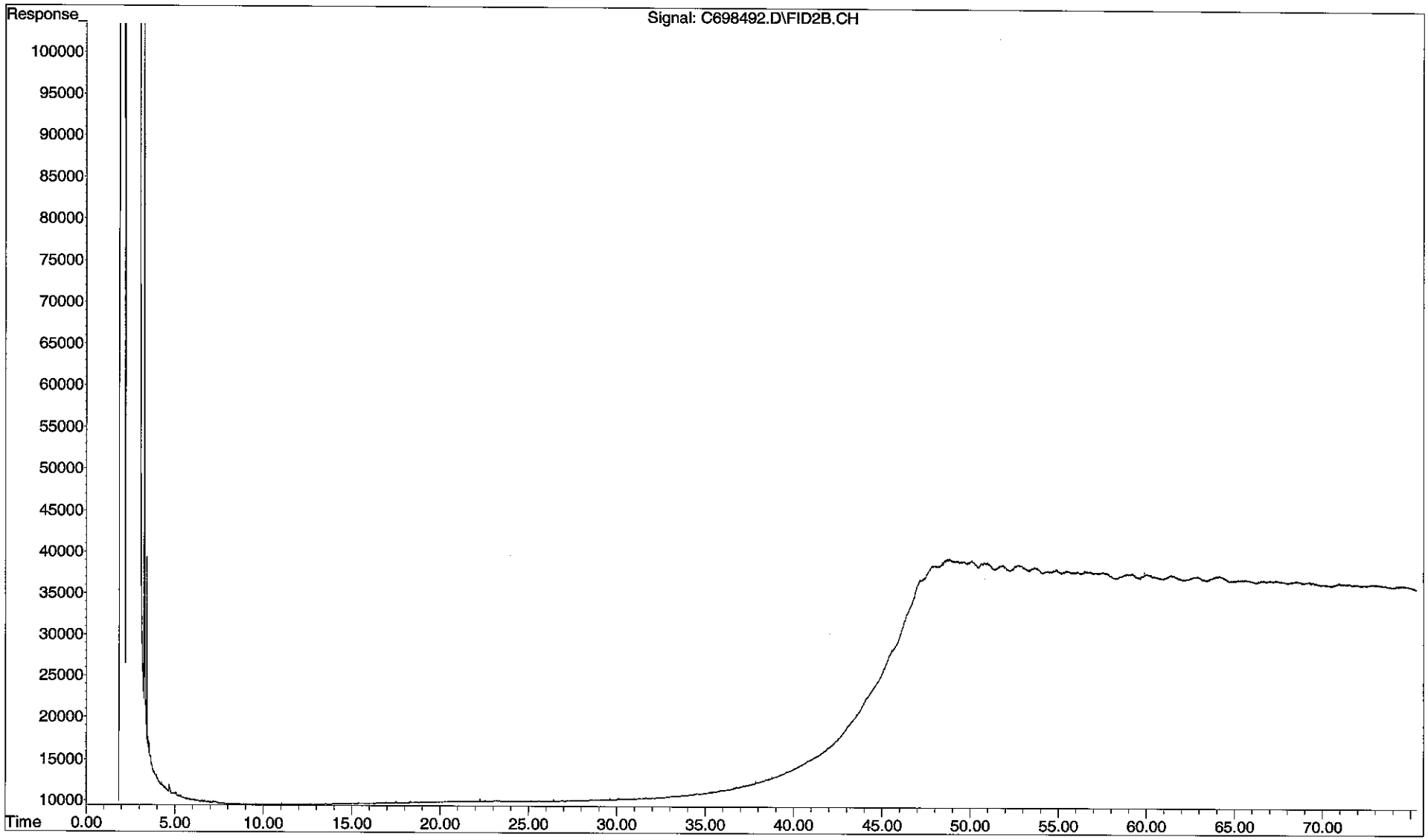
Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Sub List : TPH - TPH

	Compound	R.T.	Response	Conc Units
	Internal Standards			
1) I	5-alpha-androstane	30.550	3988	50.000 ug/mL M4
	System Monitoring Compounds			
	Target Compounds			
42) h	C9-C44 Total Petroleu...	38.600	494793916	6761334.543 ug/mL M4
45) h	Total Resolved Hydroc...	38.600	2545525	34784.471 ug/L m
	SemiQuant Compounds - Not Calibrated on this Instrument			

(f)=RT Delta > 1/2 Window (m)=manual int.

File :O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\C698492.D
Operator : JT
Acquired : 22 Dec 2012 10:13 pm using AcqMethod FID6A.M
Instrument : FID6
Sample : IB612171213R
Misc Info : DCM
ALS Vial : 91



Form I
Total Saturated Hydrocarbons by GC/FID

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Blank**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS121812B06**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	12/20/12	12/21/12	100	15.00	2	1	JT

Parameter	Result		Parameter	Result	
n-Nonane (C9)	**0.00240**	J	n-Tricosane (C23)	**0.00253**	J
n-Decane (C10)	**0.00520**	J	n-Tetracosane (C24)	0.0124	U
n-Undecane (C11)	**0.000933**	J	n-Pentacosane (C25)	0.0781	U
n-Dodecane (C12)	0.0188	U	n-Hexacosane (C26)	**0.000800**	J
n-Tridecane (C13)	0.0777	U	n-Heptacosane (C27)	**0.00200**	J
2,6,10 Trimethyldodecane (1380)	0.0139	U	n-Octacosane (C28)	**0.00133**	J
n-Tetradecane (C14)	0.0139	U	n-Nonacosane (C29)	0.0125	U
2,6,10 Trimethyltridecane (1470)	0.0596	U	n-Triacontane (C30)	0.0133	U
n-Pentadecane (C15)	0.0596	U	n-Hentriacontane (C31)	0.0143	U
n-Hexadecane (C16)	0.0128	U	n-Dotriacontane (C32)	0.0148	U
Norpristane (1650)	0.0161	U	n-Tritriacontane (C33)	0.0147	U
n-Heptadecane (C17)	0.0161	U	n-Tetratriacontane (C34)	0.0179	U
Pristane	0.0215	U	n-Pentatriacontane (C35)	0.0168	U
n-Octadecane (C18)	0.0107	U	n-Hexatriacontane (C36)	0.0221	U
Phytane	0.0112	U	n-Heptatriacontane (C37)	0.0227	U
n-Nonadecane (C19)	0.0108	U	n-Octatriacontane (C38)	0.0205	U
n-Eicosane (C20)	0.00741	U	n-Nonatriacontane (C39)	0.0244	U
n-Heneicosane (C21)	**0.000533**	J	n-Tetracontane (C40)	0.0244	U
n-Docosane (C22)	**0.000667**	J			

Total Hydrocarbon Summary

Total Saturated Hydrocarbons	**0.0164**	J
Total Petroleum Hydrocarbons (C9-C44)	26.7	U
Total Resolved Hydrocarbons	26.7	U

Surrogate	% Recovery	Acceptance Range (%)
ortho-Terphenyl	79	40-125
d50-Tetracosane	78	40-125

N/A - Not Applicable
J - Estimated value, below quantitation limit.
U - The analyte was analyzed for but not detected at the sample specific level reported.

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Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\
Data File : C698454.D
Signal(s) : FID2B.CH
Acq On : 21 Dec 2012 6:14 pm
Operator : JT
Sample : SS121812B06
Misc : 1X
ALS Vial : 72 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Dec 28 05:10:58 2012
Quant Method : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Wed Dec 19 14:59:28 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

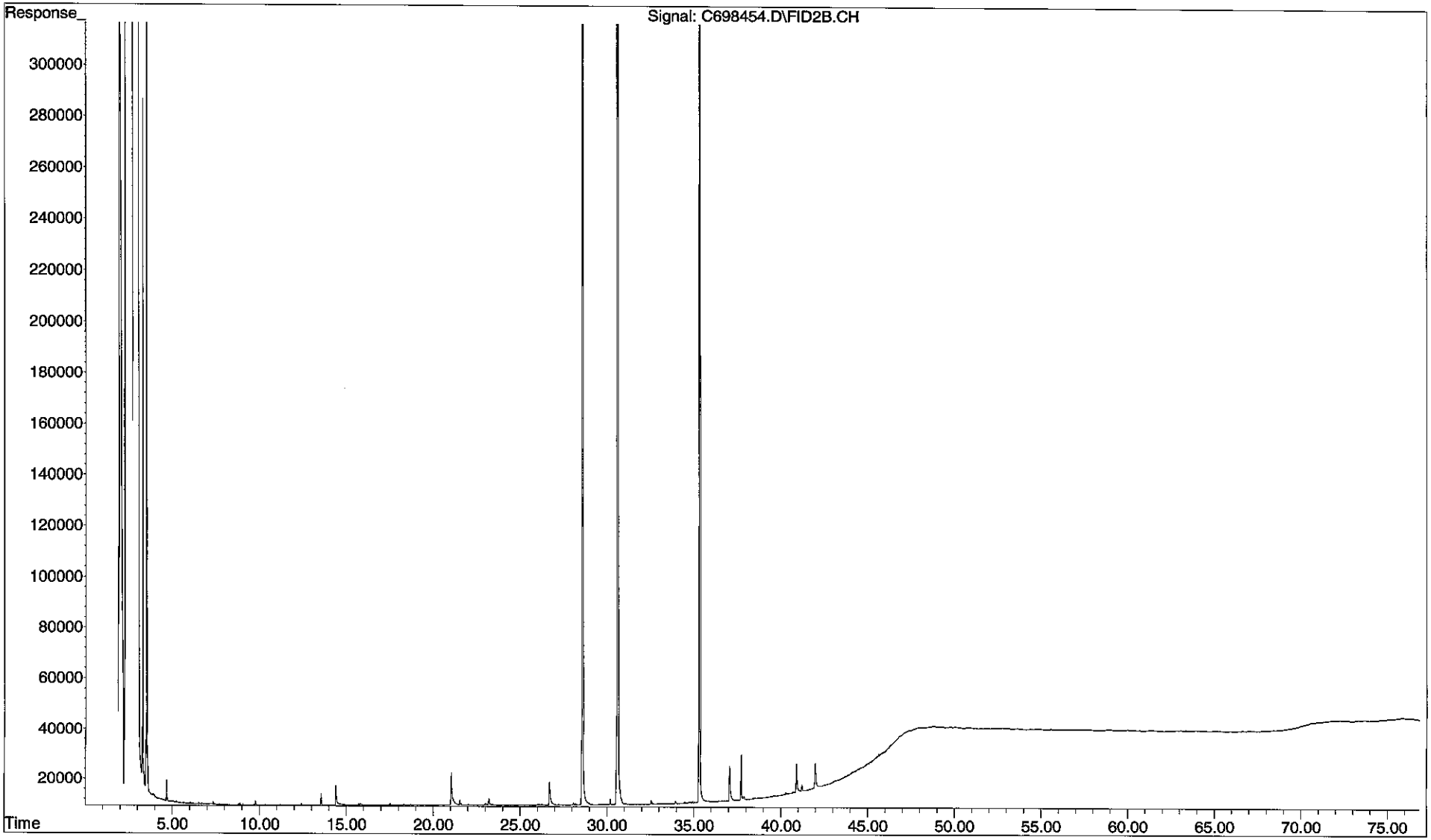
Blank Name : IB612171211R
Blank File : C698460.D

Sub List : SHC - SHC

	Compound	R.T.	Response	Conc Units
	Internal Standards			
1) I	5-alpha-androstane	30.609	64110055	50.000 ug/mL M4
	System Monitoring Compounds			
19) s	ortho-terphenyl	28.587	27215989	19.832 ug/mL M4
Spiked Amount	50.000 Range	50 - 130	Recovery =	39.66%#
24) s	d50-Tetracosane	35.315	21730136	19.503 ug/mL M4
Spiked Amount	50.000 Range	50 - 130	Recovery =	39.01%#
	Target Compounds			
3) t	n-Nonane (C9)	7.334	18100	0.018 ug/mL M4
4) t	n-Decane (C10)	9.774	41793	0.039 ug/mL M4
5) t	n-Undecane (C11)	12.270	7694	0.007 ug/mL M4
21) t	n-Heneicosane (C21)	31.615	4791	0.004 ug/mL M4
22) t	n-Docosane (C22)	33.078	6510	0.005 ug/mL M4
23) t	n-Tricosane (C23)	34.487	22853	0.019 ug/mL M4
27) t	n-Hexacosane (C26)	38.424	7611	0.006 ug/mL M4
28) t	n-Heptacosane (C27)	39.637	18523	0.015 ug/mL M4
29) t	n-Octacosane (C28)	40.802	12604	0.010 ug/mL M4
42) h	C9-C44 Total Petroleu...	38.600	524431265	445.814 ug/mL M4
42) h	C9-C44 Total Petroleu BS	38.600	43336423	36.840 ug/mL M4
45) h	Total Resolved Hydroc...	38.600	6125135	5.207 ug/L m
	SemiQuant Compounds - Not Calibrated on this Instrument			

(f)=RT Delta > 1/2 Window (m)=manual int.

File :O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\C698454.D
Operator : JT
Acquired : 21 Dec 2012 6:14 pm using AcqMethod FID6A.M
Instrument : FID6
Sample : SS121812B06
Misc Info : 1X
ALS Vial : 72



Form I
Total Saturated Hydrocarbons by GC/FID

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Laboratory Control Sample**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS121812LCS06**
Associated Blank: **SS121812B06**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	12/20/12	12/21/12	100	15.00	2	1	JT

Parameter	Result		Parameter	Result	
n-Nonane (C9)	**0.842**	S	n-Tricosane (C23)	0.00793	U
n-Decane (C10)	**0.862**	S	n-Tetracosane (C24)	**1.07**	S
n-Undecane (C11)	0.0145	U	n-Pentacosane (C25)	0.0781	U
n-Dodecane (C12)	**0.914**	S	n-Hexacosane (C26)	**1.06**	S
n-Tridecane (C13)	0.0777	U	n-Heptacosane (C27)	0.0104	U
2,6,10 Trimethyldodecane (1380)	0.0139	U	n-Octacosane (C28)	**1.05**	S
n-Tetradecane (C14)	**1.03**	S	n-Nonacosane (C29)	0.0125	U
2,6,10 Trimethyltridecane (1470)	0.0596	U	n-Triacontane (C30)	**1.09**	S
n-Pentadecane (C15)	0.0596	U	n-Hentriacontane (C31)	0.0143	U
n-Hexadecane (C16)	**1.09**	S	n-Dotriacontane (C32)	0.0148	U
Norpristane (1650)	0.0161	U	n-Tritriacontane (C33)	0.0147	U
n-Heptadecane (C17)	0.0161	U	n-Tetratriacontane (C34)	0.0179	U
Pristane	0.0215	U	n-Pentatriacontane (C35)	0.0168	U
n-Octadecane (C18)	**1.12**	S	n-Hexatriacontane (C36)	**1.03**	S
Phytane	0.0112	U	n-Heptatriacontane (C37)	0.0227	U
n-Nonadecane (C19)	**1.03**	S	n-Octatriacontane (C38)	0.0205	U
n-Eicosane (C20)	**1.05**	S	n-Nonatriacontane (C39)	0.0244	U
n-Heneicosane (C21)	0.00895	U	n-Tetracontane (C40)	0.0244	U
n-Docosane (C22)	**1.07**	S			

Total Hydrocarbon Summary

Total Saturated Hydrocarbons	**14.3**	
Total Petroleum Hydrocarbons (C9-C44)	26.7	U
Total Resolved Hydrocarbons	26.7	U

Surrogate	% Recovery	Acceptance Range (%)
ortho-Terphenyl	79	40-125
d50-Tetracosane	78	40-125

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.
S - Spike compound.

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Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\
Data File : C698456.D
Signal(s) : FID2B.CH
Acq On : 21 Dec 2012 7:43 pm
Operator : JT
Sample : SS121812LCS06
Misc : 1X
ALS Vial : 73 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Dec 28 05:11:00 2012
Quant Method : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Wed Dec 19 14:59:28 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB612171211R
Blank File : C698460.D

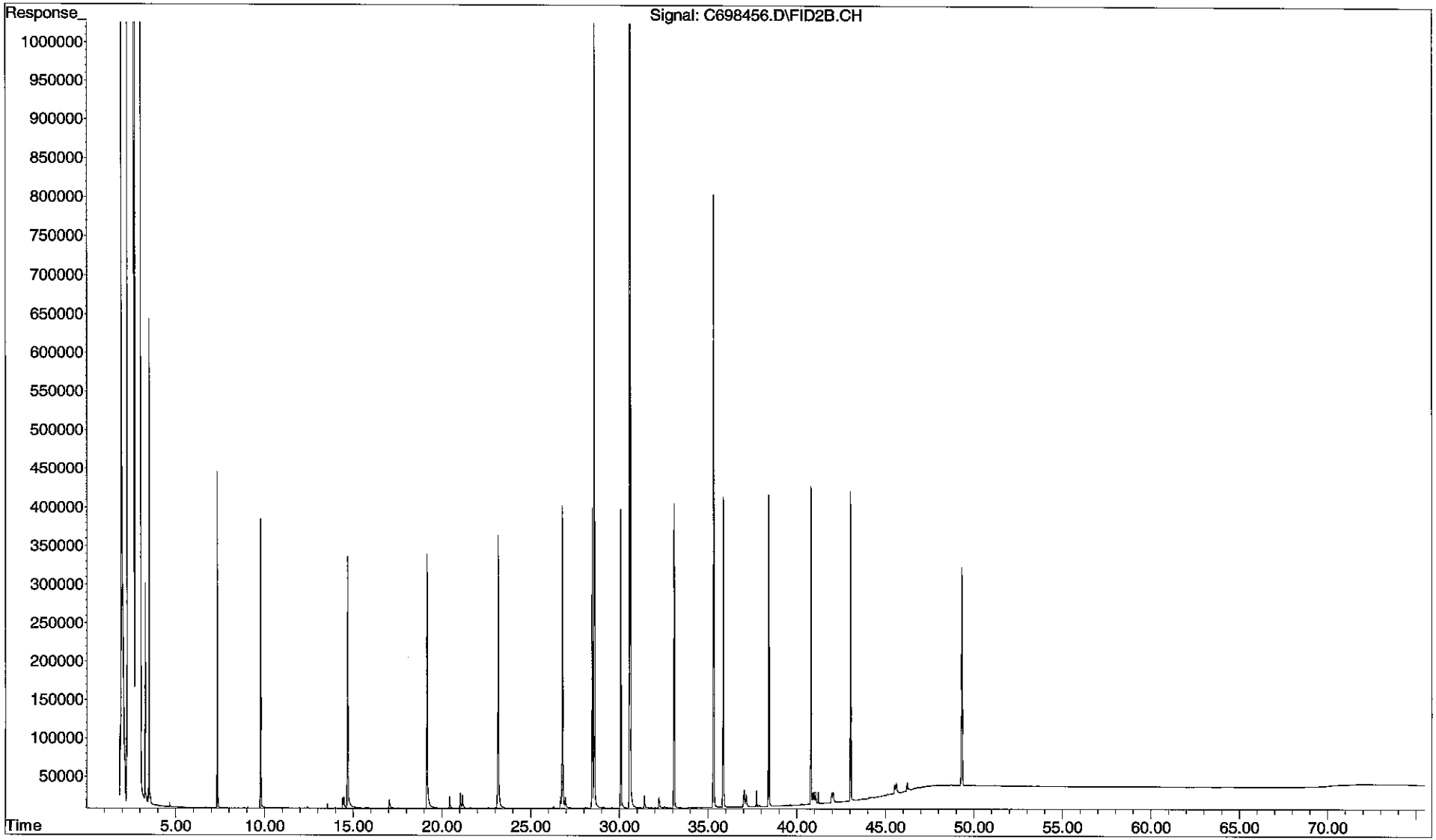
Sub List : SHC - SHC

	Compound	R.T.	Response	Conc	Units	
	Internal Standards					
1) I	5-alpha-androstane	30.609	63769781	50.000	ug/mL	M4
	System Monitoring Compounds					
19) s	ortho-terphenyl	28.587	27104165	19.856	ug/mL	M4
Spiked Amount	50.000	Range 50 - 130	Recovery =	39.71%#		
24) s	d50-Tetracosane	35.316	21528599	19.426	ug/mL	M4
Spiked Amount	50.000	Range 50 - 130	Recovery =	38.85%#		
	Target Compounds					
3) t	n-Nonane (C9)	7.331	6450820	6.312	ug/mL	M4
4) t	n-Decane (C10)	9.773	6925034	6.467	ug/mL	M4
6) t	n-Dodecane (C12)	14.680	7655334	6.857	ug/mL	M4
9) t	n-Tetradecane (C14)	19.154	8737664	7.692	ug/mL	M4
12) t	n-Hexadecane (C16)	23.166	9483983	8.191	ug/mL	M4
16) t	n-Octadecane (C18)	26.785	9768384	8.370	ug/mL	M4
18) t	n-Nonadecane (C19)	28.468	9074783	7.753	ug/mL	M4
20) t	n-Eicosane (C20)	30.076	9392380	7.854	ug/mL	M4
22) t	n-Docosane (C22)	33.083	9579588	8.000	ug/mL	M4
25) t	n-Tetracosane (C24)	35.852	9589978	8.021	ug/mL	M4
27) t	n-Hexacosane (C26)	38.416	9692647	7.990	ug/mL	M4
29) t	n-Octacosane (C28)	40.799	9550688	7.891	ug/mL	M4
31) t	n-Triacontane (C30)	43.027	9708687	8.144	ug/mL	M4
37) t	n-Hexatriacontane (C36)	49.303	9497076	7.716	ug/mL	M4
42) h	C9-C44 Total Petroleu...	38.600	644607587	550.899	ug/mL	M4
42) h	C9-C44 Total Petroleu BS	38.600	163512745	139.742	ug/mL	M4
45) h	Total Resolved Hydroc...	38.600	139756890	119.440	ug/L	m

SemiQuant Compounds - Not Calibrated on this Instrument

(f)=RT Delta > 1/2 Window (m)=manual int.

File :O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\C698456.D
Operator : JT
Acquired : 21 Dec 2012 7:43 pm using AcqMethod FID6A.M
Instrument : FID6
Sample : SS121812LCS06
Misc Info : 1X
ALS Vial : 73



Form I
Total Saturated Hydrocarbons by GC/FID

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Laboratory Control Sample Dup**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **SS121812LCSD06**
Associated Blank: **SS121812B06**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	12/20/12	12/21/12	100	15.00	2	1	JT

Parameter	Result		Parameter	Result	
n-Nonane (C9)	**0.783**	S	n-Tricosane (C23)	0.00793	U
n-Decane (C10)	**0.797**	S	n-Tetracosane (C24)	**1.01**	S
n-Undecane (C11)	0.0145	U	n-Pentacosane (C25)	0.0781	U
n-Dodecane (C12)	**0.917**	S	n-Hexacosane (C26)	**1.00**	S
n-Tridecane (C13)	0.0777	U	n-Heptacosane (C27)	0.0104	U
2,6,10 Trimethyldodecane (1380)	0.0139	U	n-Octacosane (C28)	**0.988**	S
n-Tetradecane (C14)	**0.960**	S	n-Nonacosane (C29)	0.0125	U
2,6,10 Trimethyltridecane (1470)	0.0596	U	n-Triacontane (C30)	**1.02**	S
n-Pentadecane (C15)	0.0596	U	n-Hentriacontane (C31)	0.0143	U
n-Hexadecane (C16)	**1.04**	S	n-Dotriacontane (C32)	0.0148	U
Norpristane (1650)	0.0161	U	n-Tritriacontane (C33)	0.0147	U
n-Heptadecane (C17)	0.0161	U	n-Tetratriacontane (C34)	0.0179	U
Pristane	0.0215	U	n-Pentatriacontane (C35)	0.0168	U
n-Octadecane (C18)	**1.05**	S	n-Hexatriacontane (C36)	**0.972**	S
Phytane	0.0112	U	n-Heptatriacontane (C37)	0.0227	U
n-Nonadecane (C19)	**0.975**	S	n-Octatriacontane (C38)	0.0205	U
n-Eicosane (C20)	**0.987**	S	n-Nonatriacontane (C39)	0.0244	U
n-Heneicosane (C21)	0.00895	U	n-Tetracontane (C40)	0.0244	U
n-Docosane (C22)	**1.00**	S			

Total Hydrocarbon Summary

Total Saturated Hydrocarbons	**13.5**	
Total Petroleum Hydrocarbons (C9-C44)	26.7	U
Total Resolved Hydrocarbons	26.7	U

Surrogate	% Recovery	Acceptance Range (%)
ortho-Terphenyl	74	40-125
d50-Tetracosane	73	40-125

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.
S - Spike compound.

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Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\
Data File : C698458.D
Signal(s) : FID2B.CH
Acq On : 21 Dec 2012 9:11 pm
Operator : JT
Sample : SS121812LCSD06
Misc : 1X
ALS Vial : 74 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Dec 28 05:11:01 2012
Quant Method : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Wed Dec 19 14:59:28 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB612171211R
Blank File : C698460.D

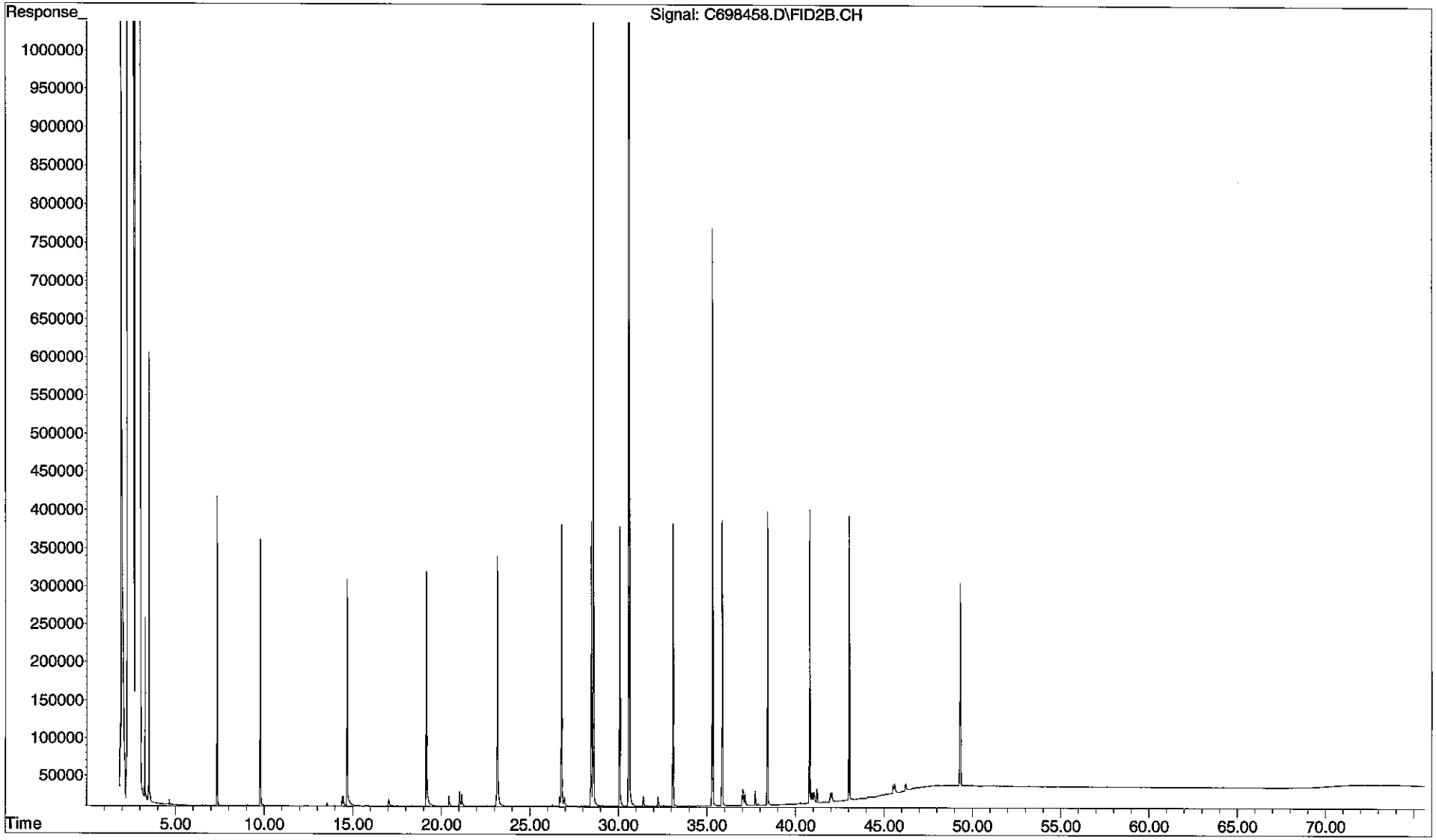
Sub List : SHC - SHC

	Compound	R.T.	Response	Conc	Units	
	Internal Standards					
1) I	5-alpha-androstane	30.609	63931023	50.000	ug/mL	M4
	System Monitoring Compounds					
19) s	ortho-terphenyl	28.585	25449008	18.596	ug/mL	M4
Spiked Amount	50.000	Range 50 - 130	Recovery =	37.19%#		
24) s	d50-Tetracosane	35.314	20231834	18.209	ug/mL	M4
Spiked Amount	50.000	Range 50 - 130	Recovery =	36.42%#		
	Target Compounds					
3) t	n-Nonane (C9)	7.330	6013953	5.869	ug/mL	M4
4) t	n-Decane (C10)	9.772	6415075	5.976	ug/mL	M4
6) t	n-Dodecane (C12)	14.678	7699101	6.879	ug/mL	M4
9) t	n-Tetradecane (C14)	19.152	8201521	7.202	ug/mL	M4
12) t	n-Hexadecane (C16)	23.165	9024370	7.775	ug/mL	M4
16) t	n-Octadecane (C18)	26.784	9192712	7.857	ug/mL	M4
18) t	n-Nonadecane (C19)	28.466	8575818	7.309	ug/mL	M4
20) t	n-Eicosane (C20)	30.072	8871431	7.400	ug/mL	M4
22) t	n-Docosane (C22)	33.080	9050597	7.539	ug/mL	M4
25) t	n-Tetracosane (C24)	35.849	9058259	7.557	ug/mL	M4
27) t	n-Hexacosane (C26)	38.414	9126084	7.504	ug/mL	M4
29) t	n-Octacosane (C28)	40.798	8993048	7.411	ug/mL	M4
31) t	n-Triacontane (C30)	43.027	9171577	7.674	ug/mL	M4
37) t	n-Hexatriacontane (C36)	49.297	8991700	7.287	ug/mL	M4
42) h	C9-C44 Total Petroleu...	38.600	615808909	524.959	ug/mL	M4
42) h	C9-C44 Total Petroleu BS	38.600	134714067	114.840	ug/mL	M4
45) h	Total Resolved Hydroc...	38.600	135373716	115.402	ug/L	m

SemiQuant Compounds - Not Calibrated on this Instrument

(f)=RT Delta > 1/2 Window (m)=manual int.

File :O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\C698458.D
Operator : JT
Acquired : 21 Dec 2012 9:11 pm using AcqMethod FID6A.M
Instrument : FID6
Sample : SS121812LCSD06
Misc Info : 1X
ALS Vial : 74



Form I
Matrix Spike
Total Saturated Hydrocarbons by GC/FID

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AS121312D010**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-02 M**
Associated Blank: **SS121812B06**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
12/13/12	12/14/12	12/20/12	12/22/12	79.5	15.22	2	1	JT

Parameter	Result		Parameter	Result	
n-Nonane (C9)	**4.57**	S	n-Tricosane (C23)	**0.154**	J
n-Decane (C10)	**5.05**	S	n-Tetracosane (C24)	**6.41**	S
n-Undecane (C11)	**0.0121**	J	n-Pentacosane (C25)	**1.16**	G
n-Dodecane (C12)	**5.66**	S	n-Hexacosane (C26)	**6.49**	S
n-Tridecane (C13)	**0.0246**	J	n-Heptacosane (C27)	**0.0633**	J
2,6,10 Trimethyldodecane (1380)	**0.0114**	J	n-Octacosane (C28)	**6.38**	S
n-Tetradecane (C14)	**6.06**	S	n-Nonacosane (C29)	**0.385**	
2,6,10 Trimethyltridecane (1470)	**0.435**	G	n-Triacontane (C30)	**6.49**	S
n-Pentadecane (C15)	**0.446**		n-Hentriacontane (C31)	**0.131**	J
n-Hexadecane (C16)	**6.68**	S	n-Dotriacontane (C32)	**0.0451**	J
Norpristane (1650)	**0.0696**	J	n-Tritriacontane (C33)	**0.0567**	J
n-Heptadecane (C17)	**0.0497**	J	n-Tetratriacontane (C34)	**0.0373**	J
Pristane	**0.0558**	J	n-Pentatriacontane (C35)	**0.0292**	J
n-Octadecane (C18)	**7.55**	GS	n-Hexatriacontane (C36)	**6.16**	S
Phytane	**0.648**	G	n-Heptatriacontane (C37)	**0.0172**	J
n-Nonadecane (C19)	**6.38**	S	n-Octatriacontane (C38)	**0.0316**	J
n-Eicosane (C20)	**6.45**	S	n-Nonatriacontane (C39)	0.0302	U
n-Heneicosane (C21)	**0.0279**	J	n-Tetracontane (C40)	**0.0344**	J
n-Docosane (C22)	**6.47**	S			

Total Hydrocarbon Summary

Total Saturated Hydrocarbons	**90.7**
Total Petroleum Hydrocarbons (C9-C44)	**173**
Total Resolved Hydrocarbons	**118**

Surrogate	% Recovery	Acceptance Range (%)
ortho-Terphenyl	76	40-125
d50-Tetracosane	76	40-125

N/A - Not Applicable
J - Estimated value, below quantitation limit.
U - The analyte was analyzed for but not detected at the sample specific level reported.
S - Spike compound.
G - Matrix Interference

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Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\
Data File : C698466.D
Signal(s) : FID2B.CH
Acq On : 22 Dec 2012 3:05 am
Operator : JT
Sample : 1212022-02M
Misc : 1X
ALS Vial : 78 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Dec 28 05:11:33 2012
Quant Method : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Wed Dec 19 14:59:28 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB612171212R
Blank File : C698480.D

Sub List : SHC - SHC

	Compound	R.T.	Response	Conc Units
	Internal Standards			
1) I	5-alpha-androstane	30.609	67022303	50.000 ug/mL M4
	System Monitoring Compounds			
19) s	ortho-terphenyl	28.622	136206355	94.939 ug/mL M4
Spiked Amount	50.000	Range 50 - 130	Recovery =	189.88%#
24) s	d50-Tetracosane	35.347	110225594	94.632 ug/mL M4
Spiked Amount	50.000	Range 50 - 130	Recovery =	189.26%#
	Target Compounds			
2) t	n-Octane (C8)	5.186	12673	0.012 ug/mL M4
3) t	n-Nonane (C9)	7.332	29688432	27.638 ug/mL M4
4) t	n-Decane (C10)	9.775	34372347	30.542 ug/mL M4
5) t	n-Undecane (C11)	12.260	82709	0.073 ug/mL M4
6) t	n-Dodecane (C12)	14.684	40190221	34.251 ug/mL M4
7) t	n-Tridecane (C13)	16.972	175576	0.149 ug/mL M4
8) t	1380	18.648	82965	0.069 ug/mL M4
9) t	n-Tetradecane (C14)	19.161	43756537	36.652 ug/mL M4
10) t	1470	20.420	3141911G	2.633 ug/mL M4
11) t	n-Pentadecane (C15)	21.148	3223987	2.701 ug/mL M4
12) t	n-Hexadecane (C16)	23.175	49190698	40.425 ug/mL M4
13) t	1650	24.070	496815	0.421 ug/mL M4
14) t	n-Heptadecane (C17)	25.015	354848	0.301 ug/mL m
15) t	Pristane	25.108	424131	0.338 ug/mL M4
16) t	n-Octadecane (C18)	26.796	56020867G	45.674 ug/mL M4
17) t	Phytane	26.926	4834603G	3.919 ug/mL M4
18) t	n-Nonadecane (C19)	28.483	47536944	38.644 ug/mL M4
20) t	n-Eicosane (C20)	30.088	49080261	39.049 ug/mL M4
21) t	n-Heneicosane (C21)	31.602	211198	0.169 ug/mL M4
22) t	n-Docosane (C22)	33.098	49307512	39.179 ug/mL M4
23) t	n-Tricosane (C23)	34.478	1195530	0.932 ug/mL M4
25) t	n-Tetracosane (C24)	35.872	48746917	38.794 ug/mL M4
26) t	n-Pentacosane (C25)	37.134	9042369G	7.031 ug/mL M4
27) t	n-Hexacosane (C26)	38.435	50045826	39.255 ug/mL M4
28) t	n-Heptacosane (C27)	39.625	480193	0.383 ug/mL M4
29) t	n-Octacosane (C28)	40.820	49148931	38.636 ug/mL M4
30) t	n-Nonacosane (C29)	41.941	2957291	2.332 ug/mL M4
31) t	n-Triacontane (C30)	43.047	49216639	39.279 ug/mL M4
32) t	n-Hentriacontane (C31)	44.083	1003137	0.792 ug/mL M4
33) t	n-Dotriacontane (C32)	45.104	344321	0.273 ug/mL M4
34) t	n-Tritriacontane (C33)	46.107	414094	0.343 ug/mL M4
35) t	n-tetratriacontane (C34)	47.080	281558	0.226 ug/mL M4
36) t	n-Pentatriacontane (C35)	48.110	224426	0.177 ug/mL M4
37) t	n-Hexatriacontane (C36)	49.324	48230023	37.284 ug/mL M4

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\
Data File : C698466.D
Signal(s) : FID2B.CH
Acq On : 22 Dec 2012 3:05 am
Operator : JT
Sample : 1212022-02M
Misc : 1X
ALS Vial : 78 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Dec 28 05:11:33 2012
Quant Method : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Wed Dec 19 14:59:28 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB612171212R
Blank File : C698480.D

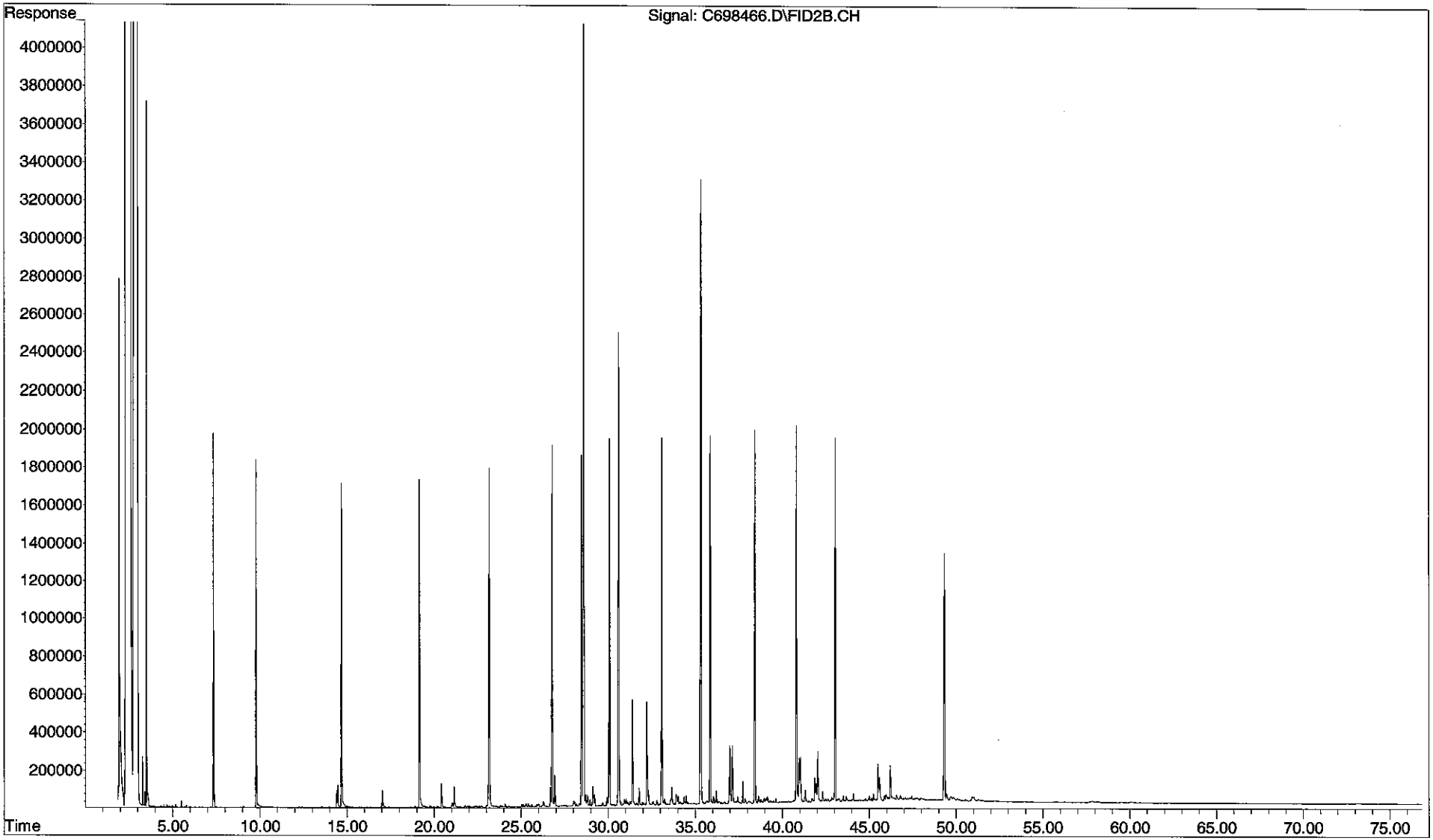
Sub List : SHC - SHC

		Compound	R.T.	Response	Conc	Units	
38)	t	n-Heptatriacontane (C37)	50.619	132266	0.104	ug/mL	M4
39)	t	n-Octatriacontane (C38)	52.223	239942	0.191	ug/mL	M4
41)	t	n-Tetracontane (C40)	56.251	246557	0.208	ug/mL	M4
42)	h	C9-C44 Total Petroleu...	38.600	1708634789	1389.380	ug/mL	M4
42)	h	C9-C44 Total Petroleu BS	38.600	1290547927	1049.412	ug/mL	M4
45)	h	Total Resolved Hydroc...	38.600	876881387	713.038	ug/L	m

SemiQuant Compounds - Not Calibrated on this Instrument

(f)=RT Delta > 1/2 Window (m)=manual int.

File :O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\C698466.D
Operator : JT
Acquired : 22 Dec 2012 3:05 am using AcqMethod FID6A.M
Instrument : FID6
Sample : 1212022-02M
Misc Info : 1X
ALS Vial : 78



Form I
Matrix Spike Duplicate
Total Saturated Hydrocarbons by GC/FID

ALPHA ANALYTICAL

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AS121312D010**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-02 S**
Associated Blank: **SS121812B06**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
12/13/12	12/14/12	12/20/12	12/22/12	79.5	15.13	2	1	JT

Parameter	Result		Parameter	Result	
n-Nonane (C9)	**4.77**	S	n-Tricosane (C23)	**0.159**	J
n-Decane (C10)	**5.17**	S	n-Tetracosane (C24)	**6.53**	S
n-Undecane (C11)	**0.0105**	J	n-Pentacosane (C25)	**1.15**	G
n-Dodecane (C12)	**5.75**	S	n-Hexacosane (C26)	**6.58**	S
n-Tridecane (C13)	**0.0246**	J	n-Heptacosane (C27)	**0.0706**	J
2,6,10 Trimethyldodecane (1380)	**0.0138**	J	n-Octacosane (C28)	**6.48**	S
n-Tetradecane (C14)	**6.18**	S	n-Nonacosane (C29)	**0.389**	
2,6,10 Trimethyltridecane (1470)	**0.425**	G	n-Triacontane (C30)	**6.60**	S
n-Pentadecane (C15)	**0.419**		n-Hentriacontane (C31)	**0.118**	J
n-Hexadecane (C16)	**6.71**	S	n-Dotriacontane (C32)	**0.0454**	J
Norpristane (1650)	**0.0392**	J	n-Tritriacontane (C33)	**0.0462**	J
n-Heptadecane (C17)	**0.0447**	J	n-Tetratriacontane (C34)	**0.0336**	J
Pristane	**0.0480**	J	n-Pentatriacontane (C35)	**0.0364**	J
n-Octadecane (C18)	**7.22**	GS	n-Hexatriacontane (C36)	**6.24**	S
Phytane	**0.483**	G	n-Heptatriacontane (C37)	**0.0196**	J
n-Nonadecane (C19)	**6.48**	S	n-Octatriacontane (C38)	**0.0301**	J
n-Eicosane (C20)	**6.51**	S	n-Nonatriacontane (C39)	0.0304	U
n-Heneicosane (C21)	**0.0281**	J	n-Tetracontane (C40)	**0.0314**	J
n-Docosane (C22)	**6.56**	S			

Total Hydrocarbon Summary

Total Saturated Hydrocarbons	**91.4**
Total Petroleum Hydrocarbons (C9-C44)	**168**
Total Resolved Hydrocarbons	**114**

Surrogate	% Recovery	Acceptance Range (%)
ortho-Terphenyl	76	40-125
d50-Tetracosane	76	40-125

N/A - Not Applicable
J - Estimated value, below quantitation limit.
U - The analyte was analyzed for but not detected at the sample specific level reported.
S - Spike compound.
G - Matrix Interference

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\
Data File : C698468.D
Signal(s) : FID2B.CH
Acq On : 22 Dec 2012 4:34 am
Operator : JT
Sample : 1212022-02S
Misc : 1X
ALS Vial : 79 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Dec 28 05:11:35 2012
Quant Method : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Wed Dec 19 14:59:28 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB612171212R
Blank File : C698480.D

Sub List : SHC - SHC

	Compound	R.T.	Response	Conc Units
	Internal Standards			
1) I	5-alpha-androstane	30.607	66384486	50.000 ug/mL M4
	System Monitoring Compounds			
19) s	ortho-terphenyl	28.620	135131042	95.095 ug/mL M4
Spiked Amount	50.000	Range 50 - 130	Recovery =	190.19%#
24) s	d50-Tetracosane	35.346	109307903	94.745 ug/mL M4
Spiked Amount	50.000	Range 50 - 130	Recovery =	189.49%#
	Target Compounds			
2) t	n-Octane (C8)	5.186	8402	0.008 ug/mL M4
3) t	n-Nonane (C9)	7.334	30514527	28.680 ug/mL M4
4) t	n-Decane (C10)	9.777	34657684	31.091 ug/mL M4
5) t	n-Undecane (C11)	12.261	69973	0.063 ug/mL M4
6) t	n-Dodecane (C12)	14.685	40212455	34.599 ug/mL M4
7) t	n-Tridecane (C13)	16.972	173120	0.148 ug/mL M4
8) t	1380	18.648	97941	0.083 ug/mL M4
9) t	n-Tetradecane (C14)	19.161	43943625	37.162 ug/mL M4
10) t	1470	20.422	3020703G	2.555 ug/mL M4
11) t	n-Pentadecane (C15)	21.148	2979508	2.520 ug/mL M4
12) t	n-Hexadecane (C16)	23.175	48681083	40.390 ug/mL M4
13) t	1650	24.069	275798	0.236 ug/mL M4
14) t	n-Heptadecane (C17)	25.016	314665	0.269 ug/mL M4
15) t	Pristane	25.108	358992	0.289 ug/mL M4
16) t	n-Octadecane (C18)	26.795	52736729G	43.410 ug/mL M4
17) t	Phytane	26.926	3549562G	2.905 ug/mL M4
18) t	n-Nonadecane (C19)	28.482	47493790	38.980 ug/mL M4
20) t	n-Eicosane (C20)	30.087	48764899	39.171 ug/mL M4
21) t	n-Heneicosane (C21)	31.603	209580	0.169 ug/mL M4
22) t	n-Docosane (C22)	33.096	49207271	39.475 ug/mL M4
23) t	n-Tricosane (C23)	34.476	1211257	0.954 ug/mL M4
25) t	n-Tetracosane (C24)	35.870	48865640	39.262 ug/mL M4
26) t	n-Pentacosane (C25)	37.135	8836355G	6.936 ug/mL M4
27) t	n-Hexacosane (C26)	38.433	49975613	39.577 ug/mL M4
28) t	n-Heptacosane (C27)	39.623	527881	0.425 ug/mL M4
29) t	n-Octacosane (C28)	40.818	49152225	39.010 ug/mL M4
30) t	n-Nonacosane (C29)	41.942	2937056	2.338 ug/mL M4
31) t	n-Triacontane (C30)	43.046	49308457	39.730 ug/mL M4
32) t	n-Hentriacontane (C31)	44.083	890918	0.710 ug/mL M4
33) t	n-Dotriacontane (C32)	45.105	341648	0.273 ug/mL M4
34) t	n-Tritriacontane (C33)	46.106	332473	0.278 ug/mL M4
35) t	n-tetratriacontane (C34)	47.075	249771	0.202 ug/mL M4
36) t	n-Pentatriacontane (C35)	48.105	275846	0.219 ug/mL M4
37) t	n-Hexatriacontane (C36)	49.327	48089127	37.532 ug/mL M4

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\
Data File : C698468.D
Signal(s) : FID2B.CH
Acq On : 22 Dec 2012 4:34 am
Operator : JT
Sample : 1212022-02S
Misc : 1X
ALS Vial : 79 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Dec 28 05:11:35 2012
Quant Method : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Wed Dec 19 14:59:28 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB612171212R
Blank File : C698480.D

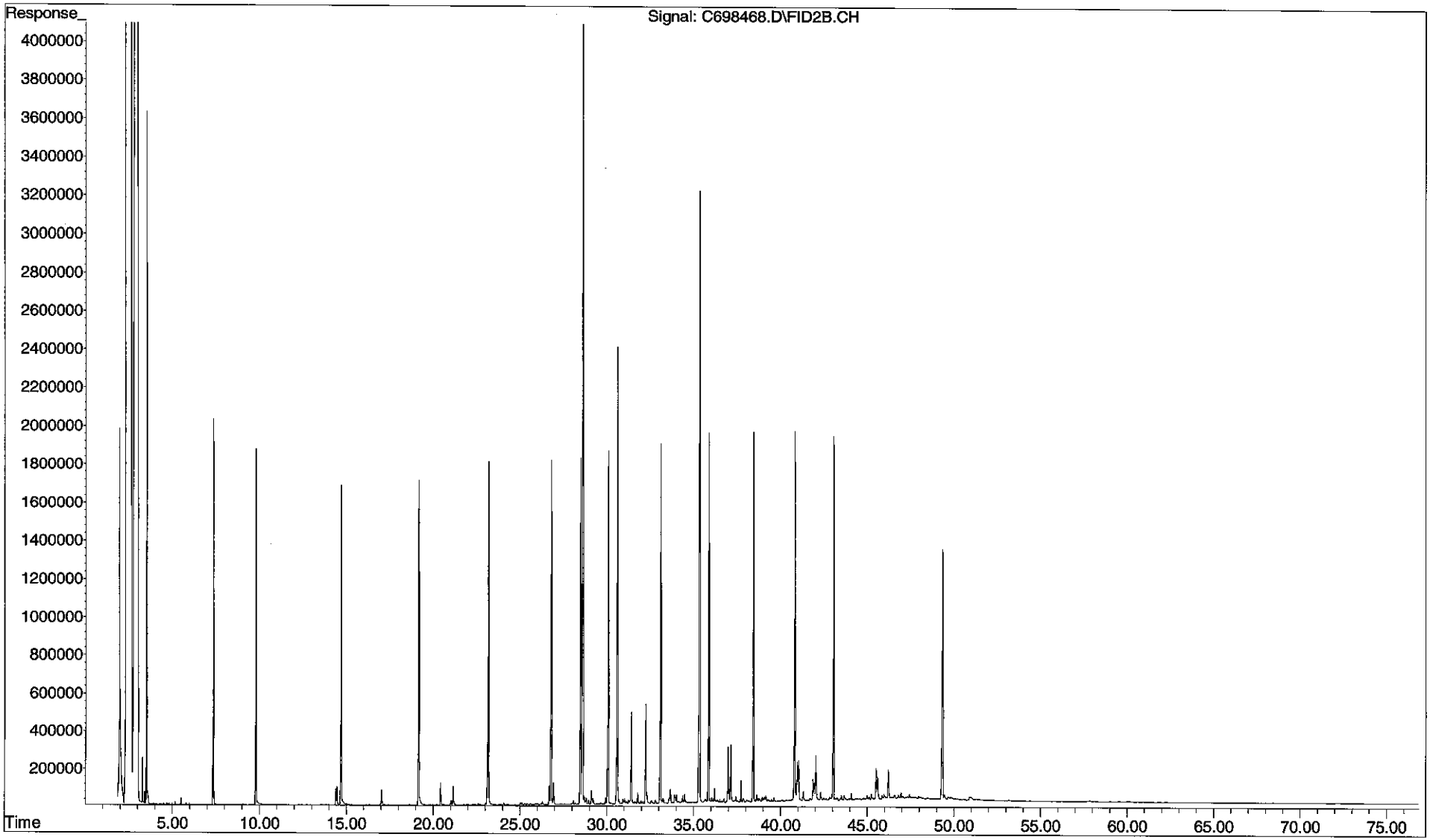
Sub List : SHC - SHC

		Compound	R.T.	Response	Conc	Units	
38)	t	n-Heptatriacontane (C37)	50.630	147619	0.118	ug/mL	M4
39)	t	n-Octatriacontane (C38)	52.214	225781	0.181	ug/mL	M4
41)	t	n-Tetracontane (C40)	56.226	222206	0.189	ug/mL	M4
42)	h	C9-C44 Total Petroleu...	38.600	1648035986	1352.980	ug/mL	M4
42)	h	C9-C44 Total Petroleu BS	38.600	1229949124	1009.745	ug/mL	M4
45)	h	Total Resolved Hydroc...	38.600	836367921	686.629	ug/L	m

SemiQuant Compounds - Not Calibrated on this Instrument

(f)=RT Delta > 1/2 Window (m)=manual int.

File :O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\C698468.D
Operator : JT
Acquired : 22 Dec 2012 4:34 am using AcqMethod FID6A.M
Instrument : FID6
Sample : 1212022-02S
Misc Info : 1X
ALS Vial : 79



Form I
Duplicate
Total Saturated Hydrocarbons by GC/FID

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **SEKR0000R024AD121312D010**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **1212022-03 D**
Associated Blank: **SS121812B06**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
12/13/12	12/14/12	12/20/12	12/22/12	79.0	15.44	2	1	JT

Parameter	Result		Parameter	Result	
n-Nonane (C9)	**0.00279**	JB	n-Tricosane (C23)	**0.174**	
n-Decane (C10)	**0.0115**	JB	n-Tetracosane (C24)	**0.0128**	J
n-Undecane (C11)	**0.0110**	J	n-Pentacosane (C25)	**1.15**	G
n-Dodecane (C12)	**0.0221**	J	n-Hexacosane (C26)	**0.0823**	J
n-Tridecane (C13)	**0.0207**	J	n-Heptacosane (C27)	**0.0897**	J
2,6,10 Trimethyldodecane (1380)	**0.00787**	J	n-Octacosane (C28)	**0.0187**	J
n-Tetradecane (C14)	**0.0198**	J	n-Nonacosane (C29)	**0.355**	
2,6,10 Trimethyltridecane (1470)	**0.0781**	GJ	n-Triacontane (C30)	**0.0671**	J
n-Pentadecane (C15)	**0.0330**	J	n-Hentriacontane (C31)	**0.131**	J
n-Hexadecane (C16)	**0.0630**	J	n-Dotriacontane (C32)	**0.0315**	J
Norpristane (1650)	**0.0835**	J	n-Tritriacontane (C33)	**0.0782**	J
n-Heptadecane (C17)	**0.0561**	J	n-Tetratriacontane (C34)	**0.0307**	J
Pristane	**0.0551**	J	n-Pentatriacontane (C35)	**0.0257**	J
n-Octadecane (C18)	**1.49**	G	n-Hexatriacontane (C36)	0.0272	U
Phytane	**0.345**	G	n-Heptatriacontane (C37)	0.0279	U
n-Nonadecane (C19)	**0.0380**	J	n-Octatriacontane (C38)	**0.0346**	J
n-Eicosane (C20)	**0.0636**	J	n-Nonatriacontane (C39)	0.0300	U
n-Heneicosane (C21)	**0.0305**	J	n-Tetracontane (C40)	**0.0515**	J
n-Docosane (C22)	**0.0520**	J			

Total Hydrocarbon Summary

Total Saturated Hydrocarbons	**4.82**
Total Petroleum Hydrocarbons (C9-C44)	**117**
Total Resolved Hydrocarbons	**35.7**

Surrogate	% Recovery	Acceptance Range (%)
ortho-Terphenyl	75	40-125
d50-Tetracosane	76	40-125

N/A - Not Applicable
B - Found in associated blank as well as sample.
J - Estimated value, below quantitation limit.
U - The analyte was analyzed for but not detected at the sample specific level reported.
G - Matrix Interference

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\
Data File : C698472.D
Signal(s) : FID2B.CH
Acq On : 22 Dec 2012 7:30 am
Operator : JT
Sample : 1212022-03D
Misc : 1X
ALS Vial : 81 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Dec 28 05:11:38 2012
Quant Method : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Wed Dec 19 14:59:28 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB612171212R
Blank File : C698480.D

Sub List : SHC - SHC

	Compound	R.T.	Response	Conc Units
	Internal Standards			
1) I	5-alpha-androstane	30.605	67941982	50.000 ug/mL M4
	System Monitoring Compounds			
19) s	ortho-terphenyl	28.618	137044092	94.230 ug/mL M4
Spiked Amount	50.000	Range 50 - 130	Recovery =	188.46%#
24) s	d50-Tetracosane	35.345	111551837	94.474 ug/mL M4
Spiked Amount	50.000	Range 50 - 130	Recovery =	188.95%#
	Target Compounds			
2) t	n-Octane (C8)	5.191	6605	0.006 ug/mL M4
3) t	n-Nonane (C9)	7.332	18747	0.017 ug/mL M4
4) t	n-Decane (C10)	9.772	79815	0.070 ug/mL M4
5) t	n-Undecane (C11)	12.261	76433	0.067 ug/mL M4
6) t	n-Dodecane (C12)	14.674	160505	0.135 ug/mL M4
7) t	n-Tridecane (C13)	16.971	150965	0.126 ug/mL M4
8) t	1380	18.648	58418	0.048 ug/mL M4
9) t	n-Tetradecane (C14)	19.147	146796	0.121 ug/mL M4
10) t	1470	20.422	576402G	0.476 ug/mL M4
11) t	n-Pentadecane (C15)	21.201	242946	0.201 ug/mL M4
12) t	n-Hexadecane (C16)	23.162	473271	0.384 ug/mL M4
13) t	1650	24.068	608737	0.509 ug/mL M4
14) t	n-Heptadecane (C17)	25.014	408833	0.342 ug/mL M4
15) t	Pristane	25.105	427142	0.336 ug/mL M4
16) t	n-Octadecane (C18)	26.753	11330593G	9.113 ug/mL M4
17) t	Phytane	26.925	2630008G	2.103 ug/mL M4
18) t	n-Nonadecane (C19)	28.461	288743	0.232 ug/mL M4
20) t	n-Eicosane (C20)	30.058	493787	0.388 ug/mL M4
21) t	n-Heneicosane (C21)	31.598	235300	0.186 ug/mL M4
22) t	n-Docosane (C22)	33.072	404111	0.317 ug/mL M4
23) t	n-Tricosane (C23)	34.474	1383807	1.064 ug/mL M4
25) t	n-Tetracosane (C24)	35.841	99425	0.078 ug/mL M4
26) t	n-Pentacosane (C25)	37.131	9119912G	6.995 ug/mL M4
27) t	n-Hexacosane (C26)	38.405	648333	0.502 ug/mL M4
28) t	n-Heptacosane (C27)	39.623	695085	0.547 ug/mL M4
29) t	n-Octacosane (C28)	40.796	147165	0.114 ug/mL M4
30) t	n-Nonacosane (C29)	41.944	2780770	2.163 ug/mL M4
31) t	n-Triacontane (C30)	43.001	519540	0.409 ug/mL M4
32) t	n-Hentriacontane (C31)	44.083	1024482	0.798 ug/mL M4
33) t	n-Dotriacontane (C32)	45.102	245267	0.192 ug/mL M4
34) t	n-Tritriacontane (C33)	46.107	584069	0.477 ug/mL M4
35) t	n-tetratriacontane (C34)	47.077	236343	0.187 ug/mL M4
36) t	n-Pentatriacontane (C35)	48.108	201939	0.157 ug/mL M4
39) t	n-Octatriacontane (C38)	52.217	268789	0.211 ug/mL M4

12-28-12

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\
Data File : C698472.D
Signal(s) : FID2B.CH
Acq On : 22 Dec 2012 7:30 am
Operator : JT
Sample : 1212022-03D
Misc : 1X
ALS Vial : 81 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Dec 28 05:11:38 2012
Quant Method : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Wed Dec 19 14:59:28 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB612171212R
Blank File : C698480.D

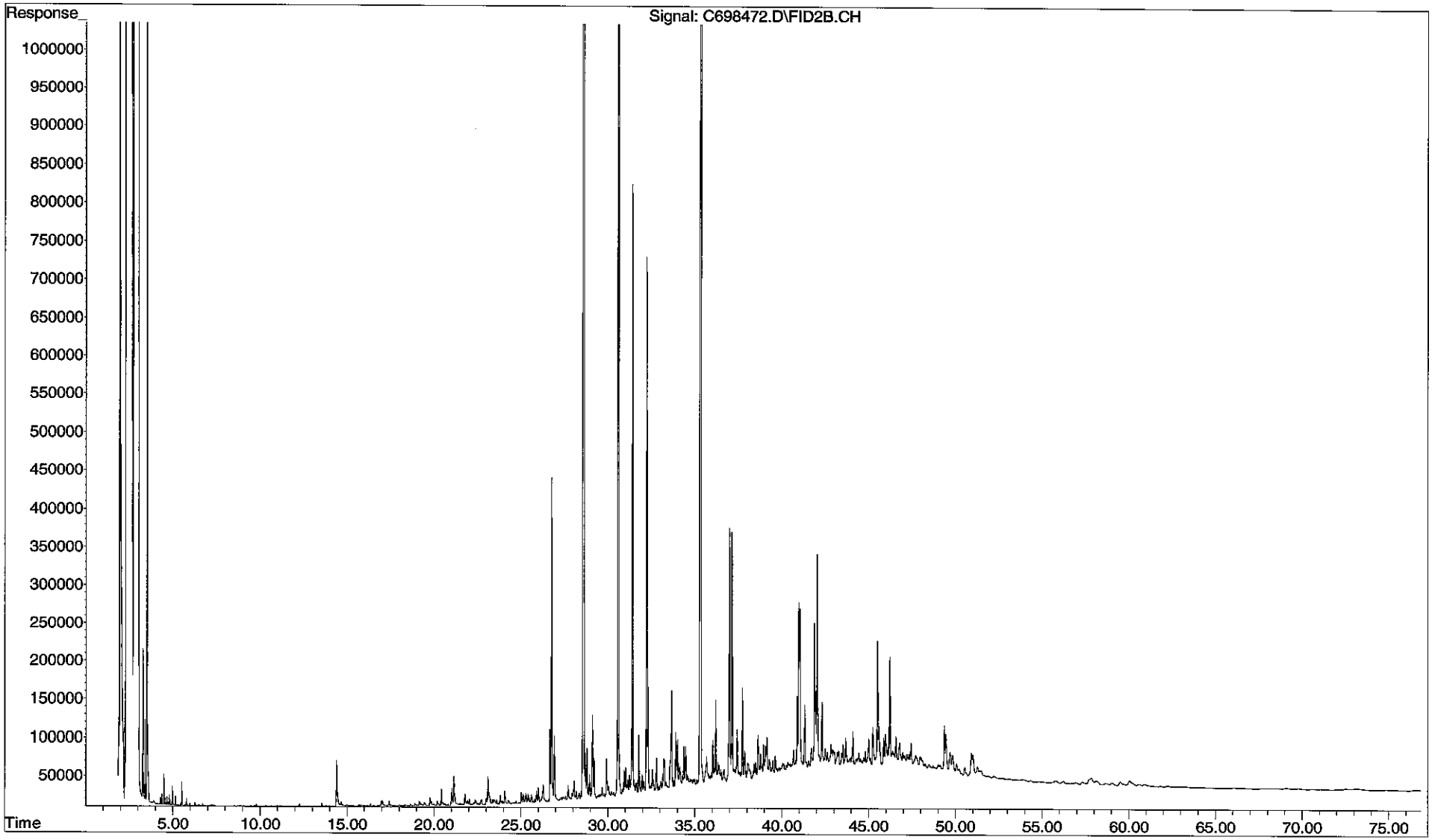
Sub List : SHC - SHC

		Compound	R.T.	Response	Conc	Units	
41)	t	n-Tetracontane (C40)	56.227	377291	0.314	ug/mL	M4
42)	h	C9-C44 Total Petroleu...	38.600	1304298713	1046.237	ug/mL	M4
42)	h	C9-C44 Total Petroleu BS	38.600	886211851	710.870	ug/mL	M4
45)	h	Total Resolved Hydroc...	38.600	271651739	217.904	ug/L	m

SemiQuant Compounds - Not Calibrated on this Instrument

(f)=RT Delta > 1/2 Window (m)=manual int.

File :O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\C698472.D
Operator : JT
Acquired : 22 Dec 2012 7:30 am using AcqMethod FID6A.M
Instrument : FID6
Sample : 1212022-03D
Misc Info : 1X
ALS Vial : 81



Form I
Cold Lake Crude
Total Saturated Hydrocarbons by GC/FID

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Cold Lake Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **TS122712CL01**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	N/A	12/22/12	100	0.10018	10	1	JT

Parameter	Result		Parameter	Result	
n-Nonane (C9)	**1750**		n-Tricosane (C23)	**198**	
n-Decane (C10)	**893**		n-Tetracosane (C24)	**180**	
n-Undecane (C11)	**844**		n-Pentacosane (C25)	**246**	
n-Dodecane (C12)	**585**		n-Hexacosane (C26)	**182**	
n-Tridecane (C13)	**694**		n-Heptacosane (C27)	**129**	
2,6,10 Trimethyldodecane (1380)	**283**		n-Octacosane (C28)	**139**	
n-Tetradecane (C14)	**697**		n-Nonacosane (C29)	**83.0**	J
2,6,10 Trimethyltridecane (1470)	**433**		n-Triacontane (C30)	**137**	
n-Pentadecane (C15)	**582**		n-Hentriacontane (C31)	**332**	
n-Hexadecane (C16)	**590**		n-Dotriacontane (C32)	**103**	
Norpristane (1650)	**212**		n-Tritriacontane (C33)	**72.9**	J
n-Heptadecane (C17)	**431**		n-Tetratriacontane (C34)	**84.4**	J
Pristane	**451**		n-Pentatriacontane (C35)	**116**	
n-Octadecane (C18)	**398**		n-Hexatriacontane (C36)	**101**	
Phytane	**312**		n-Heptatriacontane (C37)	**55.2**	J
n-Nonadecane (C19)	**310**		n-Octatriacontane (C38)	**88.9**	J
n-Eicosane (C20)	**317**		n-Nonatriacontane (C39)	**52.5**	J
n-Heneicosane (C21)	**221**		n-Tetracontane (C40)	**52.7**	J
n-Docosane (C22)	**220**				

Total Hydrocarbon Summary

Total Saturated Hydrocarbons	**12600**
Total Petroleum Hydrocarbons (C9-C44)	**457000**
Total Resolved Hydrocarbons	**65000**

Surrogate	% Recovery	Acceptance Range (%)
ortho-Terphenyl	100	40-125
d50-Tetracosane	90	40-125

N/A - Not Applicable
J - Estimated value, below quantitation limit.

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\
Data File : C698484.D
Signal(s) : FID2B.CH
Acq On : 22 Dec 2012 4:20 pm
Operator : JT
Sample : TS122712CL01
Misc : 1X WHAP16
ALS Vial : 87 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Dec 28 05:12:13 2012
Quant Method : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Wed Dec 19 14:59:28 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB612171213R
Blank File : C698492.D

Sub List : SHC - SHC

	Compound	R.T.	Response	Conc Units
	Internal Standards			
1) I	5-alpha-androstane	30.612	68362914	50.000 ug/mL M4
	System Monitoring Compounds			
19) s	ortho-terphenyl	28.603	73130466	49.974 ug/mL M4
Spiked Amount	50.000 Range	50 - 130	Recovery =	99.95%
24) s	d50-Tetracosane	35.329	53510784	45.040 ug/mL M4
Spiked Amount	50.000 Range	50 - 130	Recovery =	90.08%
	Target Compounds			
2) t	n-Octane (C8)	5.181	29180272	27.189 ug/mL M4
3) t	n-Nonane (C9)	7.327	19215748	17.538 ug/mL M4
4) t	n-Decane (C10)	9.771	10271900	8.948 ug/mL M4
5) t	n-Undecane (C11)	12.260	9735280	8.458 ug/mL M4
6) t	n-Dodecane (C12)	14.674	7014379	5.861 ug/mL M4
7) t	n-Tridecane (C13)	16.972	8382340	6.955 ug/mL M4
8) t	1380	18.649	3456209	2.838 ug/mL M4
9) t	n-Tetradecane (C14)	19.149	8504123	6.984 ug/mL M4
10) t	1470	20.438	5283535	4.340 ug/mL M4
11) t	n-Pentadecane (C15)	21.207	7092159	5.826 ug/mL M4
12) t	n-Hexadecane (C16)	23.162	7333983	5.909 ug/mL M4
13) t	1650	24.071	2553803	2.123 ug/mL M4
14) t	n-Heptadecane (C17)	25.018	5193800	4.318 ug/mL M4
15) t	Pristane	25.113	5774054	4.517 ug/mL M4
16) t	n-Octadecane (C18)	26.781	4984328	3.984 ug/mL M4
17) t	Phytane	26.939	3936589	3.128 ug/mL M4
18) t	n-Nonadecane (C19)	28.467	3900508	3.109 ug/mL M4
20) t	n-Eicosane (C20)	30.073	4074727	3.178 ug/mL M4
21) t	n-Heneicosane (C21)	31.608	2828170	2.217 ug/mL M4
22) t	n-Docosane (C22)	33.080	2824937	2.201 ug/mL M4
23) t	n-Tricosane (C23)	34.493	2591118	1.981 ug/mL M4
25) t	n-Tetracosane (C24)	35.851	2311229	1.803 ug/mL M4
26) t	n-Pentacosane (C25)	37.155	3235995	2.467 ug/mL M4
27) t	n-Hexacosane (C26)	38.412	2375740	1.827 ug/mL M4
28) t	n-Heptacosane (C27)	39.628	1655985	1.296 ug/mL M4
29) t	n-Octacosane (C28)	40.799	1800486	1.388 ug/mL M4
30) t	n-Nonacosane (C29)	41.932	1074930	0.831 ug/mL M4
31) t	n-Triacontane (C30)	43.028	1748520	1.368 ug/mL M4
32) t	n-Hentriacontane (C31)	44.094	4293496	3.324 ug/mL M4
33) t	n-Dotriacontane (C32)	45.114	1332618	1.035 ug/mL M4
34) t	n-Tritriacontane (C33)	46.114	899553	0.730 ug/mL M4
35) t	n-tetratriacontane (C34)	47.080	1076940	0.846 ug/mL M4
36) t	n-Pentatriacontane (C35)	48.124	1498548	1.158 ug/mL M4
37) t	n-Hexatriacontane (C36)	49.288	1337709	1.014 ug/mL M4

12-24-12

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\
Data File : C698484.D
Signal(s) : FID2B.CH
Acq On : 22 Dec 2012 4:20 pm
Operator : JT
Sample : TS122712CL01
Misc : 1X WHAP16
ALS Vial : 87 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Dec 28 05:12:13 2012
Quant Method : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Wed Dec 19 14:59:28 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB612171213R
Blank File : C698492.D

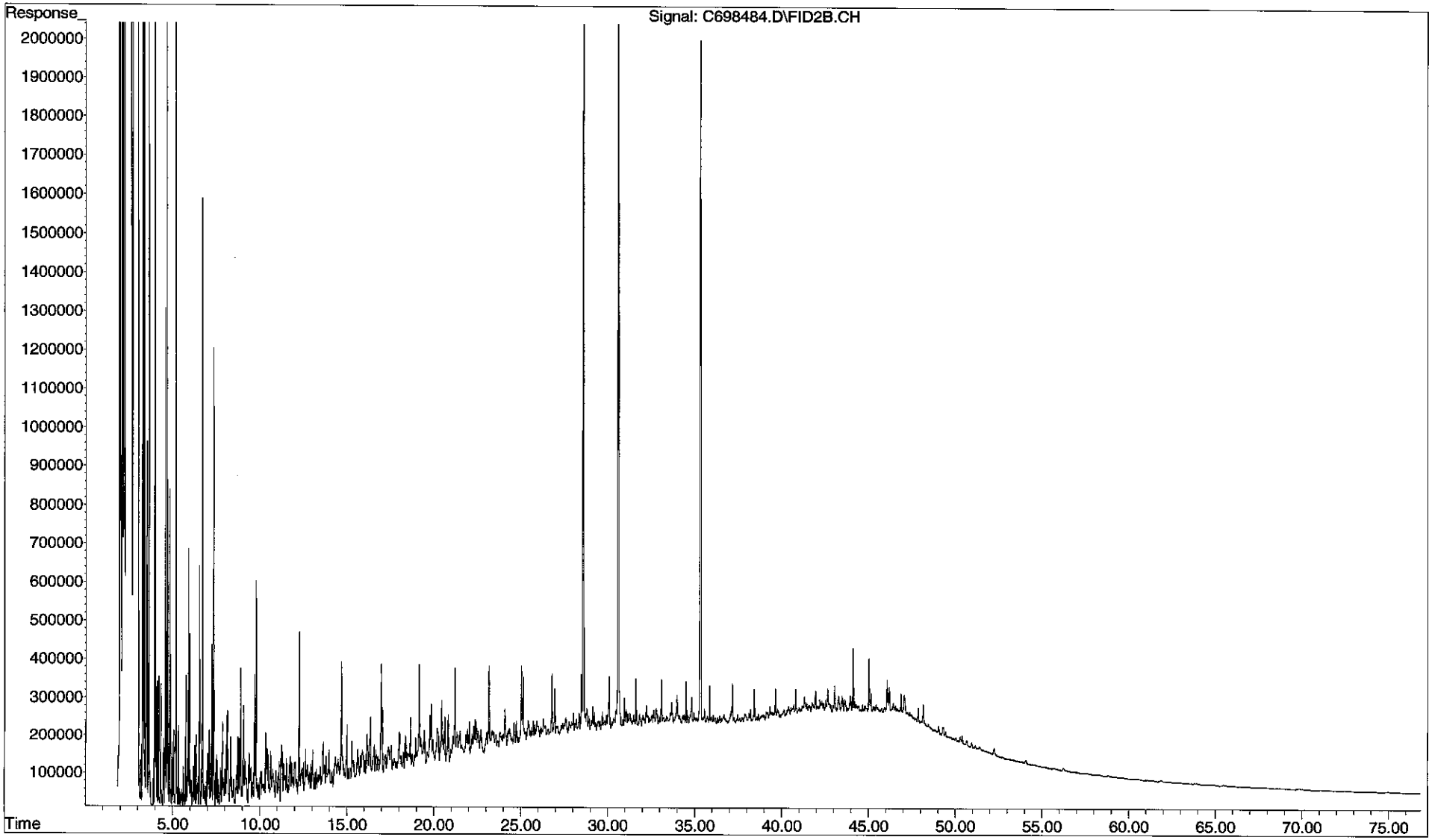
Sub List : SHC - SHC

		Compound	R.T.	Response	Conc	Units	
38)	t	n-Heptatriacontane (C37)	50.655	714575	0.553	ug/mL	M4
39)	t	n-Octatriacontane (C38)	52.237	1144362	0.891	ug/mL	M4
40)	t	n-Nonatriacontane (C39)	54.083	636557	0.526	ug/mL	M4
41)	t	n-Tetracontane (C40)	56.247	638541	0.528	ug/mL	M4
42)	h	C9-C44 Total Petroleu...	38.600	6231162306	4967.520	ug/mL	M4
42)	h	C9-C44 Total Petroleu BS	38.600	5736368390	4573.068	ug/mL	M4
45)	h	Total Resolved Hydroc...	38.600	817357745	651.603	ug/L	m

SemiQuant Compounds - Not Calibrated on this Instrument

(f)=RT Delta > 1/2 Window (m)=manual int.

File :O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\C698484.D
Operator : JT
Acquired : 22 Dec 2012 4:20 pm using AcqMethod FID6A.M
Instrument : FID6
Sample : TS122712CL01
Misc Info : 1X WHAP16
ALS Vial : 87



Form I
Western Canadian Select
Total Saturated Hydrocarbons by GC/FID

ALPHA ANALYTICAL

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Western Canadian Select**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **TS122712WCS01**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	N/A	12/22/12	100	0.10119	10	1	JT

Parameter	Result		Parameter	Result	
n-Nonane (C9)	**1650**		n-Tricosane (C23)	**203**	
n-Decane (C10)	**991**		n-Tetracosane (C24)	**187**	
n-Undecane (C11)	**955**		n-Pentacosane (C25)	**233**	
n-Dodecane (C12)	**609**		n-Hexacosane (C26)	**187**	
n-Tridecane (C13)	**680**		n-Heptacosane (C27)	**141**	
2,6,10 Trimethyldodecane (1380)	**303**		n-Octacosane (C28)	**113**	
n-Tetradecane (C14)	**698**		n-Nonacosane (C29)	**75.6**	J
2,6,10 Trimethyltridecane (1470)	**516**		n-Triacontane (C30)	**116**	
n-Pentadecane (C15)	**600**		n-Hentriacontane (C31)	**296**	
n-Hexadecane (C16)	**630**		n-Dotriacontane (C32)	**71.9**	J
Norpristane (1650)	**273**		n-Tritriacontane (C33)	**43.9**	J
n-Heptadecane (C17)	**466**		n-Tetratriacontane (C34)	**61.1**	J
Pristane	**675**		n-Pentatriacontane (C35)	**104**	
n-Octadecane (C18)	**407**		n-Hexatriacontane (C36)	**83.7**	J
Phytane	**348**		n-Heptatriacontane (C37)	**53.5**	J
n-Nonadecane (C19)	**314**		n-Octatriacontane (C38)	**76.6**	J
n-Eicosane (C20)	**292**		n-Nonatriacontane (C39)	98.8	U
n-Heneicosane (C21)	**230**		n-Tetracontane (C40)	98.8	U
n-Docosane (C22)	**254**				

Total Hydrocarbon Summary

Total Saturated Hydrocarbons	**12900**
Total Petroleum Hydrocarbons (C9-C44)	**472000**
Total Resolved Hydrocarbons	**68900**

Surrogate	% Recovery	Acceptance Range (%)
ortho-Terphenyl	99	40-125
d50-Tetracosane	94	40-125

N/A - Not Applicable
J - Estimated value, below quantitation limit.
U - The analyte was analyzed for but not detected at the sample specific level reported.

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\
Data File : C698482.D
Signal(s) : FID2B.CH
Acq On : 22 Dec 2012 2:52 pm
Operator : JT
Sample : TS122712WCS01
Misc : 1X WHAP15
ALS Vial : 86 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Dec 28 05:12:11 2012
Quant Method : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Wed Dec 19 14:59:28 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB612171213R
Blank File : C698492.D

Sub List : SHC - SHC

12-24-12

	Compound	R.T.	Response	Conc Units
	Internal Standards			
1) I	5-alpha-androstane	30.608	64104695	50.000 ug/mL M4
	System Monitoring Compounds			
19) s	ortho-terphenyl	28.601	68179958	49.686 ug/mL M4
Spiked Amount	50.000	Range 50 - 130	Recovery =	99.37%
24) s	d50-Tetracosane	35.328	52500092	47.124 ug/mL M4
Spiked Amount	50.000	Range 50 - 130	Recovery =	94.25%
	Target Compounds			
2) t	n-Octane (C8)	5.182	25108781	24.949 ug/mL M4
3) t	n-Nonane (C9)	7.327	17109438	16.653 ug/mL M4
4) t	n-Decane (C10)	9.771	10791467	10.025 ug/mL M4
5) t	n-Undecane (C11)	12.261	10431340	9.664 ug/mL M4
6) t	n-Dodecane (C12)	14.674	6914618	6.161 ug/mL M4
7) t	n-Tridecane (C13)	16.974	7782130	6.886 ug/mL M4
8) t	1380	18.648	3500515	3.066 ug/mL M4
9) t	n-Tetradecane (C14)	19.149	8071110	7.068 ug/mL M4
10) t	1470	20.435	5961210	5.222 ug/mL M4
11) t	n-Pentadecane (C15)	21.208	6925481	6.067 ug/mL M4
12) t	n-Hexadecane (C16)	23.161	7425077	6.380 ug/mL M4
13) t	1650	24.069	3112847	2.760 ug/mL M4
14) t	n-Heptadecane (C17)	25.018	5325049	4.721 ug/mL M4
15) t	Pristane	25.113	8186997	6.829 ug/mL M4
16) t	n-Octadecane (C18)	26.780	4824994	4.113 ug/mL M4
17) t	Phytane	26.938	4150238	3.517 ug/mL M4
18) t	n-Nonadecane (C19)	28.467	3740249	3.179 ug/mL M4
20) t	n-Eicosane (C20)	30.071	3557002	2.959 ug/mL M4
21) t	n-Heneicosane (C21)	31.609	2785547	2.329 ug/mL M4
22) t	n-Docosane (C22)	33.081	3097872	2.574 ug/mL M4
23) t	n-Tricosane (C23)	34.492	2524322	2.058 ug/mL M4
25) t	n-Tetracosane (C24)	35.850	2276184	1.894 ug/mL M4
26) t	n-Pentacosane (C25)	37.154	2894295	2.353 ug/mL M4
27) t	n-Hexacosane (C26)	38.415	2306654	1.892 ug/mL M4
28) t	n-Heptacosane (C27)	39.628	1708480	1.426 ug/mL M4
29) t	n-Octacosane (C28)	40.802	1395834	1.147 ug/mL M4
30) t	n-Nonacosane (C29)	41.930	928302	0.765 ug/mL M4
31) t	n-Triacontane (C30)	43.030	1407602	1.175 ug/mL M4
32) t	n-Hentriacontane (C31)	44.097	3631757	2.999 ug/mL M4
33) t	n-Dotriacontane (C32)	45.114	879658	0.728 ug/mL M4
34) t	n-Tritriacontane (C33)	46.109	513333	0.444 ug/mL M4
35) t	n-tetratriacontane (C34)	47.066	737123	0.618 ug/mL M4
36) t	n-Pentatriacontane (C35)	48.127	1282328	1.057 ug/mL M4
37) t	n-Hexatriacontane (C36)	49.253	1048209	0.847 ug/mL M4

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\
Data File : C698482.D
Signal(s) : FID2B.CH
Acq On : 22 Dec 2012 2:52 pm
Operator : JT
Sample : TS122712WCS01
Misc : 1X WHAP15
ALS Vial : 86 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Dec 28 05:12:11 2012
Quant Method : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Wed Dec 19 14:59:28 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB612171213R
Blank File : C698492.D

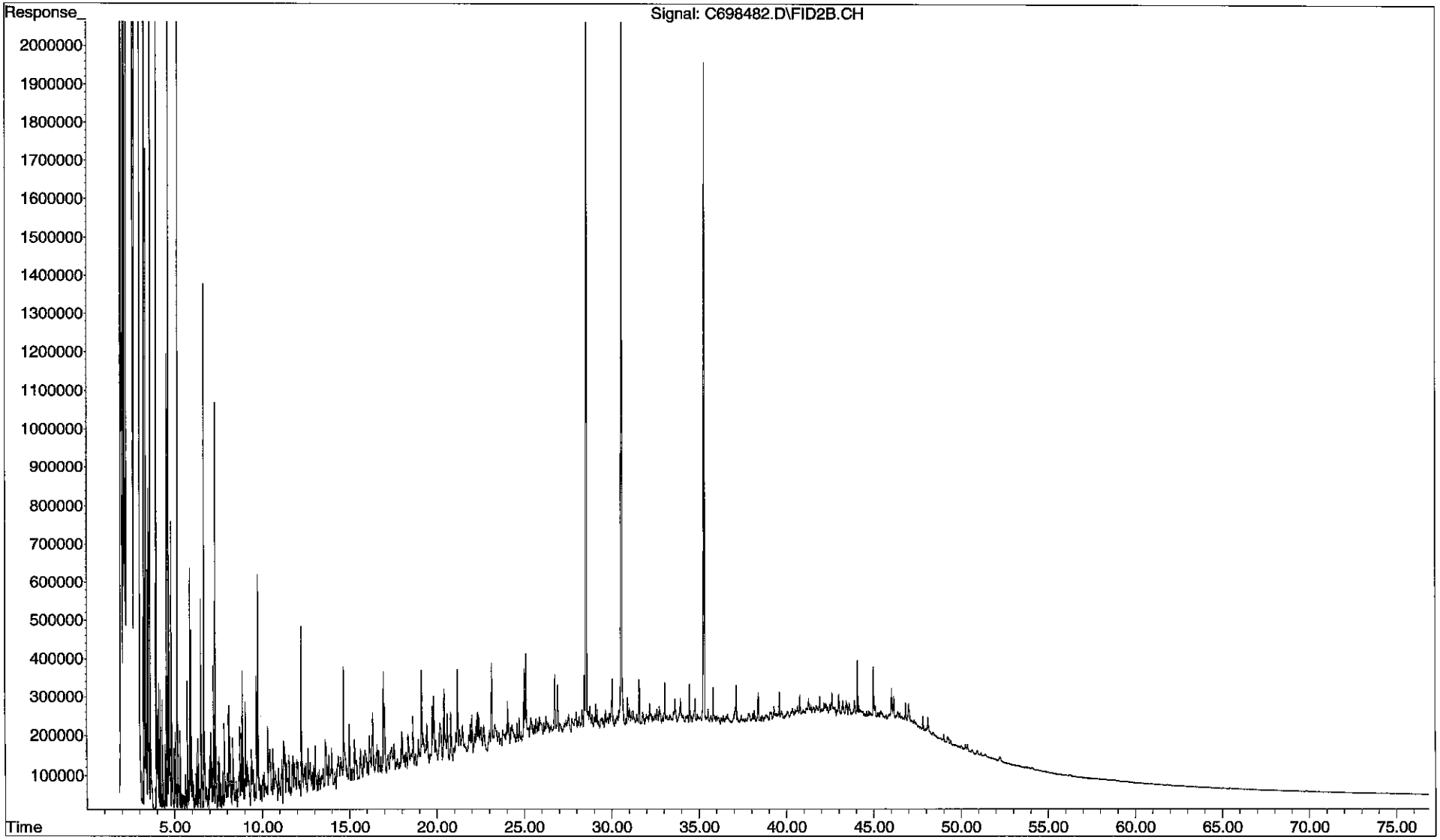
Sub List : SHC - SHC

		Compound	R.T.	Response	Conc	Units	
38)	t	n-Heptatriacontane (C37)	50.639	656198	0.541	ug/mL	M4
39)	t	n-Octatriacontane (C38)	52.234	934020	0.775	ug/mL	M4
42)	h	C9-C44 Total Petroleu...	38.600	6114647505	5198.436	ug/mL	M4
42)	h	C9-C44 Total Petroleu BS	38.600	5619853589	4777.782	ug/mL	M4
45)	h	Total Resolved Hydroc...	38.600	819979977	697.115	ug/L	m

SemiQuant Compounds - Not Calibrated on this Instrument

(f)=RT Delta > 1/2 Window (m)=manual int.

File :O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\C698482.D
Operator : JT
Acquired : 22 Dec 2012 2:52 pm using AcqMethod FID6A.M
Instrument : FID6
Sample : TS122712WCS01
Misc Info : 1X WHAP15
ALS Vial : 86



Form I
Alaska North Slope Crude
Total Saturated Hydrocarbons by GC/FID

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **TS122712ANC01**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	N/A	12/19/12	100	0.10102	10	1	JT

Parameter	Result	Parameter	Result
n-Nonane (C9)	7200	n-Tricosane (C23)	1960
n-Decane (C10)	5640	n-Tetracosane (C24)	1840
n-Undecane (C11)	5530	n-Pentacosane (C25)	1700
n-Dodecane (C12)	4540	n-Hexacosane (C26)	1510
n-Tridecane (C13)	4750	n-Heptacosane (C27)	1220
2,6,10 Trimethyldodecane (1380)	891	n-Octacosane (C28)	960
n-Tetradecane (C14)	4130	n-Nonacosane (C29)	776
2,6,10 Trimethyltridecane (1470)	1660	n-Triacontane (C30)	688
n-Pentadecane (C15)	4120	n-Hentriacontane (C31)	678
n-Hexadecane (C16)	3800	n-Dotriacontane (C32)	447
Norpristane (1650)	1220	n-Tritriacontane (C33)	313
n-Heptadecane (C17)	3530	n-Tetratriacontane (C34)	329
Pristane	2380	n-Pentatriacontane (C35)	316
n-Octadecane (C18)	3130	n-Hexatriacontane (C36)	211
Phytane	1410	n-Heptatriacontane (C37)	173
n-Nonadecane (C19)	2630	n-Octatriacontane (C38)	149
n-Eicosane (C20)	2530	n-Nonatriacontane (C39)	104
n-Heneicosane (C21)	2270	n-Tetracontane (C40)	95.4 J
n-Docosane (C22)	2260		

Total Hydrocarbon Summary

Total Saturated Hydrocarbons	77100
Total Petroleum Hydrocarbons (C9-C44)	628000
Total Resolved Hydrocarbons	199000

N/A - Not Applicable
J - Estimated value, below quantitation limit.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\
Data File : C698388.D
Signal(s) : FID2B.CH
Acq On : 19 Dec 2012 5:12 pm
Operator : JT
Sample : TS122712ANC01
Misc : 1X WHAR22
ALS Vial : 89 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Dec 28 05:14:40 2012
Quant Method : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Wed Dec 19 14:59:28 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB612171205R
Blank File : C698392.D

Sub List : SHC - SHC

	Compound	R.T.	Response	Conc Units
	Internal Standards			
1) I	5-alpha-androstane	30.620	58952933	50.000 ug/mL M4
	System Monitoring Compounds			
19) s	ortho-terphenyl	28.610	66570868	52.753 ug/mL M4
Spiked Amount	50.000	Range 50 - 130	Recovery =	105.51%
24) s	d50-Tetracosane	35.335	54038355	52.744 ug/mL M4
Spiked Amount	50.000	Range 50 - 130	Recovery =	105.49%
	Target Compounds			
2) t	n-Octane (C8)	5.202	91606518	98.978 ug/mL M4
3) t	n-Nonane (C9)	7.351	68698499	72.708 ug/mL M4
4) t	n-Decane (C10)	9.798	56429970	57.004 ug/mL M4
5) t	n-Undecane (C11)	12.288	55465009	55.877 ug/mL M4
6) t	n-Dodecane (C12)	14.700	47278793	45.808 ug/mL M4
7) t	n-Tridecane (C13)	16.999	49878506	47.993 ug/mL M4
8) t	1380	18.665	9449119	8.998 ug/mL M4
9) t	n-Tetradecane (C14)	19.174	43830003	41.739 ug/mL M4
10) t	1470	20.452	17625720	16.790 ug/mL M4
11) t	n-Pentadecane (C15)	21.232	43672667	41.602 ug/mL M4
12) t	n-Hexadecane (C16)	23.184	41139948	38.436 ug/mL M4
13) t	1650	24.084	12817402	12.357 ug/mL M4
14) t	n-Heptadecane (C17)	25.039	37022352	35.694 ug/mL M4
15) t	Pristane	25.132	26516648	24.053 ug/mL M4
16) t	n-Octadecane (C18)	26.802	34146243	31.650 ug/mL M4
17) t	Phytane	26.957	15408909	14.199 ug/mL M4
18) t	n-Nonadecane (C19)	28.486	28739421	26.561 ug/mL M4
20) t	n-Eicosane (C20)	30.091	28298126	25.596 ug/mL M4
21) t	n-Heneicosane (C21)	31.627	25209626	22.915 ug/mL M4
22) t	n-Docosane (C22)	33.097	25294304	22.849 ug/mL M4
23) t	n-Tricosane (C23)	34.509	22290623	19.762 ug/mL M4
25) t	n-Tetracosane (C24)	35.866	20563924	18.605 ug/mL M4
26) t	n-Pentacosane (C25)	37.170	19413446	17.160 ug/mL M4
27) t	n-Hexacosane (C26)	38.427	17149637	15.293 ug/mL M4
28) t	n-Heptacosane (C27)	39.639	13581160	12.326 ug/mL M4
29) t	n-Octacosane (C28)	40.808	10854542	9.701 ug/mL M4
30) t	n-Nonacosane (C29)	41.939	8747361	7.843 ug/mL M4
31) t	n-Triacontane (C30)	43.033	7656376	6.947 ug/mL M4
32) t	n-Hentriacontane (C31)	44.096	7634029	6.854 ug/mL M4
33) t	n-Dotriacontane (C32)	45.120	5013539	4.514 ug/mL M4
34) t	n-Tritriacontane (C33)	46.118	3361157	3.161 ug/mL M4
35) t	n-tetratriacontane (C34)	47.083	3647521	3.323 ug/mL M4
36) t	n-Pentatriacontane (C35)	48.123	3558432	3.188 ug/mL M4
37) t	n-Hexatriacontane (C36)	49.301	2420629	2.127 ug/mL M4

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\
Data File : C698388.D
Signal(s) : FID2B.CH
Acq On : 19 Dec 2012 5:12 pm
Operator : JT
Sample : TS122712ANC01
Misc : 1X WHAR22
ALS Vial : 89 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Dec 28 05:14:40 2012
Quant Method : O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Wed Dec 19 14:59:28 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB612171205R
Blank File : C698392.D

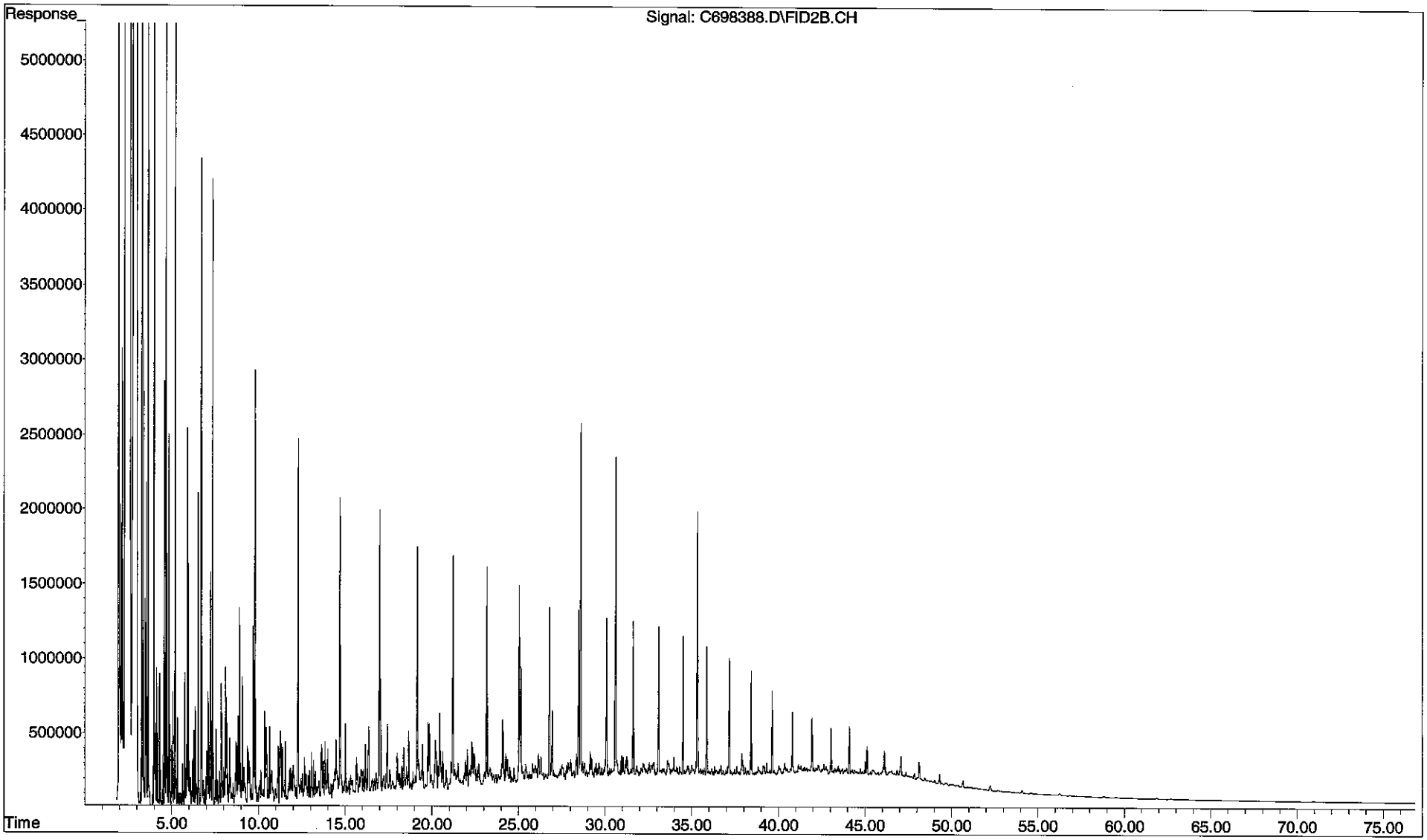
Sub List : SHC - SHC

	Compound	R.T.	Response	Conc	Units	
38) t	n-Heptatriacontane (C37)	50.651	1953098	1.752	ug/mL	M4
39) t	n-Octatriacontane (C38)	52.229	1663269	1.502	ug/mL	M4
40) t	n-Nonatriacontane (C39)	54.071	1094659	1.049	ug/mL	M4
41) t	n-Tetracontane (C40)	56.252	1005842	0.964	ug/mL	M4
42) h	C9-C44 Total Petroleu...	38.600	7485521376	6920.027	ug/mL	M4
42) h	C9-C44 Total Petroleu BS	38.600	6858546333	6340.417	ug/mL	M4
45) h	Total Resolved Hydroc...	38.600	2175496360	2011.148	ug/L	m

SemiQuant Compounds - Not Calibrated on this Instrument

(f)=RT Delta > 1/2 Window (m)=manual int.

File :O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\C698388.D
Operator : JT
Acquired : 19 Dec 2012 5:12 pm using AcqMethod FID6A.M
Instrument : FID6
Sample : TS122712ANC01
Misc Info : 1X WHAR22
ALS Vial : 89



Form I
Alaska North Slope Crude
Total Saturated Hydrocarbons by GC/FID

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1212022**
Lab ID: **TS110212ANC01**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	N/A	10/10/12	100	0.10058	10	1	JT

Parameter	Result	Parameter	Result
n-Nonane (C9)	**6500**	n-Tricosane (C23)	**1750**
n-Decane (C10)	**5290**	n-Tetracosane (C24)	**1670**
n-Undecane (C11)	**4950**	n-Pentacosane (C25)	**1720**
n-Dodecane (C12)	**4360**	n-Hexacosane (C26)	**1400**
n-Tridecane (C13)	**3950**	n-Heptacosane (C27)	**1070**
2,6,10 Trimethyldodecane (1380)	**906**	n-Octacosane (C28)	**780**
n-Tetradecane (C14)	**3700**	n-Nonacosane (C29)	**765**
2,6,10 Trimethyltridecane (1470)	**1460**	n-Triacontane (C30)	**610**
n-Pentadecane (C15)	**3820**	n-Hentriacontane (C31)	**478**
n-Hexadecane (C16)	**3180**	n-Dotriacontane (C32)	**545**
Norpristane (1650)	**1150**	n-Tritriacontane (C33)	**389**
n-Heptadecane (C17)	**2990**	n-Tetratriacontane (C34)	**354**
Pristane	**2160**	n-Pentatriacontane (C35)	**234**
n-Octadecane (C18)	**2810**	n-Hexatriacontane (C36)	**196**
Phytane	**1210**	n-Heptatriacontane (C37)	**159**
n-Nonadecane (C19)	**2430**	n-Octatriacontane (C38)	**128**
n-Eicosane (C20)	**2380**	n-Nonatriacontane (C39)	**94.4** J
n-Heneicosane (C21)	**2070**	n-Tetracontane (C40)	**99.6**
n-Docosane (C22)	**2000**		

Total Hydrocarbon Summary

Total Saturated Hydrocarbons	**69800**
Total Petroleum Hydrocarbons (C9-C44)	**579000**
Total Resolved Hydrocarbons	**201000**

N/A - Not Applicable
J - Estimated value, below quantitation limit.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID6\2012\OCT2012\OCT09.SEC\
Data File : C696982.D
Signal(s) : FID2B.CH
Acq On : 10 Oct 2012 3:31 am
Operator : JT
Sample : TS110212ANC01
Misc : WHAP13
ALS Vial : 63 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Oct 19 14:26:54 2012
Quant Method : O:\Forensics\Data\FID6\2012\OCT2012\OCT09.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Fri Oct 19 15:01:24 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB610091203R
Blank File : C696988.D

Sub List : SHC - SHC

11-6-12

	Compound	R.T.	Response	Conc Units
	Internal Standards			
1) I	5-alpha-androstane	31.169	71902143	50.000 ug/mL M4
	System Monitoring Compounds			
19) s	ortho-terphenyl	29.145	74489747	48.397 ug/mL M4
Spiked Amount	50.000 Range	50 - 130	Recovery =	96.79%
24) s	d50-Tetracosane	35.821	59938415	47.966 ug/mL M4
Spiked Amount	50.000 Range	50 - 130	Recovery =	95.93%
	Target Compounds			
2) t	n-Octane (C8)	5.546	102111967	90.459 ug/mL M4
3) t	n-Nonane (C9)	7.750	75297850	65.340 ug/mL M4
4) t	n-Decane (C10)	10.233	64248776	53.214 ug/mL M4
5) t	n-Undecane (C11)	12.741	60276355	49.788 ug/mL M4
6) t	n-Dodecane (C12)	15.164	55167542	43.825 ug/mL M4
7) t	n-Tridecane (C13)	17.468	50409823	39.769 ug/mL M4
8) t	1380	19.140	11665091	9.108 ug/mL M4
9) t	n-Tetradecane (C14)	19.648	47678202	37.226 ug/mL M4
10) t	1470	20.930	18734391	14.632 ug/mL M4
11) t	n-Pentadecane (C15)	21.711	49210633	38.435 ug/mL M4
12) t	n-Hexadecane (C16)	23.663	41788595	32.011 ug/mL M4
13) t	1650	24.567	14687246	11.610 ug/mL M4
14) t	n-Heptadecane (C17)	25.521	38097927	30.116 ug/mL M4
15) t	Pristane	25.616	29249207	21.753 ug/mL M4
16) t	n-Octadecane (C18)	27.286	37205845	28.275 ug/mL M4
17) t	Phytane	27.439	16156537	12.207 ug/mL M4
18) t	n-Nonadecane (C19)	28.971	32238838	24.429 ug/mL M4
20) t	n-Eicosane (C20)	30.575	32266598	23.930 ug/mL M4
21) t	n-Heneicosane (C21)	32.111	27881047	20.779 ug/mL M4
22) t	n-Docosane (C22)	33.584	27095249	20.068 ug/mL M4
23) t	n-Tricosane (C23)	34.995	24171613	17.570 ug/mL M4
25) t	n-Tetracosane (C24)	36.354	22645717	16.799 ug/mL M4
26) t	n-Pentacosane (C25)	37.654	23904645	17.325 ug/mL M4
27) t	n-Hexacosane (C26)	38.914	19263067	14.084 ug/mL M4
28) t	n-Heptacosane (C27)	40.125	14429591	10.738 ug/mL M4
29) t	n-Octacosane (C28)	41.292	10709895	7.848 ug/mL M4
30) t	n-Nonacosane (C29)	42.426	10469133	7.696 ug/mL m
31) t	n-Triacontane (C30)	43.517	8251301	6.138 ug/mL M4
32) t	n-Hentriacontane (C31)	44.575	6534798	4.811 ug/mL M4
33) t	n-Dotriacontane (C32)	45.600	7426749	5.483 ug/mL M4
34) t	n-Tritriacontane (C33)	46.601	5068941	3.909 ug/mL M4
35) t	n-tetratriacontane (C34)	47.594	4759824	3.556 ug/mL M4
36) t	n-Pentatriacontane (C35)	48.709	3199516	2.350 ug/mL M4
37) t	n-Hexatriacontane (C36)	49.978	2742042	1.976 ug/mL m

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID6\2012\OCT2012\OCT09.SEC\
Data File : C696982.D
Signal(s) : FID2B.CH
Acq On : 10 Oct 2012 3:31 am
Operator : JT
Sample : TS110212ANC01
Misc : WHAP13
ALS Vial : 63 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Oct 19 14:26:54 2012
Quant Method : O:\Forensics\Data\FID6\2012\OCT2012\OCT09.SEC\HC6100912R.M
Quant Title : FID Forensics
QLast Update : Fri Oct 19 15:01:24 2012
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB610091203R
Blank File : C696988.D

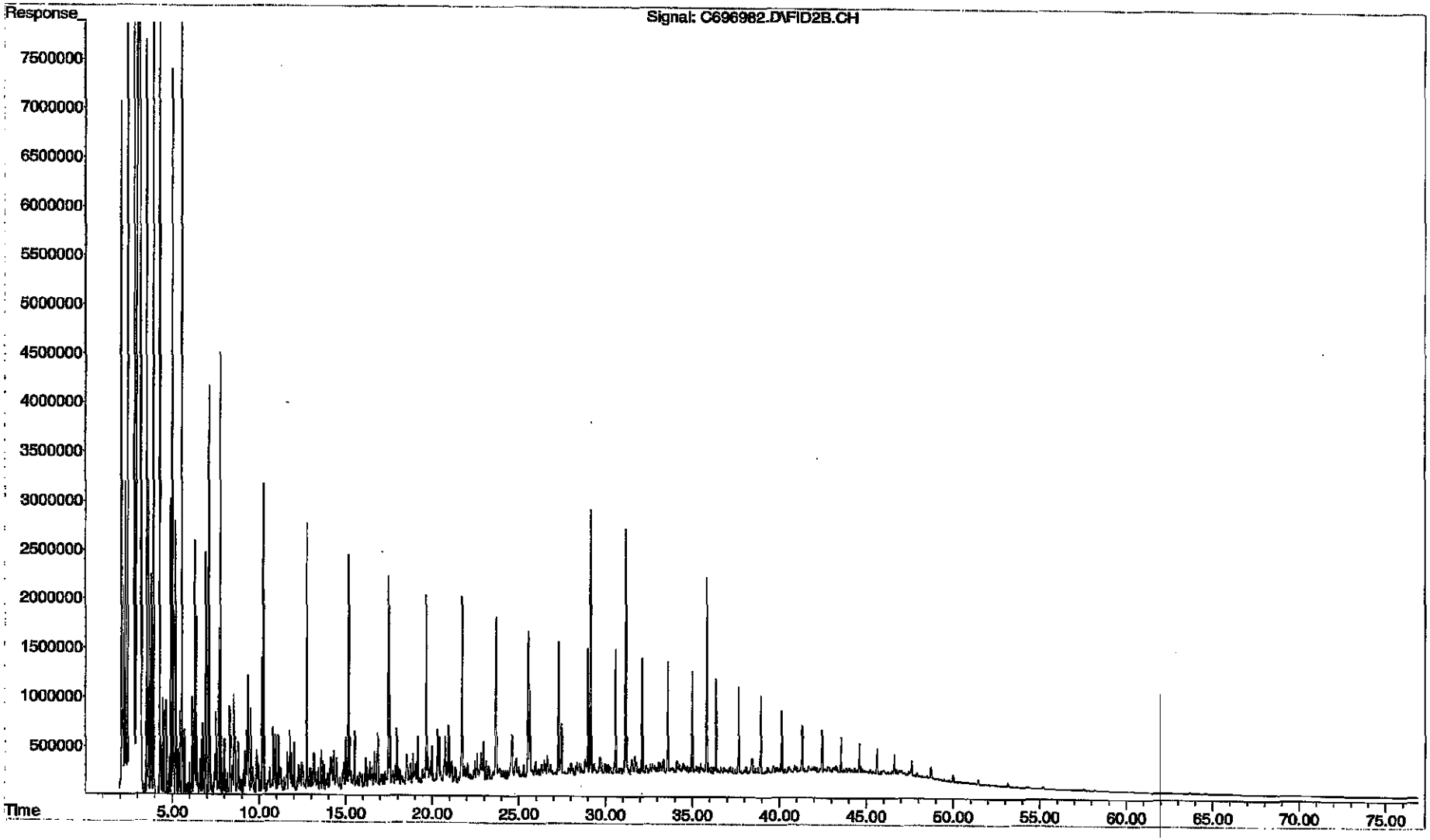
Sub List : SHC - SHC

	Compound	R.T.	Response	Conc	Units	
38) t	n-Heptatriacontane (C37)	51.451	2177791	1.602	ug/mL	M4
39) t	n-Octatriacontane (C38)	53.163	1735847	1.285	ug/mL	M4
40) t	n-Nonatriacontane (C39)	55.173	1208017	0.949	ug/mL	M4
41) t	n-Tetracontane (C40)	57.547	1275942	1.002	ug/mL	m
42) h	C9-C44 Total Petroleu...	40.125	8407455076	6372.559	ug/mL	M4
42) h	C9-C44 Total Petroleu BS	40.125	7680047739	5821.210	ug/mL	M4
45) h	Total Resolved Hydroc...	40.000	2662322462	2017.948	ug/L	m

SemiQuant Compounds - Not Calibrated on this Instrument

(f)=RT Delta > 1/2 Window (m)=manual int.

File :O:\Forensics\Data\FID6\2012\OCT2012\OCT09.SEC\C696982.D
Operator : JT
Acquired : 10 Oct 2012 3:31 am using AcqMethod FID6A.M
Instrument : FID6
Sample : TS110212ANC01
Misc Info : WHAP13
ALS Vial : 63



Alpha Woods Hole Lab
Batch Weight Report
12/18/2012

Lab ID	QC Type	PS1212022 - Pan Weight	PS1212022 - Wet Weight	PS1212022 - Dry Weight	PS1212022 - Dry Weight #2	PS1212022 - Dry Weight #3	Percent Solid	RPD
1212022-01	SAM	1.34	8.87	7.24	7.23		78.22	
1212022-02	SAM	1.35	10.78	8.86	8.85		79.53	
1212022-03	D	1.34	9.62	7.85	7.84		78.50	0.62%
1212022-03	SAM	1.34	9.67	7.93	7.92		78.99	
1212022-04	SAM	1.35	8.88	6.99	6.97		74.63	
PSS121812B02	B	1.34	1.34	1.33	1.33		100.00	

Initial: 12/18/2012 11:48:13 AM dm
Weight #1: 12/21/2012 4:00:17 PM amk
Weight #2: 12/26/2012 6:55:22 PM GV

Alpha Woods Hole Lab
Batch Prep Report
12/18/2012 1212022X - OP SHC

Lab ID	QC Type	Prep Method	Analyst	Prep Start Date	Prep Completed Date	TCLP	Initial Amount (g or ml)	Split	PIV (ml)	Final Volume (ml)	Solvent Ex	Conc. Analyst	Conc. Date	Conc. Method	Transfer Volume (ml)	Vialed By	Vialed Date
1212022-01	SAM	Shaker	DM	12/20/2012	12/20/2012		15.95	4	0.5	2	False	DB	12/19/2012	KD Flask	0.1	GV	12/20/2012
1212022-02	M	Shaker	DM	12/20/2012	12/20/2012		15.22	4	0.5	2	False	DB	12/19/2012	KD Flask	0.1	GV	12/20/2012
1212022-02	S	Shaker	DM	12/20/2012	12/20/2012		15.13	4	0.5	2	False	DB	12/19/2012	KD Flask	0.1	GV	12/20/2012
1212022-02	SAM	Shaker	DM	12/20/2012	12/20/2012		15.11	4	0.5	2	False	DB	12/19/2012	KD Flask	0.1	GV	12/20/2012
1212022-03	D	Shaker	DM	12/20/2012	12/20/2012		15.44	4	0.5	2	False	DB	12/19/2012	KD Flask	0.1	GV	12/20/2012
1212022-03	SAM	Shaker	DM	12/20/2012	12/20/2012		15.46	4	0.5	2	False	DB	12/19/2012	KD Flask	0.1	GV	12/20/2012
1212022-04	SAM	Shaker	DM	12/20/2012	12/20/2012		15.18	4	0.5	2	False	DB	12/19/2012	KD Flask	0.1	GV	12/20/2012
SS121812B06	B	Shaker	DM	12/20/2012	12/20/2012		15	4	0.5	2	False	DB	12/19/2012	KD Flask	0.1	GV	12/20/2012
SS121812C41BN02	C41BN	Shaker	DM	12/20/2012	12/20/2012		5	4	0.5	2	False	DB	12/19/2012	KD Flask	0.1	GV	12/20/2012
SS121812LCS06	LCS	Shaker	DM	12/20/2012	12/20/2012		15	4	0.5	2	False	DB	12/19/2012	KD Flask	0.1	GV	12/20/2012
SS121812LCSD06	LCSD	Shaker	DM	12/20/2012	12/20/2012		15	4	0.5	2	False	DB	12/19/2012	KD Flask	0.1	GV	12/20/2012

Alpha Woods Hole Lab
Batch Prep Spike Report

12/18/2012 1212022X - OP NEWFIE Analyst: CTK Witness: AMK

Lab ID	QC Type	OP NEWFIE - surr	Vol OP NEWFIE - surr	Units OP NEWFIE - surr	OP NEWFIE - spk 1	Vol OP NEWFIE - spk 1	Units OP NEWFIE - spk 1	OP NEWFIE - spk 2	Vol OP NEWFIE - spk 2	Units OP NEWFIE - spk 2
1212022-01	SAM	WHAR19	500	µl	WHAQ92	500	µl			
1212022-02	M	WHAR19	500	µl	WHAQ92	500	µl	WHAR09	500	µl
1212022-02	S	WHAR19	500	µl	WHAQ92	500	µl	WHAR09	500	µl
1212022-02	SAM	WHAR19	500	µl	WHAQ92	500	µl			
1212022-03	D	WHAR19	500	µl	WHAQ92	500	µl			
1212022-03	SAM	WHAR19	500	µl	WHAQ92	500	µl			
1212022-04	SAM	WHAR19	500	µl	WHAQ92	500	µl			
SS121812B06	B	WHAR19	100	µl	WHAQ92	100	µl			
SS121812C41BN02	C41BN	WHAR19	100	µl	WHAQ92	100	µl			
SS121812LCS06	LCS	WHAR19	100	µl	WHAQ92	100	µl	WHAR09	100	µl
SS121812LCSD06	LCSD	WHAR19	100	µl	WHAQ92	100	µl	WHAR09	100	µl

STD ID	TITLE	CONTENTS	SOLVENT	LOT
WHAQ92	Biomarker Surrogate	5b(H) Cholane = 10 ug/mL	DCM	0000020593
WHAR09	PAH/SHC LCS Spike Solution	Aromatic Hydrocarbon Std (for LCS) = 10 ug/mL MA EPH Aliphatic Hydrocarbon = 200 ug/mL	DCM	0000014877
WHAR19	Surrogate PAH/SHC Solution	Custom Deuterated PAH Surrogate = 10 ug/mL n-Tetracosane = 506.7 ug/mL OTP Stock Solution = 500 ug/mL	DCM	0000014877

Alpha Woods Hole Lab
Batch Prep Spike Report

12/18/2012 1212022X - OP SHC Analyst: CTK Witness: AMK

Lab ID	QC Type	OP SHC - surr	Vol OP SHC - surr	Units OP SHC - surr	OP SHC - spk 1	Vol OP SHC - spk 1	Units OP SHC - spk 1	OP SHC - spk 2	Vol OP SHC - spk 2	Units OP SHC - spk 2
1212022-01	SAM	WHAR19	500	µl				WHAQ91	50	µl
1212022-02	M	WHAR19	500	µl	WHAR09	500	µl	WHAQ91	50	µl
1212022-02	S	WHAR19	500	µl	WHAR09	500	µl	WHAQ91	50	µl
1212022-02	SAM	WHAR19	500	µl				WHAQ91	50	µl
1212022-03	D	WHAR19	500	µl				WHAQ91	50	µl
1212022-03	SAM	WHAR19	500	µl				WHAQ91	50	µl
1212022-04	SAM	WHAR19	500	µl				WHAQ91	50	µl
SS121812B06	B	WHAR19	100	µl				WHAQ91	50	µl
SS121812C41BN02	C41BN	WHAR19	100	µl				WHAQ91	50	µl
SS121812LCS06	LCS	WHAR19	100	µl	WHAR09	100	µl	WHAQ91	50	µl
SS121812LCSD06	LCSD	WHAR19	100	µl	WHAR09	100	µl	WHAQ91	50	µl

STD ID	TITLE	CONTENTS	SOLVENT	LOT
WHAQ91	PAH/SHC RIS Spiking Solution	5 Alpha Androstane = 500 ug/mL Acenaphthene-d10, Chrysene-d12 = 5 ug/mL	DCM	. 0000020593
WHAR09	PAH/SHC LCS Spike Solution	Aromatic Hydrocarbon Std (for LCS) = 10 ug/mL MA EPH Aliphatic Hydrocarbon = 200 ug/mL	DCM	0000014877
WHAR19	Surrogate PAH/SHC Solution	Custom Deuterated PAH Surrogate = 10 ug/mL n-Tetracosane = 506.7 ug/mL OTP Stock Solution = 500 ug/mL	DCM	0000014877

Alpha Woods Hole Lab
Batch Weight Report
12/18/2012

Lab ID	QC Type	1212022X - Sample
1212022-01	SAM	15.95
1212022-02	SAM	15.11
1212022-02M	OP NEWFIE	15.22
1212022-02M	OP SHC	15.22
1212022-02S	OP NEWFIE	15.13
1212022-02S	OP SHC	15.13
1212022-03	D	15.44
1212022-03	SAM	15.46
1212022-04	SAM	15.18
SS121812B06	B	15
SS121812C41BN02	C41BN	5
SS121812LCS06LCS	OP NEWFIE	15
SS121812LCS06LCS	OP SHC	15
SS121812LCSD06LCSD	OP NEWFIE	15
SS121812LCSD06LCSD	OP SHC	15

ETR 1212022x

Analyst BA

Date 12/20/2012

Alpha Analytical

- ☐ Pre-Alumina
- ☐ Post-Alumina
- ☑ Pre-Silica
- ☐ Oily Material Prep.
- ☐ Other

ETR	Lab ID	QC	Extract Volume (µL)	Aliquot Removed (µL)	Aliquot Weight (mg)	Total Extract Weight (mg)	Volume Removed for Column (µl)	Extract Weight to Column (mg)	Split Factor	QC (%R)
	WHAR21	Gravimetric Standard	10000	50	0.251	50.20	N/A	N/A	N/A	100%
1212022	1		4000	50	0.046	3.68	2000	1.84	2.00	
1212043	2		4000	50	0.058	4.64	2000	2.32	2.00	
1212043	2ms	ms	4000	50	0.063	5.04	2000	2.52	2.00	
1212043	2msd	msd	4000	50	0.077	6.16	2000	3.08	2.00	
1212043	3D	D	4000	50	0.058	4.64	2000	2.32	2.00	13%RPD
1212043	3		4000	50	0.066	5.28	2000	2.64	2.00	
1212043	4		4000	50	0.104	8.32	2000	4.16	2.00	

Note:

Total Extract Weight (mg) = (Extract Volume ÷ Aliquot Removed) (Aliquot Weight)

Gravimetric Standard = 5 mg/mL

LCS Acceptance Criteria: 95% - 105%

Verified by: BS

Date: 12/26/12

ETR 1212022x

Analyst BA

Date 12/20/2012

Alpha Analytical

- ☐ Pre-Alumina
- ☐ Post-Alumina
- ☑ Pre-Silica
- ☐ Oily Material Prep.
- ☐ Other

ETR	Lab ID	QC	Extract Volume (µL)	Aliquot Removed (µL)	Aliquot Weight (mg)	Total Extract Weight (mg)	Volume Removed for Column (µl)	Extract Weight to Column (mg)	Split Factor	QC (%R)
	WHAR21	Gravimetric Standard	10000	50	0.251		N/A	N/A	N/A	0%
1212022	1		4000	50	0.046					
1212043	2		4000	50	0.058					
1212043	2ms	ms	4000	50	0.063					
1212043	2msd	msd	4000	50	0.077					
1212043	3D	D	4000	50	0.058					#VALUE!
1212043	3		4000	50	0.066					
1212043	4		4000	50	0.104					

Note:

Total Extract Weight (mg) = (Extract Volume ÷ Aliquot Removed) (Aliquot Weight)

Gravimetric Standard = 5 mg/mL

LCS Acceptance Criteria: 95% - 105%

Verified by: BA

Date: 12/20/12

Alpha Woods Hole Lab
Batch Clean Up Report
12/18/2012 1212022X - OP SHC

Lab ID	QC Type	Clean Up Method	Analyst	Clean Up Date	Flow Rate	Coll. Start	Coll. End	Concentration Analyst	Conc. Date	Solvent Ex.	Pre Vol (ml)	Frac Amt (ml)	Frac Split	Frac Fact	Tran Vol (ml)	Active
1212022-01	SAM	3660B	WR	12/19/2012												True
1212022-02	M	3660B	WR	12/19/2012												True
1212022-02	S	3660B	WR	12/19/2012												True
1212022-02	SAM	3660B	WR	12/19/2012												True
1212022-03	D	3660B	WR	12/19/2012												True
1212022-03	SAM	3660B	WR	12/19/2012												True
1212022-04	SAM	3660B	WR	12/19/2012												True
SS121812B06	B	3660B	WR	12/19/2012												True
SS121812C41BN02	C41BN	3660B	WR	12/19/2012												True
SS121812LCS06	LCS	3660B	WR	12/19/2012												True
SS121812LCSD06	LCSD	3660B	WR	12/19/2012												True

Alpha Woods Hole Lab
Batch Clean Up Report
12/18/2012 1212022X - OP SHC

Lab ID	QC Type	Clean Up Method	Analyst	Clean Up Date	Flow Rate	Coll. Start	Coll. End	Concentration Analyst	Conc. Date	Solvent Ex.	Pre Vol (ml)	Frac Amt (ml)	Frac Split	Frac Fact	Tran Vol (ml)	Active
1212022-01	SAM	3630	BA	12/20/2012				BA	12/20/2012	False	4	2	2			True
1212022-02	M	3630	BA	12/20/2012				BA	12/20/2012	False	4	2	2			True
1212022-02	S	3630	BA	12/20/2012				BA	12/20/2012	False	4	2	2			True
1212022-02	SAM	3630	BA	12/20/2012				BA	12/20/2012	False	4	2	2			True
1212022-03	D	3630	BA	12/20/2012				BA	12/20/2012	False	4	2	2			True
1212022-03	SAM	3630	BA	12/20/2012				BA	12/20/2012	False	4	2	2			True
1212022-04	SAM	3630	BA	12/20/2012				BA	12/20/2012	False	4	2	2			True
SS121812B06	B	3630	BA	12/20/2012				BA	12/20/2012	False	4	2	2			True
SS121812C41BN02	C41BN	3630	BA	12/20/2012				BA	12/20/2012	False	4	2	2			True
SS121812LCS06	LCS	3630	BA	12/20/2012				BA	12/20/2012	False	4	2	2			True
SS121812LCSD06	LCSD	3630	BA	12/20/2012				BA	12/20/2012	False	4	2	2			True

Alpha Woods Hole Lab
Batch Clean Up Report
12/18/2012 1212022X - OP SHC

Lab ID	QC Type	Clean Up Method	Analyst	Clean Up Date	Flow Rate	Coll. Start	Coll. End	Concentration Analyst	Conc. Date	Solvent Ex.	Pre Vol (ml)	Frac Amt (ml)	Frac Split	Frac Fact	Tran Vol (ml)	Active
1212022-01	SAM	split	GV	12/20/2012							0.9	0.45	2			True
1212022-02	M	split	GV	12/20/2012							0.9	0.45	2			True
1212022-02	S	split	GV	12/20/2012							0.9	0.45	2			True
1212022-02	SAM	split	GV	12/20/2012							0.9	0.45	2			True
1212022-03	D	split	GV	12/20/2012							0.9	0.45	2			True
1212022-03	SAM	split	GV	12/20/2012							0.9	0.45	2			True
1212022-04	SAM	split	GV	12/20/2012							0.9	0.45	2			True
SS121812B06	B	split	GV	12/20/2012							0.9	0.45	2			True
SS121812C41BN02	C41BN	split	GV	12/20/2012							0.9	0.45	2			True
SS121812LCS06	LCS	split	GV	12/20/2012							0.9	0.45	2			True
SS121812LCSD06	LCSD	split	GV	12/20/2012							0.9	0.45	2			True

DWH Forensic Preparation Checklist

Batch ID: 1212022X **Client:** AECOM **Project:** Enbridge

Anomalies are noted in the Prep Process Notes section below.

Test(s) Spiked for: Choose from the following:
F1B, POIB, POIH, POIHX, POITAS, TPH+A

Identify Matrix:
Filter • Filter (L) • NAPL • Net • Oil Product • PUF • Sediment • Sheen Soil • Solid • SPMD • Tissue Pom Pom • 1L Water • 4L Water • Floc Water

Extraction HT:
12/13/2013

	Date:	Initials:
COC/ETR Check:	12/18/12	DM
1st Extraction:	12/18/12	CTK
2nd Extraction:	12/18/12	GV
3rd Extraction:	12/19/12	JM

Cleanup Methods:		Date/Initials:
No Cleanup Required		
Alumina Column (3610)	~~X~~	
Silica Column (3630)	X	BA 12/20/12
Fractionation Column (3630F1)		
GPC (3640)		
Copper (3660B)	X	WR 12/19/12
Water pH<2 verified		

	Date/Initials:	ID & Amount:
RIS Spike Analyst:	12/20/12 WR	WHAQ11 5ug/500mL
RIS Spike Witness:	12/20/12 GV	

Prep Process Notes

- All samples weighed low and spiked high after observing first extraction. DM 12/18/12

REAGENT	LOT#
DCM	000002697 9
SODIUM SULFATE	000001340 4
SILICA GEL	BCBH9151V
ALUMINA	NA

REAGENT	LOT#
COPPER	OWR121912B
GLASS WOOL	34310002

BATCH COMPLETE Analyst:	GV	Date:	12/20/12
BATCH REVIEWED Analyst:	JB	Date:	12/26/12

DWH Forensic Preparation Checklist

Batch ID: 1212022X **Client:** AECOM **Project:** Enbridge

Prep Process Notes								
Sample ID	Low Volume	High H2O	Plant Material	Other	Difficult to homogenize	Observable Hydrocarbon	Hydrocarbon Odor	Spiked High
1				Shells/rocks	✓			✓
2				Shells/rocks	✓			✓
3				Shells/rocks	✓			✓
4				Shells/rocks	✓		✓	✓

Present ✓

Analysis log File

Total Files Reported in Log : 17
Log Generated From Directory: O:\Forensics\Data\FID6\2012\OCT2012\OCT09.SEC\

GA 11-6-12

No.	DATA FILE	SAMPLE NAME	MISC	DATE INJ'D
1	C696958.D	DCM	DCM	10/9/2012 9:17 am
2	C696960.D	C610091201R	WHAQ51	10/9/2012 10:49 am
3	C696962.D	DCM	DCM	10/9/2012 12:20 pm
4	C696964.D	IB610091201R	DCM	10/9/2012 1:52 pm
5	C696966.D	I610091201R	WHAO93	10/9/2012 3:24 pm
6	C696968.D	I610091202R	WHAP92	10/9/2012 4:55 pm
7	C696970.D	I610091203R	WHAQ51	10/9/2012 6:26 pm
8	C696972.D	I610091204R	WHAO96	10/9/2012 7:57 pm
9	C696974.D	I610091205R	WHAO96	10/9/2012 9:28 pm
10	C696976.D	I610091206R	WHAP58	10/9/2012 10:58 pm
11	C696978.D	IB610091202R	DCM	10/10/2012 12:29 am
12	C696980.D	CQ610091201R	WHAQ27	10/10/2012 2:01 am
13	C696982.D	TS110212ANC01	WHAP13	10/10/2012 3:31 am
14	C696984.D	TS101912MC204	WHAP35	10/10/2012 5:02 am
15	C696986.D	DCM	DCM	10/10/2012 6:33 am
16	C696988.D	IB610091203R	DCM	10/10/2012 8:05 am
17	C696990.D			10/10/2012 9:36 am

DATA files for METHOD HC6100912R.m

CQ610091201R – ICV ✓ PASS
TS110212ANC01 – ANS ✓ PASS
TS101912MC204 – MC25L ✓ PASS
IB610091203R – IB for ANS + MC25L

METHOD: HC6100912R.m

Printed: 11/06/12

CCV = 50 ug/ml WHAQ57

Page: 1

Analysis log File

DNP 12/28/12

Total Files Reported in Log : 91
Log Generated From Directory: O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\

No.	DATA FILE	SAMPLE NAME	MISC	DATE INJ'D
1	C698312.D	C612171201R	WHAR04	12/17/2012 7:57 am
2	C698314.D	DCM	DCM	12/17/2012 9:26 am
3	C698316.D	IB612171201R	DCM	12/17/2012 11:21 am
4	C698318.D	TS121112B02	1X	12/17/2012 12:51 pm
5	C698320.D	TS121112LCS02	1X	12/17/2012 2:21 pm
6	C698322.D	TS121112LCSD02	1X	12/17/2012 3:50 pm
7	C698324.D	IB612171202R	DCM	12/17/2012 5:20 pm
8	C698326.D	1212004-01	1X	12/17/2012 6:49 pm
9	C698328.D	1212004-02	1X	12/17/2012 8:19 pm
10	C698330.D	1212004-03	1X	12/17/2012 9:48 pm
11	C698332.D	1212004-04	1X	12/17/2012 11:18 pm
12	C698334.D	1212004-05	1X	12/18/2012 12:47 am
13	C698336.D	1212004-06	1X	12/18/2012 2:16 am
14	C698338.D	1212004-06D	1X	12/18/2012 3:46 am
15	C698340.D	C612171202R	WHAR04	12/18/2012 5:15 am
16	C698342.D	DCM	DCM	12/18/2012 6:46 am
17	C698344.D	IB612171203R	DCM	12/18/2012 8:16 am
18	C698346.D	1212004-07	1X	12/18/2012 9:46 am
19	C698348.D	1212004-08	1X	12/18/2012 11:18 am
20	C698350.D	1212004-09	1X	12/18/2012 12:49 pm
21	C698352.D	1212004-10	1X	12/18/2012 2:21 pm
22	C698354.D	1212004-11	1X	12/18/2012 3:52 pm
23	C698356.D	1212004-12	1X	12/18/2012 5:23 pm
24	C698358.D	1212004-13	1X	12/18/2012 6:54 pm
25	C698360.D	C612171203R	WHAR04	12/18/2012 8:24 pm
26	C698362.D	DCM	DCM	12/18/2012 9:54 pm
27	C698364.D	IB612171204R	DCM	12/18/2012 11:24 pm
28	C698366.D	1212004-14	1X	12/19/2012 12:54 am
29	C698368.D	1212004-15	1X	12/19/2012 2:24 am
30	C698370.D	1212004-16	1X	12/19/2012 3:53 am
31	C698372.D	1212004-17	1X	12/19/2012 5:22 am
32	C698374.D	1212004-18	1X	12/19/2012 6:51 am
33	C698376.D	1212004-19	1X	12/19/2012 8:19 am
34	C698378.D	C612171204R	WHAR04	12/19/2012 9:48 am
35	C698380.D	ANS	WHAR22	12/19/2012 11:17 am
36	C698382.D	SPIKE CHECK	1X	12/19/2012 12:46 pm
37	C698384.D	DCM	DCM	12/19/2012 2:15 pm
38	C698386.D	✓C612171205R	WHAR04	12/19/2012 3:44 pm
39	C698388.D	✓TS122712ANC01	1X WHAR22	12/19/2012 5:12 pm
40	C698390.D	DCM	DCM	12/19/2012 6:41 pm
41	C698392.D	✓IB612171205R	DCM	12/19/2012 8:09 pm
42	C698394.D	SO121912B08	1X	12/19/2012 9:38 pm
43	C698396.D	SO121912LCS04	1X	12/19/2012 11:06 pm
44	C698398.D	SO121912LCSD04	1X	12/20/2012 12:35 am
45	C698400.D	IB612171206R	DCM	12/20/2012 2:03 am
46	C698402.D	1212043-01	1X	12/20/2012 3:31 am
47	C698404.D	1212043-02		12/20/2012 4:59 am
48	C698406.D	1212043-03		12/20/2012 6:50 am
49	C698408.D	1212043-04		12/20/2012 8:18 am
50	C698410.D	1212043-05		12/20/2012 9:47 am
51	C698412.D	✓C612171206R	WHAR04	12/20/2012 11:15 am
52	C698414.D	DCM	DCM	12/20/2012 12:43 pm
53	C698416.D	IB612171207R	DCM	12/20/2012 2:12 pm
54	C698418.D	1212043-06	1X	12/20/2012 3:40 pm

SeqLog 1.0.0.1 - (c) 2009 Abacus Database Applications

Total Files Reported in Log : 91
Log Generated From Directory: O:\Forensics\Data\FID6\2012\DEC2012\DEC17.SEC\

No.	DATA FILE	SAMPLE NAME	MISC	DATE INJ'D
55	C698420.D	1212043-07	1X	12/20/2012 5:09 pm
56	C698422.D	1212043-08	1X	12/20/2012 6:37 pm
57	C698424.D	1212043-09	1X	12/20/2012 8:05 pm
58	C698426.D	1212043-10	1X	12/20/2012 9:33 pm
59	C698428.D	TO122112MC204	1X WHAP35	12/20/2012 11:01 pm
60	C698430.D	C612171207R	WHAR04	12/21/2012 12:30 am
61	C698432.D	DCM	DCM	12/21/2012 1:58 am
62	C698434.D	IB612171208R	DCM	12/21/2012 3:26 am
63	C698436.D	SO122012B04	1X	12/21/2012 4:54 am
64	C698438.D	SO122012LCS03	1X	12/21/2012 6:23 am
65	C698440.D	SO122012LCSD03	1X	12/21/2012 7:51 am
66	C698442.D	1212044-01	1X	12/21/2012 9:20 am
67	C698444.D	1212044-01D	1X	12/21/2012 10:49 am
68	C698446.D	1212044-01TRP	1X	12/21/2012 12:18 pm
69	C698448.D	C612171208R	WHAR04	12/21/2012 1:48 pm
70	C698450.D	DCM	DCM	12/21/2012 3:17 pm
71	C698452.D	IB612171210R	DCM	12/21/2012 4:45 pm
72	C698454.D	SS121812B06	1X	12/21/2012 6:14 pm
73	C698456.D	SS121812LCS06	1X	12/21/2012 7:43 pm
74	C698458.D	SS121812LCSD06	1X	12/21/2012 9:11 pm
75	C698460.D	IB612171211R	DCM	12/21/2012 10:40 pm
76	C698462.D	1212022-01	1X	12/22/2012 12:08 am
77	C698464.D	1212022-02	1X	12/22/2012 1:37 am
78	C698466.D	1212022-02M	1X	12/22/2012 3:05 am
79	C698468.D	1212022-02S	1X	12/22/2012 4:34 am
80	C698470.D	1212022-03	1X	12/22/2012 6:02 am
81	C698472.D	1212022-03D	1X	12/22/2012 7:30 am
82	C698474.D	1212022-04	1X	12/22/2012 8:59 am
83	C698476.D	C612171209R	WHAR04	12/22/2012 10:27 am
84	C698478.D	DCM	DCM	12/22/2012 11:55 am
85	C698480.D	IB612171212R	DCM	12/22/2012 1:24 pm
86	C698482.D	TS122712WCS01	1X WHAP15	12/22/2012 2:52 pm
87	C698484.D	TS122712CL01	1X WHAP16	12/22/2012 4:20 pm
88	C698486.D	DCM	DCM	12/22/2012 5:48 pm
89	C698488.D	C612171210R	WHAR04	12/22/2012 7:17 pm
90	C698490.D	DCM	DCM	12/22/2012 8:45 pm
91	C698492.D	IB612171213R	DCM	12/22/2012 10:13 pm

Processing method: HC6100912R.M CCV= 50ng/ml WHAR04

Total Organic Carbon

Form I
Total Organic Carbon

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Case: **N/A** SDG: **N/A**
Client ID: **SEKR0000R024AS121312D006**
Matrix: **Sediment**
Percent Solid: **78.2**

Lab Code: **MA00030**
ETR: **1212022**

Lab ID: **1212022-01**
Date Collected: **12/13/12**
Date Received: **12/14/12**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
Total Organic Carbon (Run 1)	**0.654**		0.0100	1	12/28/12	%	9060	PJS
Total Organic Carbon (Run 2)	**0.351**		0.0100	1	12/28/12	%	9060	PJS
Total Organic Carbon	**0.502**		0.0100	1	12/28/12	%	9060	PJS

Total Organic Carbon = Average of the Total Organic Carbon Runs.

N/A - Not Applicable

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Form I
Total Organic Carbon

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Case: **N/A** SDG: **N/A**
Client ID: **SEKR0000R024AS121312D010**
Matrix: **Sediment**
Percent Solid: **79.5**

Lab Code: **MA00030**
ETR: **1212022**

Lab ID: **1212022-02**
Date Collected: **12/13/12**
Date Received: **12/14/12**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
Total Organic Carbon (Run 1)	**0.665**		0.0100	1	12/27/12	%	9060	PJS
Total Organic Carbon (Run 2)	**0.355**		0.0100	1	12/27/12	%	9060	PJS
Total Organic Carbon	**0.510**		0.0100	1	12/27/12	%	9060	PJS

Total Organic Carbon = Average of the Total Organic Carbon Runs.

N/A - Not Applicable

Form I
Total Organic Carbon

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Case: **N/A** SDG: **N/A**
Client ID: **SEKR0000R024AD121312D010**
Matrix: **Sediment**
Percent Solid: **79.0**

Lab Code: **MA00030**
ETR: **1212022**

Lab ID: **1212022-03**
Date Collected: **12/13/12**
Date Received: **12/14/12**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
Total Organic Carbon (Run 1)	**0.697**		0.0100	1	12/27/12	%	9060	PJS
Total Organic Carbon (Run 2)	**0.584**		0.0100	1	12/27/12	%	9060	PJS
Total Organic Carbon	**0.640**		0.0100	1	12/27/12	%	9060	PJS

Total Organic Carbon = Average of the Total Organic Carbon Runs.

N/A - Not Applicable

Form I
Duplicate
Total Organic Carbon

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Case: **N/A** SDG: **N/A**
Client ID: **SEKR0000R024AD121312D010**
Matrix: **Sediment**
Percent Solid: **79.0**

Lab Code: **MA00030**
ETR: **1212022**

Lab ID: **1212022-03 D**
Date Collected: **12/13/12**
Date Received: **12/14/12**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
Total Organic Carbon (Run 1)	**0.818**		0.0100	1	12/27/12	%	9060	PJS
Total Organic Carbon (Run 2)	**0.785**		0.0100	1	12/27/12	%	9060	PJS
Total Organic Carbon	**0.802**		0.0100	1	12/27/12	%	9060	PJS

Total Organic Carbon = Average of the Total Organic Carbon Runs.

N/A - Not Applicable

Form VI
Total Organic Carbon

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Case: **N/A** SDG: **N/A**
Client ID: **SEKR0000R024AD121312D010**
Matrix: **Sediment**
Percent Solid: **79.0**

Lab Code: **MA00030**
ETR: **1212022**

Lab ID: **1212022-03 D**
Date Collected: **12/13/12**
Date Received: **12/14/12**

Parameter	Sample Result	Duplicate Result	Unit	Percent RPD	RPD Limit
Total Organic Carbon (Run 1)	**0.697**	**0.818**	%	16	25
Total Organic Carbon (Run 2)	**0.584**	**0.785**	%	29[a]	25
Total Organic Carbon	**0.640**	**0.802**	%	22	25

Total Organic Carbon = Average of the Total Organic Carbon Runs.

N/A - Not Applicable
[a] - Value outside of QC Limits.

Concentrations reported as calculated values, which includes rounding for significant figures. RPD values are reported based on the unrounded calculated result.

Form VA
Total Organic Carbon

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Case: **N/A** SDG: **N/A**
Client ID: **SEKR0000R024AD121312D010**
Matrix: **Sediment**
Percent Solid: **79.0**

Lab Code: **MA00030**
ETR: **1212022**

Lab ID: **See Below**
Date Collected: **12/13/12**
Date Received: **12/14/12**

Lab ID:	1212022-03		1212022-03		
	Sample		Matrix Spike		% Recovery
Parameter	**Conc.**	**Unit**	**Conc.**	**% Recovery**	**Limits**
Total Organic Carbon (Run 1)	0.697	%	2.28	96	75-125
Total Organic Carbon (Run 2)	0.584	%	2.12	90	75-125
Total Organic Carbon	0.640	%	2.20	93	75-125

Total Organic Carbon = Average of the Total Organic Carbon Runs.

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded results.

Form I
Matrix Spike
Total Organic Carbon

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Case: **N/A** SDG: **N/A**
Client ID: **SEKR0000R024AD121312D010**
Matrix: **Sediment**
Percent Solid: **79.0**

Lab Code: **MA00030**
ETR: **1212022**

Lab ID: **1212022-03 M**
Date Collected: **12/13/12**
Date Received: **12/14/12**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
Total Organic Carbon (Run 1)	**2.28**	S	0.0100	1	12/27/12	%	9060	PJS
Total Organic Carbon (Run 2)	**2.12**	S	0.0100	1	12/27/12	%	9060	PJS
Total Organic Carbon	**2.20**	S	0.0100	1	12/27/12	%	9060	PJS

Total Organic Carbon = Average of the Total Organic Carbon Runs.

N/A - Not Applicable
S - Spike compound.

Form I
Total Organic Carbon

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Case: **N/A** SDG: **N/A**
Client ID: **SEKR0000R024AS121312D013**
Matrix: **Sediment**
Percent Solid: **74.6**

Lab Code: **MA00030**
ETR: **1212022**

Lab ID: **1212022-04**
Date Collected: **12/13/12**
Date Received: **12/14/12**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
Total Organic Carbon (Run 1)	**0.919**		0.0100	1	12/28/12	%	9060	PJS
Total Organic Carbon (Run 2)	**0.801**		0.0100	1	12/28/12	%	9060	PJS
Total Organic Carbon	**0.860**		0.0100	1	12/28/12	%	9060	PJS

Total Organic Carbon = Average of the Total Organic Carbon Runs.

N/A - Not Applicable

Form III
Total Organic Carbon

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Case: **N/A** SDG: **N/A**
Client ID: **Blank**
Matrix: **Sediment**
Percent Solid: **100**

Lab Code: **MA00030**
ETR: **1212022**

Lab ID: **WS122712B10**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
Total Organic Carbon (Run 1)	0.0100	U	0.0100	1	12/27/12	%	9060	PJS
Total Organic Carbon (Run 2)	0.0100	U	0.0100	1	12/27/12	%	9060	PJS
Total Organic Carbon	0.0100	U	0.0100	1	12/27/12	%	9060	PJS

Total Organic Carbon = Average of the Total Organic Carbon Runs.

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

Form III
Total Organic Carbon

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Case: **N/A** SDG: **N/A**
Client ID: **Blank**
Matrix: **Sediment**
Percent Solid: **100**

Lab Code: **MA00030**
ETR: **1212022**

Lab ID: **WS122812B05**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
Total Organic Carbon (Run 1)	0.0100	U	0.0100	1	12/28/12	%	9060	PJS
Total Organic Carbon (Run 2)	0.0100	U	0.0100	1	12/28/12	%	9060	PJS
Total Organic Carbon	0.0100	U	0.0100	1	12/28/12	%	9060	PJS

Total Organic Carbon = Average of the Total Organic Carbon Runs.

N/A - Not Applicable
U - The analyte was analyzed for but not detected at the sample specific level reported.

Form VII
Standard Reference Material 1941b
Total Organic Carbon

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Case: **N/A** SDG: **N/A**
Client ID: **SRM 1941b**
Matrix: **Sediment**
Percent Solid: **97.6**

Lab Code: **MA00030**
ETR: **1212022**

Lab ID: **WS122712C41BN02**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	True Conc.	Conc.	Low Limit	High Limit
Total Organic Carbon (Run 1)	2.99	2.98	2.38	3.60
Total Organic Carbon (Run 2)	2.99	3.10	2.38	3.60
Total Organic Carbon	2.99	3.04	2.38	3.60

Total Organic Carbon = Average of the Total Organic Carbon Runs.

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded results.

Form I
Standard Reference Material 1941b
Total Organic Carbon

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Case: **N/A** SDG: **N/A**
Client ID: **SRM 1941b**
Matrix: **Sediment**
Percent Solid: **97.6**

Lab Code: **MA00030**
ETR: **1212022**

Lab ID: **WS122712C41BN02**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
Total Organic Carbon (Run 1)	**2.98**		0.0100	1	12/27/12	%	9060	PJS
Total Organic Carbon (Run 2)	**3.10**		0.0100	1	12/27/12	%	9060	PJS
Total Organic Carbon	**3.04**		0.0100	1	12/27/12	%	9060	PJS

Total Organic Carbon = Average of the Total Organic Carbon Runs.

N/A - Not Applicable

Form VII
Standard Reference Material 1941b
Total Organic Carbon

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Case: **N/A** SDG: **N/A**
Client ID: **SRM 1941b**
Matrix: **Sediment**
Percent Solid: **97.6**

Lab Code: **MA00030**
ETR: **1212022**

Lab ID: **WS122812C41BN01**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	True Conc.	Conc.	Low Limit	High Limit
Total Organic Carbon (Run 1)	2.99	2.99	2.38	3.60
Total Organic Carbon (Run 2)	2.99	2.95	2.38	3.60
Total Organic Carbon	2.99	2.97	2.38	3.60

Total Organic Carbon = Average of the Total Organic Carbon Runs.

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded results.

12/28/12 16:07

Form I
Standard Reference Material 1941b
Total Organic Carbon

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Case: **N/A** SDG: **N/A**
Client ID: **SRM 1941b**
Matrix: **Sediment**
Percent Solid: **97.6**

Lab Code: **MA00030**
ETR: **1212022**

Lab ID: **WS122812C41BN01**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
Total Organic Carbon (Run 1)	**2.99**		0.0100	1	12/28/12	%	9060	PJS
Total Organic Carbon (Run 2)	**2.95**		0.0100	1	12/28/12	%	9060	PJS
Total Organic Carbon	**2.97**		0.0100	1	12/28/12	%	9060	PJS

Total Organic Carbon = Average of the Total Organic Carbon Runs.

N/A - Not Applicable

Form VII
Standard Reference Material 1944
Total Organic Carbon

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Case: **N/A** SDG: **N/A**
Client ID: **SRM 1944**
Matrix: **Sediment**
Percent Solid: **98.7**

Lab Code: **MA00030**
ETR: **1212022**

Lab ID: **WS122712L194401**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Conc.	% Recovery	% Recovery Limits
Total Organic Carbon (Run 1)	4.70	107	75-125
Total Organic Carbon (Run 2)	4.24	96	75-125
Total Organic Carbon	4.47	102	75-125

Total Organic Carbon = Average of the Total Organic Carbon Runs.

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded results.

12/28/12 16:07

Form I
Standard Reference Material 1944
Total Organic Carbon

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Case: **N/A** SDG: **N/A**
Client ID: **SRM 1944**
Matrix: **Sediment**
Percent Solid: **98.7**

Lab Code: **MA00030**
ETR: **1212022**

Lab ID: **WS122712L194401**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
Total Organic Carbon (Run 1)	**4.70**	S	0.0100	1	12/27/12	%	9060	PJS
Total Organic Carbon (Run 2)	**4.24**	S	0.0100	1	12/27/12	%	9060	PJS
Total Organic Carbon	**4.47**	S	0.0100	1	12/27/12	%	9060	PJS

Total Organic Carbon = Average of the Total Organic Carbon Runs.

N/A - Not Applicable
S - Spike compound.

Form VII
Standard Reference Material 1944
Total Organic Carbon

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Case: **N/A** SDG: **N/A**
Client ID: **SRM 1944**
Matrix: **Sediment**
Percent Solid: **98.7**

Lab Code: **MA00030**
ETR: **1212022**

Lab ID: **WS122812L194401**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Conc.	% Recovery	% Recovery Limits
Total Organic Carbon (Run 1)	4.57	104	75-125
Total Organic Carbon (Run 2)	4.86	111	75-125
Total Organic Carbon	4.71	107	75-125

Total Organic Carbon = Average of the Total Organic Carbon Runs.

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded results.

Form I
Standard Reference Material 1944
Total Organic Carbon

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**
Case: **N/A** SDG: **N/A**
Client ID: **SRM 1944**
Matrix: **Sediment**
Percent Solid: **98.7**

Lab Code: **MA00030**
ETR: **1212022**

Lab ID: **WS122812L194401**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
Total Organic Carbon (Run 1)	**4.57**	S	0.0100	1	12/28/12	%	9060	PJS
Total Organic Carbon (Run 2)	**4.86**	S	0.0100	1	12/28/12	%	9060	PJS
Total Organic Carbon	**4.71**	S	0.0100	1	12/28/12	%	9060	PJS

Total Organic Carbon = Average of the Total Organic Carbon Runs.

N/A - Not Applicable
S - Spike compound.

Raw Data

Analysis report from PE2400 CHNS/O - on 28/12/12 14:19:43

File name : O:\WETCHE~1\PE2400\2712112.CHN

#	User Sample	Typ	No	Weight	% C	% H	% N	% S	% O
1	PJS K	K	1	11.070	14.770	22.817	.193	0	0
2	PJS B	B	2	-	6	780	83	0	0
3	PJS K	K	3	10.590	14.570	23.814	.038	0	0
4	PJS K	K	4	11.230	13.900	22.855	.024	0	0
5	PJS SRM1944	S	5	5.550	4.703	.742	5.647	0	0
6	PJS MB	S	6	49.530	.003	-.027	-1.356	0	0
7	PJS SRM1944	S	7	4.610	4.238	.167	2.266	0	0
8	PJS MB	S	8	44.040	.002	-.046	-1.491	0	0
9	PJS LK0	S	9	10.340	-.002	5.189	-6.351	0	0
10	PJS LK1000	S	10	10.520	.096	5.222	-6.526	0	0
11	PJS LK5000	S	11	10.380	.479	5.187	-3.595	0	0
12	PJS LK10000	S	12	10.630	.972	5.031	-3.651	0	0
13	PJS LK20000	S	13	10.770	1.968	5.108	9.562	0	0
14	PJS LK40000	S	14	11.250	3.849	4.903	7.297	0	0
15	PJS CCV	S	15	10.480	.969	5.213	15.096	0	0
16	PJS MB CCB EB 12/28/12	S	16	47.200	.007	-.003	-1.423	0	0
17	PJS LOD	S	17	10.370	.018	5.112	5.469	0	0
18	PJS 122243601	S	18	3.020	.382	.717	17.792	0	0
19	PJS 122243601	S	19	2.840	.686	.284	-20.496	0	0
20	PJS 122243601D	S	20	3.060	.464	.407	-18.535	0	0
21	PJS 122243601D	S	21	4.260	.253	.064	-13.314	0	0
22	PJS 122243601M	S	22	4.790	2.582	11.356	11.529	0	0
23	PJS 122243601M	S	23	4.400	2.956	12.575	14.925	0	0
24	PJS 122243601	S	24	5.0	.460	1.116	-11.343	0	0
25	PJS 122243601	S	25	4.550	.399	.528	-12.793	0	0
26	PJS 122243601D	S	26	4.480	.452	.570	-12.660	0	0
27	PJS CCV	S	27	9.760	1.044	5.538	-3.364	0	0
28	PJS CCB	S	28	38.920	.001	-.012	-1.611	0	0
29	PJS 122243601D	S	29	5.050	.313	.387	-11.231	0	0
30	PJS 122312001	S	30	5.230	.007	-.362	-12.271	0	0
31	PJS 122312001	S	31	5.630	.137	.109	-9.014	0	0
32	PJS 122312002	S	32	5.430	2.699	.786	-9.071	0	0
33	PJS 122312002	S	33	5.490	3.373	.716	-10.059	0	0
34	PJS 122312004	S	34	6.130	.170	1.084	-8.522	0	0
35	PJS 122312004	S	35	5.870	.164	1.018	-8.899	0	0
36	PJS 122312001	S	36	6.710	.182	.349	-6.673	0	0
37	PJS 122312001	S	37	6.180	.163	.198	-7.728	0	0
38	PJS LOD	S	38	9.690	.021	5.239	12.476	0	0
39	PJS CCV	S	39	11.220	1.018	4.532	9.312	0	0
40	PJS CCB	S	40	43.690	0.0	-.001	-1.264	0	0
41	PJS SRM1944	S	41	3.770	3.837	.010	2.375	0	0
42	PJS MB	S	42	45.300	.002	-.049	-1.120	0	0
43	PJS LK0	S	43	10.170	.001	4.804	-4.256	0	0
44	PJS LK1000	S	44	10.230	.097	4.891	8.024	0	0
45	PJS LK5000	S	45	10.460	.489	4.872	-4.566	0	0
46	PJS LK10000	S	46	10.720	.946	4.732	-1.949	0	0
47	PJS LK20000	S	47	10.800	1.931	4.726	-3.731	0	0
48	PJS LK40000	S	48	10.830	-.014	.024	-5.099	0	0
49	PJS LOD	S	49	9.670	3.983	5.835	5.711	0	0
50	PJS SRM1941B	S	50	3.180	3.896	1.668	6.571	0	0

Analysis report from PE2400 CHNS/O - on 28/12/12 14:19:52

File name : O:\WETCHE~1\PE2400\2712112.CHN

#	User Sample	Typ	No	Weight	% C	% H	% N	% S	% O
~~51~~	~~PJS CCV~~	~~S~~	~~51~~	~~10.780~~	~~1.034~~	~~5.303~~	~~-1.800~~	0	0
~~52~~	~~PJS CCB~~	~~S~~	~~52~~	~~45.930~~	~~.002~~	~~-.001~~	~~-1.202~~	0	0
53	PJS SRM1941B	S	53	3.500	2.985	.552	3.412	0	0
54	PJS SRM1941B	S	54	3.720	3.100	.551	4.815	0	0
~~55~~	~~PJS LK40000~~	~~S~~	~~55~~	~~10.660~~	~~3.774~~	~~4.542~~	~~4.900~~	0	0
~~56~~	~~PJS LOD~~	~~S~~	~~56~~	~~9.850~~	~~.031~~	~~5.014~~	~~-5.303~~	0	0
~~57~~	~~PJS 121202201~~	~~S~~	~~57~~	~~4.080~~	~~.390~~	.932	-10.609	0	0
~~58~~	~~PJS 121202201~~	~~S~~	~~58~~	~~4.870~~	~~.488~~	.748	-8.581	0	0
59	PJS 121202202	S	59	6.330	.665	.895	-6.838	0	0
60	PJS 121202202	S	60	5.250	.355	.926	-7.960	0	0
61	PJS 121202203	S	61	6.110	.697	.233	-6.107	0	0
62	PJS 121202203	S	62	6.420	.584	.229	-4.417	0	0
63	PJS CCV	S	63	10.680	1.058	4.545	-4.193	0	0
64	PJS CCB	S	64	44.540	.002	-.024	-1.139	0	0
~~65~~	~~PJS 121202203D~~	~~S~~	~~65~~	~~6.0~~	~~1.078~~	.509	-5.224	0	0
~~66~~	~~PJS 121202203D~~	~~S~~	~~66~~	~~5.940~~	~~.804~~	.255	-6.282	0	0
67	PJS 121202203M	S	67	6.630	2.281	7.204	4.953	0	0
68	PJS 121202203M	S	68	6.310	2.123	7.839	.473	0	0
~~69~~	~~PJS 121202204~~	~~S~~	~~69~~	~~6.590~~	~~1.038~~	1.456	-2.265	0	0
~~70~~	~~PJS 121202204~~	~~S~~	~~70~~	~~6.630~~	~~.841~~	.923	-3.377	0	0
~~71~~	~~PJS 121202202~~	~~S~~	~~71~~	~~6.860~~	~~.209~~	~~.497~~	~~-5.874~~	0	0
~~72~~	~~PJS 121202202~~	~~S~~	~~72~~	~~7.100~~	~~.342~~	~~.802~~	~~-7.358~~	0	0
73	PJS 121202203D	S	73	7.110	.818	.261	-3.989	0	0
74	PJS 121202203D	S	74	4.910	.785	.047	-6.688	0	0
75	PJS CCV	S	75	10.500	.971	4.628	1.990	0	0
76	PJS CCB	S	76	50.220	.004	-.026	-.951	0	0

Analysis report from PE2400 CHNS/O - on 28/12/12 14:18:36

File name :

#	User Sample	Typ	No	Weight	% C	% H	% N	% S	% O	
1	PJS K	K	1	10.400	14.702	21.894	.934	0	0	28
2	PJS B	B	2	-	33	1069	305	0	0	28
3	PJS K	K	3	11.240	14.582	19.143	.039	0	0	28
4	PJS K	K	4	10.690	14.556	20.455	-.002	0	0	28
5	PJS SRM1944	S	5	5.480	4.566	1.061	13.618	0	0	28
6	PJS MB	S	6	44.620	.006	-.025	-.736	0	0	28
7	PJS SRM1944	S	7	4.530	4.862	.399	10.873	0	0	28
8	PJS MB	S	8	46.220	.007	-.046	-.807	0	0	28
9	PJS LK0	S	9	9.740	.003	5.246	-3.984	0	0	28
10	PJS 1000	S	10	11.280	.088	4.644	-3.308	0	0	28
11	PJS 5000	S	11	10.620	.470	4.929	-3.514	0	0	28
12	PJS 10000	S	12	10.310	.925	5.099	-4.198	0	0	28
13	PJS 20000	S	13	10.300	1.897	5.282	-4.347	0	0	28
14	PJS 40000	S	14	10.990	3.653	4.833	-4.074	0	0	28
15	PJS CCV	S	15	10.940	1.012	4.930	-5.048	0	0	28
16	PJS CCB	S	16	47.730	0.0	-.001	-1.001	0	0	28
17	PJS LOD	S	17	9.700	.019	5.600	-4.616	0	0	28
18	PJS SRM1941B	S	18	4.910	2.992	1.215	10.335	0	0	28
19	PJS SRM1941B	S	19	4.720	2.947	.787	8.538	0	0	28
20	PJS 122284901	S	20	3.720	2.380	.357	4.413	0	0	28
21	PJS 122284901	S	21	4.980	2.464	.532	7.493	0	0	28
22	PJS 122284902	S	22	4.150	2.132	.346	4.675	0	0	28
23	PJS 122284902	S	23	4.020	2.082	.296	4.084	0	0	28
24	PJS 122284902D	S	24	3.760	2.481	.309	4.366	0	0	28
25	PJS 122284902D	S	25	4.740	2.255	.436	6.298	0	0	28
26	PJS 122284902M	S	26	4.570	4.550	11.592	15.677	0	0	28
27	PJS CCV	S	27	10.910	1.021	4.927	-2.736	0	0	28
28	PJS CCB	S	28	29.810	.001	-.015	-1.602	0	0	28
29	PJS 122284902M	S	29	4.830	4.274	11.069	11.434	0	0	28
30	PJS 122284903	S	30	3.230	1.889	.902	-.462	0	0	28
31	PJS 122284903	S	31	3.440	1.826	.381	-.434	0	0	28
32	PJS 122284904	S	32	4.170	2.055	.532	4.653	0	0	28
33	PJS 122284904	S	33	4.0	2.055	.426	4.478	0	0	28
34	PJS 122284905	S	34	3.880	2.225	.305	4.616	0	0	28
35	PJS 122284905	S	35	4.150	2.218	.332	5.035	0	0	28
36	PJS 122284906	S	36	4.680	2.844	.326	7.654	0	0	28
37	PJS 122284906	S	37	3.540	2.775	.012	3.373	0	0	28
38	PJS 122284907	S	38	4.990	2.112	.556	6.281	0	0	28
39	PJS CCV	S	39	10.230	1.013	5.258	-4.523	0	0	28
40	PJS CCB	S	40	35.410	.007	-.022	-1.349	0	0	28
41	PJS SRM1944	S	41	5.290	4.831	.279	10.439	0	0	28
42	PJS MB	S	42	40.670	.005	-.068	-1.174	0	0	28
43	PJS 122284907	S	43	4.510	2.391	.722	9.928	0	0	28
44	PJS 122284908	S	44	4.020	2.086	.166	3.342	0	0	28
45	PJS 122284908	S	45	3.100	2.401	-.158	1.926	0	0	28
46	PJS 122284909	S	46	4.390	2.429	.385	5.440	0	0	28
47	PJS 122284909	S	47	3.240	2.314	.047	.461	0	0	28
48	PJS 122284910	S	48	4.920	2.445	.379	6.067	0	0	28
49	PJS 122284910	S	49	3.880	2.372	.145	4.616	0	0	28
50	PJS 122284912	S	50	4.550	2.035	.178	3.608	0	0	28

Analysis report from PE2400 CHNS/O - on 28/12/12 14:18:50

File name :

#	User Sample	Typ	No	Weight	% C	% H	% N	% S	% O
~~51~~	~~PJS CCV~~	~~S~~	~~51~~	~~11.0~~	~~1.0~~	~~4.789~~	~~-4.206~~	0	0
52	PJS CCB	S	52	50.970	.001	-.021	-.908	0	0
~~53~~	~~PJS 122284912~~	~~S~~	~~53~~	~~4.380~~	~~1.938~~	~~.138~~	~~1.363~~	0	0
54	PJS 121202201	S	54	5.630	.654	.455	-5.302	0	0
55	PJS 121202201	S	55	5.590	.351	.308	-6.408	0	0
56	PJS 121202204	S	56	6.580	.919	.524	-4.083	0	0
57	PJS 121202204	S	57	4.970	.801	.315	-6.307	0	0
~~58~~	~~PJS 121202201~~	~~S~~	~~58~~	~~9.690~~	~~.307~~	.487	-3.697	0	0
~~59~~	~~PJS 121202201~~	~~S~~	~~59~~	~~5.960~~	~~.472~~	.363	-6.511	0	0
60	PJS CCV	S	60	10.390	1.003	5.133	-4.597	0	0
61	PJS CCB	S	61	46.760	.002	-.017	-1.053	0	0

Replicate Analysis Summary Report
Total Organic Carbon

Client: **AECOM**
Project: **Enbridge Line 6B MP 608**

Lab Code: **MA00030**
ETR: **1212022**

Sample ID	Analysis Date	Rep. 1	Rep. 2	RPD
1212022-02	12/27/12	0.665	0.355	60.78
1212022-03	12/27/12	0.697	0.584	17.64
1212022-03D	12/27/12	0.818	0.785	4.12
1212022-03MS	12/27/12	2.281	2.123	7.18
WS122712C41BN02	12/27/12	2.985	3.100	3.78
WS122712L194401	12/27/12	4.703	4.238	10.40
1212022-01	12/28/12	0.654	0.351	60.30
1212022-04	12/28/12	0.919	0.801	13.72
WS122812C41BN01	12/28/12	2.992	2.947	1.52
WS122812L194401	12/28/12	4.566	4.862	6.28

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

TOTAL ORGANIC CARBON

9060 (mod.) / Lloyd Kahn

Date: 12/27/12
Analyst: PJS
2° Review: _____

Standard ID: WW1627 12A
LCS ID: WS 020712A TV=4.4
Filter Aid ID: WS030411A

MS ID: WW,127 12B
Balance ID: 1655C90309

Login	SAMPLE	QC D/MS	TRAY LOCATION	AUTO SLOT	WEIGHT (mg)
Conditioning Std					
Blank					
K Factor				1	11.07
Blank				2	49.08
K Factor				3	10.59
K Factor				4	11.23
LCS SRM1944				5	5.55
Blank				6	49.53
SRM 1944				7	4.61
MB				8	44.04
LKO				9	10.34
1000				10	10.52
5000				11	10.38
10000				12	10.63
20000				13	10.77
40000				14	11.25
CCV				15	10.48
CCB				16	47.20
LOD				17	10.37
L1222436	01			18	3.02
↓	01			19	2.84

Login	SAMPLE	QC D/MS	TRAY LOCATION	AUTO SLOT	WEIGHT (mg)
L1222436	01	D		20	3.06
↓	01	D		21	4.26
	01	MS		22	4.79/10.54
	01	MS		23	4.40/10.34
	01			24	5.00
	01			25	4.55
	01	D		26	4.48
CCV				27	9.76
CCB				28	38.92
L1222436	01	D		29	5.05
L1223120	01			30	5.23
↓	01			31	5.63
	02			32	5.43
	02			33	5.49
	04			34	6.13
	04			35	5.87
	01			36	6.71
↓	01			37	6.18
LOD				38	9.69
CCV				39	11.22
CCB				40	43.69

TOTAL ORGANIC CARBON

9060 (mod.) / Lloyd Kahn

Date: 12/27/12
Analyst: RJS/CS
2° Review: _____

Standard ID: see page 63 ~~ES12/26/12~~ ES12/27/12
LCS ID:
Filter Aid ID:

MS ID: see page 63 12/27/12
Balance ID: SS

Login	SAMPLE	QC D/MS	TRAY LOCATION	AUTO SLOT	WEIGHT (mg)
Conditioning Std		63 12/27/12			
Blank					
K Factor	see page 82				
Blank					
K Factor					
K Factor					
LCS SRM 1944				41	3.77
Blank MB				42	45.30
LKO				43	10.17
1000				44	10.23
5000				45	10.46
10000				46	10.72
20000				47	10.80
40000				48	10.83
LOD				49	9.67
SRM 1941B				50	3.18
CCV				51	10.78
CCB				52	45.93
SRM 1941B				53	3.50
SRM 1941B				54	3.72
LK40000				55	10.66

Login	SAMPLE	QC D/MS	TRAY LOCATION	AUTO SLOT	WEIGHT (mg)
LOD			~~56~~ PTS 12/27/12	56	9.85
1212022	01			57	4.08
	01			58	4.87
	02			59	6.33
	02			60	5.25
	03			61	6.11
	03			62	6.42
CCV				63	10.68
CCB				64	44.54
1212022	03	D		65	6.00
	03	D		66	5.94
	03	M		67	6.63/10.93 #1
	03	M		68	6.31/10.84 #2
	04			69	6.59
	04			70	6.63
	02			71	6.86
	02			72	7.10
	03	D		73	7.11
	03	D		74	4.91
CCV				75	10.50
CCB				76	50.22

TVMS#1 1.648
TVMS#2 1.718

TOTAL ORGANIC CARBON
9060 (mod.) / Lloyd Kahn

Date: 12/28/12
Analyst: DR
2° Review: _____

Standard ID: WW112712B
LCS ID: WS020712A TV 4.4
Filter Aid ID: WS030411A

MS ID: WW112712B
Balance ID: 655C90309

Login	SAMPLE	QC D/MS	TRAY LOCATION	AUTO SLOT	WEIGHT (mg)
Conditioning Std					
Blank					
K Factor				1	10.40
Blank				2	53.86
K Factor				3	11.24
K Factor				4	10.69
LCS SRM 1944				5	5.48
Blank				6	44.62
SRM 1944				7	4.53
MB				8	46.22
LRO				9	9.74
1000				10	11.28
5000				11	10.62
10000				12	10.31
20000				13	10.30
40000				14	10.99
CCV				15	10.94
CCB				16	47.73
LOD				17	9.70
SRM 1941B				18	4.91
SRM 1941B				19	4.78

Login	SAMPLE	QC D/MS	TRAY LOCATION	AUTO SLOT	WEIGHT (mg)
L1222849	01			20	3.72
	01			21	4.98
	02			22	4.15
	02			23	4.02
	02	D		24	3.76
	02	D		25	4.74
	02	M		26	4.57/10.12
CCV				27	10.91
CCB				28	29.81
	02	M		29	4.83/10.74
	03			30	3.23
	03			31	3.44
	04			32	4.17
	04			33	4.00
	05			34	3.88
	05			35	4.15
	06			36	4.68
	06			37	3.54
	07			38	4.99
CCV				39	10.23
CCB				40	35.41

9060 (mod.) / Lloyd Kahn

Date: 12/28/12 PK
Analyst: _____ 2° Review: _____

Standard ID: _____ PK 12/28/12
LCS ID: _____ MS ID: _____
Filter Aid ID: _____ Balance ID: _____

Login	SAMPLE	QC D/MS	TRAY LOCATION	AUTO SLOT	WEIGHT (mg)
Conditioning Std					
Blank					
K Factor			See page 5		
Blank					
K Factor				PK 12/28/12	
K Factor					
LCS SRM	1944			41	5.29
Blank MB				42	40.67
L1222849	07			43	4.51
	08			44	4.02
	08			45	3.10
	09			46	4.39
	09			47	3.24
	10			48	4.92
	10			49	3.88
	12			50	4.55
CCV				51	11.00
CCB				52	50.97
L1222849	12			53	4.38
1212022	01			54	5.63
	01			55	5.59

Login	SAMPLE	QC D/MS	TRAY LOCATION	AUTO SLOT	WEIGHT (mg)
1212022	04			56	6.58
	04			57	4.97
	01			58	9.69
	01			59	5.96
		PK 12/28/12			
CCV				60	10.39
CCB				61	46.76
		PK 12/28/12			
CCV					
CCB					

DATE 27 12 12 TIME 11 05 57 OPERATOR ID PJS 122712

RUN 1 K1 WEIGHT 11.070

	SIGNALS	AVERAGE RESULTS
	ZR 11355	
KC 14.770	NR 11652	KC 14.487
KH 22.817	CR 13295	KH 22.628
KN .193	HR 26756	KN .067

FILL TIME 21 SECONDS

DATE 27 12 12 TIME 11 10 46 OPERATOR ID PJS 122712

RUN 2 BLANK RUN

	SIGNALS	AVERAGE RESULTS
	ZR 11391	
CARBON 6	NR 11474	CARBON 7
HYDROGEN 780	CR 11480	HYDROGEN 768
NITROGEN 83	HR 12260	NITROGEN 65

FILL TIME 20 SECONDS

DATE 27 12 12 TIME 11 15 34

MESSAGE 12

NITROGEN KFACTOR OUT OF TOLERANCE

DATE 27 12 12 TIME 11 15 34 OPERATOR ID PJS 122712

RUN 3 K1 WEIGHT 10.590

	SIGNALS	AVERAGE RESULTS
	ZR 11371	
KC 14.570	NR 11483	KC 14.528
KH 23.814	CR 13033	KH 23.221
KN .038	HR 26486	KN .067

FILL TIME 20 SECONDS

DATE 27 12 12 TIME 11 22 30 OPERATOR ID PJS 122712

RUN 4 K1 WEIGHT 11.230

	SIGNALS	AVERAGE RESULTS
	ZR 11381	
KC 13.899	NR 11477	KC 14.214

KN 22.855 CR 13643 KN 23.038
KN .024 HR 26723 KN .067

FILL TIME 20 SECONDS

DATE 27 12 12 TIME 11 29 34 OPERATOR ID PJS 122712

RUN 5 ID SRM1944 WEIGHT 5.550

SIGNALS

ZR 11382
CARBON 4.703% NR 11468
HYDROGEN .742% CR 15185
NITROGEN 5.647% HR 16902

BLANKS 7 768 65
KFACTORS 14.214 23.038 .067

OXFILL COMB BOOST1 BOOST2
1 5 1 1

FILL TIME 20 SECONDS

DATE 27 12 12 TIME 11 34 22 OPERATOR ID PJS 122712

RUN 6 ID MB WEIGHT 49.530

SIGNALS

ZR 11381
CARBON .003% NR 11401
HYDROGEN -.027% CR 11427
NITROGEN -1.356% HR 11890

BLANKS 7 768 65
KFACTORS 14.214 23.038 .067

OXFILL COMB BOOST1 BOOST2
1 5 1 1

FILL TIME 20 SECONDS

DATE 27 12 12 TIME 11 39 11 OPERATOR ID PJS 122712

RUN 7 ID SRM1944 WEIGHT 4.610

SIGNALS

ZR 11376
CARBON 4.238% NR 11448
HYDROGEN .167% CR 14232
NITROGEN 2.266% HR 15177

BLANKS 7 768 65
KFACTORS 14.214 23.038 .067

OXFILL COMB BOOST1 BOOST2
1 5 1 1

FILL TIME 20 SECONDS

DATE 27 12 12 TIME 11 43 59 OPERATOR ID PJS 122712

RUN 8 ID MB WEIGHT 44.040

SIGNALS

ZR 11376
NR 11397
CR 11414
HR 11711

CARBON .002%
HYDROGEN -.046%
NITROGEN -1.491%

BLANKS 7 768 65
KFACTORS 14.214 23.038 .067

OXFILL	COMB	BOOST1	BOOST2
1	5	1	1

FILL TIME 20 SECONDS

DATE 27 12 12 TIME 11 51 31 OPERATOR ID PJS 122712

RUN 9 ID LK0 WEIGHT 10.340

SIGNALS

ZR 11374
NR 11395
CR 11399
HR 24527

CARBON -.002%
HYDROGEN 5.189%
NITROGEN -6.351%

BLANKS 7 768 65
KFACTORS 14.214 23.038 .067

OXFILL	COMB	BOOST1	BOOST2
1	5	1	1

FILL TIME 20 SECONDS

Not this BTR
28/01/28/12

DATE 27 12 12 TIME 11 56 19 OPERATOR ID PJS 122712

RUN 10 ID LK1000 WEIGHT 10.520

SIGNALS

ZR 11404
NR 11423
CR 11573
HR 24997

CARBON .096%
HYDROGEN 5.222%
NITROGEN -6.526%

BLANKS 7 768 65
KFACTORS 14.214 23.038 .067

OXFILL	COMB	BOOST1	BOOST2
1	5	1	1

FILL TIME 20 SECONDS

RUN 14 ID LK400000   WEIGHT 11.250

SIGNALS

ZR 11420
NR 11540
CR 17702
HR 31178

CARBON 3.849%
HYDROGEN 4.903%
NITROGEN 7.297%

BLANKS 7 768 65
KFACTORS 14.214 23.038 .067

OXFILL COMB BOOST1 BOOST2
1 5 1 1

FILL TIME 20 SECONDS

NOT This ETR 88 12/28/12

DATE 27 12 12 TIME 12 20 21 OPERATOR ID PJS 122712

RUN 15 ID CCV WEIGHT 10.480

SIGNALS

ZR 11422
NR 11593
CR 13043
HR 26396

CARBON .969%
HYDROGEN 5.213%
NITROGEN 15.096%

BLANKS 7 768 65
KFACTORS 14.214 23.038 .067

OXFILL COMB BOOST1 BOOST2
1 5 1 1

FILL TIME 20 SECONDS

DATE 27 12 12 TIME 12 27 31 OPERATOR ID PJS 122712

RUN 16 ID MB WEIGHT 47.200

SIGNALS

ZR 11397
NR 11417
CR 11468
HR 12201

CARBON .007%
HYDROGEN -.003%
NITROGEN -1.423%

BLANKS 7 768 65
KFACTORS 14.214 23.038 .067

OXFILL COMB BOOST1 BOOST2
1 5 1 1

FILL TIME 20 SECONDS

DATE 27 12 12 TIME 12 32 19 OPERATOR ID PJS 122712

RUN 17 ID LOD WEIGHT 10.370

FILL TIME 20 SECONDS

DATE 27 12 12 TIME 16 44 53 OPERATOR ID PJS 122712

RUN 52 ID CCB WEIGHT 45.930

SIGNALS

ZR 11361
NR 11389
CR 11411
HR 12164

CARBON .002%
HYDROGEN -.001%
NITROGEN -1.202%

BLANKS 7 768 65
KFACTORS 14.214 23.038 .067

OXFILL COMB BOOST1 BOOST2
1 5 1 1

FILL TIME 20 SECONDS

NOT THIS ETF
gs 12/28/12

DATE 27 12 12 TIME 16 53 59 OPERATOR ID PJS 122712

RUN 53 ID SRM1941B WEIGHT 3.500

SIGNALS

ZR 11348
NR 11421
CR 12913
HR 14126

CARBON 2.985%
HYDROGEN .552%
NITROGEN 3.412%

BLANKS 7 768 65
KFACTORS 14.214 23.038 .067

OXFILL COMB BOOST1 BOOST2
1 5 1 1

FILL TIME 20 SECONDS

DATE 27 12 12 TIME 16 58 47 OPERATOR ID PJS 122712

RUN 54 ID SRM1941B WEIGHT 3.720

SIGNALS

ZR 11350
NR 11427
CR 13073
HR 14313

CARBON 3.100%
HYDROGEN .551%
NITROGEN 4.815%

BLANKS 7 768 65
KFACTORS 14.214 23.038 .067

OXFILL COMB BOOST1 BOOST2
1 5 1 1

FILL TIME 20 SECONDS

DATE 27 12 12 TIME 17 33 06 OPERATOR ID PJS 122712

RUN 55 ID LK40000 WEIGHT 10.660

SIGNALS

ZR 11336
NR 11436
CR 17161
HR 29084

CARBON 3.774%
HYDROGEN 4.542%
NITROGEN 4.900%

BLANKS 7 768 65
KFACTORS 14.214 23.038 .067

OXFILL	COMB	BOOST1	BOOST2
1	5	1	1

FILL TIME 20 SECONDS

NOT THIS ET
PJS 12/28/12

DATE 27 12 12 TIME 17 45 35 OPERATOR ID PJS 122712

RUN 56 ID LOD WEIGHT 9.850

SIGNALS

ZR 11341
NR 11371
CR 11421
HR 23566

CARBON .031%
HYDROGEN 5.014%
NITROGEN -5.303%

BLANKS 7 768 65
KFACTORS 14.214 23.038 .067

OXFILL	COMB	BOOST1	BOOST2
1	5	1	1

FILL TIME 20 SECONDS

DATE 27 12 12 TIME 17 55 15 OPERATOR ID PJS 122712

RUN 57 ID 121202201 WEIGHT 4.080

SIGNALS

ZR 11341
NR 11377
CR 11610
HR 13254

CARBON .390%
HYDROGEN .932%
NITROGEN -10.609%

DNR
recursion
1/28/12
PJS 12/28/12

BLANKS 7 768 65
KFACTORS 14.214 23.038 .067

OXFILL	COMB	BOOST1	BOOST2
1	5	1	1

FILL TIME 20 SECONDS

DATE 27 12 12 TIME 18 00 03 OPERATOR ID PJS 122712

RUN 58 ID 121202201 WEIGHT 4.870

SIGNALS

ZR 11345
NR 11382
CR 11727
HR 13334

CARBON .488%
HYDROGEN .748%
NITROGEN -8.581%

BLANKS 7 768 65
KFACTORS 14.214 23.038 .067

OXFILL COMB BOOST1 BOOST2
1 5 1 1

FILL TIME 20 SECONDS

DATE 27 12 12 TIME 18 00 04

MESSAGE 4

CHANGE REDUCTION TUBE

DATE 27 12 12 TIME 18 00 04

MESSAGE 6

EMPTY VIAL RECEPTACLE

DATE 27 12 12 TIME 18 04 50 OPERATOR ID PJS 122712

RUN 59 ID 121202202 WEIGHT 6.330

SIGNALS

ZR 11344
NR 11380
CR 11985
HR 14058

CARBON .665%
HYDROGEN .895%
NITROGEN -6.838%

BLANKS 7 768 65
KFACTORS 14.214 23.038 .067

OXFILL COMB BOOST1 BOOST2
1 5 1 1

FILL TIME 20 SECONDS

DATE 27 12 12 TIME 18 09 38 OPERATOR ID PJS 122712

RUN 60 ID 121202202 WEIGHT 5.250

CARBON .355% SIGNALS NR 11382 ES 12/28/12

ZR 11345

DOR Reviewed on 12/28/12 ES 12/28/12

```
   HYDROGEN .926%            CR 11654
   NITROGEN -7.960%          HR 13542

   BLANKS 7 768 65
   KFACTORS 14.214 23.038 .067

   OXFILL COMB BOOST1 BOOST2
     1     5     1      1

FILL TIME 20  SECONDS



DATE 27 12 12    TIME 18 14 26    OPERATOR ID PJS 122712

RUN 61  ID 121202203    WEIGHT 6.110

                            SIGNALS

                            ZR 11345
   CARBON .697%             NR 11385
   HYDROGEN .233%           CR 11997
   NITROGEN -6.107%         HR 13093

   BLANKS 7 768 65
   KFACTORS 14.214 23.038 .067

   OXFILL COMB BOOST1 BOOST2
     1     5     1      1

FILL TIME 20  SECONDS



DATE 27 12 12    TIME 18 19 14    OPERATOR ID PJS 122712

RUN 62  ID 121202203    WEIGHT 6.420

                            SIGNALS

                            ZR 11341
   CARBON .584%             NR 11387
   HYDROGEN .229%           CR 11927
   NITROGEN -4.417%         HR 13034

   BLANKS 7 768 65
   KFACTORS 14.214 23.038 .067

   OXFILL COMB BOOST1 BOOST2
     1     5     1      1

FILL TIME 20  SECONDS



DATE 27 12 12    TIME 18 24 01    OPERATOR ID PJS 122712

RUN 63  ID CCV          WEIGHT 10.680

                            SIGNALS

                            ZR 11345
   CARBON 1.058%            NR 11380
   HYDROGEN 4.545%          CR 12993
   NITROGEN -4.193%         HR 24944
```

BLANKS 7 768 65
KFACTORS 14.214 23.038 .067

OXFILL COMB BOOST1 BOOST2
1 5 1 1

FILL TIME 20 SECONDS

DATE 27 12 12 TIME 18 31 32 OPERATOR ID PJS 122712

RUN 64 ID CCB WEIGHT 44.540

SIGNALS

ZR 11353
CARBON .002% NR 11384
HYDROGEN -.024% CR 11405
NITROGEN -1.139% HR 11925

BLANKS 7 768 65
KFACTORS 14.214 23.038 .067

OXFILL COMB BOOST1 BOOST2
1 5 1 1

FILL TIME 20 SECONDS

DATE 27 12 12 TIME 18 36 20 OPERATOR ID PJS 122712

RUN 65 ID 121202203D WEIGHT 6.0

SIGNALS

ZR 11350
CARBON 1.078% NR 11394
HYDROGEN .509% CR 12320
NITROGEN -5.224% HR 13792

BLANKS 7 768 65
KFACTORS 14.214 23.038 .067

OXFILL COMB BOOST1 BOOST2
1 5 1 1

FILL TIME 20 SECONDS

DNR sample was re-run 8D 12/28/17

DATE 27 12 12 TIME 18 41 08 OPERATOR ID PJS 122712

RUN 66 ID 121202203D WEIGHT 5.940

SIGNALS

ZR 11350
CARBON .804% NR 11390
HYDROGEN .255% CR 12076
NITROGEN -6.282% HR 13193

BLANKS 7 768 65
KFACTORS 14.214 23.038 .067

OXFILL COMB BOOST1 BOOST2
1 5 1 1

FILL TIME 20 SECONDS

DATE 27 12 12 TIME 18 45 55 OPERATOR ID PJS 122712

RUN 67 ID 121202203M WEIGHT 6.630

SIGNALS

ZR 11348
CARBON 2.281% NR 11435
HYDROGEN 7.204% CR 13592
NITROGEN 4.953% HR 25364

BLANKS 7 768 65
KFACTORS 14.214 23.038 .067

OXFILL COMB BOOST1 BOOST2
1 5 1 1

FILL TIME 20 SECONDS

DATE 27 12 12 TIME 18 50 43 OPERATOR ID PJS 122712

RUN 68 ID 121202203M WEIGHT 6.310

SIGNALS

ZR 11373
CARBON 2.123% NR 11440
HYDROGEN 7.839% CR 13351
NITROGEN .473% HR 25514

BLANKS 7 768 65
KFACTORS 14.214 23.038 .067

OXFILL COMB BOOST1 BOOST2
1 5 1 1

FILL TIME 20 SECONDS

DATE 27 12 12 TIME 18 55 31 OPERATOR ID PJS 122712

RUN 69 ID 121202204 WEIGHT 6.590

SIGNALS

ZR 11379
CARBON 1.038% NR 11434
HYDROGEN 1.456% CR 12413
NITROGEN -2.265% HR 15392

BLANKS 7 768 65
KFACTORS 14.214 23.038 .067

OXFILL COMB BOOST1 BOOST2
1 5 1 1

D N R
Duplicate sample
12/28/12
12/28/12

FILL TIME 20 SECONDS

DATE 27 12 12 TIME 19 00 19 OPERATOR ID PJS 122712

RUN 70 ID 121202204 WEIGHT 6.630

	SIGNALS
	ZR 11365
CARBON .841%	NR 11415
HYDROGEN .923%	CR 12215
NITROGEN -3.377%	HR 14393

BLANKS 7 768 65
KFACTORS 14.214 23.038 .067

OXFILL	COMB	BOOST1	BOOST2
1	5	1	1

FILL TIME 20 SECONDS

DNR screen sample 12/28/12

DATE 27 12 12 TIME 19 05 06 OPERATOR ID PJS 122712

RUN 71 ID 121202202 WEIGHT 6.860

	SIGNALS
	ZR 11363
CARBON .209%	NR 11401
HYDROGEN .497%	CR 11612
NITROGEN -5.874%	HR 13166

BLANKS 7 768 65
KFACTORS 14.214 23.038 .067

OXFILL	COMB	BOOST1	BOOST2
1	5	1	1

FILL TIME 20 SECONDS

DNR RPD out

DATE 27 12 12 TIME 19 09 54 OPERATOR ID PJS 122712

RUN 72 ID 121202202 WEIGHT 7.100

	SIGNALS
	ZR 11367
CARBON .342%	NR 11397
HYDROGEN .802%	CR 11749
NITROGEN -7.358%	HR 13829

BLANKS 7 768 65
KFACTORS 14.214 23.038 .067

OXFILL	COMB	BOOST1	BOOST2
1	5	1	1

FILL TIME 20 SECONDS

DATE 27 12 12 TIME 19 14 42 OPERATOR ID PJS 122712

RUN 73 ID 1212022030 WEIGHT 7.110

SIGNALS

ZR 11357
NR 11403
CR 12237
HR 13433

CARBON .818%
HYDROGEN .261%
NITROGEN -3.989%

BLANKS 7 768 65
KFACTORS 14.214 23.038 .067

OXFILL	COMB	BOOST1	BOOST2
1	5	1	1

FILL TIME 20 SECONDS

DATE 27 12 12 TIME 19 19 30 OPERATOR ID PJS 122712

RUN 74 ID 1212022030 WEIGHT 4.910

SIGNALS

ZR 11357
NR 11400
CR 11955
HR 12776

CARBON .785%
HYDROGEN .047%
NITROGEN -6.688%

BLANKS 7 768 65
KFACTORS 14.214 23.038 .067

OXFILL	COMB	BOOST1	BOOST2
1	5	1	1

FILL TIME 20 SECONDS

DATE 27 12 12 TIME 19 24 18 OPERATOR ID PJS 122712

RUN 75 ID CCV WEIGHT 10.500

SIGNALS

ZR 11356
NR 11435
CR 12891
HR 24854

CARBON .971%
HYDROGEN 4.628%
NITROGEN 1.990%

BLANKS 7 768 65
KFACTORS 14.214 23.038 .067

OXFILL	COMB	BOOST1	BOOST2
1	5	1	1

FILL TIME 20 SECONDS

DATE 27 12 12 TIME 19 32 27 OPERATOR ID PJS 122712

RUN 78 ID CCB WEIGHT 30.000

SIGNALS

ZR 11357
NR 11390
CR 11424
HR 11895

CARBON .004%
HYDROGEN -.026%
NITROGEN -.951%

BLANKS 7 768 65
KFACTORS 14.214 23.038 .067

OXFILL	COMB	BOOST1	BOOST2
1	5	1	1

FILL TIME 20 SECONDS

DATE 28 12 12 TIME 08 45 40

MESSAGE 12

NITROGEN KFACTOR OUT OF TOLERANCE

DATE 28 12 12 TIME 08 45 40 OPERATOR ID PJS 122812

RUN 1 K1 WEIGHT 10.400

	SIGNALS	AVERAGE RESULTS
	ZR 11311	
KC 14.702	NR 12509	KC 14.458
KH 21.894	CR 14045	KH 22.466
KN .934	HR 26266	KN .067

FILL TIME 20 SECONDS

DATE 28 12 12 TIME 08 50 50 OPERATOR ID PJS 122812

RUN 2 BLANK RUN

	SIGNALS	AVERAGE RESULTS
	ZR 11337	
CARBON 33	NR 11642	CARBON 20
HYDROGEN 1069	CR 11675	HYDROGEN 768
NITROGEN 305	HR 12744	NITROGEN 65

FILL TIME 19 SECONDS

DATE 28 12 12 TIME 08 55 38 OPERATOR ID PJS 122812

RUN 3 K1 WEIGHT 11.240

	SIGNALS	AVERAGE RESULTS
	ZR 11327	

```
   KH 19.143                CR 13102      KH 22.466
   KN .039                  HR 24693      KN .067

FILL TIME 20  SECONDS


DATE 28 12 12    TIME 09 00 25


   MESSAGE 8

CHECK FOR SAMPLE DROP



DATE 28 12 12    TIME 09 00 25    OPERATOR ID PJS 122812

RUN 4   K1 WEIGHT 10.690

                            SIGNALS       AVERAGE RESULTS

                            ZR 11371
   KC 14.556                NR 11434      KC 14.538
   KH 20.455                CR 13010      KH 21.460
   KN -.002                 HR 24777      KN .067

FILL TIME 20  SECONDS


DATE 28 12 12    TIME 09 06 17    OPERATOR ID PJS 122812

RUN 5   ID SRM1944      WEIGHT 5.480

                            SIGNALS

                            ZR 11367
   CARBON 4.566%            NR 11482
   HYDROGEN 1.061%          CR 15140
   NITROGEN 13.618%         HR 17156

   BLANKS 20 768 65
   KFACTORS 14.538 21.460 .067

   OXFILL COMB BOOST1 BOOST2
     1     5     1      1

FILL TIME 20  SECONDS


DATE 28 12 12    TIME 09 11 04    OPERATOR ID PJS 122812

RUN 6   ID MB           WEIGHT 44.620

                            SIGNALS

                            ZR 11356
   CARBON .006%             NR 11399
   HYDROGEN -.025%          CR 11456
   NITROGEN -.736%          HR 11988

   BLANKS 20 768 65
   KFACTORS 14.538 21.460 .067
```

```
   OXFILL COMB BOOST1 BOOST2
     1     5     1      1

FILL TIME 20  SECONDS



DATE 28 12 12    TIME 09 15 52    OPERATOR ID PJS 122812

RUN 7   ID SRM1944      WEIGHT 4.530

                              SIGNALS

                              ZR 11353
   CARBON 4.862%              NR 11451
   HYDROGEN .399%             CR 14673
   NITROGEN 10.873%           HR 15829

   BLANKS 20 768 65
   KFACTORS 14.538 21.460 .067

   OXFILL COMB BOOST1 BOOST2
     1     5     1      1

FILL TIME 20  SECONDS



DATE 28 12 12    TIME 09 20 39    OPERATOR ID PJS 122812

RUN 8   ID MB           WEIGHT 46.220

                              SIGNALS

                              ZR 11353
   CARBON .007%               NR 11393
   HYDROGEN -.046%            CR 11458
   NITROGEN -.807%            HR 11769

   BLANKS 20 768 65
   KFACTORS 14.538 21.460 .067

   OXFILL COMB BOOST1 BOOST2
     1     5     1      1

FILL TIME 20  SECONDS
```

```
DATE 28 12 12    TIME 09 26 58    OPERATOR ID PJS 122812

RUN 9   ID LK0          WEIGHT 9.740

                              SIGNALS

                              ZR 11350
   CARBON -.003%              NR 11389
   HYDROGEN 5.246%            CR 11405
   NITROGEN -3.984%           HR 23138

   BLANKS 20 768 65
   KFACTORS 14.538 21.460 .067

   OXFILL COMB BOOST1 BOOST2
     1     5     1      1
```

NOT THIS ETR

9/28/12

DATE 28 12 12 TIME 09 46 10 OPERATOR ID PJS 122812

RUN 13 ID 20000 WEIGHT 10.300

SIGNALS

ZR 11397
NR 11432
CR 14293 —
HR 26736

CARBON 1.897%
HYDROGEN 5.282%
NITROGEN -4.347%

BLANKS 20 768 65
KFACTORS 14.538 21.460 .067

OXFILL COMB BOOST1 BOOST2
1 5 1 1

FILL TIME 20 SECONDS

NOT THIS ETR
28 12/28/12

DATE 28 12 12 TIME 09 50 57 OPERATOR ID PJS 122812

RUN 14 ID 40000 WEIGHT 10.990

SIGNALS

ZR 11401
NR 11436
CR 17292 —
HR 29458

CARBON 3.653%
HYDROGEN 4.833%
NITROGEN -4.074%

BLANKS 20 768 65
KFACTORS 14.538 21.460 .067

OXFILL COMB BOOST1 BOOST2
1 5 1 1

FILL TIME 20 SECONDS

DATE 28 12 12 TIME 09 55 45 OPERATOR ID PJS 122812

RUN 15 ID CCV WEIGHT 10.940

SIGNALS

ZR 11387
NR 11415
CR 13045
HR 25387

CARBON 1.012%
HYDROGEN 4.930%
NITROGEN -5.048%

BLANKS 20 768 65
KFACTORS 14.538 21.460 .067

OXFILL COMB BOOST1 BOOST2
1 5 1 1

FILL TIME 20 SECONDS

DATE 28 12 12 TIME 10 01 54 OPERATOR ID PJS 122812

RUN 16 ID CCB   WEIGHT 47.730

                        SIGNALS

                        ZR 11366
   CARBON 0.0%   NR 11399
   HYDROGEN -.001%   CR 11418
   NITROGEN -1.001%   HR 12172

   BLANKS 20 768 65
   KFACTORS 14.538 21.460 .067

   OXFILL COMB BOOST1 BOOST2
     1   5   1   1

FILL TIME 20 SECONDS

DATE 28 12 12   TIME 10 07 33   OPERATOR ID PJS 122812

RUN 17 ID ~~LCB~~   WEIGHT 9.700
LOQ EJR 12/28/12
                        SIGNALS

                        ZR 11353
   CARBON .019%   NR 11388
   HYDROGEN 5.600%   CR 11435
   NITROGEN -4.616%   HR 23860

NOT THIS EJR 12/28/12

   BLANKS 20 768 65
   KFACTORS 14.538 21.460 .067

   OXFILL COMB BOOST1 BOOST2
     1   5   1   1

FILL TIME 20 SECONDS

DATE 28 12 12   TIME 10 12 21   OPERATOR ID PJS 122812

RUN 18 ID SRM1941B   WEIGHT 4.910

                        SIGNALS

                        ZR 11373
   CARBON 2.992%   NR 11472
   HYDROGEN 1.215%   CR 13628
   NITROGEN 10.335%   HR 15676

   BLANKS 20 768 65
   KFACTORS 14.538 21.460 .067

   OXFILL COMB BOOST1 BOOST2
     1   5   1   1

FILL TIME 20 SECONDS

DATE 28 12 12   TIME 10 17 09   OPERATOR ID PJS 122812

RUN 19 ID SRM1941B   WEIGHT 4.720

ZR 11359
CARBON 2.947% NR 11451
HYDROGEN .787% CR 13493
NITROGEN 8.538% HR 15058

BLANKS 20 768 65
KFACTORS 14.538 21.460 .067

OXFILL COMB BOOST1 BOOST2
1 5 1 1

FILL TIME 20 SECONDS

DATE 28 12 12 TIME 10 24 07 OPERATOR ID PJS 122812

RUN 20 ID 122284901 WEIGHT 3.720

SIGNALS

ZR 11349
CARBON 2.380% NR 11425
HYDROGEN .357% CR 12732
NITROGEN 4.413% HR 13785

BLANKS 20 768 65
KFACTORS 14.538 21.460 .067

OXFILL COMB BOOST1 BOOST2
1 5 1 1

FILL TIME 20 SECONDS

DATE 28 12 12 TIME 10 28 55 OPERATOR ID PJS 122812

RUN 21 ID 122284901 WEIGHT 4.980

SIGNALS

ZR 11351
CARBON 2.464% NR 11441
HYDROGEN .532% CR 13245
NITROGEN 7.493% HR 14582

BLANKS 20 768 65
KFACTORS 14.538 21.460 .067

OXFILL COMB BOOST1 BOOST2
1 5 1 1

FILL TIME 20 SECONDS

DATE 28 12 12 TIME 10 33 43 OPERATOR ID PJS 122812

RUN 22 ID 122284902 WEIGHT 4.150

CARBON 2.132% SIGNALS NR 11427 28 12/28/12

ZR 11349

NOT This ETR 28 12/28/12

RUN 38 ID 122284907   WEIGHT 4.990

SIGNALS

ZR 11360
CARBON 2.112% NR 11446
HYDROGEN .556% CR 12998
NITROGEN 6.281% HR 14361

BLANKS 20 768 65
KFACTORS 14.538 21.460 .067

OXFILL COMB BOOST1 BOOST2
1 5 1 1

FILL TIME 20 SECONDS

NOT This ETR
EB 12/28/12

DATE 28 12 12   TIME 12 00 37   OPERATOR ID PJS 122812

RUN 39 ID CCV   WEIGHT 10.230

SIGNALS

ZR 11365
CARBON 1.013% NR 11399
HYDROGEN 5.258% CR 12925
NITROGEN -4.523% HR 25237

BLANKS 20 768 65
KFACTORS 14.538 21.460 .067

OXFILL COMB BOOST1 BOOST2
1 5 1 1

FILL TIME 20 SECONDS

DATE 28 12 12   TIME 12 06 32   OPERATOR ID PJS 122812

RUN 40 ID CCB   WEIGHT 35.410

SIGNALS

ZR 11379
CARBON .007% NR 11412
HYDROGEN -.022% CR 11468
NITROGEN -1.349% HR 12071

BLANKS 20 768 65
KFACTORS 14.538 21.460 .067

OXFILL COMB BOOST1 BOOST2
1 5 1 1

FILL TIME 20 SECONDS

DATE 28 12 12   TIME 12 11 20   OPERATOR ID PJS 122812

RUN 41 ID SRM1944   WEIGHT 5.290

FILL TIME 20 SECONDS

DATE 28 12 12 TIME 13 41 00 OPERATOR ID PJS 122812

RUN 54 ID 121202201 WEIGHT 5.630

SIGNALS

ZR 11358
CARBON .654% NR 11403
HYDROGEN .455% CR 11958
NITROGEN -5.302% HR 13276

BLANKS 20 768 65
KFACTORS 14.538 21.460 .067

OXFILL COMB BOOST1 BOOST2
1 5 1 1

FILL TIME 20 SECONDS

DATE 28 12 12 TIME 13 47 07 OPERATOR ID PJS 122812

RUN 55 ID 121202201 WEIGHT 5.590

SIGNALS

ZR 11359
CARBON .351% NR 11400
HYDROGEN .308% CR 11705
NITROGEN -6.408% HR 12842

BLANKS 20 768 65
KFACTORS 14.538 21.460 .067

OXFILL COMB BOOST1 BOOST2
1 5 1 1

FILL TIME 20 SECONDS

DATE 28 12 12 TIME 13 52 14 OPERATOR ID PJS 122812

RUN 56 ID 121202204 WEIGHT 6.580

SIGNALS

ZR 11361
CARBON .919% NR 11408
HYDROGEN .524% CR 12307
NITROGEN -4.083% HR 13815

BLANKS 20 768 65
KFACTORS 14.538 21.460 .067

OXFILL COMB BOOST1 BOOST2
1 5 1 1

FILL TIME 20 SECONDS

DATE 28 12 12 TIME 13 57 02 OPERATOR ID PJS 122812

RUN 57 ID 121202204 WEIGHT 4.970

SIGNALS

ZR 11362
NR 11406
CR 12005
HR 13109

CARBON .801%
HYDROGEN .315%
NITROGEN -6.307%

BLANKS 20 768 65
KFACTORS 14.538 21.460 .067

OXFILL	COMB	BOOST1	BOOST2
1	5	1	1

FILL TIME 20 SECONDS

DATE 28 12 12 TIME 14 01 51 OPERATOR ID PJS 122812

RUN 58 ID 121202201 WEIGHT 9.690

SIGNALS

ZR 11363
NR 11404
CR 11856
HR 13637

CARBON .307%
HYDROGEN .487%
NITROGEN -3.697%

BLANKS 20 768 65
KFACTORS 14.538 21.460 .067

OXFILL	COMB	BOOST1	BOOST2
1	5	1	1

FILL TIME 20 SECONDS

DATE 28 12 12 TIME 14 06 39 OPERATOR ID PJS 122812

RUN 59 ID 121202201 WEIGHT 5.960

SIGNALS

ZR 11365
NR 11404
CR 11833
HR 13065

CARBON .472%
HYDROGEN .363%
NITROGEN -6.511%

BLANKS 20 768 65
KFACTORS 14.538 21.460 .067

OXFILL	COMB	BOOST1	BOOST2
1	5	1	1

FILL TIME 20 SECONDS

DWR RPD must

DATE 28 12 12 TIME 14 14 54 OPERATOR ID PJS 122812

```
RUN 60  ID CCV          WEIGHT 10.390

                              SIGNALS

                              ZR 11364
    CARBON 1.003%             NR 11397
    HYDROGEN 5.133%           CR 12932
    NITROGEN -4.597%          HR 25145

    BLANKS 20 768 65
    KFACTORS 14.538 21.460 .067

    OXFILL COMB BOOST1 BOOST2
      1     5     1      1

FILL TIME 20  SECONDS


DATE 28 12 12    TIME 14 20 10    OPERATOR ID PJS 122812

RUN 61  ID CCB          WEIGHT 46.760

                              SIGNALS

                              ZR 11387
    CARBON .002%              NR 11419
    HYDROGEN -.017%           CR 11454
    NITROGEN -1.053%          HR 12049

    BLANKS 20 768 65
    KFACTORS 14.538 21.460 .067

    OXFILL COMB BOOST1 BOOST2
      1     5     1      1

FILL TIME 20  SECONDS
```

Chain of Custody Records

MANSFIELD CHAIN OF CUSTODY

PAGE 1 OF 1

ALPHA ANALYTICAL — World Class Chemistry

Westborough, MA TEL: 508-898-9220 FAX: 508-898-9193
Mansfield, MA TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab:

ALPHA Job #: 1212022

Project Information

Project Name: MDLSed

Project Location: MARSHALL, MI

Project #: 60246209

Project Manager: DAVE BAREHAM

ALPHA Quote #:

Client Information

Client: ENBRIDGE

Address: 333 KALAMAZOO AVE

MARSHALL , MI 49068

Phone: 616.970.9700

Fax:

Email: JOHN.BOHRMAN@ENBRIDGE.COM

☐ These samples have been Previously analyzed by Alpha

Turn-Around Time

☒ Standard ☐ Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Report Information Data Deliverables

☐ FAX ☐ EMAIL

☐ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #: TASK# 9.04

Regulatory Requirements/Report Limits

State/Fed Program *Criteria*

Other Project Specific Requirements/Comments/Detection Limits:
Oil Topping-Range Finding-MDL Study'

☐ MS/MSD (at unit cost) will be omitted unless you check here

ANALYSIS

SAMPLE HANDLING
Filtration
☐ Done
☐ Not Needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	PAHs AND ALKYL HOMOLOGS	PETROLEUM BIOMARKERS	SHC\TEH	PERCENT MOISTURE	TOC								Sample Specific Comments	TOTAL # BOTTLES
-1	SEKR0000R024AS121312D006	12/13/12	0839	SE	GMK	☒	☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	☐		1
-2	SEKR0000R024AS121312D010	12/13/12	0841	SE	GMK	☒	☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	☐		1
-3	SEKR0000R024AD121312D010	12/13/12	0841	SE	GMK	☒	☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	☐		1
-4	SEKR0000R024AS121312D013	12/13/12	0844	SE	GMK	☒	☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	☐		1
						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		
						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		
						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		
						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		
						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		
						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		
					Container Type	G	G	G	G	G	G	G	-	-	-	-	-		
					Preservative	A	A	A	A	A	A	A	-	-	-	-	-		

Relinquished By:	Date/Time	Received By:	Date/Time
G Kraemer	12/13/12 1530	[signature]	12/13/12 1530
[signature]	12/13/12 1630	Fed Ex	
Fed Ex	12/14/12 1005	[signature]	12/14/12 1005

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

FORM NO: 101-09(I-NJ) (rev. 5-JAN-12)

ALPHA ANALYTICAL

Sample Delivery Group Form

Laboratory Job No: 12122022 **Client:** AECOM

Receipt Date/Time: 12/14/12 1005 **SDG Reviewer:** MP

Samples Delivered By:

[ ] Alpha Courier [ ] Client [ ] UPS [X] FedEx [ ] Other _____

Bill of Laden: [X] Yes [ ] Unavailable Tracking #: Attached 8011 1733 5960

Chain of Custody: [X] Present [ ] Absent: _____

Custody Seals: [ ] Absent [X] Present/Intact [ ] Present/Broken

Cooler/Sample Temperature:

Is Ice/Blue Ice present? [X] Yes [ ] No [ ] N/A _____

Temp taken from: Temp. Blank: (a)_____ (b)_____ (c)_____ (d)_____ (e)_____

IR Gun: (a) 3.2° (b)_____ (c)_____ (d)_____ (e)_____

IR Gun SN (circle one): 090512810 100311463

Was Temp: [X] 2-6 Celsius

[ ] <2 Celsius ... were samples frozen upon receipt? [ ] Yes [ ] No

[ ] >6 Celsius ... were samples delivered direct from site? [ ] Yes [ ] No

Containers Received: [X] Intact

[ ] Broken/Leaking Sample IDs: _____

Sample IDs: _____

All Containers Accounted For? [X] Yes

[ ] No: _____

Extra Samples Received? [X] No

[ ] Yes: _____

Do Sample Labels and COC agree? [X] Yes

[ ] No: _____

Are Samples in Appropriate Containers? [X] Yes

[ ] No: _____

Are samples rec'd within holding time? [X] Yes

[ ] No: _____

* Please note: the analysis of pH will always be performed beyond the regulatory-required holding time of 15 min. from the time of collection.

pH of samples upon receipt: [X] N/A [ ] <2 [ ] >12 and/or [ ] _____

Are samples properly preserved? [ ] Yes [ ] No If No then.....

Initial pH= _____ preserved In-House with [ ] HCL [ ] H_2SO_4 [ ] HNO_3 [ ] NAOH <<Final pH = _____>>

Other Issues: _____

Chlorine Check: [ ] N/A [ ] Present [ ] Absent

VOA/VPH vials: [ ] Yes [X] No Preserved? [ ] Yes [ ] No If yes: [ ] HCL, [ ] _____

Aqueous: vials contain head space? [ ] No [ ] Yes: _____

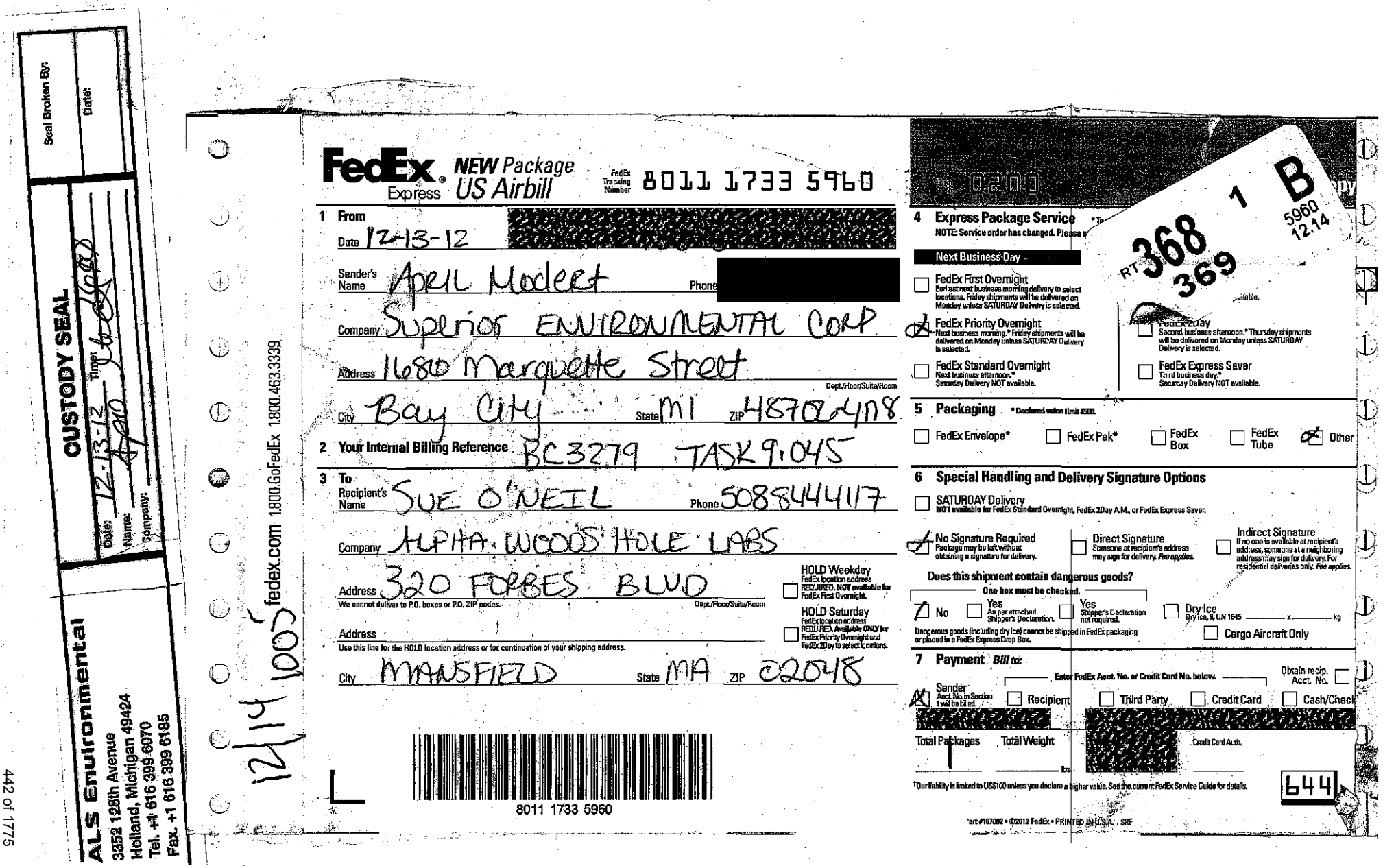
Soils: MeOH covering soil? [ ] Yes [ ] No: _____

Reagent H_2O Preserved vials Frozen @ date/time: _____

Frozen by Client? [ ] No [ ] Yes @ date/time: _____

Was Client notified of any discrepancies listed above? [ ] Yes [ ] No [X] N/A

If Yes: Call Tracker #_____

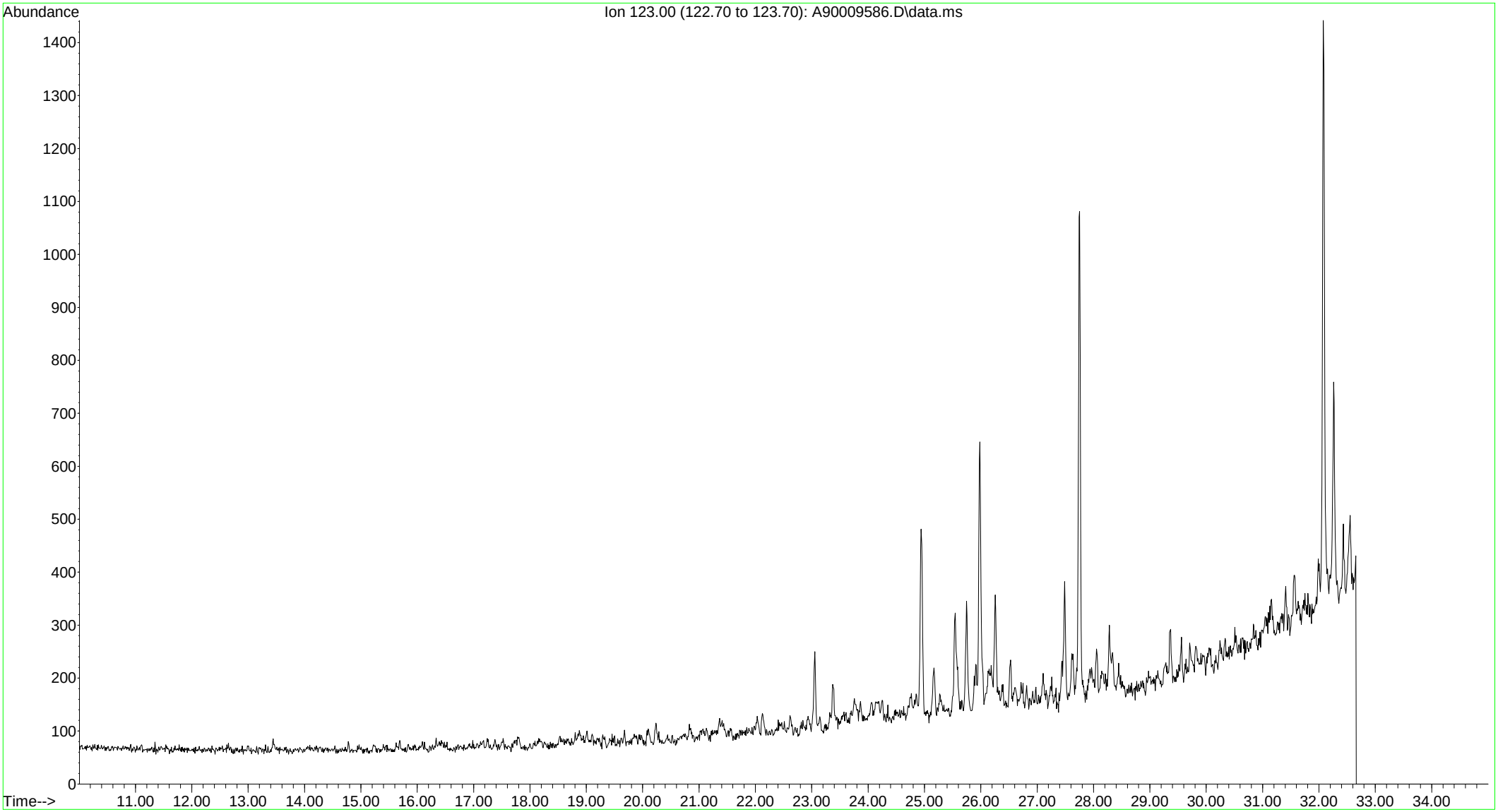


Seal Broken By:
Date:
CUSTODY SEAL
Time:
Date: 12-13-12
Name:
Company:
ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185
12/14 1005
fedex.com 1.800.GoFedEx 1.800.463.3339
FedEx Express NEW Package US Airbill
FedEx Tracking Number 8011 1733 5960
0200
1 From
Date 12-13-12
Sender's Name April Modeer Phone [redacted]
Company Superior ENVIRONMENTAL CORP
Address 1680 Marquette Street
Dept./Floor/Suite/Room
City Bay City State MI ZIP 48708-4118
2 Your Internal Billing Reference BC3279 TASK 9.045
3 To
Recipient's Name SUE O'NEIL Phone 5088444117
Company ALPHA WOODS HOLE LABS
Address 320 FORBES BLVD
We cannot deliver to P.O. boxes or P.O. ZIP codes.
Dept./Floor/Suite/Room
Address
Use this line for the HOLD location address or for continuation of your shipping address.
City MANSFIELD State MA ZIP 02048
HOLD Weekday FedEx location address REQUIRED. NOT available for FedEx First Overnight.
HOLD Saturday FedEx location address REQUIRED. Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations.
8011 1733 5960
RT 368 369 1 B 5960 12.14
4 Express Package Service *To
NOTE: Service order has changed. Please s
Next Business Day
FedEx First Overnight Earliest next business morning delivery to select locations. Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
FedEx Priority Overnight Next business morning.* Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
FedEx Standard Overnight Next business afternoon.* Saturday Delivery NOT available.
FedEx 2Day Second business afternoon.* Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
FedEx Express Saver Third business day.* Saturday Delivery NOT available.
5 Packaging * Declared value limit $500.
FedEx Envelope* FedEx Pak* FedEx Box FedEx Tube Other
6 Special Handling and Delivery Signature Options
SATURDAY Delivery NOT available for FedEx Standard Overnight, FedEx 2Day A.M., or FedEx Express Saver.
No Signature Required Package may be left without obtaining a signature for delivery.
Direct Signature Someone at recipient's address may sign for delivery. Fee applies.
Indirect Signature If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only. Fee applies.
Does this shipment contain dangerous goods?
One box must be checked.
No Yes As per attached Shipper's Declaration Yes Shipper's Declaration not required Dry Ice Dry Ice, 9, UN 1845 ____ x ____ kg
Dangerous goods (including dry ice) cannot be shipped in FedEx packaging or placed in a FedEx Express Drop Box.
Cargo Aircraft Only
7 Payment Bill to:
Enter FedEx Acct. No. or Credit Card No. below.
Obtain recip. Acct. No.
Sender Acct. No. in Section 1 will be billed. Recipient Third Party Credit Card Cash/Check
Total Packages Total Weight lbs Credit Card Auth.
†Our liability is limited to US$100 unless you declare a higher value. See the current FedEx Service Guide for details.
644
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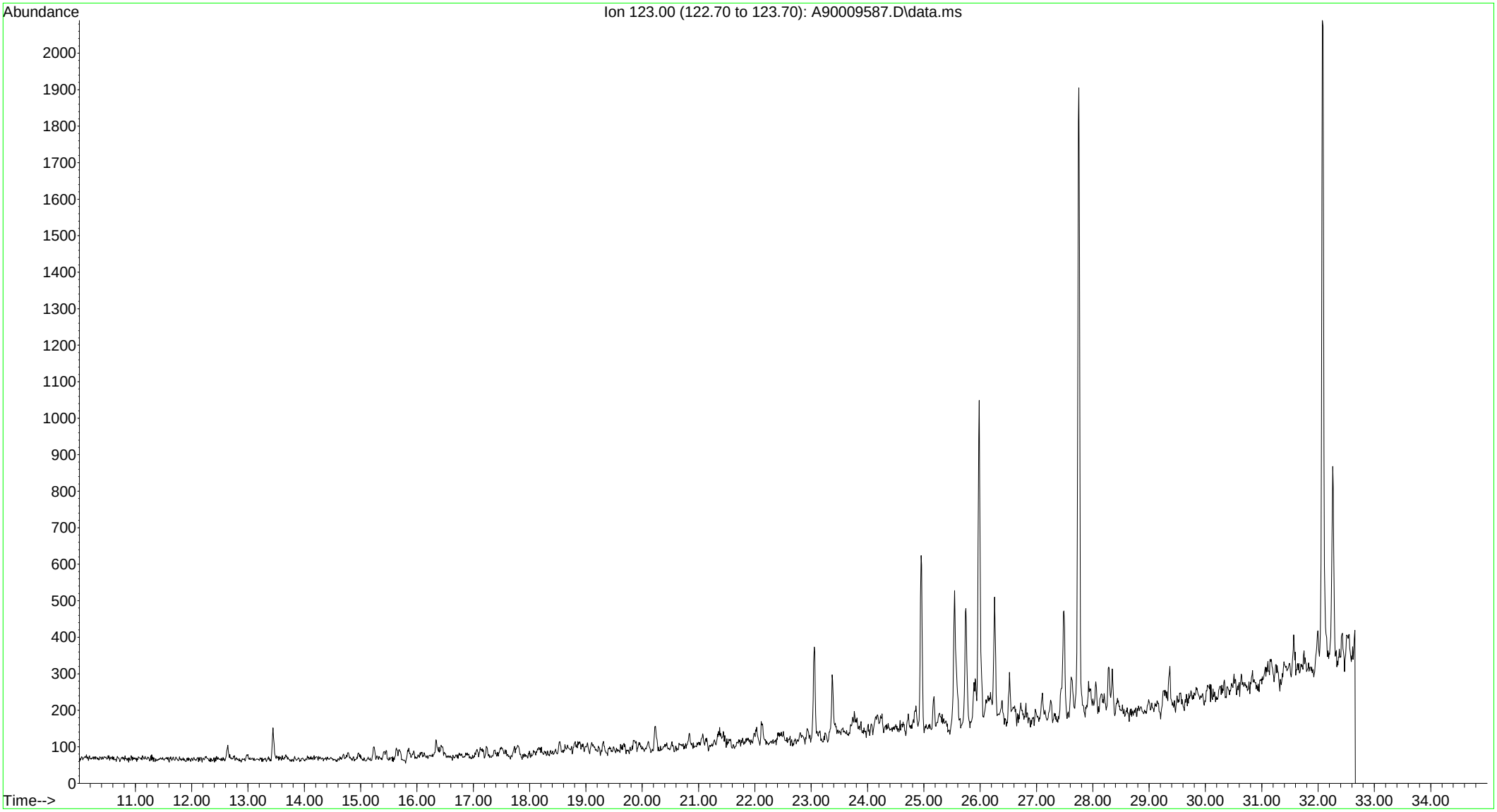
EIP

Ion 123

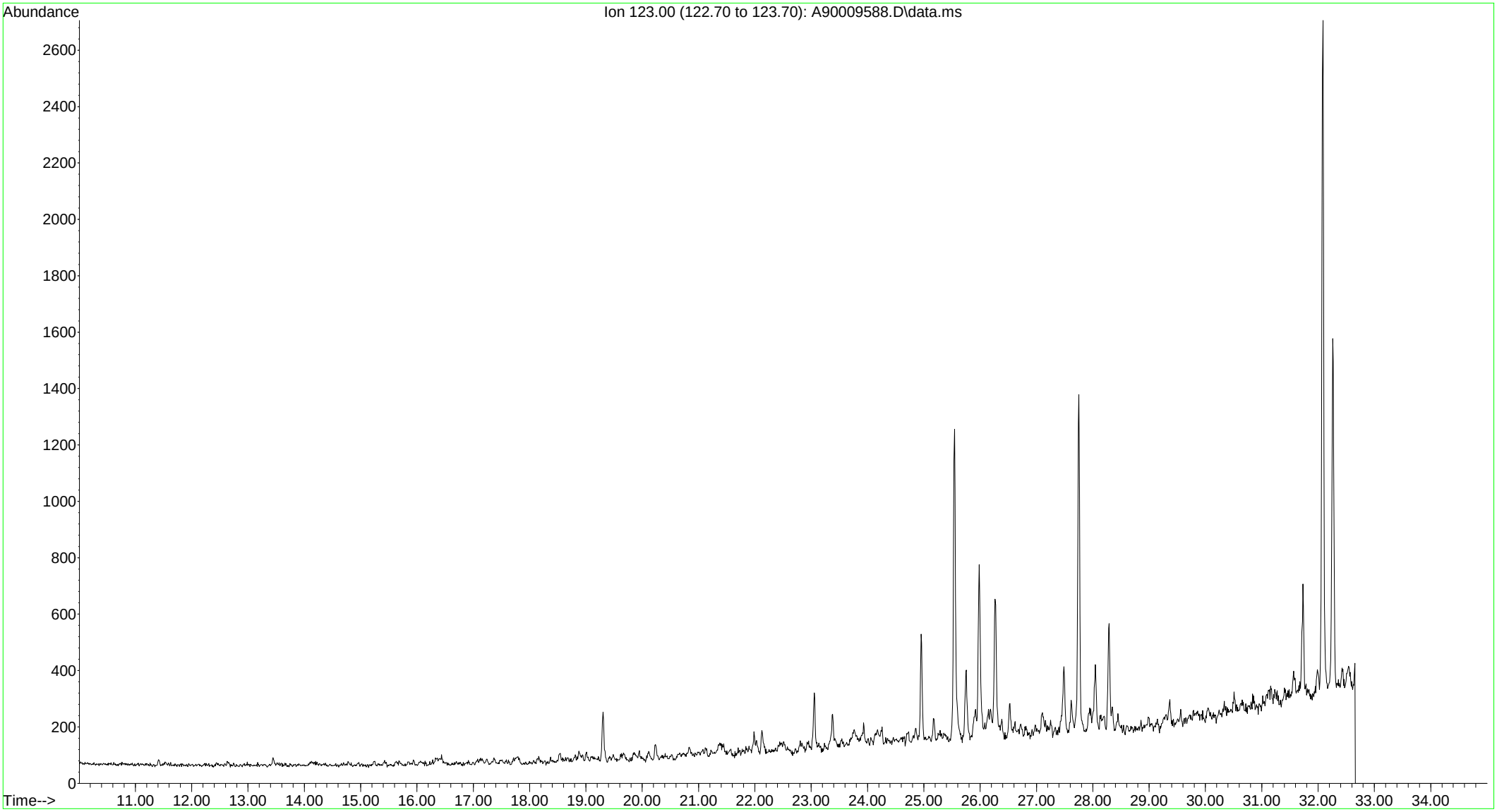
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Instrument : PAH 9
Sample Name: 1212022-01
Misc Info : 1X
Vial Number: 15



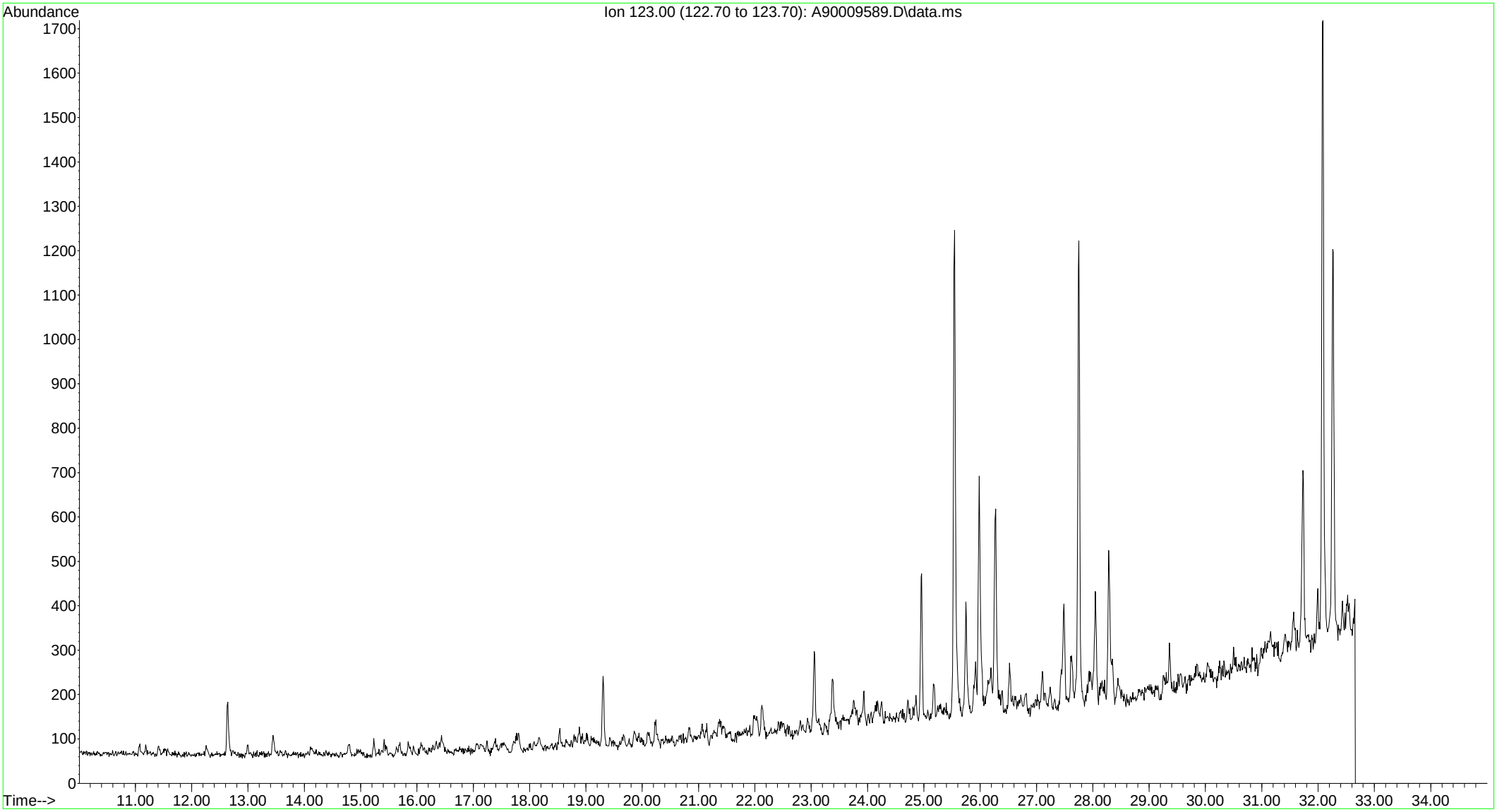
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Instrument : PAH 9
Sample Name: 1212022-02
Misc Info : 1X
Vial Number: 16



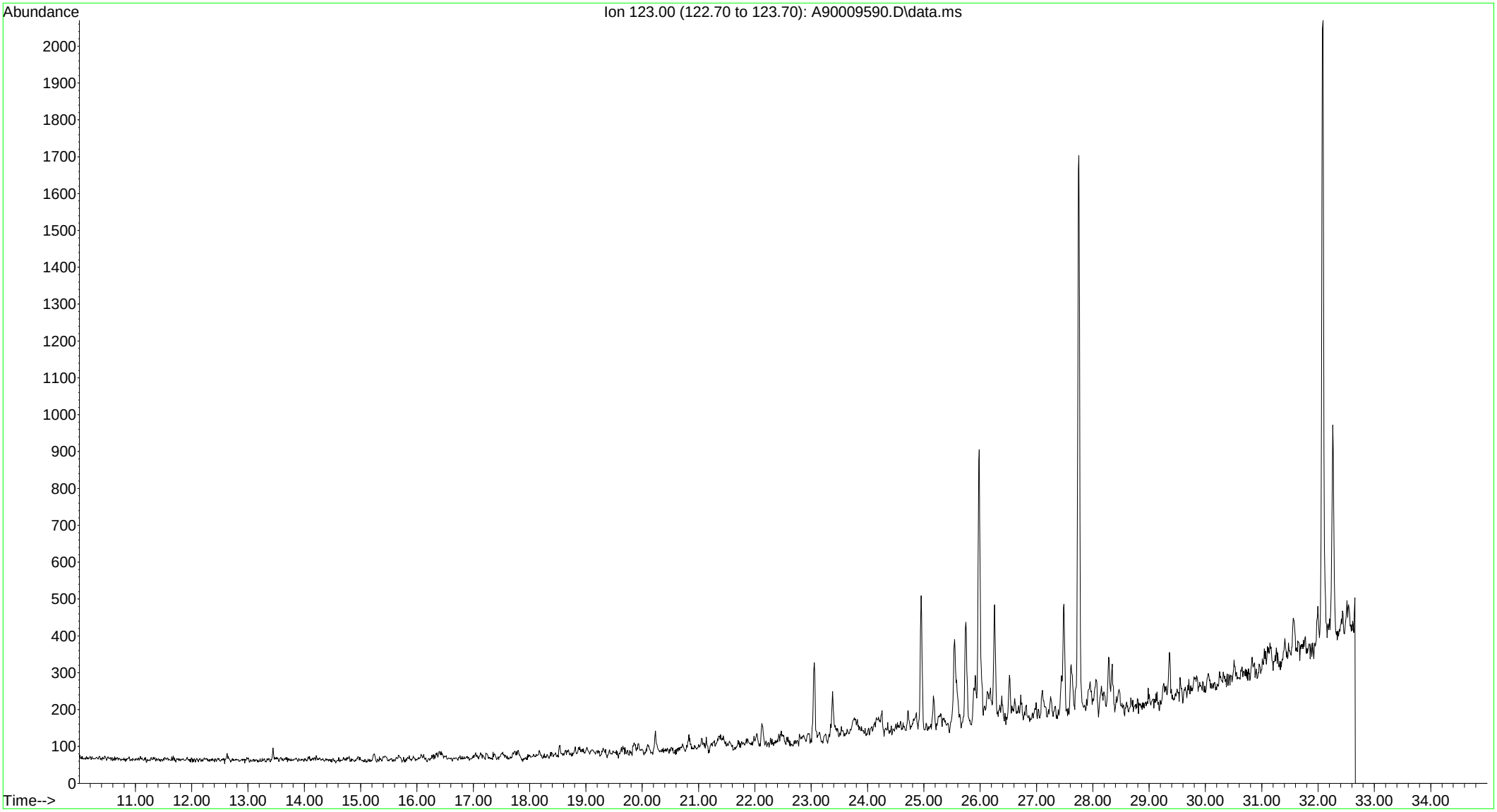
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Acquired : 23 Dec 2012 7:33 am using AcqMethod FRNC9ALT.M
Instrument : PAH 9
Sample Name: 1212022-02M
Misc Info : 1X
Vial Number: 17



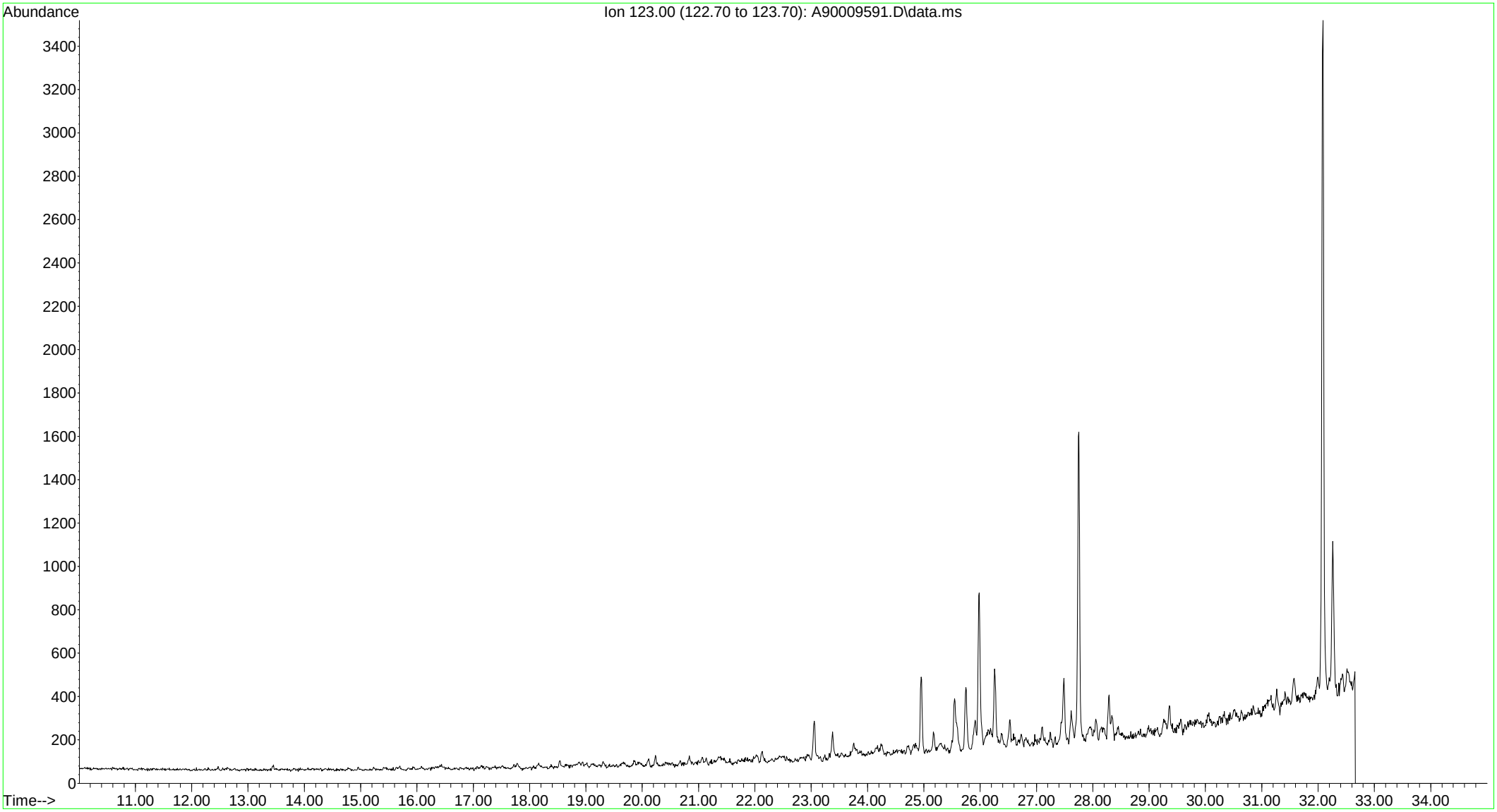
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Acquired : 23 Dec 2012 8:58 am using AcqMethod FRNC9ALT.M
Instrument : PAH 9
Sample Name: 1212022-02S
Misc Info : 1X
Vial Number: 18



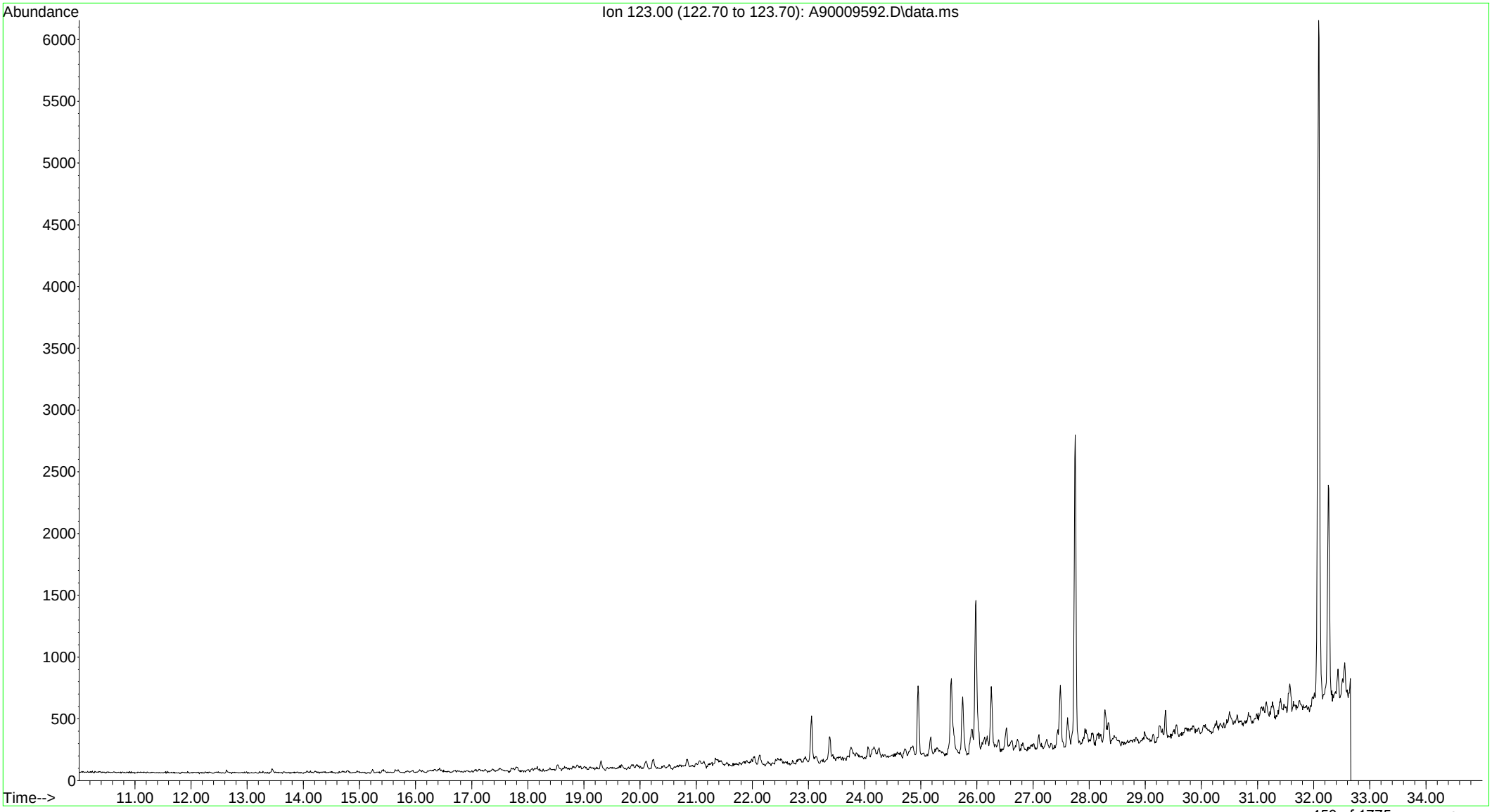
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Operator : ps
Acquired : 23 Dec 2012 10:22 am using AcqMethod FRNC9ALT.M
Instrument : PAH 9
Sample Name: 1212022-03
Misc Info : 1X
Vial Number: 19



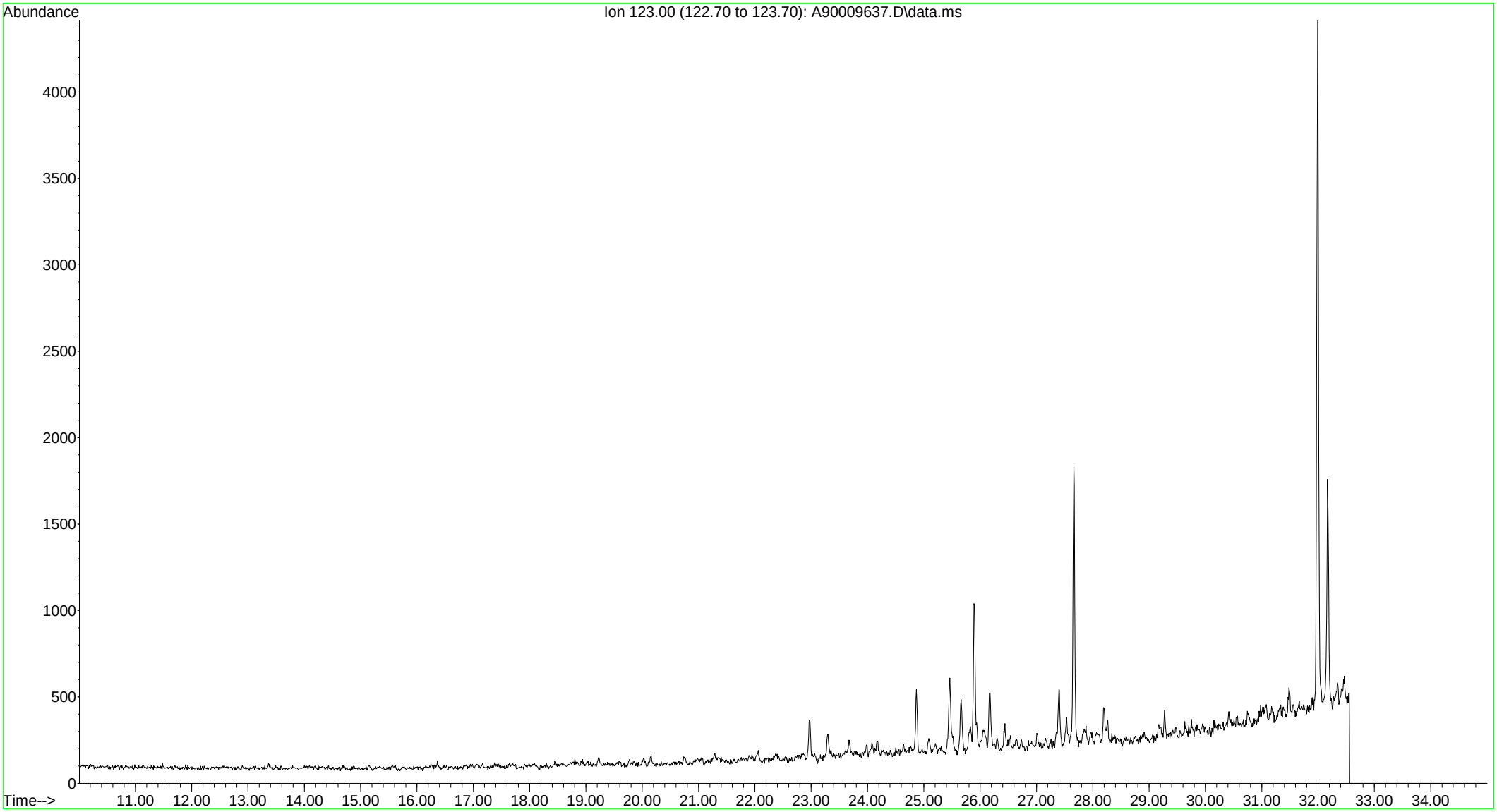
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Operator : ps
Acquired : 23 Dec 2012 11:47 am using AcqMethod FRNC9ALT.M
Instrument : PAH 9
Sample Name: 1212022-03D
Misc Info : 1X
Vial Number: 20



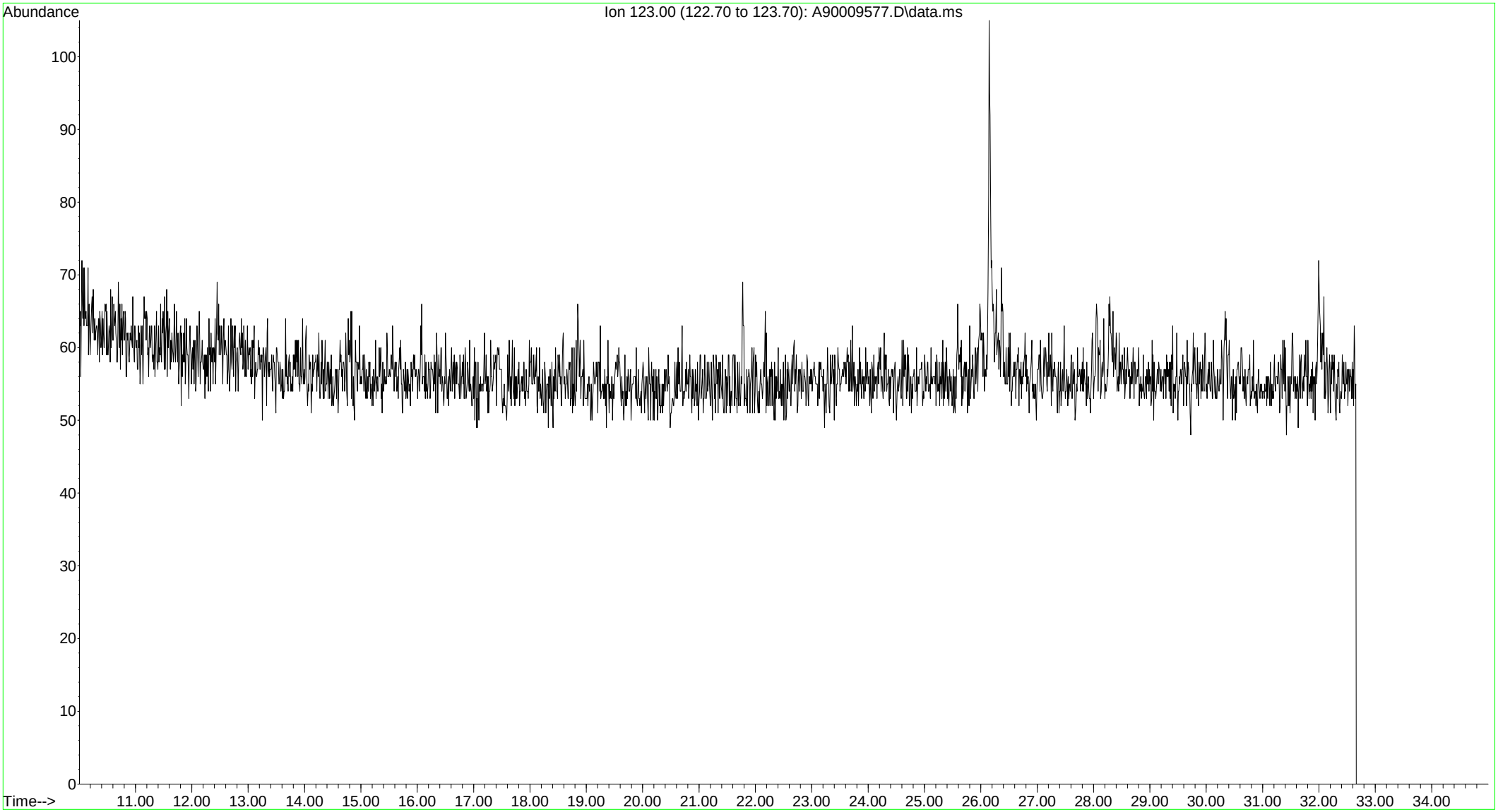
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Operator : ps
Acquired : 23 Dec 2012 1:12 pm using AcqMethod FRNC9ALT.M
Instrument : PAH 9
Sample Name: 1212022-04
Misc Info : 1X
Vial Number: 21



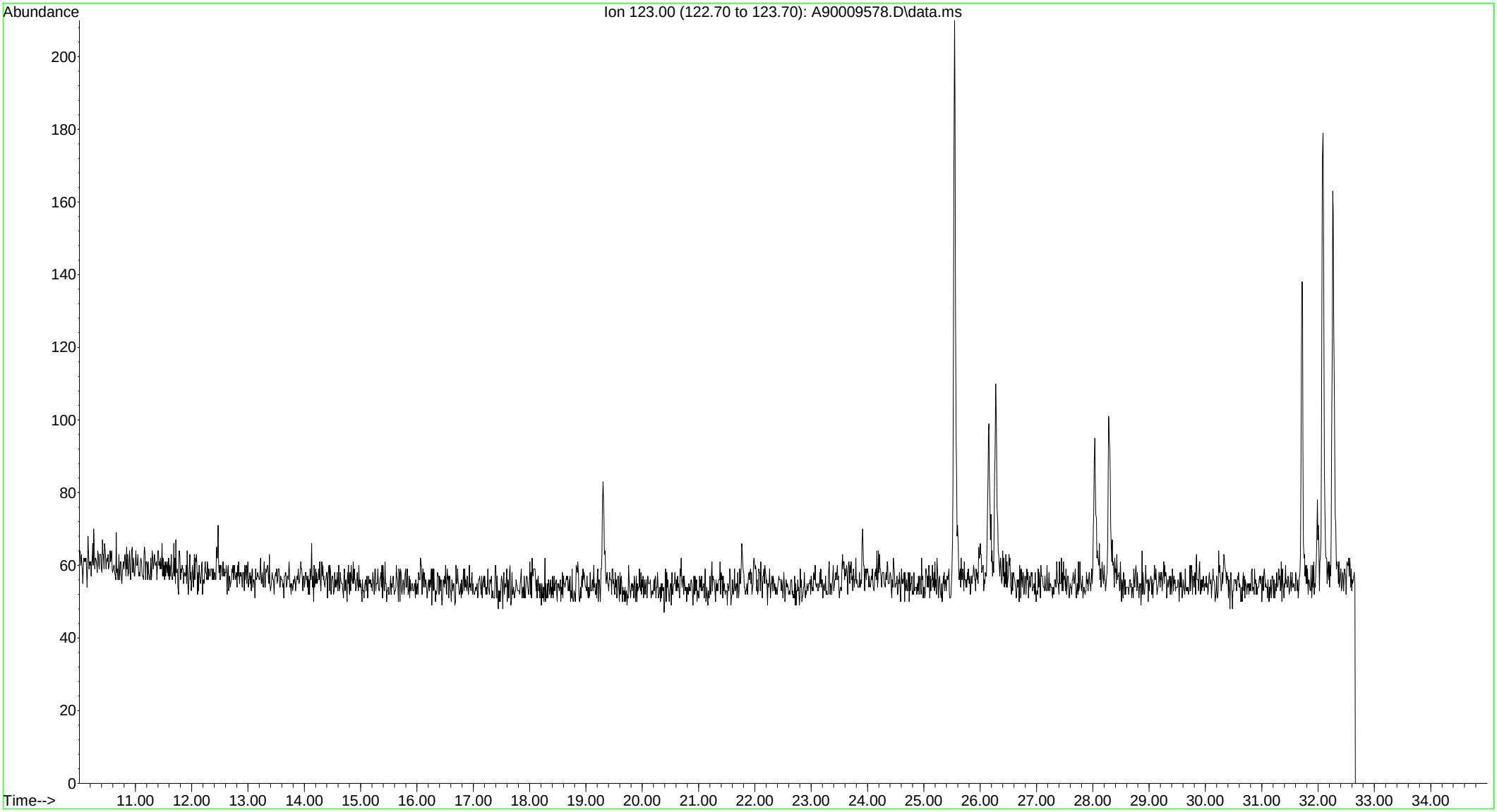
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Acquired : 26 Dec 2012 9:24 pm using AcqMethod FRNC9ALT.M
Instrument : PAH 9
Sample Name: 1212022-04-RE
Misc Info : 2X
Vial Number: 7



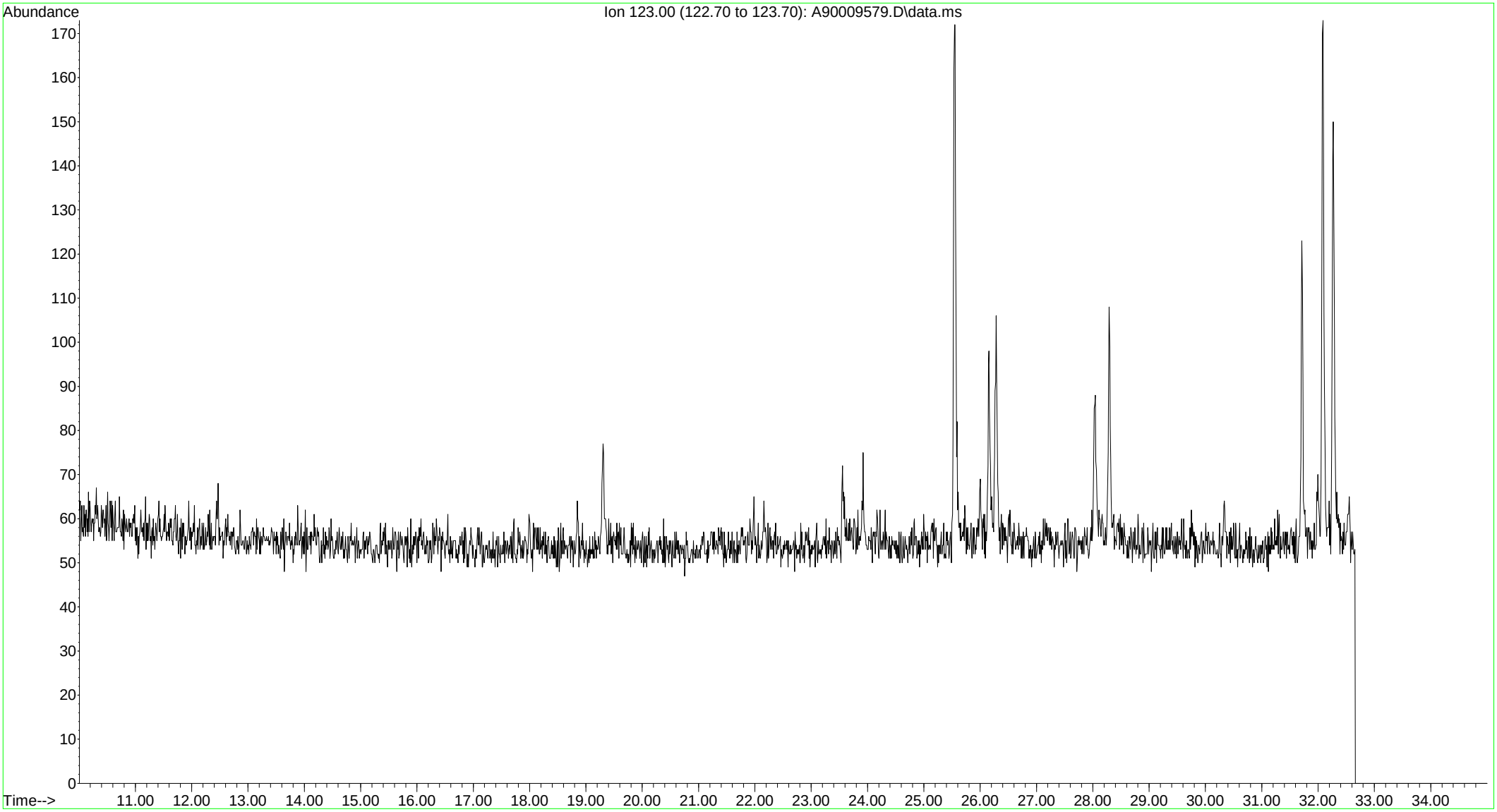
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Acquired : 22 Dec 2012 4:03 pm using AcqMethod FRNC9ALT.M
Instrument : PAH 9
Sample Name: SS121812B06
Misc Info : 1X
Vial Number: 6



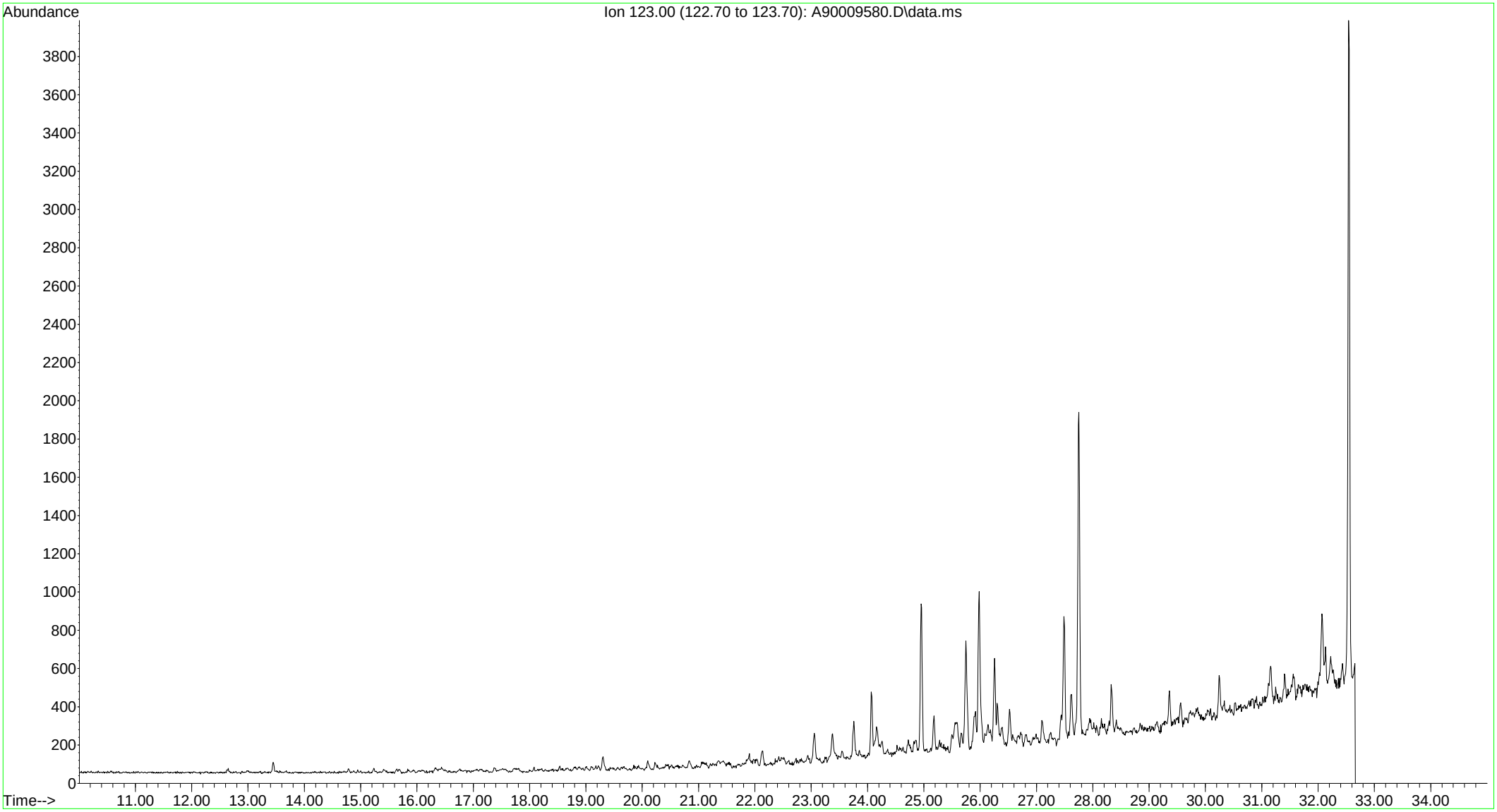
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Operator : ps
Acquired : 22 Dec 2012 5:27 pm using AcqMethod FRNC9ALT.M
Instrument : PAH 9
Sample Name: SS121812LCS06
Misc Info : 1X
Vial Number: 7



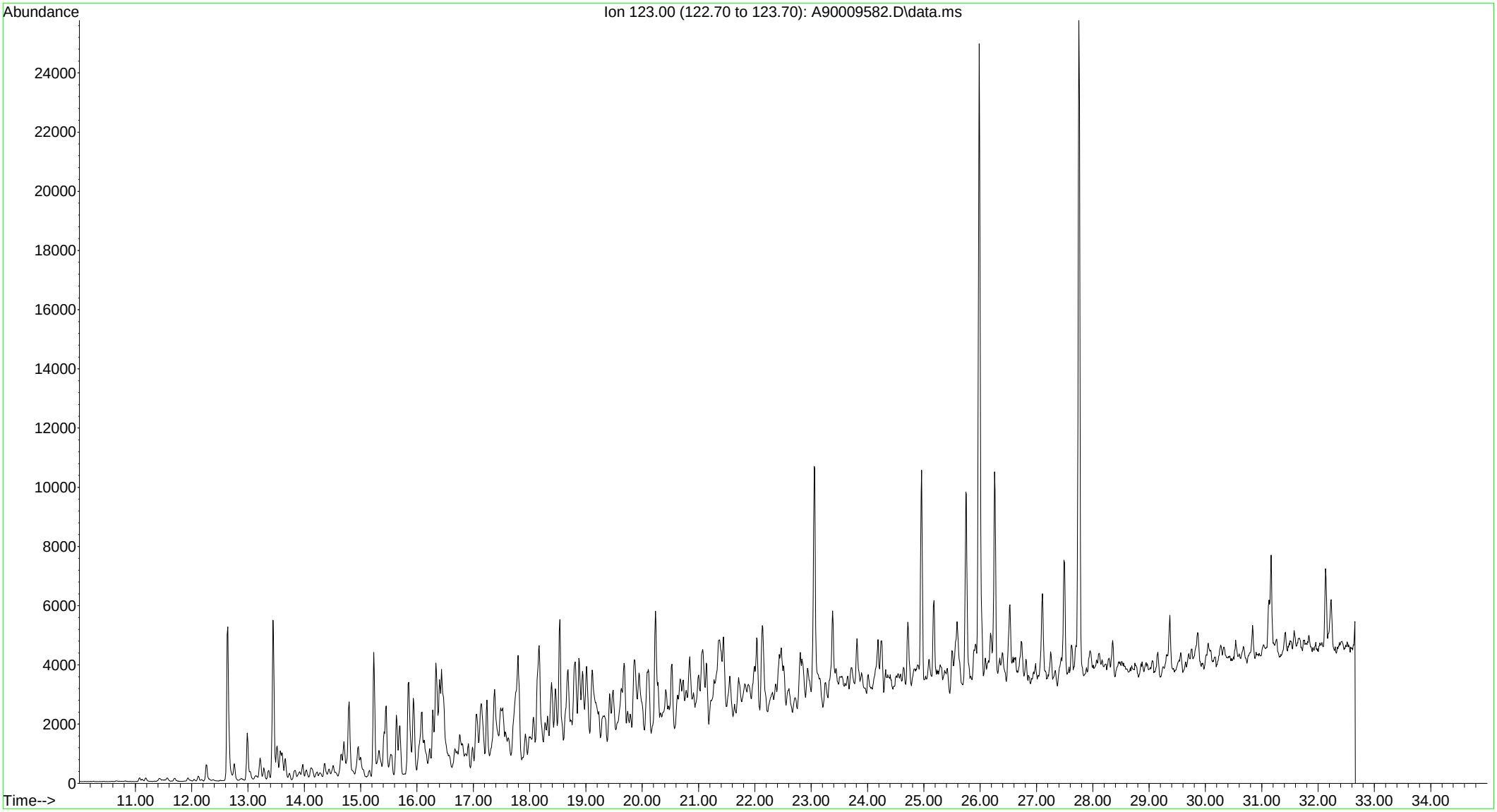
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Operator : ps
Acquired : 22 Dec 2012 6:52 pm using AcqMethod FRNC9ALT.M
Instrument : PAH 9
Sample Name: SS121812LCSD06
Misc Info : 1X
Vial Number: 8



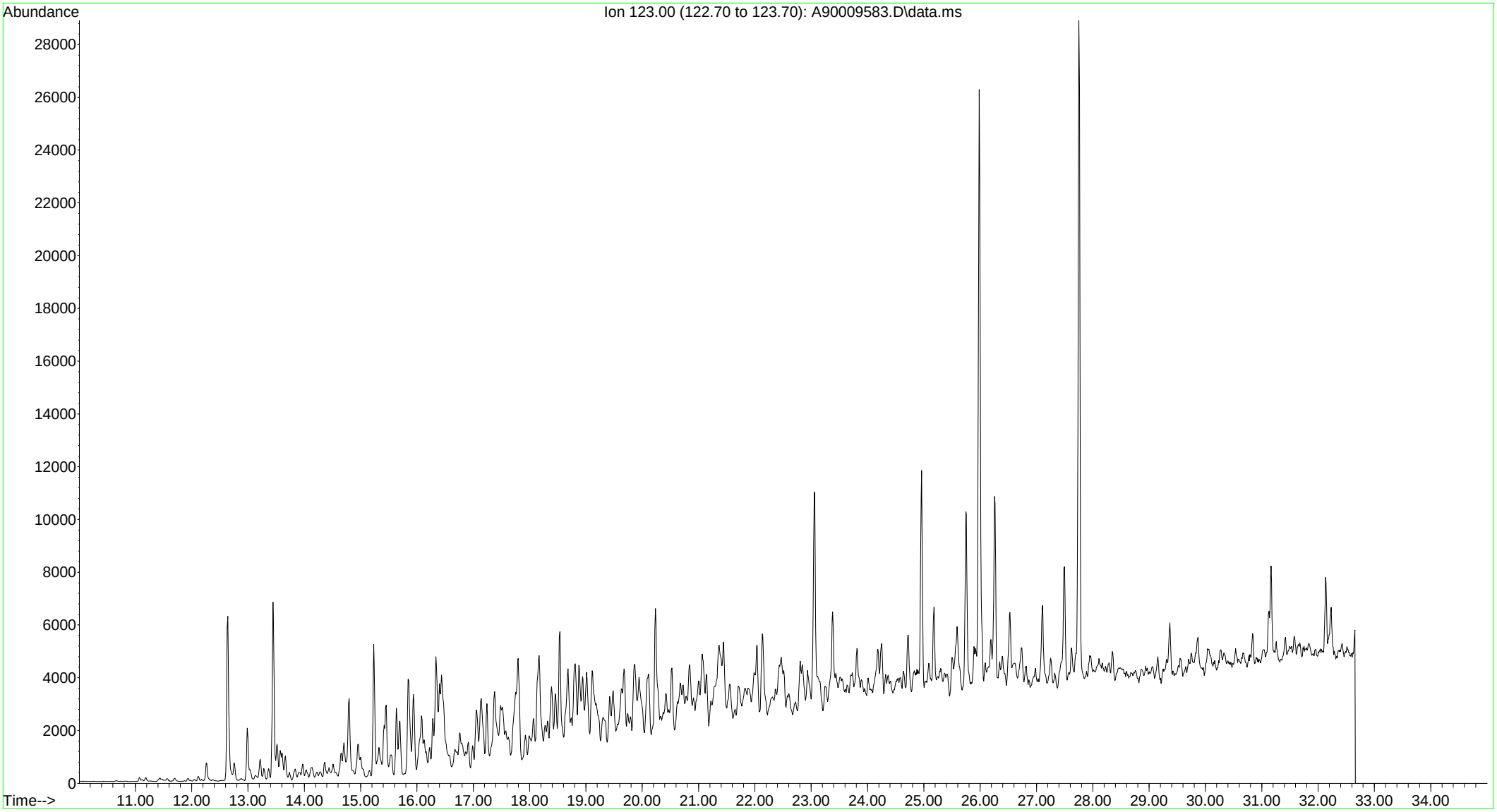
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Acquired : 22 Dec 2012 8:16 pm using AcqMethod FRNC9ALT.M
Instrument : PAH 9
Sample Name: SS121812C41BN02
Misc Info : 1X
Vial Number: 9



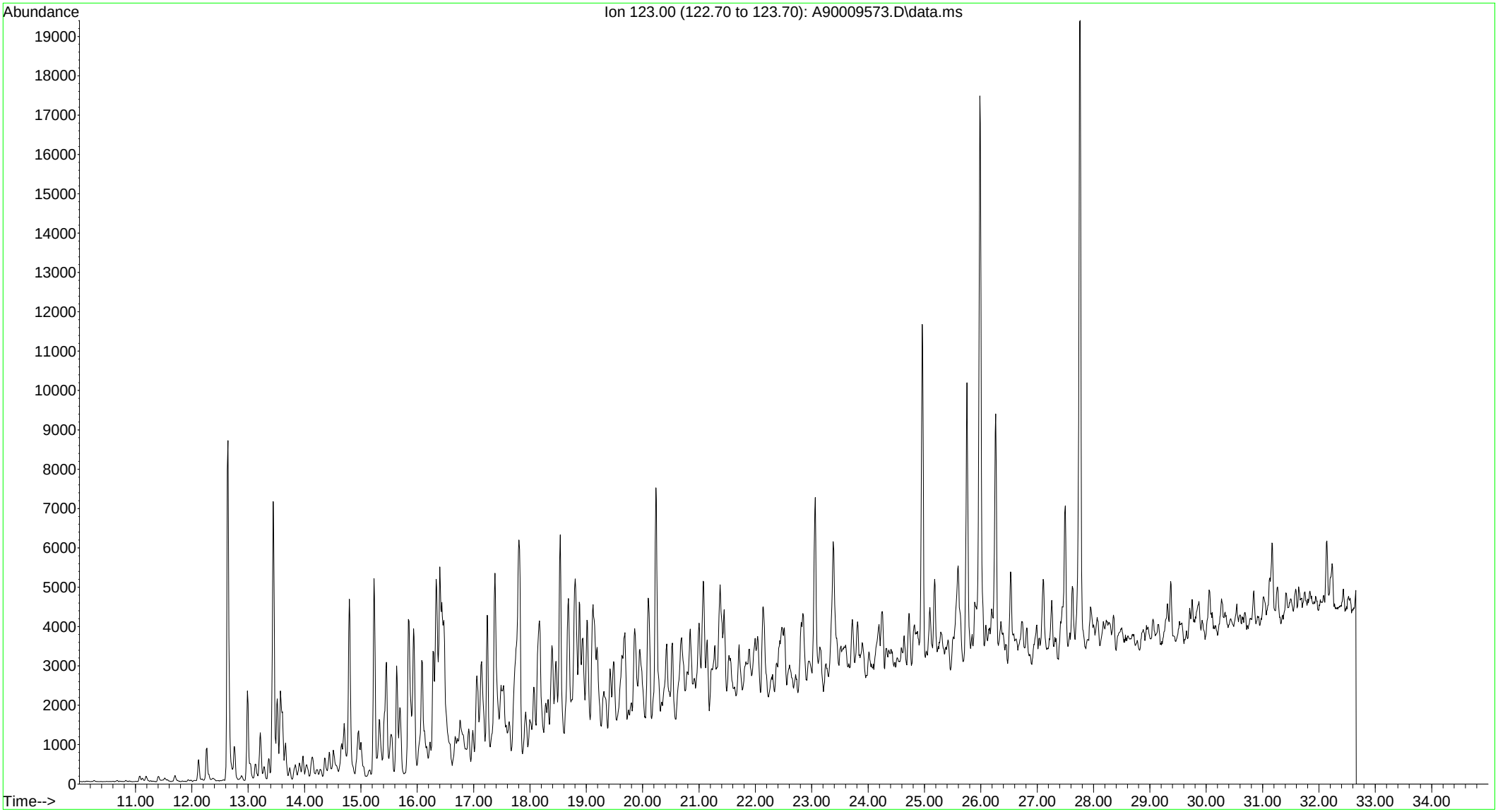
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Operator : ps
Acquired : 22 Dec 2012 11:06 pm using AcqMethod FRNC9ALT.M
Instrument : PAH 9
Sample Name: SS122712CL03
Misc Info : WHAQ74:5.064mg/kg
Vial Number: 11



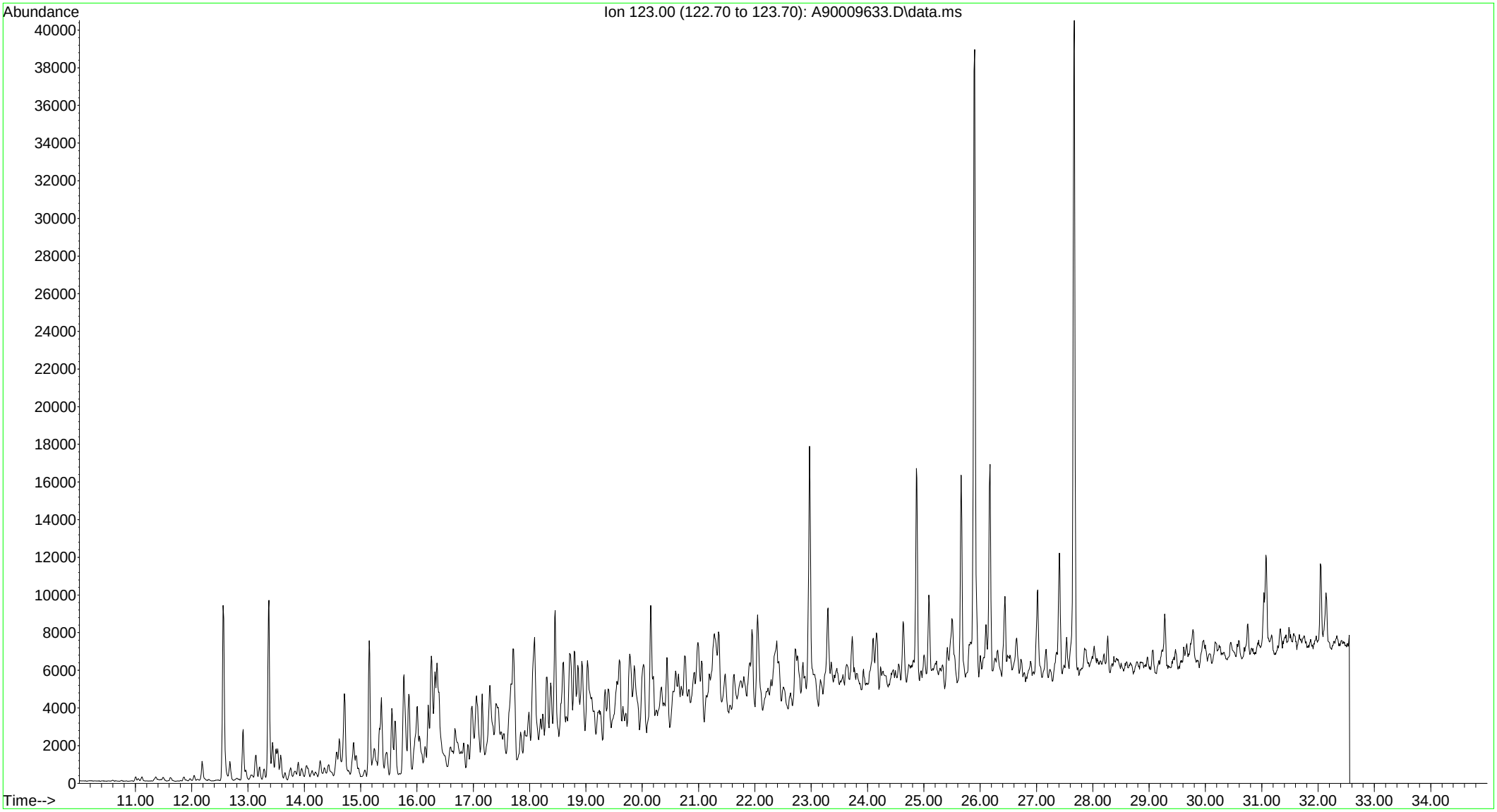
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Operator : ps
Acquired : 23 Dec 2012 12:30 am using AcqMethod FRNC9ALT.M
Instrument : PAH 9
Sample Name: SS122712WCS03
Misc Info : WHAQ73:5.086mg/kg
Vial Number: 12



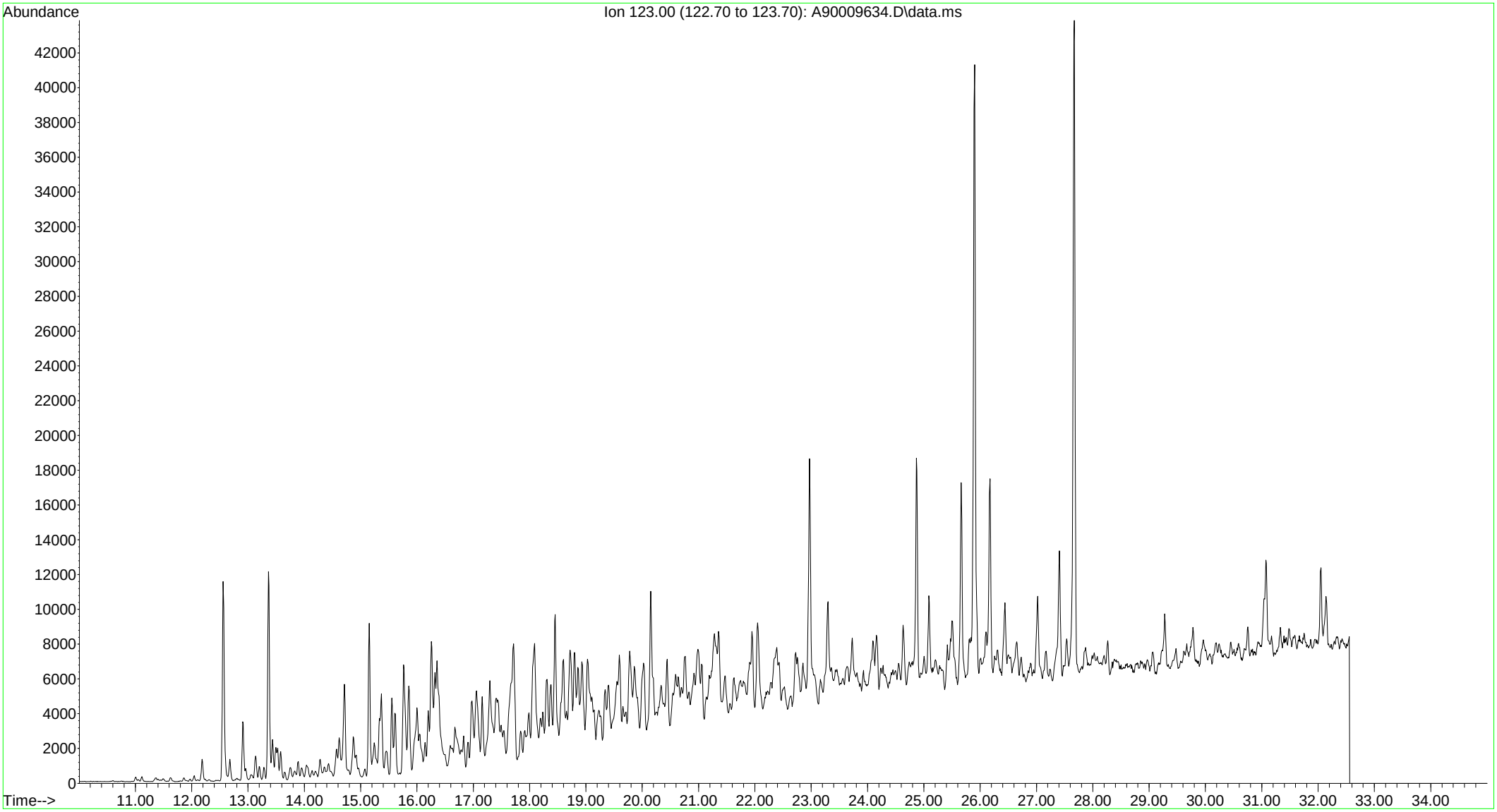
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Operator : ps
Acquired : 22 Dec 2012 10:17 am using AcqMethod FRNC9ALT.M
Instrument : PAH 9
Sample Name: SS122712ANC03
Misc Info : WHAR16:5.134mg/kg
Vial Number: 2



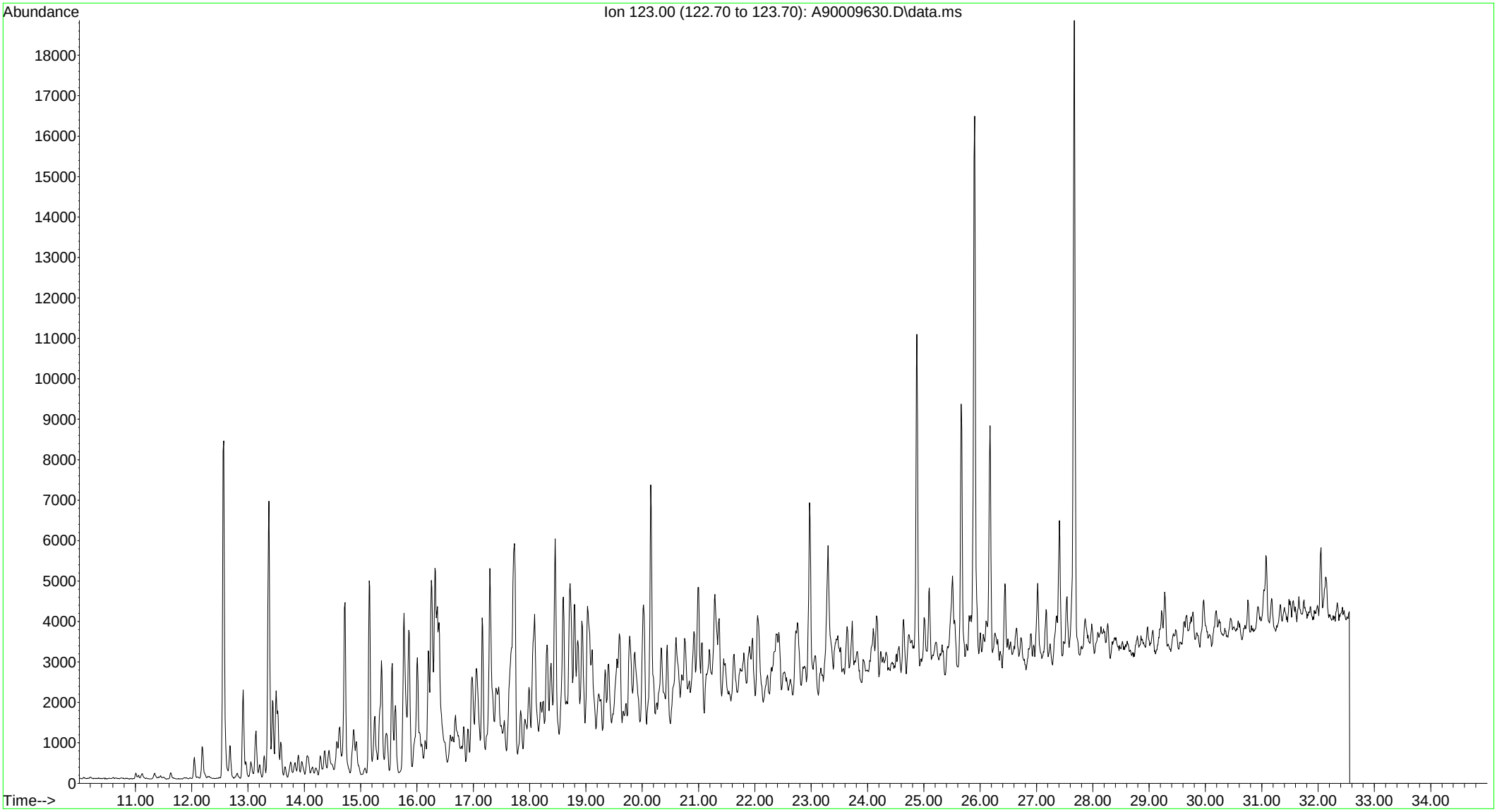
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Operator : ps
Acquired : 26 Dec 2012 3:46 pm using AcqMethod FRNC9ALT.M
Instrument : PAH 9
Sample Name: SS122712CL04
Misc Info : WHAQ74@5.064
Vial Number: 3



File :O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\A90009634.D
Operator : ps
Acquired : 26 Dec 2012 5:11 pm using AcqMethod FRNC9ALT.M
Instrument : PAH 9
Sample Name: SS122712WCS04
Misc Info : WHAQ73@5.036
Vial Number: 4



File :O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\A90009630.D
Operator : ps
Acquired : 26 Dec 2012 9:19 am using AcqMethod FRNC9ALT.M
Instrument : PAH 9
Sample Name: SS122712ANC04
Misc Info : WHAR16:5.134mg/kg
Vial Number: 1



Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009573.D
Acq On : 22 Dec 2012 10:17 am
Operator : ps
Sample : SS122712ANC03
Misc : WHAR16:5.134mg/kg
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Dec 27 15:45:12 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC22\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Dec 22 12:27:19 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.155	164	66859	500.000	ng/mL	0.00
74) Chrysene-d12	42.557	240	114934	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.229	136	229258	892.132	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 89.21%			
42) Phenanthrene-d10	32.004	188	242178	1004.246	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 100.42%			
83) Benzo[b]fluoranthene-d12	46.459	264	223708	1058.869	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 105.89%			
88) Benzo[a]pyrene-d12	47.584	264	218326	1030.884	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 103.09%			
129) 5B(H)Cholane - Surr	43.196	217	51639M4	1070.251	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 107.03%			
Target Compounds						Qvalue
3) trans-Decalin	15.907	138	133065	2263.813	ng/mL	100
4) cis-Decalin	17.112	138	5843M4	126.978	ng/mL	
5) C1-Decalins	17.824	152	238258M5	4053.444	ng/mL	
6) C2-Decalins	19.147	166	216198M5	3678.141	ng/mL	
7) C3-Decalins	21.611	180	122340M5	2081.350	ng/mL	
8) C4-Decalins	24.969	194	131679M5	2240.233	ng/mL	
10) Naphthalene	19.302	128	743661	2819.981	ng/mL#	100
11) C1-Naphthalenes	21.985	142	1635406M5	6201.501	ng/mL	
12) C2-Naphthalenes	24.814	156	2112838M5	8011.935	ng/mL	
13) C3-Naphthalenes	27.141	170	1645851M5	6241.109	ng/mL	
14) C4-Naphthalenes	29.896	184	971947M5	3685.648	ng/mL	
16) 2-Methylnaphthalene	21.985	142	962724	5582.331	ng/mL#	100
17) 1-Methylnaphthalene	22.405	142	673054	4021.438	ng/mL#	100
18) Benzothiophene	19.530	134	6376M4	28.891	ng/mL	
19) C1-Benzo(b)thiophenes	21.556	148	38606M5	174.935	ng/mL	
20) C2-Benzo(b)thiophenes	25.006	162	59601M5	270.069	ng/mL	
21) C3-Benzo(b)thiophenes	26.977	176	130130M5	589.656	ng/mL	
22) C4-Benzo(b)thiophenes	29.075	190	117153M5	530.853	ng/mL	
23) Biphenyl	23.856	154	155705	689.921	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.476	156	523896	3231.617	ng/mL#	100
25) Dibenzofuran	26.922	168	62702	260.484	ng/mL#	83
26) Acenaphthylene	25.553	152	9565	35.259	ng/mL#	100
27) Acenaphthene	26.283	153	12956M3	75.959	ng/mL	
28) 2,3,5-Trimethylnaphthalen	27.834	170	106636M3	715.455	ng/mL	
29) Fluorene	28.291	166	69222M4	369.559	ng/mL	
30) C1-Fluorenes	30.644	180	167957M5	896.682	ng/mL	
31) C2-Fluorenes	32.843	194	278110M5	1484.762	ng/mL	
32) C3-Fluorenes	34.669	208	270589M5	1444.609	ng/mL	
33) Dibenzothiophene	31.593	184	187063	709.963	ng/mL#	89
34) 4-Methyldibenzothiophene(	33.364	198	188904	716.950	ng/mL#	100
35) 2/3-Methyldibenzothiophen	33.710	198	131943	500.765	ng/mL#	100
36) 1-Methyldibenzothiophene(	34.130	198	60018	227.787	ng/mL#	100
37) OTP	33.793	198	29783	113.036	ng/mL#	100
38) C1-Dibenzothiophenes	33.364	198	416004M5	1578.866	ng/mL	
38) C1-Dibenzothiophenes BS	33.364	198	386221m	1465.831	ng/mL	
39) C2-Dibenzothiophenes	35.052	212	556502M5	2112.101	ng/mL	
40) C3-Dibenzothiophenes	36.851	226	509094M5	1932.172	ng/mL	
41) C4-Dibenzothiophenes	38.540	240	279906M5	1062.332	ng/mL	
43) Phenanthrene	32.086	178	286917M4	1054.033	ng/mL	

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009573.D
Acq On : 22 Dec 2012 10:17 am
Operator : ps
Sample : SS122712ANC03
Misc : WHAR16:5.134mg/kg
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Dec 27 15:45:12 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC22\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Dec 22 12:27:19 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
44) 3-Methylphenanthrene(3MP)	34.048	192	131104	481.631	ng/mL	98
45) 2-Methylphenanthrene(2MP)	34.158	192	143467	527.048	ng/mL	97
46) 2-Methylanthracene(2MA)	34.322	192	4861	17.858	ng/mL	83
47) 9/4-Methylphenanthrene(9M	34.505	192	201738	741.115	ng/mL	99
48) 1-Methylphenanthrene(1MP)	34.596	192	145525	534.608	ng/mL	97
49) C1-Phenanthrenes/Anthrace	34.505	192	631258M5	2319.023	ng/mL	
50) C2-Phenanthrenes/Anthrace	36.312	206	729246M5	2678.996	ng/mL	
50) C2-Phenanthrenes/Anthr BS	36.312	206	729246m	2678.996	ng/mL	
52) C3-Phenanthrenes/Anthrace	38.147	220	531337M5	1951.948	ng/mL	
53) C4-Phenanthrenes/Anthrace	40.329	234	211888M5	778.403	ng/mL	
56) Carbazole	32.944	167	6979M3	29.185	ng/mL	
57) 1-Methylphenanthrene	34.596	192	145525	724.601	ng/mL	97
58) Fluoranthene	36.841	202	6182M4	20.330	ng/mL	
59) Benzo(b)fluorene	39.362	216	5556M4	30.723	ng/mL	
60) Pyrene	37.727	202	20300M4	65.435	ng/mL	
61) C1-Fluoranthenes/Pyrenes	39.115	216	99997M5	322.331	ng/mL	
62) C2-Fluoranthenes/Pyrenes	40.923	230	155225M5	500.354	ng/mL	
63) C3-Fluoranthenes/Pyrenes	42.941	244	184700M5	595.364	ng/mL	
64) C4-Fluoranthenes/Pyrenes	44.292	258	155585M5	501.514	ng/mL	
66) Naphthobenzothiophene	41.571	234	41248M3	153.231	ng/ml	
67) Naphthobenzothiophene-2,1	41.571	234	40718M3	151.262	ng/mL	
68) Naphthobenzothiophene-1,2	41.909	234	10093M4	37.494	ng/mL	
69) Naphthobenzothiophene-2,3	42.210	234	4191M4	15.569	ng/mL	
70) C1-Naphthobenzothiophenes	42.968	248	152888M5	567.958	ng/ml	
71) C2-Naphthobenzothiophenes	44.968	262	196797M5	731.074	ng/ml	
72) C3-Naphthobenzothiophenes	46.569	276	147369M5	547.456	ng/ml	
73) C4-Naphthobenzothiophenes	47.593	290	111515M5	414.263	ng/mL	
75) Benz[a]anthracene	42.502	228	2729M3	10.352	ng/mL	
77) Chrysene/Triphenylene	42.630	228	48980M4	188.903	ng/mL	
78) C1-Chrysenes	44.137	242	93317M5	359.899	ng/mL	
79) C2-Chrysenes	46.816	256	131731M5	508.052	ng/mL	
79) C2-Chrysenes BS	46.816	256	122865m	473.858	ng/mL	
80) BBF-d12 Surr BKGD	46.459	256	8866	34.194	ng/mL	100
81) C3-Chrysenes	48.782	270	141841M5	547.043	ng/mL	
82) C4-Chrysenes	48.883	284	82256M5	317.240	ng/mL	
84) Benzo[b]fluoranthene	46.542	252	7264	26.574	ng/mL	97
87) Benzo[e]pyrene	47.493	252	12480	48.081	ng/mL	94
89) Benzo[a]pyrene	47.676	252	1797M3	7.310	ng/mL	
90) Perylene	47.968	252	2818M4	10.741	ng/mL	
91) Indeno[1,2,3-cd]pyrene	52.175	276	1073	3.941	ng/mL#	100
92) Dibenz[ah]+[ac]anthracene	52.193	278	1147M4	4.277	ng/mL	
93) Benzo[g,h,i]perylene	53.363	276	4102	15.333	ng/mL#	85
94) Hopane (T19)	51.334	191	74032M4	732.652	ng/mL	
96) C23 Tricyclic Terpane (T4	40.229	191	31470	311.440	ng/ml	100
97) C24 Tricyclic Terpane (T5	40.950	191	18744M4	185.498	ng/ml	
98) C25 Tricyclic Terpane (T6	42.438	191	19075M4	188.774	ng/ml	
99) C24 Tetracyclic Terpane (	43.735	191	6370M4	63.040	ng/ml	
100) C26 Tricyclic Terpane-22S	43.498	191	7335M4	72.590	ng/ml	
101) C26 Tricyclic Terpane-22R	43.589	191	7290	72.145	ng/ml	100
102) C28 Tricyclic Terpane-22S	45.883	191	6728M4	66.583	ng/ml	
103) C28 Tricyclic Terpane-22R	46.048	191	7411	73.342	ng/ml	100
104) C29 Tricyclic Terpane-22S	46.560	191	9713	96.124	ng/ml	100
105) C29 Tricyclic Terpane-22R	46.752	191	9119M4	90.245	ng/ml	
106) 18a-22,29,30-Trisnorneoho	47.795	191	13594	134.532	ng/ml	100
107) C30 Tricyclic Terpane-22S	47.913	191	7663M4	75.836	ng/mL	
108) C30 Tricyclic Terpane-22R	48.142	191	7294	72.184	ng/mL	100

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009573.D
Acq On : 22 Dec 2012 10:17 am
Operator : ps
Sample : SS122712ANC03
Misc : WHAR16:5.134mg/kg
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Dec 27 15:45:12 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC22\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Dec 22 12:27:19 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

	Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
109)	17a(H)-22,29,30-Trisnorho	48.316	191	15957	157.917	ng/ml	100
110)	17a/b,21b/a 28,30-Bisnorh	49.441	191	3986M4	39.447	ng/ml	
111)	17a(H),21b(H)-25-Norhopan	49.276	191	4068	40.259	ng/ml	100
112)	30-Norhopane (T15)	50.063	191	44083M4	436.264	ng/ml	
113)	18a(H)-30-Norneohopane-C2	50.163	191	10971M4	108.574	ng/ml	
114)	17a(H)-Diahopane (X)	50.282	191	6082M4	60.190	ng/ml	
115)	30-Normoretane (T17)	50.795	191	5133	50.798	ng/ml	100
117)	Moretane (T20)	51.974	191	7296M4	72.204	ng/ml	
118)	30-Homohopane-22S (T21)	52.988	191	32107M4	317.744	ng/ml	
119)	30-Homohopane-22R (T22)	53.208	191	27247	269.648	ng/ml	100
120)	Gammacerane/C32-diahopane	53.701	191	5273M4	52.184	ng/mL	
121)	30,31-Bishomohopane-22S (	54.432	191	22821	225.846	ng/ml	100
122)	30,31-Bishomohopane-22R (	54.779	191	16270	161.015	ng/ml	100
123)	30,31-Trishomohopane-22S	56.388	191	17715	175.315	ng/ml	100
124)	30,31-Trishomohopane-22R	56.954	191	12008	118.836	ng/ml	100
125)	Tetrakishomohopane-22S (T	58.800	191	13494	133.542	ng/ml	100
126)	Tetrakishomohopane-22R (T	59.623	191	9254	91.581	ng/ml	100
127)	Pentakishomohopane-22S (T	61.660	191	13309	131.711	ng/ml	100
128)	Pentakishomohopane-22R (T	62.839	191	9639M4	95.392	ng/ml	
130)	13b(H),17a(H)-20S-Diachol	44.712	217	11834M4	245.267	ng/ml	
131)	13b(H),17a(H)-20R-Diachol	45.133	217	6628M4	137.369	ng/ml	
132)	13b,17a-20S-Methyldiachol	45.828	217	5902M4	122.323	ng/ml	
133)	14a,17a-20S-Chol/13b,17a-	46.688	217	16315	338.139	ng/ml	100
134)	14a,17a-20R-Chol/13b,17a-	47.182	217	18450	382.388	ng/ml	100
135)	Unknown Sterane (S18)	47.447	217	4816	99.815	ng/ml	100
136)	13a,17b-20S-Ethyldiachole	47.703	217	1091	22.612	ng/ml	100
137)	14a,17a-20S-Methylcholest	47.849	217	8691M4	180.126	ng/ml	
138)	14a,17a-20R-Methylcholest	48.517	217	7506M4	155.567	ng/ml	
139)	14a(H),17a(H)-20S-Ethylch	48.856	217	11558M4	239.547	ng/ml	
140)	14a(H),17a(H)-20R-Ethylch	49.706	217	10043M4	208.147	ng/ml	
141)	14b(H),17b(H)-20R-Cholest	46.779	218	10394M4	215.422	ng/ml	
142)	14b(H),17b(H)-20S-Cholest	46.853	218	10482M4	217.246	ng/ml	
143)	14b,17b-20R-Methylcholest	48.005	218	11242	232.997	ng/ml	100
144)	14b,17b-20S-Methylcholest	48.087	218	13875M4	287.568	ng/ml	
145)	14b(H),17b(H)-20R-Ethylch	49.084	218	14872	308.232	ng/ml	100
146)	14b(H),17b(H)-20S-Ethylch	49.130	218	8935M3	185.183	ng/ml	
147)	C26,20R- +C27,20S- triaro	48.810	231	60331	1250.398	ng/mL	100
148)	C28,20S-triaromatic stero	49.624	231	37331	773.708	ng/mL	100
149)	C27,20R-triaromatic stero	50.035	231	36631M4	759.200	ng/mL	
150)	C28,20R-triaromatic stero	51.160	231	31353	649.811	ng/mL	100

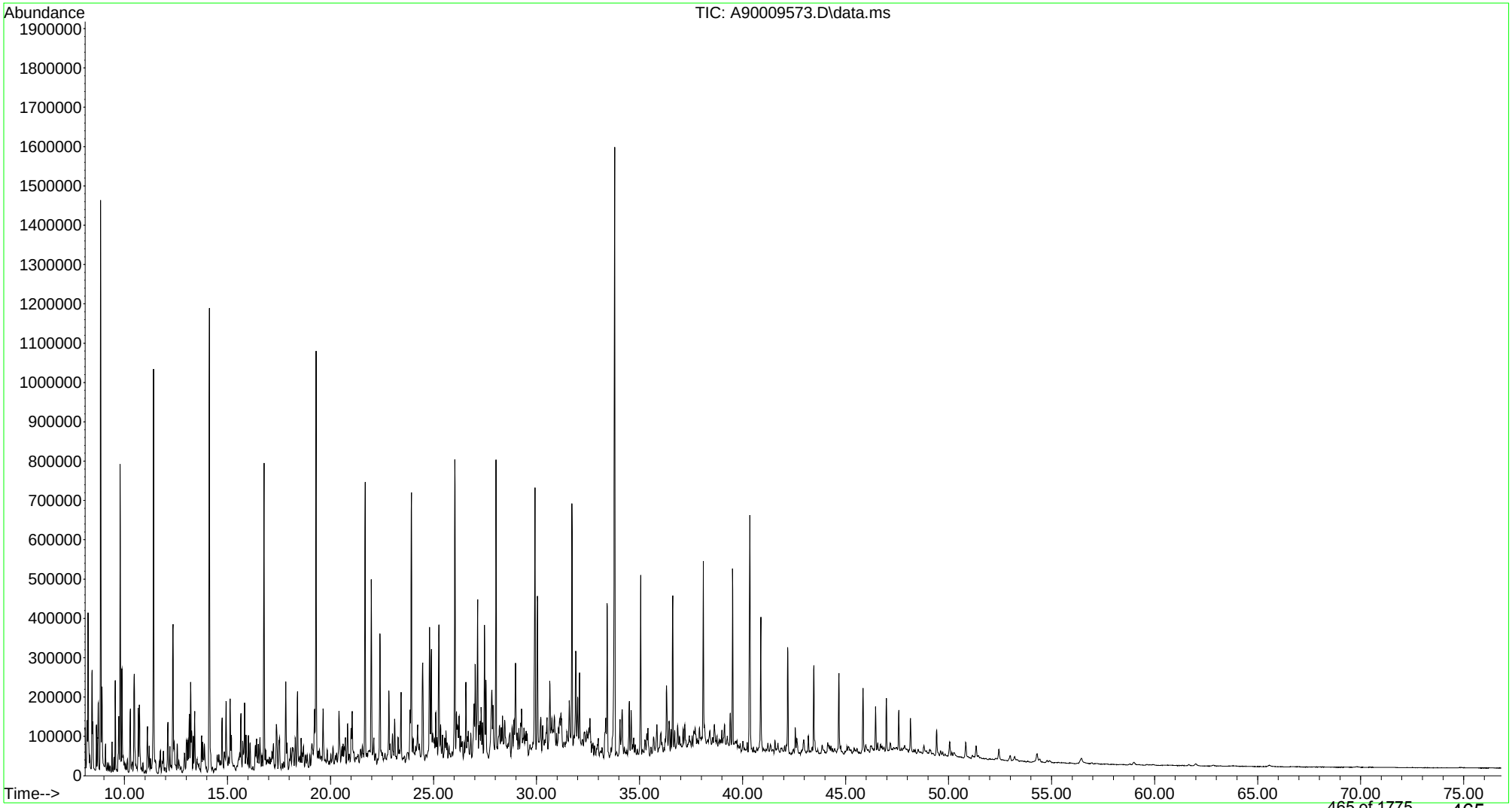
(#) = qualifier out of range (m) = manual integration (+) = signals summed

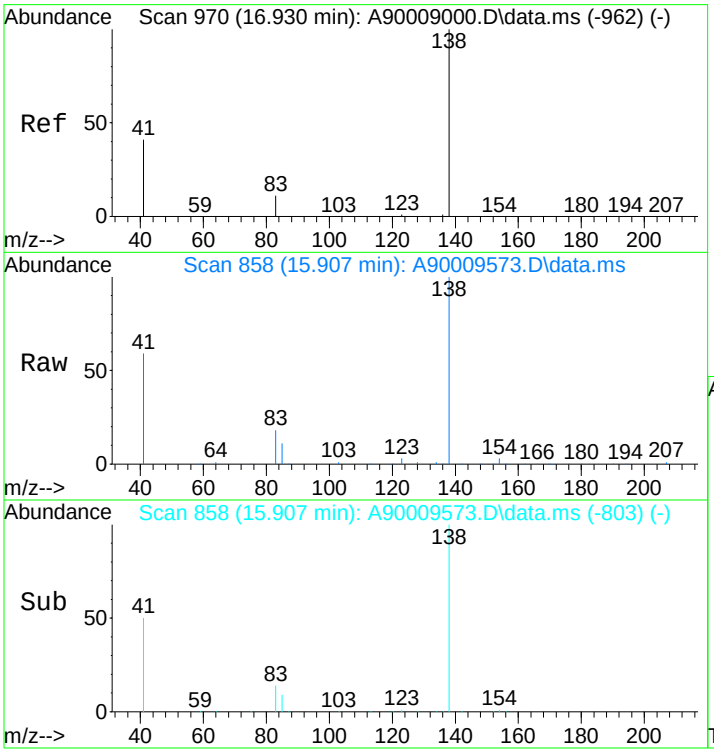
Quantitation Report (QT Reviewed)

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Data File : A90009573.D
Acq On : 22 Dec 2012 10:17 am
Operator : ps
Sample : SS122712ANC03
Misc : WHAR16:5.134mg/kg
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Dec 27 15:45:12 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC22\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Dec 22 12:27:19 2012
Response via : Initial Calibration

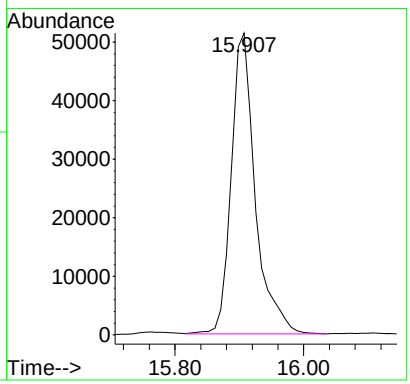
Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

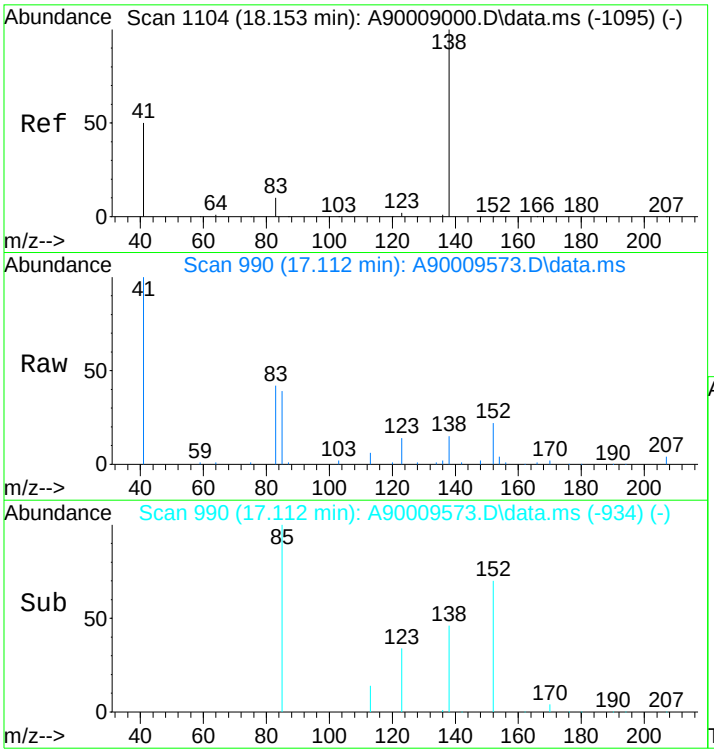




#3
trans-Decalin
Concen: 2263.81 ng/mL
RT: 15.907 min Scan# 858
Delta R.T. -0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

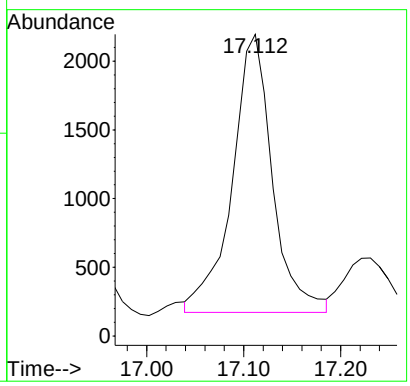
Tgt Ion:138 Resp: 133065

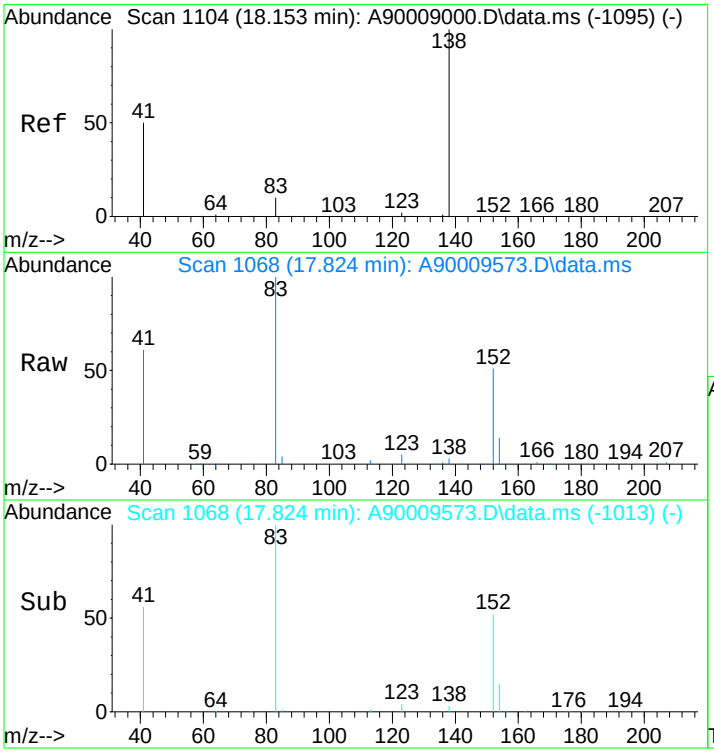




#4
cis-Decalin
Concen: 126.98 ng/mL m
RT: 17.112 min Scan# 990
Delta R.T. 0.009 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

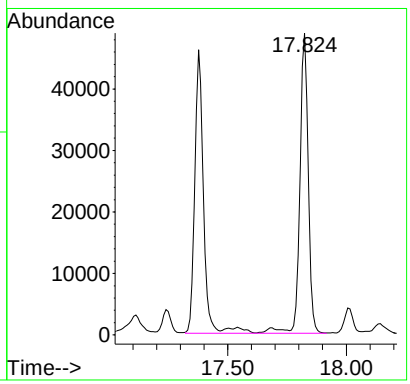
Tgt Ion:138 Resp: 5843

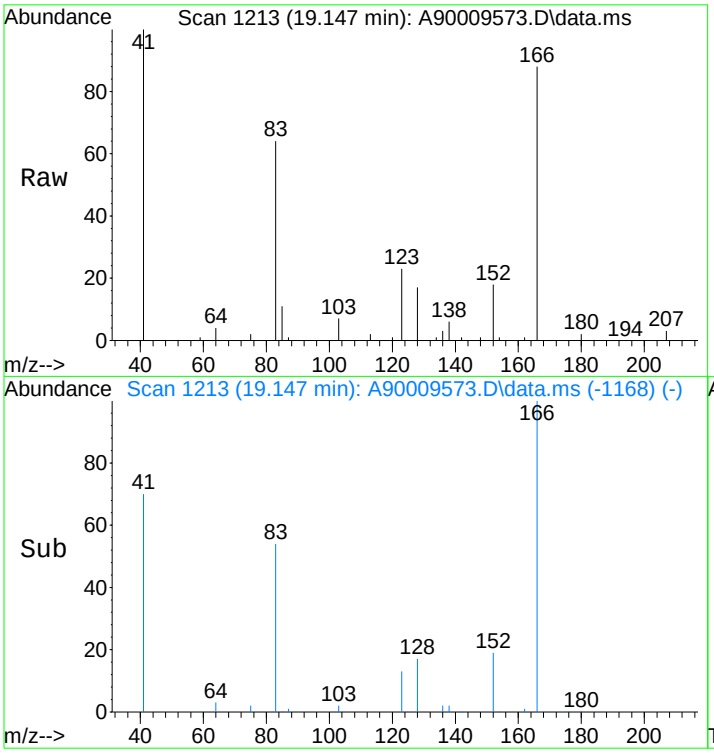




#5
C1-Decalins
Concen: 4053.44 ng/mL m
RT: 17.824 min Scan# 1068
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

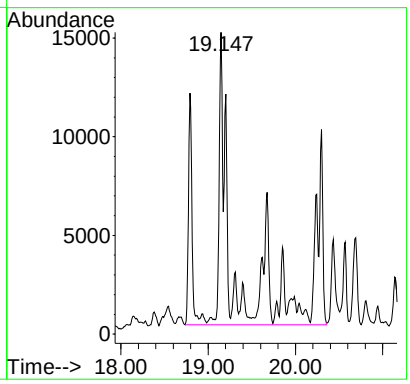
Tgt Ion:152 Resp: 238258

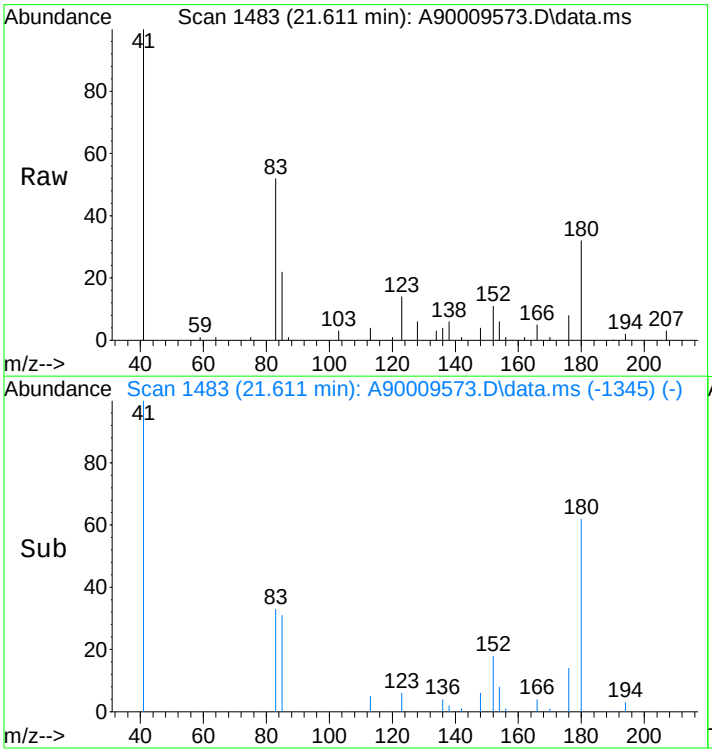




#6
C2-Decalins
Concen: 3678.14 ng/mL m
RT: 19.147 min Scan# 1213
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

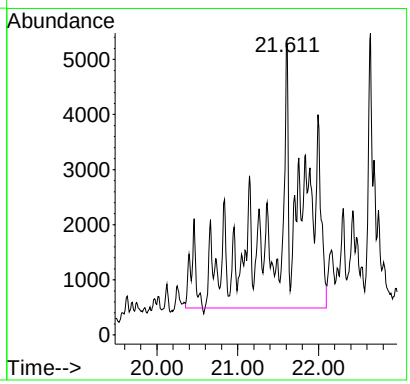
Tgt Ion:166 Resp: 216198

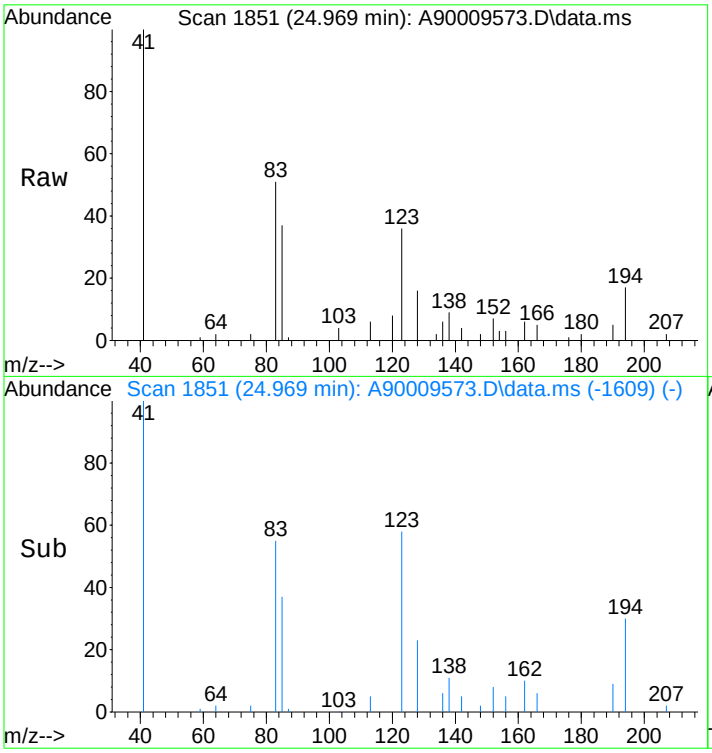




#7
C3-Decalins
Concen: 2081.35 ng/mL m
RT: 21.611 min Scan# 1483
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

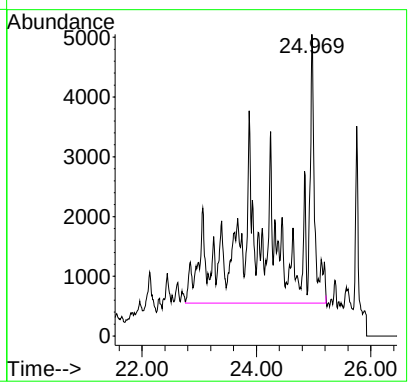
Tgt Ion:180 Resp: 122340

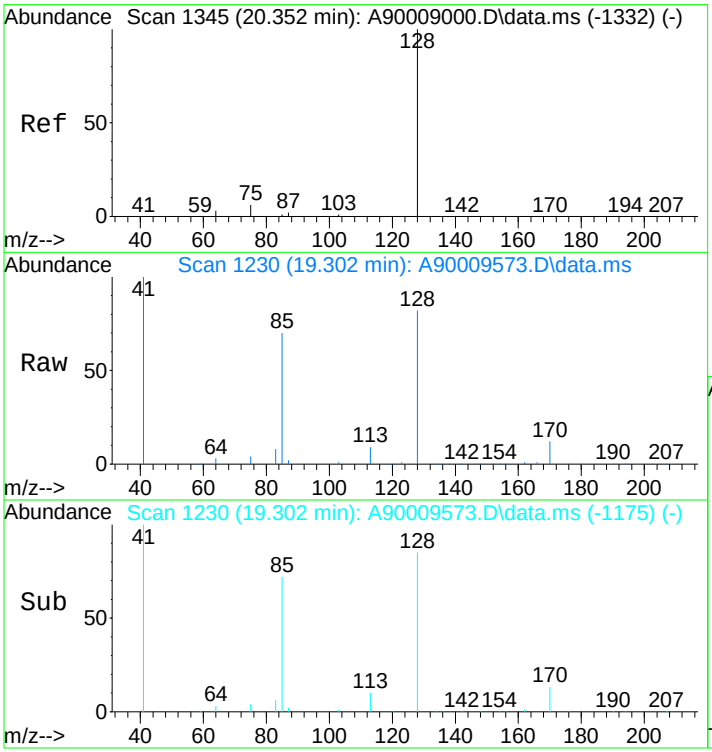




#8
C4-Decalins
Concen: 2240.23 ng/mL m
RT: 24.969 min Scan# 1851
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:194 Resp: 131679

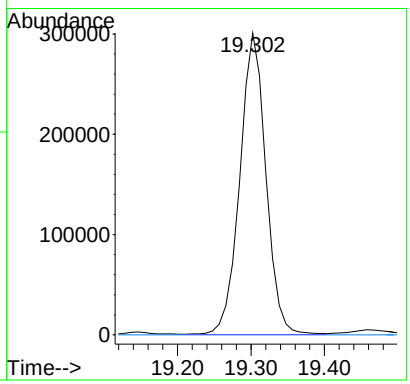


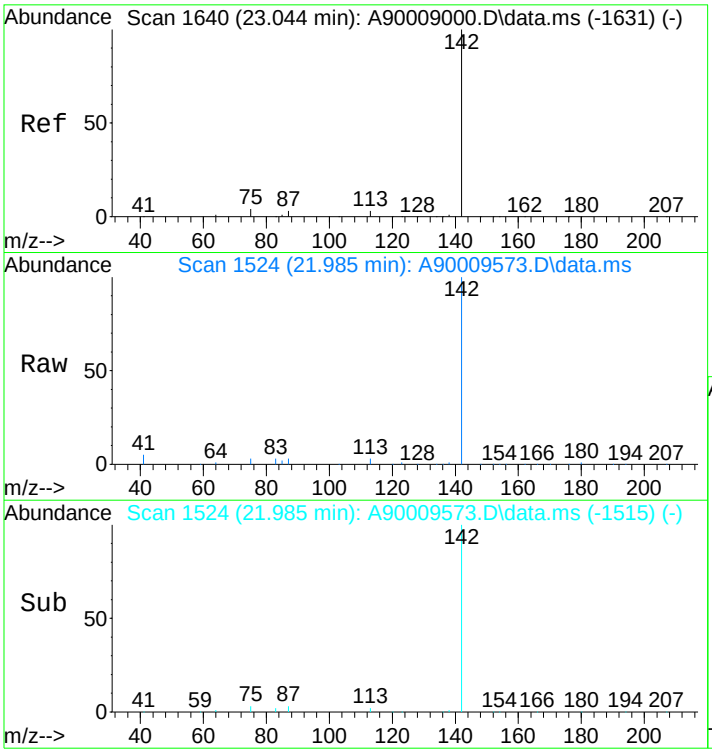


#10
Naphthalene
Concen: 2819.98 ng/mL
RT: 19.302 min Scan# 1230
Delta R.T. -0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:128 Resp: 743661

Ion	Ratio	Lower	Upper
128	100		
127	0.0	0.0	0.0

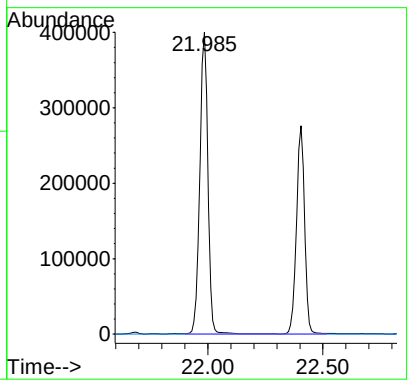


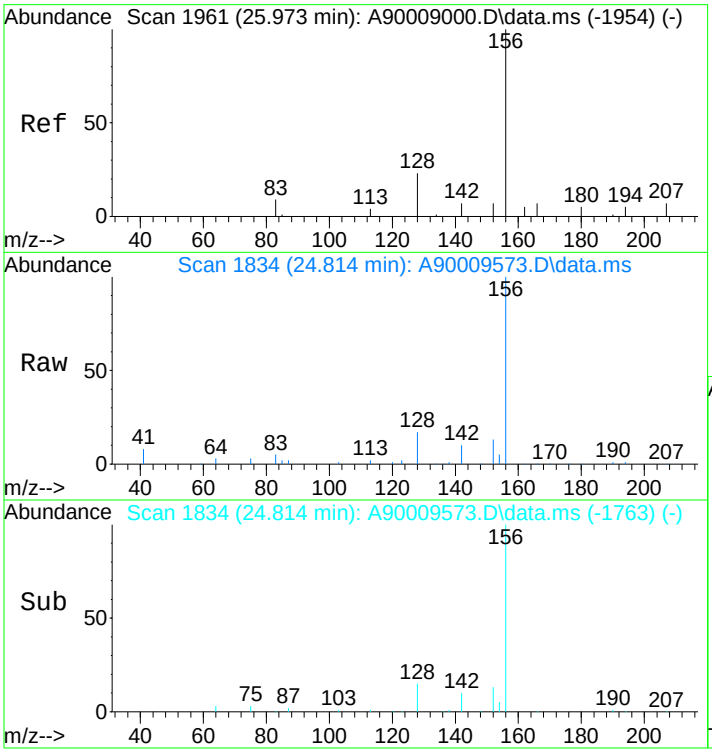


#11
C1-Naphthalenes
Concen: 6201.50 ng/mL m
RT: 21.985 min Scan# 1524
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:142 Resp: 1635406

Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	0.0

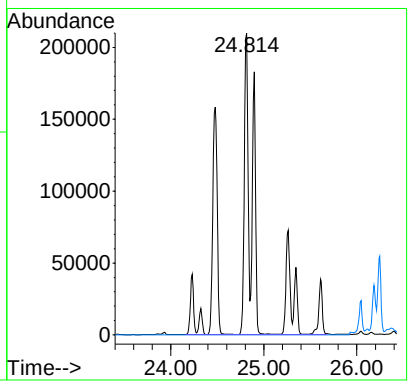


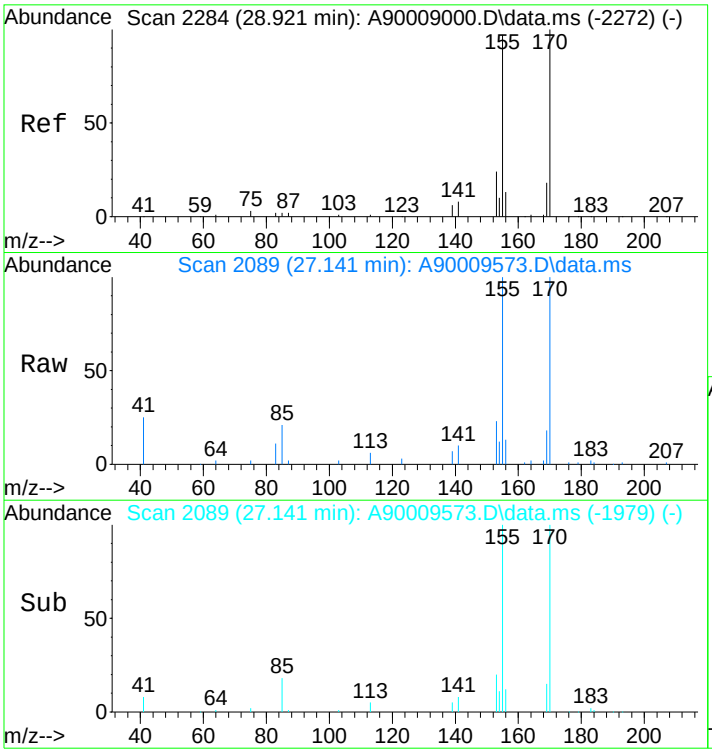


#12
C2-Naphthalenes
Concen: 8011.94 ng/mL m
RT: 24.814 min Scan# 1834
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:156 Resp: 2112838

Ion	Ratio	Lower	Upper
156	100		
141	0.0	0.0	0.0

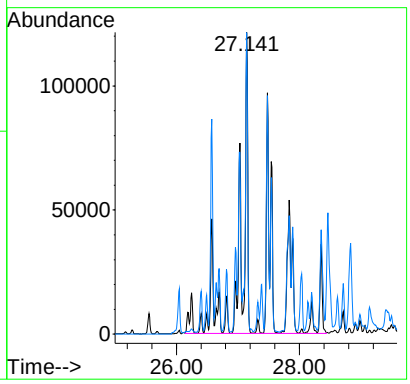


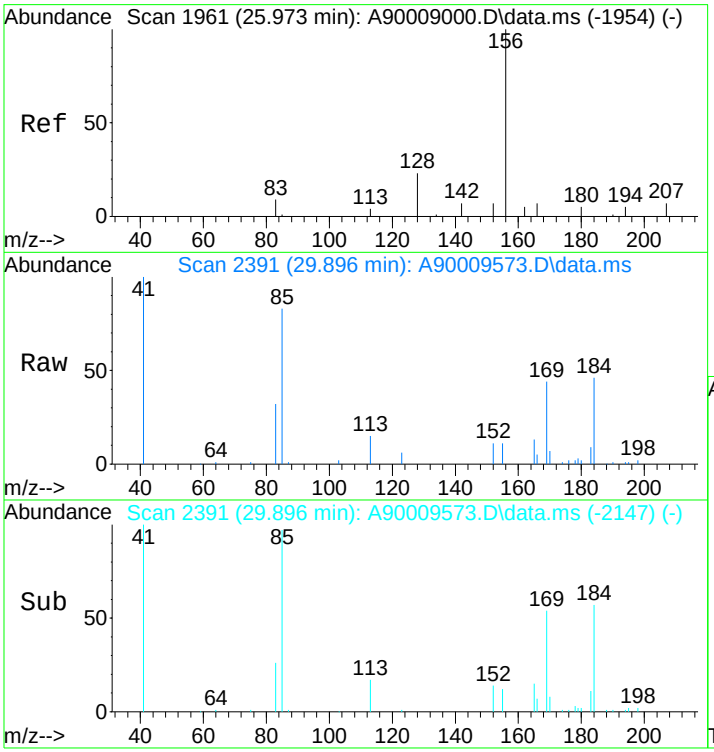


#13
C3-Naphthalenes
Concen: 6241.11 ng/mL m
RT: 27.141 min Scan# 2089
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:170 Resp: 1645851

Ion	Ratio	Lower	Upper
170	100		
155	18.6	79.9	119.9#

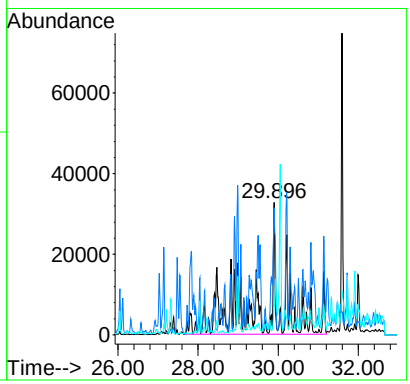


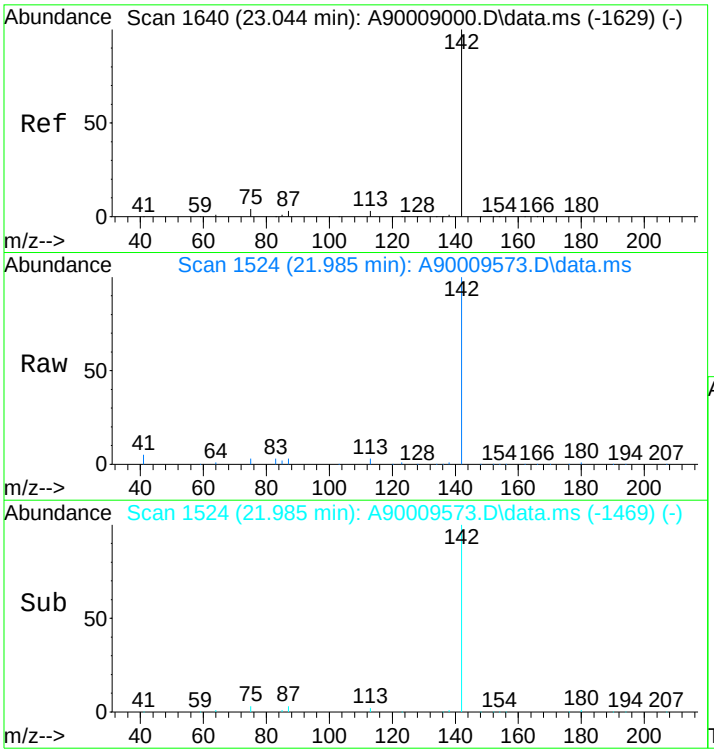


#14
C4-Naphthalenes
Concen: 3685.65 ng/mL m
RT: 29.896 min Scan# 2391
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:184 Resp: 971947

Ion	Ratio	Lower	Upper
184	100		
169	12.4	76.6	115.0#
183	0.0	16.4	24.6#

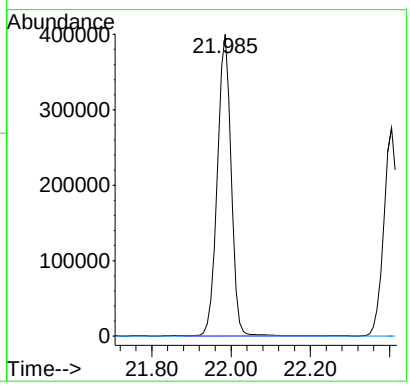


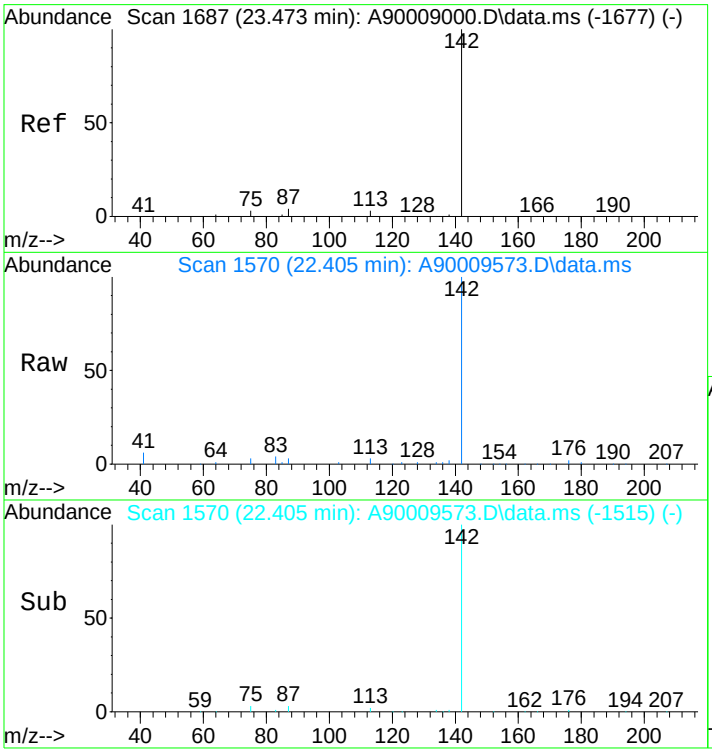


#16
2-Methylnaphthalene
Concen: 5582.33 ng/mL
RT: 21.985 min Scan# 1524
Delta R.T. -0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:142 Resp: 962724

Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	0.0

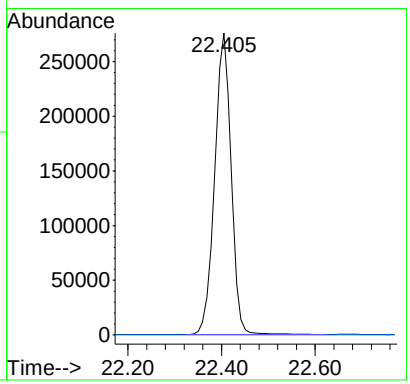


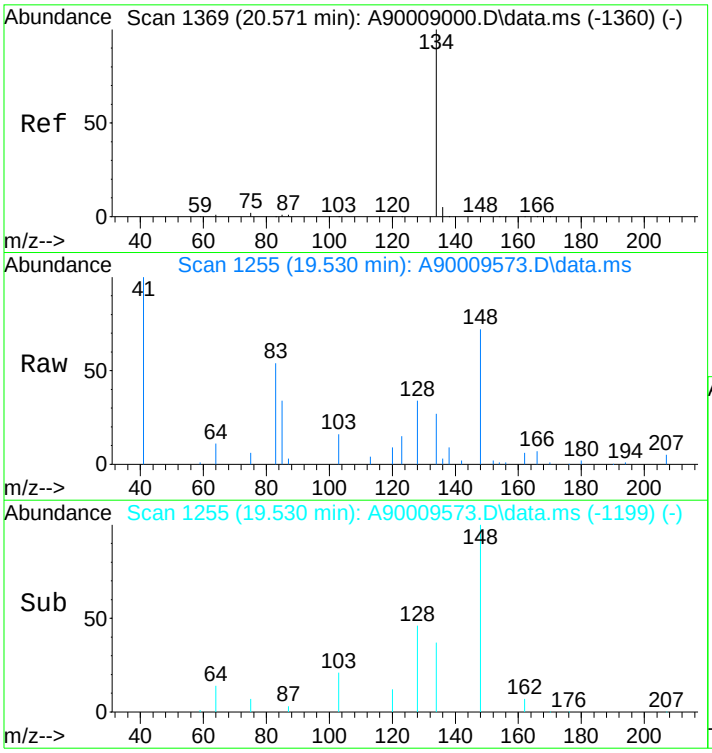


#17
1-Methylnaphthalene
Concen: 4021.44 ng/mL
RT: 22.405 min Scan# 1570
Delta R.T. -0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:142 Resp: 673054

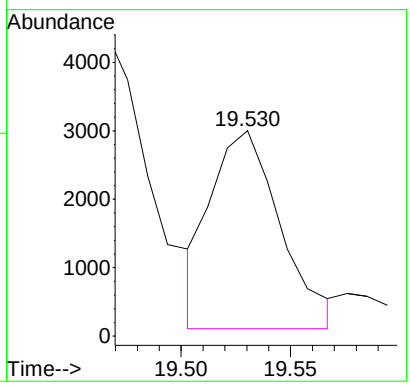
Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	20.0

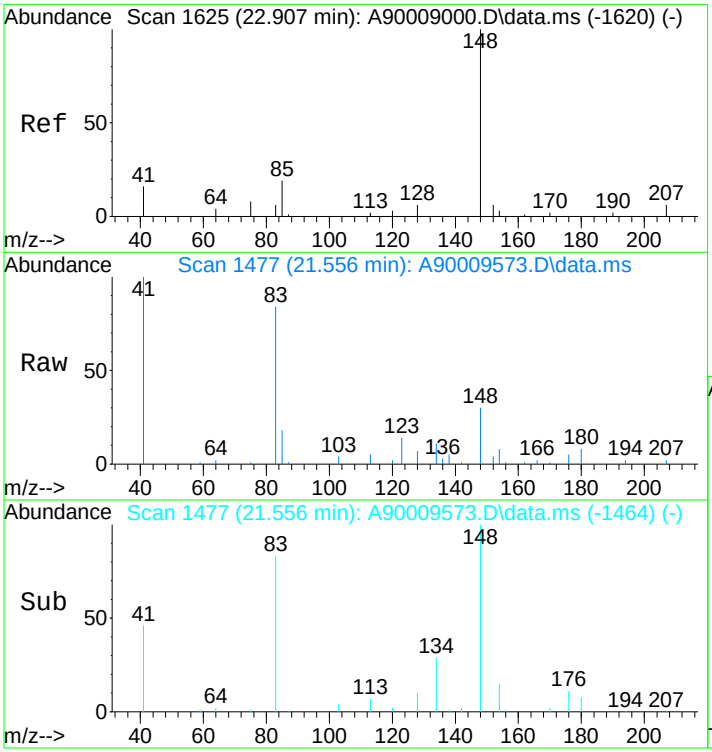




#18
Benzothiophene
Concen: 28.89 ng/mL m
RT: 19.530 min Scan# 1255
Delta R.T. 0.009 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

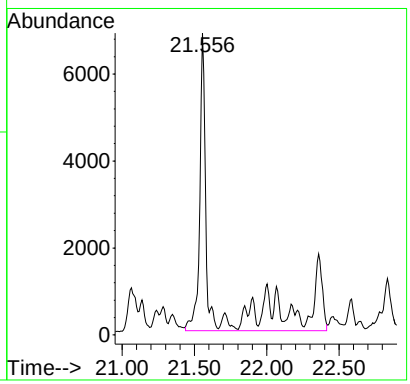
Tgt Ion:134 Resp: 6376

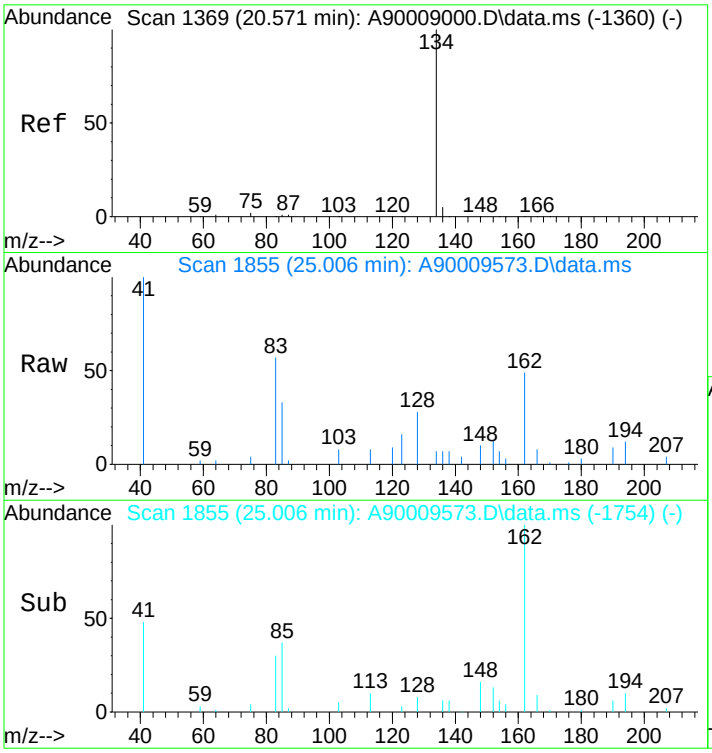




#19
C1-Benzo(b)thiophenes
Concen: 174.93 ng/mL m
RT: 21.556 min Scan# 1477
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

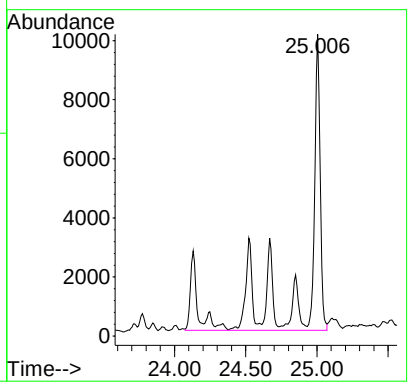
Tgt Ion:148 Resp: 38606

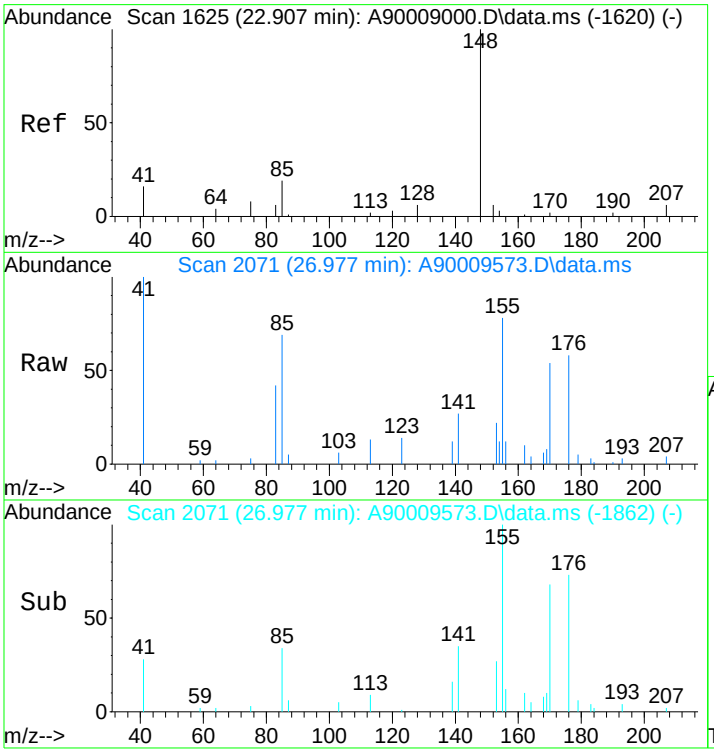




#20
C2-Benzo(b)thiophenes
Concen: 270.07 ng/mL m
RT: 25.006 min Scan# 1855
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

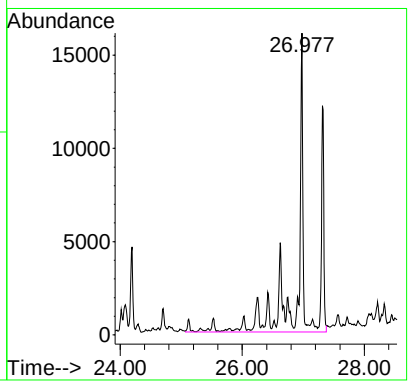
Tgt Ion:162 Resp: 59601

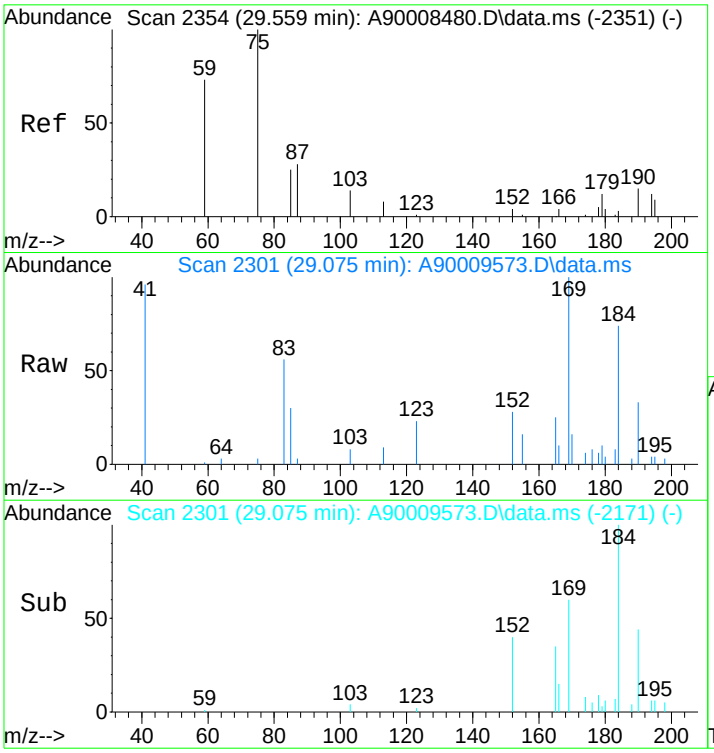




#21
C3-Benzo(b)thiophenes
Concen: 589.66 ng/mL m
RT: 26.977 min Scan# 2071
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

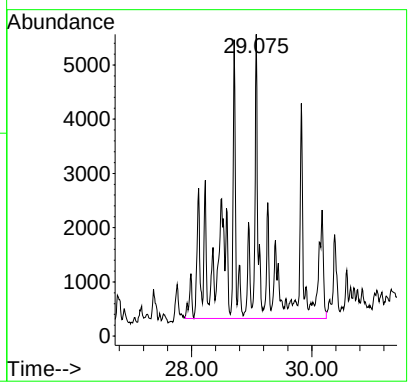
Tgt Ion:176 Resp: 130130

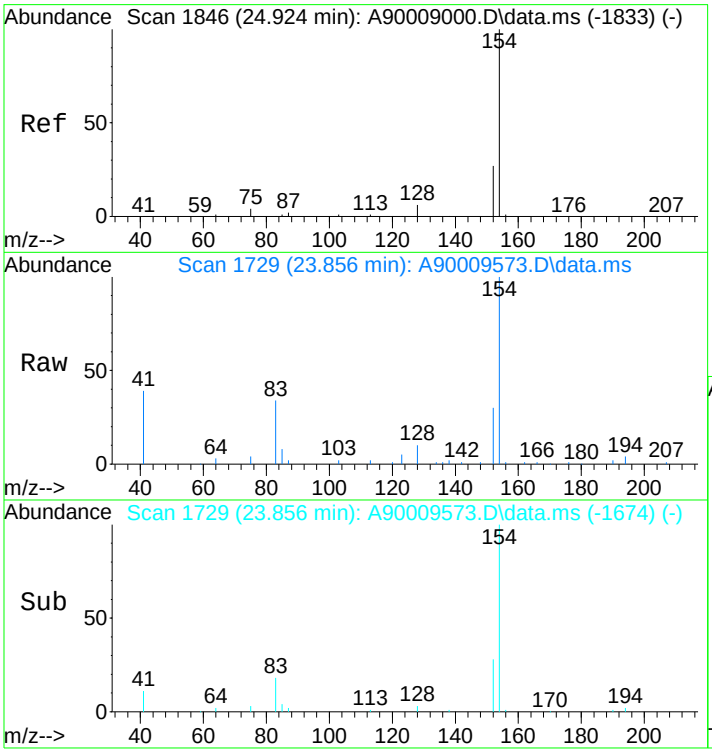




#22
C4-Benzo(b)thiophenes
Concen: 530.85 ng/mL m
RT: 29.075 min Scan# 2301
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:190 Resp: 117153

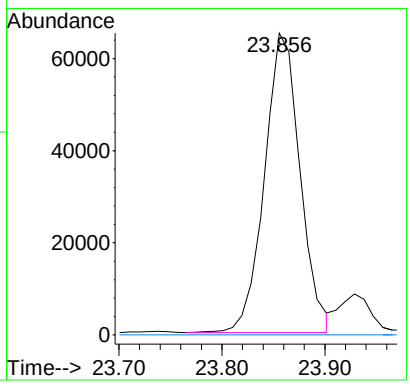


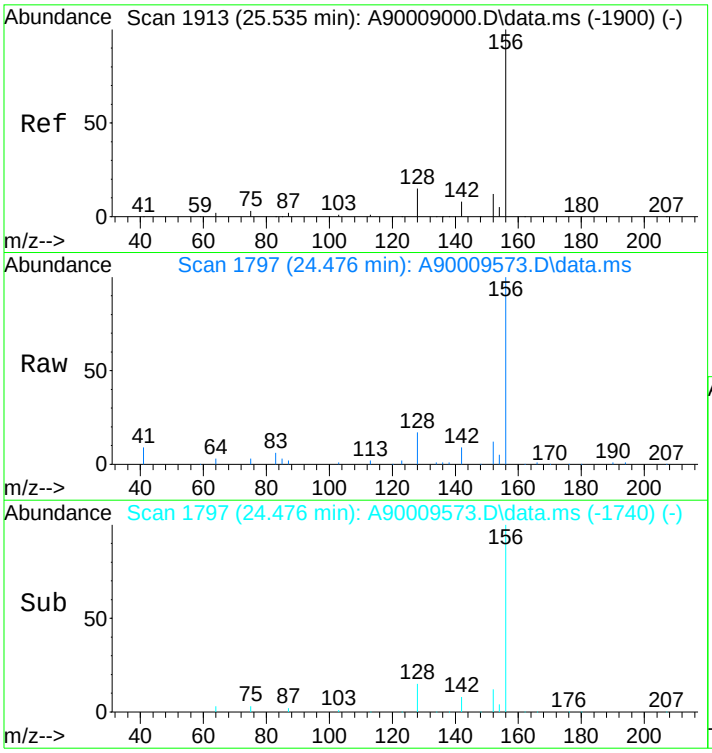


#23
Biphenyl
Concen: 689.92 ng/mL
RT: 23.856 min Scan# 1729
Delta R.T. -0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:154 Resp: 155705

Ion	Ratio	Lower	Upper
154	100		
153	0.0	0.0	0.0

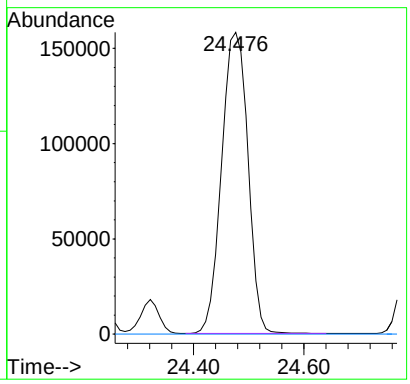


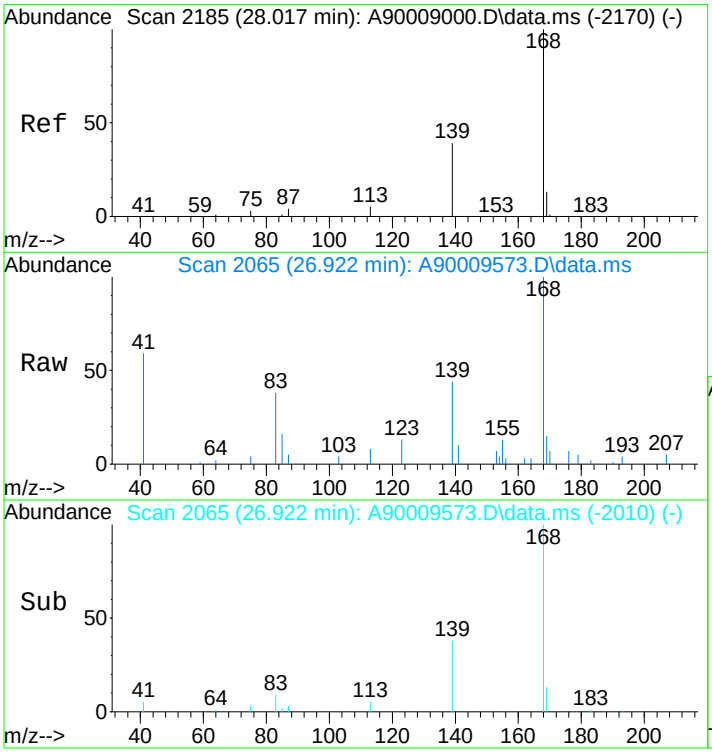


#24
2,6-Dimethylnaphthalene
Concen: 3231.62 ng/mL
RT: 24.476 min Scan# 1797
Delta R.T. 0.018 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:156 Resp: 523896

Ion	Ratio	Lower	Upper
156	100		
155	0.0	0.0	0.0

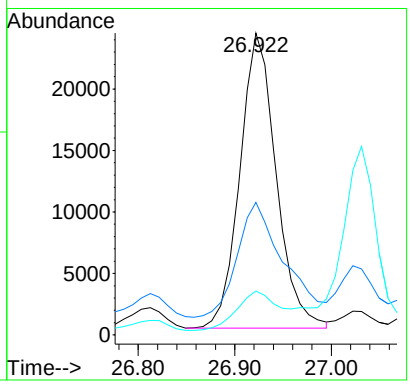


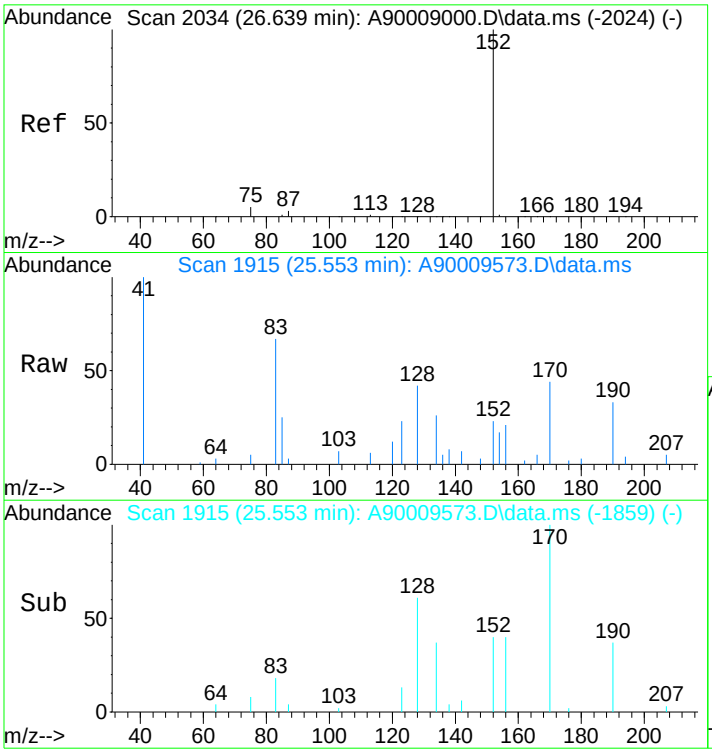


#25
Dibenzofuran
Concen: 260.48 ng/mL
RT: 26.922 min Scan# 2065
Delta R.T. -0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:168 Resp: 62702

Ion	Ratio	Lower	Upper
168	100		
139	49.6	29.5	44.3#
169	15.8	10.6	16.0

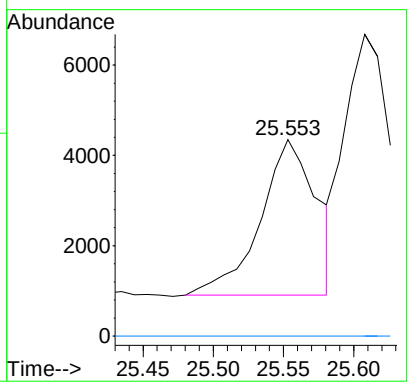


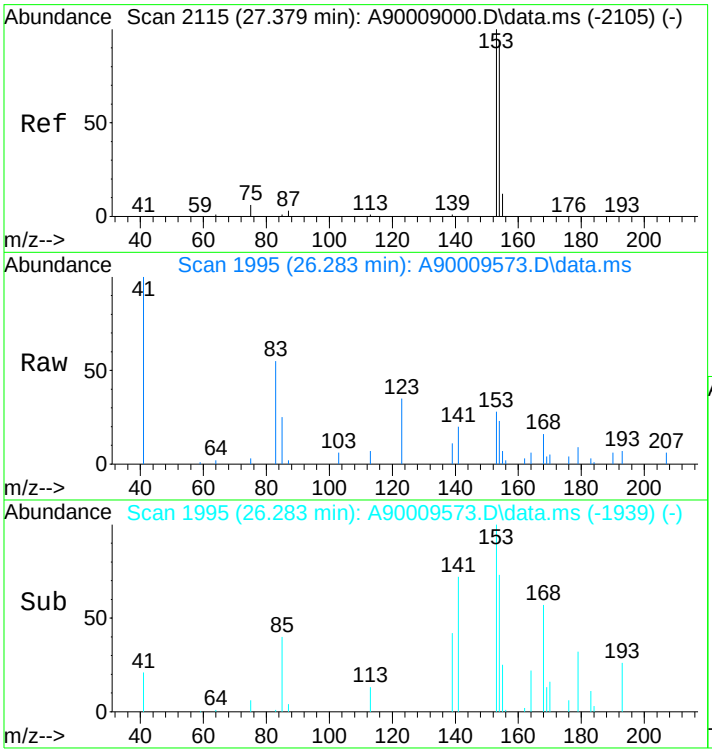


#26
Acenaphthylene
Concen: 35.26 ng/mL
RT: 25.553 min Scan# 1915
Delta R.T. 0.009 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:152 Resp: 9565

Ion	Ratio	Lower	Upper
152	100		
153	0.0	0.0	0.0

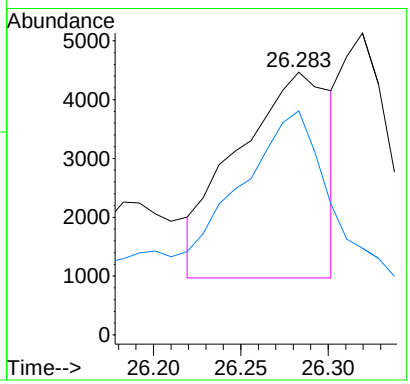


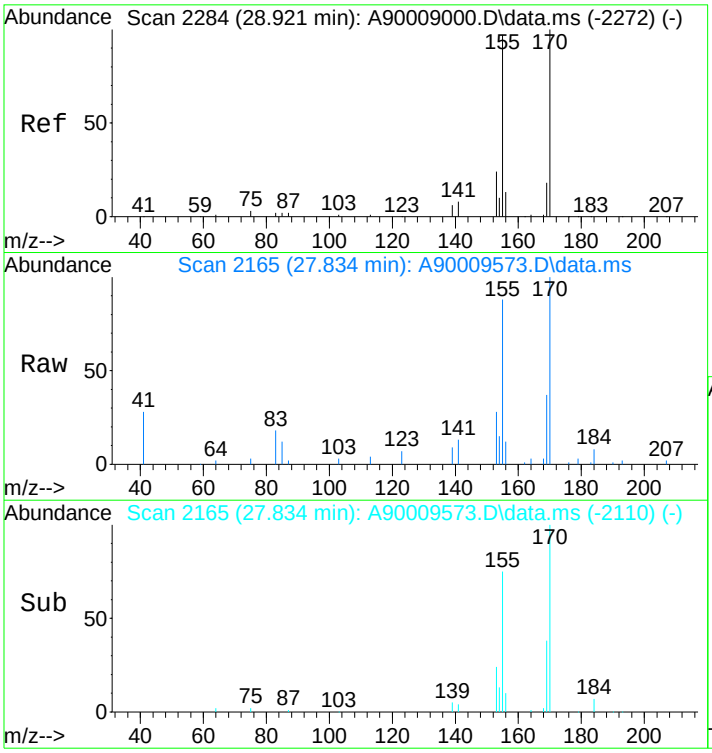


#27
Acenaphthene
Concen: 75.96 ng/mL m
RT: 26.283 min Scan# 1995
Delta R.T. 0.009 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:153 Resp: 12956

Ion	Ratio	Lower	Upper
153	100		
154	101.8	75.8	113.6

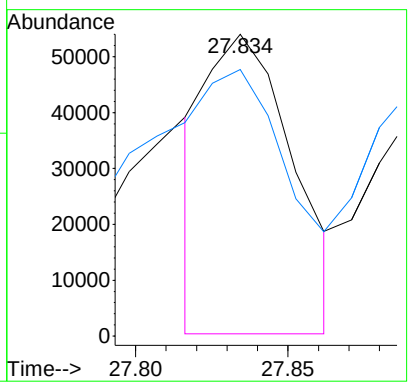


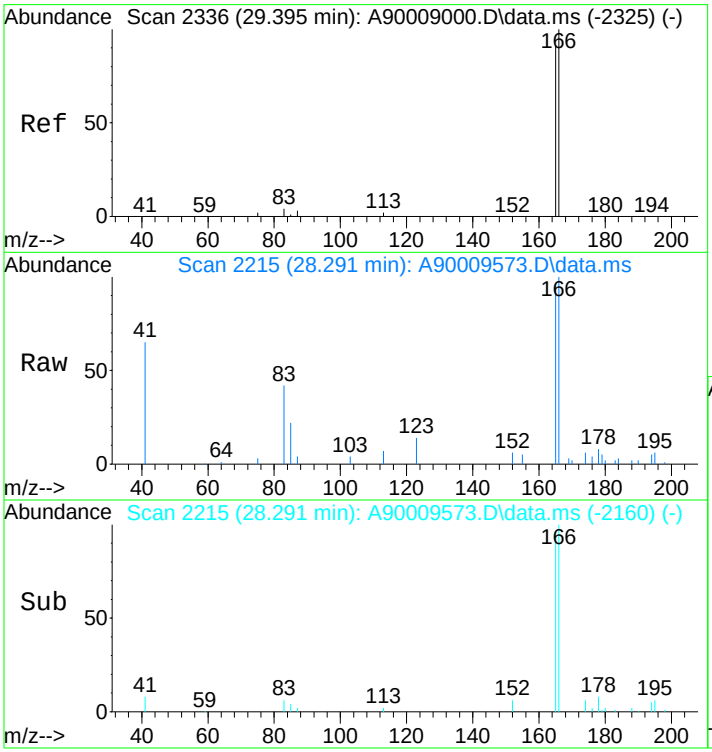


#28
2,3,5-Trimethylnaphthalene
Concen: 715.46 ng/mL m
RT: 27.834 min Scan# 2165
Delta R.T. -0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:170 Resp: 106636

Ion	Ratio	Lower	Upper
170	100		
155	162.6	71.5	107.3#

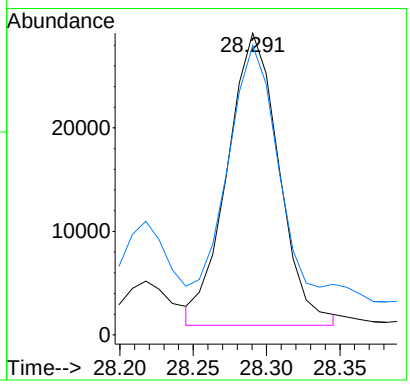


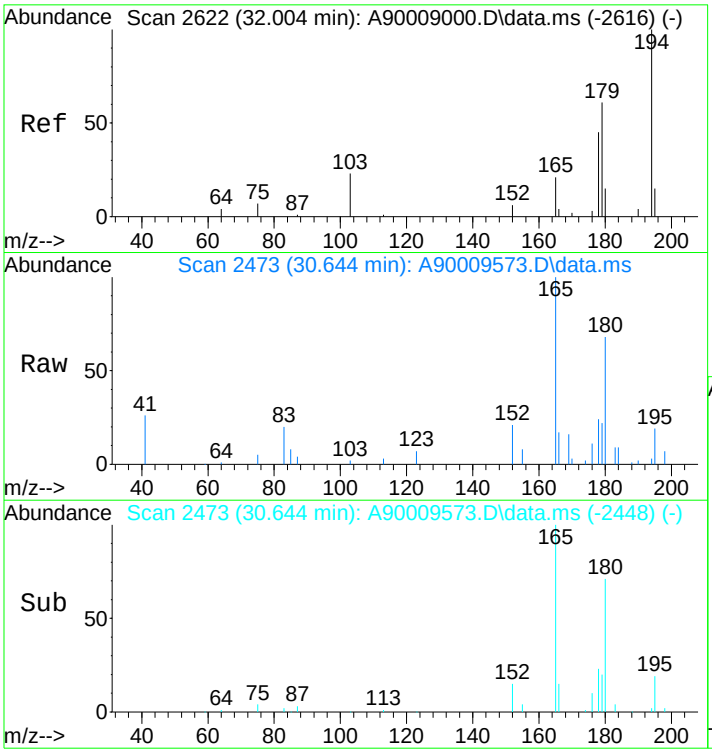


#29
Fluorene
Concen: 369.56 ng/mL m
RT: 28.291 min Scan# 2215
Delta R.T. -0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:166 Resp: 69222

Ion	Ratio	Lower	Upper
166	100		
165	114.9	73.9	110.9#

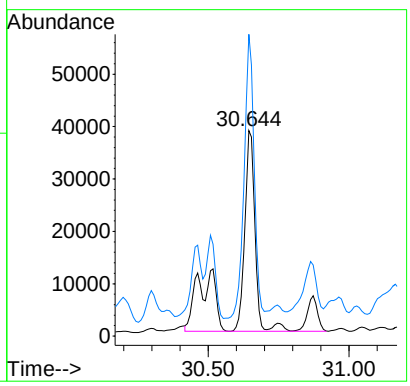


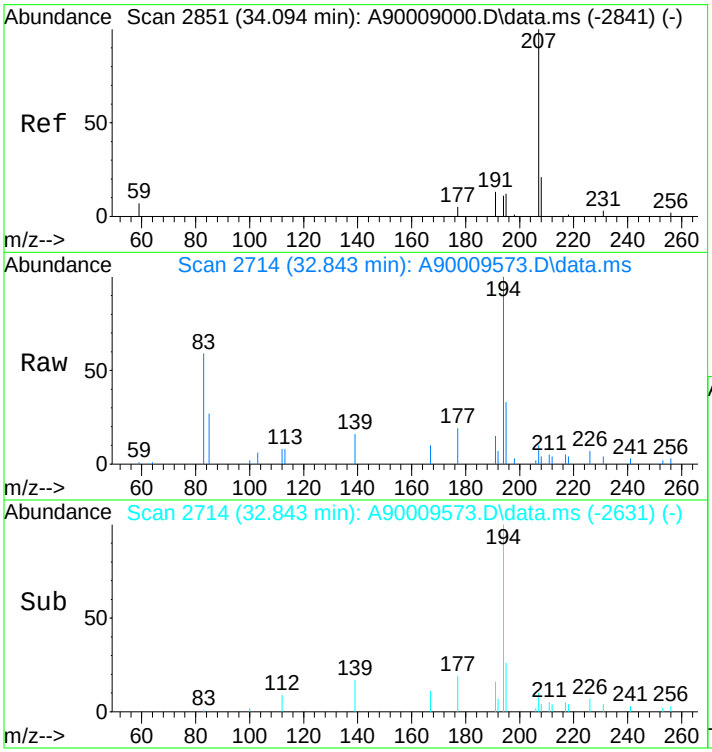


#30
C1-Fluorenes
Concen: 896.68 ng/mL m
RT: 30.644 min Scan# 2473
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:180 Resp: 167957

Ion	Ratio	Lower	Upper
180	100		
165	80.3	117.5	176.3#

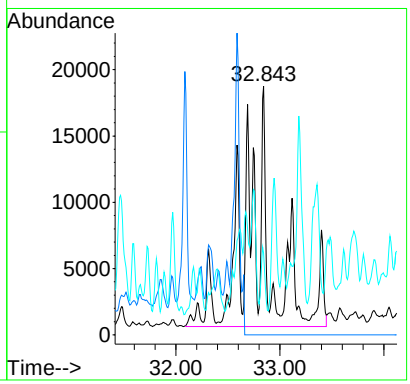


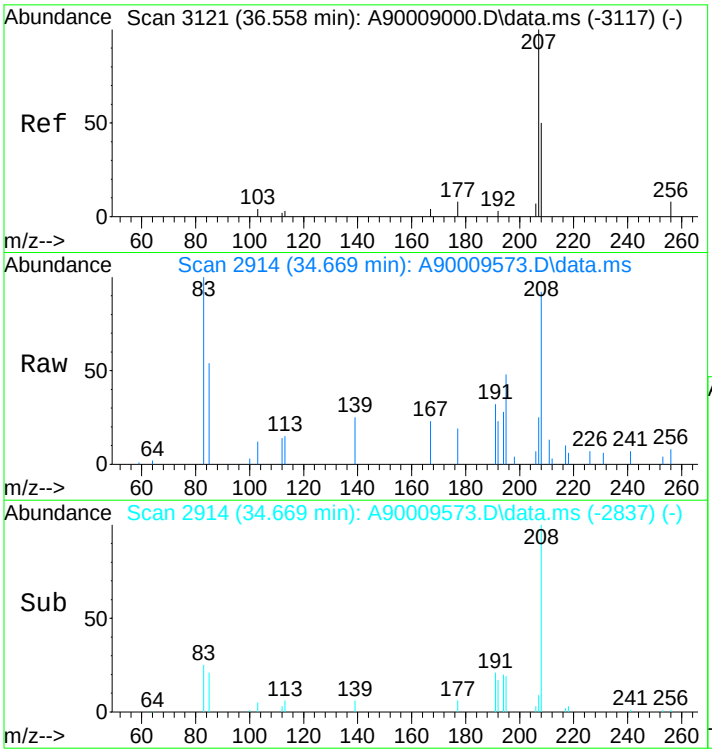


#31
C2-Fluorenes
Concen: 1484.76 ng/mL m
RT: 32.843 min Scan# 2714
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:194 Resp: 278110

Ion	Ratio	Lower	Upper
194	100		
179	0.0	0.0	0.0
195	4.4	26.3	39.5#

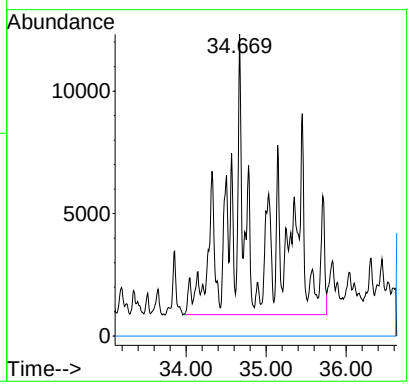


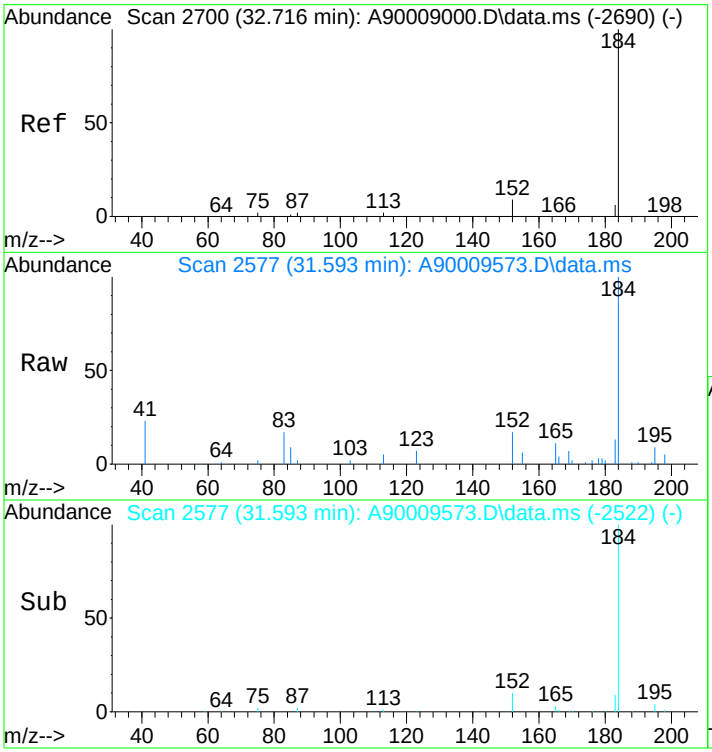


#32
C3-Fluorenes
Concen: 1444.61 ng/mL m
RT: 34.669 min Scan# 2914
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:208 Resp: 270589

Ion	Ratio	Lower	Upper
208	100		
197	0.0	0.0	0.0

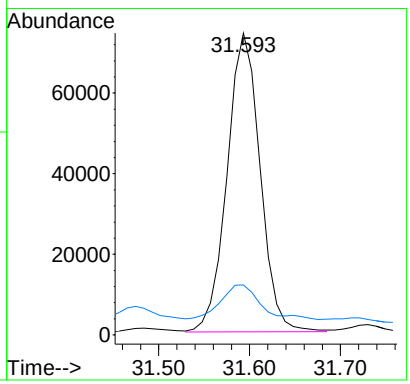


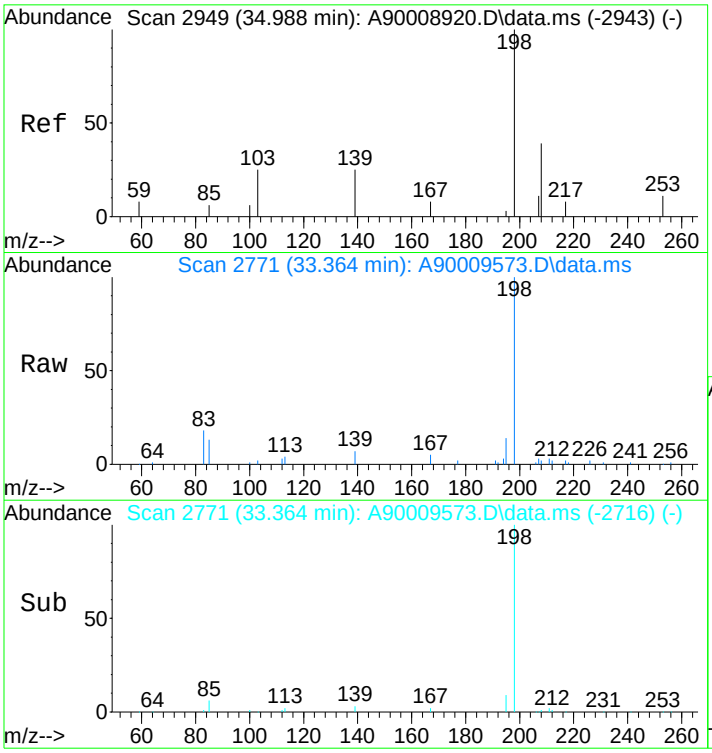


#33
Dibenzothiophene
Concen: 709.96 ng/mL
RT: 31.593 min Scan# 2577
Delta R.T. -0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:184 Resp: 187063

Ion	Ratio	Lower	Upper
184	100		
152	13.4	7.6	11.4#

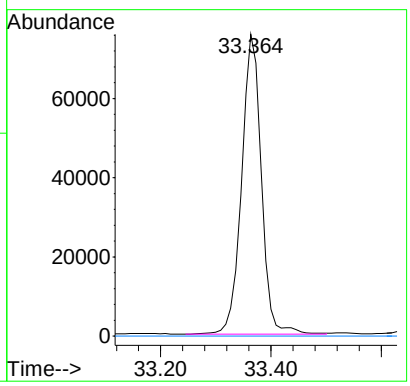


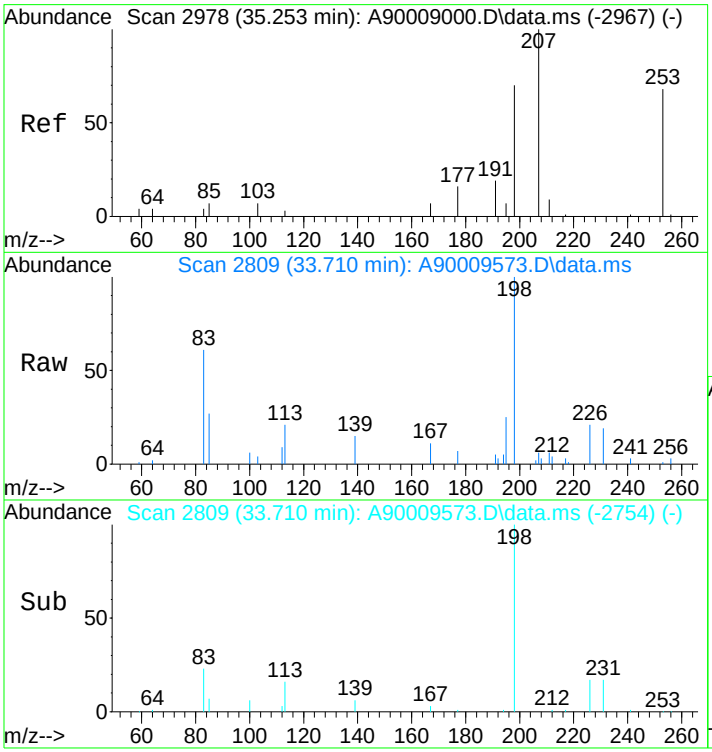


#34
4-Methyldibenzothiophene(4MDT)
Concen: 716.95 ng/mL
RT: 33.364 min Scan# 2771
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:198 Resp: 188904

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

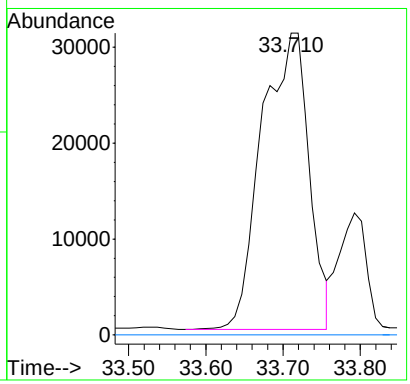


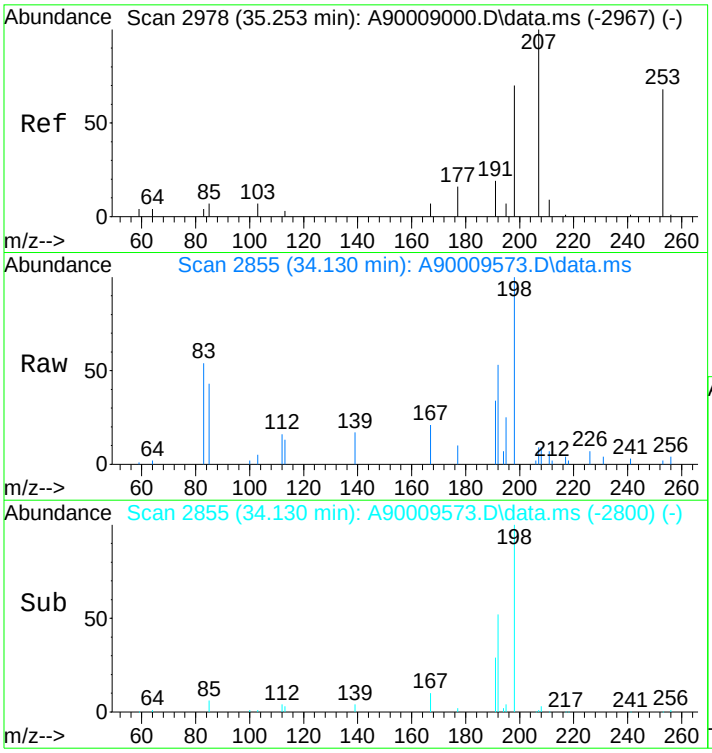


#35
2/3-Methyldibenzothiophene(2MDT)
Concen: 500.77 ng/mL
RT: 33.710 min Scan# 2809
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:198 Resp: 131943

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

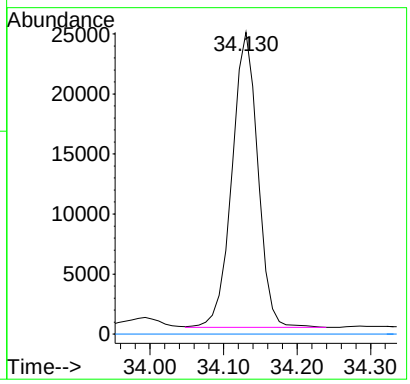


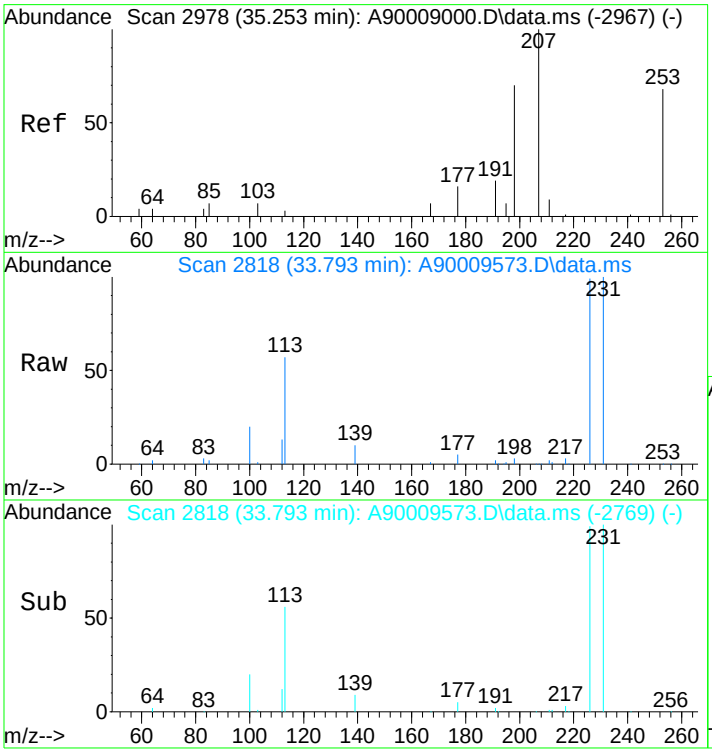


#36
1-Methyldibenzothiophene(1MDT)
Concen: 227.79 ng/mL
RT: 34.130 min Scan# 2855
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:198 Resp: 60018

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

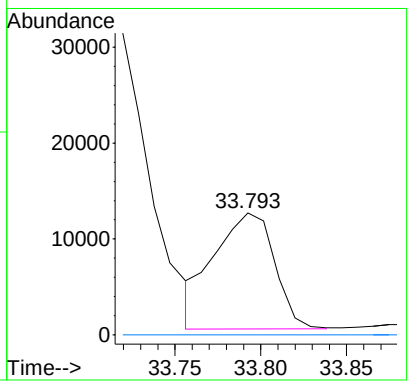


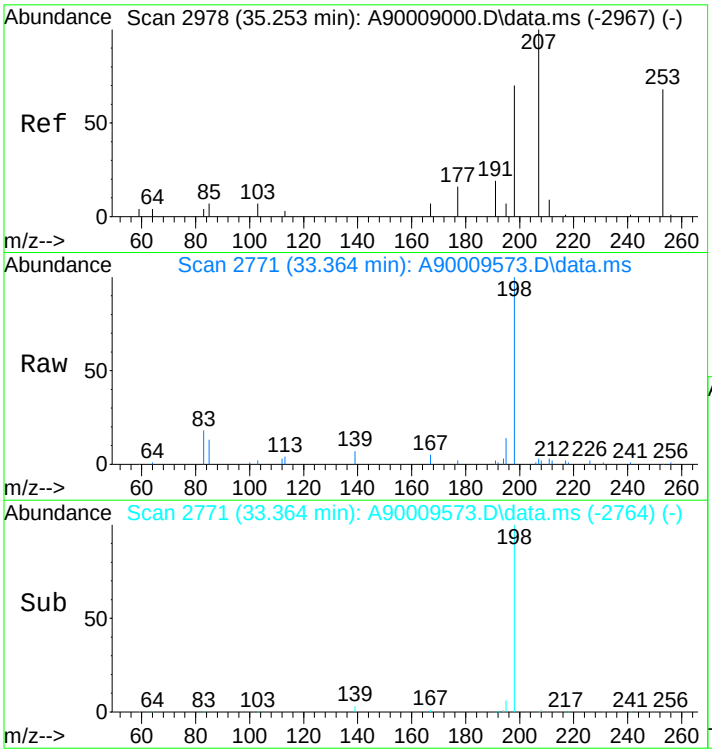


#37
OTP
Concen: 113.04 ng/mL
RT: 33.793 min Scan# 2818
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:198 Resp: 29783

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

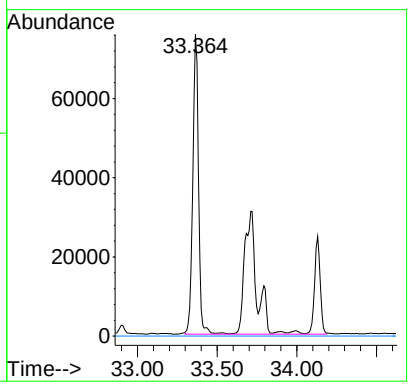


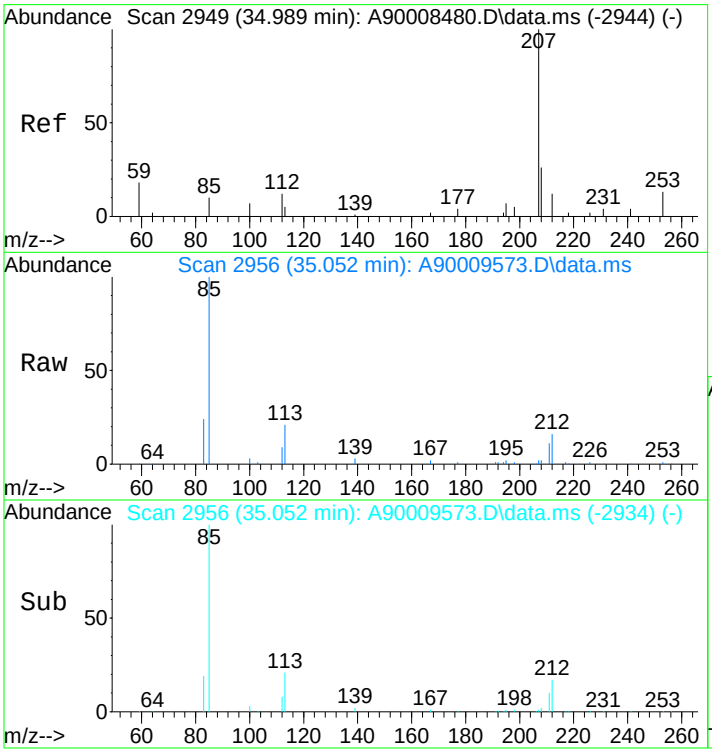


#38
C1-Dibenzothiophenes
Concen: 1578.87 ng/mL m
RT: 33.364 min Scan# 2771
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:198 Resp: 416004

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

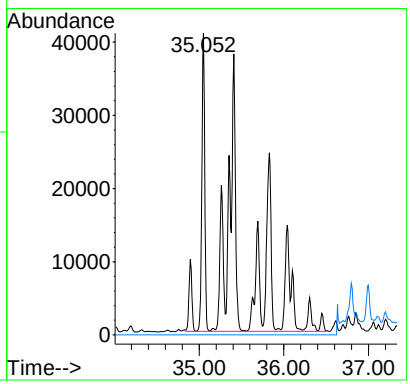


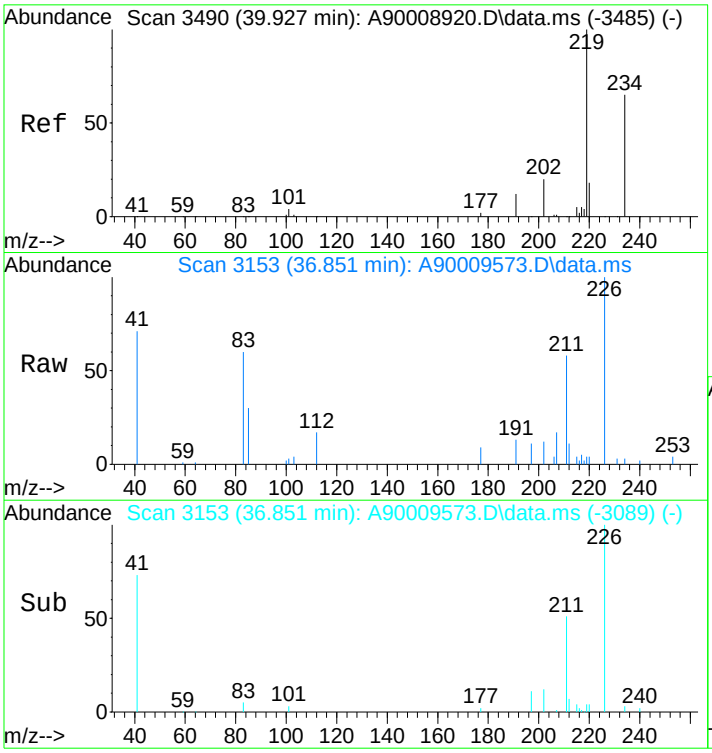


#39
C2-Dibenzothiophenes
Concen: 2112.10 ng/mL m
RT: 35.052 min Scan# 2956
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:212 Resp: 556502

Ion	Ratio	Lower	Upper
212	100		
197	0.0	0.0	0.0

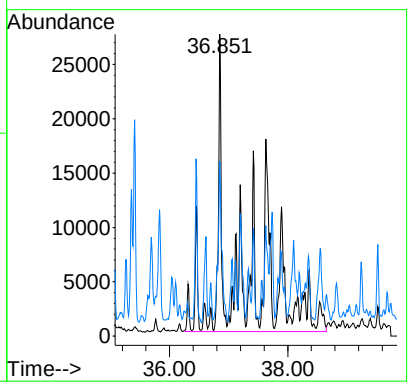


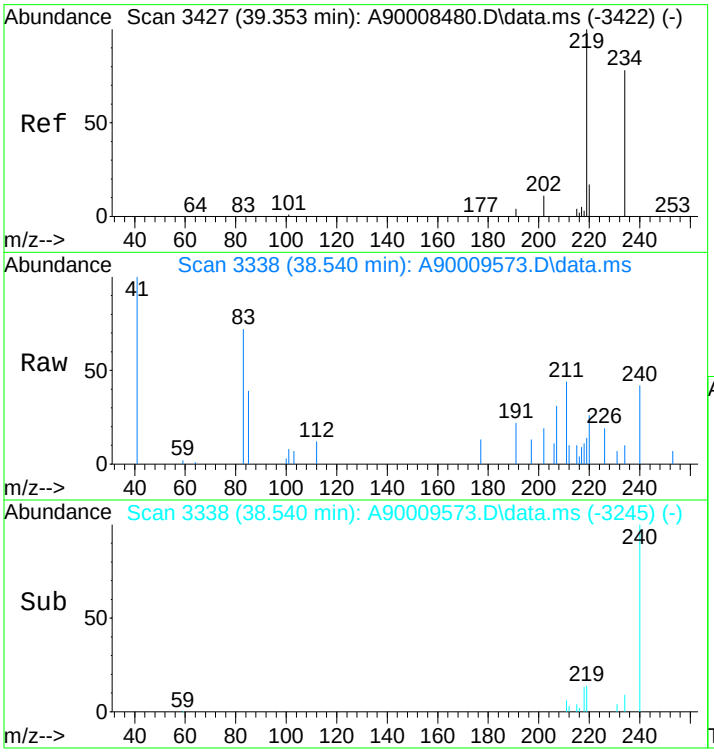


#40
C3-Dibenzothiophenes
Concen: 1932.17 ng/mL m
RT: 36.851 min Scan# 3153
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:226 Resp: 509094

Ion	Ratio	Lower	Upper
226	100		
211	3.7	46.4	69.6#

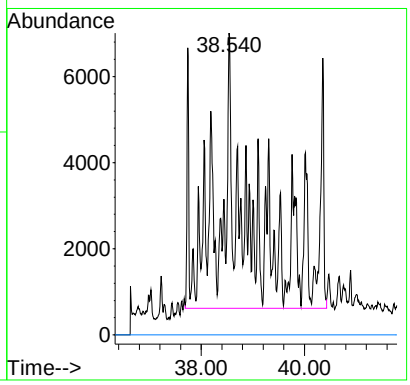


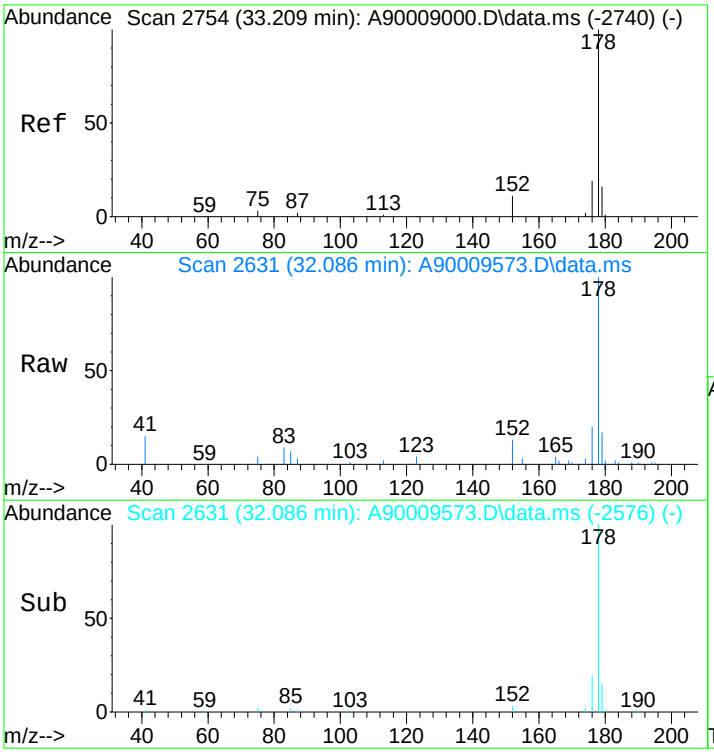


#41
C4-Dibenzothiophenes
Concen: 1062.33 ng/mL m
RT: 38.540 min Scan# 3338
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:240 Resp: 279906

Ion	Ratio	Lower	Upper
240	100		
225	0.0	0.0	0.0

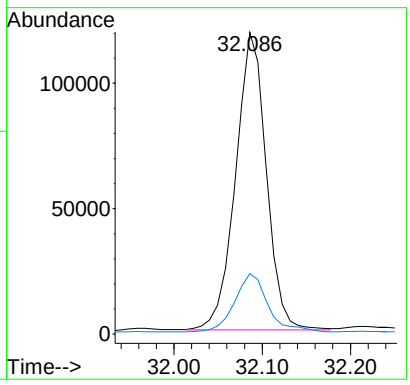


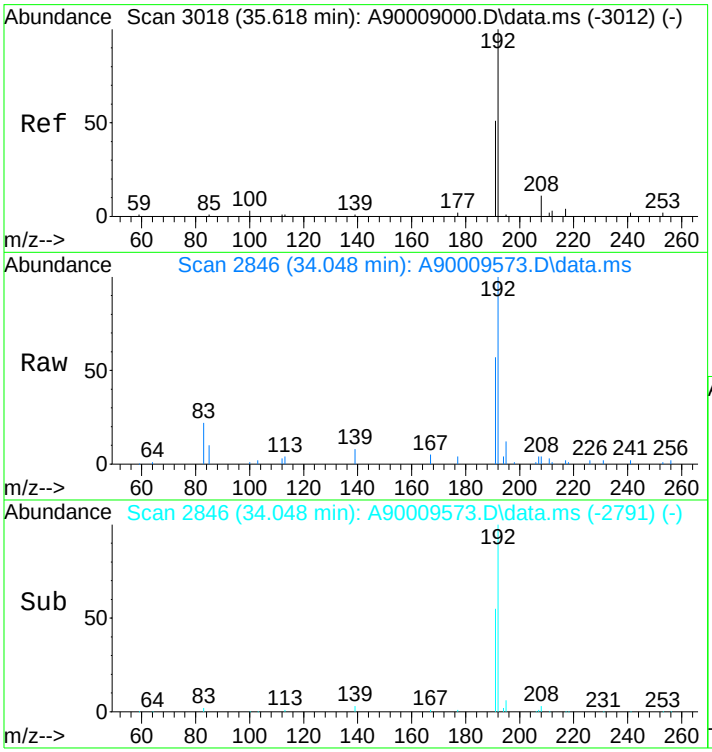


#43
Phenanthrene
Concen: 1054.03 ng/mL m
RT: 32.086 min Scan# 2631
Delta R.T. -0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:178 Resp: 286917

Ion	Ratio	Lower	Upper
178	100		
176	21.2	15.1	22.7

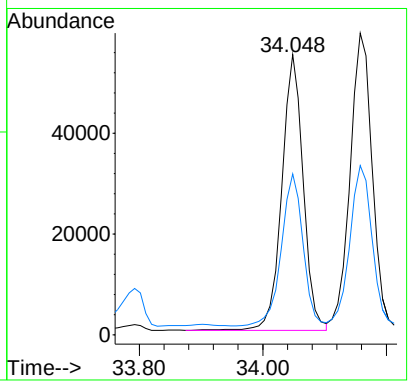


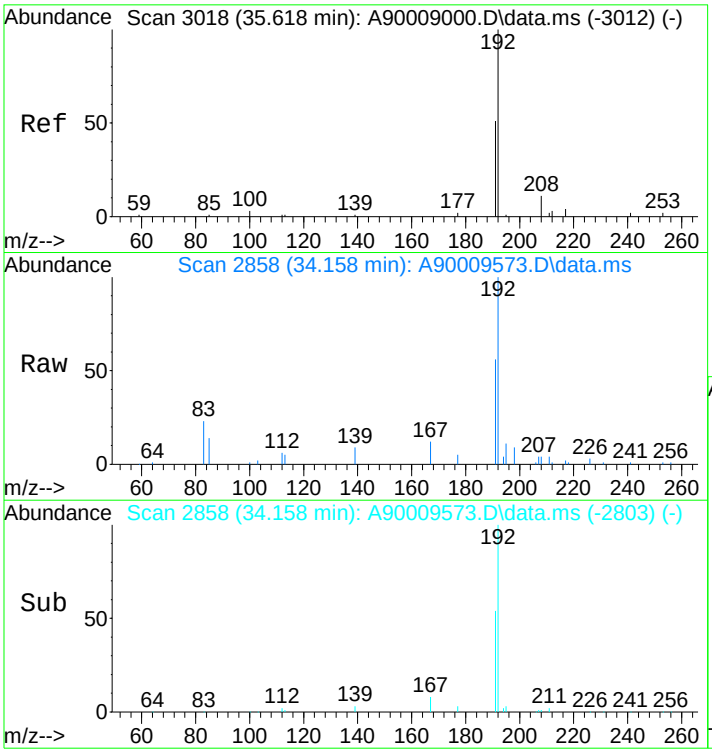


#44
3-Methylphenanthrene(3MP)
Concen: 481.63 ng/mL
RT: 34.048 min Scan# 2846
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:192 Resp: 131104

Ion	Ratio	Lower	Upper
192	100		
191	56.0	45.9	68.9

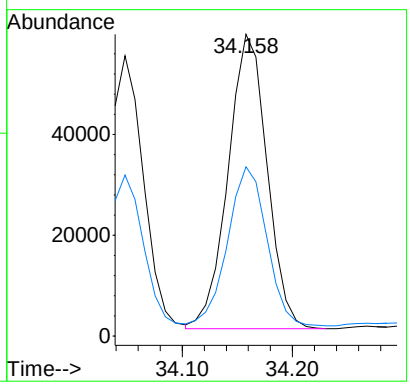


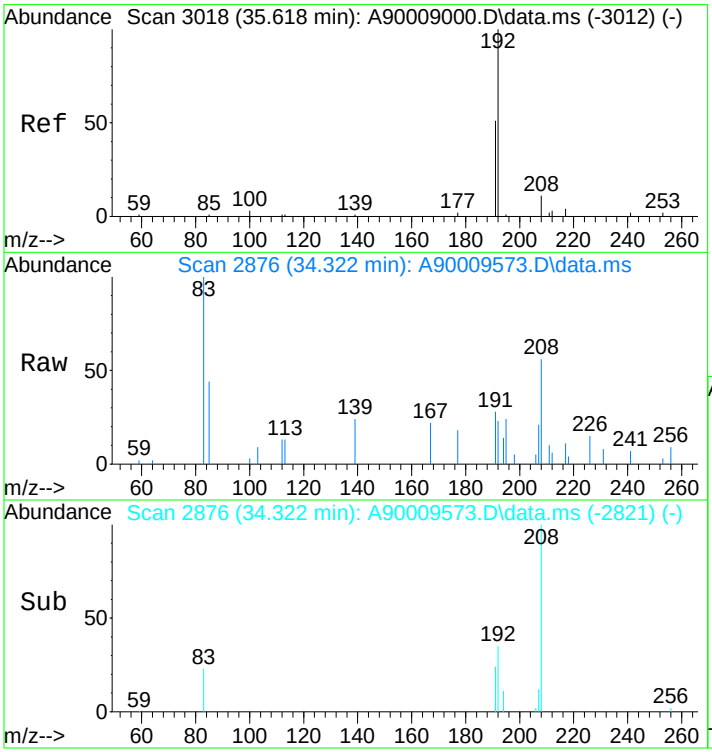


#45
2-Methylphenanthrene(2MP)
Concen: 527.05 ng/mL
RT: 34.158 min Scan# 2858
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:192 Resp: 143467

Ion	Ratio	Lower	Upper
192	100		
191	54.1	44.9	67.3

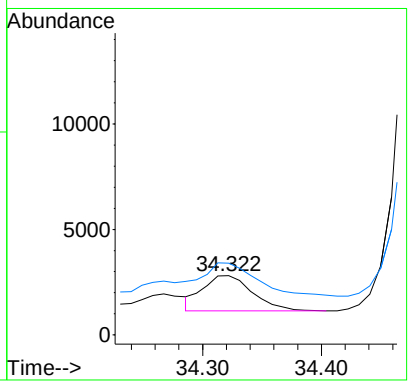


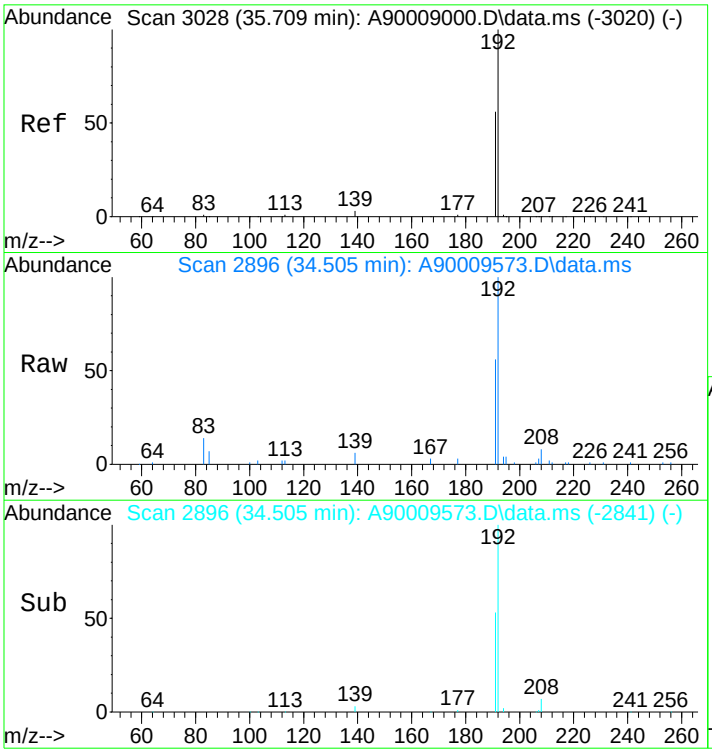


#46
2-Methylanthracene(2MA)
Concen: 17.86 ng/mL
RT: 34.322 min Scan# 2876
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:192 Resp: 4861

Ion	Ratio	Lower	Upper
192	100		
191	139.6	96.8	145.2

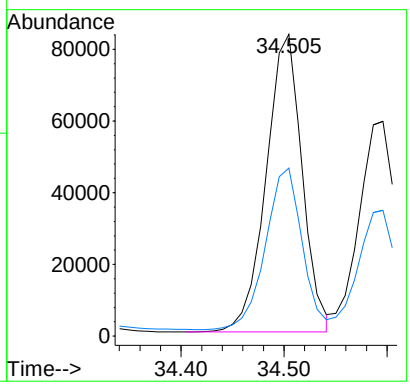


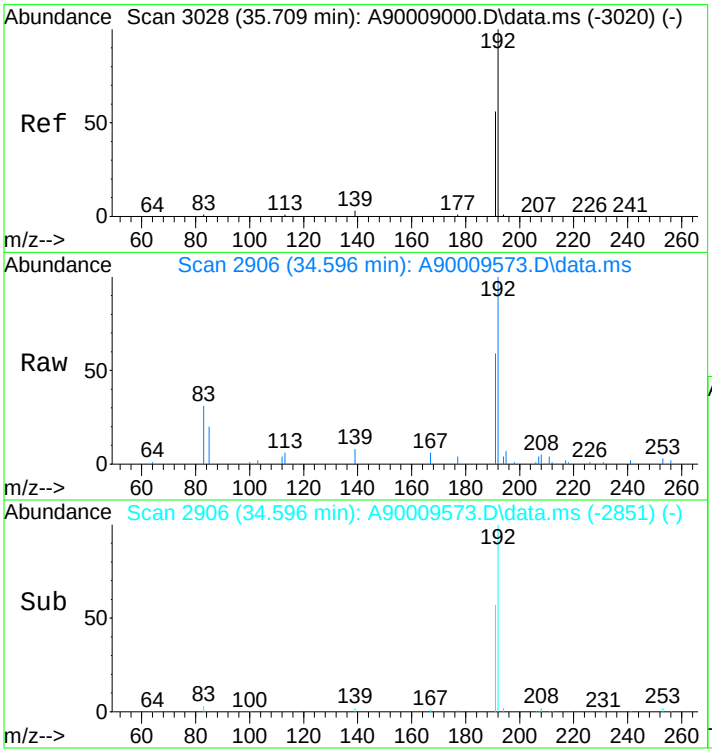


#47
9/4-Methylphenanthrene(9MP)
Concen: 741.12 ng/mL
RT: 34.505 min Scan# 2896
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:192 Resp: 201738

Ion	Ratio	Lower	Upper
192	100		
191	54.9	44.5	66.7

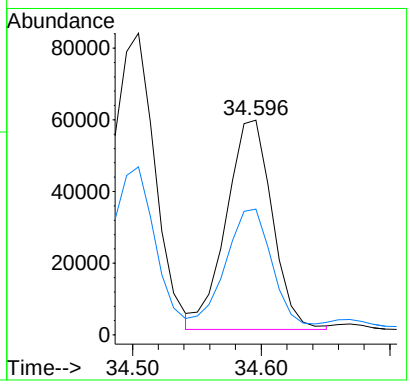


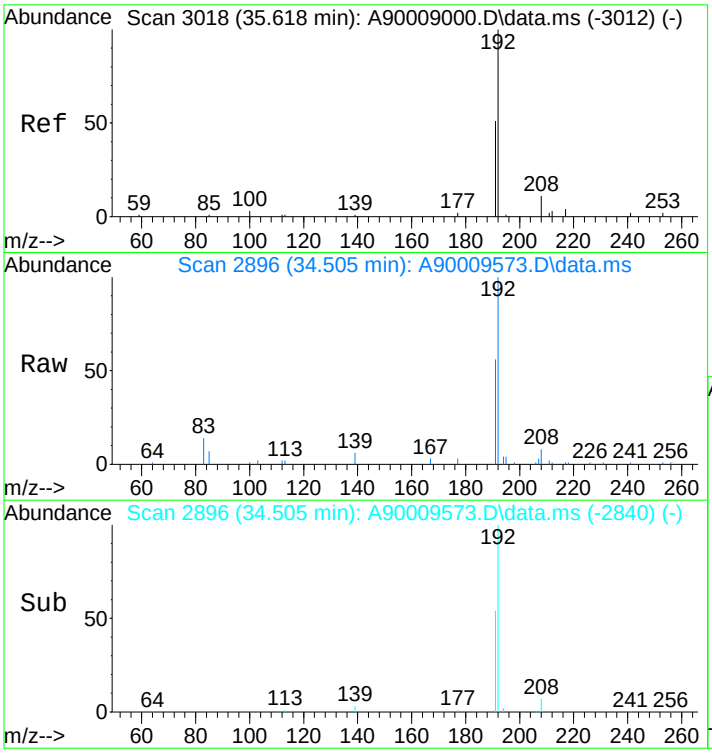


#48
1-Methylphenanthrene(1MP)
Concen: 534.61 ng/mL
RT: 34.596 min Scan# 2906
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:192 Resp: 145525

Ion	Ratio	Lower	Upper
192	100		
191	56.2	46.9	70.3

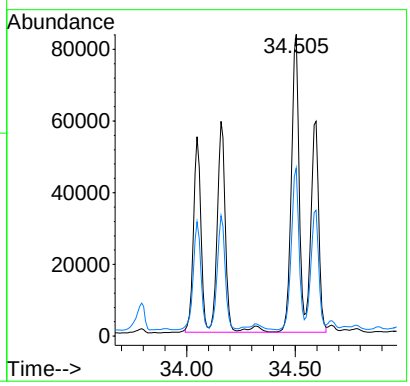


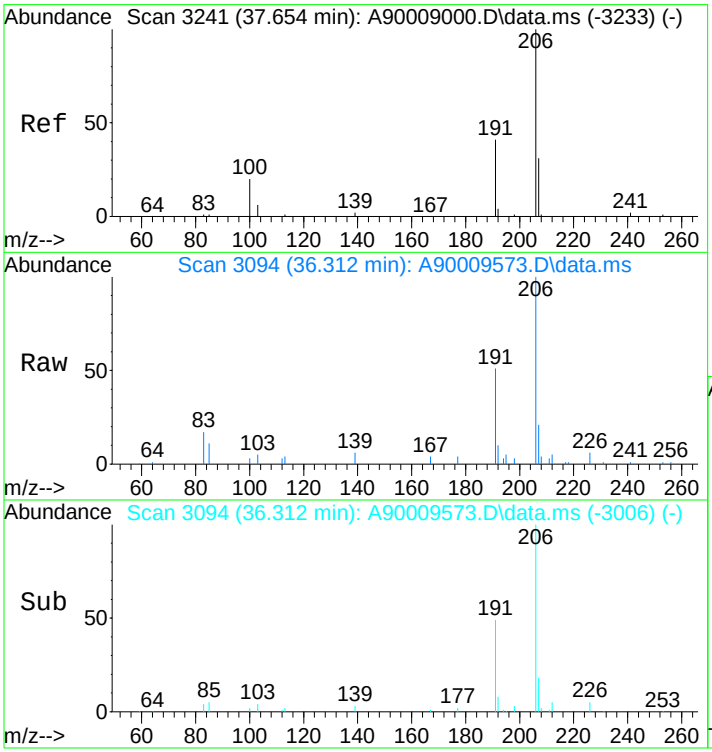


#49
C1-Phenanthrenes/Anthracenes
Concen: 2319.02 ng/mL m
RT: 34.505 min Scan# 2896
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:192 Resp: 631258

Ion	Ratio	Lower	Upper
192	100		
191	17.5	44.5	66.7#

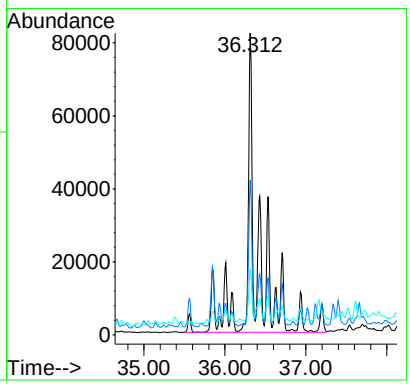


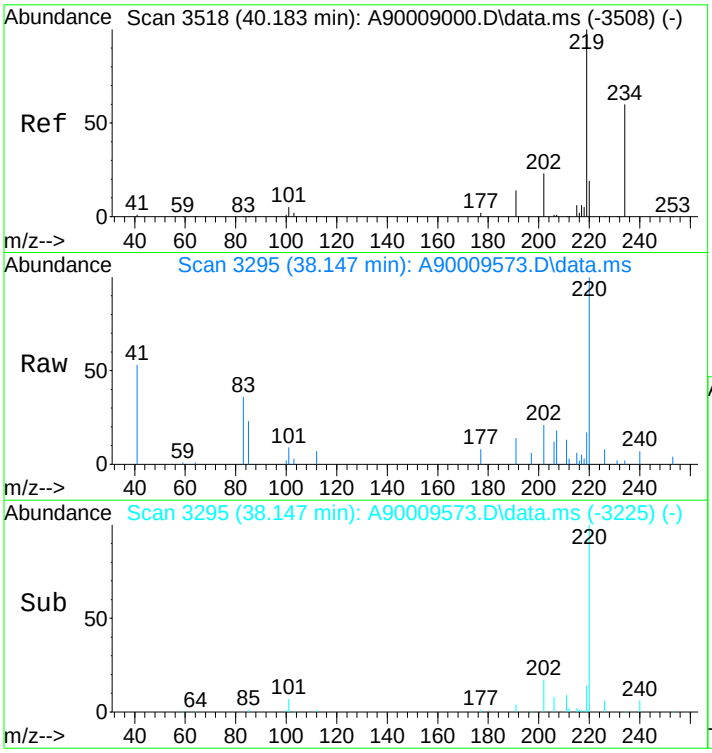


#50
C2-Phenanthrenes/Anthracenes
Concen: 2679.00 ng/mL m
RT: 36.312 min Scan# 3094
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:206 Resp: 729246

Ion	Ratio	Lower	Upper
206	100		
191	1.5	41.0	61.4#
207	0.8	17.1	25.7#

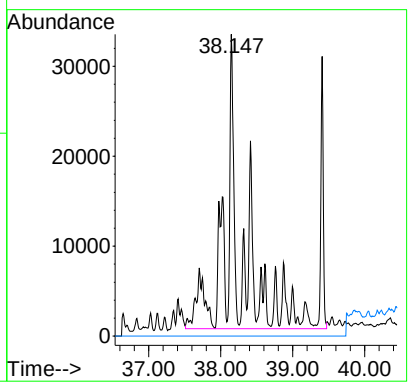


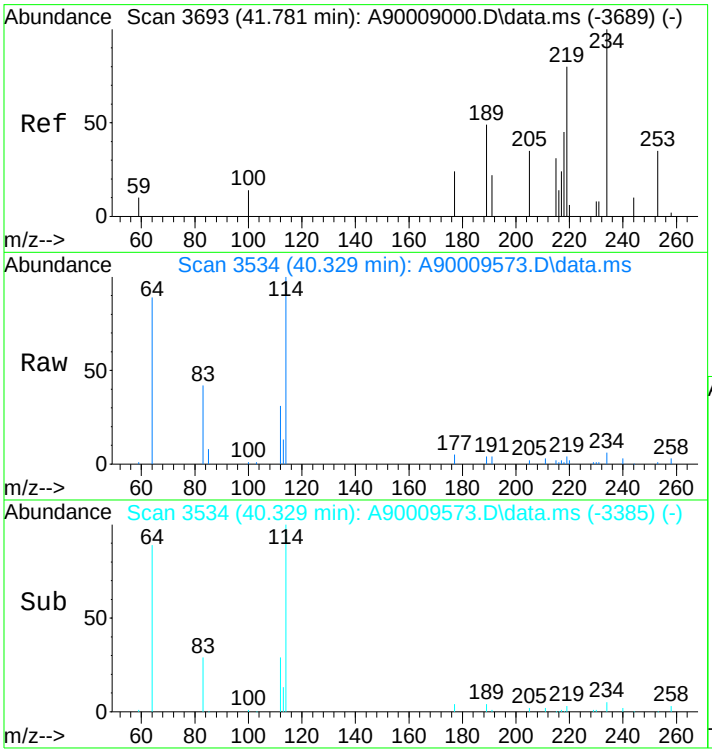


#52
C3-Phenanthrenes/Anthracenes
Concen: 1951.95 ng/mL m
RT: 38.147 min Scan# 3295
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:220 Resp: 531337

Ion	Ratio	Lower	Upper
220	100		
205	0.0	0.0	0.0

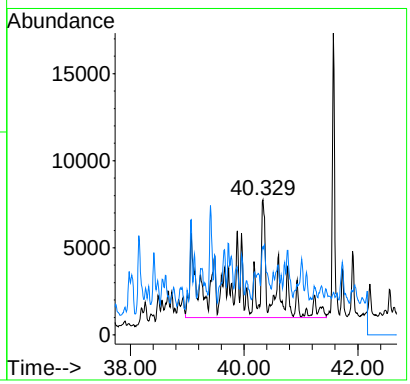


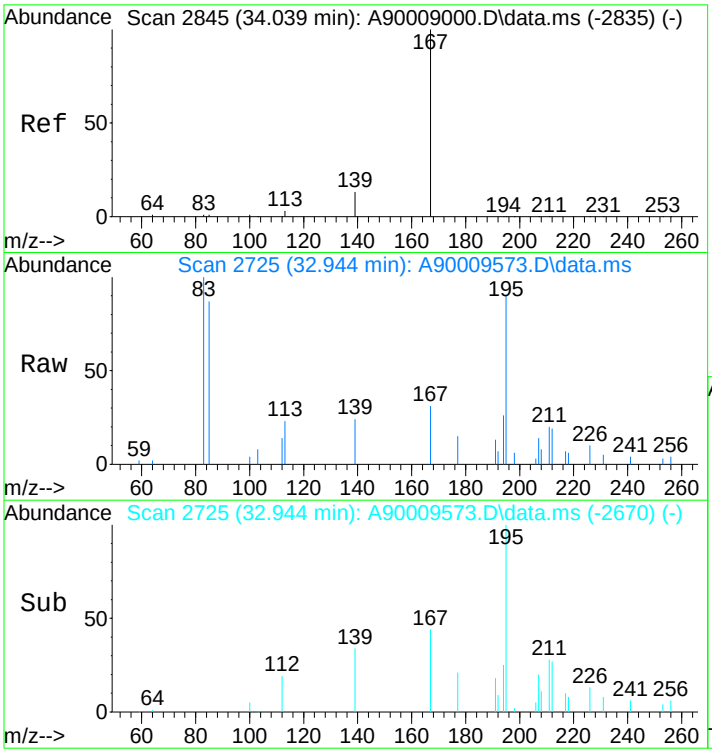


#53
C4-Phenanthrenes/Anthracenes
Concen: 778.40 ng/mL m
RT: 40.329 min Scan# 3534
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:234 Resp: 211888

Ion	Ratio	Lower	Upper
234	100		
219	2.4	52.1	78.1#

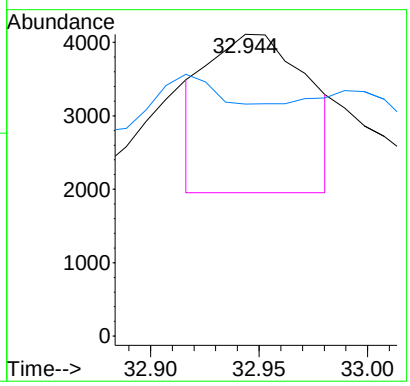


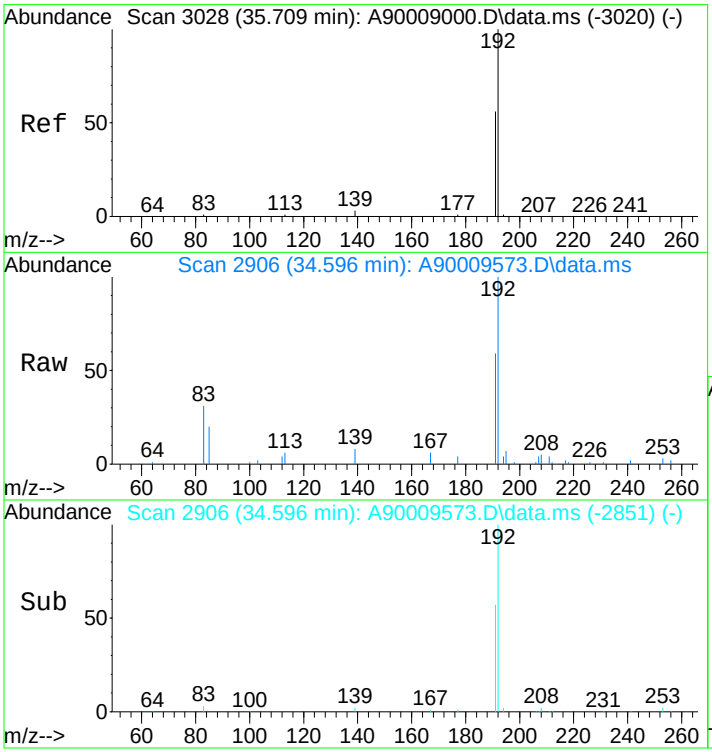


#56
Carbazole
Concen: 29.19 ng/mL m
RT: 32.944 min Scan# 2725
Delta R.T. -0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:167 Resp: 6979

Ion	Ratio	Lower	Upper
167	100		
139	0.0	10.1	15.1#

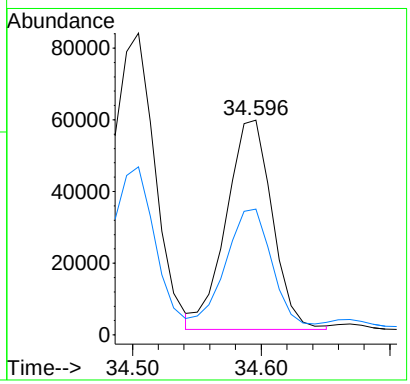


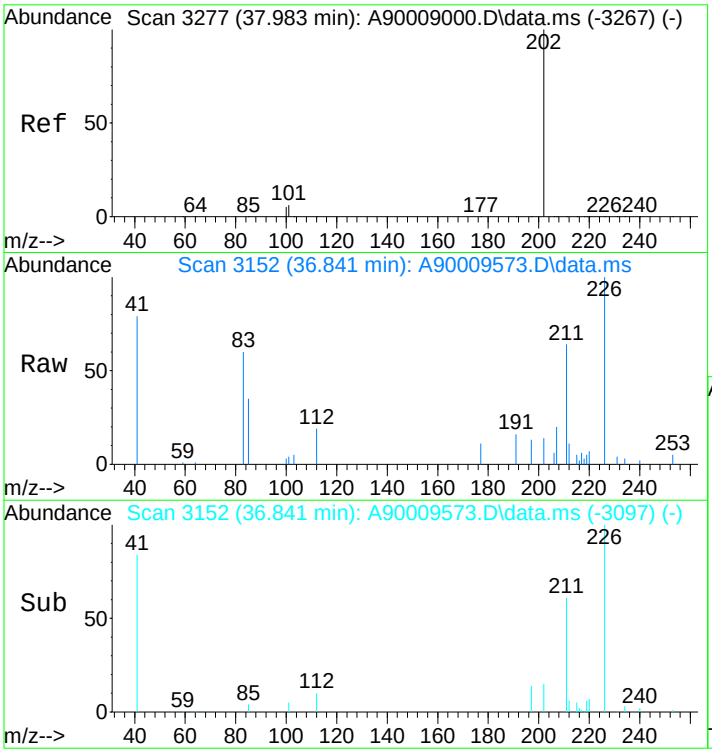


#57
1-Methylphenanthrene
Concen: 724.60 ng/mL
RT: 34.596 min Scan# 2906
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:192 Resp: 145525

Ion	Ratio	Lower	Upper
192	100		
191	56.2	46.9	70.3

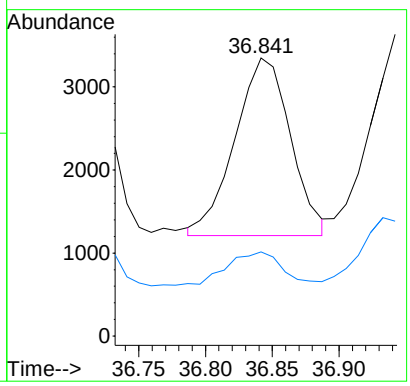


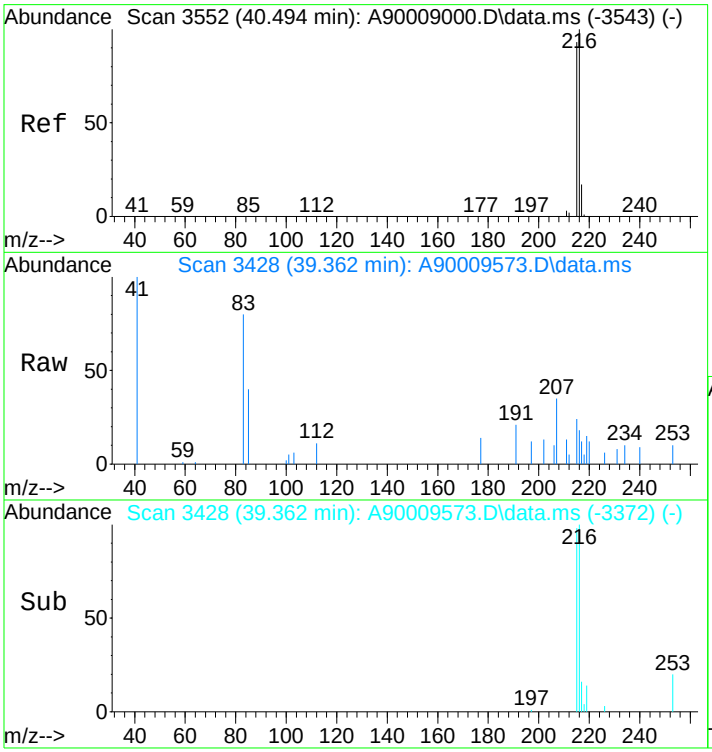


#58
Fluoranthene
Concen: 20.33 ng/mL m
RT: 36.841 min Scan# 3152
Delta R.T. -0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:202 Resp: 6182

Ion	Ratio	Lower	Upper
202	100		
101	33.1	8.6	12.8#

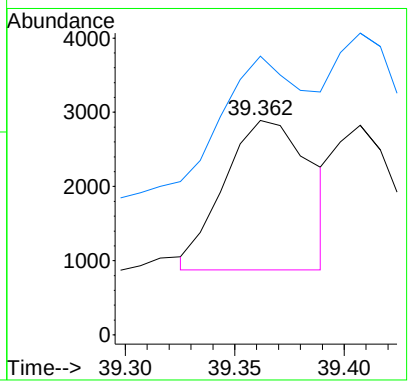


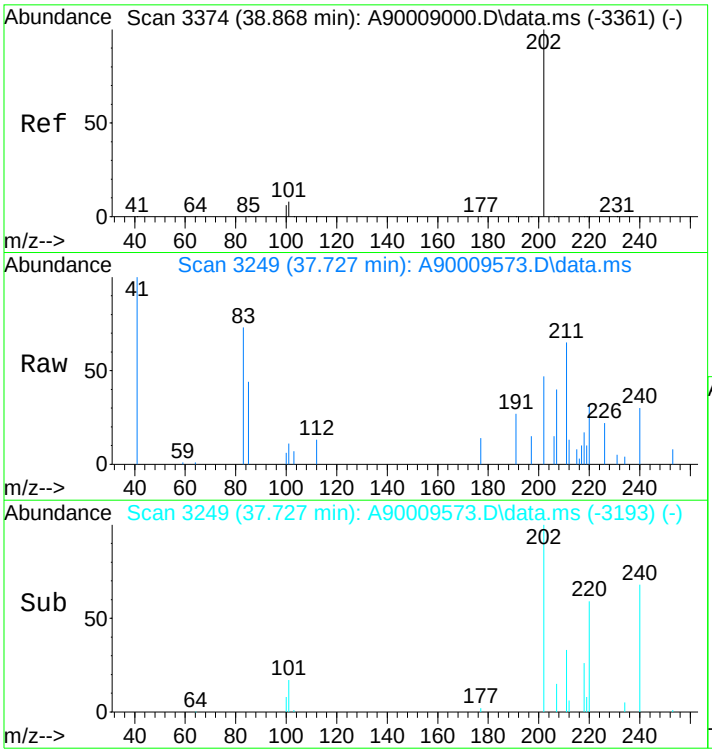


#59
Benzo(b)fluorene
Concen: 30.72 ng/mL m
RT: 39.362 min Scan# 3428
Delta R.T. 0.009 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:216 Resp: 5556

Ion	Ratio	Lower	Upper
216	100		
215	107.4	72.4	108.6

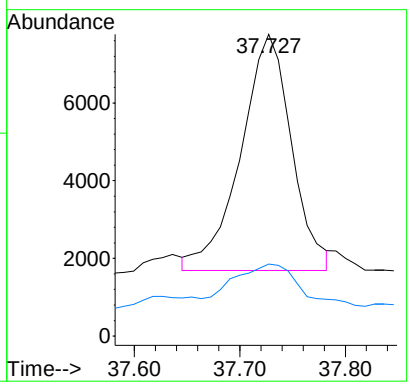


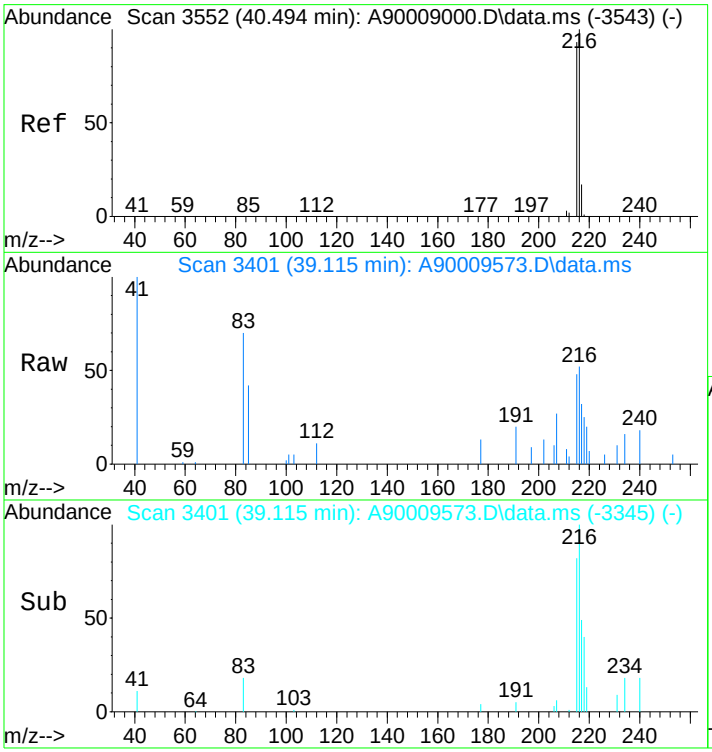


#60
Pyrene
Concen: 65.44 ng/mL m
RT: 37.727 min Scan# 3249
Delta R.T. 0.009 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:202 Resp: 20300

Ion	Ratio	Lower	Upper
202	100		
101	24.6	9.8	14.6#

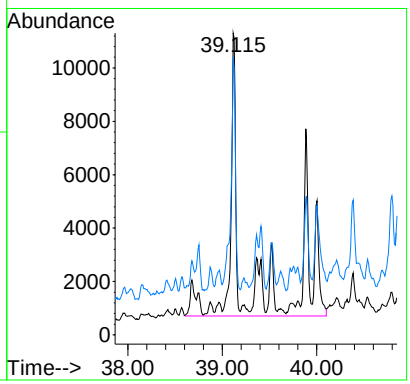


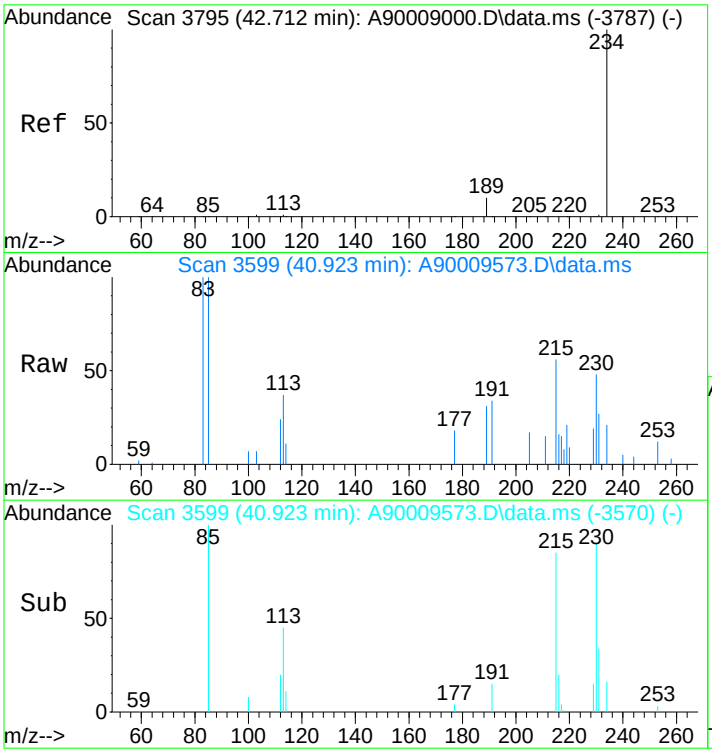


#61
C1-Fluoranthenes/Pyrenes
Concen: 322.33 ng/mL m
RT: 39.115 min Scan# 3401
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:216 Resp: 99997

Ion	Ratio	Lower	Upper
216	100		
215	29.4	73.5	110.3#

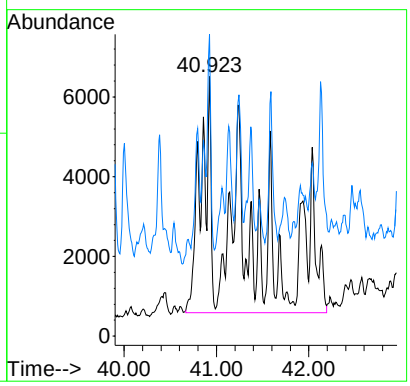


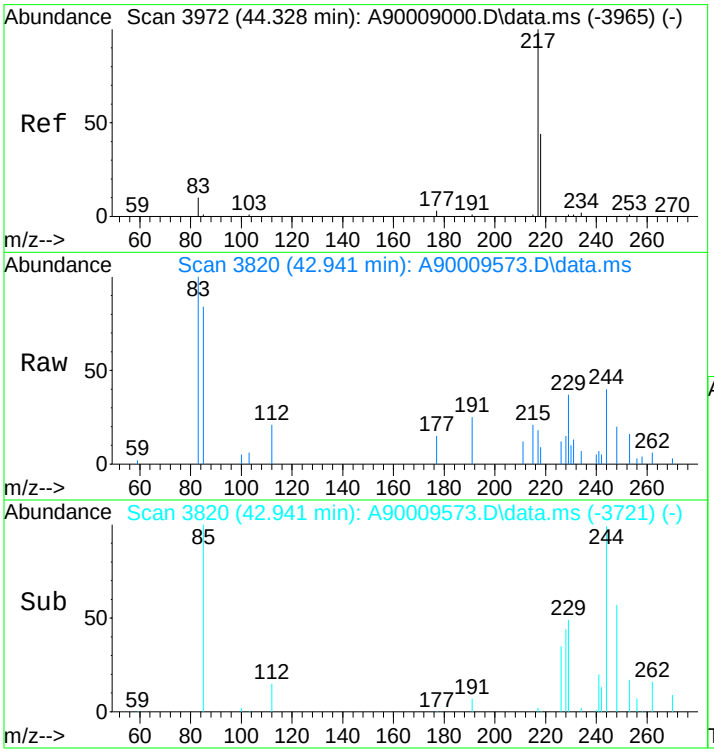


#62
C2-Fluoranthenes/Pyrenes
Concen: 500.35 ng/mL m
RT: 40.923 min Scan# 3599
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:230 Resp: 155225

Ion	Ratio	Lower	Upper
230	100		
215	8.6	93.1	139.7#

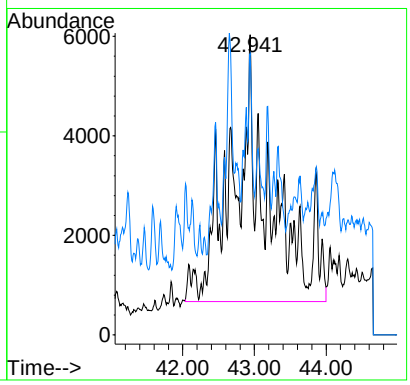


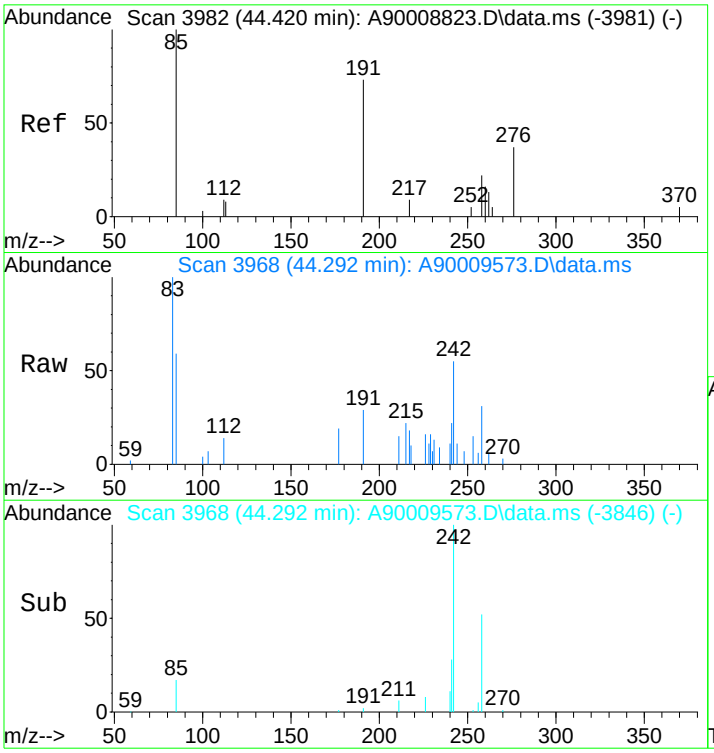


#63
C3-Fluoranthenes/Pyrenes
Concen: 595.36 ng/mL m
RT: 42.941 min Scan# 3820
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:244 Resp: 184700

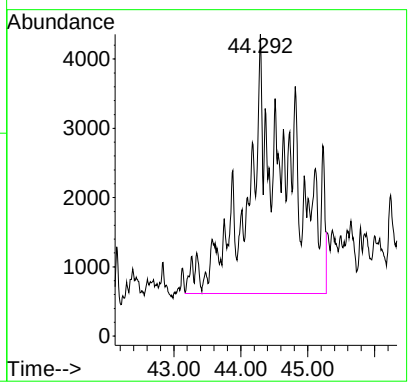
Ion	Ratio	Lower	Upper
244	100		
229	5.2	75.0	112.4#

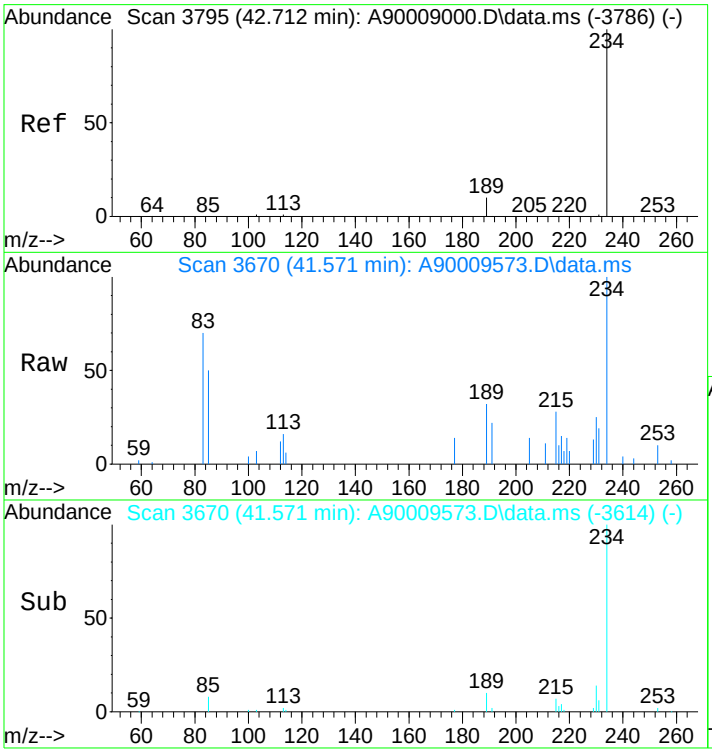




#64
C4-Fluoranthenes/Pyrenes
Concen: 501.51 ng/mL m
RT: 44.292 min Scan# 3968
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:258 Resp: 155585

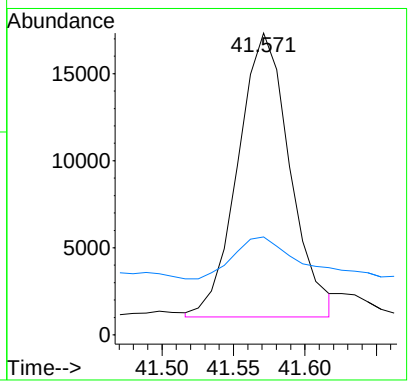


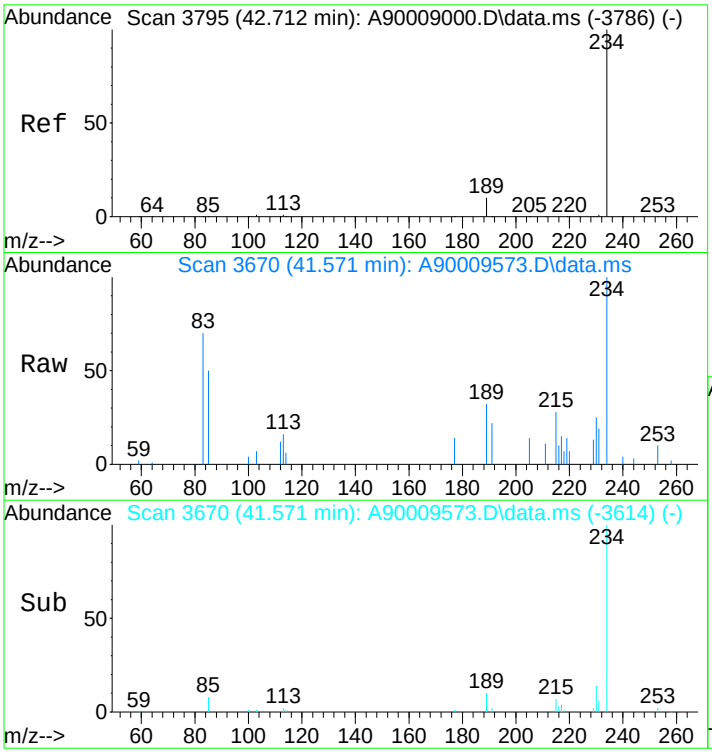


#66
Naphthobenzothiophene
Concen: 153.23 ng/ml m
RT: 41.571 min Scan# 3670
Delta R.T. 0.009 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:234 Resp: 41248

Ion	Ratio	Lower	Upper
234	100		
189	18.8	7.4	11.2#

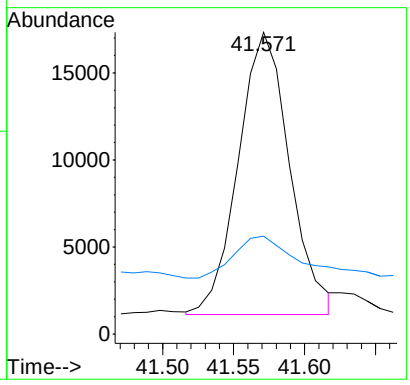


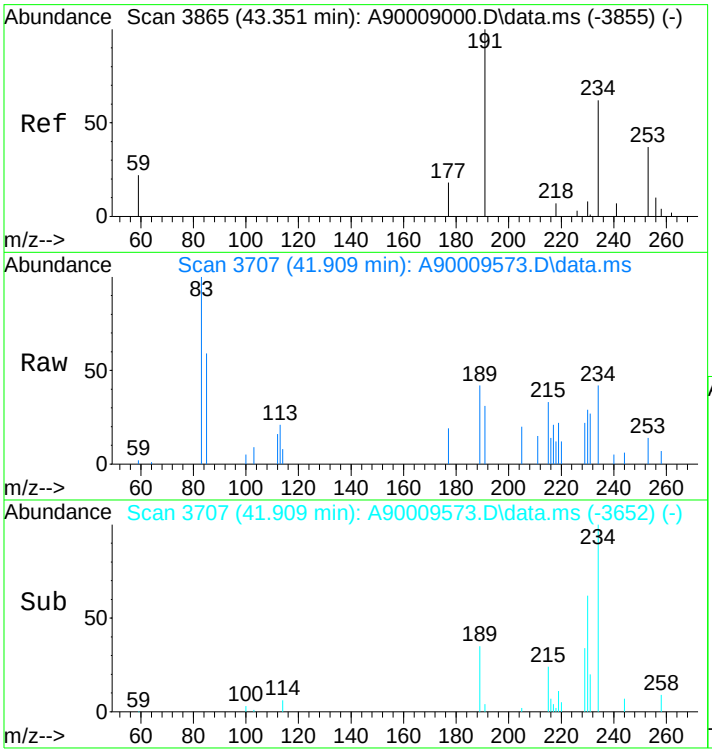


#67
Naphthobenzothiophene-2,1-D
Concen: 151.26 ng/mL m
RT: 41.571 min Scan# 3670
Delta R.T. 0.009 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:234 Resp: 40718

Ion	Ratio	Lower	Upper
234	100		
189	19.1	7.4	11.2#

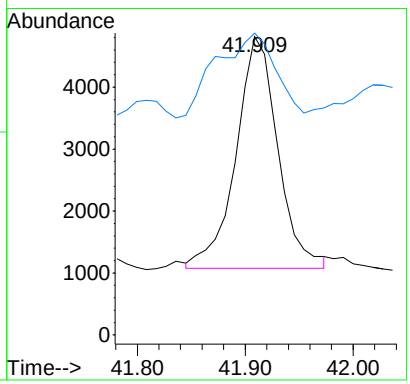


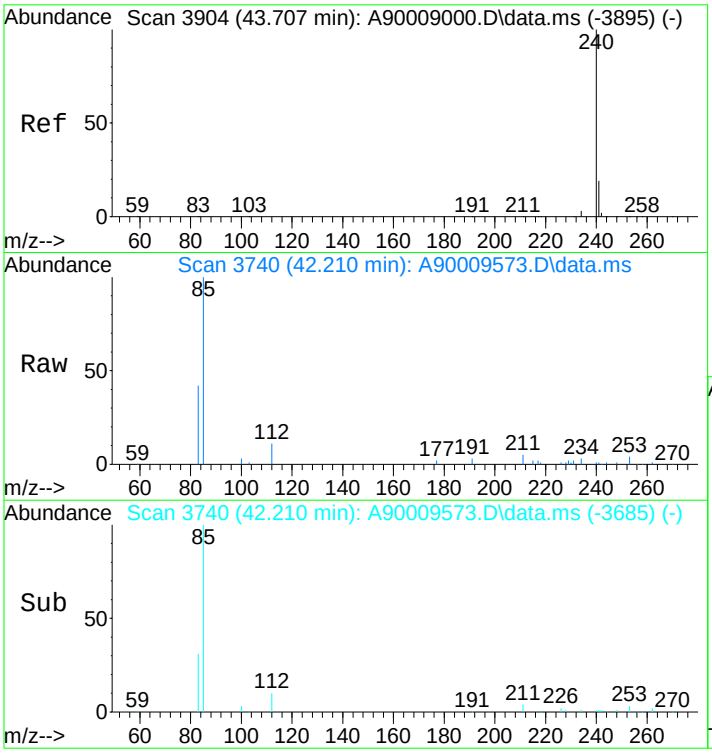


#68
Naphthobenzothiophene-1,2-D
Concen: 37.49 ng/mL m
RT: 41.909 min Scan# 3707
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:234 Resp: 10093

Ion	Ratio	Lower	Upper
234	100		
189	0.0	81.0	121.4#

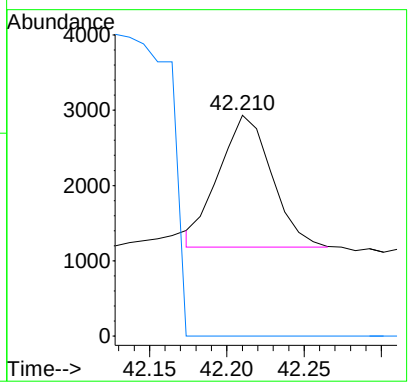


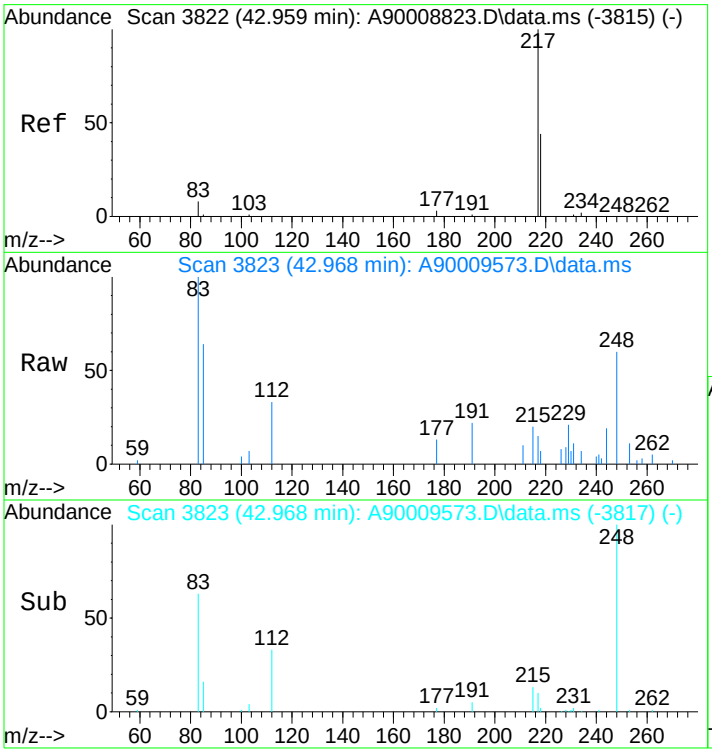


#69
Naphthobenzothiophene-2,3-D
Concen: 15.57 ng/mL m
RT: 42.210 min Scan# 3740
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:234 Resp: 4191

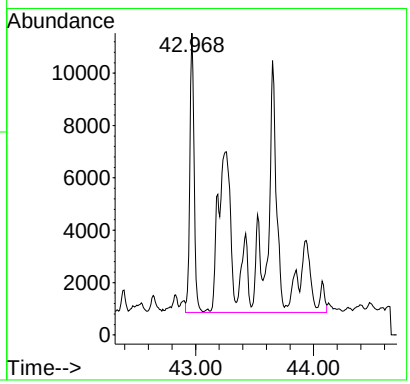
Ion	Ratio	Lower	Upper
234	100		
189	0.0	0.0	0.0

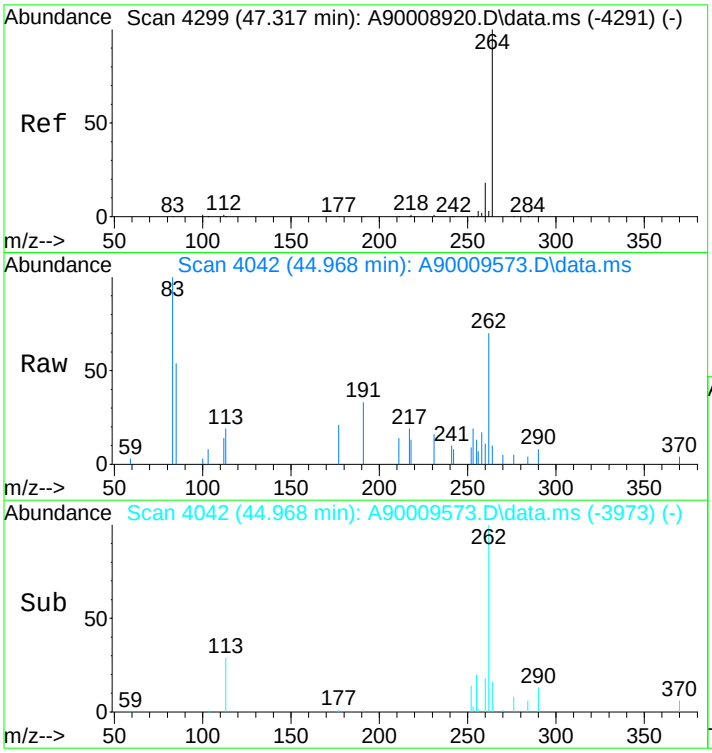




#70
C1-Naphthobenzothiophenes
Concen: 567.96 ng/ml m
RT: 42.968 min Scan# 3823
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

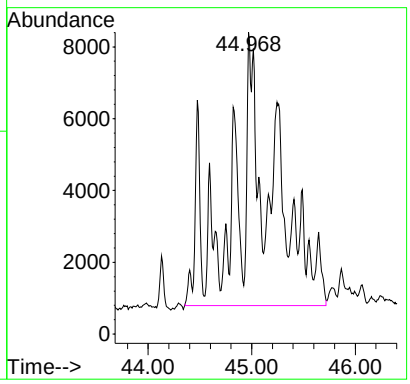
Tgt Ion:248 Resp: 152888

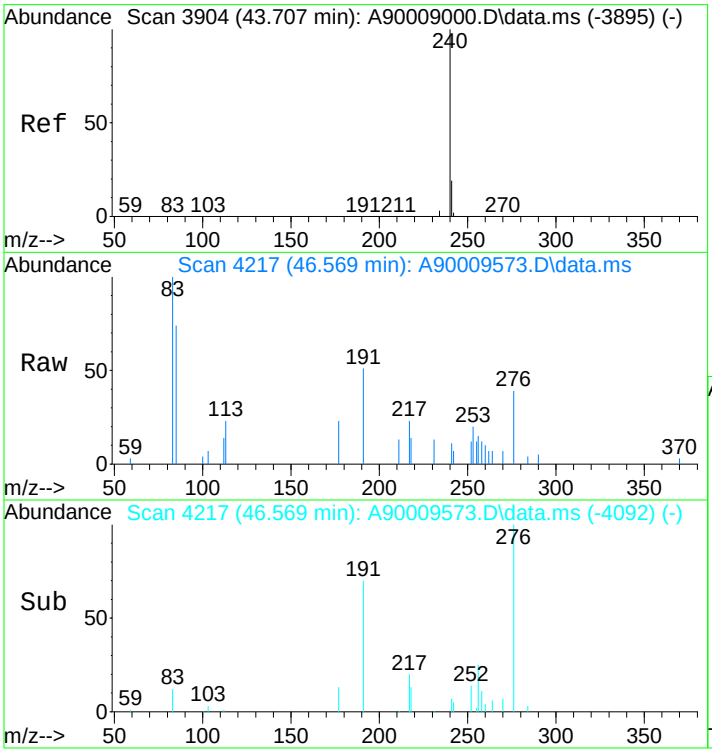




#71
C2-Naphthobenzothiophenes
Concen: 731.07 ng/ml m
RT: 44.968 min Scan# 4042
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

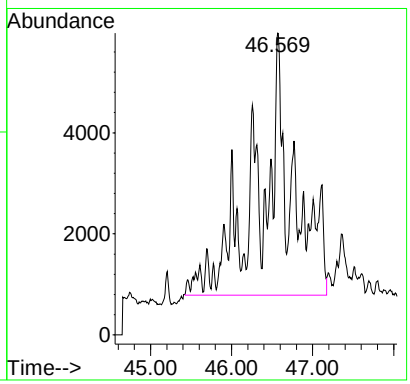
Tgt Ion:262 Resp: 196797

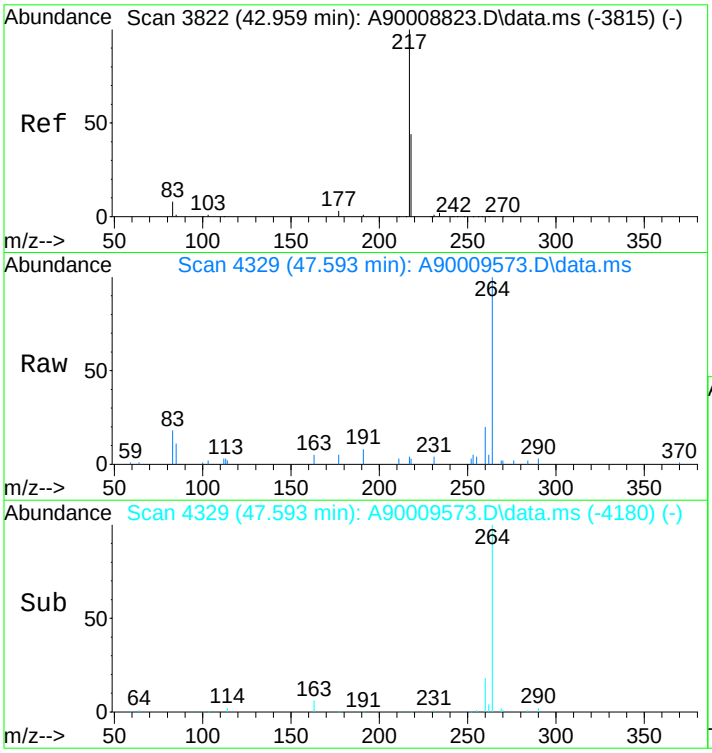




#72
C3-Naphthobenzothiophenes
Concen: 547.46 ng/ml m
RT: 46.569 min Scan# 4217
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

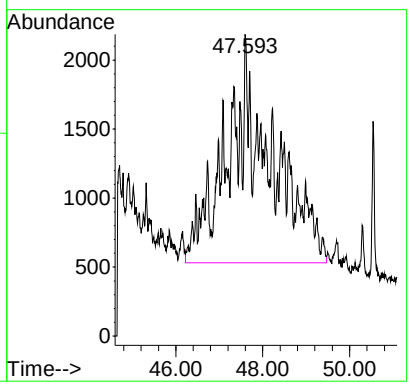
Tgt Ion:276 Resp: 147369

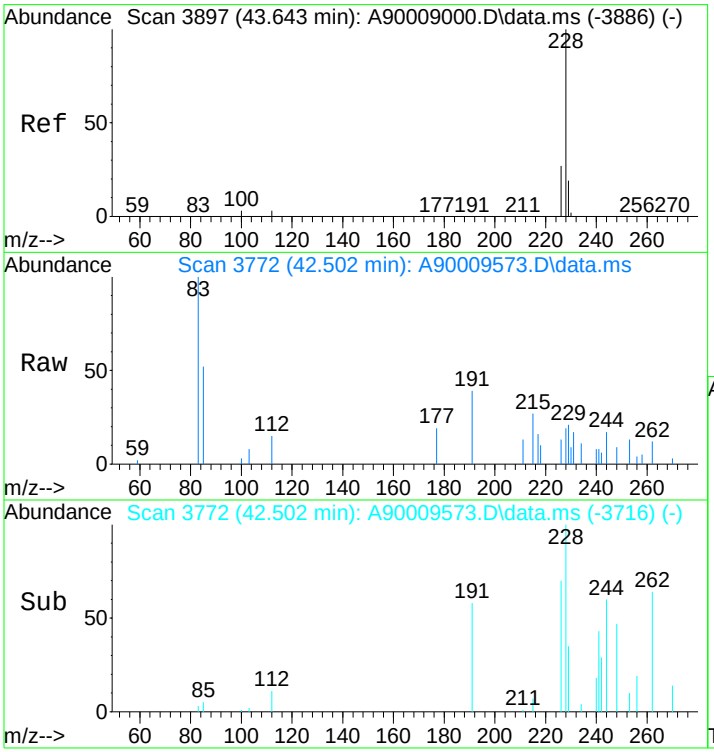




#73
C4-Naphthobenzothiophenes
Concen: 414.26 ng/mL m
RT: 47.593 min Scan# 4329
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:290 Resp: 111515

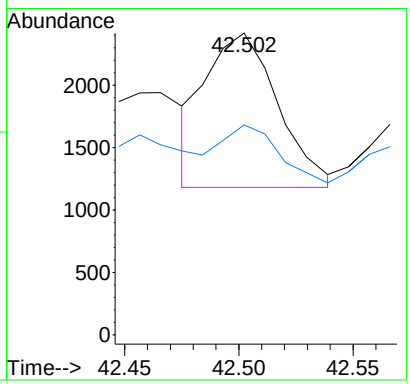


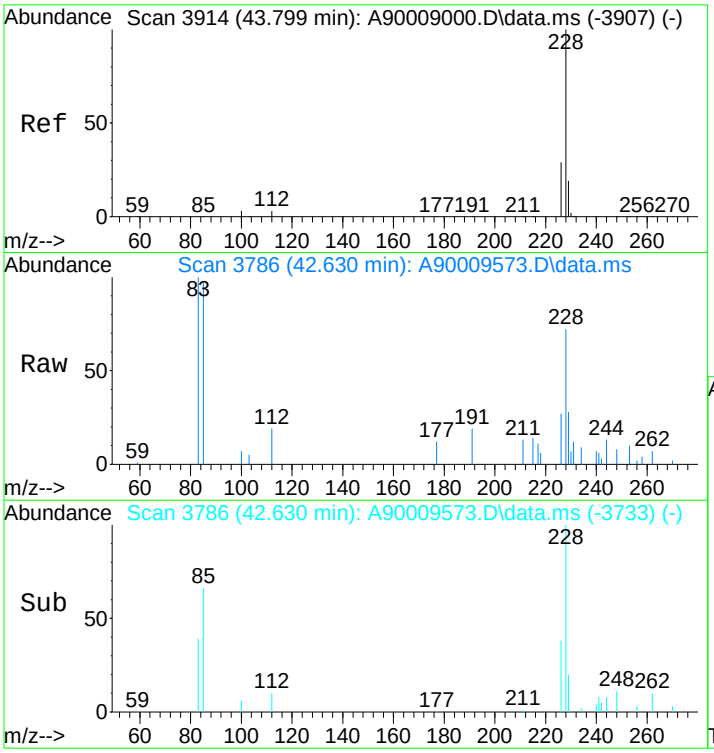


#75
Benz[a]anthracene
Concen: 10.35 ng/mL m
RT: 42.502 min Scan# 3772
Delta R.T. 0.009 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:228 Resp: 2729

Ion	Ratio	Lower	Upper
228	100		
226	524.3	21.2	31.8#

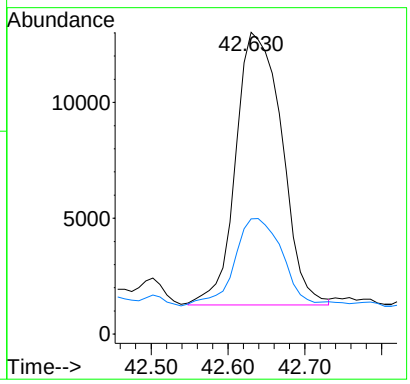


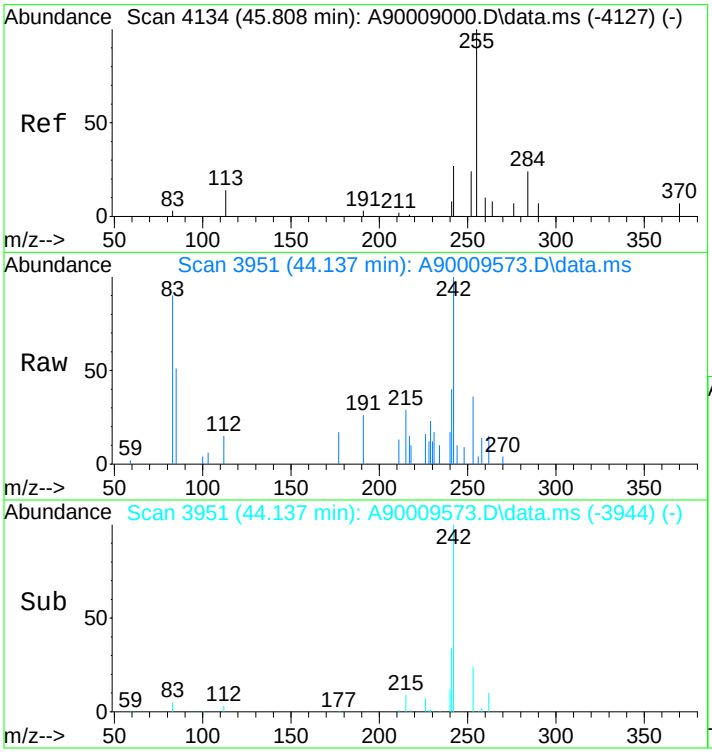


#77
Chrysene/Triphenylene
Concen: 188.90 ng/mL m
RT: 42.630 min Scan# 3786
Delta R.T. -0.019 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:228 Resp: 48980

Ion	Ratio	Lower	Upper
228	100		
226	29.2	23.4	35.0

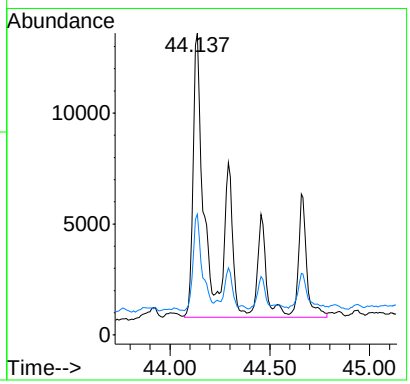


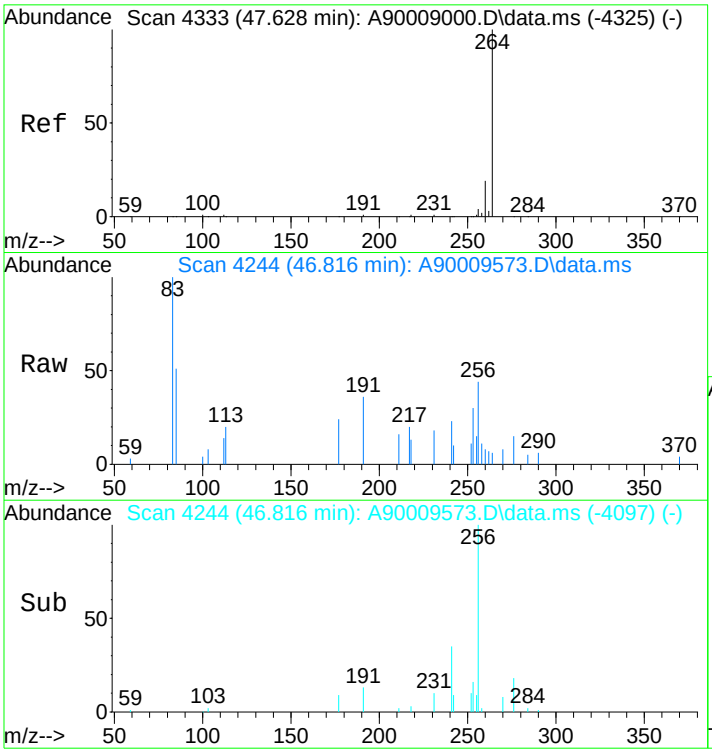


#78
C1-Chrysenes
Concen: 359.90 ng/mL m
RT: 44.137 min Scan# 3951
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:242 Resp: 93317

Ion	Ratio	Lower	Upper
242	100		
241	4.2	31.9	47.9#

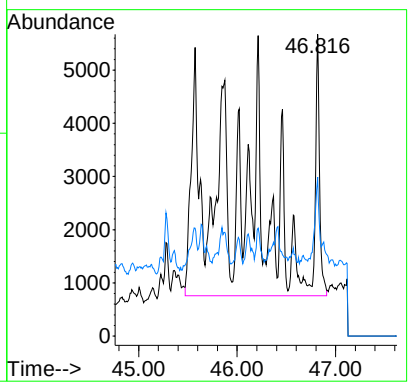


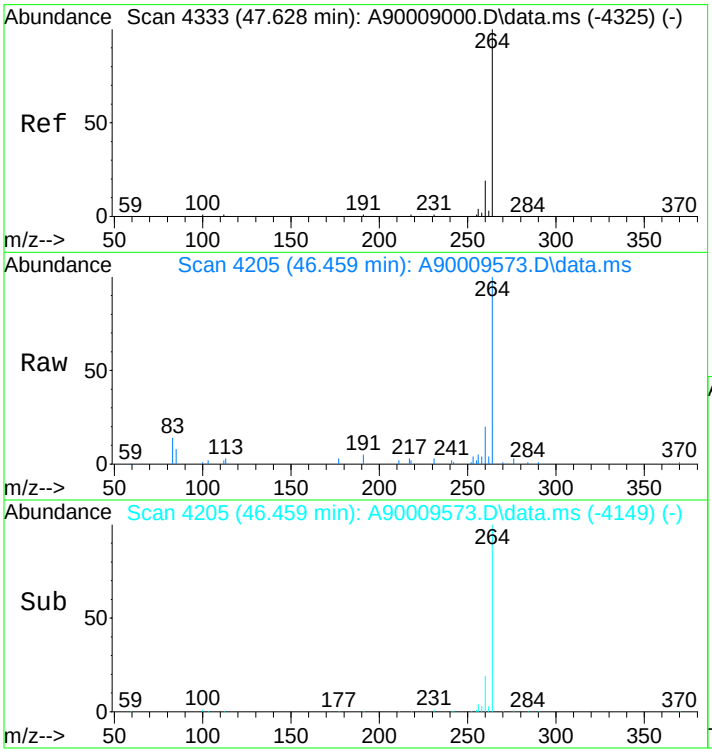


#79
C2-Chrysenes
Concen: 508.05 ng/mL m
RT: 46.816 min Scan# 4244
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:256 Resp: 131731

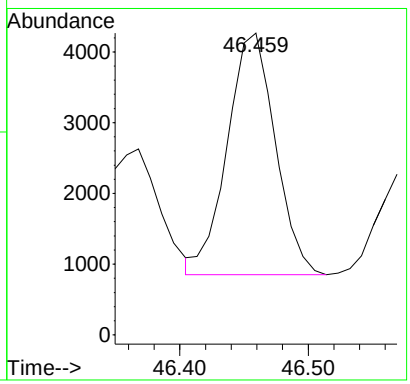
Ion	Ratio	Lower	Upper
256	100		
241	3.5	42.2	63.2#

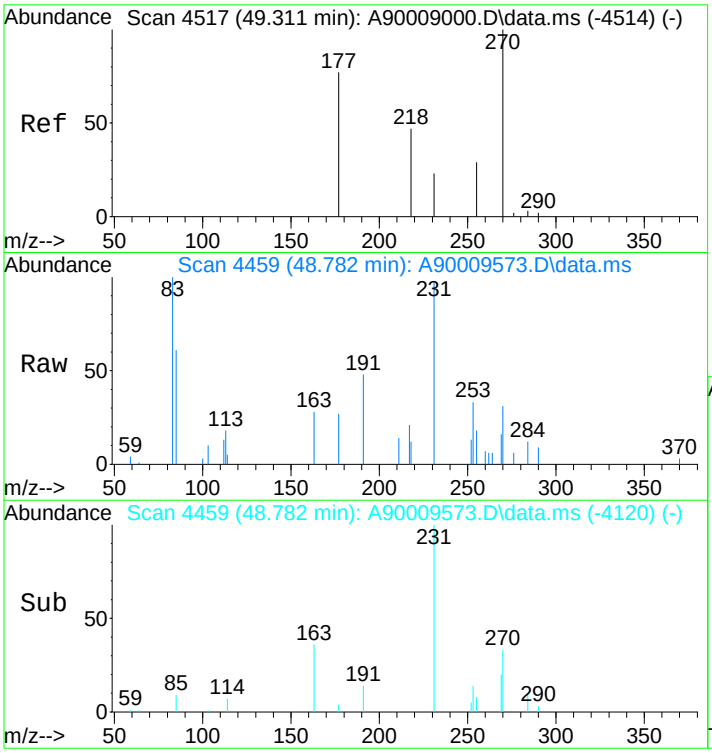




#80
BBF-d12 Surr BKGD
Concen: 34.19 ng/mL
RT: 46.459 min Scan# 4205
Delta R.T. 0.015 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:256 Resp: 8866

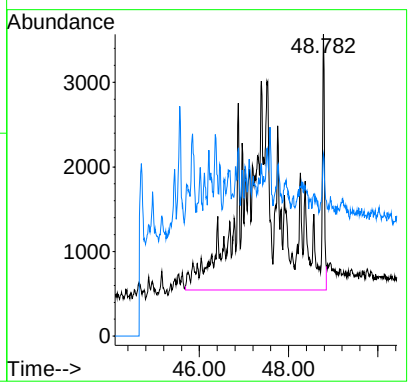


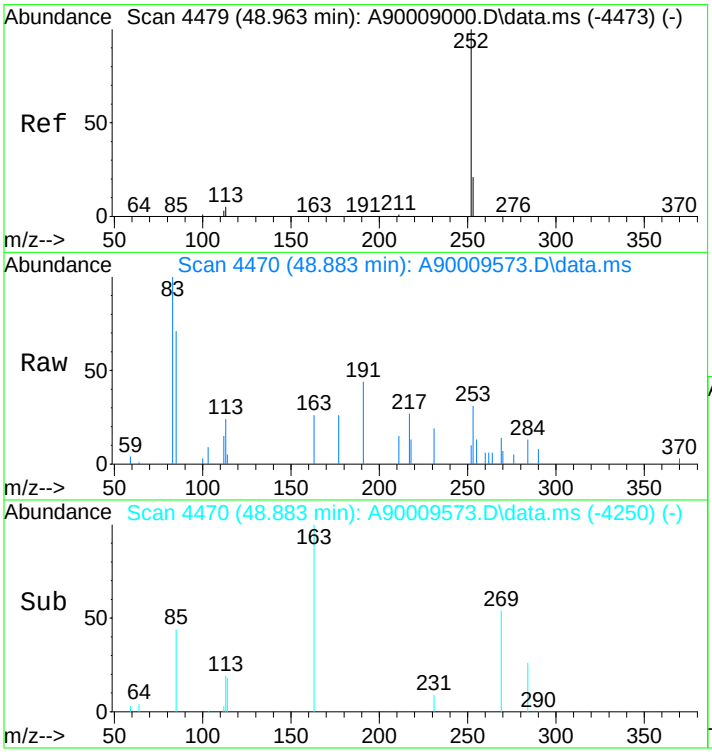


#81
C3-Chrysenes
Concen: 547.04 ng/mL m
RT: 48.782 min Scan# 4459
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:270 Resp: 141841

Ion	Ratio	Lower	Upper
270	100		
255	1.7	48.2	72.4#

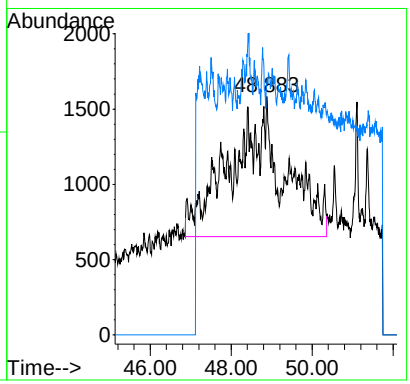


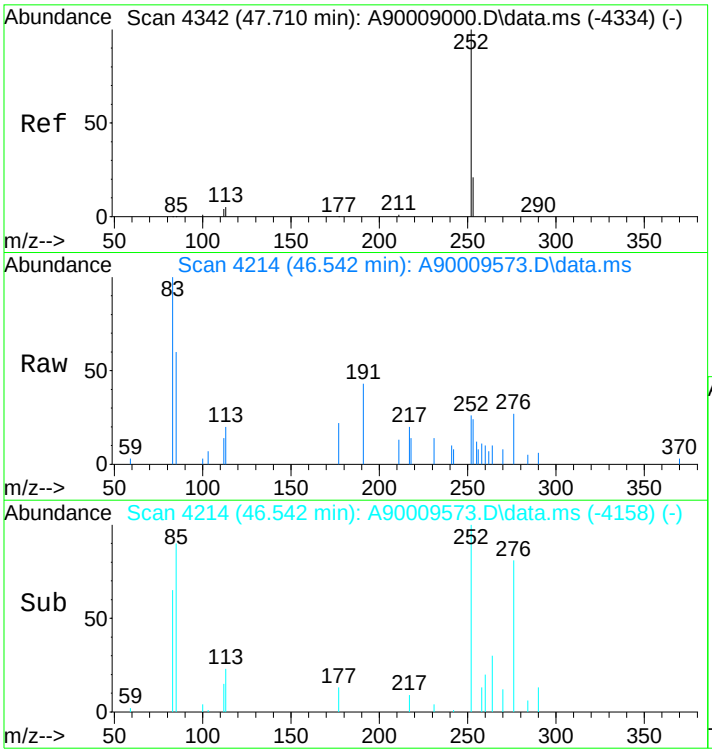


#82
C4-Chrysenes
Concen: 317.24 ng/mL m
RT: 48.883 min Scan# 4470
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:284 Resp: 82256

Ion	Ratio	Lower	Upper
284	100		
269	0.0	84.6	126.8#

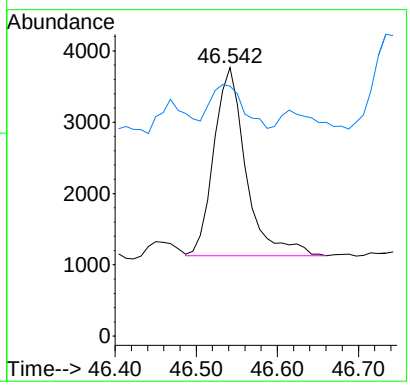


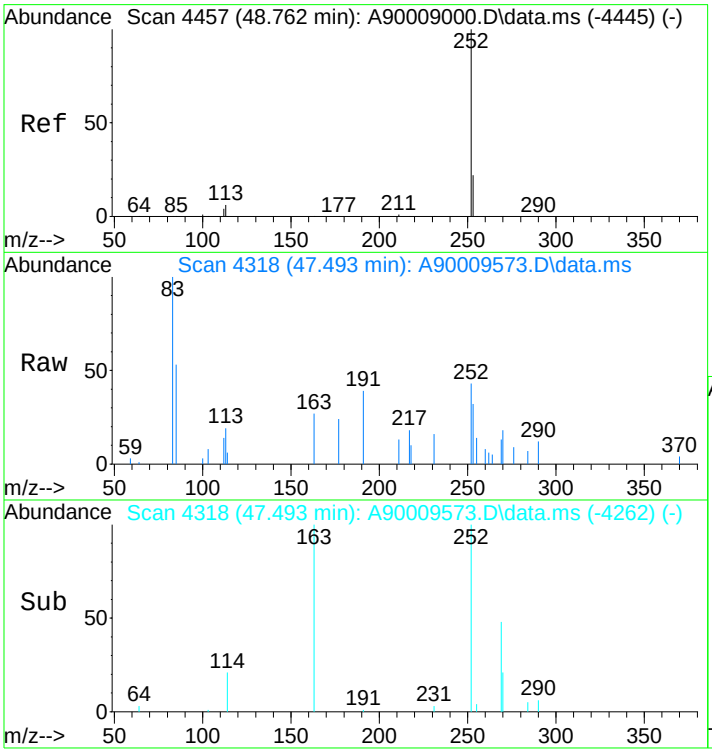


#84
Benzo[b]fluoranthene
Concen: 26.57 ng/mL
RT: 46.542 min Scan# 4214
Delta R.T. 0.009 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:252 Resp: 7264

Ion	Ratio	Lower	Upper
252	100		
253	22.7	19.2	28.8

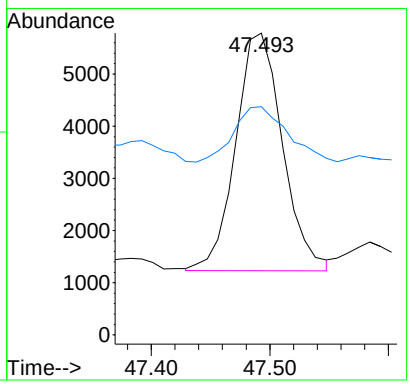


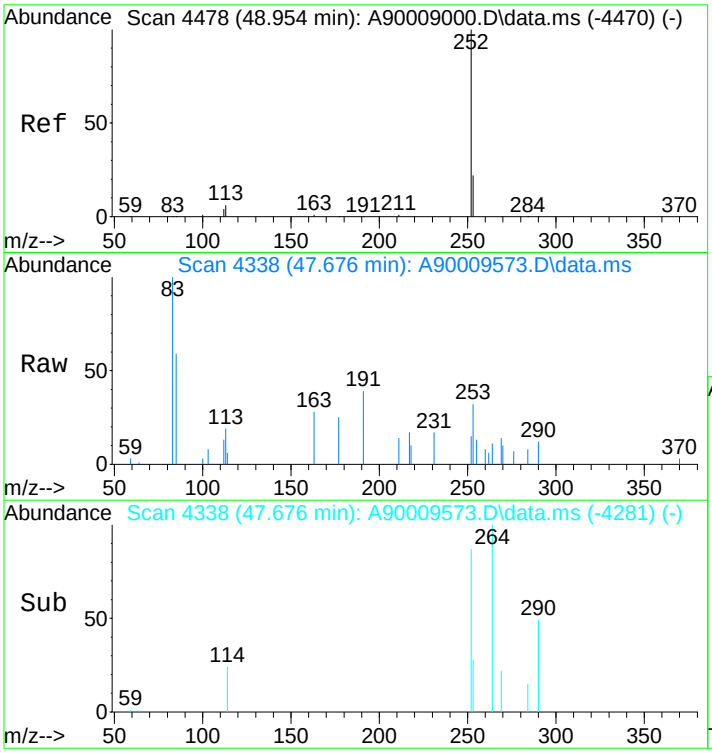


#87
Benzo[e]pyrene
Concen: 48.08 ng/mL
RT: 47.493 min Scan# 4318
Delta R.T. 0.009 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:252 Resp: 12480

Ion	Ratio	Lower	Upper
252	100		
253	27.9	19.8	29.8

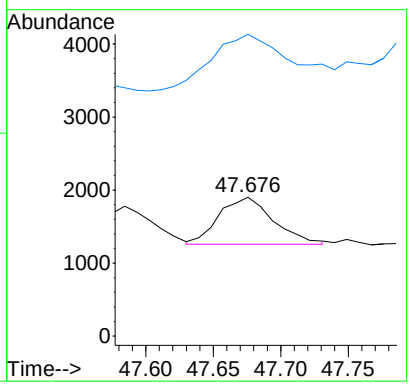


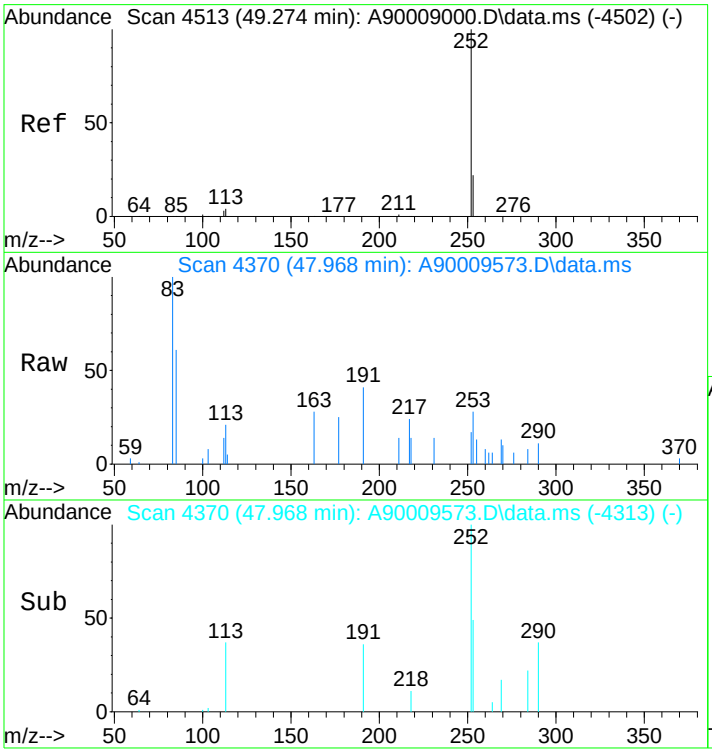


#89
Benzo[a]pyrene
Concen: 7.31 ng/mL m
RT: 47.676 min Scan# 4338
Delta R.T. 0.018 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:252 Resp: 1797

Ion	Ratio	Lower	Upper
252	100		
253	184.3	20.0	30.0#

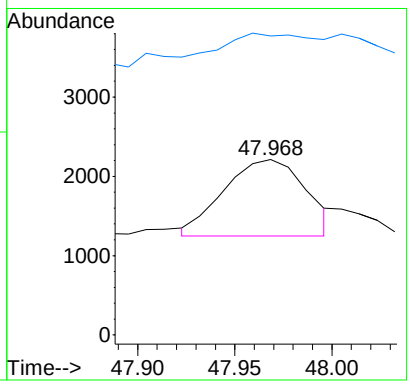


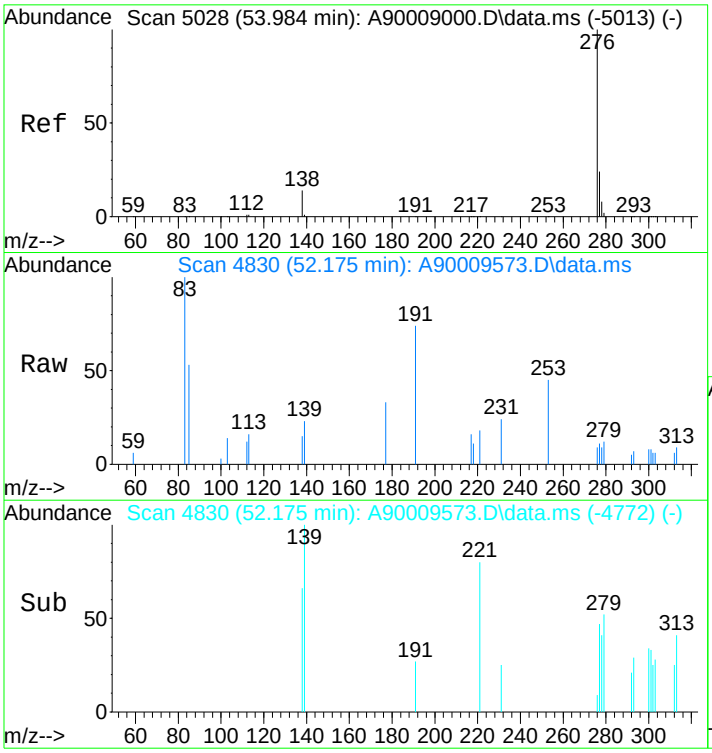


#90
Perylene
Concen: 10.74 ng/mL m
RT: 47.968 min Scan# 4370
Delta R.T. 0.018 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:252 Resp: 2818

Ion	Ratio	Lower	Upper
252	100		
253	103.5	20.1	30.1#

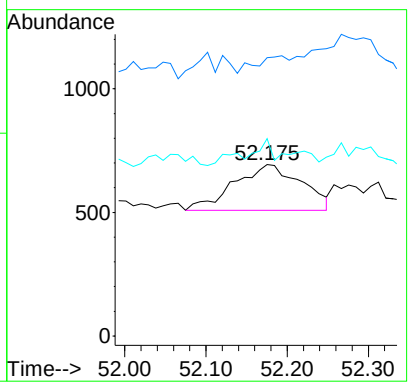


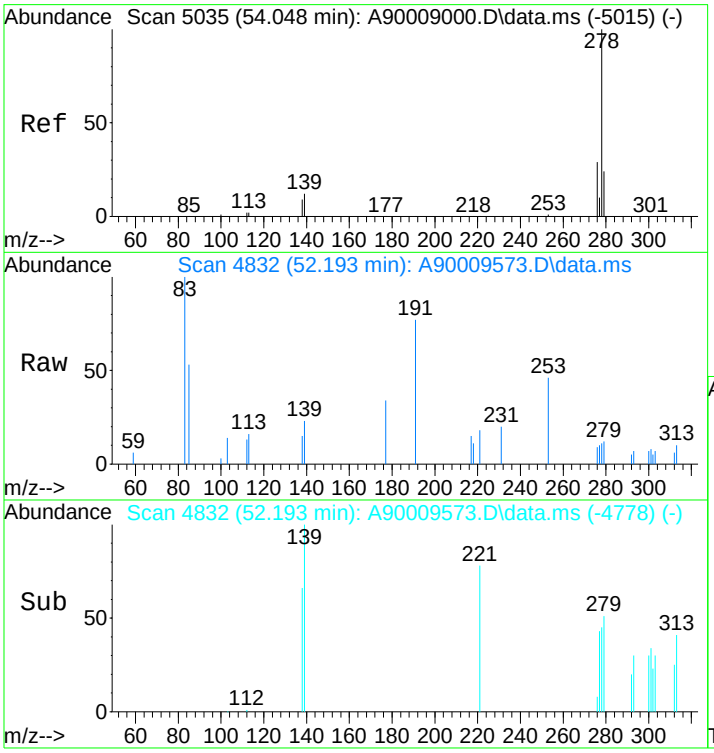


#91
Indeno[1,2,3-cd]pyrene
Concen: 3.94 ng/mL
RT: 52.175 min Scan# 4830
Delta R.T. 0.027 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:276 Resp: 1073

Ion	Ratio	Lower	Upper
276	100		
138	0.0	0.0	0.0
277	0.0	0.0	0.0

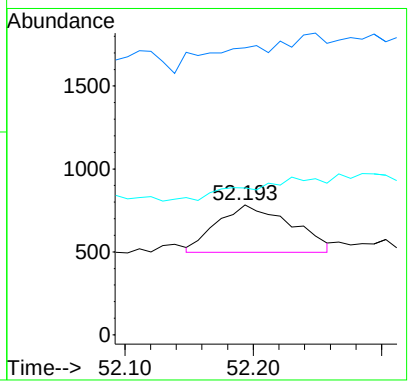


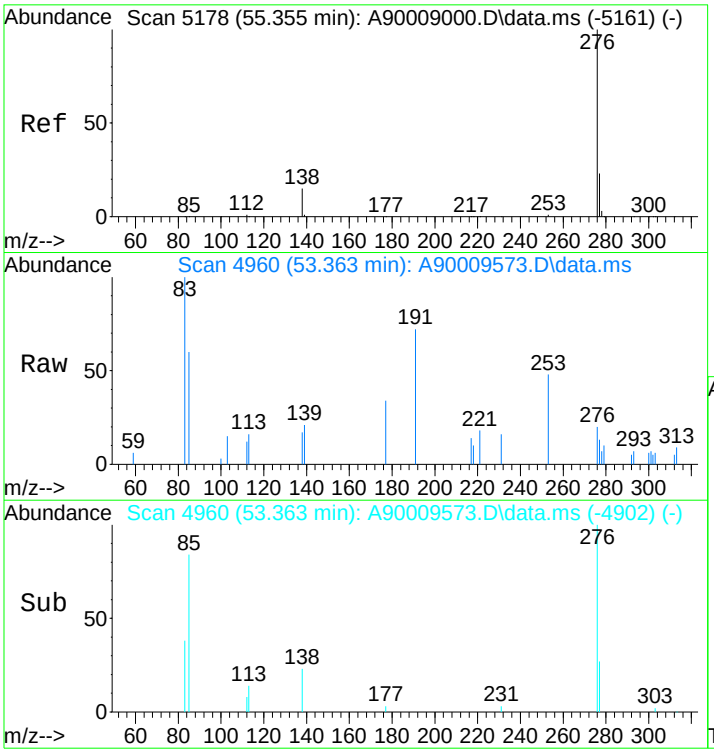


#92
Dibenz[ah]+[ac]anthracene
Concen: 4.28 ng/mL m
RT: 52.193 min Scan# 4832
Delta R.T. -0.009 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:278 Resp: 1147

Ion	Ratio	Lower	Upper
278	100		
139	0.0	13.0	19.6#
279	0.0	19.2	28.8#

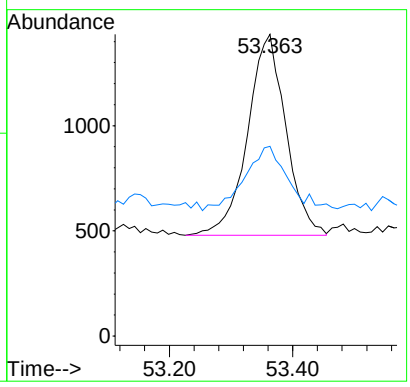


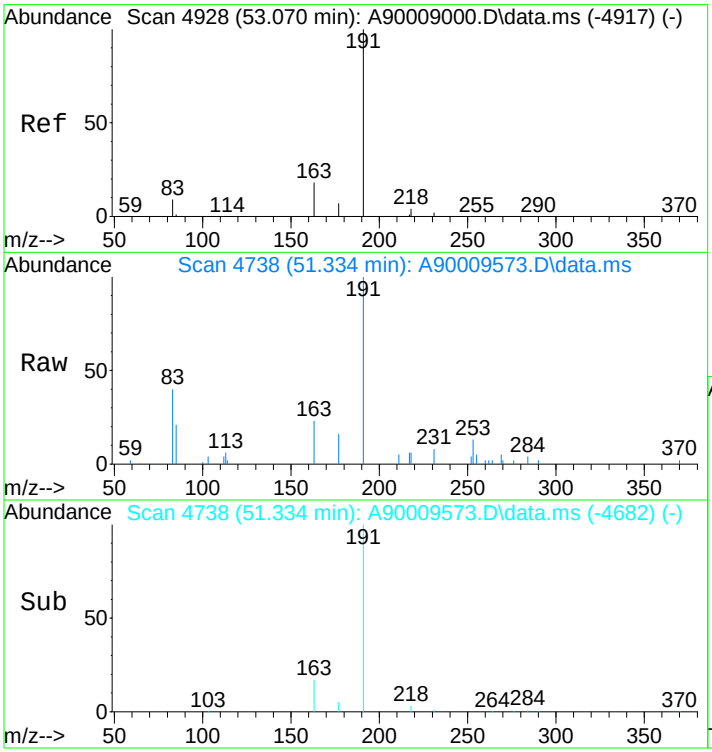


#93
Benzo[g,h,i]perylene
Concen: 15.33 ng/mL
RT: 53.363 min Scan# 4960
Delta R.T. 0.027 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:276 Resp: 4102

Ion	Ratio	Lower	Upper
276	100		
277	32.8	20.1	30.1#

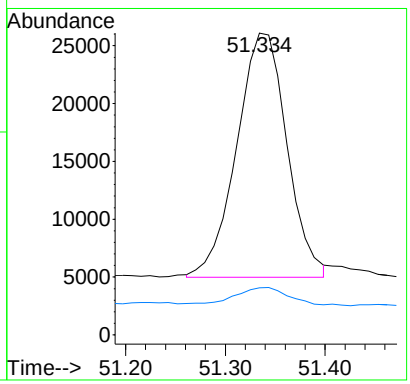


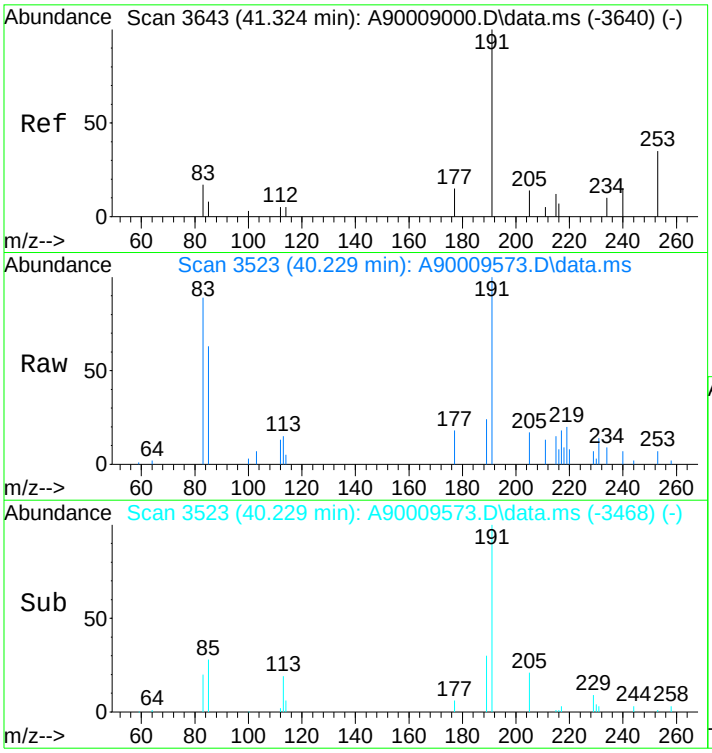


#94
Hopane (T19)
Concen: 732.65 ng/mL m
RT: 51.334 min Scan# 4738
Delta R.T. 0.009 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:191 Resp: 74032

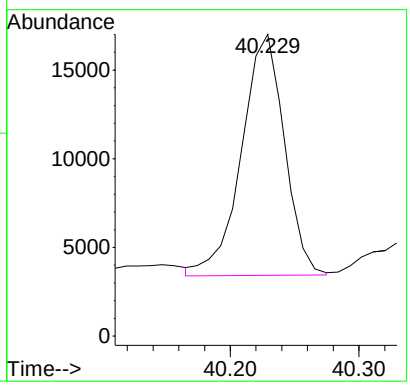
Ion	Ratio	Lower	Upper
191	100		
177	8.2	12.2	18.4#

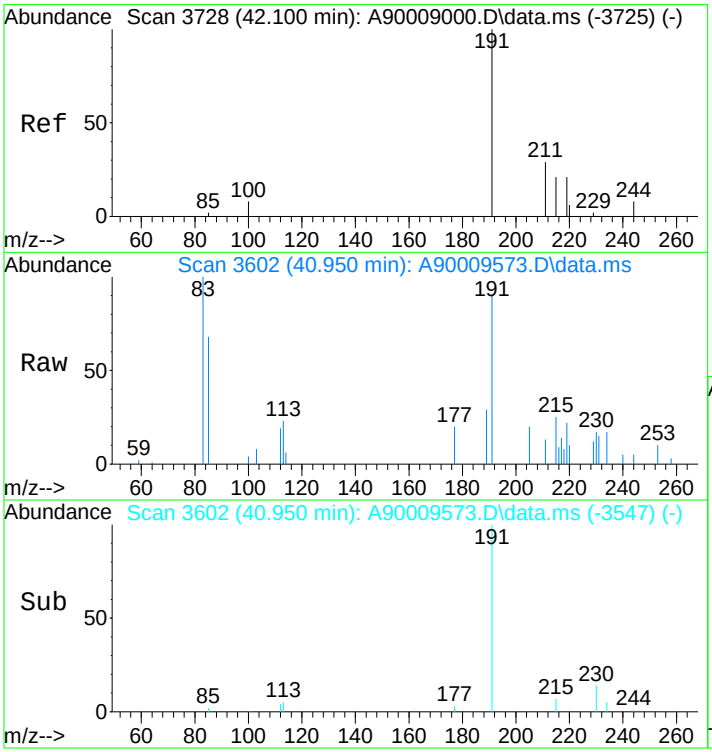




#96
C23 Tricyclic Terpane (T4)
Concen: 311.44 ng/ml
RT: 40.229 min Scan# 3523
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

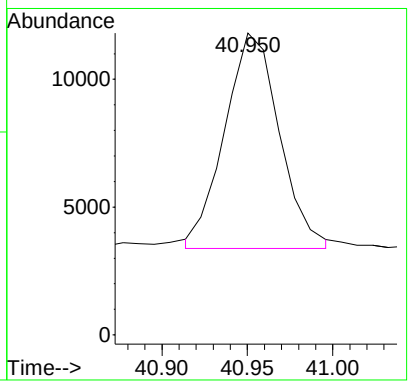
Tgt Ion:191 Resp: 31470

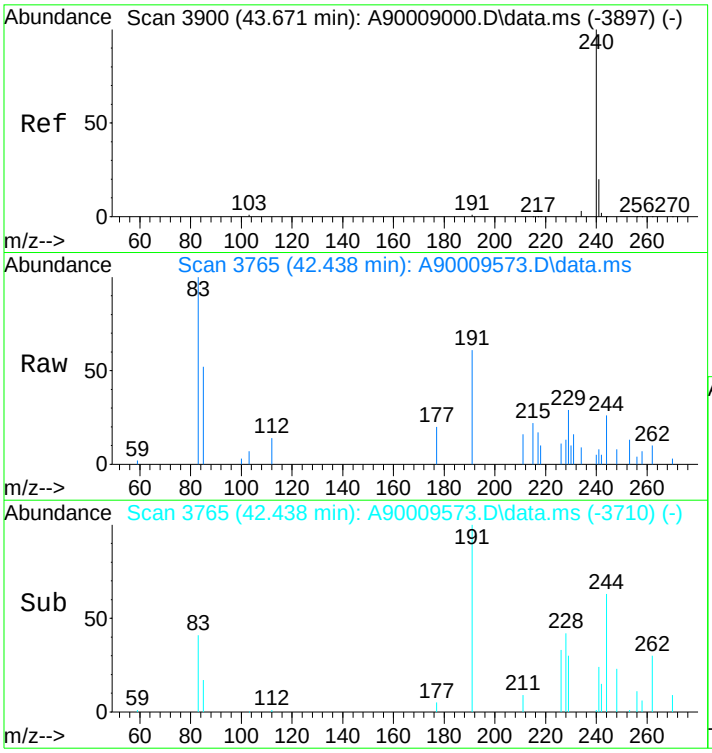




#97
C24 Tricyclic Terpane (T5)
Concen: 185.50 ng/ml m
RT: 40.950 min Scan# 3602
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

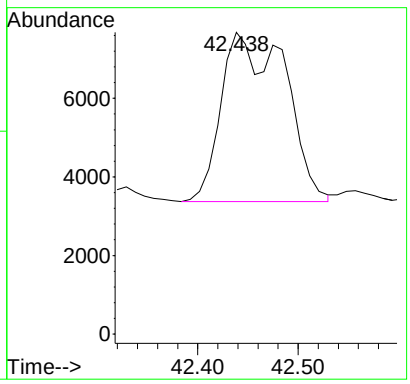
Tgt Ion:191 Resp: 18744

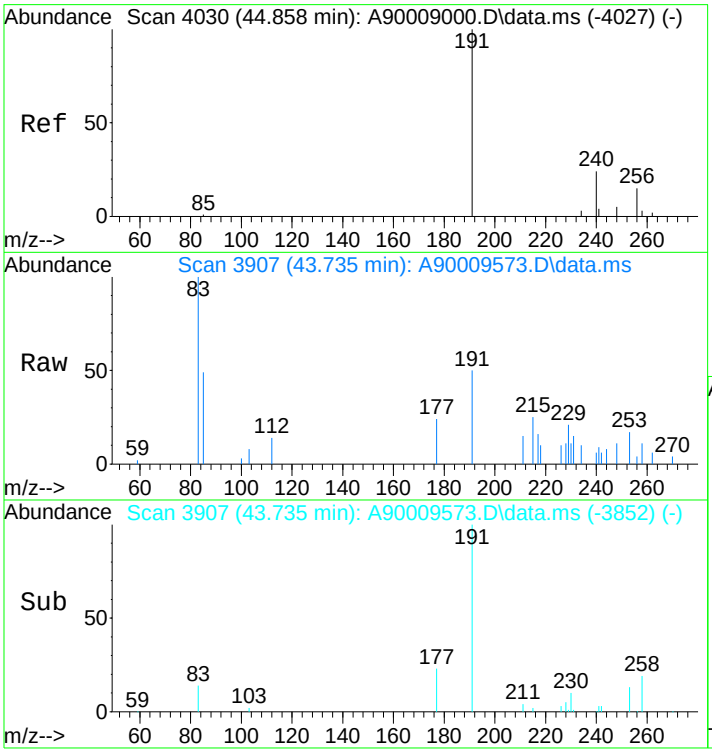




#98
C25 Tricyclic Terpane (T6)
Concen: 188.77 ng/ml m
RT: 42.438 min Scan# 3765
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

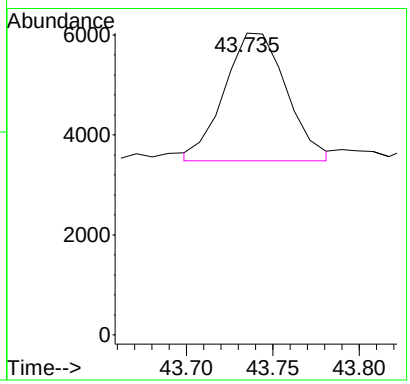
Tgt Ion:191 Resp: 19075

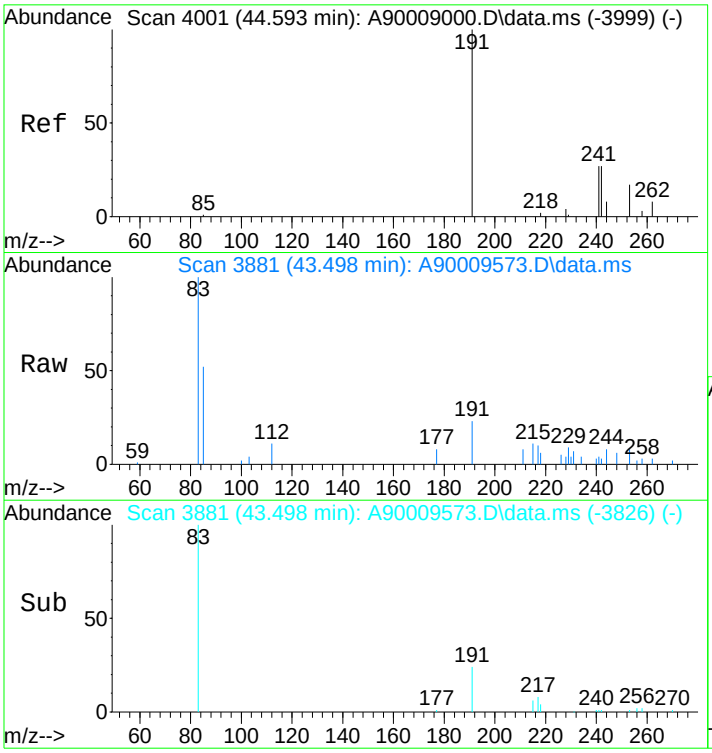




#99
C24 Tetracyclic Terpane (T6a)
Concen: 63.04 ng/ml m
RT: 43.735 min Scan# 3907
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

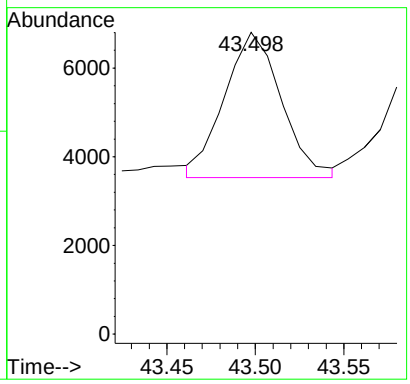
Tgt Ion:191 Resp: 6370

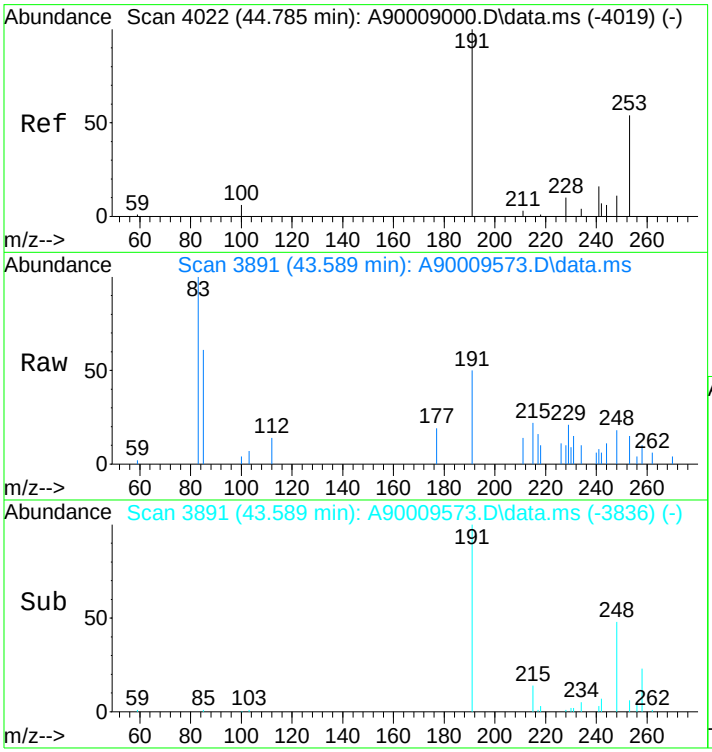




#100
C26 Tricyclic Terpane-22S (T6b)
Concen: 72.59 ng/ml m
RT: 43.498 min Scan# 3881
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

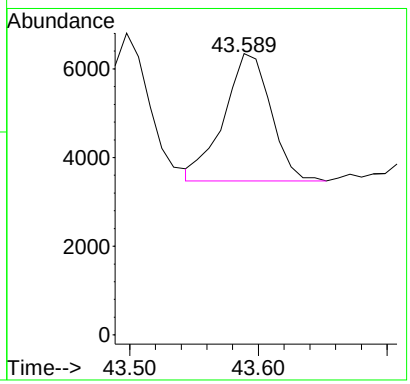
Tgt Ion:191 Resp: 7335

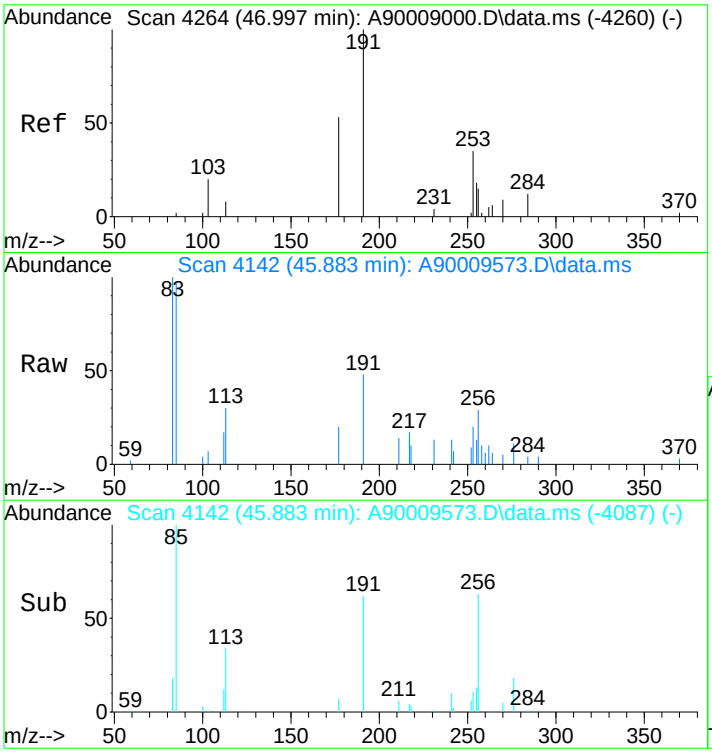




#101
C26 Tricyclic Terpane-22R (T6c)
Concen: 72.14 ng/ml
RT: 43.589 min Scan# 3891
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

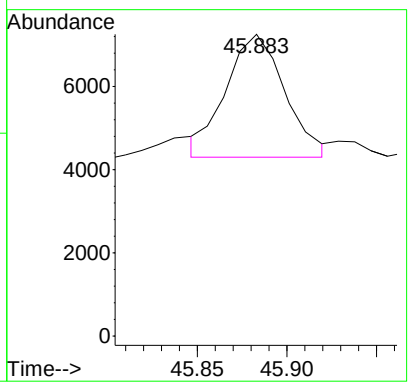
Tgt Ion:191 Resp: 7290

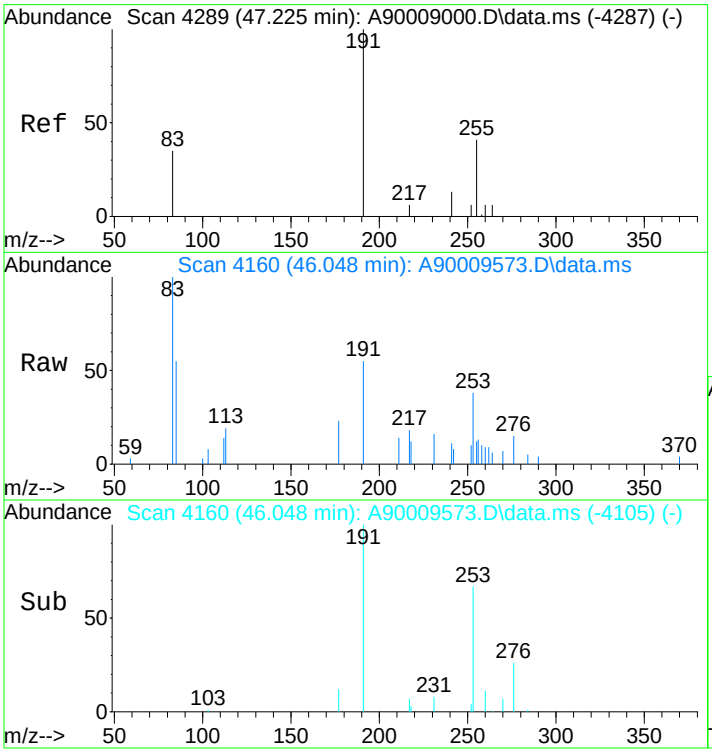




#102
C28 Tricyclic Terpane-22S (T7)
Concen: 66.58 ng/ml m
RT: 45.883 min Scan# 4142
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

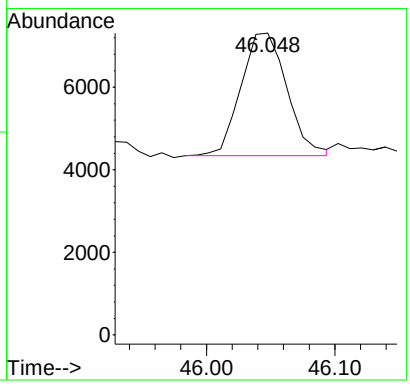
Tgt Ion:191 Resp: 6728

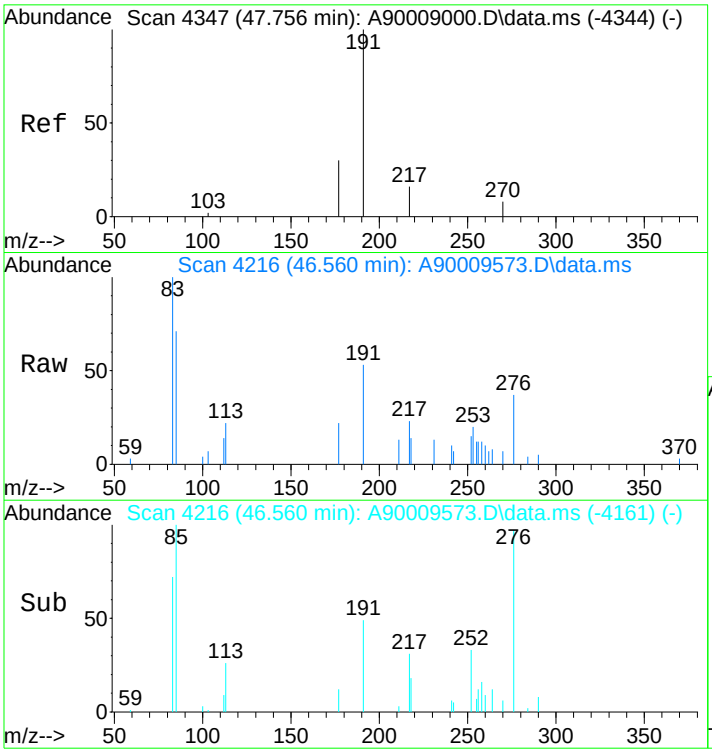




#103
C28 Tricyclic Terpane-22R (T8)
Concen: 73.34 ng/ml
RT: 46.048 min Scan# 4160
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

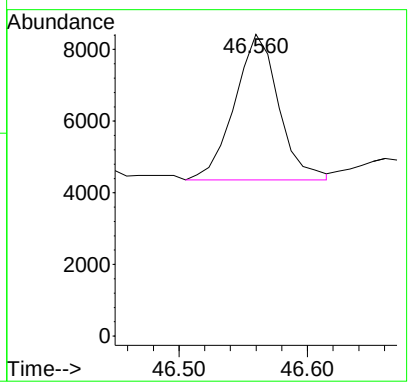
Tgt Ion:191 Resp: 7411

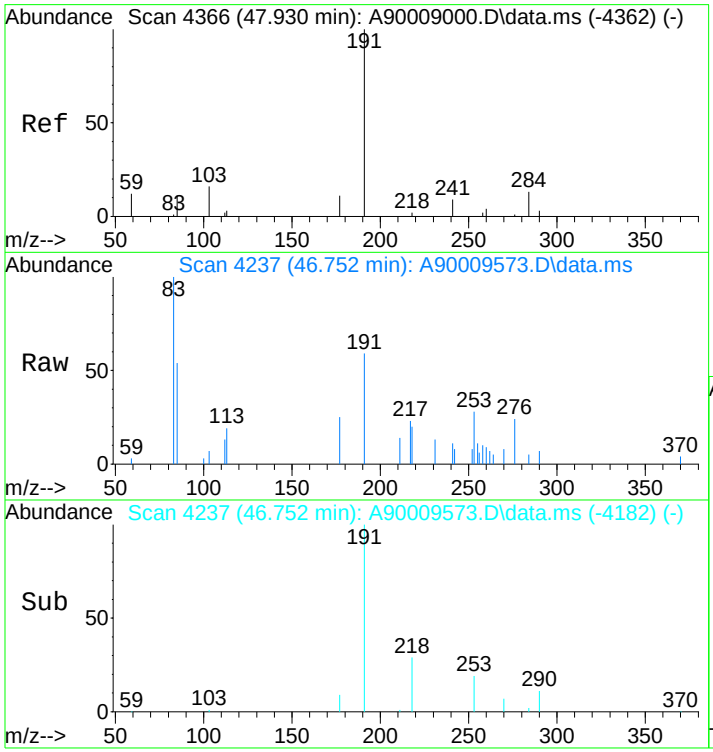




#104
C29 Tricyclic Terpane-22S (T9)
Concen: 96.12 ng/ml
RT: 46.560 min Scan# 4216
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

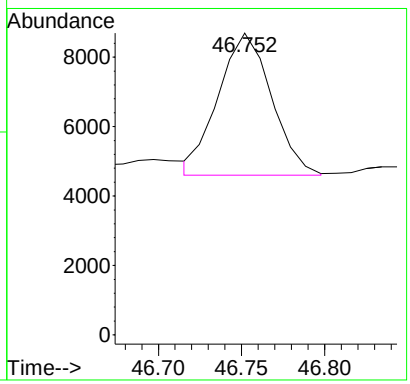
Tgt Ion:191 Resp: 9713

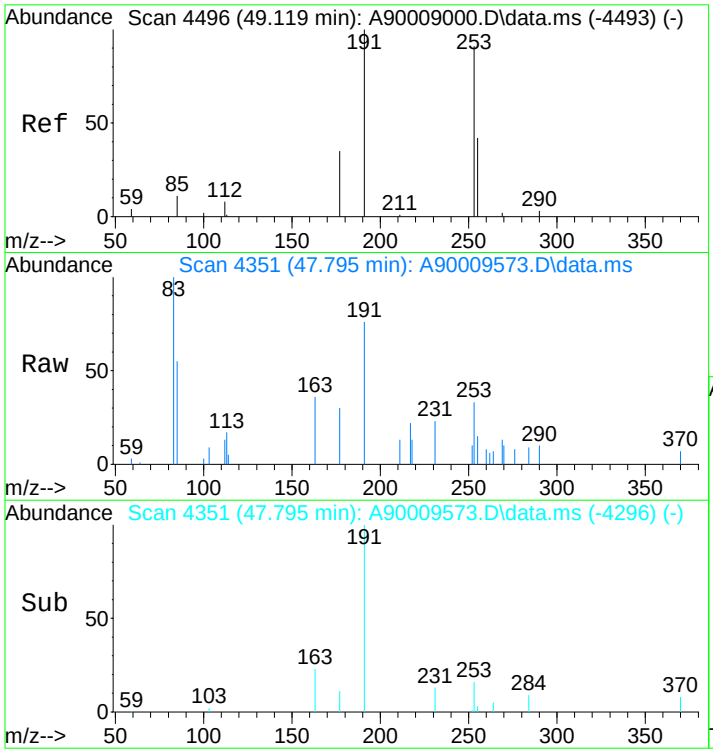




#105
C29 Tricyclic Terpane-22R (T10)
Concen: 90.25 ng/ml m
RT: 46.752 min Scan# 4237
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

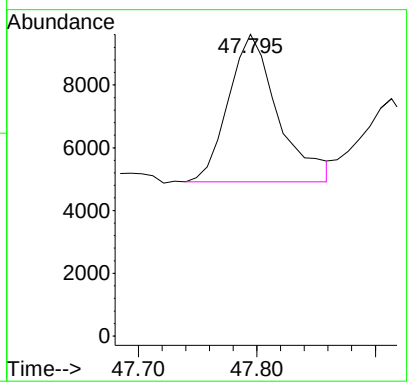
Tgt Ion:191 Resp: 9119

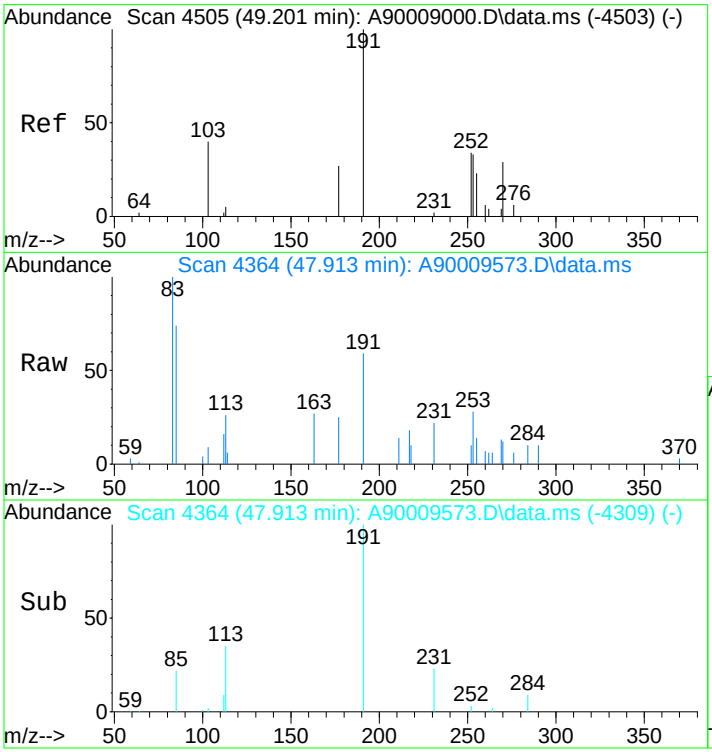




#106
18a-22,29,30-Trisnorneohopane-TS (T11)
Concen: 134.53 ng/ml
RT: 47.795 min Scan# 4351
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

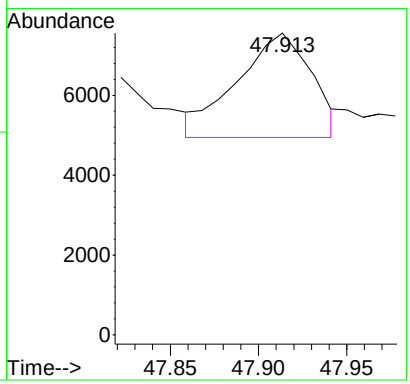
Tgt Ion:191 Resp: 13594

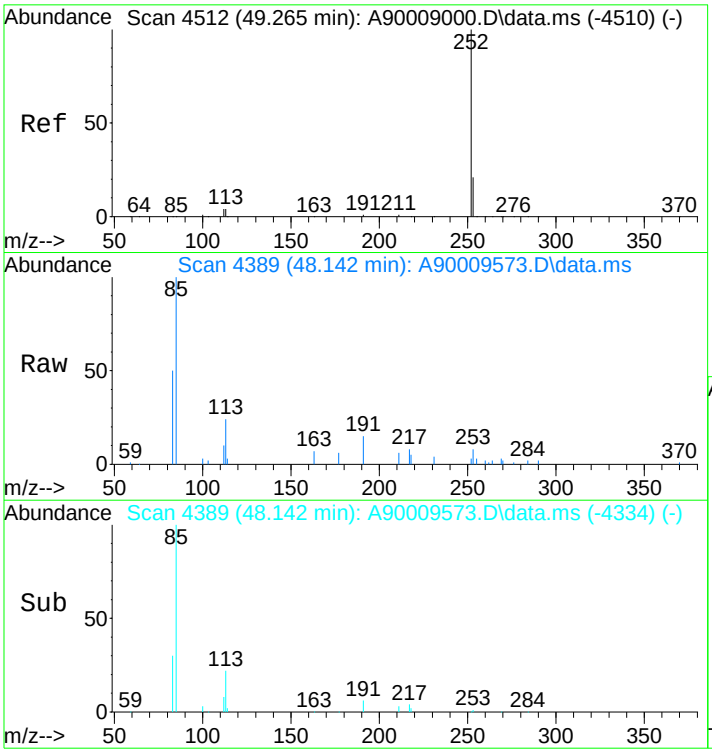




#107
C30 Tricyclic Terpane-22S
Concen: 75.84 ng/mL m
RT: 47.913 min Scan# 4364
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

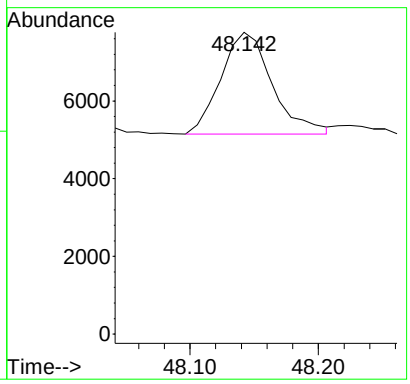
Tgt Ion:191 Resp: 7663

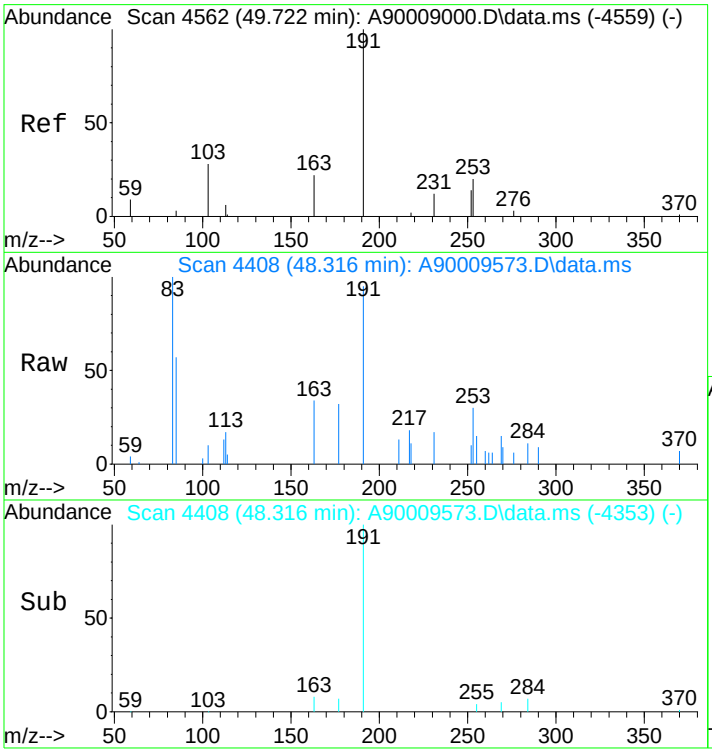




#108
C30 Tricyclic Terpane-22R
Concen: 72.18 ng/mL
RT: 48.142 min Scan# 4389
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

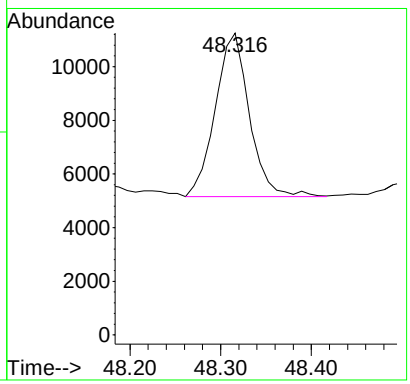
Tgt Ion:191 Resp: 7294

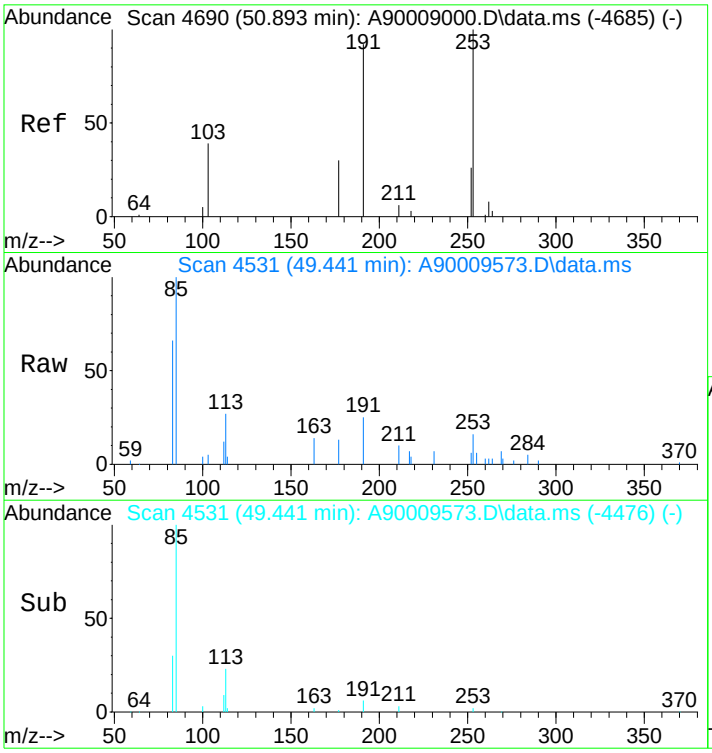




#109
17a(H)-22,29,30-Trisnorhopane-TM (T12)
Concen: 157.92 ng/ml
RT: 48.316 min Scan# 4408
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

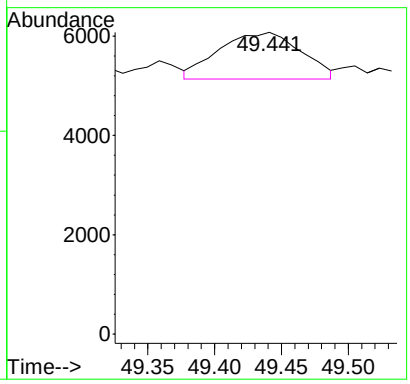
Tgt Ion:191 Resp: 15957

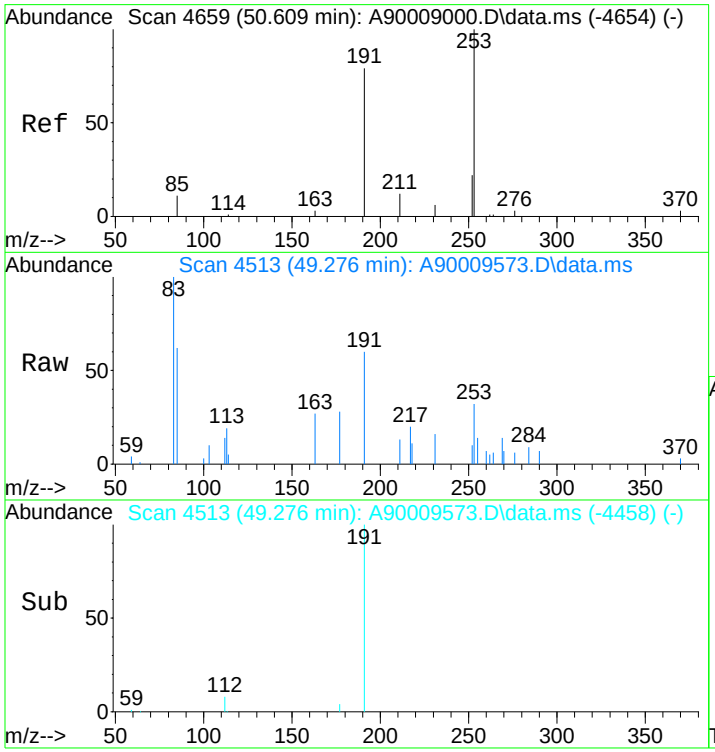




#110
17a/b,21b/a 28,30-Bisnorhopane (T14a)
Concen: 39.45 ng/ml m
RT: 49.441 min Scan# 4531
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

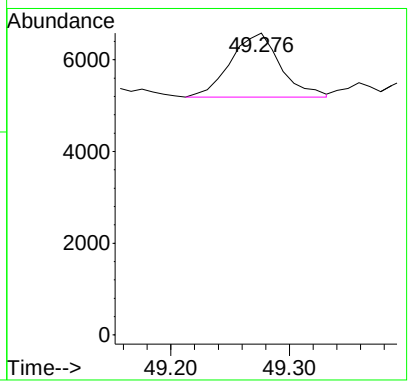
Tgt Ion:191 Resp: 3986

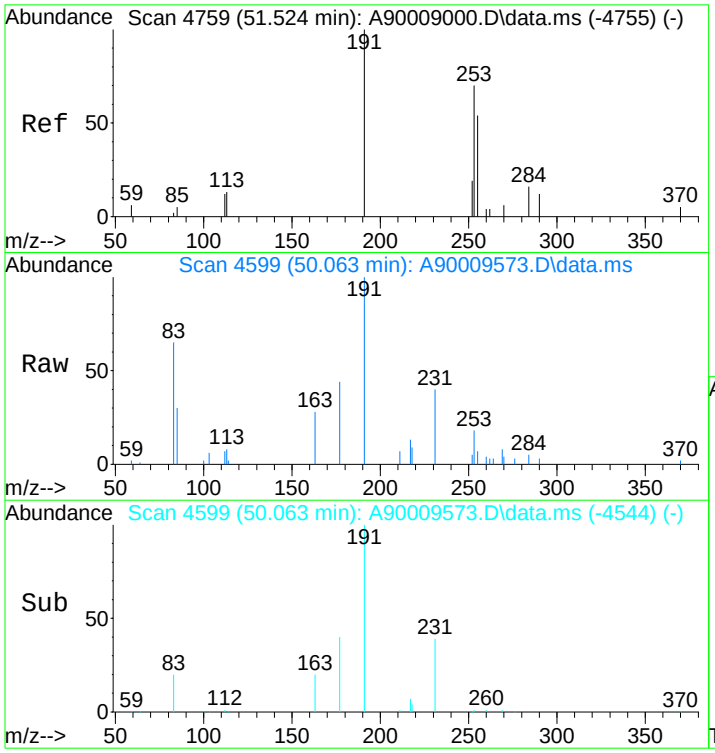




#111
17a(H),21b(H)-25-Norhopane (T14b)
Concen: 40.26 ng/ml
RT: 49.276 min Scan# 4513
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

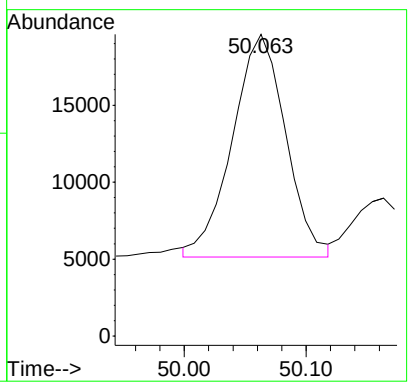
Tgt Ion:191 Resp: 4068

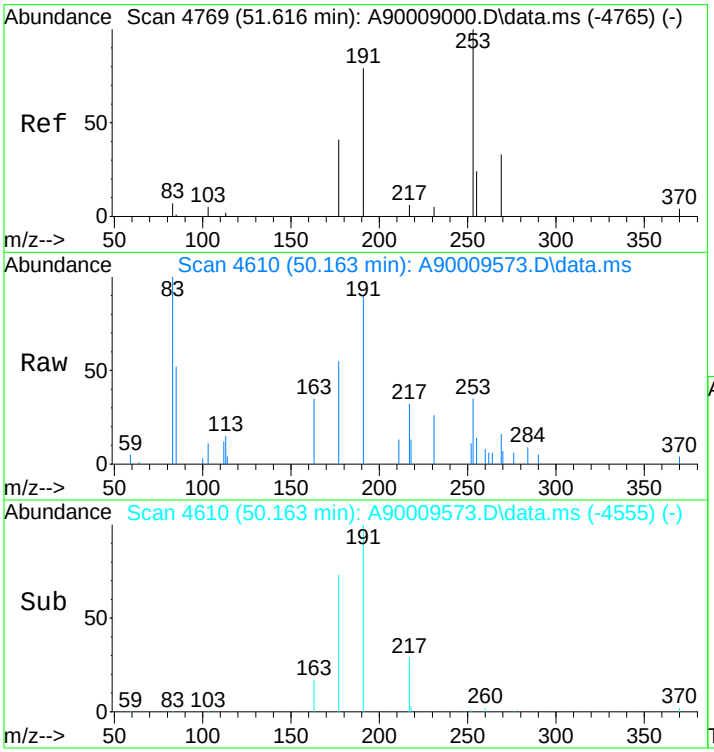




#112
30-Norhopane (T15)
Concen: 436.26 ng/ml m
RT: 50.063 min Scan# 4599
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

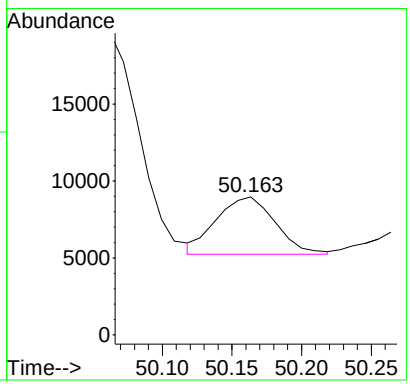
Tgt Ion:191 Resp: 44083

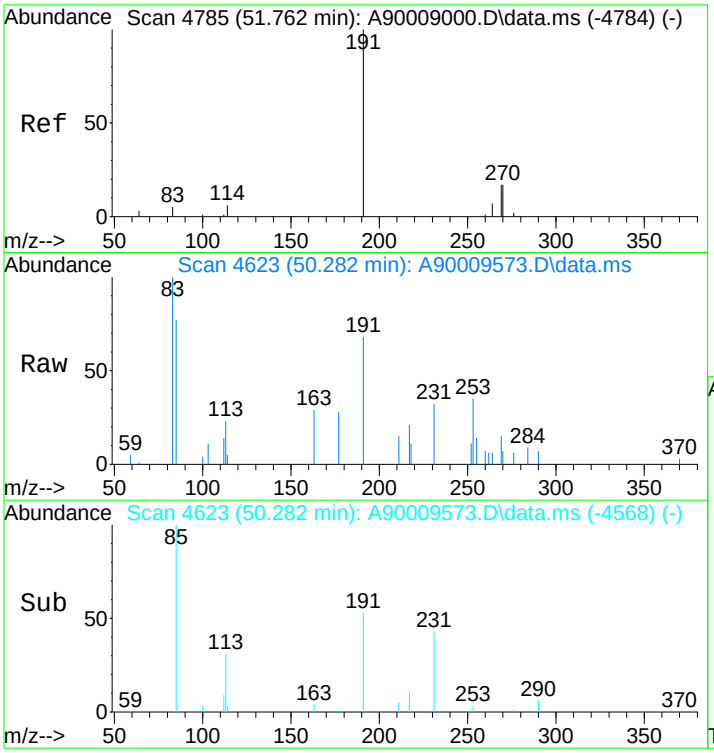




#113
18a(H)-30-Norneohopane-C29Ts (T16)
Concen: 108.57 ng/ml m
RT: 50.163 min Scan# 4610
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

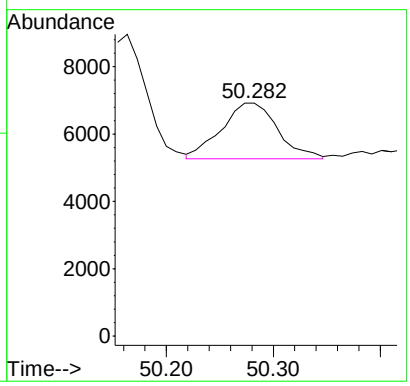
Tgt Ion:191 Resp: 10971

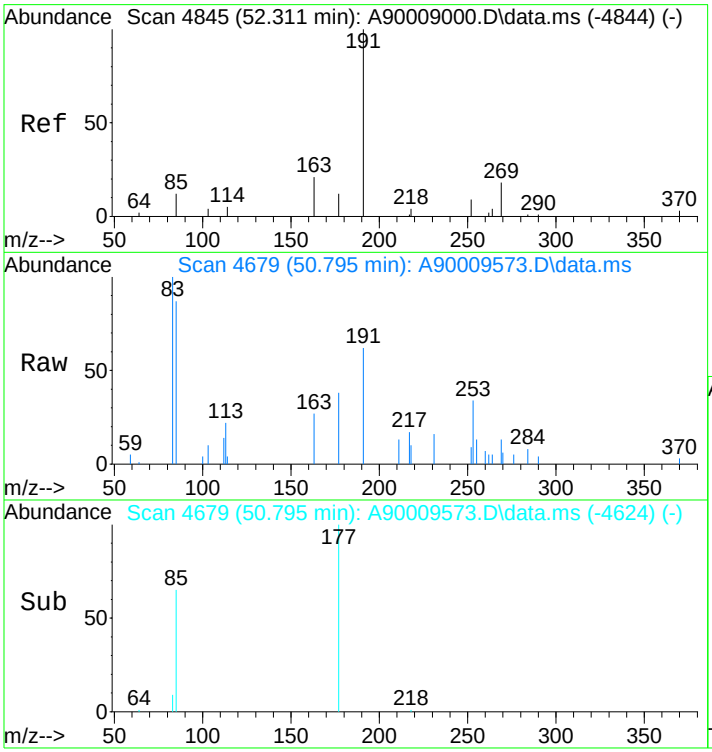




#114
17a(H)-Diahopane (X)
Concen: 60.19 ng/ml m
RT: 50.282 min Scan# 4623
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

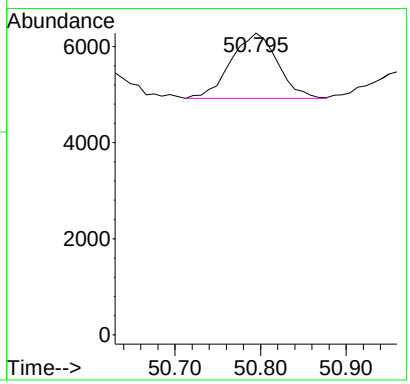
Tgt Ion:191 Resp: 6082

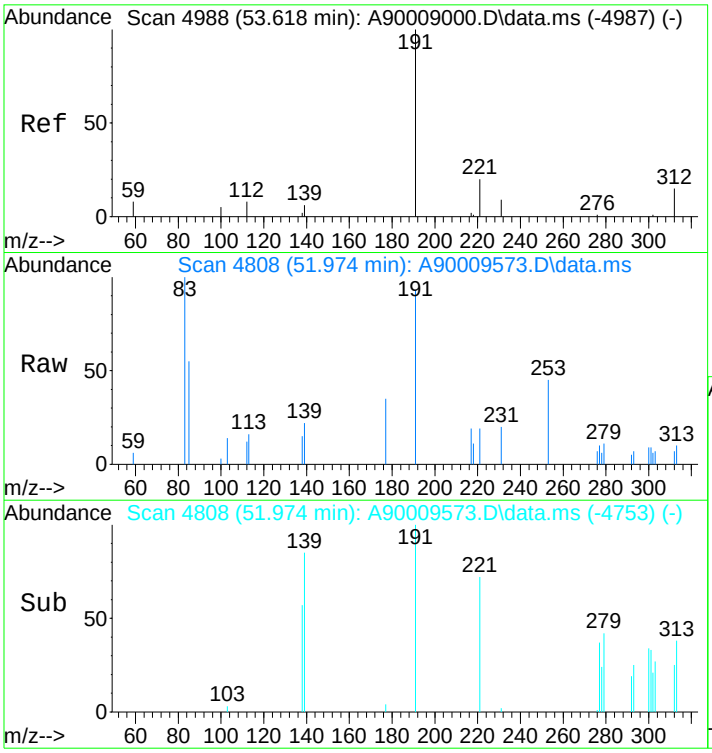




#115
30-Normoretane (T17)
Concen: 50.80 ng/ml
RT: 50.795 min Scan# 4679
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

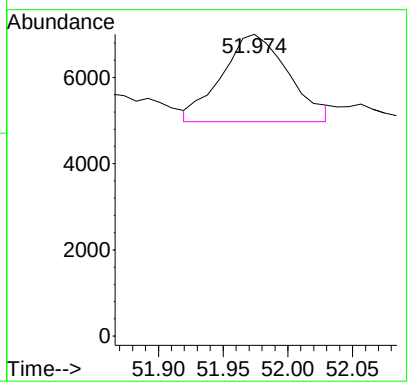
Tgt Ion:191 Resp: 5133

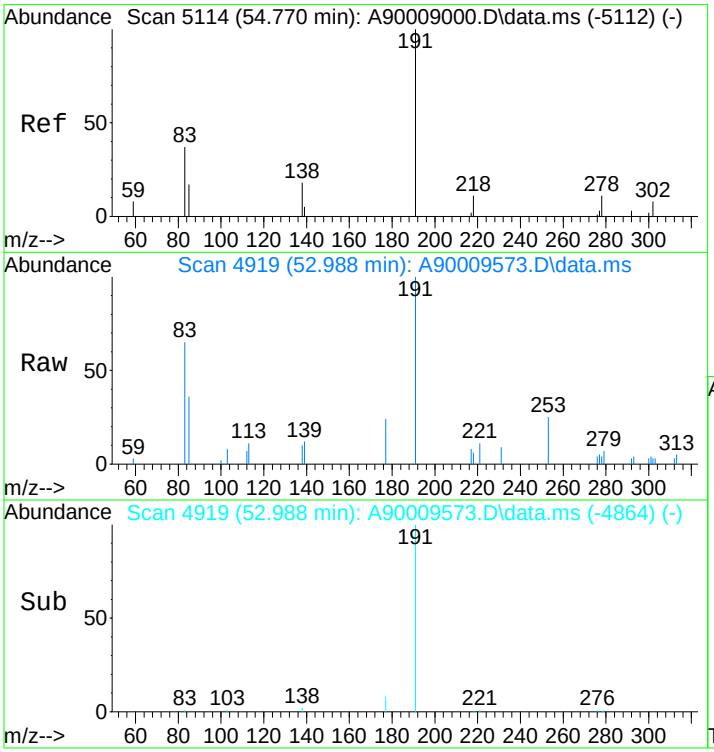




#117
Moretane (T20)
Concen: 72.20 ng/ml m
RT: 51.974 min Scan# 4808
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

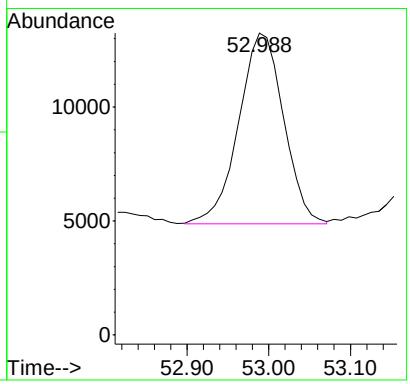
Tgt Ion:191 Resp: 7296

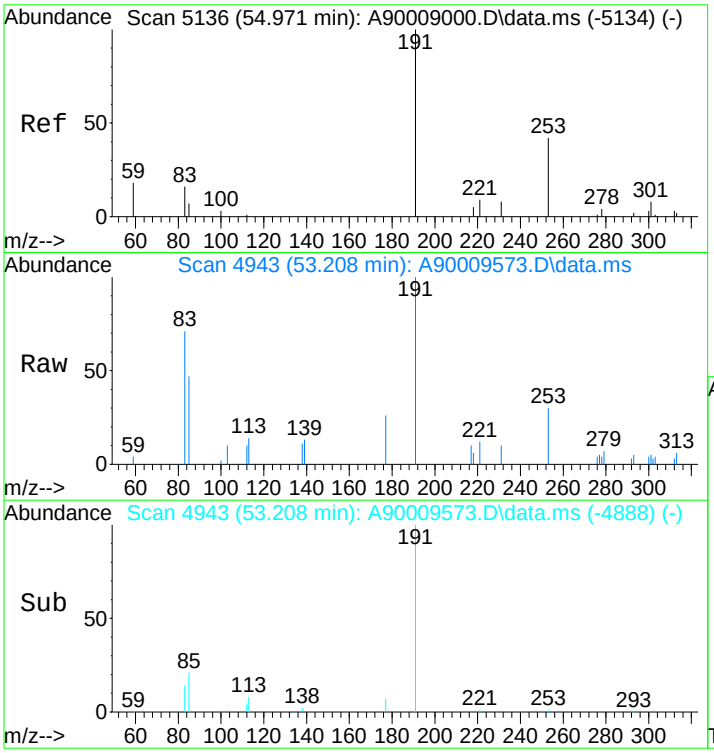




#118
30-Homohopane-22S (T21)
Concen: 317.74 ng/ml m
RT: 52.988 min Scan# 4919
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

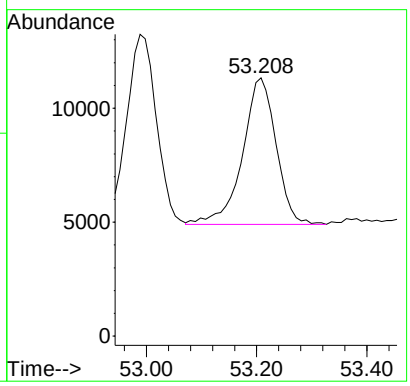
Tgt Ion:191 Resp: 32107

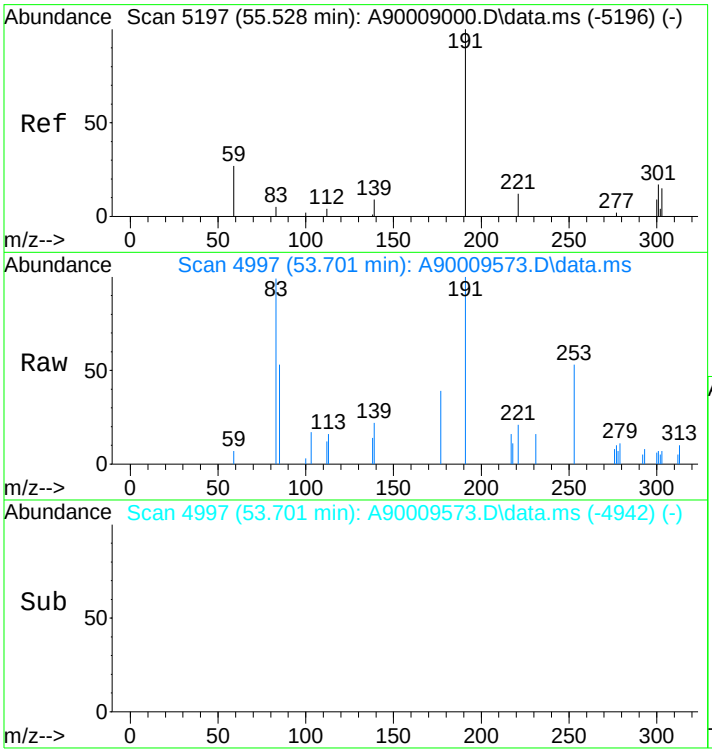




#119
30-Homohopane-22R (T22)
Concen: 269.65 ng/ml
RT: 53.208 min Scan# 4943
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

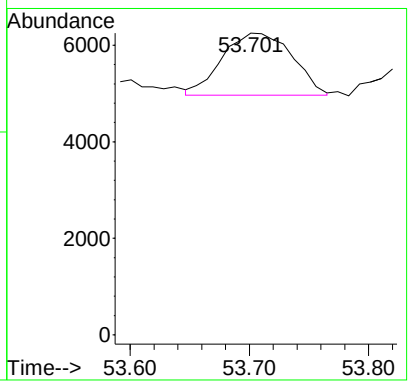
Tgt Ion:191 Resp: 27247

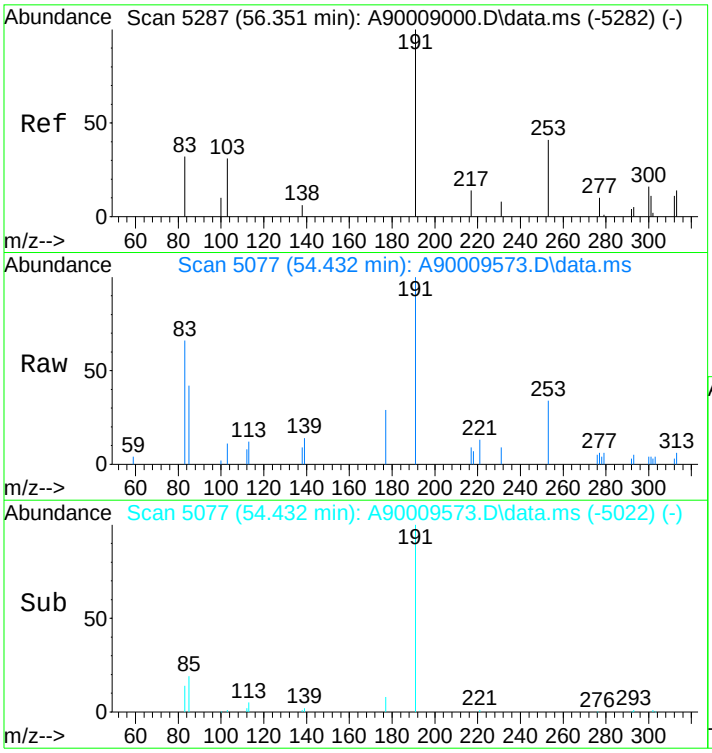




#120
Gammacerane/C32-diahopane
Concen: 52.18 ng/mL m
RT: 53.701 min Scan# 4997
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

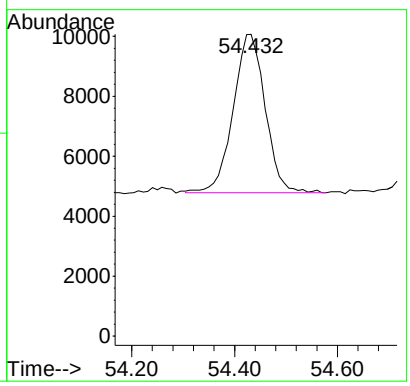
Tgt Ion:191 Resp: 5273

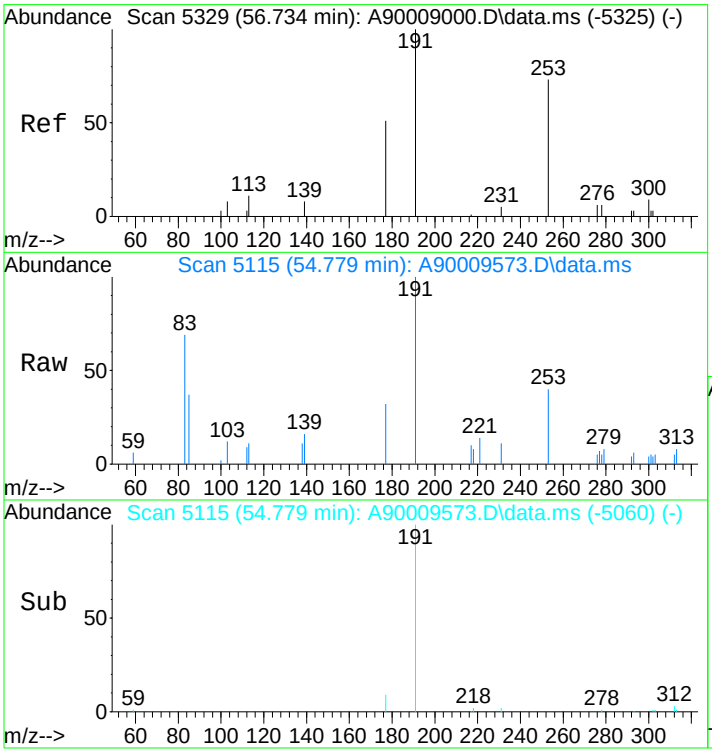




#121
30,31-Bishomohopane-22S (T26)
Concen: 225.85 ng/ml
RT: 54.432 min Scan# 5077
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

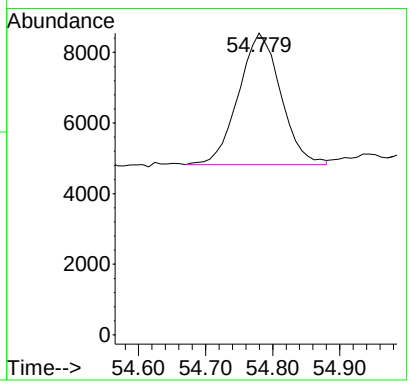
Tgt Ion:191 Resp: 22821

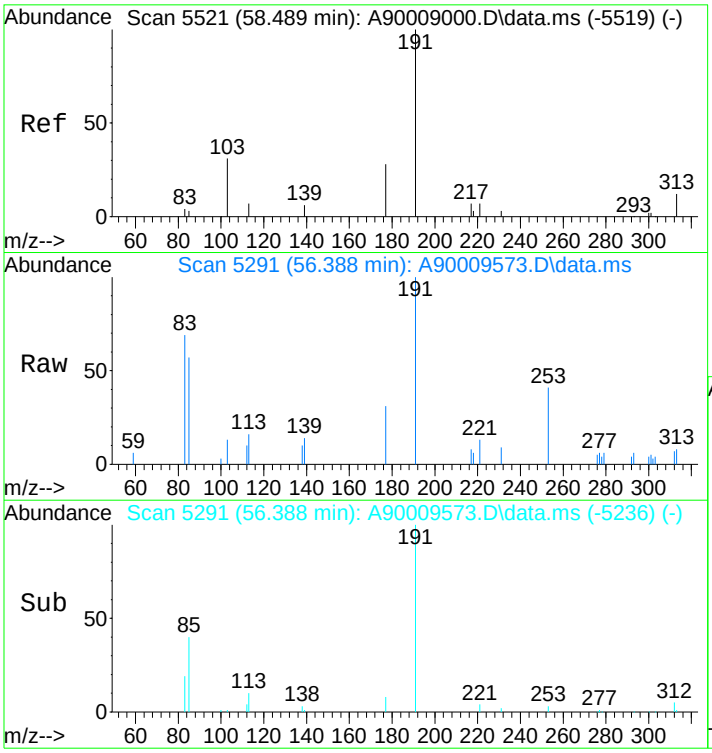




#122
30,31-Bishomohopane-22R (T27)
Concen: 161.01 ng/ml
RT: 54.779 min Scan# 5115
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

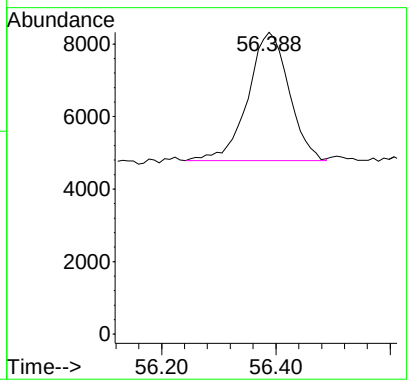
Tgt Ion:191 Resp: 16270

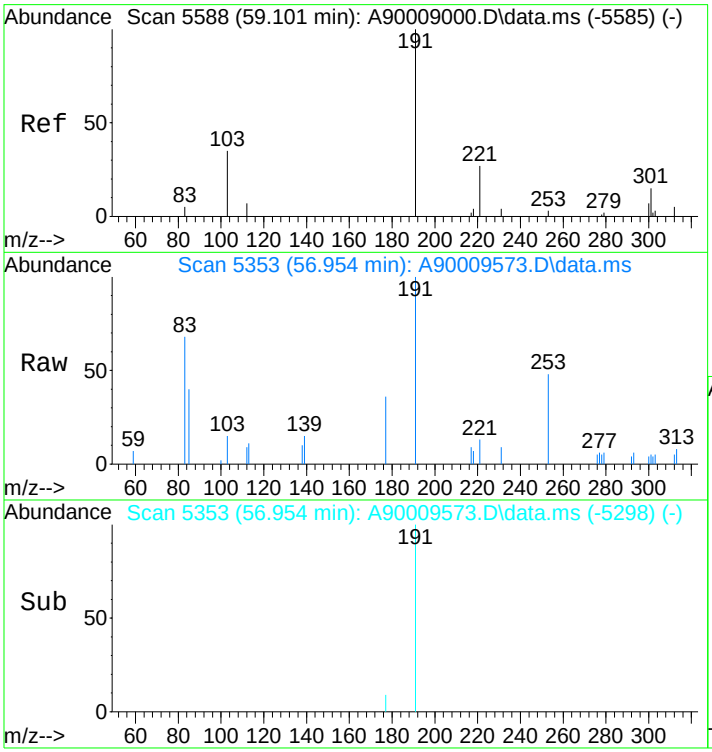




#123
30,31-Trishomohopane-22S (T30)
Concen: 175.32 ng/ml
RT: 56.388 min Scan# 5291
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

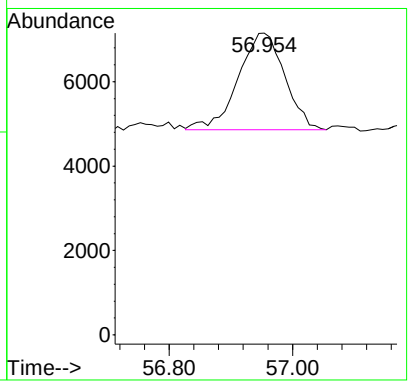
Tgt Ion:191 Resp: 17715

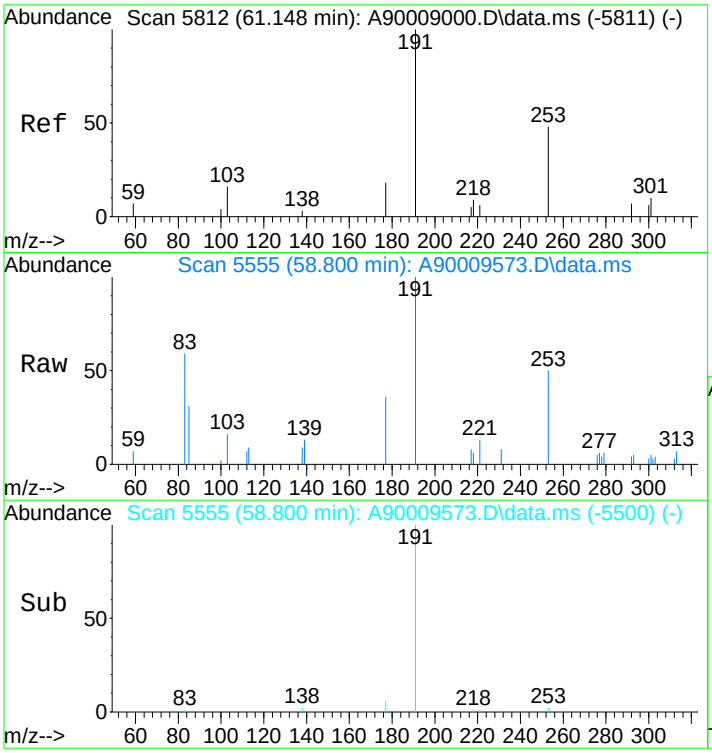




#124
30,31-Trishomohopane-22R (T31)
Concen: 118.84 ng/ml
RT: 56.954 min Scan# 5353
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

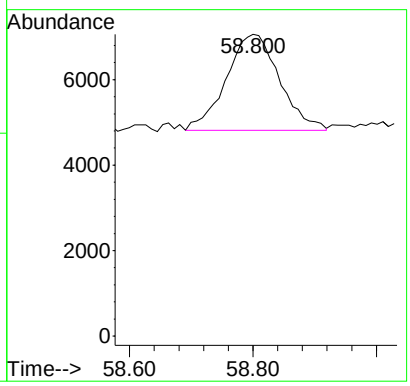
Tgt Ion:191 Resp: 12008

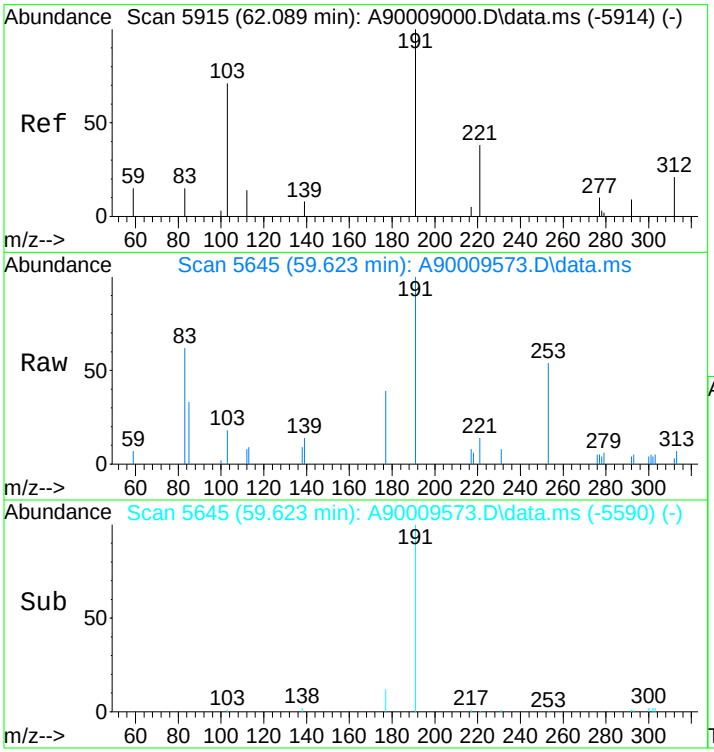




#125
Tetrakishomohopane-22S (T32)
Concen: 133.54 ng/ml
RT: 58.800 min Scan# 5555
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

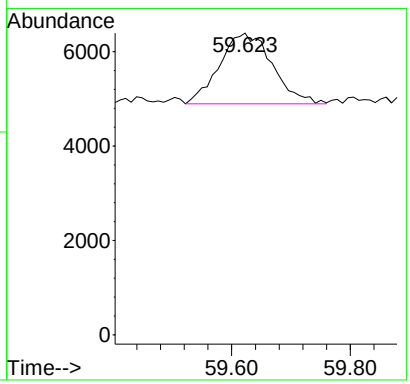
Tgt Ion:191 Resp: 13494

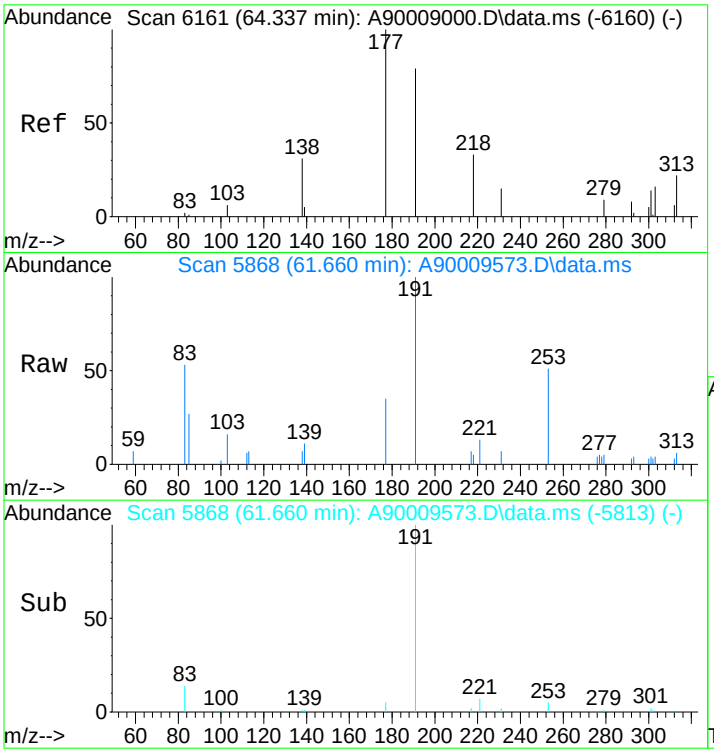




#126
Tetrakishomohopane-22R (T33)
Concen: 91.58 ng/ml
RT: 59.623 min Scan# 5645
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

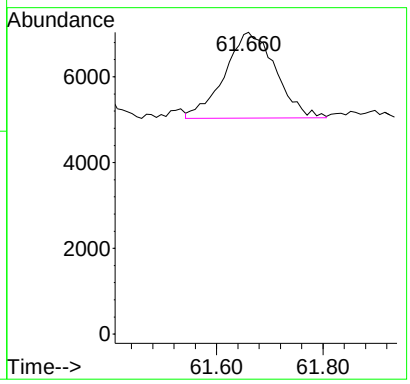
Tgt Ion:191 Resp: 9254

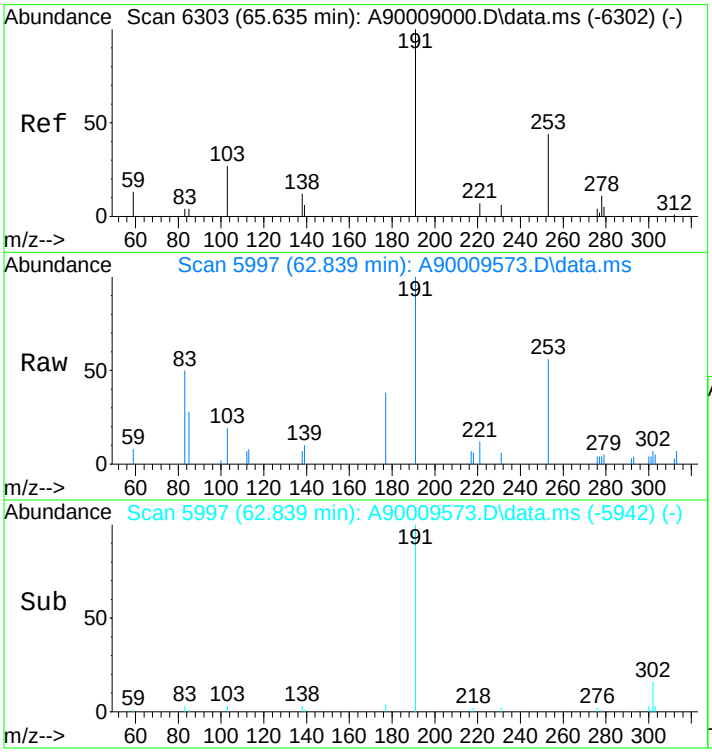




#127
Pentakishomohopane-22S (T34)
Concen: 131.71 ng/ml
RT: 61.660 min Scan# 5868
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

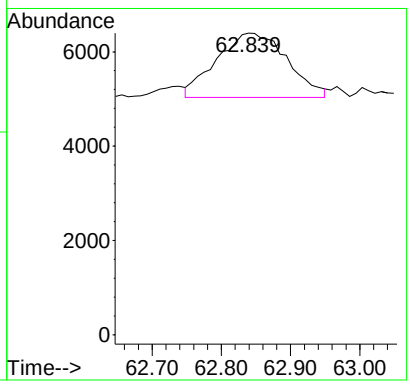
Tgt Ion:191 Resp: 13309

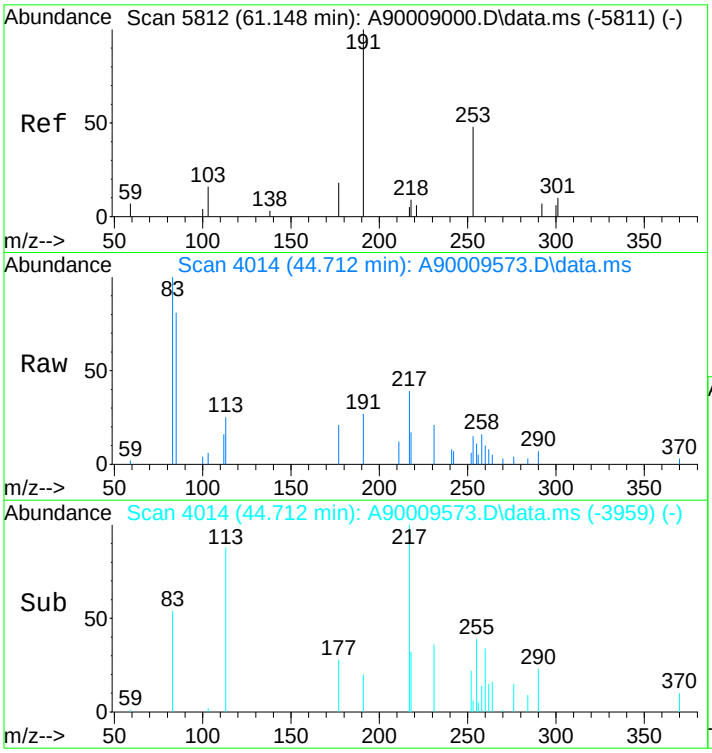




#128
Pentakishomohopane-22R (T35)
Concen: 95.39 ng/ml m
RT: 62.839 min Scan# 5997
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

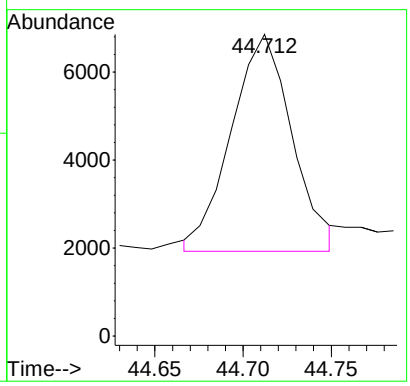
Tgt Ion:191 Resp: 9639

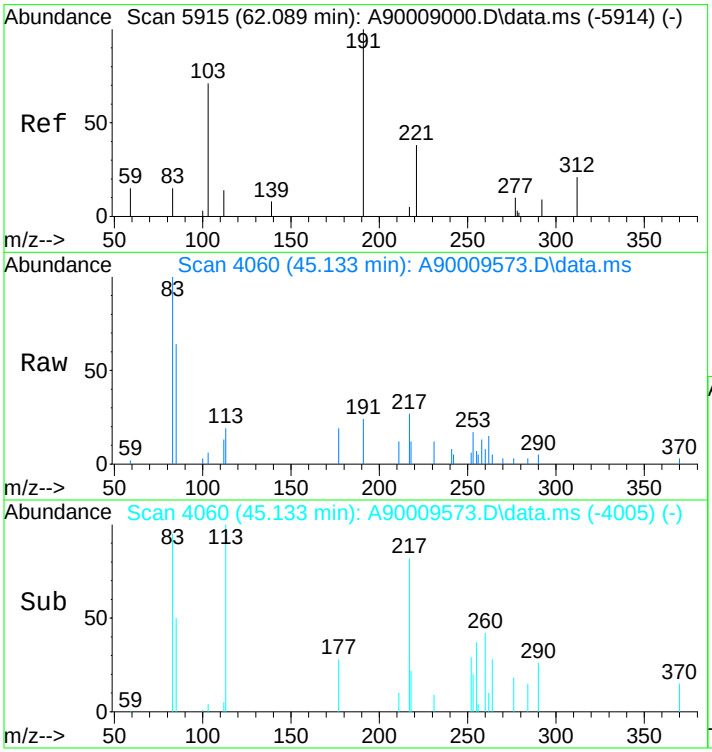




#130
13b(H),17a(H)-20S-Diacholestane (S4)
Concen: 245.27 ng/ml m
RT: 44.712 min Scan# 4014
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

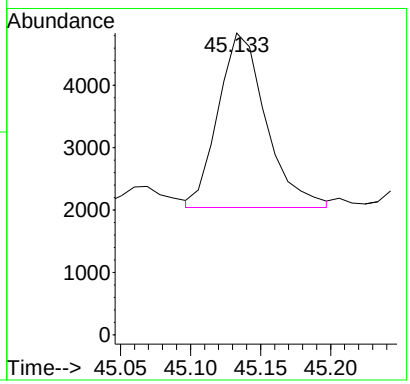
Tgt Ion:217 Resp: 11834

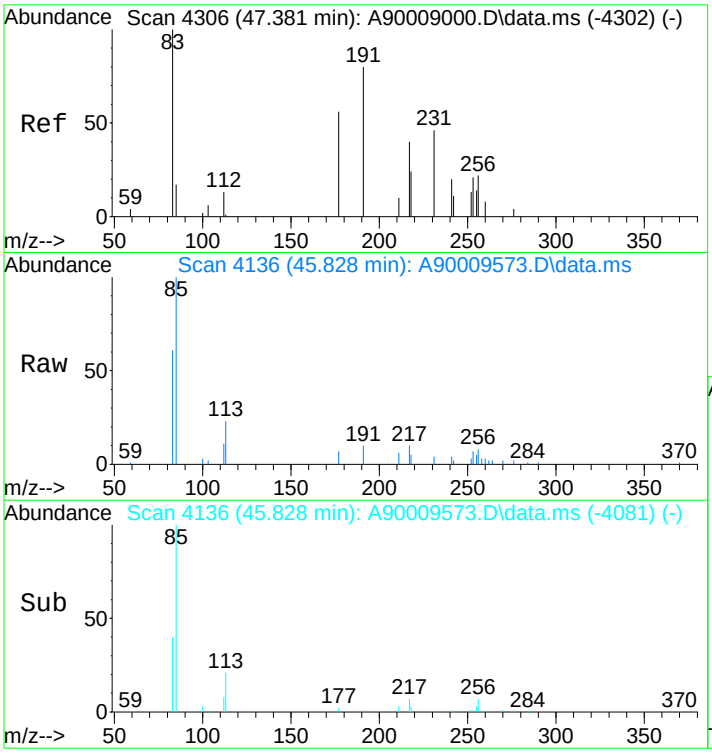




#131
13b(H),17a(H)-20R-Diacholestane (S5)
Concen: 137.37 ng/ml m
RT: 45.133 min Scan# 4060
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

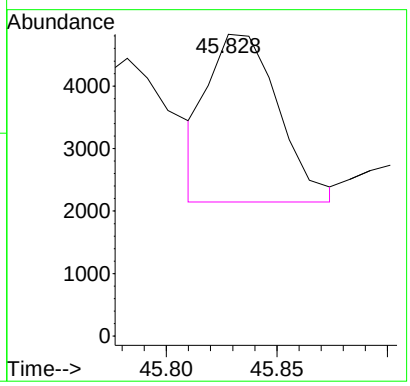
Tgt Ion:217 Resp: 6628

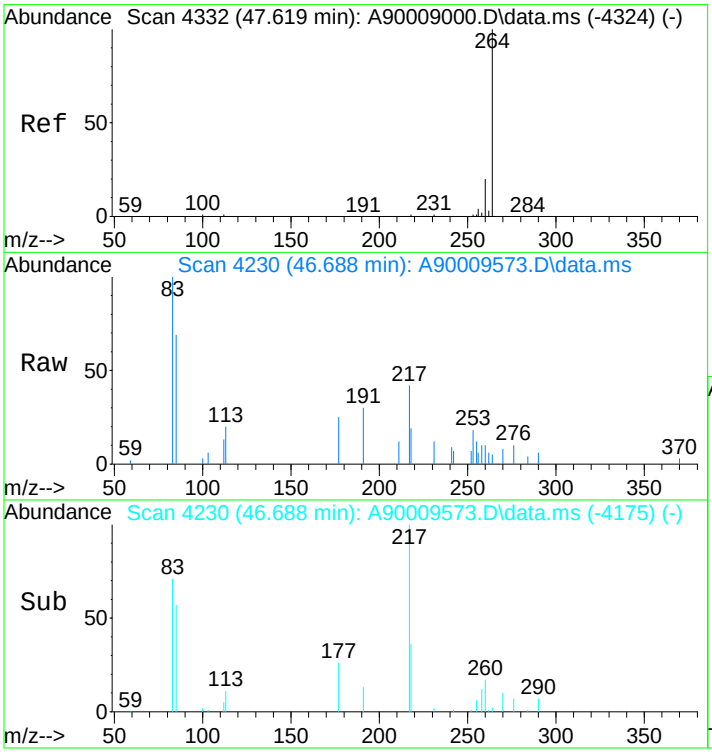




#132
13b,17a-20S-Methyldiacholestane (S8)
Concen: 122.32 ng/ml m
RT: 45.828 min Scan# 4136
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

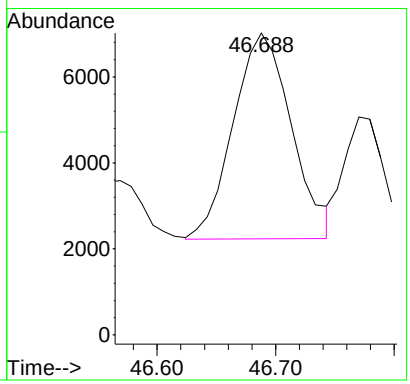
Tgt Ion:217 Resp: 5902

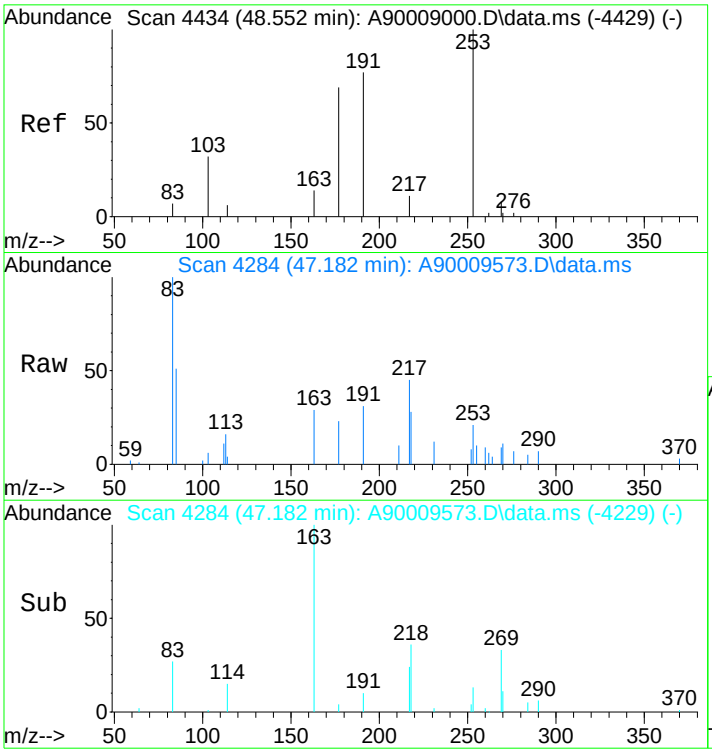




#133
14a,17a-20S-Chol/13b,17a-20S-Ethyldiach
Concen: 338.14 ng/ml
RT: 46.688 min Scan# 4230
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

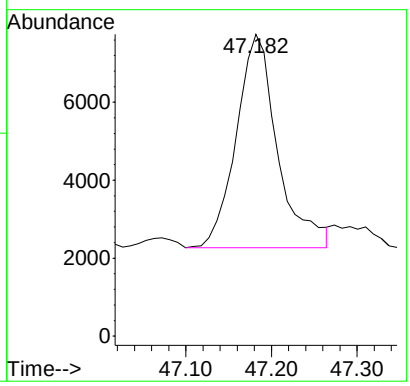
Tgt Ion:217 Resp: 16315

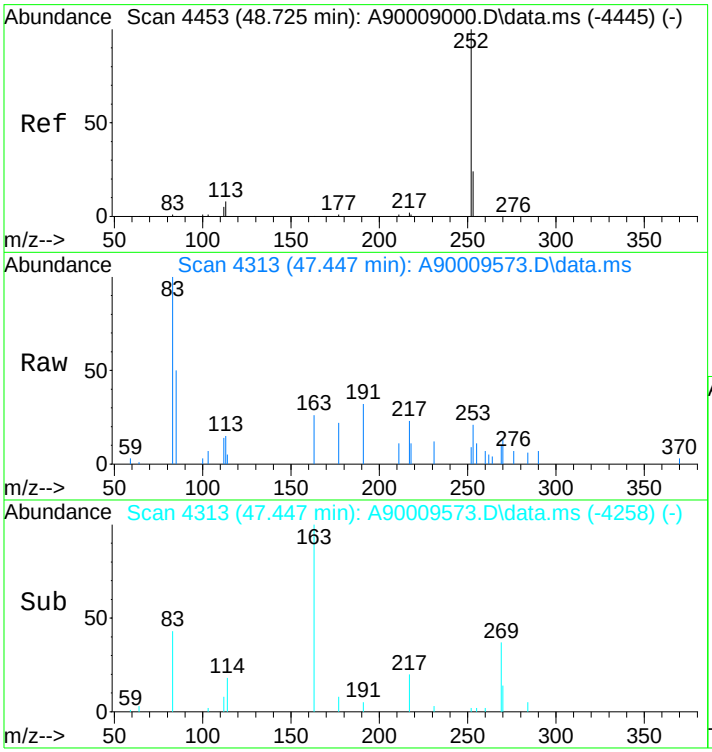




#134
14a,17a-20R-Chol/13b,17a-20R-Ethyldiach
Concen: 382.39 ng/ml
RT: 47.182 min Scan# 4284
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

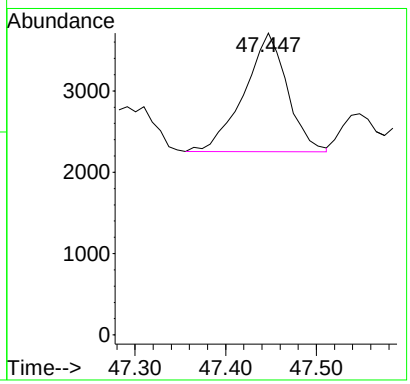
Tgt Ion:217 Resp: 18450

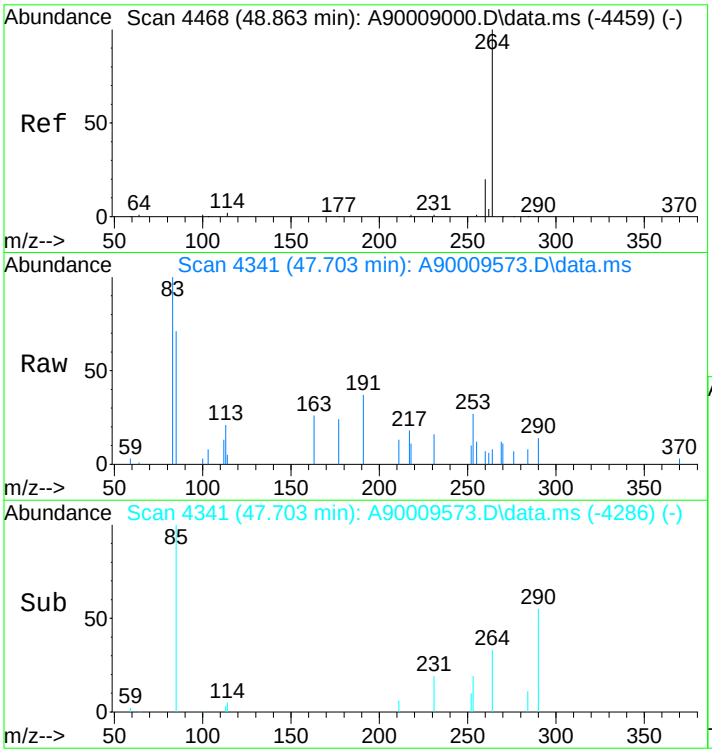




#135
Unknown Sterane (S18)
Concen: 99.81 ng/ml
RT: 47.447 min Scan# 4313
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

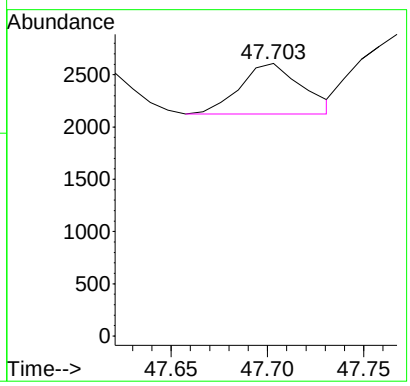
Tgt Ion:217 Resp: 4816

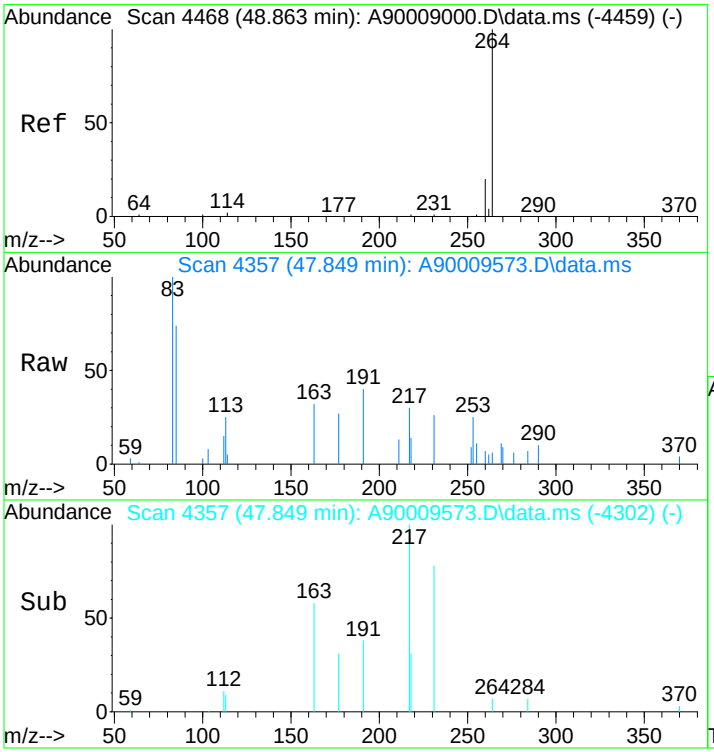




#136
13a,17b-20S-Ethyldiacholestane (S19)
Concen: 22.61 ng/ml
RT: 47.703 min Scan# 4341
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

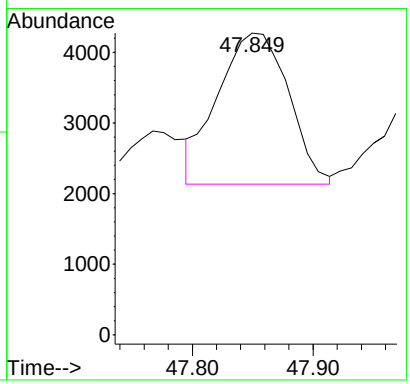
Tgt Ion:217 Resp: 1091

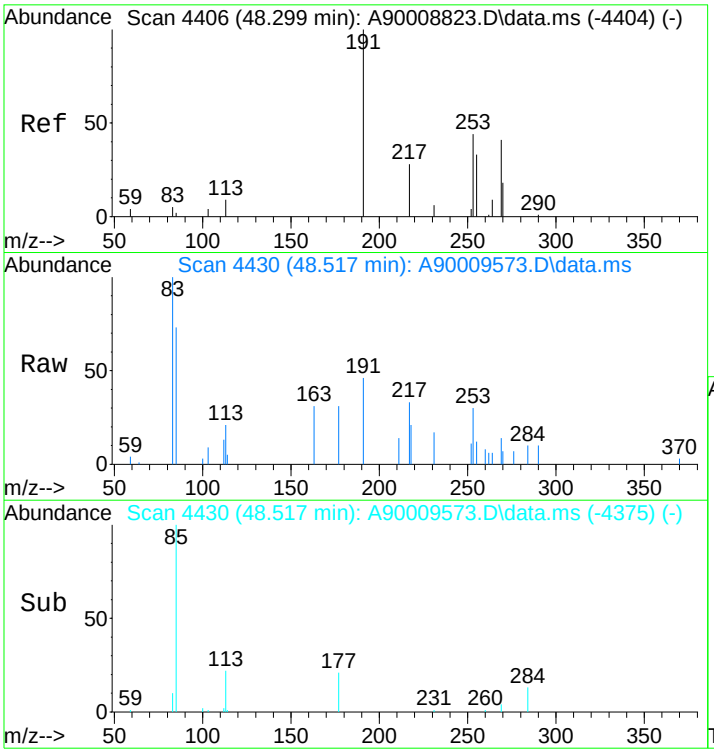




#137
14a,17a-20S-Methylcholestane (S20)
Concen: 180.13 ng/ml m
RT: 47.849 min Scan# 4357
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

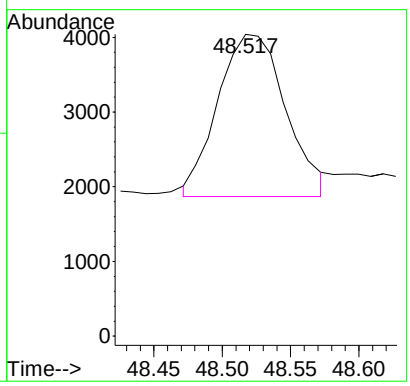
Tgt Ion:217 Resp: 8691

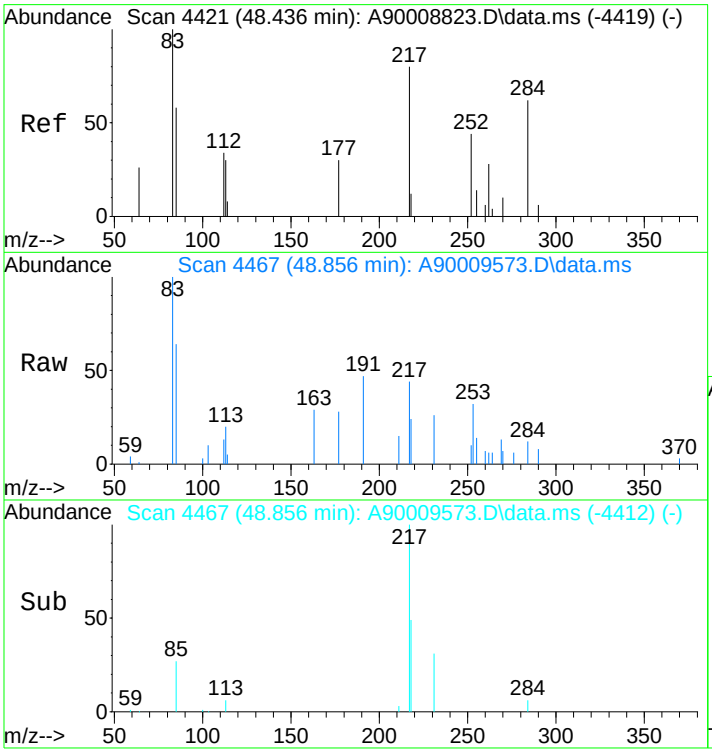




#138
14a,17a-20R-Methylcholestane (S24)
Concen: 155.57 ng/ml m
RT: 48.517 min Scan# 4430
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

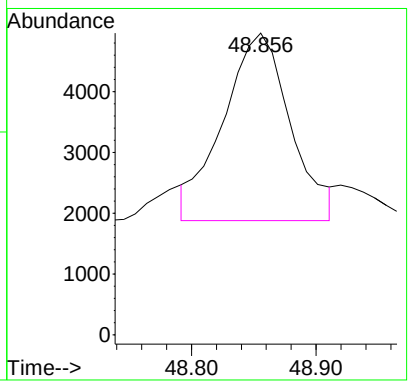
Tgt Ion:217 Resp: 7506

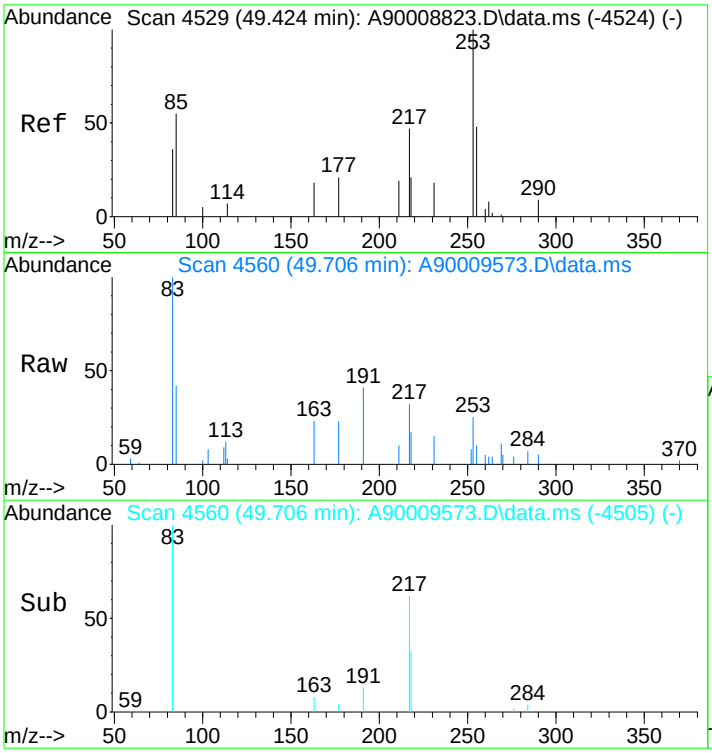




#139
14a(H),17a(H)-20S-Ethylcholestane (S25)
Concen: 239.55 ng/ml m
RT: 48.856 min Scan# 4467
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

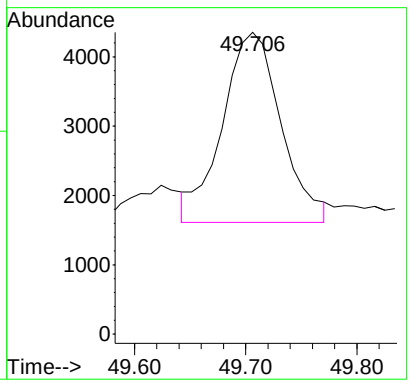
Tgt Ion:217 Resp: 11558

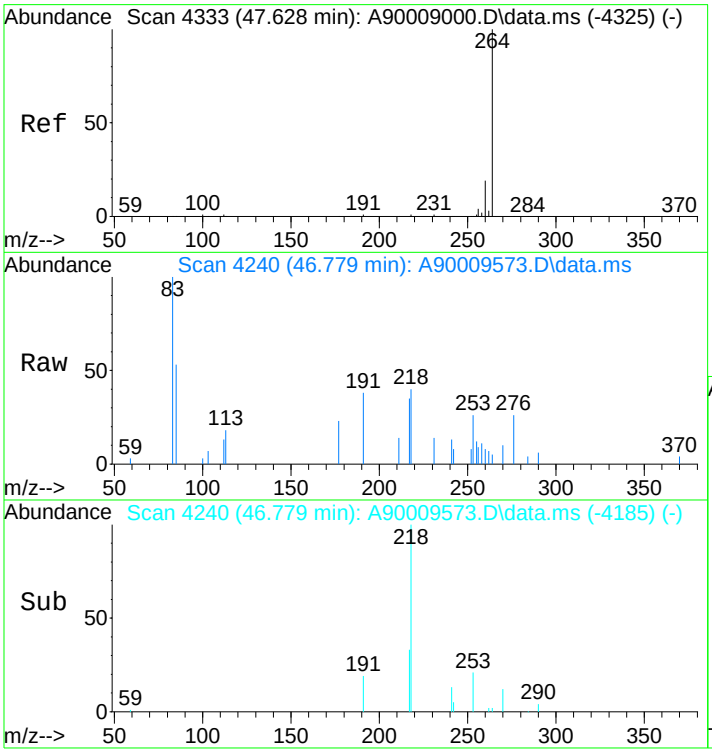




#140
14a(H),17a(H)-20R-Ethylcholestane (S28)
Concen: 208.15 ng/ml m
RT: 49.706 min Scan# 4560
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

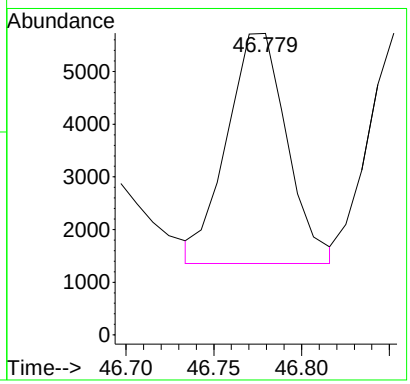
Tgt Ion:217 Resp: 10043

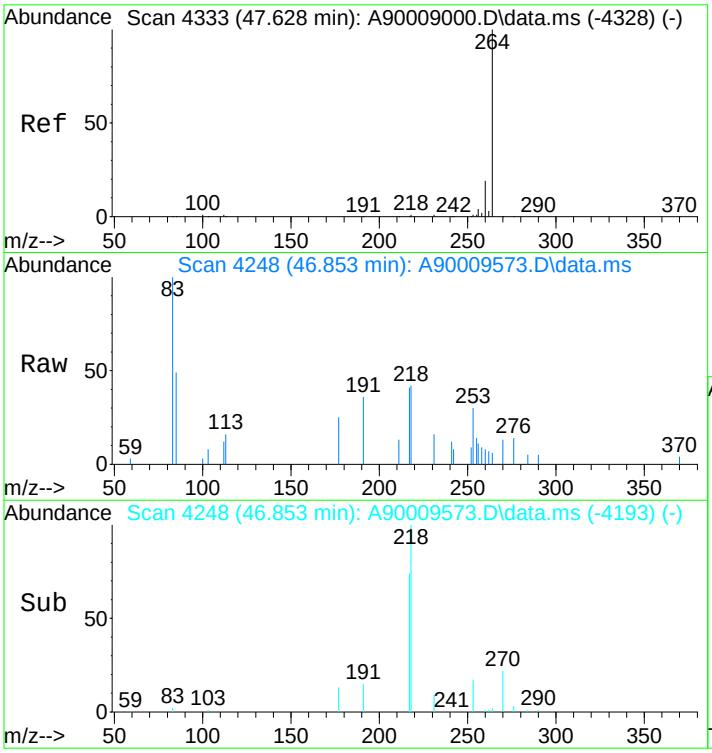




#141
14b(H),17b(H)-20R-Cholestane (S14)
Concen: 215.42 ng/ml m
RT: 46.779 min Scan# 4240
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

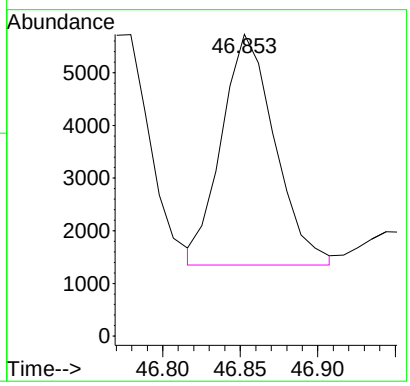
Tgt Ion:218 Resp: 10394

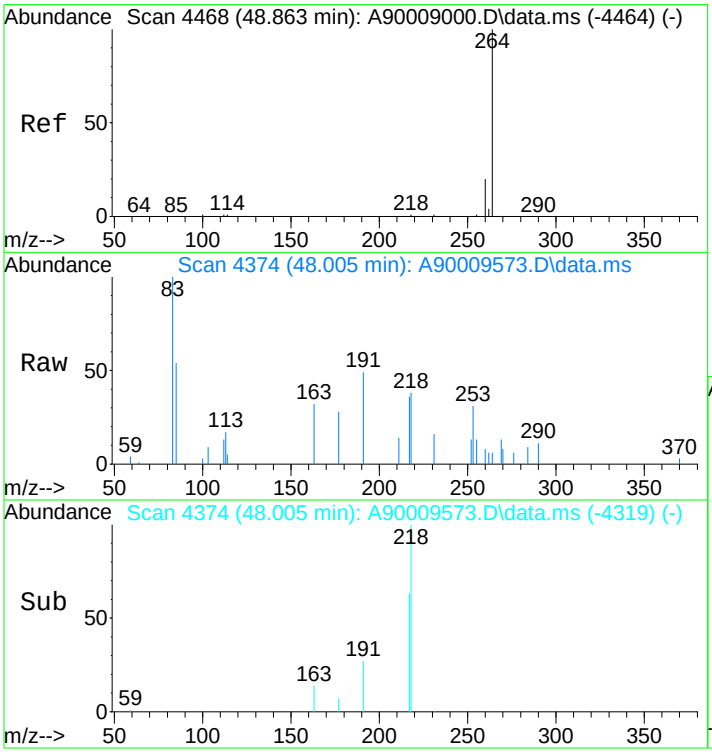




#142
14b(H),17b(H)-20S-Cholestane (S15)
Concen: 217.25 ng/ml m
RT: 46.853 min Scan# 4248
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

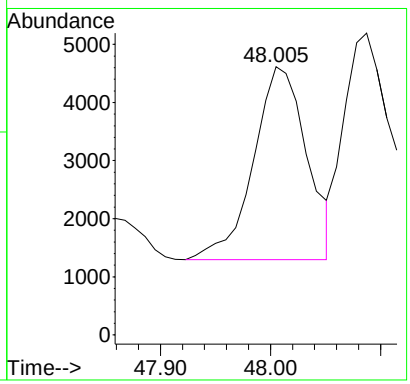
Tgt Ion:218 Resp: 10482

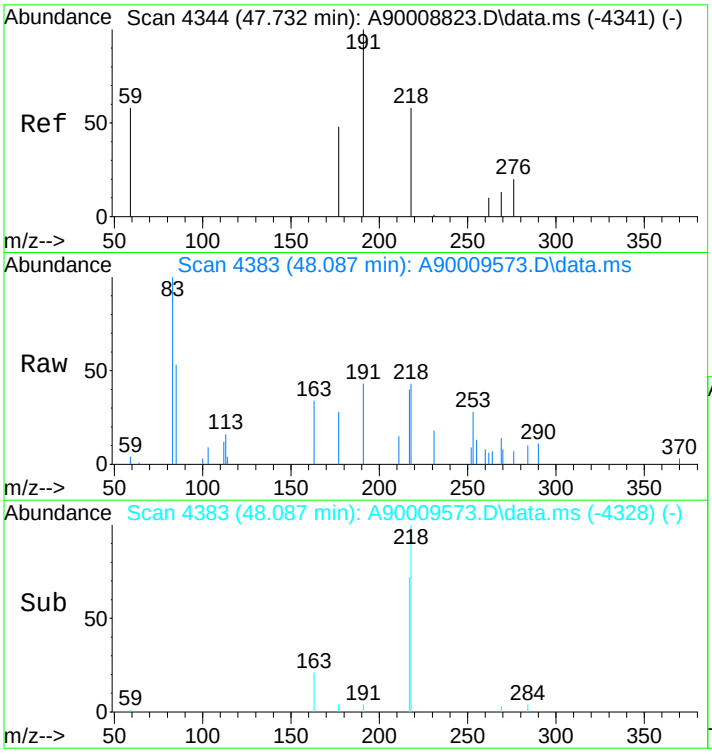




#143
14b,17b-20R-Methylcholestane (S22)
Concen: 233.00 ng/ml
RT: 48.005 min Scan# 4374
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

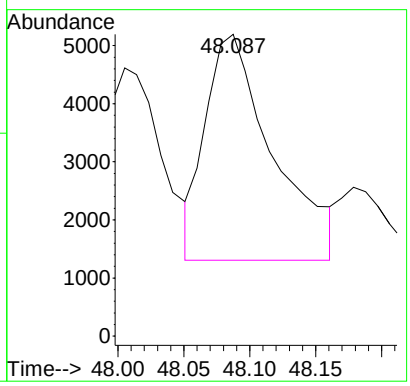
Tgt Ion:218 Resp: 11242

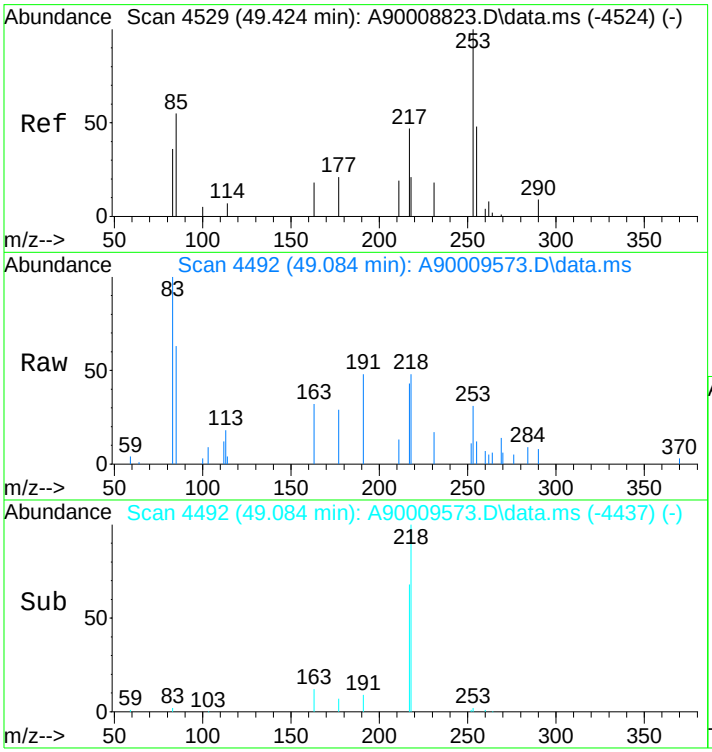




#144
14b,17b-20S-Methylcholestane (S23)
Concen: 287.57 ng/ml m
RT: 48.087 min Scan# 4383
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

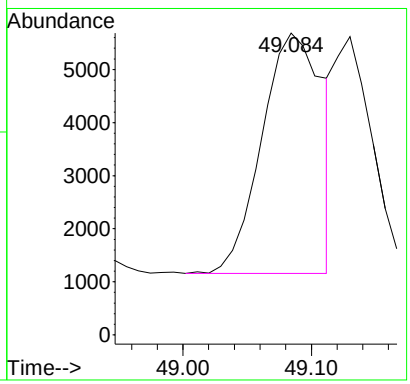
Tgt Ion:218 Resp: 13875

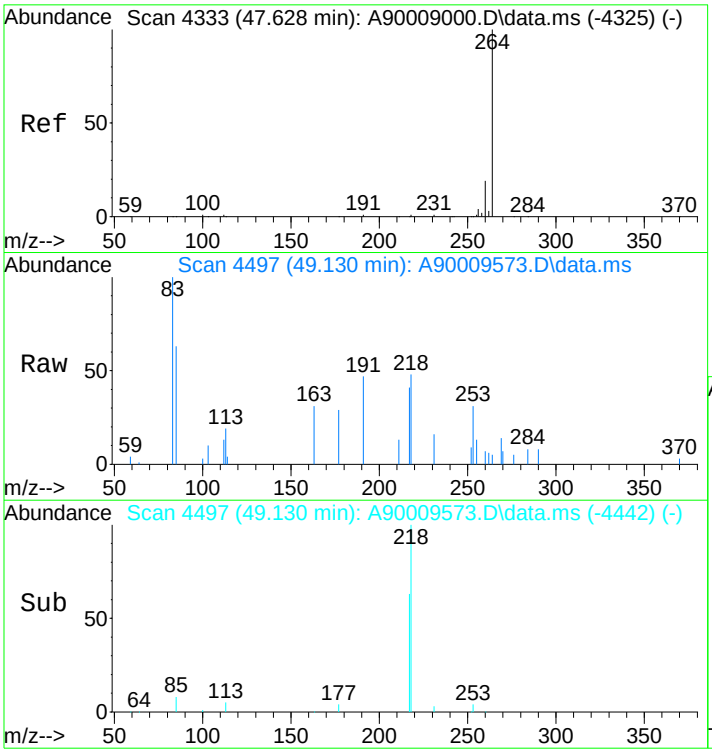




#145
14b(H),17b(H)-20R-Ethylcholestane (S26)
Concen: 308.23 ng/ml
RT: 49.084 min Scan# 4492
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

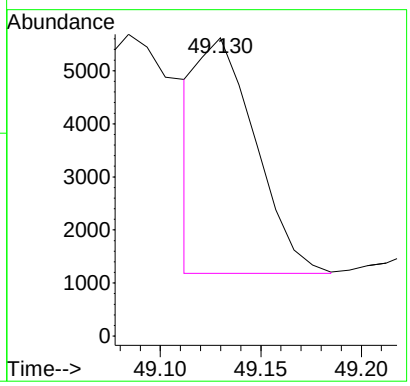
Tgt Ion:218 Resp: 14872

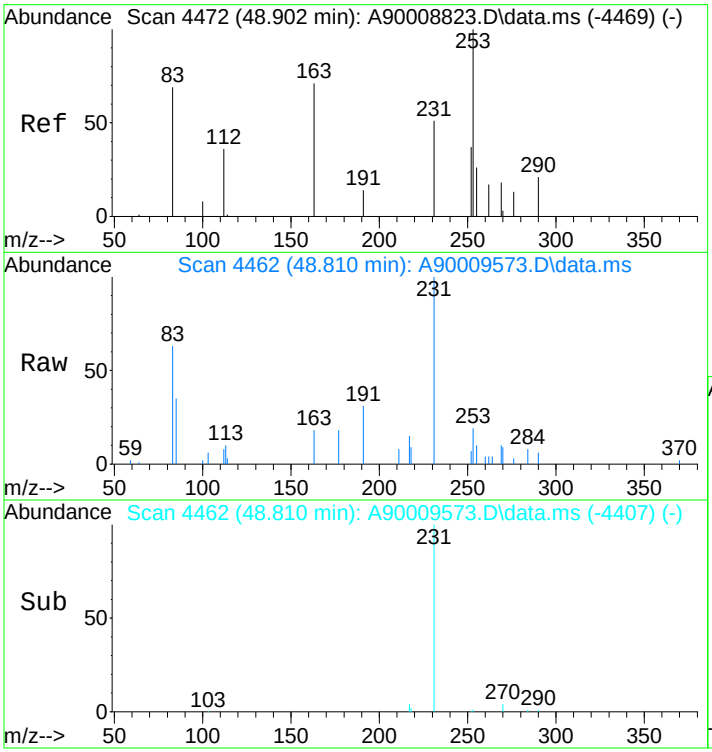




#146
14b(H),17b(H)-20S-Ethylcholestane (S27)
Concen: 185.18 ng/ml m
RT: 49.130 min Scan# 4497
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

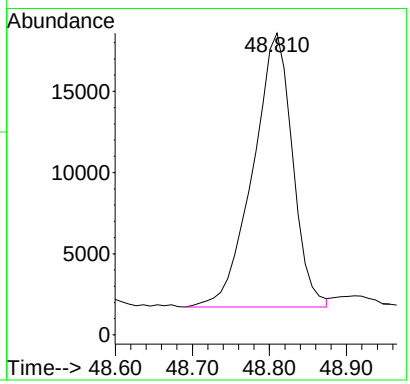
Tgt Ion:218 Resp: 8935

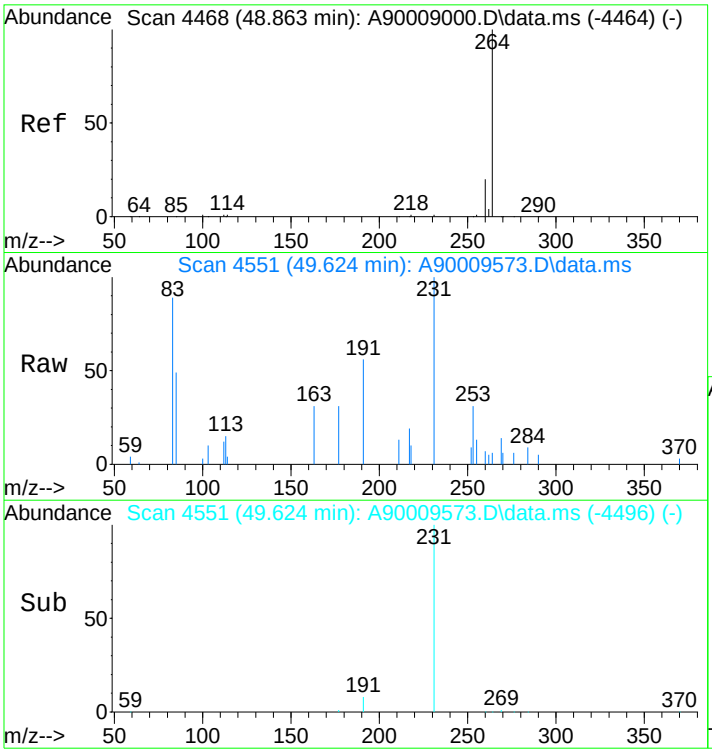




#147
C26,20R- +C27,20S- triaromatic steroid
Concen: 1250.40 ng/mL
RT: 48.810 min Scan# 4462
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

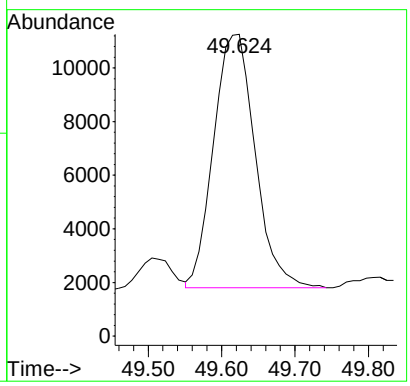
Tgt Ion:231 Resp: 60331

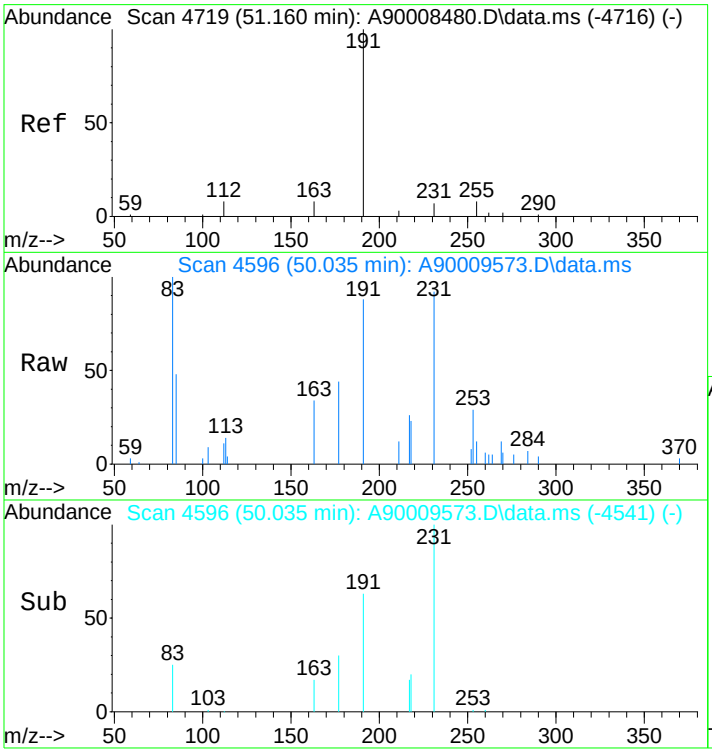




#148
C28,20S-triaromatic steroid
Concen: 773.71 ng/mL
RT: 49.624 min Scan# 4551
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

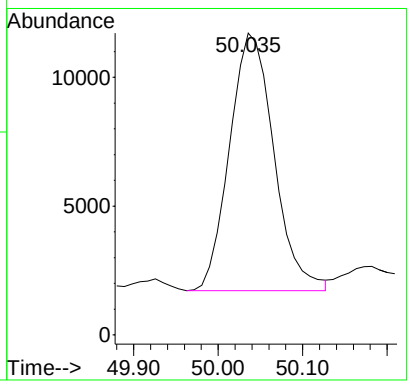
Tgt Ion:231 Resp: 37331

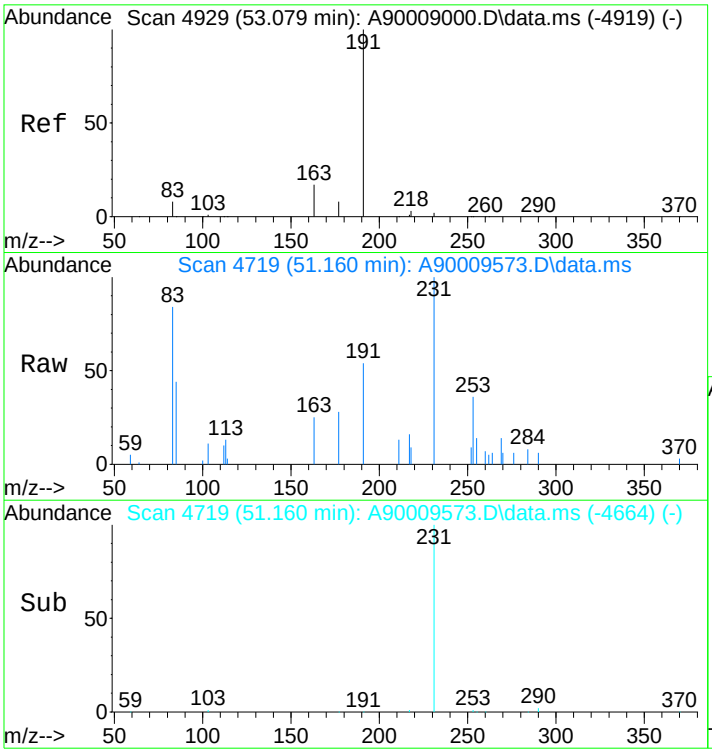




#149
C27,20R-triaromatic steroid
Concen: 759.20 ng/mL m
RT: 50.035 min Scan# 4596
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

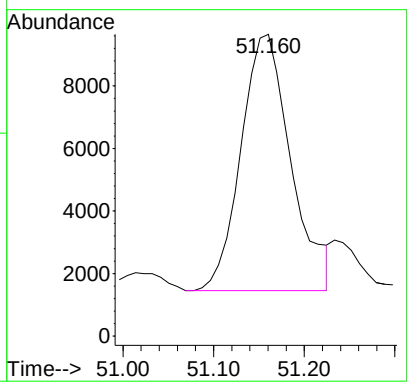
Tgt Ion:231 Resp: 36631





#150
C28,20R-triaromatic steroid
Concen: 649.81 ng/mL
RT: 51.160 min Scan# 4719
Delta R.T. 0.000 min
Lab File: A90009573.D
Acq: 22 Dec 2012 10:17 am

Tgt Ion:231 Resp: 31353



Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009577.D
Acq On : 22 Dec 2012 4:03 pm
Operator : ps
Sample : SS121812B06
Misc : 1X
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Dec 27 14:18:28 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.156	164	60861	500.000	ng/mL	0.00
74) Chrysene-d12	42.557	240	110962	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.239	136	79007	337.746	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 33.77%#			
42) Phenanthrene-d10	32.004	188	89729	408.751	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 40.88%#			
83) Benzo[b]fluoranthene-d12	46.450	264	83956	411.611	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 41.16%#			
88) Benzo[a]pyrene-d12	47.575	264	76619	374.727	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 37.47%#			
129) 5B(H)Cholane - Surr	43.187	217	17925	384.805	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 38.48%#			
Target Compounds						Qvalue
10) Naphthalene	19.312	128	87M4	0.362	ng/mL	
23) Biphenyl	23.883	154B	1197	5.827	ng/mL#	100
25) Dibenzofuran	26.959	168	67M2	0.306	ng/mL	
29) Fluorene	28.327	166	103M3	0.604	ng/mL	
33) Dibenzothiophene	31.593	184	65M3	0.271	ng/mL	
43) Phenanthrene	32.095	178B	1985	8.011	ng/mL	99
47) 9/4-Methylphenanthrene(9M	34.496	192	131	0.529	ng/mL#	24
49) C1-Phenanthrenes/Anthrace	34.496	192	477M5	1.925	ng/mL	
55) Anthracene	32.287	178	183M3	0.795	ng/mL	
58) Fluoranthene	36.869	202	46M3	0.166	ng/mL	
60) Pyrene	37.737	202	57M4	0.202	ng/mL	
77) Chrysene/Triphenylene	42.649	228	50M3	0.200	ng/mL	

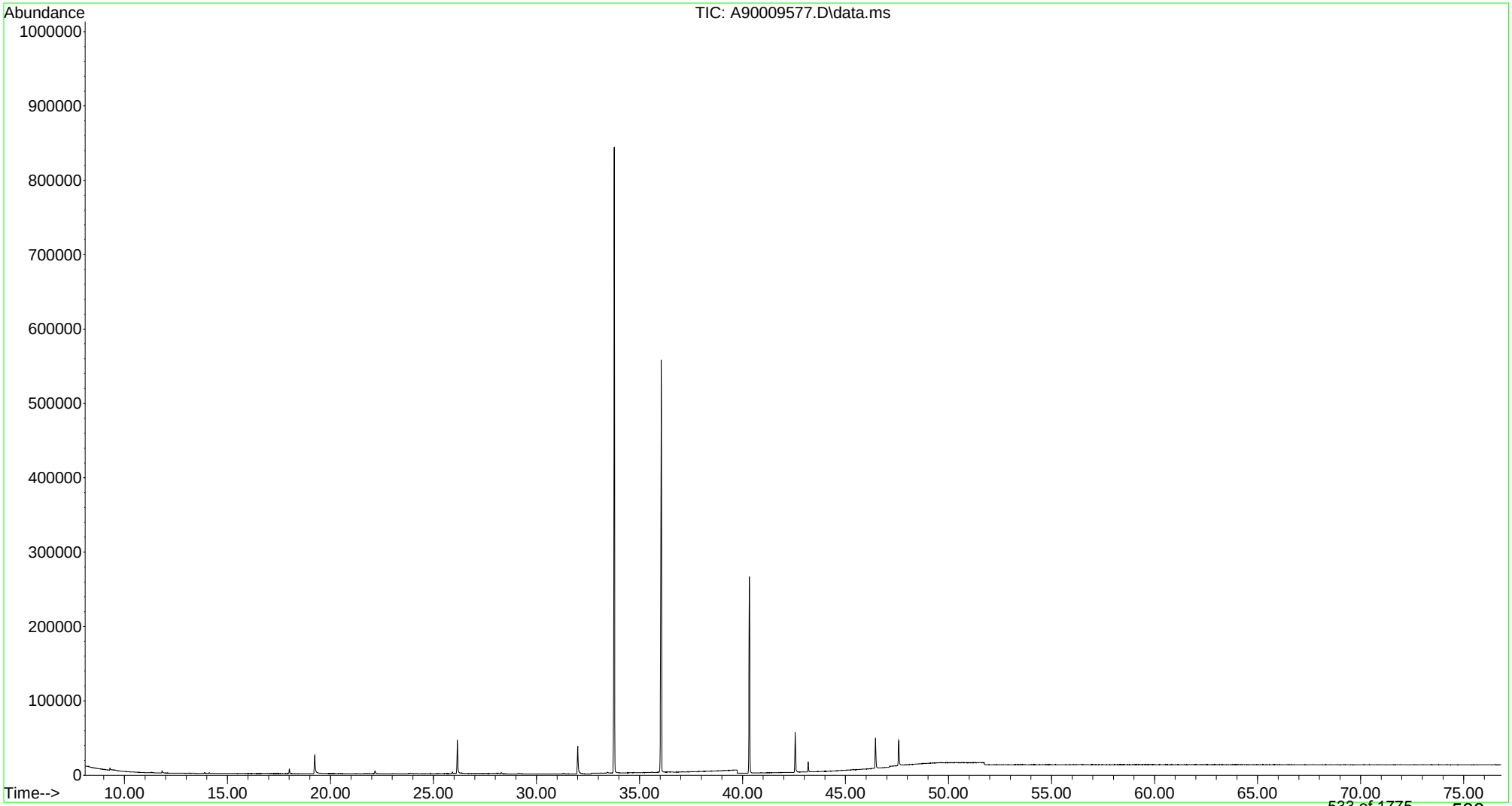
(#) = qualifier out of range (m) = manual integration (+) = signals summed

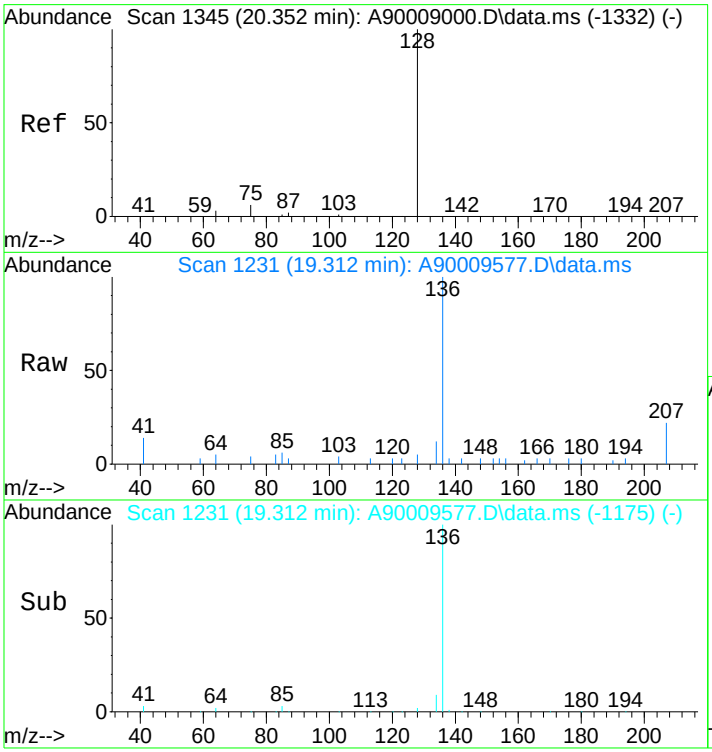
Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009577.D
Acq On : 22 Dec 2012 4:03 pm
Operator : ps
Sample : SS121812B06
Misc : 1X
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Dec 27 14:18:28 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

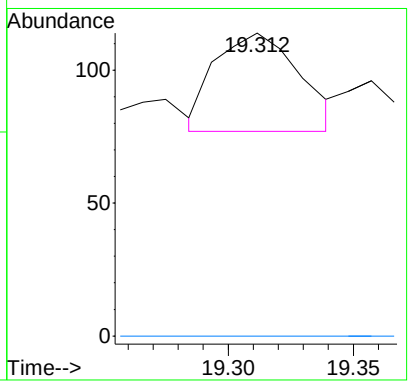


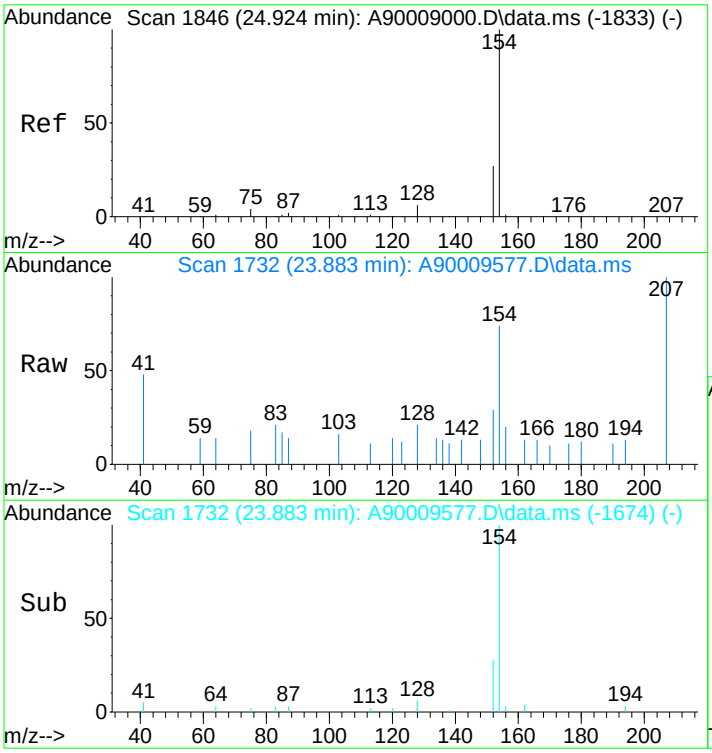


#10
Naphthalene
Concen: 0.36 ng/mL m
RT: 19.312 min Scan# 1231
Delta R.T. 0.009 min
Lab File: A90009577.D
Acq: 22 Dec 2012 4:03 pm

Tgt Ion:128 Resp: 87

Ion	Ratio	Lower	Upper
128	100		
127	0.0	0.0	0.0

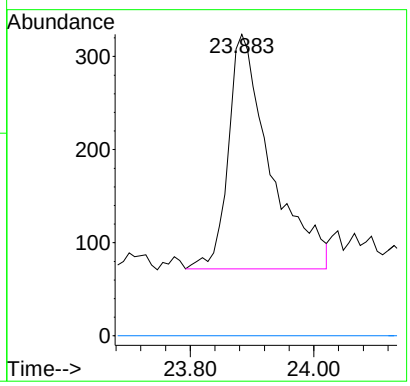


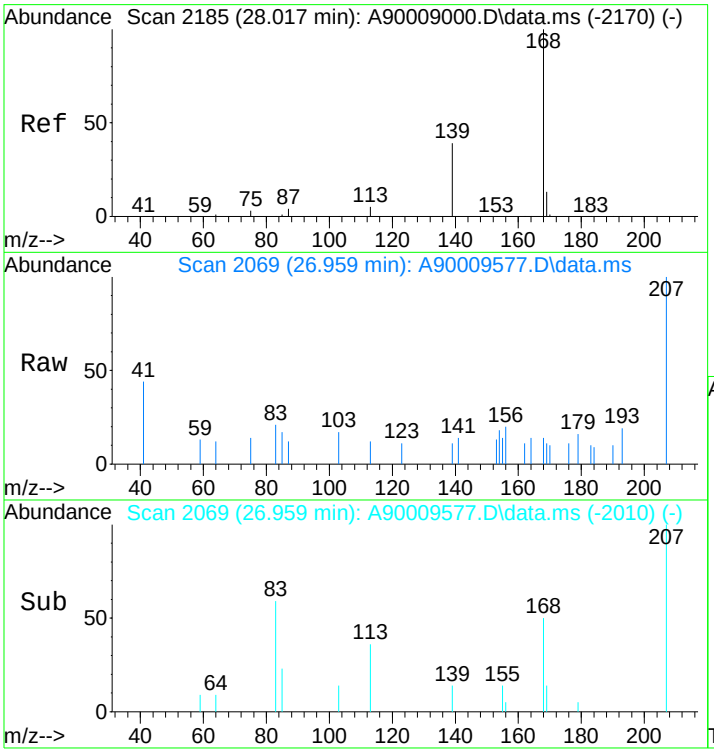


#23
Biphenyl
Concen: 5.83 ng/mL
RT: 23.883 min Scan# 1732
Delta R.T. 0.027 min
Lab File: A90009577.D
Acq: 22 Dec 2012 4:03 pm

Tgt Ion:154 Resp: 1197

Ion	Ratio	Lower	Upper
154	100		
153	0.0	0.0	0.0

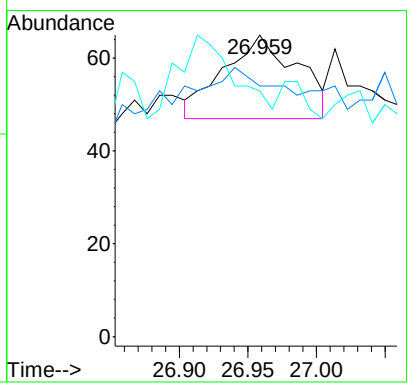


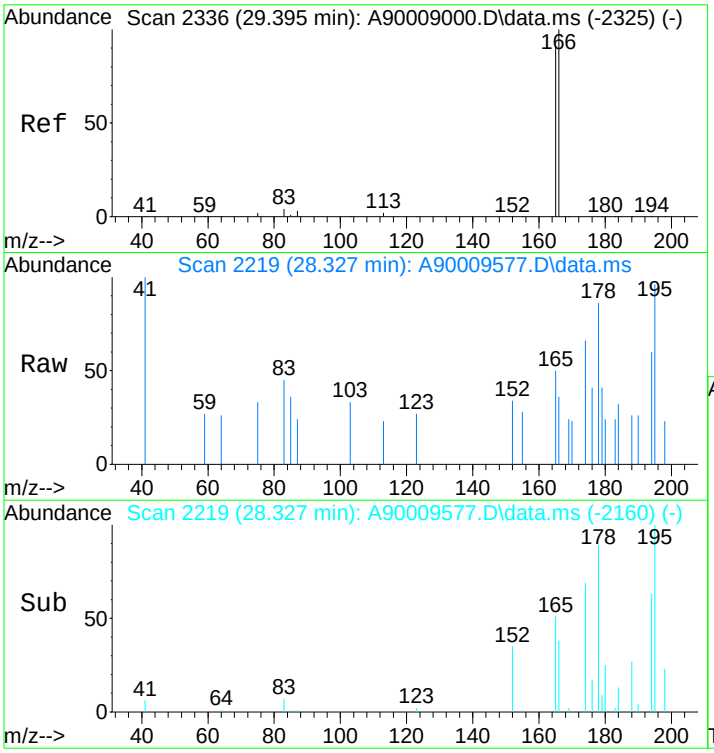


#25
Dibenzofuran
Concen: 0.31 ng/mL m
RT: 26.959 min Scan# 2069
Delta R.T. 0.036 min
Lab File: A90009577.D
Acq: 22 Dec 2012 4:03 pm

Tgt Ion:168 Resp: 67

Ion	Ratio	Lower	Upper
168	100		
139	0.0	28.0	42.0#
169	0.0	10.6	15.8#

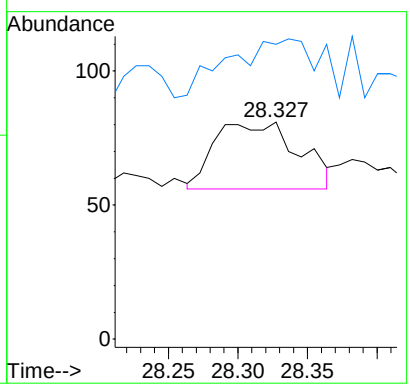


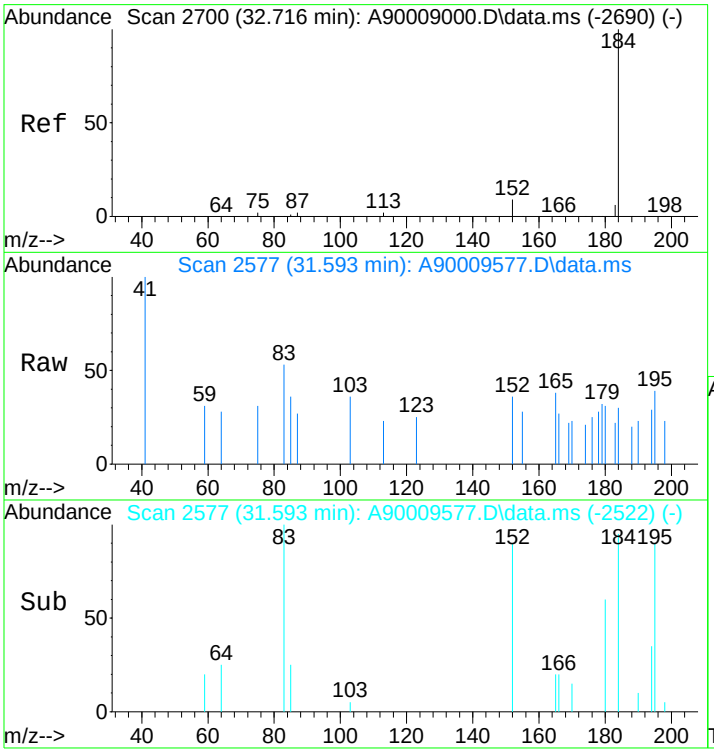


#29
Fluorene
Concen: 0.60 ng/mL m
RT: 28.327 min Scan# 2219
Delta R.T. 0.036 min
Lab File: A90009577.D
Acq: 22 Dec 2012 4:03 pm

Tgt Ion:166 Resp: 103

Ion	Ratio	Lower	Upper
166	100		
165	253.4	73.4	110.0#

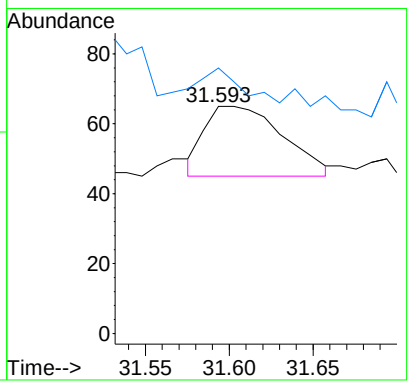


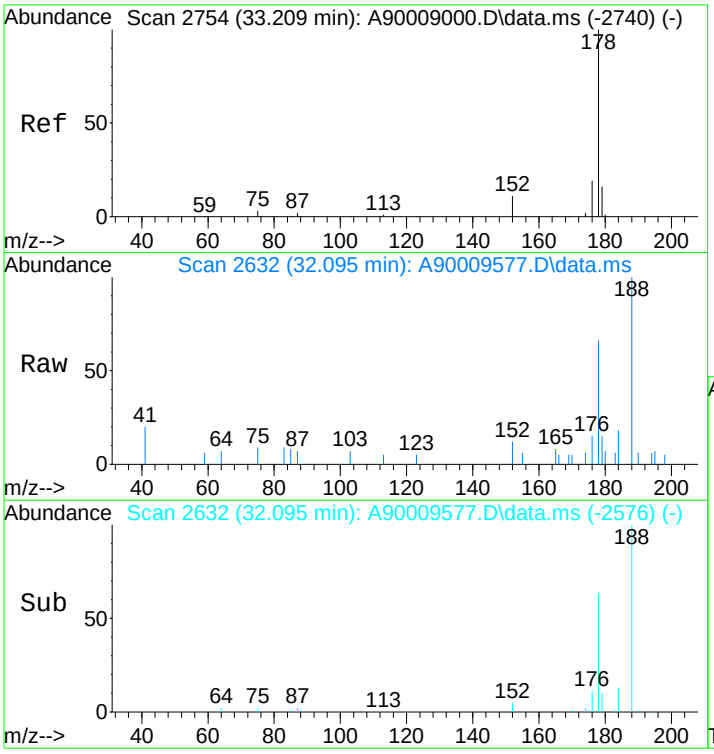


#33
Dibenzothiophene
Concen: 0.27 ng/mL m
RT: 31.593 min Scan# 2577
Delta R.T. -0.000 min
Lab File: A90009577.D
Acq: 22 Dec 2012 4:03 pm

Tgt Ion:184 Resp: 65

Ion	Ratio	Lower	Upper
184	100		
152	0.0	7.0	10.4#

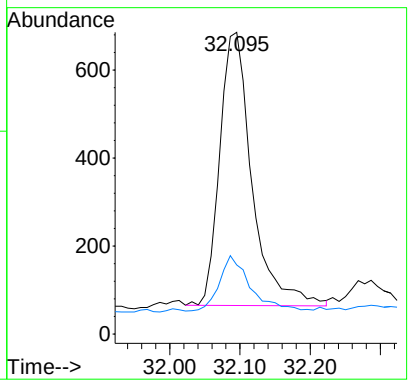


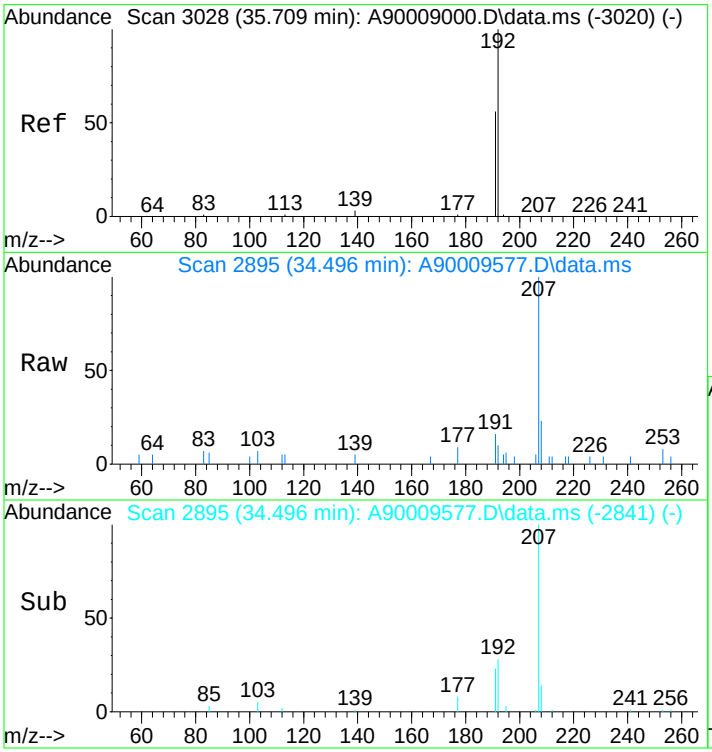


#43
Phenanthrene
Concen: 8.01 ng/mL
RT: 32.095 min Scan# 2632
Delta R.T. 0.009 min
Lab File: A90009577.D
Acq: 22 Dec 2012 4:03 pm

Tgt Ion:178 Resp: 1985

Ion	Ratio	Lower	Upper
178	100		
176	19.4	15.1	22.7

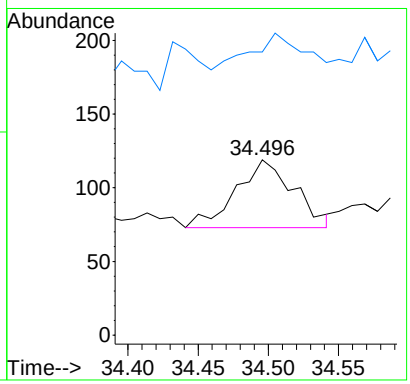


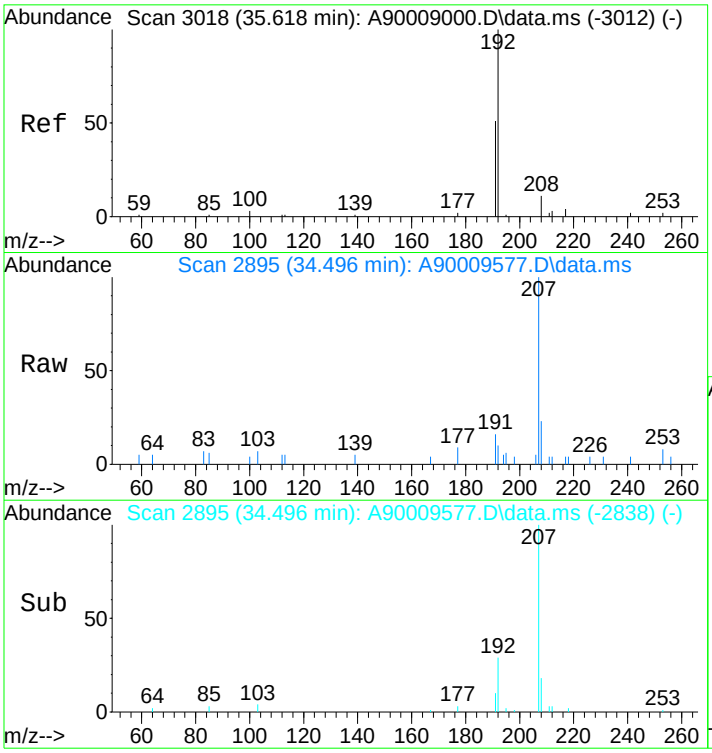


#47
9/4-Methylphenanthrene(9MP)
Concen: 0.53 ng/mL
RT: 34.496 min Scan# 2895
Delta R.T. -0.009 min
Lab File: A90009577.D
Acq: 22 Dec 2012 4:03 pm

Tgt Ion:192 Resp: 131

Ion	Ratio	Lower	Upper
192	100		
191	0.0	44.5	66.7#

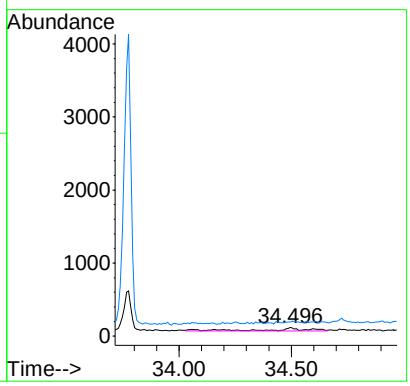


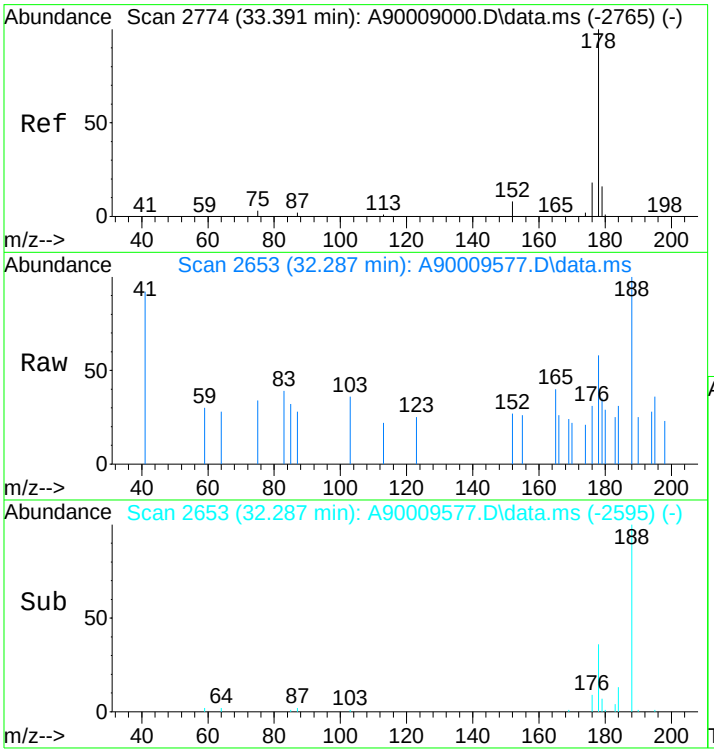


#49
C1-Phenanthrenes/Anthracenes
Concen: 1.93 ng/mL m
RT: 34.496 min Scan# 2895
Delta R.T. -0.009 min
Lab File: A90009577.D
Acq: 22 Dec 2012 4:03 pm

Tgt Ion:192 Resp: 477

Ion	Ratio	Lower	Upper
192	100		
191	0.0	44.5	66.7#

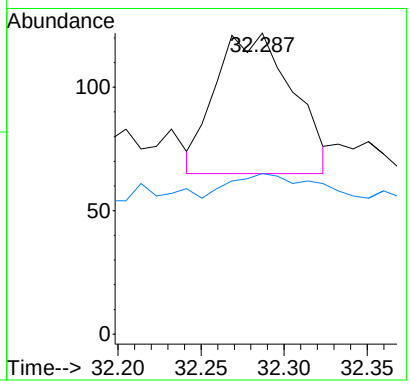


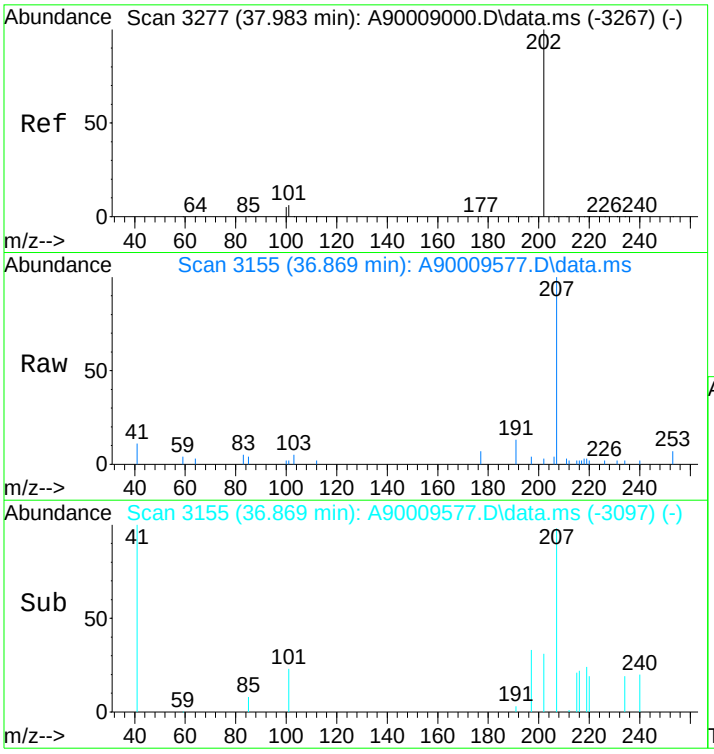


#55
Anthracene
Concen: 0.80 ng/mL m
RT: 32.287 min Scan# 2653
Delta R.T. 0.027 min
Lab File: A90009577.D
Acq: 22 Dec 2012 4:03 pm

Tgt Ion:178 Resp: 183

Ion	Ratio	Lower	Upper
178	100		
176	204.9	14.6	21.8#

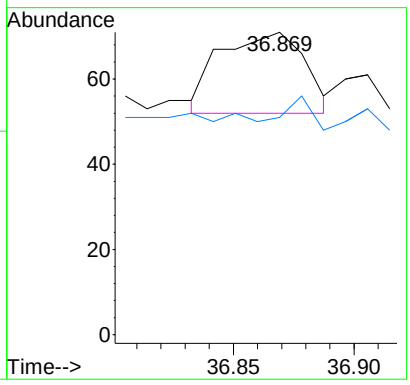


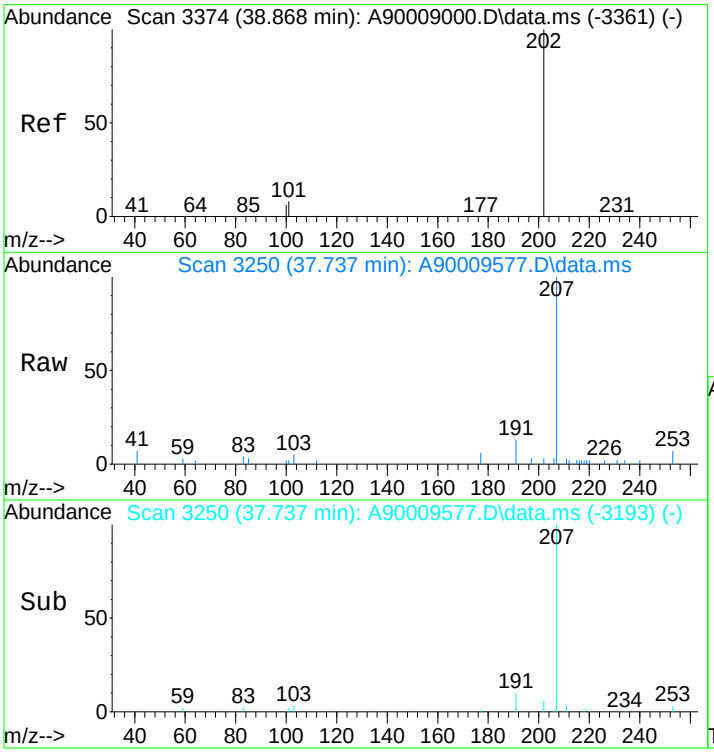


#58
Fluoranthene
Concen: 0.17 ng/mL m
RT: 36.869 min Scan# 3155
Delta R.T. 0.027 min
Lab File: A90009577.D
Acq: 22 Dec 2012 4:03 pm

Tgt Ion:202 Resp: 46

Ion	Ratio	Lower	Upper
202	100		
101	665.2	8.2	12.2#

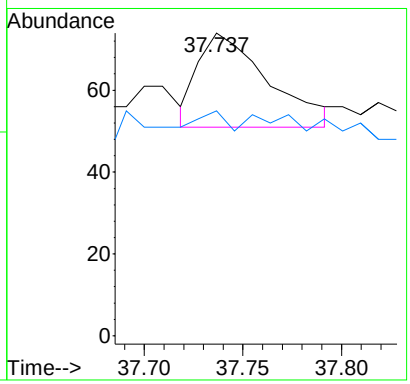


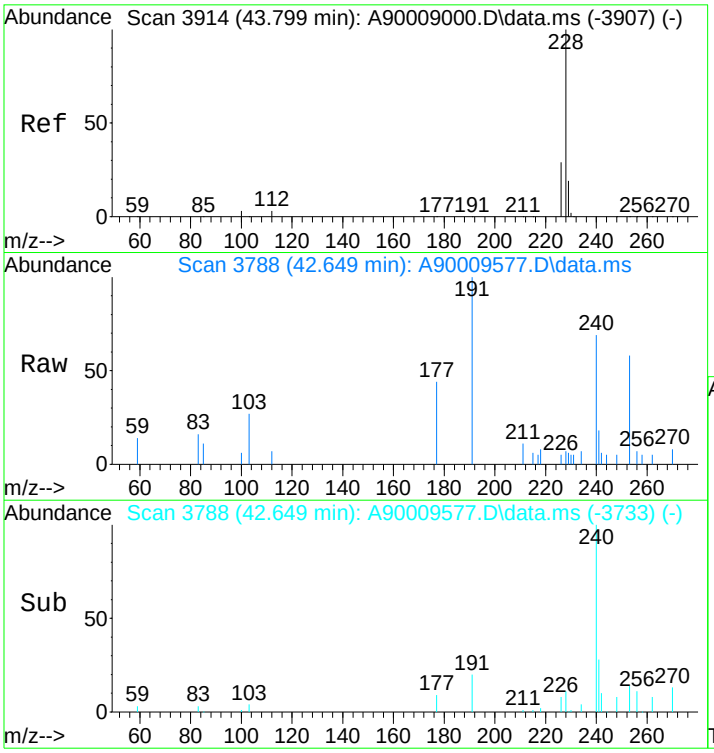


#60
Pyrene
Concen: 0.20 ng/mL m
RT: 37.737 min Scan# 3250
Delta R.T. 0.018 min
Lab File: A90009577.D
Acq: 22 Dec 2012 4:03 pm

Tgt Ion:202 Resp: 57

Ion	Ratio	Lower	Upper
202	100		
101	0.0	9.5	14.3#

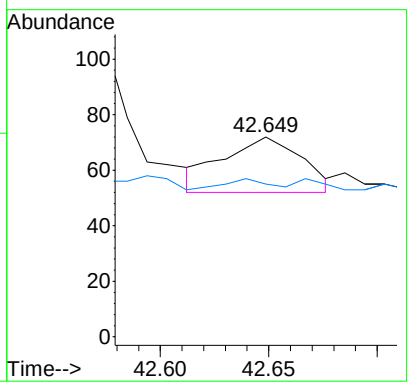




#77
Chrysene/Triphenylene
Concen: 0.20 ng/mL m
RT: 42.649 min Scan# 3788
Delta R.T. -0.000 min
Lab File: A90009577.D
Acq: 22 Dec 2012 4:03 pm

Tgt Ion:228 Resp: 50

Ion	Ratio	Lower	Upper
228	100		
226	0.0	23.3	34.9#



Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009578.D
Acq On : 22 Dec 2012 5:27 pm
Operator : ps
Sample : SS121812LCS06
Misc : 1X
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Dec 27 15:50:12 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.156	164	62102	500.000	ng/mL	0.00
74) Chrysene-d12	42.557	240	118972	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.230	136	87097	364.890	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 36.49%#			
42) Phenanthrene-d10	31.995	188	95092	424.525	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 42.45%#			
83) Benzo[b]fluoranthene-d12	46.450	264	88024	402.500	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 40.25%#			
88) Benzo[a]pyrene-d12	47.576	264	80716	368.186	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 36.82%#			
129) 5B(H)Cholane - Surr	43.188	217	18043	361.260	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 36.13%#			
Target Compounds						Qvalue
10) Naphthalene	19.303	128	88838	362.681	ng/mL#	100
16) 2-Methylnaphthalene	21.985	142	59053	368.646	ng/mL#	100
26) Acenaphthylene	25.544	152	89108	353.633	ng/mL#	100
27) Acenaphthene	26.274	153	58558	369.613	ng/mL	100
29) Fluorene	28.291	166	65369	375.722	ng/mL	100
43) Phenanthrene	32.086	178	99076	391.851	ng/mL	100
55) Anthracene	32.269	178	91293M4	388.825	ng/mL	
58) Fluoranthene	36.842	202	108911	385.595	ng/mL	100
60) Pyrene	37.718	202	114833	398.508	ng/mL	100
75) Benz[a]anthracene	42.494	228	96058	352.000	ng/mL	99
77) Chrysene/Triphenylene	42.658	228	99825	371.932	ng/mL	99
84) Benzo[b]fluoranthene	46.533	252	102827	363.412	ng/mL	94
85) Benzo[j]+[k]fluoranthene	46.615	252	109161	392.645	ng/mL	91
89) Benzo[a]pyrene	47.658	252	98278	386.227	ng/mL#	88
91) Indeno[1,2,3-cd]pyrene	52.148	276	96200M3	341.362	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.203	278	100691	362.706	ng/mL	99
93) Benzo[g,h,i]perylene	53.345	276	98366	355.200	ng/mL	100

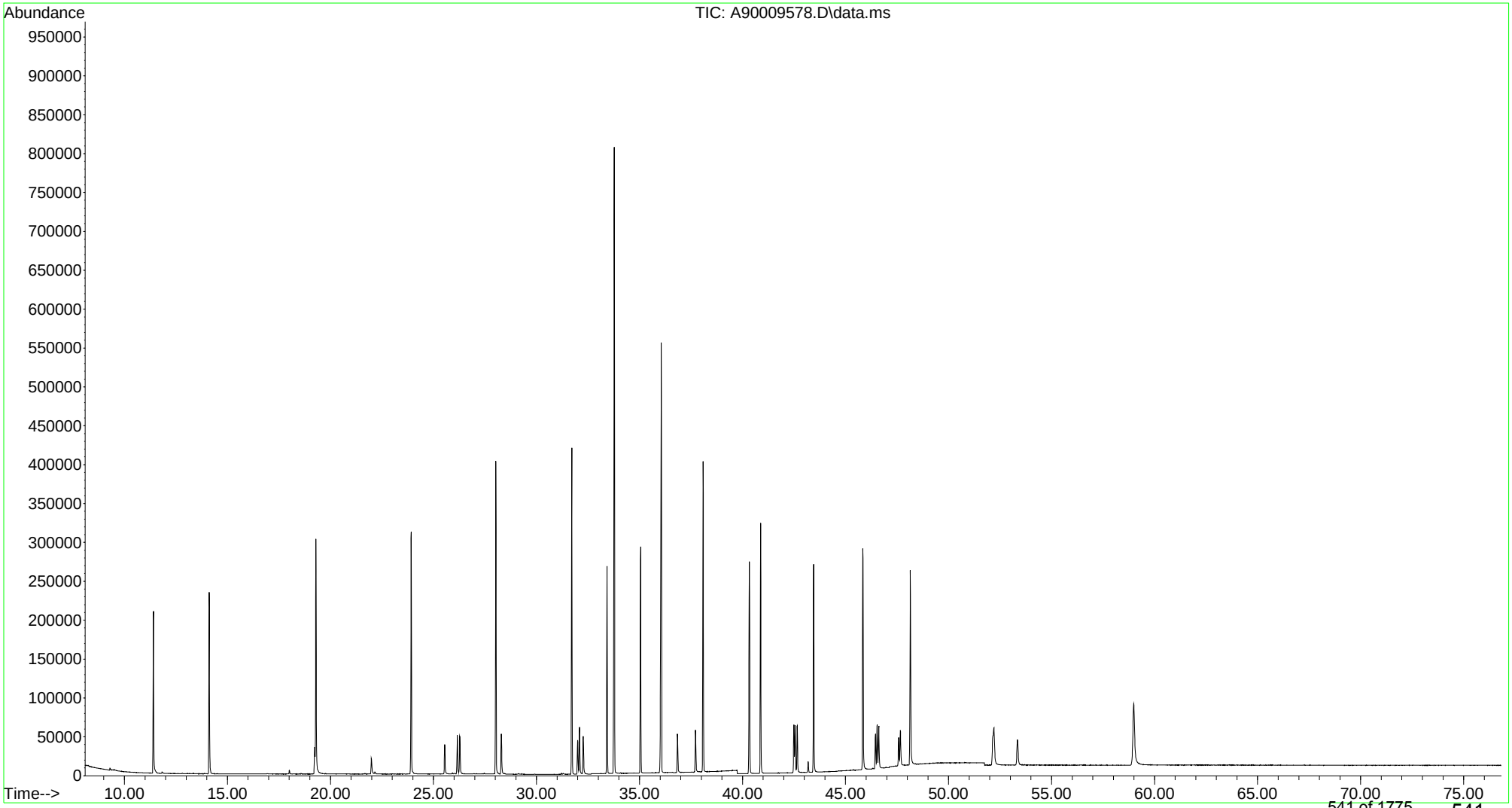
(#) = qualifier out of range (m) = manual integration (+) = signals summed

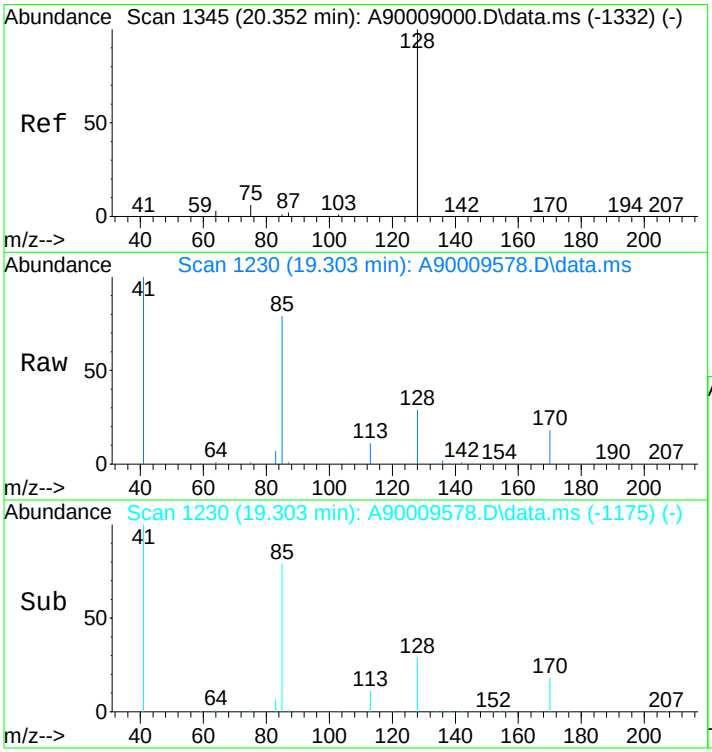
Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009578.D
Acq On : 22 Dec 2012 5:27 pm
Operator : ps
Sample : SS121812LCS06
Misc : 1X
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Dec 27 15:50:12 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

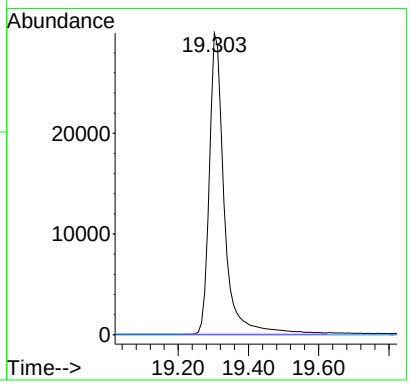


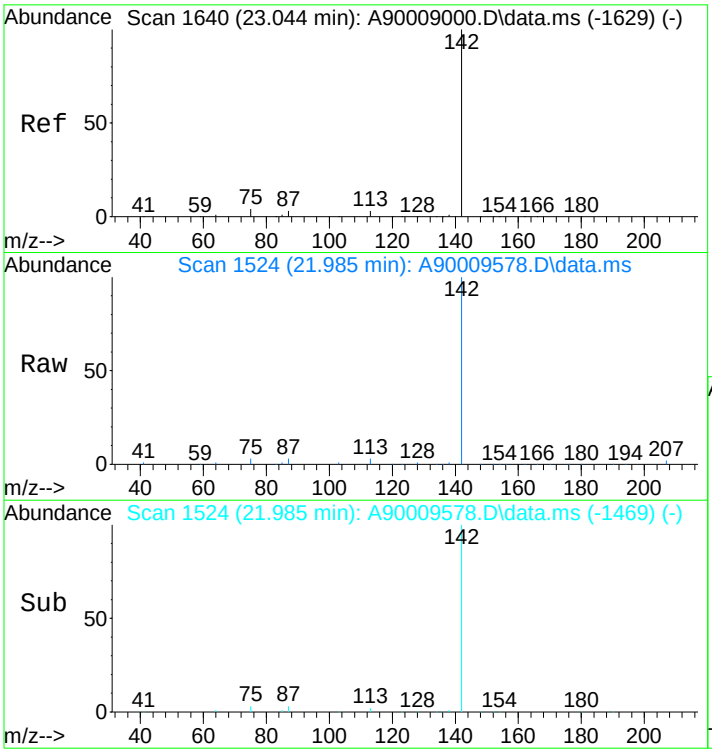


#10
Naphthalene
Concen: 362.68 ng/mL
RT: 19.303 min Scan# 1230
Delta R.T. 0.000 min
Lab File: A90009578.D
Acq: 22 Dec 2012 5:27 pm

Tgt Ion:128 Resp: 88838

Ion	Ratio	Lower	Upper
128	100		
127	0.0	0.0	0.0

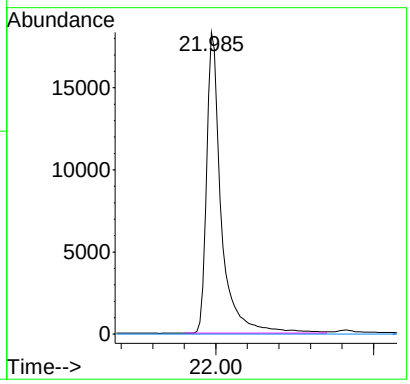


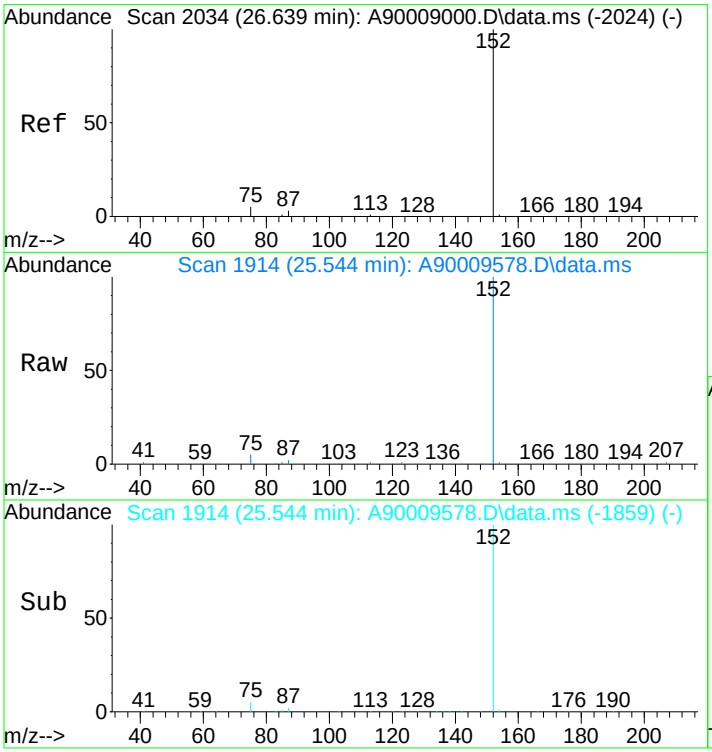


#16
2-Methylnaphthalene
Concen: 368.65 ng/mL
RT: 21.985 min Scan# 1524
Delta R.T. 0.000 min
Lab File: A90009578.D
Acq: 22 Dec 2012 5:27 pm

Tgt Ion:142 Resp: 59053

Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	0.0

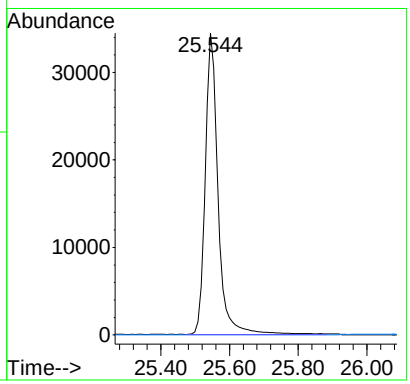


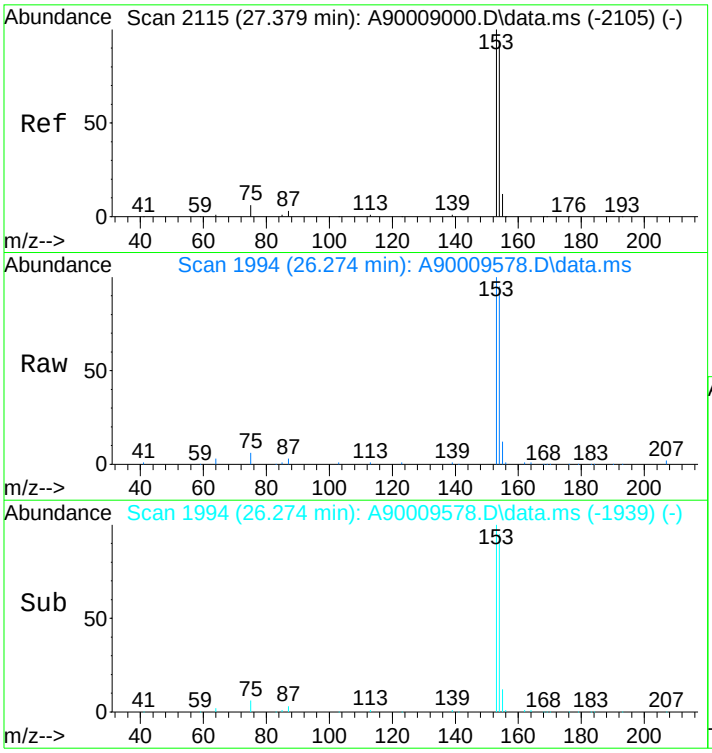


#26
Acenaphthylene
Concen: 353.63 ng/mL
RT: 25.544 min Scan# 1914
Delta R.T. 0.000 min
Lab File: A90009578.D
Acq: 22 Dec 2012 5:27 pm

Tgt Ion:152 Resp: 89108

Ion	Ratio	Lower	Upper
152	100		
153	0.0	0.0	0.0

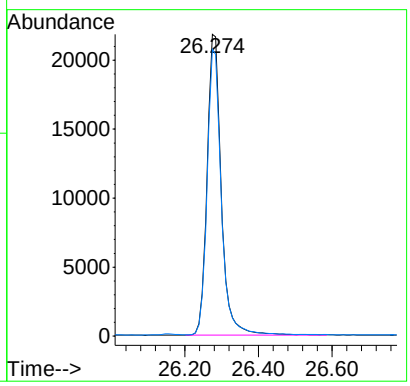


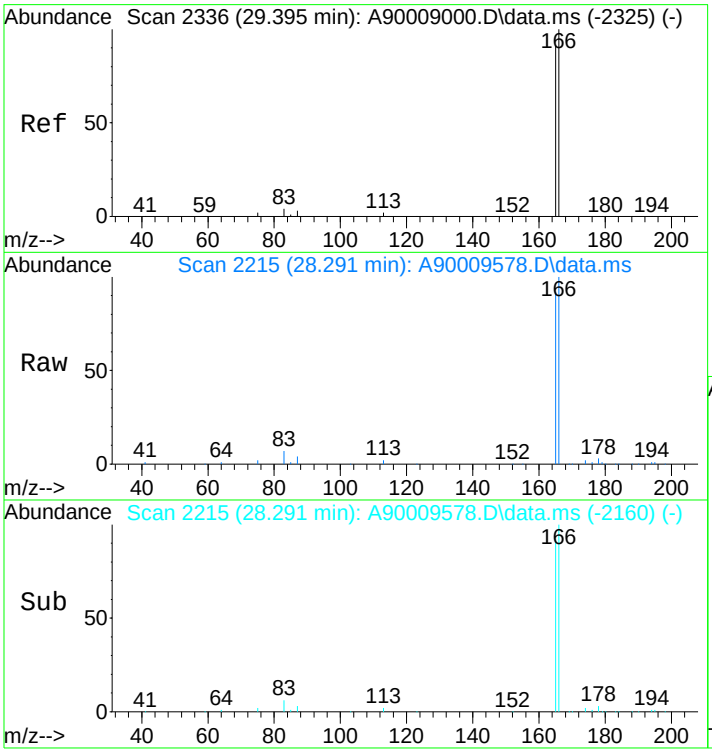


#27
Acenaphthene
Concen: 369.61 ng/mL
RT: 26.274 min Scan# 1994
Delta R.T. 0.000 min
Lab File: A90009578.D
Acq: 22 Dec 2012 5:27 pm

Tgt Ion:153 Resp: 58558

Ion	Ratio	Lower	Upper
153	100		
154	94.6	75.4	113.0

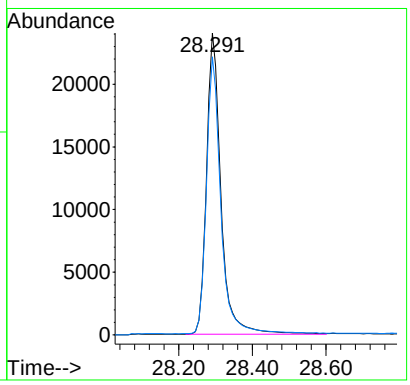


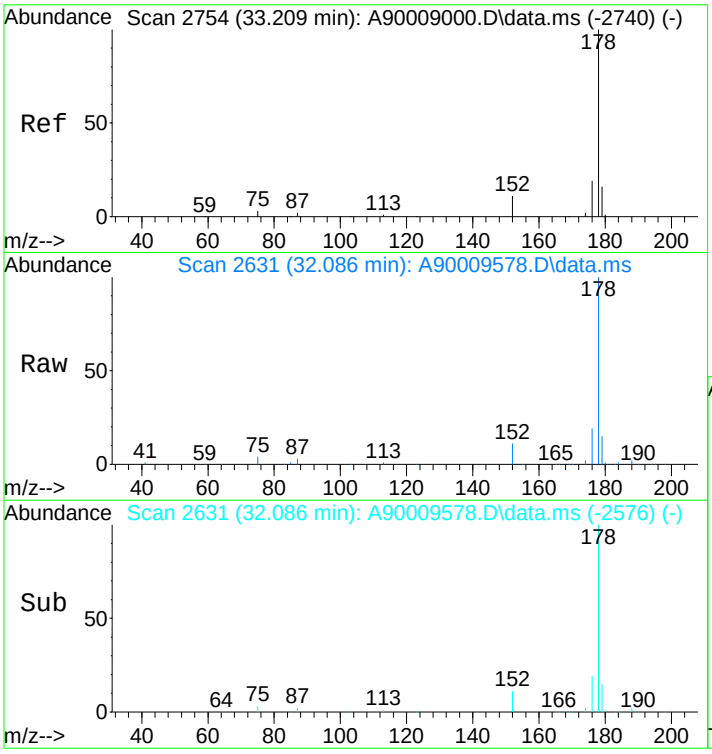


#29
Fluorene
Concen: 375.72 ng/mL
RT: 28.291 min Scan# 2215
Delta R.T. 0.000 min
Lab File: A90009578.D
Acq: 22 Dec 2012 5:27 pm

Tgt Ion:166 Resp: 65369

Ion	Ratio	Lower	Upper
166	100		
165	91.8	73.4	110.0

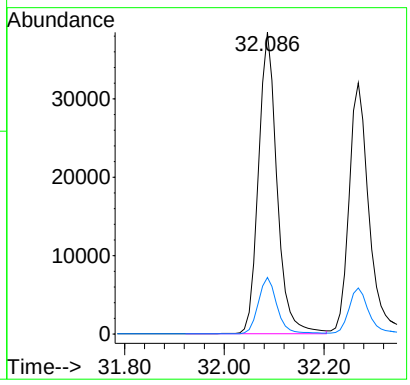


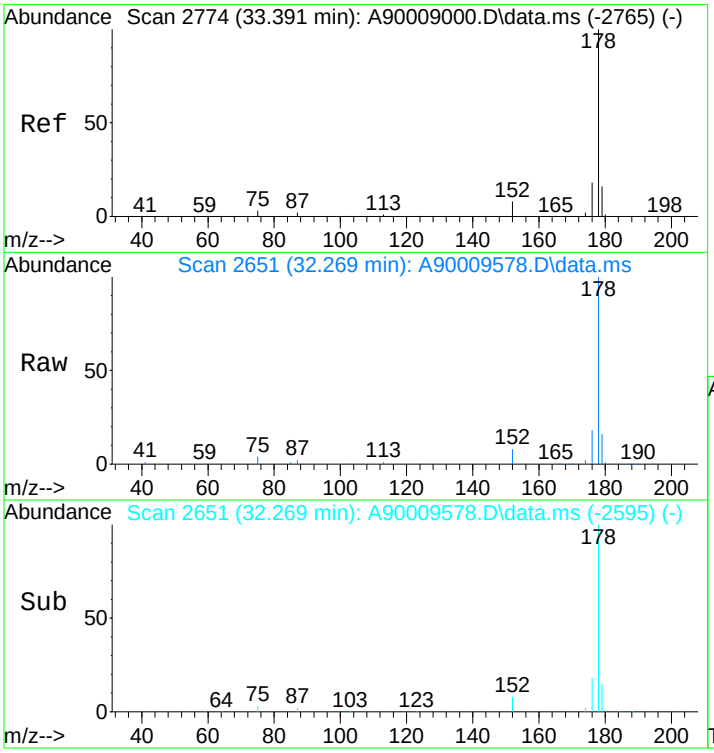


#43
Phenanthrene
Concen: 391.85 ng/mL
RT: 32.086 min Scan# 2631
Delta R.T. 0.000 min
Lab File: A90009578.D
Acq: 22 Dec 2012 5:27 pm

Tgt Ion:178 Resp: 99076

Ion	Ratio	Lower	Upper
178	100		
176	18.8	15.1	22.7

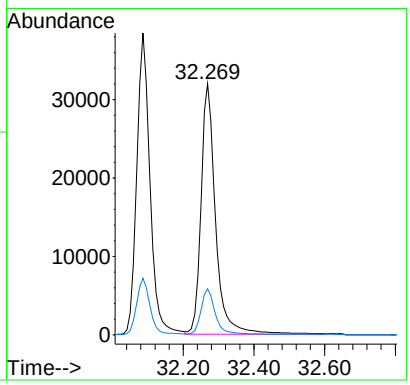


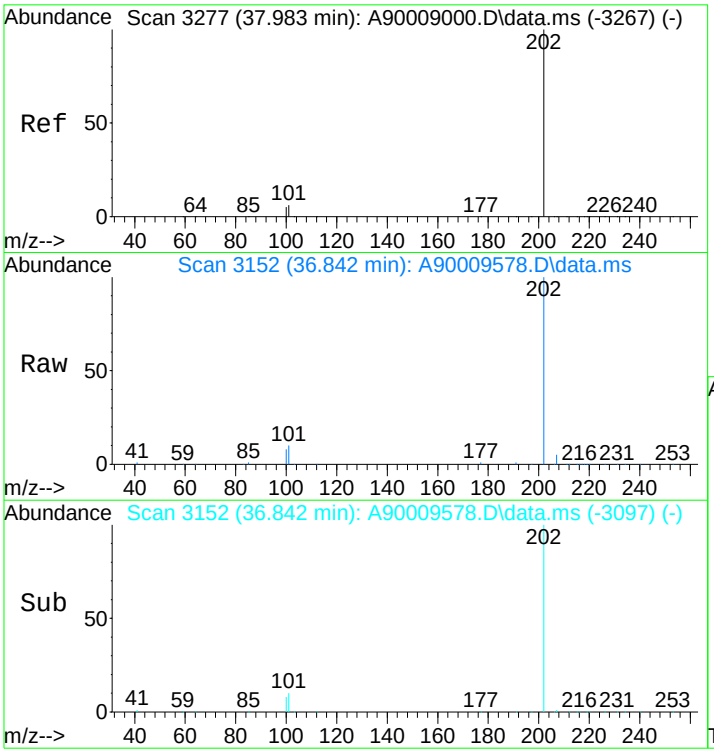


#55
Anthracene
Concen: 388.82 ng/mL m
RT: 32.269 min Scan# 2651
Delta R.T. 0.009 min
Lab File: A90009578.D
Acq: 22 Dec 2012 5:27 pm

Tgt Ion:178 Resp: 91293

Ion	Ratio	Lower	Upper
178	100		
176	17.8	14.6	21.8

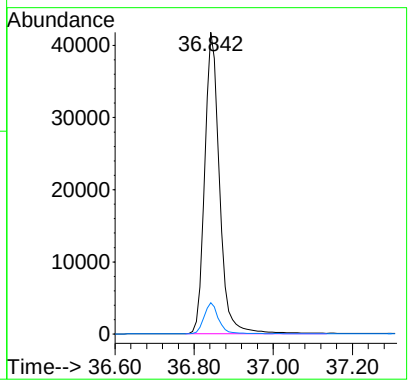


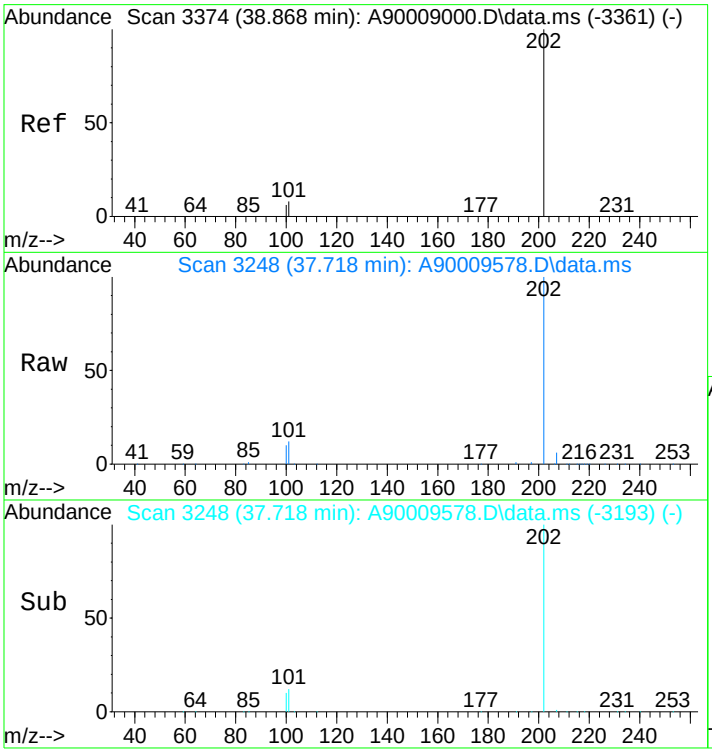


#58
Fluoranthene
Concen: 385.59 ng/mL
RT: 36.842 min Scan# 3152
Delta R.T. 0.000 min
Lab File: A90009578.D
Acq: 22 Dec 2012 5:27 pm

Tgt Ion:202 Resp: 108911

Ion	Ratio	Lower	Upper
202	100		
101	10.1	8.2	12.2

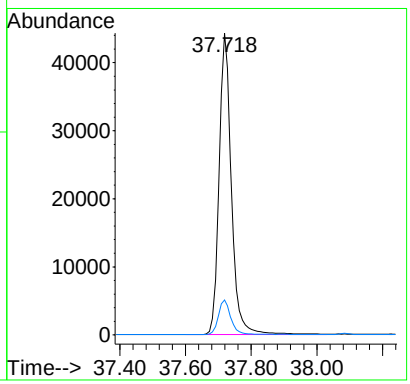


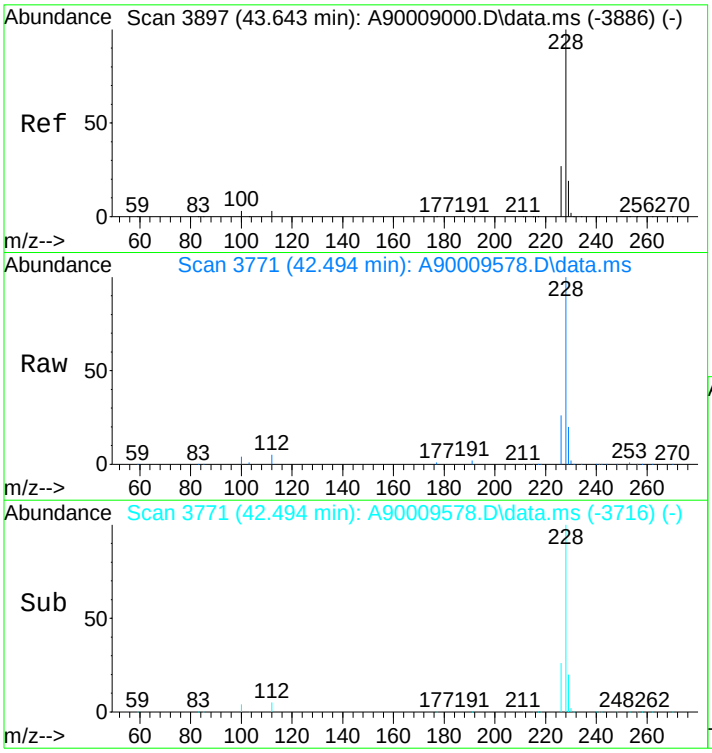


#60
Pyrene
Concen: 398.51 ng/mL
RT: 37.718 min Scan# 3248
Delta R.T. 0.000 min
Lab File: A90009578.D
Acq: 22 Dec 2012 5:27 pm

Tgt Ion:202 Resp: 114833

Ion	Ratio	Lower	Upper
202	100		
101	11.7	9.5	14.3

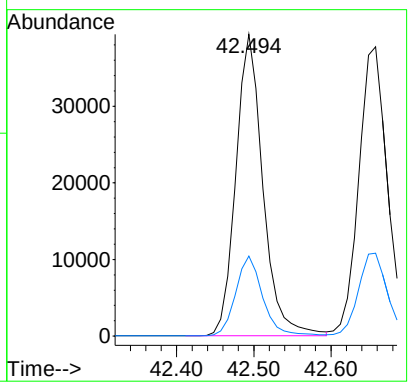


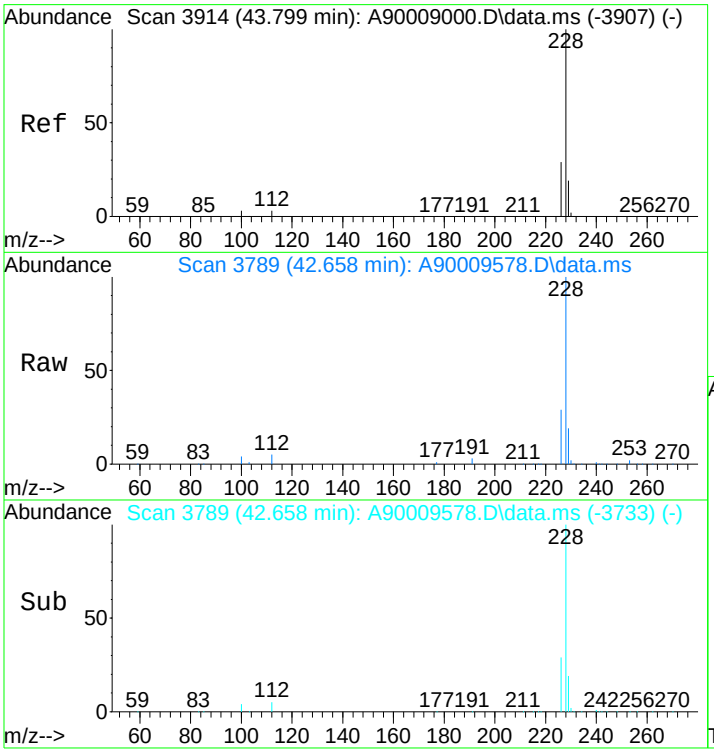


#75
Benz[a]anthracene
Concen: 352.00 ng/mL
RT: 42.494 min Scan# 3771
Delta R.T. 0.000 min
Lab File: A90009578.D
Acq: 22 Dec 2012 5:27 pm

Tgt Ion:228 Resp: 96058

Ion	Ratio	Lower	Upper
228	100		
226	26.3	20.8	31.2

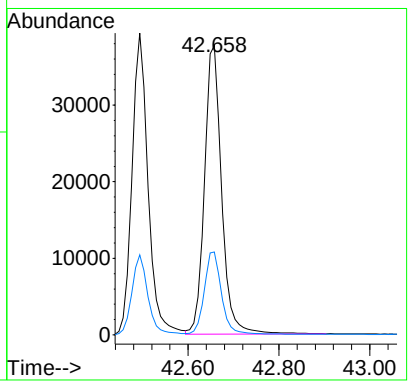


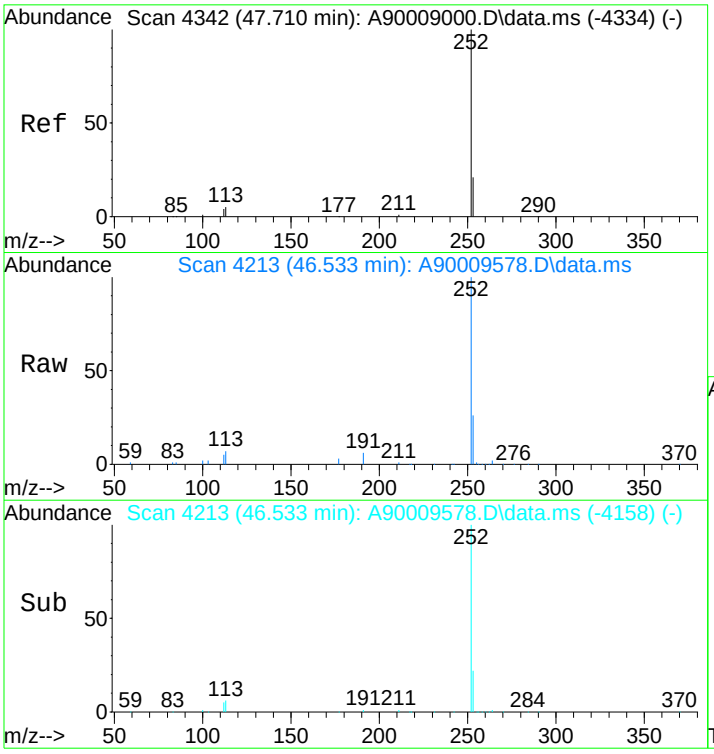


#77
Chrysene/Triphenylene
Concen: 371.93 ng/mL
RT: 42.658 min Scan# 3789
Delta R.T. 0.009 min
Lab File: A90009578.D
Acq: 22 Dec 2012 5:27 pm

Tgt Ion:228 Resp: 99825

Ion	Ratio	Lower	Upper
228	100		
226	28.7	23.3	34.9

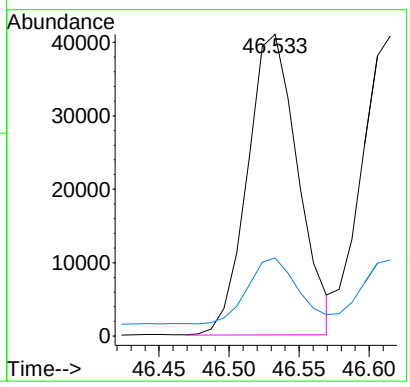


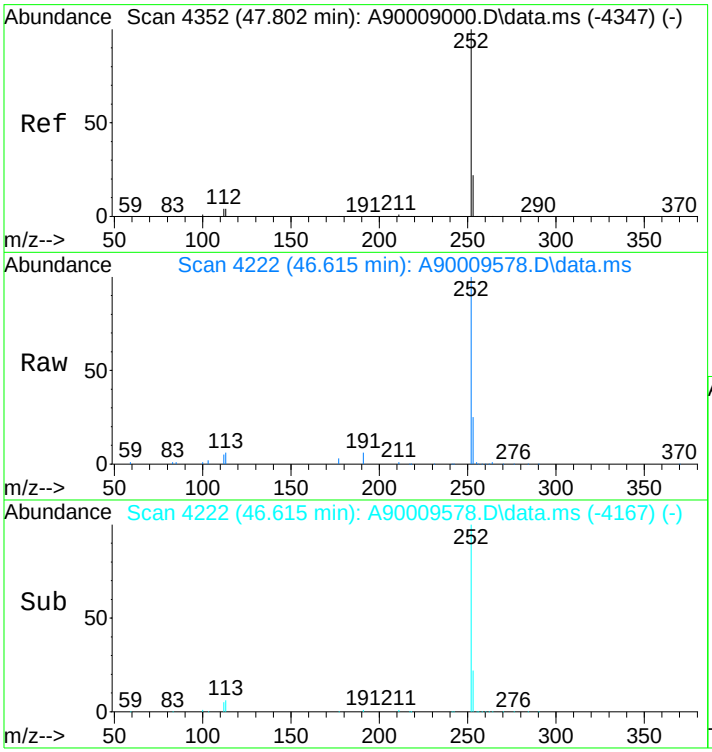


#84
Benzo[b]fluoranthene
Concen: 363.41 ng/mL
RT: 46.533 min Scan# 4213
Delta R.T. 0.000 min
Lab File: A90009578.D
Acq: 22 Dec 2012 5:27 pm

Tgt Ion:252 Resp: 102827

Ion	Ratio	Lower	Upper
252	100		
253	22.4	20.3	30.5

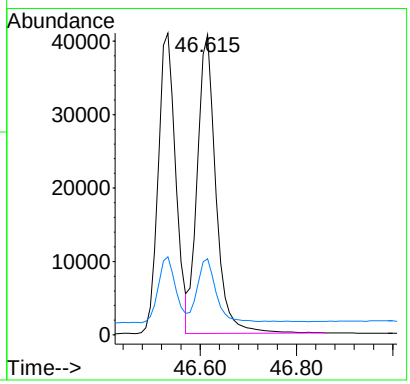


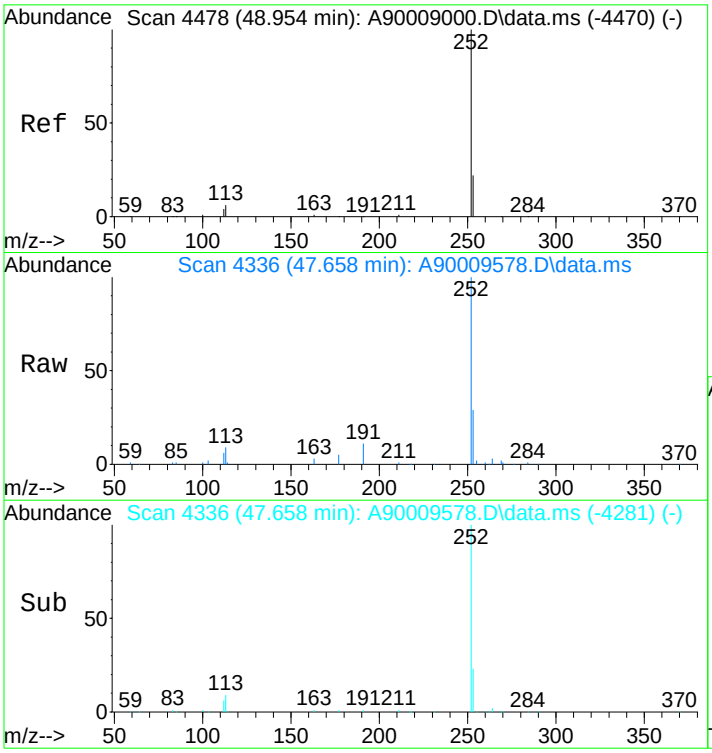


#85
Benzo[j]+[k]fluoranthene
Concen: 392.65 ng/mL
RT: 46.615 min Scan# 4222
Delta R.T. 0.000 min
Lab File: A90009578.D
Acq: 22 Dec 2012 5:27 pm

Tgt Ion:252 Resp: 109161

Ion	Ratio	Lower	Upper
252	100		
253	20.9	20.2	30.4

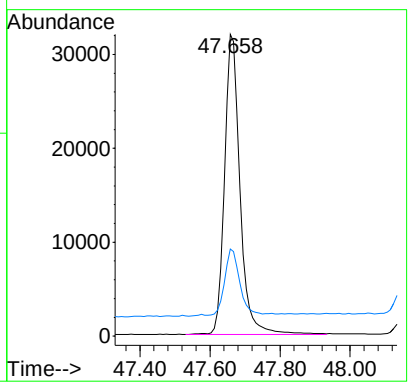


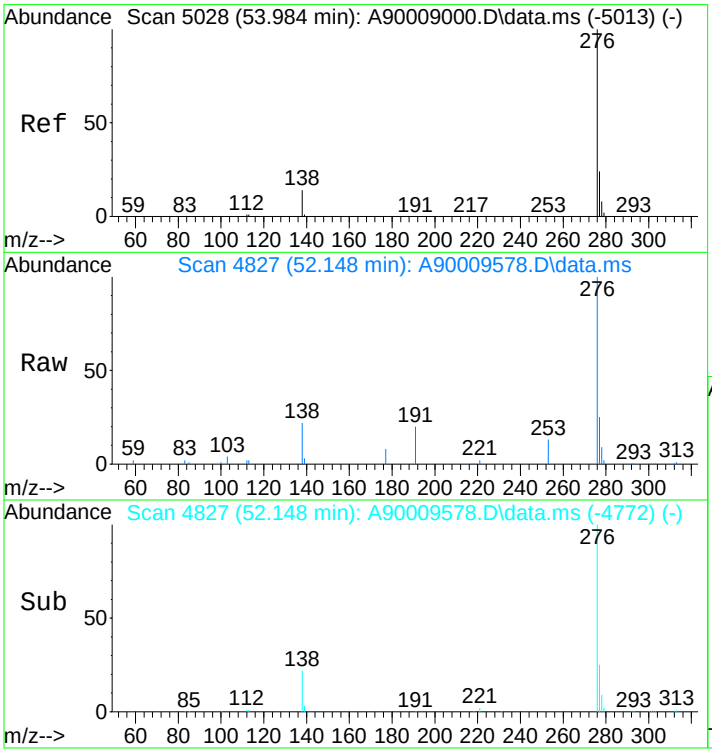


#89
Benzo[a]pyrene
Concen: 386.23 ng/mL
RT: 47.658 min Scan# 4336
Delta R.T. 0.000 min
Lab File: A90009578.D
Acq: 22 Dec 2012 5:27 pm

Tgt Ion:252 Resp: 98278

Ion	Ratio	Lower	Upper
252	100		
253	21.4	21.9	32.9#

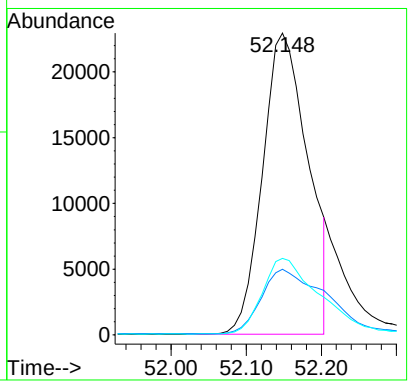


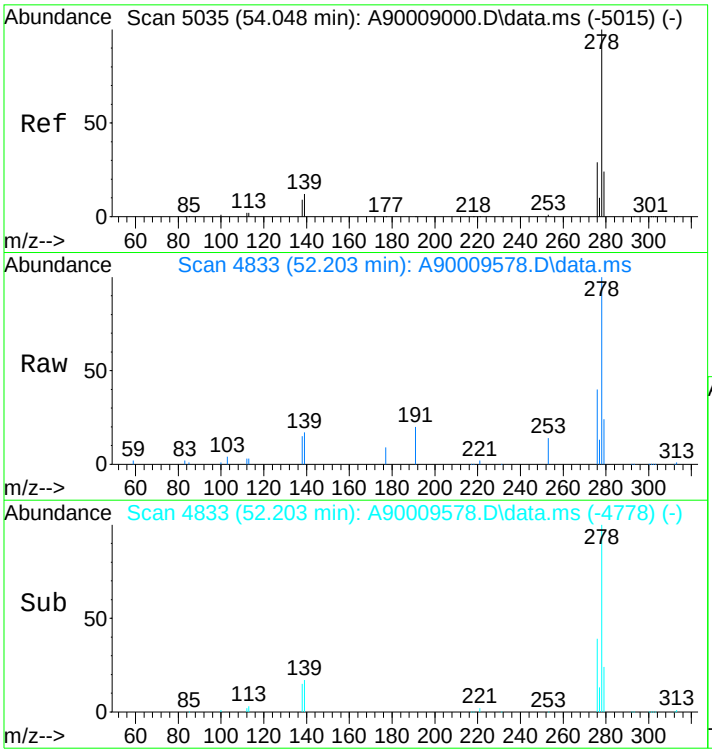


#91
Indeno[1,2,3-cd]pyrene
Concen: 341.36 ng/mL m
RT: 52.148 min Scan# 4827
Delta R.T. 0.000 min
Lab File: A90009578.D
Acq: 22 Dec 2012 5:27 pm

Tgt Ion:276 Resp: 96200

Ion	Ratio	Lower	Upper
276	100		
138	31.6	17.7	26.5#
277	32.8	20.2	30.4#

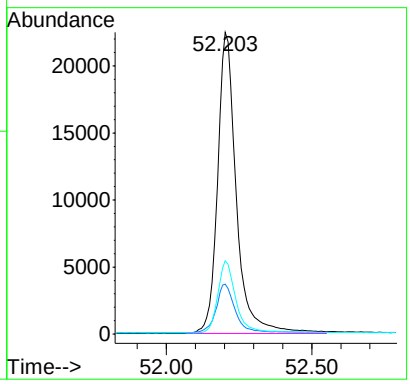


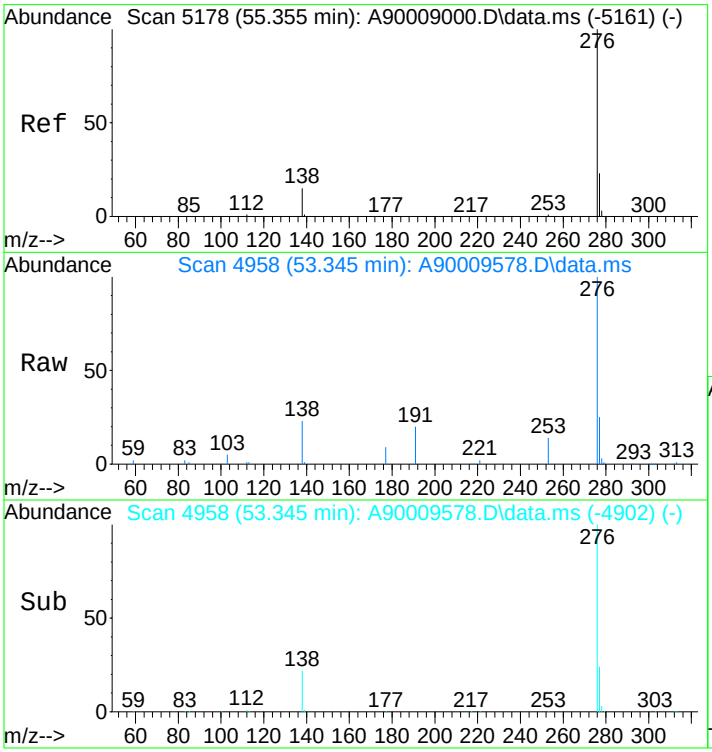


#92
Dibenz[ah]+[ac]anthracene
Concen: 362.71 ng/mL
RT: 52.203 min Scan# 4833
Delta R.T. 0.000 min
Lab File: A90009578.D
Acq: 22 Dec 2012 5:27 pm

Tgt Ion:278 Resp: 100691

Ion	Ratio	Lower	Upper
278	100		
139	16.4	13.3	19.9
279	23.2	19.3	28.9

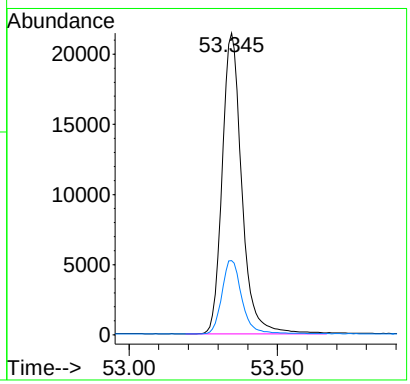




#93
Benzo[g,h,i]perylene
Concen: 355.20 ng/mL
RT: 53.345 min Scan# 4958
Delta R.T. 0.009 min
Lab File: A90009578.D
Acq: 22 Dec 2012 5:27 pm

Tgt Ion:276 Resp: 98366

Ion	Ratio	Lower	Upper
276	100		
277	25.0	20.0	30.0



Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009579.D
Acq On : 22 Dec 2012 6:52 pm
Operator : ps
Sample : SS121812LCSD06
Misc : 1X
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Dec 27 15:52:10 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.156	164	61901	500.000	ng/mL	0.00
74) Chrysene-d12	42.557	240	119353	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.229	136	79666	334.842	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 33.48%#			
42) Phenanthrene-d10	31.995	188	88401	395.936	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 39.59%#			
83) Benzo[b]fluoranthene-d12	46.450	264	82367	375.430	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 37.54%#			
88) Benzo[a]pyrene-d12	47.575	264	74312	337.892	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 33.79%#			
129) 5B(H)Cholane - Surr	43.187	217	16641	332.126	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 33.21%#			
Target Compounds						Qvalue
10) Naphthalene	19.311	128	82152	336.474	ng/mL#	100
16) 2-Methylnaphthalene	21.994	142	54569	341.761	ng/mL#	100
26) Acenaphthylene	25.544	152	82522	328.559	ng/mL#	100
27) Acenaphthene	26.283	153	54264	343.622	ng/mL	99
29) Fluorene	28.291	166	60820	350.710	ng/mL	100
43) Phenanthrene	32.086	178	92729	367.939	ng/mL	100
55) Anthracene	32.269	178	84779M4	362.253	ng/mL	
58) Fluoranthene	36.842	202	102436	363.848	ng/mL	100
60) Pyrene	37.718	202	107542	374.417	ng/mL	99
75) Benz[a]anthracene	42.493	228	89880	328.310	ng/mL	100
77) Chrysene/Triphenylene	42.649	228	94925	352.546	ng/mL	99
84) Benzo[b]fluoranthene	46.533	252	96367	339.494	ng/mL	93
85) Benzo[j]+[k]fluoranthene	46.615	252	102724	368.312	ng/mL	92
89) Benzo[a]pyrene	47.658	252	90527	354.630	ng/mL	90
91) Indeno[1,2,3-cd]pyrene	52.148	276	88854M3	314.288	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.203	278	93768	336.690	ng/mL	98
93) Benzo[g,h,i]perylene	53.345	276	91734	330.194	ng/mL	100

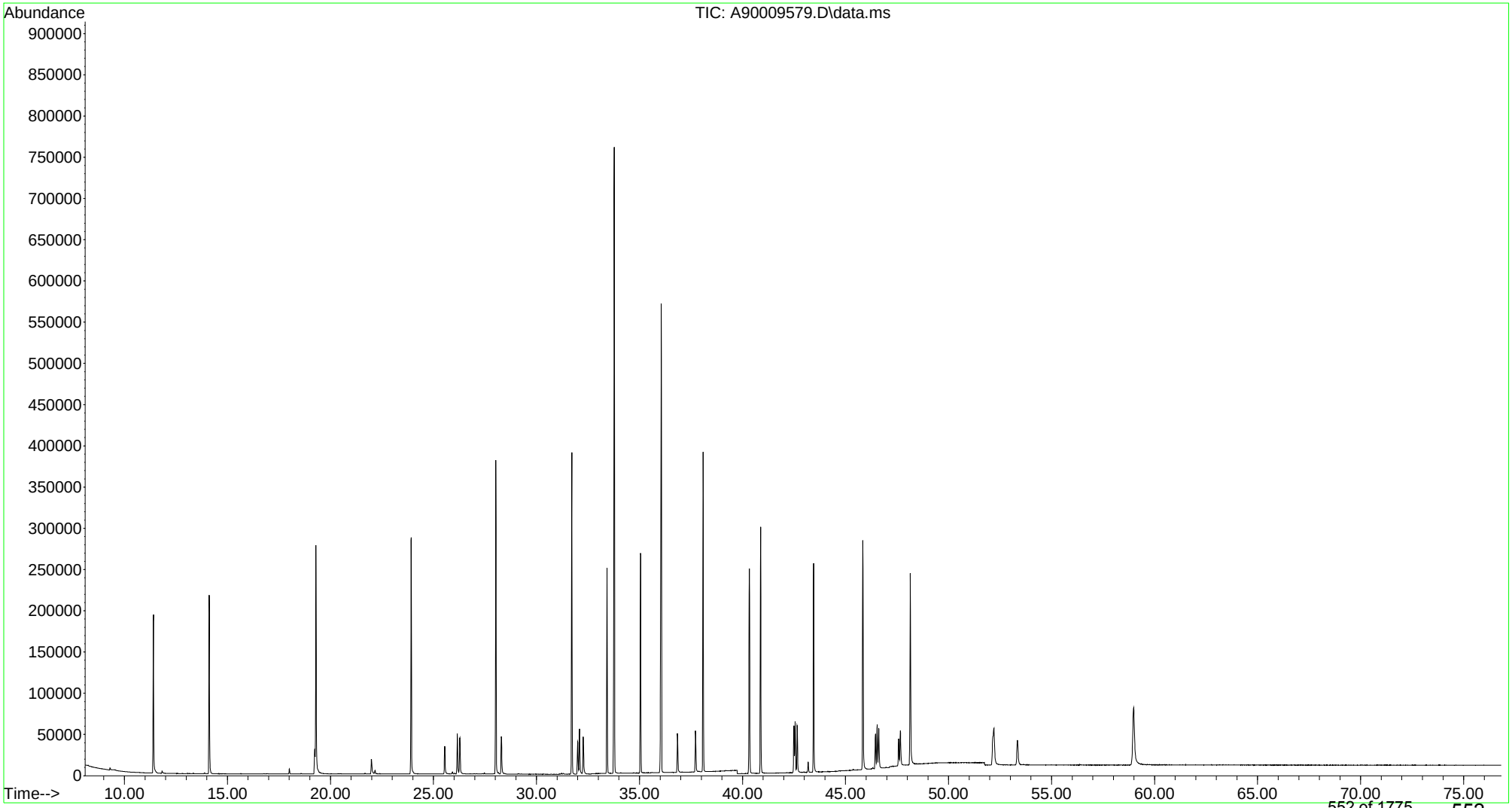
(#) = qualifier out of range (m) = manual integration (+) = signals summed

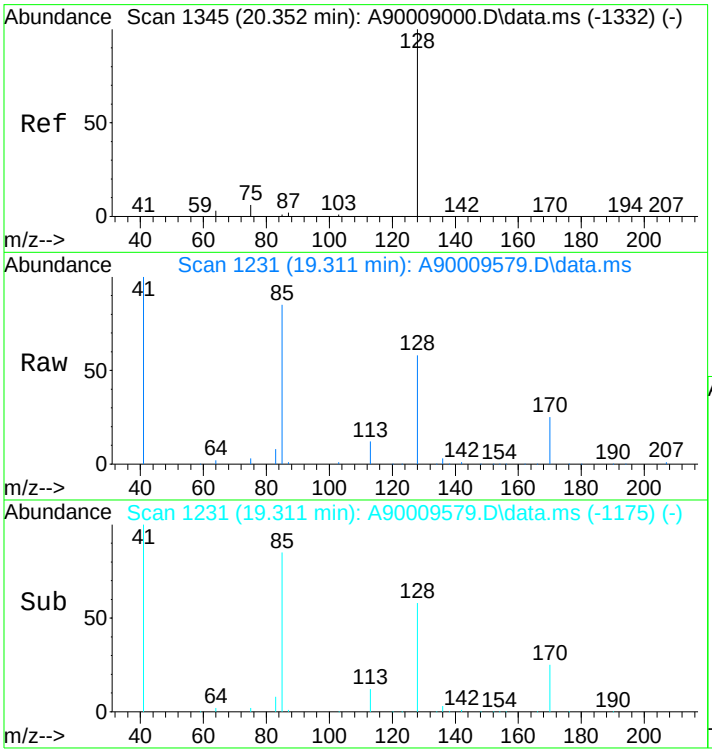
Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009579.D
Acq On : 22 Dec 2012 6:52 pm
Operator : ps
Sample : SS121812LCSD06
Misc : 1X
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Dec 27 15:52:10 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

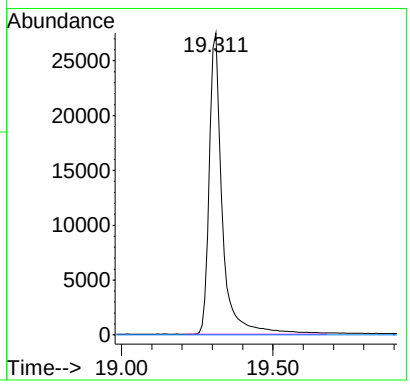


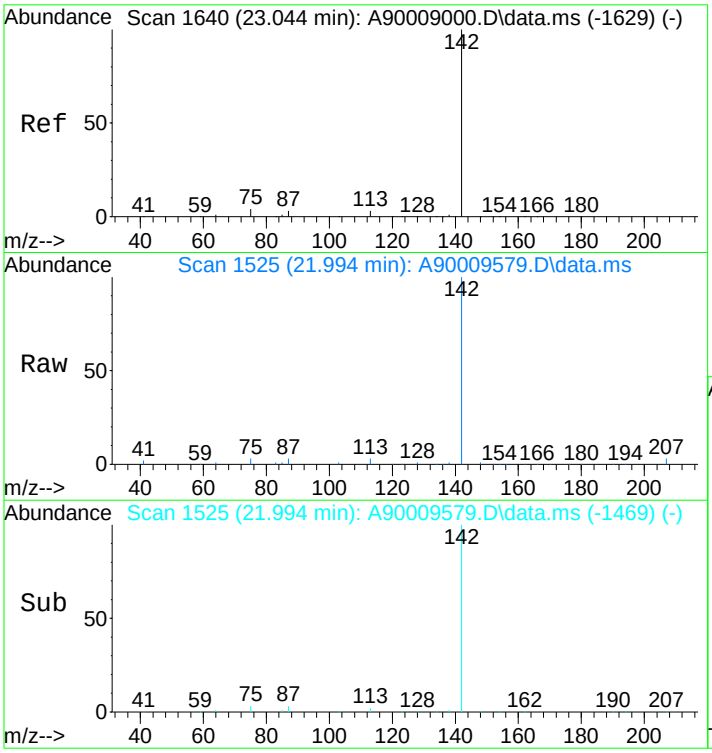


#10
Naphthalene
Concen: 336.47 ng/mL
RT: 19.311 min Scan# 1231
Delta R.T. 0.009 min
Lab File: A90009579.D
Acq: 22 Dec 2012 6:52 pm

Tgt Ion:128 Resp: 82152

Ion	Ratio	Lower	Upper
128	100		
127	0.0	0.0	0.0

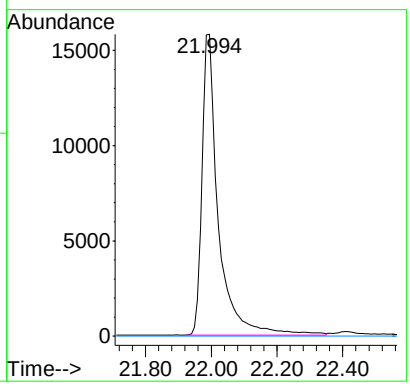


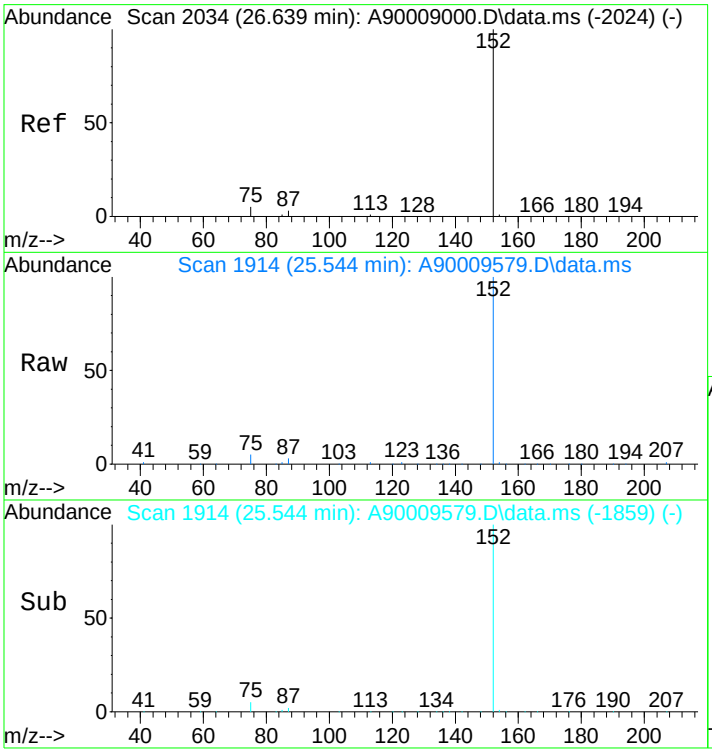


#16
2-Methylnaphthalene
Concen: 341.76 ng/mL
RT: 21.994 min Scan# 1525
Delta R.T. 0.009 min
Lab File: A90009579.D
Acq: 22 Dec 2012 6:52 pm

Tgt Ion:142 Resp: 54569

Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	0.0

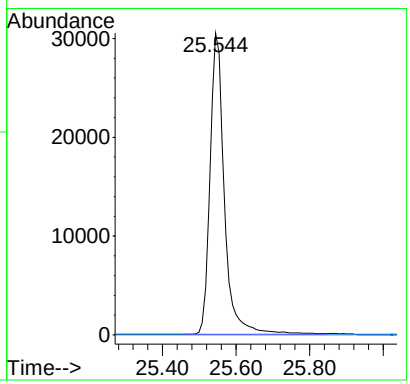


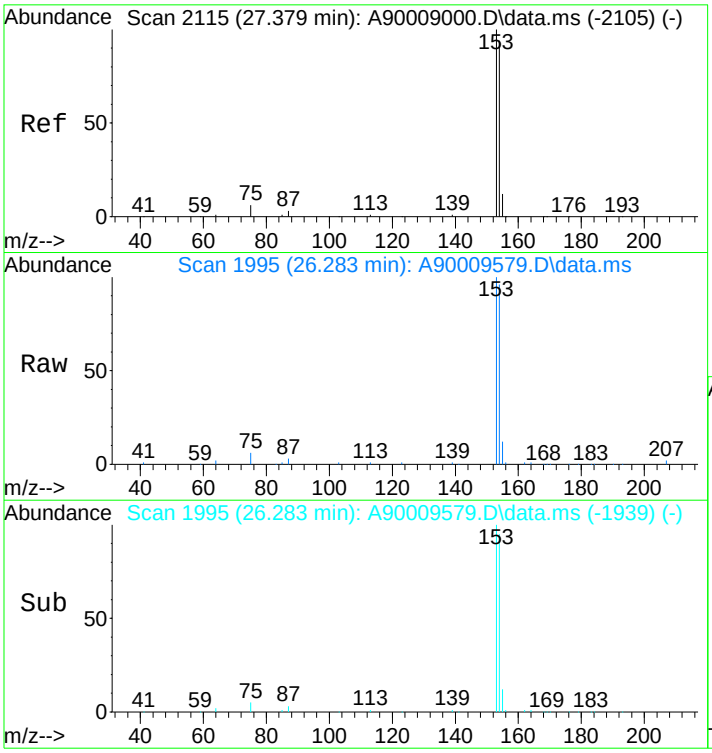


#26
Acenaphthylene
Concen: 328.56 ng/mL
RT: 25.544 min Scan# 1914
Delta R.T. -0.000 min
Lab File: A90009579.D
Acq: 22 Dec 2012 6:52 pm

Tgt Ion:152 Resp: 82522

Ion	Ratio	Lower	Upper
152	100		
153	0.0	0.0	0.0

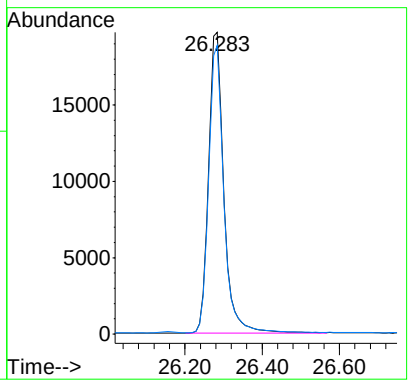


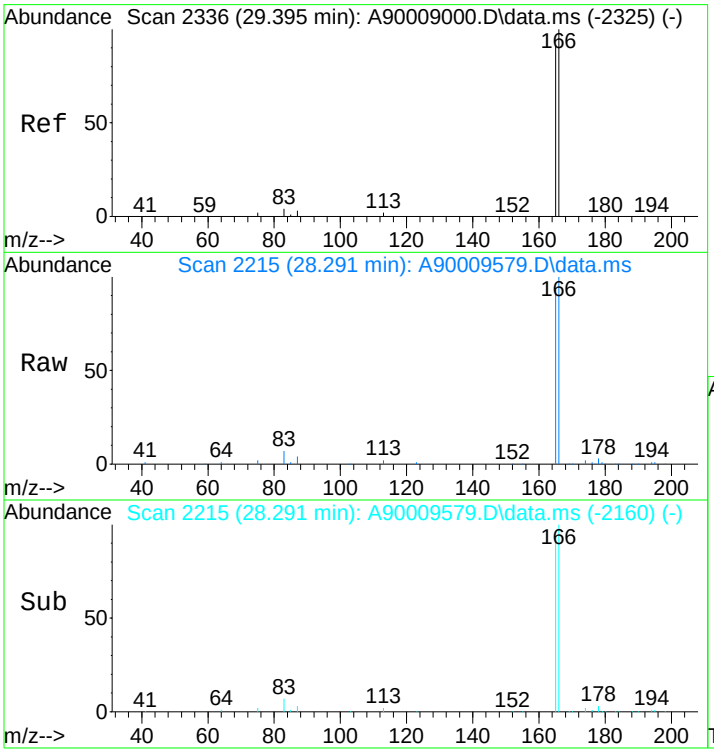


#27
Acenaphthene
Concen: 343.62 ng/mL
RT: 26.283 min Scan# 1995
Delta R.T. 0.009 min
Lab File: A90009579.D
Acq: 22 Dec 2012 6:52 pm

Tgt Ion:153 Resp: 54264

Ion	Ratio	Lower	Upper
153	100		
154	94.7	75.4	113.0

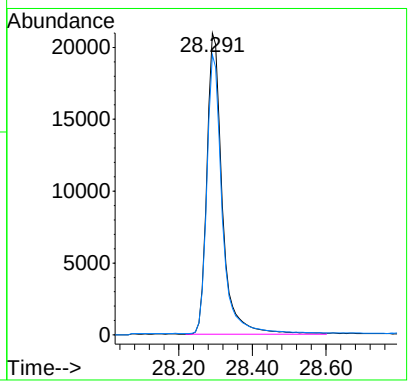


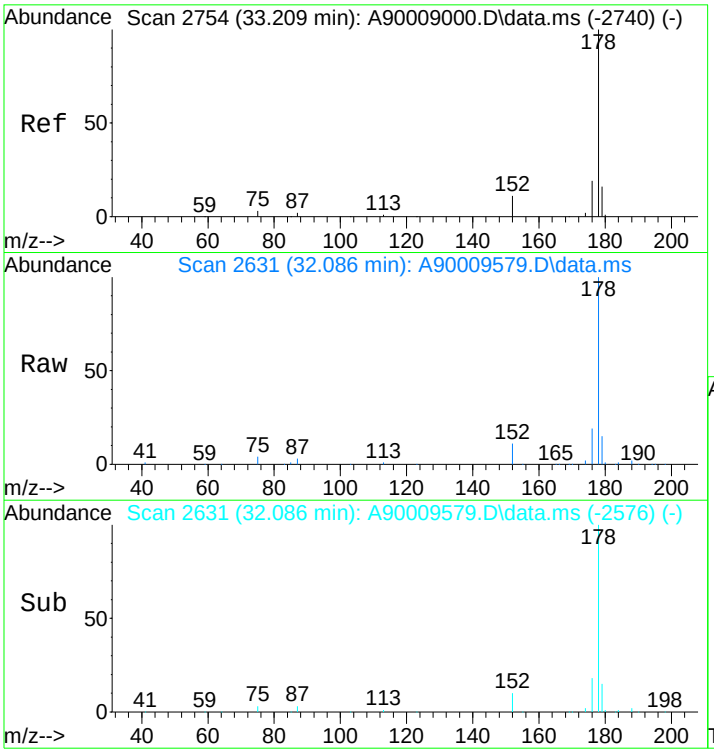


#29
Fluorene
Concen: 350.71 ng/mL
RT: 28.291 min Scan# 2215
Delta R.T. -0.000 min
Lab File: A90009579.D
Acq: 22 Dec 2012 6:52 pm

Tgt Ion:166 Resp: 60820

Ion	Ratio	Lower	Upper
166	100		
165	92.1	73.4	110.0

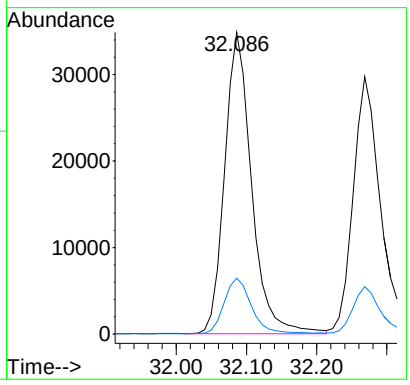


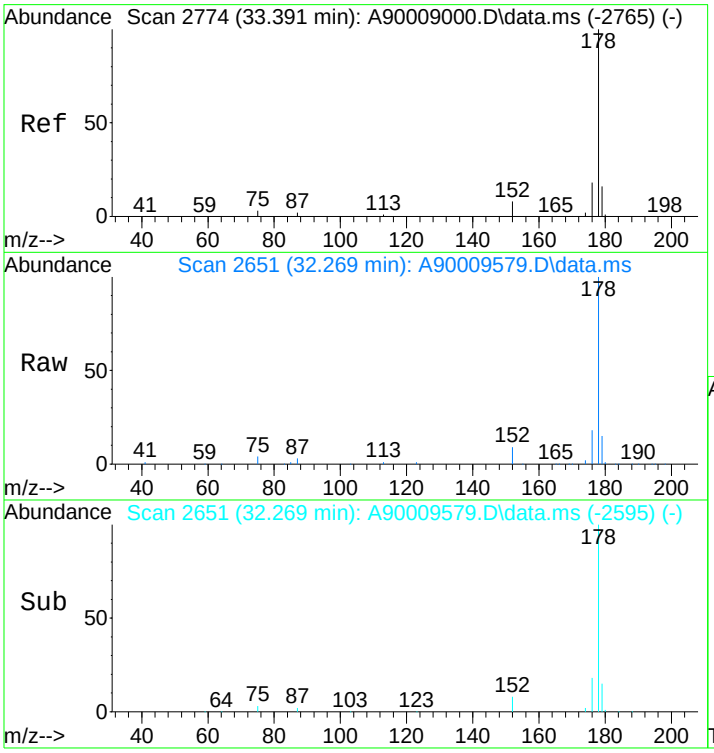


#43
Phenanthrene
Concen: 367.94 ng/mL
RT: 32.086 min Scan# 2631
Delta R.T. -0.000 min
Lab File: A90009579.D
Acq: 22 Dec 2012 6:52 pm

Tgt Ion:178 Resp: 92729

Ion	Ratio	Lower	Upper
178	100		
176	18.8	15.1	22.7

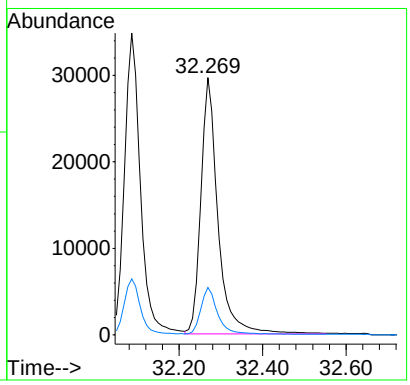


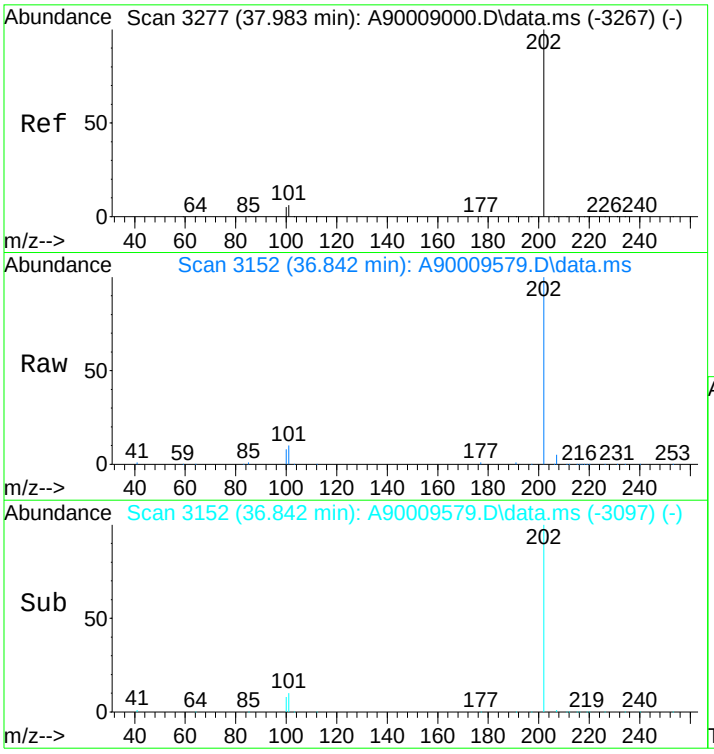


#55
Anthracene
Concen: 362.25 ng/mL m
RT: 32.269 min Scan# 2651
Delta R.T. 0.009 min
Lab File: A90009579.D
Acq: 22 Dec 2012 6:52 pm

Tgt Ion:178 Resp: 84779

Ion	Ratio	Lower	Upper
178	100		
176	17.9	14.6	21.8

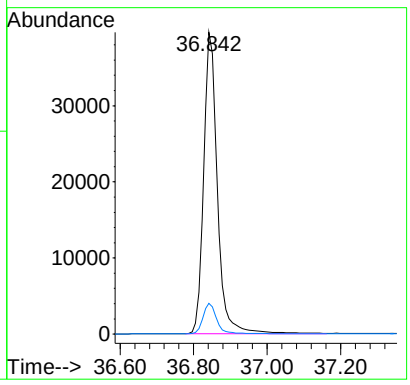


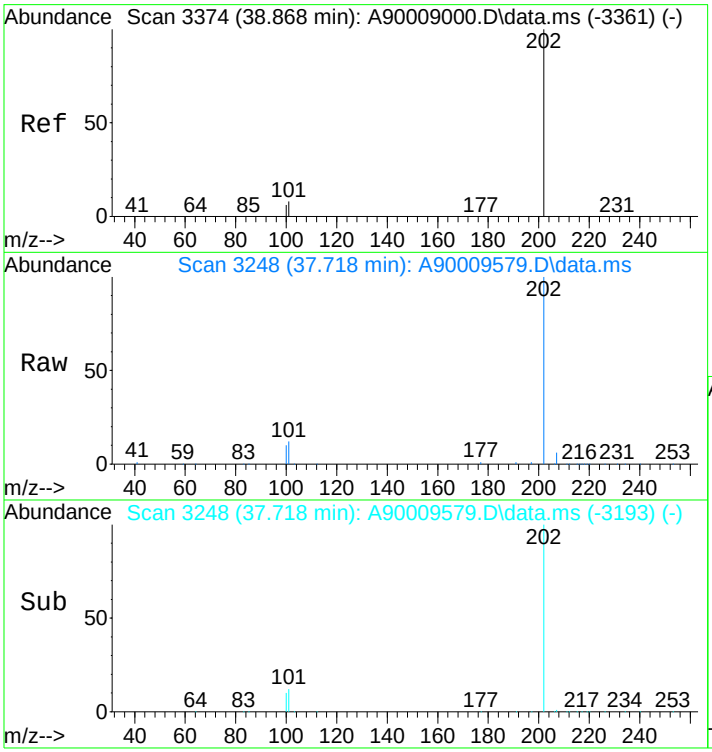


#58
Fluoranthene
Concen: 363.85 ng/mL
RT: 36.842 min Scan# 3152
Delta R.T. -0.000 min
Lab File: A90009579.D
Acq: 22 Dec 2012 6:52 pm

Tgt Ion:202 Resp: 102436

Ion	Ratio	Lower	Upper
202	100		
101	10.1	8.2	12.2

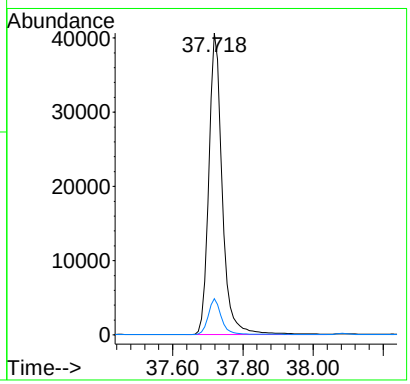


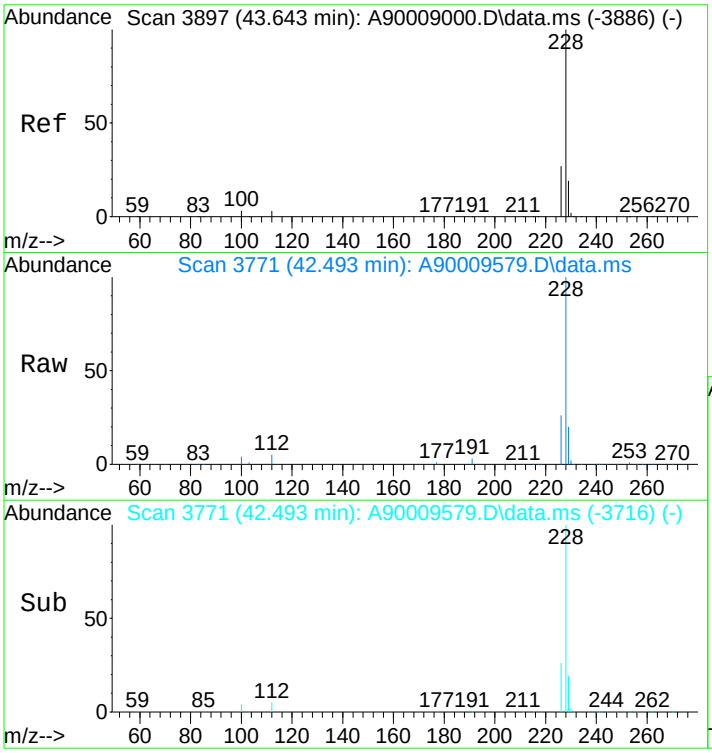


#60
Pyrene
Concen: 374.42 ng/mL
RT: 37.718 min Scan# 3248
Delta R.T. -0.000 min
Lab File: A90009579.D
Acq: 22 Dec 2012 6:52 pm

Tgt Ion:202 Resp: 107542

Ion	Ratio	Lower	Upper
202	100		
101	11.6	9.5	14.3

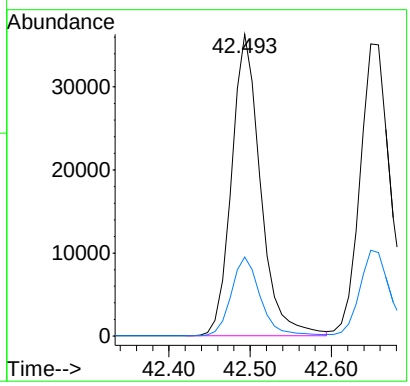


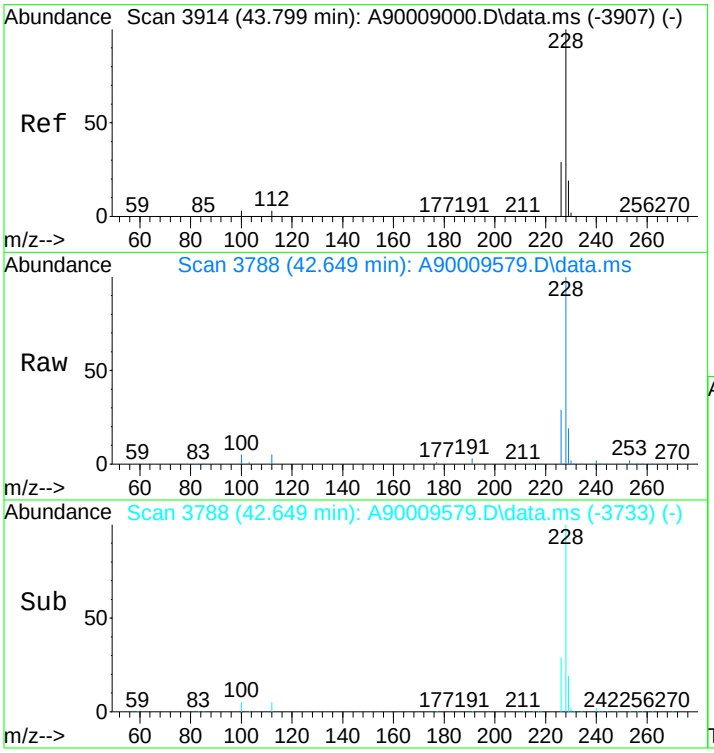


#75
Benz[a]anthracene
Concen: 328.31 ng/mL
RT: 42.493 min Scan# 3771
Delta R.T. -0.000 min
Lab File: A90009579.D
Acq: 22 Dec 2012 6:52 pm

Tgt Ion:228 Resp: 89880

Ion	Ratio	Lower	Upper
228	100		
226	26.1	20.8	31.2

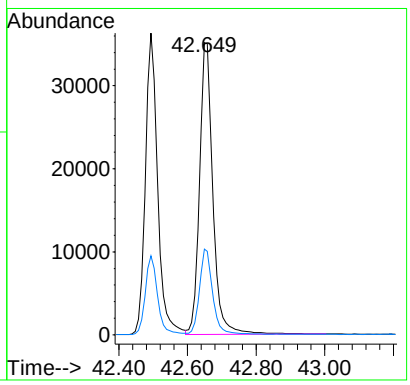


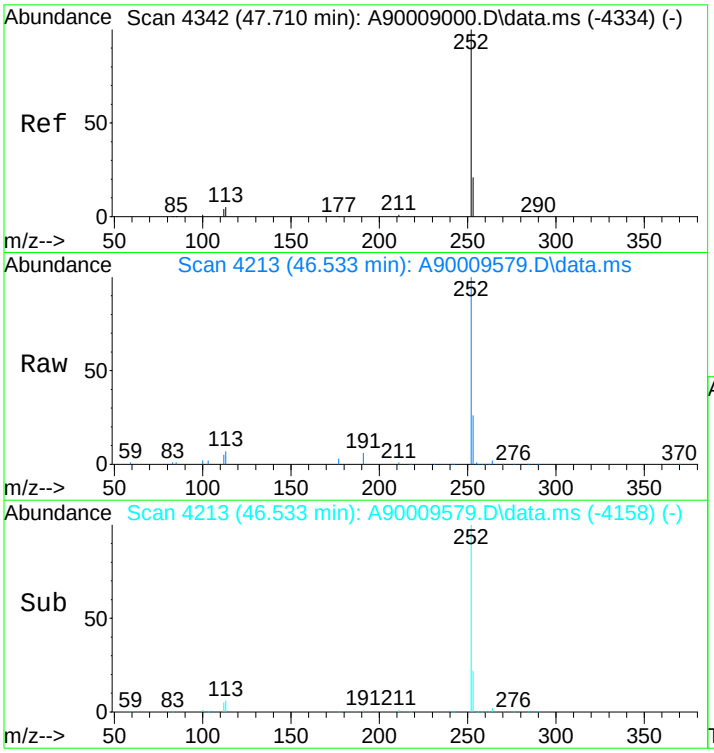


#77
Chrysene/Triphenylene
Concen: 352.55 ng/mL
RT: 42.649 min Scan# 3788
Delta R.T. -0.000 min
Lab File: A90009579.D
Acq: 22 Dec 2012 6:52 pm

Tgt Ion:228 Resp: 94925

Ion	Ratio	Lower	Upper
228	100		
226	28.6	23.3	34.9

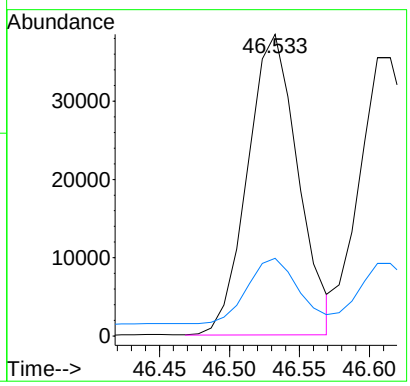


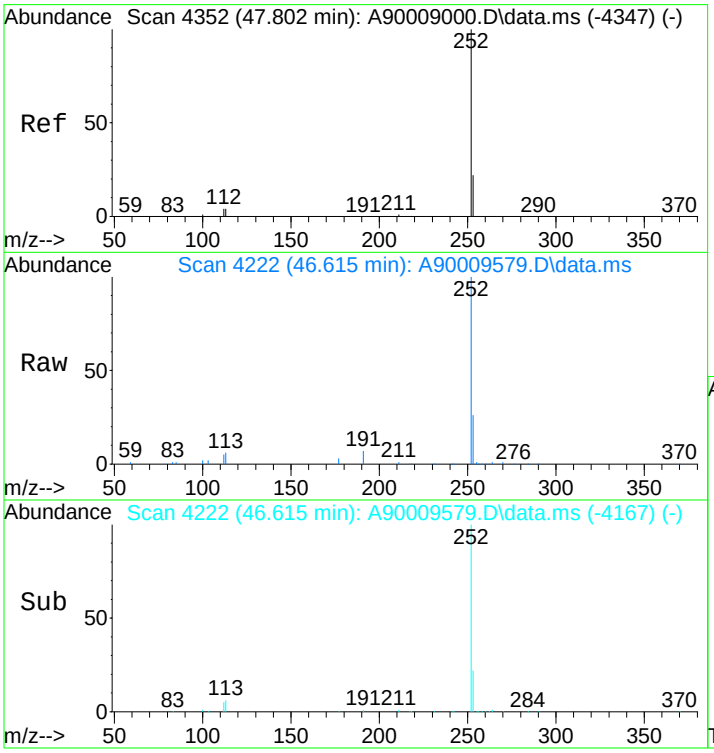


#84
Benzo[b]fluoranthene
Concen: 339.49 ng/mL
RT: 46.533 min Scan# 4213
Delta R.T. -0.000 min
Lab File: A90009579.D
Acq: 22 Dec 2012 6:52 pm

Tgt Ion:252 Resp: 96367

Ion	Ratio	Lower	Upper
252	100		
253	21.8	20.3	30.5

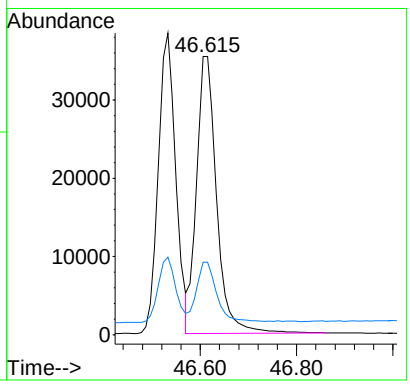


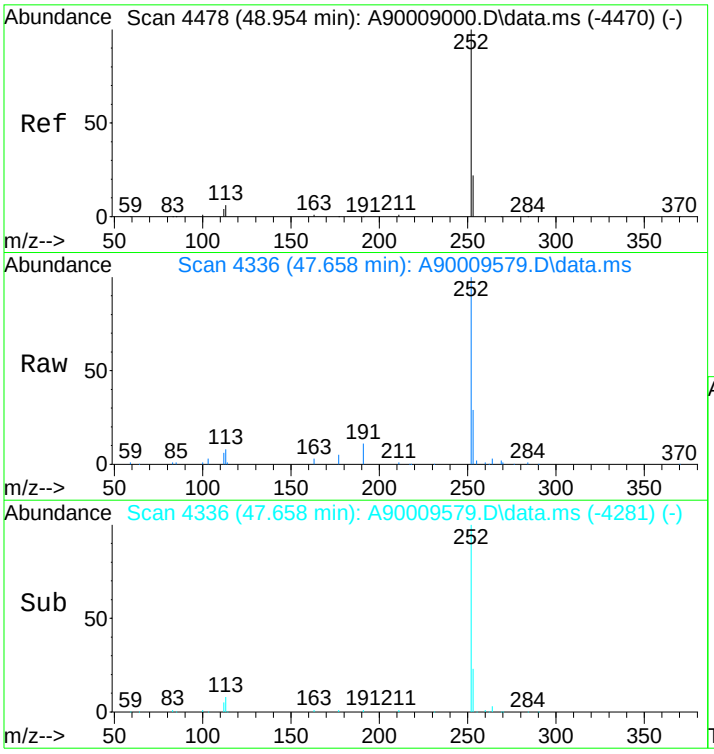


#85
Benzo[j]+[k]fluoranthene
Concen: 368.31 ng/mL
RT: 46.615 min Scan# 4222
Delta R.T. -0.000 min
Lab File: A90009579.D
Acq: 22 Dec 2012 6:52 pm

Tgt Ion:252 Resp: 102724

Ion	Ratio	Lower	Upper
252	100		
253	21.2	20.2	30.4

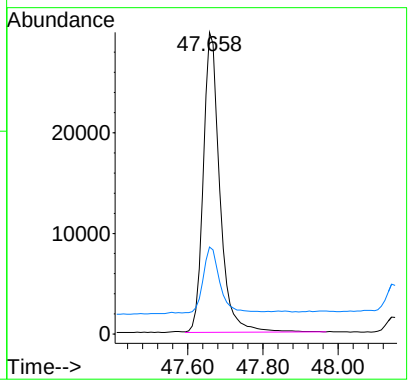


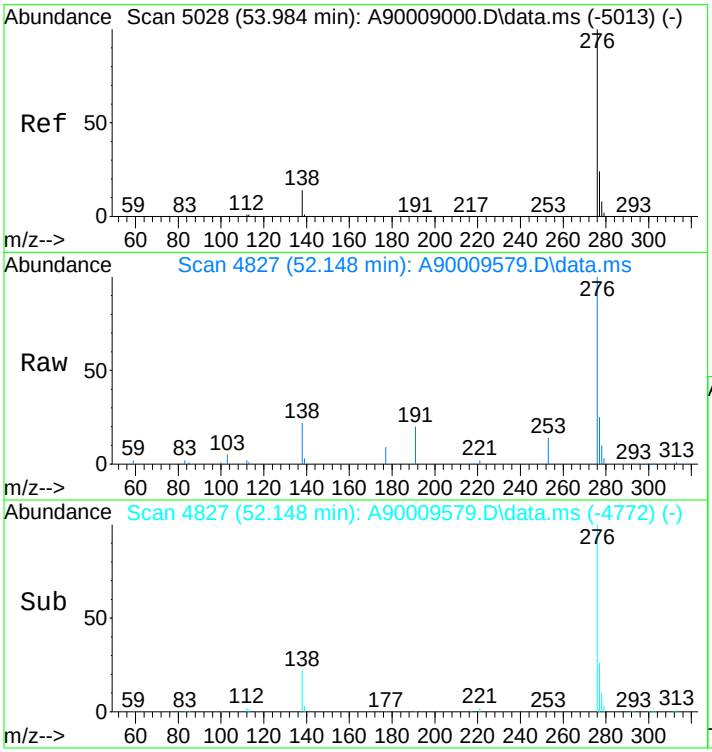


#89
Benzo[a]pyrene
Concen: 354.63 ng/mL
RT: 47.658 min Scan# 4336
Delta R.T. -0.000 min
Lab File: A90009579.D
Acq: 22 Dec 2012 6:52 pm

Tgt Ion:252 Resp: 90527

Ion	Ratio	Lower	Upper
252	100		
253	22.1	21.9	32.9

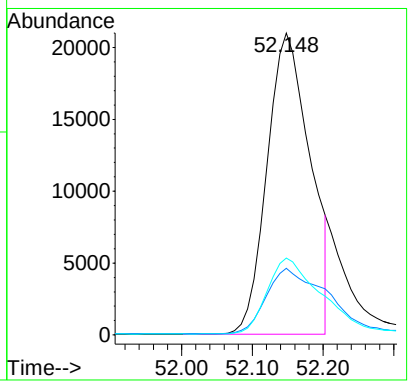


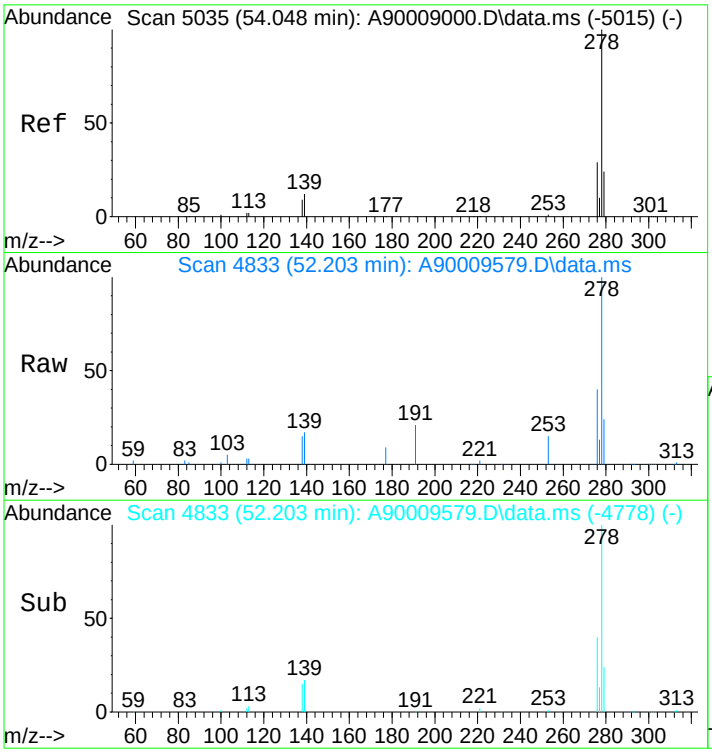


#91
Indeno[1,2,3-cd]pyrene
Concen: 314.29 ng/mL m
RT: 52.148 min Scan# 4827
Delta R.T. -0.000 min
Lab File: A90009579.D
Acq: 22 Dec 2012 6:52 pm

Tgt Ion:276 Resp: 88854

Ion	Ratio	Lower	Upper
276	100		
138	31.9	17.7	26.5#
277	33.0	20.2	30.4#

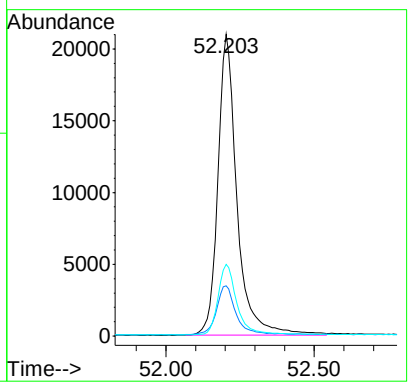


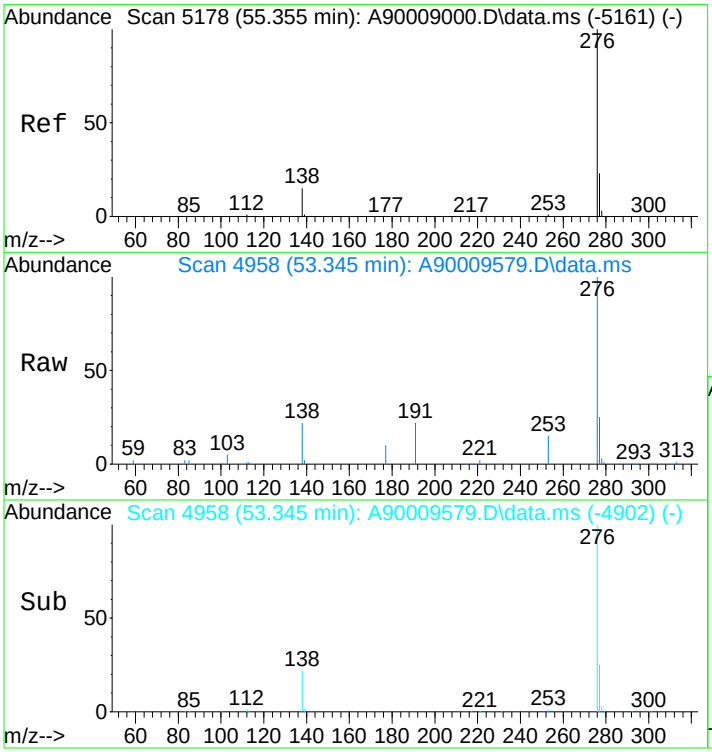


#92
Dibenz[ah]+[ac]anthracene
Concen: 336.69 ng/mL
RT: 52.203 min Scan# 4833
Delta R.T. -0.000 min
Lab File: A90009579.D
Acq: 22 Dec 2012 6:52 pm

Tgt Ion:278 Resp: 93768

Ion	Ratio	Lower	Upper
278	100		
139	16.2	13.3	19.9
279	23.1	19.3	28.9

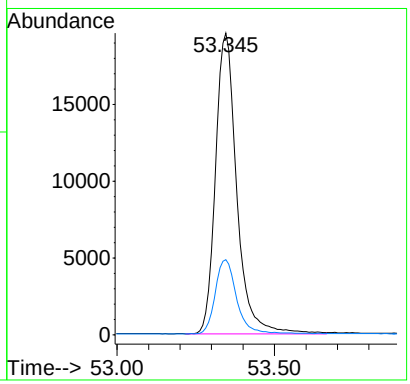




#93
Benzo[g,h,i]perylene
Concen: 330.19 ng/mL
RT: 53.345 min Scan# 4958
Delta R.T. 0.009 min
Lab File: A90009579.D
Acq: 22 Dec 2012 6:52 pm

Tgt Ion:276 Resp: 91734

Ion	Ratio	Lower	Upper
276	100		
277	25.0	20.0	30.0



Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009580.D
Acq On : 22 Dec 2012 8:16 pm
Operator : ps
Sample : SS121812C41BN02
Misc : 1X
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Dec 27 15:53:43 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : SRM1941B_REV2 - Organics in Sediment

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.156	164	61844	500.000	ng/mL	0.00
74) Chrysene-d12	42.548	240	118898	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.230	136	60536	254.672	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 25.47%#			
42) Phenanthrene-d10	31.995	188	79226	355.169	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 35.52%#			
83) Benzo[b]fluoranthene-d12	46.451	264	73390	335.793	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 33.58%#			
88) Benzo[a]pyrene-d12	47.576	264	67302	307.189	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 30.72%#			
129) 5B(H)Cholane - Surr	43.188	217	16536	331.293	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 33.13%#			
Target Compounds						Qvalue
10) Naphthalene	19.303	128	258585	1060.076	ng/mL#	100
29) Fluorene	28.291	166	13834M4	79.845	ng/mL	
43) Phenanthrene	32.086	178	162338	644.734	ng/mL	100
55) Anthracene	32.269	178	61074M4	261.205	ng/mL	
58) Fluoranthene	36.842	202	297141	1056.404	ng/mL	99
60) Pyrene	37.718	202	249026	867.806	ng/mL	100
75) Benz[a]anthracene	42.494	228	120923M3	443.393	ng/mL	
77) Chrysene/Triphenylene	42.649	228	169282	631.110	ng/mL	100
84) Benzo[b]fluoranthene	46.533	252	192595	681.094	ng/mL	93
87) Benzo[e]pyrene	47.475	252	138271	514.951	ng/mL	90
89) Benzo[a]pyrene	47.658	252	108874M4	428.135	ng/mL	
90) Perylene	47.951	252	126985M3	467.882	ng/mL	
91) Indeno[1,2,3-cd]pyrene	52.139	276	112438M3	399.230	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.194	278	32015	115.395	ng/mL	94
93) Benzo[g,h,i]perylene	53.336	276	107149	387.156	ng/mL	100

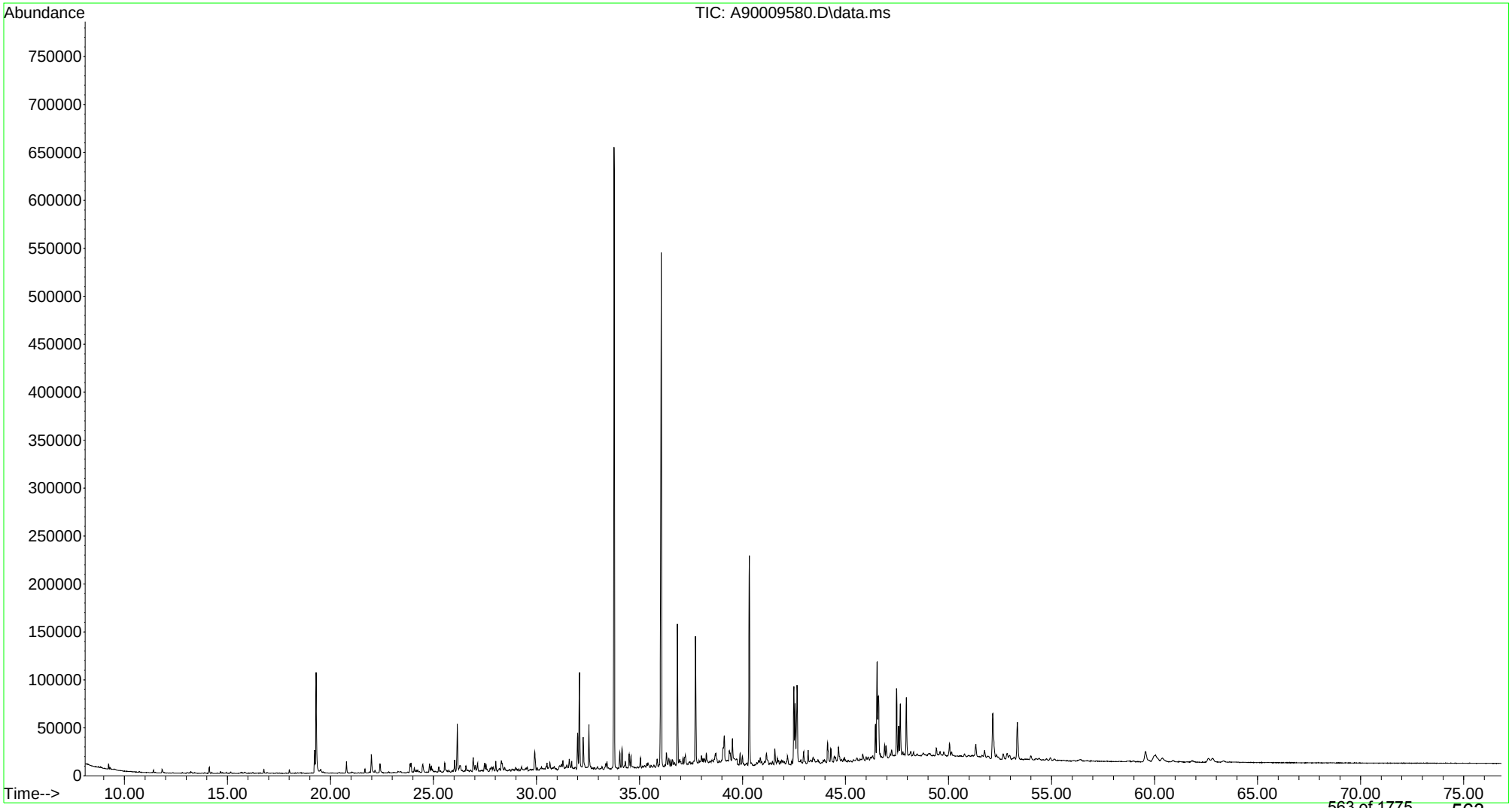
(#) = qualifier out of range (m) = manual integration (+) = signals summed

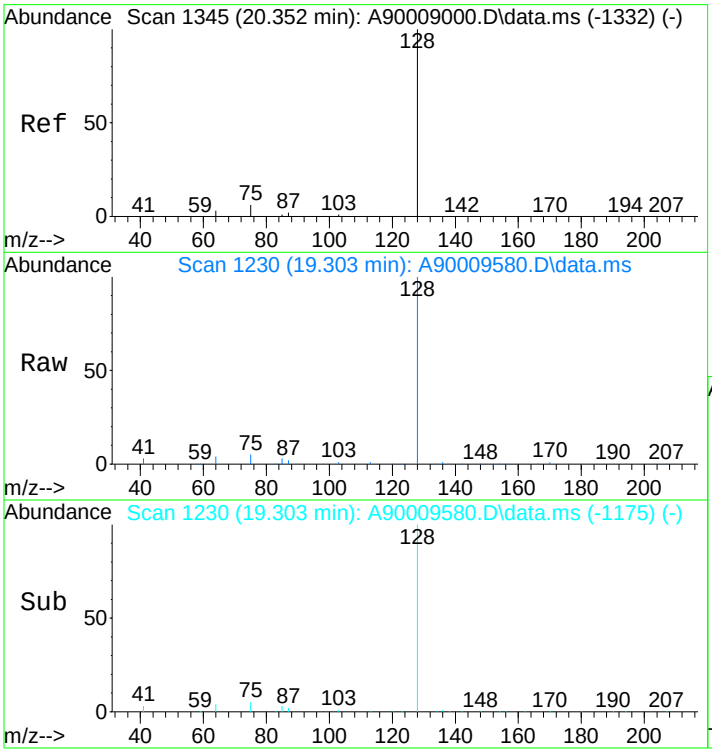
Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009580.D
Acq On : 22 Dec 2012 8:16 pm
Operator : ps
Sample : SS121812C41BN02
Misc : 1X
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Dec 27 15:53:43 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : SRM1941B_REV2 - Organics in Sediment

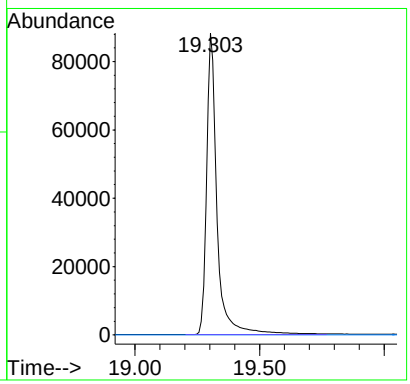


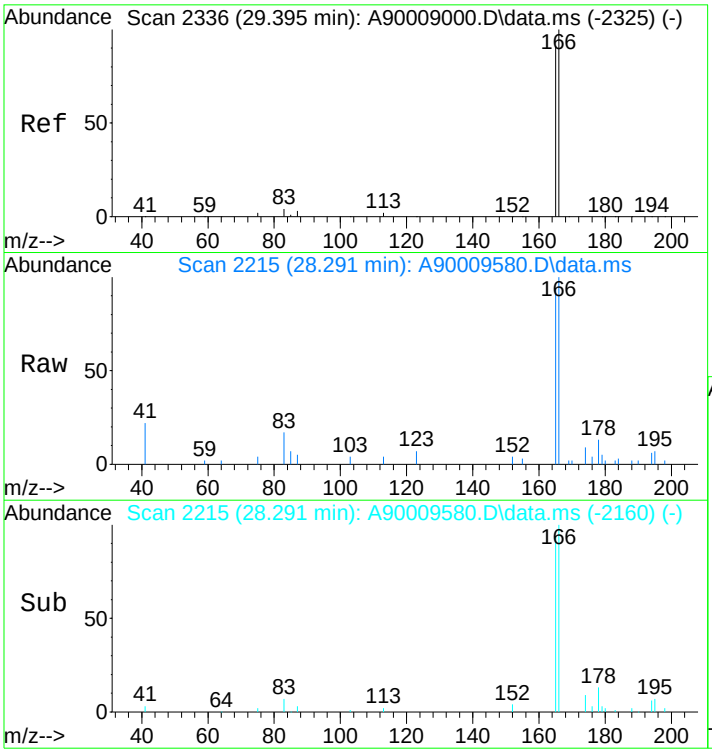


#10
Naphthalene
Concen: 1060.08 ng/mL
RT: 19.303 min Scan# 1230
Delta R.T. 0.000 min
Lab File: A90009580.D
Acq: 22 Dec 2012 8:16 pm

Tgt Ion:128 Resp: 258585

Ion	Ratio	Lower	Upper
128	100		
127	0.0	0.0	0.0

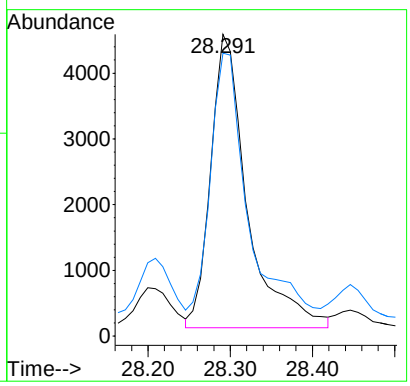


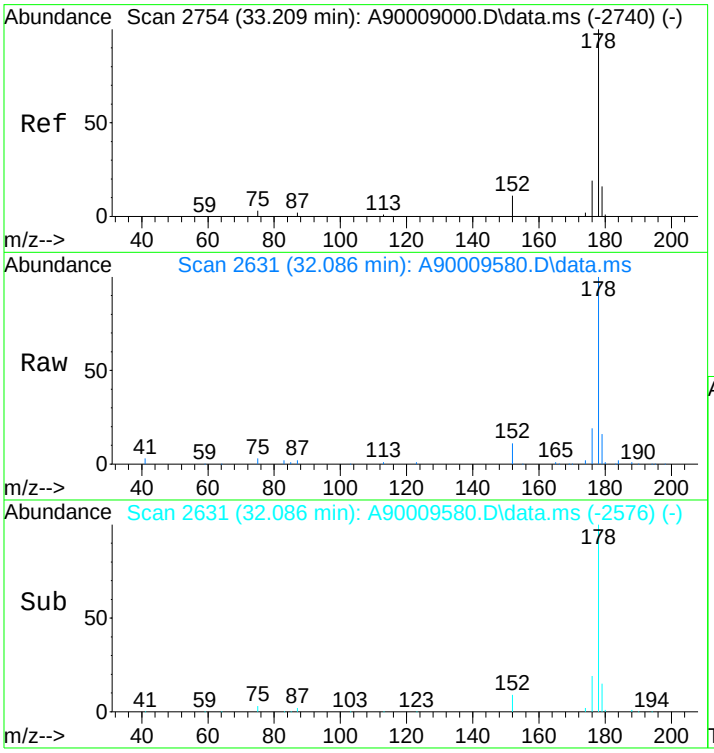


#29
Fluorene
Concen: 79.85 ng/mL m
RT: 28.291 min Scan# 2215
Delta R.T. 0.000 min
Lab File: A90009580.D
Acq: 22 Dec 2012 8:16 pm

Tgt Ion:166 Resp: 13834

Ion	Ratio	Lower	Upper
166	100		
165	103.8	73.4	110.0

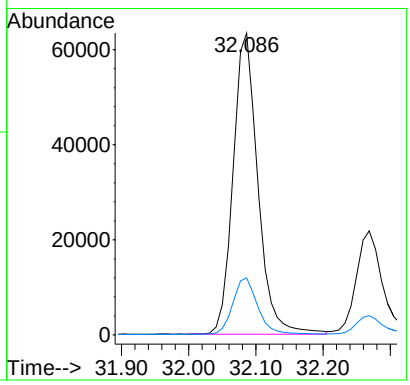


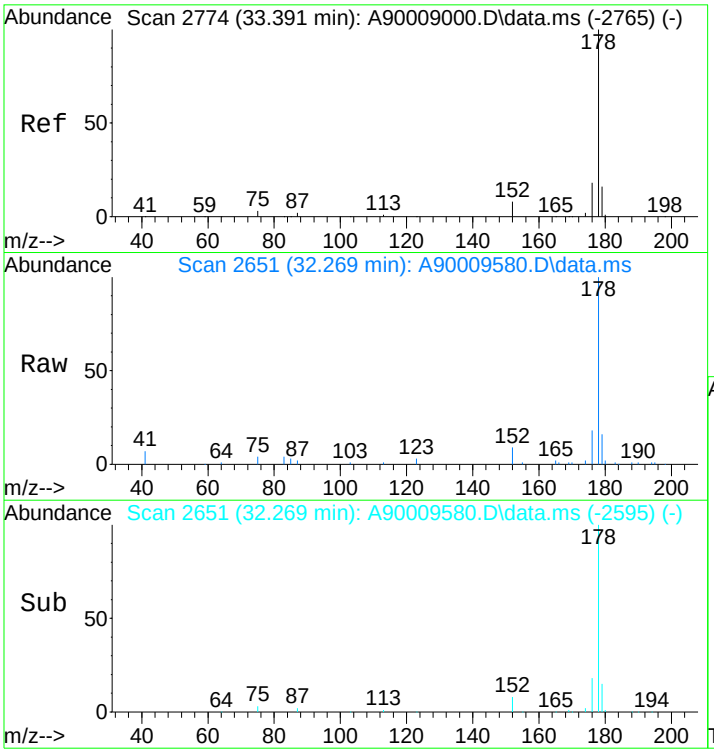


#43
Phenanthrene
Concen: 644.73 ng/mL
RT: 32.086 min Scan# 2631
Delta R.T. 0.000 min
Lab File: A90009580.D
Acq: 22 Dec 2012 8:16 pm

Tgt Ion:178 Resp: 162338

Ion	Ratio	Lower	Upper
178	100		
176	19.0	15.1	22.7

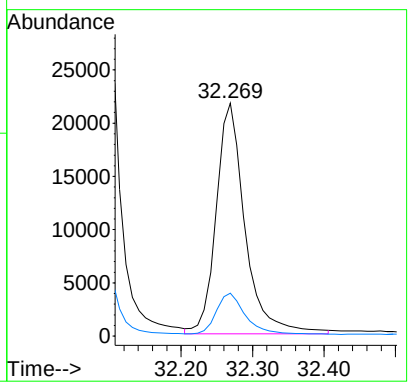


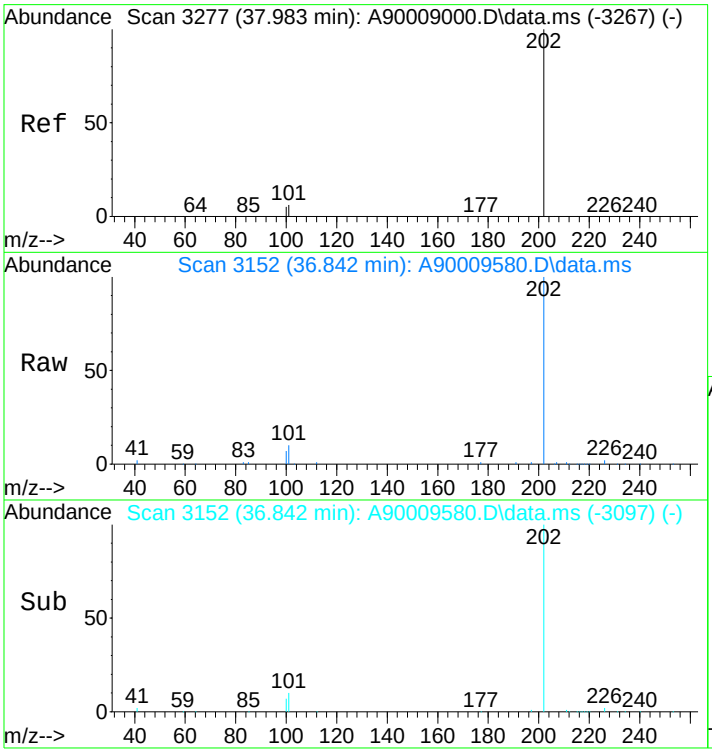


#55
Anthracene
Concen: 261.20 ng/mL m
RT: 32.269 min Scan# 2651
Delta R.T. 0.009 min
Lab File: A90009580.D
Acq: 22 Dec 2012 8:16 pm

Tgt Ion:178 Resp: 61074

Ion	Ratio	Lower	Upper
178	100		
176	18.3	14.6	21.8

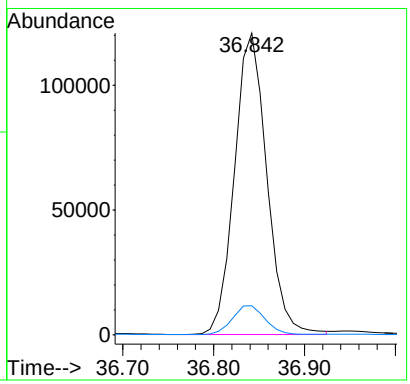


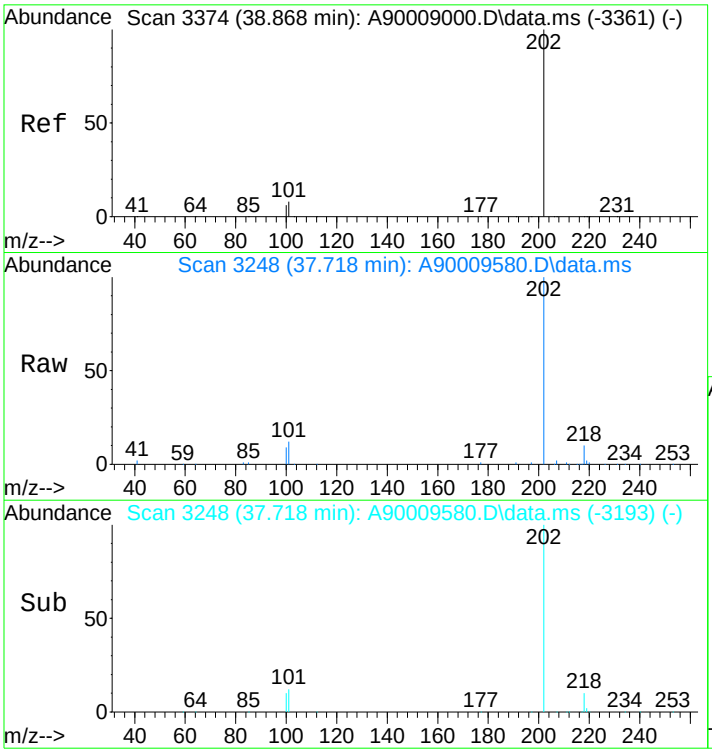


#58
Fluoranthene
Concen: 1056.40 ng/mL
RT: 36.842 min Scan# 3152
Delta R.T. 0.000 min
Lab File: A90009580.D
Acq: 22 Dec 2012 8:16 pm

Tgt Ion:202 Resp: 297141

Ion	Ratio	Lower	Upper
202	100		
101	9.8	8.2	12.2

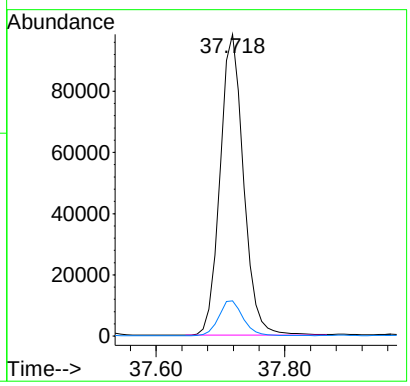


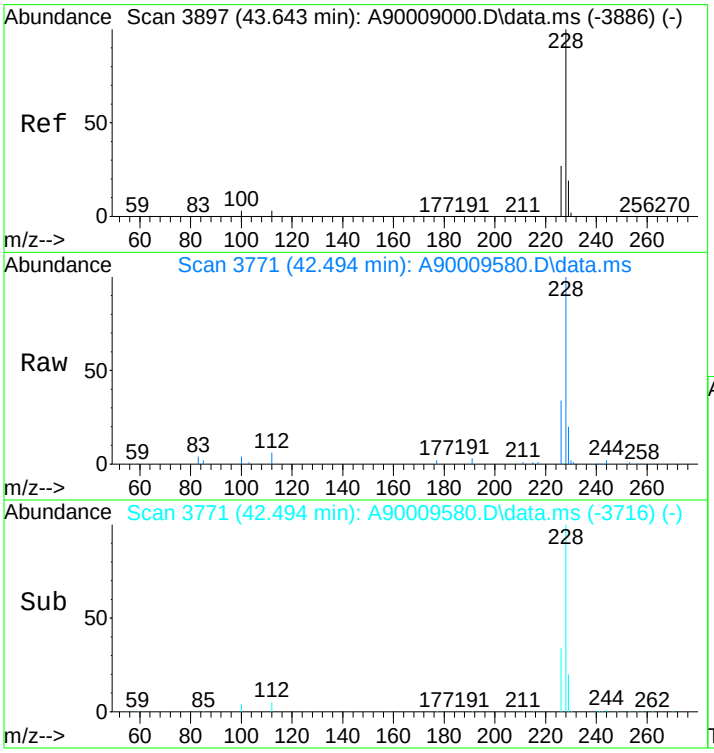


#60
Pyrene
Concen: 867.81 ng/mL
RT: 37.718 min Scan# 3248
Delta R.T. 0.000 min
Lab File: A90009580.D
Acq: 22 Dec 2012 8:16 pm

Tgt Ion:202 Resp: 249026

Ion	Ratio	Lower	Upper
202	100		
101	12.1	9.5	14.3

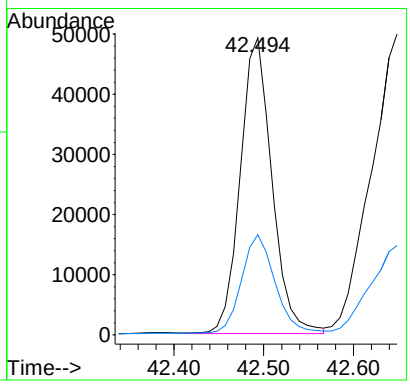


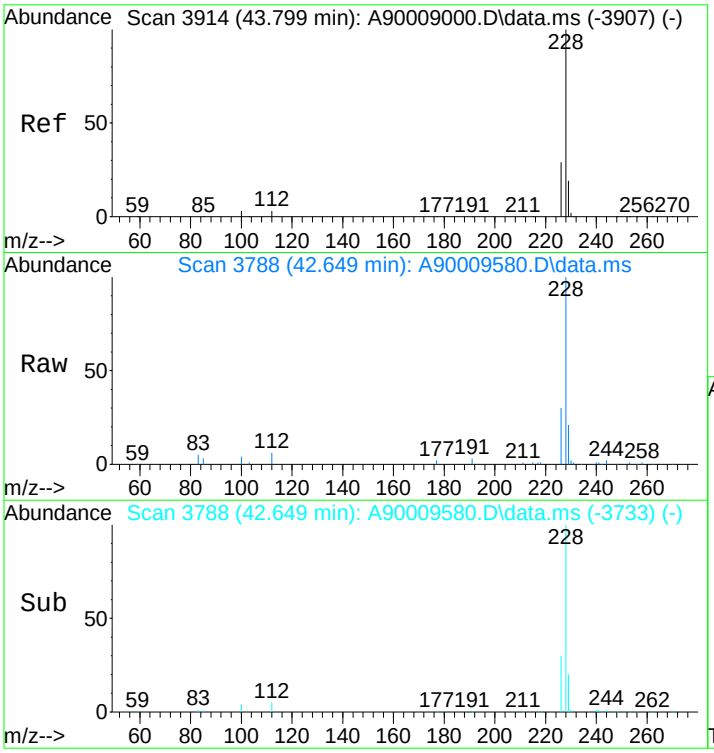


#75
Benz[a]anthracene
Concen: 443.39 ng/mL m
RT: 42.494 min Scan# 3771
Delta R.T. 0.000 min
Lab File: A90009580.D
Acq: 22 Dec 2012 8:16 pm

Tgt Ion:228 Resp: 120923

Ion	Ratio	Lower	Upper
228	100		
226	0.1	20.8	31.2#

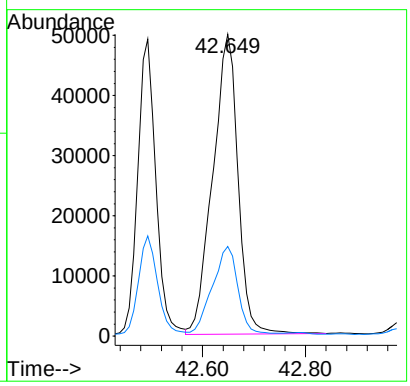


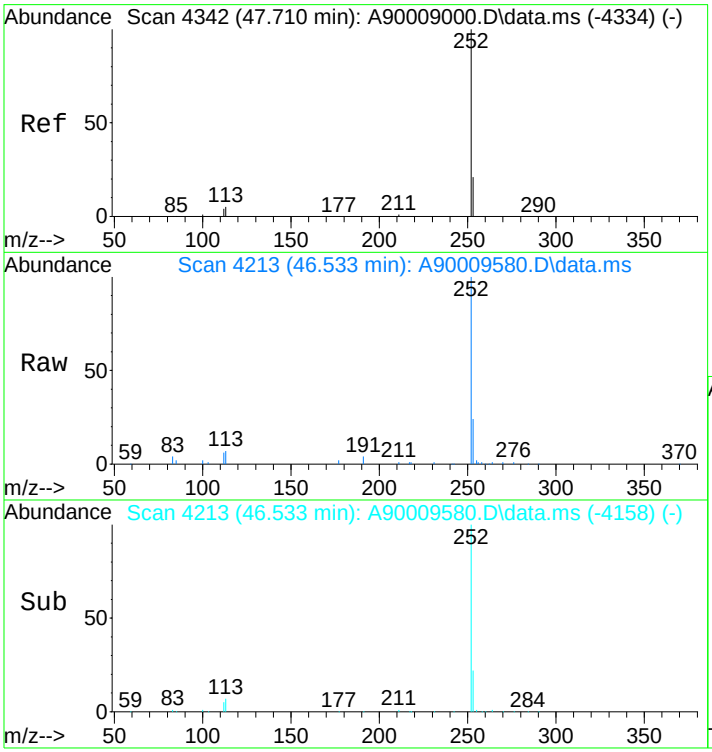


#77
Chrysene/Triphenylene
Concen: 631.11 ng/mL
RT: 42.649 min Scan# 3788
Delta R.T. 0.000 min
Lab File: A90009580.D
Acq: 22 Dec 2012 8:16 pm

Tgt Ion:228 Resp: 169282

Ion	Ratio	Lower	Upper
228	100		
226	29.1	23.3	34.9

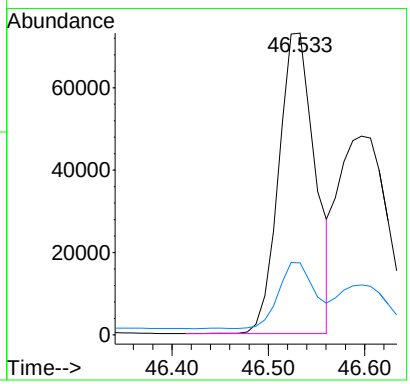


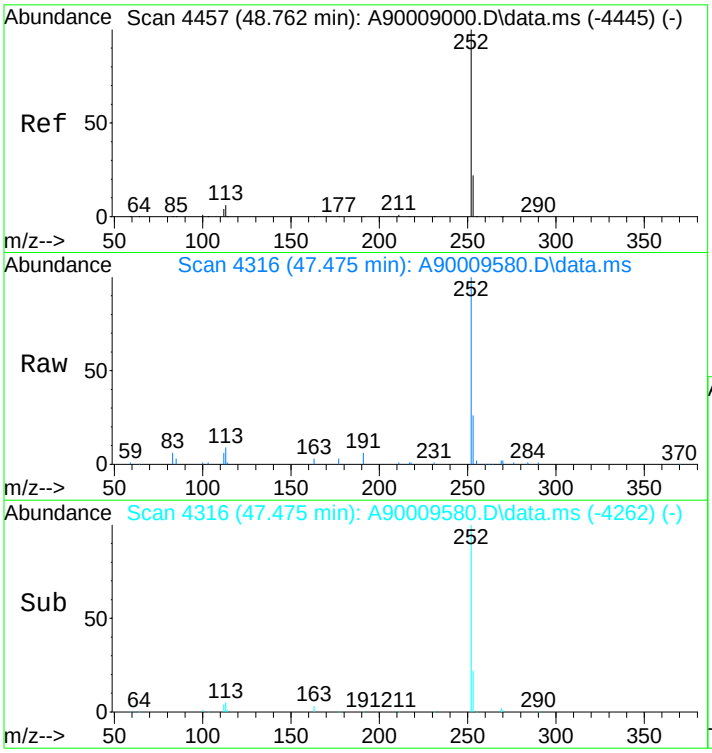


#84
Benzo[b]fluoranthene
Concen: 681.09 ng/mL
RT: 46.533 min Scan# 4213
Delta R.T. 0.000 min
Lab File: A90009580.D
Acq: 22 Dec 2012 8:16 pm

Tgt Ion:252 Resp: 192595

Ion	Ratio	Lower	Upper
252	100		
253	21.9	20.3	30.5

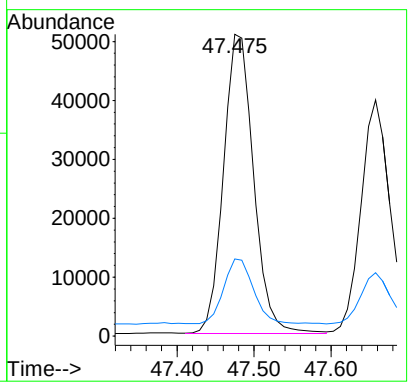


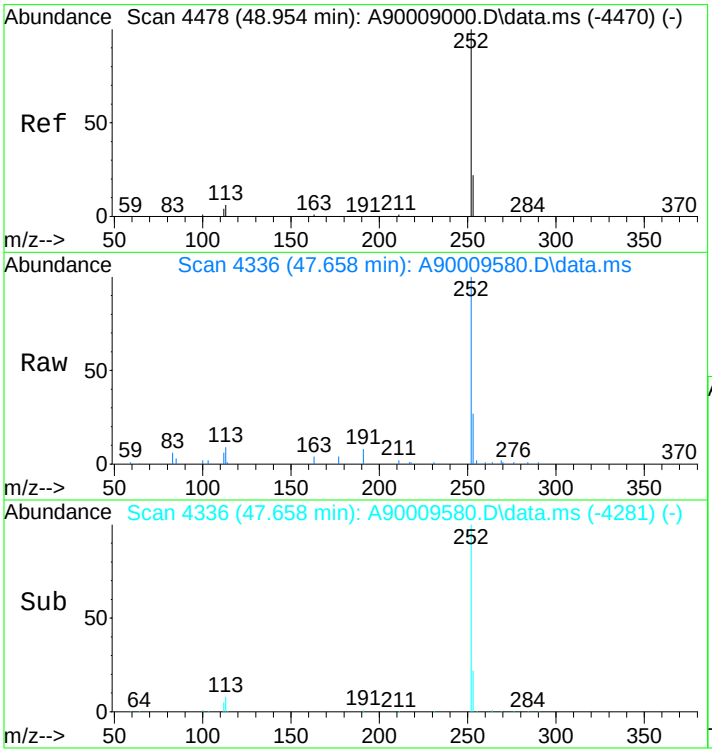


#87
Benzo[e]pyrene
Concen: 514.95 ng/mL
RT: 47.475 min Scan# 4316
Delta R.T. -0.009 min
Lab File: A90009580.D
Acq: 22 Dec 2012 8:16 pm

Tgt Ion:252 Resp: 138271

Ion	Ratio	Lower	Upper
252	100		
253	21.5	21.4	32.0

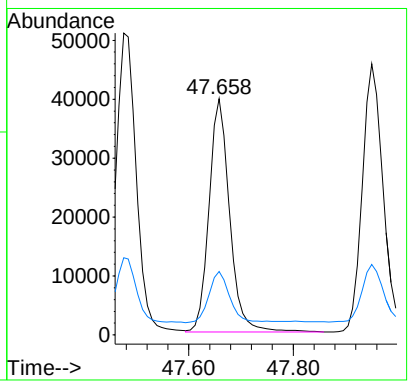


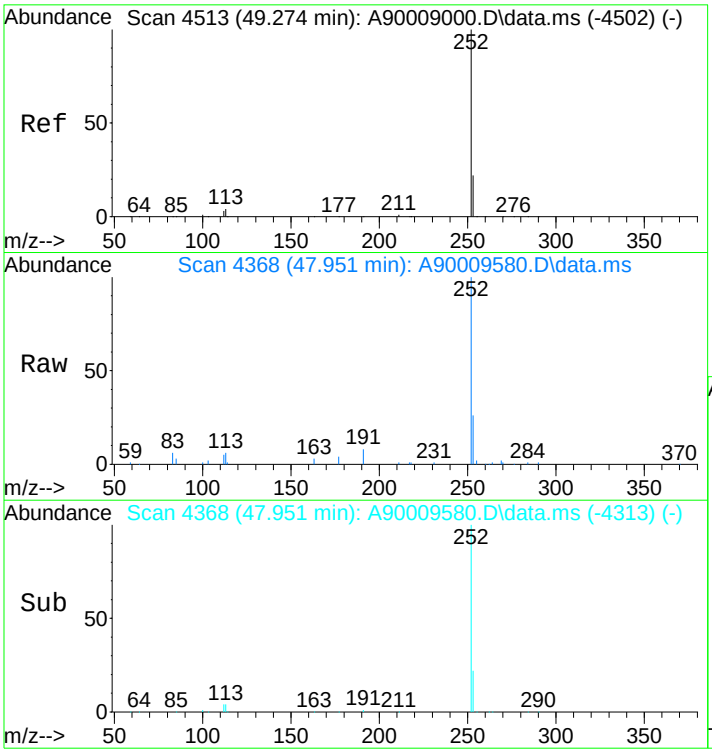


#89
Benzo[a]pyrene
Concen: 428.13 ng/mL m
RT: 47.658 min Scan# 4336
Delta R.T. 0.000 min
Lab File: A90009580.D
Acq: 22 Dec 2012 8:16 pm

Tgt Ion:252 Resp: 108874

Ion	Ratio	Lower	Upper
252	100		
253	22.2	21.9	32.9

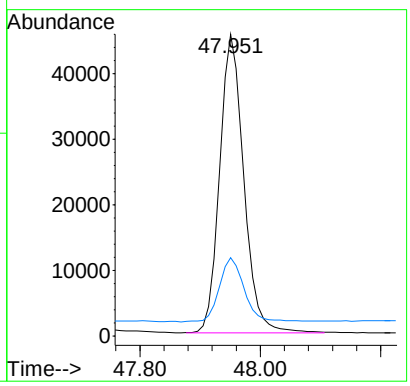


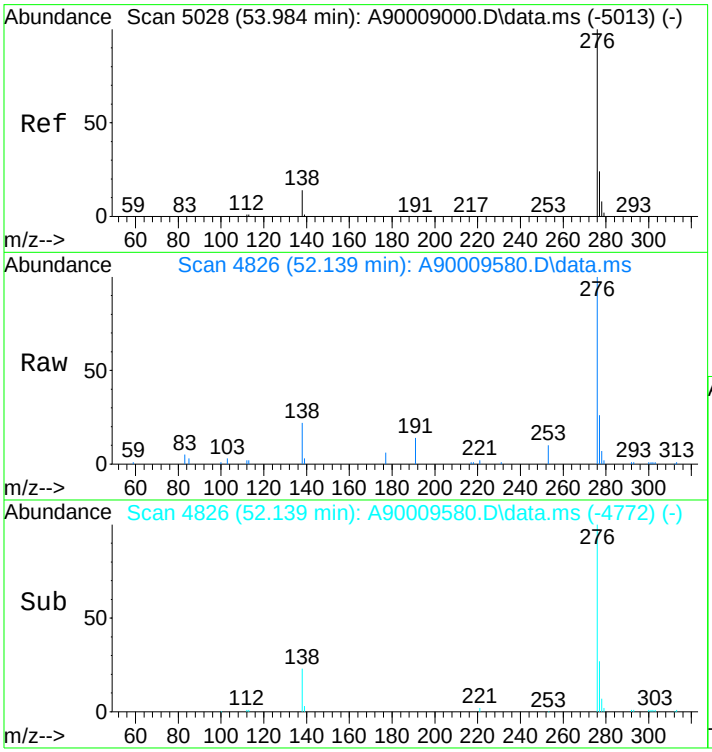


#90
Perylene
Concen: 467.88 ng/mL m
RT: 47.951 min Scan# 4368
Delta R.T. 0.000 min
Lab File: A90009580.D
Acq: 22 Dec 2012 8:16 pm

Tgt Ion:252 Resp: 126985

Ion	Ratio	Lower	Upper
252	100		
253	19.0	22.2	33.2#

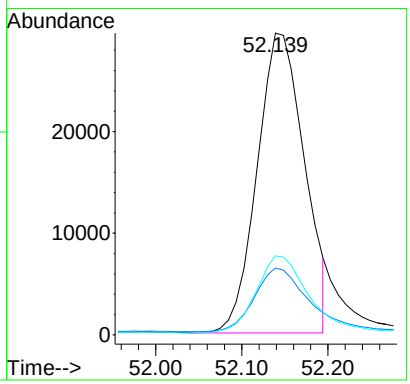


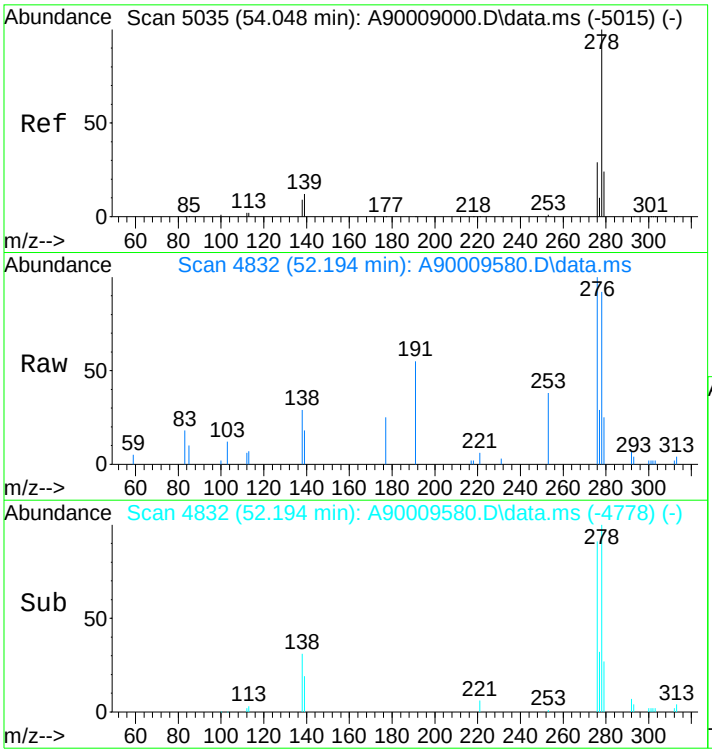


#91
Indeno[1,2,3-cd]pyrene
Concen: 399.23 ng/mL m
RT: 52.139 min Scan# 4826
Delta R.T. -0.009 min
Lab File: A90009580.D
Acq: 22 Dec 2012 8:16 pm

Tgt Ion:276 Resp: 112438

Ion	Ratio	Lower	Upper
276	100		
138	25.0	17.7	26.5
277	28.9	20.2	30.4

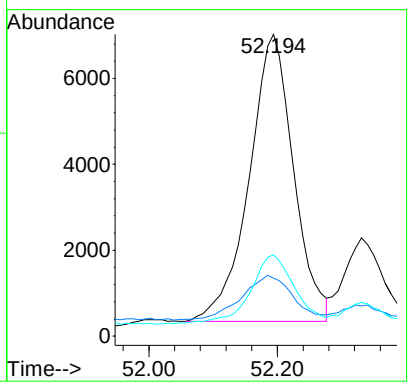


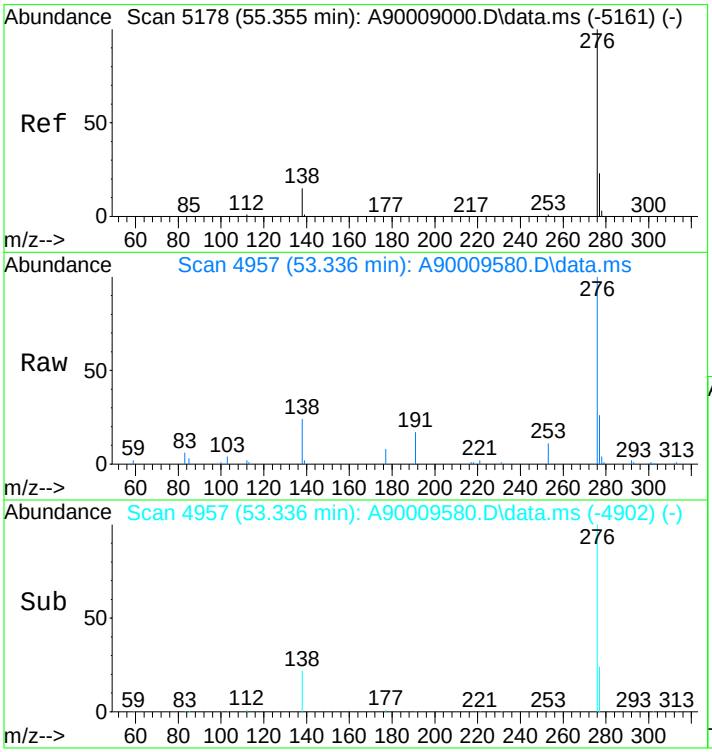


#92
Dibenz[ah]+[ac]anthracene
Concen: 115.40 ng/mL
RT: 52.194 min Scan# 4832
Delta R.T. -0.009 min
Lab File: A90009580.D
Acq: 22 Dec 2012 8:16 pm

Tgt Ion:278 Resp: 32015

Ion	Ratio	Lower	Upper
278	100		
139	16.1	13.3	19.9
279	19.4	19.3	28.9

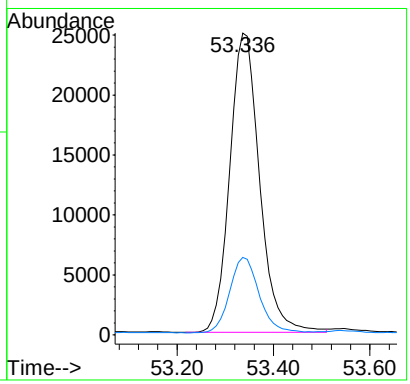




#93
Benzo[g,h,i]perylene
Concen: 387.16 ng/mL
RT: 53.336 min Scan# 4957
Delta R.T. 0.000 min
Lab File: A90009580.D
Acq: 22 Dec 2012 8:16 pm

Tgt Ion:276 Resp: 107149

Ion	Ratio	Lower	Upper
276	100		
277	25.1	20.0	30.0



Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009582.D
Acq On : 22 Dec 2012 11:06 pm
Operator : ps
Sample : SS122712CL03
Misc : WHAQ74:5.064mg/kg
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Dec 27 15:59:19 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.156	164	63842	500.000	ng/mL	0.00
74) Chrysene-d12	42.557	240	119050	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.230	136	222470	906.628	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 90.66%			
42) Phenanthrene-d10	31.995	188	242604	1053.554	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 105.36%			
83) Benzo[b]fluoranthene-d12	46.460	264	227952	1041.653	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 104.17%			
88) Benzo[a]pyrene-d12	47.575	264	217234	990.265	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 99.03%			
129) 5B(H)Cholane - Surr	43.187	217	53835	1077.188	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 107.72%			
Target Compounds						Qvalue
3) trans-Decalin	15.908	138	36074	642.724	ng/mL	100
4) cis-Decalin	17.112	138	2328M3	52.982	ng/mL	
5) C1-Decalins	17.377	152	85233M5	1518.581	ng/mL	
6) C2-Decalins	18.791	166	138795M5	2472.885	ng/mL	
7) C3-Decalins	21.602	180	110496M5	1968.687	ng/mL	
8) C4-Decalins	24.239	194	106619M5	1899.611	ng/mL	
10) Naphthalene	19.302	128	80889	321.229	ng/mL#	100
11) C1-Naphthalenes	21.985	142	234595M5	931.630	ng/mL	
12) C2-Naphthalenes	24.805	156	525048M5	2085.084	ng/mL	
13) C3-Naphthalenes	27.479	170	672667M5	2671.313	ng/mL	
14) C4-Naphthalenes	30.216	184	574681M5	2282.188	ng/mL	
16) 2-Methylnaphthalene	21.985	142	139177	845.152	ng/mL#	100
17) 1-Methylnaphthalene	22.405	142	95336	596.543	ng/mL#	100
18) Benzothiophene	19.522	134	9029M4	42.846	ng/mL	
19) C1-Benzo(b)thiophenes	21.557	148	51904M5	246.306	ng/mL	
20) C2-Benzo(b)thiophenes	25.006	162	93989M5	446.017	ng/mL	
21) C3-Benzo(b)thiophenes	26.977	176	173645M5	824.018	ng/mL	
22) C4-Benzo(b)thiophenes	29.076	190	189462M5	899.076	ng/mL	
23) Biphenyl	23.865	154	16737	77.665	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.477	156	130113	840.522	ng/mL#	100
25) Dibenzofuran	26.931	168	9859	42.893	ng/mL#	43
26) Acenaphthylene	25.554	152	4061M4	15.677	ng/mL	
27) Acenaphthene	26.274	153	11247M4	69.055	ng/mL	
28) 2,3,5-Trimethylnaphthalen	27.835	170	39561M3	277.971	ng/mL	
29) Fluorene	28.291	166	25068M4	140.156	ng/mL	
30) C1-Fluorenes	30.645	180	76545M5	427.967	ng/mL	
31) C2-Fluorenes	32.834	194	172965M5	967.056	ng/mL	
32) C3-Fluorenes	34.669	208	207474M5	1159.998	ng/mL	
33) Dibenzothiophene	31.594	184	83651	332.485	ng/mL#	63
34) 4-Methyldibenzothiophene(	33.364	198	112061	445.406	ng/mL#	100
35) 2/3-Methyldibenzothiophen	33.711	198	87208	346.623	ng/mL#	100
36) 1-Methyldibenzothiophene(	34.131	198	59549	236.688	ng/mL#	100
37) OTP	33.793	198	31476	125.107	ng/mL#	100
38) C1-Dibenzothiophenes	33.364	198	309736M5	1231.099	ng/mL	
38) C1-Dibenzothiophenes BS	33.364	198	278260m	1105.992	ng/mL	
39) C2-Dibenzothiophenes	35.044	212	531882M5	2114.056	ng/mL	
40) C3-Dibenzothiophenes	36.851	226	576840M5	2292.750	ng/mL	
41) C4-Dibenzothiophenes	38.540	240	408790M5	1624.806	ng/mL	
43) Phenanthrene	32.086	178	104413M3	401.704	ng/mL	

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009582.D
Acq On : 22 Dec 2012 11:06 pm
Operator : ps
Sample : SS122712CL03
Misc : WHAQ74:5.064mg/kg
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Dec 27 15:59:19 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
44) 3-Methylphenanthrene(3MP)	34.049	192	57940	222.910	ng/mL	93
45) 2-Methylphenanthrene(2MP)	34.158	192	66783	256.932	ng/mL	97
46) 2-Methylanthracene(2MA)	34.322	192	8429M3	32.429	ng/mL	
47) 9/4-Methylphenanthrene(9M	34.496	192	101077	388.689	ng/mL	99
48) 1-Methylphenanthrene(1MP)	34.587	192	59442	228.689	ng/mL	98
49) C1-Phenanthrenes/Anthrace	34.496	192	299726M5	1153.124	ng/mL	
50) C2-Phenanthrenes/Anthrace	36.312	206	464231M5	1786.017	ng/mL	
50) C2-Phenanthrenes/Anthr BS	36.312	206	464231m	1786.017	ng/mL	
52) C3-Phenanthrenes/Anthrace	39.408	220	440119M5	1693.252	ng/mL	
53) C4-Phenanthrenes/Anthrace	40.321	234	200073M5	769.733	ng/mL	
54) Retene	39.061	234	17613M4	246.489	ng/mL	
56) Carbazole	32.944	167	6558M3	28.721	ng/mL	
57) 1-Methylphenanthrene	34.587	192	59245	308.934	ng/mL	99
58) Fluoranthene	36.842	202	8482M4	29.212	ng/mL	
60) Pyrene	37.728	202	27402M4	92.502	ng/mL	
61) C1-Fluoranthenes/Pyrenes	39.115	216	97253M5	328.301	ng/mL	
62) C2-Fluoranthenes/Pyrenes	40.923	230	133321M5	450.057	ng/mL	
63) C3-Fluoranthenes/Pyrenes	42.941	244	161740M5	545.992	ng/mL	
64) C4-Fluoranthenes/Pyrenes	44.292	258	153725M5	518.936	ng/mL	
66) Naphthobenzothiophene	41.571	234	33862M4	131.737	ng/ml	
67) Naphthobenzothiophene-2,1	41.571	234	33789M4	131.453	ng/mL	
68) Naphthobenzothiophene-1,2	41.909	234	9332M4	36.305	ng/mL	
69) Naphthobenzothiophene-2,3	42.210	234	5816M3	22.627	ng/mL	
70) C1-Naphthobenzothiophenes	42.968	248	164506M5	639.997	ng/ml	
71) C2-Naphthobenzothiophenes	45.014	262	239772M5	932.813	ng/ml	
72) C3-Naphthobenzothiophenes	46.578	276	186290M5	724.746	ng/ml	
73) C4-Naphthobenzothiophenes	47.603	290	160658M5	625.027	ng/mL	
75) Benz[a]anthracene	42.503	228	5646M4	20.676	ng/mL	
77) Chrysene/Triphenylene	42.649	228	27397M4	102.010	ng/mL	
78) C1-Chrysenes	44.128	242	77419M5	288.262	ng/mL	
79) C2-Chrysenes	46.213	256	126798M5	472.119	ng/mL	
79) C2-Chrysenes BS	46.213	256	118270m	440.366	ng/mL	
80) BBF-d12 Surr BKGD	46.450	256	8528	31.753	ng/mL	100
81) C3-Chrysenes	47.511	270	132169M5	492.117	ng/mL	
82) C4-Chrysenes	48.874	284	85586M5	318.670	ng/mL	
84) Benzo[b]fluoranthene	46.542	252	7316	25.839	ng/mL	97
85) Benzo[j]+[k]fluoranthene	46.606	252	2525M3	9.076	ng/mL	
87) Benzo[e]pyrene	47.484	252	10785M3	40.114	ng/mL	
89) Benzo[a]pyrene	47.667	252	5561M3	21.840	ng/mL	
90) Perylene	47.960	252	13277M3	48.857	ng/mL	
91) Indeno[1,2,3-cd]pyrene	52.157	276	3610M4	12.802	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.203	278	1379M4	4.964	ng/mL	
93) Benzo[g,h,i]perylene	53.354	276	8618	31.099	ng/mL#	71
94) Hopane (T19)	51.325	191	120916M3	1155.263	ng/mL	
96) C23 Tricyclic Terpane (T4	40.220	191	52401M4	500.653	ng/ml	
97) C24 Tricyclic Terpane (T5	40.951	191	27644M4	264.118	ng/ml	
98) C25 Tricyclic Terpane (T6	42.475	191	25536M1	243.978	ng/ml	
99) C24 Tetracyclic Terpane (	43.735	191	9606	91.778	ng/ml	100
100) C26 Tricyclic Terpane-22S	43.489	191	9970M4	95.256	ng/ml	
101) C26 Tricyclic Terpane-22R	43.589	191	9639	92.094	ng/ml	100
102) C28 Tricyclic Terpane-22S	45.874	191	10699M4	102.221	ng/ml	
103) C28 Tricyclic Terpane-22R	46.039	191	11375M4	108.680	ng/ml	
104) C29 Tricyclic Terpane-22S	46.551	191	13796	131.811	ng/ml	100
105) C29 Tricyclic Terpane-22R	46.743	191	13094	125.104	ng/ml	100
106) 18a-22,29,30-Trisnorneoho	47.786	191	13961	133.387	ng/ml	100
107) C30 Tricyclic Terpane-22S	47.905	191	10938M4	104.505	ng/mL	

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009582.D
Acq On : 22 Dec 2012 11:06 pm
Operator : ps
Sample : SS122712CL03
Misc : WHAQ74:5.064mg/kg
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Dec 27 15:59:19 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

	Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
108)	C30 Tricyclic Terpane-22R	48.133	191	10090M4	96.403	ng/mL	
109)	17a(H)-22,29,30-Trisnorho	48.307	191	33406M4	319.170	ng/ml	
110)	17a/b,21b/a 28,30-Bisnorh	49.432	191	20715M4	197.917	ng/ml	
111)	17a(H),21b(H)-25-Norhopan	49.267	191	6139	58.654	ng/ml	100
112)	30-Norhopane (T15)	50.054	191	89379M4	853.951	ng/ml	
113)	18a(H)-30-Norneohopane-C2	50.155	191	12684M4	121.186	ng/ml	
114)	17a(H)-Diahopane (X)	50.274	191	4426M4	42.287	ng/ml	
115)	30-Normoretane (T17)	50.786	191	8982	85.816	ng/ml	100
116)	18a(H)&18b(H)-Oleananes (	51.152	191	899M4	8.589	ng/ml	
117)	Moretane (T20)	51.965	191	9083M4	86.781	ng/ml	
118)	30-Homohopane-22S (T21)	52.980	191	53109	507.417	ng/ml	100
119)	30-Homohopane-22R (T22)	53.199	191	44133	421.658	ng/ml	100
120)	Gammacerane/C32-diahopane	53.692	191	19651M4	187.751	ng/mL	
121)	30,31-Bishomohopane-22S (	54.414	191	34344	328.132	ng/ml	100
122)	30,31-Bishomohopane-22R (	54.771	191	25069	239.516	ng/ml	100
123)	30,31-Trishomohopane-22S	56.370	191	26335M4	251.612	ng/ml	
124)	30,31-Trishomohopane-22R	56.936	191	17095	163.330	ng/ml	100
125)	Tetrakishomohopane-22S (T	58.782	191	16663	159.203	ng/ml	100
126)	Tetrakishomohopane-22R (T	59.605	191	12275M4	117.279	ng/ml	
127)	Pentakishomohopane-22S (T	61.651	191	20419M4	195.089	ng/ml	
128)	Pentakishomohopane-22R (T	62.821	191	14263M4	136.272	ng/ml	
130)	13b(H),17a(H)-20S-Diachol	44.703	217	8425M4	168.576	ng/ml	
131)	13b(H),17a(H)-20R-Diachol	45.133	217	4160M4	83.238	ng/ml	
132)	13b,17a-20S-Methyldiachol	45.828	217	4300M4	86.039	ng/ml	
133)	14a,17a-20S-Chol/13b,17a-	46.679	217	14500	290.131	ng/ml	100
134)	14a,17a-20R-Chol/13b,17a-	47.173	217	17917M4	358.502	ng/ml	
135)	Unknown Sterane (S18)	47.447	217	3296	65.950	ng/ml	100
136)	13a,17b-20S-Ethyldiachole	47.694	217	1656	33.135	ng/ml	100
137)	14a,17a-20S-Methylcholest	47.841	217	7106M4	142.184	ng/ml	
138)	14a,17a-20R-Methylcholest	48.517	217	6410M4	128.258	ng/ml	
139)	14a(H),17a(H)-20S-Ethylch	48.847	217	13152M4	263.159	ng/ml	
140)	14a(H),17a(H)-20R-Ethylch	49.697	217	11964M4	239.388	ng/ml	
141)	14b(H),17b(H)-20R-Cholest	46.771	218	12110M4	242.310	ng/ml	
142)	14b(H),17b(H)-20S-Cholest	46.853	218	12230M4	244.711	ng/ml	
143)	14b,17b-20R-Methylcholest	48.005	218	9613	192.347	ng/ml	100
144)	14b,17b-20S-Methylcholest	48.078	218	13554M4	271.203	ng/ml	
145)	14b(H),17b(H)-20R-Ethylch	49.075	218	18006	360.283	ng/ml	100
146)	14b(H),17b(H)-20S-Ethylch	49.121	218	12109M3	242.290	ng/ml	
147)	C26,20R- +C27,20S- triaro	48.801	231	56080	1122.108	ng/mL	100
148)	C28,20S-triaromatic stero	49.606	231	47398M4	948.390	ng/mL	
149)	C27,20R-triaromatic stero	50.036	231	37573M4	751.801	ng/mL	
150)	C28,20R-triaromatic stero	51.152	231	38723	774.811	ng/mL	100

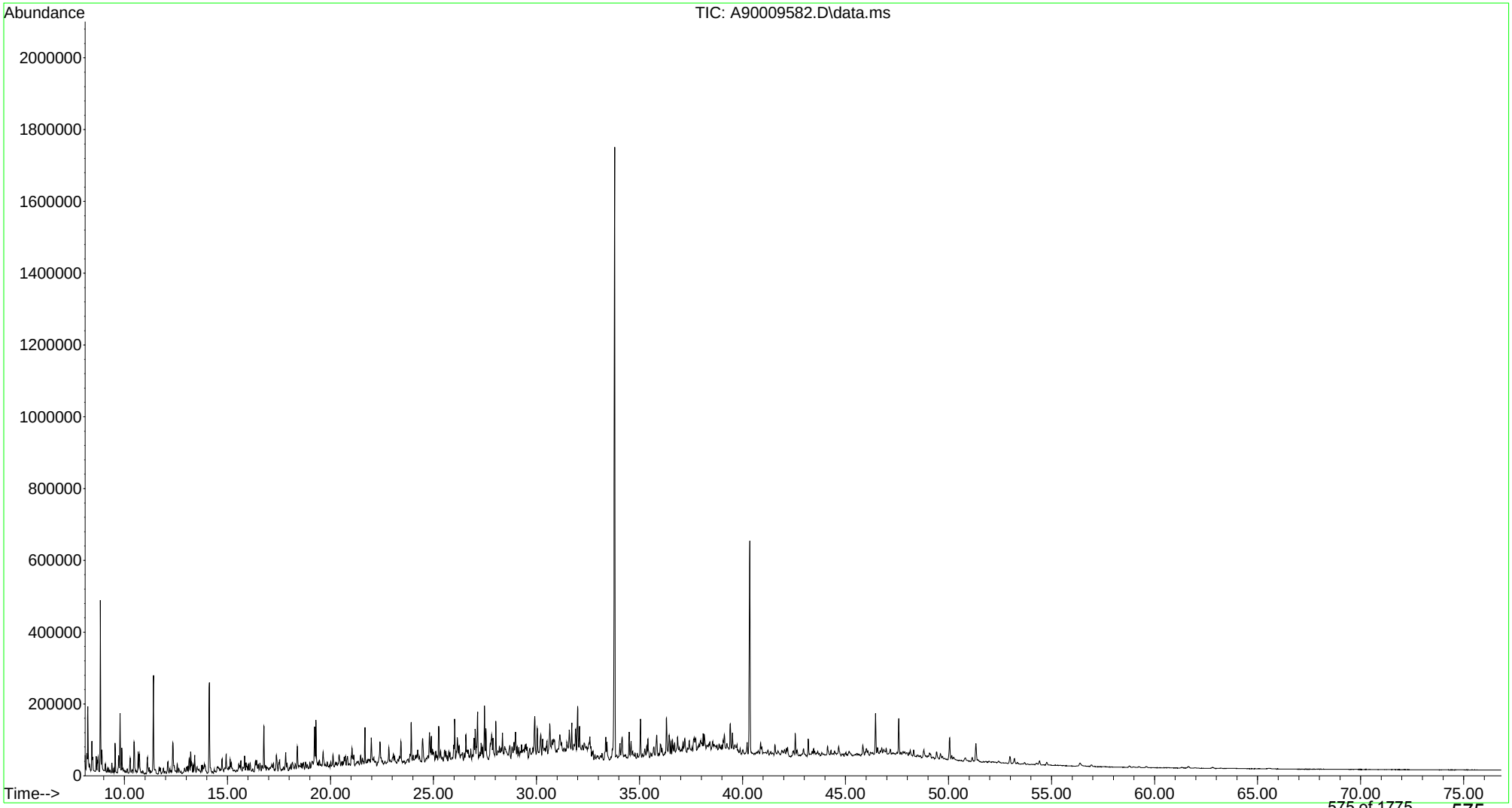
(#) = qualifier out of range (m) = manual integration (+) = signals summed

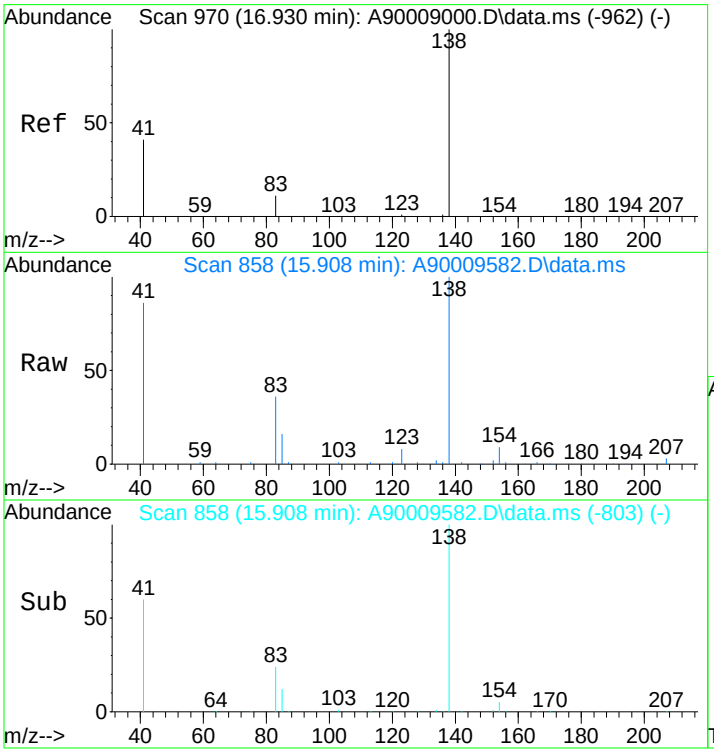
Quantitation Report (QT Reviewed)

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Data File : A90009582.D
Acq On : 22 Dec 2012 11:06 pm
Operator : ps
Sample : SS122712CL03
Misc : WHAQ74:5.064mg/kg
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Dec 27 15:59:19 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

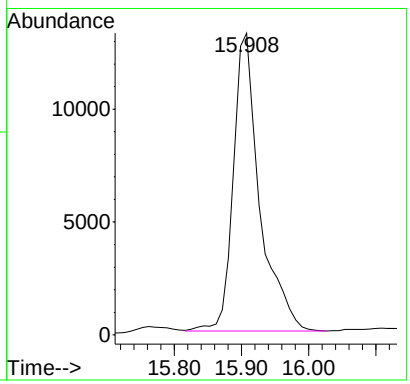
Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

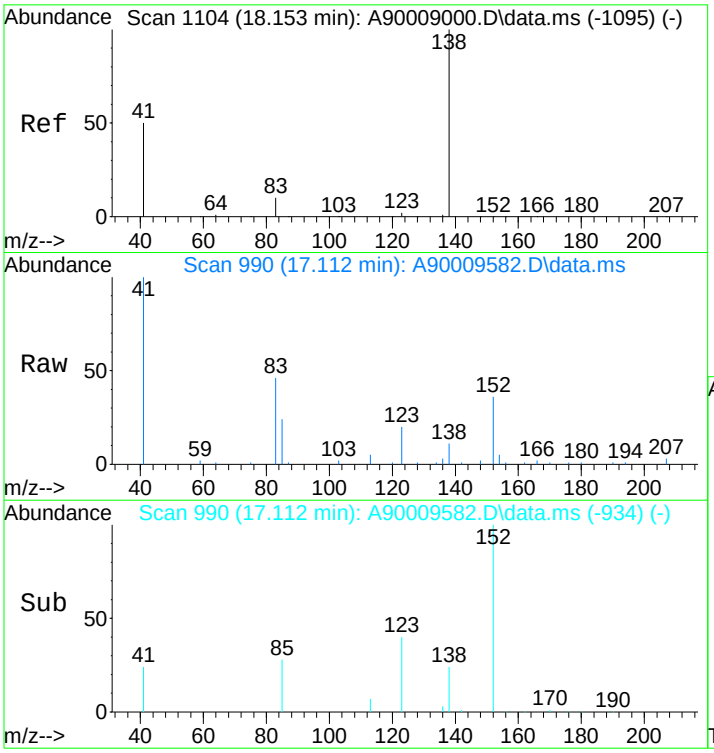




#3
trans-Decalin
Concen: 642.72 ng/mL
RT: 15.908 min Scan# 858
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

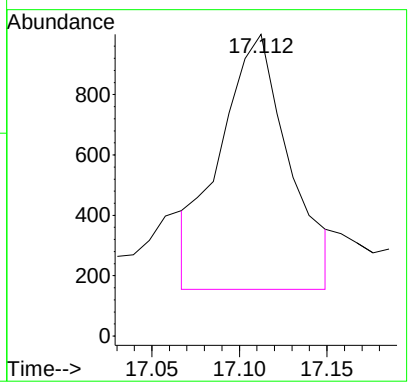
Tgt Ion:138 Resp: 36074

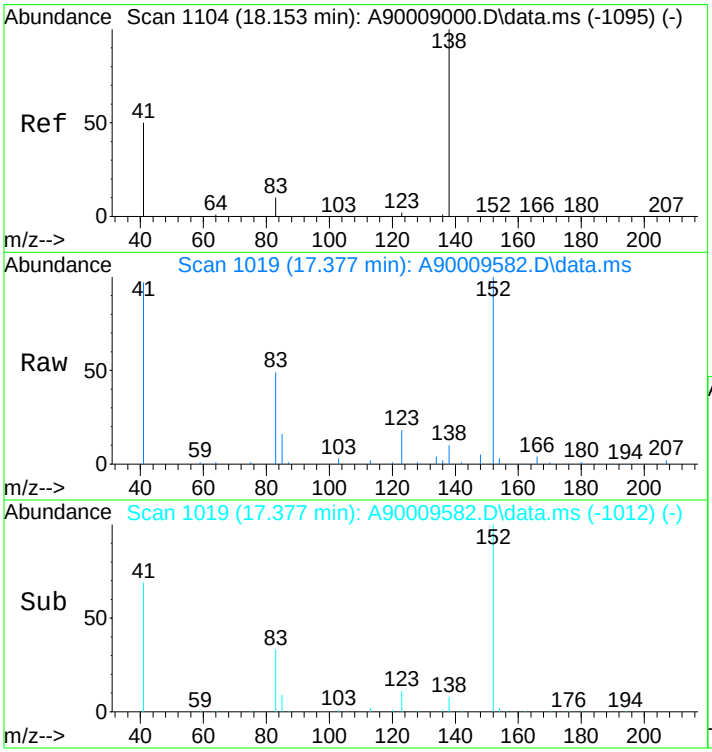




#4
cis-Decalin
Concen: 52.98 ng/mL m
RT: 17.112 min Scan# 990
Delta R.T. 0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

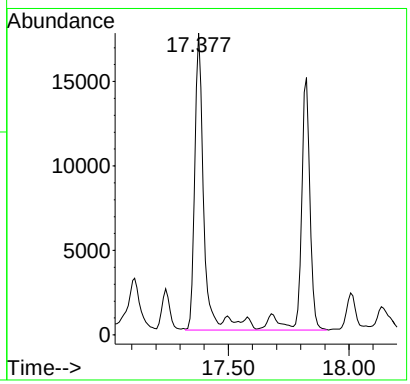
Tgt Ion:138 Resp: 2328

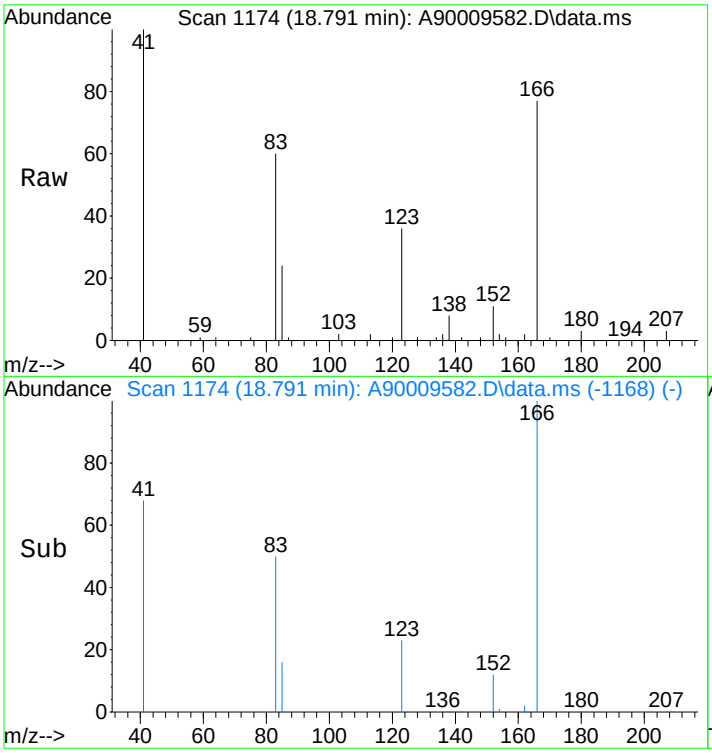




#5
C1-Decalins
Concen: 1518.58 ng/mL m
RT: 17.377 min Scan# 1019
Delta R.T. -0.447 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

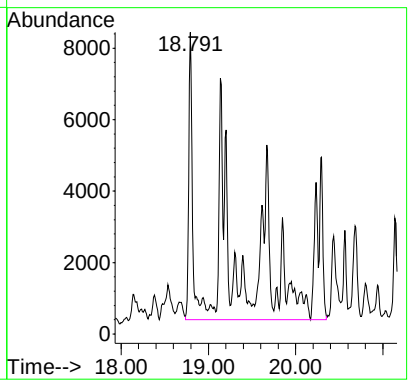
Tgt Ion:152 Resp: 85233

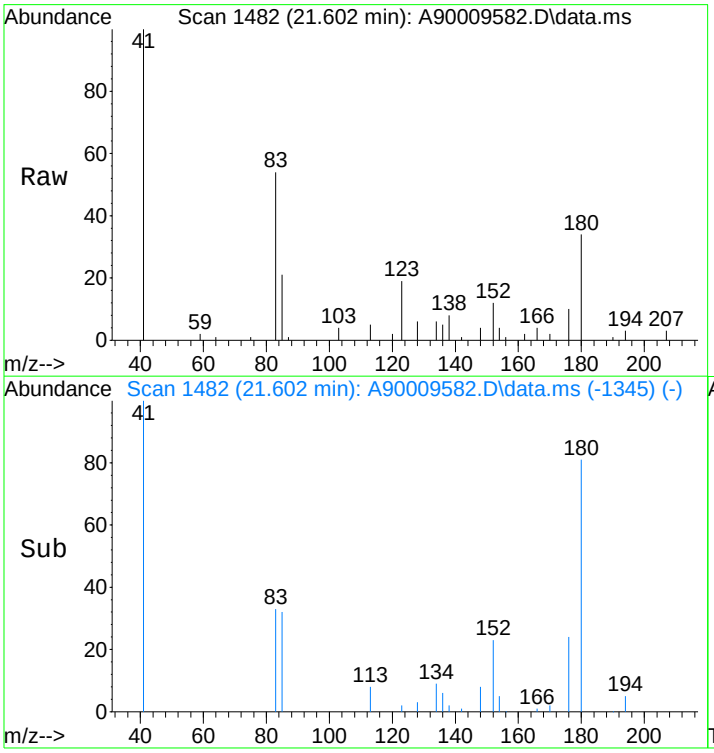




#6
C2-Decalins
Concen: 2472.89 ng/mL m
RT: 18.791 min Scan# 1174
Delta R.T. -0.356 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

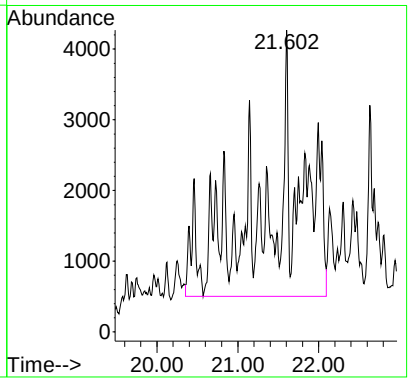
Tgt Ion:166 Resp: 138795

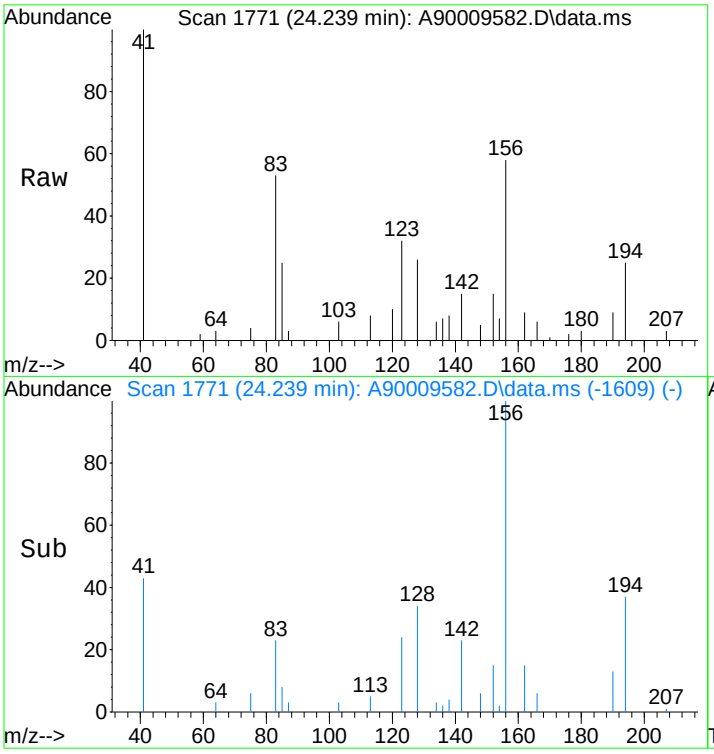




#7
C3-Decalins
Concen: 1968.69 ng/mL m
RT: 21.602 min Scan# 1482
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

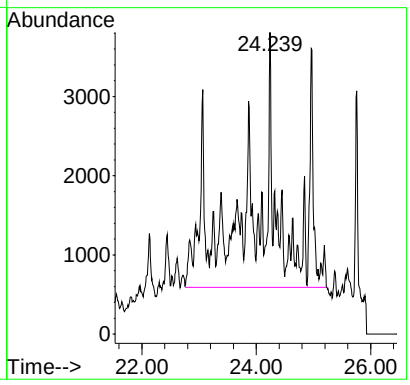
Tgt Ion:180 Resp: 110496

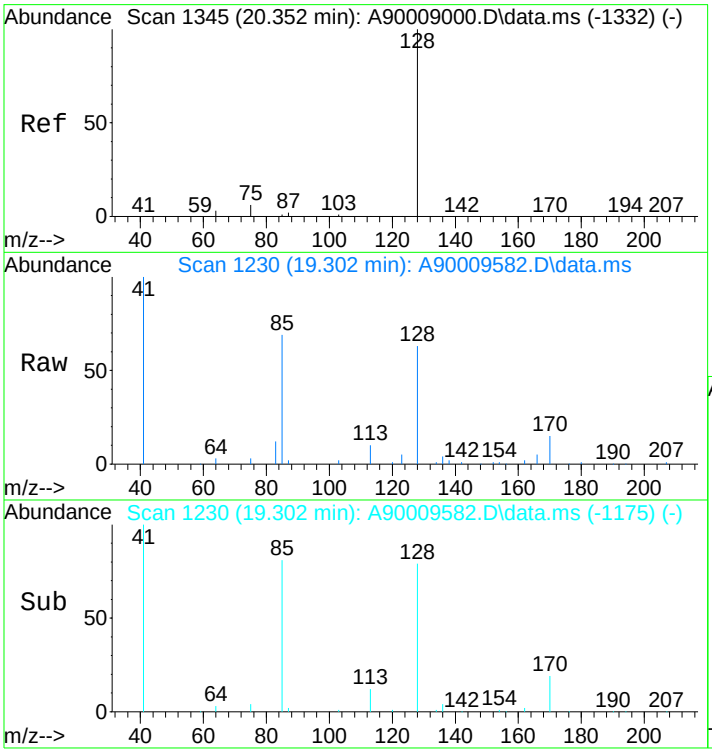




#8
C4-Decalins
Concen: 1899.61 ng/mL m
RT: 24.239 min Scan# 1771
Delta R.T. -0.730 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:194 Resp: 106619

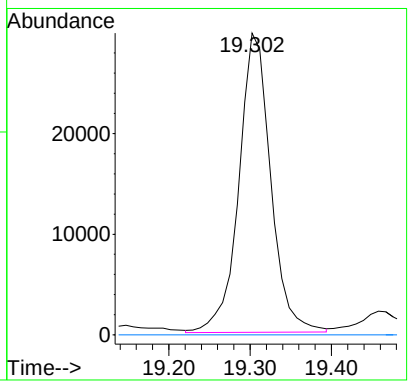


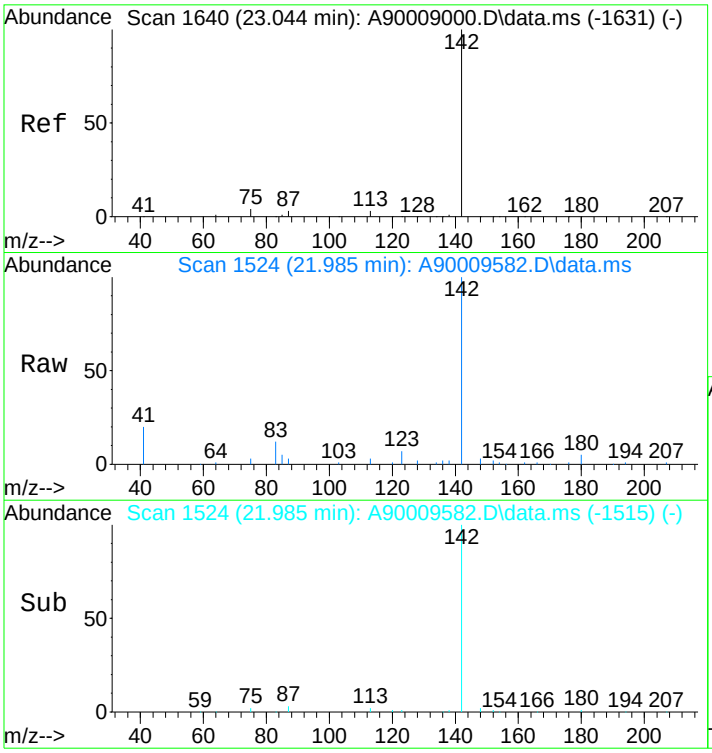


#10
Naphthalene
Concen: 321.23 ng/mL
RT: 19.302 min Scan# 1230
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:128 Resp: 80889

Ion	Ratio	Lower	Upper
128	100		
127	0.0	0.0	0.0

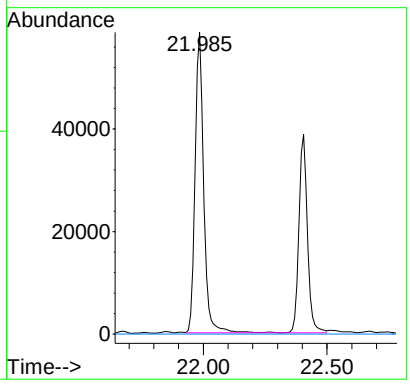


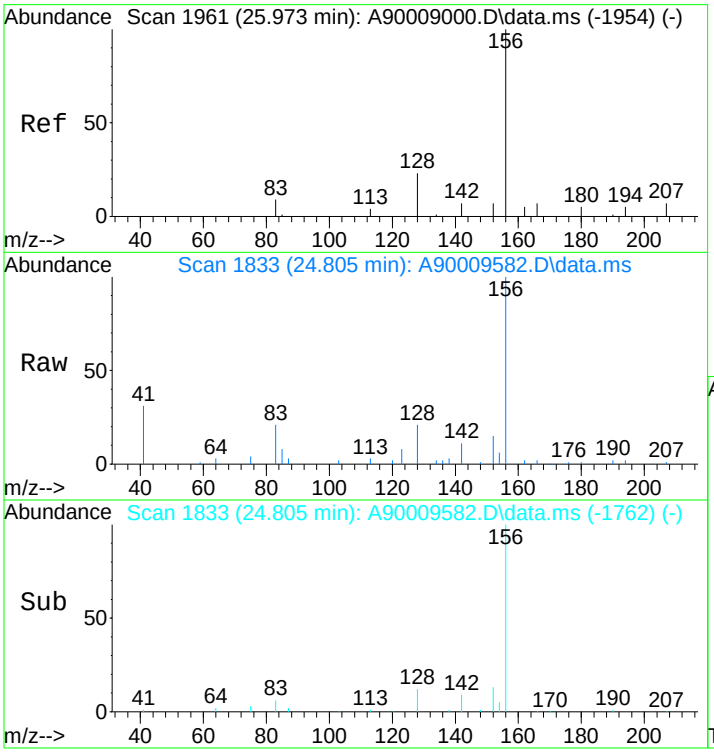


#11
C1-Naphthalenes
Concen: 931.63 ng/mL m
RT: 21.985 min Scan# 1524
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:142 Resp: 234595

Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	0.0

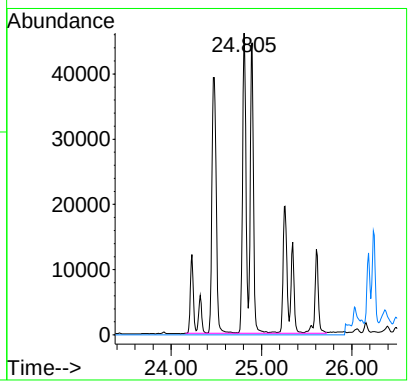


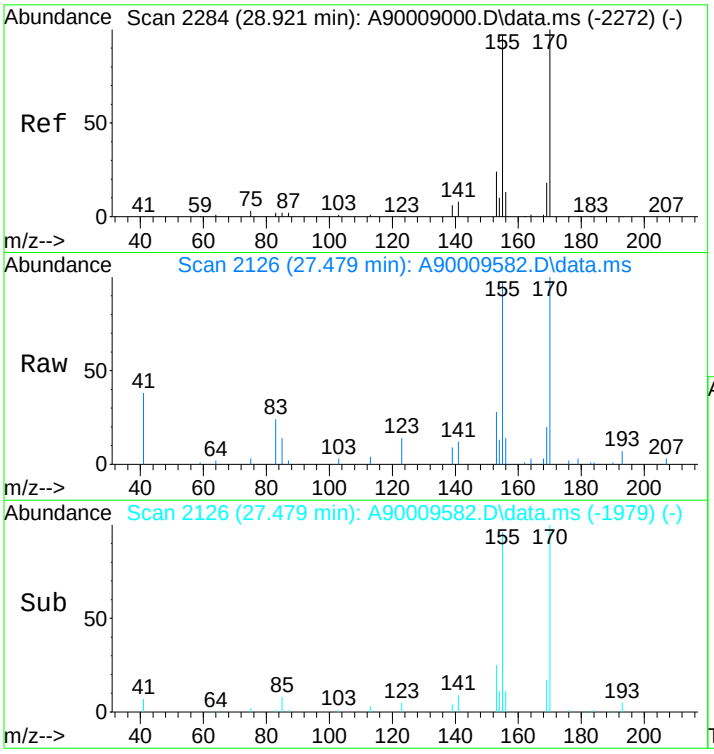


#12
C2-Naphthalenes
Concen: 2085.08 ng/mL m
RT: 24.805 min Scan# 1833
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:156 Resp: 525048

Ion	Ratio	Lower	Upper
156	100		
141	0.0	0.0	0.0

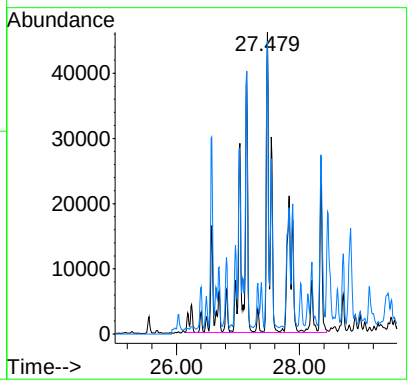


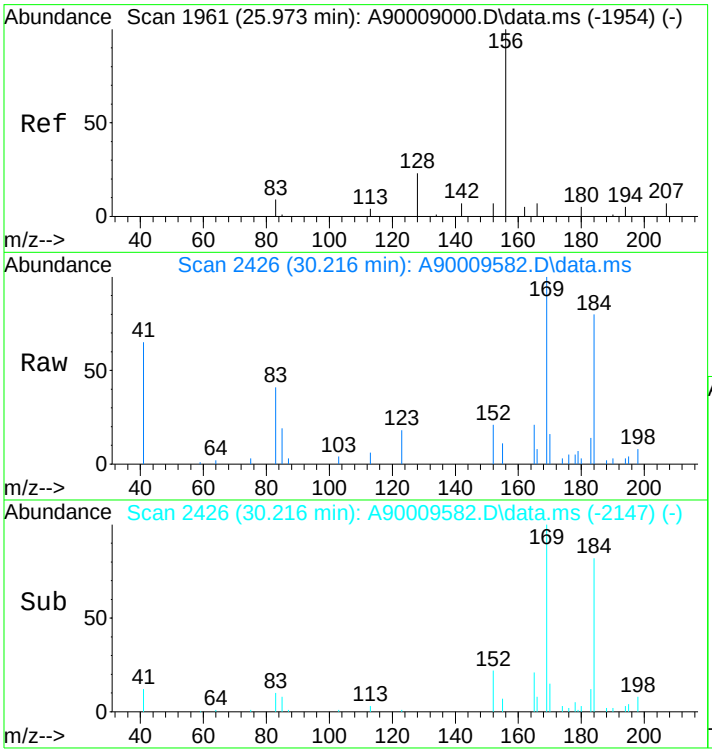


#13
C3-Naphthalenes
Concen: 2671.31 ng/mL m
RT: 27.479 min Scan# 2126
Delta R.T. 0.338 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:170 Resp: 672667

Ion	Ratio	Lower	Upper
170	100		
155	13.7	79.9	119.9#

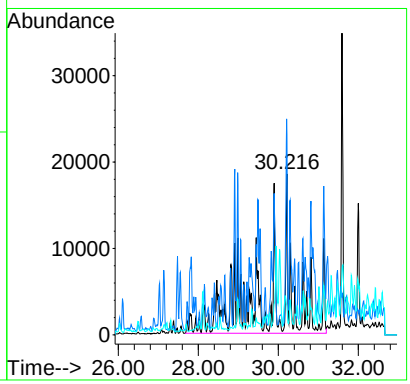


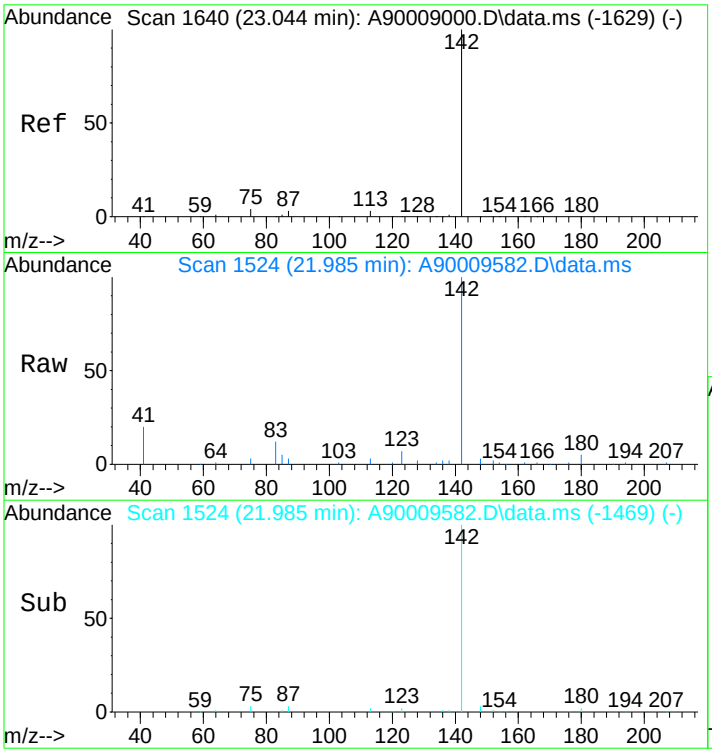


#14
C4-Naphthalenes
Concen: 2282.19 ng/mL m
RT: 30.216 min Scan# 2426
Delta R.T. 0.320 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:184 Resp: 574681

Ion	Ratio	Lower	Upper
184	100		
169	8.9	76.6	115.0#
183	0.0	16.4	24.6#

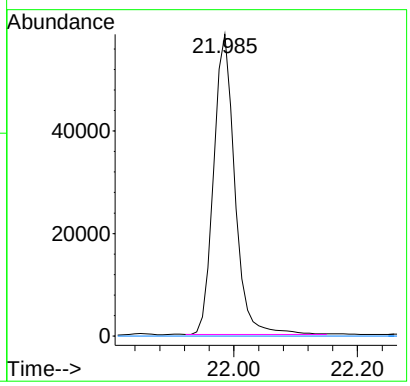


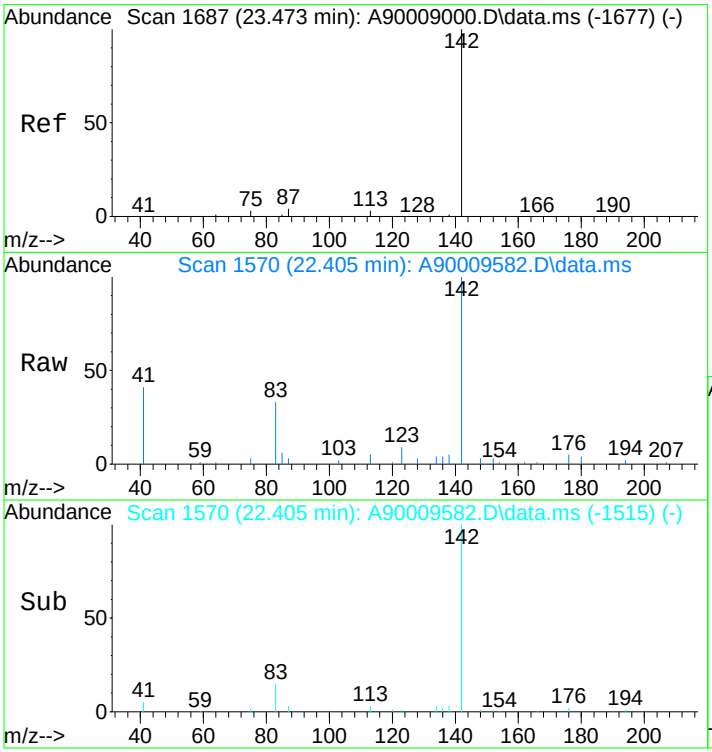


#16
2-Methylnaphthalene
Concen: 845.15 ng/mL
RT: 21.985 min Scan# 1524
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:142 Resp: 139177

Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	0.0

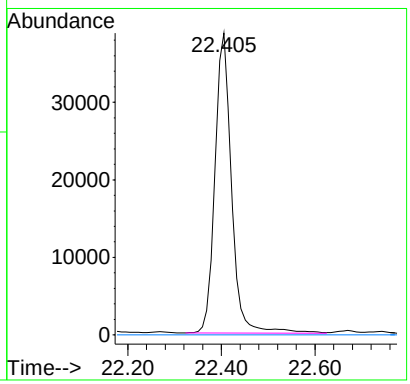


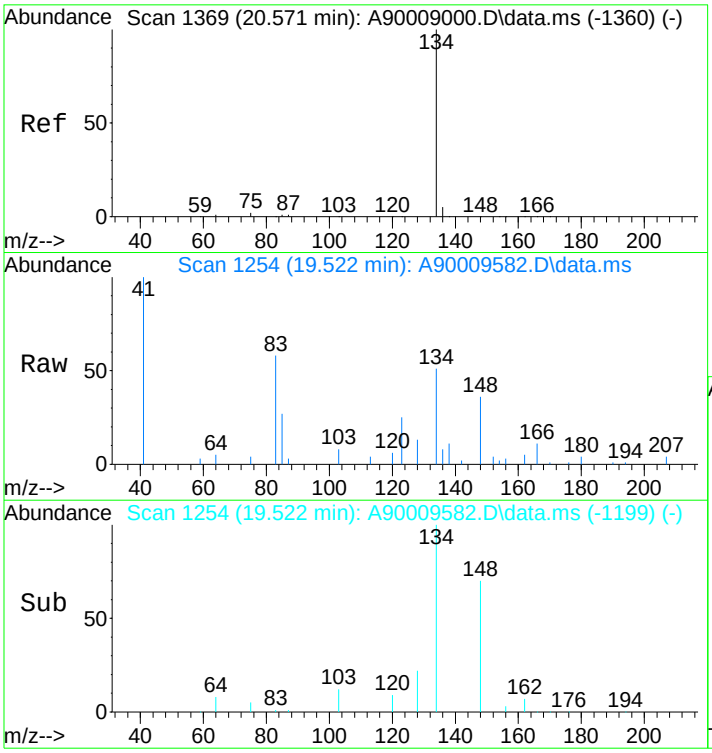


#17
1-Methylnaphthalene
Concen: 596.54 ng/mL
RT: 22.405 min Scan# 1570
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:142 Resp: 95336

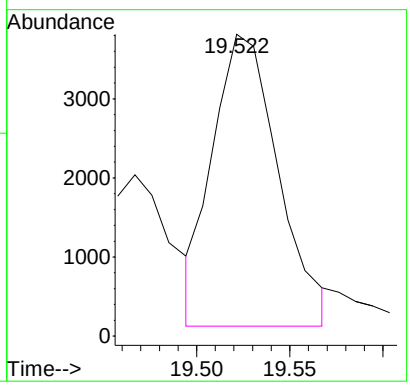
Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	20.0

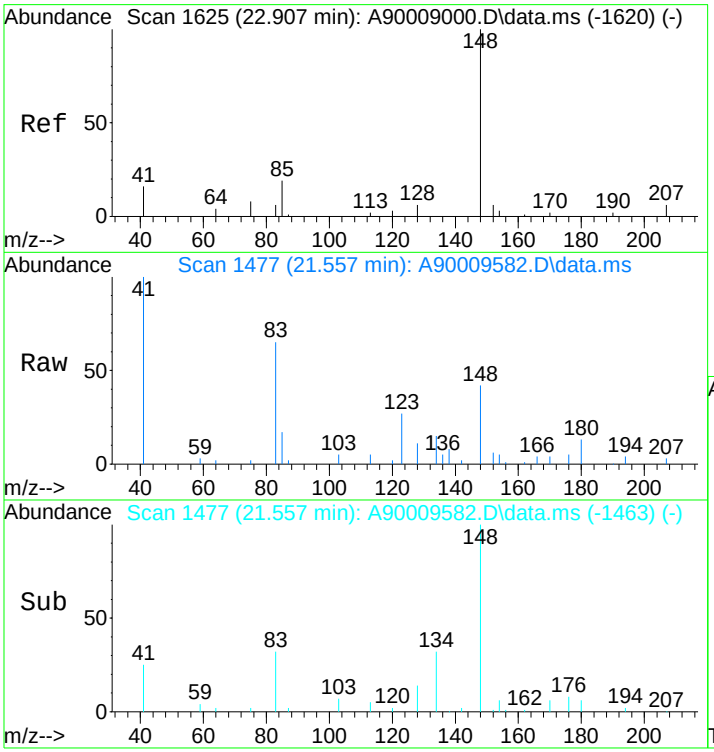




#18
Benzothiophene
Concen: 42.85 ng/mL m
RT: 19.522 min Scan# 1254
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

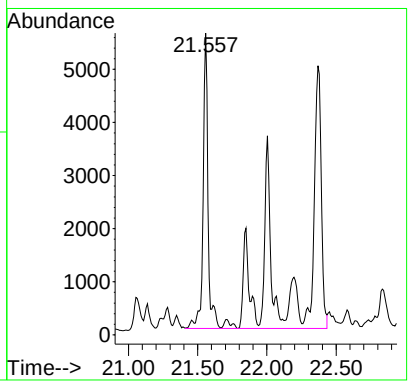
Tgt Ion:134 Resp: 9029

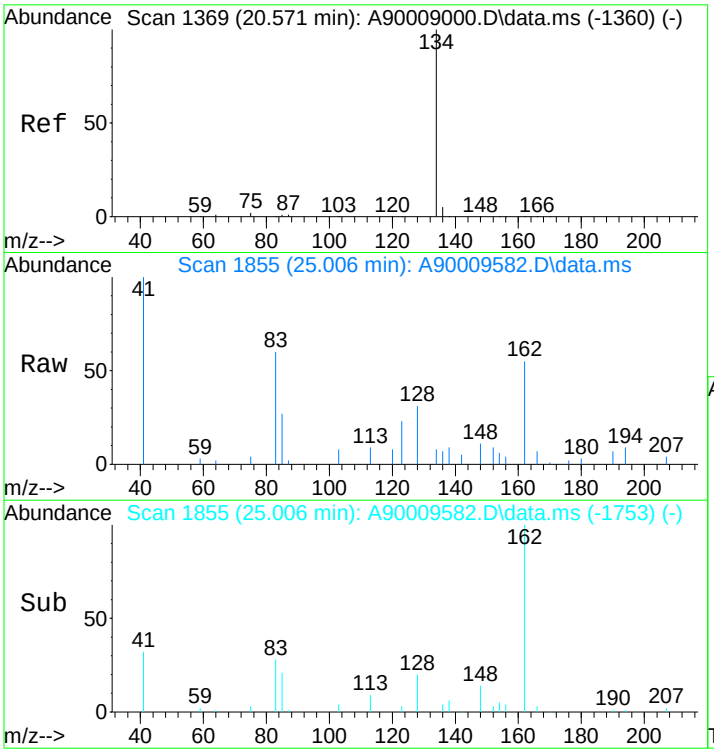




#19
C1-Benzo(b)thiophenes
Concen: 246.31 ng/mL m
RT: 21.557 min Scan# 1477
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

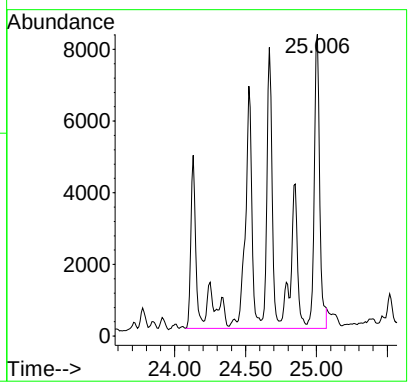
Tgt Ion:148 Resp: 51904

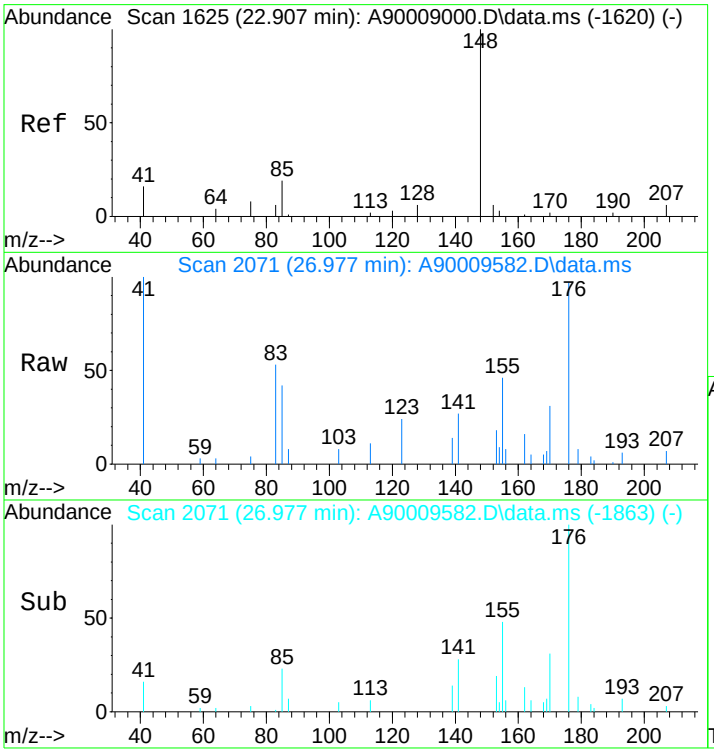




#20
C2-Benzo(b)thiophenes
Concen: 446.02 ng/mL m
RT: 25.006 min Scan# 1855
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

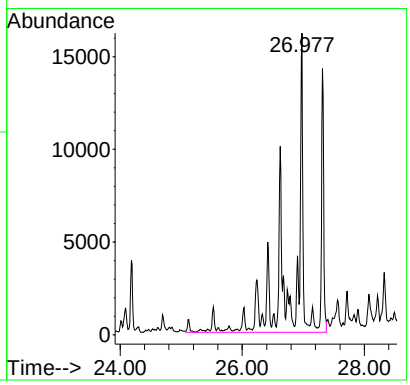
Tgt Ion:162 Resp: 93989

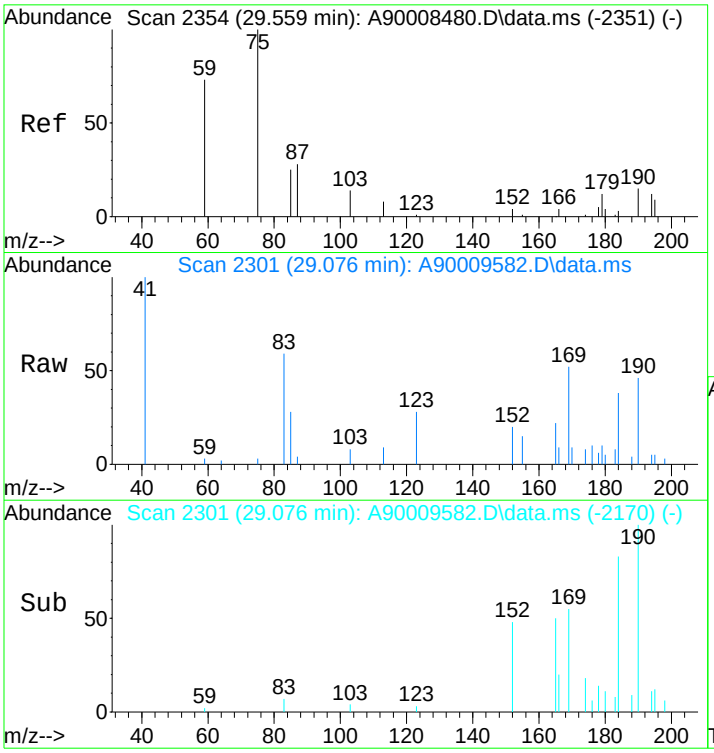




#21
C3-Benzo(b)thiophenes
Concen: 824.02 ng/mL m
RT: 26.977 min Scan# 2071
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

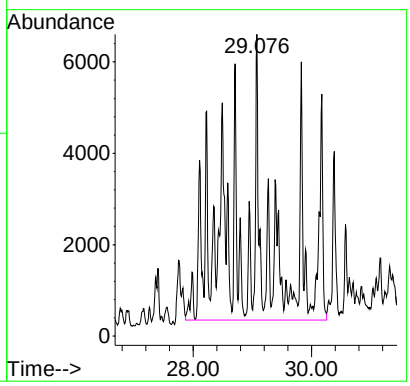
Tgt Ion:176 Resp: 173645

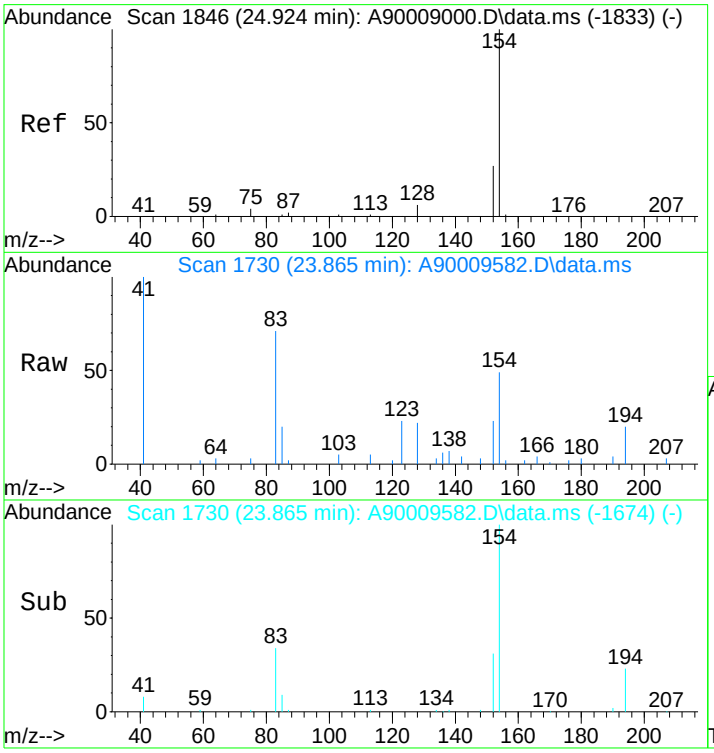




#22
C4-Benzo(b)thiophenes
Concen: 899.08 ng/mL m
RT: 29.076 min Scan# 2301
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:190 Resp: 189462

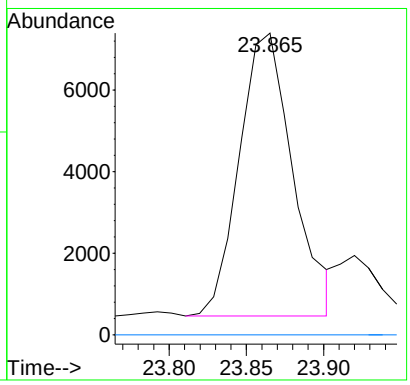


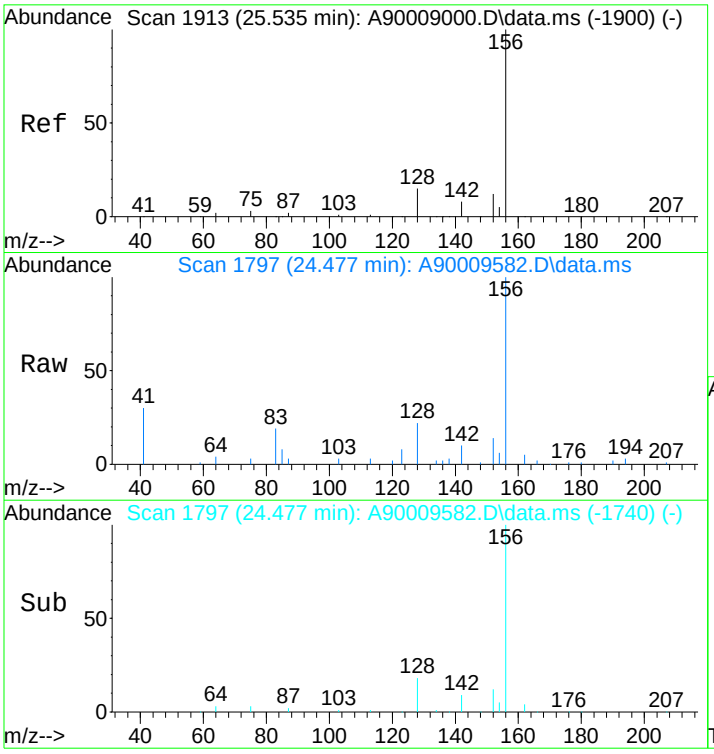


#23
Biphenyl
Concen: 77.67 ng/mL
RT: 23.865 min Scan# 1730
Delta R.T. 0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:154 Resp: 16737

Ion	Ratio	Lower	Upper
154	100		
153	0.0	0.0	0.0

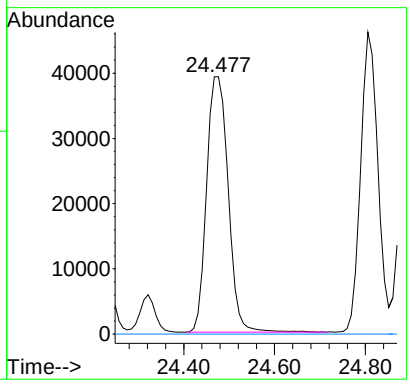


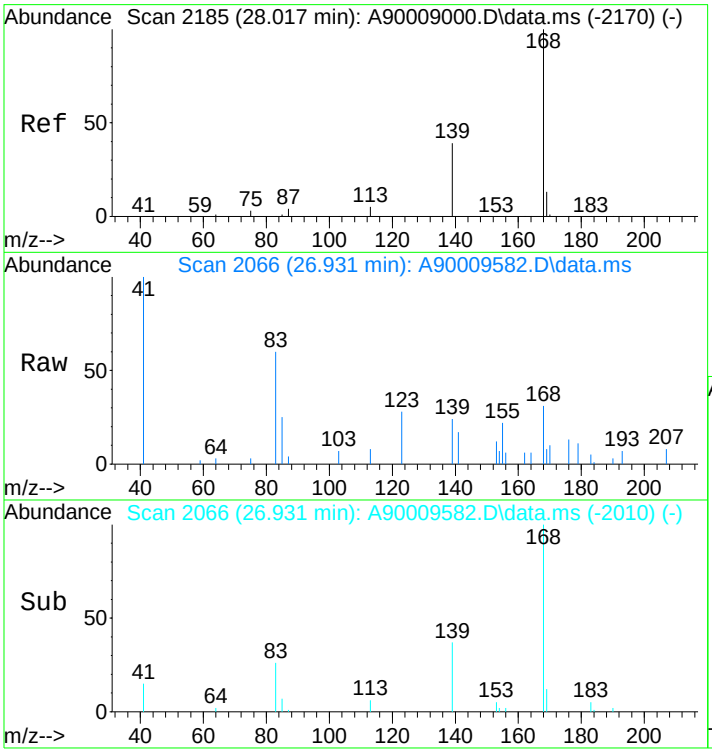


#24
2,6-Dimethylnaphthalene
Concen: 840.52 ng/mL
RT: 24.477 min Scan# 1797
Delta R.T. 0.018 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:156 Resp: 130113

Ion	Ratio	Lower	Upper
156	100		
155	0.0	0.0	0.0

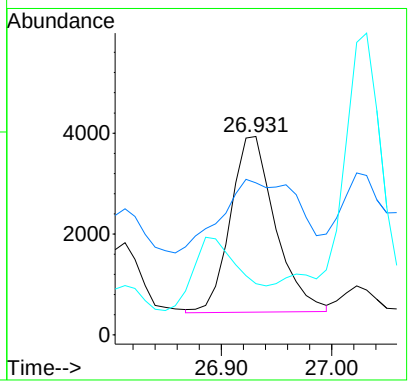


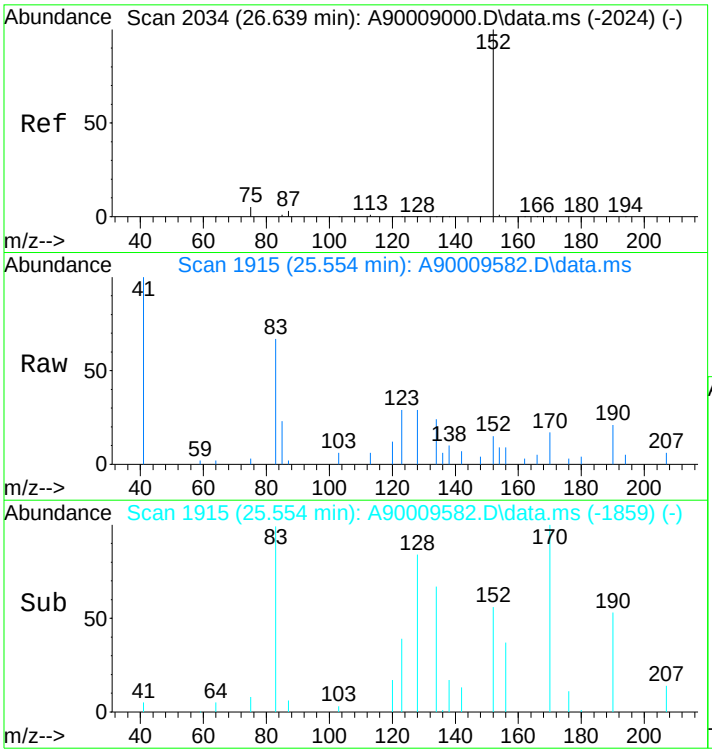


#25
Dibenzofuran
Concen: 42.89 ng/mL
RT: 26.931 min Scan# 2066
Delta R.T. 0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:168 Resp: 9859

Ion	Ratio	Lower	Upper
168	100		
139	73.5	28.0	42.0#
169	0.0	10.6	15.8#

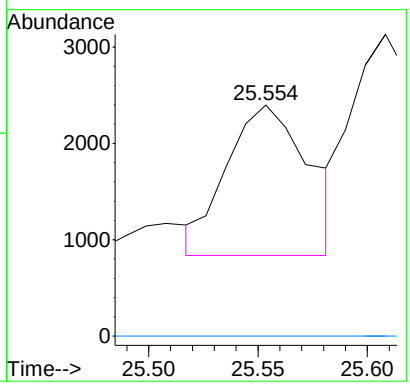


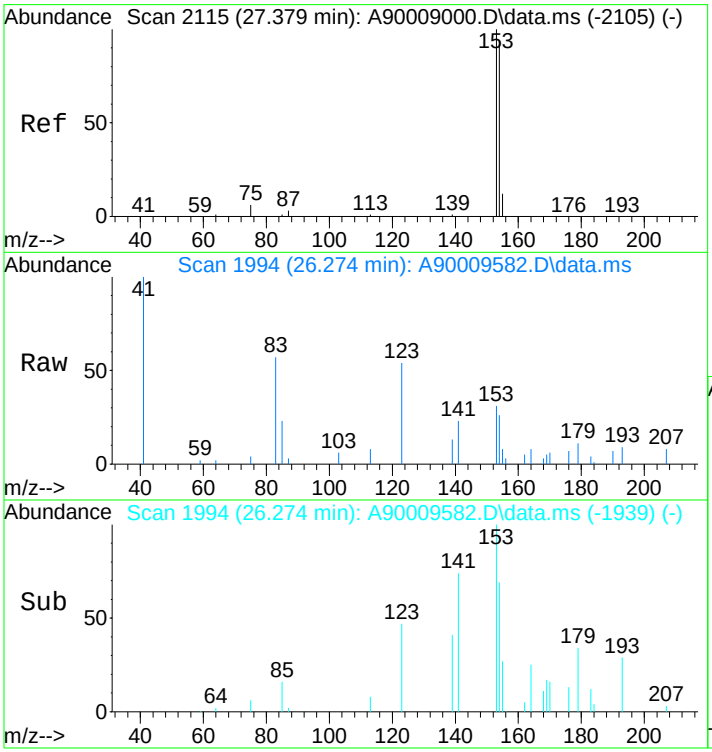


#26
Acenaphthylene
Concen: 15.68 ng/mL m
RT: 25.554 min Scan# 1915
Delta R.T. 0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:152 Resp: 4061

Ion	Ratio	Lower	Upper
152	100		
153	0.0	0.0	0.0

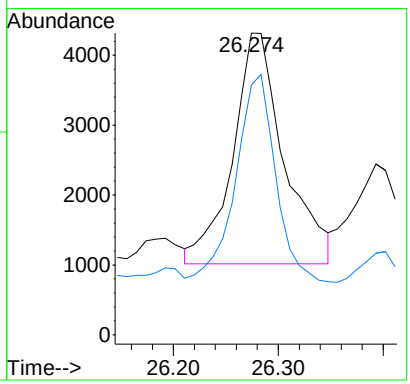


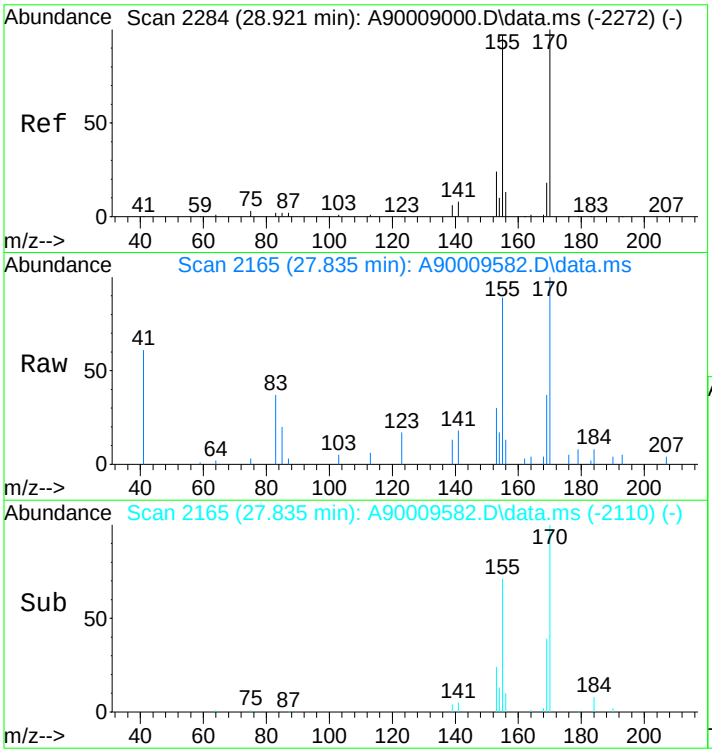


#27
Acenaphthene
Concen: 69.06 ng/mL m
RT: 26.274 min Scan# 1994
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:153 Resp: 11247

Ion	Ratio	Lower	Upper
153	100		
154	75.4	75.4	113.0

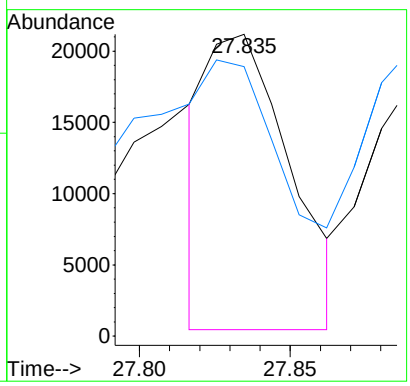


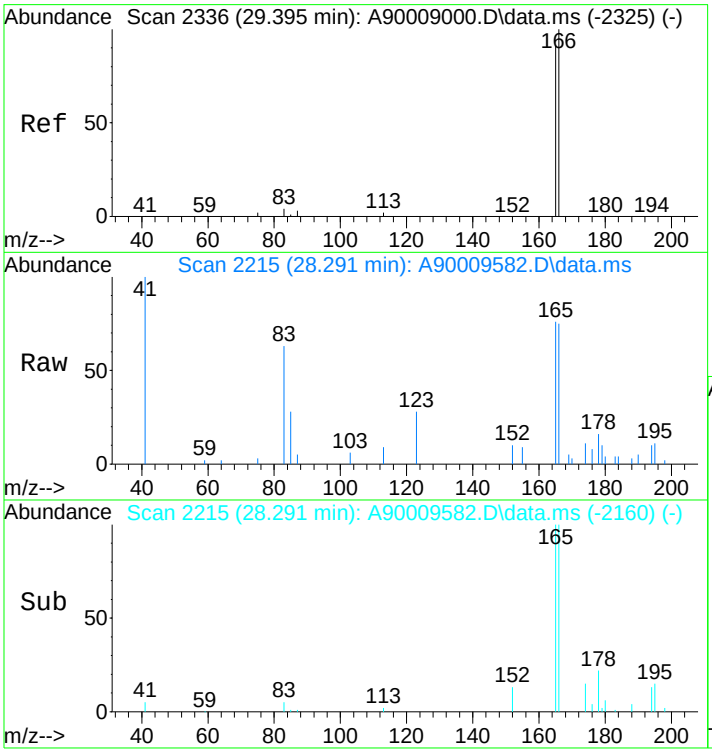


#28
2,3,5-Trimethylnaphthalene
Concen: 277.97 ng/mL m
RT: 27.835 min Scan# 2165
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:170 Resp: 39561

Ion	Ratio	Lower	Upper
170	100		
155	176.9	69.0	103.4#

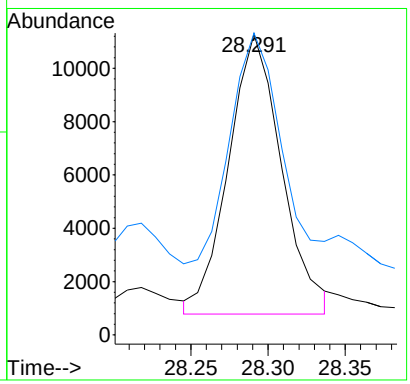


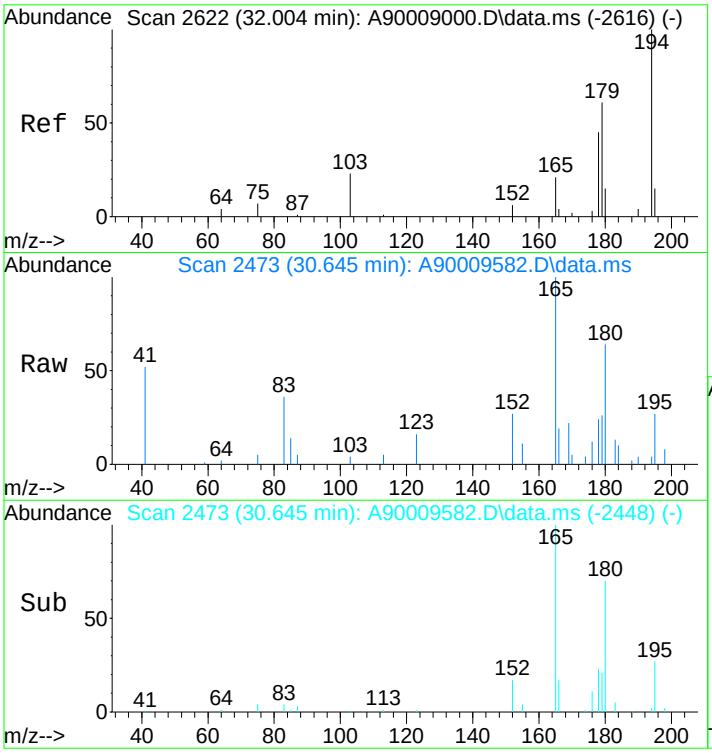


#29
Fluorene
Concen: 140.16 ng/mL m
RT: 28.291 min Scan# 2215
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:166 Resp: 25068

Ion	Ratio	Lower	Upper
166	100		
165	142.8	73.4	110.0#

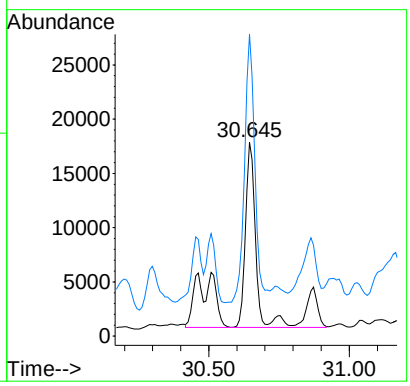


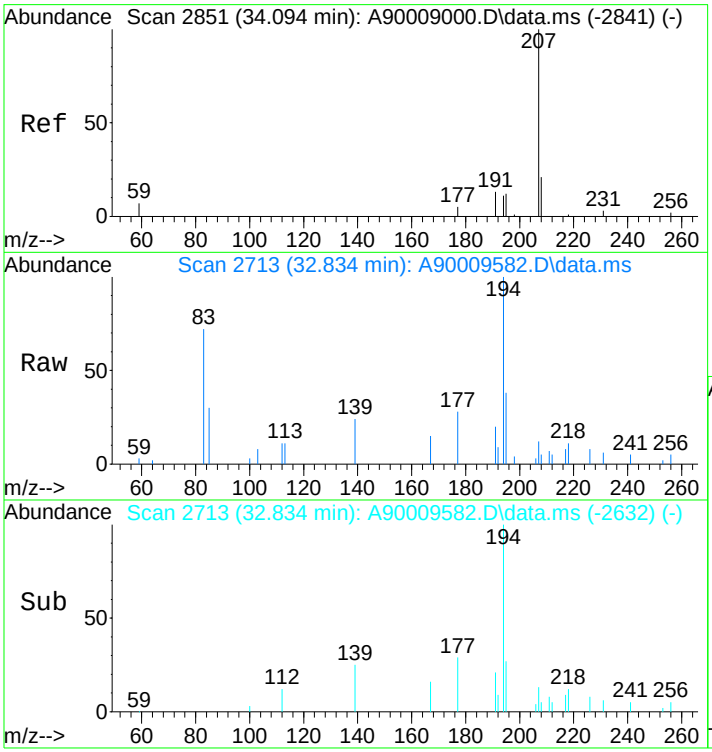


#30
C1-Fluorenes
Concen: 427.97 ng/mL m
RT: 30.645 min Scan# 2473
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:180 Resp: 76545

Ion	Ratio	Lower	Upper
180	100		
165	82.5	117.5	176.3#

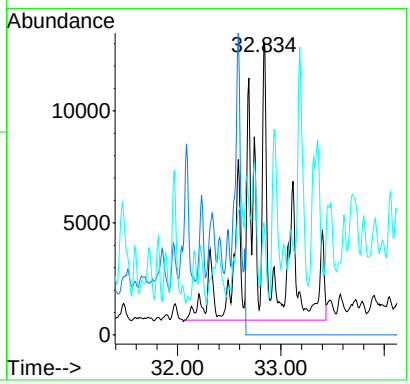


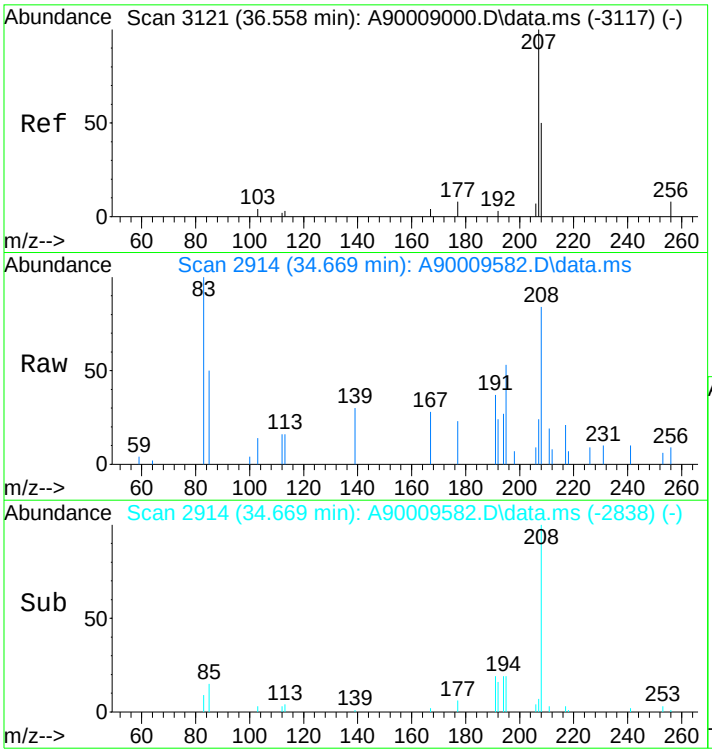


#31
C2-Fluorenes
Concen: 967.06 ng/mL m
RT: 32.834 min Scan# 2713
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:194 Resp: 172965

Ion	Ratio	Lower	Upper
194	100		
179	0.0	0.0	0.0
195	5.2	26.3	39.5#

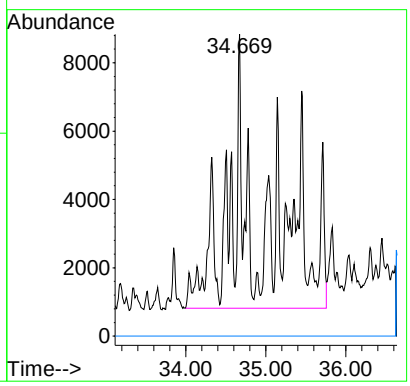


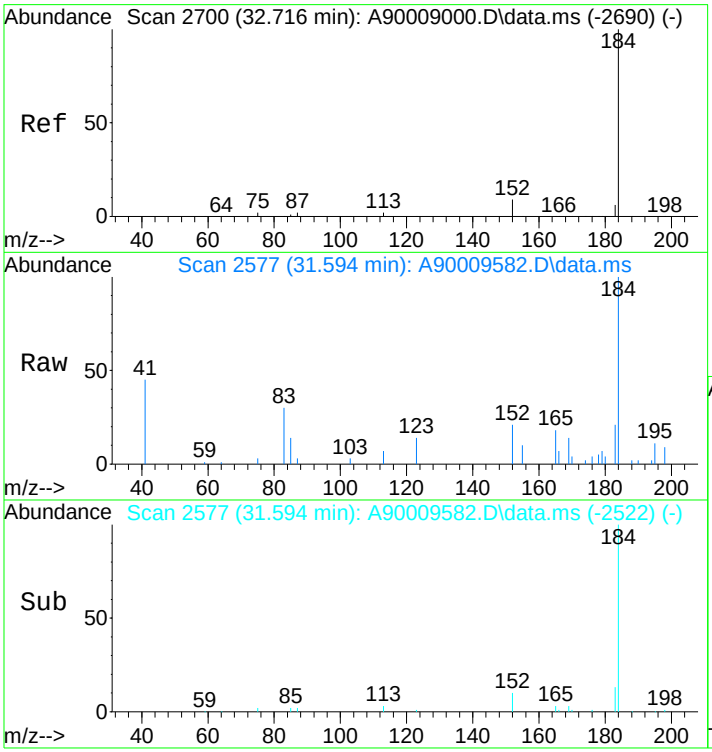


#32
C3-Fluorenes
Concen: 1160.00 ng/mL m
RT: 34.669 min Scan# 2914
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:208 Resp: 207474

Ion	Ratio	Lower	Upper
208	100		
197	0.0	0.0	0.0

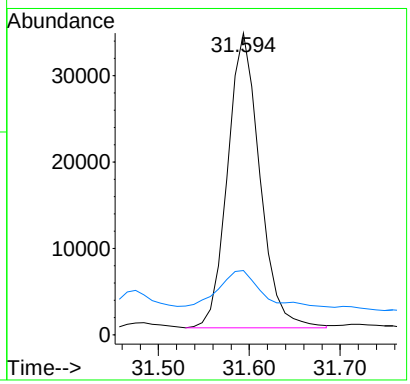


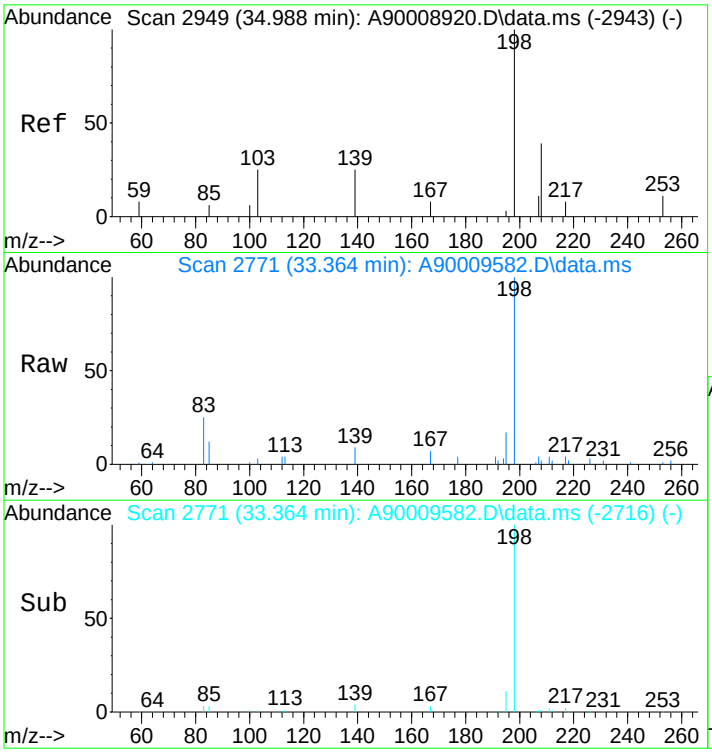


#33
Dibenzothiophene
Concen: 332.49 ng/mL
RT: 31.594 min Scan# 2577
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:184 Resp: 83651

Ion	Ratio	Lower	Upper
184	100		
152	21.9	7.0	10.4#

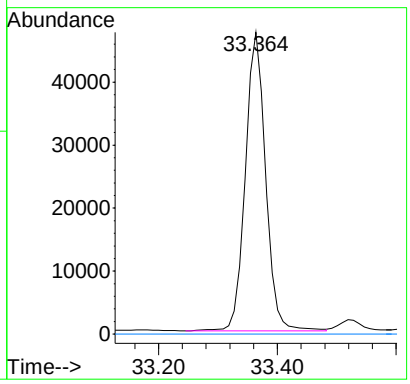


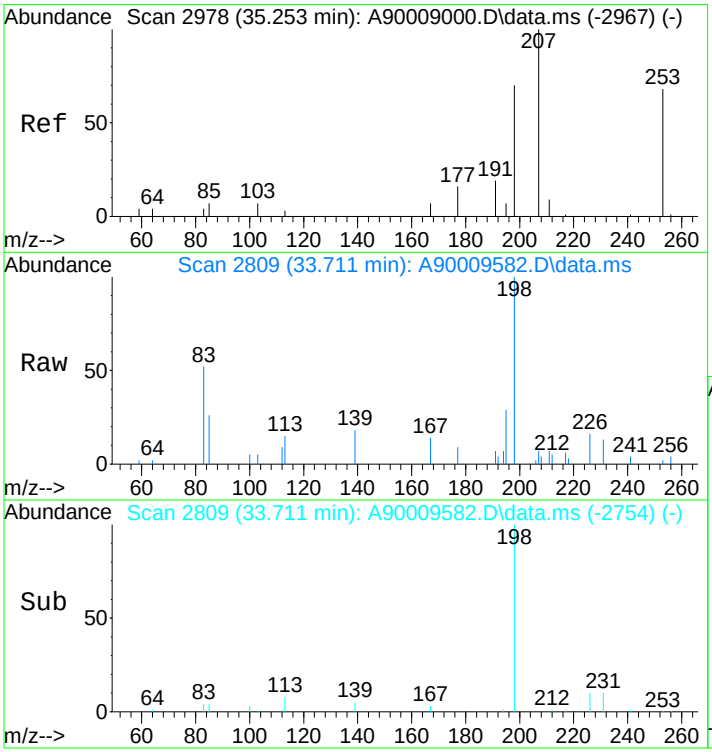


#34
4-Methyldibenzothiophene(4MDT)
Concen: 445.41 ng/mL
RT: 33.364 min Scan# 2771
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:198 Resp: 112061

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

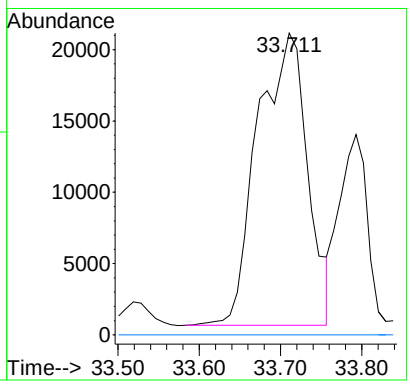


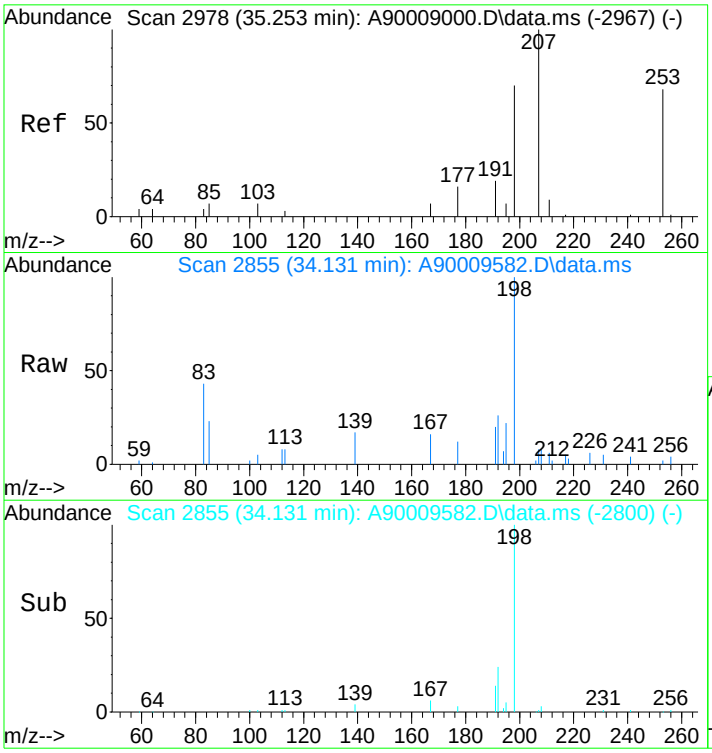


#35
2/3-Methyldibenzothiophene(2MDT)
Concen: 346.62 ng/mL
RT: 33.711 min Scan# 2809
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:198 Resp: 87208

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

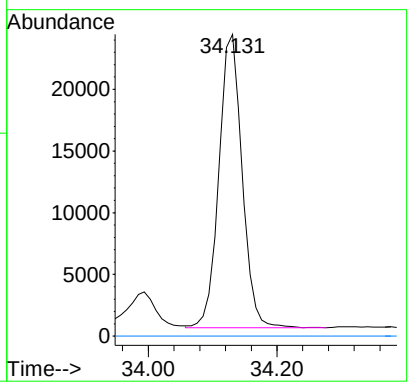


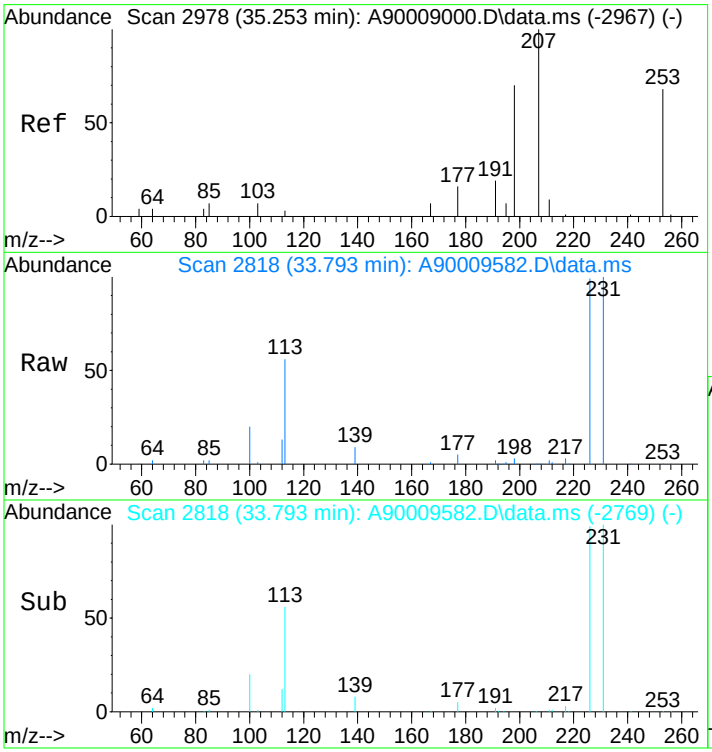


#36
1-Methyldibenzothiophene(1MDT)
Concen: 236.69 ng/mL
RT: 34.131 min Scan# 2855
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:198 Resp: 59549

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

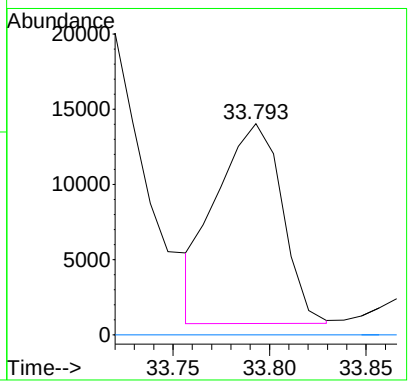


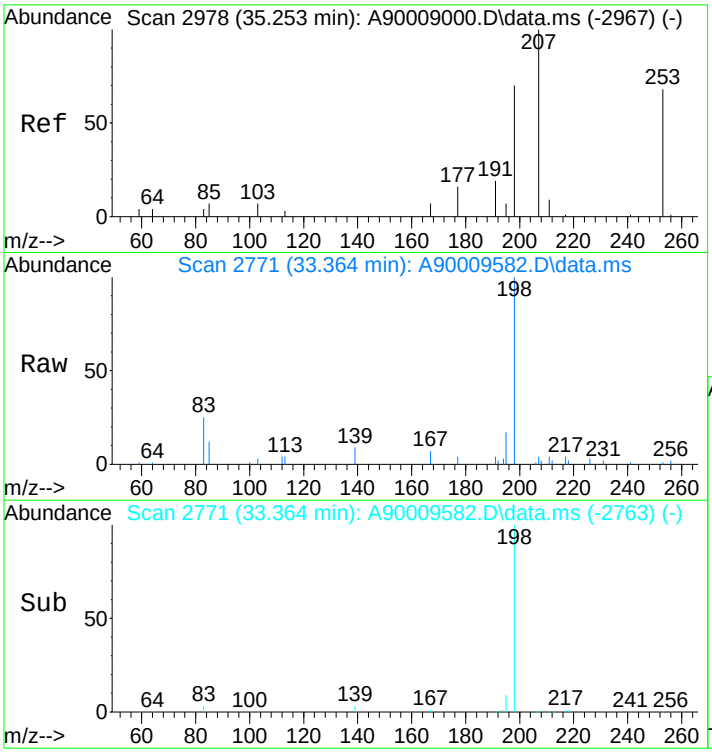


#37
OTP
Concen: 125.11 ng/mL
RT: 33.793 min Scan# 2818
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:198 Resp: 31476

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

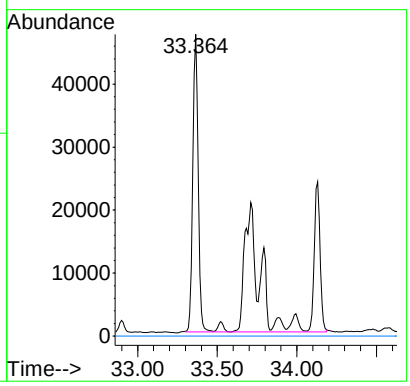


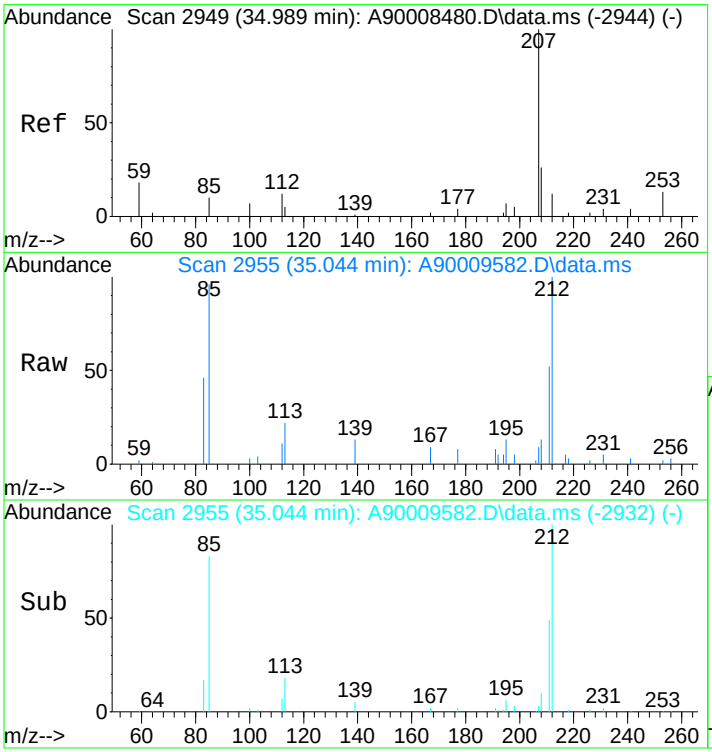


#38
C1-Dibenzothiophenes
Concen: 1231.10 ng/mL m
RT: 33.364 min Scan# 2771
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:198 Resp: 309736

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

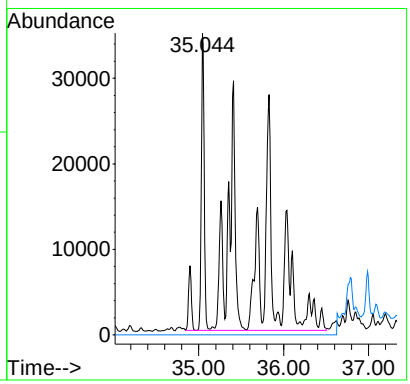


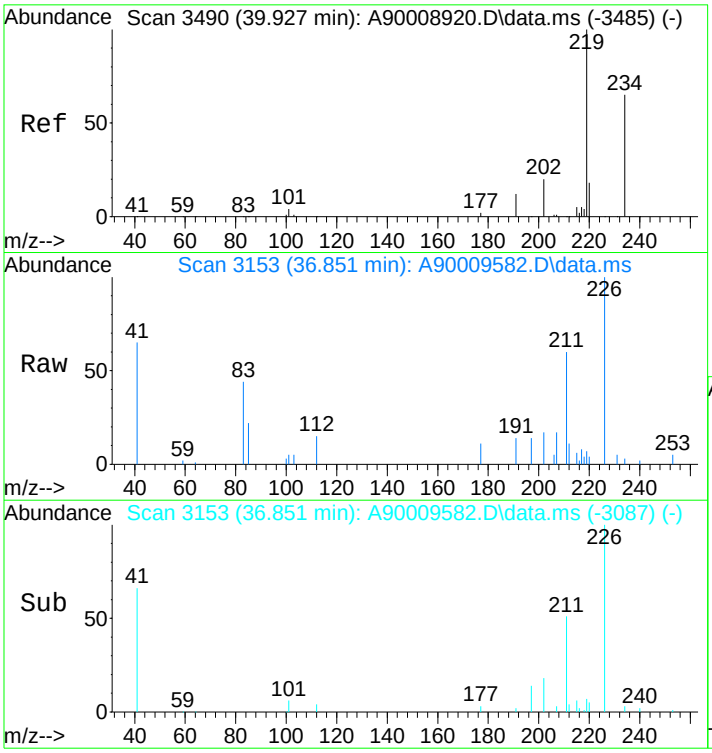


#39
C2-Dibenzothiophenes
Concen: 2114.06 ng/mL m
RT: 35.044 min Scan# 2955
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:212 Resp: 531882

Ion	Ratio	Lower	Upper
212	100		
197	0.0	0.0	0.0

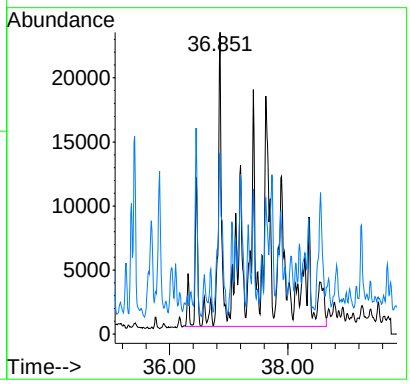


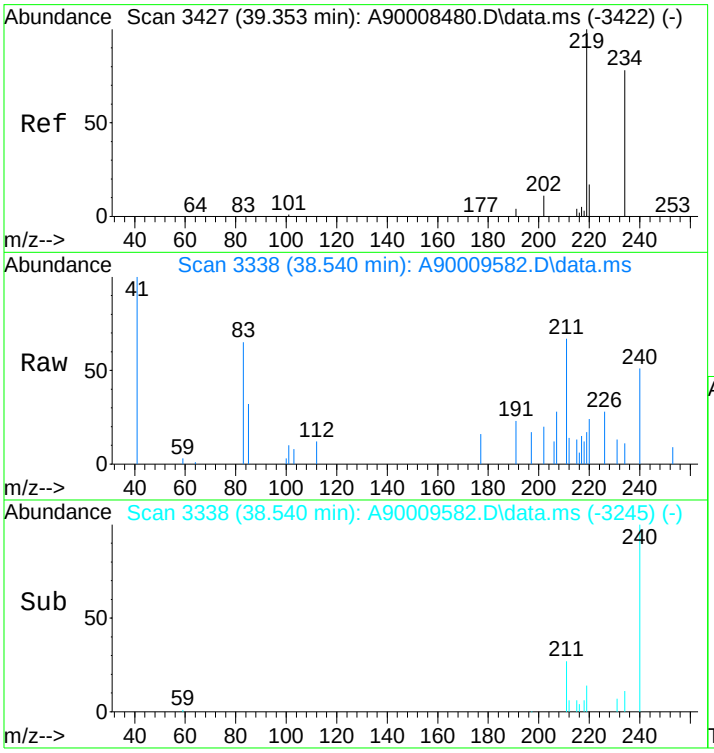


#40
C3-Dibenzothiophenes
Concen: 2292.75 ng/mL m
RT: 36.851 min Scan# 3153
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:226 Resp: 576840

Ion	Ratio	Lower	Upper
226	100		
211	3.9	46.4	69.6#

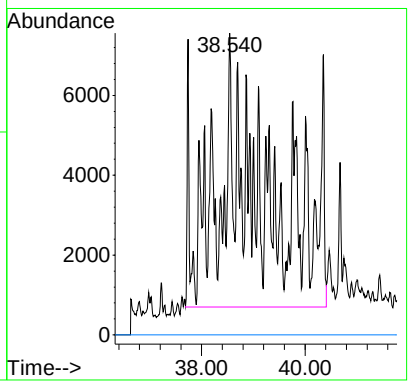


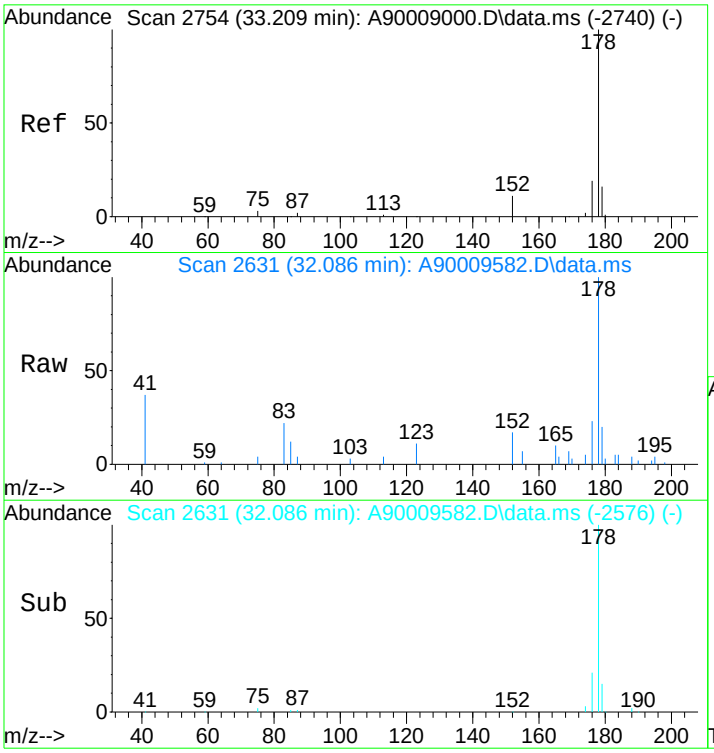


#41
C4-Dibenzothiophenes
Concen: 1624.81 ng/mL m
RT: 38.540 min Scan# 3338
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:240 Resp: 408790

Ion	Ratio	Lower	Upper
240	100		
225	0.0	0.0	0.0

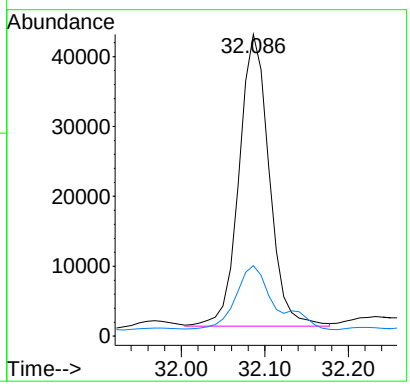


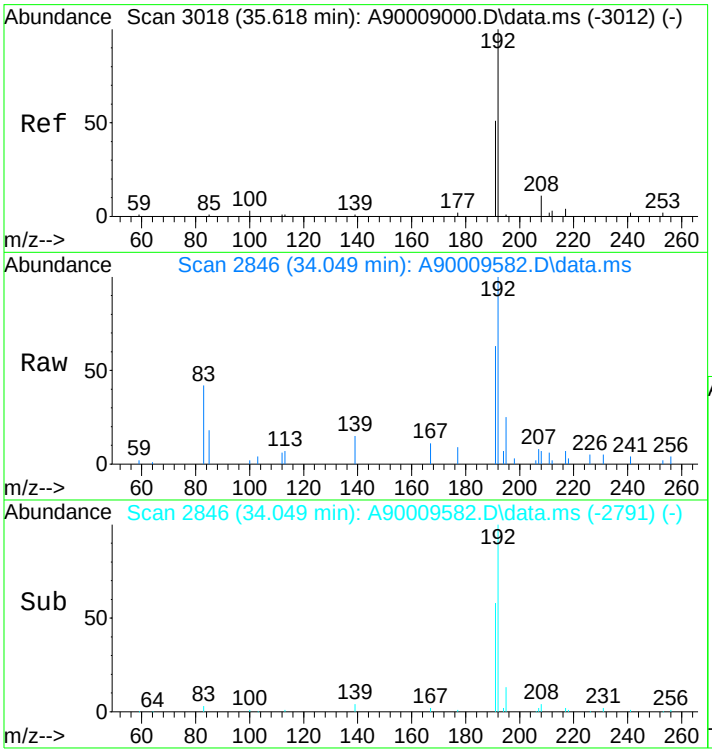


#43
Phenanthrene
Concen: 401.70 ng/mL m
RT: 32.086 min Scan# 2631
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:178 Resp: 104413

Ion	Ratio	Lower	Upper
178	100		
176	0.8	15.1	22.7#

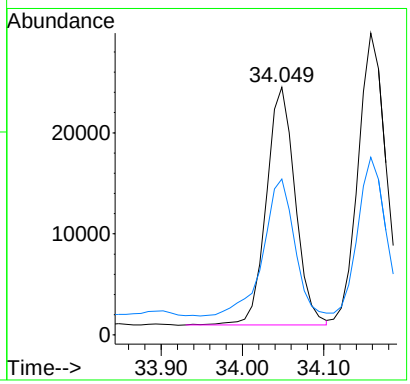


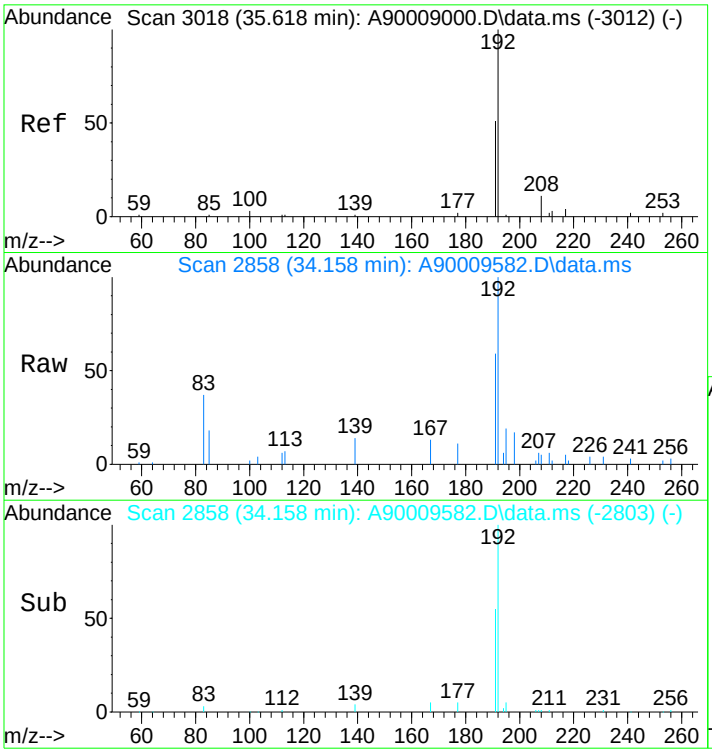


#44
3-Methylphenanthrene(3MP)
Concen: 222.91 ng/mL
RT: 34.049 min Scan# 2846
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:192 Resp: 57940

Ion	Ratio	Lower	Upper
192	100		
191	62.5	45.9	68.9

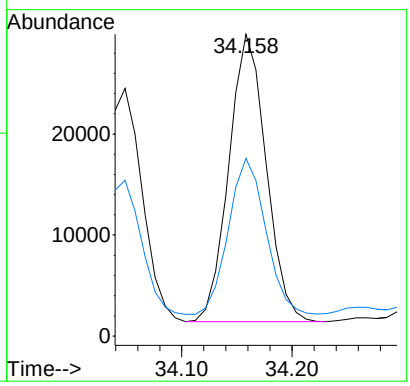


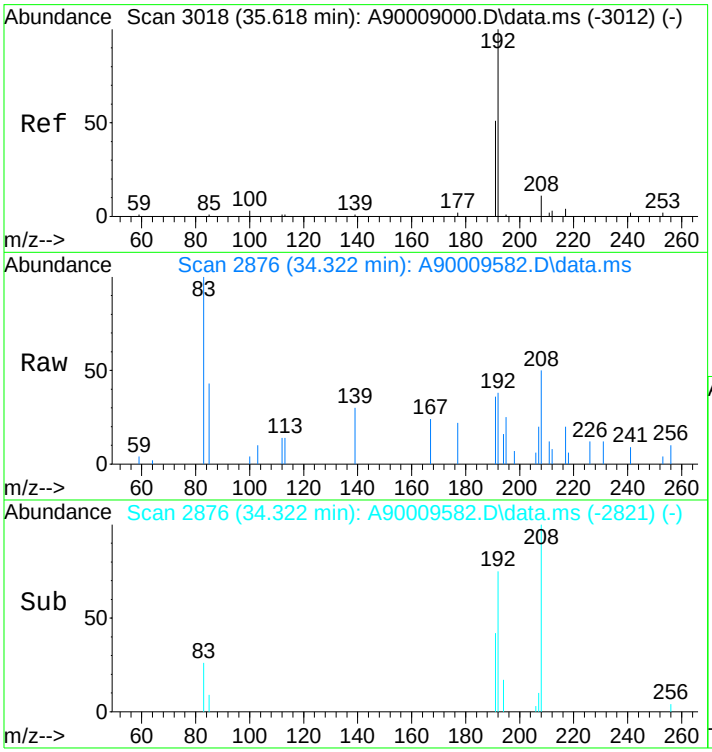


#45
2-Methylphenanthrene(2MP)
Concen: 256.93 ng/mL
RT: 34.158 min Scan# 2858
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:192 Resp: 66783

Ion	Ratio	Lower	Upper
192	100		
191	54.2	44.9	67.3

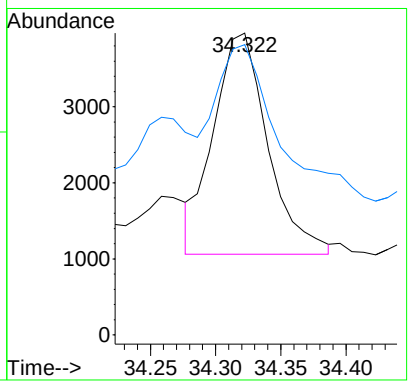


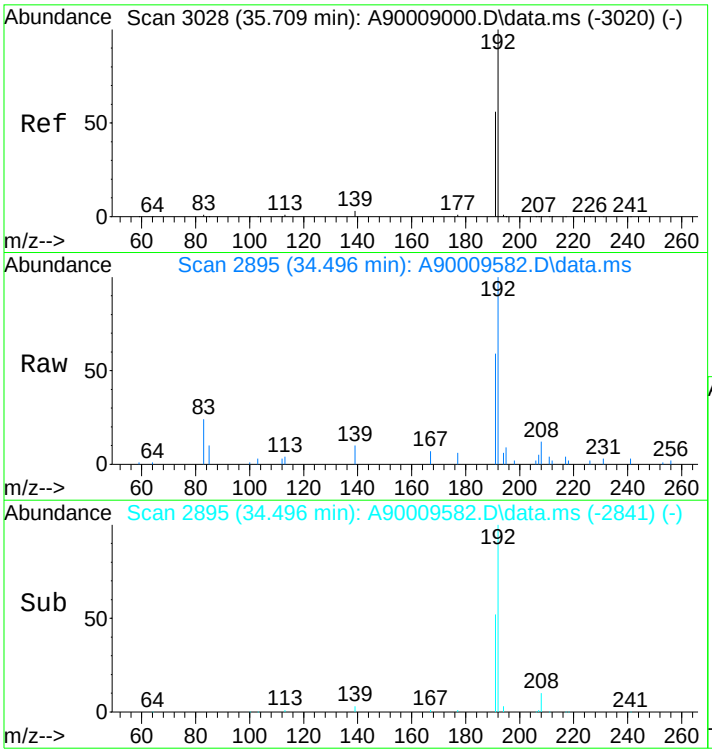


#46
2-Methylanthracene(2MA)
Concen: 32.43 ng/mL m
RT: 34.322 min Scan# 2876
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:192 Resp: 8429

Ion	Ratio	Lower	Upper
192	100		
191	12.6	96.8	145.2#

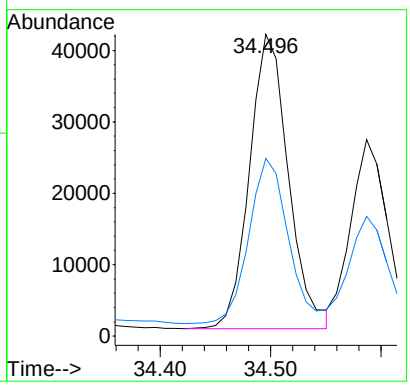


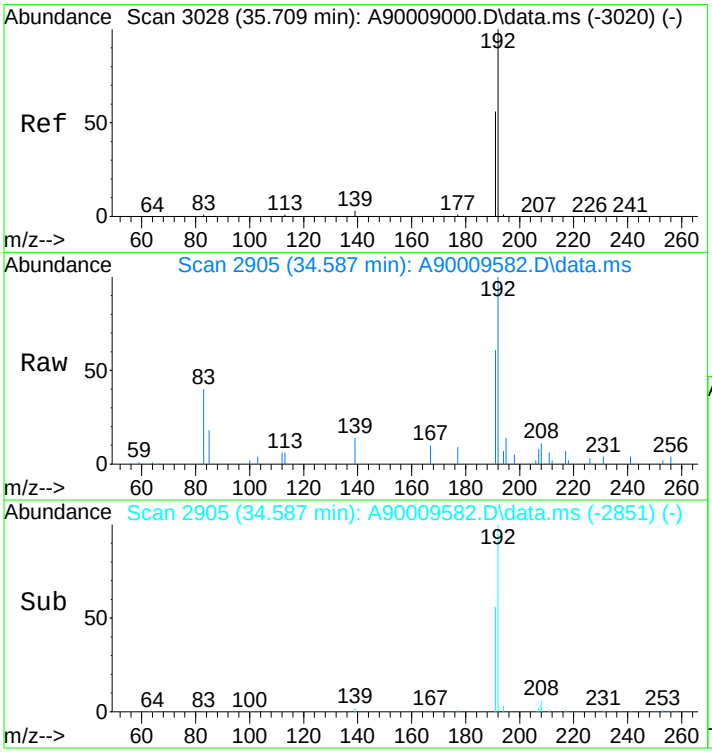


#47
9/4-Methylphenanthrene(9MP)
Concen: 388.87 ng/mL
RT: 34.496 min Scan# 2895
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:192 Resp: 101077

Ion	Ratio	Lower	Upper
192	100		
191	56.1	44.5	66.7

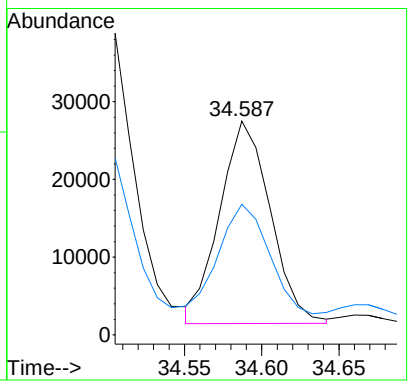


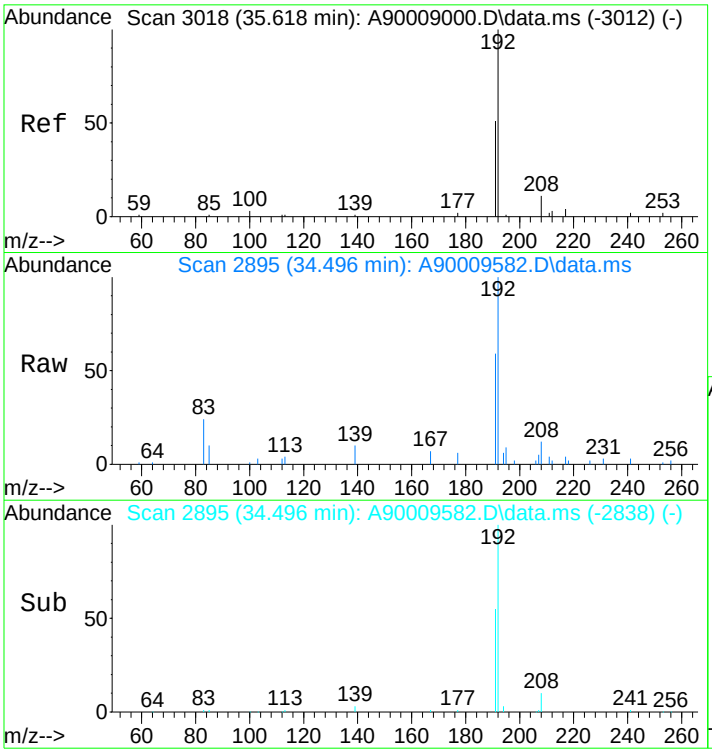


#48
1-Methylphenanthrene(1MP)
Concen: 228.69 ng/mL
RT: 34.587 min Scan# 2905
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:192 Resp: 59442

Ion	Ratio	Lower	Upper
192	100		
191	57.1	46.9	70.3

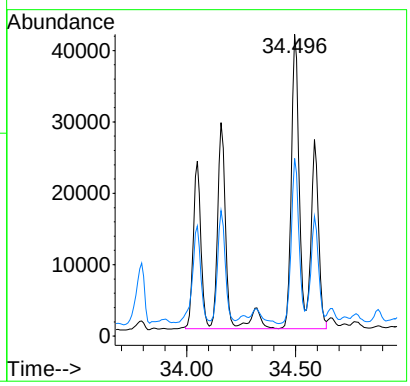


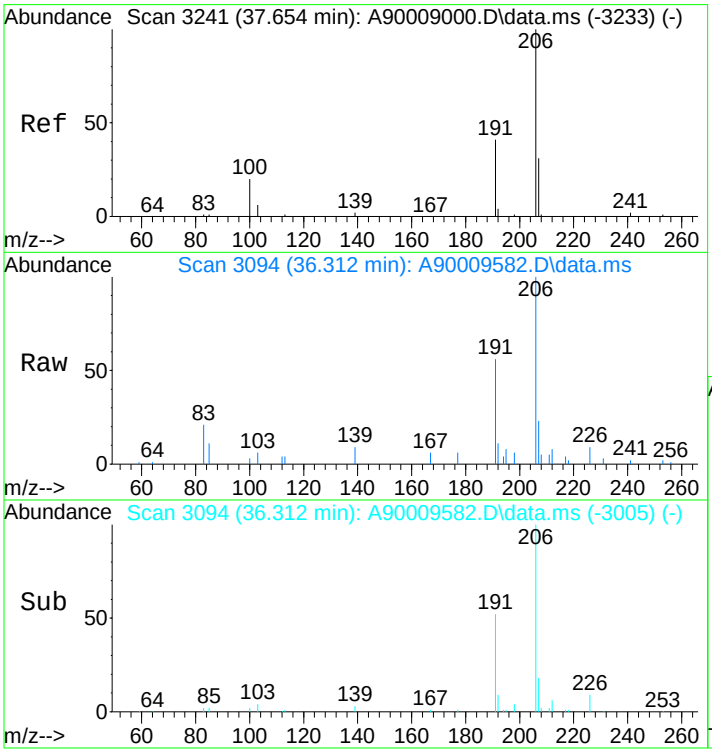


#49
C1-Phenanthrenes/Anthracenes
Concen: 1153.12 ng/mL m
RT: 34.496 min Scan# 2895
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:192 Resp: 299726

Ion	Ratio	Lower	Upper
192	100		
191	18.9	44.5	66.7#

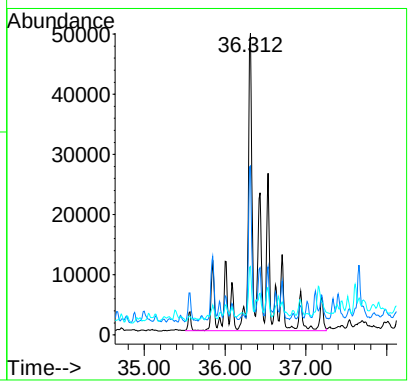


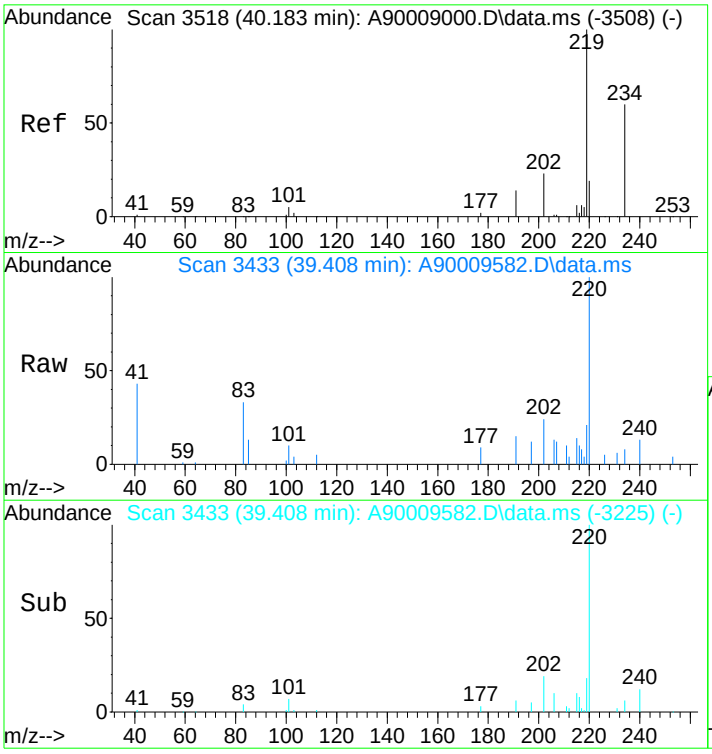


#50
C2-Phenanthrenes/Anthracenes
Concen: 1786.02 ng/mL m
RT: 36.312 min Scan# 3094
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:206 Resp: 464231

Ion	Ratio	Lower	Upper
206	100		
191	14.8	41.0	61.4#
207	4.6	17.1	25.7#

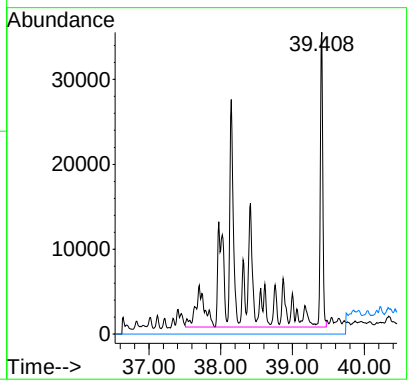


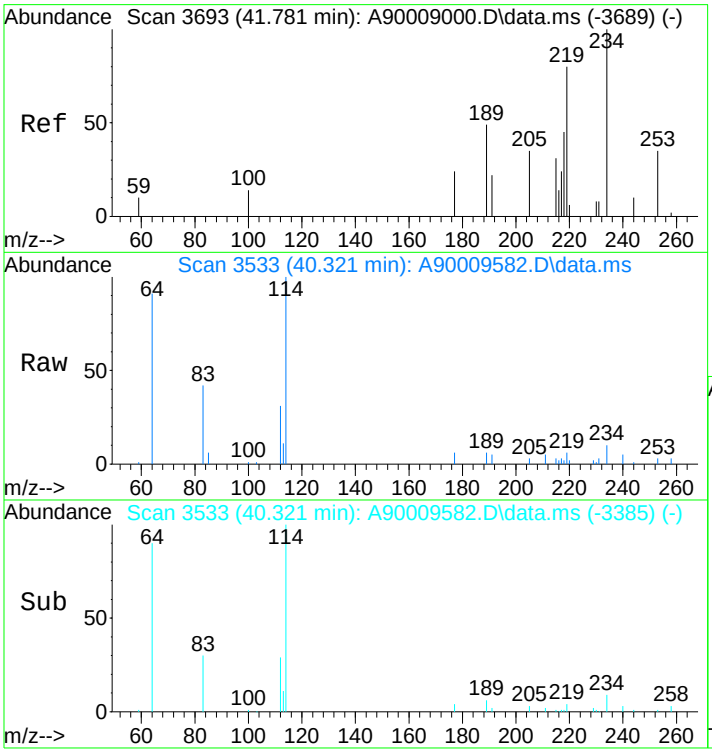


#52
C3-Phenanthrenes/Anthracenes
Concen: 1693.25 ng/mL m
RT: 39.408 min Scan# 3433
Delta R.T. 1.260 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:220 Resp: 440119

Ion	Ratio	Lower	Upper
220	100		
205	0.0	0.0	0.0

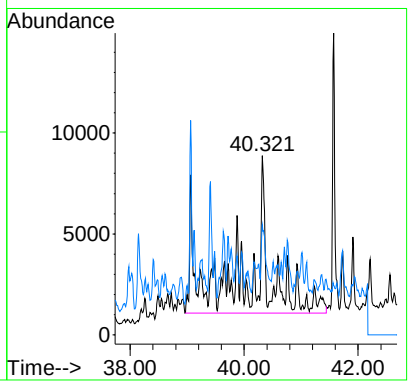


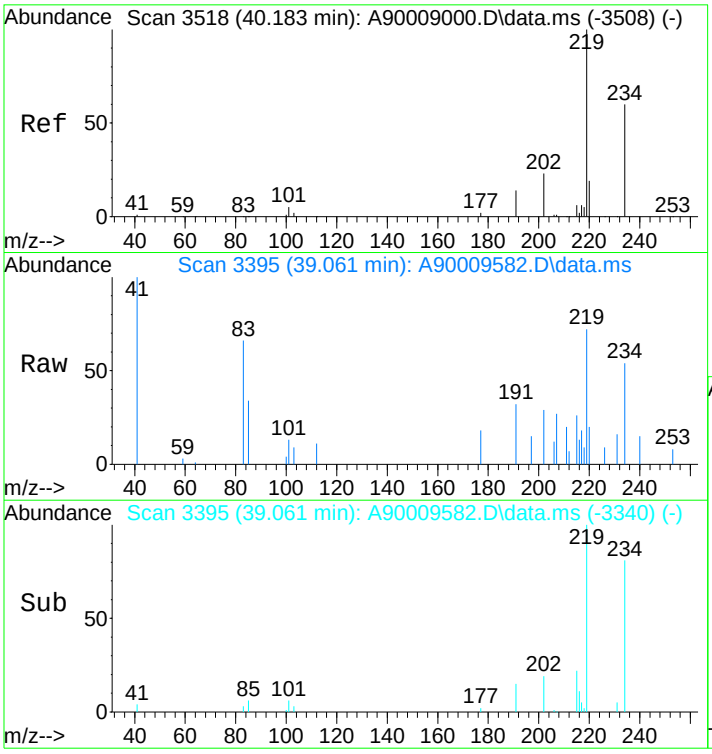


#53
C4-Phenanthrenes/Anthracenes
Concen: 769.73 ng/mL m
RT: 40.321 min Scan# 3533
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:234 Resp: 200073

Ion	Ratio	Lower	Upper
234	100		
219	2.4	52.1	78.1#

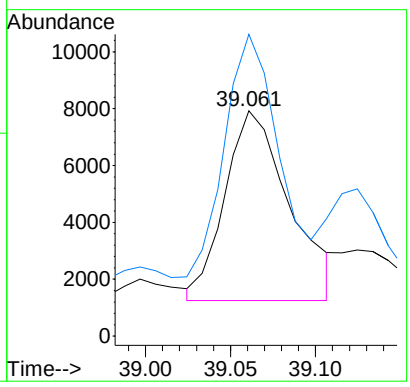


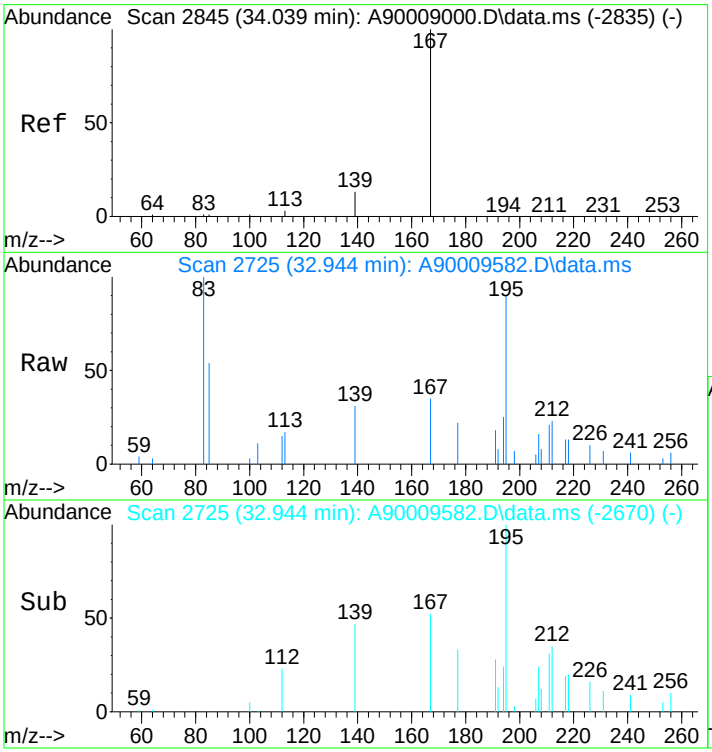


#54
Retene
Concen: 246.49 ng/mL m
RT: 39.061 min Scan# 3395
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:234 Resp: 17613

Ion	Ratio	Lower	Upper
234	100		
219	110.1	120.4	180.6#

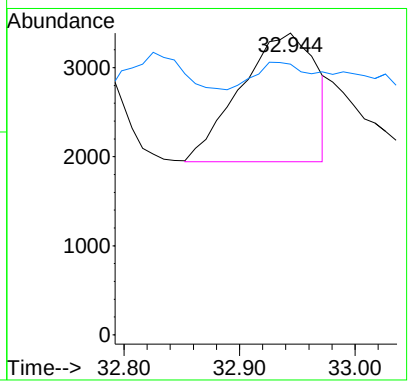


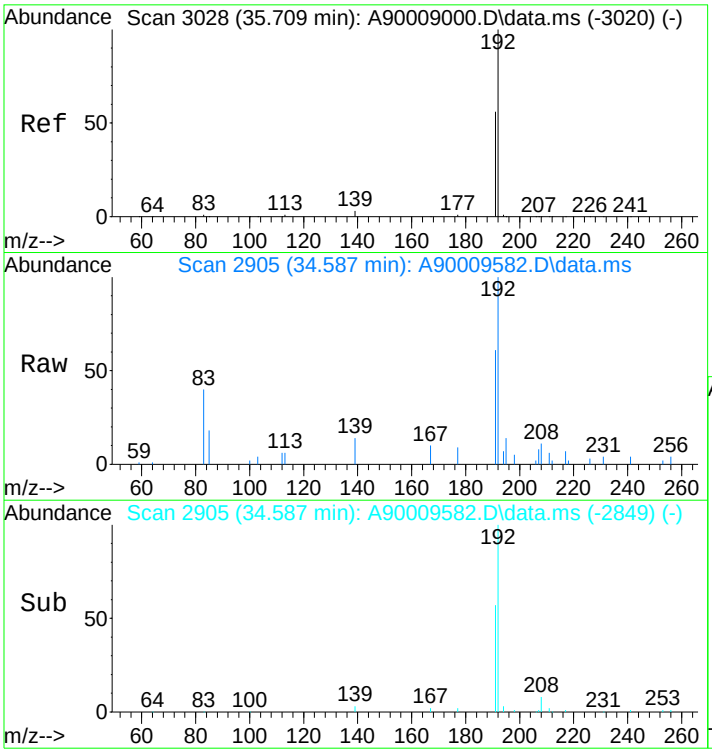


#56
Carbazole
Concen: 28.72 ng/mL m
RT: 32.944 min Scan# 2725
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:167 Resp: 6558

Ion	Ratio	Lower	Upper
167	100		
139	0.0	10.2	15.2#

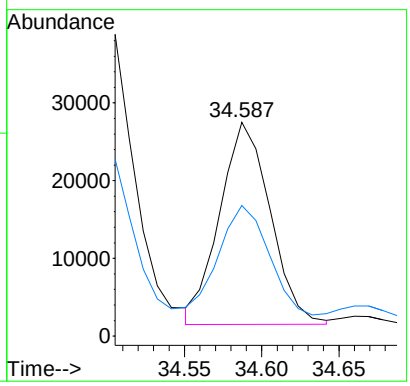


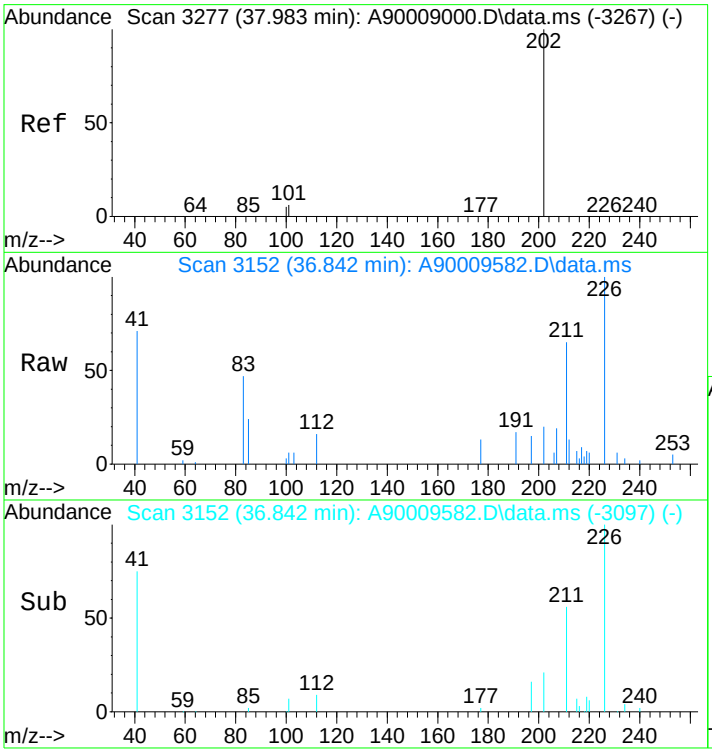


#57
1-Methylphenanthrene
Concen: 308.93 ng/mL
RT: 34.587 min Scan# 2905
Delta R.T. 0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:192 Resp: 59245

Ion	Ratio	Lower	Upper
192	100		
191	56.8	44.9	67.3

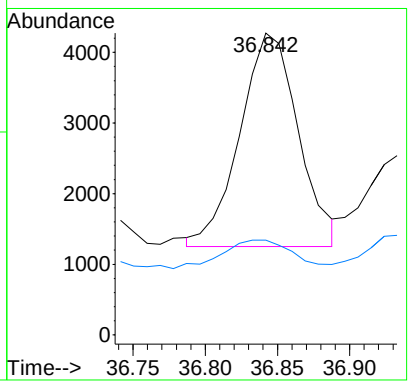


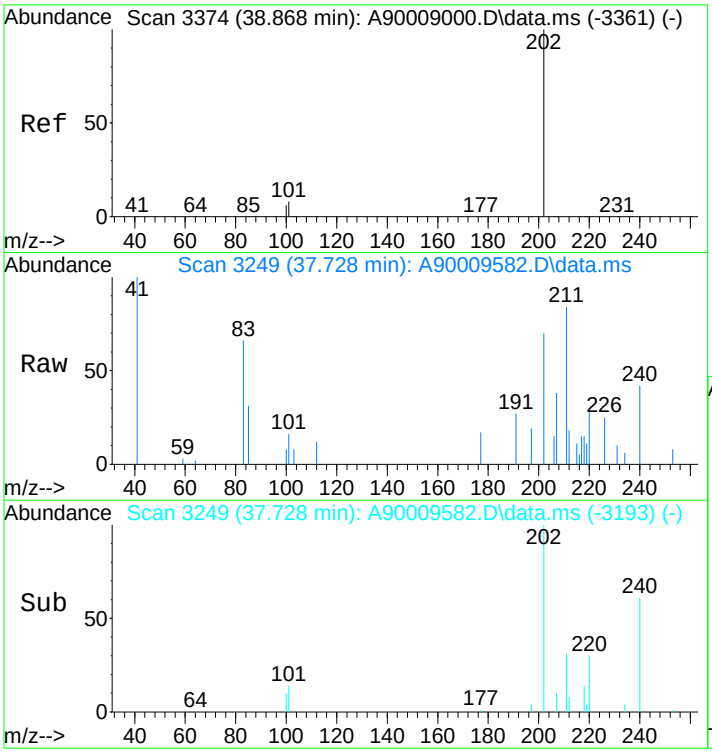


#58
Fluoranthene
Concen: 29.21 ng/mL m
RT: 36.842 min Scan# 3152
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:202 Resp: 8482

Ion	Ratio	Lower	Upper
202	100		
101	30.0	8.2	12.2#

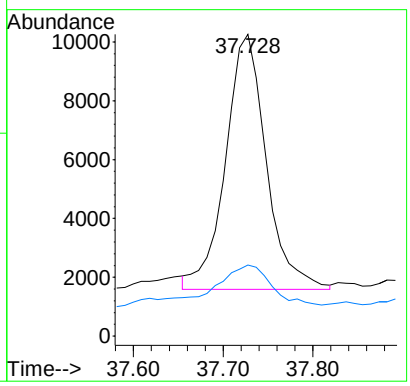


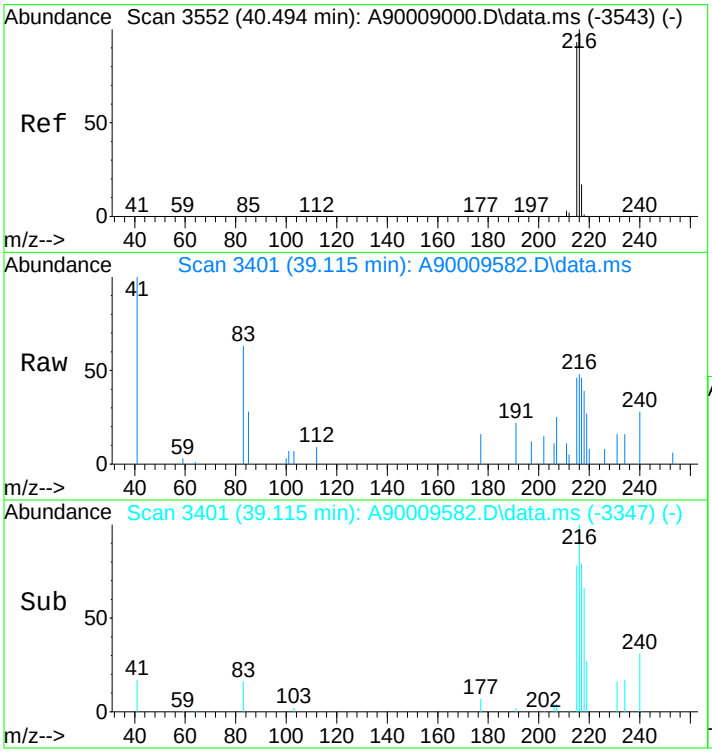


#60
Pyrene
Concen: 92.50 ng/mL m
RT: 37.728 min Scan# 3249
Delta R.T. 0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:202 Resp: 27402

Ion	Ratio	Lower	Upper
202	100		
101	25.0	9.5	14.3#

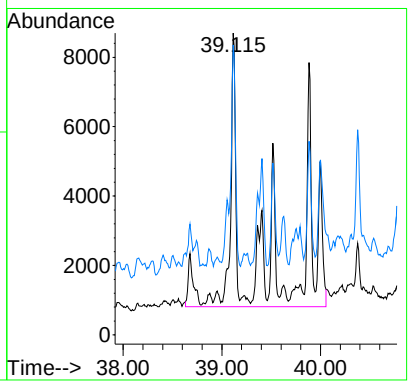


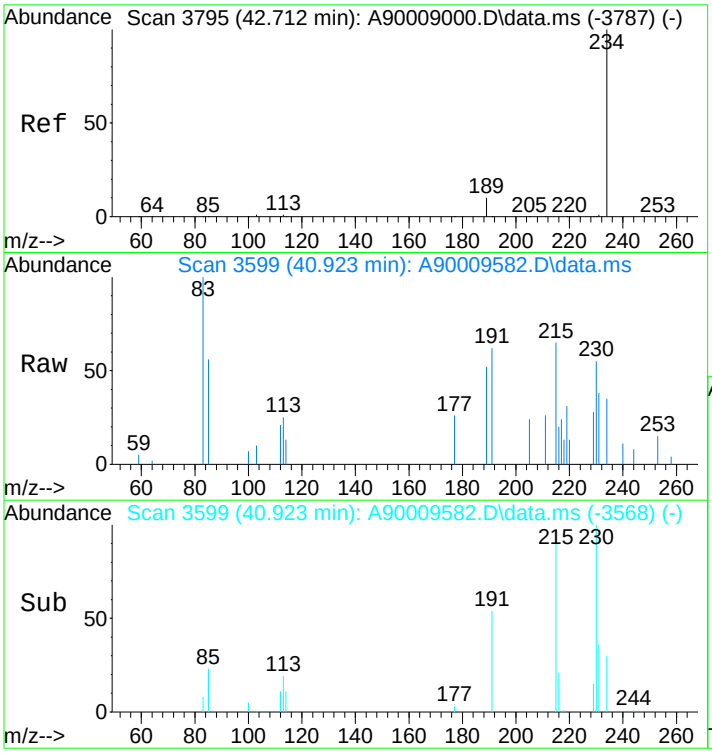


#61
C1-Fluoranthenes/Pyrenes
Concen: 328.30 ng/mL m
RT: 39.115 min Scan# 3401
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:216 Resp: 97253

Ion	Ratio	Lower	Upper
216	100		
215	19.0	73.5	110.3#

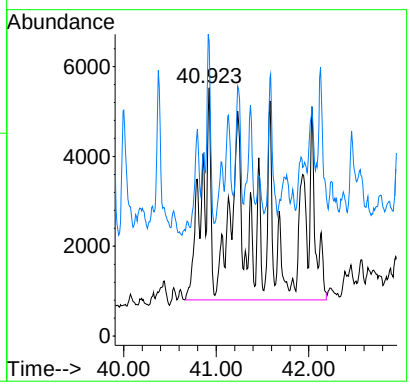


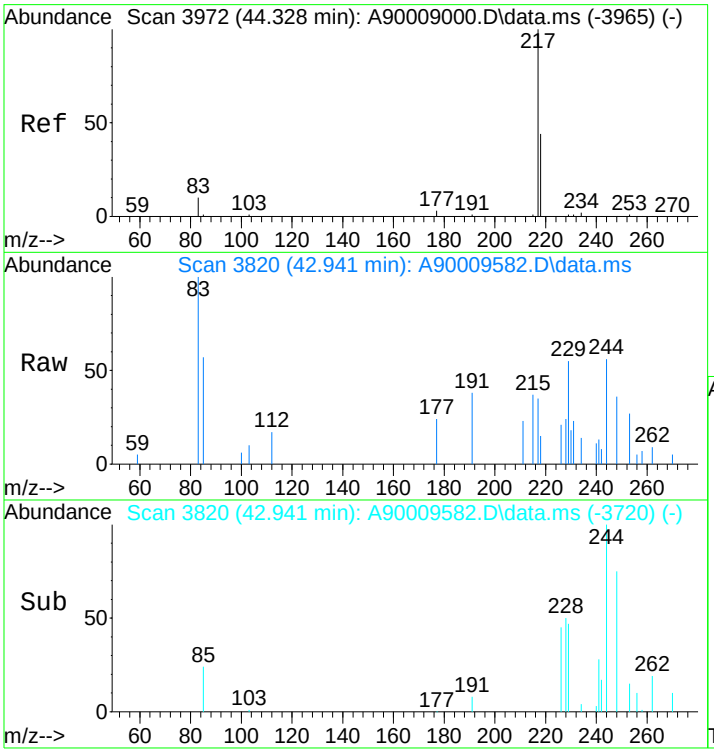


#62
C2-Fluoranthenes/Pyrenes
Concen: 450.06 ng/mL m
RT: 40.923 min Scan# 3599
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:230 Resp: 133321

Ion	Ratio	Lower	Upper
230	100		
215	5.6	93.1	139.7#

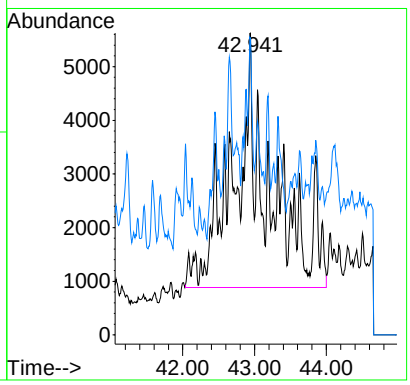


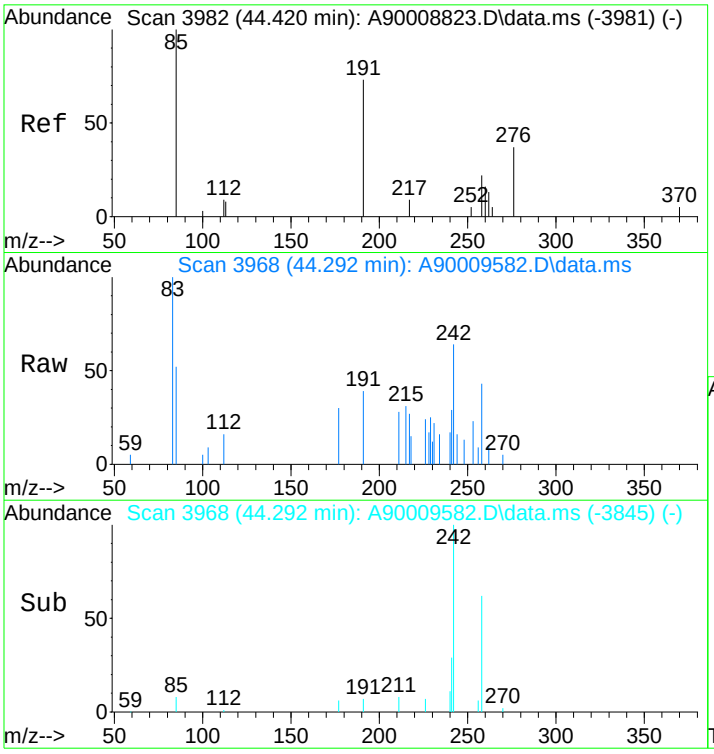


#63
C3-Fluoranthenes/Pyrenes
Concen: 545.99 ng/mL m
RT: 42.941 min Scan# 3820
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:244 Resp: 161740

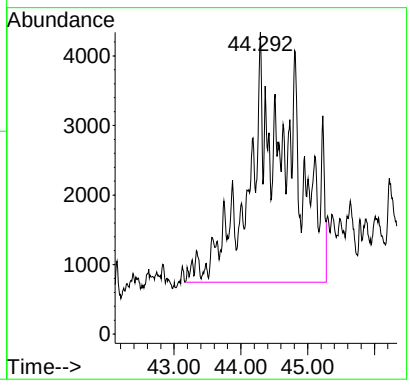
Ion	Ratio	Lower	Upper
244	100		
229	5.1	75.0	112.4#

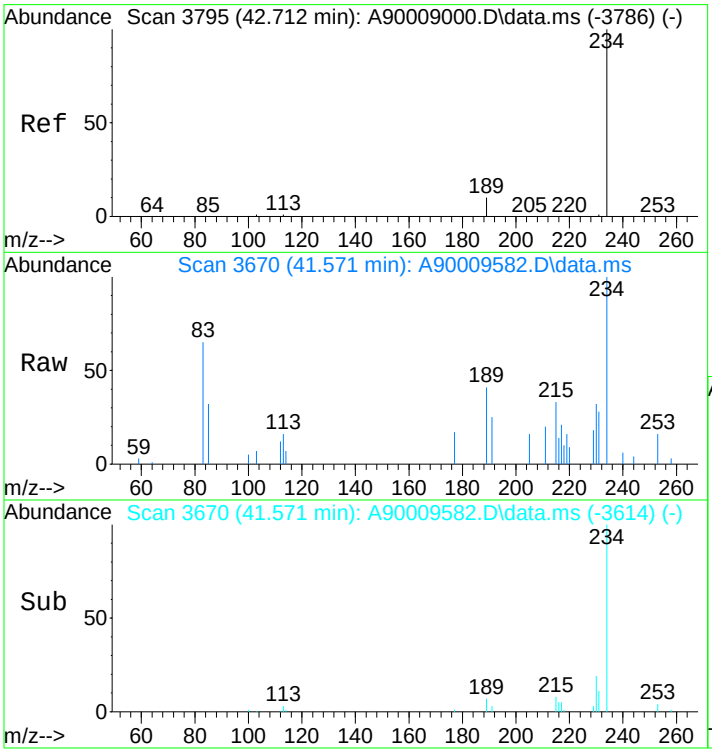




#64
C4-Fluoranthenes/Pyrenes
Concen: 518.94 ng/mL m
RT: 44.292 min Scan# 3968
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:258 Resp: 153725

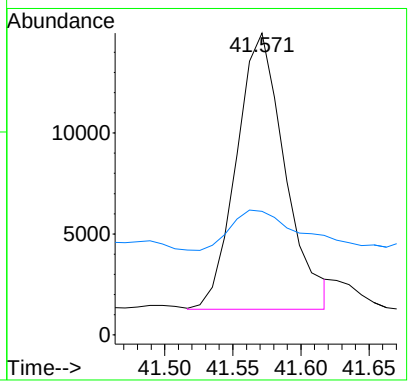


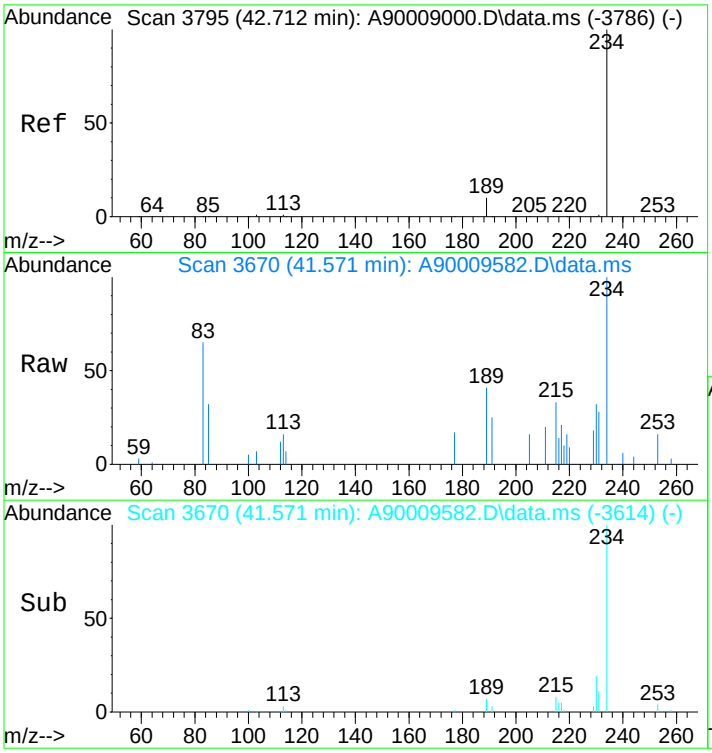


#66
Naphthobenzothiophene
Concen: 131.74 ng/ml m
RT: 41.571 min Scan# 3670
Delta R.T. 0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:234 Resp: 33862

Ion	Ratio	Lower	Upper
234	100		
189	21.3	7.2	10.8#

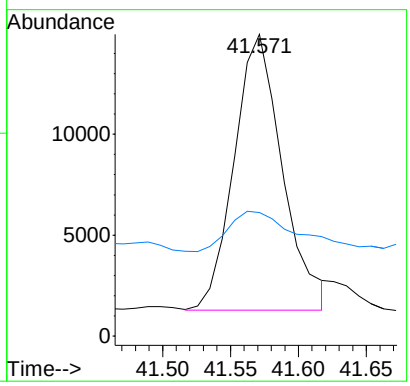


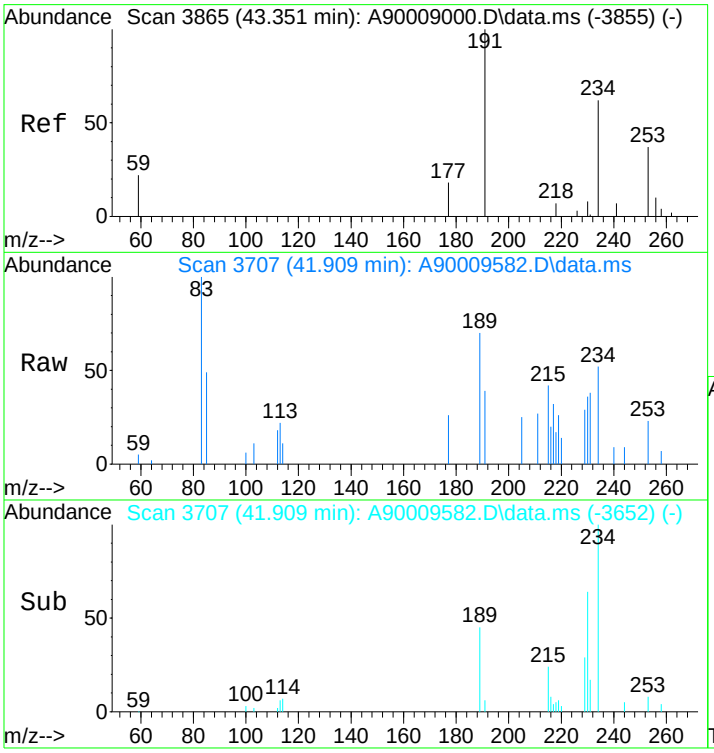


#67
Naphthobenzothiophene-2,1-D
Concen: 131.45 ng/mL m
RT: 41.571 min Scan# 3670
Delta R.T. 0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:234 Resp: 33789

Ion	Ratio	Lower	Upper
234	100		
189	21.3	7.2	10.8#

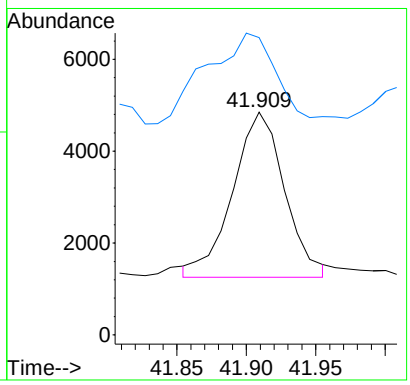


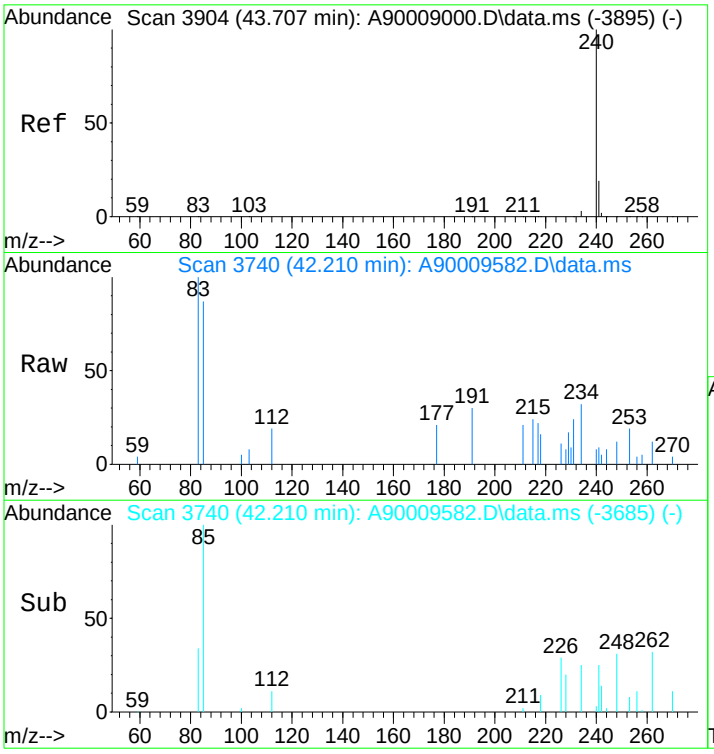


#68
Naphthobenzothiophene-1,2-D
Concen: 36.31 ng/mL m
RT: 41.909 min Scan# 3707
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:234 Resp: 9332

Ion	Ratio	Lower	Upper
234	100		
189	62.9	81.0	121.4#

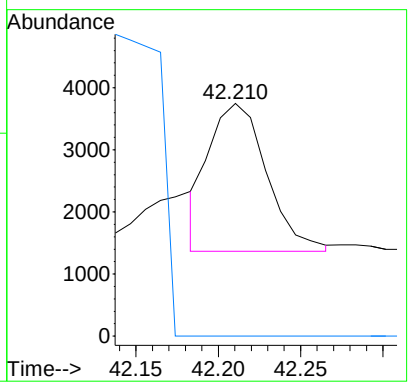


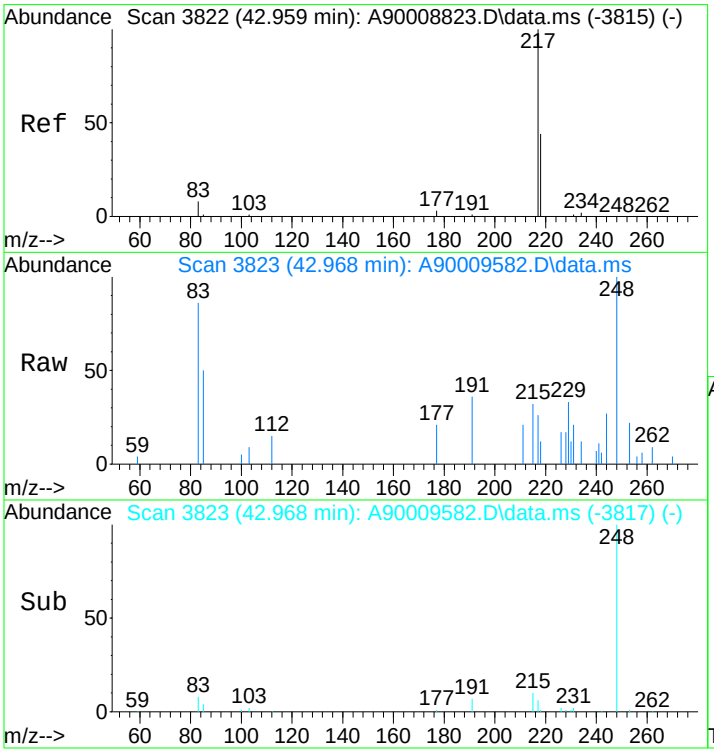


#69
Naphthobenzothiophene-2,3-D
Concen: 22.63 ng/mL m
RT: 42.210 min Scan# 3740
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:234 Resp: 5816

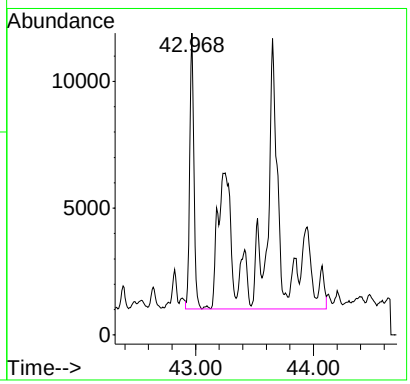
Ion	Ratio	Lower	Upper
234	100		
189	0.0	0.0	0.0

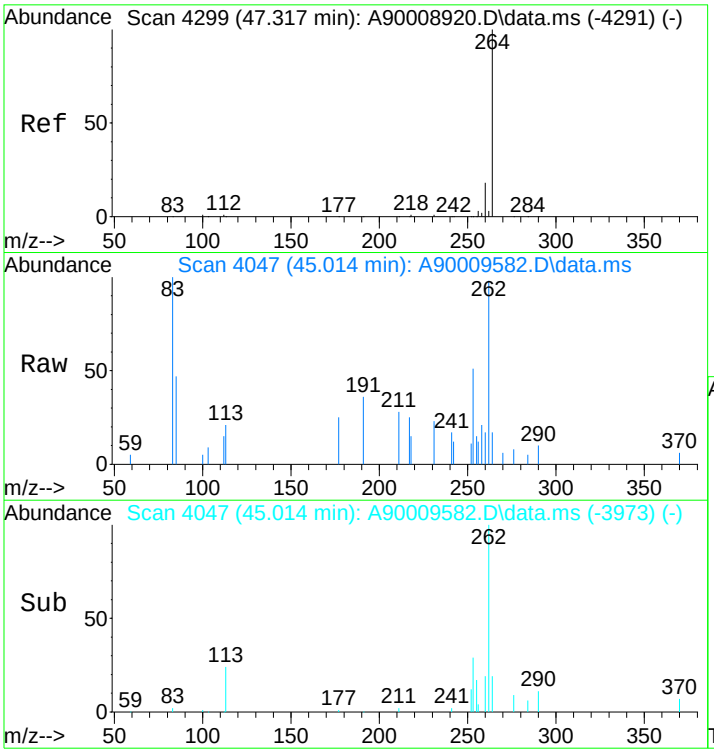




#70
C1-Naphthobenzothiophenes
Concen: 640.00 ng/ml m
RT: 42.968 min Scan# 3823
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

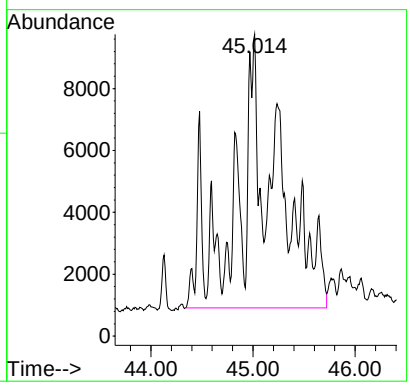
Tgt Ion:248 Resp: 164506

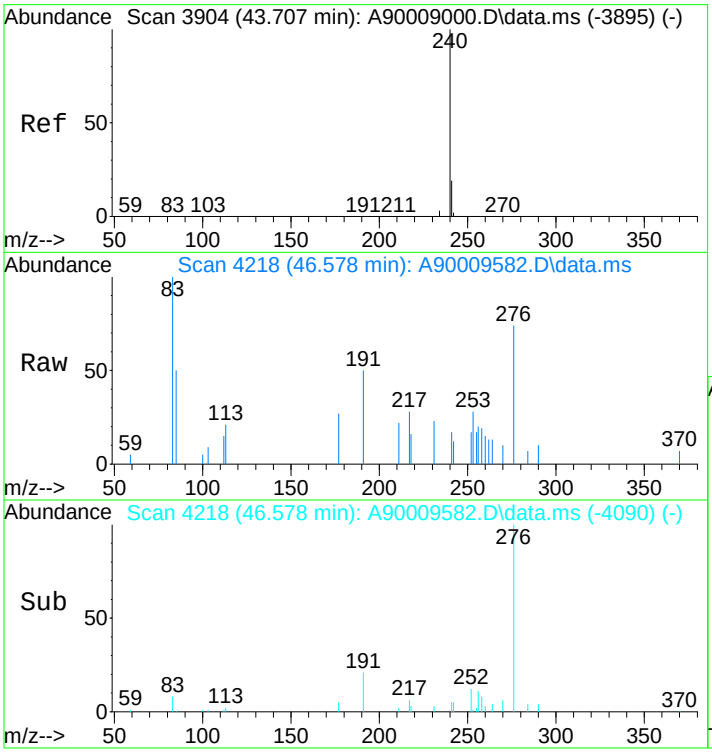




#71
C2-Naphthobenzothiophenes
Concen: 932.81 ng/ml m
RT: 45.014 min Scan# 4047
Delta R.T. 0.046 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

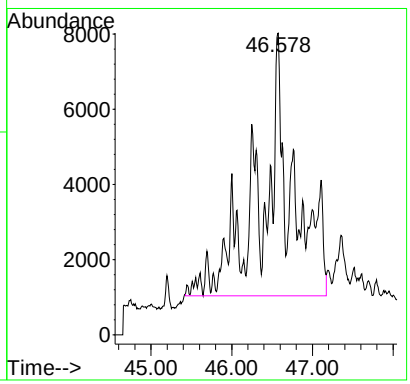
Tgt Ion:262 Resp: 239772

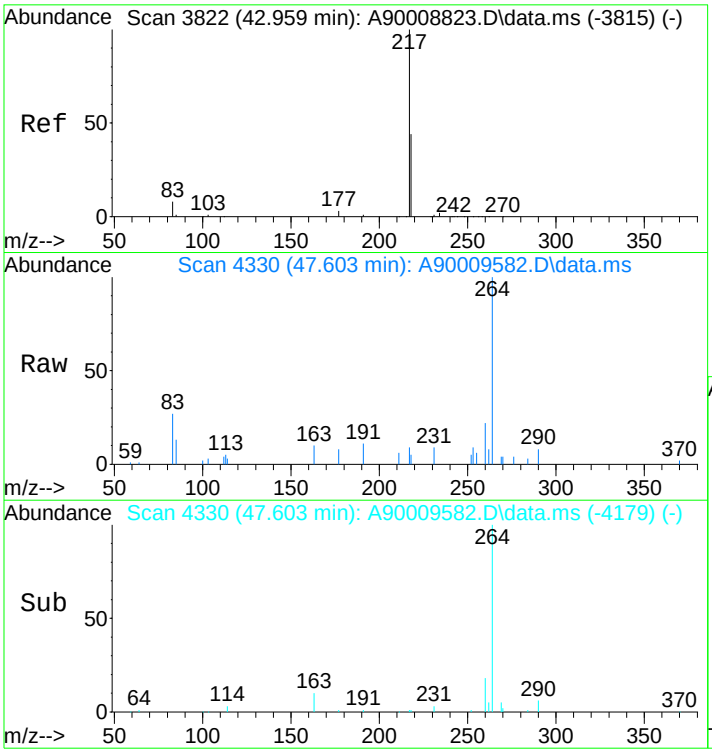




#72
C3-Naphthobenzothiophenes
Concen: 724.75 ng/ml m
RT: 46.578 min Scan# 4218
Delta R.T. 0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

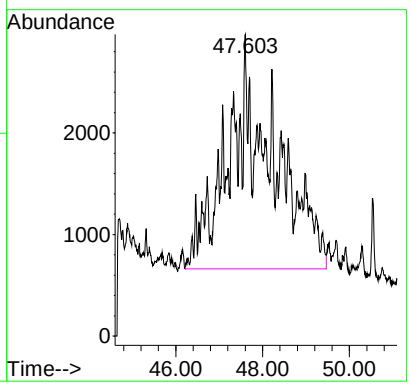
Tgt Ion:276 Resp: 186290

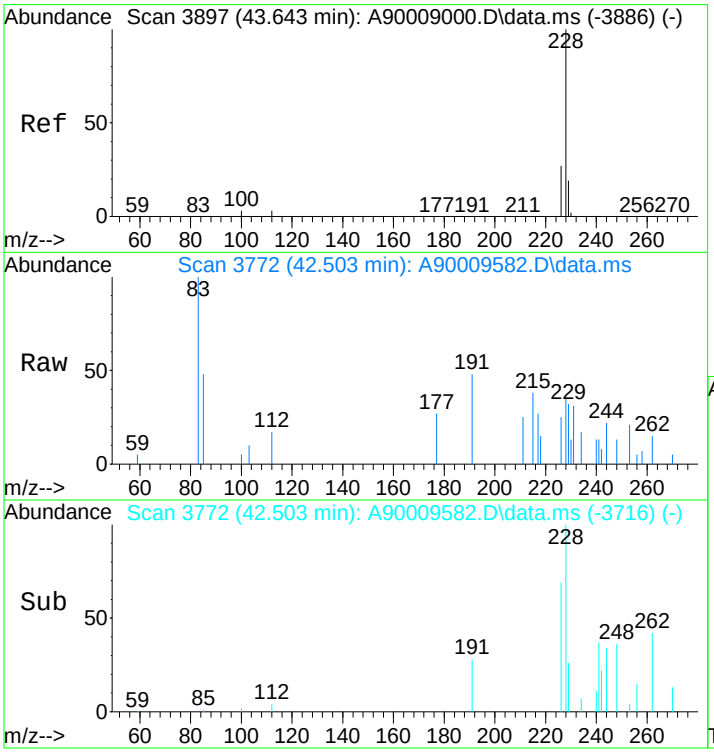




#73
C4-Naphthobenzothiophenes
Concen: 625.03 ng/mL m
RT: 47.603 min Scan# 4330
Delta R.T. 0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:290 Resp: 160658

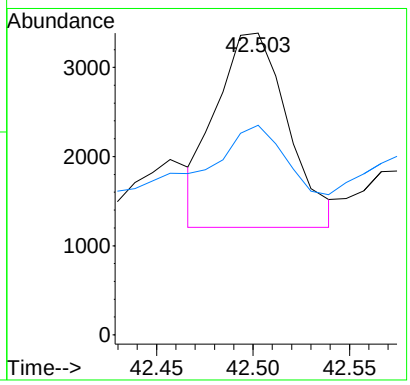


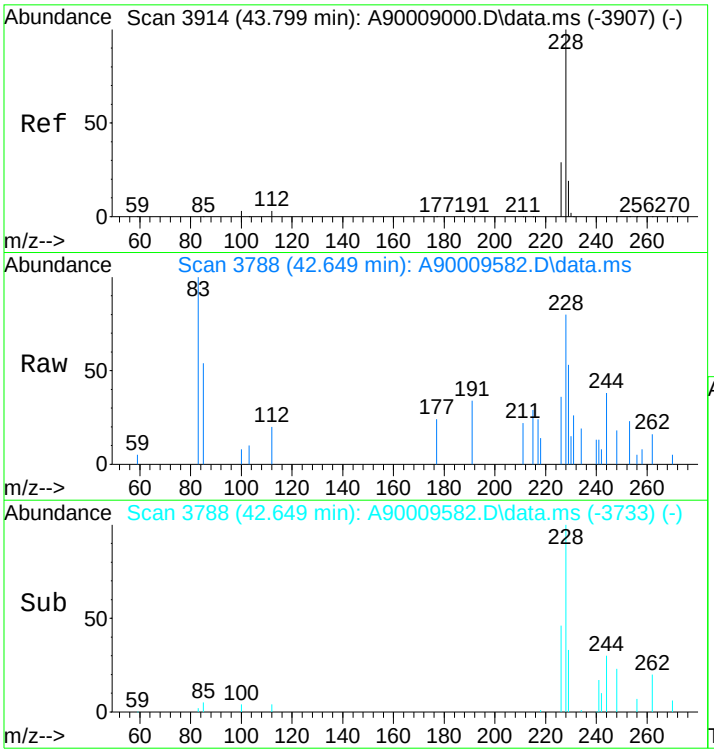


#75
Benz[a]anthracene
Concen: 20.68 ng/mL m
RT: 42.503 min Scan# 3772
Delta R.T. 0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:228 Resp: 5646

Ion	Ratio	Lower	Upper
228	100		
226	0.0	20.8	31.2#

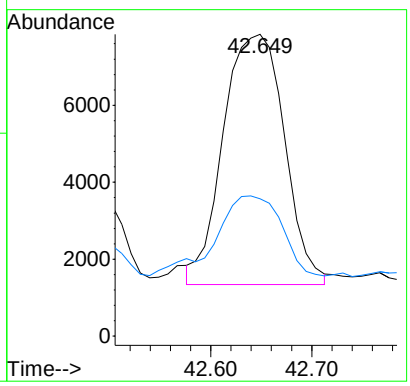


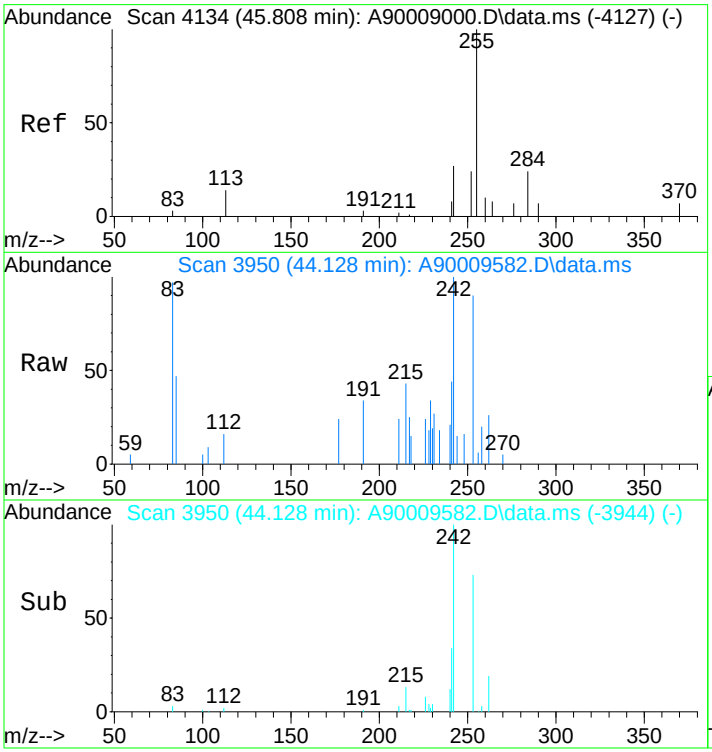


#77
Chrysene/Triphenylene
Concen: 102.01 ng/mL m
RT: 42.649 min Scan# 3788
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:228 Resp: 27397

Ion	Ratio	Lower	Upper
228	100		
226	31.1	23.3	34.9

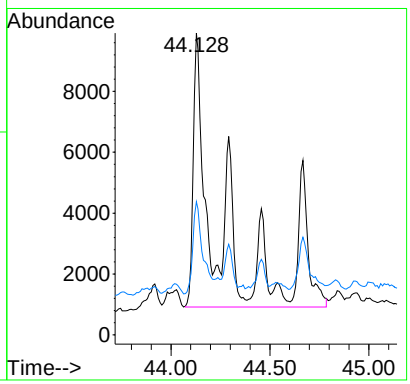


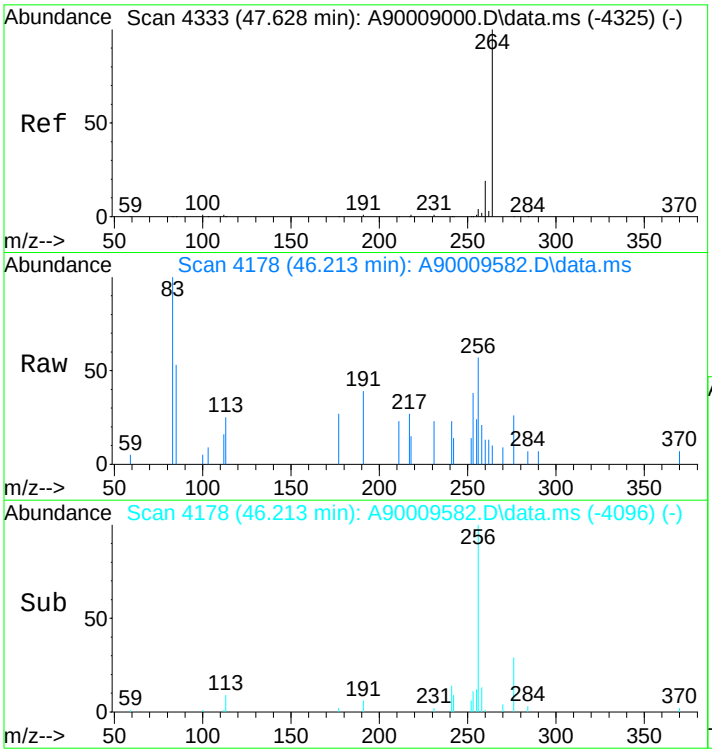


#78
C1-Chrysenes
Concen: 288.26 ng/mL m
RT: 44.128 min Scan# 3950
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:242 Resp: 77419

Ion	Ratio	Lower	Upper
242	100		
241	1.0	31.9	47.9#

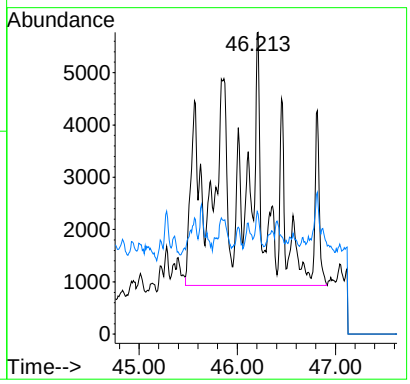


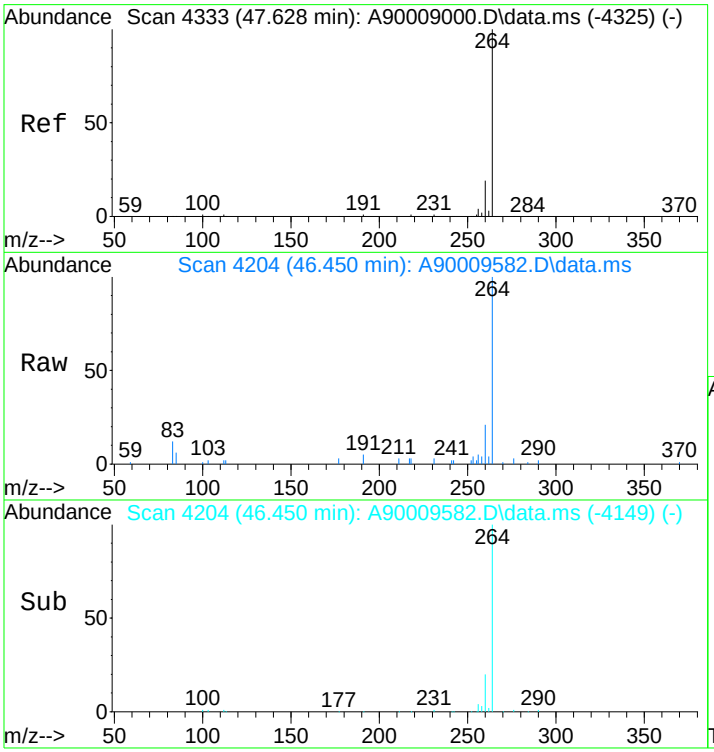


#79
C2-Chrysenes
Concen: 472.12 ng/mL m
RT: 46.213 min Scan# 4178
Delta R.T. -0.603 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:256 Resp: 126798

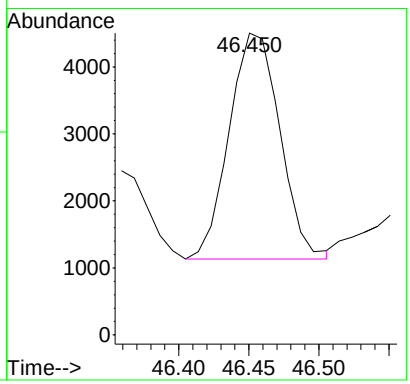
Ion	Ratio	Lower	Upper
256	100		
241	2.0	42.2	63.2#

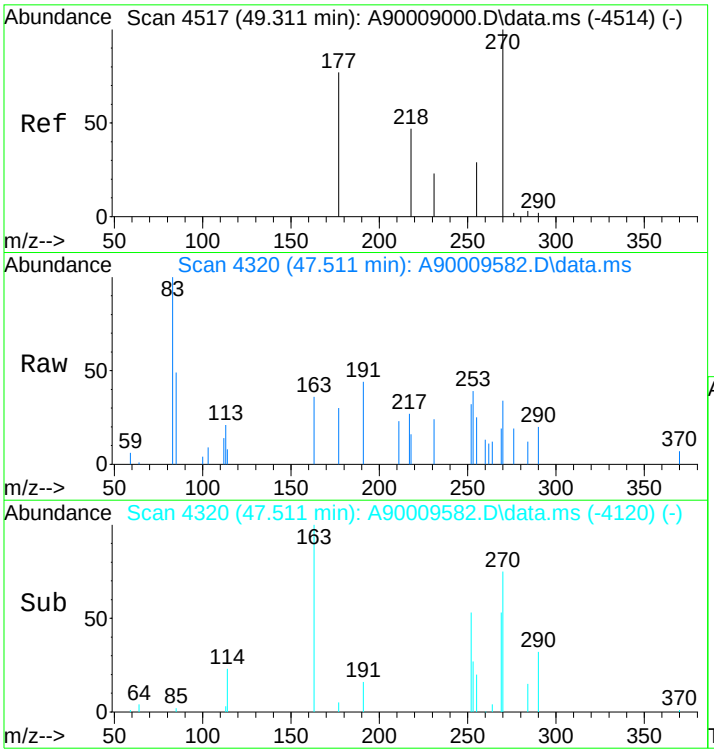




#80
BBF-d12 Surr BKGD
Concen: 31.75 ng/mL
RT: 46.450 min Scan# 4204
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:256 Resp: 8528

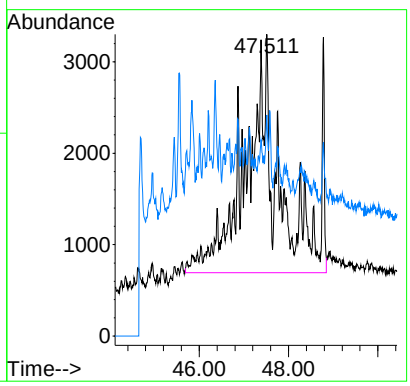


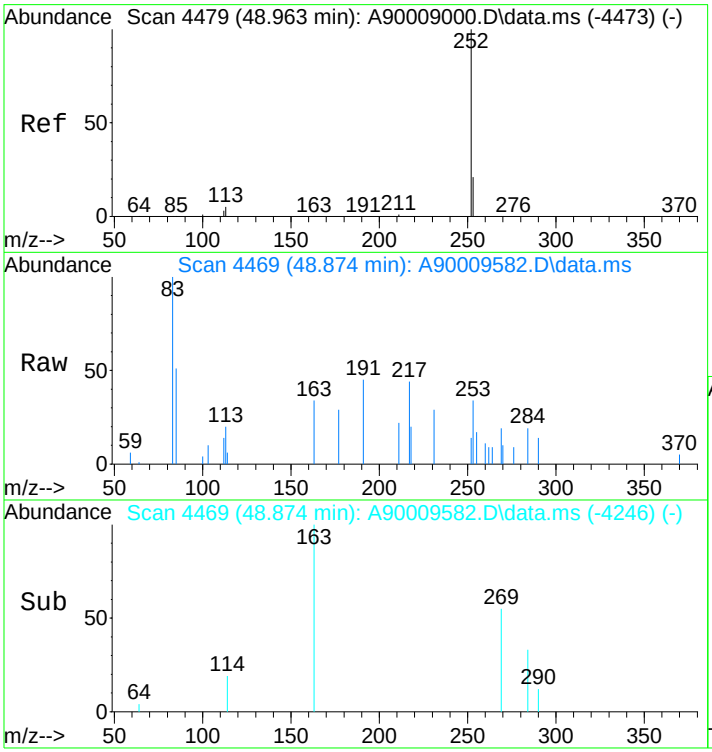


#81
C3-Chrysenes
Concen: 492.12 ng/mL m
RT: 47.511 min Scan# 4320
Delta R.T. -1.271 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:270 Resp: 132169

Ion	Ratio	Lower	Upper
270	100		
255	0.3	48.2	72.4#

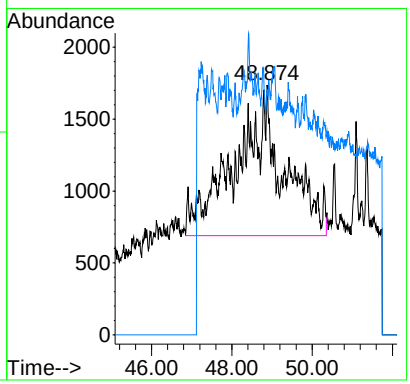


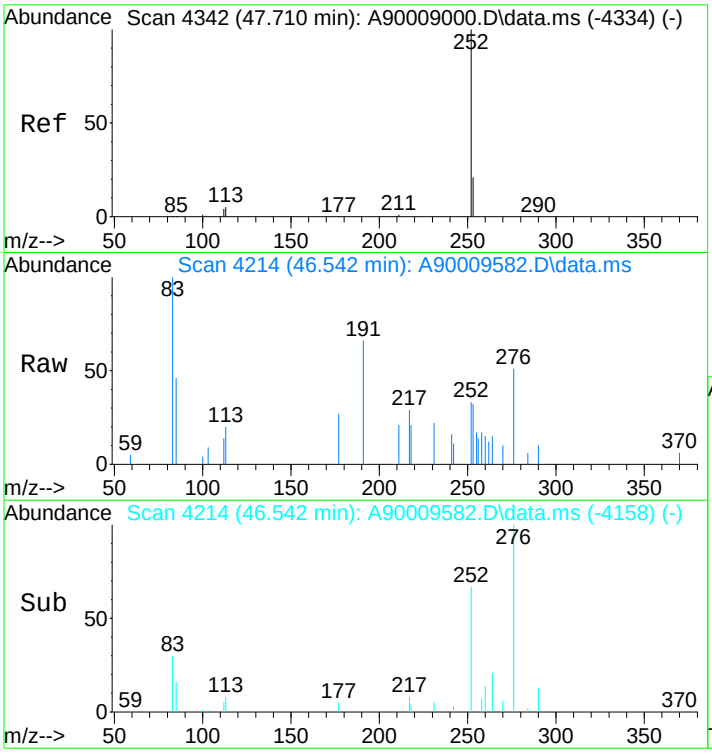


#82
C4-Chrysenes
Concen: 318.67 ng/mL m
RT: 48.874 min Scan# 4469
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:284 Resp: 85586

Ion	Ratio	Lower	Upper
284	100		
269	0.0	84.6	126.8#

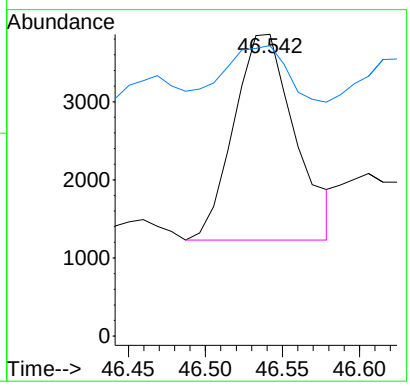


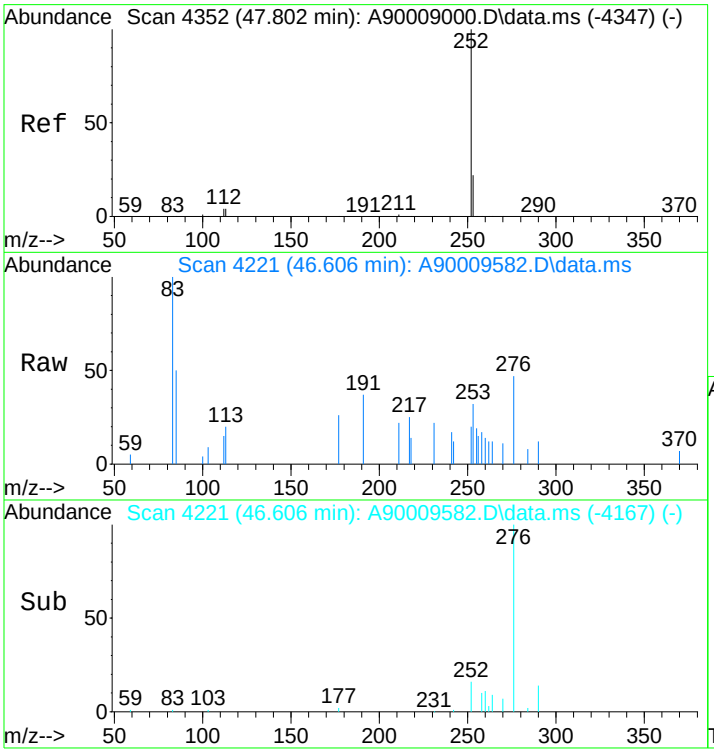


#84
Benzo[b]fluoranthene
Concen: 25.84 ng/mL
RT: 46.542 min Scan# 4214
Delta R.T. 0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:252 Resp: 7316

Ion	Ratio	Lower	Upper
252	100		
253	27.0	20.3	30.5

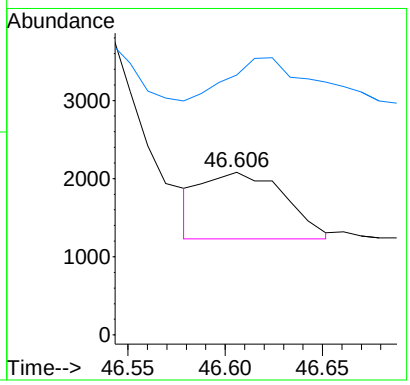


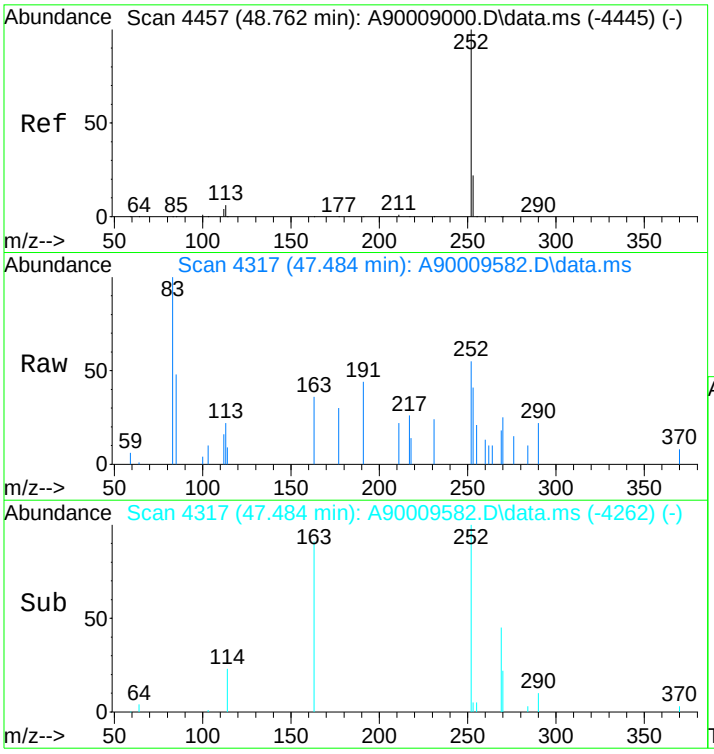


#85
Benzo[j]+[k]fluoranthene
Concen: 9.08 ng/mL m
RT: 46.606 min Scan# 4221
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:252 Resp: 2525

Ion	Ratio	Lower	Upper
252	100		
253	84.4	20.2	30.4#

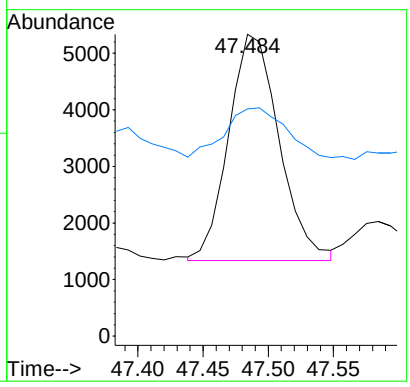


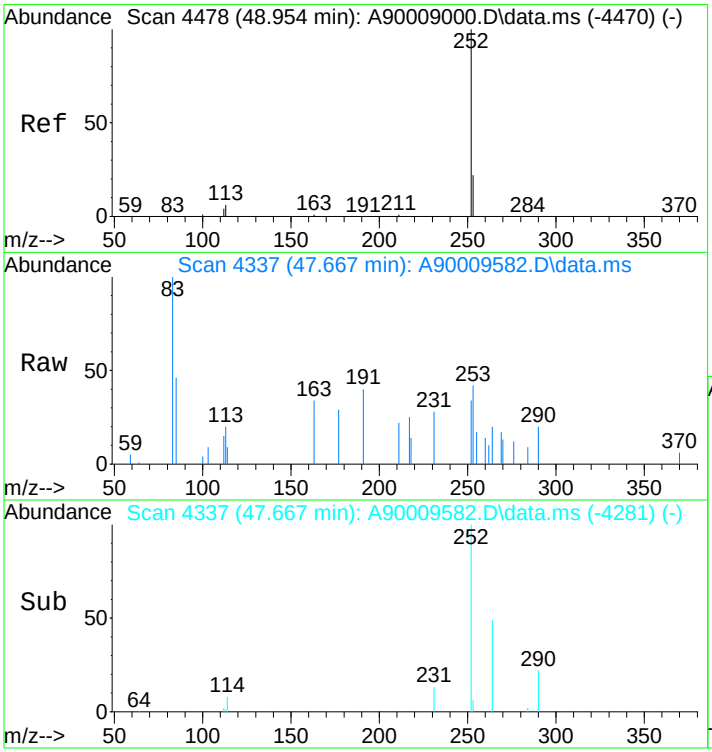


#87
Benzo[e]pyrene
Concen: 40.11 ng/mL m
RT: 47.484 min Scan# 4317
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:252 Resp: 10785

Ion	Ratio	Lower	Upper
252	100		
253	5.0	21.4	32.0#

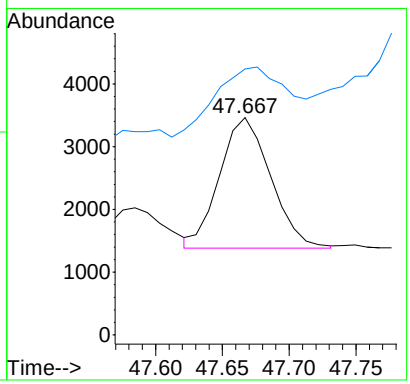


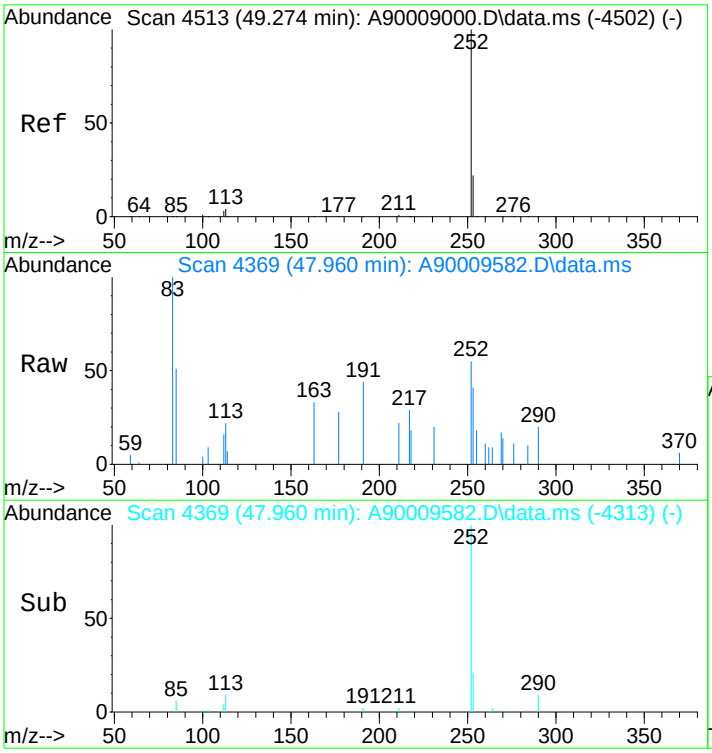


#89
Benzo[a]pyrene
Concen: 21.84 ng/mL m
RT: 47.667 min Scan# 4337
Delta R.T. 0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:252 Resp: 5561

Ion	Ratio	Lower	Upper
252	100		
253	55.0	21.9	32.9#

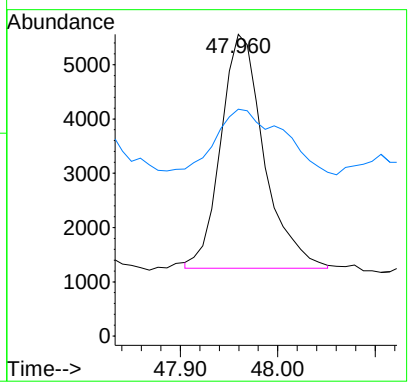


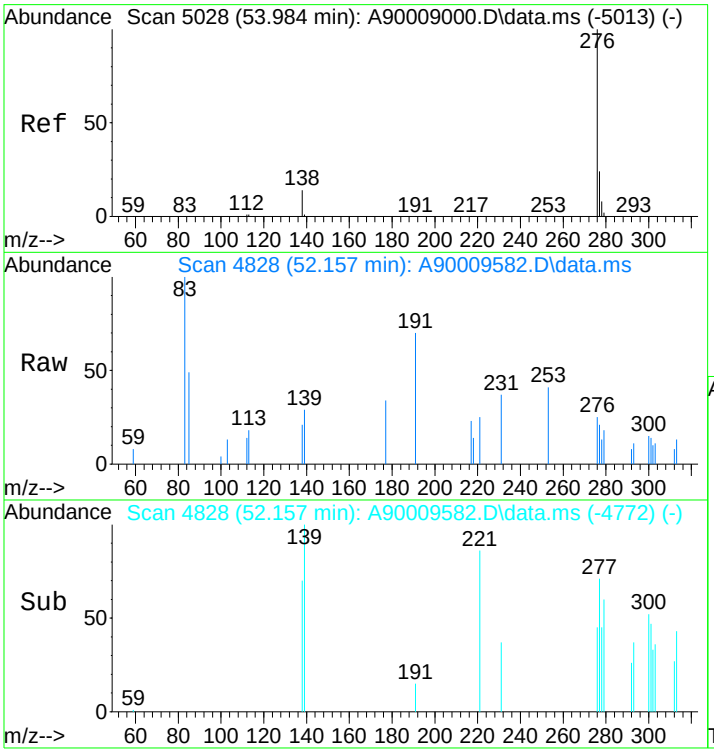


#90
Perylene
Concen: 48.86 ng/mL m
RT: 47.960 min Scan# 4369
Delta R.T. 0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:252 Resp: 13277

Ion	Ratio	Lower	Upper
252	100		
253	2.5	22.2	33.2#

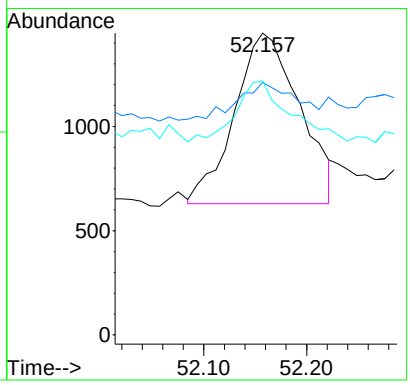


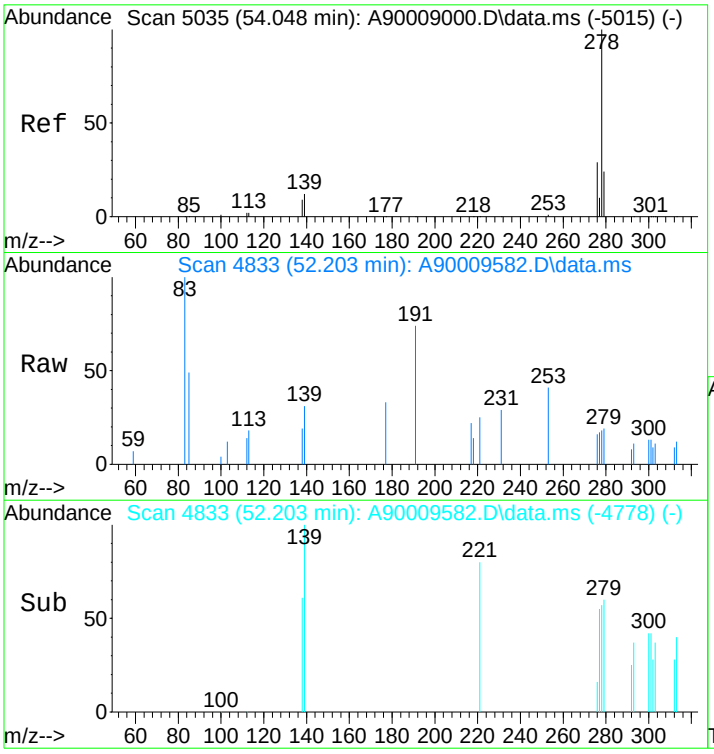


#91
Indeno[1,2,3-cd]pyrene
Concen: 12.80 ng/mL m
RT: 52.157 min Scan# 4828
Delta R.T. 0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:276 Resp: 3610

Ion	Ratio	Lower	Upper
276	100		
138	0.0	17.7	26.5#
277	0.0	20.2	30.4#

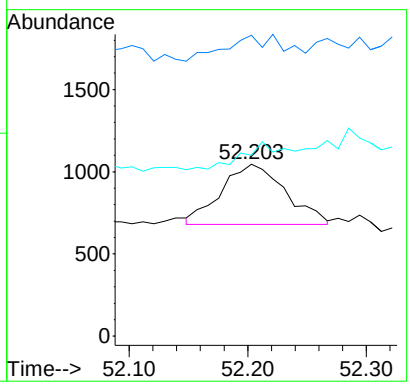


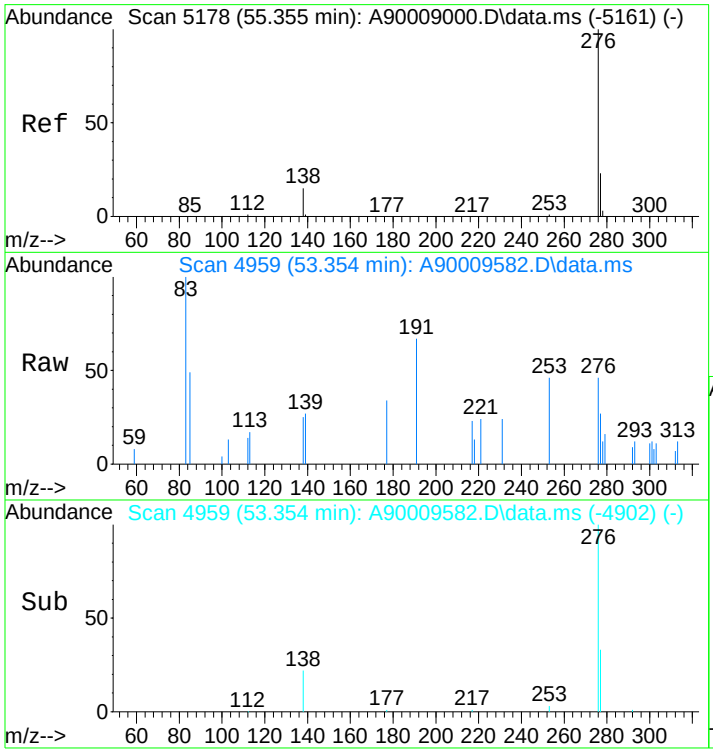


#92
Dibenz[ah]+[ac]anthracene
Concen: 4.96 ng/mL m
RT: 52.203 min Scan# 4833
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:278 Resp: 1379

Ion	Ratio	Lower	Upper
278	100		
139	0.0	13.3	19.9#
279	0.0	19.3	28.9#

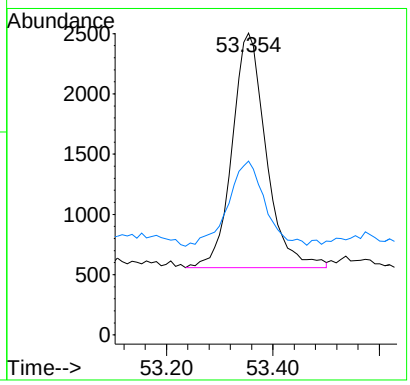


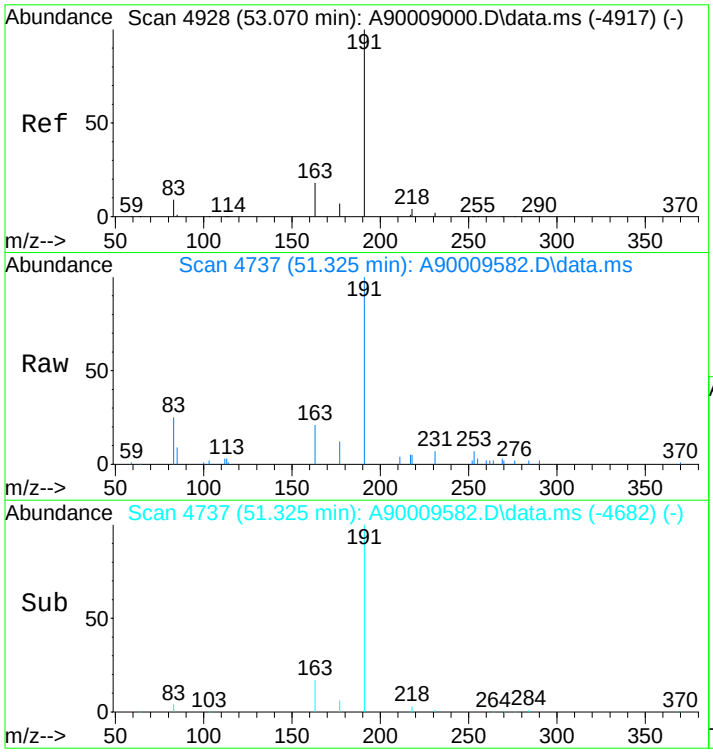


#93
Benzo[g,h,i]perylene
Concen: 31.10 ng/mL
RT: 53.354 min Scan# 4959
Delta R.T. 0.018 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:276 Resp: 8618

Ion	Ratio	Lower	Upper
276	100		
277	39.4	20.0	30.0#

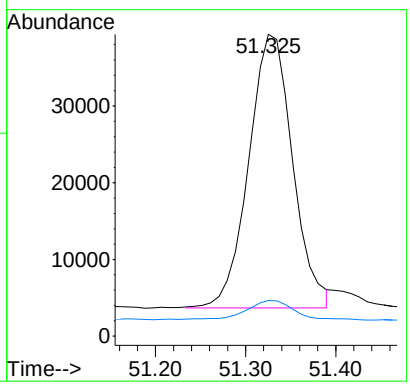


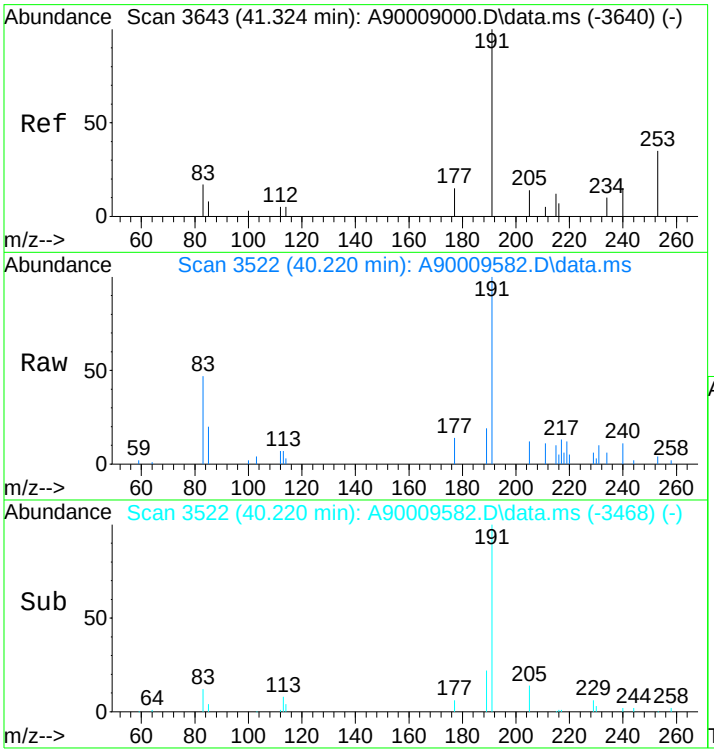


#94
Hopane (T19)
Concen: 1155.26 ng/mL m
RT: 51.325 min Scan# 4737
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:191 Resp: 120916

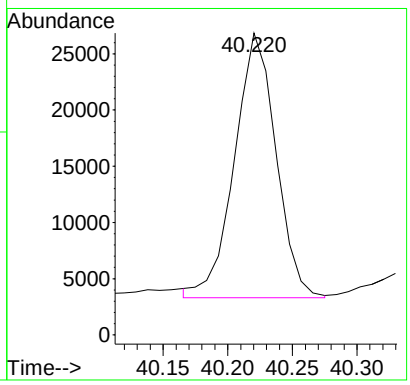
Ion	Ratio	Lower	Upper
191	100		
177	0.2	14.4	21.6#

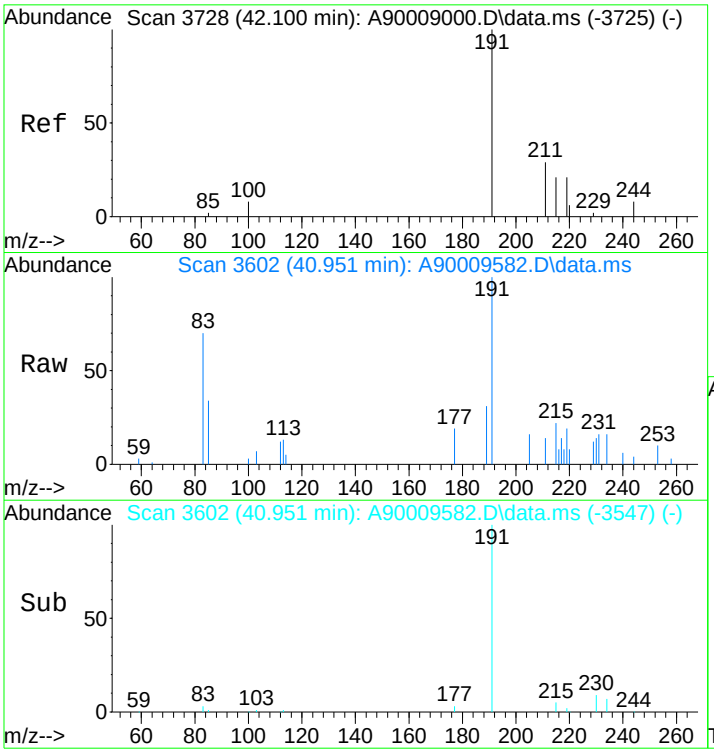




#96
C23 Tricyclic Terpane (T4)
Concen: 500.65 ng/ml m
RT: 40.220 min Scan# 3522
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

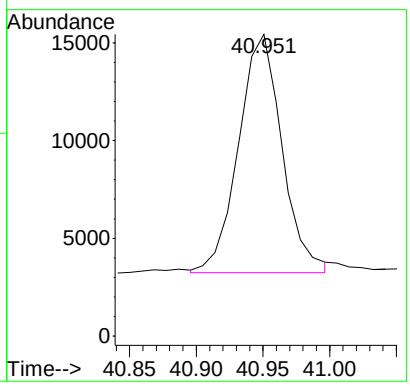
Tgt Ion:191 Resp: 52401

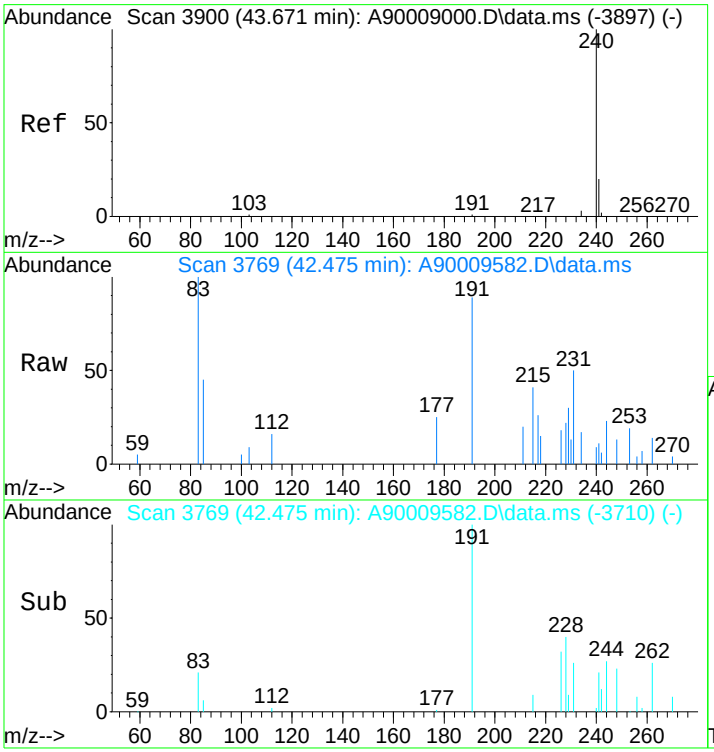




#97
C24 Tricyclic Terpane (T5)
Concen: 264.12 ng/ml m
RT: 40.951 min Scan# 3602
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

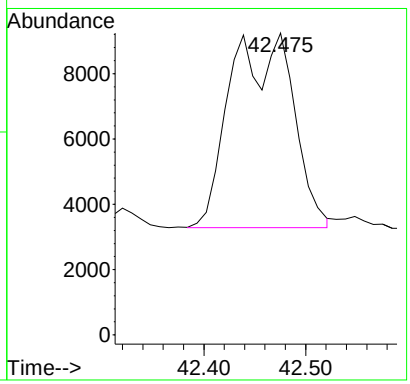
Tgt Ion:191 Resp: 27644

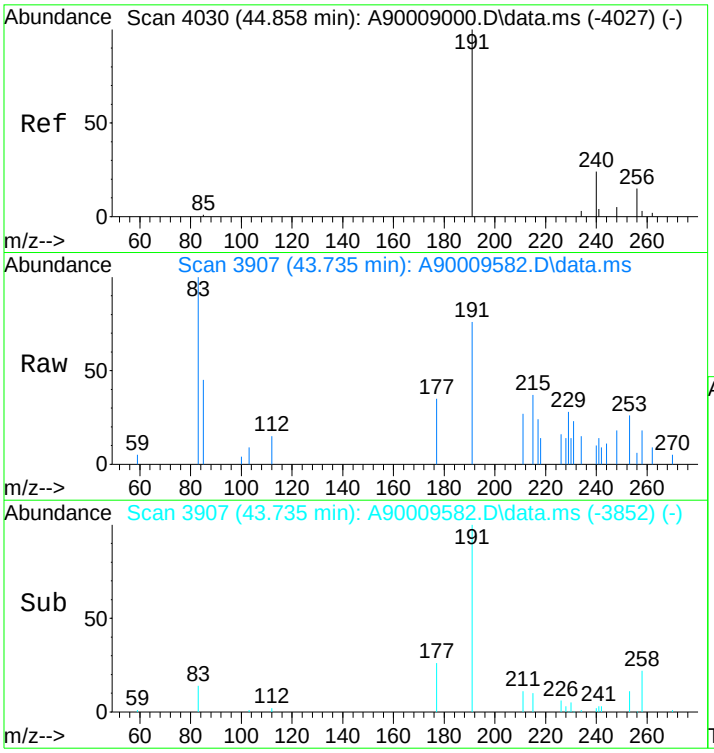




#98
C25 Tricyclic Terpane (T6)
Concen: 243.98 ng/ml m
RT: 42.475 min Scan# 3769
Delta R.T. 0.037 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

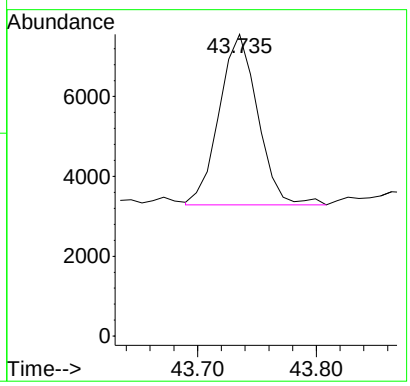
Tgt Ion:191 Resp: 25536

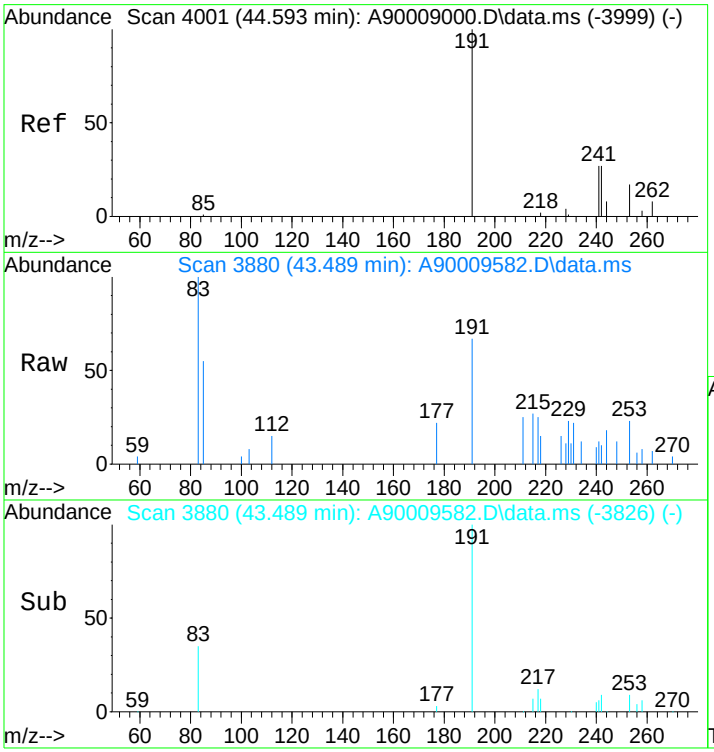




#99
C24 Tetracyclic Terpane (T6a)
Concen: 91.78 ng/ml
RT: 43.735 min Scan# 3907
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

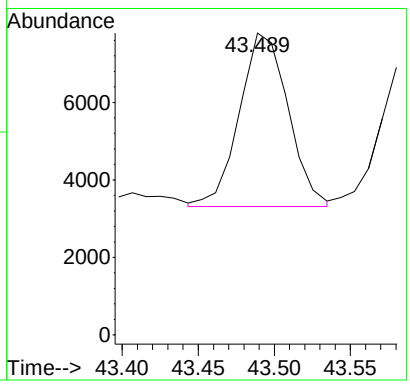
Tgt Ion:191 Resp: 9606

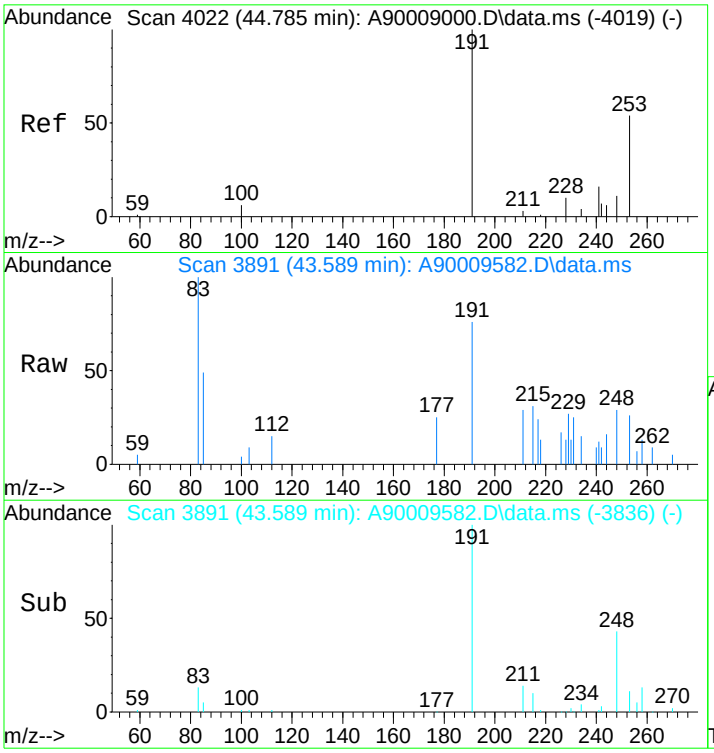




#100
C26 Tricyclic Terpane-22S (T6b)
Concen: 95.26 ng/ml m
RT: 43.489 min Scan# 3880
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

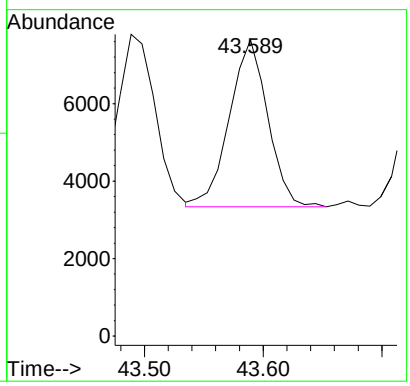
Tgt Ion:191 Resp: 9970

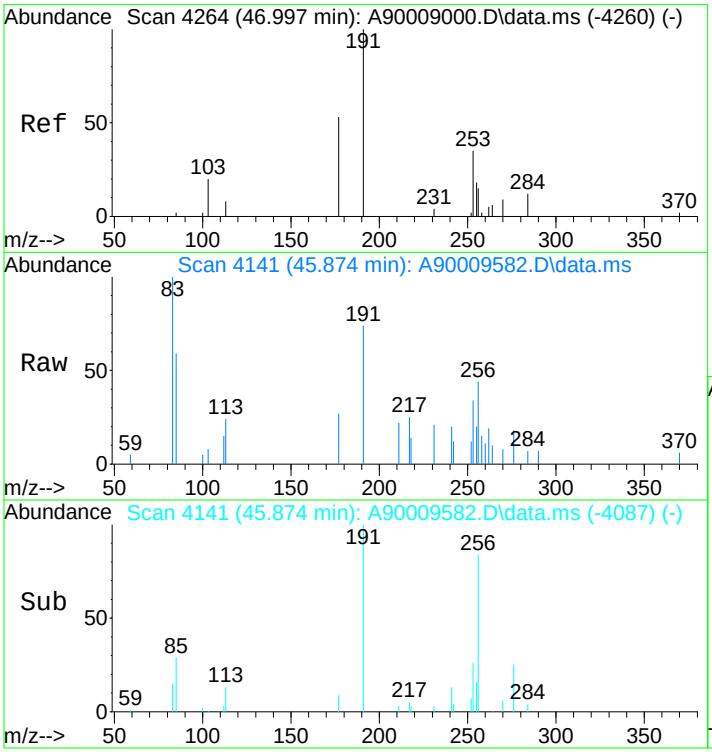




#101
C26 Tricyclic Terpane-22R (T6c)
Concen: 92.09 ng/ml
RT: 43.589 min Scan# 3891
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

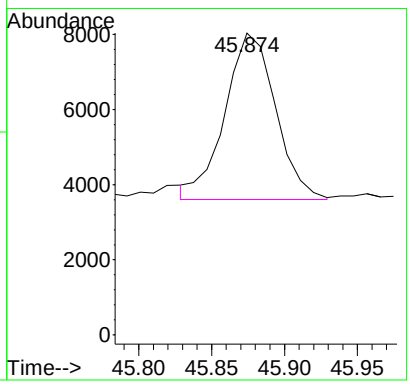
Tgt Ion:191 Resp: 9639

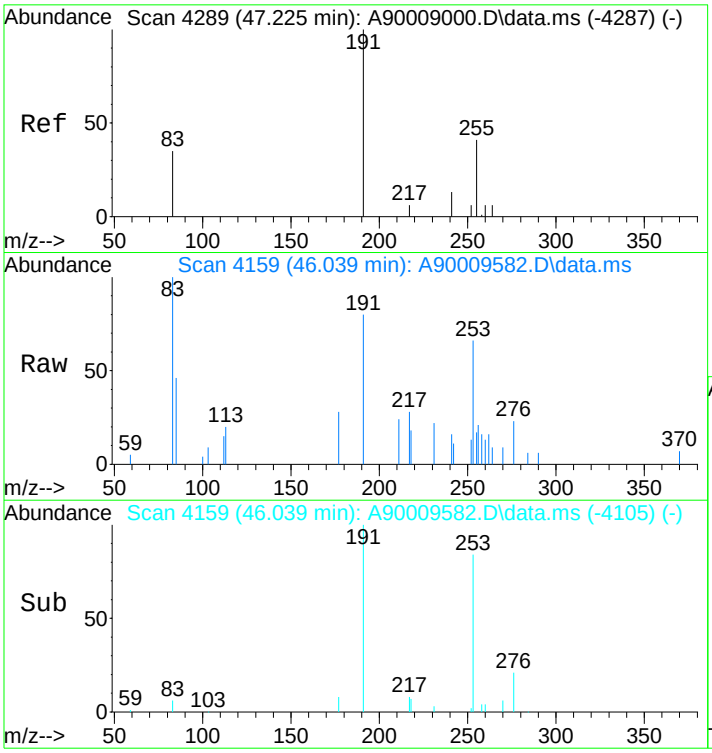




#102
C28 Tricyclic Terpane-22S (T7)
Concen: 102.22 ng/ml m
RT: 45.874 min Scan# 4141
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

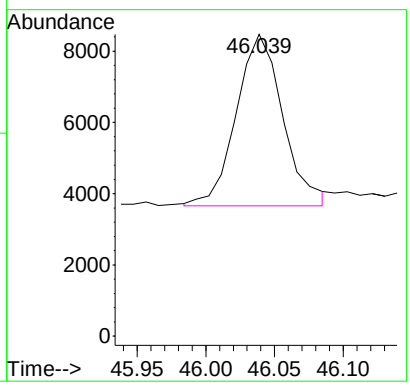
Tgt Ion:191 Resp: 10699

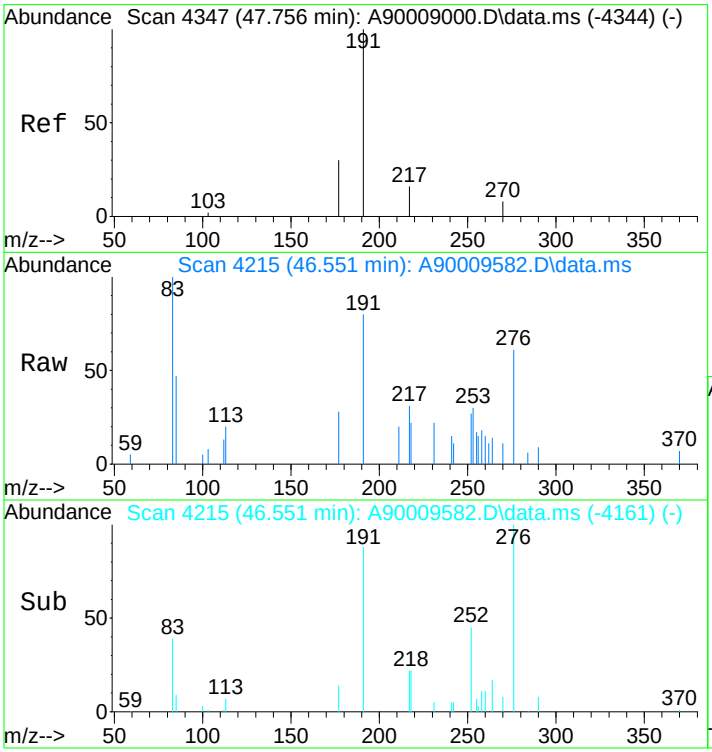




#103
C28 Tricyclic Terpane-22R (T8)
Concen: 108.68 ng/ml m
RT: 46.039 min Scan# 4159
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

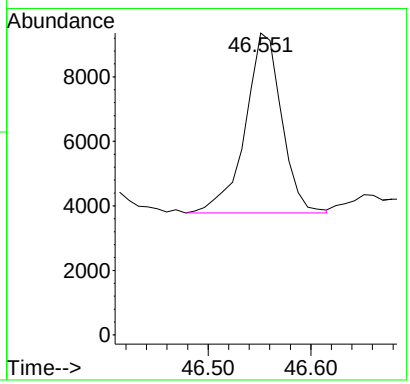
Tgt Ion:191 Resp: 11375

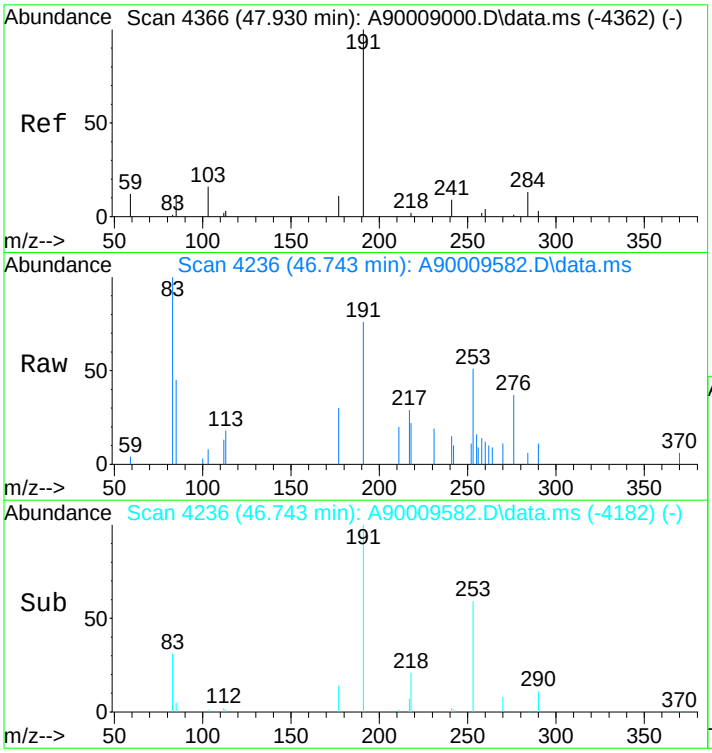




#104
C29 Tricyclic Terpane-22S (T9)
Concen: 131.81 ng/ml
RT: 46.551 min Scan# 4215
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

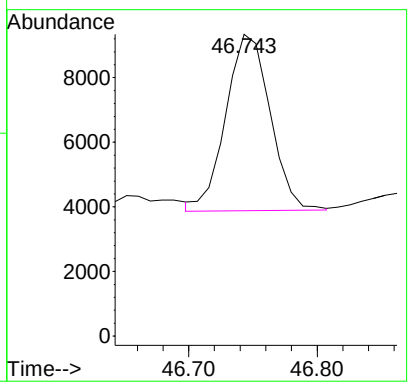
Tgt Ion:191 Resp: 13796

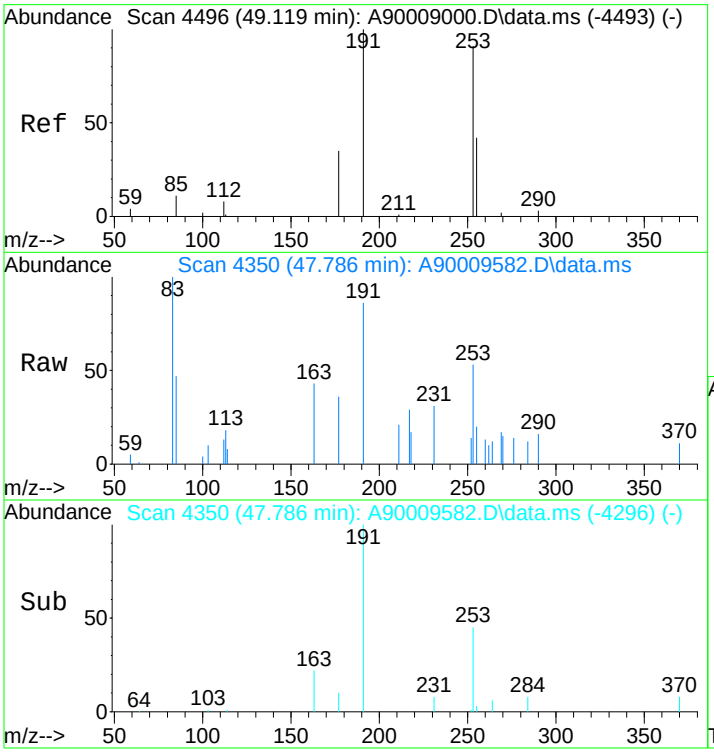




#105
C29 Tricyclic Terpane-22R (T10)
Concen: 125.10 ng/ml
RT: 46.743 min Scan# 4236
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

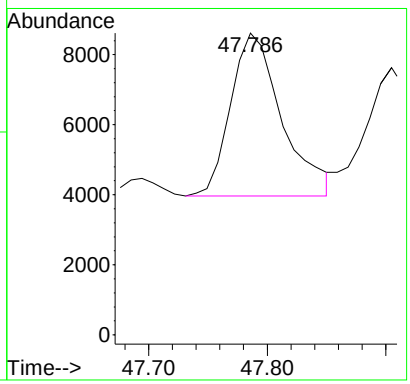
Tgt Ion:191 Resp: 13094

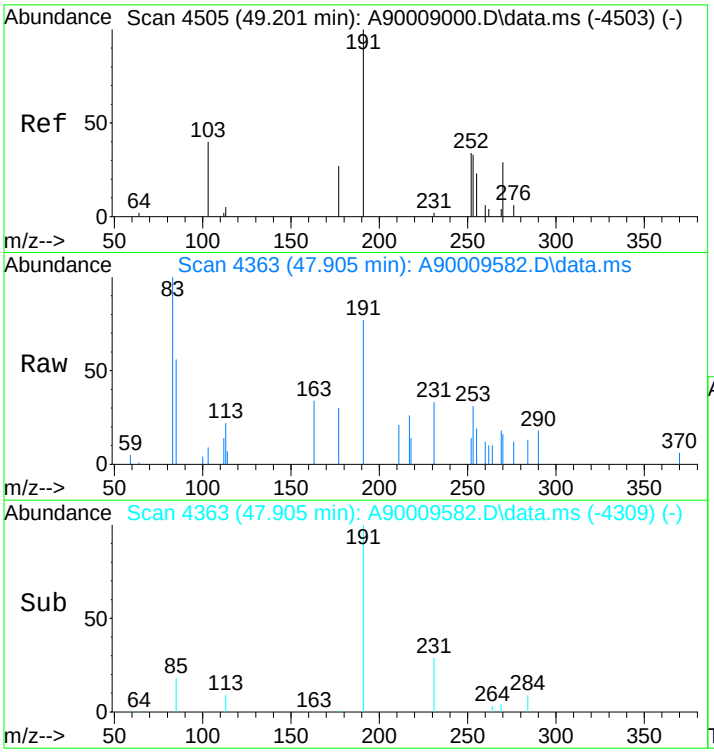




#106
18a-22,29,30-Trisnorneohopane-TS (T11)
Concen: 133.39 ng/ml
RT: 47.786 min Scan# 4350
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

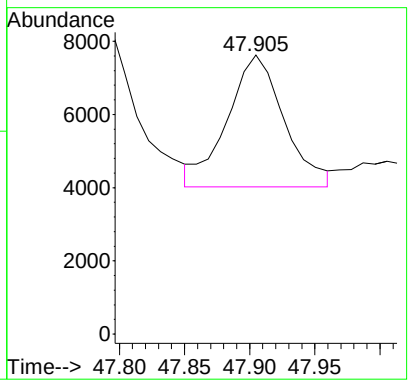
Tgt Ion:191 Resp: 13961

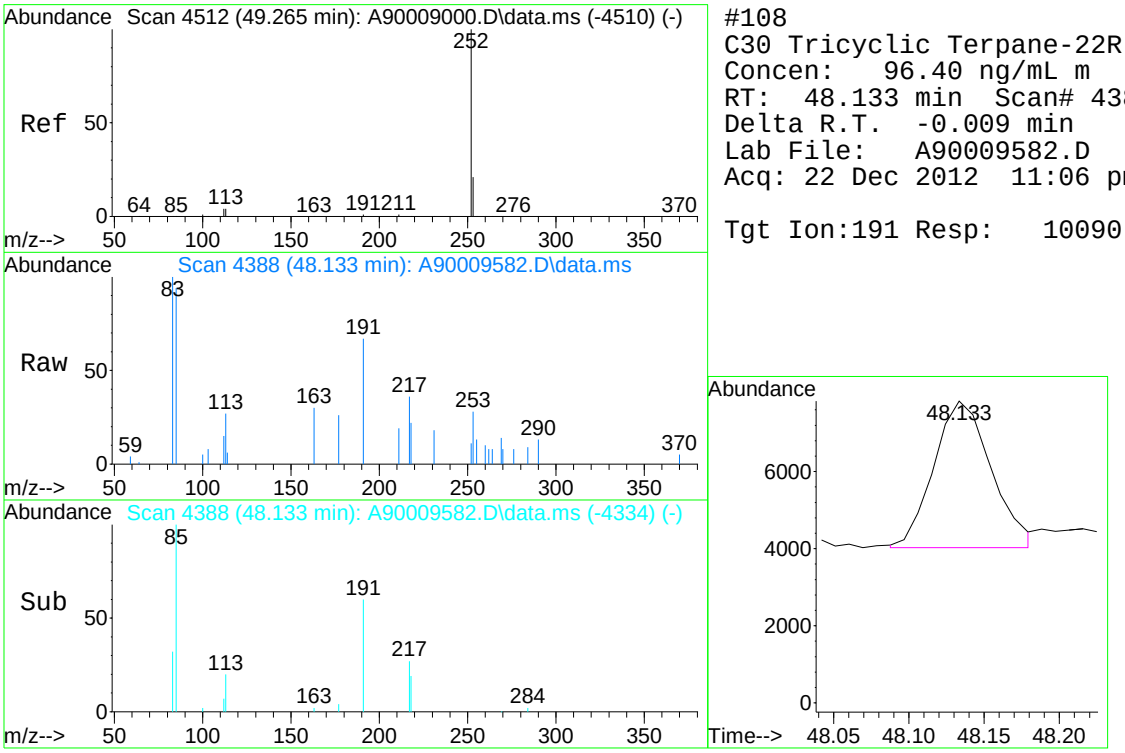




#107
C30 Tricyclic Terpane-22S
Concen: 104.50 ng/mL m
RT: 47.905 min Scan# 4363
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

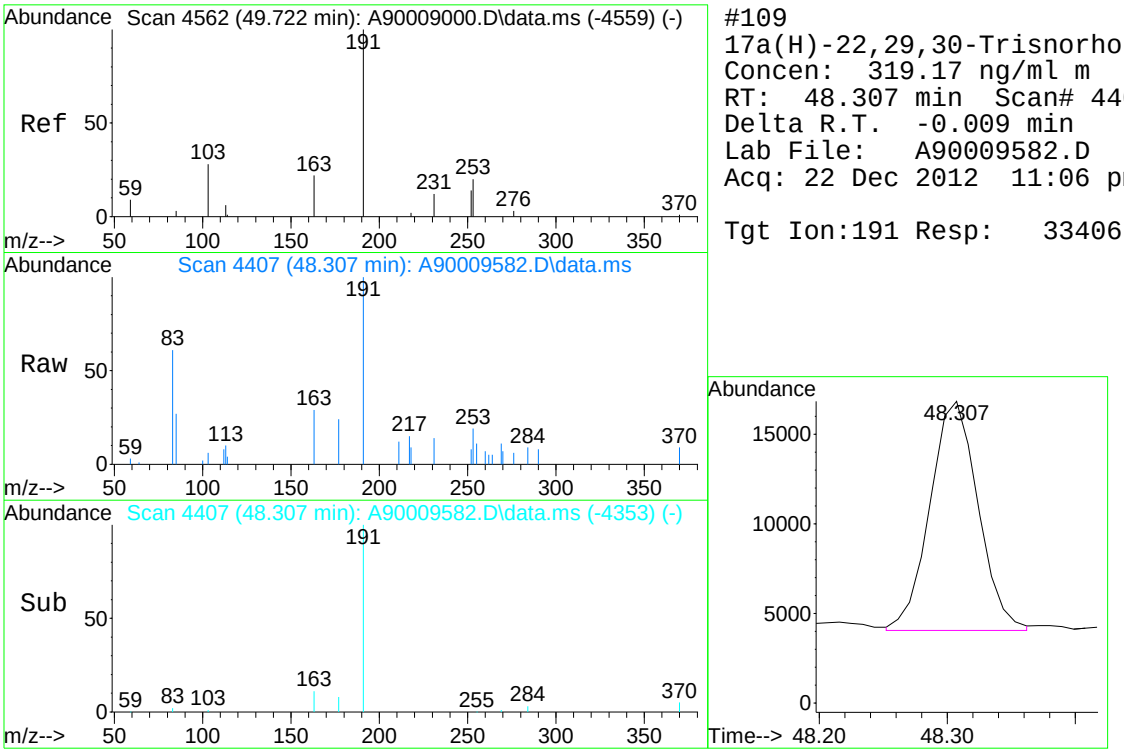
Tgt Ion:191 Resp: 10938





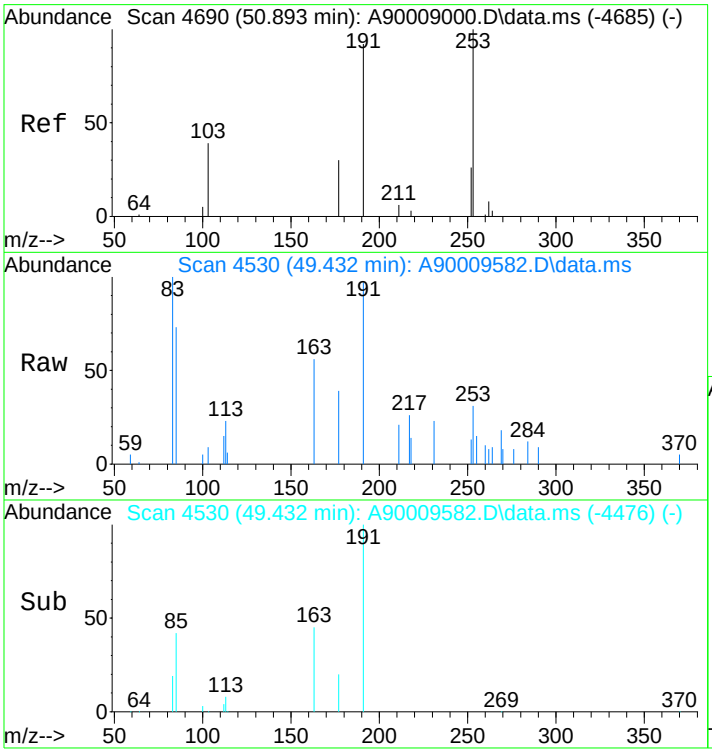
#108
C30 Tricyclic Terpane-22R
Concen: 96.40 ng/mL m
RT: 48.133 min Scan# 4388
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:191 Resp: 10090



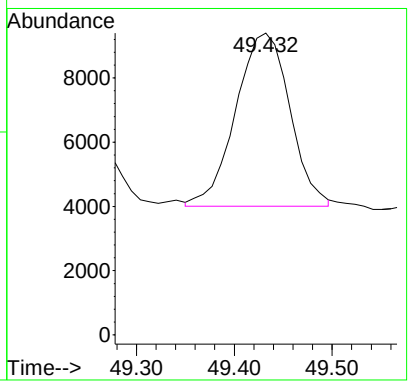
#109
17a(H)-22,29,30-Trisnorhopane-TM (T12)
Concen: 319.17 ng/ml m
RT: 48.307 min Scan# 4407
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

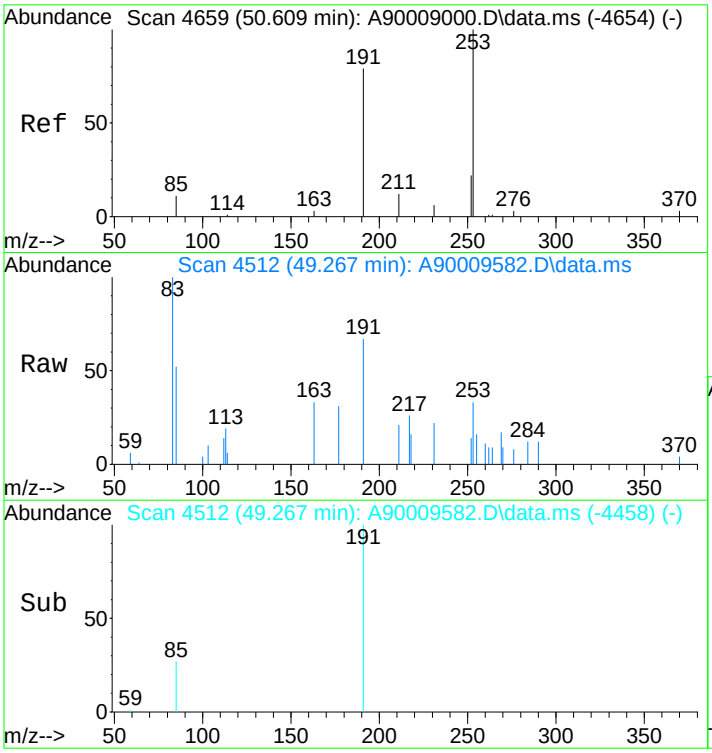
Tgt Ion:191 Resp: 33406



#110
17a/b,21b/a 28,30-Bisnorhopane (T14a)
Concen: 197.92 ng/ml m
RT: 49.432 min Scan# 4530
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

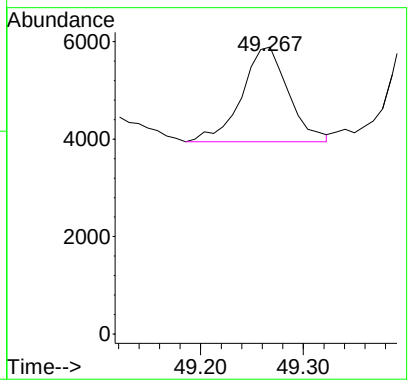
Tgt Ion:191 Resp: 20715

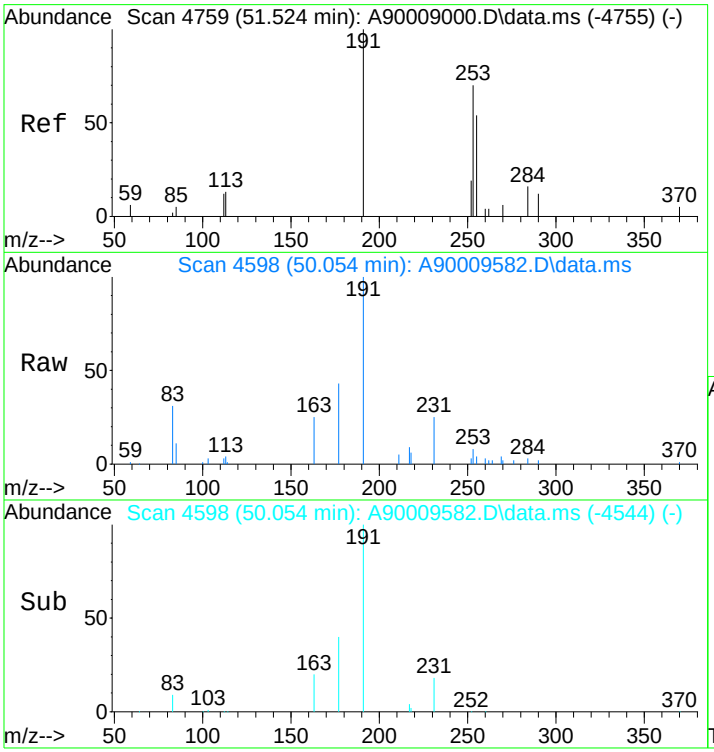




#111
17a(H),21b(H)-25-Norhopane (T14b)
Concen: 58.65 ng/ml
RT: 49.267 min Scan# 4512
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

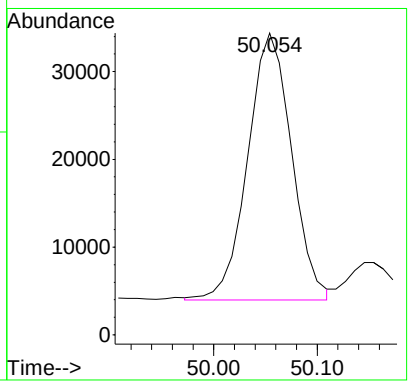
Tgt Ion:191 Resp: 6139

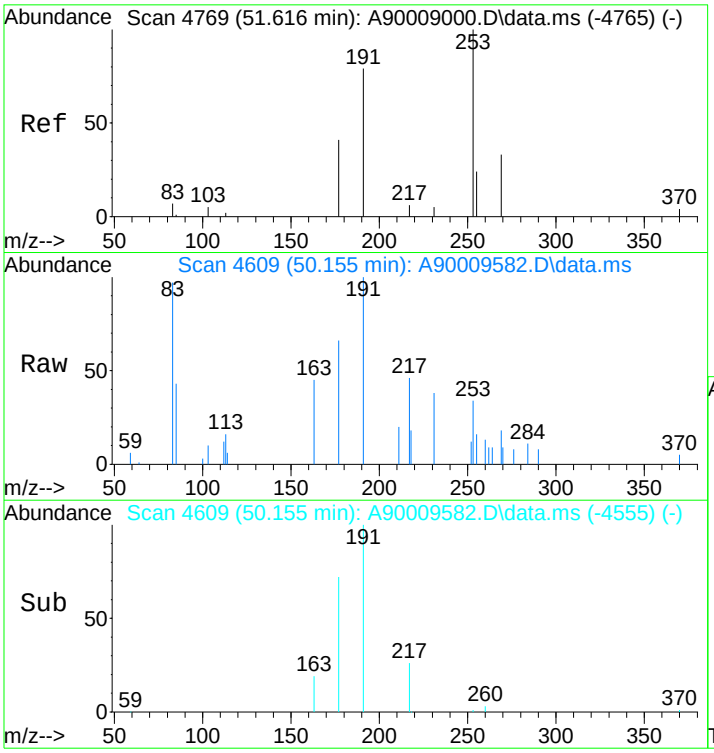




#112
30-Norhopane (T15)
Concen: 853.95 ng/ml m
RT: 50.054 min Scan# 4598
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

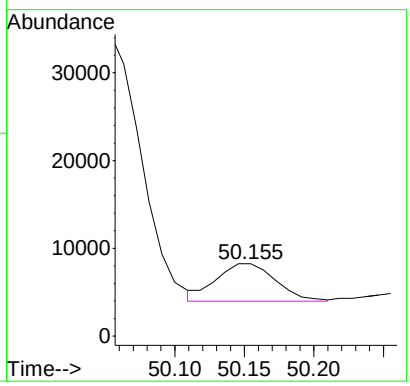
Tgt Ion:191 Resp: 89379

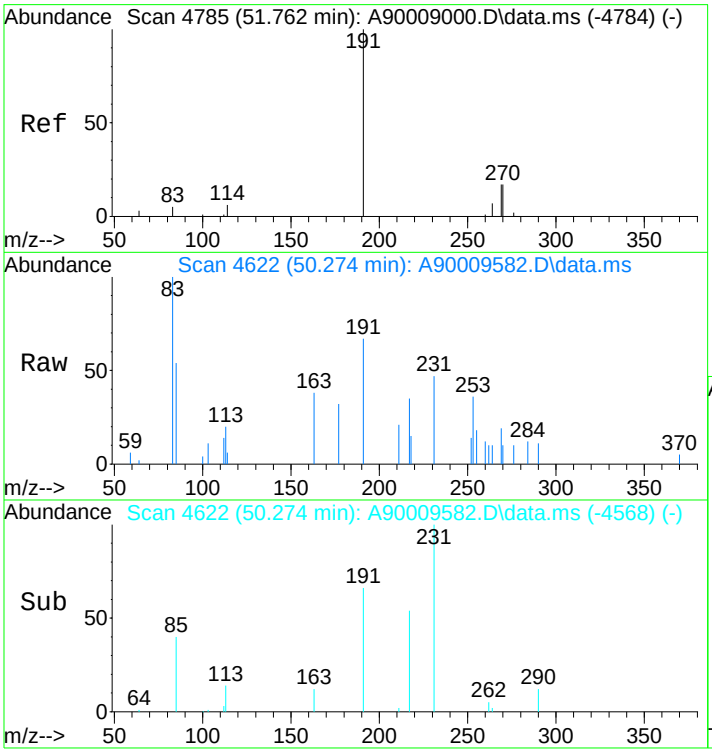




#113
18a(H)-30-Norneohopane-C29Ts (T16)
Concen: 121.19 ng/ml m
RT: 50.155 min Scan# 4609
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

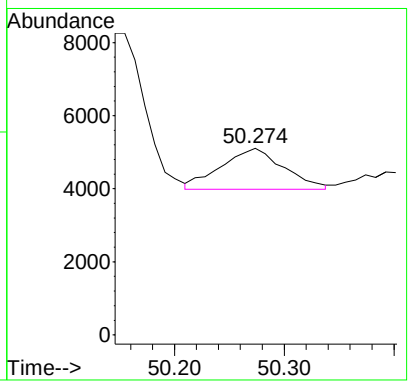
Tgt Ion:191 Resp: 12684

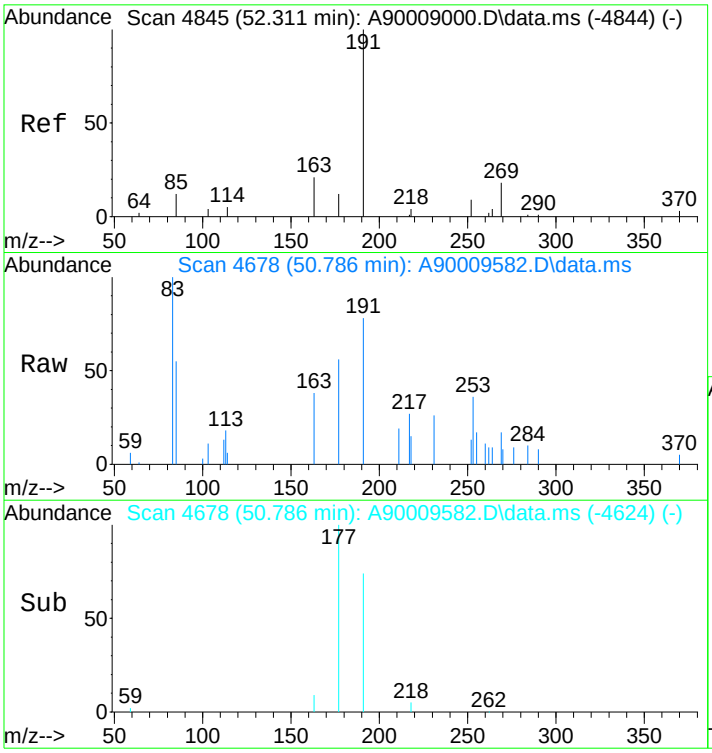




#114
17a(H)-Diahopane (X)
Concen: 42.29 ng/ml m
RT: 50.274 min Scan# 4622
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

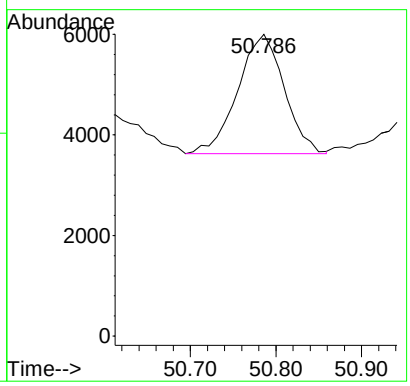
Tgt Ion:191 Resp: 4426

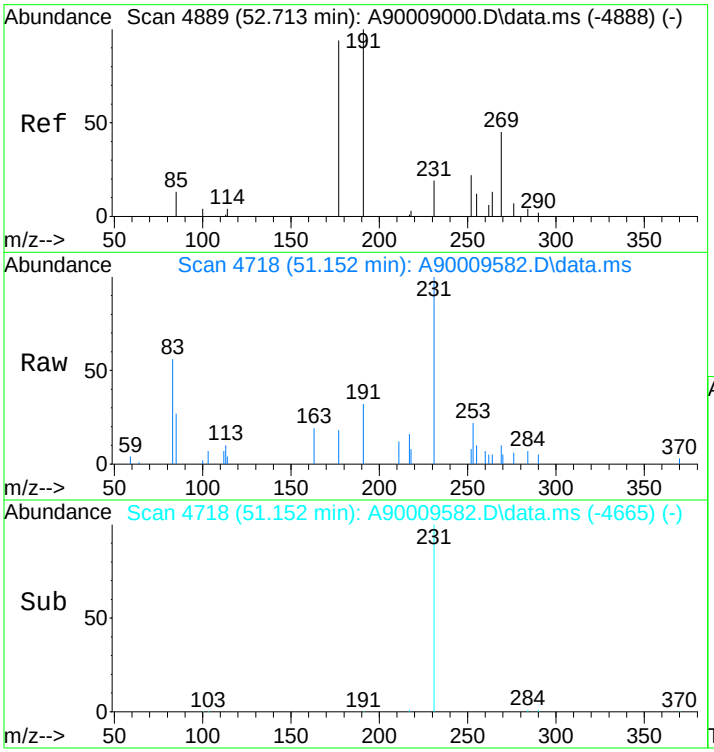




#115
30-Normoretane (T17)
Concen: 85.82 ng/ml
RT: 50.786 min Scan# 4678
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

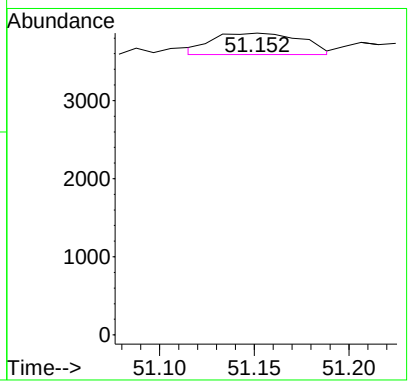
Tgt Ion:191 Resp: 8982

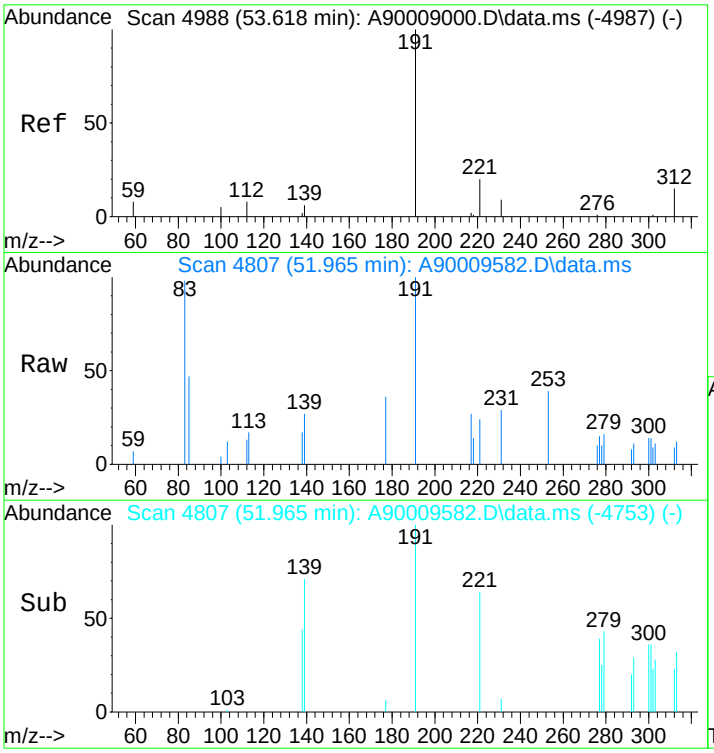




#116
18a(H)&18b(H)-Oleananes (T18)
Concen: 8.59 ng/ml m
RT: 51.152 min Scan# 4718
Delta R.T. -0.018 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

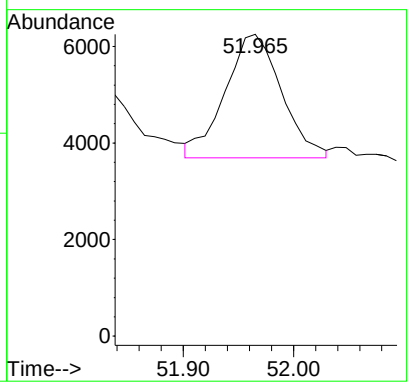
Tgt Ion:191 Resp: 899

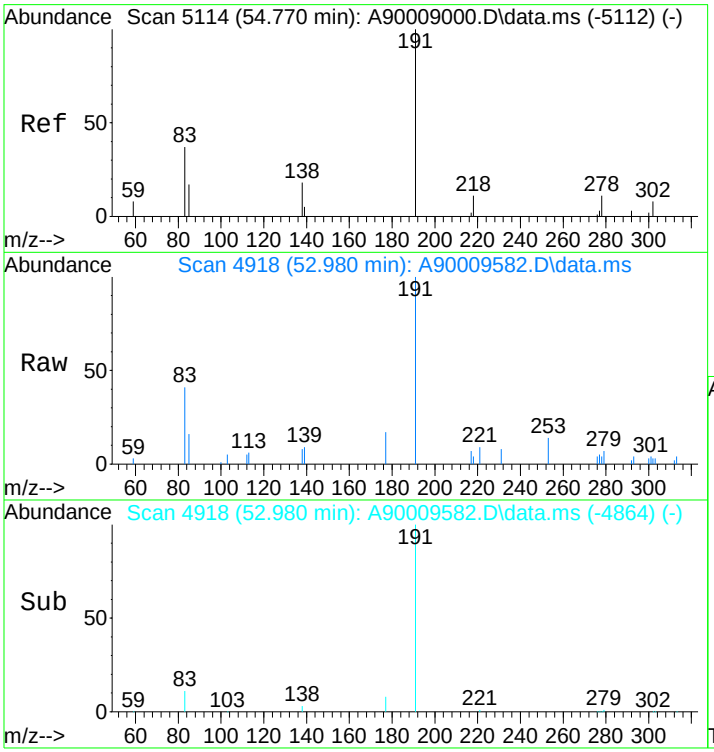




#117
Moretane (T20)
Concen: 86.78 ng/ml m
RT: 51.965 min Scan# 4807
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

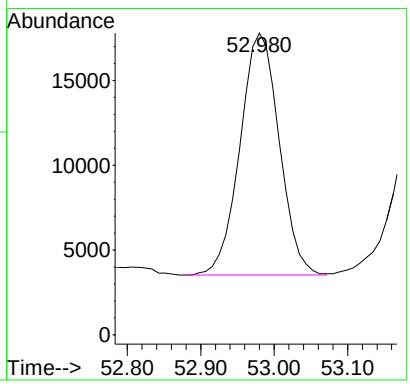
Tgt Ion:191 Resp: 9083

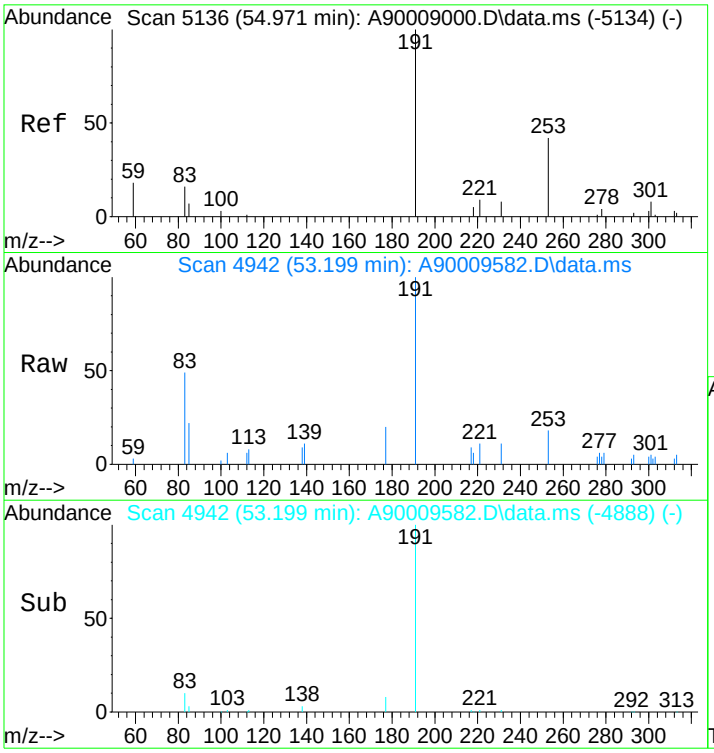




#118
30-Homohopane-22S (T21)
Concen: 507.42 ng/ml
RT: 52.980 min Scan# 4918
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

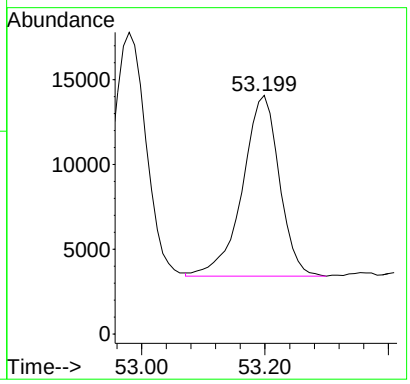
Tgt Ion:191 Resp: 53109

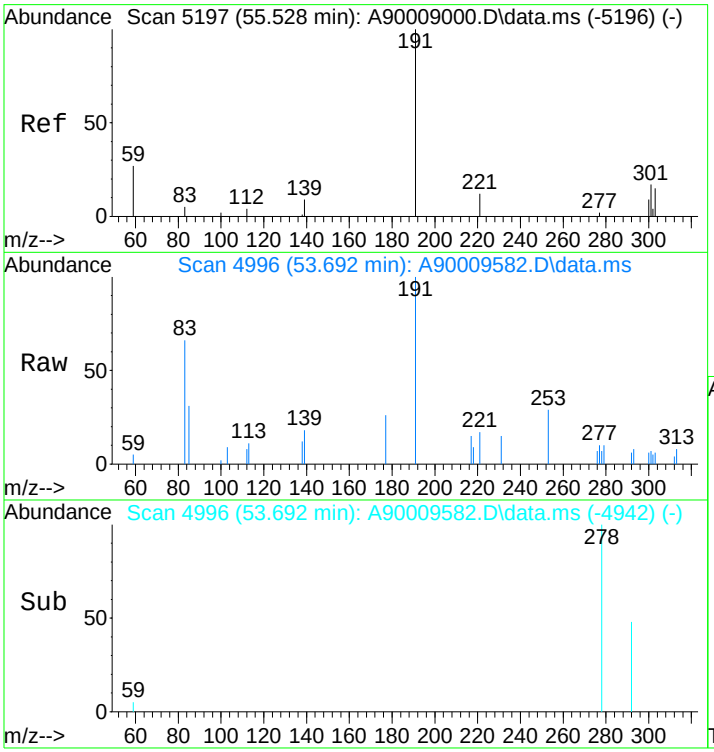




#119
30-Homohopane-22R (T22)
Concen: 421.66 ng/ml
RT: 53.199 min Scan# 4942
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

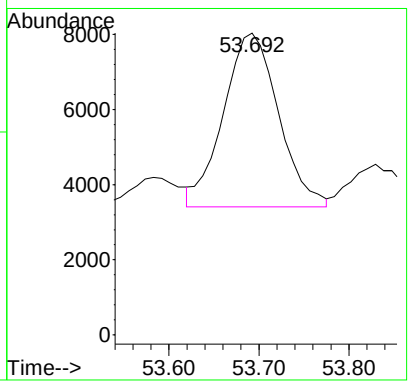
Tgt Ion:191 Resp: 44133

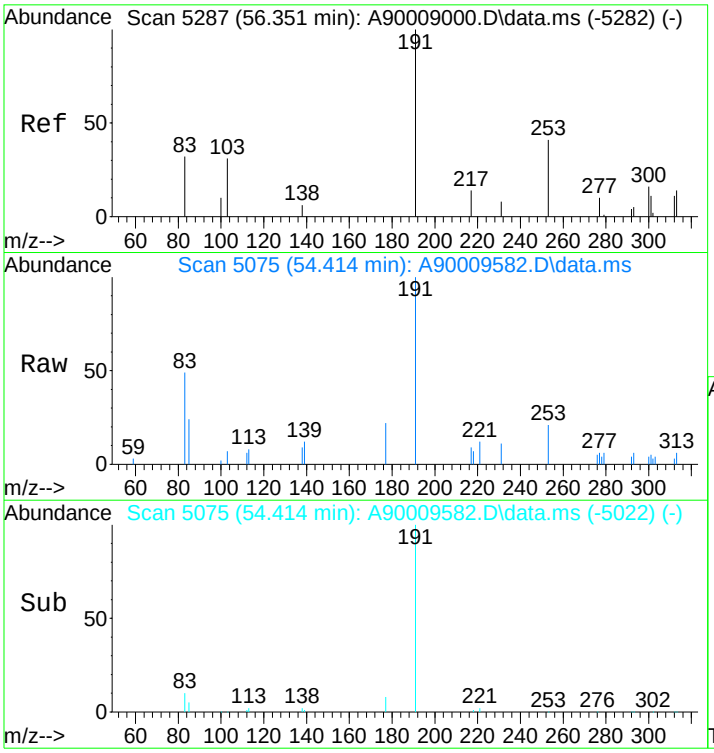




#120
Gammacerane/C32-diahopane
Concen: 187.75 ng/mL m
RT: 53.692 min Scan# 4996
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

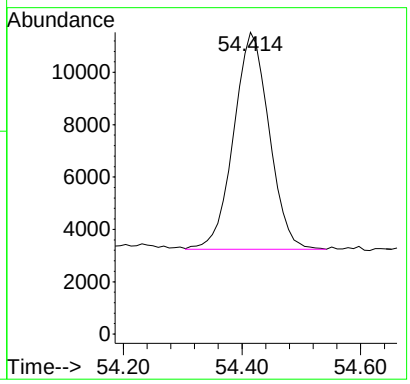
Tgt Ion:191 Resp: 19651

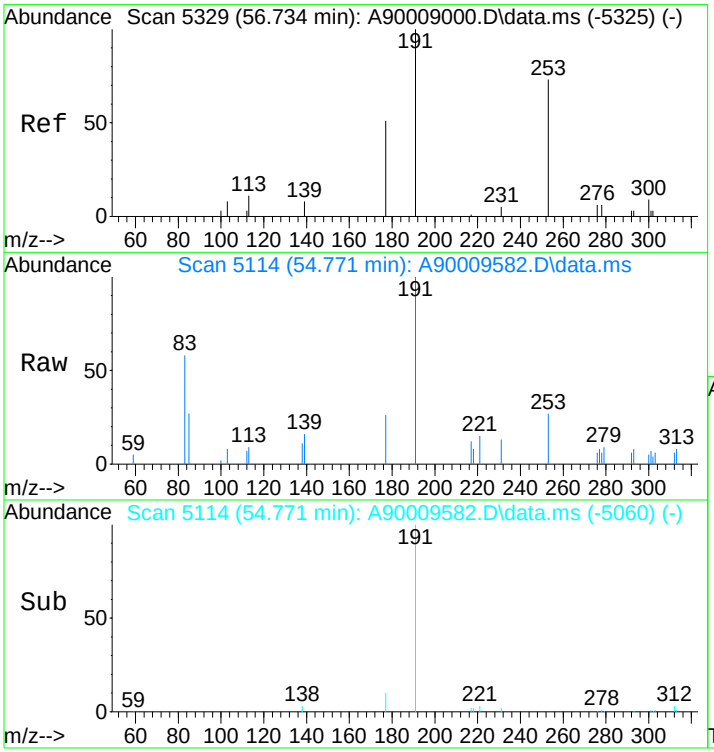




#121
30,31-Bishomohopane-22S (T26)
Concen: 328.13 ng/ml
RT: 54.414 min Scan# 5075
Delta R.T. -0.018 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

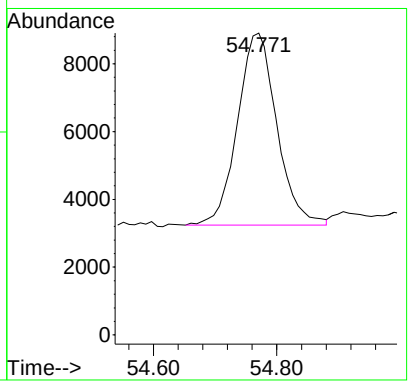
Tgt Ion:191 Resp: 34344

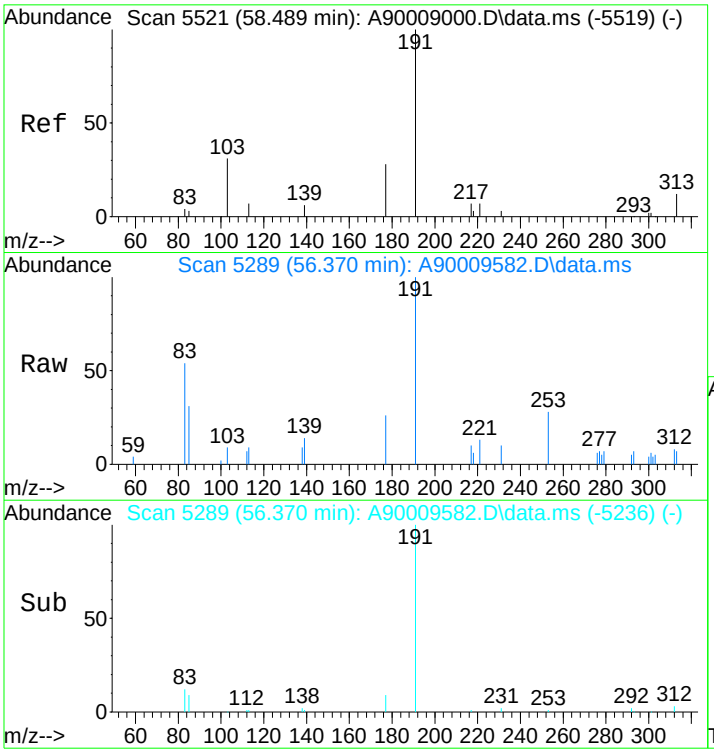




#122
30,31-Bishomohopane-22R (T27)
Concen: 239.52 ng/ml
RT: 54.771 min Scan# 5114
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

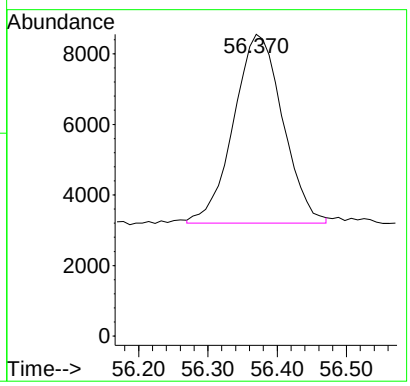
Tgt Ion:191 Resp: 25069

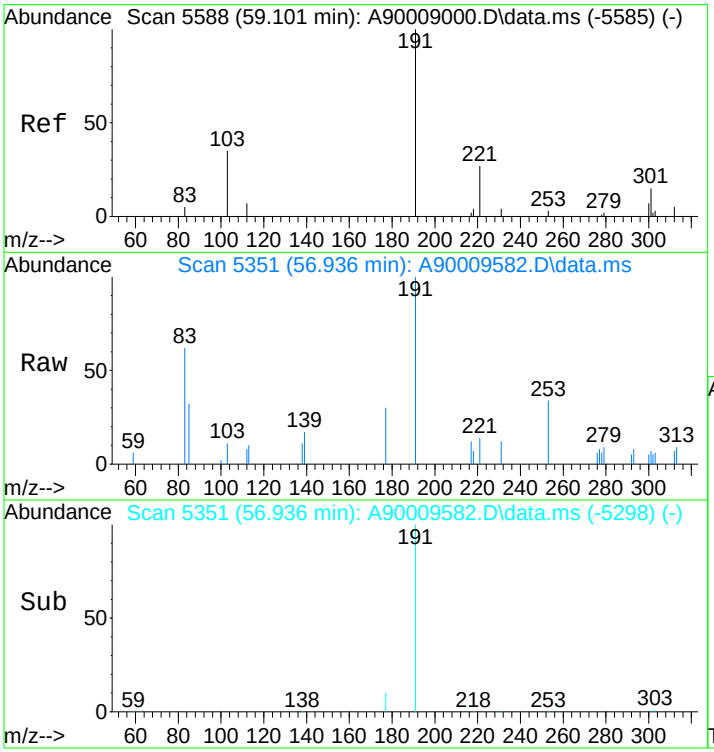




#123
30,31-Trishomohopane-22S (T30)
Concen: 251.61 ng/ml m
RT: 56.370 min Scan# 5289
Delta R.T. -0.018 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

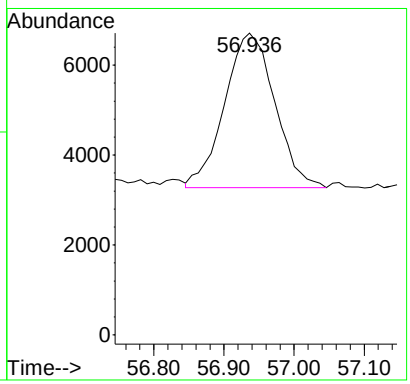
Tgt Ion:191 Resp: 26335

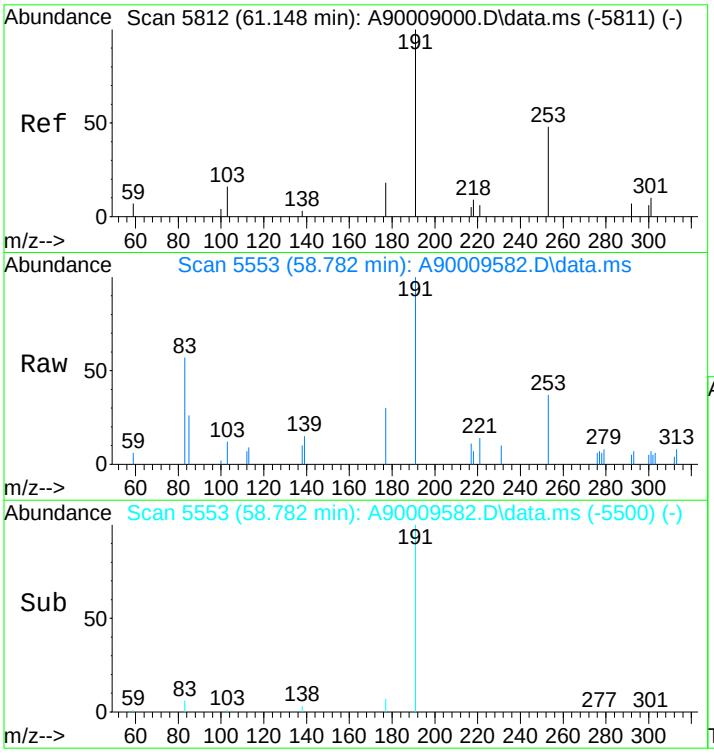




#124
30,31-Trishomohopane-22R (T31)
Concen: 163.33 ng/ml
RT: 56.936 min Scan# 5351
Delta R.T. -0.018 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

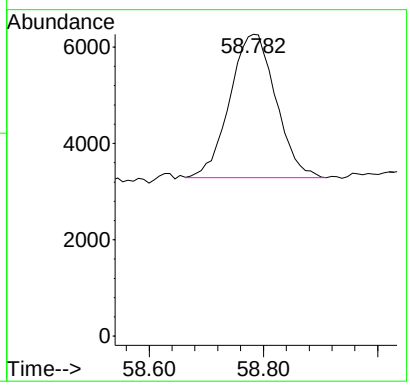
Tgt Ion:191 Resp: 17095

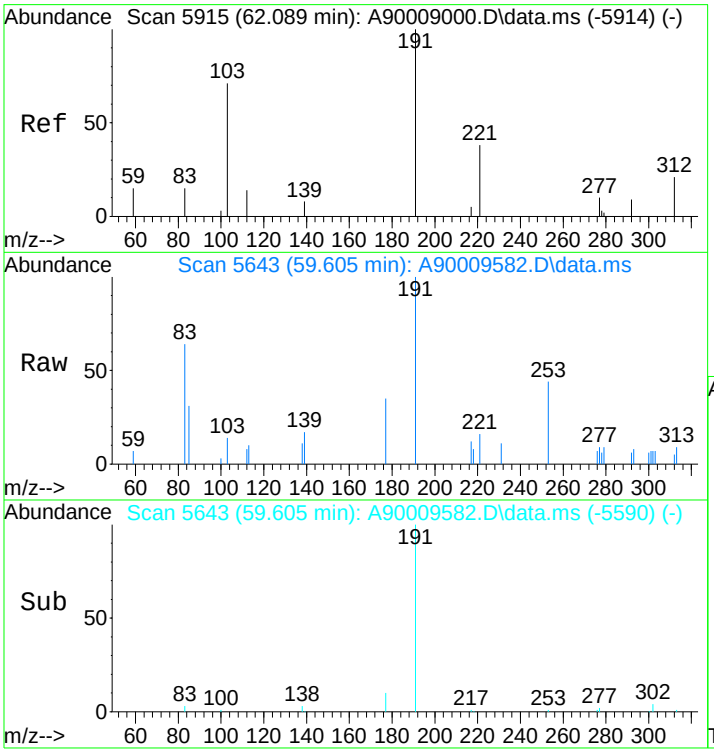




#125
Tetrakishomohopane-22S (T32)
Concen: 159.20 ng/ml
RT: 58.782 min Scan# 5553
Delta R.T. -0.018 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

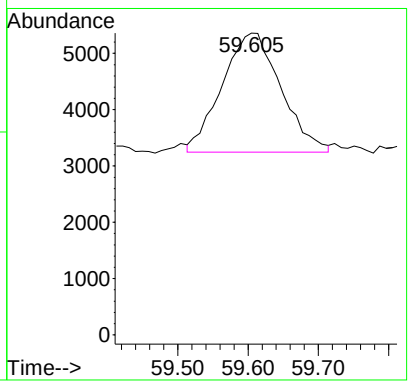
Tgt Ion:191 Resp: 16663

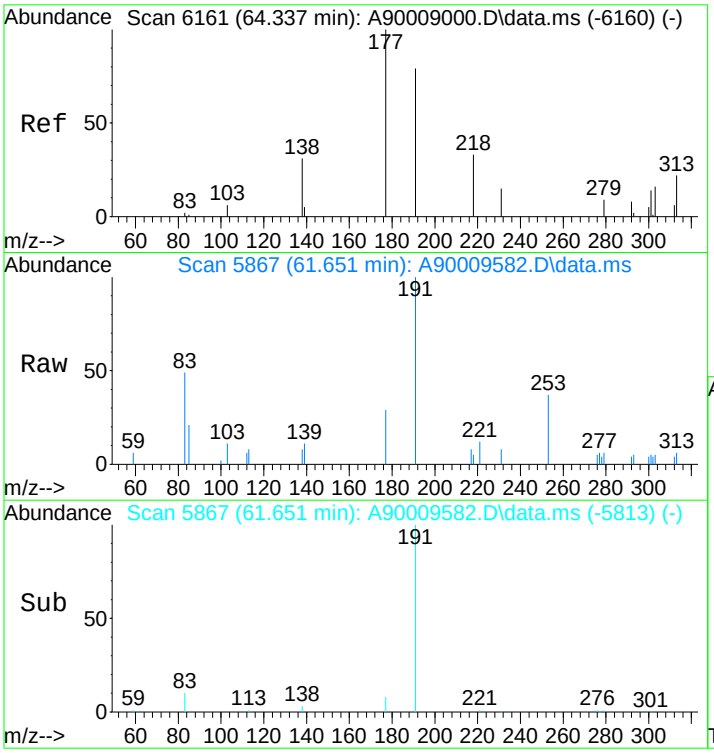




#126
Tetrakishomohopane-22R (T33)
Concen: 117.28 ng/ml m
RT: 59.605 min Scan# 5643
Delta R.T. -0.018 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

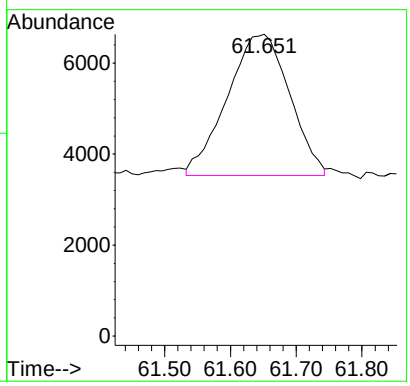
Tgt Ion:191 Resp: 12275

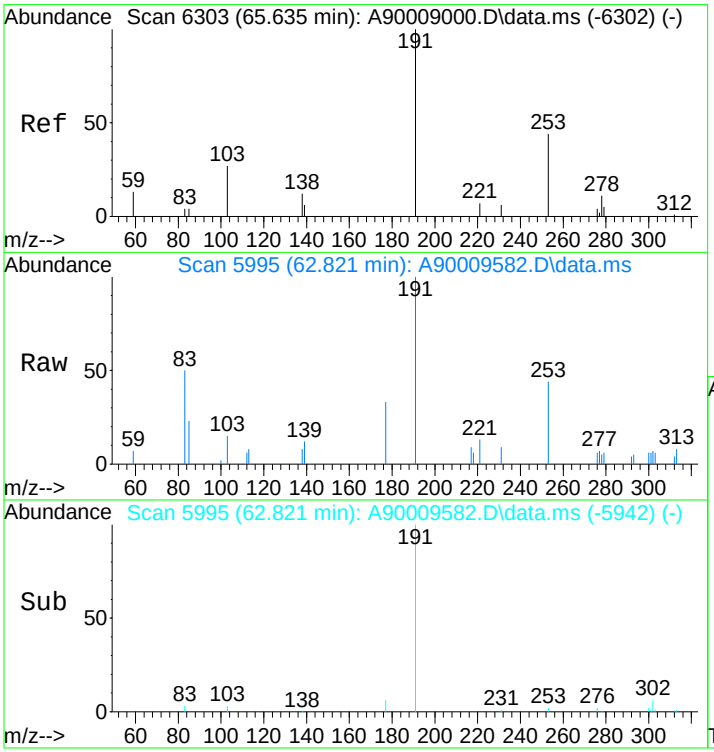




#127
Pentakishomohopane-22S (T34)
Concen: 195.09 ng/ml m
RT: 61.651 min Scan# 5867
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

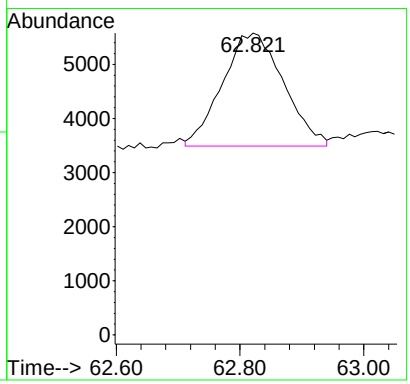
Tgt Ion:191 Resp: 20419

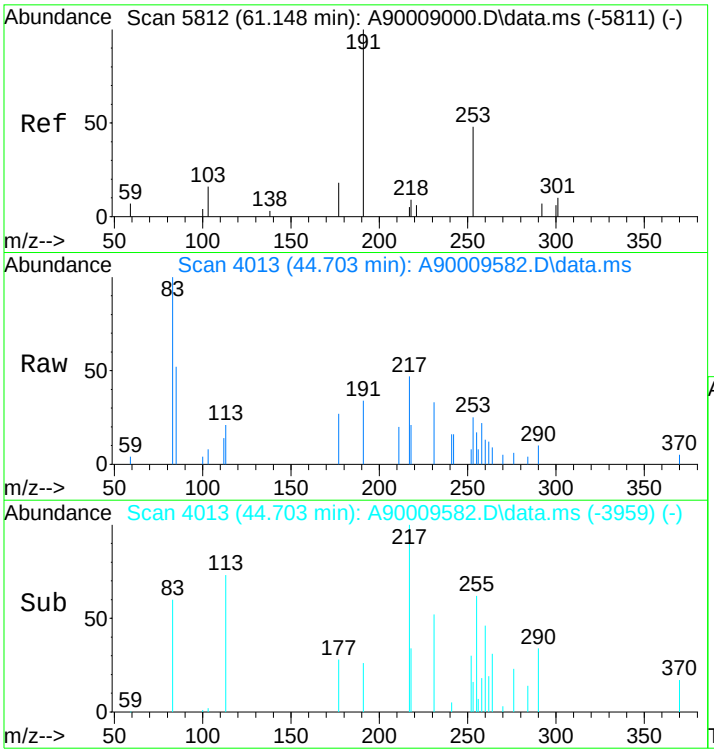




#128
Pentakishomohopane-22R (T35)
Concen: 136.27 ng/ml m
RT: 62.821 min Scan# 5995
Delta R.T. -0.018 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

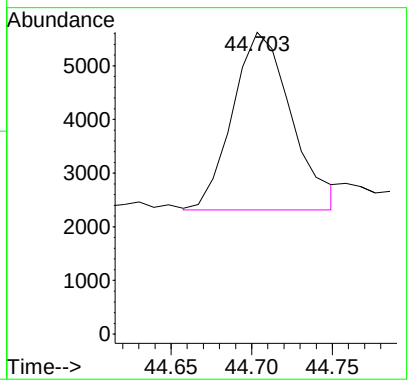
Tgt Ion:191 Resp: 14263

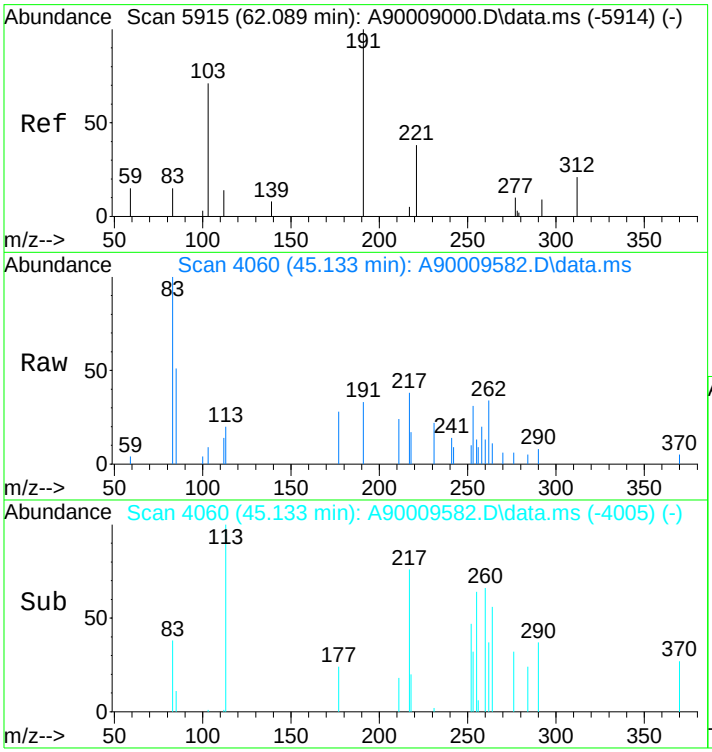




#130
13b(H),17a(H)-20S-Diacholestane (S4)
Concen: 168.58 ng/ml m
RT: 44.703 min Scan# 4013
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

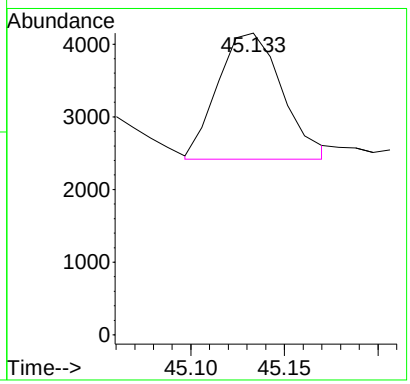
Tgt Ion:217 Resp: 8425

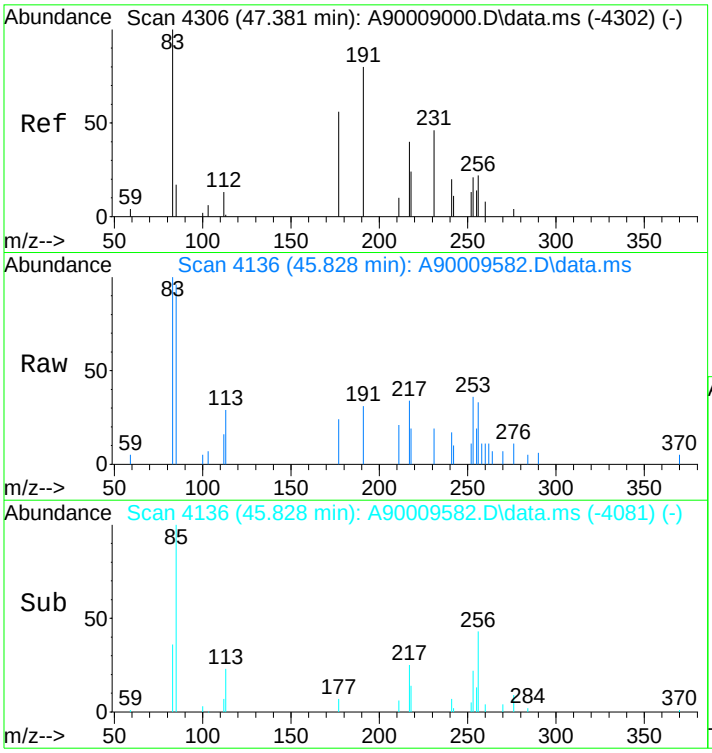




#131
13b(H),17a(H)-20R-Diacholestane (S5)
Concen: 83.24 ng/ml m
RT: 45.133 min Scan# 4060
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

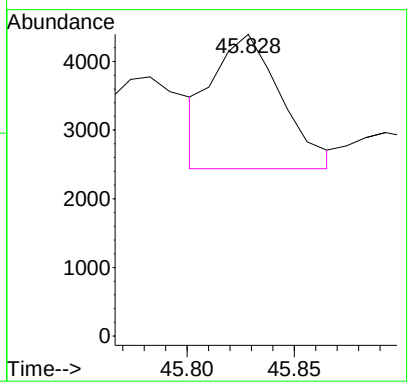
Tgt Ion:217 Resp: 4160

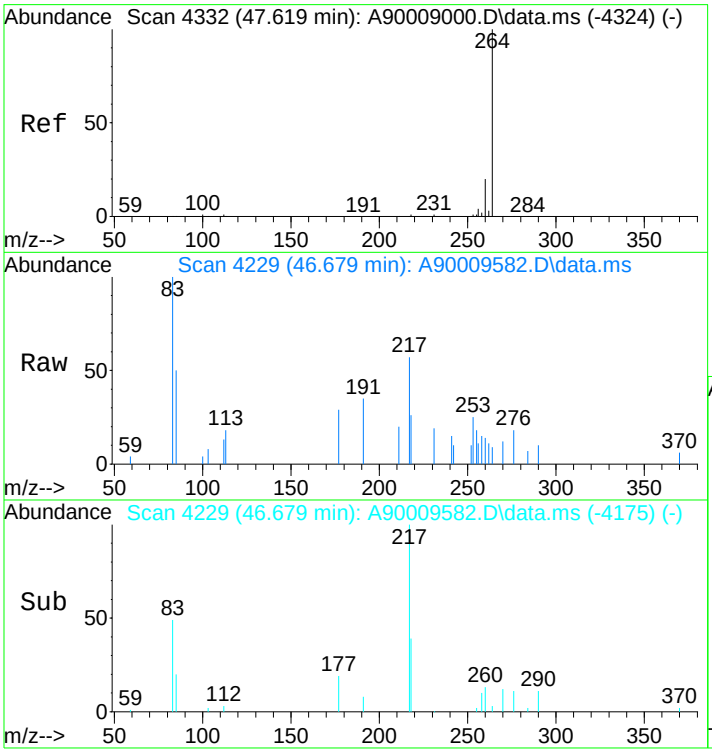




#132
13b,17a-20S-Methyldiacholestane (S8)
Concen: 86.04 ng/ml m
RT: 45.828 min Scan# 4136
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

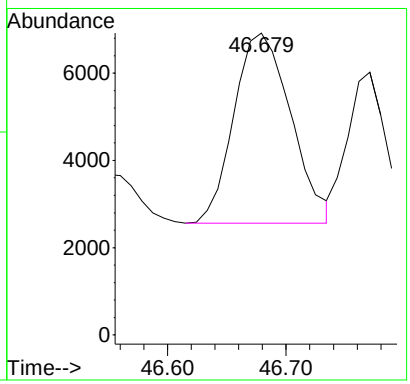
Tgt Ion:217 Resp: 4300

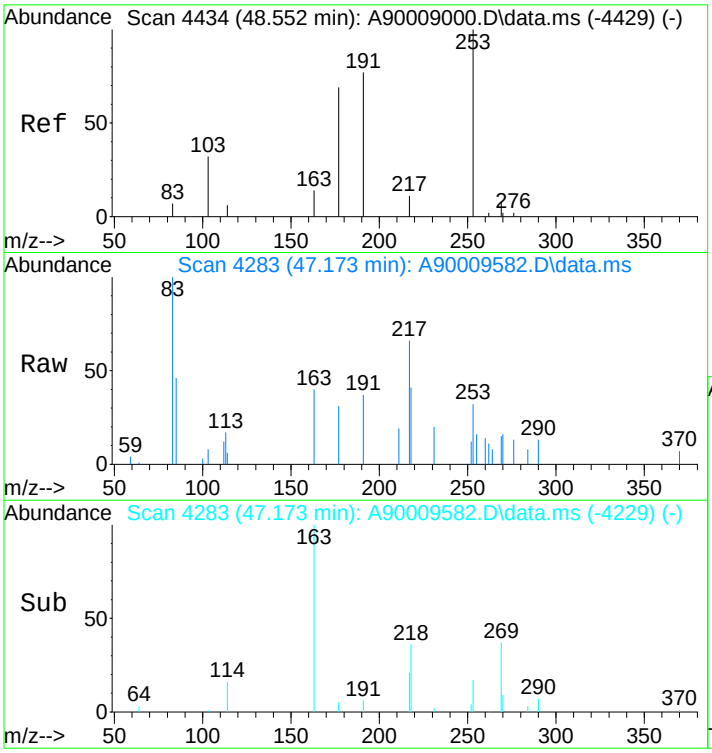




#133
14a,17a-20S-Chol/13b,17a-20S-Ethyldiach
Concen: 290.13 ng/ml
RT: 46.679 min Scan# 4229
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

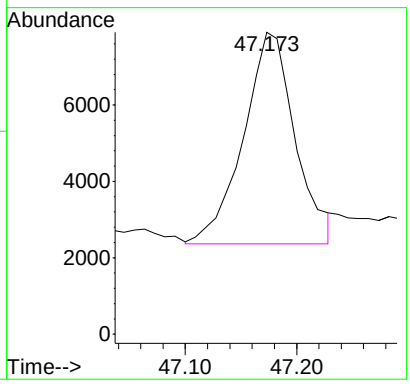
Tgt Ion:217 Resp: 14500

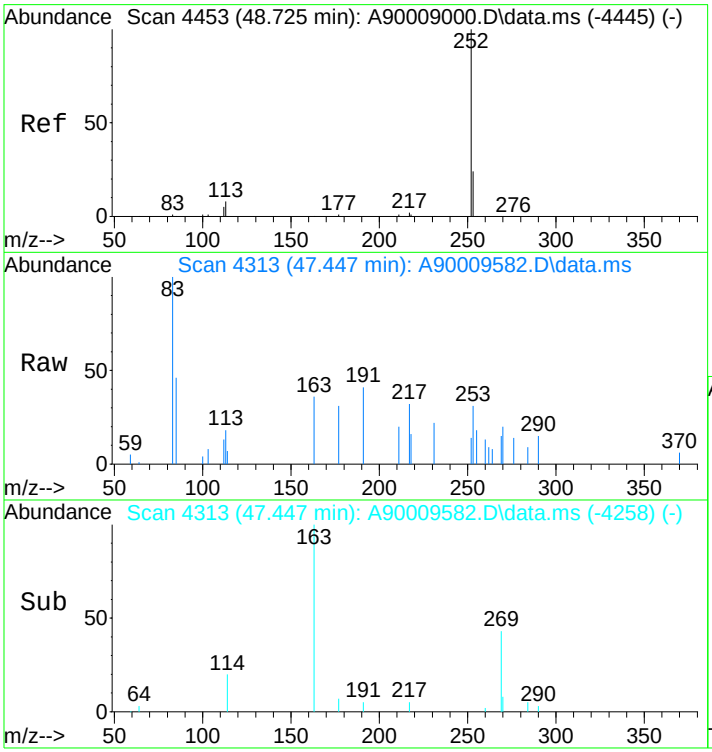




#134
14a,17a-20R-Chol/13b,17a-20R-Ethyldiach
Concen: 358.50 ng/ml m
RT: 47.173 min Scan# 4283
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

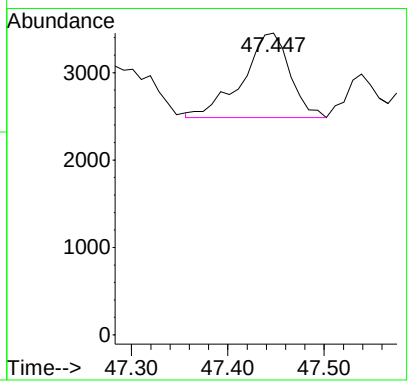
Tgt Ion:217 Resp: 17917

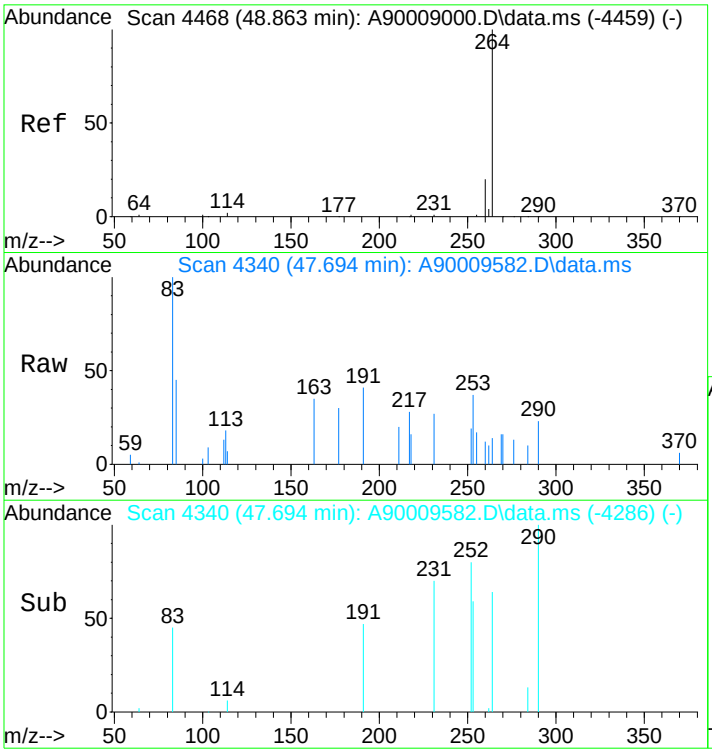




#135
Unknown Sterane (S18)
Concen: 65.95 ng/ml
RT: 47.447 min Scan# 4313
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

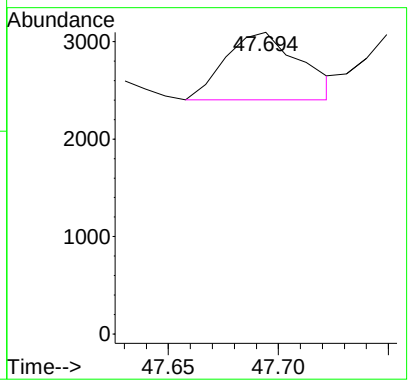
Tgt Ion:217 Resp: 3296

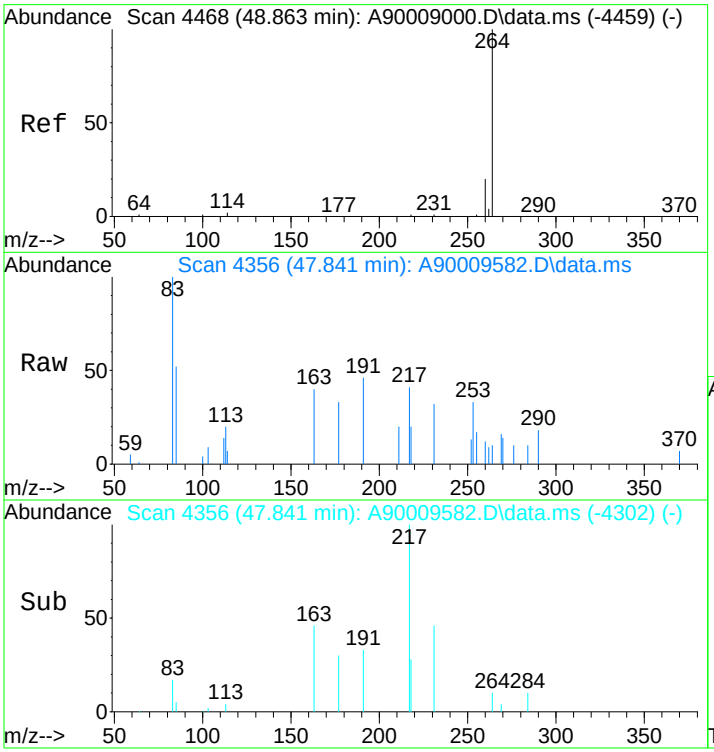




#136
13a,17b-20S-Ethyldiacholestane (S19)
Concen: 33.14 ng/ml
RT: 47.694 min Scan# 4340
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

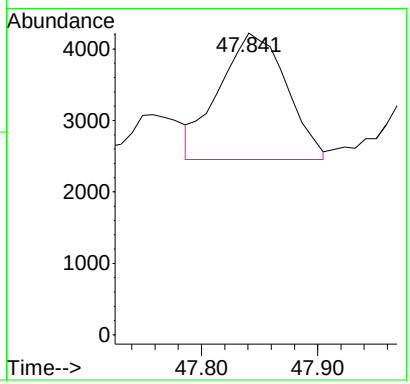
Tgt Ion:217 Resp: 1656

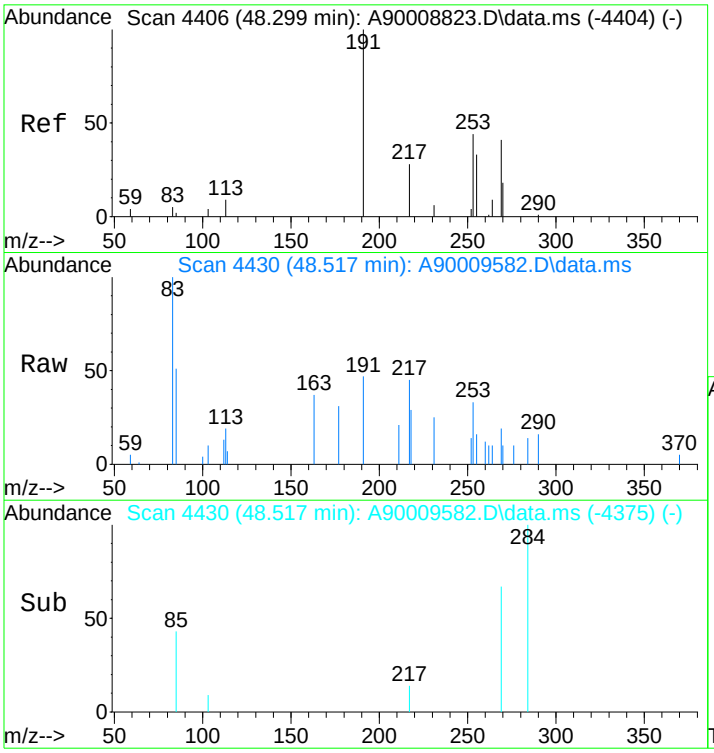




#137
14a,17a-20S-Methylcholestane (S20)
Concen: 142.18 ng/ml m
RT: 47.841 min Scan# 4356
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

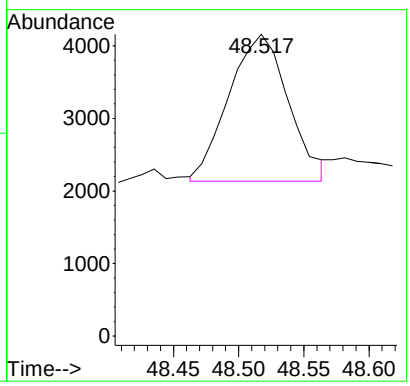
Tgt Ion:217 Resp: 7106

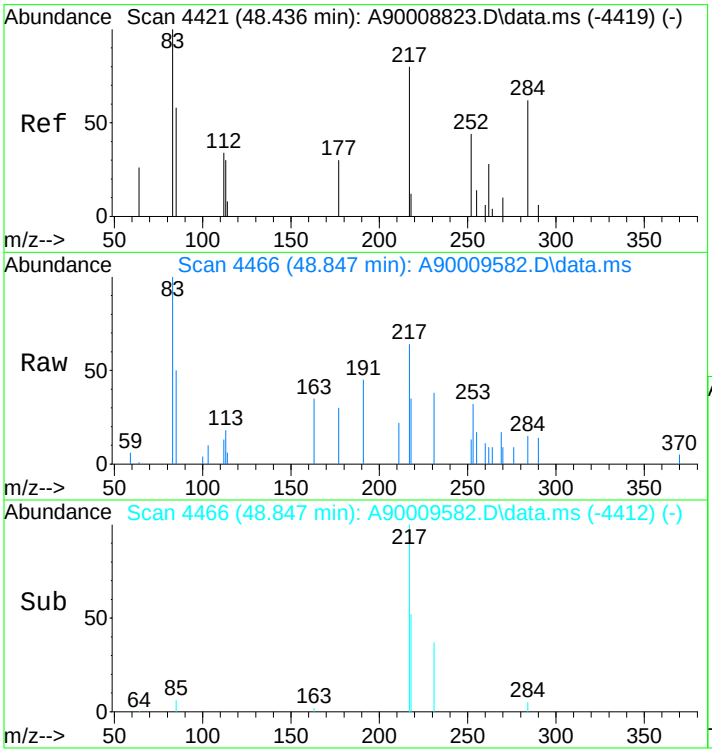




#138
14a,17a-20R-Methylcholestane (S24)
Concen: 128.26 ng/ml m
RT: 48.517 min Scan# 4430
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

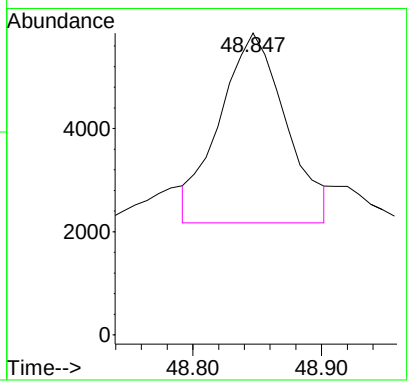
Tgt Ion:217 Resp: 6410

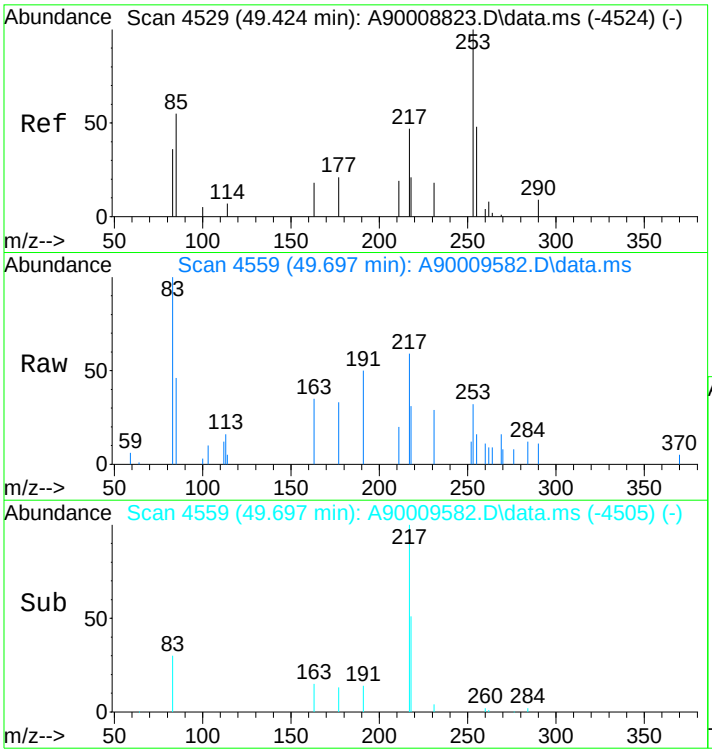




#139
14a(H),17a(H)-20S-Ethylcholestane (S25)
Concen: 263.16 ng/ml m
RT: 48.847 min Scan# 4466
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

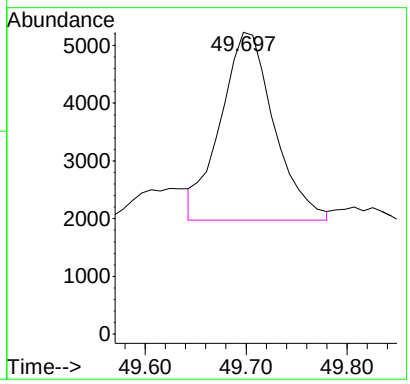
Tgt Ion:217 Resp: 13152

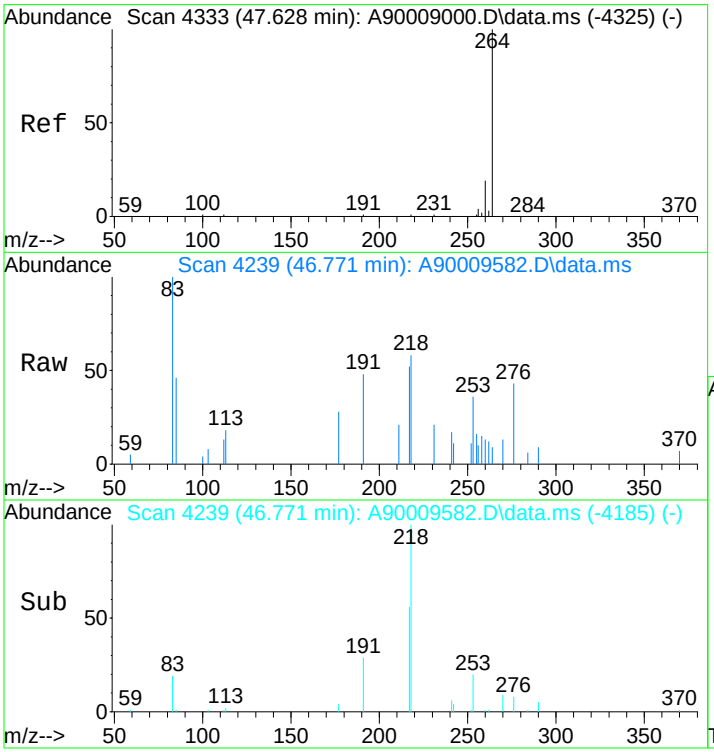




#140
14a(H),17a(H)-20R-Ethylcholestane (S28)
Concen: 239.39 ng/ml m
RT: 49.697 min Scan# 4559
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

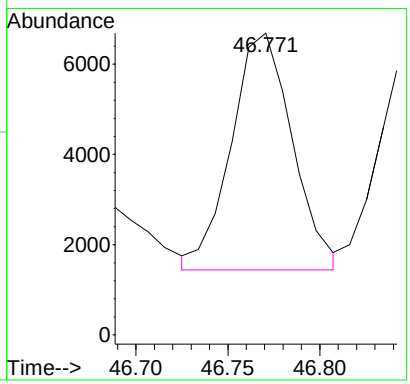
Tgt Ion:217 Resp: 11964

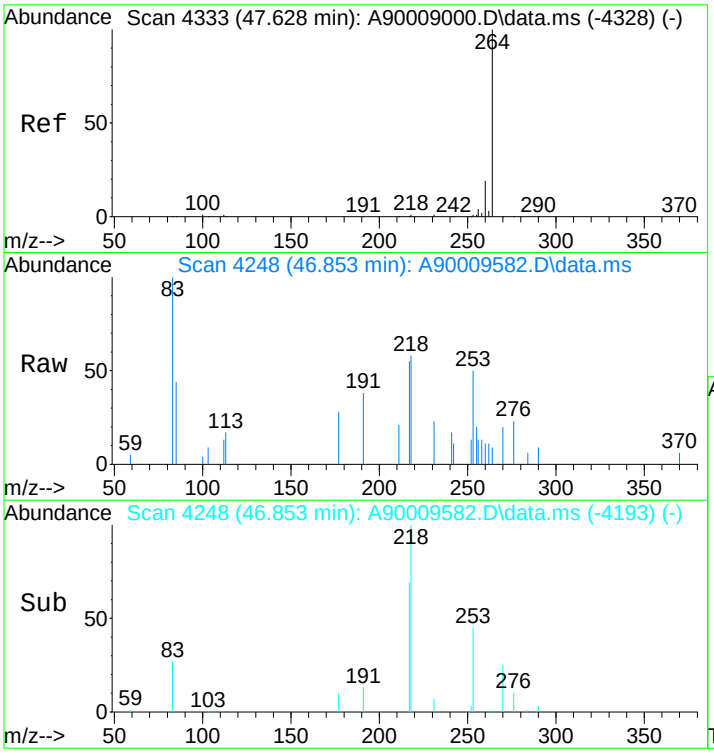




#141
14b(H),17b(H)-20R-Cholestane (S14)
Concen: 242.31 ng/ml m
RT: 46.771 min Scan# 4239
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

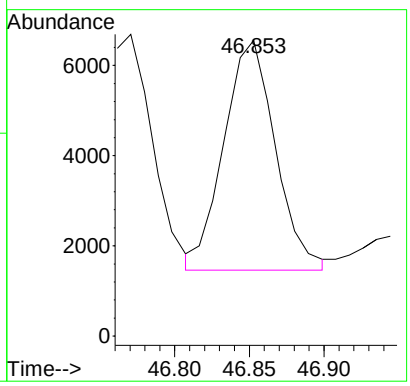
Tgt Ion:218 Resp: 12110

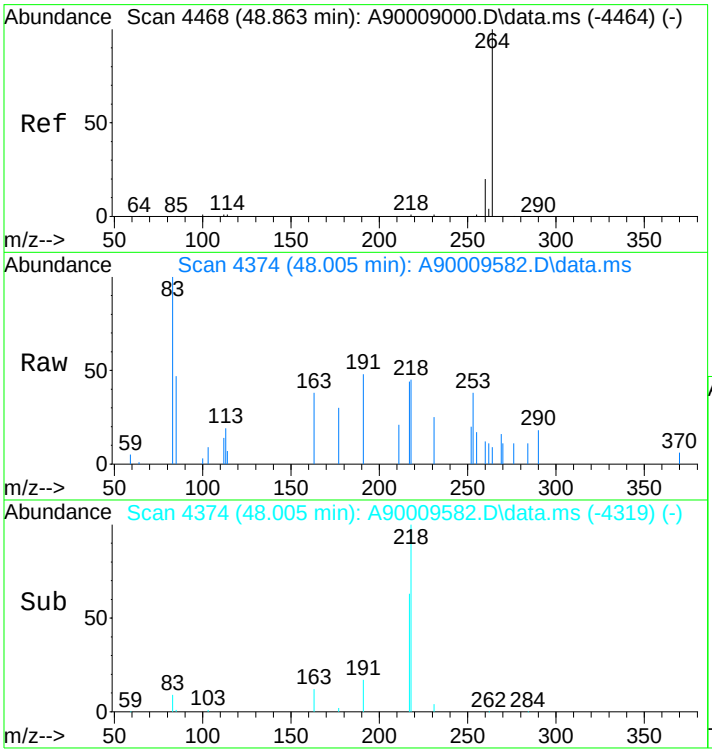




#142
14b(H),17b(H)-20S-Cholestane (S15)
Concen: 244.71 ng/ml m
RT: 46.853 min Scan# 4248
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

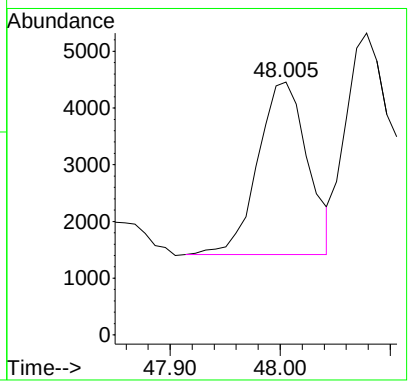
Tgt Ion:218 Resp: 12230

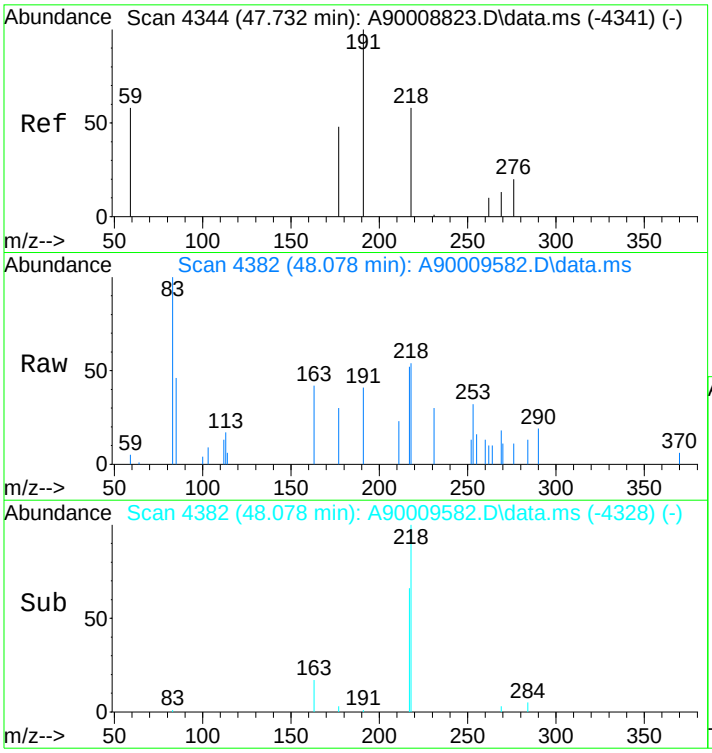




#143
14b,17b-20R-Methylcholestane (S22)
Concen: 192.35 ng/ml
RT: 48.005 min Scan# 4374
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

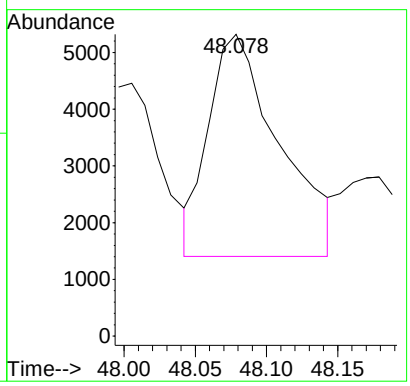
Tgt Ion:218 Resp: 9613

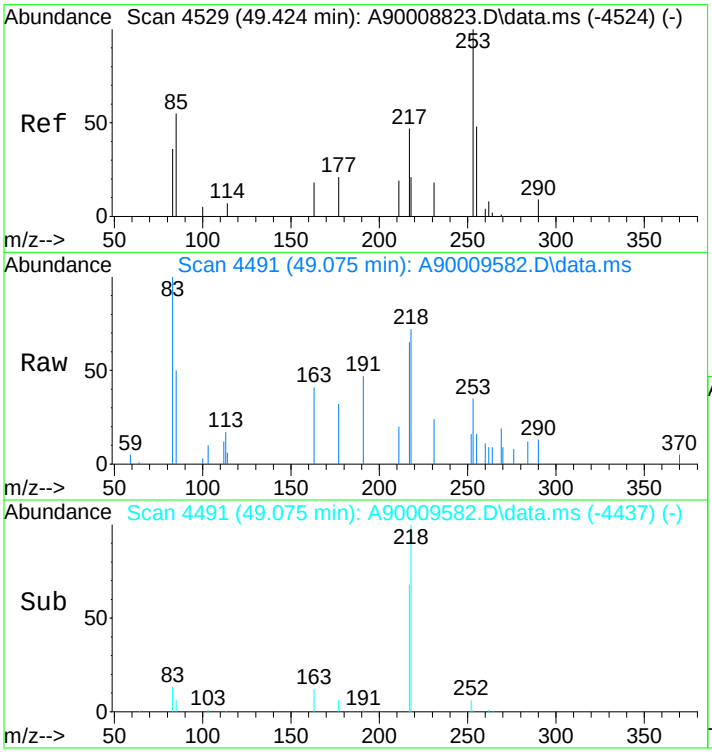




#144
14b,17b-20S-Methylcholestane (S23)
Concen: 271.20 ng/ml m
RT: 48.078 min Scan# 4382
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

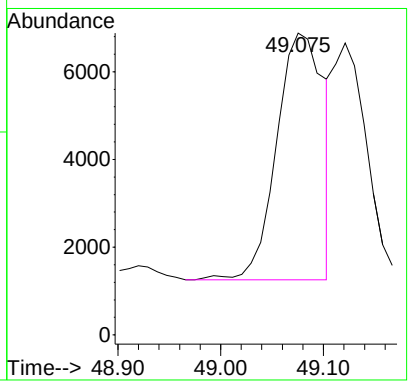
Tgt Ion:218 Resp: 13554

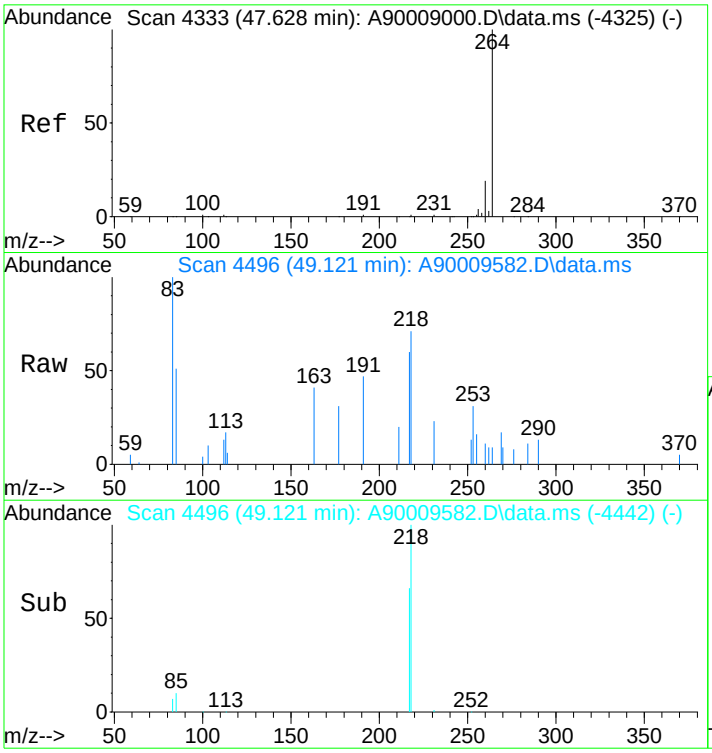




#145
14b(H),17b(H)-20R-Ethylcholestane (S26)
Concen: 360.28 ng/ml
RT: 49.075 min Scan# 4491
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

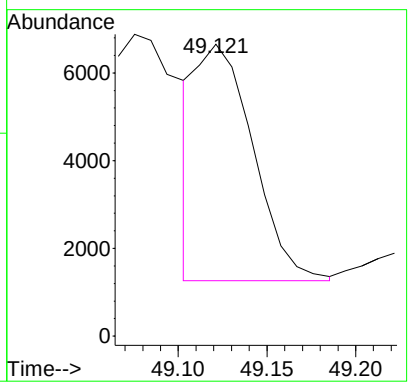
Tgt Ion:218 Resp: 18006

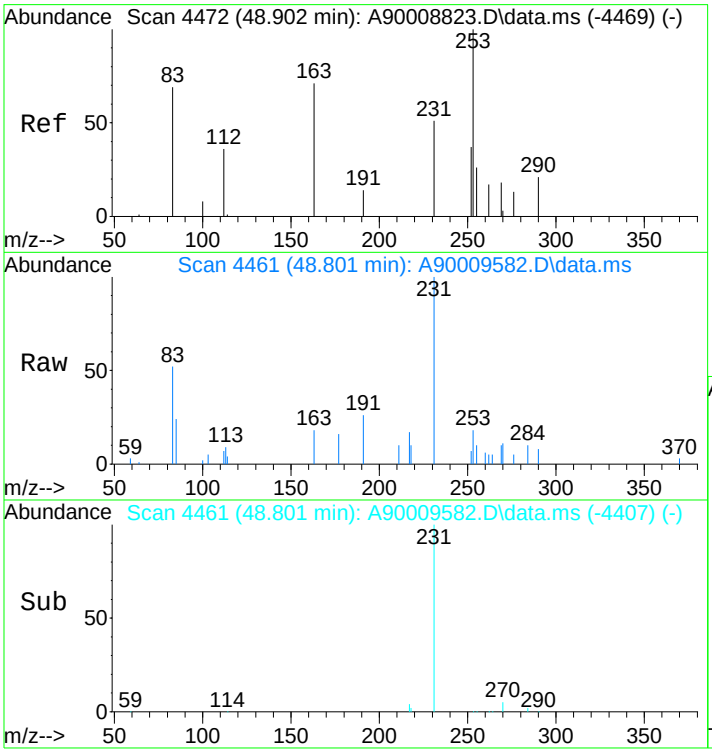




#146
14b(H),17b(H)-20S-Ethylcholestane (S27)
Concen: 242.29 ng/ml m
RT: 49.121 min Scan# 4496
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

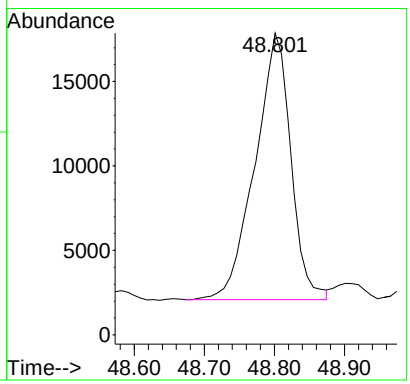
Tgt Ion:218 Resp: 12109

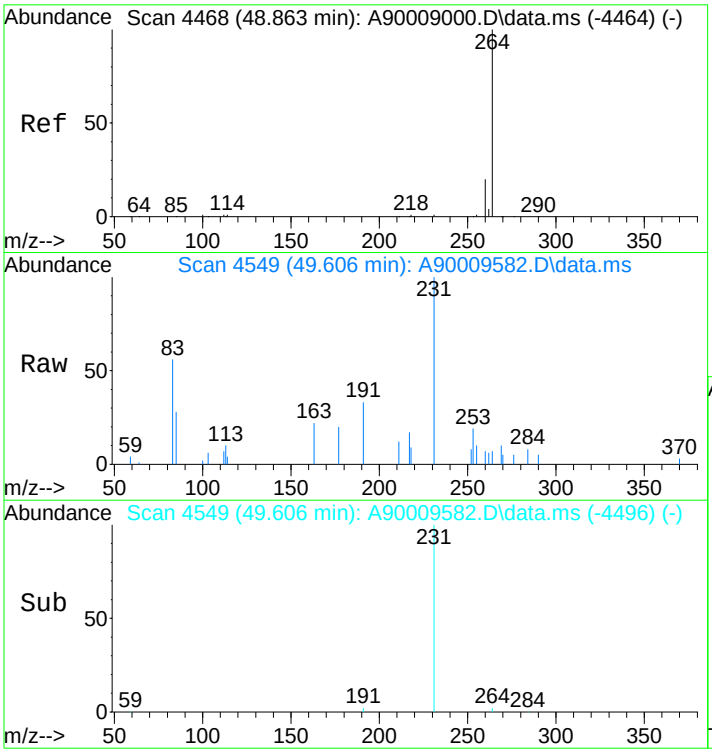




#147
C26,20R- +C27,20S- triaromatic steroid
Concen: 1122.11 ng/mL
RT: 48.801 min Scan# 4461
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

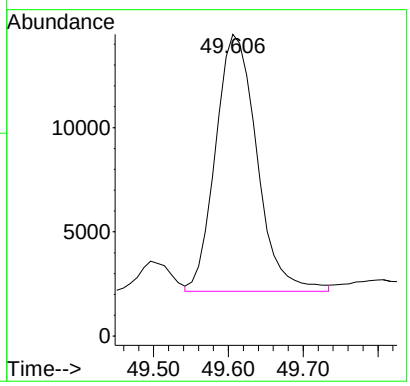
Tgt Ion:231 Resp: 56080

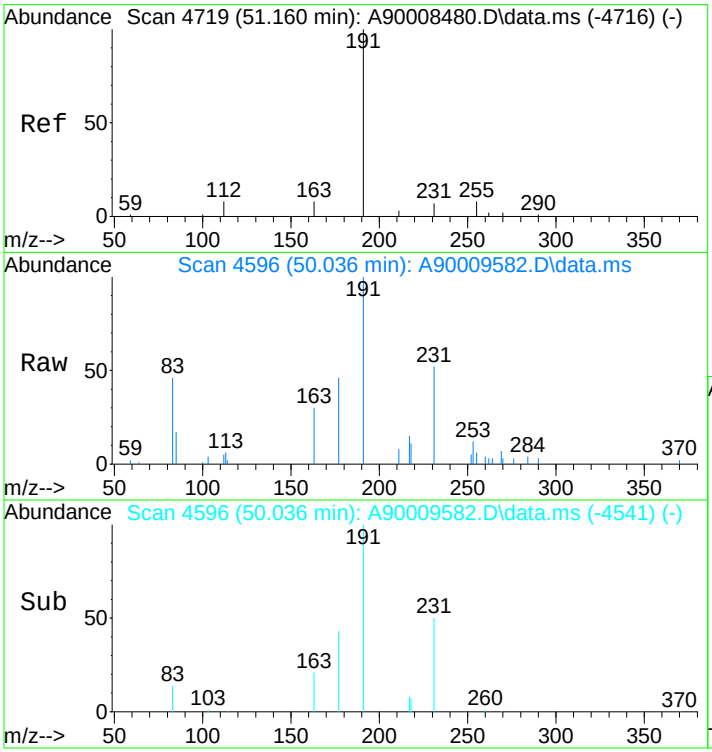




#148
C28,20S-triaromatic steroid
Concen: 948.39 ng/mL m
RT: 49.606 min Scan# 4549
Delta R.T. -0.018 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

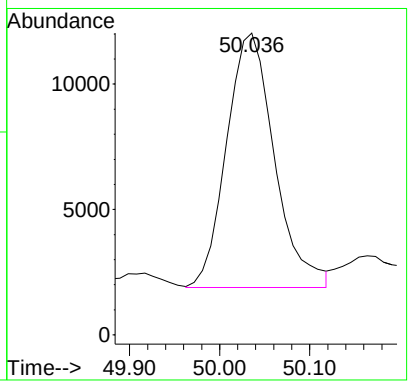
Tgt Ion:231 Resp: 47398

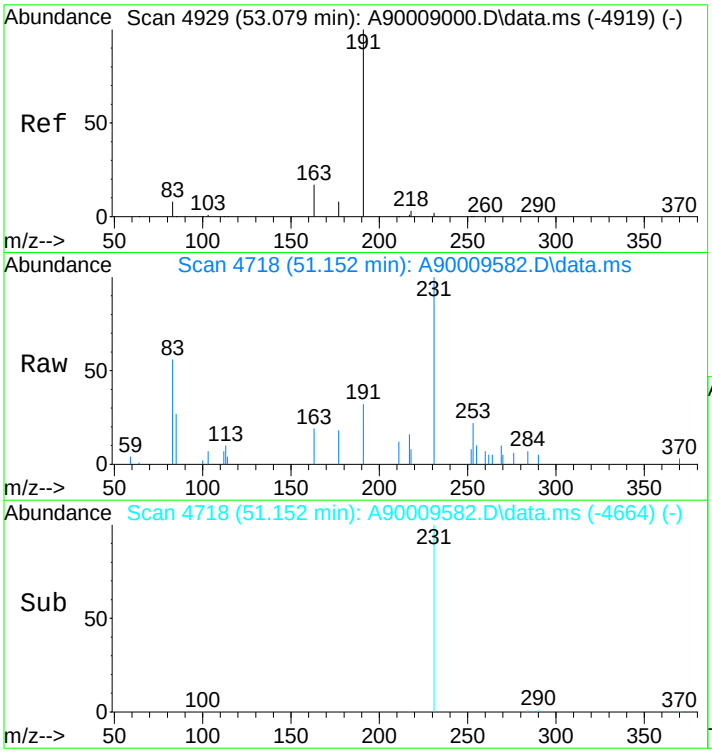




#149
C27,20R-triaromatic steroid
Concen: 751.80 ng/mL m
RT: 50.036 min Scan# 4596
Delta R.T. 0.000 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

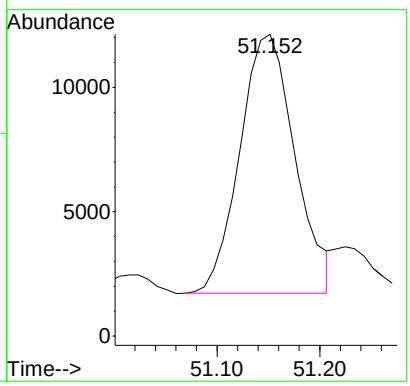
Tgt Ion:231 Resp: 37573





#150
C28,20R-triaromatic steroid
Concen: 774.81 ng/mL
RT: 51.152 min Scan# 4718
Delta R.T. -0.009 min
Lab File: A90009582.D
Acq: 22 Dec 2012 11:06 pm

Tgt Ion:231 Resp: 38723



Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009583.D
Acq On : 23 Dec 2012 12:30 am
Operator : ps
Sample : SS122712WCS03
Misc : WHAQ73:5.086mg/kg
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Dec 27 16:00:26 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.156	164	64268	500.000	ng/mL	0.00
74) Chrysene-d12	42.558	240	119312	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.230	136	229294	928.244	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 92.82%			
42) Phenanthrene-d10	31.995	188	245785	1060.293	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 106.03%			
83) Benzo[b]fluoranthene-d12	46.460	264	230556	1051.239	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 105.12%			
88) Benzo[a]pyrene-d12	47.585	264	222466	1011.888	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 101.19%			
129) 5B(H)Cholane - Surr	43.197	217	54467	1087.441	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 108.74%			
Target Compounds						Qvalue
3) trans-Decalin	15.908	138	43853	776.142	ng/mL	100
4) cis-Decalin	17.113	138	2820M3	63.754	ng/mL	
5) C1-Decalins	17.377	152	98877M5	1749.996	ng/mL	
6) C2-Decalins	18.792	166	146541M5	2593.588	ng/mL	
7) C3-Decalins	21.602	180	116637M5	2064.325	ng/mL	
8) C4-Decalins	24.960	194	125305M5	2217.738	ng/mL	
10) Naphthalene	19.303	128	87916	346.820	ng/mL#	100
11) C1-Naphthalenes	21.986	142	256178M5	1010.597	ng/mL	
12) C2-Naphthalenes	24.805	156	654479M5	2581.856	ng/mL	
13) C3-Naphthalenes	27.479	170	793995M5	3132.233	ng/mL	
14) C4-Naphthalenes	29.897	184	636579M5	2511.242	ng/mL	
16) 2-Methylnaphthalene	21.986	142	156598	944.637	ng/mL#	100
17) 1-Methylnaphthalene	22.405	142	97697	607.264	ng/mL#	100
18) Benzothiophene	19.522	134	6709M4	31.626	ng/mL	
19) C1-Benzo(b)thiophenes	21.557	148	41481M5	195.540	ng/mL	
20) C2-Benzo(b)thiophenes	25.006	162	67242M5	316.976	ng/mL	
21) C3-Benzo(b)thiophenes	26.977	176	143402M5	675.992	ng/mL	
22) C4-Benzo(b)thiophenes	29.076	190	157474M5	742.326	ng/mL	
23) Biphenyl	23.865	154	17001	78.368	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.477	156	165974	1065.074	ng/mL#	100
25) Dibenzofuran	26.922	168	9528	41.178	ng/mL#	47
26) Acenaphthylene	25.554	152	4998M4	19.167	ng/mL	
27) Acenaphthene	26.284	153	13181M3	80.393	ng/mL	
28) 2,3,5-Trimethylnaphthalen	27.835	170	58800M3	410.413	ng/mL	
29) Fluorene	28.291	166	29441M3	163.515	ng/mL	
30) C1-Fluorenes	30.645	180	83526M5	463.903	ng/mL	
31) C2-Fluorenes	32.835	194	189468M5	1052.304	ng/mL	
32) C3-Fluorenes	34.669	208	222820M5	1237.540	ng/mL	
33) Dibenzothiophene	31.594	184	76810	303.271	ng/mL#	55
34) 4-Methyldibenzothiophene(	33.364	198	101239	399.725	ng/mL#	100
35) 2/3-Methyldibenzothiophen	33.711	198	77874	307.472	ng/mL#	100
36) 1-Methyldibenzothiophene(	34.131	198	52908	208.898	ng/mL#	100
37) OTP	33.793	198	31586	124.712	ng/mL#	100
38) C1-Dibenzothiophenes	33.364	198	282241M5	1114.379	ng/mL	
38) C1-Dibenzothiophenes BS	33.364	198	250655m	989.668	ng/mL	
39) C2-Dibenzothiophenes	35.053	212	474124M5	1871.996	ng/mL	
40) C3-Dibenzothiophenes	36.851	226	518714M5	2048.052	ng/mL	
41) C4-Dibenzothiophenes	40.357	240	362669M5	1431.935	ng/mL	
43) Phenanthrene	32.086	178	110890M3	423.795	ng/mL	

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009583.D
Acq On : 23 Dec 2012 12:30 am
Operator : ps
Sample : SS122712WCS03
Misc : WHAQ73:5.086mg/kg
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Dec 27 16:00:26 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
44) 3-Methylphenanthrene(3MP)	34.049	192	61271	234.163	ng/mL	92
45) 2-Methylphenanthrene(2MP)	34.158	192	70313	268.719	ng/mL	97
46) 2-Methylanthracene(2MA)	34.323	192	6511M3	24.883	ng/mL	
47) 9/4-Methylphenanthrene(9M	34.496	192	100828	385.340	ng/mL	99
48) 1-Methylphenanthrene(1MP)	34.587	192	62122	237.415	ng/mL	98
49) C1-Phenanthrenes/Anthrace	34.496	192	305906M5	1169.099	ng/mL	
50) C2-Phenanthrenes/Anthrace	36.312	206	467849M5	1788.006	ng/mL	
50) C2-Phenanthrenes/Anthr BS	36.312	206	467849m	1788.006	ng/mL	
52) C3-Phenanthrenes/Anthrace	39.408	220	430267M5	1644.376	ng/mL	
53) C4-Phenanthrenes/Anthrace	39.061	234	207787M5	794.112	ng/mL	
54) Retene	39.061	234	23061M4	320.593	ng/mL	
56) Carbazole	32.944	167	6196M3	26.956	ng/mL	
57) 1-Methylphenanthrene	34.587	192	61936	320.826	ng/mL	99
58) Fluoranthene	36.842	202	9779M3	33.455	ng/mL	
60) Pyrene	37.728	202	33259M4	111.530	ng/mL	
61) C1-Fluoranthenes/Pyrenes	39.125	216	110035M5	368.987	ng/mL	
62) C2-Fluoranthenes/Pyrenes	40.923	230	151621M5	508.440	ng/mL	
63) C3-Fluoranthenes/Pyrenes	42.932	244	176272M5	591.104	ng/mL	
64) C4-Fluoranthenes/Pyrenes	44.293	258	164866M5	552.856	ng/mL	
66) Naphthobenzothiophene	41.572	234	29188M4	112.801	ng/ml	
67) Naphthobenzothiophene-2,1	41.572	234	28959M4	111.916	ng/mL	
68) Naphthobenzothiophene-1,2	41.909	234	8048M4	31.103	ng/mL	
69) Naphthobenzothiophene-2,3	42.211	234	5489M3	21.213	ng/mL	
70) C1-Naphthobenzothiophenes	43.653	248	151061M5	583.795	ng/ml	
71) C2-Naphthobenzothiophenes	45.015	262	224301M5	866.841	ng/ml	
72) C3-Naphthobenzothiophenes	46.579	276	186832M5	722.037	ng/ml	
73) C4-Naphthobenzothiophenes	47.603	290	147817M5	571.258	ng/mL	
75) Benz[a]anthracene	42.503	228	5643M3	20.620	ng/mL	
77) Chrysene/Triphenylene	42.640	228	27416M4	101.856	ng/mL	
78) C1-Chrysenes	44.137	242	82834M5	307.746	ng/mL	
79) C2-Chrysenes	46.213	256	133104M5	494.510	ng/mL	
79) C2-Chrysenes BS	46.213	256	124107m	461.085	ng/mL	
80) BBF-d12 Surr BKGD	46.460	256	8997	33.426	ng/mL	100
81) C3-Chrysenes	47.521	270	144396M5	536.463	ng/mL	
82) C4-Chrysenes	48.883	284	82248M5	305.569	ng/mL	
84) Benzo[b]fluoranthene	46.542	252	8313M4	29.296	ng/mL	
85) Benzo[j]+[k]fluoranthene	46.606	252	2903M3	10.412	ng/mL	
87) Benzo[e]pyrene	47.493	252	13084	48.559	ng/mL	96
89) Benzo[a]pyrene	47.667	252	6580M3	25.785	ng/mL	
90) Perylene	47.960	252	14187M3	52.091	ng/mL	
91) Indeno[1,2,3-cd]pyrene	52.167	276	3916M4	13.856	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.212	278	1851M3	6.649	ng/mL	
93) Benzo[g,h,i]perylene	53.364	276	10476	37.721	ng/mL#	86
94) Hopane (T19)	51.335	191	117954M4	1124.489	ng/mL	
96) C23 Tricyclic Terpane (T4	40.220	191	52473M4	500.240	ng/ml	
97) C24 Tricyclic Terpane (T5	40.951	191	27755M4	264.596	ng/ml	
98) C25 Tricyclic Terpane (T6	42.475	191	25774M1	245.711	ng/ml	
99) C24 Tetracyclic Terpane (	43.736	191	9260	88.278	ng/ml	100
100) C26 Tricyclic Terpane-22S	43.498	191	10142M4	96.687	ng/ml	
101) C26 Tricyclic Terpane-22R	43.589	191	9756	93.007	ng/ml	100
102) C28 Tricyclic Terpane-22S	45.874	191	10372M4	98.879	ng/ml	
103) C28 Tricyclic Terpane-22R	46.039	191	11486	109.499	ng/ml	100
104) C29 Tricyclic Terpane-22S	46.551	191	14478	138.023	ng/ml	100
105) C29 Tricyclic Terpane-22R	46.752	191	12934	123.303	ng/ml	100
106) 18a-22,29,30-Trisnorneoho	47.795	191	14391	137.193	ng/ml	100
107) C30 Tricyclic Terpane-22S	47.905	191	10309M4	98.279	ng/mL	

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009583.D
Acq On : 23 Dec 2012 12:30 am
Operator : ps
Sample : SS122712WCS03
Misc : WHAQ73:5.086mg/kg
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Dec 27 16:00:26 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
108) C30 Tricyclic Terpane-22R	48.134	191	10222	97.449	ng/mL	100
109) 17a(H)-22,29,30-Trisnorho	48.307	191	32471M4	309.555	ng/ml	
110) 17a/b,21b/a 28,30-Bisnorh	49.432	191	20371M4	194.203	ng/ml	
111) 17a(H),21b(H)-25-Norhopan	49.268	191	6259	59.669	ng/ml	100
112) 30-Norhopane (T15)	50.063	191	85939M4	819.281	ng/ml	
113) 18a(H)-30-Norneohopane-C2	50.155	191	12823M4	122.245	ng/ml	
114) 17a(H)-Diahopane (X)	50.283	191	4712M4	44.921	ng/ml	
115) 30-Normoretane (T17)	50.786	191	8582	81.815	ng/ml	100
116) 18a(H)&18b(H)-Oleananes (	51.161	191	1231	11.735	ng/ml	100
117) Moretane (T20)	51.966	191	8947M4	85.294	ng/ml	
118) 30-Homohopane-22S (T21)	52.989	191	52471	500.221	ng/ml	100
119) 30-Homohopane-22R (T22)	53.199	191	43378	413.535	ng/ml	100
120) Gammacerane/C32-diahopane	53.702	191	20097	191.590	ng/mL	100
121) 30,31-Bishomohopane-22S (	54.424	191	34204	326.076	ng/ml	100
122) 30,31-Bishomohopane-22R (	54.780	191	23881	227.664	ng/ml	100
123) 30,31-Trishomohopane-22S	56.379	191	26241	250.163	ng/ml	100
124) 30,31-Trishomohopane-22R	56.946	191	17759	169.302	ng/ml	100
125) Tetrakishomohopane-22S (T	58.801	191	17207	164.039	ng/ml	100
126) Tetrakishomohopane-22R (T	59.614	191	11764	112.150	ng/ml	100
127) Pentakishomohopane-22S (T	61.652	191	22006	209.789	ng/ml	100
128) Pentakishomohopane-22R (T	62.840	191	13737M4	130.959	ng/ml	
130) 13b(H),17a(H)-20S-Diachol	44.704	217	8597M4	171.640	ng/ml	
131) 13b(H),17a(H)-20R-Diachol	45.133	217	4450	88.845	ng/ml	100
132) 13b,17a-20S-Methyldiachol	45.829	217	4414M4	88.126	ng/ml	
133) 14a,17a-20S-Chol/13b,17a-	46.679	217	14563	290.752	ng/ml	100
134) 14a,17a-20R-Chol/13b,17a-	47.182	217	17528	349.949	ng/ml	100
135) Unknown Sterane (S18)	47.448	217	3737	74.610	ng/ml	100
136) 13a,17b-20S-Ethyldiachole	47.695	217	1596	31.864	ng/ml	100
137) 14a,17a-20S-Methylcholest	47.841	217	7091M4	141.573	ng/ml	
138) 14a,17a-20R-Methylcholest	48.518	217	6146	122.706	ng/ml	100
139) 14a(H),17a(H)-20S-Ethylch	48.847	217	11767M4	234.930	ng/ml	
140) 14a(H),17a(H)-20R-Ethylch	49.707	217	11705M4	233.692	ng/ml	
141) 14b(H),17b(H)-20R-Cholest	46.771	218	11205M4	223.709	ng/ml	
142) 14b(H),17b(H)-20S-Cholest	46.853	218	11267M4	224.947	ng/ml	
143) 14b,17b-20R-Methylcholest	48.005	218	8860	176.891	ng/ml	100
144) 14b,17b-20S-Methylcholest	48.079	218	12673M4	253.018	ng/ml	
145) 14b(H),17b(H)-20R-Ethylch	49.085	218	16337	326.170	ng/ml	100
146) 14b(H),17b(H)-20S-Ethylch	49.121	218	12220M3	243.974	ng/ml	
147) C26,20R- +C27,20S- triaro	48.810	231	57262	1143.243	ng/mL	100
148) C28,20S-triaromatic stero	49.615	231	47026M4	938.880	ng/mL	
149) C27,20R-triaromatic stero	50.036	231	37960M4	757.876	ng/mL	
150) C28,20R-triaromatic stero	51.152	231	40463	807.849	ng/mL	100

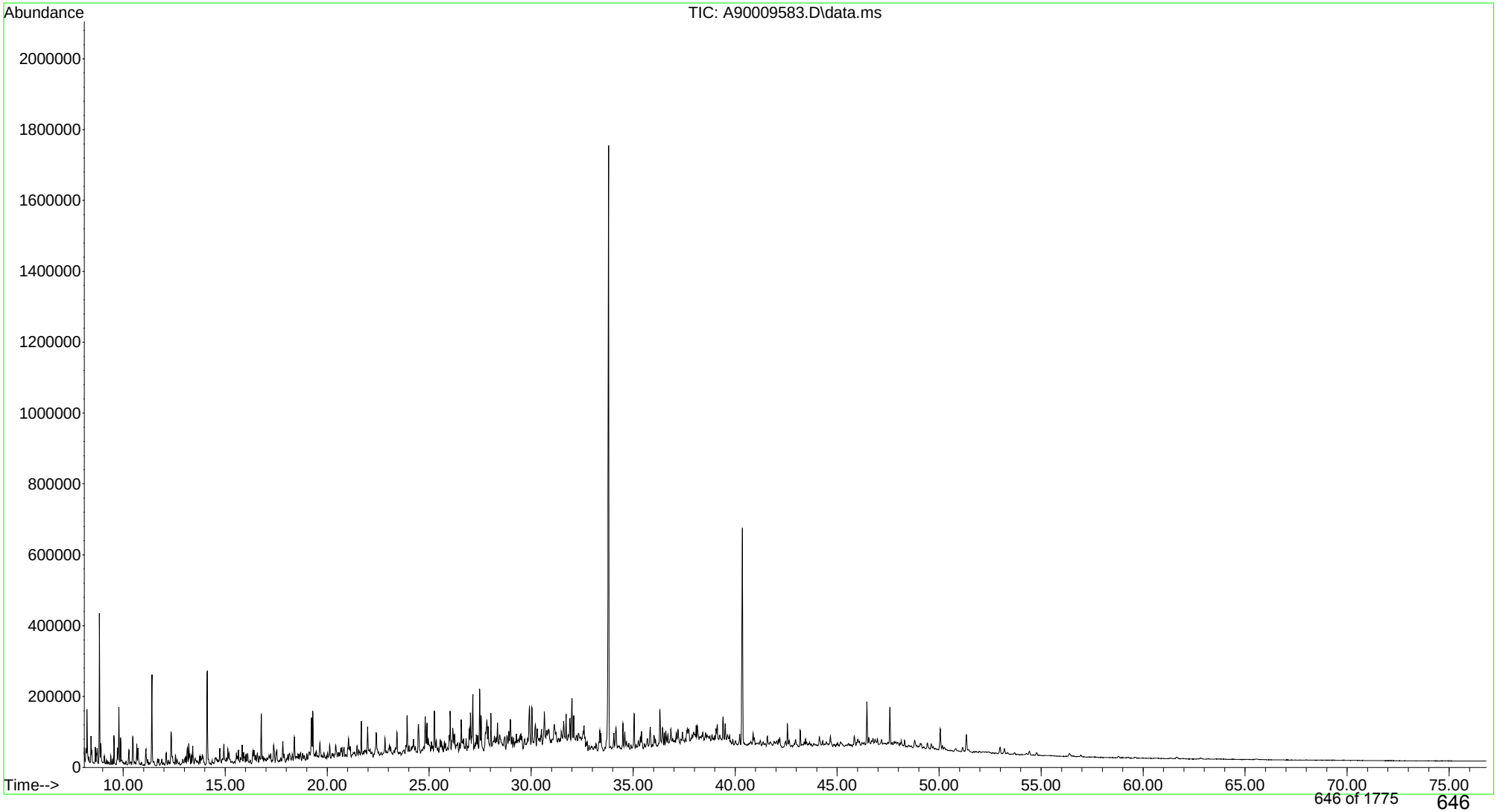
(#) = qualifier out of range (m) = manual integration (+) = signals summed

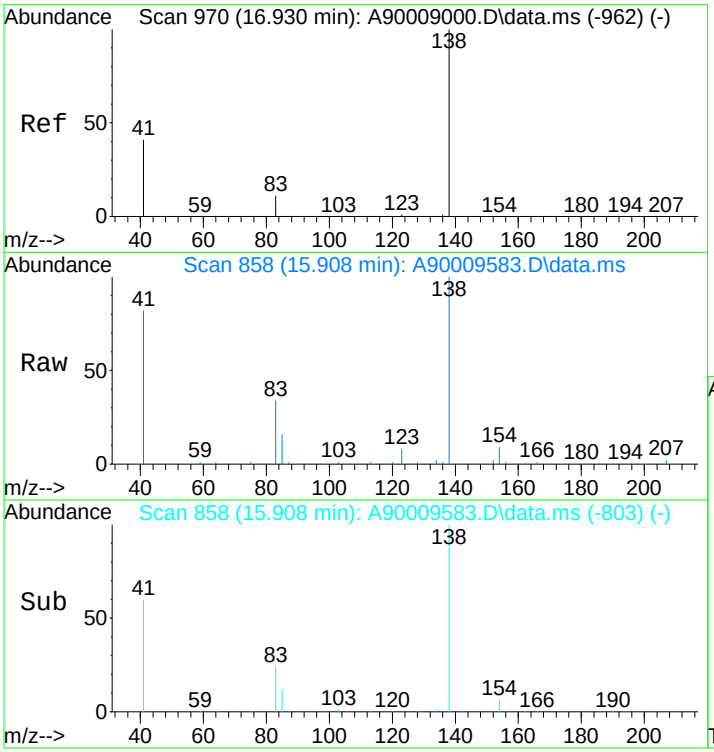
Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009583.D
Acq On : 23 Dec 2012 12:30 am
Operator : ps
Sample : SS122712WCS03
Misc : WHAQ73:5.086mg/kg
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Dec 27 16:00:26 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

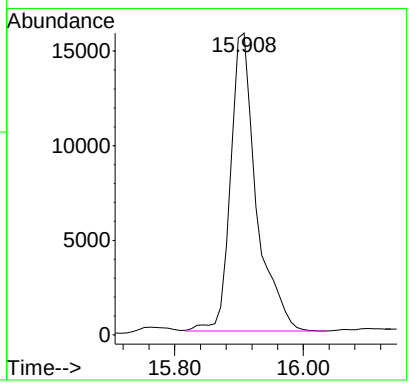
Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

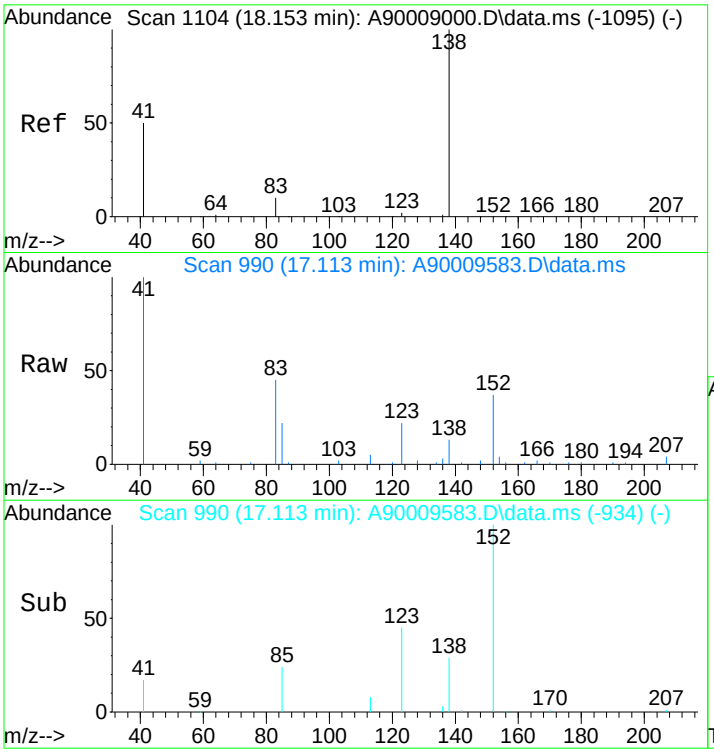




#3
trans-Decalin
Concen: 776.14 ng/mL
RT: 15.908 min Scan# 858
Delta R.T. 0.000 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

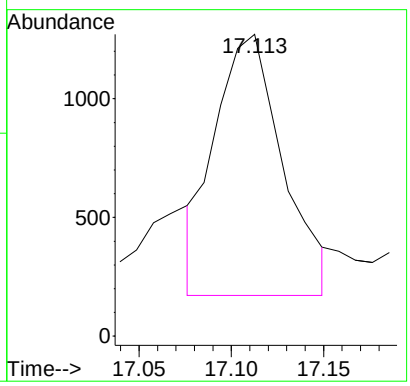
Tgt Ion:138 Resp: 43853

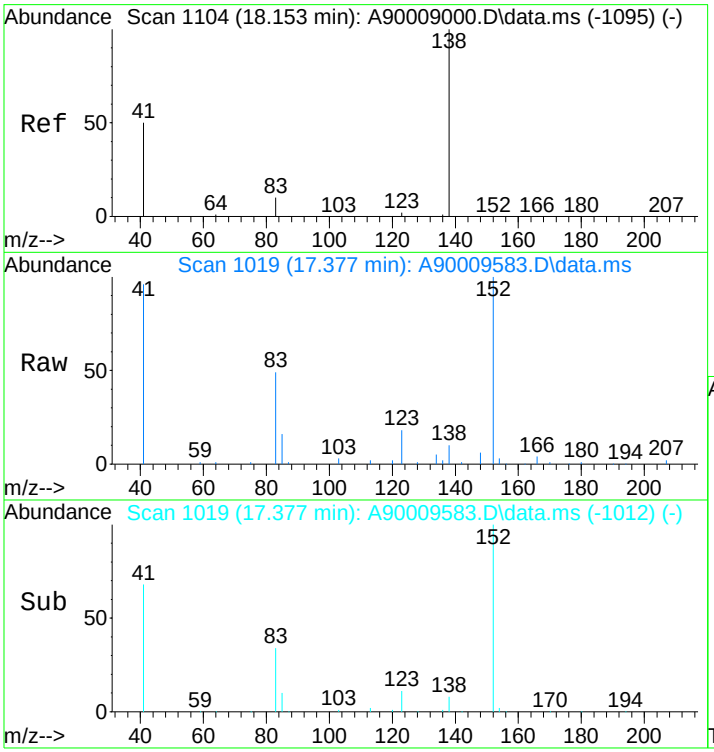




#4
cis-Decalin
Concen: 63.75 ng/mL m
RT: 17.113 min Scan# 990
Delta R.T. 0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

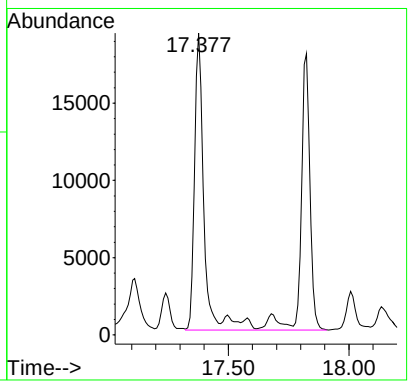
Tgt Ion:138 Resp: 2820

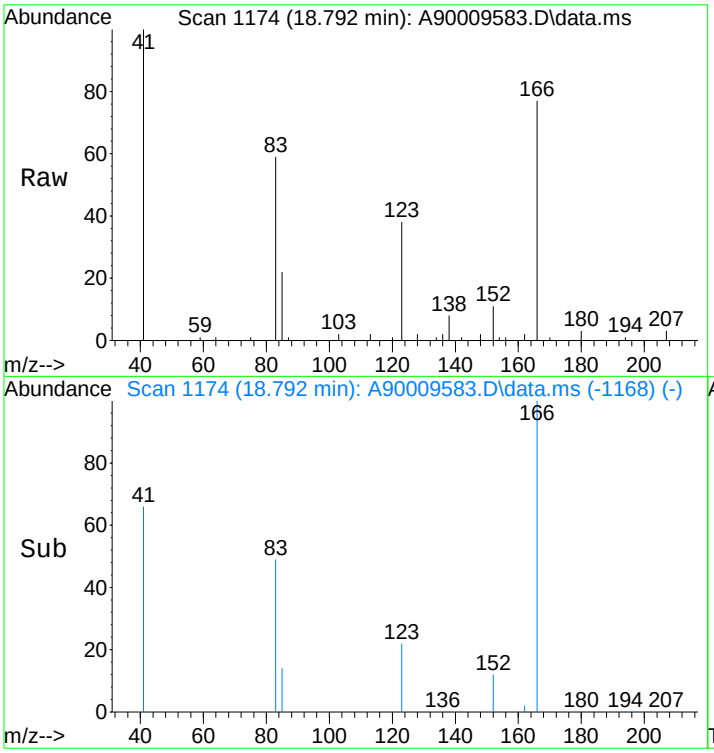




#5
C1-Decalins
Concen: 1750.00 ng/mL m
RT: 17.377 min Scan# 1019
Delta R.T. -0.447 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

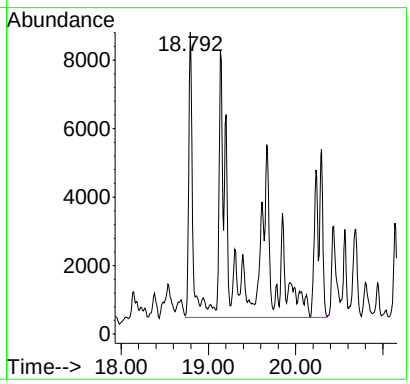
Tgt Ion:152 Resp: 98877

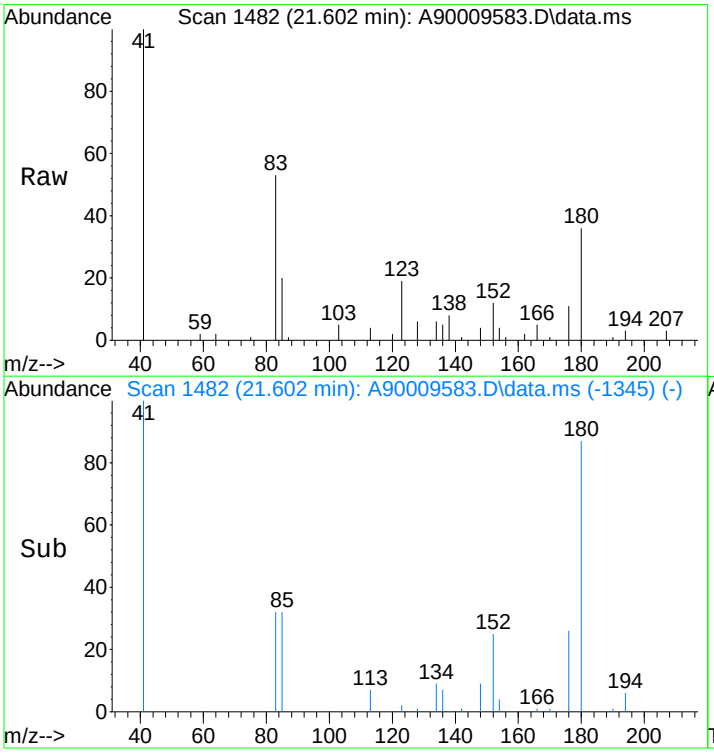




#6
C2-Decalins
Concen: 2593.59 ng/mL m
RT: 18.792 min Scan# 1174
Delta R.T. -0.355 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

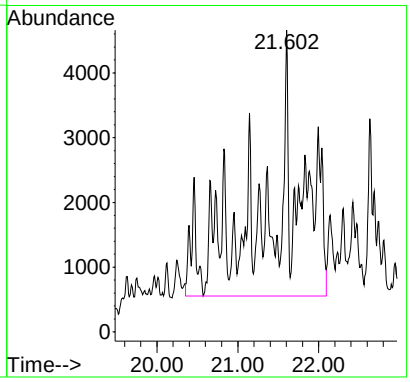
Tgt Ion:166 Resp: 146541

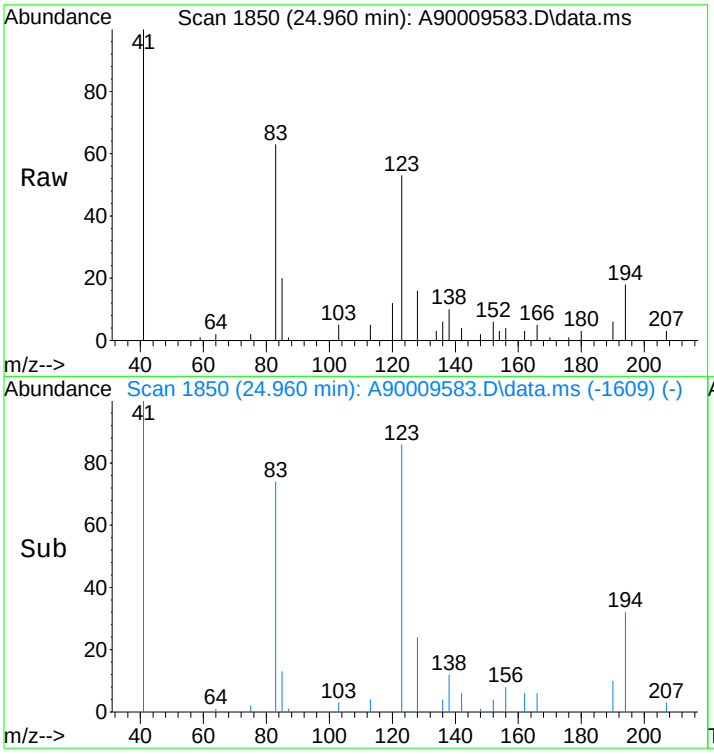




#7
C3-Decalins
Concen: 2064.33 ng/mL m
RT: 21.602 min Scan# 1482
Delta R.T. -0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

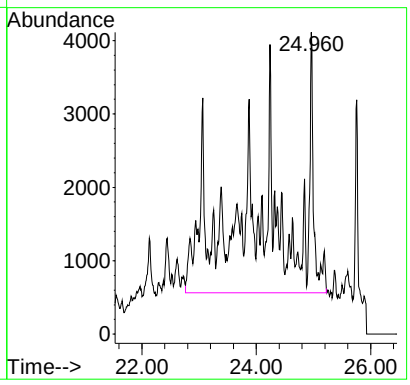
Tgt Ion:180 Resp: 116637

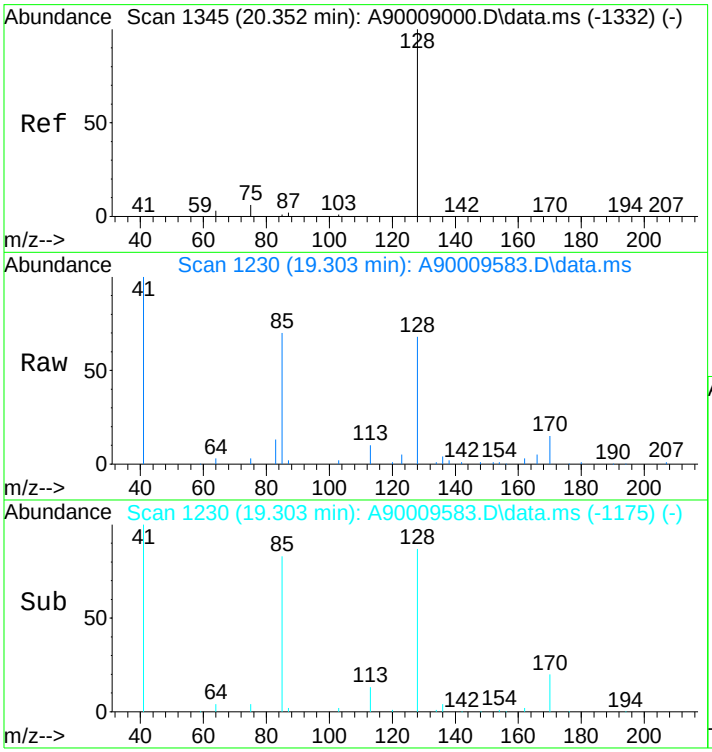




#8
C4-Decalins
Concen: 2217.74 ng/mL m
RT: 24.960 min Scan# 1850
Delta R.T. -0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:194 Resp: 125305

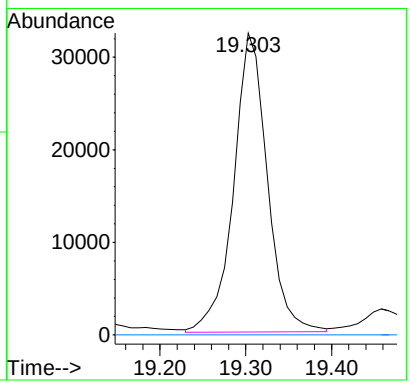


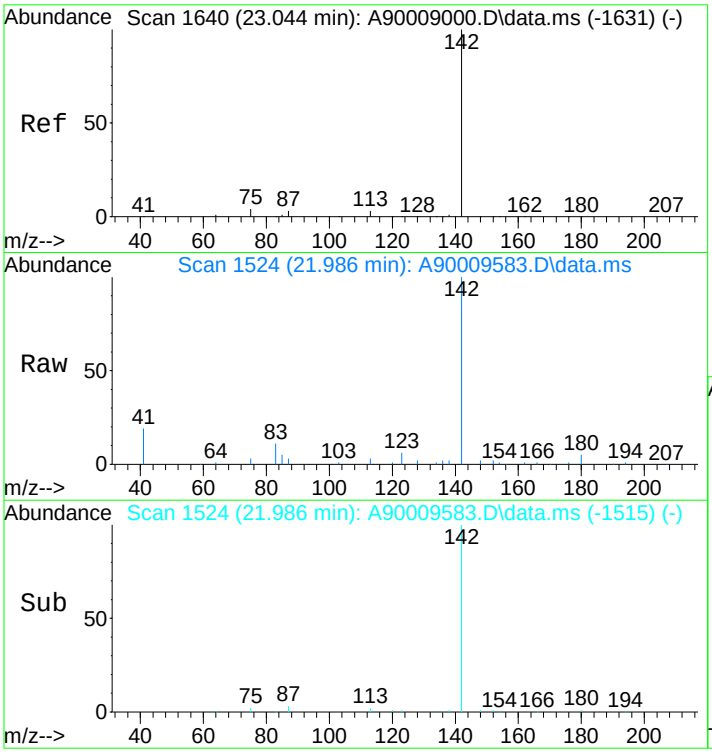


#10
Naphthalene
Concen: 346.82 ng/mL
RT: 19.303 min Scan# 1230
Delta R.T. 0.000 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:128 Resp: 87916

Ion	Ratio	Lower	Upper
128	100		
127	0.0	0.0	0.0

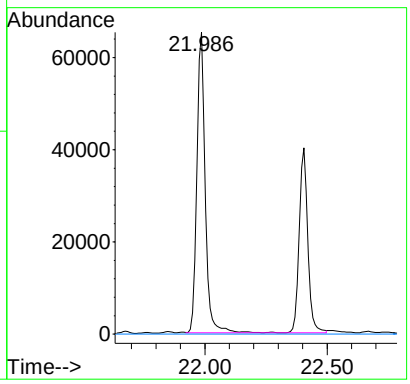


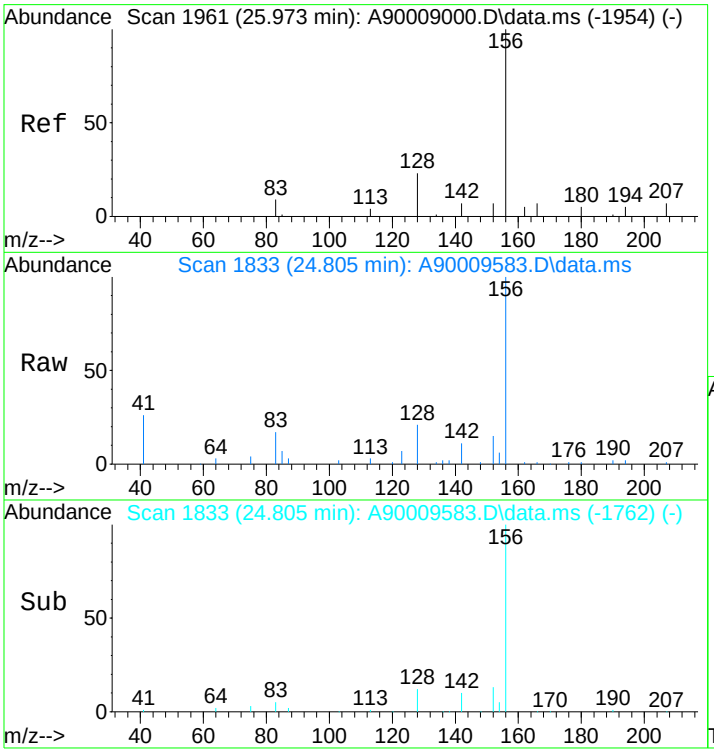


#11
C1-Naphthalenes
Concen: 1010.60 ng/mL m
RT: 21.986 min Scan# 1524
Delta R.T. 0.000 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:142 Resp: 256178

Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	0.0

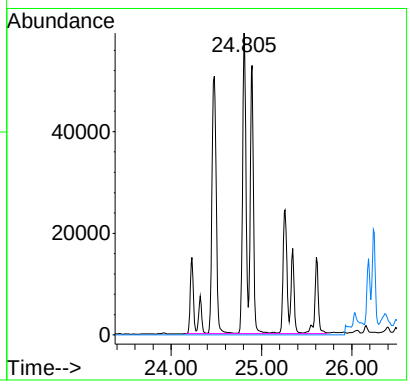


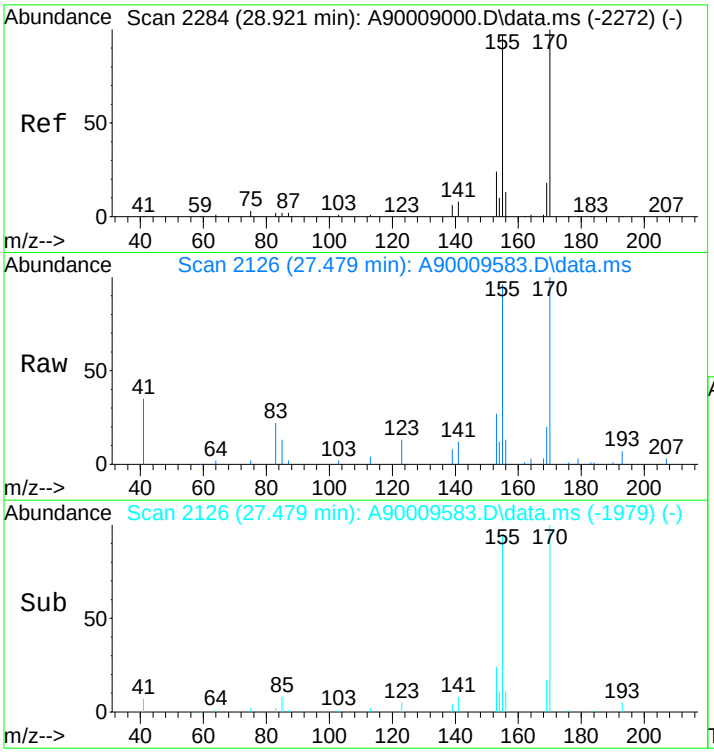


#12
C2-Naphthalenes
Concen: 2581.86 ng/mL m
RT: 24.805 min Scan# 1833
Delta R.T. -0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:156 Resp: 654479

Ion	Ratio	Lower	Upper
156	100		
141	0.0	0.0	0.0

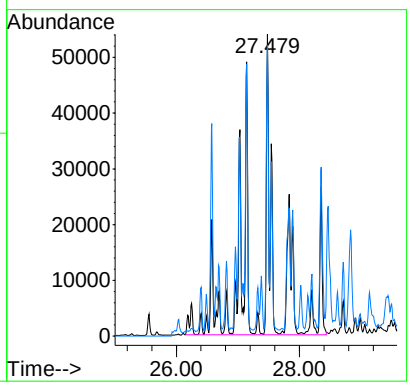


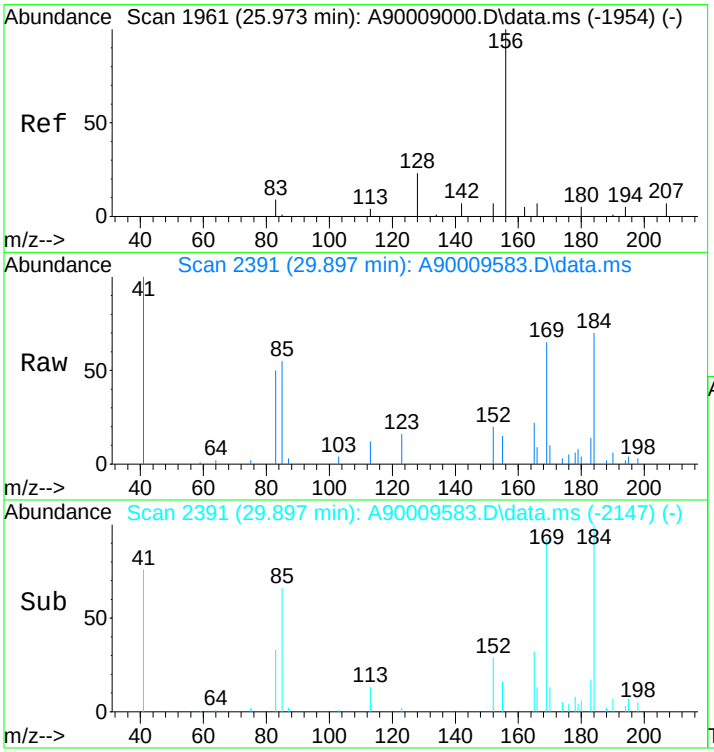


#13
C3-Naphthalenes
Concen: 3132.23 ng/mL m
RT: 27.479 min Scan# 2126
Delta R.T. 0.338 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:170 Resp: 793995

Ion	Ratio	Lower	Upper
170	100		
155	14.1	79.9	119.9#

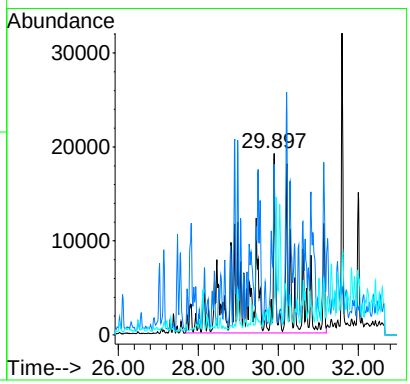


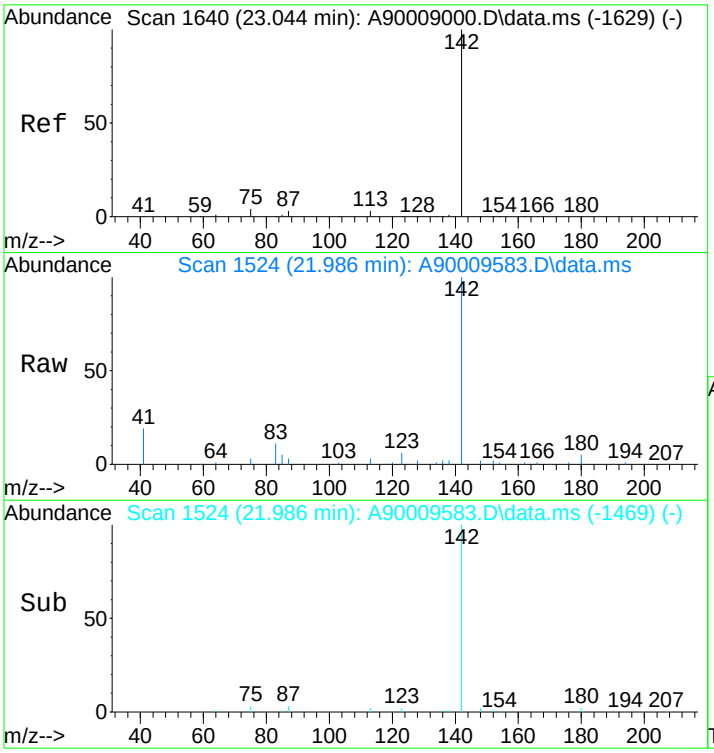


#14
C4-Naphthalenes
Concen: 2511.24 ng/mL m
RT: 29.897 min Scan# 2391
Delta R.T. 0.001 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:184 Resp: 636579

Ion	Ratio	Lower	Upper
184	100		
169	8.9	76.6	115.0#
183	0.0	16.4	24.6#

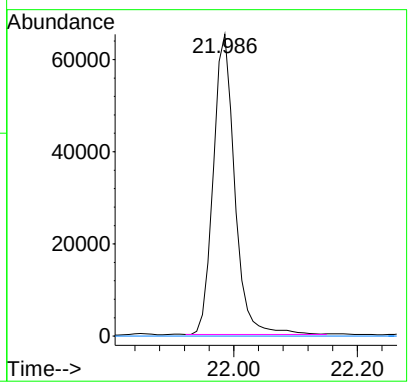


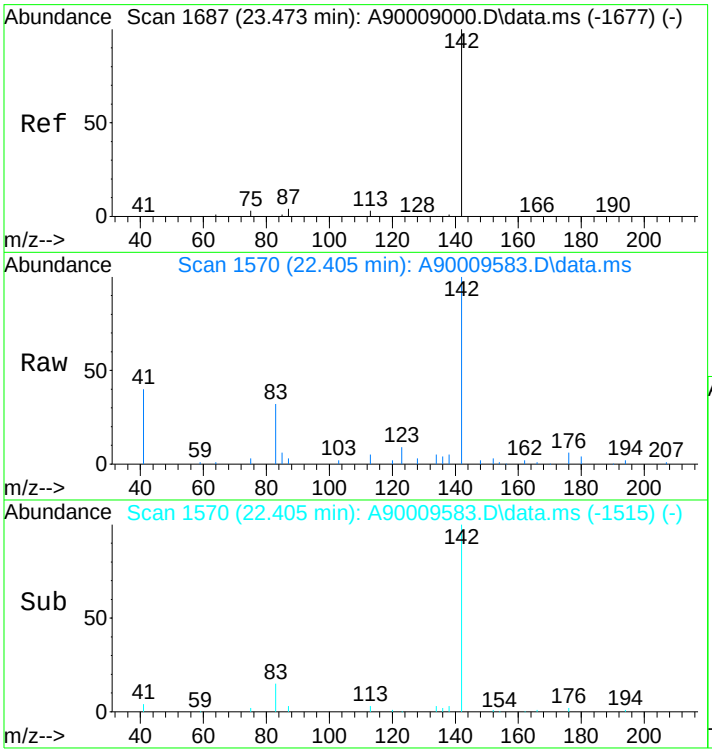


#16
2-Methylnaphthalene
Concen: 944.64 ng/mL
RT: 21.986 min Scan# 1524
Delta R.T. 0.000 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:142 Resp: 156598

Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	0.0

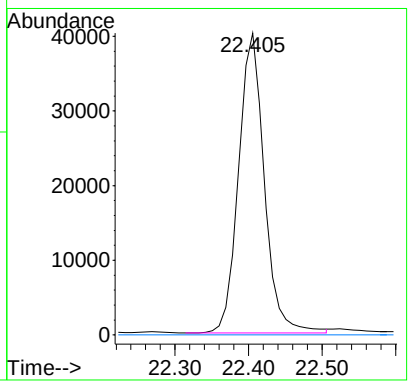


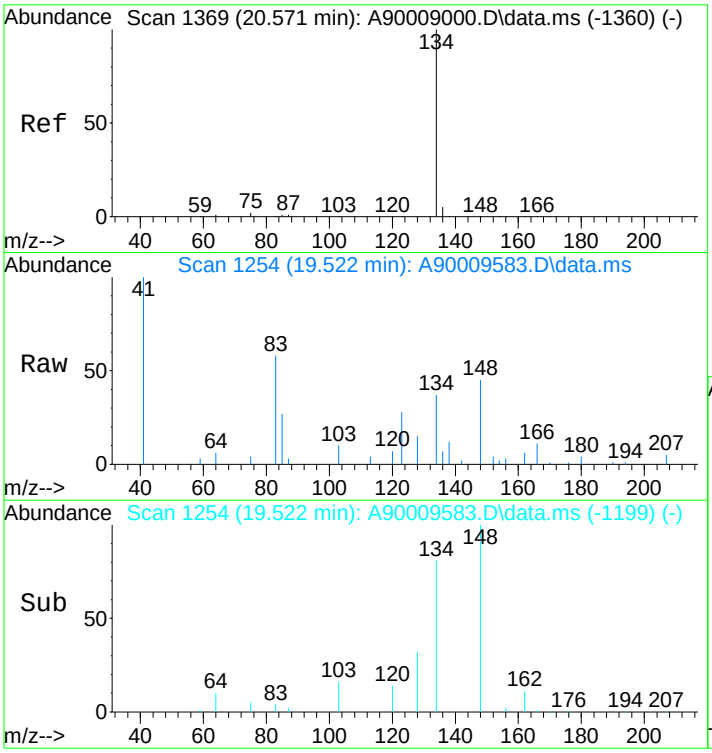


#17
1-Methylnaphthalene
Concen: 607.26 ng/mL
RT: 22.405 min Scan# 1570
Delta R.T. 0.000 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:142 Resp: 97697

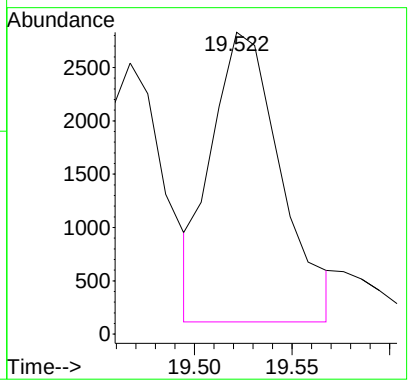
Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	20.0

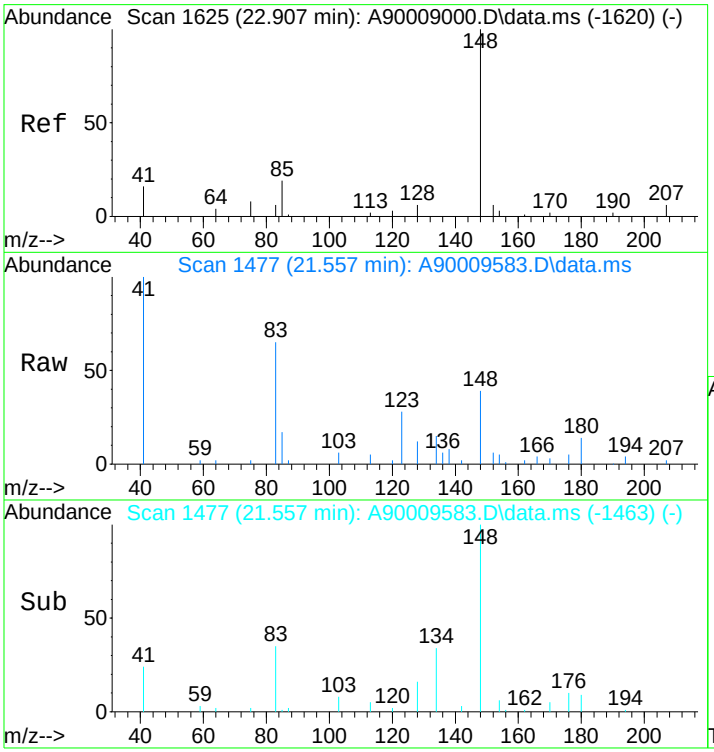




#18
Benzothiophene
Concen: 31.63 ng/mL m
RT: 19.522 min Scan# 1254
Delta R.T. 0.000 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

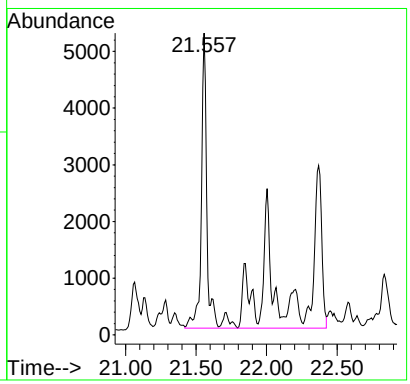
Tgt Ion:134 Resp: 6709

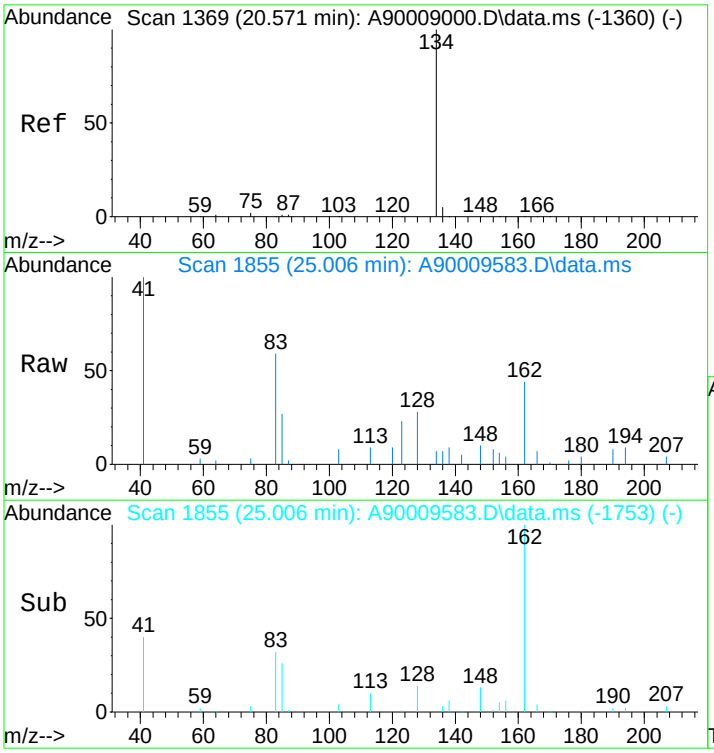




#19
C1-Benzo(b)thiophenes
Concen: 195.54 ng/mL m
RT: 21.557 min Scan# 1477
Delta R.T. 0.001 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

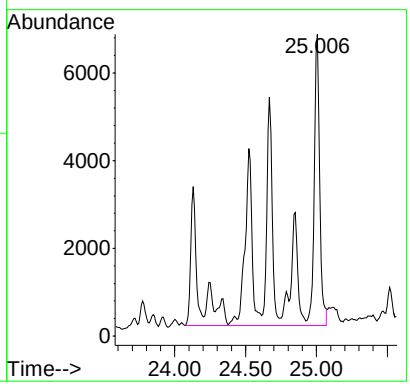
Tgt Ion:148 Resp: 41481

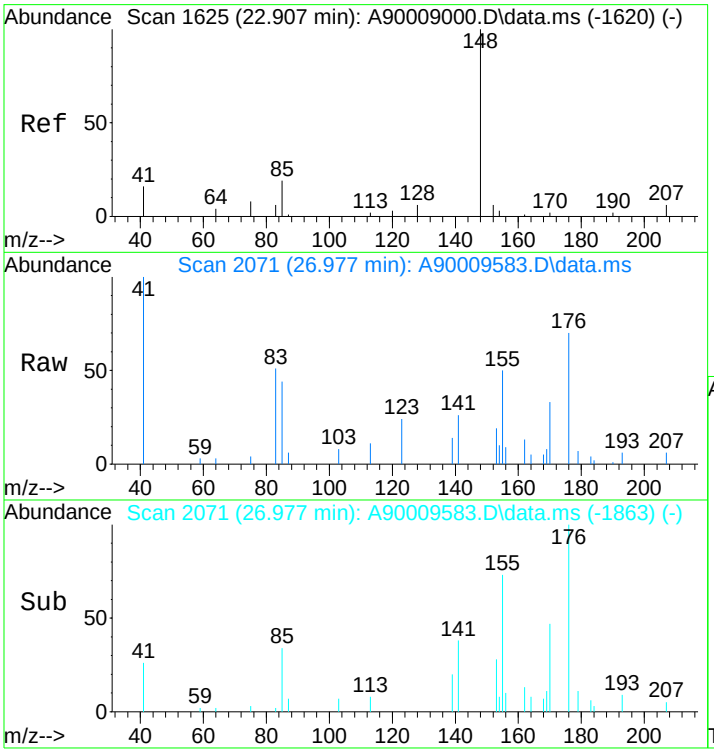




#20
C2-Benzo(b)thiophenes
Concen: 316.98 ng/mL m
RT: 25.006 min Scan# 1855
Delta R.T. 0.000 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

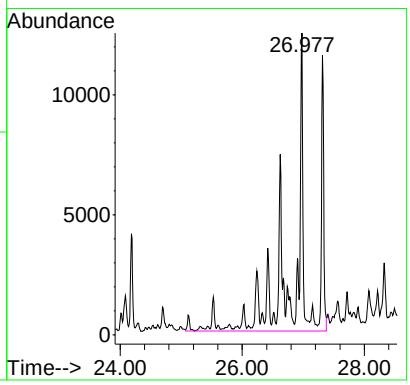
Tgt Ion:162 Resp: 67242

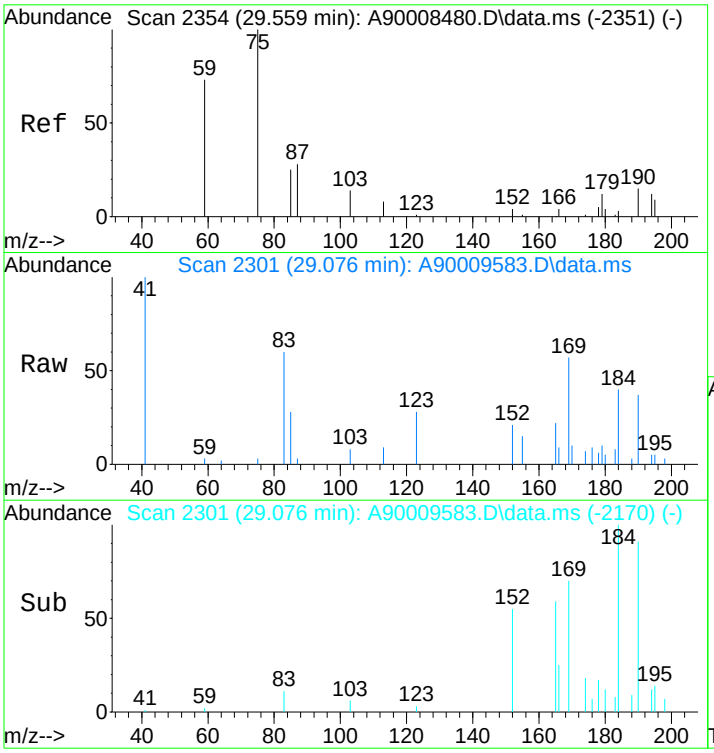




#21
C3-Benzo(b)thiophenes
Concen: 675.99 ng/mL m
RT: 26.977 min Scan# 2071
Delta R.T. 0.001 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

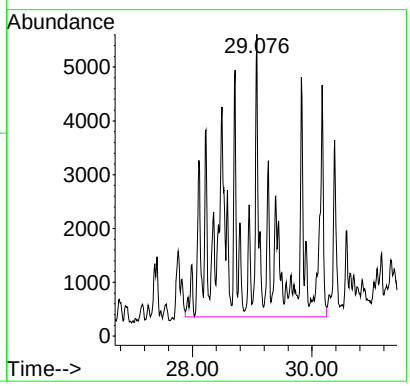
Tgt Ion:176 Resp: 143402

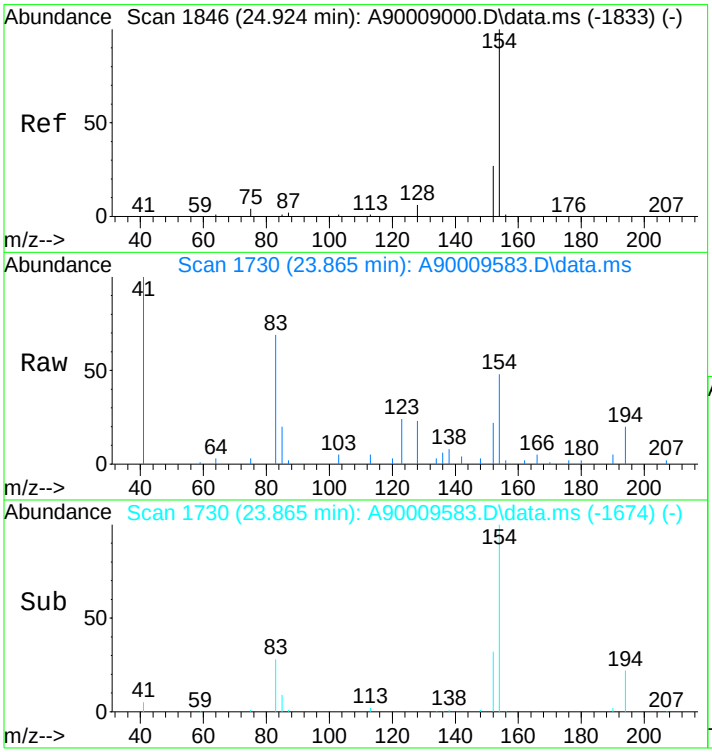




#22
C4-Benzo(b)thiophenes
Concen: 742.33 ng/mL m
RT: 29.076 min Scan# 2301
Delta R.T. 0.001 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:190 Resp: 157474

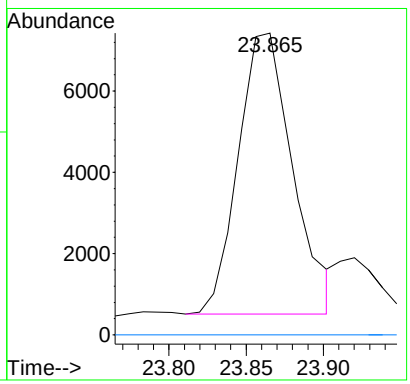


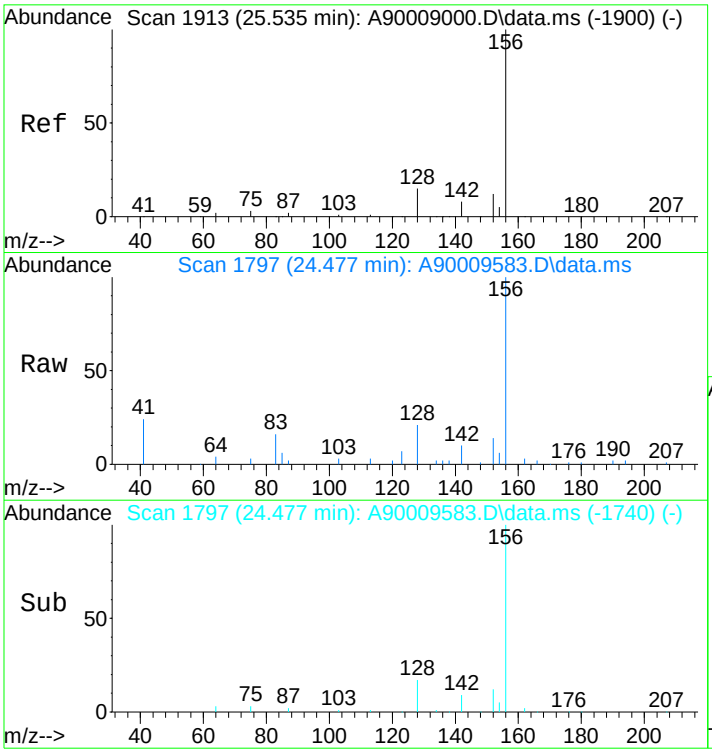


#23
Biphenyl
Concen: 78.37 ng/mL
RT: 23.865 min Scan# 1730
Delta R.T. 0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:154 Resp: 17001

Ion	Ratio	Lower	Upper
154	100		
153	0.0	0.0	0.0

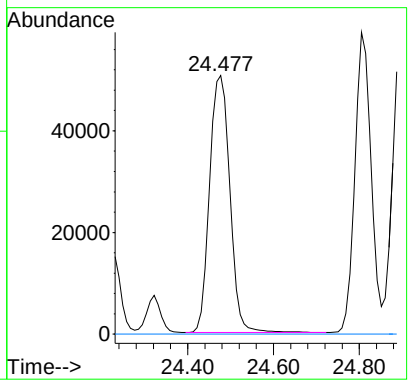


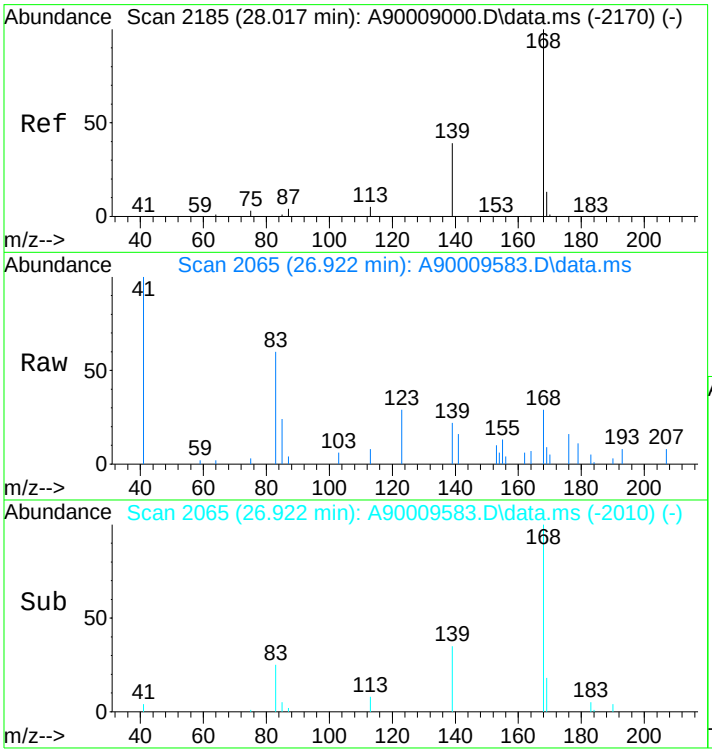


#24
2,6-Dimethylnaphthalene
Concen: 1065.07 ng/mL
RT: 24.477 min Scan# 1797
Delta R.T. 0.018 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:156 Resp: 165974

Ion	Ratio	Lower	Upper
156	100		
155	0.0	0.0	0.0

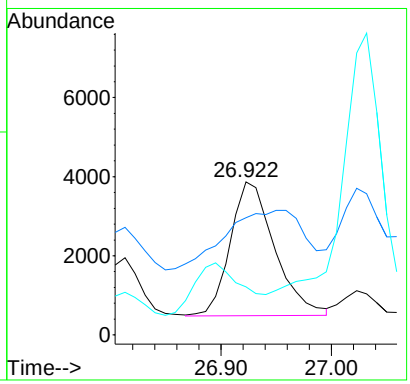


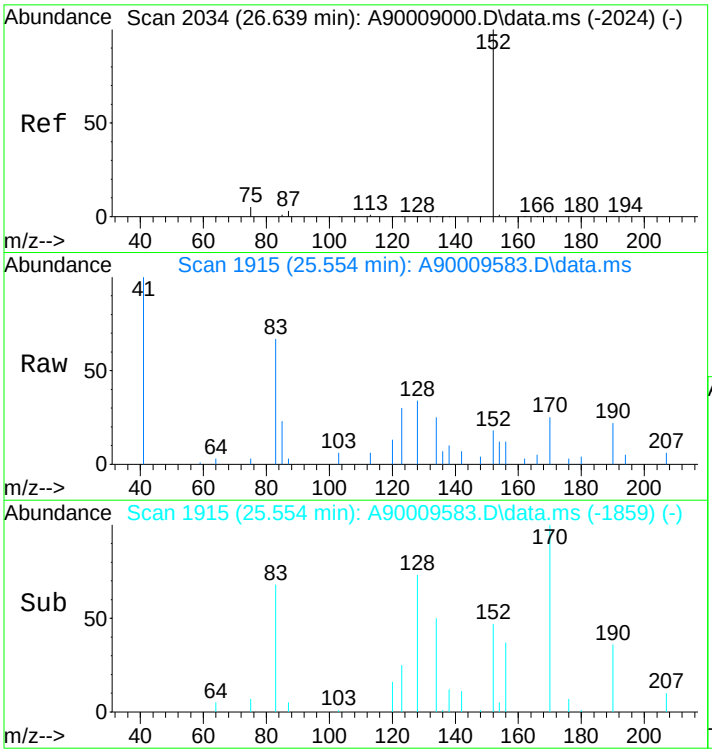


#25
Dibenzofuran
Concen: 41.18 ng/mL
RT: 26.922 min Scan# 2065
Delta R.T. 0.000 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:168 Resp: 9528

Ion	Ratio	Lower	Upper
168	100		
139	0.0	28.0	42.0#
169	0.0	10.6	15.8#

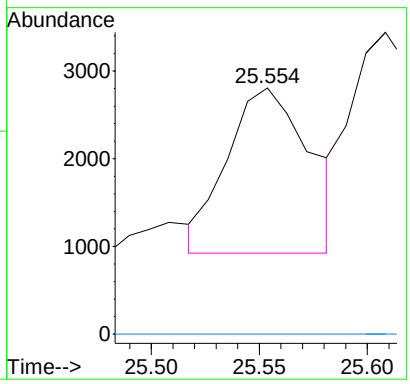


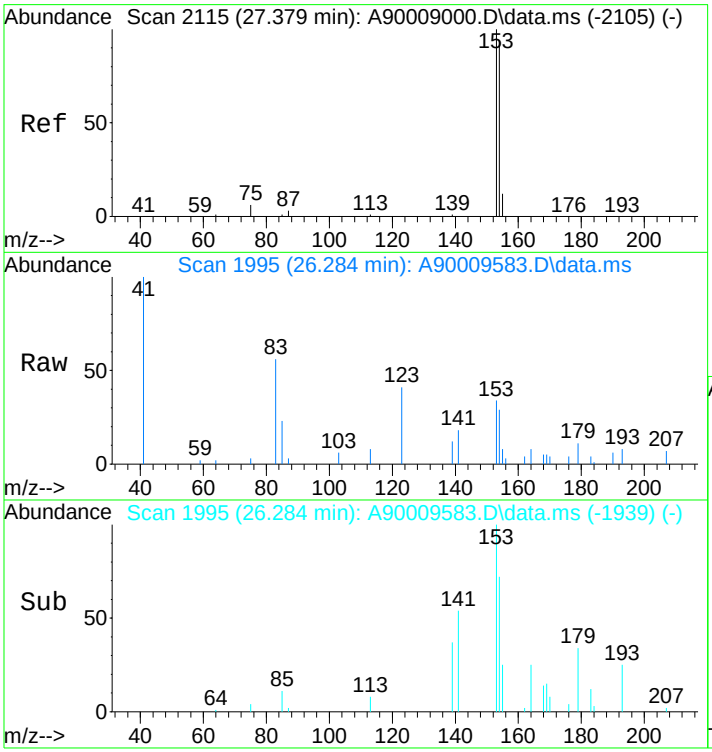


#26
Acenaphthylene
Concen: 19.17 ng/mL m
RT: 25.554 min Scan# 1915
Delta R.T. 0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:152 Resp: 4998

Ion	Ratio	Lower	Upper
152	100		
153	0.0	0.0	0.0

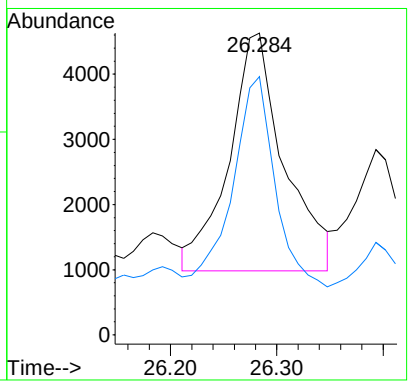


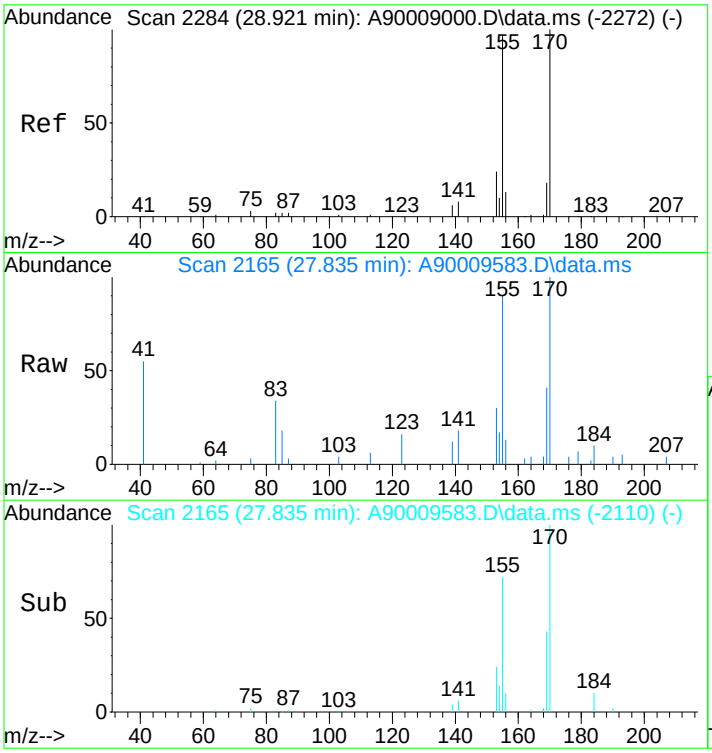


#27
Acenaphthene
Concen: 80.39 ng/mL m
RT: 26.284 min Scan# 1995
Delta R.T. 0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:153 Resp: 13181

Ion	Ratio	Lower	Upper
153	100		
154	29.3	75.4	113.0#

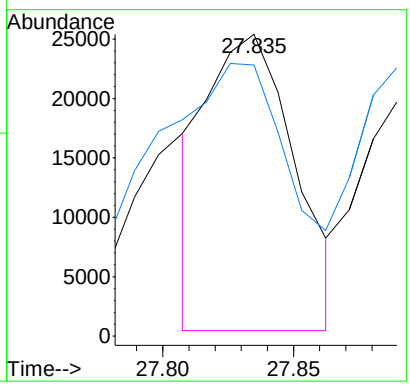


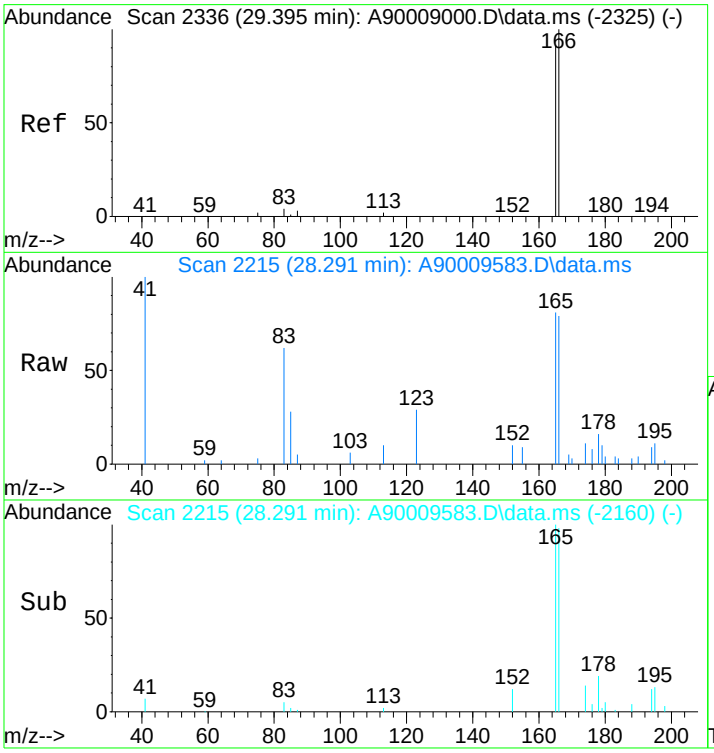


#28
2,3,5-Trimethylnaphthalene
Concen: 410.41 ng/mL m
RT: 27.835 min Scan# 2165
Delta R.T. 0.000 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:170 Resp: 58800

Ion	Ratio	Lower	Upper
170	100		
155	141.3	69.0	103.4#

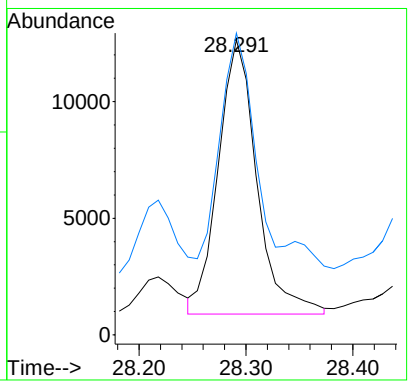


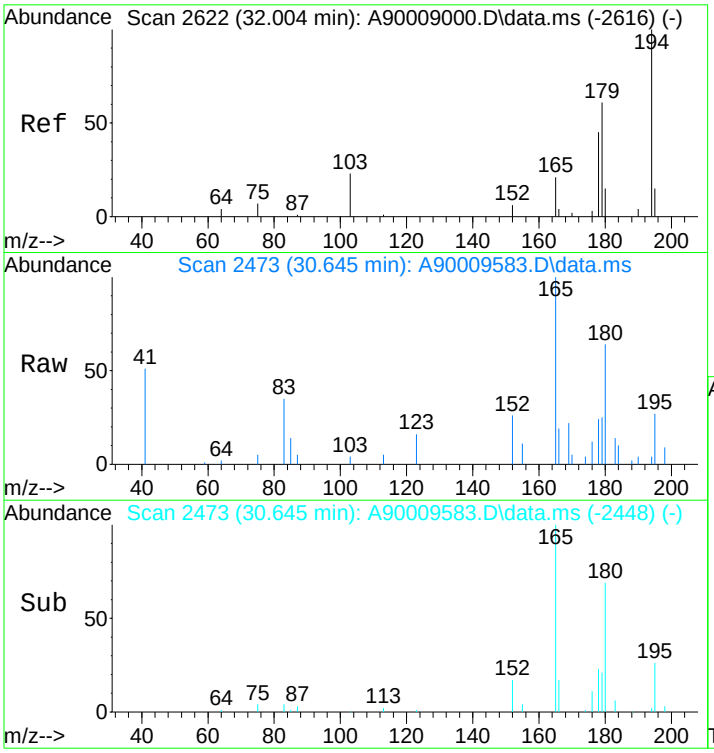


#29
Fluorene
Concen: 163.52 ng/mL m
RT: 28.291 min Scan# 2215
Delta R.T. 0.000 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:166 Resp: 29441

Ion	Ratio	Lower	Upper
166	100		
165	22.9	73.4	110.0#

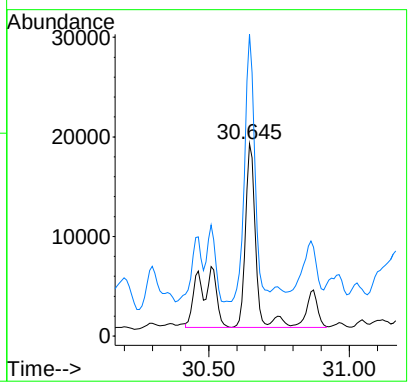


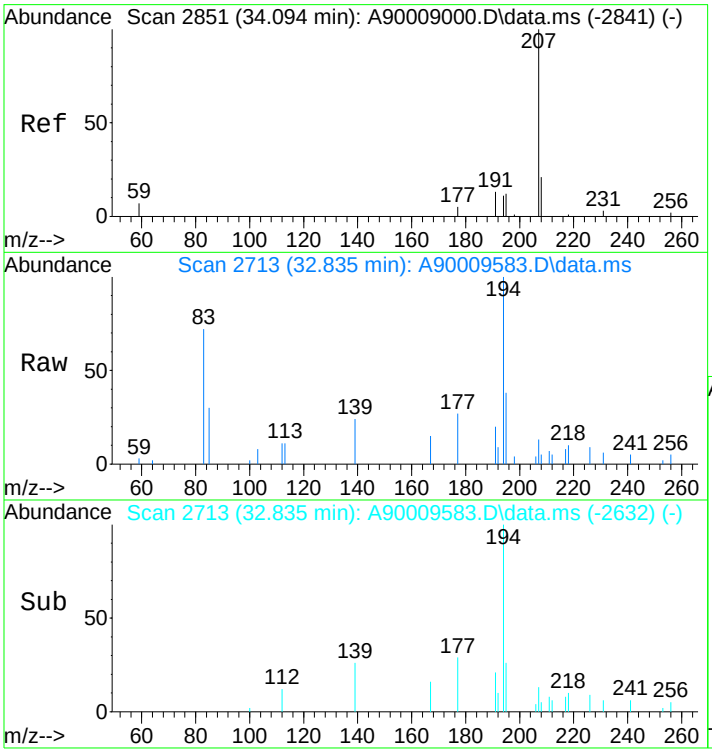


#30
C1-Fluorenes
Concen: 463.90 ng/mL m
RT: 30.645 min Scan# 2473
Delta R.T. 0.001 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:180 Resp: 83526

Ion	Ratio	Lower	Upper
180	100		
165	81.9	117.5	176.3#

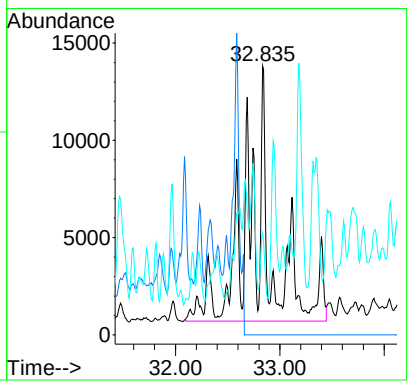


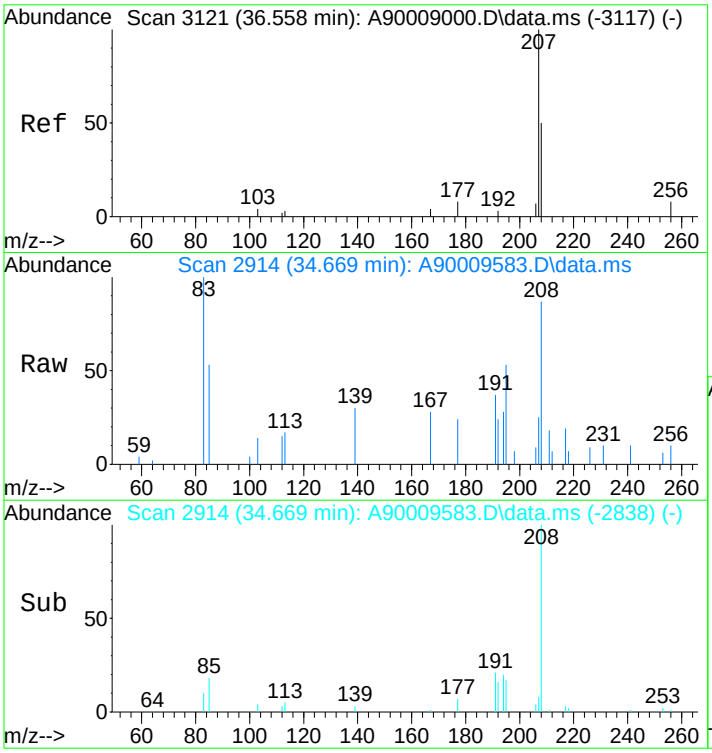


#31
C2-Fluorenes
Concen: 1052.30 ng/mL m
RT: 32.835 min Scan# 2713
Delta R.T. -0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:194 Resp: 189468

Ion	Ratio	Lower	Upper
194	100		
179	0.0	0.0	0.0
195	4.7	26.3	39.5#

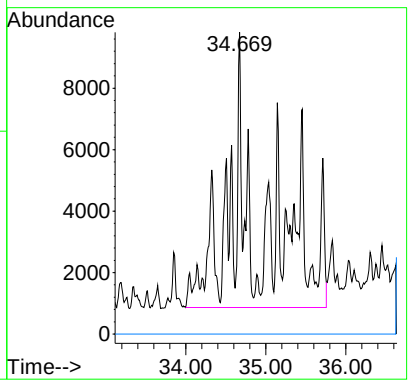


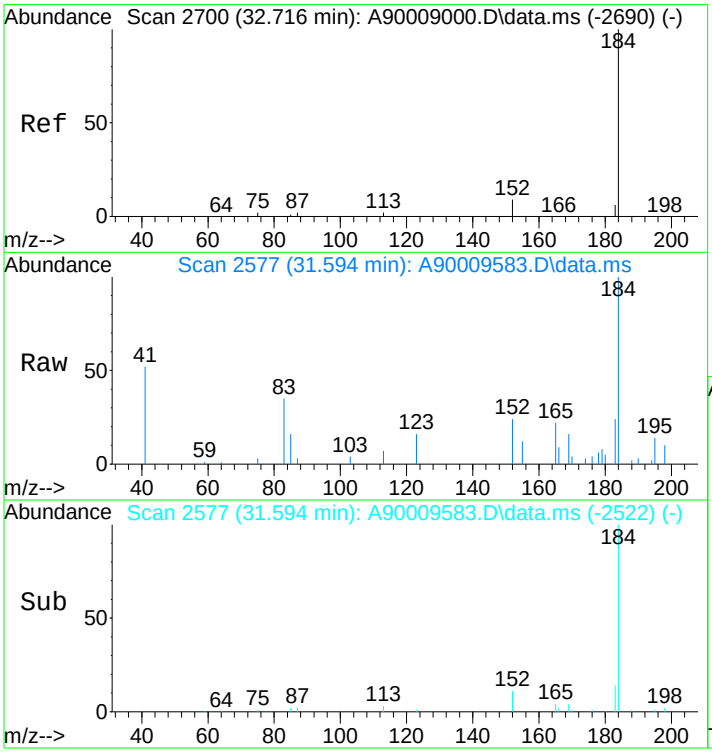


#32
C3-Fluorenes
Concen: 1237.54 ng/mL m
RT: 34.669 min Scan# 2914
Delta R.T. 0.001 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:208 Resp: 222820

Ion	Ratio	Lower	Upper
208	100		
197	0.0	0.0	0.0

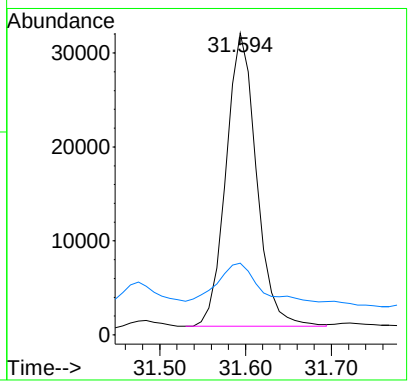


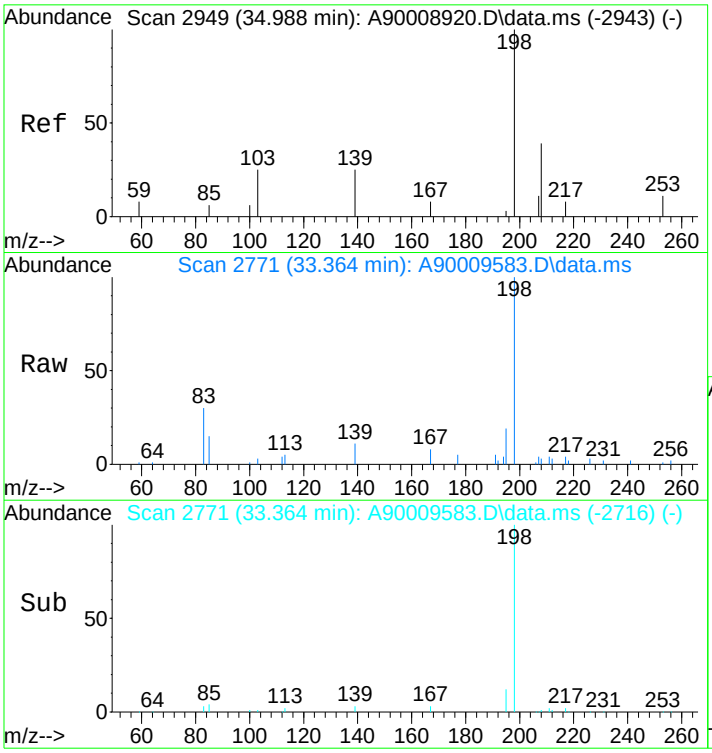


#33
Dibenzothiophene
Concen: 303.27 ng/mL
RT: 31.594 min Scan# 2577
Delta R.T. 0.000 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:184 Resp: 76810

Ion	Ratio	Lower	Upper
184	100		
152	25.0	7.0	10.4#

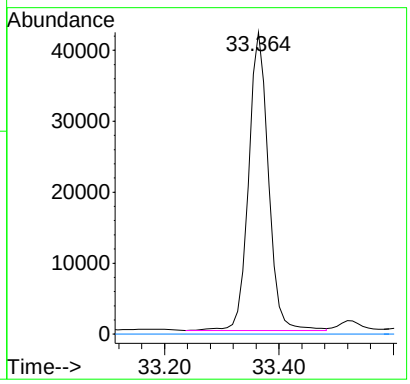


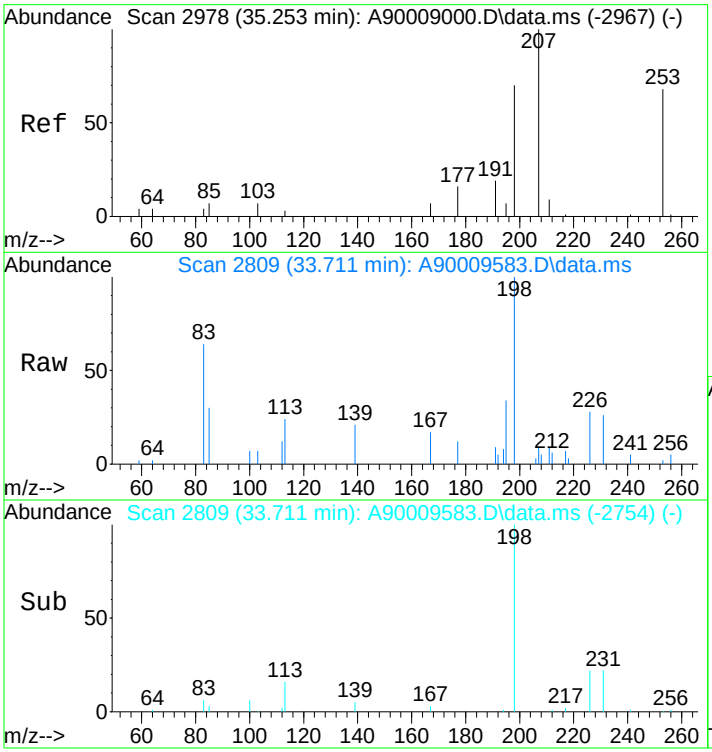


#34
4-Methyldibenzothiophene(4MDT)
Concen: 399.72 ng/mL
RT: 33.364 min Scan# 2771
Delta R.T. 0.001 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:198 Resp: 101239

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

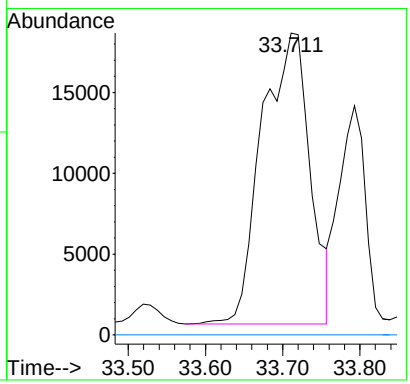


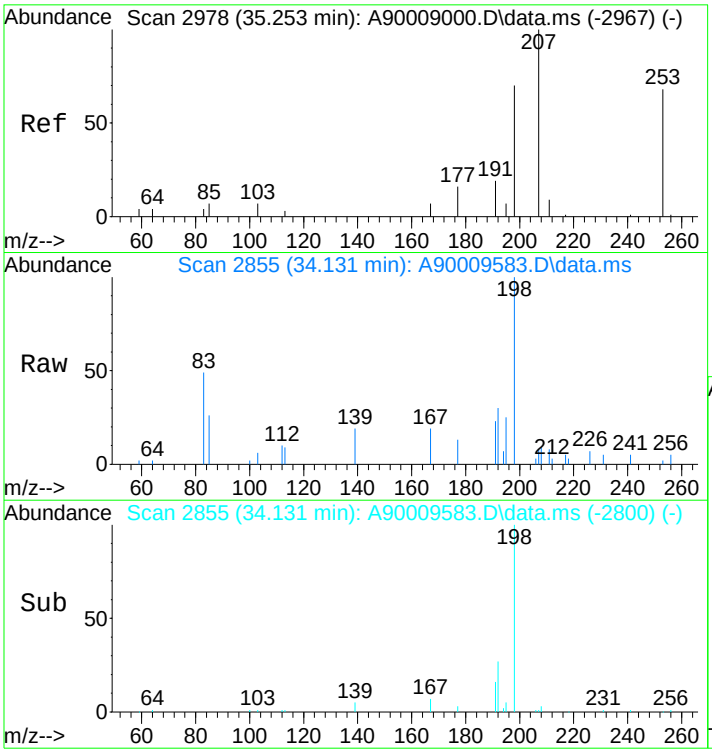


#35
2/3-Methyldibenzothiophene(2MDT)
Concen: 307.47 ng/mL
RT: 33.711 min Scan# 2809
Delta R.T. 0.001 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:198 Resp: 77874

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

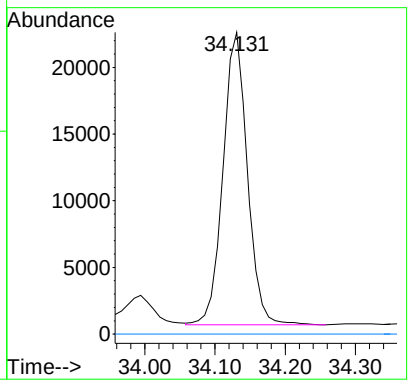


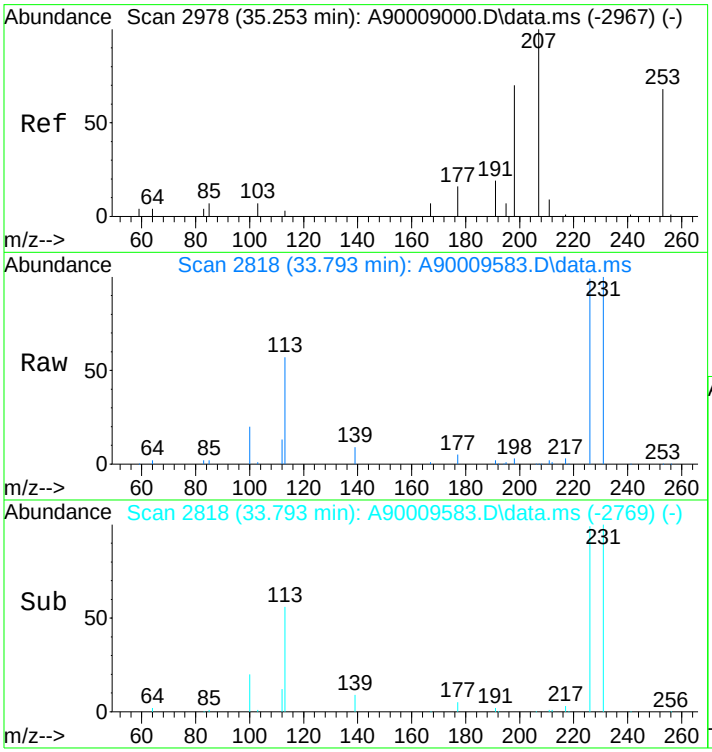


#36
1-Methyldibenzothiophene(1MDT)
Concen: 208.90 ng/mL
RT: 34.131 min Scan# 2855
Delta R.T. 0.001 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:198 Resp: 52908

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

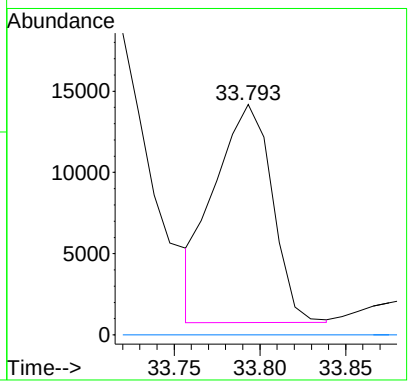


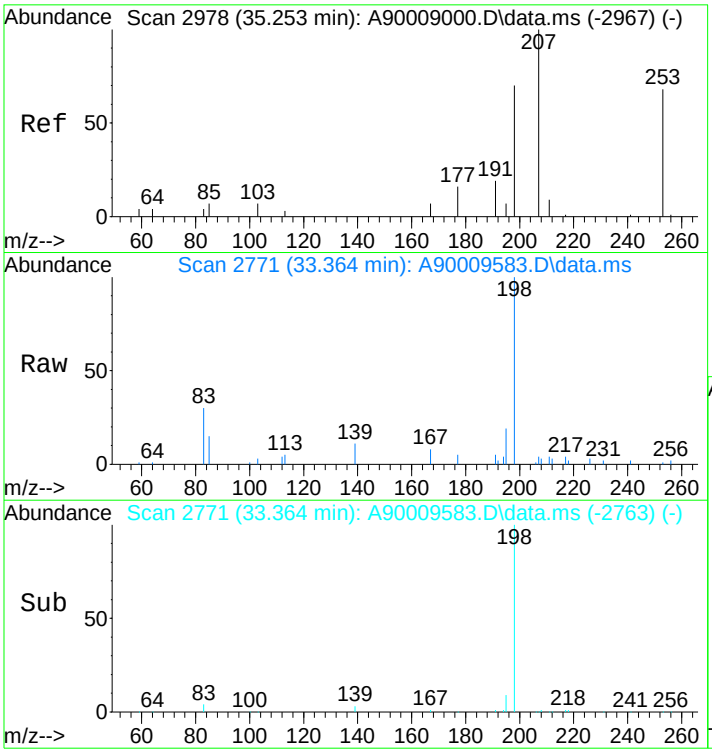


#37
OTP
Concen: 124.71 ng/mL
RT: 33.793 min Scan# 2818
Delta R.T. 0.001 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:198 Resp: 31586

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

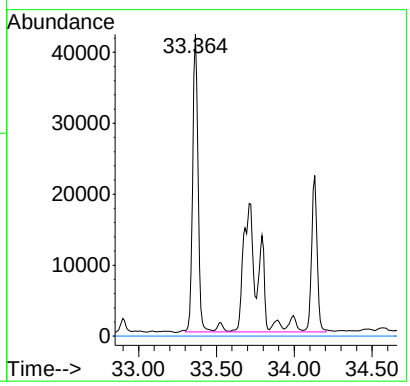


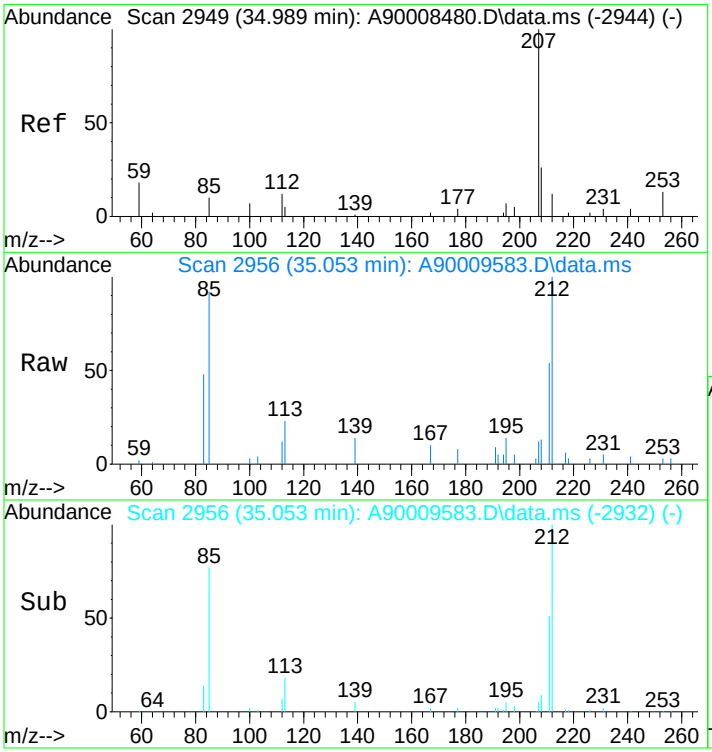


#38
C1-Dibenzothiophenes
Concen: 1114.38 ng/mL m
RT: 33.364 min Scan# 2771
Delta R.T. 0.001 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:198 Resp: 282241

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

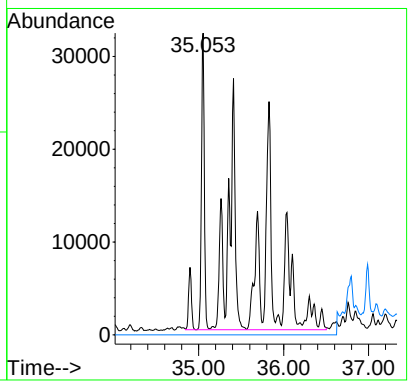


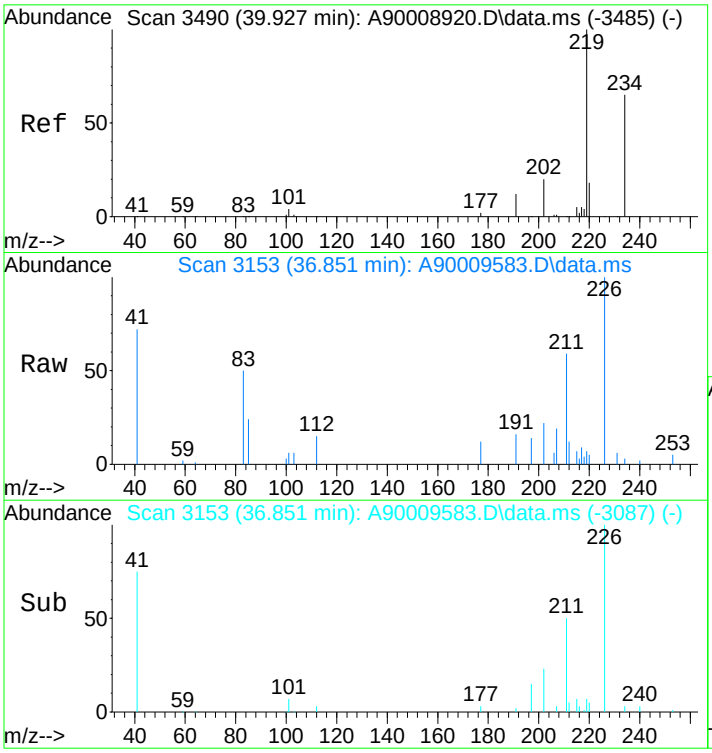


#39
C2-Dibenzothiophenes
Concen: 1872.00 ng/mL m
RT: 35.053 min Scan# 2956
Delta R.T. 0.000 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:212 Resp: 474124

Ion	Ratio	Lower	Upper
212	100		
197	0.0	0.0	0.0

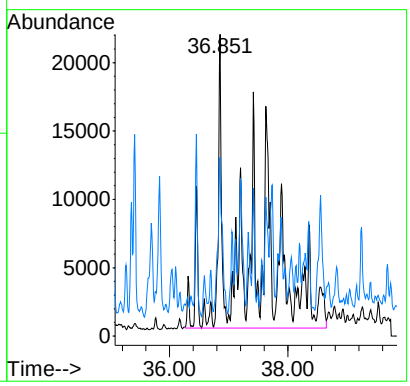


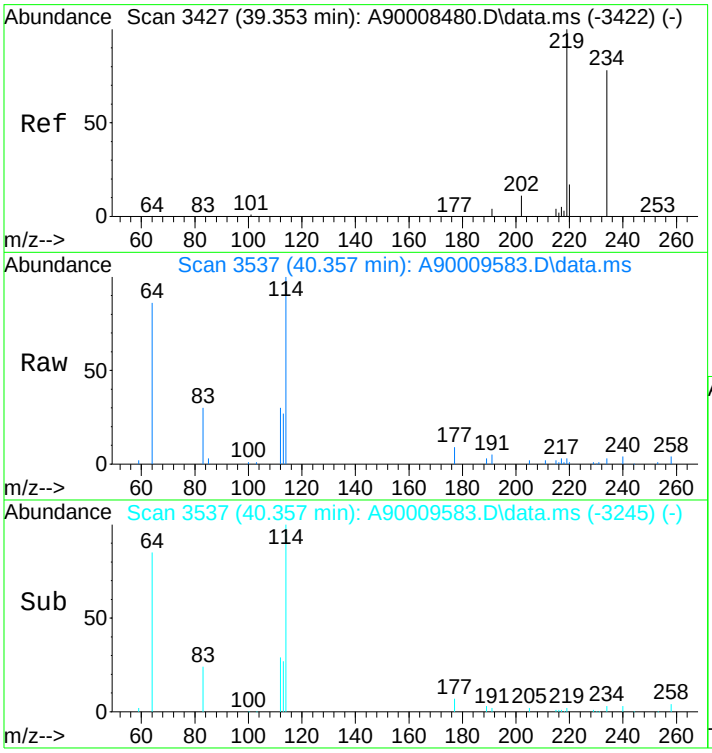


#40
C3-Dibenzothiophenes
Concen: 2048.05 ng/mL m
RT: 36.851 min Scan# 3153
Delta R.T. 0.001 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:226 Resp: 518714

Ion	Ratio	Lower	Upper
226	100		
211	3.6	46.4	69.6#

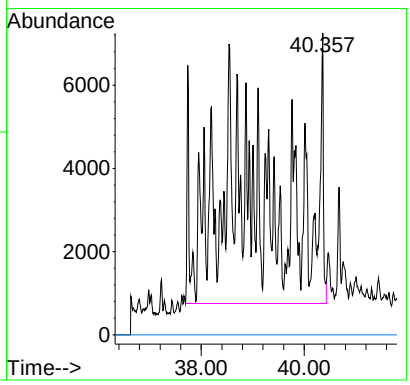


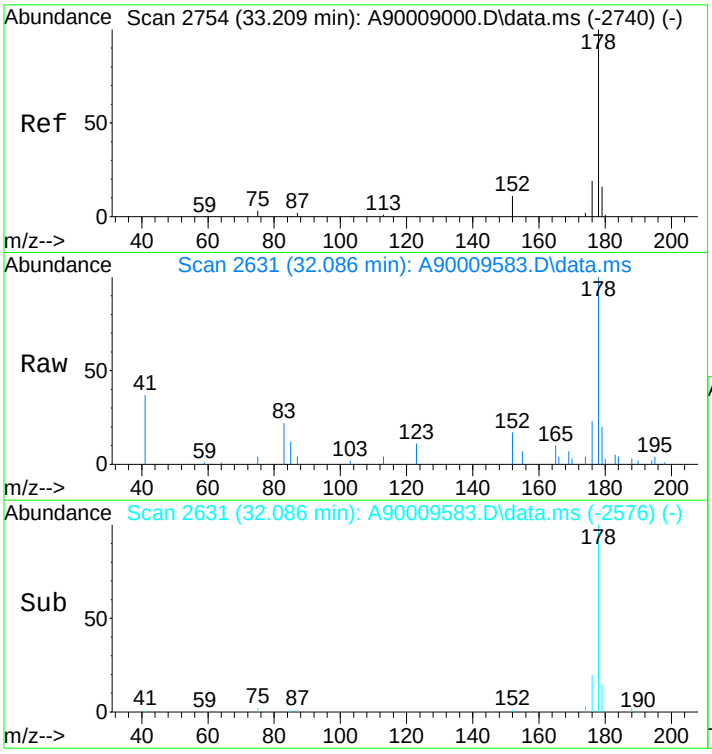


#41
C4-Dibenzothiophenes
Concen: 1431.94 ng/mL m
RT: 40.357 min Scan# 3537
Delta R.T. 1.817 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:240 Resp: 362669

Ion	Ratio	Lower	Upper
240	100		
225	0.0	0.0	0.0

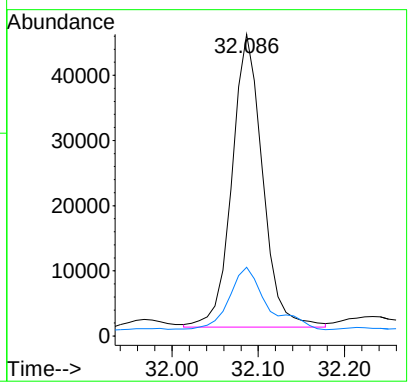


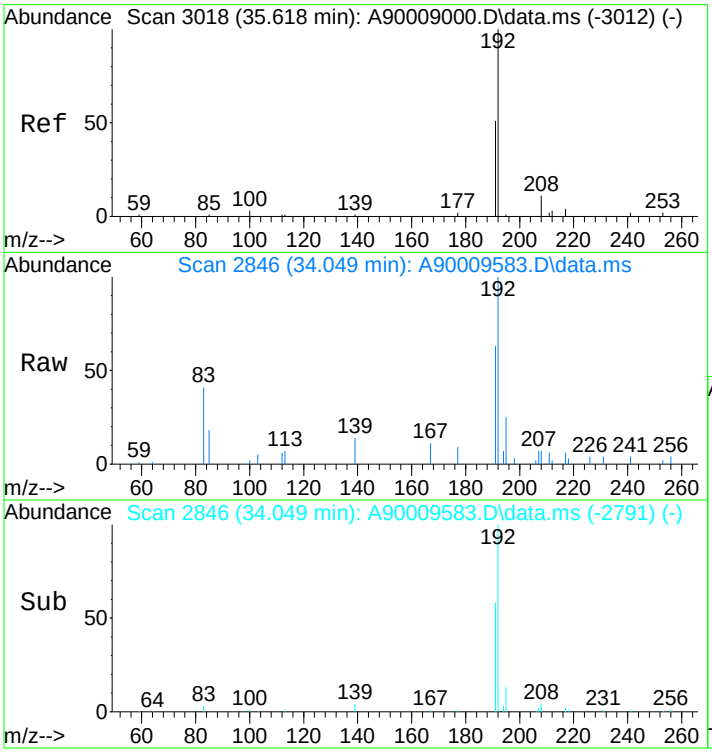


#43
Phenanthrene
Concen: 423.79 ng/mL m
RT: 32.086 min Scan# 2631
Delta R.T. 0.000 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:178 Resp: 110890

Ion	Ratio	Lower	Upper
178	100		
176	0.8	15.1	22.7#

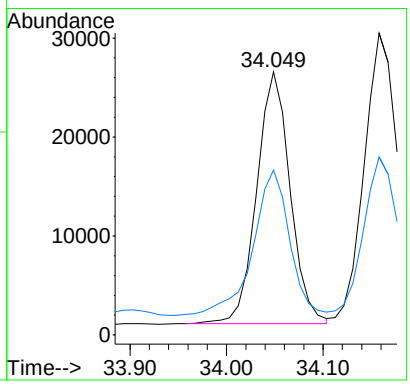


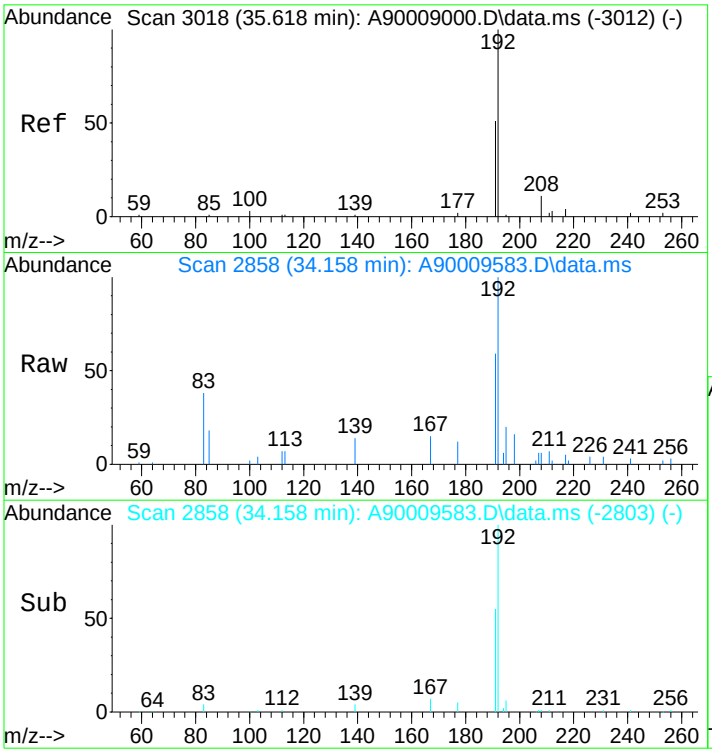


#44
3-Methylphenanthrene(3MP)
Concen: 234.16 ng/mL
RT: 34.049 min Scan# 2846
Delta R.T. 0.001 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:192 Resp: 61271

Ion	Ratio	Lower	Upper
192	100		
191	63.2	45.9	68.9

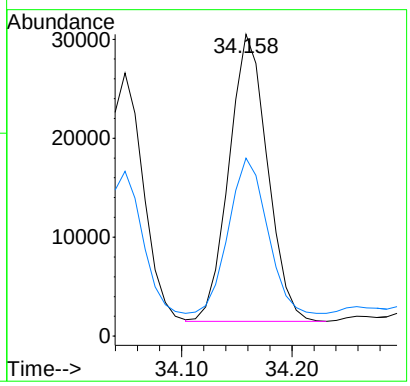


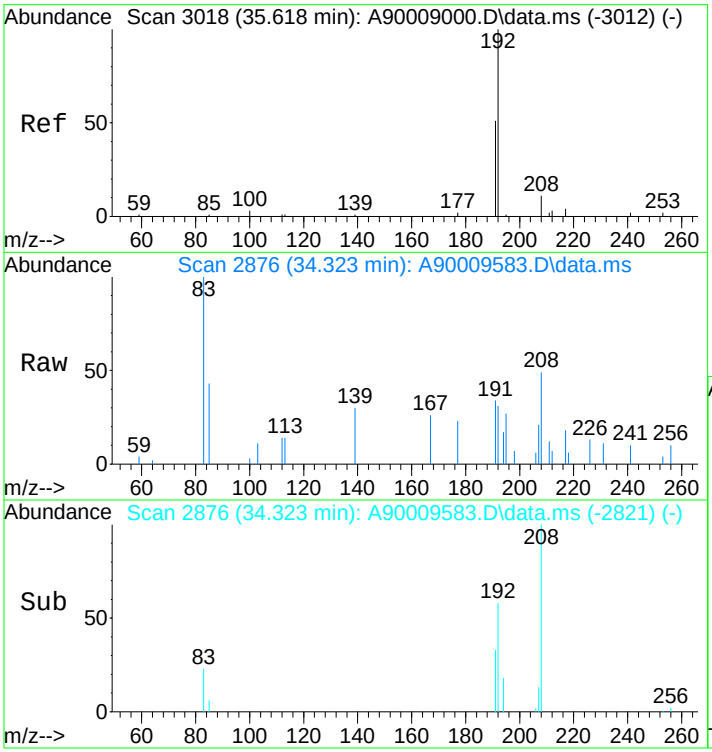


#45
2-Methylphenanthrene(2MP)
Concen: 268.72 ng/mL
RT: 34.158 min Scan# 2858
Delta R.T. 0.001 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:192 Resp: 70313

Ion	Ratio	Lower	Upper
192	100		
191	54.0	44.9	67.3

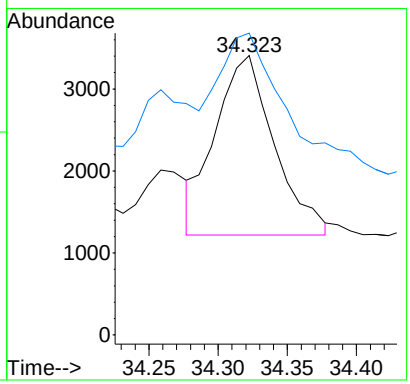


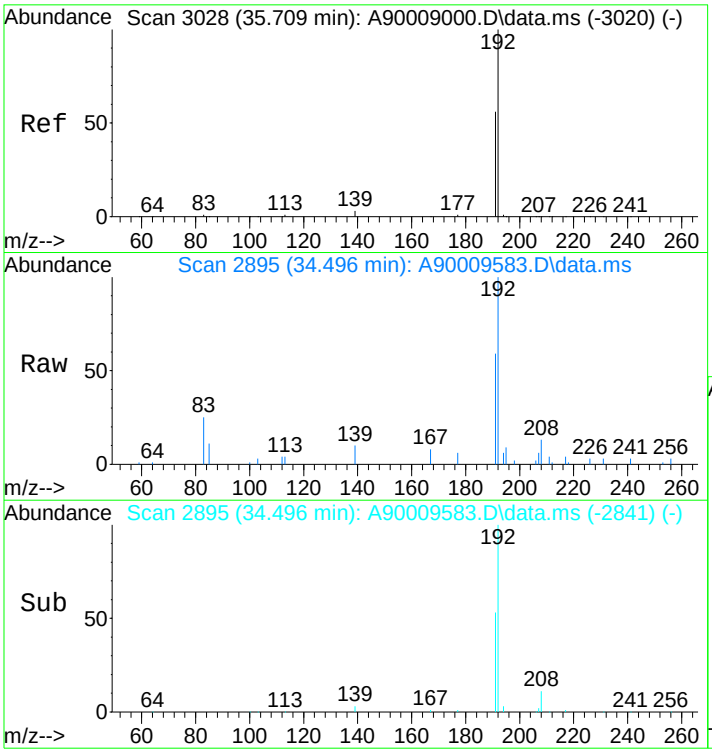


#46
2-Methylanthracene(2MA)
Concen: 24.88 ng/mL m
RT: 34.323 min Scan# 2876
Delta R.T. 0.000 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:192 Resp: 6511

Ion	Ratio	Lower	Upper
192	100		
191	6.6	96.8	145.2#

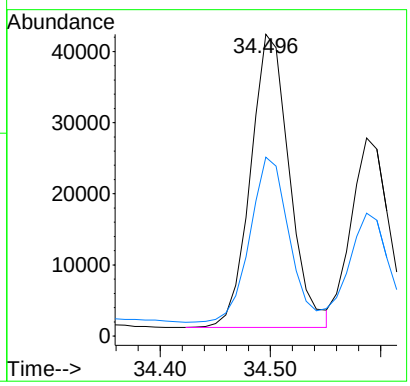


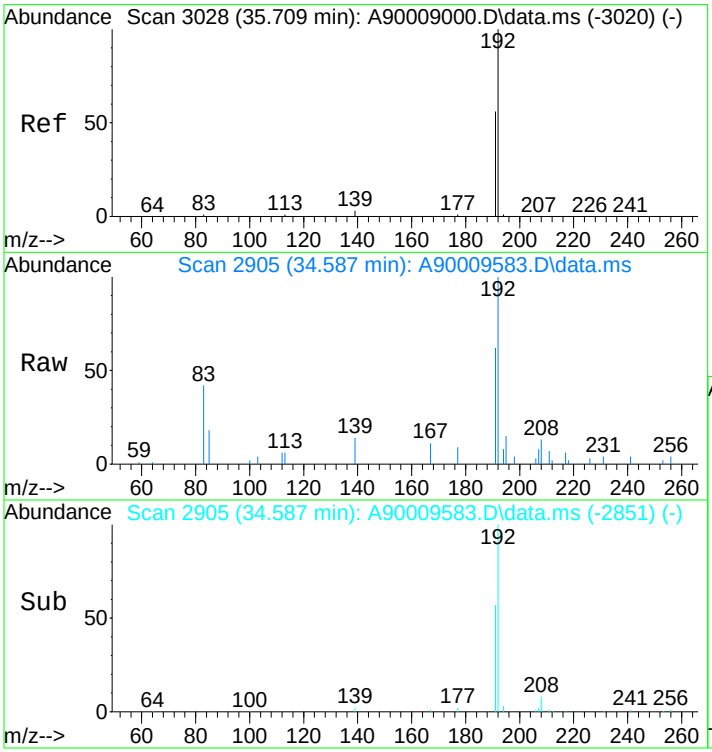


#47
9/4-Methylphenanthrene(9MP)
Concen: 385.34 ng/mL
RT: 34.496 min Scan# 2895
Delta R.T. -0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:192 Resp: 100828

Ion	Ratio	Lower	Upper
192	100		
191	56.0	44.5	66.7

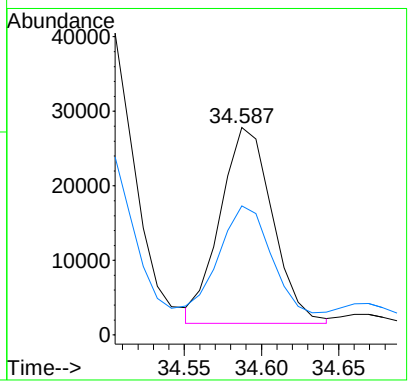


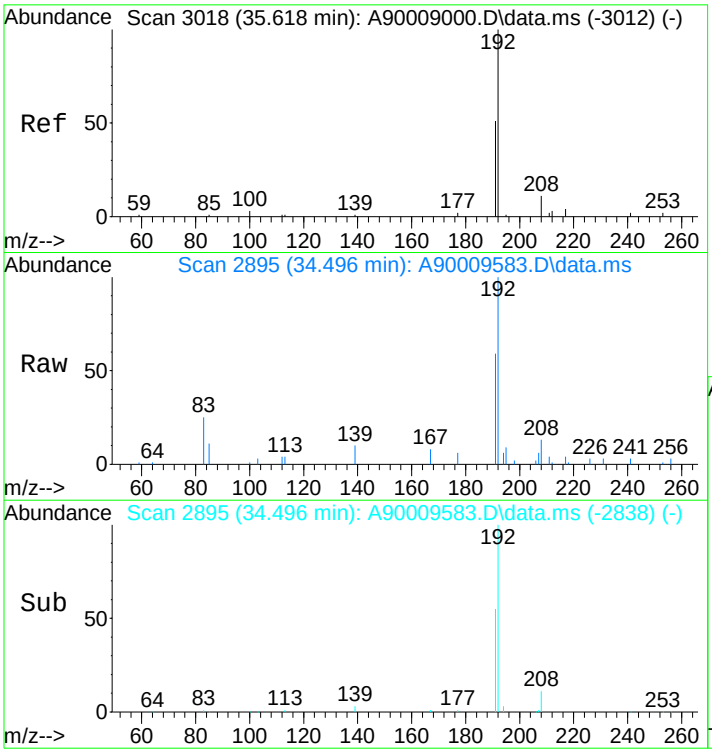


#48
1-Methylphenanthrene(1MP)
Concen: 237.42 ng/mL
RT: 34.587 min Scan# 2905
Delta R.T. -0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:192 Resp: 62122

Ion	Ratio	Lower	Upper
192	100		
191	57.3	46.9	70.3

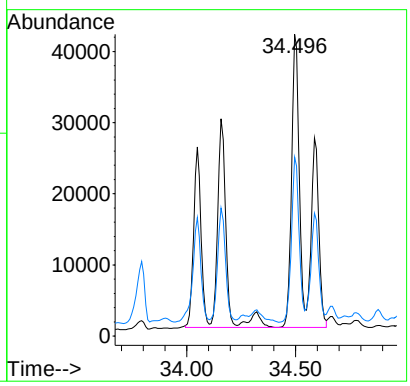


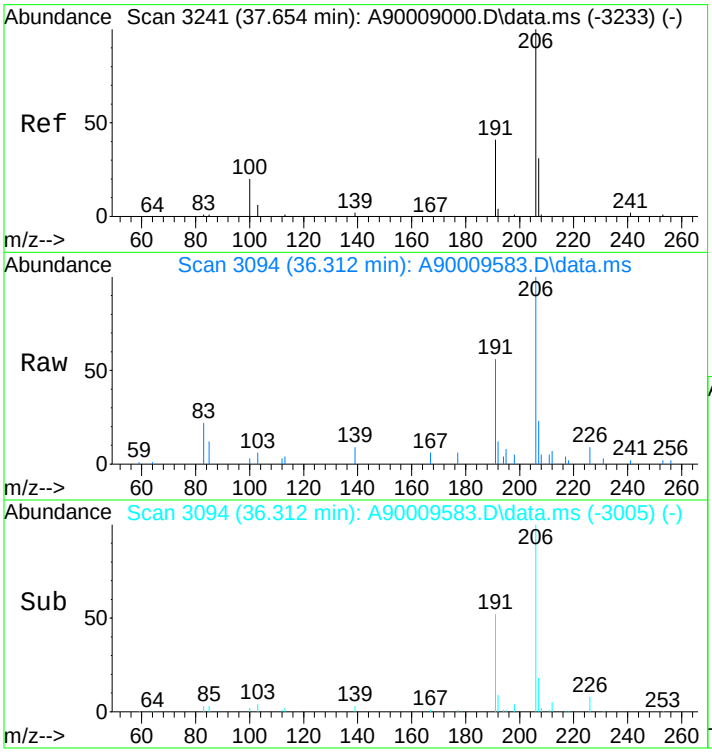


#49
C1-Phenanthrenes/Anthracenes
Concen: 1169.10 ng/mL m
RT: 34.496 min Scan# 2895
Delta R.T. -0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:192 Resp: 305906

Ion	Ratio	Lower	Upper
192	100		
191	18.5	44.5	66.7#

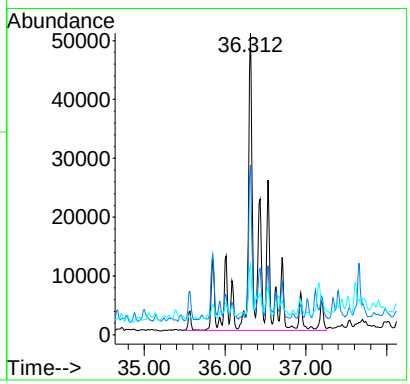


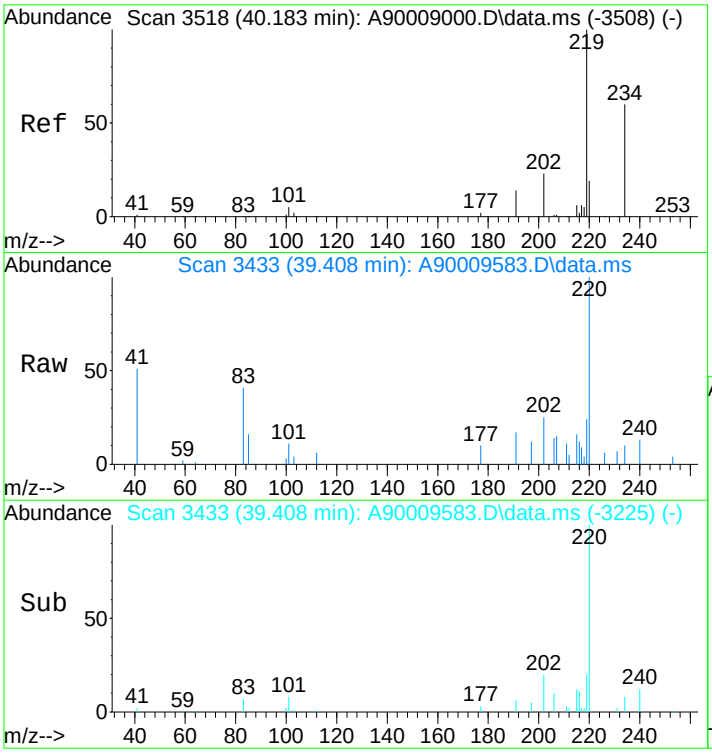


#50
C2-Phenanthrenes/Anthracenes
Concen: 1788.01 ng/mL m
RT: 36.312 min Scan# 3094
Delta R.T. 0.001 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:206 Resp: 467849

Ion	Ratio	Lower	Upper
206	100		
191	1.7	41.0	61.4#
207	0.8	17.1	25.7#

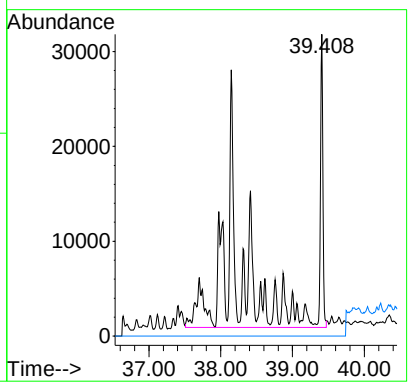


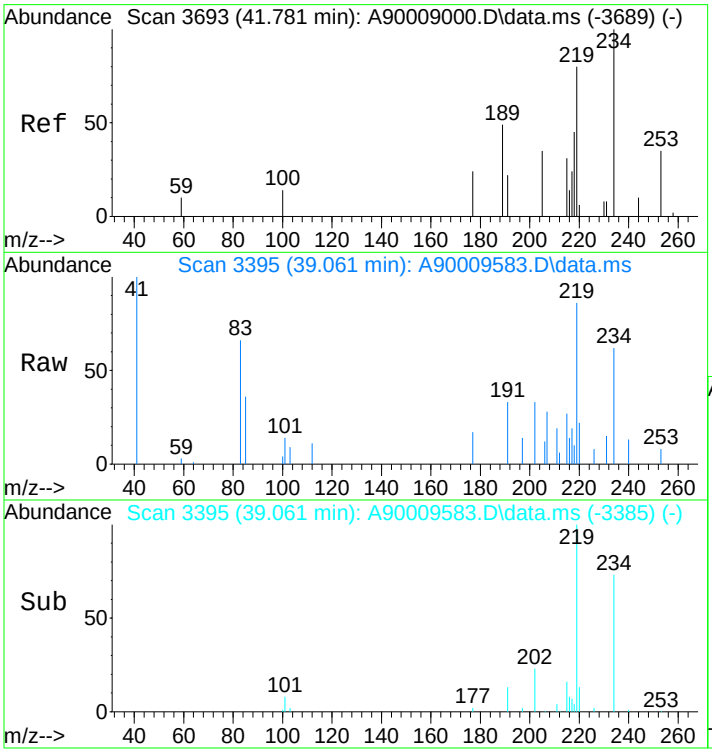


#52
C3-Phenanthrenes/Anthracenes
Concen: 1644.38 ng/mL m
RT: 39.408 min Scan# 3433
Delta R.T. 1.261 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:220 Resp: 430267

Ion	Ratio	Lower	Upper
220	100		
205	0.0	0.0	0.0

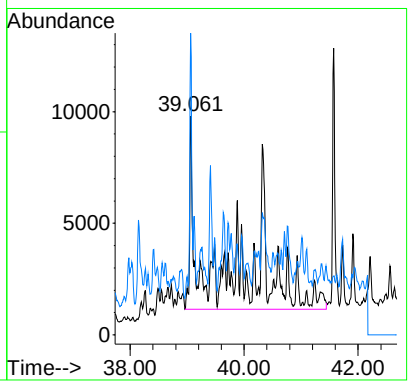


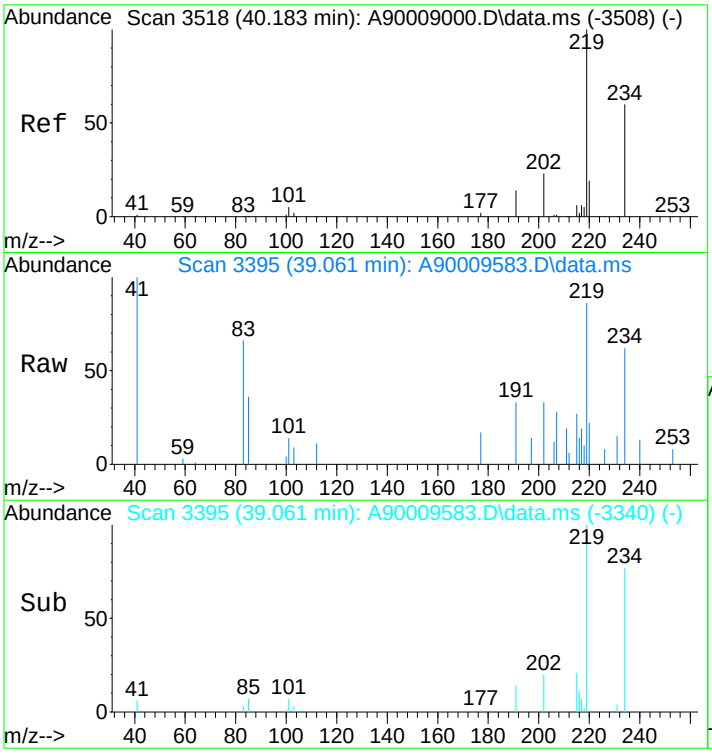


#53
C4-Phenanthrenes/Anthracenes
Concen: 794.11 ng/mL m
RT: 39.061 min Scan# 3395
Delta R.T. -1.269 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:234 Resp: 207787

Ion	Ratio	Lower	Upper
234	100		
219	2.5	52.1	78.1#

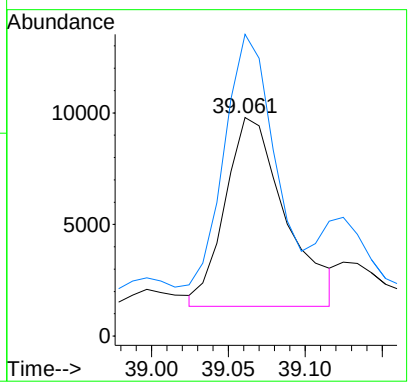


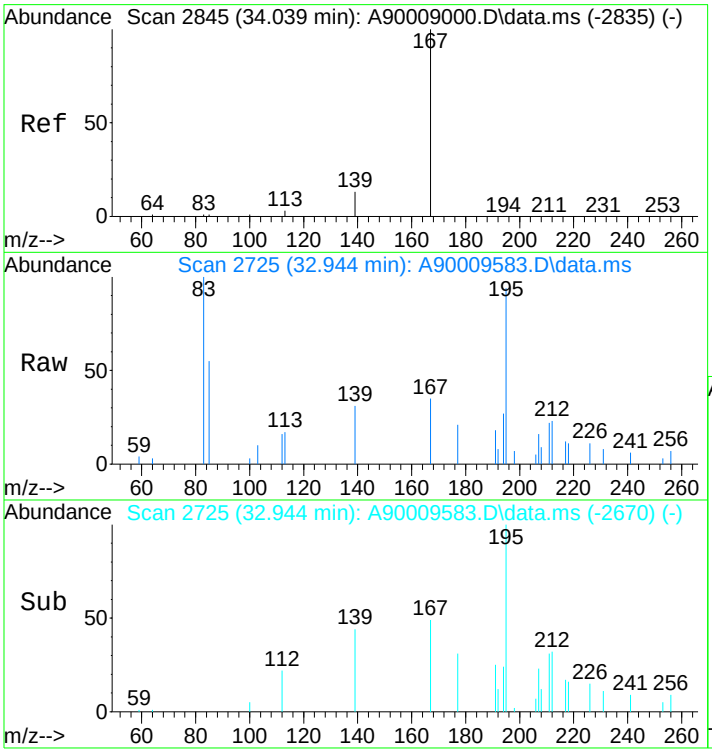


#54
Retene
Concen: 320.59 ng/mL m
RT: 39.061 min Scan# 3395
Delta R.T. 0.000 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:234 Resp: 23061

Ion	Ratio	Lower	Upper
234	100		
219	118.2	120.4	180.6#

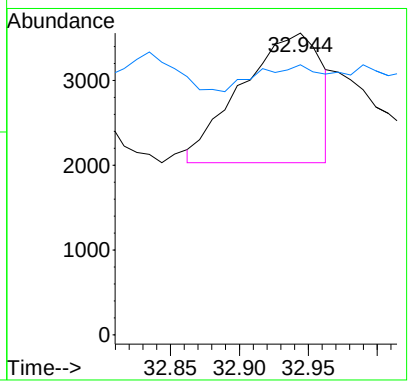


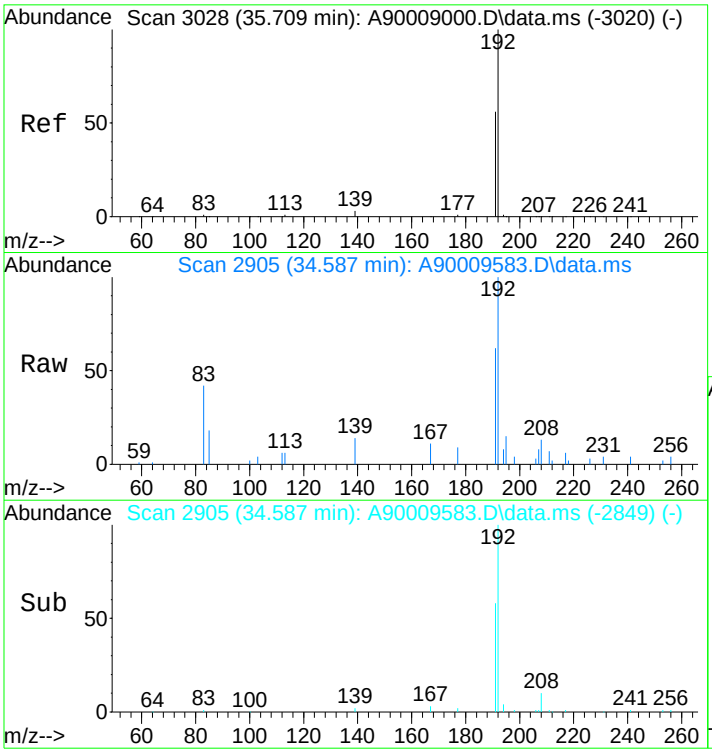


#56
Carbazole
Concen: 26.96 ng/mL m
RT: 32.944 min Scan# 2725
Delta R.T. 0.000 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:167 Resp: 6196

Ion	Ratio	Lower	Upper
167	100		
139	0.0	10.2	15.2#

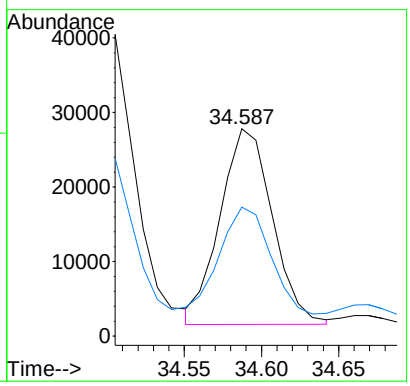


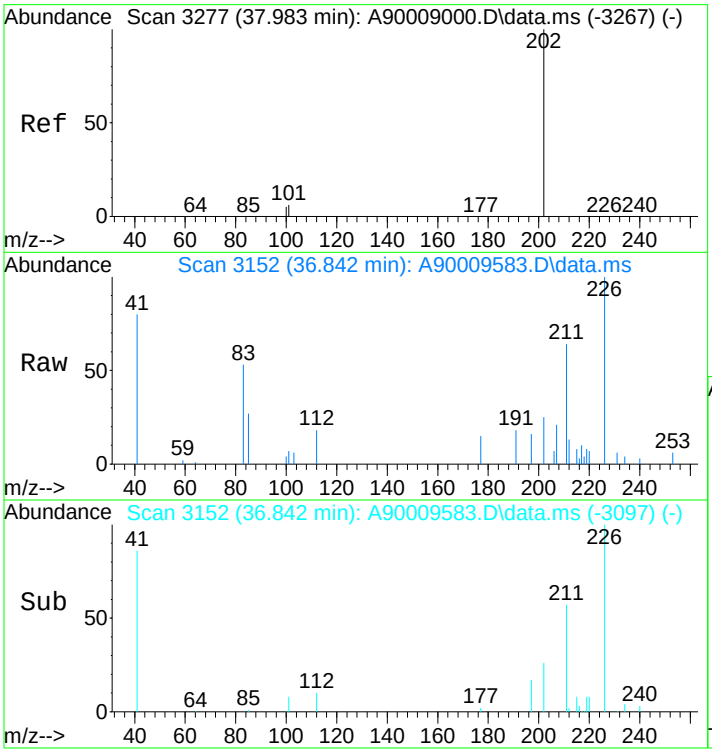


#57
1-Methylphenanthrene
Concen: 320.83 ng/mL
RT: 34.587 min Scan# 2905
Delta R.T. 0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:192 Resp: 61936

Ion	Ratio	Lower	Upper
192	100		
191	56.5	44.9	67.3

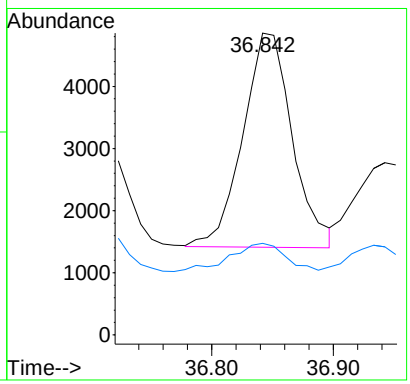


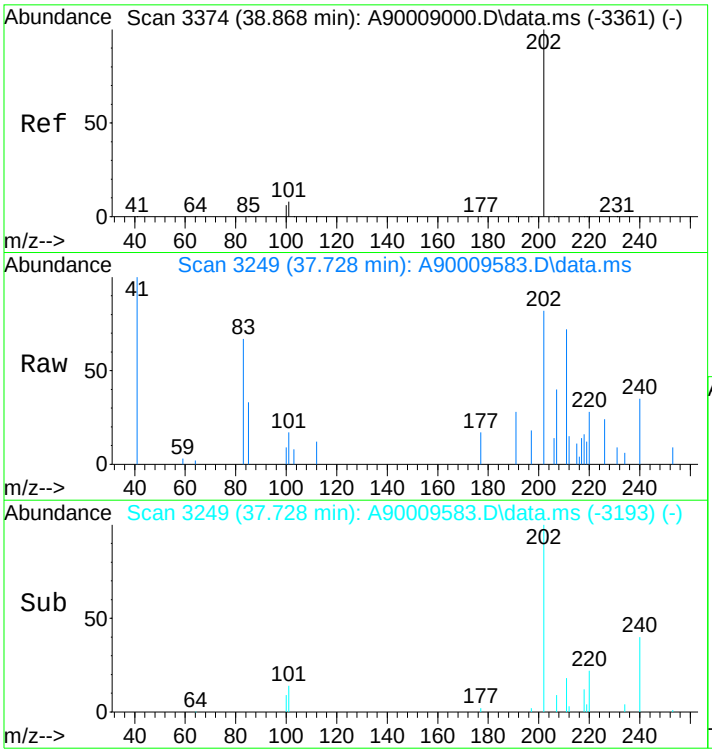


#58
Fluoranthene
Concen: 33.46 ng/mL m
RT: 36.842 min Scan# 3152
Delta R.T. 0.000 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:202 Resp: 9779

Ion	Ratio	Lower	Upper
202	100		
101	13.8	8.2	12.2#

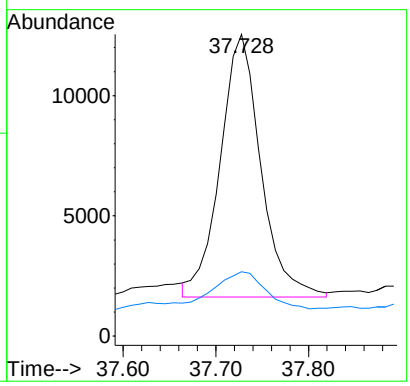


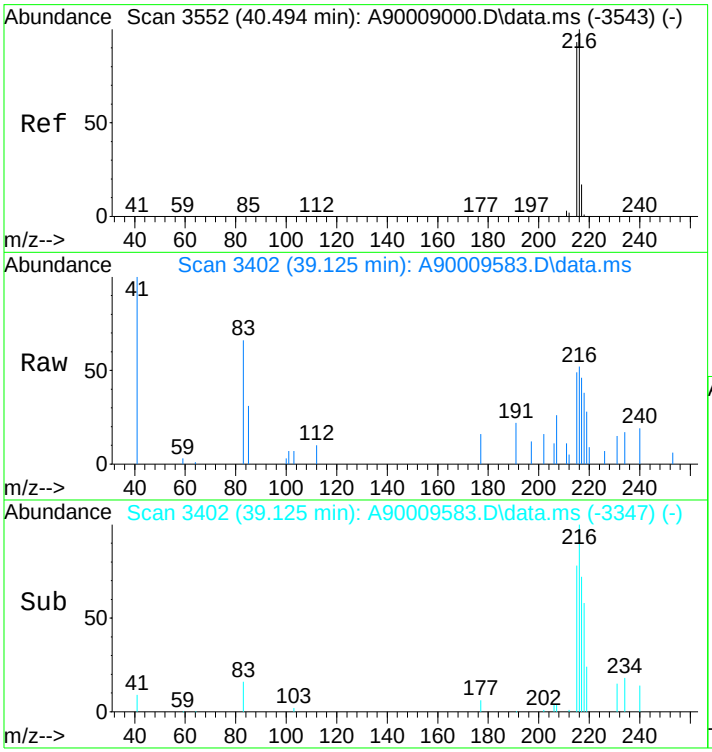


#60
Pyrene
Concen: 111.53 ng/mL m
RT: 37.728 min Scan# 3249
Delta R.T. 0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:202 Resp: 33259

Ion	Ratio	Lower	Upper
202	100		
101	16.8	9.5	14.3#

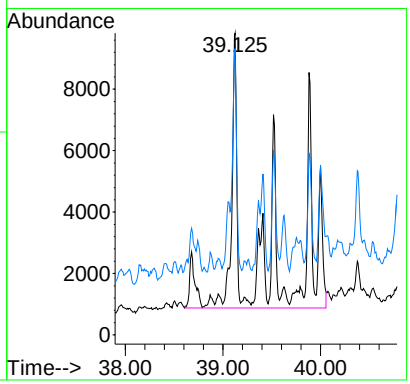


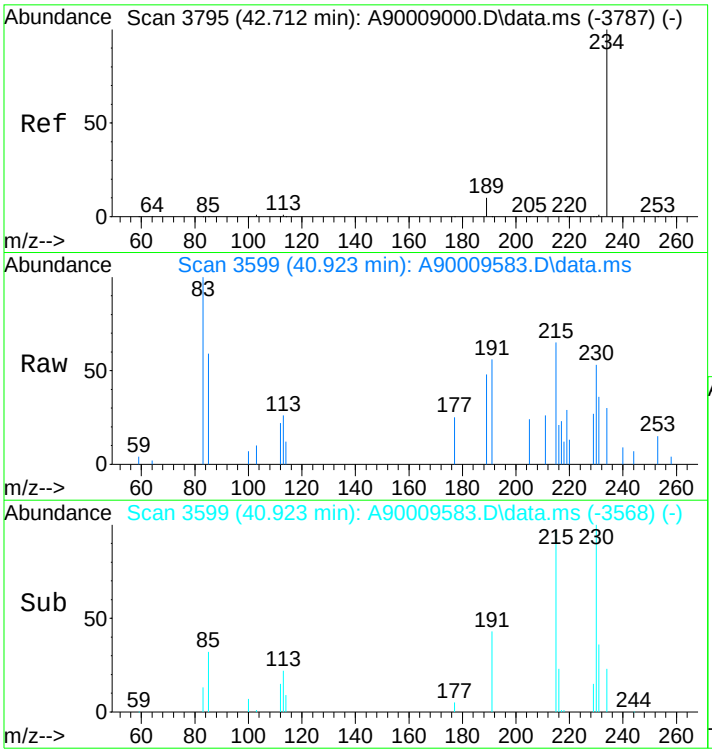


#61
C1-Fluoranthenes/Pyrenes
Concen: 368.99 ng/mL m
RT: 39.125 min Scan# 3402
Delta R.T. 0.010 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:216 Resp: 110035

Ion	Ratio	Lower	Upper
216	100		
215	19.2	73.5	110.3#

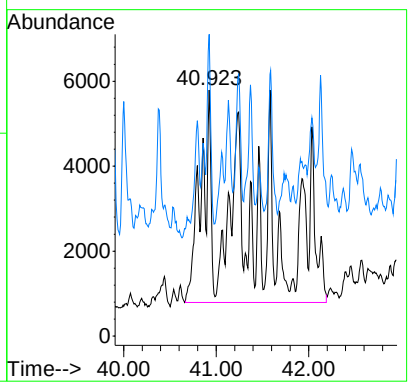


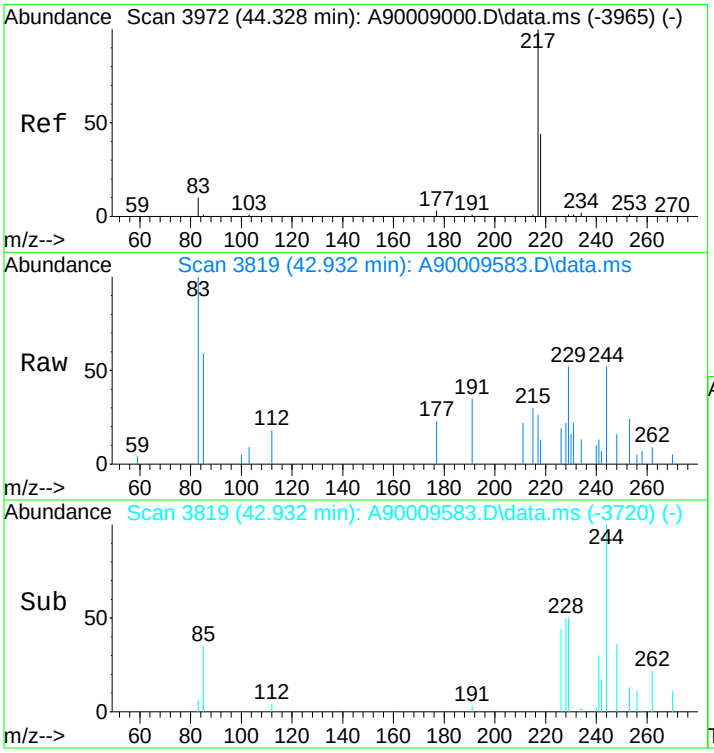


#62
C2-Fluoranthenes/Pyrenes
Concen: 508.44 ng/mL m
RT: 40.923 min Scan# 3599
Delta R.T. 0.001 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:230 Resp: 151621

Ion	Ratio	Lower	Upper
230	100		
215	3.8	93.1	139.7#

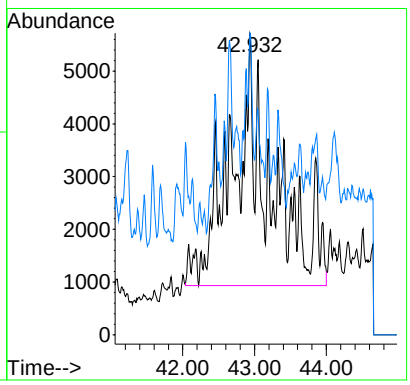


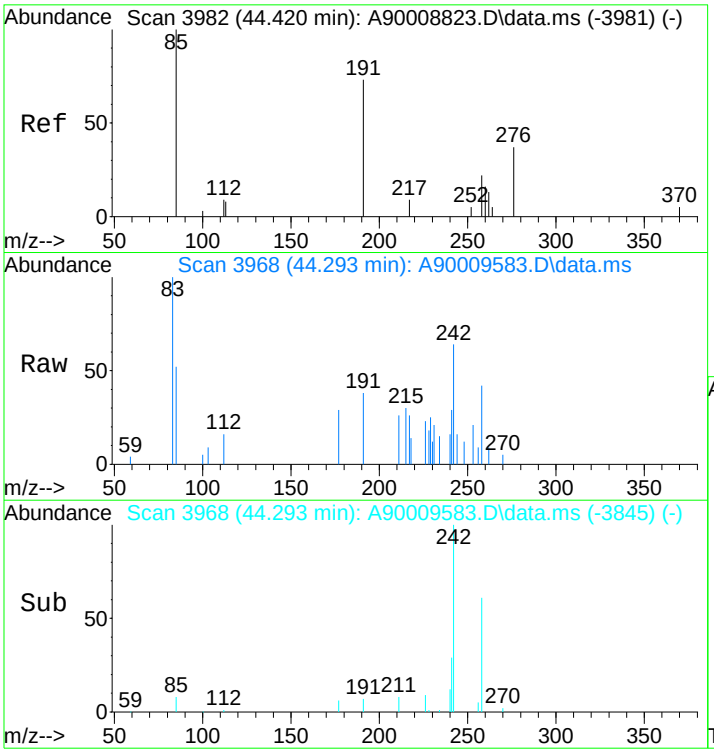


#63
C3-Fluoranthenes/Pyrenes
Concen: 591.10 ng/mL m
RT: 42.932 min Scan# 3819
Delta R.T. -0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:244 Resp: 176272

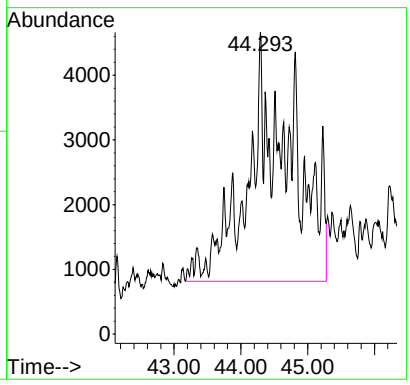
Ion	Ratio	Lower	Upper
244	100		
229	4.9	75.0	112.4#

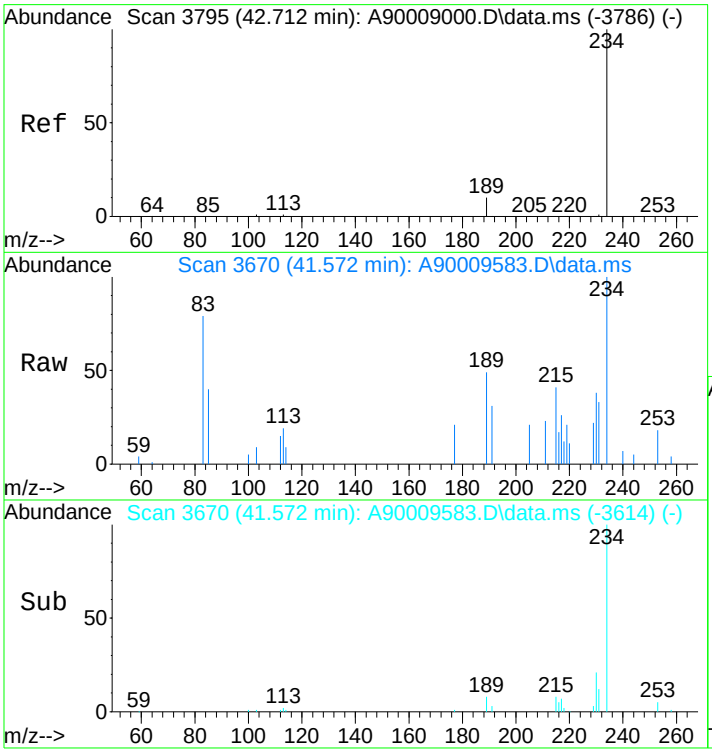




#64
C4-Fluoranthenes/Pyrenes
Concen: 552.86 ng/mL m
RT: 44.293 min Scan# 3968
Delta R.T. 0.000 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:258 Resp: 164866

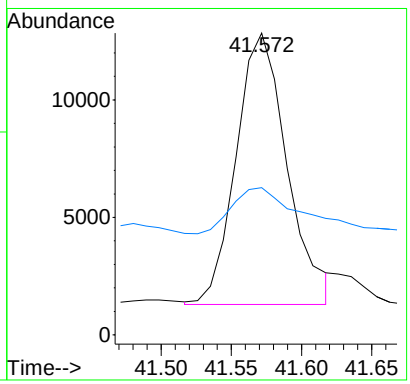


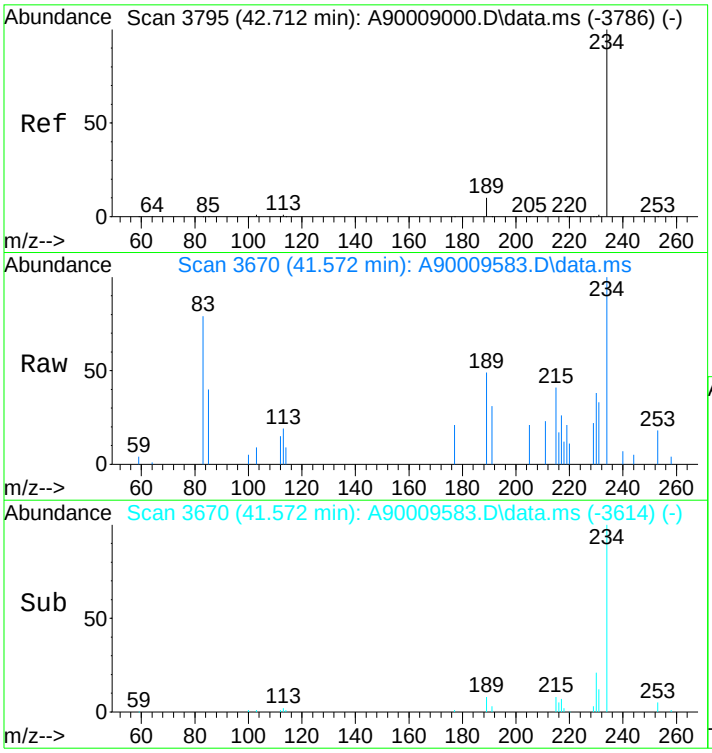


#66
Naphthobenzothiophene
Concen: 112.80 ng/ml m
RT: 41.572 min Scan# 3670
Delta R.T. 0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:234 Resp: 29188

Ion	Ratio	Lower	Upper
234	100		
189	24.1	7.2	10.8#

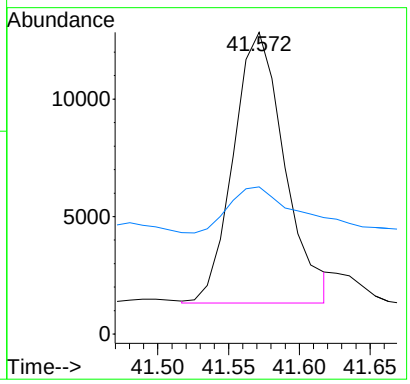


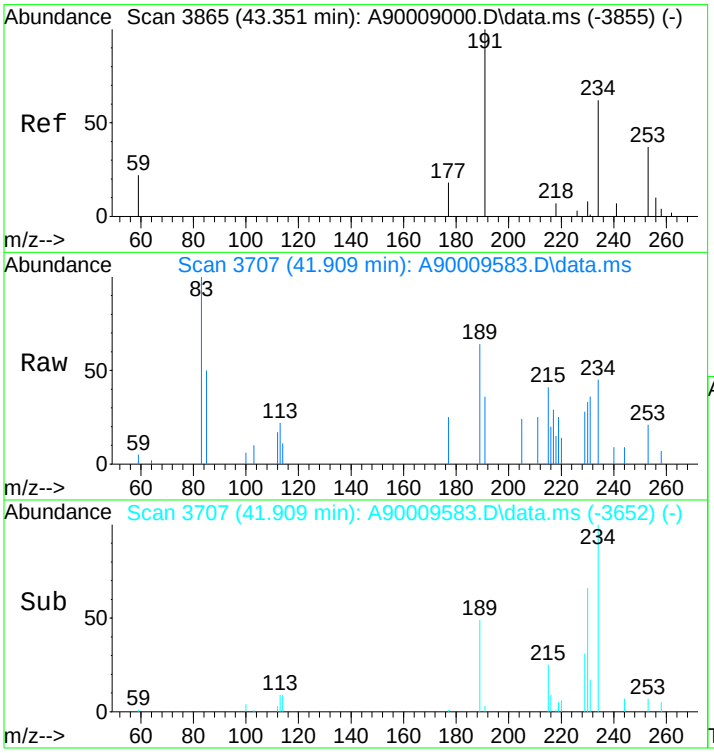


#67
Naphthobenzothiophene-2,1-D
Concen: 111.92 ng/mL m
RT: 41.572 min Scan# 3670
Delta R.T. 0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:234 Resp: 28959

Ion	Ratio	Lower	Upper
234	100		
189	24.3	7.2	10.8#

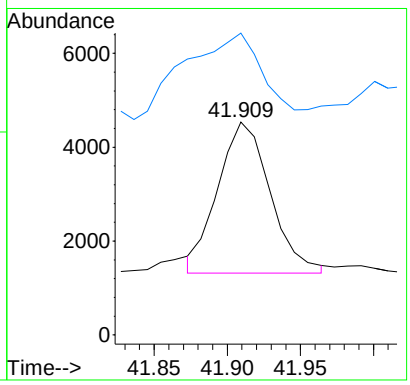


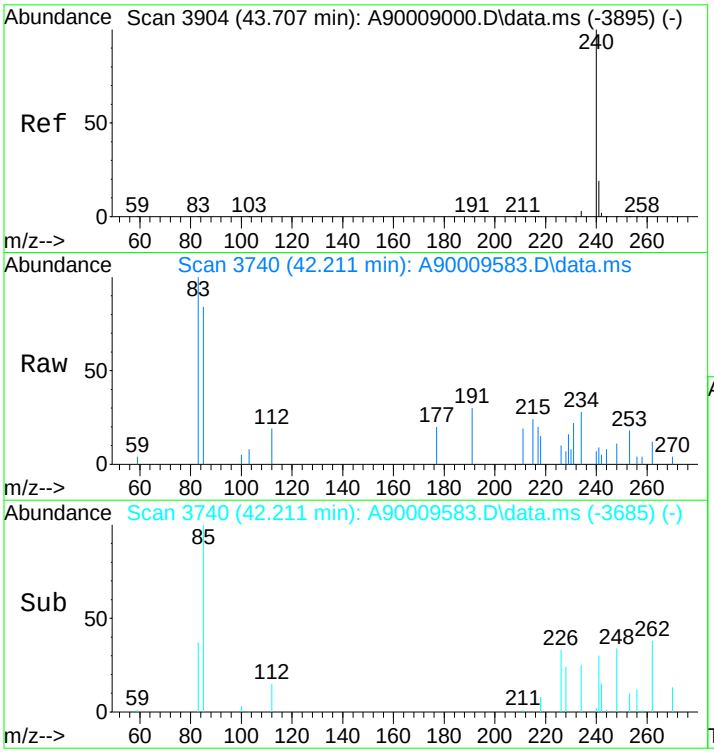


#68
Naphthobenzothiophene-1,2-D
Concen: 31.10 ng/mL m
RT: 41.909 min Scan# 3707
Delta R.T. 0.001 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:234 Resp: 8048

Ion	Ratio	Lower	Upper
234	100		
189	70.4	81.0	121.4#

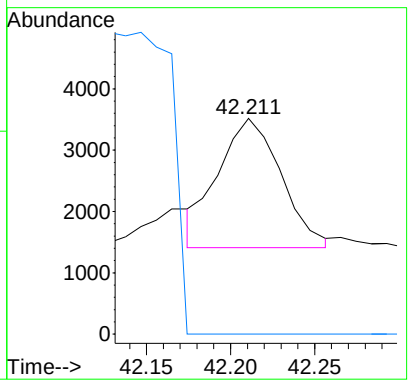


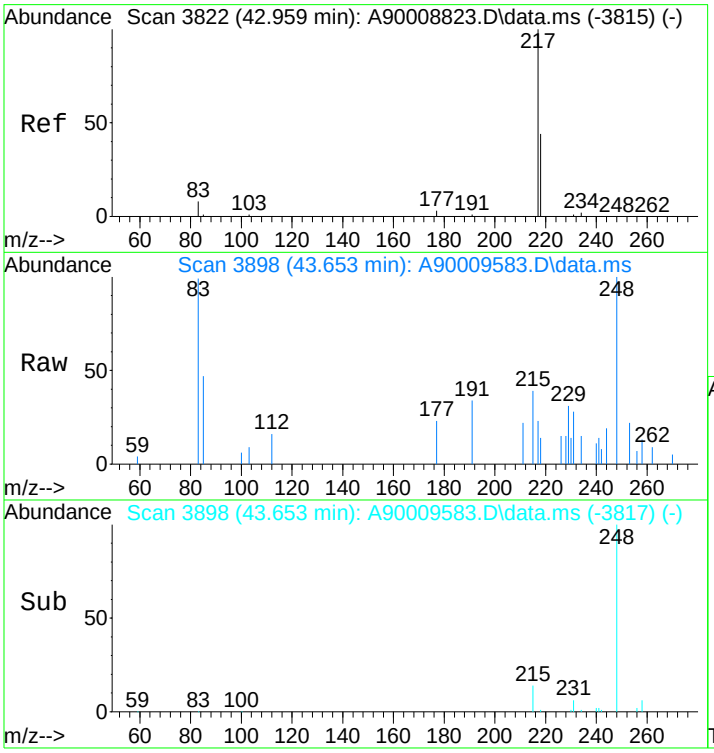


#69
Naphthobenzothiophene-2,3-D
Concen: 21.21 ng/mL m
RT: 42.211 min Scan# 3740
Delta R.T. 0.001 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:234 Resp: 5489

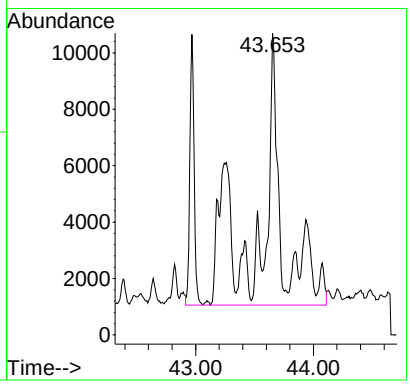
Ion	Ratio	Lower	Upper
234	100		
189	0.0	0.0	0.0

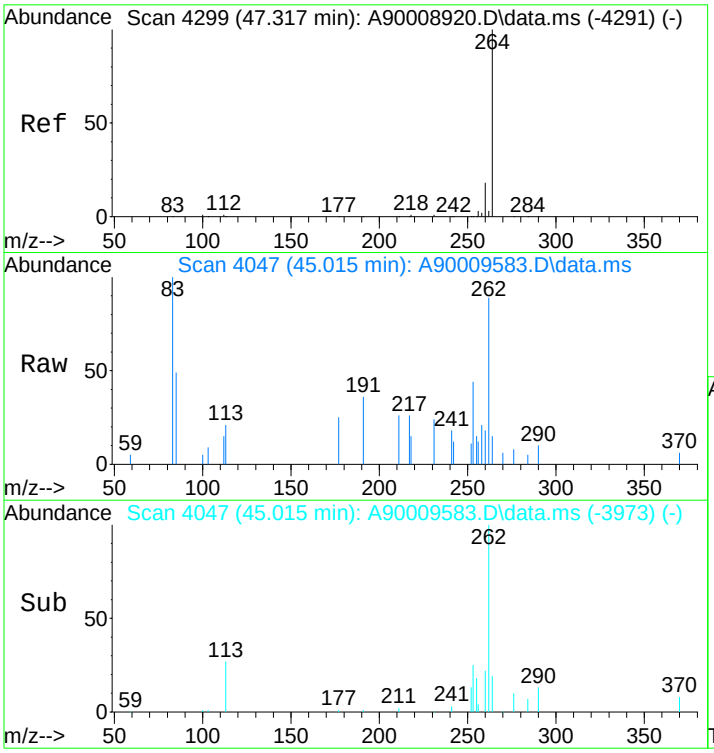




#70
C1-Naphthobenzothiophenes
Concen: 583.80 ng/ml m
RT: 43.653 min Scan# 3898
Delta R.T. 0.685 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

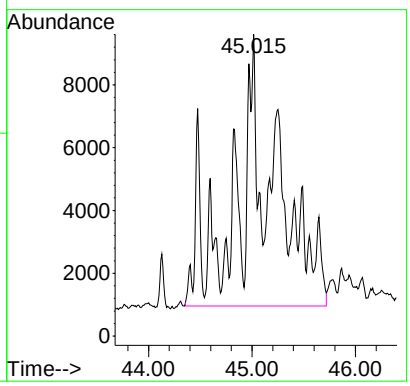
Tgt Ion:248 Resp: 151061

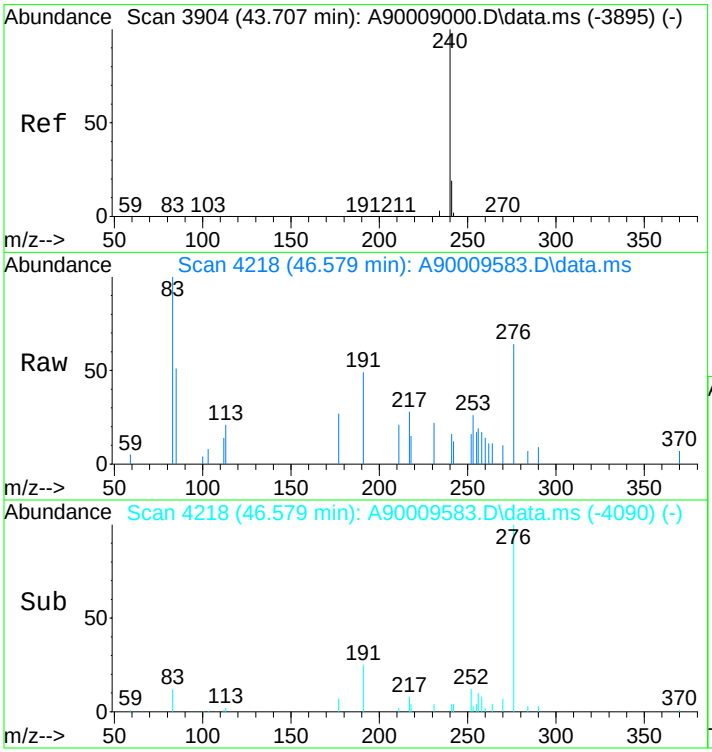




#71
C2-Naphthobenzothiophenes
Concen: 866.84 ng/ml m
RT: 45.015 min Scan# 4047
Delta R.T. 0.046 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

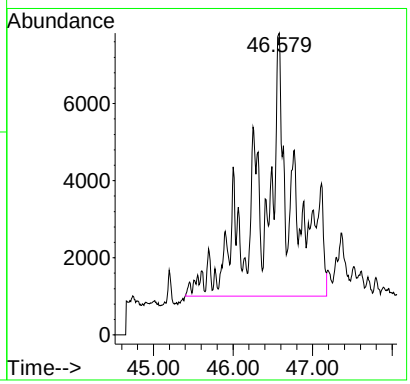
Tgt Ion:262 Resp: 224301

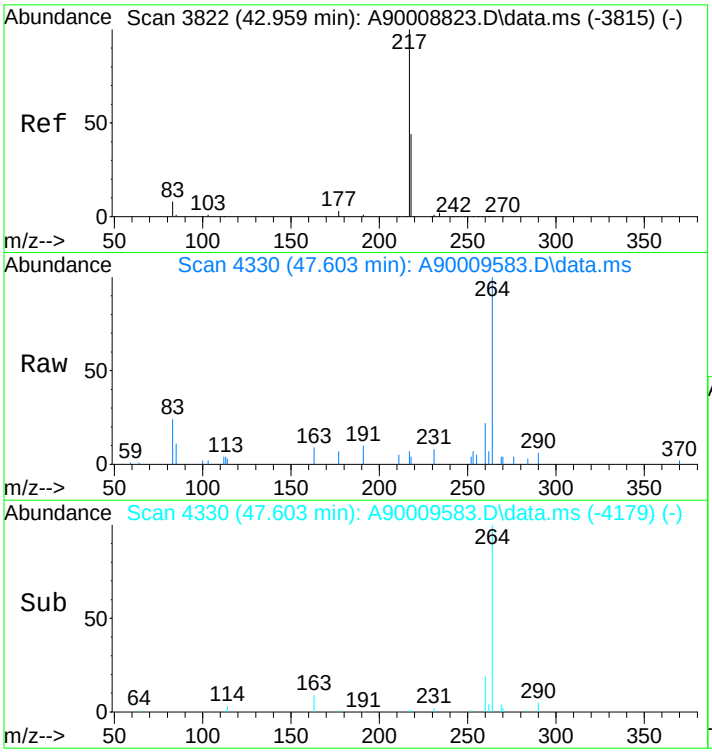




#72
C3-Naphthobenzothiophenes
Concen: 722.04 ng/ml m
RT: 46.579 min Scan# 4218
Delta R.T. 0.010 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

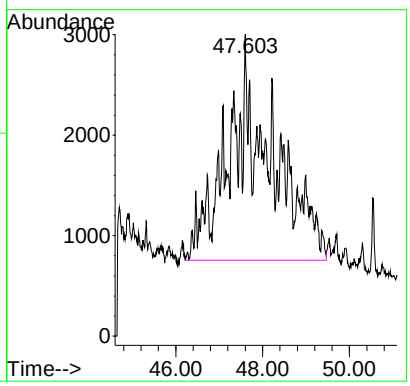
Tgt Ion:276 Resp: 186832

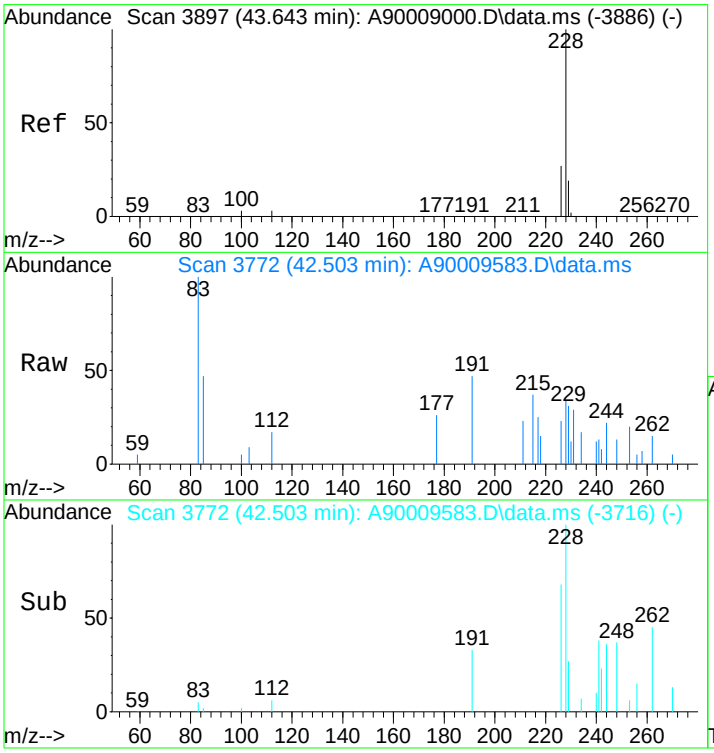




#73
C4-Naphthobenzothiophenes
Concen: 571.26 ng/mL m
RT: 47.603 min Scan# 4330
Delta R.T. 0.010 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:290 Resp: 147817

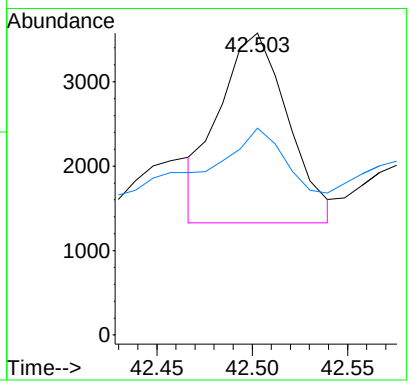


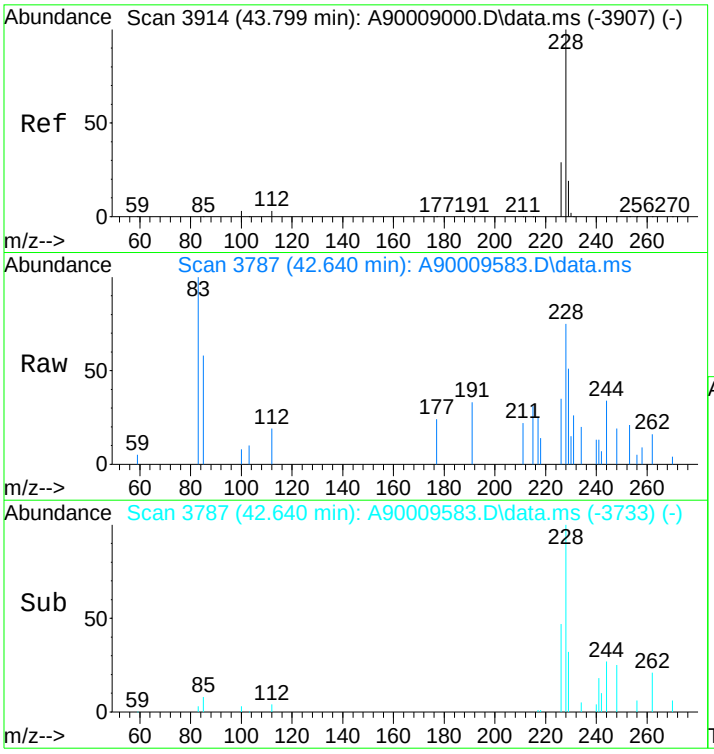


#75
Benz[a]anthracene
Concen: 20.62 ng/mL m
RT: 42.503 min Scan# 3772
Delta R.T. 0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:228 Resp: 5643

Ion	Ratio	Lower	Upper
228	100		
226	144.3	20.8	31.2#

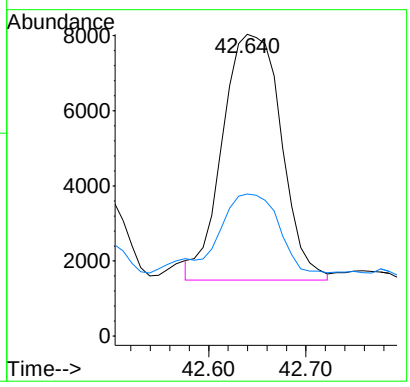


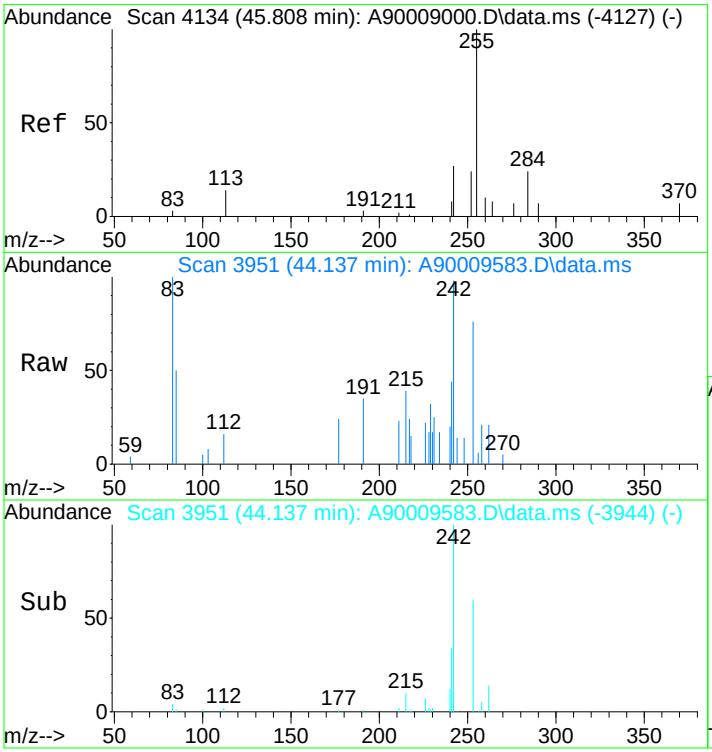


#77
Chrysene/Triphenylene
Concen: 101.86 ng/mL m
RT: 42.640 min Scan# 3787
Delta R.T. -0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:228 Resp: 27416

Ion	Ratio	Lower	Upper
228	100		
226	29.7	23.3	34.9

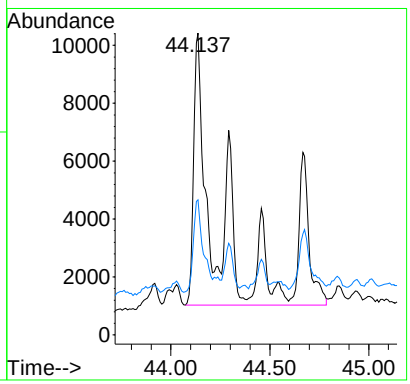


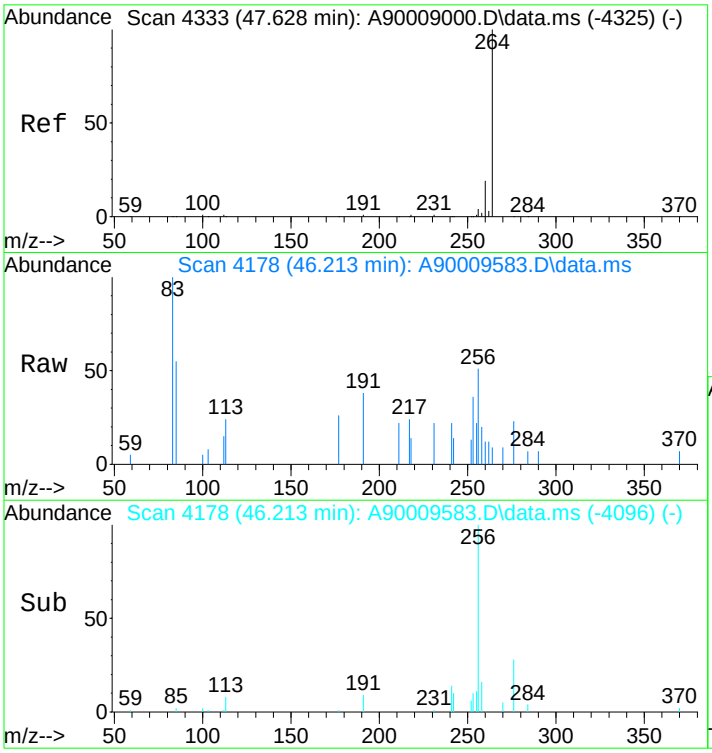


#78
C1-Chrysenes
Concen: 307.75 ng/mL m
RT: 44.137 min Scan# 3951
Delta R.T. 0.001 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:242 Resp: 82834

Ion	Ratio	Lower	Upper
242	100		
241	3.5	31.9	47.9#

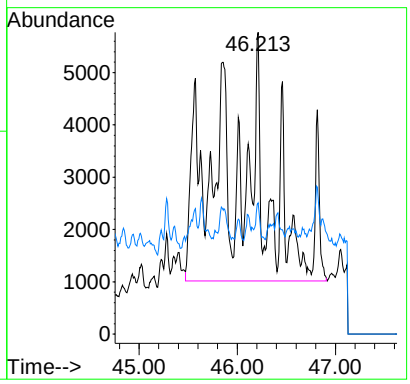


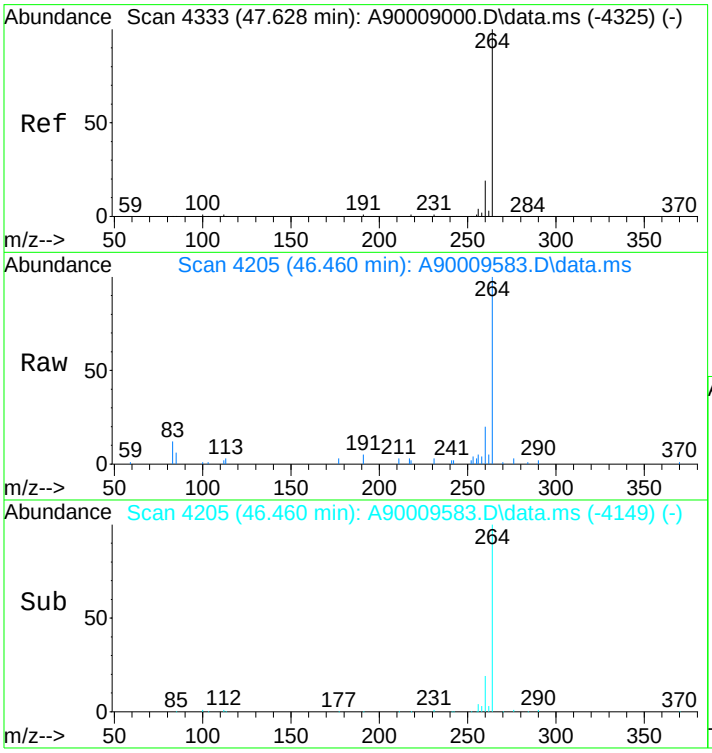


#79
C2-Chrysenes
Concen: 494.51 ng/mL m
RT: 46.213 min Scan# 4178
Delta R.T. -0.603 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:256 Resp: 133104

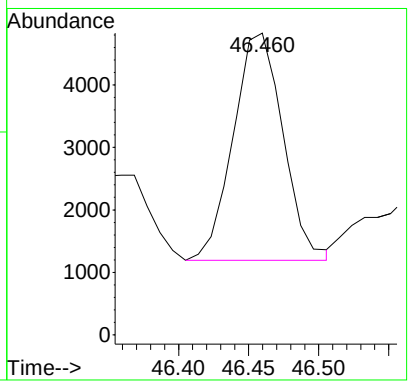
Ion	Ratio	Lower	Upper
256	100		
241	0.3	42.2	63.2#

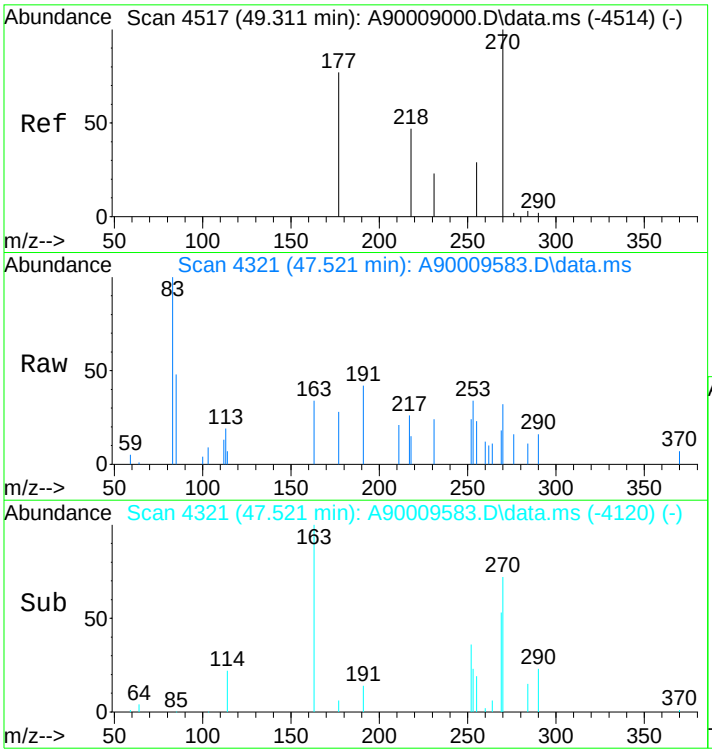




#80
BBF-d12 Surr BKGD
Concen: 33.43 ng/mL
RT: 46.460 min Scan# 4205
Delta R.T. 0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:256 Resp: 8997

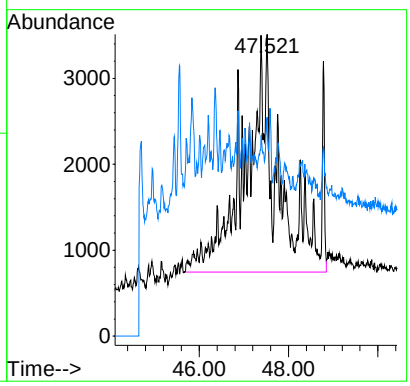


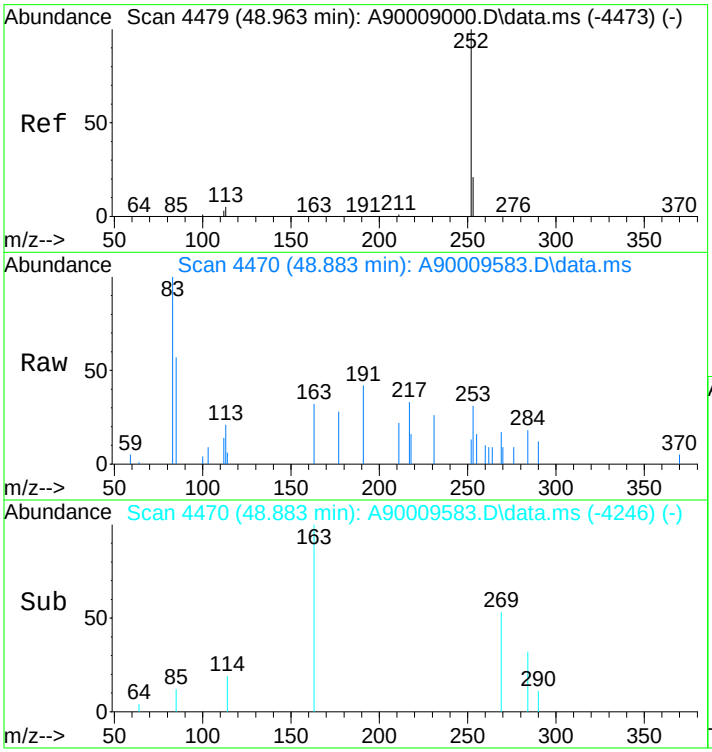


#81
C3-Chrysenes
Concen: 536.46 ng/mL m
RT: 47.521 min Scan# 4321
Delta R.T. -1.262 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:270 Resp: 144396

Ion	Ratio	Lower	Upper
270	100		
255	1.3	48.2	72.4#

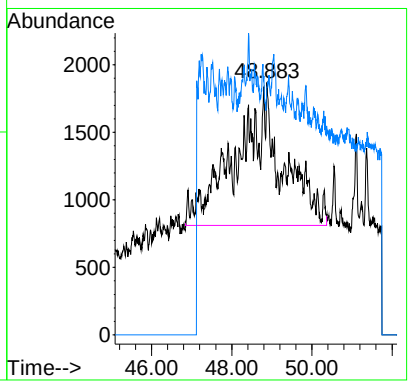


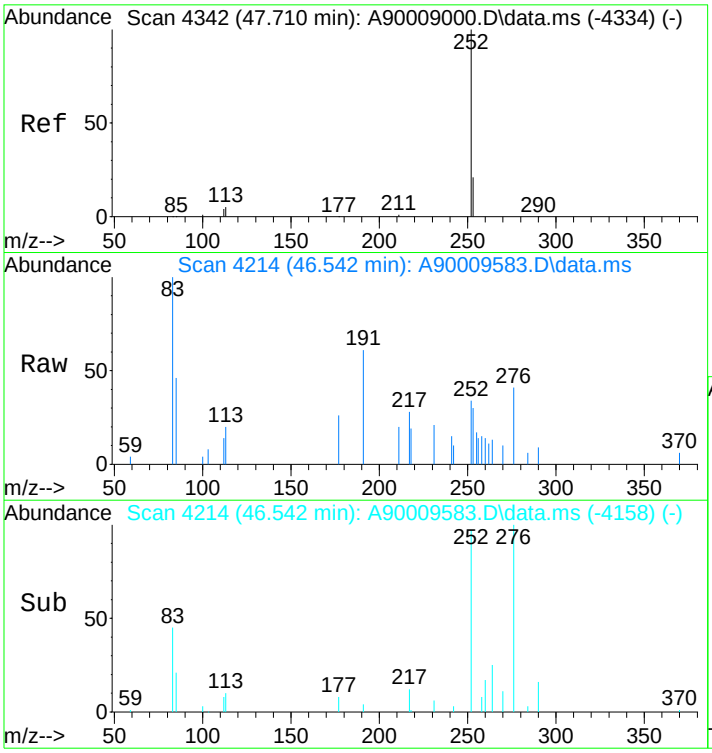


#82
C4-Chrysenes
Concen: 305.57 ng/mL m
RT: 48.883 min Scan# 4470
Delta R.T. 0.001 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:284 Resp: 82248

Ion	Ratio	Lower	Upper
284	100		
269	0.0	84.6	126.8#

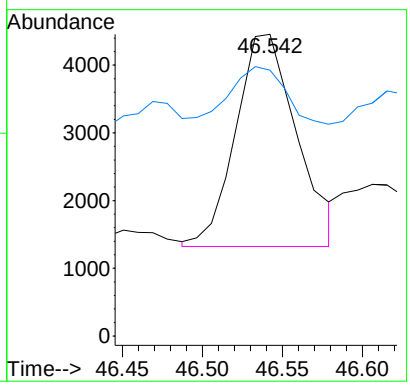


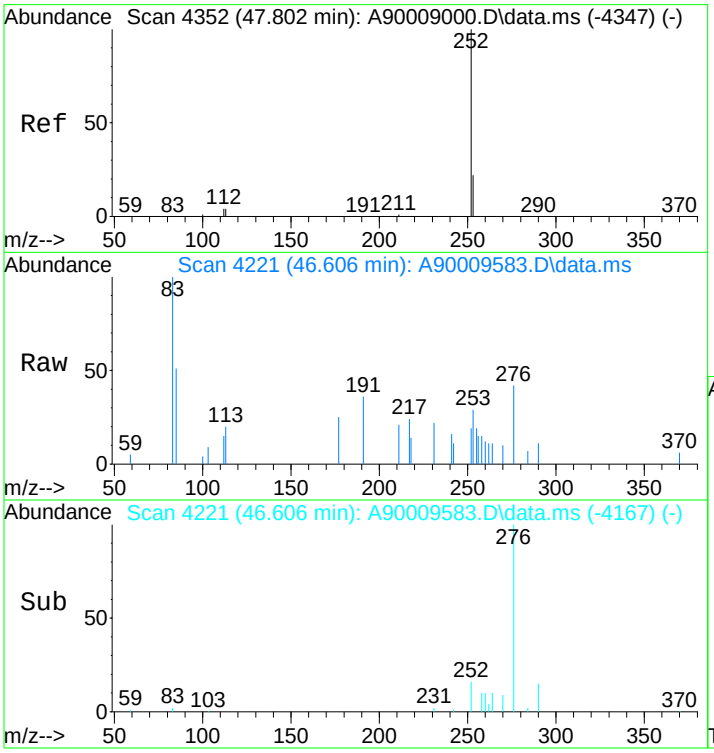


#84
Benzo[b]fluoranthene
Concen: 29.30 ng/mL m
RT: 46.542 min Scan# 4214
Delta R.T. 0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:252 Resp: 8313

Ion	Ratio	Lower	Upper
252	100		
253	23.7	20.3	30.5

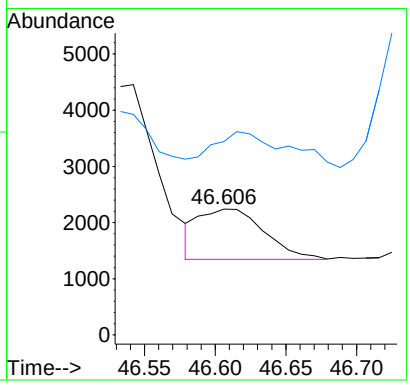


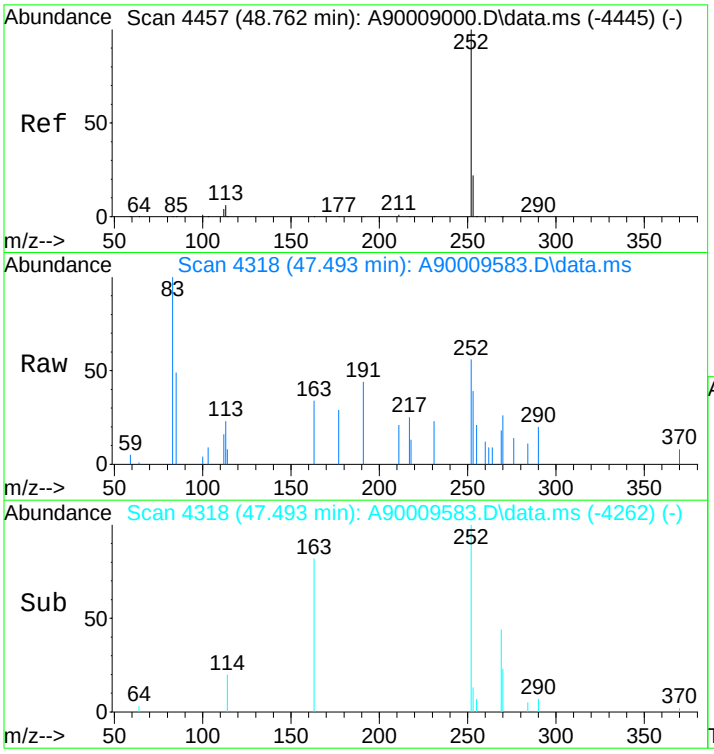


#85
Benzo[j]+[k]fluoranthene
Concen: 10.41 ng/mL m
RT: 46.606 min Scan# 4221
Delta R.T. -0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:252 Resp: 2903

Ion	Ratio	Lower	Upper
252	100		
253	77.8	20.2	30.4#

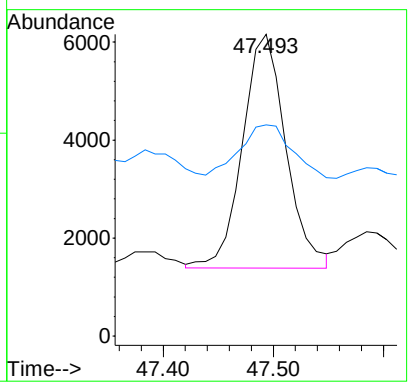


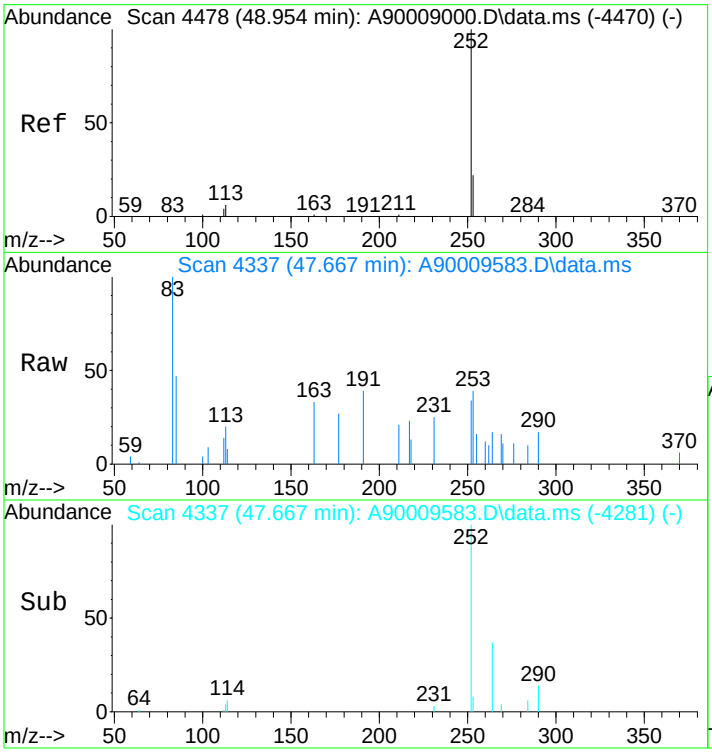


#87
Benzo[e]pyrene
Concen: 48.56 ng/mL
RT: 47.493 min Scan# 4318
Delta R.T. 0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:252 Resp: 13084

Ion	Ratio	Lower	Upper
252	100		
253	28.6	21.4	32.0

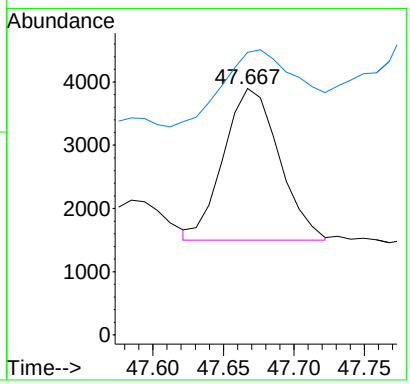


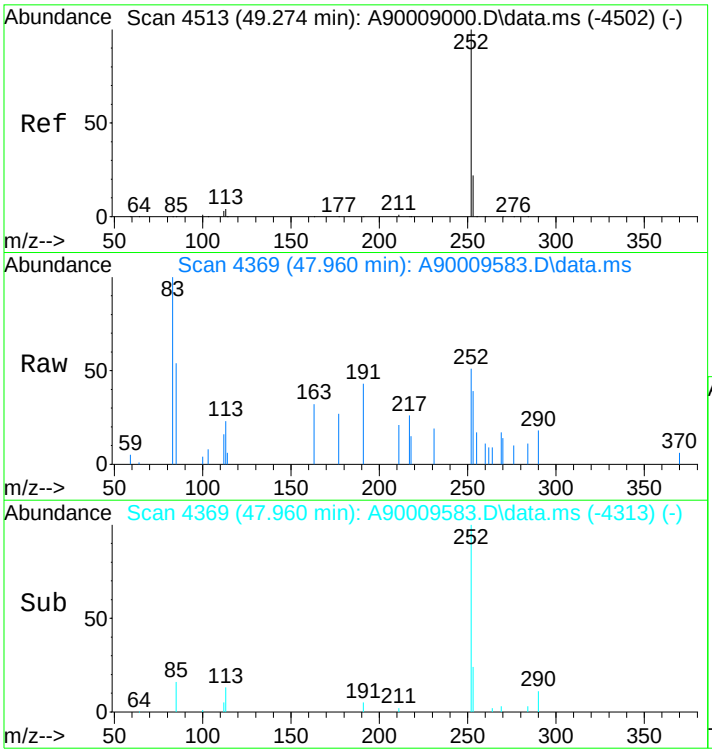


#89
Benzo[a]pyrene
Concen: 25.79 ng/mL m
RT: 47.667 min Scan# 4337
Delta R.T. 0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:252 Resp: 6580

Ion	Ratio	Lower	Upper
252	100		
253	55.0	21.9	32.9#

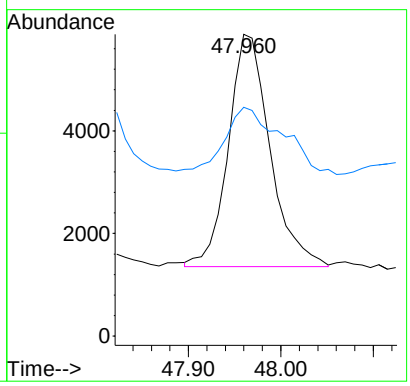


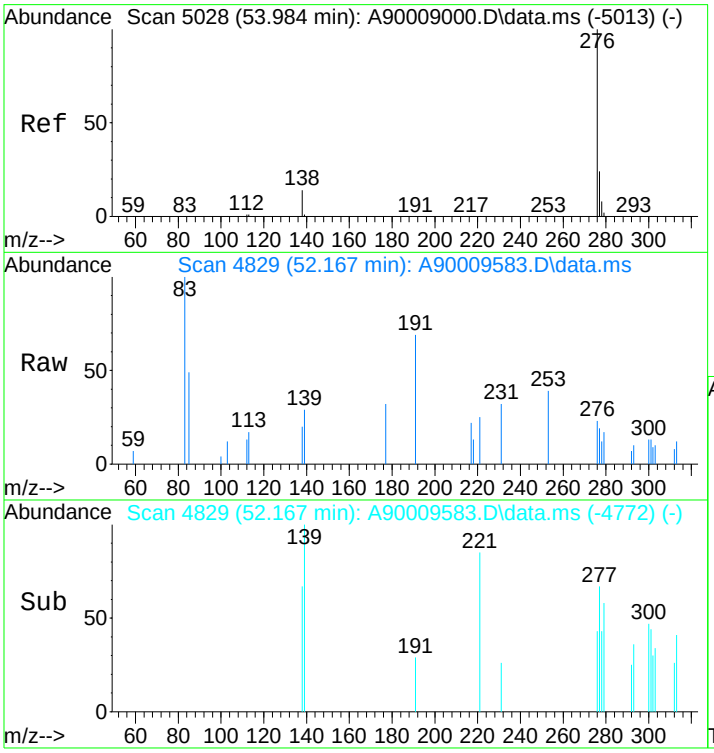


#90
Perylene
Concen: 52.09 ng/mL m
RT: 47.960 min Scan# 4369
Delta R.T. 0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:252 Resp: 14187

Ion	Ratio	Lower	Upper
252	100		
253	21.6	22.2	33.2#

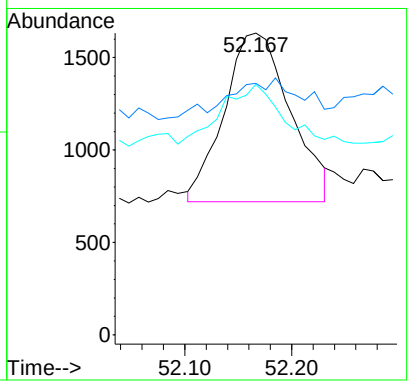


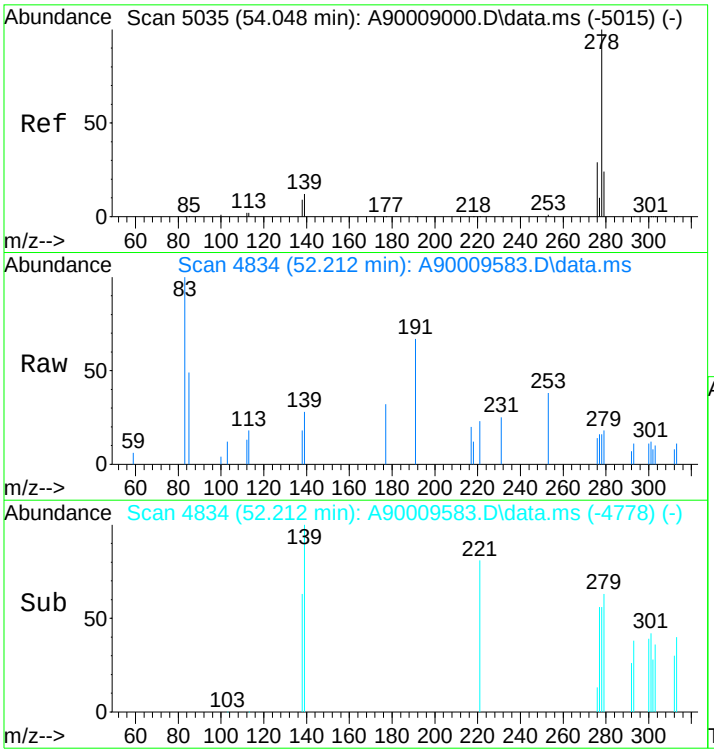


#91
Indeno[1,2,3-cd]pyrene
Concen: 13.86 ng/mL m
RT: 52.167 min Scan# 4829
Delta R.T. 0.019 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:276 Resp: 3916

Ion	Ratio	Lower	Upper
276	100		
138	0.0	17.7	26.5#
277	0.0	20.2	30.4#

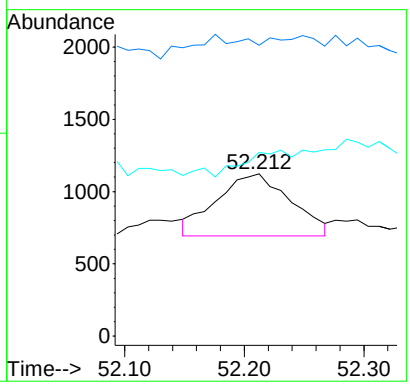


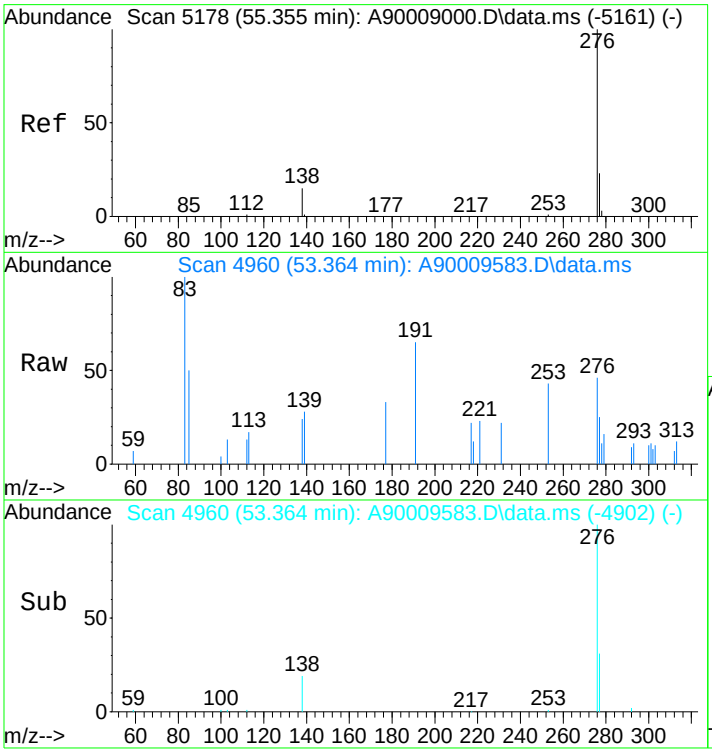


#92
Dibenz[ah]+[ac]anthracene
Concen: 6.65 ng/mL m
RT: 52.212 min Scan# 4834
Delta R.T. 0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:278 Resp: 1851

Ion	Ratio	Lower	Upper
278	100		
139	176.4	13.3	19.9#
279	291.6	19.3	28.9#

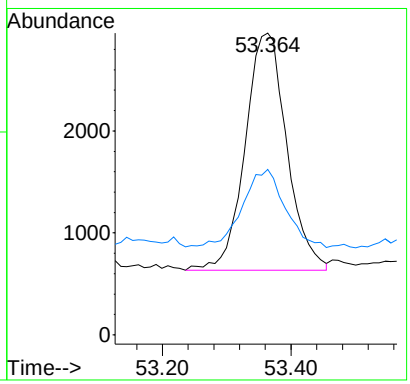


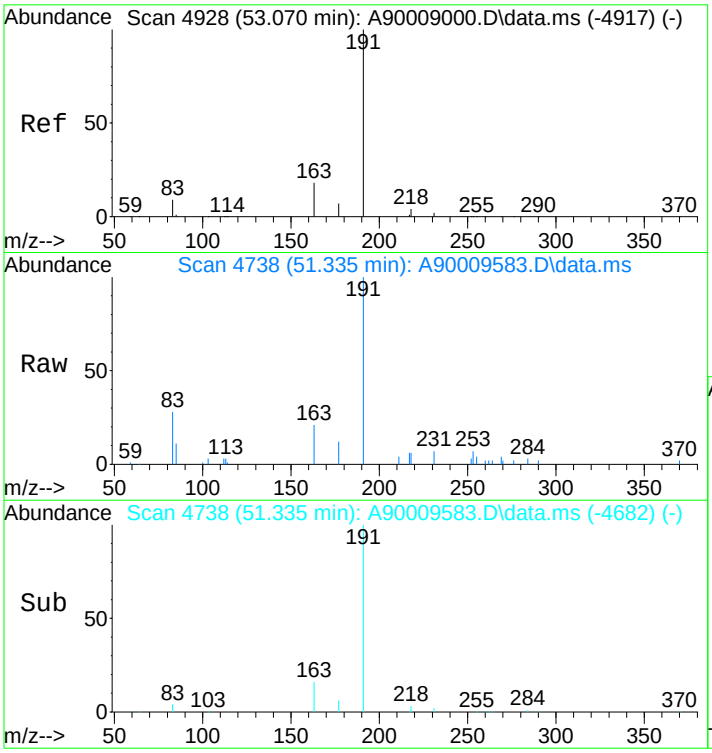


#93
Benzo[g,h,i]perylene
Concen: 37.72 ng/mL
RT: 53.364 min Scan# 4960
Delta R.T. 0.028 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:276 Resp: 10476

Ion	Ratio	Lower	Upper
276	100		
277	31.8	20.0	30.0#

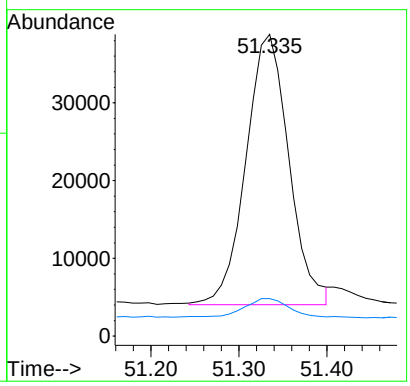


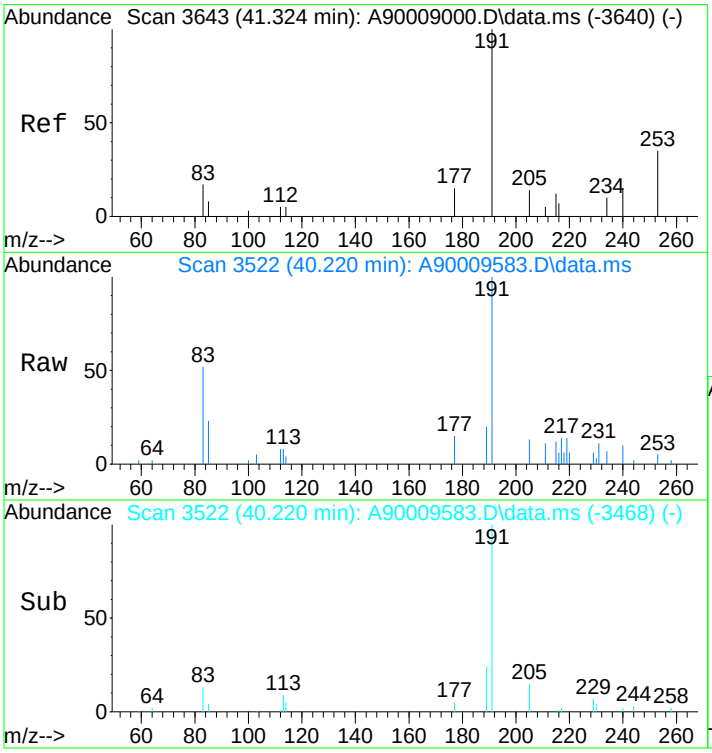


#94
Hopane (T19)
Concen: 1124.49 ng/mL m
RT: 51.335 min Scan# 4738
Delta R.T. 0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:191 Resp: 117954

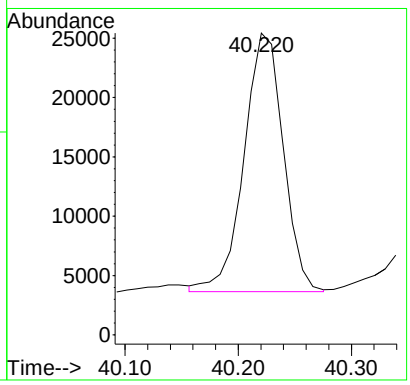
Ion	Ratio	Lower	Upper
191	100		
177	7.8	14.4	21.6#

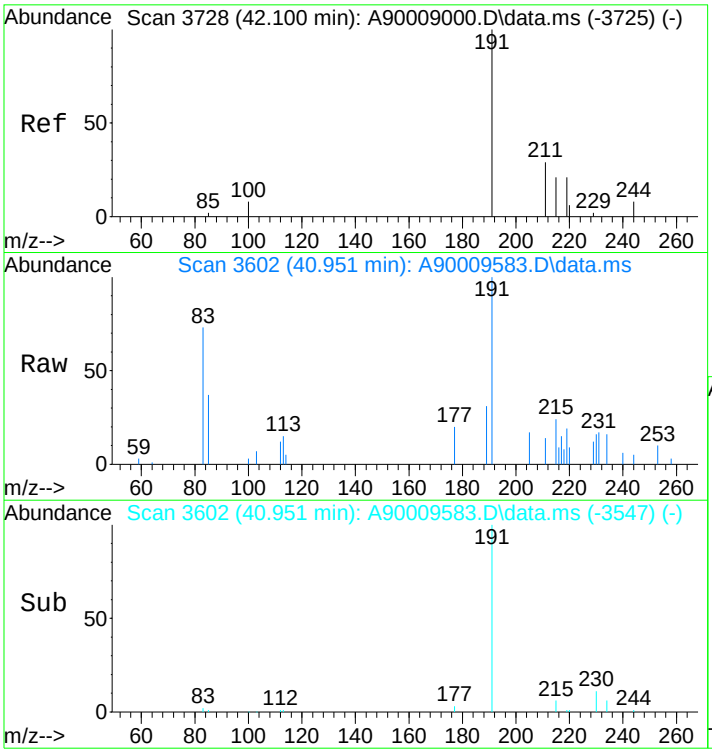




#96
C23 Tricyclic Terpane (T4)
Concen: 500.24 ng/ml m
RT: 40.220 min Scan# 3522
Delta R.T. -0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

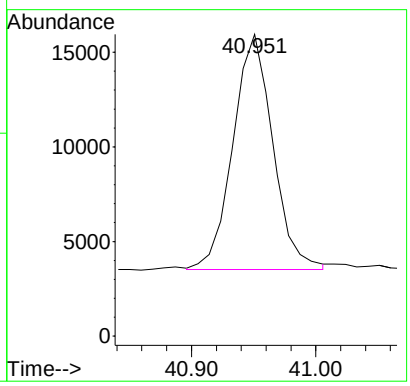
Tgt Ion:191 Resp: 52473

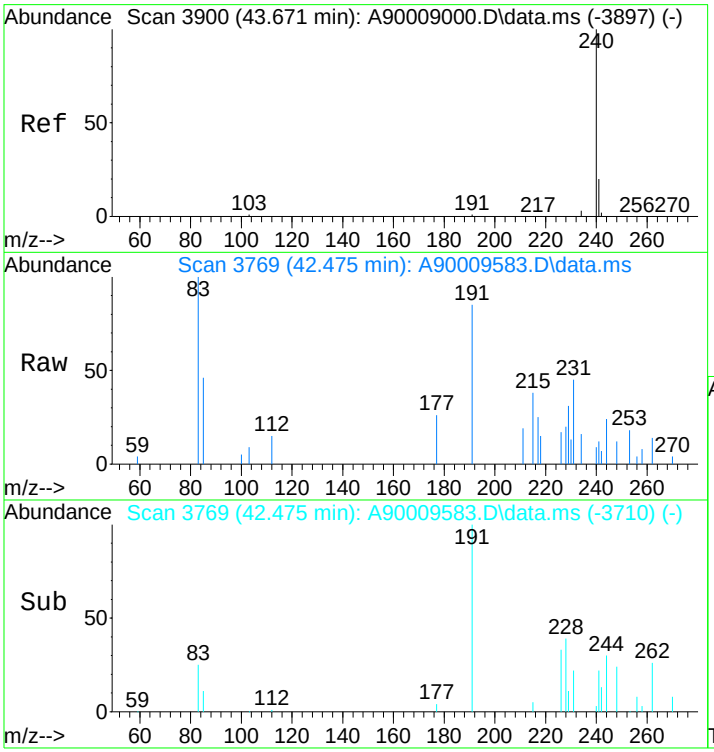




#97
C24 Tricyclic Terpane (T5)
Concen: 264.60 ng/ml m
RT: 40.951 min Scan# 3602
Delta R.T. 0.000 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

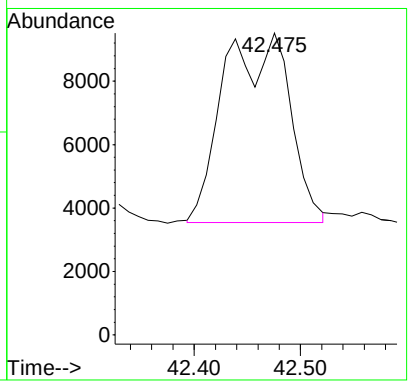
Tgt Ion:191 Resp: 27755

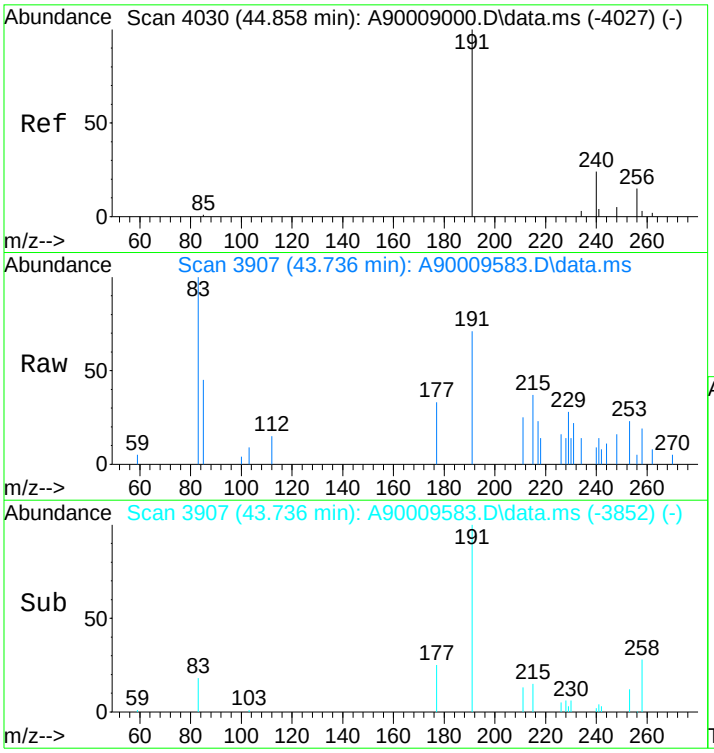




#98
C25 Tricyclic Terpane (T6)
Concen: 245.71 ng/ml m
RT: 42.475 min Scan# 3769
Delta R.T. 0.037 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

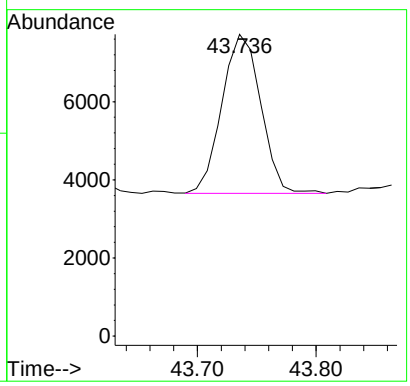
Tgt Ion:191 Resp: 25774

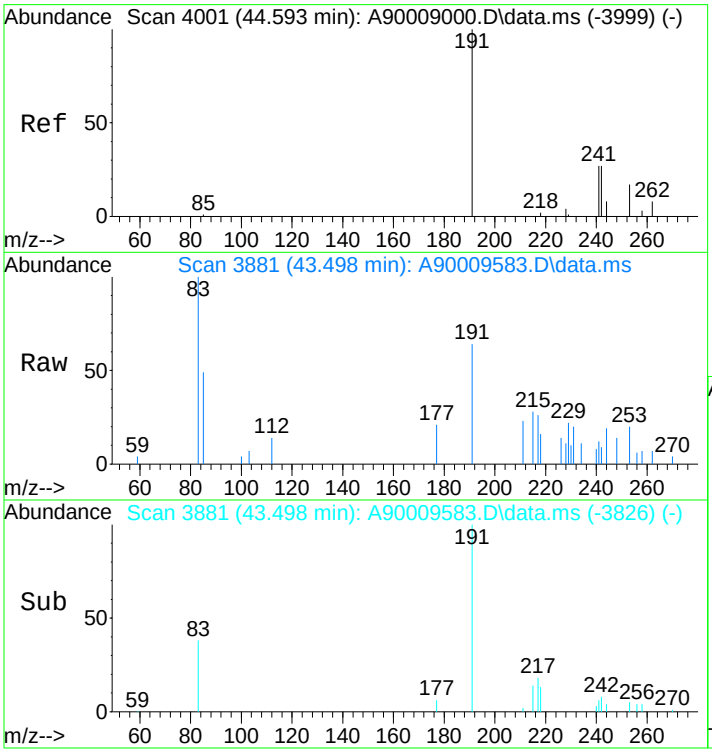




#99
C24 Tetracyclic Terpane (T6a)
Concen: 88.28 ng/ml
RT: 43.736 min Scan# 3907
Delta R.T. 0.001 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

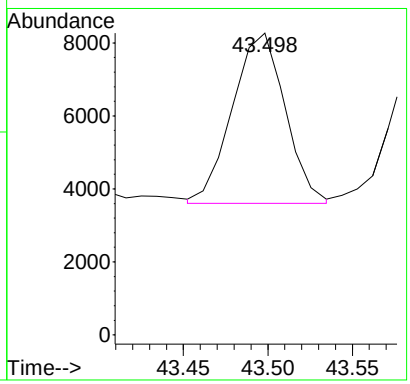
Tgt Ion:191 Resp: 9260

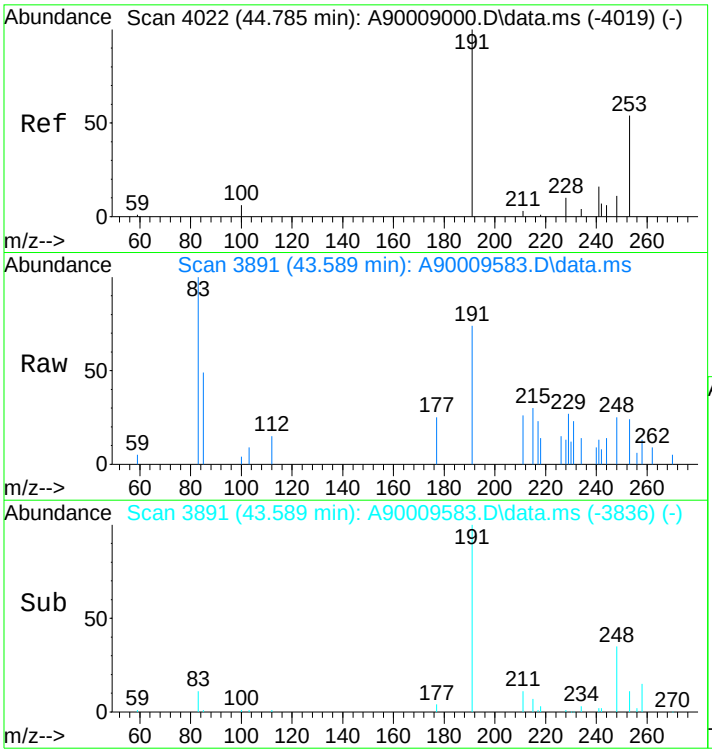




#100
C26 Tricyclic Terpane-22S (T6b)
Concen: 96.69 ng/ml m
RT: 43.498 min Scan# 3881
Delta R.T. 0.001 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

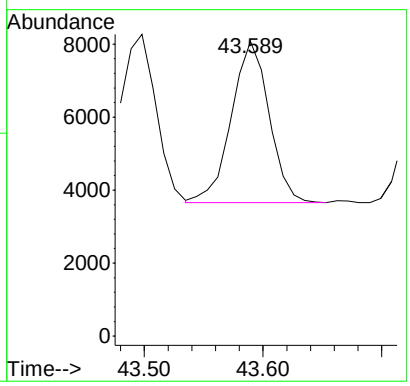
Tgt Ion:191 Resp: 10142

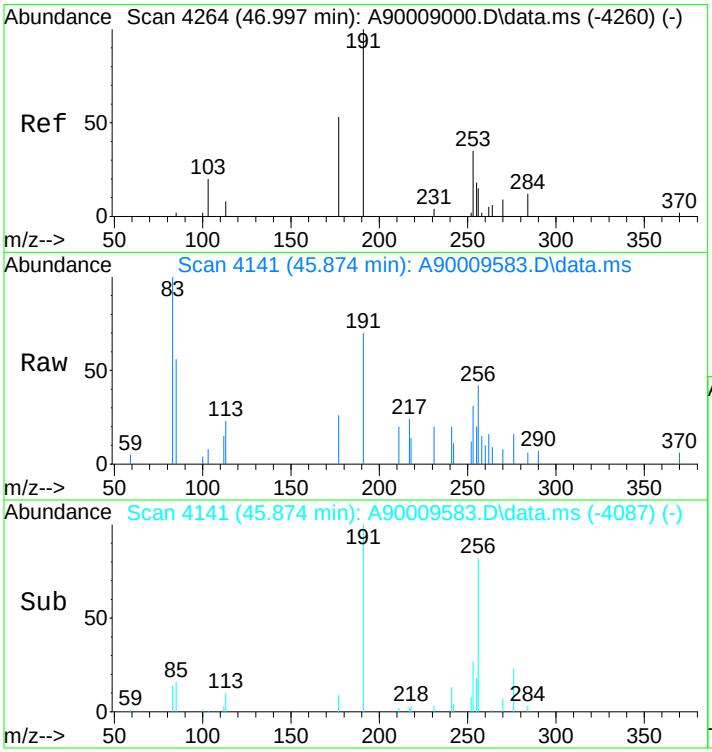




#101
C26 Tricyclic Terpane-22R (T6c)
Concen: 93.01 ng/ml
RT: 43.589 min Scan# 3891
Delta R.T. 0.000 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

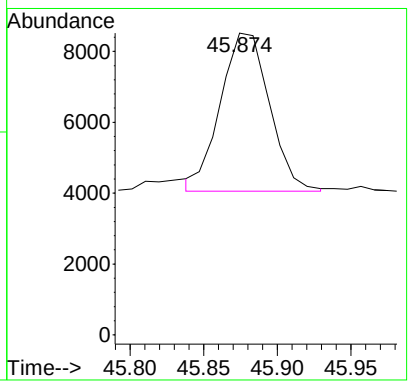
Tgt Ion:191 Resp: 9756

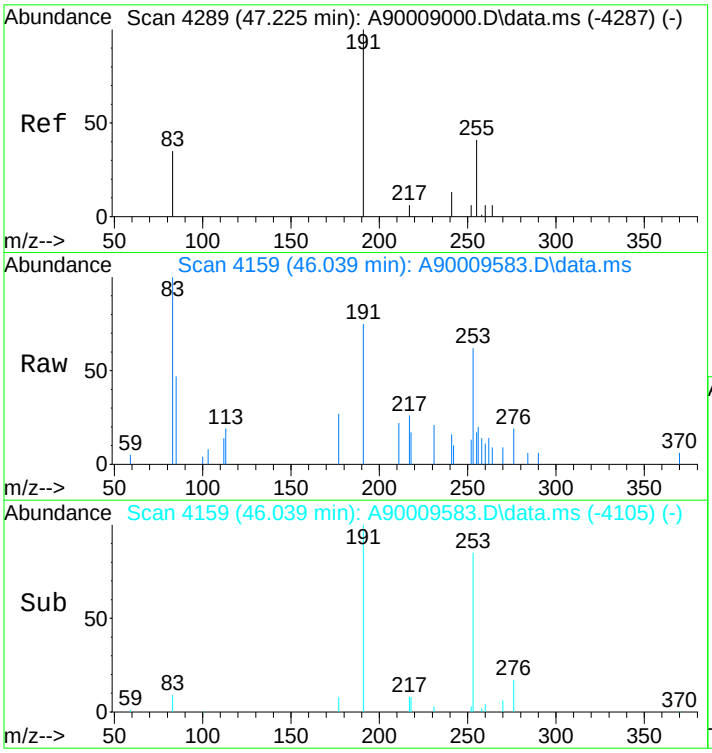




#102
C28 Tricyclic Terpane-22S (T7)
Concen: 98.88 ng/ml m
RT: 45.874 min Scan# 4141
Delta R.T. -0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

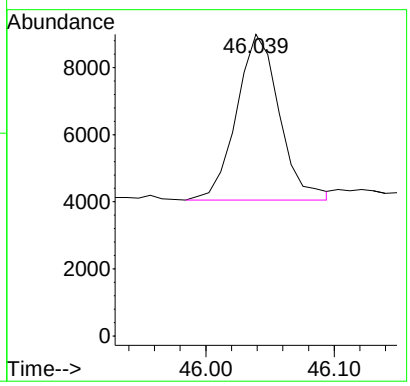
Tgt Ion:191 Resp: 10372

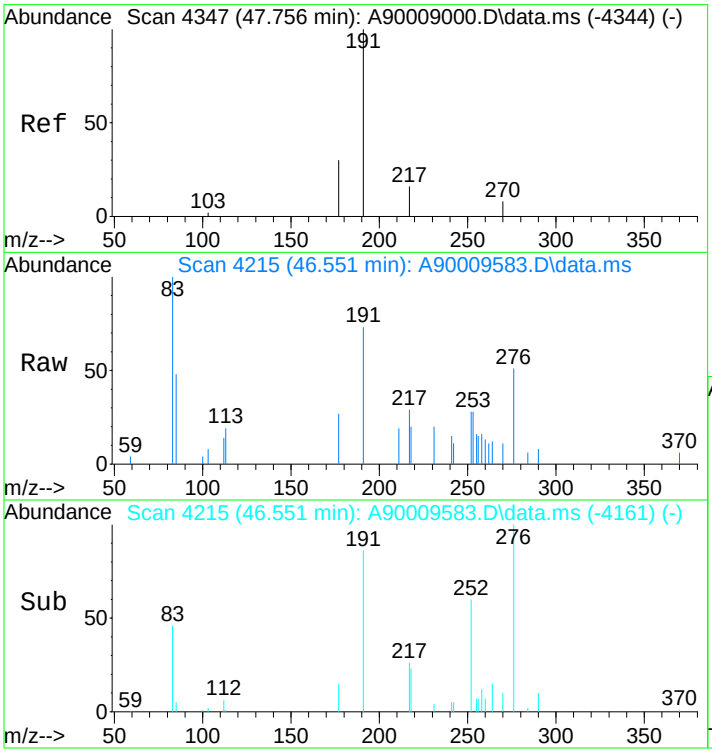




#103
C28 Tricyclic Terpane-22R (T8)
Concen: 109.50 ng/ml
RT: 46.039 min Scan# 4159
Delta R.T. -0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

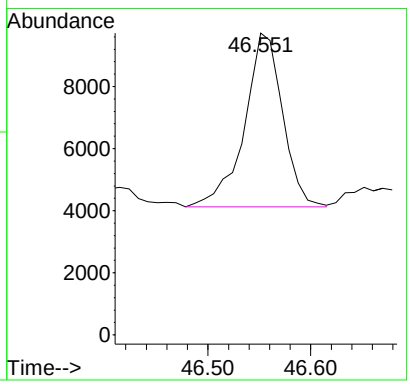
Tgt Ion:191 Resp: 11486

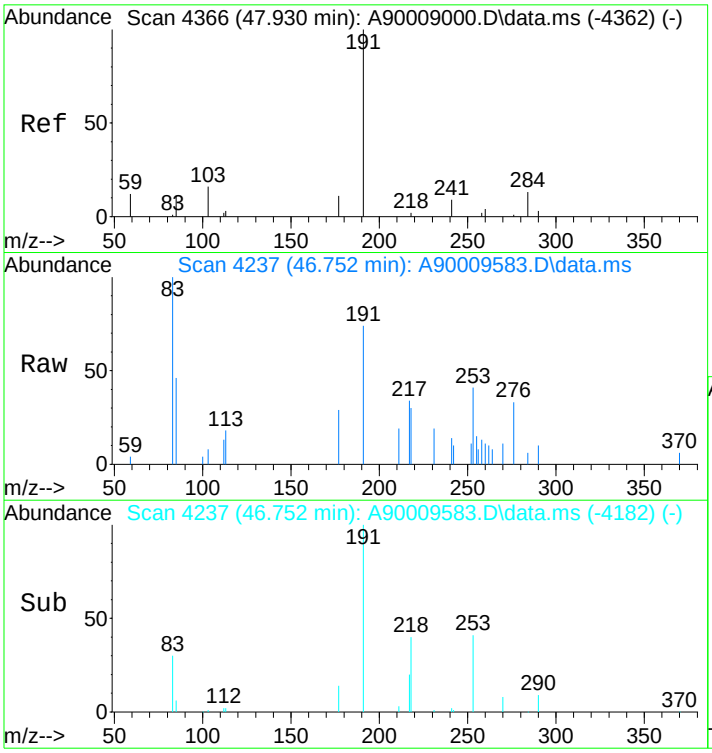




#104
C29 Tricyclic Terpane-22S (T9)
Concen: 138.02 ng/ml
RT: 46.551 min Scan# 4215
Delta R.T. -0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

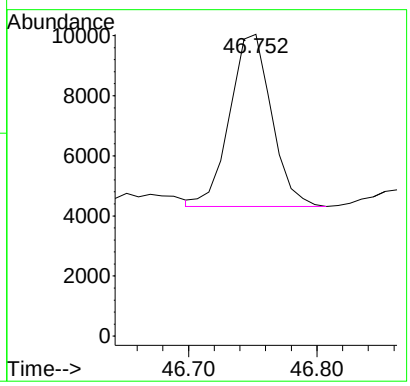
Tgt Ion:191 Resp: 14478

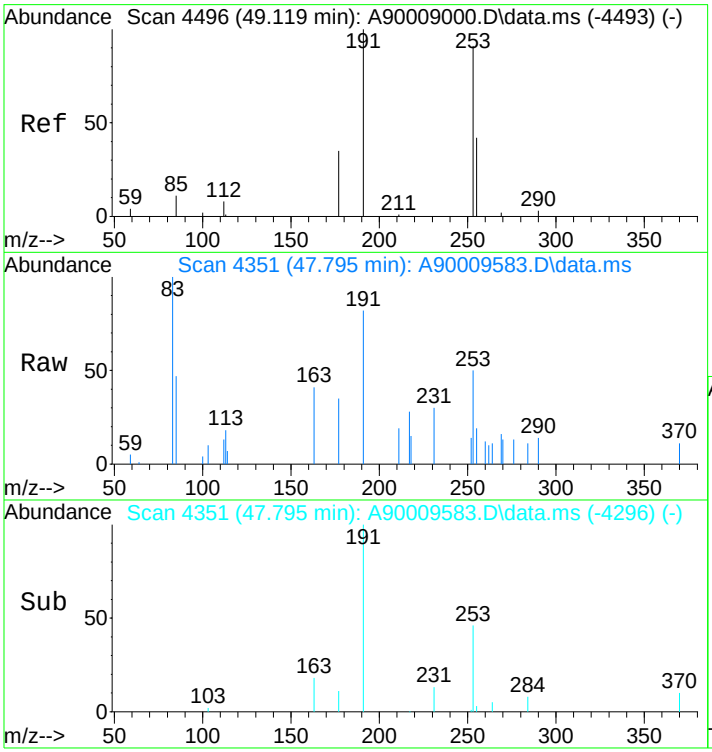




#105
C29 Tricyclic Terpane-22R (T10)
Concen: 123.30 ng/ml
RT: 46.752 min Scan# 4237
Delta R.T. 0.001 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

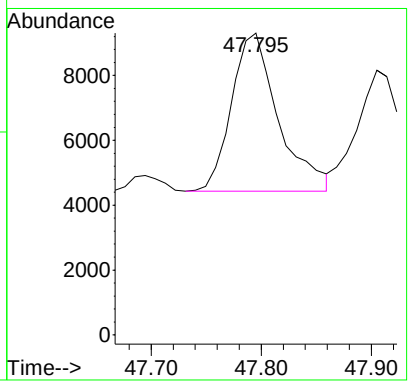
Tgt Ion:191 Resp: 12934

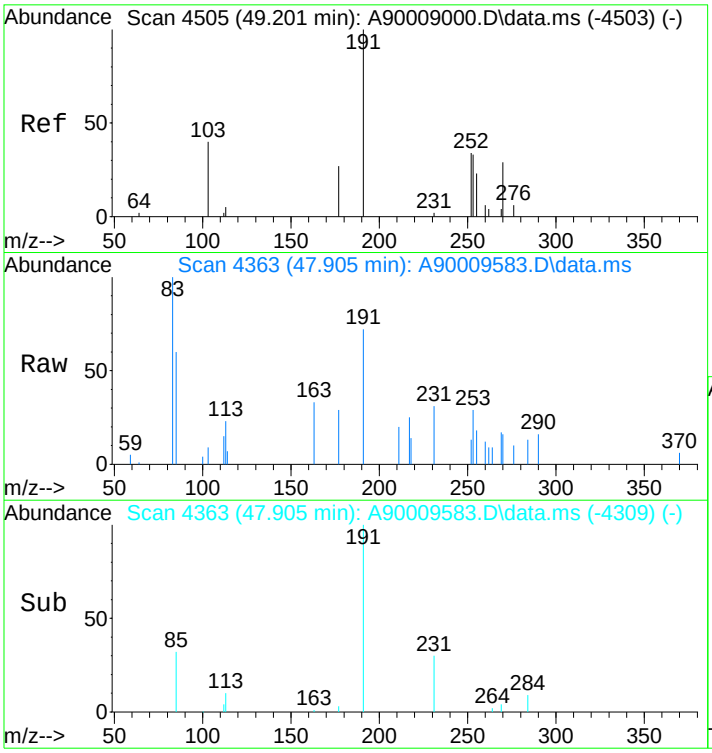




#106
18a-22,29,30-Trisnorneohopane-TS (T11)
Concen: 137.19 ng/ml
RT: 47.795 min Scan# 4351
Delta R.T. 0.000 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

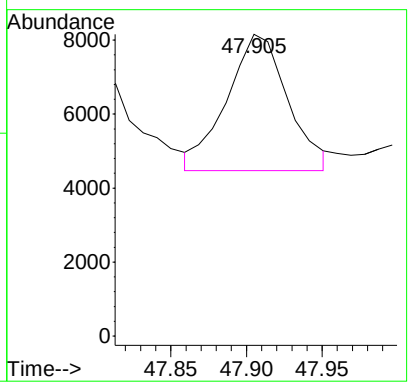
Tgt Ion:191 Resp: 14391

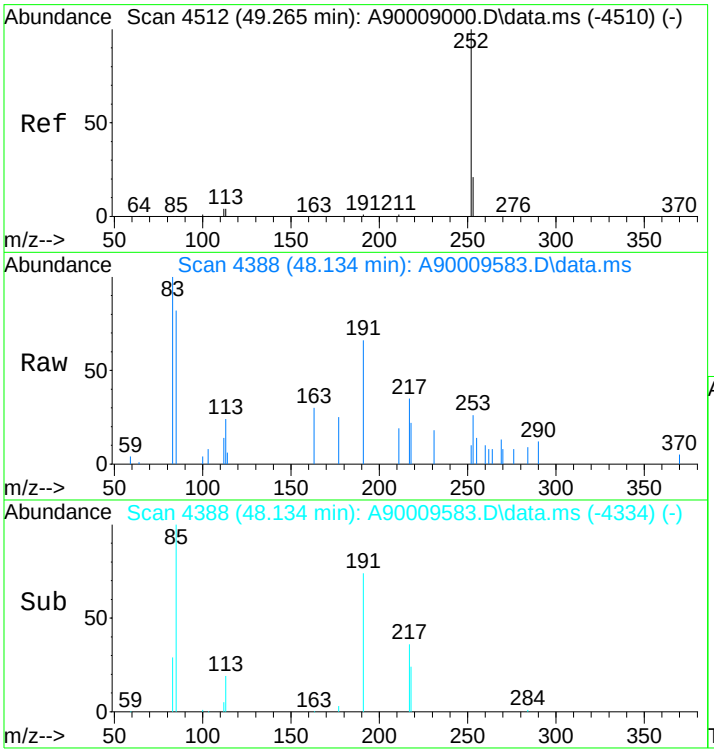




#107
C30 Tricyclic Terpane-22S
Concen: 98.28 ng/mL m
RT: 47.905 min Scan# 4363
Delta R.T. -0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

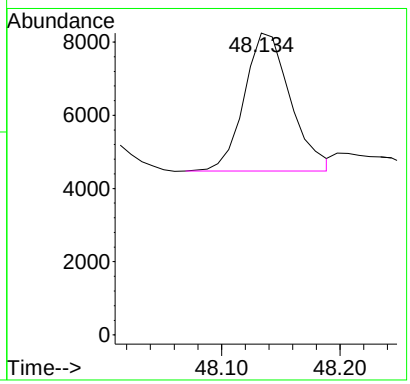
Tgt Ion:191 Resp: 10309

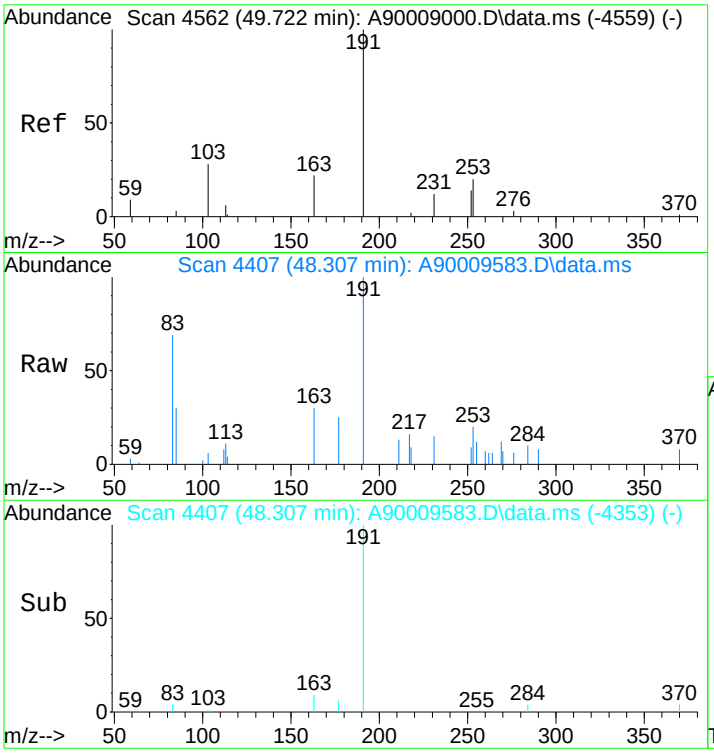




#108
C30 Tricyclic Terpane-22R
Concen: 97.45 ng/mL
RT: 48.134 min Scan# 4388
Delta R.T. -0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

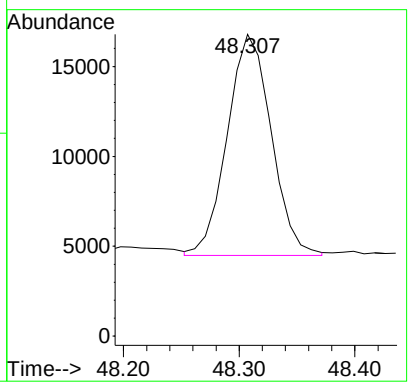
Tgt Ion:191 Resp: 10222

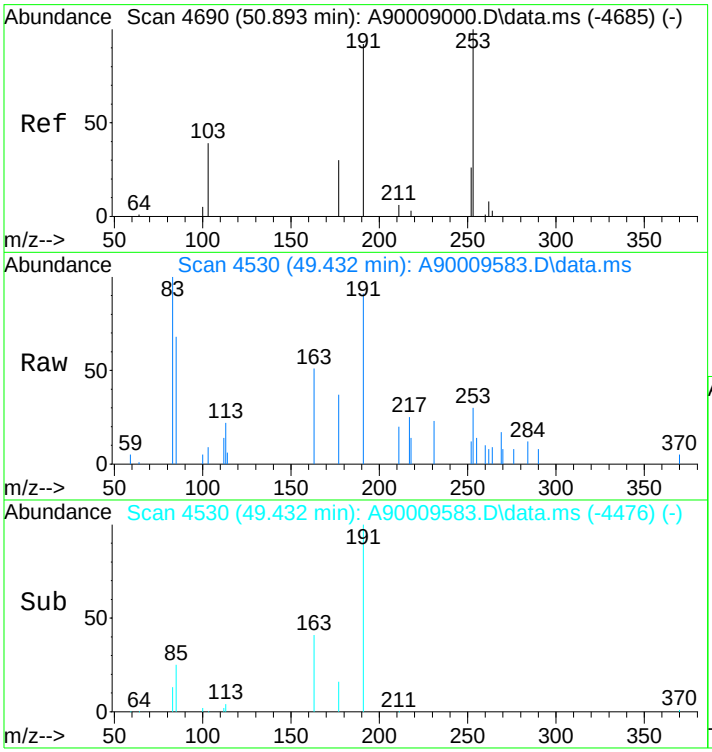




#109
17a(H)-22,29,30-Trisnorhopane-TM (T12)
Concen: 309.56 ng/ml m
RT: 48.307 min Scan# 4407
Delta R.T. -0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

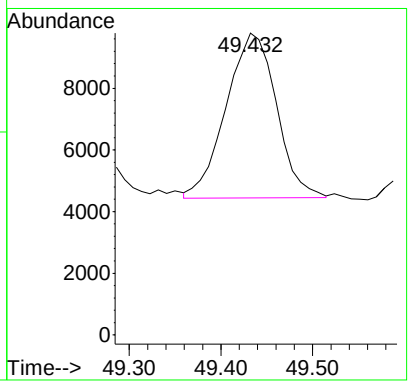
Tgt Ion:191 Resp: 32471

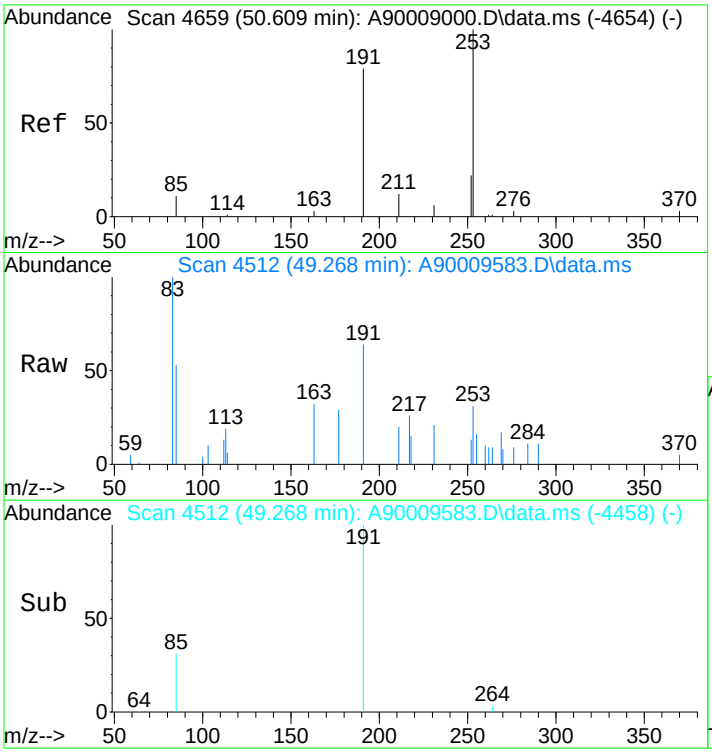




#110
17a/b,21b/a 28,30-Bisnorhopane (T14a)
Concen: 194.20 ng/ml m
RT: 49.432 min Scan# 4530
Delta R.T. -0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

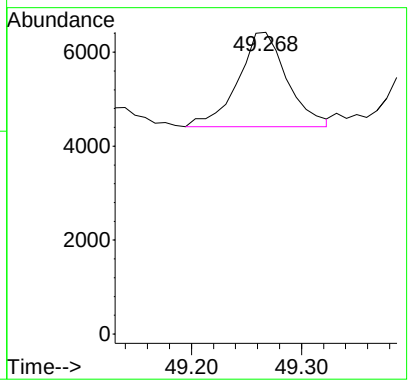
Tgt Ion:191 Resp: 20371

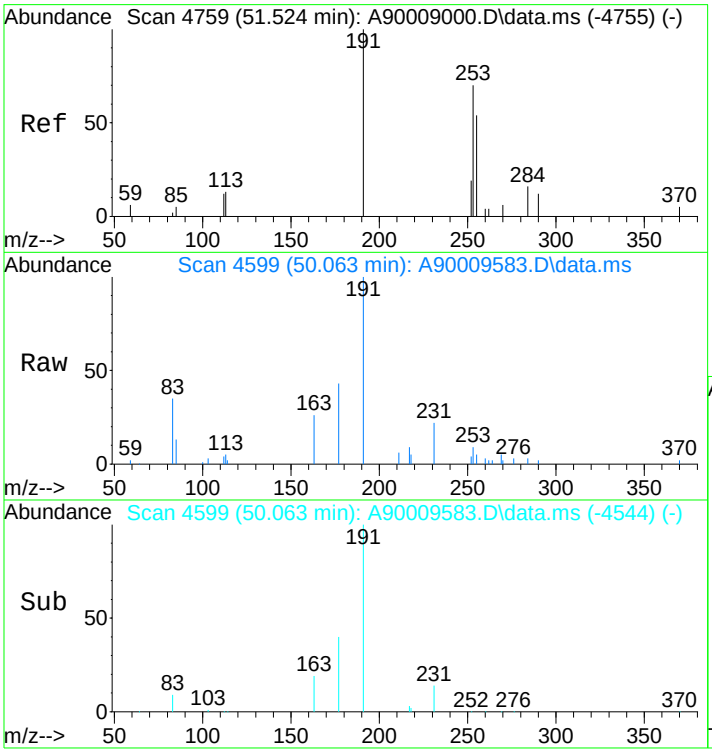




#111
17a(H),21b(H)-25-Norhopane (T14b)
Concen: 59.67 ng/ml
RT: 49.268 min Scan# 4512
Delta R.T. -0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

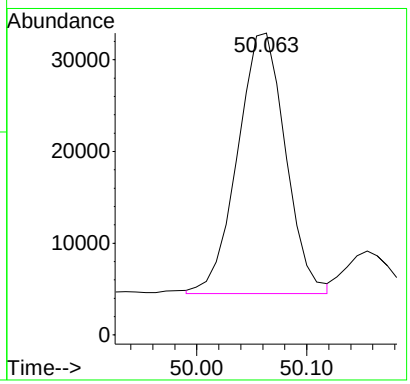
Tgt Ion:191 Resp: 6259

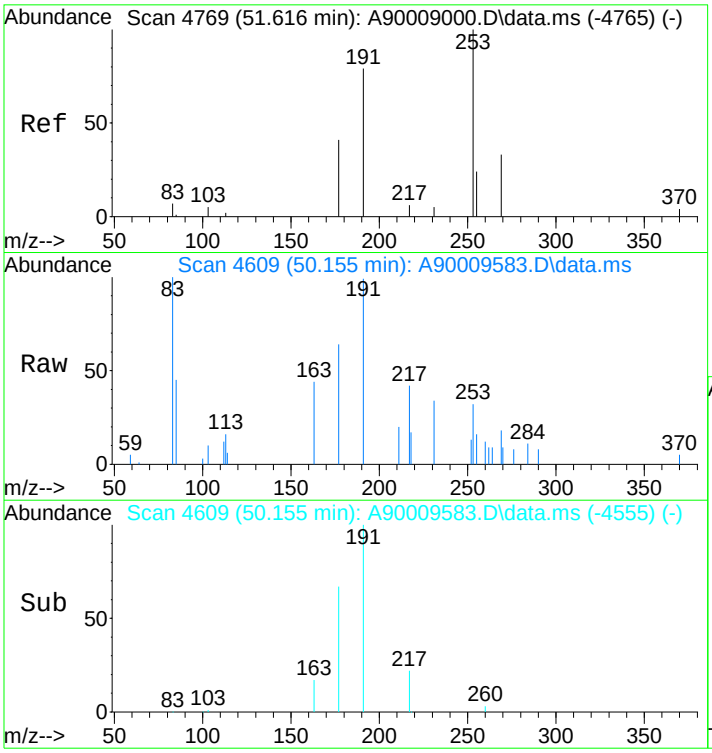




#112
30-Norhopane (T15)
Concen: 819.28 ng/ml m
RT: 50.063 min Scan# 4599
Delta R.T. 0.001 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

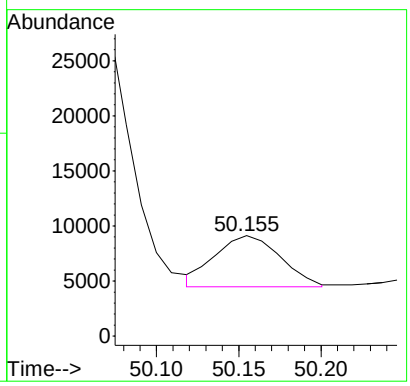
Tgt Ion:191 Resp: 85939

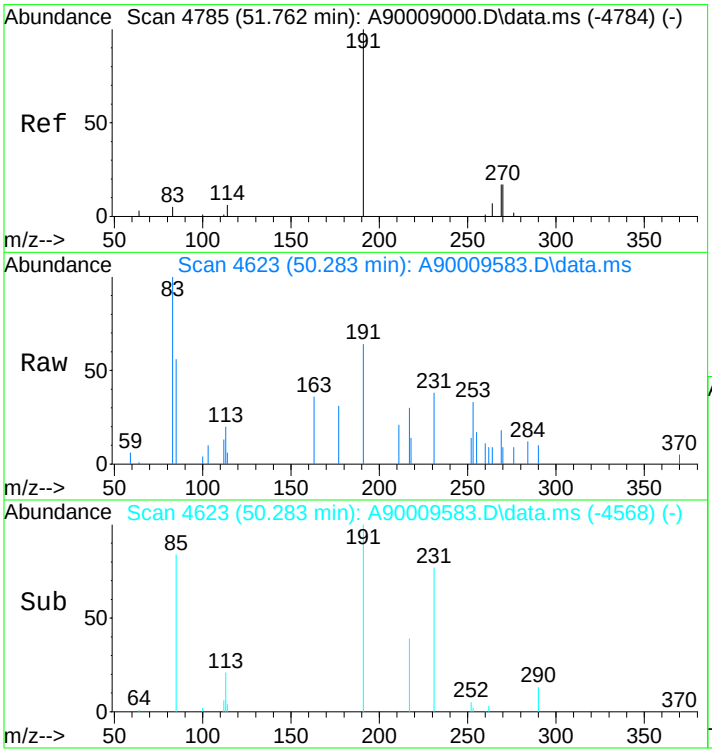




#113
18a(H)-30-Norneohopane-C29Ts (T16)
Concen: 122.25 ng/ml m
RT: 50.155 min Scan# 4609
Delta R.T. -0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

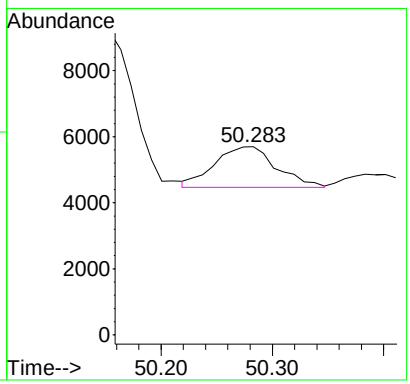
Tgt Ion:191 Resp: 12823

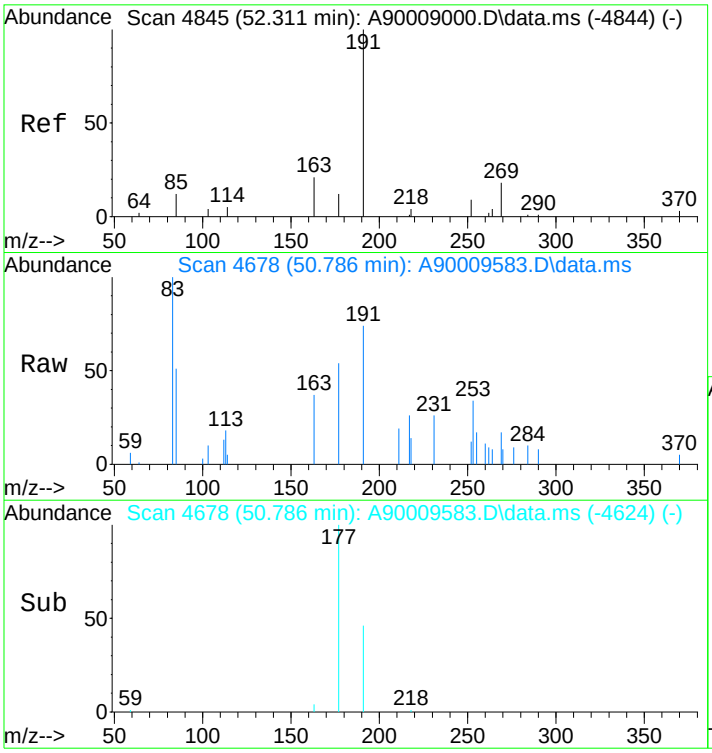




#114
17a(H)-Diahopane (X)
Concen: 44.92 ng/ml m
RT: 50.283 min Scan# 4623
Delta R.T. 0.001 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

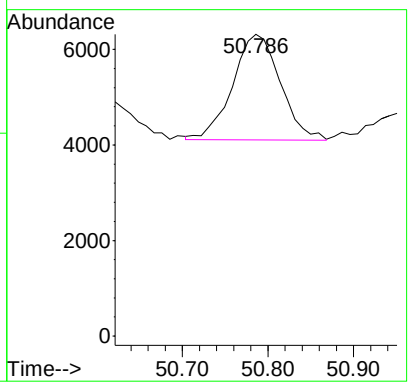
Tgt Ion:191 Resp: 4712

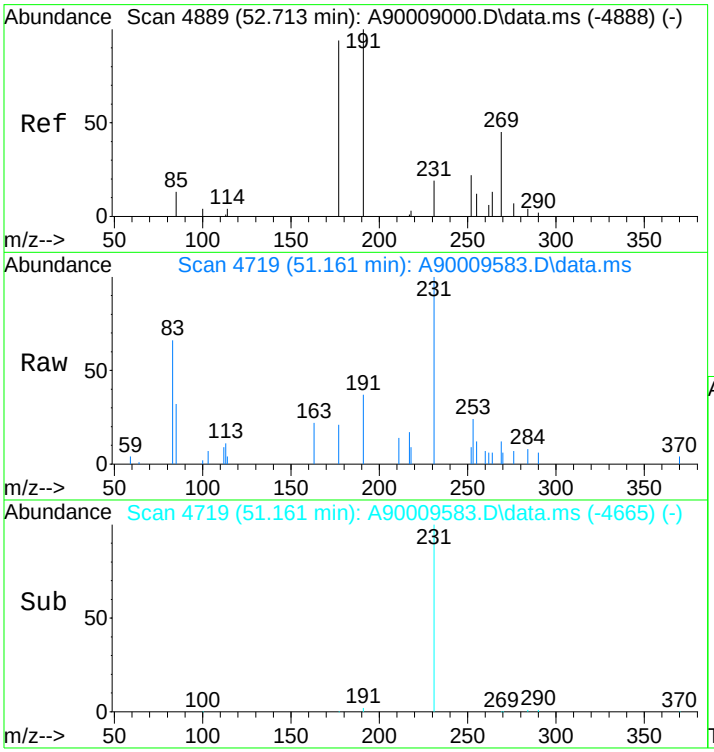




#115
30-Normoretane (T17)
Concen: 81.81 ng/ml
RT: 50.786 min Scan# 4678
Delta R.T. -0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

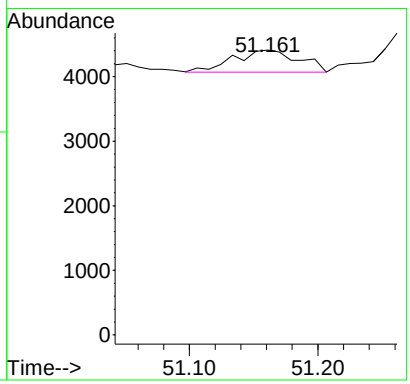
Tgt Ion:191 Resp: 8582

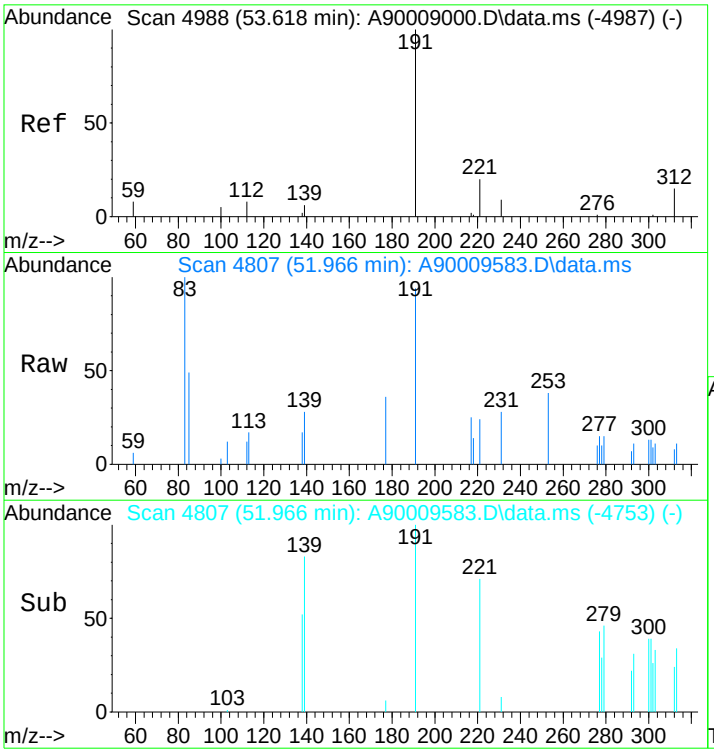




#116
18a(H)&18b(H)-Oleananes (T18)
Concen: 11.74 ng/ml
RT: 51.161 min Scan# 4719
Delta R.T. -0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

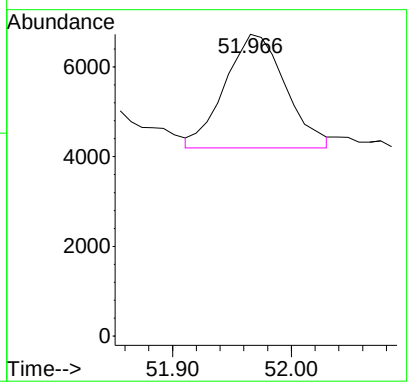
Tgt Ion:191 Resp: 1231

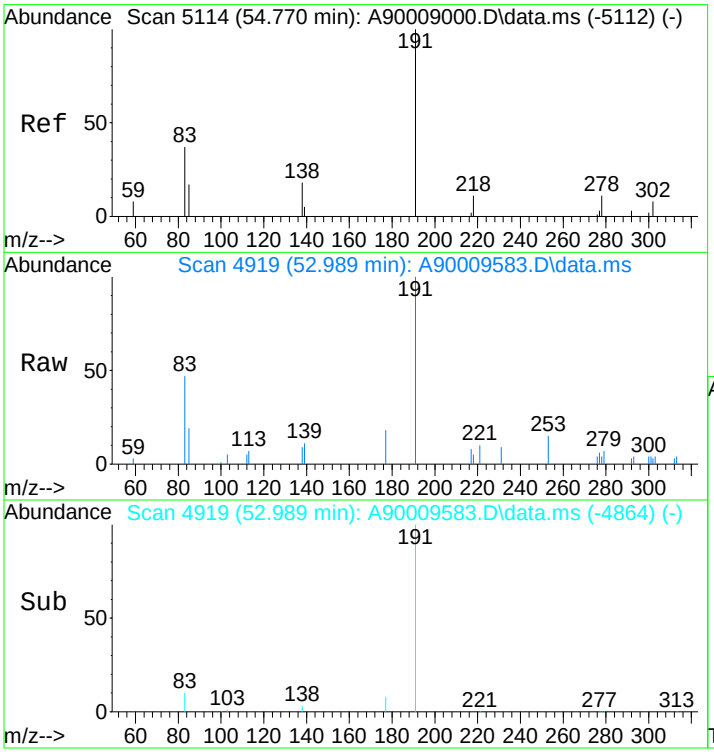




#117
Moretane (T20)
Concen: 85.29 ng/ml m
RT: 51.966 min Scan# 4807
Delta R.T. -0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

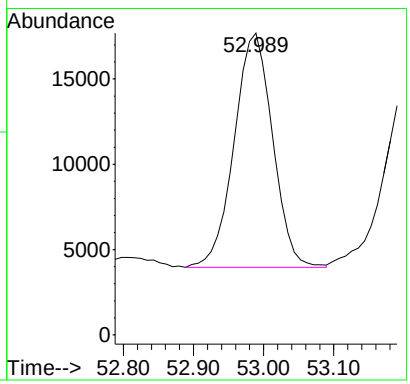
Tgt Ion:191 Resp: 8947

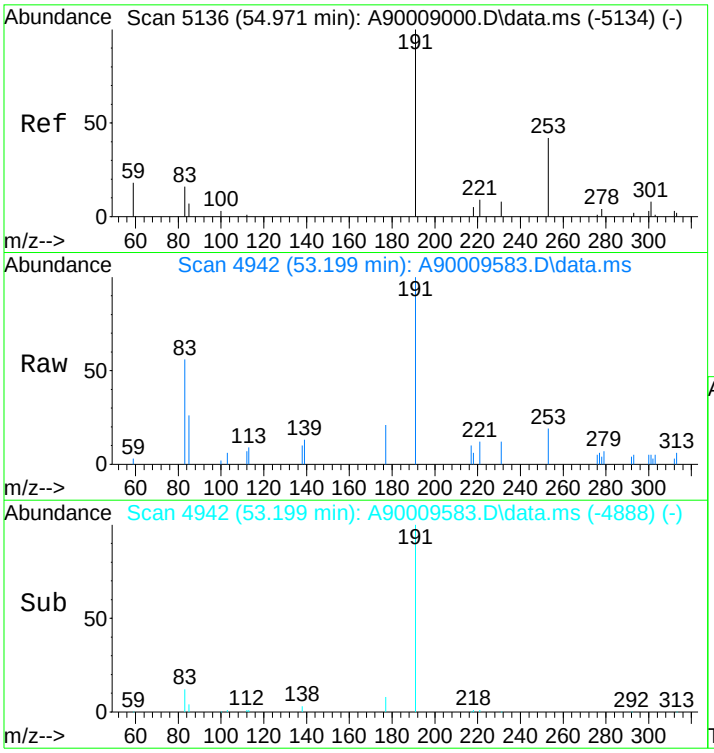




#118
30-Homohopane-22S (T21)
Concen: 500.22 ng/ml
RT: 52.989 min Scan# 4919
Delta R.T. 0.001 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

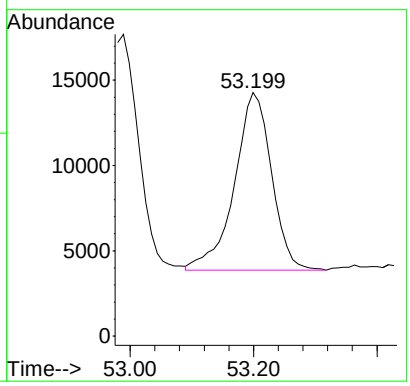
Tgt Ion:191 Resp: 52471

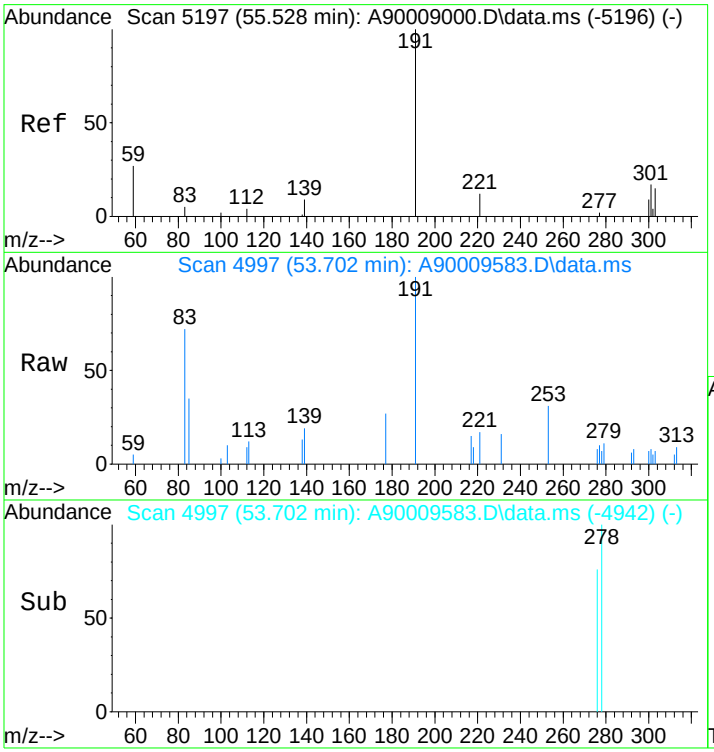




#119
30-Homohopane-22R (T22)
Concen: 413.53 ng/ml
RT: 53.199 min Scan# 4942
Delta R.T. -0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

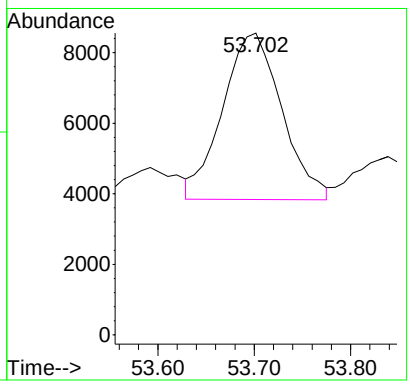
Tgt Ion:191 Resp: 43378

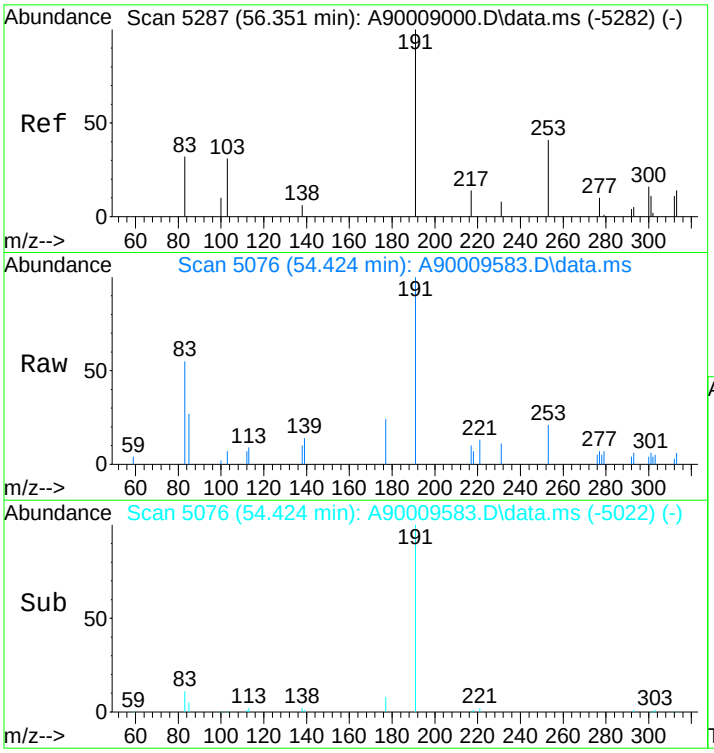




#120
Gammacerane/C32-diahopane
Concen: 191.59 ng/mL
RT: 53.702 min Scan# 4997
Delta R.T. 0.001 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

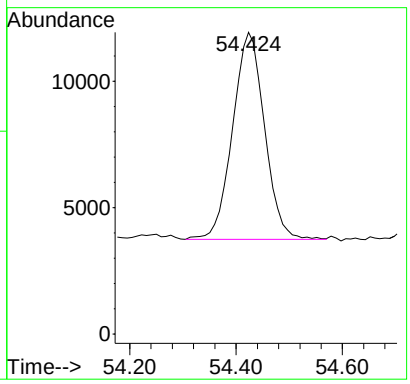
Tgt Ion:191 Resp: 20097

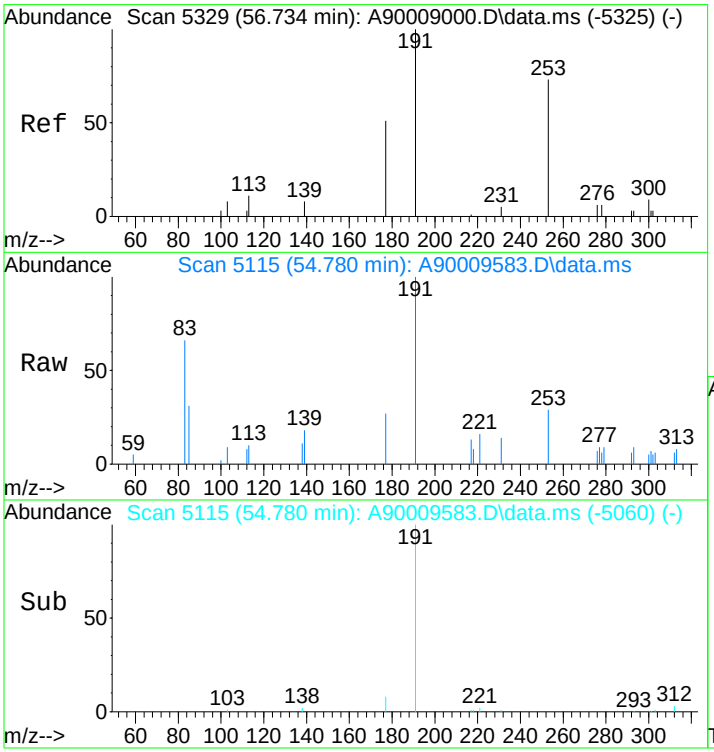




#121
30,31-Bishomohopane-22S (T26)
Concen: 326.08 ng/ml
RT: 54.424 min Scan# 5076
Delta R.T. -0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

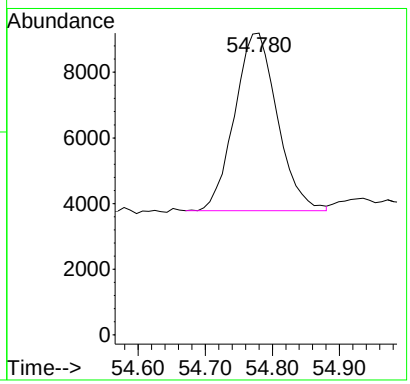
Tgt Ion:191 Resp: 34204

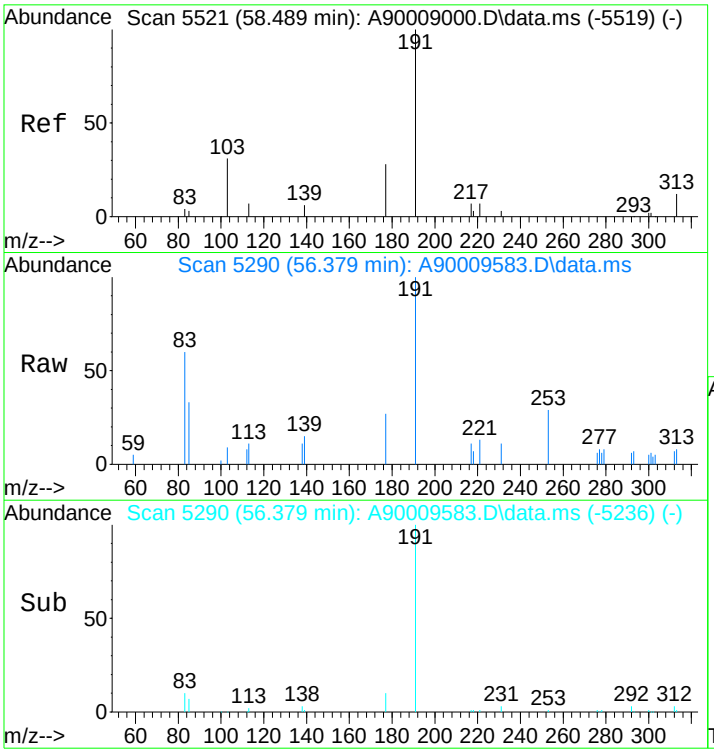




#122
30,31-Bishomohopane-22R (T27)
Concen: 227.66 ng/ml
RT: 54.780 min Scan# 5115
Delta R.T. 0.001 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

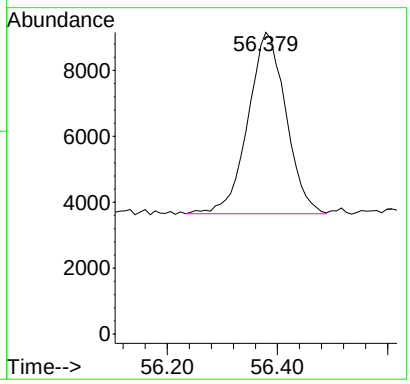
Tgt Ion:191 Resp: 23881

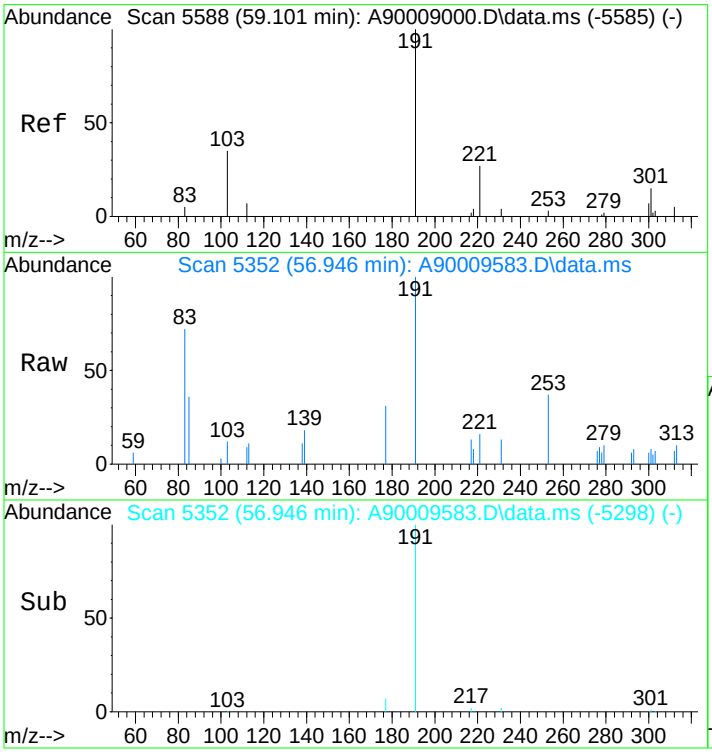




#123
30,31-Trishomohopane-22S (T30)
Concen: 250.16 ng/ml
RT: 56.379 min Scan# 5290
Delta R.T. -0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

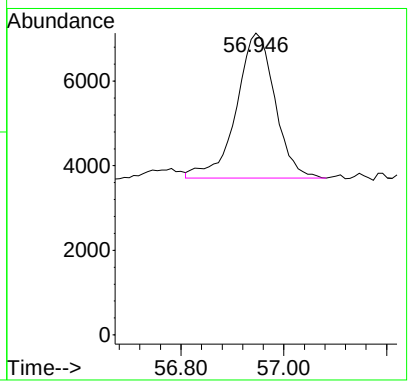
Tgt Ion:191 Resp: 26241

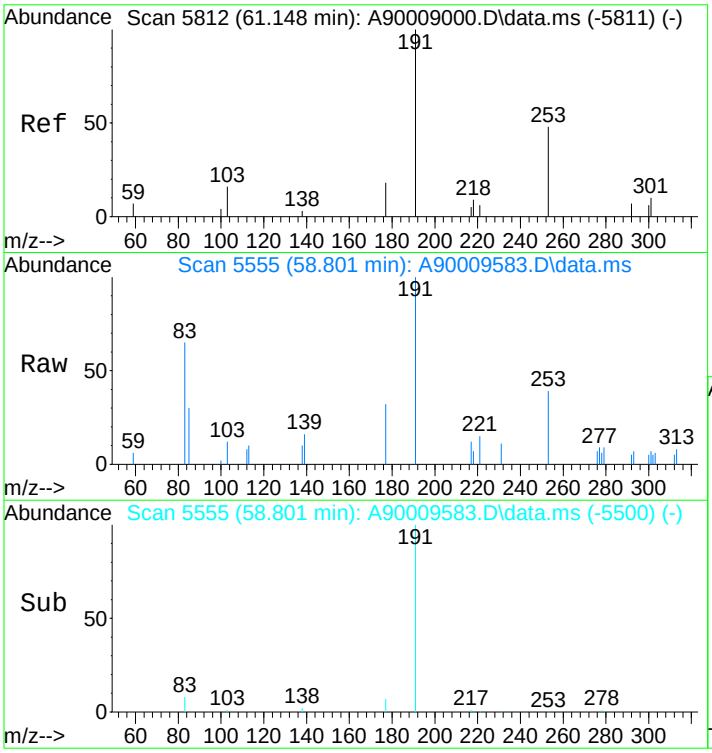




#124
30,31-Trishomohopane-22R (T31)
Concen: 169.30 ng/ml
RT: 56.946 min Scan# 5352
Delta R.T. -0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

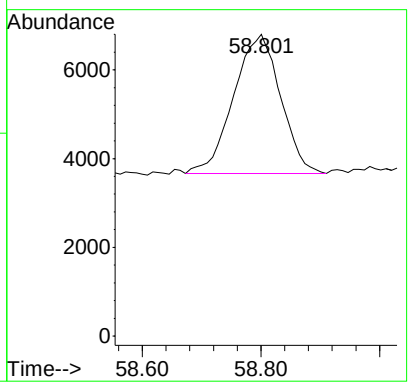
Tgt Ion:191 Resp: 17759

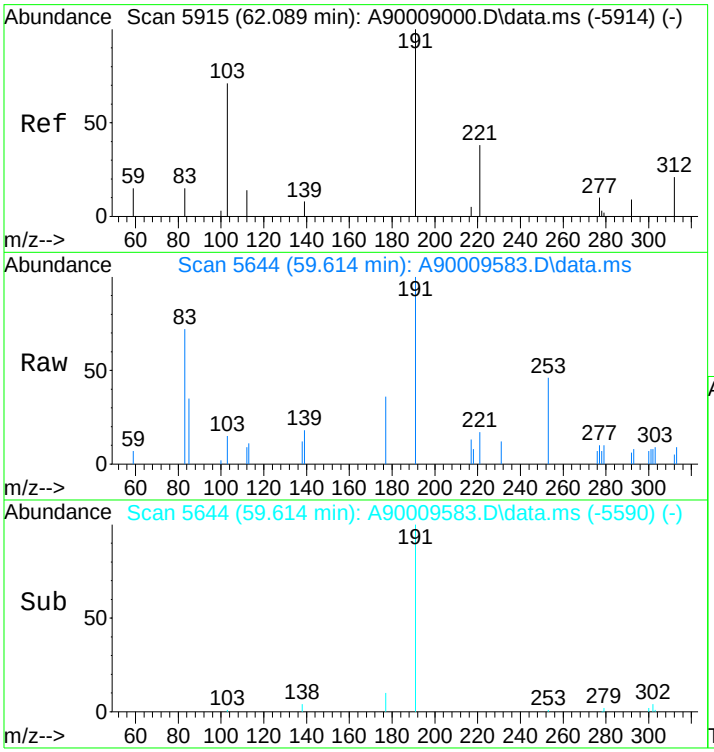




#125
Tetrakishomohopane-22S (T32)
Concen: 164.04 ng/ml
RT: 58.801 min Scan# 5555
Delta R.T. 0.001 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

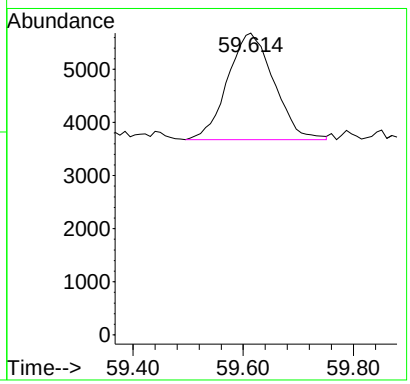
Tgt Ion:191 Resp: 17207

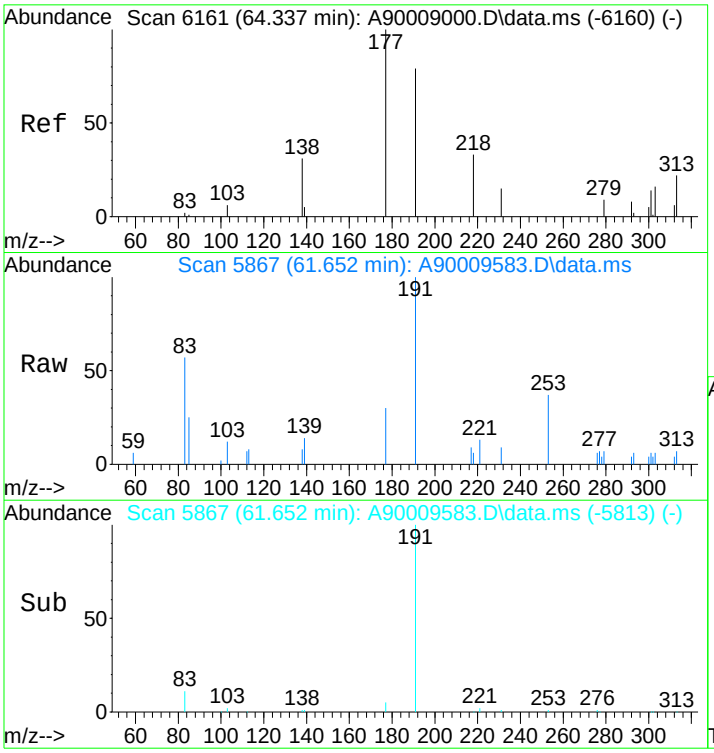




#126
Tetrakishomohopane-22R (T33)
Concen: 112.15 ng/ml
RT: 59.614 min Scan# 5644
Delta R.T. -0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

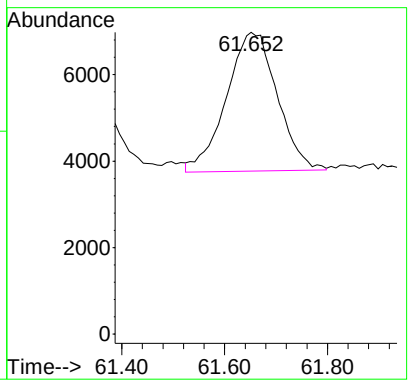
Tgt Ion:191 Resp: 11764

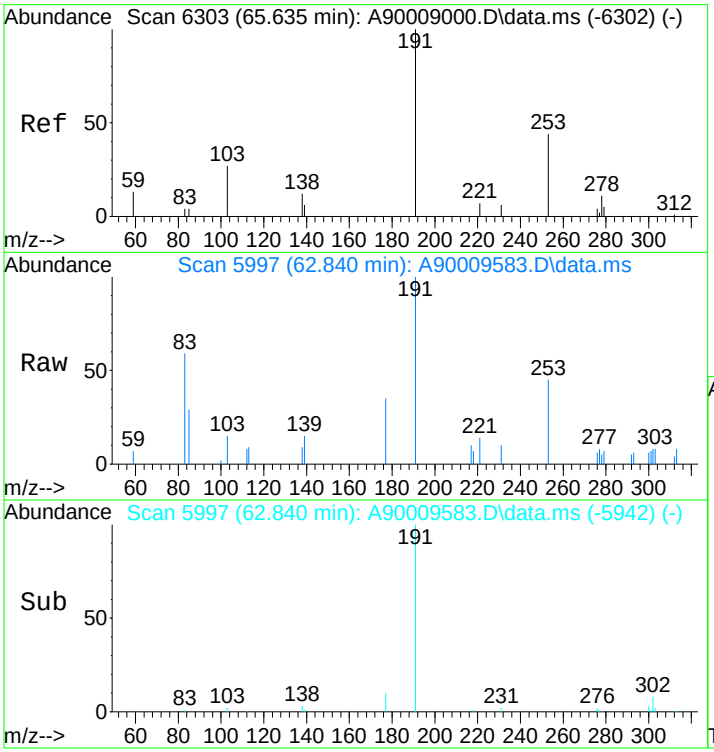




#127
Pentakishomohopane-22S (T34)
Concen: 209.79 ng/ml
RT: 61.652 min Scan# 5867
Delta R.T. -0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

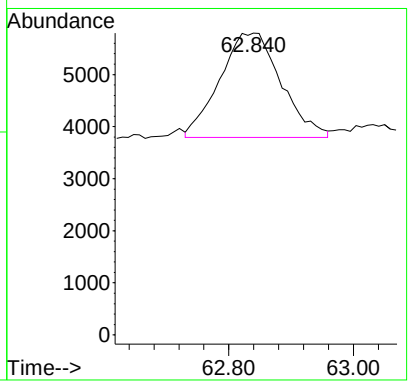
Tgt Ion:191 Resp: 22006

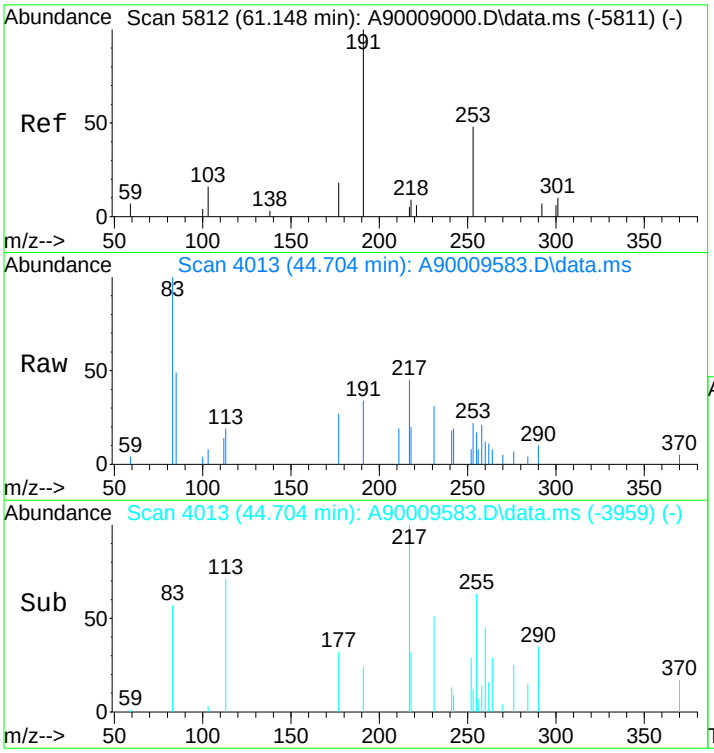




#128
Pentakishomohopane-22R (T35)
Concen: 130.96 ng/ml m
RT: 62.840 min Scan# 5997
Delta R.T. 0.001 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

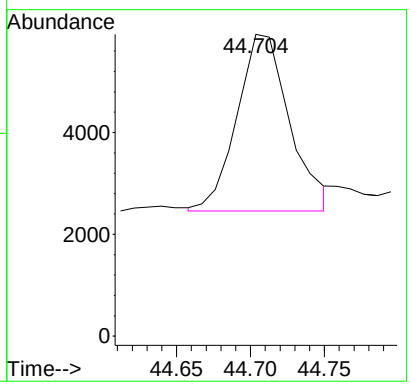
Tgt Ion:191 Resp: 13737

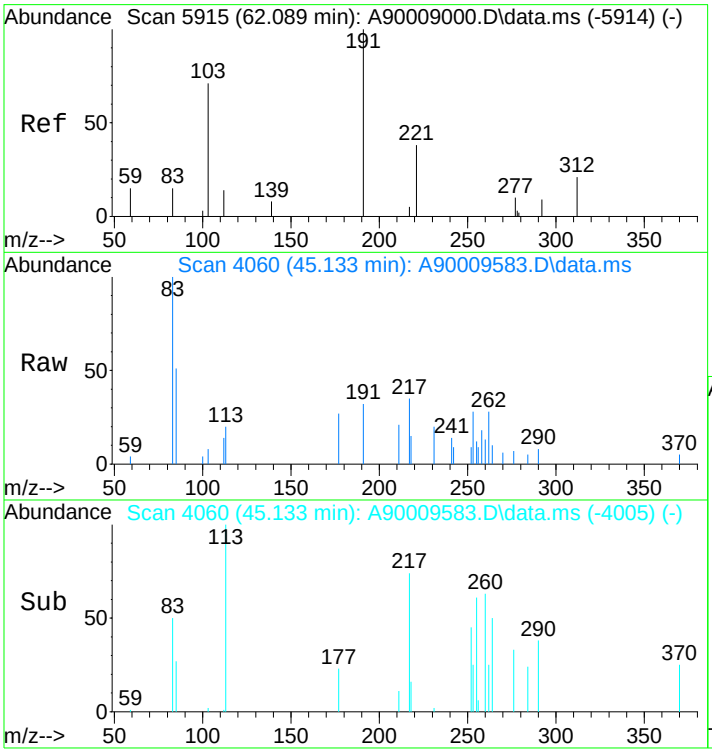




#130
13b(H),17a(H)-20S-Diacholestane (S4)
Concen: 171.64 ng/ml m
RT: 44.704 min Scan# 4013
Delta R.T. -0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

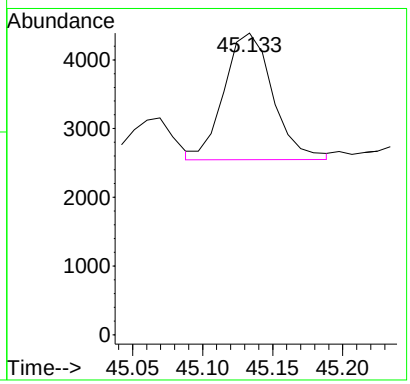
Tgt Ion:217 Resp: 8597

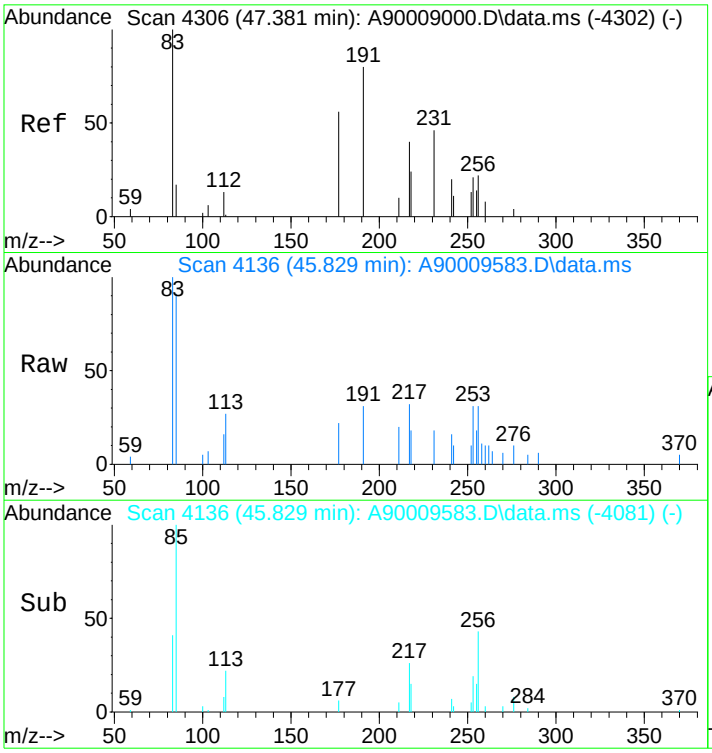




#131
13b(H),17a(H)-20R-Diacholestane (S5)
Concen: 88.84 ng/ml
RT: 45.133 min Scan# 4060
Delta R.T. 0.001 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

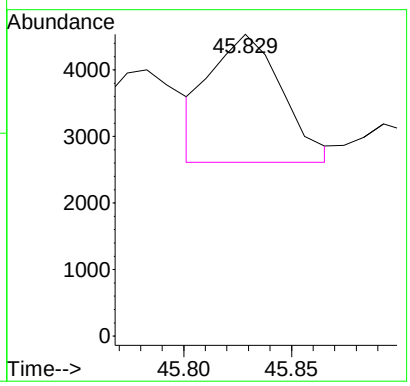
Tgt Ion:217 Resp: 4450

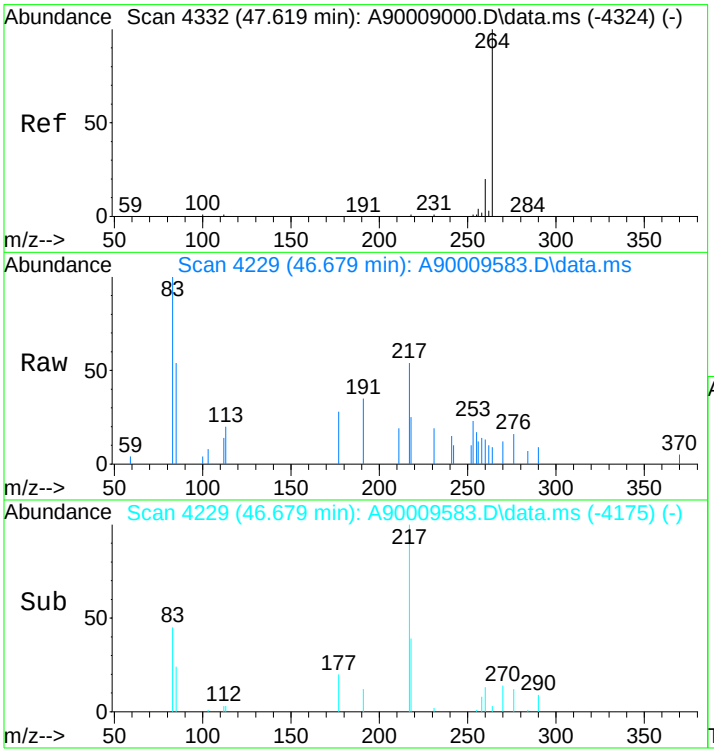




#132
13b,17a-20S-Methyldiacholestane (S8)
Concen: 88.13 ng/ml m
RT: 45.829 min Scan# 4136
Delta R.T. 0.001 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

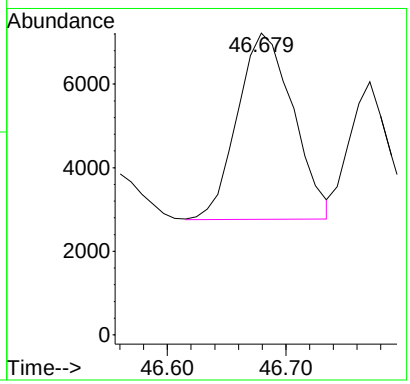
Tgt Ion:217 Resp: 4414

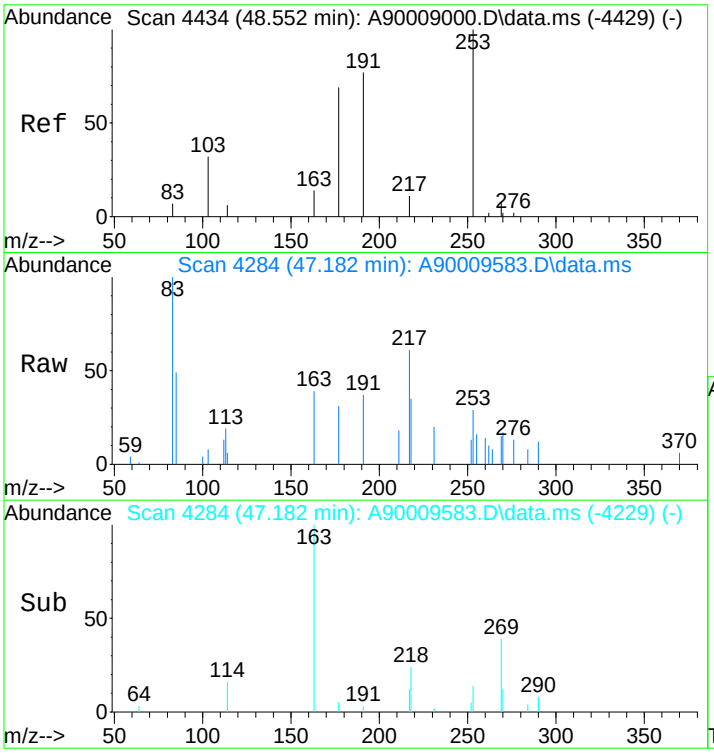




#133
14a,17a-20S-Chol/13b,17a-20S-Ethyldiach
Concen: 290.75 ng/ml
RT: 46.679 min Scan# 4229
Delta R.T. -0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

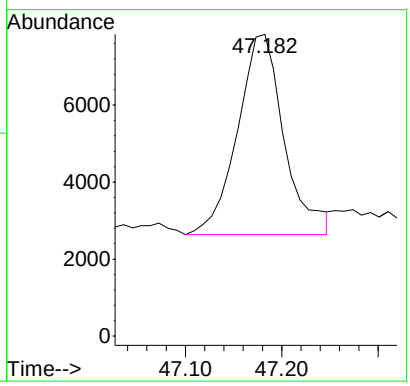
Tgt Ion:217 Resp: 14563

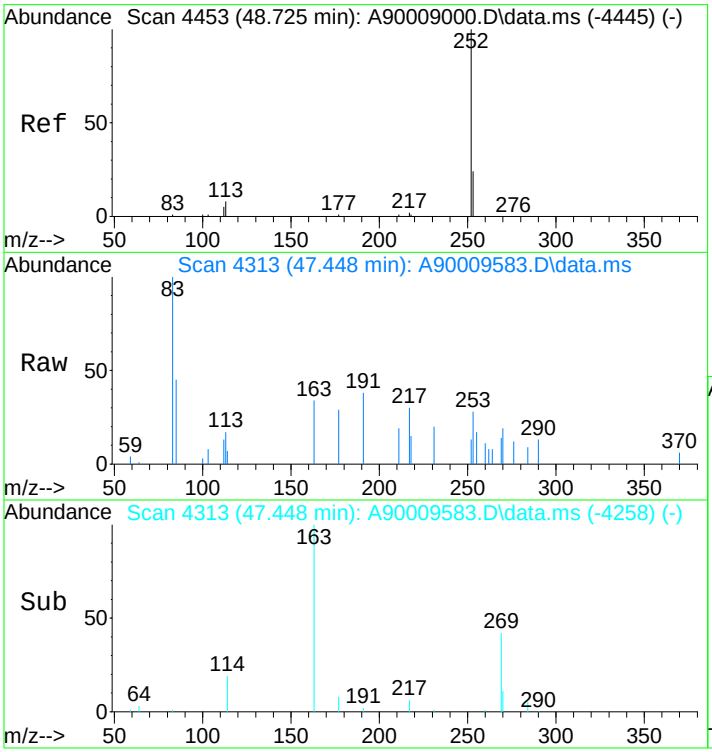




#134
14a,17a-20R-Chol/13b,17a-20R-Ethyldiach
Concen: 349.95 ng/ml
RT: 47.182 min Scan# 4284
Delta R.T. 0.001 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

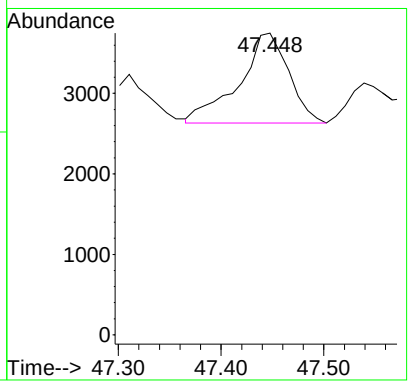
Tgt Ion:217 Resp: 17528

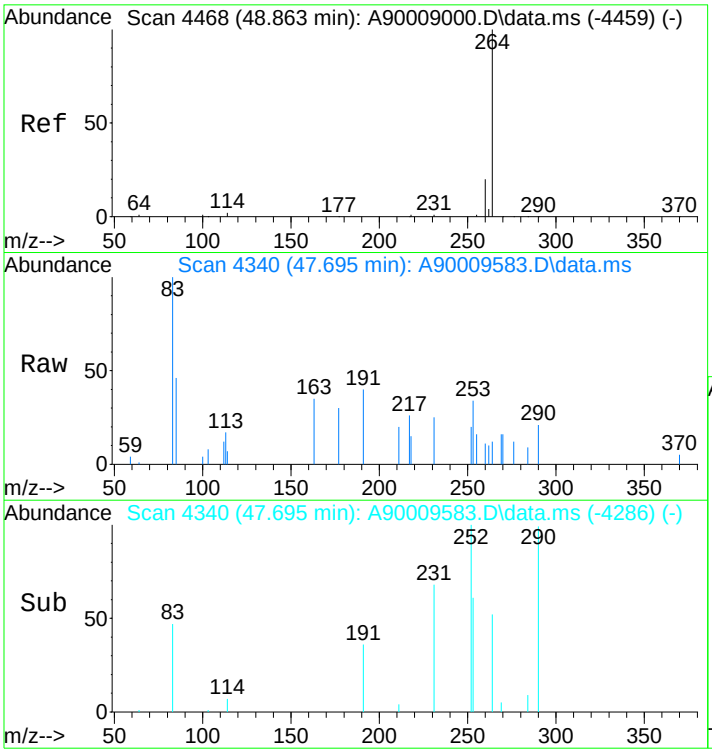




#135
Unknown Sterane (S18)
Concen: 74.61 ng/ml
RT: 47.448 min Scan# 4313
Delta R.T. 0.001 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

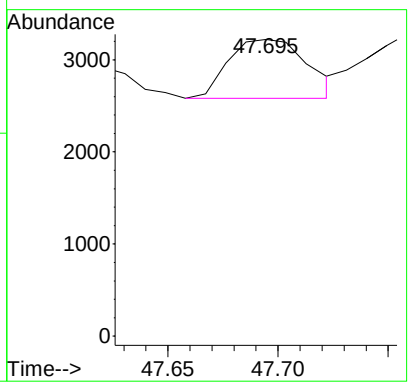
Tgt Ion:217 Resp: 3737

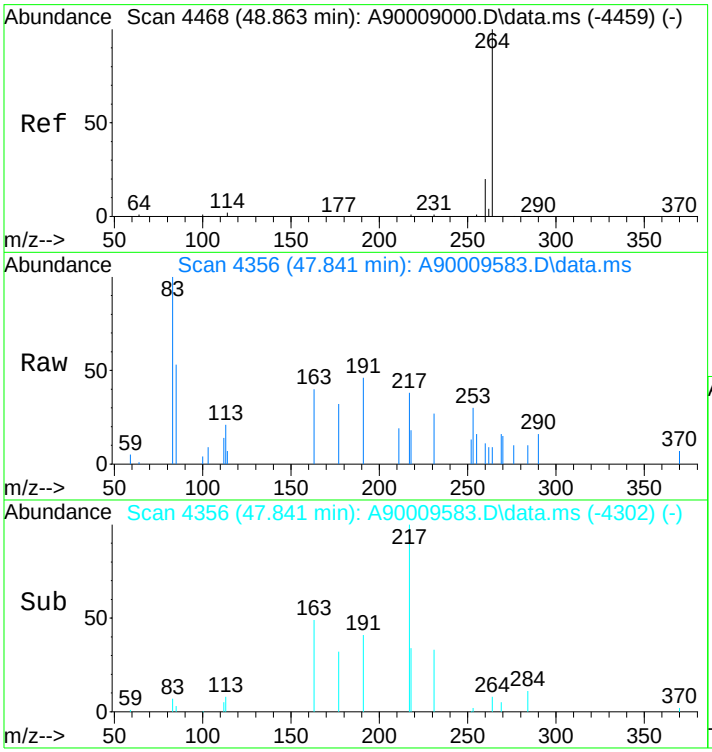




#136
13a,17b-20S-Ethyldiacholestane (S19)
Concen: 31.86 ng/ml
RT: 47.695 min Scan# 4340
Delta R.T. -0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

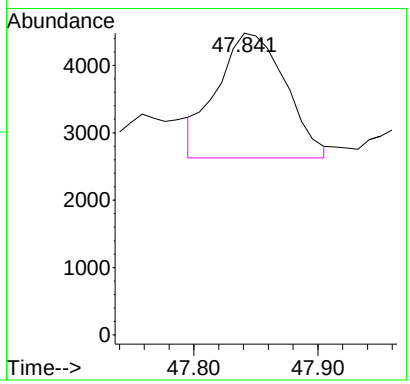
Tgt Ion:217 Resp: 1596

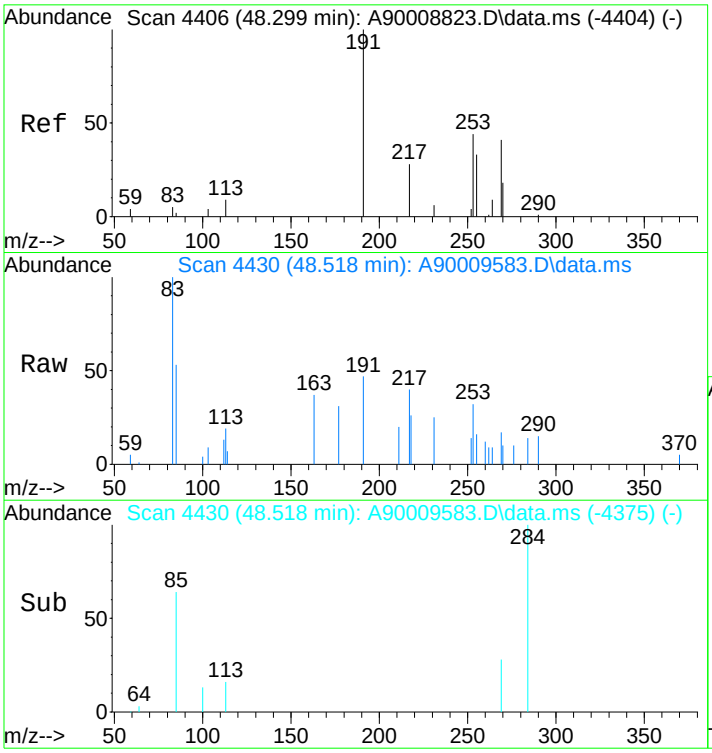




#137
14a,17a-20S-Methylcholestane (S20)
Concen: 141.57 ng/ml m
RT: 47.841 min Scan# 4356
Delta R.T. -0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

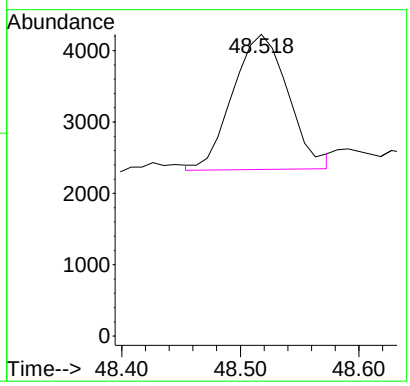
Tgt Ion:217 Resp: 7091

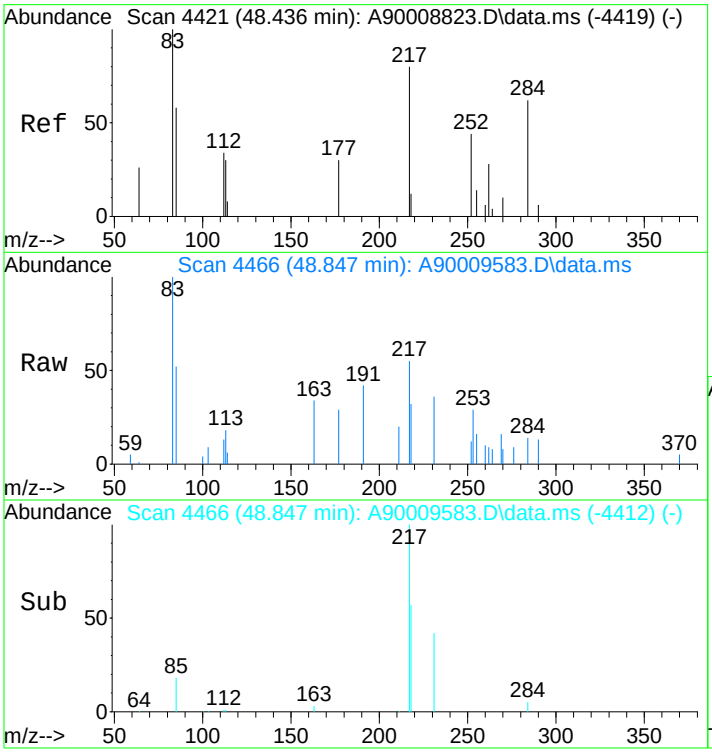




#138
14a,17a-20R-Methylcholestane (S24)
Concen: 122.71 ng/ml
RT: 48.518 min Scan# 4430
Delta R.T. 0.001 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

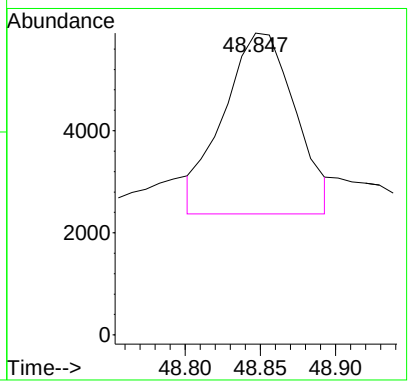
Tgt Ion:217 Resp: 6146

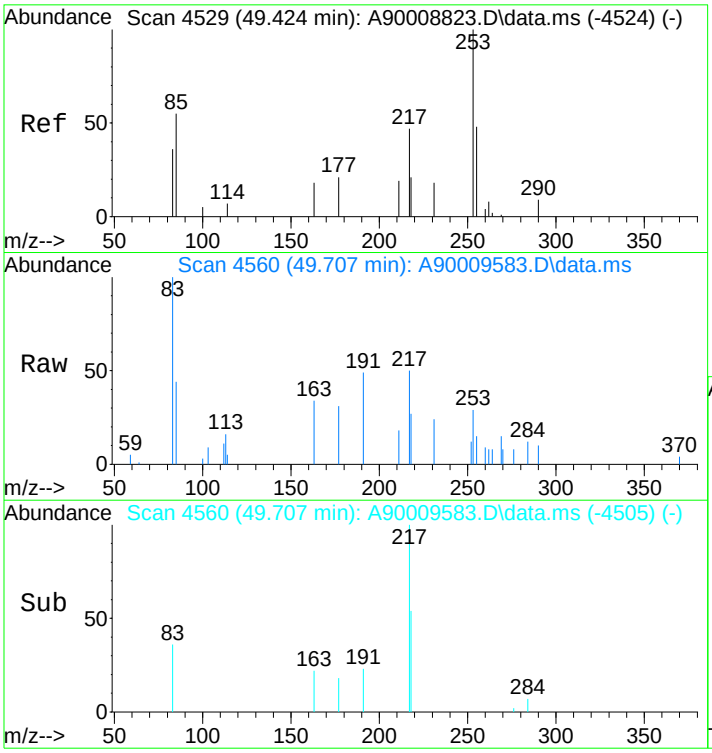




#139
14a(H),17a(H)-20S-Ethylcholestane (S25)
Concen: 234.93 ng/ml m
RT: 48.847 min Scan# 4466
Delta R.T. -0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

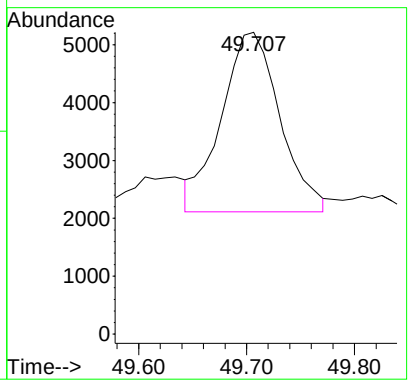
Tgt Ion:217 Resp: 11767

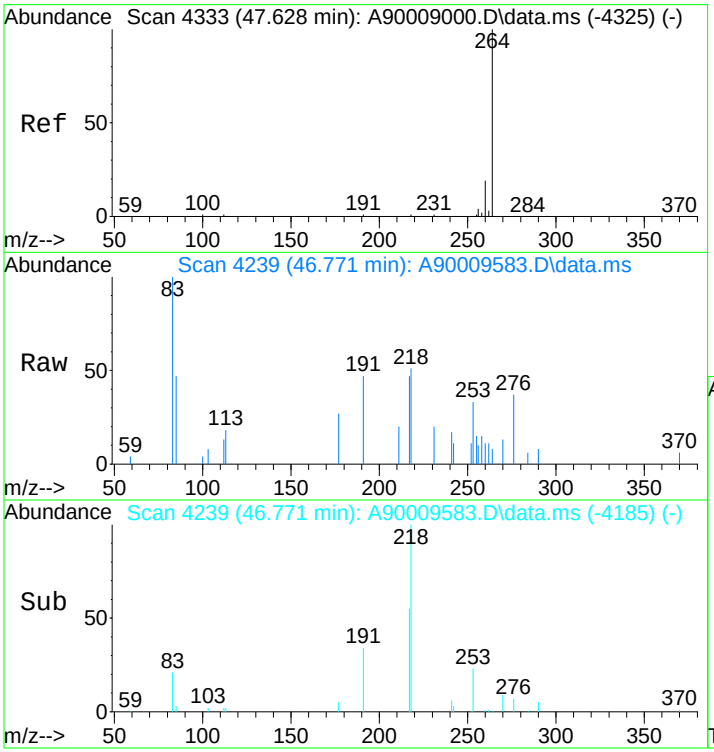




#140
14a(H),17a(H)-20R-Ethylcholestane (S28)
Concen: 233.69 ng/ml m
RT: 49.707 min Scan# 4560
Delta R.T. 0.001 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

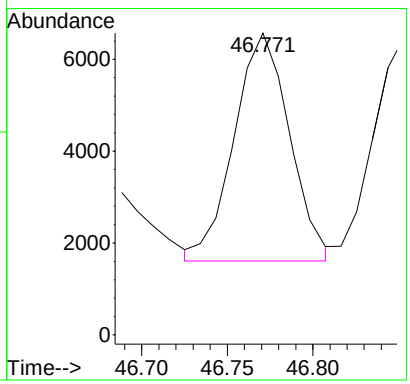
Tgt Ion:217 Resp: 11705

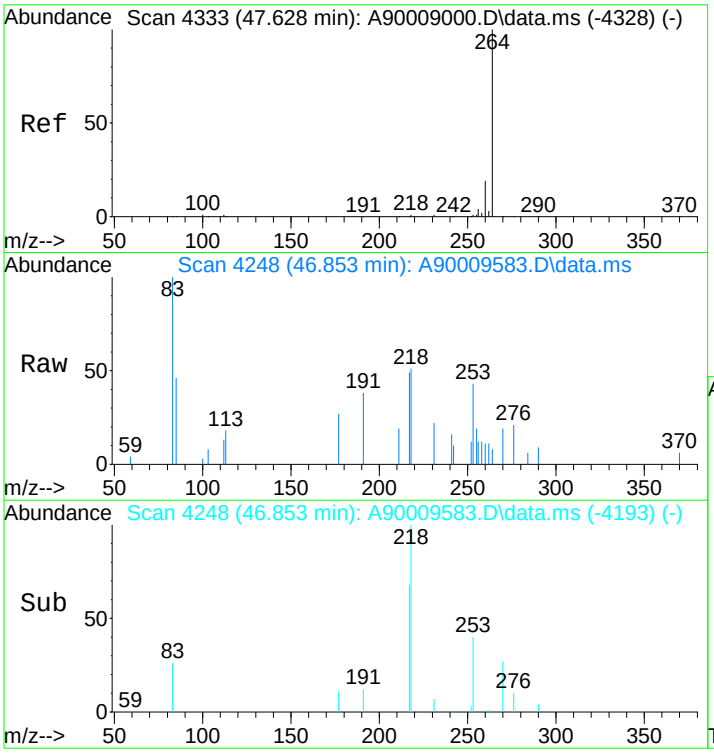




#141
14b(H),17b(H)-20R-Cholestane (S14)
Concen: 223.71 ng/ml m
RT: 46.771 min Scan# 4239
Delta R.T. -0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

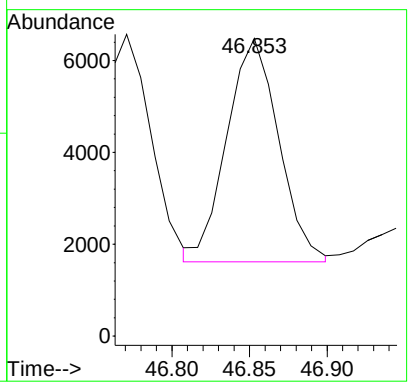
Tgt Ion:218 Resp: 11205

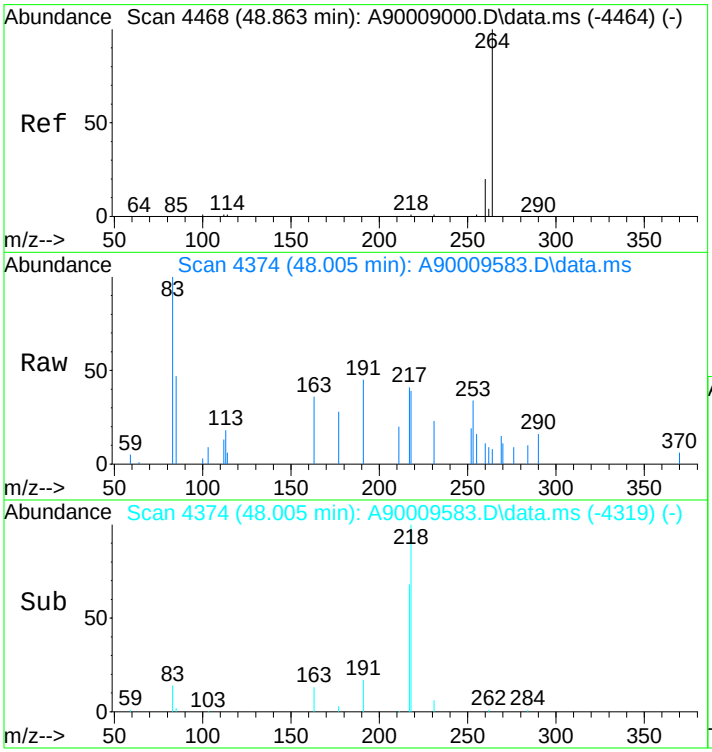




#142
14b(H),17b(H)-20S-Cholestane (S15)
Concen: 224.95 ng/ml m
RT: 46.853 min Scan# 4248
Delta R.T. 0.001 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

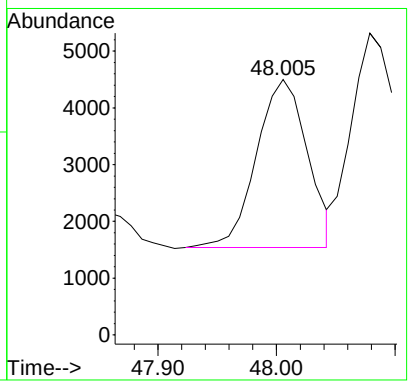
Tgt Ion:218 Resp: 11267

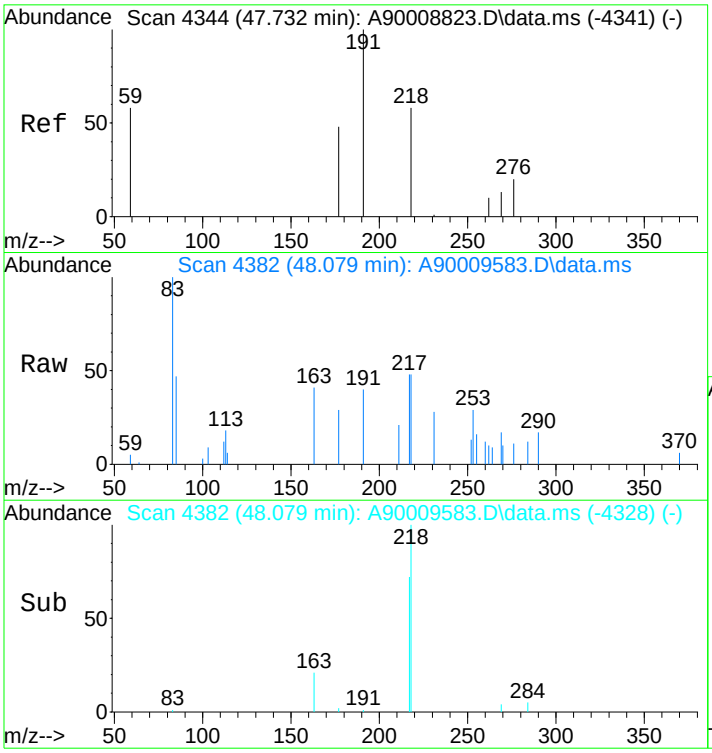




#143
14b,17b-20R-Methylcholestane (S22)
Concen: 176.89 ng/ml
RT: 48.005 min Scan# 4374
Delta R.T. 0.001 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

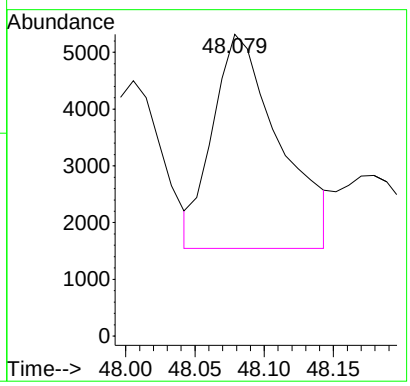
Tgt Ion:218 Resp: 8860

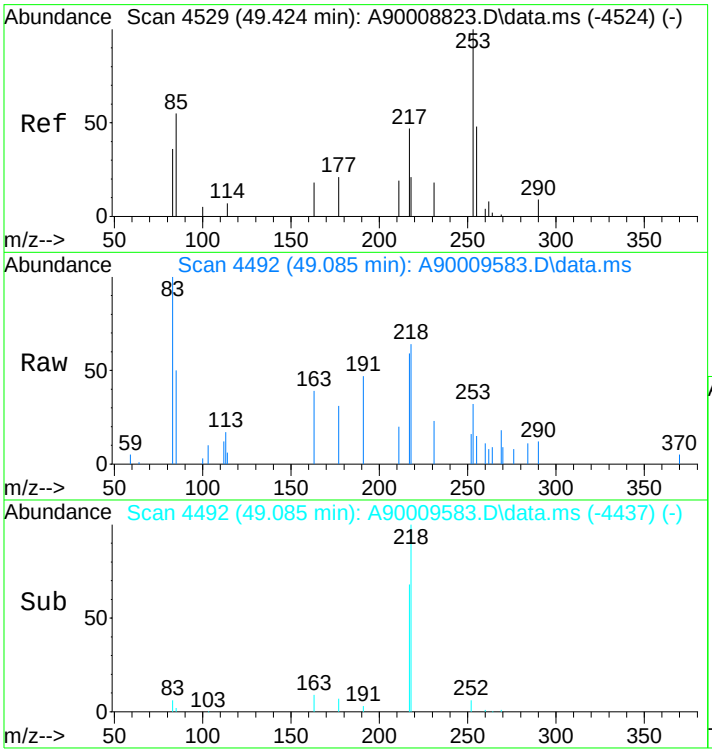




#144
14b,17b-20S-Methylcholestane (S23)
Concen: 253.02 ng/ml m
RT: 48.079 min Scan# 4382
Delta R.T. -0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

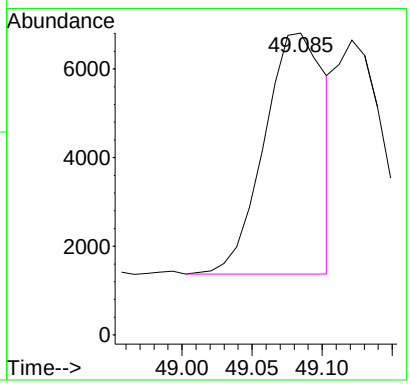
Tgt Ion:218 Resp: 12673

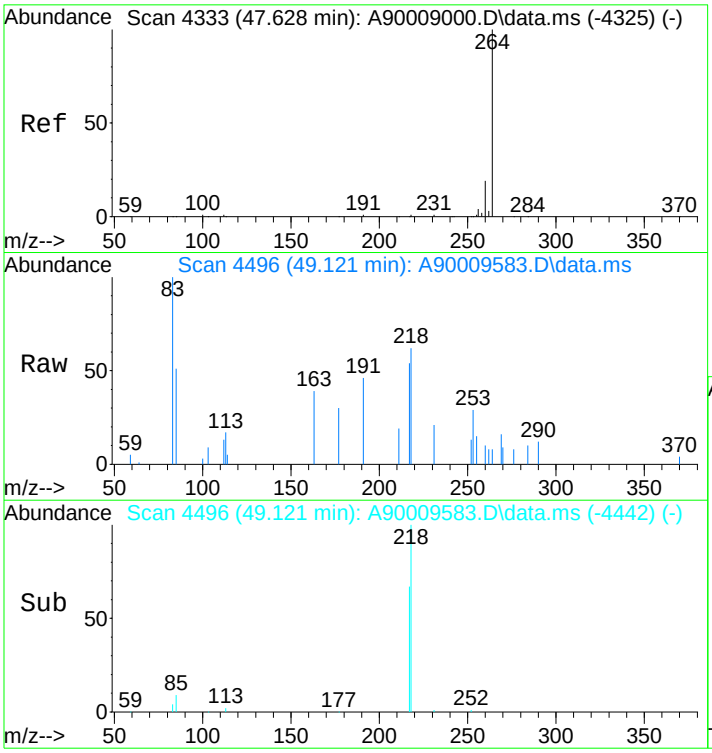




#145
14b(H),17b(H)-20R-Ethylcholestane (S26)
Concen: 326.17 ng/ml
RT: 49.085 min Scan# 4492
Delta R.T. 0.001 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

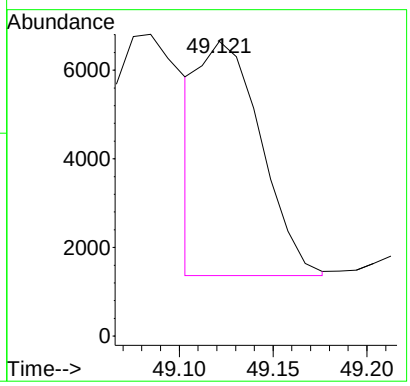
Tgt Ion:218 Resp: 16337

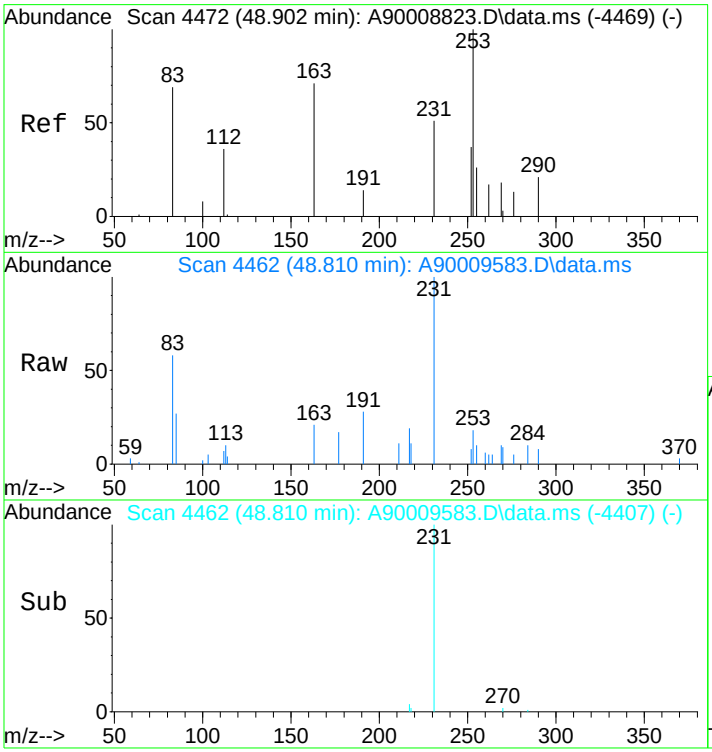




#146
14b(H),17b(H)-20S-Ethylcholestane (S27)
Concen: 243.97 ng/ml m
RT: 49.121 min Scan# 4496
Delta R.T. -0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

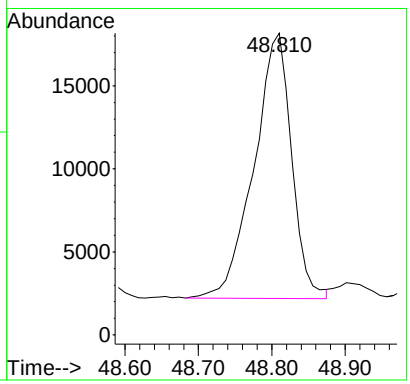
Tgt Ion:218 Resp: 12220

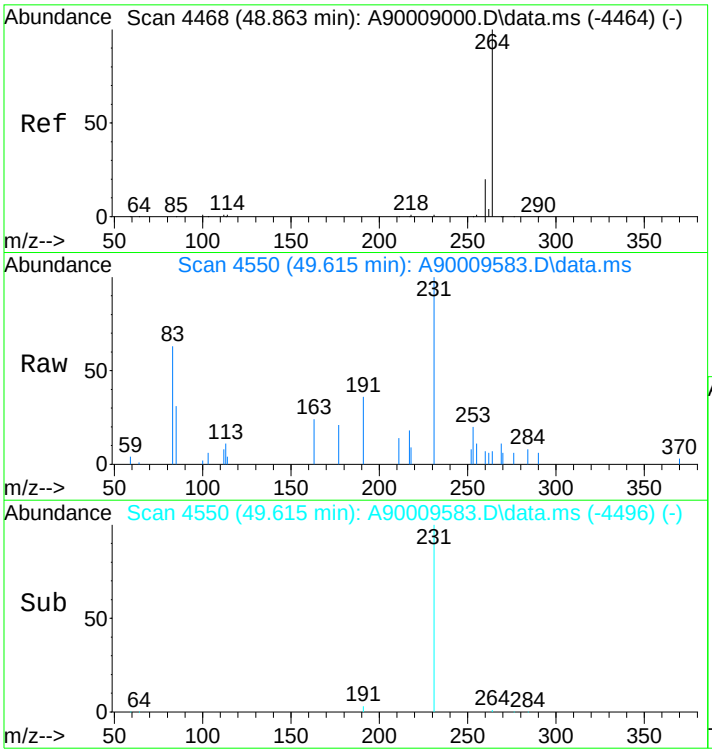




#147
C26,20R- +C27,20S- triaromatic steroid
Concen: 1143.24 ng/mL
RT: 48.810 min Scan# 4462
Delta R.T. 0.001 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

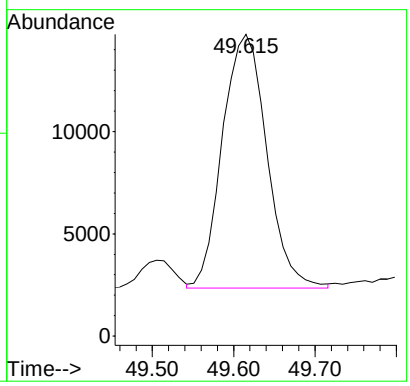
Tgt Ion:231 Resp: 57262

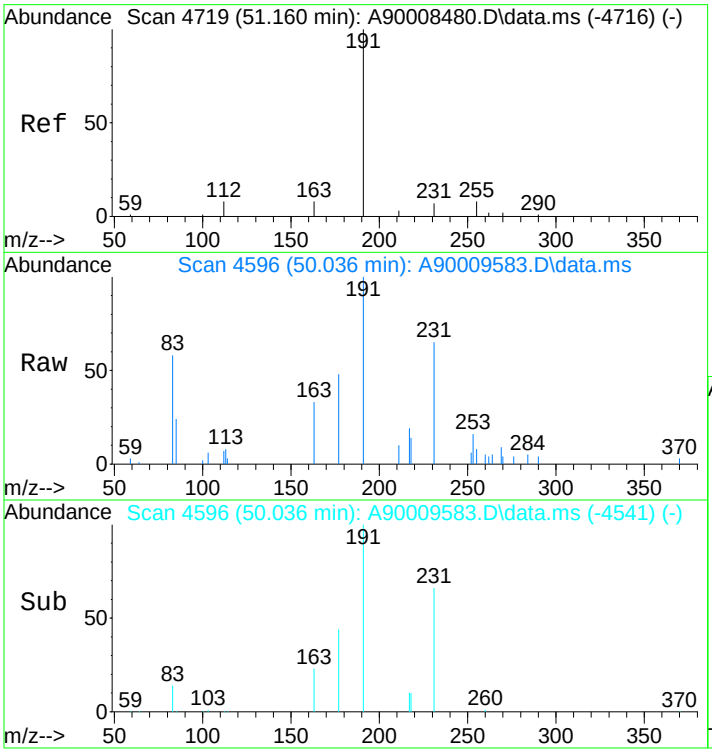




#148
C28,20S-triaromatic steroid
Concen: 938.88 ng/mL m
RT: 49.615 min Scan# 4550
Delta R.T. -0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

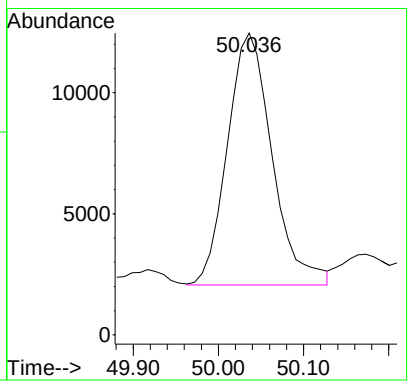
Tgt Ion:231 Resp: 47026

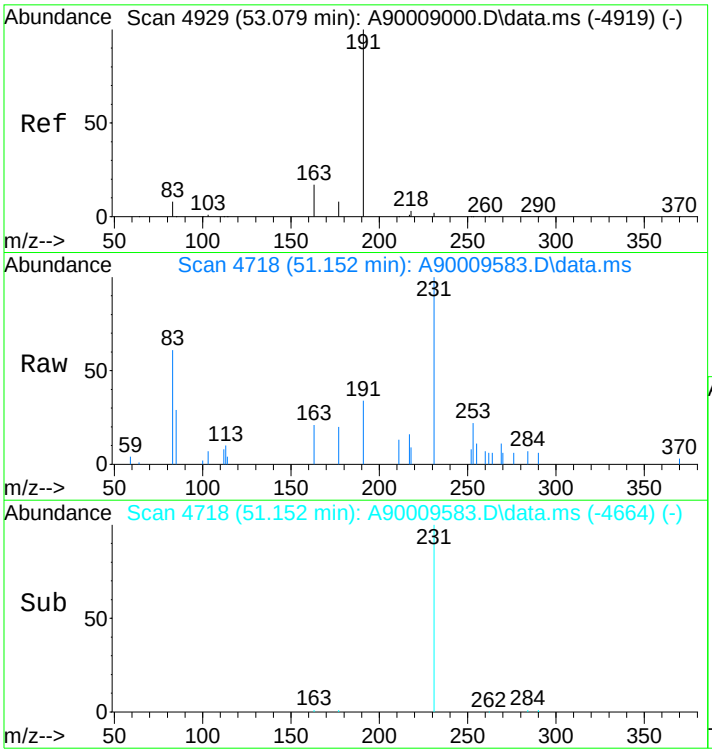




#149
C27,20R-triaromatic steroid
Concen: 757.88 ng/mL m
RT: 50.036 min Scan# 4596
Delta R.T. 0.000 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

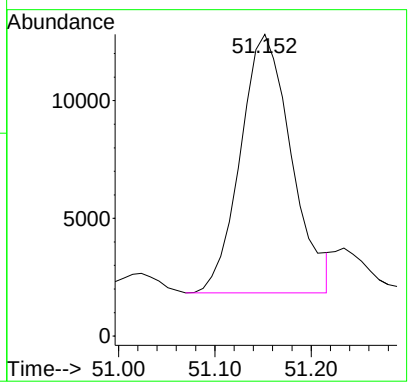
Tgt Ion:231 Resp: 37960





#150
C28,20R-triaromatic steroid
Concen: 807.85 ng/mL
RT: 51.152 min Scan# 4718
Delta R.T. -0.009 min
Lab File: A90009583.D
Acq: 23 Dec 2012 12:30 am

Tgt Ion:231 Resp: 40463



Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009586.D
Acq On : 23 Dec 2012 4:44 am
Operator : ps
Sample : 1212022-01
Misc : 1X
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Dec 27 16:07:18 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.156	164	68487	500.000	ng/mL	0.00
74) Chrysene-d12	42.558	240	128108	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.230	136	421932	1602.871	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 160.29%#			
42) Phenanthrene-d10	31.995	188	509401	2062.134	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 206.21%#			
83) Benzo[b]fluoranthene-d12	46.451	264	466155	1979.536	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 197.95%#			
88) Benzo[a]pyrene-d12	47.576	264	444729	1883.962	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 188.40%#			
129) 5B(H)Cholane - Surr	43.188	217	110303	2051.008	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 205.10%#			
Target Compounds						Qvalue
3) trans-Decalin	15.899	138	149M4	2.475	ng/mL	
5) C1-Decalins	17.824	152	540M5	8.969	ng/mL	
6) C2-Decalins	19.138	166	1438M5	23.883	ng/mL	
7) C3-Decalins	21.593	180	1378M5	22.886	ng/mL	
8) C4-Decalins	24.960	194	2247M5	37.319	ng/mL	
10) Naphthalene	19.303	128	49796	184.339	ng/mL#	100
11) C1-Naphthalenes	21.995	142	17588M5	65.109	ng/mL	
12) C2-Naphthalenes	24.814	156	45885M5	169.861	ng/mL	
13) C3-Naphthalenes	27.141	170	88078M5	326.055	ng/mL	
14) C4-Naphthalenes	31.138	184	63342M5	234.485	ng/mL	
16) 2-Methylnaphthalene	21.995	142	11642	65.901	ng/mL#	100
17) 1-Methylnaphthalene	22.405	142	6232	36.351	ng/mL#	100
18) Benzothiophene	19.531	134	1986M4	8.785	ng/mL	
19) C1-Benzo(b)thiophenes	22.168	148	2121M5	9.382	ng/mL	
20) C2-Benzo(b)thiophenes	24.532	162	3276M5	14.492	ng/mL	
21) C3-Benzo(b)thiophenes	26.621	176	7990M5	35.344	ng/mL	
22) C4-Benzo(b)thiophenes	29.067	190	5826M5	25.772	ng/mL	
23) Biphenyl	23.865	154	12292	53.171	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.477	156	9866	59.411	ng/mL#	100
25) Dibenzofuran	26.931	168	20944M4	84.940	ng/mL	
26) Acenaphthylene	25.544	152	99005	356.279	ng/mL#	100
27) Acenaphthene	26.274	153	36335	207.962	ng/mL	100
28) 2,3,5-Trimethylnaphthalen	27.835	170	7369M3	48.266	ng/mL	
29) Fluorene	28.291	166	43034M4	224.287	ng/mL	
30) C1-Fluorenes	30.508	180	60749M5	316.615	ng/mL	
31) C2-Fluorenes	32.844	194	60330M5	314.431	ng/mL	
32) C3-Fluorenes	35.345	208	38359M5	199.921	ng/mL	
33) Dibenzothiophene	31.594	184	41815	154.929	ng/mL#	87
34) 4-Methyldibenzothiophene(	33.364	198	17246	63.898	ng/mL#	100
35) 2/3-Methyldibenzothiophen	33.720	198	19631M1	72.735	ng/mL	
36) 1-Methyldibenzothiophene(	34.131	198	7283	26.984	ng/mL#	100
37) OTP	33.811	198	63997	237.115	ng/mL#	100
38) C1-Dibenzothiophenes	33.811	198	118978M5	440.825	ng/mL	
38) C1-Dibenzothiophenes BS	33.811	198	54981m	203.710	ng/mL	
39) C2-Dibenzothiophenes	35.044	212	62715M5	232.365	ng/mL	
40) C3-Dibenzothiophenes	36.842	226	41706M5	154.525	ng/mL	
41) C4-Dibenzothiophenes	38.531	240	17560M5	65.062	ng/mL	
43) Phenanthrene	32.086	178	743861	2667.728	ng/mL	100
44) 3-Methylphenanthrene(3MP)	34.049	192	113713	407.812	ng/mL	97

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009586.D
Acq On : 23 Dec 2012 4:44 am
Operator : ps
Sample : 1212022-01
Misc : 1X
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Dec 27 16:07:18 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
45) 2-Methylphenanthrene(2MP)	34.158	192	135315	485.284	ng/mL	97
46) 2-Methylanthracene(2MA)	34.322	192	91869	329.472	ng/mL#	35
47) 9/4-Methylphenanthrene(9M	34.505	192	143401M3	514.283	ng/mL	
48) 1-Methylphenanthrene(1MP)	34.587	192	95711	343.251	ng/mL	96
49) C1-Phenanthrenes/Anthrace	34.158	192	590441M5	2117.514	ng/mL	
50) C2-Phenanthrenes/Anthrace	36.312	206	383997M5	1377.139	ng/mL	
50) C2-Phenanthrenes/Anthr BS	36.312	206	383997m	1377.139	ng/mL	
52) C3-Phenanthrenes/Anthrace	38.148	220	155344M5	557.114	ng/mL	
53) C4-Phenanthrenes/Anthrace	40.348	234	53471M5	191.764	ng/mL	
55) Anthracene	32.269	178	270471M4	1044.563	ng/mL	
56) Carbazole	32.953	167	12169M4	49.680	ng/mL	
57) 1-Methylphenanthrene	34.587	192	95711	465.238	ng/mL	100
58) Fluoranthene	36.851	202	2372745	7617.419	ng/mL	99
59) Benzo(b)fluorene	39.362	216	184472M3	995.827	ng/mL	
60) Pyrene	37.728	202	2370959	7460.901	ng/mL	100
61) C1-Fluoranthenes/Pyrenes	39.116	216	1183751M5	3725.011	ng/mL	
62) C2-Fluoranthenes/Pyrenes	40.850	230	386471M5	1216.142	ng/mL	
63) C3-Fluoranthenes/Pyrenes	43.051	244	153980M5	484.542	ng/mL	
64) C4-Fluoranthenes/Pyrenes	43.334	258	82298M5	258.974	ng/mL	
66) Naphthobenzothiophene	41.562	234	101824	369.271	ng/ml	97
67) Naphthobenzothiophene-2,1	41.562	234	101824	369.271	ng/mL	97
68) Naphthobenzothiophene-1,2	41.900	234	23879M3	86.599	ng/mL	
69) Naphthobenzothiophene-2,3	42.201	234	36893M3	133.795	ng/mL	
70) C1-Naphthobenzothiophenes	42.968	248	100431M5	364.219	ng/ml	
71) C2-Naphthobenzothiophenes	44.466	262	56440M5	204.683	ng/ml	
72) C3-Naphthobenzothiophenes	46.350	276	32570M5	118.117	ng/ml	
73) C4-Naphthobenzothiophenes	47.612	290	18544M5	67.251	ng/mL	
75) Benz[a]anthracene	42.494	228	1056049M3	3593.867	ng/mL	
77) Chrysene/Triphenylene	42.658	228	943911M4	3266.054	ng/mL	
78) C1-Chrysenes	44.128	242	444096M5	1536.629	ng/mL	
79) C2-Chrysenes	45.545	256	223881M5	774.657	ng/mL	
79) C2-Chrysenes BS	45.545	256	205976m	712.703	ng/mL	
80) BBF-d12 Surr BKGD	46.451	256	17905	61.954	ng/mL	100
81) C3-Chrysenes	46.871	270	133774M5	462.875	ng/mL	
82) C4-Chrysenes	48.316	284	49578M5	171.546	ng/mL	
84) Benzo[b]fluoranthene	46.533	252	855058	2806.443	ng/mL	94
85) Benzo[j]+[k]fluoranthene	46.597	252	864631	2888.234	ng/mL	92
86) Benzo[a]fluoranthene	46.899	252	241774	807.628	ng/mL#	1
87) Benzo[e]pyrene	47.484	252	649689	2245.632	ng/mL	91
89) Benzo[a]pyrene	47.667	252	1073469	3917.817	ng/mL	90
90) Perylene	47.951	252	284064M3	971.401	ng/mL	
91) Indeno[1,2,3-cd]pyrene	52.157	276	665060M4	2191.640	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.194	278	173680M4	581.008	ng/mL	
93) Benzo[g,h,i]perylene	53.345	276	651449	2184.623	ng/mL	100
94) Hopane (T19)	51.325	191	35100M4	311.643	ng/mL	
96) C23 Tricyclic Terpane (T4	40.211	191	4029	35.772	ng/ml	100
97) C24 Tricyclic Terpane (T5	40.942	191	2667M4	23.680	ng/ml	
98) C25 Tricyclic Terpane (T6	42.503	191G	55941	496.684	ng/ml	100
99) C24 Tetracyclic Terpane (	43.735	191	2981M4	26.467	ng/ml	
100) C26 Tricyclic Terpane-22S	43.489	191	2373M4	21.069	ng/ml	
101) C26 Tricyclic Terpane-22R	43.580	191	1516	13.460	ng/ml	100
102) C28 Tricyclic Terpane-22S	45.865	191	1342M4	11.915	ng/ml	
103) C28 Tricyclic Terpane-22R	46.030	191	1725	15.316	ng/ml	100
104) C29 Tricyclic Terpane-22S	46.551	191	2161	19.187	ng/ml	100
105) C29 Tricyclic Terpane-22R	46.743	191	1413M4	12.546	ng/ml	
106) 18a-22,29,30-Trisnorneoho	47.786	191	7180	63.749	ng/ml	100

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009586.D
Acq On : 23 Dec 2012 4:44 am
Operator : ps
Sample : 1212022-01
Misc : 1X
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Dec 27 16:07:18 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

	Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
107)	C30 Tricyclic Terpane-22S	47.896	191	2533M4	22.490	ng/mL	
108)	C30 Tricyclic Terpane-22R	48.133	191	1222M3	10.850	ng/mL	
109)	17a(H)-22,29,30-Trisnorho	48.298	191	9380M4	83.282	ng/ml	
110)	17a/b,21b/a 28,30-Bisnorh	49.414	191	1413	12.546	ng/ml	100
111)	17a(H),21b(H)-25-Norhopan	49.222	191	3284M4	29.158	ng/ml	
112)	30-Norhopane (T15)	50.045	191	26219M4	232.791	ng/ml	
113)	18a(H)-30-Norneohopane-C2	50.146	191	6960	61.796	ng/ml	100
114)	17a(H)-Diahopane (X)	50.264	191	2524M4	22.410	ng/ml	
115)	30-Normoretane (T17)	50.777	191	4538	40.292	ng/ml	100
116)	18a(H)&18b(H)-Oleananes (	51.152	191	2578M4	22.889	ng/ml	
117)	Moretane (T20)	51.947	191	5725M4	50.831	ng/ml	
118)	30-Homohopane-22S (T21)	52.980	191	13269M4	117.812	ng/ml	
119)	30-Homohopane-22R (T22)	53.181	191	12022	106.740	ng/ml	100
120)	Gammacerane/C32-diahopane	53.693	191	3454	30.667	ng/mL	100
121)	30,31-Bishomohopane-22S (	54.360	191G	35211M4	312.629	ng/ml	
122)	30,31-Bishomohopane-22R (	54.762	191	6466	57.410	ng/ml	100
123)	30,31-Trishomohopane-22S	56.370	191	7456M4	66.200	ng/ml	
124)	30,31-Trishomohopane-22R	56.936	191	3335M4	29.611	ng/ml	
125)	Tetrakishomohopane-22S (T	58.837	191G	12874	114.305	ng/ml	100
126)	Tetrakishomohopane-22R (T	59.522	191G	13235	117.510	ng/ml	100
127)	Pentakishomohopane-22S (T	61.633	191	3777	33.535	ng/ml	100
128)	Pentakishomohopane-22R (T	62.821	191	2532M4	22.481	ng/ml	
130)	13b(H),17a(H)-20S-Diachol	44.703	217	2673	49.703	ng/ml	100
131)	13b(H),17a(H)-20R-Diachol	45.124	217	1760	32.726	ng/ml	100
132)	13b,17a-20S-Methyldiachol	45.829	217	1896M4	35.255	ng/ml	
133)	14a,17a-20S-Chol/13b,17a-	46.679	217	5289	98.345	ng/ml	100
134)	14a,17a-20R-Chol/13b,17a-	47.173	217	5147	95.705	ng/ml	100
135)	Unknown Sterane (S18)	47.438	217	1514	28.152	ng/ml	100
136)	13a,17b-20S-Ethyldiachole	47.685	217	218	4.054	ng/ml	100
137)	14a,17a-20S-Methylcholest	47.841	217	2409M4	44.794	ng/ml	
138)	14a,17a-20R-Methylcholest	48.518	217	1780	33.098	ng/ml	100
139)	14a(H),17a(H)-20S-Ethylch	48.838	217	2903M4	53.979	ng/ml	
140)	14a(H),17a(H)-20R-Ethylch	49.688	217	2817M4	52.380	ng/ml	
141)	14b(H),17b(H)-20R-Cholest	46.771	218	2333M4	43.381	ng/ml	
142)	14b(H),17b(H)-20S-Cholest	46.844	218	2521M4	46.876	ng/ml	
143)	14b,17b-20R-Methylcholest	47.996	218	2694M4	50.093	ng/ml	
144)	14b,17b-20S-Methylcholest	48.069	218	4048M4	75.270	ng/ml	
145)	14b(H),17b(H)-20R-Ethylch	49.075	218	5595	104.035	ng/ml	100
146)	14b(H),17b(H)-20S-Ethylch	49.112	218	4181M3	77.743	ng/ml	
147)	C26,20R- +C27,20S- triaro	48.792	231	3401M4	63.239	ng/mL	
148)	C28,20S-triaromatic stero	49.606	231	4453M4	82.800	ng/mL	
149)	C27,20R-triaromatic stero	50.027	231	2558M4	47.564	ng/mL	
150)	C28,20R-triaromatic stero	51.143	231	3048M4	56.675	ng/mL	

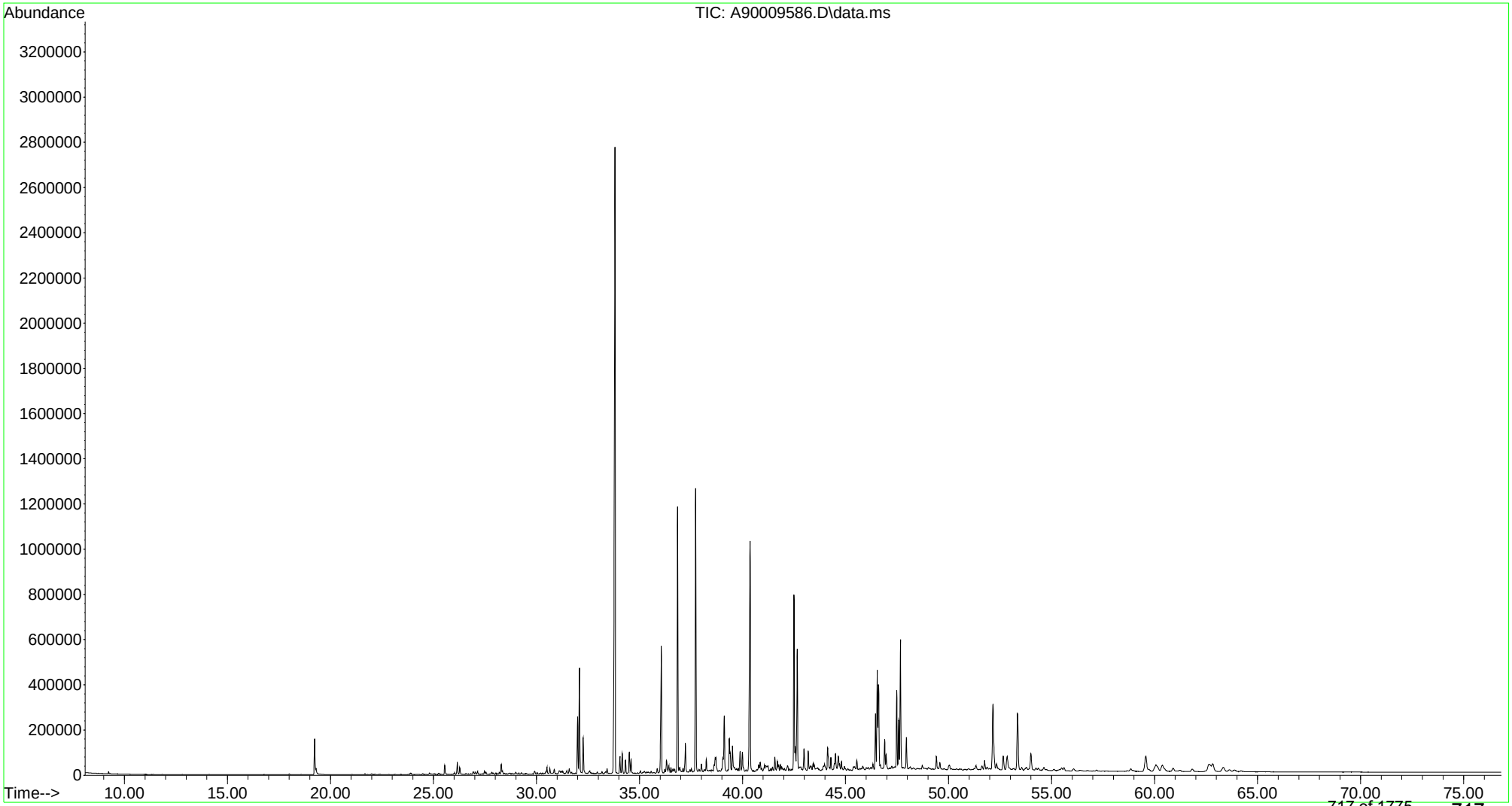
(#) = qualifier out of range (m) = manual integration (+) = signals summed

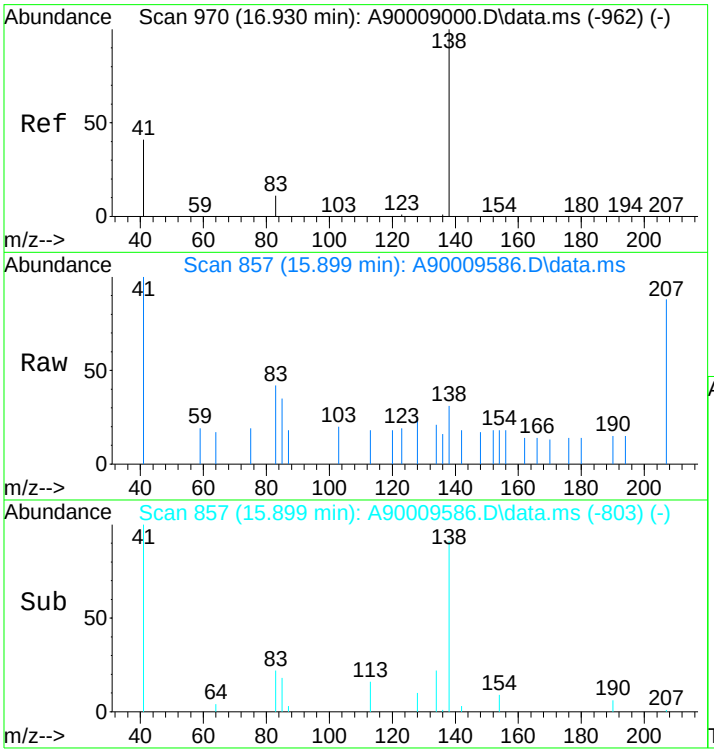
Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009586.D
Acq On : 23 Dec 2012 4:44 am
Operator : ps
Sample : 1212022-01
Misc : 1X
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Dec 27 16:07:18 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

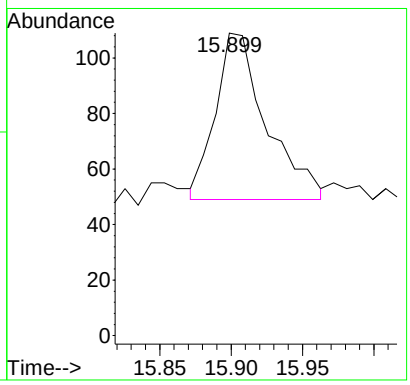
Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

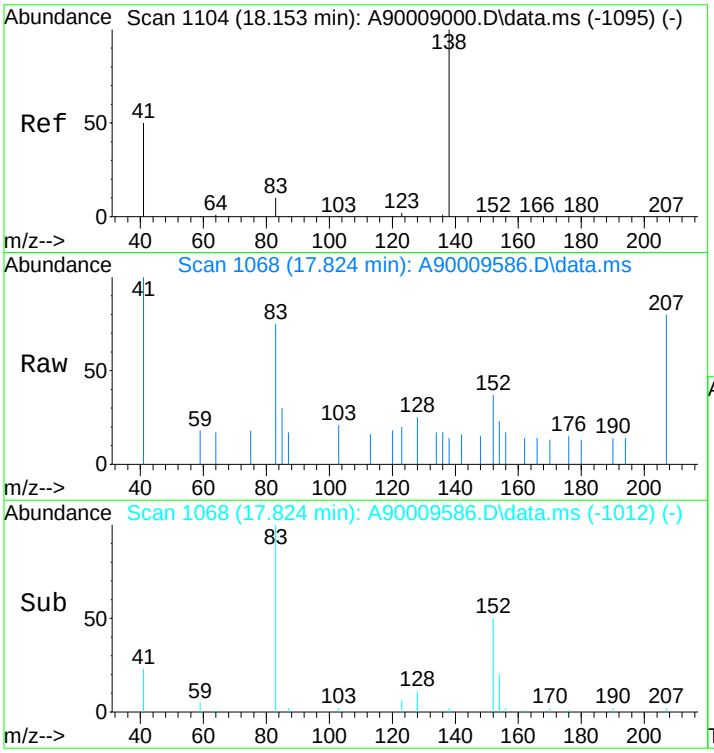




#3
trans-Decalin
Concen: 2.47 ng/mL m
RT: 15.899 min Scan# 857
Delta R.T. -0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

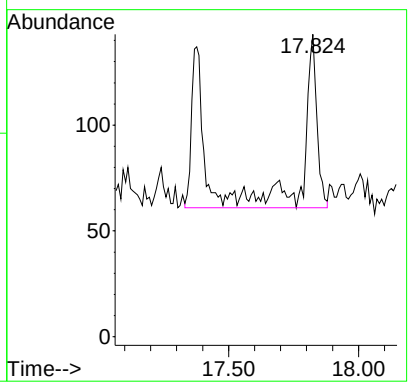
Tgt Ion:138 Resp: 149

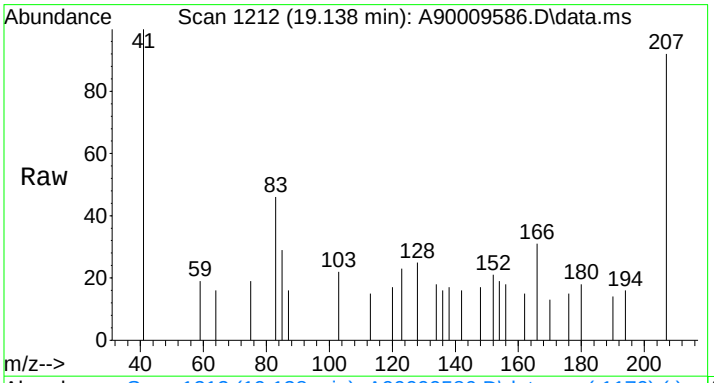




#5
C1-Decalins
Concen: 8.97 ng/mL m
RT: 17.824 min Scan# 1068
Delta R.T. 0.000 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

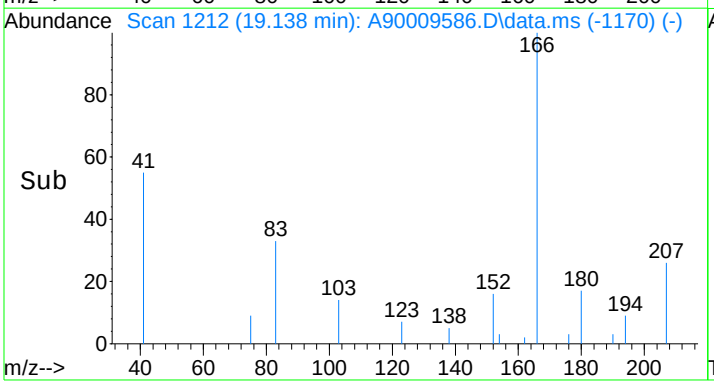
Tgt Ion:152 Resp: 540

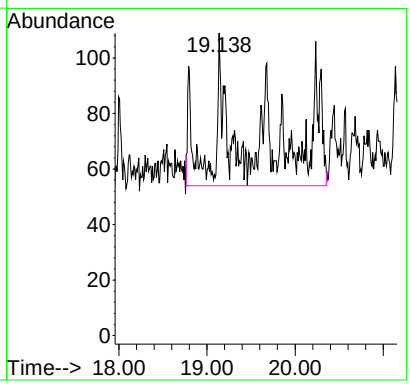


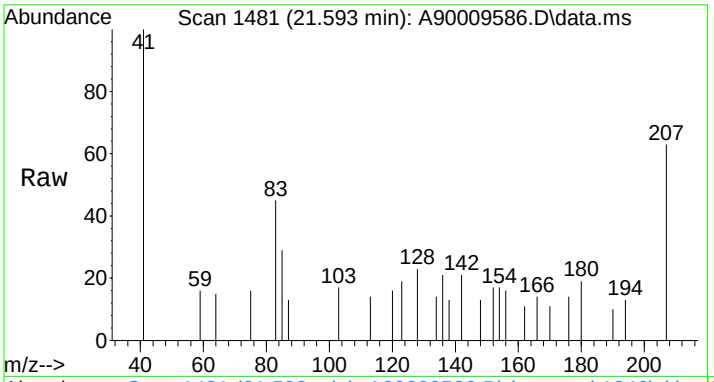


#6
C2-Decalins
Concen: 23.88 ng/mL m
RT: 19.138 min Scan# 1212
Delta R.T. -0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:166 Resp: 1438

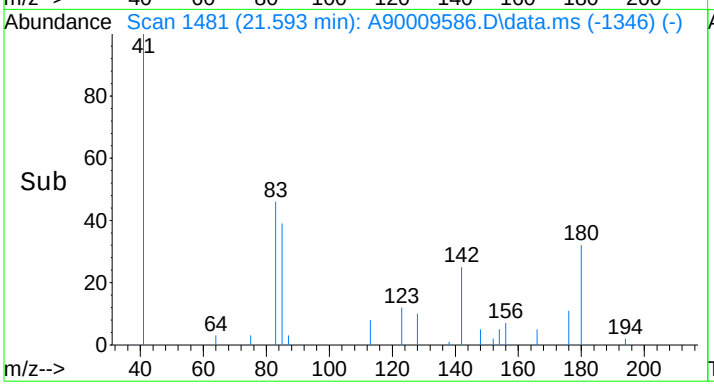


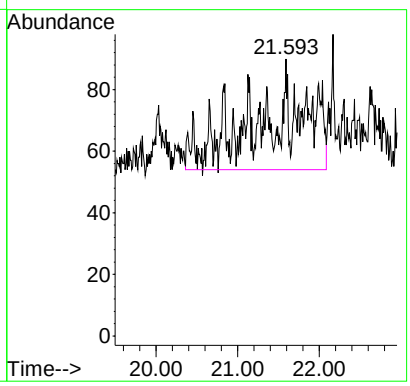


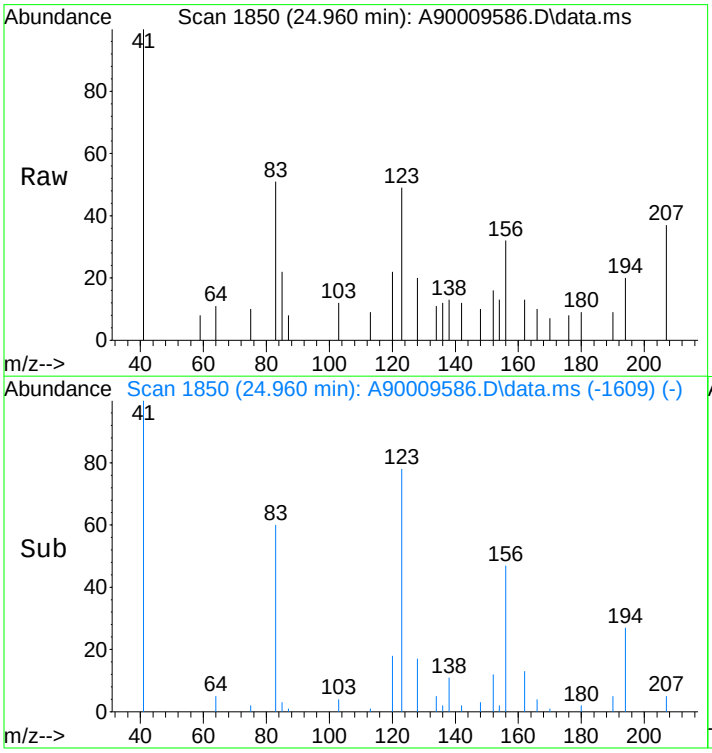


#7
C3-Decalins
Concen: 22.89 ng/mL m
RT: 21.593 min Scan# 1481
Delta R.T. -0.018 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:180 Resp: 1378

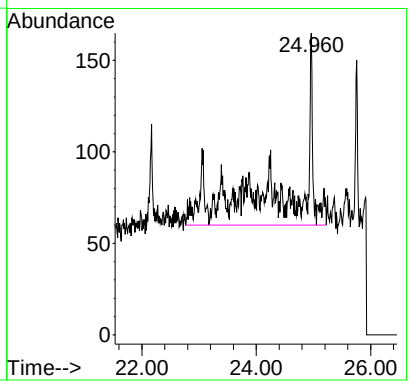


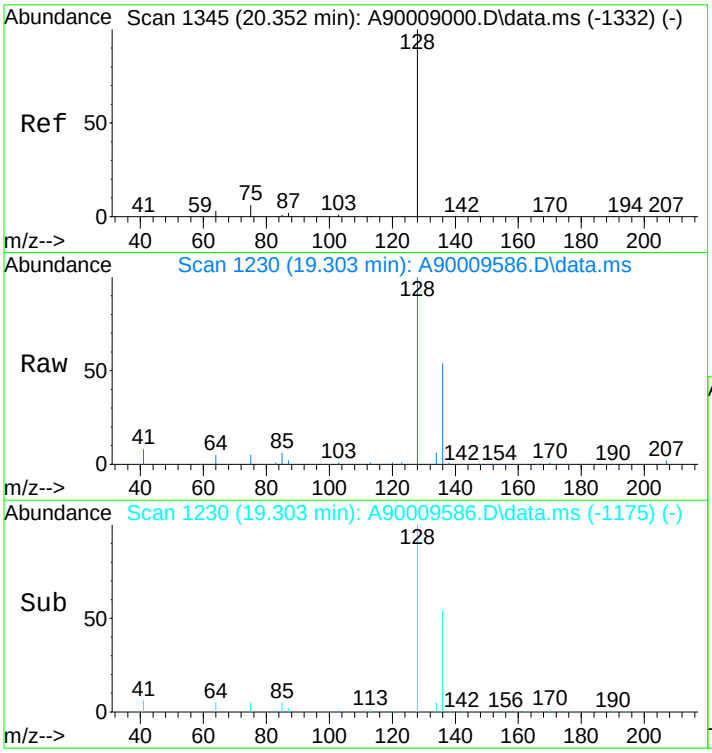




#8
C4-Decalins
Concen: 37.32 ng/mL m
RT: 24.960 min Scan# 1850
Delta R.T. -0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:194 Resp: 2247

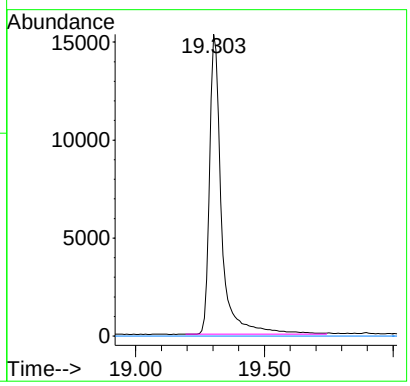


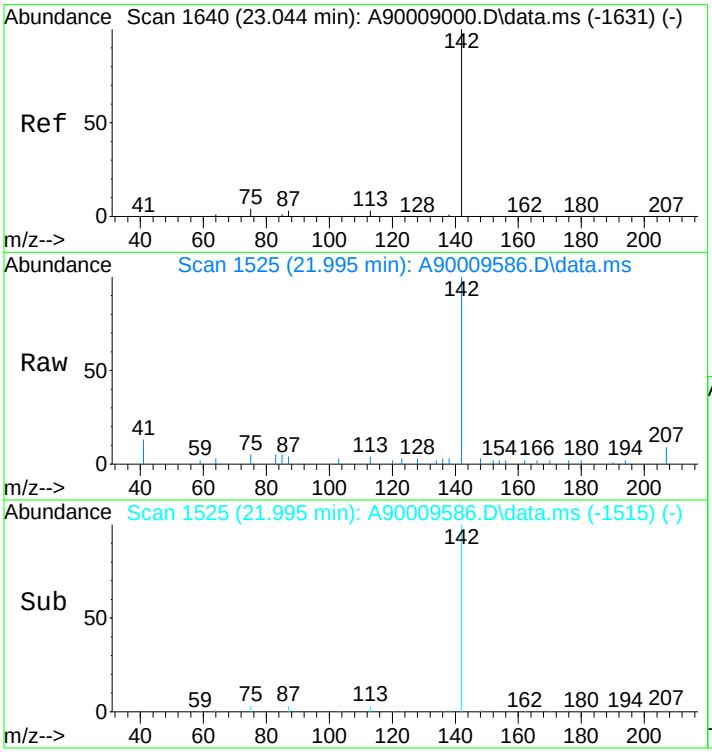


#10
Naphthalene
Concen: 184.34 ng/mL
RT: 19.303 min Scan# 1230
Delta R.T. 0.000 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:128 Resp: 49796

Ion	Ratio	Lower	Upper
128	100		
127	0.0	0.0	0.0

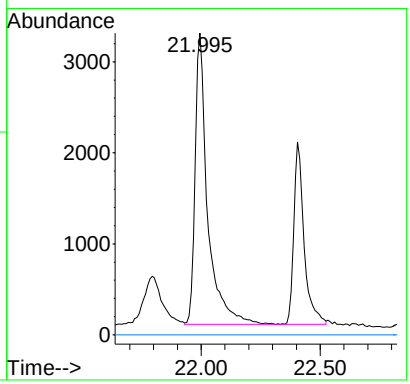


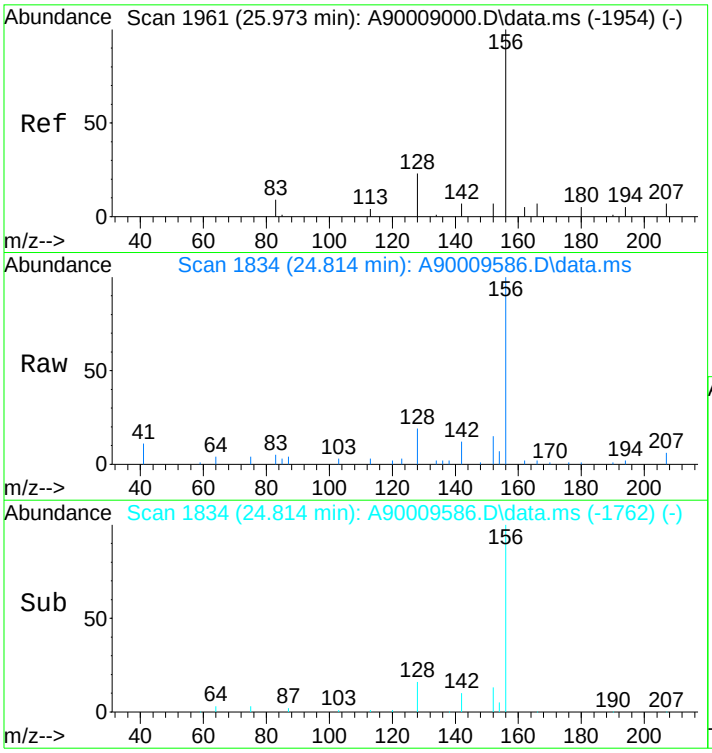


#11
C1-Naphthalenes
Concen: 65.11 ng/mL m
RT: 21.995 min Scan# 1525
Delta R.T. 0.010 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:142 Resp: 17588

Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	0.0

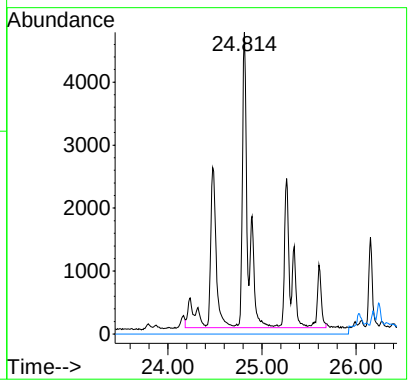


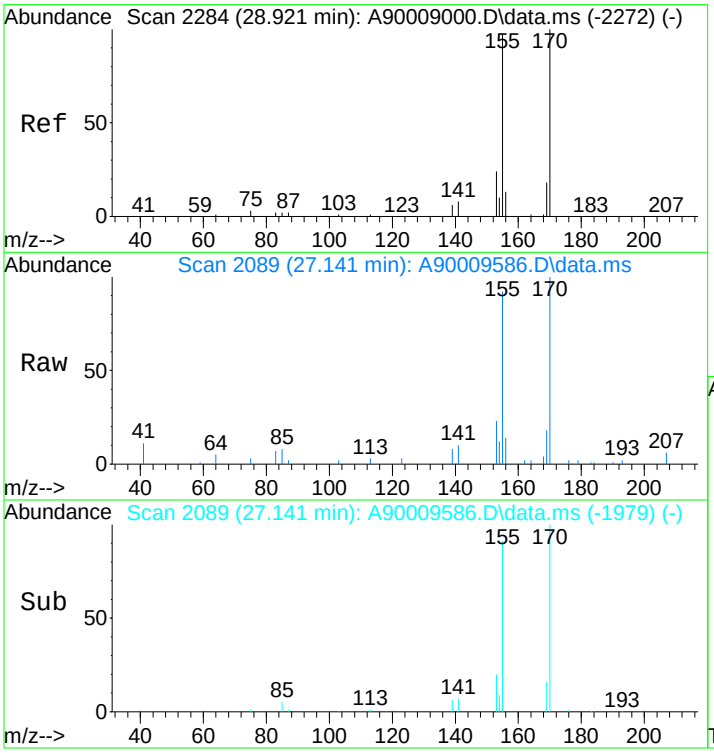


#12
C2-Naphthalenes
Concen: 169.86 ng/mL m
RT: 24.814 min Scan# 1834
Delta R.T. 0.000 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:156 Resp: 45885

Ion	Ratio	Lower	Upper
156	100		
141	0.0	0.0	0.0

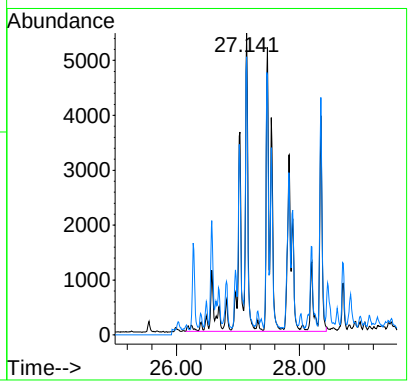


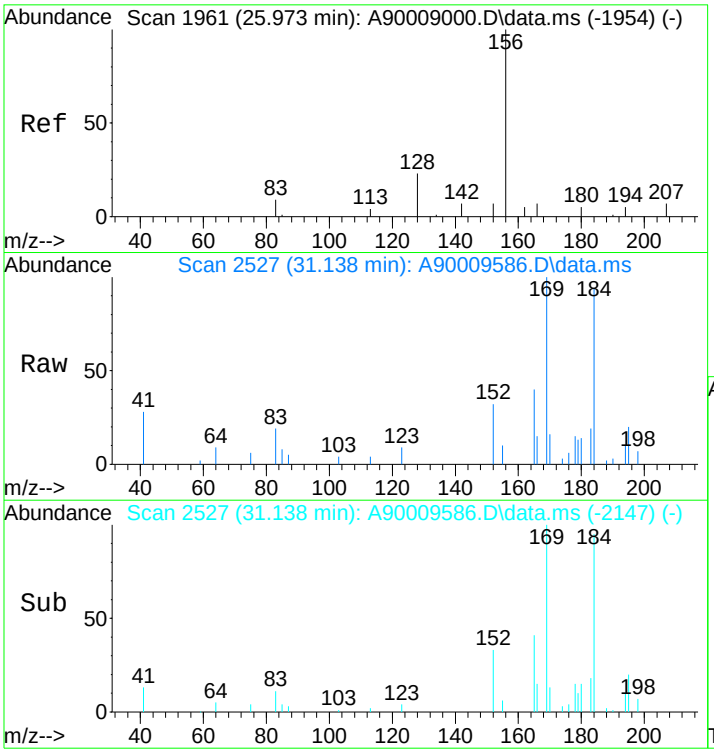


#13
C3-Naphthalenes
Concen: 326.05 ng/mL m
RT: 27.141 min Scan# 2089
Delta R.T. 0.000 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:170 Resp: 88078

Ion	Ratio	Lower	Upper
170	100		
155	14.6	79.9	119.9#

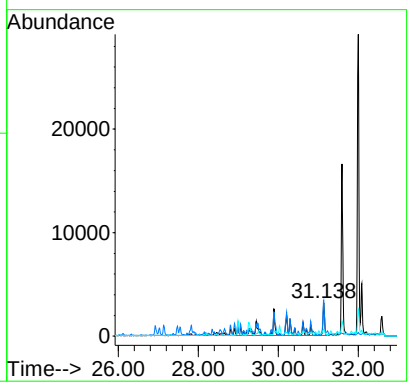


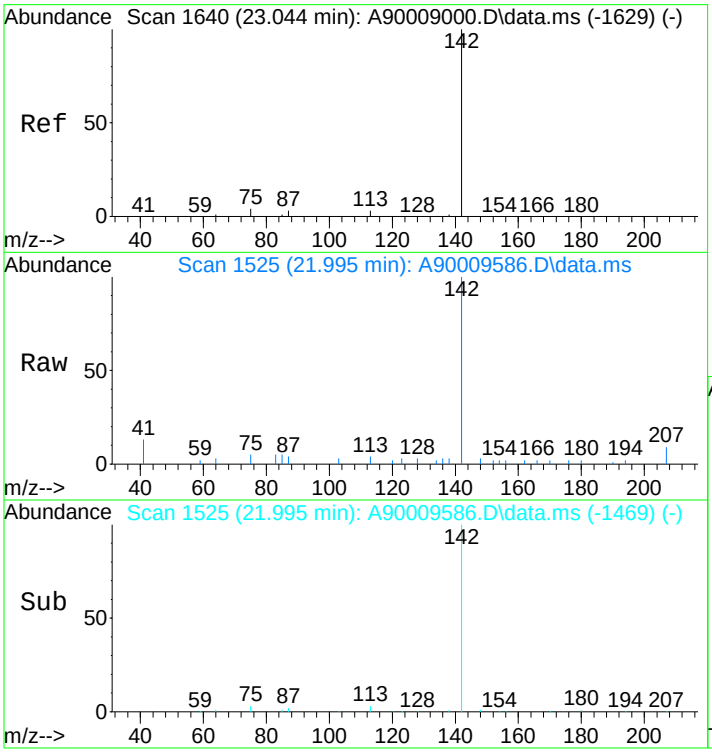


#14
C4-Naphthalenes
Concen: 234.48 ng/mL m
RT: 31.138 min Scan# 2527
Delta R.T. 1.241 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:184 Resp: 63342

Ion	Ratio	Lower	Upper
184	100		
169	10.4	76.6	115.0#
183	2.1	16.4	24.6#

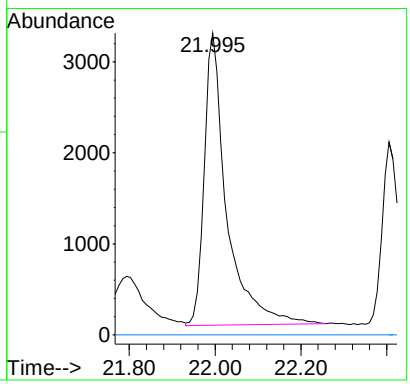


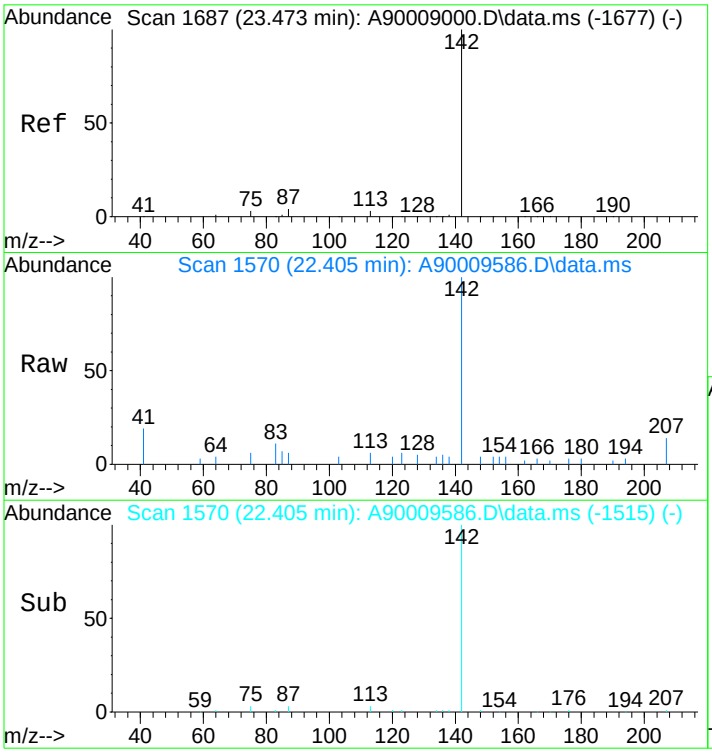


#16
2-Methylnaphthalene
Concen: 65.90 ng/mL
RT: 21.995 min Scan# 1525
Delta R.T. 0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:142 Resp: 11642

Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	0.0

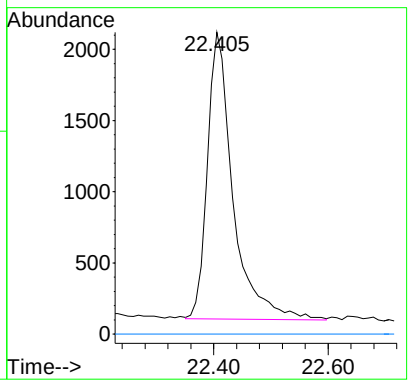


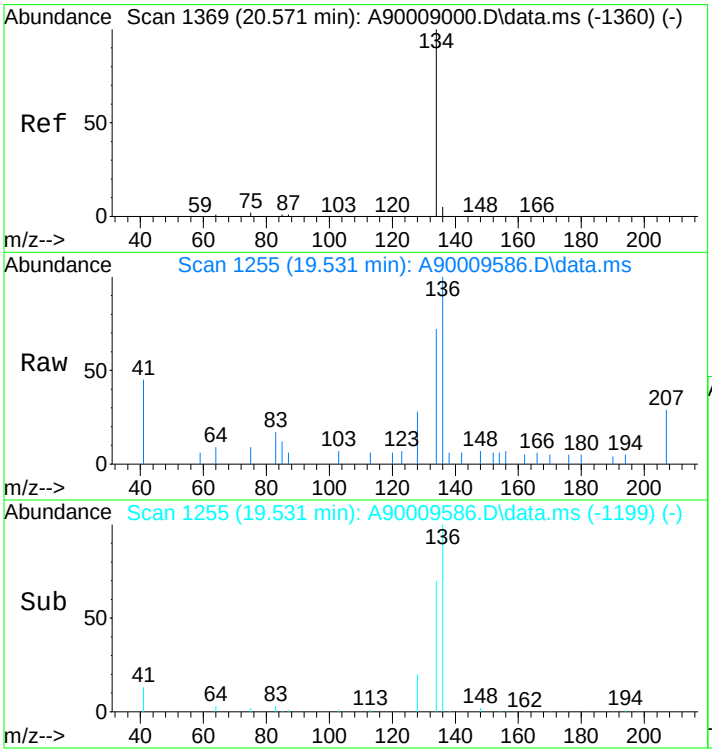


#17
1-Methylnaphthalene
Concen: 36.35 ng/mL
RT: 22.405 min Scan# 1570
Delta R.T. 0.000 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:142 Resp: 6232

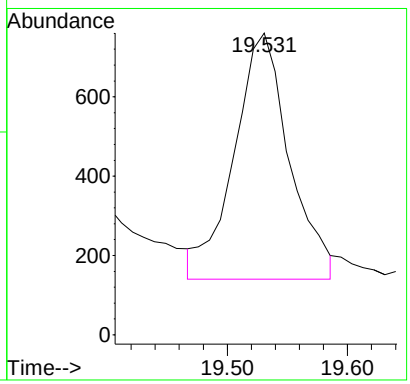
Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	20.0

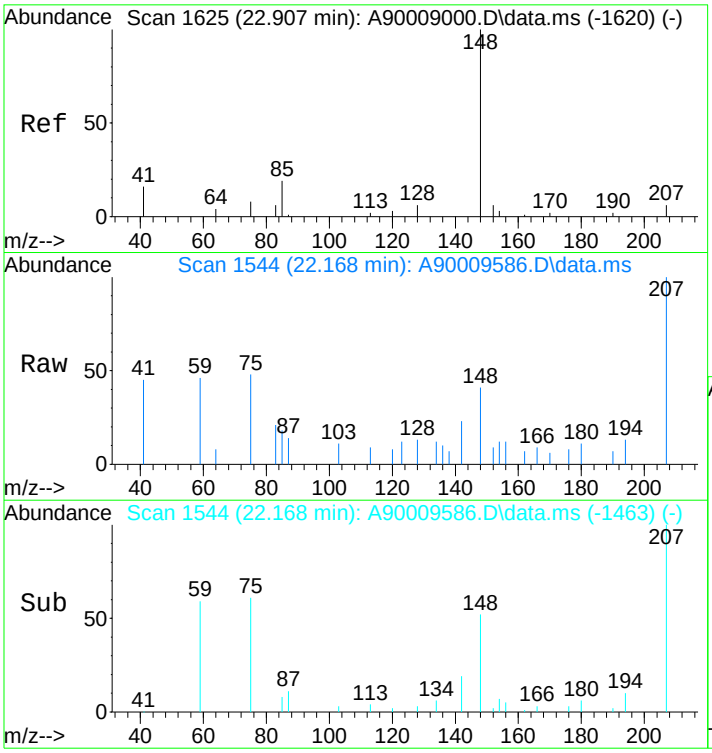




#18
Benzothiophene
Concen: 8.79 ng/mL m
RT: 19.531 min Scan# 1255
Delta R.T. 0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

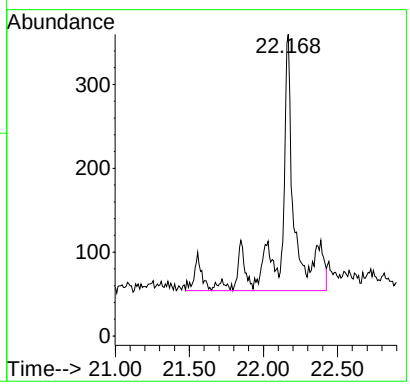
Tgt Ion:134 Resp: 1986

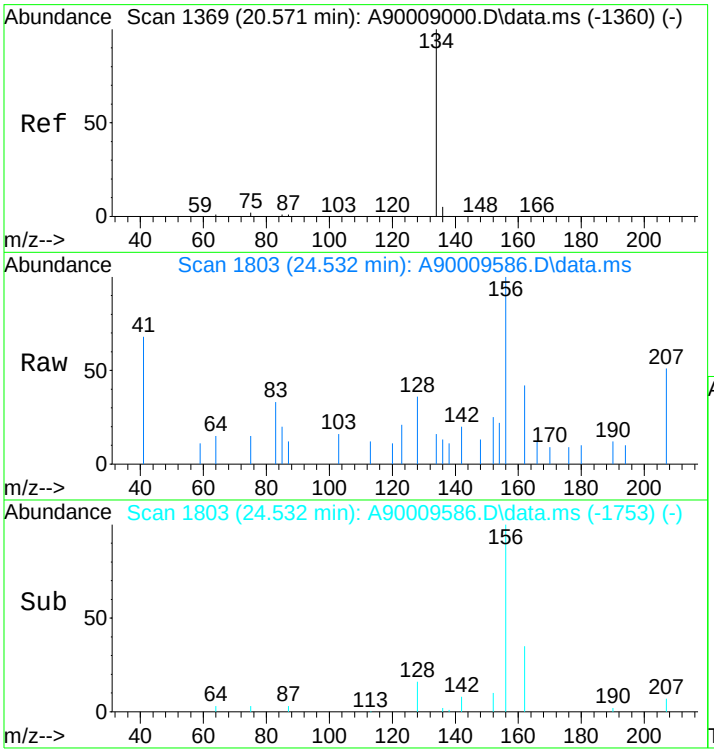




#19
C1-Benzo(b)thiophenes
Concen: 9.38 ng/mL m
RT: 22.168 min Scan# 1544
Delta R.T. 0.612 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

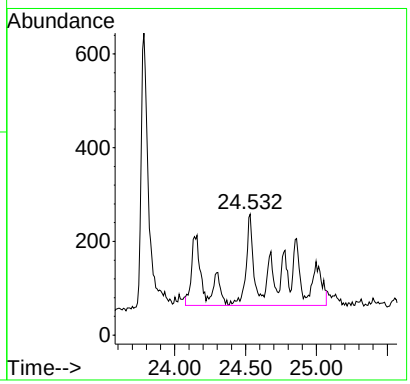
Tgt Ion:148 Resp: 2121

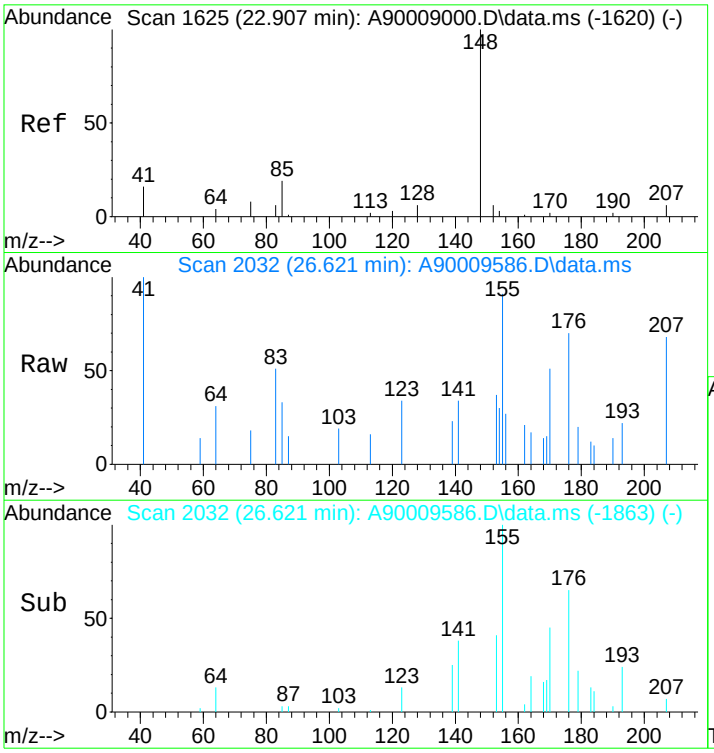




#20
C2-Benzo(b)thiophenes
Concen: 14.49 ng/mL m
RT: 24.532 min Scan# 1803
Delta R.T. -0.474 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

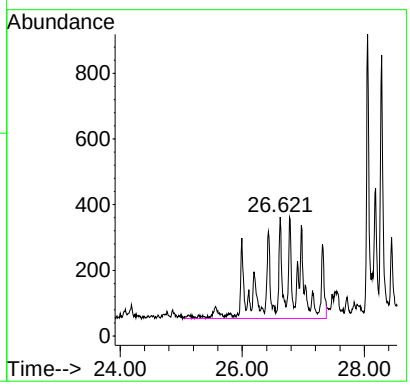
Tgt Ion:162 Resp: 3276

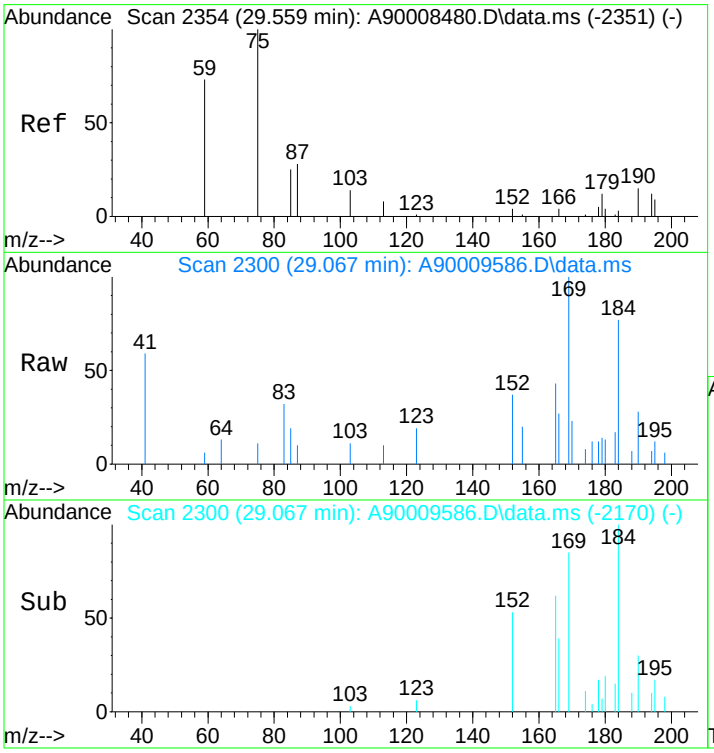




#21
C3-Benzo(b)thiophenes
Concen: 35.34 ng/mL m
RT: 26.621 min Scan# 2032
Delta R.T. -0.355 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

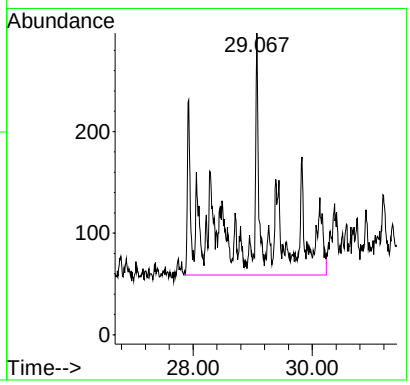
Tgt Ion:176 Resp: 7990

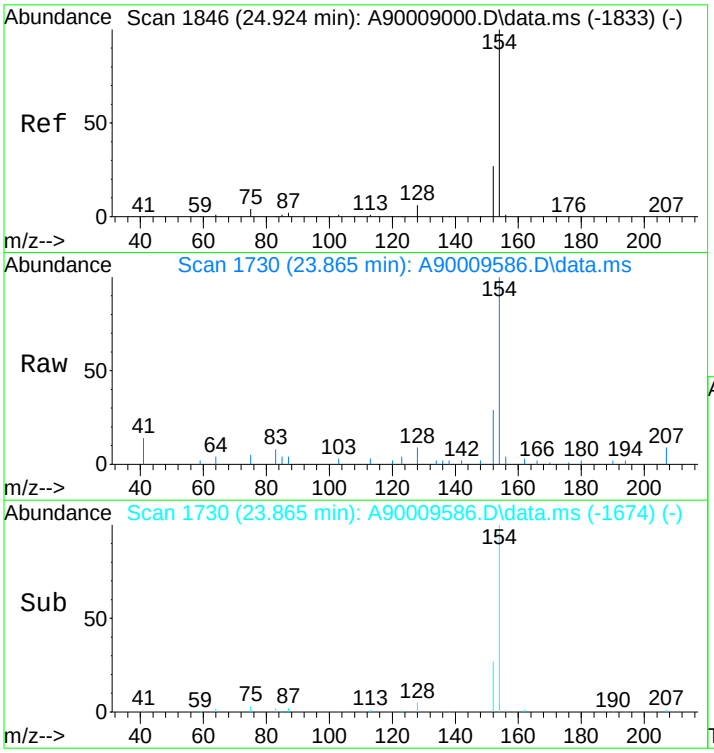




#22
C4-Benzo(b)thiophenes
Concen: 25.77 ng/mL m
RT: 29.067 min Scan# 2300
Delta R.T. -0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:190 Resp: 5826

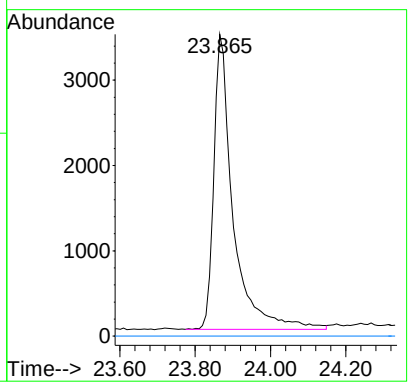


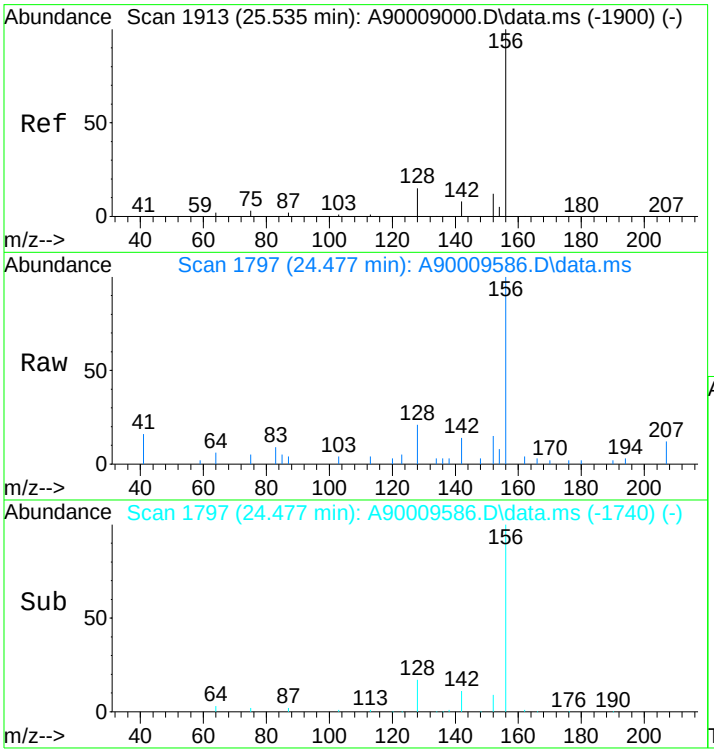


#23
Biphenyl
Concen: 53.17 ng/mL
RT: 23.865 min Scan# 1730
Delta R.T. 0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:154 Resp: 12292

Ion	Ratio	Lower	Upper
154	100		
153	0.0	0.0	0.0

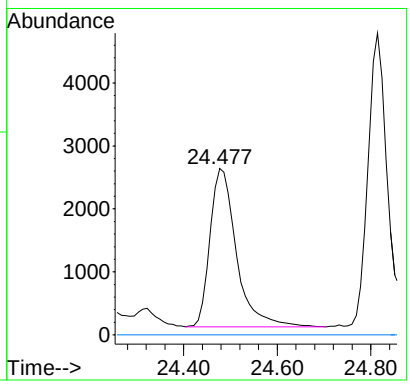


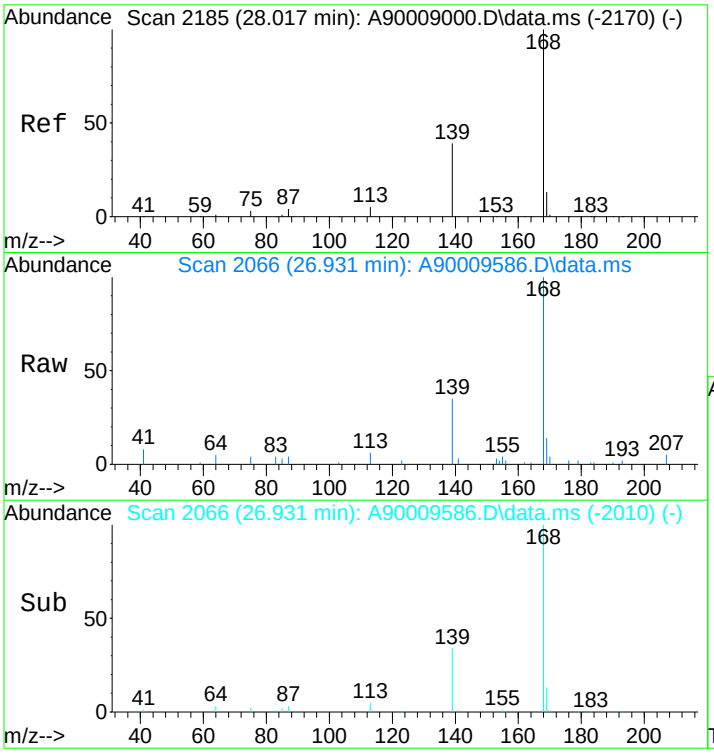


#24
2,6-Dimethylnaphthalene
Concen: 59.41 ng/mL
RT: 24.477 min Scan# 1797
Delta R.T. 0.018 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:156 Resp: 9866

Ion	Ratio	Lower	Upper
156	100		
155	0.0	0.0	0.0

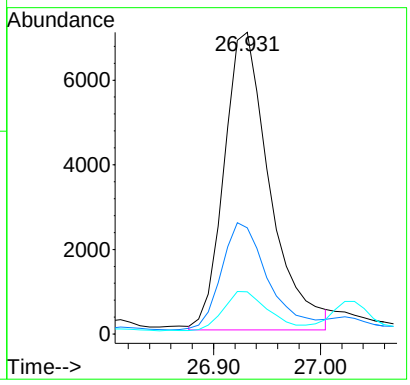


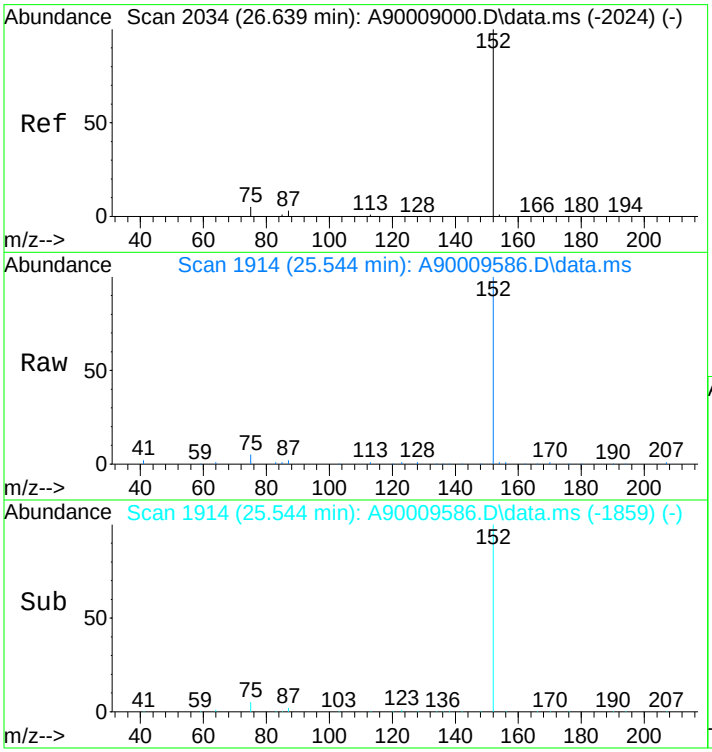


#25
Dibenzofuran
Concen: 84.94 ng/mL m
RT: 26.931 min Scan# 2066
Delta R.T. 0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:168 Resp: 20944

Ion	Ratio	Lower	Upper
168	100		
139	36.5	28.0	42.0
169	13.4	10.6	15.8

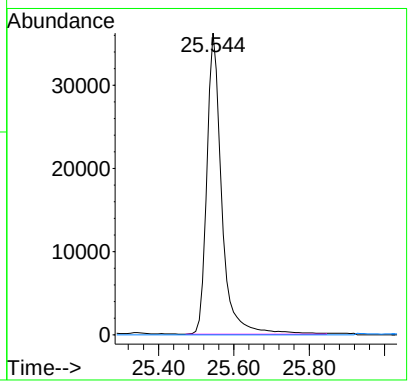


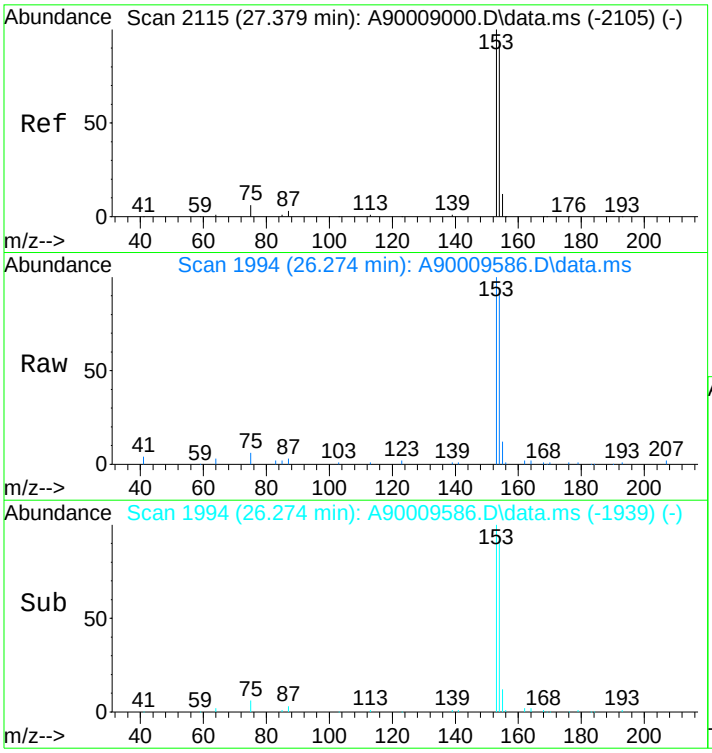


#26
Acenaphthylene
Concen: 356.28 ng/mL
RT: 25.544 min Scan# 1914
Delta R.T. 0.000 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:152 Resp: 99005

Ion	Ratio	Lower	Upper
152	100		
153	0.0	0.0	0.0

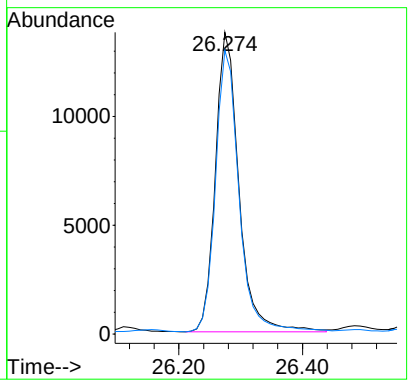


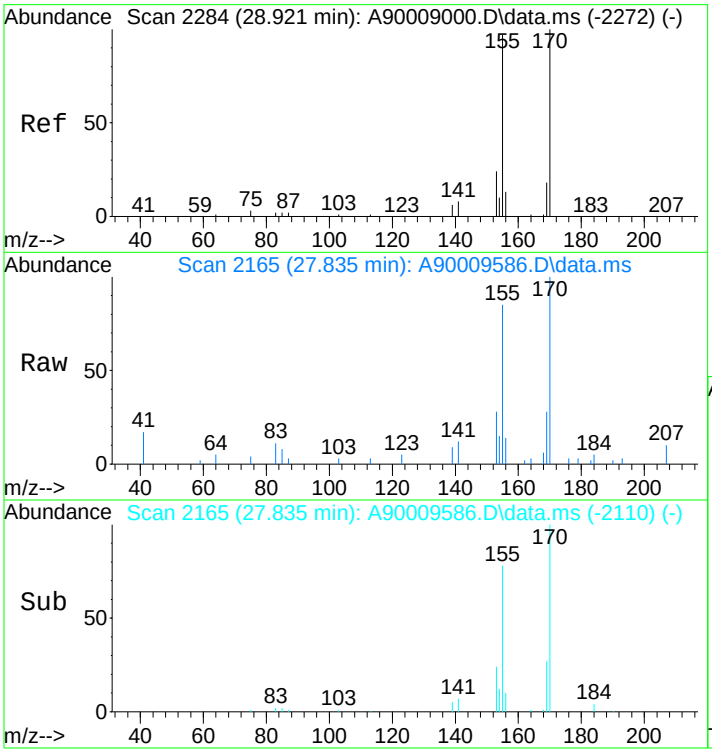


#27
Acenaphthene
Concen: 207.96 ng/mL
RT: 26.274 min Scan# 1994
Delta R.T. 0.000 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:153 Resp: 36335

Ion	Ratio	Lower	Upper
153	100		
154	94.0	75.4	113.0

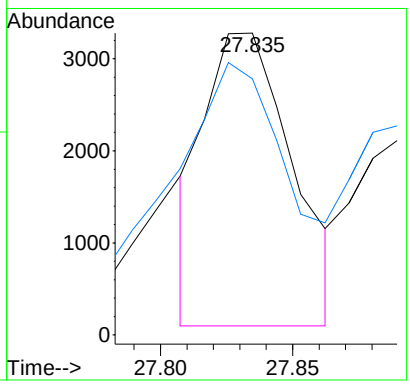


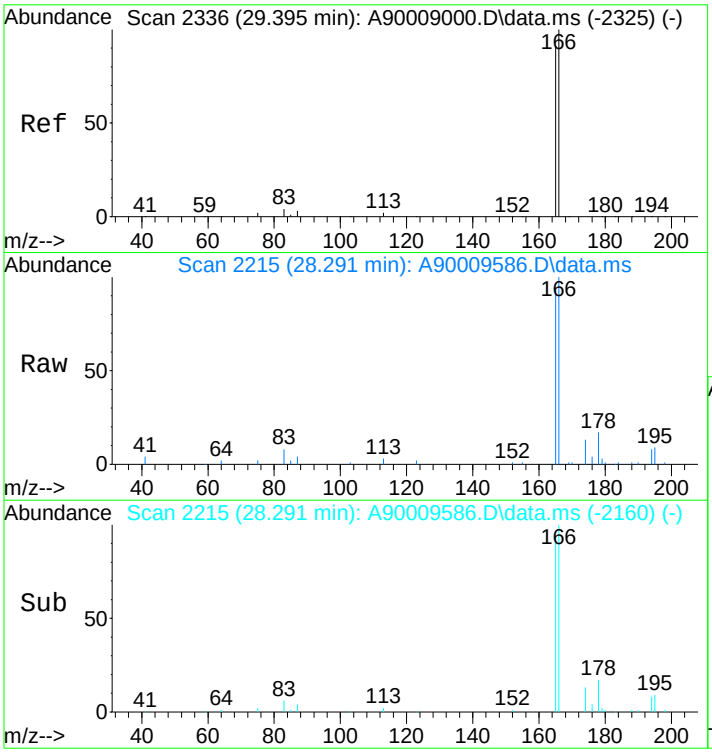


#28
2,3,5-Trimethylnaphthalene
Concen: 48.27 ng/mL m
RT: 27.835 min Scan# 2165
Delta R.T. 0.000 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:170 Resp: 7369

Ion	Ratio	Lower	Upper
170	100		
155	126.3	69.0	103.4#

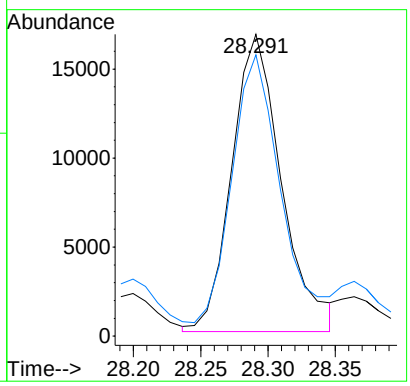


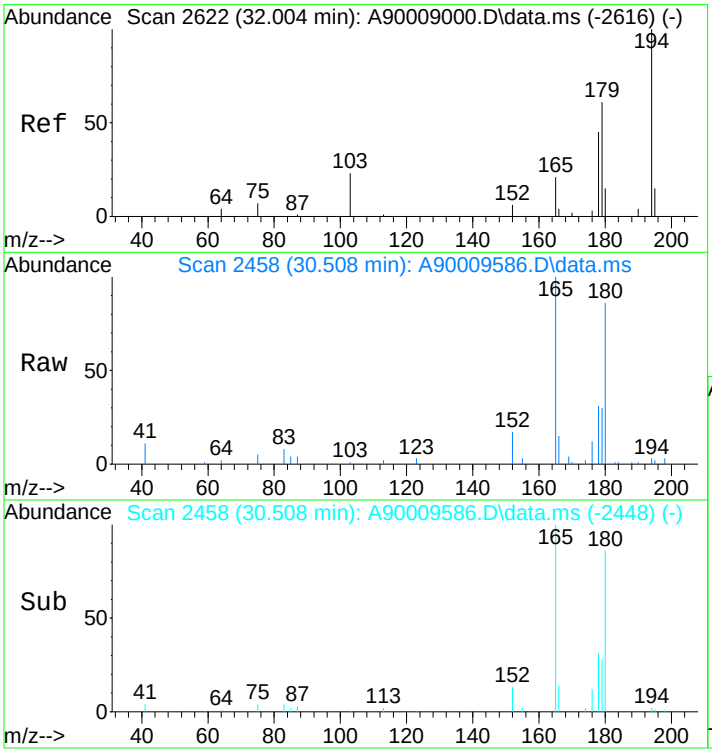


#29
Fluorene
Concen: 224.29 ng/mL m
RT: 28.291 min Scan# 2215
Delta R.T. 0.000 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:166 Resp: 43034

Ion	Ratio	Lower	Upper
166	100		
165	87.5	73.4	110.0

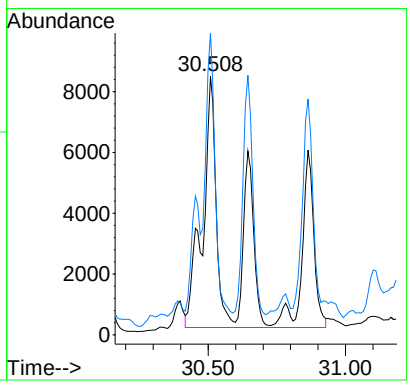


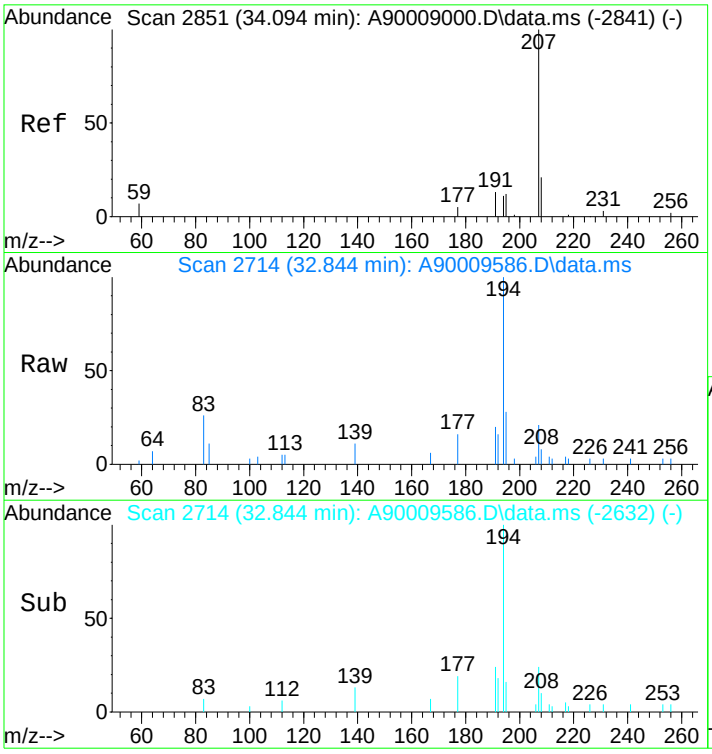


#30
C1-Fluorenes
Concen: 316.61 ng/mL m
RT: 30.508 min Scan# 2458
Delta R.T. -0.136 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:180 Resp: 60749

Ion	Ratio	Lower	Upper
180	100		
165	31.7	117.5	176.3#

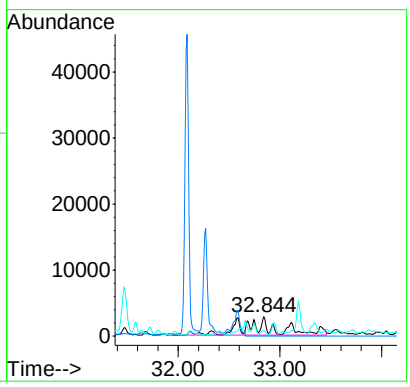


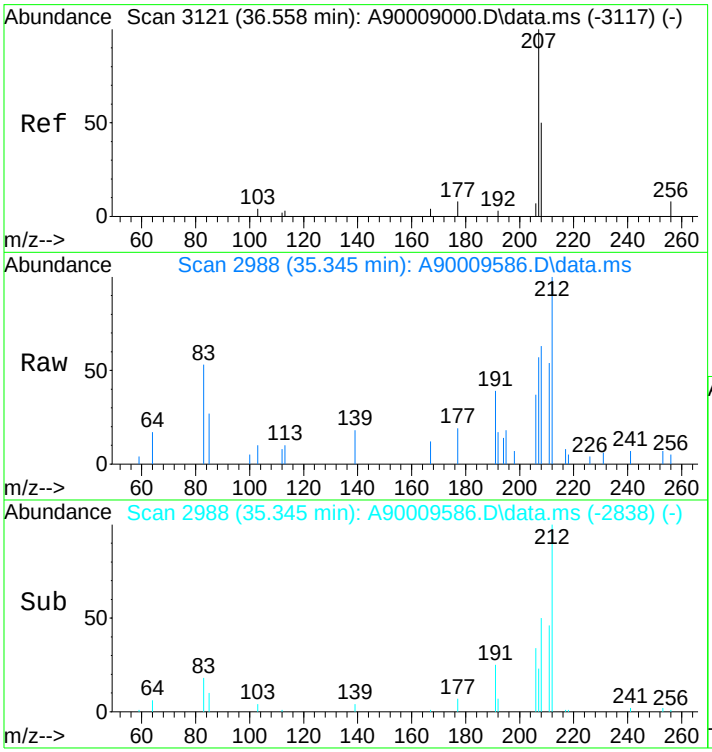


#31
C2-Fluorenes
Concen: 314.43 ng/mL m
RT: 32.844 min Scan# 2714
Delta R.T. 0.000 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:194 Resp: 60330

Ion	Ratio	Lower	Upper
194	100		
179	0.0	0.0	0.0
195	2.9	26.3	39.5#

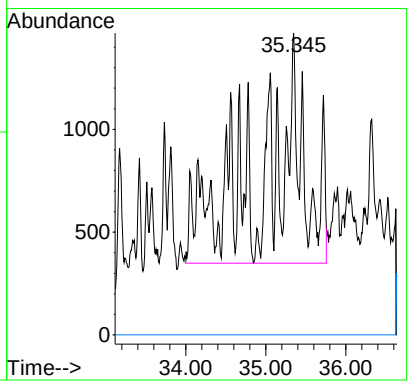


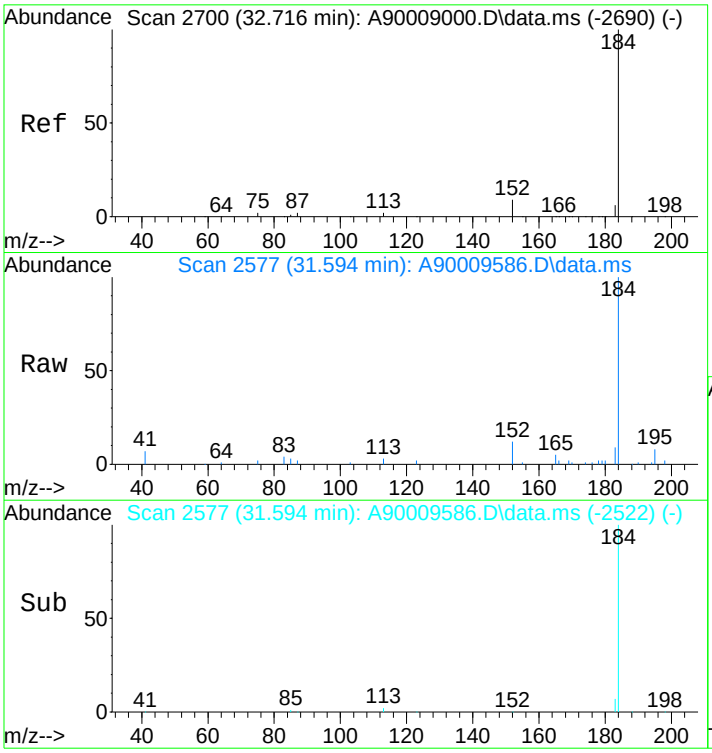


#32
C3-Fluorenes
Concen: 199.92 ng/mL m
RT: 35.345 min Scan# 2988
Delta R.T. 0.676 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:208 Resp: 38359

Ion	Ratio	Lower	Upper
208	100		
197	0.0	0.0	0.0

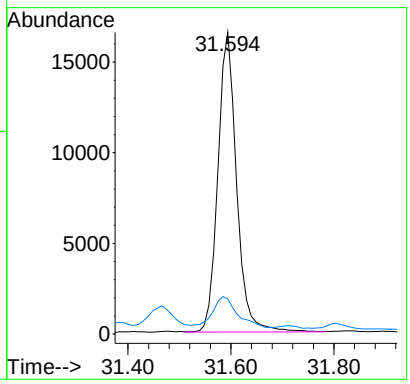


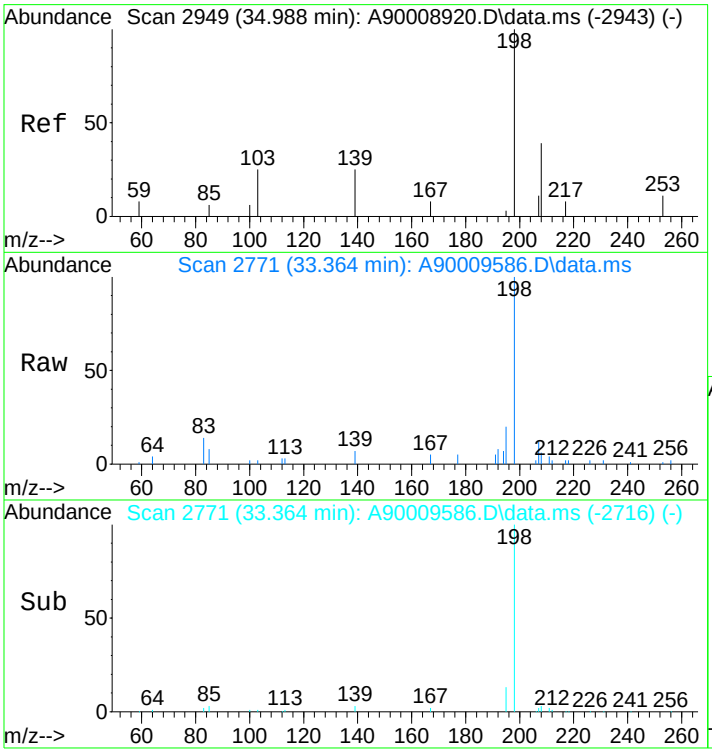


#33
Dibenzothiophene
Concen: 154.93 ng/mL
RT: 31.594 min Scan# 2577
Delta R.T. 0.000 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:184 Resp: 41815

Ion	Ratio	Lower	Upper
184	100		
152	13.4	7.0	10.4#

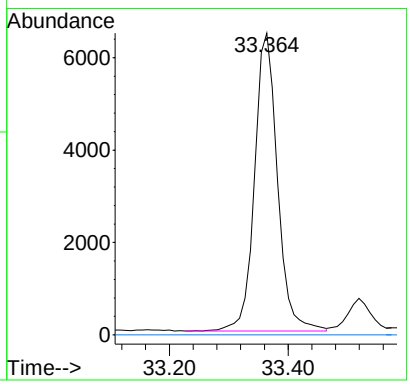


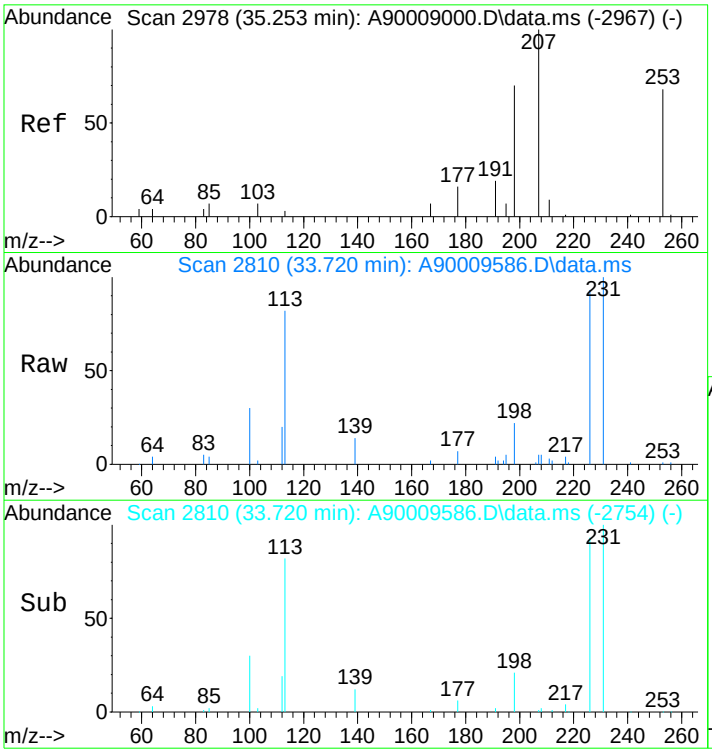


#34
4-Methyldibenzothiophene(4MDT)
Concen: 63.90 ng/mL
RT: 33.364 min Scan# 2771
Delta R.T. 0.000 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:198 Resp: 17246

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

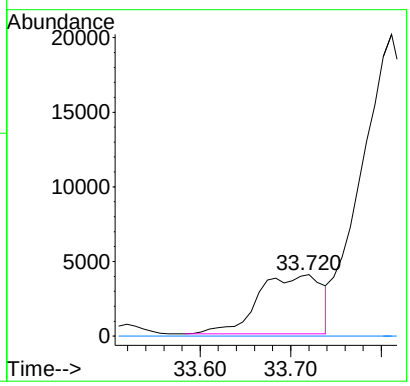


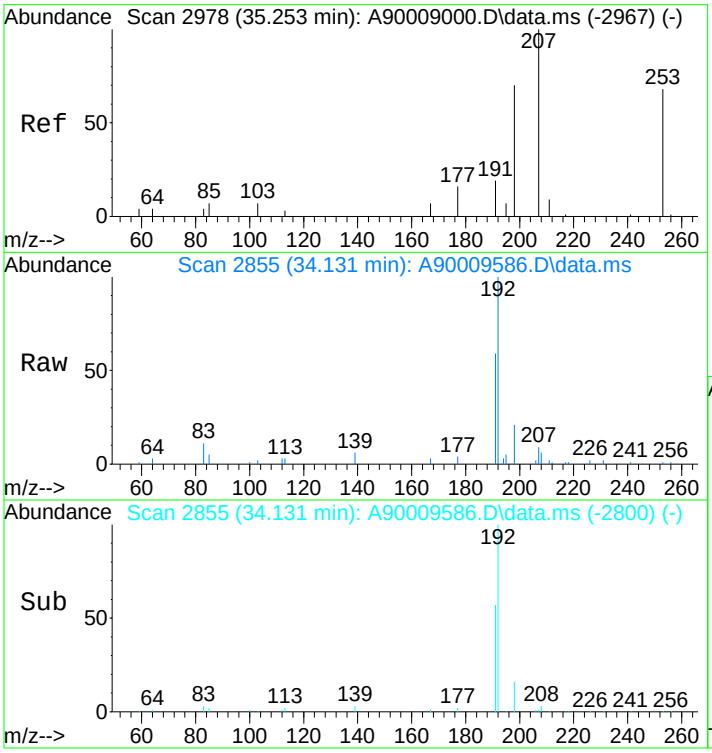


#35
2/3-Methyldibenzothiophene(2MDT)
Concen: 72.73 ng/mL m
RT: 33.720 min Scan# 2810
Delta R.T. 0.010 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:198 Resp: 19631

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

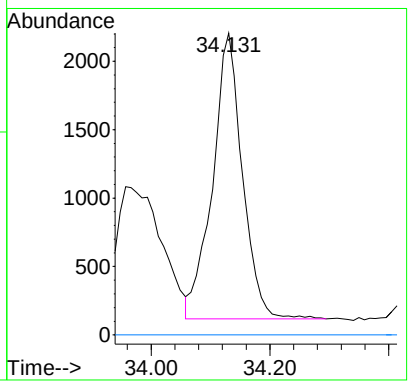


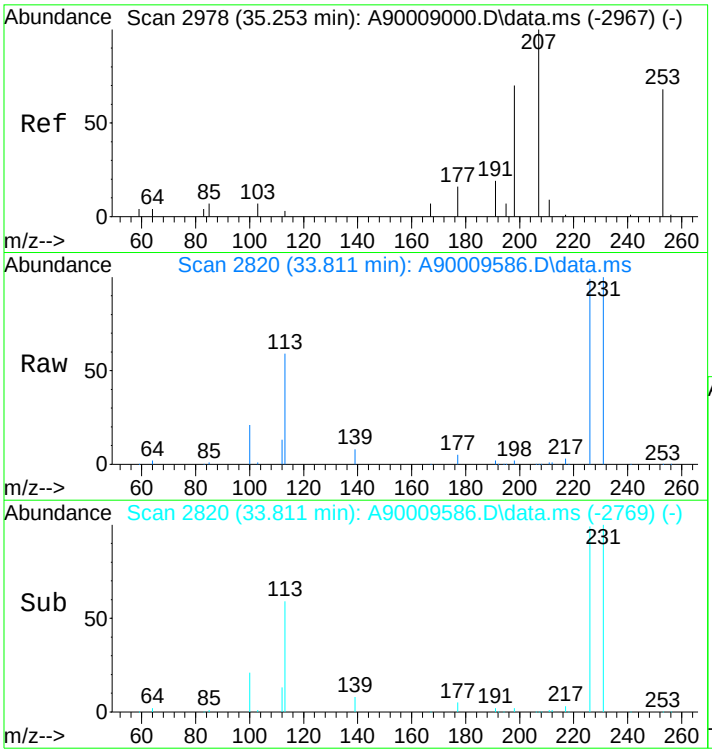


#36
1-Methyldibenzothiophene(1MDT)
Concen: 26.98 ng/mL
RT: 34.131 min Scan# 2855
Delta R.T. 0.000 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:198 Resp: 7283

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

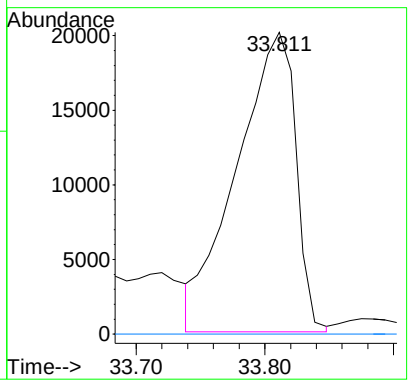


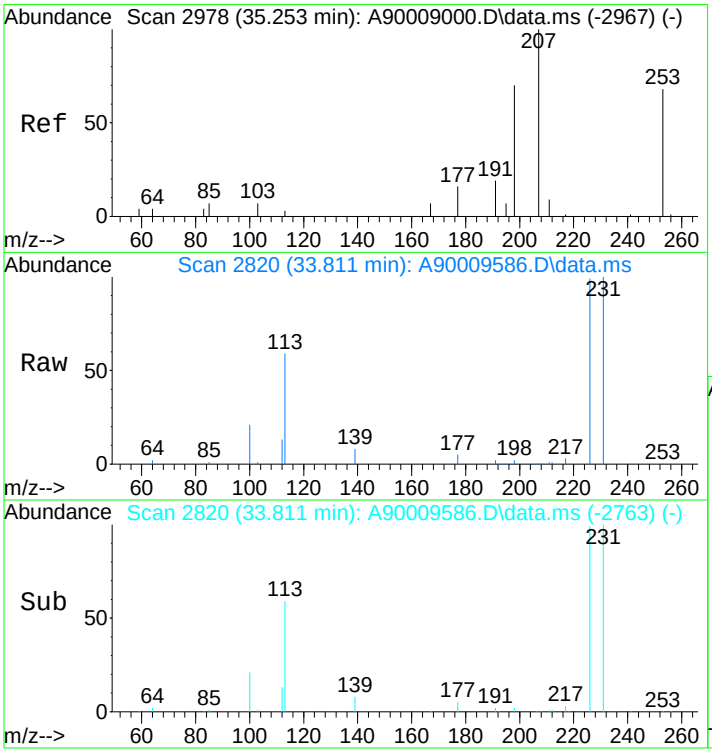


#37
OTP
Concen: 237.12 ng/mL
RT: 33.811 min Scan# 2820
Delta R.T. 0.019 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:198 Resp: 63997

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

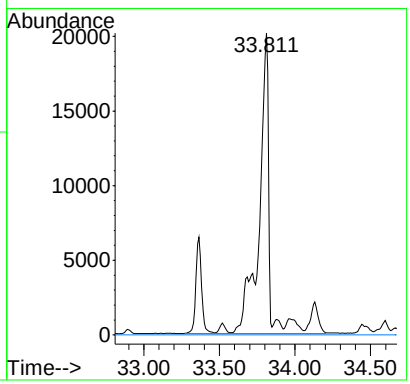


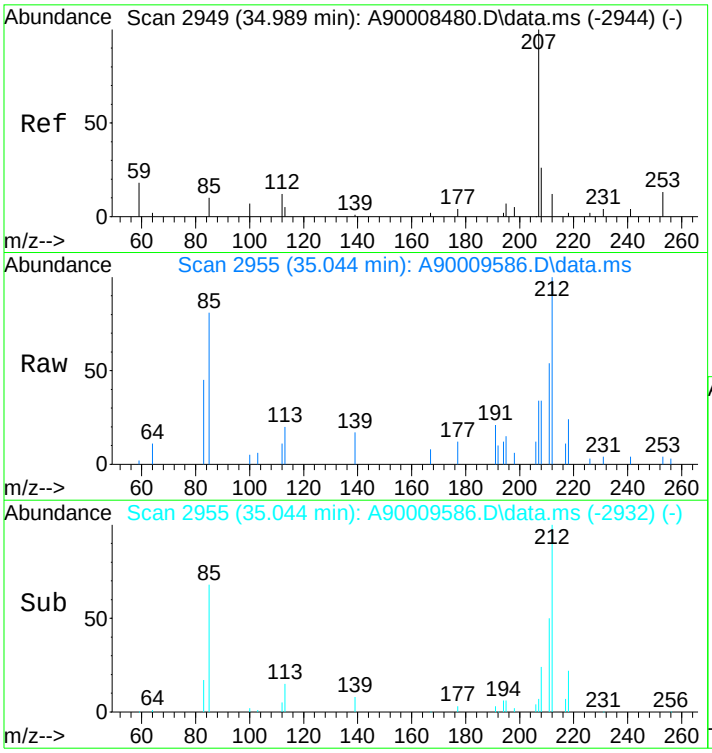


#38
C1-Dibenzothiophenes
Concen: 440.83 ng/mL m
RT: 33.811 min Scan# 2820
Delta R.T. 0.448 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:198 Resp: 118978

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

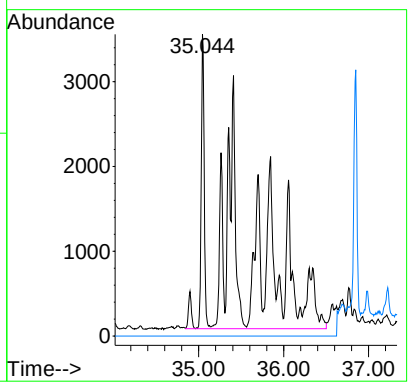


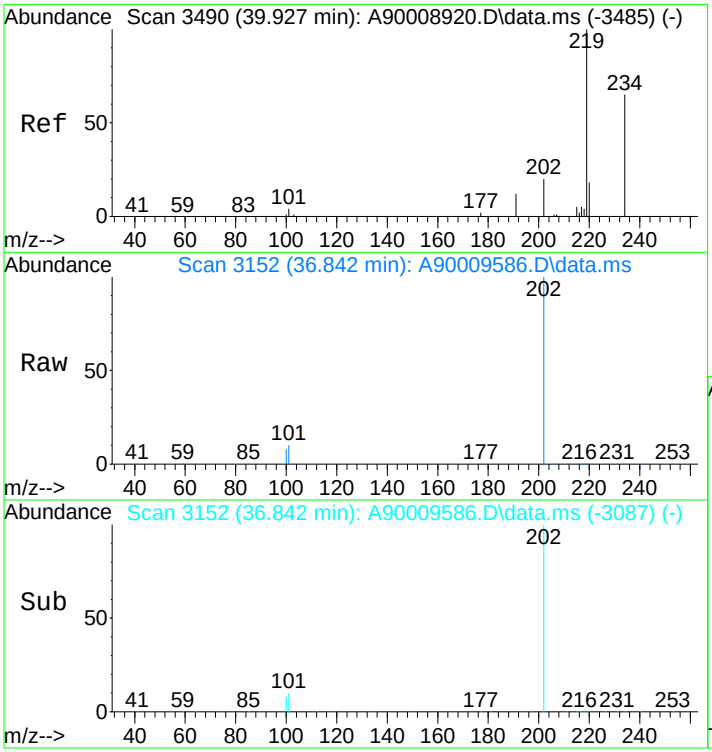


#39
C2-Dibenzothiophenes
Concen: 232.37 ng/mL m
RT: 35.044 min Scan# 2955
Delta R.T. -0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:212 Resp: 62715

Ion	Ratio	Lower	Upper
212	100		
197	0.0	0.0	0.0

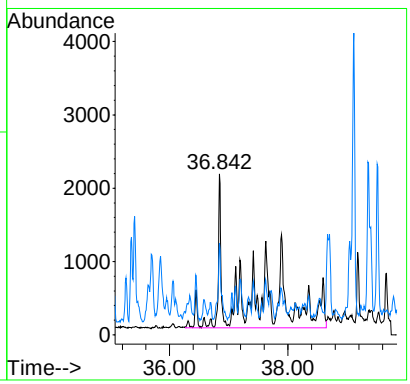


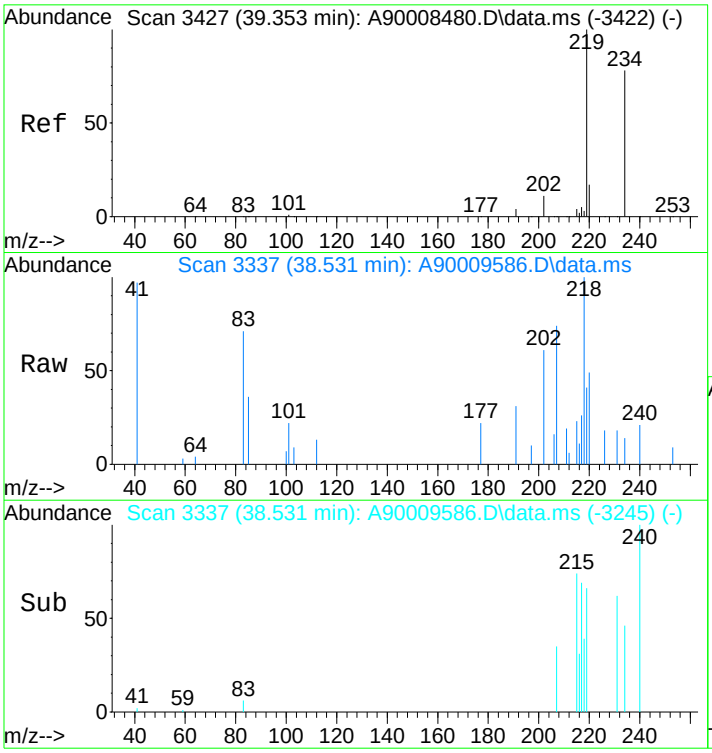


#40
C3-Dibenzothiophenes
Concen: 154.52 ng/mL m
RT: 36.842 min Scan# 3152
Delta R.T. -0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:226 Resp: 41706

Ion	Ratio	Lower	Upper
226	100		
211	9.6	46.4	69.6#

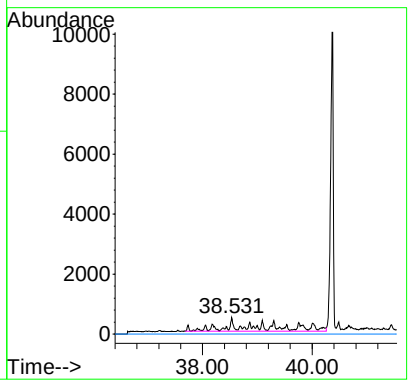


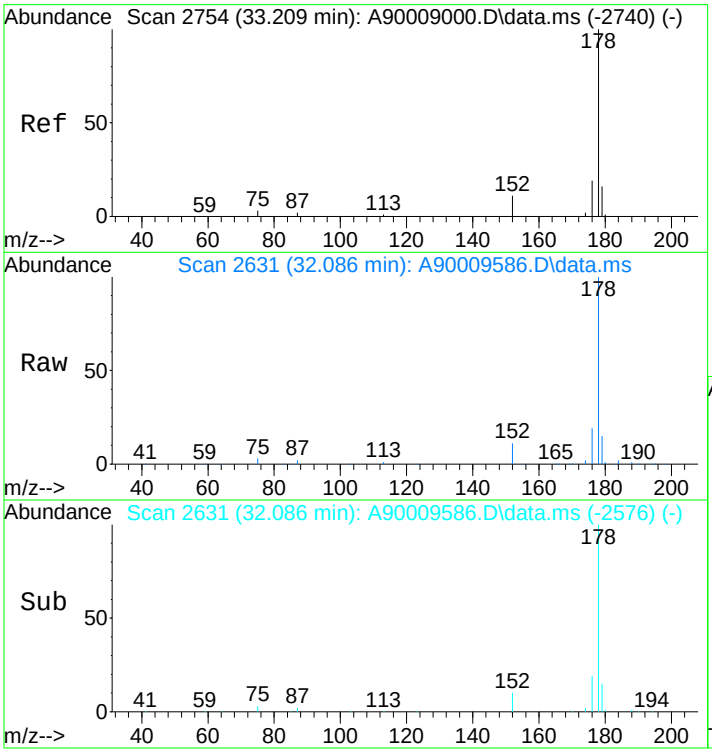


#41
C4-Dibenzothiophenes
Concen: 65.06 ng/mL m
RT: 38.531 min Scan# 3337
Delta R.T. -0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:240 Resp: 17560

Ion	Ratio	Lower	Upper
240	100		
225	0.0	0.0	0.0

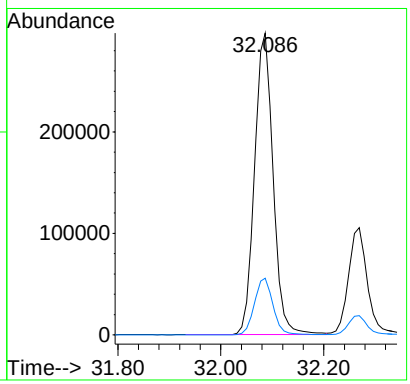


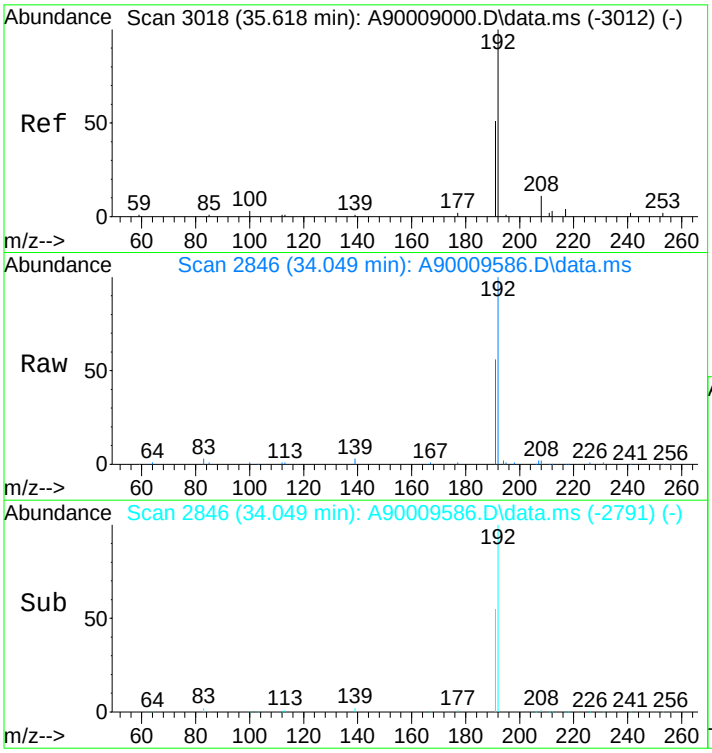


#43
Phenanthrene
Concen: 2667.73 ng/mL
RT: 32.086 min Scan# 2631
Delta R.T. 0.000 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:178 Resp: 743861

Ion	Ratio	Lower	Upper
178	100		
176	18.8	15.1	22.7

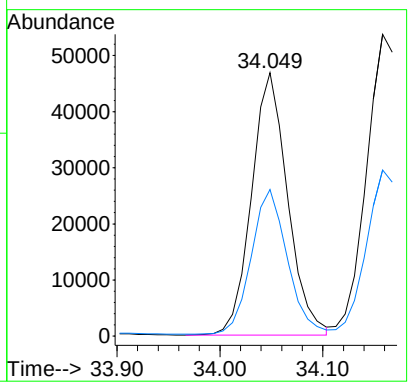


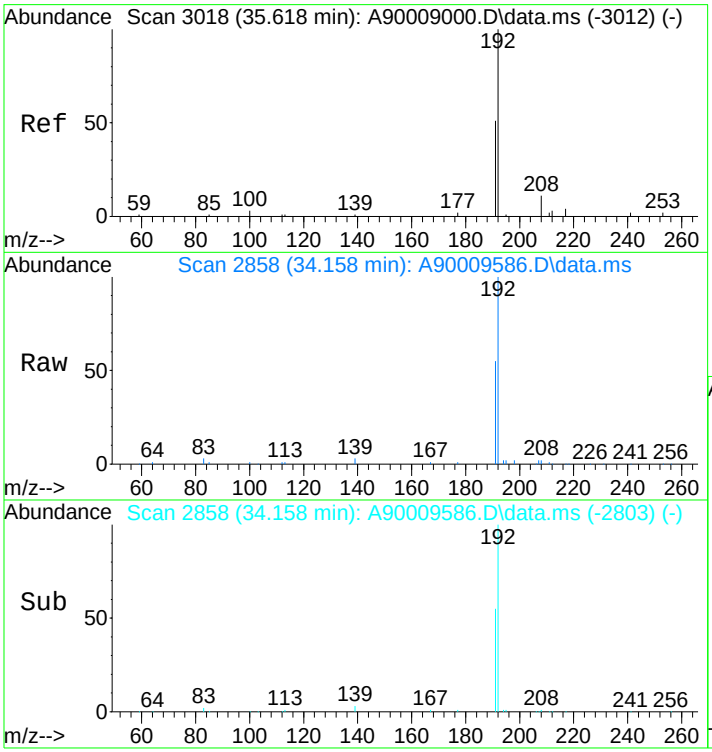


#44
3-Methylphenanthrene(3MP)
Concen: 407.81 ng/mL
RT: 34.049 min Scan# 2846
Delta R.T. 0.000 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:192 Resp: 113713

Ion	Ratio	Lower	Upper
192	100		
191	55.1	45.9	68.9

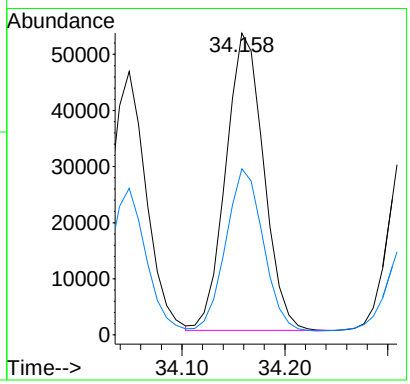


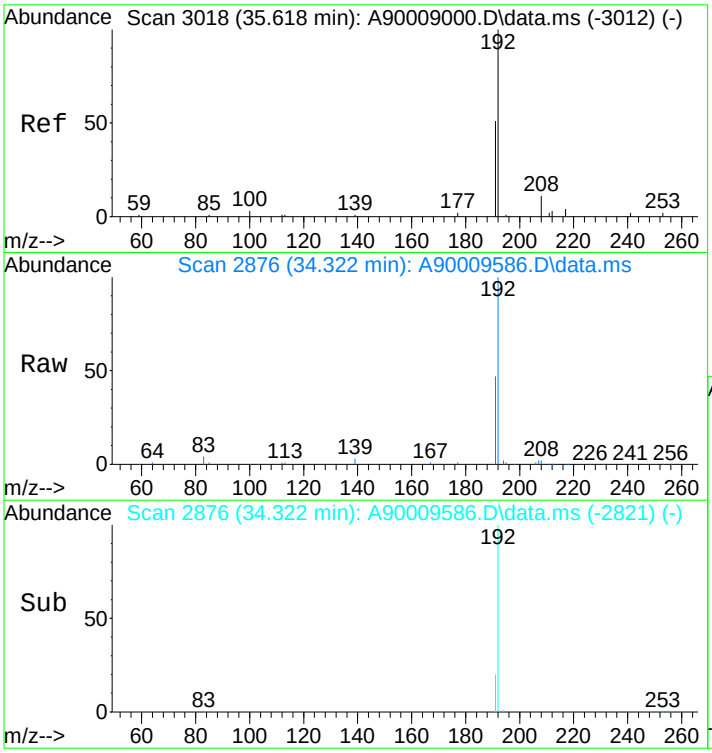


#45
2-Methylphenanthrene(2MP)
Concen: 485.28 ng/mL
RT: 34.158 min Scan# 2858
Delta R.T. 0.000 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:192 Resp: 135315

Ion	Ratio	Lower	Upper
192	100		
191	53.8	44.9	67.3

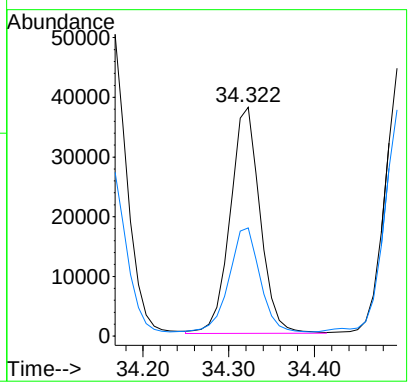


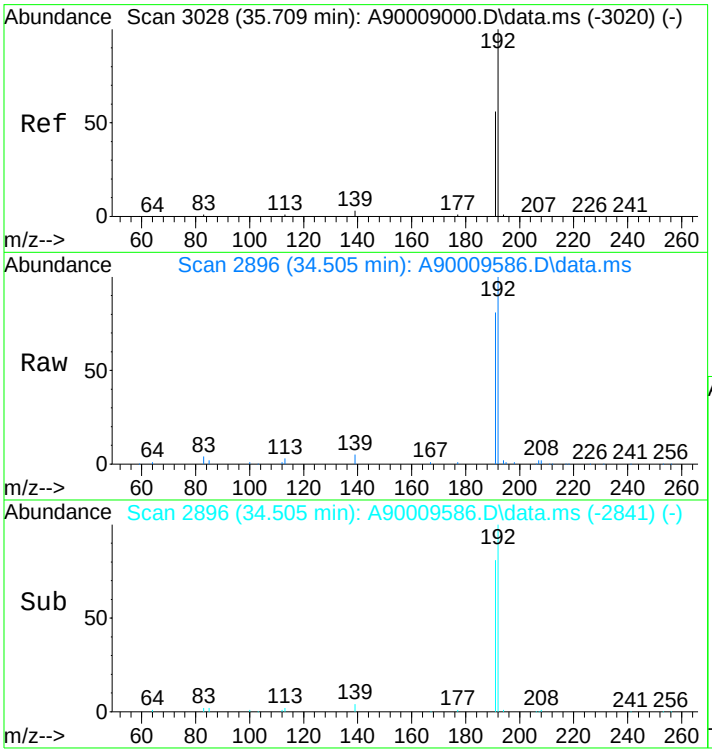


#46
2-Methylanthracene(2MA)
Concen: 329.47 ng/mL
RT: 34.322 min Scan# 2876
Delta R.T. 0.000 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:192 Resp: 91869

Ion	Ratio	Lower	Upper
192	100		
191	48.8	96.8	145.2#

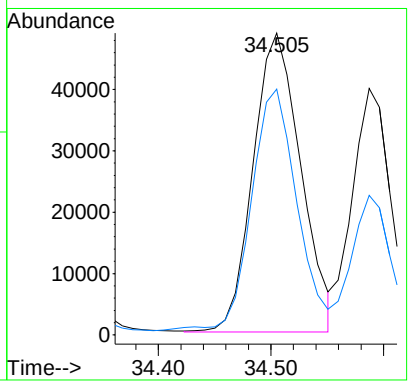


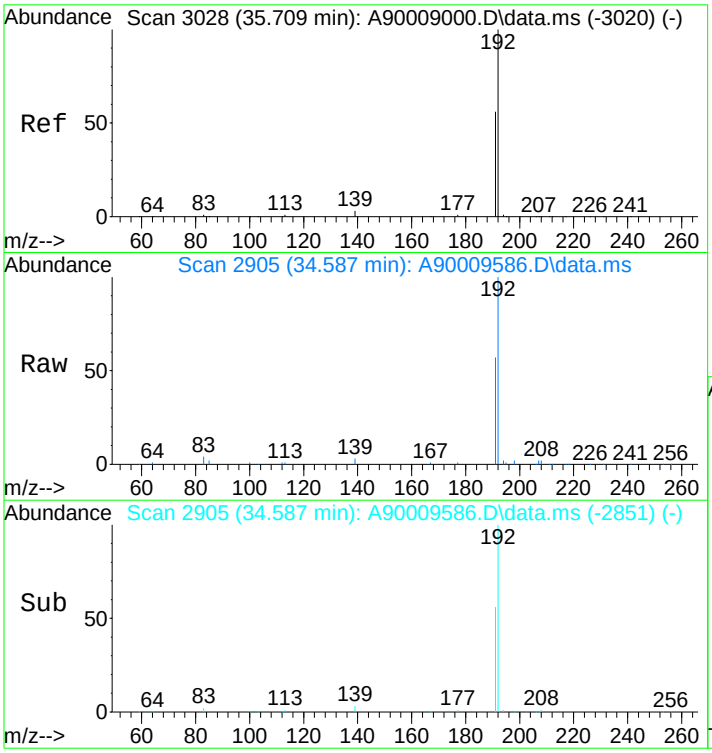


#47
9/4-Methylphenanthrene(9MP)
Concen: 514.28 ng/mL m
RT: 34.505 min Scan# 2896
Delta R.T. 0.000 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:192 Resp: 143401

Ion	Ratio	Lower	Upper
192	100		
191	37.3	44.5	66.7#

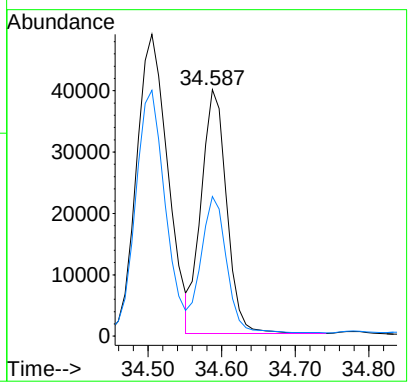


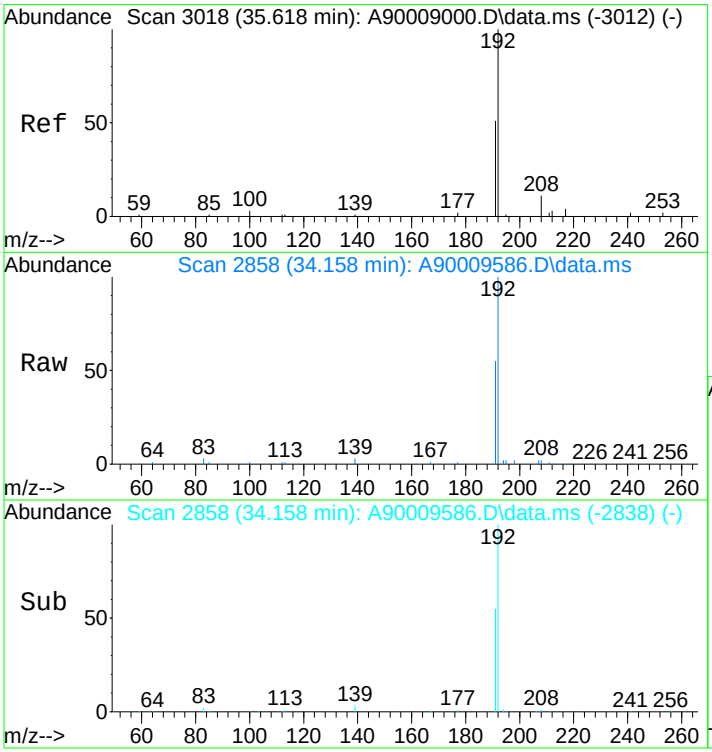


#48
1-Methylphenanthrene(1MP)
Concen: 343.25 ng/mL
RT: 34.587 min Scan# 2905
Delta R.T. -0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:192 Resp: 95711

Ion	Ratio	Lower	Upper
192	100		
191	55.9	46.9	70.3

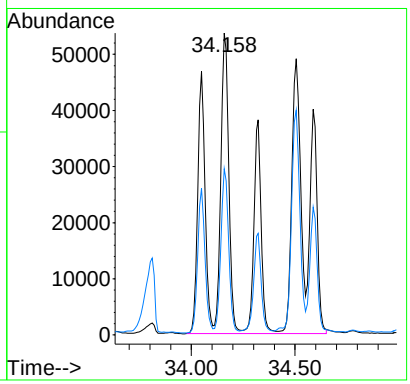


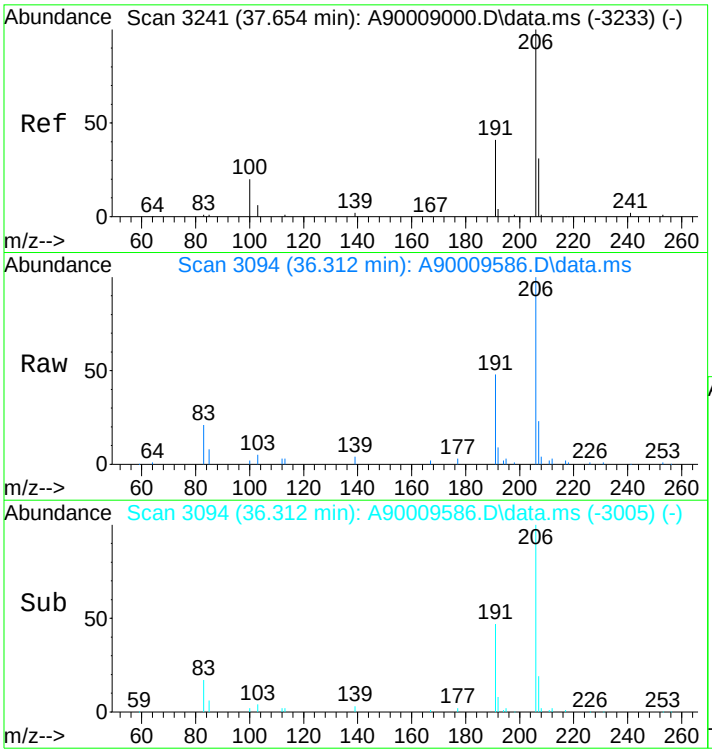


#49
C1-Phenanthrenes/Anthracenes
Concen: 2117.51 ng/mL m
RT: 34.158 min Scan# 2858
Delta R.T. -0.346 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:192 Resp: 590441

Ion	Ratio	Lower	Upper
192	100		
191	6.3	44.5	66.7#

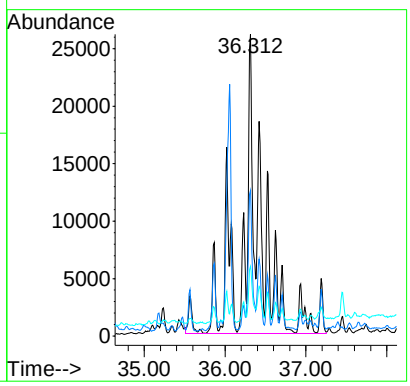


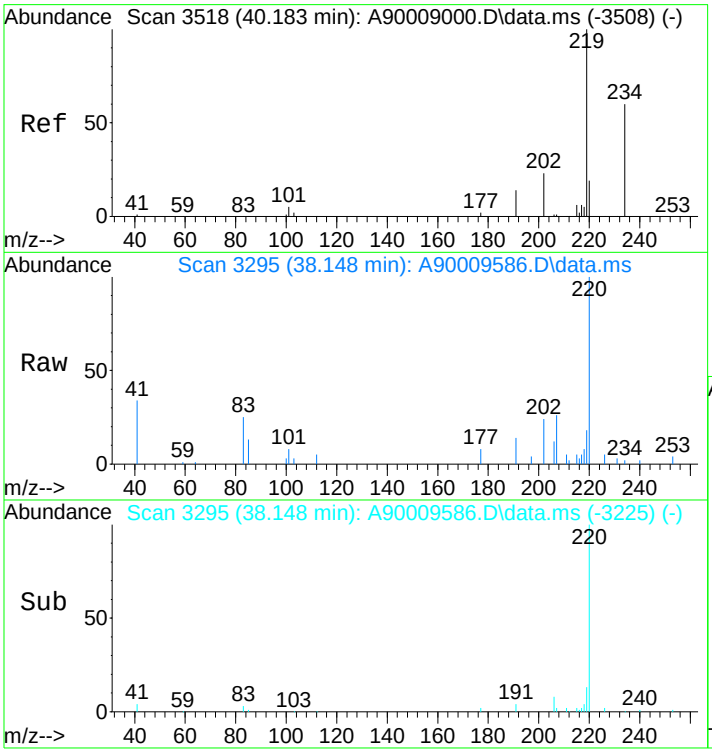


#50
C2-Phenanthrenes/Anthracenes
Concen: 1377.14 ng/mL m
RT: 36.312 min Scan# 3094
Delta R.T. 0.000 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:206 Resp: 383997

Ion	Ratio	Lower	Upper
206	100		
191	10.7	41.0	61.4#
207	4.3	17.1	25.7#

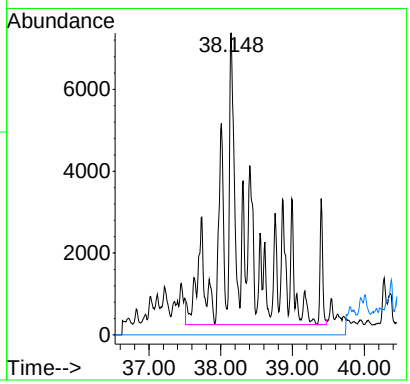


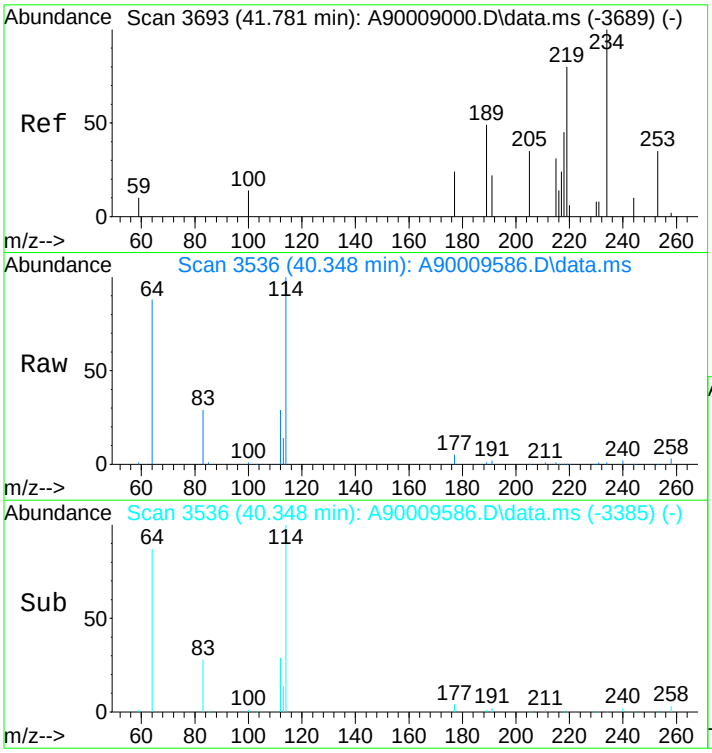


#52
C3-Phenanthrenes/Anthracenes
Concen: 557.11 ng/mL m
RT: 38.148 min Scan# 3295
Delta R.T. 0.000 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:220 Resp: 155344

Ion	Ratio	Lower	Upper
220	100		
205	0.0	0.0	0.0

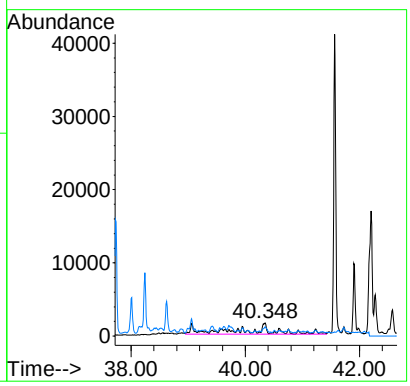


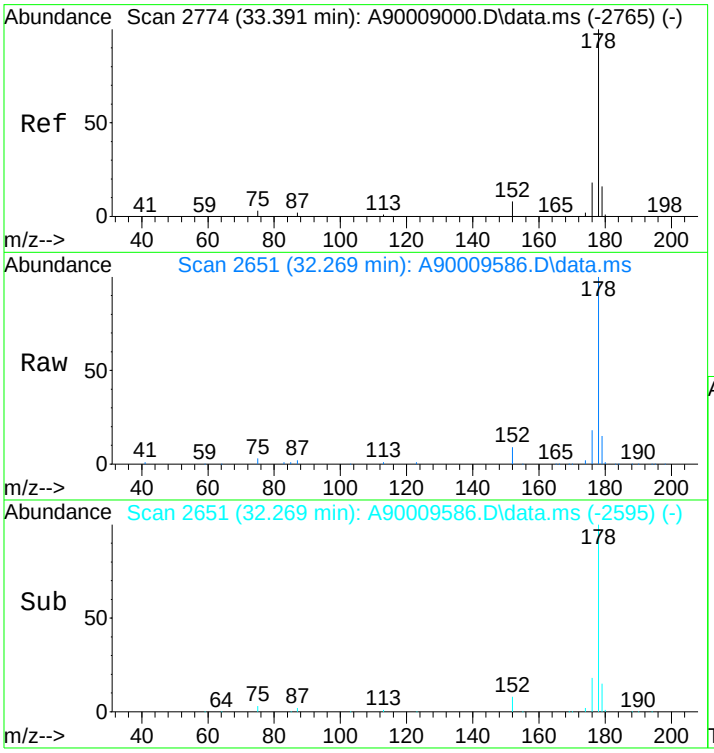


#53
C4-Phenanthrenes/Anthracenes
Concen: 191.76 ng/mL m
RT: 40.348 min Scan# 3536
Delta R.T. 0.019 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:234 Resp: 53471

Ion	Ratio	Lower	Upper
234	100		
219	6.5	52.1	78.1#

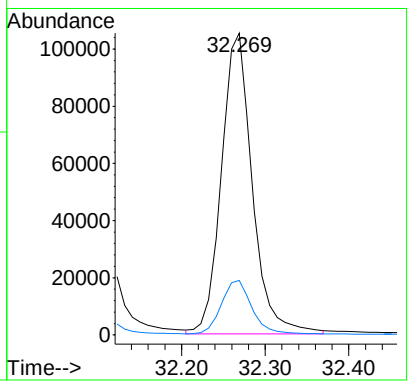


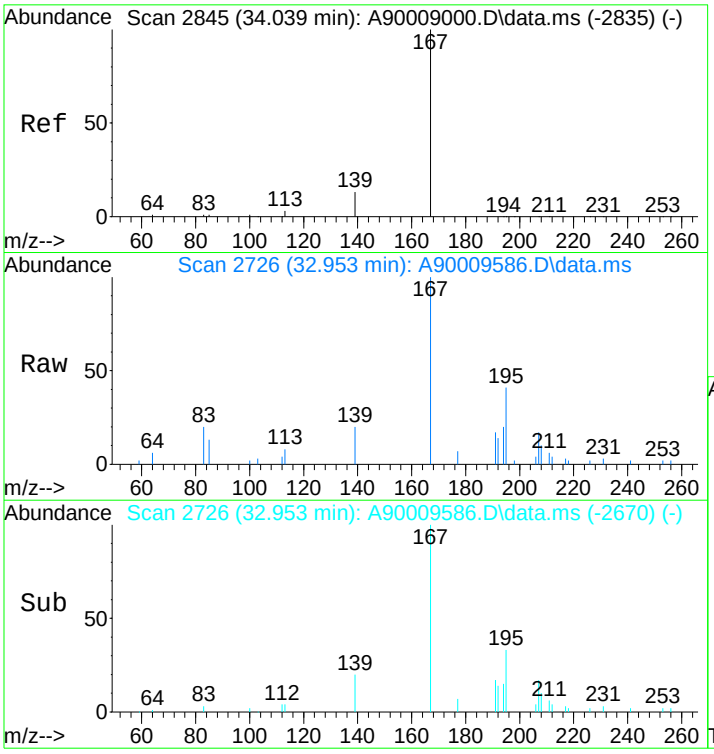


#55
Anthracene
Concen: 1044.56 ng/mL m
RT: 32.269 min Scan# 2651
Delta R.T. 0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:178 Resp: 270471

Ion	Ratio	Lower	Upper
178	100		
176	18.1	14.6	21.8

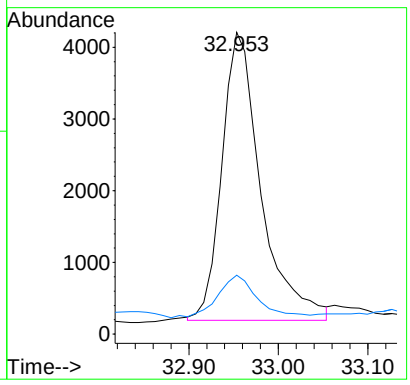


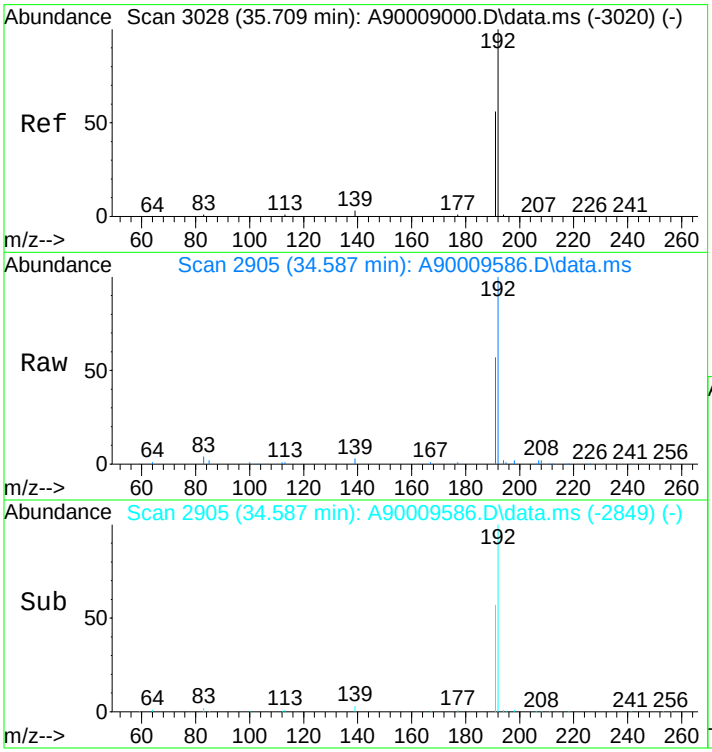


#56
Carbazole
Concen: 49.68 ng/mL m
RT: 32.953 min Scan# 2726
Delta R.T. 0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:167 Resp: 12169

Ion	Ratio	Lower	Upper
167	100		
139	14.0	10.2	15.2

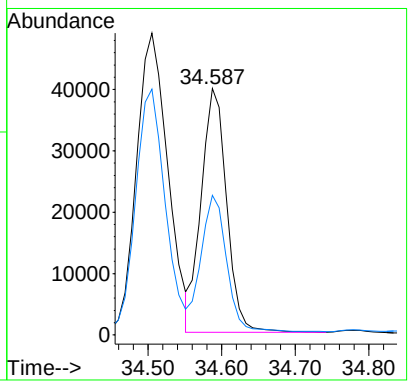


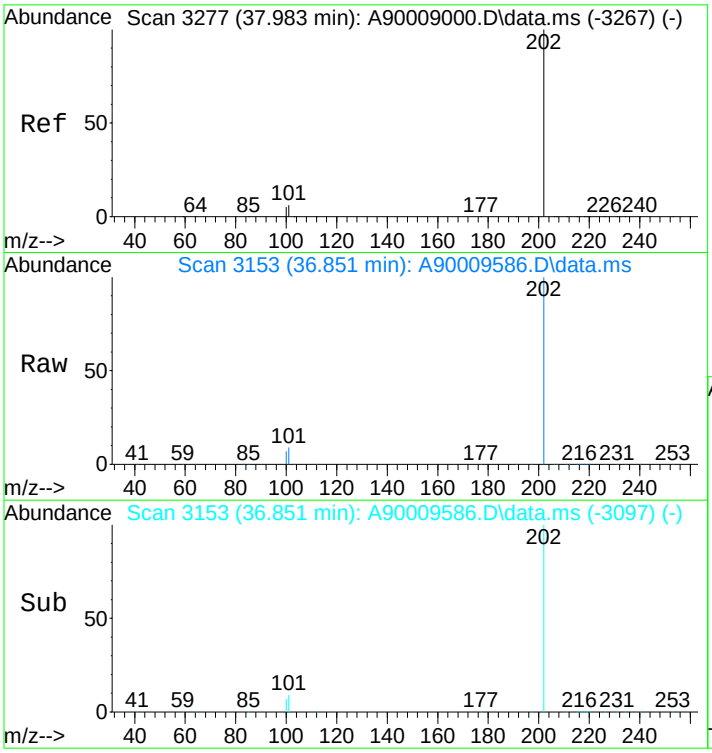


#57
1-Methylphenanthrene
Concen: 465.24 ng/mL
RT: 34.587 min Scan# 2905
Delta R.T. 0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:192 Resp: 95711

Ion	Ratio	Lower	Upper
192	100		
191	55.9	44.9	67.3

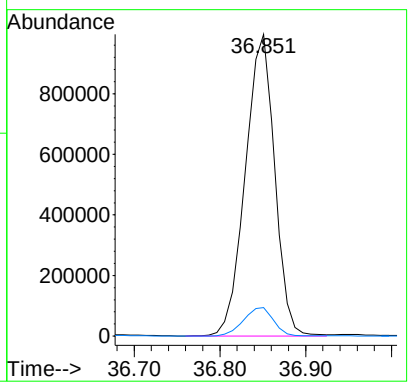


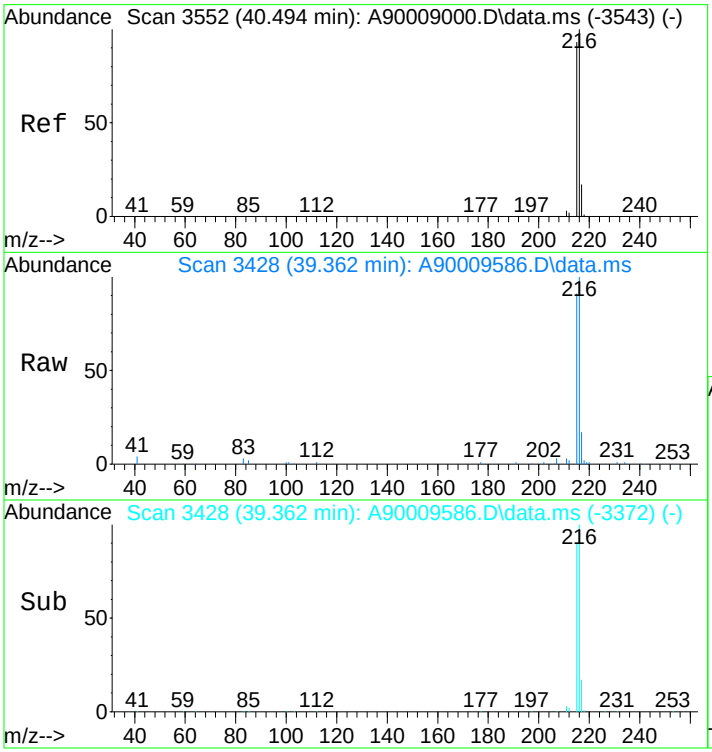


#58
Fluoranthene
Concen: 7617.42 ng/mL
RT: 36.851 min Scan# 3153
Delta R.T. 0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:202 Resp: 2372745

Ion	Ratio	Lower	Upper
202	100		
101	9.7	8.2	12.2

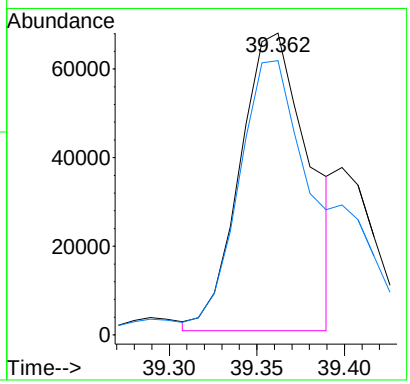


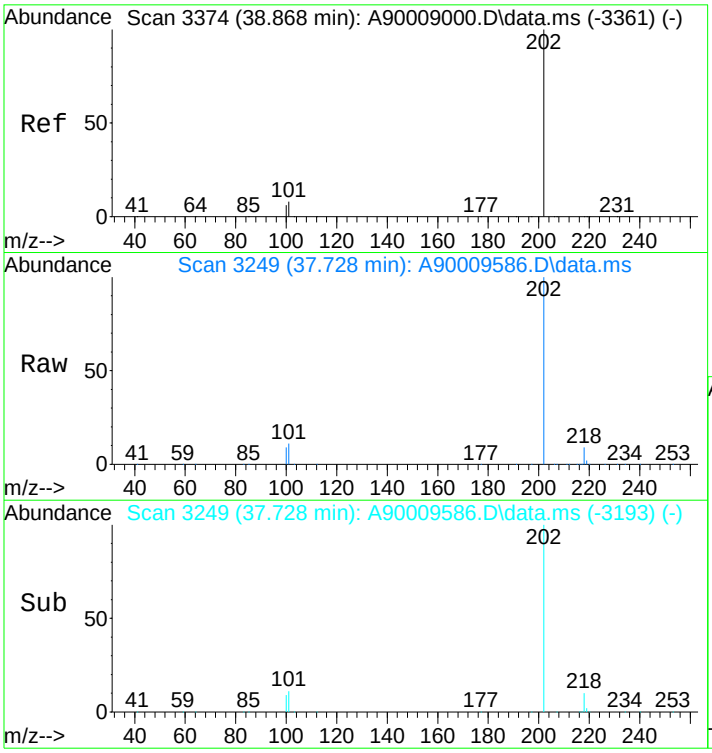


#59
Benzo(b)fluorene
Concen: 995.83 ng/mL m
RT: 39.362 min Scan# 3428
Delta R.T. 0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:216 Resp: 184472

Ion	Ratio	Lower	Upper
216	100		
215	113.9	73.4	110.2#

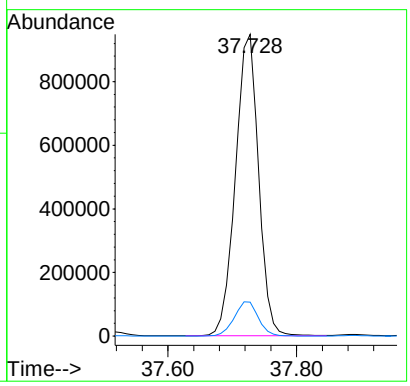


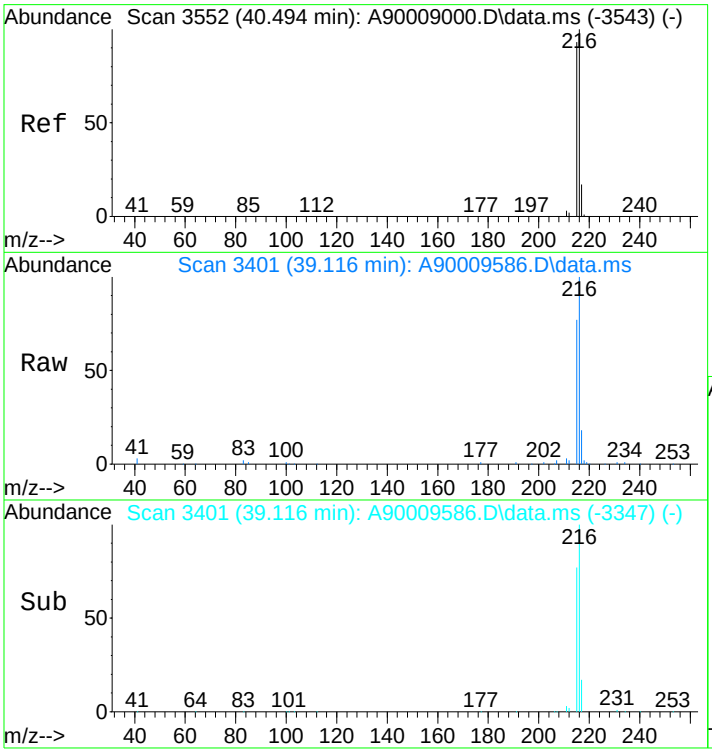


#60
Pyrene
Concen: 7460.90 ng/mL
RT: 37.728 min Scan# 3249
Delta R.T. 0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:202 Resp: 2370959

Ion	Ratio	Lower	Upper
202	100		
101	11.8	9.5	14.3

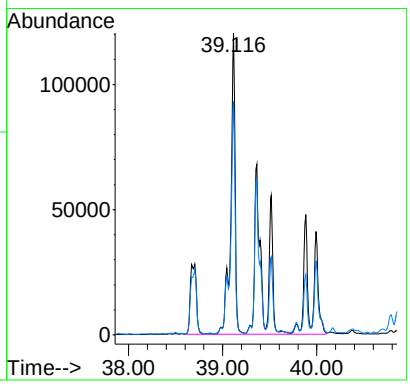


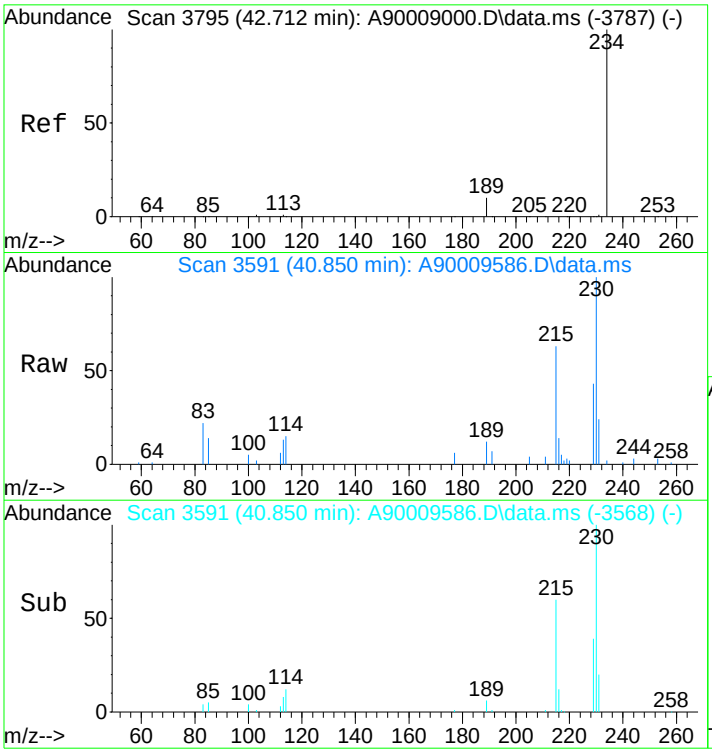


#61
C1-Fluoranthenes/Pyrenes
Concen: 3725.01 ng/mL m
RT: 39.116 min Scan# 3401
Delta R.T. 0.000 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:216 Resp: 1183751

Ion	Ratio	Lower	Upper
216	100		
215	21.5	73.5	110.3#

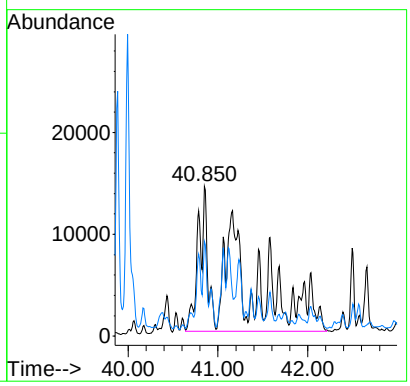


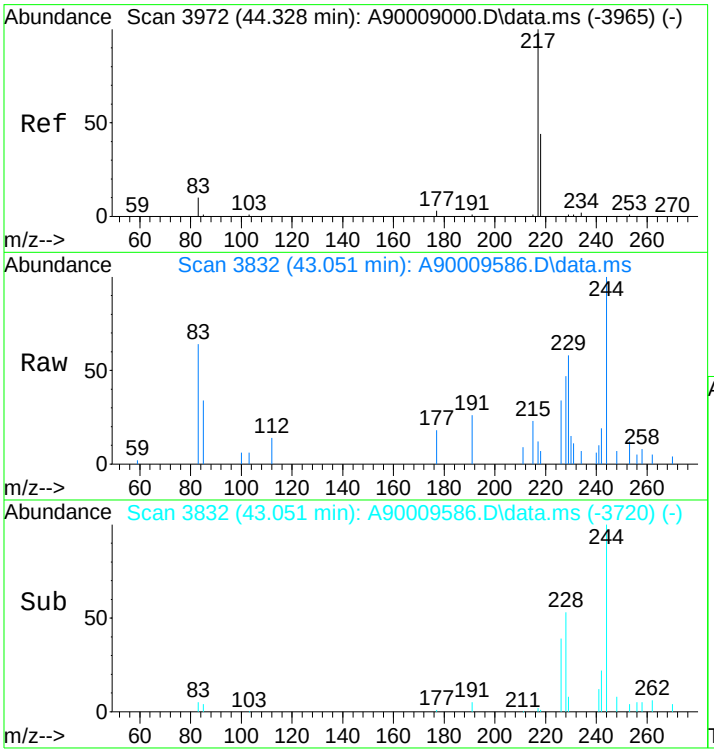


#62
C2-Fluoranthenes/Pyrenes
Concen: 1216.14 ng/mL m
RT: 40.850 min Scan# 3591
Delta R.T. -0.073 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:230 Resp: 386471

Ion	Ratio	Lower	Upper
230	100		
215	2.6	93.1	139.7#

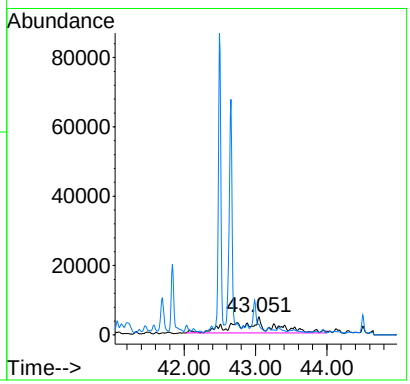


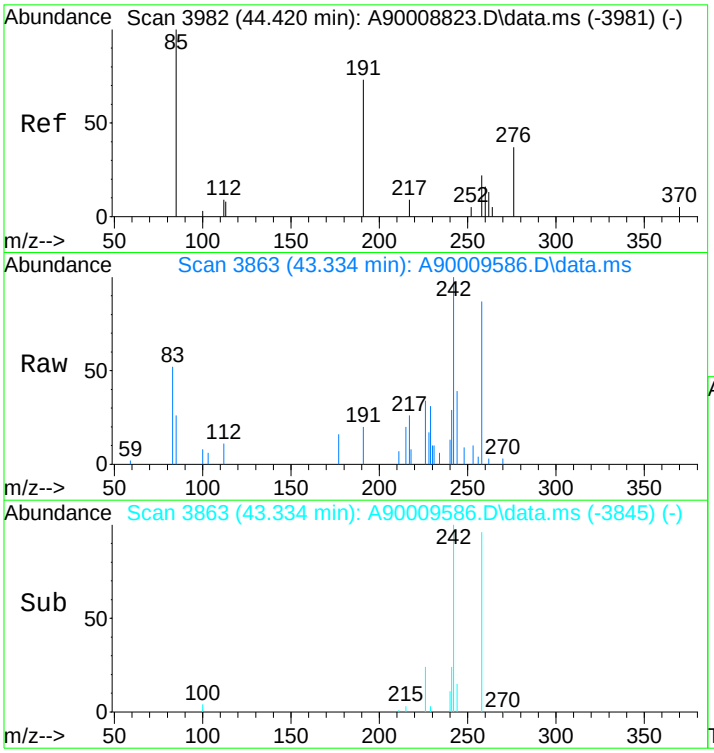


#63
C3-Fluoranthenes/Pyrenes
Concen: 484.54 ng/mL m
RT: 43.051 min Scan# 3832
Delta R.T. 0.110 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:244 Resp: 153980

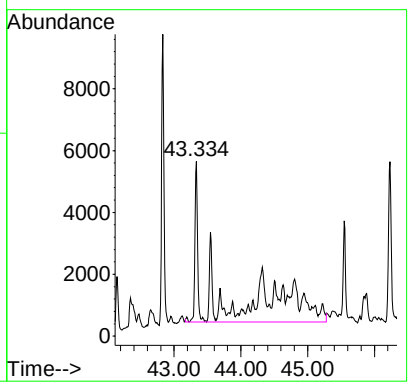
Ion	Ratio	Lower	Upper
244	100		
229	1.8	75.0	112.4#

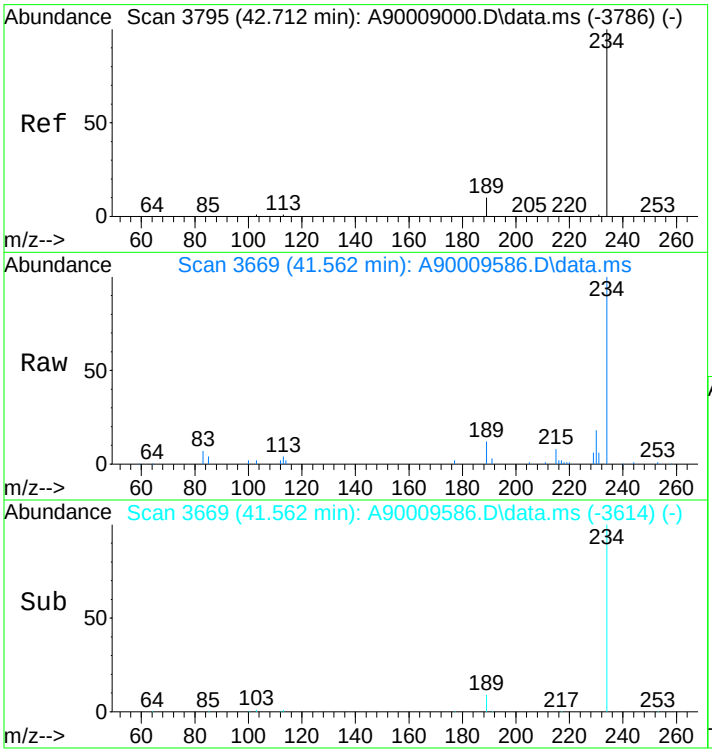




#64
C4-Fluoranthenes/Pyrenes
Concen: 258.97 ng/mL m
RT: 43.334 min Scan# 3863
Delta R.T. -0.958 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:258 Resp: 82298

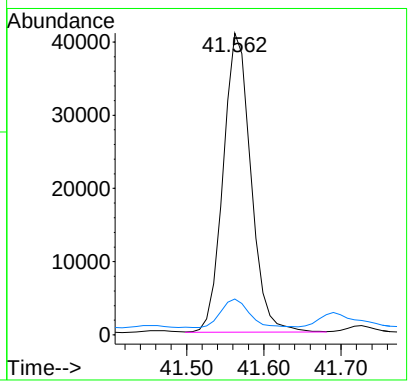


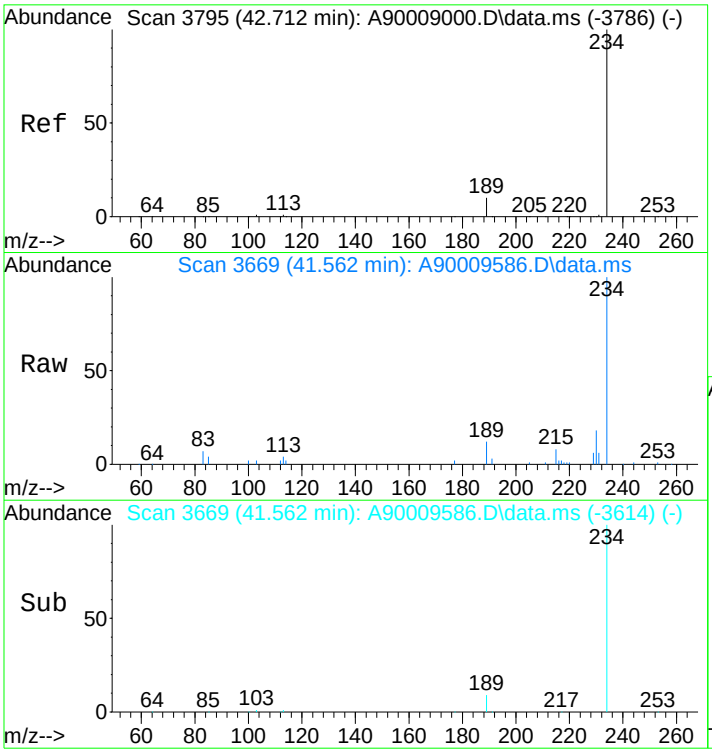


#66
Naphthobenzothiophene
Concen: 369.27 ng/ml
RT: 41.562 min Scan# 3669
Delta R.T. 0.000 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:234 Resp: 101824

Ion	Ratio	Lower	Upper
234	100		
189	10.2	7.2	10.8

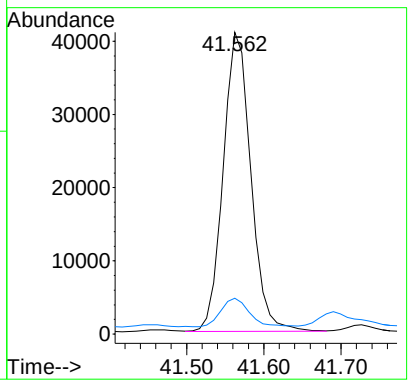


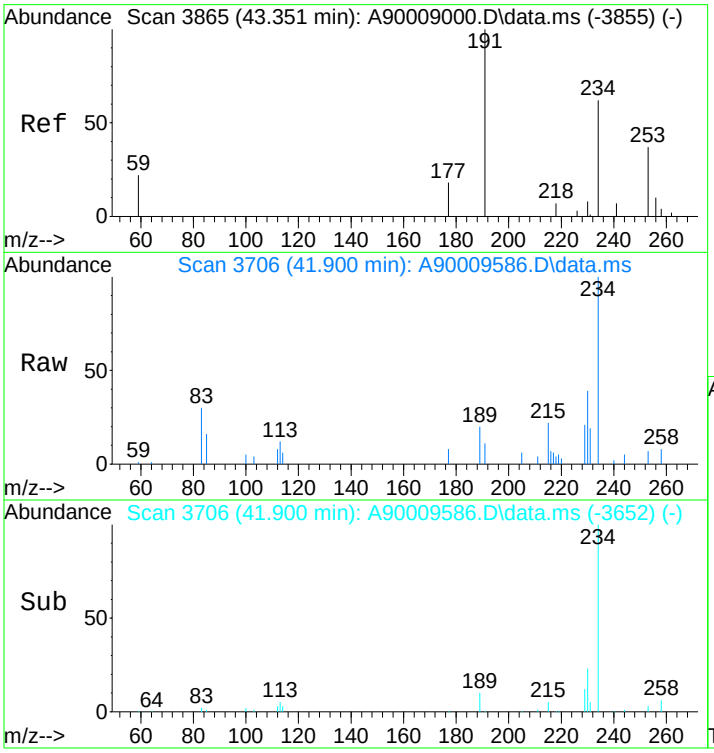


#67
Naphthobenzothiophene-2,1-D
Concen: 369.27 ng/mL
RT: 41.562 min Scan# 3669
Delta R.T. 0.000 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:234 Resp: 101824

Ion	Ratio	Lower	Upper
234	100		
189	10.2	7.2	10.8

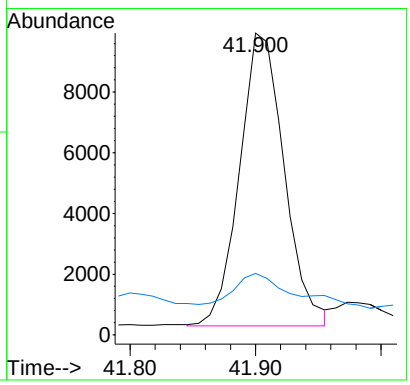


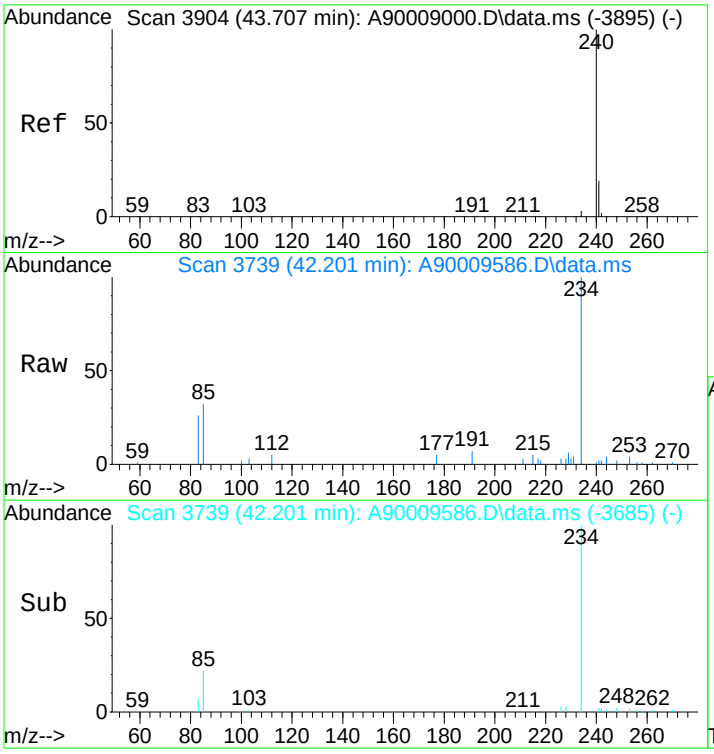


#68
Naphthobenzothiophene-1,2-D
Concen: 86.60 ng/mL m
RT: 41.900 min Scan# 3706
Delta R.T. -0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:234 Resp: 23879

Ion	Ratio	Lower	Upper
234	100		
189	2.5	81.0	121.4#

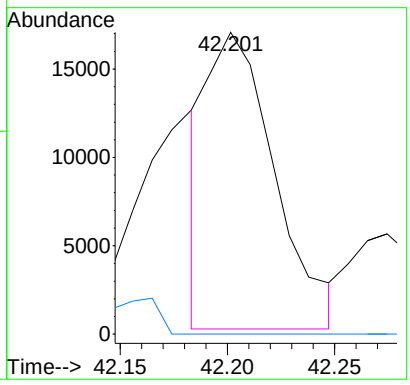


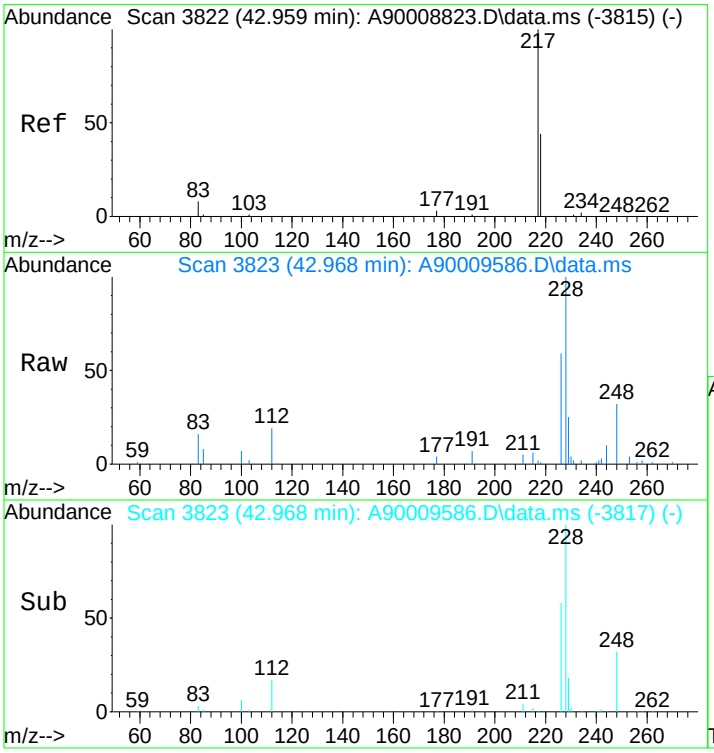


#69
Naphthobenzothiophene-2,3-D
Concen: 133.79 ng/mL m
RT: 42.201 min Scan# 3739
Delta R.T. -0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:234 Resp: 36893

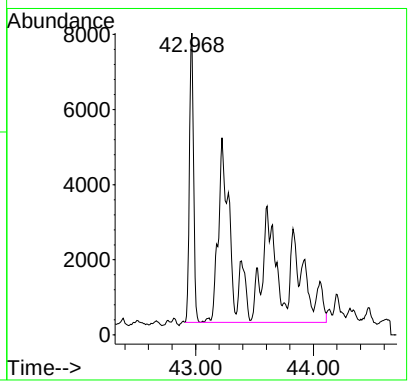
Ion	Ratio	Lower	Upper
234	100		
189	0.0	0.0	0.0

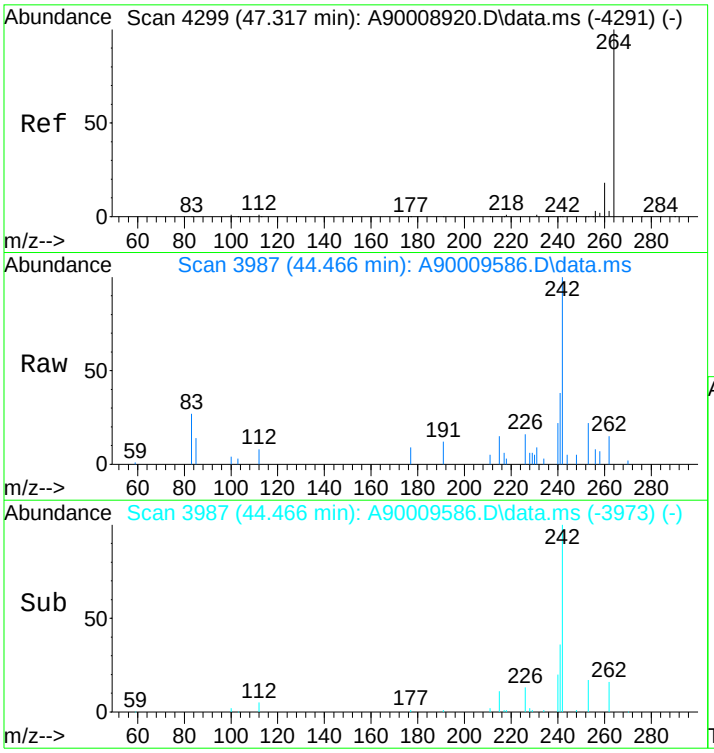




#70
C1-Naphthobenzothiophenes
Concen: 364.22 ng/ml m
RT: 42.968 min Scan# 3823
Delta R.T. 0.000 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

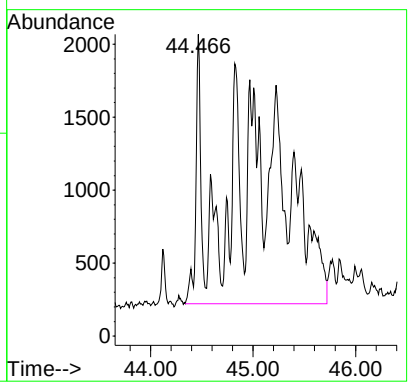
Tgt Ion:248 Resp: 100431

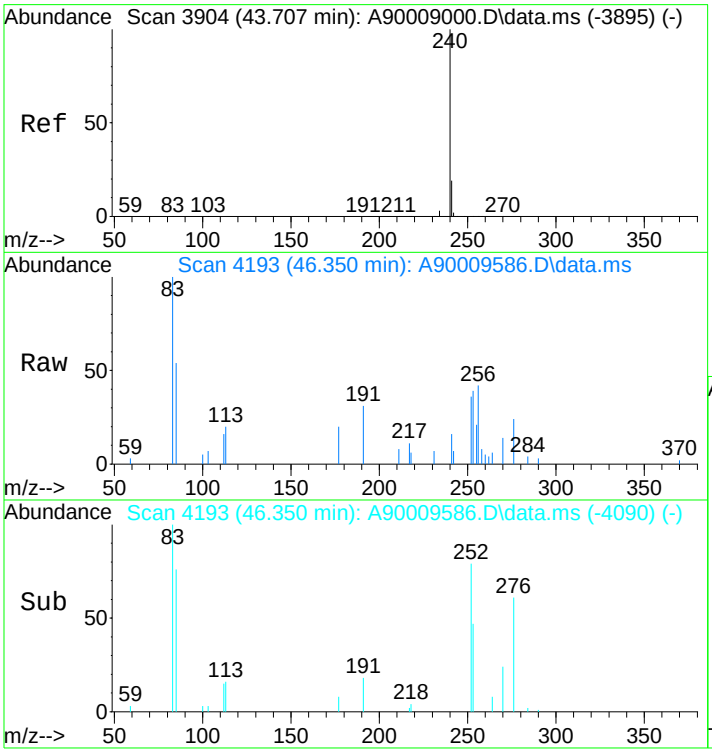




#71
C2-Naphthobenzothiophenes
Concen: 204.68 ng/ml m
RT: 44.466 min Scan# 3987
Delta R.T. -0.502 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

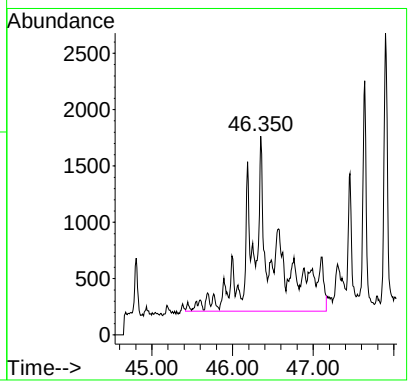
Tgt Ion:262 Resp: 56440

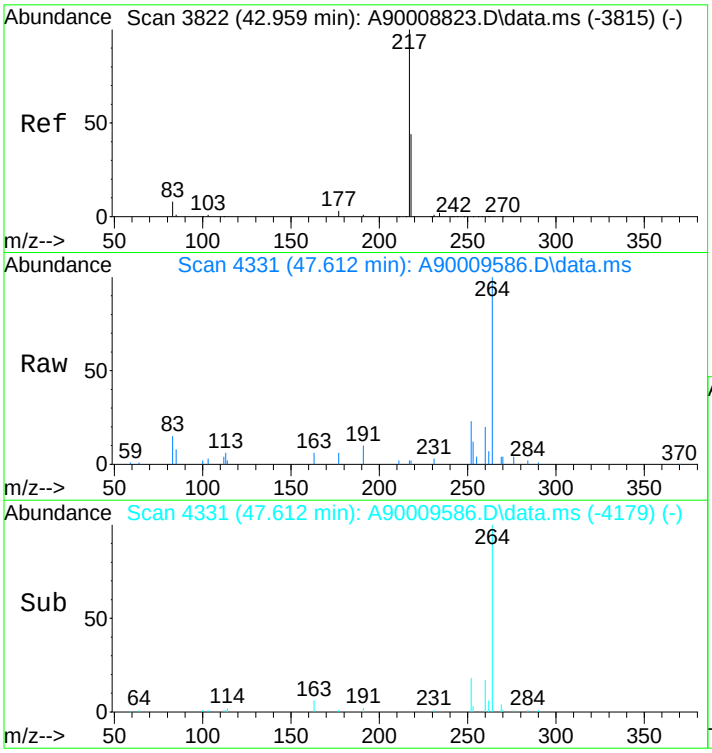




#72
C3-Naphthobenzothiophenes
Concen: 118.12 ng/ml m
RT: 46.350 min Scan# 4193
Delta R.T. -0.219 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

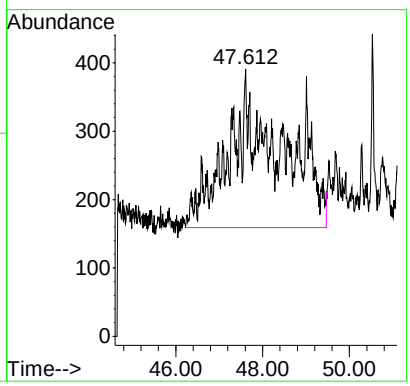
Tgt Ion:276 Resp: 32570

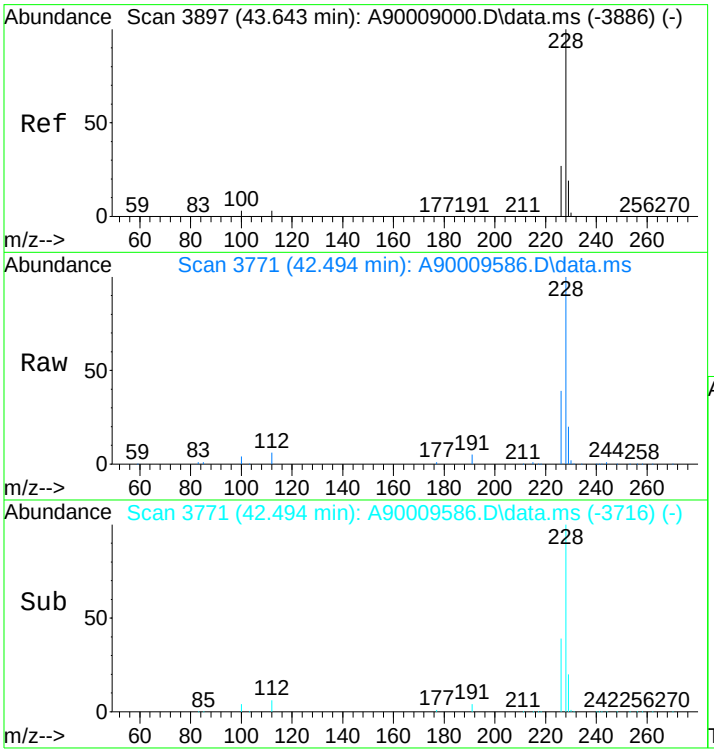




#73
C4-Naphthobenzothiophenes
Concen: 67.25 ng/mL m
RT: 47.612 min Scan# 4331
Delta R.T. 0.019 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:290 Resp: 18544

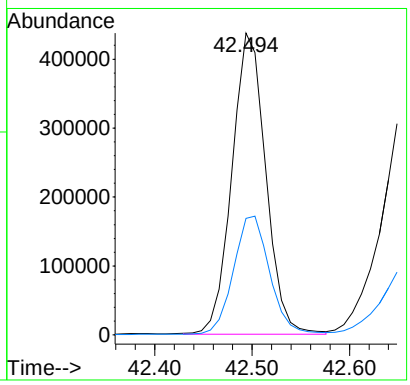


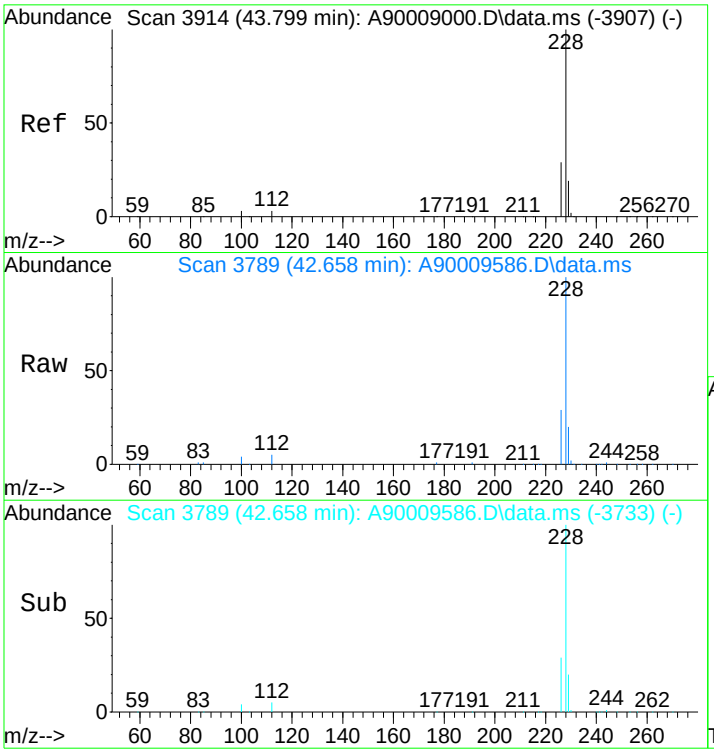


#75
Benz[a]anthracene
Concen: 3593.87 ng/mL m
RT: 42.494 min Scan# 3771
Delta R.T. 0.000 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:228 Resp: 1056049

Ion	Ratio	Lower	Upper
228	100		
226	26.8	20.8	31.2

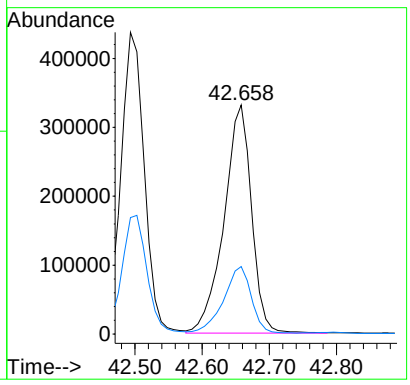


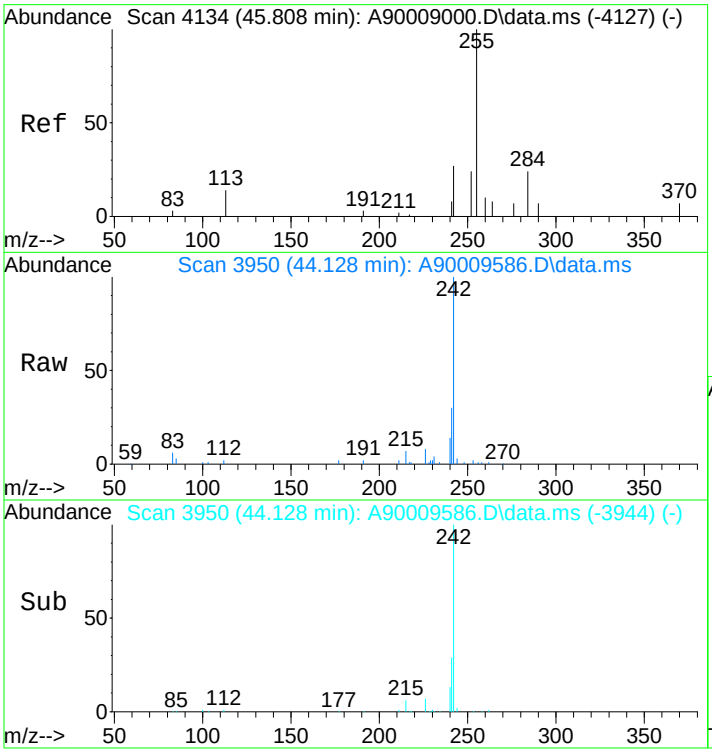


#77
Chrysene/Triphenylene
Concen: 3266.05 ng/mL m
RT: 42.658 min Scan# 3789
Delta R.T. 0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:228 Resp: 943911

Ion	Ratio	Lower	Upper
228	100		
226	30.0	23.3	34.9

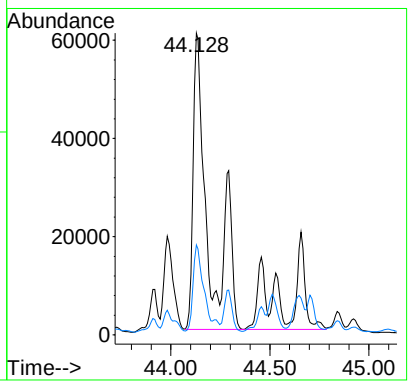


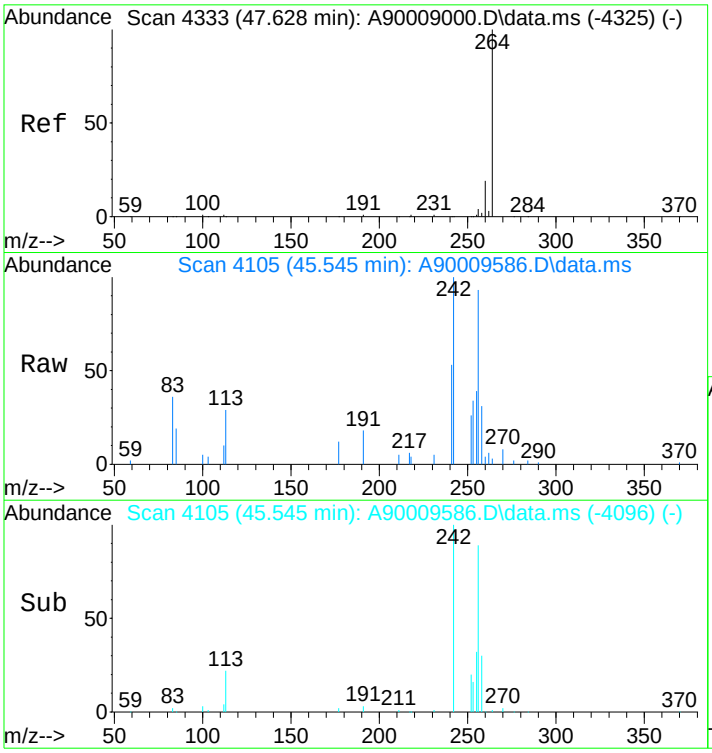


#78
C1-Chrysenes
Concen: 1536.63 ng/mL m
RT: 44.128 min Scan# 3950
Delta R.T. -0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:242 Resp: 444096

Ion	Ratio	Lower	Upper
242	100		
241	3.5	31.9	47.9#

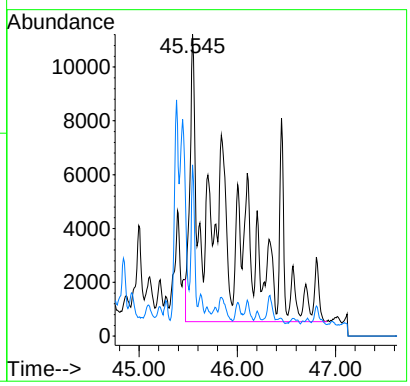


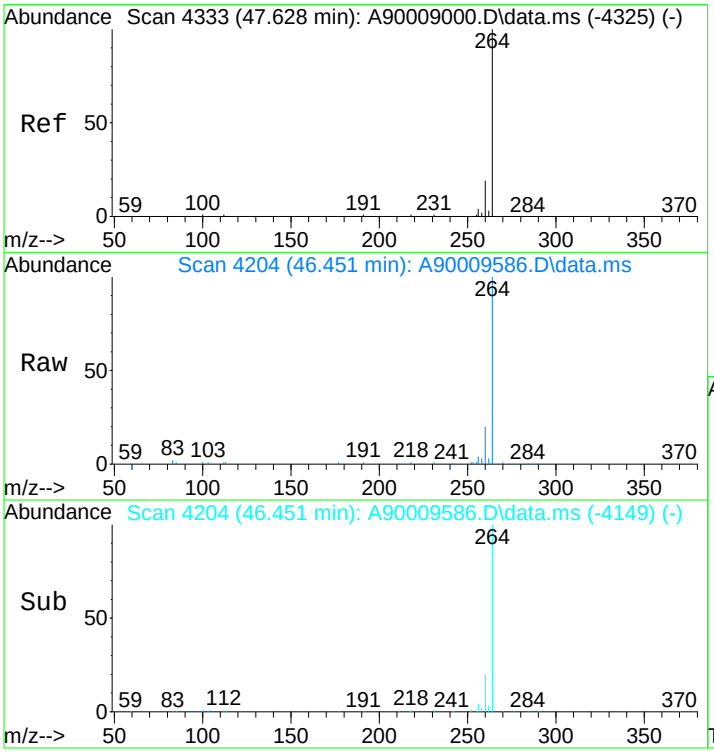


#79
C2-Chrysenes
Concen: 774.66 ng/mL m
RT: 45.545 min Scan# 4105
Delta R.T. -1.271 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:256 Resp: 223881

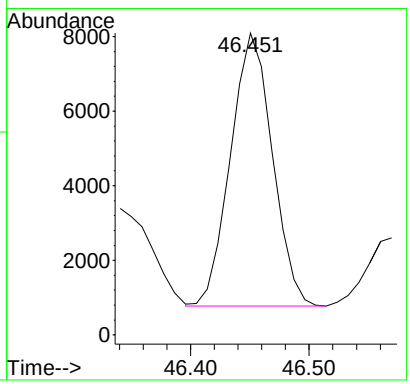
Ion	Ratio	Lower	Upper
256	100		
241	0.8	42.2	63.2#

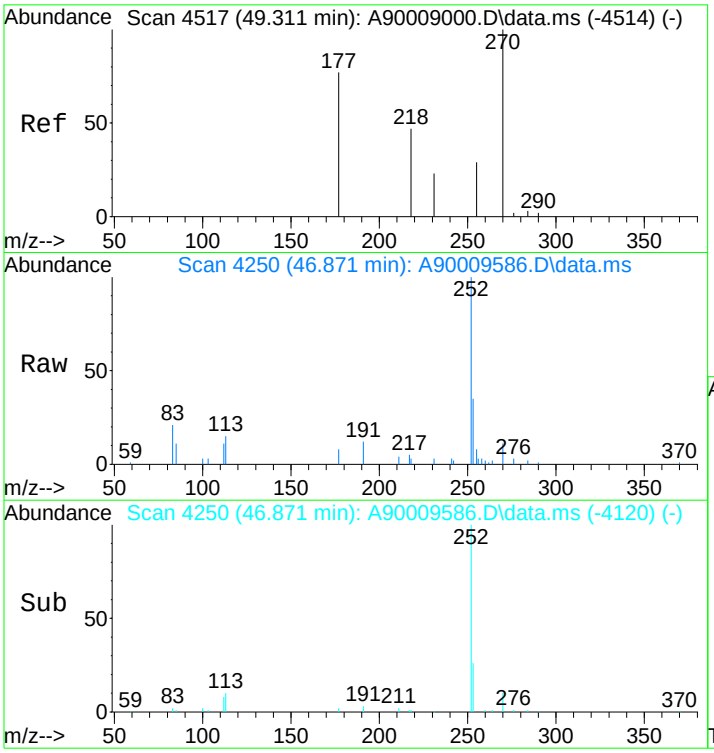




#80
BBF-d12 Surr BKGD
Concen: 61.95 ng/mL
RT: 46.451 min Scan# 4204
Delta R.T. 0.000 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:256 Resp: 17905

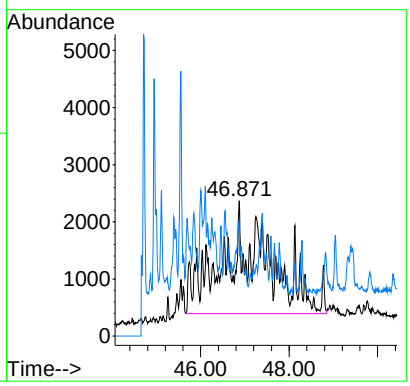


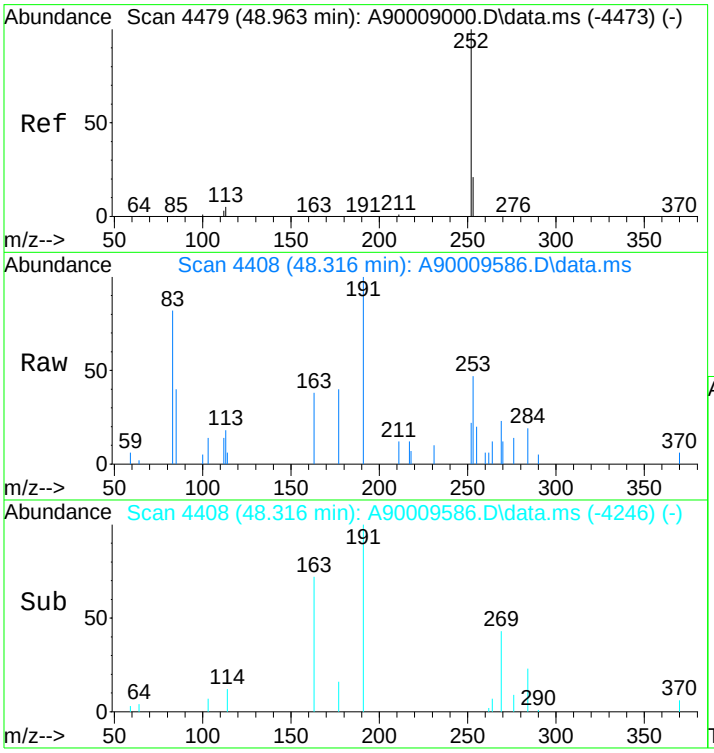


#81
C3-Chrysenes
Concen: 462.88 ng/mL m
RT: 46.871 min Scan# 4250
Delta R.T. -1.911 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:270 Resp: 133774

Ion	Ratio	Lower	Upper
270	100		
255	0.0	48.2	72.4#

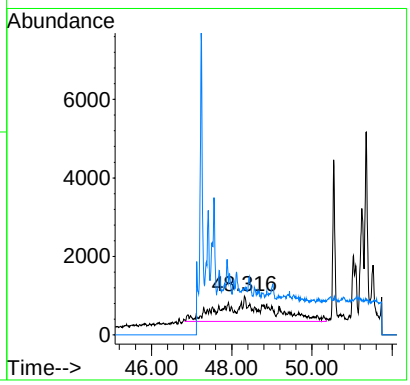


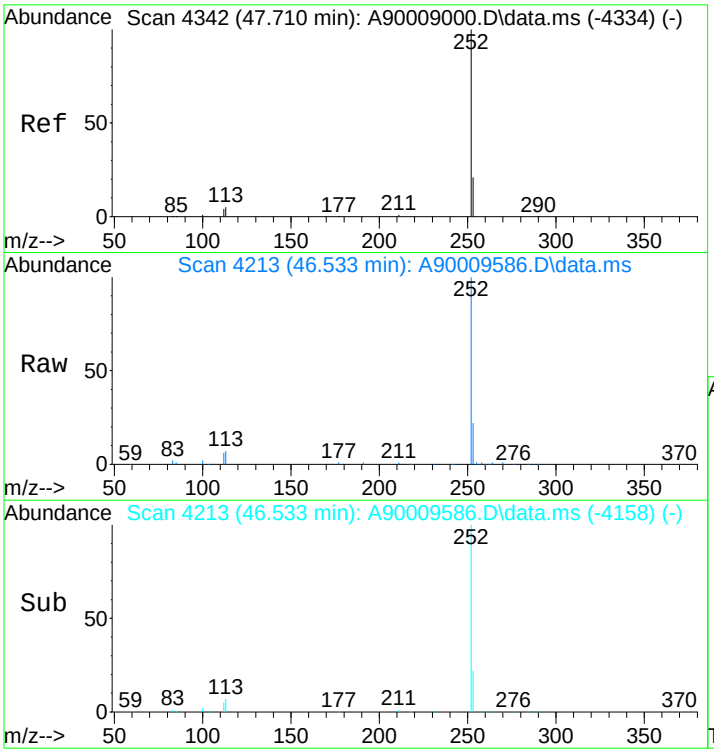


#82
C4-Chrysenes
Concen: 171.55 ng/mL m
RT: 48.316 min Scan# 4408
Delta R.T. -0.567 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:284 Resp: 49578

Ion	Ratio	Lower	Upper
284	100		
269	0.0	84.6	126.8#

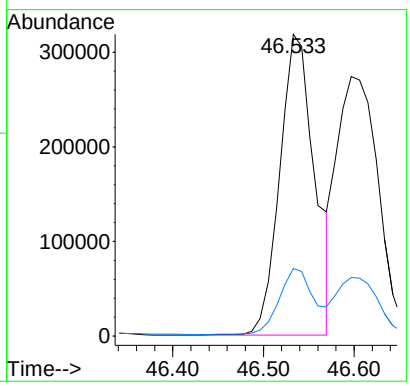


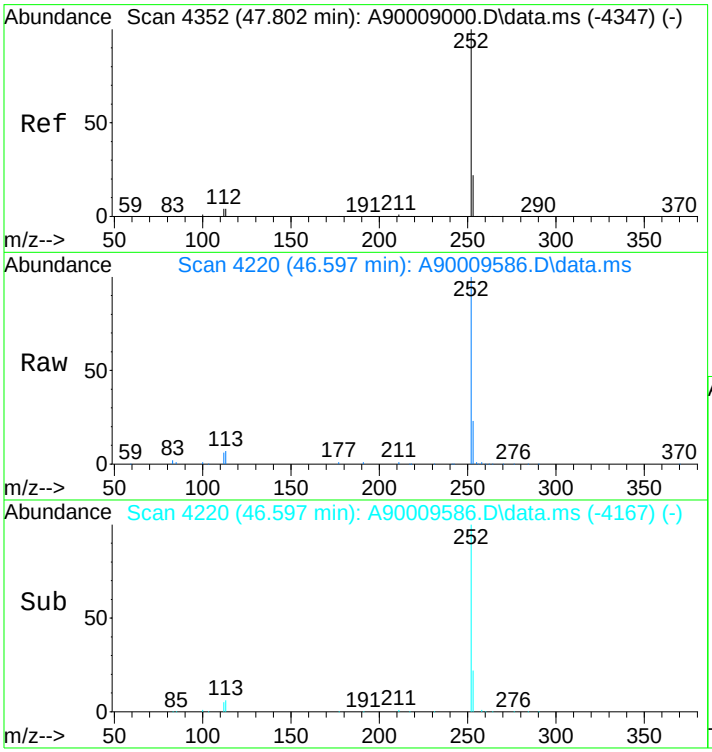


#84
Benzo[b]fluoranthene
Concen: 2806.44 ng/mL
RT: 46.533 min Scan# 4213
Delta R.T. 0.000 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:252 Resp: 855058

Ion	Ratio	Lower	Upper
252	100		
253	22.1	20.3	30.5

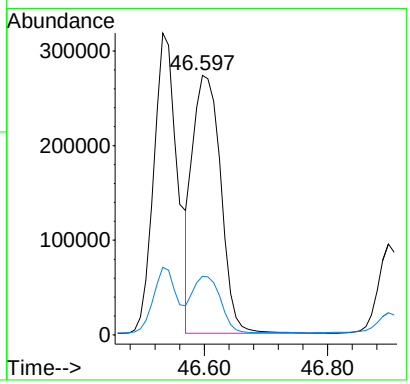


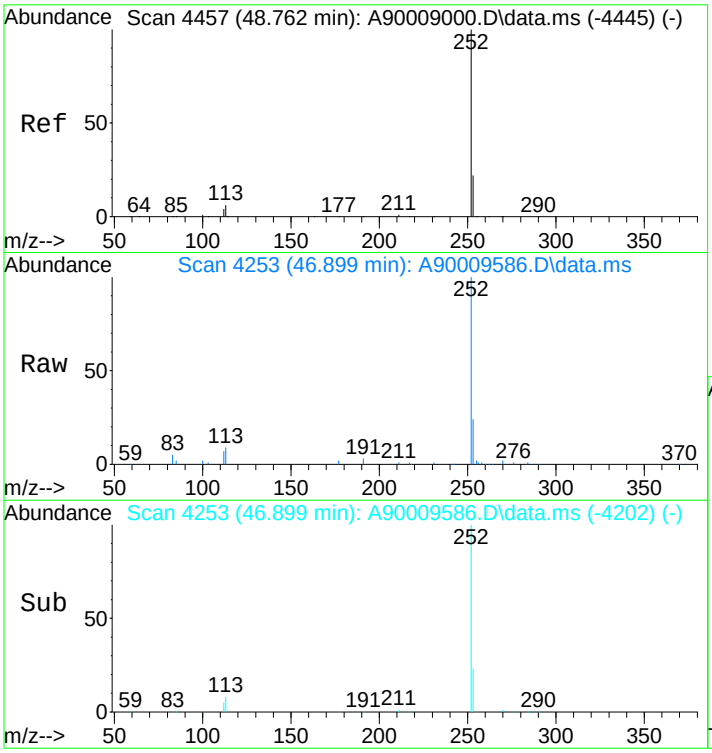


#85
Benzo[j]+[k]fluoranthene
Concen: 2888.23 ng/mL
RT: 46.597 min Scan# 4220
Delta R.T. -0.018 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:252 Resp: 864631

Ion	Ratio	Lower	Upper
252	100		
253	21.4	20.2	30.4

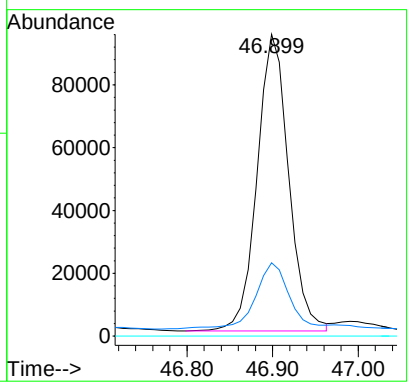


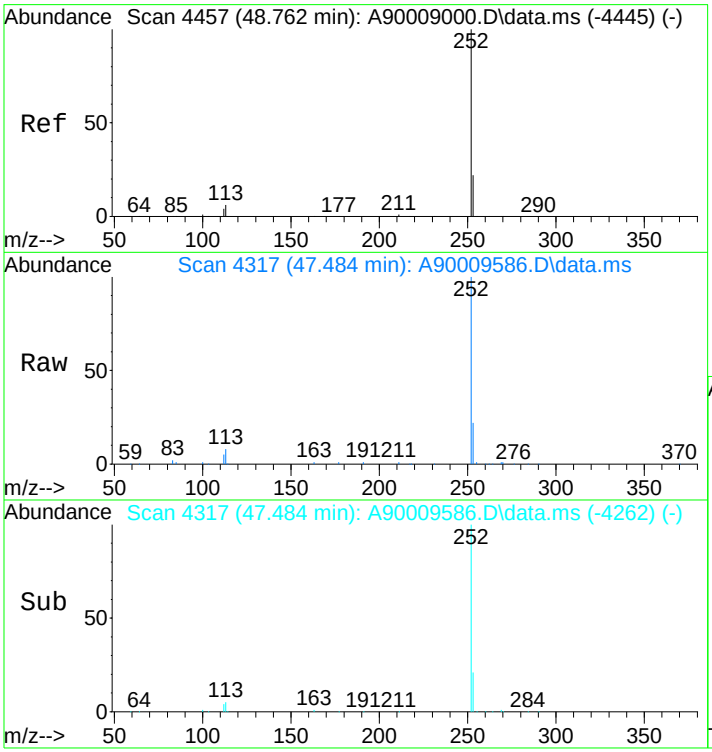


#86
Benzo[a]fluoranthene
Concen: 807.63 ng/mL
RT: 46.899 min Scan# 4253
Delta R.T. -0.031 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:252 Resp: 241774

Ion	Ratio	Lower	Upper
252	100		
253	24.0	191.7	287.5#
125	0.0	0.0	0.0

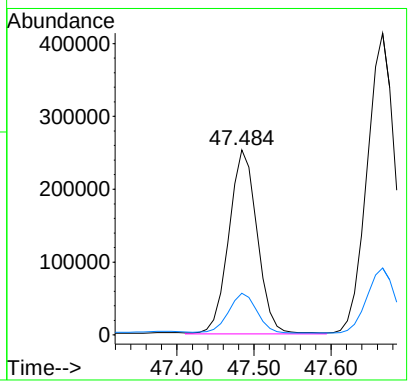


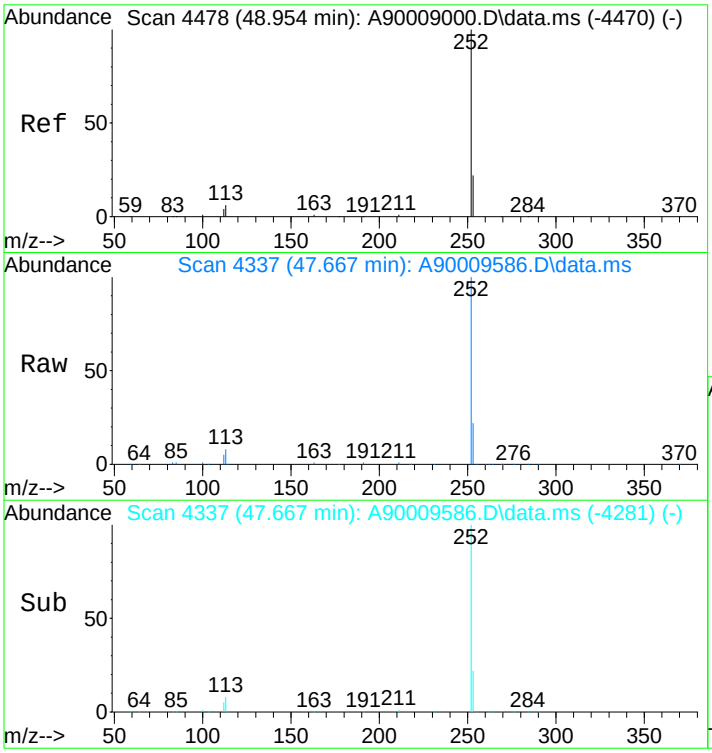


#87
Benzo[e]pyrene
Concen: 2245.63 ng/mL
RT: 47.484 min Scan# 4317
Delta R.T. 0.000 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:252 Resp: 649689

Ion	Ratio	Lower	Upper
252	100		
253	22.0	21.4	32.0

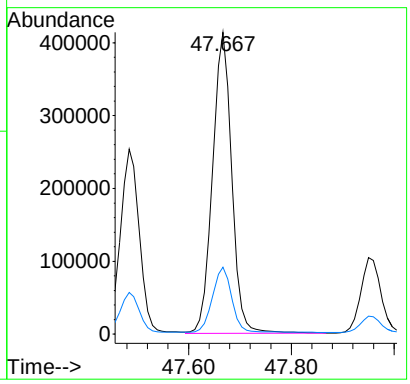


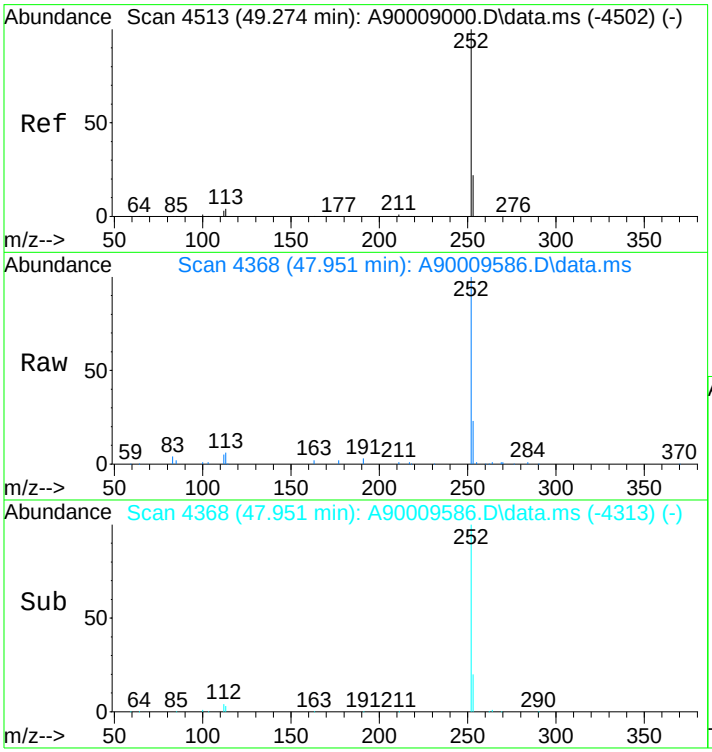


#89
Benzo[a]pyrene
Concen: 3917.82 ng/mL
RT: 47.667 min Scan# 4337
Delta R.T. 0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:252 Resp: 1073469

Ion	Ratio	Lower	Upper
252	100		
253	22.1	21.9	32.9

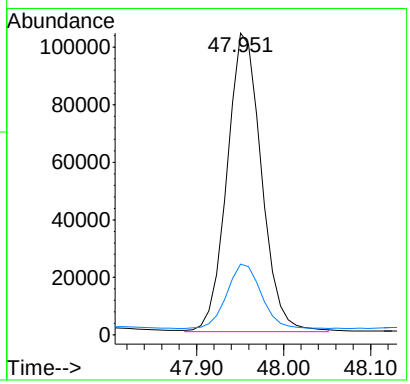


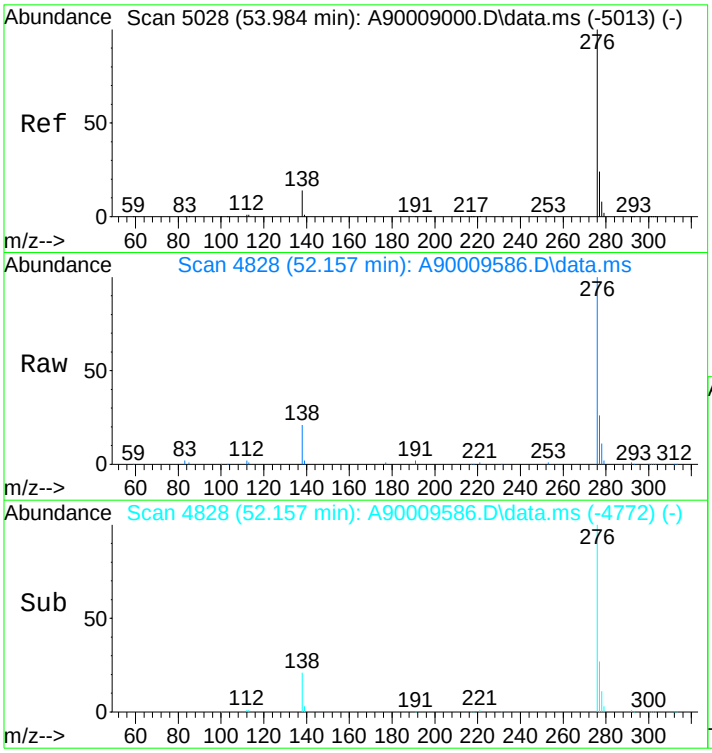


#90
Perylene
Concen: 971.40 ng/mL m
RT: 47.951 min Scan# 4368
Delta R.T. 0.000 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:252 Resp: 284064

Ion	Ratio	Lower	Upper
252	100		
253	83.5	22.2	33.2#

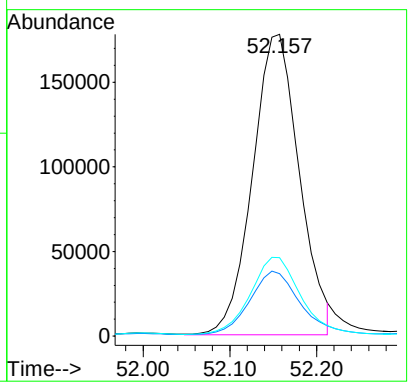


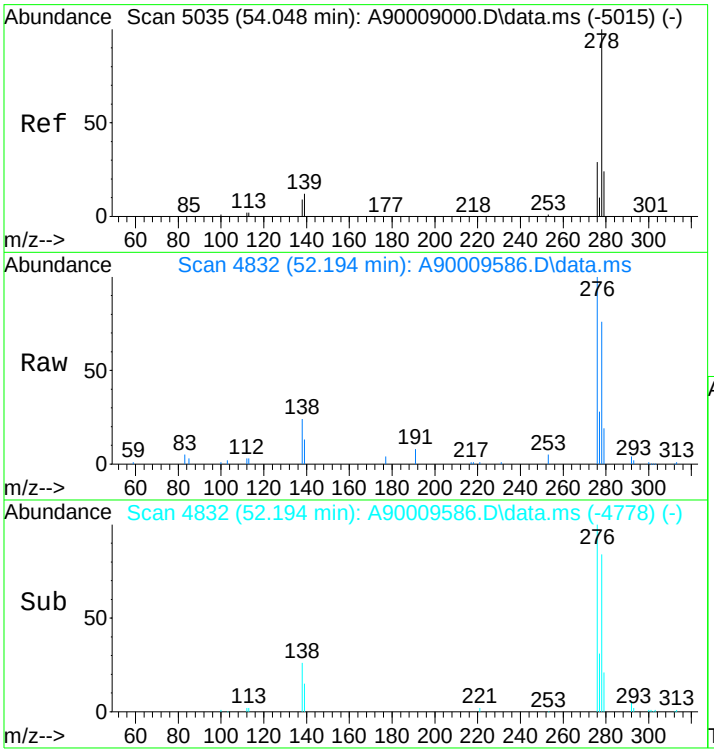


#91
Indeno[1,2,3-cd]pyrene
Concen: 2191.64 ng/mL m
RT: 52.157 min Scan# 4828
Delta R.T. 0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:276 Resp: 665060

Ion	Ratio	Lower	Upper
276	100		
138	23.8	17.7	26.5
277	28.8	20.2	30.4

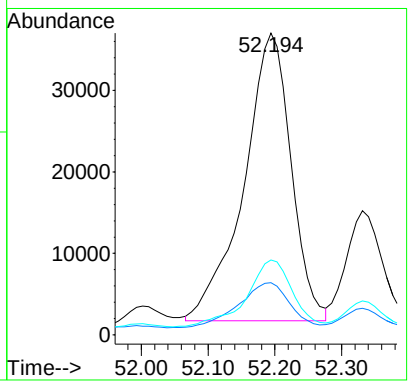


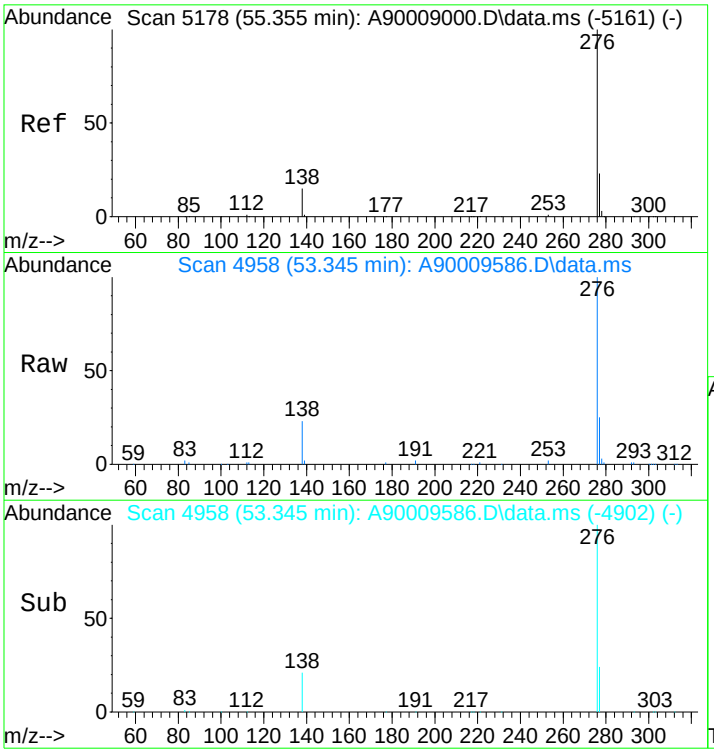


#92
Dibenz[ah]+[ac]anthracene
Concen: 581.01 ng/mL m
RT: 52.194 min Scan# 4832
Delta R.T. -0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:278 Resp: 173680

Ion	Ratio	Lower	Upper
278	100		
139	0.0	13.3	19.9#
279	0.0	19.3	28.9#

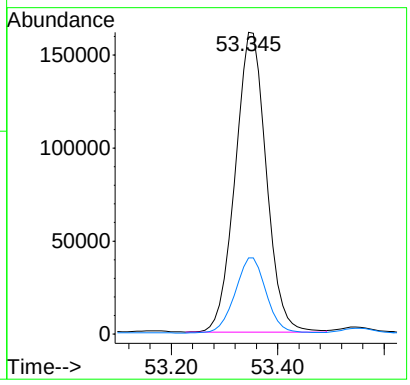


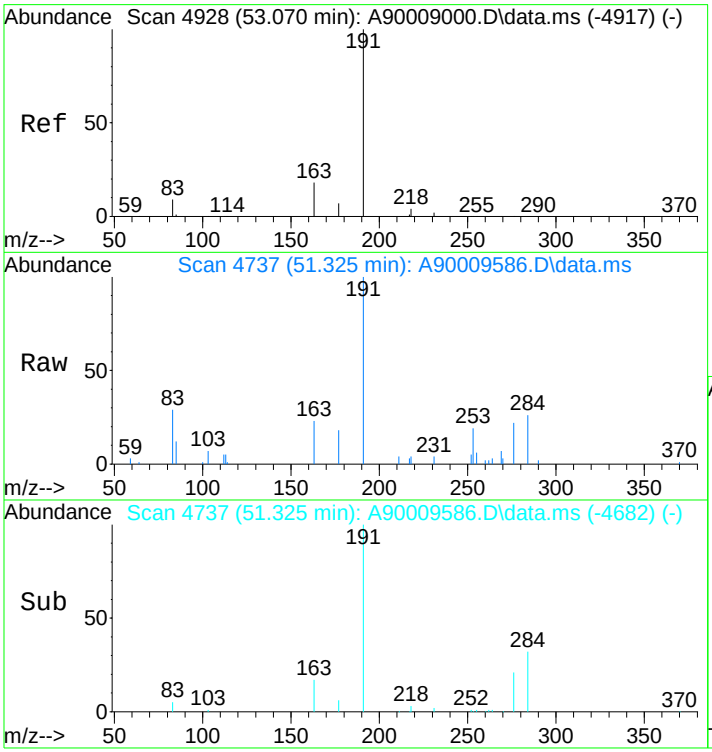


#93
Benzo[g,h,i]perylene
Concen: 2184.62 ng/mL
RT: 53.345 min Scan# 4958
Delta R.T. 0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:276 Resp: 651449

Ion	Ratio	Lower	Upper
276	100		
277	25.2	20.0	30.0

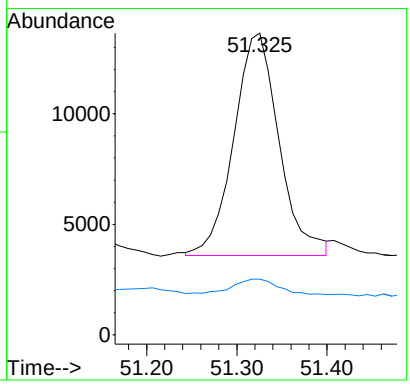


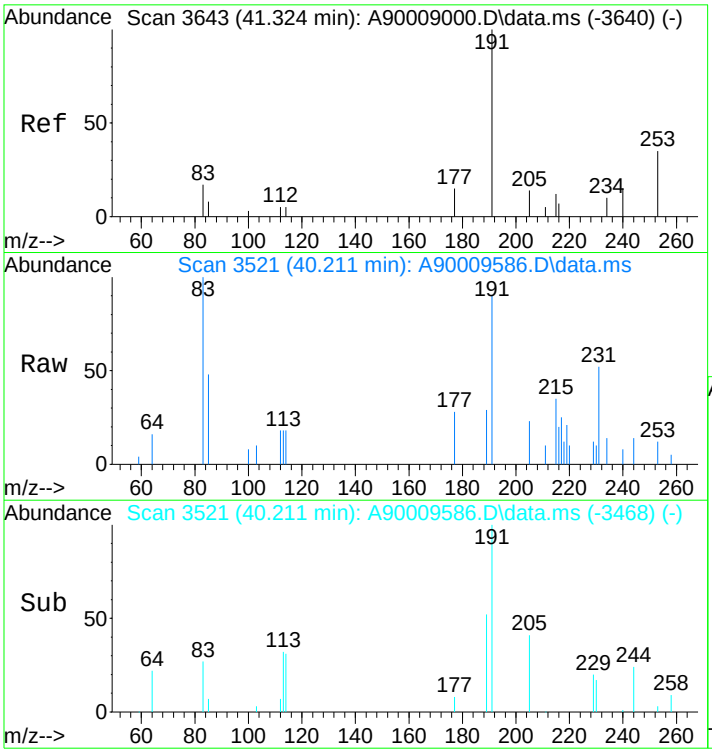


#94
Hopane (T19)
Concen: 311.64 ng/mL m
RT: 51.325 min Scan# 4737
Delta R.T. 0.000 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:191 Resp: 35100

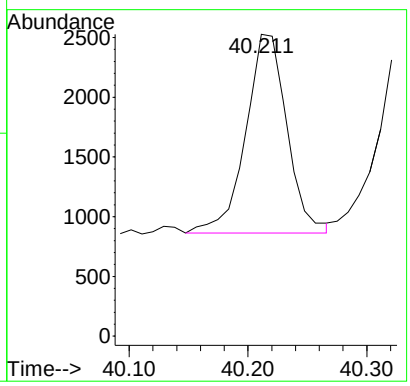
Ion	Ratio	Lower	Upper
191	100		
177	8.6	14.4	21.6#

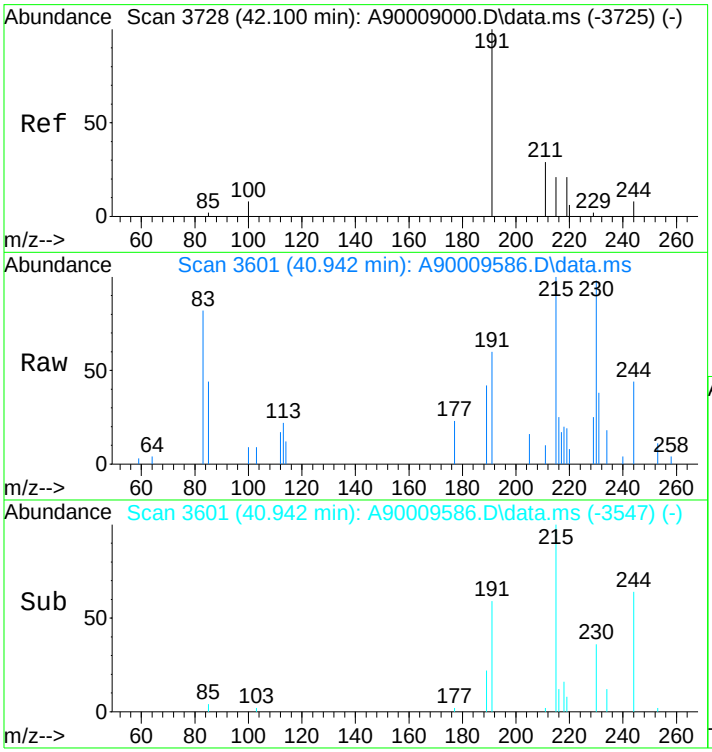




#96
C23 Tricyclic Terpane (T4)
Concen: 35.77 ng/ml
RT: 40.211 min Scan# 3521
Delta R.T. -0.018 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

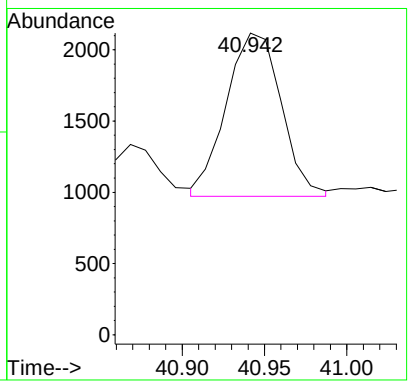
Tgt Ion:191 Resp: 4029

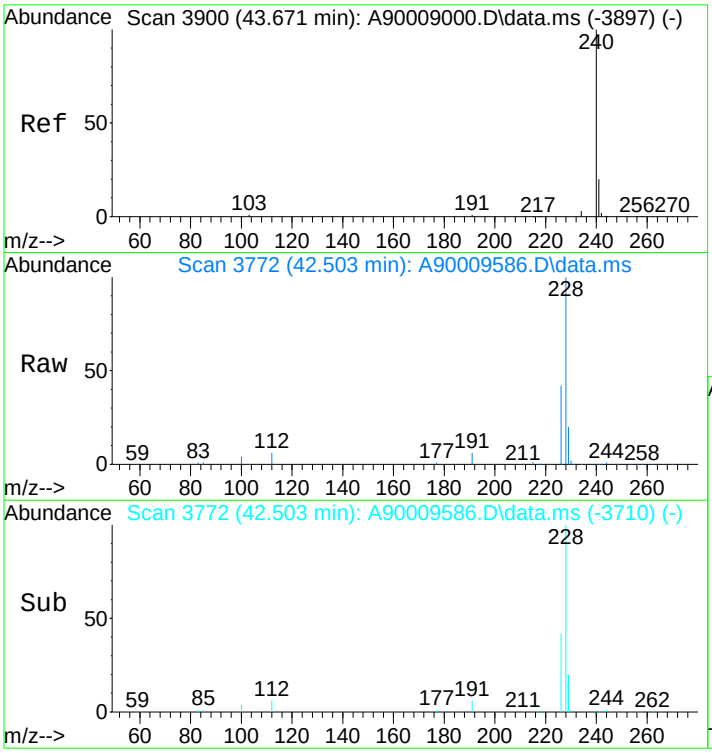




#97
C24 Tricyclic Terpane (T5)
Concen: 23.68 ng/ml m
RT: 40.942 min Scan# 3601
Delta R.T. -0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

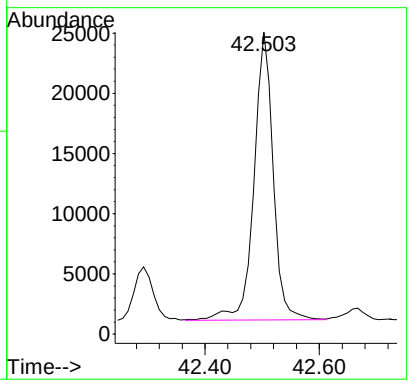
Tgt Ion:191 Resp: 2667

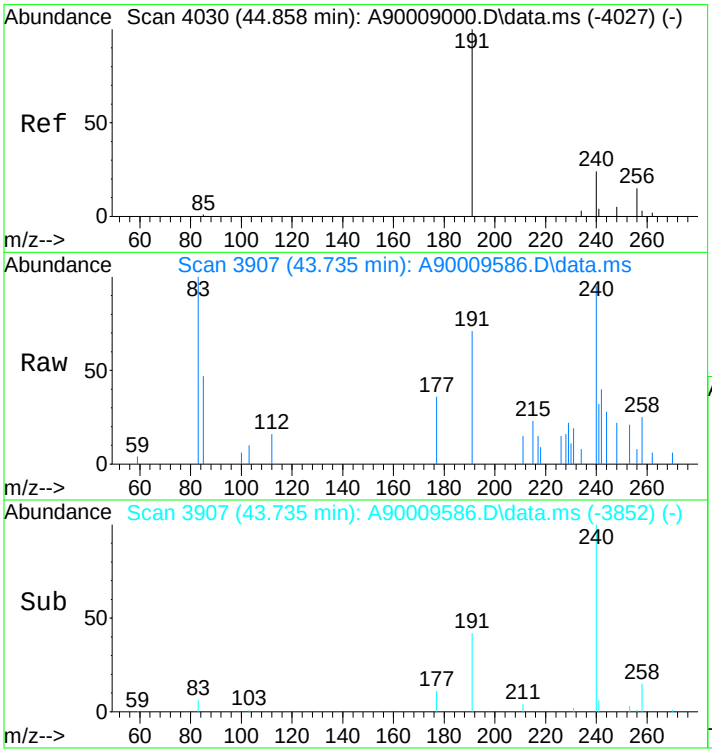




#98
C25 Tricyclic Terpane (T6)
Concen: 496.68 ng/ml
RT: 42.503 min Scan# 3772
Delta R.T. 0.064 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

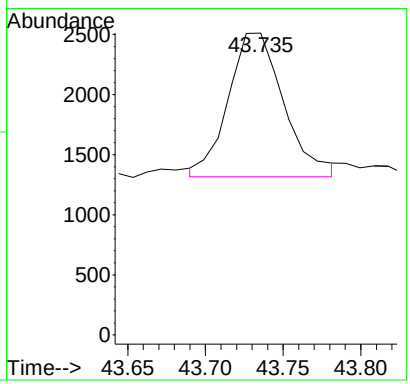
Tgt Ion:191 Resp: 55941

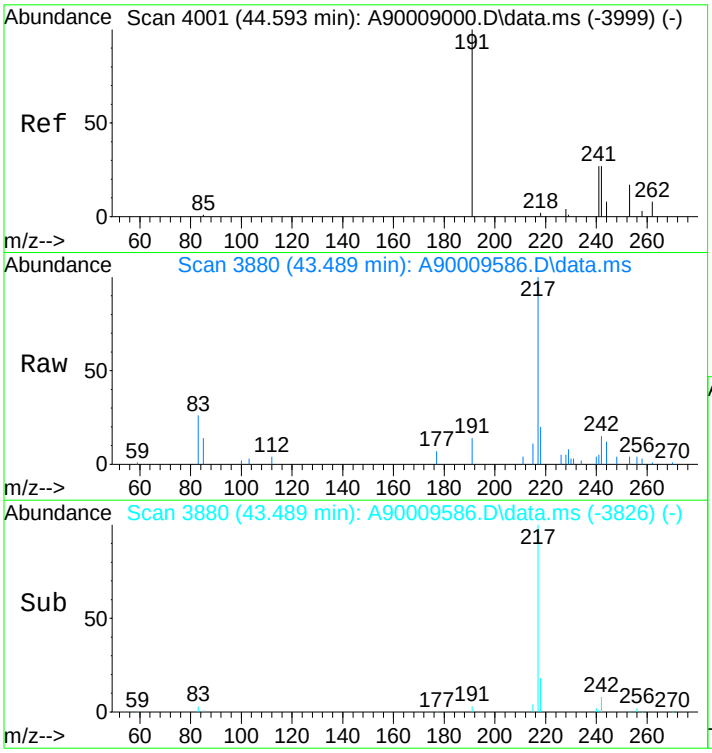




#99
C24 Tetracyclic Terpane (T6a)
Concen: 26.47 ng/ml m
RT: 43.735 min Scan# 3907
Delta R.T. 0.000 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

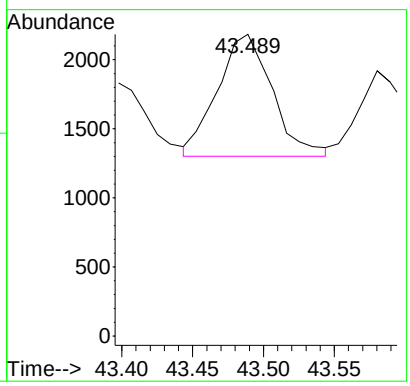
Tgt Ion:191 Resp: 2981

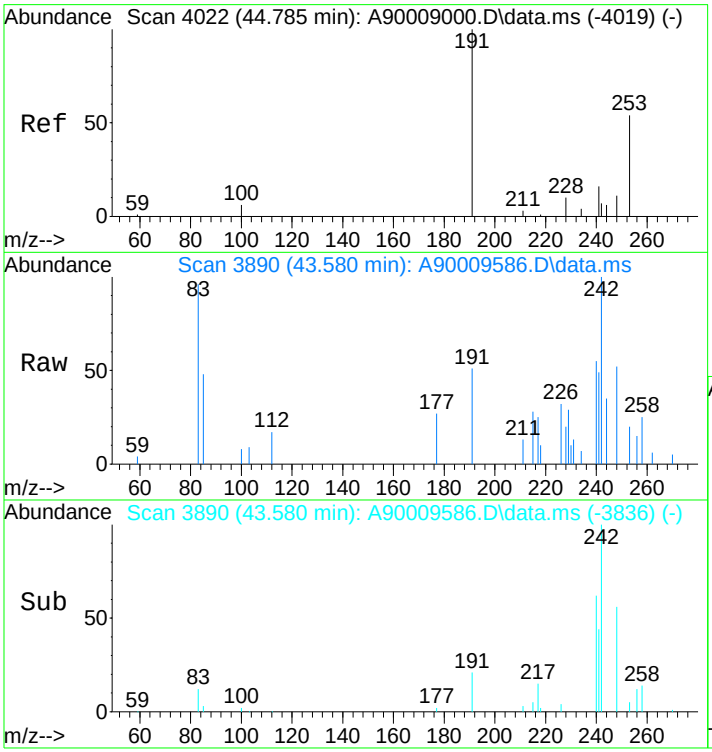




#100
C26 Tricyclic Terpane-22S (T6b)
Concen: 21.07 ng/ml m
RT: 43.489 min Scan# 3880
Delta R.T. -0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

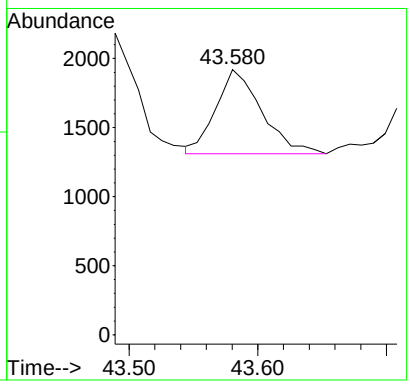
Tgt Ion:191 Resp: 2373

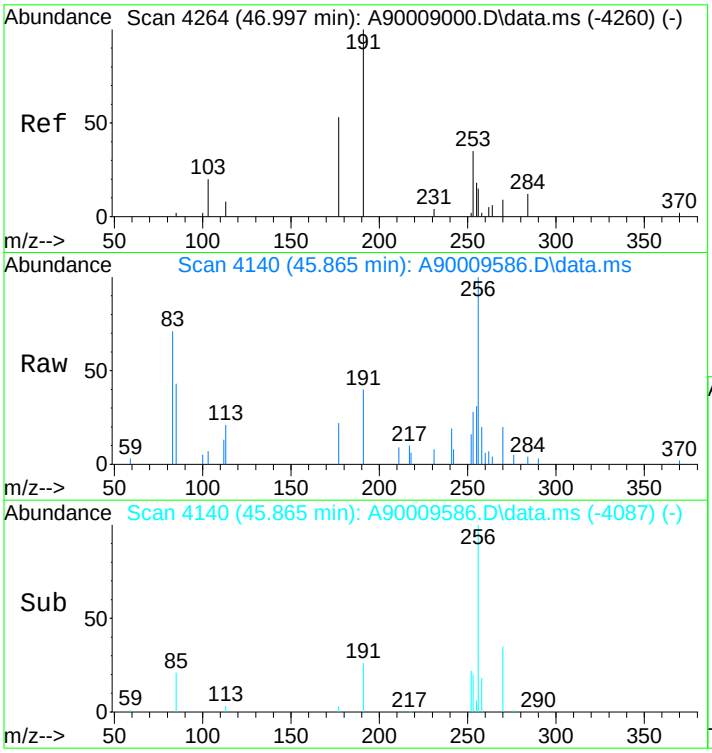




#101
C26 Tricyclic Terpane-22R (T6c)
Concen: 13.46 ng/ml
RT: 43.580 min Scan# 3890
Delta R.T. -0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

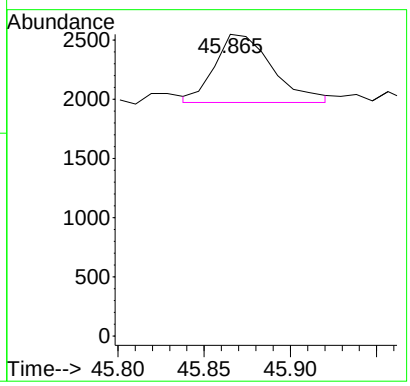
Tgt Ion:191 Resp: 1516

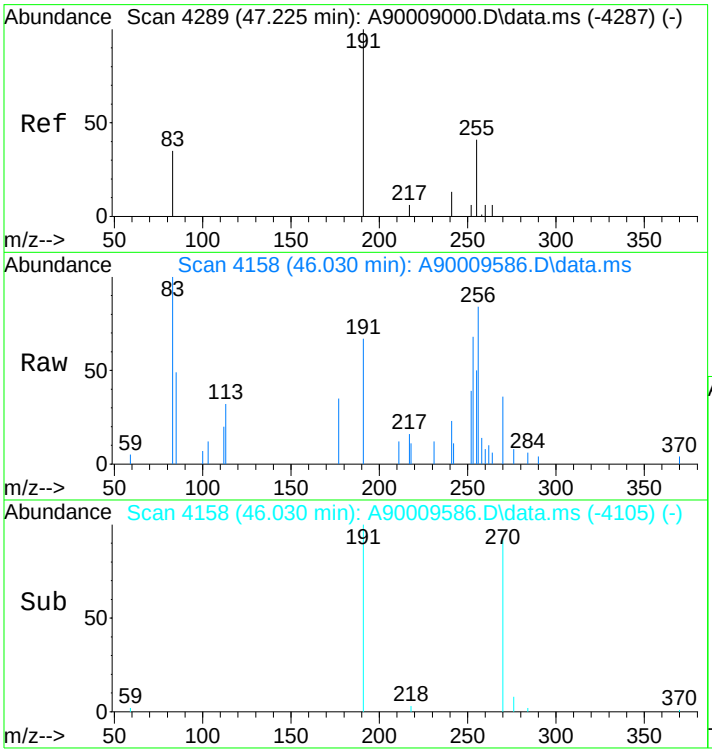




#102
C28 Tricyclic Terpane-22S (T7)
Concen: 11.92 ng/ml m
RT: 45.865 min Scan# 4140
Delta R.T. -0.018 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

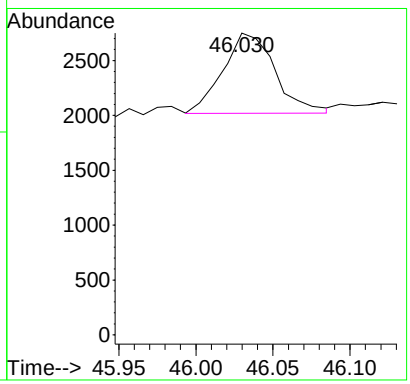
Tgt Ion:191 Resp: 1342

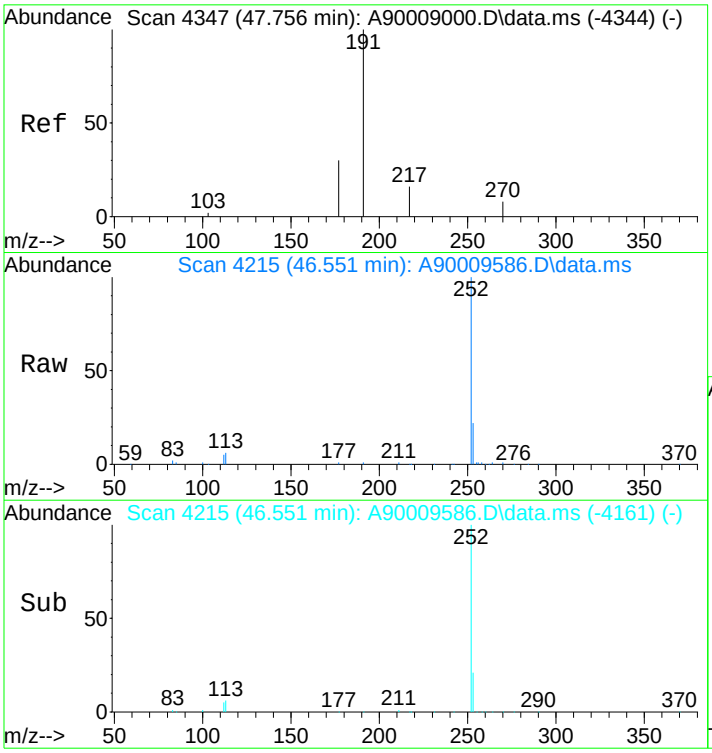




#103
C28 Tricyclic Terpane-22R (T8)
Concen: 15.32 ng/ml
RT: 46.030 min Scan# 4158
Delta R.T. -0.018 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

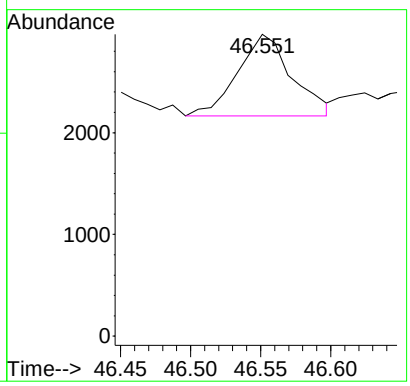
Tgt Ion:191 Resp: 1725

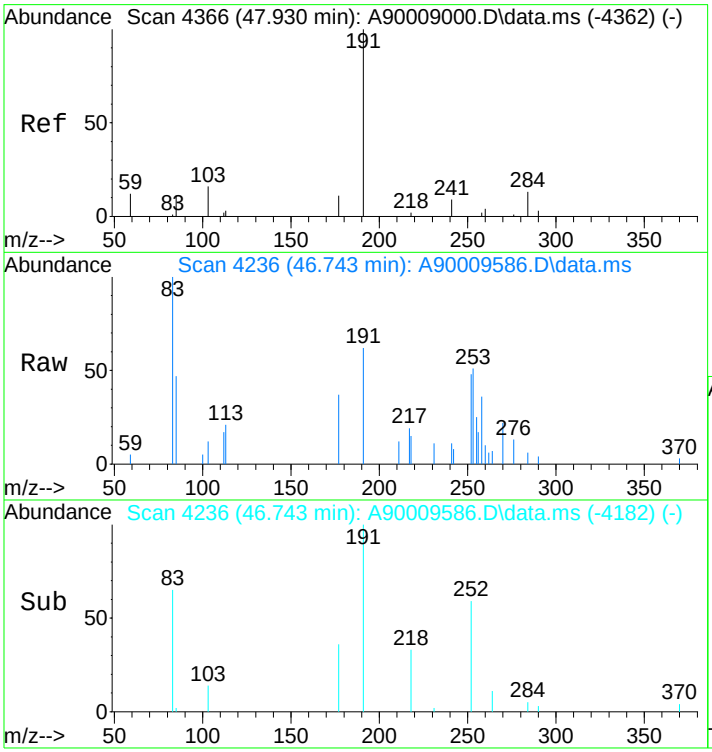




#104
C29 Tricyclic Terpane-22S (T9)
Concen: 19.19 ng/ml
RT: 46.551 min Scan# 4215
Delta R.T. -0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

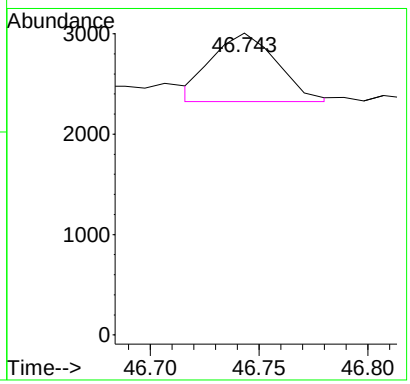
Tgt Ion:191 Resp: 2161

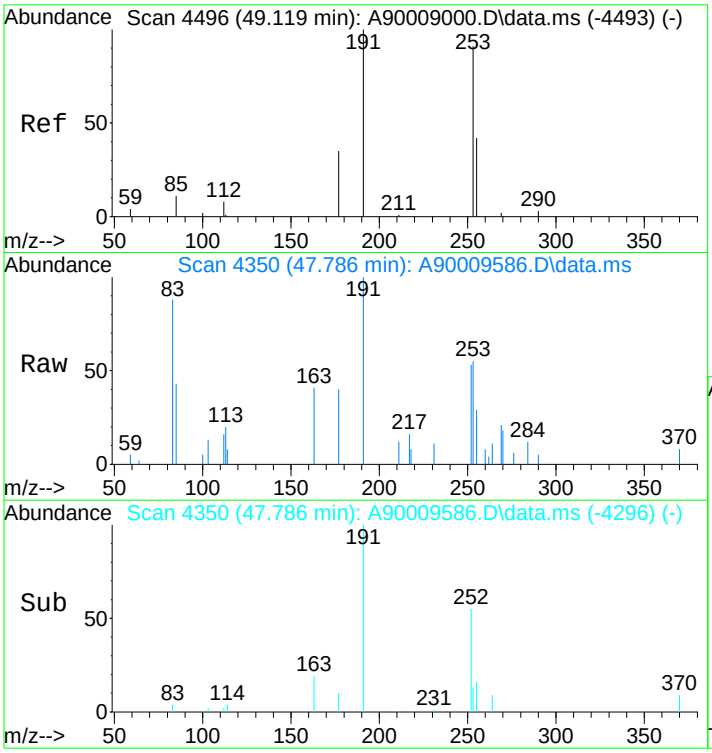




#105
C29 Tricyclic Terpane-22R (T10)
Concen: 12.55 ng/ml m
RT: 46.743 min Scan# 4236
Delta R.T. -0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

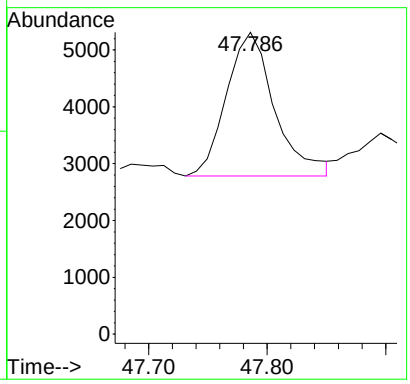
Tgt Ion:191 Resp: 1413

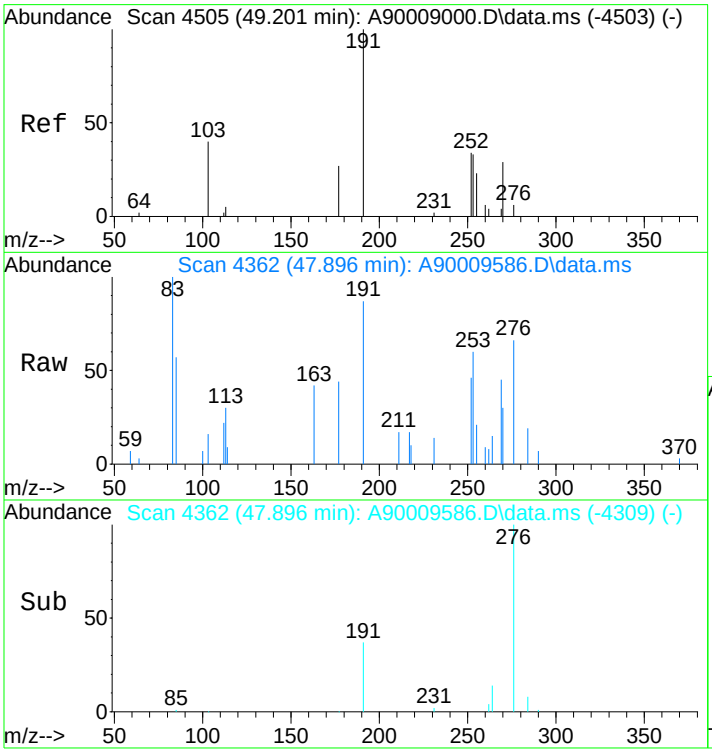




#106
18a-22,29,30-Trisnorneohopane-TS (T11)
Concen: 63.75 ng/ml
RT: 47.786 min Scan# 4350
Delta R.T. -0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

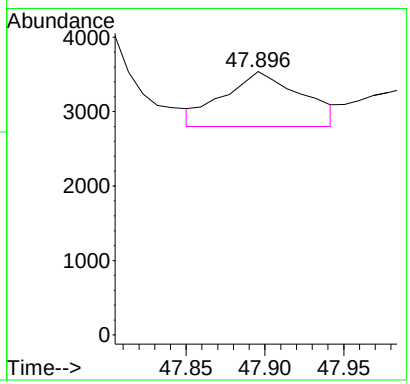
Tgt Ion:191 Resp: 7180

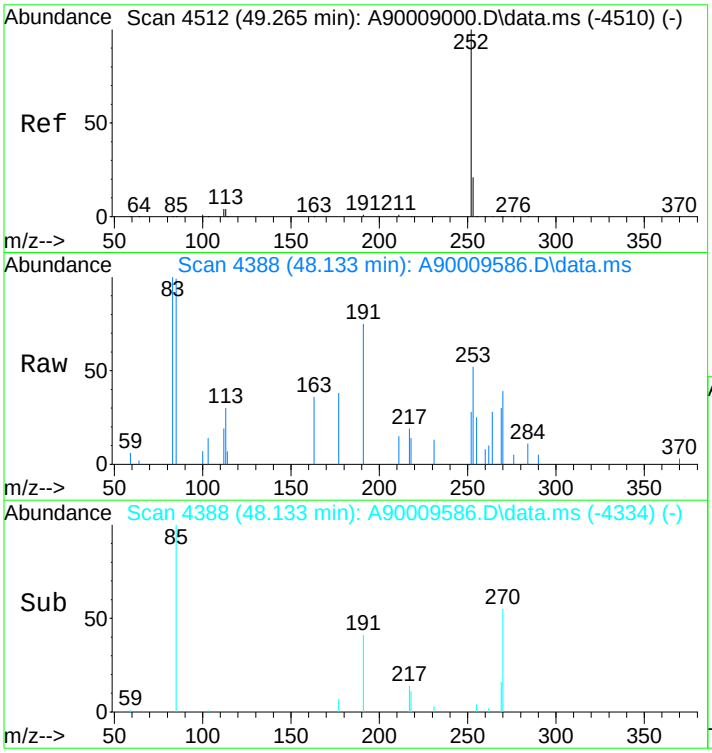




#107
C30 Tricyclic Terpane-22S
Concen: 22.49 ng/mL m
RT: 47.896 min Scan# 4362
Delta R.T. -0.018 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

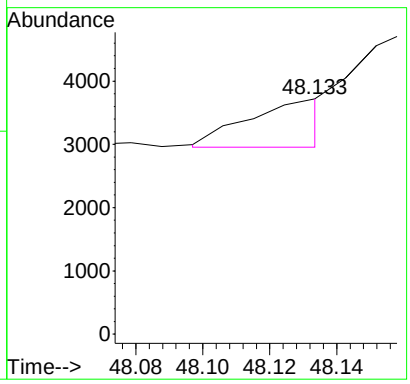
Tgt Ion:191 Resp: 2533

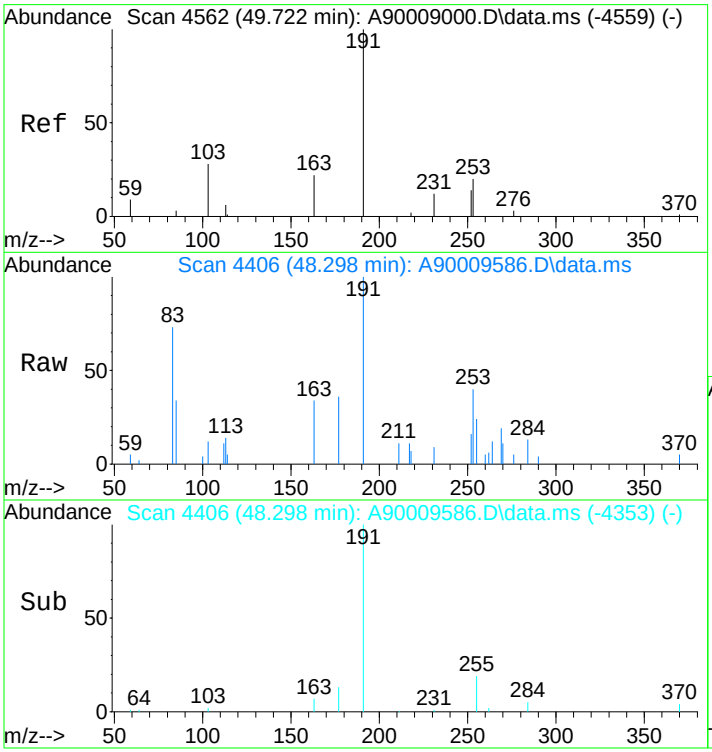




#108
C30 Tricyclic Terpane-22R
Concen: 10.85 ng/mL m
RT: 48.133 min Scan# 4388
Delta R.T. -0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

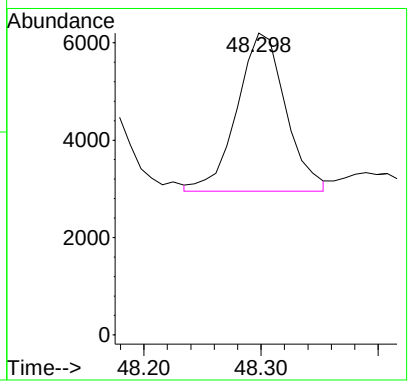
Tgt Ion:191 Resp: 1222

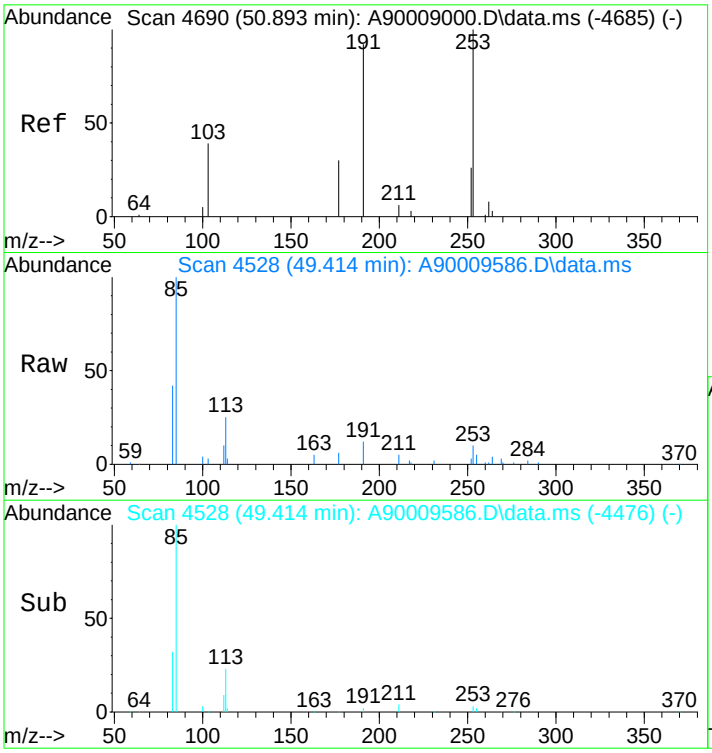




#109
17a(H)-22,29,30-Trisnorhopane-TM (T12)
Concen: 83.28 ng/ml m
RT: 48.298 min Scan# 4406
Delta R.T. -0.018 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

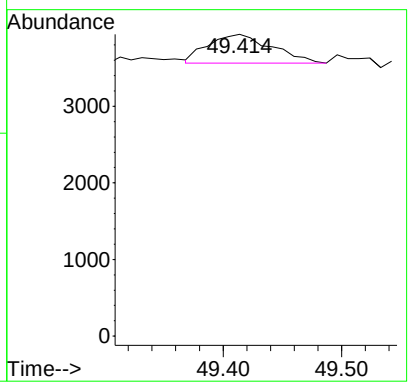
Tgt Ion:191 Resp: 9380

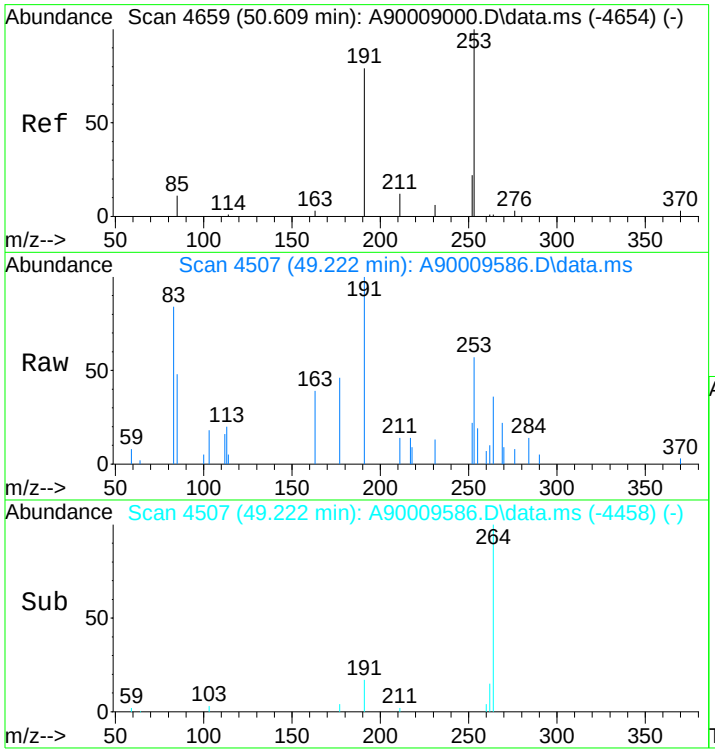




#110
17a/b,21b/a 28,30-Bisnorhopane (T14a)
Concen: 12.55 ng/ml
RT: 49.414 min Scan# 4528
Delta R.T. -0.027 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

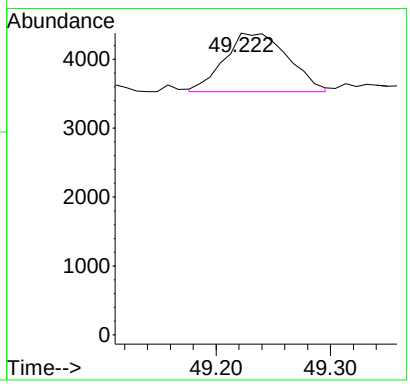
Tgt Ion:191 Resp: 1413

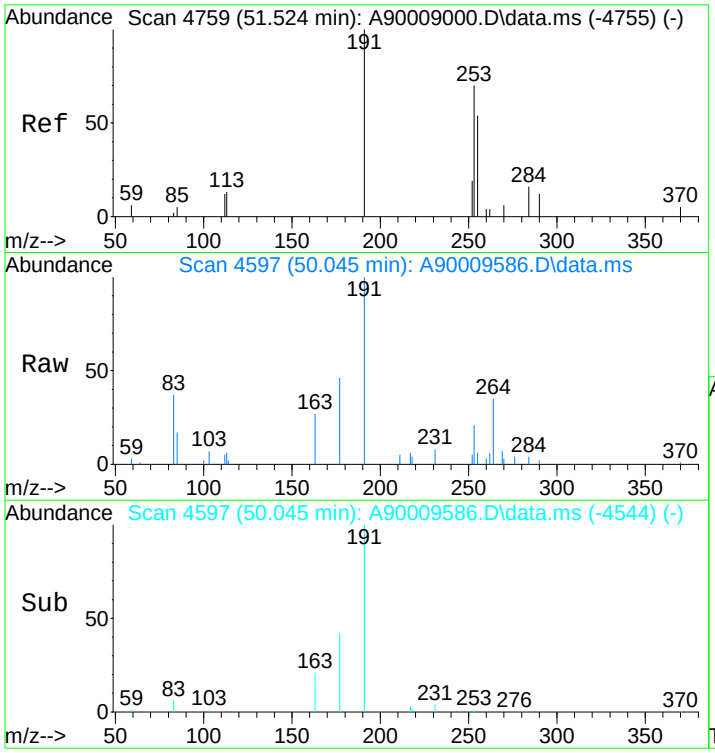




#111
17a(H),21b(H)-25-Norhopane (T14b)
Concen: 29.16 ng/ml m
RT: 49.222 min Scan# 4507
Delta R.T. -0.054 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

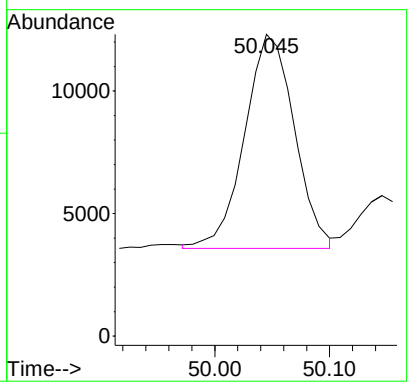
Tgt Ion:191 Resp: 3284

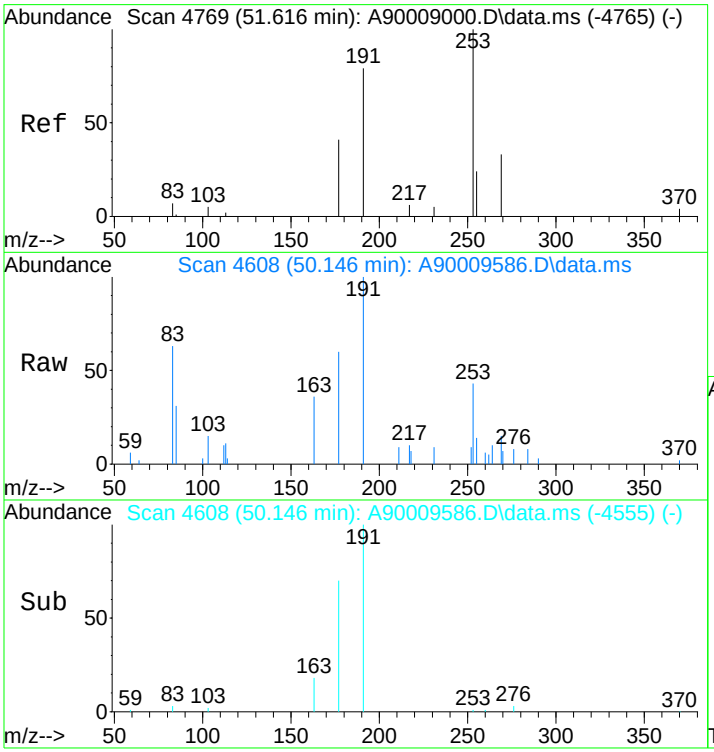




#112
30-Norhopane (T15)
Concen: 232.79 ng/ml m
RT: 50.045 min Scan# 4597
Delta R.T. -0.018 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

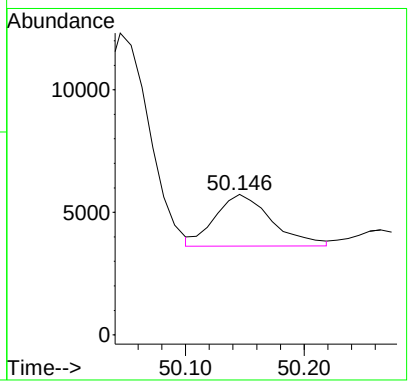
Tgt Ion:191 Resp: 26219

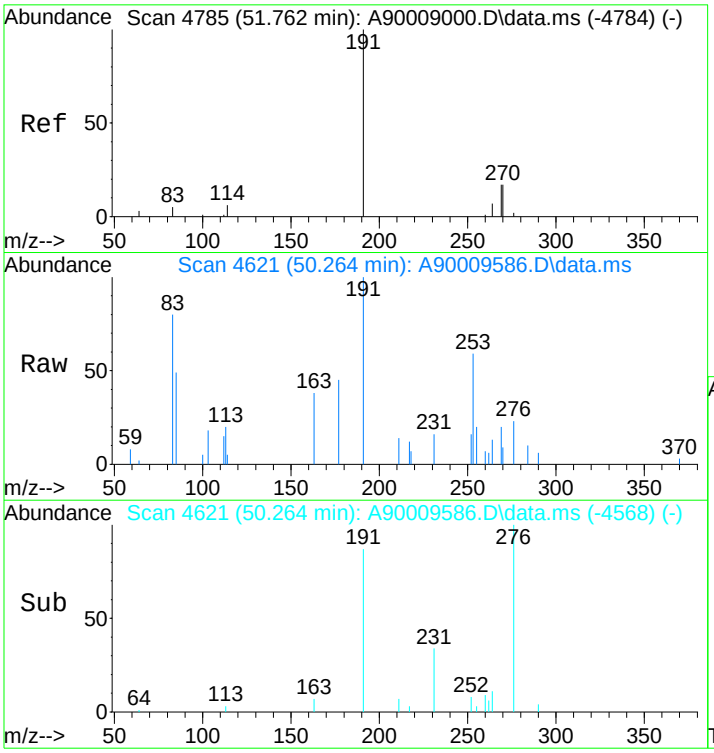




#113
18a(H)-30-Norneohopane-C29Ts (T16)
Concen: 61.80 ng/ml
RT: 50.146 min Scan# 4608
Delta R.T. -0.018 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

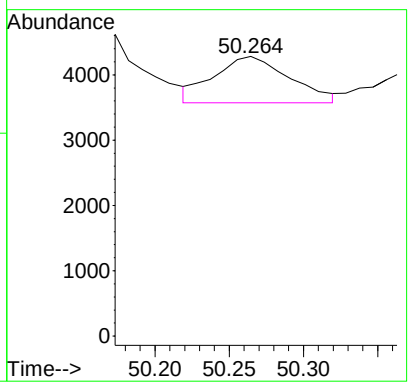
Tgt Ion:191 Resp: 6960

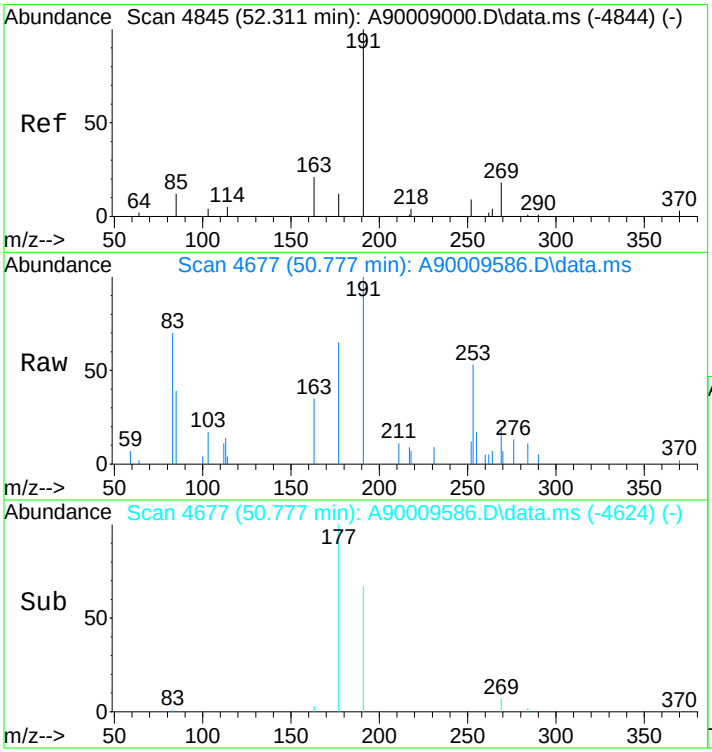




#114
17a(H)-Diahopane (X)
Concen: 22.41 ng/ml m
RT: 50.264 min Scan# 4621
Delta R.T. -0.018 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

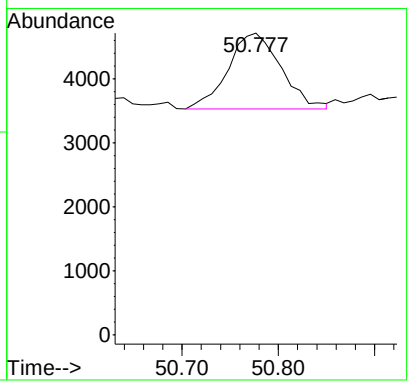
Tgt Ion:191 Resp: 2524

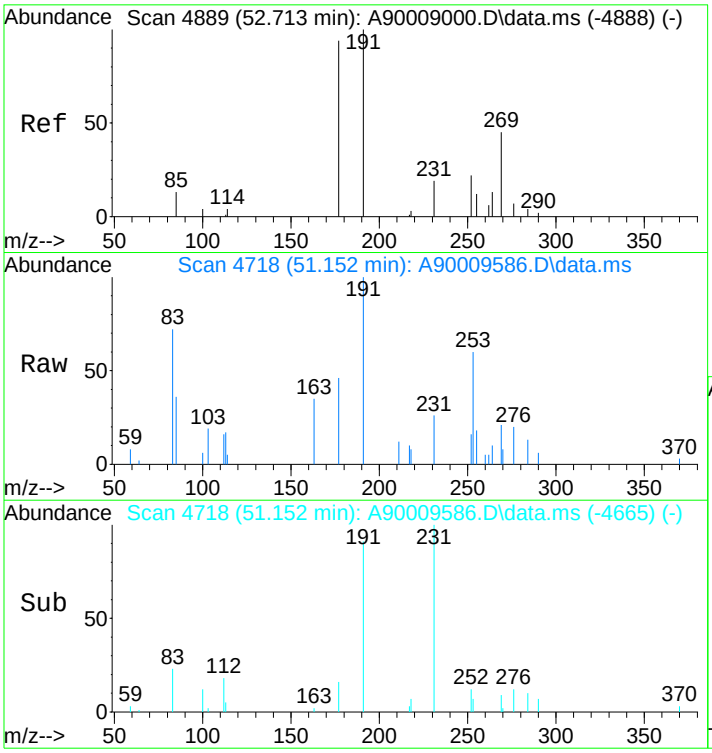




#115
30-Normoretane (T17)
Concen: 40.29 ng/ml
RT: 50.777 min Scan# 4677
Delta R.T. -0.018 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

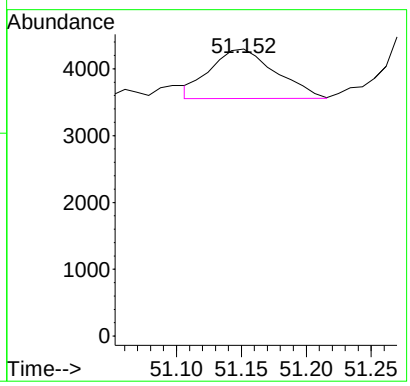
Tgt Ion:191 Resp: 4538

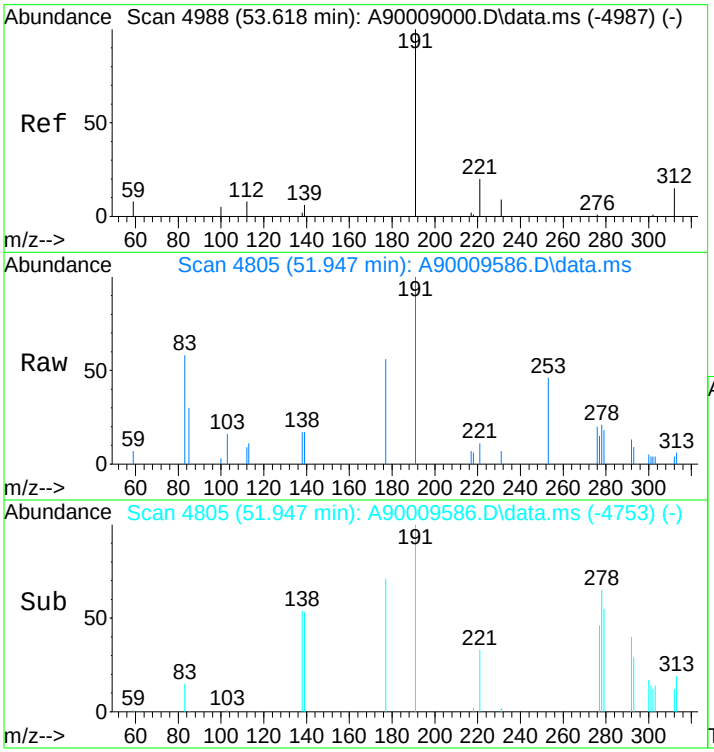




#116
18a(H)&18b(H)-Oleananes (T18)
Concen: 22.89 ng/ml m
RT: 51.152 min Scan# 4718
Delta R.T. -0.018 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

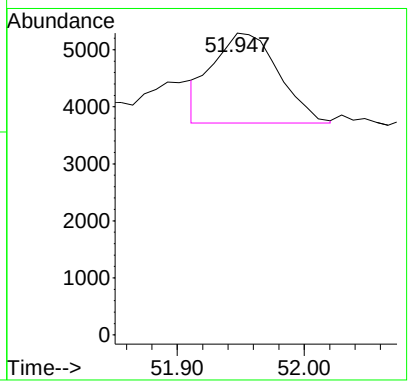
Tgt Ion:191 Resp: 2578

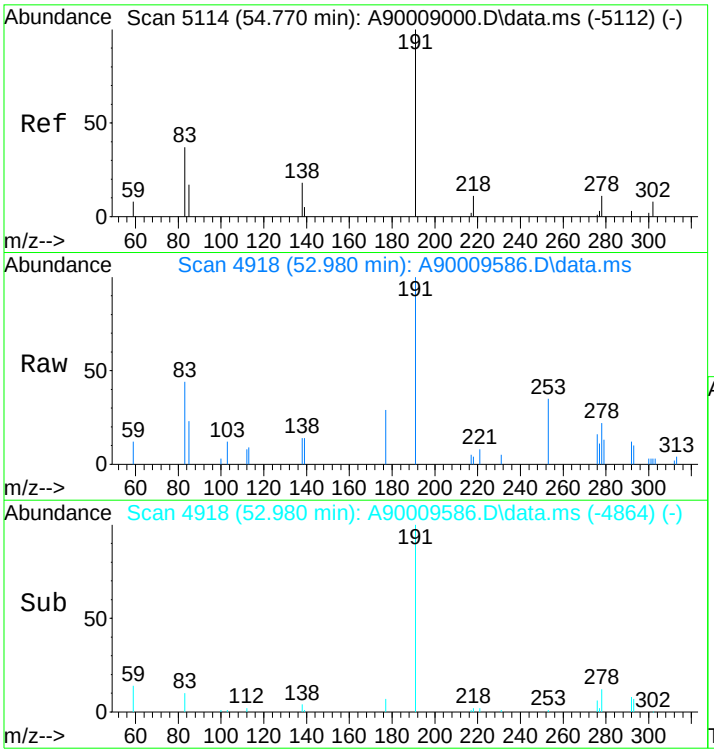




#117
Moretane (T20)
Concen: 50.83 ng/ml m
RT: 51.947 min Scan# 4805
Delta R.T. -0.027 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

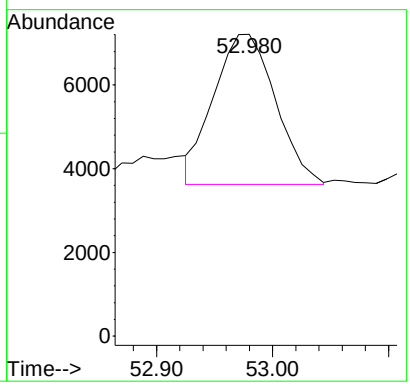
Tgt Ion:191 Resp: 5725

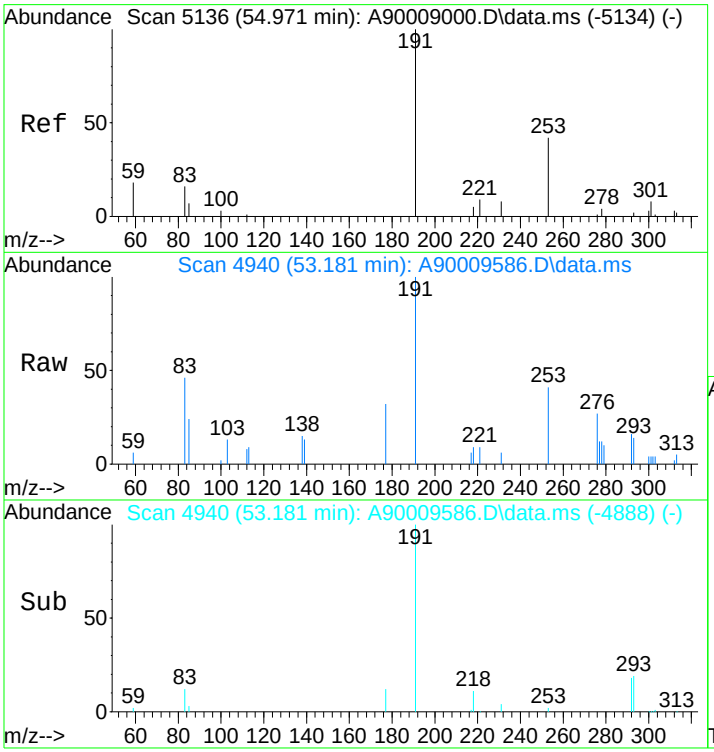




#118
30-Homohopane-22S (T21)
Concen: 117.81 ng/ml m
RT: 52.980 min Scan# 4918
Delta R.T. -0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

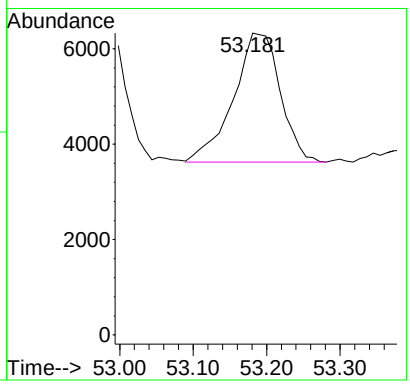
Tgt Ion:191 Resp: 13269

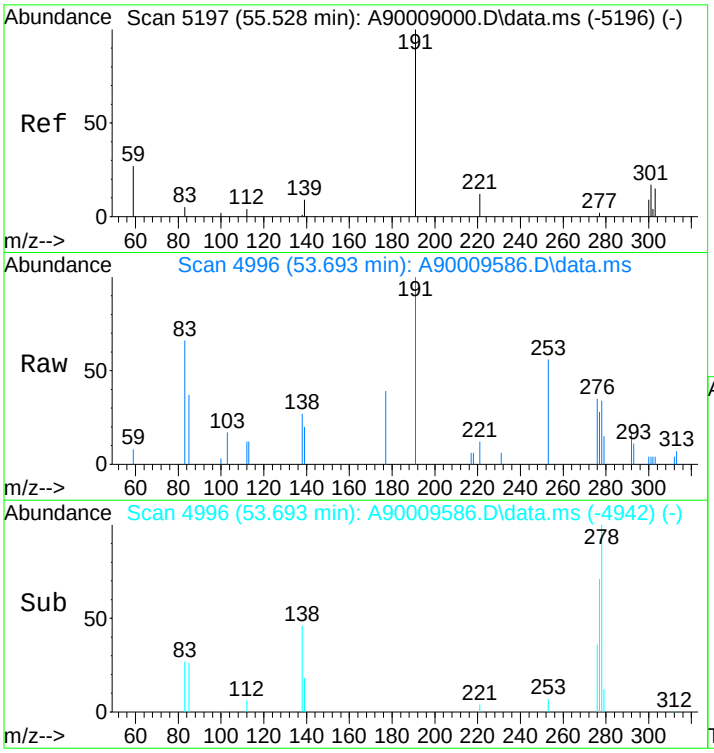




#119
30-Homohopane-22R (T22)
Concen: 106.74 ng/ml
RT: 53.181 min Scan# 4940
Delta R.T. -0.027 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

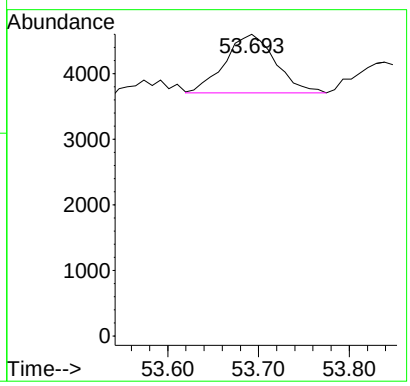
Tgt Ion:191 Resp: 12022

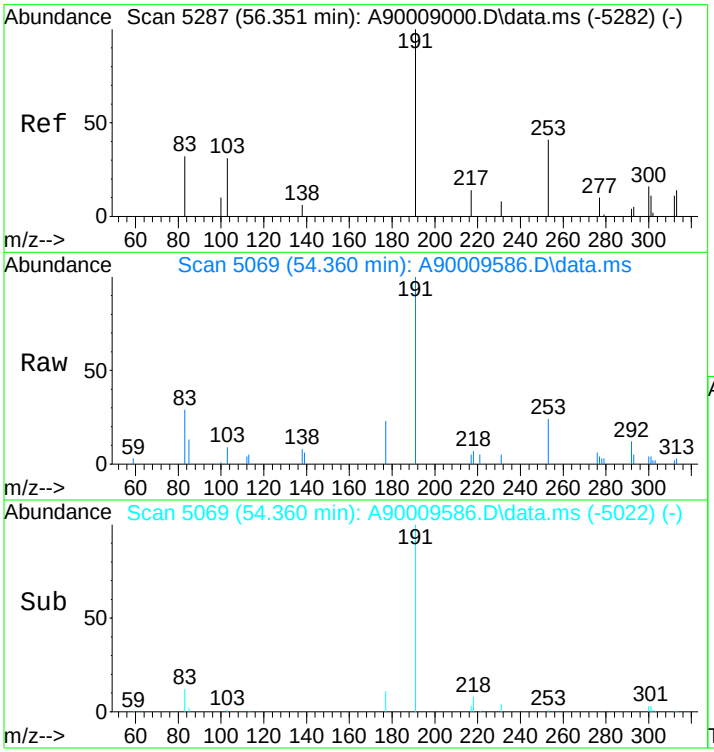




#120
Gammacerane/C32-diahopane
Concen: 30.67 ng/mL
RT: 53.693 min Scan# 4996
Delta R.T. -0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

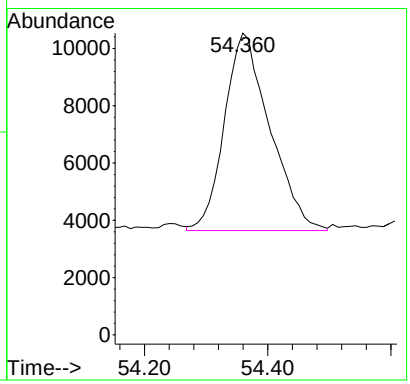
Tgt Ion:191 Resp: 3454

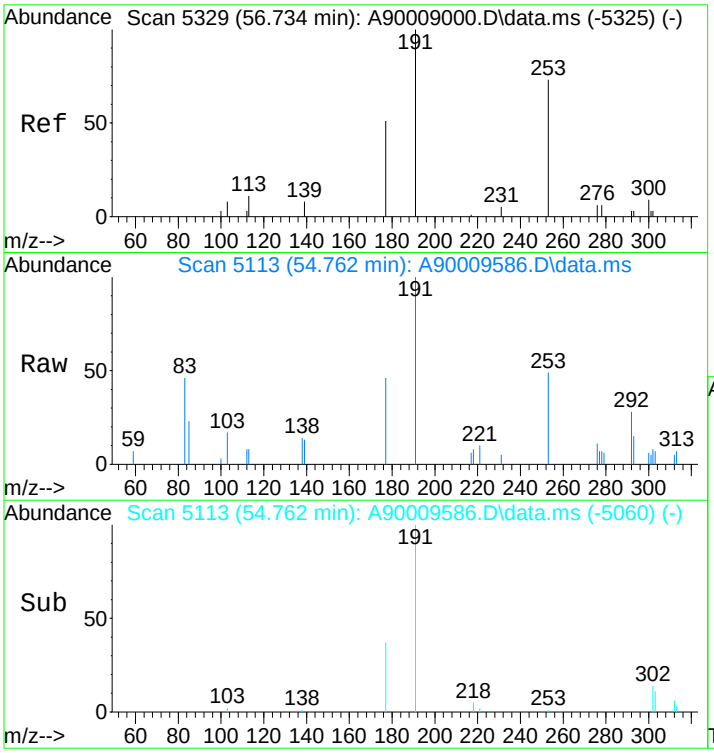




#121
30,31-Bishomohopane-22S (T26)
Concen: 312.63 ng/ml m
RT: 54.360 min Scan# 5069
Delta R.T. -0.073 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

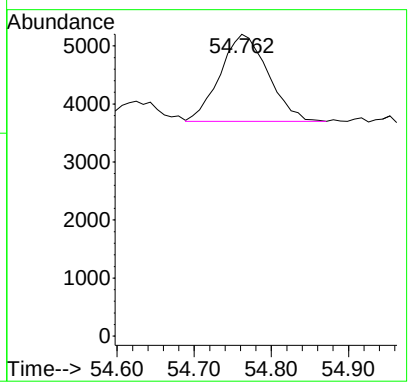
Tgt Ion:191 Resp: 35211

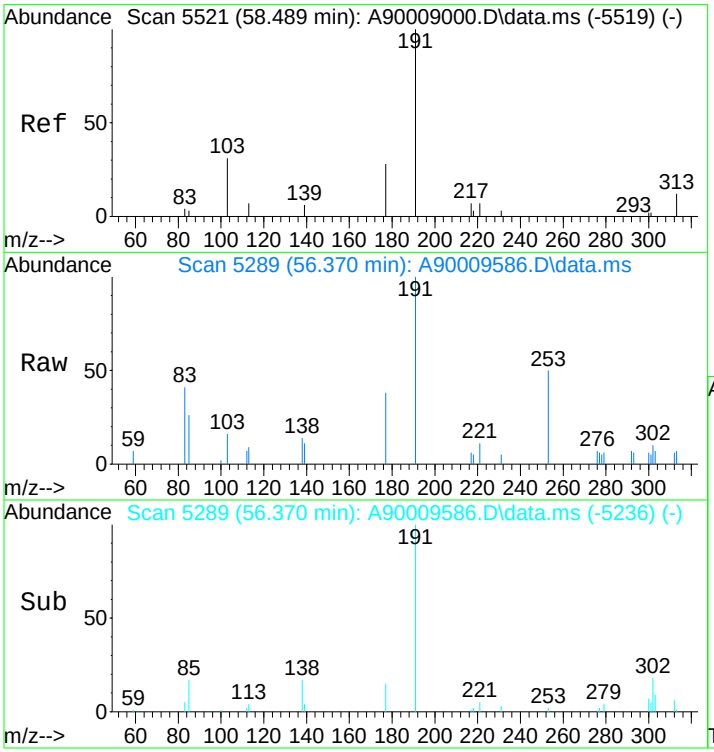




#122
30,31-Bishomohopane-22R (T27)
Concen: 57.41 ng/ml
RT: 54.762 min Scan# 5113
Delta R.T. -0.018 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

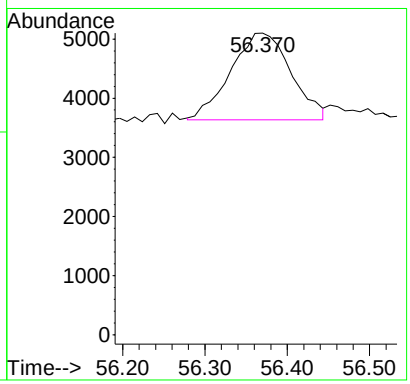
Tgt Ion:191 Resp: 6466

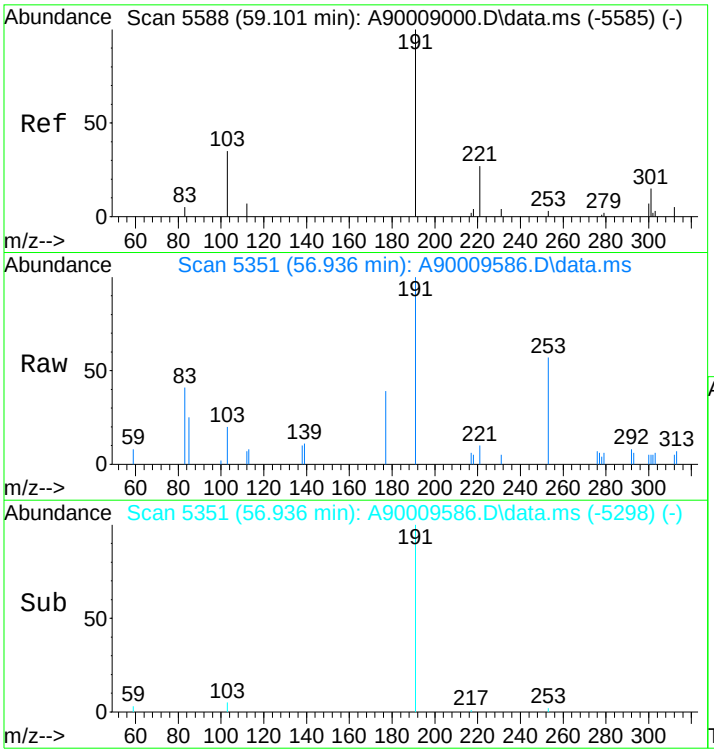




#123
30,31-Trishomohopane-22S (T30)
Concen: 66.20 ng/ml m
RT: 56.370 min Scan# 5289
Delta R.T. -0.018 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

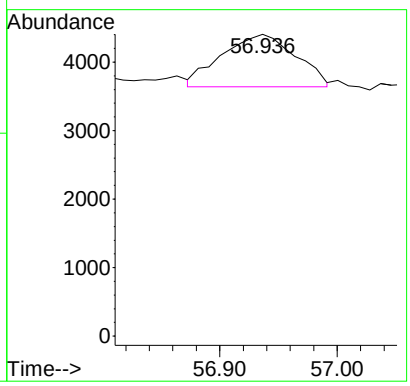
Tgt Ion:191 Resp: 7456

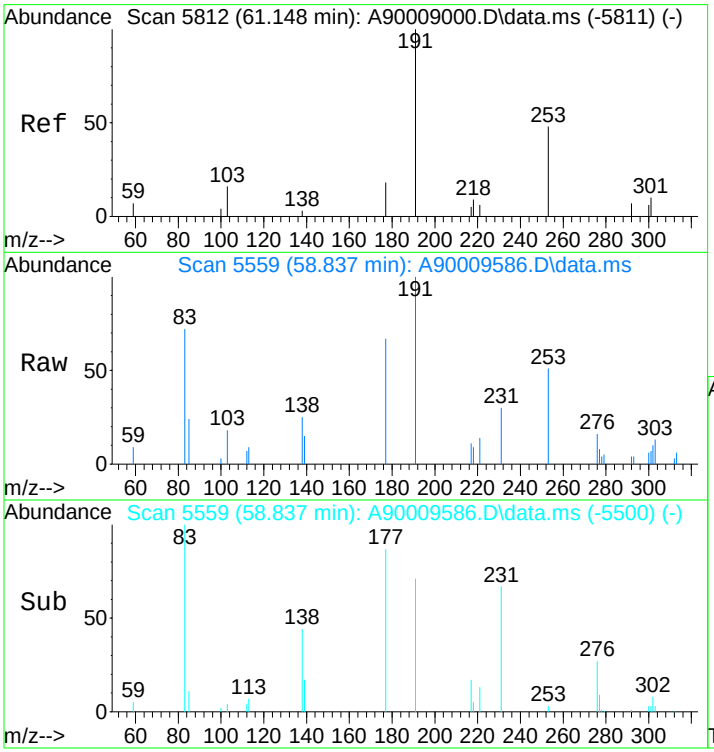




#124
30,31-Trishomohopane-22R (T31)
Concen: 29.61 ng/ml m
RT: 56.936 min Scan# 5351
Delta R.T. -0.018 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

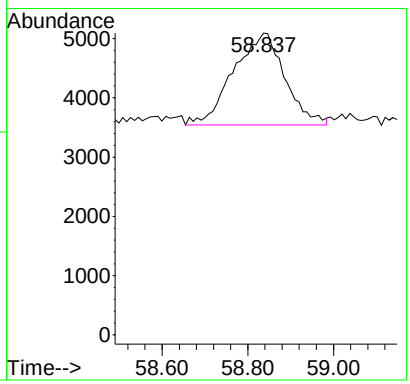
Tgt Ion:191 Resp: 3335

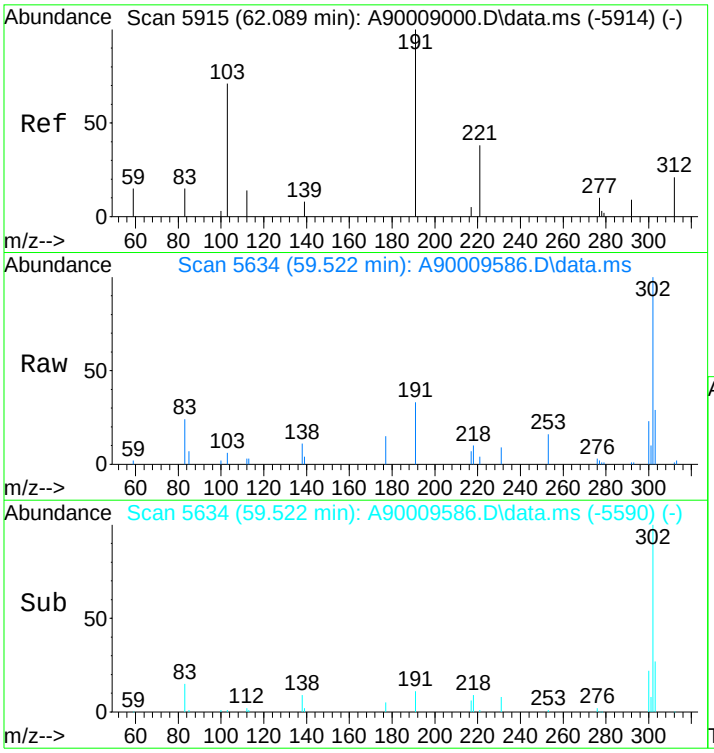




#125
Tetrakishomohopane-22S (T32)
Concen: 114.30 ng/ml
RT: 58.837 min Scan# 5559
Delta R.T. 0.037 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

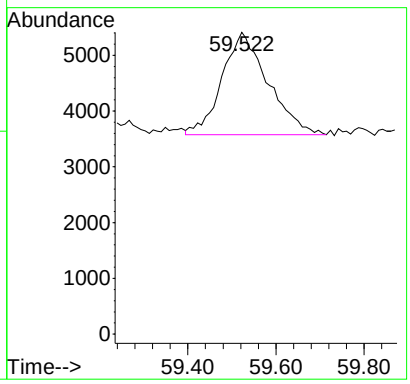
Tgt Ion:191 Resp: 12874

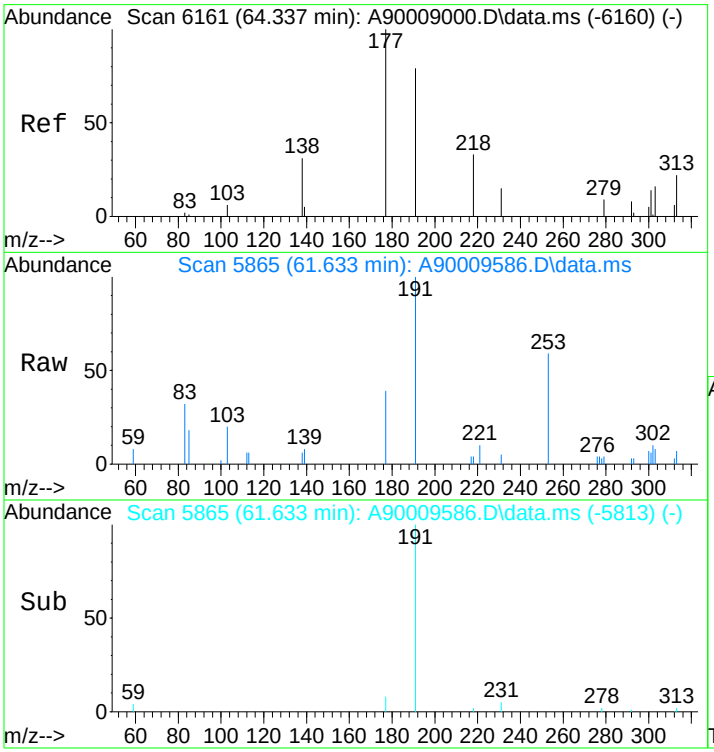




#126
Tetrakishomohopane-22R (T33)
Concen: 117.51 ng/ml
RT: 59.522 min Scan# 5634
Delta R.T. -0.100 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

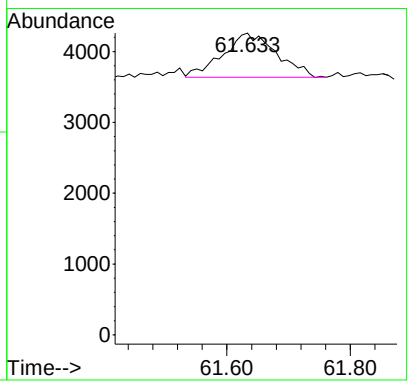
Tgt Ion:191 Resp: 13235

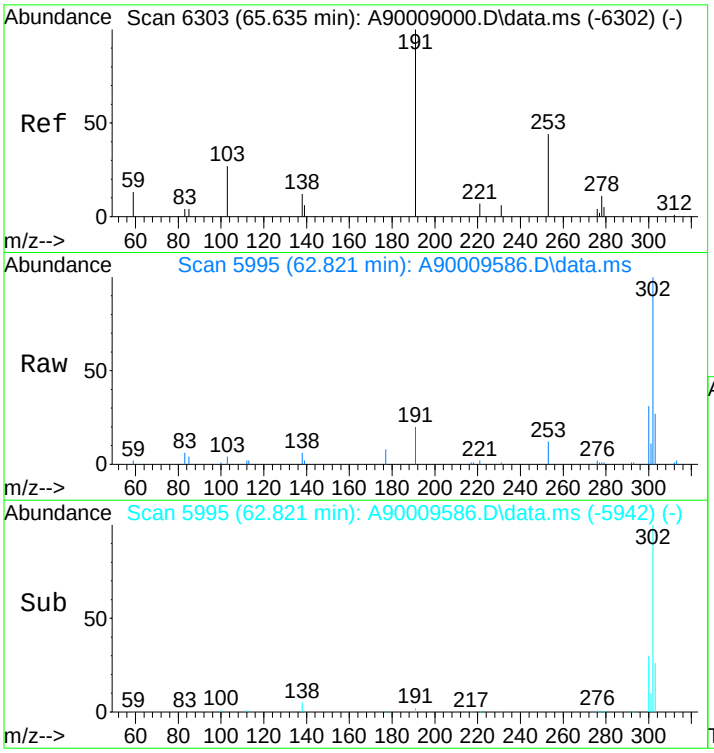




#127
Pentakishomohopane-22S (T34)
Concen: 33.53 ng/ml
RT: 61.633 min Scan# 5865
Delta R.T. -0.027 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

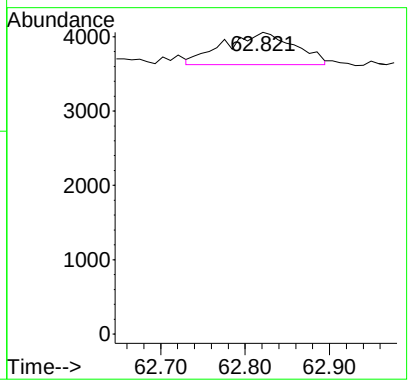
Tgt Ion:191 Resp: 3777

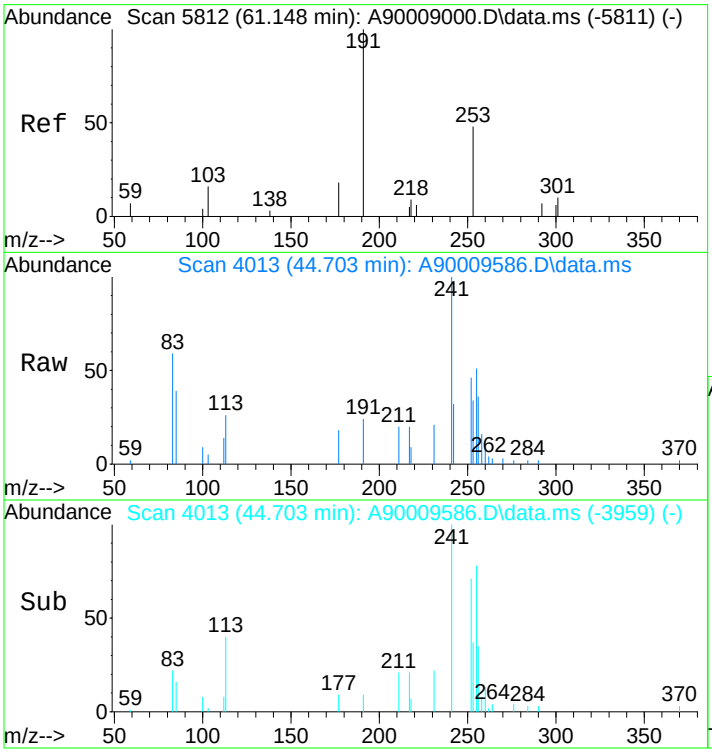




#128
Pentakishomohopane-22R (T35)
Concen: 22.48 ng/ml m
RT: 62.821 min Scan# 5995
Delta R.T. -0.018 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

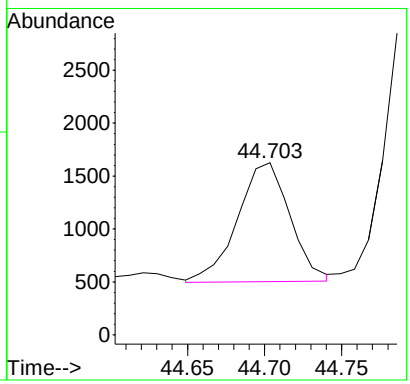
Tgt Ion:191 Resp: 2532

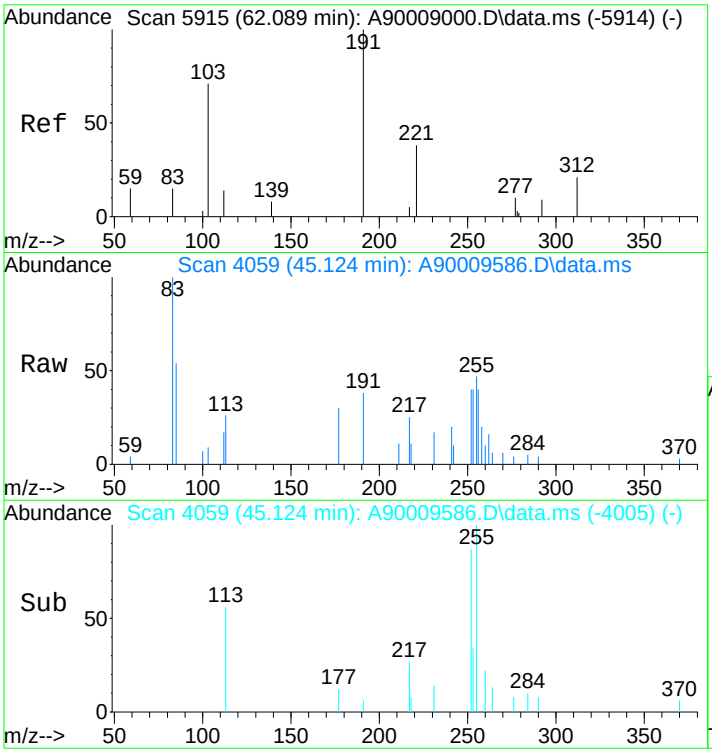




#130
13b(H),17a(H)-20S-Diacholestane (S4)
Concen: 49.70 ng/ml
RT: 44.703 min Scan# 4013
Delta R.T. -0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

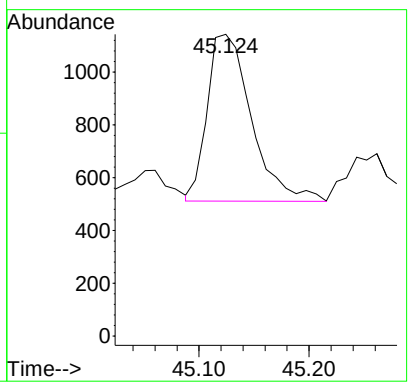
Tgt Ion:217 Resp: 2673

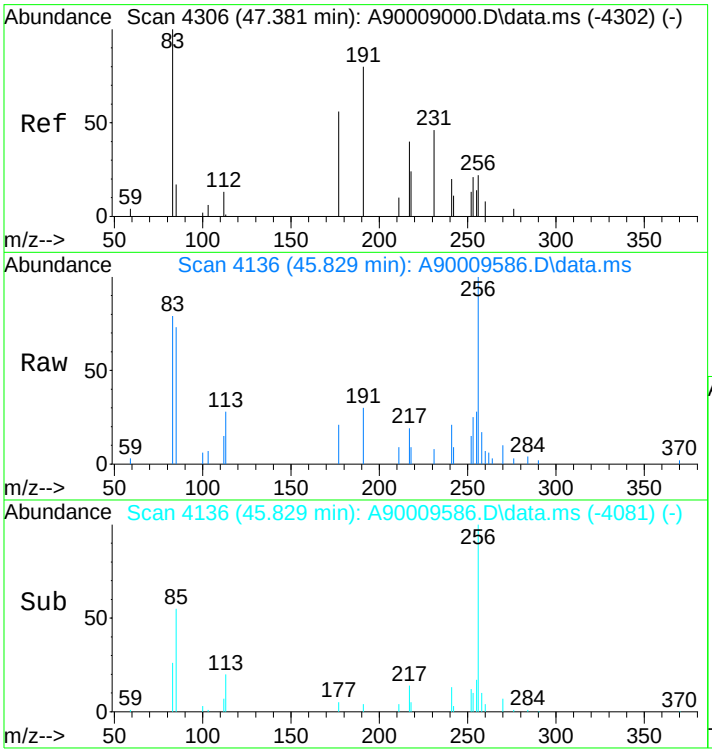




#131
13b(H),17a(H)-20R-Diacholestane (S5)
Concen: 32.73 ng/ml
RT: 45.124 min Scan# 4059
Delta R.T. -0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

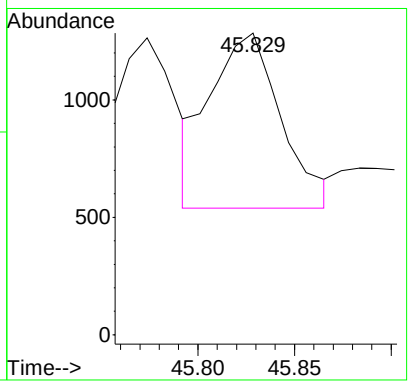
Tgt Ion:217 Resp: 1760

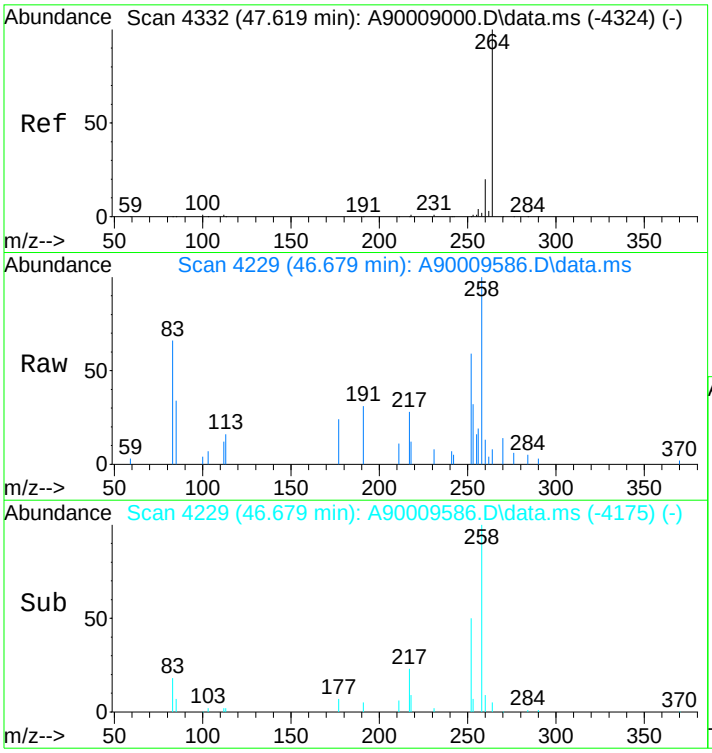




#132
13b,17a-20S-Methyldiacholestane (S8)
Concen: 35.25 ng/ml m
RT: 45.829 min Scan# 4136
Delta R.T. 0.000 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

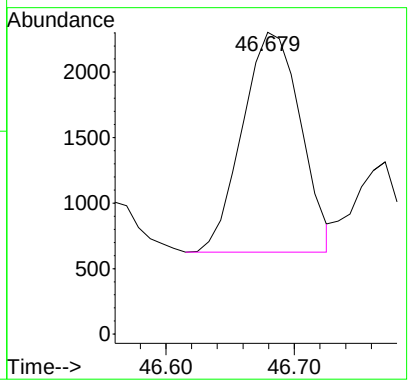
Tgt Ion:217 Resp: 1896

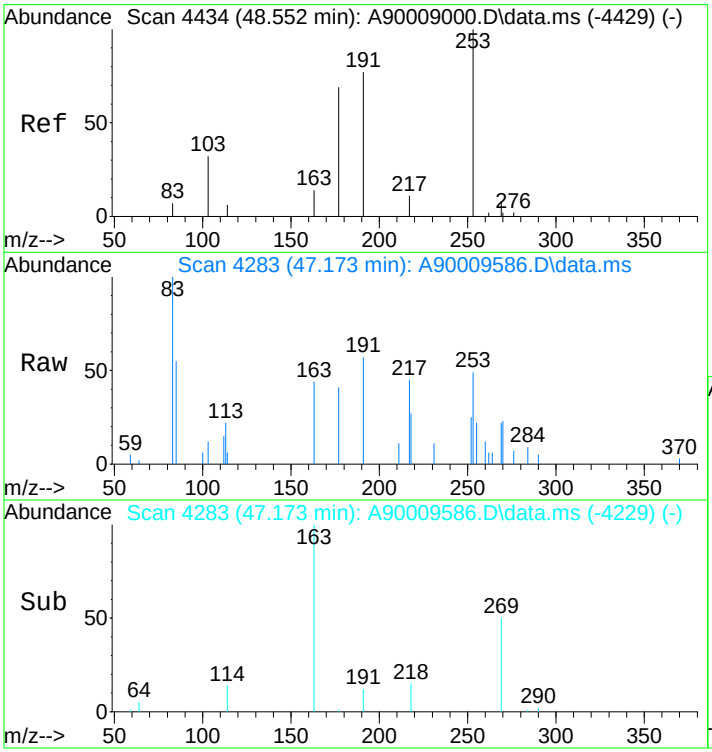




#133
14a,17a-20S-Chol/13b,17a-20S-Ethyldiach
Concen: 98.35 ng/ml
RT: 46.679 min Scan# 4229
Delta R.T. -0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

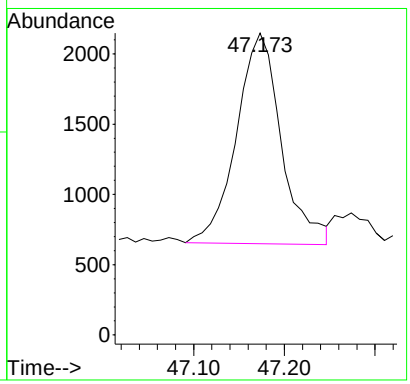
Tgt Ion:217 Resp: 5289

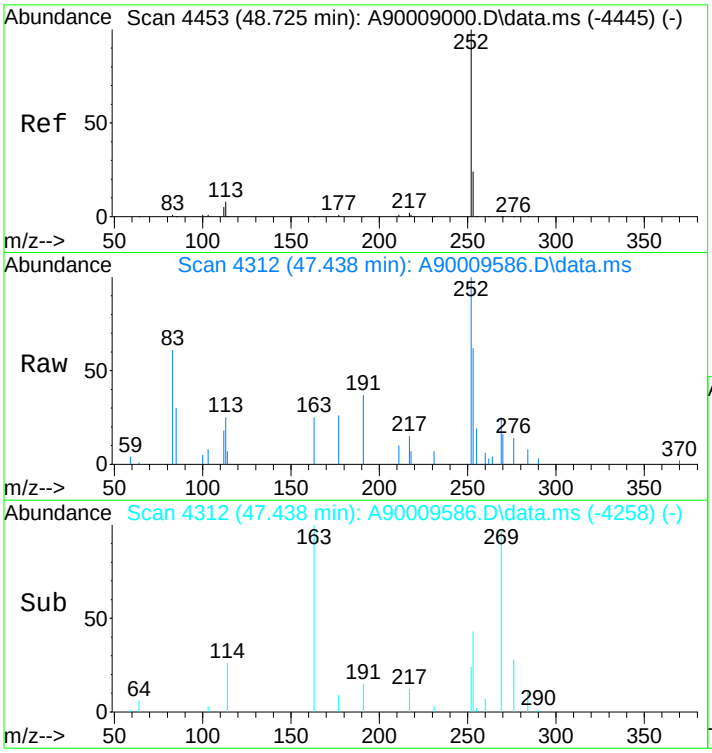




#134
14a,17a-20R-Chol/13b,17a-20R-Ethyldiach
Concen: 95.70 ng/ml
RT: 47.173 min Scan# 4283
Delta R.T. -0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

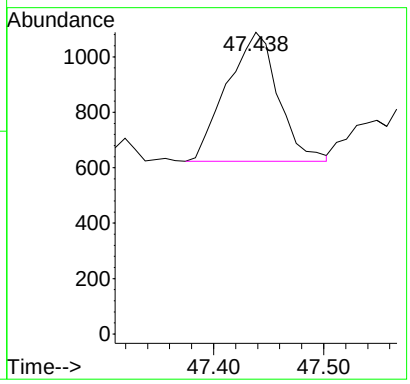
Tgt Ion:217 Resp: 5147

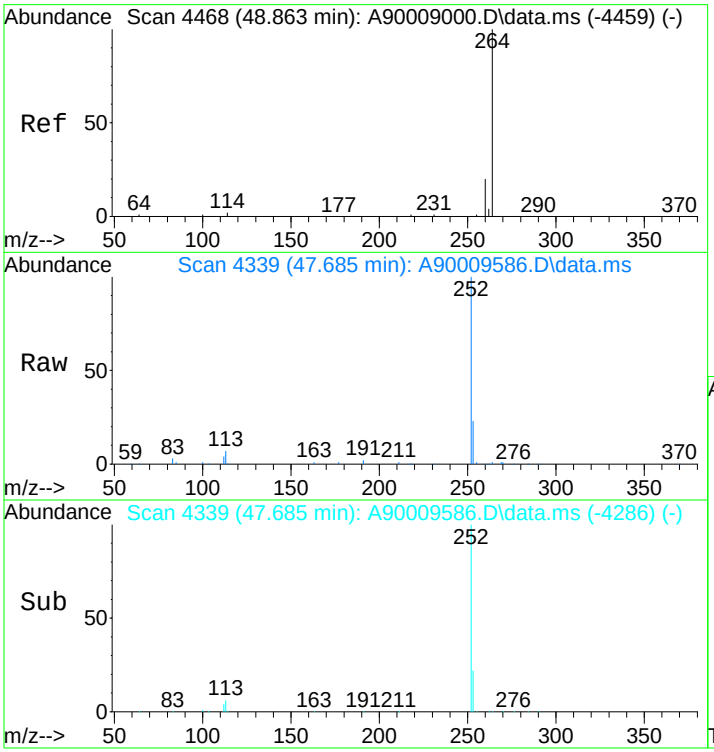




#135
Unknown Sterane (S18)
Concen: 28.15 ng/ml
RT: 47.438 min Scan# 4312
Delta R.T. -0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

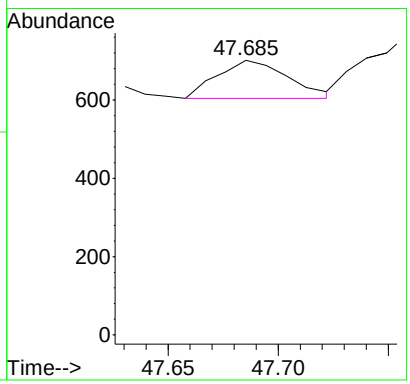
Tgt Ion:217 Resp: 1514

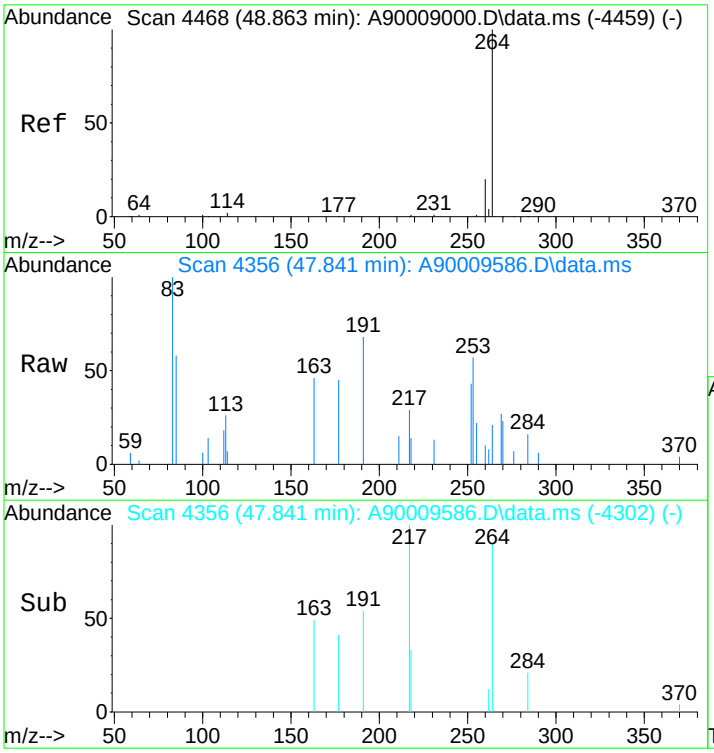




#136
13a,17b-20S-Ethyldiacholestane (S19)
Concen: 4.05 ng/ml
RT: 47.685 min Scan# 4339
Delta R.T. -0.018 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

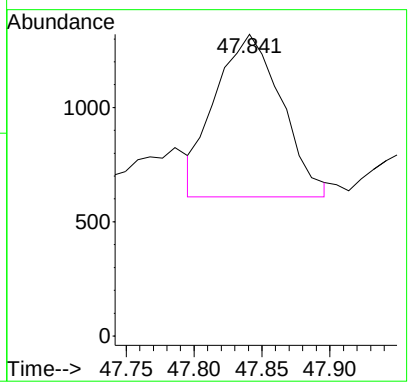
Tgt Ion:217 Resp: 218

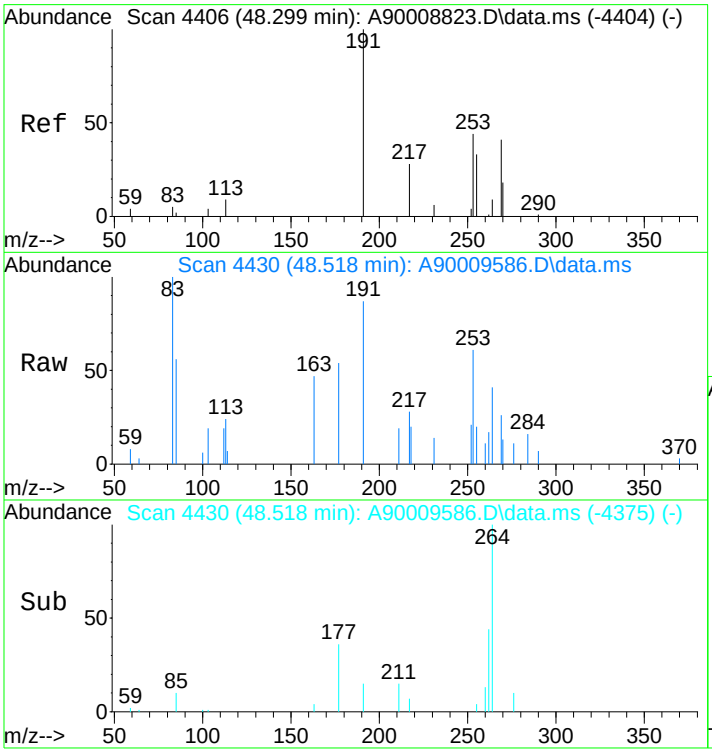




#137
14a,17a-20S-Methylcholestane (S20)
Concen: 44.79 ng/ml m
RT: 47.841 min Scan# 4356
Delta R.T. -0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

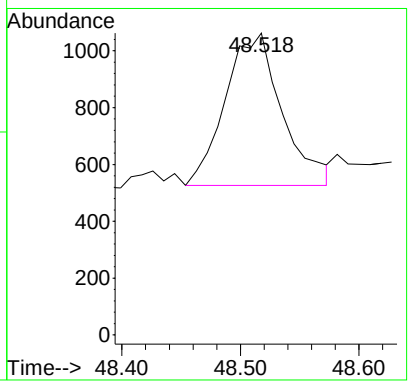
Tgt Ion:217 Resp: 2409

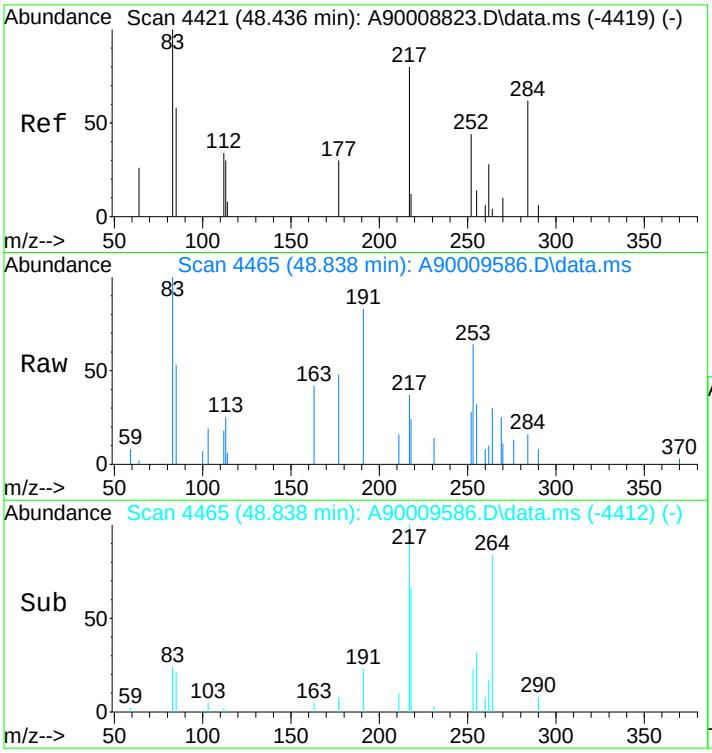




#138
14a,17a-20R-Methylcholestane (S24)
Concen: 33.10 ng/ml
RT: 48.518 min Scan# 4430
Delta R.T. 0.000 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

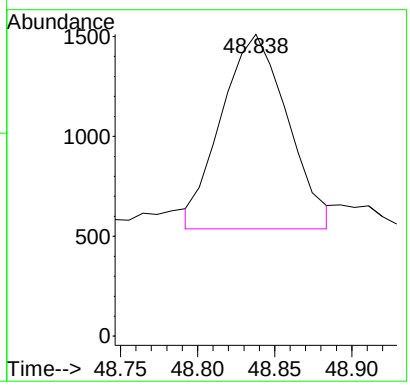
Tgt Ion:217 Resp: 1780

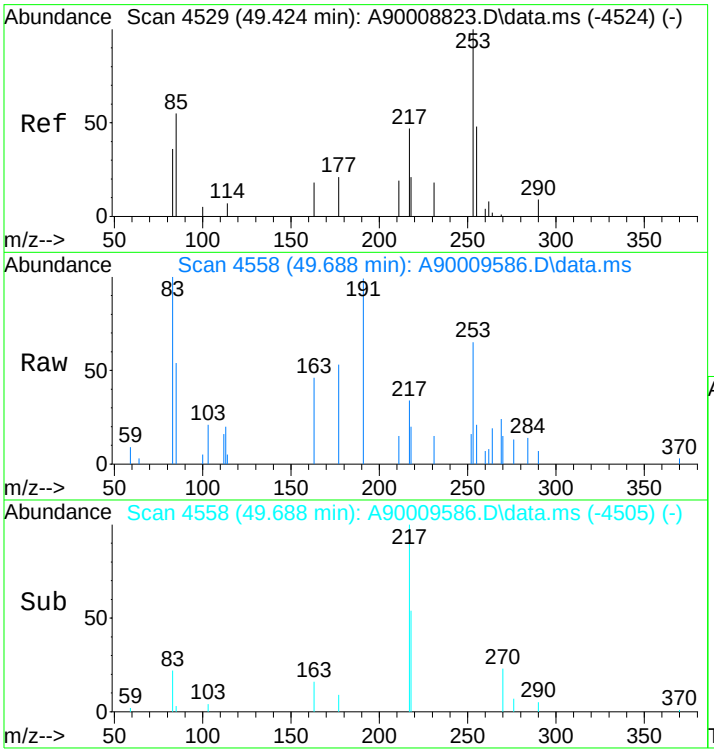




#139
14a(H),17a(H)-20S-Ethylcholestane (S25)
Concen: 53.98 ng/ml m
RT: 48.838 min Scan# 4465
Delta R.T. -0.018 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

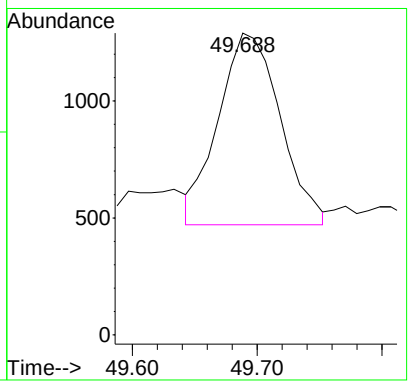
Tgt Ion:217 Resp: 2903

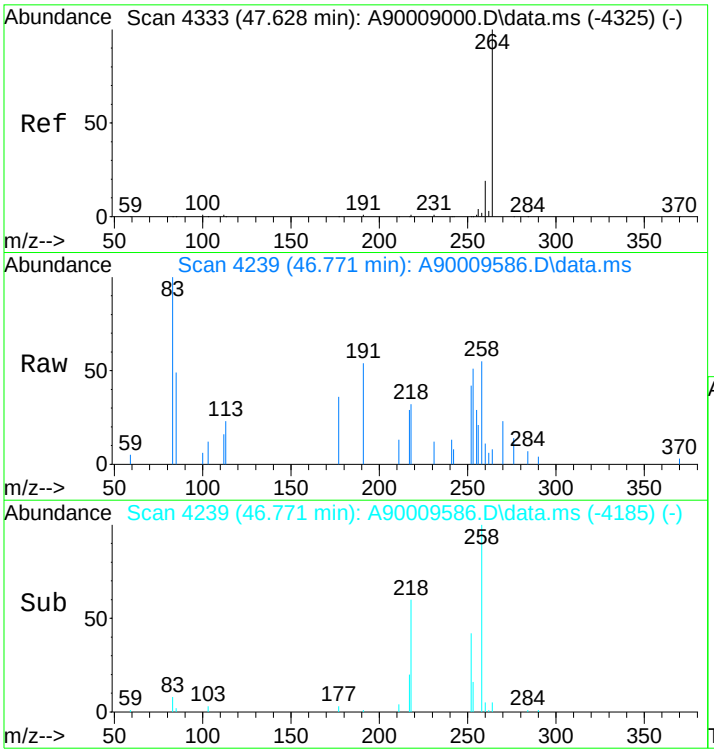




#140
14a(H),17a(H)-20R-Ethylcholestane (S28)
Concen: 52.38 ng/ml m
RT: 49.688 min Scan# 4558
Delta R.T. -0.018 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

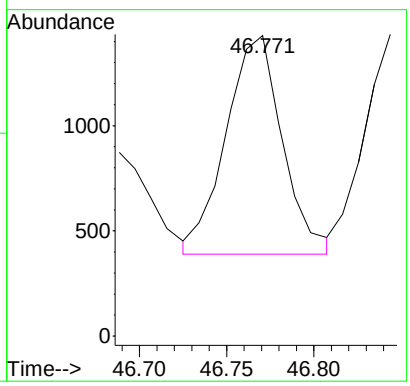
Tgt Ion:217 Resp: 2817

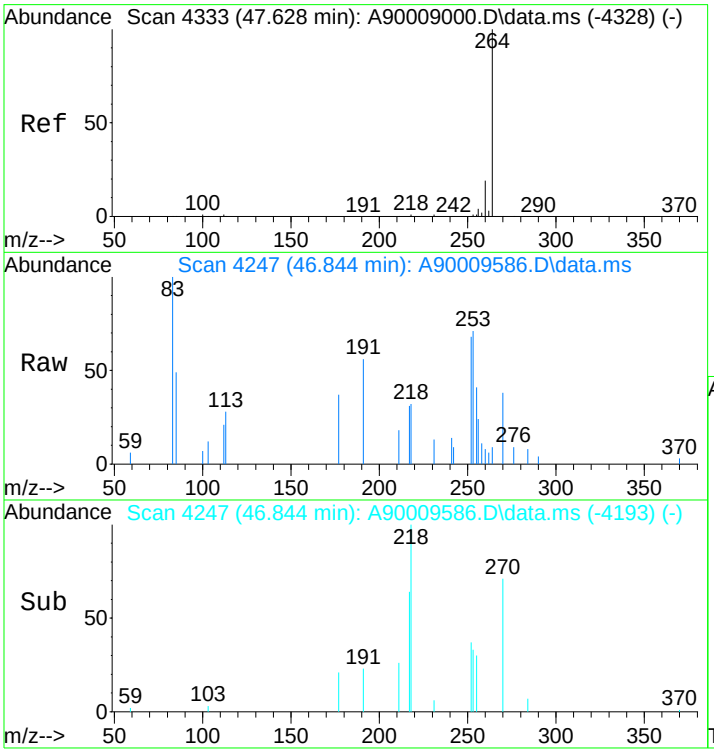




#141
14b(H),17b(H)-20R-Cholestane (S14)
Concen: 43.38 ng/ml m
RT: 46.771 min Scan# 4239
Delta R.T. -0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

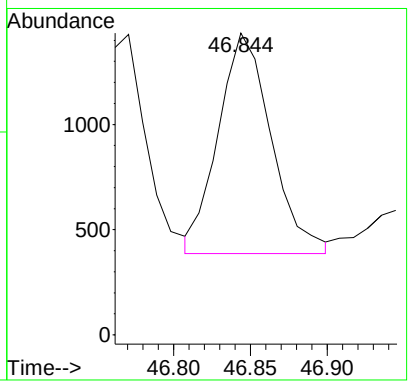
Tgt Ion:218 Resp: 2333

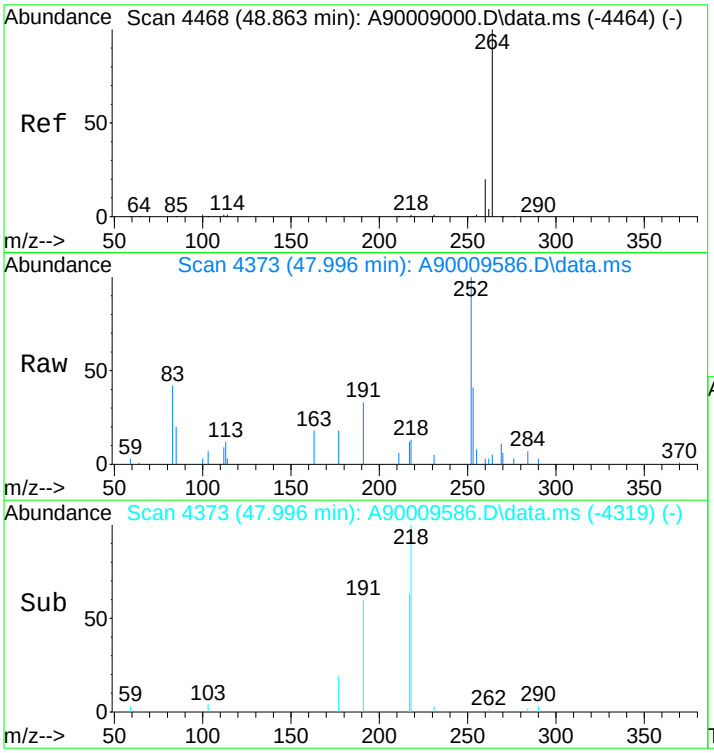




#142
14b(H),17b(H)-20S-Cholestane (S15)
Concen: 46.88 ng/ml m
RT: 46.844 min Scan# 4247
Delta R.T. -0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

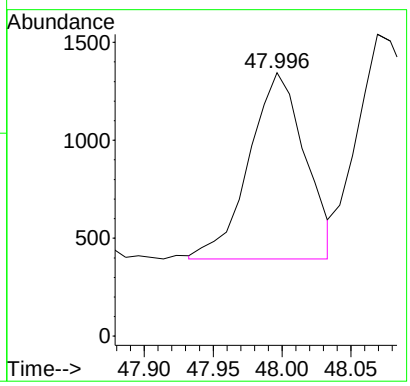
Tgt Ion:218 Resp: 2521

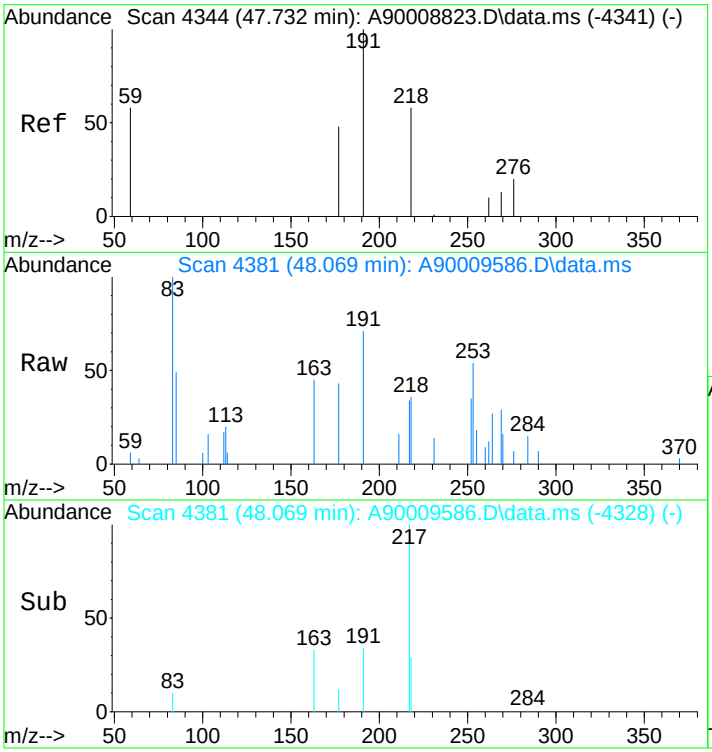




#143
14b,17b-20R-Methylcholestane (S22)
Concen: 50.09 ng/ml m
RT: 47.996 min Scan# 4373
Delta R.T. -0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

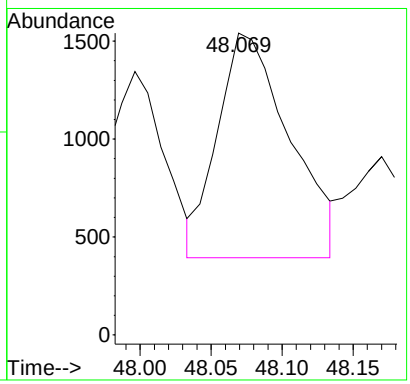
Tgt Ion:218 Resp: 2694

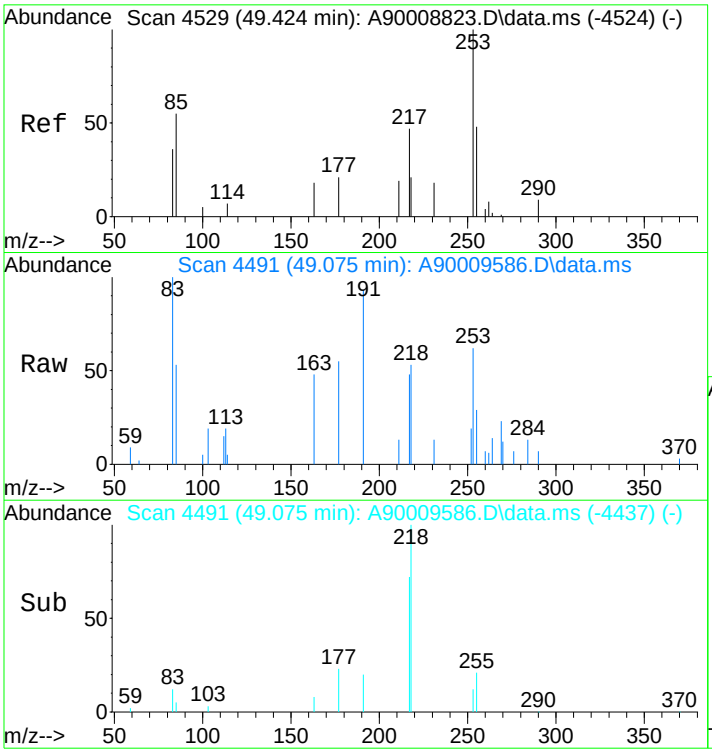




#144
14b,17b-20S-Methylcholestane (S23)
Concen: 75.27 ng/ml m
RT: 48.069 min Scan# 4381
Delta R.T. -0.018 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

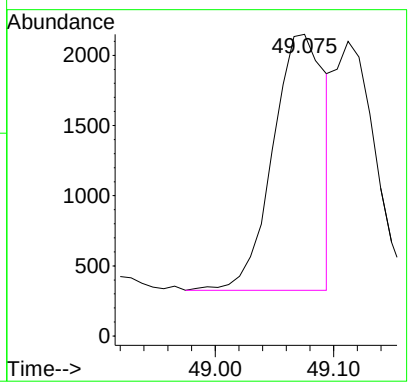
Tgt Ion:218 Resp: 4048

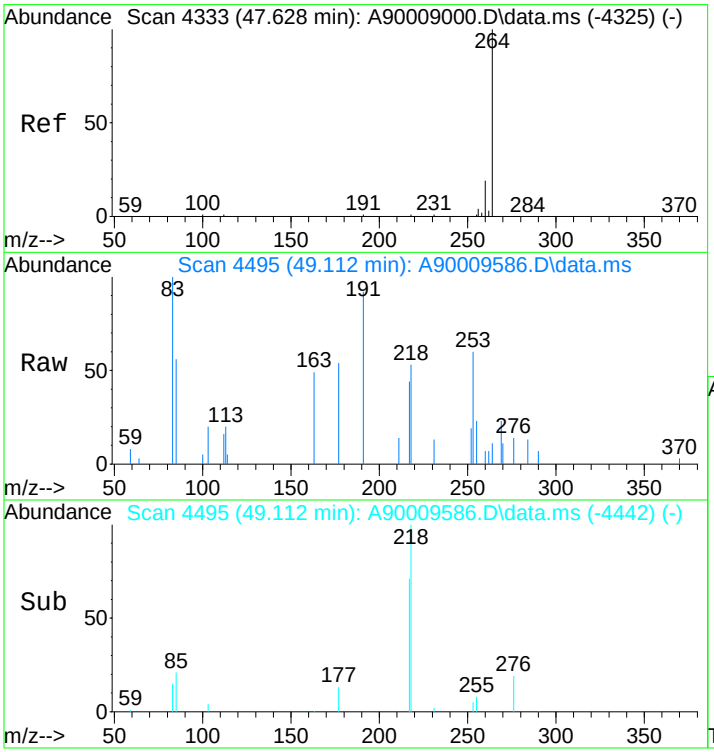




#145
14b(H),17b(H)-20R-Ethylcholestane (S26)
Concen: 104.04 ng/ml
RT: 49.075 min Scan# 4491
Delta R.T. -0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

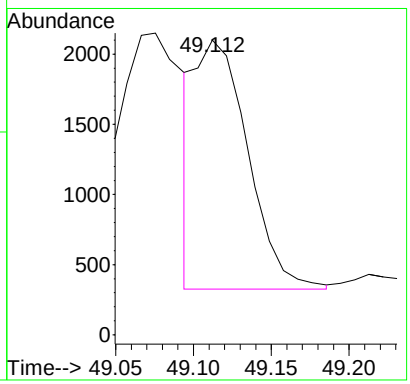
Tgt Ion:218 Resp: 5595

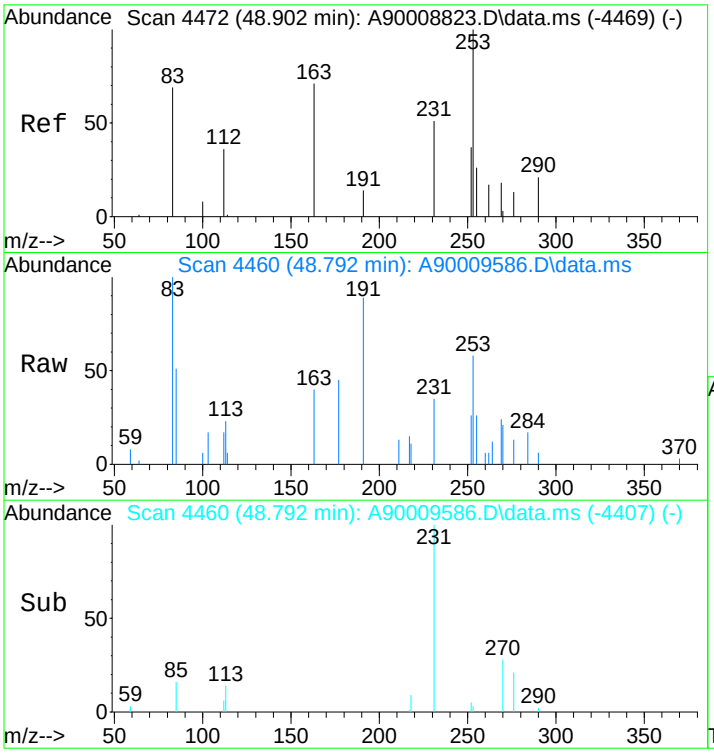




#146
14b(H),17b(H)-20S-Ethylcholestane (S27)
Concen: 77.74 ng/ml m
RT: 49.112 min Scan# 4495
Delta R.T. -0.018 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

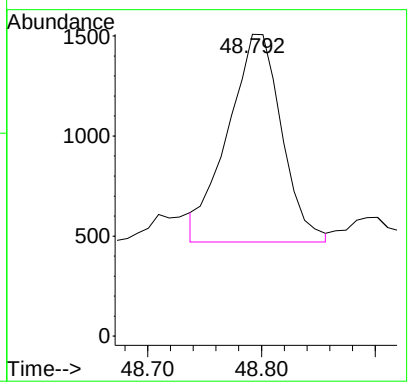
Tgt Ion:218 Resp: 4181

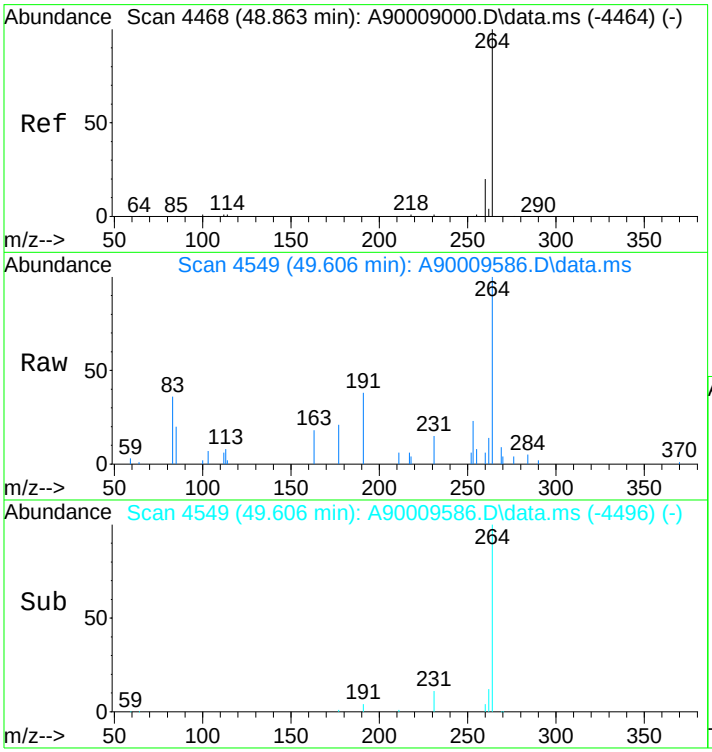




#147
C26,20R- +C27,20S- triaromatic steroid
Concen: 63.24 ng/mL m
RT: 48.792 min Scan# 4460
Delta R.T. -0.018 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

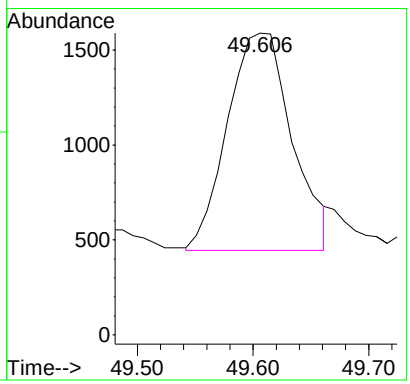
Tgt Ion:231 Resp: 3401

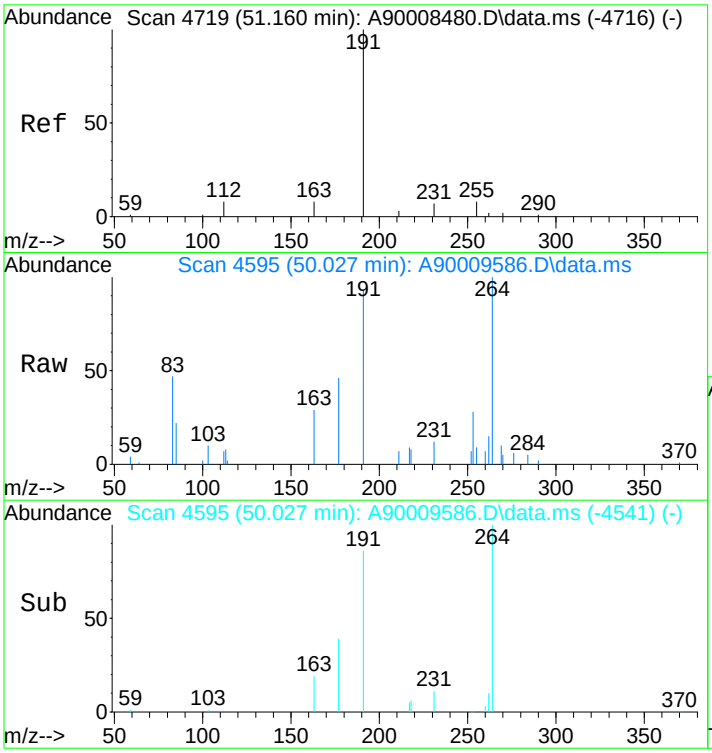




#148
C28,20S-triaromatic steroid
Concen: 82.80 ng/mL m
RT: 49.606 min Scan# 4549
Delta R.T. -0.018 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

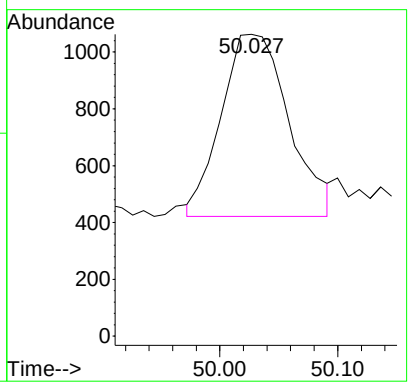
Tgt Ion:231 Resp: 4453

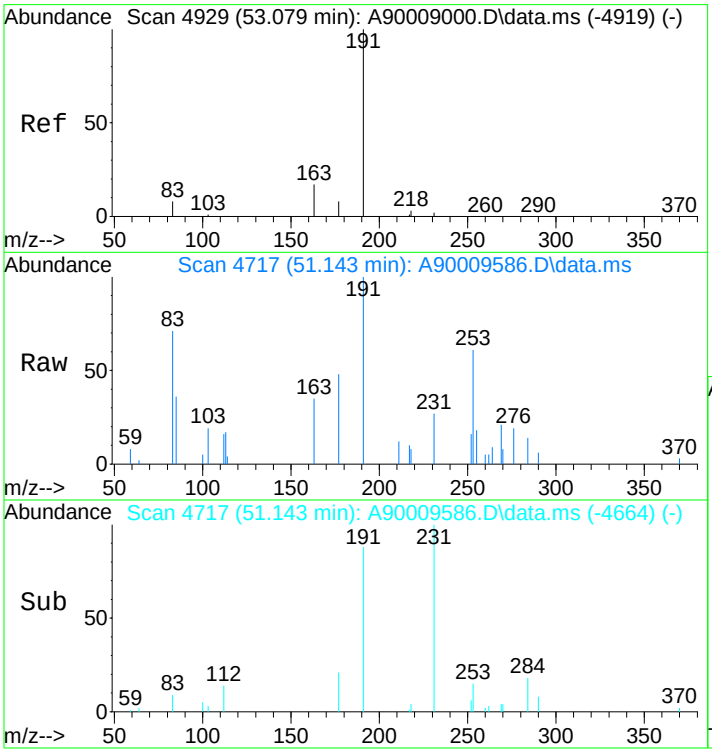




#149
C27,20R-triaromatic steroid
Concen: 47.56 ng/mL m
RT: 50.027 min Scan# 4595
Delta R.T. -0.009 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

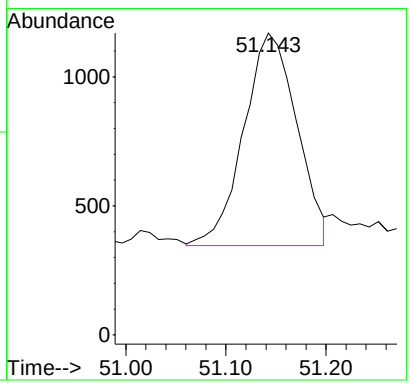
Tgt Ion:231 Resp: 2558





#150
C28,20R-triaromatic steroid
Concen: 56.68 ng/mL m
RT: 51.143 min Scan# 4717
Delta R.T. -0.018 min
Lab File: A90009586.D
Acq: 23 Dec 2012 4:44 am

Tgt Ion:231 Resp: 3048



Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009587.D
Acq On : 23 Dec 2012 6:09 am
Operator : ps
Sample : 1212022-02
Misc : 1X
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Dec 27 16:09:16 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.156	164	64600	500.000	ng/mL	0.00
74) Chrysene-d12	42.557	240	121367	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.229	136	417522	1681.555	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 168.16%#			
42) Phenanthrene-d10	31.995	188	488191	2095.186	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 209.52%#			
83) Benzo[b]fluoranthene-d12	46.450	264	453585	2033.140	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 203.31%#			
88) Benzo[a]pyrene-d12	47.585	264	413556	1849.212	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 184.92%#			
129) 5B(H)Cholane - Surr	43.187	217	106143	2083.277	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 208.33%#			
Target Compounds						Qvalue
3) trans-Decalin	15.908	138	400	7.043	ng/mL	100
5) C1-Decalins	17.377	152	867M5	15.266	ng/mL	
6) C2-Decalins	20.242	166	1815M5	31.958	ng/mL	
7) C3-Decalins	21.985	180	1872M5	32.962	ng/mL	
8) C4-Decalins	24.960	194	3624M5	63.811	ng/mL	
10) Naphthalene	19.302	128	101543	398.519	ng/mL#	100
11) C1-Naphthalenes	21.994	142	32897M5	129.109	ng/mL	
12) C2-Naphthalenes	24.814	156	78512M5	308.130	ng/mL	
13) C3-Naphthalenes	27.141	170	143632M5	563.702	ng/mL	
14) C4-Naphthalenes	31.137	184	101695M5	399.115	ng/mL	
16) 2-Methylnaphthalene	21.994	142	20308	121.873	ng/mL#	100
17) 1-Methylnaphthalene	22.405	142	12494	77.261	ng/mL#	100
18) Benzothiophene	19.531	134	4845	22.722	ng/mL	100
19) C1-Benzo(b)thiophenes	22.168	148	2436M5	11.424	ng/mL	
20) C2-Benzo(b)thiophenes	24.531	162	3222M5	15.110	ng/mL	
21) C3-Benzo(b)thiophenes	26.621	176	8851M5	41.509	ng/mL	
22) C4-Benzo(b)thiophenes	29.066	190	7044M5	33.034	ng/mL	
23) Biphenyl	23.865	154	15458	70.889	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.486	156	15161	96.790	ng/mL#	100
25) Dibenzofuran	26.922	168	32838M4	141.190	ng/mL	
26) Acenaphthylene	25.544	152	183017	698.233	ng/mL#	100
27) Acenaphthene	26.274	153	44161	267.962	ng/mL	99
28) 2,3,5-Trimethylnaphthalen	27.835	170	13077M3	90.806	ng/mL	
29) Fluorene	28.291	166	62164M4	343.484	ng/mL	
30) C1-Fluorenes	30.508	180	86510M5	478.006	ng/mL	
31) C2-Fluorenes	32.844	194	101575M5	561.247	ng/mL	
32) C3-Fluorenes	35.345	208	64267M5	355.104	ng/mL	
33) Dibenzothiophene	31.594	184	63580	249.744	ng/mL#	85
34) 4-Methyldibenzothiophene(	33.364	198	36584	143.703	ng/mL#	100
35) 2/3-Methyldibenzothiophen	33.711	198	40179M1	157.824	ng/mL	
36) 1-Methyldibenzothiophene(	34.131	198	12092	47.498	ng/mL#	100
37) OTP	33.811	198	56574	222.225	ng/mL#	100
38) C1-Dibenzothiophenes	33.811	198	168462M5	661.724	ng/mL	
38) C1-Dibenzothiophenes BS	33.811	198	111888m	439.500	ng/mL	
39) C2-Dibenzothiophenes	35.043	212	117576M5	461.843	ng/mL	
40) C3-Dibenzothiophenes	36.842	226	64116M5	251.850	ng/mL	
41) C4-Dibenzothiophenes	38.531	240	23167M5	91.001	ng/mL	
43) Phenanthrene	32.086	178	1228944	4672.588	ng/mL	100
44) 3-Methylphenanthrene(3MP)	34.048	192	219778	835.622	ng/mL	97

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009587.D
Acq On : 23 Dec 2012 6:09 am
Operator : ps
Sample : 1212022-02
Misc : 1X
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Dec 27 16:09:16 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
45) 2-Methylphenanthrene(2MP)	34.158	192	262422	997.759	ng/mL	96
46) 2-Methylanthracene(2MA)	34.322	192	136548M3	519.171	ng/mL	
47) 9/4-Methylphenanthrene(9M	34.505	192	255063M3	969.779	ng/mL	
48) 1-Methylphenanthrene(1MP)	34.587	192	183814	698.882	ng/mL	96
49) C1-Phenanthrenes/Anthrace	34.158	192	1075599M5	4089.553	ng/mL	
50) C2-Phenanthrenes/Anthrace	36.312	206	689817M5	2622.765	ng/mL	
50) C2-Phenanthrenes/Anthr BS	36.312	206	689817m	2622.765	ng/mL	
52) C3-Phenanthrenes/Anthrace	38.138	220	273762M5	1040.875	ng/mL	
53) C4-Phenanthrenes/Anthrace	40.348	234	87269M5	331.807	ng/mL	
55) Anthracene	32.269	178	388283M4	1589.783	ng/mL	
56) Carbazole	32.953	167	18700	80.936	ng/mL#	88
57) 1-Methylphenanthrene	34.587	192	183820	947.287	ng/mL	100
58) Fluoranthene	36.851	202	4041361	13754.983	ng/mL	98
59) Benzo(b)fluorene	39.362	216	280978M3	1608.057	ng/mL	
60) Pyrene	37.727	202	3945404	13162.378	ng/mL	99
61) C1-Fluoranthenes/Pyrenes	39.115	216	1955316M5	6523.187	ng/mL	
62) C2-Fluoranthenes/Pyrenes	41.160	230	716060M5	2388.869	ng/mL	
63) C3-Fluoranthenes/Pyrenes	43.041	244	281114M5	937.833	ng/mL	
64) C4-Fluoranthenes/Pyrenes	43.334	258	167461M5	558.672	ng/mL	
66) Naphthobenzothiophene	41.562	234	175861	676.145	ng/ml#	94
67) Naphthobenzothiophene-2,1	41.562	234	175861	676.145	ng/mL#	94
68) Naphthobenzothiophene-1,2	41.909	234	42907	164.968	ng/mL#	25
69) Naphthobenzothiophene-2,3	42.201	234	71706M3	275.693	ng/mL	
70) C1-Naphthobenzothiophenes	42.968	248	175817M5	675.976	ng/ml	
71) C2-Naphthobenzothiophenes	44.466	262	87989M5	338.297	ng/ml	
72) C3-Naphthobenzothiophenes	46.350	276	45431M5	174.672	ng/ml	
73) C4-Naphthobenzothiophenes	49.011	290	22205M5	85.373	ng/mL	
75) Benz[a]anthracene	42.503	228	1635034M3	5873.275	ng/mL	
77) Chrysene/Triphenylene	42.658	228	1699882	6208.500	ng/mL	99
78) C1-Chrysenes	44.128	242	779305M5	2846.265	ng/mL	
79) C2-Chrysenes	45.838	256	353679M5	1291.746	ng/mL	
79) C2-Chrysenes BS	45.838	256	335423m	1225.070	ng/mL	
80) BBF-d12 Surr BKGD	46.450	256	18256	66.677	ng/mL	100
81) C3-Chrysenes	46.862	270	217524M5	794.466	ng/mL	
82) C4-Chrysenes	48.325	284	76165M5	278.178	ng/mL	
84) Benzo[b]fluoranthene	46.542	252	1406459	4872.629	ng/mL	94
85) Benzo[j]+[k]fluoranthene	46.615	252	1582608	5580.211	ng/mL	93
86) Benzo[a]fluoranthene	46.899	252	366183	1291.146	ng/mL#	1
87) Benzo[e]pyrene	47.493	252	1092776	3986.942	ng/mL	91
89) Benzo[a]pyrene	47.667	252	1715511	6608.818	ng/mL	90
90) Perylene	47.960	252	409888M3	1479.528	ng/mL	
91) Indeno[1,2,3-cd]pyrene	52.157	276	1099344M4	3823.998	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.194	278	300602M4	1061.451	ng/mL	
93) Benzo[g,h,i]perylene	53.363	276	1038301	3675.319	ng/mL	100
94) Hopane (T19)	51.325	191	22028M3	206.443	ng/mL	
96) C23 Tricyclic Terpane (T4	40.211	191	2649	24.826	ng/ml	100
97) C24 Tricyclic Terpane (T5	40.941	191	2088M4	19.568	ng/ml	
98) C25 Tricyclic Terpane (T6	42.503	191G	5222M1	48.940	ng/ml	
99) C24 Tetracyclic Terpane (	43.735	191	1791	16.785	ng/ml	100
100) C26 Tricyclic Terpane-22S	43.489	191	1851M4	17.347	ng/ml	
101) C26 Tricyclic Terpane-22R	43.580	191	982M4	9.203	ng/ml	
102) C28 Tricyclic Terpane-22S	45.874	191	1053M4	9.869	ng/ml	
103) C28 Tricyclic Terpane-22R	46.030	191	1467M4	13.749	ng/ml	
104) C29 Tricyclic Terpane-22S	46.551	191	1188M4	11.134	ng/ml	
105) C29 Tricyclic Terpane-22R	46.743	191	1247M4	11.687	ng/ml	
106) 18a-22,29,30-Trisnorneoho	47.786	191	4457M4	41.770	ng/ml	

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009587.D
Acq On : 23 Dec 2012 6:09 am
Operator : ps
Sample : 1212022-02
Misc : 1X
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Dec 27 16:09:16 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
107) C30 Tricyclic Terpane-22S	47.905	191	1068M4	10.009	ng/mL	
108) C30 Tricyclic Terpane-22R	48.142	191	1180M3	11.059	ng/mL	
109) 17a(H)-22,29,30-Trisnorho	48.298	191	6707M4	62.857	ng/ml	
110) 17a/b,21b/a 28,30-Bisnorh	49.414	191	1099M4	10.300	ng/ml	
111) 17a(H),21b(H)-25-Norhopan	49.249	191	1595	14.948	ng/ml	100
112) 30-Norhopane (T15)	50.045	191	16589	155.470	ng/ml	100
113) 18a(H)-30-Norneohopane-C2	50.145	191	4427M4	41.489	ng/ml	
114) 17a(H)-Diahopane (X)	50.255	191	1605M4	15.042	ng/ml	
115) 30-Normoretane (T17)	50.776	191	3131	29.343	ng/ml	100
116) 18a(H)&18b(H)-Oleananes (	51.151	191	1570M4	14.714	ng/ml	
117) Moretane (T20)	51.947	191	3736M4	35.013	ng/ml	
118) 30-Homohopane-22S (T21)	52.970	191	8762	82.116	ng/ml	100
119) 30-Homohopane-22R (T22)	53.190	191	6703M4	62.820	ng/ml	
120) Gammacerane/C32-diahopane	53.692	191	2490M4	23.336	ng/mL	
121) 30,31-Bishomohopane-22S (	54.350	191G	18088	169.518	ng/ml	100
122) 30,31-Bishomohopane-22R (	54.761	191	4701M4	44.057	ng/ml	
123) 30,31-Trishomohopane-22S	56.370	191	4335M4	40.627	ng/ml	
124) 30,31-Trishomohopane-22R	56.927	191	2292M4	21.480	ng/ml	
125) Tetrakishomohopane-22S (T	58.782	191	2666M4	24.985	ng/ml	
126) Tetrakishomohopane-22R (T	59.541	191G	2520M4	23.617	ng/ml	
127) Pentakishomohopane-22S (T	61.615	191	2782M4	26.073	ng/ml	
128) Pentakishomohopane-22R (T	62.839	191	2269M1	21.265	ng/ml	
130) 13b(H),17a(H)-20S-Diachol	44.703	217	1853M4	36.369	ng/ml	
131) 13b(H),17a(H)-20R-Diachol	45.124	217	932	18.292	ng/ml	100
132) 13b,17a-20S-Methyldiachol	45.828	217	1130M4	22.179	ng/ml	
133) 14a,17a-20S-Chol/13b,17a-	46.679	217	3577	70.206	ng/ml	100
134) 14a,17a-20R-Chol/13b,17a-	47.173	217	3494M4	68.577	ng/ml	
135) Unknown Sterane (S18)	47.438	217	1030	20.216	ng/ml	100
136) 13a,17b-20S-Ethyldiachole	47.676	217	155M4	3.042	ng/ml	
137) 14a,17a-20S-Methylcholest	47.841	217	1721M4	33.778	ng/ml	
138) 14a,17a-20R-Methylcholest	48.508	217	1240M4	24.338	ng/ml	
139) 14a(H),17a(H)-20S-Ethylch	48.838	217	2115M4	41.511	ng/ml	
140) 14a(H),17a(H)-20R-Ethylch	49.697	217	1890M4	37.095	ng/ml	
141) 14b(H),17b(H)-20R-Cholest	46.770	218	1232M4	24.181	ng/ml	
142) 14b(H),17b(H)-20S-Cholest	46.853	218	1402M4	27.517	ng/ml	
143) 14b,17b-20R-Methylcholest	47.996	218	1610M4	31.600	ng/ml	
144) 14b,17b-20S-Methylcholest	48.069	218	2530M4	49.656	ng/ml	
145) 14b(H),17b(H)-20R-Ethylch	49.075	218	3537	69.421	ng/ml	100
146) 14b(H),17b(H)-20S-Ethylch	49.112	218	2624M3	51.501	ng/ml	
147) C26,20R- +C27,20S- triaro	48.792	231	3097M4	60.785	ng/mL	
148) C28,20S-triaromatic stero	49.606	231	4247M4	83.356	ng/mL	
149) C27,20R-triaromatic stero	50.027	231	2085M4	40.922	ng/mL	
150) C28,20R-triaromatic stero	51.142	231	3034	59.549	ng/mL	100

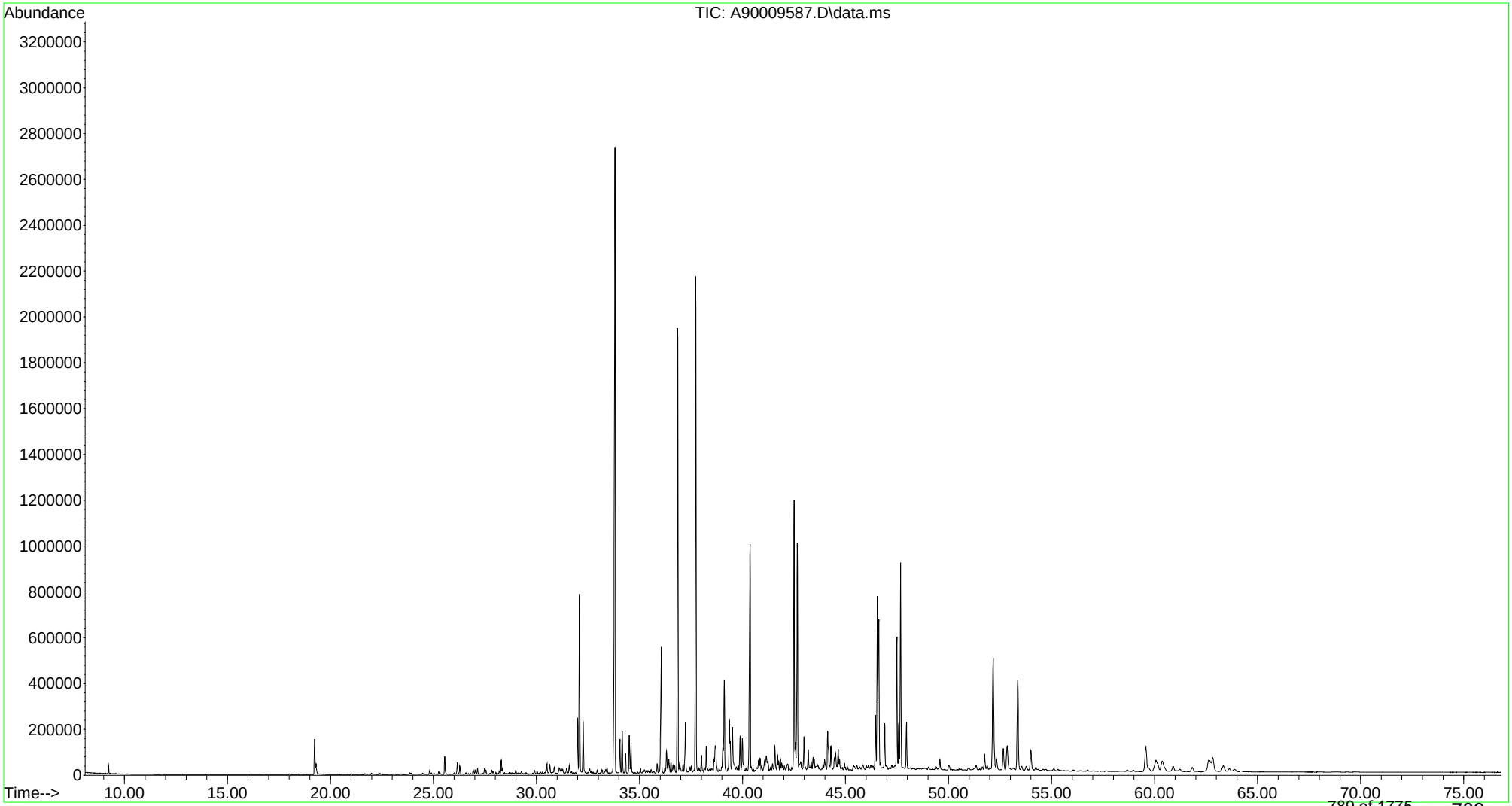
(#) = qualifier out of range (m) = manual integration (+) = signals summed

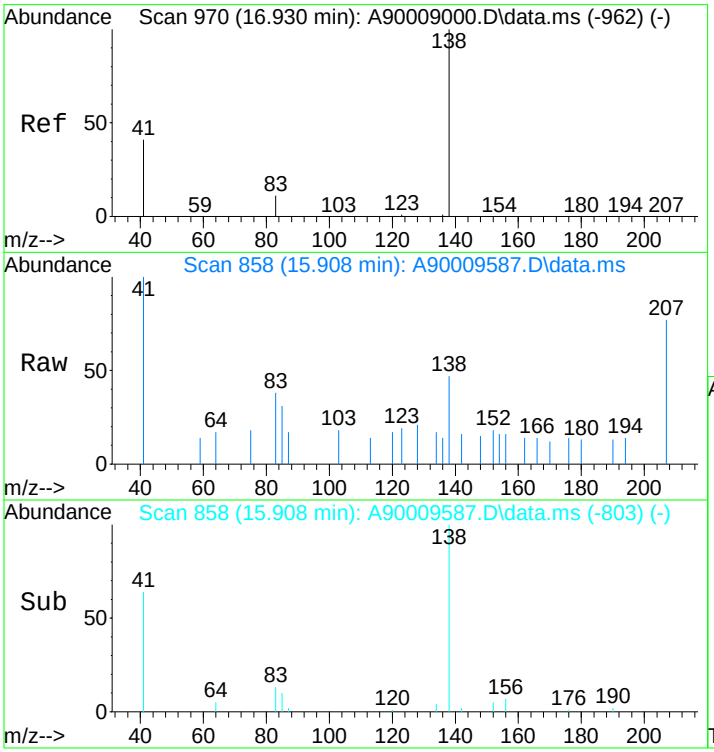
Quantitation Report (QT Reviewed)

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Data File : A90009587.D
Acq On : 23 Dec 2012 6:09 am
Operator : ps
Sample : 1212022-02
Misc : 1X
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Dec 27 16:09:16 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

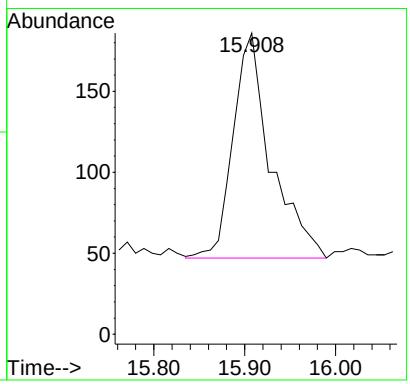
Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

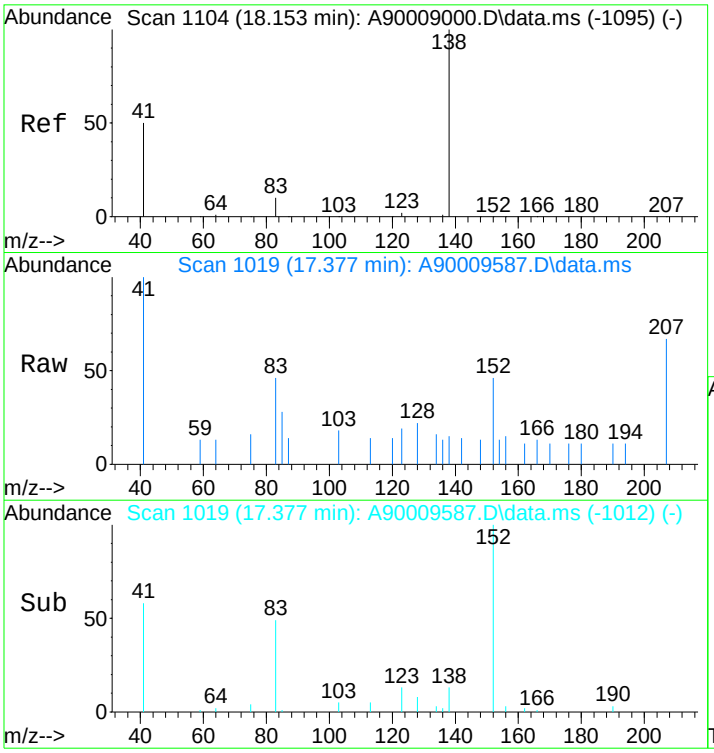




#3
trans-Decalin
Concen: 7.04 ng/mL
RT: 15.908 min Scan# 858
Delta R.T. 0.000 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

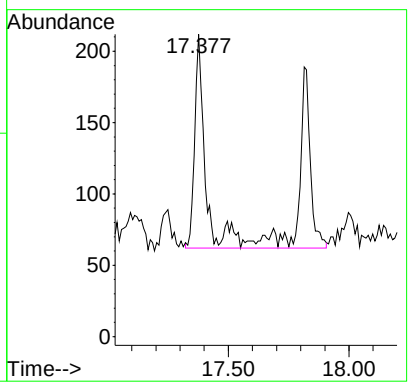
Tgt Ion:138 Resp: 400

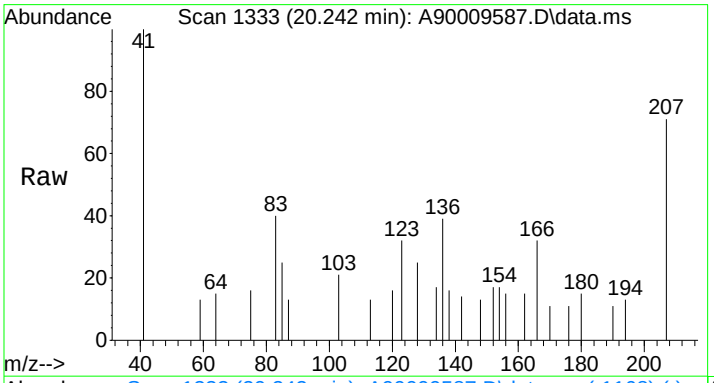




#5
C1-Decalins
Concen: 15.27 ng/mL m
RT: 17.377 min Scan# 1019
Delta R.T. -0.447 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

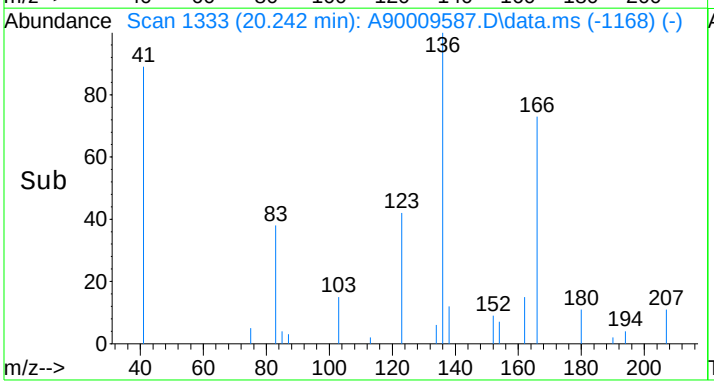
Tgt Ion:152 Resp: 867

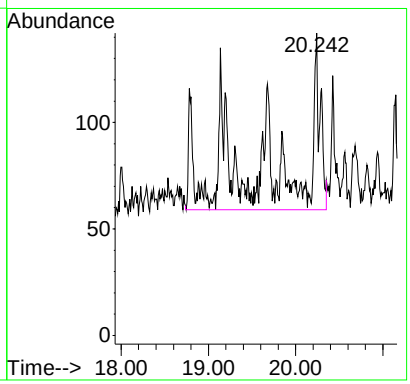


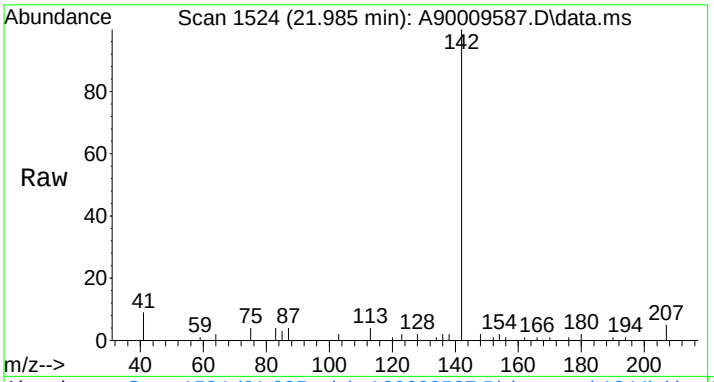


#6
C2-Decalins
Concen: 31.96 ng/mL m
RT: 20.242 min Scan# 1333
Delta R.T. 1.095 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:166 Resp: 1815

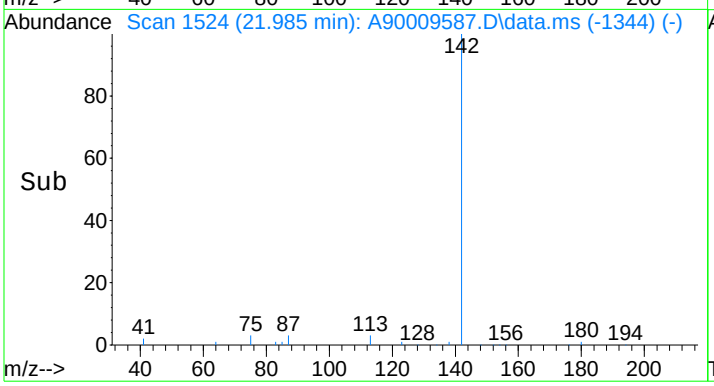


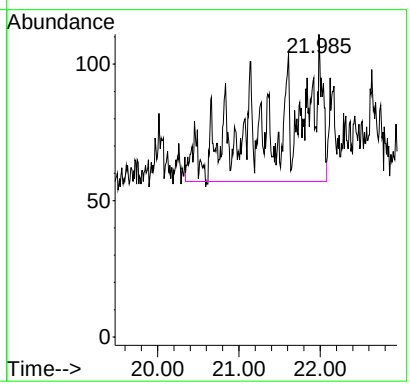


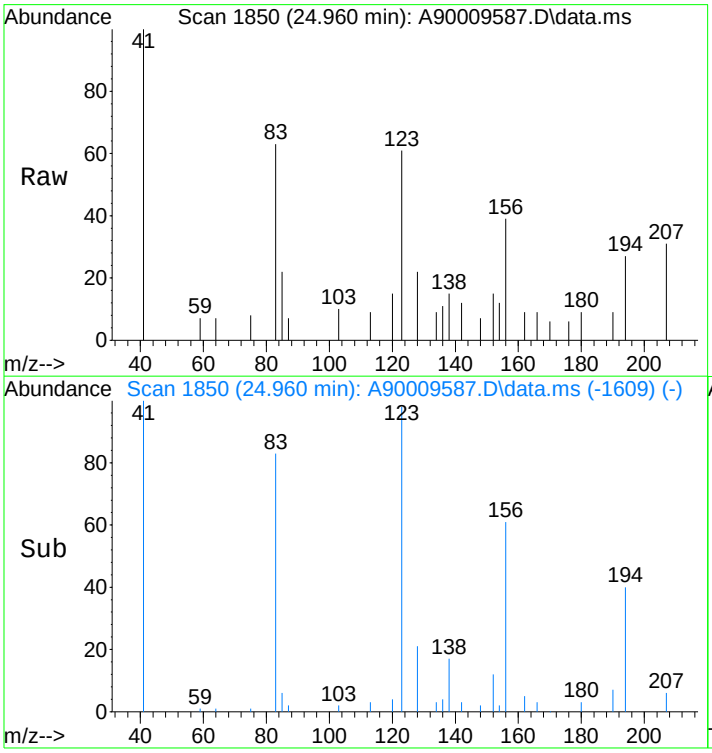


#7
C3-Decalins
Concen: 32.96 ng/mL m
RT: 21.985 min Scan# 1524
Delta R.T. 0.374 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:180 Resp: 1872

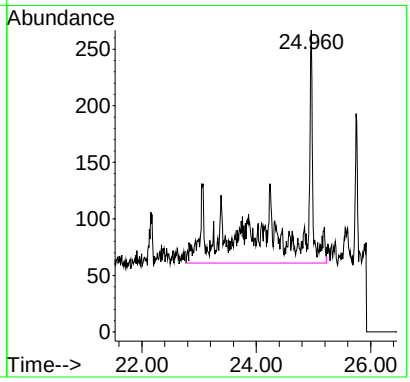


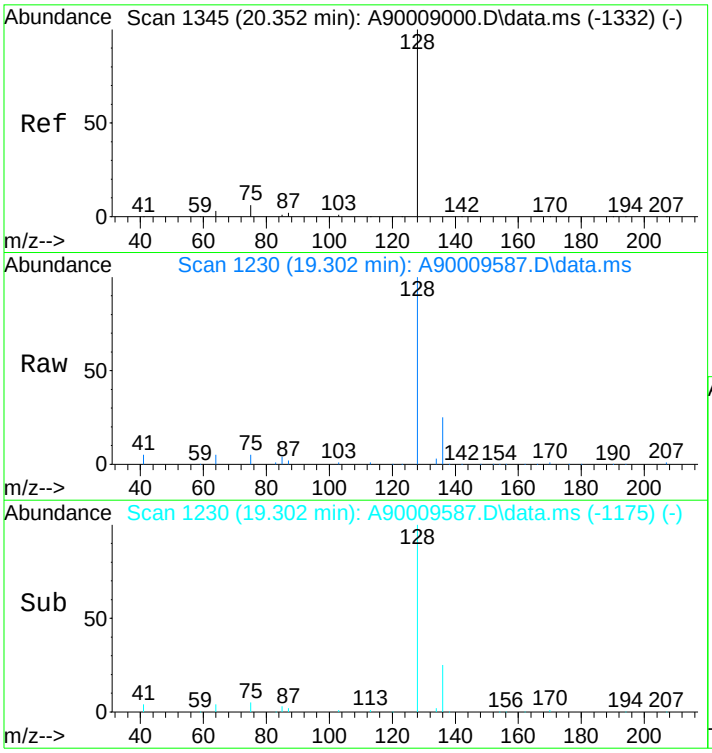




#8
C4-Decalins
Concen: 63.81 ng/mL m
RT: 24.960 min Scan# 1850
Delta R.T. -0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:194 Resp: 3624

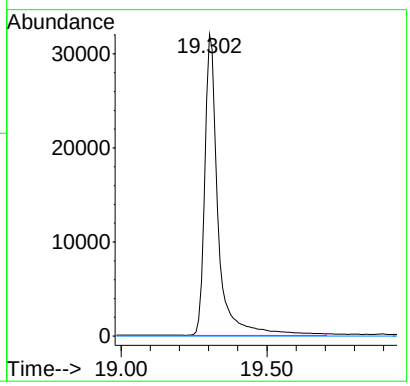


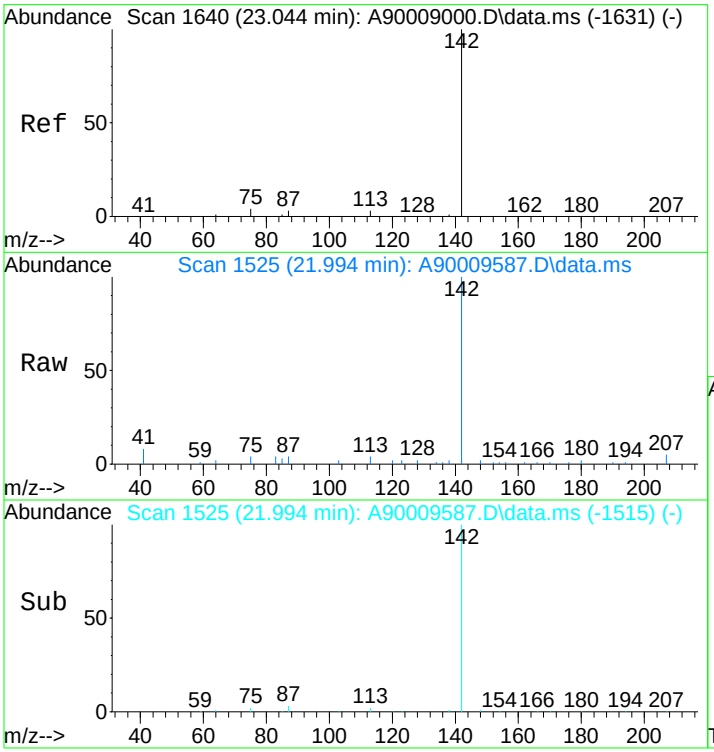


#10
Naphthalene
Concen: 398.52 ng/mL
RT: 19.302 min Scan# 1230
Delta R.T. 0.000 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:128 Resp: 101543

Ion	Ratio	Lower	Upper
128	100		
127	0.0	0.0	0.0

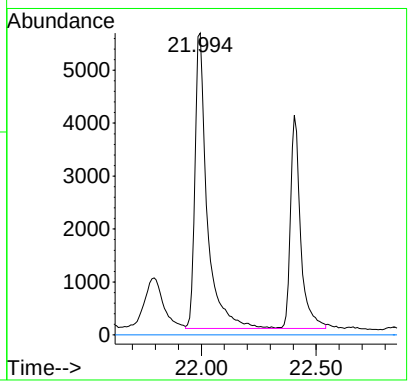


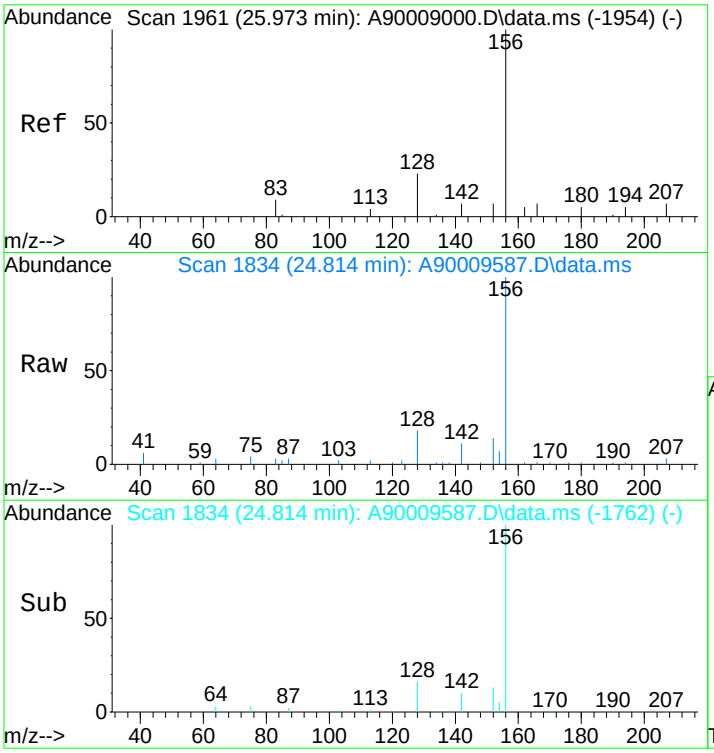


#11
C1-Naphthalenes
Concen: 129.11 ng/mL m
RT: 21.994 min Scan# 1525
Delta R.T. 0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:142 Resp: 32897

Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	0.0

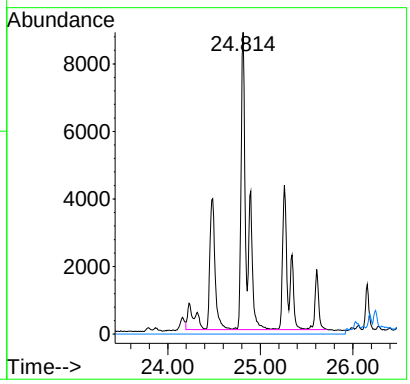


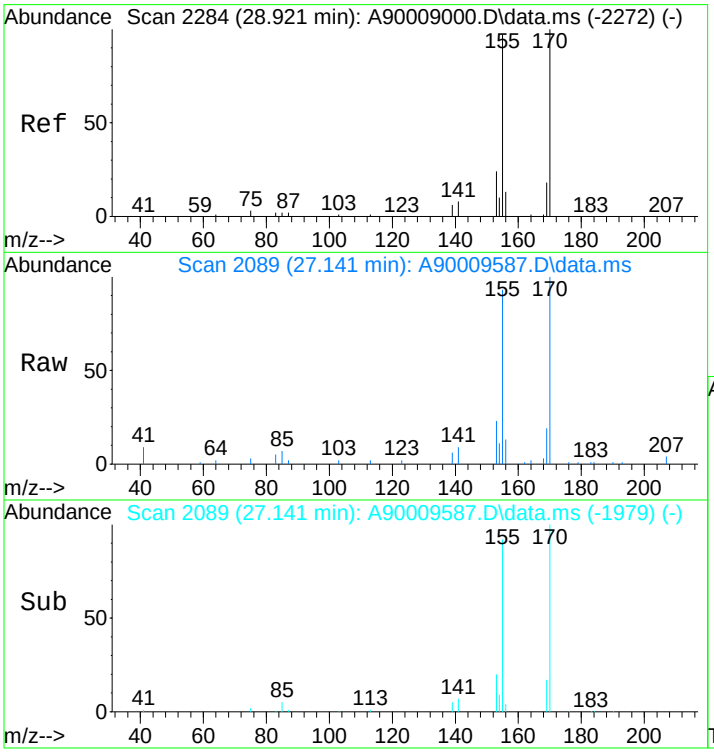


#12
C2-Naphthalenes
Concen: 308.13 ng/mL m
RT: 24.814 min Scan# 1834
Delta R.T. 0.000 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:156 Resp: 78512

Ion	Ratio	Lower	Upper
156	100		
141	0.0	0.0	0.0

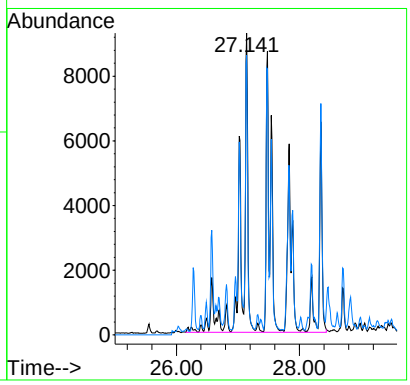


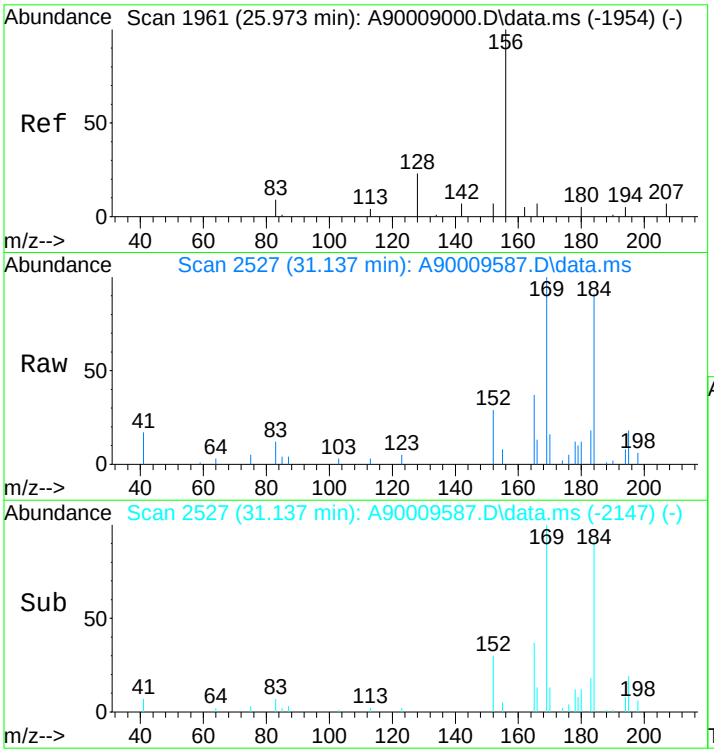


#13
C3-Naphthalenes
Concen: 563.70 ng/mL m
RT: 27.141 min Scan# 2089
Delta R.T. 0.000 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:170 Resp: 143632

Ion	Ratio	Lower	Upper
170	100		
155	15.4	79.9	119.9#

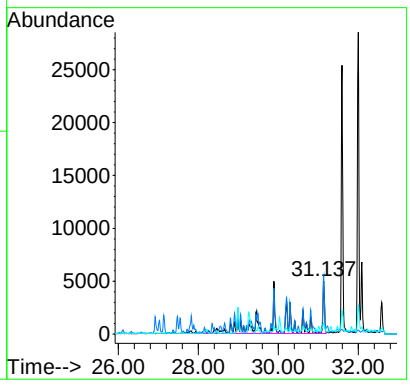


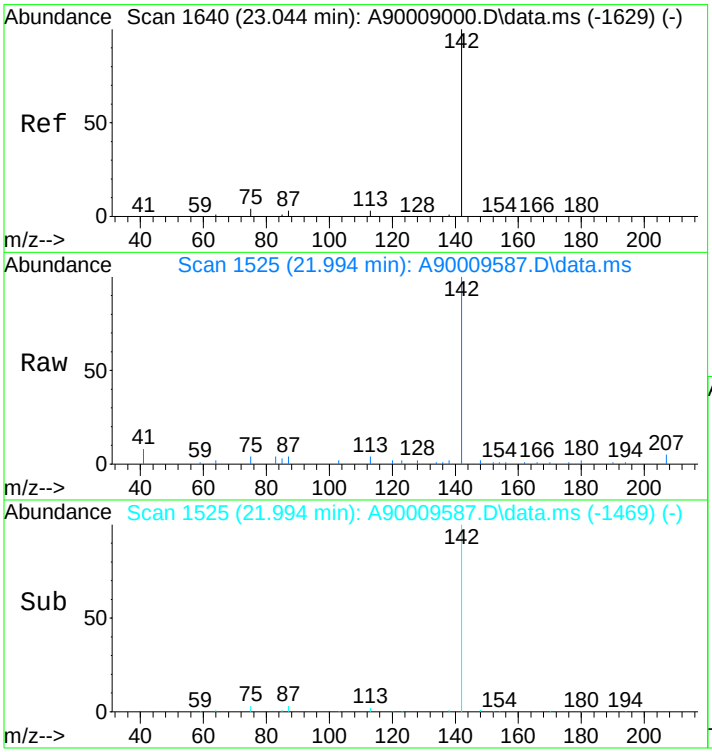


#14
C4-Naphthalenes
Concen: 399.12 ng/mL m
RT: 31.137 min Scan# 2527
Delta R.T. 1.241 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:184 Resp: 101695

Ion	Ratio	Lower	Upper
184	100		
169	2.6	76.6	115.0#
183	0.5	16.4	24.6#

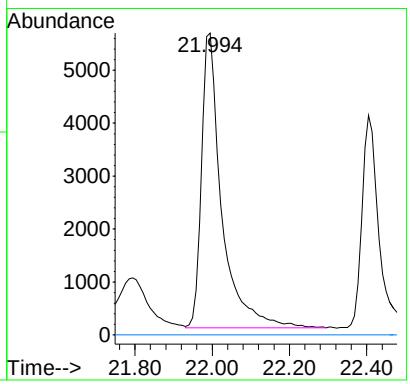


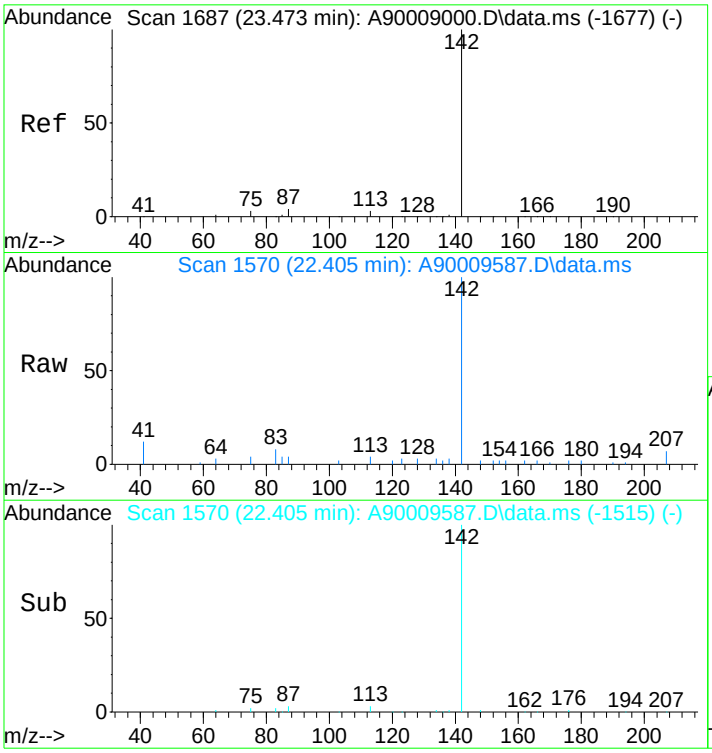


#16
2-Methylnaphthalene
Concen: 121.87 ng/mL
RT: 21.994 min Scan# 1525
Delta R.T. 0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:142 Resp: 20308

Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	0.0

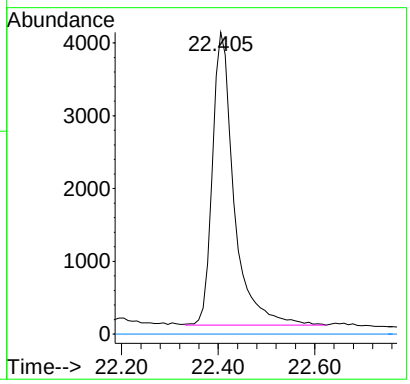


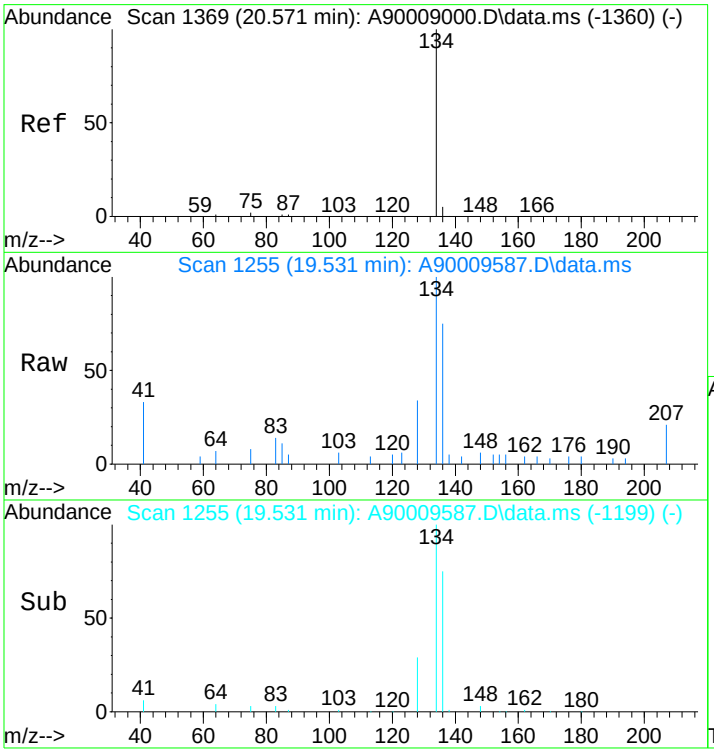


#17
1-Methylnaphthalene
Concen: 77.26 ng/mL
RT: 22.405 min Scan# 1570
Delta R.T. 0.000 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:142 Resp: 12494

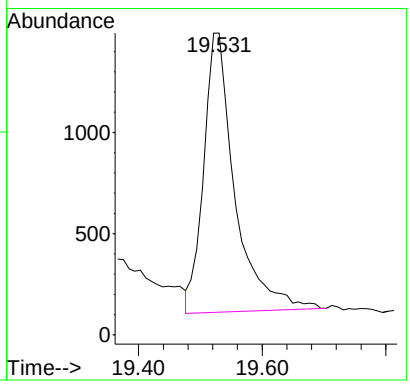
Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	20.0

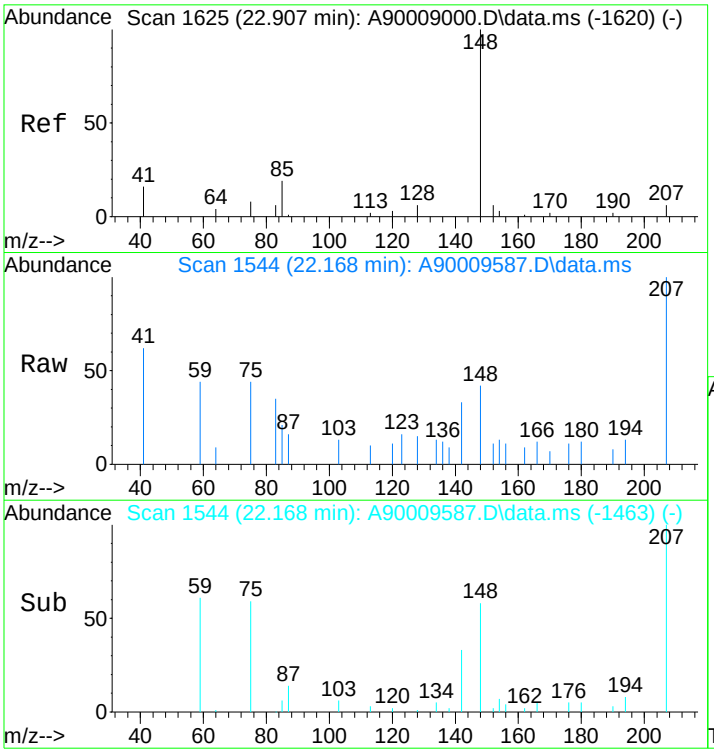




#18
Benzothiophene
Concen: 22.72 ng/mL
RT: 19.531 min Scan# 1255
Delta R.T. 0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

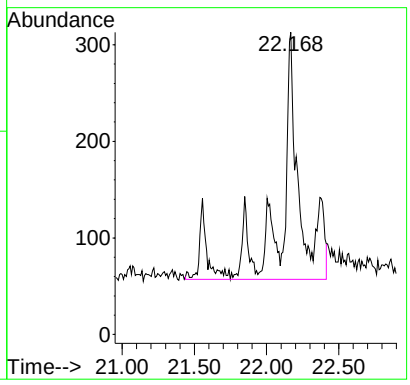
Tgt Ion:134 Resp: 4845

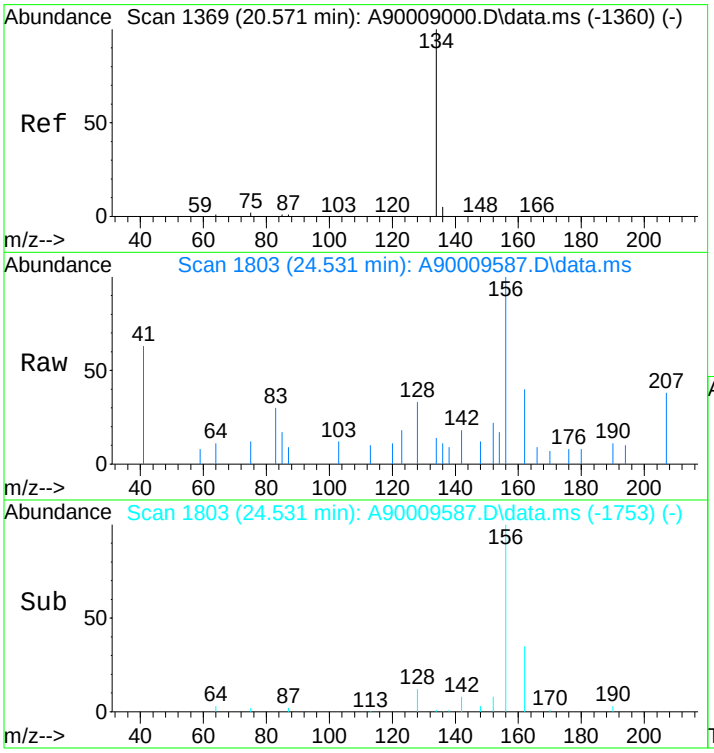




#19
C1-Benzo(b)thiophenes
Concen: 11.42 ng/mL m
RT: 22.168 min Scan# 1544
Delta R.T. 0.612 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

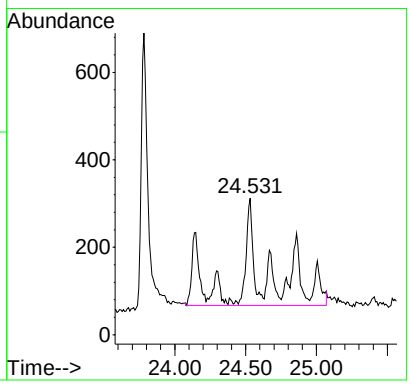
Tgt Ion:148 Resp: 2436

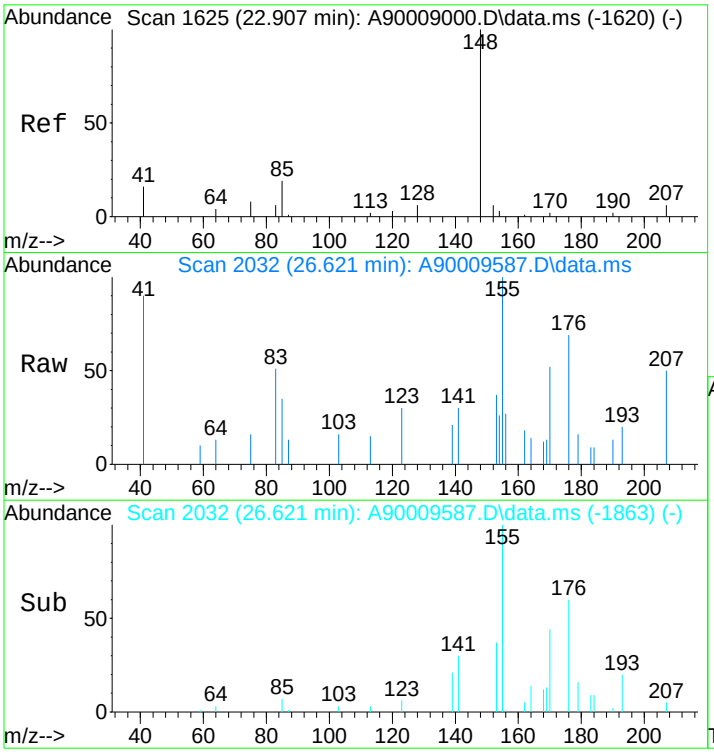




#20
C2-Benzo(b)thiophenes
Concen: 15.11 ng/mL m
RT: 24.531 min Scan# 1803
Delta R.T. -0.474 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

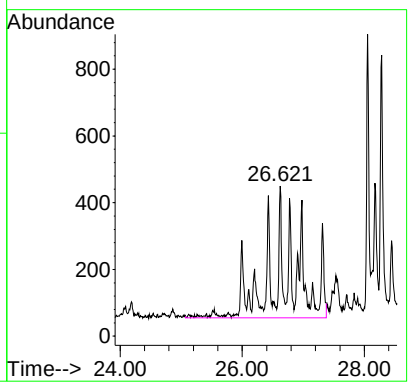
Tgt Ion:162 Resp: 3222

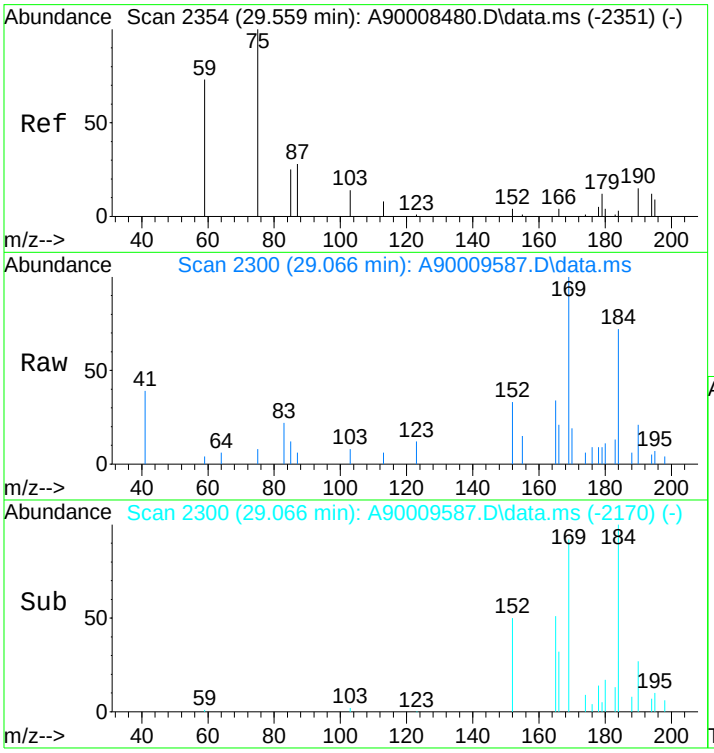




#21
C3-Benzo(b)thiophenes
Concen: 41.51 ng/mL m
RT: 26.621 min Scan# 2032
Delta R.T. -0.356 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

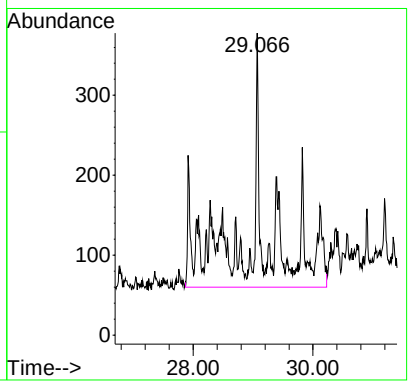
Tgt Ion:176 Resp: 8851

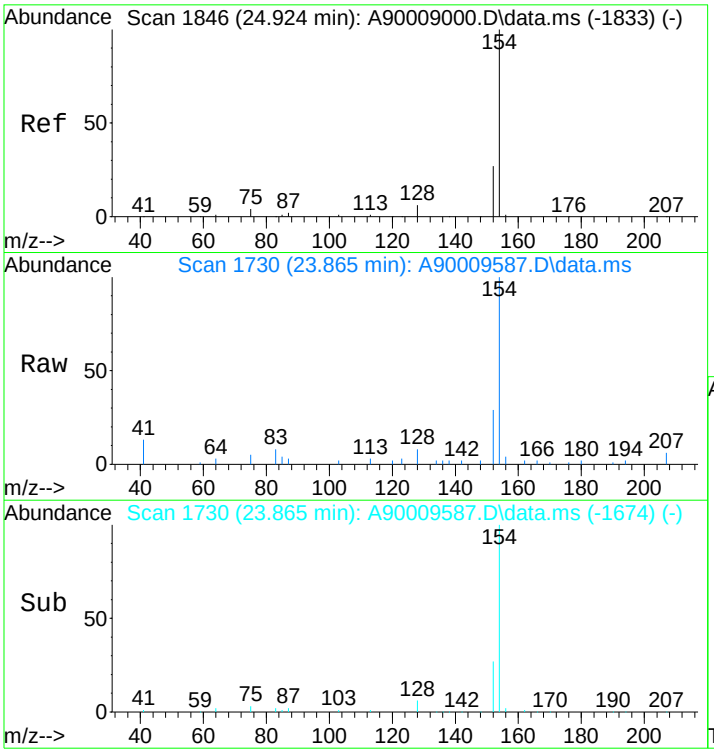




#22
C4-Benzo(b)thiophenes
Concen: 33.03 ng/mL m
RT: 29.066 min Scan# 2300
Delta R.T. -0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:190 Resp: 7044

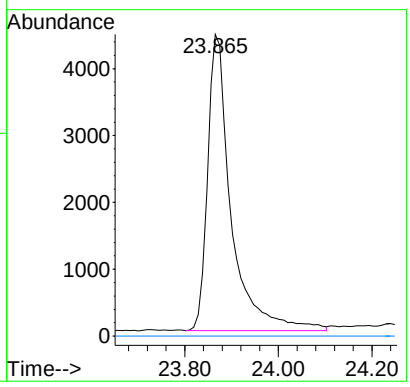


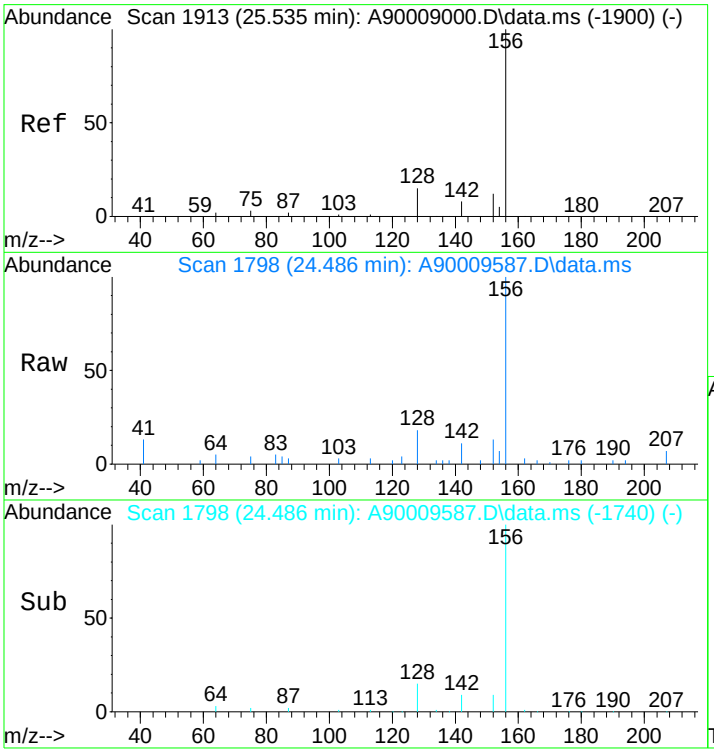


#23
Biphenyl
Concen: 70.89 ng/mL
RT: 23.865 min Scan# 1730
Delta R.T. 0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:154 Resp: 15458

Ion	Ratio	Lower	Upper
154	100		
153	0.0	0.0	0.0

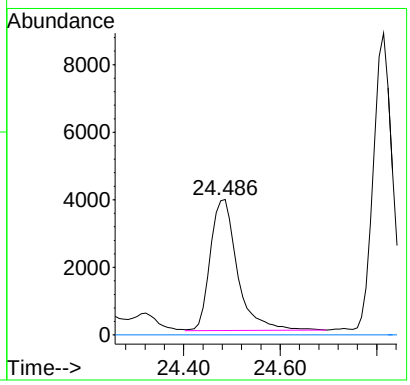


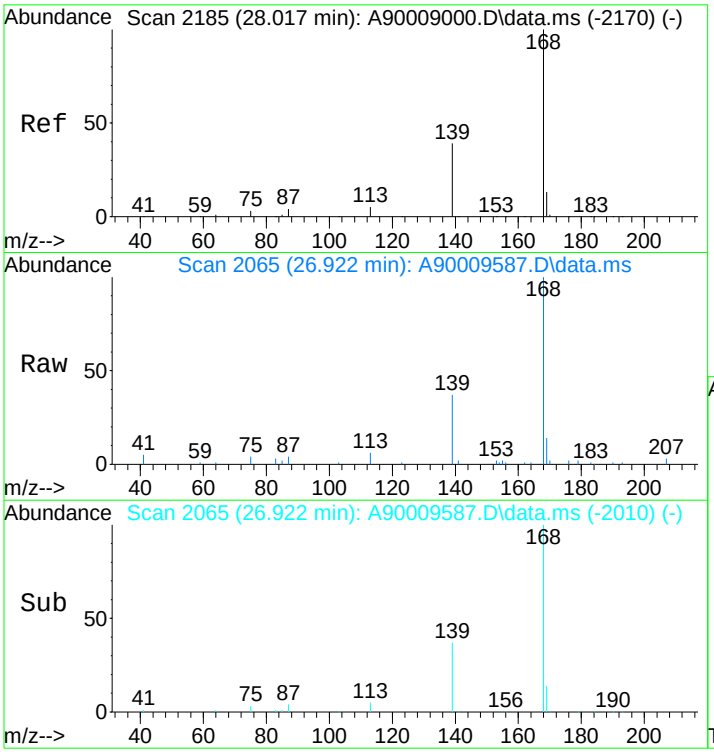


#24
2,6-Dimethylnaphthalene
Concen: 96.79 ng/mL
RT: 24.486 min Scan# 1798
Delta R.T. 0.027 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:156 Resp: 15161

Ion	Ratio	Lower	Upper
156	100		
155	0.0	0.0	0.0

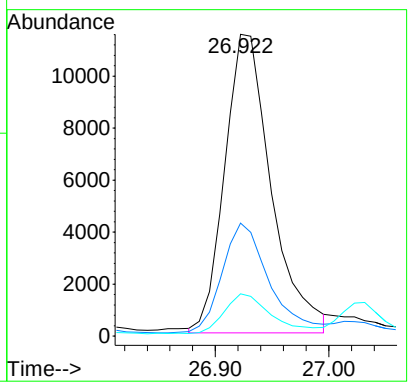


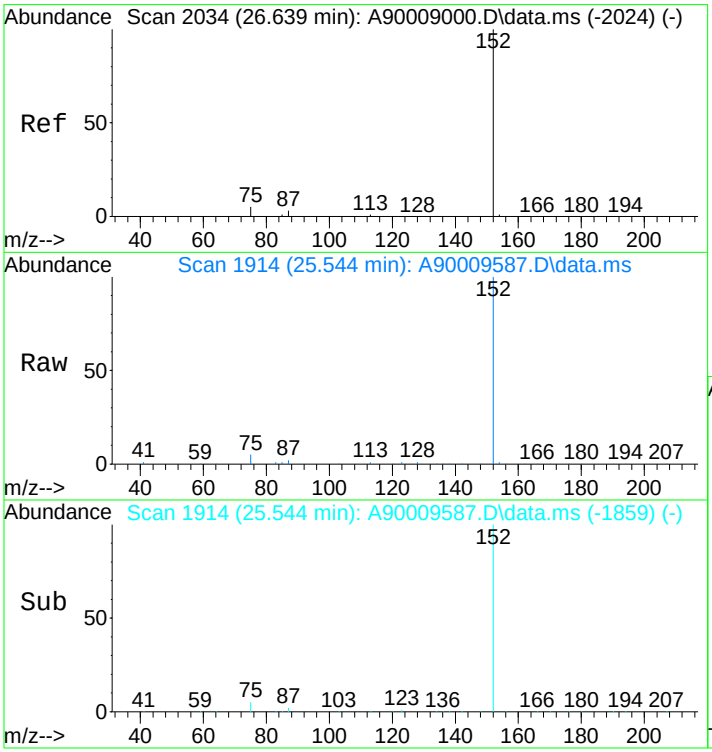


#25
Dibenzofuran
Concen: 141.19 ng/mL m
RT: 26.922 min Scan# 2065
Delta R.T. 0.000 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:168 Resp: 32838

Ion	Ratio	Lower	Upper
168	100		
139	37.1	28.0	42.0
169	13.6	10.6	15.8

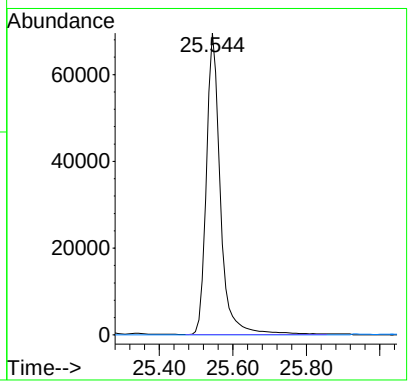


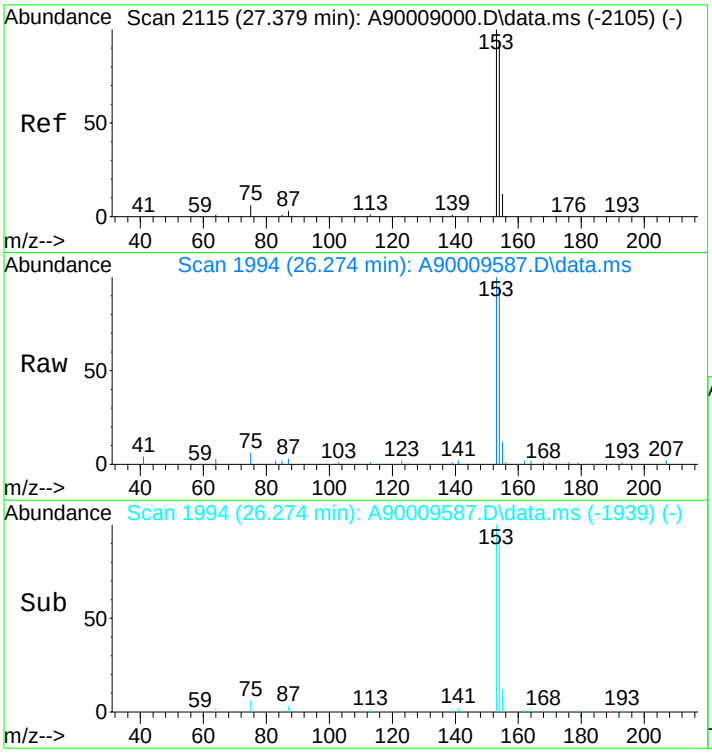


#26
Acenaphthylene
Concen: 698.23 ng/mL
RT: 25.544 min Scan# 1914
Delta R.T. 0.000 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:152 Resp: 183017

Ion	Ratio	Lower	Upper
152	100		
153	0.0	0.0	0.0

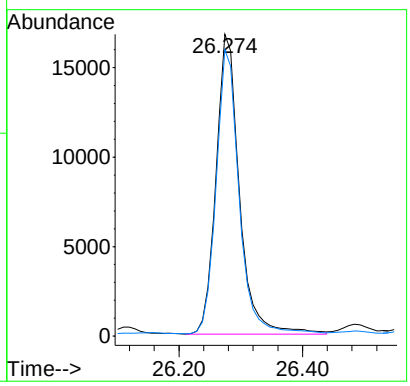


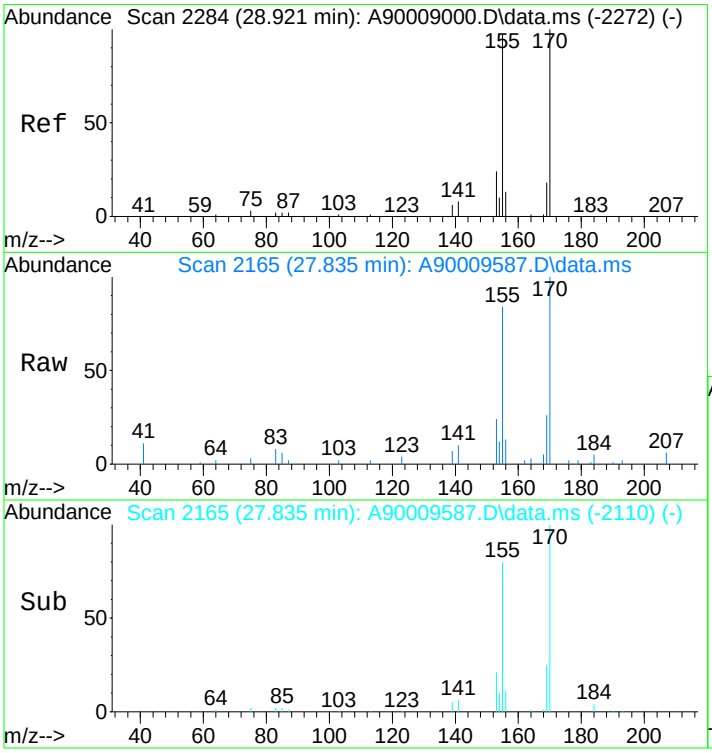


#27
Acenaphthene
Concen: 267.96 ng/mL
RT: 26.274 min Scan# 1994
Delta R.T. 0.000 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:153 Resp: 44161

Ion	Ratio	Lower	Upper
153	100		
154	93.2	75.4	113.0

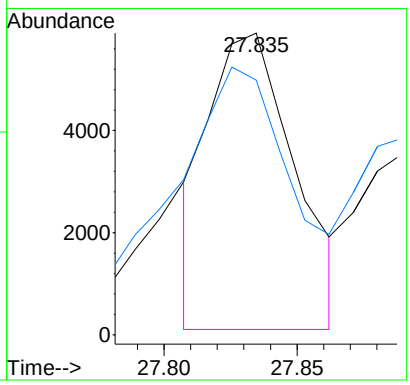


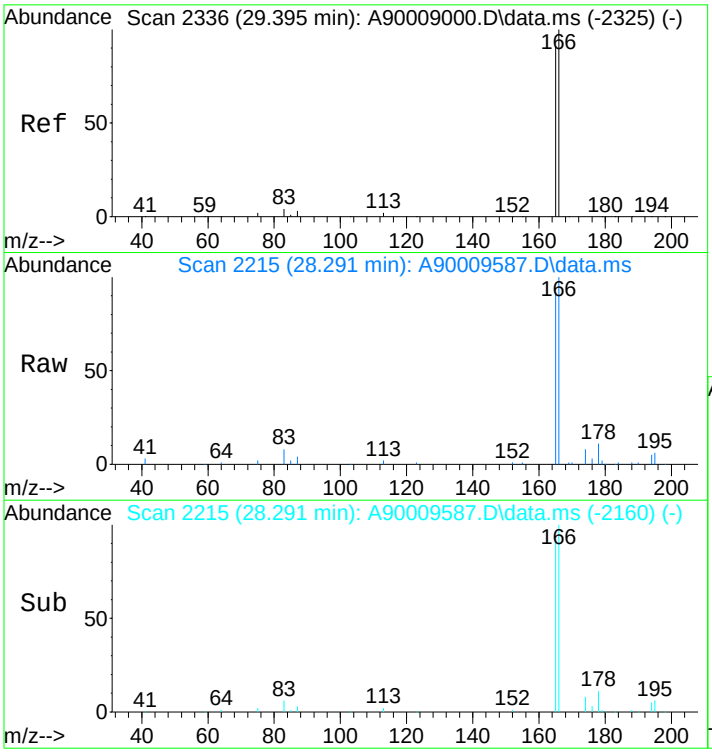


#28
2,3,5-Trimethylnaphthalene
Concen: 90.81 ng/mL m
RT: 27.835 min Scan# 2165
Delta R.T. 0.000 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:170 Resp: 13077

Ion	Ratio	Lower	Upper
170	100		
155	125.5	69.0	103.4#

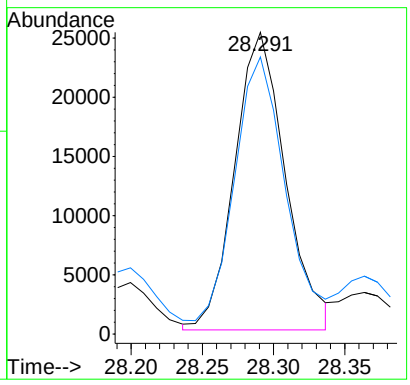


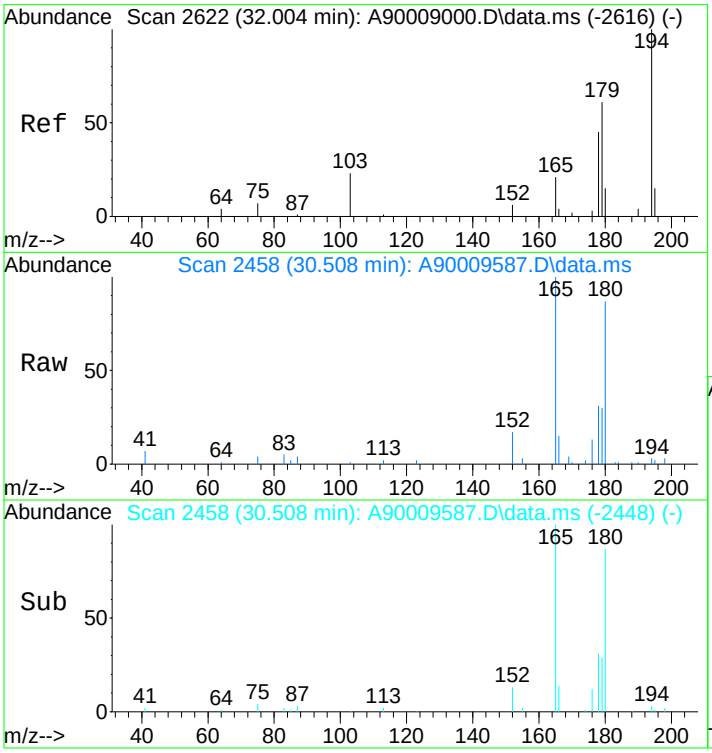


#29
Fluorene
Concen: 343.48 ng/mL m
RT: 28.291 min Scan# 2215
Delta R.T. 0.000 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:166 Resp: 62164

Ion	Ratio	Lower	Upper
166	100		
165	89.4	73.4	110.0

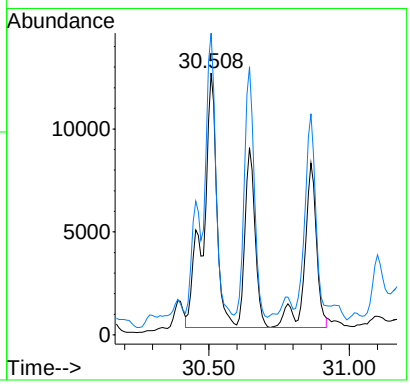


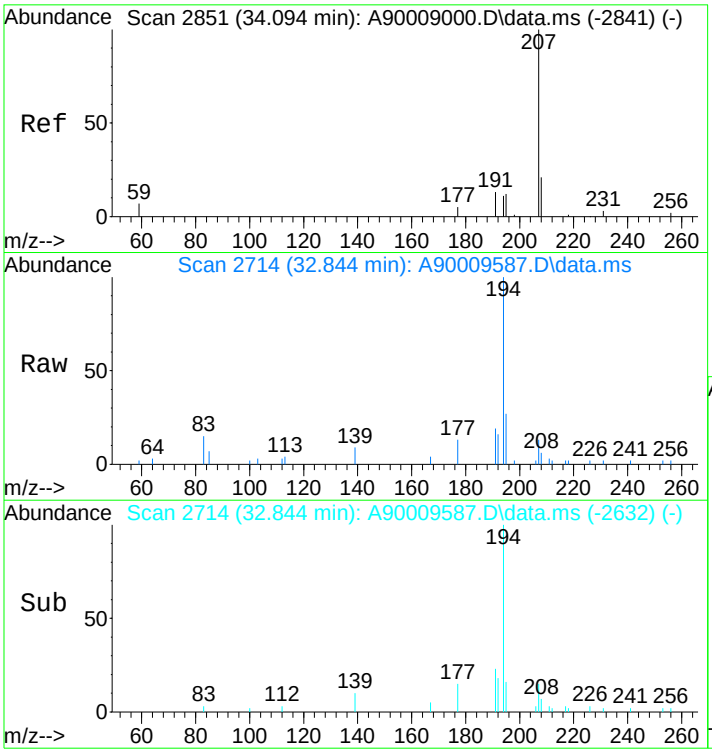


#30
C1-Fluorenes
Concen: 478.01 ng/mL m
RT: 30.508 min Scan# 2458
Delta R.T. -0.137 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:180 Resp: 86510

Ion	Ratio	Lower	Upper
180	100		
165	34.0	117.5	176.3#

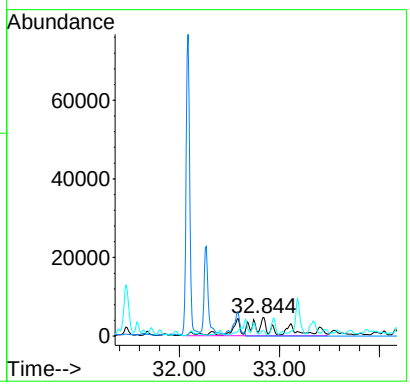


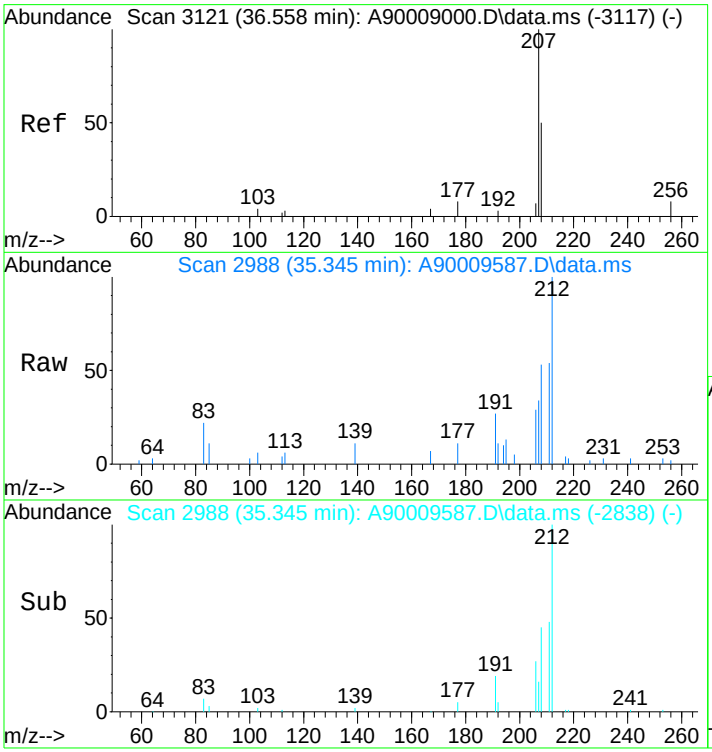


#31
C2-Fluorenes
Concen: 561.25 ng/mL m
RT: 32.844 min Scan# 2714
Delta R.T. 0.000 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:194 Resp: 101575

Ion	Ratio	Lower	Upper
194	100		
179	0.0	0.0	0.0
195	3.0	26.3	39.5#

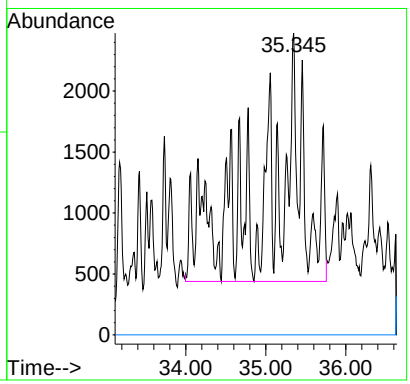


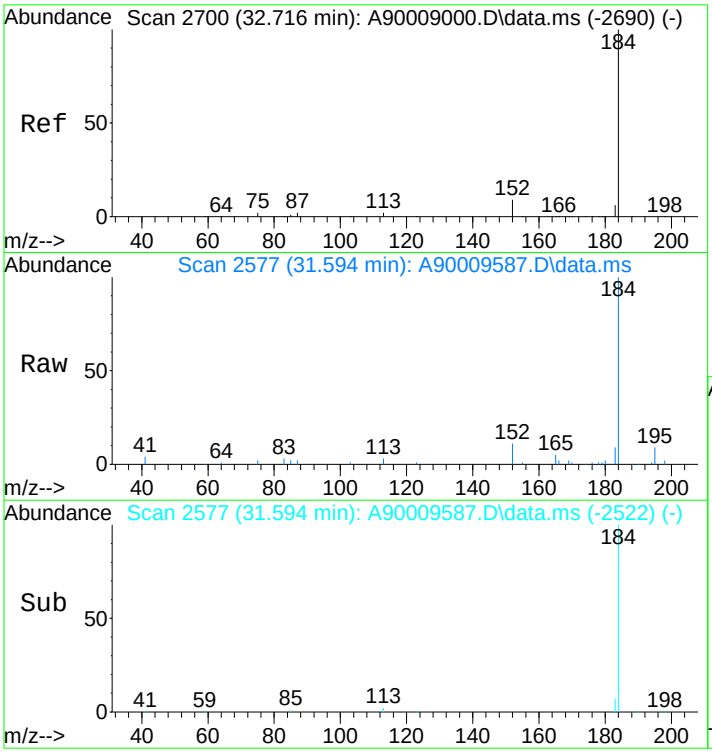


#32
C3-Fluorenes
Concen: 355.10 ng/mL m
RT: 35.345 min Scan# 2988
Delta R.T. 0.676 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:208 Resp: 64267

Ion	Ratio	Lower	Upper
208	100		
197	0.0	0.0	0.0

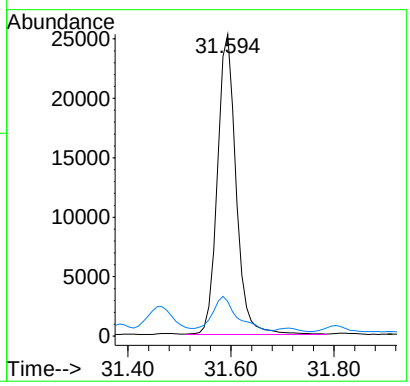


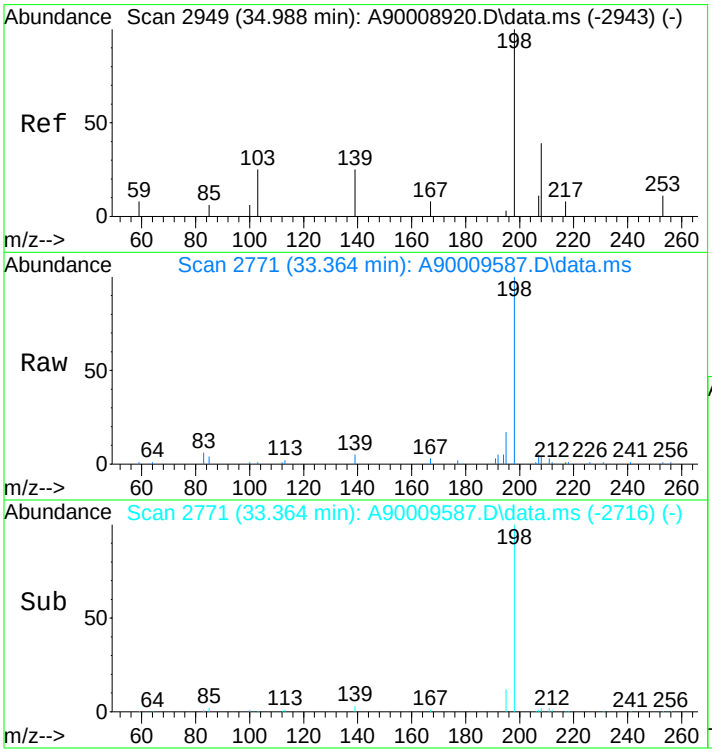


#33
Dibenzothiophene
Concen: 249.74 ng/mL
RT: 31.594 min Scan# 2577
Delta R.T. 0.000 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:184 Resp: 63580

Ion	Ratio	Lower	Upper
184	100		
152	14.2	7.0	10.4#

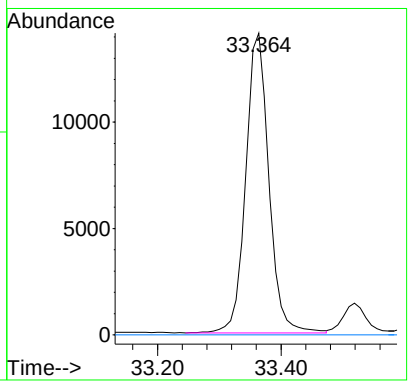


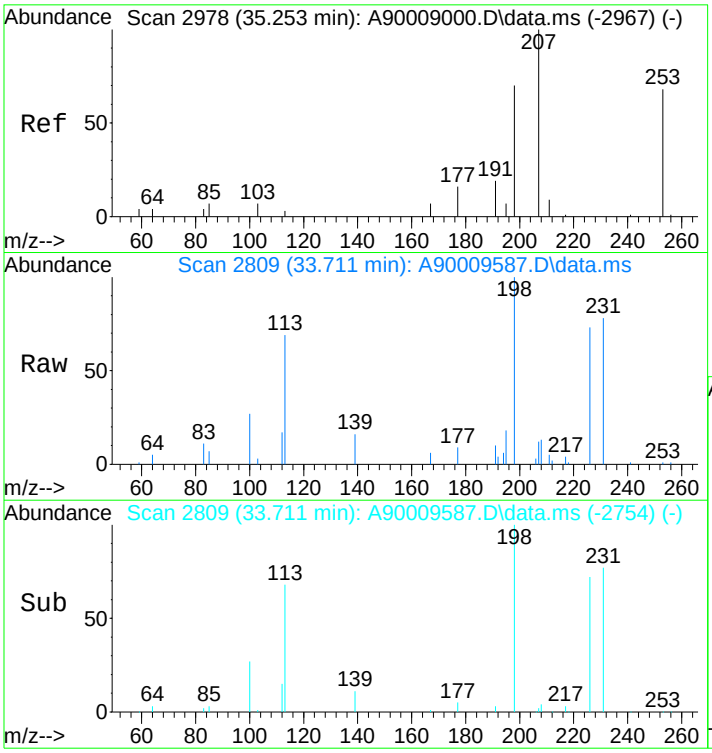


#34
4-Methyldibenzothiophene(4MDT)
Concen: 143.70 ng/mL
RT: 33.364 min Scan# 2771
Delta R.T. 0.000 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:198 Resp: 36584

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

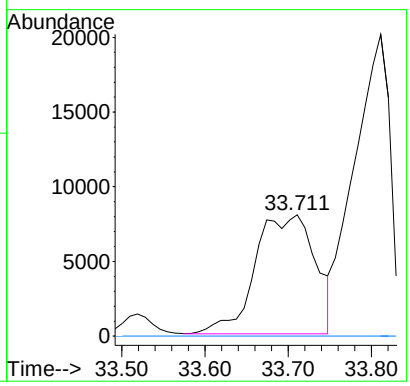


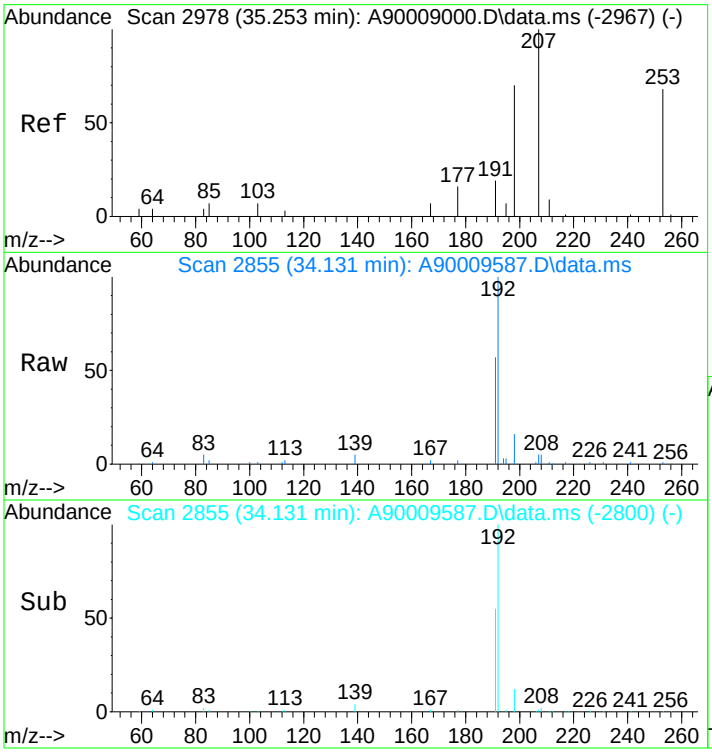


#35
2/3-Methyldibenzothiophene(2MDT)
Concen: 157.82 ng/mL m
RT: 33.711 min Scan# 2809
Delta R.T. 0.000 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:198 Resp: 40179

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

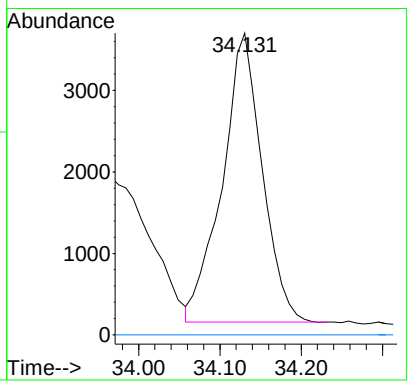


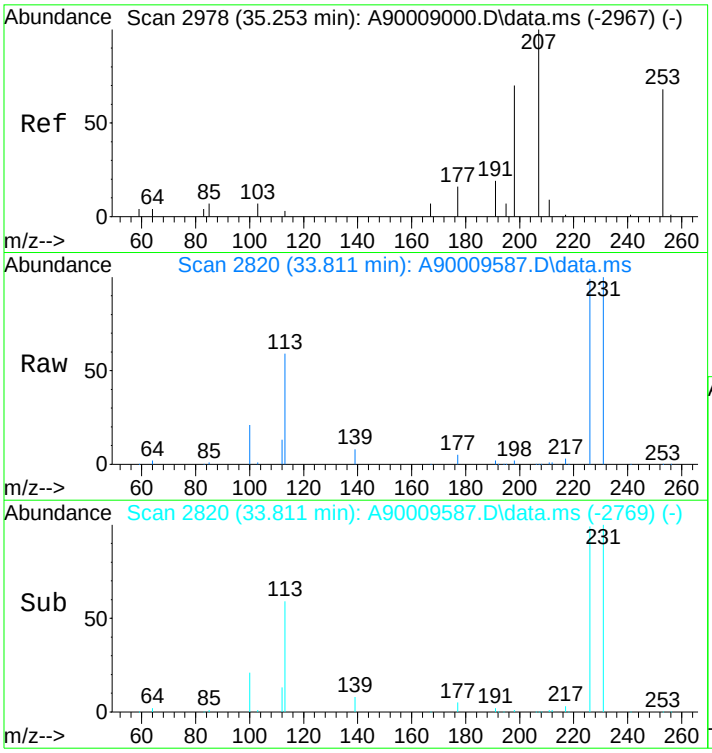


#36
1-Methyldibenzothiophene(1MDT)
Concen: 47.50 ng/mL
RT: 34.131 min Scan# 2855
Delta R.T. 0.000 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:198 Resp: 12092

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

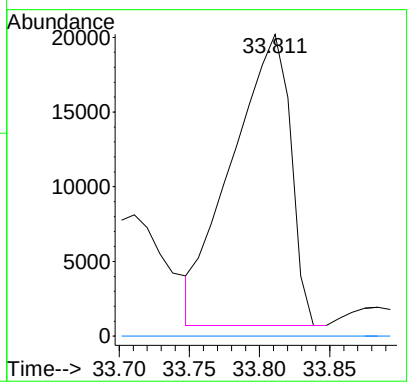


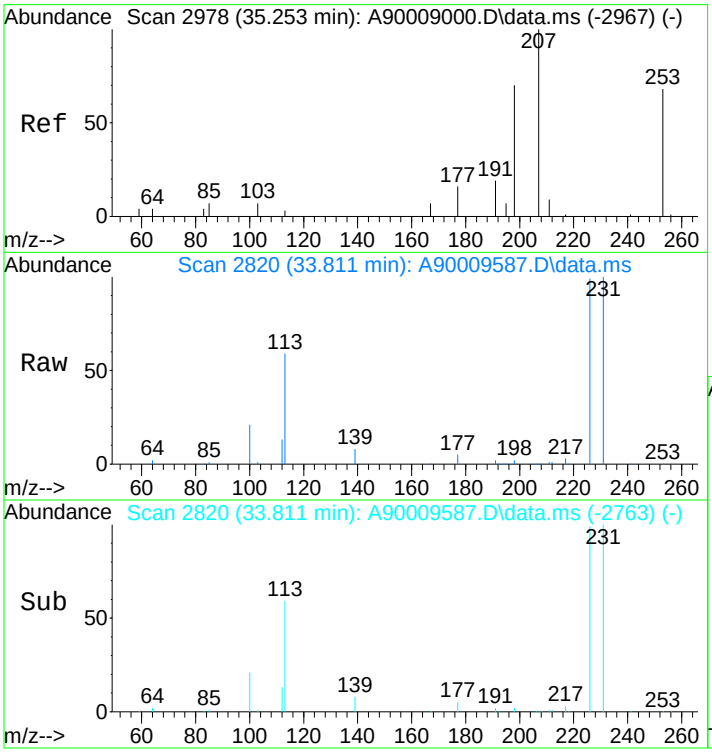


#37
OTP
Concen: 222.22 ng/mL
RT: 33.811 min Scan# 2820
Delta R.T. 0.019 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:198 Resp: 56574

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

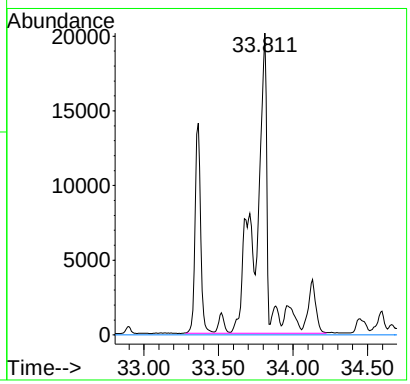


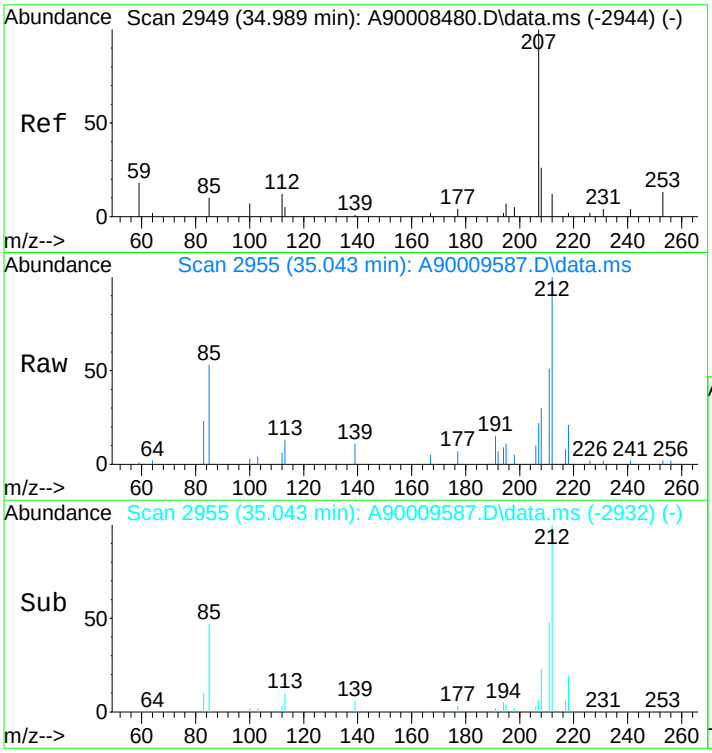


#38
C1-Dibenzothiophenes
Concen: 661.72 ng/mL m
RT: 33.811 min Scan# 2820
Delta R.T. 0.448 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:198 Resp: 168462

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

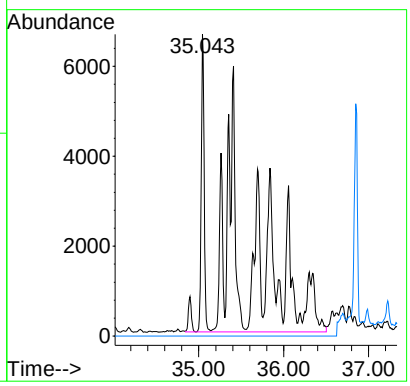


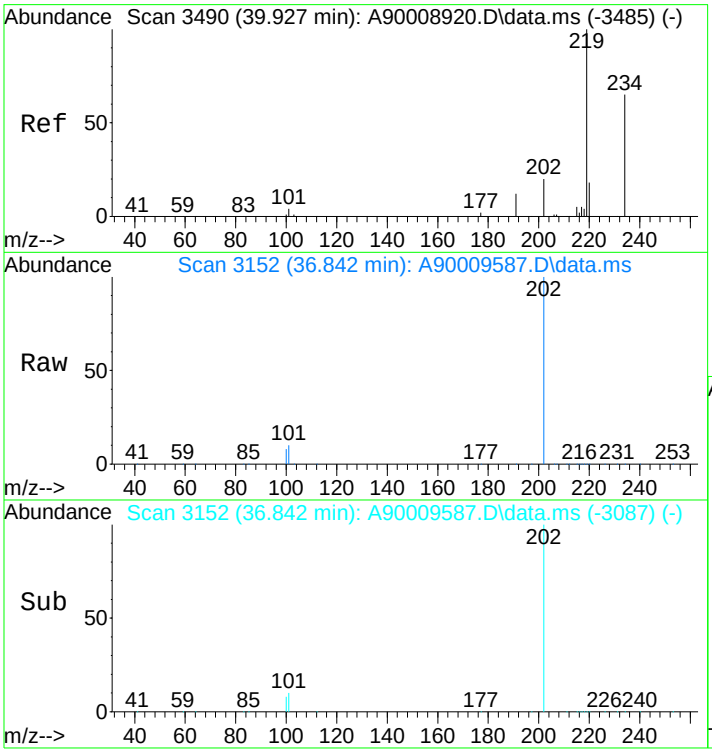


#39
C2-Dibenzothiophenes
Concen: 461.84 ng/mL m
RT: 35.043 min Scan# 2955
Delta R.T. -0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:212 Resp: 117576

Ion	Ratio	Lower	Upper
212	100		
197	0.0	0.0	0.0

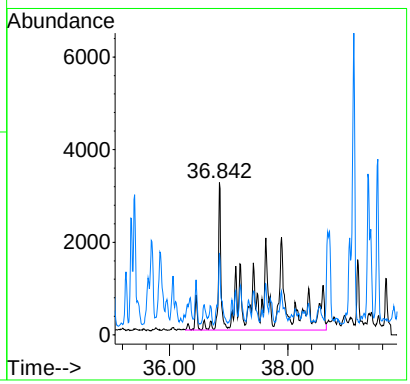


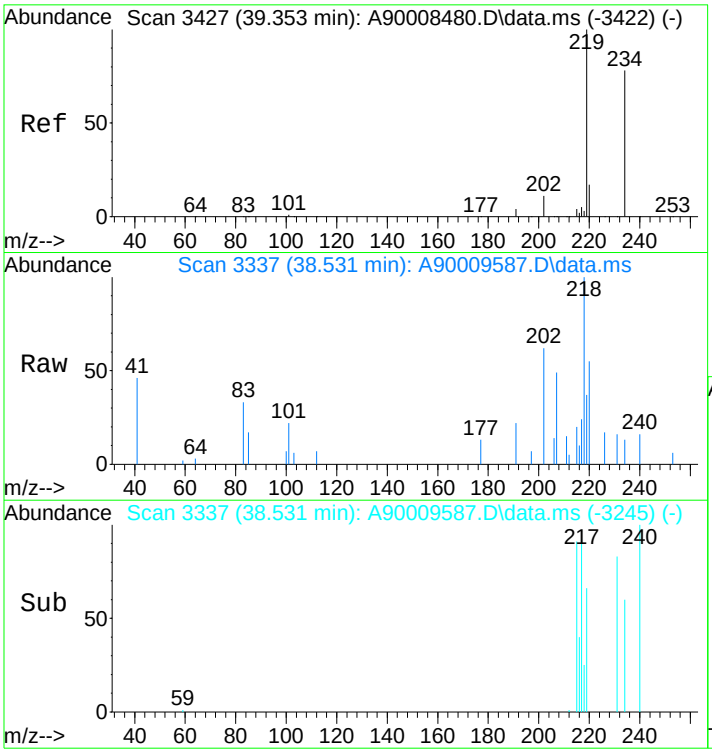


#40
C3-Dibenzothiophenes
Concen: 251.85 ng/mL m
RT: 36.842 min Scan# 3152
Delta R.T. -0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:226 Resp: 64116

Ion	Ratio	Lower	Upper
226	100		
211	9.4	46.4	69.6#

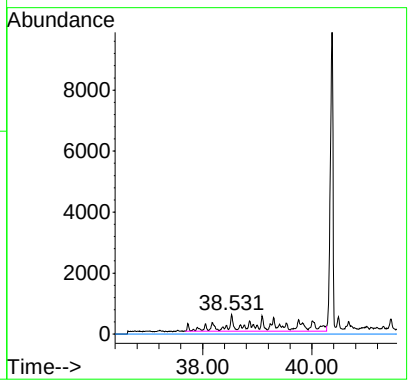


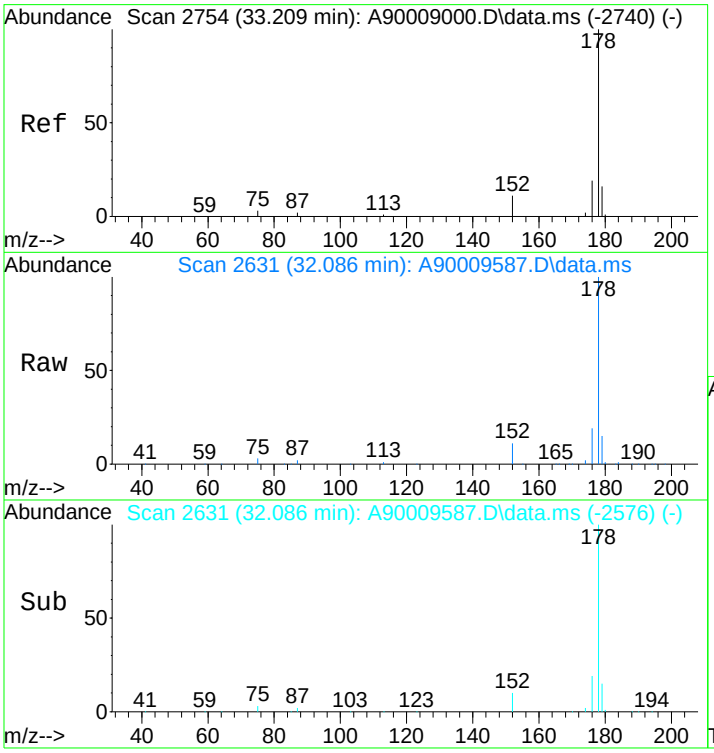


#41
C4-Dibenzothiophenes
Concen: 91.00 ng/mL m
RT: 38.531 min Scan# 3337
Delta R.T. -0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:240 Resp: 23167

Ion	Ratio	Lower	Upper
240	100		
225	0.0	0.0	0.0

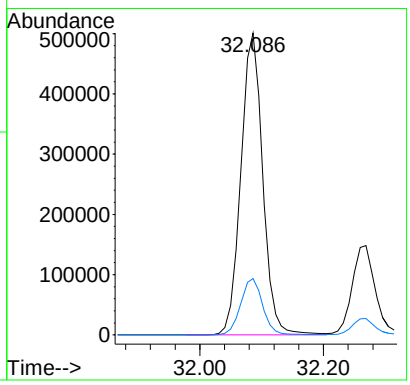


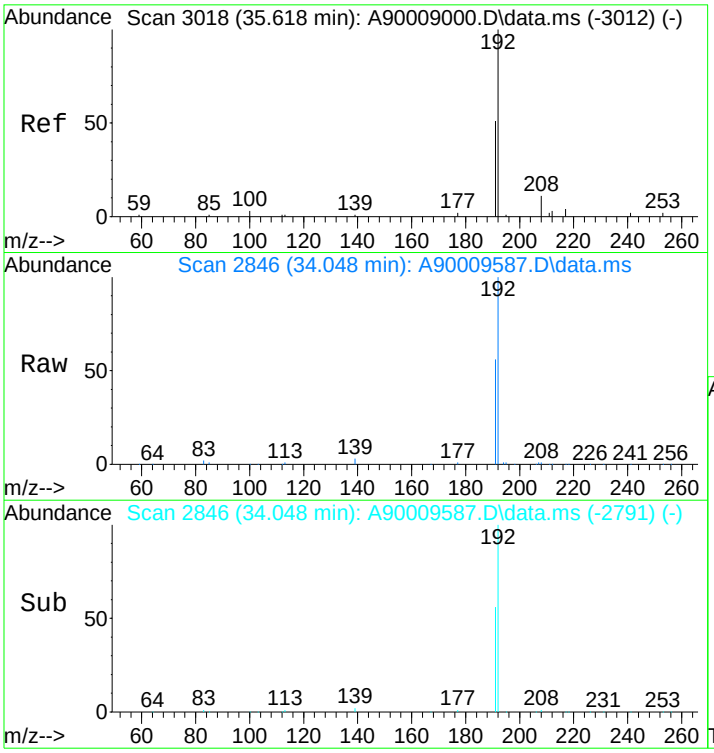


#43
Phenanthrene
Concen: 4672.59 ng/mL
RT: 32.086 min Scan# 2631
Delta R.T. 0.000 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:178 Resp: 1228944

Ion	Ratio	Lower	Upper
178	100		
176	18.8	15.1	22.7

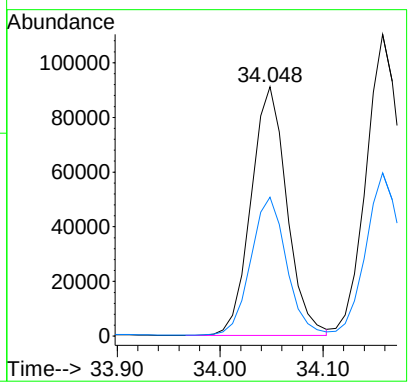


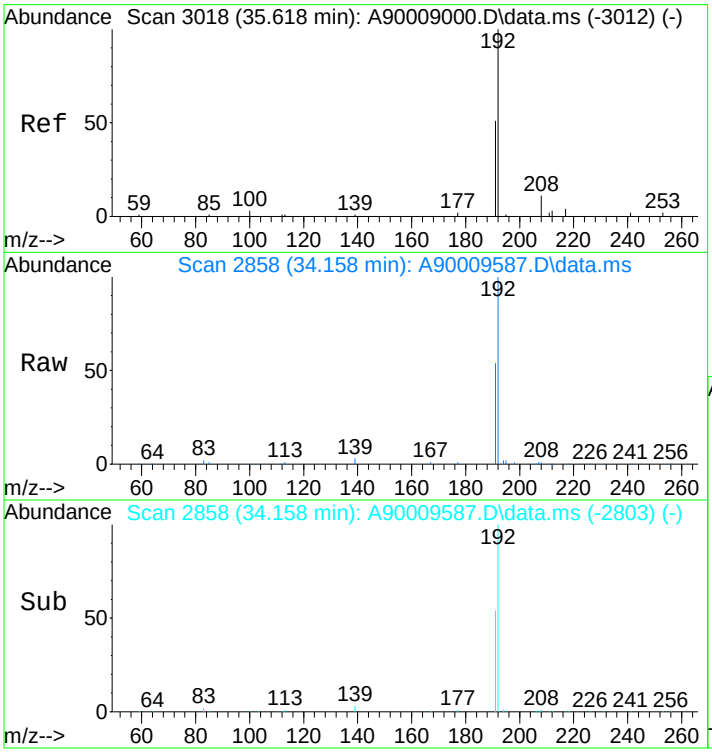


#44
3-Methylphenanthrene(3MP)
Concen: 835.62 ng/mL
RT: 34.048 min Scan# 2846
Delta R.T. 0.000 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:192 Resp: 219778

Ion	Ratio	Lower	Upper
192	100		
191	55.2	45.9	68.9

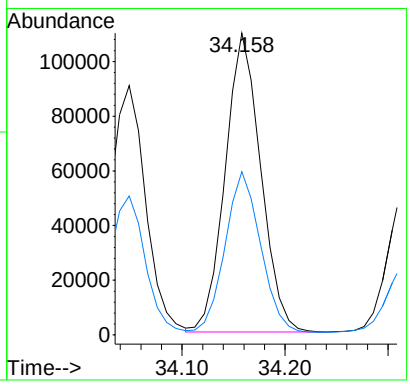


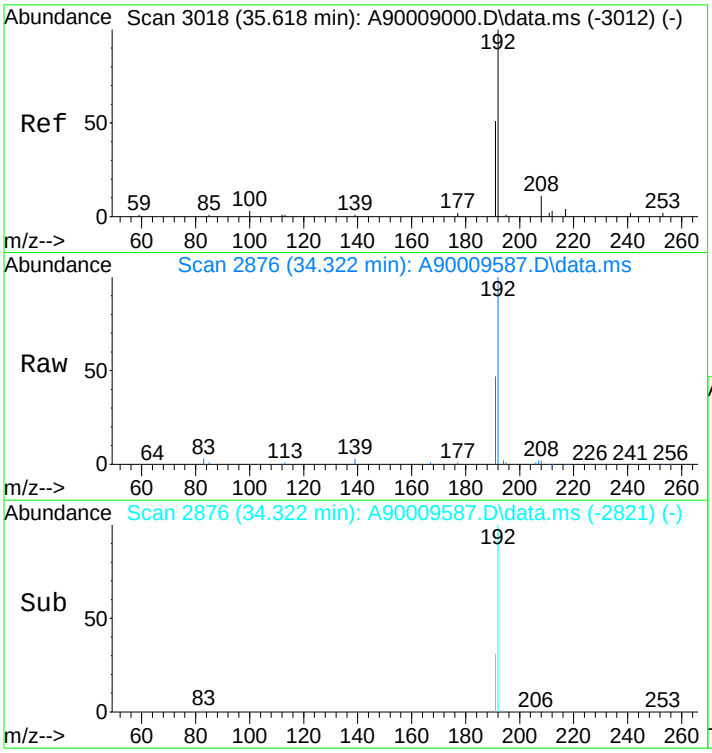


#45
2-Methylphenanthrene(2MP)
Concen: 997.76 ng/mL
RT: 34.158 min Scan# 2858
Delta R.T. 0.000 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:192 Resp: 262422

Ion	Ratio	Lower	Upper
192	100		
191	53.5	44.9	67.3

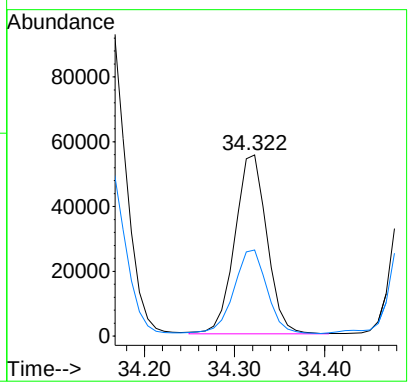


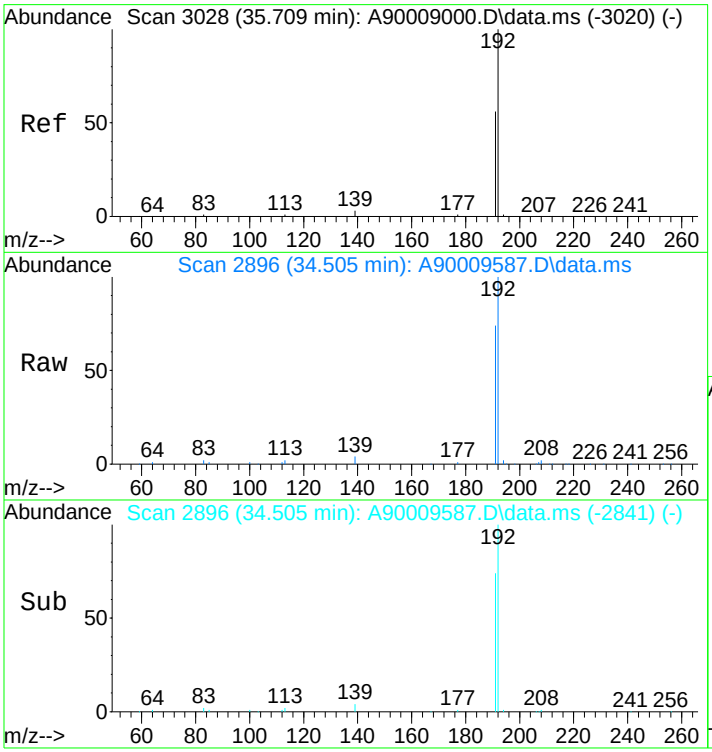


#46
2-Methylanthracene(2MA)
Concen: 519.17 ng/mL m
RT: 34.322 min Scan# 2876
Delta R.T. 0.000 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:192 Resp: 136548

Ion	Ratio	Lower	Upper
192	100		
191	0.7	96.8	145.2#

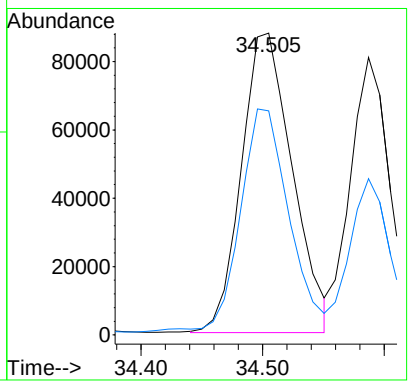


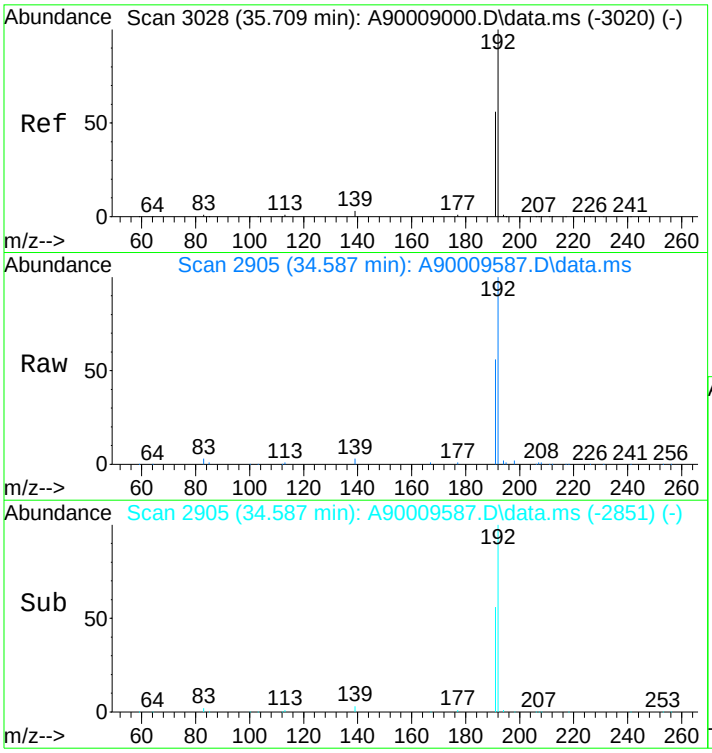


#47
9/4-Methylphenanthrene(9MP)
Concen: 969.78 ng/mL m
RT: 34.505 min Scan# 2896
Delta R.T. 0.000 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:192 Resp: 255063

Ion	Ratio	Lower	Upper
192	100		
191	40.3	44.5	66.7#

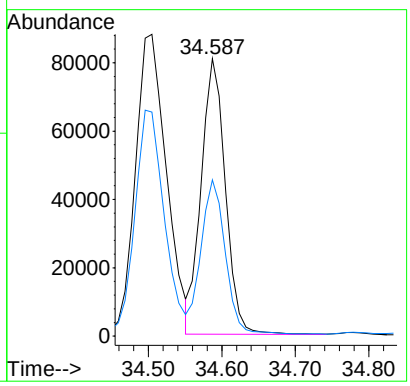


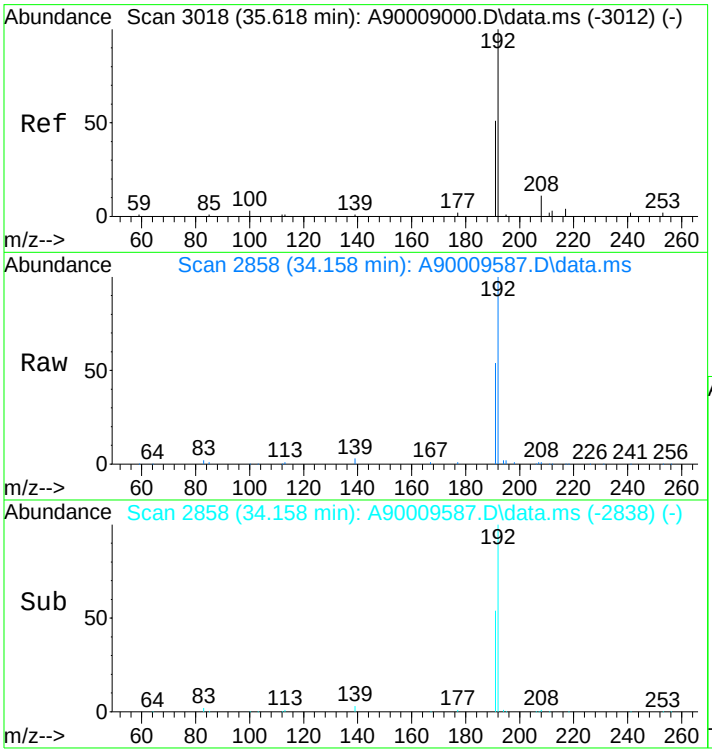


#48
1-Methylphenanthrene(1MP)
Concen: 698.88 ng/mL
RT: 34.587 min Scan# 2905
Delta R.T. -0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:192 Resp: 183814

Ion	Ratio	Lower	Upper
192	100		
191	55.9	46.9	70.3

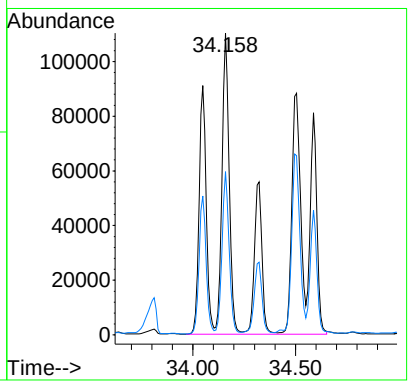


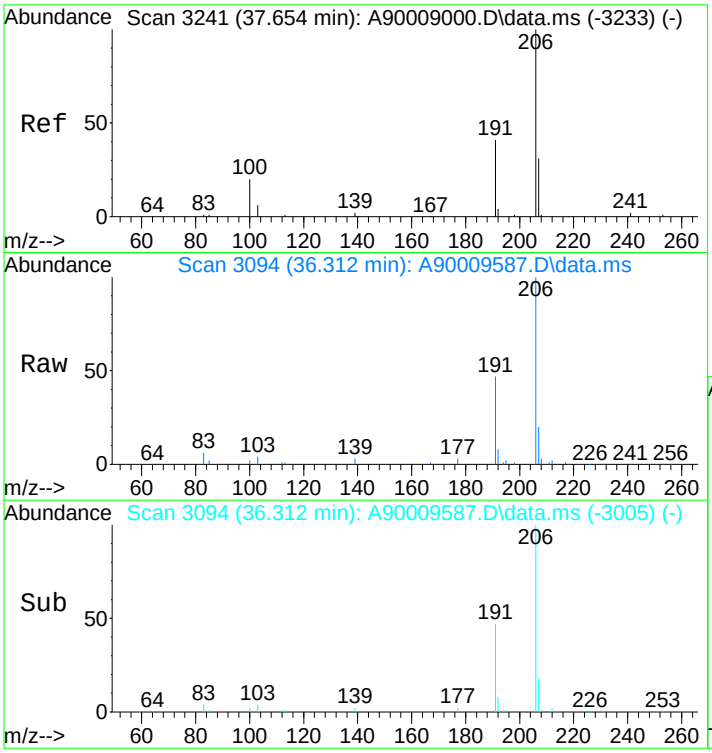


#49
C1-Phenanthrenes/Anthracenes
Concen: 4089.55 ng/mL m
RT: 34.158 min Scan# 2858
Delta R.T. -0.347 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:192 Resp: 1075599

Ion	Ratio	Lower	Upper
192	100		
191	7.2	44.5	66.7#

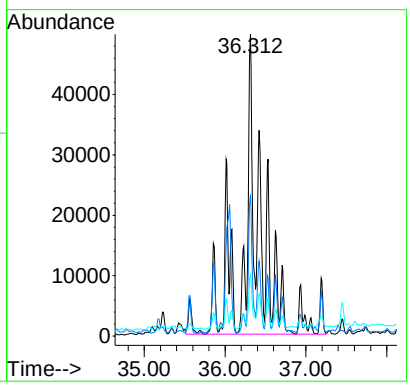


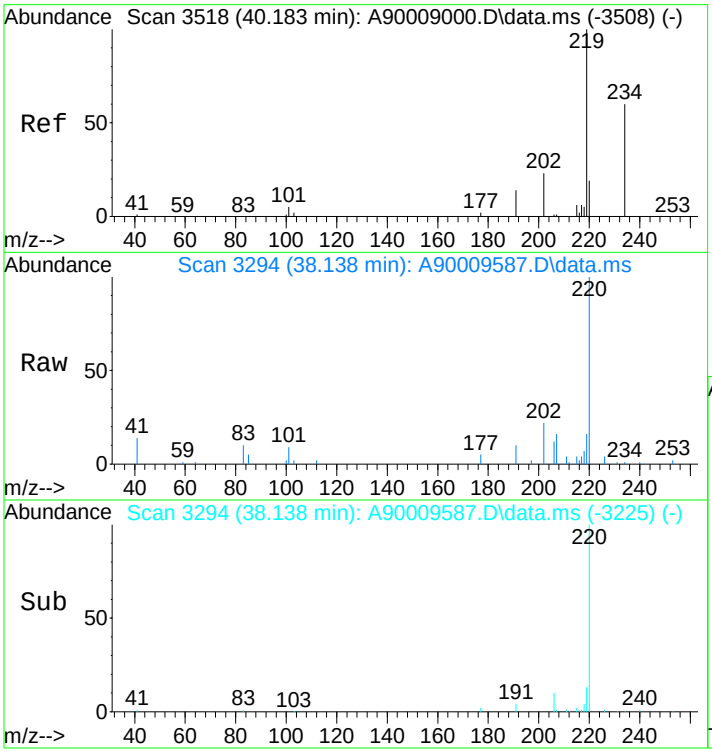


#50
C2-Phenanthrenes/Anthracenes
Concen: 2622.76 ng/mL m
RT: 36.312 min Scan# 3094
Delta R.T. 0.000 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:206 Resp: 689817

Ion	Ratio	Lower	Upper
206	100		
191	1.9	41.0	61.4#
207	0.7	17.1	25.7#

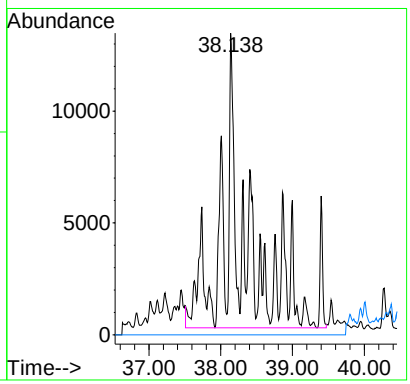


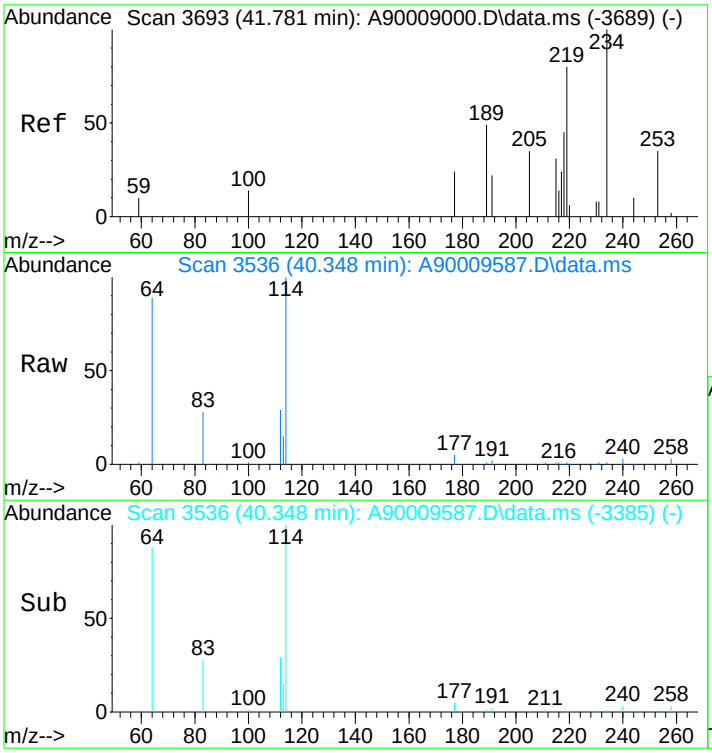


#52
C3-Phenanthrenes/Anthracenes
Concen: 1040.88 ng/mL m
RT: 38.138 min Scan# 3294
Delta R.T. -0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:220 Resp: 273762

Ion	Ratio	Lower	Upper
220	100		
205	0.0	0.0	0.0

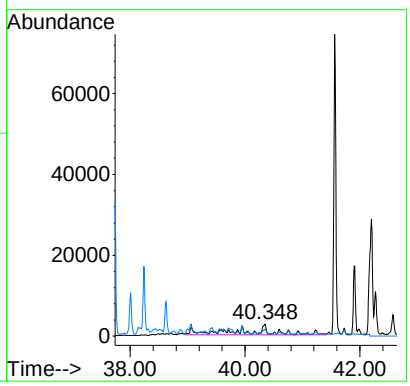


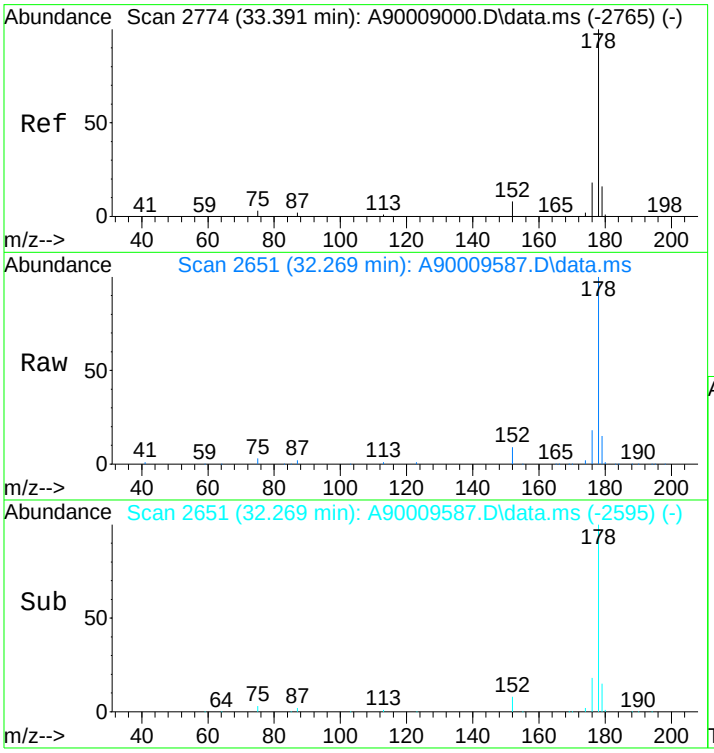


#53
C4-Phenanthrenes/Anthracenes
Concen: 331.81 ng/mL m
RT: 40.348 min Scan# 3536
Delta R.T. 0.019 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:234 Resp: 87269

Ion	Ratio	Lower	Upper
234	100		
219	0.6	52.1	78.1#

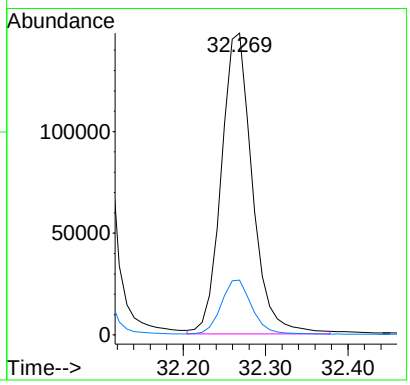


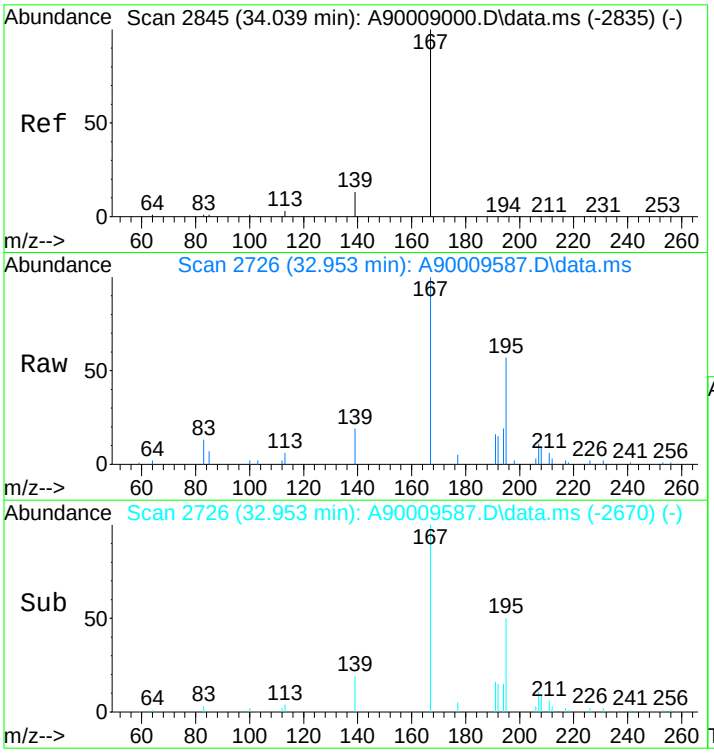


#55
Anthracene
Concen: 1589.78 ng/mL m
RT: 32.269 min Scan# 2651
Delta R.T. 0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:178 Resp: 388283

Ion	Ratio	Lower	Upper
178	100		
176	18.1	14.6	21.8

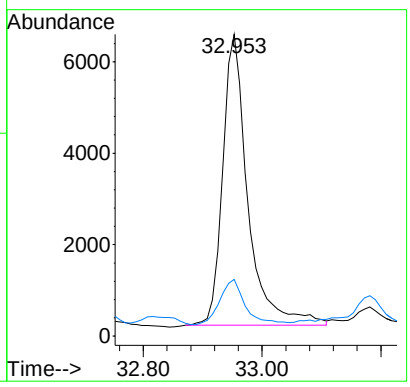


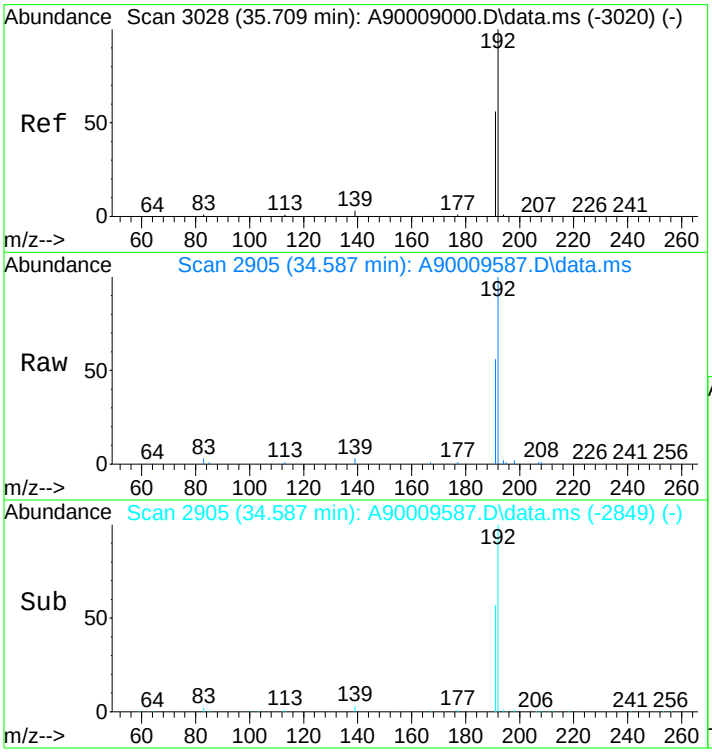


#56
Carbazole
Concen: 80.94 ng/mL
RT: 32.953 min Scan# 2726
Delta R.T. 0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:167 Resp: 18700

Ion	Ratio	Lower	Upper
167	100		
139	17.4	10.2	15.2#

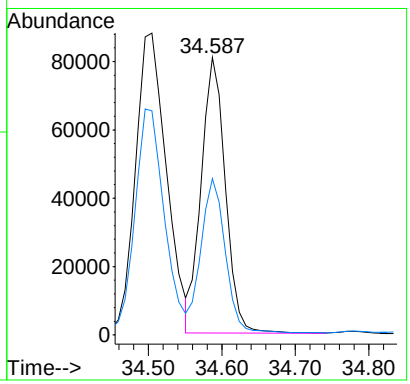


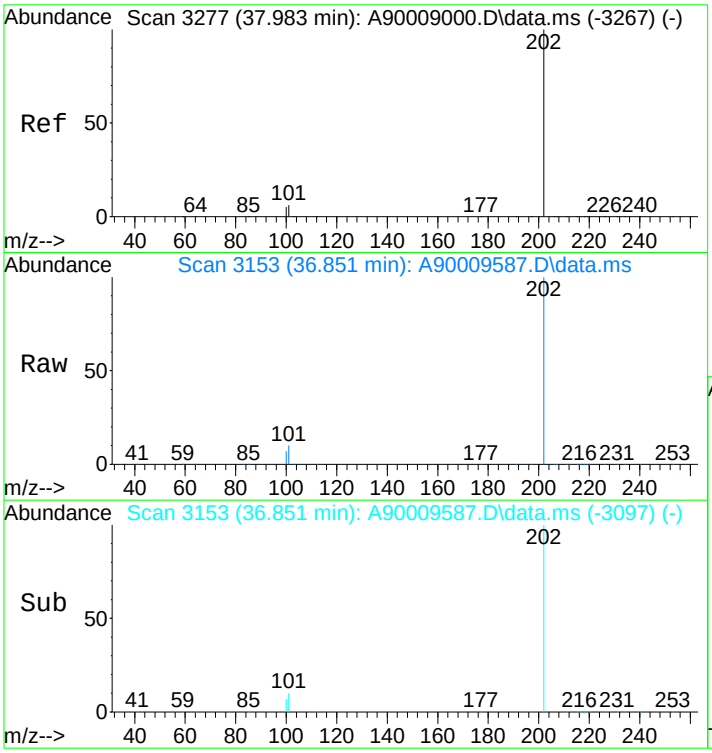


#57
1-Methylphenanthrene
Concen: 947.29 ng/mL
RT: 34.587 min Scan# 2905
Delta R.T. 0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:192 Resp: 183820

Ion	Ratio	Lower	Upper
192	100		
191	55.9	44.9	67.3

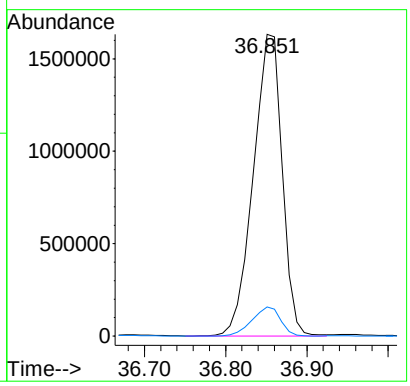


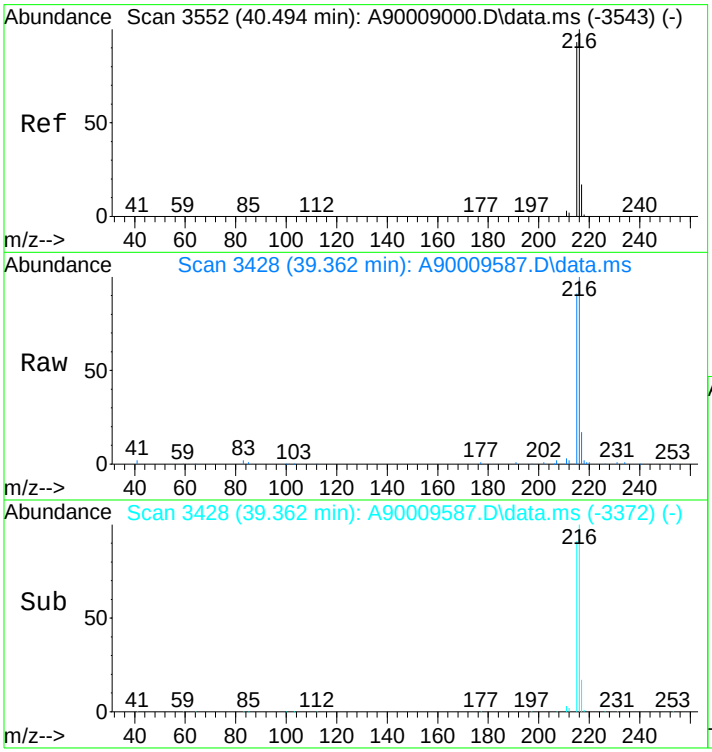


#58
Fluoranthene
Concen: 13754.98 ng/mL
RT: 36.851 min Scan# 3153
Delta R.T. 0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:202 Resp: 4041361

Ion	Ratio	Lower	Upper
202	100		
101	9.5	8.2	12.2

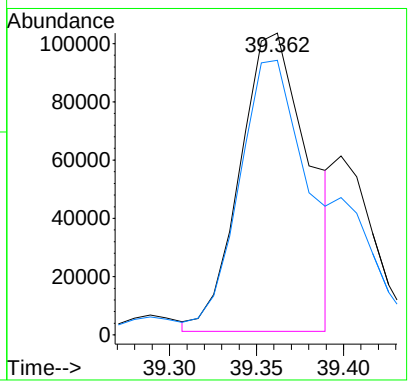


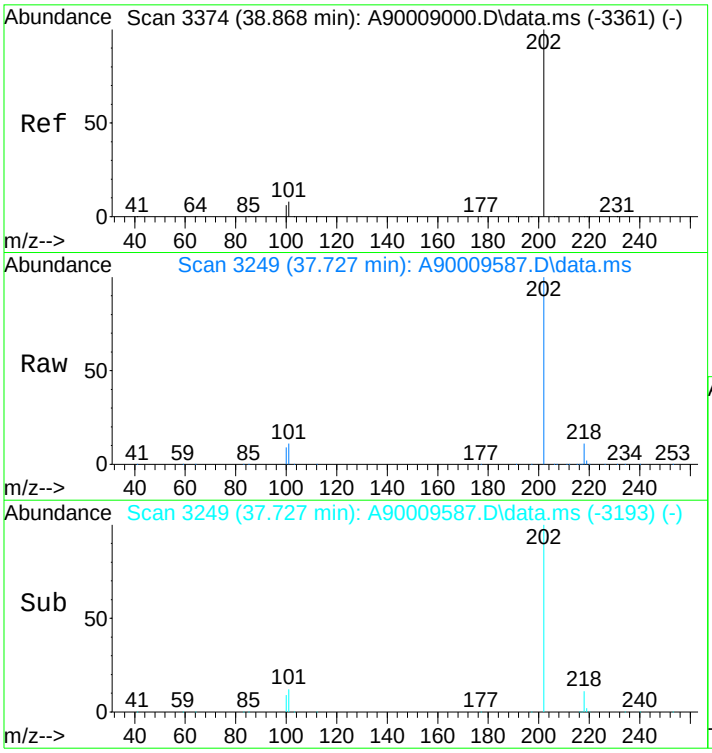


#59
Benzo(b)fluorene
Concen: 1608.06 ng/mL m
RT: 39.362 min Scan# 3428
Delta R.T. 0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:216 Resp: 280978

Ion	Ratio	Lower	Upper
216	100		
215	115.2	73.4	110.2#

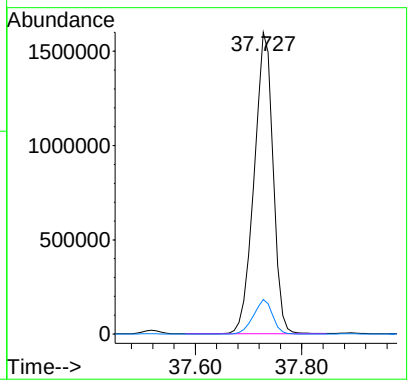


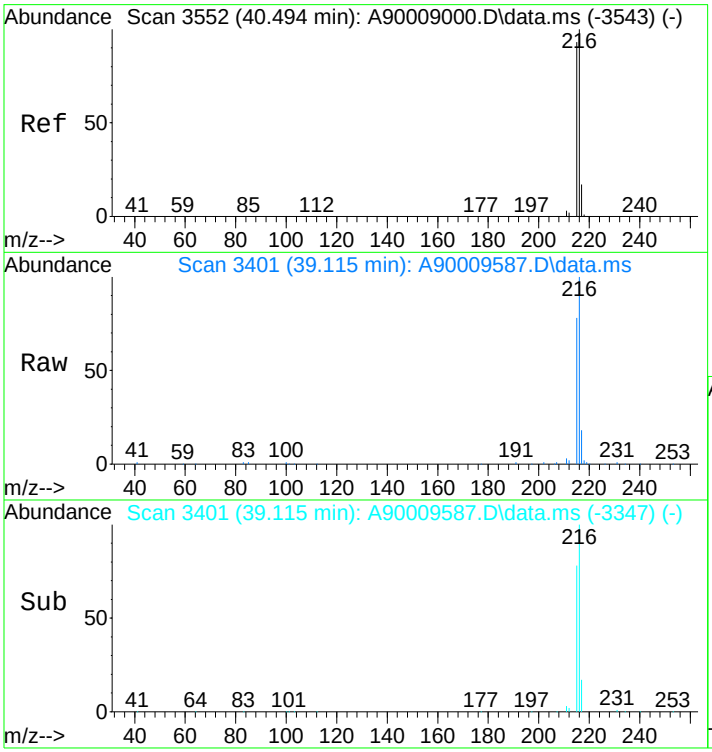


#60
Pyrene
Concen: 13162.38 ng/mL
RT: 37.727 min Scan# 3249
Delta R.T. 0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:202 Resp: 3945404

Ion	Ratio	Lower	Upper
202	100		
101	11.5	9.5	14.3

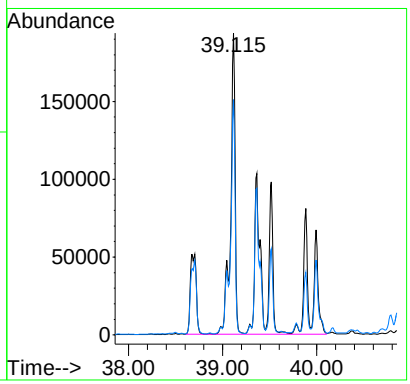


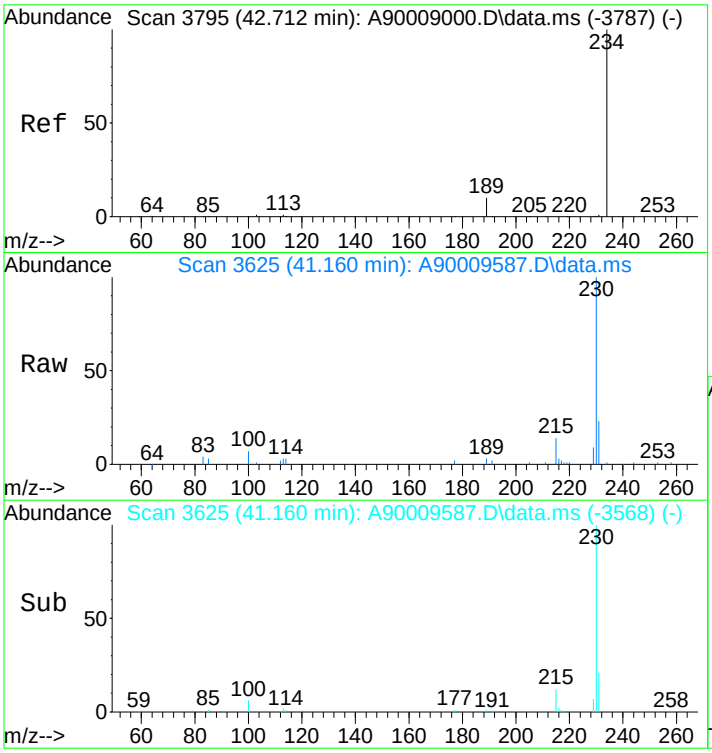


#61
C1-Fluoranthenes/Pyrenes
Concen: 6523.19 ng/mL m
RT: 39.115 min Scan# 3401
Delta R.T. 0.000 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:216 Resp: 1955316

Ion	Ratio	Lower	Upper
216	100		
215	21.3	73.5	110.3#

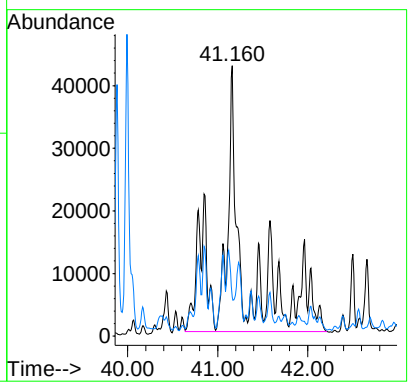


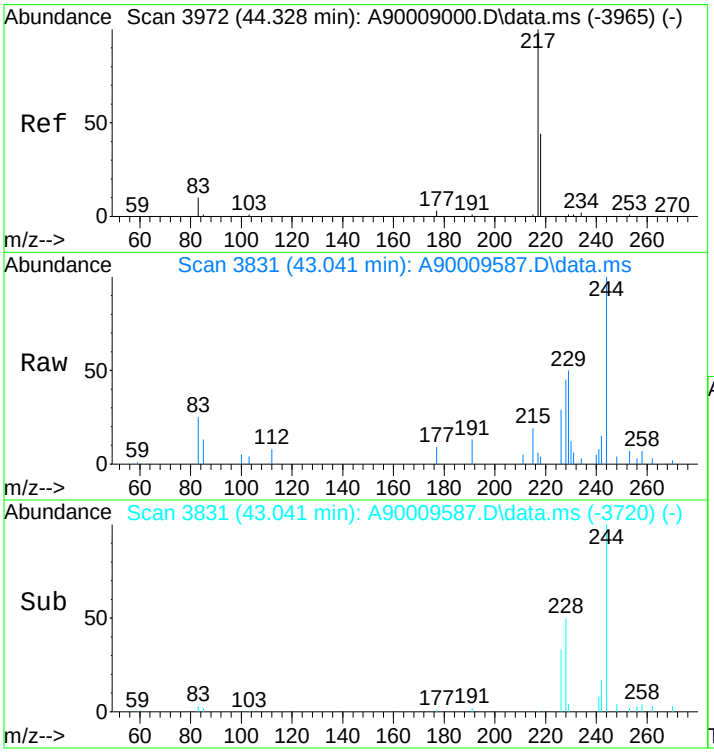


#62
C2-Fluoranthenes/Pyrenes
Concen: 2388.87 ng/mL m
RT: 41.160 min Scan# 3625
Delta R.T. 0.238 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:230 Resp: 716060

Ion	Ratio	Lower	Upper
230	100		
215	0.4	93.1	139.7#

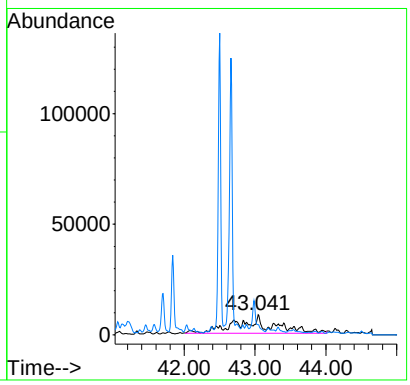


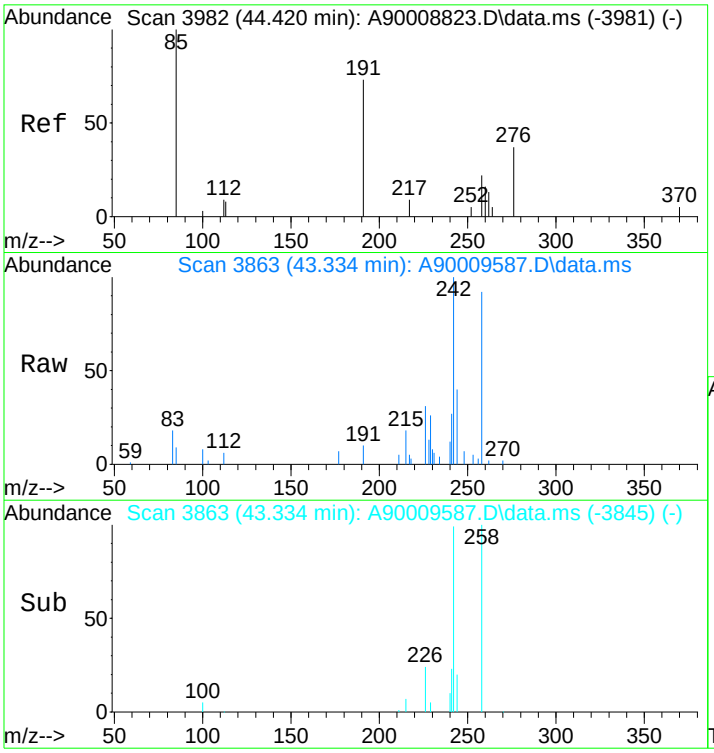


#63
C3-Fluoranthenes/Pyrenes
Concen: 937.83 ng/mL m
RT: 43.041 min Scan# 3831
Delta R.T. 0.101 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:244 Resp: 281114

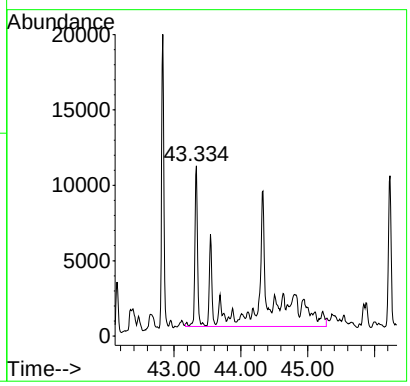
Ion	Ratio	Lower	Upper
244	100		
229	0.0	75.0	112.4#

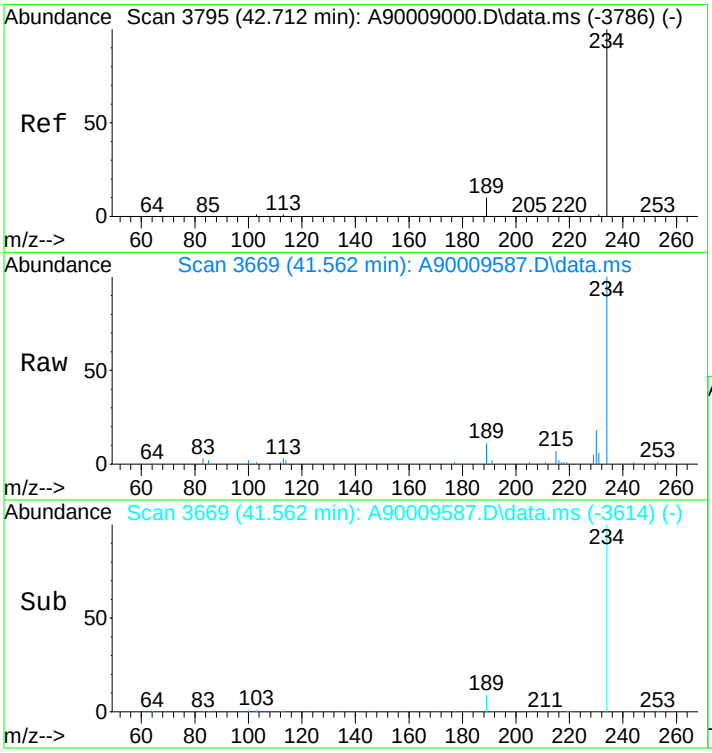




#64
C4-Fluoranthenes/Pyrenes
Concen: 558.67 ng/mL m
RT: 43.334 min Scan# 3863
Delta R.T. -0.959 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:258 Resp: 167461

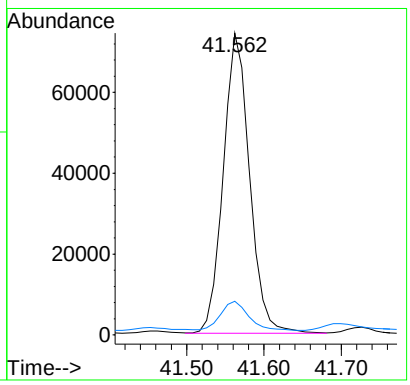


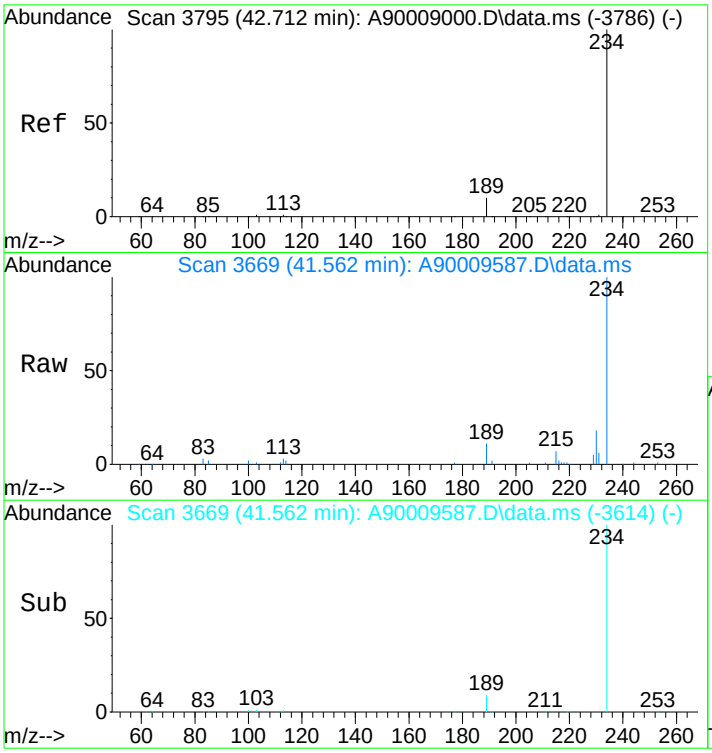


#66
Naphthobenzothiophene
Concen: 676.14 ng/ml
RT: 41.562 min Scan# 3669
Delta R.T. 0.000 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:234 Resp: 175861

Ion	Ratio	Lower	Upper
234	100		
189	11.1	7.2	10.8#

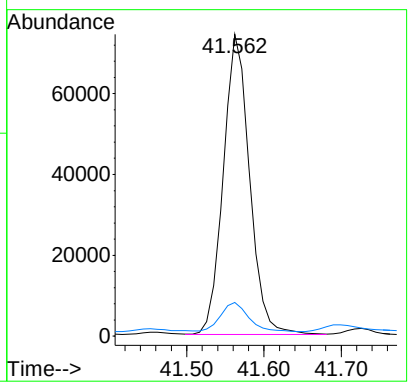


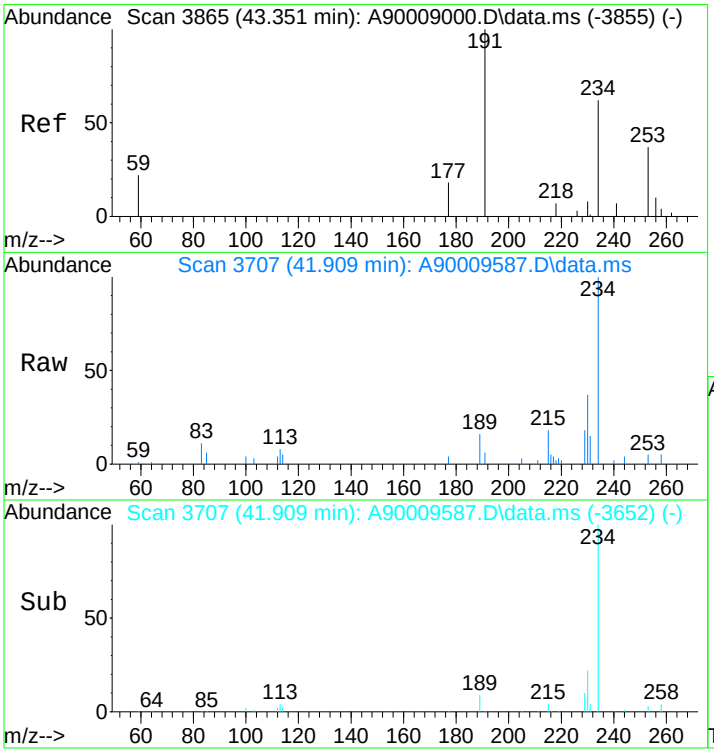


#67
Naphthobenzothiophene-2,1-D
Concen: 676.14 ng/mL
RT: 41.562 min Scan# 3669
Delta R.T. 0.000 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:234 Resp: 175861

Ion	Ratio	Lower	Upper
234	100		
189	11.1	7.2	10.8#

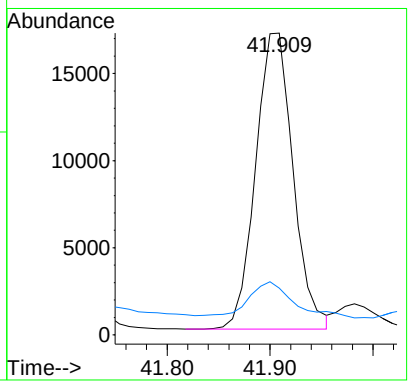


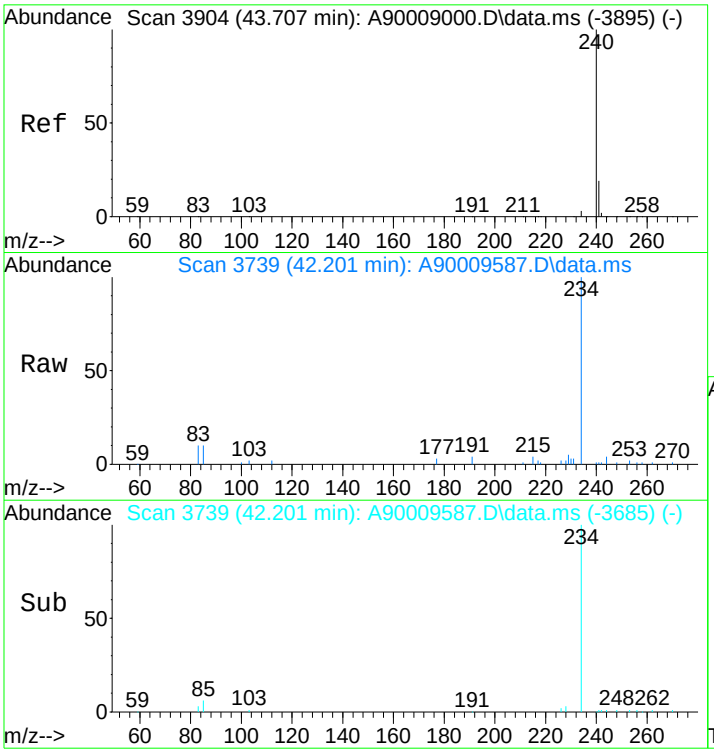


#68
Naphthobenzothiophene-1,2-D
Concen: 164.97 ng/mL
RT: 41.909 min Scan# 3707
Delta R.T. 0.000 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:234 Resp: 42907

Ion	Ratio	Lower	Upper
234	100		
189	25.5	81.0	121.4#

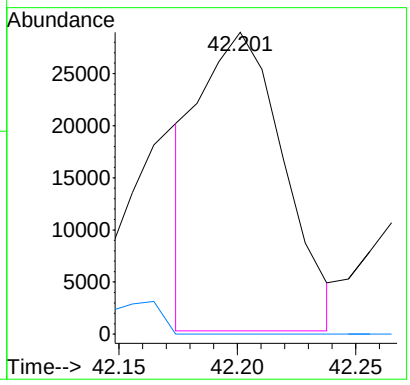


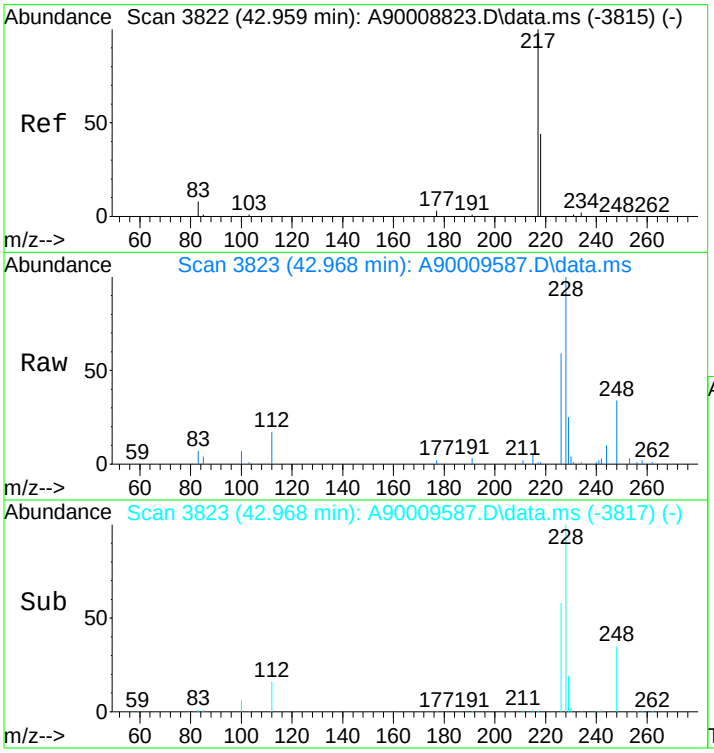


#69
Naphthobenzothiophene-2,3-D
Concen: 275.69 ng/mL m
RT: 42.201 min Scan# 3739
Delta R.T. -0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:234 Resp: 71706

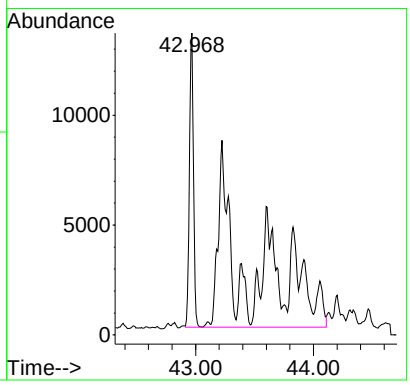
Ion	Ratio	Lower	Upper
234	100		
189	0.0	0.0	0.0

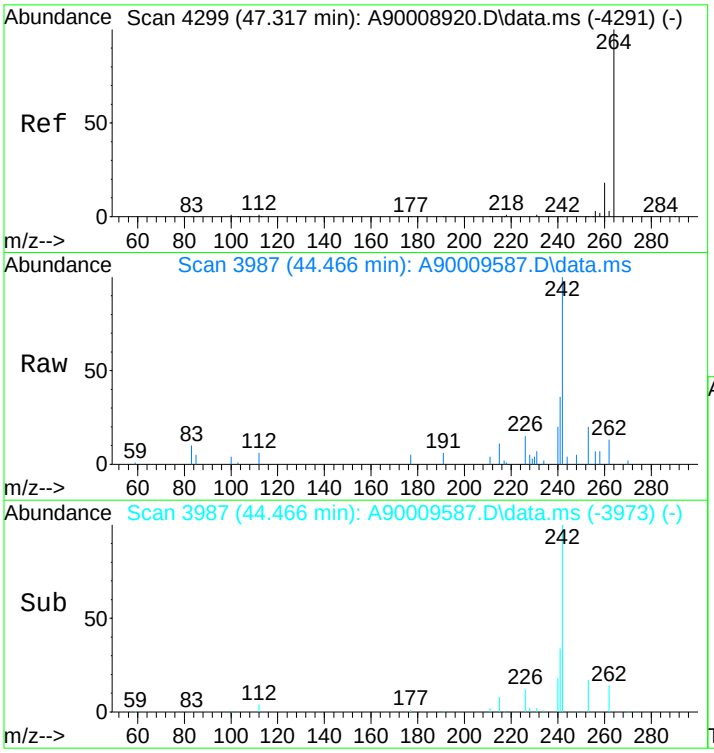




#70
C1-Naphthobenzothiophenes
Concen: 675.98 ng/ml m
RT: 42.968 min Scan# 3823
Delta R.T. 0.000 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

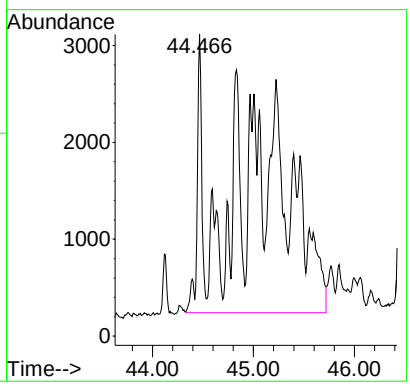
Tgt Ion:248 Resp: 175817

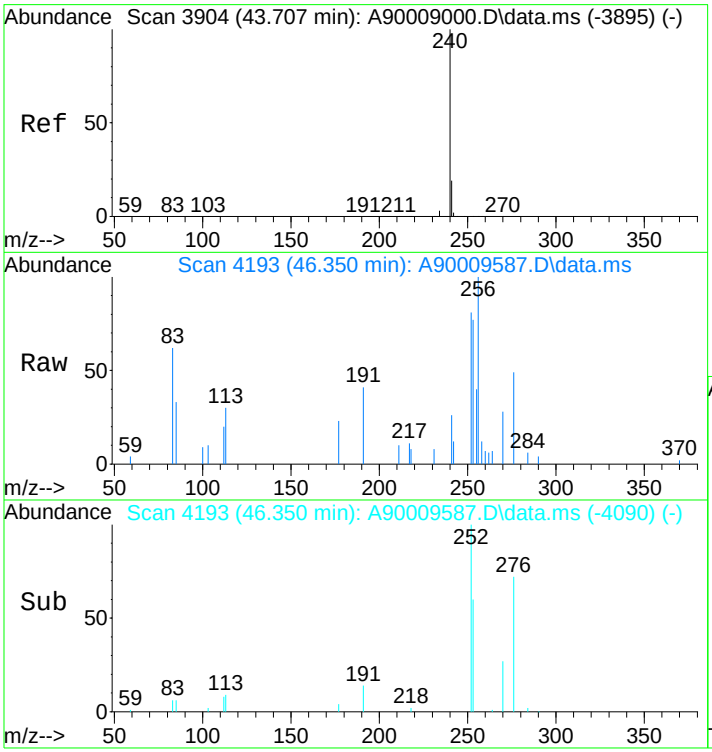




#71
C2-Naphthobenzothiophenes
Concen: 338.30 ng/ml m
RT: 44.466 min Scan# 3987
Delta R.T. -0.502 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

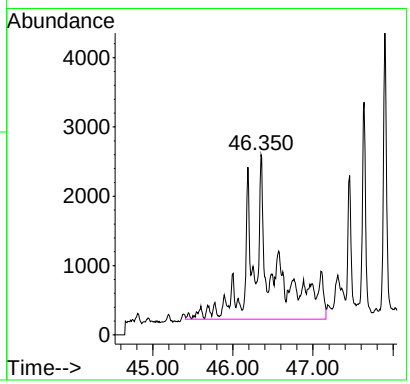
Tgt Ion:262 Resp: 87989

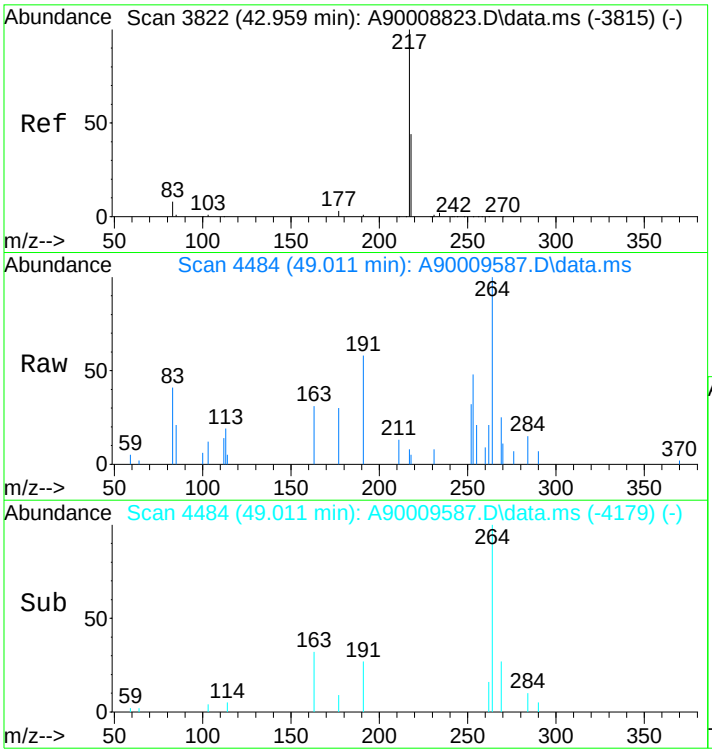




#72
C3-Naphthobenzothiophenes
Concen: 174.67 ng/ml m
RT: 46.350 min Scan# 4193
Delta R.T. -0.219 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

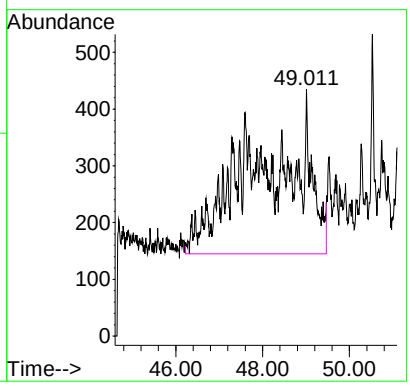
Tgt Ion:276 Resp: 45431

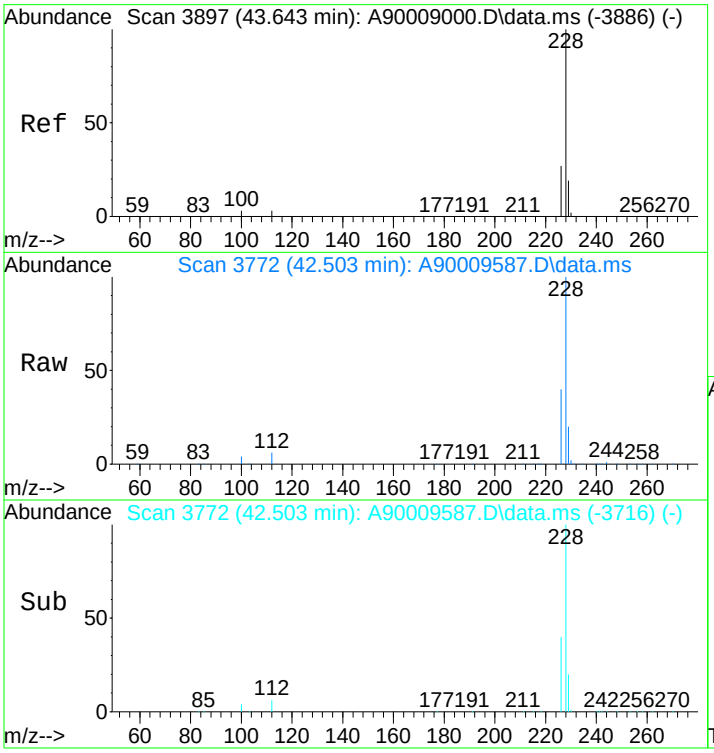




#73
C4-Naphthobenzothiophenes
Concen: 85.37 ng/mL m
RT: 49.011 min Scan# 4484
Delta R.T. 1.418 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:290 Resp: 22205

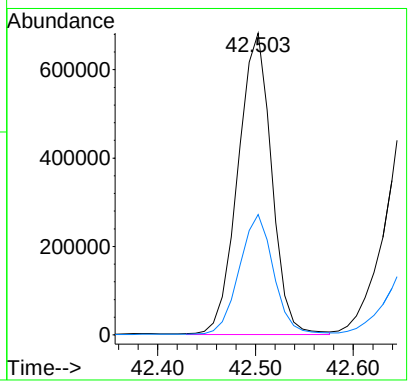


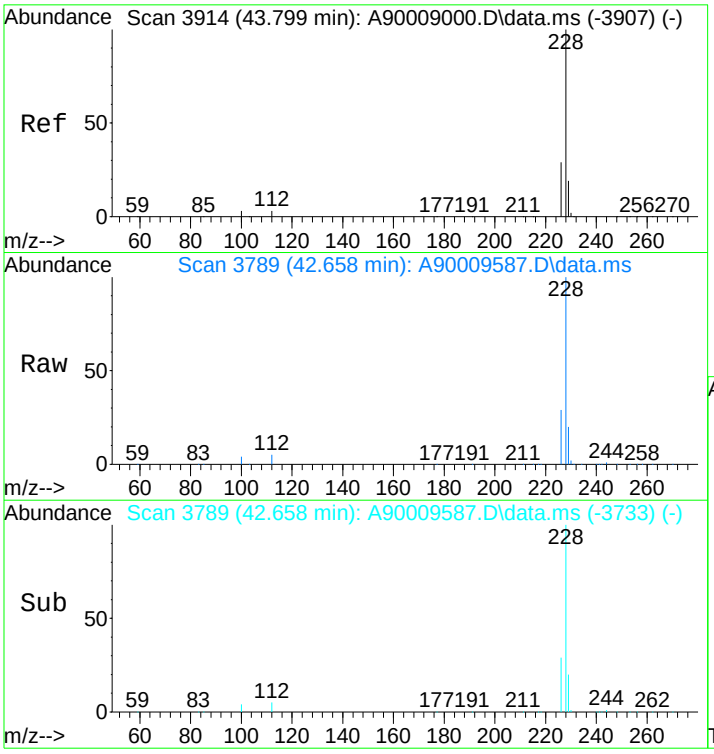


#75
Benz[a]anthracene
Concen: 5873.27 ng/mL m
RT: 42.503 min Scan# 3772
Delta R.T. 0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:228 Resp: 1635034

Ion	Ratio	Lower	Upper
228	100		
226	30.8	20.8	31.2

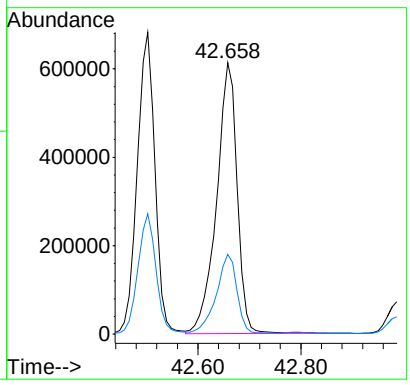


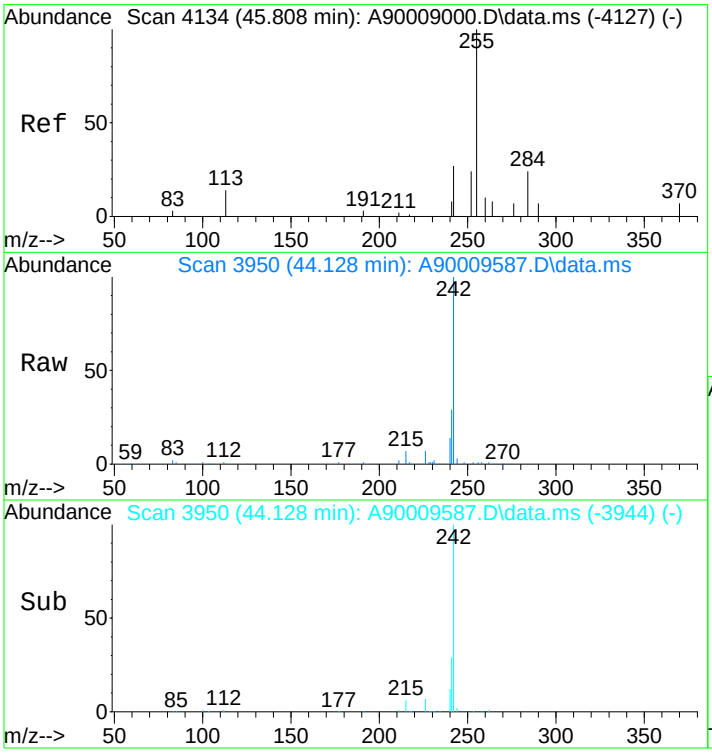


#77
Chrysene/Triphenylene
Concen: 6208.50 ng/mL
RT: 42.658 min Scan# 3789
Delta R.T. 0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:228 Resp: 1699882

Ion	Ratio	Lower	Upper
228	100		
226	29.6	23.3	34.9

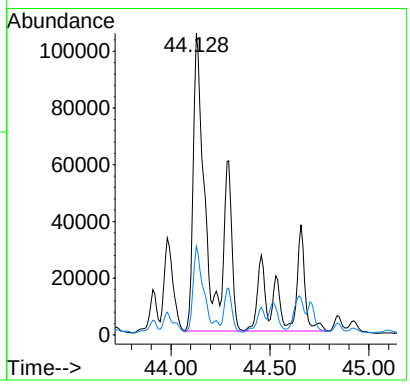


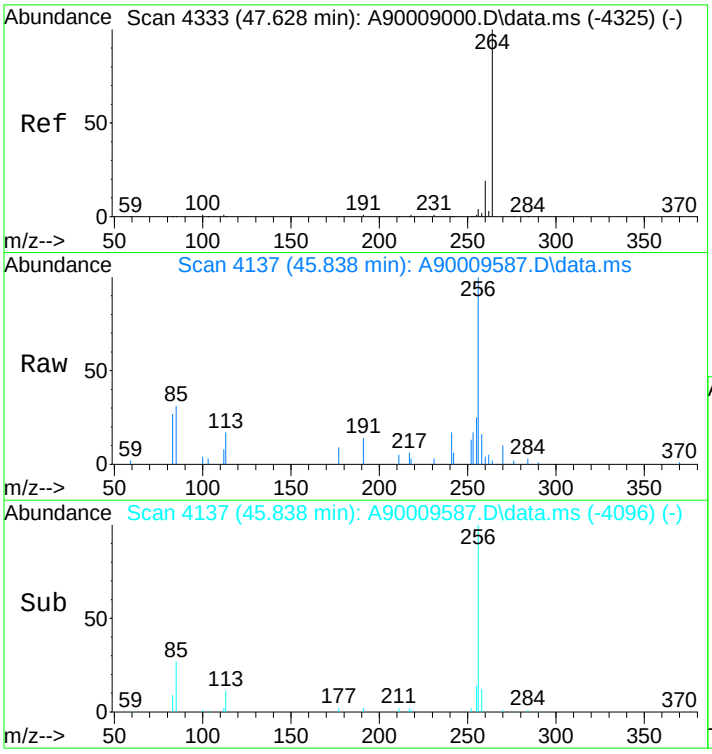


#78
C1-Chrysenes
Concen: 2846.27 ng/mL m
RT: 44.128 min Scan# 3950
Delta R.T. -0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:242 Resp: 779305

Ion	Ratio	Lower	Upper
242	100		
241	3.3	31.9	47.9#

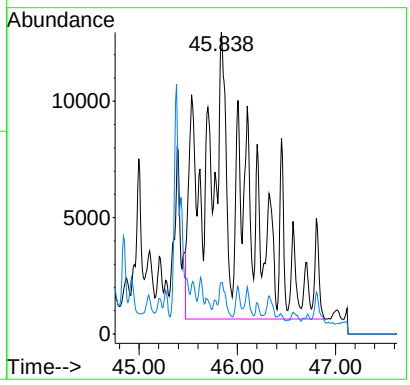


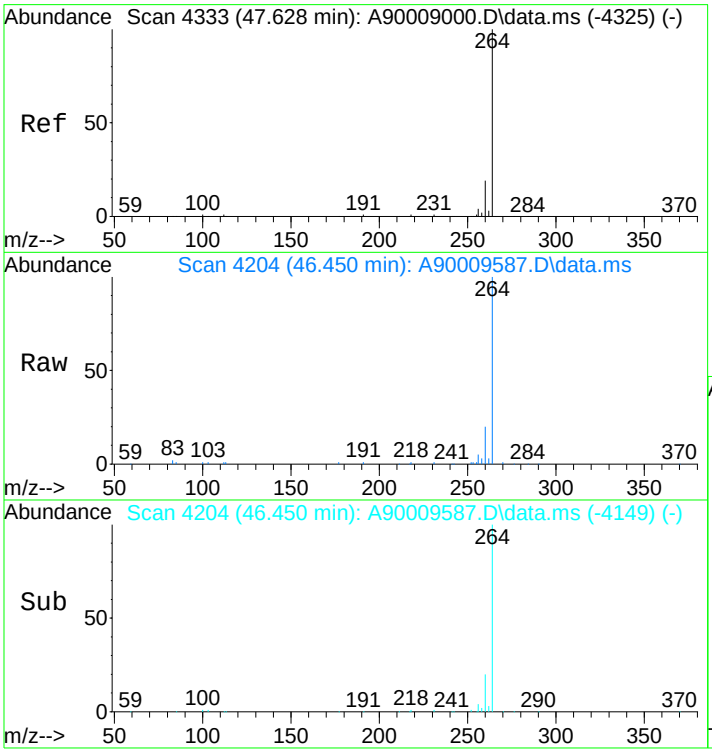


#79
C2-Chrysenes
Concen: 1291.75 ng/mL m
RT: 45.838 min Scan# 4137
Delta R.T. -0.978 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:256 Resp: 353679

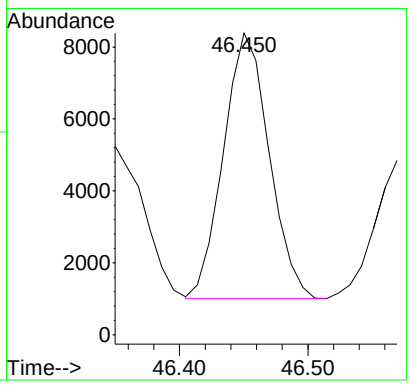
Ion	Ratio	Lower	Upper
256	100		
241	1.0	42.2	63.2#

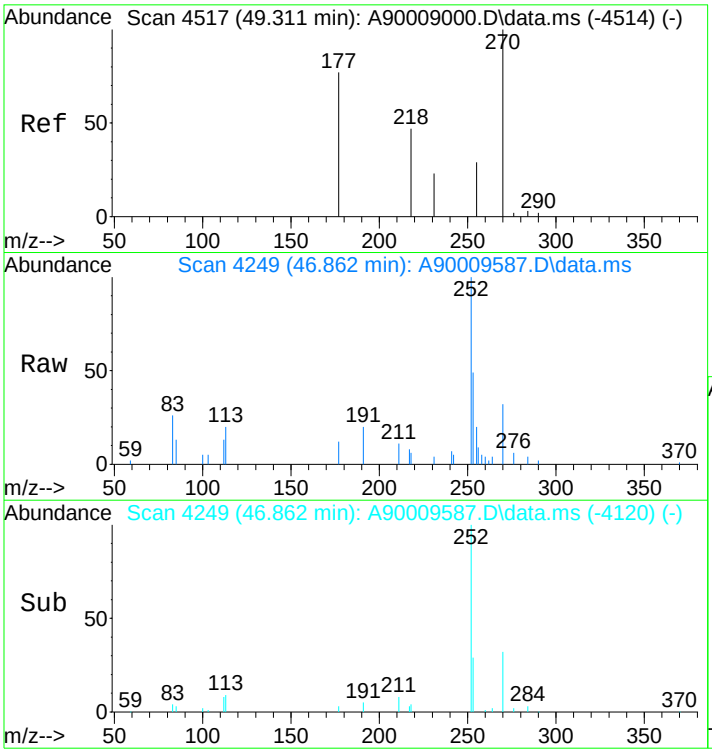




#80
BBF-d12 Surr BKGD
Concen: 66.68 ng/mL
RT: 46.450 min Scan# 4204
Delta R.T. 0.000 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:256 Resp: 18256

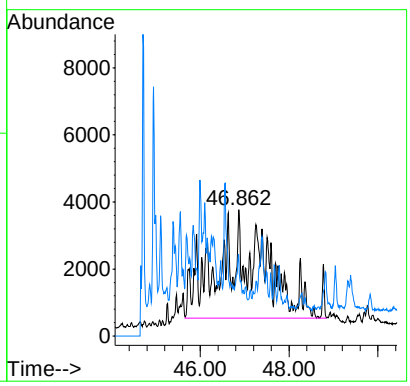


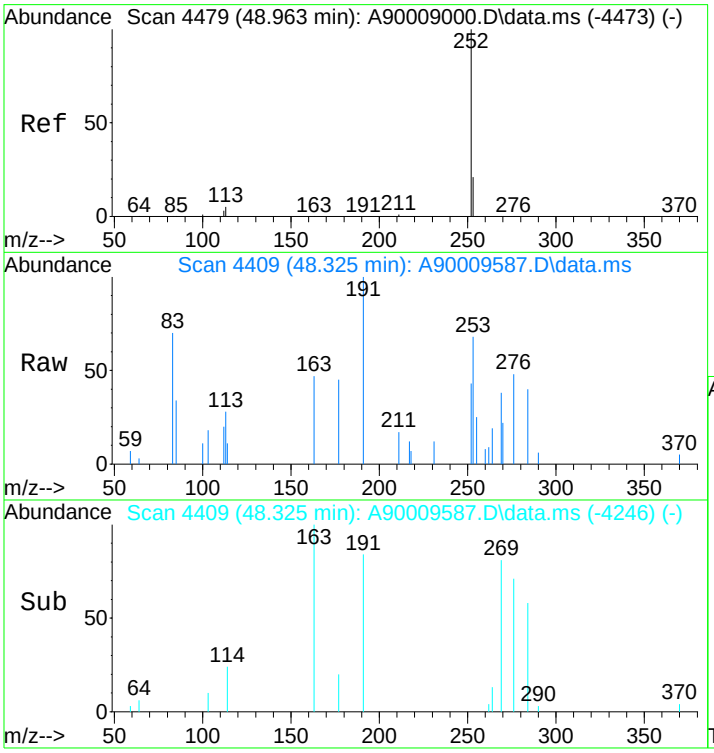


#81
C3-Chrysenes
Concen: 794.47 ng/mL m
RT: 46.862 min Scan# 4249
Delta R.T. -1.920 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:270 Resp: 217524

Ion	Ratio	Lower	Upper
270	100		
255	0.3	48.2	72.4#

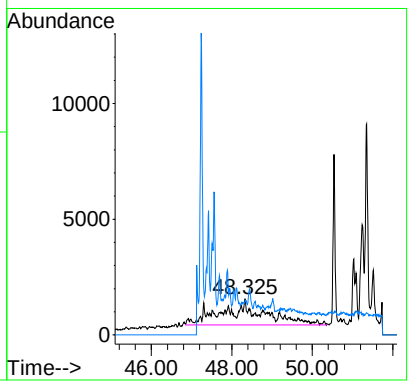


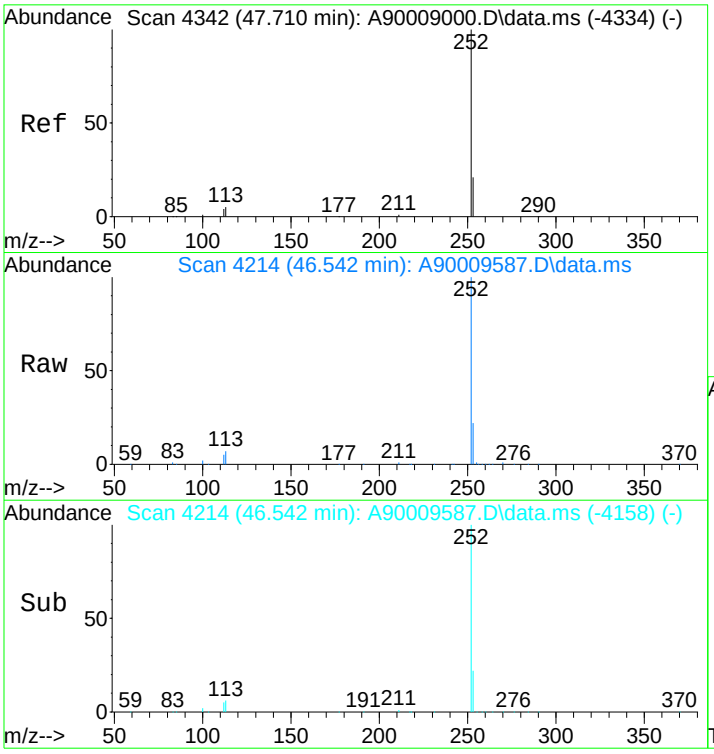


#82
C4-Chrysenes
Concen: 278.18 ng/mL m
RT: 48.325 min Scan# 4409
Delta R.T. -0.558 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:284 Resp: 76165

Ion	Ratio	Lower	Upper
284	100		
269	0.0	84.6	126.8#

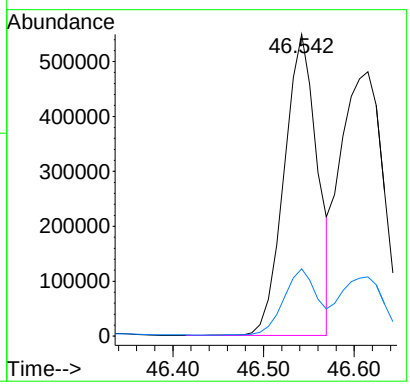


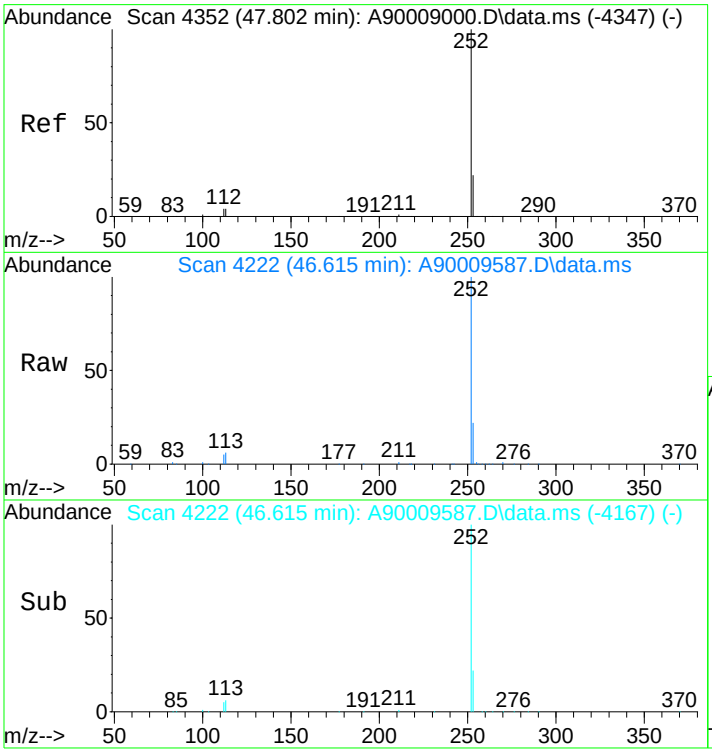


#84
Benzo[b]fluoranthene
Concen: 4872.63 ng/mL
RT: 46.542 min Scan# 4214
Delta R.T. 0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:252 Resp: 1406459

Ion	Ratio	Lower	Upper
252	100		
253	22.2	20.3	30.5

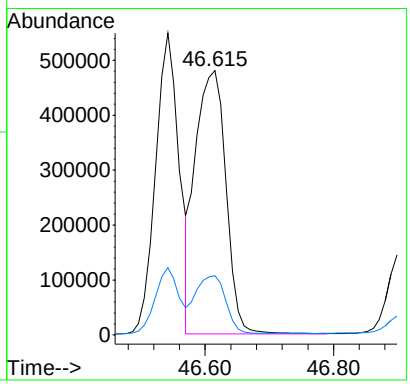


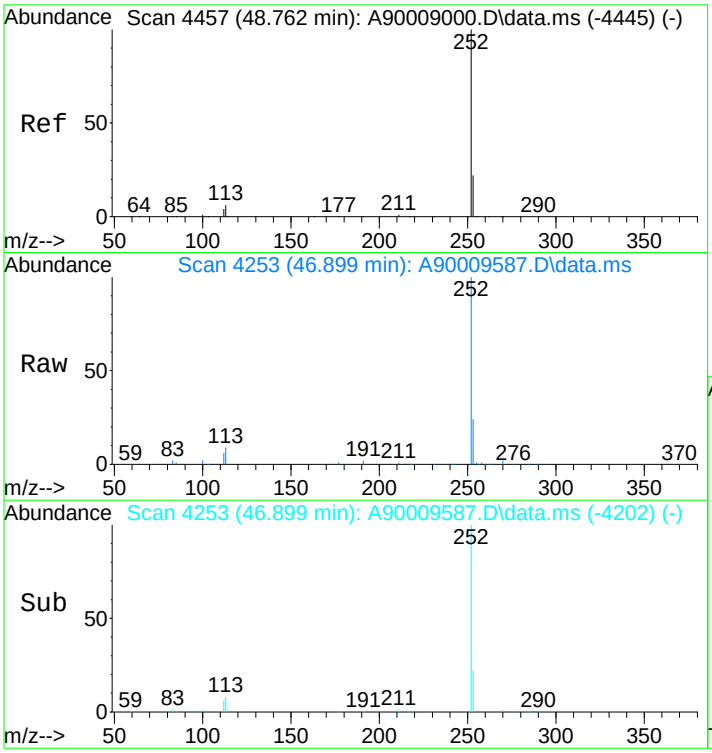


#85
Benzo[j]+[k]fluoranthene
Concen: 5580.21 ng/mL
RT: 46.615 min Scan# 4222
Delta R.T. 0.000 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:252 Resp: 1582608

Ion	Ratio	Lower	Upper
252	100		
253	21.7	20.2	30.4

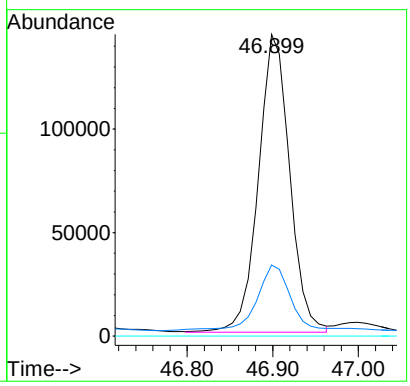


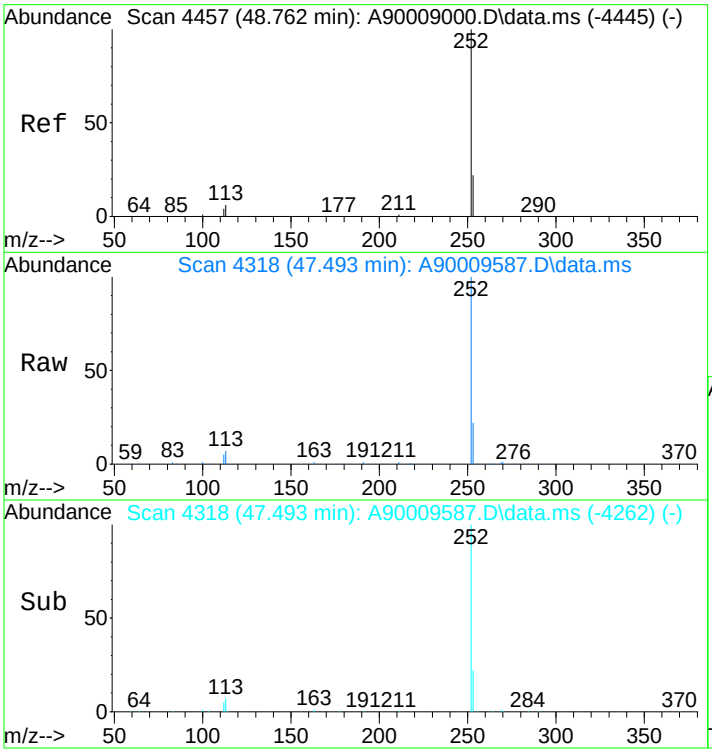


#86
Benzo[a]fluoranthene
Concen: 1291.15 ng/mL
RT: 46.899 min Scan# 4253
Delta R.T. -0.031 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:252 Resp: 366183

Ion	Ratio	Lower	Upper
252	100		
253	24.6	191.7	287.5#
125	0.0	0.0	0.0

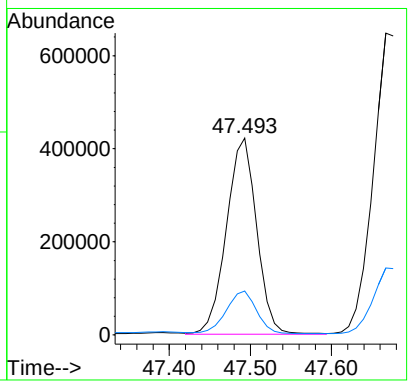


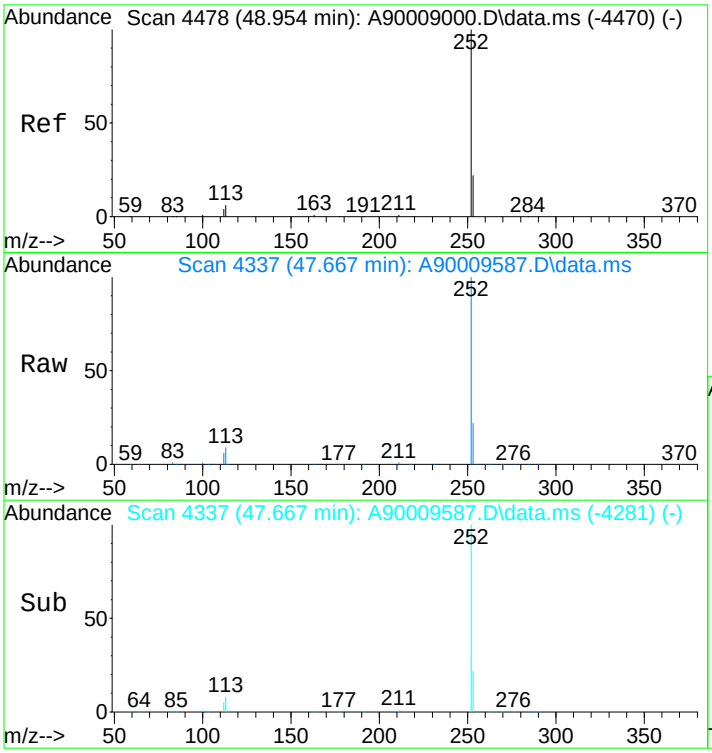


#87
Benzo[e]pyrene
Concen: 3986.94 ng/mL
RT: 47.493 min Scan# 4318
Delta R.T. 0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:252 Resp: 1092776

Ion	Ratio	Lower	Upper
252	100		
253	22.1	21.4	32.0

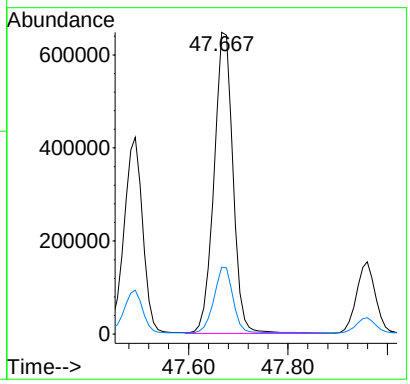


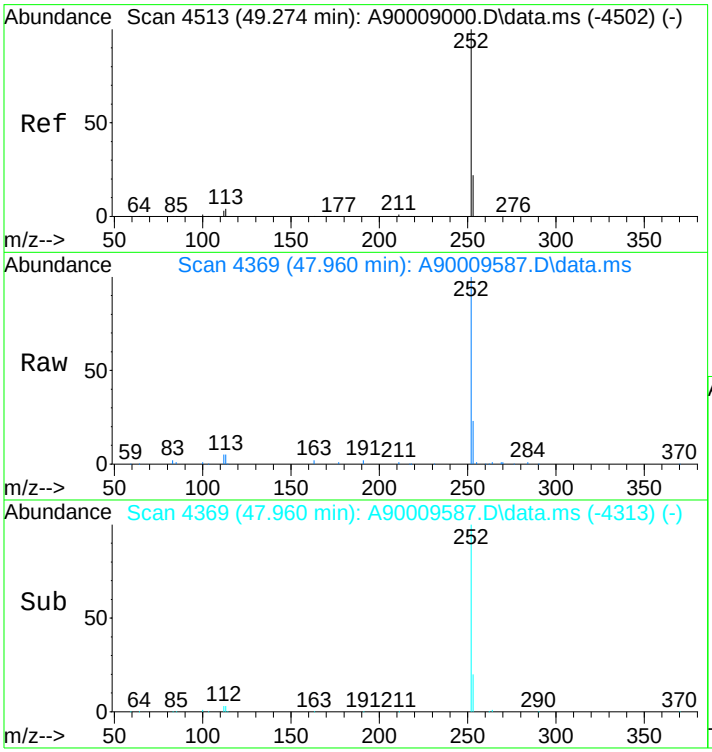


#89
Benzo[a]pyrene
Concen: 6608.82 ng/mL
RT: 47.667 min Scan# 4337
Delta R.T. 0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:252 Resp: 1715511

Ion	Ratio	Lower	Upper
252	100		
253	22.0	21.9	32.9

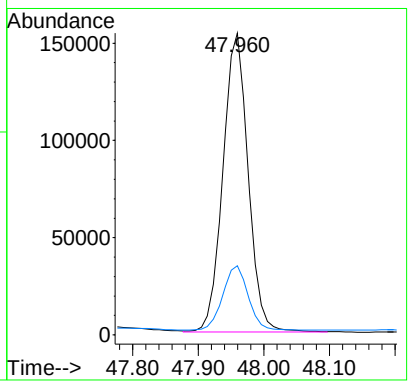


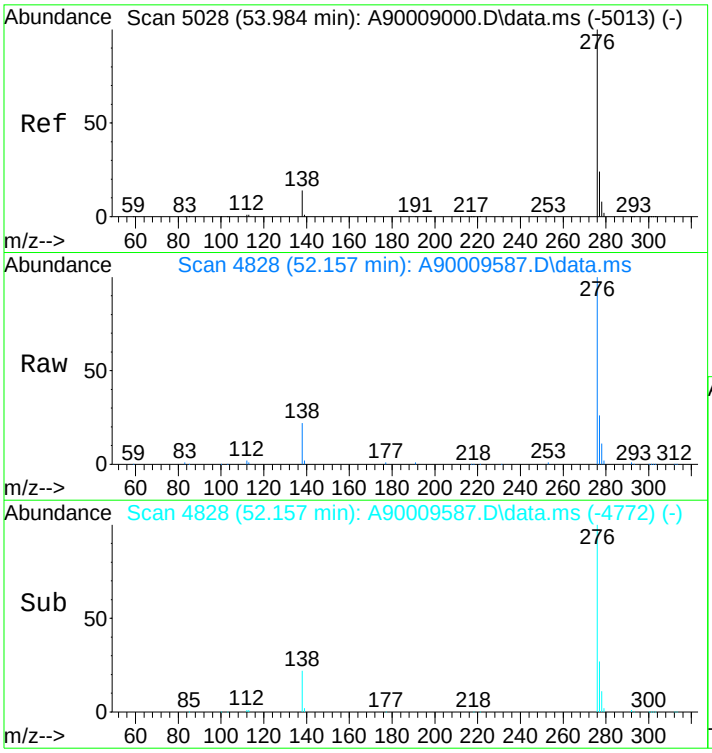


#90
Perylene
Concen: 1479.53 ng/mL m
RT: 47.960 min Scan# 4369
Delta R.T. 0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:252 Resp: 409888

Ion	Ratio	Lower	Upper
252	100		
253	0.2	22.2	33.2#

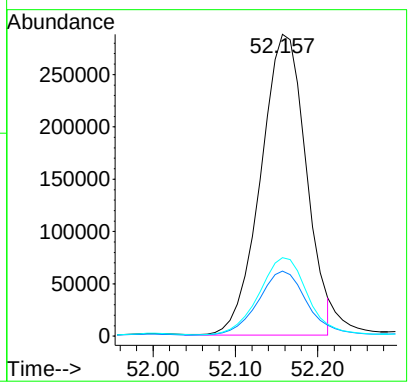


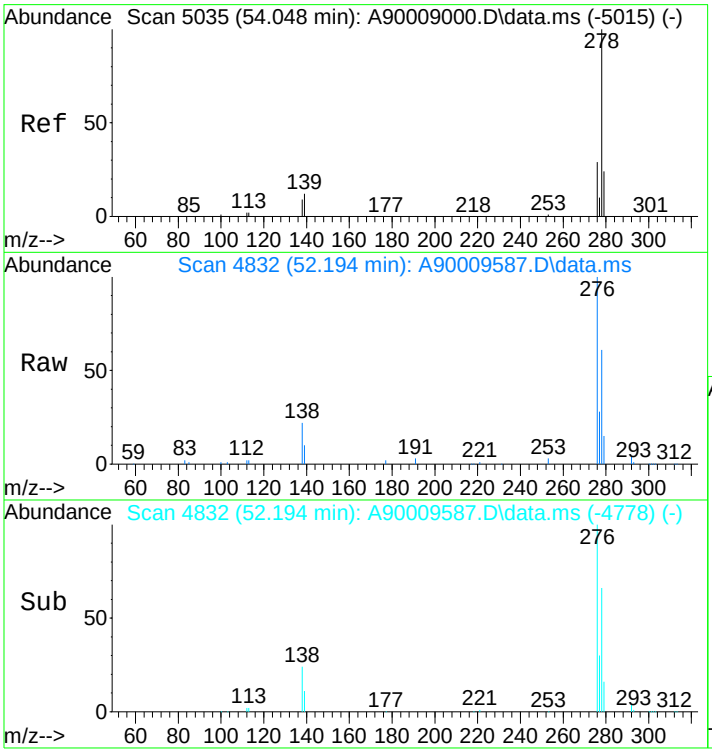


#91
Indeno[1,2,3-cd]pyrene
Concen: 3824.00 ng/mL m
RT: 52.157 min Scan# 4828
Delta R.T. 0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:276 Resp: 1099344

Ion	Ratio	Lower	Upper
276	100		
138	23.6	17.7	26.5
277	28.5	20.2	30.4

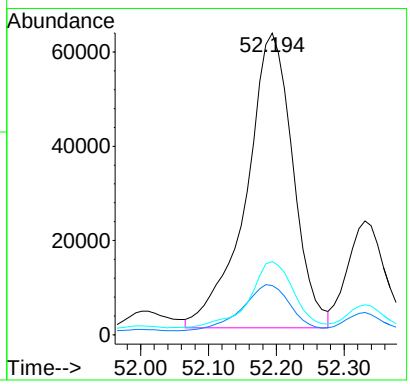


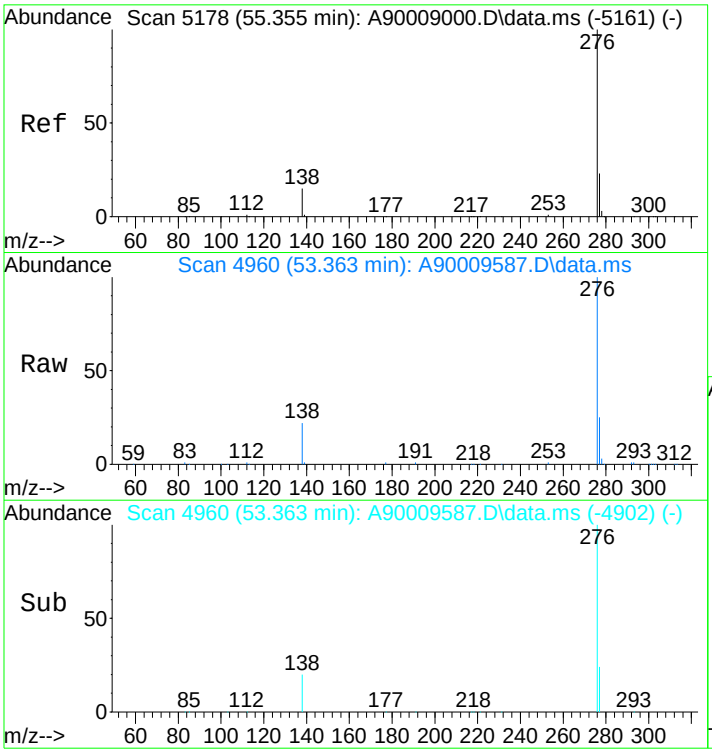


#92
Dibenz[ah]+[ac]anthracene
Concen: 1061.45 ng/mL m
RT: 52.194 min Scan# 4832
Delta R.T. -0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:278 Resp: 300602

Ion	Ratio	Lower	Upper
278	100		
139	16.0	13.3	19.9
279	24.3	19.3	28.9

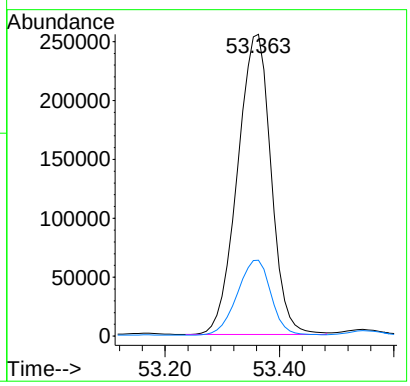


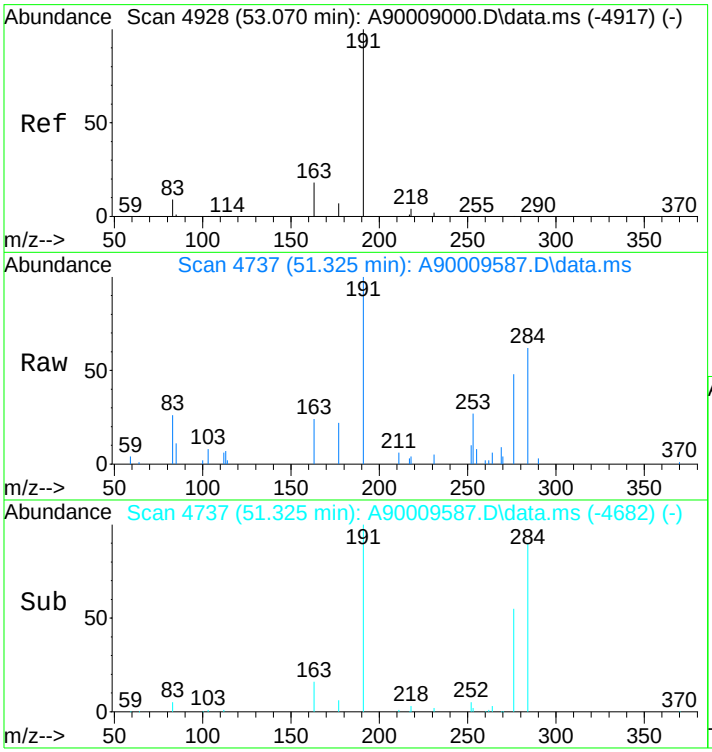


#93
Benzo[g,h,i]perylene
Concen: 3675.32 ng/mL
RT: 53.363 min Scan# 4960
Delta R.T. 0.027 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:276 Resp: 1038301

Ion	Ratio	Lower	Upper
276	100		
277	25.2	20.0	30.0

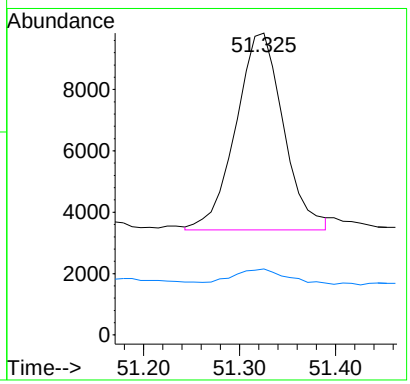


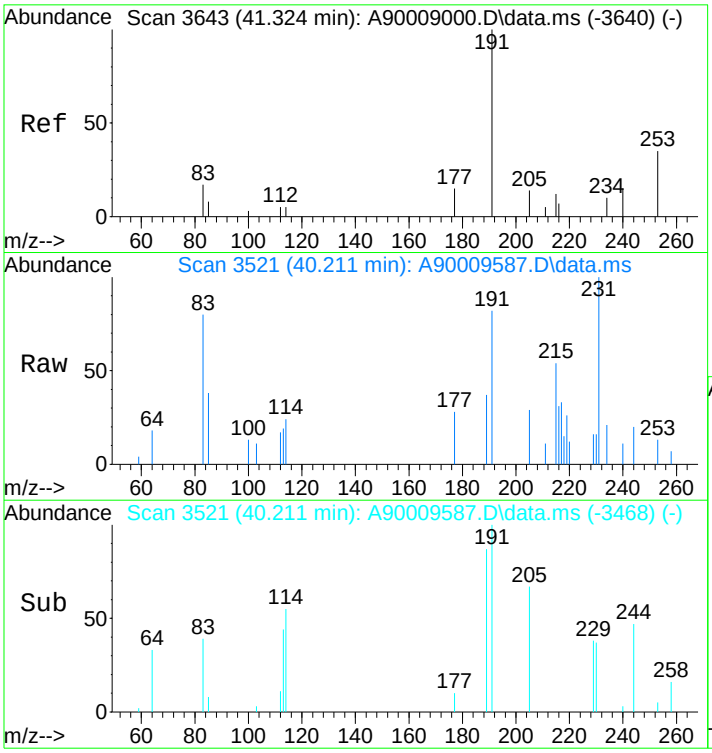


#94
Hopane (T19)
Concen: 206.44 ng/mL m
RT: 51.325 min Scan# 4737
Delta R.T. 0.000 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:191 Resp: 22028

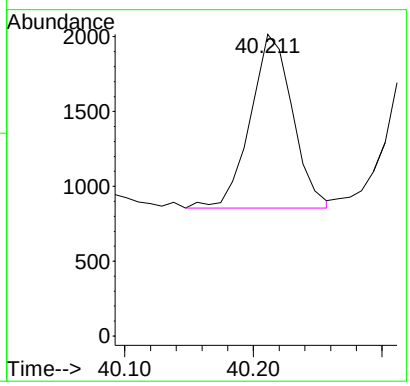
Ion	Ratio	Lower	Upper
191	100		
177	1.4	14.4	21.6#

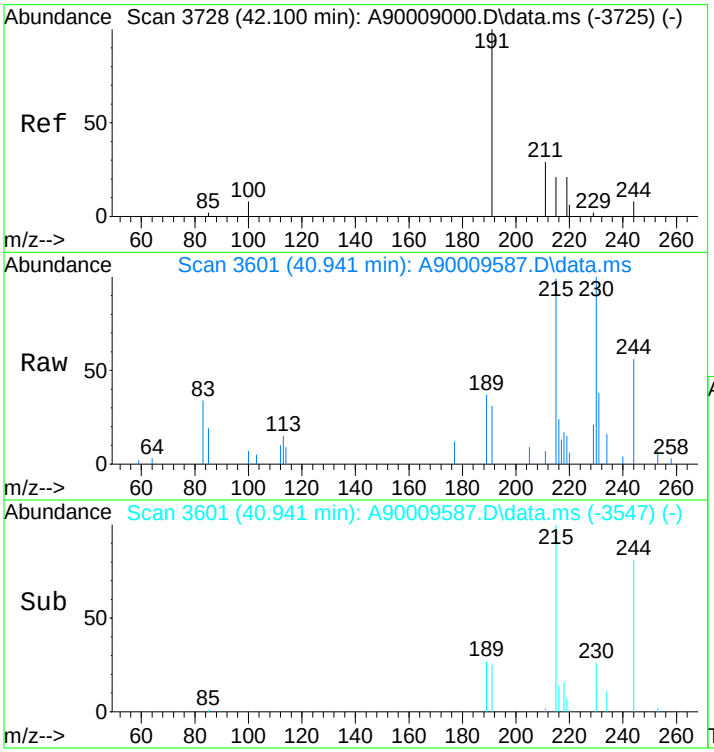




#96
C23 Tricyclic Terpane (T4)
Concen: 24.83 ng/ml
RT: 40.211 min Scan# 3521
Delta R.T. -0.018 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

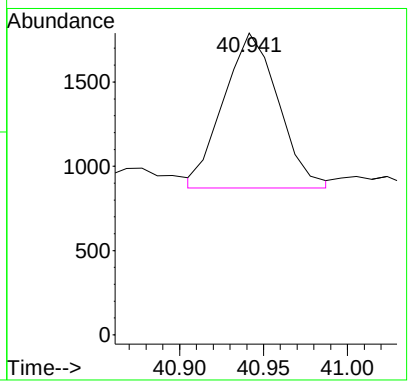
Tgt Ion:191 Resp: 2649

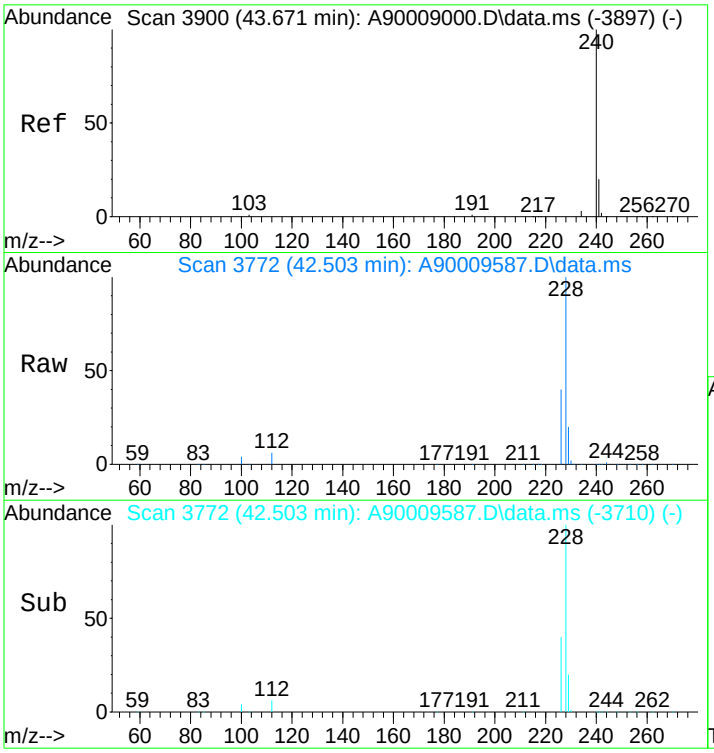




#97
C24 Tricyclic Terpane (T5)
Concen: 19.57 ng/ml m
RT: 40.941 min Scan# 3601
Delta R.T. -0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

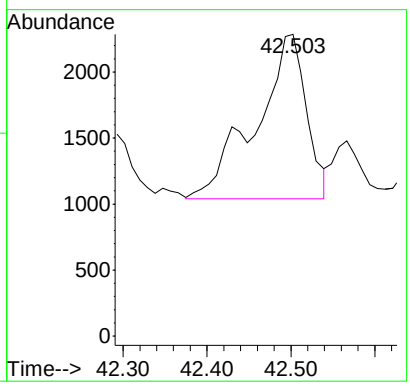
Tgt Ion:191 Resp: 2088

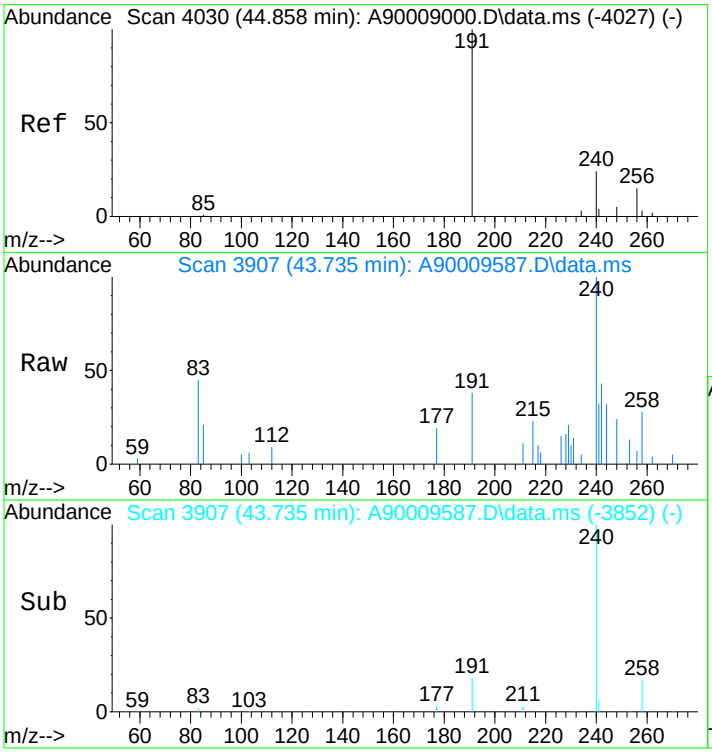




#98
C25 Tricyclic Terpane (T6)
Concen: 48.94 ng/ml m
RT: 42.503 min Scan# 3772
Delta R.T. 0.064 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

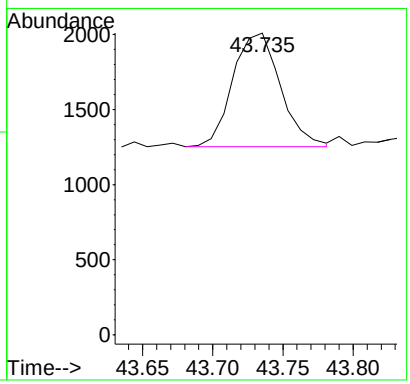
Tgt Ion:191 Resp: 5222

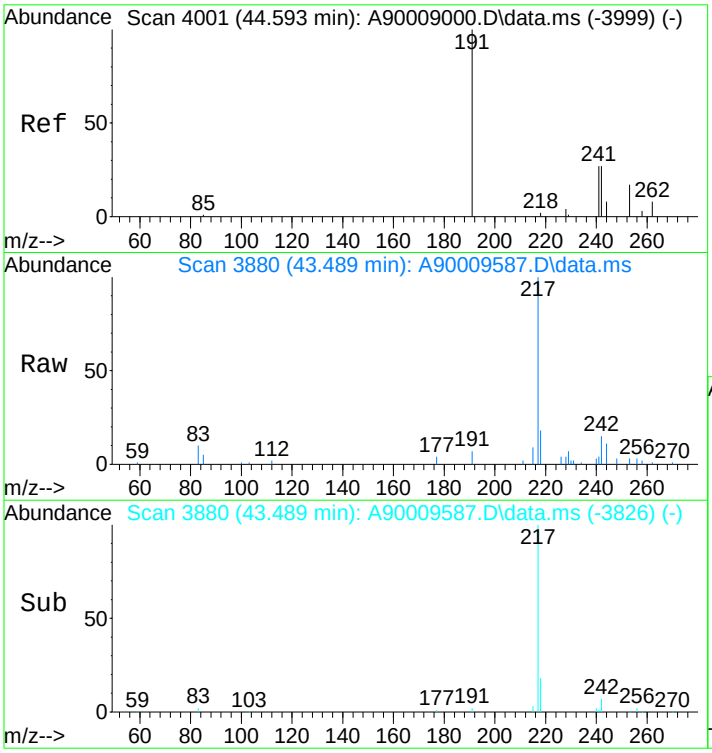




#99
C24 Tetracyclic Terpane (T6a)
Concen: 16.79 ng/ml
RT: 43.735 min Scan# 3907
Delta R.T. 0.000 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

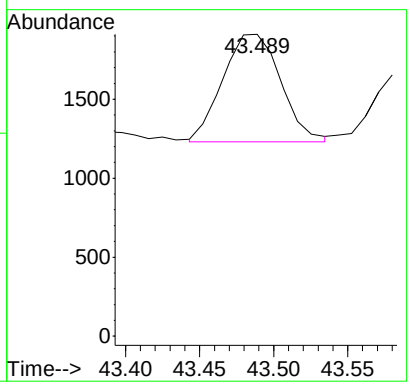
Tgt Ion:191 Resp: 1791

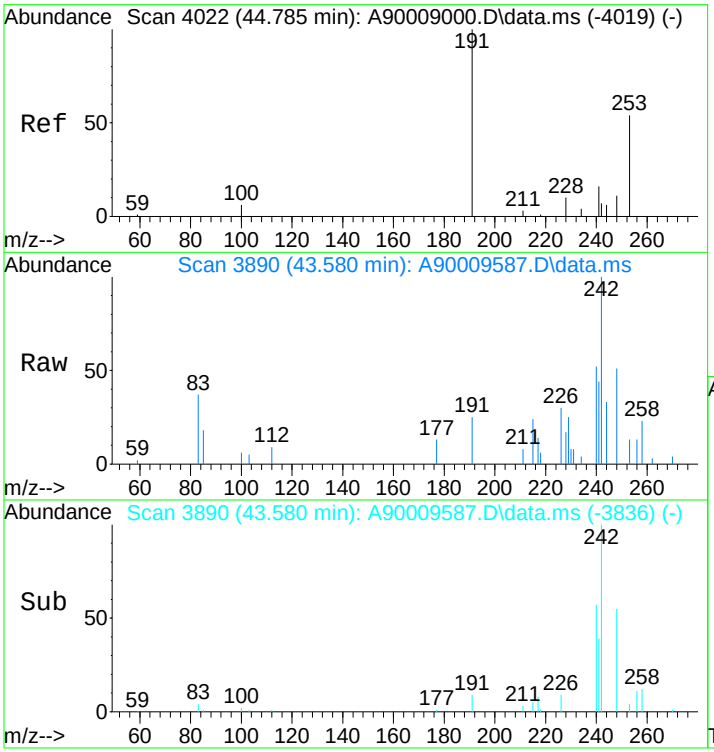




#100
C26 Tricyclic Terpane-22S (T6b)
Concen: 17.35 ng/ml m
RT: 43.489 min Scan# 3880
Delta R.T. -0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

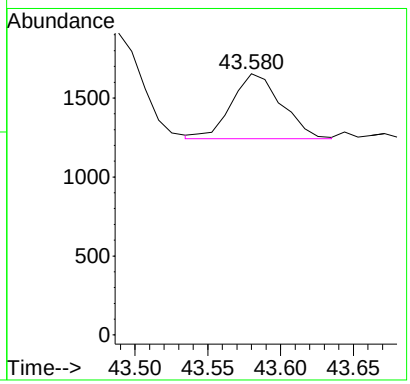
Tgt Ion:191 Resp: 1851

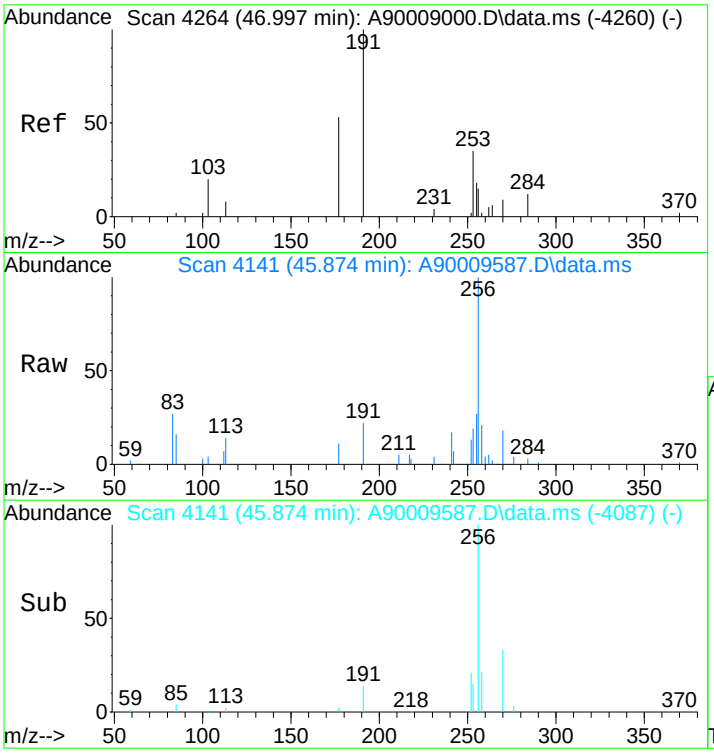




#101
C26 Tricyclic Terpane-22R (T6c)
Concen: 9.20 ng/ml m
RT: 43.580 min Scan# 3890
Delta R.T. -0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

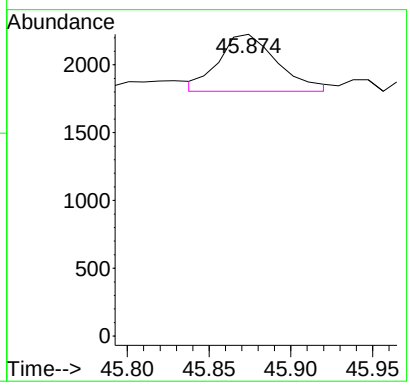
Tgt Ion:191 Resp: 982

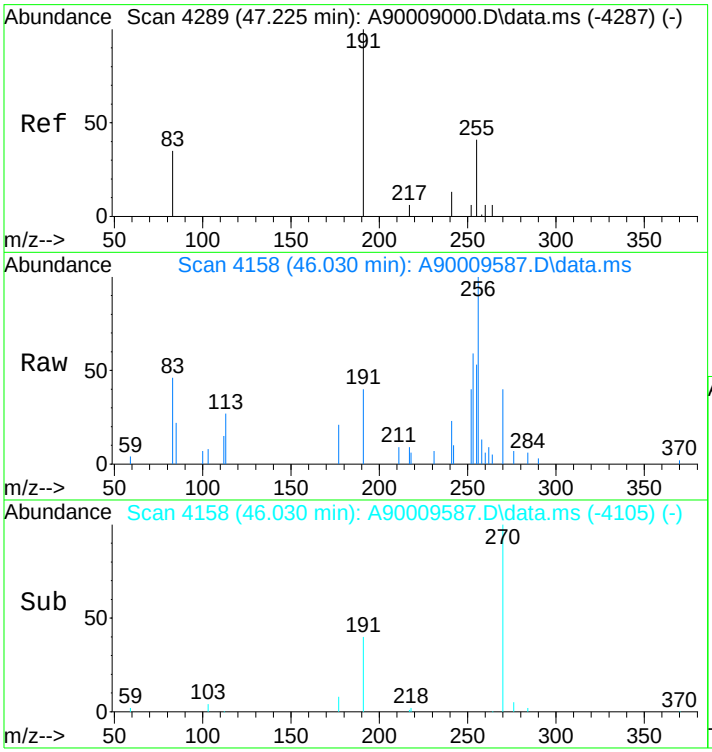




#102
C28 Tricyclic Terpane-22S (T7)
Concen: 9.87 ng/ml m
RT: 45.874 min Scan# 4141
Delta R.T. -0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

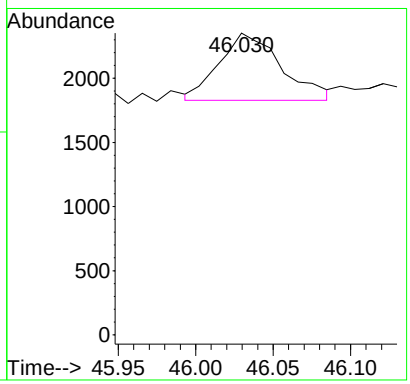
Tgt Ion:191 Resp: 1053

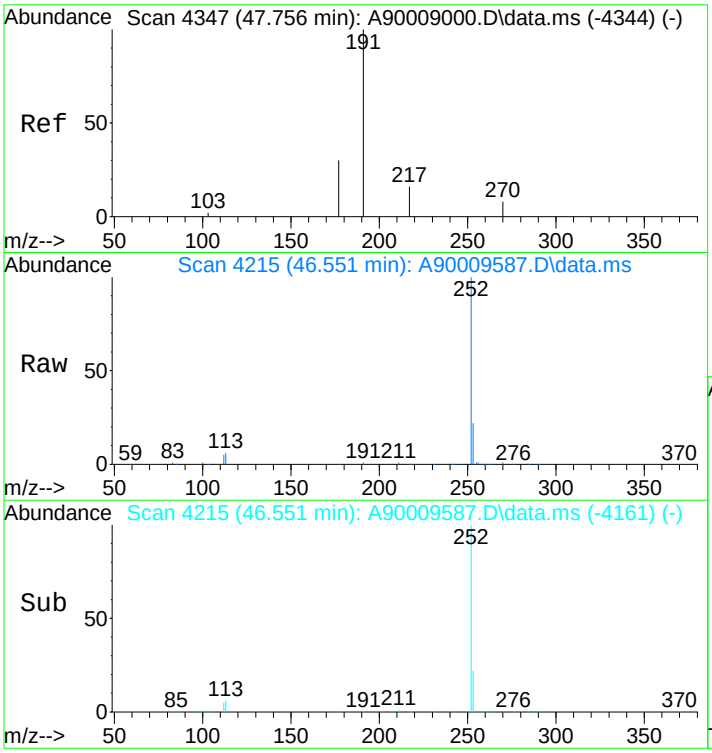




#103
C28 Tricyclic Terpane-22R (T8)
Concen: 13.75 ng/ml m
RT: 46.030 min Scan# 4158
Delta R.T. -0.018 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

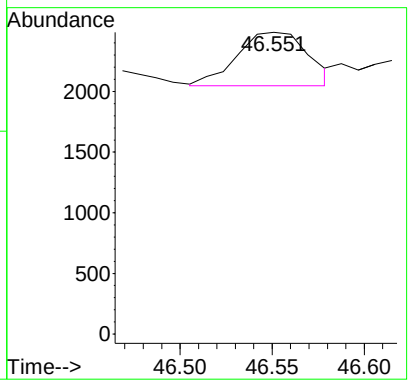
Tgt Ion:191 Resp: 1467

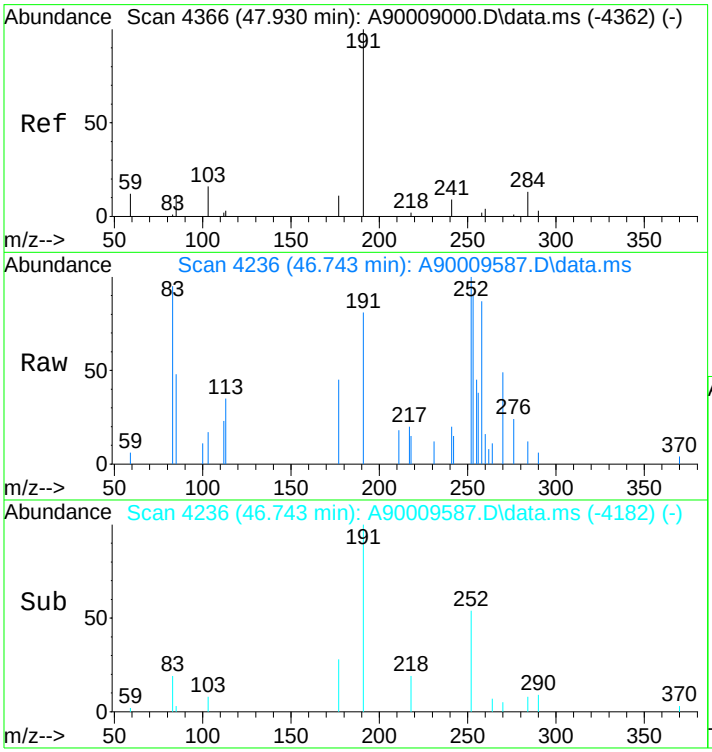




#104
C29 Tricyclic Terpane-22S (T9)
Concen: 11.13 ng/ml m
RT: 46.551 min Scan# 4215
Delta R.T. -0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

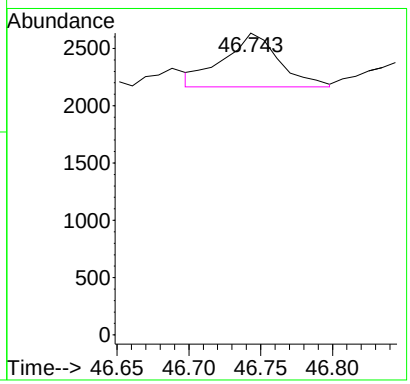
Tgt Ion:191 Resp: 1188

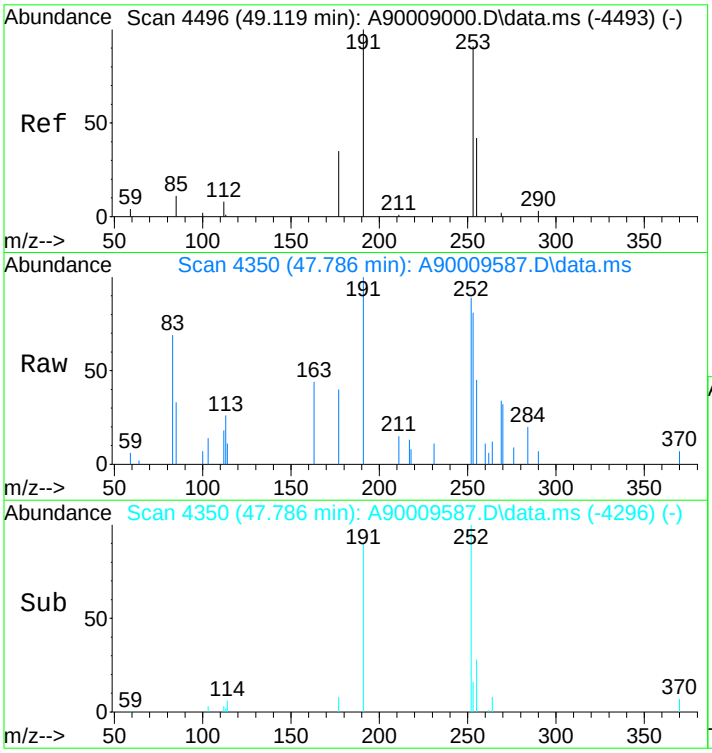




#105
C29 Tricyclic Terpane-22R (T10)
Concen: 11.69 ng/ml m
RT: 46.743 min Scan# 4236
Delta R.T. -0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

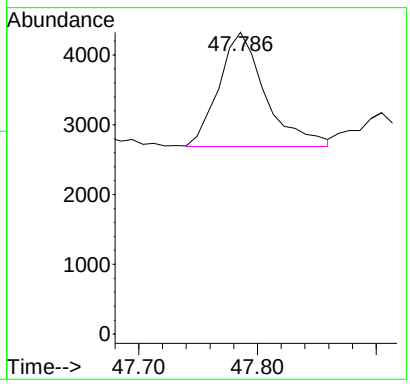
Tgt Ion:191 Resp: 1247

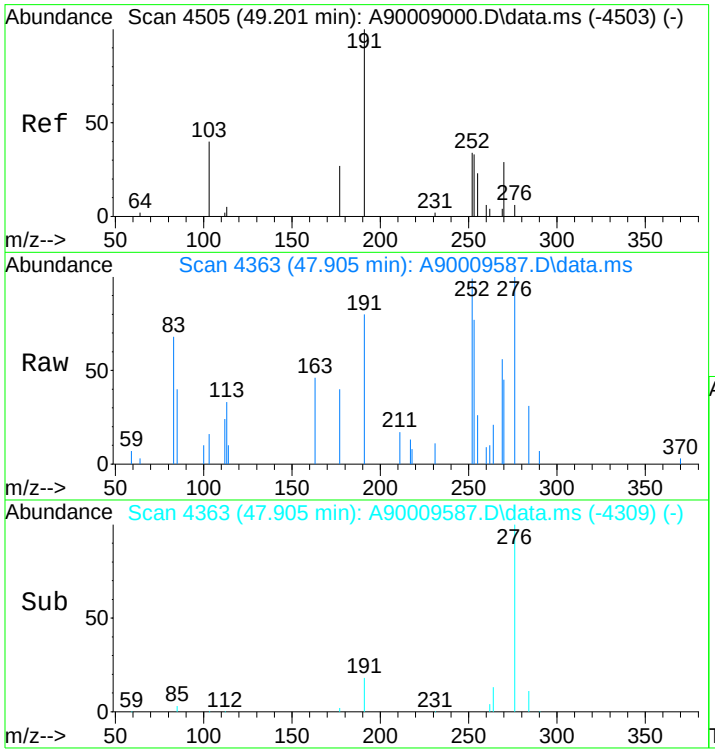




#106
18a-22,29,30-Trisnorneohopane-TS (T11)
Concen: 41.77 ng/ml m
RT: 47.786 min Scan# 4350
Delta R.T. -0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

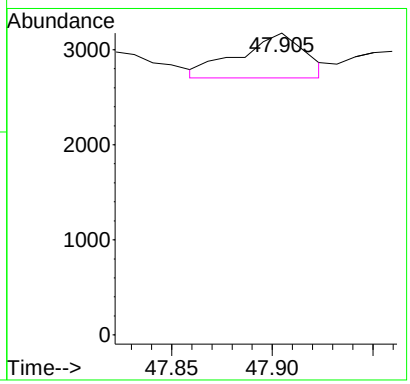
Tgt Ion:191 Resp: 4457

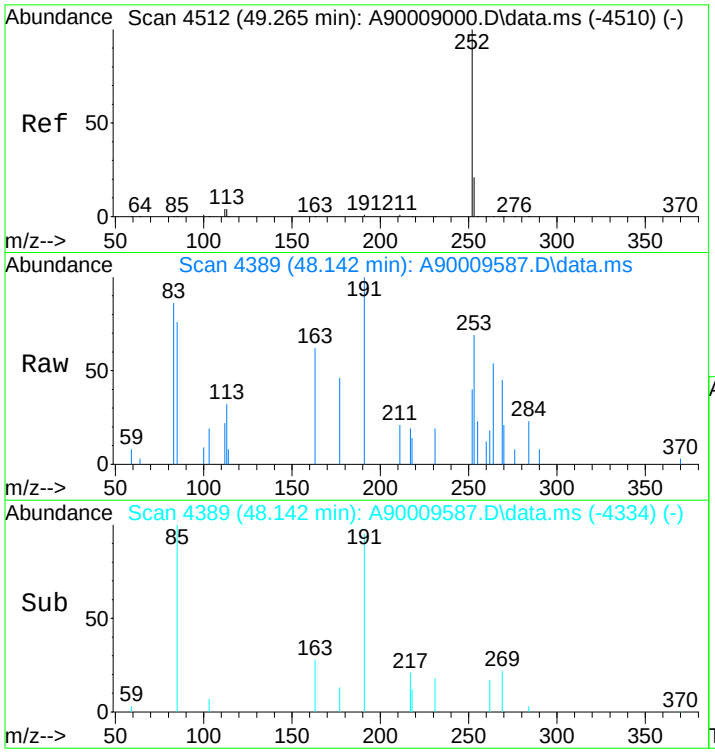




#107
C30 Tricyclic Terpane-22S
Concen: 10.01 ng/mL m
RT: 47.905 min Scan# 4363
Delta R.T. -0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

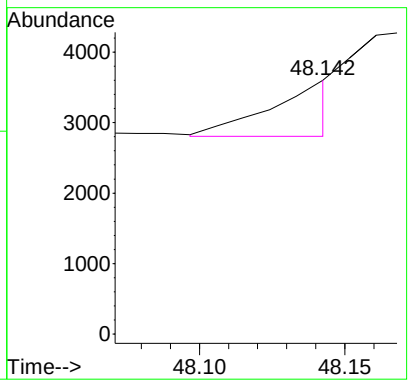
Tgt Ion:191 Resp: 1068

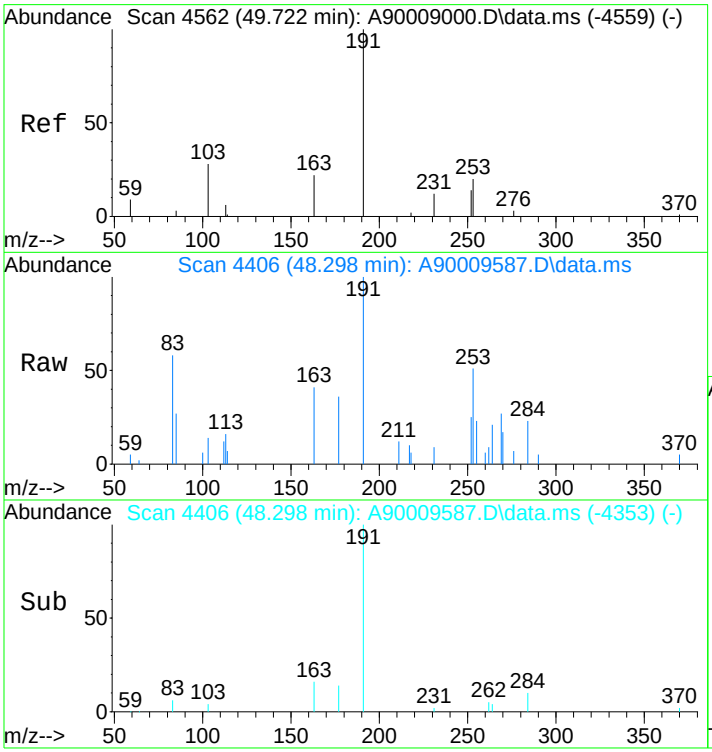




#108
C30 Tricyclic Terpane-22R
Concen: 11.06 ng/mL m
RT: 48.142 min Scan# 4389
Delta R.T. 0.000 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

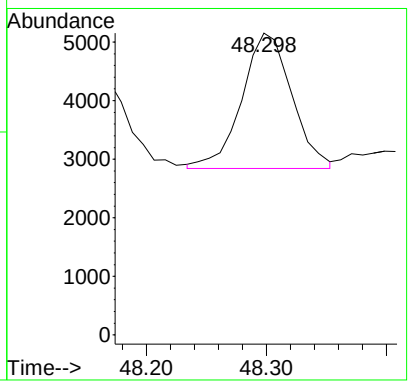
Tgt Ion:191 Resp: 1180

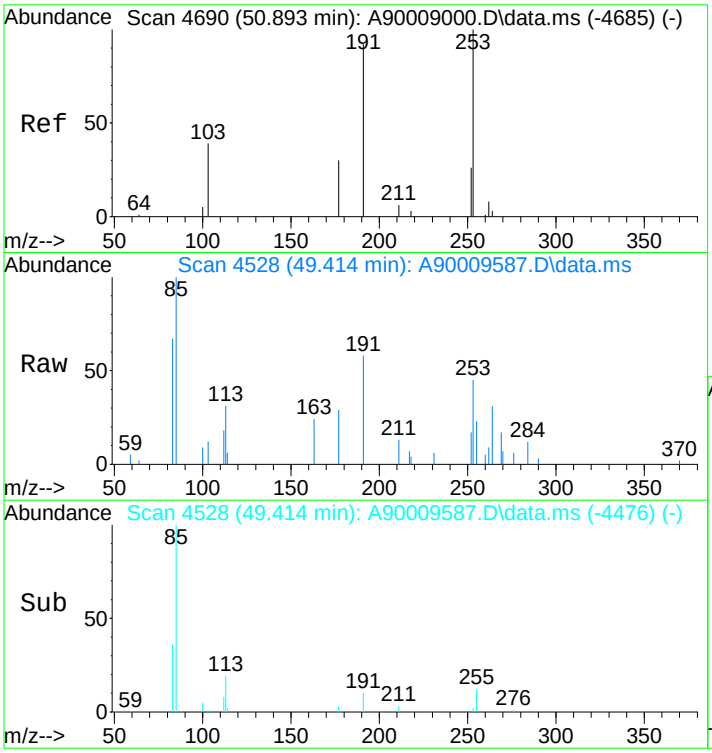




#109
17a(H)-22,29,30-Trisnorhopane-TM (T12)
Concen: 62.86 ng/ml m
RT: 48.298 min Scan# 4406
Delta R.T. -0.018 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

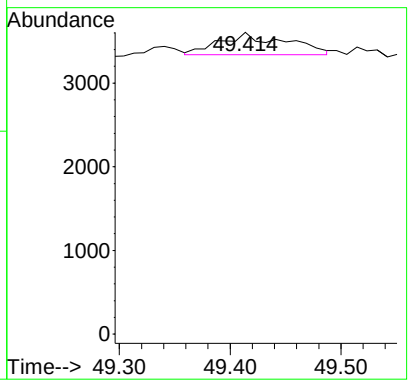
Tgt Ion:191 Resp: 6707

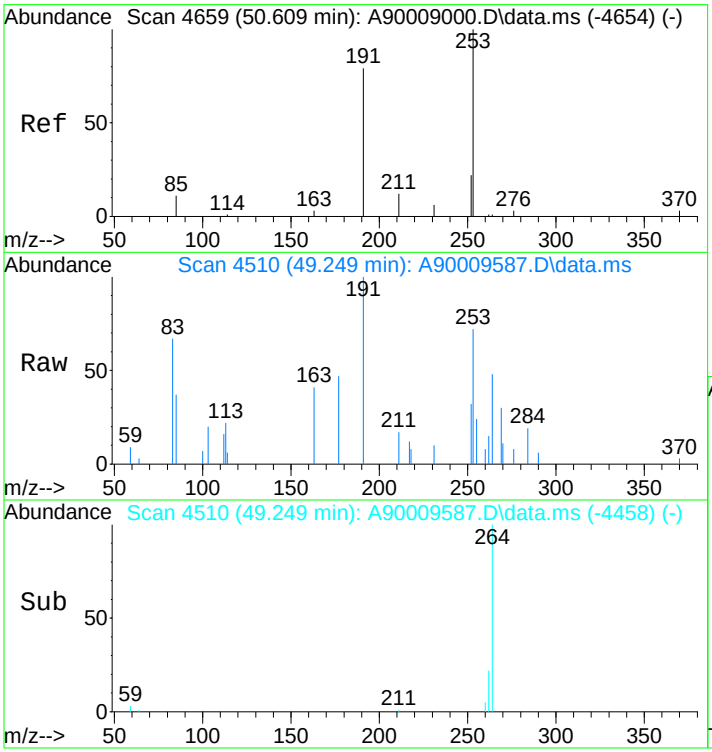




#110
17a/b,21b/a 28,30-Bisnorhopane (T14a)
Concen: 10.30 ng/ml m
RT: 49.414 min Scan# 4528
Delta R.T. -0.027 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

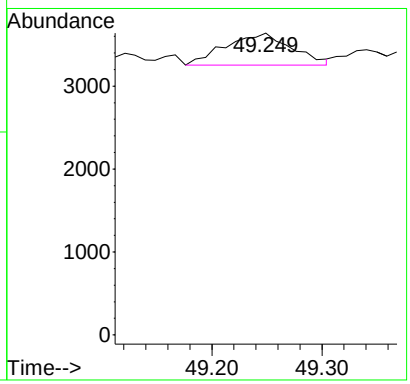
Tgt Ion:191 Resp: 1099

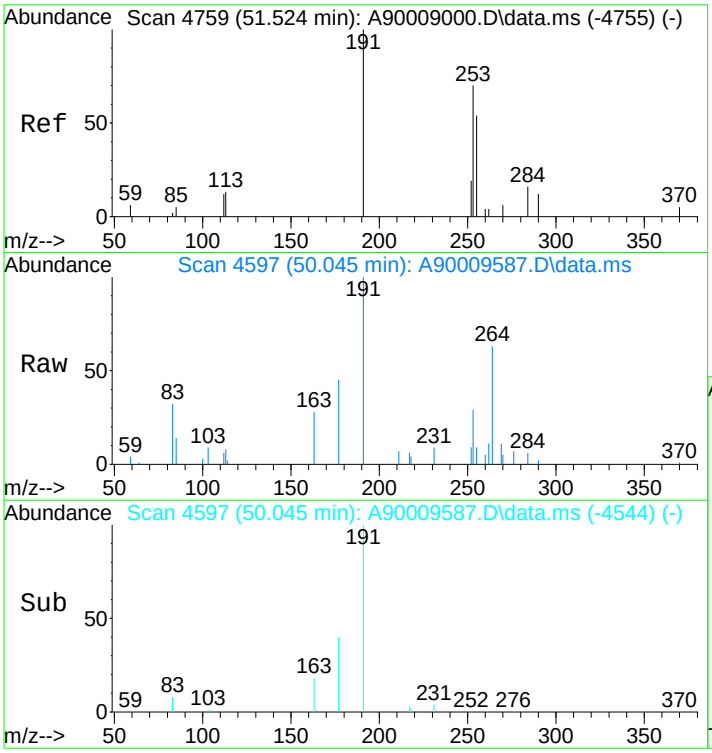




#111
17a(H),21b(H)-25-Norhopane (T14b)
Concen: 14.95 ng/ml
RT: 49.249 min Scan# 4510
Delta R.T. -0.027 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

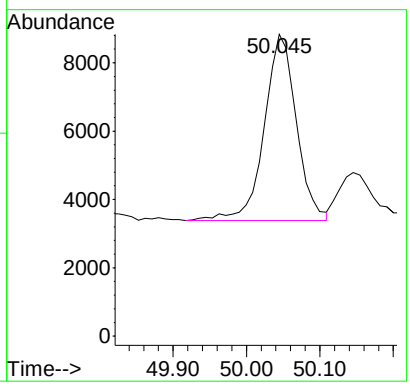
Tgt Ion:191 Resp: 1595

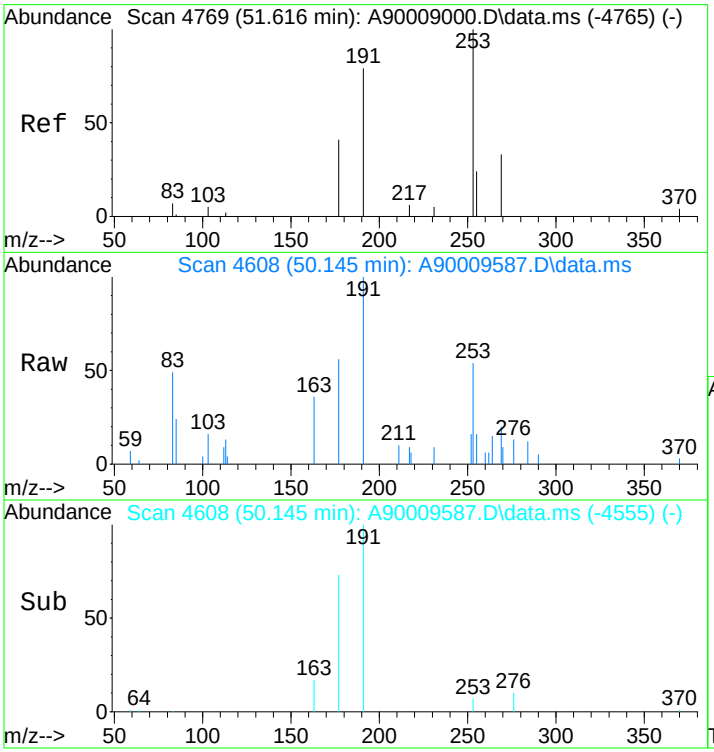




#112
30-Norhopane (T15)
Concen: 155.47 ng/ml
RT: 50.045 min Scan# 4597
Delta R.T. -0.018 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

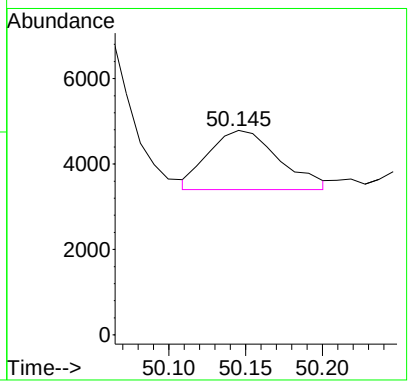
Tgt Ion:191 Resp: 16589

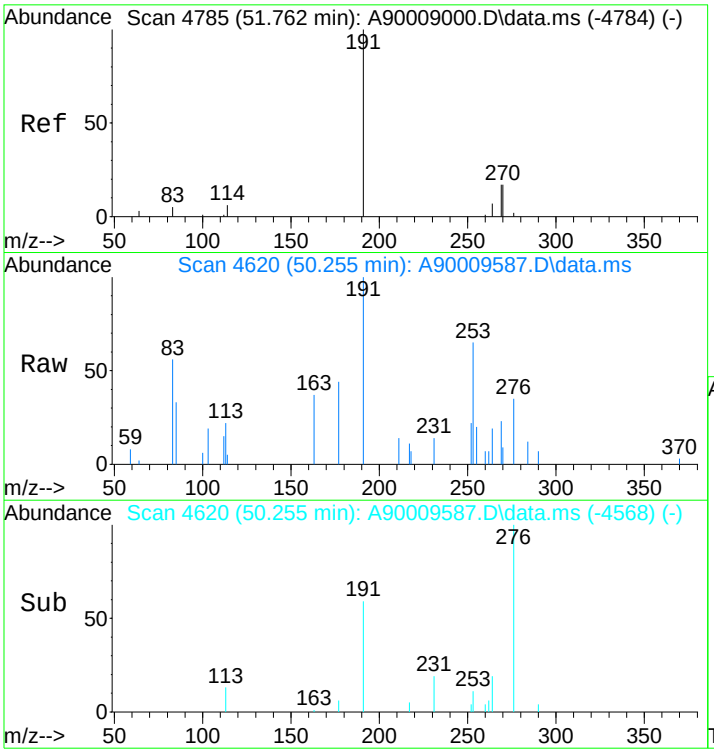




#113
18a(H)-30-Norneohopane-C29Ts (T16)
Concen: 41.49 ng/ml m
RT: 50.145 min Scan# 4608
Delta R.T. -0.018 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

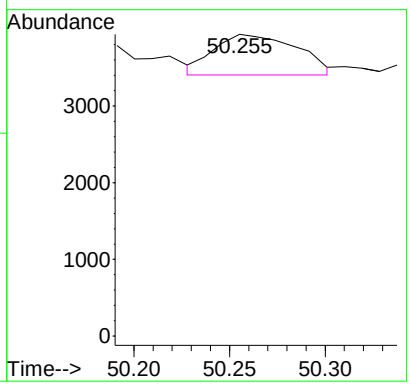
Tgt Ion:191 Resp: 4427

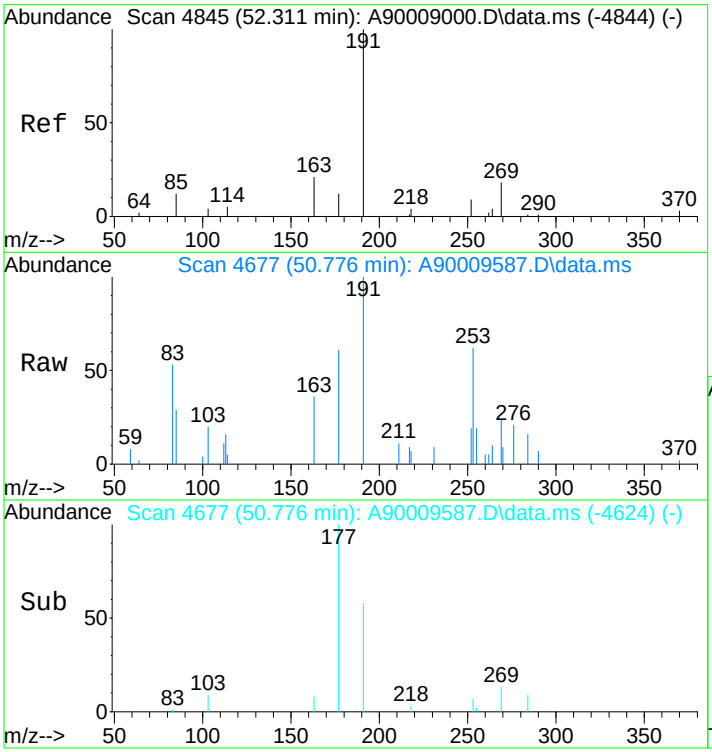




#114
17a(H)-Diahopane (X)
Concen: 15.04 ng/ml m
RT: 50.255 min Scan# 4620
Delta R.T. -0.027 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

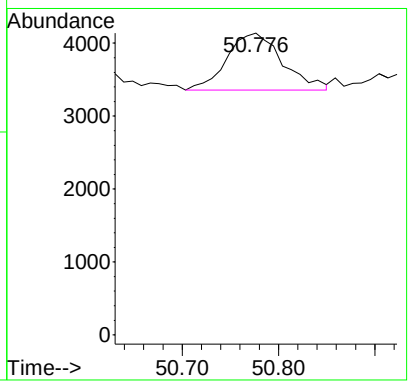
Tgt Ion:191 Resp: 1605

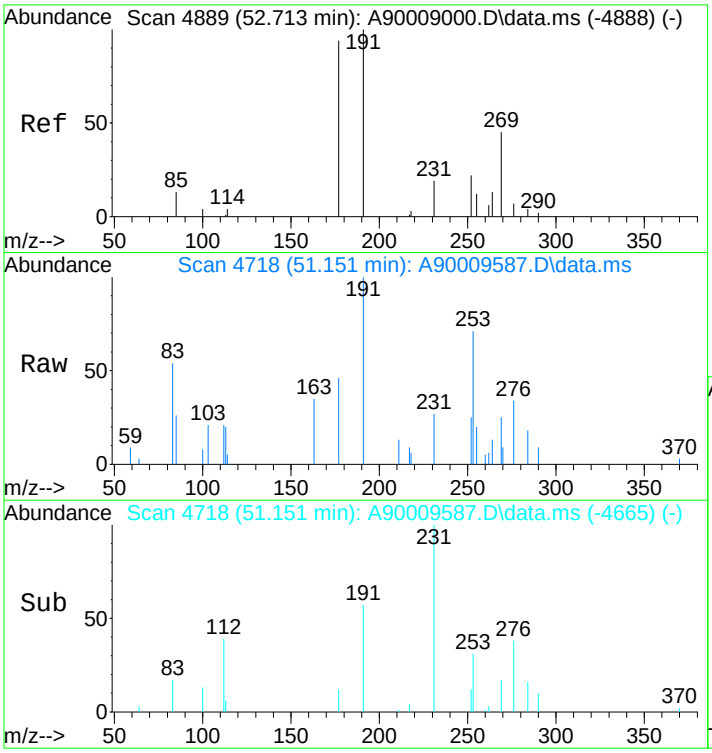




#115
30-Normoretane (T17)
Concen: 29.34 ng/ml
RT: 50.776 min Scan# 4677
Delta R.T. -0.018 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

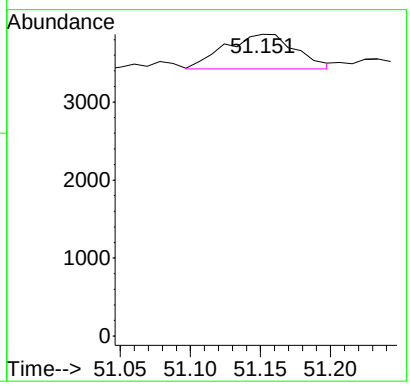
Tgt Ion:191 Resp: 3131

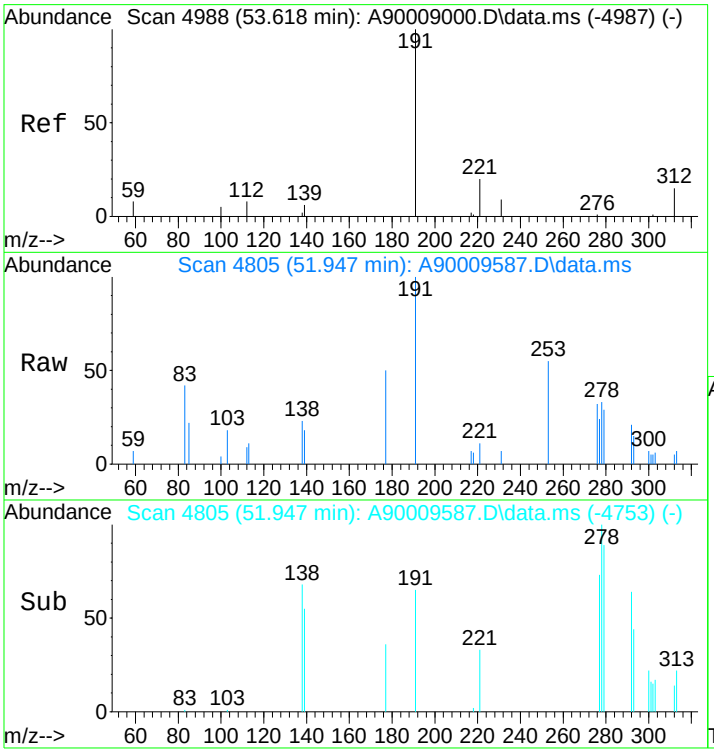




#116
18a(H)&18b(H)-Oleananes (T18)
Concen: 14.71 ng/ml m
RT: 51.151 min Scan# 4718
Delta R.T. -0.018 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

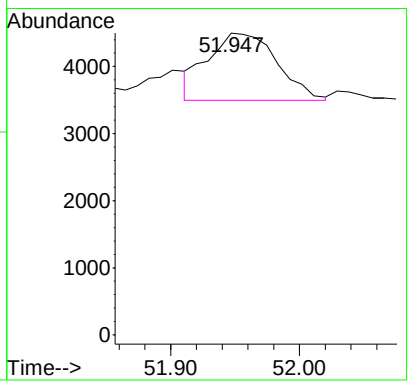
Tgt Ion:191 Resp: 1570

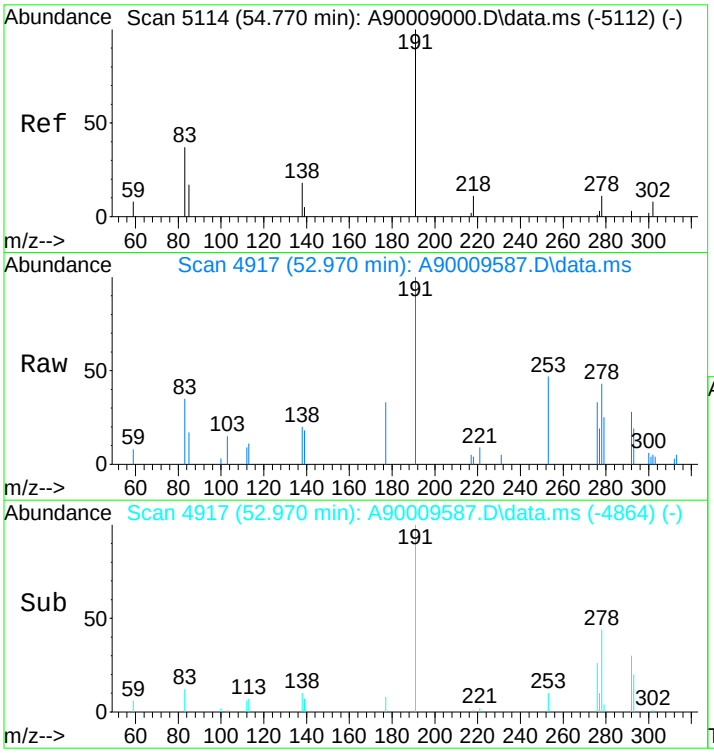




#117
Moretane (T20)
Concen: 35.01 ng/ml m
RT: 51.947 min Scan# 4805
Delta R.T. -0.027 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

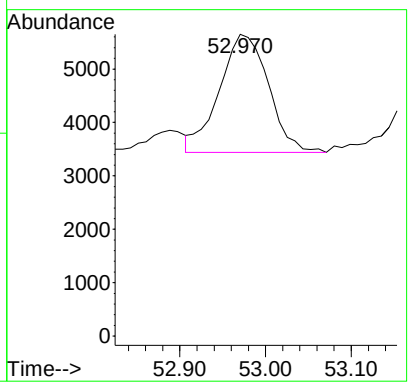
Tgt Ion:191 Resp: 3736

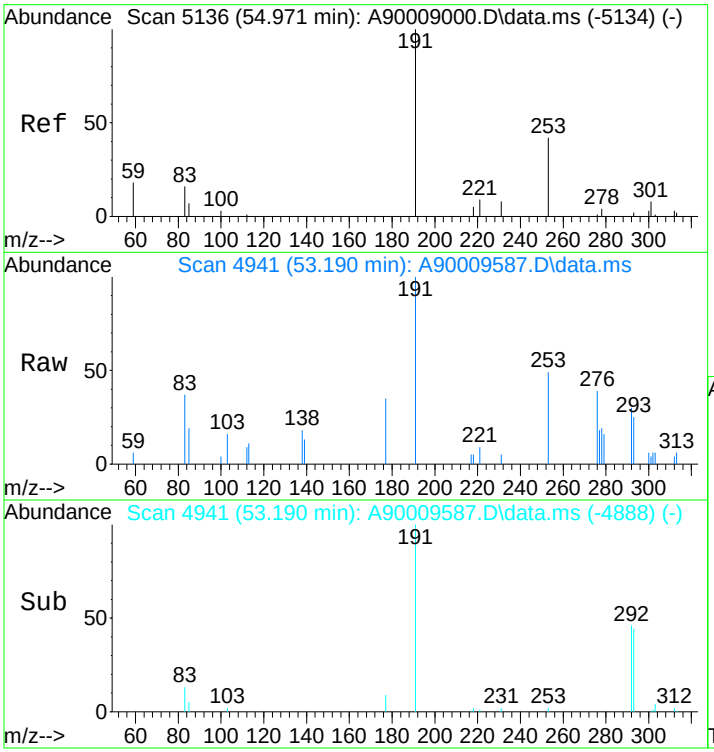




#118
30-Homohopane-22S (T21)
Concen: 82.12 ng/ml
RT: 52.970 min Scan# 4917
Delta R.T. -0.018 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

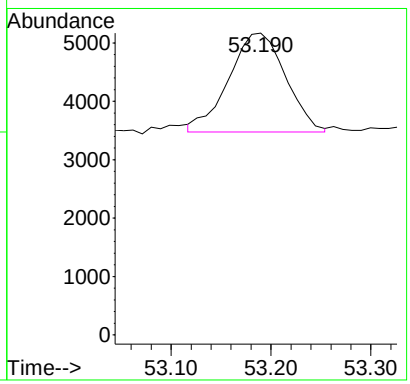
Tgt Ion:191 Resp: 8762

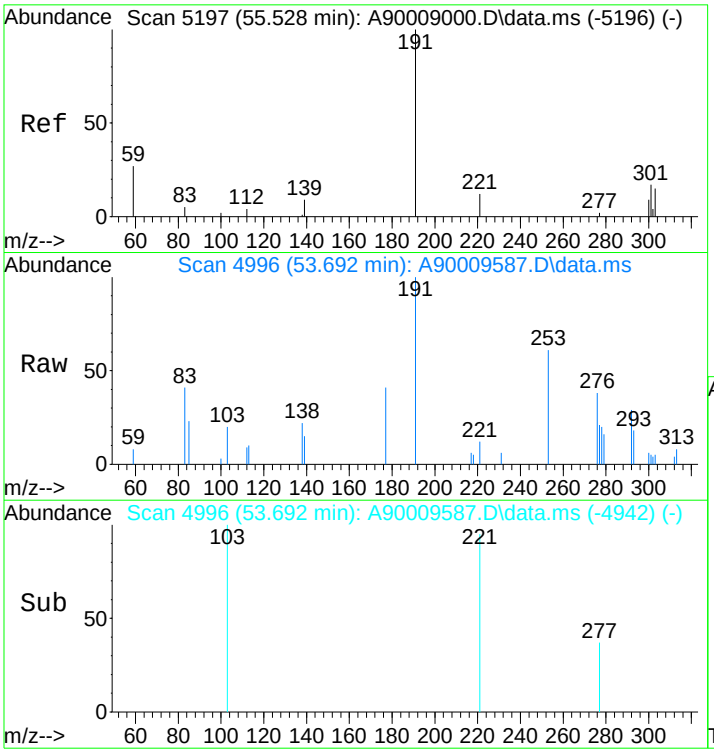




#119
30-Homohopane-22R (T22)
Concen: 62.82 ng/ml m
RT: 53.190 min Scan# 4941
Delta R.T. -0.018 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

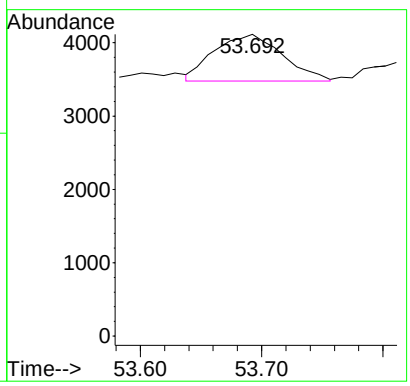
Tgt Ion:191 Resp: 6703

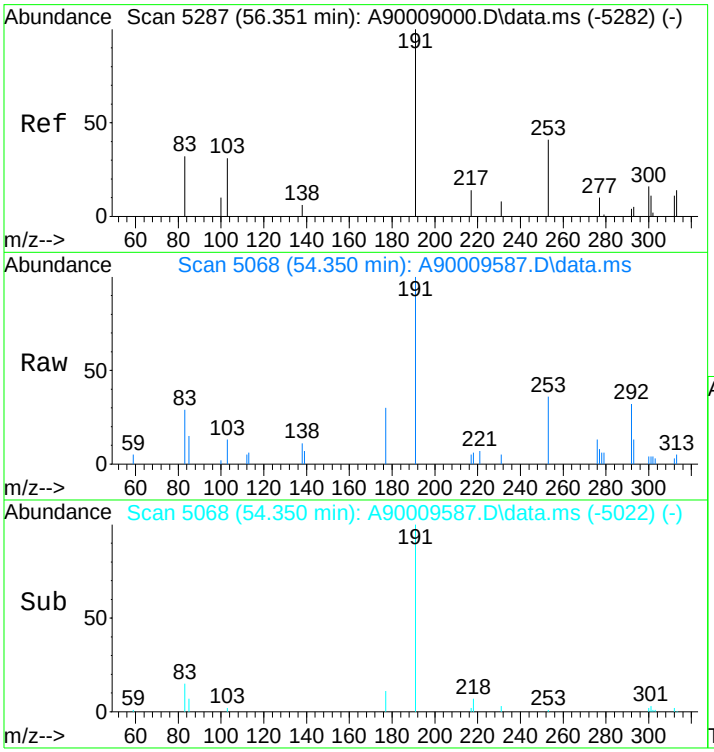




#120
Gammacerane/C32-diahopane
Concen: 23.34 ng/mL m
RT: 53.692 min Scan# 4996
Delta R.T. -0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

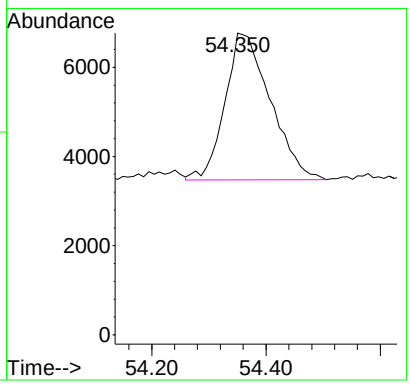
Tgt Ion:191 Resp: 2490

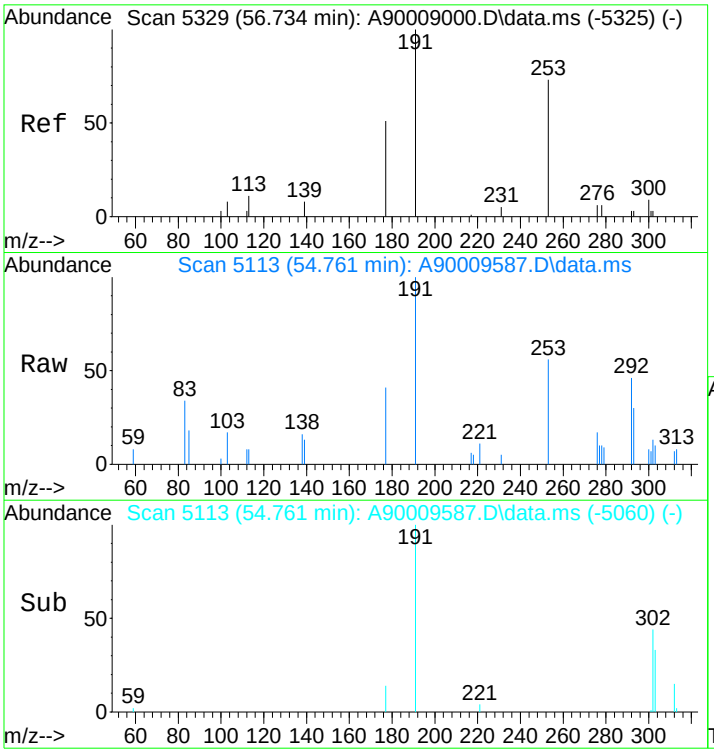




#121
30,31-Bishomohopane-22S (T26)
Concen: 169.52 ng/ml
RT: 54.350 min Scan# 5068
Delta R.T. -0.082 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

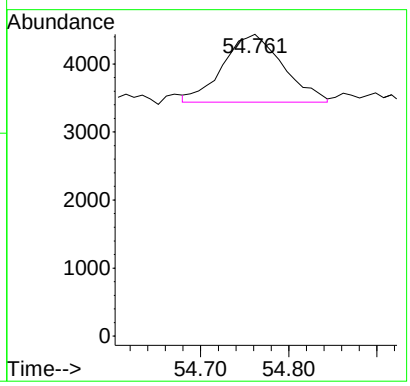
Tgt Ion:191 Resp: 18088

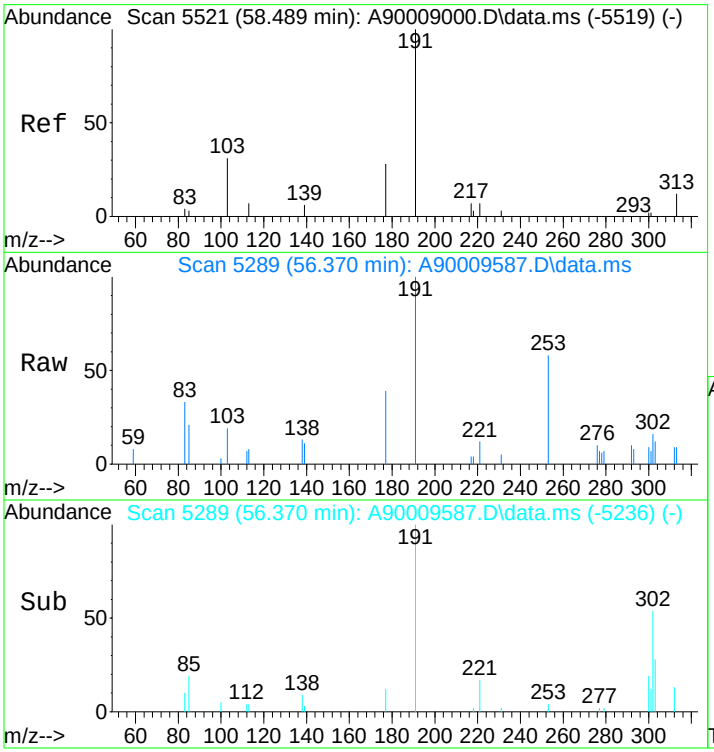




#122
30,31-Bishomohopane-22R (T27)
Concen: 44.06 ng/ml m
RT: 54.761 min Scan# 5113
Delta R.T. -0.018 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

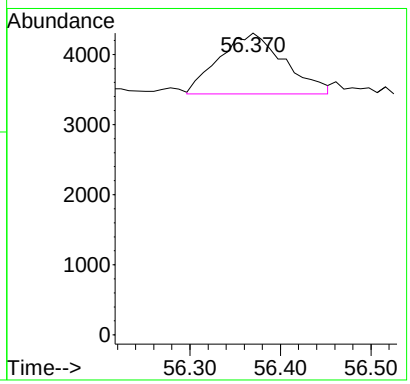
Tgt Ion:191 Resp: 4701

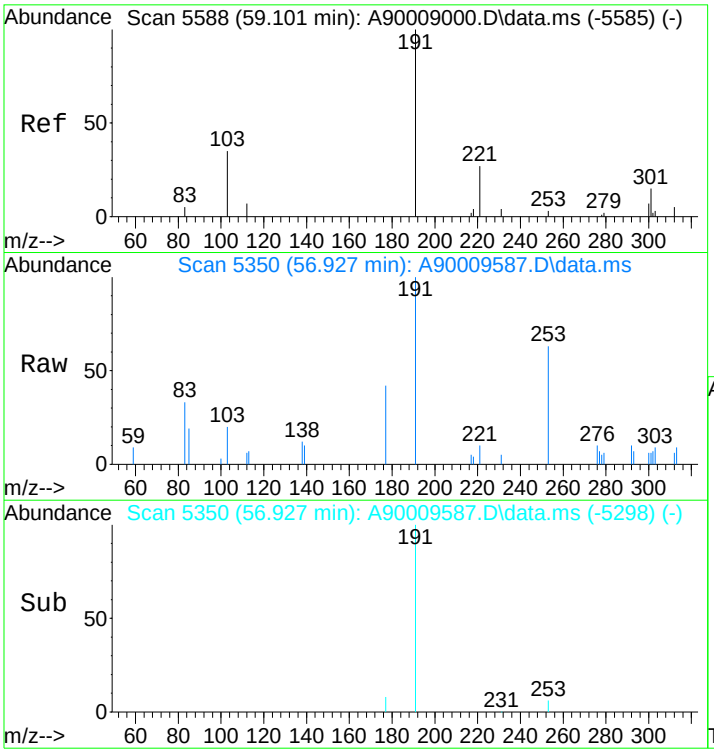




#123
30,31-Trishomohopane-22S (T30)
Concen: 40.63 ng/ml m
RT: 56.370 min Scan# 5289
Delta R.T. -0.018 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

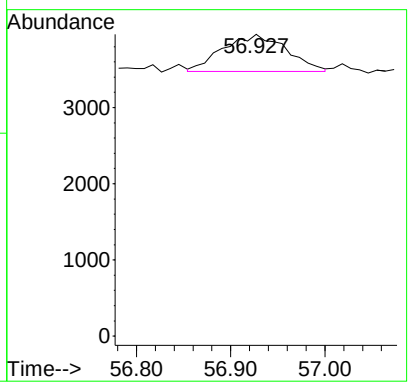
Tgt Ion:191 Resp: 4335

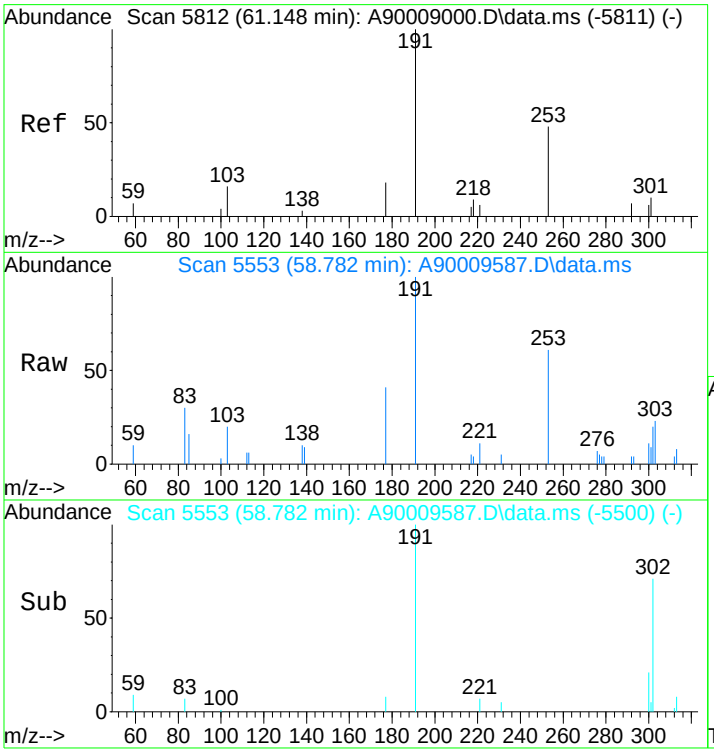




#124
30,31-Trishomohopane-22R (T31)
Concen: 21.48 ng/ml m
RT: 56.927 min Scan# 5350
Delta R.T. -0.027 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

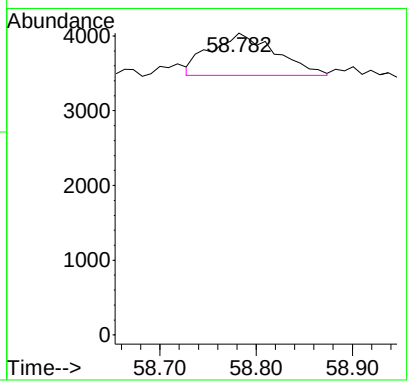
Tgt Ion:191 Resp: 2292

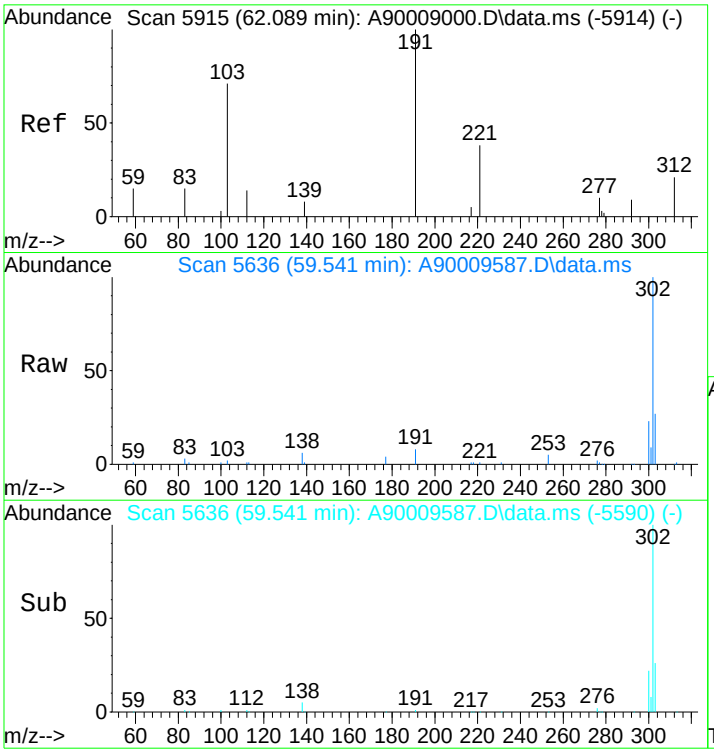




#125
Tetrakishomohopane-22S (T32)
Concen: 24.99 ng/ml m
RT: 58.782 min Scan# 5553
Delta R.T. -0.018 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

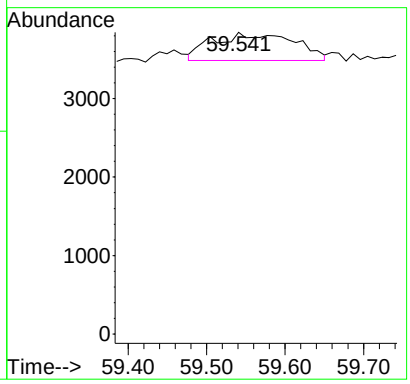
Tgt Ion:191 Resp: 2666

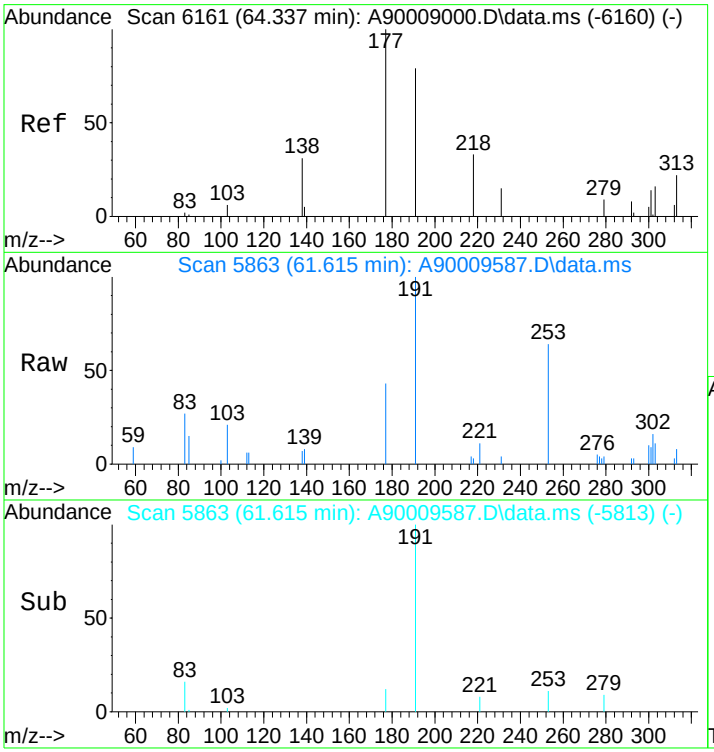




#126
Tetrakishomohopane-22R (T33)
Concen: 23.62 ng/ml m
RT: 59.541 min Scan# 5636
Delta R.T. -0.082 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

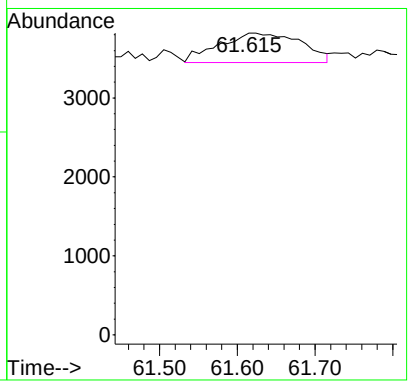
Tgt Ion:191 Resp: 2520

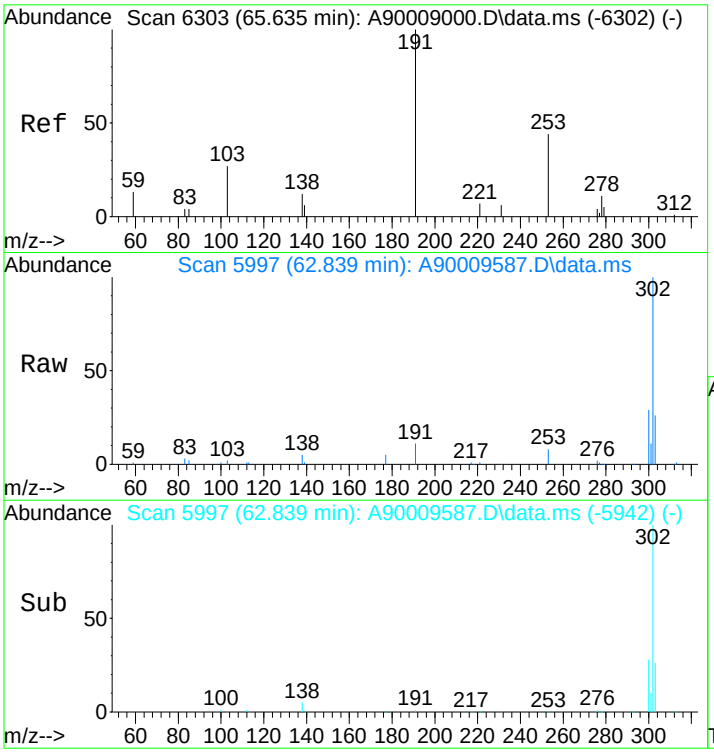




#127
Pentakishomohopane-22S (T34)
Concen: 26.07 ng/ml m
RT: 61.615 min Scan# 5863
Delta R.T. -0.045 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

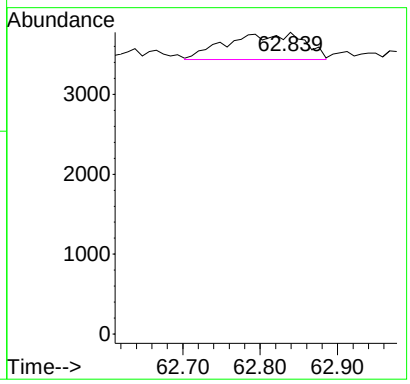
Tgt Ion:191 Resp: 2782

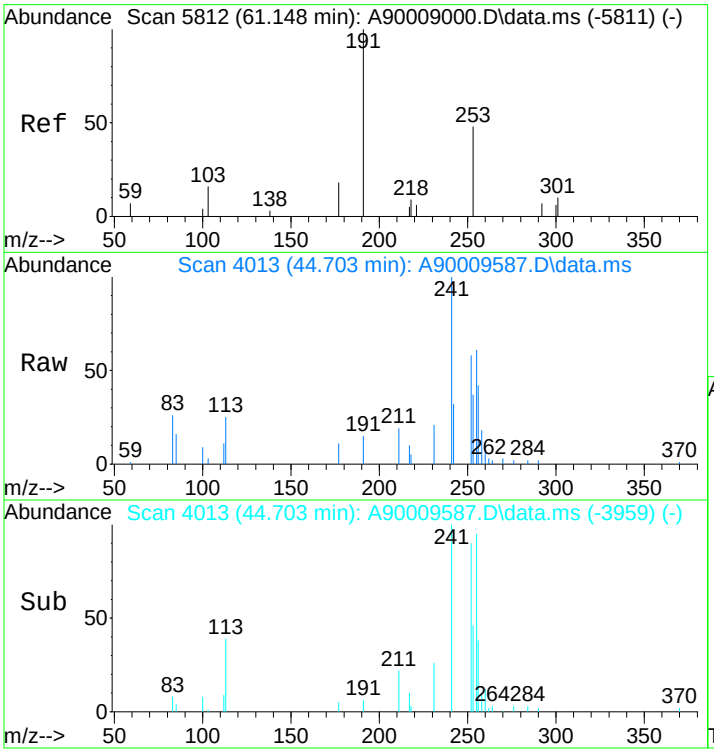




#128
Pentakishomohopane-22R (T35)
Concen: 21.26 ng/ml m
RT: 62.839 min Scan# 5997
Delta R.T. 0.000 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

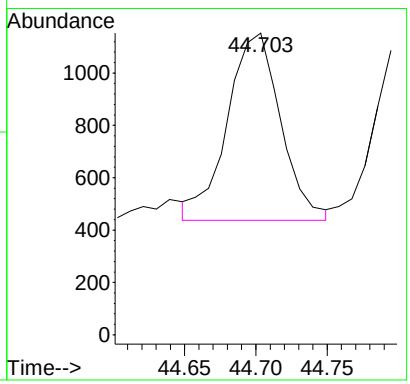
Tgt Ion:191 Resp: 2269

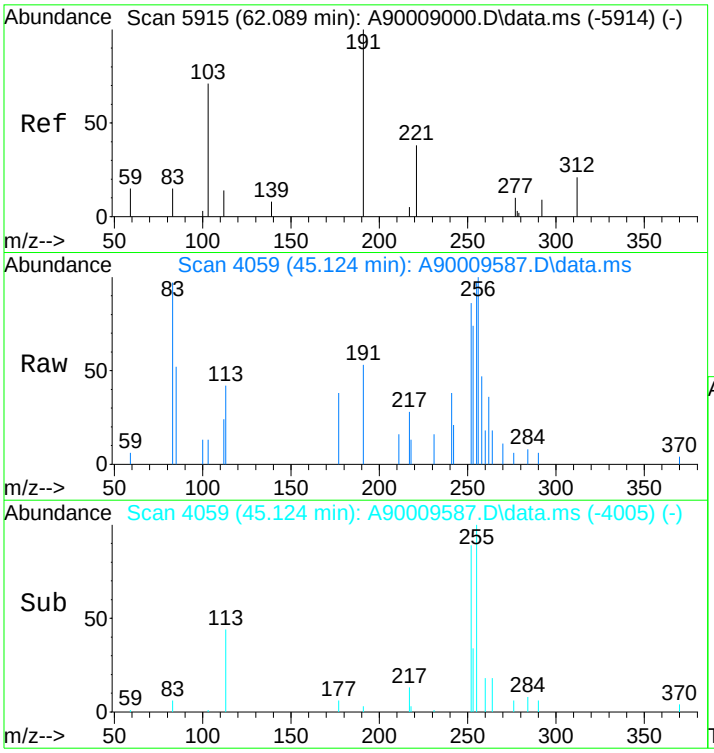




#130
13b(H),17a(H)-20S-Diacholestane (S4)
Concen: 36.37 ng/ml m
RT: 44.703 min Scan# 4013
Delta R.T. -0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

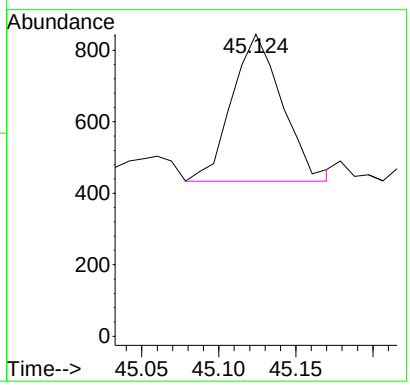
Tgt Ion:217 Resp: 1853

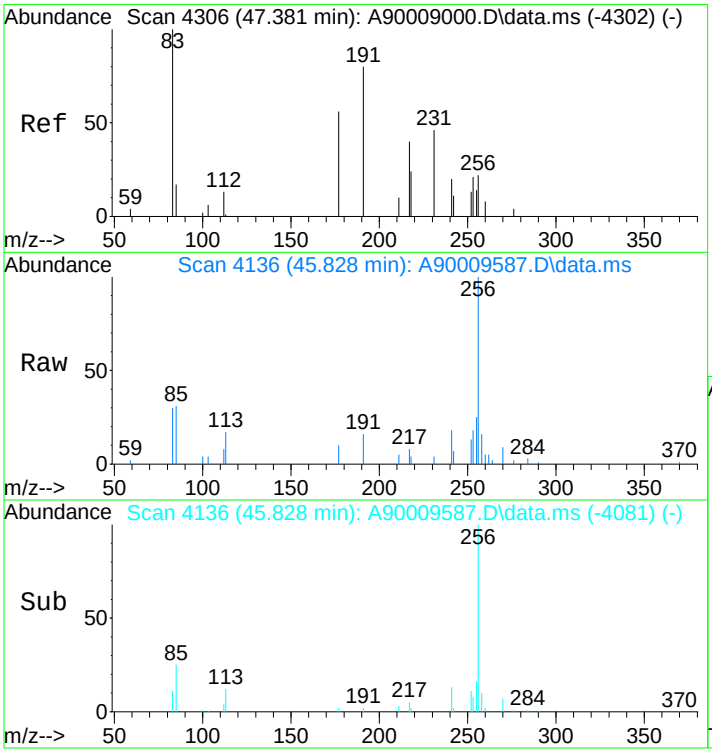




#131
13b(H),17a(H)-20R-Diacholestane (S5)
Concen: 18.29 ng/ml
RT: 45.124 min Scan# 4059
Delta R.T. -0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

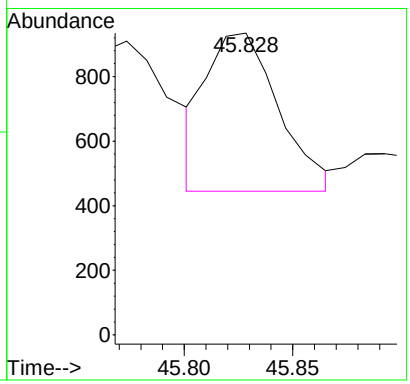
Tgt Ion:217 Resp: 932

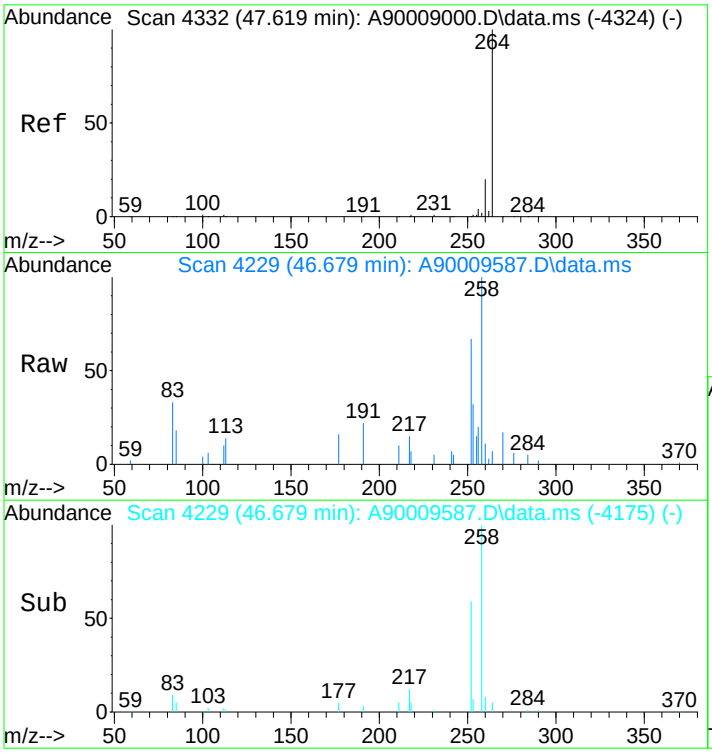




#132
13b,17a-20S-Methyldiacholestane (S8)
Concen: 22.18 ng/ml m
RT: 45.828 min Scan# 4136
Delta R.T. 0.000 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

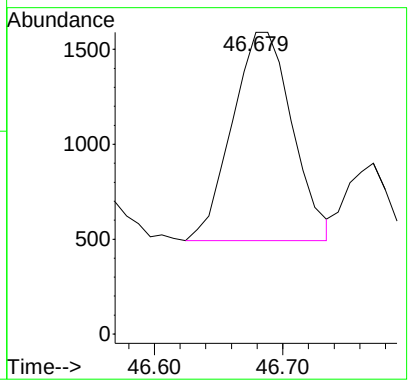
Tgt Ion:217 Resp: 1130

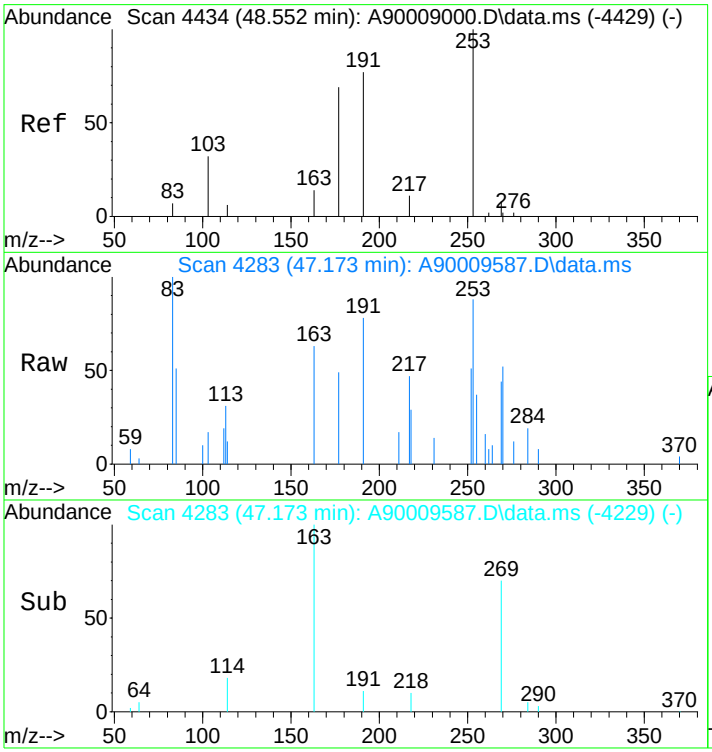




#133
14a,17a-20S-Chol/13b,17a-20S-Ethyldiach
Concen: 70.21 ng/ml
RT: 46.679 min Scan# 4229
Delta R.T. -0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

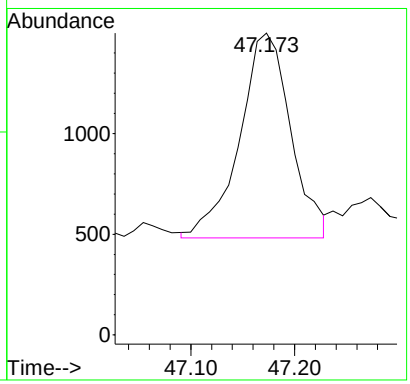
Tgt Ion:217 Resp: 3577

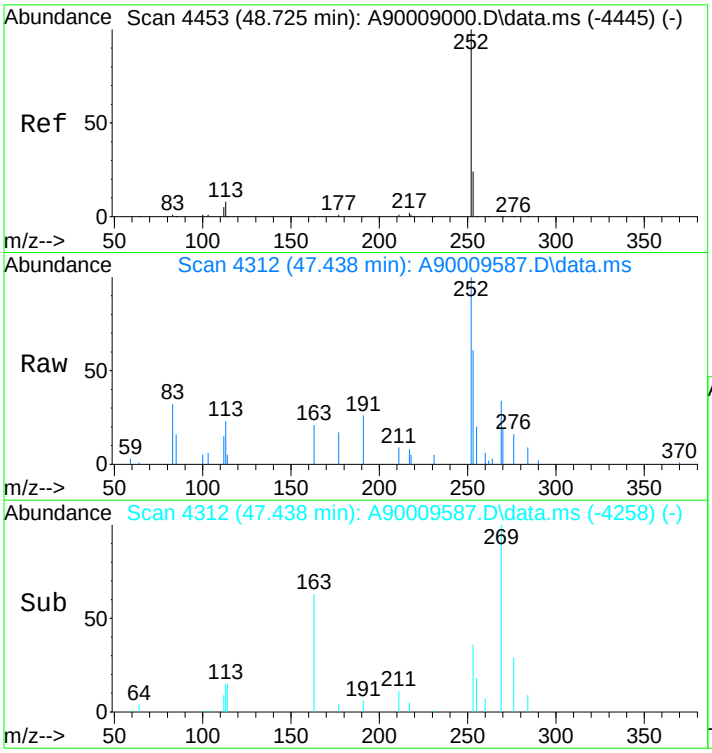




#134
14a,17a-20R-Chol/13b,17a-20R-Ethyldiach
Concen: 68.58 ng/ml m
RT: 47.173 min Scan# 4283
Delta R.T. -0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

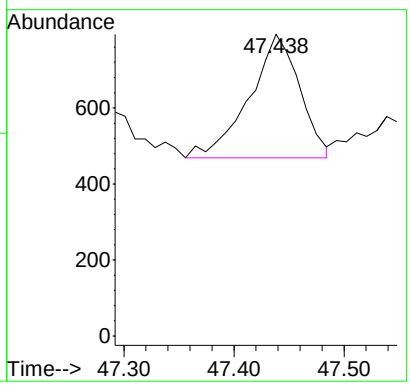
Tgt Ion:217 Resp: 3494

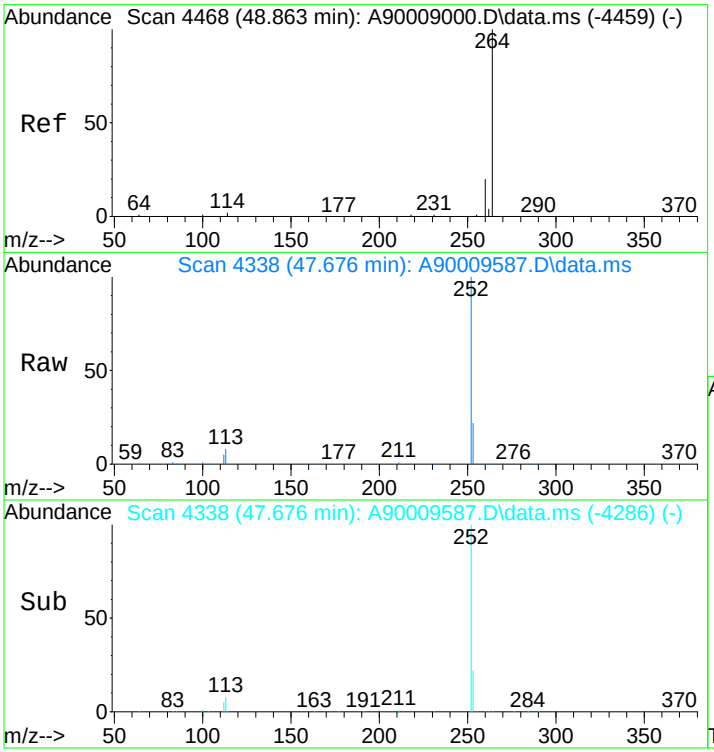




#135
Unknown Sterane (S18)
Concen: 20.22 ng/ml
RT: 47.438 min Scan# 4312
Delta R.T. -0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

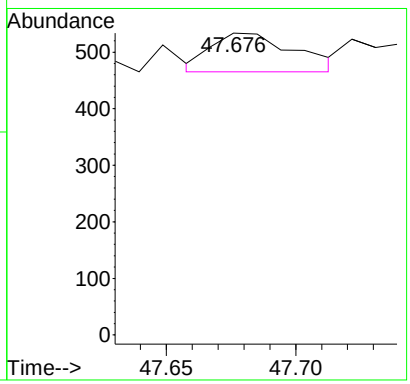
Tgt Ion:217 Resp: 1030

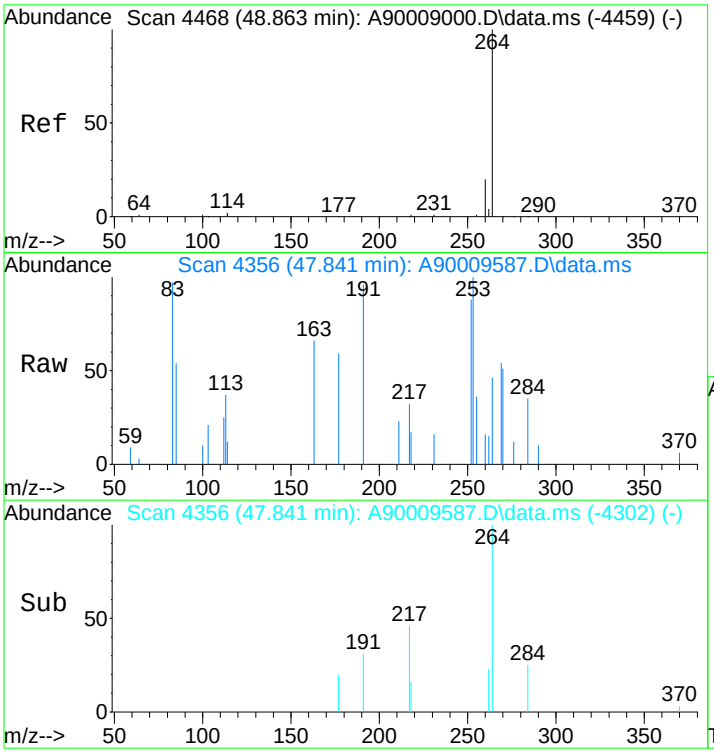




#136
13a,17b-20S-Ethyldiacholestane (S19)
Concen: 3.04 ng/ml m
RT: 47.676 min Scan# 4338
Delta R.T. -0.027 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

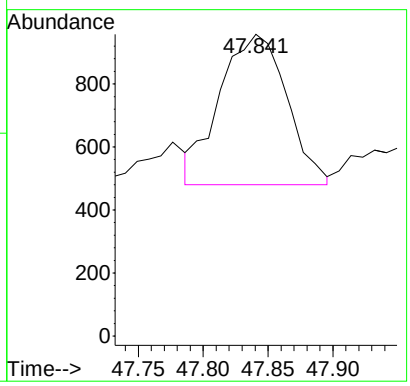
Tgt Ion:217 Resp: 155

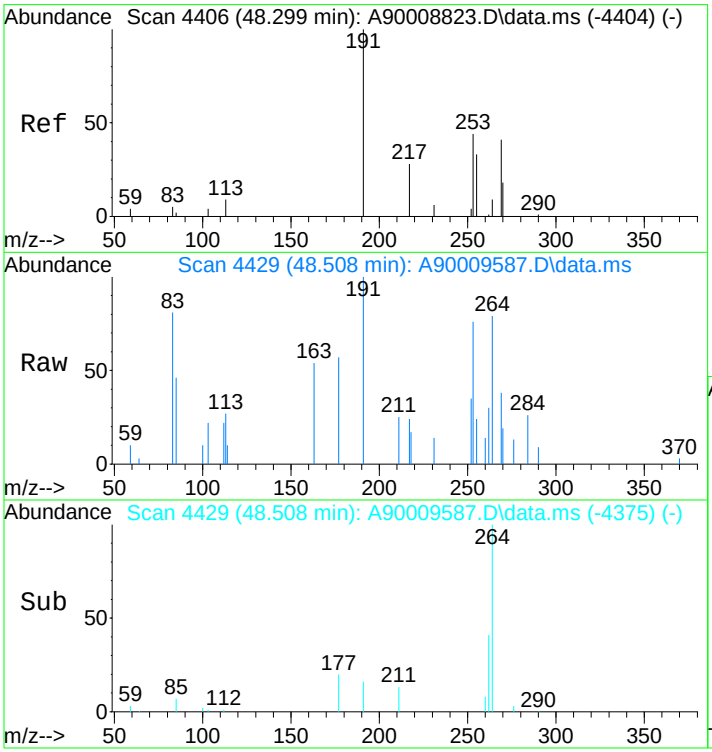




#137
14a,17a-20S-Methylcholestane (S20)
Concen: 33.78 ng/ml m
RT: 47.841 min Scan# 4356
Delta R.T. -0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

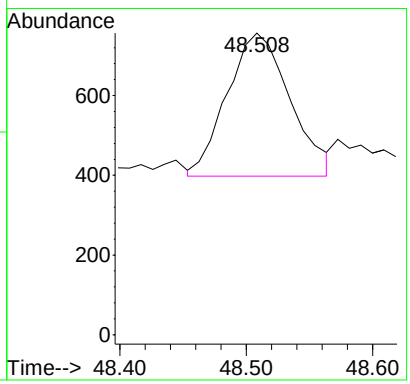
Tgt Ion:217 Resp: 1721

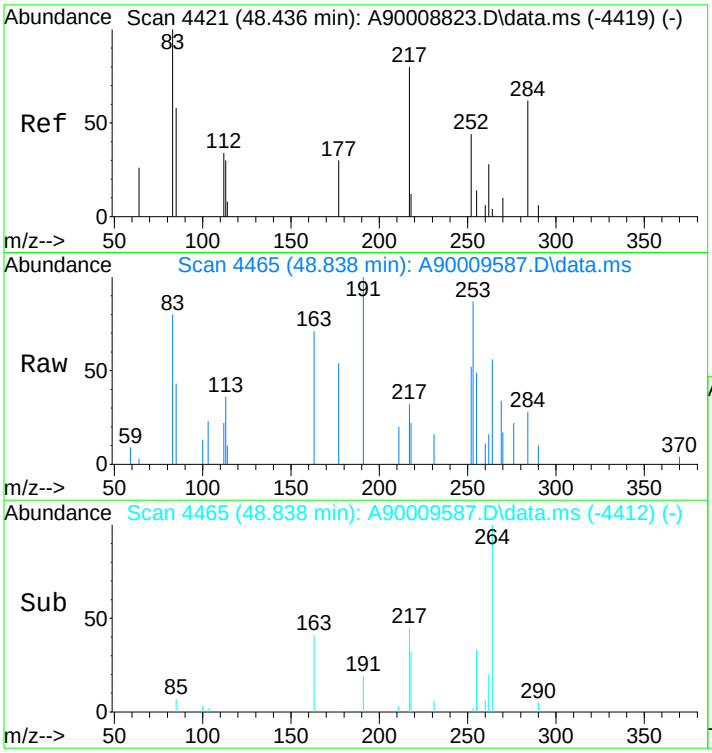




#138
14a,17a-20R-Methylcholestane (S24)
Concen: 24.34 ng/ml m
RT: 48.508 min Scan# 4429
Delta R.T. -0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

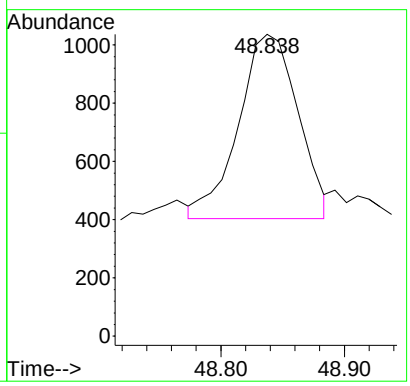
Tgt Ion:217 Resp: 1240

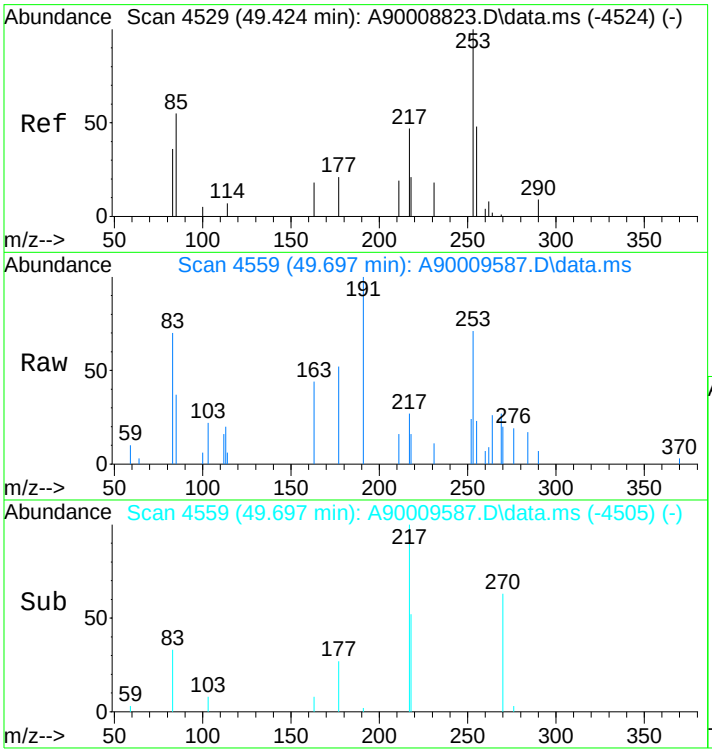




#139
14a(H),17a(H)-20S-Ethylcholestane (S25)
Concen: 41.51 ng/ml m
RT: 48.838 min Scan# 4465
Delta R.T. -0.018 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

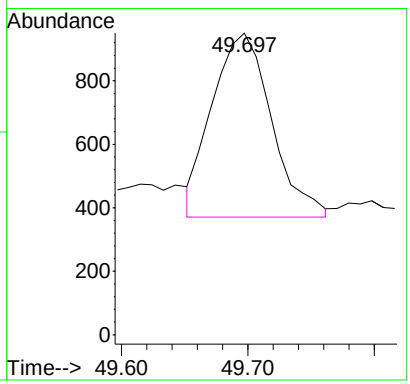
Tgt Ion:217 Resp: 2115

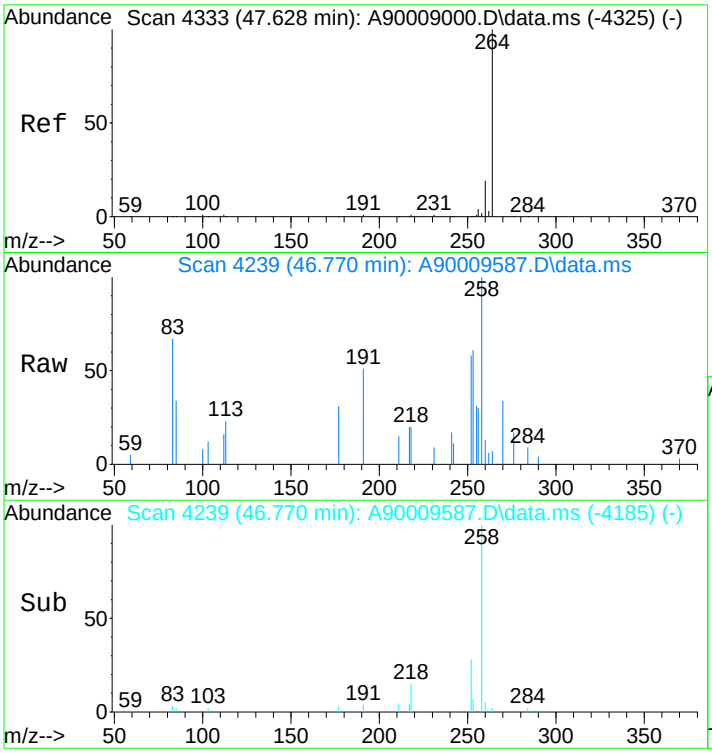




#140
14a(H),17a(H)-20R-Ethylcholestane (S28)
Concen: 37.10 ng/ml m
RT: 49.697 min Scan# 4559
Delta R.T. -0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

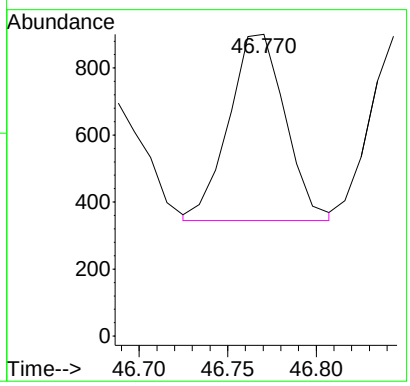
Tgt Ion:217 Resp: 1890

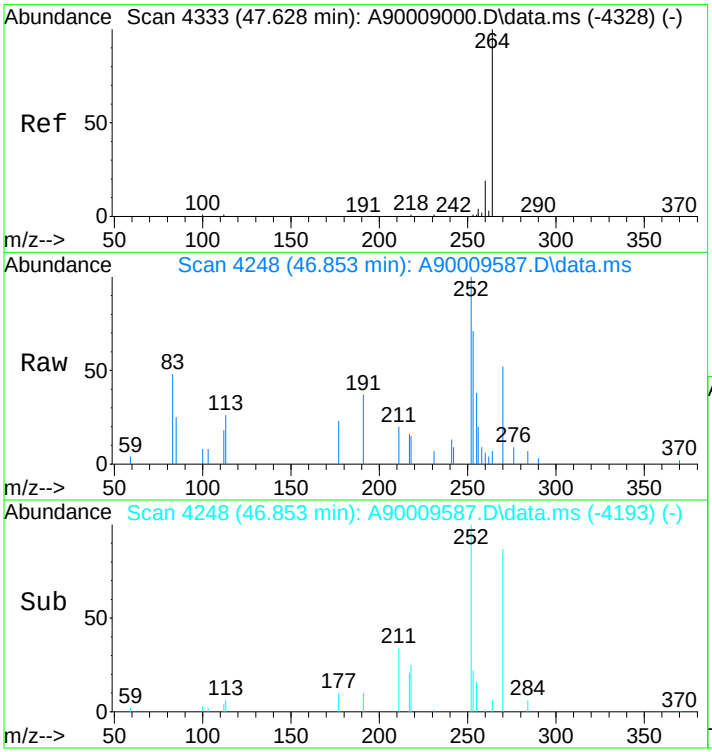




#141
14b(H),17b(H)-20R-Cholestane (S14)
Concen: 24.18 ng/ml m
RT: 46.770 min Scan# 4239
Delta R.T. -0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

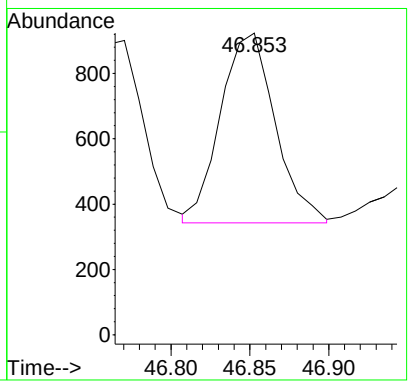
Tgt Ion:218 Resp: 1232

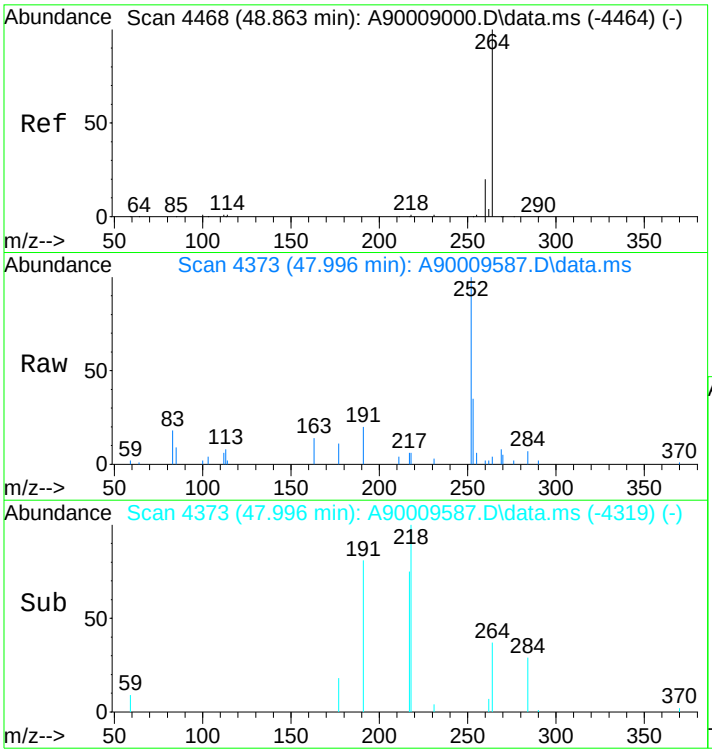




#142
14b(H),17b(H)-20S-Cholestane (S15)
Concen: 27.52 ng/ml m
RT: 46.853 min Scan# 4248
Delta R.T. 0.000 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

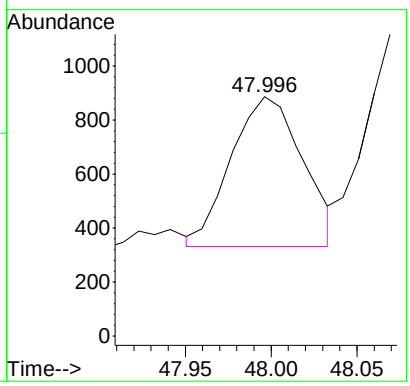
Tgt Ion:218 Resp: 1402

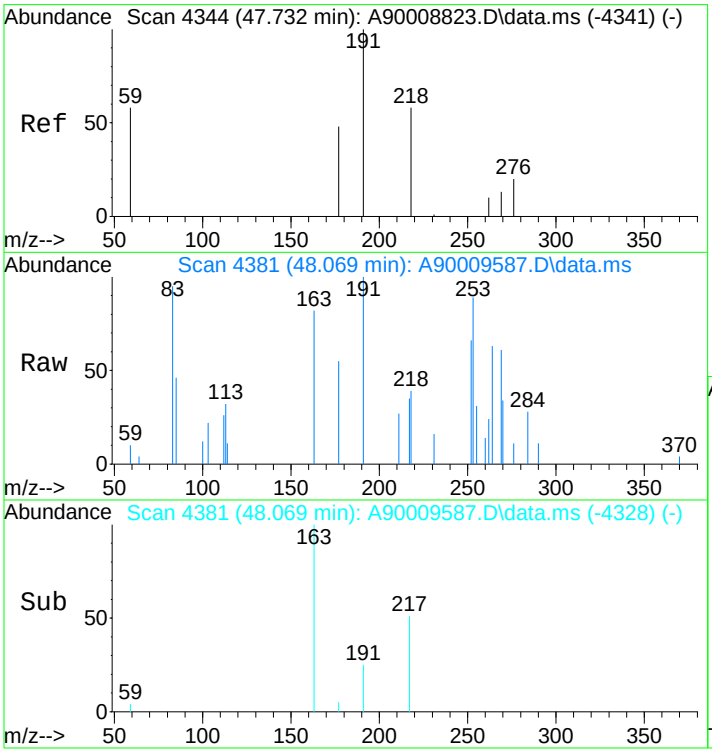




#143
14b,17b-20R-Methylcholestane (S22)
Concen: 31.60 ng/ml m
RT: 47.996 min Scan# 4373
Delta R.T. -0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

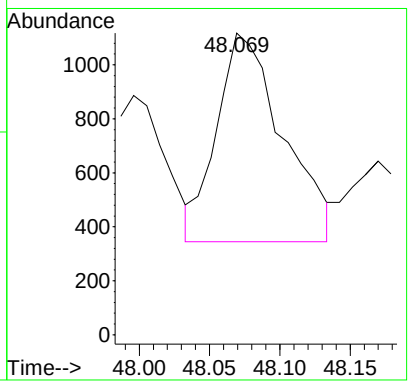
Tgt Ion:218 Resp: 1610

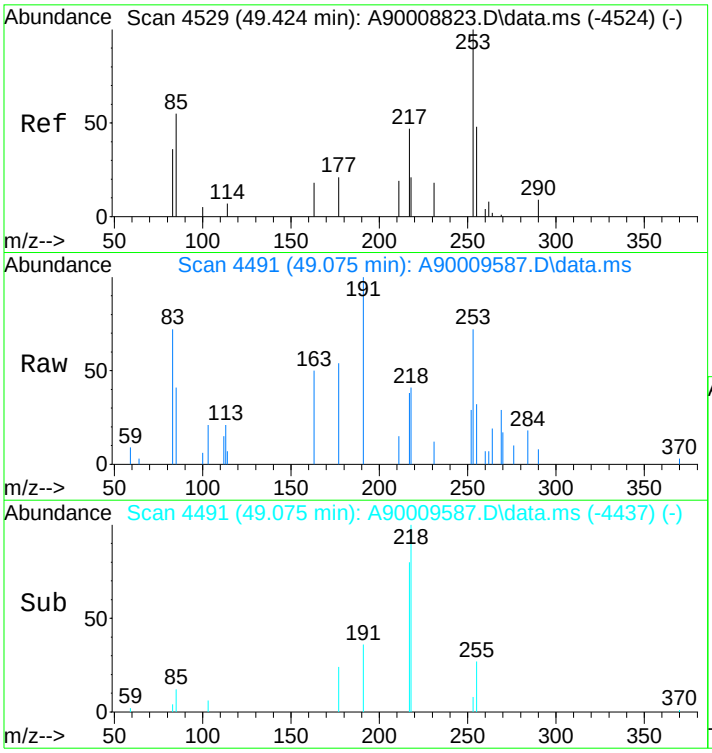




#144
14b,17b-20S-Methylcholestane (S23)
Concen: 49.66 ng/ml m
RT: 48.069 min Scan# 4381
Delta R.T. -0.018 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

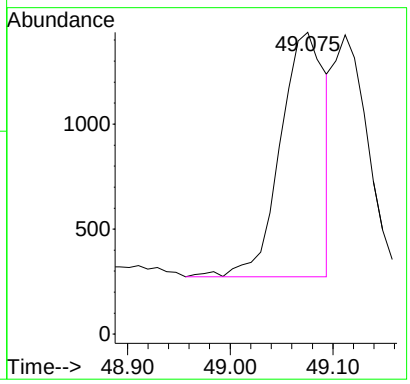
Tgt Ion:218 Resp: 2530

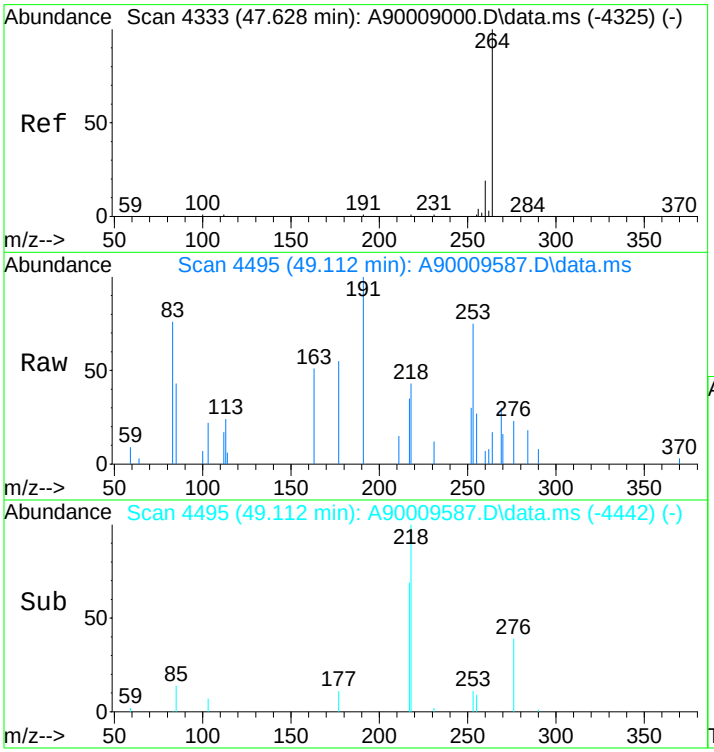




#145
14b(H),17b(H)-20R-Ethylcholestane (S26)
Concen: 69.42 ng/ml
RT: 49.075 min Scan# 4491
Delta R.T. -0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

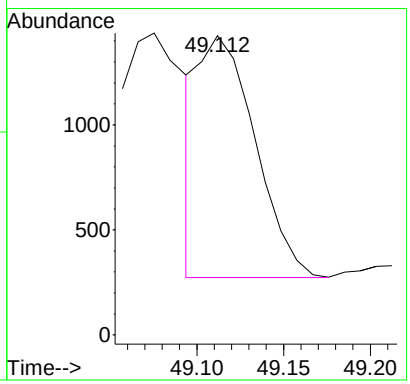
Tgt Ion:218 Resp: 3537

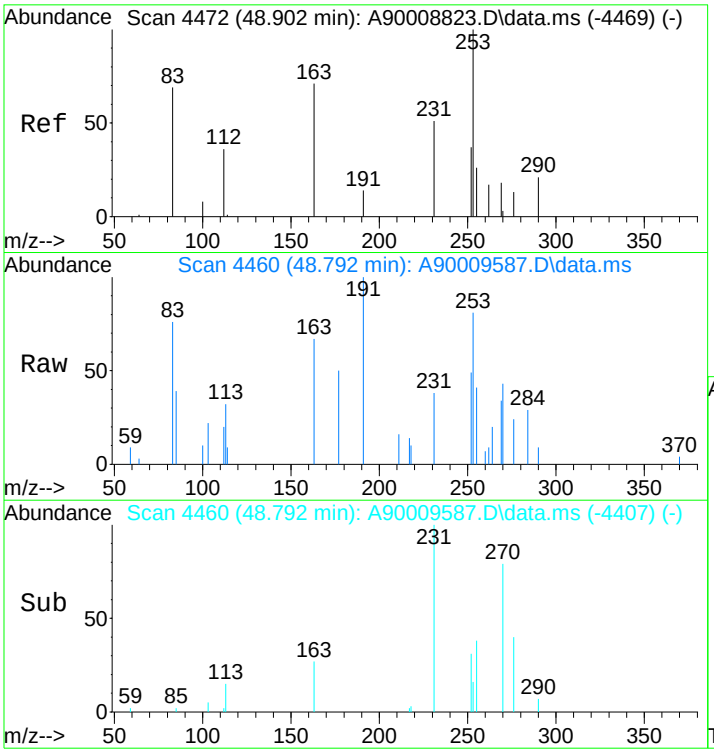




#146
14b(H),17b(H)-20S-Ethylcholestane (S27)
Concen: 51.50 ng/ml m
RT: 49.112 min Scan# 4495
Delta R.T. -0.018 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

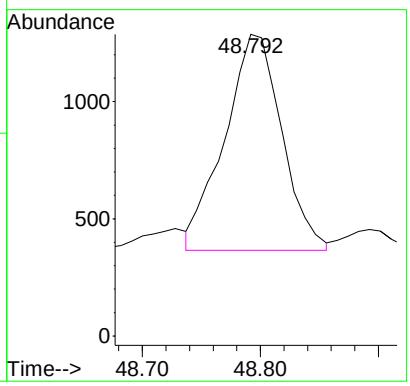
Tgt Ion:218 Resp: 2624

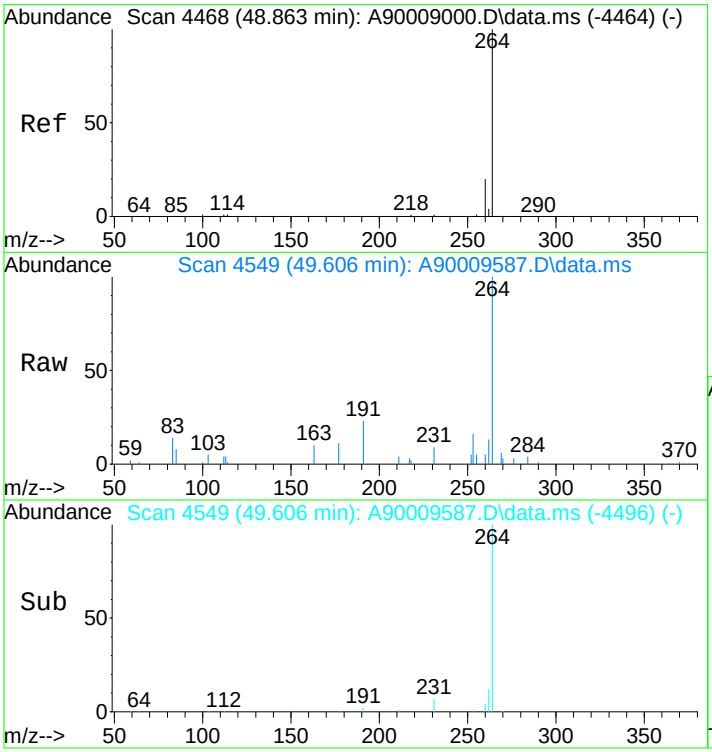




#147
C26,20R- +C27,20S- triaromatic steroid
Concen: 60.79 ng/mL m
RT: 48.792 min Scan# 4460
Delta R.T. -0.018 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

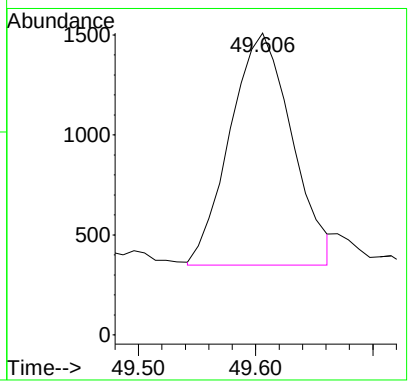
Tgt Ion:231 Resp: 3097

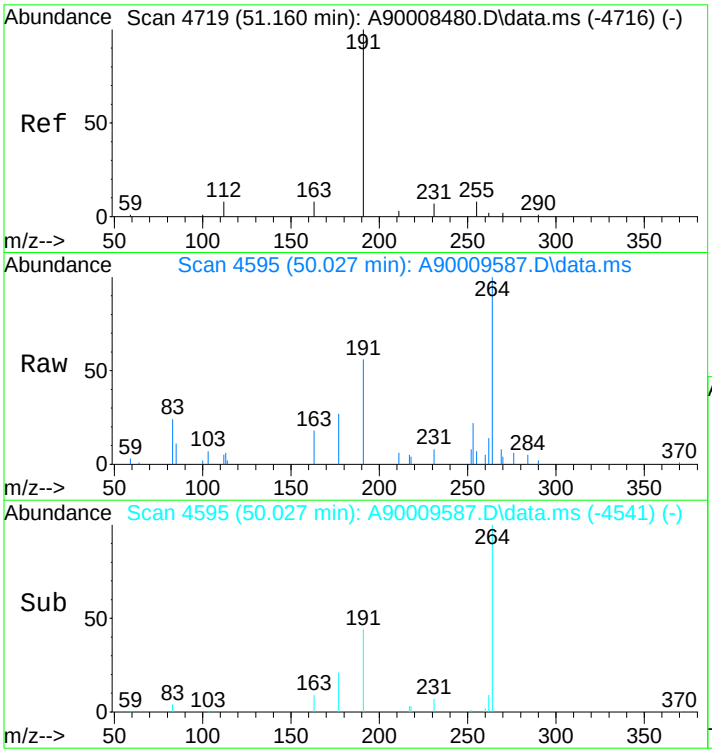




#148
C28,20S-triaromatic steroid
Concen: 83.36 ng/mL m
RT: 49.606 min Scan# 4549
Delta R.T. -0.018 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

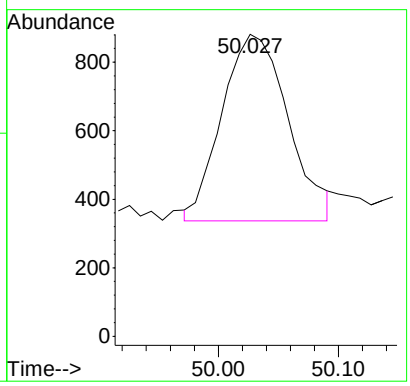
Tgt Ion:231 Resp: 4247

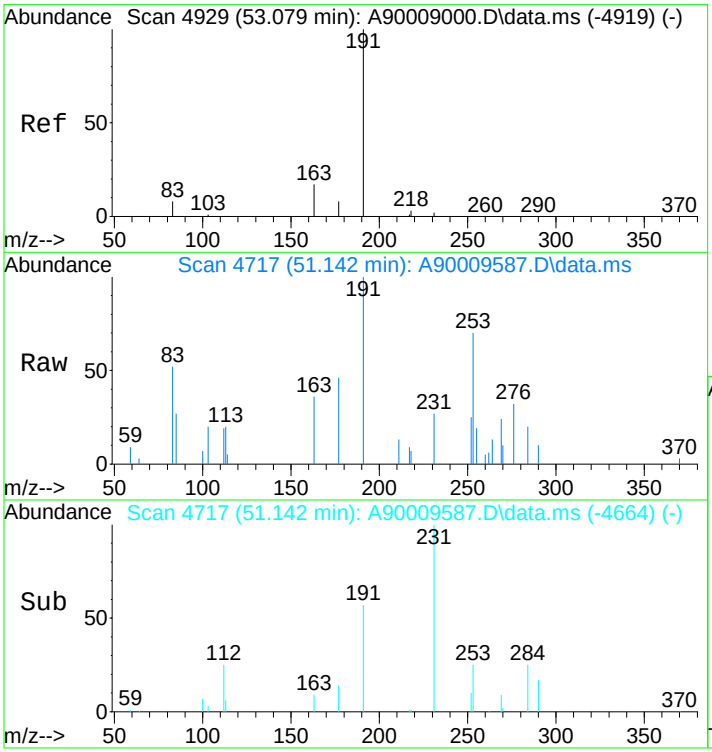




#149
C27,20R-triaromatic steroid
Concen: 40.92 ng/mL m
RT: 50.027 min Scan# 4595
Delta R.T. -0.009 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

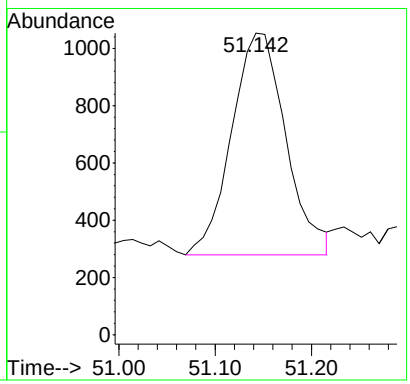
Tgt Ion:231 Resp: 2085





#150
C28,20R-triaromatic steroid
Concen: 59.55 ng/mL
RT: 51.142 min Scan# 4717
Delta R.T. -0.018 min
Lab File: A90009587.D
Acq: 23 Dec 2012 6:09 am

Tgt Ion:231 Resp: 3034



Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009588.D
Acq On : 23 Dec 2012 7:33 am
Operator : ps
Sample : 1212022-02M
Misc : 1X
ALS Vial : 17 Sample Multiplier: 1

Quant Time: Dec 27 14:19:12 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.156	164	65184	500.000	ng/mL	0.00
74) Chrysene-d12	42.558	240	121949	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.230	136	442868	1767.655	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 176.77%#			
42) Phenanthrene-d10	31.995	188	483522	2056.556	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 205.66%#			
83) Benzo[b]fluoranthene-d12	46.451	264	453486	2022.995	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 202.30%#			
88) Benzo[a]pyrene-d12	47.585	264	409236	1821.162	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 182.12%#			
129) 5B(H)Cholane - Surr	43.188	217	98117	1916.559	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 191.66%#			
Target Compounds						Qvalue
3) trans-Decalin	15.908	138	371	6.474	ng/mL	100
5) C1-Decalins	17.377	152	857M5	14.955	ng/mL	
6) C2-Decalins	19.193	166	1839M5	32.091	ng/mL	
7) C3-Decalins	21.602	180	1839M5	32.091	ng/mL	
8) C4-Decalins	24.951	194	4242M5	74.023	ng/mL	
10) Naphthalene	19.303	128	568656	2211.769	ng/mL#	100
11) C1-Naphthalenes	21.986	142	353177M5	1373.670	ng/mL	
12) C2-Naphthalenes	24.814	156	82530M5	320.998	ng/mL	
13) C3-Naphthalenes	27.141	170	158125M5	615.022	ng/mL	
14) C4-Naphthalenes	29.897	184	90814M5	353.218	ng/mL	
16) 2-Methylnaphthalene	21.986	142	337659	2008.219	ng/mL#	100
17) 1-Methylnaphthalene	22.405	142	15667	96.014	ng/mL#	100
18) Benzothiophene	19.522	134	4868M4	22.625	ng/mL	
19) C1-Benzo(b)thiophenes	22.004	148	6385M5	29.676	ng/mL	
20) C2-Benzo(b)thiophenes	24.532	162	3988M5	18.535	ng/mL	
21) C3-Benzo(b)thiophenes	26.977	176	9764M5	45.380	ng/mL	
22) C4-Benzo(b)thiophenes	29.076	190	7838M5	36.429	ng/mL	
23) Biphenyl	23.865	154	25067	113.925	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.477	156	23695	149.917	ng/mL#	100
25) Dibenzofuran	26.922	168	48717M4	207.586	ng/mL	
26) Acenaphthylene	25.544	152	612734M4	2316.715	ng/mL	
27) Acenaphthene	26.275	153	336506	2023.571	ng/mL	100
28) 2,3,5-Trimethylnaphthalen	27.835	170	12193M3	83.909	ng/mL	
29) Fluorene	28.291	166	412379M4	2258.164	ng/mL	
30) C1-Fluorenes	30.508	180	114064M5	624.608	ng/mL	
31) C2-Fluorenes	32.844	194	120512M5	659.917	ng/mL	
32) C3-Fluorenes	35.345	208	69233M5	379.116	ng/mL	
33) Dibenzothiophene	31.594	184	90499	352.298	ng/mL#	91
34) 4-Methyldibenzothiophene(	33.364	198	116377	453.037	ng/mL#	100
35) 2/3-Methyldibenzothiophen	33.711	198	94923	369.520	ng/mL#	100
36) 1-Methyldibenzothiophene(	34.131	198	19456	75.739	ng/mL#	100
37) OTP	33.811	198	59857	233.014	ng/mL#	100
38) C1-Dibenzothiophenes	33.364	198	318948M5	1241.614	ng/mL	
38) C1-Dibenzothiophenes BS	33.364	198	259091m	1008.600	ng/mL	
39) C2-Dibenzothiophenes	35.053	212	285144M5	1110.020	ng/mL	
40) C3-Dibenzothiophenes	36.851	226	108329M5	421.708	ng/mL	
41) C4-Dibenzothiophenes	38.111	240	32546M5	126.696	ng/mL	
43) Phenanthrene	32.086	178	1598914	6024.792	ng/mL	100
44) 3-Methylphenanthrene(3MP)	34.049	192	204546	770.740	ng/mL	97

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009588.D
Acq On : 23 Dec 2012 7:33 am
Operator : ps
Sample : 1212022-02M
Misc : 1X
ALS Vial : 17 Sample Multiplier: 1

Quant Time: Dec 27 14:19:12 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
45) 2-Methylphenanthrene(2MP)	34.158	192	234738	884.505	ng/mL	97
46) 2-Methylanthracene(2MA)	34.322	192	140906M3	530.941	ng/mL	
47) 9/4-Methylphenanthrene(9M	34.505	192	289664M3	1091.469	ng/mL	
48) 1-Methylphenanthrene(1MP)	34.587	192	199971	753.501	ng/mL	96
49) C1-Phenanthrenes/Anthrace	34.505	192	1082939M5	4080.571	ng/mL	
50) C2-Phenanthrenes/Anthrace	36.312	206	586895M5	2211.451	ng/mL	
50) C2-Phenanthrenes/Anthr BS	36.312	206	586895m	2211.451	ng/mL	
52) C3-Phenanthrenes/Anthrace	38.148	220	190408M5	717.467	ng/mL	
53) C4-Phenanthrenes/Anthrace	40.348	234	54523M5	205.446	ng/mL	
55) Anthracene	32.269	178	904514	3670.255	ng/mL	100
56) Carbazole	32.953	167	16298	69.908	ng/mL#	86
57) 1-Methylphenanthrene	34.587	192	199971	1021.285	ng/mL	100
58) Fluoranthene	36.851	202	3015987M4	10173.102	ng/mL	
59) Benzo(b)fluorene	39.362	216	223633M3	1268.401	ng/mL	
60) Pyrene	37.728	202	3232376	10687.011	ng/mL	99
61) C1-Fluoranthenes/Pyrenes	39.116	216	1520648M5	5027.627	ng/mL	
62) C2-Fluoranthenes/Pyrenes	40.850	230	469306M5	1551.638	ng/mL	
63) C3-Fluoranthenes/Pyrenes	43.051	244	174004M5	575.299	ng/mL	
64) C4-Fluoranthenes/Pyrenes	43.334	258	87949M5	290.781	ng/mL	
66) Naphthobenzothiophene	41.562	234	197797	753.670	ng/ml	98
67) Naphthobenzothiophene-2,1	41.562	234	197797	753.670	ng/mL	98
68) Naphthobenzothiophene-1,2	41.900	234	34958	133.201	ng/mL#	23
69) Naphthobenzothiophene-2,3	42.201	234	62662M3	238.762	ng/mL	
70) C1-Naphthobenzothiophenes	42.968	248	225020M5	857.399	ng/ml	
71) C2-Naphthobenzothiophenes	44.466	262	95288M5	363.078	ng/ml	
72) C3-Naphthobenzothiophenes	46.359	276	38804M5	147.856	ng/ml	
73) C4-Naphthobenzothiophenes	47.594	290	19935M5	75.959	ng/mL	
75) Benz[a]anthracene	42.503	228	1713330M3	6125.153	ng/mL	
77) Chrysene/Triphenylene	42.658	228	1614376	5868.066	ng/mL	99
78) C1-Chrysenes	44.137	242	519664M5	1888.917	ng/mL	
79) C2-Chrysenes	45.838	256	242750M5	882.368	ng/mL	
79) C2-Chrysenes BS	45.838	256	224803m	817.132	ng/mL	
80) BBF-d12 Surr BKGD	46.451	256	17947	65.235	ng/mL	100
81) C3-Chrysenes	46.871	270	142175M5	516.789	ng/mL	
82) C4-Chrysenes	48.326	284	49999M5	181.740	ng/mL	
84) Benzo[b]fluoranthene	46.542	252	1576243	5434.778	ng/mL	90
85) Benzo[j]+[k]fluoranthene	46.615	252	1491439	5233.655	ng/mL	92
86) Benzo[a]fluoranthene	46.899	252	295672	1037.552	ng/mL#	1
87) Benzo[e]pyrene	47.493	252	750404	2724.748	ng/mL	91
89) Benzo[a]pyrene	47.667	252	1699045	6514.147	ng/mL	90
90) Perylene	47.960	252	329340	1183.109	ng/mL#	88
91) Indeno[1,2,3-cd]pyrene	52.167	276	1392032M3	4818.986	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.203	278	751658	2641.500	ng/mL	99
93) Benzo[g,h,i]perylene	53.364	276	1346218	4742.524	ng/mL	100
94) Hopane (T19)	51.316	191	23264M3	216.987	ng/mL	
96) C23 Tricyclic Terpane (T4	40.220	191	2676	24.959	ng/ml	100
97) C24 Tricyclic Terpane (T5	40.942	191	2050M4	19.121	ng/ml	
98) C25 Tricyclic Terpane (T6	42.494	191G	3949M1	36.833	ng/ml	
99) C24 Tetracyclic Terpane (	43.735	191	2024M4	18.878	ng/ml	
100) C26 Tricyclic Terpane-22S	43.489	191	1881M4	17.544	ng/ml	
101) C26 Tricyclic Terpane-22R	43.580	191	1139M4	10.624	ng/ml	
102) C28 Tricyclic Terpane-22S	45.865	191	1862	17.367	ng/ml	100
103) C28 Tricyclic Terpane-22R	46.030	191	1375M4	12.825	ng/ml	
104) C29 Tricyclic Terpane-22S	46.551	191	1372	12.797	ng/ml	100
105) C29 Tricyclic Terpane-22R	46.743	191	1076M4	10.036	ng/ml	
106) 18a-22,29,30-Trisnorneoho	47.786	191	4368M4	40.741	ng/ml	

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009588.D
Acq On : 23 Dec 2012 7:33 am
Operator : ps
Sample : 1212022-02M
Misc : 1X
ALS Vial : 17 Sample Multiplier: 1

Quant Time: Dec 27 14:19:12 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
107) C30 Tricyclic Terpane-22S	47.905	191	1462M4	13.636	ng/mL	
108) C30 Tricyclic Terpane-22R	48.133	191	1144M3	10.670	ng/mL	
109) 17a(H)-22,29,30-Trisnorho	48.298	191	6445M4	60.113	ng/ml	
110) 17a/b,21b/a 28,30-Bisnorh	49.414	191	1187	11.071	ng/ml	100
111) 17a(H),21b(H)-25-Norhopan	49.231	191	787M4	7.340	ng/ml	
112) 30-Norhopane (T15)	50.045	191	17086M4	159.363	ng/ml	
113) 18a(H)-30-Norneohopane-C2	50.146	191	4919M4	45.880	ng/ml	
114) 17a(H)-Diahopane (X)	50.265	191	2094M4	19.531	ng/ml	
115) 30-Normoretane (T17)	50.777	191	3126	29.157	ng/ml	100
116) 18a(H)&18b(H)-Oleananes (	51.152	191	1692M4	15.782	ng/ml	
117) Moretane (T20)	51.956	191	3506M4	32.701	ng/ml	
118) 30-Homohopane-22S (T21)	52.980	191	8955M4	83.525	ng/ml	
119) 30-Homohopane-22R (T22)	53.190	191	7875M4	73.451	ng/ml	
120) Gammacerane/C32-diahopane	53.693	191	2250M4	20.986	ng/mL	
121) 30,31-Bishomohopane-22S (	54.360	191G	17874	166.713	ng/ml	100
122) 30,31-Bishomohopane-22R (	54.753	191	4708	43.912	ng/ml	100
123) 30,31-Trishomohopane-22S	56.370	191	4672	43.576	ng/ml	100
124) 30,31-Trishomohopane-22R	56.927	191	2612	24.362	ng/ml	100
125) Tetrakishomohopane-22S (T	58.782	191	3176M4	29.623	ng/ml	
126) Tetrakishomohopane-22R (T	59.586	191G	3911M4	36.478	ng/ml	
127) Pentakishomohopane-22S (T	61.633	191	2082M4	19.419	ng/ml	
128) Pentakishomohopane-22R (T	62.812	191	1660M4	15.483	ng/ml	
130) 13b(H),17a(H)-20S-Diachol	44.703	217	1726	33.715	ng/ml	100
131) 13b(H),17a(H)-20R-Diachol	45.124	217	1140M4	22.268	ng/ml	
132) 13b,17a-20S-Methyldiachol	45.829	217	1380M4	26.956	ng/ml	
133) 14a,17a-20S-Chol/13b,17a-	46.688	217	3947	77.098	ng/ml	100
134) 14a,17a-20R-Chol/13b,17a-	47.173	217	3821M4	74.637	ng/ml	
135) Unknown Sterane (S18)	47.438	217	1070	20.901	ng/ml	100
137) 14a,17a-20S-Methylcholest	47.841	217	1894M4	36.996	ng/ml	
138) 14a,17a-20R-Methylcholest	48.508	217	1320	25.784	ng/ml	100
139) 14a(H),17a(H)-20S-Ethylch	48.838	217	2187M4	42.720	ng/ml	
140) 14a(H),17a(H)-20R-Ethylch	49.697	217	2298M4	44.888	ng/ml	
141) 14b(H),17b(H)-20R-Cholest	46.771	218	1400M4	27.347	ng/ml	
142) 14b(H),17b(H)-20S-Cholest	46.853	218	1539M4	30.062	ng/ml	
143) 14b,17b-20R-Methylcholest	48.005	218	1894	36.996	ng/ml	100
144) 14b,17b-20S-Methylcholest	48.079	218	3067M4	59.909	ng/ml	
145) 14b(H),17b(H)-20R-Ethylch	49.076	218	4412	86.181	ng/ml	100
146) 14b(H),17b(H)-20S-Ethylch	49.121	218	2287M3	44.673	ng/ml	
147) C26,20R- +C27,20S- triaro	48.801	231	3389	66.199	ng/mL	100
148) C28,20S-triaromatic stero	49.615	231	4294	83.876	ng/mL	100
149) C27,20R-triaromatic stero	50.027	231	2285	44.634	ng/mL	100
150) C28,20R-triaromatic stero	51.152	231	3094	60.436	ng/mL	100

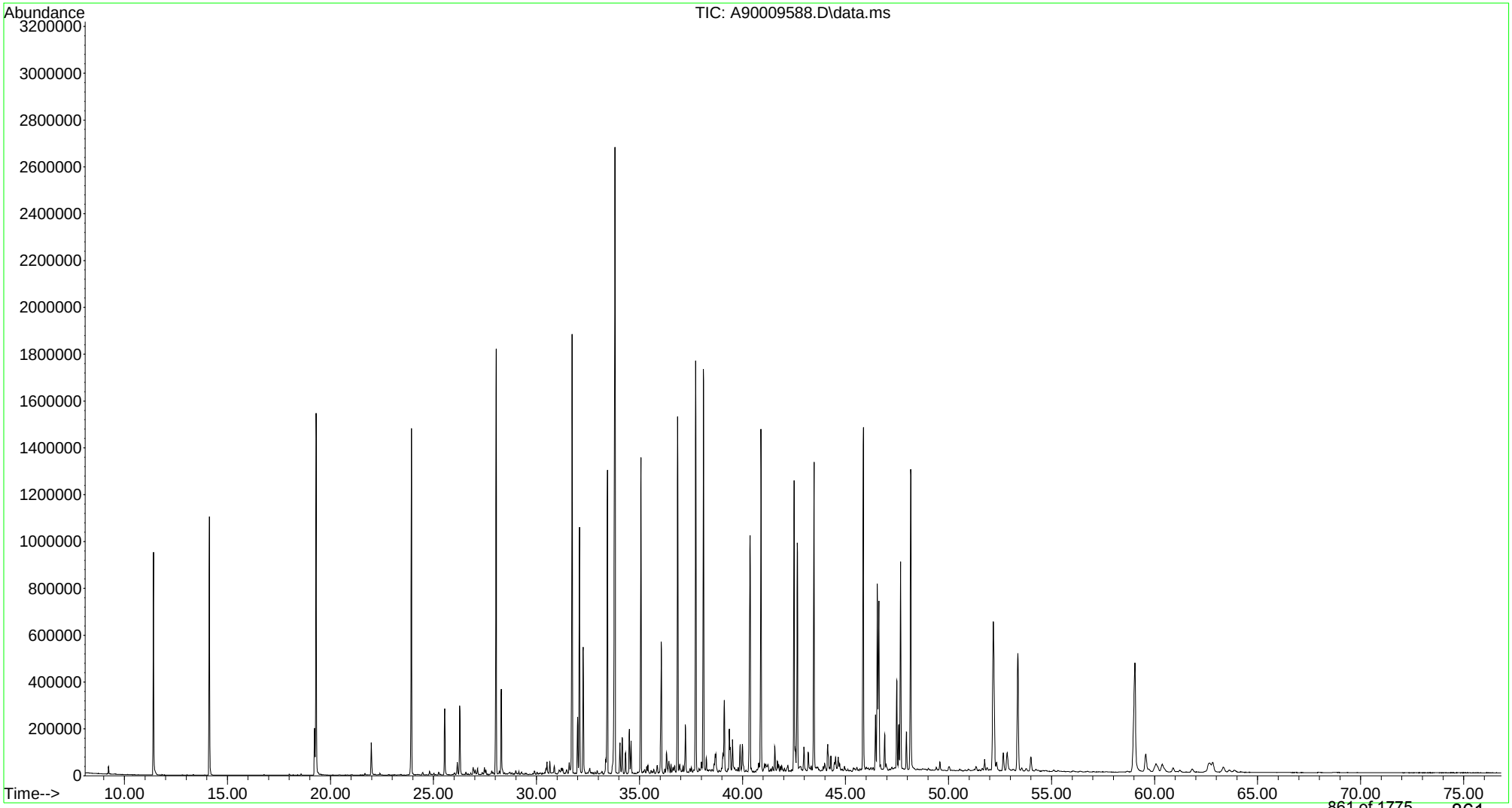
(#) = qualifier out of range (m) = manual integration (+) = signals summed

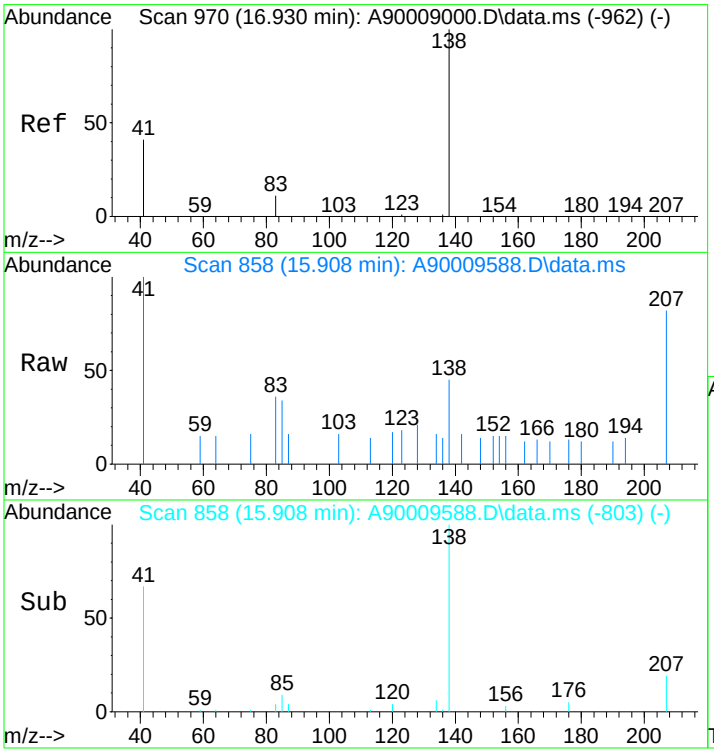
Quantitation Report (QT Reviewed)

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Data File : A90009588.D
Acq On : 23 Dec 2012 7:33 am
Operator : ps
Sample : 1212022-02M
Misc : 1X
ALS Vial : 17 Sample Multiplier: 1

Quant Time: Dec 27 14:19:12 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

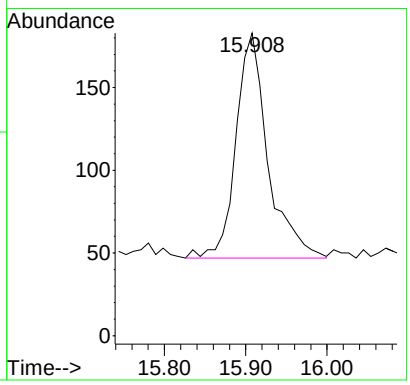
Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

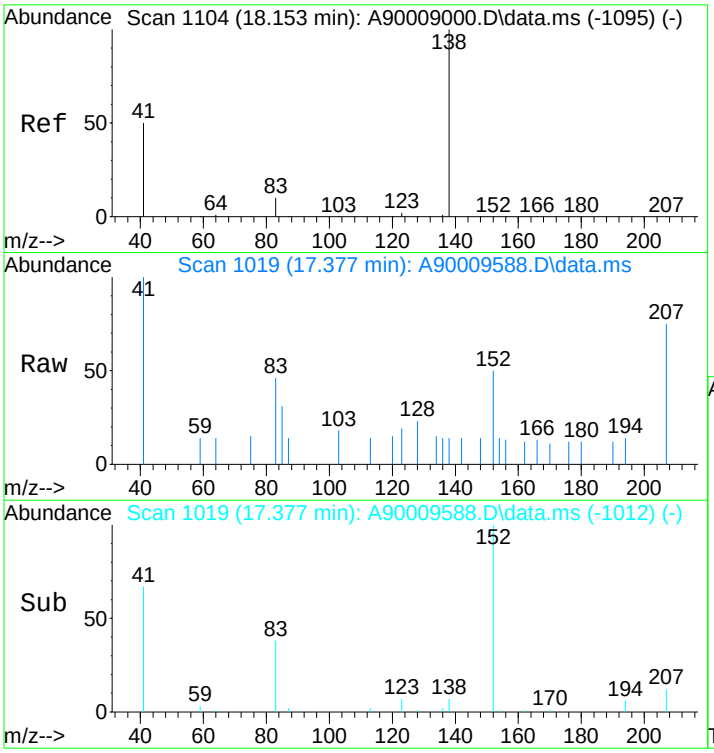




#3
trans-Decalin
Concen: 6.47 ng/mL
RT: 15.908 min Scan# 858
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

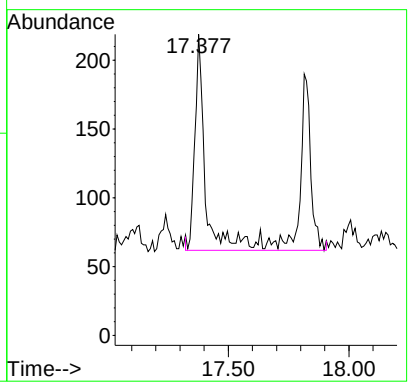
Tgt Ion:138 Resp: 371

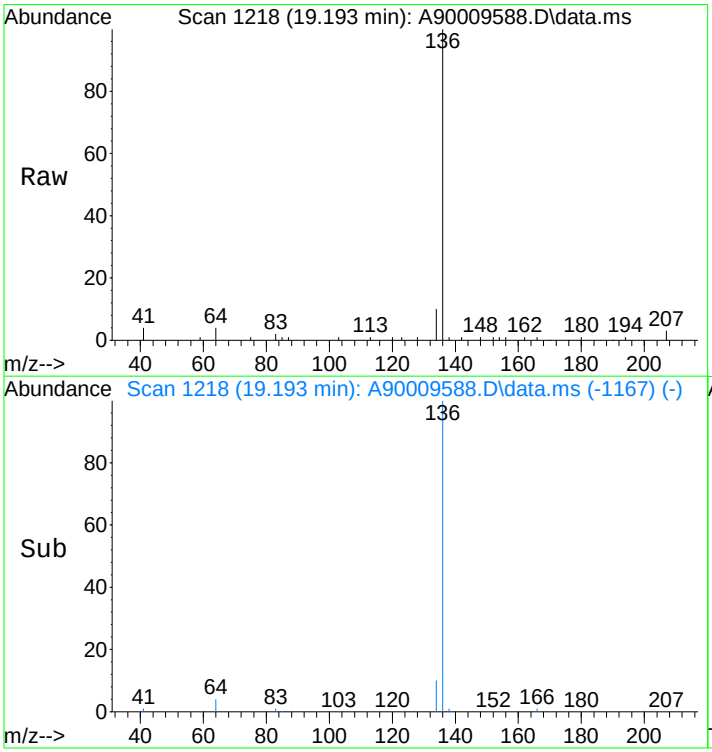




#5
C1-Decalins
Concen: 14.95 ng/mL m
RT: 17.377 min Scan# 1019
Delta R.T. -0.447 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

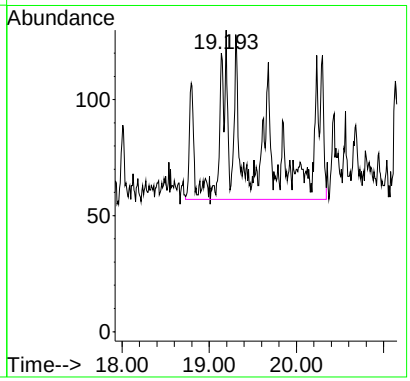
Tgt Ion:152 Resp: 857

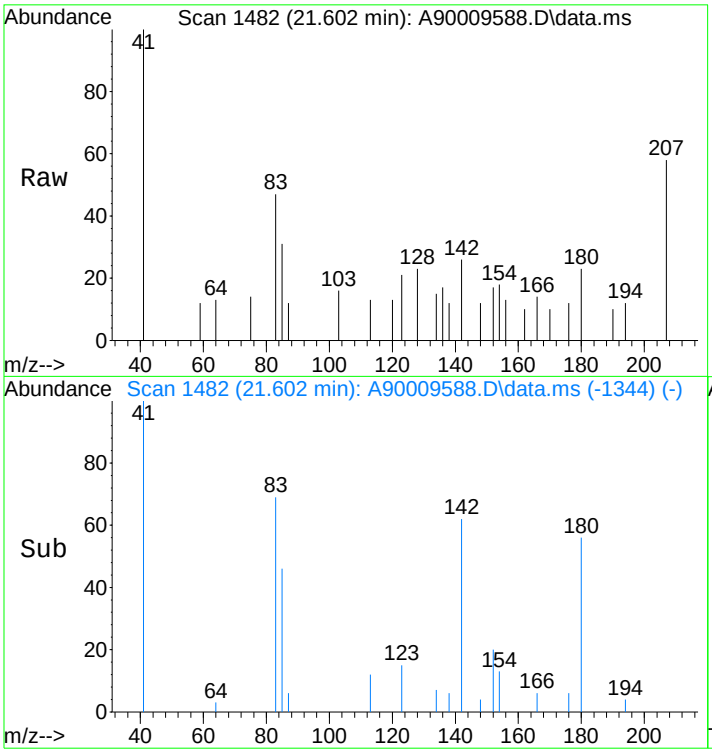




#6
C2-Decalins
Concen: 32.09 ng/mL m
RT: 19.193 min Scan# 1218
Delta R.T. 0.046 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

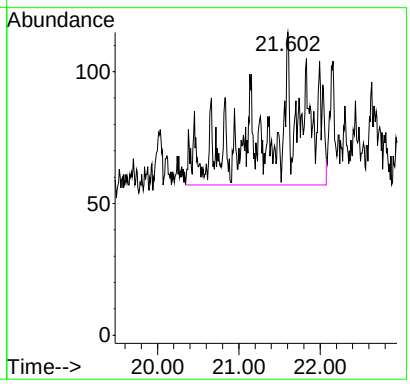
Tgt Ion:166 Resp: 1839

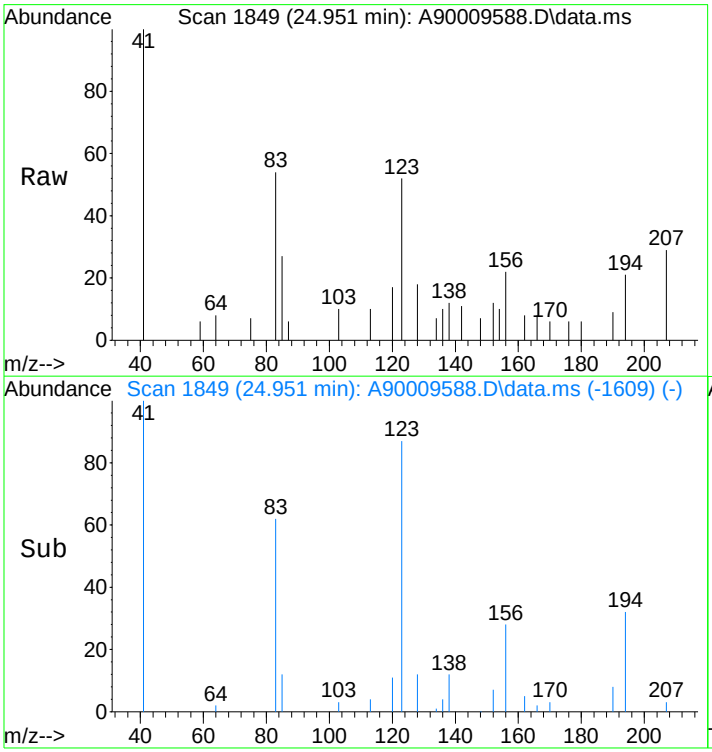




#7
C3-Decalins
Concen: 32.09 ng/mL m
RT: 21.602 min Scan# 1482
Delta R.T. -0.009 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

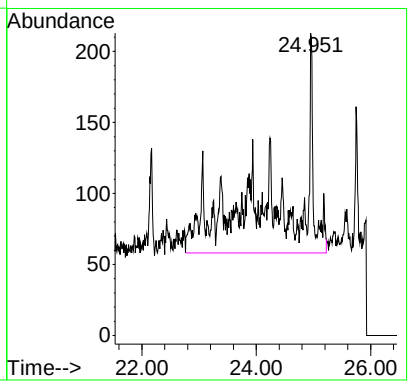
Tgt Ion:180 Resp: 1839

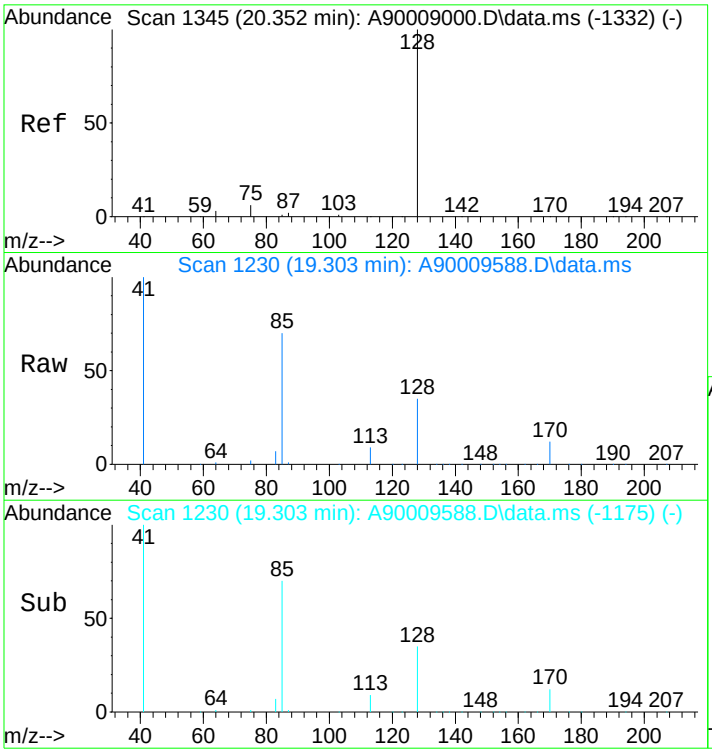




#8
C4-Decalins
Concen: 74.02 ng/mL m
RT: 24.951 min Scan# 1849
Delta R.T. -0.018 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:194 Resp: 4242

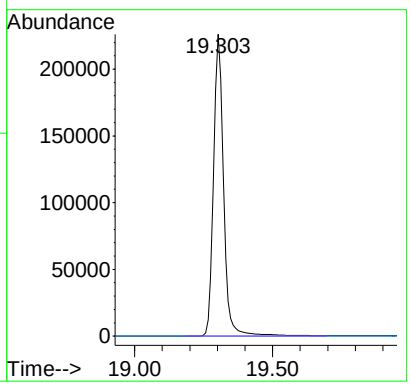


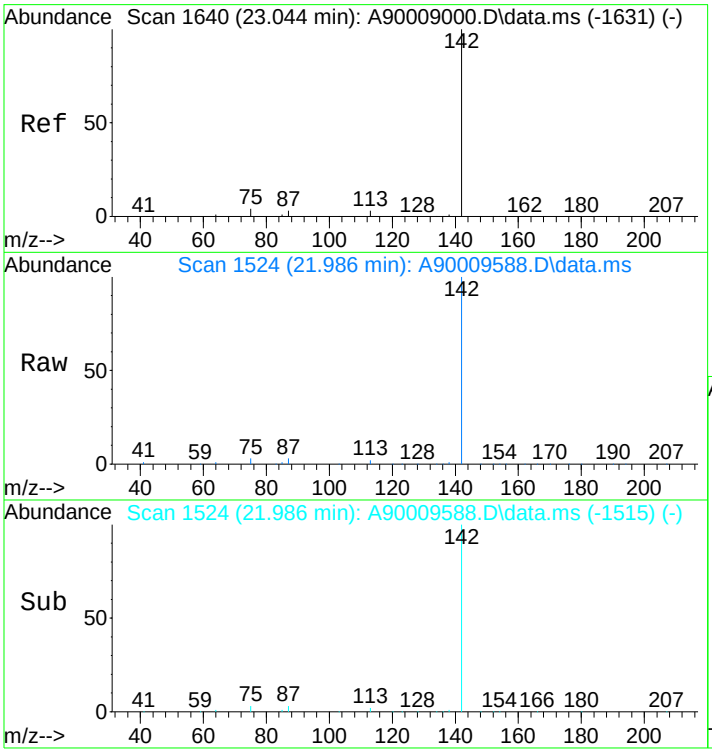


#10
Naphthalene
Concen: 2211.77 ng/mL
RT: 19.303 min Scan# 1230
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:128 Resp: 568656

Ion	Ratio	Lower	Upper
128	100		
127	0.0	0.0	0.0

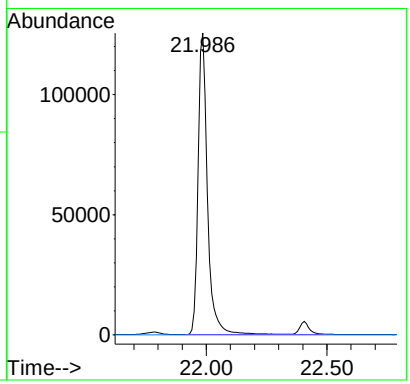


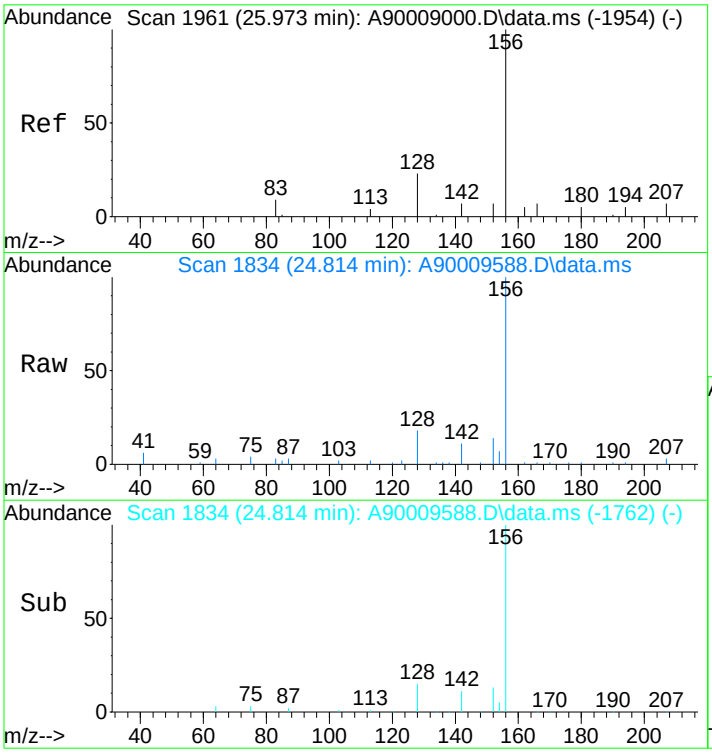


#11
C1-Naphthalenes
Concen: 1373.67 ng/mL m
RT: 21.986 min Scan# 1524
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:142 Resp: 353177

Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	0.0

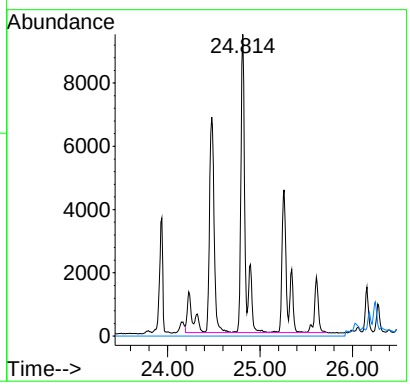


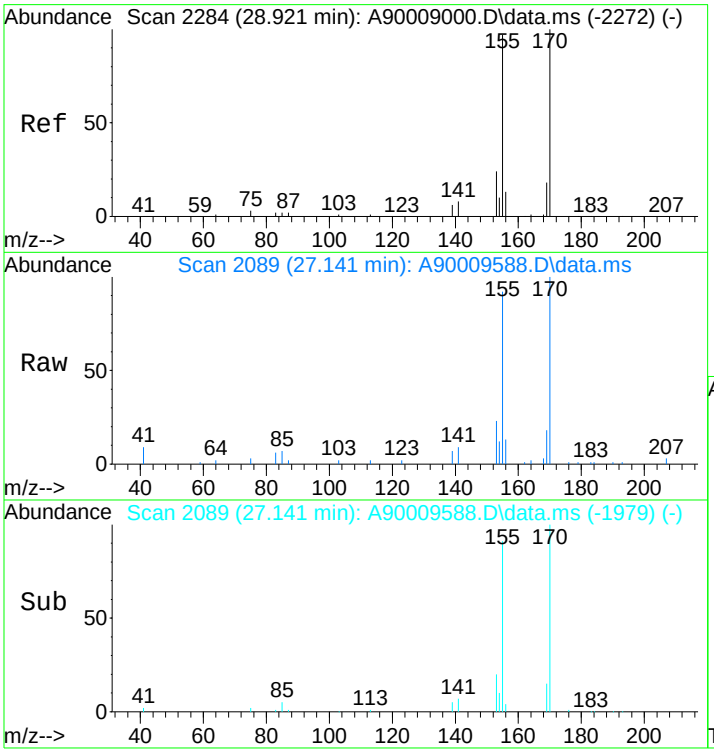


#12
C2-Naphthalenes
Concen: 321.00 ng/mL m
RT: 24.814 min Scan# 1834
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:156 Resp: 82530

Ion	Ratio	Lower	Upper
156	100		
141	0.0	0.0	0.0

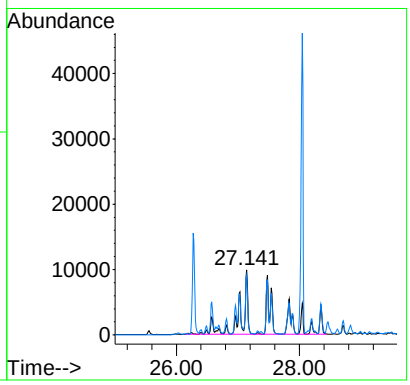


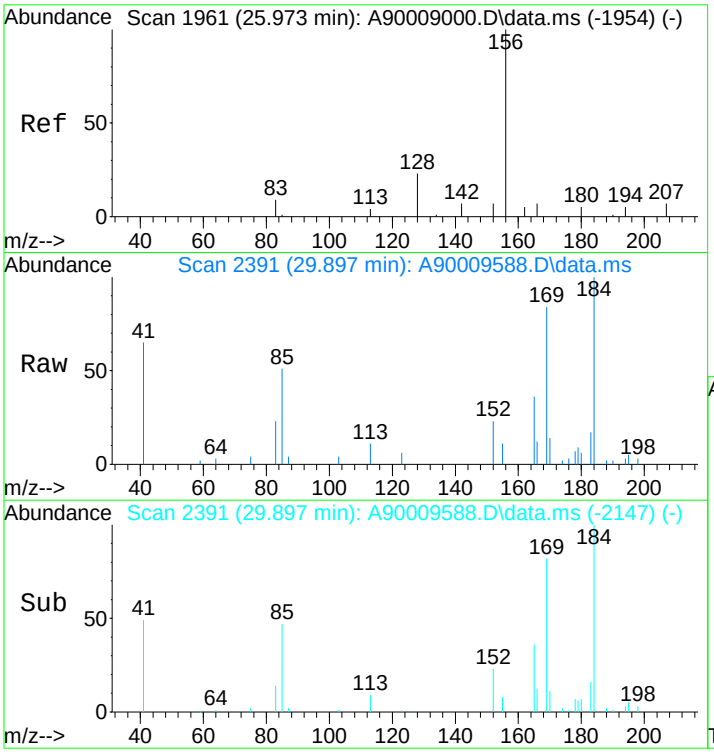


#13
C3-Naphthalenes
Concen: 615.02 ng/mL m
RT: 27.141 min Scan# 2089
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:170 Resp: 158125

Ion	Ratio	Lower	Upper
170	100		
155	14.8	79.9	119.9#

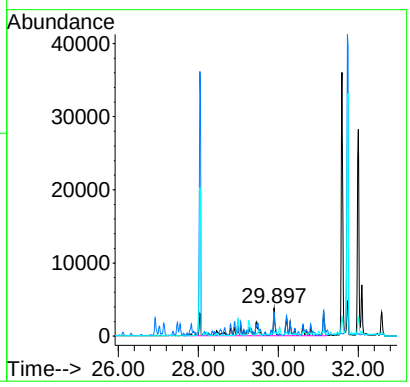


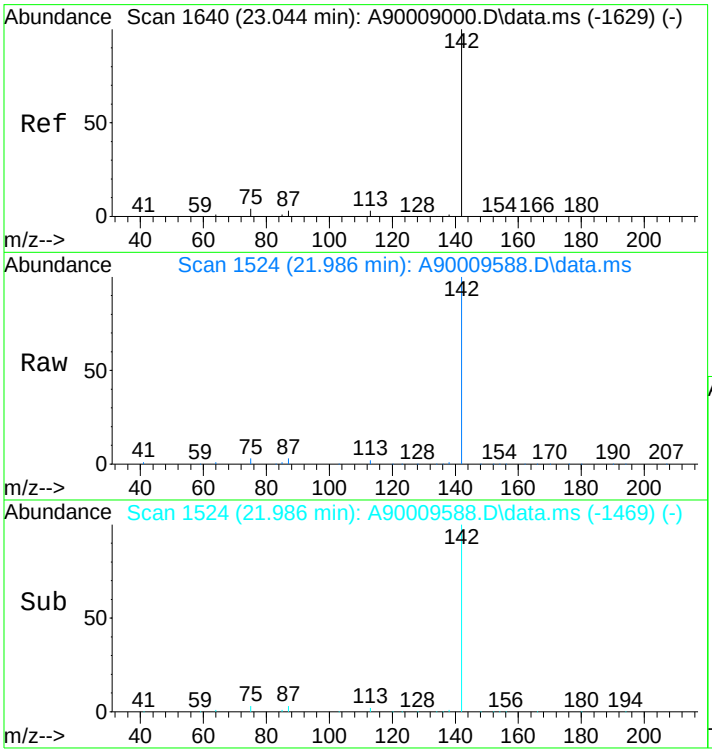


#14
C4-Naphthalenes
Concen: 353.22 ng/mL m
RT: 29.897 min Scan# 2391
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:184 Resp: 90814

Ion	Ratio	Lower	Upper
184	100		
169	10.5	76.6	115.0#
183	1.2	16.4	24.6#

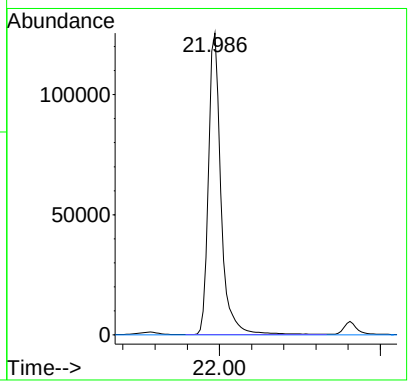


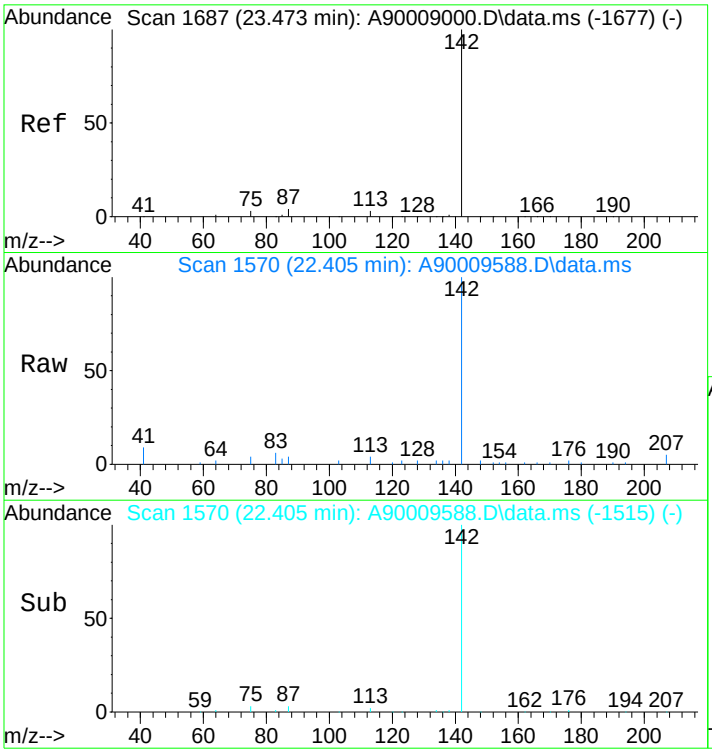


#16
2-Methylnaphthalene
Concen: 2008.22 ng/mL
RT: 21.986 min Scan# 1524
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:142 Resp: 337659

Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	0.0

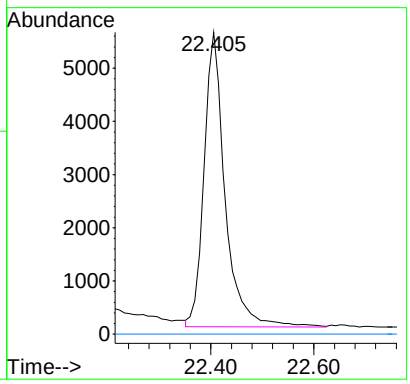


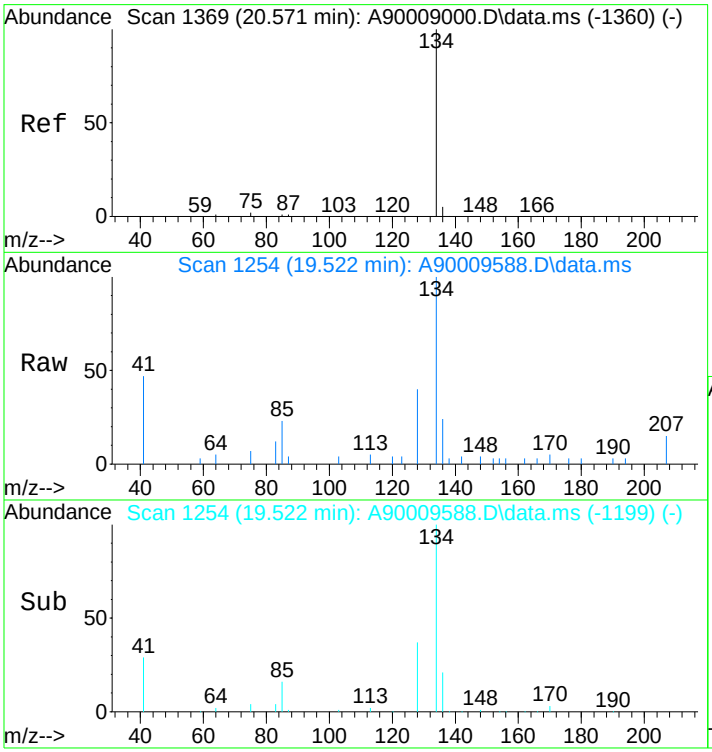


#17
1-Methylnaphthalene
Concen: 96.01 ng/mL
RT: 22.405 min Scan# 1570
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:142 Resp: 15667

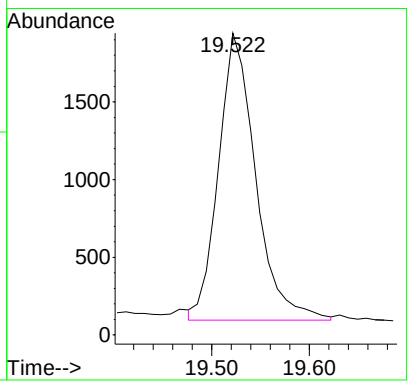
Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	20.0

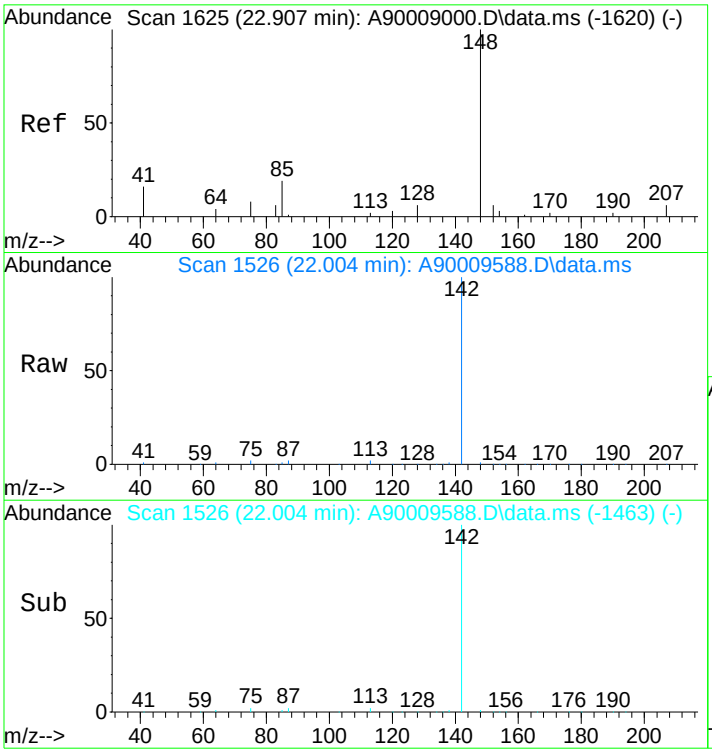




#18
Benzothiophene
Concen: 22.63 ng/mL m
RT: 19.522 min Scan# 1254
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

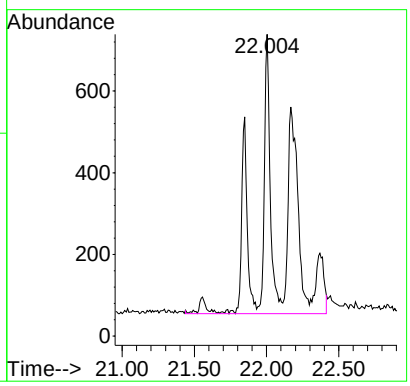
Tgt Ion:134 Resp: 4868

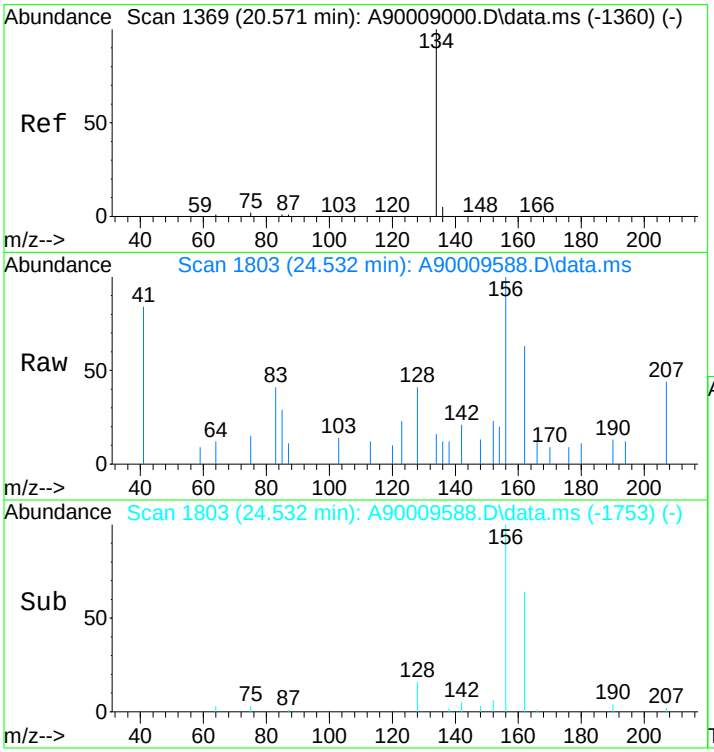




#19
C1-Benzo(b)thiophenes
Concen: 29.68 ng/mL m
RT: 22.004 min Scan# 1526
Delta R.T. 0.448 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

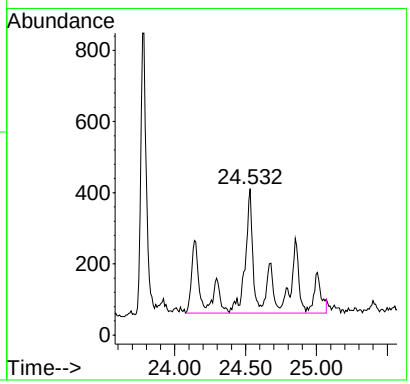
Tgt Ion:148 Resp: 6385

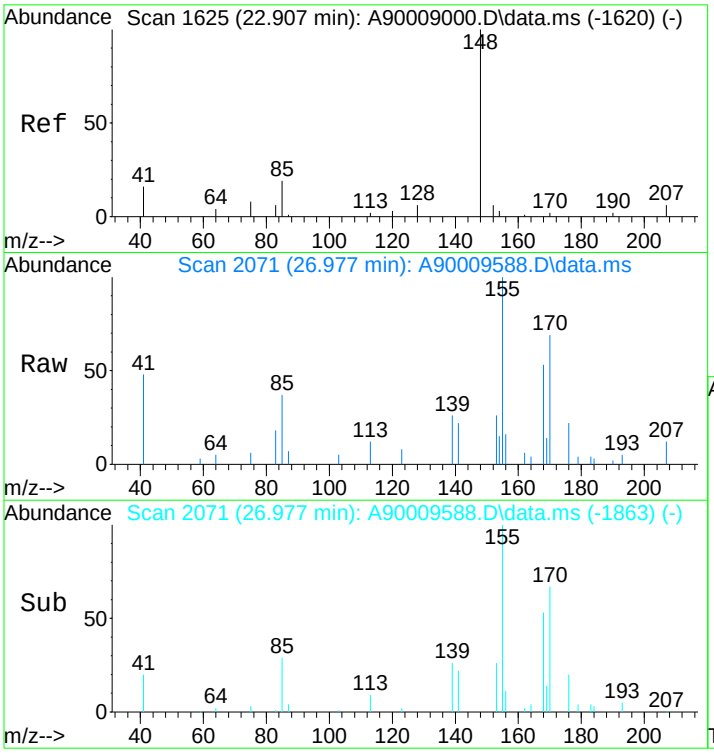




#20
C2-Benzo(b)thiophenes
Concen: 18.54 ng/mL m
RT: 24.532 min Scan# 1803
Delta R.T. -0.474 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

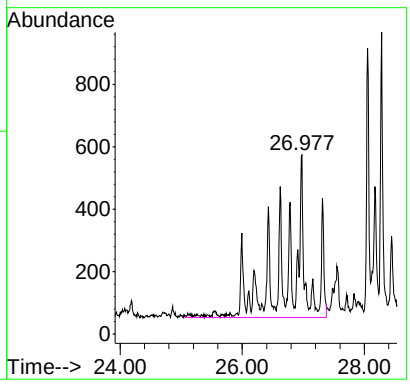
Tgt Ion:162 Resp: 3988

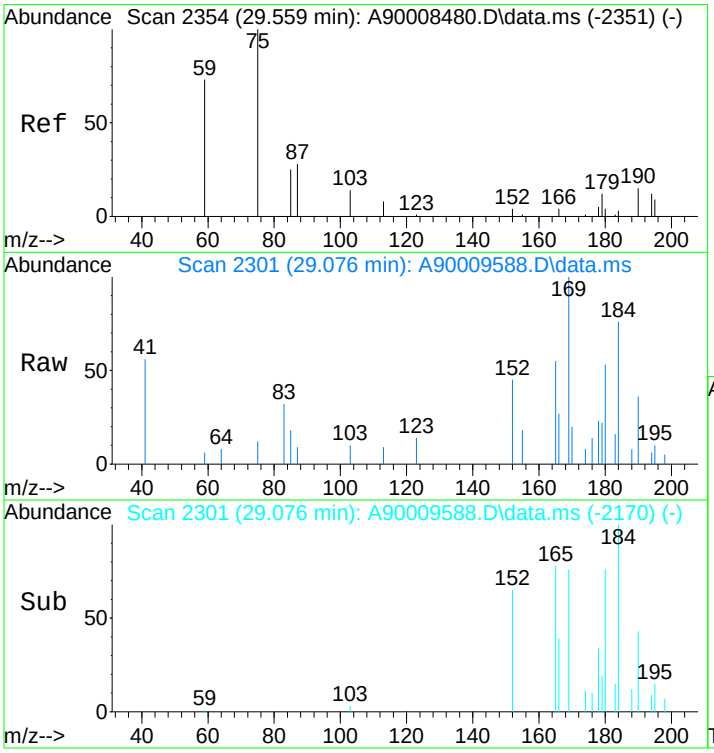




#21
C3-Benzo(b)thiophenes
Concen: 45.38 ng/mL m
RT: 26.977 min Scan# 2071
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

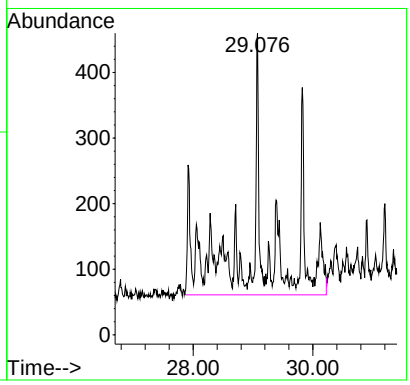
Tgt Ion:176 Resp: 9764

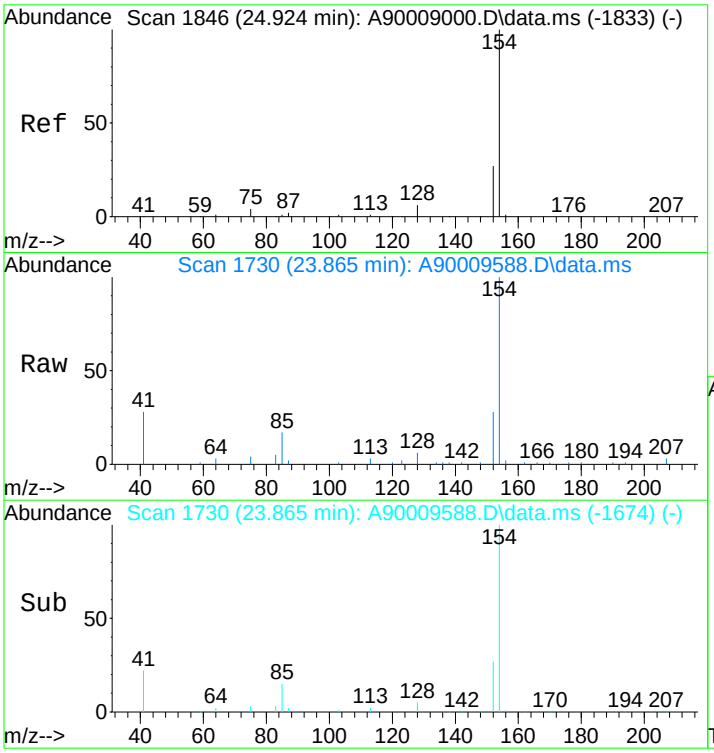




#22
C4-Benzo(b)thiophenes
Concen: 36.43 ng/mL m
RT: 29.076 min Scan# 2301
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:190 Resp: 7838

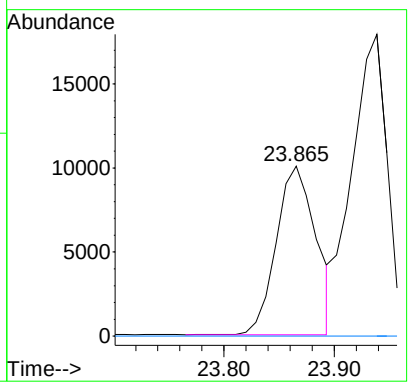


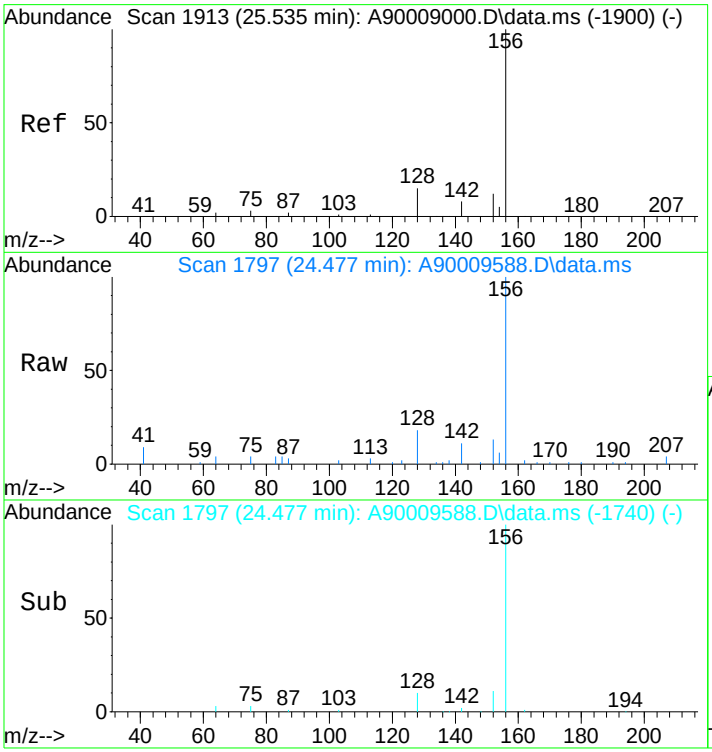


#23
Biphenyl
Concen: 113.92 ng/mL
RT: 23.865 min Scan# 1730
Delta R.T. 0.009 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:154 Resp: 25067

Ion	Ratio	Lower	Upper
154	100		
153	0.0	0.0	0.0

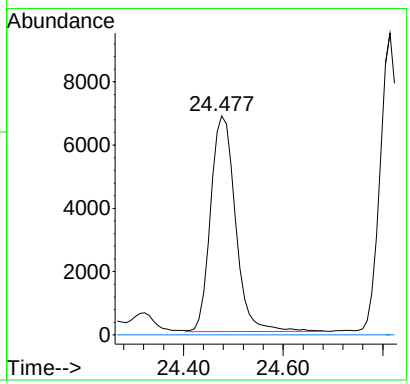


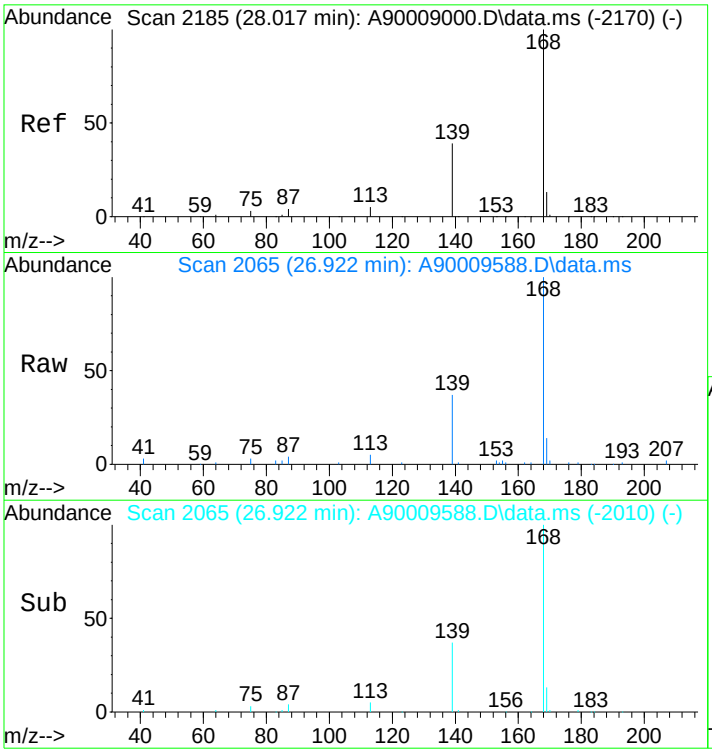


#24
2,6-Dimethylnaphthalene
Concen: 149.92 ng/mL
RT: 24.477 min Scan# 1797
Delta R.T. 0.018 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:156 Resp: 23695

Ion	Ratio	Lower	Upper
156	100		
155	0.0	0.0	0.0

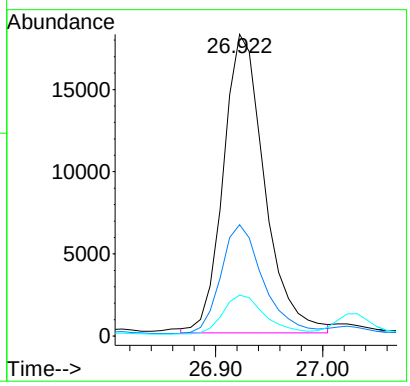


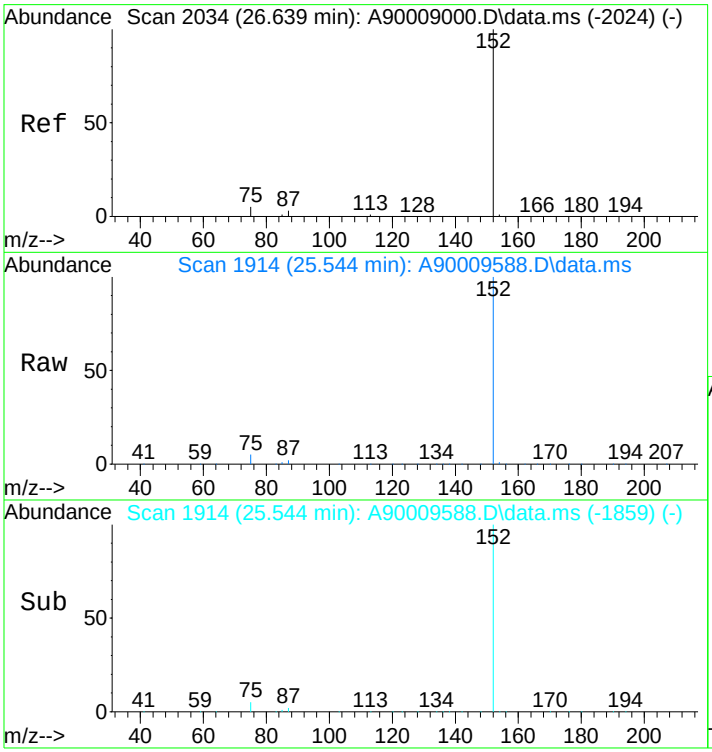


#25
Dibenzofuran
Concen: 207.59 ng/mL m
RT: 26.922 min Scan# 2065
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:168 Resp: 48717

Ion	Ratio	Lower	Upper
168	100		
139	38.0	28.0	42.0
169	14.0	10.6	15.8

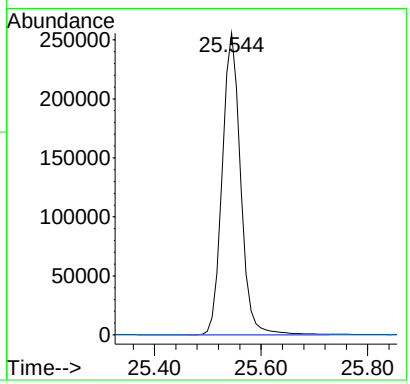


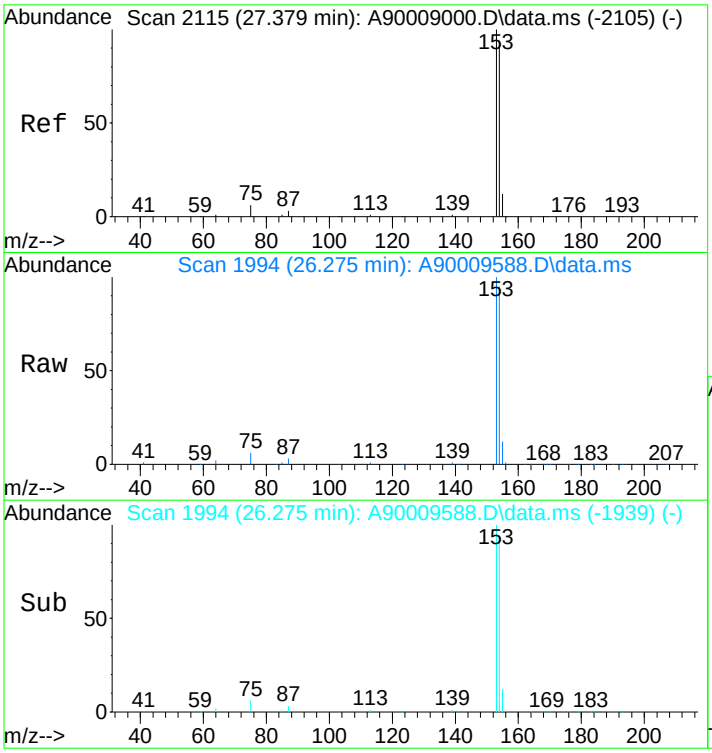


#26
Acenaphthylene
Concen: 2316.71 ng/mL m
RT: 25.544 min Scan# 1914
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:152 Resp: 612734

Ion	Ratio	Lower	Upper
152	100		
153	0.0	0.0	0.0

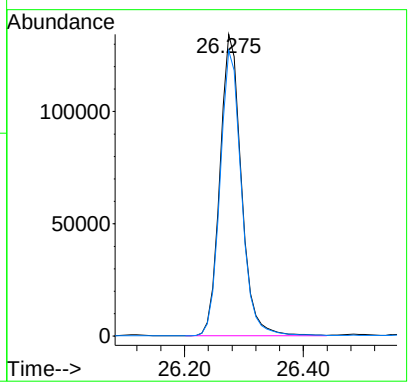


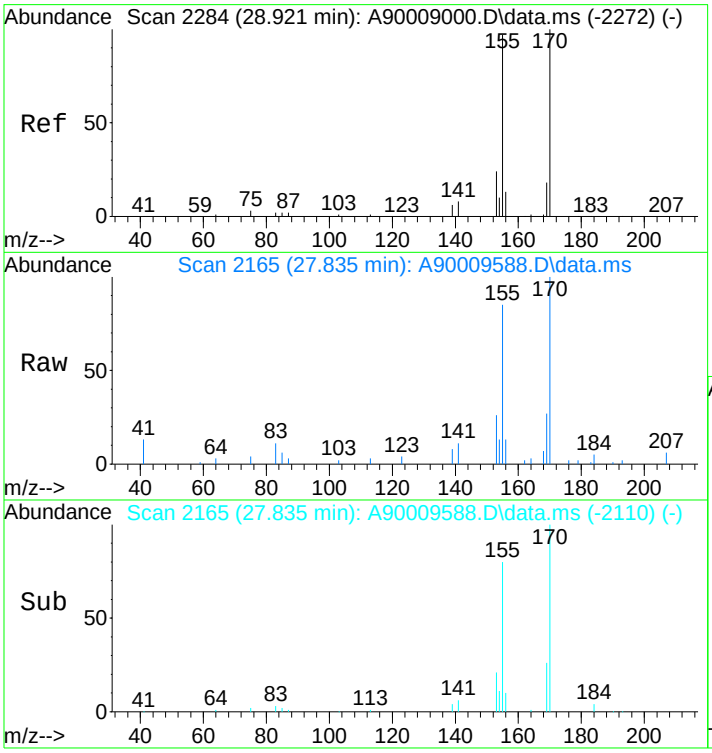


#27
Acenaphthene
Concen: 2023.57 ng/mL
RT: 26.275 min Scan# 1994
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:153 Resp: 336506

Ion	Ratio	Lower	Upper
153	100		
154	94.5	75.4	113.0

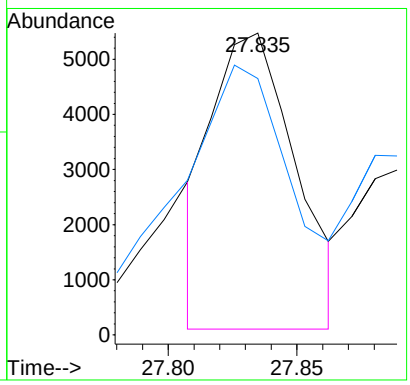


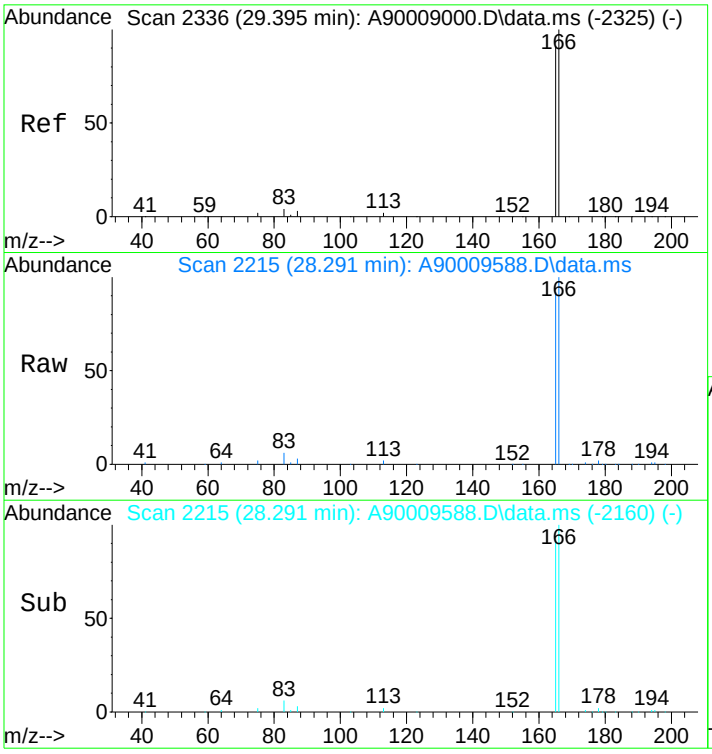


#28
2,3,5-Trimethylnaphthalene
Concen: 83.91 ng/mL m
RT: 27.835 min Scan# 2165
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:170 Resp: 12193

Ion	Ratio	Lower	Upper
170	100		
155	124.5	69.0	103.4#

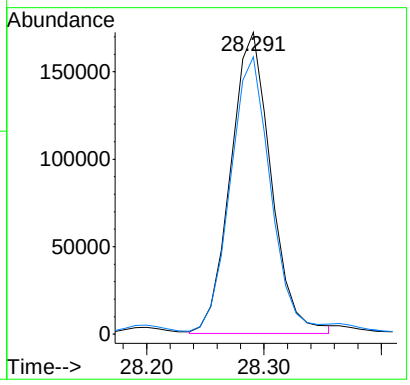


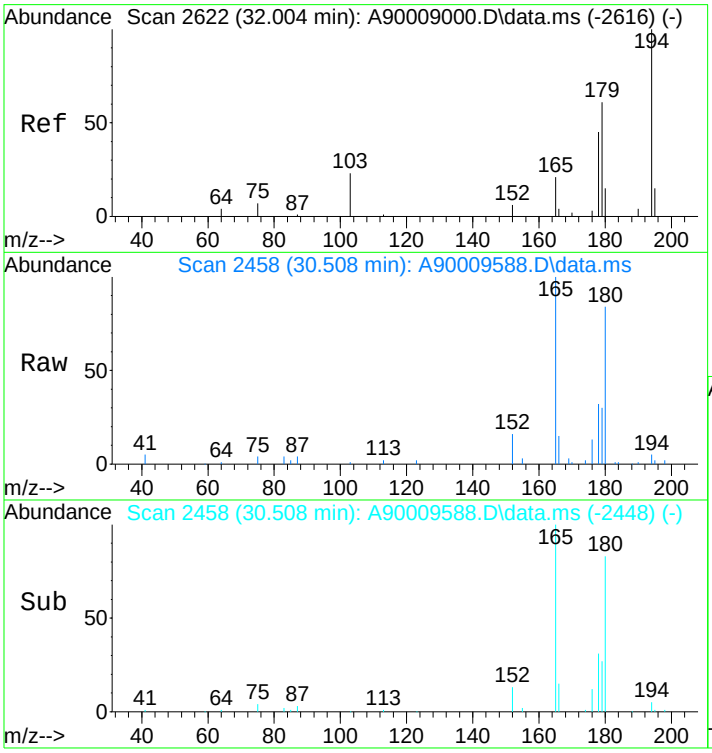


#29
Fluorene
Concen: 2258.16 ng/mL m
RT: 28.291 min Scan# 2215
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:166 Resp: 412379

Ion	Ratio	Lower	Upper
166	100		
165	93.2	73.4	110.0

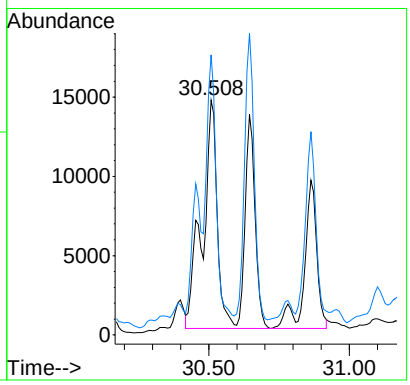


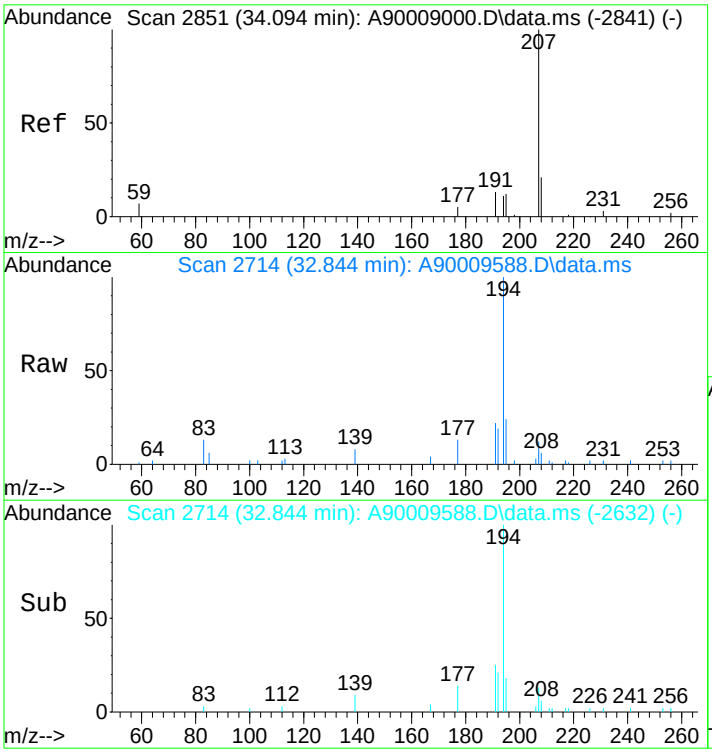


#30
C1-Fluorenes
Concen: 624.61 ng/mL m
RT: 30.508 min Scan# 2458
Delta R.T. -0.136 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:180 Resp: 114064

Ion	Ratio	Lower	Upper
180	100		
165	38.0	117.5	176.3#

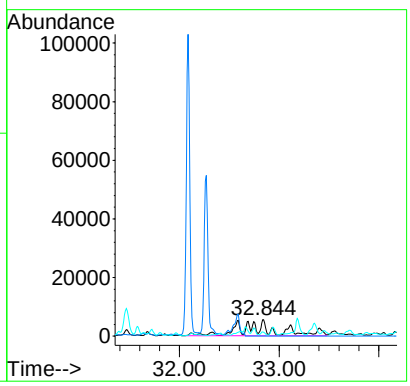


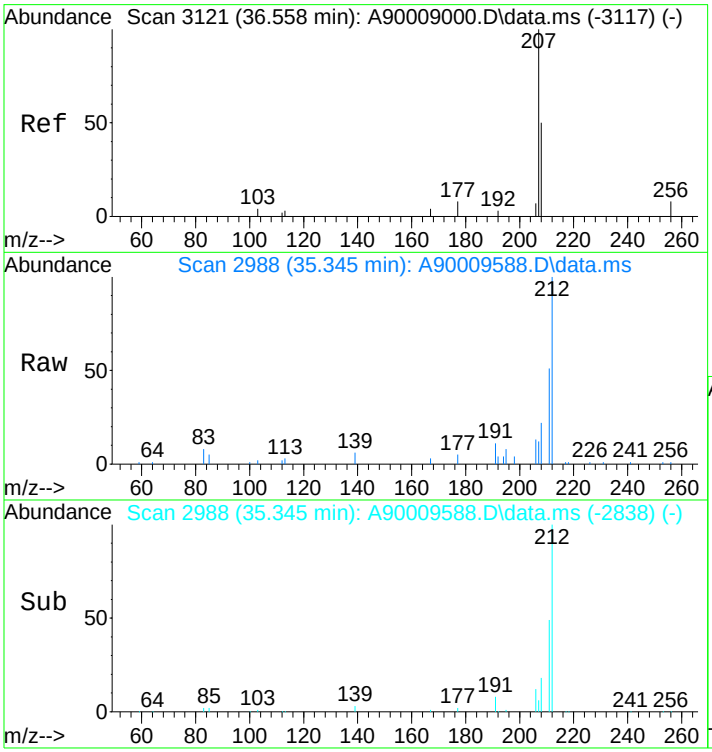


#31
C2-Fluorenes
Concen: 659.92 ng/mL m
RT: 32.844 min Scan# 2714
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:194 Resp: 120512

Ion	Ratio	Lower	Upper
194	100		
179	0.0	0.0	0.0
195	2.6	26.3	39.5#

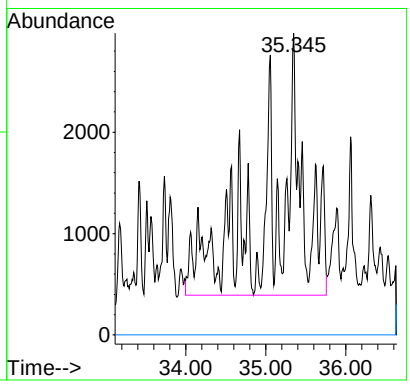


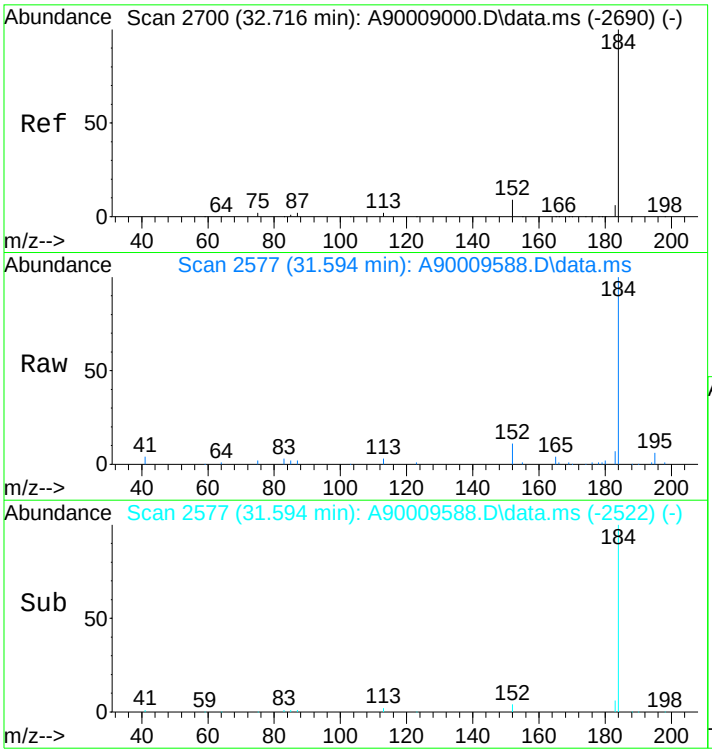


#32
C3-Fluorenes
Concen: 379.12 ng/mL m
RT: 35.345 min Scan# 2988
Delta R.T. 0.676 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:208 Resp: 69233

Ion	Ratio	Lower	Upper
208	100		
197	0.0	0.0	0.0

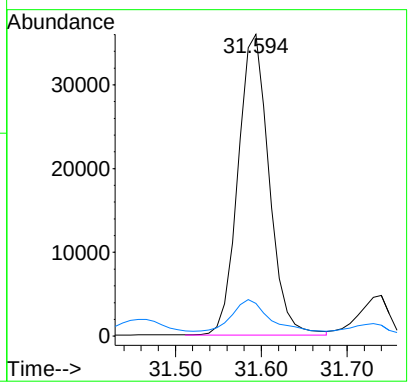


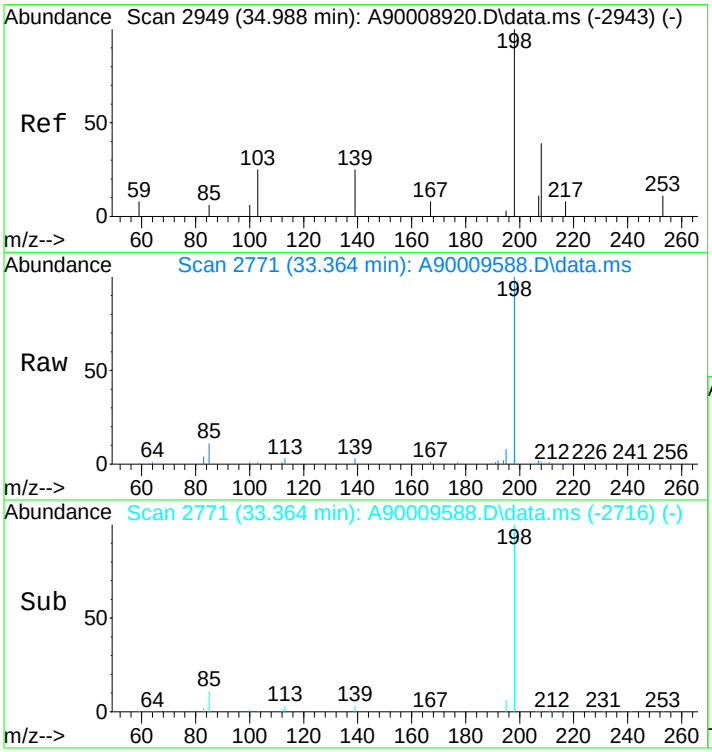


#33
Dibenzothiophene
Concen: 352.30 ng/mL
RT: 31.594 min Scan# 2577
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:184 Resp: 90499

Ion	Ratio	Lower	Upper
184	100		
152	12.0	7.0	10.4#

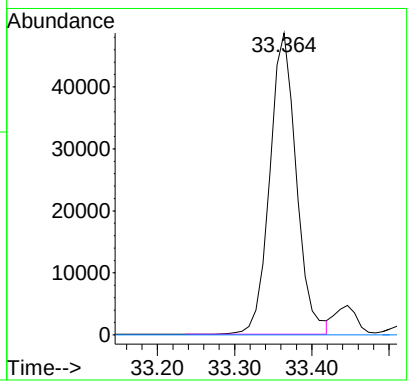


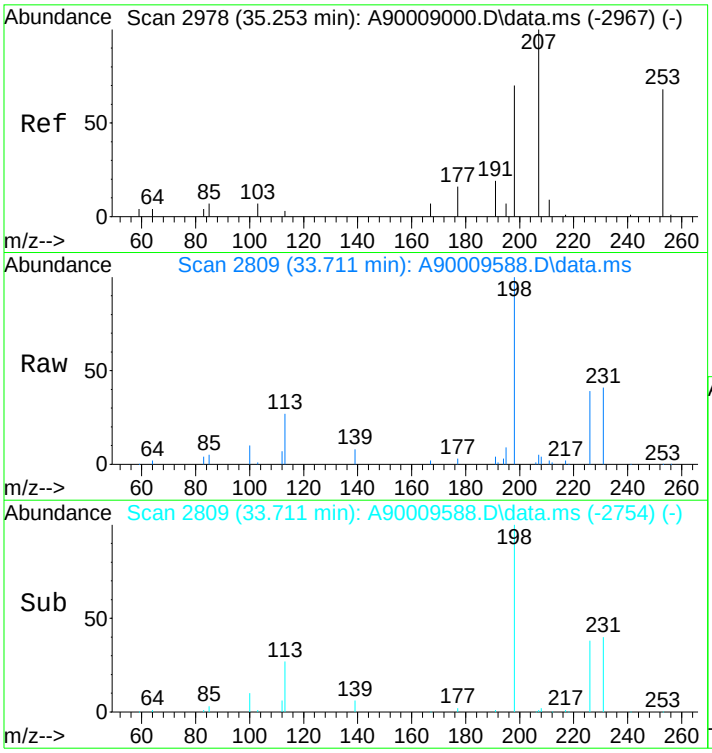


#34
4-Methyldibenzothiophene(4MDT)
Concen: 453.04 ng/mL
RT: 33.364 min Scan# 2771
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:198 Resp: 116377

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

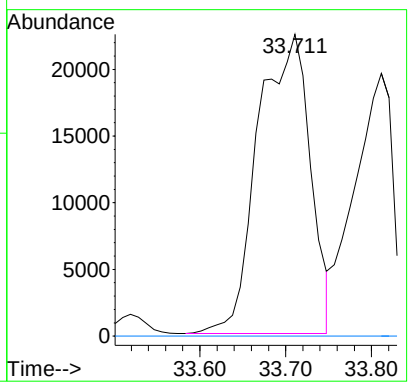


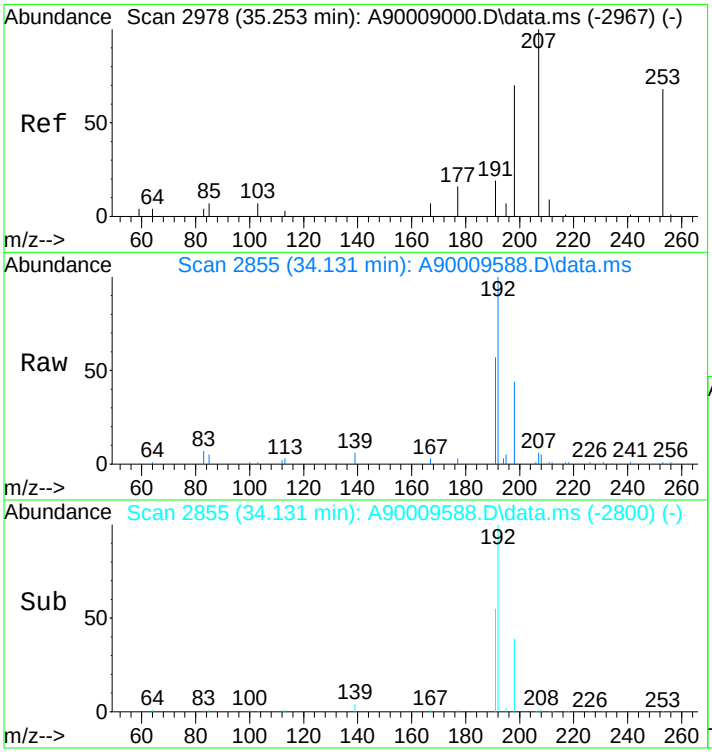


#35
2/3-Methyldibenzothiophene(2MDT)
Concen: 369.52 ng/mL
RT: 33.711 min Scan# 2809
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:198 Resp: 94923

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

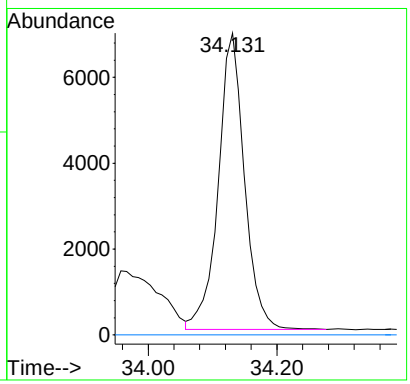


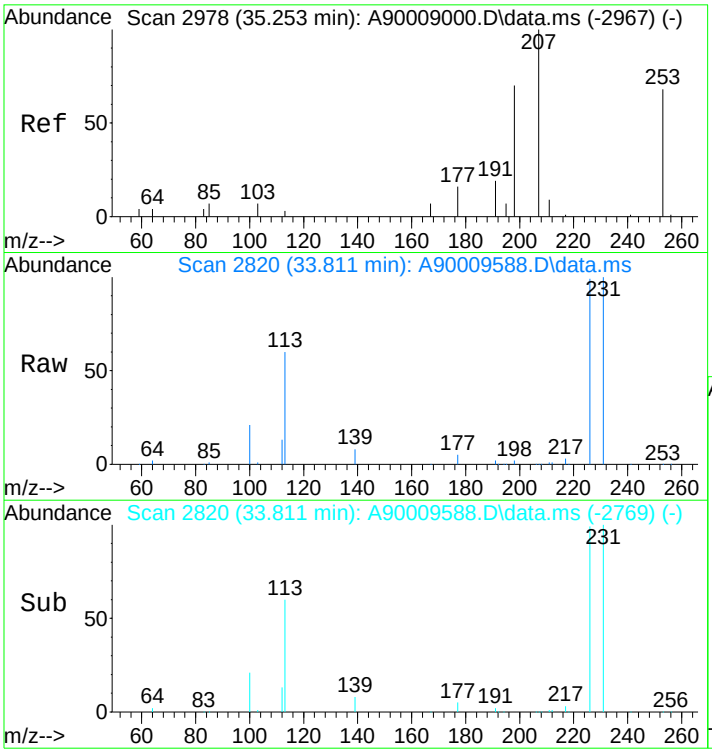


#36
1-Methyldibenzothiophene(1MDT)
Concen: 75.74 ng/mL
RT: 34.131 min Scan# 2855
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:198 Resp: 19456

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

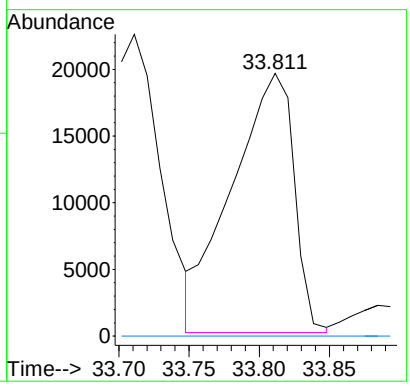


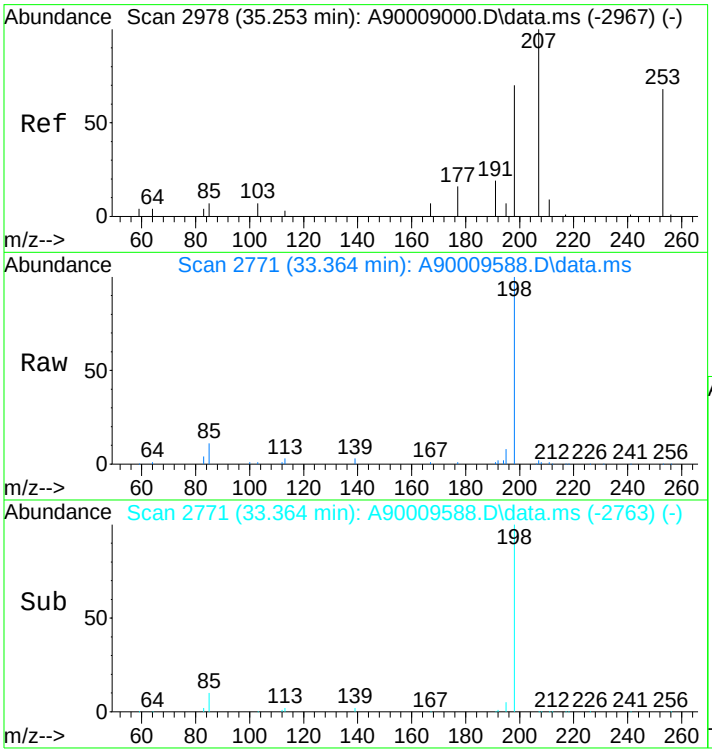


#37
OTP
Concen: 233.01 ng/mL
RT: 33.811 min Scan# 2820
Delta R.T. 0.019 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:198 Resp: 59857

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

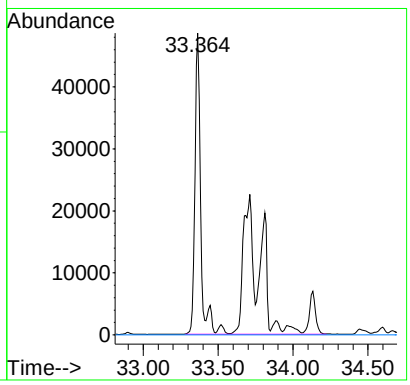


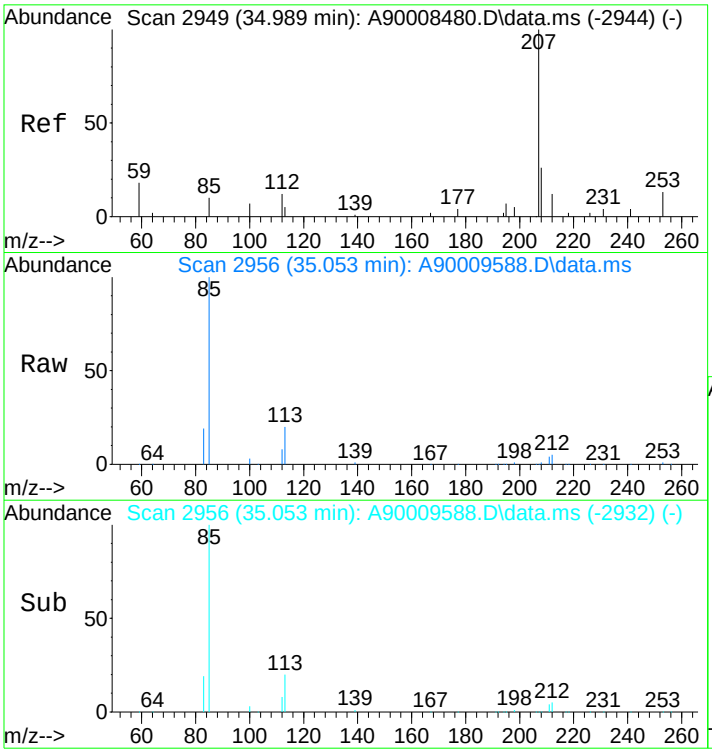


#38
C1-Dibenzothiophenes
Concen: 1241.61 ng/mL m
RT: 33.364 min Scan# 2771
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:198 Resp: 318948

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

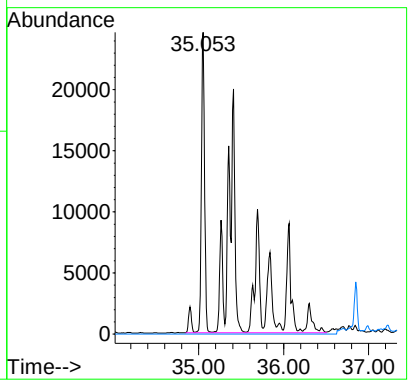


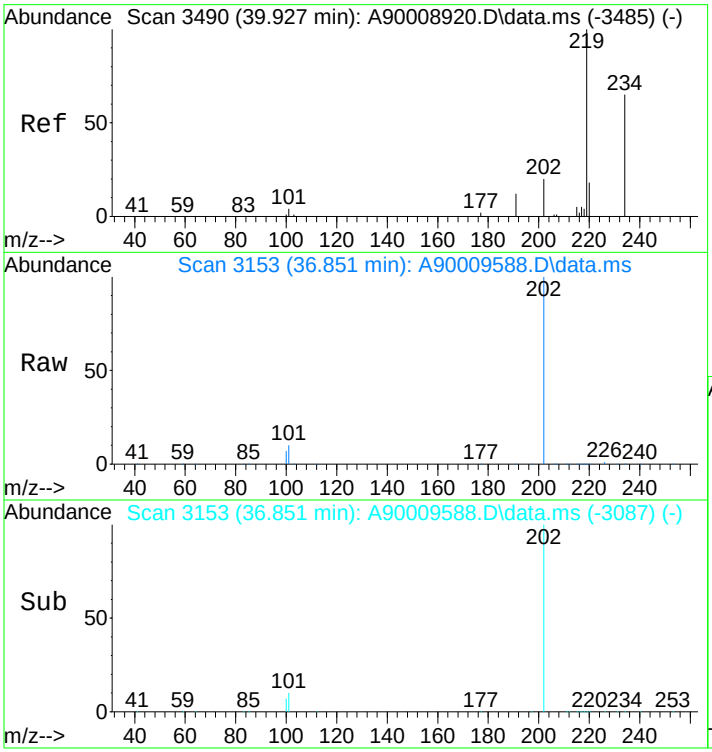


#39
C2-Dibenzothiophenes
Concen: 1110.02 ng/mL m
RT: 35.053 min Scan# 2956
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:212 Resp: 285144

Ion	Ratio	Lower	Upper
212	100		
197	0.0	0.0	0.0

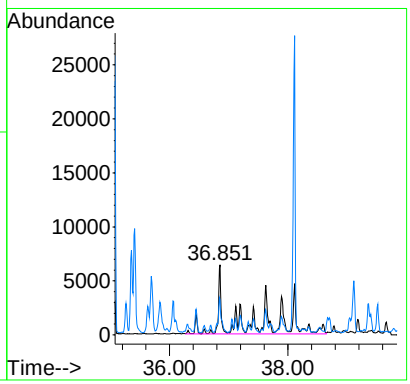


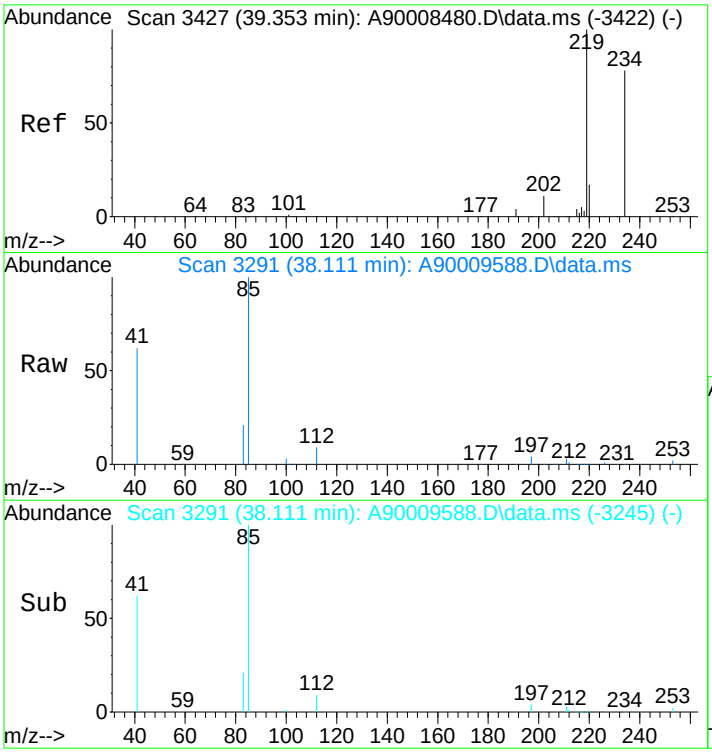


#40
C3-Dibenzothiophenes
Concen: 421.71 ng/mL m
RT: 36.851 min Scan# 3153
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:226 Resp: 108329

Ion	Ratio	Lower	Upper
226	100		
211	10.9	46.4	69.6#

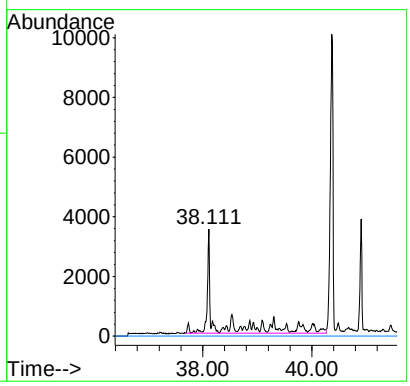


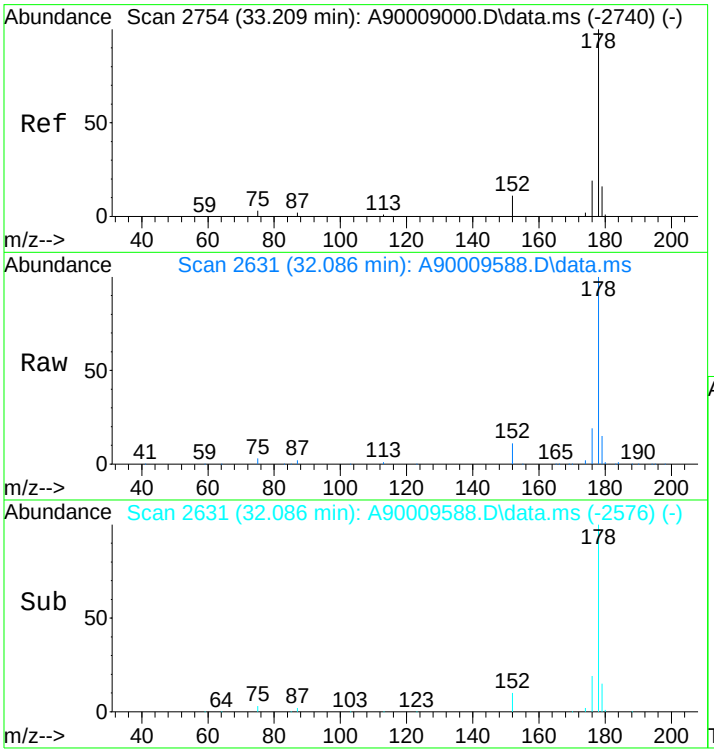


#41
C4-Dibenzothiophenes
Concen: 126.70 ng/mL m
RT: 38.111 min Scan# 3291
Delta R.T. -0.429 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:240 Resp: 32546

Ion	Ratio	Lower	Upper
240	100		
225	0.0	0.0	0.0

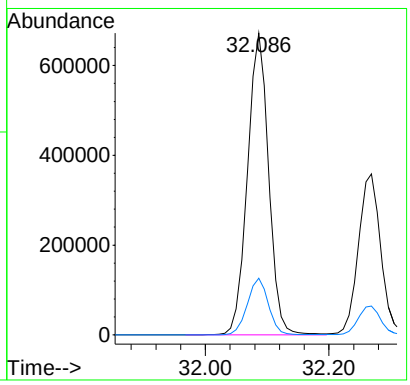


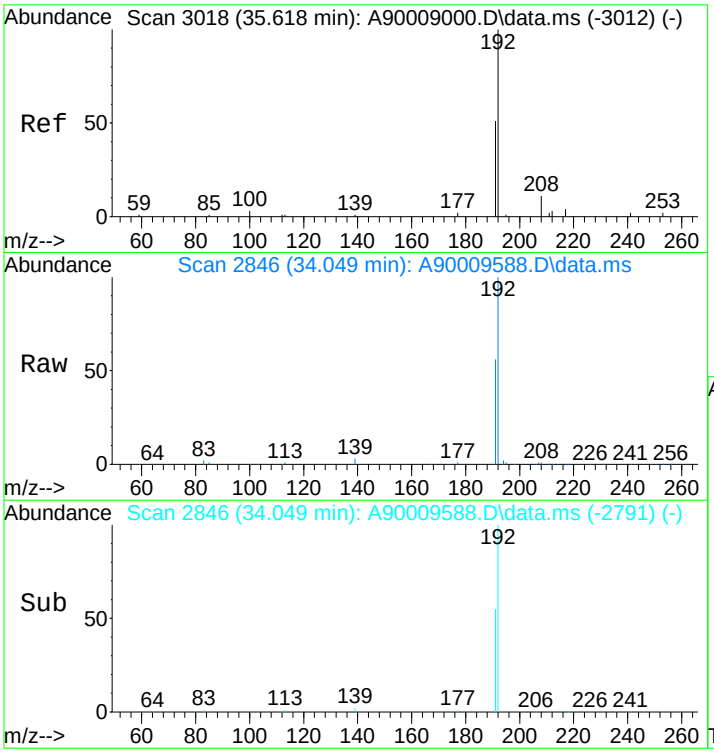


#43
Phenanthrene
Concen: 6024.79 ng/mL
RT: 32.086 min Scan# 2631
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:178 Resp: 1598914

Ion	Ratio	Lower	Upper
178	100		
176	18.8	15.1	22.7

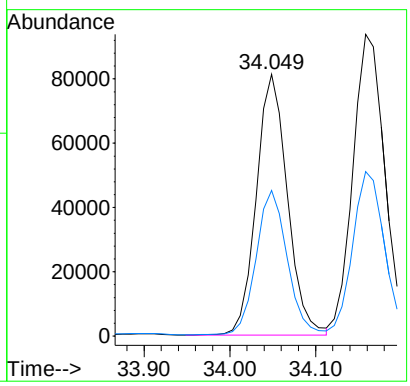


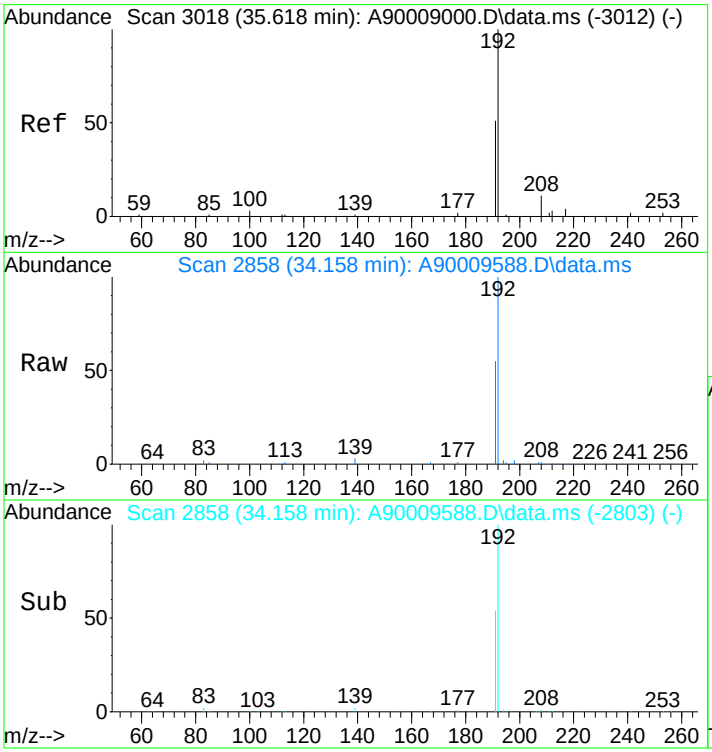


#44
3-Methylphenanthrene(3MP)
Concen: 770.74 ng/mL
RT: 34.049 min Scan# 2846
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:192 Resp: 204546

Ion	Ratio	Lower	Upper
192	100		
191	55.1	45.9	68.9

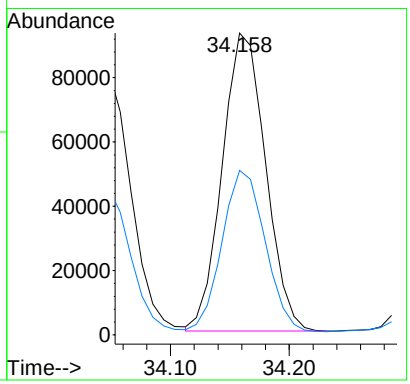


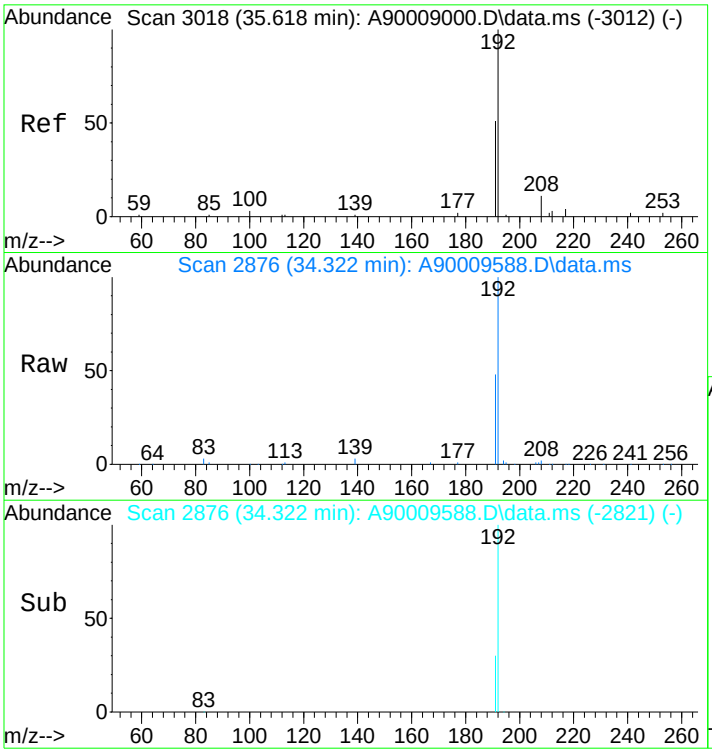


#45
2-Methylphenanthrene(2MP)
Concen: 884.51 ng/mL
RT: 34.158 min Scan# 2858
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:192 Resp: 234738

Ion	Ratio	Lower	Upper
192	100		
191	53.7	44.9	67.3

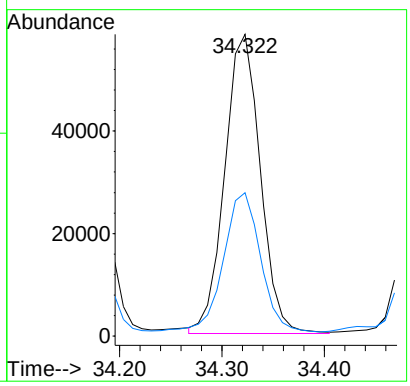


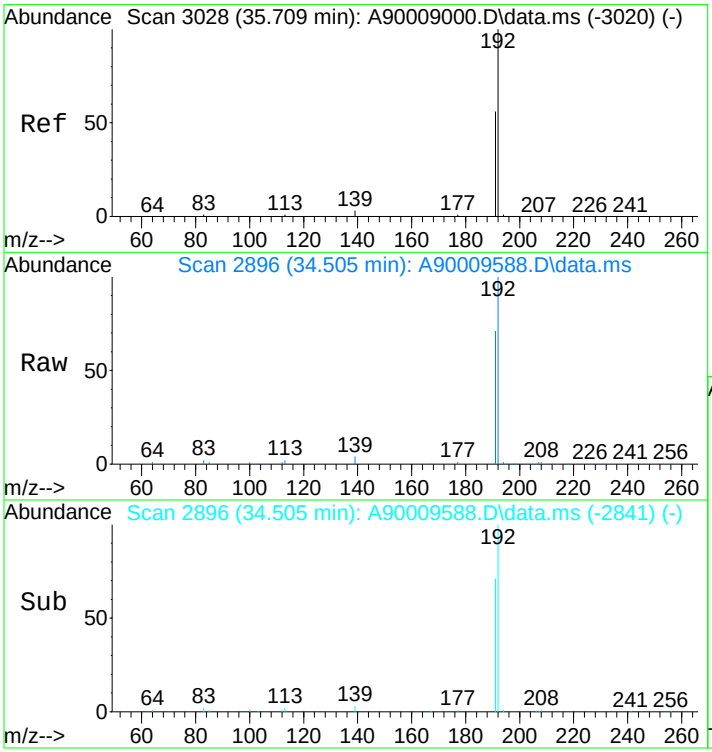


#46
2-Methylanthracene(2MA)
Concen: 530.94 ng/mL m
RT: 34.322 min Scan# 2876
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:192 Resp: 140906

Ion	Ratio	Lower	Upper
192	100		
191	0.9	96.8	145.2#

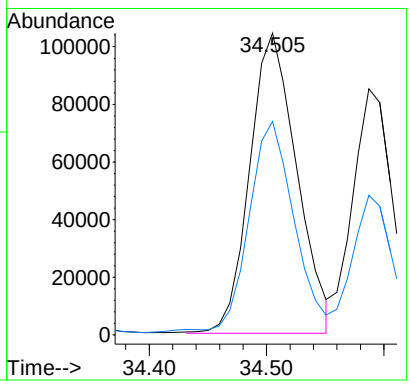


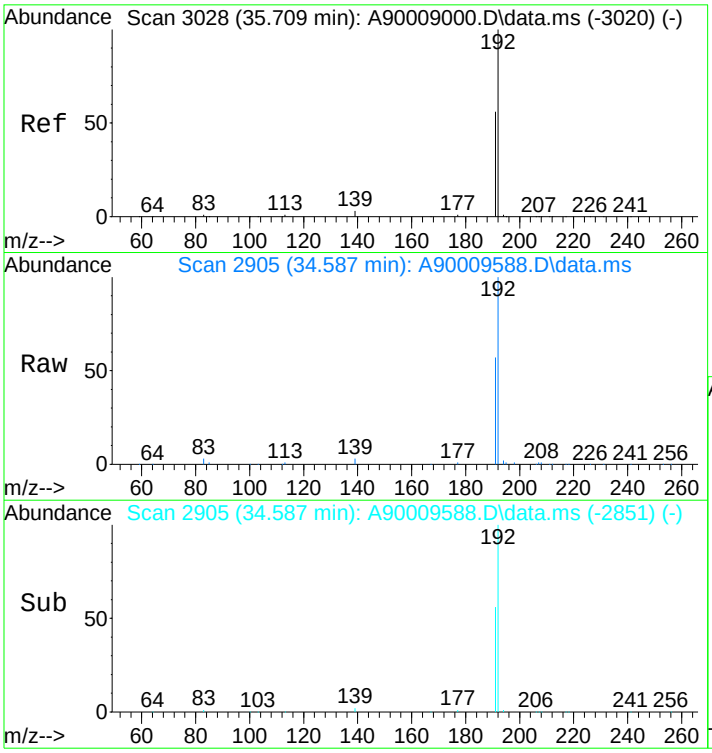


#47
9/4-Methylphenanthrene(9MP)
Concen: 1091.47 ng/mL m
RT: 34.505 min Scan# 2896
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:192 Resp: 289664

Ion	Ratio	Lower	Upper
192	100		
191	38.6	44.5	66.7#

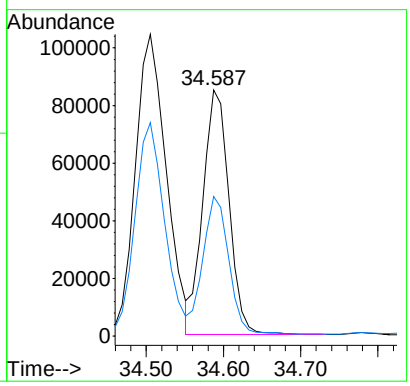


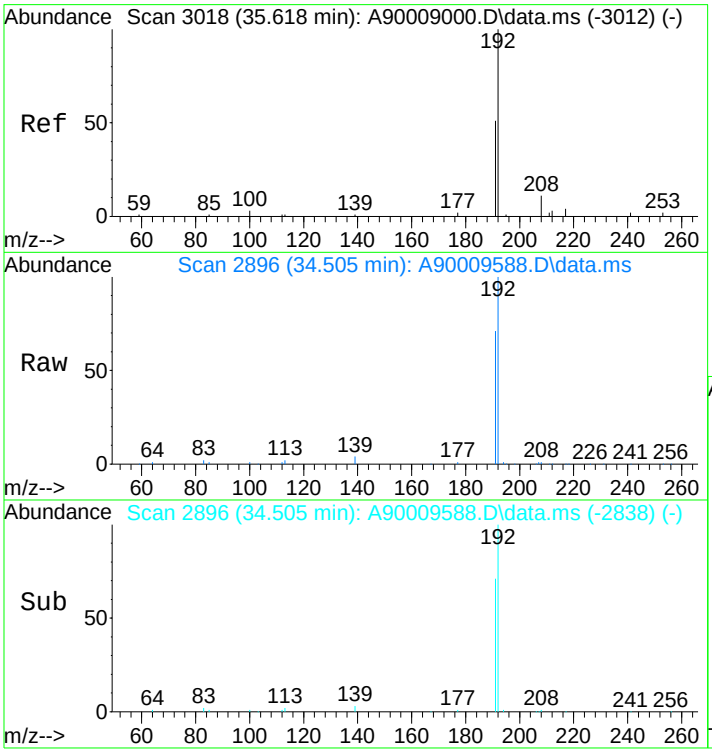


#48
1-Methylphenanthrene(1MP)
Concen: 753.50 ng/mL
RT: 34.587 min Scan# 2905
Delta R.T. -0.009 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:192 Resp: 199971

Ion	Ratio	Lower	Upper
192	100		
191	55.9	46.9	70.3

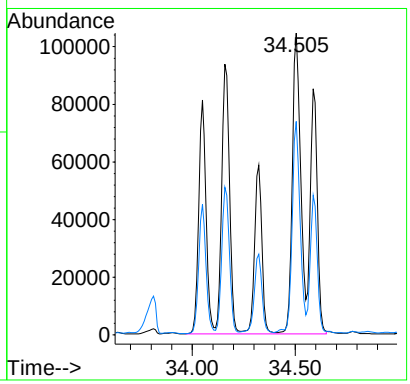


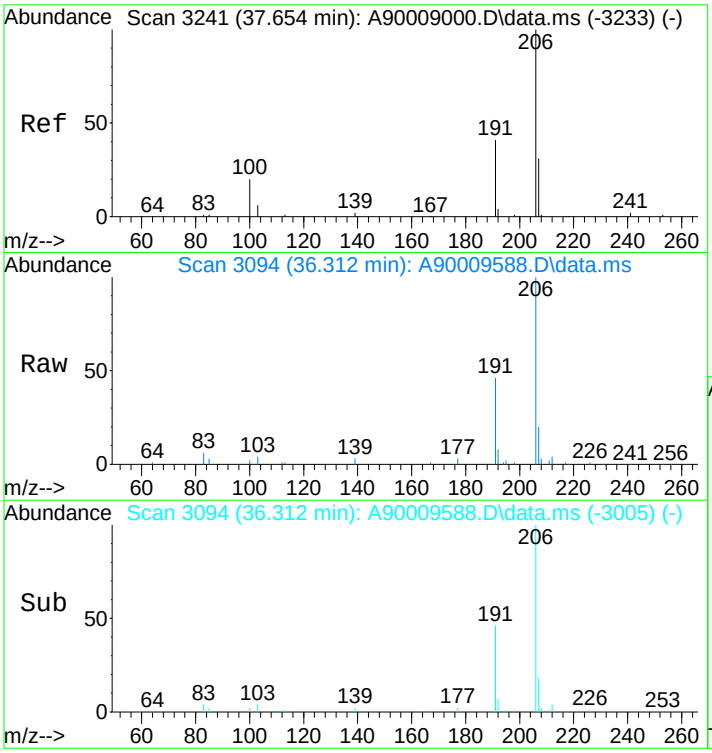


#49
C1-Phenanthrenes/Anthracenes
Concen: 4080.57 ng/mL m
RT: 34.505 min Scan# 2896
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:192 Resp: 1082939

Ion	Ratio	Lower	Upper
192	100		
191	7.7	44.5	66.7#

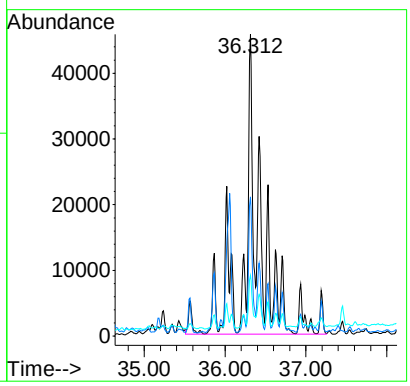


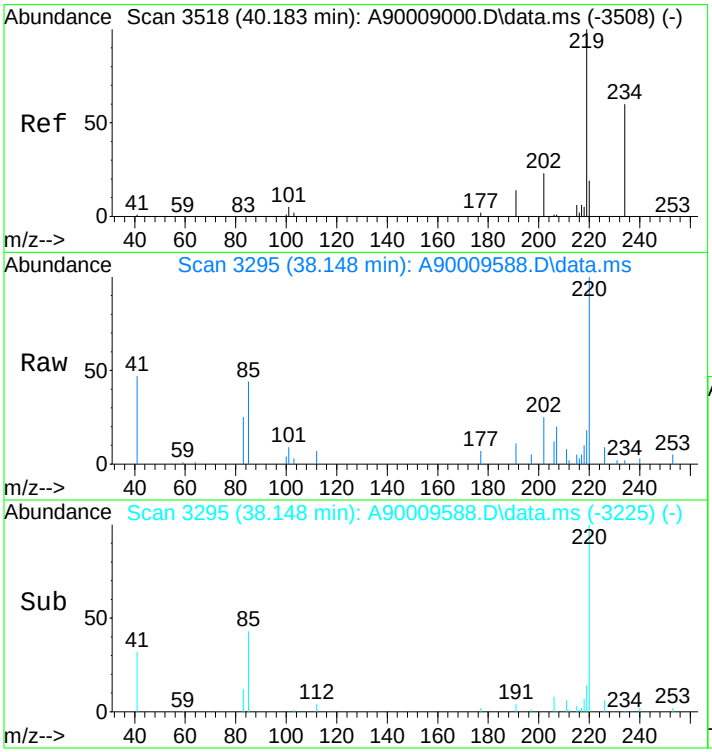


#50
C2-Phenanthrenes/Anthracenes
Concen: 2211.45 ng/mL m
RT: 36.312 min Scan# 3094
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:206 Resp: 586895

Ion	Ratio	Lower	Upper
206	100		
191	11.1	41.0	61.4#
207	4.3	17.1	25.7#

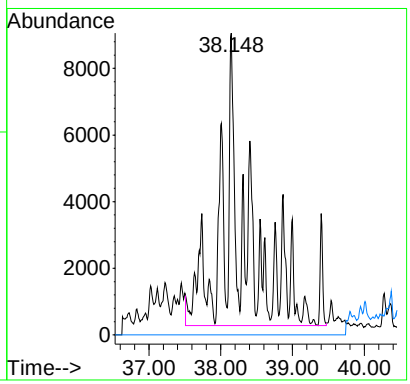


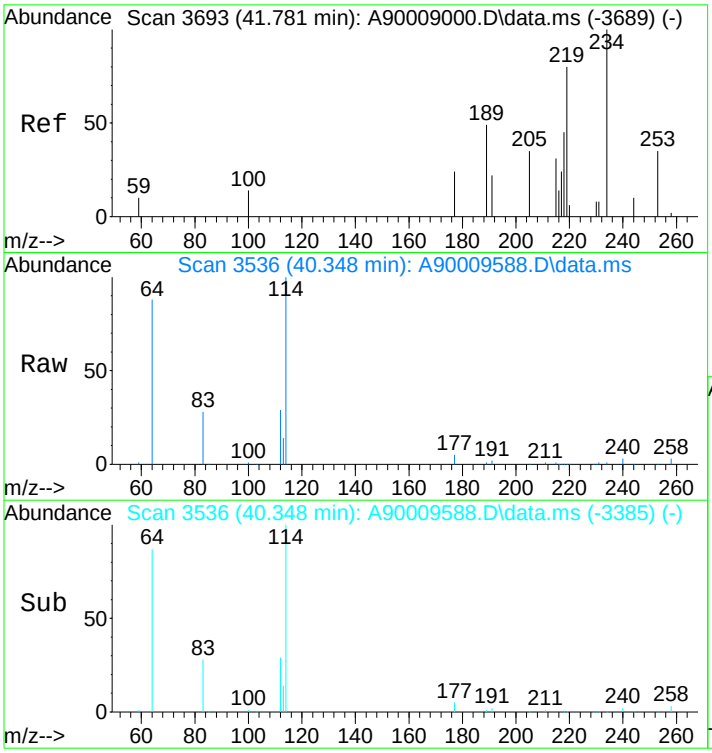


#52
C3-Phenanthrenes/Anthracenes
Concen: 717.47 ng/mL m
RT: 38.148 min Scan# 3295
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:220 Resp: 190408

Ion	Ratio	Lower	Upper
220	100		
205	0.0	0.0	0.0

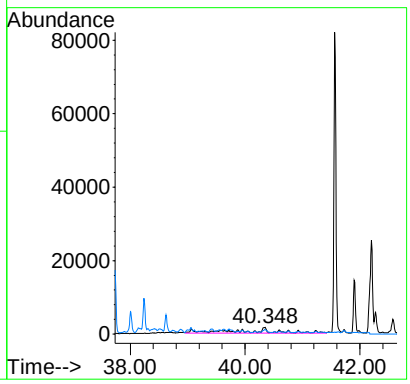


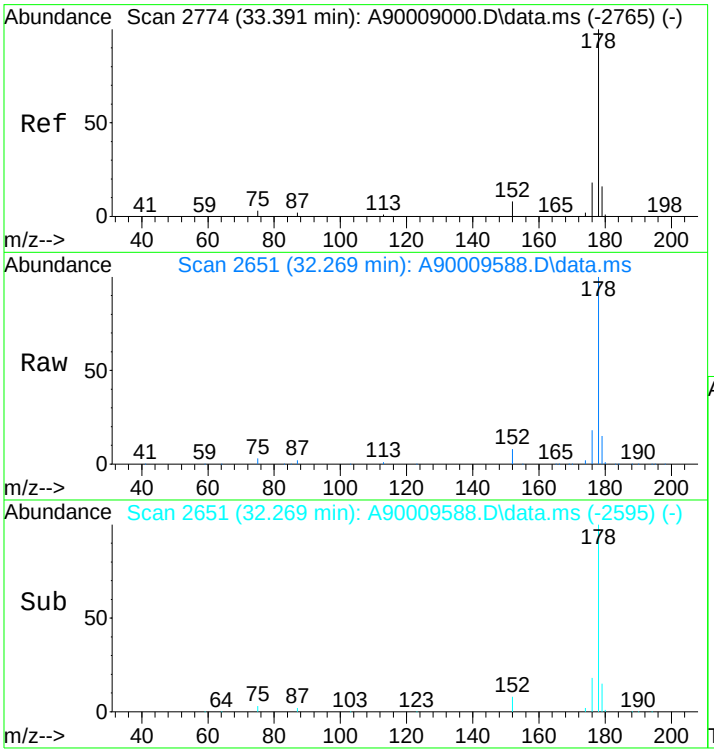


#53
C4-Phenanthrenes/Anthracenes
Concen: 205.45 ng/mL m
RT: 40.348 min Scan# 3536
Delta R.T. 0.019 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:234 Resp: 54523

Ion	Ratio	Lower	Upper
234	100		
219	7.2	52.1	78.1#

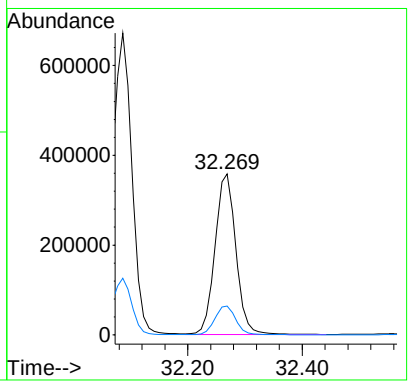


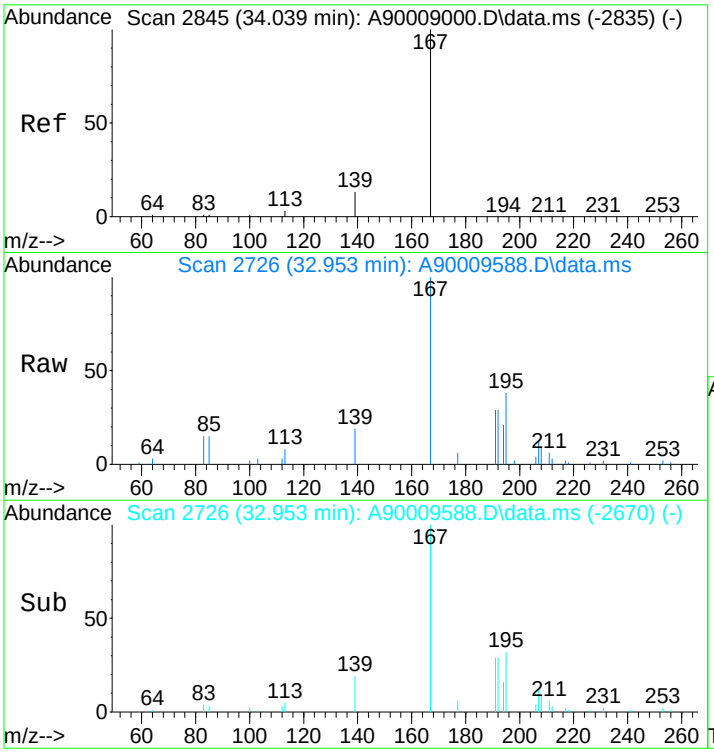


#55
Anthracene
Concen: 3670.26 ng/mL
RT: 32.269 min Scan# 2651
Delta R.T. 0.009 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:178 Resp: 904514

Ion	Ratio	Lower	Upper
178	100		
176	18.1	14.6	21.8

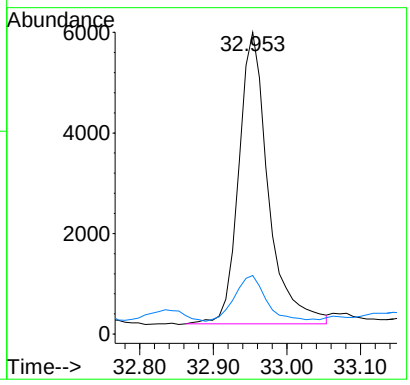


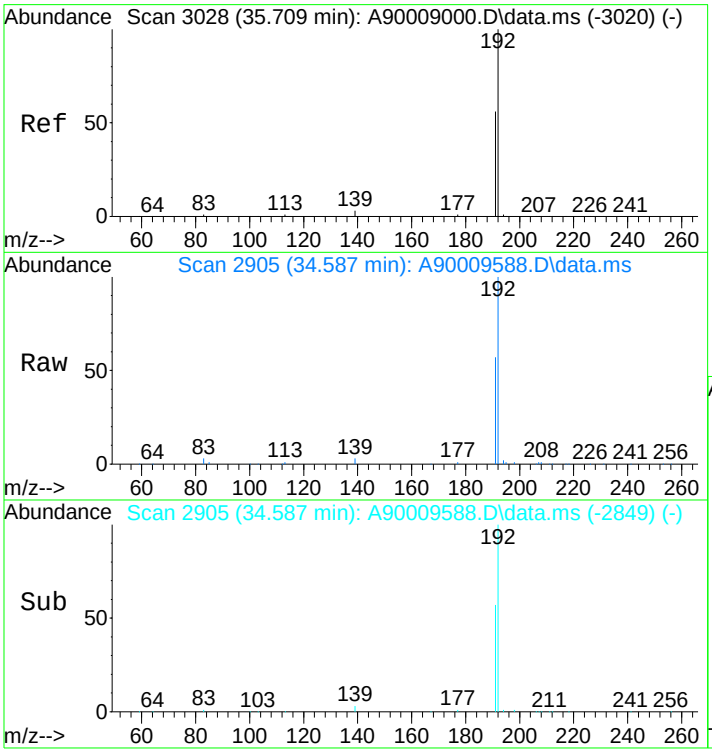


#56
Carbazole
Concen: 69.91 ng/mL
RT: 32.953 min Scan# 2726
Delta R.T. 0.009 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:167 Resp: 16298

Ion	Ratio	Lower	Upper
167	100		
139	18.3	10.2	15.2#

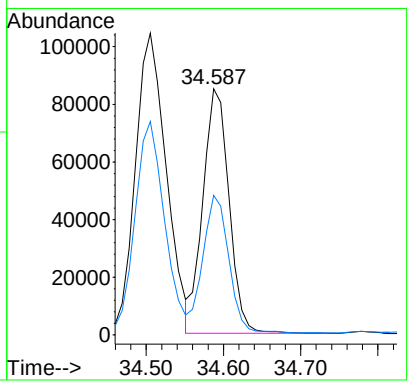


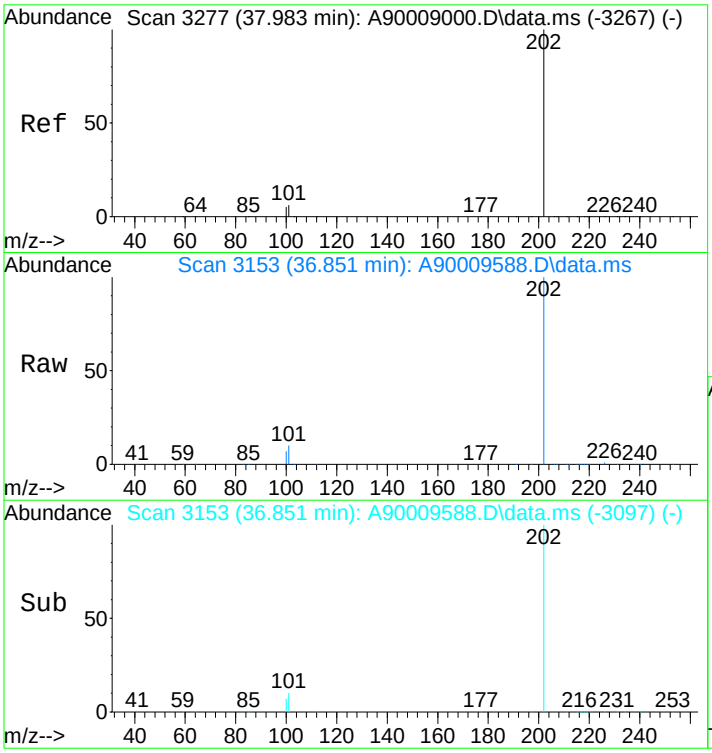


#57
1-Methylphenanthrene
Concen: 1021.29 ng/mL
RT: 34.587 min Scan# 2905
Delta R.T. 0.009 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:192 Resp: 199971

Ion	Ratio	Lower	Upper
192	100		
191	55.9	44.9	67.3

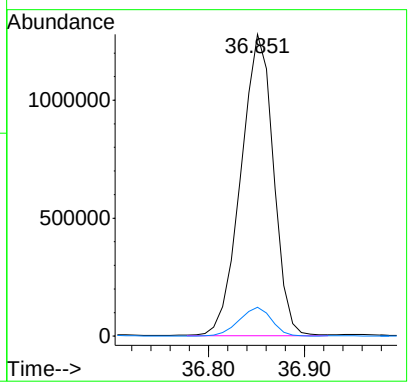


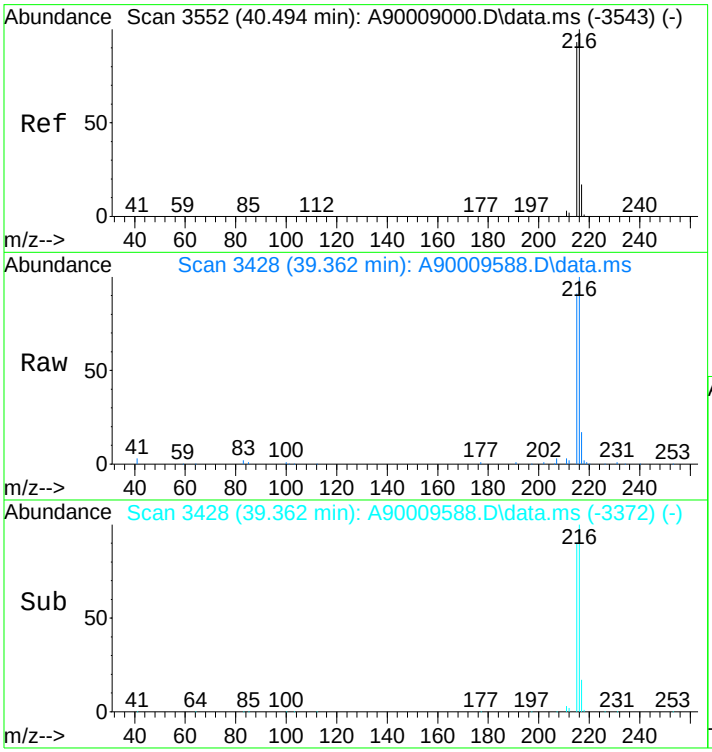


#58
Fluoranthene
Concen: 10173.10 ng/mL m
RT: 36.851 min Scan# 3153
Delta R.T. 0.009 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:202 Resp: 3015987

Ion	Ratio	Lower	Upper
202	100		
101	9.6	8.2	12.2

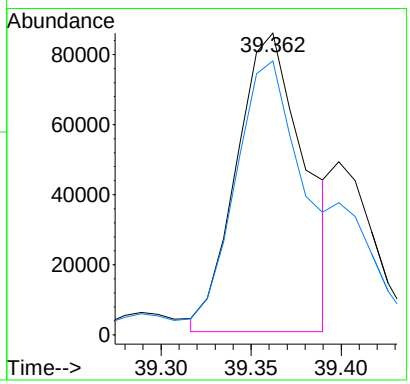


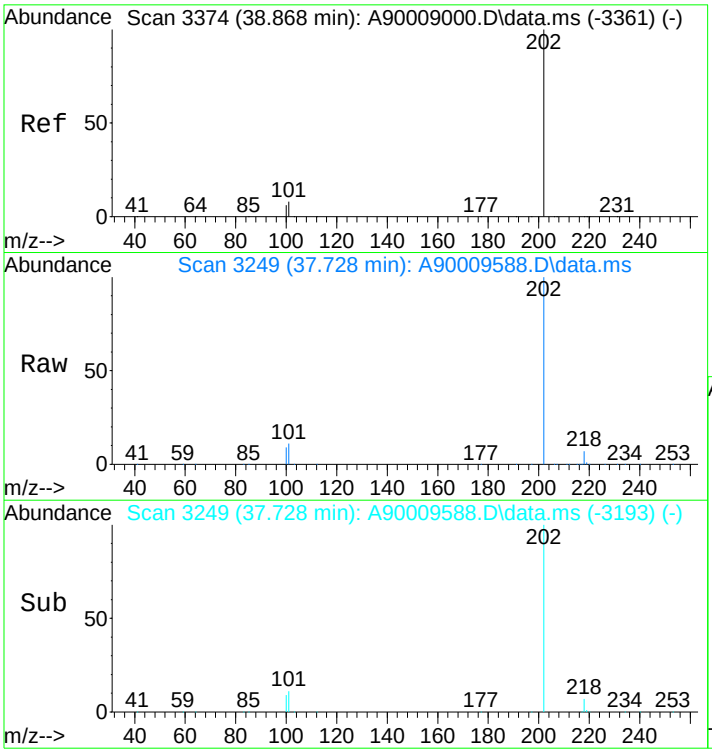


#59
Benzo(b)fluorene
Concen: 1268.40 ng/mL m
RT: 39.362 min Scan# 3428
Delta R.T. 0.009 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:216 Resp: 223633

Ion	Ratio	Lower	Upper
216	100		
215	116.3	73.4	110.2#

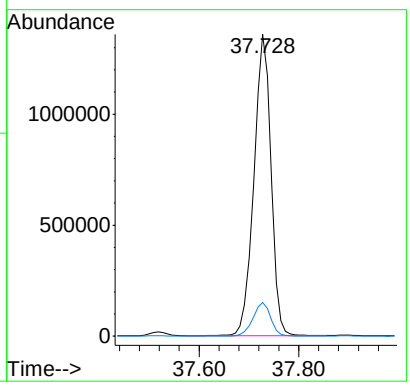


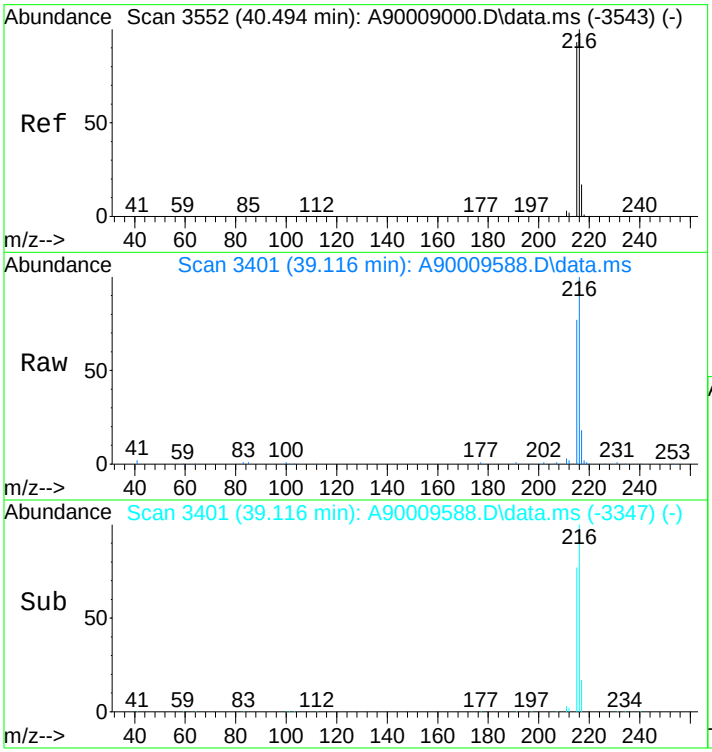


#60
Pyrene
Concen: 10687.01 ng/mL
RT: 37.728 min Scan# 3249
Delta R.T. 0.009 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:202 Resp: 3232376

Ion	Ratio	Lower	Upper
202	100		
101	11.5	9.5	14.3

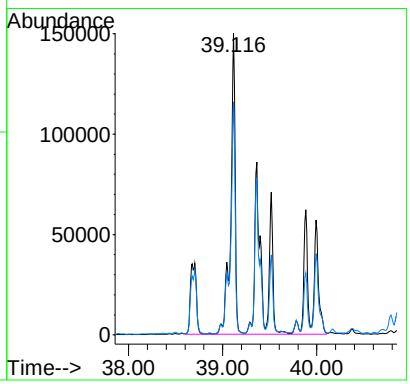


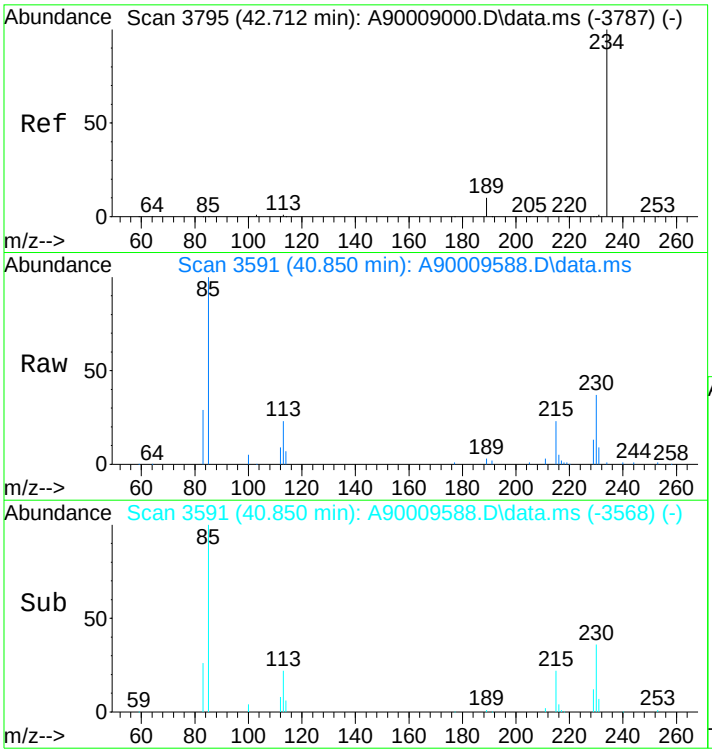


#61
C1-Fluoranthenes/Pyrenes
Concen: 5027.63 ng/mL m
RT: 39.116 min Scan# 3401
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:216 Resp: 1520648

Ion	Ratio	Lower	Upper
216	100		
215	20.9	73.5	110.3#

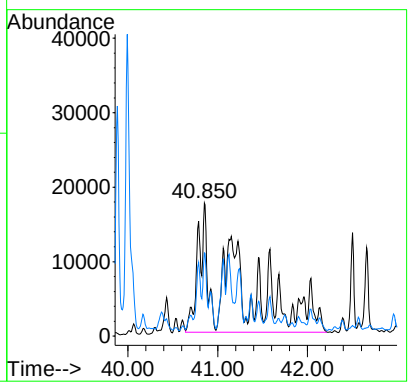


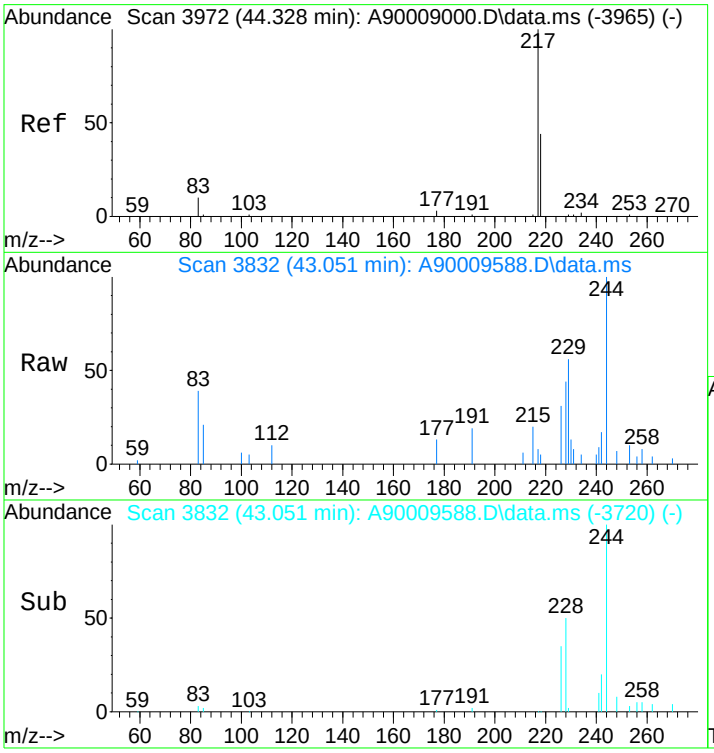


#62
C2-Fluoranthenes/Pyrenes
Concen: 1551.64 ng/mL m
RT: 40.850 min Scan# 3591
Delta R.T. -0.073 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:230 Resp: 469306

Ion	Ratio	Lower	Upper
230	100		
215	2.1	93.1	139.7#

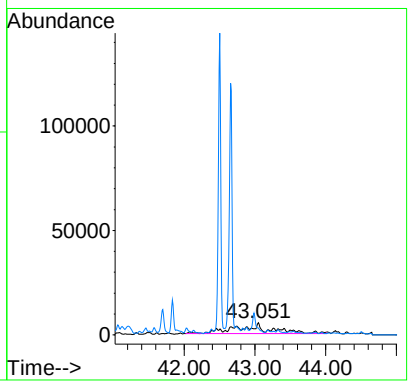


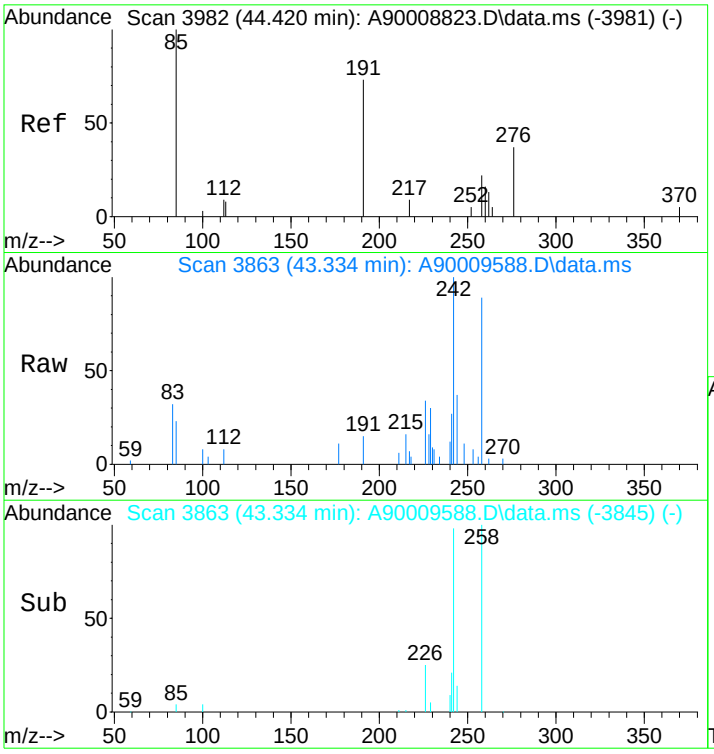


#63
C3-Fluoranthenes/Pyrenes
Concen: 575.30 ng/mL m
RT: 43.051 min Scan# 3832
Delta R.T. 0.110 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:244 Resp: 174004

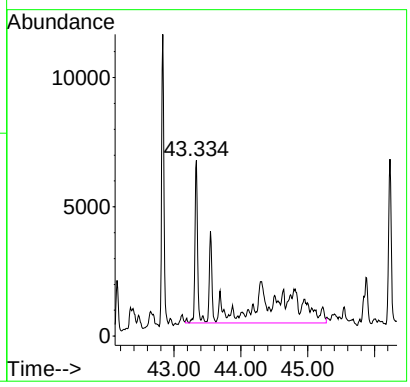
Ion	Ratio	Lower	Upper
244	100		
229	2.0	75.0	112.4#

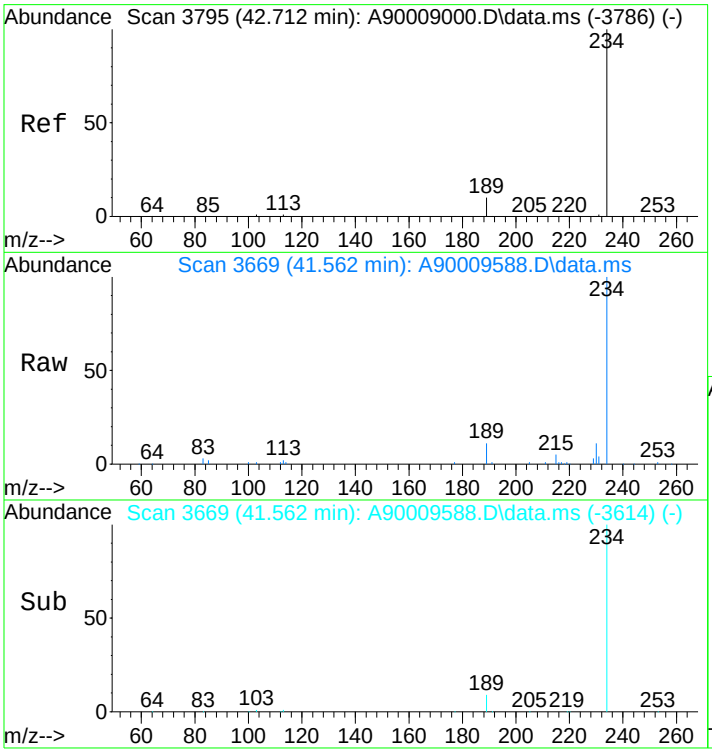




#64
C4-Fluoranthenes/Pyrenes
Concen: 290.78 ng/mL m
RT: 43.334 min Scan# 3863
Delta R.T. -0.958 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:258 Resp: 87949

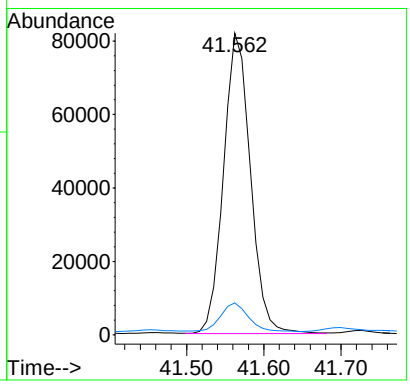


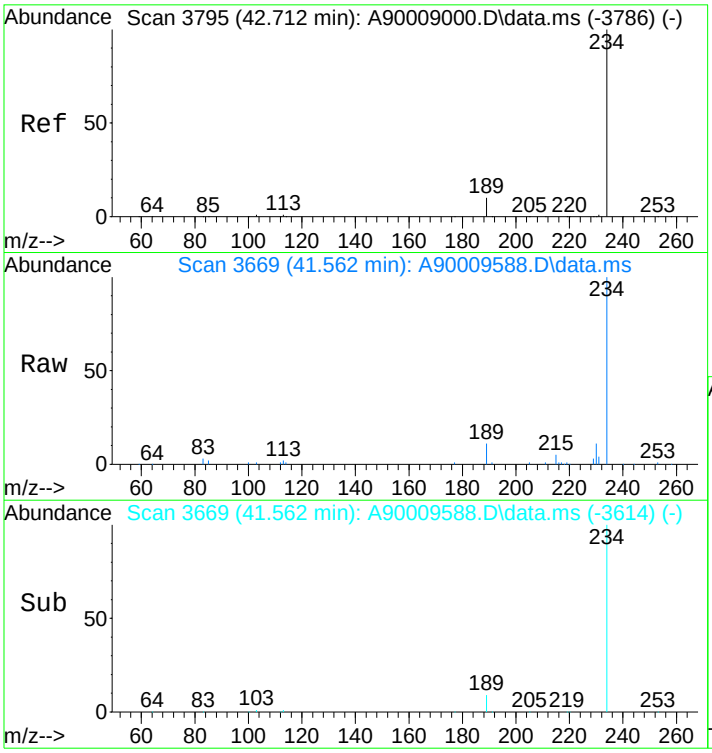


#66
Naphthobenzothiophene
Concen: 753.67 ng/ml
RT: 41.562 min Scan# 3669
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:234 Resp: 197797

Ion	Ratio	Lower	Upper
234	100		
189	9.8	7.2	10.8

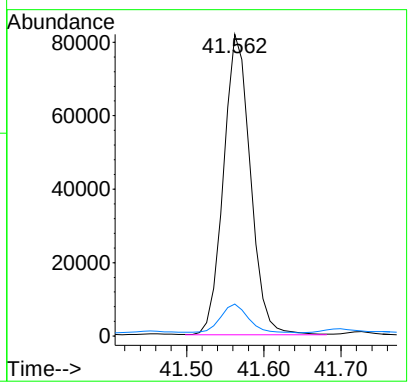


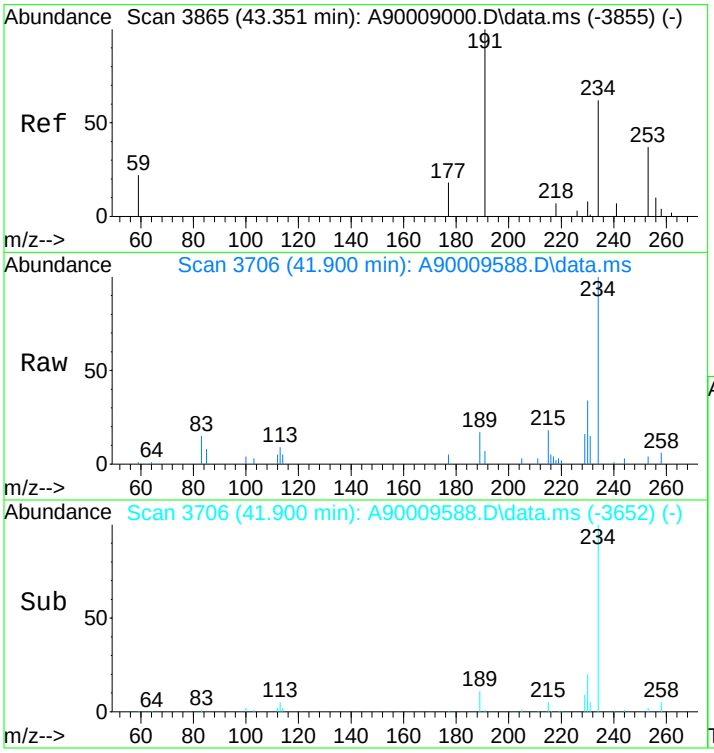


#67
Naphthobenzothiophene-2,1-D
Concen: 753.67 ng/mL
RT: 41.562 min Scan# 3669
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:234 Resp: 197797

Ion	Ratio	Lower	Upper
234	100		
189	9.8	7.2	10.8

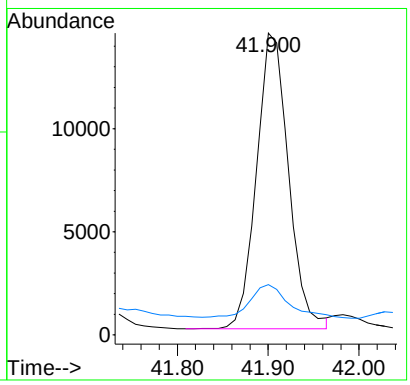


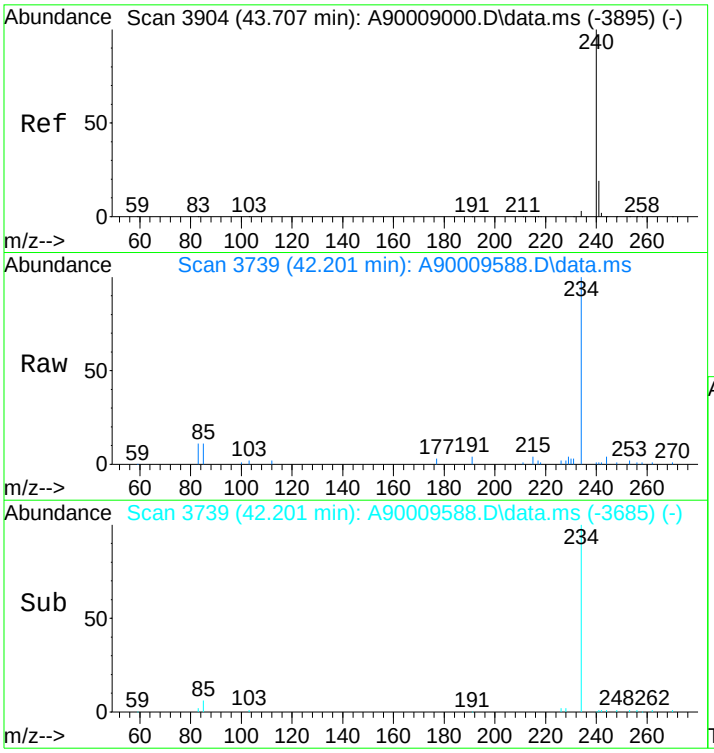


#68
Naphthobenzothiophene-1,2-D
Concen: 133.20 ng/mL
RT: 41.900 min Scan# 3706
Delta R.T. -0.009 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:234 Resp: 34958

Ion	Ratio	Lower	Upper
234	100		
189	23.9	81.0	121.4#

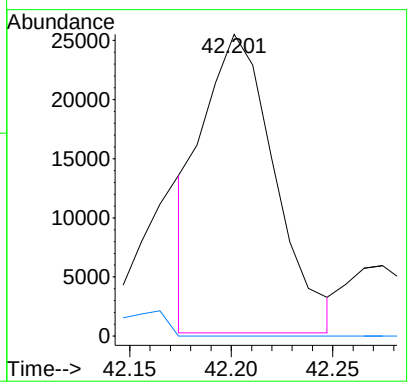


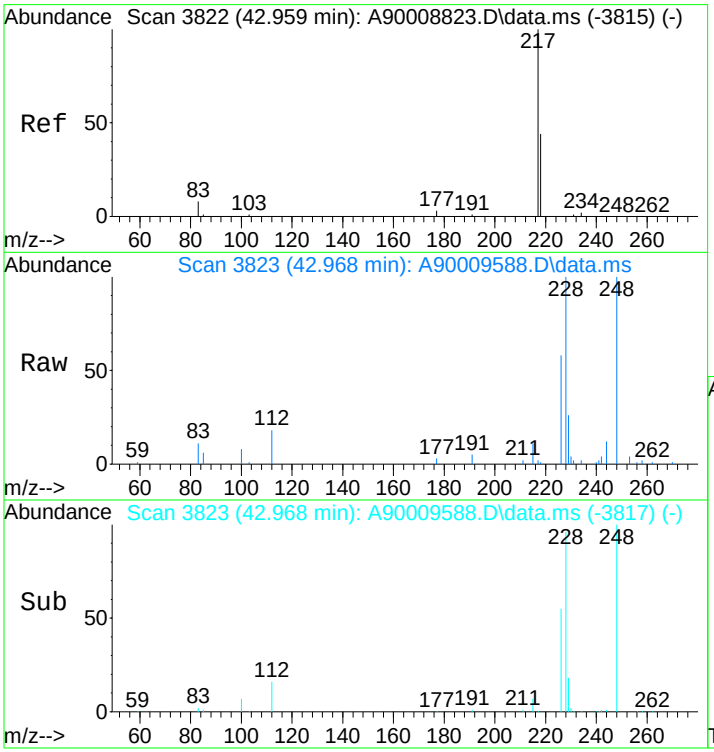


#69
Naphthobenzothiophene-2,3-D
Concen: 238.76 ng/mL m
RT: 42.201 min Scan# 3739
Delta R.T. -0.009 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:234 Resp: 62662

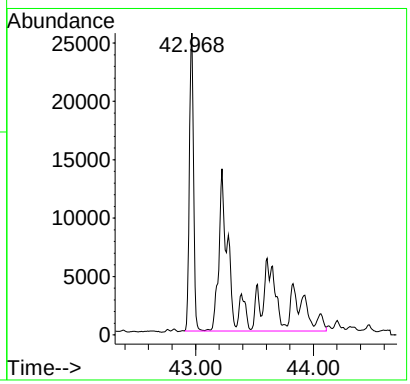
Ion	Ratio	Lower	Upper
234	100		
189	0.0	0.0	0.0

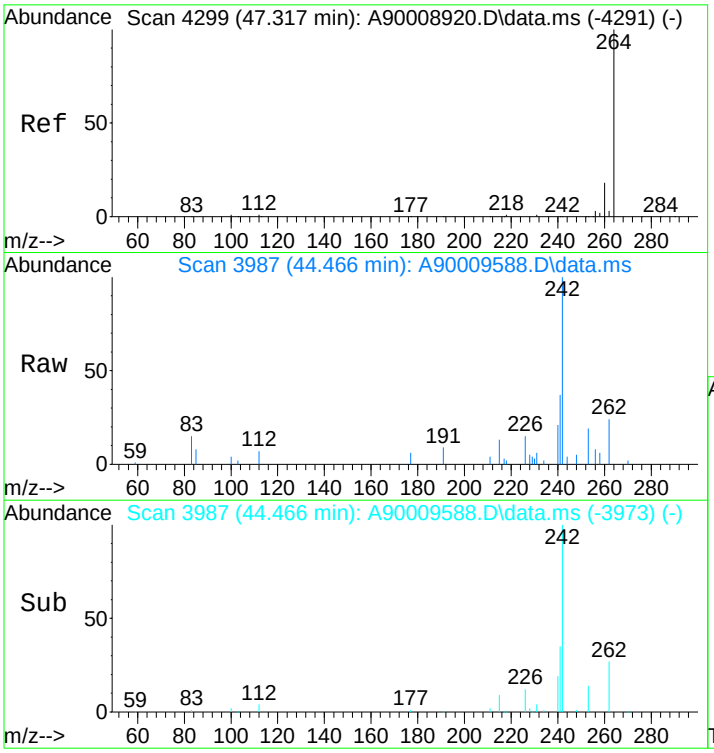




#70
C1-Naphthobenzothiophenes
Concen: 857.40 ng/ml m
RT: 42.968 min Scan# 3823
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

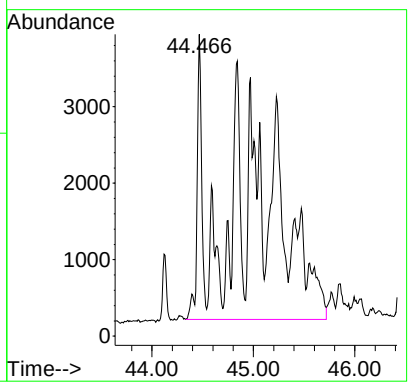
Tgt Ion:248 Resp: 225020

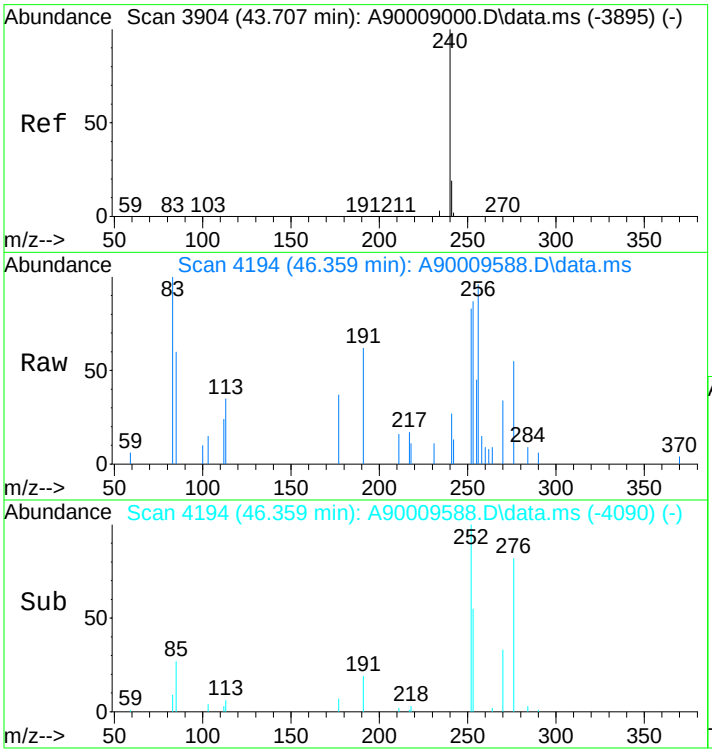




#71
C2-Naphthobenzothiophenes
Concen: 363.08 ng/ml m
RT: 44.466 min Scan# 3987
Delta R.T. -0.502 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

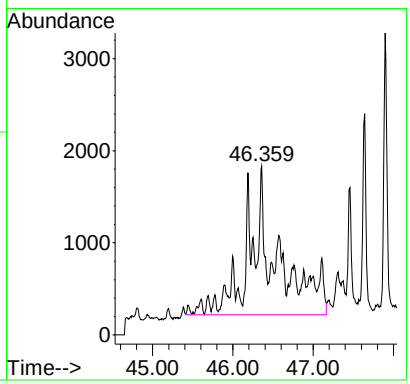
Tgt Ion:262 Resp: 95288

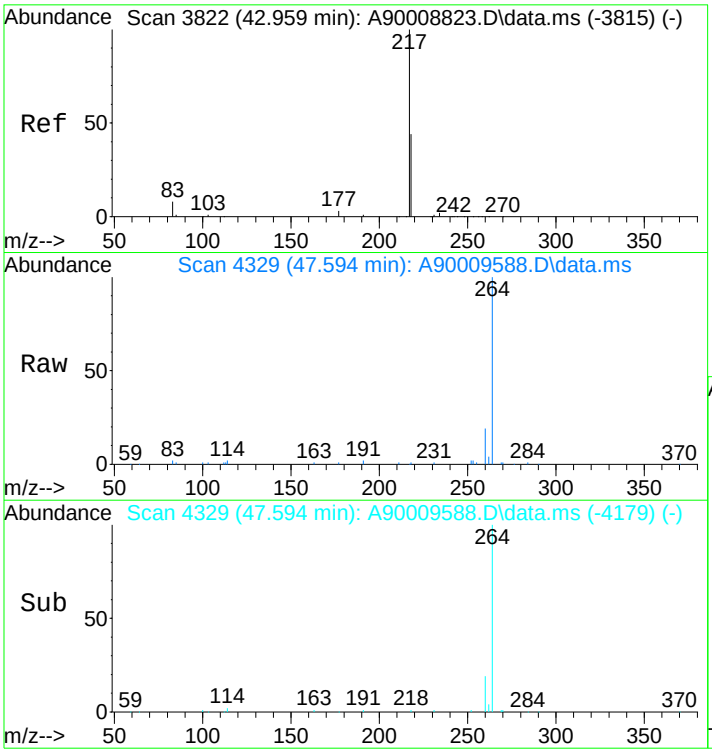




#72
C3-Naphthobenzothiophenes
Concen: 147.86 ng/ml m
RT: 46.359 min Scan# 4194
Delta R.T. -0.210 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

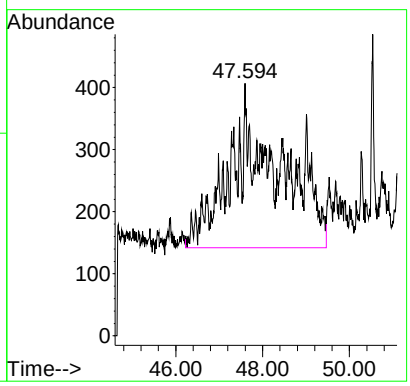
Tgt Ion:276 Resp: 38804

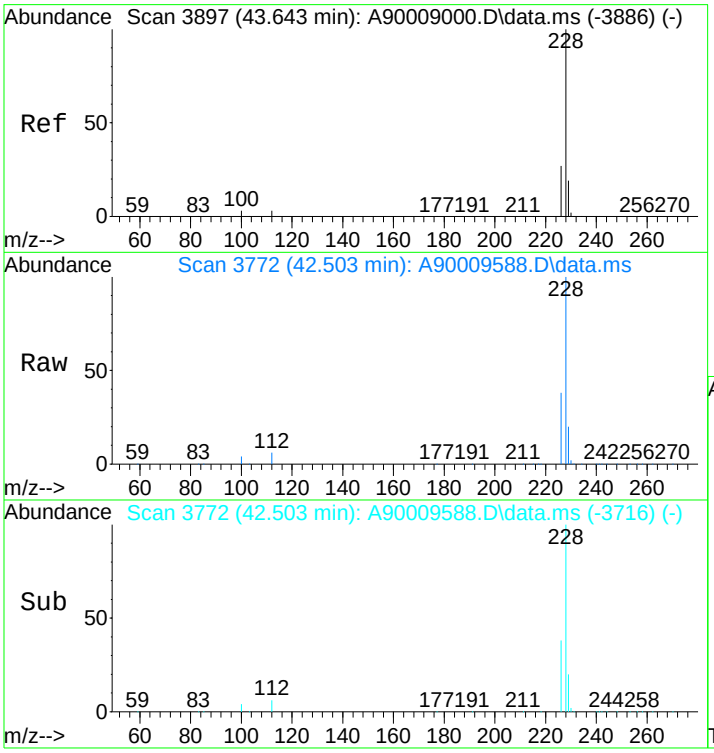




#73
C4-Naphthobenzothiophenes
Concen: 75.96 ng/mL m
RT: 47.594 min Scan# 4329
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:290 Resp: 19935

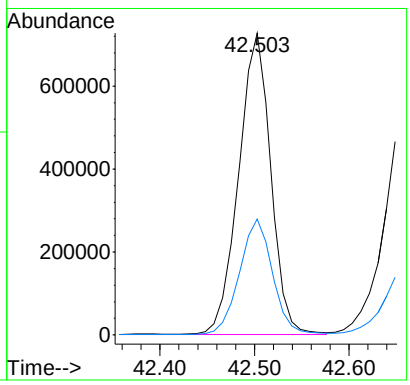


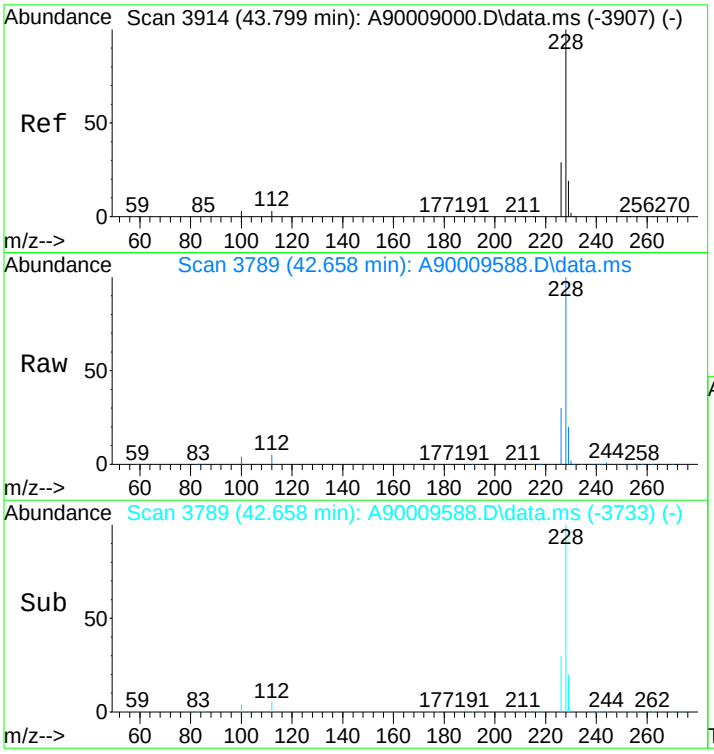


#75
Benz[a]anthracene
Concen: 6125.15 ng/mL m
RT: 42.503 min Scan# 3772
Delta R.T. 0.009 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:228 Resp: 1713330

Ion	Ratio	Lower	Upper
228	100		
226	27.9	20.8	31.2

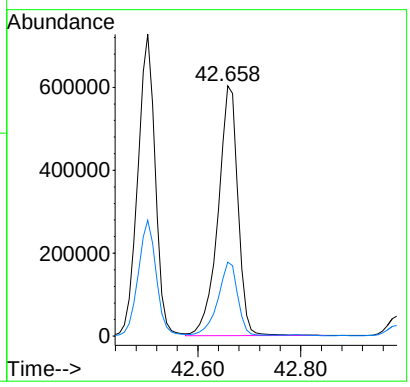


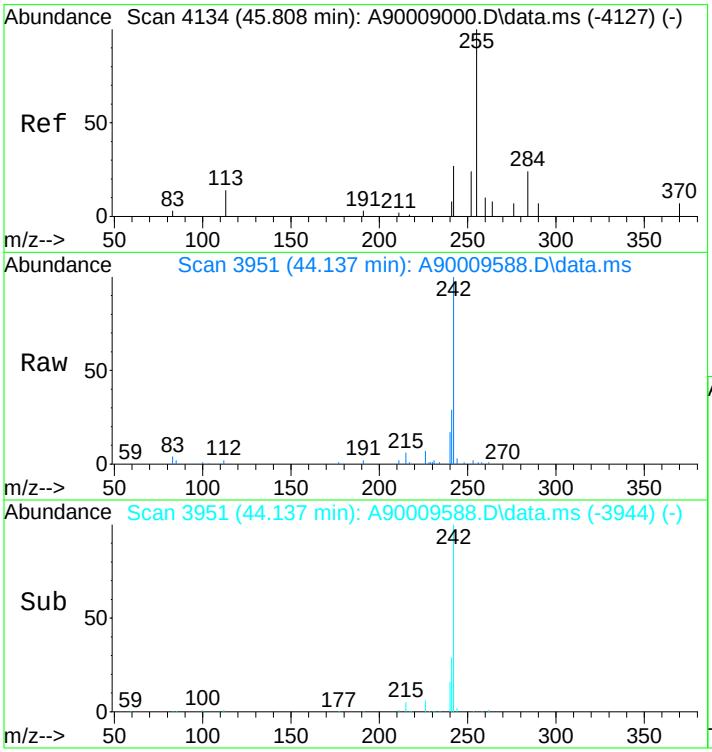


#77
Chrysene/Triphenylene
Concen: 5868.07 ng/mL
RT: 42.658 min Scan# 3789
Delta R.T. 0.009 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:228 Resp: 1614376

Ion	Ratio	Lower	Upper
228	100		
226	29.6	23.3	34.9

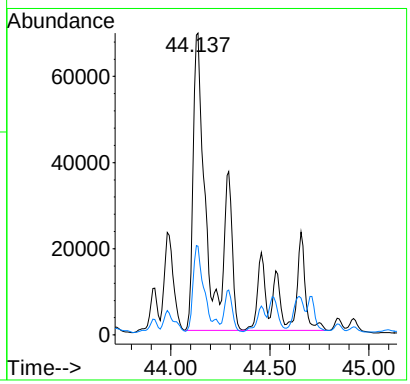


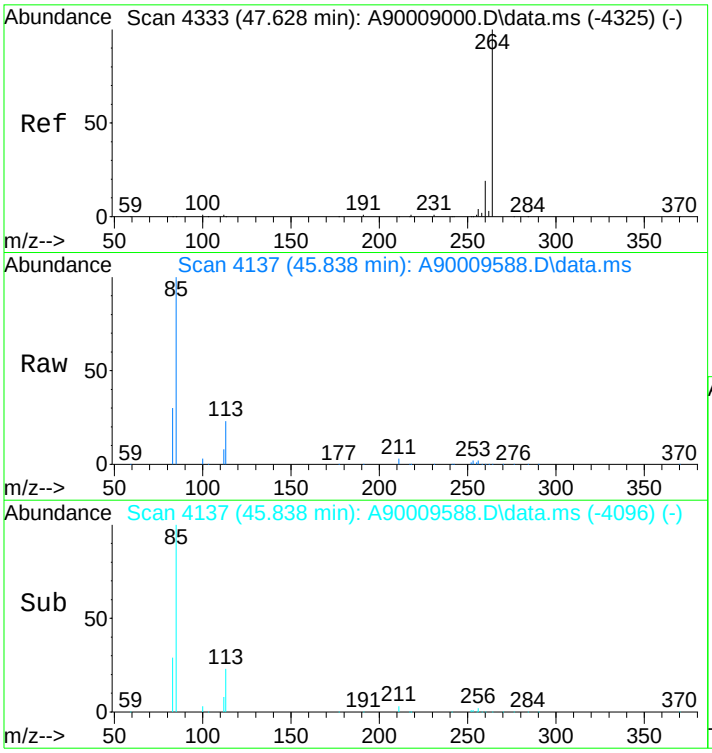


#78
C1-Chrysenes
Concen: 1888.92 ng/mL m
RT: 44.137 min Scan# 3951
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:242 Resp: 519664

Ion	Ratio	Lower	Upper
242	100		
241	3.5	31.9	47.9#

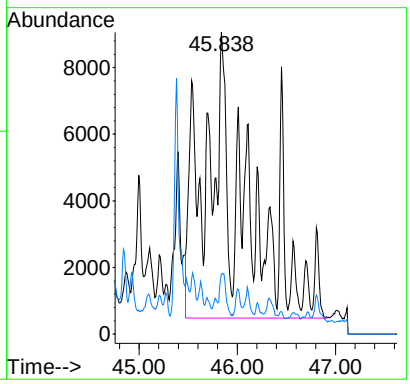


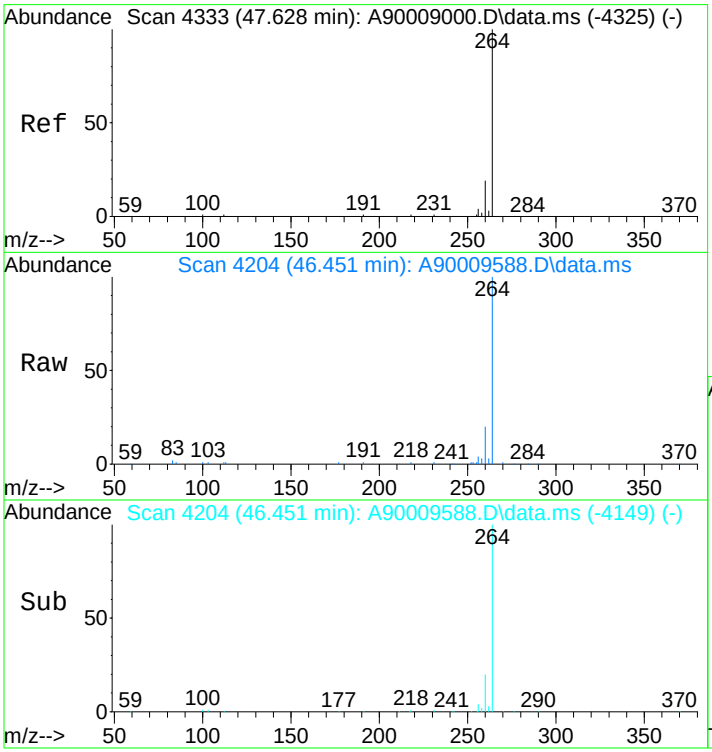


#79
C2-Chrysenes
Concen: 882.37 ng/mL m
RT: 45.838 min Scan# 4137
Delta R.T. -0.978 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:256 Resp: 242750

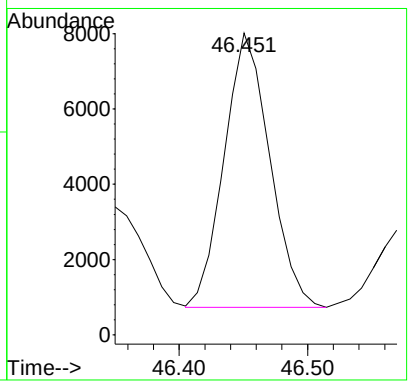
Ion	Ratio	Lower	Upper
256	100		
241	0.8	42.2	63.2#

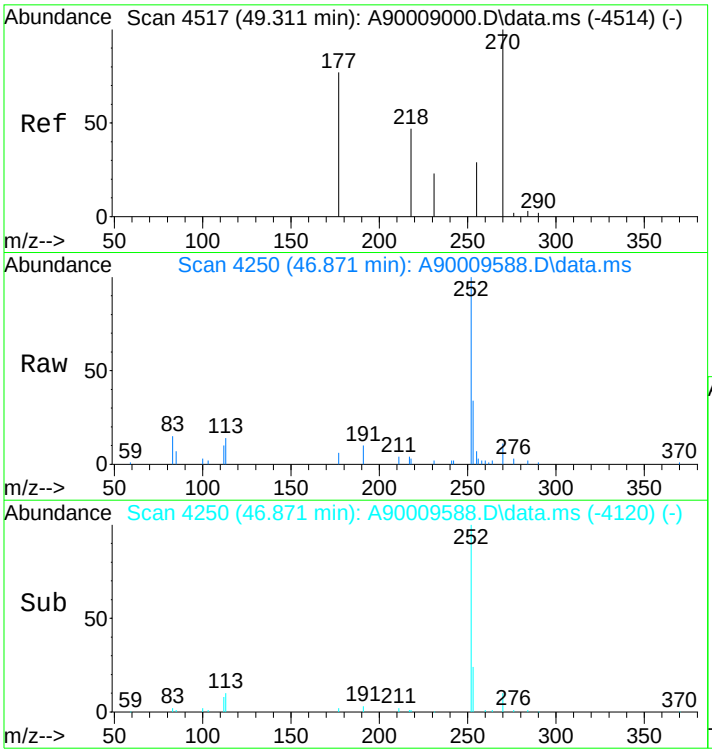




#80
BBF-d12 Surr BKGD
Concen: 65.24 ng/mL
RT: 46.451 min Scan# 4204
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:256 Resp: 17947

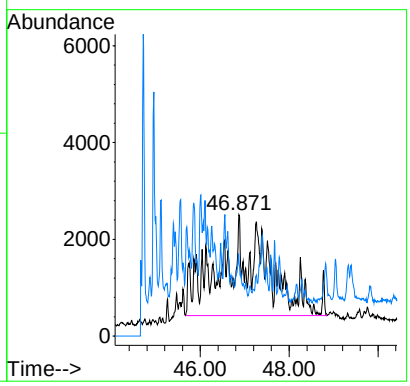


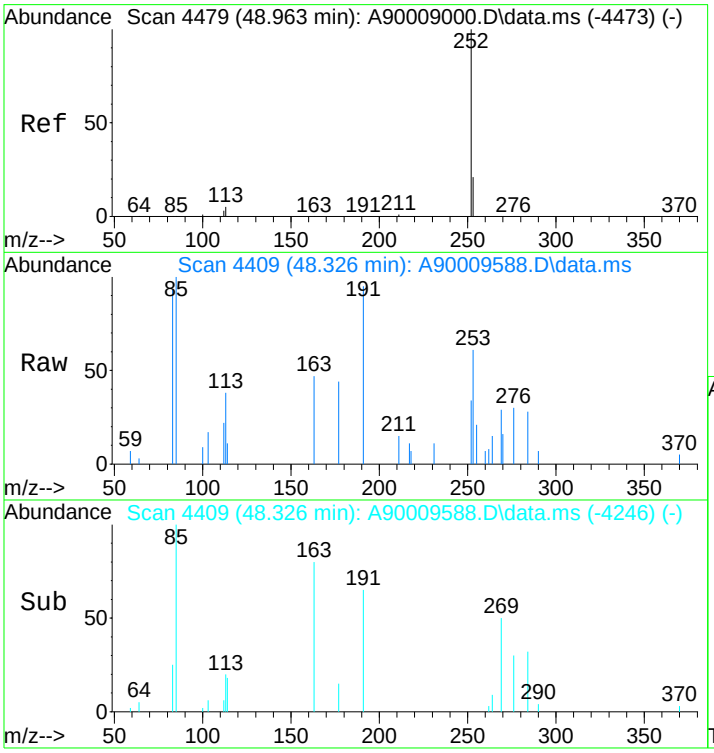


#81
C3-Chrysenes
Concen: 516.79 ng/mL m
RT: 46.871 min Scan# 4250
Delta R.T. -1.911 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:270 Resp: 142175

Ion	Ratio	Lower	Upper
270	100		
255	0.2	48.2	72.4#

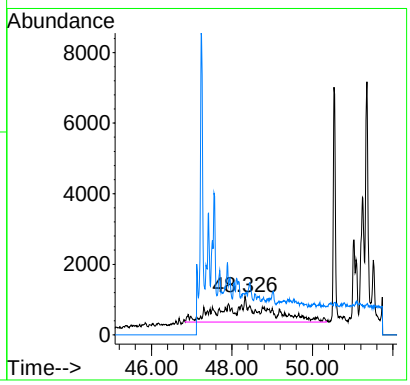


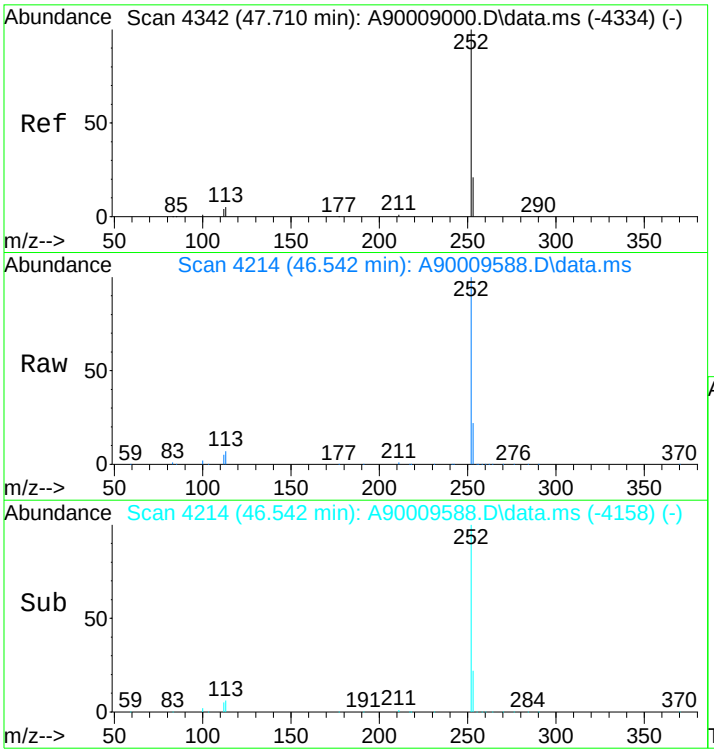


#82
C4-Chrysenes
Concen: 181.74 ng/mL m
RT: 48.326 min Scan# 4409
Delta R.T. -0.557 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:284 Resp: 49999

Ion	Ratio	Lower	Upper
284	100		
269	0.0	84.6	126.8#

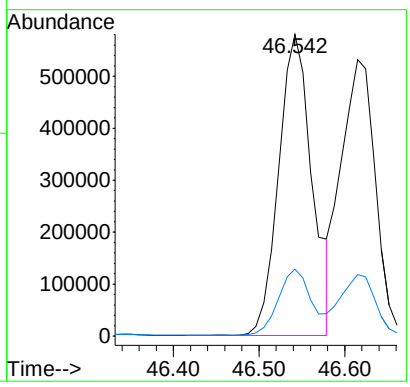


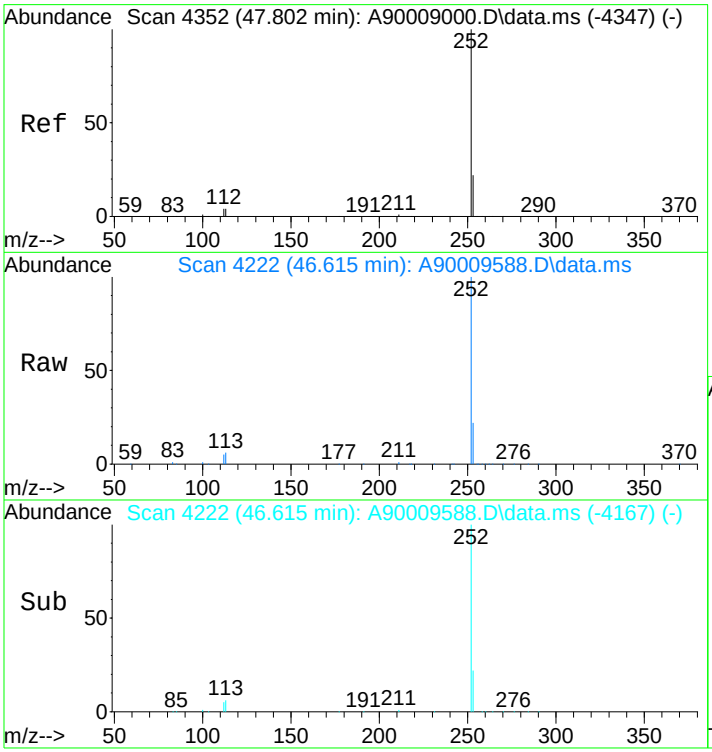


#84
Benzo[b]fluoranthene
Concen: 5434.78 ng/mL
RT: 46.542 min Scan# 4214
Delta R.T. 0.009 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:252 Resp: 1576243

Ion	Ratio	Lower	Upper
252	100		
253	20.6	20.3	30.5

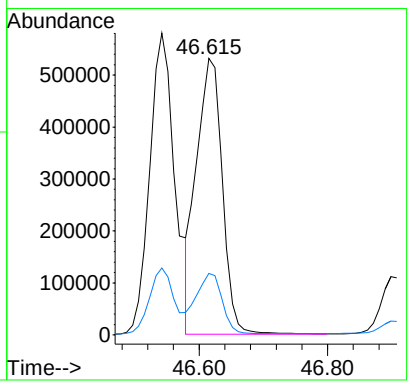


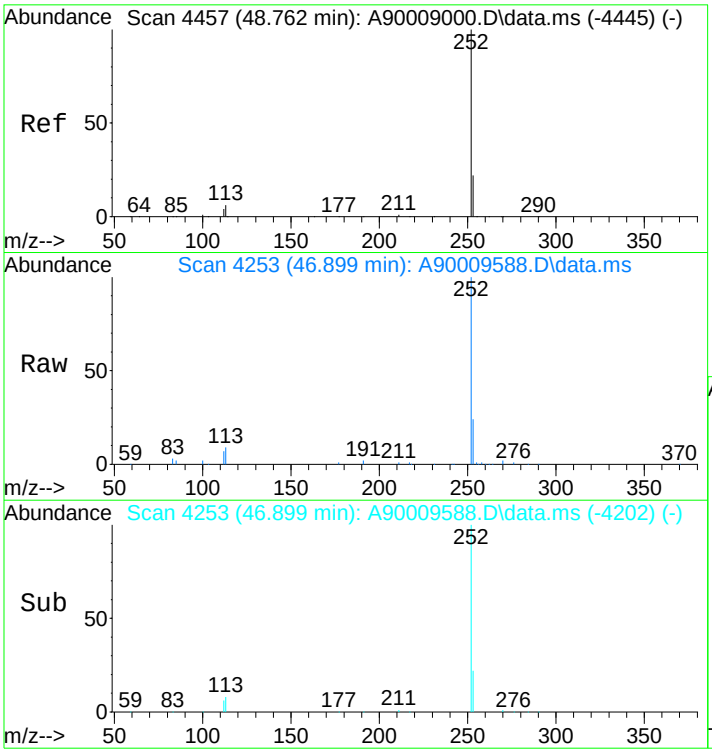


#85
Benzo[j]+[k]fluoranthene
Concen: 5233.66 ng/mL
RT: 46.615 min Scan# 4222
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:252 Resp: 1491439

Ion	Ratio	Lower	Upper
252	100		
253	21.4	20.2	30.4

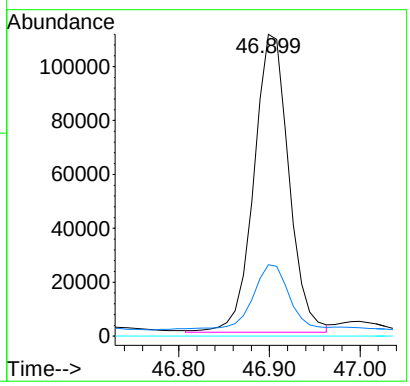


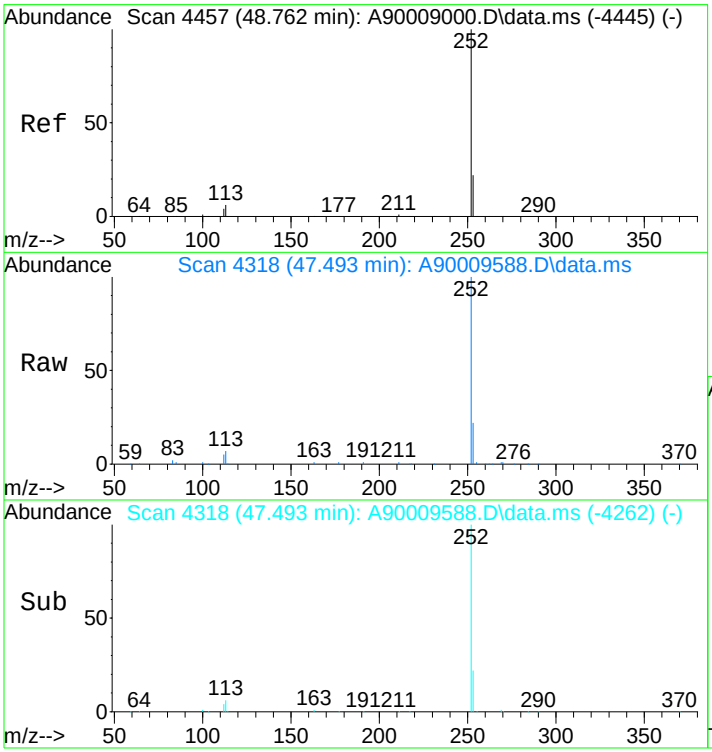


#86
Benzo[a]fluoranthene
Concen: 1037.55 ng/mL
RT: 46.899 min Scan# 4253
Delta R.T. -0.031 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:252 Resp: 295672

Ion	Ratio	Lower	Upper
252	100		
253	24.0	191.7	287.5#
125	0.0	0.0	0.0

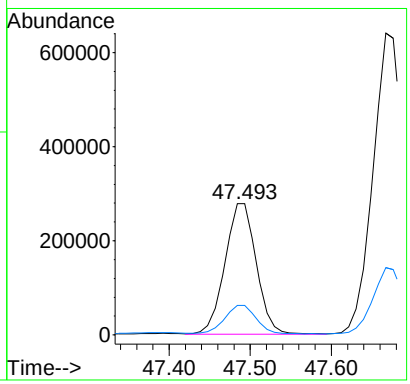


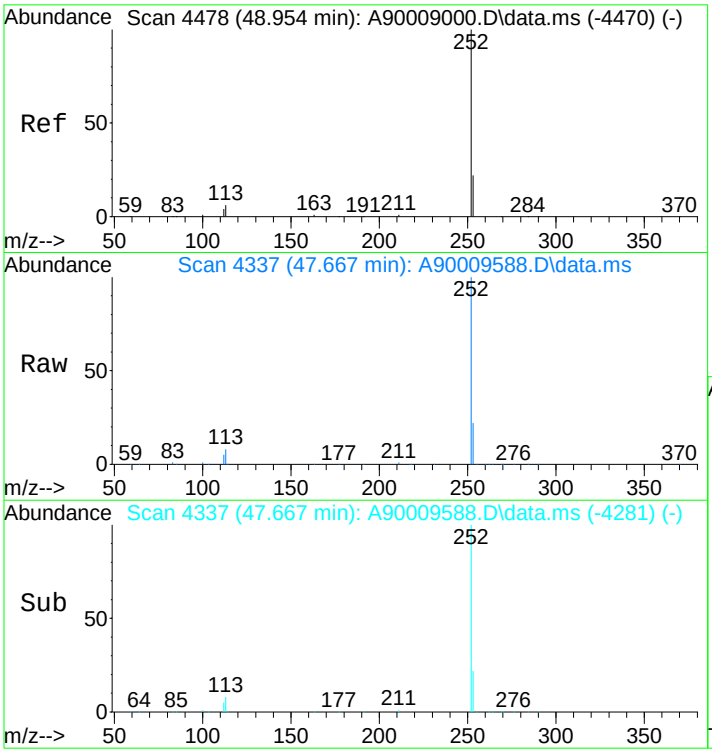


#87
Benzo[e]pyrene
Concen: 2724.75 ng/mL
RT: 47.493 min Scan# 4318
Delta R.T. 0.009 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:252 Resp: 750404

Ion	Ratio	Lower	Upper
252	100		
253	22.0	21.4	32.0

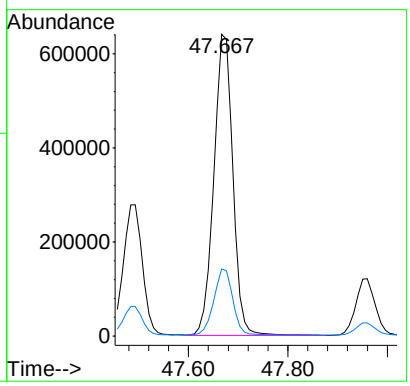


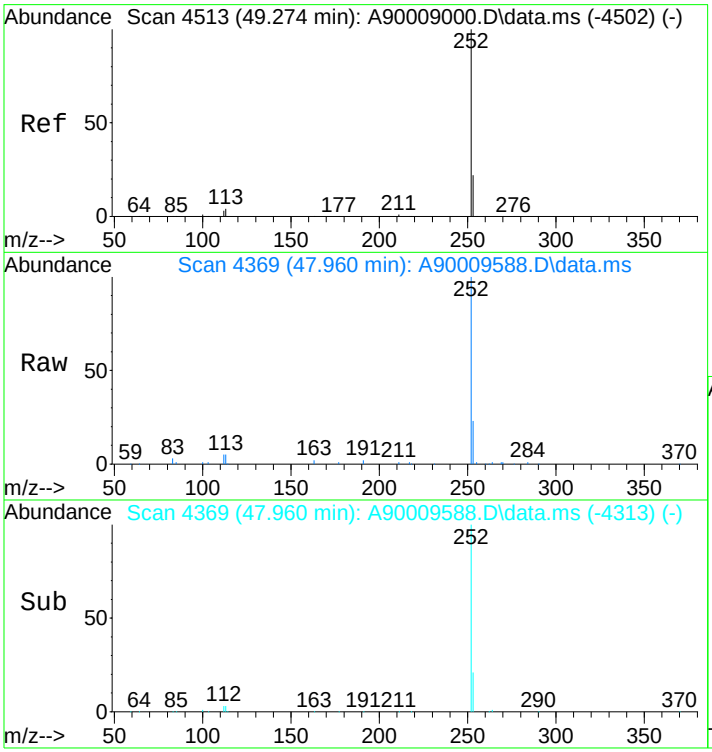


#89
Benzo[a]pyrene
Concen: 6514.15 ng/mL
RT: 47.667 min Scan# 4337
Delta R.T. 0.009 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:252 Resp: 1699045

Ion	Ratio	Lower	Upper
252	100		
253	22.0	21.9	32.9

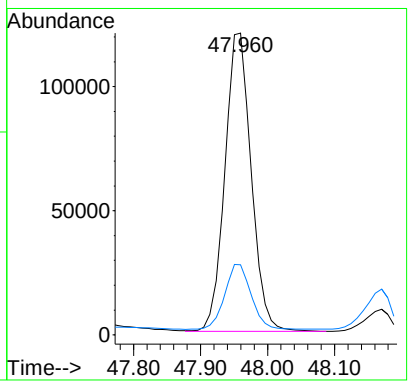


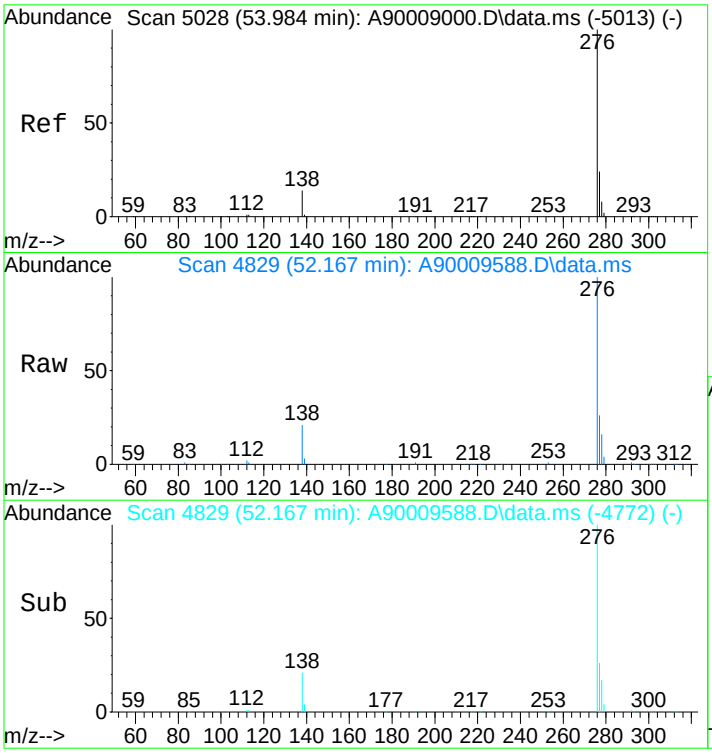


#90
Perylene
Concen: 1183.11 ng/mL
RT: 47.960 min Scan# 4369
Delta R.T. 0.009 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:252 Resp: 329340

Ion	Ratio	Lower	Upper
252	100		
253	21.6	22.2	33.2#

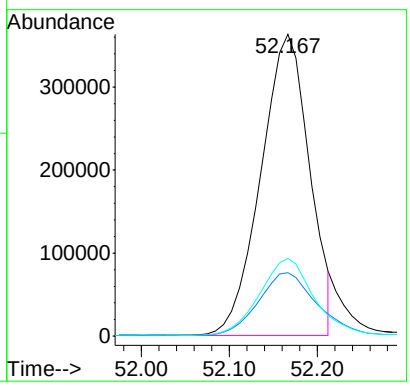


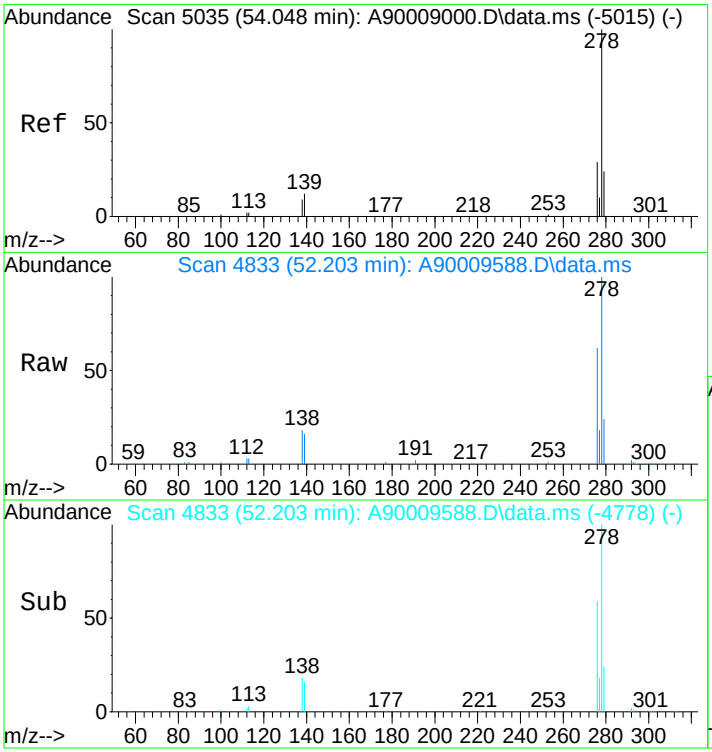


#91
Indeno[1,2,3-cd]pyrene
Concen: 4818.99 ng/mL m
RT: 52.167 min Scan# 4829
Delta R.T. 0.018 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:276 Resp: 1392032

Ion	Ratio	Lower	Upper
276	100		
138	25.6	17.7	26.5
277	28.5	20.2	30.4

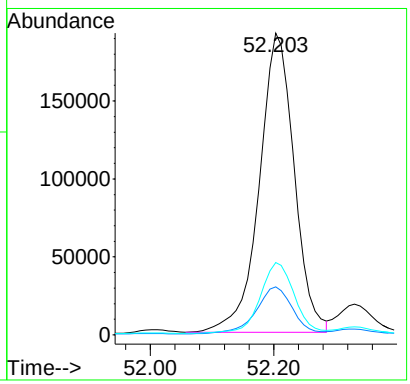


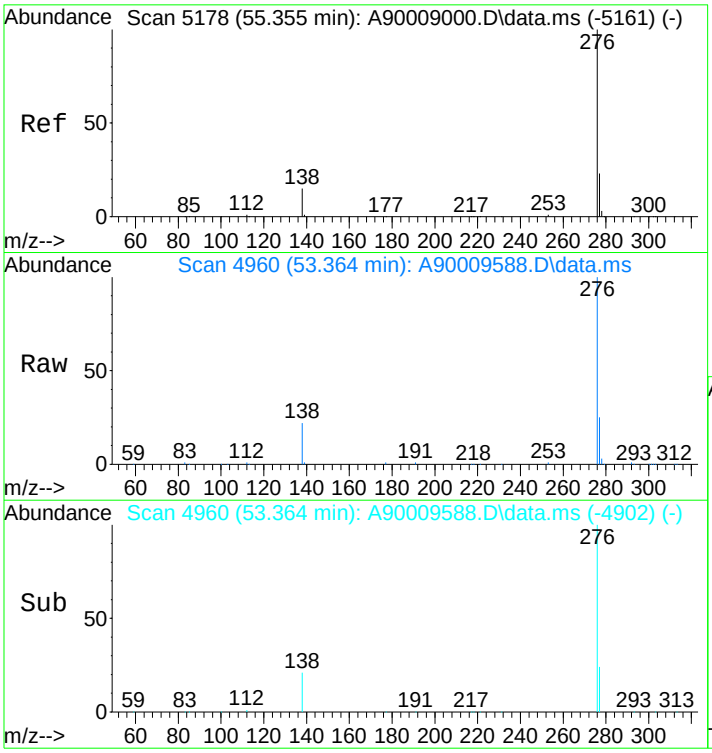


#92
Dibenz[ah]+[ac]anthracene
Concen: 2641.50 ng/mL
RT: 52.203 min Scan# 4833
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:278 Resp: 751658

Ion	Ratio	Lower	Upper
278	100		
139	16.4	13.3	19.9
279	23.2	19.3	28.9

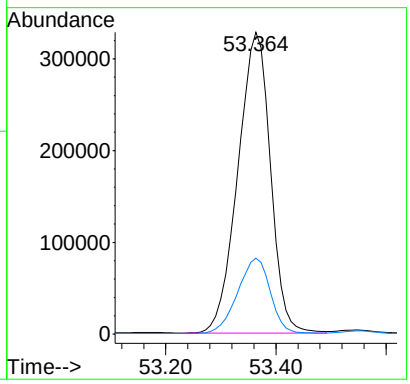


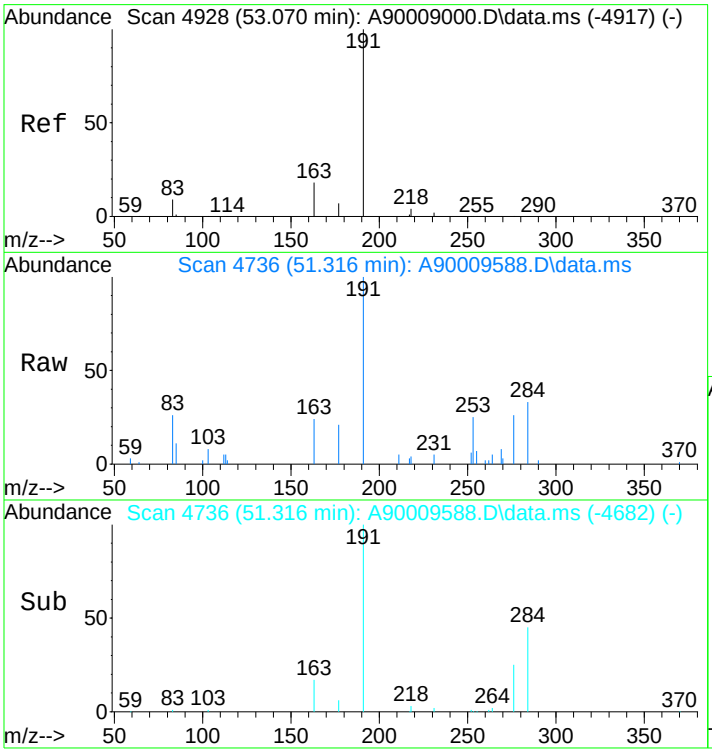


#93
Benzo[g,h,i]perylene
Concen: 4742.52 ng/mL
RT: 53.364 min Scan# 4960
Delta R.T. 0.028 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:276 Resp: 1346218

Ion	Ratio	Lower	Upper
276	100		
277	25.2	20.0	30.0

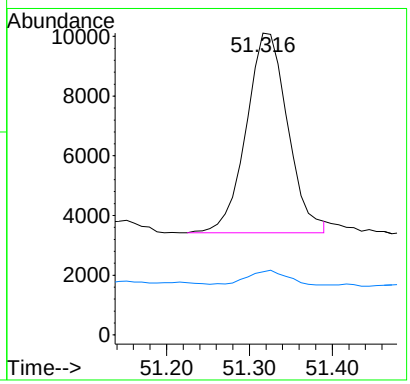


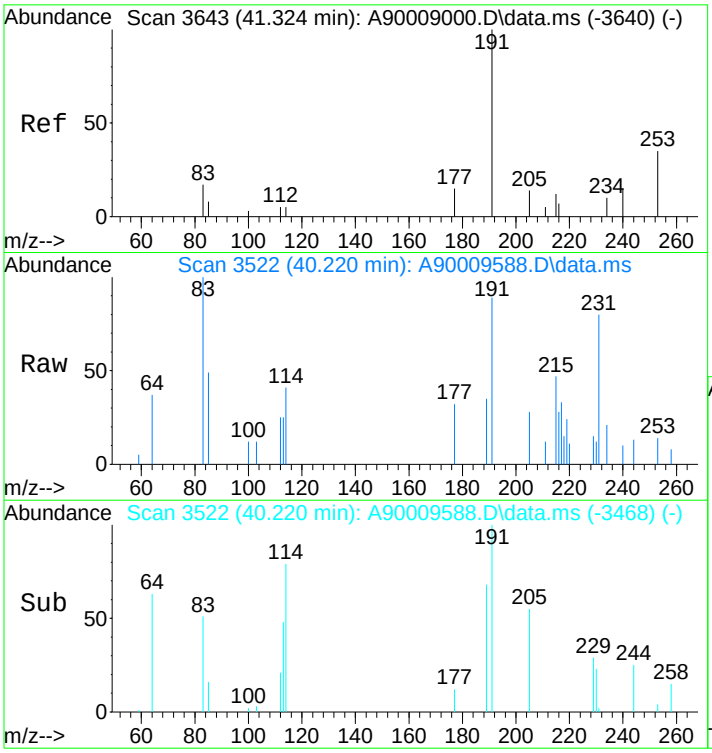


#94
Hopane (T19)
Concen: 216.99 ng/mL m
RT: 51.316 min Scan# 4736
Delta R.T. -0.009 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:191 Resp: 23264

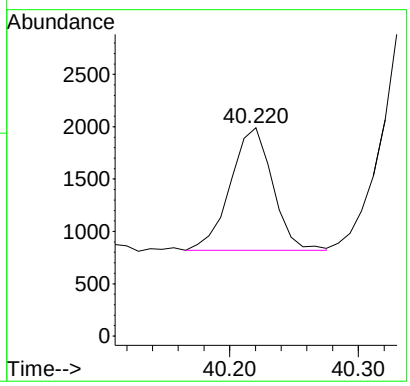
Ion	Ratio	Lower	Upper
191	100		
177	0.9	14.4	21.6#

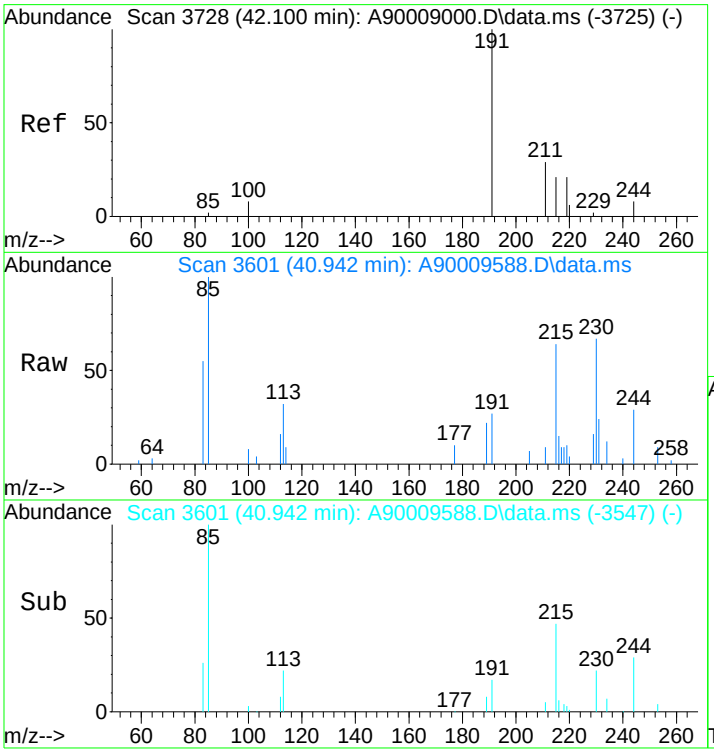




#96
C23 Tricyclic Terpane (T4)
Concen: 24.96 ng/ml
RT: 40.220 min Scan# 3522
Delta R.T. -0.009 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

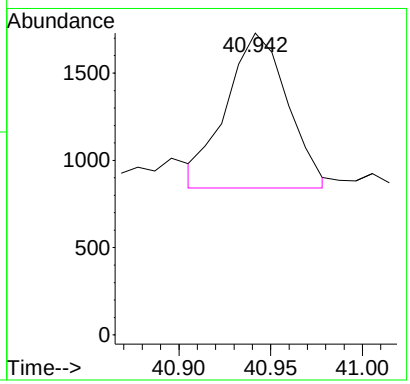
Tgt Ion:191 Resp: 2676

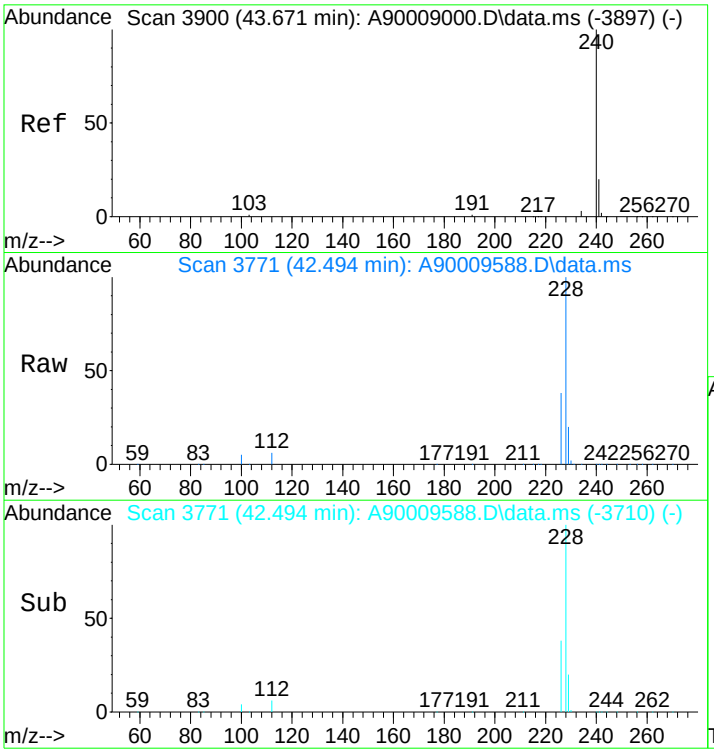




#97
C24 Tricyclic Terpane (T5)
Concen: 19.12 ng/ml m
RT: 40.942 min Scan# 3601
Delta R.T. -0.009 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

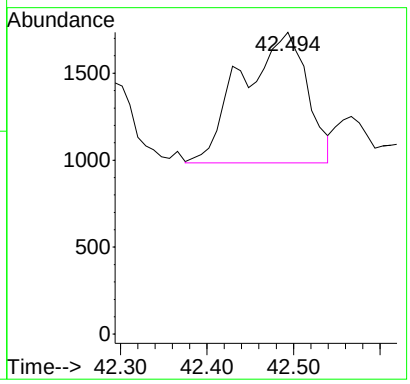
Tgt Ion:191 Resp: 2050

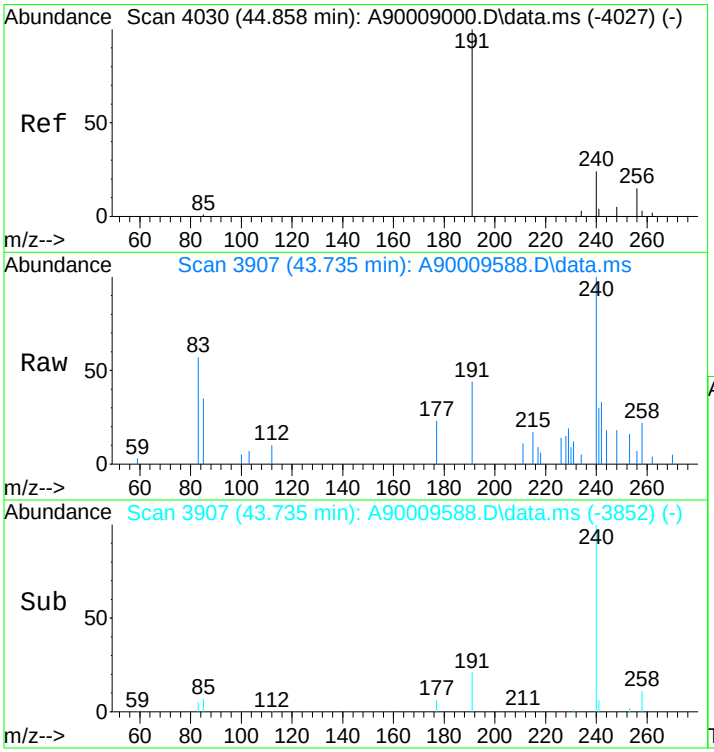




#98
C25 Tricyclic Terpane (T6)
Concen: 36.83 ng/ml m
RT: 42.494 min Scan# 3771
Delta R.T. 0.055 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

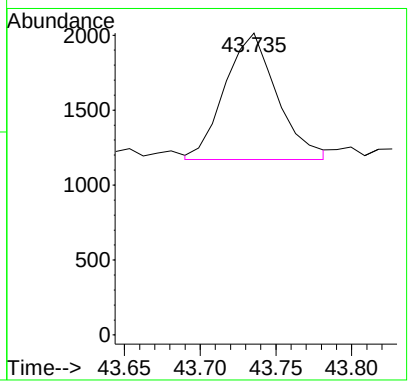
Tgt Ion:191 Resp: 3949

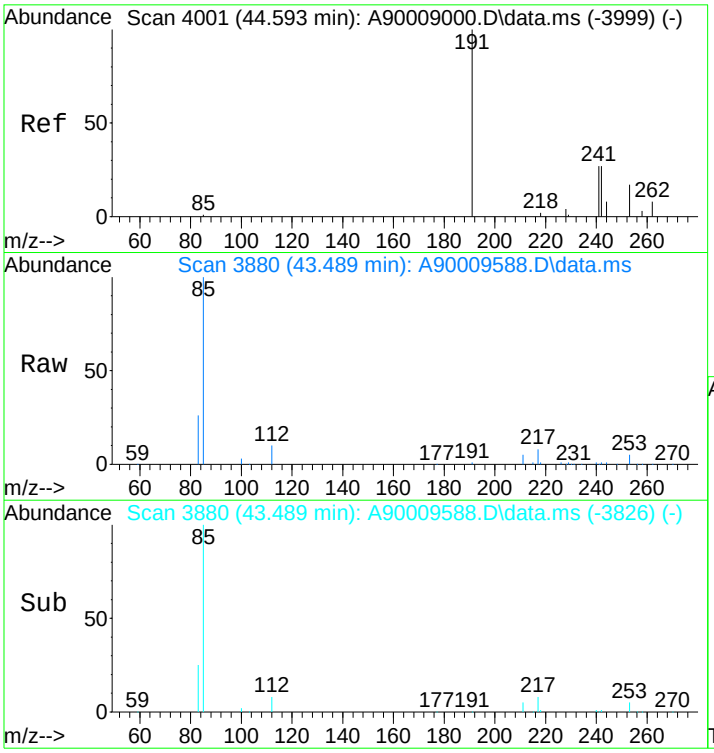




#99
C24 Tetracyclic Terpane (T6a)
Concen: 18.88 ng/ml m
RT: 43.735 min Scan# 3907
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

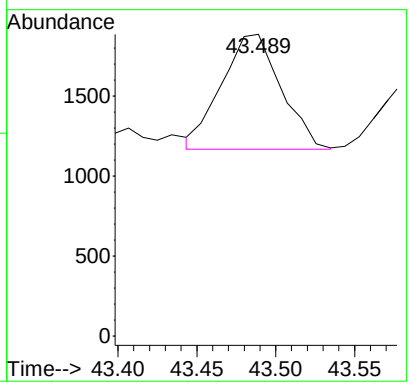
Tgt Ion:191 Resp: 2024

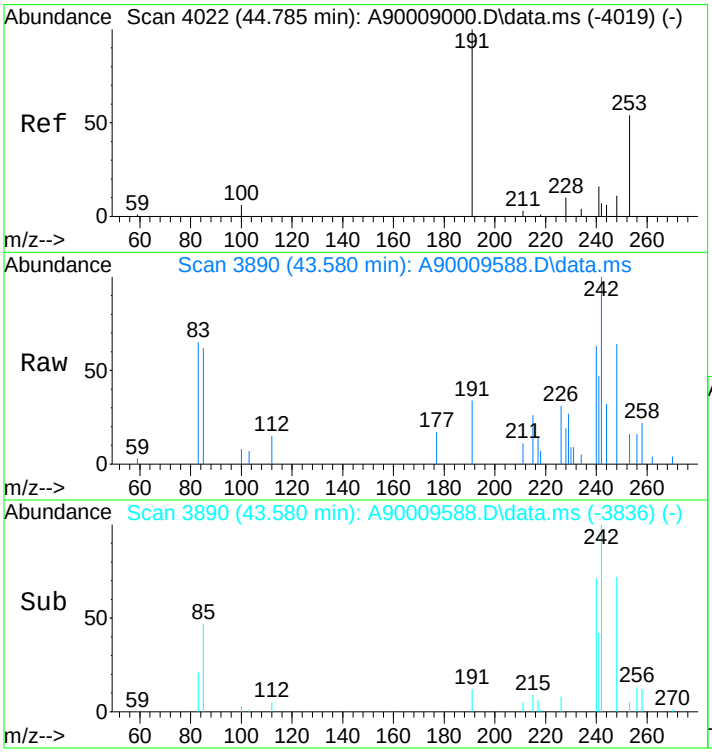




#100
C26 Tricyclic Terpane-22S (T6b)
Concen: 17.54 ng/ml m
RT: 43.489 min Scan# 3880
Delta R.T. -0.009 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

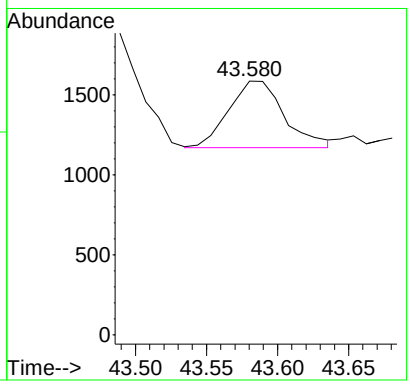
Tgt Ion:191 Resp: 1881

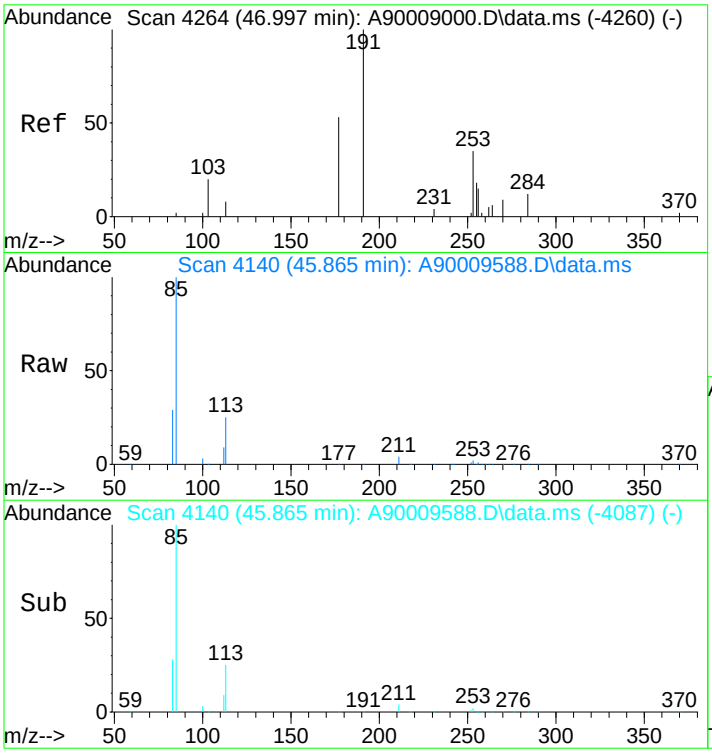




#101
C26 Tricyclic Terpane-22R (T6c)
Concen: 10.62 ng/ml m
RT: 43.580 min Scan# 3890
Delta R.T. -0.009 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

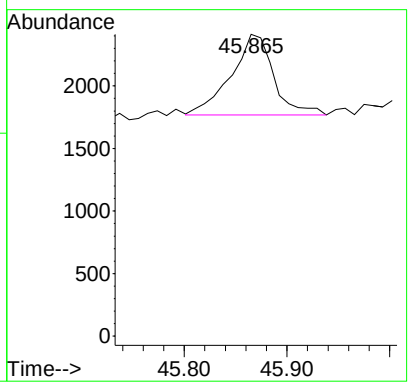
Tgt Ion:191 Resp: 1139

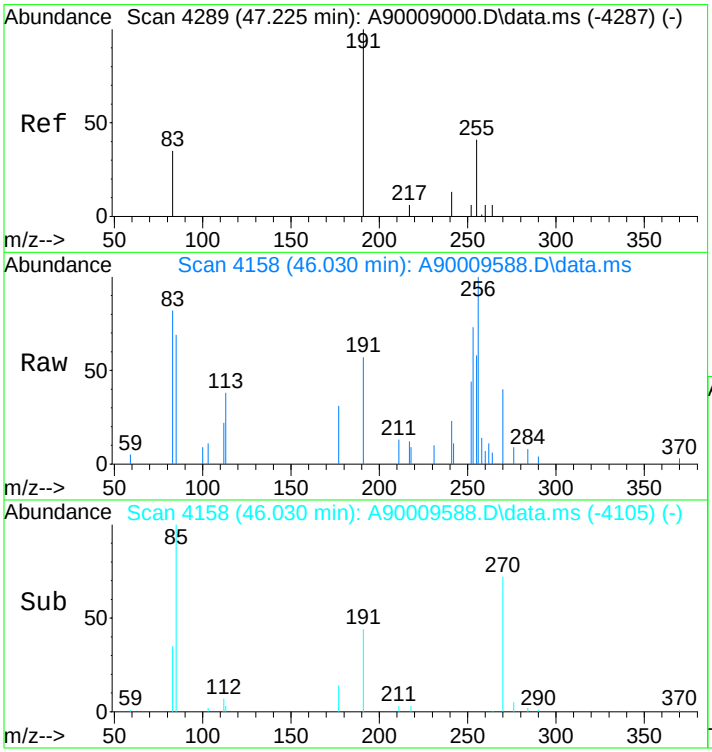




#102
C28 Tricyclic Terpane-22S (T7)
Concen: 17.37 ng/ml
RT: 45.865 min Scan# 4140
Delta R.T. -0.018 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

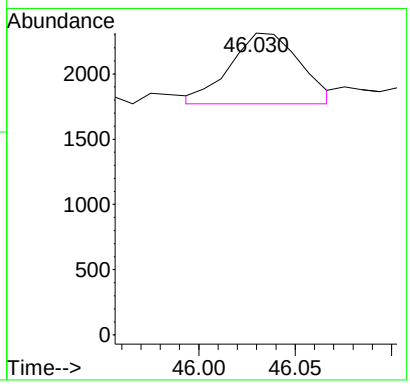
Tgt Ion:191 Resp: 1862

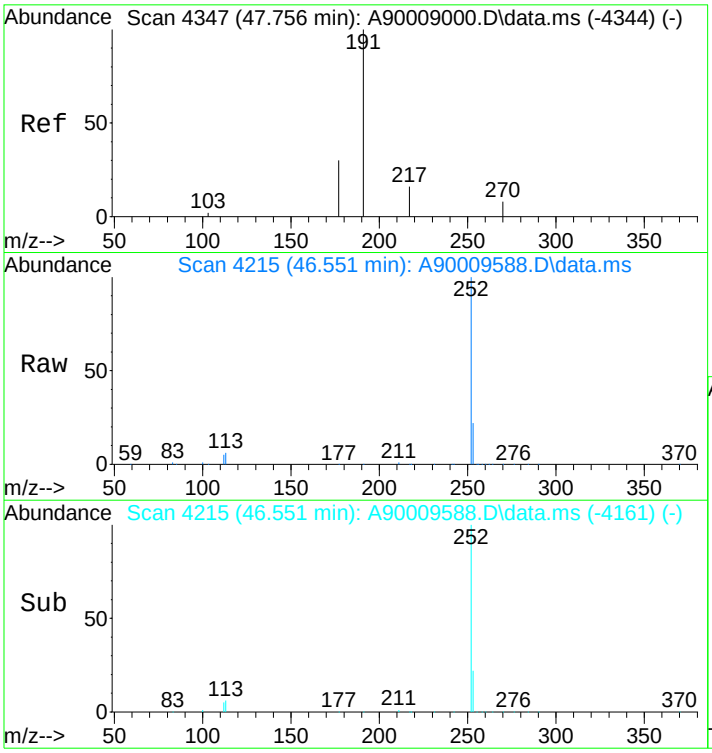




#103
C28 Tricyclic Terpane-22R (T8)
Concen: 12.82 ng/ml m
RT: 46.030 min Scan# 4158
Delta R.T. -0.018 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

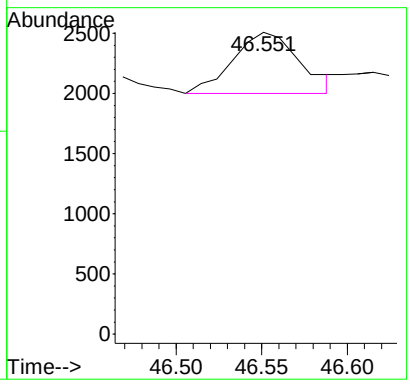
Tgt Ion:191 Resp: 1375

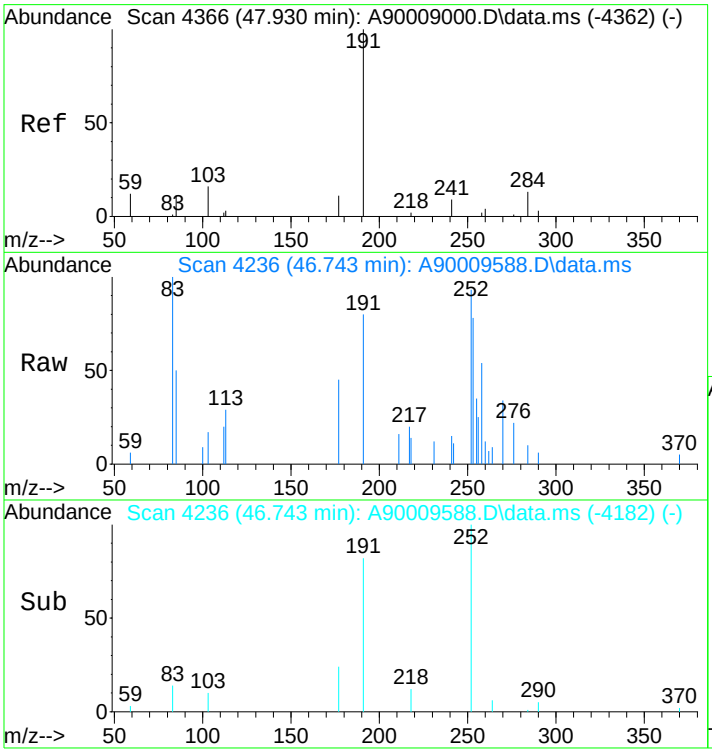




#104
C29 Tricyclic Terpane-22S (T9)
Concen: 12.80 ng/ml
RT: 46.551 min Scan# 4215
Delta R.T. -0.009 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

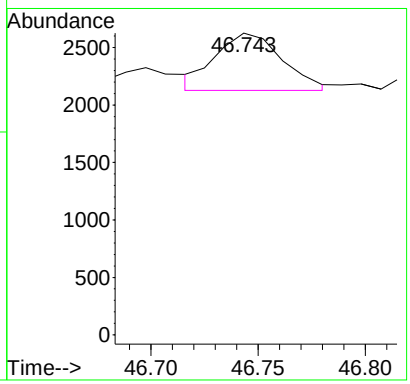
Tgt Ion:191 Resp: 1372

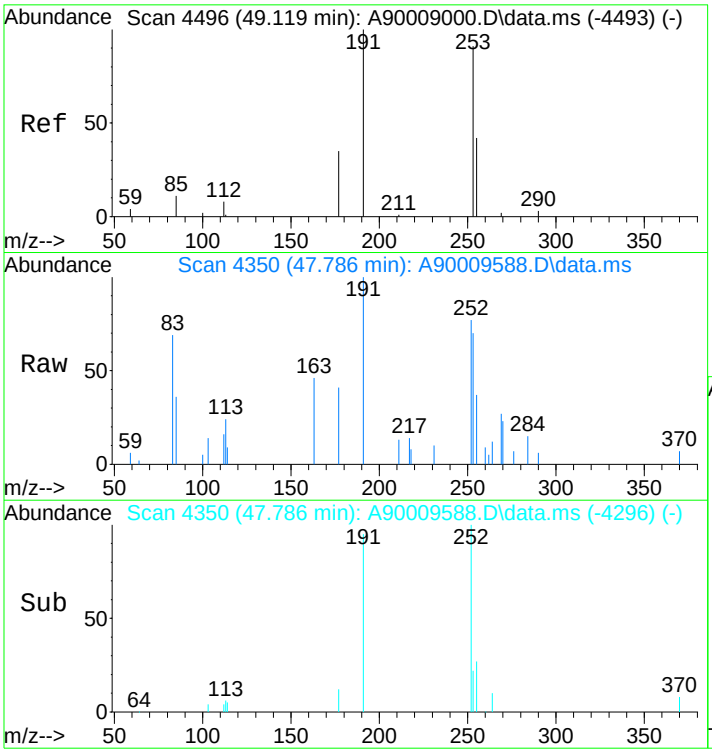




#105
C29 Tricyclic Terpane-22R (T10)
Concen: 10.04 ng/ml m
RT: 46.743 min Scan# 4236
Delta R.T. -0.009 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

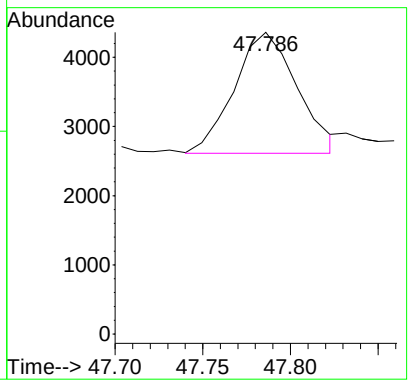
Tgt Ion:191 Resp: 1076

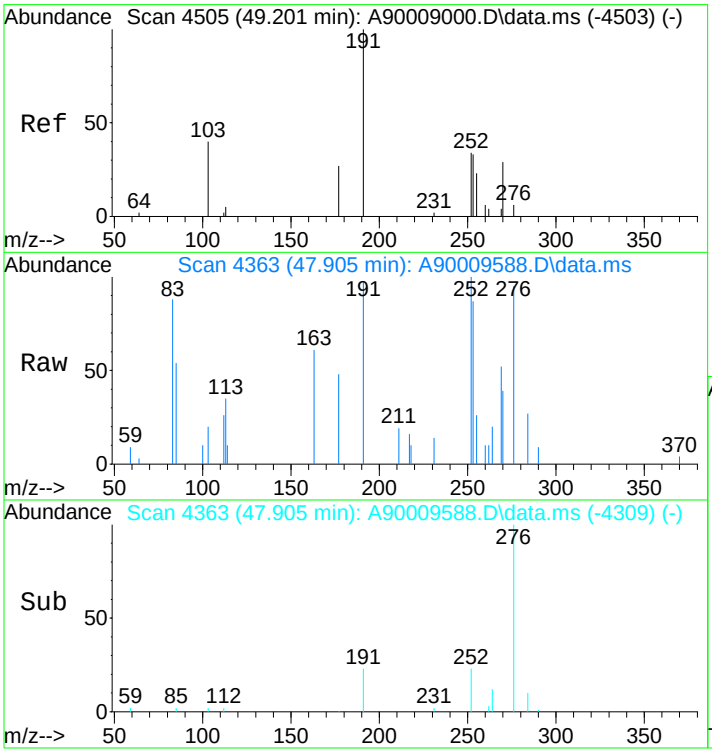




#106
18a-22,29,30-Trisnorneohopane-TS (T11)
Concen: 40.74 ng/ml m
RT: 47.786 min Scan# 4350
Delta R.T. -0.009 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

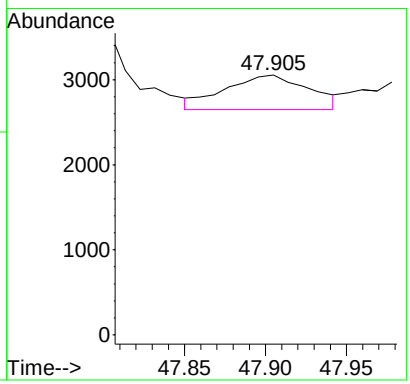
Tgt Ion:191 Resp: 4368

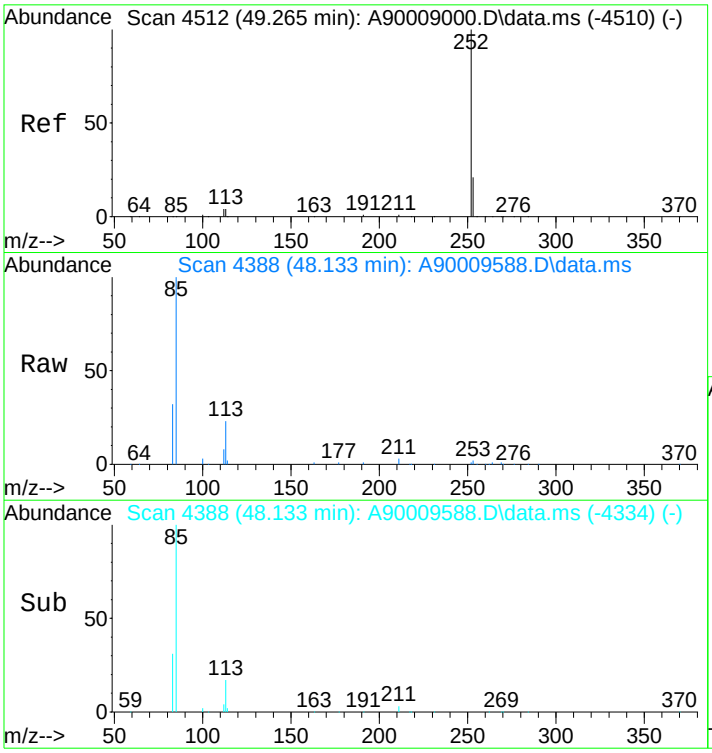




#107
C30 Tricyclic Terpane-22S
Concen: 13.64 ng/mL m
RT: 47.905 min Scan# 4363
Delta R.T. -0.009 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

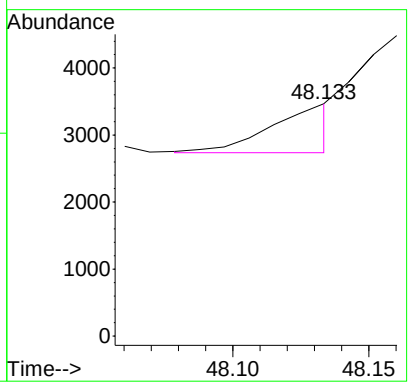
Tgt Ion:191 Resp: 1462

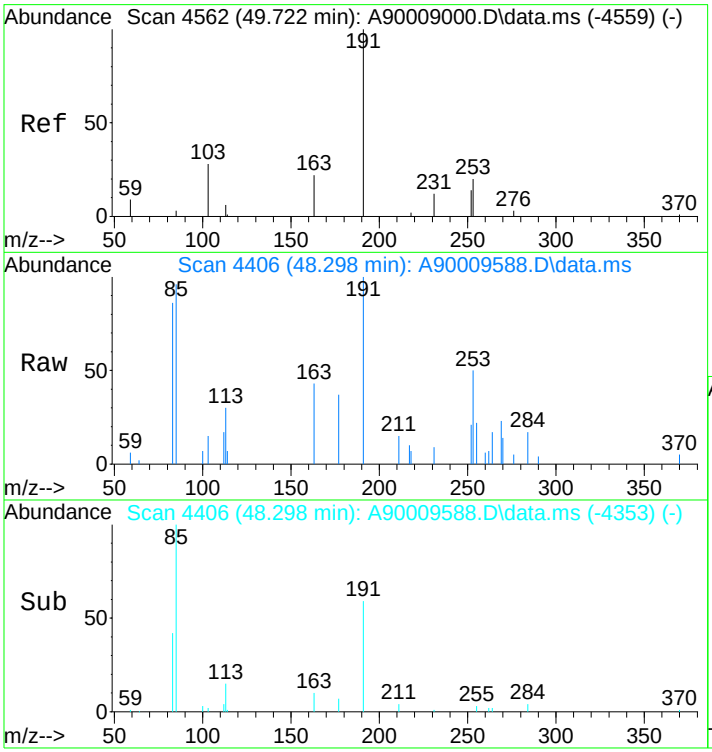




#108
C30 Tricyclic Terpane-22R
Concen: 10.67 ng/mL m
RT: 48.133 min Scan# 4388
Delta R.T. -0.009 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

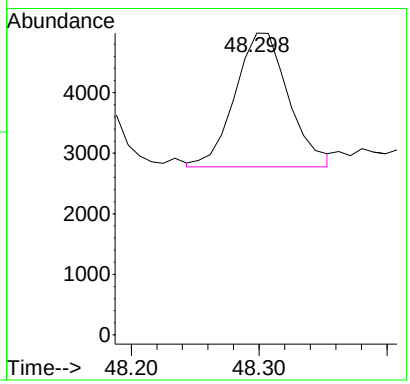
Tgt Ion:191 Resp: 1144

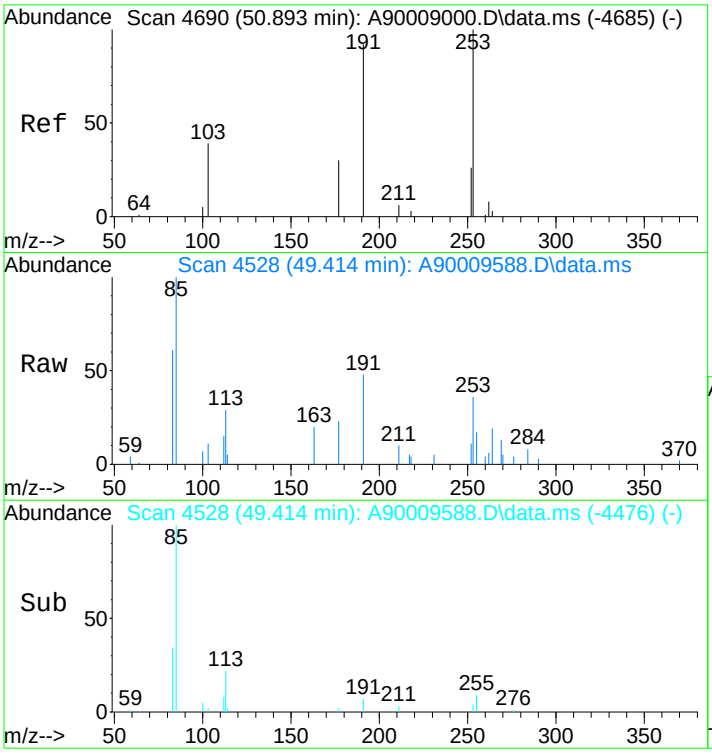




#109
17a(H)-22,29,30-Trisnorhopane-TM (T12)
Concen: 60.11 ng/ml m
RT: 48.298 min Scan# 4406
Delta R.T. -0.018 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

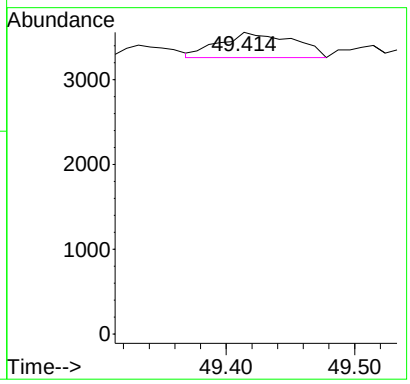
Tgt Ion:191 Resp: 6445

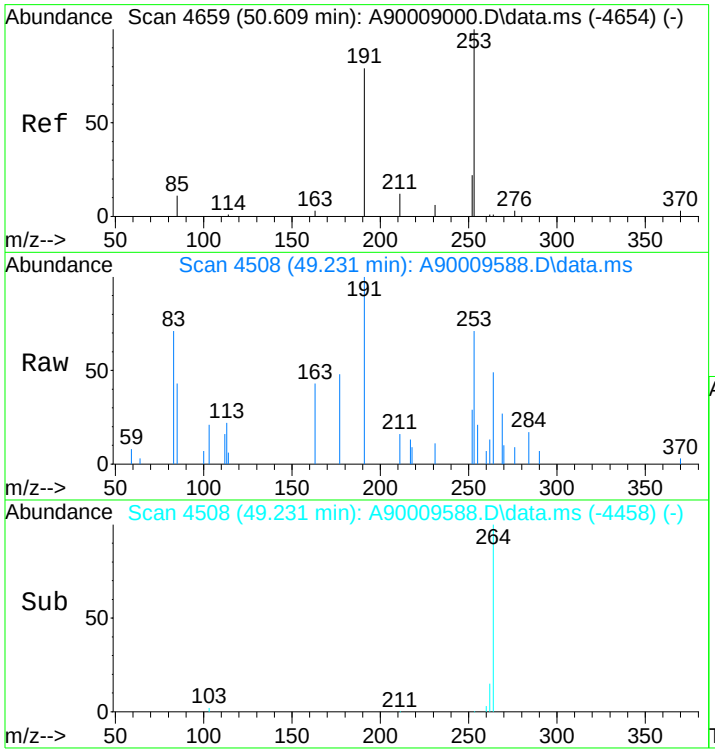




#110
17a/b,21b/a 28,30-Bisnorhopane (T14a)
Concen: 11.07 ng/ml
RT: 49.414 min Scan# 4528
Delta R.T. -0.027 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

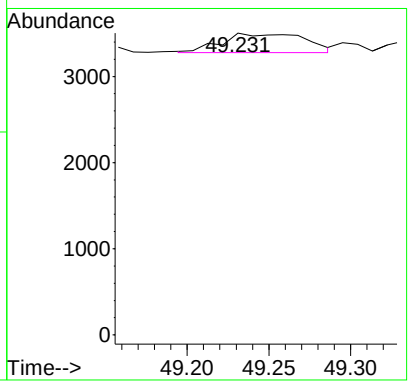
Tgt Ion:191 Resp: 1187

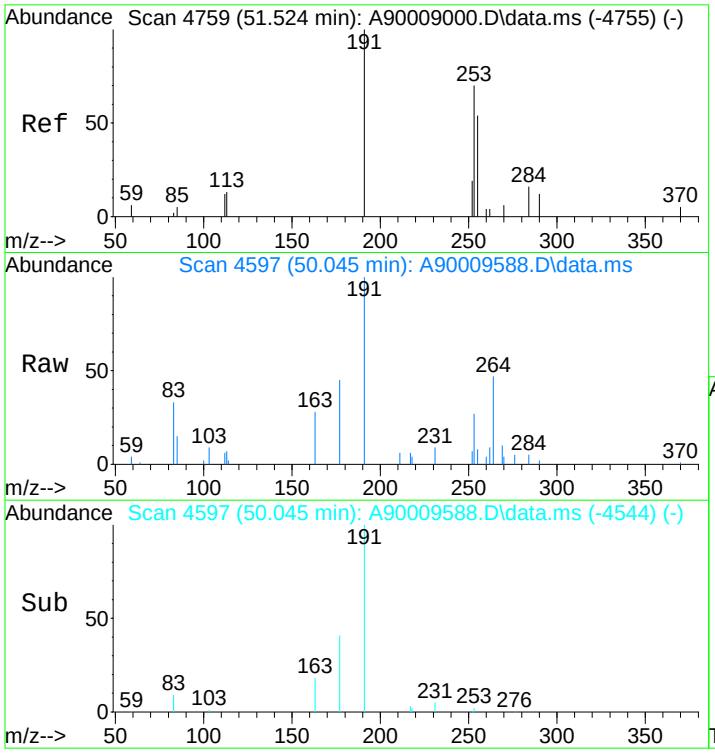




#111
17a(H),21b(H)-25-Norhopane (T14b)
Concen: 7.34 ng/ml m
RT: 49.231 min Scan# 4508
Delta R.T. -0.045 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

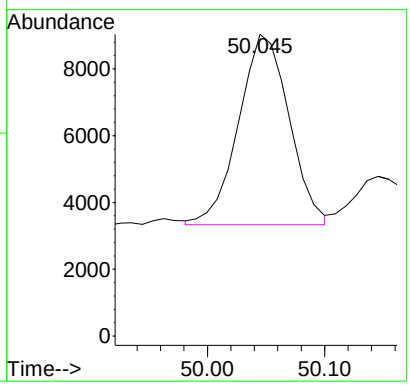
Tgt Ion:191 Resp: 787

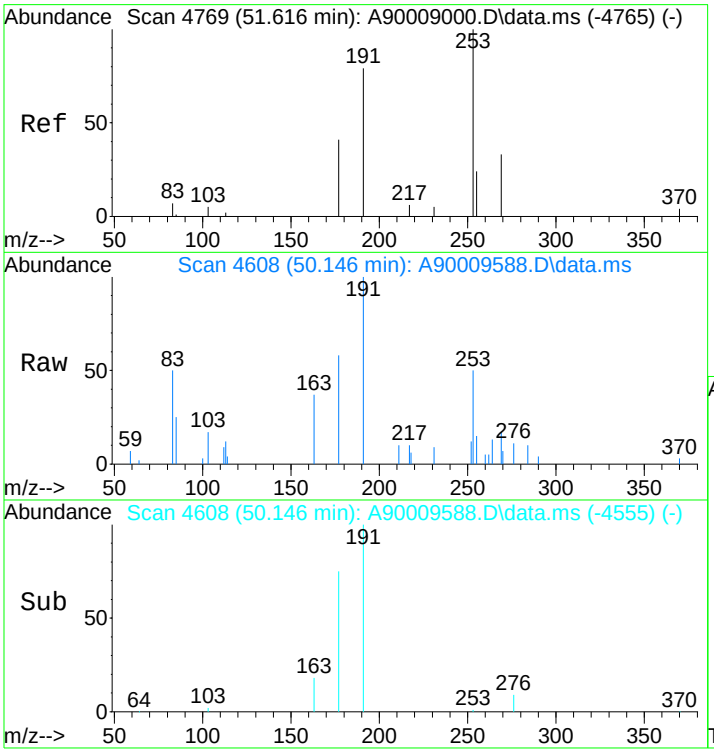




#112
30-Norhopane (T15)
Concen: 159.36 ng/ml m
RT: 50.045 min Scan# 4597
Delta R.T. -0.018 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

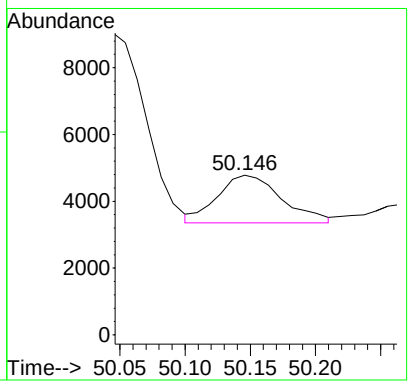
Tgt Ion:191 Resp: 17086

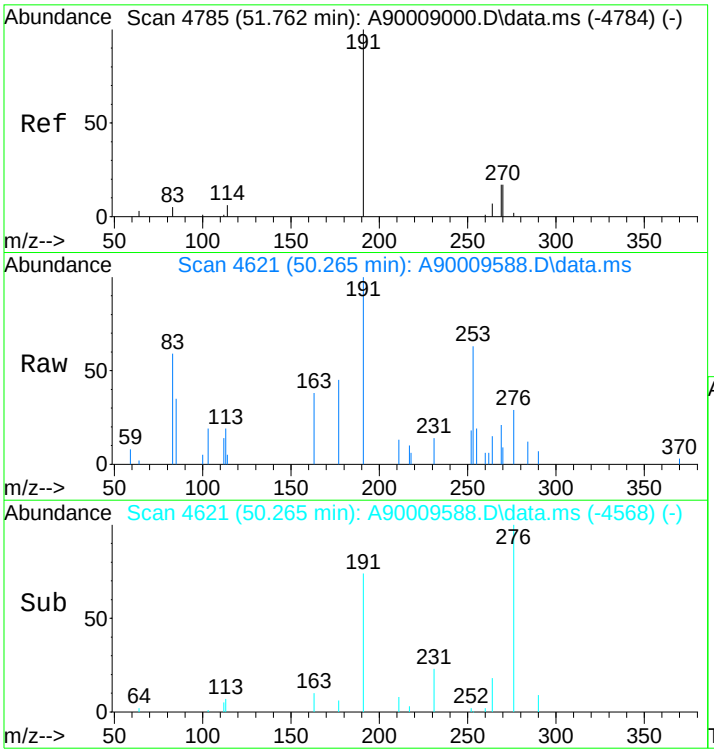




#113
18a(H)-30-Norneohopane-C29Ts (T16)
Concen: 45.88 ng/ml m
RT: 50.146 min Scan# 4608
Delta R.T. -0.018 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

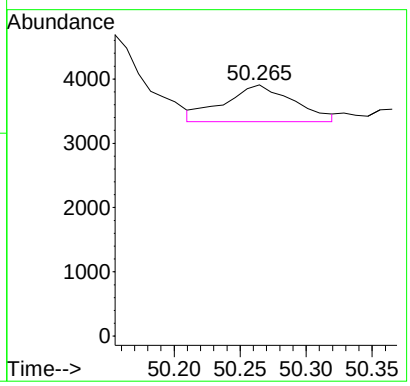
Tgt Ion:191 Resp: 4919

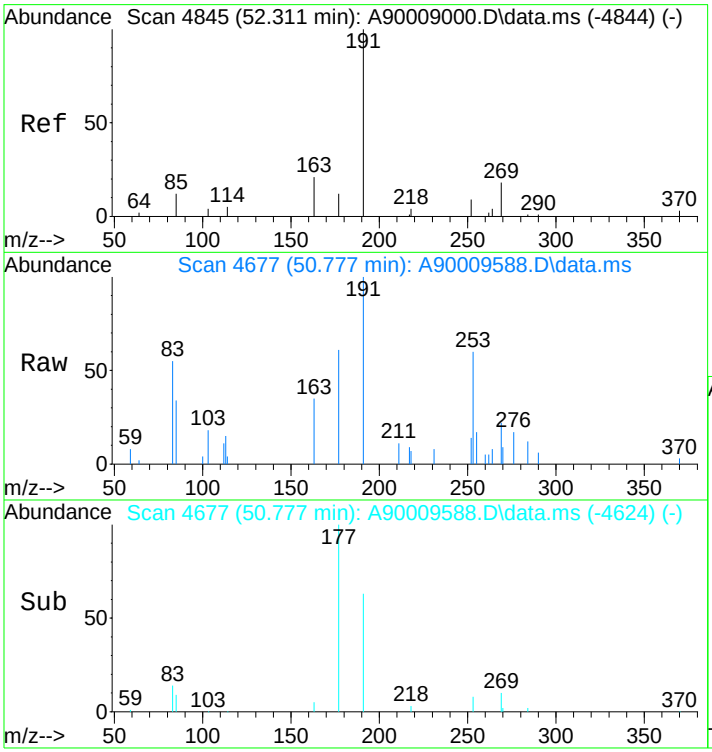




#114
17a(H)-Diahopane (X)
Concen: 19.53 ng/ml m
RT: 50.265 min Scan# 4621
Delta R.T. -0.018 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

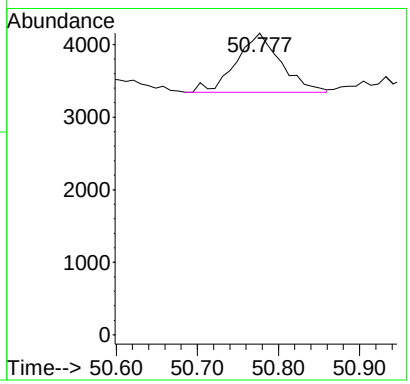
Tgt Ion:191 Resp: 2094

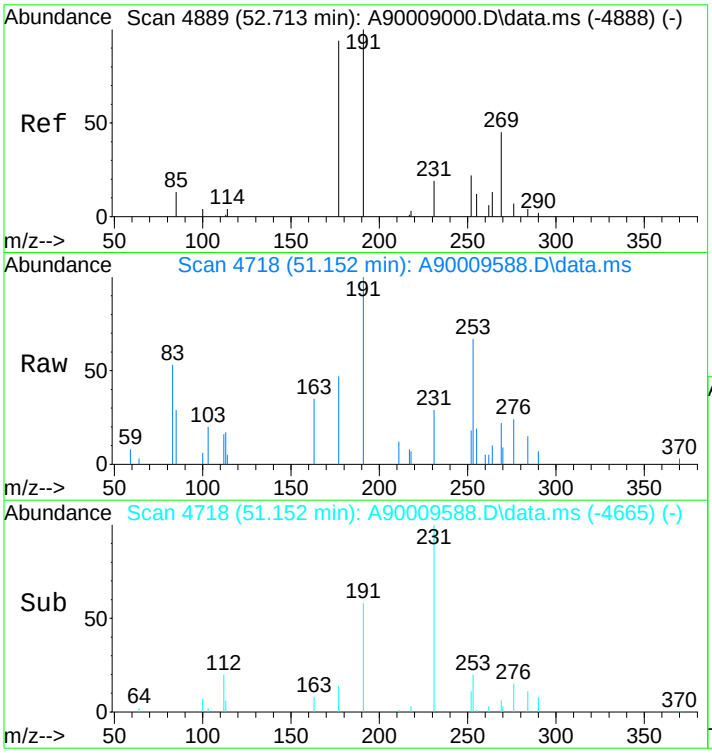




#115
30-Normoretane (T17)
Concen: 29.16 ng/ml
RT: 50.777 min Scan# 4677
Delta R.T. -0.018 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

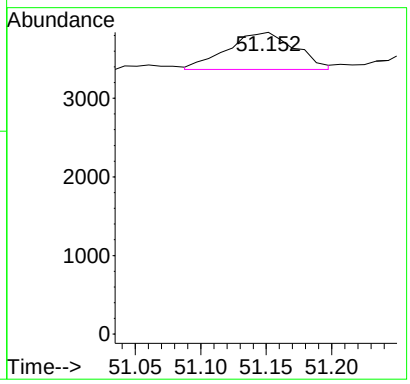
Tgt Ion:191 Resp: 3126

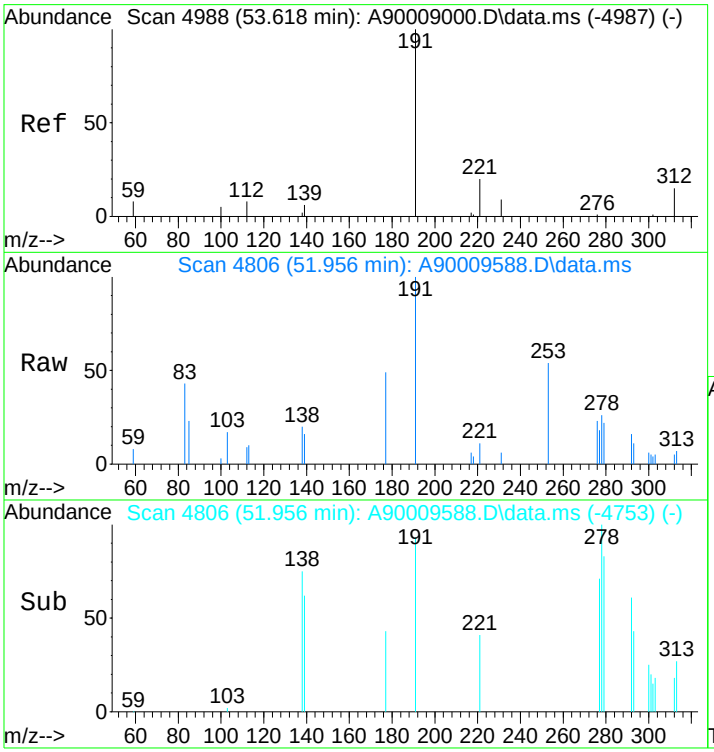




#116
18a(H)&18b(H)-Oleananes (T18)
Concen: 15.78 ng/ml m
RT: 51.152 min Scan# 4718
Delta R.T. -0.018 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

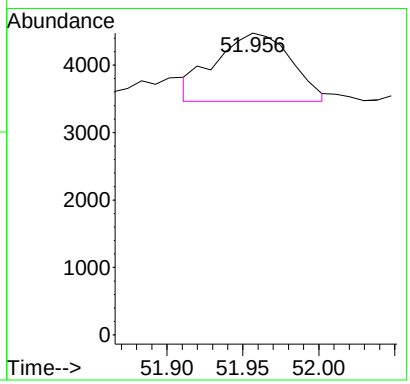
Tgt Ion:191 Resp: 1692

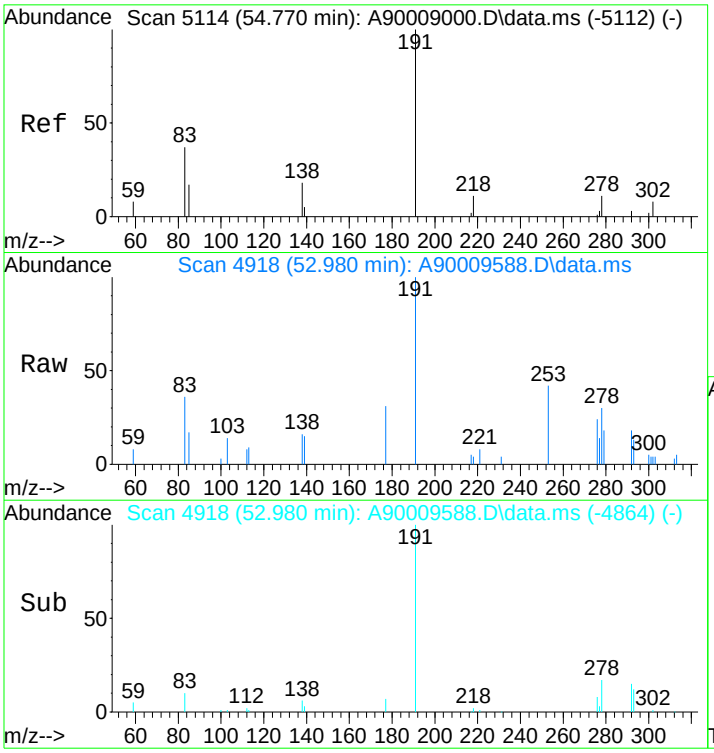




#117
Moretane (T20)
Concen: 32.70 ng/ml m
RT: 51.956 min Scan# 4806
Delta R.T. -0.018 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

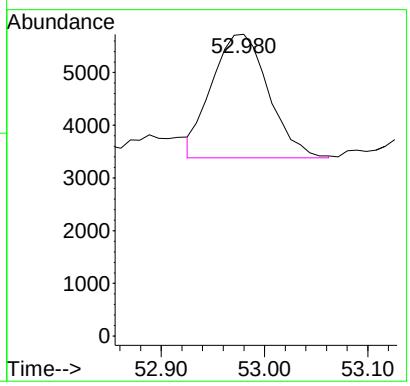
Tgt Ion:191 Resp: 3506

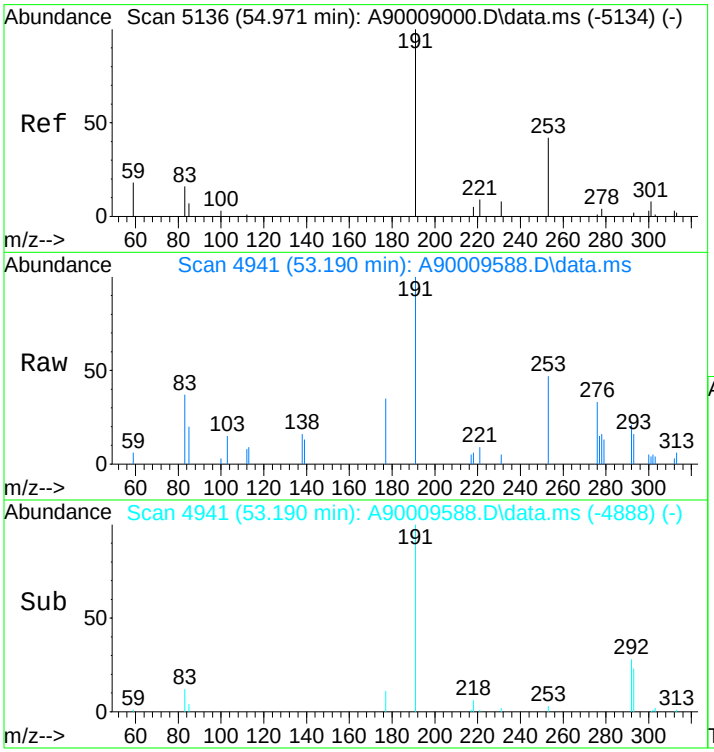




#118
30-Homohopane-22S (T21)
Concen: 83.52 ng/ml m
RT: 52.980 min Scan# 4918
Delta R.T. -0.009 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

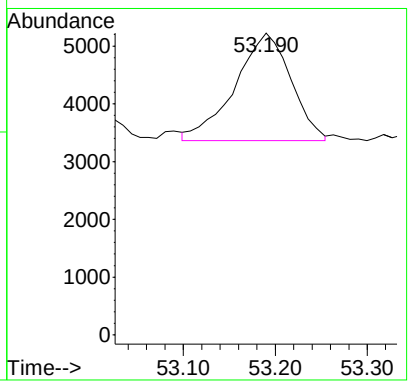
Tgt Ion:191 Resp: 8955

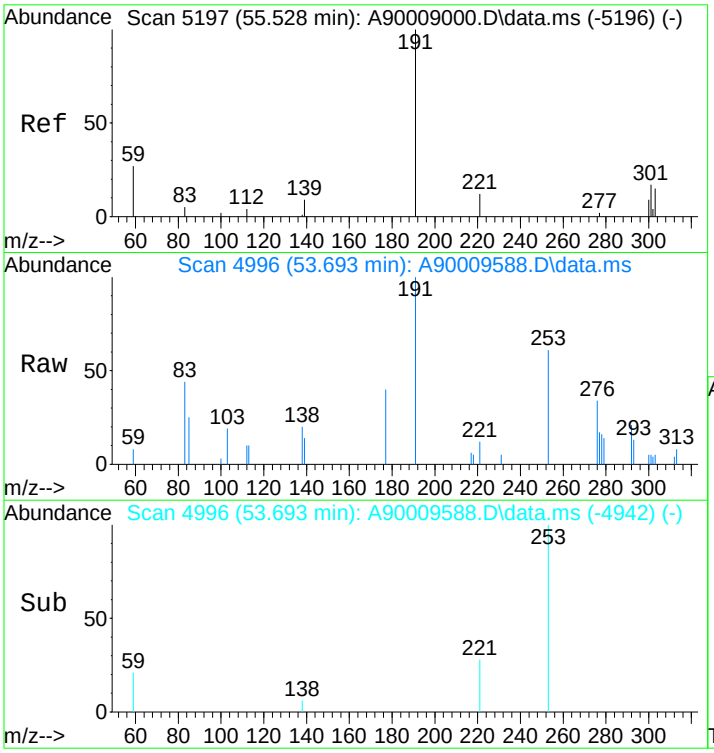




#119
30-Homohopane-22R (T22)
Concen: 73.45 ng/ml m
RT: 53.190 min Scan# 4941
Delta R.T. -0.018 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

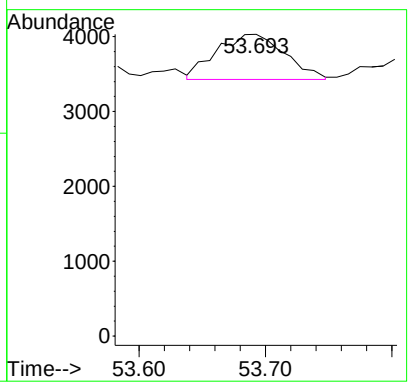
Tgt Ion:191 Resp: 7875

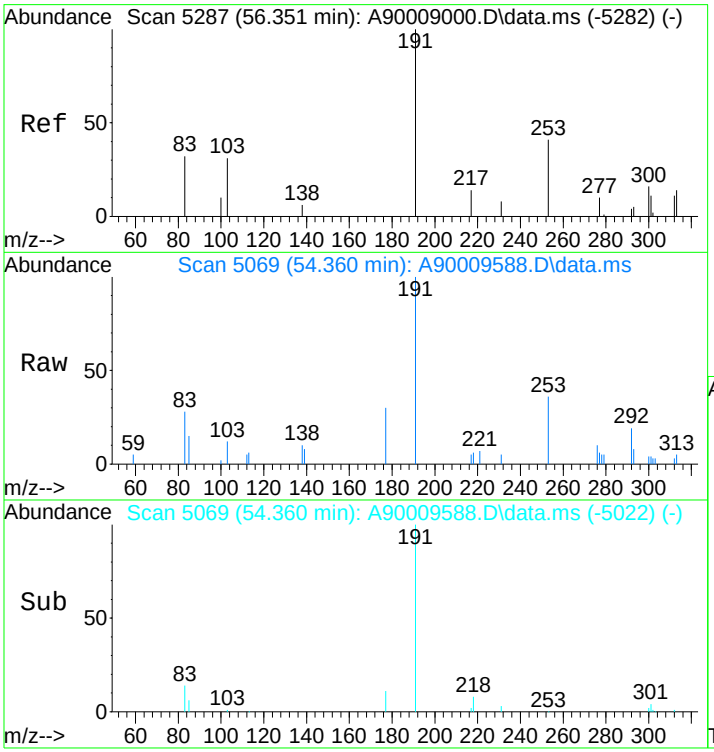




#120
Gammacerane/C32-diahopane
Concen: 20.99 ng/mL m
RT: 53.693 min Scan# 4996
Delta R.T. -0.009 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

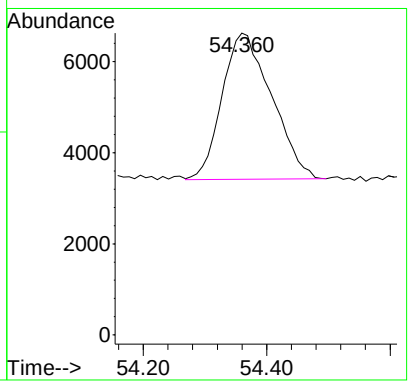
Tgt Ion:191 Resp: 2250

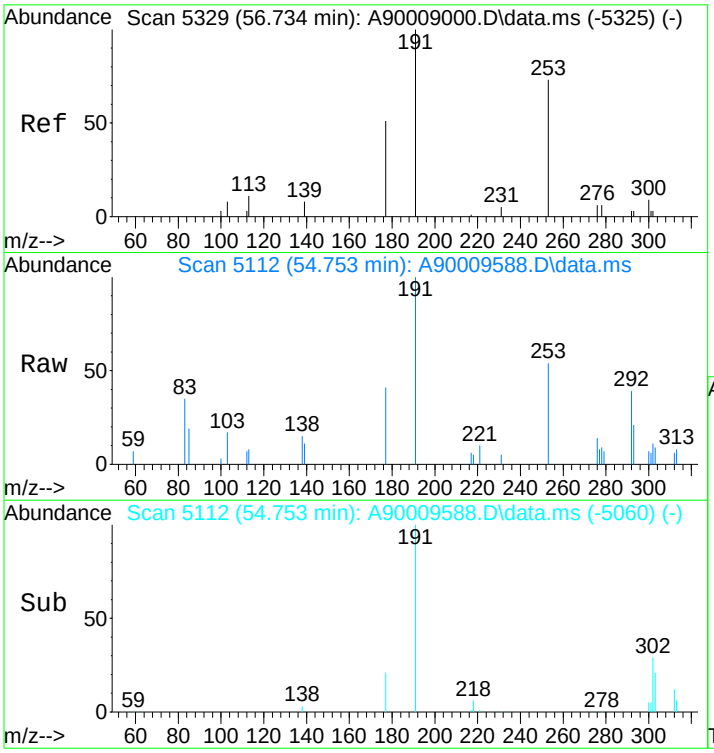




#121
30,31-Bishomohopane-22S (T26)
Concen: 166.71 ng/ml
RT: 54.360 min Scan# 5069
Delta R.T. -0.073 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

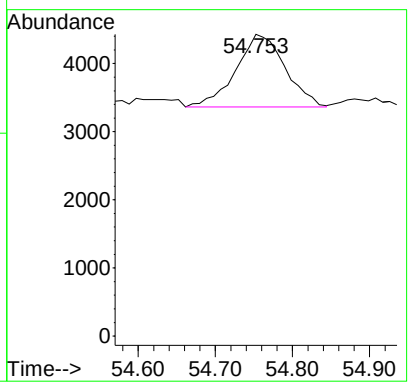
Tgt Ion:191 Resp: 17874

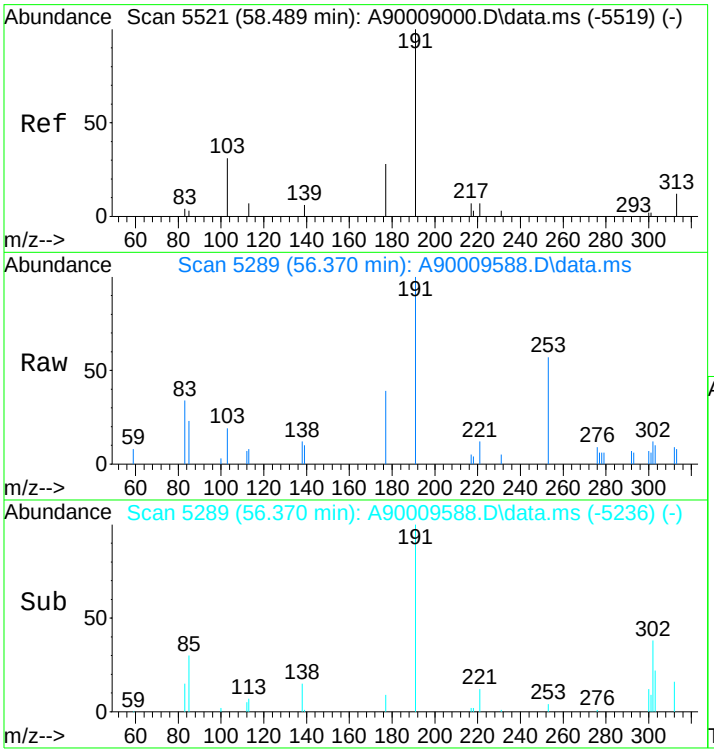




#122
30,31-Bishomohopane-22R (T27)
Concen: 43.91 ng/ml
RT: 54.753 min Scan# 5112
Delta R.T. -0.027 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

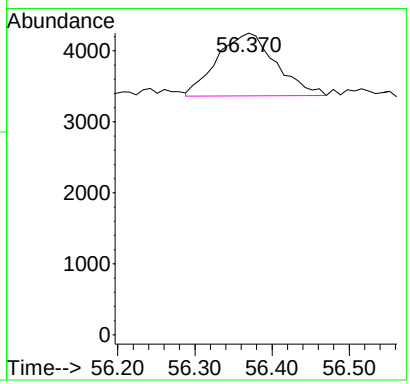
Tgt Ion:191 Resp: 4708

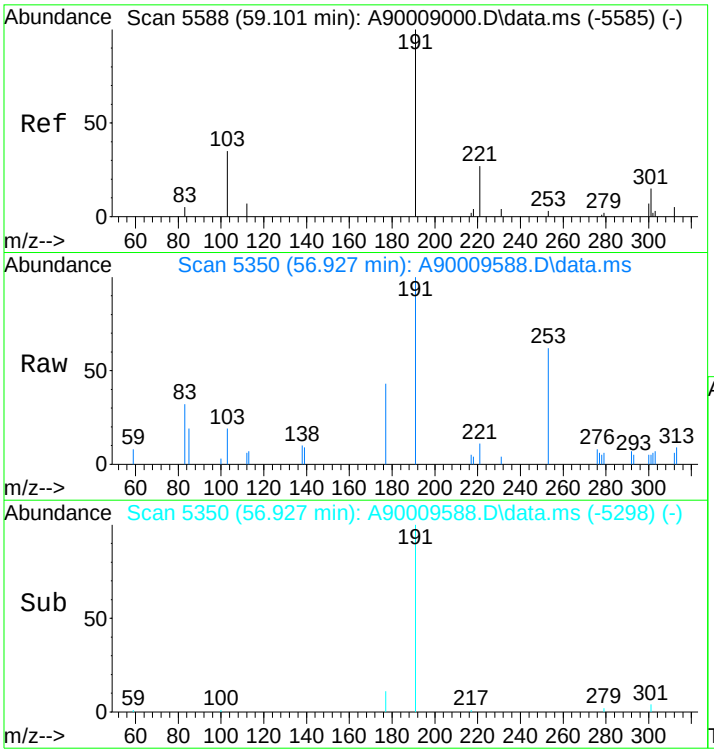




#123
30,31-Trishomohopane-22S (T30)
Concen: 43.58 ng/ml
RT: 56.370 min Scan# 5289
Delta R.T. -0.018 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

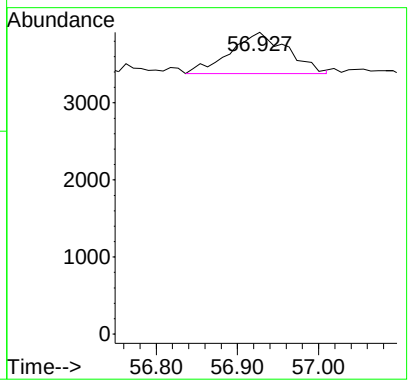
Tgt Ion:191 Resp: 4672

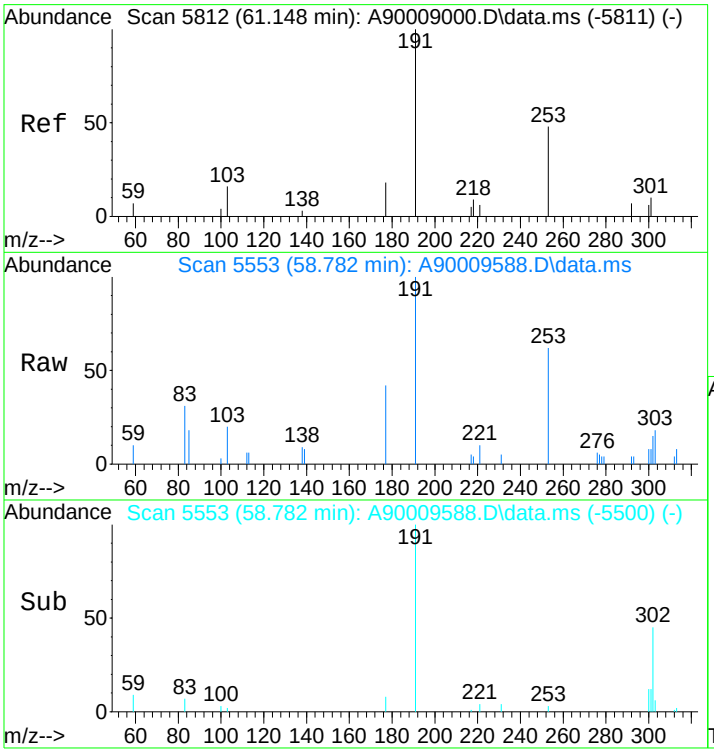




#124
30,31-Trishomohopane-22R (T31)
Concen: 24.36 ng/ml
RT: 56.927 min Scan# 5350
Delta R.T. -0.027 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

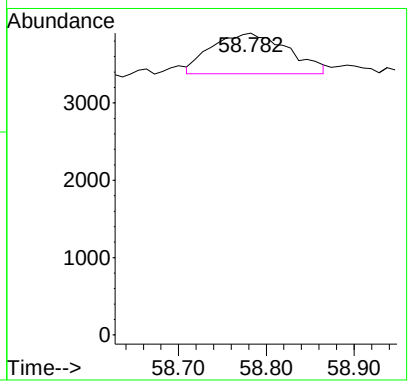
Tgt Ion:191 Resp: 2612

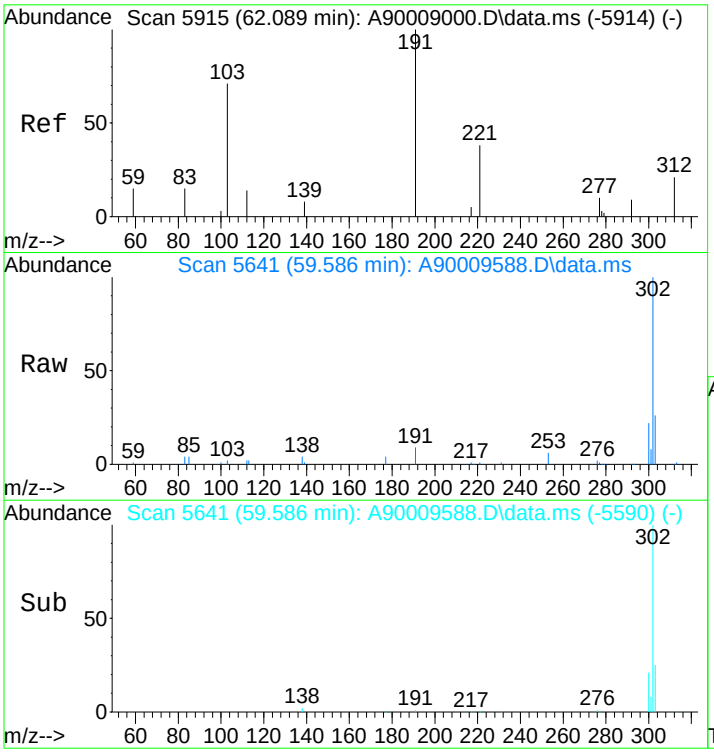




#125
Tetrakishomohopane-22S (T32)
Concen: 29.62 ng/ml m
RT: 58.782 min Scan# 5553
Delta R.T. -0.018 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

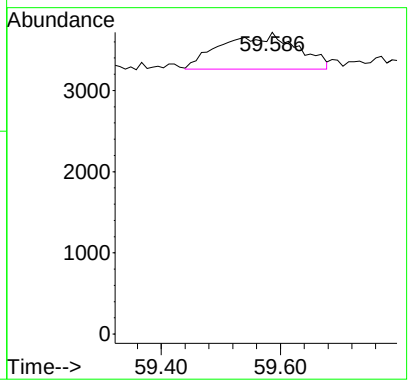
Tgt Ion:191 Resp: 3176

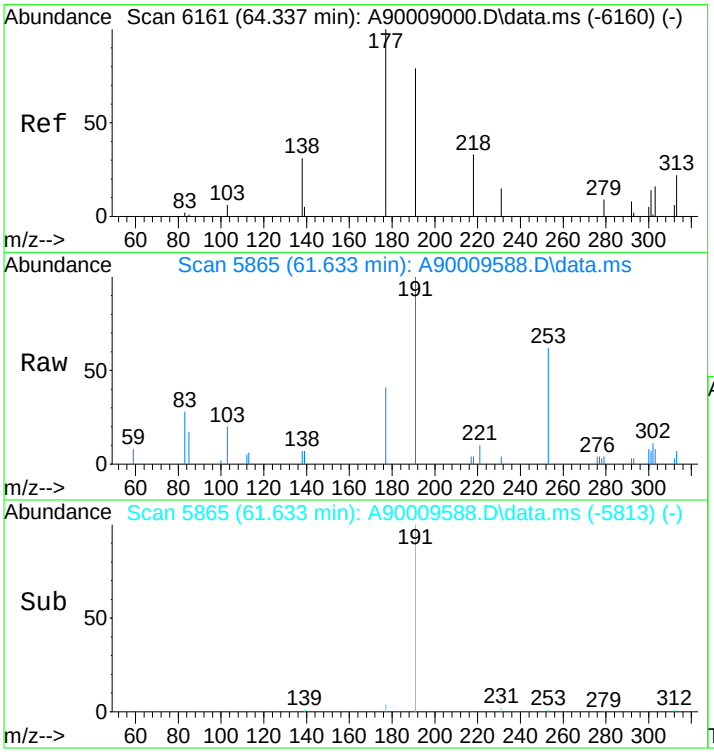




#126
Tetrakishomohopane-22R (T33)
Concen: 36.48 ng/ml m
RT: 59.586 min Scan# 5641
Delta R.T. -0.036 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

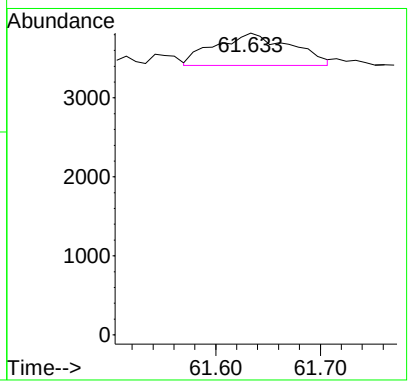
Tgt Ion:191 Resp: 3911

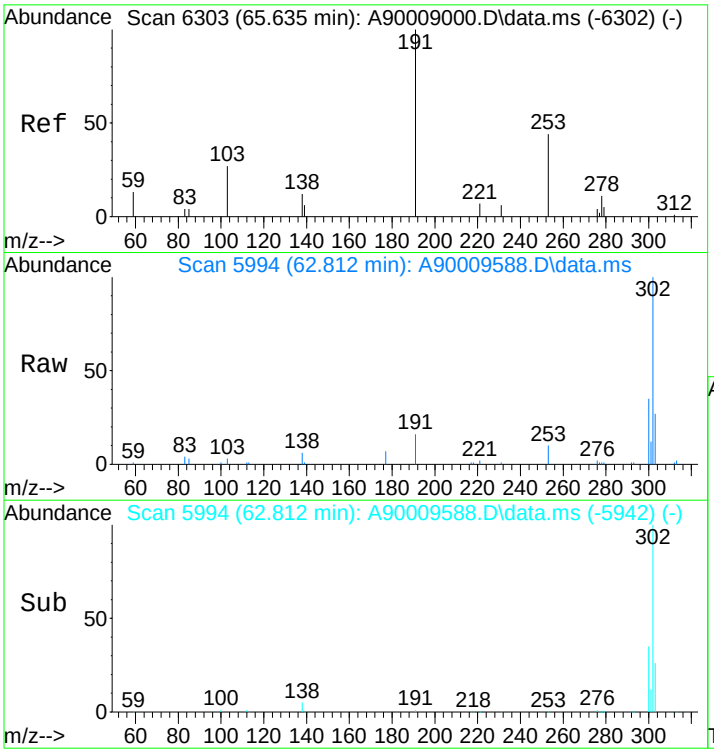




#127
Pentakishomohopane-22S (T34)
Concen: 19.42 ng/ml m
RT: 61.633 min Scan# 5865
Delta R.T. -0.027 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

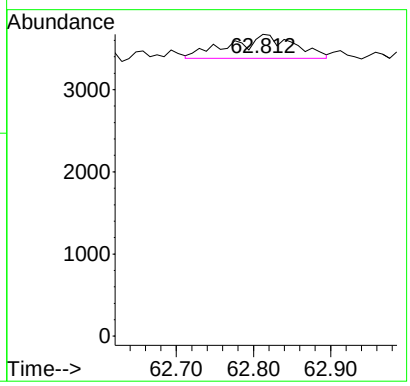
Tgt Ion:191 Resp: 2082

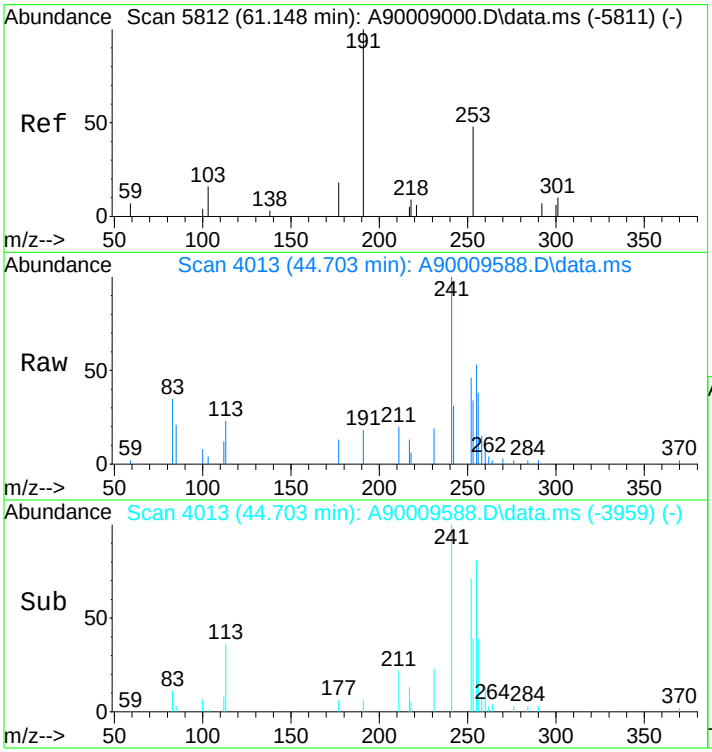




#128
Pentakishomohopane-22R (T35)
Concen: 15.48 ng/ml m
RT: 62.812 min Scan# 5994
Delta R.T. -0.027 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

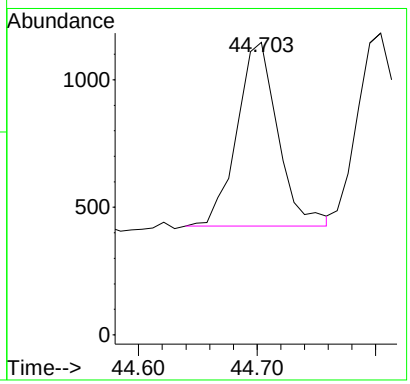
Tgt Ion:191 Resp: 1660

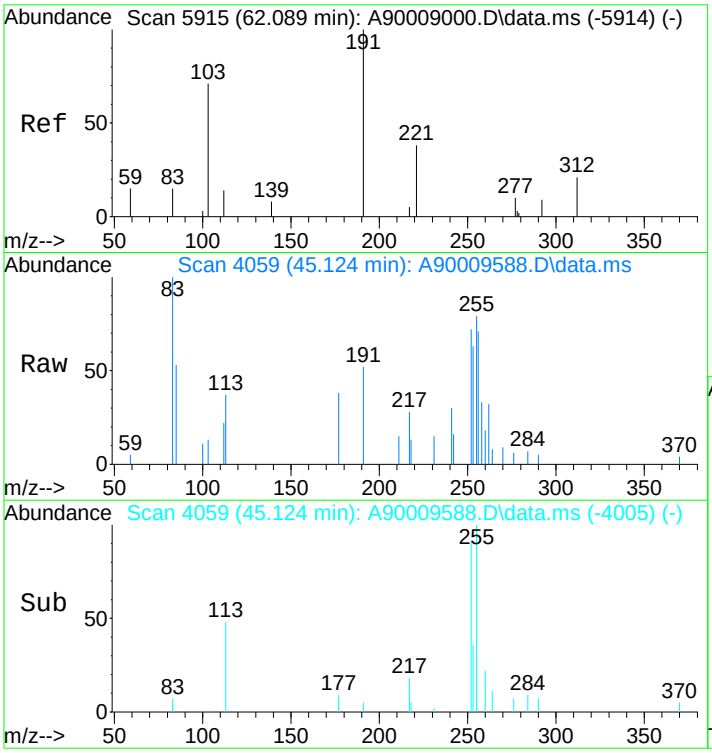




#130
13b(H),17a(H)-20S-Diacholestane (S4)
Concen: 33.71 ng/ml
RT: 44.703 min Scan# 4013
Delta R.T. -0.009 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

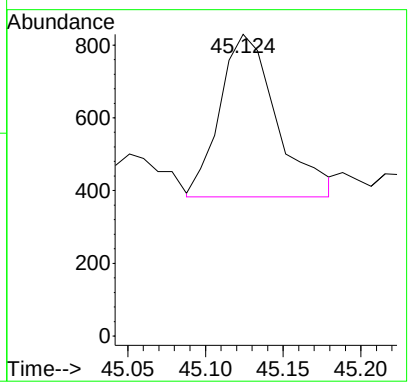
Tgt Ion:217 Resp: 1726

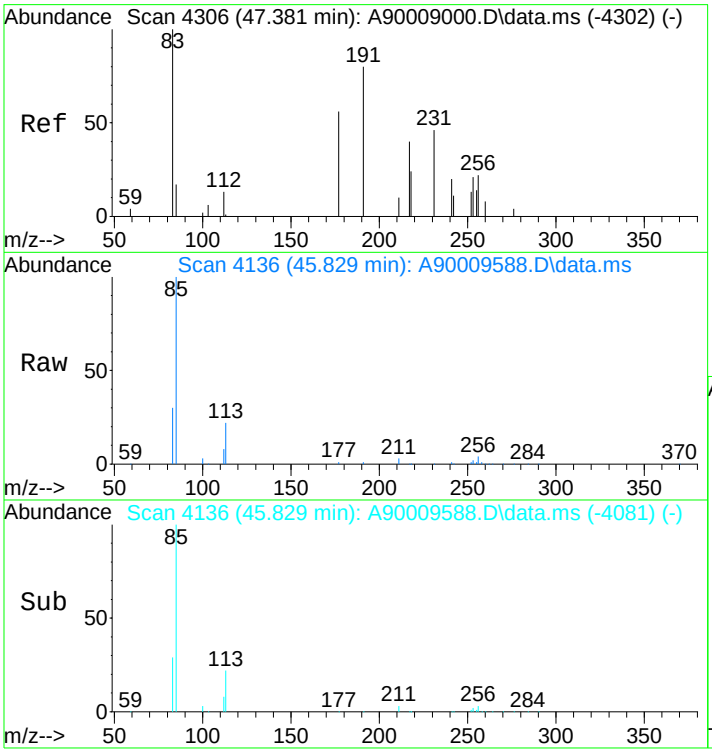




#131
13b(H),17a(H)-20R-Diacholestane (S5)
Concen: 22.27 ng/ml m
RT: 45.124 min Scan# 4059
Delta R.T. -0.009 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

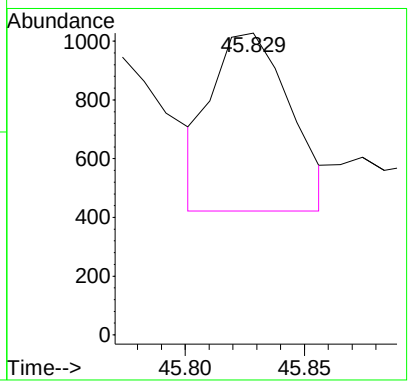
Tgt Ion:217 Resp: 1140

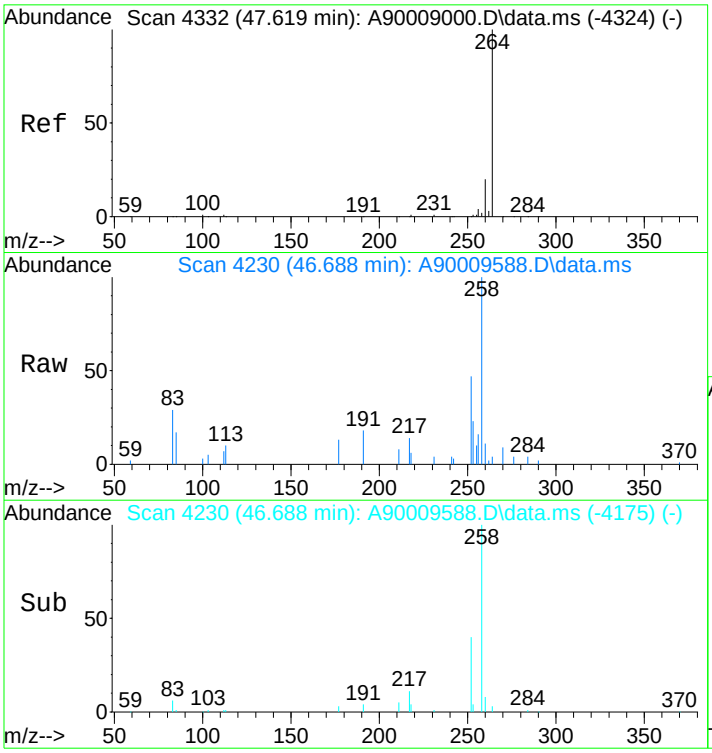




#132
13b,17a-20S-Methyldiacholestane (S8)
Concen: 26.96 ng/ml m
RT: 45.829 min Scan# 4136
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

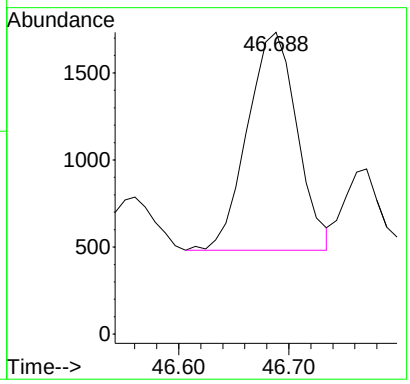
Tgt Ion:217 Resp: 1380

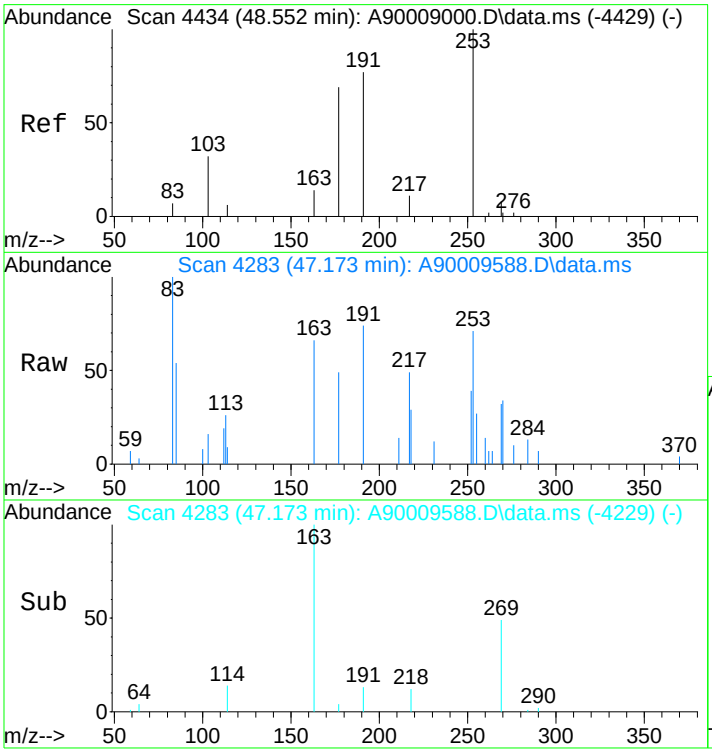




#133
14a,17a-20S-Chol/13b,17a-20S-Ethyldiach
Concen: 77.10 ng/ml
RT: 46.688 min Scan# 4230
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

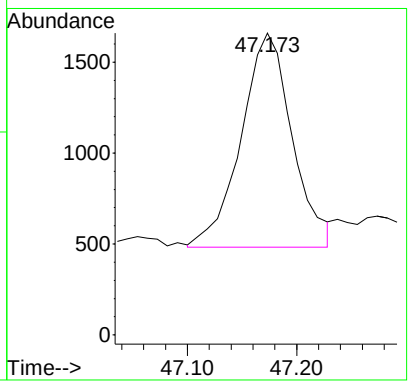
Tgt Ion:217 Resp: 3947

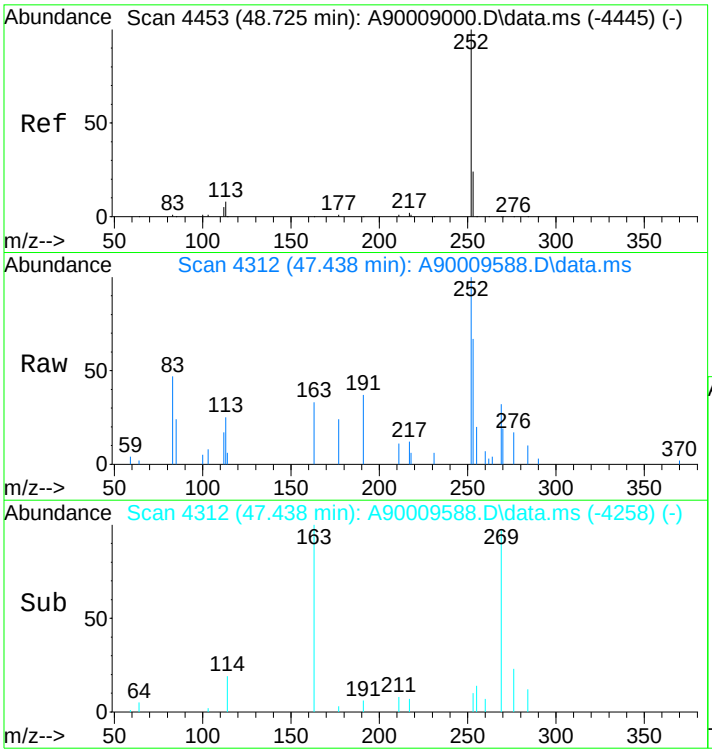




#134
14a,17a-20R-Chol/13b,17a-20R-Ethyldiach
Concen: 74.64 ng/ml m
RT: 47.173 min Scan# 4283
Delta R.T. -0.009 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

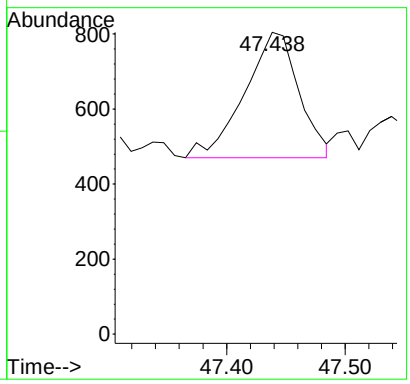
Tgt Ion:217 Resp: 3821

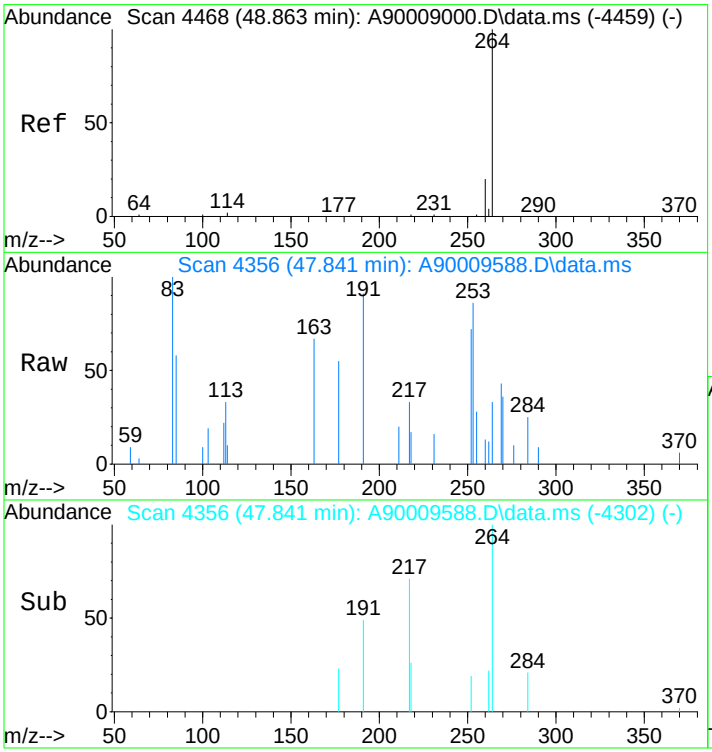




#135
Unknown Sterane (S18)
Concen: 20.90 ng/ml
RT: 47.438 min Scan# 4312
Delta R.T. -0.009 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

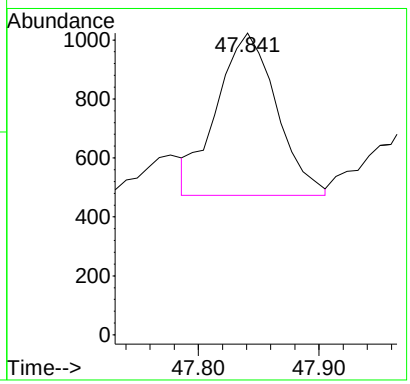
Tgt Ion:217 Resp: 1070

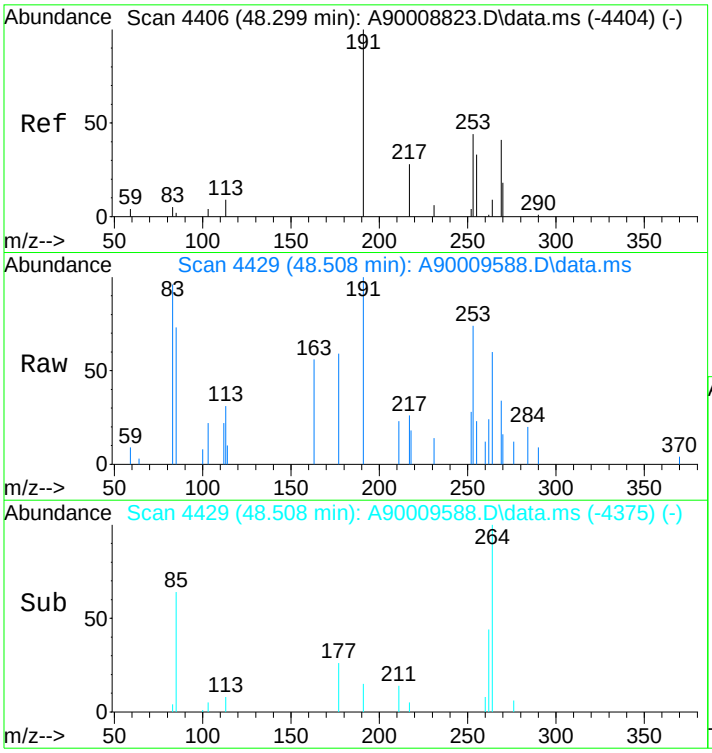




#137
14a,17a-20S-Methylcholestane (S20)
Concen: 37.00 ng/ml m
RT: 47.841 min Scan# 4356
Delta R.T. -0.009 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

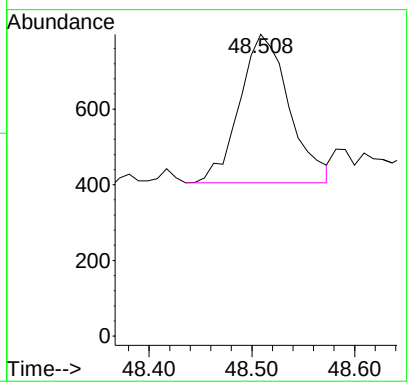
Tgt Ion:217 Resp: 1894

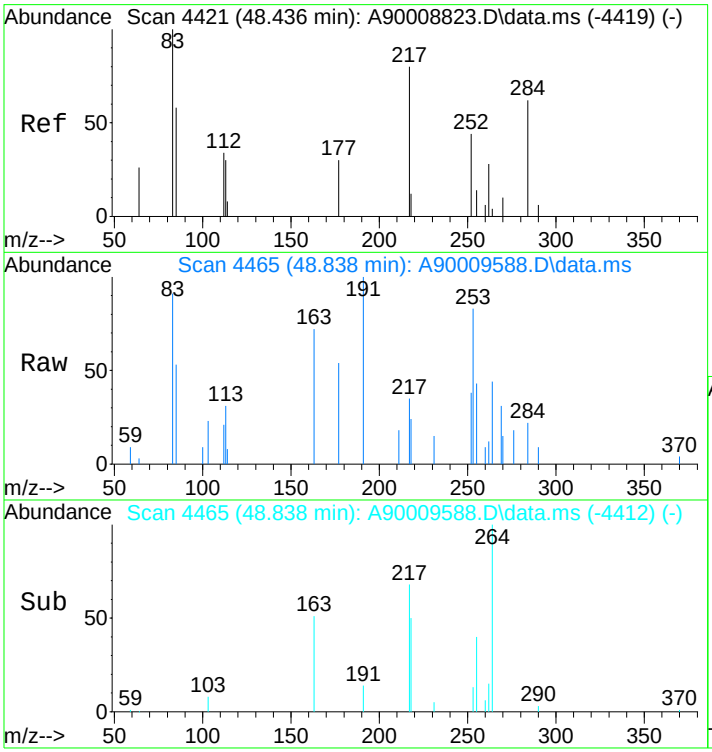




#138
14a,17a-20R-Methylcholestane (S24)
Concen: 25.78 ng/ml
RT: 48.508 min Scan# 4429
Delta R.T. -0.009 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

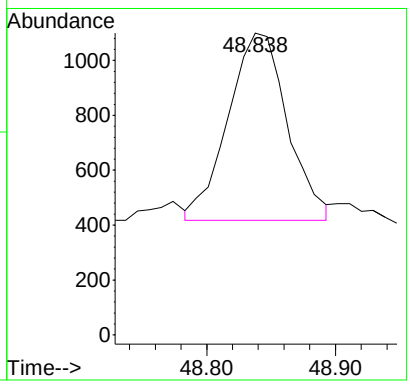
Tgt Ion:217 Resp: 1320

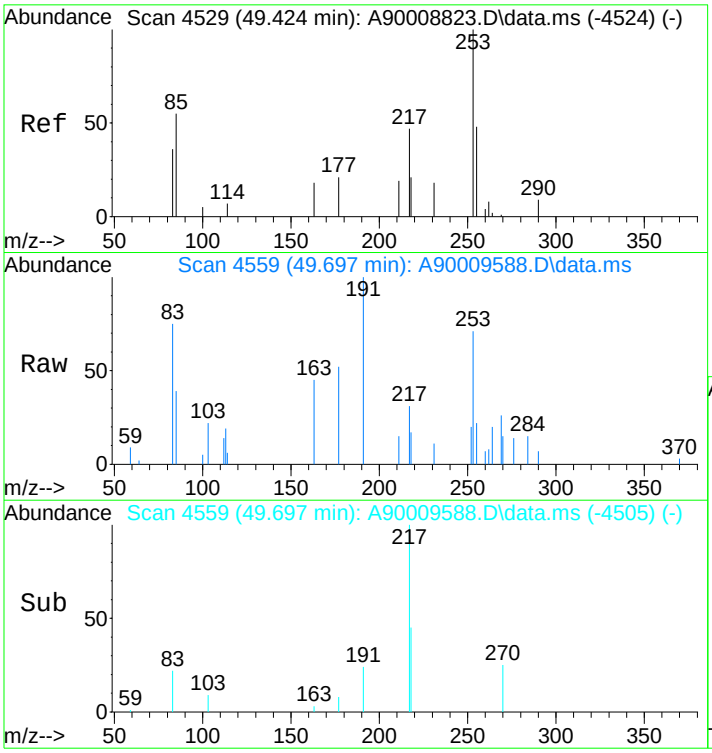




#139
14a(H),17a(H)-20S-Ethylcholestane (S25)
Concen: 42.72 ng/ml m
RT: 48.838 min Scan# 4465
Delta R.T. -0.018 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

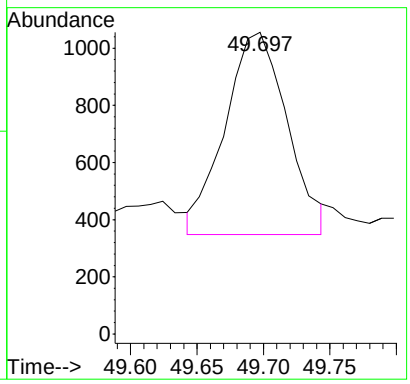
Tgt Ion:217 Resp: 2187

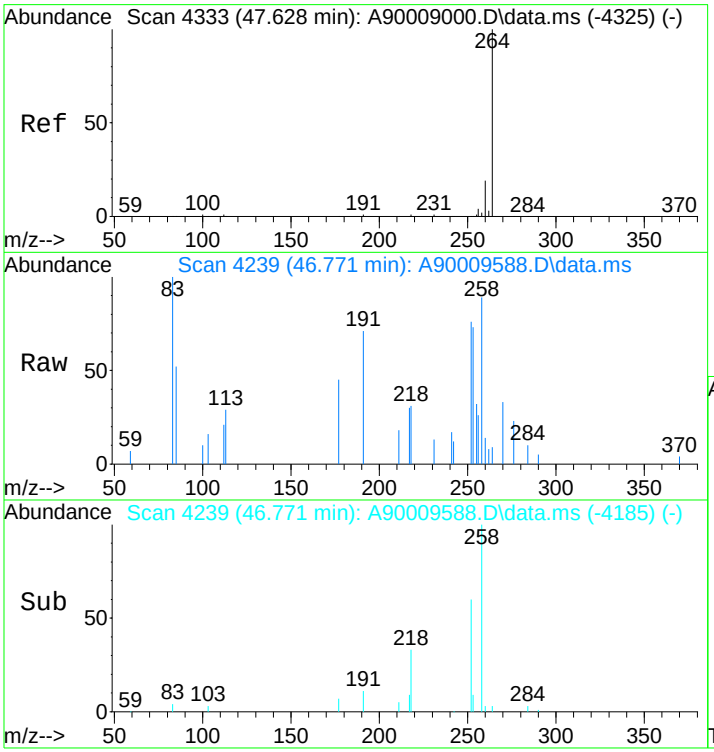




#140
14a(H),17a(H)-20R-Ethylcholestane (S28)
Concen: 44.89 ng/ml m
RT: 49.697 min Scan# 4559
Delta R.T. -0.009 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

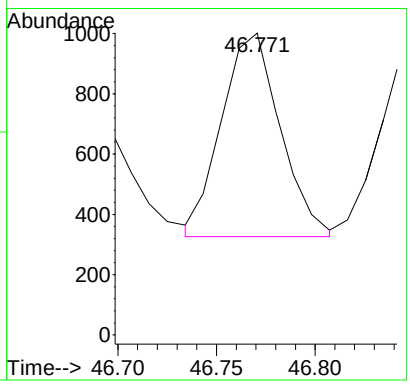
Tgt Ion:217 Resp: 2298

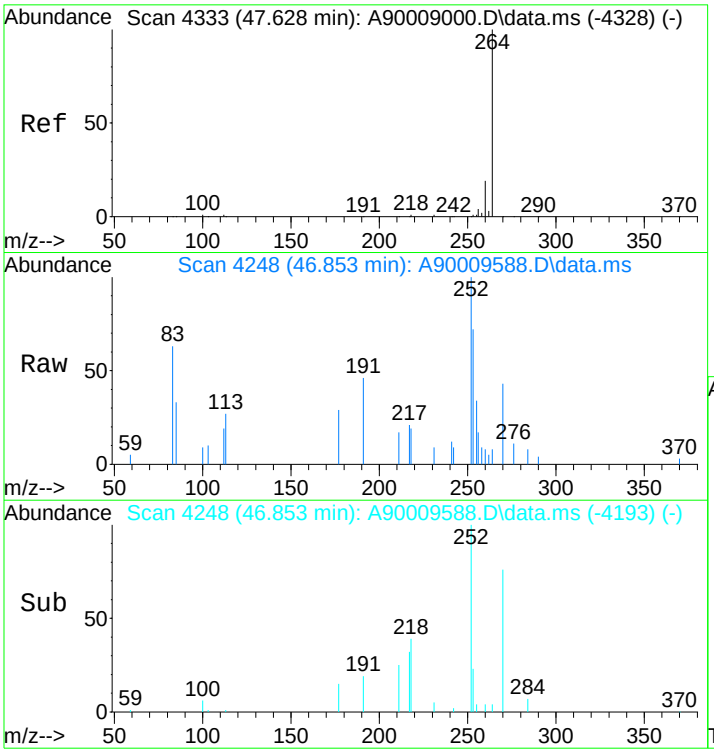




#141
14b(H),17b(H)-20R-Cholestane (S14)
Concen: 27.35 ng/ml m
RT: 46.771 min Scan# 4239
Delta R.T. -0.009 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

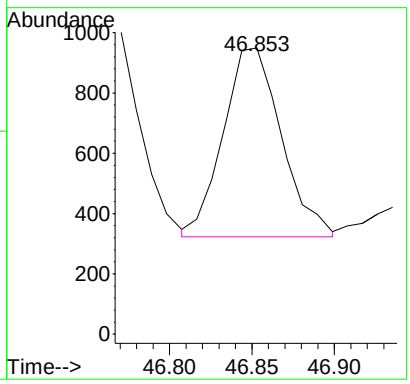
Tgt Ion:218 Resp: 1400

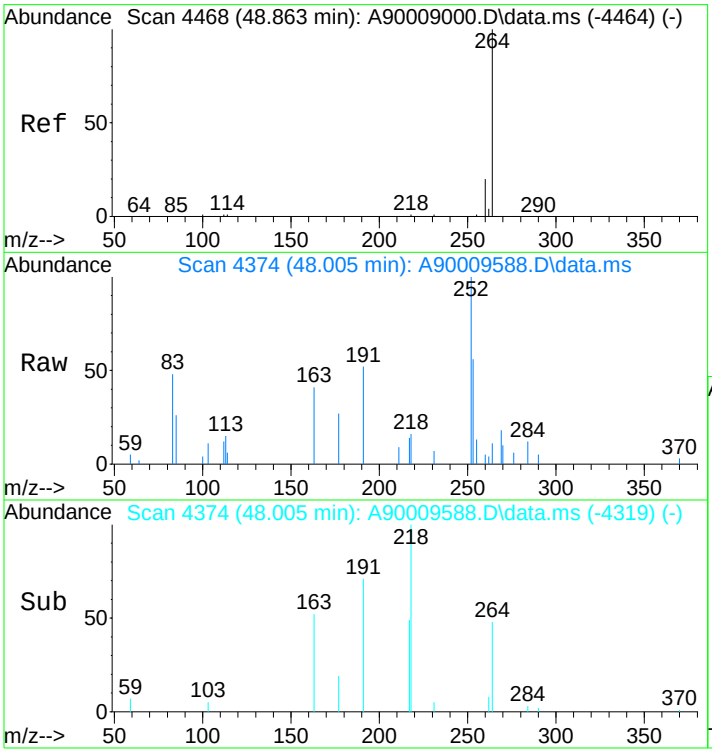




#142
14b(H),17b(H)-20S-Cholestane (S15)
Concen: 30.06 ng/ml m
RT: 46.853 min Scan# 4248
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

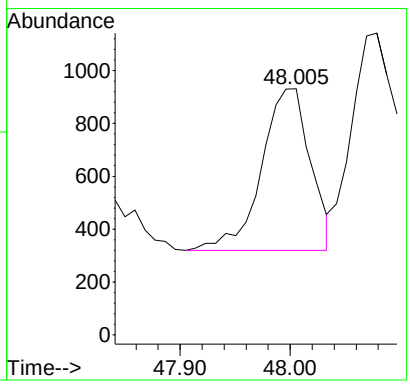
Tgt Ion:218 Resp: 1539

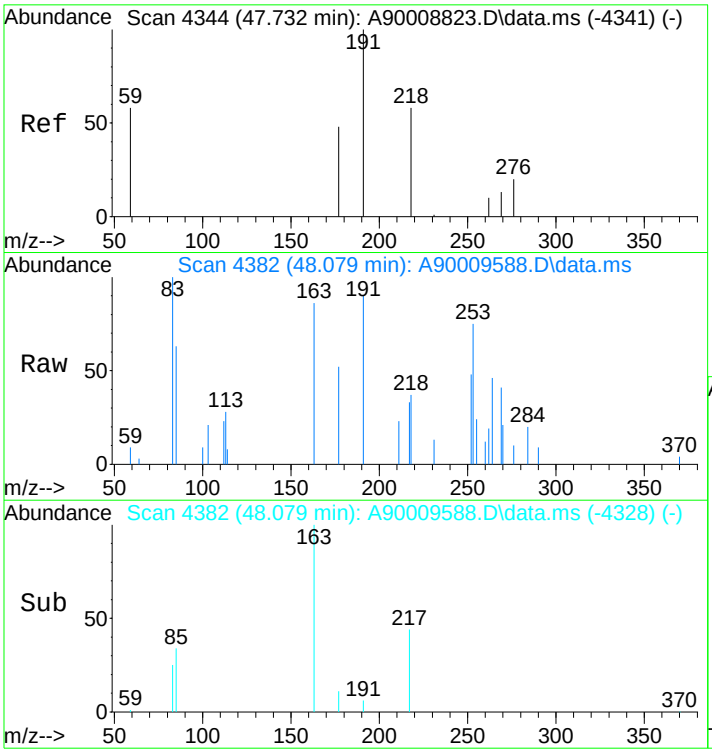




#143
14b,17b-20R-Methylcholestane (S22)
Concen: 37.00 ng/ml
RT: 48.005 min Scan# 4374
Delta R.T. 0.000 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

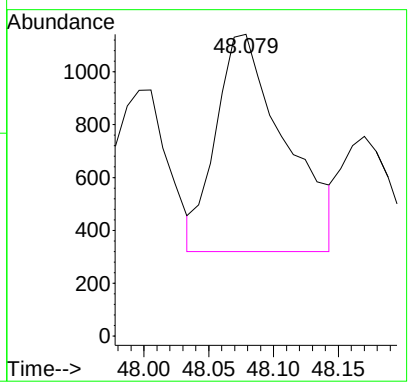
Tgt Ion:218 Resp: 1894

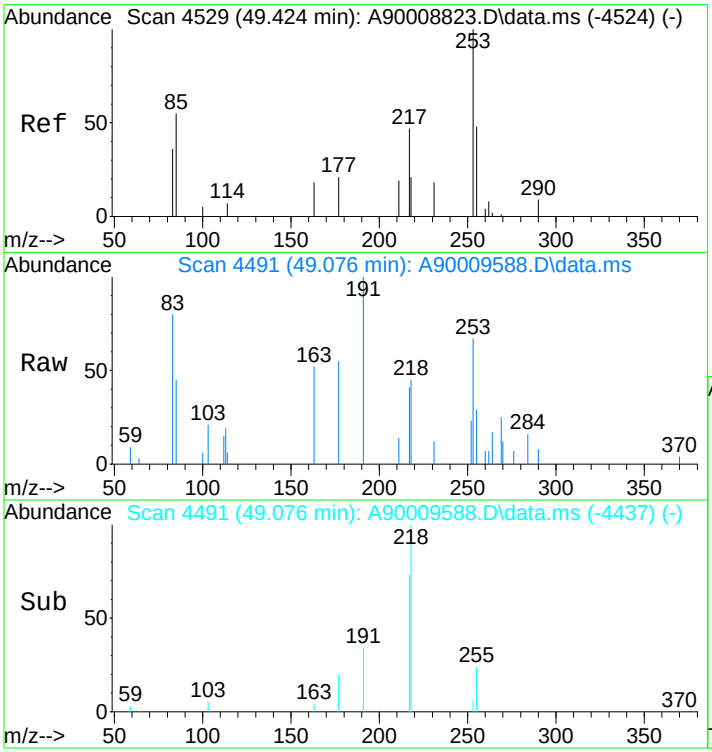




#144
14b,17b-20S-Methylcholestane (S23)
Concen: 59.91 ng/ml m
RT: 48.079 min Scan# 4382
Delta R.T. -0.009 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

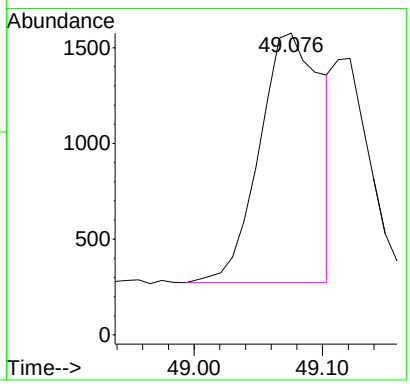
Tgt Ion:218 Resp: 3067

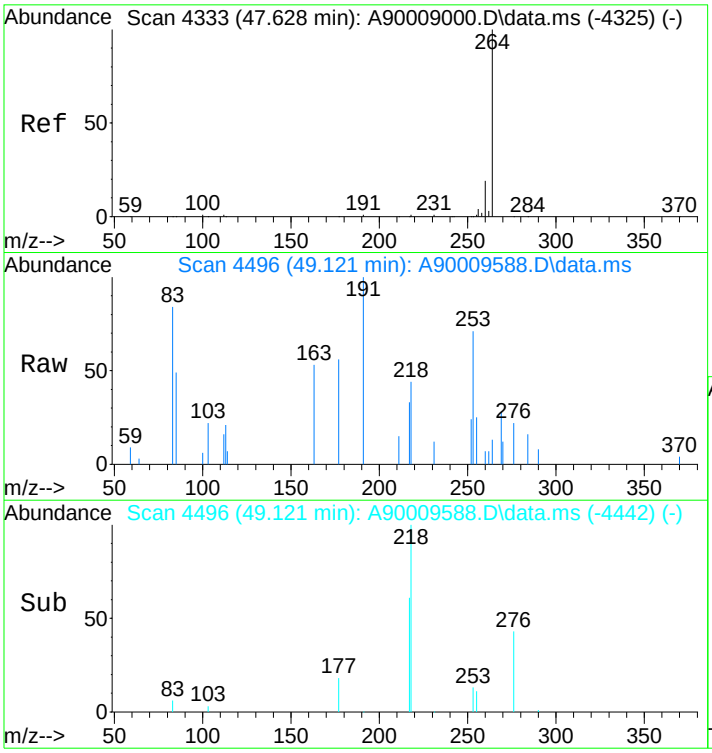




#145
14b(H),17b(H)-20R-Ethylcholestane (S26)
Concen: 86.18 ng/ml
RT: 49.076 min Scan# 4491
Delta R.T. -0.009 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

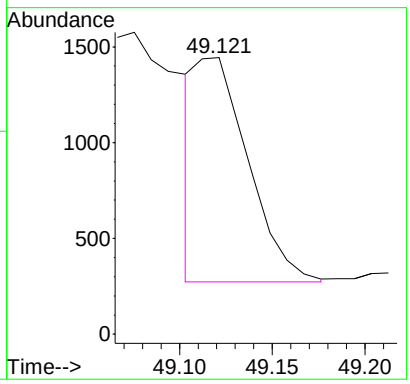
Tgt Ion:218 Resp: 4412

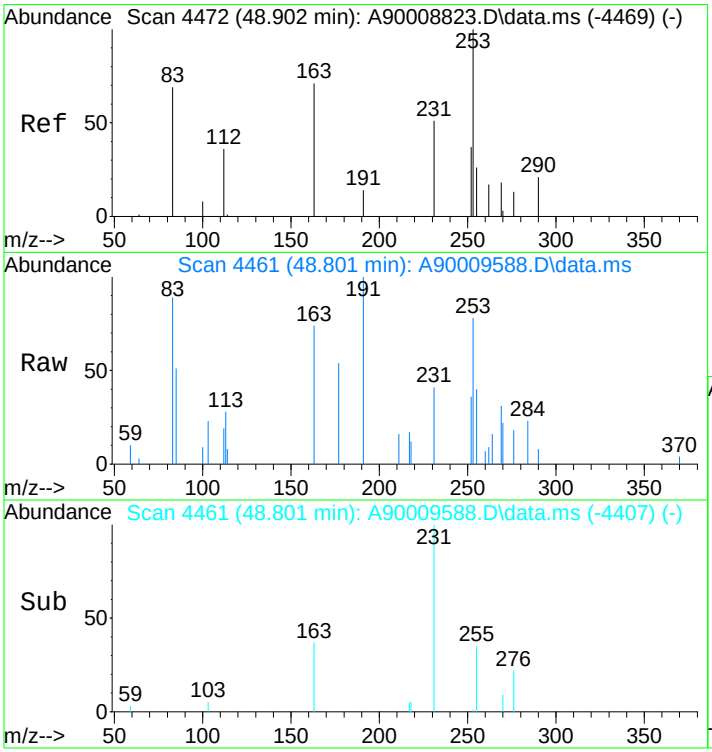




#146
14b(H),17b(H)-20S-Ethylcholestane (S27)
Concen: 44.67 ng/ml m
RT: 49.121 min Scan# 4496
Delta R.T. -0.009 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

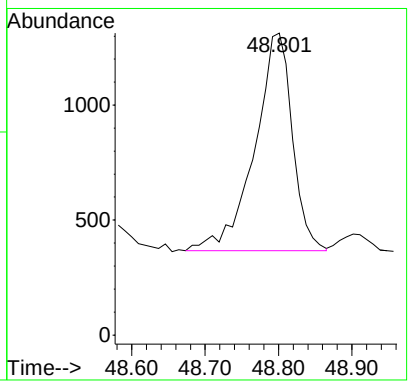
Tgt Ion:218 Resp: 2287

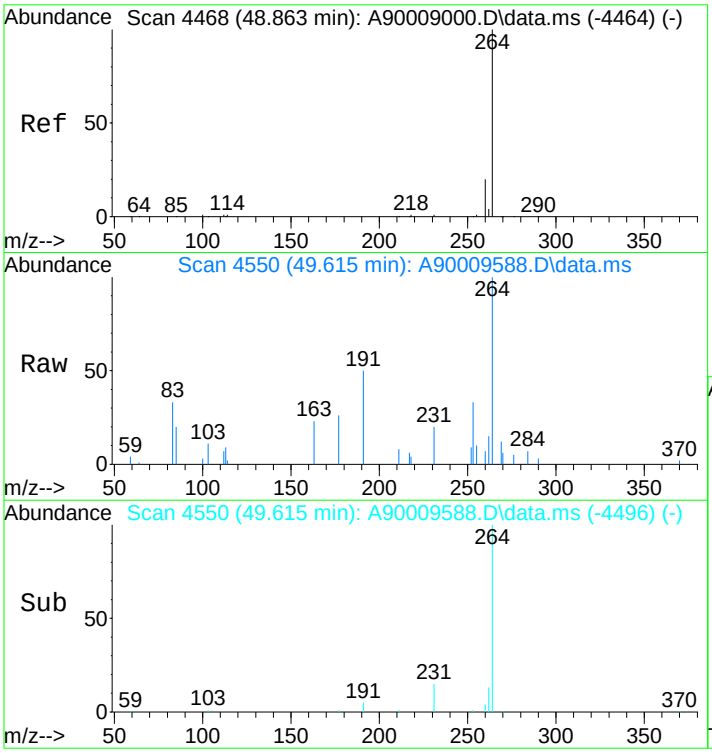




#147
C26,20R- +C27,20S- triaromatic steroid
Concen: 66.20 ng/mL
RT: 48.801 min Scan# 4461
Delta R.T. -0.009 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

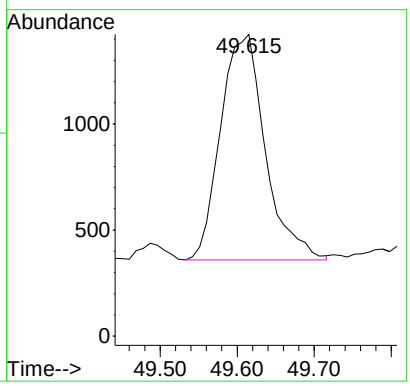
Tgt Ion:231 Resp: 3389

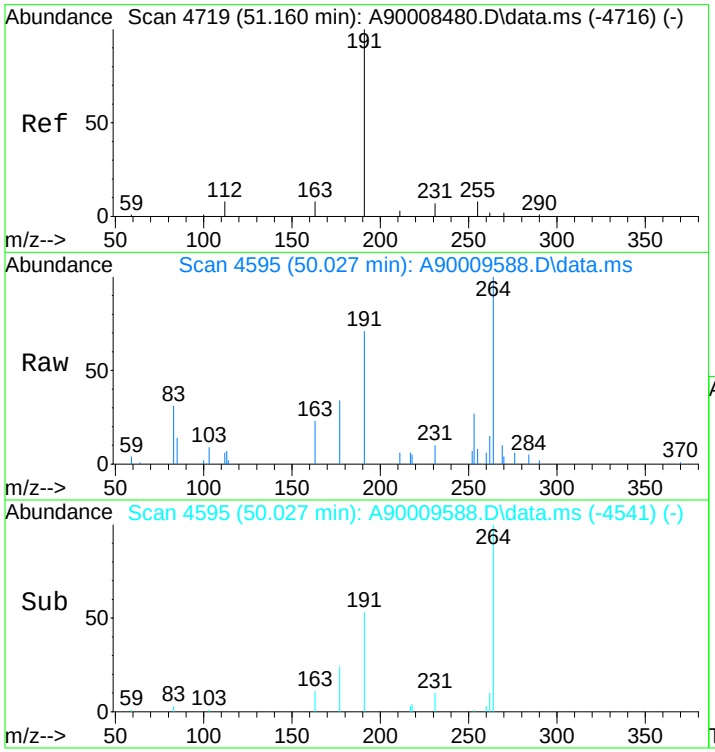




#148
C28,20S-triaromatic steroid
Concen: 83.88 ng/mL
RT: 49.615 min Scan# 4550
Delta R.T. -0.009 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

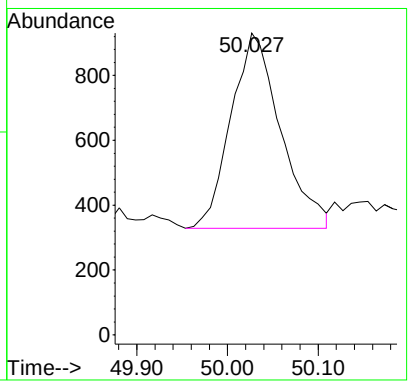
Tgt Ion:231 Resp: 4294

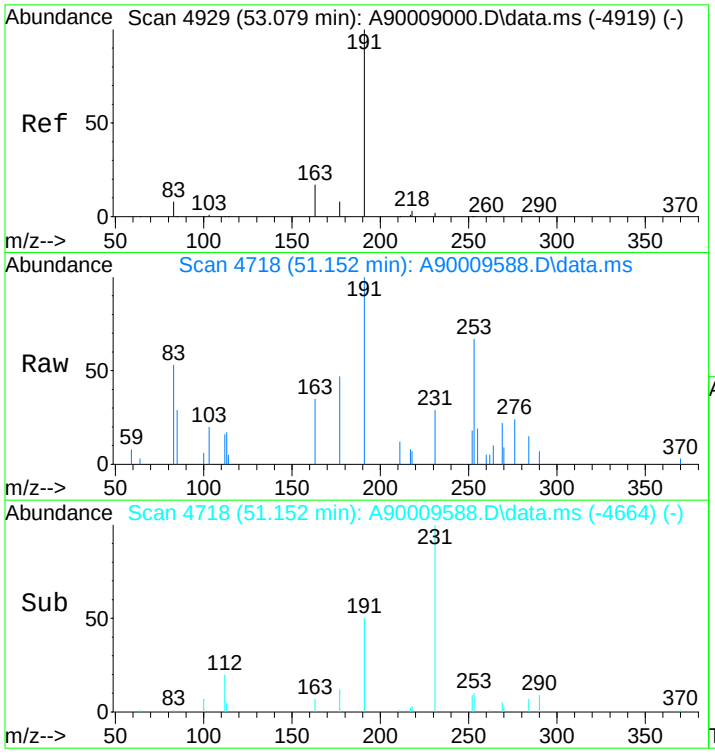




#149
C27,20R-triaromatic steroid
Concen: 44.63 ng/mL
RT: 50.027 min Scan# 4595
Delta R.T. -0.009 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

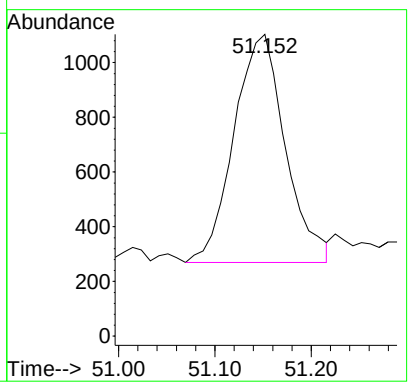
Tgt Ion:231 Resp: 2285





#150
C28,20R-triaromatic steroid
Concen: 60.44 ng/mL
RT: 51.152 min Scan# 4718
Delta R.T. -0.009 min
Lab File: A90009588.D
Acq: 23 Dec 2012 7:33 am

Tgt Ion:231 Resp: 3094



Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009589.D
Acq On : 23 Dec 2012 8:58 am
Operator : ps
Sample : 1212022-02S
Misc : 1X
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Dec 27 16:11:01 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 12:38:00 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.156	164	64876	500.000	ng/mL	0.00
74) Chrysene-d12	42.557	240	122291	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.229	136	438694	1759.308	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 175.93%#			
42) Phenanthrene-d10	31.995	188	480450	2053.192	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 205.32%#			
83) Benzo[b]fluoranthene-d12	46.450	264	453535	2017.556	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 201.76%#			
88) Benzo[a]pyrene-d12	47.585	264	403418	1790.250	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 179.02%#			
129) 5B(H)Cholane - Surr	43.187	217	98537	1919.380	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 191.94%#			
Target Compounds						Qvalue
3) trans-Decalin	15.908	138	298	5.225	ng/mL	100
5) C1-Decalins	17.377	152	1195M5	20.952	ng/mL	
6) C2-Decalins	19.138	166	2251M5	39.466	ng/mL	
7) C3-Decalins	21.602	180	1900M5	33.312	ng/mL	
8) C4-Decalins	24.960	194	3722M5	65.257	ng/mL	
10) Naphthalene	19.302	128	479424	1873.557	ng/mL#	100
11) C1-Naphthalenes	21.985	142	321658M5	1257.018	ng/mL	
12) C2-Naphthalenes	24.814	156	31809M5	124.307	ng/mL	
13) C3-Naphthalenes	28.045	170	75412M5	294.705	ng/mL	
14) C4-Naphthalenes	28.054	184	67235M5	262.750	ng/mL	
16) 2-Methylnaphthalene	21.985	142	314098	1876.959	ng/mL#	100
17) 1-Methylnaphthalene	22.405	142	7519	46.299	ng/mL#	100
18) Benzothiophene	19.521	134	1875M4	8.756	ng/mL	
19) C1-Benzo(b)thiophenes	22.168	148	5752M5	26.861	ng/mL	
20) C2-Benzo(b)thiophenes	24.148	162	2457M5	11.474	ng/mL	
21) C3-Benzo(b)thiophenes	26.785	176	6542M5	30.550	ng/mL	
22) C4-Benzo(b)thiophenes	29.066	190	5921M5	27.650	ng/mL	
23) Biphenyl	23.865	154	9743	44.490	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.486	156	7155	45.484	ng/mL#	100
25) Dibenzofuran	26.931	168	14542M4	62.259	ng/mL	
26) Acenaphthylene	25.544	152	601814M4	2286.229	ng/mL	
27) Acenaphthene	26.274	153	322430	1948.130	ng/mL	99
28) 2,3,5-Trimethylnaphthalen	27.835	170	5250M3	36.301	ng/mL	
29) Fluorene	28.291	166	369496	2032.945	ng/mL	99
30) C1-Fluorenes	30.508	180	44655M5	245.689	ng/mL	
31) C2-Fluorenes	32.844	194	64969M5	357.456	ng/mL	
32) C3-Fluorenes	35.345	208	43136M5	237.332	ng/mL	
33) Dibenzothiophene	31.594	184	30047	117.524	ng/mL#	85
34) 4-Methyldibenzothiophene(	33.364	198	18500	72.359	ng/mL#	100
35) 2/3-Methyldibenzothiophen	33.711	198	17457M1	68.280	ng/mL	
36) 1-Methyldibenzothiophene(	34.131	198	6491	25.388	ng/mL#	100
37) OTP	33.811	198	61039	238.743	ng/mL#	100
38) C1-Dibenzothiophenes	33.811	198	122766M5	480.177	ng/mL	
38) C1-Dibenzothiophenes BS	33.811	198	61727m	241.434	ng/mL	
39) C2-Dibenzothiophenes	35.053	212	81117M5	317.275	ng/mL	
40) C3-Dibenzothiophenes	38.111	226	55752M5	218.064	ng/mL	
41) C4-Dibenzothiophenes	38.111	240	27771M5	108.621	ng/mL	
43) Phenanthrene	32.086	178	966031	3657.337	ng/mL	100
44) 3-Methylphenanthrene(3MP)	34.048	192	105560	399.644	ng/mL	97

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009589.D
Acq On : 23 Dec 2012 8:58 am
Operator : ps
Sample : 1212022-02S
Misc : 1X
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Dec 27 16:11:01 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 12:38:00 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
45) 2-Methylphenanthrene(2MP)	34.158	192	130384	493.626	ng/mL	97
46) 2-Methylanthracene(2MA)	34.322	192	89302M3	338.092	ng/mL	
47) 9/4-Methylphenanthrene(9M	34.505	192	164481M3	622.715	ng/mL	
48) 1-Methylphenanthrene(1MP)	34.587	192	102105	386.564	ng/mL	97
49) C1-Phenanthrenes/Anthrace	34.505	192	602457M5	2280.867	ng/mL	
50) C2-Phenanthrenes/Anthrace	36.312	206	438158M5	1658.841	ng/mL	
50) C2-Phenanthrenes/Anthr BS	36.312	206	438158m	1658.841	ng/mL	
52) C3-Phenanthrenes/Anthrace	38.148	220	174443M5	660.431	ng/mL	
53) C4-Phenanthrenes/Anthrace	40.348	234	51723M5	195.820	ng/mL	
55) Anthracene	32.269	178	658811M4	2685.955	ng/mL	
56) Carbazole	32.953	167	5992	25.824	ng/mL#	73
57) 1-Methylphenanthrene	34.587	192	102284	524.862	ng/mL	100
58) Fluoranthene	36.851	202	2679153	9079.844	ng/mL	98
59) Benzo(b)fluorene	39.362	216	182942M3	1042.536	ng/mL	
60) Pyrene	37.727	202	3131059	10401.179	ng/mL	99
61) C1-Fluoranthenes/Pyrenes	39.115	216	1355481M5	4502.822	ng/mL	
62) C2-Fluoranthenes/Pyrenes	40.859	230	430069M5	1428.662	ng/mL	
63) C3-Fluoranthenes/Pyrenes	43.050	244	155599M5	516.890	ng/mL	
64) C4-Fluoranthenes/Pyrenes	43.334	258	75555M5	250.989	ng/mL	
66) Naphthobenzothiophene	41.562	234	116553	446.213	ng/ml	97
67) Naphthobenzothiophene-2,1	41.562	234	116553	446.213	ng/mL	97
68) Naphthobenzothiophene-1,2	41.900	234	27295	104.497	ng/mL#	26
69) Naphthobenzothiophene-2,3	42.201	234	49589M3	189.847	ng/mL	
70) C1-Naphthobenzothiophenes	42.968	248	119219M5	456.420	ng/ml	
71) C2-Naphthobenzothiophenes	44.466	262	57650M5	220.708	ng/ml	
72) C3-Naphthobenzothiophenes	46.350	276	34117M5	130.614	ng/ml	
73) C4-Naphthobenzothiophenes	47.594	290	18173M5	69.574	ng/mL	
75) Benz[a]anthracene	42.503	228	1642060M3	5853.946	ng/mL	
77) Chrysene/Triphenylene	42.658	228	1595492	5783.206	ng/mL	99
78) C1-Chrysenes	44.137	242	523892M5	1898.960	ng/mL	
79) C2-Chrysenes	45.838	256	237831M5	862.070	ng/mL	
79) C2-Chrysenes BS	45.838	256	220064m	797.670	ng/mL	
80) BBF-d12 Surr BKGD	46.450	256	17767	64.400	ng/mL	100
81) C3-Chrysenes	46.871	270	122407M5	443.691	ng/mL	
82) C4-Chrysenes	48.325	284	43316M5	157.008	ng/mL	
84) Benzo[b]fluoranthene	46.542	252	1320244	4539.380	ng/mL	93
85) Benzo[j]+[k]fluoranthene	46.615	252	1440743	5041.617	ng/mL	93
86) Benzo[a]fluoranthene	46.899	252	234715	821.342	ng/mL#	1
87) Benzo[e]pyrene	47.484	252	654668	2370.478	ng/mL	91
89) Benzo[a]pyrene	47.667	252	1526102M3	5834.720	ng/mL	
90) Perylene	47.950	252	241227	864.152	ng/mL#	88
91) Indeno[1,2,3-cd]pyrene	52.166	276	1211748M3	4183.141	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.203	278	720741	2525.767	ng/mL	99
93) Benzo[g,h,i]perylene	53.363	276	1175639	4130.018	ng/mL	100
94) Hopane (T19)	51.316	191	23780M3	221.179	ng/mL	
96) C23 Tricyclic Terpane (T4	40.211	191	2711	25.215	ng/ml	100
97) C24 Tricyclic Terpane (T5	40.941	191	2025M4	18.835	ng/ml	
98) C25 Tricyclic Terpane (T6	42.493	191G	3903M1	36.302	ng/ml	
99) C24 Tetracyclic Terpane (	43.735	191	1990	18.509	ng/ml	100
100) C26 Tricyclic Terpane-22S	43.480	191	1713M4	15.933	ng/ml	
101) C26 Tricyclic Terpane-22R	43.580	191	911M4	8.473	ng/ml	
102) C28 Tricyclic Terpane-22S	45.874	191	1733M4	16.119	ng/ml	
103) C28 Tricyclic Terpane-22R	46.039	191	1459	13.570	ng/ml	100
104) C29 Tricyclic Terpane-22S	46.551	191	1560	14.510	ng/ml	100
105) C29 Tricyclic Terpane-22R	46.743	191	1045M4	9.720	ng/ml	
106) 18a-22,29,30-Trisnorneoho	47.786	191	4816	44.794	ng/ml	100

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009589.D
Acq On : 23 Dec 2012 8:58 am
Operator : ps
Sample : 1212022-02S
Misc : 1X
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Dec 27 16:11:01 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 12:38:00 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
107) C30 Tricyclic Terpane-22S	47.905	191	1418M4	13.189	ng/mL	
108) C30 Tricyclic Terpane-22R	48.142	191	1733M3	16.119	ng/mL	
109) 17a(H)-22,29,30-Trisnorho	48.298	191	5934M4	55.192	ng/ml	
110) 17a/b,21b/a 28,30-Bisnorh	49.414	191	1074M4	9.989	ng/ml	
111) 17a(H),21b(H)-25-Norhopan	49.249	191	1032M4	9.599	ng/ml	
112) 30-Norhopane (T15)	50.045	191	17472	162.508	ng/ml	100
113) 18a(H)-30-Norneohopane-C2	50.145	191	4742	44.106	ng/ml	100
114) 17a(H)-Diahopane (X)	50.264	191	1733M4	16.119	ng/ml	
115) 30-Normoretane (T17)	50.777	191	2754M4	25.615	ng/ml	
116) 18a(H)&18b(H)-Oleananes (	51.152	191	1664M4	15.477	ng/ml	
117) Moretane (T20)	51.956	191	3528M4	32.814	ng/ml	
118) 30-Homohopane-22S (T21)	52.980	191	8645M4	80.408	ng/ml	
119) 30-Homohopane-22R (T22)	53.190	191	7681	71.441	ng/ml	100
120) Gammacerane/C32-diahopane	53.692	191	2488	23.141	ng/mL	100
121) 30,31-Bishomohopane-22S (	54.359	191G	18295	170.163	ng/ml	100
122) 30,31-Bishomohopane-22R (	54.761	191	4404	40.962	ng/ml	100
123) 30,31-Trishomohopane-22S	56.361	191	4778M4	44.440	ng/ml	
124) 30,31-Trishomohopane-22R	56.909	191	2660	24.741	ng/ml	100
125) Tetrakishomohopane-22S (T	58.773	191	3230M4	30.042	ng/ml	
126) Tetrakishomohopane-22R (T	59.577	191G	3672M4	34.153	ng/ml	
127) Pentakishomohopane-22S (T	61.633	191	2601	24.192	ng/ml	100
128) Pentakishomohopane-22R (T	62.812	191	1732	16.109	ng/ml	100
130) 13b(H),17a(H)-20S-Diachol	44.694	217	1921	37.419	ng/ml	100
131) 13b(H),17a(H)-20R-Diachol	45.124	217	929	18.096	ng/ml	100
132) 13b,17a-20S-Methyldiachol	45.828	217	1464M4	28.517	ng/ml	
133) 14a,17a-20S-Chol/13b,17a-	46.679	217	3808	74.175	ng/ml	100
134) 14a,17a-20R-Chol/13b,17a-	47.173	217	3649	71.078	ng/ml	100
135) Unknown Sterane (S18)	47.438	217	1012	19.713	ng/ml	100
137) 14a,17a-20S-Methylcholest	47.841	217	1691M3	32.939	ng/ml	
138) 14a,17a-20R-Methylcholest	48.517	217	1222M4	23.803	ng/ml	
139) 14a(H),17a(H)-20S-Ethylch	48.838	217	2075M4	40.418	ng/ml	
140) 14a(H),17a(H)-20R-Ethylch	49.688	217	1990M4	38.763	ng/ml	
141) 14b(H),17b(H)-20R-Cholest	46.771	218	1516	29.530	ng/ml	100
142) 14b(H),17b(H)-20S-Cholest	46.844	218	1582	30.815	ng/ml	100
143) 14b,17b-20R-Methylcholest	47.996	218	1817M4	35.393	ng/ml	
144) 14b,17b-20S-Methylcholest	48.078	218	3089M4	60.170	ng/ml	
145) 14b(H),17b(H)-20R-Ethylch	49.075	218	3779	73.610	ng/ml	100
146) 14b(H),17b(H)-20S-Ethylch	49.112	218	2876M3	56.021	ng/ml	
147) C26,20R- +C27,20S- triaro	48.801	231	3124M4	60.852	ng/mL	
148) C28,20S-triaromatic stero	49.606	231	4178	81.382	ng/mL	100
149) C27,20R-triaromatic stero	50.027	231	2075M4	40.418	ng/mL	
150) C28,20R-triaromatic stero	51.152	231	2764M4	53.839	ng/mL	

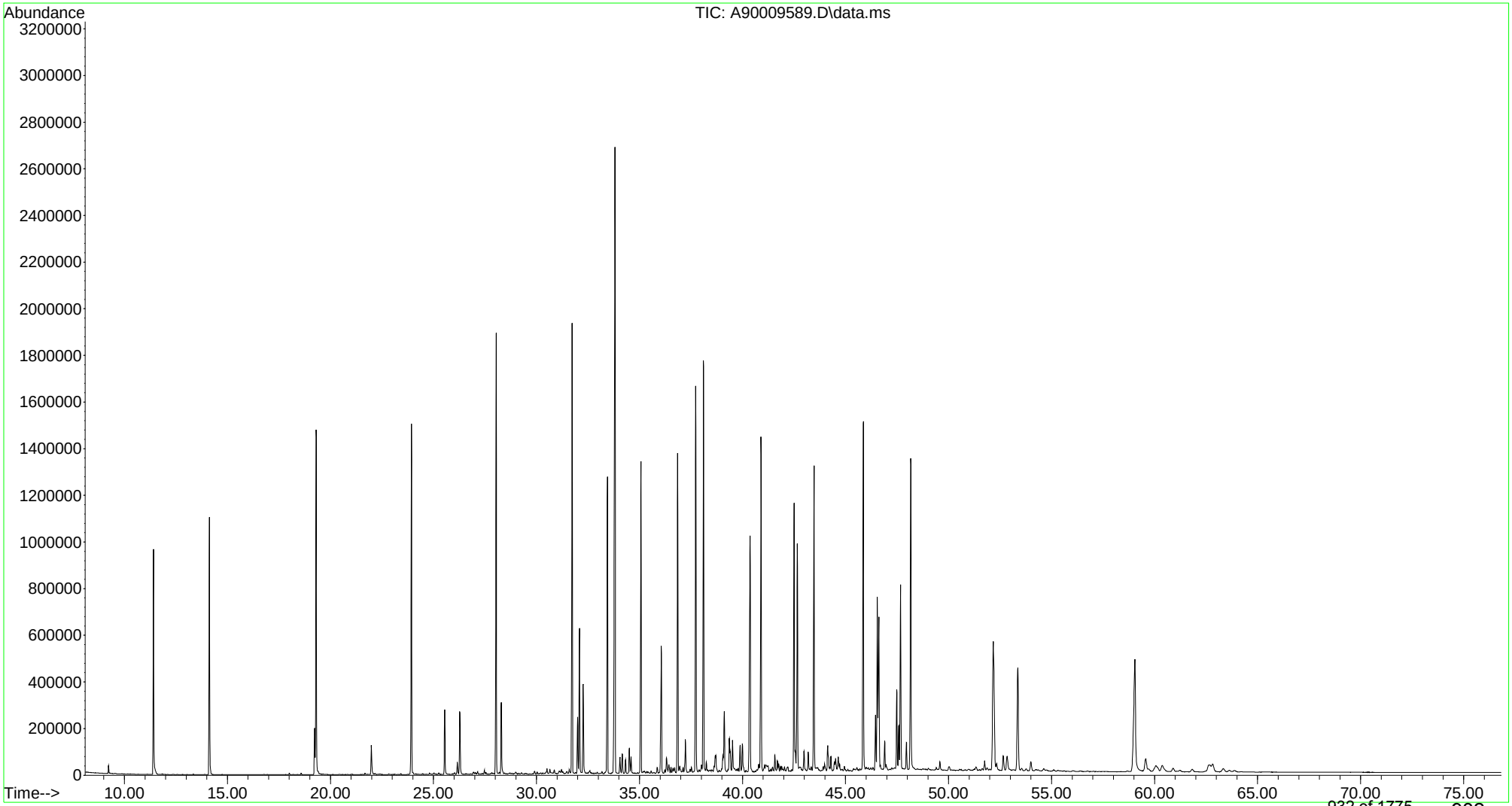
(#) = qualifier out of range (m) = manual integration (+) = signals summed

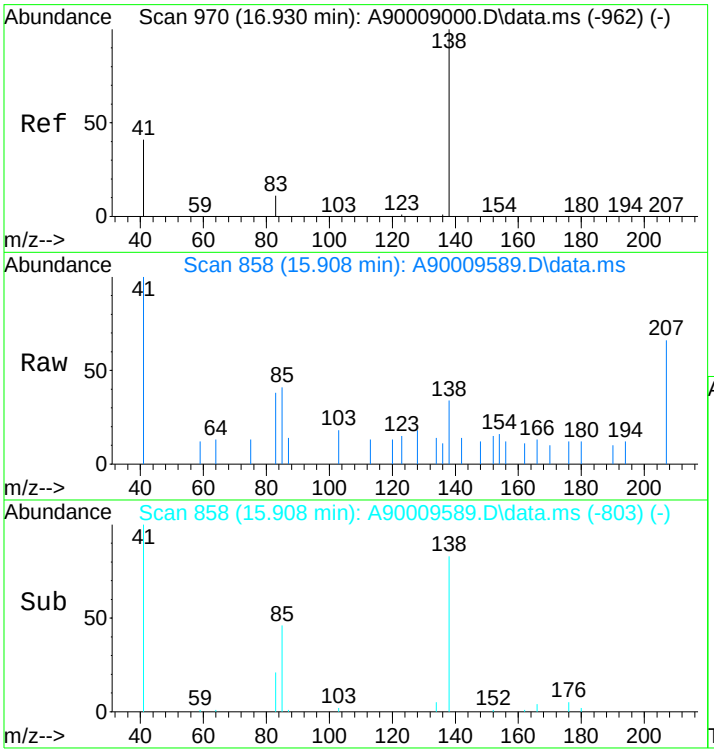
Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009589.D
Acq On : 23 Dec 2012 8:58 am
Operator : ps
Sample : 1212022-02S
Misc : 1X
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Dec 27 16:11:01 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 12:38:00 2012
Response via : Initial Calibration

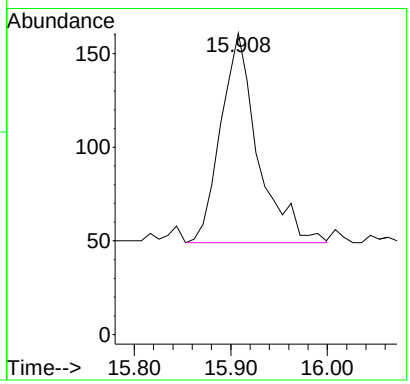
Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

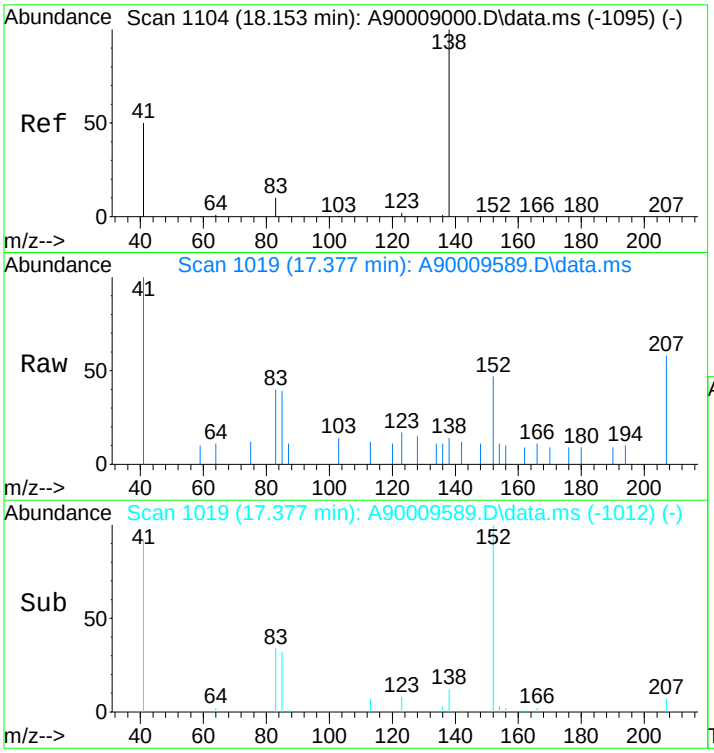




#3
trans-Decalin
Concen: 5.22 ng/mL
RT: 15.908 min Scan# 858
Delta R.T. 0.000 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

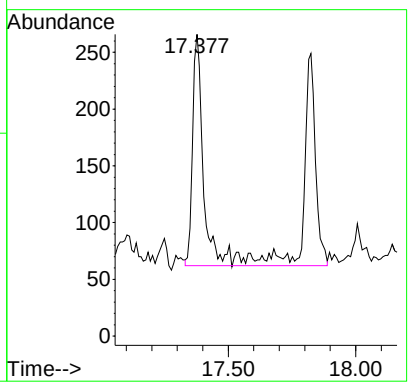
Tgt Ion:138 Resp: 298

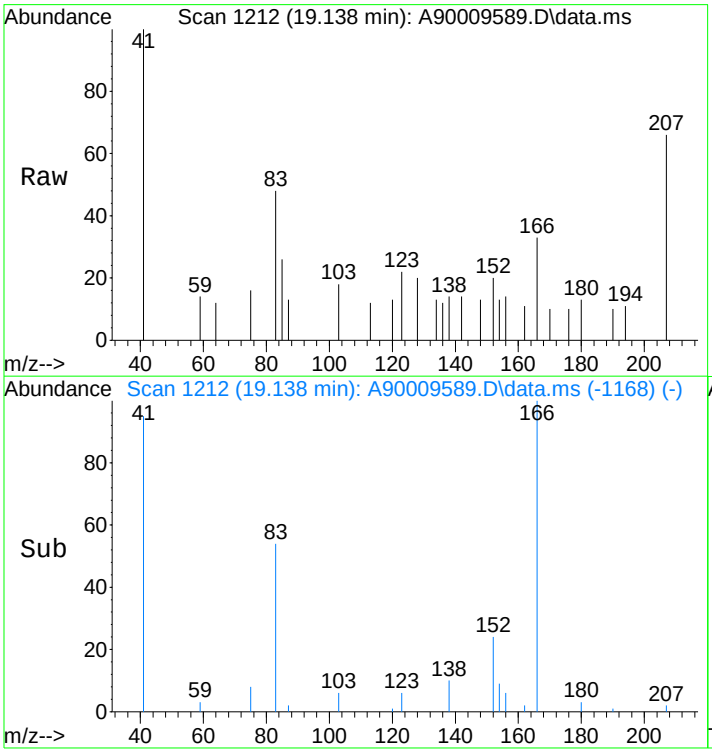




#5
C1-Decalins
Concen: 20.95 ng/mL m
RT: 17.377 min Scan# 1019
Delta R.T. -0.447 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

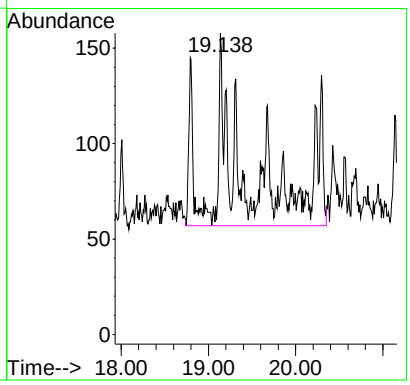
Tgt Ion:152 Resp: 1195

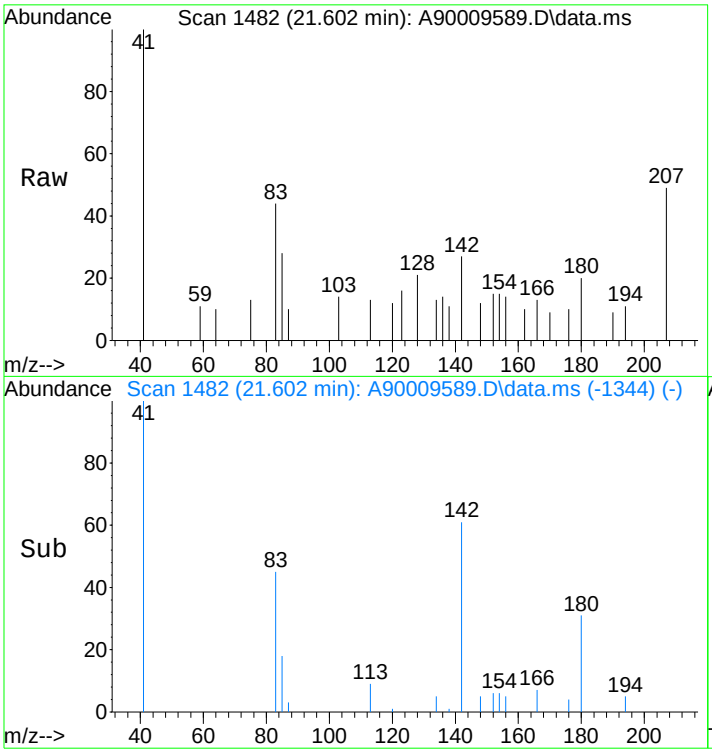




#6
C2-Decalins
Concen: 39.47 ng/mL m
RT: 19.138 min Scan# 1212
Delta R.T. -0.009 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

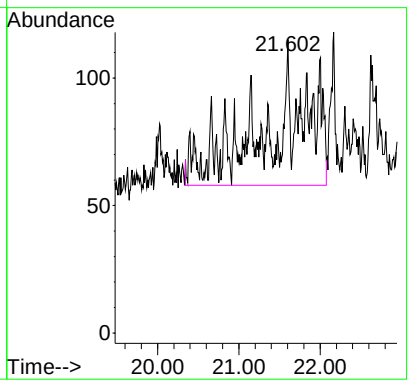
Tgt Ion:166 Resp: 2251

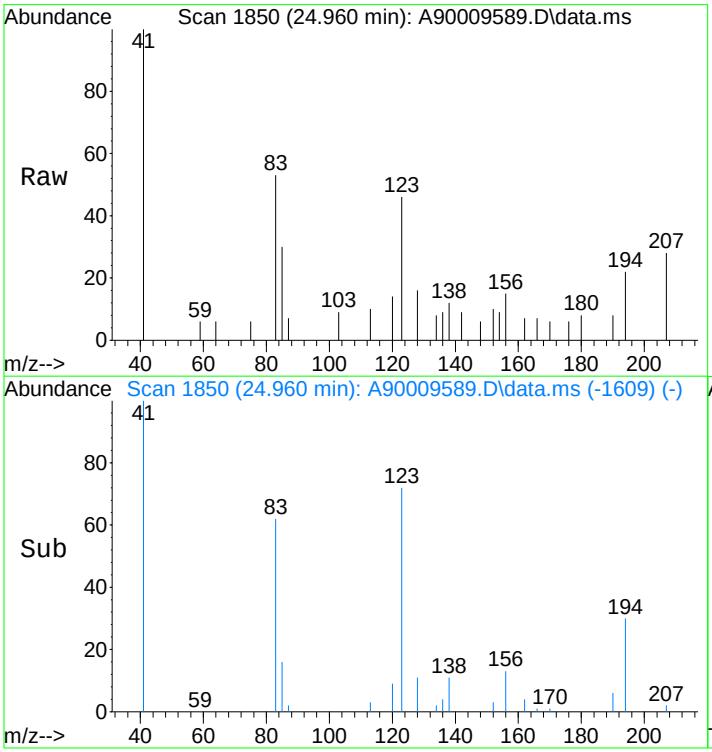




#7
C3-Decalins
Concen: 33.31 ng/mL m
RT: 21.602 min Scan# 1482
Delta R.T. -0.009 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

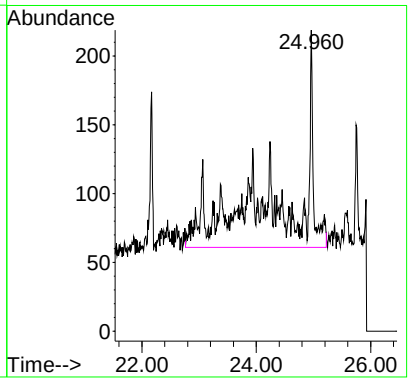
Tgt Ion:180 Resp: 1900

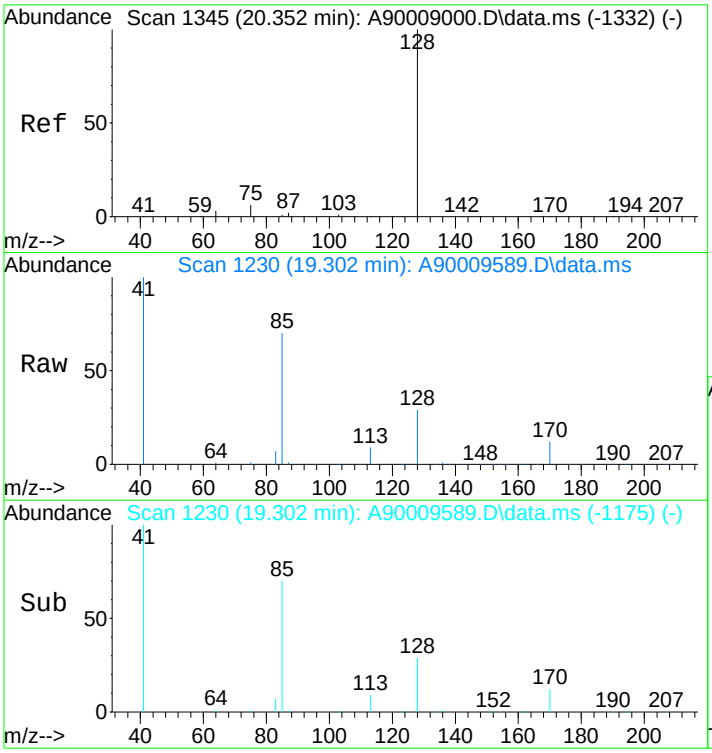




#8
C4-Decalins
Concen: 65.26 ng/mL m
RT: 24.960 min Scan# 1850
Delta R.T. -0.009 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:194 Resp: 3722

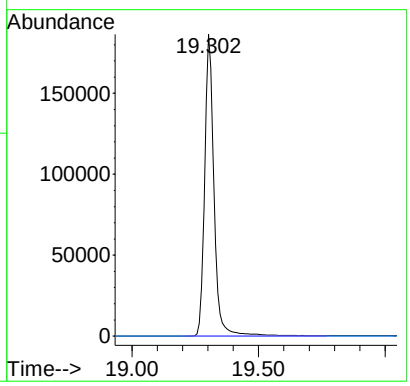


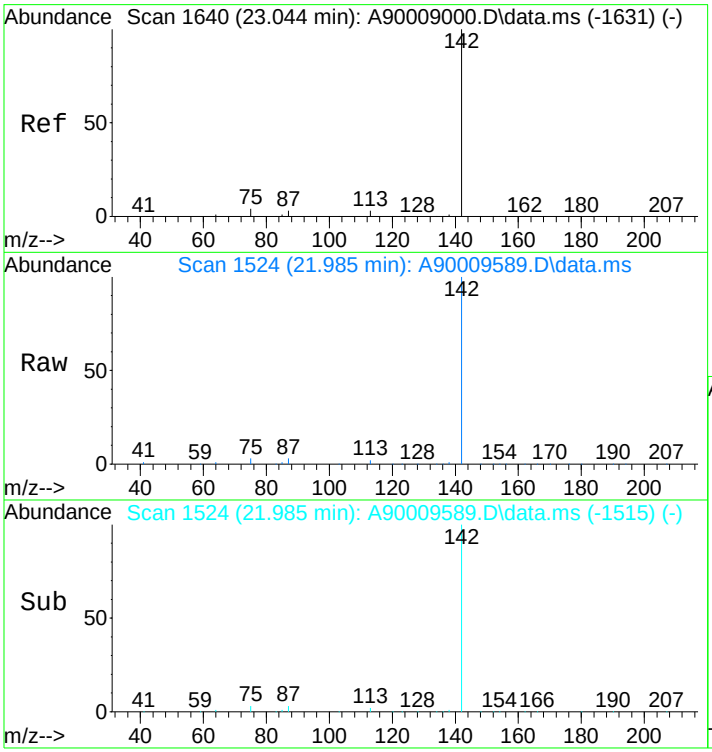


#10
Naphthalene
Concen: 1873.56 ng/mL
RT: 19.302 min Scan# 1230
Delta R.T. 0.000 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:128 Resp: 479424

Ion	Ratio	Lower	Upper
128	100		
127	0.0	0.0	0.0

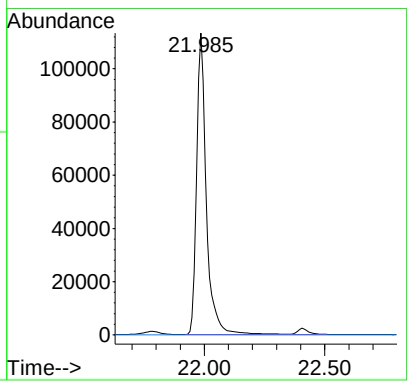


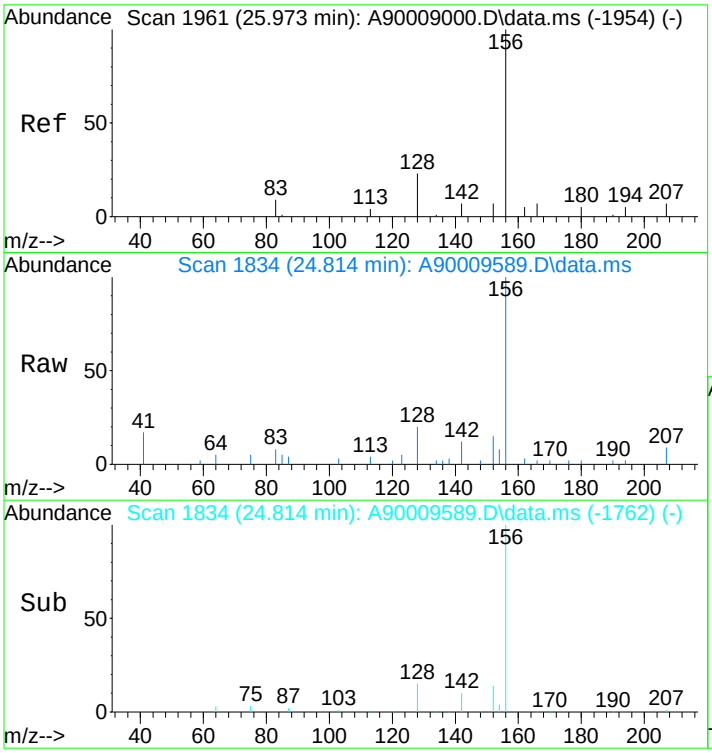


#11
C1-Naphthalenes
Concen: 1257.02 ng/mL m
RT: 21.985 min Scan# 1524
Delta R.T. 0.000 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:142 Resp: 321658

Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	0.0

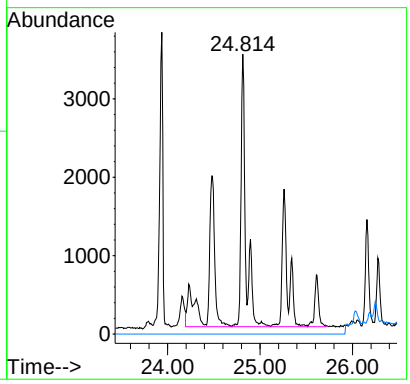


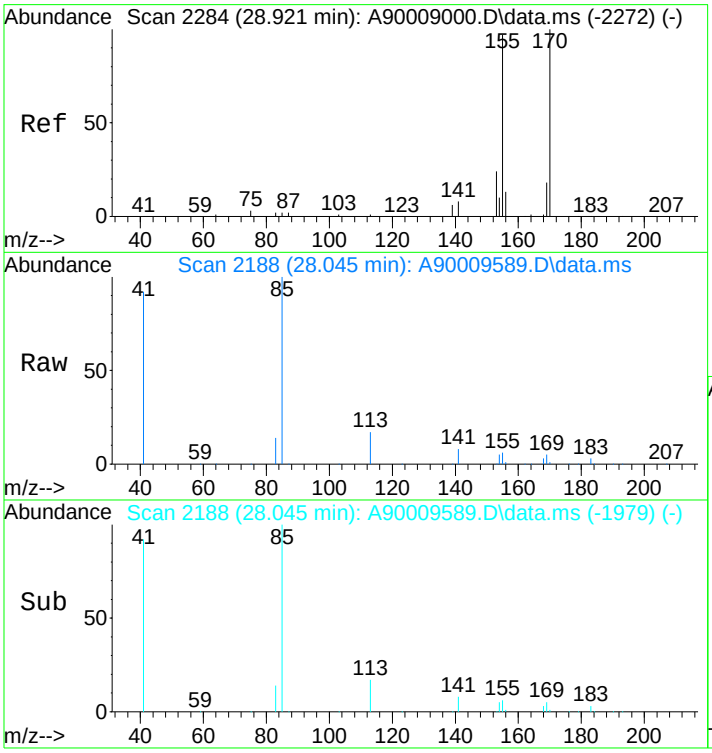


#12
C2-Naphthalenes
Concen: 124.31 ng/mL m
RT: 24.814 min Scan# 1834
Delta R.T. 0.000 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:156 Resp: 31809

Ion	Ratio	Lower	Upper
156	100		
141	0.0	0.0	0.0

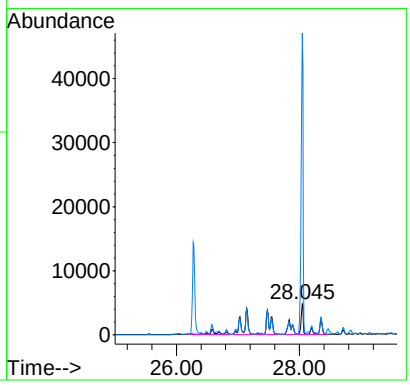


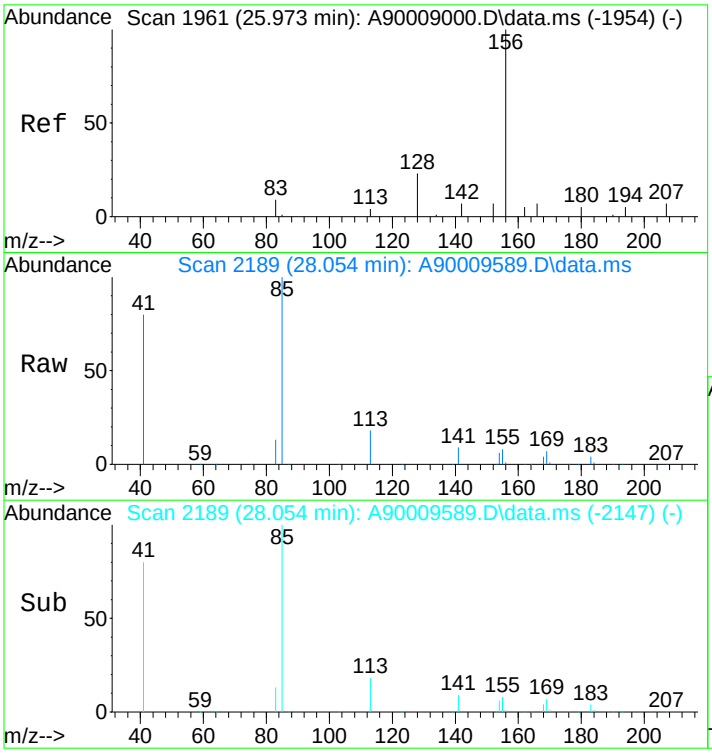


#13
C3-Naphthalenes
Concen: 294.71 ng/mL m
RT: 28.045 min Scan# 2188
Delta R.T. 0.904 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:170 Resp: 75412

Ion	Ratio	Lower	Upper
170	100		
155	13.7	79.9	119.9#

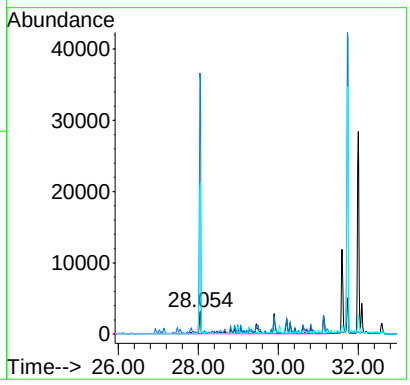


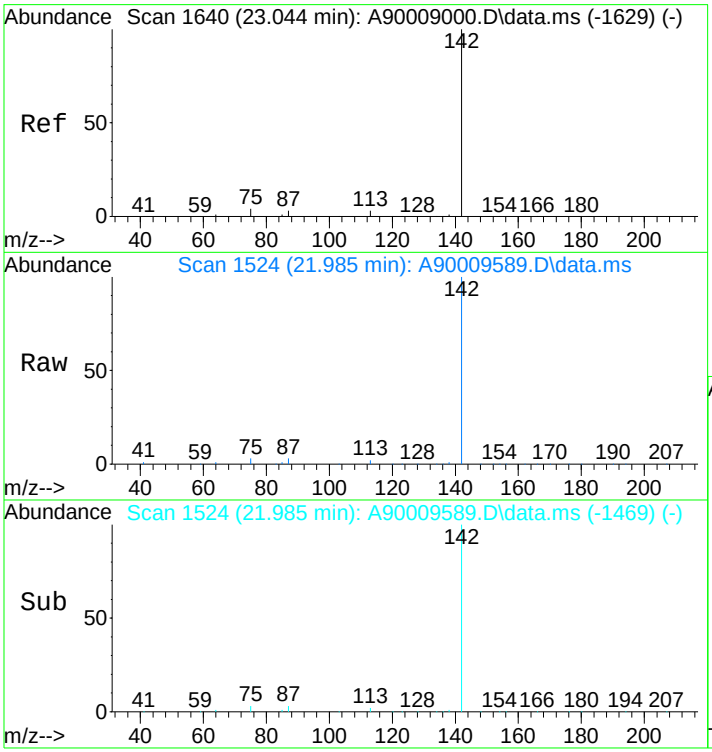


#14
C4-Naphthalenes
Concen: 262.75 ng/mL m
RT: 28.054 min Scan# 2189
Delta R.T. -1.843 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:184 Resp: 67235

Ion	Ratio	Lower	Upper
184	100		
169	4.9	76.6	115.0#
183	0.9	16.4	24.6#

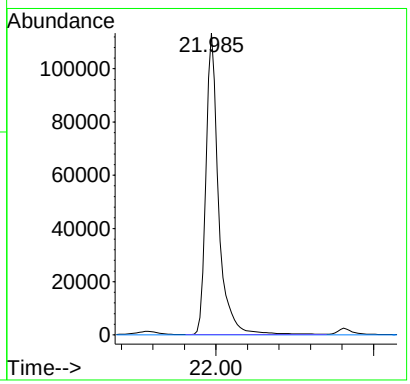


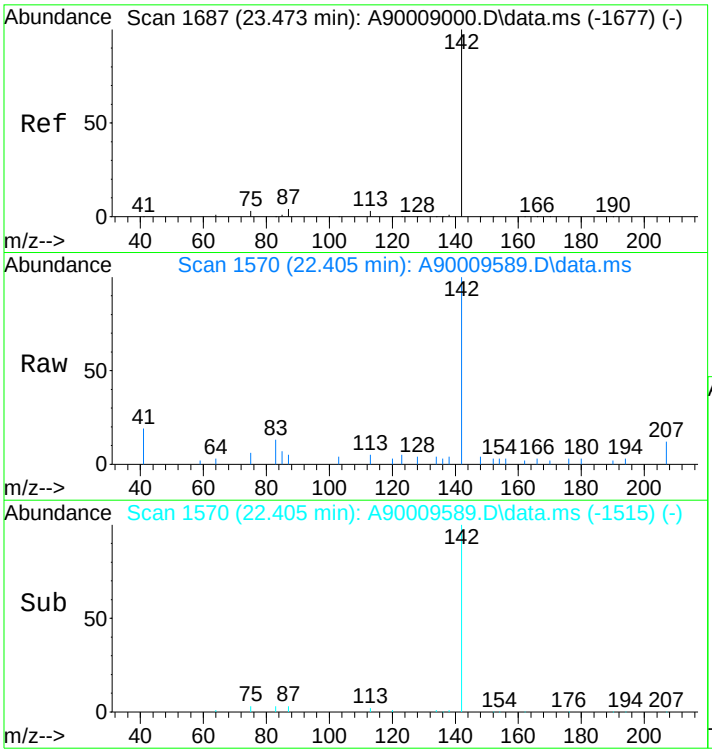


#16
2-Methylnaphthalene
Concen: 1876.96 ng/mL
RT: 21.985 min Scan# 1524
Delta R.T. 0.000 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:142 Resp: 314098

Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	0.0

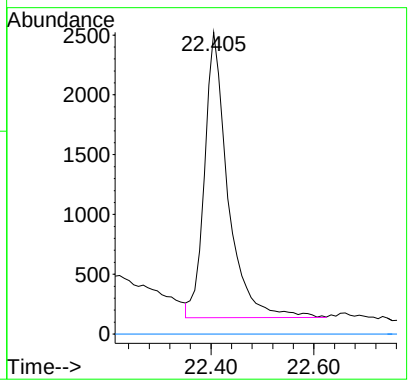


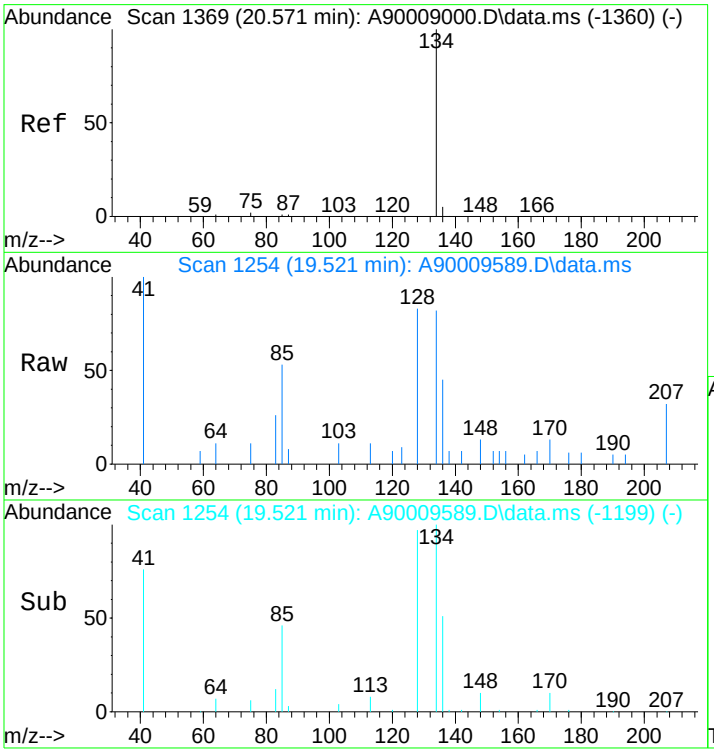


#17
1-Methylnaphthalene
Concen: 46.30 ng/mL
RT: 22.405 min Scan# 1570
Delta R.T. 0.000 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:142 Resp: 7519

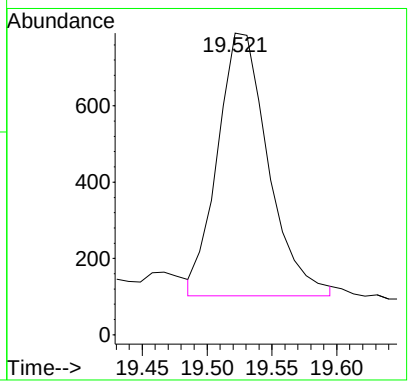
Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	20.0

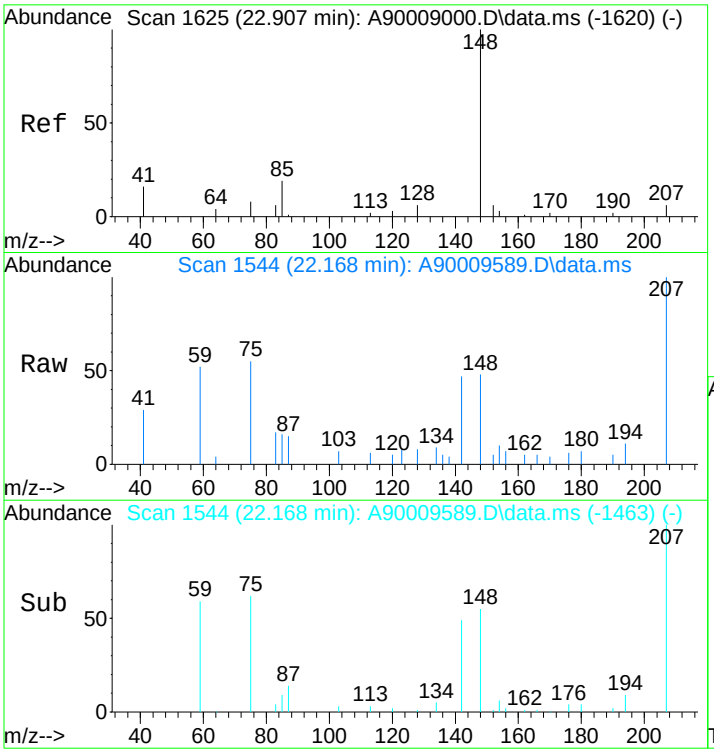




#18
Benzothiophene
Concen: 8.76 ng/mL m
RT: 19.521 min Scan# 1254
Delta R.T. 0.000 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

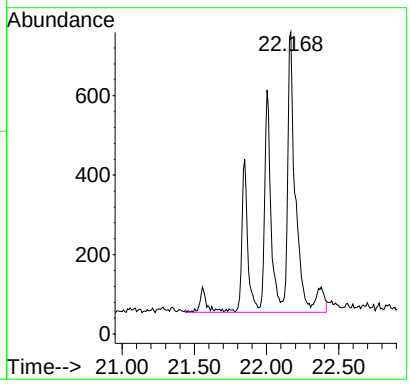
Tgt Ion:134 Resp: 1875

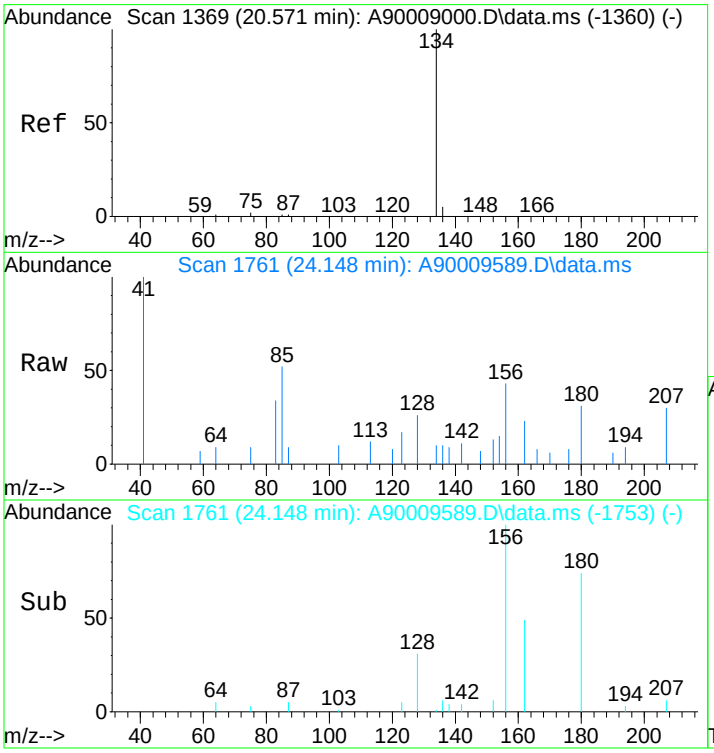




#19
C1-Benzo(b)thiophenes
Concen: 26.86 ng/mL m
RT: 22.168 min Scan# 1544
Delta R.T. 0.612 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

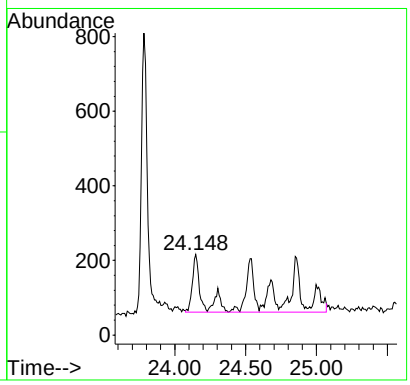
Tgt Ion:148 Resp: 5752

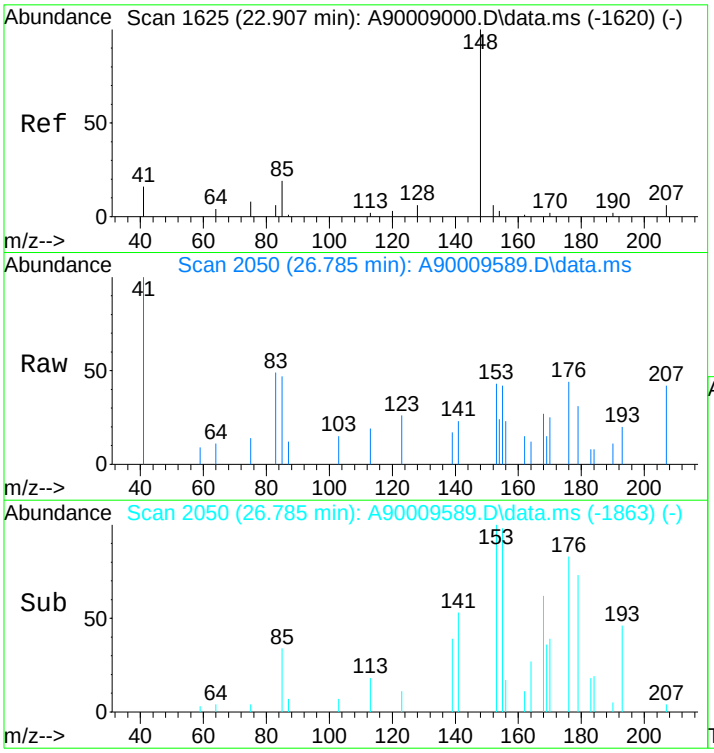




#20
C2-Benzo(b)thiophenes
Concen: 11.47 ng/mL m
RT: 24.148 min Scan# 1761
Delta R.T. -0.858 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

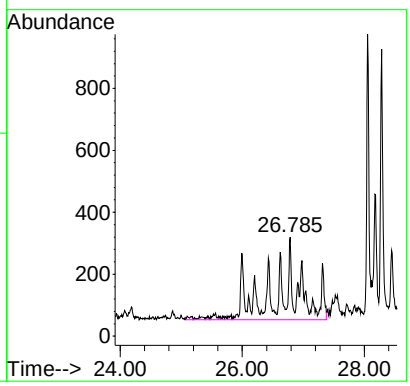
Tgt Ion:162 Resp: 2457

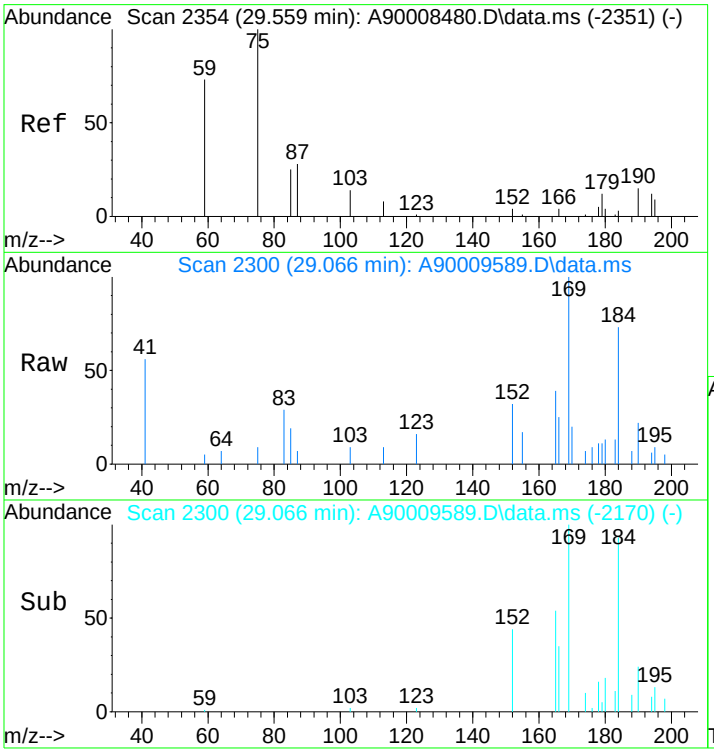




#21
C3-Benzo(b)thiophenes
Concen: 30.55 ng/mL m
RT: 26.785 min Scan# 2050
Delta R.T. -0.191 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

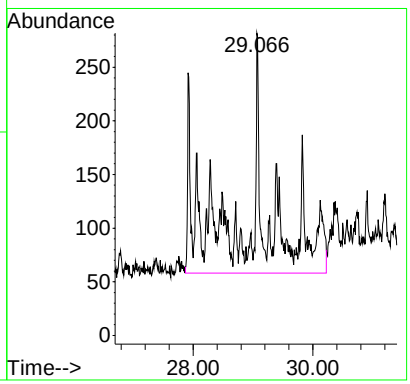
Tgt Ion:176 Resp: 6542

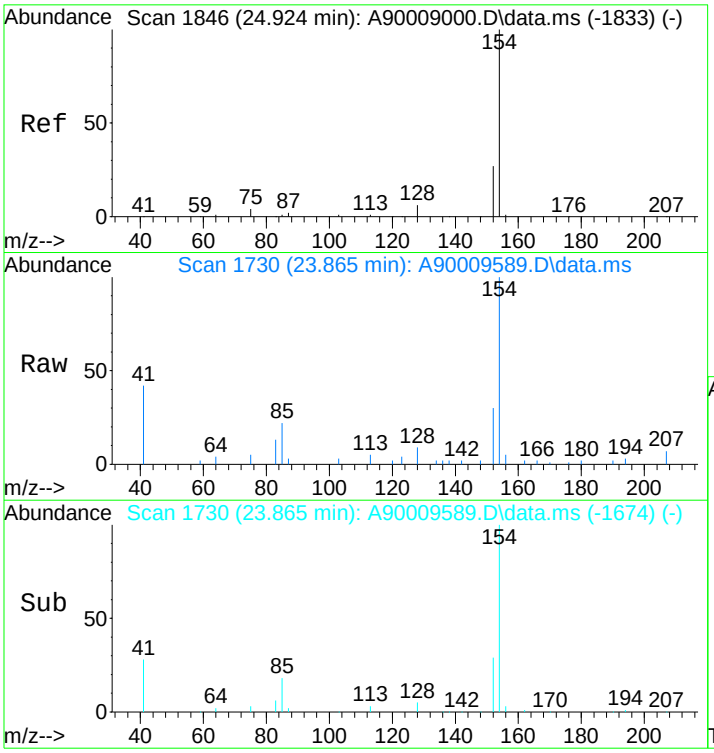




#22
C4-Benzo(b)thiophenes
Concen: 27.65 ng/mL m
RT: 29.066 min Scan# 2300
Delta R.T. -0.009 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:190 Resp: 5921

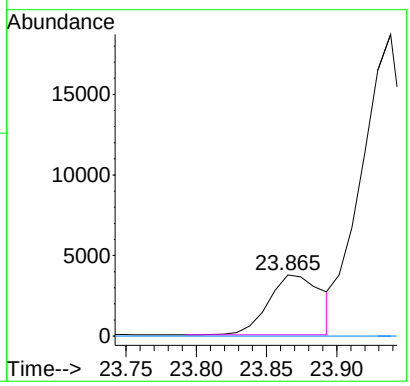


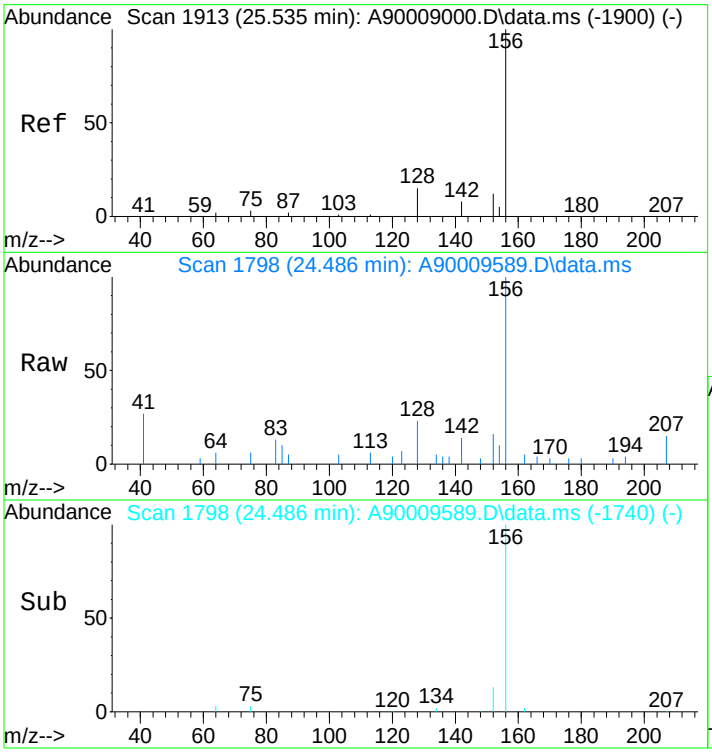


#23
Biphenyl
Concen: 44.49 ng/mL
RT: 23.865 min Scan# 1730
Delta R.T. 0.009 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:154 Resp: 9743

Ion	Ratio	Lower	Upper
154	100		
153	0.0	0.0	0.0

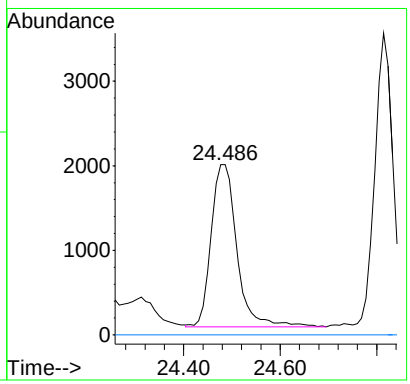


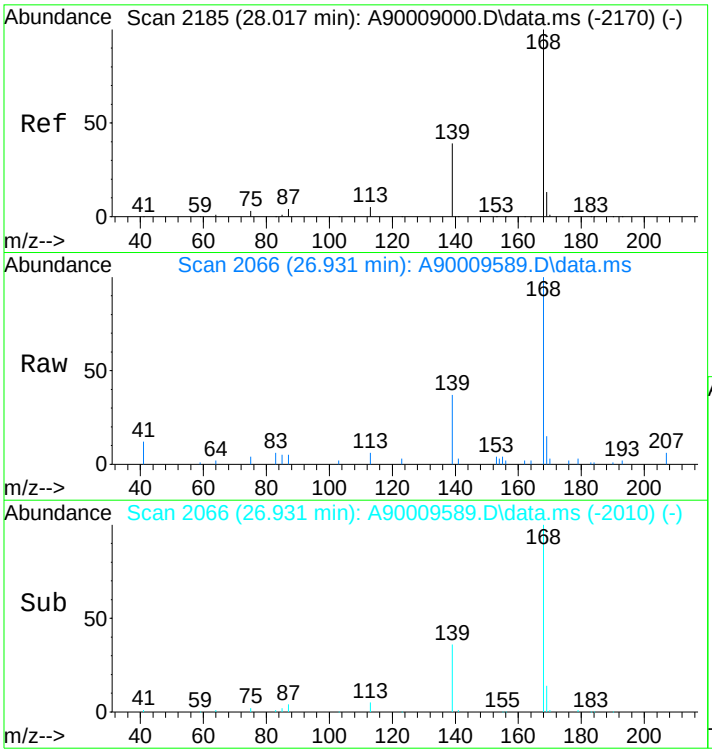


#24
2,6-Dimethylnaphthalene
Concen: 45.48 ng/mL
RT: 24.486 min Scan# 1798
Delta R.T. 0.027 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:156 Resp: 7155

Ion	Ratio	Lower	Upper
156	100		
155	0.0	0.0	0.0

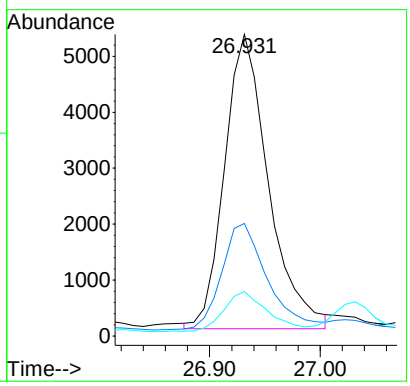


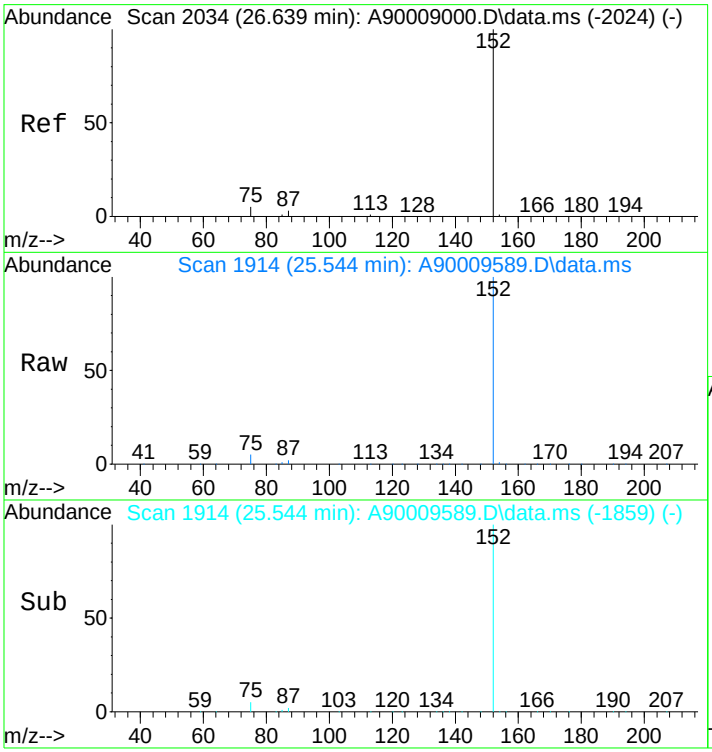


#25
Dibenzofuran
Concen: 62.26 ng/mL m
RT: 26.931 min Scan# 2066
Delta R.T. 0.009 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:168 Resp: 14542

Ion	Ratio	Lower	Upper
168	100		
139	38.4	28.0	42.0
169	14.0	10.6	15.8

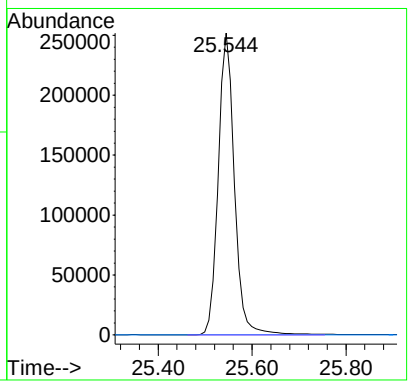


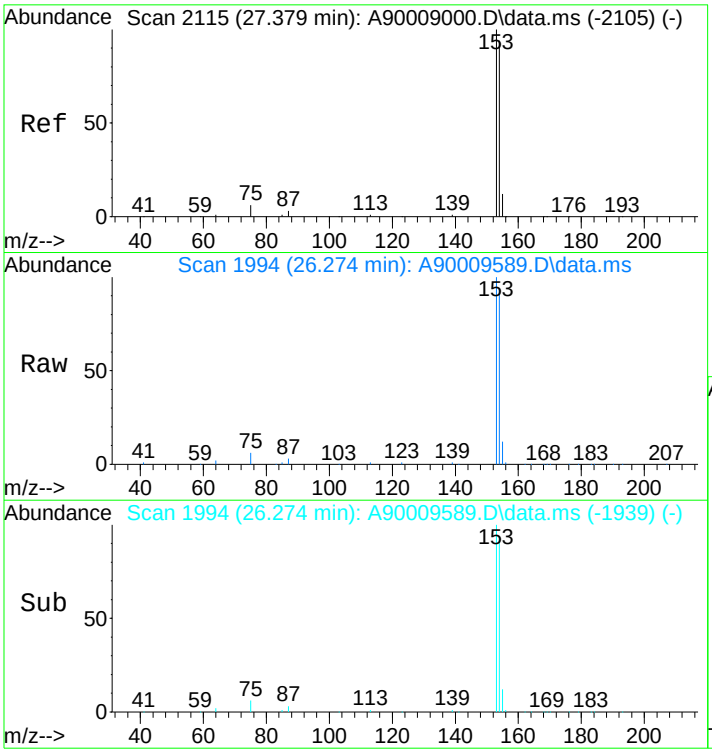


#26
Acenaphthylene
Concen: 2286.23 ng/mL m
RT: 25.544 min Scan# 1914
Delta R.T. 0.000 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:152 Resp: 601814

Ion	Ratio	Lower	Upper
152	100		
153	0.0	0.0	0.0

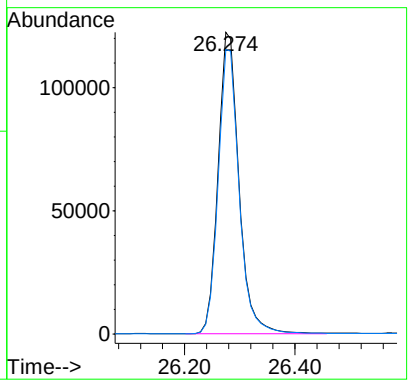


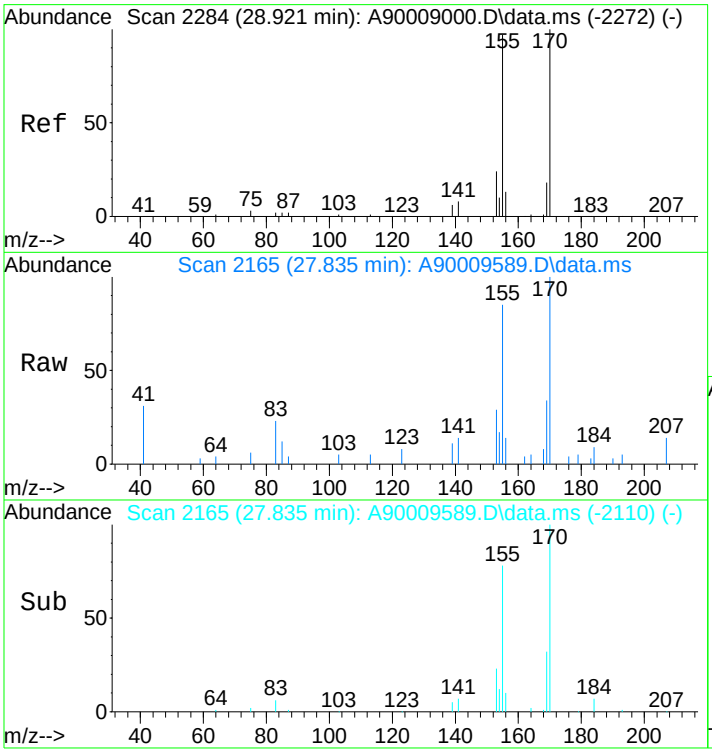


#27
Acenaphthene
Concen: 1948.13 ng/mL
RT: 26.274 min Scan# 1994
Delta R.T. 0.000 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:153 Resp: 322430

Ion	Ratio	Lower	Upper
153	100		
154	95.0	75.4	113.0

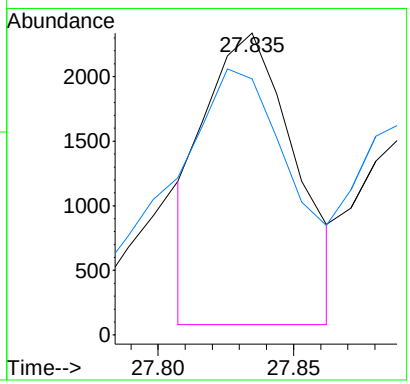


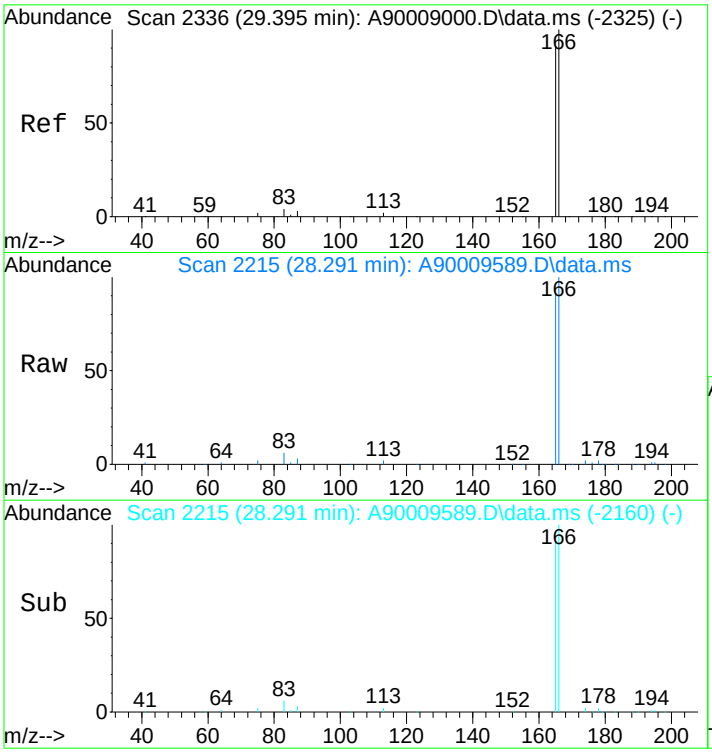


#28
2,3,5-Trimethylnaphthalene
Concen: 36.30 ng/mL m
RT: 27.835 min Scan# 2165
Delta R.T. 0.000 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:170 Resp: 5250

Ion	Ratio	Lower	Upper
170	100		
155	123.0	69.0	103.4#

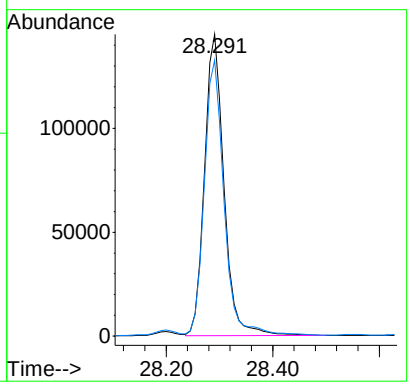


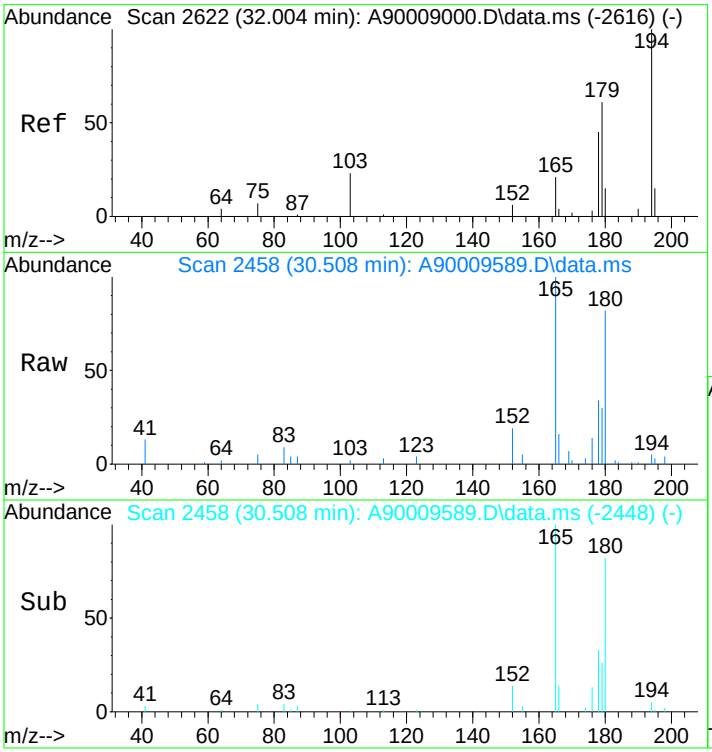


#29
Fluorene
Concen: 2032.95 ng/mL
RT: 28.291 min Scan# 2215
Delta R.T. 0.000 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:166 Resp: 369496

Ion	Ratio	Lower	Upper
166	100		
165	92.5	73.4	110.0

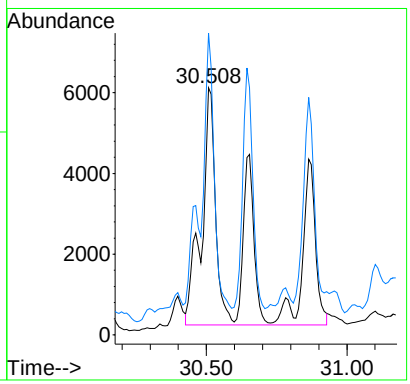


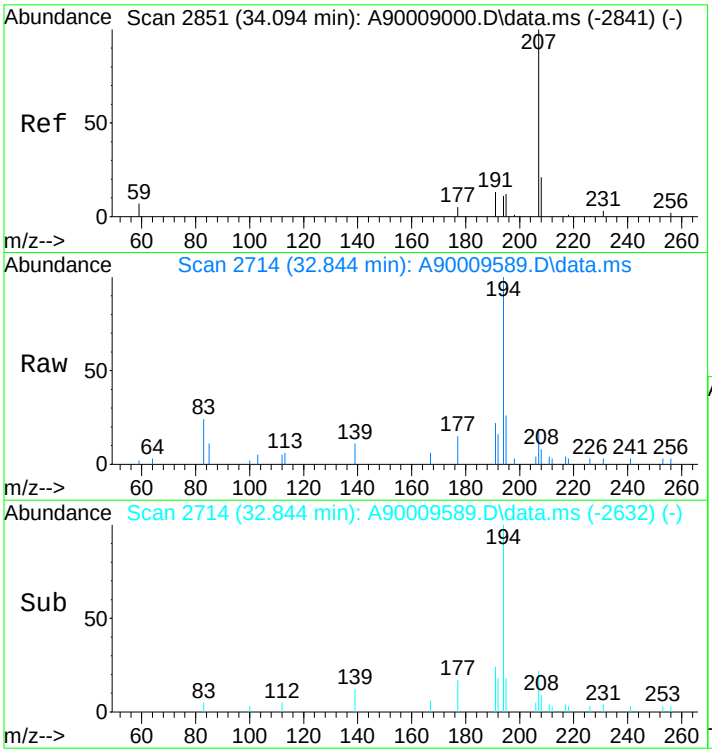


#30
C1-Fluorenes
Concen: 245.69 ng/mL m
RT: 30.508 min Scan# 2458
Delta R.T. -0.137 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:180 Resp: 44655

Ion	Ratio	Lower	Upper
180	100		
165	32.6	117.5	176.3#

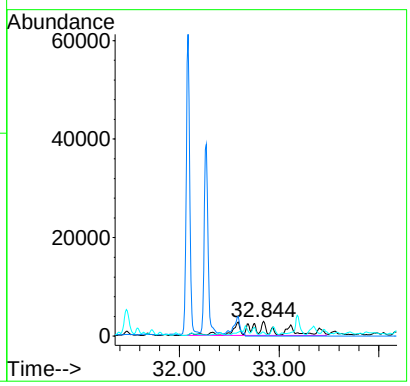


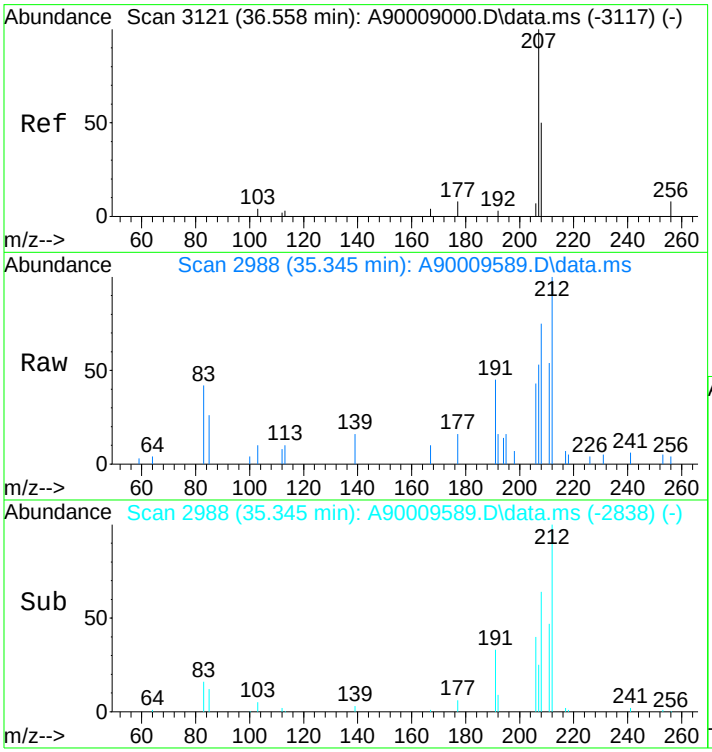


#31
C2-Fluorenes
Concen: 357.46 ng/mL m
RT: 32.844 min Scan# 2714
Delta R.T. 0.000 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:194 Resp: 64969

Ion	Ratio	Lower	Upper
194	100		
179	0.0	0.0	0.0
195	2.5	26.3	39.5#

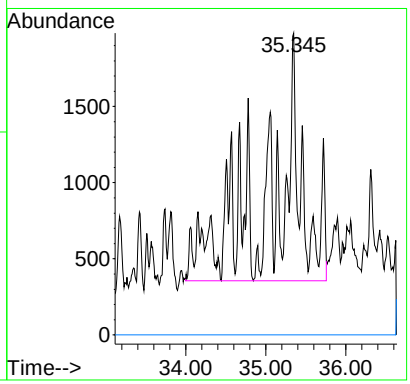


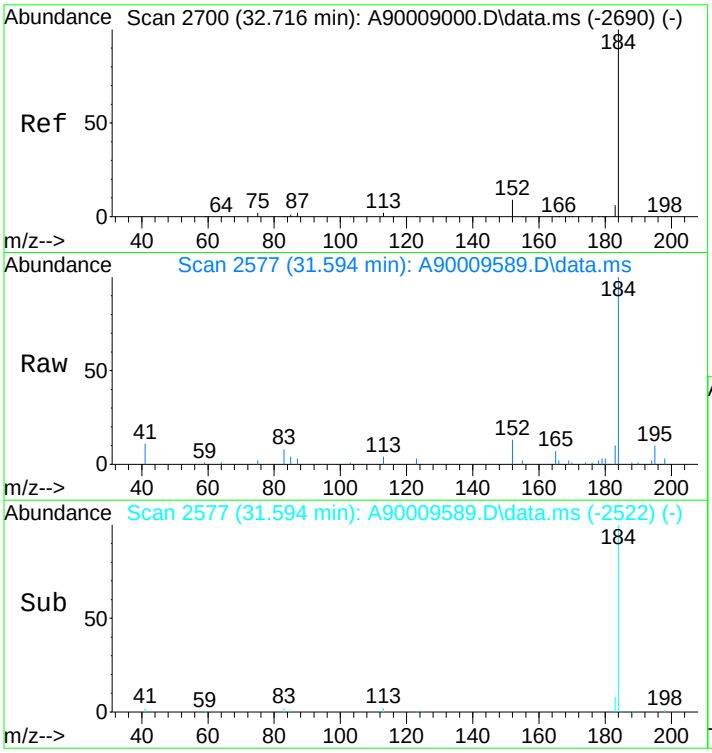


#32
C3-Fluorenes
Concen: 237.33 ng/mL m
RT: 35.345 min Scan# 2988
Delta R.T. 0.676 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:208 Resp: 43136

Ion	Ratio	Lower	Upper
208	100		
197	0.0	0.0	0.0

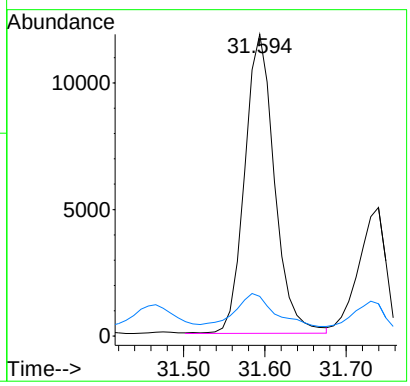


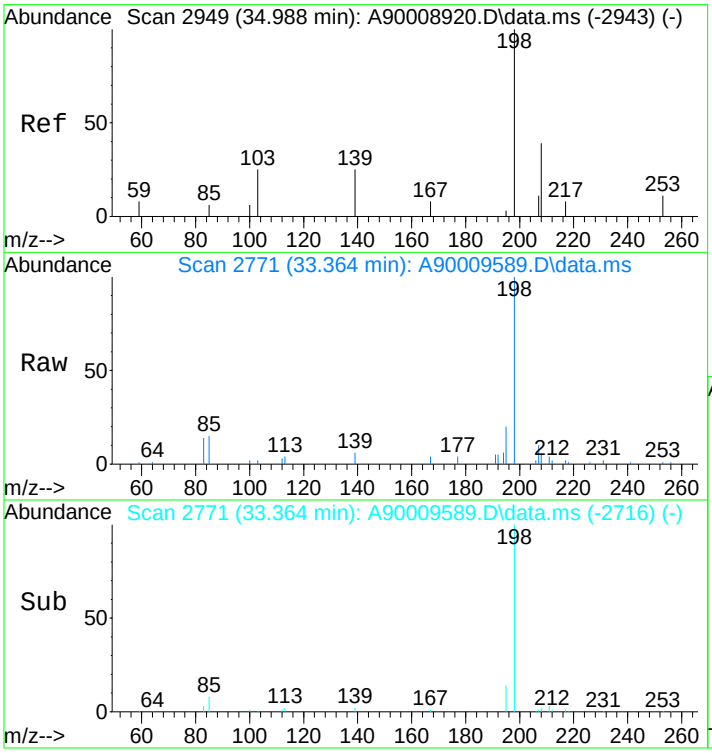


#33
Dibenzothiophene
Concen: 117.52 ng/mL
RT: 31.594 min Scan# 2577
Delta R.T. 0.000 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:184 Resp: 30047

Ion	Ratio	Lower	Upper
184	100		
152	14.0	7.0	10.4#

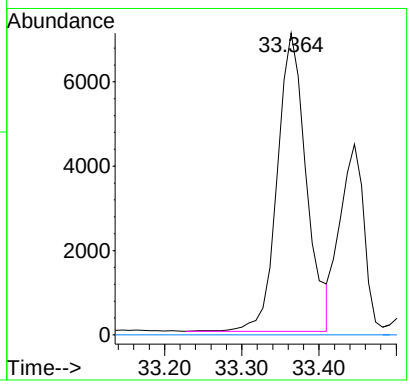


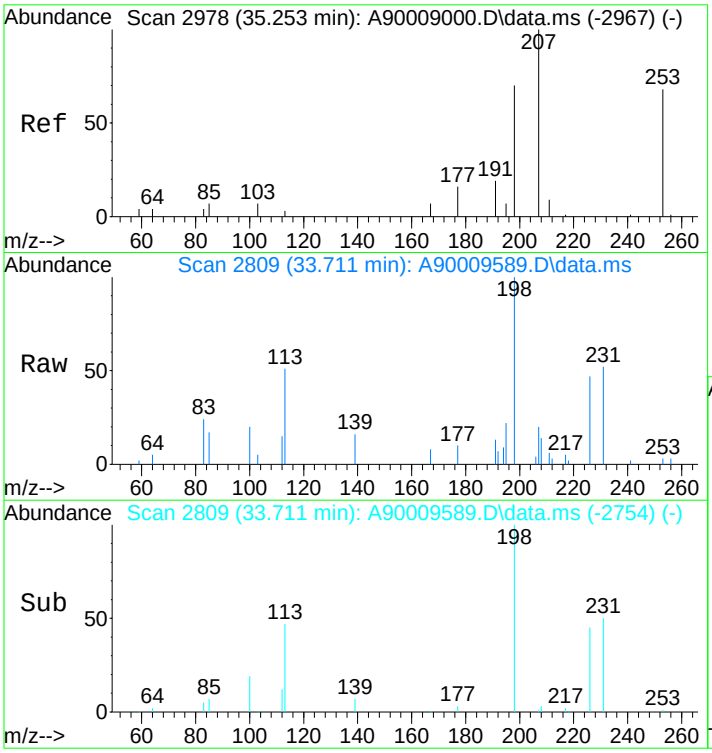


#34
4-Methyldibenzothiophene(4MDT)
Concen: 72.36 ng/mL
RT: 33.364 min Scan# 2771
Delta R.T. 0.000 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:198 Resp: 18500

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

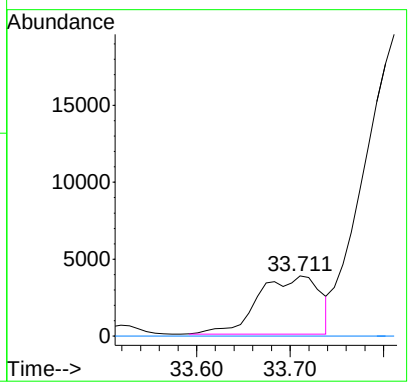


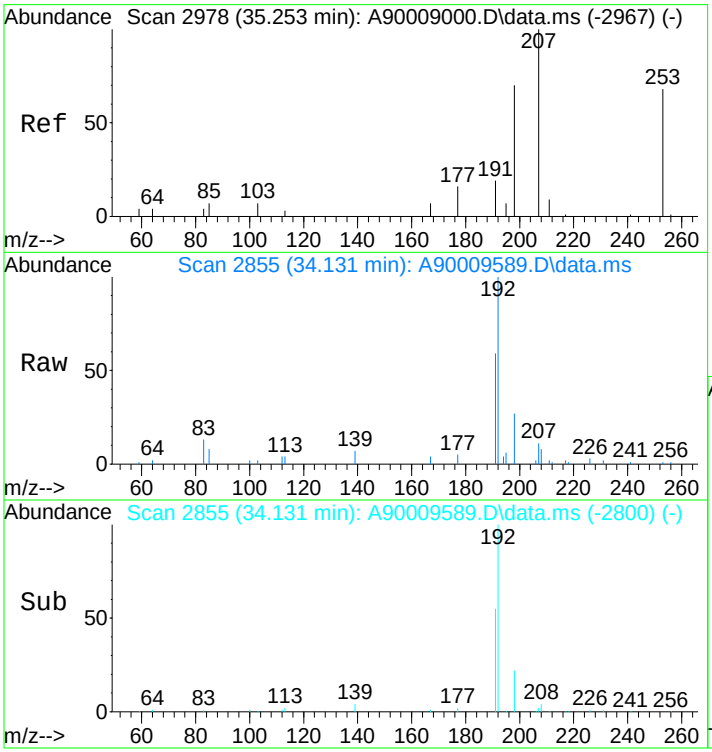


#35
2/3-Methyldibenzothiophene(2MDT)
Concen: 68.28 ng/mL m
RT: 33.711 min Scan# 2809
Delta R.T. 0.000 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:198 Resp: 17457

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

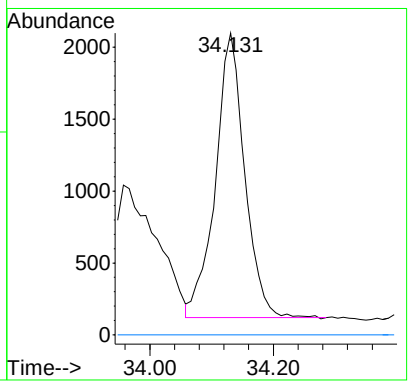


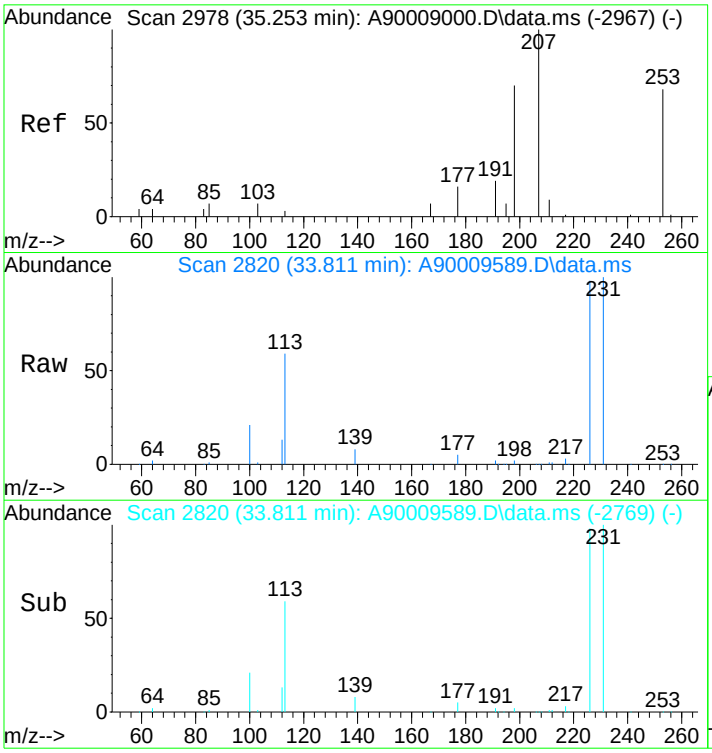


#36
1-Methyldibenzothiophene(1MDT)
Concen: 25.39 ng/mL
RT: 34.131 min Scan# 2855
Delta R.T. 0.000 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:198 Resp: 6491

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

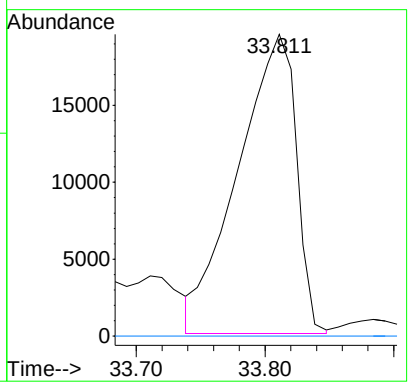


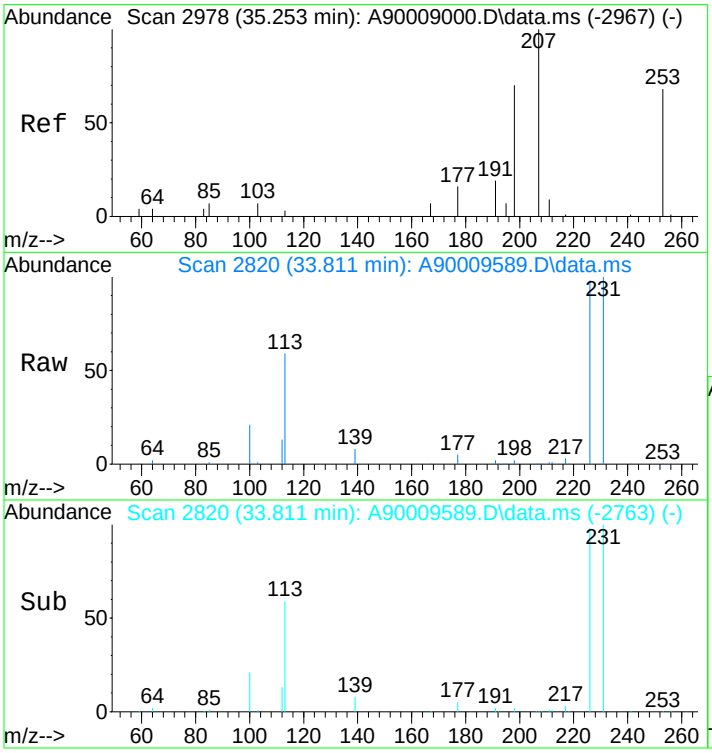


#37
OTP
Concen: 238.74 ng/mL
RT: 33.811 min Scan# 2820
Delta R.T. 0.019 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:198 Resp: 61039

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

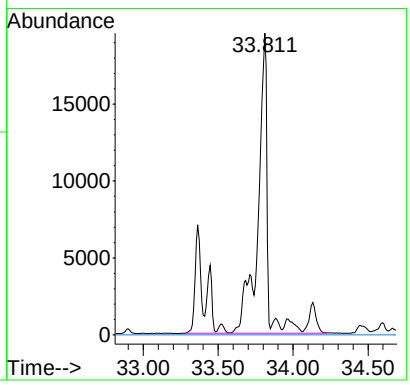


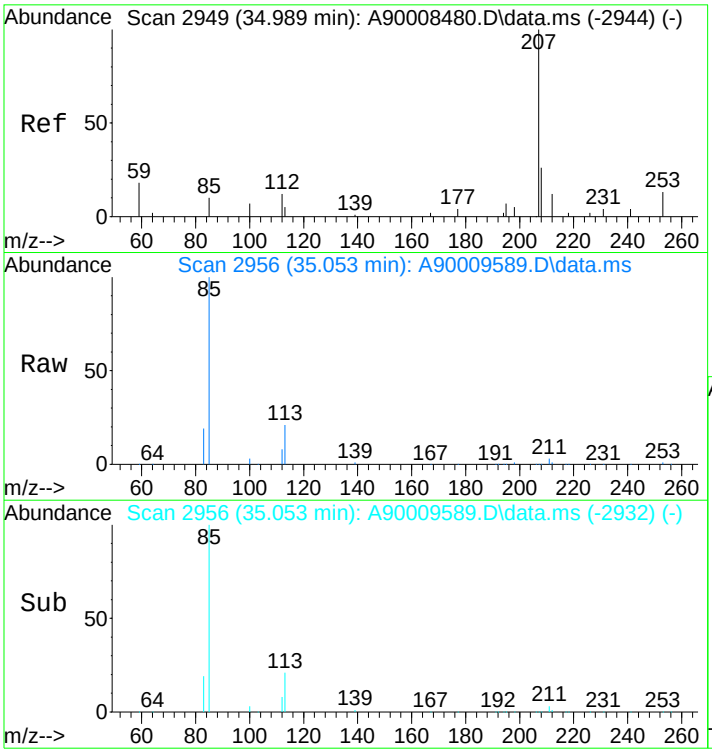


#38
C1-Dibenzothiophenes
Concen: 480.18 ng/mL m
RT: 33.811 min Scan# 2820
Delta R.T. 0.448 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:198 Resp: 122766

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

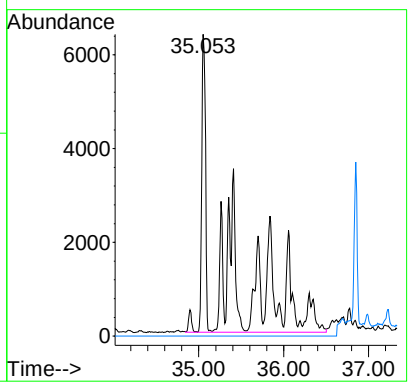


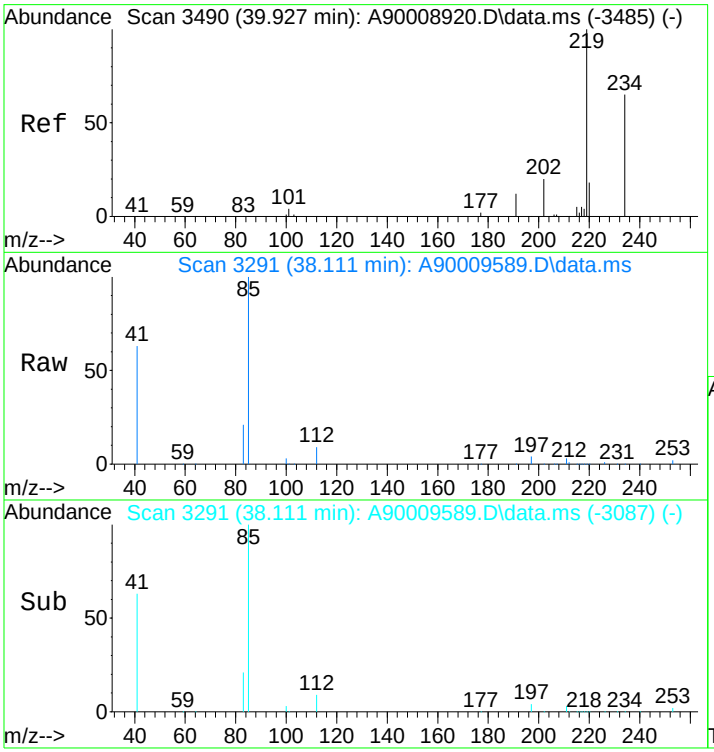


#39
C2-Dibenzothiophenes
Concen: 317.27 ng/mL m
RT: 35.053 min Scan# 2956
Delta R.T. 0.000 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:212 Resp: 81117

Ion	Ratio	Lower	Upper
212	100		
197	0.0	0.0	0.0

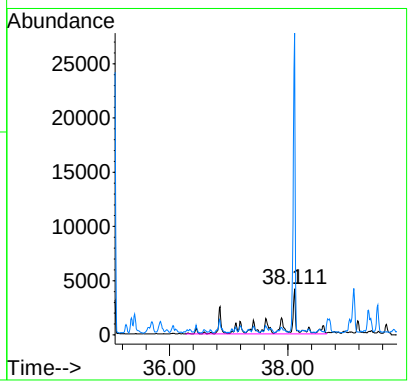


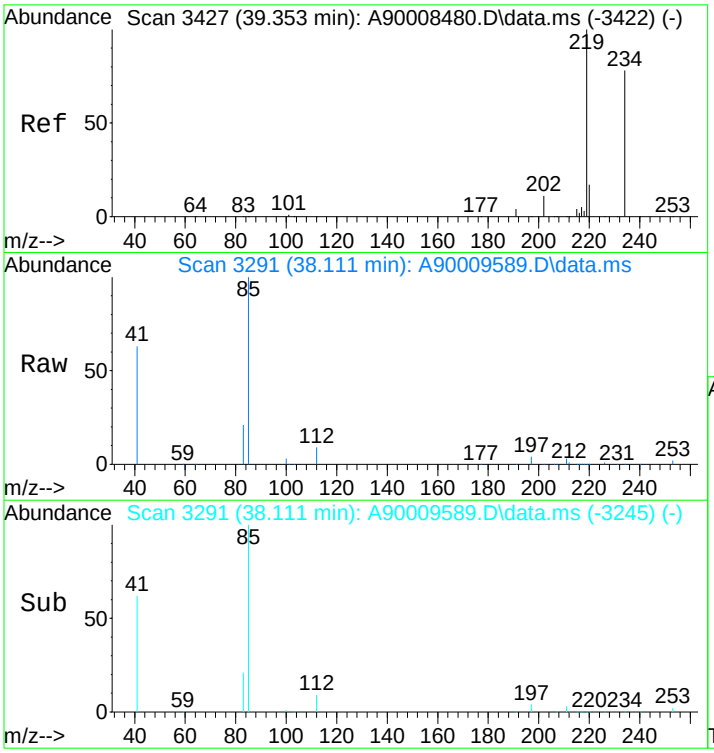


#40
C3-Dibenzothiophenes
Concen: 218.06 ng/mL m
RT: 38.111 min Scan# 3291
Delta R.T. 1.260 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:226 Resp: 55752

Ion	Ratio	Lower	Upper
226	100		
211	7.9	46.4	69.6#

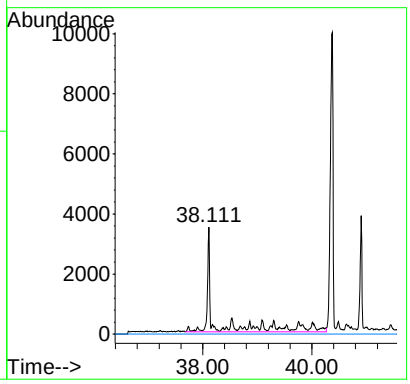


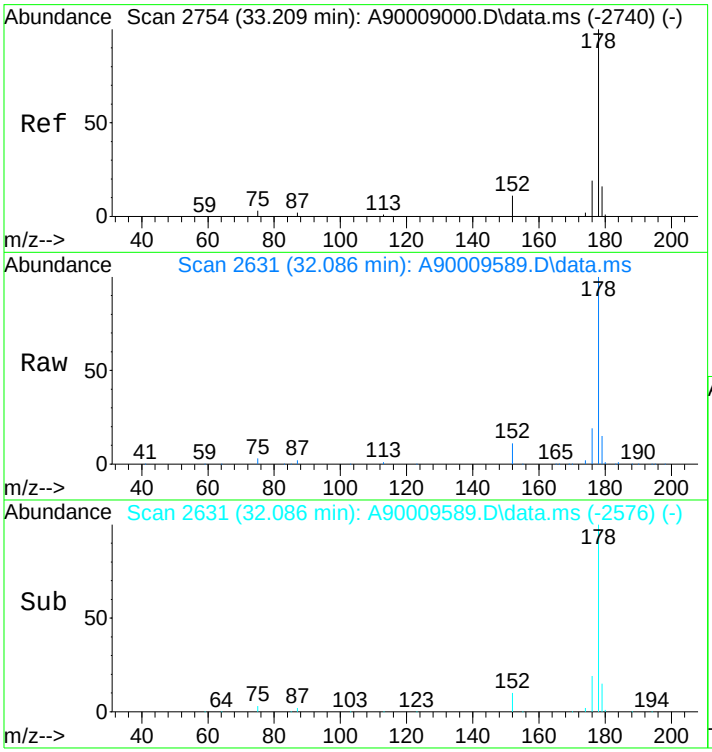


#41
C4-Dibenzothiophenes
Concen: 108.62 ng/mL m
RT: 38.111 min Scan# 3291
Delta R.T. -0.429 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:240 Resp: 27771

Ion	Ratio	Lower	Upper
240	100		
225	0.0	0.0	0.0

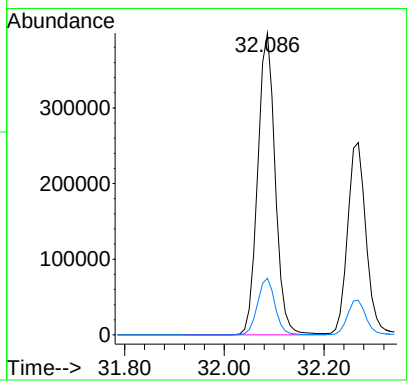


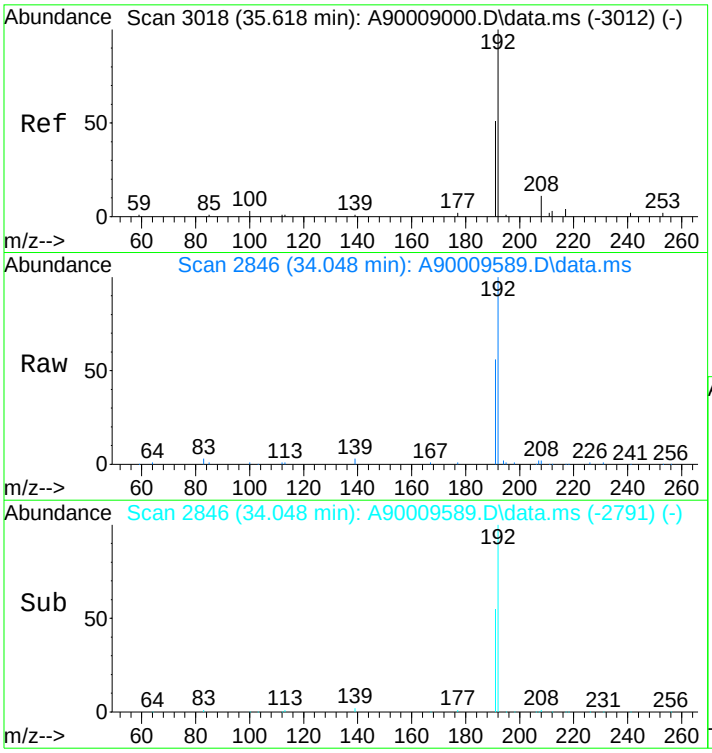


#43
Phenanthrene
Concen: 3657.34 ng/mL
RT: 32.086 min Scan# 2631
Delta R.T. 0.000 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:178 Resp: 966031

Ion	Ratio	Lower	Upper
178	100		
176	18.8	15.1	22.7

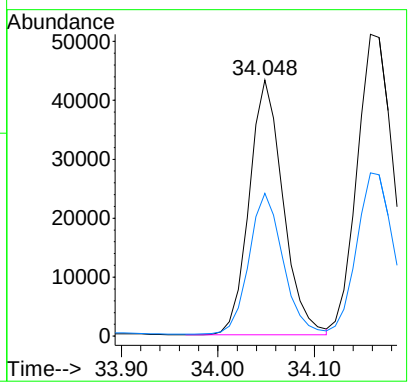


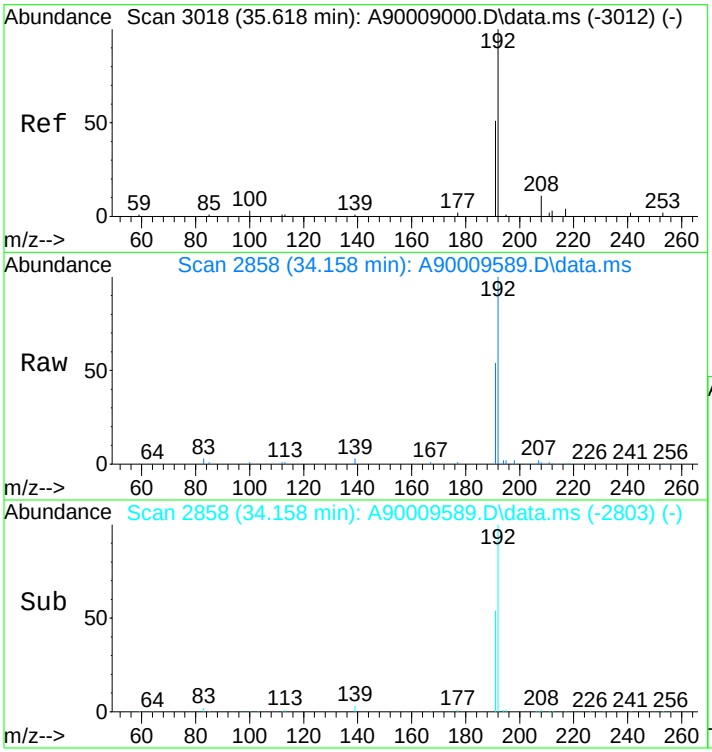


#44
3-Methylphenanthrene(3MP)
Concen: 399.64 ng/mL
RT: 34.048 min Scan# 2846
Delta R.T. 0.000 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:192 Resp: 105560

Ion	Ratio	Lower	Upper
192	100		
191	55.4	45.9	68.9

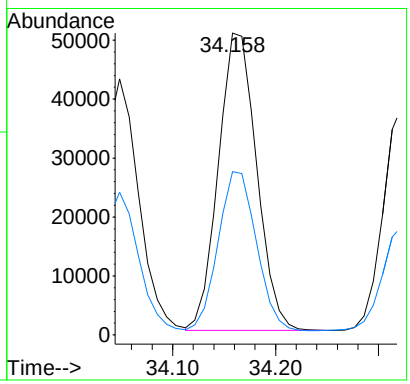


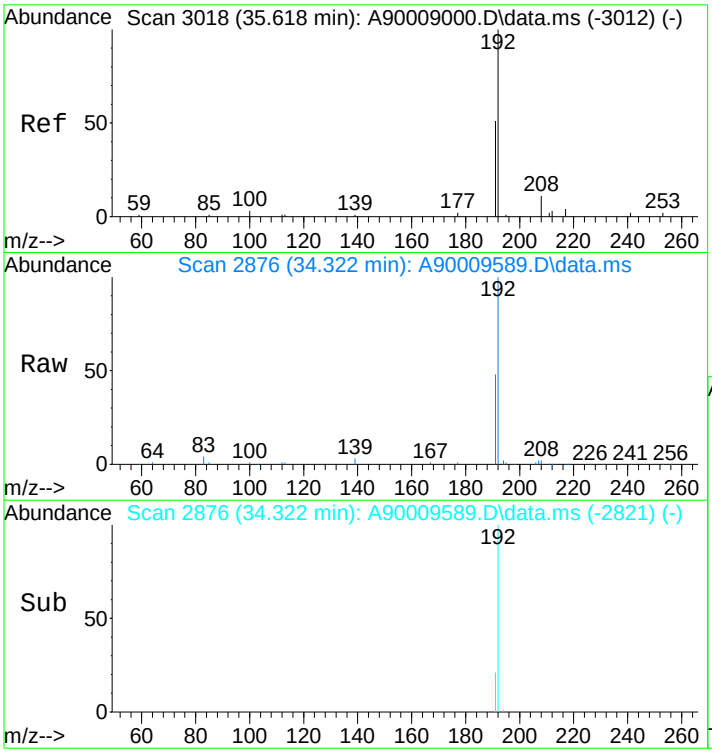


#45
2-Methylphenanthrene(2MP)
Concen: 493.63 ng/mL
RT: 34.158 min Scan# 2858
Delta R.T. 0.000 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:192 Resp: 130384

Ion	Ratio	Lower	Upper
192	100		
191	53.6	44.9	67.3

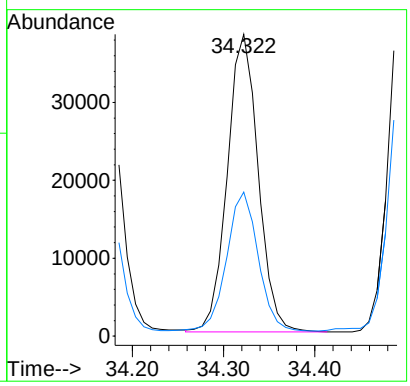


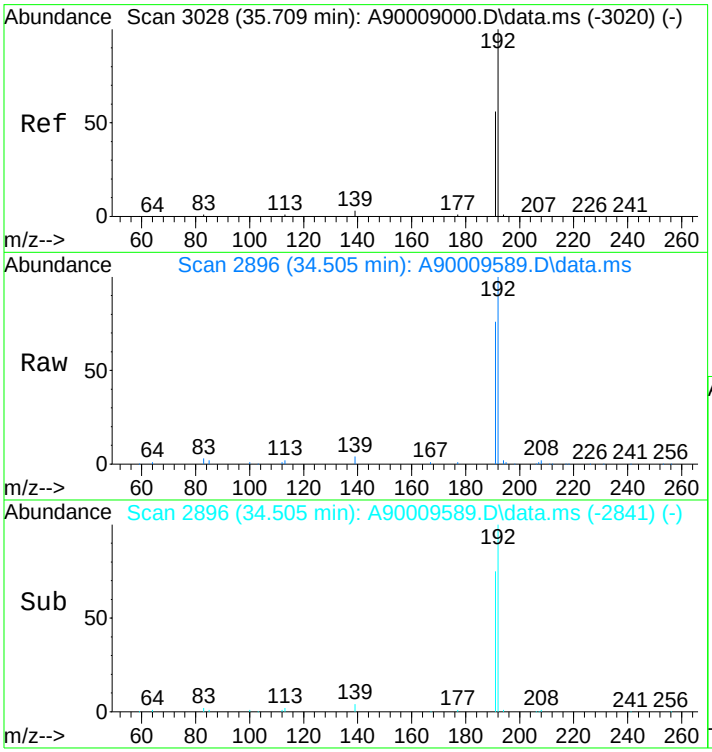


#46
2-Methylanthracene(2MA)
Concen: 338.09 ng/mL m
RT: 34.322 min Scan# 2876
Delta R.T. 0.000 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:192 Resp: 89302

Ion	Ratio	Lower	Upper
192	100		
191	0.7	96.8	145.2#

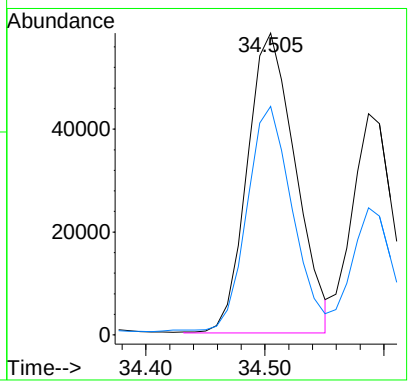


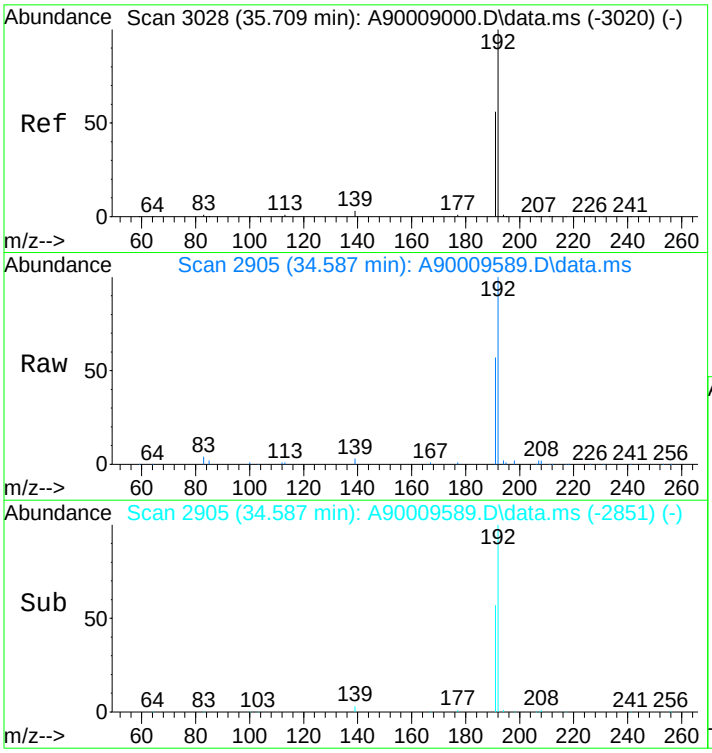


#47
9/4-Methylphenanthrene(9MP)
Concen: 622.72 ng/mL m
RT: 34.505 min Scan# 2896
Delta R.T. 0.000 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:192 Resp: 164481

Ion	Ratio	Lower	Upper
192	100		
191	34.9	44.5	66.7#

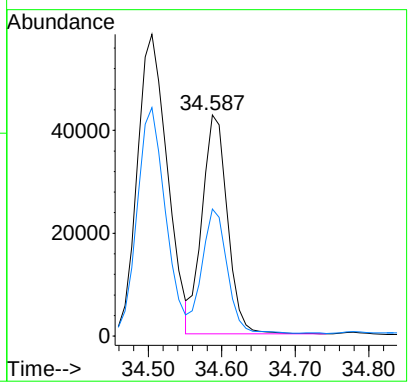


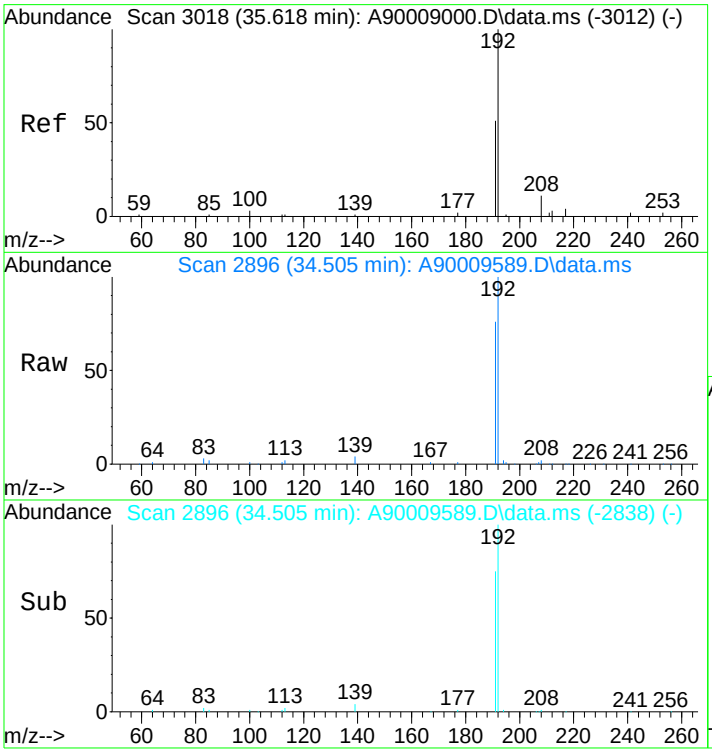


#48
1-Methylphenanthrene(1MP)
Concen: 386.56 ng/mL
RT: 34.587 min Scan# 2905
Delta R.T. -0.009 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:192 Resp: 102105

Ion	Ratio	Lower	Upper
192	100		
191	56.2	46.9	70.3

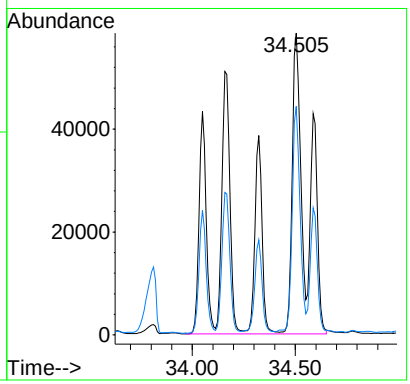


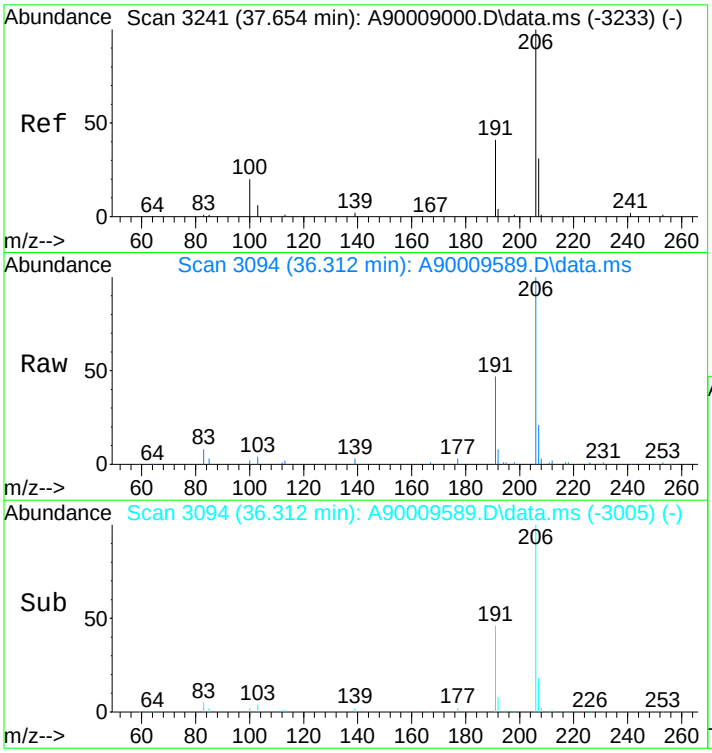


#49
C1-Phenanthrenes/Anthracenes
Concen: 2280.87 ng/mL m
RT: 34.505 min Scan# 2896
Delta R.T. 0.000 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:192 Resp: 602457

Ion	Ratio	Lower	Upper
192	100		
191	6.8	44.5	66.7#

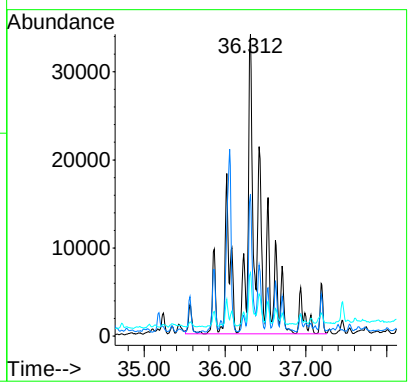


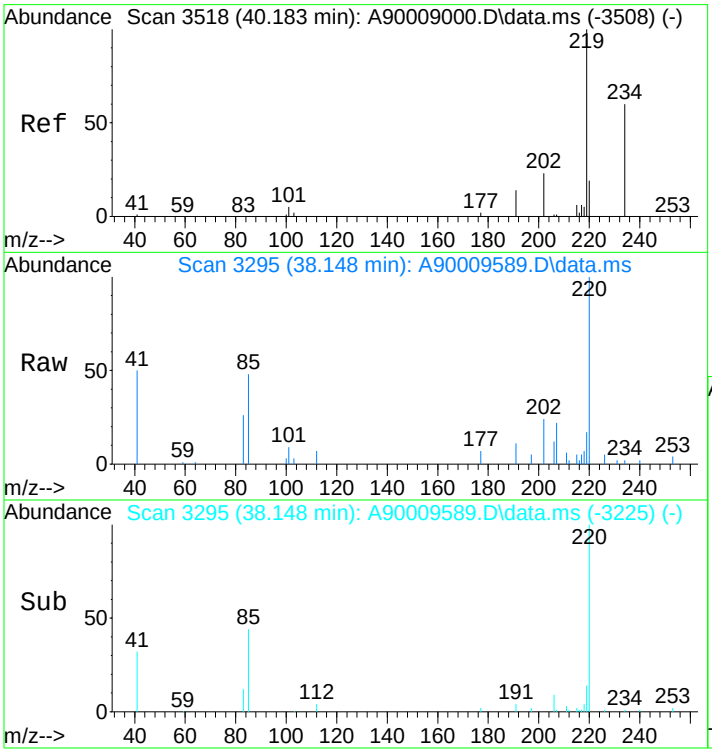


#50
C2-Phenanthrenes/Anthracenes
Concen: 1658.84 ng/mL m
RT: 36.312 min Scan# 3094
Delta R.T. 0.000 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:206 Resp: 438158

Ion	Ratio	Lower	Upper
206	100		
191	11.1	41.0	61.4#
207	4.6	17.1	25.7#

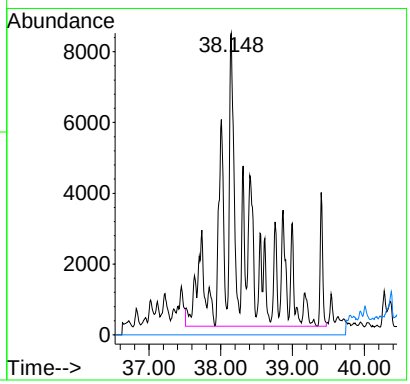


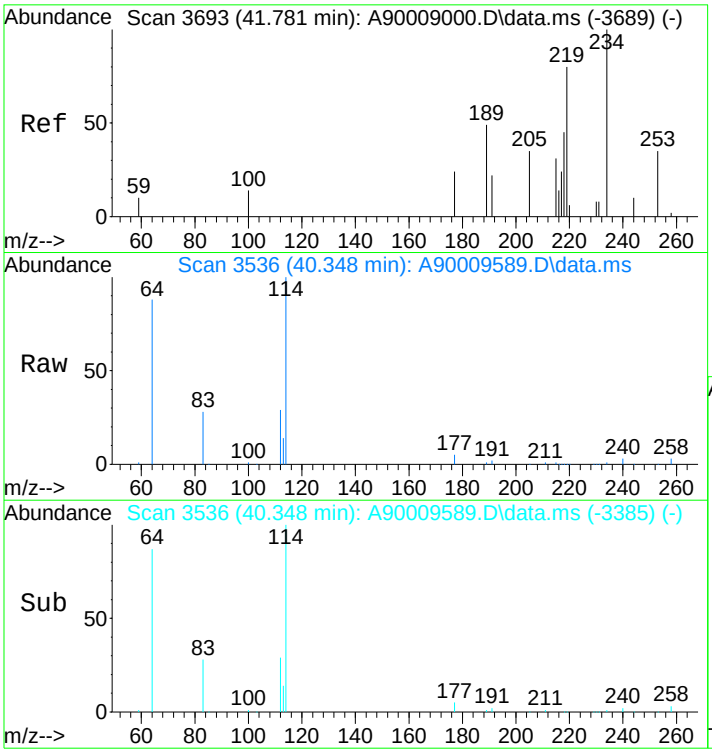


#52
C3-Phenanthrenes/Anthracenes
Concen: 660.43 ng/mL m
RT: 38.148 min Scan# 3295
Delta R.T. 0.000 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:220 Resp: 174443

Ion	Ratio	Lower	Upper
220	100		
205	0.0	0.0	0.0

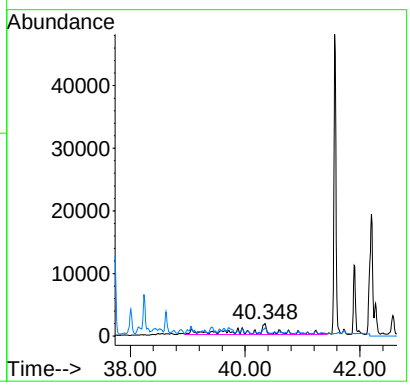


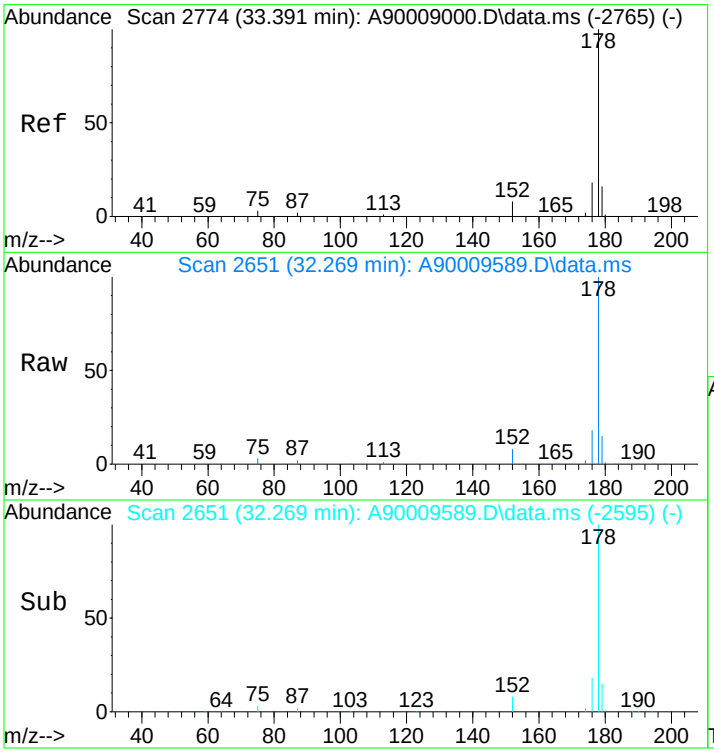


#53
C4-Phenanthrenes/Anthracenes
Concen: 195.82 ng/mL m
RT: 40.348 min Scan# 3536
Delta R.T. 0.019 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:234 Resp: 51723

Ion	Ratio	Lower	Upper
234	100		
219	0.6	52.1	78.1#

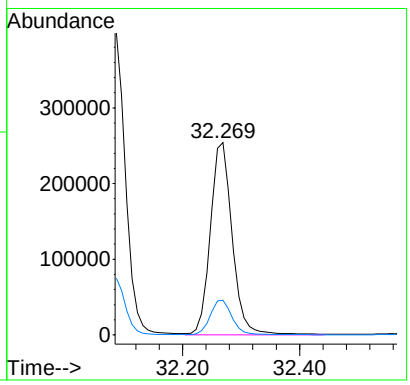


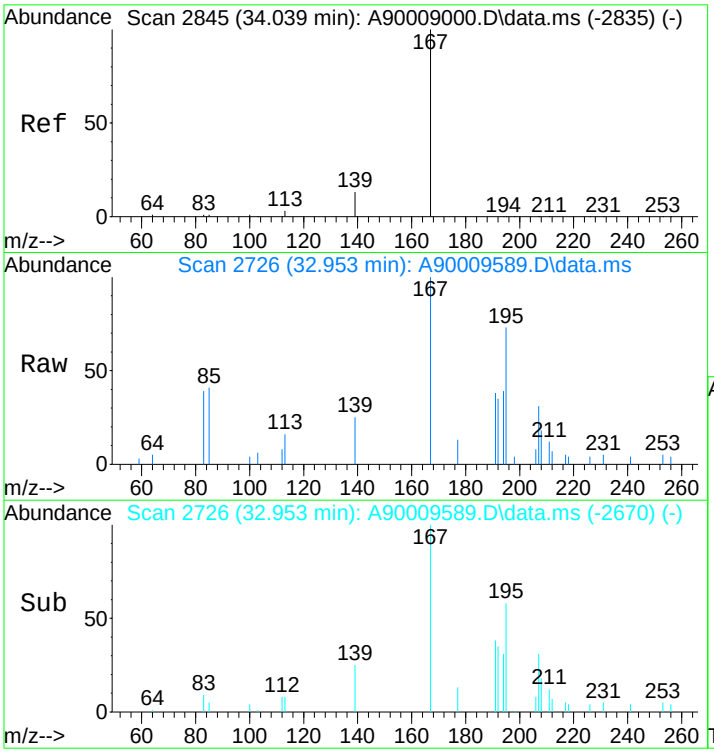


#55
Anthracene
Concen: 2685.96 ng/mL m
RT: 32.269 min Scan# 2651
Delta R.T. 0.009 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:178 Resp: 658811

Ion	Ratio	Lower	Upper
178	100		
176	18.0	14.6	21.8

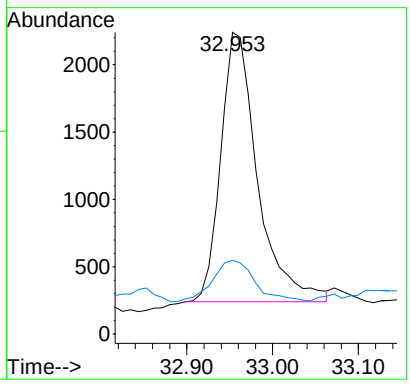


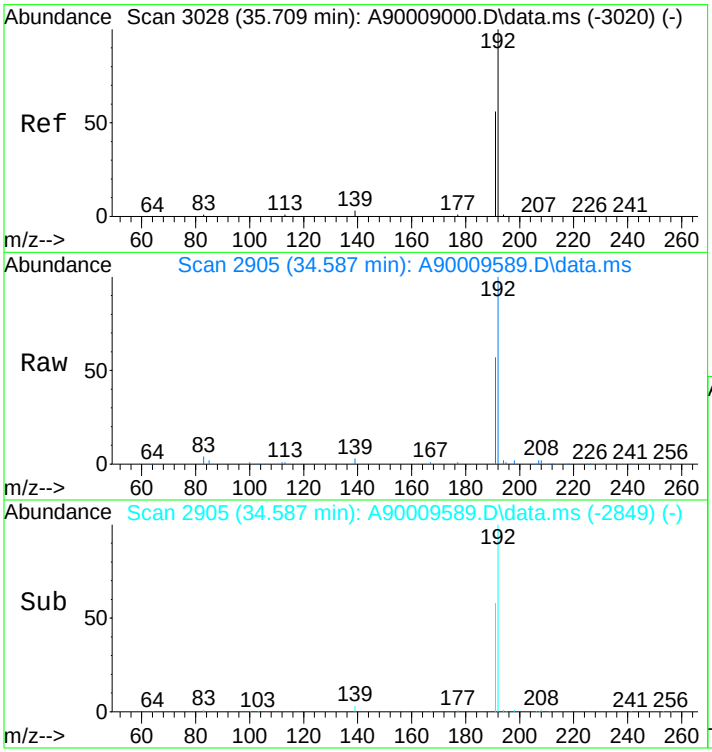


#56
Carbazole
Concen: 25.82 ng/mL
RT: 32.953 min Scan# 2726
Delta R.T. 0.009 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:167 Resp: 5992

Ion	Ratio	Lower	Upper
167	100		
139	23.2	10.2	15.2#

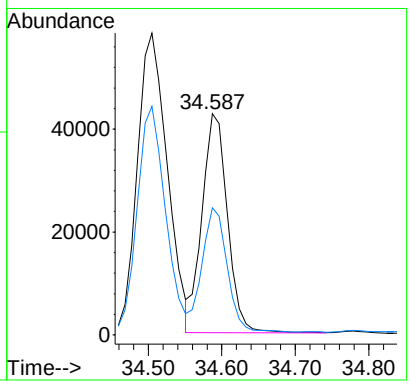


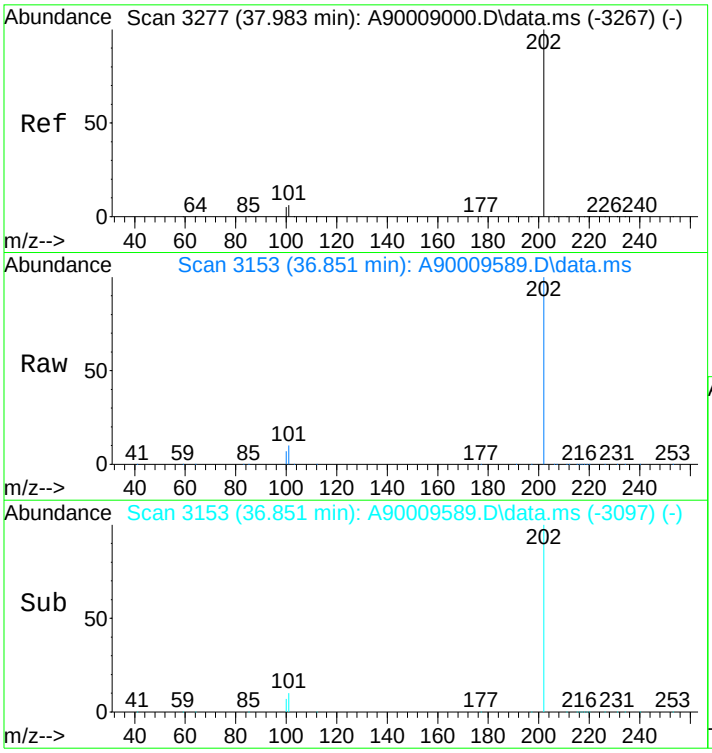


#57
1-Methylphenanthrene
Concen: 524.86 ng/mL
RT: 34.587 min Scan# 2905
Delta R.T. 0.009 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:192 Resp: 102284

Ion	Ratio	Lower	Upper
192	100		
191	56.1	44.9	67.3

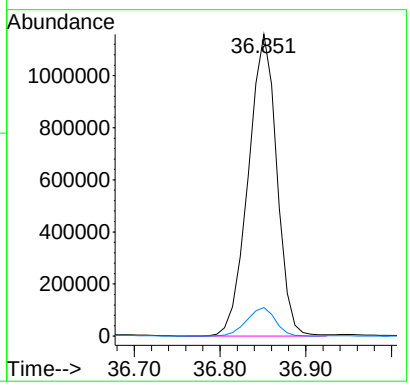


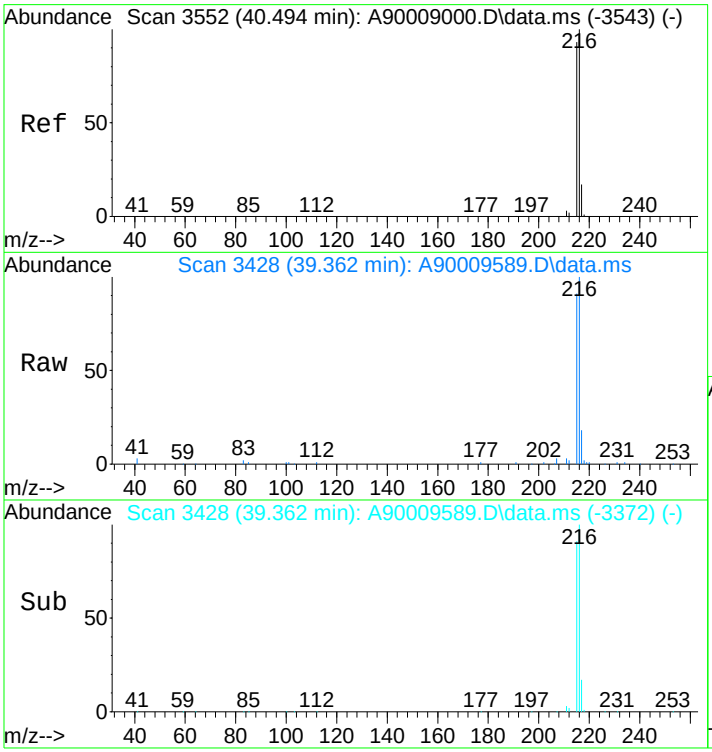


#58
Fluoranthene
Concen: 9079.84 ng/mL
RT: 36.851 min Scan# 3153
Delta R.T. 0.009 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:202 Resp: 2679153

Ion	Ratio	Lower	Upper
202	100		
101	9.5	8.2	12.2

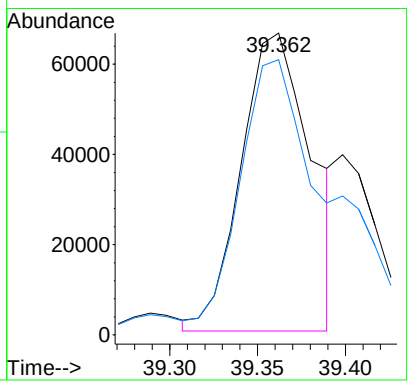


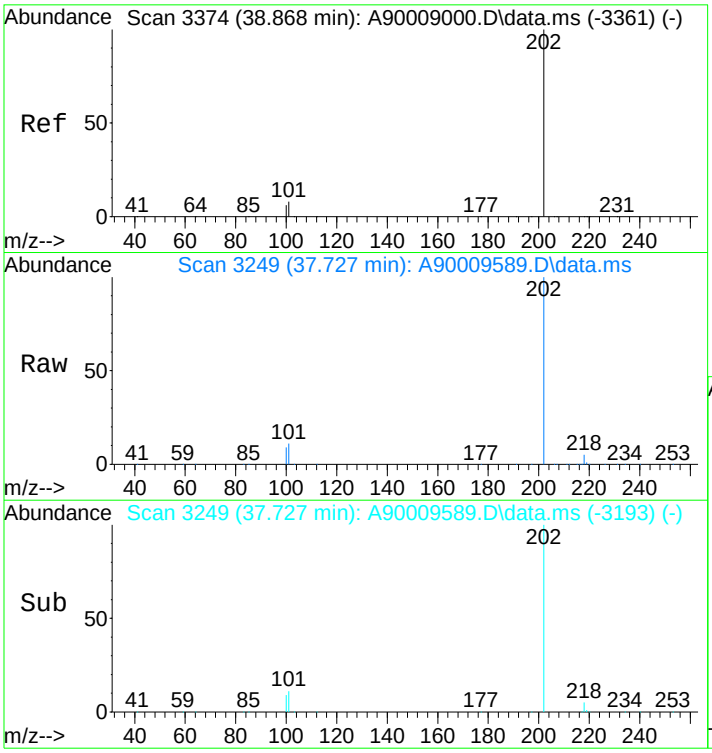


#59
Benzo(b)fluorene
Concen: 1042.54 ng/mL m
RT: 39.362 min Scan# 3428
Delta R.T. 0.009 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:216 Resp: 182942

Ion	Ratio	Lower	Upper
216	100		
215	116.5	73.4	110.2#

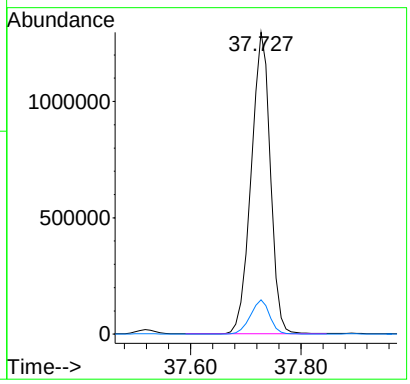


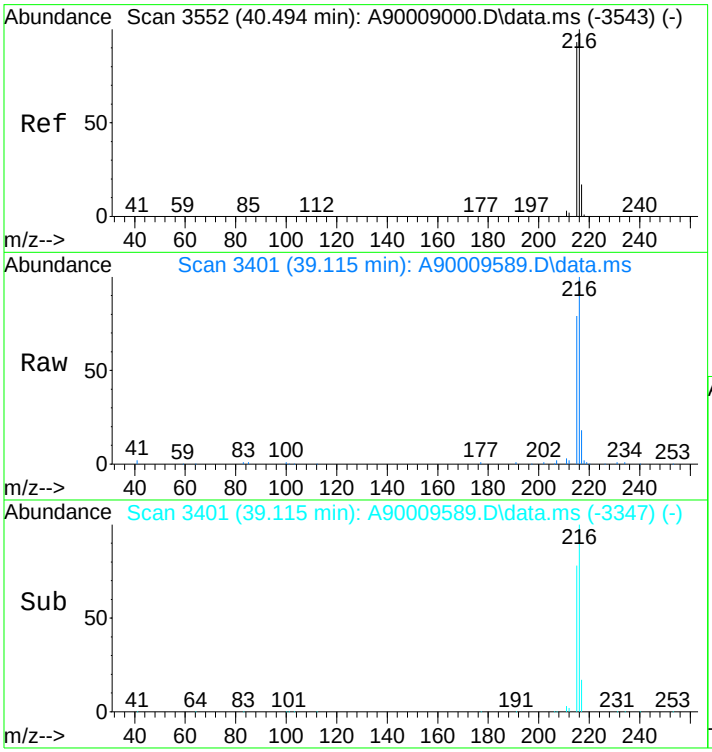


#60
Pyrene
Concen: 10401.18 ng/mL
RT: 37.727 min Scan# 3249
Delta R.T. 0.009 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:202 Resp: 3131059

Ion	Ratio	Lower	Upper
202	100		
101	11.4	9.5	14.3

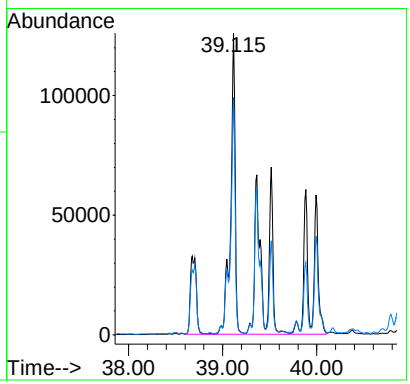


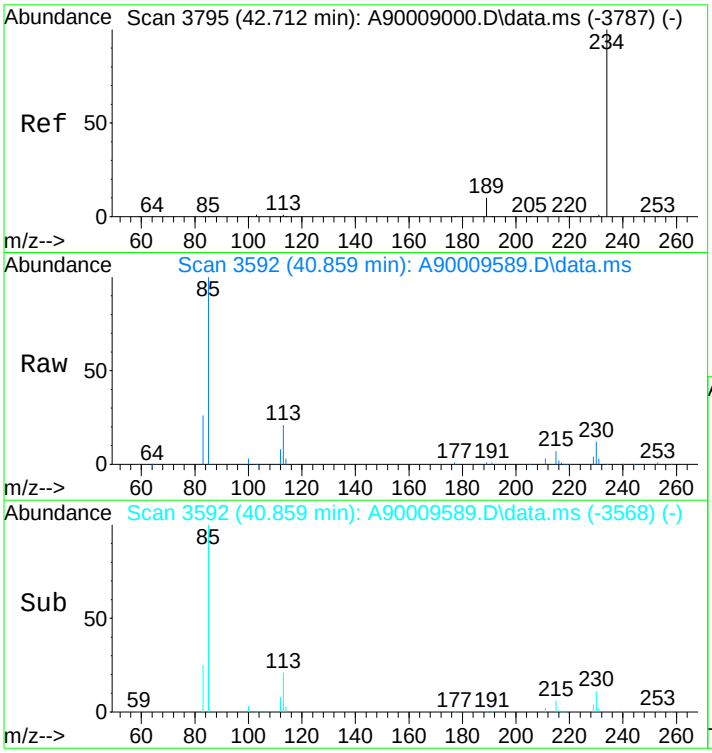


#61
C1-Fluoranthenes/Pyrenes
Concen: 4502.82 ng/mL m
RT: 39.115 min Scan# 3401
Delta R.T. 0.000 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:216 Resp: 1355481

Ion	Ratio	Lower	Upper
216	100		
215	20.2	73.5	110.3#

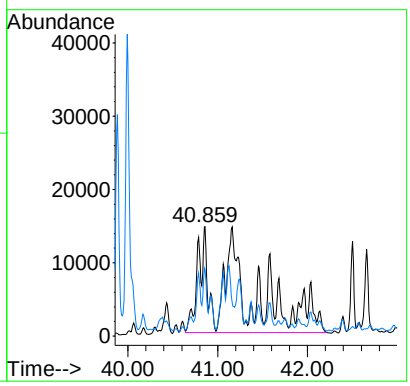


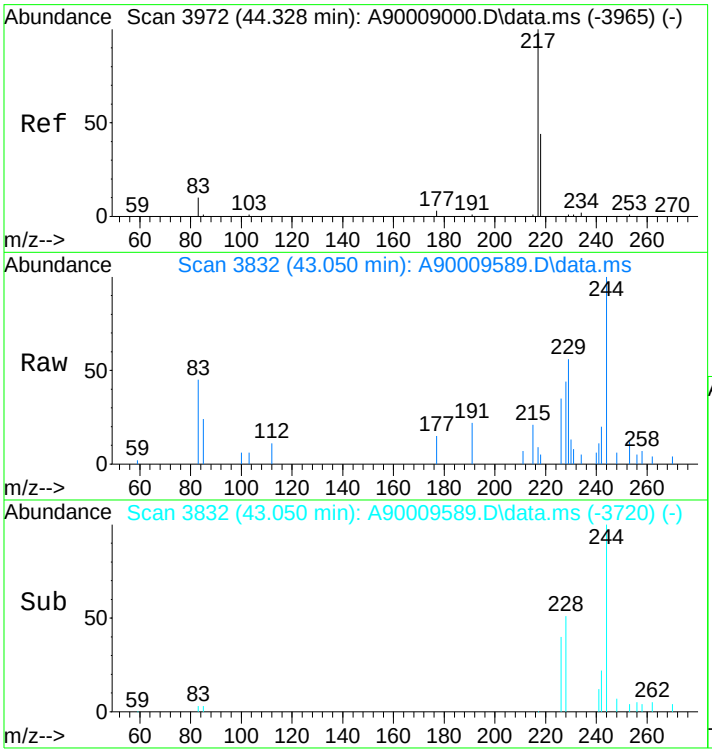


#62
C2-Fluoranthenes/Pyrenes
Concen: 1428.66 ng/mL m
RT: 40.859 min Scan# 3592
Delta R.T. -0.064 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:230 Resp: 430069

Ion	Ratio	Lower	Upper
230	100		
215	1.9	93.1	139.7#

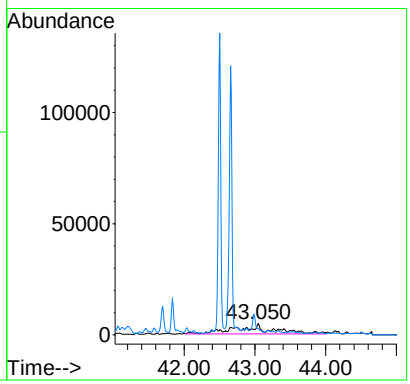


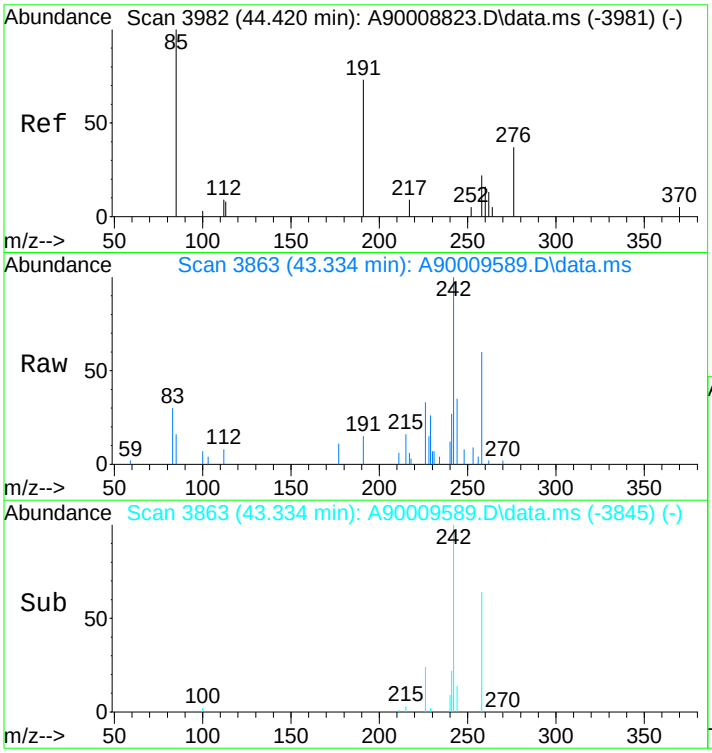


#63
C3-Fluoranthenes/Pyrenes
Concen: 516.89 ng/mL m
RT: 43.050 min Scan# 3832
Delta R.T. 0.110 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:244 Resp: 155599

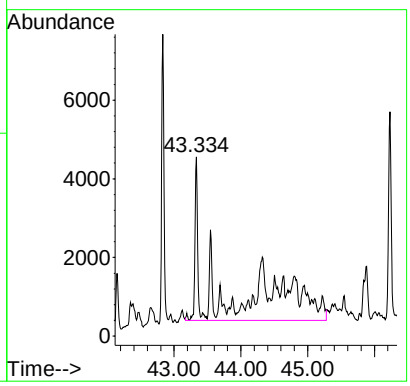
Ion	Ratio	Lower	Upper
244	100		
229	1.5	75.0	112.4#

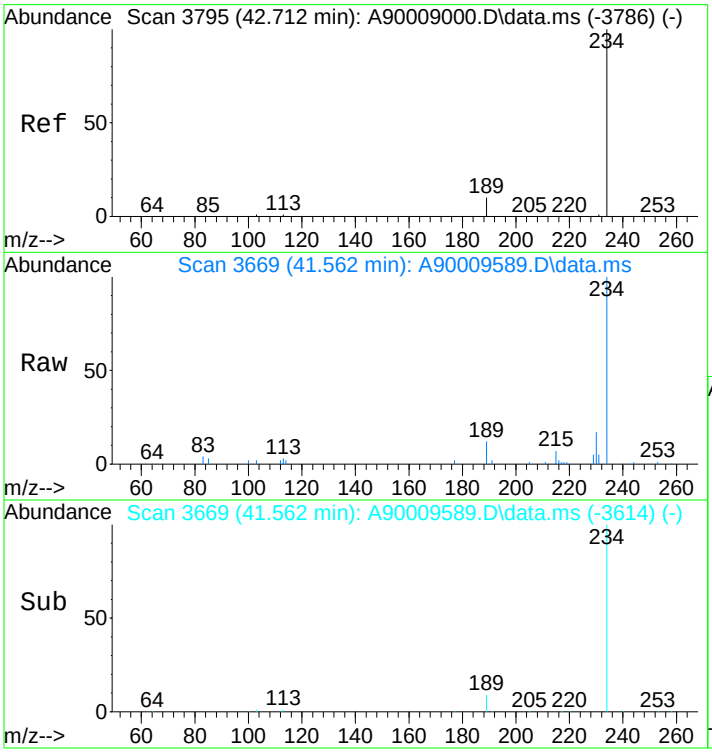




#64
C4-Fluoranthenes/Pyrenes
Concen: 250.99 ng/mL m
RT: 43.334 min Scan# 3863
Delta R.T. -0.958 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:258 Resp: 75555

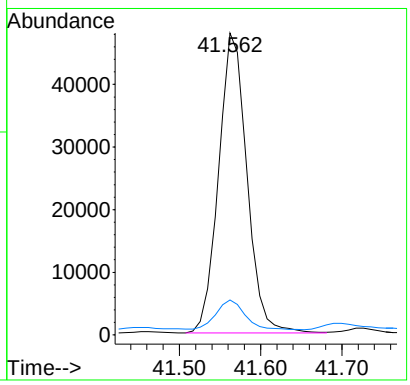


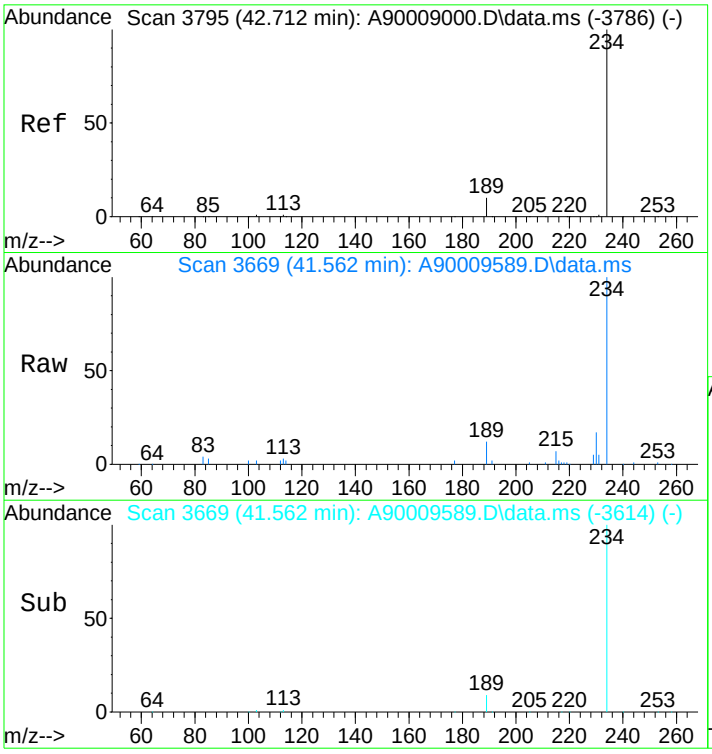


#66
Naphthobenzothiophene
Concen: 446.21 ng/ml
RT: 41.562 min Scan# 3669
Delta R.T. 0.000 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:234 Resp: 116553

Ion	Ratio	Lower	Upper
234	100		
189	9.9	7.2	10.8

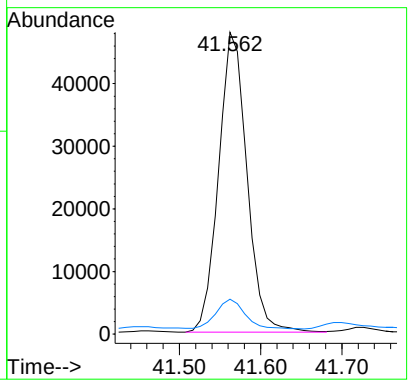


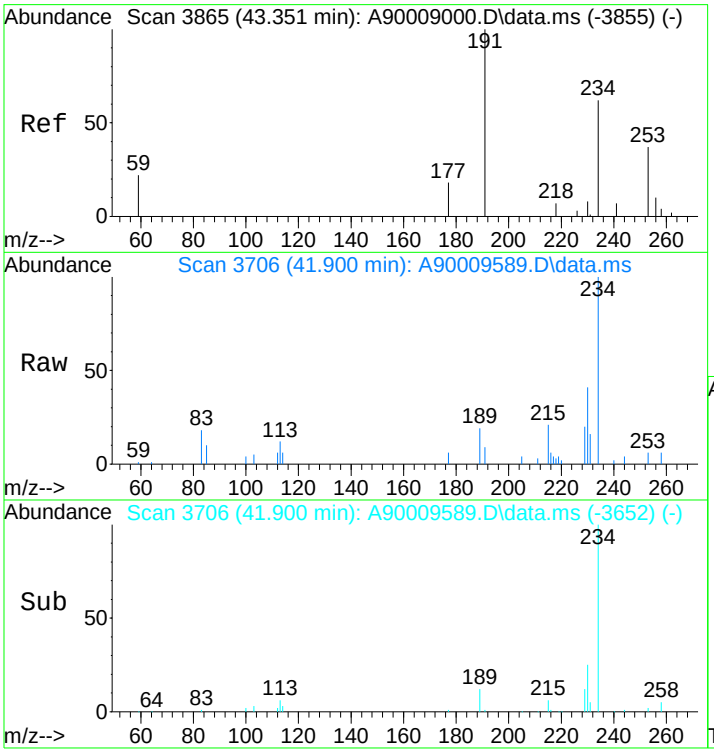


#67
Naphthobenzothiophene-2,1-D
Concen: 446.21 ng/mL
RT: 41.562 min Scan# 3669
Delta R.T. 0.000 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:234 Resp: 116553

Ion	Ratio	Lower	Upper
234	100		
189	9.9	7.2	10.8

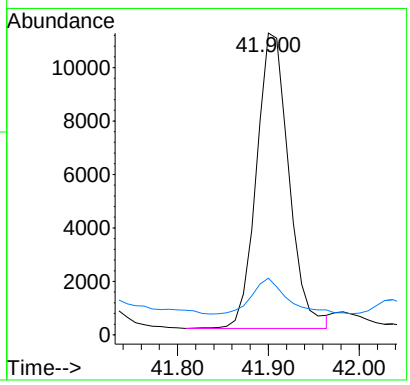


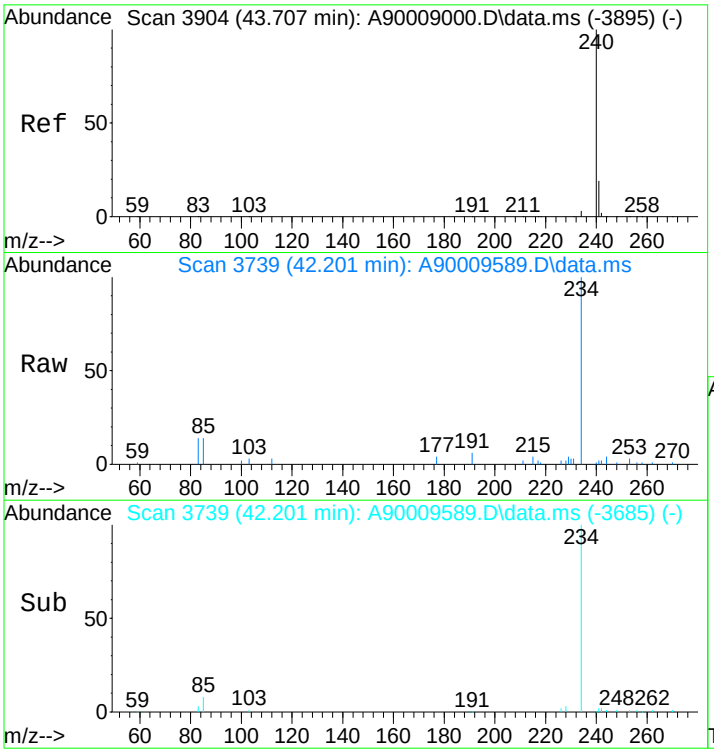


#68
Naphthobenzothiophene-1,2-D
Concen: 104.50 ng/mL
RT: 41.900 min Scan# 3706
Delta R.T. -0.009 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:234 Resp: 27295

Ion	Ratio	Lower	Upper
234	100		
189	27.2	81.0	121.4#

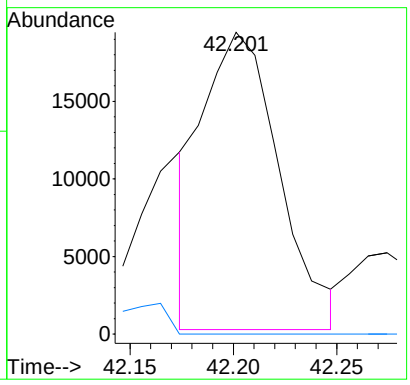


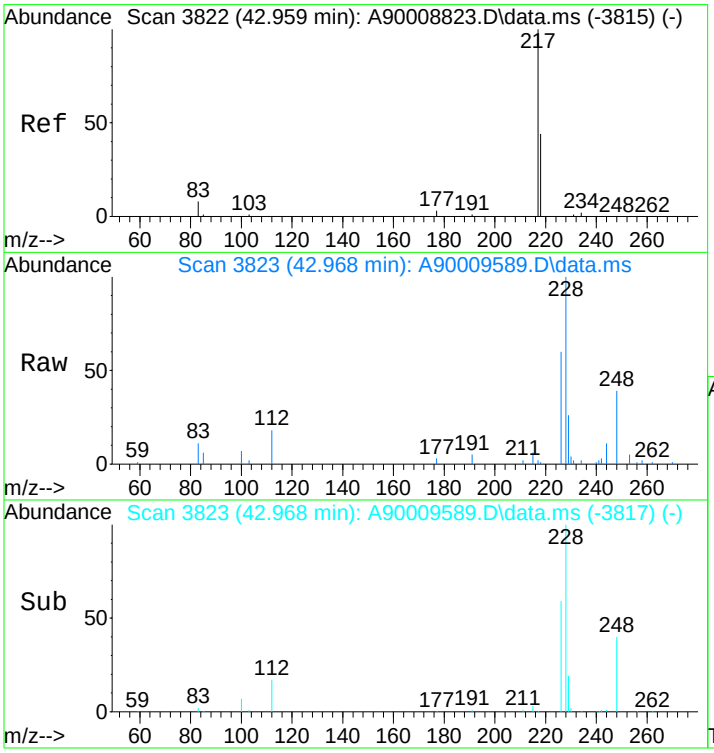


#69
Naphthobenzothiophene-2,3-D
Concen: 189.85 ng/mL m
RT: 42.201 min Scan# 3739
Delta R.T. -0.009 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:234 Resp: 49589

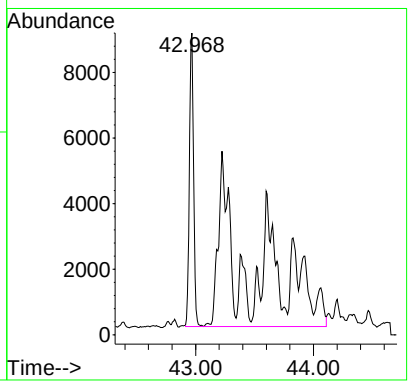
Ion	Ratio	Lower	Upper
234	100		
189	0.0	0.0	0.0

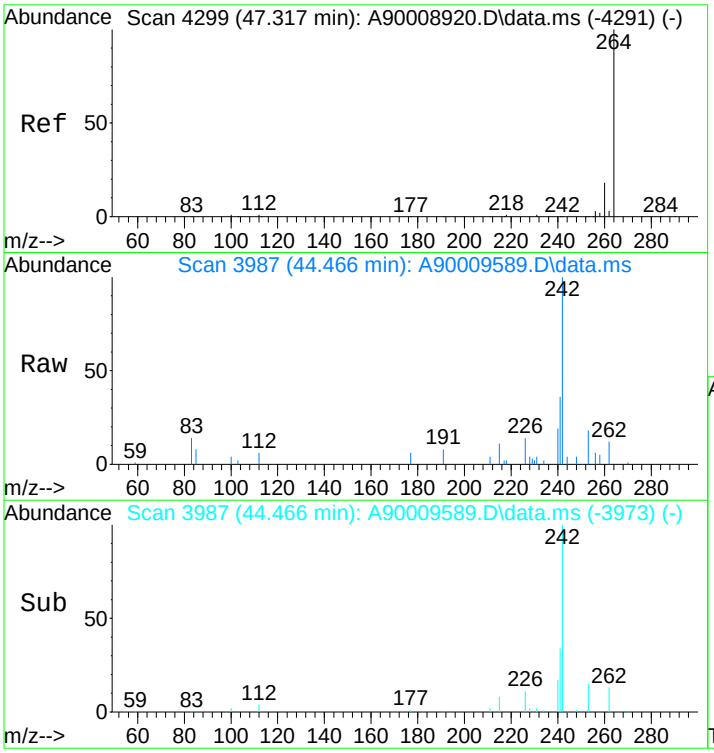




#70
C1-Naphthobenzothiophenes
Concen: 456.42 ng/ml m
RT: 42.968 min Scan# 3823
Delta R.T. 0.000 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

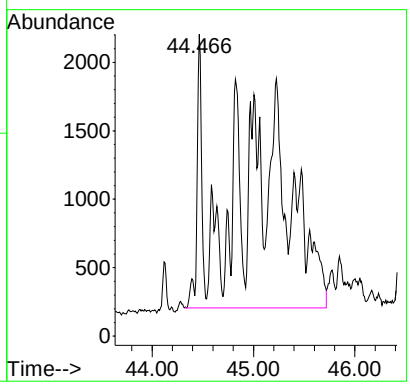
Tgt Ion:248 Resp: 119219

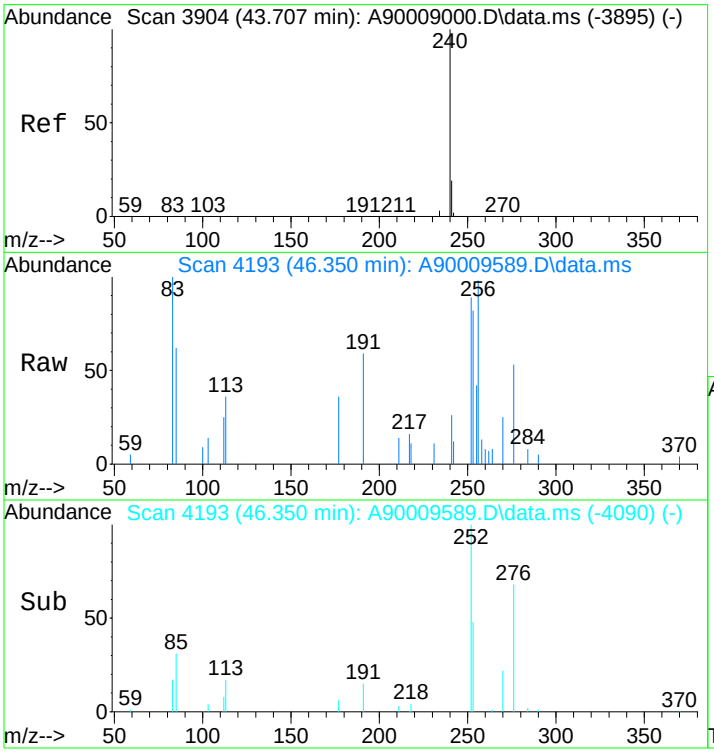




#71
C2-Naphthobenzothiophenes
Concen: 220.71 ng/ml m
RT: 44.466 min Scan# 3987
Delta R.T. -0.502 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

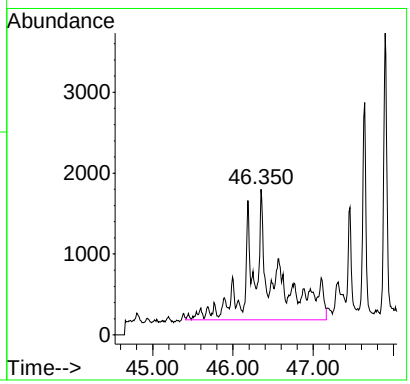
Tgt Ion:262 Resp: 57650

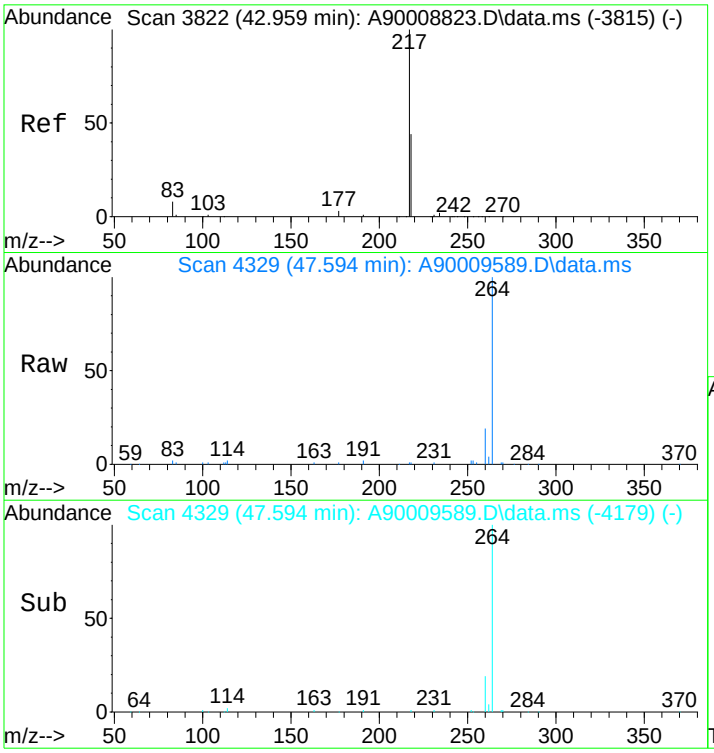




#72
C3-Naphthobenzothiophenes
Concen: 130.61 ng/ml m
RT: 46.350 min Scan# 4193
Delta R.T. -0.219 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

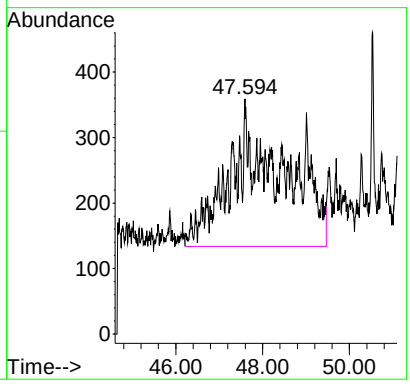
Tgt Ion:276 Resp: 34117

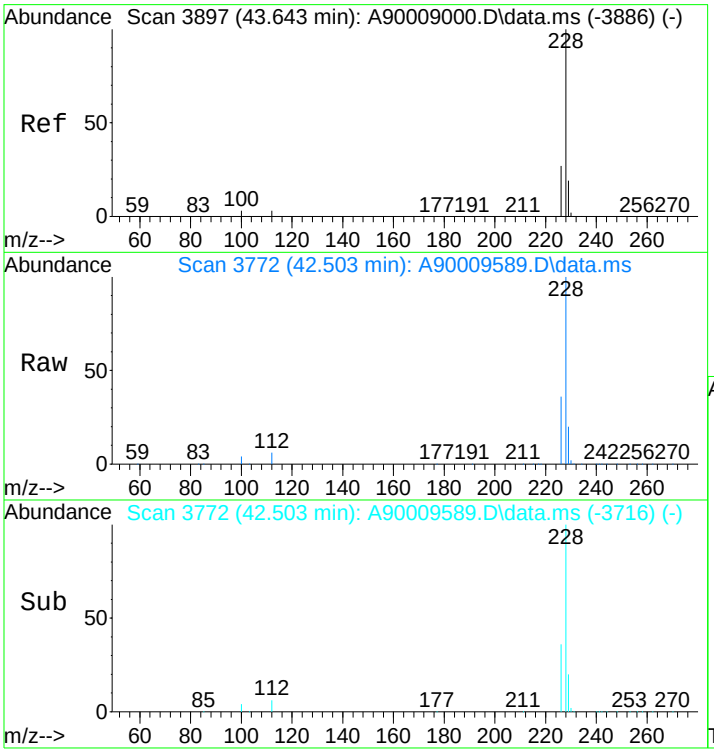




#73
C4-Naphthobenzothiophenes
Concen: 69.57 ng/mL m
RT: 47.594 min Scan# 4329
Delta R.T. 0.000 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:290 Resp: 18173

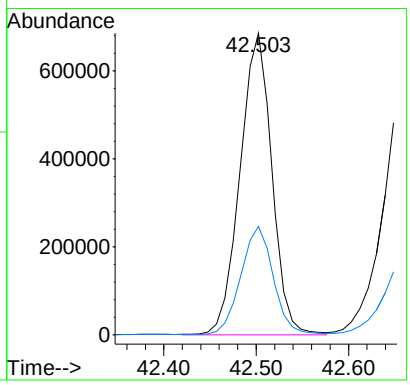


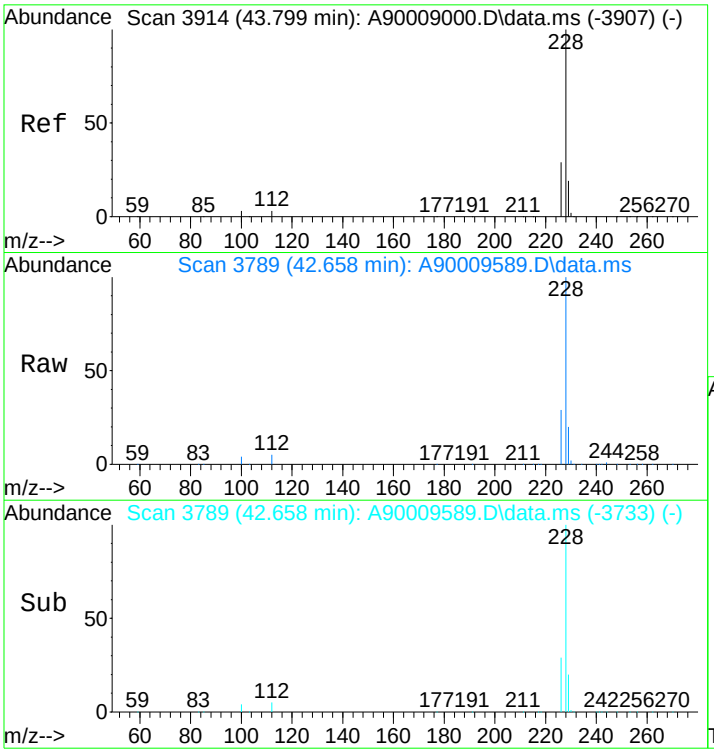


#75
Benz[a]anthracene
Concen: 5853.95 ng/mL m
RT: 42.503 min Scan# 3772
Delta R.T. 0.009 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:228 Resp: 1642060

Ion	Ratio	Lower	Upper
228	100		
226	28.6	20.8	31.2

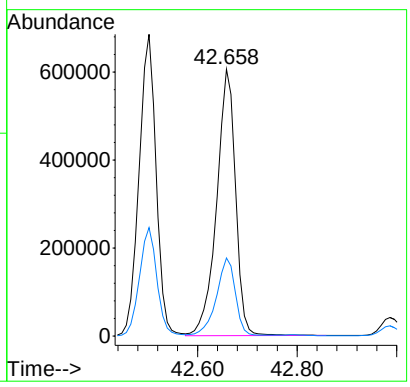


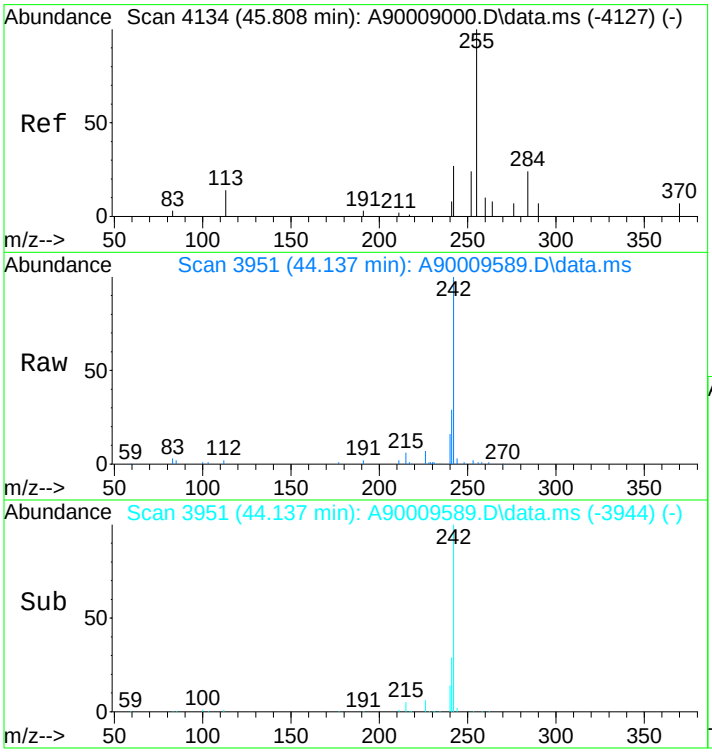


#77
Chrysene/Triphenylene
Concen: 5783.21 ng/mL
RT: 42.658 min Scan# 3789
Delta R.T. 0.009 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:228 Resp: 1595492

Ion	Ratio	Lower	Upper
228	100		
226	29.4	23.3	34.9

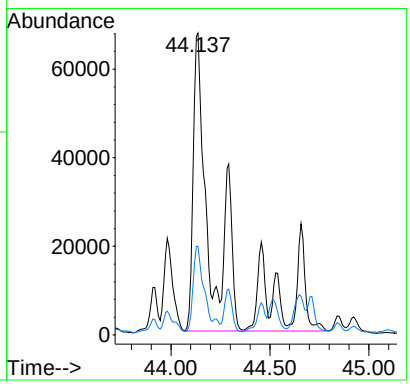


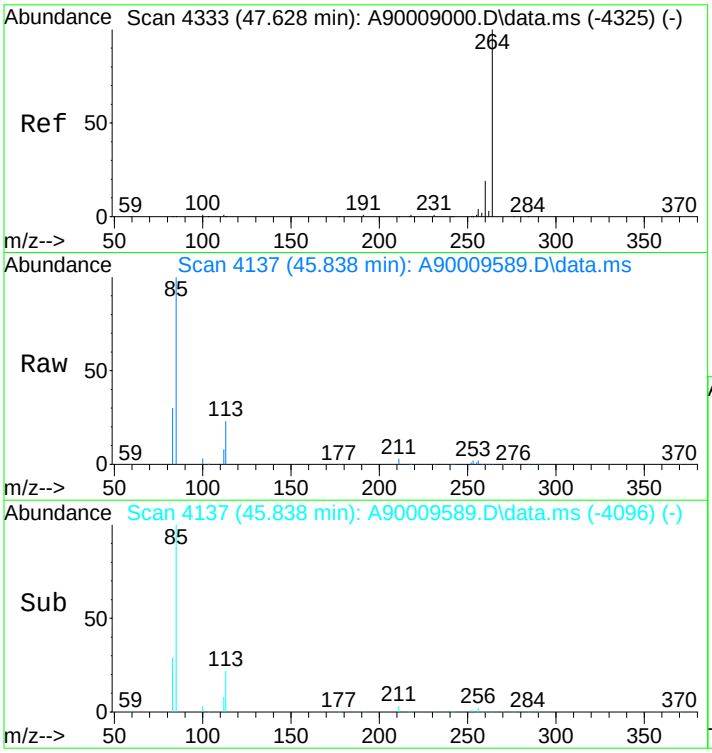


#78
C1-Chrysenes
Concen: 1898.96 ng/mL m
RT: 44.137 min Scan# 3951
Delta R.T. 0.000 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:242 Resp: 523892

Ion	Ratio	Lower	Upper
242	100		
241	3.6	31.9	47.9#

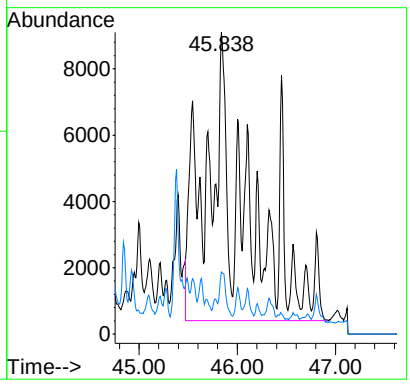


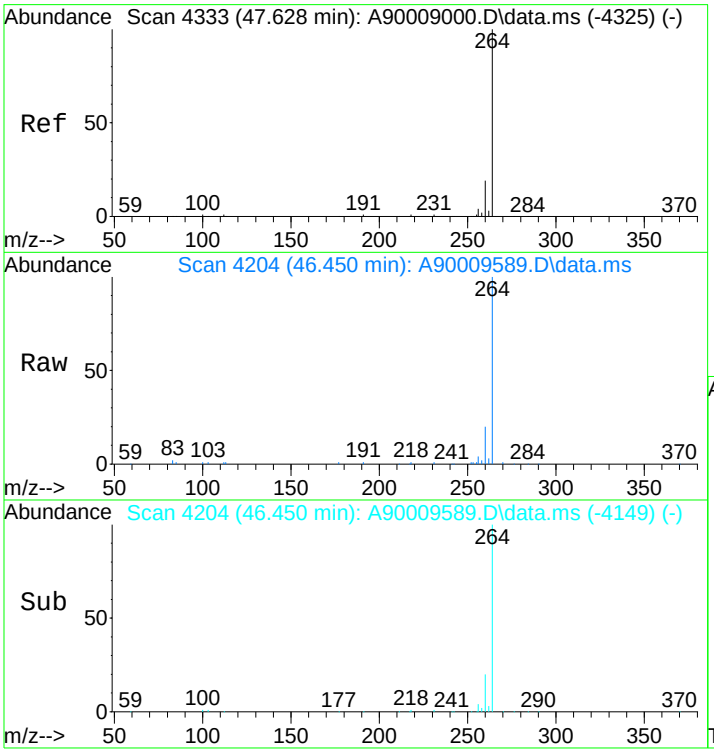


#79
C2-Chrysenes
Concen: 862.07 ng/mL m
RT: 45.838 min Scan# 4137
Delta R.T. -0.978 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:256 Resp: 237831

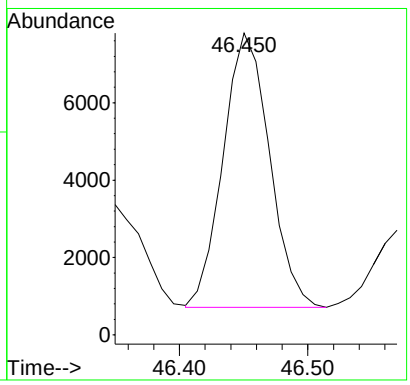
Ion	Ratio	Lower	Upper
256	100		
241	0.9	42.2	63.2#

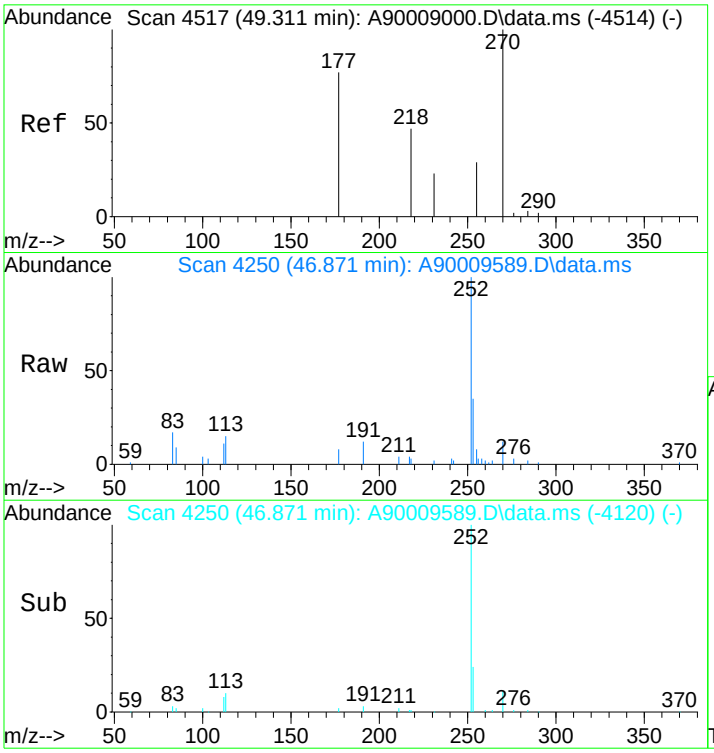




#80
BBF-d12 Surr BKGD
Concen: 64.40 ng/mL
RT: 46.450 min Scan# 4204
Delta R.T. 0.000 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:256 Resp: 17767

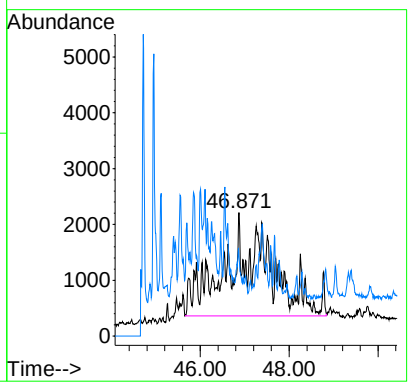


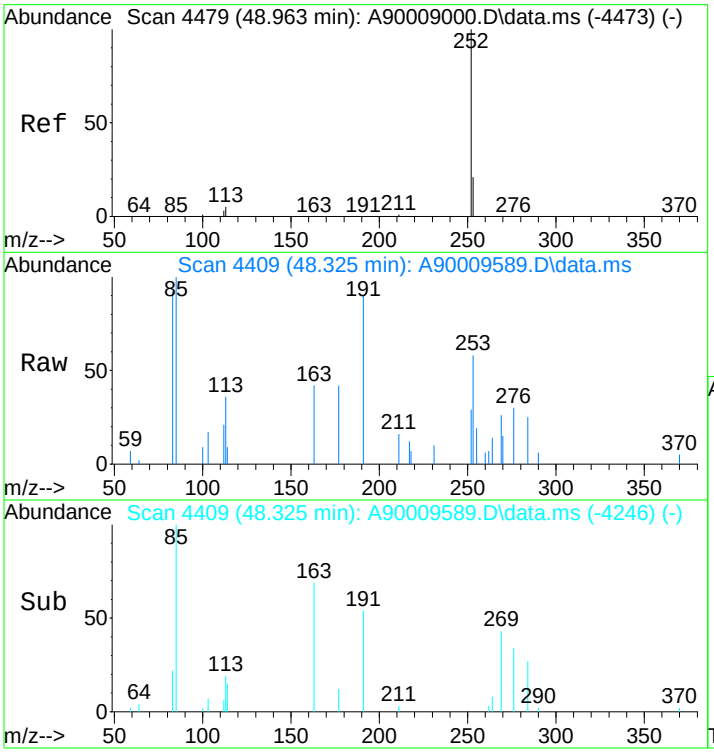


#81
C3-Chrysenes
Concen: 443.69 ng/mL m
RT: 46.871 min Scan# 4250
Delta R.T. -1.911 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:270 Resp: 122407

Ion	Ratio	Lower	Upper
270	100		
255	0.0	48.2	72.4#

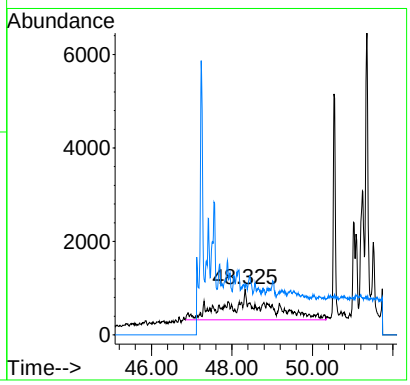


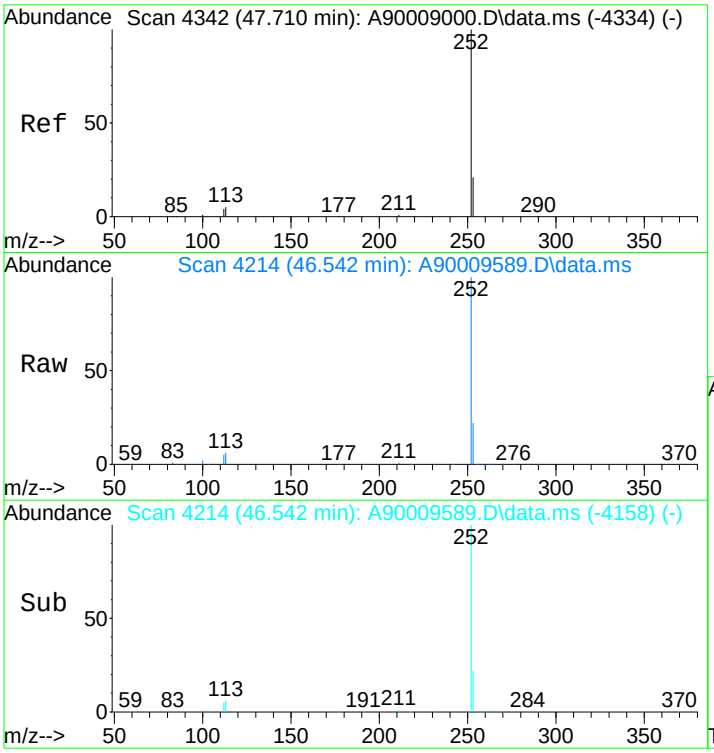


#82
C4-Chrysenes
Concen: 157.01 ng/mL m
RT: 48.325 min Scan# 4409
Delta R.T. -0.558 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:284 Resp: 43316

Ion	Ratio	Lower	Upper
284	100		
269	0.0	84.6	126.8#

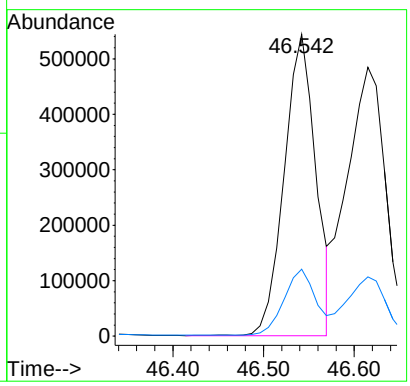


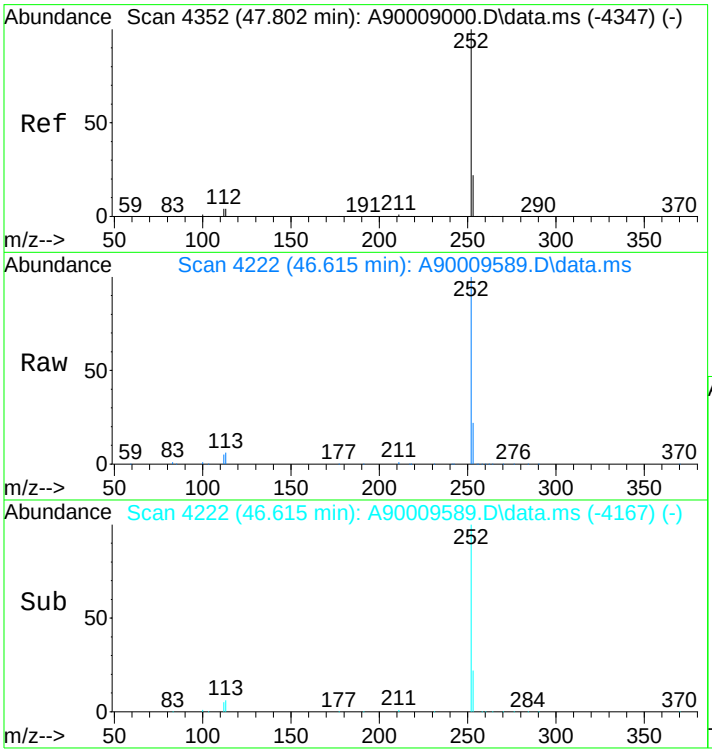


#84
Benzo[b]fluoranthene
Concen: 4539.38 ng/mL
RT: 46.542 min Scan# 4214
Delta R.T. 0.009 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:252 Resp: 1320244

Ion	Ratio	Lower	Upper
252	100		
253	22.0	20.3	30.5

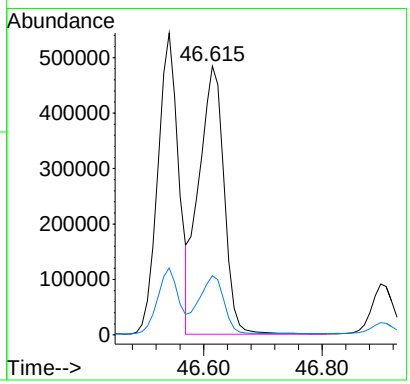


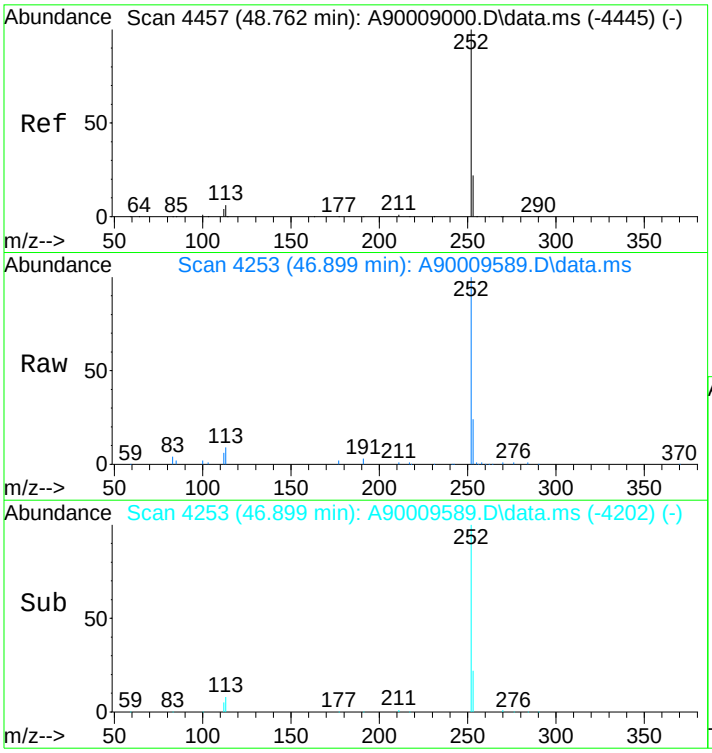


#85
Benzo[j]+[k]fluoranthene
Concen: 5041.62 ng/mL
RT: 46.615 min Scan# 4222
Delta R.T. 0.000 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:252 Resp: 1440743

Ion	Ratio	Lower	Upper
252	100		
253	21.6	20.2	30.4

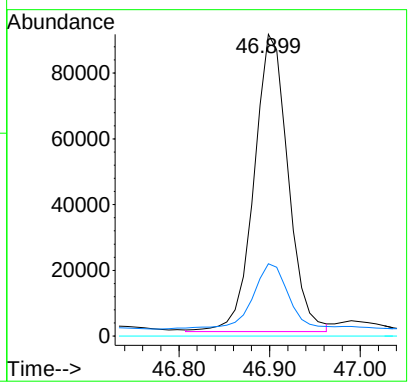


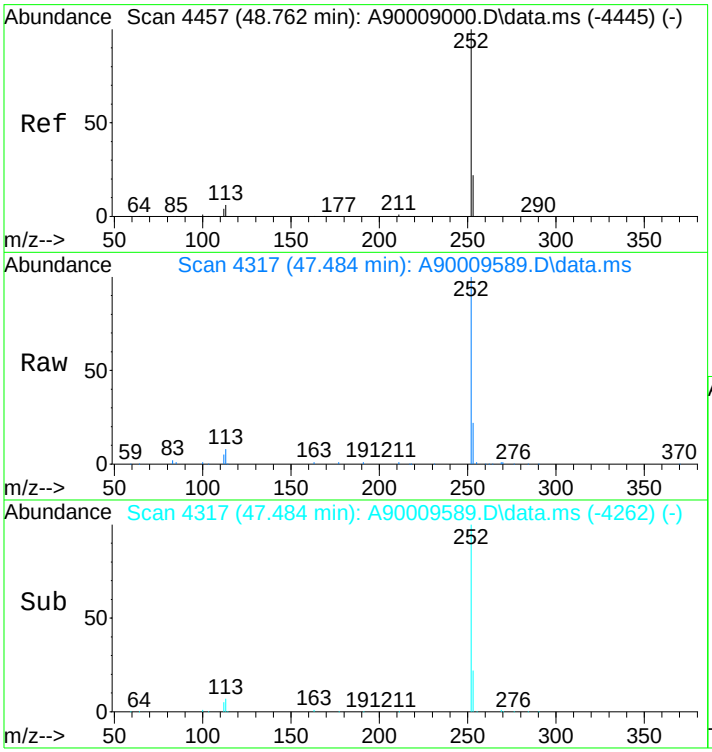


#86
Benzo[a]fluoranthene
Concen: 821.34 ng/mL
RT: 46.899 min Scan# 4253
Delta R.T. -0.031 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:252 Resp: 234715

Ion	Ratio	Lower	Upper
252	100		
253	23.5	191.7	287.5#
125	0.0	0.0	0.0

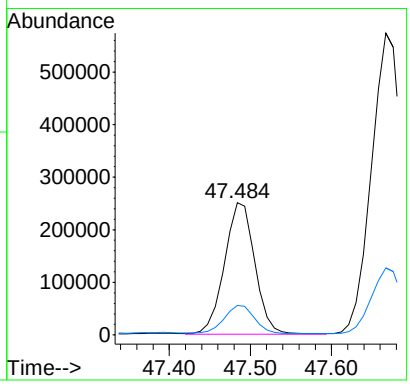


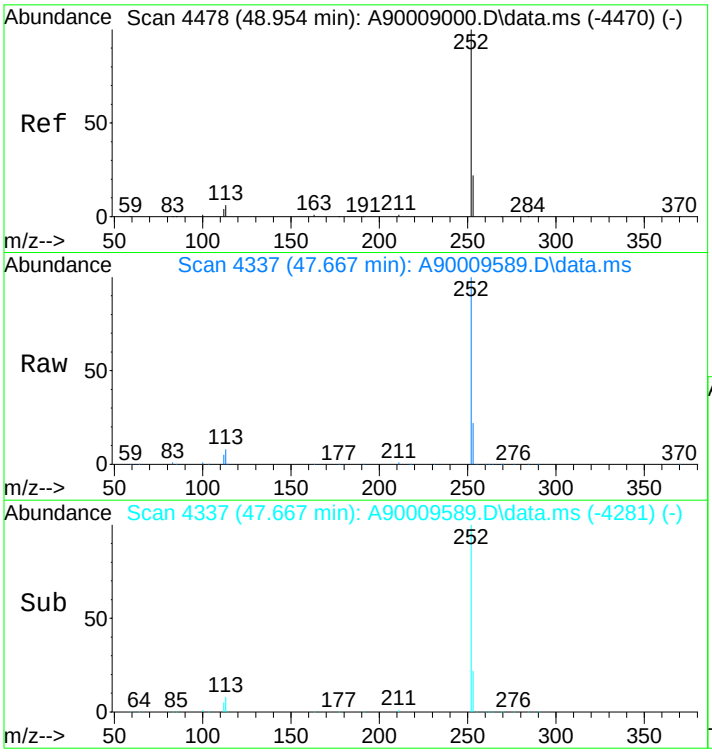


#87
Benzo[e]pyrene
Concen: 2370.48 ng/mL
RT: 47.484 min Scan# 4317
Delta R.T. 0.000 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:252 Resp: 654668

Ion	Ratio	Lower	Upper
252	100		
253	22.0	21.4	32.0

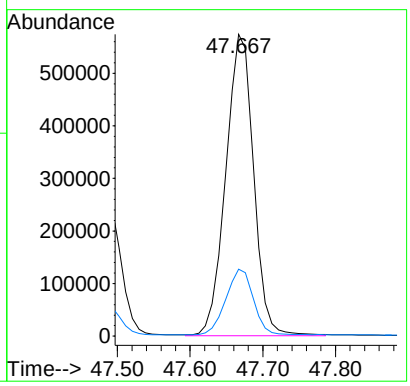


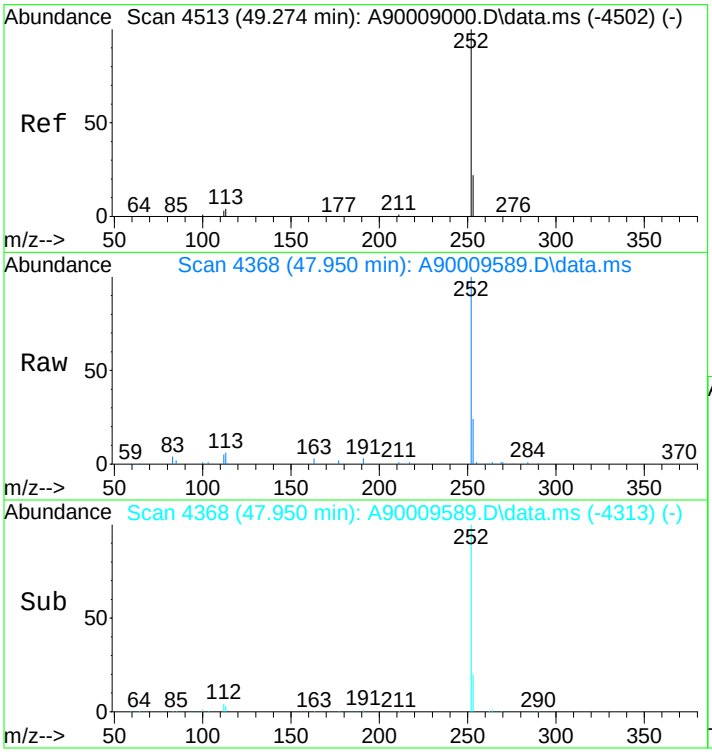


#89
Benzo[a]pyrene
Concen: 5834.72 ng/mL m
RT: 47.667 min Scan# 4337
Delta R.T. 0.009 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:252 Resp: 1526102

Ion	Ratio	Lower	Upper
252	100		
253	9.5	21.9	32.9#

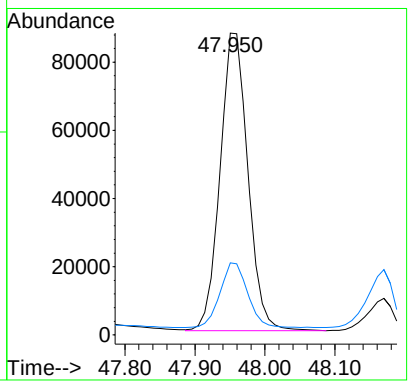


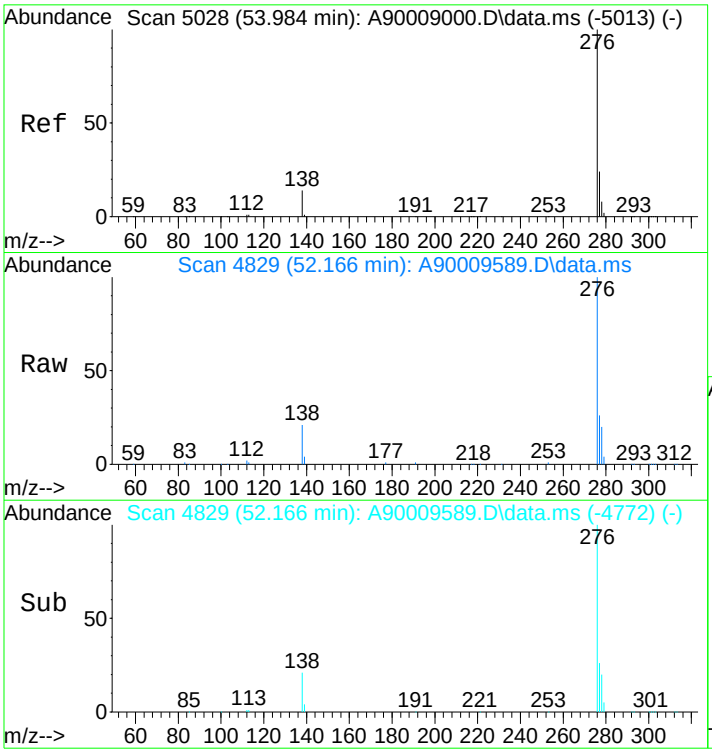


#90
Perylene
Concen: 864.15 ng/mL
RT: 47.950 min Scan# 4368
Delta R.T. 0.000 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:252 Resp: 241227

Ion	Ratio	Lower	Upper
252	100		
253	21.6	22.2	33.2#

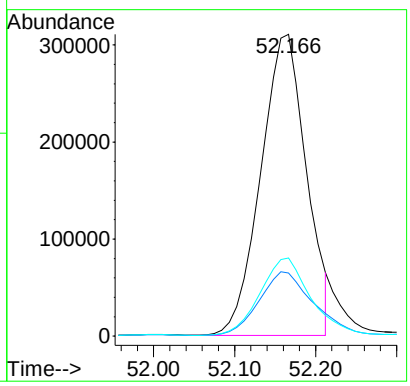


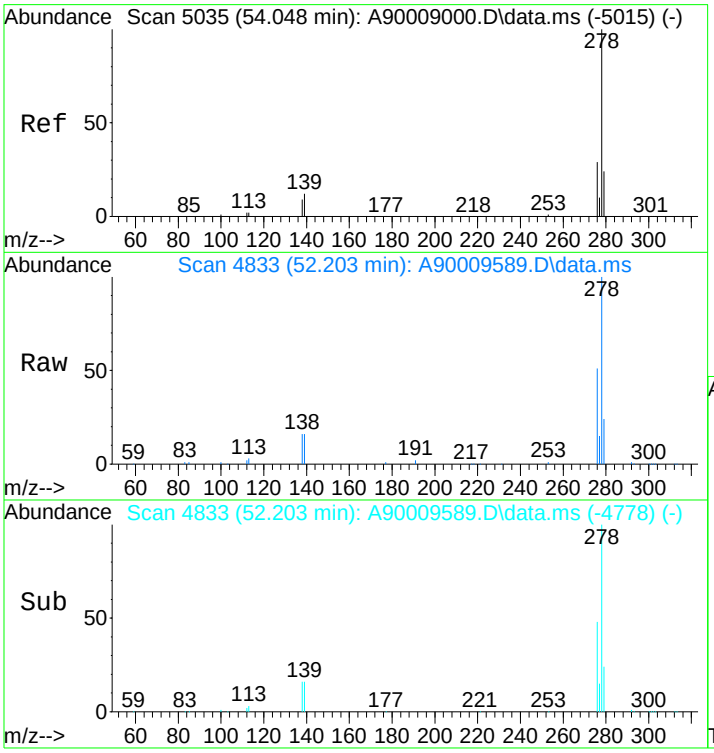


#91
Indeno[1,2,3-cd]pyrene
Concen: 4183.14 ng/mL m
RT: 52.166 min Scan# 4829
Delta R.T. 0.018 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:276 Resp: 1211748

Ion	Ratio	Lower	Upper
276	100		
138	25.8	17.7	26.5
277	28.7	20.2	30.4

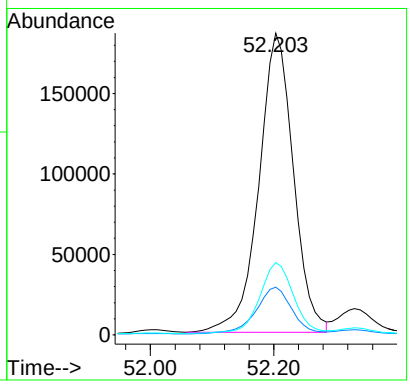


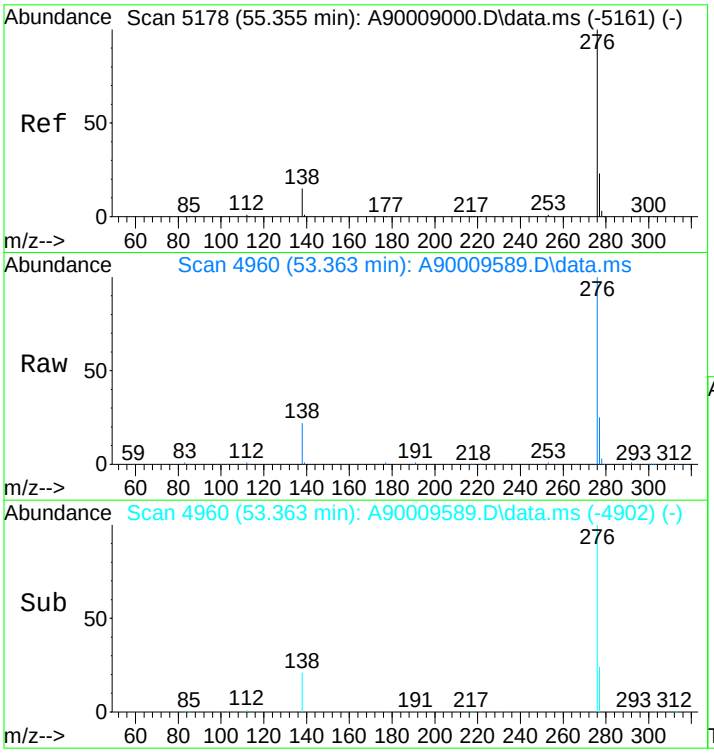


#92
Dibenz[ah]+[ac]anthracene
Concen: 2525.77 ng/mL
RT: 52.203 min Scan# 4833
Delta R.T. 0.000 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:278 Resp: 720741

Ion	Ratio	Lower	Upper
278	100		
139	16.2	13.3	19.9
279	23.3	19.3	28.9

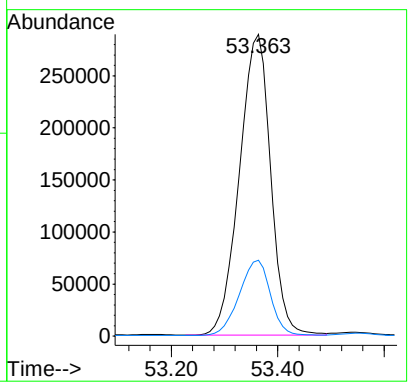


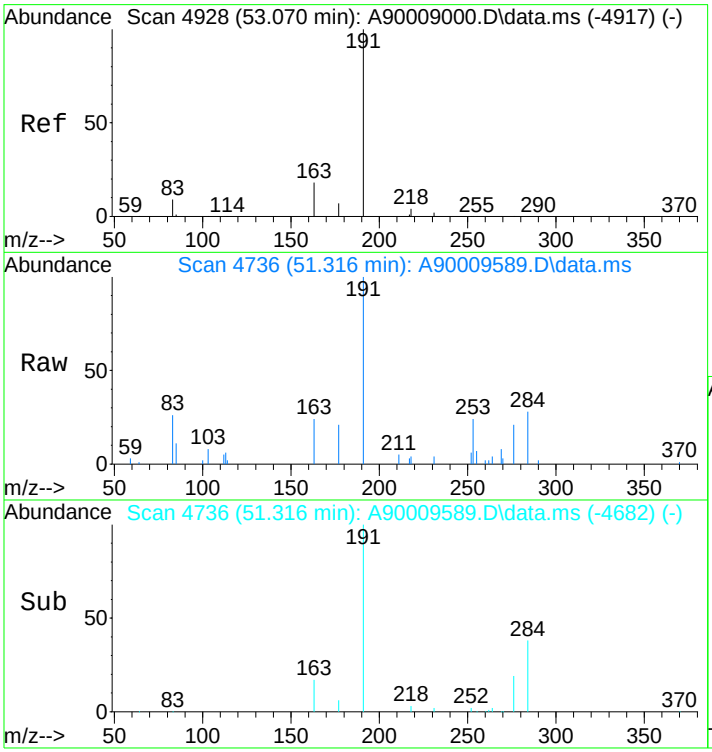


#93
Benzo[g,h,i]perylene
Concen: 4130.02 ng/mL
RT: 53.363 min Scan# 4960
Delta R.T. 0.027 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:276 Resp: 1175639

Ion	Ratio	Lower	Upper
276	100		
277	25.1	20.0	30.0

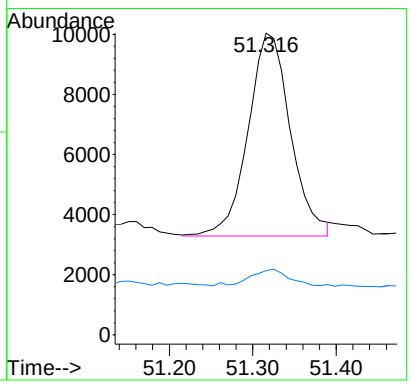


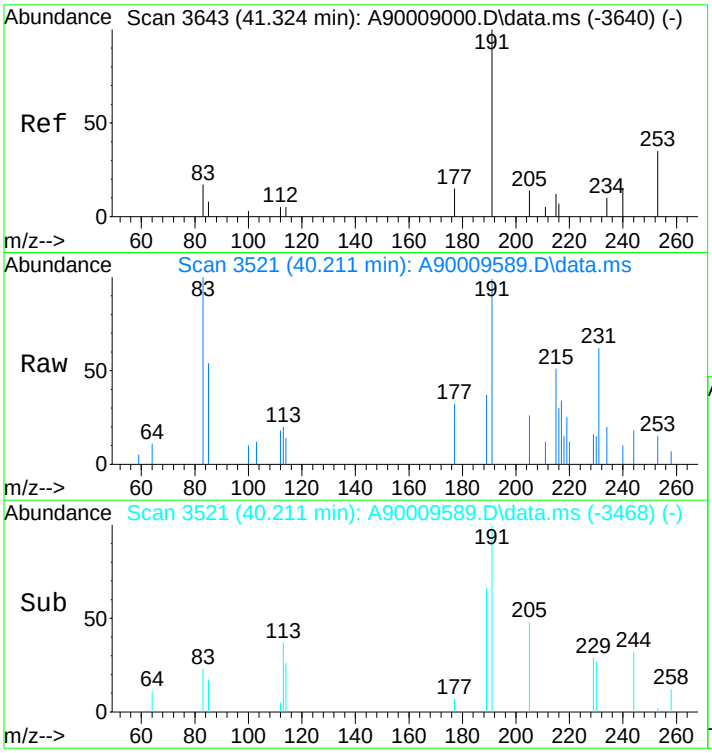


#94
Hopane (T19)
Concen: 221.18 ng/mL m
RT: 51.316 min Scan# 4736
Delta R.T. -0.009 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:191 Resp: 23780

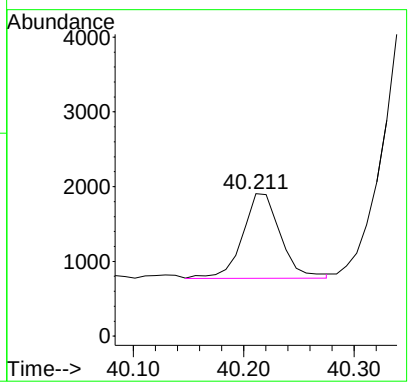
Ion	Ratio	Lower	Upper
191	100		
177	0.5	14.4	21.6#

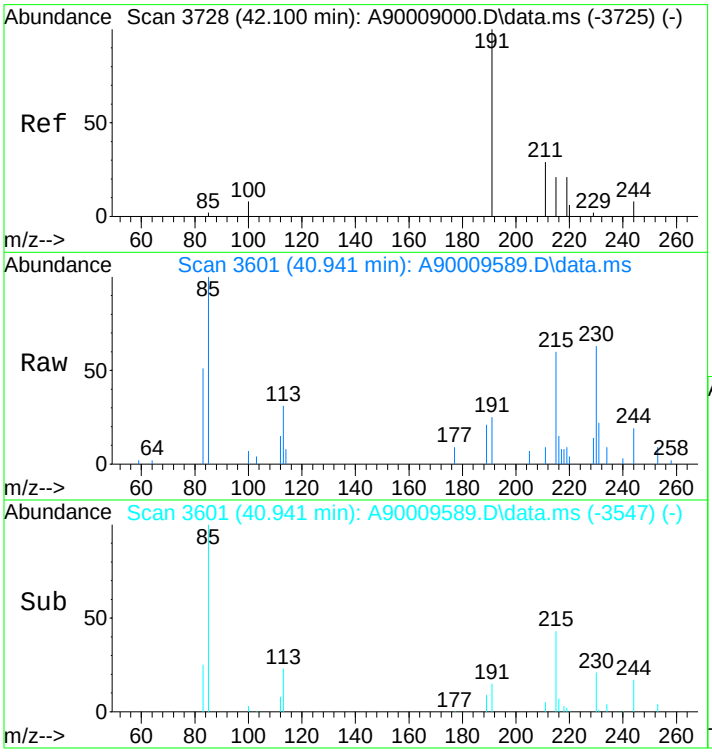




#96
C23 Tricyclic Terpane (T4)
Concen: 25.22 ng/ml
RT: 40.211 min Scan# 3521
Delta R.T. -0.018 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

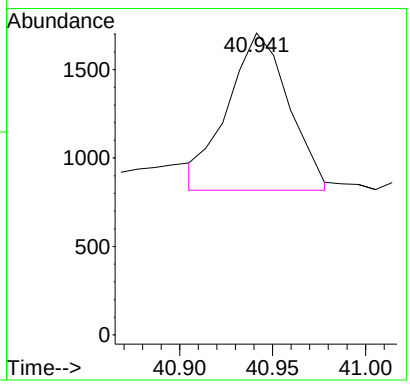
Tgt Ion:191 Resp: 2711

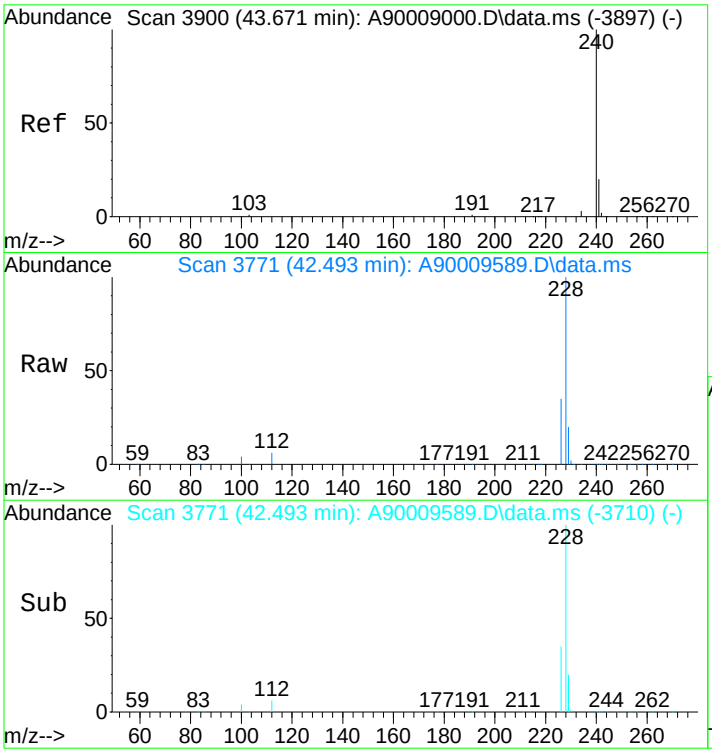




#97
C24 Tricyclic Terpane (T5)
Concen: 18.83 ng/ml m
RT: 40.941 min Scan# 3601
Delta R.T. -0.009 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

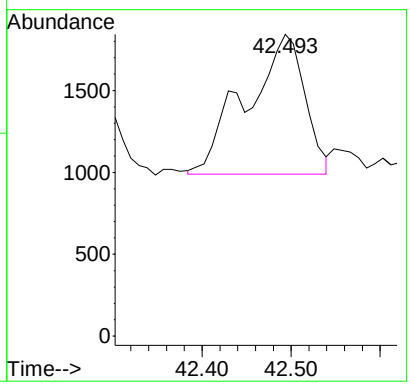
Tgt Ion:191 Resp: 2025

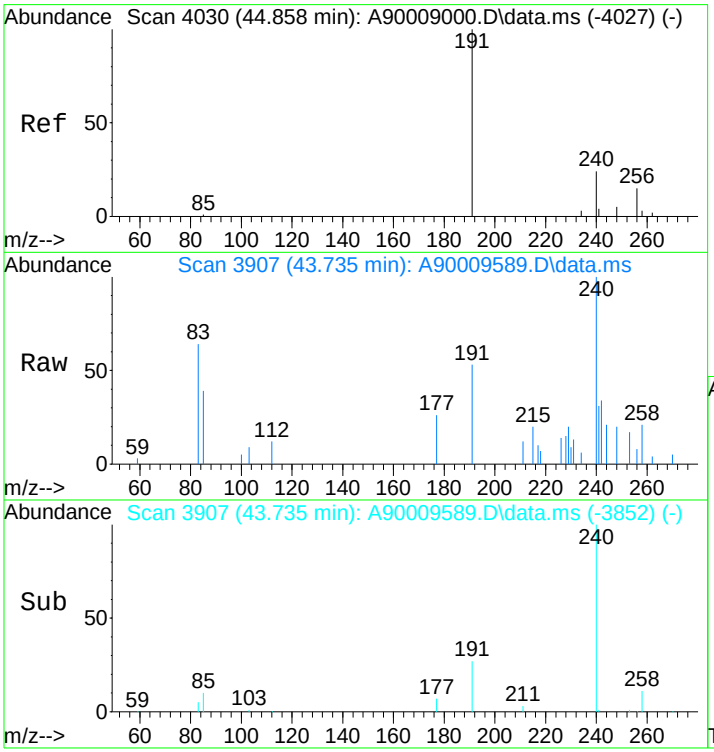




#98
C25 Tricyclic Terpane (T6)
Concen: 36.30 ng/ml m
RT: 42.493 min Scan# 3771
Delta R.T. 0.055 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

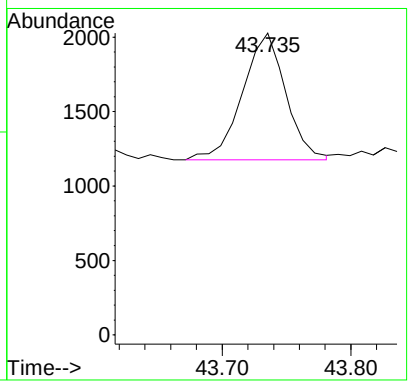
Tgt Ion:191 Resp: 3903

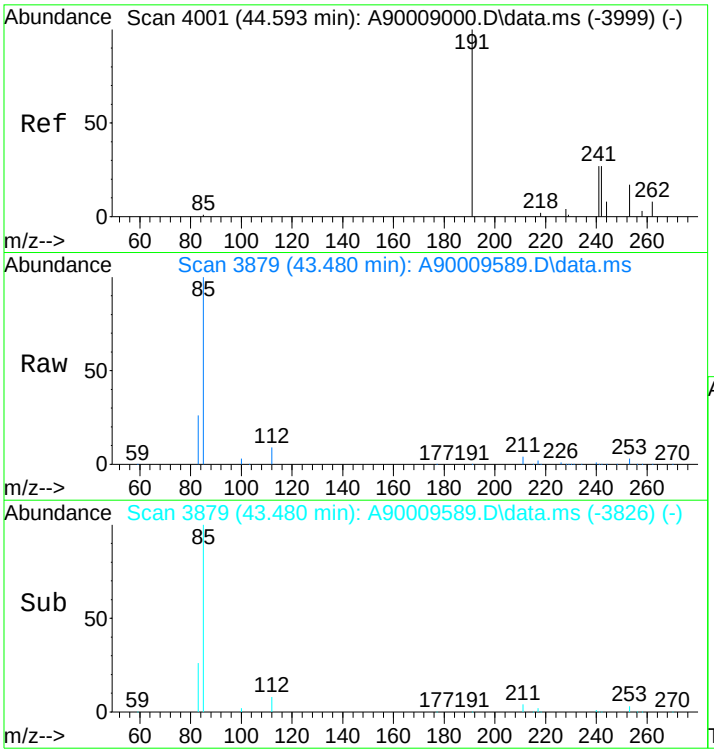




#99
C24 Tetracyclic Terpane (T6a)
Concen: 18.51 ng/ml
RT: 43.735 min Scan# 3907
Delta R.T. 0.000 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

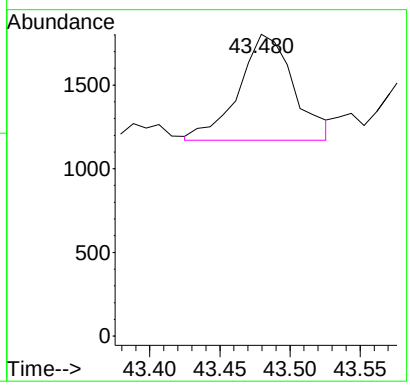
Tgt Ion:191 Resp: 1990

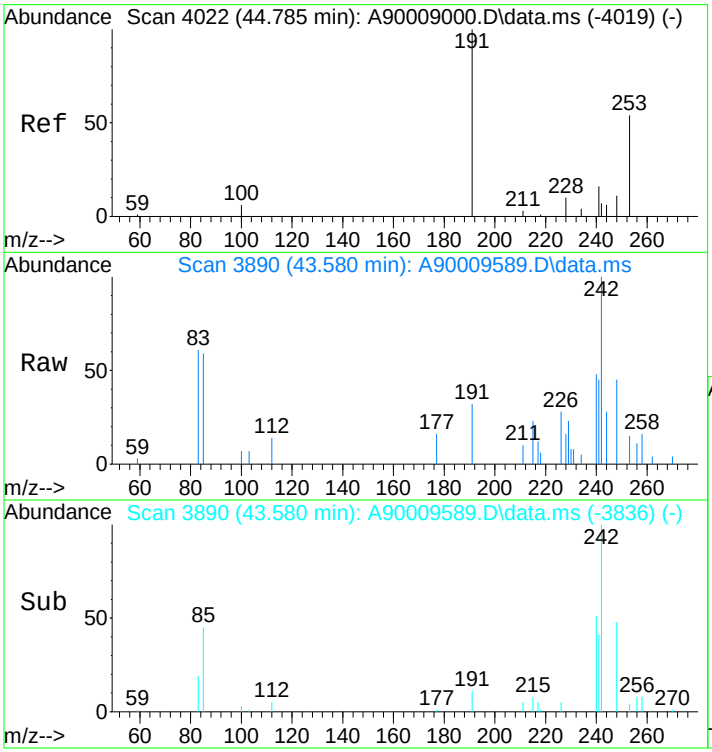




#100
C26 Tricyclic Terpane-22S (T6b)
Concen: 15.93 ng/ml m
RT: 43.480 min Scan# 3879
Delta R.T. -0.018 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

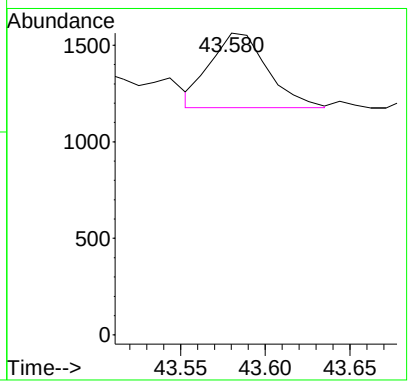
Tgt Ion:191 Resp: 1713

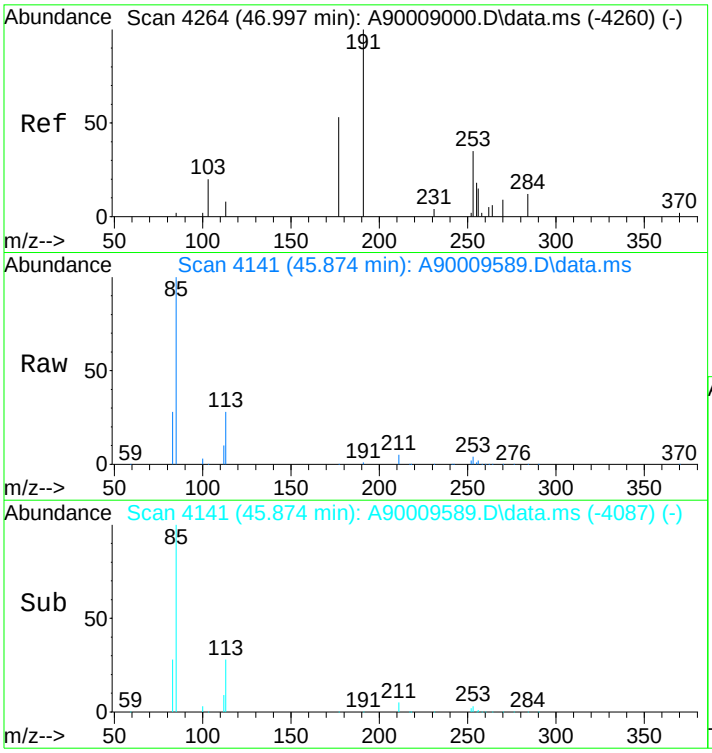




#101
C26 Tricyclic Terpane-22R (T6c)
Concen: 8.47 ng/ml m
RT: 43.580 min Scan# 3890
Delta R.T. -0.009 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

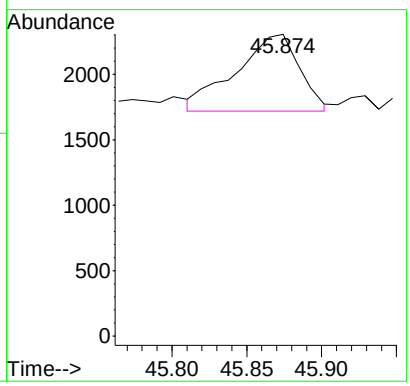
Tgt Ion:191 Resp: 911

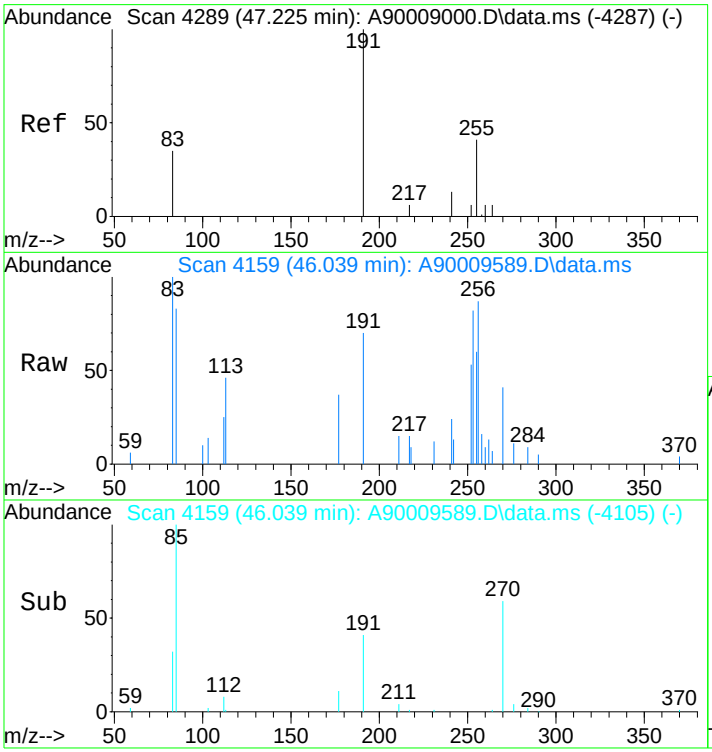




#102
C28 Tricyclic Terpane-22S (T7)
Concen: 16.12 ng/ml m
RT: 45.874 min Scan# 4141
Delta R.T. -0.009 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

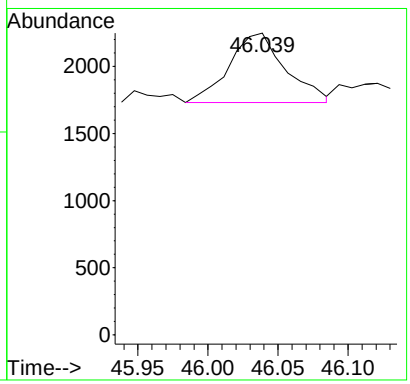
Tgt Ion:191 Resp: 1733

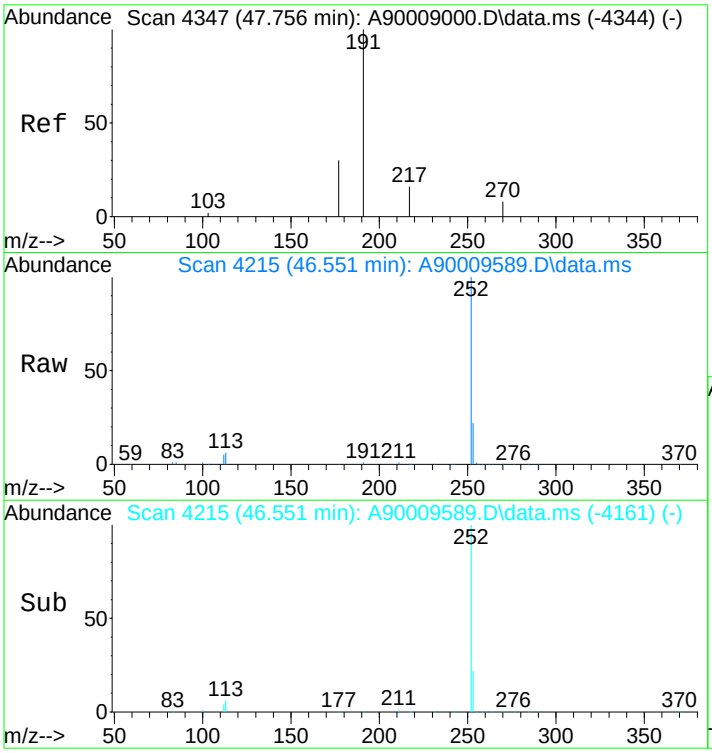




#103
C28 Tricyclic Terpane-22R (T8)
Concen: 13.57 ng/ml
RT: 46.039 min Scan# 4159
Delta R.T. -0.009 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

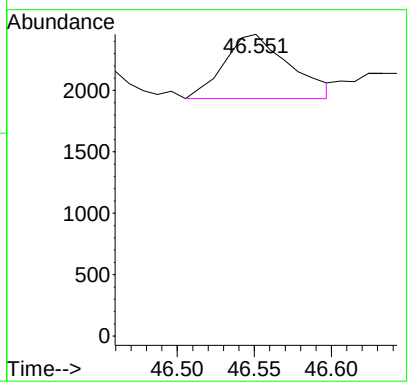
Tgt Ion:191 Resp: 1459

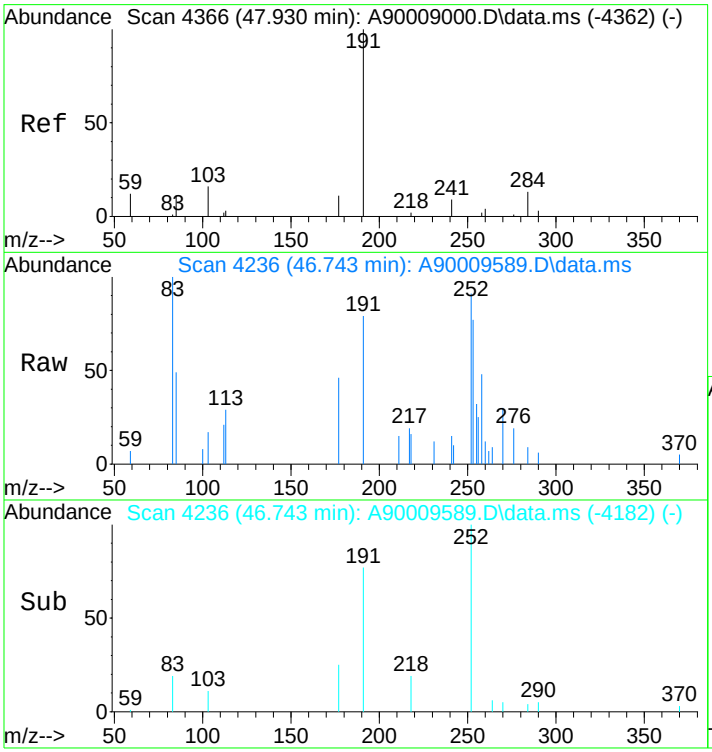




#104
C29 Tricyclic Terpane-22S (T9)
Concen: 14.51 ng/ml
RT: 46.551 min Scan# 4215
Delta R.T. -0.009 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

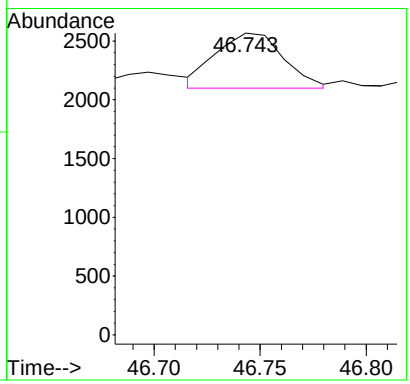
Tgt Ion:191 Resp: 1560

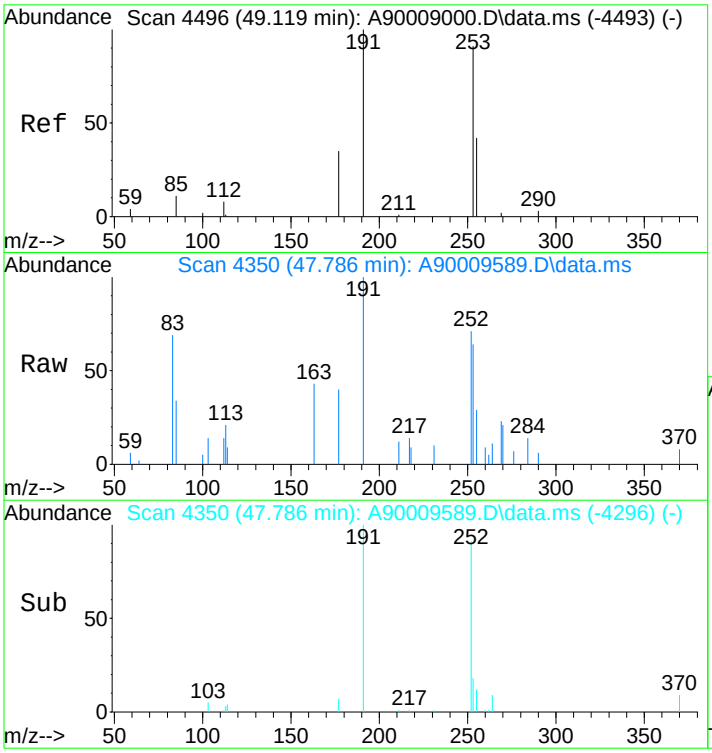




#105
C29 Tricyclic Terpane-22R (T10)
Concen: 9.72 ng/ml m
RT: 46.743 min Scan# 4236
Delta R.T. -0.009 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

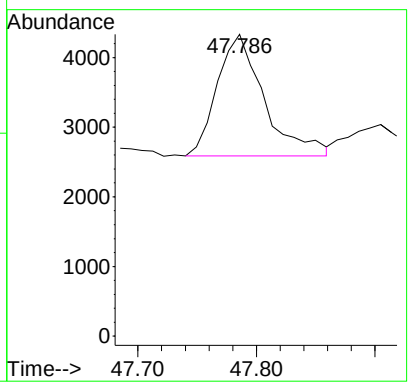
Tgt Ion:191 Resp: 1045

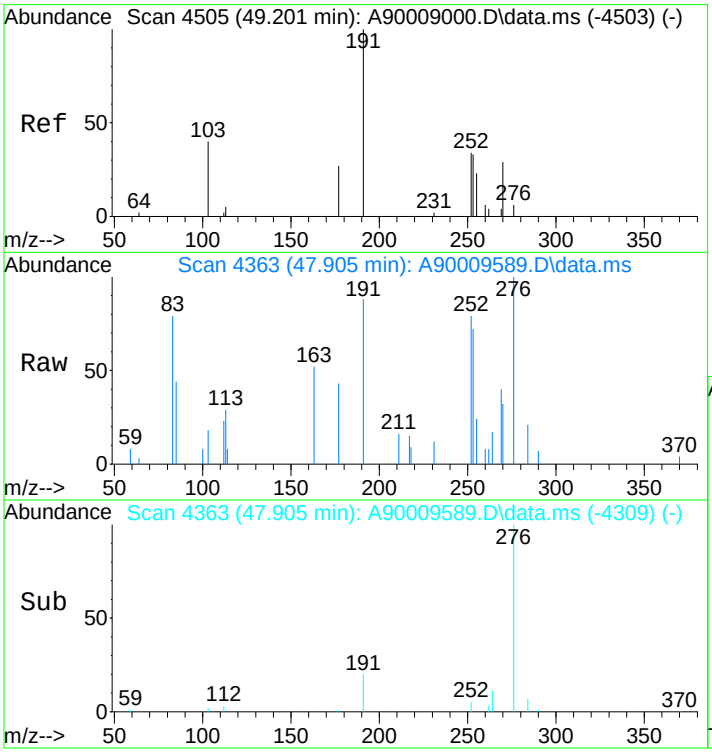




#106
18a-22,29,30-Trisnorneohopane-TS (T11)
Concen: 44.79 ng/ml
RT: 47.786 min Scan# 4350
Delta R.T. -0.009 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

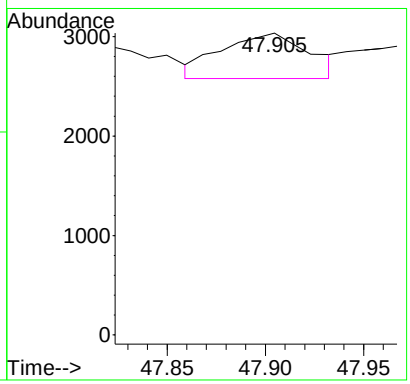
Tgt Ion:191 Resp: 4816

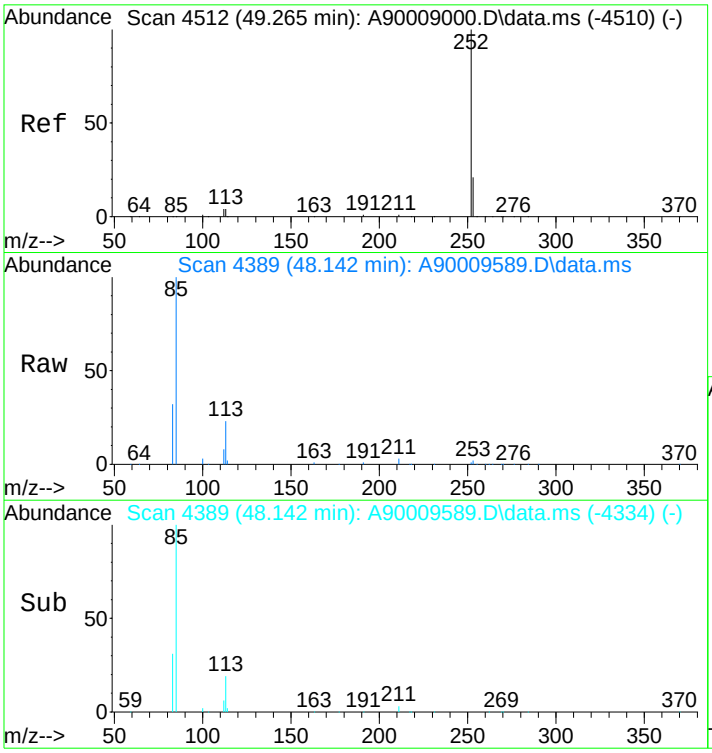




#107
C30 Tricyclic Terpane-22S
Concen: 13.19 ng/mL m
RT: 47.905 min Scan# 4363
Delta R.T. -0.009 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

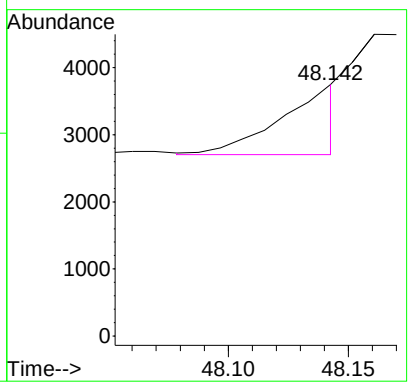
Tgt Ion:191 Resp: 1418

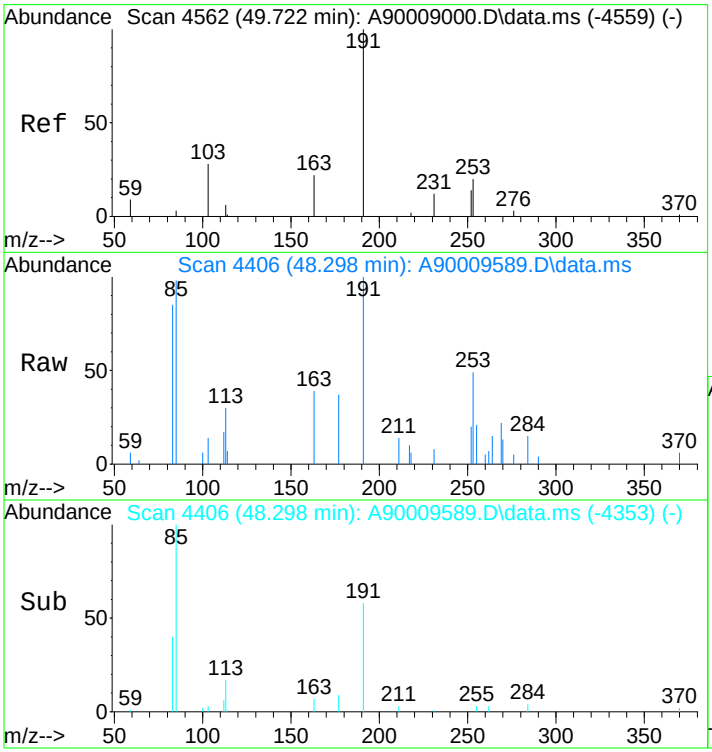




#108
C30 Tricyclic Terpane-22R
Concen: 16.12 ng/mL m
RT: 48.142 min Scan# 4389
Delta R.T. 0.000 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

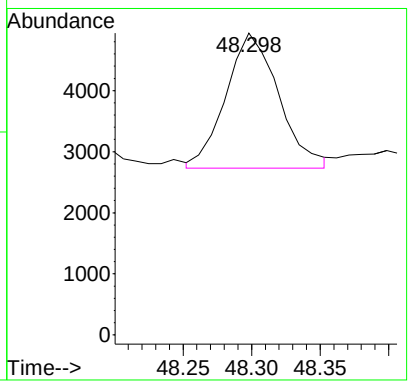
Tgt Ion:191 Resp: 1733

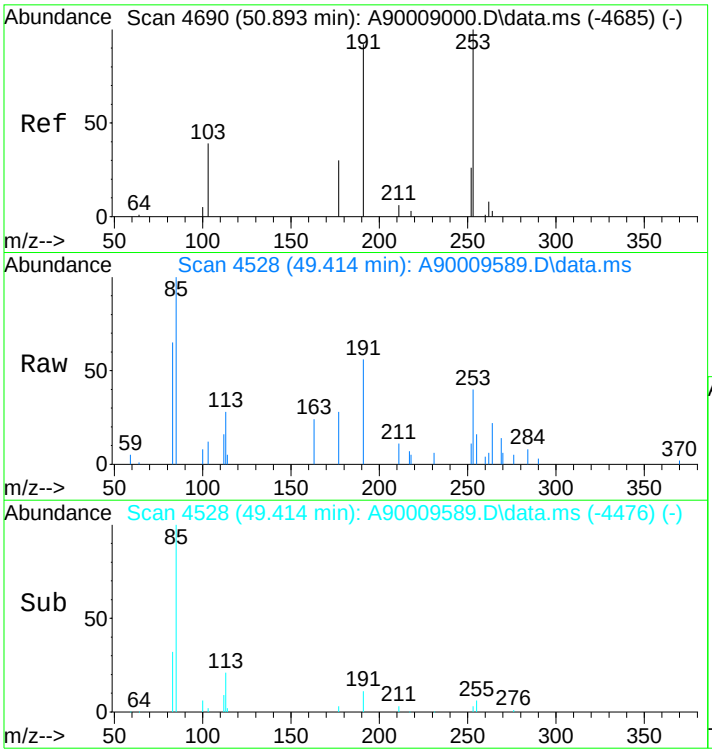




#109
17a(H)-22,29,30-Trisnorhopane-TM (T12)
Concen: 55.19 ng/ml m
RT: 48.298 min Scan# 4406
Delta R.T. -0.018 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

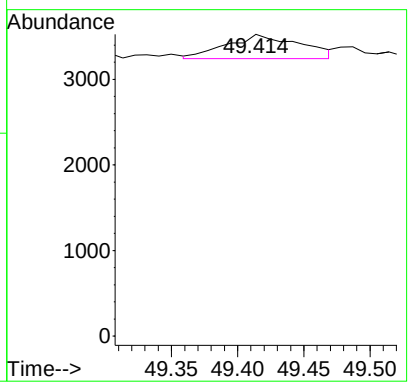
Tgt Ion:191 Resp: 5934

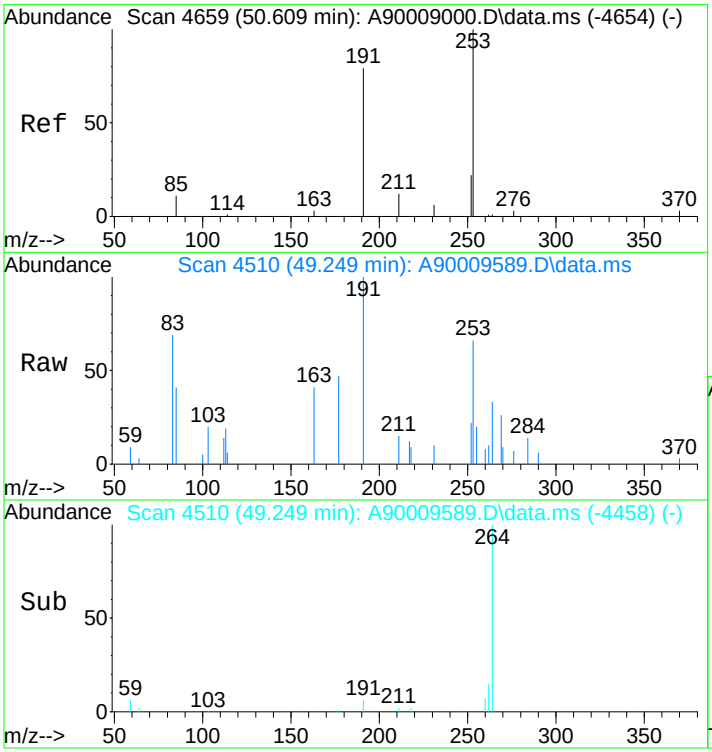




#110
17a/b,21b/a 28,30-Bisnorhopane (T14a)
Concen: 9.99 ng/ml m
RT: 49.414 min Scan# 4528
Delta R.T. -0.027 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

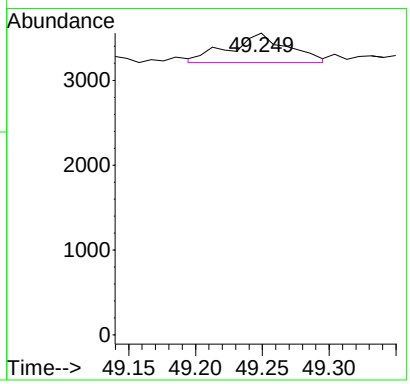
Tgt Ion:191 Resp: 1074

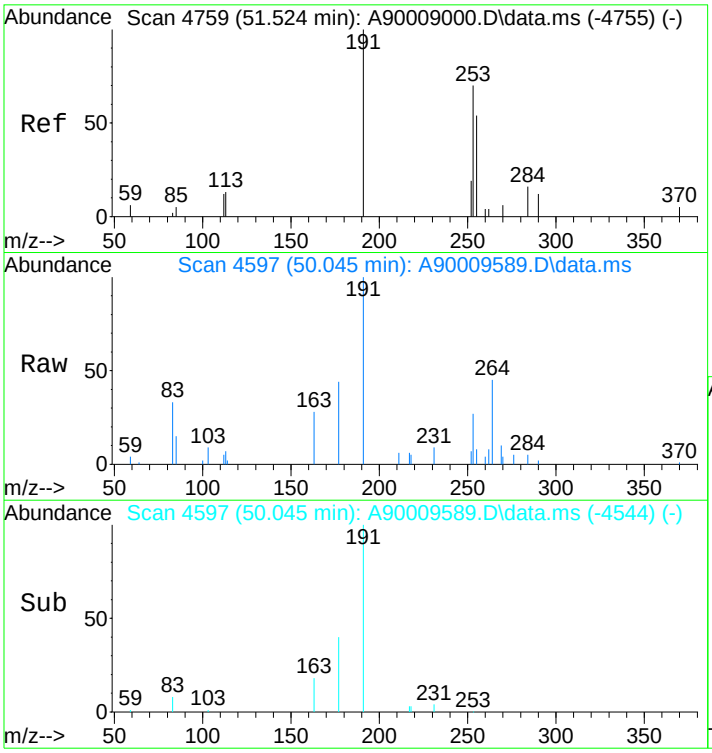




#111
17a(H),21b(H)-25-Norhopane (T14b)
Concen: 9.60 ng/ml m
RT: 49.249 min Scan# 4510
Delta R.T. -0.027 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

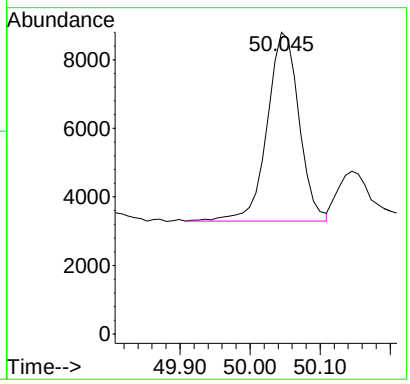
Tgt Ion:191 Resp: 1032

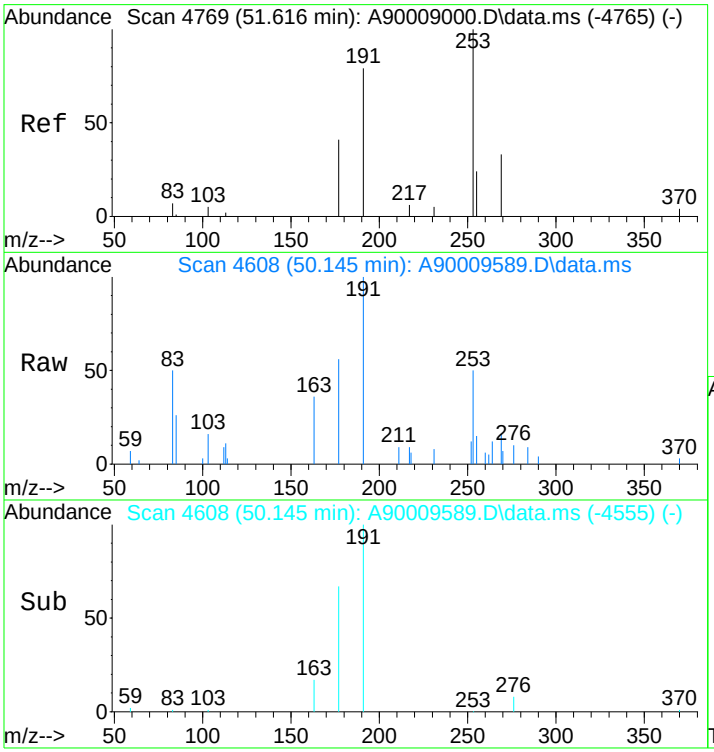




#112
30-Norhopane (T15)
Concen: 162.51 ng/ml
RT: 50.045 min Scan# 4597
Delta R.T. -0.018 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

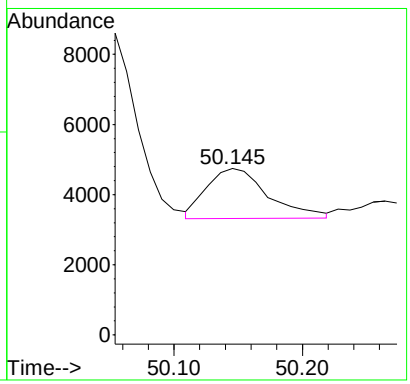
Tgt Ion:191 Resp: 17472

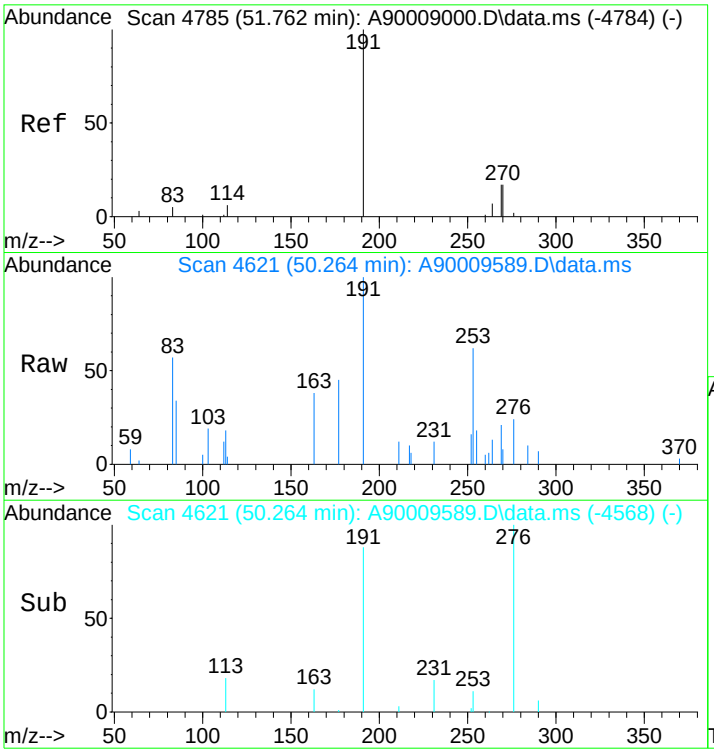




#113
18a(H)-30-Norneohopane-C29Ts (T16)
Concen: 44.11 ng/ml
RT: 50.145 min Scan# 4608
Delta R.T. -0.018 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

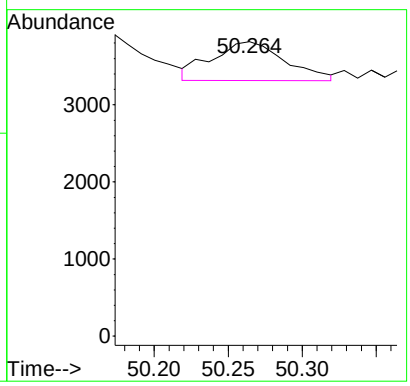
Tgt Ion:191 Resp: 4742

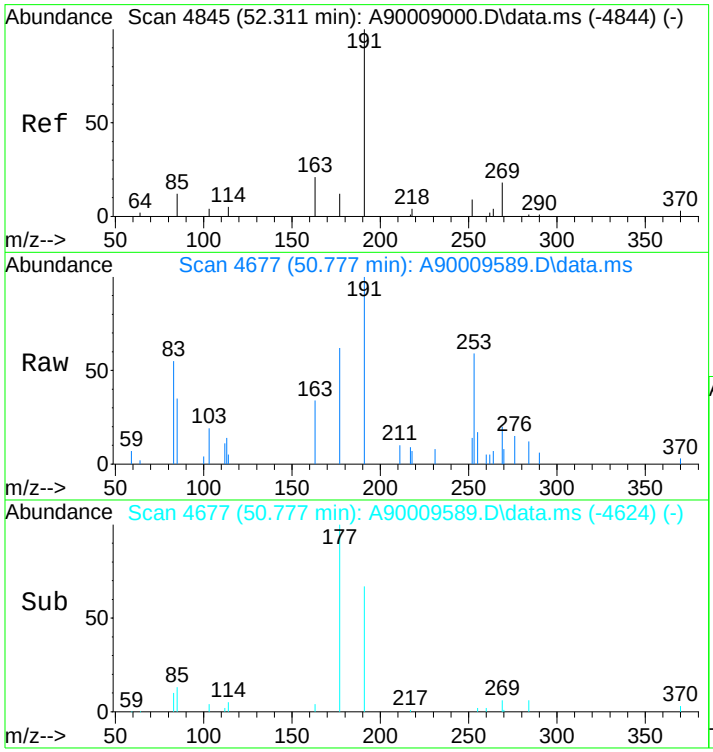




#114
17a(H)-Diahopane (X)
Concen: 16.12 ng/ml m
RT: 50.264 min Scan# 4621
Delta R.T. -0.018 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

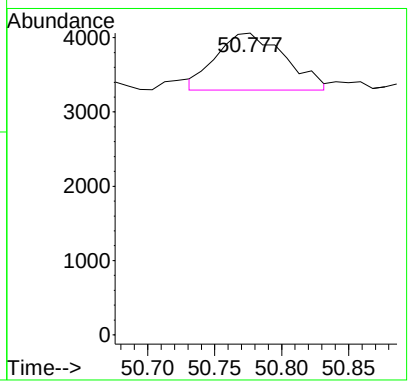
Tgt Ion:191 Resp: 1733

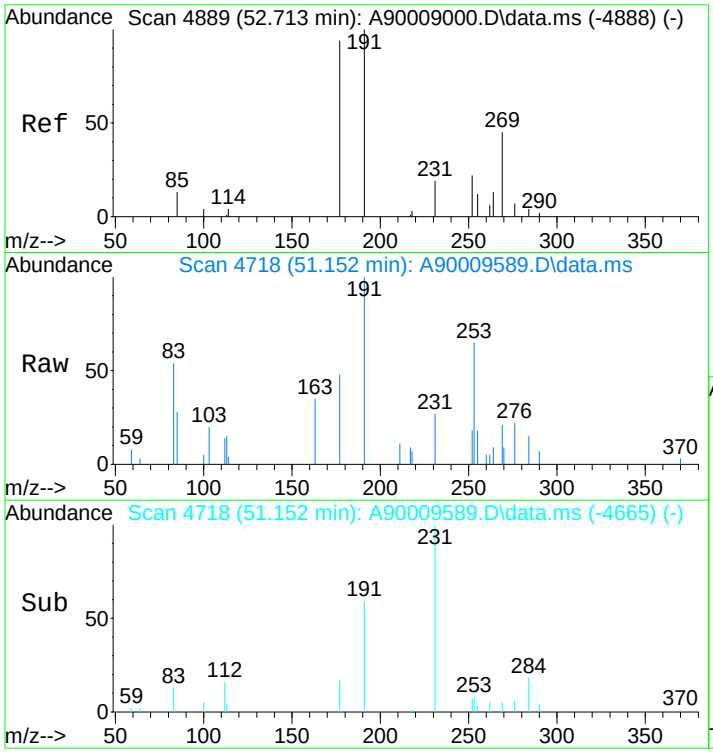




#115
30-Normoretane (T17)
Concen: 25.62 ng/ml m
RT: 50.777 min Scan# 4677
Delta R.T. -0.018 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

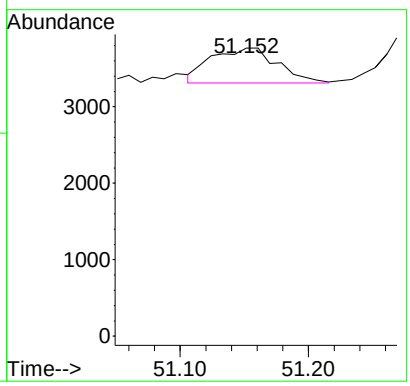
Tgt Ion:191 Resp: 2754

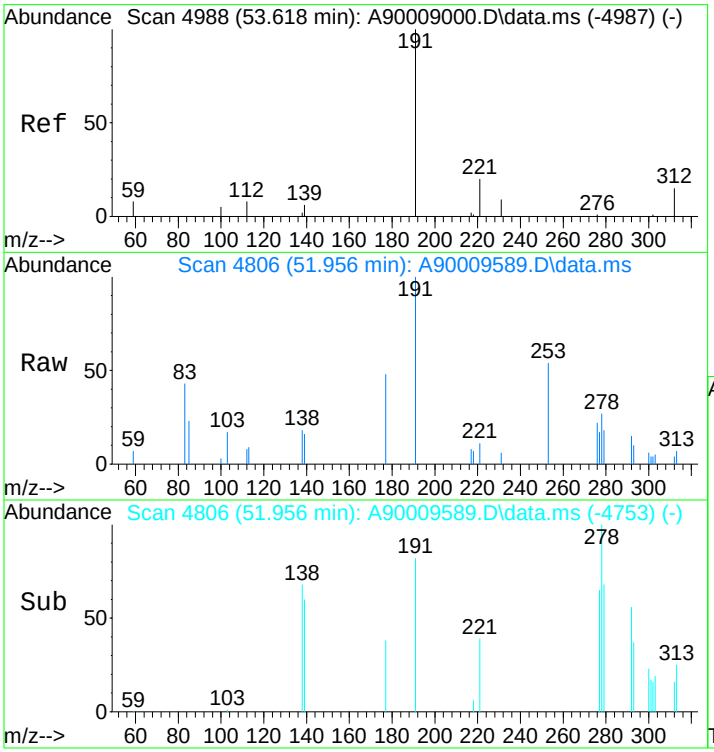




#116
18a(H)&18b(H)-Oleananes (T18)
Concen: 15.48 ng/ml m
RT: 51.152 min Scan# 4718
Delta R.T. -0.018 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

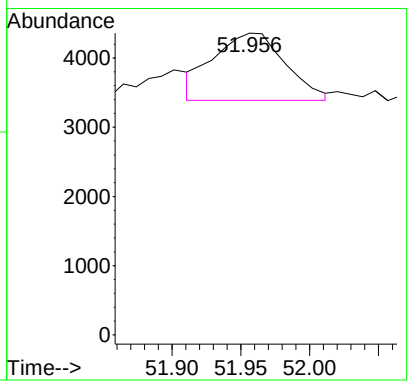
Tgt Ion:191 Resp: 1664

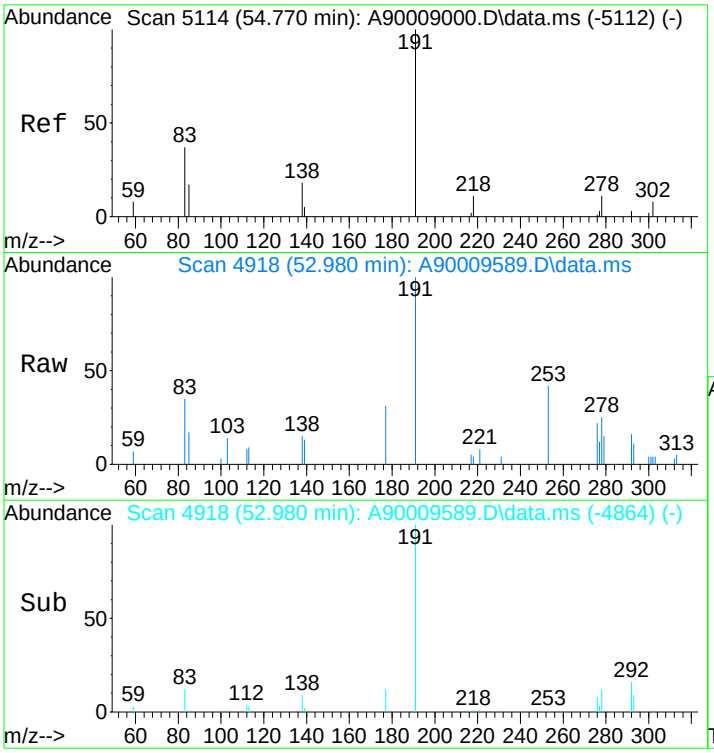




#117
Moretane (T20)
Concen: 32.81 ng/ml m
RT: 51.956 min Scan# 4806
Delta R.T. -0.018 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

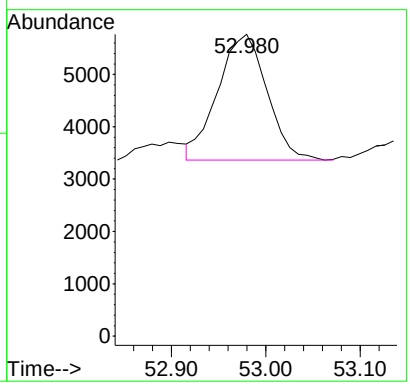
Tgt Ion:191 Resp: 3528

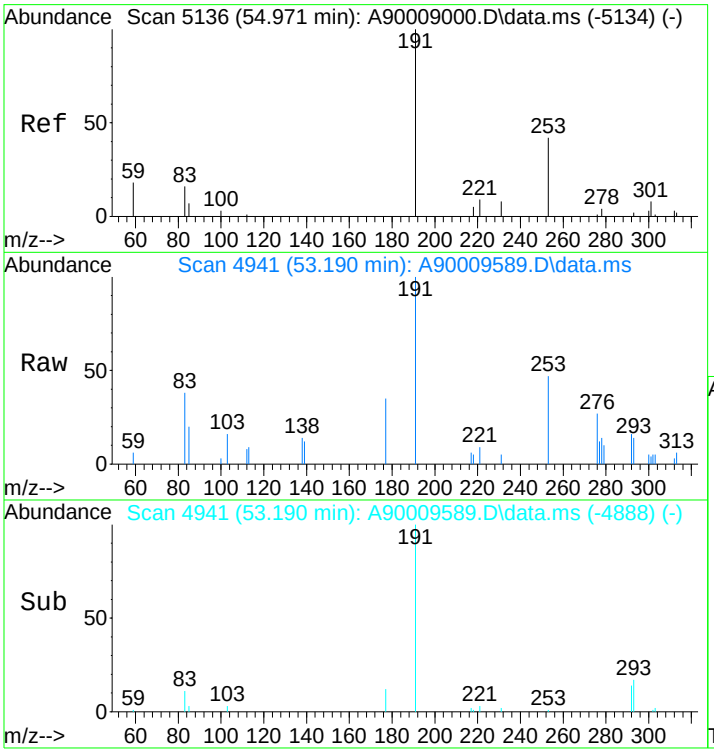




#118
30-Homohopane-22S (T21)
Concen: 80.41 ng/ml m
RT: 52.980 min Scan# 4918
Delta R.T. -0.009 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

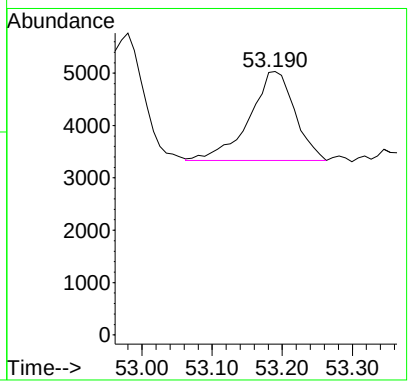
Tgt Ion:191 Resp: 8645

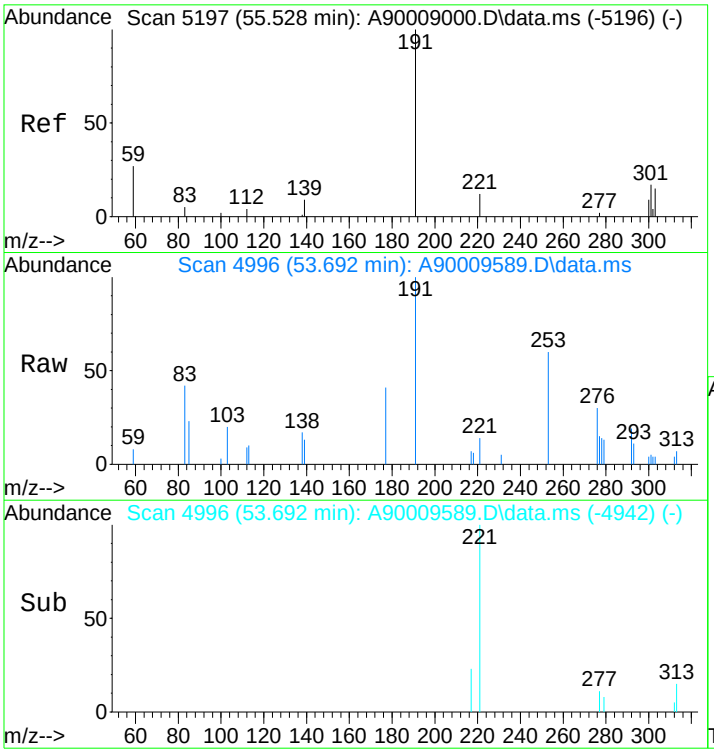




#119
30-Homohopane-22R (T22)
Concen: 71.44 ng/ml
RT: 53.190 min Scan# 4941
Delta R.T. -0.018 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

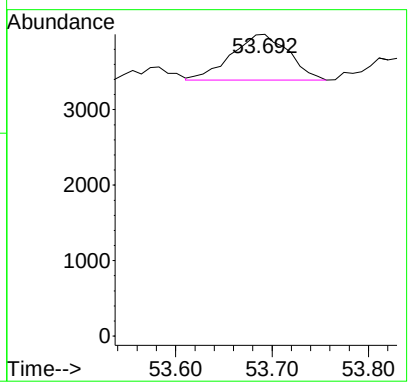
Tgt Ion:191 Resp: 7681

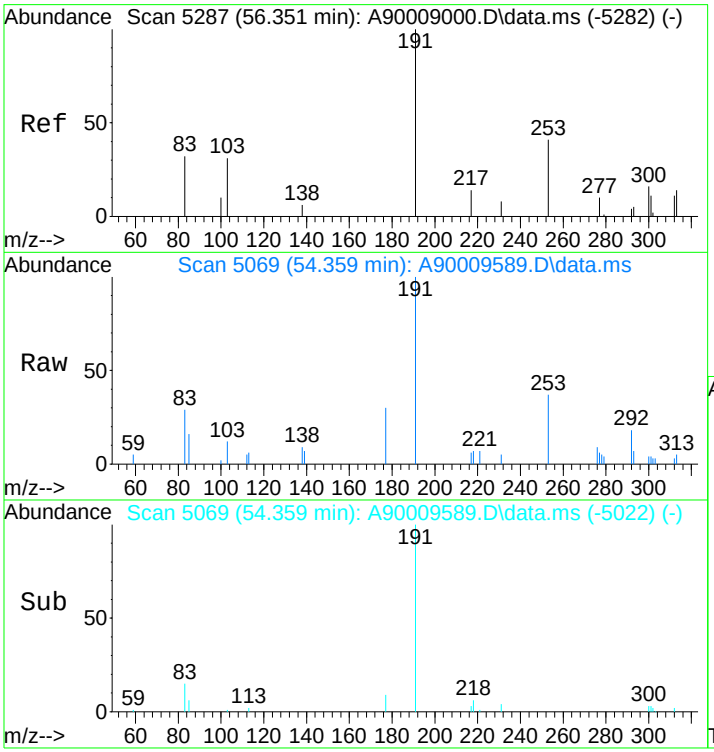




#120
Gammacerane/C32-diahopane
Concen: 23.14 ng/mL
RT: 53.692 min Scan# 4996
Delta R.T. -0.009 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

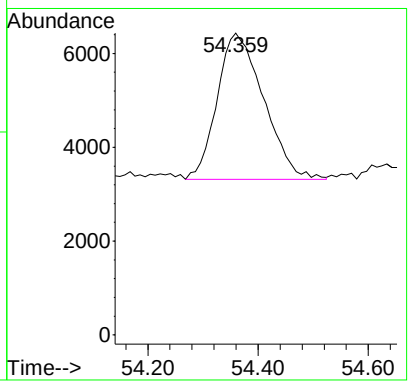
Tgt Ion:191 Resp: 2488

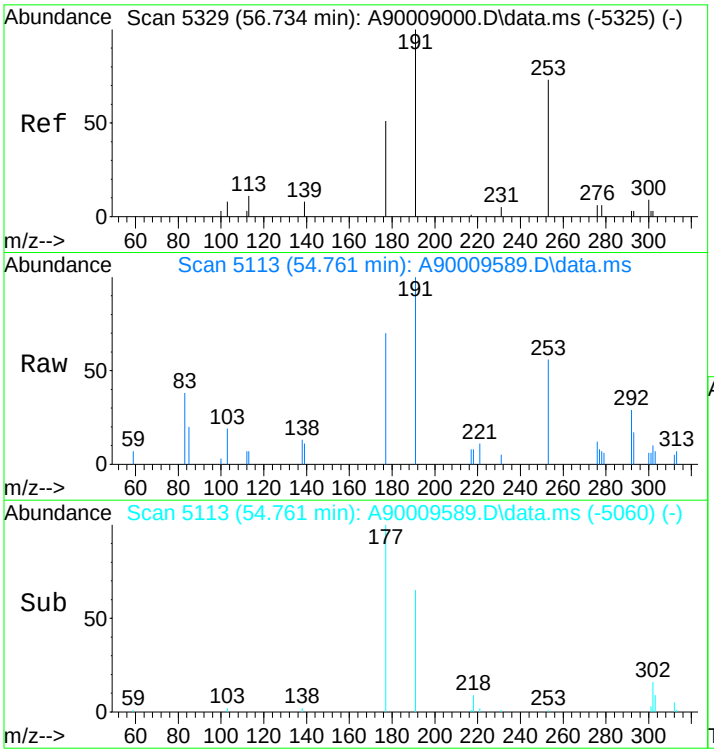




#121
30,31-Bishomohopane-22S (T26)
Concen: 170.16 ng/ml
RT: 54.359 min Scan# 5069
Delta R.T. -0.073 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

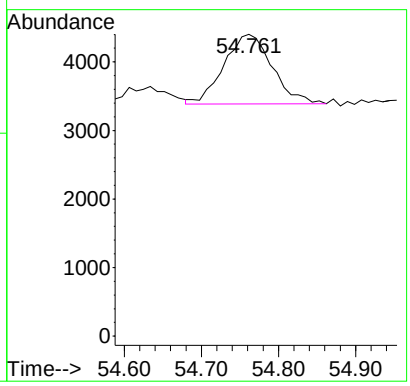
Tgt Ion:191 Resp: 18295

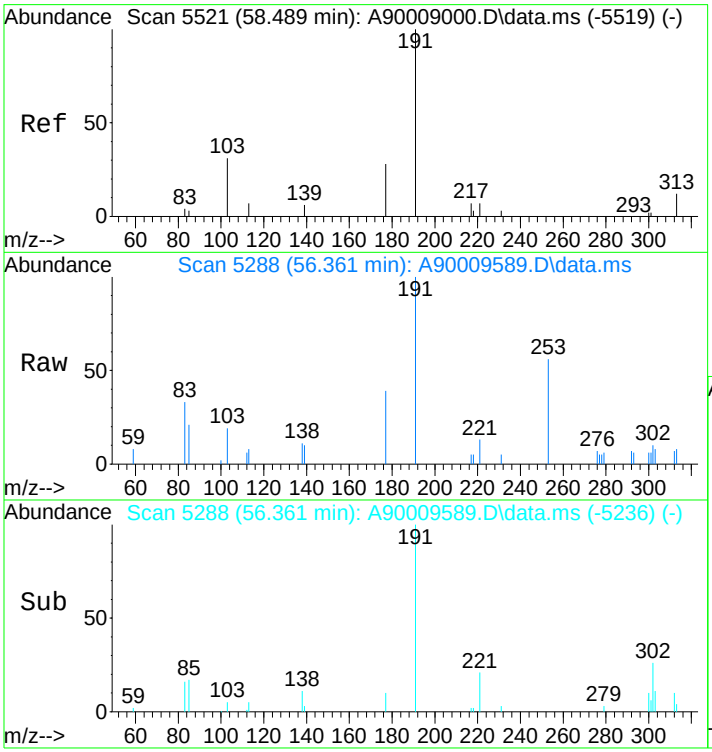




#122
30,31-Bishomohopane-22R (T27)
Concen: 40.96 ng/ml
RT: 54.761 min Scan# 5113
Delta R.T. -0.018 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

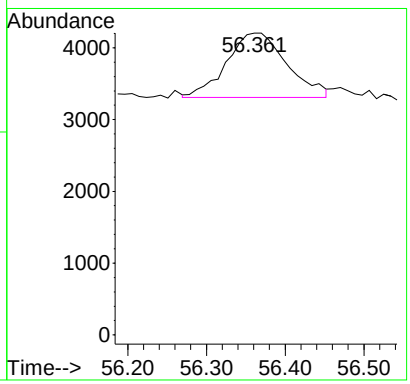
Tgt Ion:191 Resp: 4404

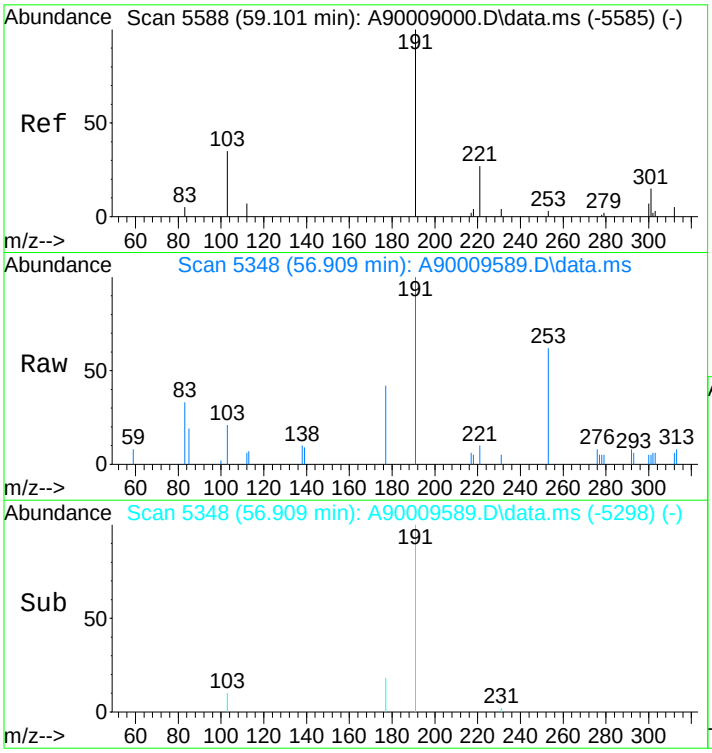




#123
30,31-Trishomohopane-22S (T30)
Concen: 44.44 ng/ml m
RT: 56.361 min Scan# 5288
Delta R.T. -0.027 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

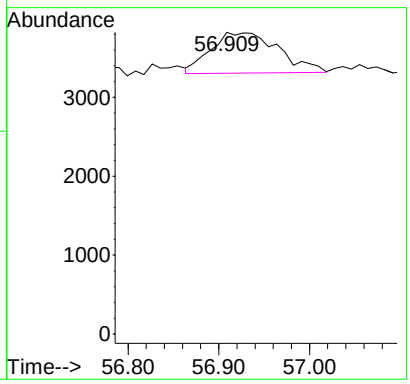
Tgt Ion:191 Resp: 4778

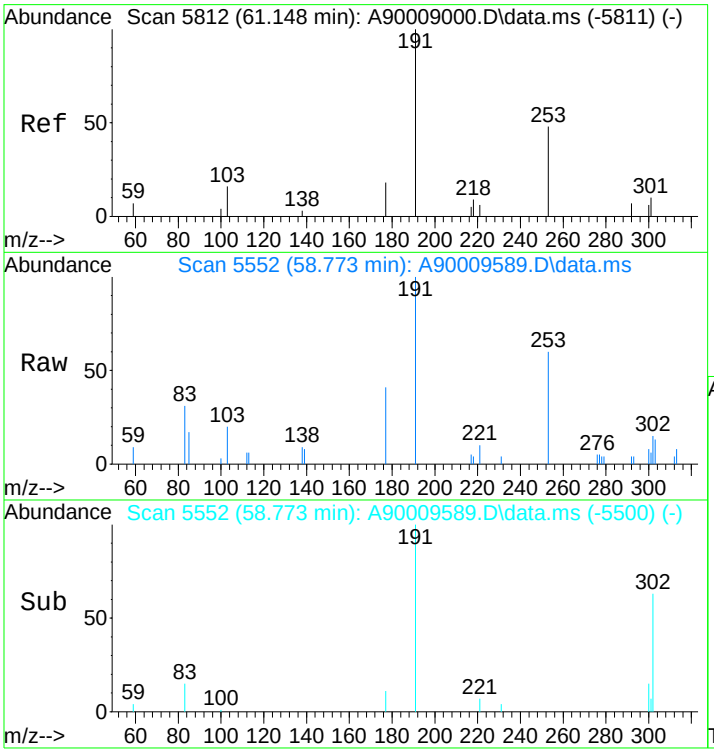




#124
30,31-Trishomohopane-22R (T31)
Concen: 24.74 ng/ml
RT: 56.909 min Scan# 5348
Delta R.T. -0.045 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

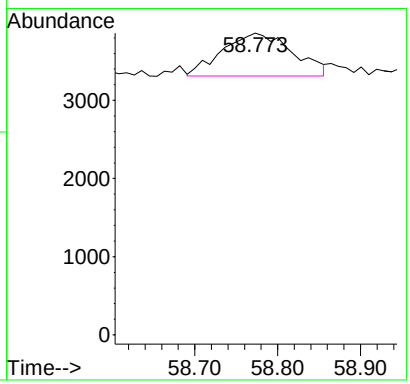
Tgt Ion:191 Resp: 2660

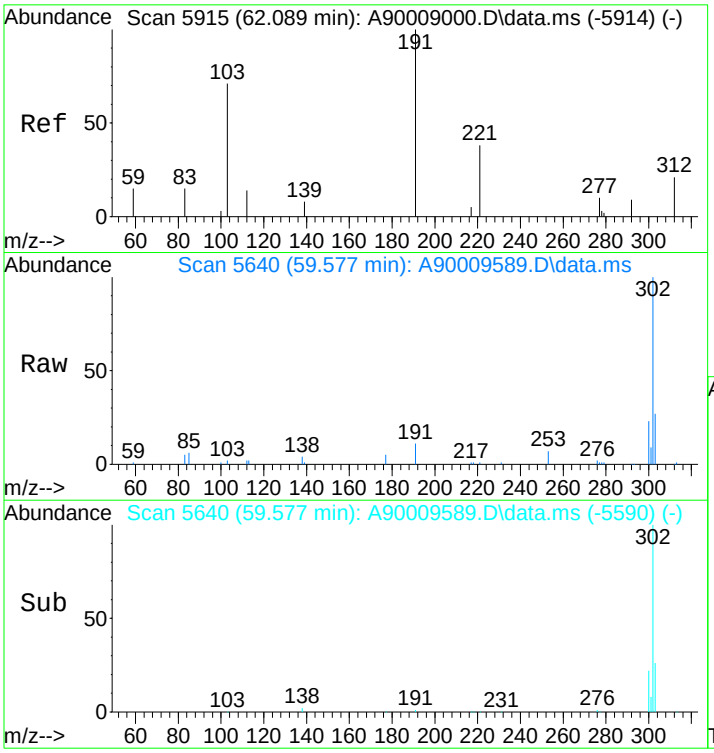




#125
Tetrakishomohopane-22S (T32)
Concen: 30.04 ng/ml m
RT: 58.773 min Scan# 5552
Delta R.T. -0.027 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

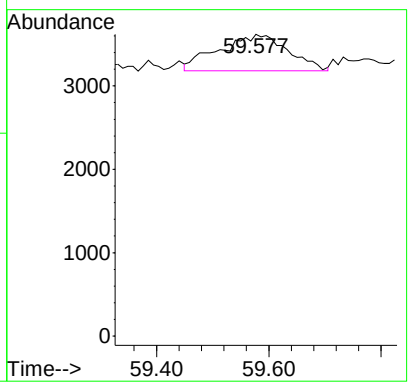
Tgt Ion:191 Resp: 3230

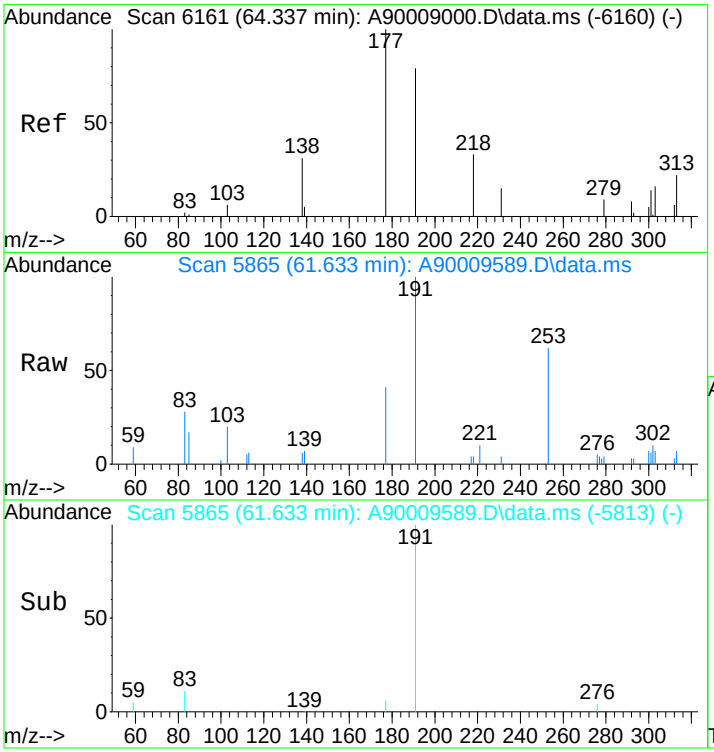




#126
Tetrakishomohopane-22R (T33)
Concen: 34.15 ng/ml m
RT: 59.577 min Scan# 5640
Delta R.T. -0.045 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

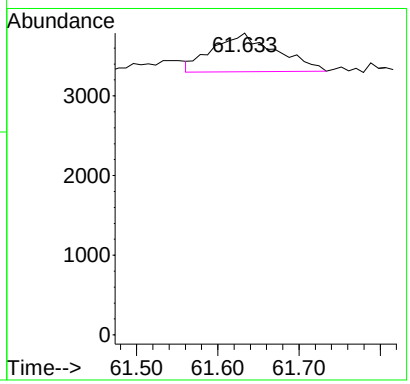
Tgt Ion:191 Resp: 3672

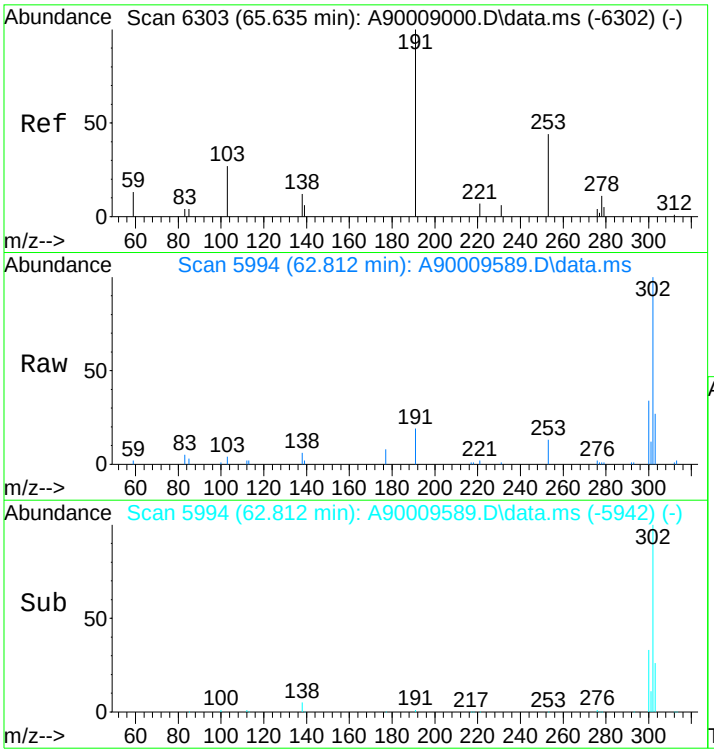




#127
Pentakishomohopane-22S (T34)
Concen: 24.19 ng/ml
RT: 61.633 min Scan# 5865
Delta R.T. -0.027 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

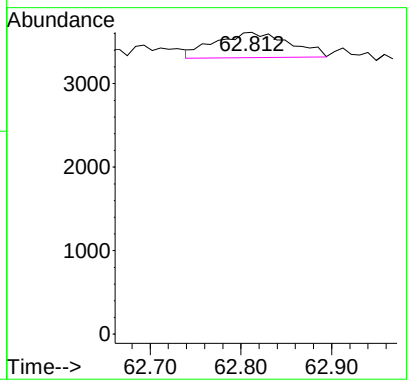
Tgt Ion:191 Resp: 2601

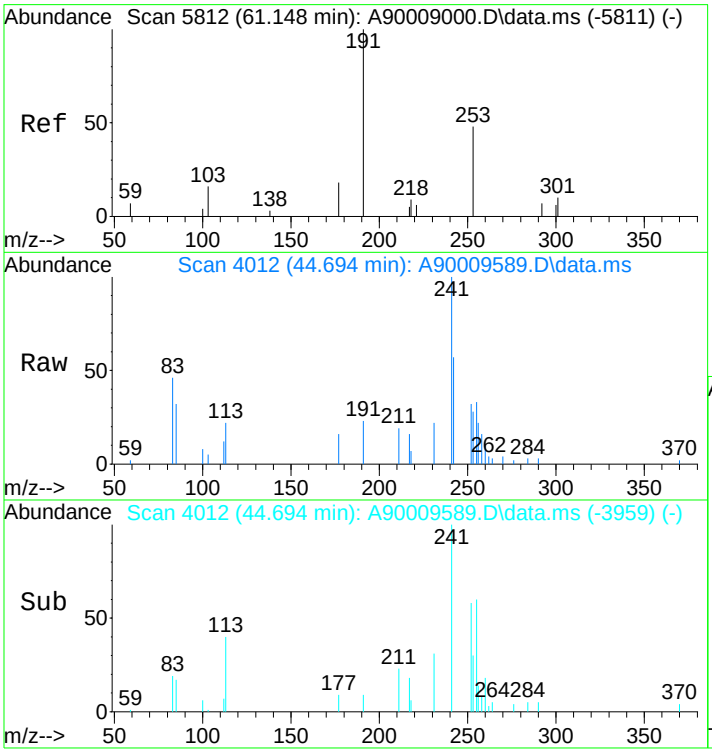




#128
Pentakishomohopane-22R (T35)
Concen: 16.11 ng/ml
RT: 62.812 min Scan# 5994
Delta R.T. -0.027 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

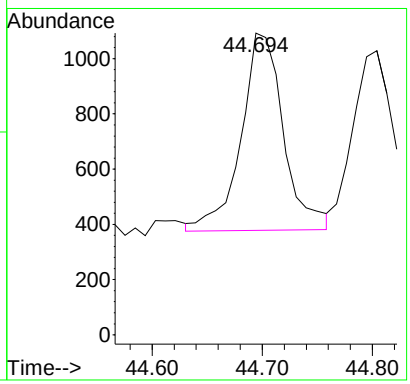
Tgt Ion:191 Resp: 1732

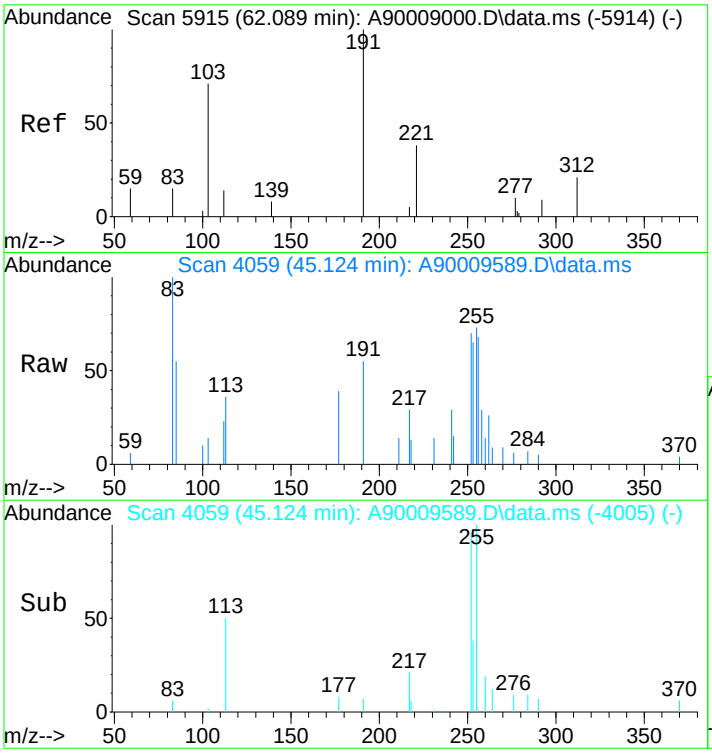




#130
13b(H),17a(H)-20S-Diacholestane (S4)
Concen: 37.42 ng/ml
RT: 44.694 min Scan# 4012
Delta R.T. -0.018 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

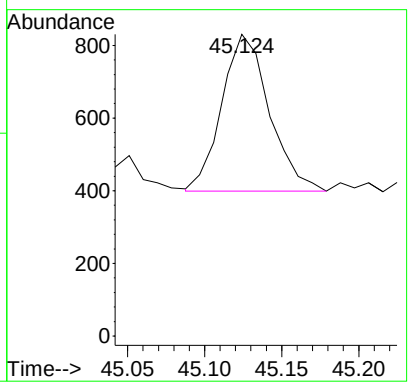
Tgt Ion:217 Resp: 1921

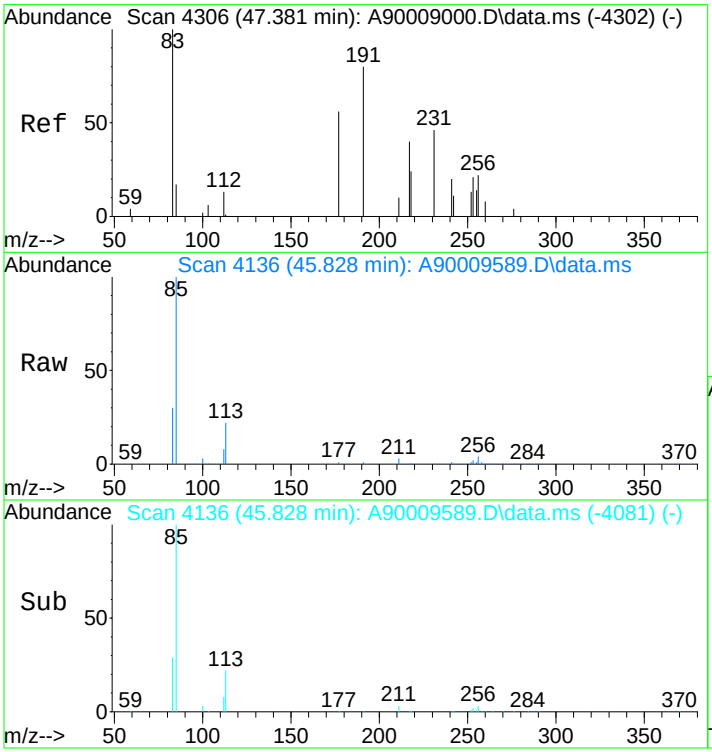




#131
13b(H),17a(H)-20R-Diacholestane (S5)
Concen: 18.10 ng/ml
RT: 45.124 min Scan# 4059
Delta R.T. -0.009 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

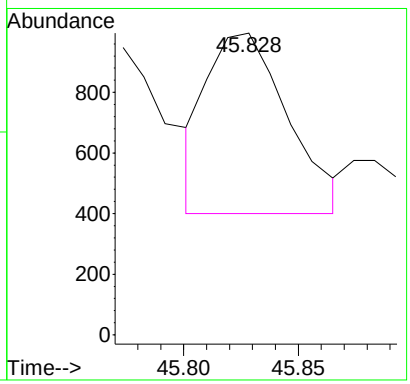
Tgt Ion:217 Resp: 929

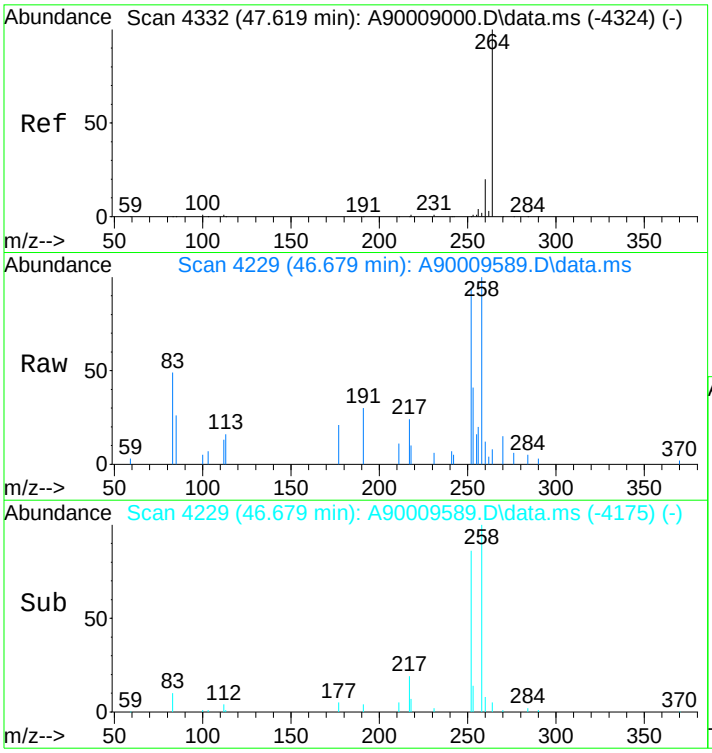




#132
13b,17a-20S-Methyldiacholestane (S8)
Concen: 28.52 ng/ml m
RT: 45.828 min Scan# 4136
Delta R.T. 0.000 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

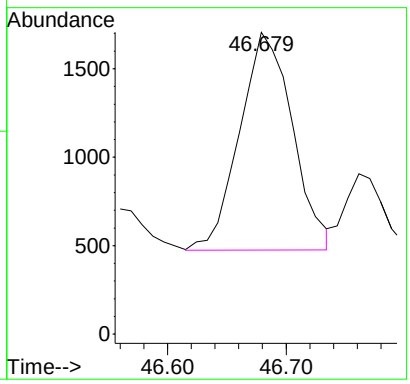
Tgt Ion:217 Resp: 1464

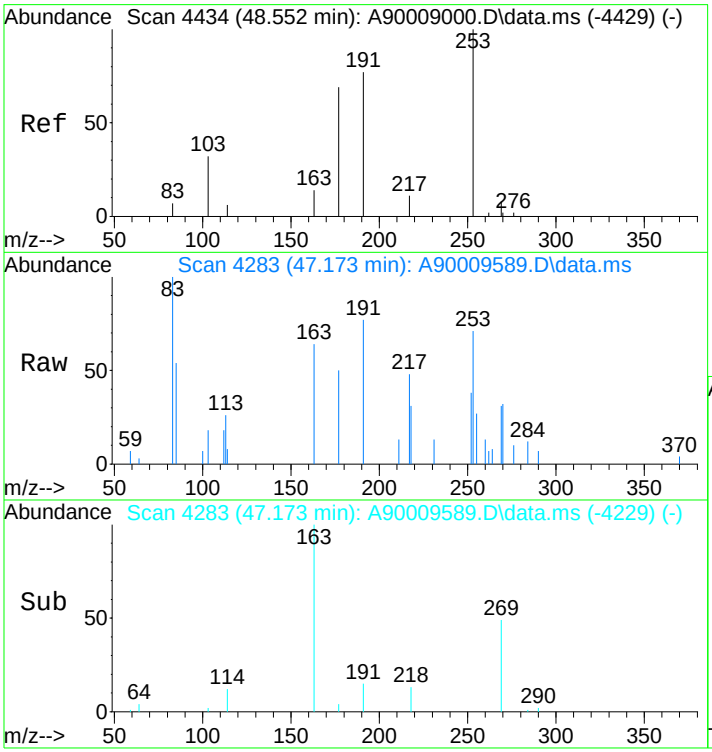




#133
14a,17a-20S-Chol/13b,17a-20S-Ethyldiach
Concen: 74.18 ng/ml
RT: 46.679 min Scan# 4229
Delta R.T. -0.009 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

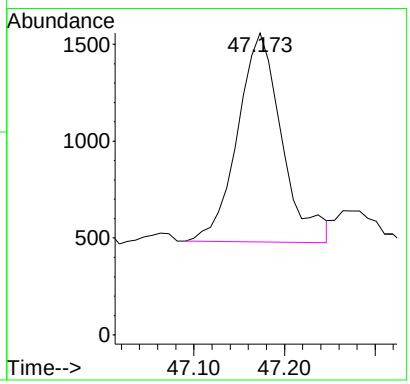
Tgt Ion:217 Resp: 3808

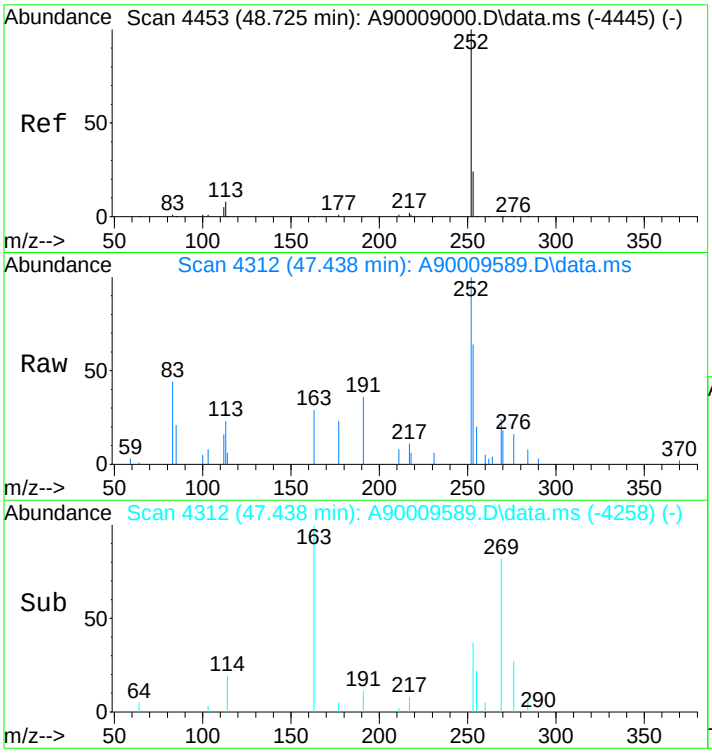




#134
14a,17a-20R-Chol/13b,17a-20R-Ethyldiach
Concen: 71.08 ng/ml
RT: 47.173 min Scan# 4283
Delta R.T. -0.009 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

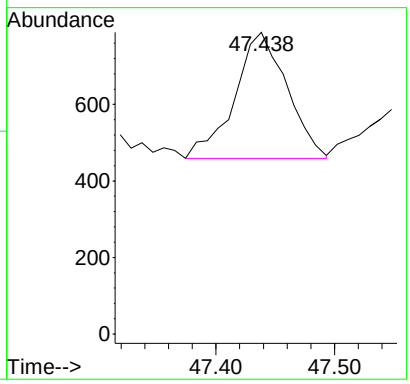
Tgt Ion:217 Resp: 3649

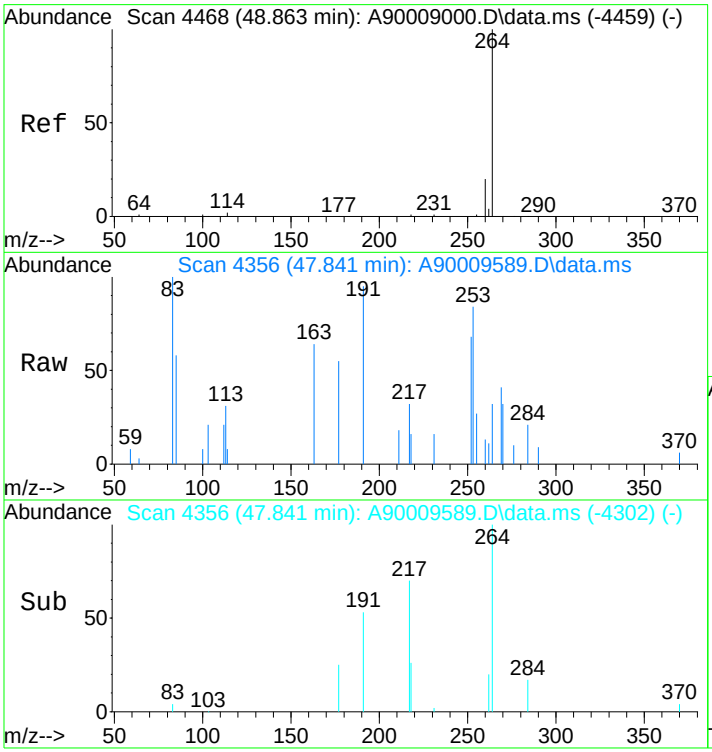




#135
Unknown Sterane (S18)
Concen: 19.71 ng/ml
RT: 47.438 min Scan# 4312
Delta R.T. -0.009 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

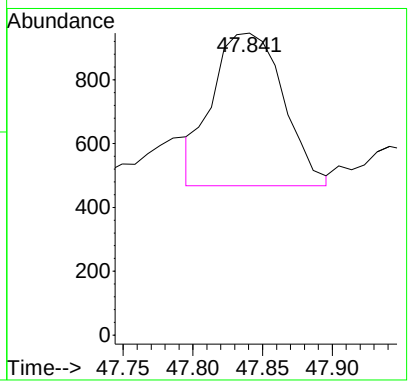
Tgt Ion:217 Resp: 1012

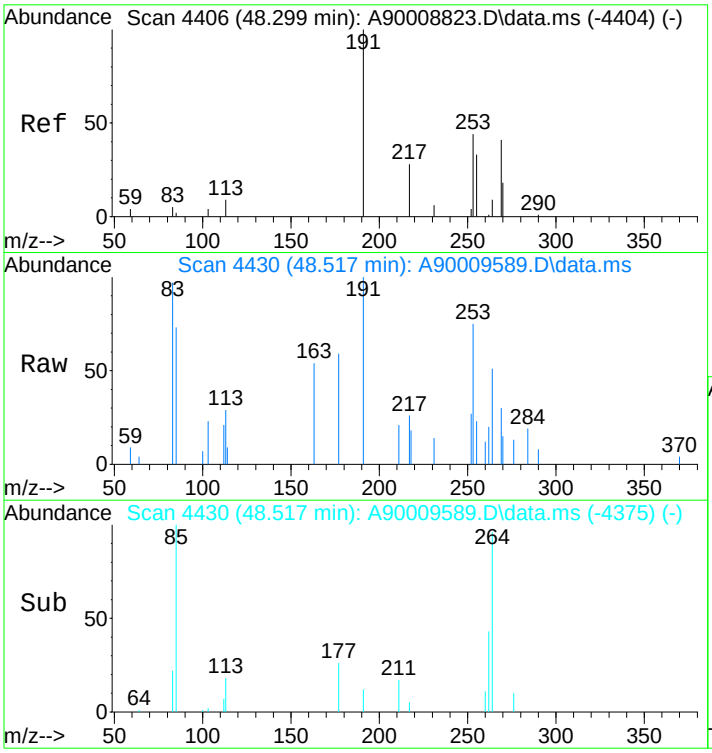




#137
14a,17a-20S-Methylcholestane (S20)
Concen: 32.94 ng/ml m
RT: 47.841 min Scan# 4356
Delta R.T. -0.009 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

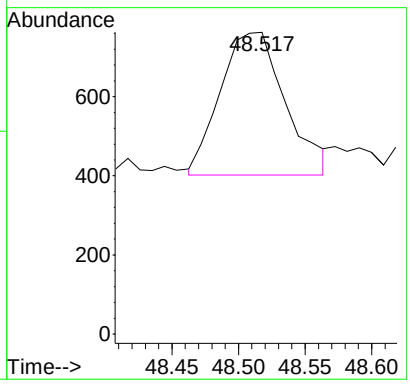
Tgt Ion:217 Resp: 1691

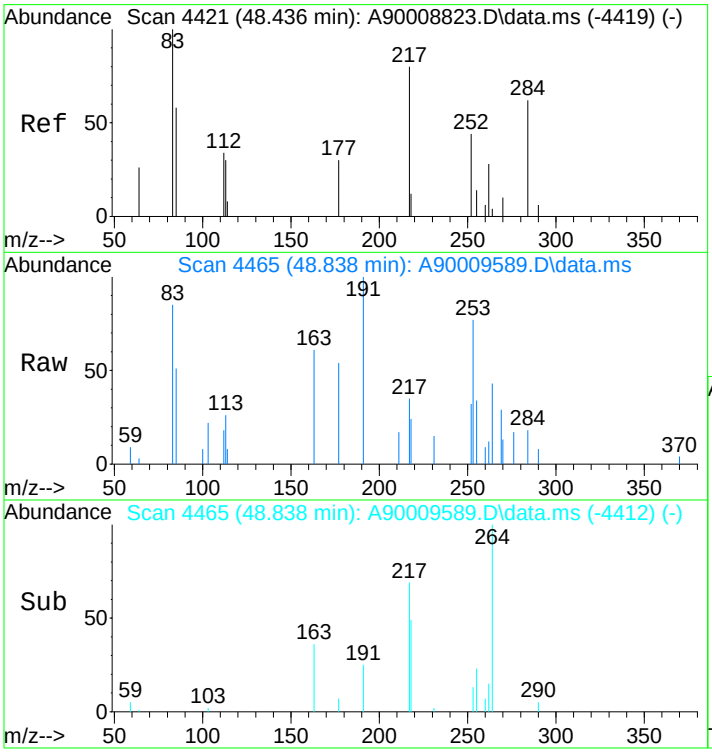




#138
14a,17a-20R-Methylcholestane (S24)
Concen: 23.80 ng/ml m
RT: 48.517 min Scan# 4430
Delta R.T. 0.000 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

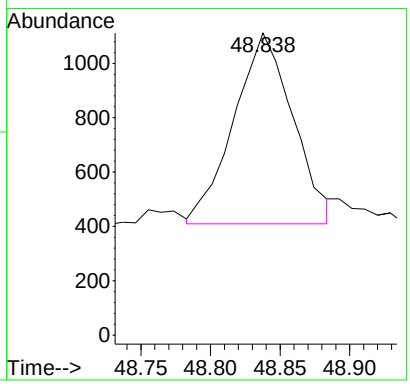
Tgt Ion:217 Resp: 1222

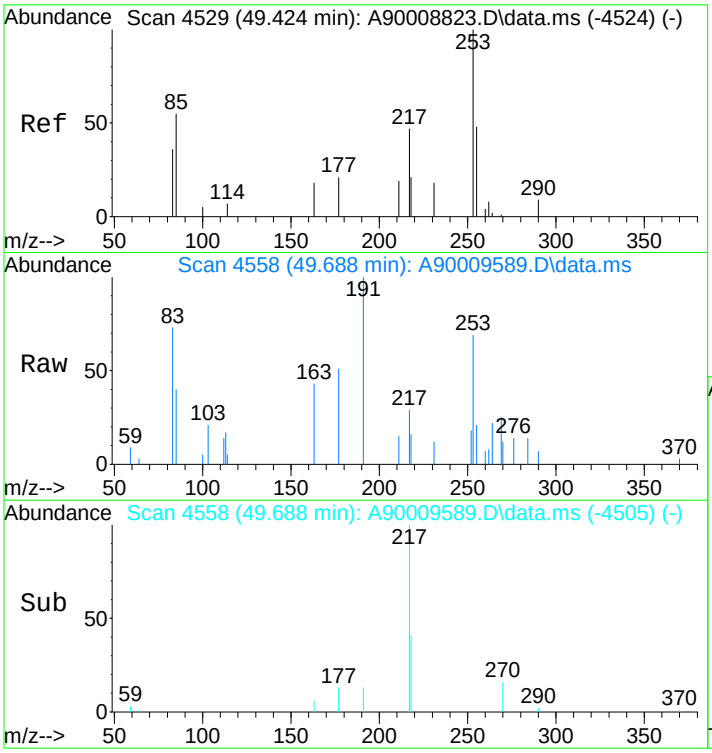




#139
14a(H),17a(H)-20S-Ethylcholestane (S25)
Concen: 40.42 ng/ml m
RT: 48.838 min Scan# 4465
Delta R.T. -0.018 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

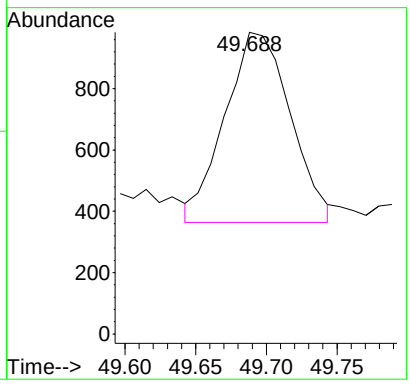
Tgt Ion:217 Resp: 2075

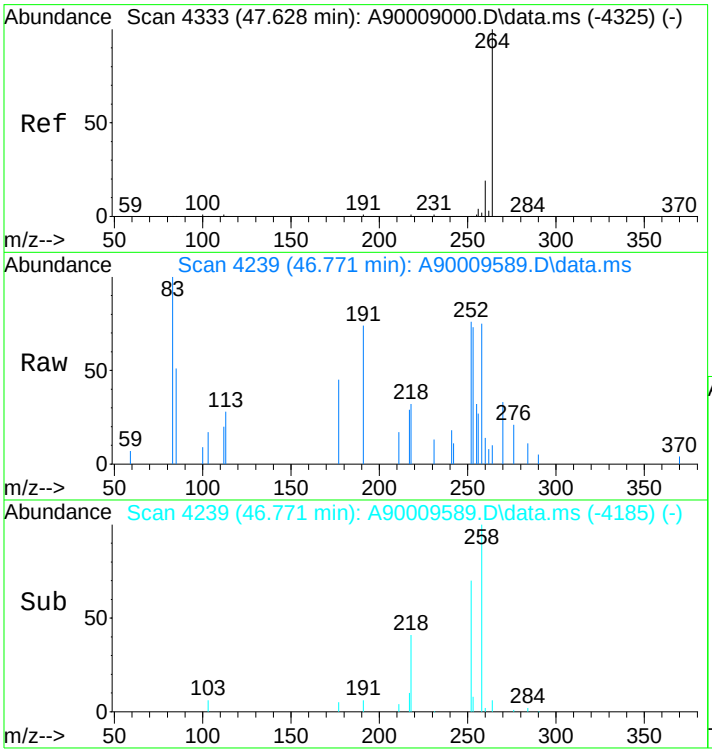




#140
14a(H),17a(H)-20R-Ethylcholestane (S28)
Concen: 38.76 ng/ml m
RT: 49.688 min Scan# 4558
Delta R.T. -0.018 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

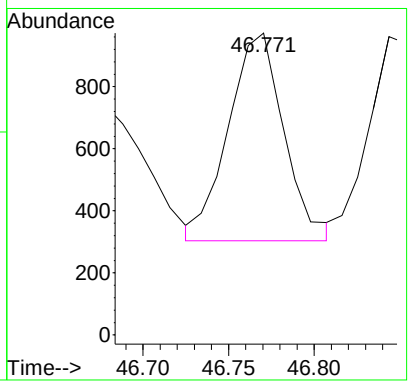
Tgt Ion:217 Resp: 1990

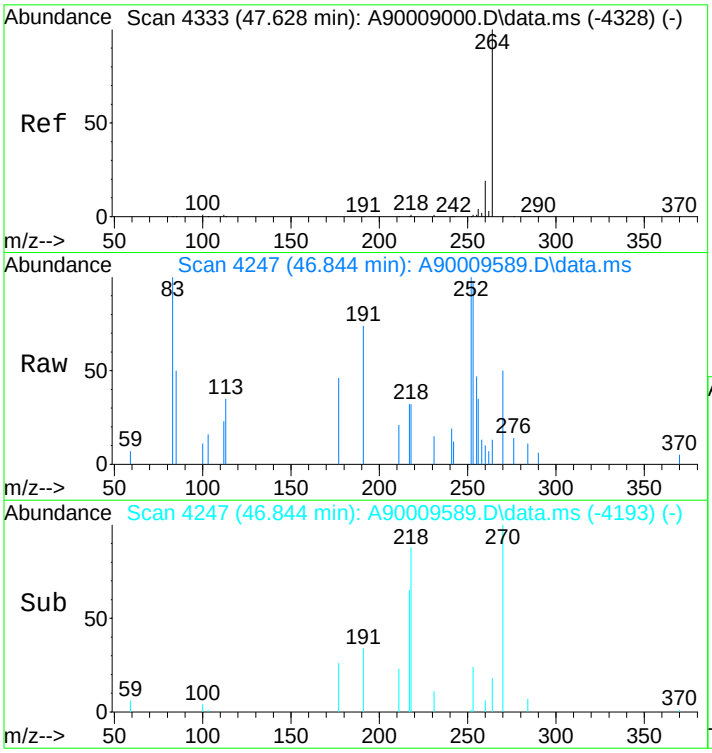




#141
14b(H),17b(H)-20R-Cholestane (S14)
Concen: 29.53 ng/ml
RT: 46.771 min Scan# 4239
Delta R.T. -0.009 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

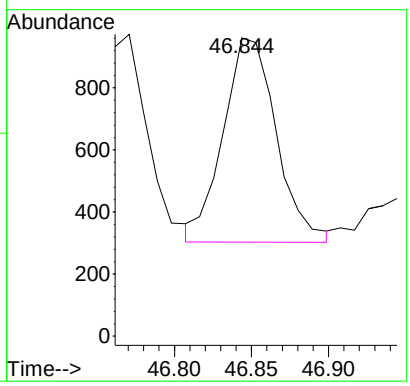
Tgt Ion:218 Resp: 1516

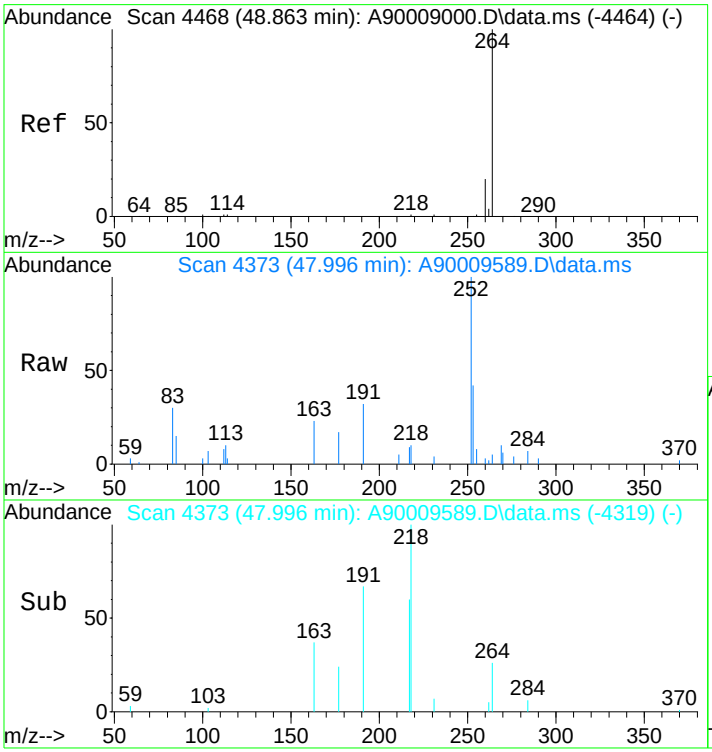




#142
14b(H),17b(H)-20S-Cholestane (S15)
Concen: 30.82 ng/ml
RT: 46.844 min Scan# 4247
Delta R.T. -0.009 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

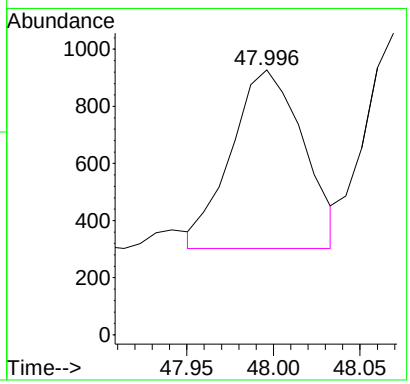
Tgt Ion:218 Resp: 1582

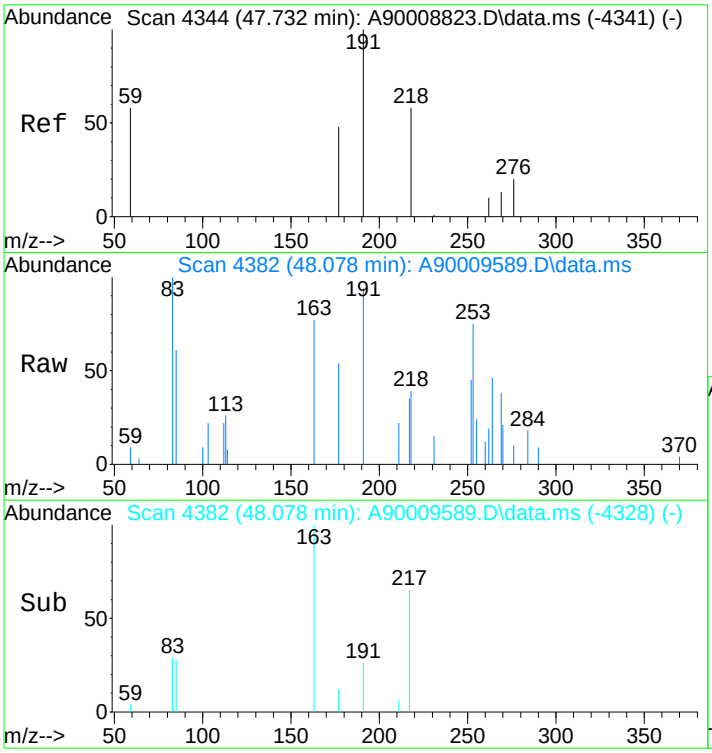




#143
14b,17b-20R-Methylcholestane (S22)
Concen: 35.39 ng/ml m
RT: 47.996 min Scan# 4373
Delta R.T. -0.009 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

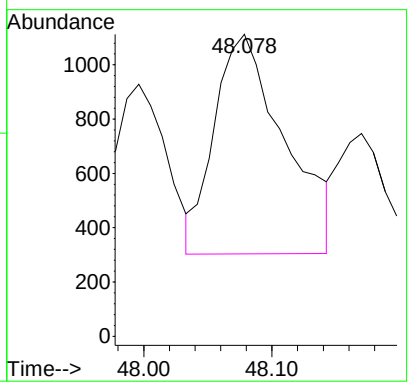
Tgt Ion:218 Resp: 1817

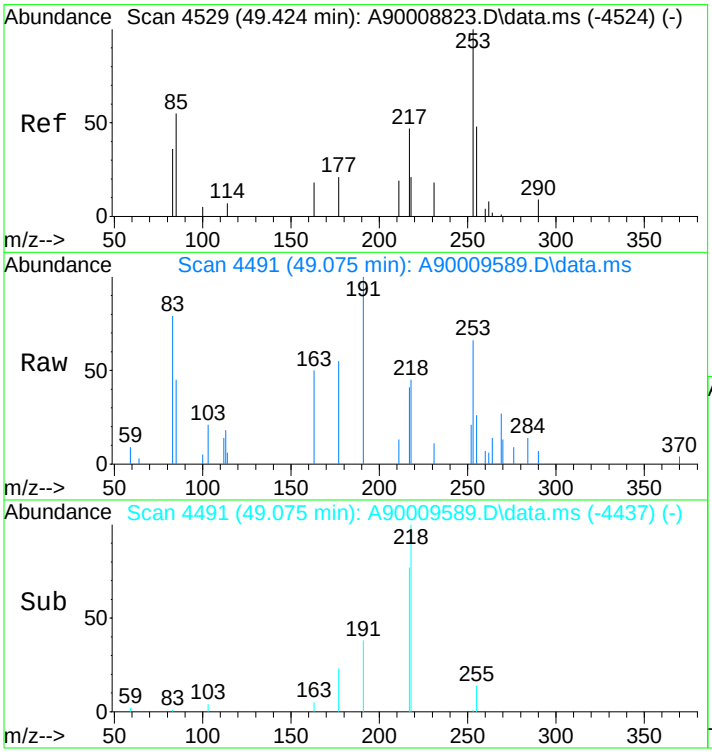




#144
14b,17b-20S-Methylcholestane (S23)
Concen: 60.17 ng/ml m
RT: 48.078 min Scan# 4382
Delta R.T. -0.009 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

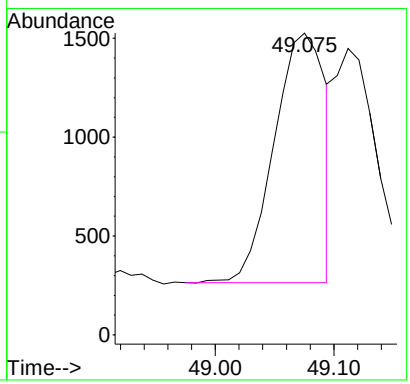
Tgt Ion:218 Resp: 3089

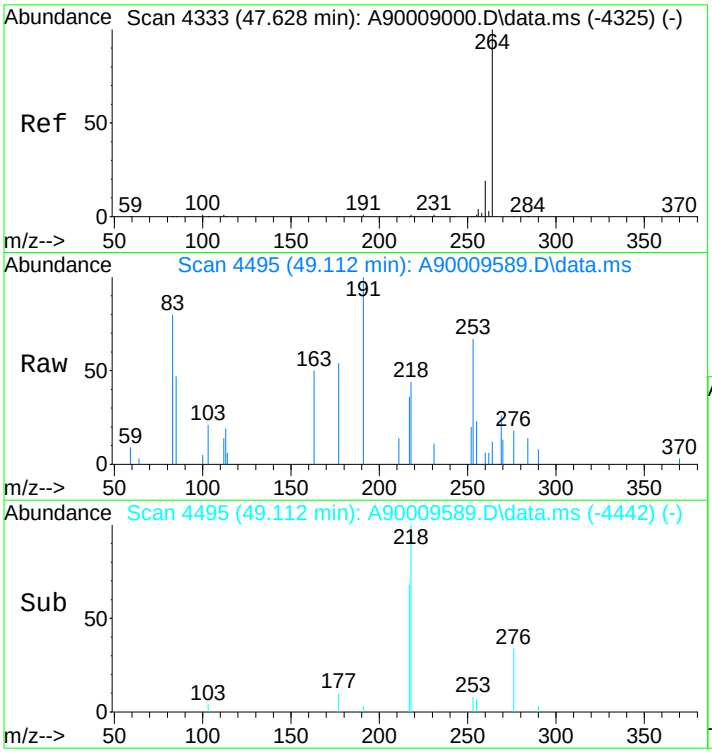




#145
14b(H),17b(H)-20R-Ethylcholestane (S26)
Concen: 73.61 ng/ml
RT: 49.075 min Scan# 4491
Delta R.T. -0.009 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

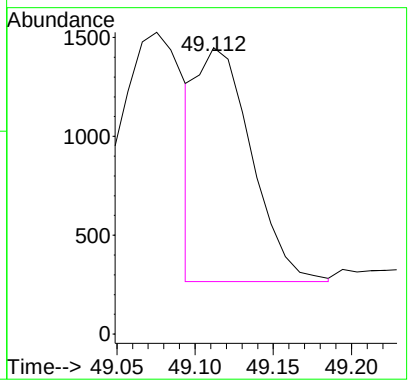
Tgt Ion:218 Resp: 3779

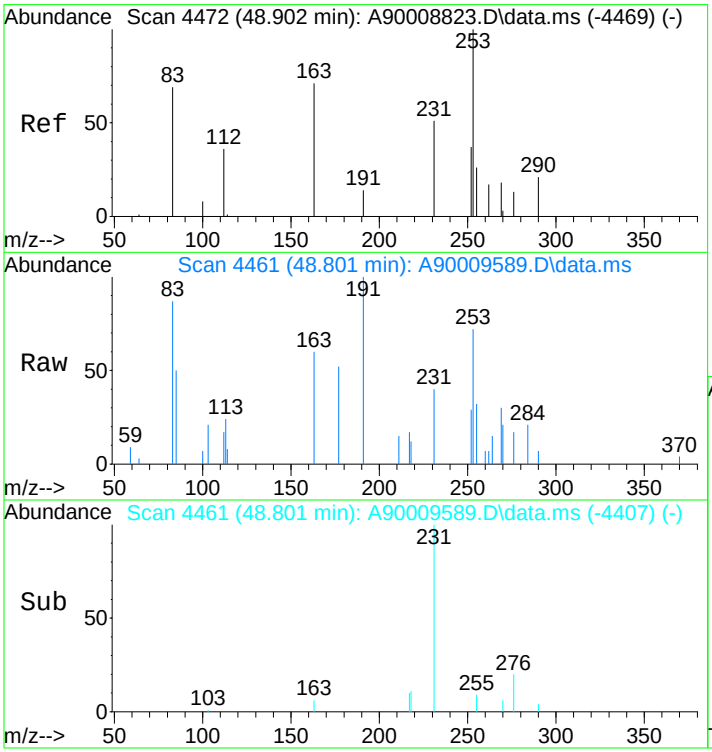




#146
14b(H),17b(H)-20S-Ethylcholestane (S27)
Concen: 56.02 ng/ml m
RT: 49.112 min Scan# 4495
Delta R.T. -0.018 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

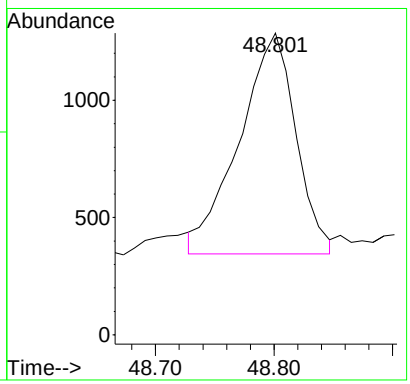
Tgt Ion:218 Resp: 2876

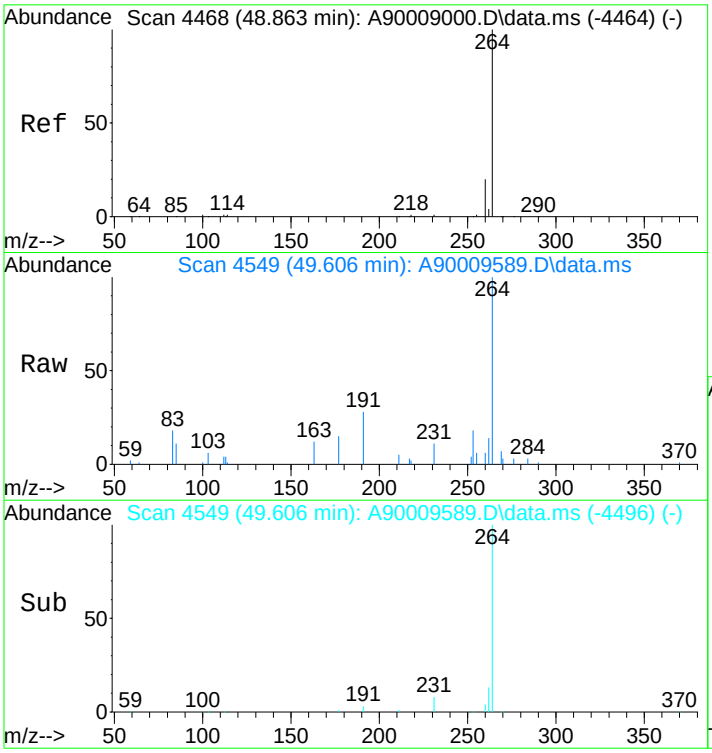




#147
C26,20R- +C27,20S- triaromatic steroid
Concen: 60.85 ng/mL m
RT: 48.801 min Scan# 4461
Delta R.T. -0.009 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

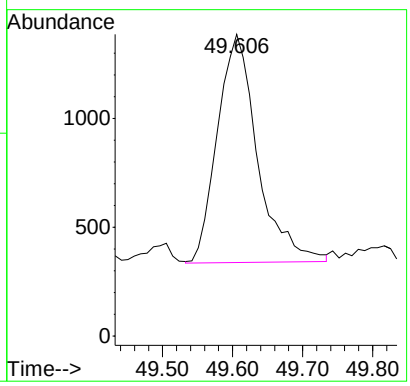
Tgt Ion:231 Resp: 3124

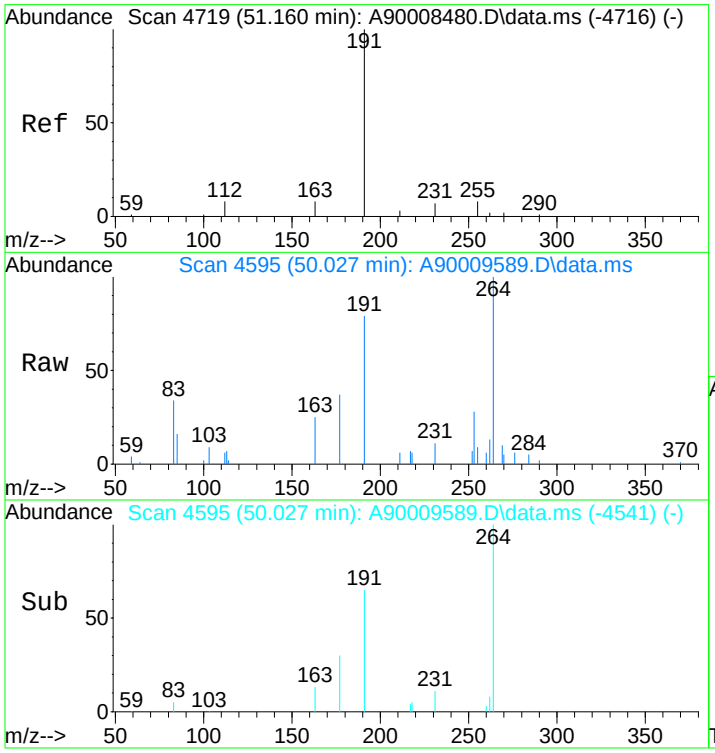




#148
C28,20S-triaromatic steroid
Concen: 81.38 ng/mL
RT: 49.606 min Scan# 4549
Delta R.T. -0.018 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

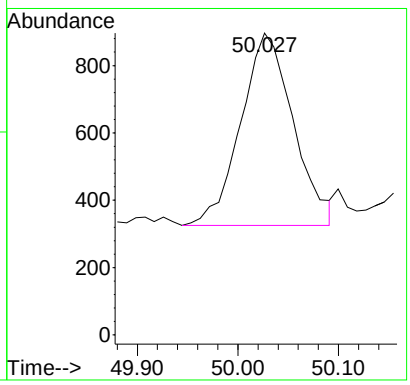
Tgt Ion:231 Resp: 4178

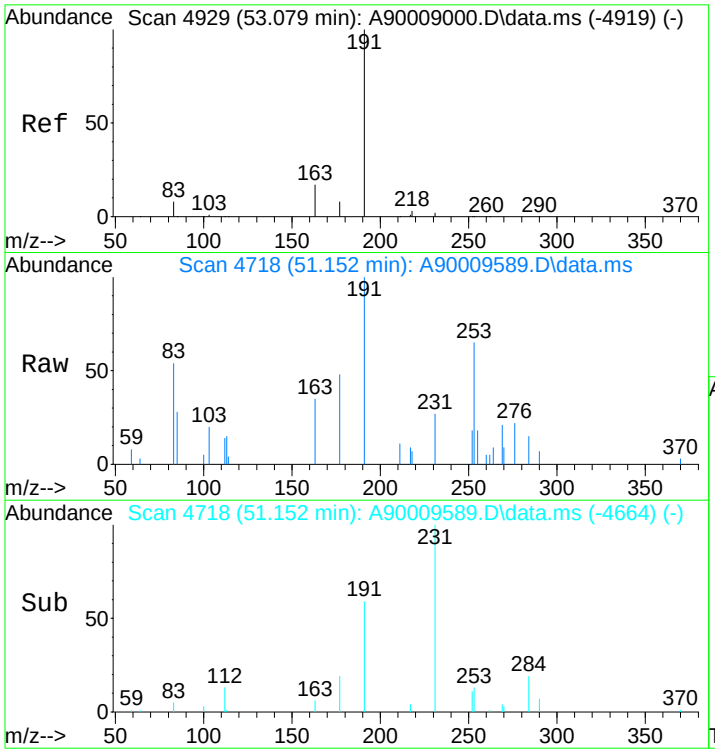




#149
C27,20R-triaromatic steroid
Concen: 40.42 ng/mL m
RT: 50.027 min Scan# 4595
Delta R.T. -0.009 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

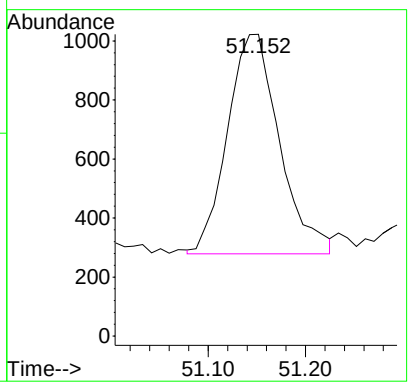
Tgt Ion:231 Resp: 2075





#150
C28,20R-triaromatic steroid
Concen: 53.84 ng/mL m
RT: 51.152 min Scan# 4718
Delta R.T. -0.009 min
Lab File: A90009589.D
Acq: 23 Dec 2012 8:58 am

Tgt Ion:231 Resp: 2764



Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009590.D
Acq On : 23 Dec 2012 10:22 am
Operator : ps
Sample : 1212022-03
Misc : 1X
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Dec 27 14:19:25 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.156	164	66179	500.000	ng/mL	0.00
74) Chrysene-d12	42.557	240	125525	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.229	136	415028	1631.629	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 163.16%#			
42) Phenanthrene-d10	31.995	188	497405	2083.796	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 208.38%#			
83) Benzo[b]fluoranthene-d12	46.450	264	466866	2023.351	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 202.34%#			
88) Benzo[a]pyrene-d12	47.585	264	425397	1839.150	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 183.92%#			
129) 5B(H)Cholane - Surr	43.187	217	100430	1905.853	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 190.59%#			
Target Compounds						Qvalue
3) trans-Decalin	15.908	138	184	3.163	ng/mL	100
5) C1-Decalins	17.377	152	660M5	11.344	ng/mL	
6) C2-Decalins	19.667	166	1537M5	26.417	ng/mL	
7) C3-Decalins	21.137	180	2058M5	35.372	ng/mL	
8) C4-Decalins	24.960	194	3164M5	54.382	ng/mL	
10) Naphthalene	19.302	128	62897	240.958	ng/mL#	100
11) C1-Naphthalenes	21.994	142	25743M5	98.621	ng/mL	
12) C2-Naphthalenes	24.814	156	70322M5	269.403	ng/mL	
13) C3-Naphthalenes	27.141	170	121603M5	465.860	ng/mL	
14) C4-Naphthalenes	31.137	184	87352M5	334.645	ng/mL	
16) 2-Methylnaphthalene	21.994	142	15267	89.435	ng/mL#	100
17) 1-Methylnaphthalene	22.405	142	9899	59.753	ng/mL#	100
18) Benzothiophene	19.531	134	2427M4	11.110	ng/mL	
19) C1-Benzo(b)thiophenes	22.159	148	2283M5	10.451	ng/mL	
20) C2-Benzo(b)thiophenes	24.531	162	4194M5	19.199	ng/mL	
21) C3-Benzo(b)thiophenes	26.621	176	9831M5	45.005	ng/mL	
22) C4-Benzo(b)thiophenes	29.066	190	7057M5	32.306	ng/mL	
23) Biphenyl	23.865	154	13834	61.928	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.486	156	14716	91.707	ng/mL#	100
25) Dibenzofuran	26.931	168	30520M4	128.092	ng/mL	
26) Acenaphthylene	25.544	152	117055	435.925	ng/mL#	100
27) Acenaphthene	26.274	153	41579	246.275	ng/mL	99
28) 2,3,5-Trimethylnaphthalen	27.835	170	10687M3	72.439	ng/mL	
29) Fluorene	28.291	166	64377M4	347.225	ng/mL	
30) C1-Fluorenes	30.508	180	76683M5	413.598	ng/mL	
31) C2-Fluorenes	32.844	194	88911M5	479.552	ng/mL	
32) C3-Fluorenes	35.345	208	59605M5	321.486	ng/mL	
33) Dibenzothiophene	31.594	184	64530	247.428	ng/mL#	86
34) 4-Methyldibenzothiophene(	33.364	198	27502	105.451	ng/mL#	100
35) 2/3-Methyldibenzothiophen	33.711	198	29923M1	114.734	ng/mL	
36) 1-Methyldibenzothiophene(	34.131	198	10979	42.097	ng/mL#	100
37) OTP	33.811	198	62981	241.489	ng/mL#	100
38) C1-Dibenzothiophenes	33.811	198	149617M5	573.678	ng/mL	
38) C1-Dibenzothiophenes BS	33.811	198	86636m	332.190	ng/mL	
39) C2-Dibenzothiophenes	35.043	212	98317M5	376.978	ng/mL	
40) C3-Dibenzothiophenes	36.842	226	59538M5	228.287	ng/mL	
41) C4-Dibenzothiophenes	38.531	240	23480M5	90.030	ng/mL	
43) Phenanthrene	32.086	178	1163769	4319.212	ng/mL	100
44) 3-Methylphenanthrene(3MP)	34.048	192	183396	680.656	ng/mL	97

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009590.D
Acq On : 23 Dec 2012 10:22 am
Operator : ps
Sample : 1212022-03
Misc : 1X
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Dec 27 14:19:25 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
45) 2-Methylphenanthrene(2MP)	34.158	192	228378	847.602	ng/mL	96
46) 2-Methylanthracene(2MA)	34.322	192	147136M3	546.081	ng/mL	
47) 9/4-Methylphenanthrene(9M	34.505	192	210818M3	782.430	ng/mL	
48) 1-Methylphenanthrene(1MP)	34.587	192	147352	546.882	ng/mL	96
49) C1-Phenanthrenes/Anthrace	34.158	192	932873M5	3462.265	ng/mL	
50) C2-Phenanthrenes/Anthrace	36.312	206	608243M5	2257.433	ng/mL	
50) C2-Phenanthrenes/Anthr BS	36.312	206	608243m	2257.433	ng/mL	
52) C3-Phenanthrenes/Anthrace	38.138	220	243724M5	904.557	ng/mL	
53) C4-Phenanthrenes/Anthrace	40.339	234	77433M5	287.385	ng/mL	
55) Anthracene	32.260	178	419512	1676.664	ng/mL	100
56) Carbazole	32.953	167	28328	119.682	ng/mL#	93
57) 1-Methylphenanthrene	34.587	192	147358	741.267	ng/mL	100
58) Fluoranthene	36.851	202	3543010	11771.102	ng/mL	98
59) Benzo(b)fluorene	39.362	216	292675M3	1635.035	ng/mL	
60) Pyrene	37.727	202	3492511	11373.469	ng/mL	99
61) C1-Fluoranthenes/Pyrenes	39.115	216	1858590M5	6052.555	ng/mL	
62) C2-Fluoranthenes/Pyrenes	41.151	230	623880M5	2031.684	ng/mL	
63) C3-Fluoranthenes/Pyrenes	43.050	244	242948M5	791.168	ng/mL	
64) C4-Fluoranthenes/Pyrenes	43.334	258	134529M5	438.098	ng/mL	
66) Naphthobenzothiophene	41.562	234	176456	662.246	ng/ml#	95
67) Naphthobenzothiophene-2,1	41.562	234	176456	662.246	ng/mL#	95
68) Naphthobenzothiophene-1,2	41.900	234	40992	153.844	ng/mL#	13
69) Naphthobenzothiophene-2,3	42.201	234	60674M3	227.712	ng/mL	
70) C1-Naphthobenzothiophenes	42.959	248	169597M5	636.503	ng/ml	
71) C2-Naphthobenzothiophenes	44.466	262	86207M5	323.538	ng/ml	
72) C3-Naphthobenzothiophenes	46.350	276	43871M5	164.649	ng/ml	
73) C4-Naphthobenzothiophenes	49.011	290	20297M5	76.175	ng/mL	
75) Benz[a]anthracene	42.503	228	1757394M3	6103.698	ng/mL	
77) Chrysene/Triphenylene	42.658	228	1593697	5627.870	ng/mL	99
78) C1-Chrysenes	44.128	242	752879M5	2658.664	ng/mL	
79) C2-Chrysenes	45.838	256	337933M5	1193.353	ng/mL	
79) C2-Chrysenes BS	45.838	256	319204m	1127.215	ng/mL	
80) BBF-d12 Surr BKGD	46.450	256	18729	66.138	ng/mL	100
81) C3-Chrysenes	46.871	270	202128M5	713.781	ng/mL	
82) C4-Chrysenes	48.325	284	67179M5	237.231	ng/mL	
84) Benzo[b]fluoranthene	46.542	252	1362249	4563.133	ng/mL	94
85) Benzo[j]+[k]fluoranthene	46.615	252	1459989	4977.339	ng/mL	93
86) Benzo[a]fluoranthene	46.899	252	386095	1316.260	ng/mL#	1
87) Benzo[e]pyrene	47.493	252	1047592	3695.484	ng/mL	91
89) Benzo[a]pyrene	47.667	252	1693567	6308.166	ng/mL	90
90) Perylene	47.950	252	446388M3	1557.905	ng/mL	
91) Indeno[1,2,3-cd]pyrene	52.157	276	1093660M4	3678.212	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.194	278	313564	1070.544	ng/mL	99
93) Benzo[g,h,i]perylene	53.354	276	1078470	3691.053	ng/mL	100
94) Hopane (T19)	51.316	191	30963M4	280.569	ng/mL	
96) C23 Tricyclic Terpane (T4	40.211	191	3467	31.416	ng/ml	100
97) C24 Tricyclic Terpane (T5	40.941	191	2609	23.641	ng/ml	100
98) C25 Tricyclic Terpane (T6	42.493	191G	5125M1	46.440	ng/ml	
99) C24 Tetracyclic Terpane (	43.726	191	2510M4	22.744	ng/ml	
100) C26 Tricyclic Terpane-22S	43.480	191	1957M4	17.733	ng/ml	
101) C26 Tricyclic Terpane-22R	43.580	191	1162	10.529	ng/ml	100
102) C28 Tricyclic Terpane-22S	45.874	191	1175M4	10.647	ng/ml	
103) C28 Tricyclic Terpane-22R	46.039	191	1792M4	16.238	ng/ml	
104) C29 Tricyclic Terpane-22S	46.551	191	1612M4	14.607	ng/ml	
105) C29 Tricyclic Terpane-22R	46.743	191	1260M4	11.417	ng/ml	
106) 18a-22,29,30-Trisnorneoho	47.786	191	6326	57.323	ng/ml	100

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009590.D
Acq On : 23 Dec 2012 10:22 am
Operator : ps
Sample : 1212022-03
Misc : 1X
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Dec 27 14:19:25 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

	Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
107)	C30 Tricyclic Terpane-22S	47.905	191	1653M4	14.979	ng/mL	
108)	C30 Tricyclic Terpane-22R	48.142	191	1479M3	13.402	ng/mL	
109)	17a(H)-22,29,30-Trisnorho	48.298	191	7797	70.652	ng/ml	100
110)	17a/b,21b/a 28,30-Bisnorh	49.414	191	1245	11.281	ng/ml	100
111)	17a(H),21b(H)-25-Norhopan	49.249	191	1226	11.109	ng/ml	100
112)	30-Norhopane (T15)	50.045	191	22061M4	199.904	ng/ml	
113)	18a(H)-30-Norneohopane-C2	50.145	191	6452M4	58.464	ng/ml	
114)	17a(H)-Diahopane (X)	50.264	191	2568M4	23.270	ng/ml	
115)	30-Normoretane (T17)	50.777	191	3514M4	31.842	ng/ml	
116)	18a(H)&18b(H)-Oleananes (	51.142	191	2256M4	20.443	ng/ml	
117)	Moretane (T20)	51.947	191	5623M4	50.952	ng/ml	
118)	30-Homohopane-22S (T21)	52.970	191	11252	101.959	ng/ml	100
119)	30-Homohopane-22R (T22)	53.190	191	8686M4	78.708	ng/ml	
120)	Gammacerane/C32-diahopane	53.683	191	3170	28.725	ng/mL	100
121)	30,31-Bishomohopane-22S (	54.359	191G	20947	189.810	ng/ml	100
122)	30,31-Bishomohopane-22R (	54.761	191	4995	45.262	ng/ml	100
123)	30,31-Trishomohopane-22S	56.361	191	5729	51.913	ng/ml	100
124)	30,31-Trishomohopane-22R	56.918	191	2950	26.731	ng/ml	100
125)	Tetrakishomohopane-22S (T	58.782	191	3299	29.894	ng/ml	100
126)	Tetrakishomohopane-22R (T	59.531	191G	4743M4	42.978	ng/ml	
127)	Pentakishomohopane-22S (T	61.633	191	2583	23.406	ng/ml	100
128)	Pentakishomohopane-22R (T	62.812	191	2520	22.835	ng/ml	100
130)	13b(H),17a(H)-20S-Diachol	44.703	217	2369M4	44.956	ng/ml	
131)	13b(H),17a(H)-20R-Diachol	45.124	217	1239	23.512	ng/ml	100
132)	13b,17a-20S-Methyldiachol	45.819	217	1771M4	33.608	ng/ml	
133)	14a,17a-20S-Chol/13b,17a-	46.688	217	4868	92.380	ng/ml	100
134)	14a,17a-20R-Chol/13b,17a-	47.164	217	4781	90.729	ng/ml	100
135)	Unknown Sterane (S18)	47.438	217	1228	23.304	ng/ml	100
136)	13a,17b-20S-Ethyldiachole	47.685	217	157	2.979	ng/ml	100
137)	14a,17a-20S-Methylcholest	47.831	217	2339M4	44.387	ng/ml	
138)	14a,17a-20R-Methylcholest	48.499	217	1663M4	31.559	ng/ml	
139)	14a(H),17a(H)-20S-Ethylch	48.838	217	2927M4	55.545	ng/ml	
140)	14a(H),17a(H)-20R-Ethylch	49.697	217	2602M4	49.378	ng/ml	
141)	14b(H),17b(H)-20R-Cholest	46.761	218	1785M4	33.874	ng/ml	
142)	14b(H),17b(H)-20S-Cholest	46.844	218	1996M4	37.878	ng/ml	
143)	14b,17b-20R-Methylcholest	47.996	218	2486	47.177	ng/ml	100
144)	14b,17b-20S-Methylcholest	48.069	218	3786M4	71.847	ng/ml	
145)	14b(H),17b(H)-20R-Ethylch	49.075	218	5025	95.359	ng/ml	100
146)	14b(H),17b(H)-20S-Ethylch	49.112	218	3418M3	64.863	ng/ml	
147)	C26,20R- +C27,20S- triaro	48.792	231	3887M4	73.763	ng/mL	
148)	C28,20S-triaromatic stero	49.597	231	5443	103.291	ng/mL	100
149)	C27,20R-triaromatic stero	50.027	231	2720M4	51.617	ng/mL	
150)	C28,20R-triaromatic stero	51.142	231	3816M4	72.416	ng/mL	

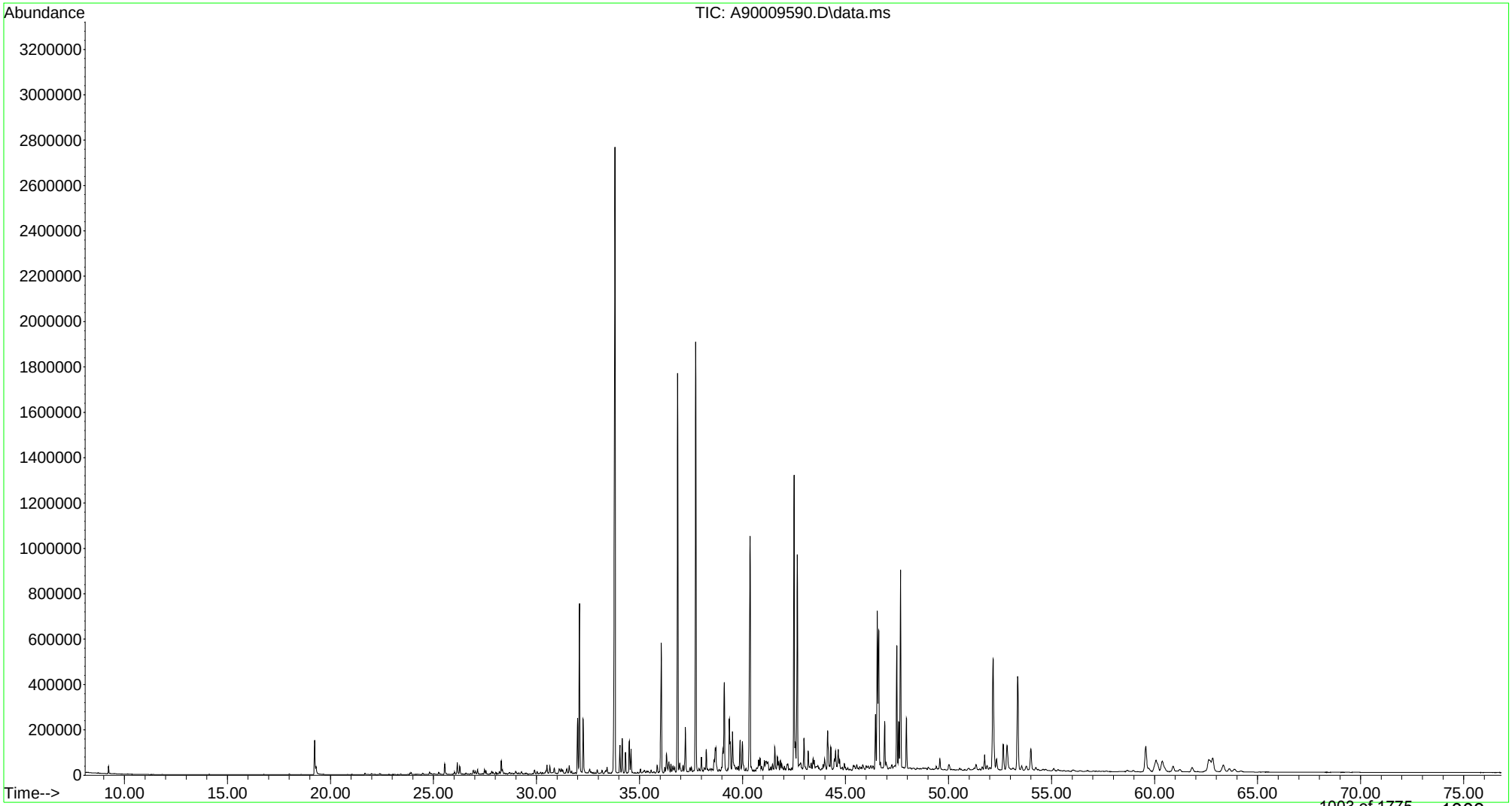
(#) = qualifier out of range (m) = manual integration (+) = signals summed

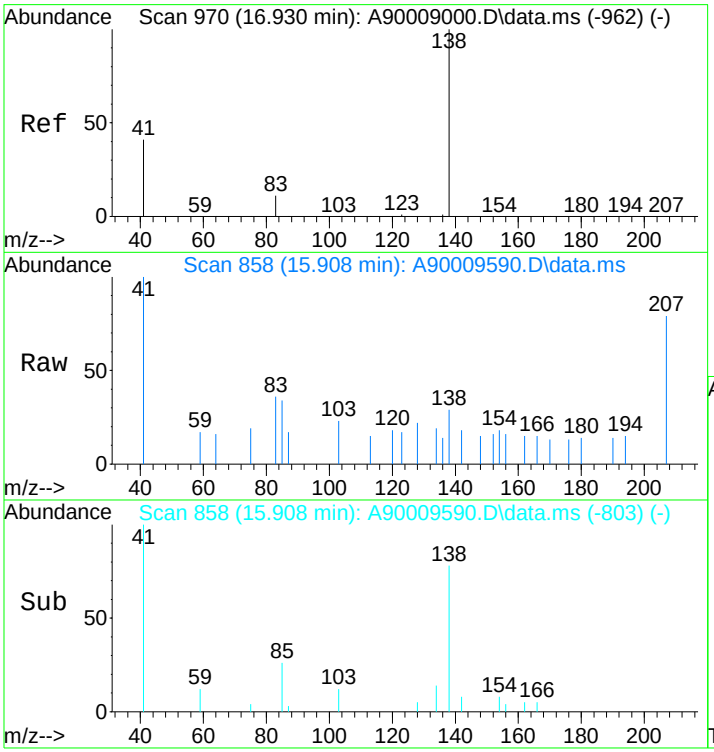
Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009590.D
Acq On : 23 Dec 2012 10:22 am
Operator : ps
Sample : 1212022-03
Misc : 1X
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Dec 27 14:19:25 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

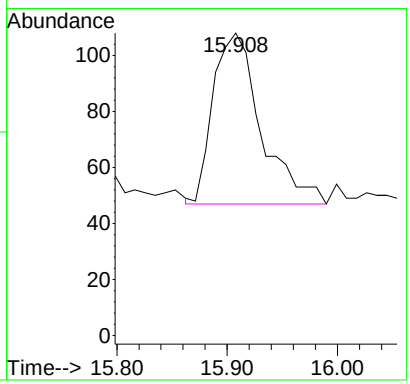
Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

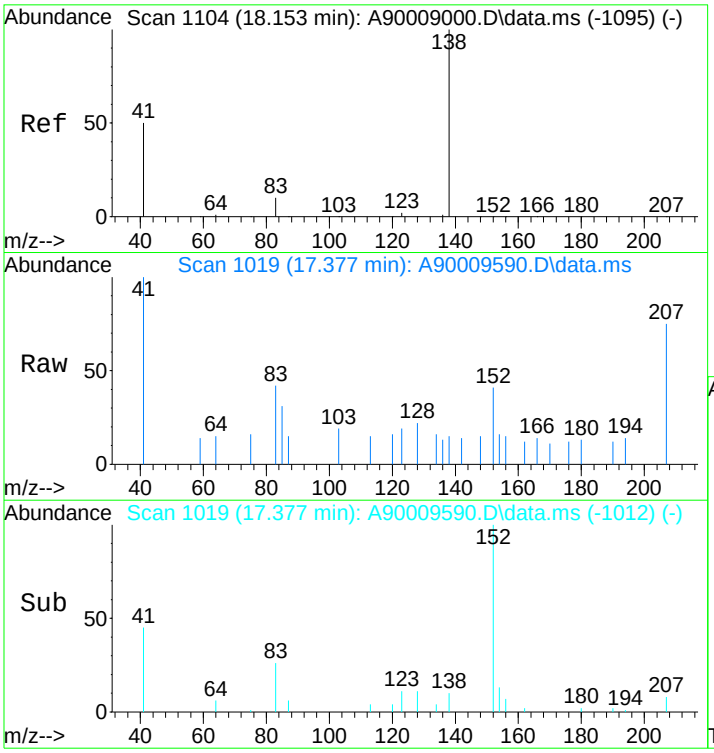




#3
trans-Decalin
Concen: 3.16 ng/mL
RT: 15.908 min Scan# 858
Delta R.T. 0.000 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

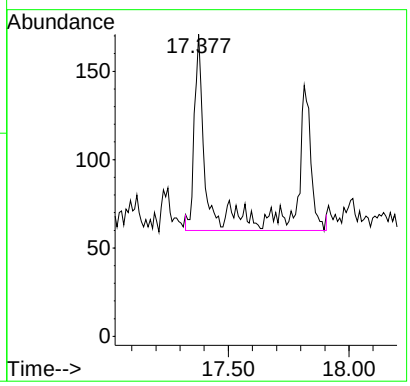
Tgt Ion:138 Resp: 184

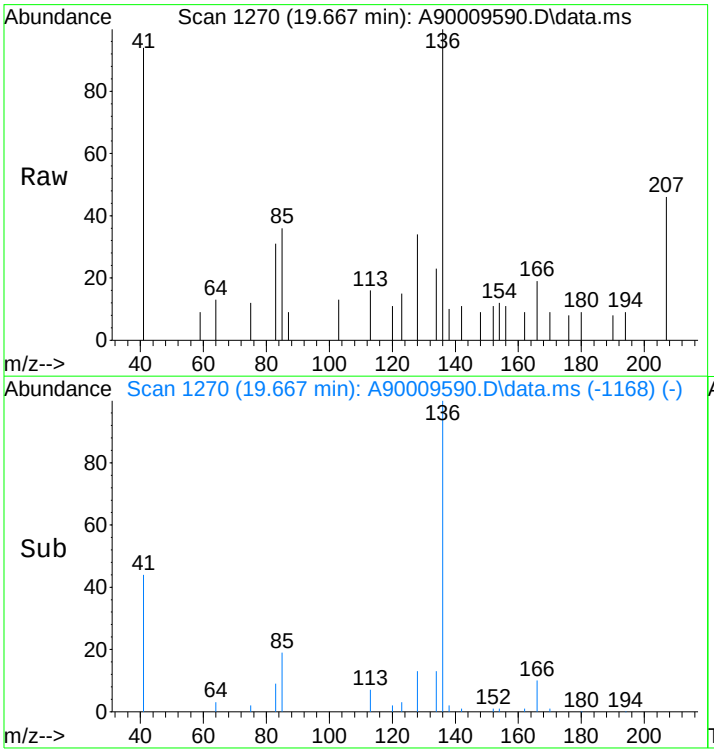




#5
C1-Decalins
Concen: 11.34 ng/mL m
RT: 17.377 min Scan# 1019
Delta R.T. -0.447 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

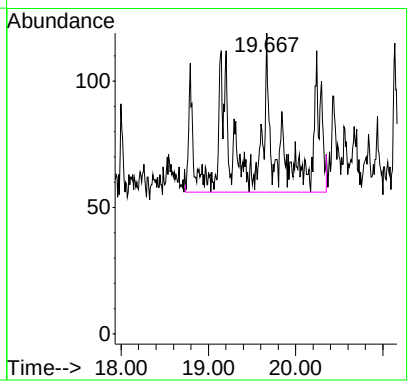
Tgt Ion:152 Resp: 660

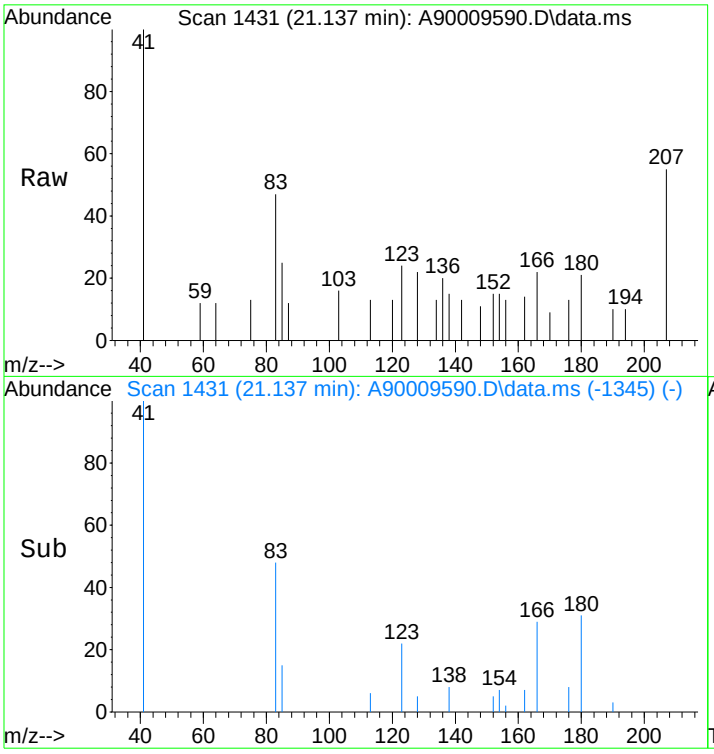




#6
C2-Decalins
Concen: 26.42 ng/mL m
RT: 19.667 min Scan# 1270
Delta R.T. 0.520 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

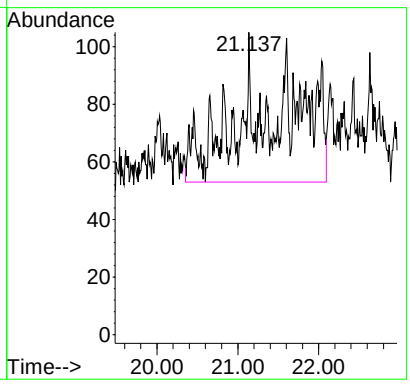
Tgt Ion:166 Resp: 1537

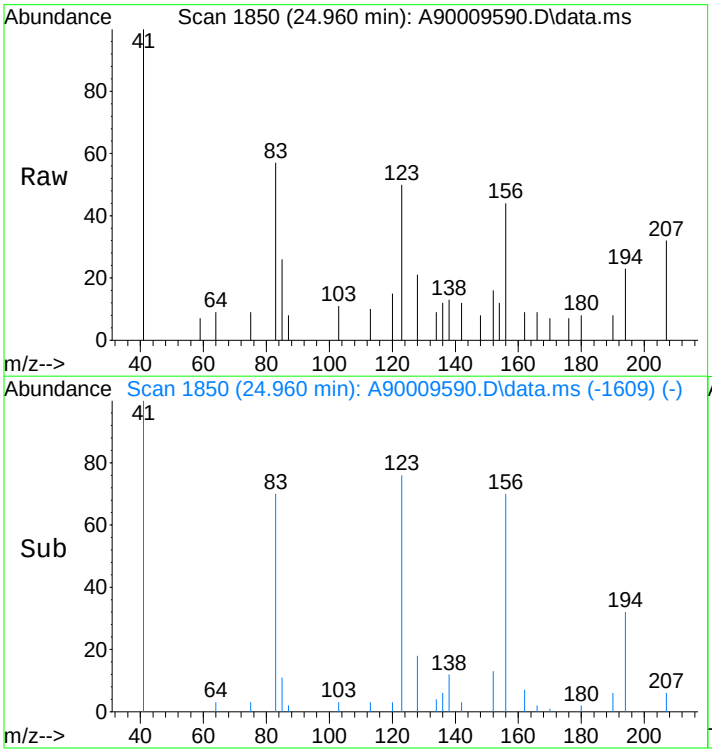




#7
C3-Decalins
Concen: 35.37 ng/mL m
RT: 21.137 min Scan# 1431
Delta R.T. -0.474 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

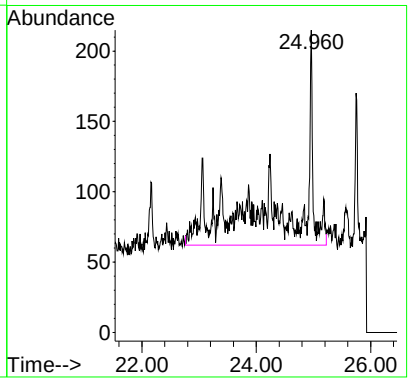
Tgt Ion:180 Resp: 2058

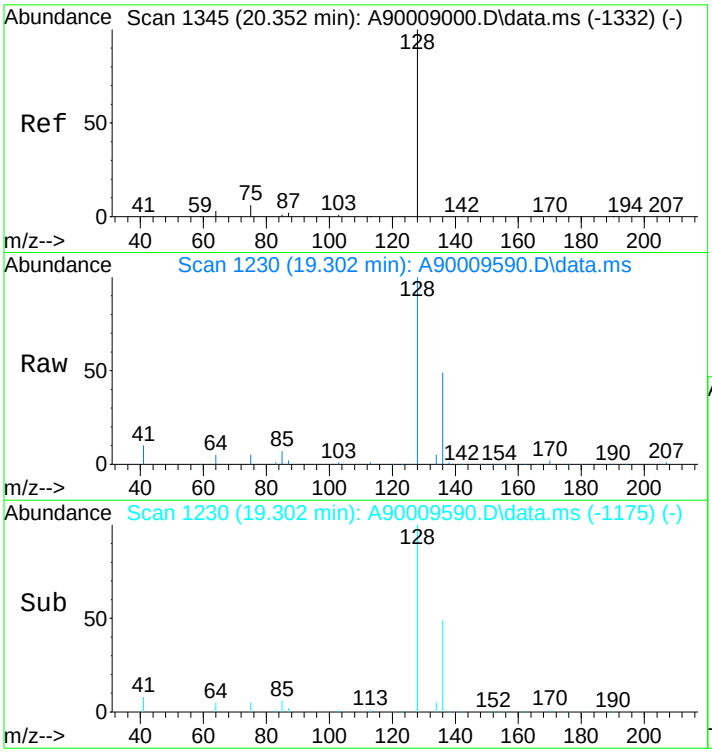




#8
C4-Decalins
Concen: 54.38 ng/mL m
RT: 24.960 min Scan# 1850
Delta R.T. -0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:194 Resp: 3164

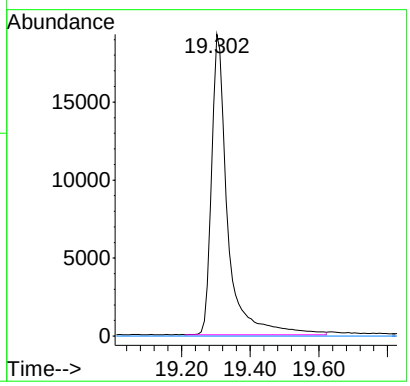


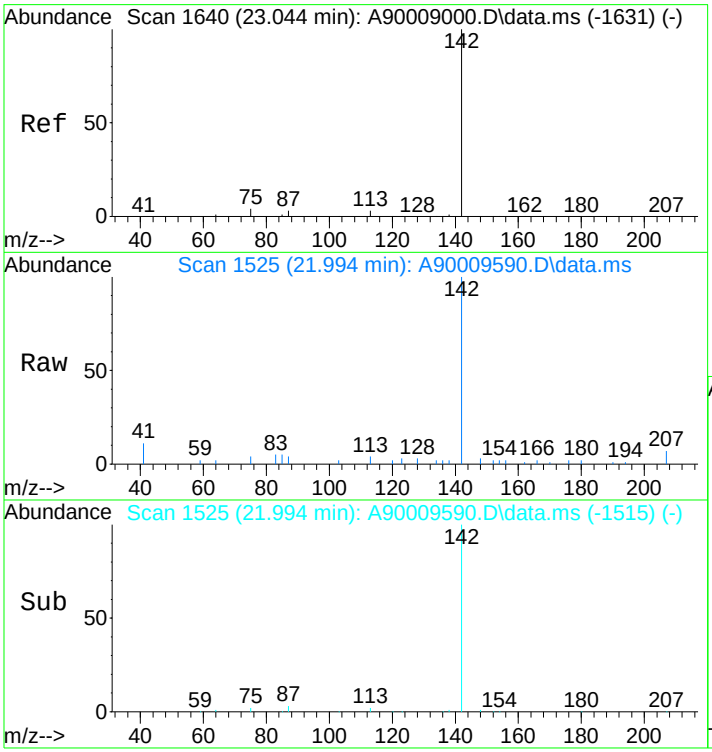


#10
Naphthalene
Concen: 240.96 ng/mL
RT: 19.302 min Scan# 1230
Delta R.T. 0.000 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:128 Resp: 62897

Ion	Ratio	Lower	Upper
128	100		
127	0.0	0.0	0.0

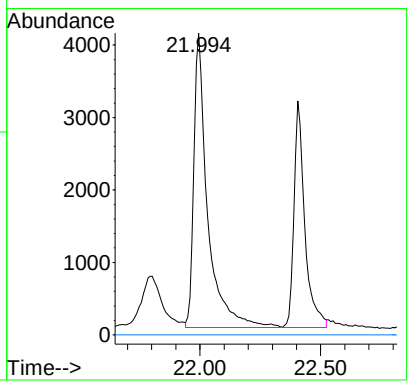


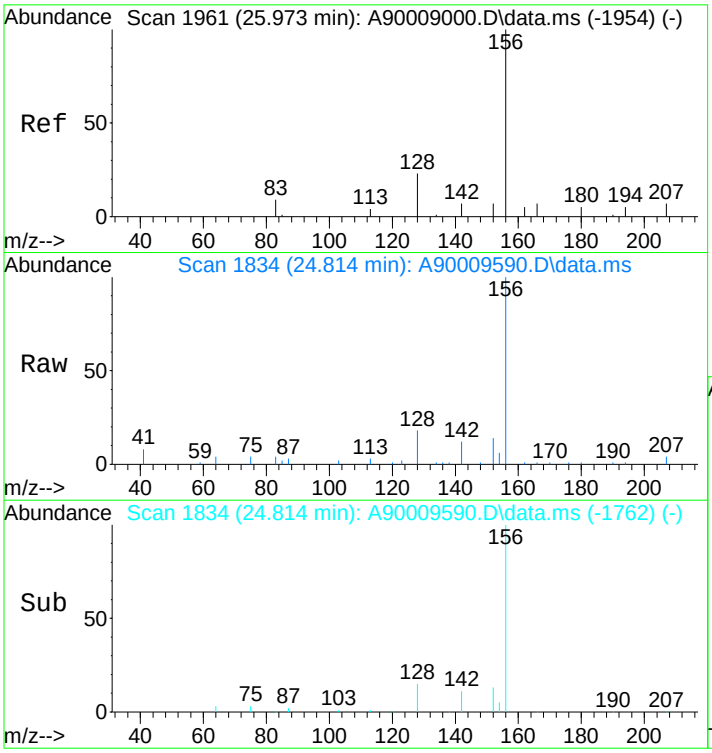


#11
C1-Naphthalenes
Concen: 98.62 ng/mL m
RT: 21.994 min Scan# 1525
Delta R.T. 0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:142 Resp: 25743

Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	0.0

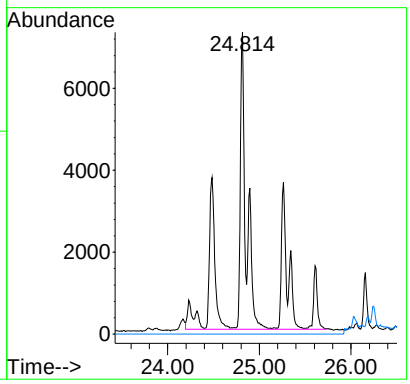


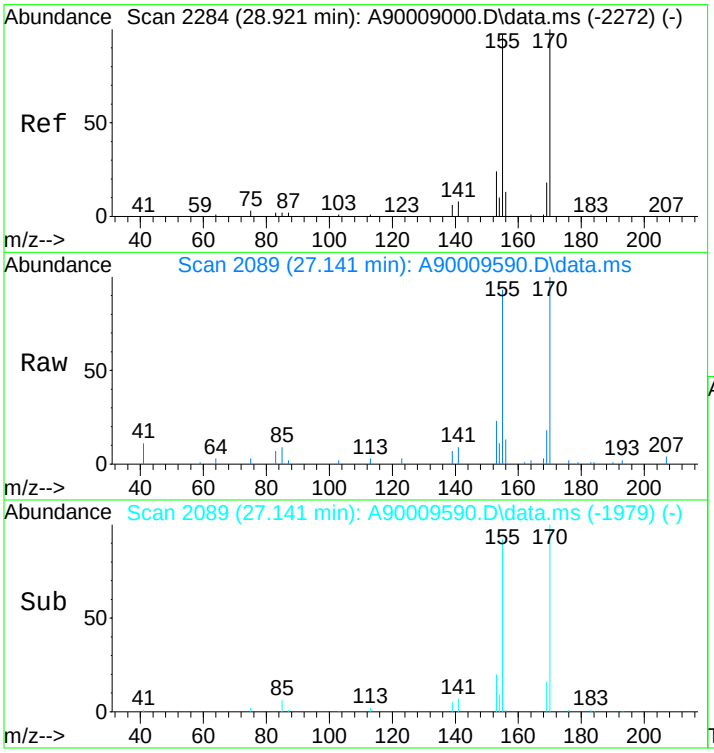


#12
C2-Naphthalenes
Concen: 269.40 ng/mL m
RT: 24.814 min Scan# 1834
Delta R.T. 0.000 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:156 Resp: 70322

Ion	Ratio	Lower	Upper
156	100		
141	0.0	0.0	0.0

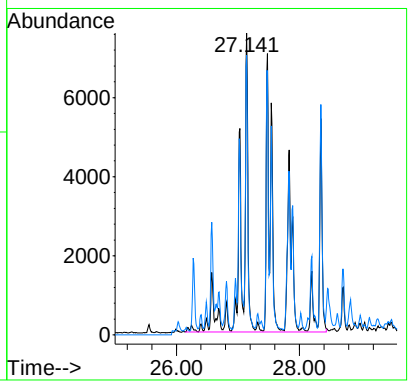


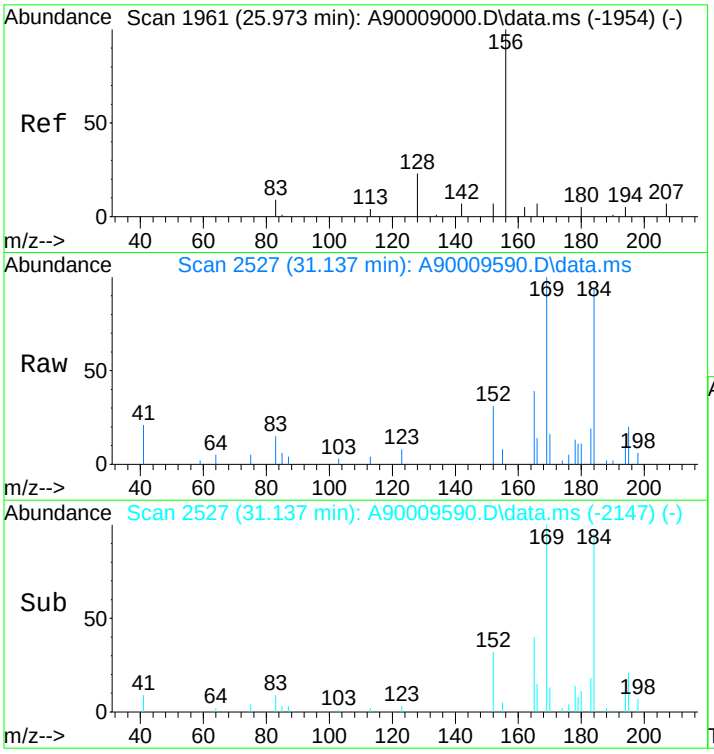


#13
C3-Naphthalenes
Concen: 465.86 ng/mL m
RT: 27.141 min Scan# 2089
Delta R.T. 0.000 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:170 Resp: 121603

Ion	Ratio	Lower	Upper
170	100		
155	15.0	79.9	119.9#

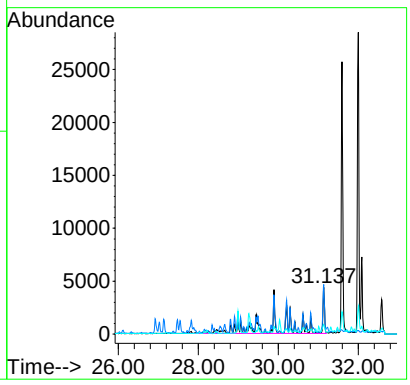


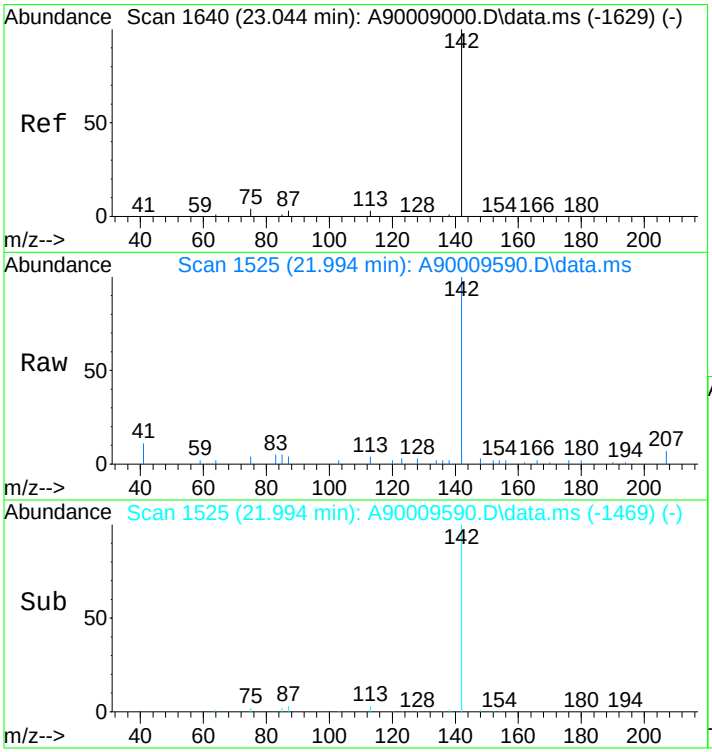


#14
C4-Naphthalenes
Concen: 334.64 ng/mL m
RT: 31.137 min Scan# 2527
Delta R.T. 1.241 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:184 Resp: 87352

Ion	Ratio	Lower	Upper
184	100		
169	10.5	76.6	115.0#
183	2.0	16.4	24.6#

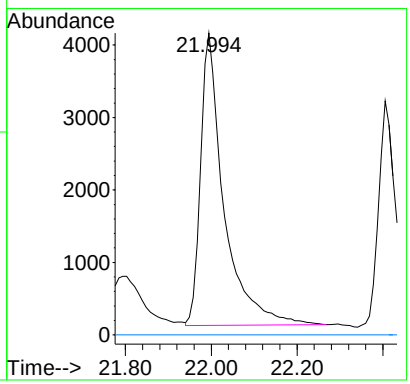


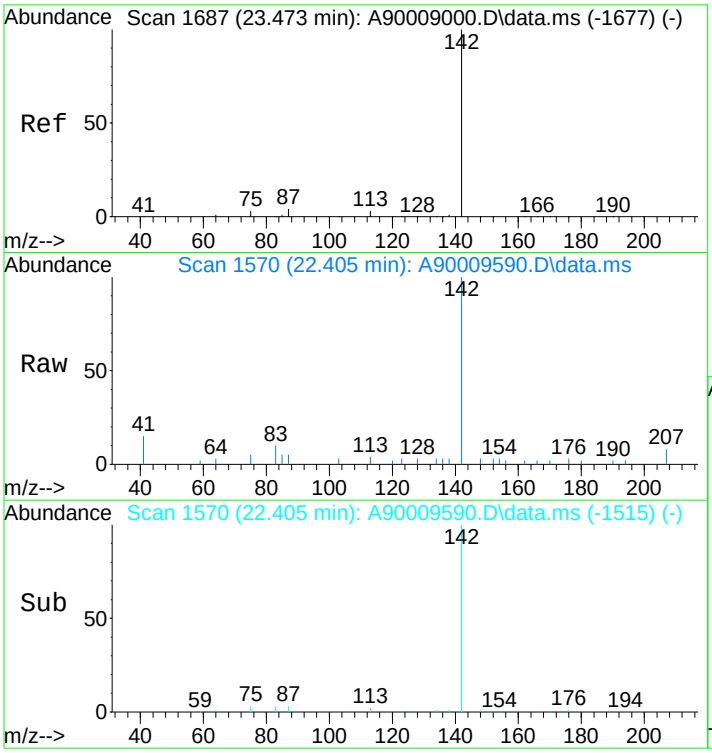


#16
2-Methylnaphthalene
Concen: 89.43 ng/mL
RT: 21.994 min Scan# 1525
Delta R.T. 0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:142 Resp: 15267

Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	0.0

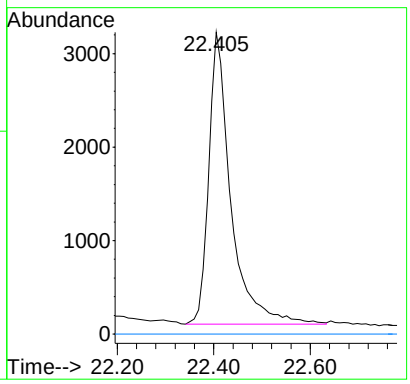


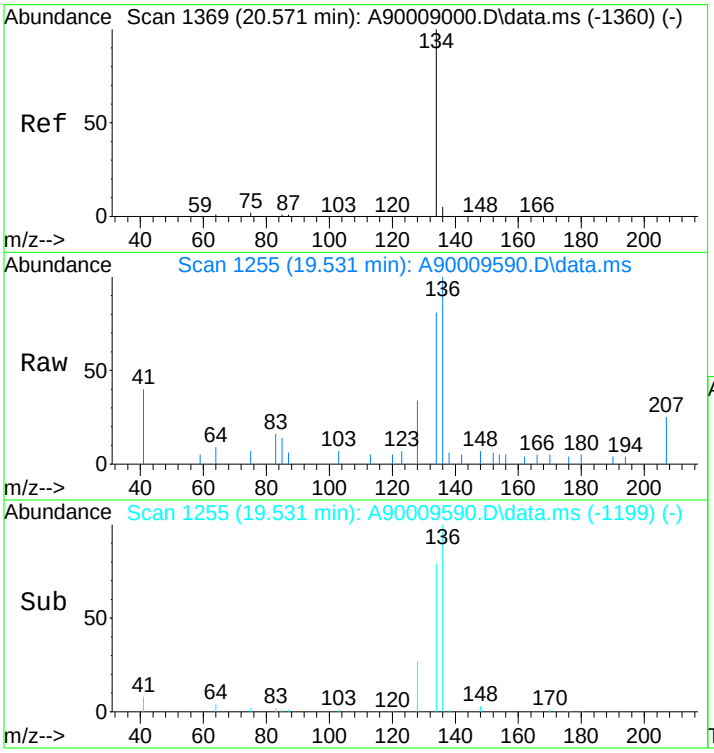


#17
1-Methylnaphthalene
Concen: 59.75 ng/mL
RT: 22.405 min Scan# 1570
Delta R.T. 0.000 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:142 Resp: 9899

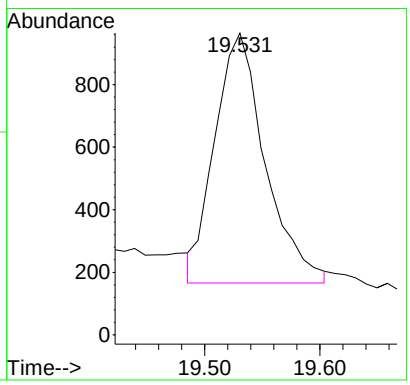
Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	20.0

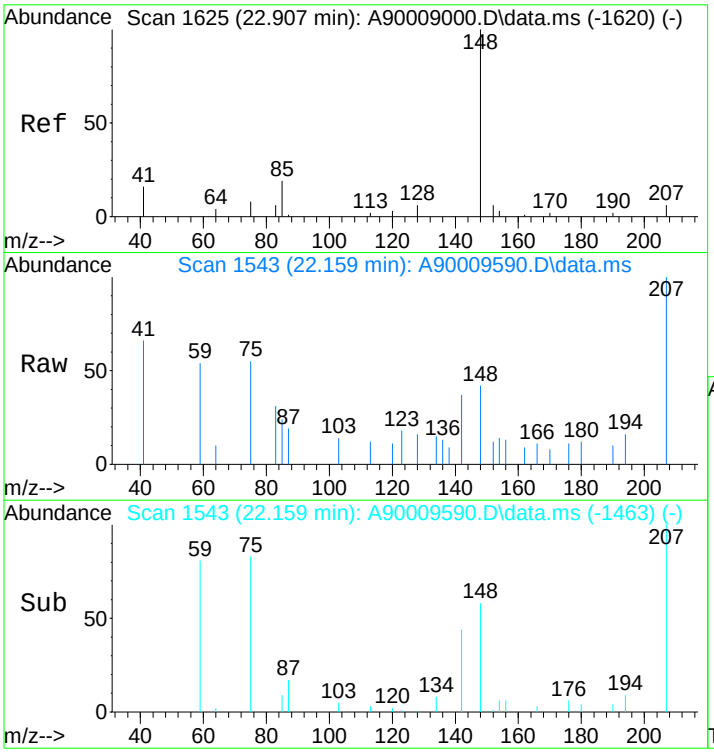




#18
Benzothiophene
Concen: 11.11 ng/mL m
RT: 19.531 min Scan# 1255
Delta R.T. 0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

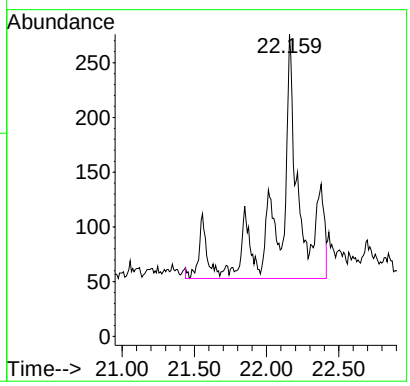
Tgt Ion:134 Resp: 2427

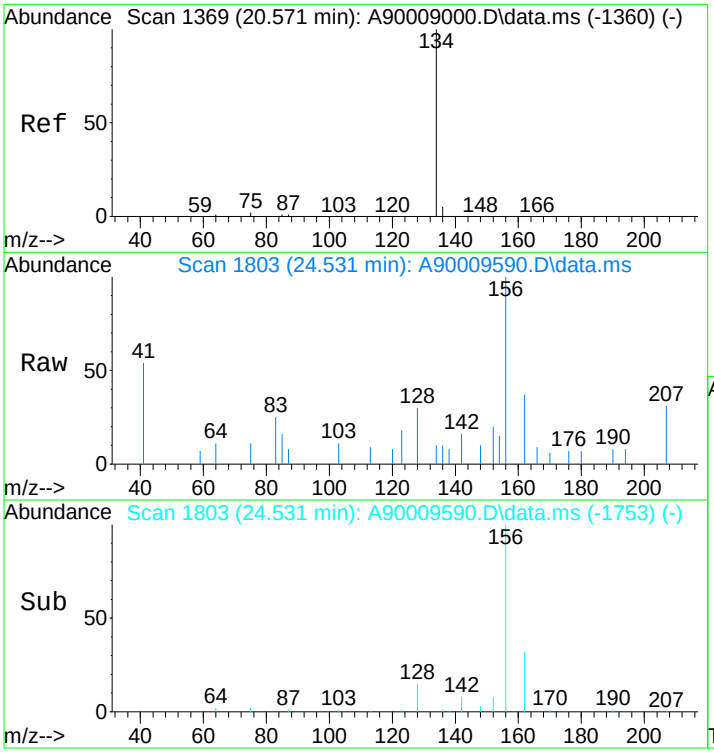




#19
C1-Benzo(b)thiophenes
Concen: 10.45 ng/mL m
RT: 22.159 min Scan# 1543
Delta R.T. 0.603 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

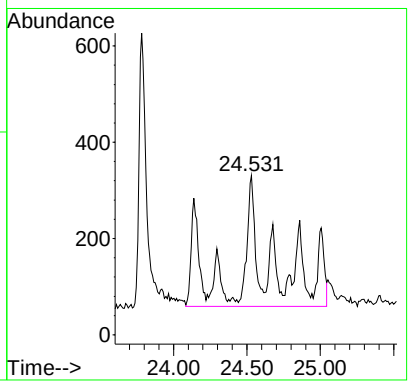
Tgt Ion:148 Resp: 2283

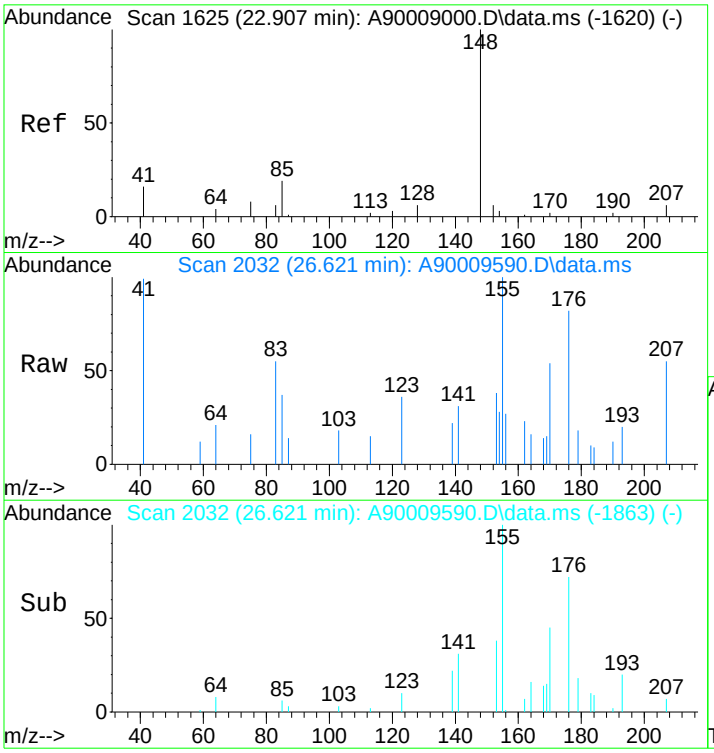




#20
C2-Benzo(b)thiophenes
Concen: 19.20 ng/mL m
RT: 24.531 min Scan# 1803
Delta R.T. -0.474 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

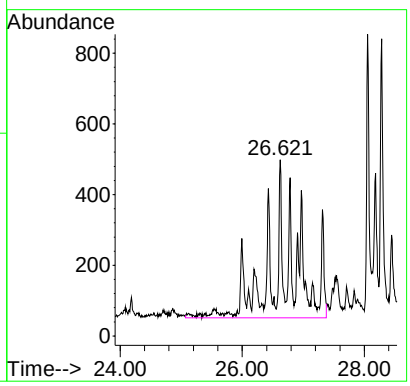
Tgt Ion:162 Resp: 4194

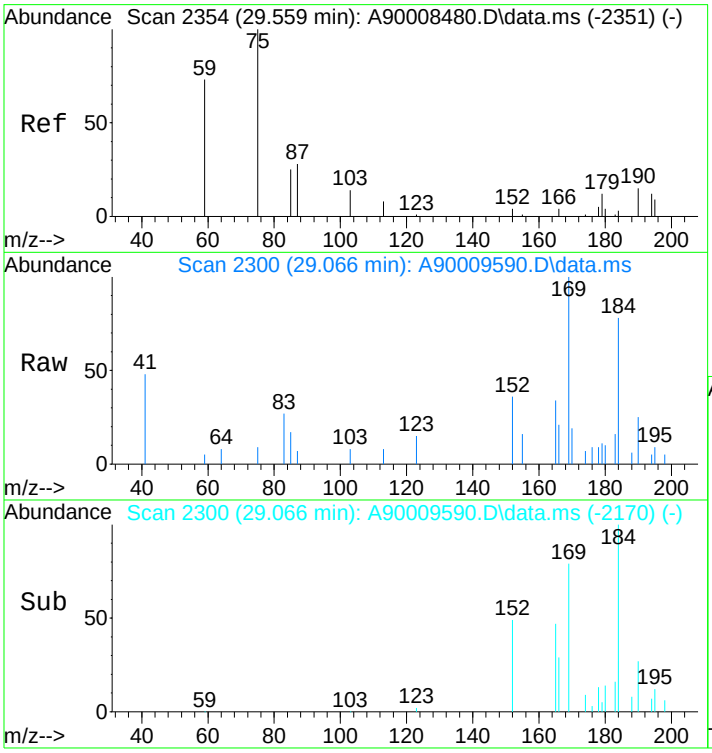




#21
C3-Benzo(b)thiophenes
Concen: 45.00 ng/mL m
RT: 26.621 min Scan# 2032
Delta R.T. -0.356 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

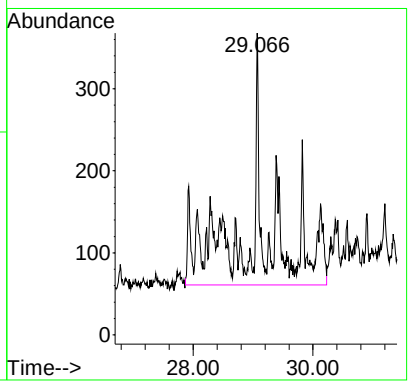
Tgt Ion:176 Resp: 9831

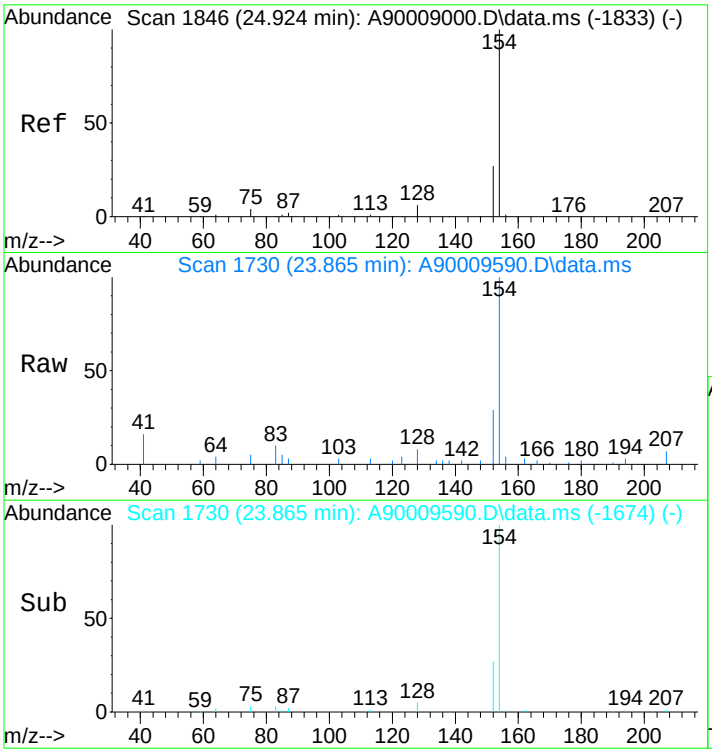




#22
C4-Benzo(b)thiophenes
Concen: 32.31 ng/mL m
RT: 29.066 min Scan# 2300
Delta R.T. -0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:190 Resp: 7057

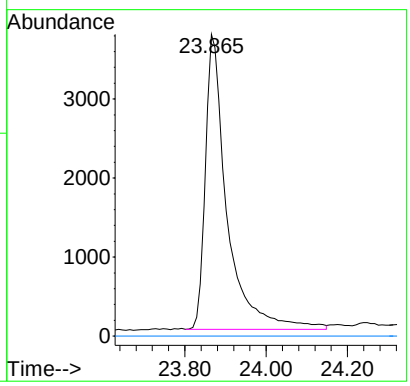


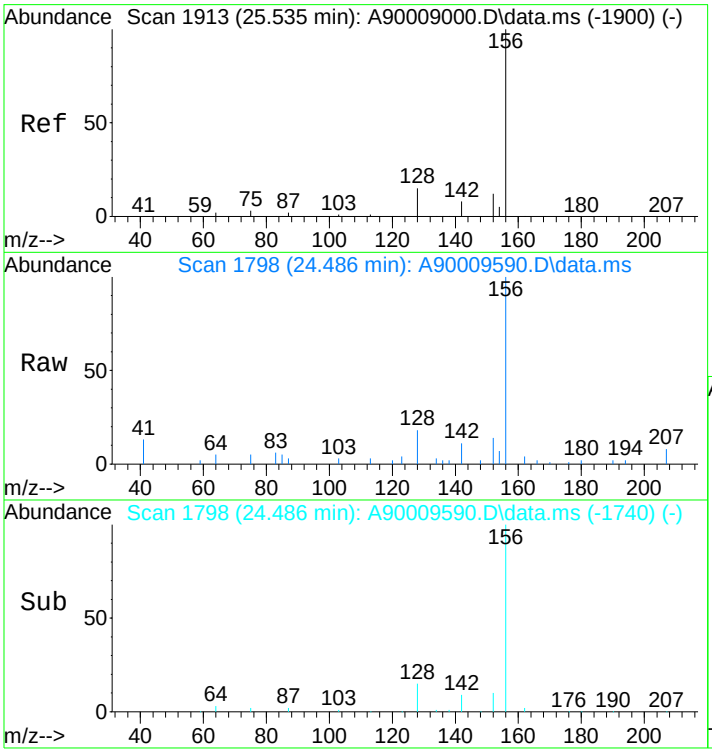


#23
Biphenyl
Concen: 61.93 ng/mL
RT: 23.865 min Scan# 1730
Delta R.T. 0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:154 Resp: 13834

Ion	Ratio	Lower	Upper
154	100		
153	0.0	0.0	0.0

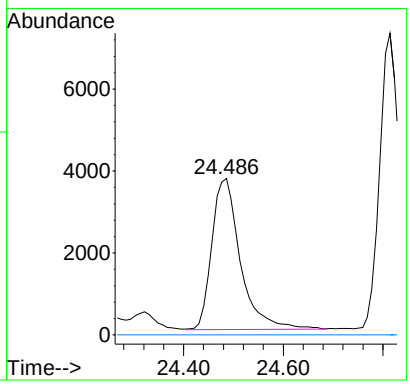


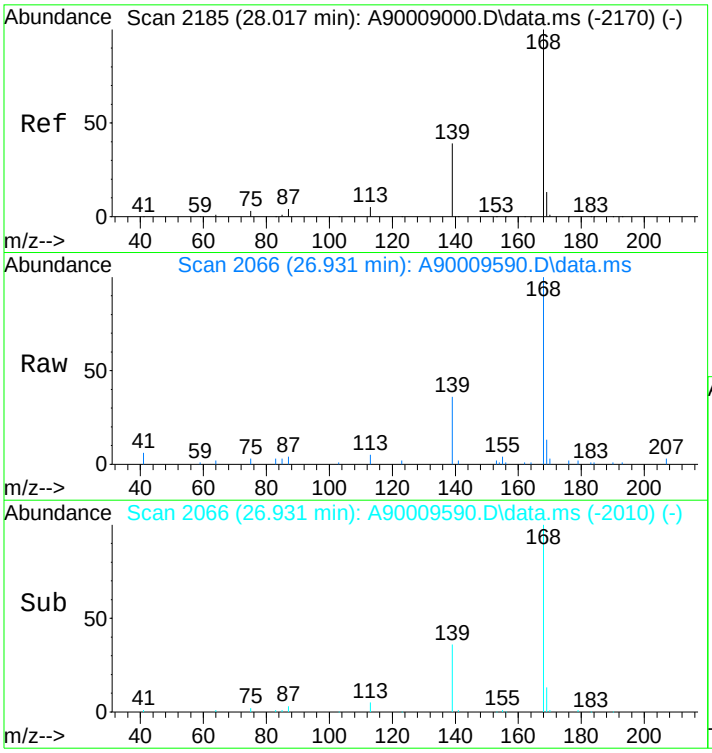


#24
2,6-Dimethylnaphthalene
Concen: 91.71 ng/mL
RT: 24.486 min Scan# 1798
Delta R.T. 0.027 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:156 Resp: 14716

Ion	Ratio	Lower	Upper
156	100		
155	0.0	0.0	0.0

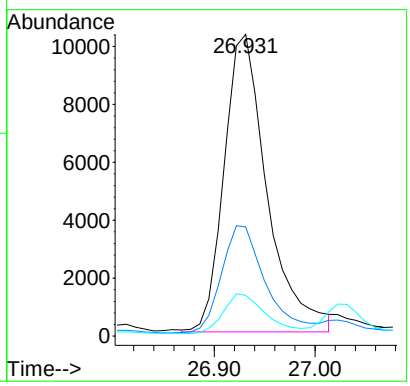


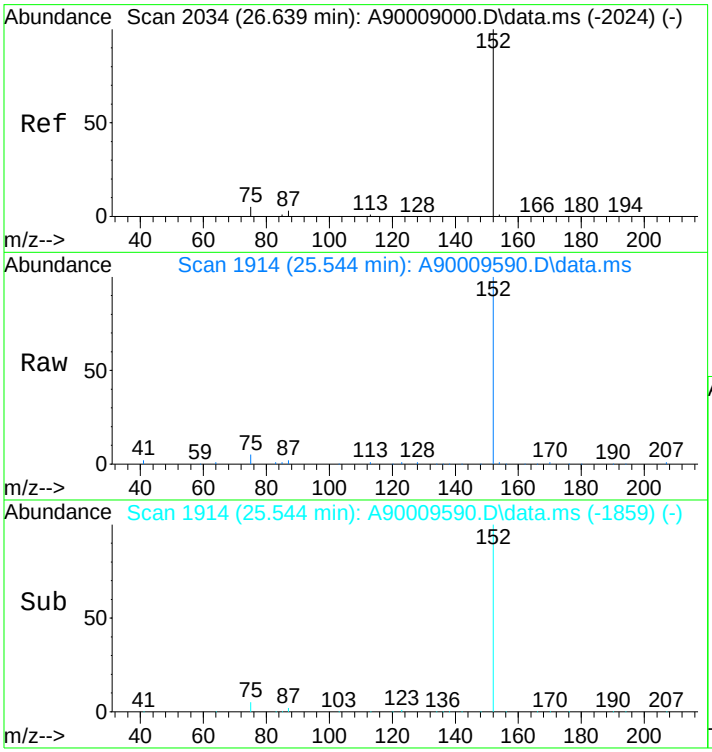


#25
Dibenzofuran
Concen: 128.09 ng/mL m
RT: 26.931 min Scan# 2066
Delta R.T. 0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:168 Resp: 30520

Ion	Ratio	Lower	Upper
168	100		
139	36.5	28.0	42.0
169	13.3	10.6	15.8

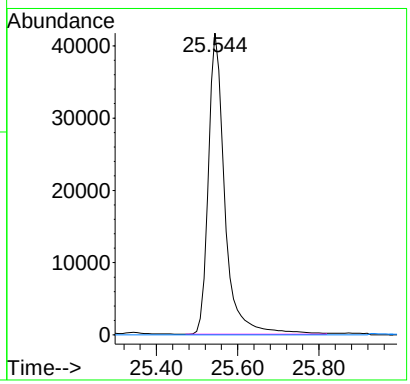


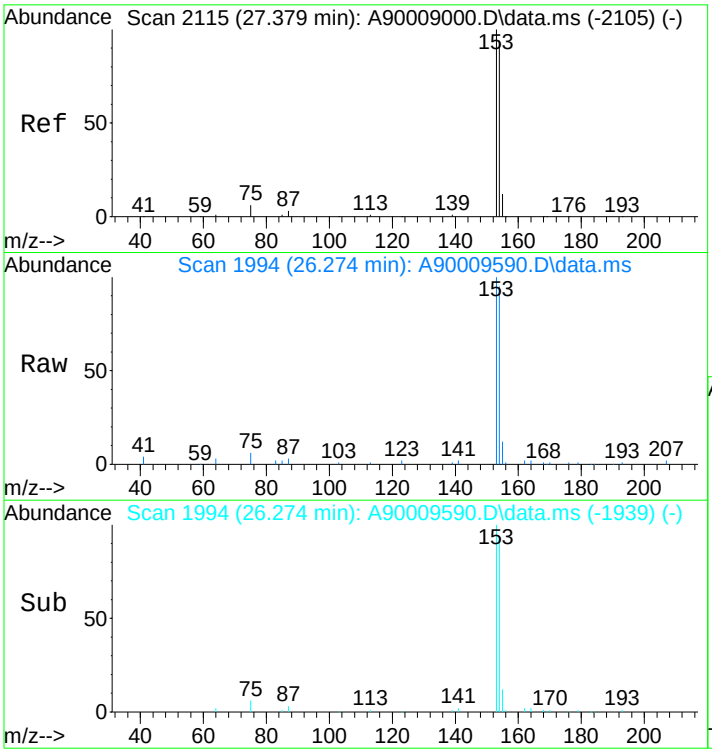


#26
Acenaphthylene
Concen: 435.92 ng/mL
RT: 25.544 min Scan# 1914
Delta R.T. 0.000 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:152 Resp: 117055

Ion	Ratio	Lower	Upper
152	100		
153	0.0	0.0	0.0

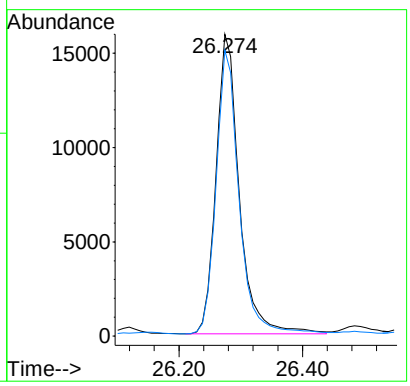


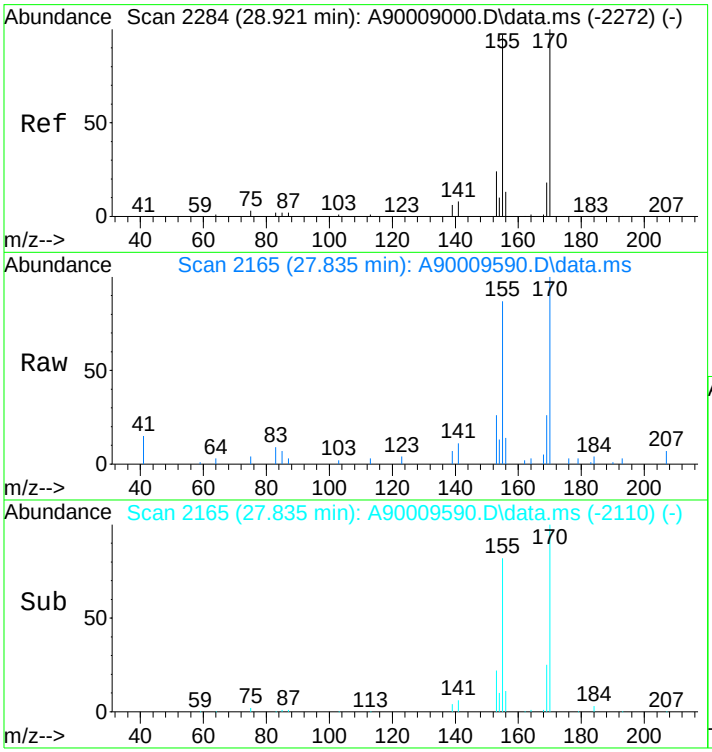


#27
Acenaphthene
Concen: 246.28 ng/mL
RT: 26.274 min Scan# 1994
Delta R.T. 0.000 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:153 Resp: 41579

Ion	Ratio	Lower	Upper
153	100		
154	93.2	75.4	113.0

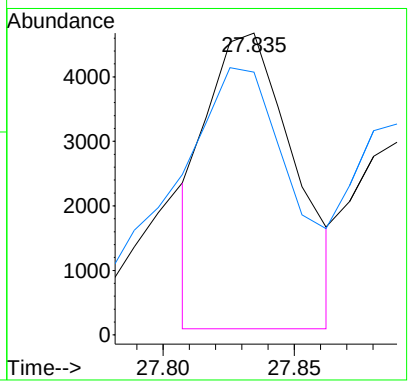


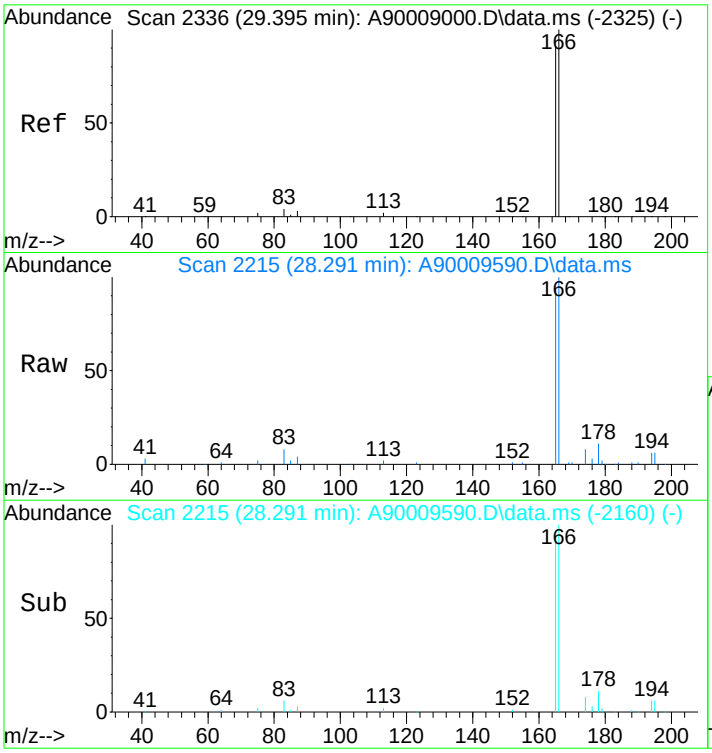


#28
2,3,5-Trimethylnaphthalene
Concen: 72.44 ng/mL m
RT: 27.835 min Scan# 2165
Delta R.T. 0.000 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:170 Resp: 10687

Ion	Ratio	Lower	Upper
170	100		
155	123.9	69.0	103.4#

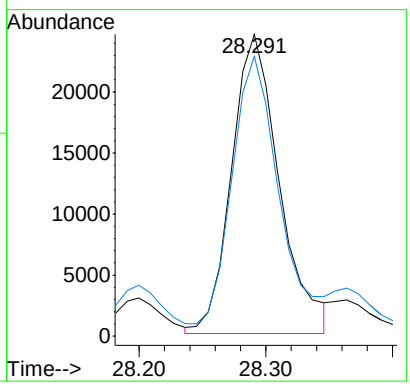


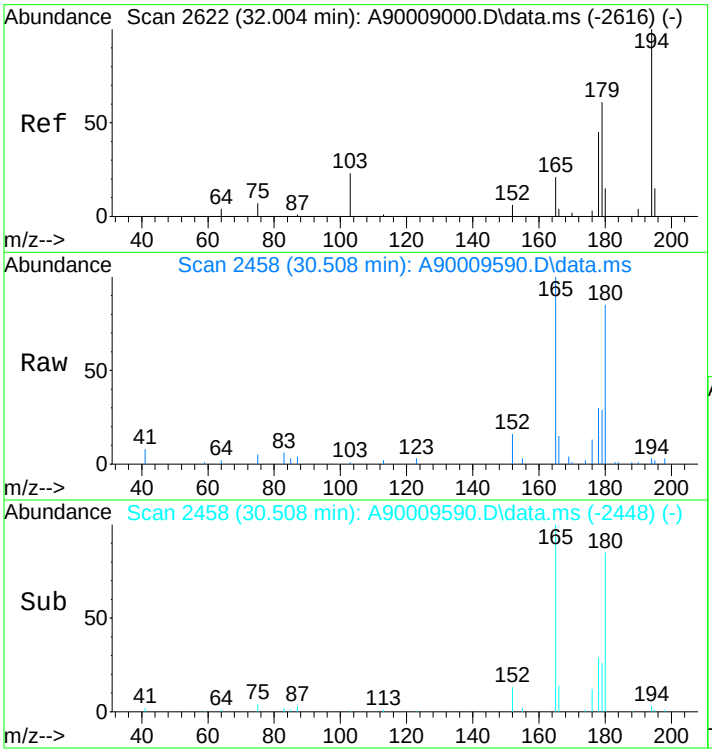


#29
Fluorene
Concen: 347.22 ng/mL m
RT: 28.291 min Scan# 2215
Delta R.T. 0.000 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:166 Resp: 64377

Ion	Ratio	Lower	Upper
166	100		
165	86.0	73.4	110.0

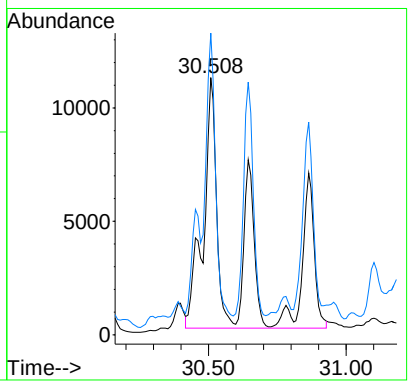


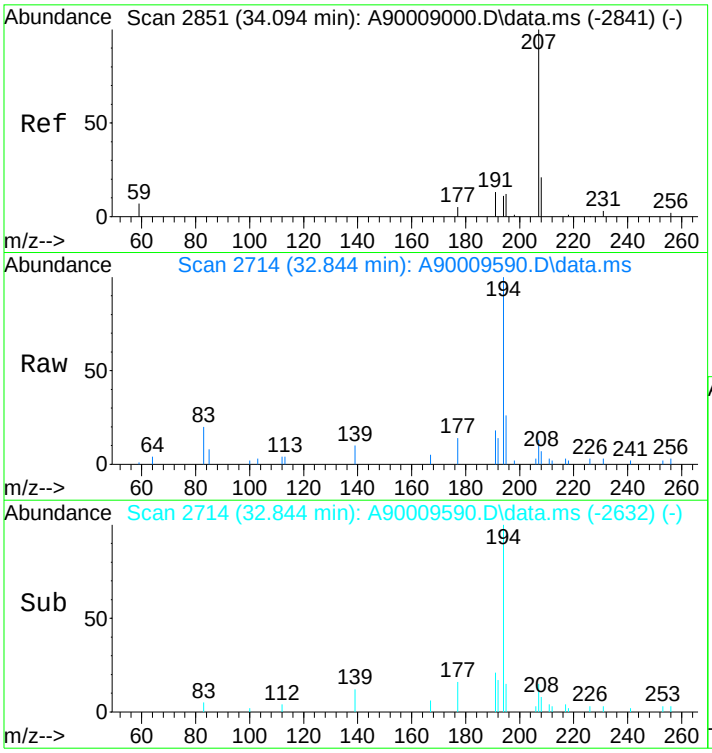


#30
C1-Fluorenes
Concen: 413.60 ng/mL m
RT: 30.508 min Scan# 2458
Delta R.T. -0.137 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:180 Resp: 76683

Ion	Ratio	Lower	Upper
180	100		
165	32.5	117.5	176.3#

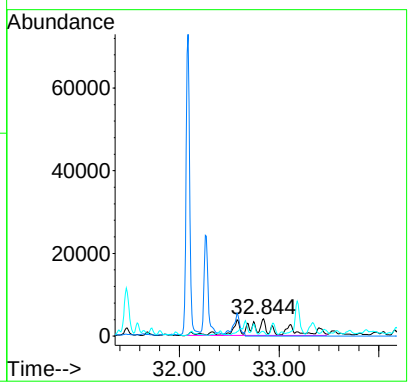


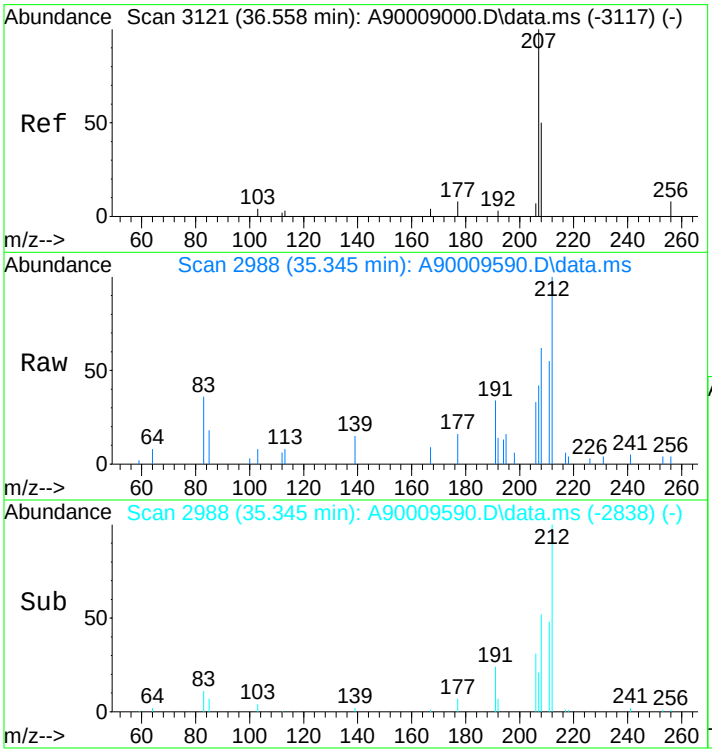


#31
C2-Fluorenes
Concen: 479.55 ng/mL m
RT: 32.844 min Scan# 2714
Delta R.T. 0.000 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:194 Resp: 88911

Ion	Ratio	Lower	Upper
194	100		
179	0.0	0.0	0.0
195	2.9	26.3	39.5#

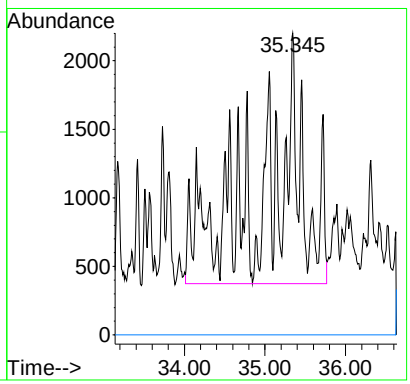


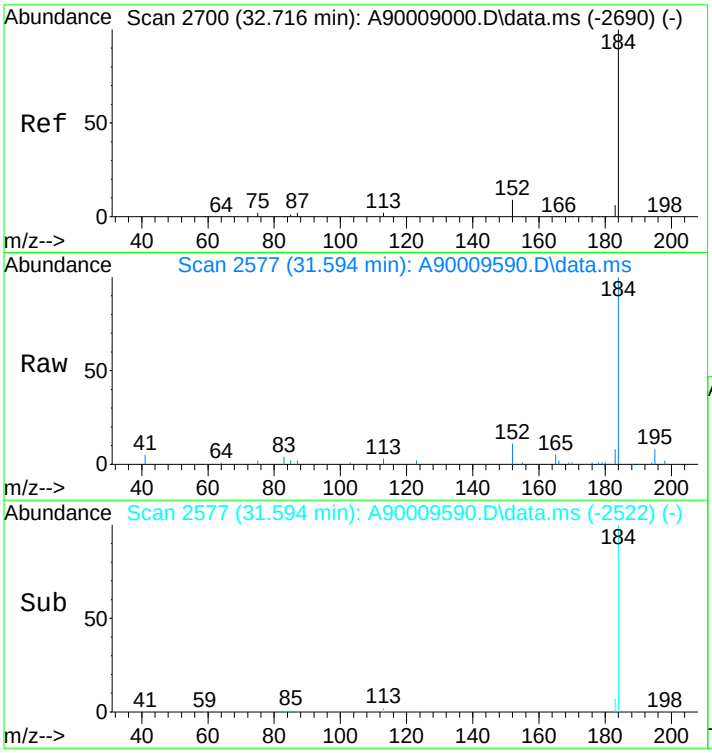


#32
C3-Fluorenes
Concen: 321.49 ng/mL m
RT: 35.345 min Scan# 2988
Delta R.T. 0.676 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:208 Resp: 59605

Ion	Ratio	Lower	Upper
208	100		
197	0.0	0.0	0.0

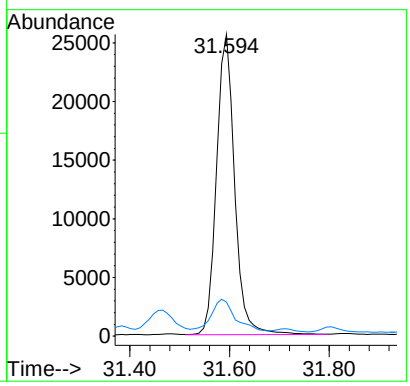


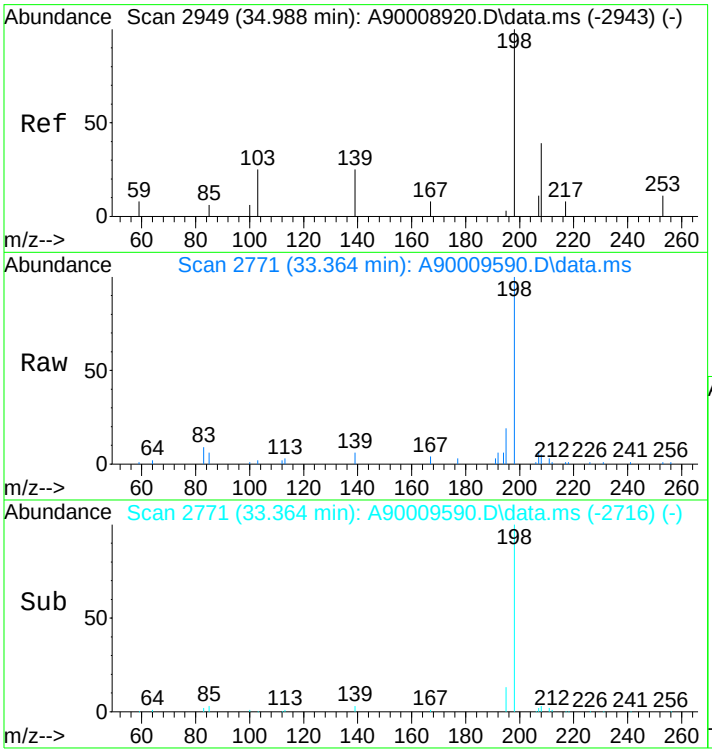


#33
Dibenzothiophene
Concen: 247.43 ng/mL
RT: 31.594 min Scan# 2577
Delta R.T. 0.000 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:184 Resp: 64530

Ion	Ratio	Lower	Upper
184	100		
152	13.6	7.0	10.4#

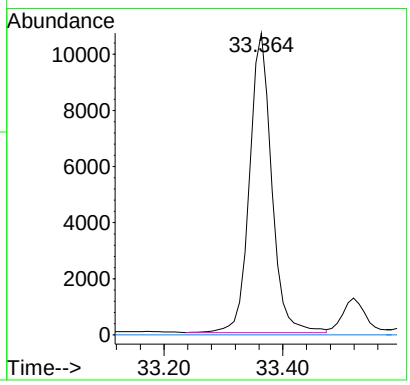


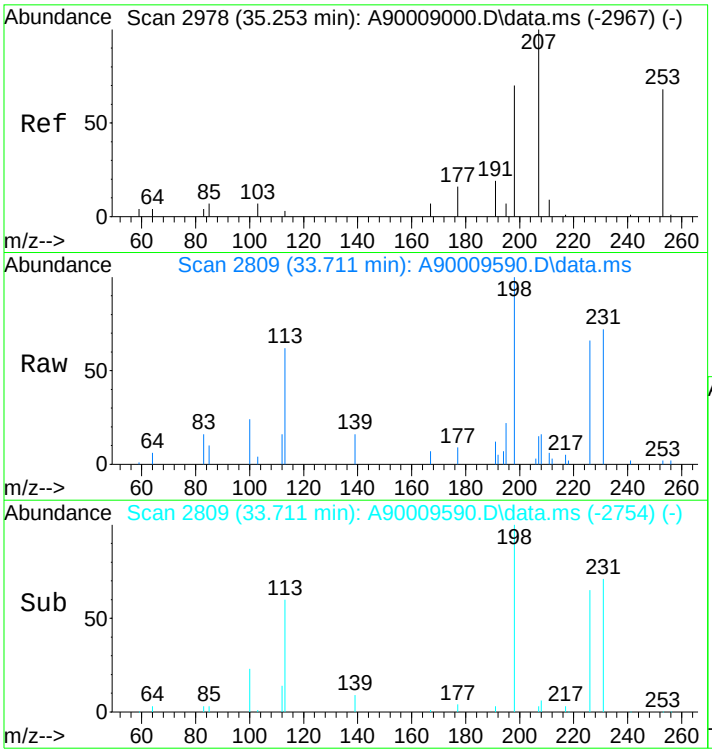


#34
4-Methyldibenzothiophene(4MDT)
Concen: 105.45 ng/mL
RT: 33.364 min Scan# 2771
Delta R.T. 0.000 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:198 Resp: 27502

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

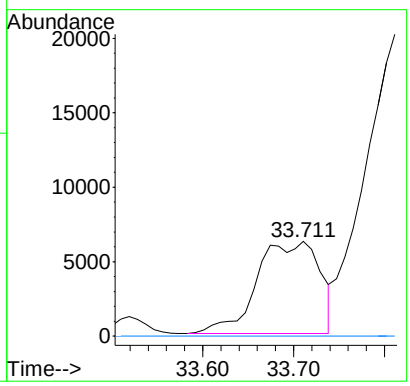


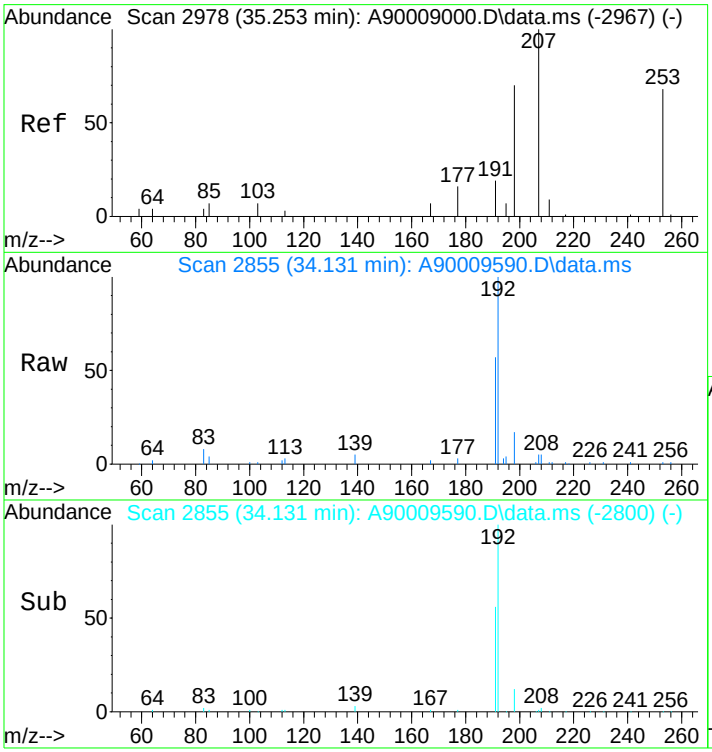


#35
2/3-Methyldibenzothiophene(2MDT)
Concen: 114.73 ng/mL m
RT: 33.711 min Scan# 2809
Delta R.T. 0.000 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:198 Resp: 29923

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

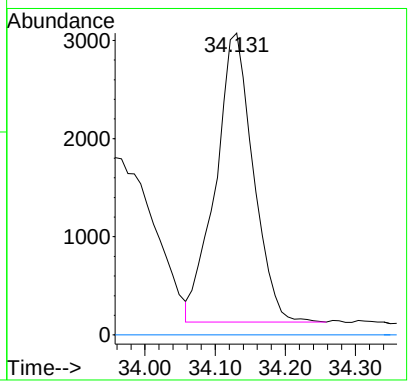


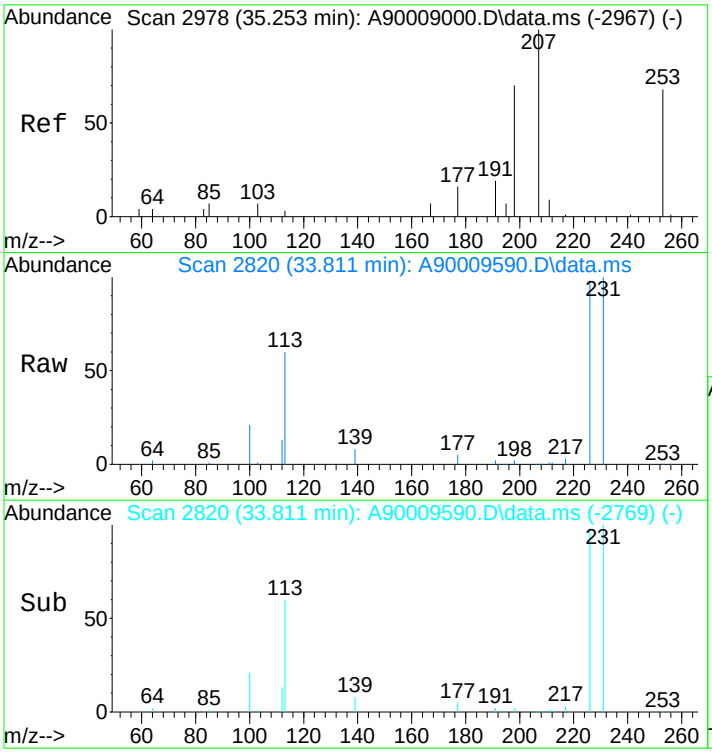


#36
1-Methyldibenzothiophene(1MDT)
Concen: 42.10 ng/mL
RT: 34.131 min Scan# 2855
Delta R.T. 0.000 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:198 Resp: 10979

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

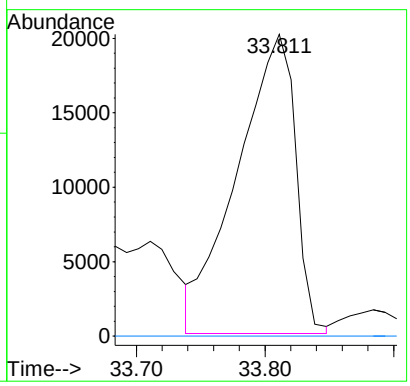


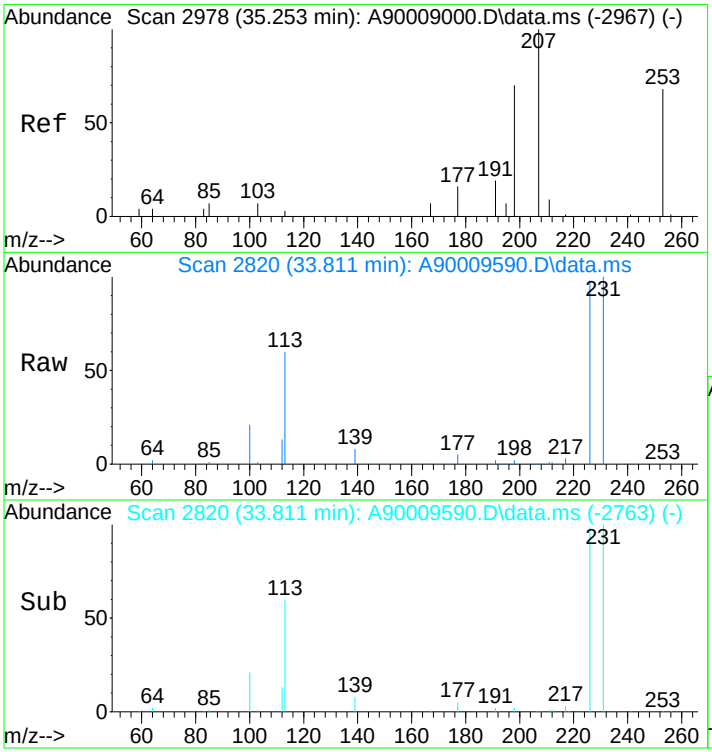


#37
OTP
Concen: 241.49 ng/mL
RT: 33.811 min Scan# 2820
Delta R.T. 0.019 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:198 Resp: 62981

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

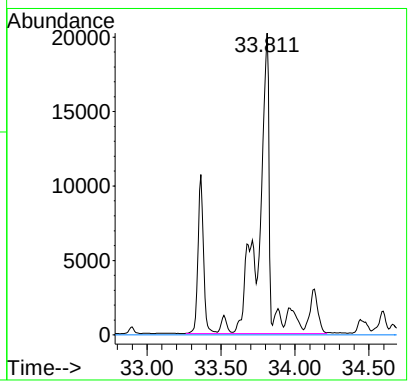


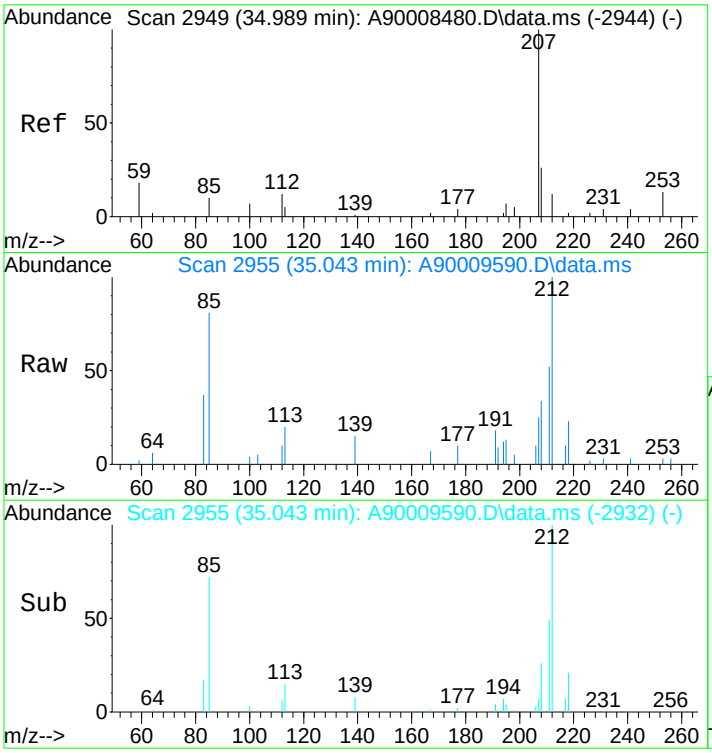


#38
C1-Dibenzothiophenes
Concen: 573.68 ng/mL m
RT: 33.811 min Scan# 2820
Delta R.T. 0.448 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:198 Resp: 149617

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

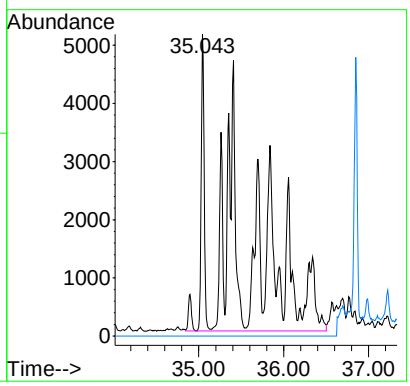


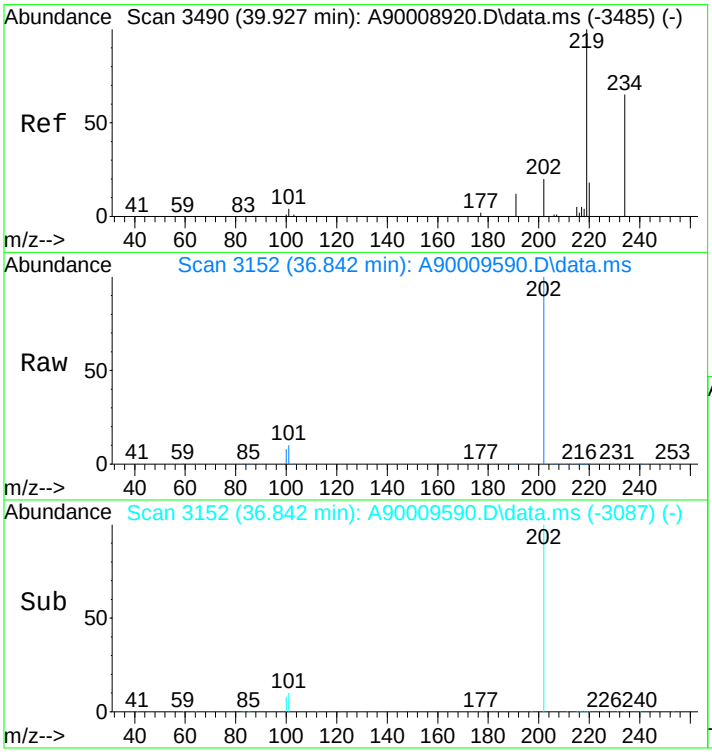


#39
C2-Dibenzothiophenes
Concen: 376.98 ng/mL m
RT: 35.043 min Scan# 2955
Delta R.T. -0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:212 Resp: 98317

Ion	Ratio	Lower	Upper
212	100		
197	0.0	0.0	0.0

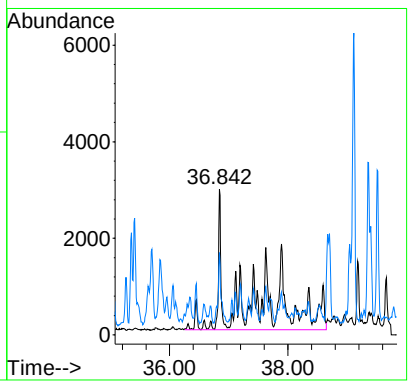


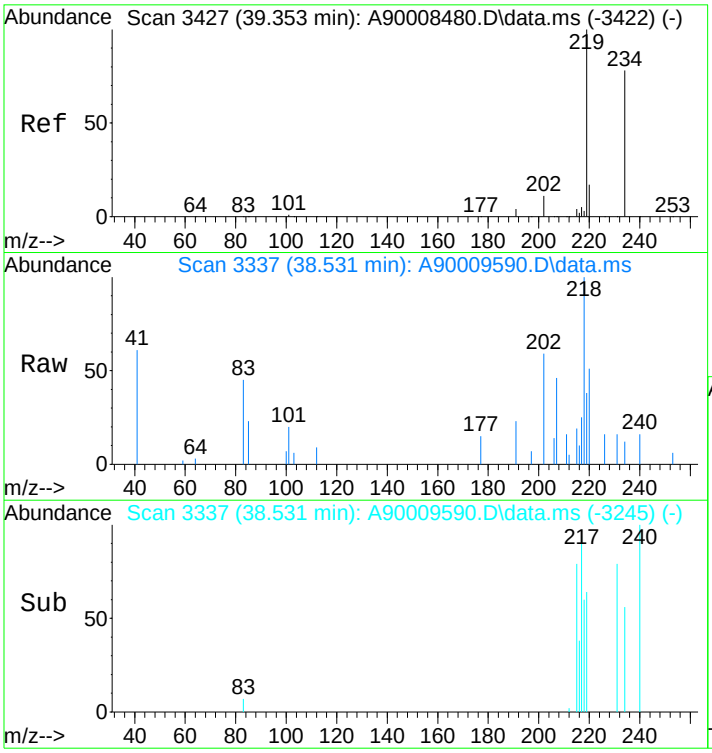


#40
C3-Dibenzothiophenes
Concen: 228.29 ng/mL m
RT: 36.842 min Scan# 3152
Delta R.T. -0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:226 Resp: 59538

Ion	Ratio	Lower	Upper
226	100		
211	8.8	46.4	69.6#

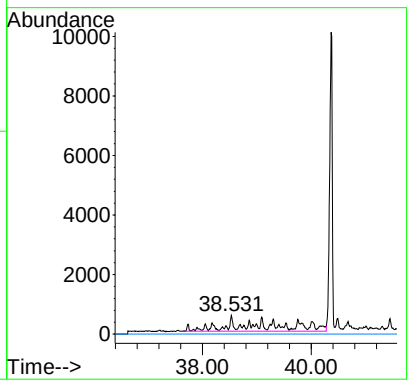


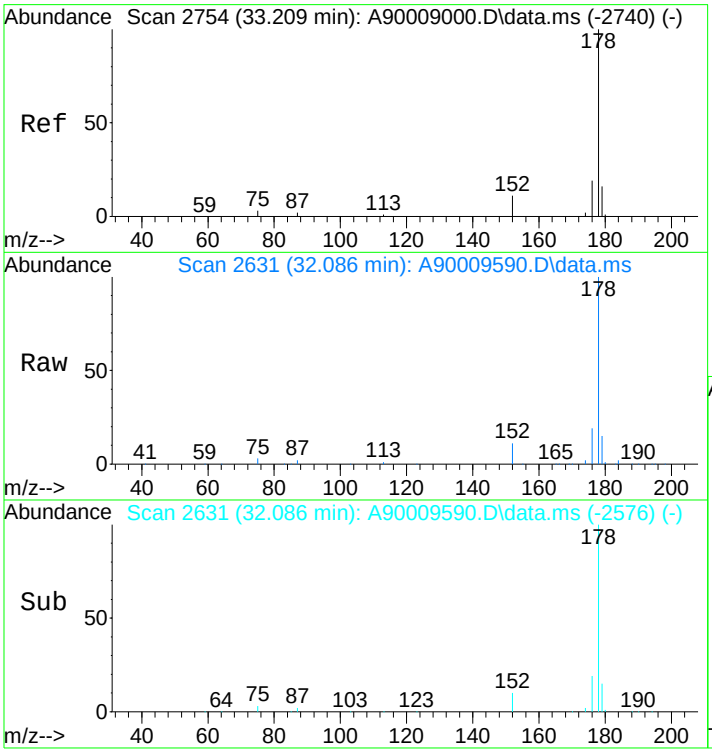


#41
C4-Dibenzothiophenes
Concen: 90.03 ng/mL m
RT: 38.531 min Scan# 3337
Delta R.T. -0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:240 Resp: 23480

Ion	Ratio	Lower	Upper
240	100		
225	0.0	0.0	0.0

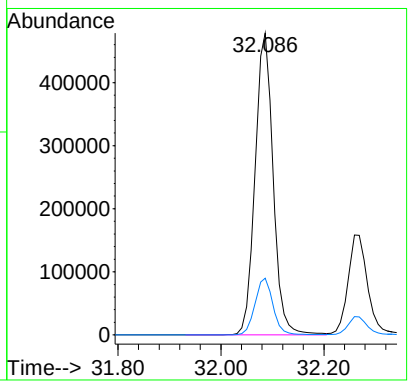


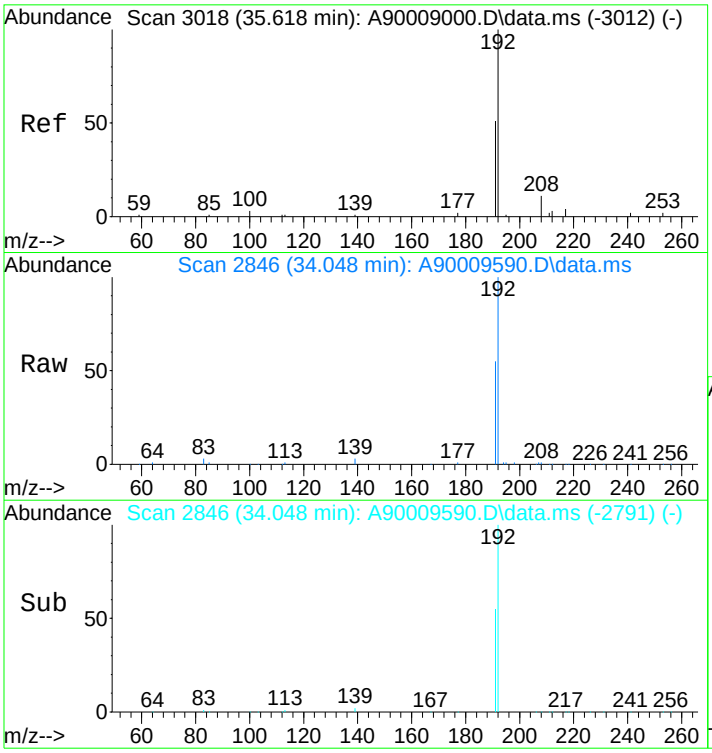


#43
Phenanthrene
Concen: 4319.21 ng/mL
RT: 32.086 min Scan# 2631
Delta R.T. 0.000 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:178 Resp: 1163769

Ion	Ratio	Lower	Upper
178	100		
176	18.8	15.1	22.7

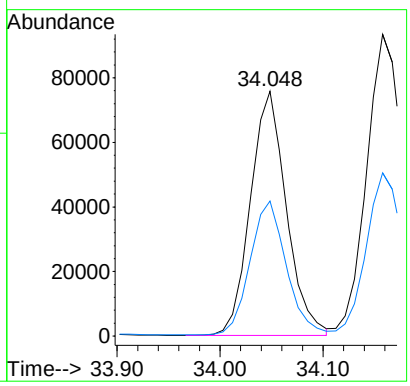


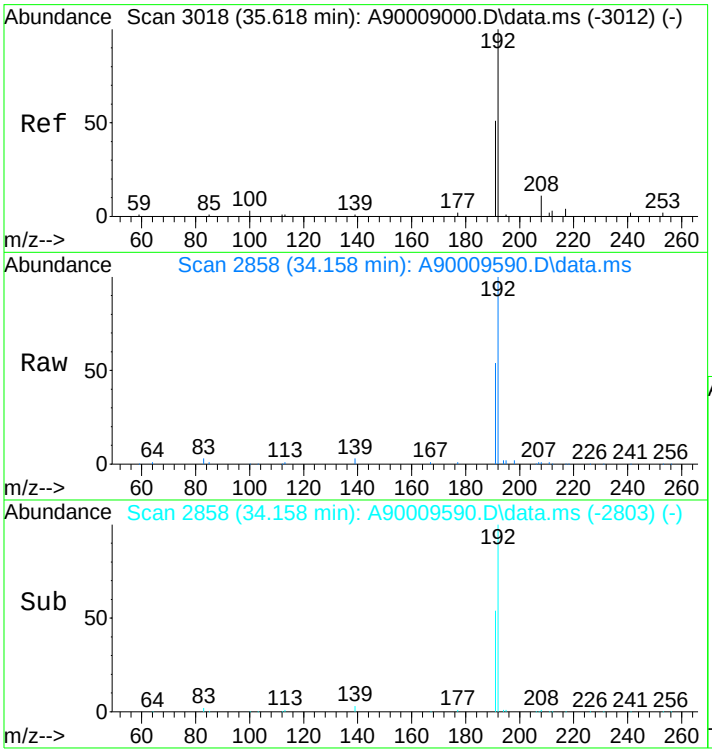


#44
3-Methylphenanthrene(3MP)
Concen: 680.66 ng/mL
RT: 34.048 min Scan# 2846
Delta R.T. 0.000 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:192 Resp: 183396

Ion	Ratio	Lower	Upper
192	100		
191	55.2	45.9	68.9

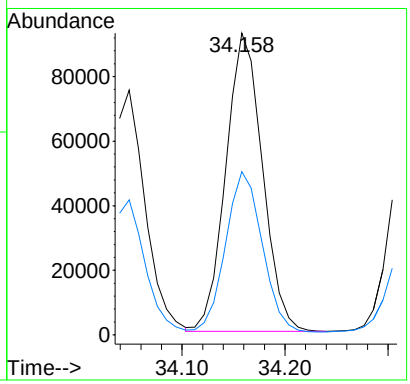


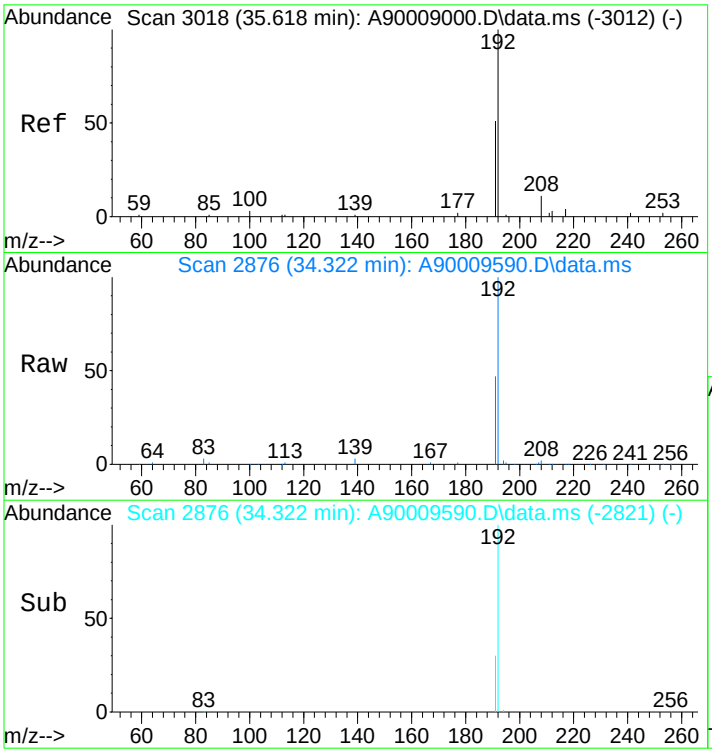


#45
2-Methylphenanthrene(2MP)
Concen: 847.60 ng/mL
RT: 34.158 min Scan# 2858
Delta R.T. 0.000 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:192 Resp: 228378

Ion	Ratio	Lower	Upper
192	100		
191	53.5	44.9	67.3

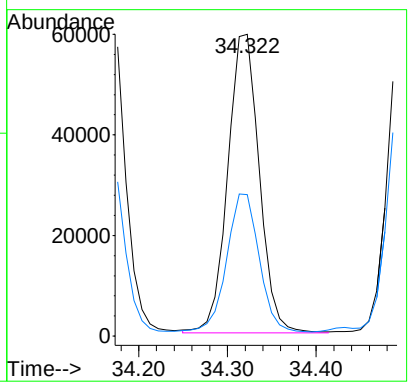


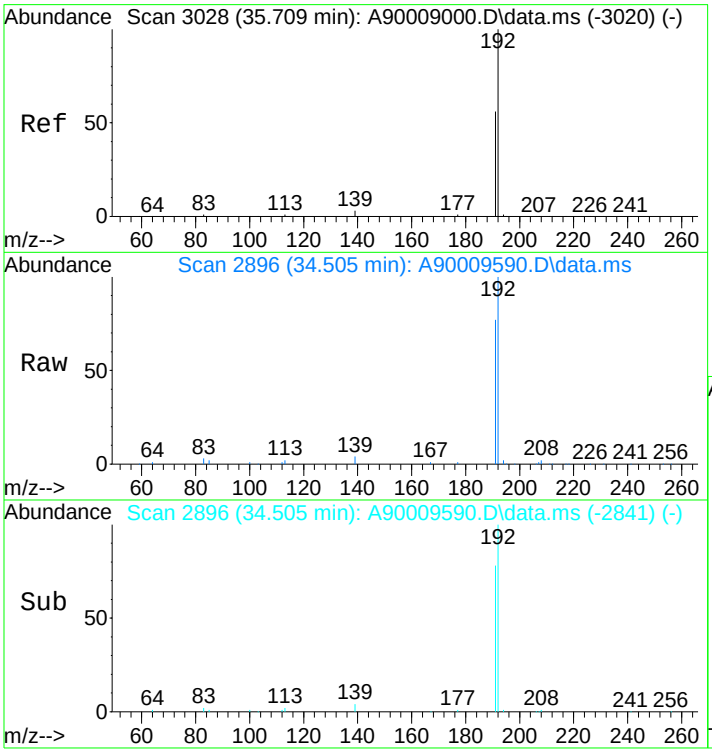


#46
2-Methylanthracene(2MA)
Concen: 546.08 ng/mL m
RT: 34.322 min Scan# 2876
Delta R.T. 0.000 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:192 Resp: 147136

Ion	Ratio	Lower	Upper
192	100		
191	0.5	96.8	145.2#

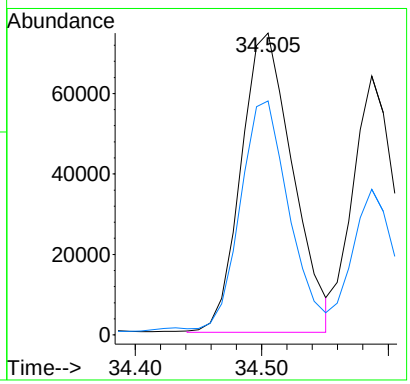


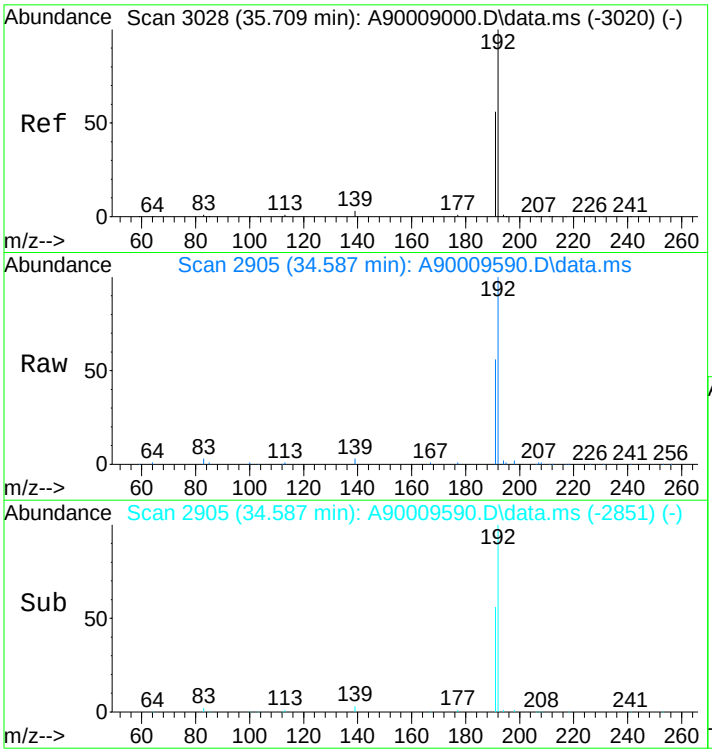


#47
9/4-Methylphenanthrene(9MP)
Concen: 782.43 ng/mL m
RT: 34.505 min Scan# 2896
Delta R.T. 0.000 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:192 Resp: 210818

Ion	Ratio	Lower	Upper
192	100		
191	39.0	44.5	66.7#

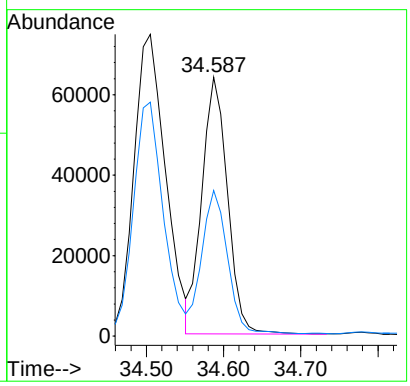


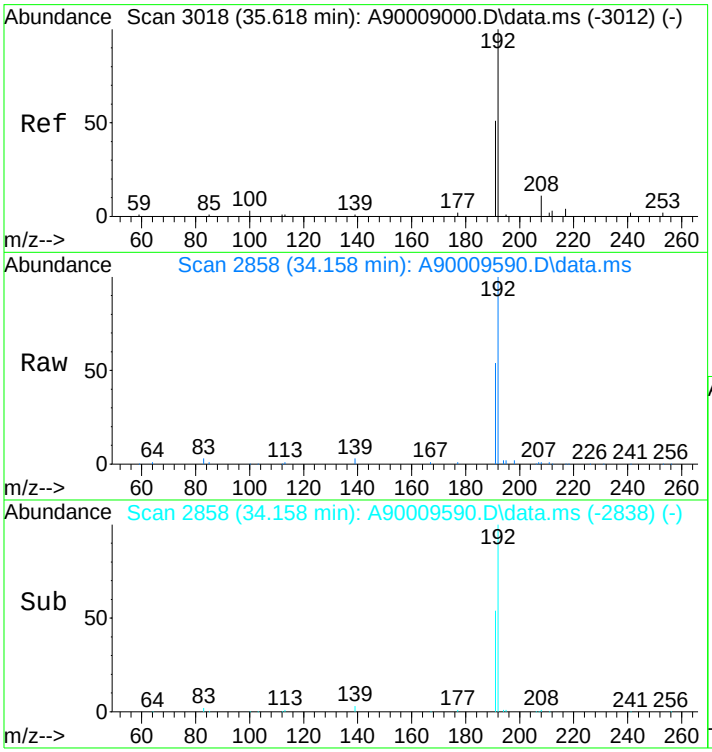


#48
1-Methylphenanthrene(1MP)
Concen: 546.88 ng/mL
RT: 34.587 min Scan# 2905
Delta R.T. -0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:192 Resp: 147352

Ion	Ratio	Lower	Upper
192	100		
191	55.8	46.9	70.3

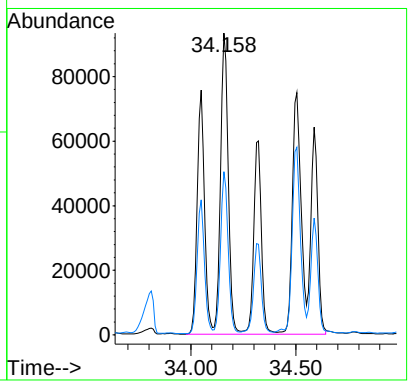


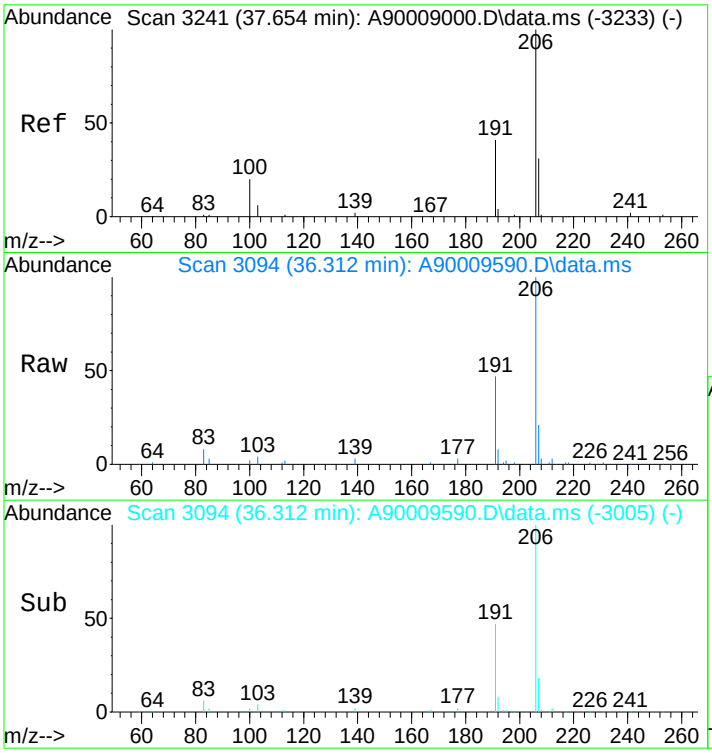


#49
C1-Phenanthrenes/Anthracenes
Concen: 3462.26 ng/mL m
RT: 34.158 min Scan# 2858
Delta R.T. -0.347 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:192 Resp: 932873

Ion	Ratio	Lower	Upper
192	100		
191	6.5	44.5	66.7#

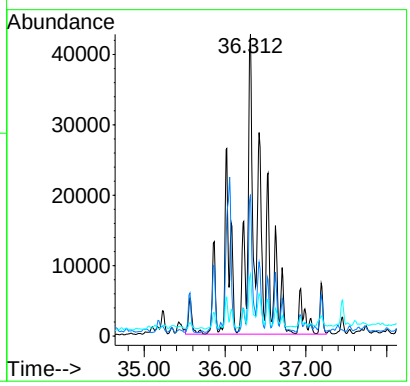


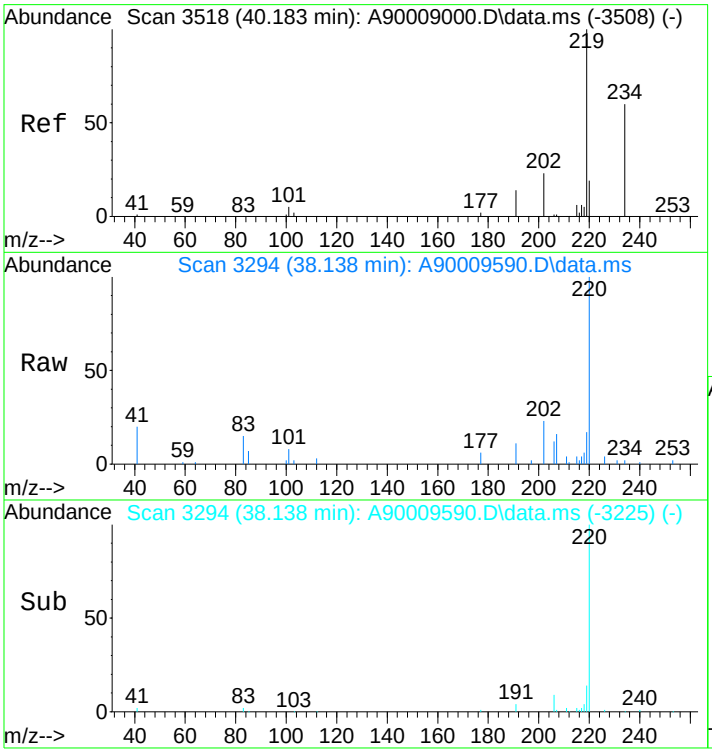


#50
C2-Phenanthrenes/Anthracenes
Concen: 2257.43 ng/mL m
RT: 36.312 min Scan# 3094
Delta R.T. 0.000 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:206 Resp: 608243

Ion	Ratio	Lower	Upper
206	100		
191	10.2	41.0	61.4#
207	4.0	17.1	25.7#

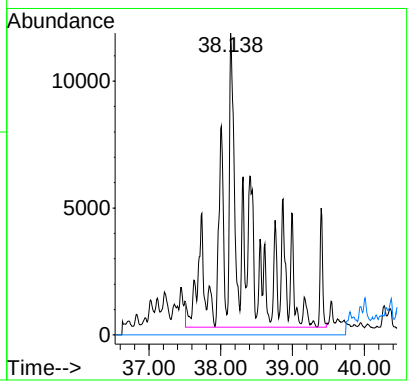


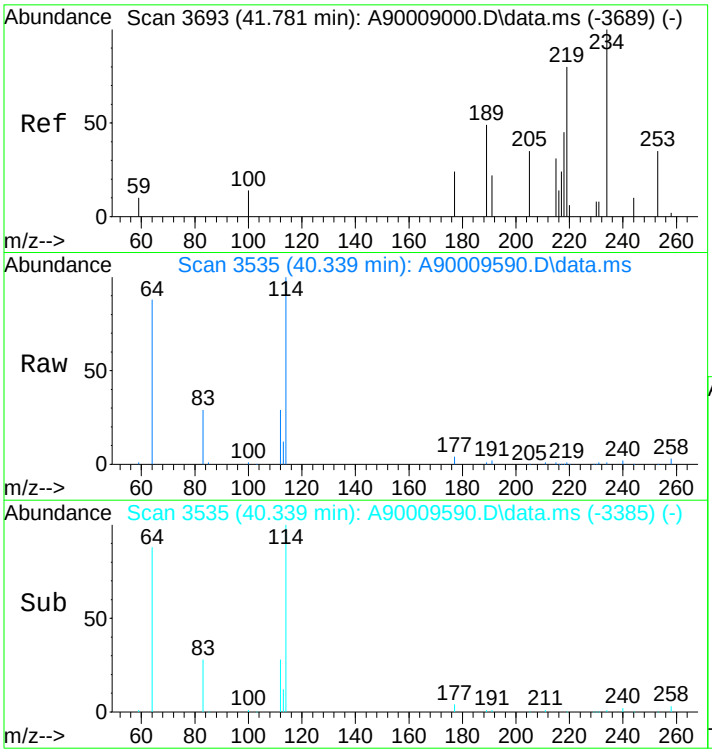


#52
C3-Phenanthrenes/Anthracenes
Concen: 904.56 ng/mL m
RT: 38.138 min Scan# 3294
Delta R.T. -0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:220 Resp: 243724

Ion	Ratio	Lower	Upper
220	100		
205	0.0	0.0	0.0

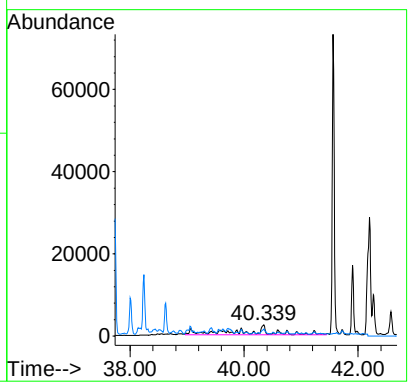


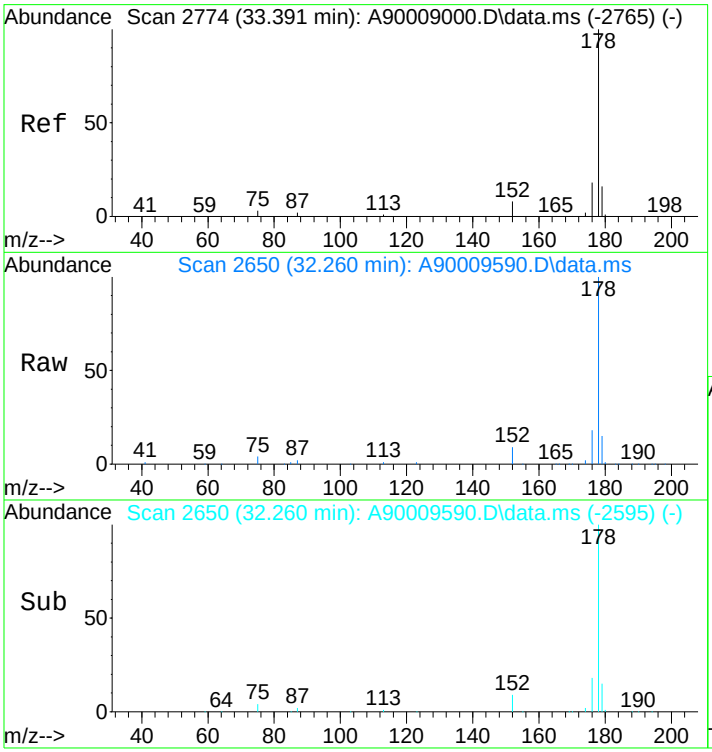


#53
C4-Phenanthrenes/Anthracenes
Concen: 287.38 ng/mL m
RT: 40.339 min Scan# 3535
Delta R.T. 0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:234 Resp: 77433

Ion	Ratio	Lower	Upper
234	100		
219	1.3	52.1	78.1#

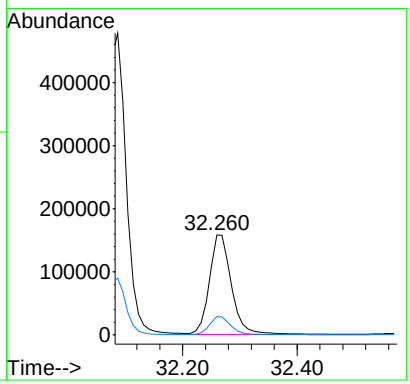


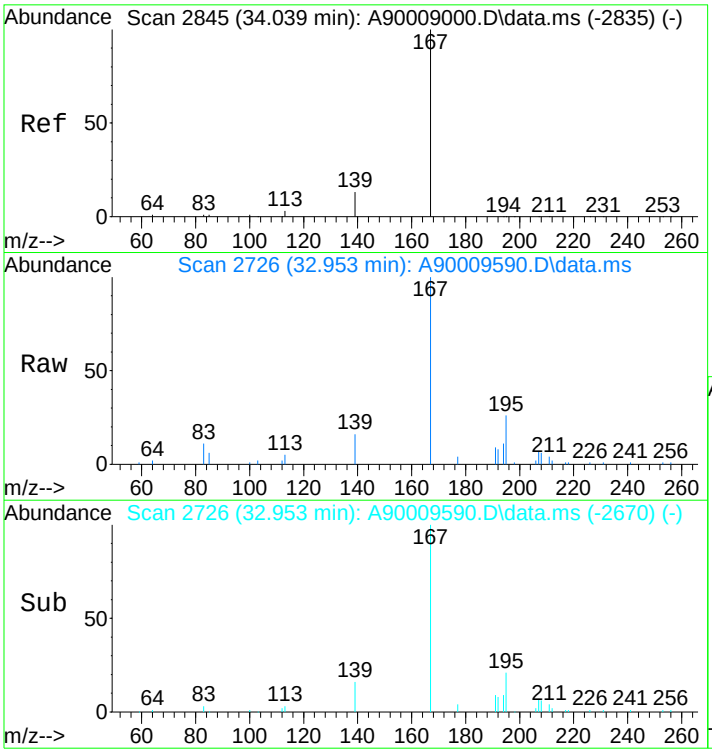


#55
Anthracene
Concen: 1676.66 ng/mL
RT: 32.260 min Scan# 2650
Delta R.T. 0.000 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:178 Resp: 419512

Ion	Ratio	Lower	Upper
178	100		
176	18.2	14.6	21.8

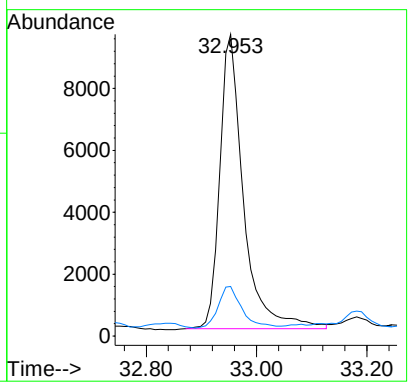


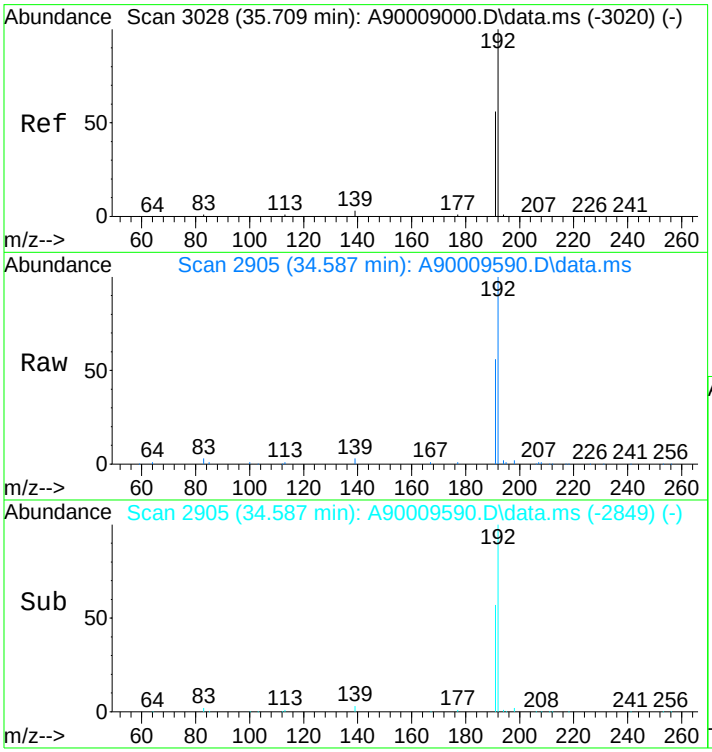


#56
Carbazole
Concen: 119.68 ng/mL
RT: 32.953 min Scan# 2726
Delta R.T. 0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:167 Resp: 28328

Ion	Ratio	Lower	Upper
167	100		
139	15.4	10.2	15.2#

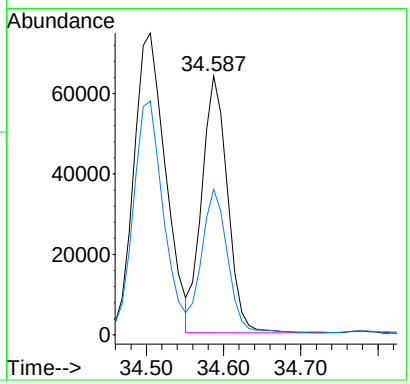


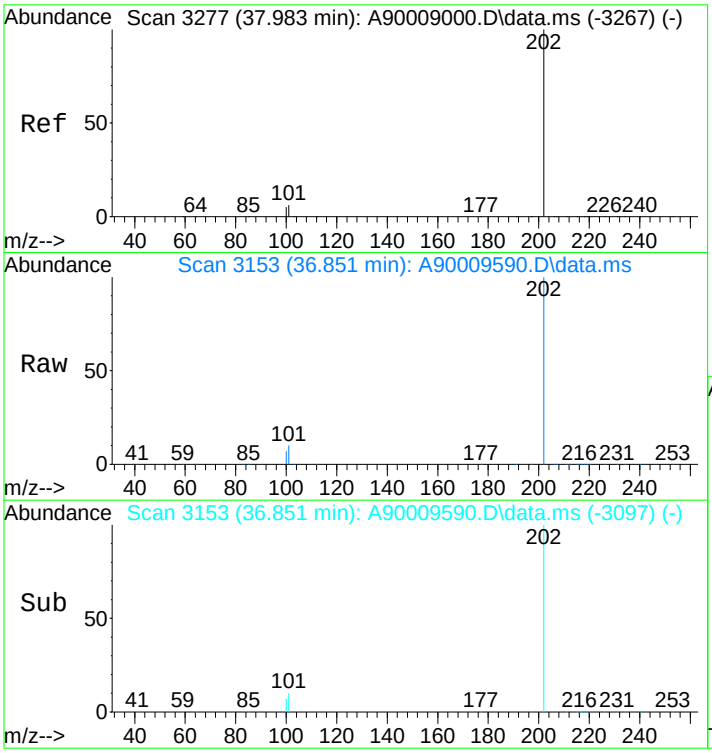


#57
1-Methylphenanthrene
Concen: 741.27 ng/mL
RT: 34.587 min Scan# 2905
Delta R.T. 0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:192 Resp: 147358

Ion	Ratio	Lower	Upper
192	100		
191	55.8	44.9	67.3

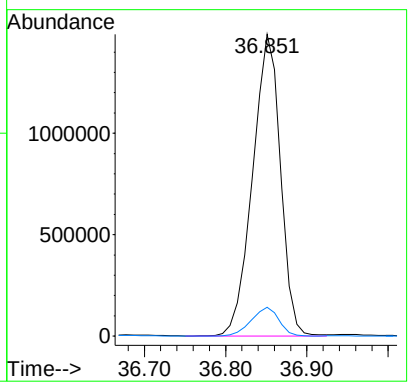


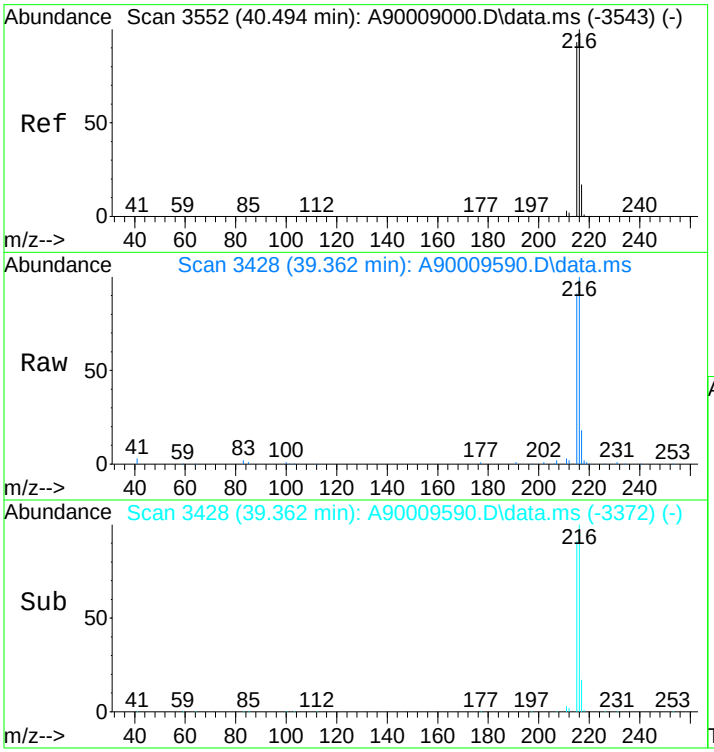


#58
Fluoranthene
Concen: 11771.10 ng/mL
RT: 36.851 min Scan# 3153
Delta R.T. 0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:202 Resp: 3543010

Ion	Ratio	Lower	Upper
202	100		
101	9.5	8.2	12.2

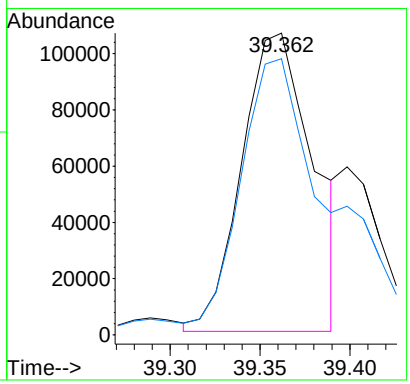


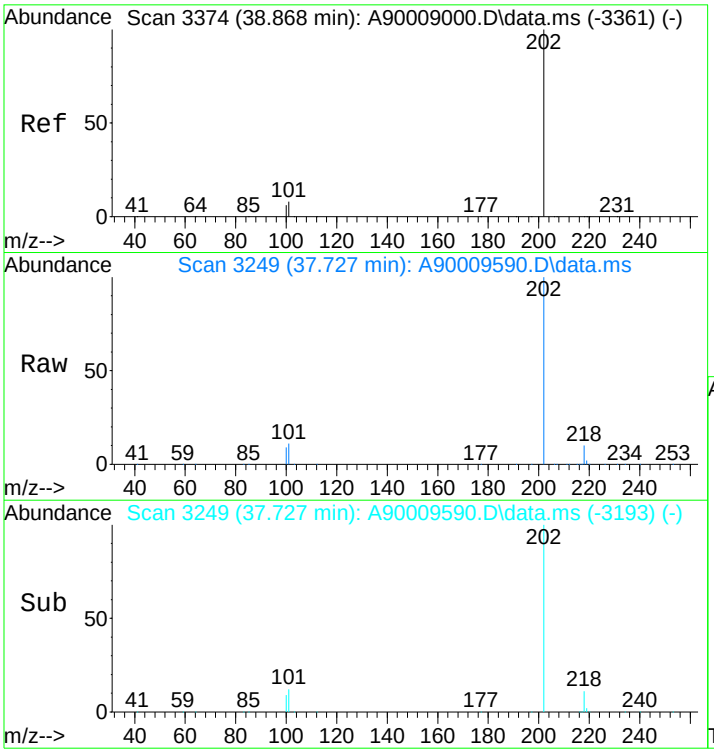


#59
Benzo(b)fluorene
Concen: 1635.04 ng/mL m
RT: 39.362 min Scan# 3428
Delta R.T. 0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:216 Resp: 292675

Ion	Ratio	Lower	Upper
216	100		
215	115.3	73.4	110.2#

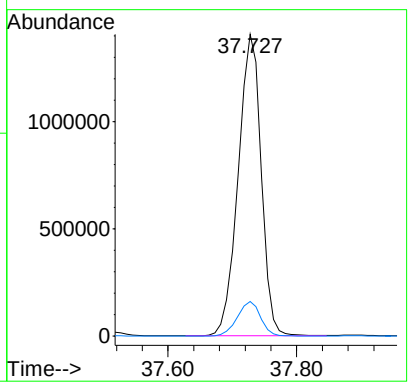


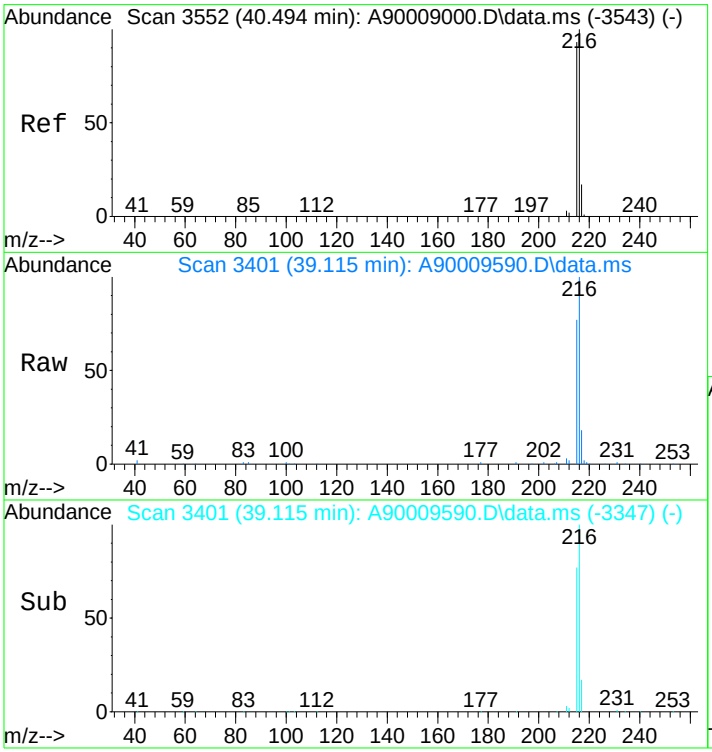


#60
Pyrene
Concen: 11373.47 ng/mL
RT: 37.727 min Scan# 3249
Delta R.T. 0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:202 Resp: 3492511

Ion	Ratio	Lower	Upper
202	100		
101	11.6	9.5	14.3

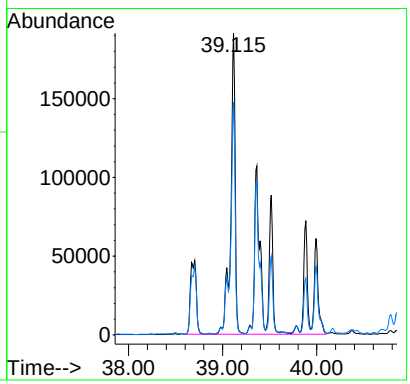


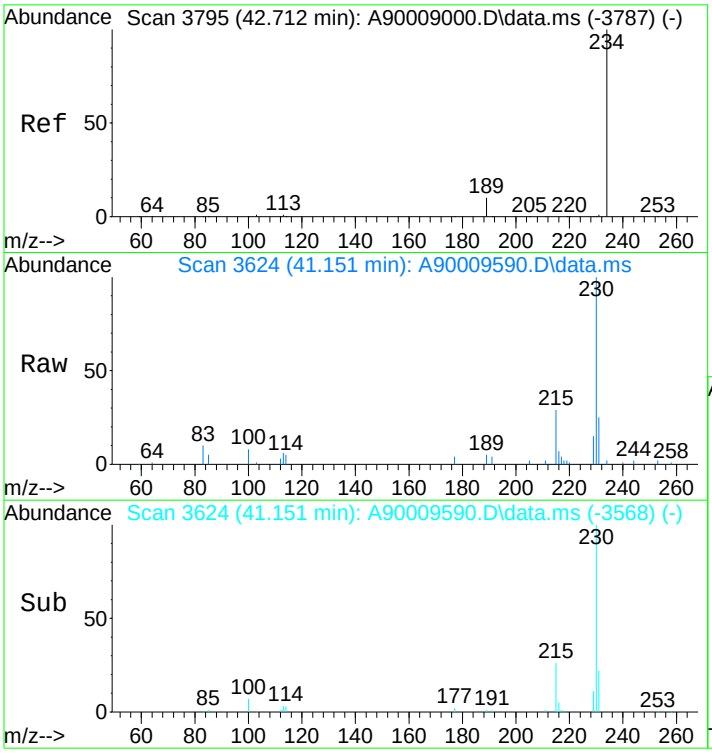


#61
C1-Fluoranthenes/Pyrenes
Concen: 6052.56 ng/mL m
RT: 39.115 min Scan# 3401
Delta R.T. 0.000 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:216 Resp: 1858590

Ion	Ratio	Lower	Upper
216	100		
215	22.0	73.5	110.3#

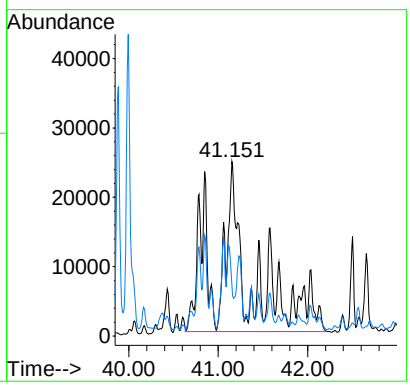


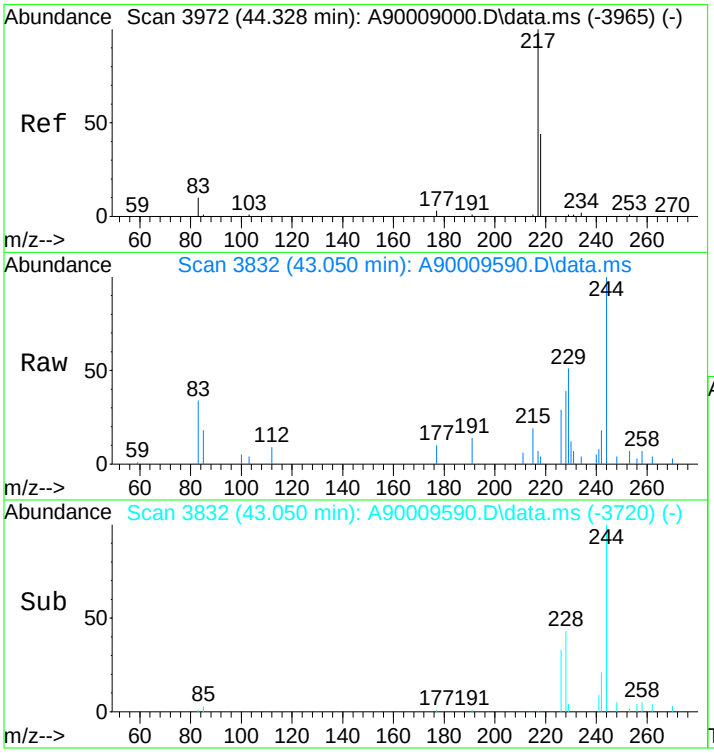


#62
C2-Fluoranthenes/Pyrenes
Concen: 2031.68 ng/mL m
RT: 41.151 min Scan# 3624
Delta R.T. 0.229 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:230 Resp: 623880

Ion	Ratio	Lower	Upper
230	100		
215	2.0	93.1	139.7#

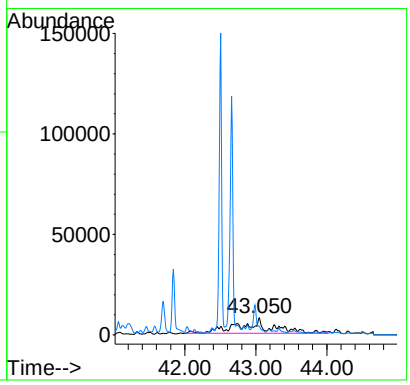


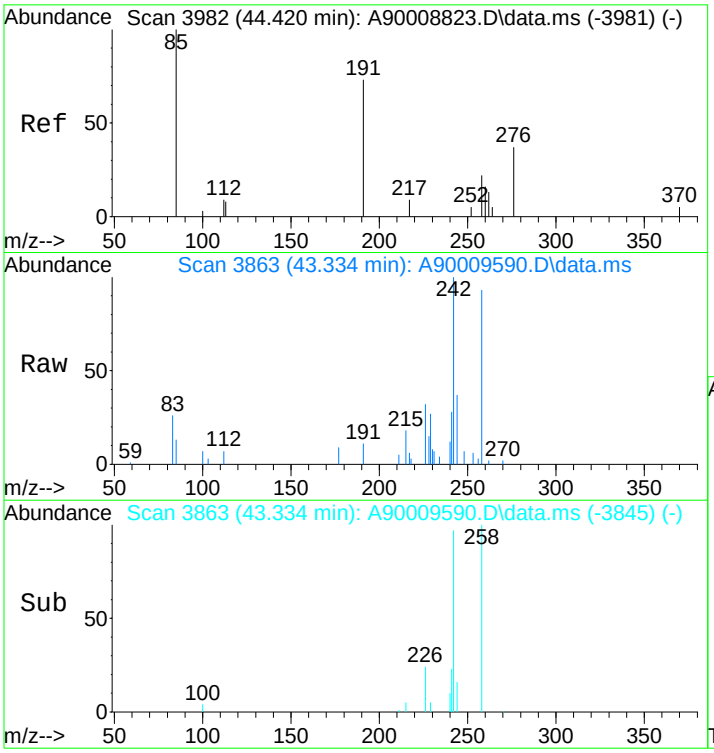


#63
C3-Fluoranthenes/Pyrenes
Concen: 791.17 ng/mL m
RT: 43.050 min Scan# 3832
Delta R.T. 0.110 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:244 Resp: 242948

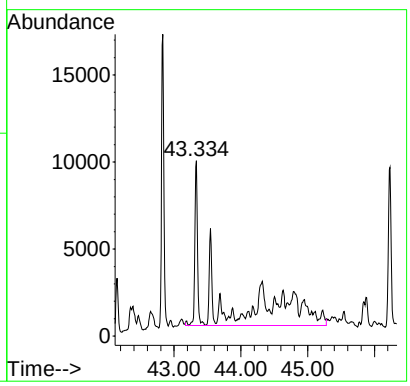
Ion	Ratio	Lower	Upper
244	100		
229	1.3	75.0	112.4#

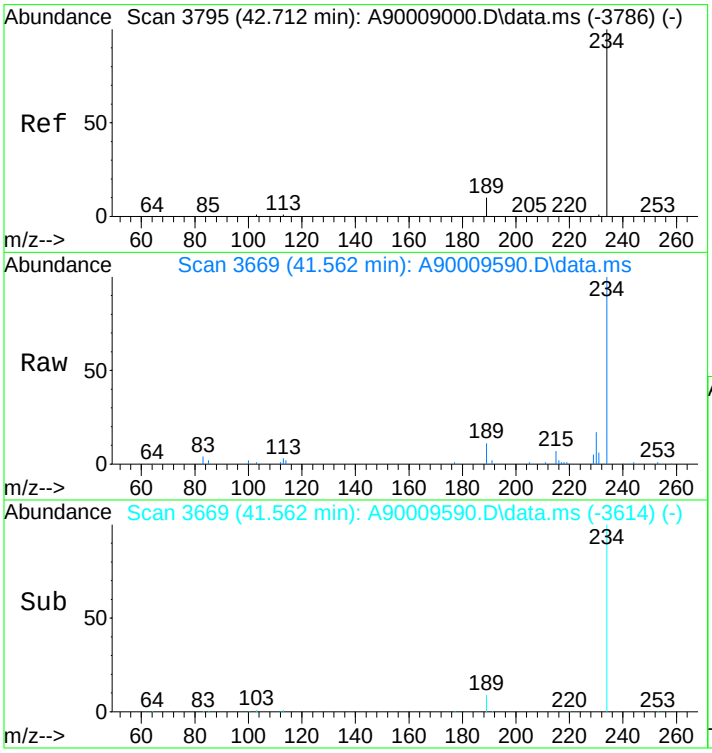




#64
C4-Fluoranthenes/Pyrenes
Concen: 438.10 ng/mL m
RT: 43.334 min Scan# 3863
Delta R.T. -0.959 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:258 Resp: 134529

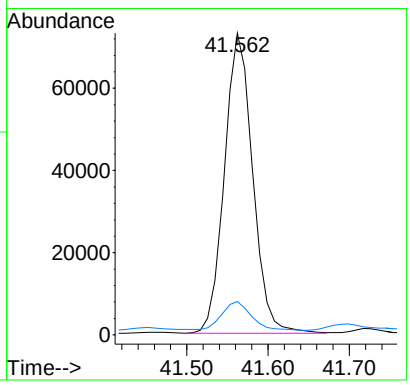


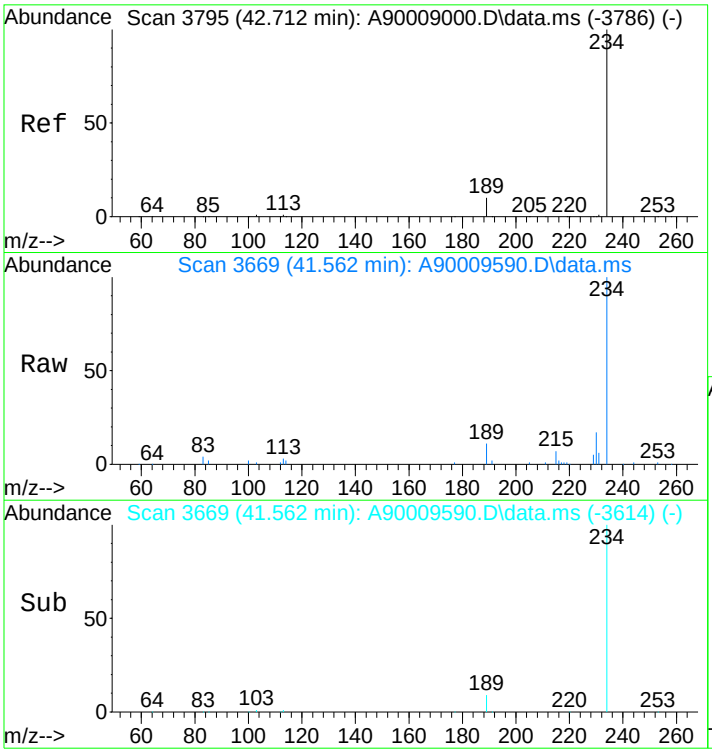


#66
Naphthobenzothiophene
Concen: 662.25 ng/ml
RT: 41.562 min Scan# 3669
Delta R.T. 0.000 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:234 Resp: 176456

Ion	Ratio	Lower	Upper
234	100		
189	10.8	7.2	10.8#

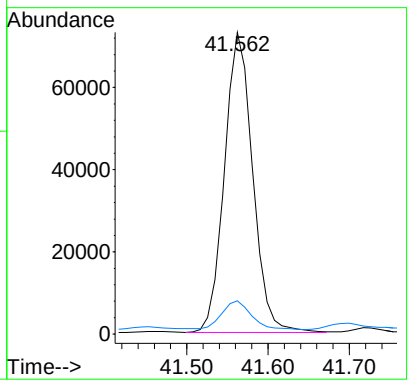


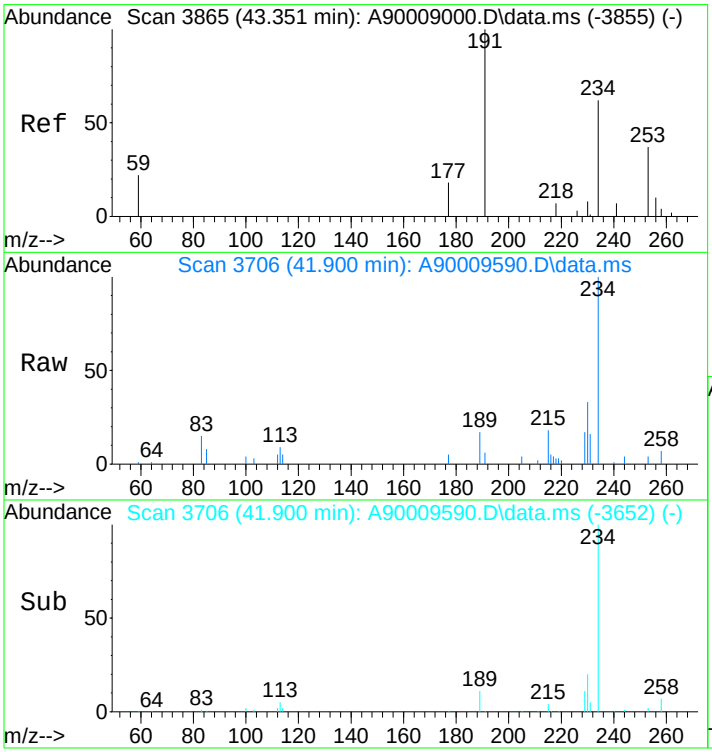


#67
Naphthobenzothiophene-2,1-D
Concen: 662.25 ng/mL
RT: 41.562 min Scan# 3669
Delta R.T. 0.000 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:234 Resp: 176456

Ion	Ratio	Lower	Upper
234	100		
189	10.8	7.2	10.8#

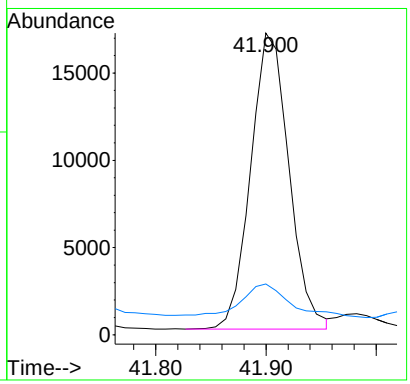


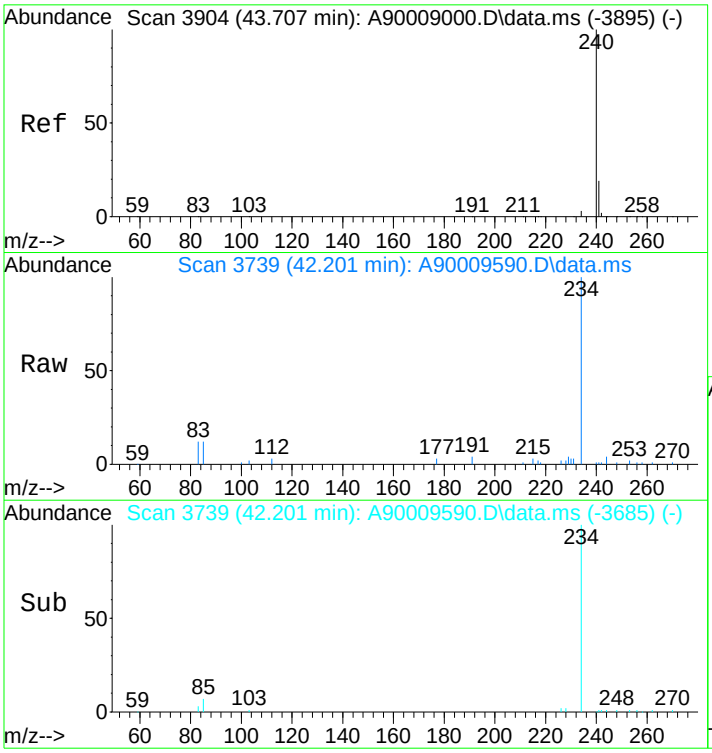


#68
Naphthobenzothiophene-1,2-D
Concen: 153.84 ng/mL
RT: 41.900 min Scan# 3706
Delta R.T. -0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:234 Resp: 40992

Ion	Ratio	Lower	Upper
234	100		
189	14.0	81.0	121.4#

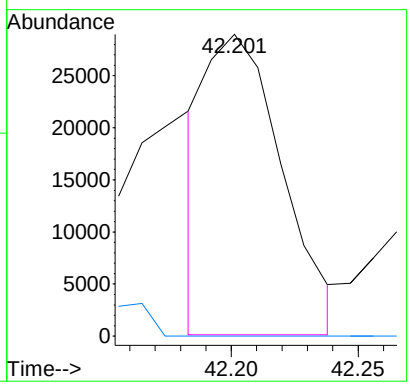


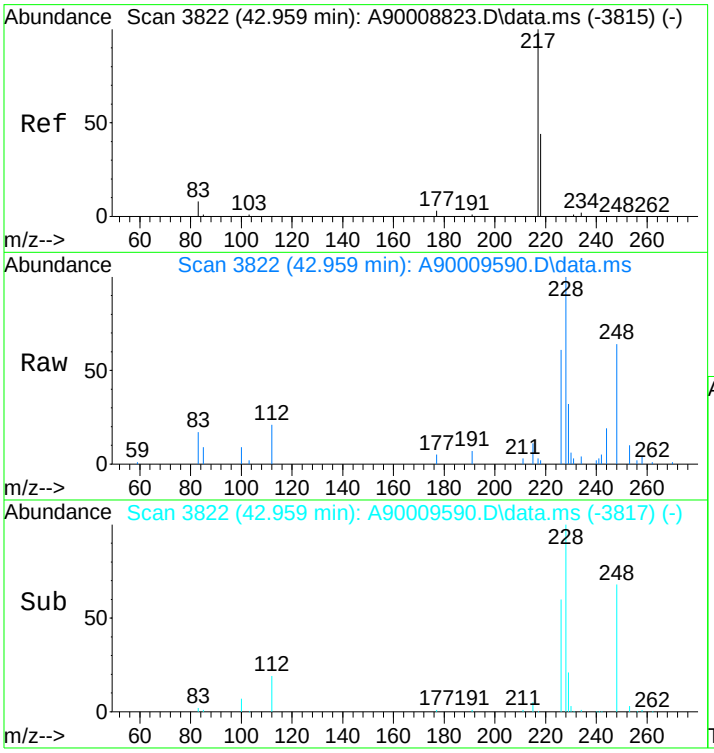


#69
Naphthobenzothiophene-2,3-D
Concen: 227.71 ng/mL m
RT: 42.201 min Scan# 3739
Delta R.T. -0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:234 Resp: 60674

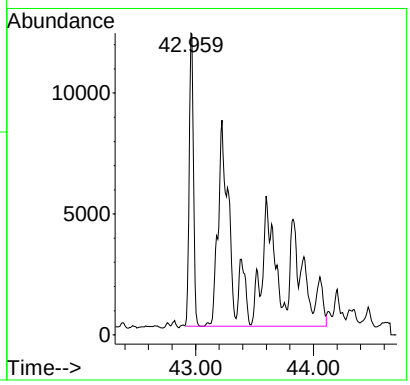
Ion	Ratio	Lower	Upper
234	100		
189	0.0	0.0	0.0

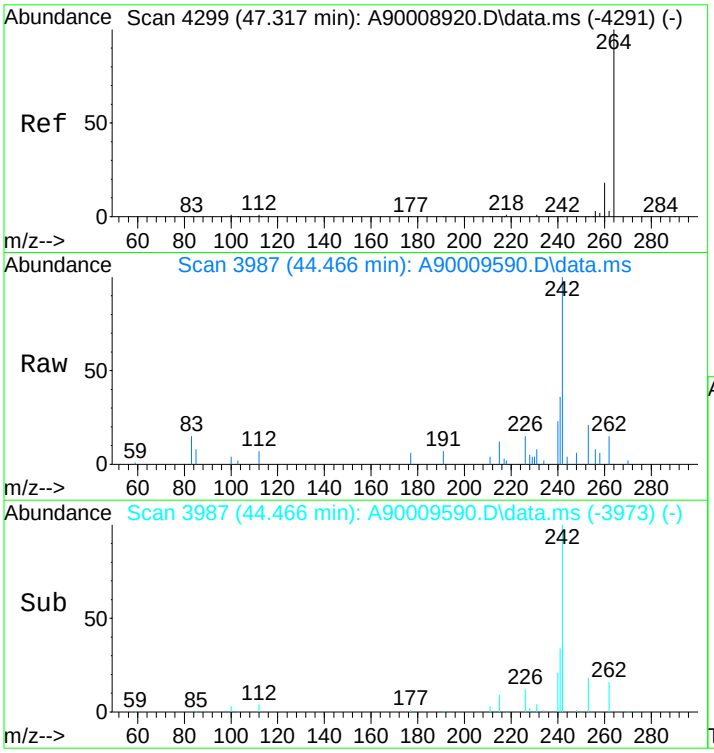




#70
C1-Naphthobenzothiophenes
Concen: 636.50 ng/ml m
RT: 42.959 min Scan# 3822
Delta R.T. -0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

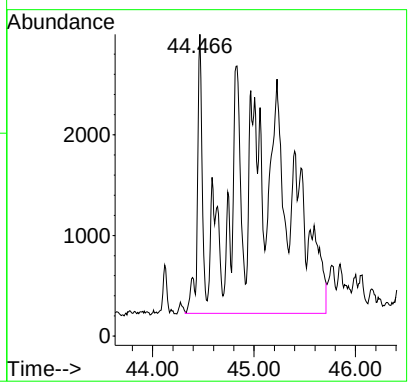
Tgt Ion:248 Resp: 169597

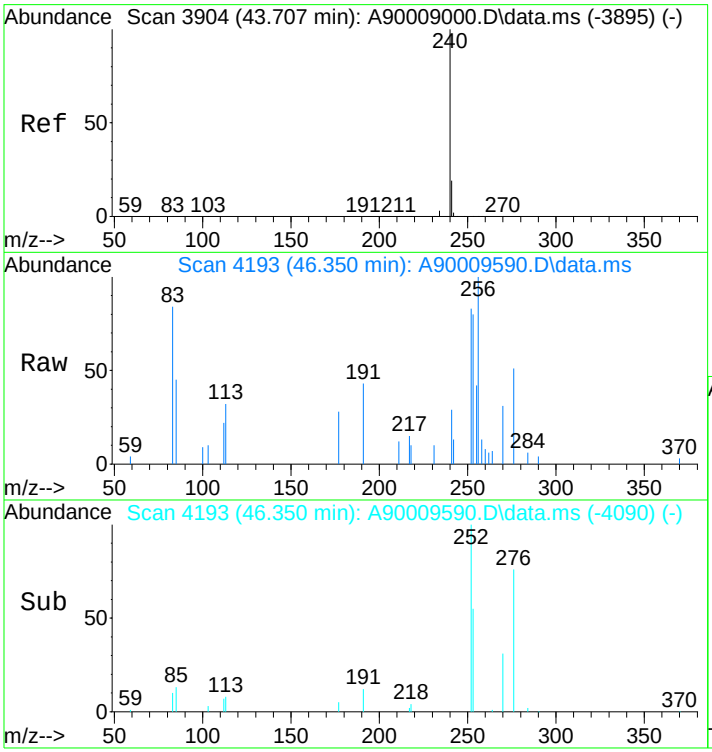




#71
C2-Naphthobenzothiophenes
Concen: 323.54 ng/ml m
RT: 44.466 min Scan# 3987
Delta R.T. -0.502 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

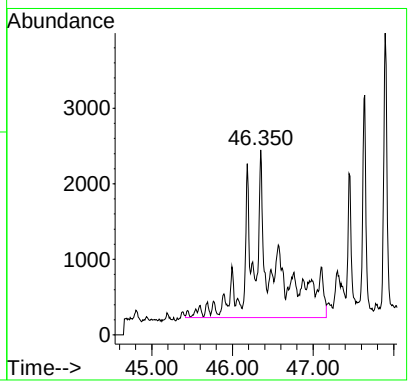
Tgt Ion:262 Resp: 86207

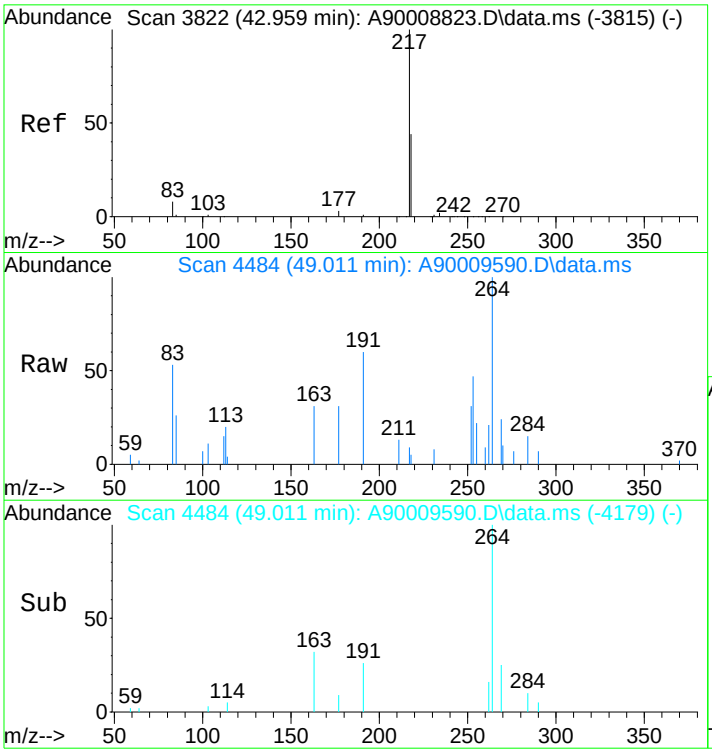




#72
C3-Naphthobenzothiophenes
Concen: 164.65 ng/ml m
RT: 46.350 min Scan# 4193
Delta R.T. -0.219 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

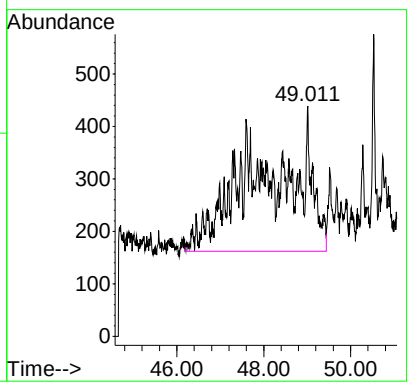
Tgt Ion:276 Resp: 43871

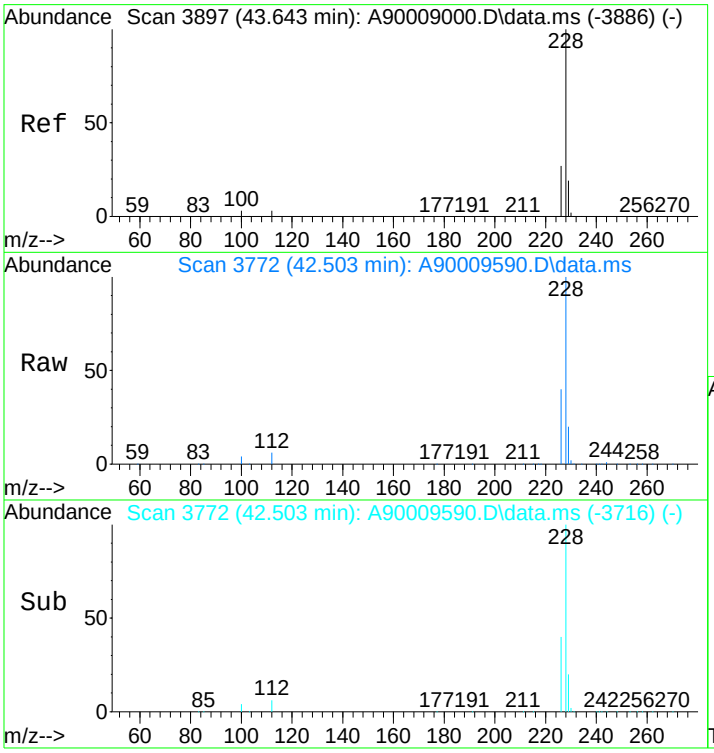




#73
C4-Naphthobenzothiophenes
Concen: 76.18 ng/mL m
RT: 49.011 min Scan# 4484
Delta R.T. 1.418 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:290 Resp: 20297

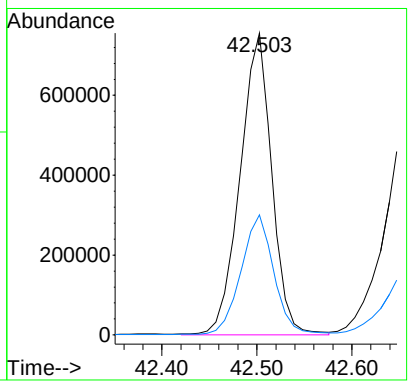


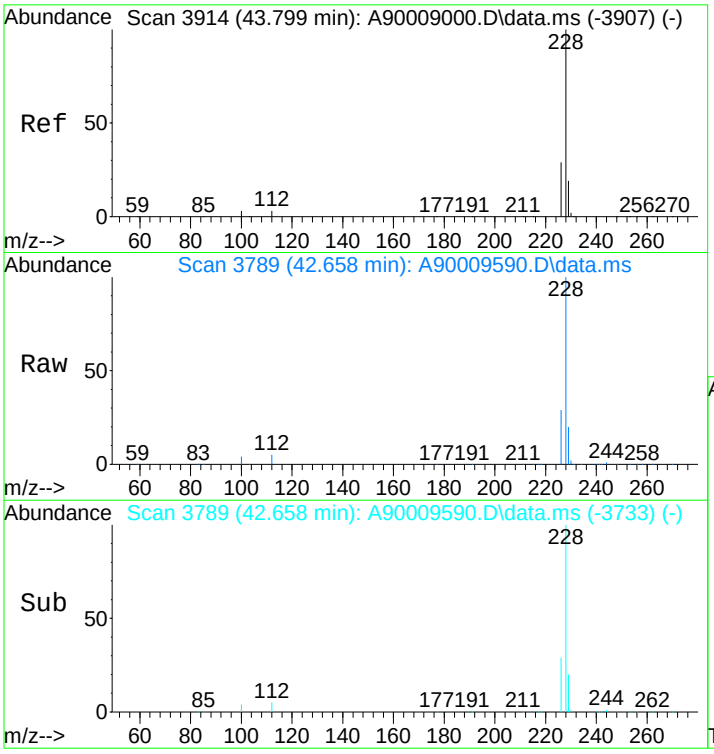


#75
Benz[a]anthracene
Concen: 6103.70 ng/mL m
RT: 42.503 min Scan# 3772
Delta R.T. 0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:228 Resp: 1757394

Ion	Ratio	Lower	Upper
228	100		
226	27.0	20.8	31.2

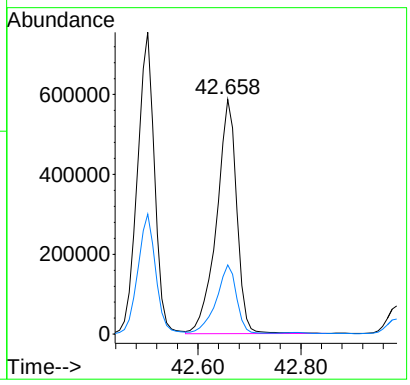


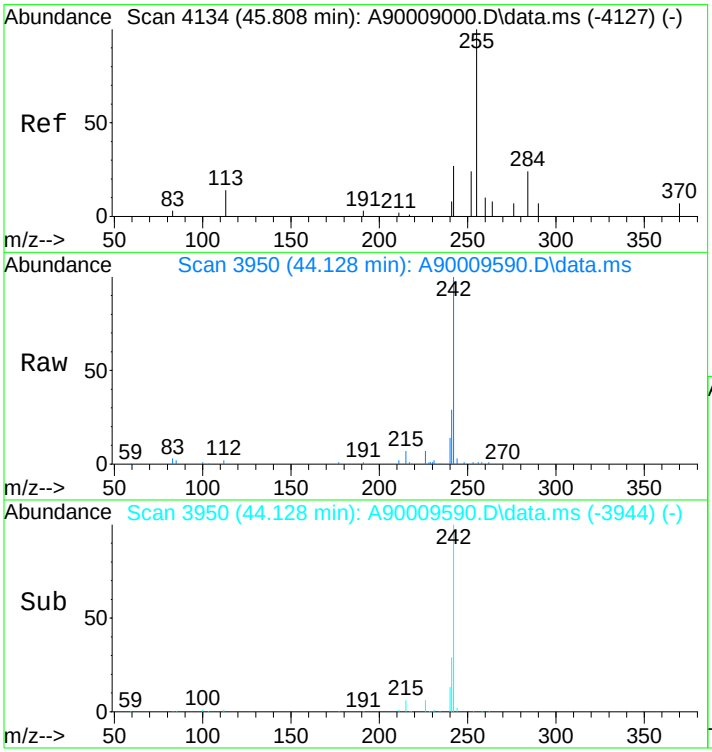


#77
Chrysene/Triphenylene
Concen: 5627.87 ng/mL
RT: 42.658 min Scan# 3789
Delta R.T. 0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:228 Resp: 1593697

Ion	Ratio	Lower	Upper
228	100		
226	29.7	23.3	34.9

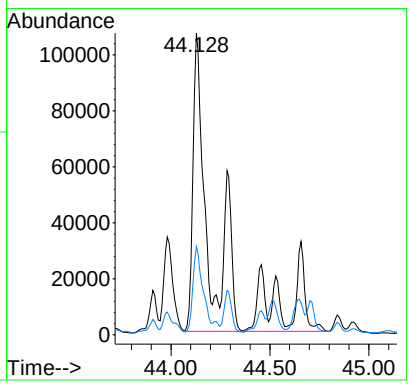


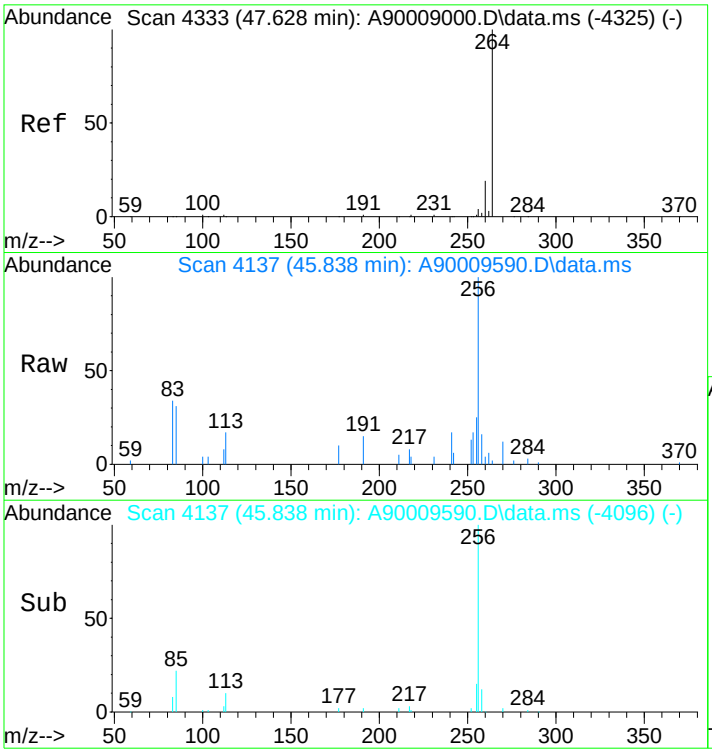


#78
C1-Chrysenes
Concen: 2658.66 ng/mL m
RT: 44.128 min Scan# 3950
Delta R.T. -0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:242 Resp: 752879

Ion	Ratio	Lower	Upper
242	100		
241	3.2	31.9	47.9#

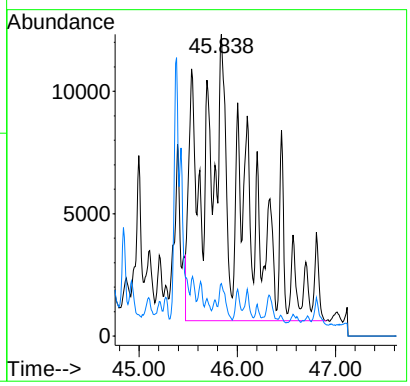


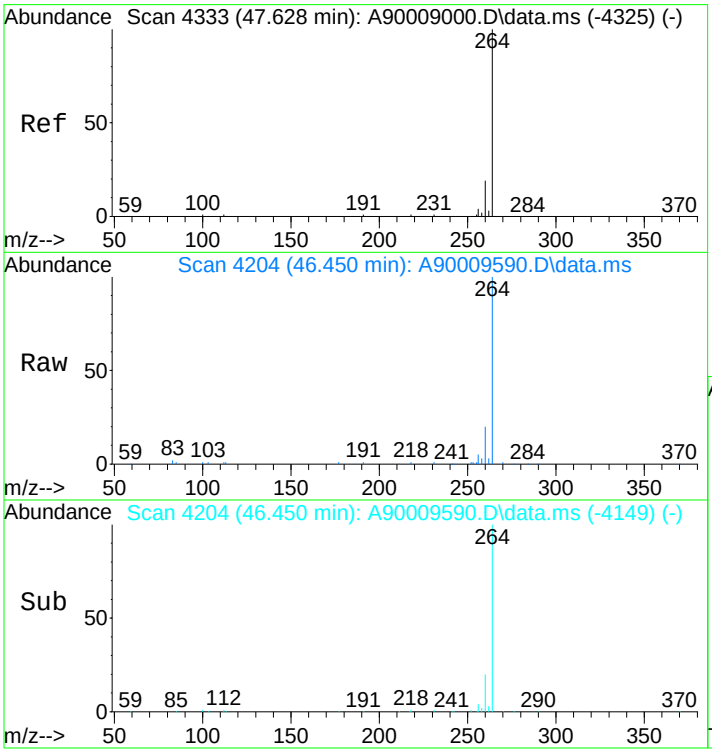


#79
C2-Chrysenes
Concen: 1193.35 ng/mL m
RT: 45.838 min Scan# 4137
Delta R.T. -0.978 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:256 Resp: 337933

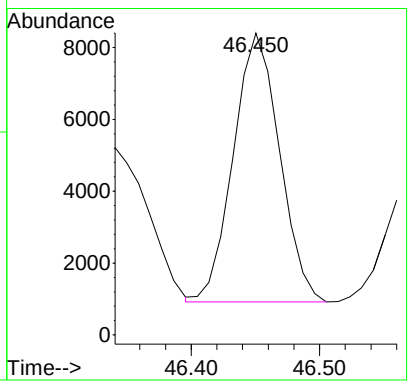
Ion	Ratio	Lower	Upper
256	100		
241	0.8	42.2	63.2#

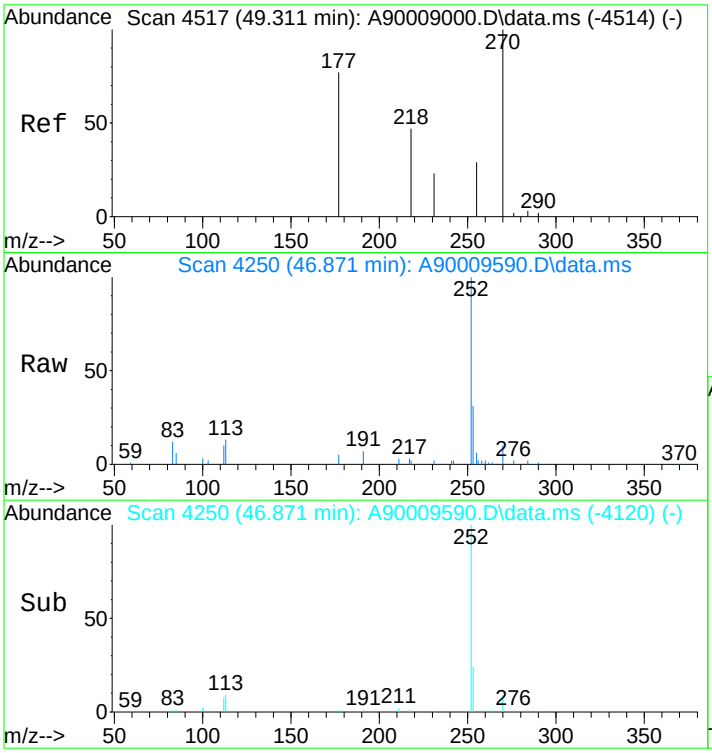




#80
BBF-d12 Surr BKGD
Concen: 66.14 ng/mL
RT: 46.450 min Scan# 4204
Delta R.T. 0.000 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:256 Resp: 18729

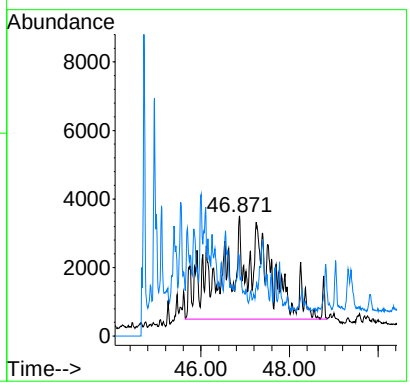


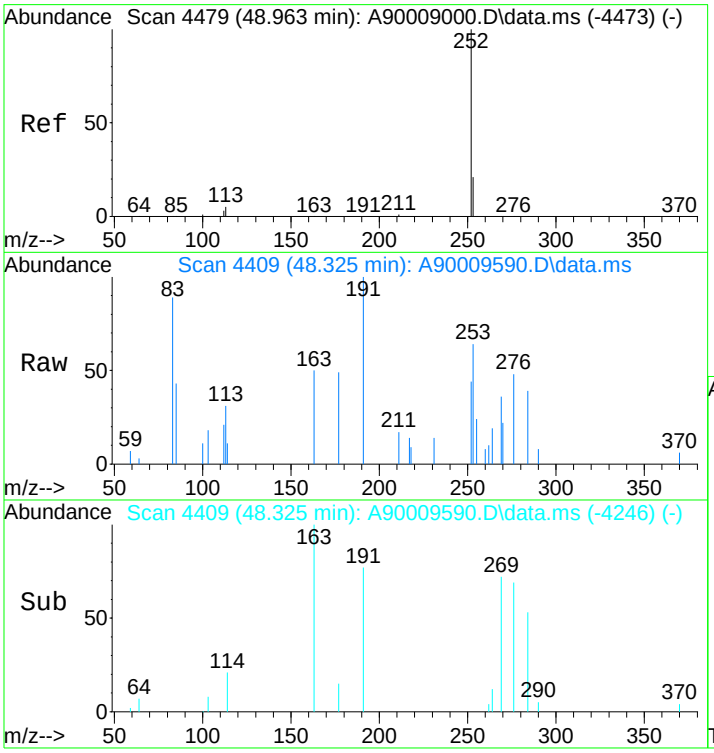


#81
C3-Chrysenes
Concen: 713.78 ng/mL m
RT: 46.871 min Scan# 4250
Delta R.T. -1.911 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:270 Resp: 202128

Ion	Ratio	Lower	Upper
270	100		
255	0.0	48.2	72.4#

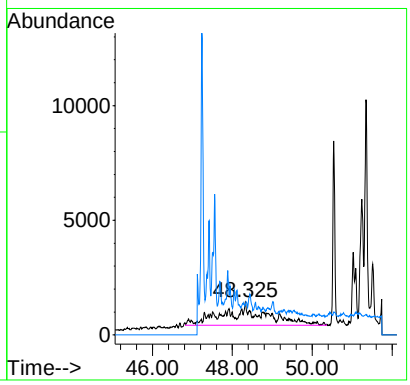


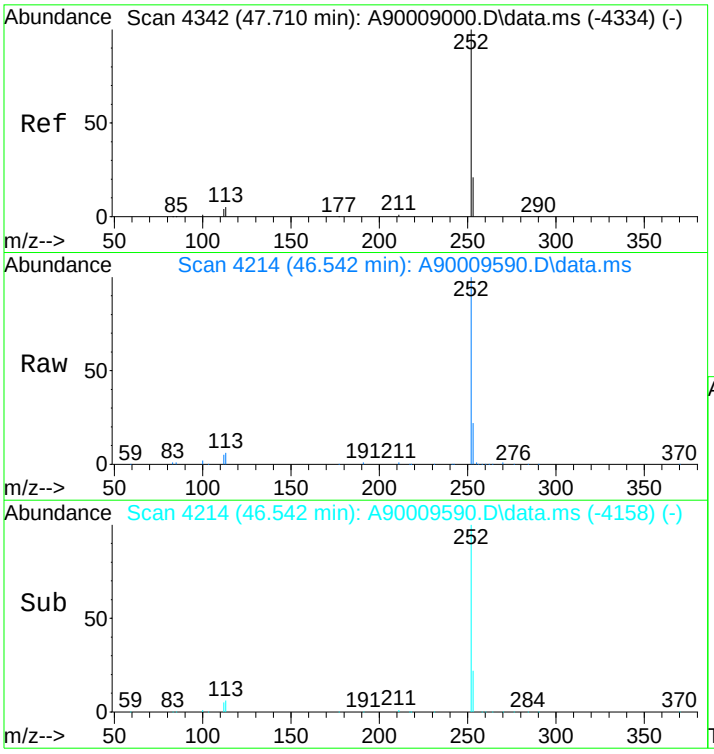


#82
C4-Chrysenes
Concen: 237.23 ng/mL m
RT: 48.325 min Scan# 4409
Delta R.T. -0.558 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:284 Resp: 67179

Ion	Ratio	Lower	Upper
284	100		
269	0.0	84.6	126.8#

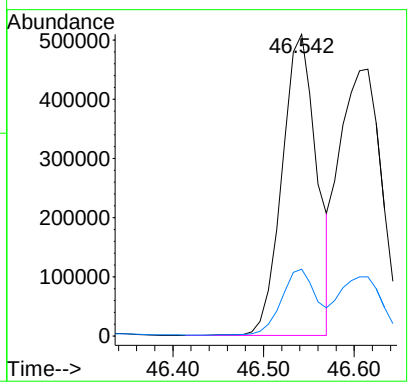


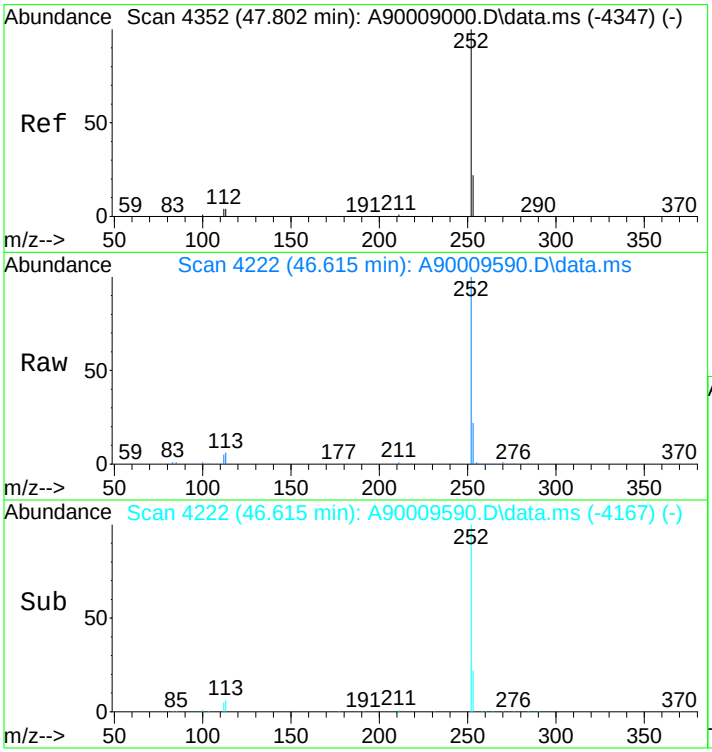


#84
Benzo[b]fluoranthene
Concen: 4563.13 ng/mL
RT: 46.542 min Scan# 4214
Delta R.T. 0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:252 Resp: 1362249

Ion	Ratio	Lower	Upper
252	100		
253	22.2	20.3	30.5

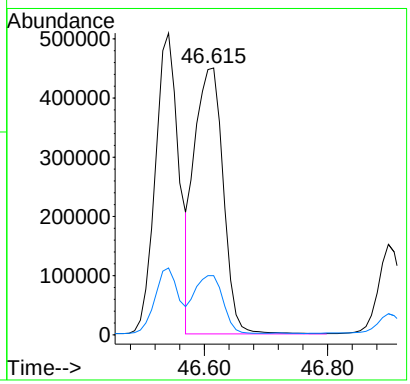


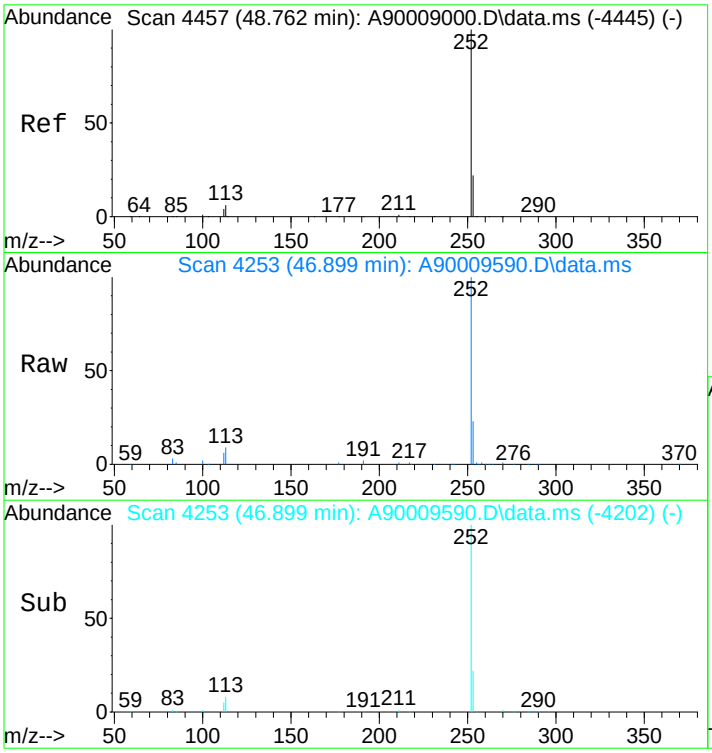


#85
Benzo[j]+[k]fluoranthene
Concen: 4977.34 ng/mL
RT: 46.615 min Scan# 4222
Delta R.T. 0.000 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:252 Resp: 1459989

Ion	Ratio	Lower	Upper
252	100		
253	21.6	20.2	30.4

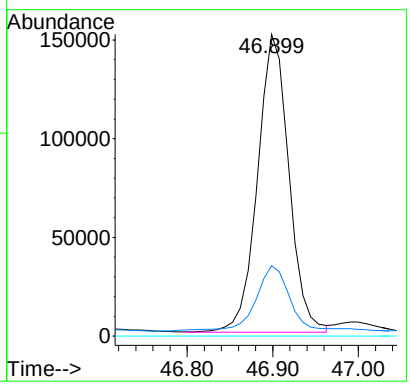


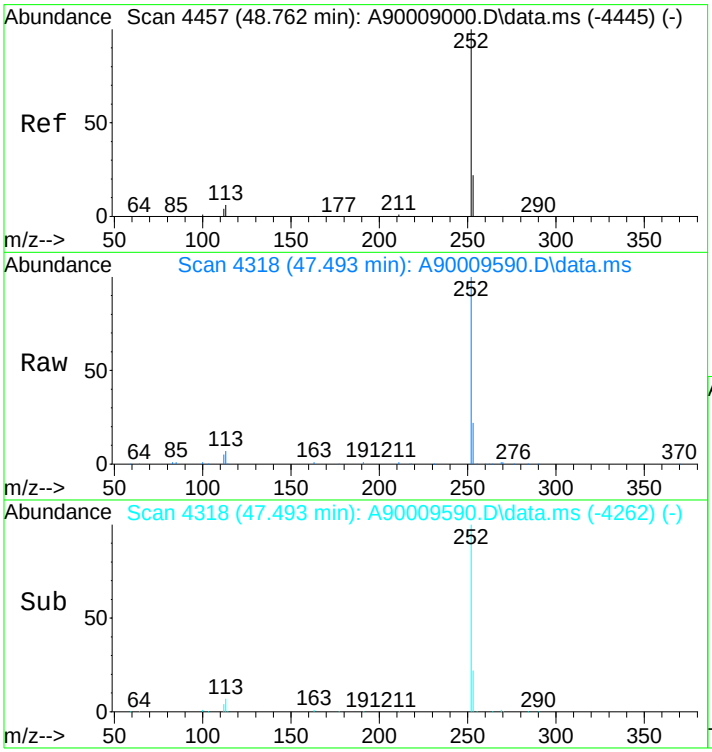


#86
Benzo[a]fluoranthene
Concen: 1316.26 ng/mL
RT: 46.899 min Scan# 4253
Delta R.T. -0.031 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:252 Resp: 386095

Ion	Ratio	Lower	Upper
252	100		
253	24.7	191.7	287.5#
125	0.0	0.0	0.0

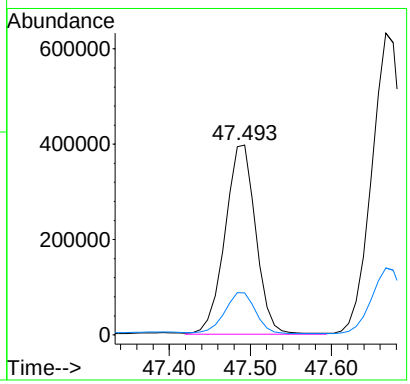


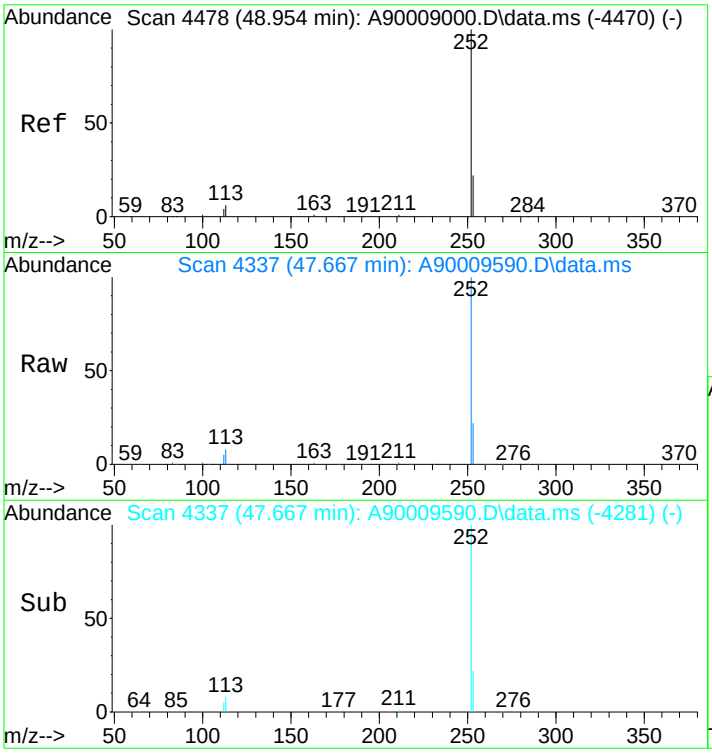


#87
Benzo[e]pyrene
Concen: 3695.48 ng/mL
RT: 47.493 min Scan# 4318
Delta R.T. 0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:252 Resp: 1047592

Ion	Ratio	Lower	Upper
252	100		
253	22.1	21.4	32.0

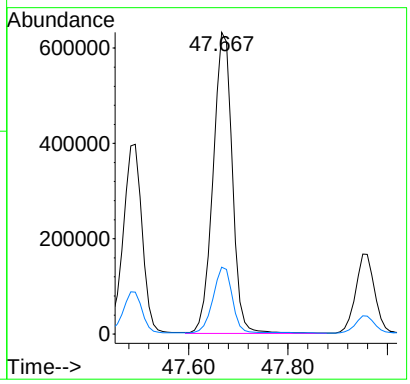


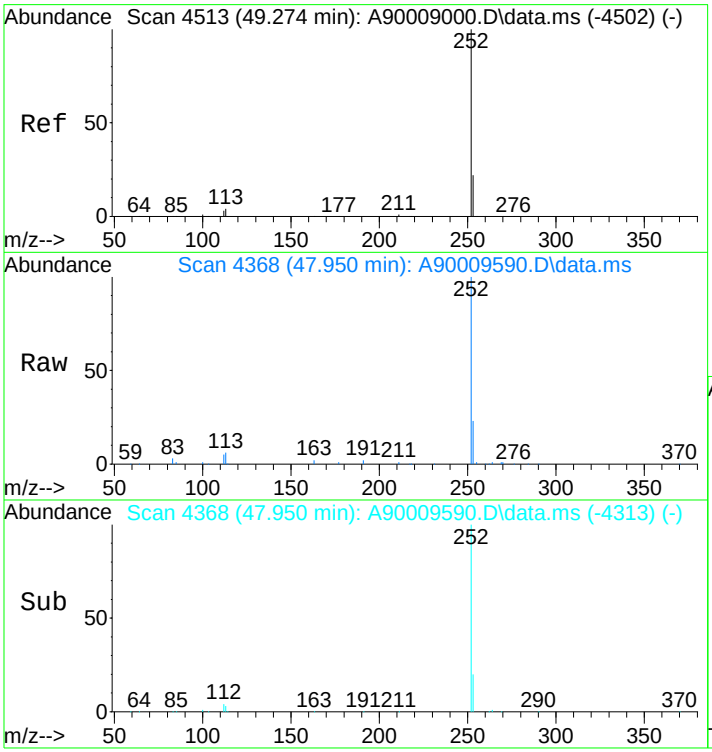


#89
Benzo[a]pyrene
Concen: 6308.17 ng/mL
RT: 47.667 min Scan# 4337
Delta R.T. 0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:252 Resp: 1693567

Ion	Ratio	Lower	Upper
252	100		
253	22.0	21.9	32.9

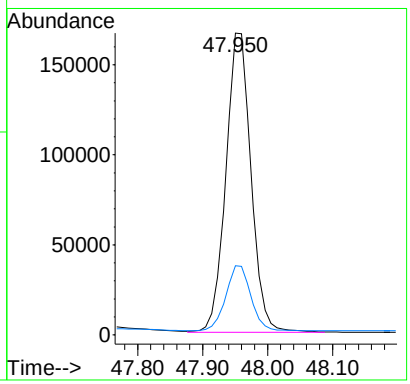


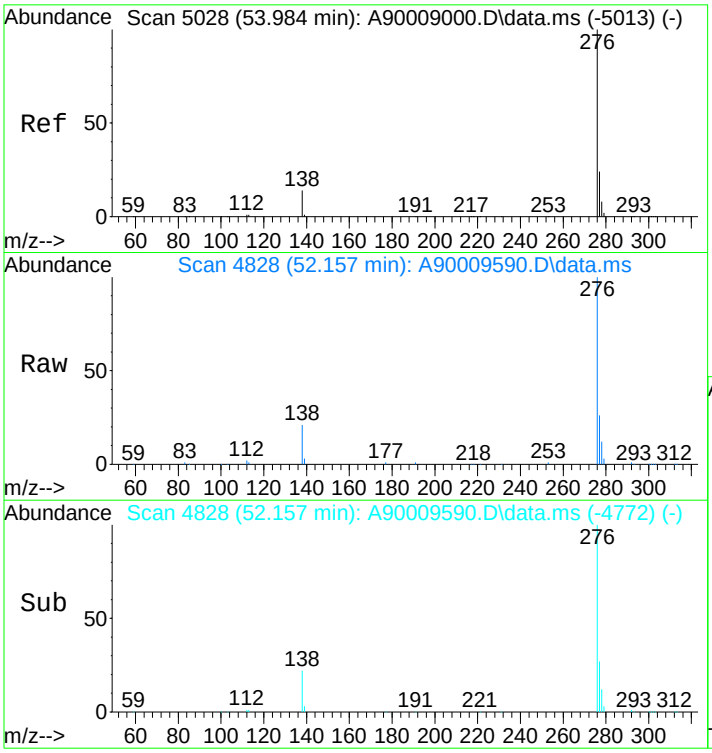


#90
Perylene
Concen: 1557.90 ng/mL m
RT: 47.950 min Scan# 4368
Delta R.T. 0.000 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:252 Resp: 446388

Ion	Ratio	Lower	Upper
252	100		
253	0.2	22.2	33.2#

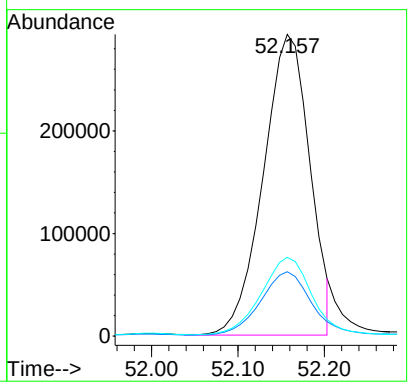


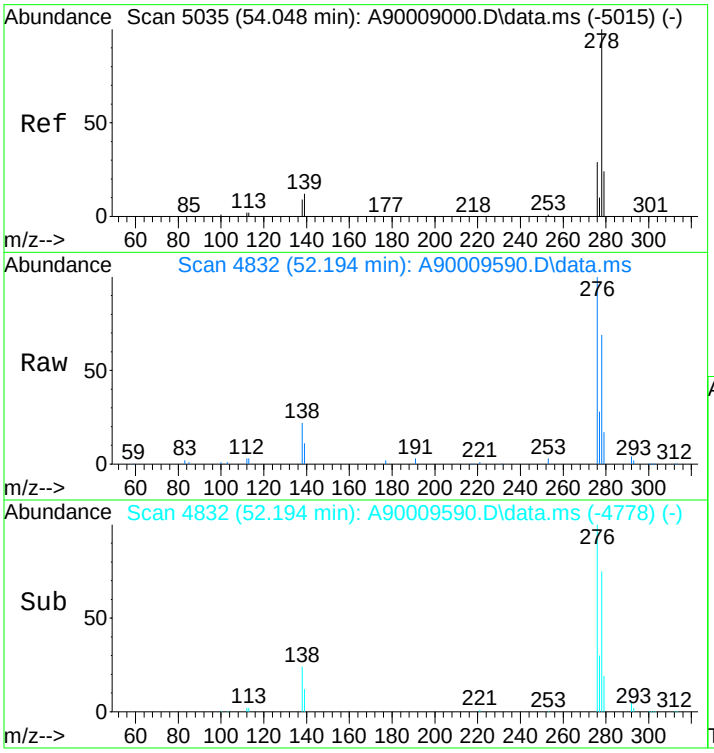


#91
Indeno[1,2,3-cd]pyrene
Concen: 3678.21 ng/mL m
RT: 52.157 min Scan# 4828
Delta R.T. 0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:276 Resp: 1093660

Ion	Ratio	Lower	Upper
276	100		
138	23.8	17.7	26.5
277	29.0	20.2	30.4

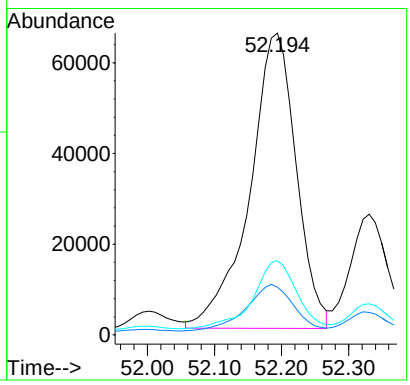


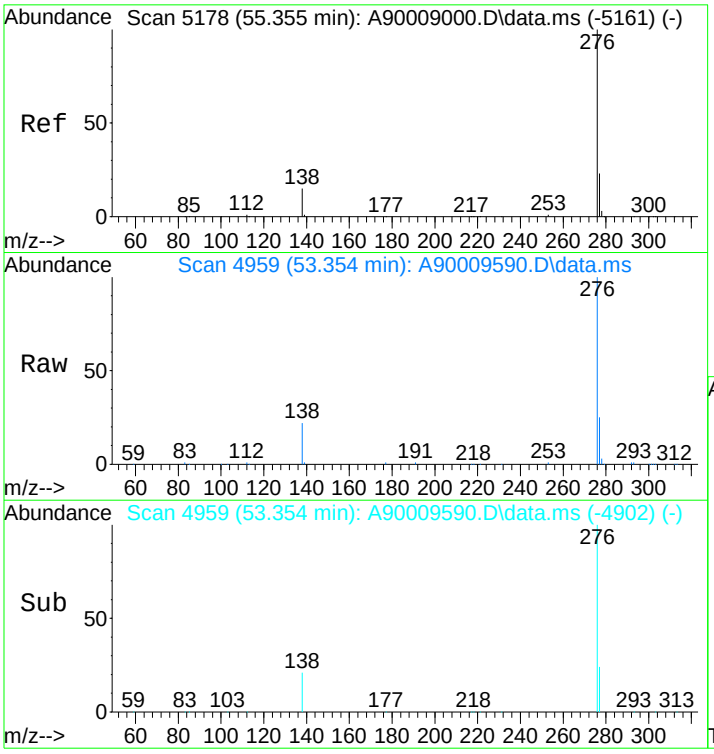


#92
Dibenz[ah]+[ac]anthracene
Concen: 1070.54 ng/mL
RT: 52.194 min Scan# 4832
Delta R.T. -0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:278 Resp: 313564

Ion	Ratio	Lower	Upper
278	100		
139	15.7	13.3	19.9
279	24.2	19.3	28.9

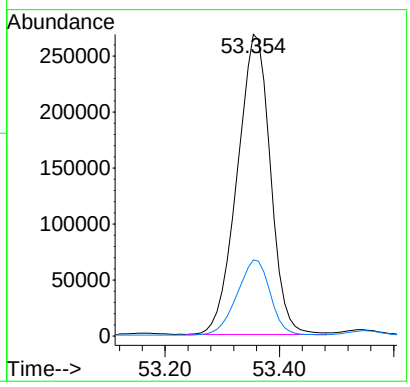


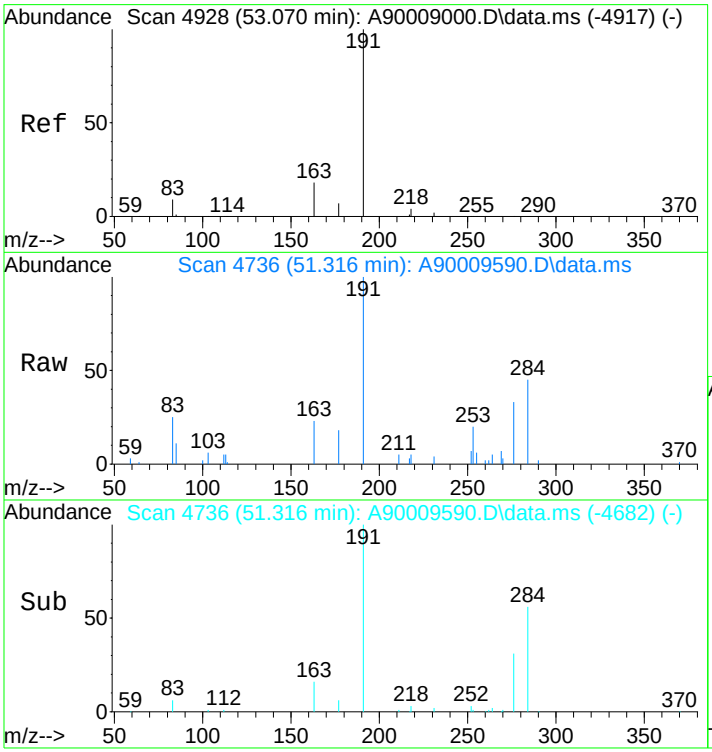


#93
Benzo[g,h,i]perylene
Concen: 3691.05 ng/mL
RT: 53.354 min Scan# 4959
Delta R.T. 0.018 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:276 Resp: 1078470

Ion	Ratio	Lower	Upper
276	100		
277	25.2	20.0	30.0

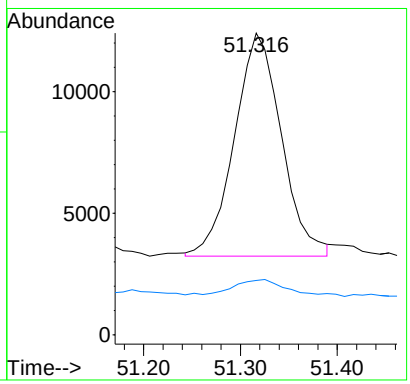


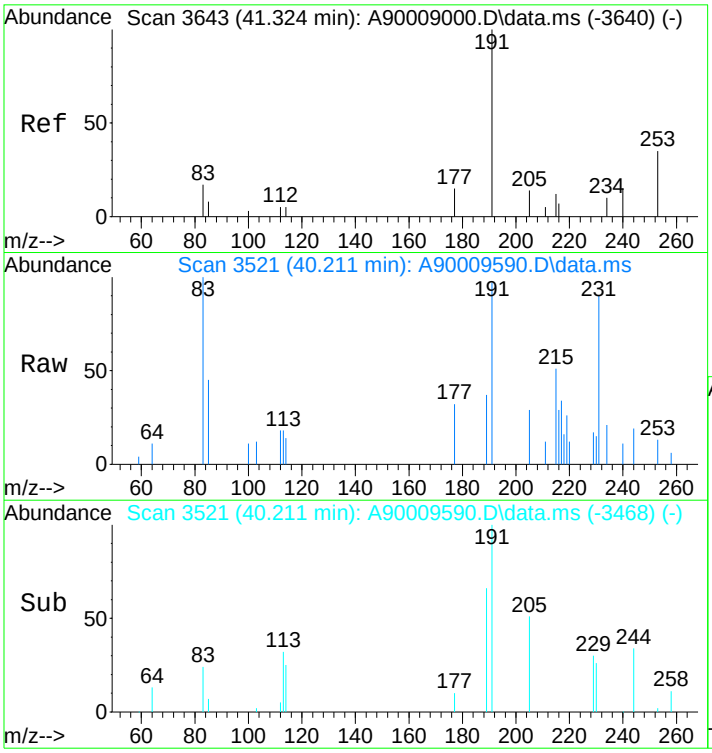


#94
Hopane (T19)
Concen: 280.57 ng/mL m
RT: 51.316 min Scan# 4736
Delta R.T. -0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:191 Resp: 30963

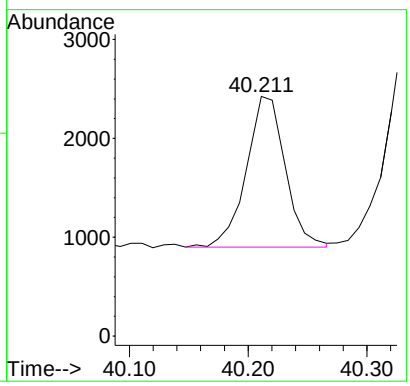
Ion	Ratio	Lower	Upper
191	100		
177	8.7	14.4	21.6#

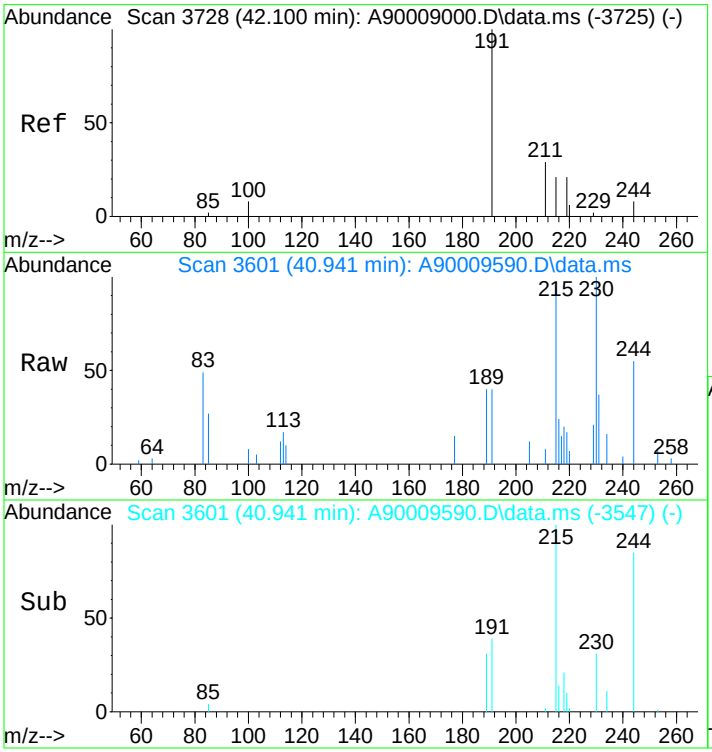




#96
C23 Tricyclic Terpane (T4)
Concen: 31.42 ng/ml
RT: 40.211 min Scan# 3521
Delta R.T. -0.018 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

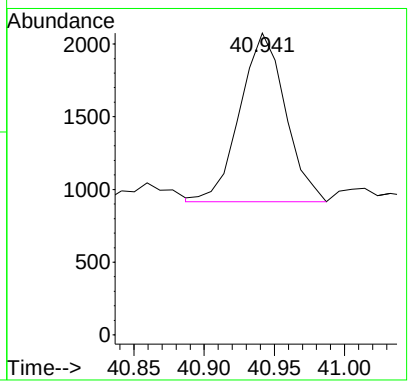
Tgt Ion:191 Resp: 3467

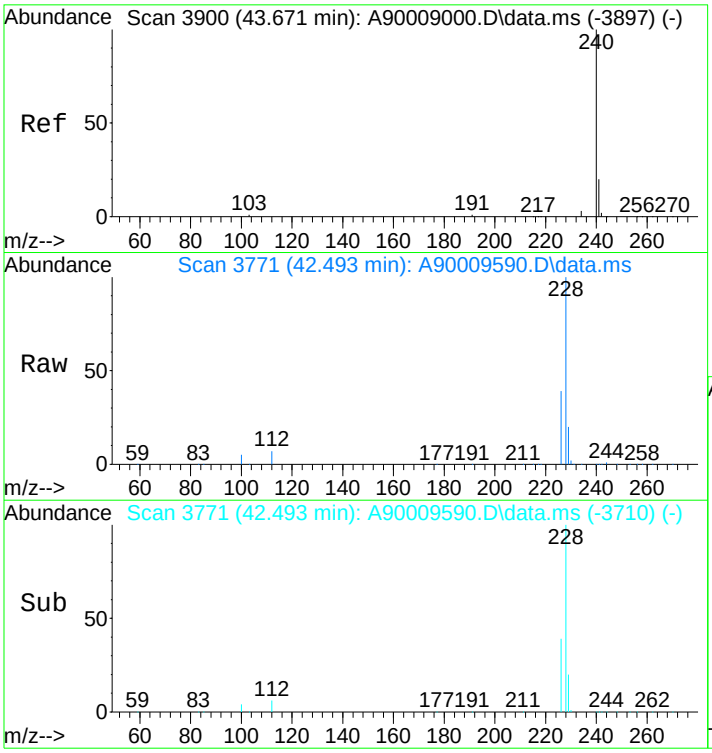




#97
C24 Tricyclic Terpane (T5)
Concen: 23.64 ng/ml
RT: 40.941 min Scan# 3601
Delta R.T. -0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

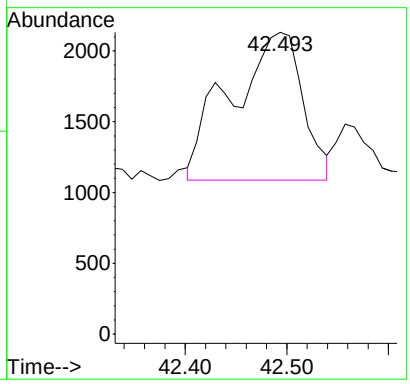
Tgt Ion:191 Resp: 2609

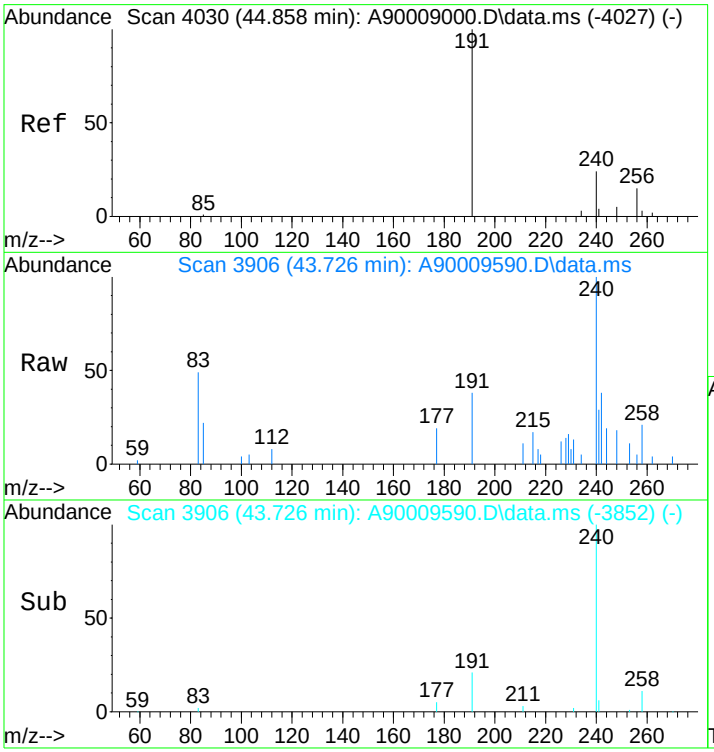




#98
C25 Tricyclic Terpane (T6)
Concen: 46.44 ng/ml m
RT: 42.493 min Scan# 3771
Delta R.T. 0.055 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

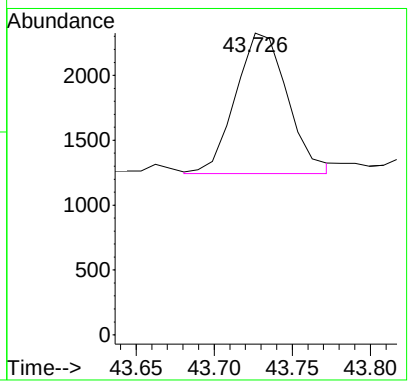
Tgt Ion:191 Resp: 5125

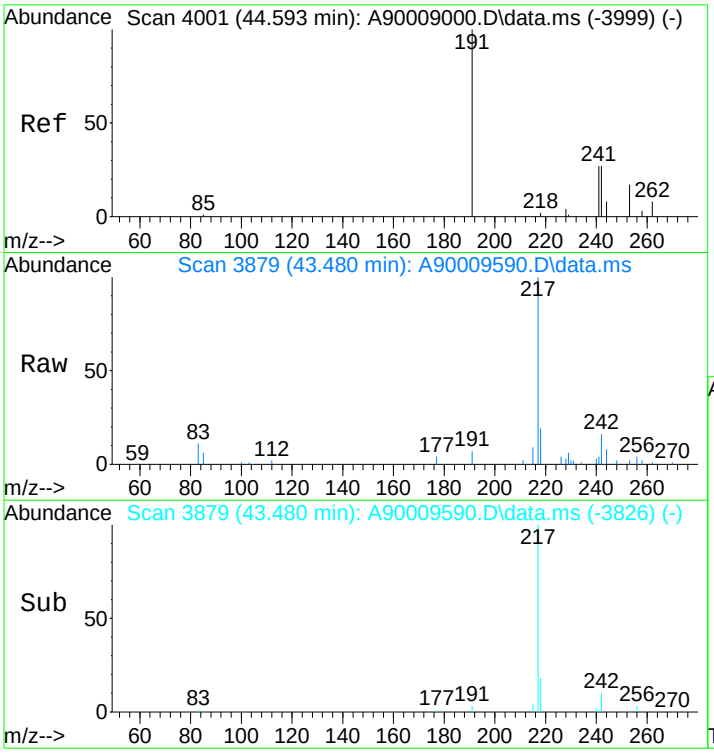




#99
C24 Tetracyclic Terpane (T6a)
Concen: 22.74 ng/ml m
RT: 43.726 min Scan# 3906
Delta R.T. -0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

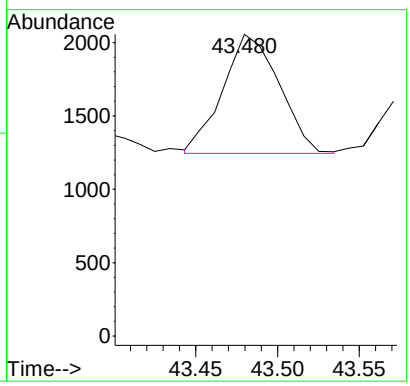
Tgt Ion:191 Resp: 2510

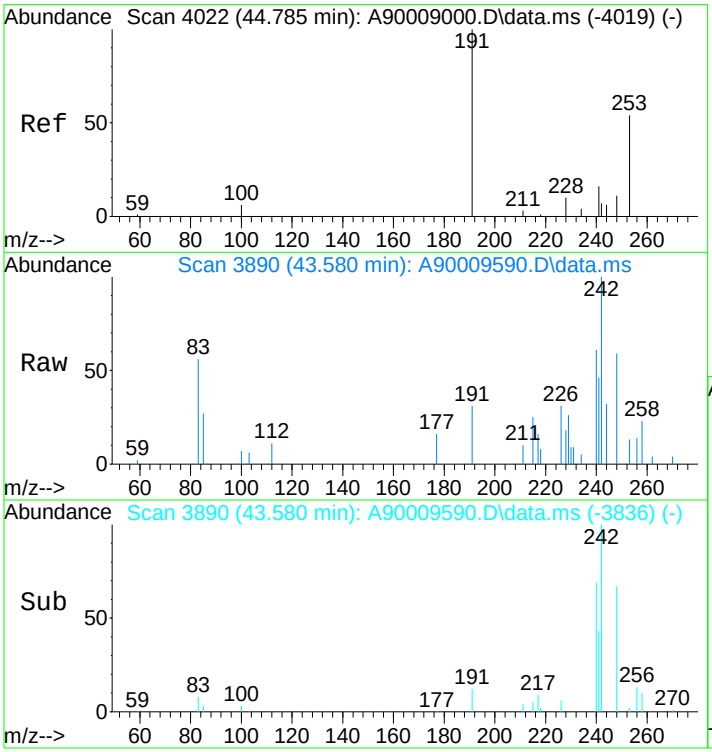




#100
C26 Tricyclic Terpane-22S (T6b)
Concen: 17.73 ng/ml m
RT: 43.480 min Scan# 3879
Delta R.T. -0.018 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

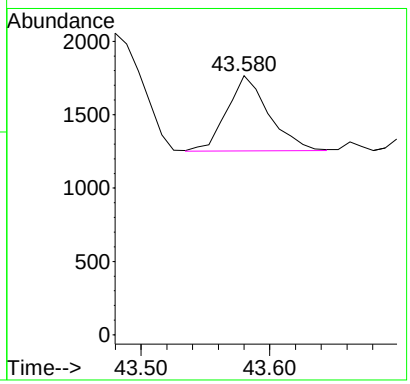
Tgt Ion:191 Resp: 1957

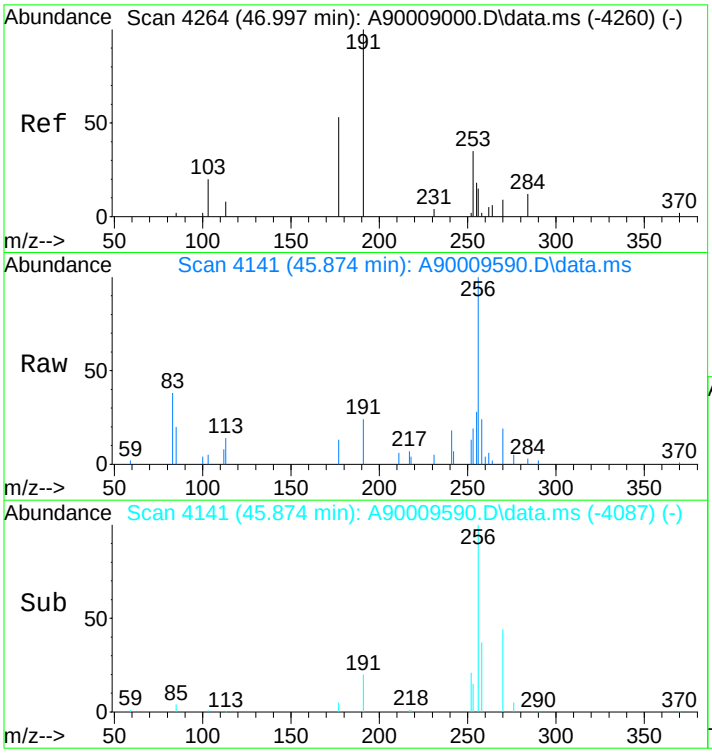




#101
C26 Tricyclic Terpane-22R (T6c)
Concen: 10.53 ng/ml
RT: 43.580 min Scan# 3890
Delta R.T. -0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

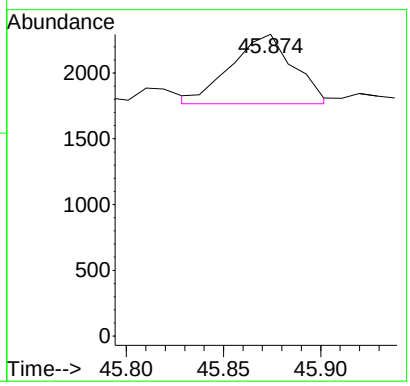
Tgt Ion:191 Resp: 1162

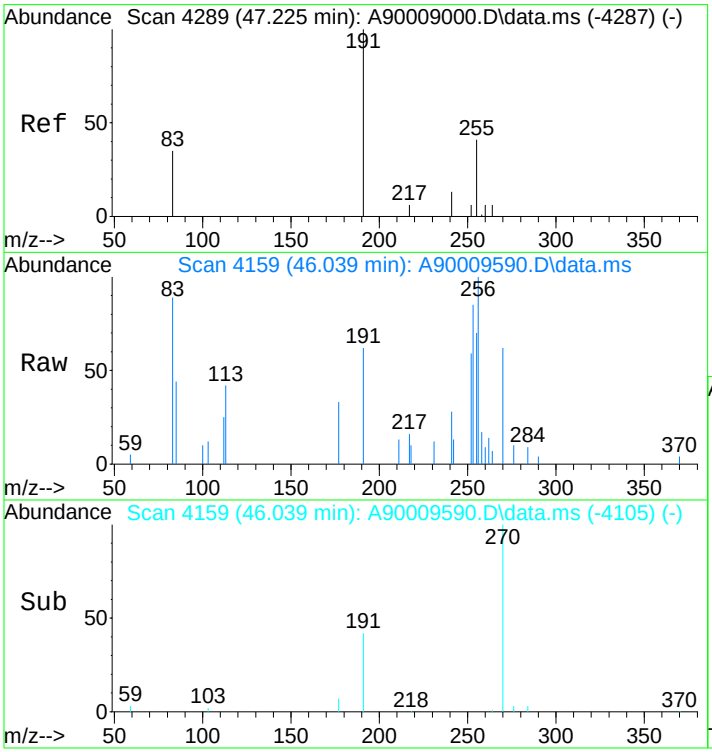




#102
C28 Tricyclic Terpane-22S (T7)
Concen: 10.65 ng/ml m
RT: 45.874 min Scan# 4141
Delta R.T. -0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

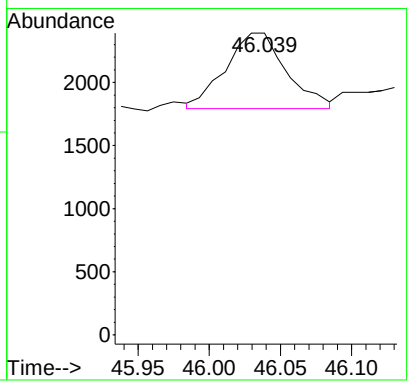
Tgt Ion:191 Resp: 1175

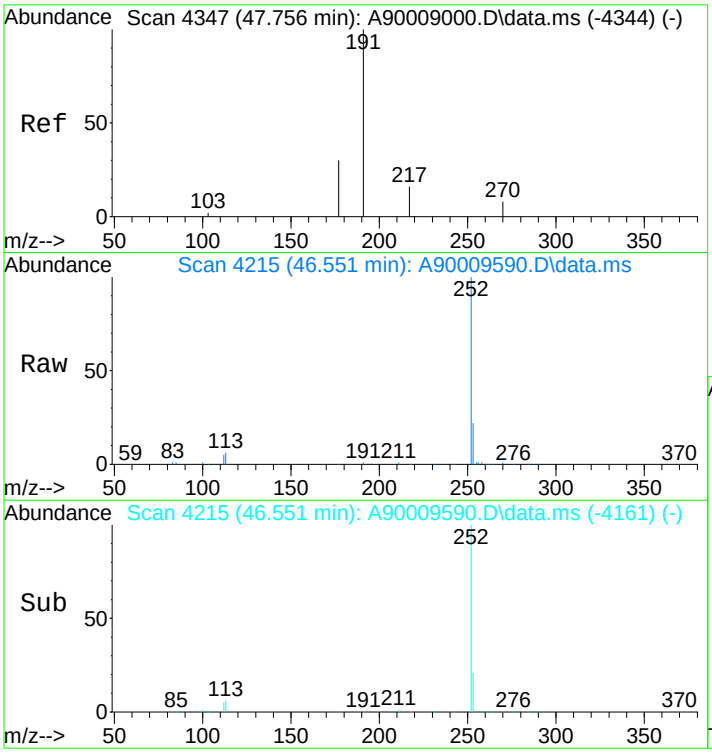




#103
C28 Tricyclic Terpane-22R (T8)
Concen: 16.24 ng/ml m
RT: 46.039 min Scan# 4159
Delta R.T. -0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

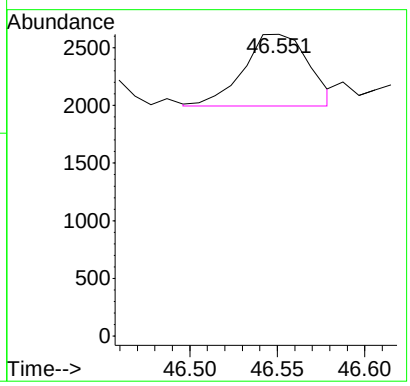
Tgt Ion:191 Resp: 1792

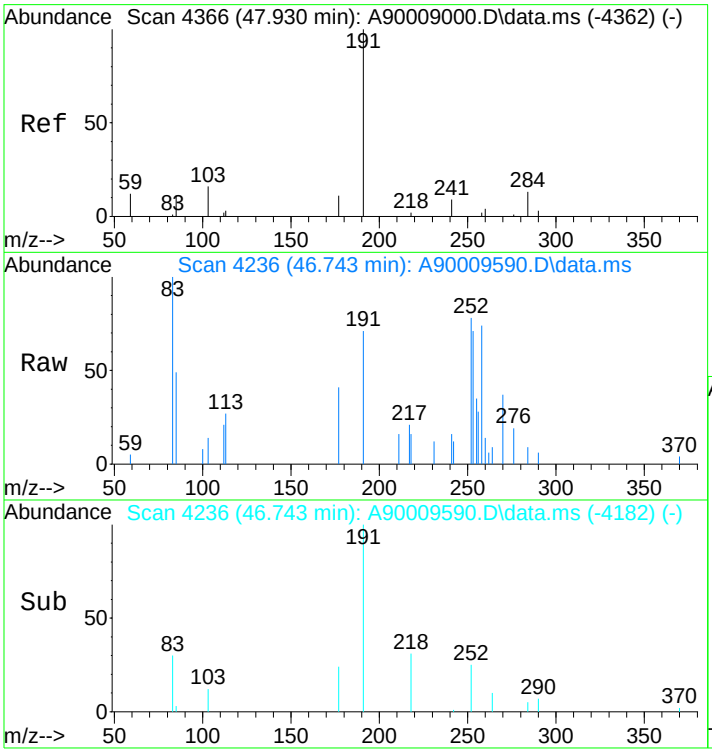




#104
C29 Tricyclic Terpane-22S (T9)
Concen: 14.61 ng/ml m
RT: 46.551 min Scan# 4215
Delta R.T. -0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

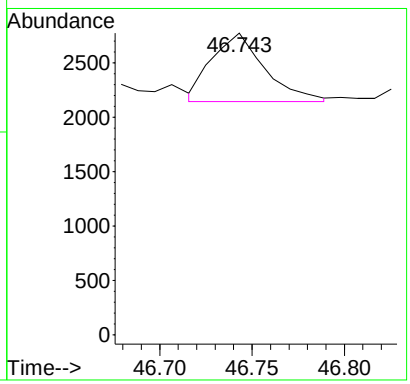
Tgt Ion:191 Resp: 1612

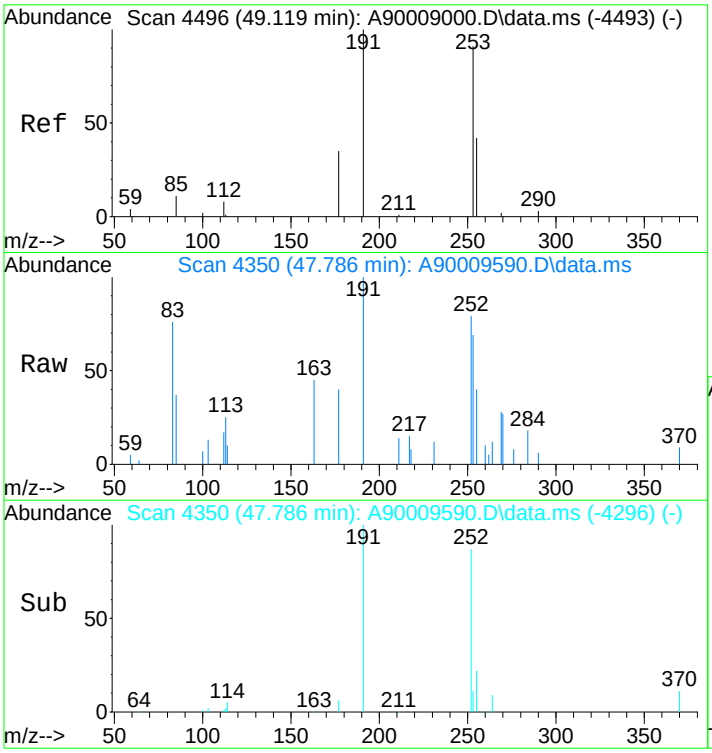




#105
C29 Tricyclic Terpane-22R (T10)
Concen: 11.42 ng/ml m
RT: 46.743 min Scan# 4236
Delta R.T. -0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

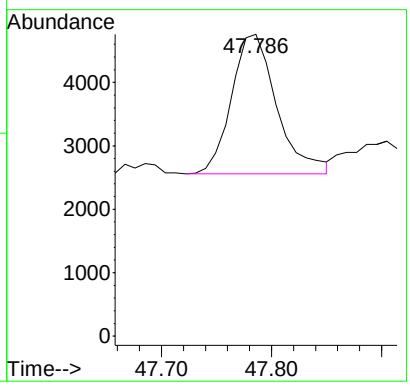
Tgt Ion:191 Resp: 1260

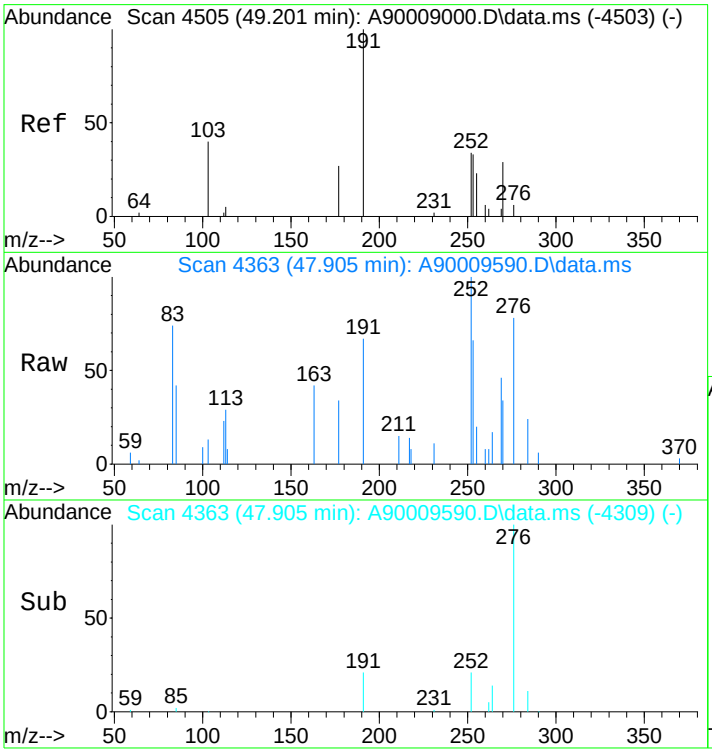




#106
18a-22,29,30-Trisnorneohopane-TS (T11)
Concen: 57.32 ng/ml
RT: 47.786 min Scan# 4350
Delta R.T. -0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

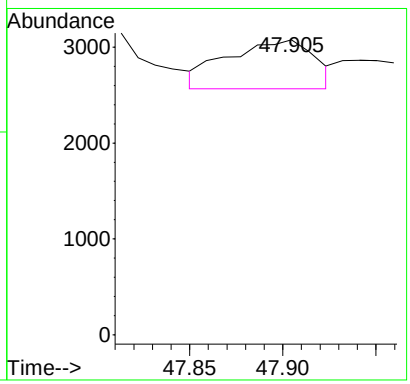
Tgt Ion:191 Resp: 6326

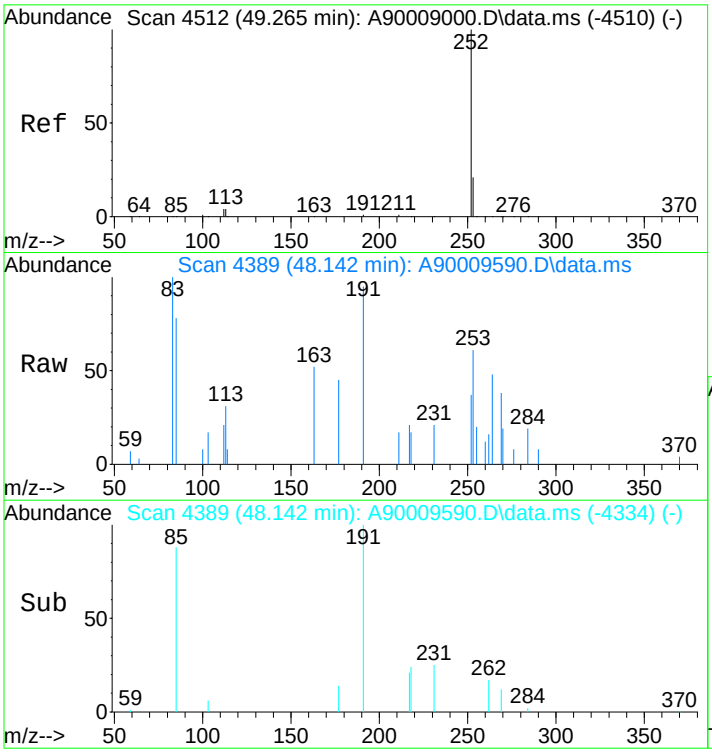




#107
C30 Tricyclic Terpane-22S
Concen: 14.98 ng/mL m
RT: 47.905 min Scan# 4363
Delta R.T. -0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

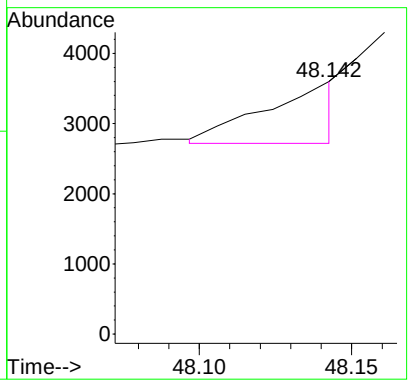
Tgt Ion:191 Resp: 1653

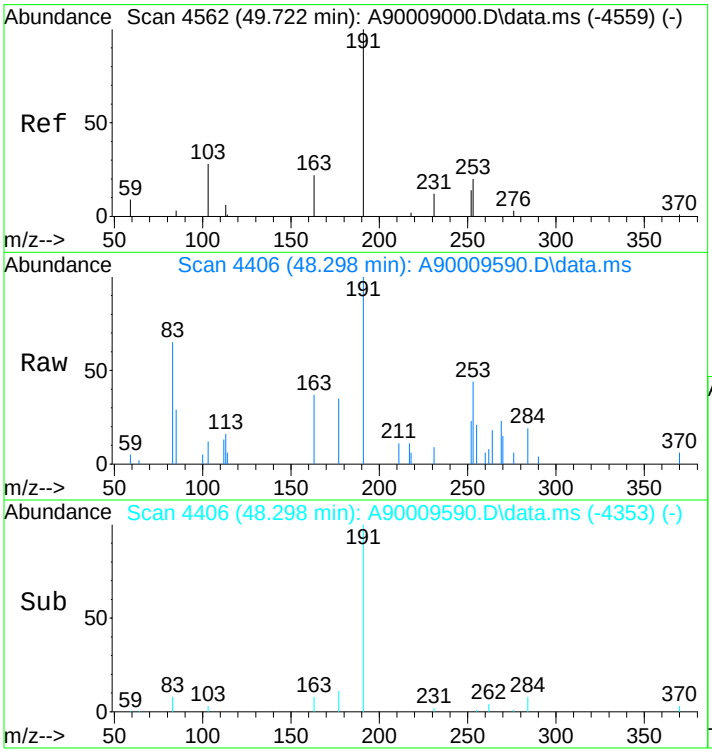




#108
C30 Tricyclic Terpane-22R
Concen: 13.40 ng/mL m
RT: 48.142 min Scan# 4389
Delta R.T. 0.000 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

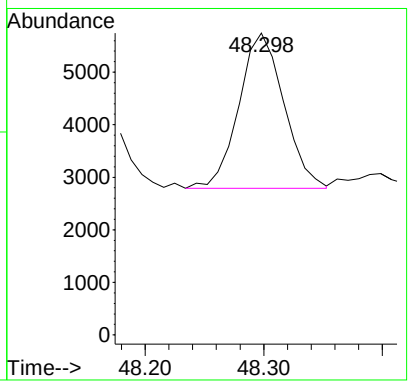
Tgt Ion:191 Resp: 1479

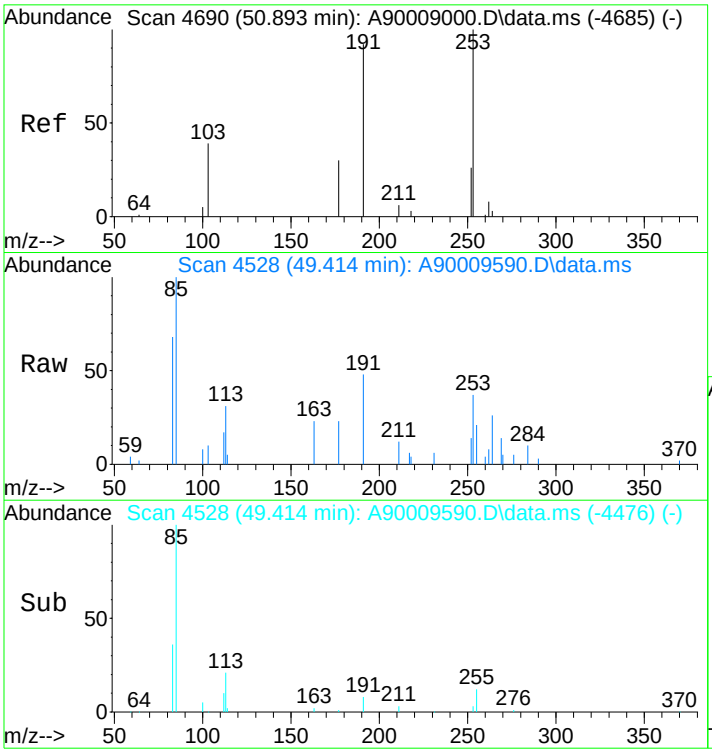




#109
17a(H)-22,29,30-Trisnorhopane-TM (T12)
Concen: 70.65 ng/ml
RT: 48.298 min Scan# 4406
Delta R.T. -0.018 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

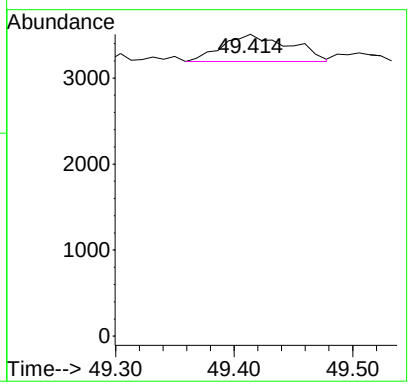
Tgt Ion:191 Resp: 7797

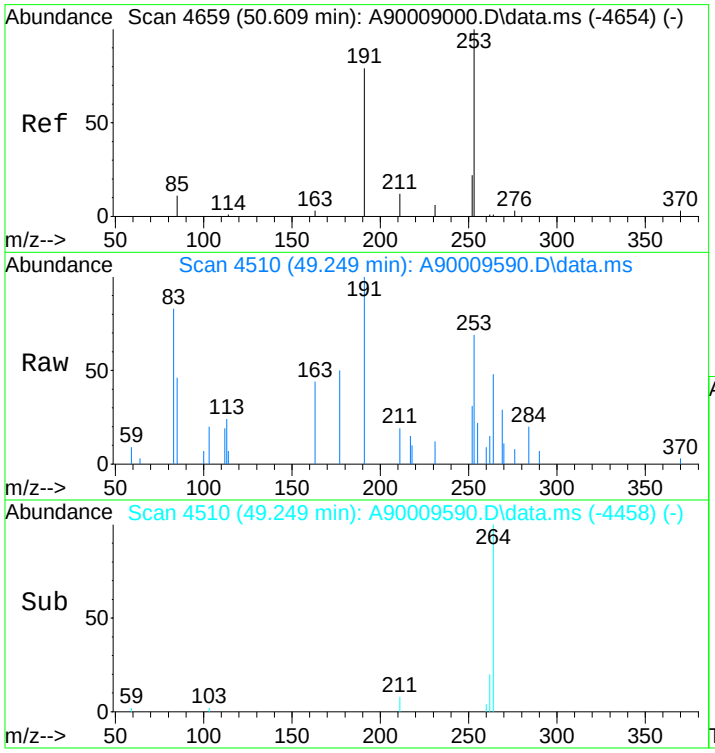




#110
17a/b,21b/a 28,30-Bisnorhopane (T14a)
Concen: 11.28 ng/ml
RT: 49.414 min Scan# 4528
Delta R.T. -0.027 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

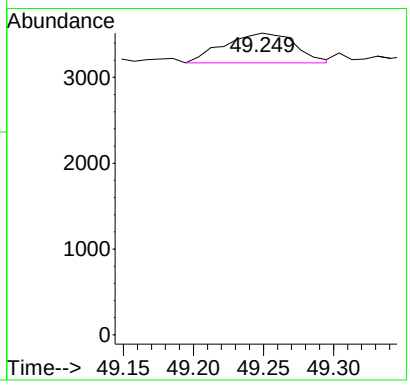
Tgt Ion:191 Resp: 1245

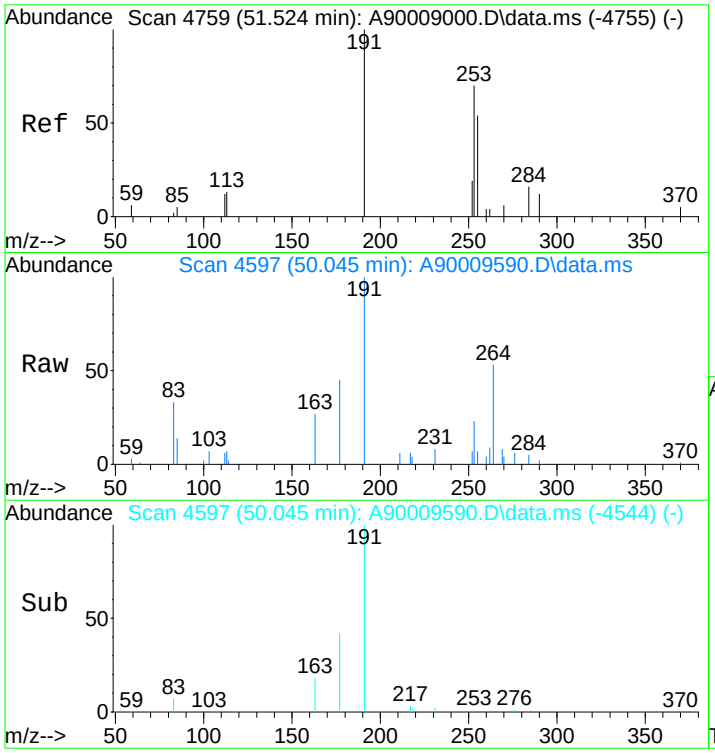




#111
17a(H),21b(H)-25-Norhopane (T14b)
Concen: 11.11 ng/ml
RT: 49.249 min Scan# 4510
Delta R.T. -0.027 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

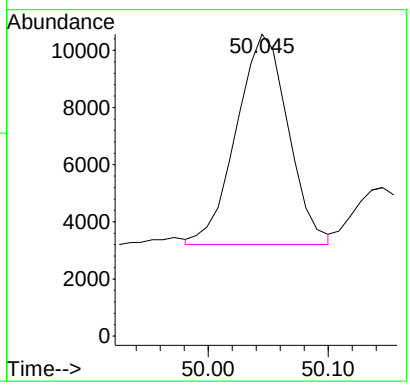
Tgt Ion:191 Resp: 1226

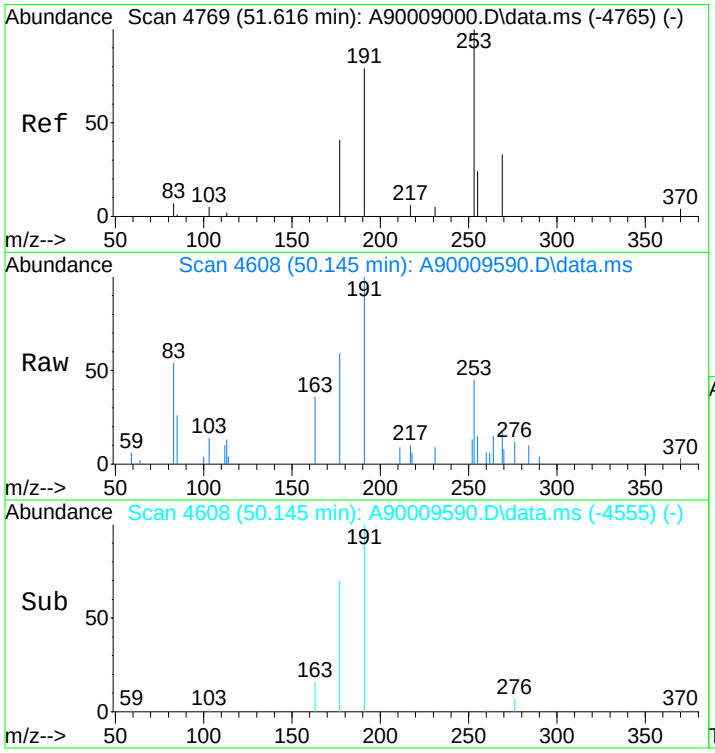




#112
30-Norhopane (T15)
Concen: 199.90 ng/ml m
RT: 50.045 min Scan# 4597
Delta R.T. -0.018 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

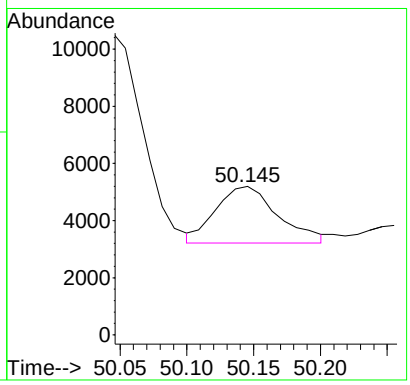
Tgt Ion:191 Resp: 22061

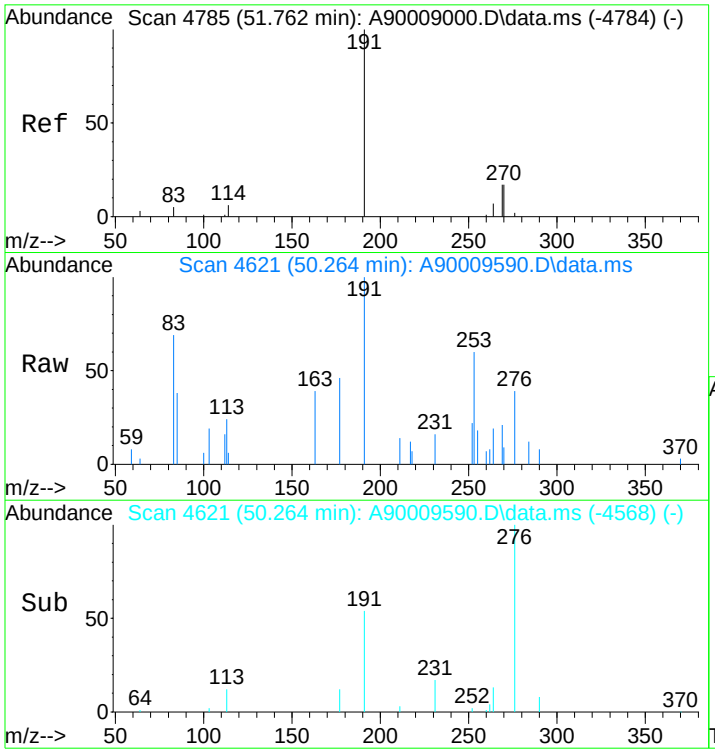




#113
18a(H)-30-Norneohopane-C29Ts (T16)
Concen: 58.46 ng/ml m
RT: 50.145 min Scan# 4608
Delta R.T. -0.018 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

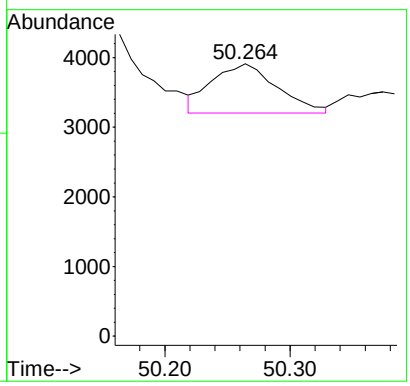
Tgt Ion:191 Resp: 6452

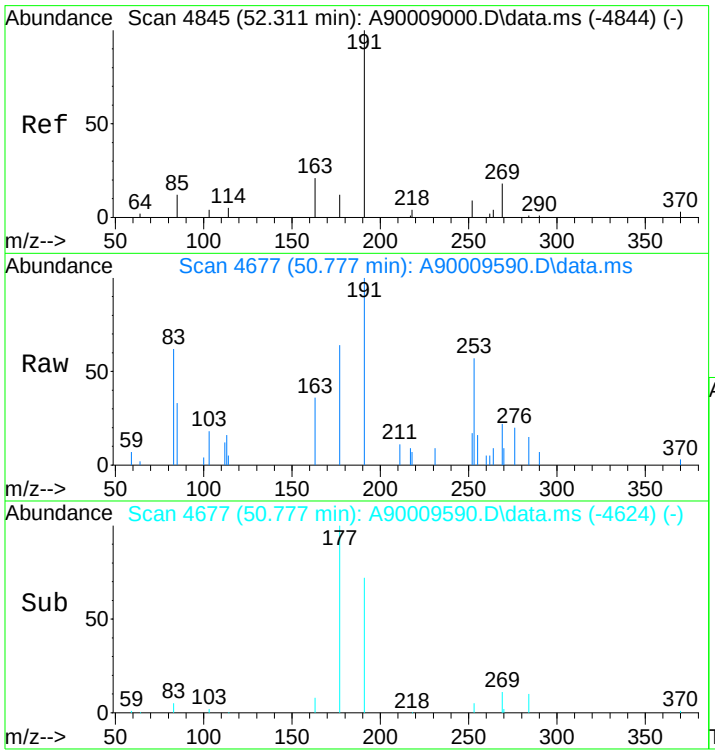




#114
17a(H)-Diahopane (X)
Concen: 23.27 ng/ml m
RT: 50.264 min Scan# 4621
Delta R.T. -0.018 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

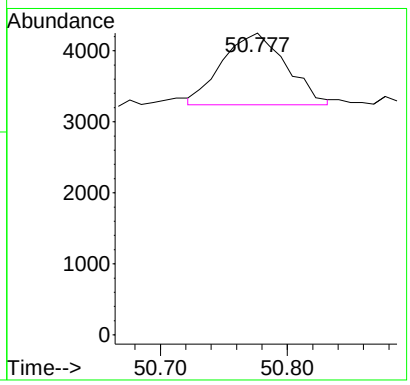
Tgt Ion:191 Resp: 2568

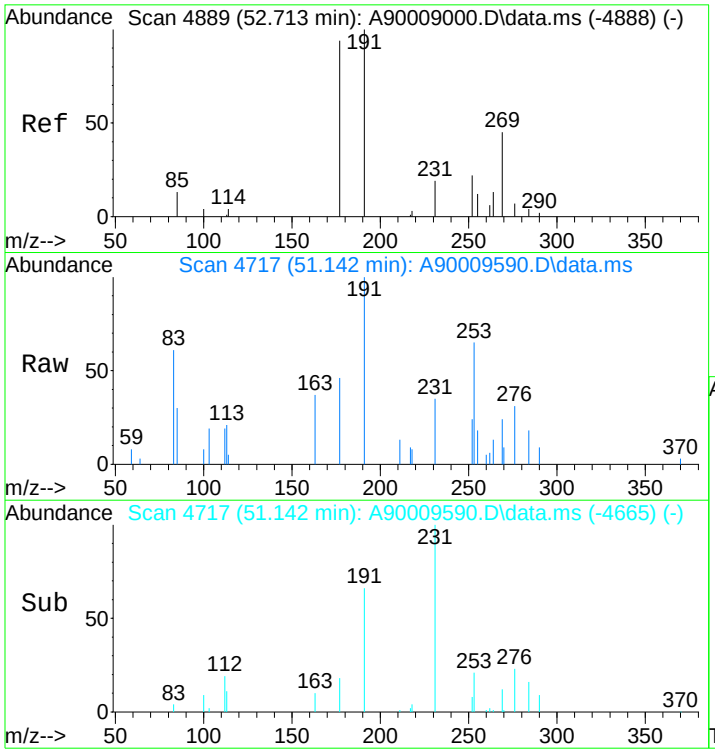




#115
30-Normoretane (T17)
Concen: 31.84 ng/ml m
RT: 50.777 min Scan# 4677
Delta R.T. -0.018 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

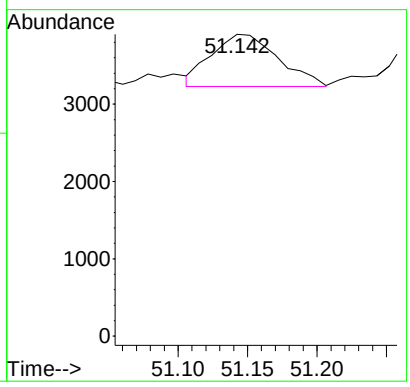
Tgt Ion:191 Resp: 3514

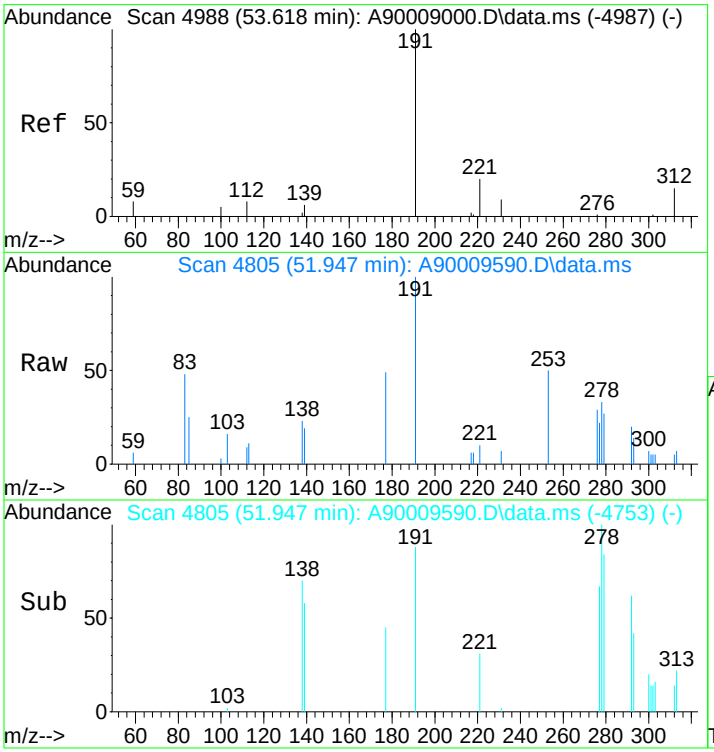




#116
18a(H)&18b(H)-Oleananes (T18)
Concen: 20.44 ng/ml m
RT: 51.142 min Scan# 4717
Delta R.T. -0.027 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

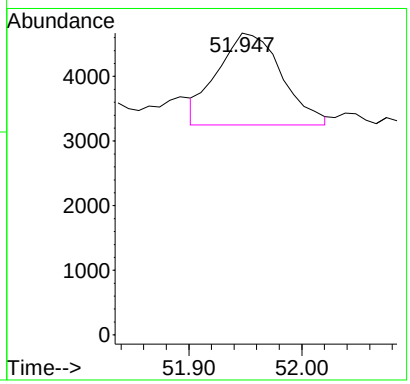
Tgt Ion:191 Resp: 2256

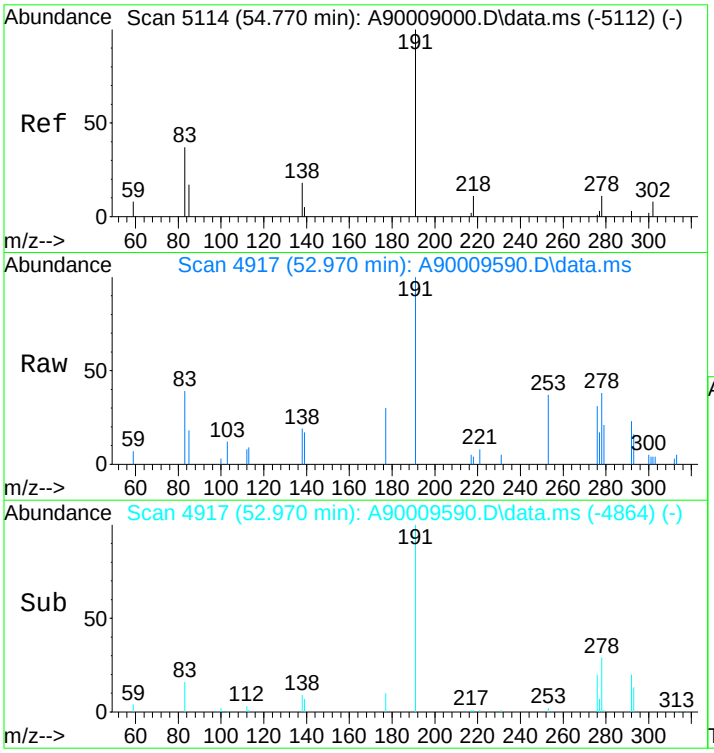




#117
Moretane (T20)
Concen: 50.95 ng/ml m
RT: 51.947 min Scan# 4805
Delta R.T. -0.027 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

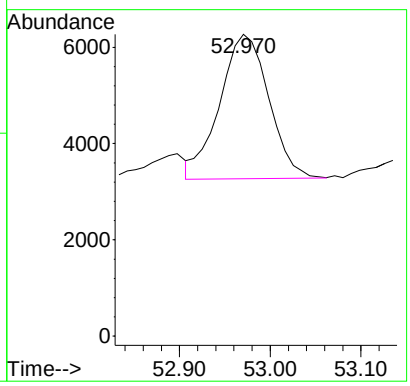
Tgt Ion:191 Resp: 5623

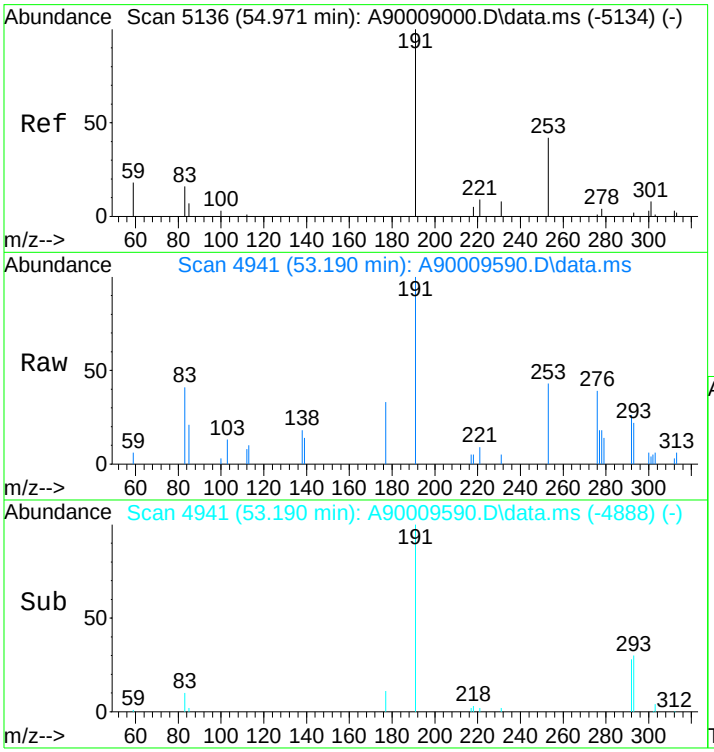




#118
30-Homohopane-22S (T21)
Concen: 101.96 ng/ml
RT: 52.970 min Scan# 4917
Delta R.T. -0.018 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

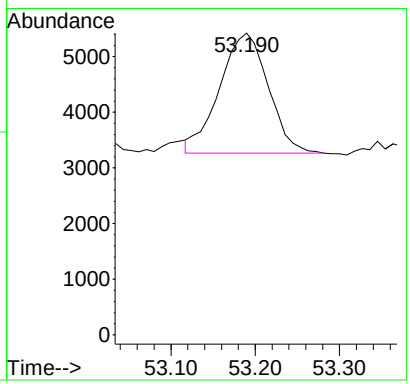
Tgt Ion:191 Resp: 11252

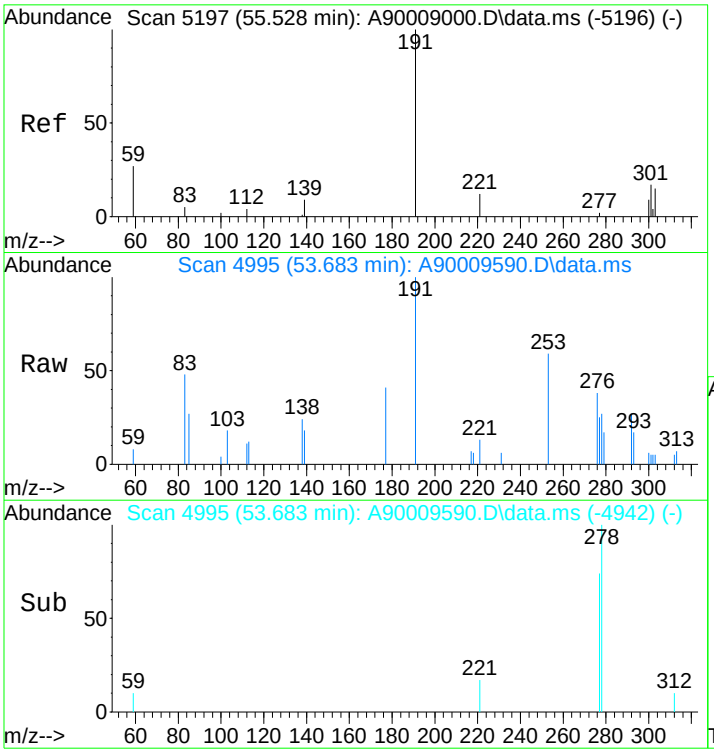




#119
30-Homohopane-22R (T22)
Concen: 78.71 ng/ml m
RT: 53.190 min Scan# 4941
Delta R.T. -0.018 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

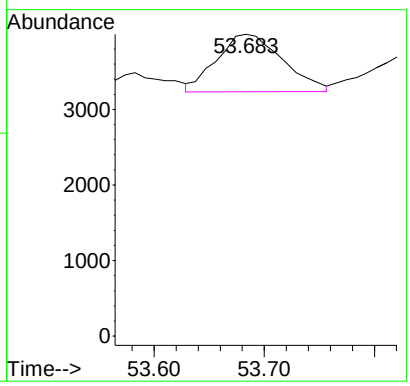
Tgt Ion:191 Resp: 8686

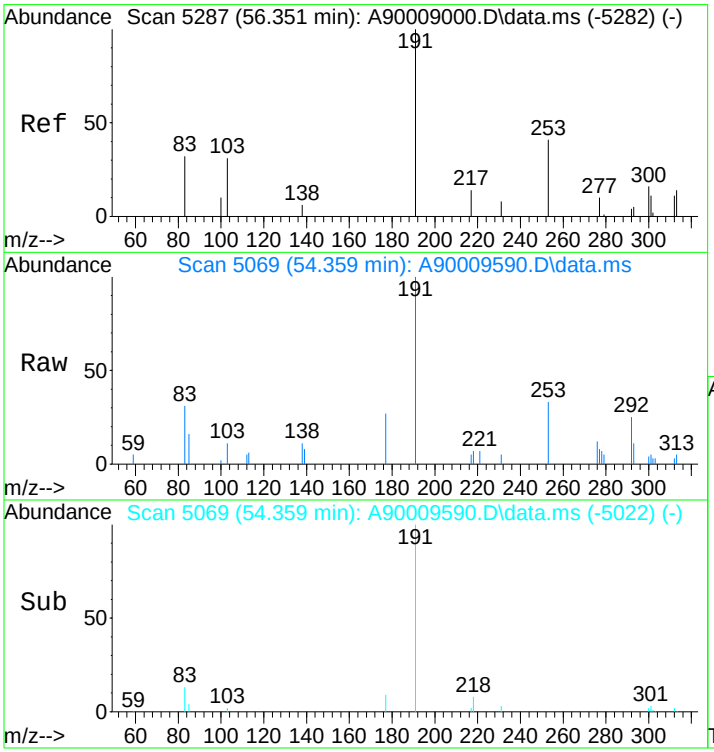




#120
Gammacerane/C32-diahopane
Concen: 28.72 ng/mL
RT: 53.683 min Scan# 4995
Delta R.T. -0.018 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

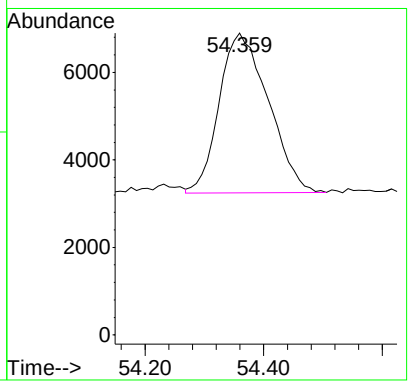
Tgt Ion:191 Resp: 3170

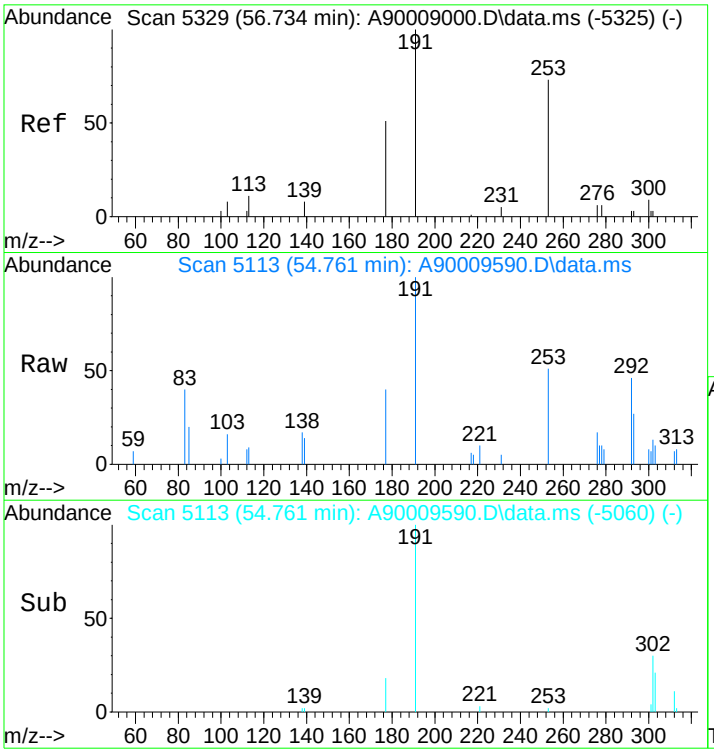




#121
30,31-Bishomohopane-22S (T26)
Concen: 189.81 ng/ml
RT: 54.359 min Scan# 5069
Delta R.T. -0.073 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

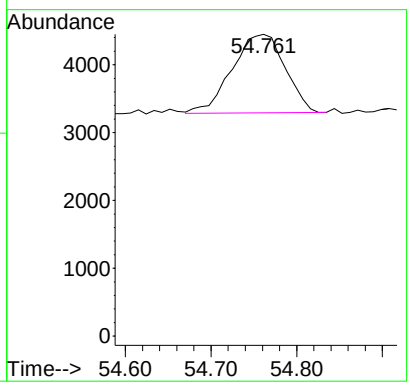
Tgt Ion:191 Resp: 20947

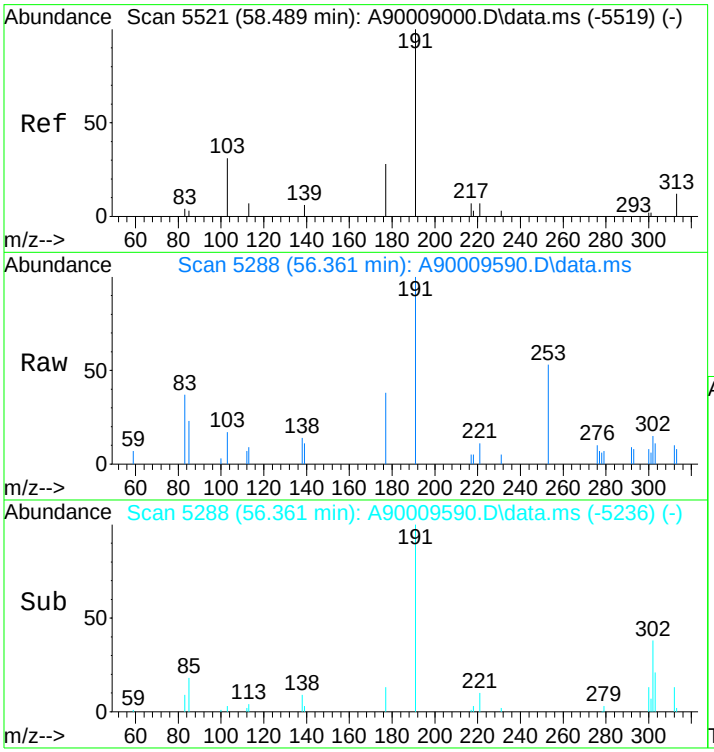




#122
30,31-Bishomohopane-22R (T27)
Concen: 45.26 ng/ml
RT: 54.761 min Scan# 5113
Delta R.T. -0.018 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

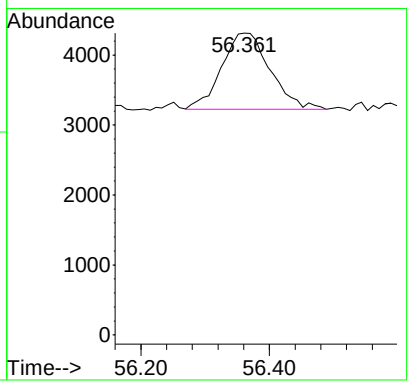
Tgt Ion:191 Resp: 4995

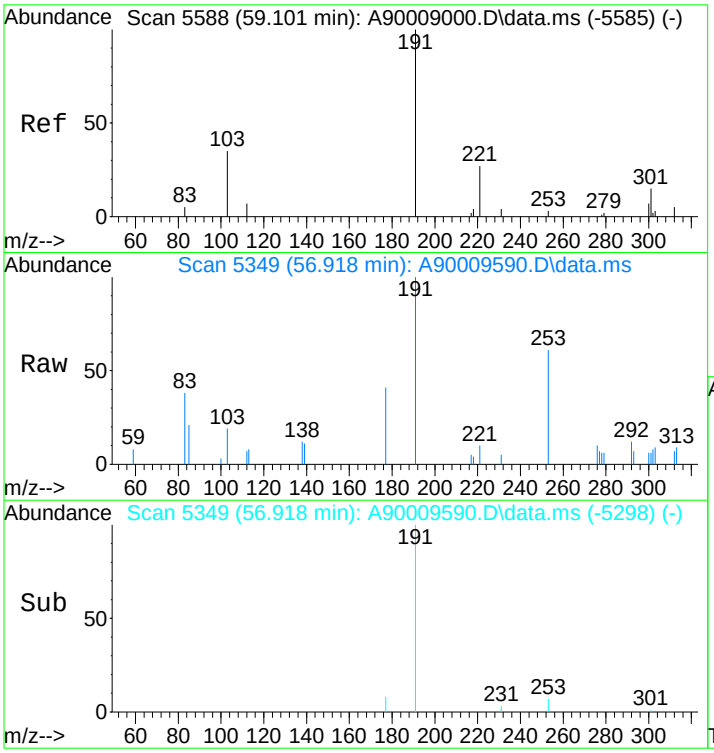




#123
30,31-Trishomohopane-22S (T30)
Concen: 51.91 ng/ml
RT: 56.361 min Scan# 5288
Delta R.T. -0.027 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

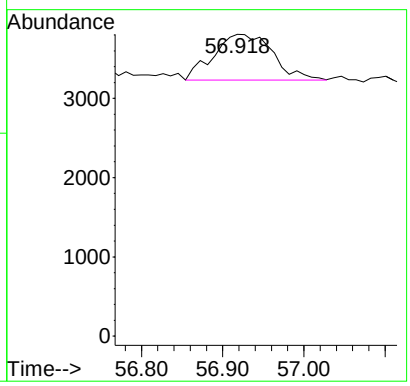
Tgt Ion:191 Resp: 5729

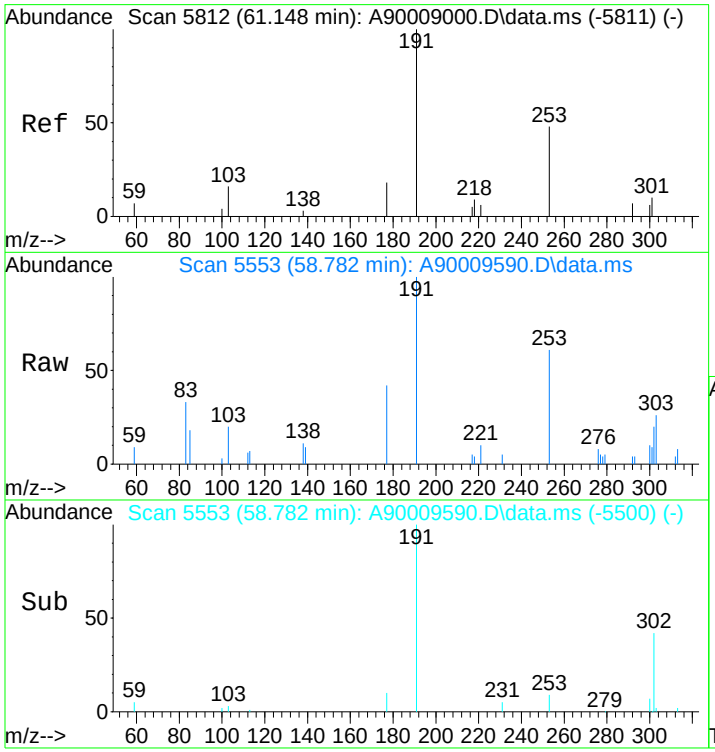




#124
30,31-Trishomohopane-22R (T31)
Concen: 26.73 ng/ml
RT: 56.918 min Scan# 5349
Delta R.T. -0.036 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

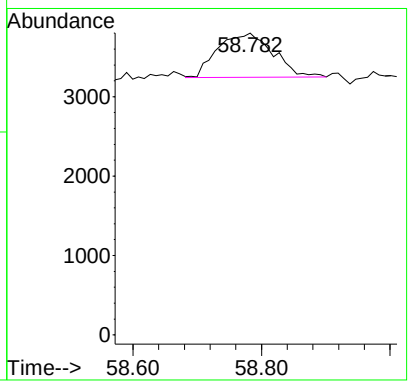
Tgt Ion:191 Resp: 2950

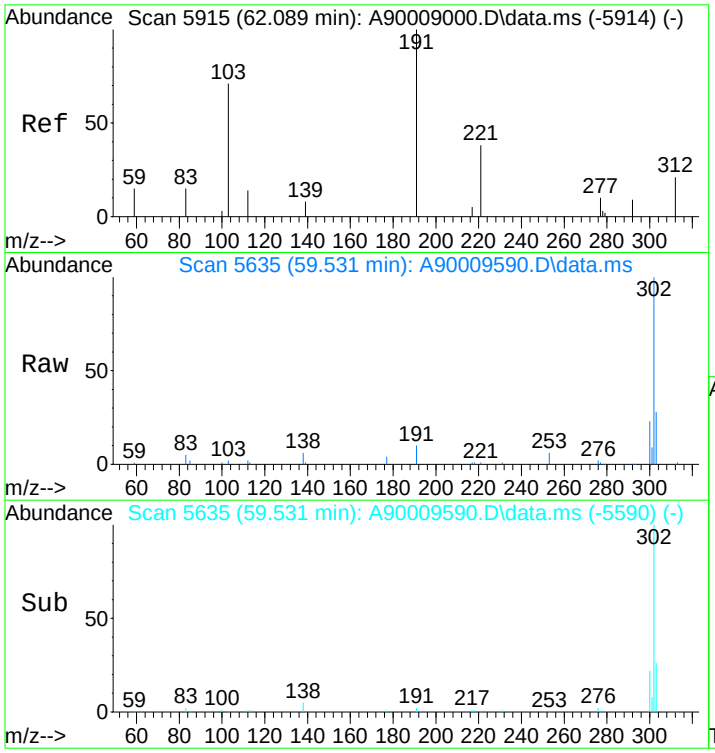




#125
Tetrakishomohopane-22S (T32)
Concen: 29.89 ng/ml
RT: 58.782 min Scan# 5553
Delta R.T. -0.018 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

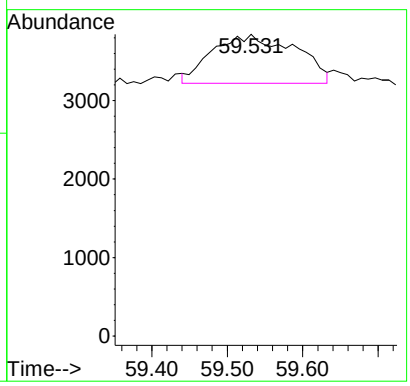
Tgt Ion:191 Resp: 3299

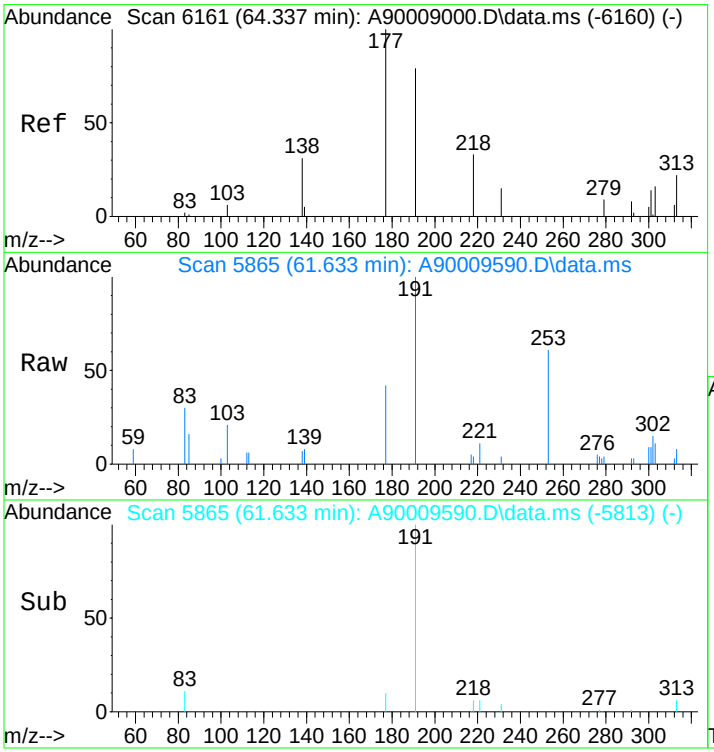




#126
Tetrakishomohopane-22R (T33)
Concen: 42.98 ng/ml m
RT: 59.531 min Scan# 5635
Delta R.T. -0.091 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

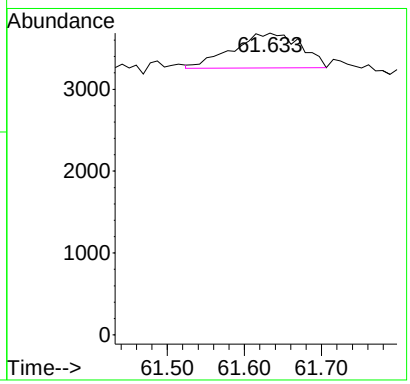
Tgt Ion:191 Resp: 4743

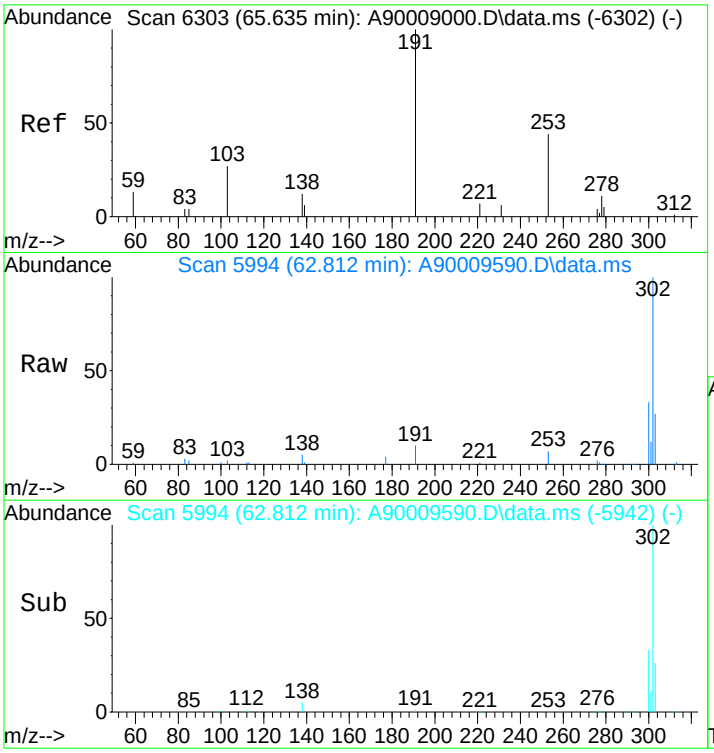




#127
Pentakishomohopane-22S (T34)
Concen: 23.41 ng/ml
RT: 61.633 min Scan# 5865
Delta R.T. -0.027 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

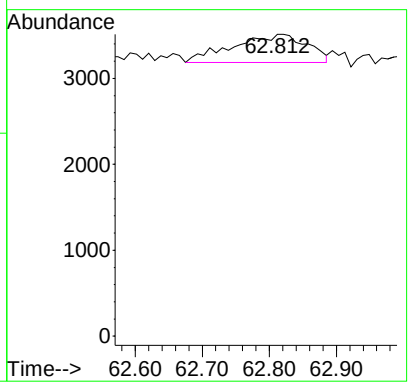
Tgt Ion:191 Resp: 2583

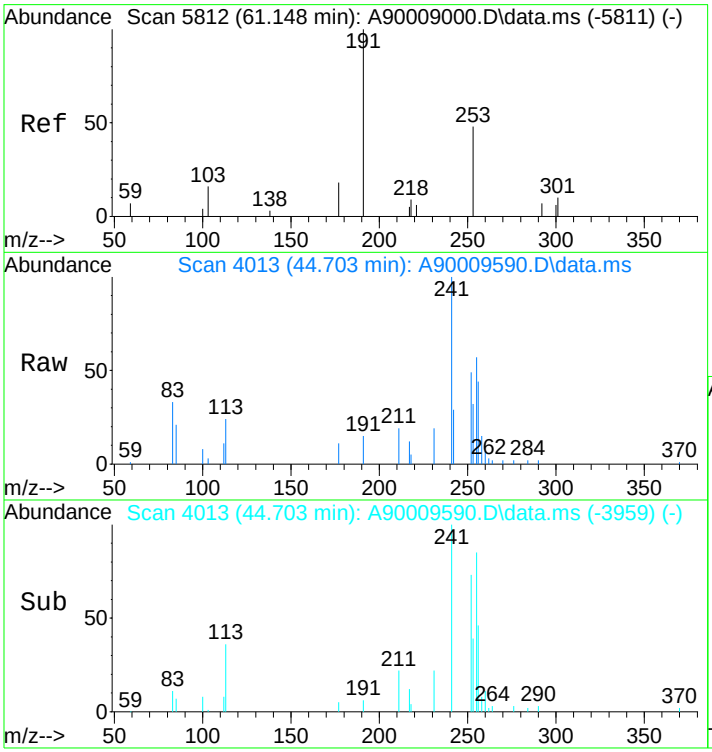




#128
Pentakishomohopane-22R (T35)
Concen: 22.83 ng/ml
RT: 62.812 min Scan# 5994
Delta R.T. -0.027 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

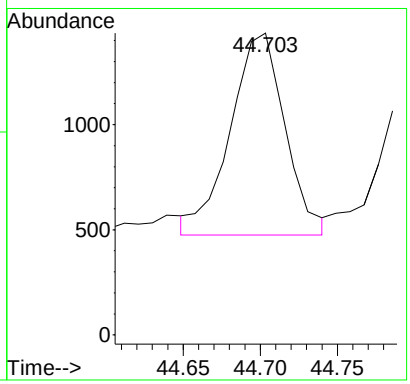
Tgt Ion:191 Resp: 2520

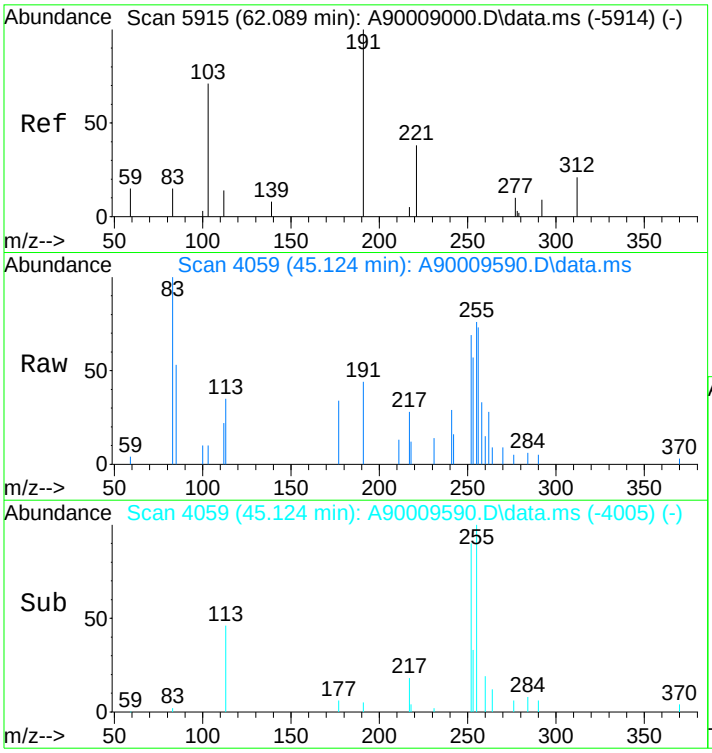




#130
13b(H),17a(H)-20S-Diacholestane (S4)
Concen: 44.96 ng/ml m
RT: 44.703 min Scan# 4013
Delta R.T. -0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

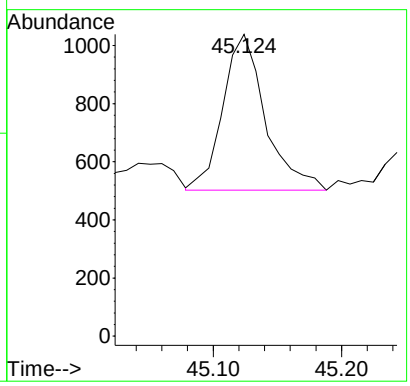
Tgt Ion:217 Resp: 2369

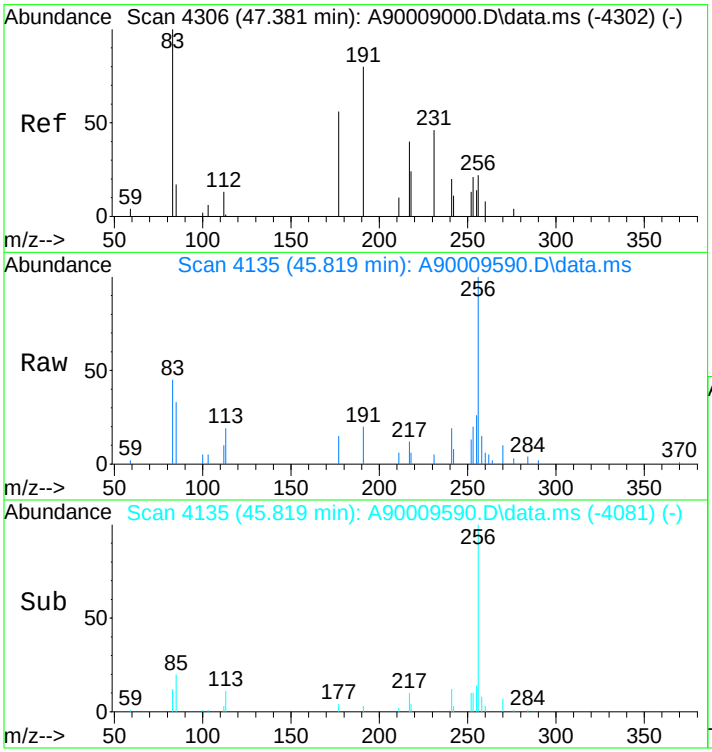




#131
13b(H),17a(H)-20R-Diacholestane (S5)
Concen: 23.51 ng/ml
RT: 45.124 min Scan# 4059
Delta R.T. -0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

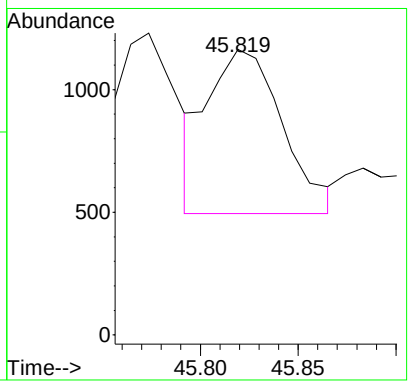
Tgt Ion:217 Resp: 1239

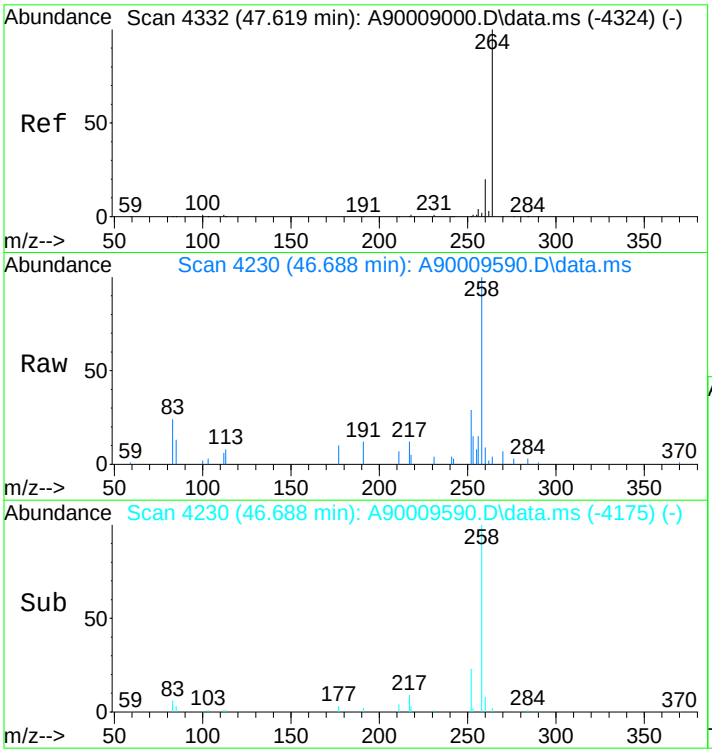




#132
13b,17a-20S-Methyldiacholestane (S8)
Concen: 33.61 ng/ml m
RT: 45.819 min Scan# 4135
Delta R.T. -0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

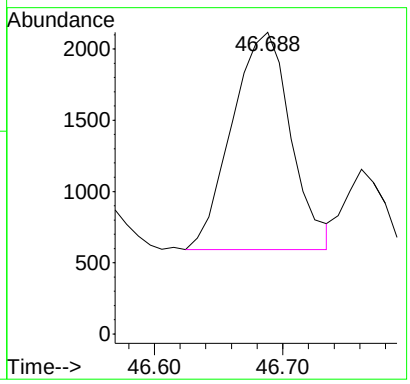
Tgt Ion:217 Resp: 1771

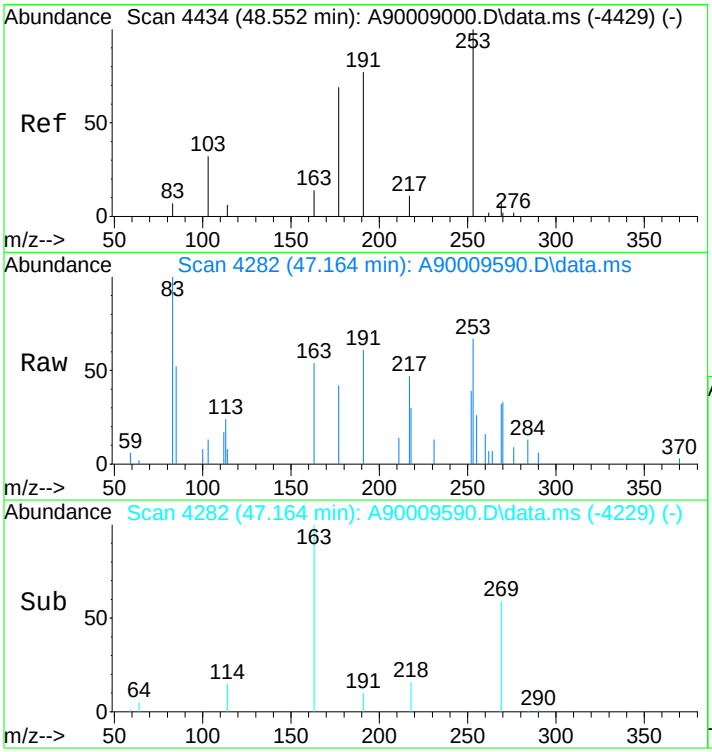




#133
14a,17a-20S-Chol/13b,17a-20S-Ethyldiach
Concen: 92.38 ng/ml
RT: 46.688 min Scan# 4230
Delta R.T. 0.000 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

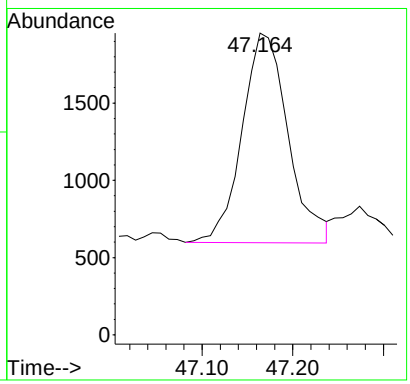
Tgt Ion:217 Resp: 4868

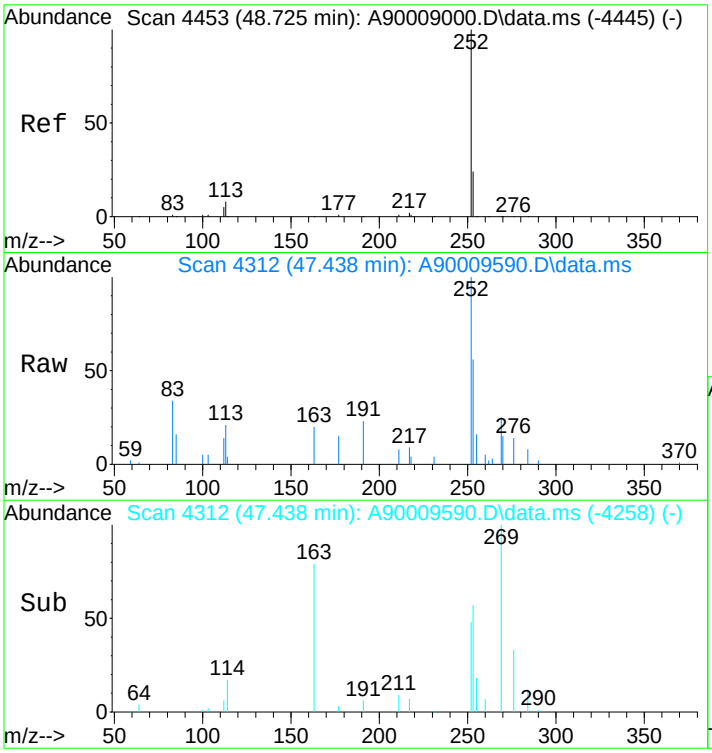




#134
14a,17a-20R-Chol/13b,17a-20R-Ethyldiach
Concen: 90.73 ng/ml
RT: 47.164 min Scan# 4282
Delta R.T. -0.018 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

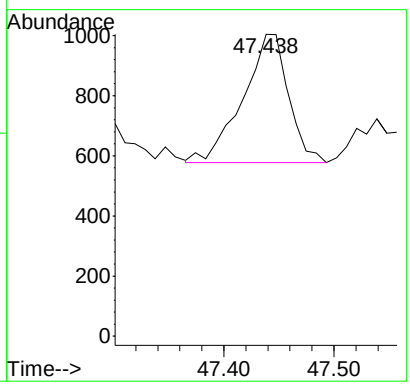
Tgt Ion:217 Resp: 4781

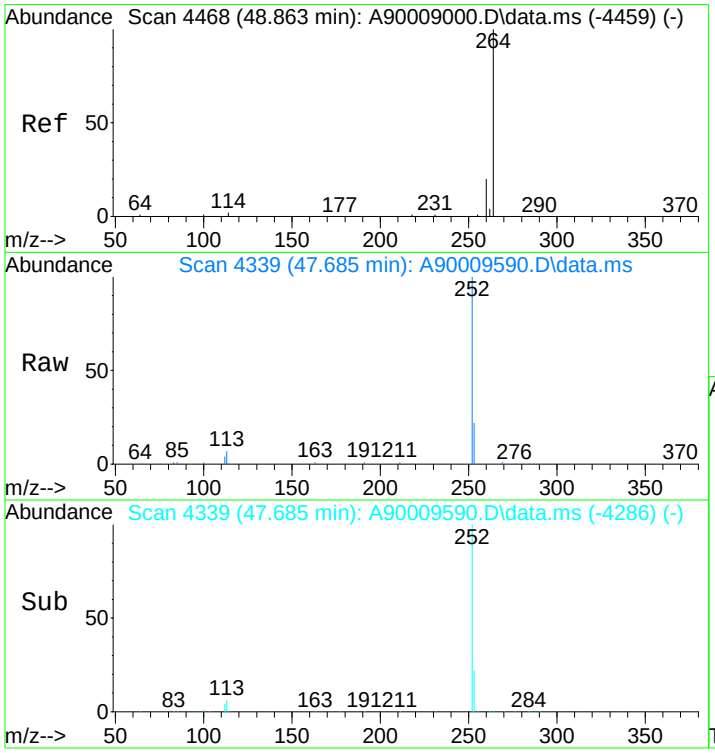




#135
Unknown Sterane (S18)
Concen: 23.30 ng/ml
RT: 47.438 min Scan# 4312
Delta R.T. -0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

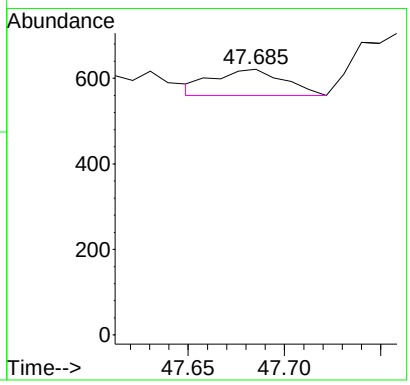
Tgt Ion:217 Resp: 1228

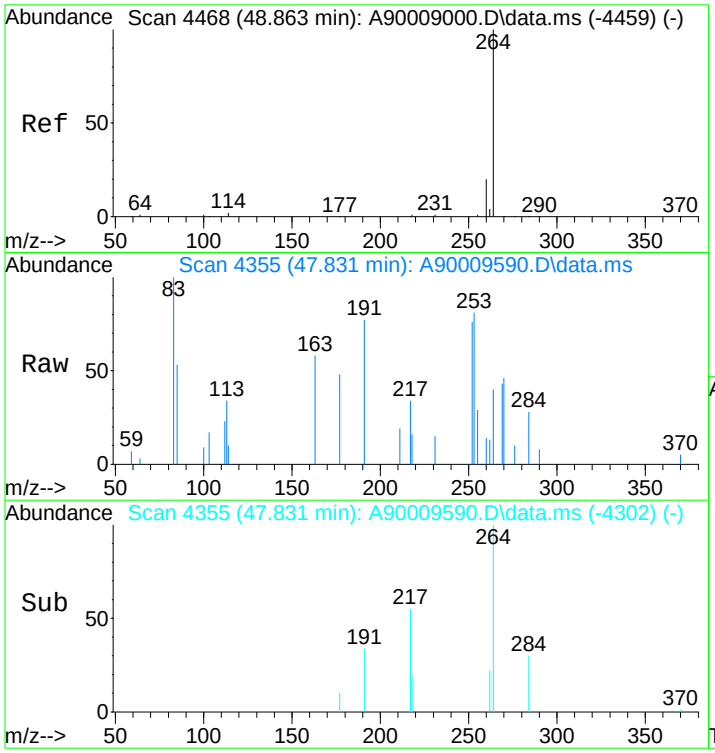




#136
13a,17b-20S-Ethyldiacholestane (S19)
Concen: 2.98 ng/ml
RT: 47.685 min Scan# 4339
Delta R.T. -0.018 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

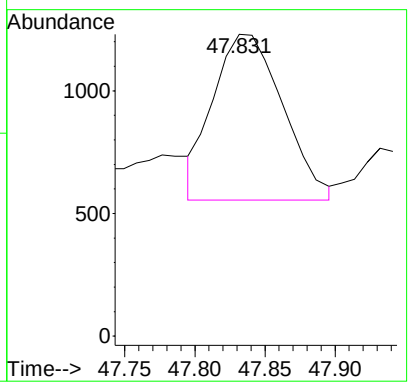
Tgt Ion:217 Resp: 157

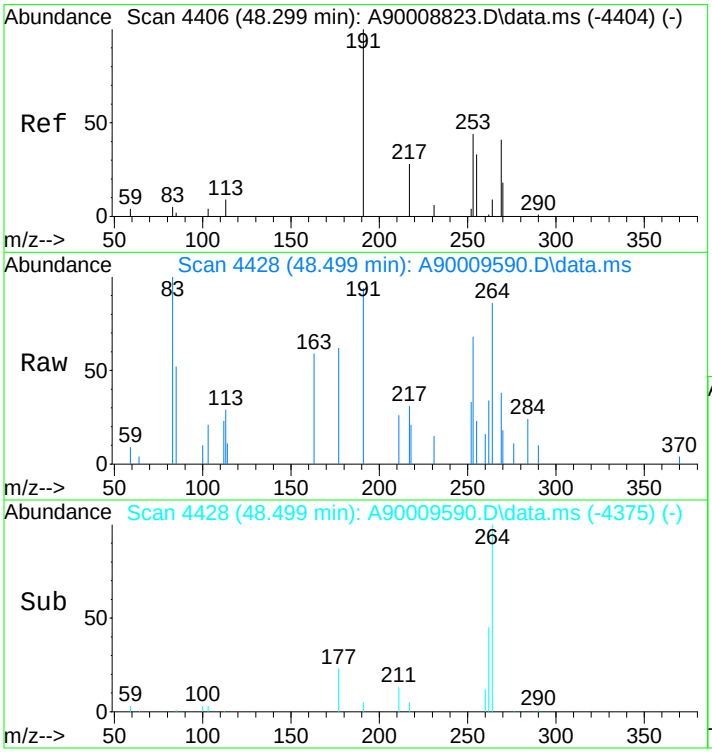




#137
14a,17a-20S-Methylcholestane (S20)
Concen: 44.39 ng/ml m
RT: 47.831 min Scan# 4355
Delta R.T. -0.018 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

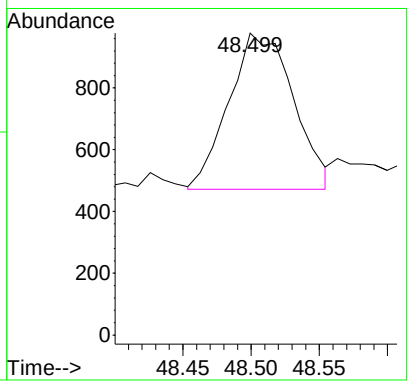
Tgt Ion:217 Resp: 2339

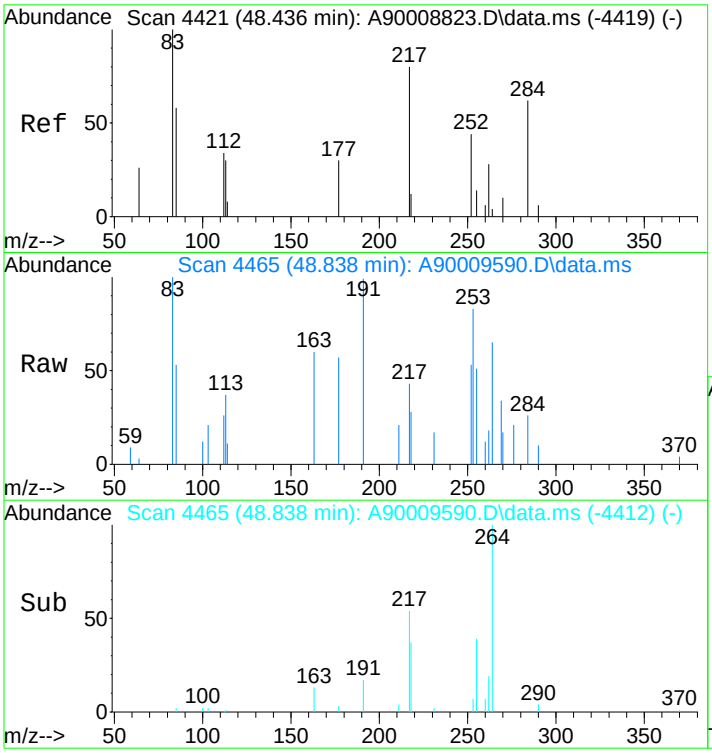




#138
14a,17a-20R-Methylcholestane (S24)
Concen: 31.56 ng/ml m
RT: 48.499 min Scan# 4428
Delta R.T. -0.018 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

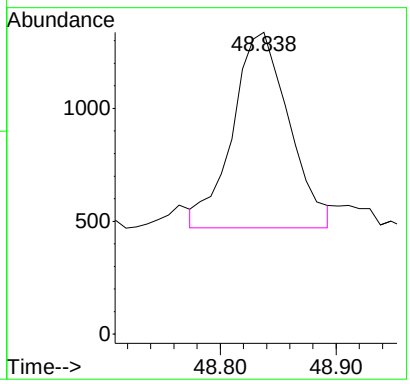
Tgt Ion:217 Resp: 1663

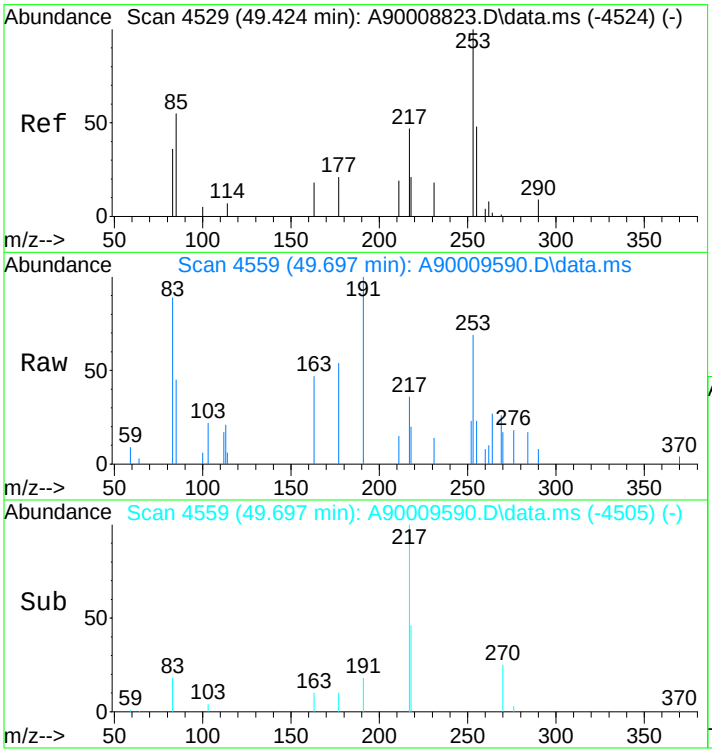




#139
14a(H),17a(H)-20S-Ethylcholestane (S25)
Concen: 55.55 ng/ml m
RT: 48.838 min Scan# 4465
Delta R.T. -0.018 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

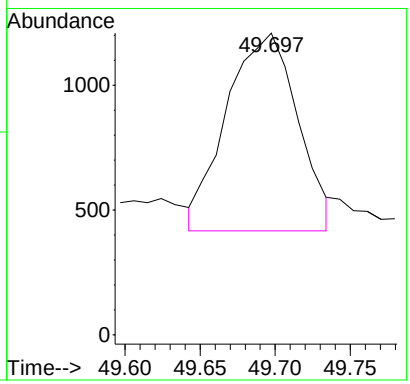
Tgt Ion:217 Resp: 2927

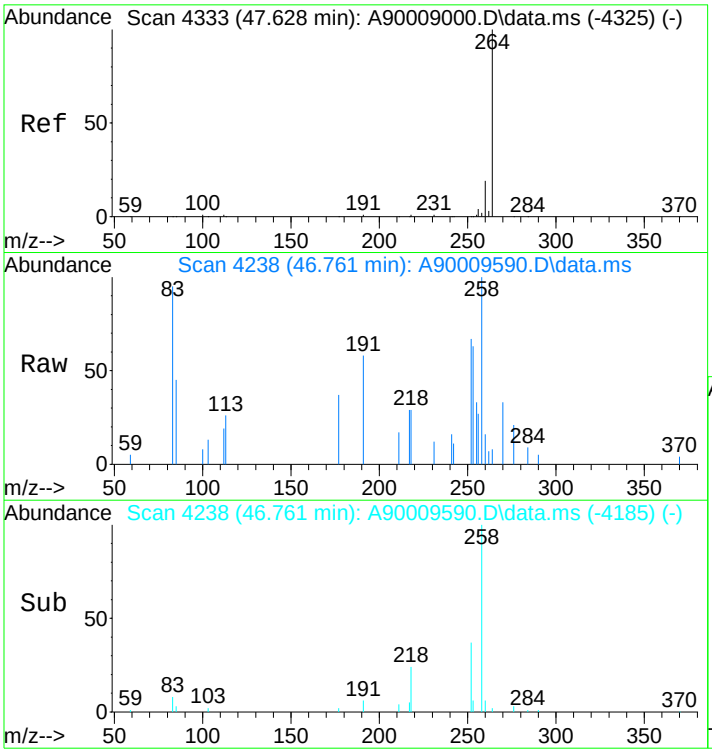




#140
14a(H),17a(H)-20R-Ethylcholestane (S28)
Concen: 49.38 ng/ml m
RT: 49.697 min Scan# 4559
Delta R.T. -0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

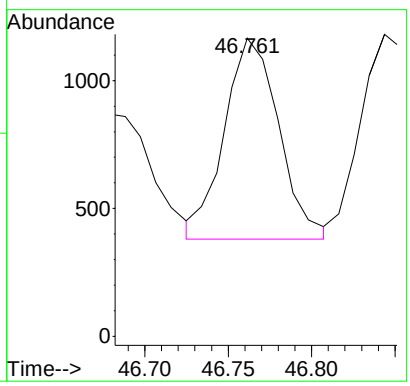
Tgt Ion:217 Resp: 2602

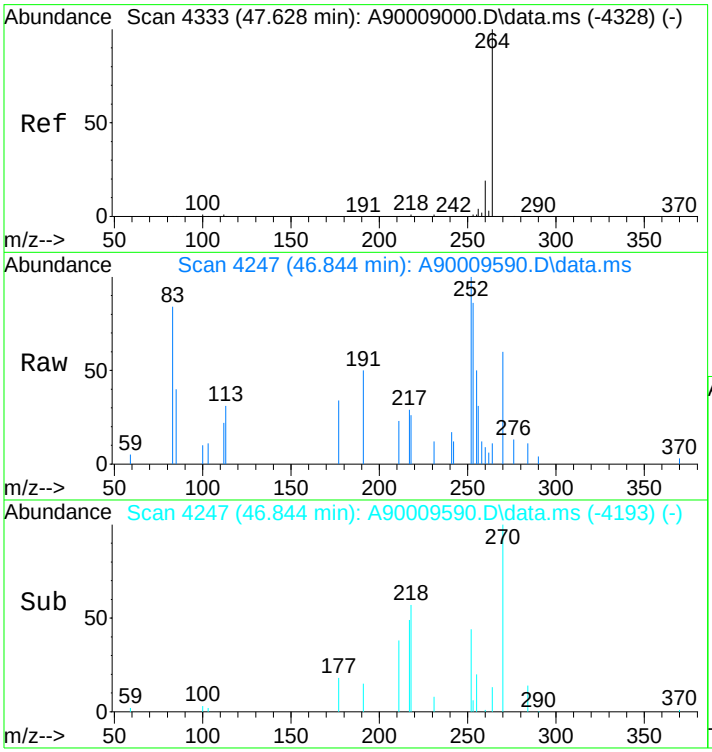




#141
14b(H),17b(H)-20R-Cholestane (S14)
Concen: 33.87 ng/ml m
RT: 46.761 min Scan# 4238
Delta R.T. -0.018 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

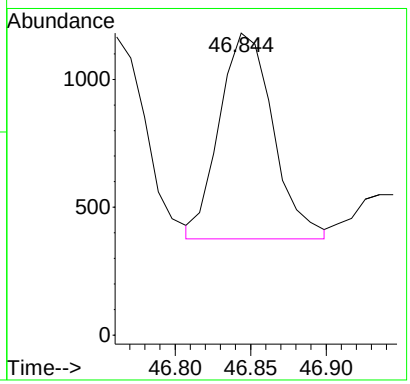
Tgt Ion:218 Resp: 1785

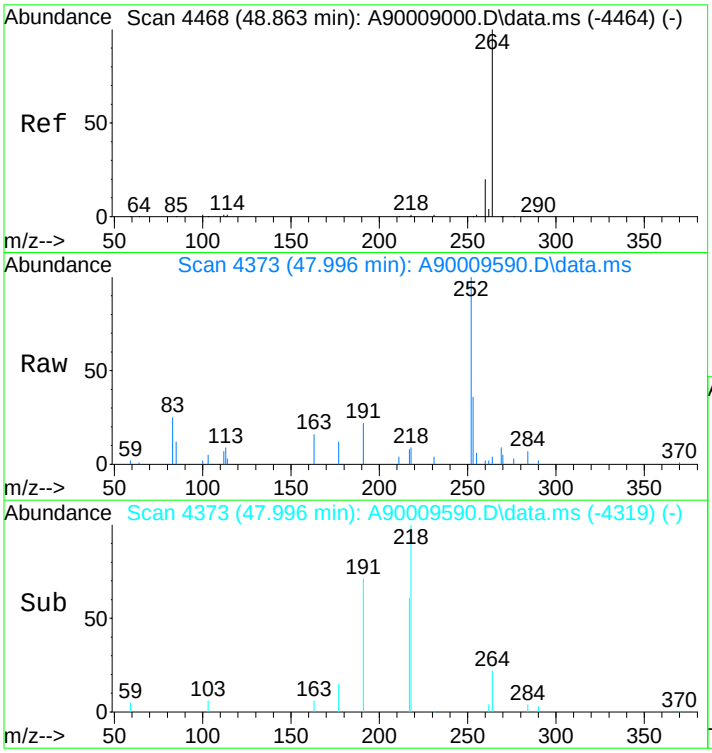




#142
14b(H),17b(H)-20S-Cholestane (S15)
Concen: 37.88 ng/ml m
RT: 46.844 min Scan# 4247
Delta R.T. -0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

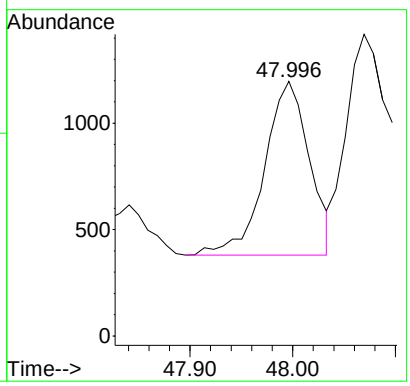
Tgt Ion:218 Resp: 1996

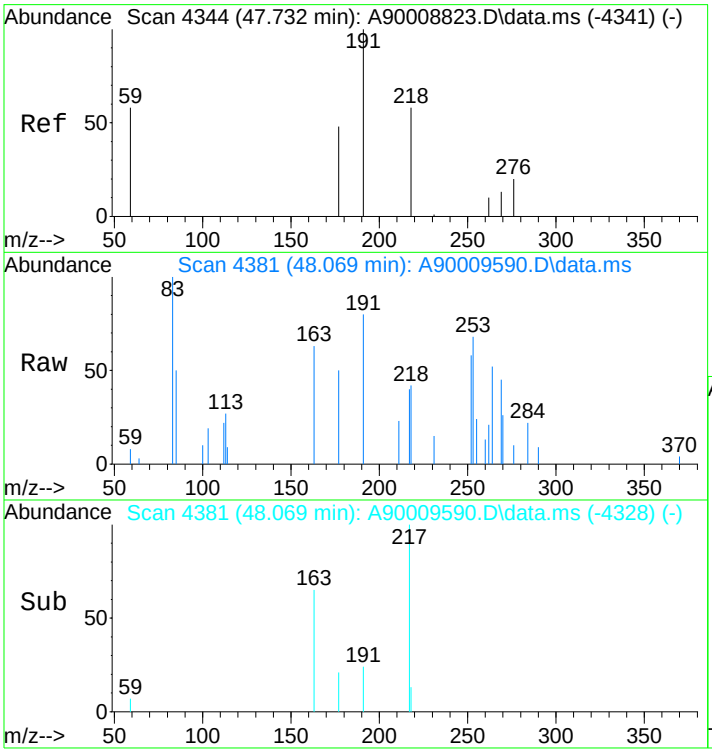




#143
14b,17b-20R-Methylcholestane (S22)
Concen: 47.18 ng/ml
RT: 47.996 min Scan# 4373
Delta R.T. -0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

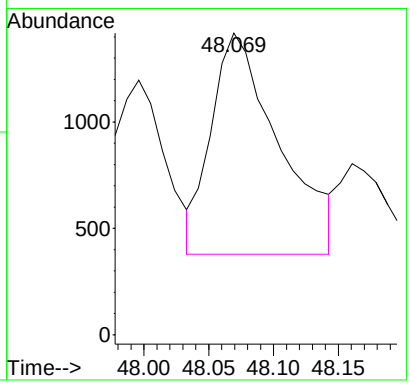
Tgt Ion:218 Resp: 2486

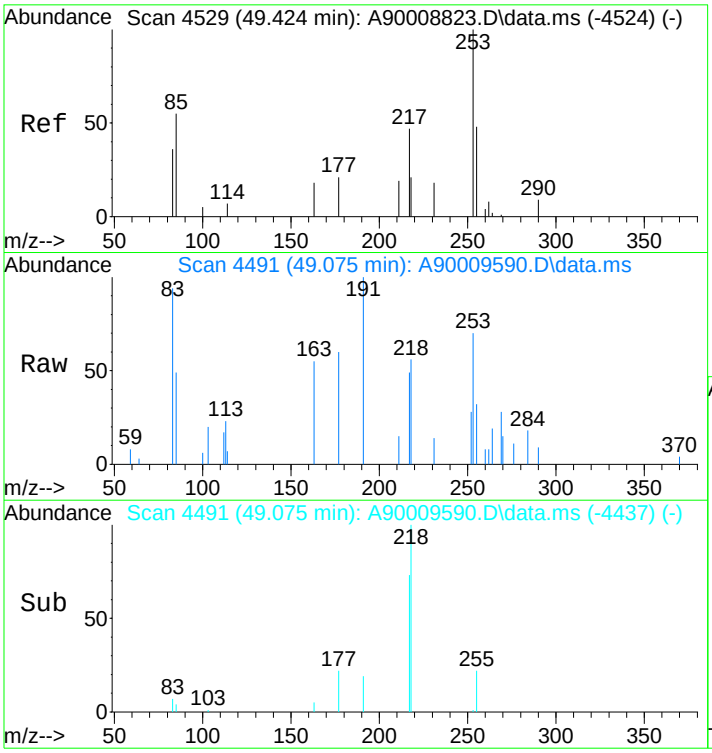




#144
14b,17b-20S-Methylcholestane (S23)
Concen: 71.85 ng/ml m
RT: 48.069 min Scan# 4381
Delta R.T. -0.018 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

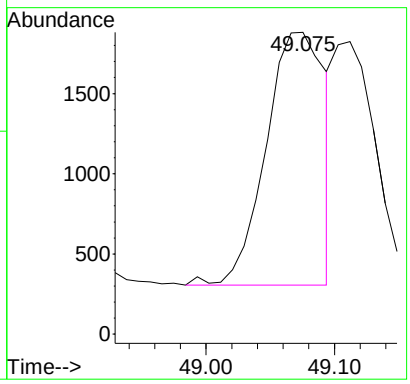
Tgt Ion:218 Resp: 3786

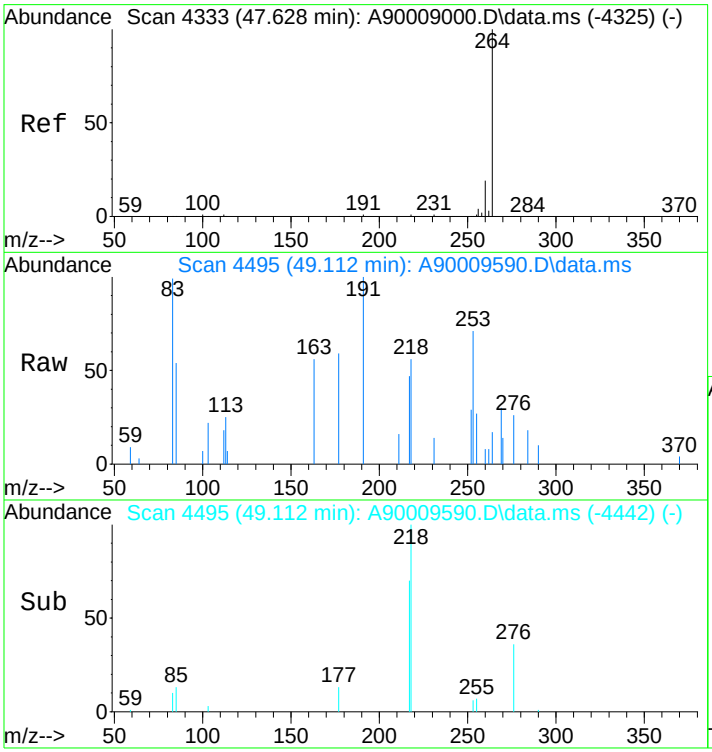




#145
14b(H),17b(H)-20R-Ethylcholestane (S26)
Concen: 95.36 ng/ml
RT: 49.075 min Scan# 4491
Delta R.T. -0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

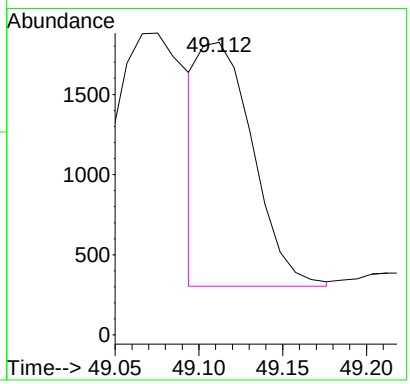
Tgt Ion:218 Resp: 5025

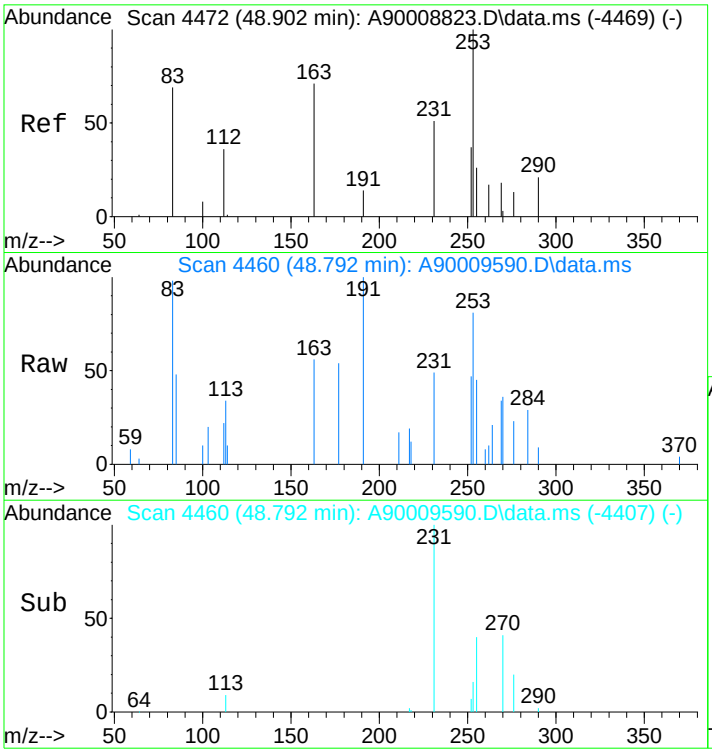




#146
14b(H),17b(H)-20S-Ethylcholestane (S27)
Concen: 64.86 ng/ml m
RT: 49.112 min Scan# 4495
Delta R.T. -0.018 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

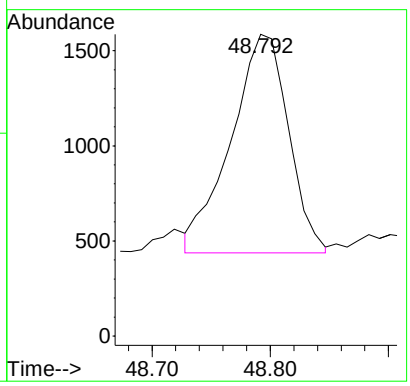
Tgt Ion:218 Resp: 3418

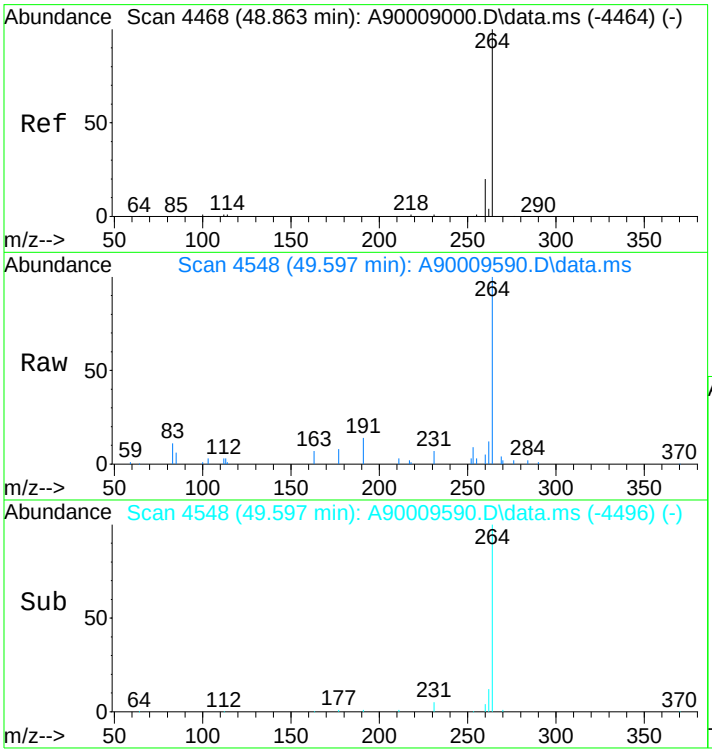




#147
C26,20R- +C27,20S- triaromatic steroid
Concen: 73.76 ng/mL m
RT: 48.792 min Scan# 4460
Delta R.T. -0.018 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

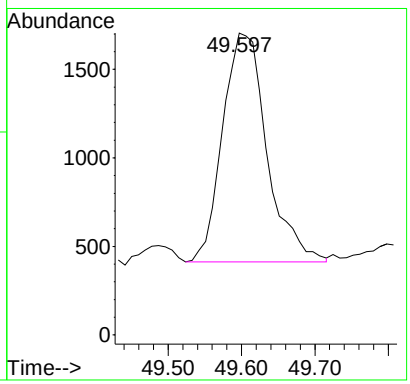
Tgt Ion:231 Resp: 3887

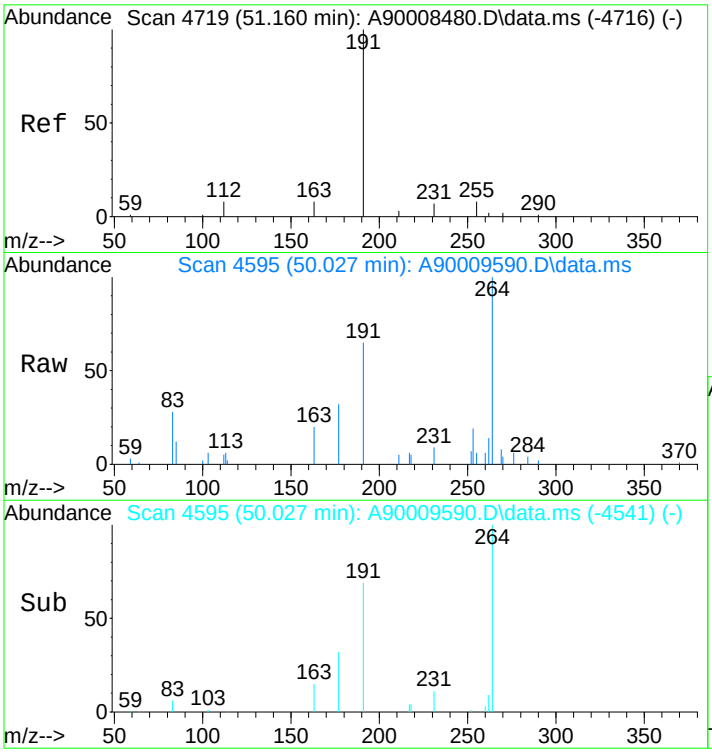




#148
C28,20S-triaromatic steroid
Concen: 103.29 ng/mL
RT: 49.597 min Scan# 4548
Delta R.T. -0.027 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

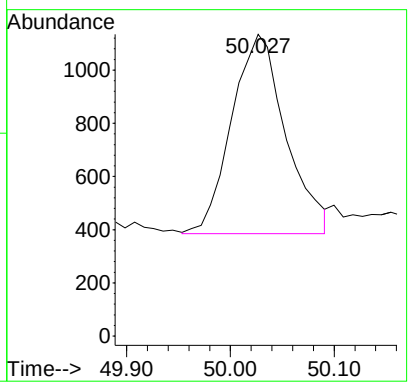
Tgt Ion:231 Resp: 5443

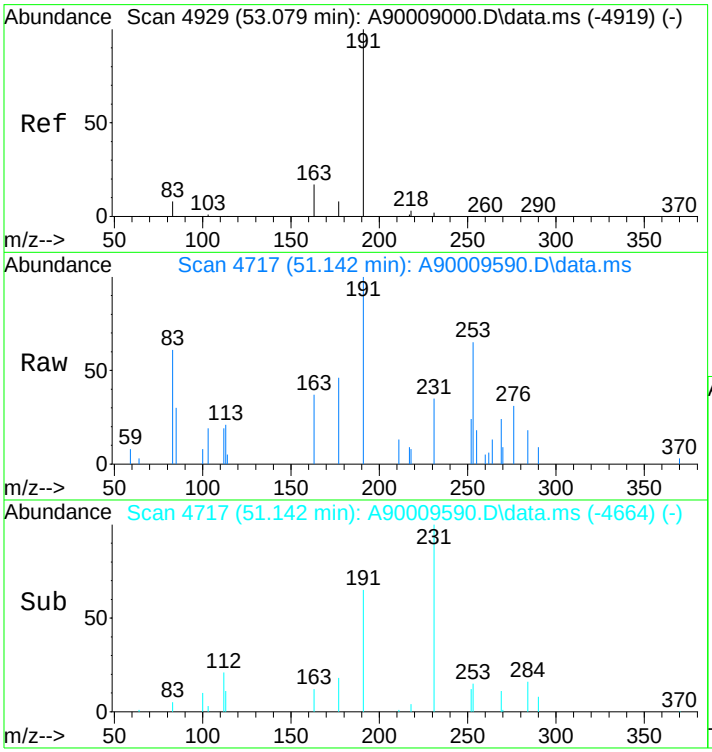




#149
C27,20R-triaromatic steroid
Concen: 51.62 ng/mL m
RT: 50.027 min Scan# 4595
Delta R.T. -0.009 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

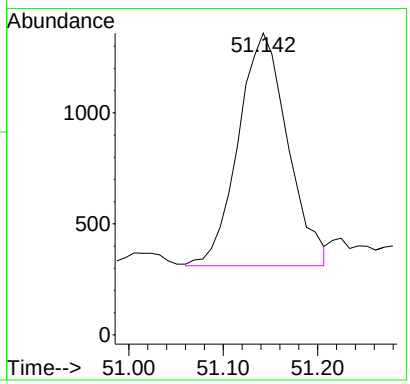
Tgt Ion:231 Resp: 2720





#150
C28,20R-triaromatic steroid
Concen: 72.42 ng/mL m
RT: 51.142 min Scan# 4717
Delta R.T. -0.018 min
Lab File: A90009590.D
Acq: 23 Dec 2012 10:22 am

Tgt Ion:231 Resp: 3816



Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009591.D
Acq On : 23 Dec 2012 11:47 am
Operator : ps
Sample : 1212022-03D
Misc : 1X
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Dec 27 14:19:31 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.156	164	66885	500.000	ng/mL	0.00
74) Chrysene-d12	42.557	240	124368	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.229	136	395836	1539.752	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 153.98%#			
42) Phenanthrene-d10	31.995	188	492189	2040.180	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 204.02%#			
83) Benzo[b]fluoranthene-d12	46.450	264	459905	2011.725	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 201.17%#			
88) Benzo[a]pyrene-d12	47.584	264	422888	1845.311	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 184.53%#			
129) 5B(H)Cholane - Surr	43.187	217	99528	1906.307	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 190.63%#			
Target Compounds						Qvalue
3) trans-Decalin	15.899	138	182M4	3.095	ng/mL	
5) C1-Decalins	17.377	152	707M5	12.023	ng/mL	
6) C2-Decalins	19.667	166	1605M5	27.295	ng/mL	
7) C3-Decalins	21.593	180	1614M5	27.448	ng/mL	
8) C4-Decalins	24.960	194	2787M5	47.396	ng/mL	
10) Naphthalene	19.302	128	79105	299.852	ng/mL#	100
11) C1-Naphthalenes	21.994	142	59852M5	226.872	ng/mL	
12) C2-Naphthalenes	24.814	156	113281M5	429.397	ng/mL	
13) C3-Naphthalenes	27.141	170	135146M5	512.278	ng/mL	
14) C4-Naphthalenes	31.137	184	85792M5	325.199	ng/mL	
16) 2-Methylnaphthalene	21.994	142	33734	195.530	ng/mL#	100
17) 1-Methylnaphthalene	22.405	142	26808	160.113	ng/mL#	100
18) Benzothiophene	19.531	134	2246M4	10.173	ng/mL	
19) C1-Benzo(b)thiophenes	22.168	148	2547M5	11.537	ng/mL	
20) C2-Benzo(b)thiophenes	24.531	162	4622M5	20.935	ng/mL	
21) C3-Benzo(b)thiophenes	26.621	176	9178M5	41.572	ng/mL	
22) C4-Benzo(b)thiophenes	29.066	190	6668M5	30.203	ng/mL	
23) Biphenyl	23.865	154	23134	102.466	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.486	156	23624	145.666	ng/mL#	100
25) Dibenzofuran	26.922	168	114363	474.915	ng/mL	97
26) Acenaphthylene	25.544	152	117269	432.112	ng/mL#	100
27) Acenaphthene	26.274	153	123367	722.998	ng/mL	100
28) 2,3,5-Trimethylnaphthalen	27.835	170	11511M3	77.201	ng/mL	
29) Fluorene	28.291	166	145928M4	778.771	ng/mL	
30) C1-Fluorenes	30.508	180	90174M5	481.230	ng/mL	
31) C2-Fluorenes	32.843	194	97817M5	522.018	ng/mL	
32) C3-Fluorenes	35.335	208	77487M5	413.523	ng/mL	
33) Dibenzothiophene	31.593	184	120156	455.853	ng/mL#	92
34) 4-Methyldibenzothiophene(	33.364	198	51197	194.233	ng/mL#	100
35) 2/3-Methyldibenzothiophen	33.711	198	51229M1	194.355	ng/mL	
36) 1-Methyldibenzothiophene(	34.131	198	14076	53.402	ng/mL#	100
37) OTP	33.811	198	57001	216.253	ng/mL#	100
38) C1-Dibenzothiophenes	33.364	198	195453M5	741.517	ng/mL	
38) C1-Dibenzothiophenes BS	33.364	198	138452m	525.265	ng/mL	
39) C2-Dibenzothiophenes	35.043	212	195695M5	742.436	ng/mL	
40) C3-Dibenzothiophenes	36.842	226	108326M5	410.972	ng/mL	
41) C4-Dibenzothiophenes	38.531	240	31839M5	120.792	ng/mL	
43) Phenanthrene	32.086	178	2204969	8097.141	ng/mL	100
44) 3-Methylphenanthrene(3MP)	34.048	192	216427	794.769	ng/mL	97

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009591.D
Acq On : 23 Dec 2012 11:47 am
Operator : ps
Sample : 1212022-03D
Misc : 1X
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Dec 27 14:19:31 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
45) 2-Methylphenanthrene(2MP)	34.158	192	271858	998.324	ng/mL	96
46) 2-Methylanthracene(2MA)	34.322	192	135878M3	498.975	ng/mL	
47) 9/4-Methylphenanthrene(9M	34.505	192	244971M3	899.589	ng/mL	
48) 1-Methylphenanthrene(1MP)	34.587	192	178492	655.463	ng/mL	97
49) C1-Phenanthrenes/Anthrace	34.158	192	1065268M5	3911.903	ng/mL	
50) C2-Phenanthrenes/Anthrace	36.312	206	643481M5	2363.007	ng/mL	
50) C2-Phenanthrenes/Anthr BS	36.312	206	643481m	2363.007	ng/mL	
52) C3-Phenanthrenes/Anthrace	38.147	220	243359M5	893.669	ng/mL	
53) C4-Phenanthrenes/Anthrace	40.348	234	75002M5	275.424	ng/mL	
55) Anthracene	32.269	178	517942	2048.209	ng/mL	100
56) Carbazole	32.944	167	122725	513.024	ng/mL	100
57) 1-Methylphenanthrene	34.587	192	178492	888.405	ng/mL	100
58) Fluoranthene	36.860	202	4393375	14442.237	ng/mL	98
59) Benzo(b)fluorene	39.362	216	298375M3	1649.284	ng/mL	
60) Pyrene	37.727	202	4165011	13420.318	ng/mL	99
61) C1-Fluoranthenes/Pyrenes	39.115	216	2002351M5	6451.889	ng/mL	
62) C2-Fluoranthenes/Pyrenes	41.160	230	726938M5	2342.308	ng/mL	
63) C3-Fluoranthenes/Pyrenes	43.050	244	266078M5	857.345	ng/mL	
64) C4-Fluoranthenes/Pyrenes	43.333	258	148034M5	476.989	ng/mL	
66) Naphthobenzothiophene	41.562	234	291981	1084.248	ng/ml	98
67) Naphthobenzothiophene-2,1	41.562	234	291981	1084.248	ng/mL	98
68) Naphthobenzothiophene-1,2	41.909	234	53893M3	200.127	ng/mL	
69) Naphthobenzothiophene-2,3	42.201	234	97351M3	361.505	ng/mL	
70) C1-Naphthobenzothiophenes	42.968	248	388351M5	1442.110	ng/ml	
71) C2-Naphthobenzothiophenes	44.466	262	186292M5	691.780	ng/ml	
72) C3-Naphthobenzothiophenes	46.350	276	70900M5	263.281	ng/ml	
73) C4-Naphthobenzothiophenes	47.594	290	28399M5	105.457	ng/mL	
75) Benz[a]anthracene	42.503	228	1833680M3	6427.899	ng/mL	
77) Chrysene/Triphenylene	42.658	228	1683141	5999.021	ng/mL	99
78) C1-Chrysenes	44.128	242	784682M5	2796.749	ng/mL	
79) C2-Chrysenes	45.837	256	343851M5	1225.548	ng/mL	
79) C2-Chrysenes BS	45.837	256	326018m	1161.987	ng/mL	
80) BBF-d12 Surr BKGD	46.450	256	17833	63.560	ng/mL	100
81) C3-Chrysenes	46.871	270	196806M5	701.452	ng/mL	
82) C4-Chrysenes	48.325	284	64775M5	230.870	ng/mL	
84) Benzo[b]fluoranthene	46.542	252	1387677	4691.553	ng/mL	94
85) Benzo[j]+[k]fluoranthene	46.615	252	1526531	5252.606	ng/mL	93
86) Benzo[a]fluoranthene	46.898	252	372257	1280.891	ng/mL#	1
87) Benzo[e]pyrene	47.493	252	1069228	3806.896	ng/mL	91
89) Benzo[a]pyrene	47.676	252	1713794	6442.893	ng/mL	90
90) Perylene	47.959	252	451713	1591.155	ng/mL#	88
91) Indeno[1,2,3-cd]pyrene	52.157	276	1089252M4	3697.468	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.194	278	305074M4	1051.248	ng/mL	
93) Benzo[g,h,i]perylene	53.363	276	1050992	3630.473	ng/mL	100
94) Hopane (T19)	51.325	191	32588M3	298.041	ng/mL	
96) C23 Tricyclic Terpane (T4	40.211	191	3713M4	33.958	ng/ml	
97) C24 Tricyclic Terpane (T5	40.941	191	2824	25.828	ng/ml	100
98) C25 Tricyclic Terpane (T6	42.493	191G	5159M1	47.183	ng/ml	
99) C24 Tetracyclic Terpane (	43.735	191	2770M4	25.334	ng/ml	
100) C26 Tricyclic Terpane-22S	43.489	191	2534M4	23.175	ng/ml	
101) C26 Tricyclic Terpane-22R	43.580	191	1732	15.840	ng/ml	100
102) C28 Tricyclic Terpane-22S	45.874	191	1452M4	13.280	ng/ml	
103) C28 Tricyclic Terpane-22R	46.039	191	2303M4	21.063	ng/ml	
104) C29 Tricyclic Terpane-22S	46.551	191	2199	20.111	ng/ml	100
105) C29 Tricyclic Terpane-22R	46.743	191	1938M4	17.724	ng/ml	
106) 18a-22,29,30-Trisnorneoho	47.786	191	7073	64.688	ng/ml	100

Quantitation Report (QT Reviewed)

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Data File : A90009591.D
Acq On : 23 Dec 2012 11:47 am
Operator : ps
Sample : 1212022-03D
Misc : 1X
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Dec 27 14:19:31 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

	Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
107)	C30 Tricyclic Terpane-22S	47.905	191	2639M4	24.136	ng/mL	
108)	C30 Tricyclic Terpane-22R	48.142	191	1957M3	17.898	ng/mL	
109)	17a(H)-22,29,30-Trisnorho	48.298	191	8736M4	79.897	ng/ml	
110)	17a/b,21b/a 28,30-Bisnorh	49.414	191	1436M4	13.133	ng/ml	
111)	17a(H),21b(H)-25-Norhopan	49.258	191	1824	16.682	ng/ml	100
112)	30-Norhopane (T15)	50.045	191	22484M4	205.632	ng/ml	
113)	18a(H)-30-Norneohopane-C2	50.145	191	6592M4	60.289	ng/ml	
114)	17a(H)-Diahopane (X)	50.264	191	2493M4	22.800	ng/ml	
115)	30-Normoretane (T17)	50.767	191	3859	35.293	ng/ml	100
116)	18a(H)&18b(H)-Oleananes (	51.151	191	2550	23.322	ng/ml	100
117)	Moretane (T20)	51.956	191	4780M3	43.717	ng/ml	
118)	30-Homohopane-22S (T21)	52.980	191	11540	105.542	ng/ml	100
119)	30-Homohopane-22R (T22)	53.190	191	10857	99.295	ng/ml	100
120)	Gammacerane/C32-diahopane	53.683	191	2600	23.779	ng/mL	100
121)	30,31-Bishomohopane-22S (	54.359	191G	23673	216.507	ng/ml	100
122)	30,31-Bishomohopane-22R (	54.761	191	5575	50.987	ng/ml	100
123)	30,31-Trishomohopane-22S	56.370	191	6250M4	57.161	ng/ml	
124)	30,31-Trishomohopane-22R	56.927	191	3292M4	30.108	ng/ml	
125)	Tetrakishomohopane-22S (T	58.800	191	5068M4	46.351	ng/ml	
126)	Tetrakishomohopane-22R (T	59.513	191G	14153	129.439	ng/ml	100
127)	Pentakishomohopane-22S (T	61.642	191	2807M4	25.672	ng/ml	
128)	Pentakishomohopane-22R (T	62.821	191	2108M4	19.279	ng/ml	
130)	13b(H),17a(H)-20S-Diachol	44.703	217	2837	54.338	ng/ml	100
131)	13b(H),17a(H)-20R-Diachol	45.124	217	1572	30.109	ng/ml	100
132)	13b,17a-20S-Methyldiachol	45.819	217	1795M4	34.380	ng/ml	
133)	14a,17a-20S-Chol/13b,17a-	46.688	217	6021	115.323	ng/ml	100
134)	14a,17a-20R-Chol/13b,17a-	47.173	217	5671	108.619	ng/ml	100
135)	Unknown Sterane (S18)	47.438	217	1575	30.167	ng/ml	100
136)	13a,17b-20S-Ethyldiachole	47.676	217	190M4	3.639	ng/ml	
137)	14a,17a-20S-Methylcholest	47.841	217	2644M4	50.642	ng/ml	
138)	14a,17a-20R-Methylcholest	48.508	217	1874	35.894	ng/ml	100
139)	14a(H),17a(H)-20S-Ethylch	48.828	217	3160M4	60.525	ng/ml	
140)	14a(H),17a(H)-20R-Ethylch	49.688	217	3323M4	63.647	ng/ml	
141)	14b(H),17b(H)-20R-Cholest	46.761	218	2488M4	47.654	ng/ml	
142)	14b(H),17b(H)-20S-Cholest	46.844	218	2743M4	52.538	ng/ml	
143)	14b,17b-20R-Methylcholest	47.996	218	2846M4	54.511	ng/ml	
144)	14b,17b-20S-Methylcholest	48.078	218	4706M4	90.136	ng/ml	
145)	14b(H),17b(H)-20R-Ethylch	49.066	218	6056	115.993	ng/ml	100
146)	14b(H),17b(H)-20S-Ethylch	49.112	218	4456M3	85.348	ng/ml	
147)	C26,20R- +C27,20S- triaro	48.801	231	3607M4	69.087	ng/mL	
148)	C28,20S-triaromatic stero	49.606	231	4997M4	95.710	ng/mL	
149)	C27,20R-triaromatic stero	50.026	231	2467M4	47.252	ng/mL	
150)	C28,20R-triaromatic stero	51.142	231	3279M4	62.804	ng/mL	

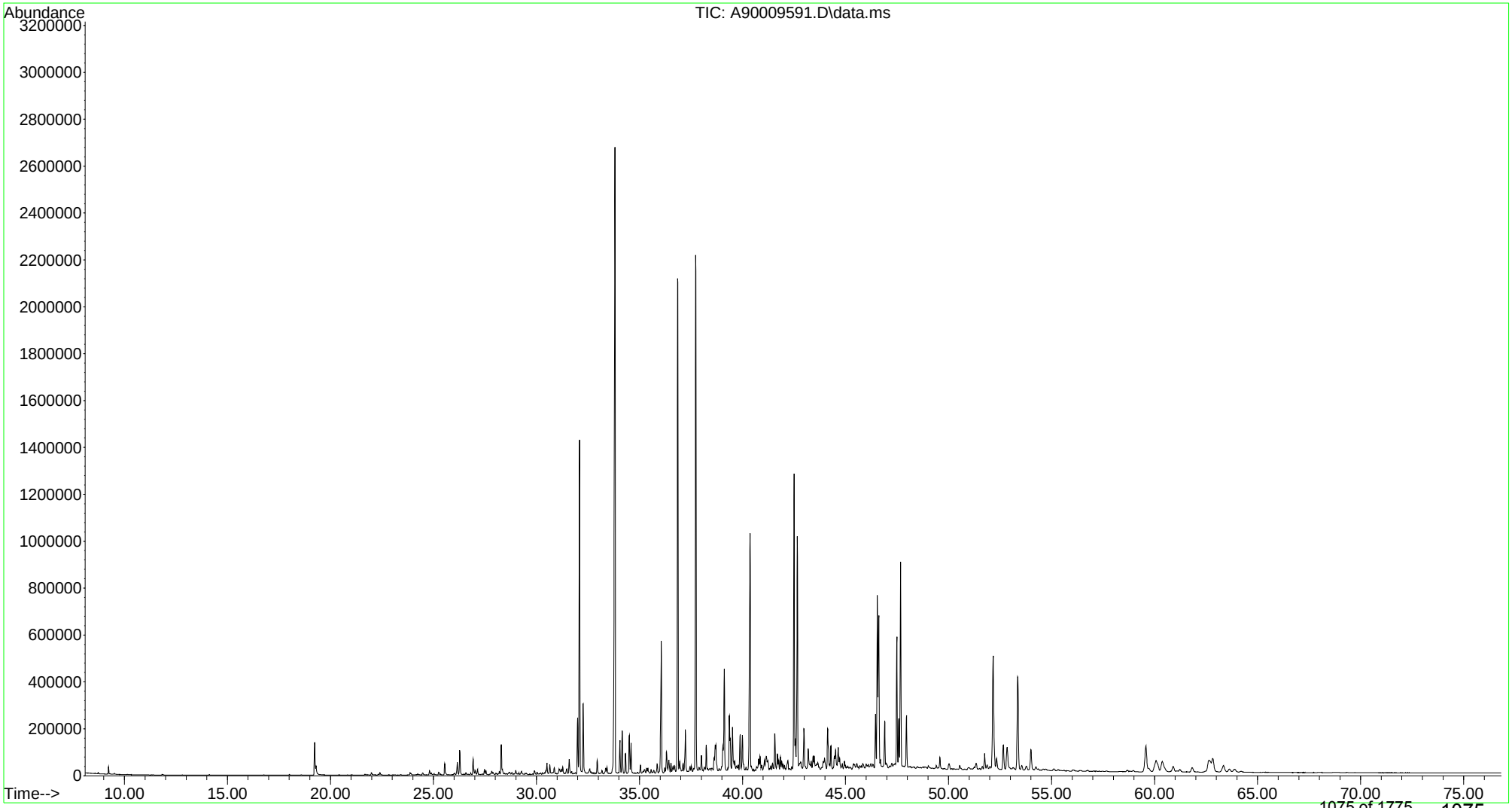
(#) = qualifier out of range (m) = manual integration (+) = signals summed

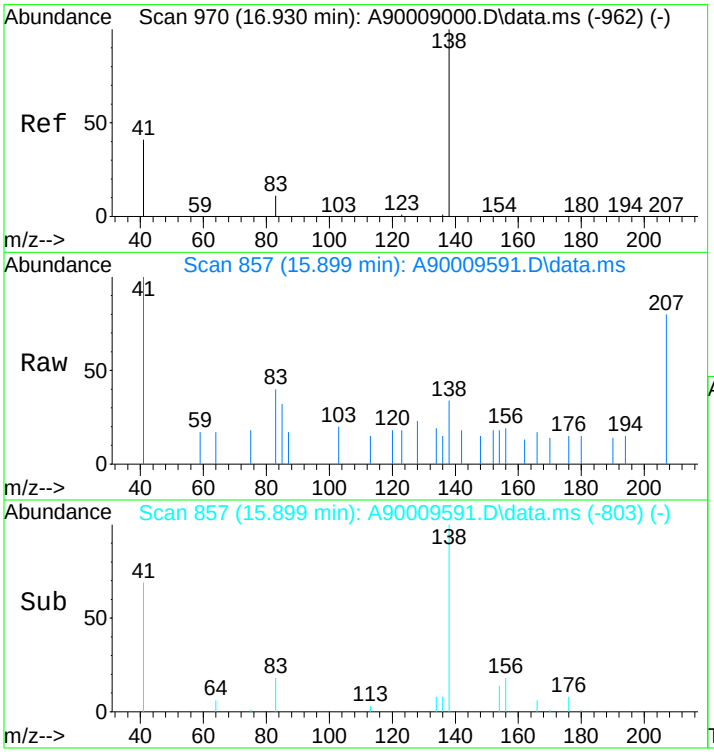
Quantitation Report (QT Reviewed)

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Data File : A90009591.D
Acq On : 23 Dec 2012 11:47 am
Operator : ps
Sample : 1212022-03D
Misc : 1X
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Dec 27 14:19:31 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

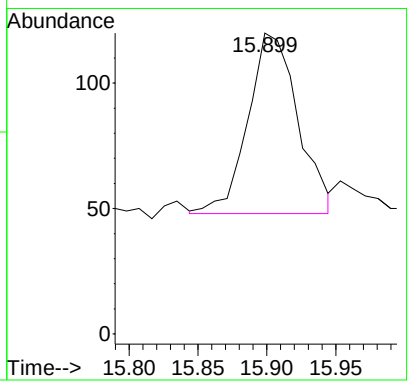
Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

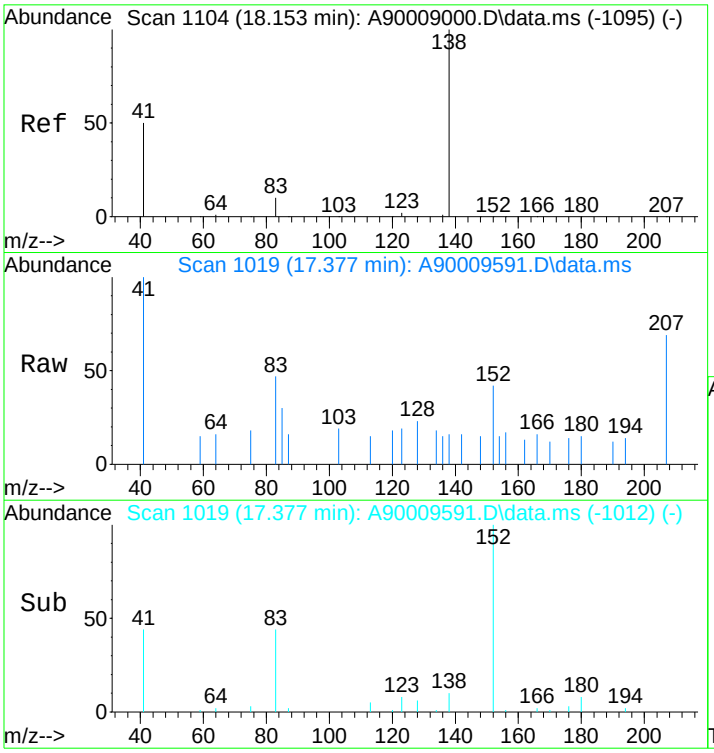




#3
trans-Decalin
Concen: 3.10 ng/mL m
RT: 15.899 min Scan# 857
Delta R.T. -0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

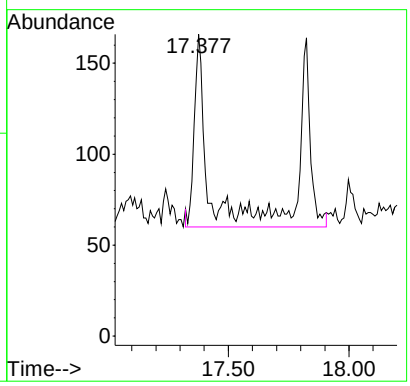
Tgt Ion:138 Resp: 182

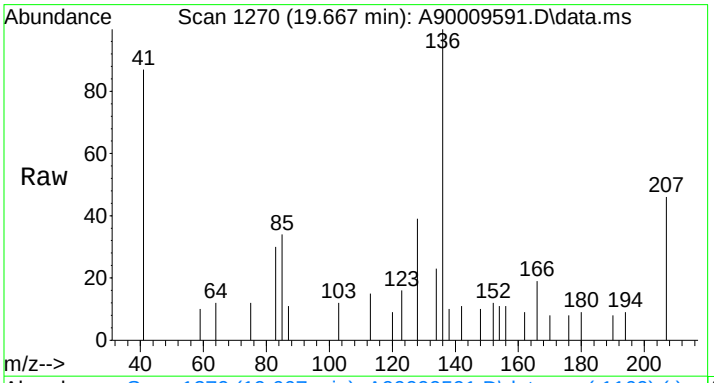




#5
C1-Decalins
Concen: 12.02 ng/mL m
RT: 17.377 min Scan# 1019
Delta R.T. -0.447 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

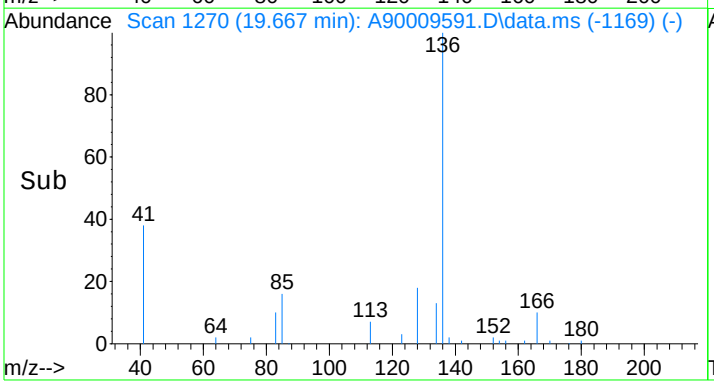
Tgt Ion:152 Resp: 707

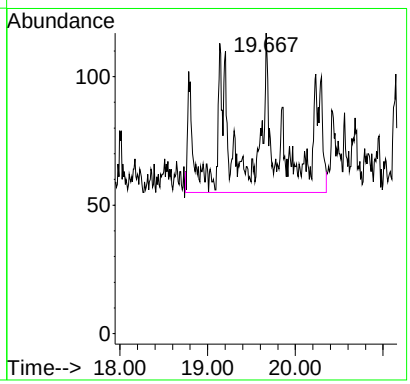


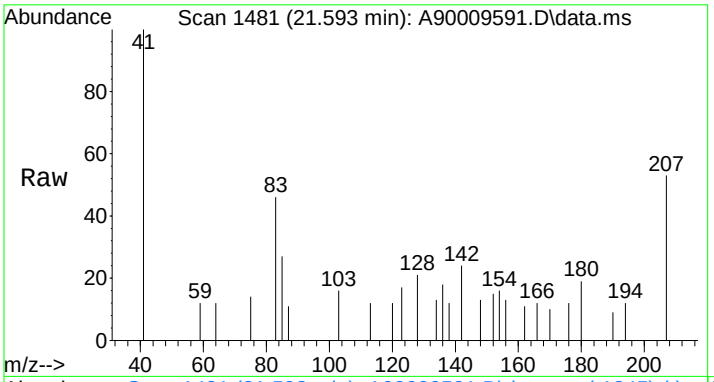


#6
C2-Decalins
Concen: 27.29 ng/mL m
RT: 19.667 min Scan# 1270
Delta R.T. 0.520 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:166 Resp: 1605

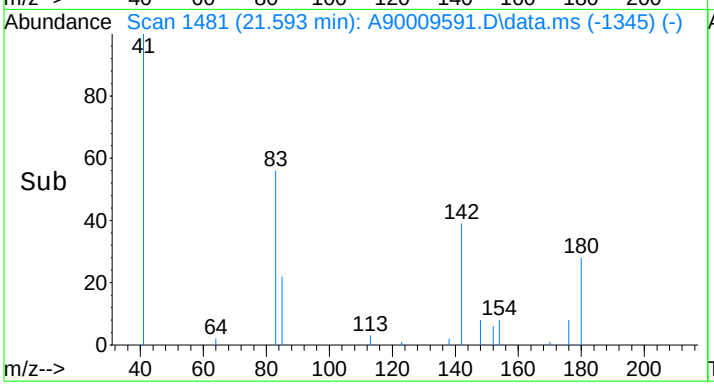


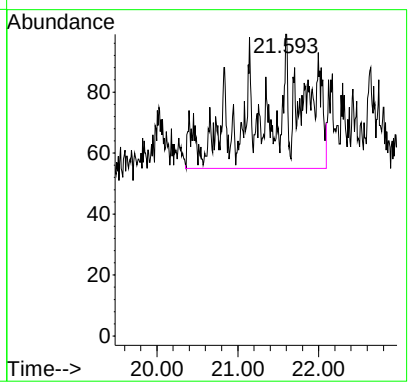


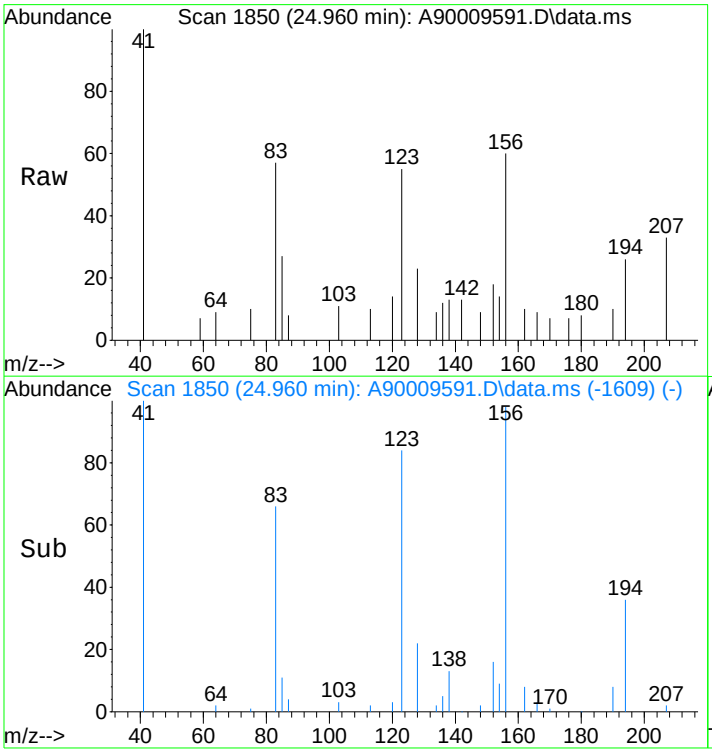


#7
C3-Decalins
Concen: 27.45 ng/mL m
RT: 21.593 min Scan# 1481
Delta R.T. -0.018 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:180 Resp: 1614

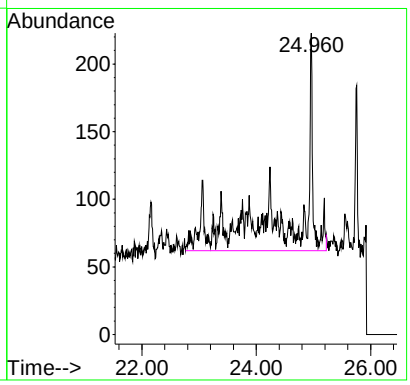


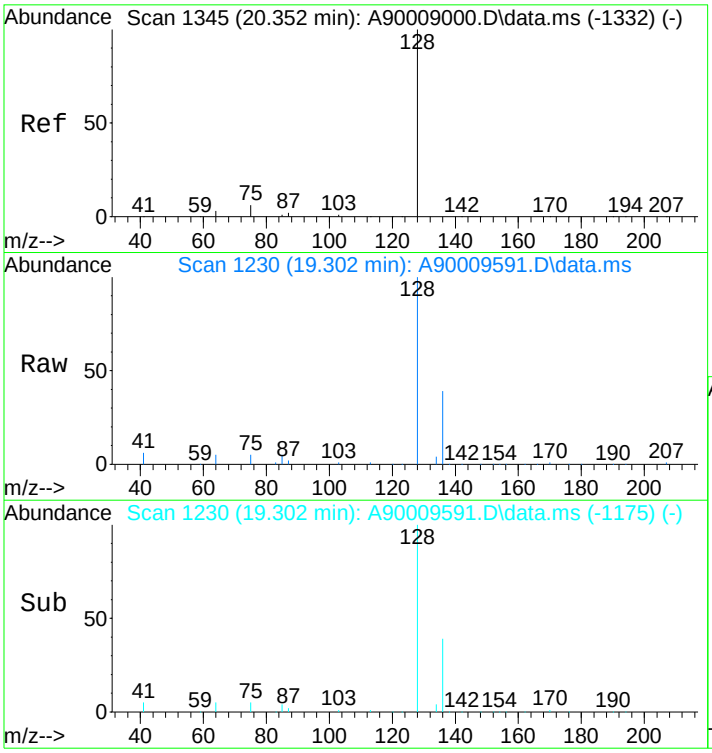




#8
C4-Decalins
Concen: 47.40 ng/mL m
RT: 24.960 min Scan# 1850
Delta R.T. -0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:194 Resp: 2787

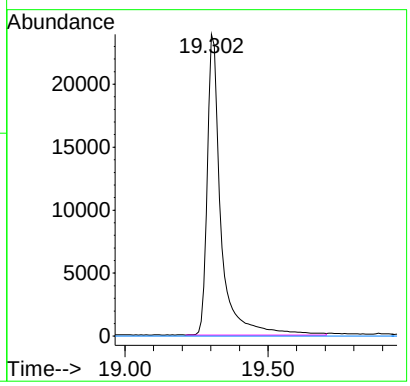


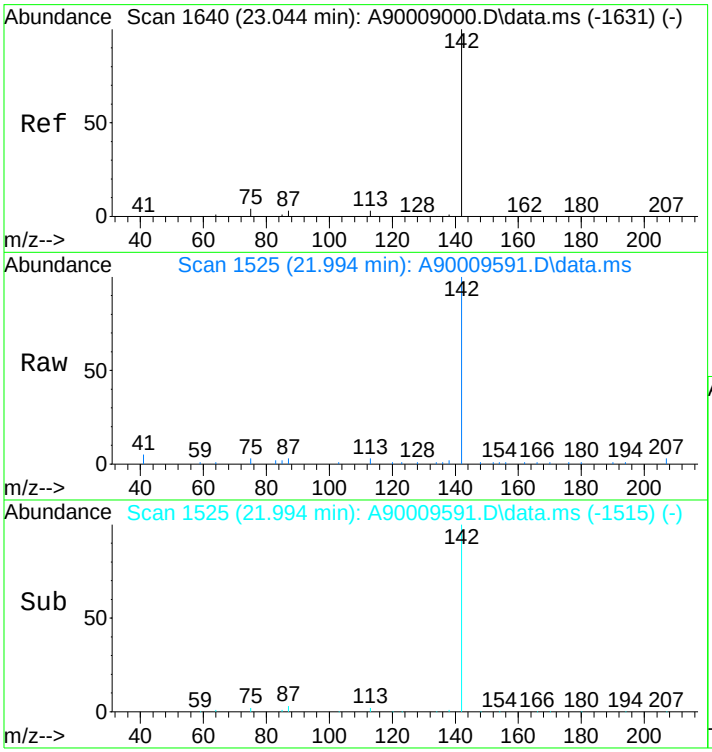


#10
Naphthalene
Concen: 299.85 ng/mL
RT: 19.302 min Scan# 1230
Delta R.T. -0.000 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:128 Resp: 79105

Ion	Ratio	Lower	Upper
128	100		
127	0.0	0.0	0.0

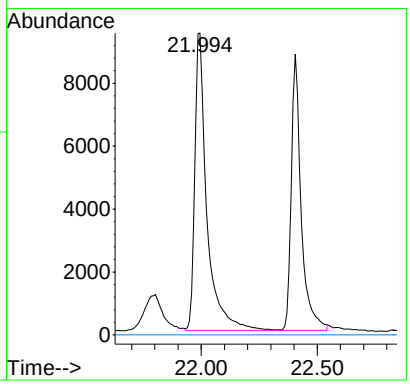


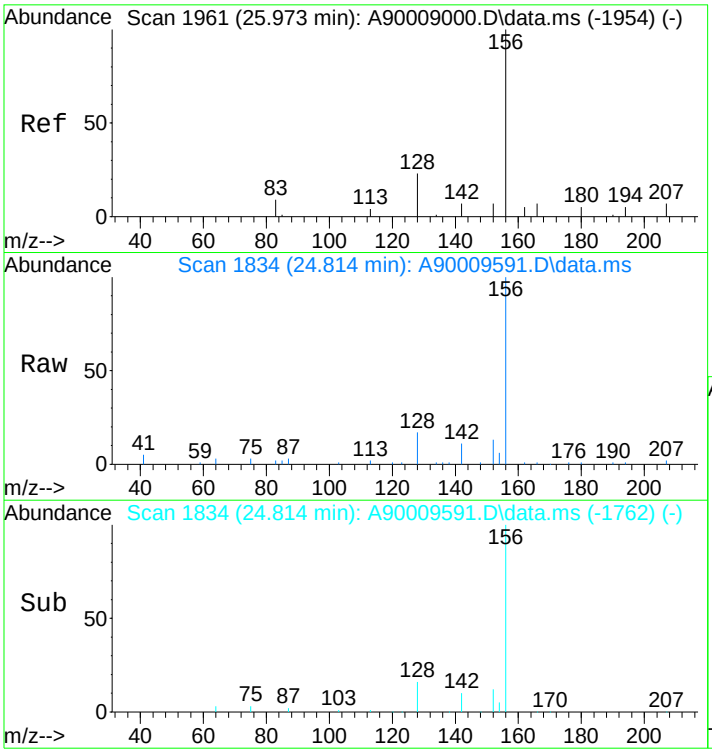


#11
C1-Naphthalenes
Concen: 226.87 ng/mL m
RT: 21.994 min Scan# 1525
Delta R.T. 0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:142 Resp: 59852

Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	0.0

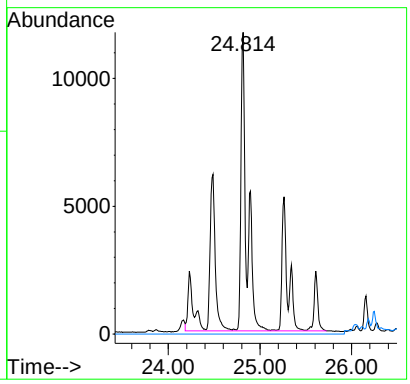


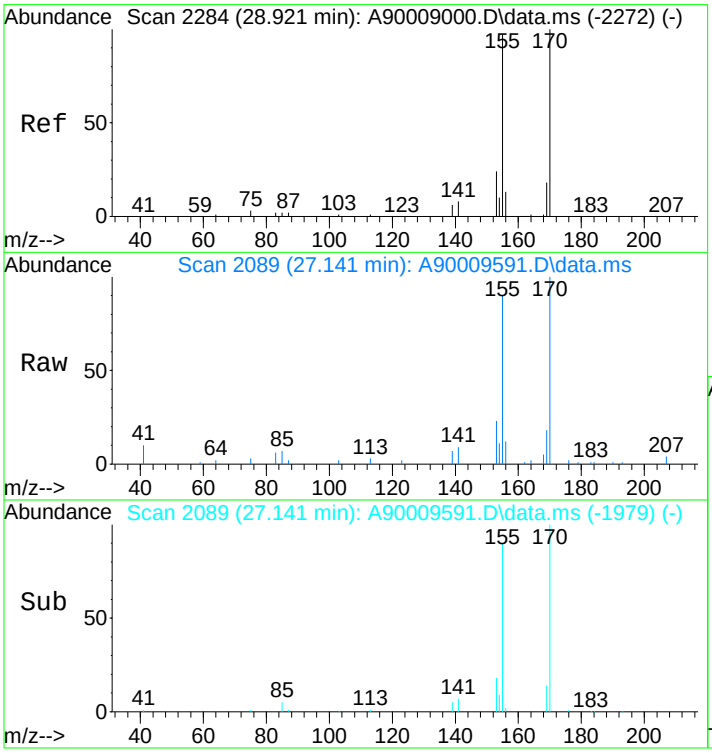


#12
C2-Naphthalenes
Concen: 429.40 ng/mL m
RT: 24.814 min Scan# 1834
Delta R.T. 0.000 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:156 Resp: 113281

Ion	Ratio	Lower	Upper
156	100		
141	0.0	0.0	0.0

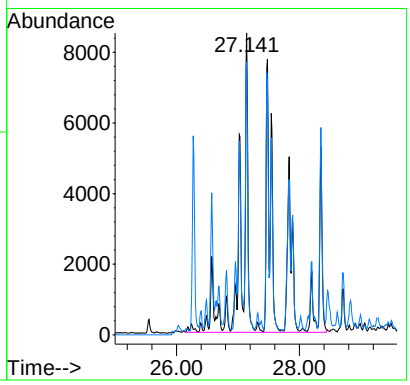


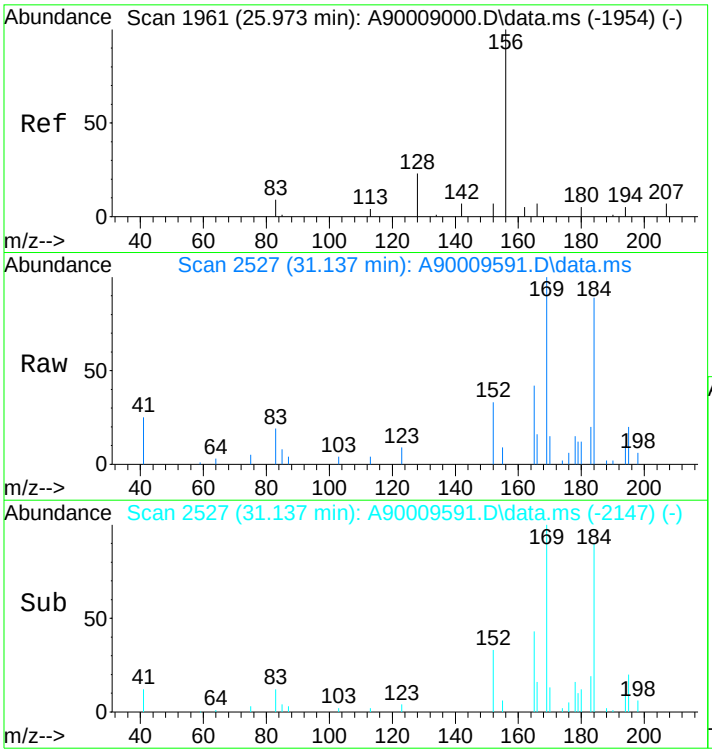


#13
C3-Naphthalenes
Concen: 512.28 ng/mL m
RT: 27.141 min Scan# 2089
Delta R.T. 0.000 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:170 Resp: 135146

Ion	Ratio	Lower	Upper
170	100		
155	14.9	79.9	119.9#

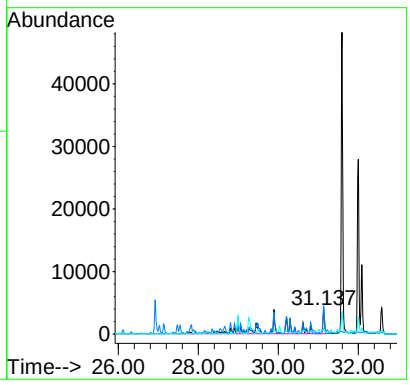


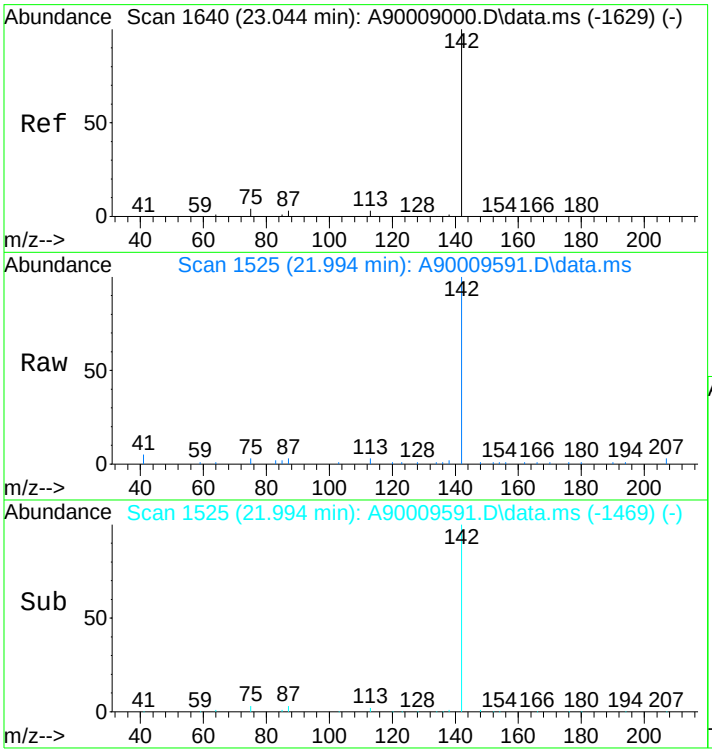


#14
C4-Naphthalenes
Concen: 325.20 ng/mL m
RT: 31.137 min Scan# 2527
Delta R.T. 1.241 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:184 Resp: 85792

Ion	Ratio	Lower	Upper
184	100		
169	10.0	76.6	115.0#
183	2.1	16.4	24.6#

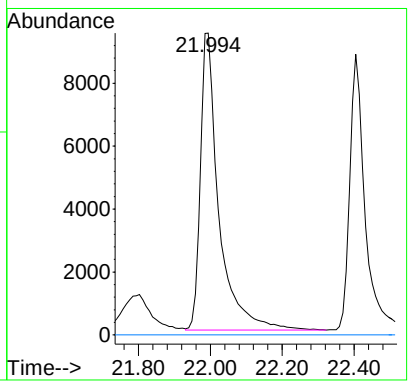


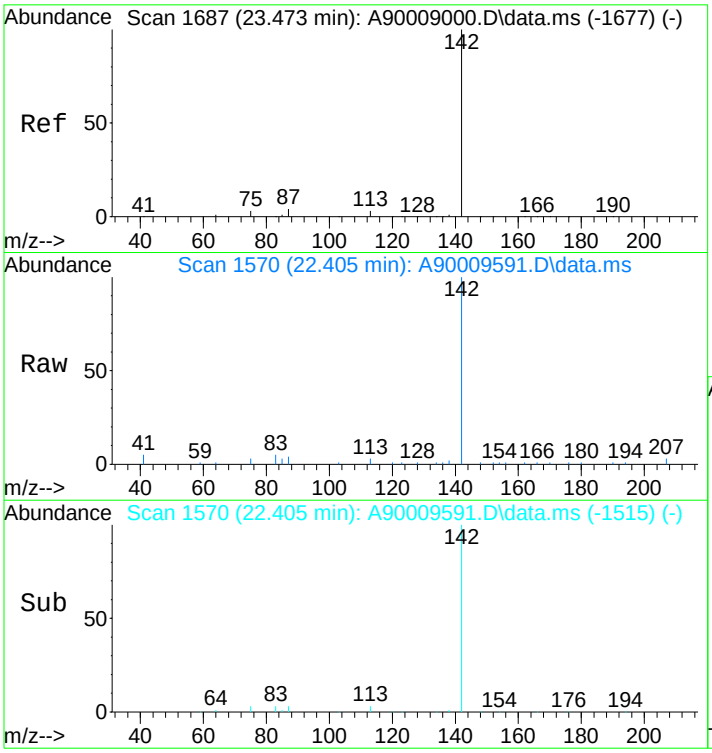


#16
2-Methylnaphthalene
Concen: 195.53 ng/mL
RT: 21.994 min Scan# 1525
Delta R.T. 0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:142 Resp: 33734

Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	0.0

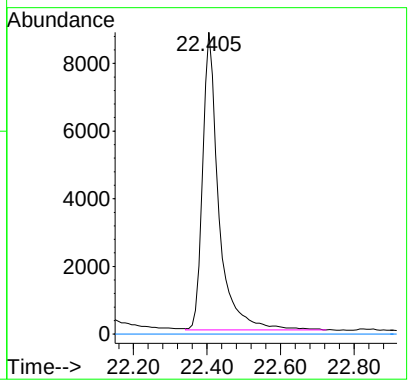


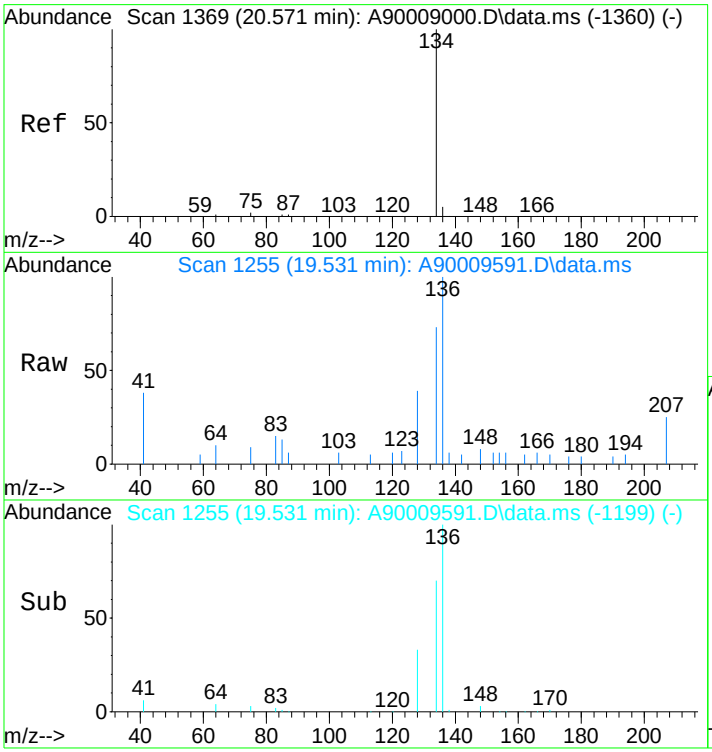


#17
1-Methylnaphthalene
Concen: 160.11 ng/mL
RT: 22.405 min Scan# 1570
Delta R.T. -0.000 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:142 Resp: 26808

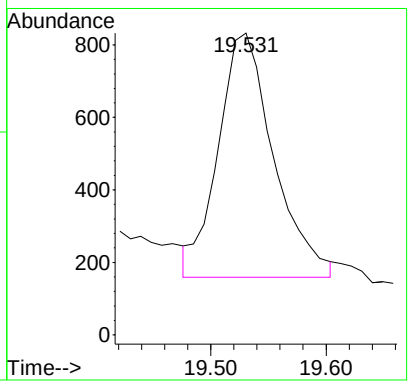
Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	20.0

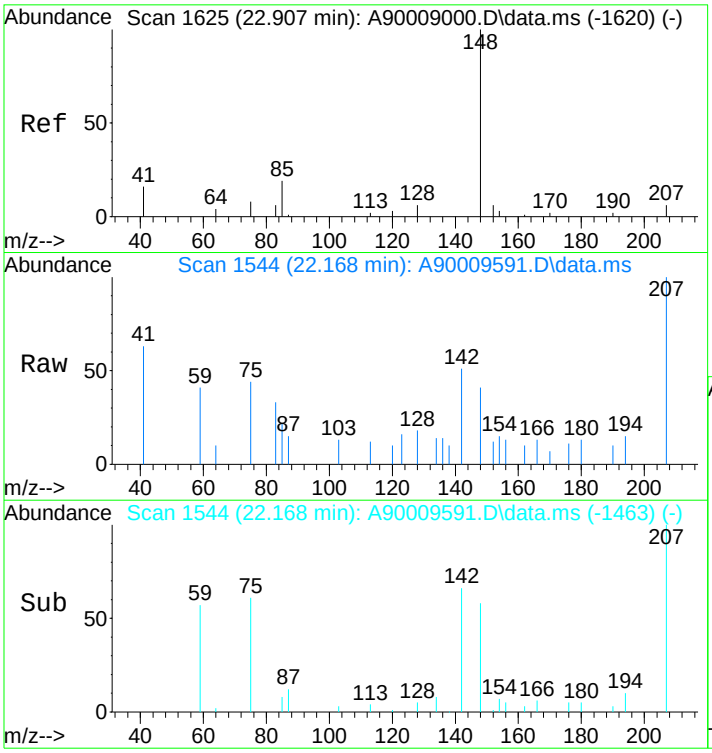




#18
Benzothiophene
Concen: 10.17 ng/mL m
RT: 19.531 min Scan# 1255
Delta R.T. 0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

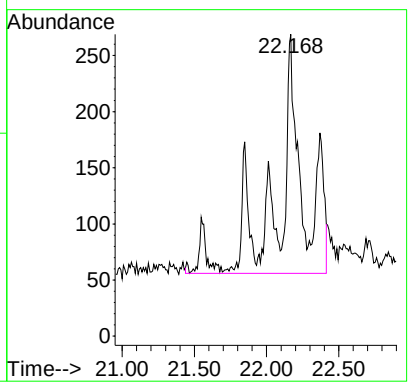
Tgt Ion:134 Resp: 2246

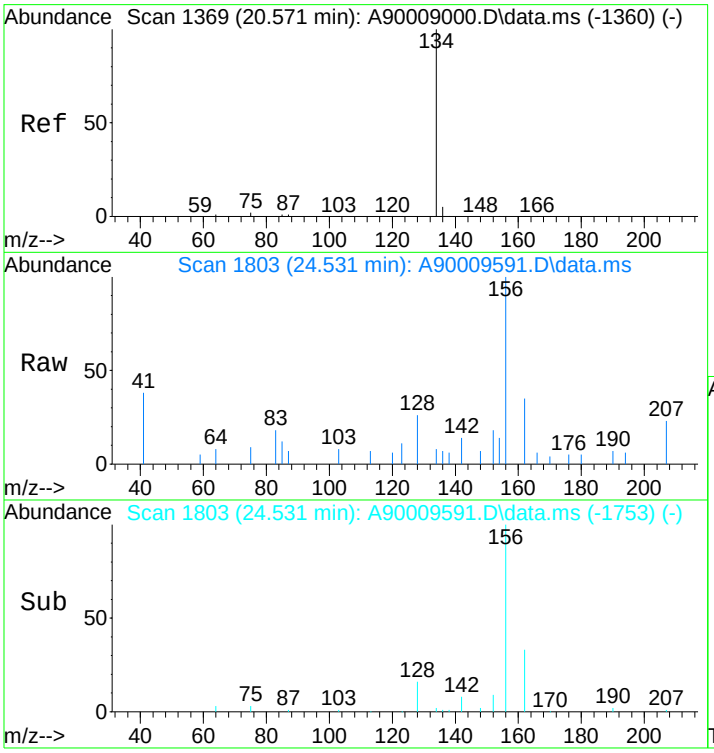




#19
C1-Benzo(b)thiophenes
Concen: 11.54 ng/mL m
RT: 22.168 min Scan# 1544
Delta R.T. 0.612 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

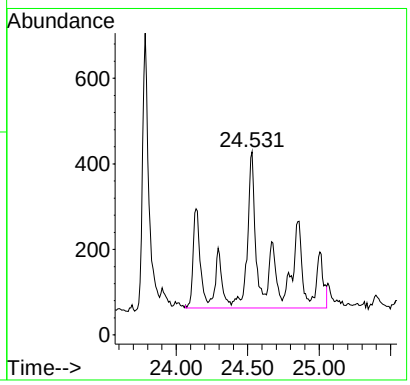
Tgt Ion:148 Resp: 2547

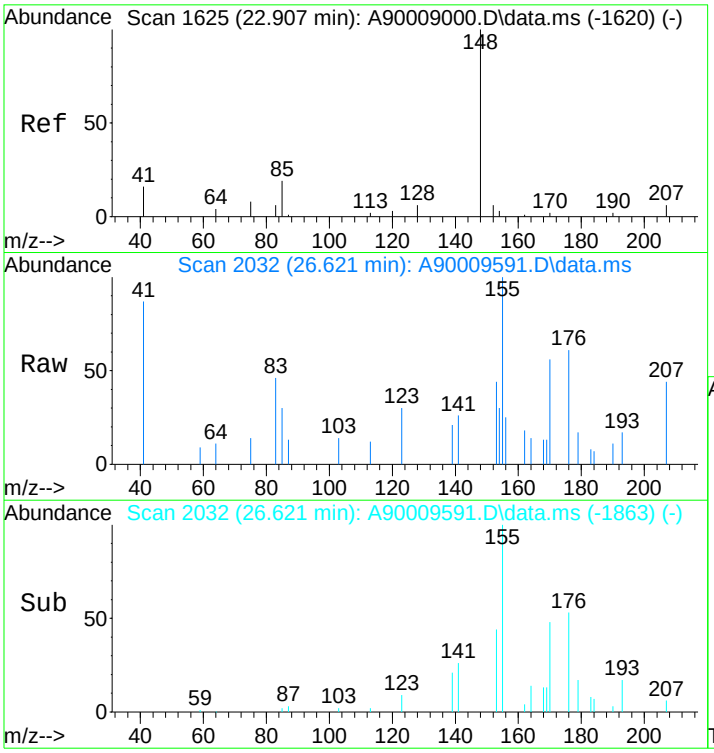




#20
C2-Benzo(b)thiophenes
Concen: 20.94 ng/mL m
RT: 24.531 min Scan# 1803
Delta R.T. -0.474 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

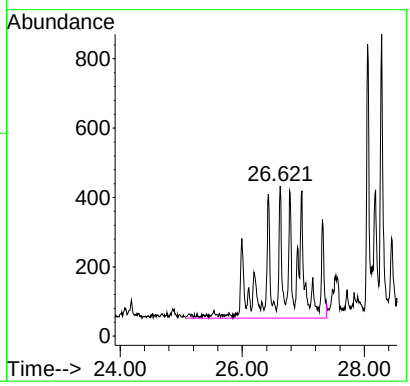
Tgt Ion:162 Resp: 4622

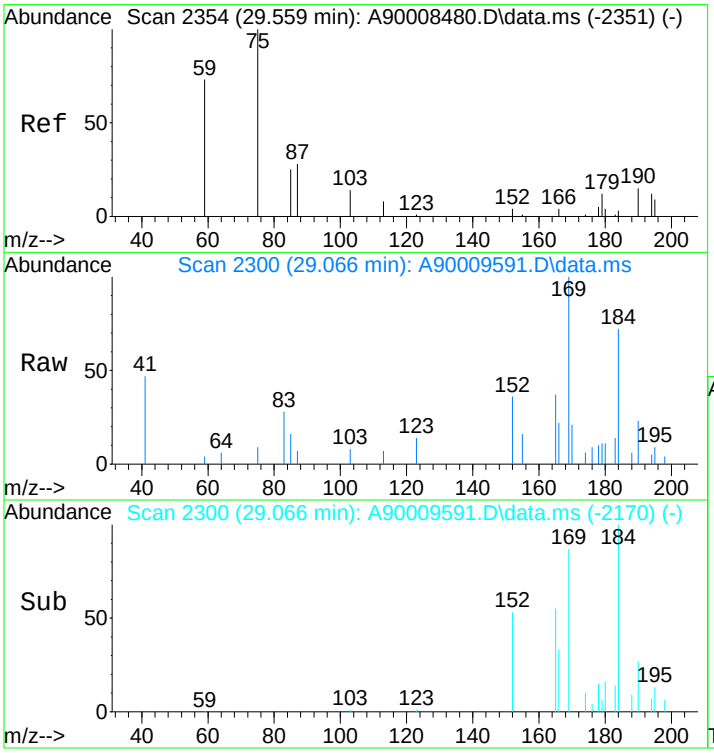




#21
C3-Benzo(b)thiophenes
Concen: 41.57 ng/mL m
RT: 26.621 min Scan# 2032
Delta R.T. -0.356 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

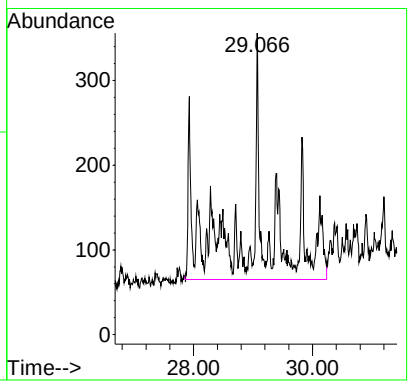
Tgt Ion:176 Resp: 9178

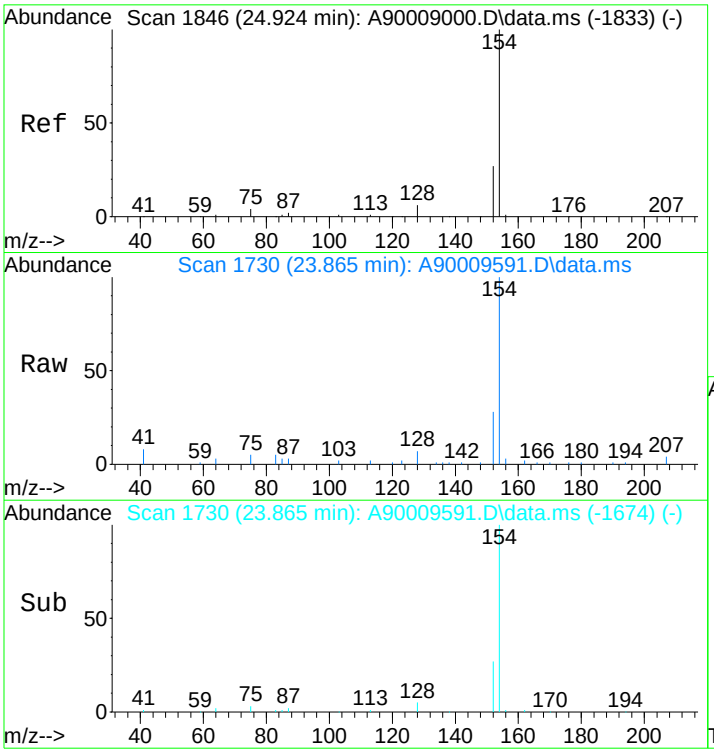




#22
C4-Benzo(b)thiophenes
Concen: 30.20 ng/mL m
RT: 29.066 min Scan# 2300
Delta R.T. -0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:190 Resp: 6668

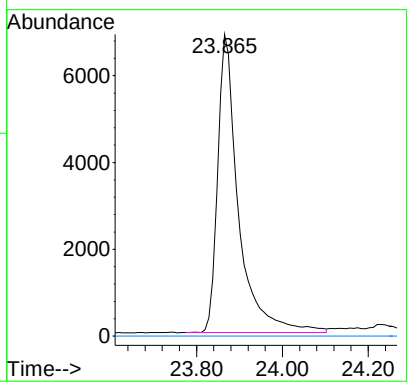


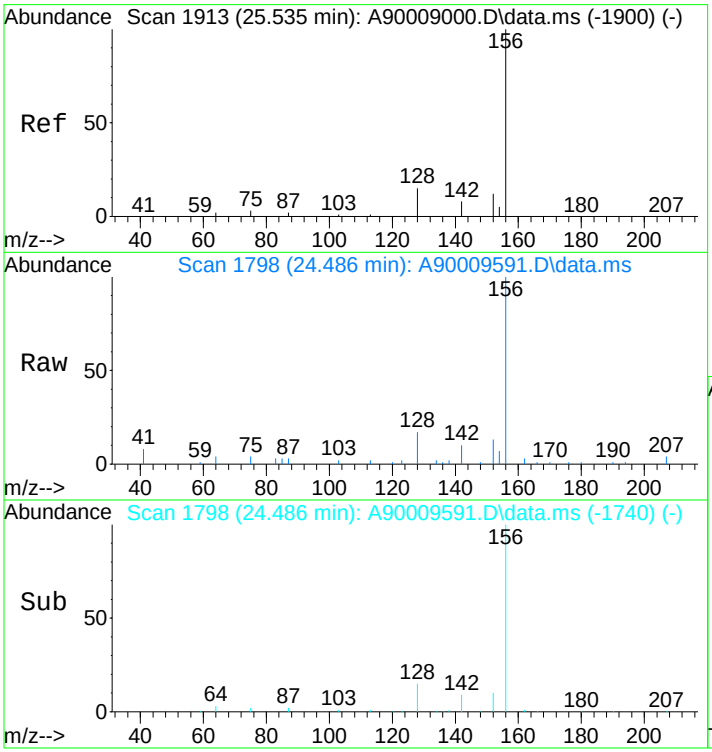


#23
Biphenyl
Concen: 102.47 ng/mL
RT: 23.865 min Scan# 1730
Delta R.T. 0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:154 Resp: 23134

Ion	Ratio	Lower	Upper
154	100		
153	0.0	0.0	0.0

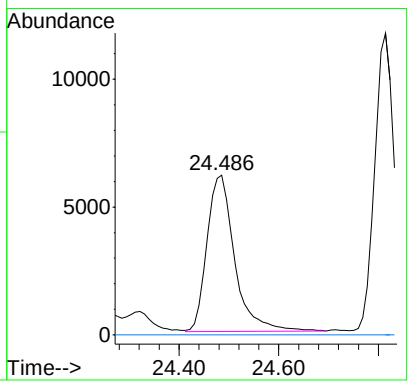


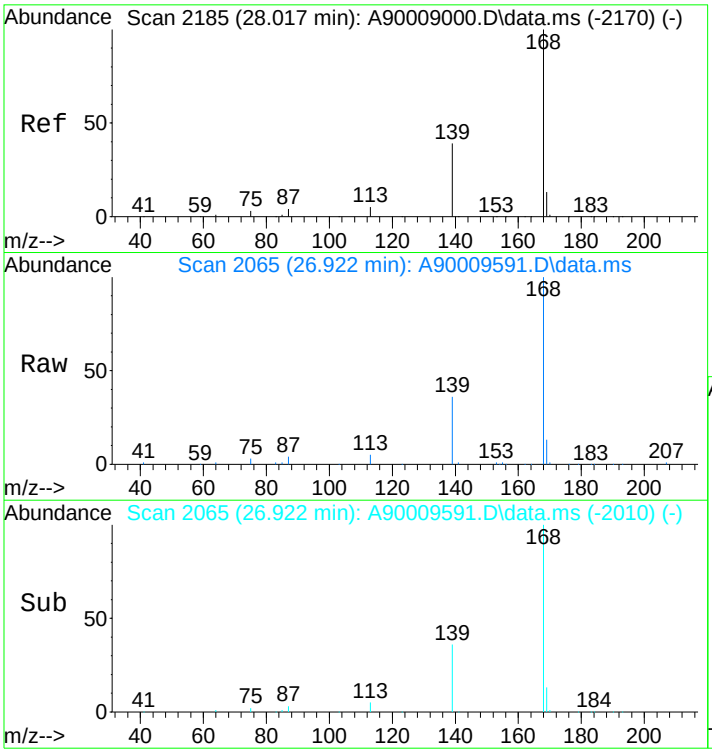


#24
2,6-Dimethylnaphthalene
Concen: 145.67 ng/mL
RT: 24.486 min Scan# 1798
Delta R.T. 0.027 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:156 Resp: 23624

Ion	Ratio	Lower	Upper
156	100		
155	0.0	0.0	0.0

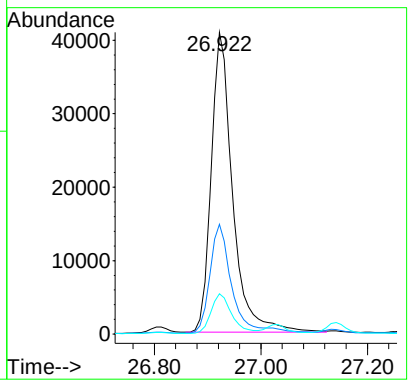


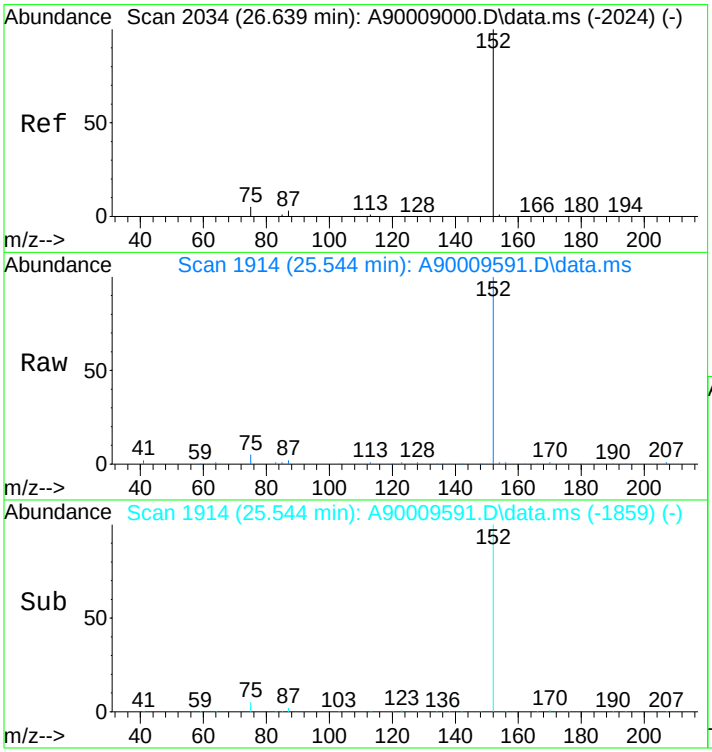


#25
Dibenzofuran
Concen: 474.92 ng/mL
RT: 26.922 min Scan# 2065
Delta R.T. -0.000 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:168 Resp: 114363

Ion	Ratio	Lower	Upper
168	100		
139	37.3	28.0	42.0
169	13.0	10.6	15.8

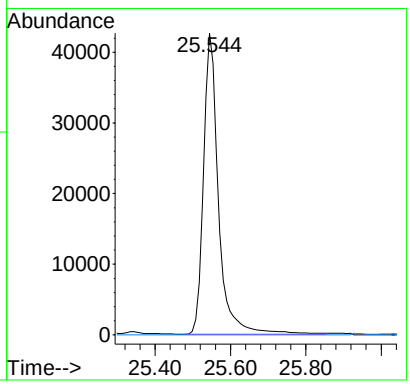


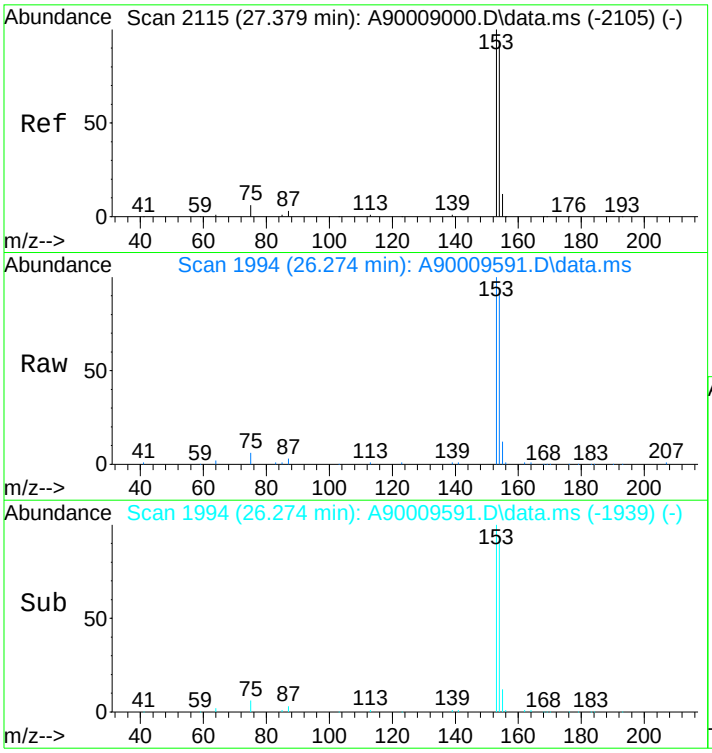


#26
Acenaphthylene
Concen: 432.11 ng/mL
RT: 25.544 min Scan# 1914
Delta R.T. -0.000 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:152 Resp: 117269

Ion	Ratio	Lower	Upper
152	100		
153	0.0	0.0	0.0

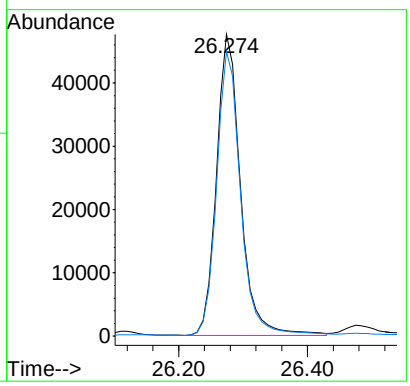


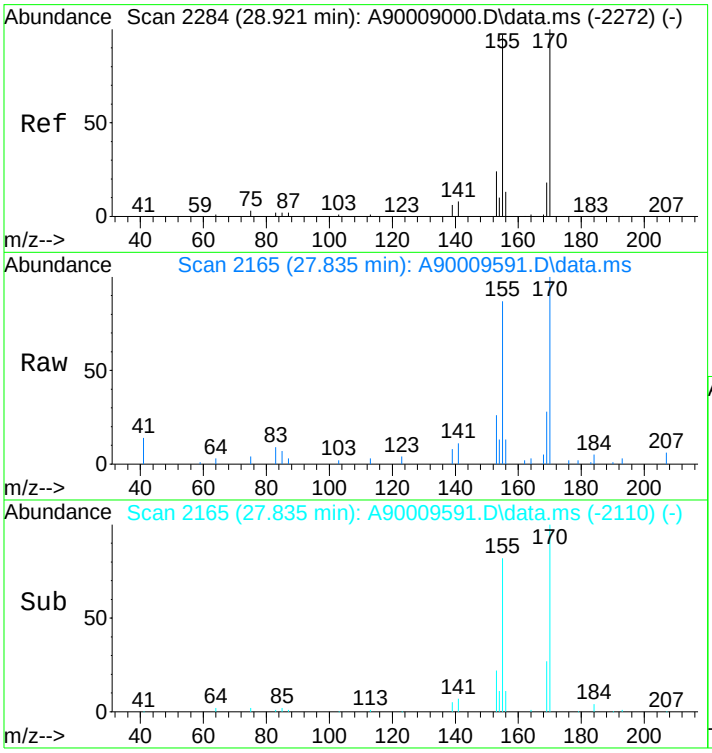


#27
Acenaphthene
Concen: 723.00 ng/mL
RT: 26.274 min Scan# 1994
Delta R.T. -0.000 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:153 Resp: 123367

Ion	Ratio	Lower	Upper
153	100		
154	93.9	75.4	113.0

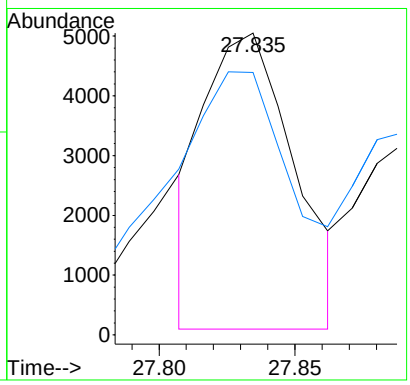


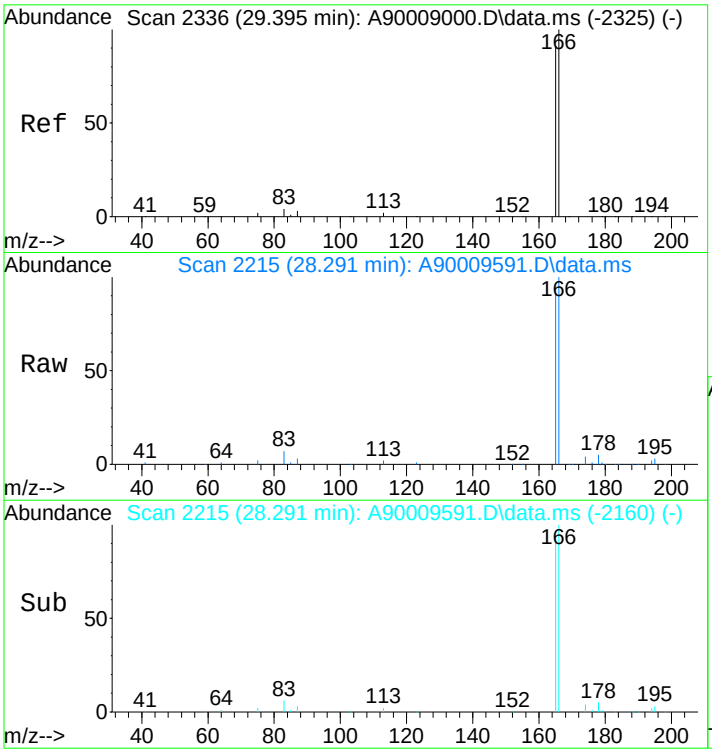


#28
2,3,5-Trimethylnaphthalene
Concen: 77.20 ng/mL m
RT: 27.835 min Scan# 2165
Delta R.T. -0.000 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:170 Resp: 11511

Ion	Ratio	Lower	Upper
170	100		
155	126.9	69.0	103.4#

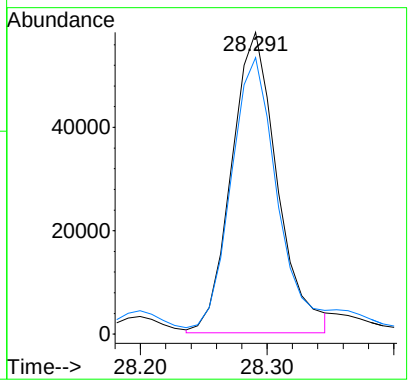


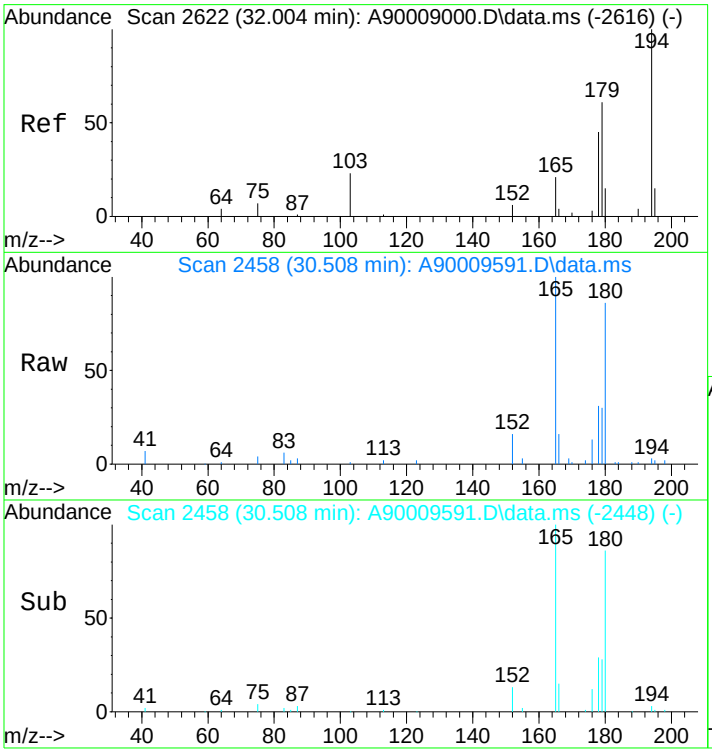


#29
Fluorene
Concen: 778.77 ng/mL m
RT: 28.291 min Scan# 2215
Delta R.T. -0.000 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:166 Resp: 145928

Ion	Ratio	Lower	Upper
166	100		
165	101.2	73.4	110.0

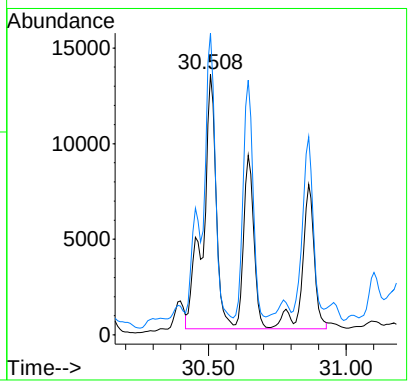


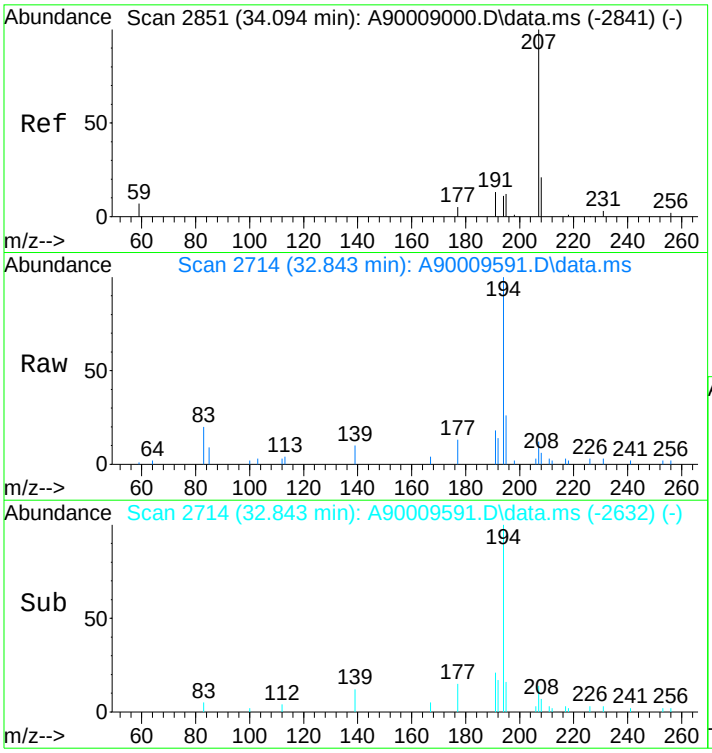


#30
C1-Fluorenes
Concen: 481.23 ng/mL m
RT: 30.508 min Scan# 2458
Delta R.T. -0.137 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:180 Resp: 90174

Ion	Ratio	Lower	Upper
180	100		
165	33.5	117.5	176.3#

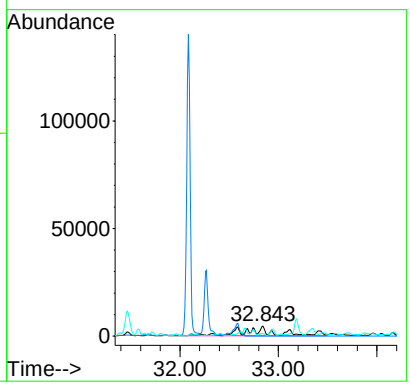


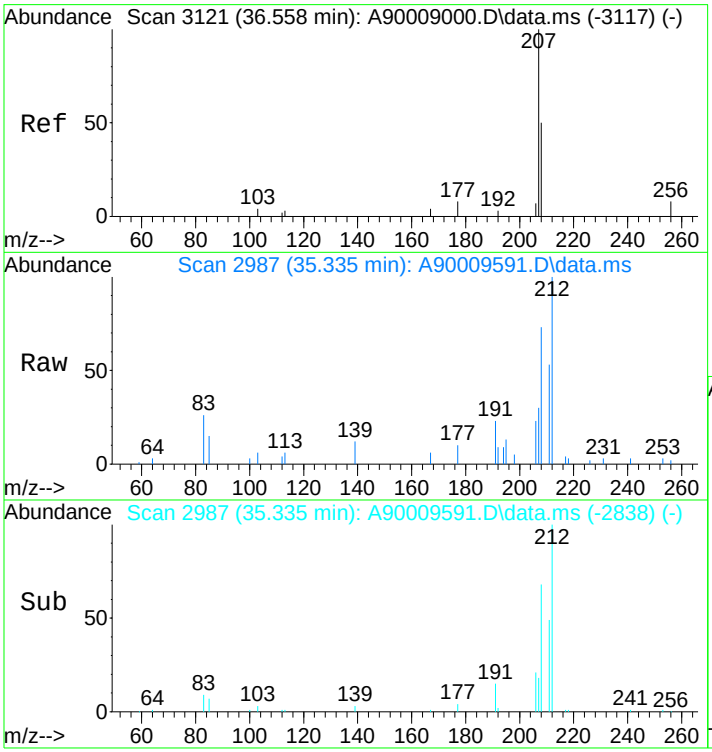


#31
C2-Fluorenes
Concen: 522.02 ng/mL m
RT: 32.843 min Scan# 2714
Delta R.T. 0.000 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:194 Resp: 97817

Ion	Ratio	Lower	Upper
194	100		
179	0.0	0.0	0.0
195	2.9	26.3	39.5#

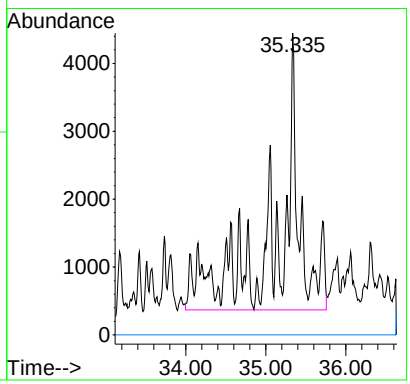


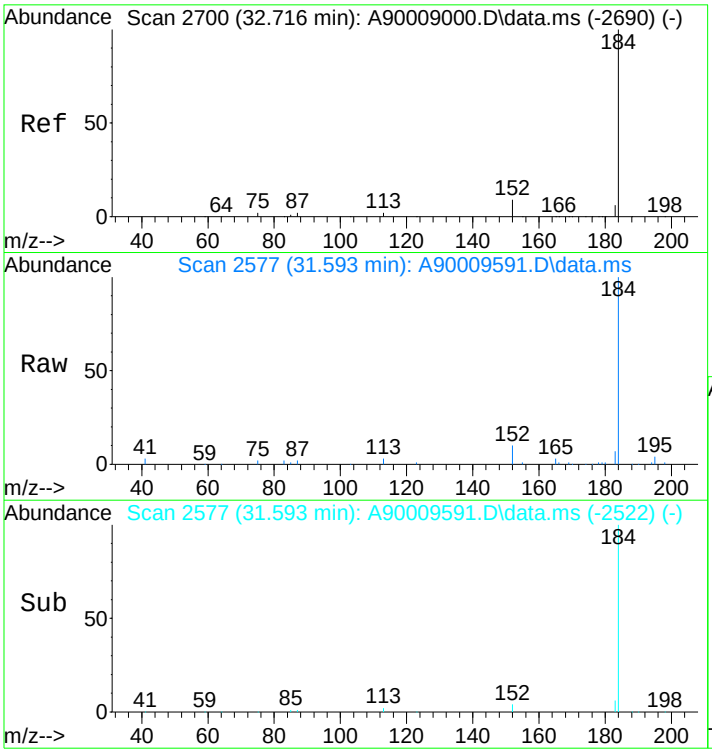


#32
C3-Fluorenes
Concen: 413.52 ng/mL m
RT: 35.335 min Scan# 2987
Delta R.T. 0.667 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:208 Resp: 77487

Ion	Ratio	Lower	Upper
208	100		
197	0.0	0.0	0.0

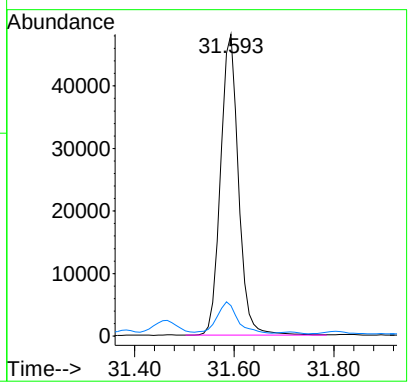


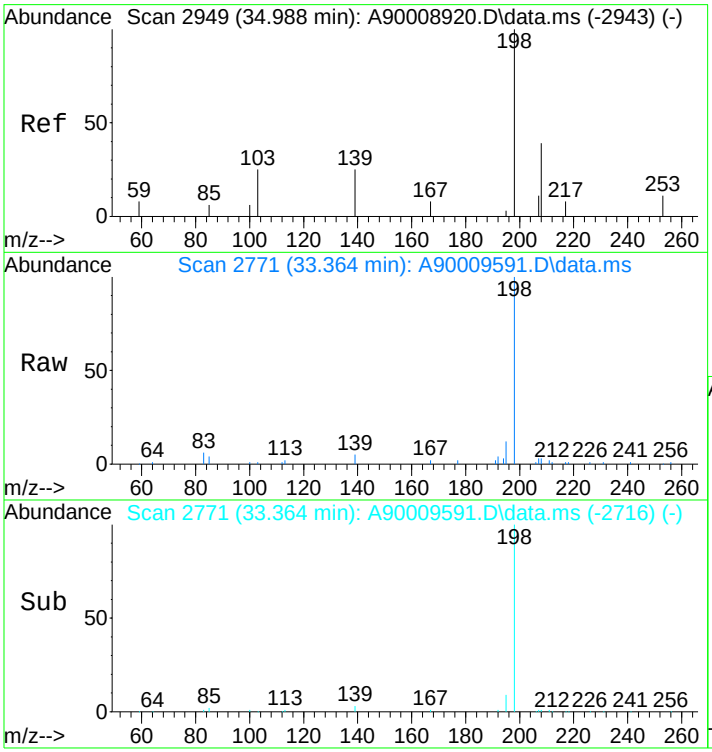


#33
Dibenzothiophene
Concen: 455.85 ng/mL
RT: 31.593 min Scan# 2577
Delta R.T. -0.000 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:184 Resp: 120156

Ion	Ratio	Lower	Upper
184	100		
152	11.7	7.0	10.4#

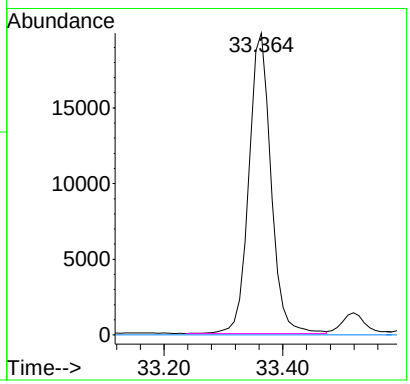


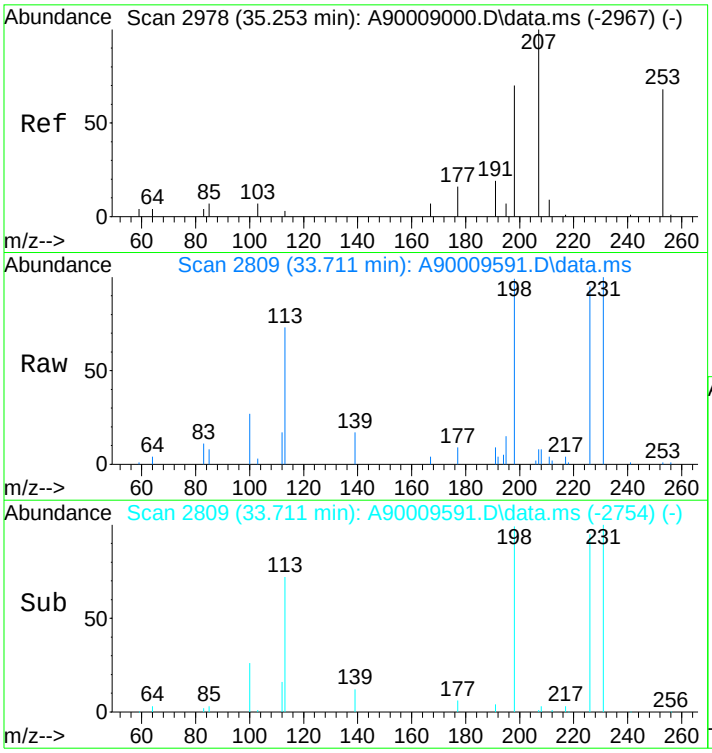


#34
4-Methyldibenzothiophene(4MDT)
Concen: 194.23 ng/mL
RT: 33.364 min Scan# 2771
Delta R.T. 0.000 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:198 Resp: 51197

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

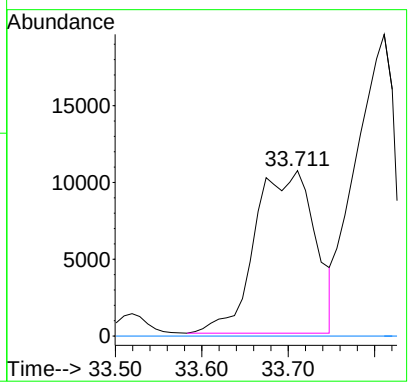


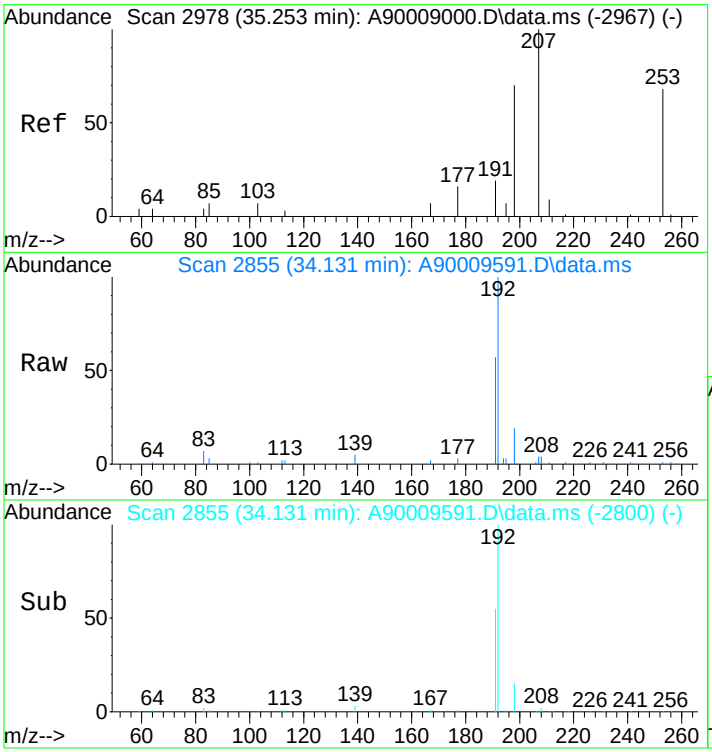


#35
2/3-Methyldibenzothiophene(2MDT)
Concen: 194.35 ng/mL m
RT: 33.711 min Scan# 2809
Delta R.T. 0.000 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:198 Resp: 51229

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

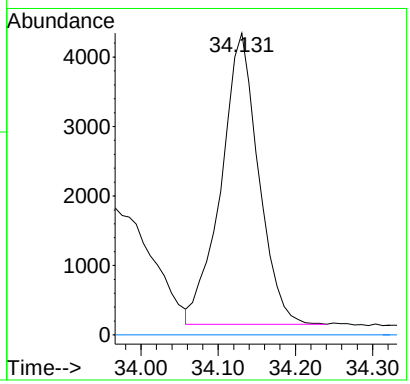


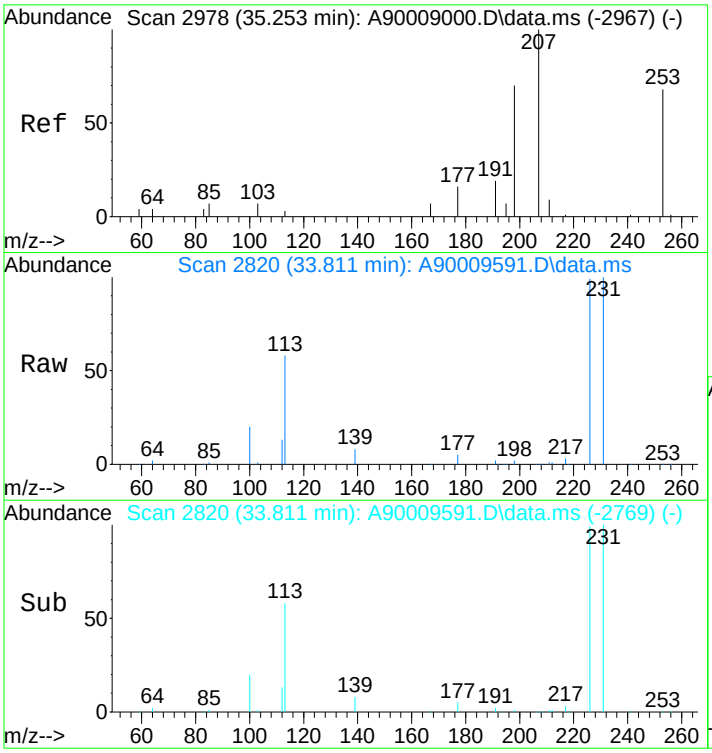


#36
1-Methyldibenzothiophene(1MDT)
Concen: 53.40 ng/mL
RT: 34.131 min Scan# 2855
Delta R.T. 0.000 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:198 Resp: 14076

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

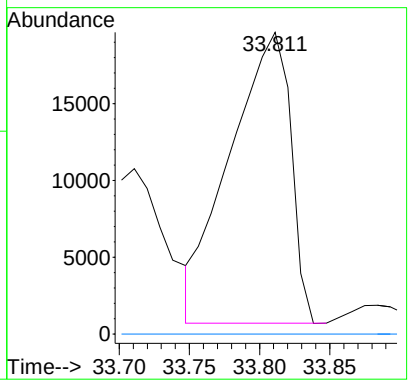


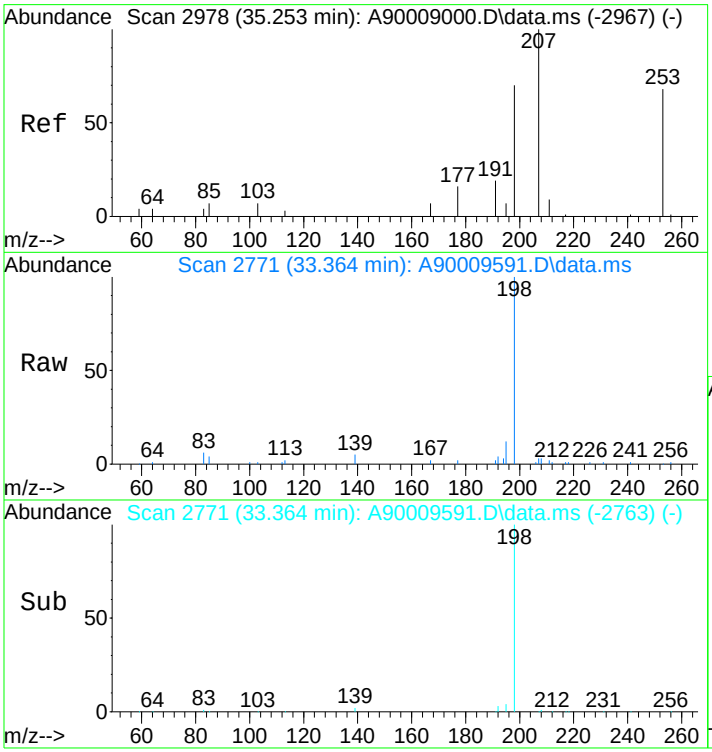


#37
OTP
Concen: 216.25 ng/mL
RT: 33.811 min Scan# 2820
Delta R.T. 0.019 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:198 Resp: 57001

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

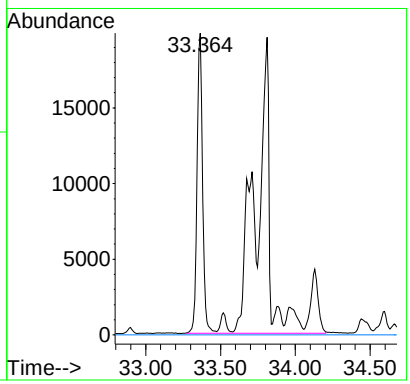


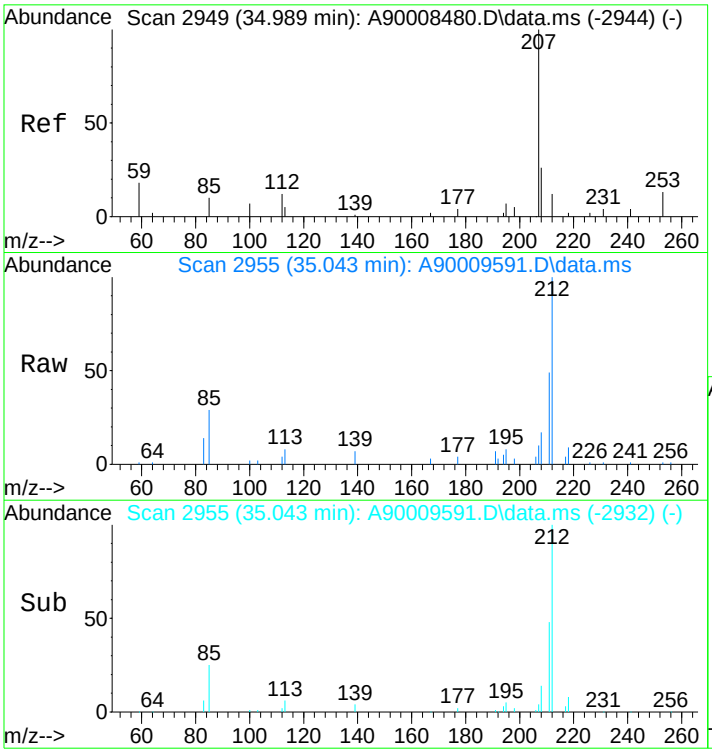


#38
C1-Dibenzothiophenes
Concen: 741.52 ng/mL m
RT: 33.364 min Scan# 2771
Delta R.T. 0.000 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:198 Resp: 195453

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

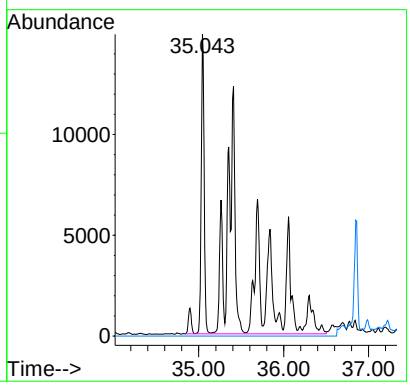


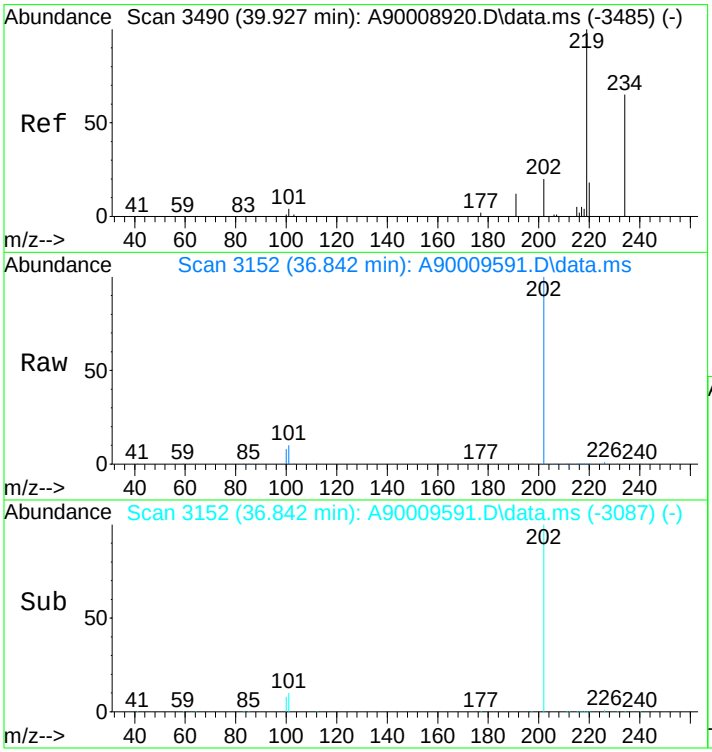


#39
C2-Dibenzothiophenes
Concen: 742.44 ng/mL m
RT: 35.043 min Scan# 2955
Delta R.T. -0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:212 Resp: 195695

Ion	Ratio	Lower	Upper
212	100		
197	0.0	0.0	0.0

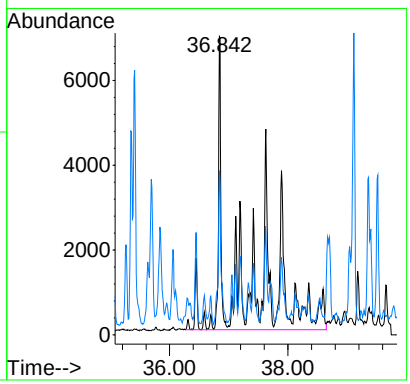


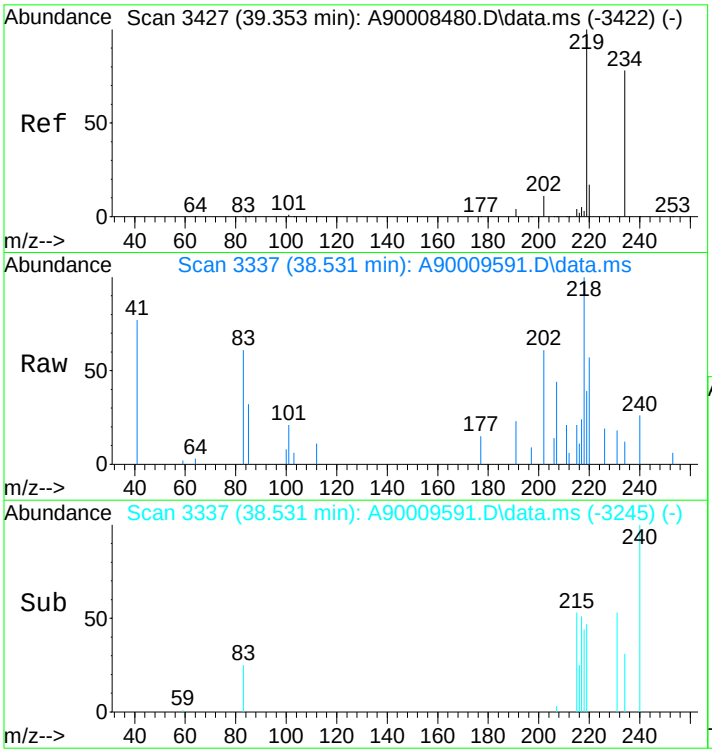


#40
C3-Dibenzothiophenes
Concen: 410.97 ng/mL m
RT: 36.842 min Scan# 3152
Delta R.T. -0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:226 Resp: 108326

Ion	Ratio	Lower	Upper
226	100		
211	11.6	46.4	69.6#

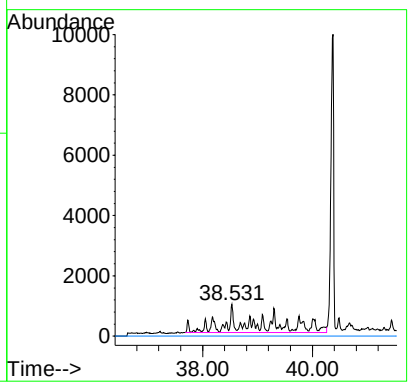


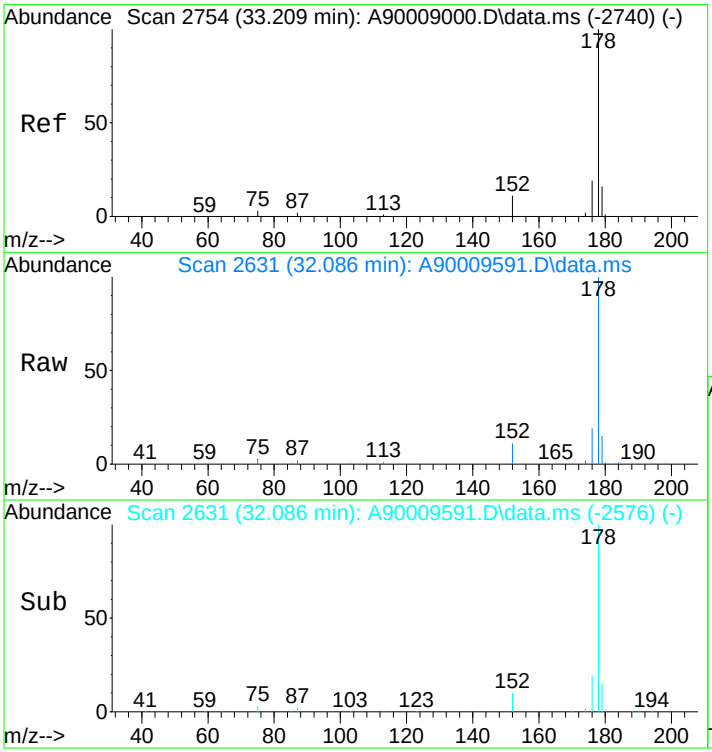


#41
C4-Dibenzothiophenes
Concen: 120.79 ng/mL m
RT: 38.531 min Scan# 3337
Delta R.T. -0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:240 Resp: 31839

Ion	Ratio	Lower	Upper
240	100		
225	0.0	0.0	0.0

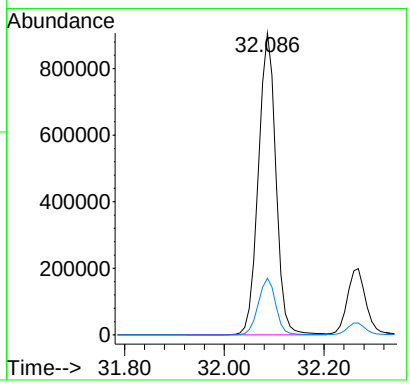


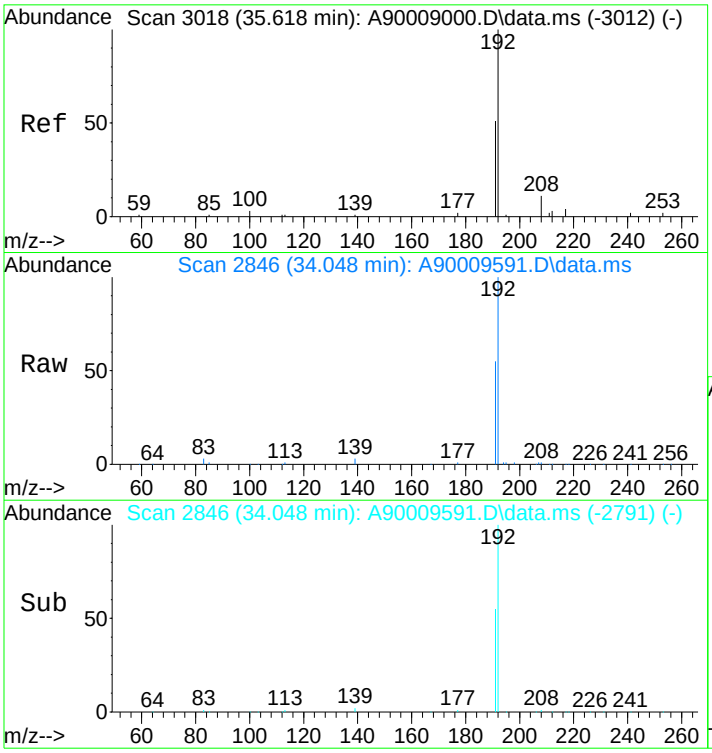


#43
Phenanthrene
Concen: 8097.14 ng/mL
RT: 32.086 min Scan# 2631
Delta R.T. -0.000 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:178 Resp: 2204969

Ion	Ratio	Lower	Upper
178	100		
176	18.7	15.1	22.7

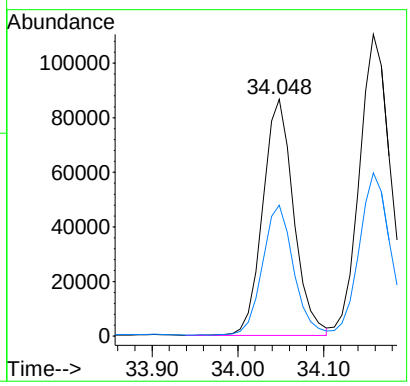


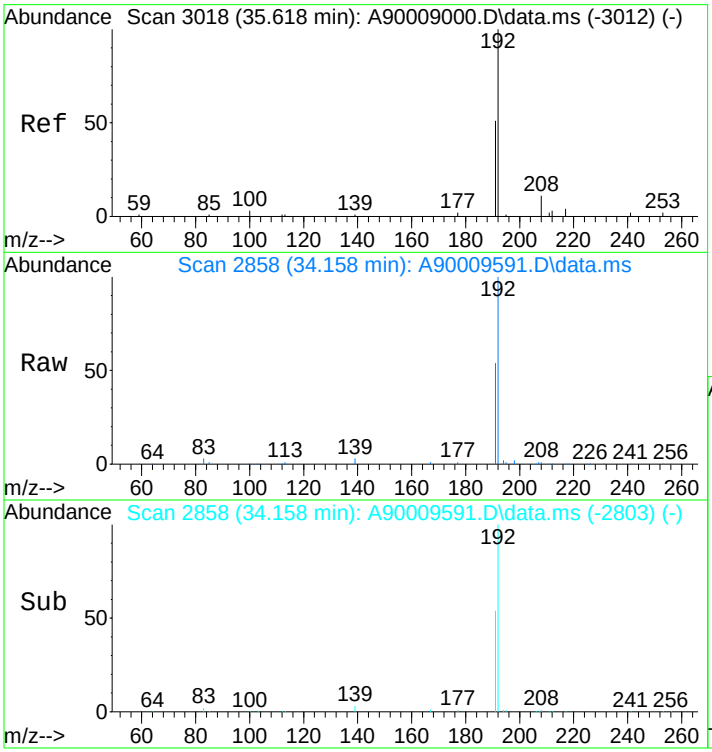


#44
3-Methylphenanthrene(3MP)
Concen: 794.77 ng/mL
RT: 34.048 min Scan# 2846
Delta R.T. 0.000 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:192 Resp: 216427

Ion	Ratio	Lower	Upper
192	100		
191	55.0	45.9	68.9

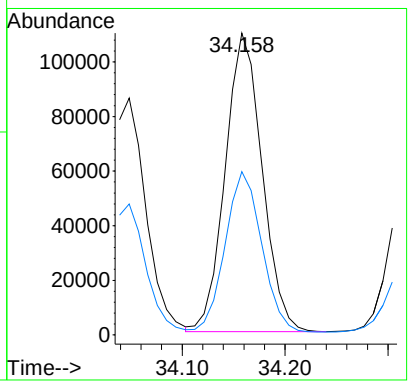


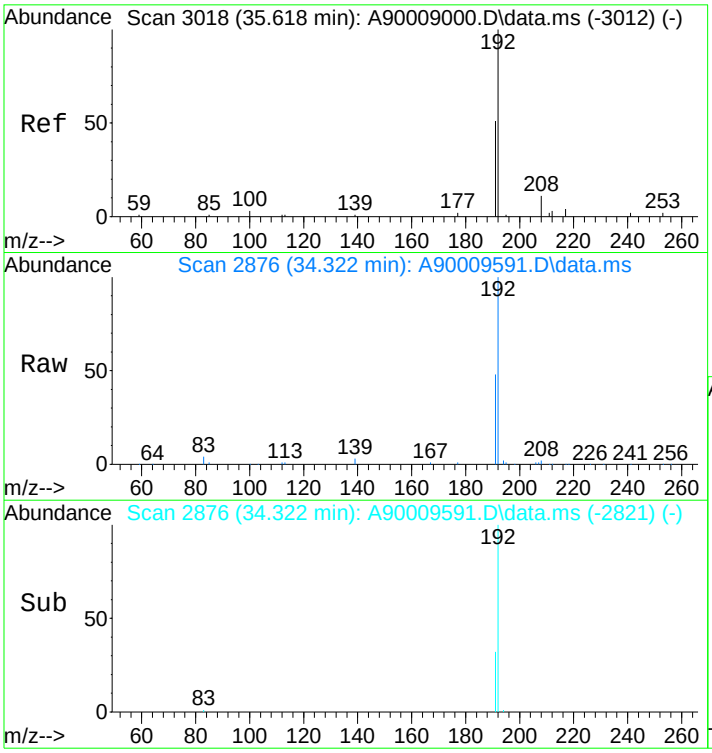


#45
2-Methylphenanthrene(2MP)
Concen: 998.32 ng/mL
RT: 34.158 min Scan# 2858
Delta R.T. 0.000 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:192 Resp: 271858

Ion	Ratio	Lower	Upper
192	100		
191	53.4	44.9	67.3

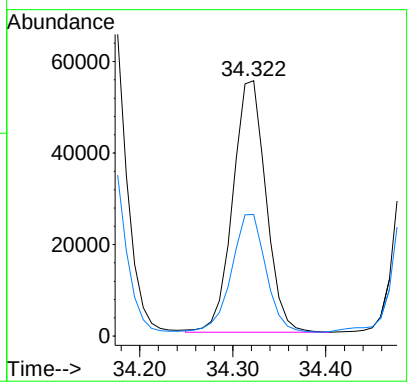


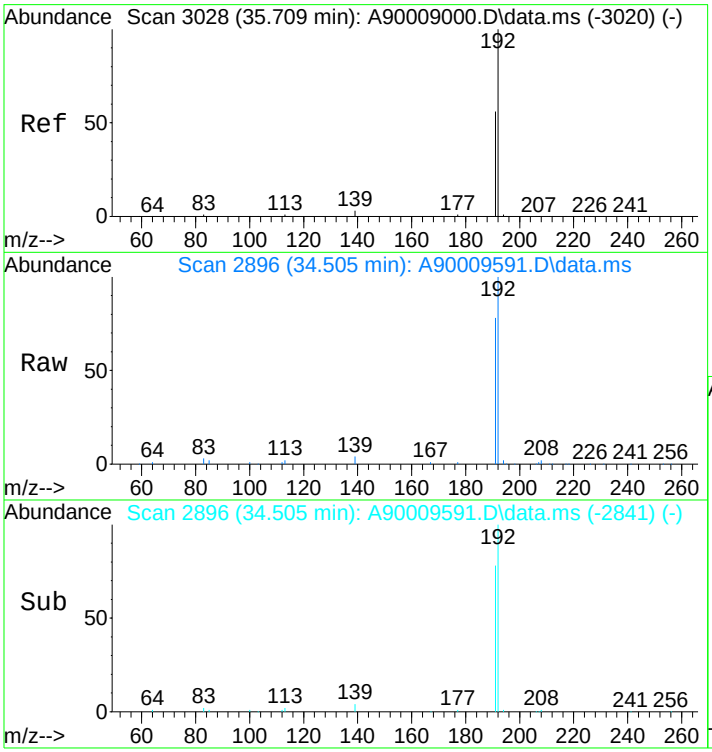


#46
2-Methylanthracene(2MA)
Concen: 498.97 ng/mL m
RT: 34.322 min Scan# 2876
Delta R.T. 0.000 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:192 Resp: 135878

Ion	Ratio	Lower	Upper
192	100		
191	0.6	96.8	145.2#

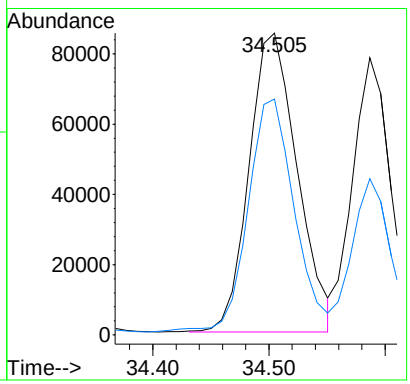


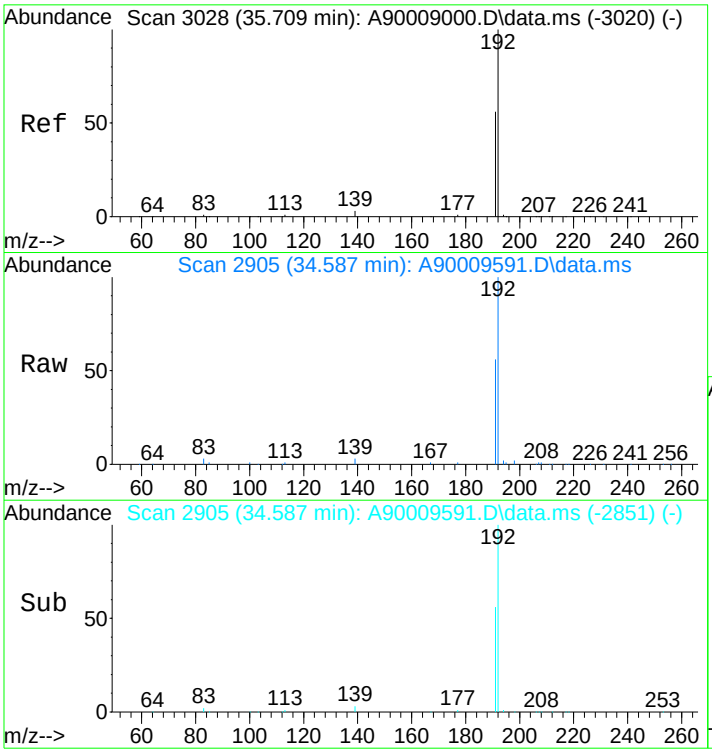


#47
9/4-Methylphenanthrene(9MP)
Concen: 899.59 ng/mL m
RT: 34.505 min Scan# 2896
Delta R.T. 0.000 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:192 Resp: 244971

Ion	Ratio	Lower	Upper
192	100		
191	40.9	44.5	66.7#

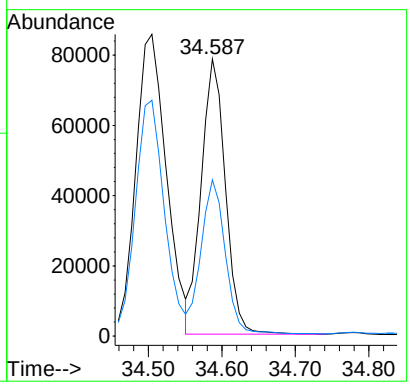


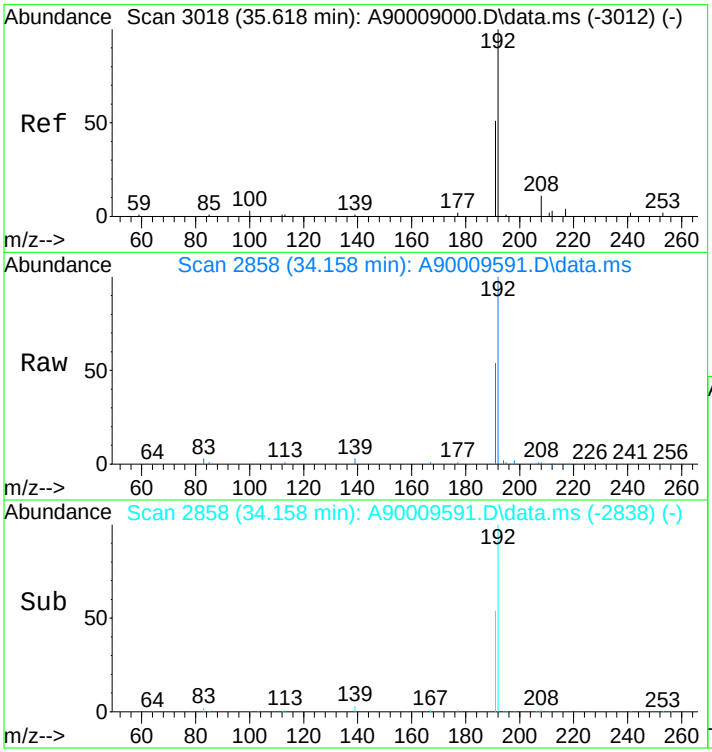


#48
1-Methylphenanthrene(1MP)
Concen: 655.46 ng/mL
RT: 34.587 min Scan# 2905
Delta R.T. -0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:192 Resp: 178492

Ion	Ratio	Lower	Upper
192	100		
191	56.1	46.9	70.3

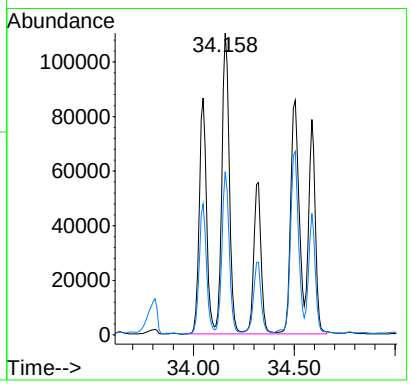


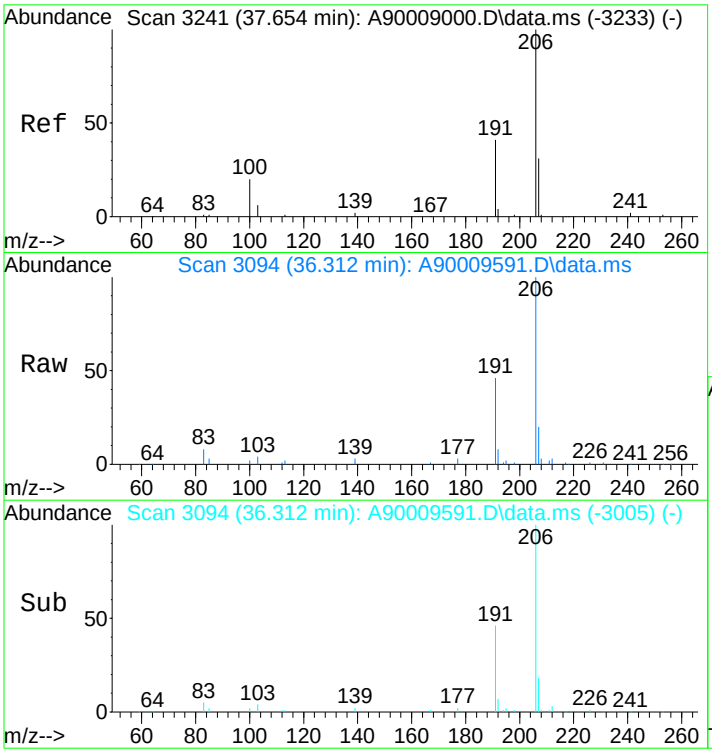


#49
C1-Phenanthrenes/Anthracenes
Concen: 3911.90 ng/mL m
RT: 34.158 min Scan# 2858
Delta R.T. -0.347 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:192 Resp: 1065268

Ion	Ratio	Lower	Upper
192	100		
191	7.0	44.5	66.7#

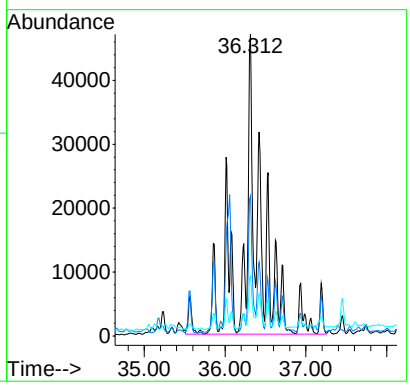


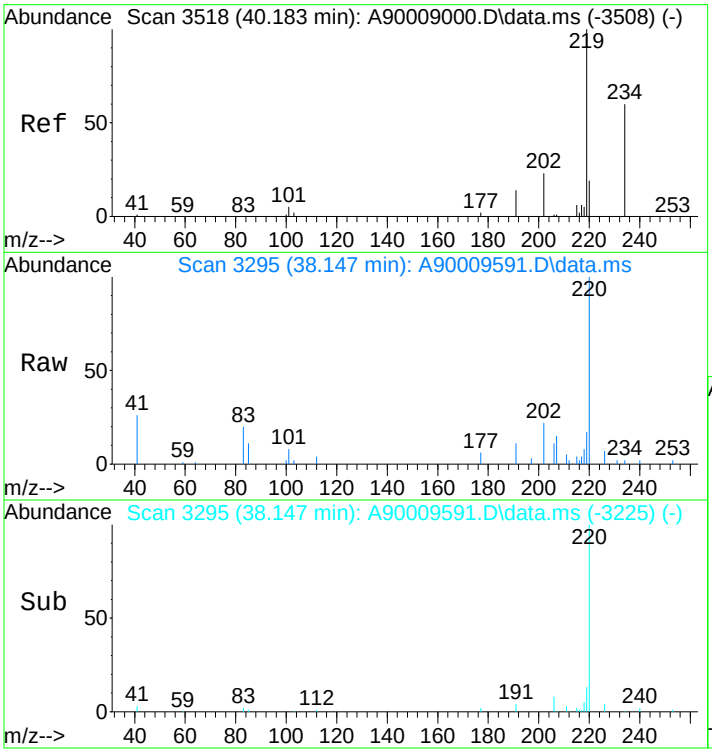


#50
C2-Phenanthrenes/Anthracenes
Concen: 2363.01 ng/mL m
RT: 36.312 min Scan# 3094
Delta R.T. 0.000 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:206 Resp: 643481

Ion	Ratio	Lower	Upper
206	100		
191	10.6	41.0	61.4#
207	4.1	17.1	25.7#

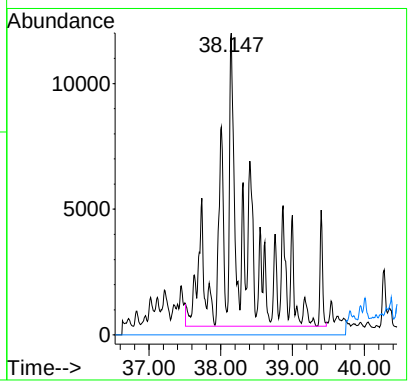


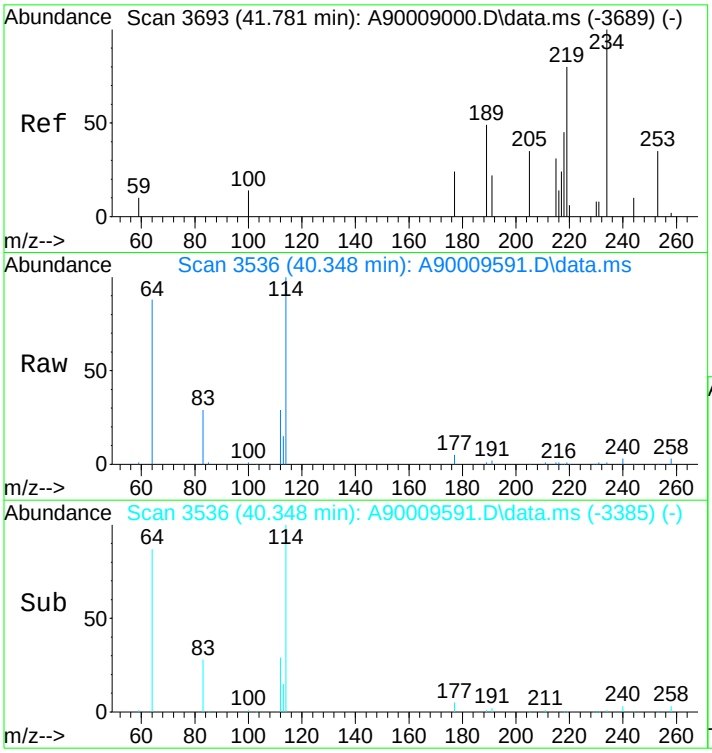


#52
C3-Phenanthrenes/Anthracenes
Concen: 893.67 ng/mL m
RT: 38.147 min Scan# 3295
Delta R.T. 0.000 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:220 Resp: 243359

Ion	Ratio	Lower	Upper
220	100		
205	0.0	0.0	0.0

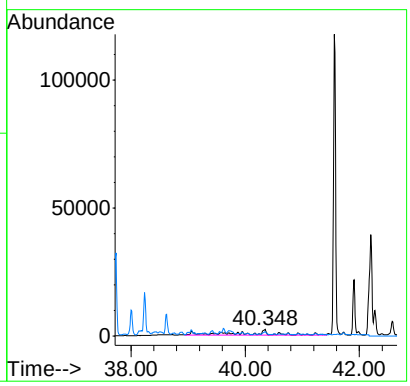


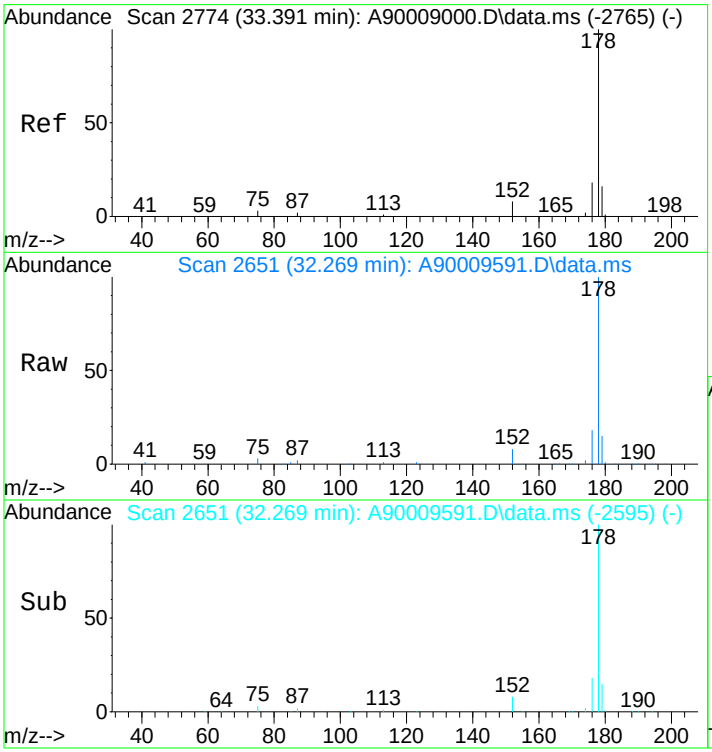


#53
C4-Phenanthrenes/Anthracenes
Concen: 275.42 ng/mL m
RT: 40.348 min Scan# 3536
Delta R.T. 0.018 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:234 Resp: 75002

Ion	Ratio	Lower	Upper
234	100		
219	6.4	52.1	78.1#

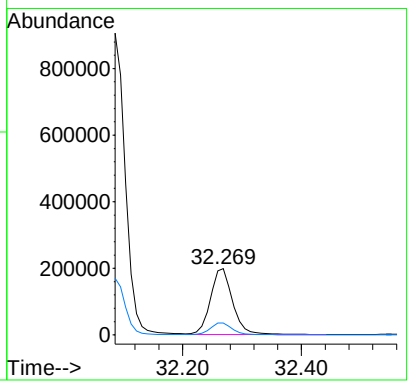


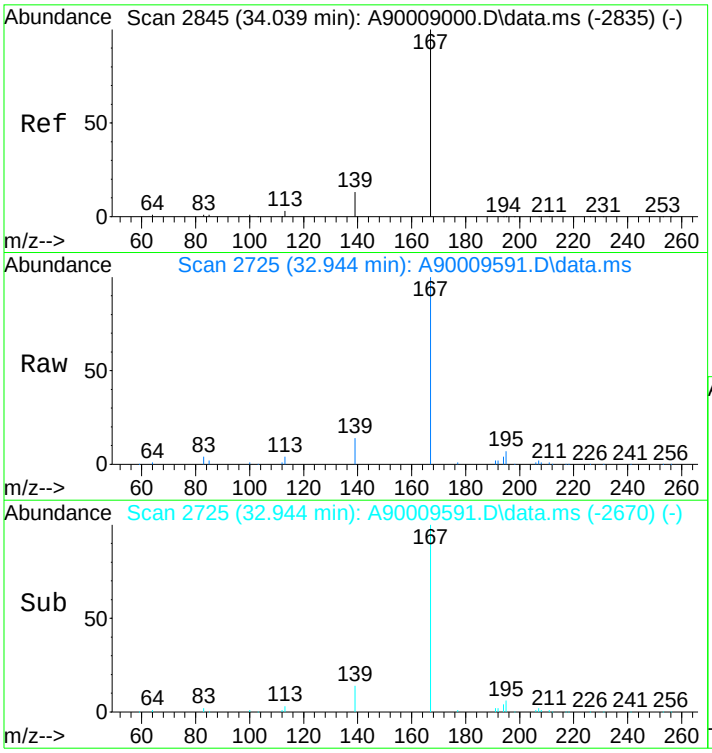


#55
Anthracene
Concen: 2048.21 ng/mL
RT: 32.269 min Scan# 2651
Delta R.T. 0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:178 Resp: 517942

Ion	Ratio	Lower	Upper
178	100		
176	18.2	14.6	21.8

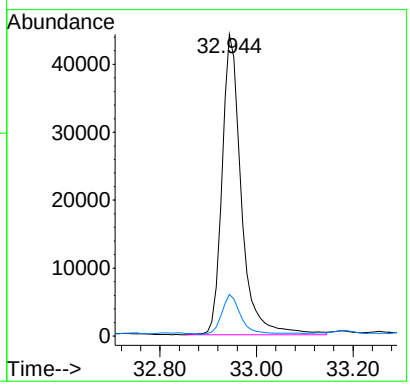


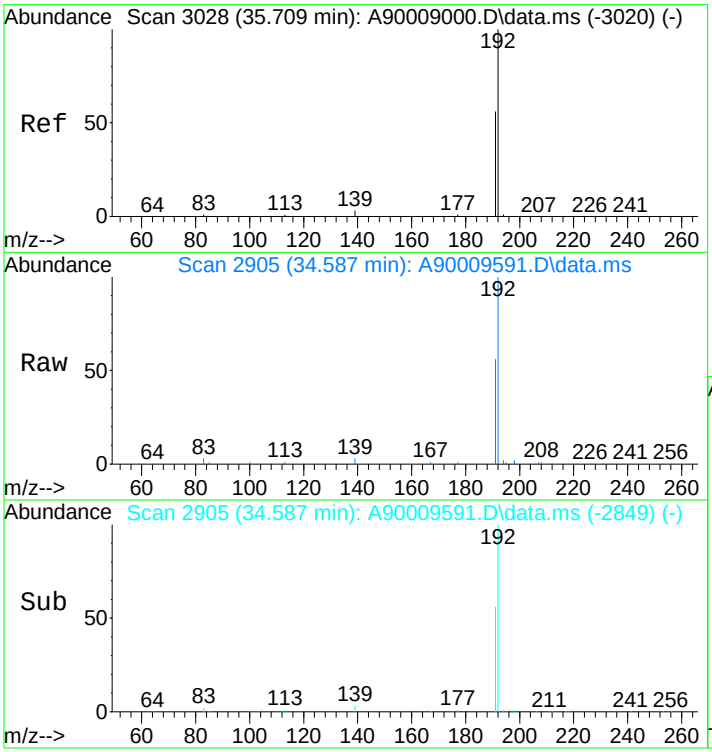


#56
Carbazole
Concen: 513.02 ng/mL
RT: 32.944 min Scan# 2725
Delta R.T. -0.000 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:167 Resp: 122725

Ion	Ratio	Lower	Upper
167	100		
139	12.7	10.2	15.2

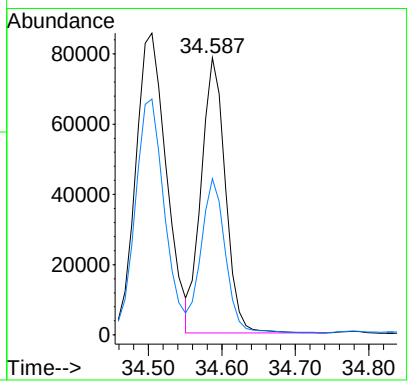


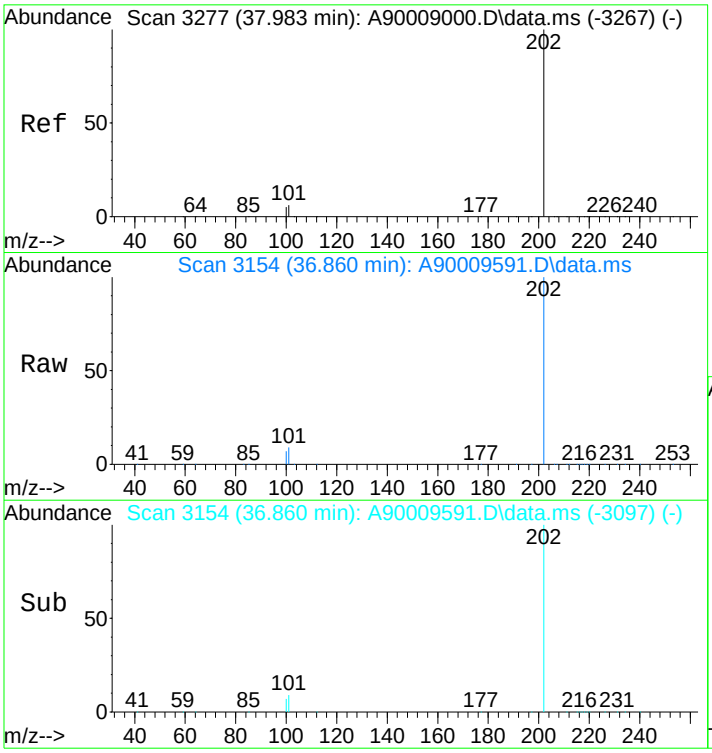


#57
1-Methylphenanthrene
Concen: 888.41 ng/mL
RT: 34.587 min Scan# 2905
Delta R.T. 0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:192 Resp: 178492

Ion	Ratio	Lower	Upper
192	100		
191	56.1	44.9	67.3

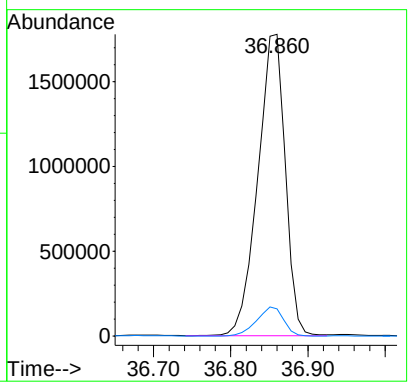


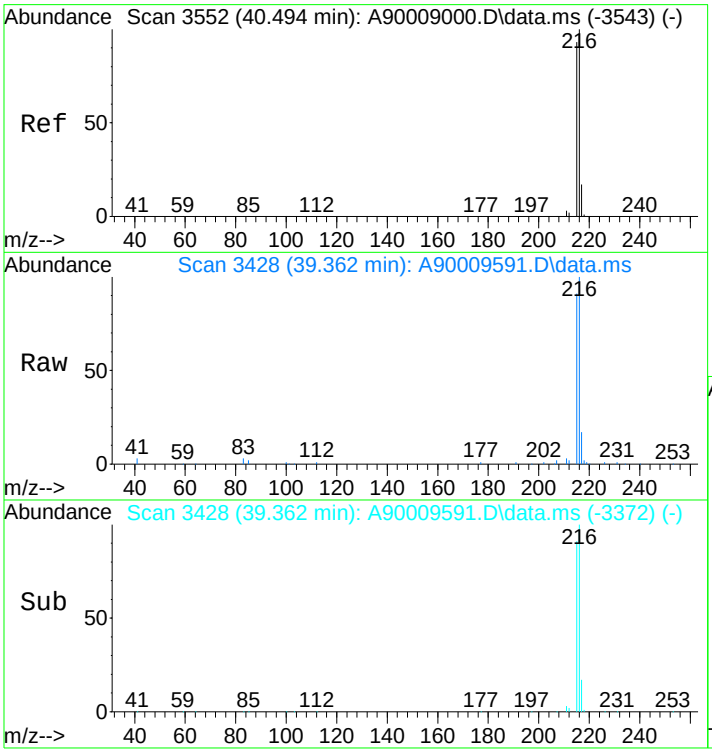


#58
Fluoranthene
Concen: 14442.24 ng/mL
RT: 36.860 min Scan# 3154
Delta R.T. 0.018 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:202 Resp: 4393375

Ion	Ratio	Lower	Upper
202	100		
101	9.5	8.2	12.2

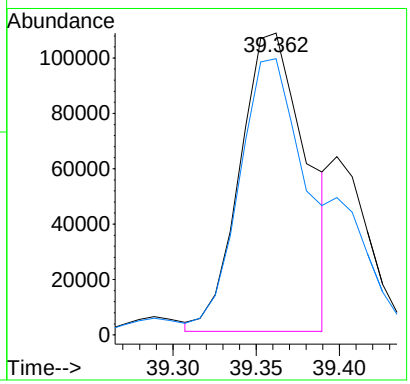


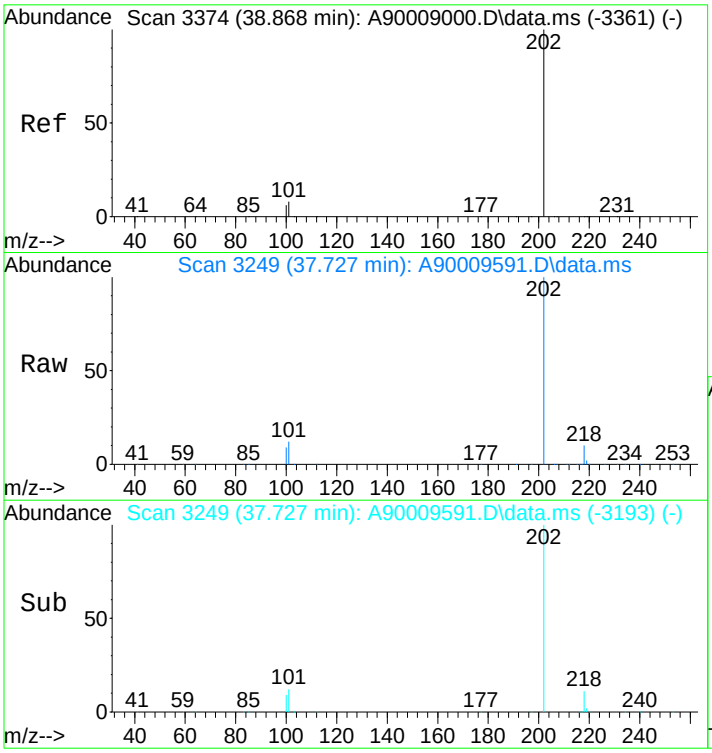


#59
Benzo(b)fluorene
Concen: 1649.28 ng/mL m
RT: 39.362 min Scan# 3428
Delta R.T. 0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:216 Resp: 298375

Ion	Ratio	Lower	Upper
216	100		
215	115.8	73.4	110.2#

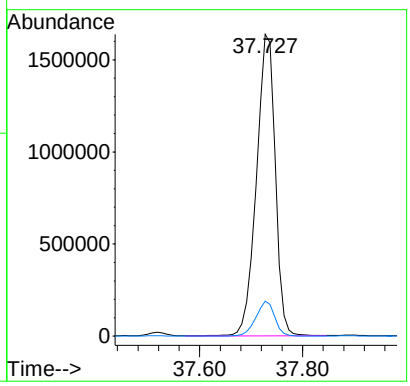


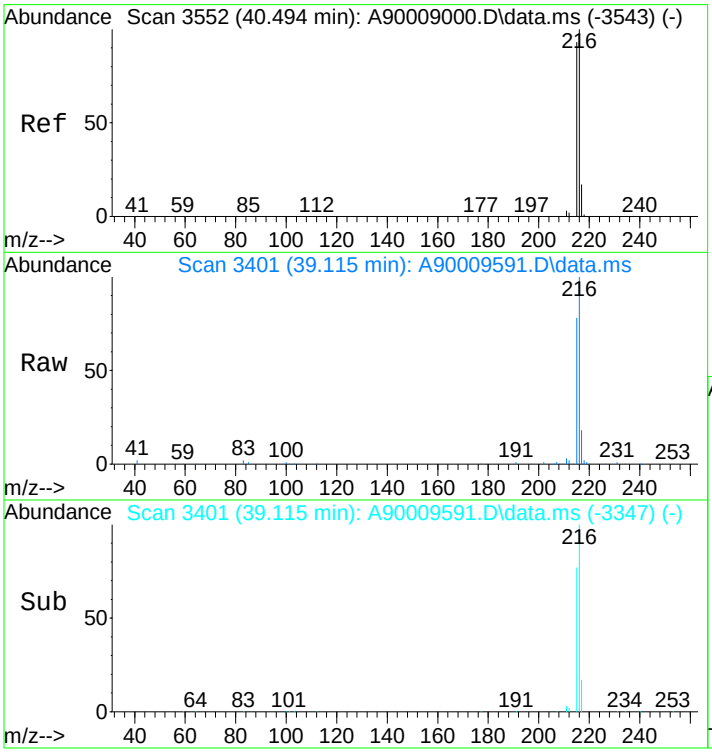


#60
Pyrene
Concen: 13420.32 ng/mL
RT: 37.727 min Scan# 3249
Delta R.T. 0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:202 Resp: 4165011

Ion	Ratio	Lower	Upper
202	100		
101	11.6	9.5	14.3

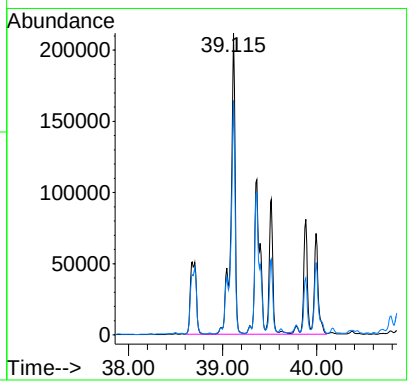


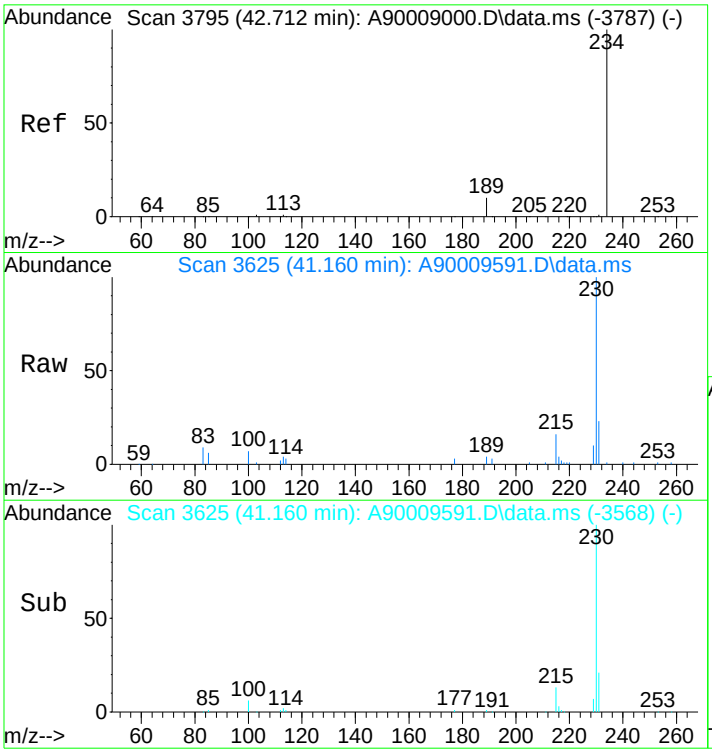


#61
C1-Fluoranthenes/Pyrenes
Concen: 6451.89 ng/mL m
RT: 39.115 min Scan# 3401
Delta R.T. 0.000 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:216 Resp: 2002351

Ion	Ratio	Lower	Upper
216	100		
215	21.7	73.5	110.3#

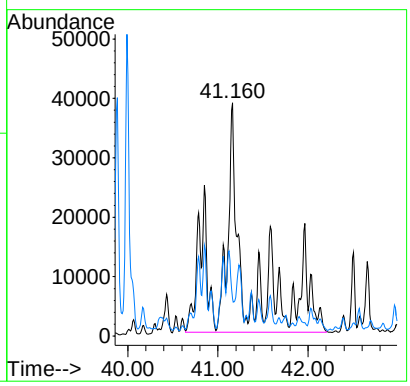


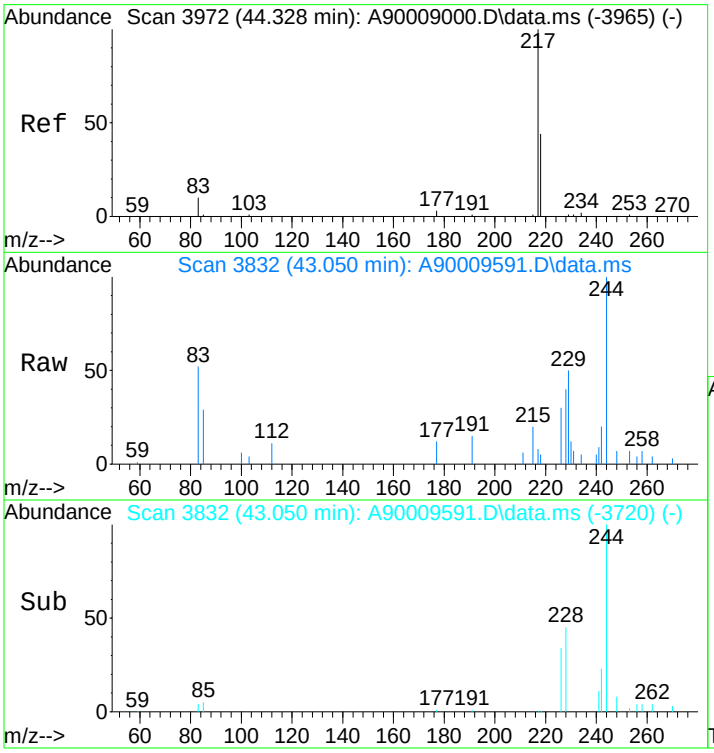


#62
C2-Fluoranthenes/Pyrenes
Concen: 2342.31 ng/mL m
RT: 41.160 min Scan# 3625
Delta R.T. 0.238 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:230 Resp: 726938

Ion	Ratio	Lower	Upper
230	100		
215	0.5	93.1	139.7#

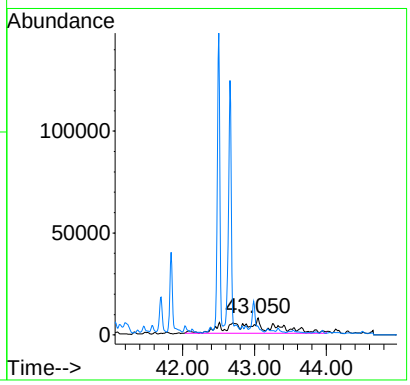


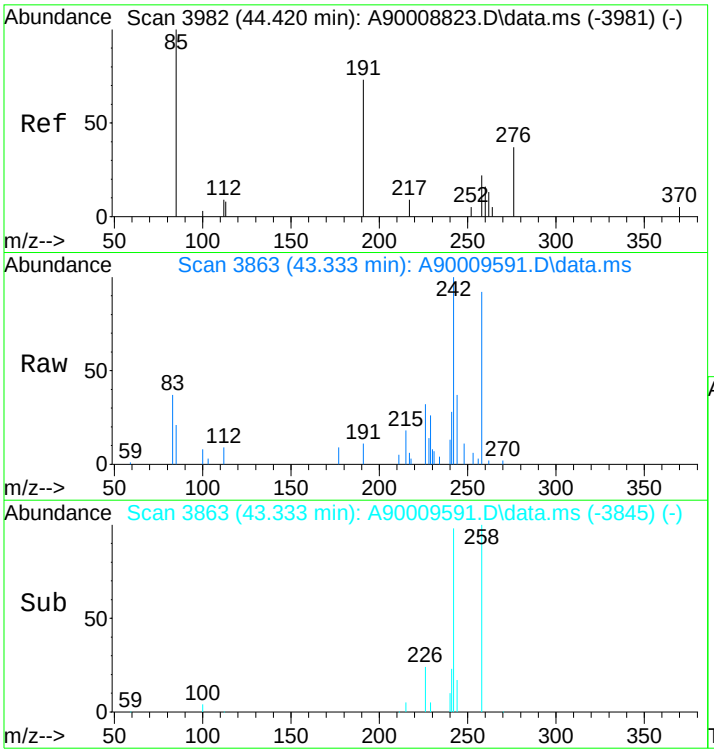


#63
C3-Fluoranthenes/Pyrenes
Concen: 857.34 ng/mL m
RT: 43.050 min Scan# 3832
Delta R.T. 0.110 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:244 Resp: 266078

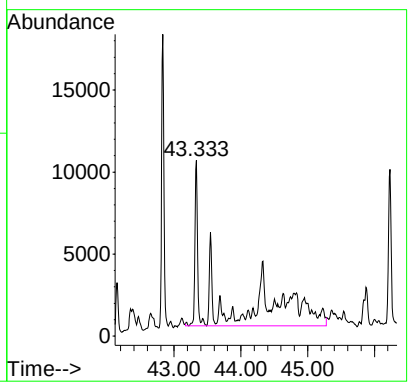
Ion	Ratio	Lower	Upper
244	100		
229	0.7	75.0	112.4#

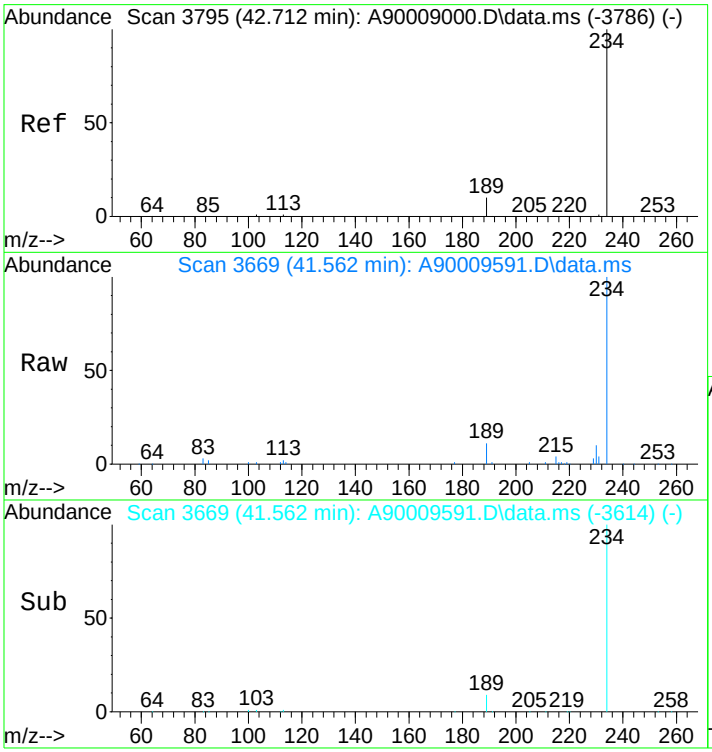




#64
C4-Fluoranthenes/Pyrenes
Concen: 476.99 ng/mL m
RT: 43.333 min Scan# 3863
Delta R.T. -0.959 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:258 Resp: 148034

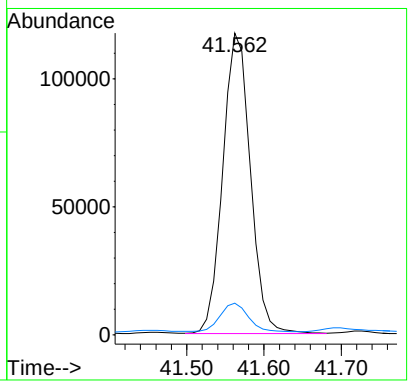


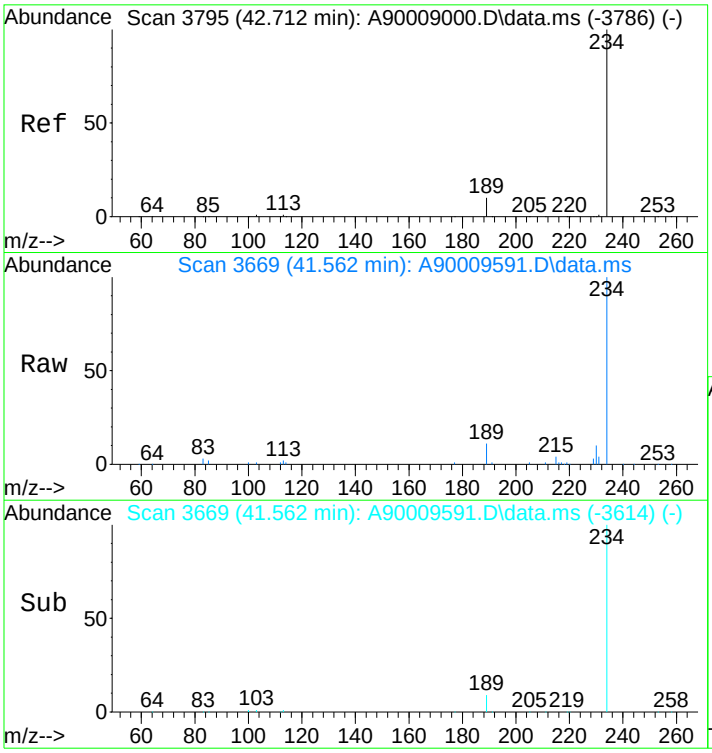


#66
Naphthobenzothiophene
Concen: 1084.25 ng/ml
RT: 41.562 min Scan# 3669
Delta R.T. -0.000 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:234 Resp: 291981

Ion	Ratio	Lower	Upper
234	100		
189	9.8	7.2	10.8

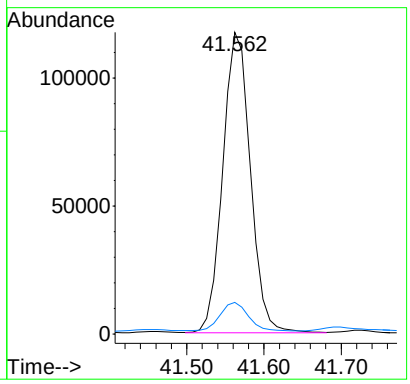


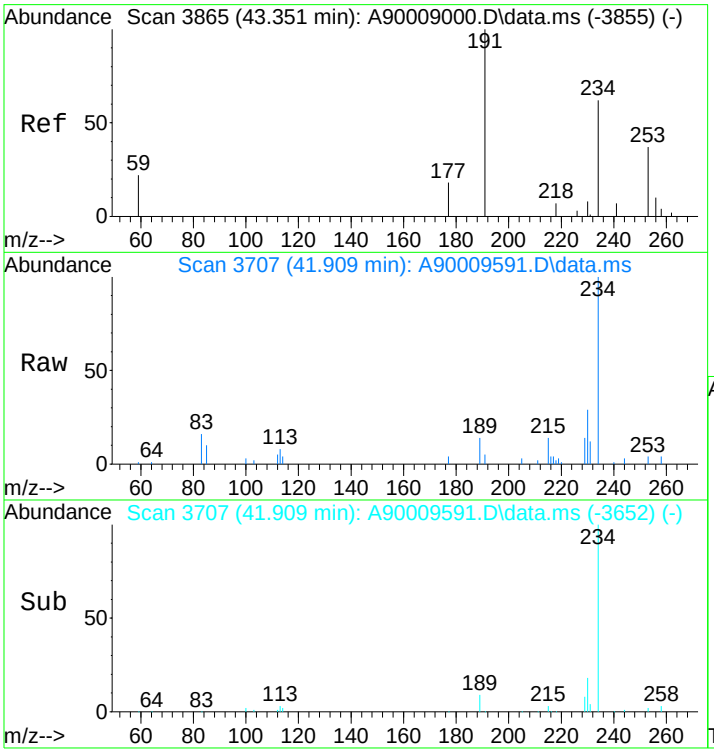


#67
Naphthobenzothiophene-2,1-D
Concen: 1084.25 ng/mL
RT: 41.562 min Scan# 3669
Delta R.T. -0.000 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:234 Resp: 291981

Ion	Ratio	Lower	Upper
234	100		
189	9.8	7.2	10.8

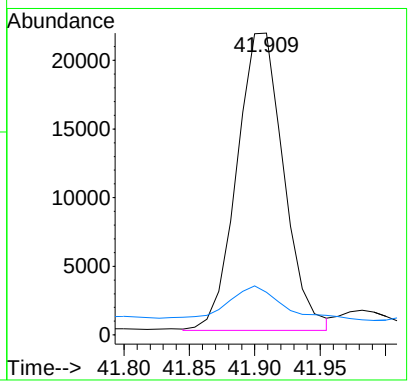


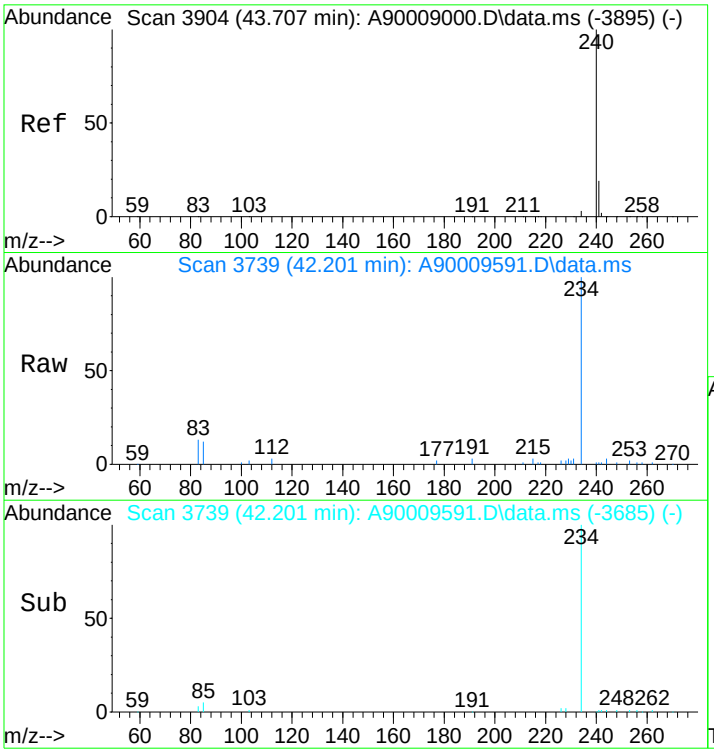


#68
Naphthobenzothiophene-1,2-D
Concen: 200.13 ng/mL m
RT: 41.909 min Scan# 3707
Delta R.T. 0.000 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:234 Resp: 53893

Ion	Ratio	Lower	Upper
234	100		
189	2.7	81.0	121.4#

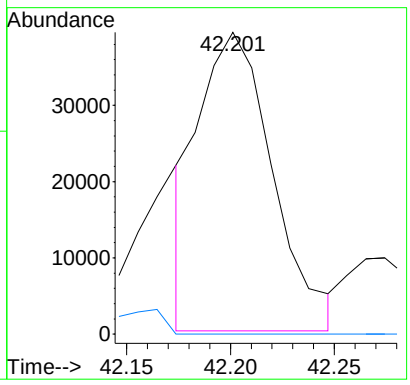


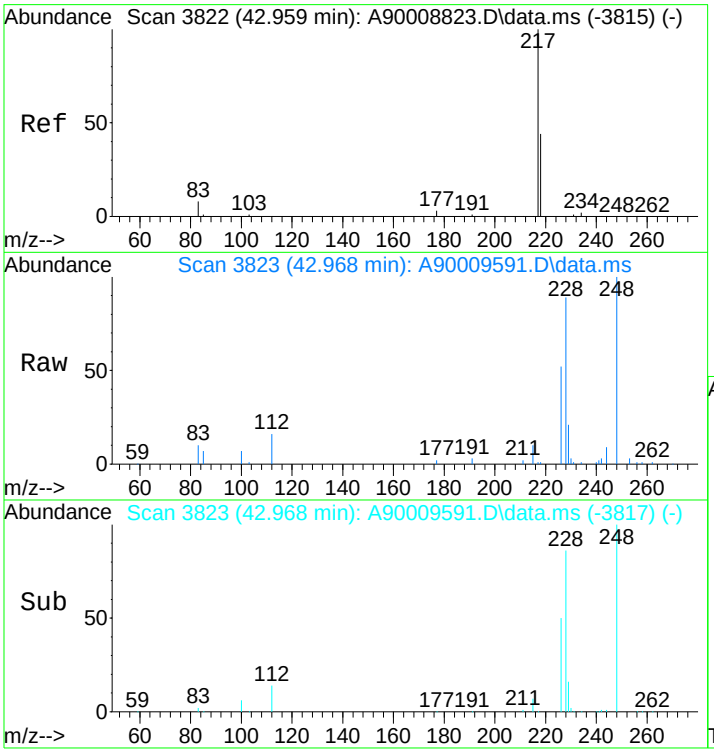


#69
Naphthobenzothiophene-2,3-D
Concen: 361.51 ng/mL m
RT: 42.201 min Scan# 3739
Delta R.T. -0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:234 Resp: 97351

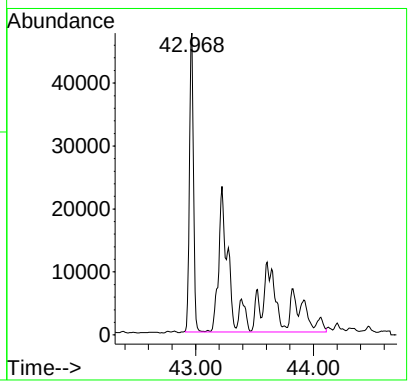
Ion	Ratio	Lower	Upper
234	100		
189	0.0	0.0	0.0

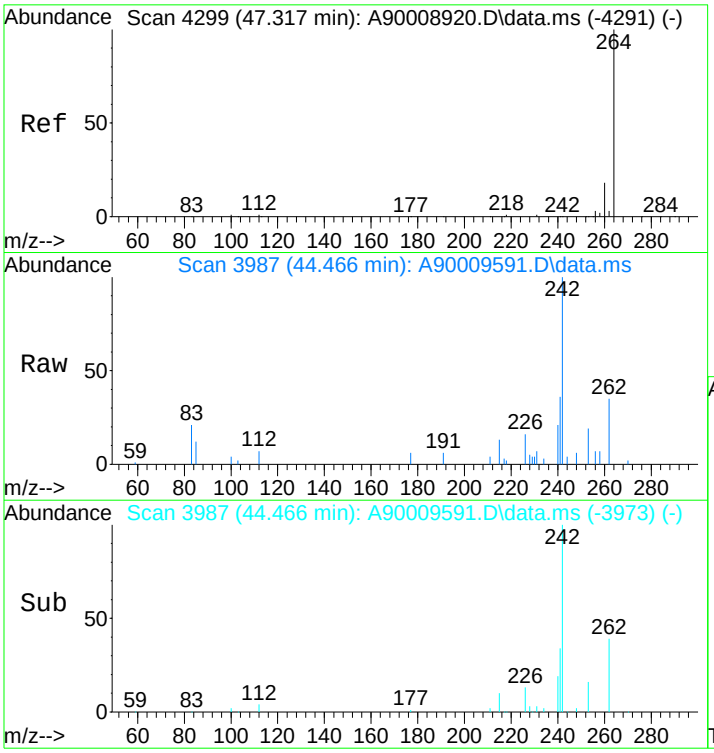




#70
C1-Naphthobenzothiophenes
Concen: 1442.11 ng/ml m
RT: 42.968 min Scan# 3823
Delta R.T. 0.000 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

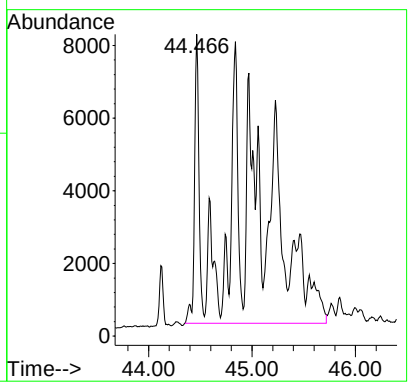
Tgt Ion:248 Resp: 388351

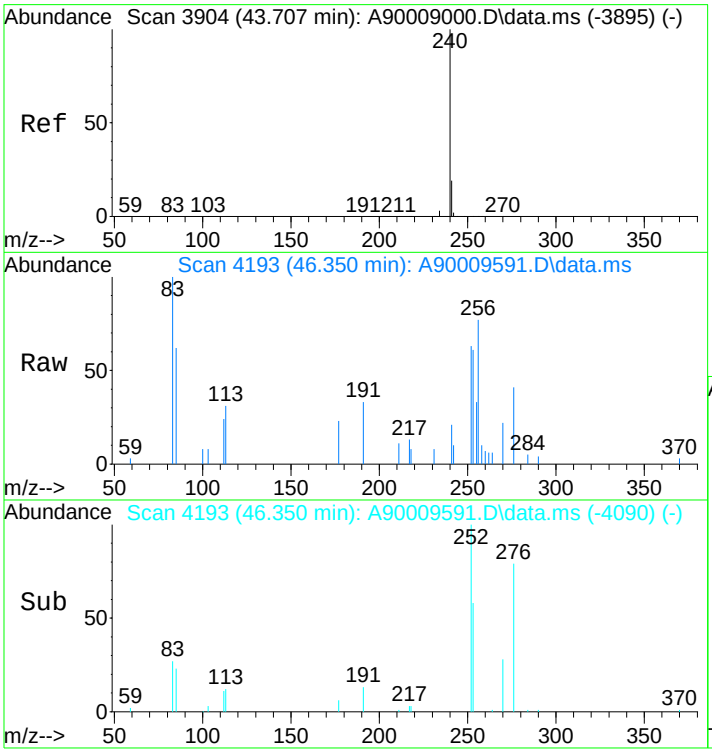




#71
C2-Naphthobenzothiophenes
Concen: 691.78 ng/ml m
RT: 44.466 min Scan# 3987
Delta R.T. -0.503 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

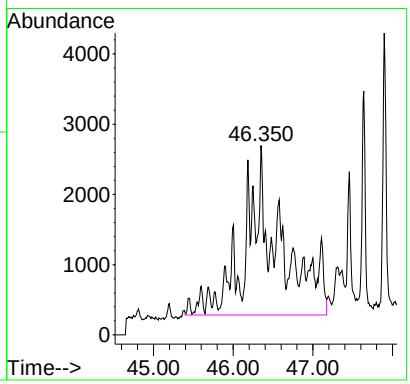
Tgt Ion:262 Resp: 186292

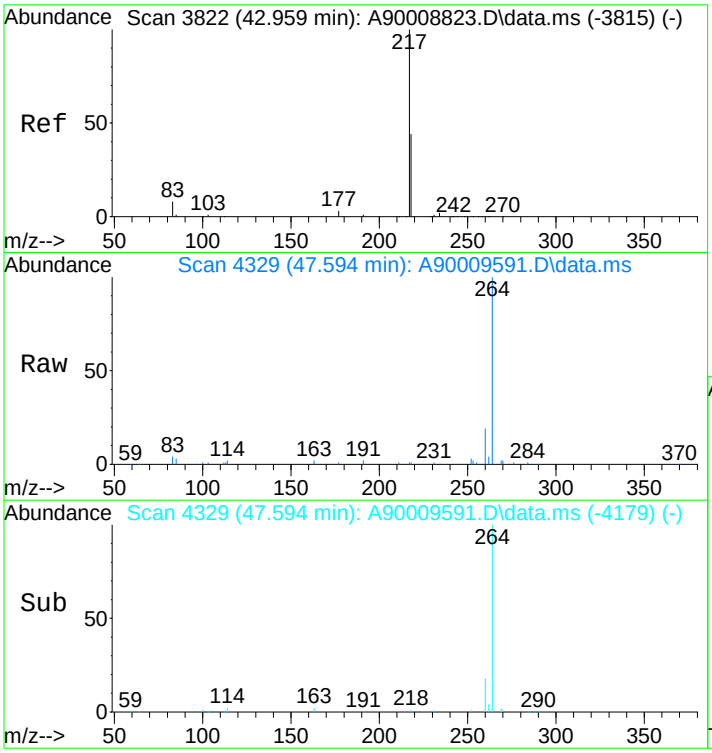




#72
C3-Naphthobenzothiophenes
Concen: 263.28 ng/ml m
RT: 46.350 min Scan# 4193
Delta R.T. -0.219 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

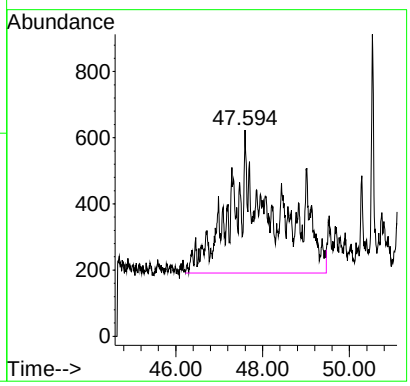
Tgt Ion:276 Resp: 70900

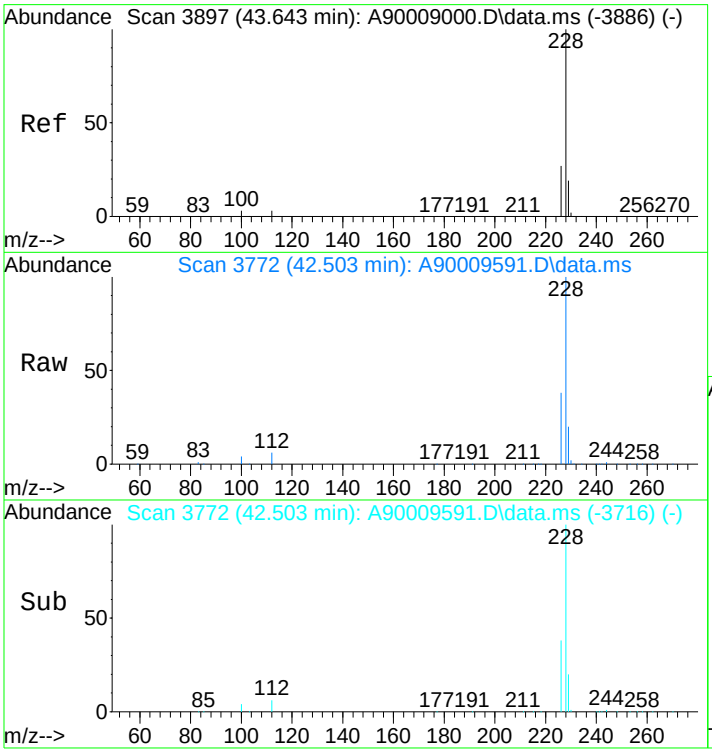




#73
C4-Naphthobenzothiophenes
Concen: 105.46 ng/mL m
RT: 47.594 min Scan# 4329
Delta R.T. 0.000 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:290 Resp: 28399

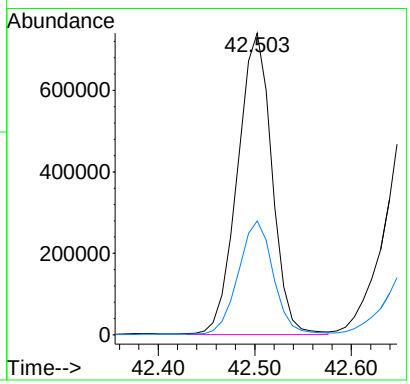


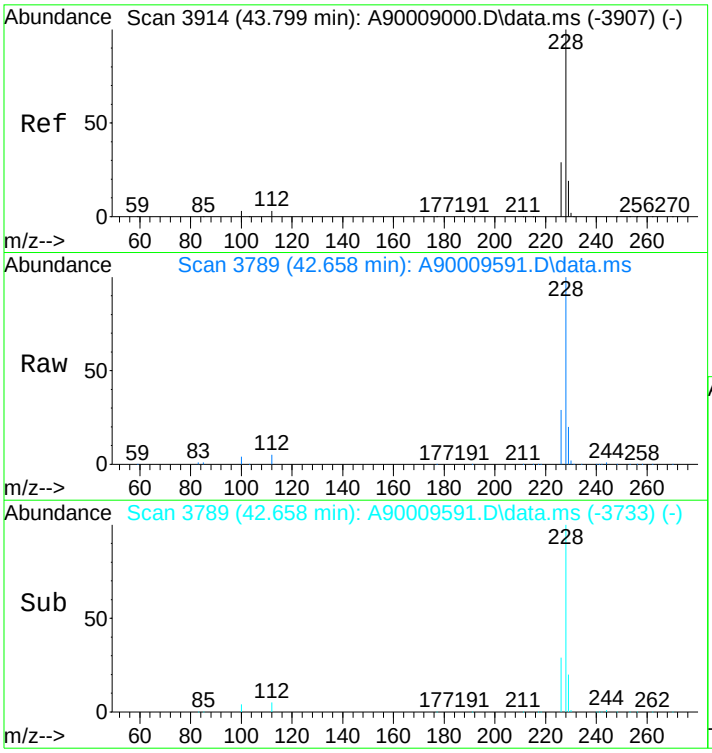


#75
Benz[a]anthracene
Concen: 6427.90 ng/mL m
RT: 42.503 min Scan# 3772
Delta R.T. 0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:228 Resp: 1833680

Ion	Ratio	Lower	Upper
228	100		
226	27.3	20.8	31.2

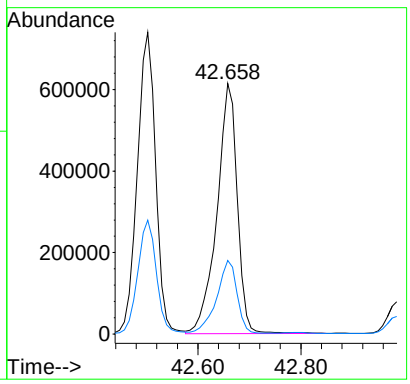


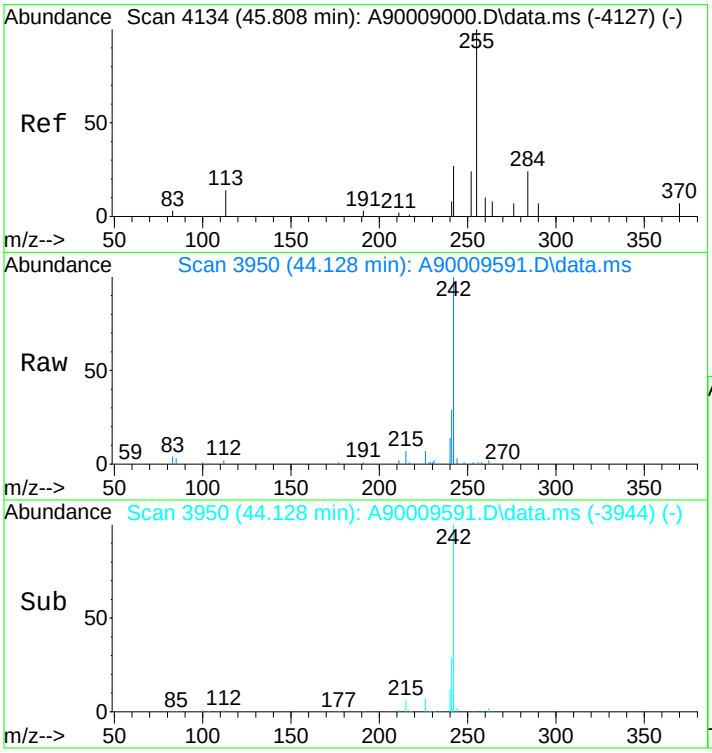


#77
Chrysene/Triphenylene
Concen: 5999.02 ng/mL
RT: 42.658 min Scan# 3789
Delta R.T. 0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:228 Resp: 1683141

Ion	Ratio	Lower	Upper
228	100		
226	29.7	23.3	34.9

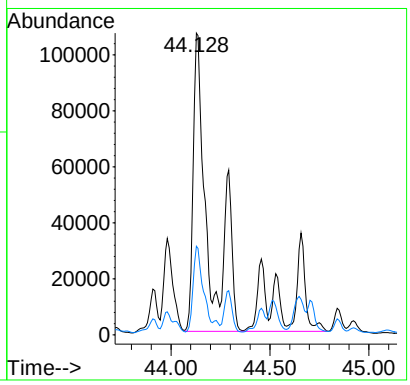


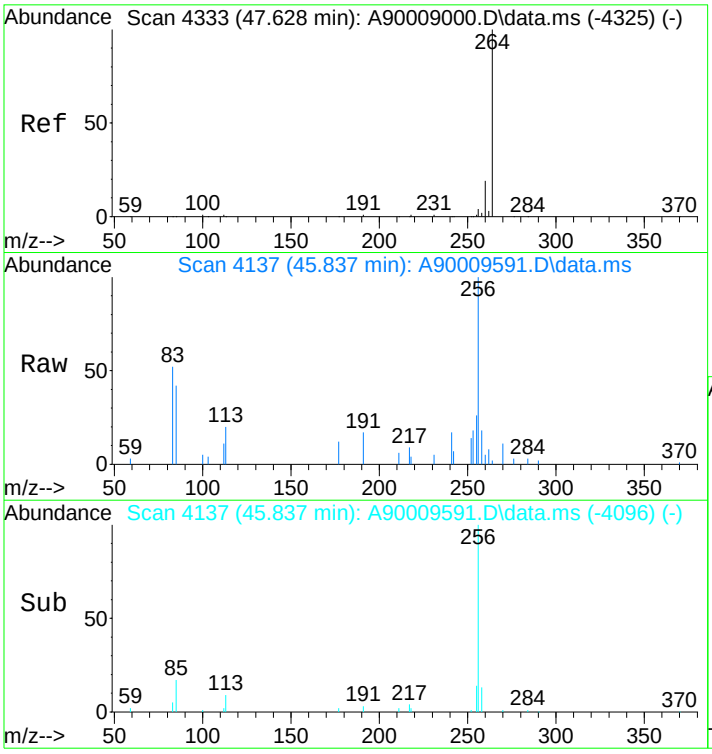


#78
C1-Chrysenes
Concen: 2796.75 ng/mL m
RT: 44.128 min Scan# 3950
Delta R.T. -0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:242 Resp: 784682

Ion	Ratio	Lower	Upper
242	100		
241	3.3	31.9	47.9#

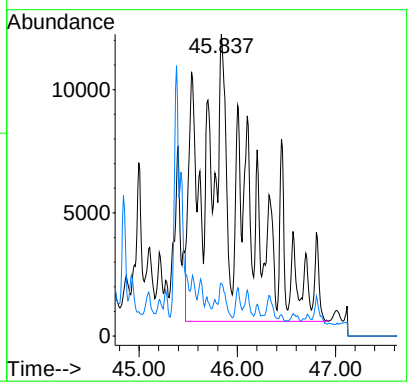


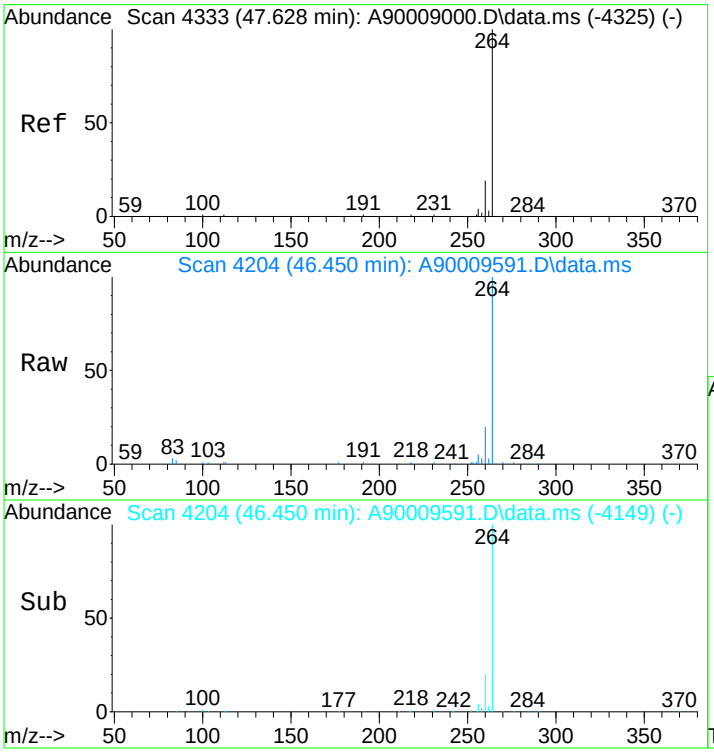


#79
C2-Chrysenes
Concen: 1225.55 ng/mL m
RT: 45.837 min Scan# 4137
Delta R.T. -0.978 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:256 Resp: 343851

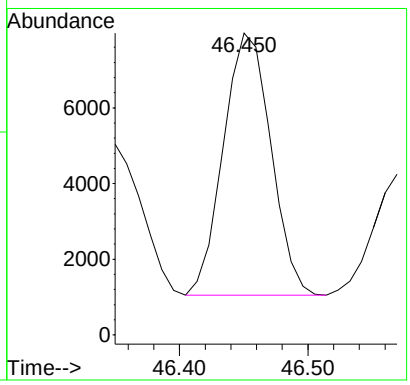
Ion	Ratio	Lower	Upper
256	100		
241	0.8	42.2	63.2#

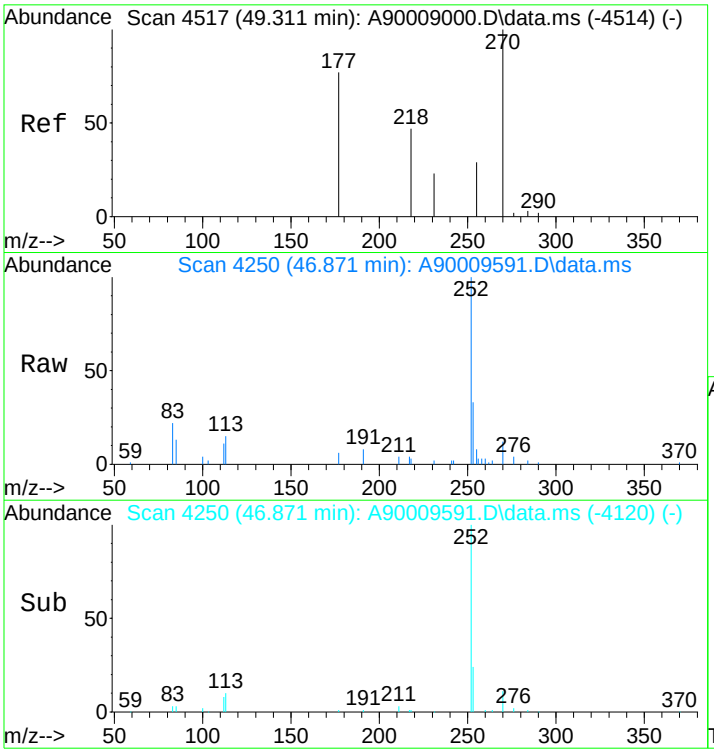




#80
BBF-d12 Surr BKGD
Concen: 63.56 ng/mL
RT: 46.450 min Scan# 4204
Delta R.T. -0.000 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:256 Resp: 17833

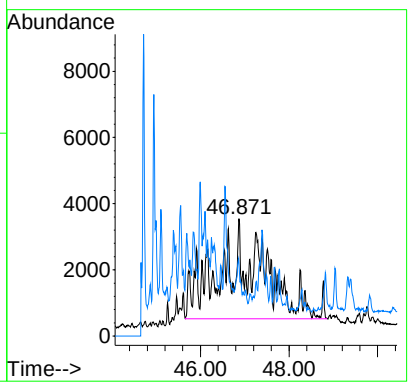


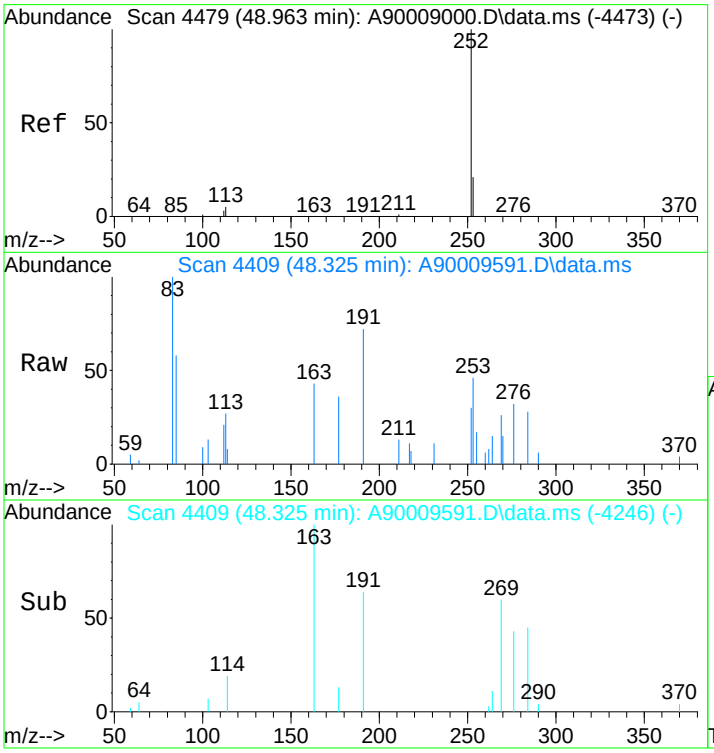


#81
C3-Chrysenes
Concen: 701.45 ng/mL m
RT: 46.871 min Scan# 4250
Delta R.T. -1.911 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:270 Resp: 196806

Ion	Ratio	Lower	Upper
270	100		
255	0.2	48.2	72.4#

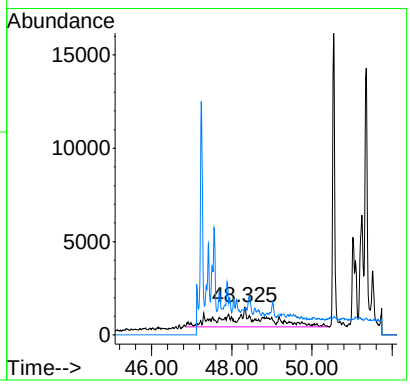


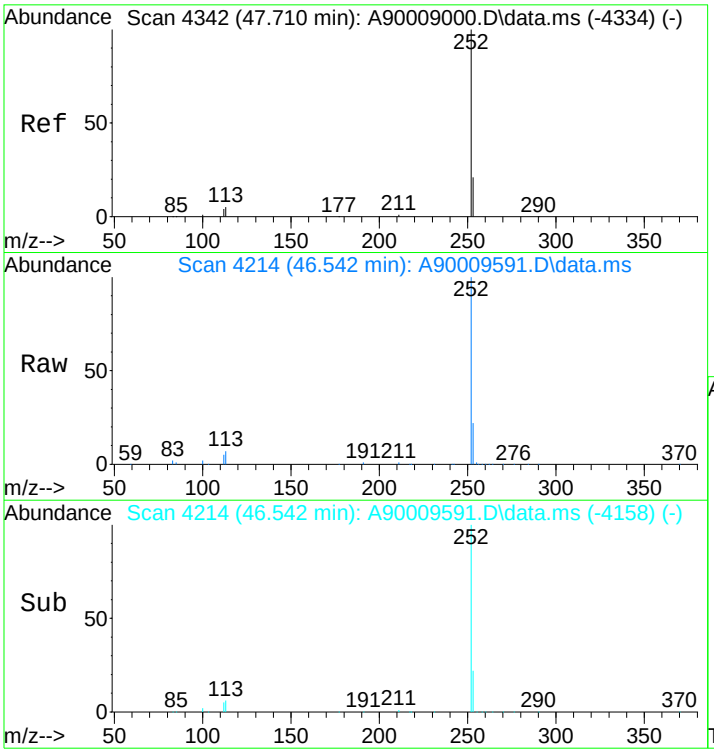


#82
C4-Chrysenes
Concen: 230.87 ng/mL m
RT: 48.325 min Scan# 4409
Delta R.T. -0.558 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:284 Resp: 64775

Ion	Ratio	Lower	Upper
284	100		
269	0.0	84.6	126.8#

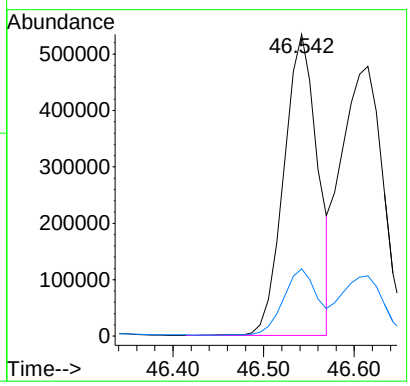


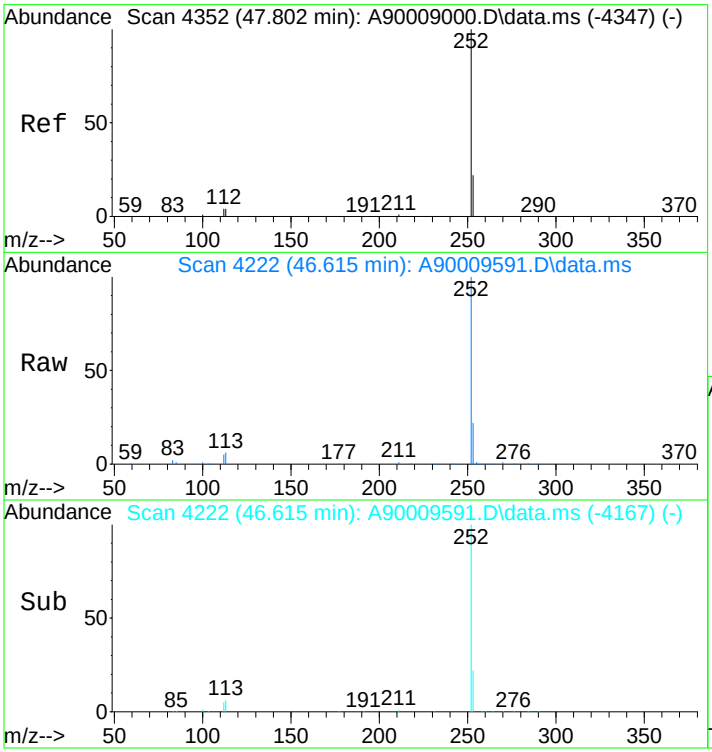


#84
Benzo[b]fluoranthene
Concen: 4691.55 ng/mL
RT: 46.542 min Scan# 4214
Delta R.T. 0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:252 Resp: 1387677

Ion	Ratio	Lower	Upper
252	100		
253	22.2	20.3	30.5

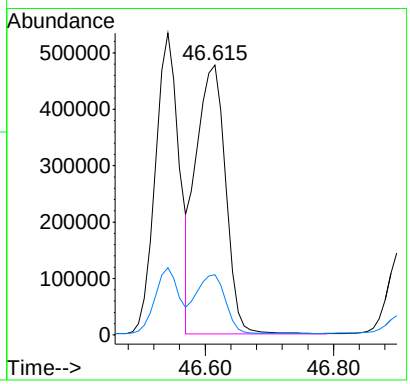


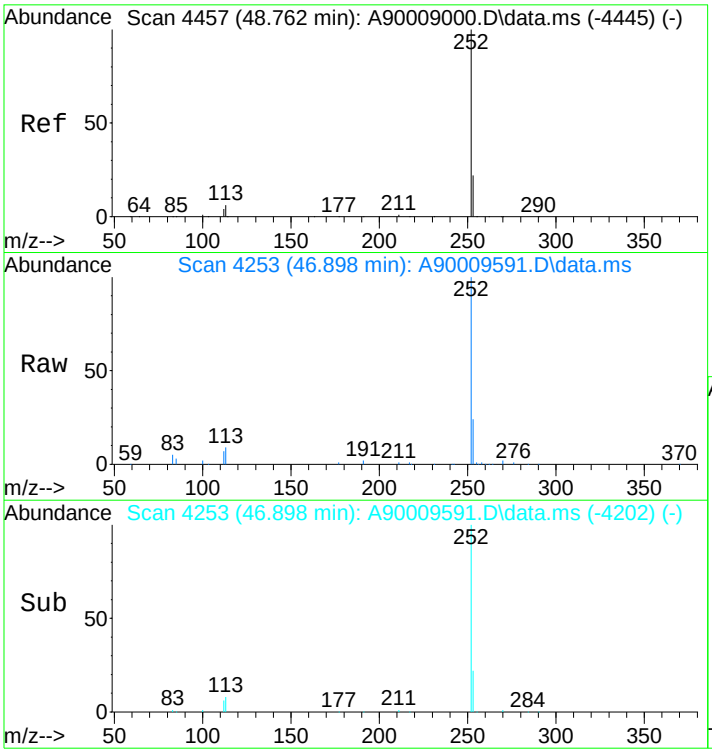


#85
Benzo[j]+[k]fluoranthene
Concen: 5252.61 ng/mL
RT: 46.615 min Scan# 4222
Delta R.T. -0.000 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:252 Resp: 1526531

Ion	Ratio	Lower	Upper
252	100		
253	21.6	20.2	30.4

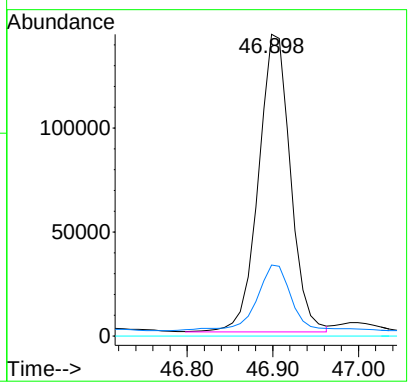


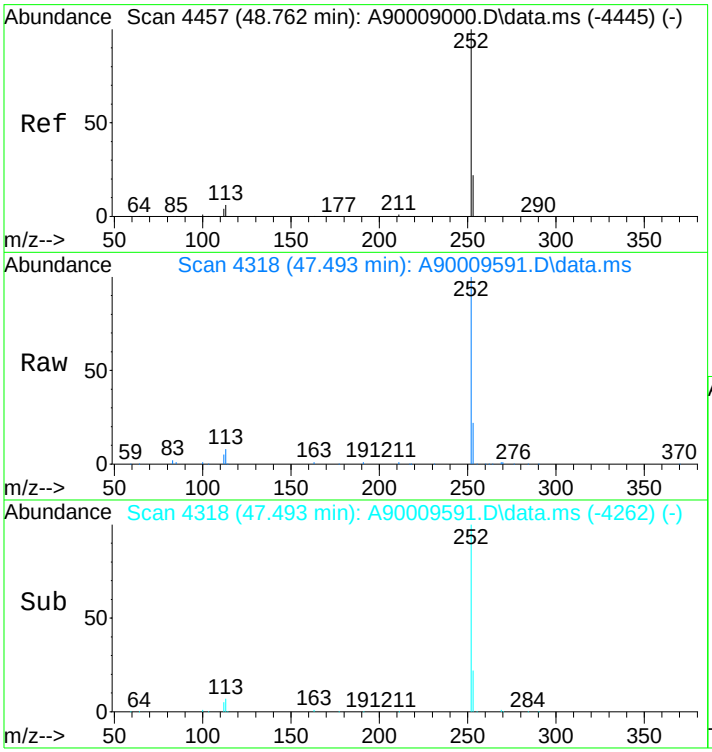


#86
Benzo[a]fluoranthene
Concen: 1280.89 ng/mL
RT: 46.898 min Scan# 4253
Delta R.T. -0.031 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:252 Resp: 372257

Ion	Ratio	Lower	Upper
252	100		
253	24.8	191.7	287.5#
125	0.0	0.0	0.0

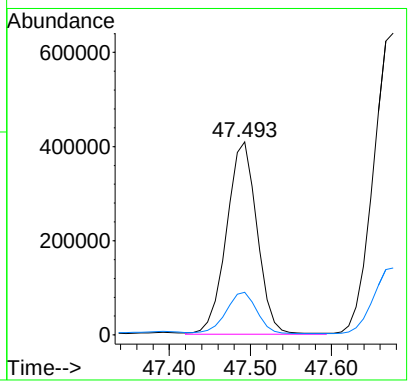


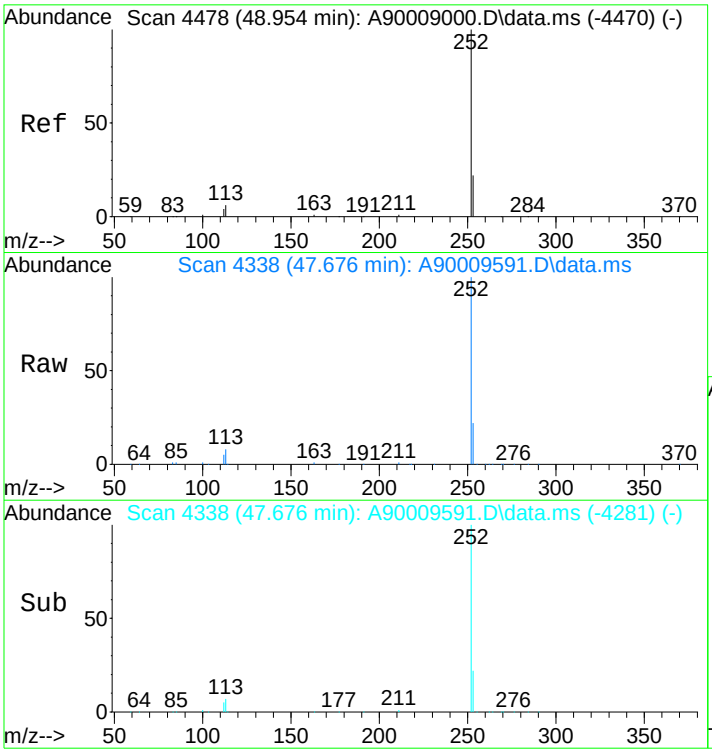


#87
Benzo[e]pyrene
Concen: 3806.90 ng/mL
RT: 47.493 min Scan# 4318
Delta R.T. 0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:252 Resp: 1069228

Ion	Ratio	Lower	Upper
252	100		
253	21.9	21.4	32.0

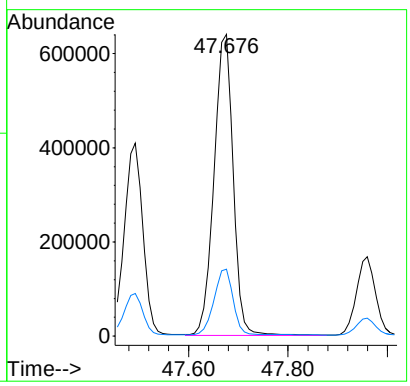


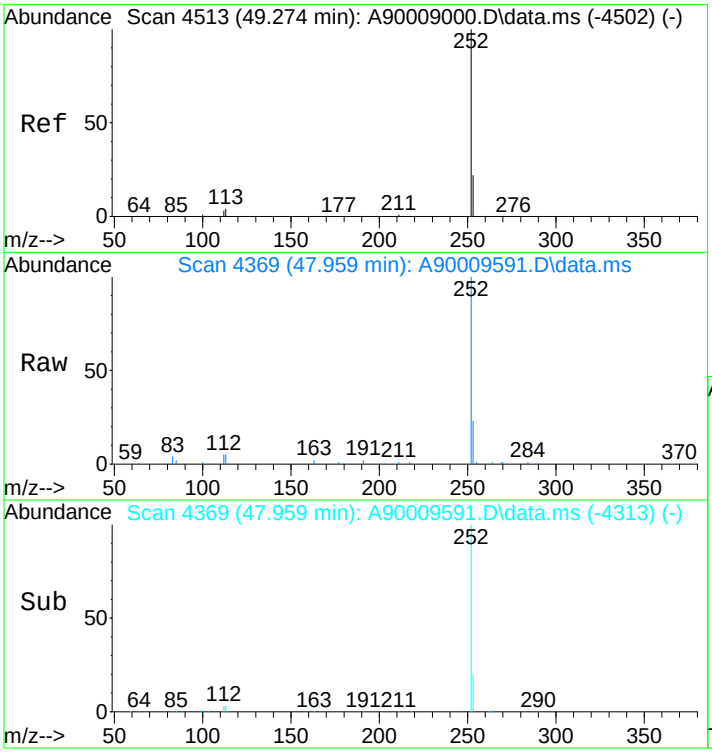


#89
Benzo[a]pyrene
Concen: 6442.89 ng/mL
RT: 47.676 min Scan# 4338
Delta R.T. 0.018 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:252 Resp: 1713794

Ion	Ratio	Lower	Upper
252	100		
253	22.0	21.9	32.9

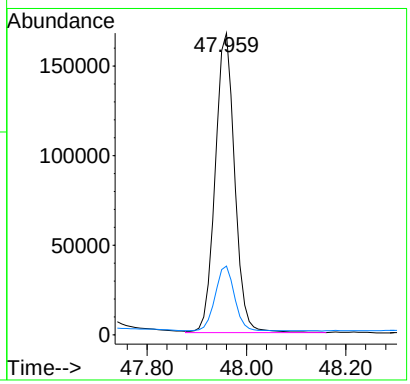


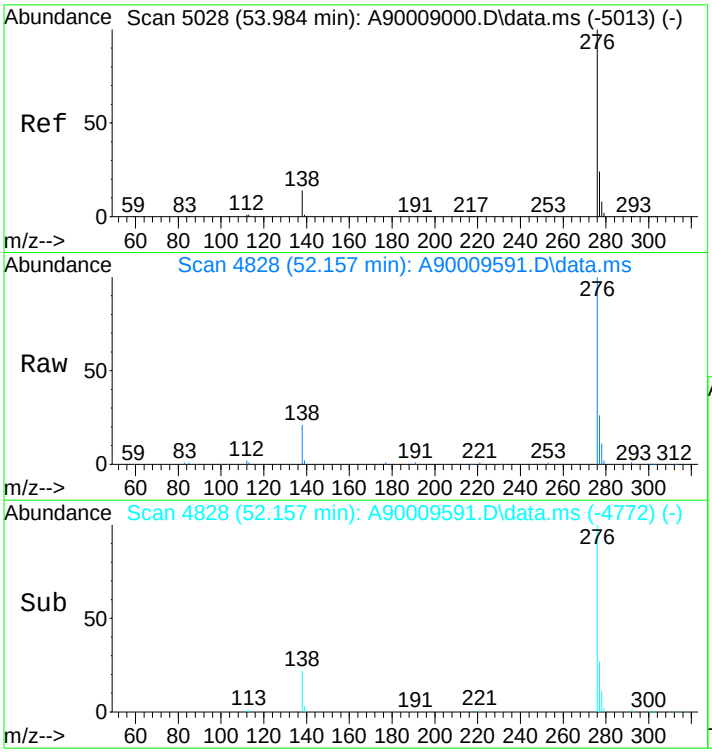


#90
Perylene
Concen: 1591.16 ng/mL
RT: 47.959 min Scan# 4369
Delta R.T. 0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:252 Resp: 451713

Ion	Ratio	Lower	Upper
252	100		
253	21.5	22.2	33.2#

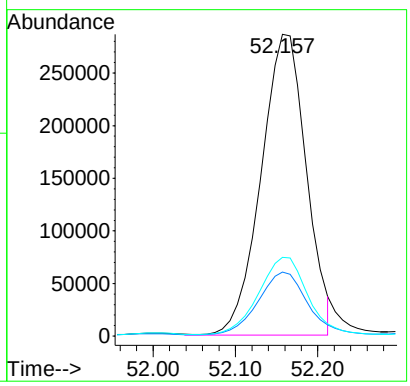


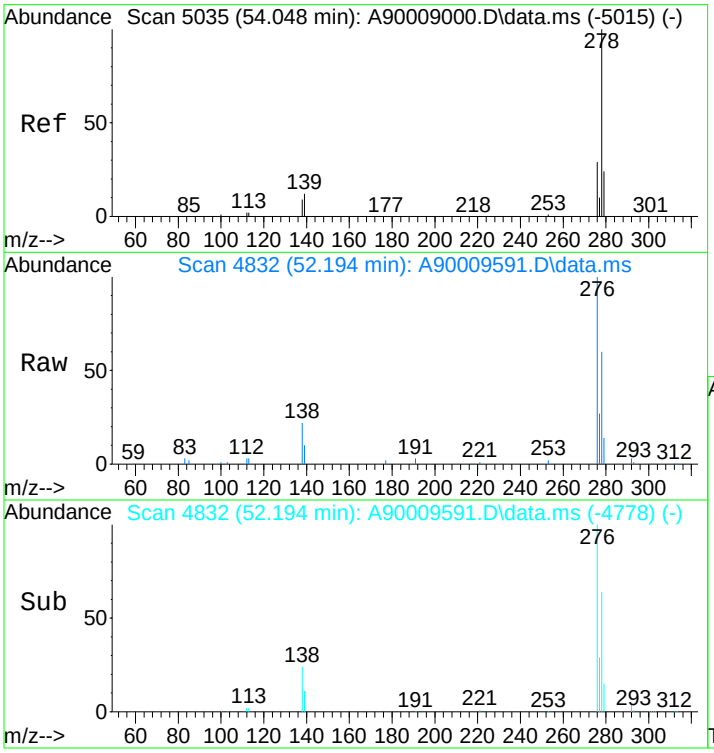


#91
Indeno[1,2,3-cd]pyrene
Concen: 3697.47 ng/mL m
RT: 52.157 min Scan# 4828
Delta R.T. 0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:276 Resp: 1089252

Ion	Ratio	Lower	Upper
276	100		
138	23.5	17.7	26.5
277	29.0	20.2	30.4

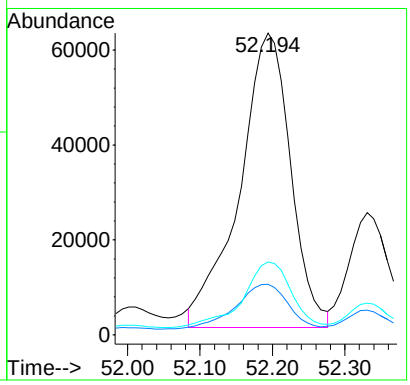


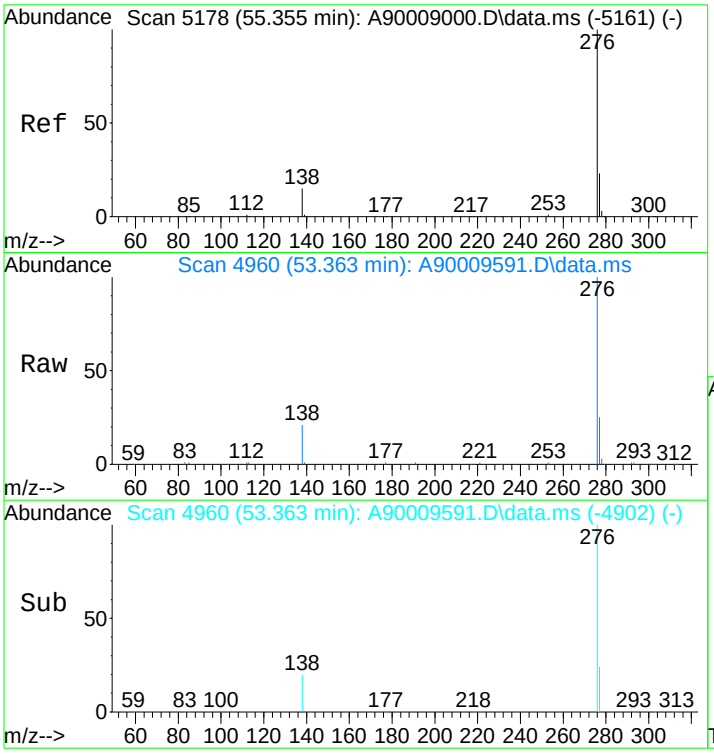


#92
Dibenz[ah]+[ac]anthracene
Concen: 1051.25 ng/mL m
RT: 52.194 min Scan# 4832
Delta R.T. -0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:278 Resp: 305074

Ion	Ratio	Lower	Upper
278	100		
139	15.3	13.3	19.9
279	22.3	19.3	28.9

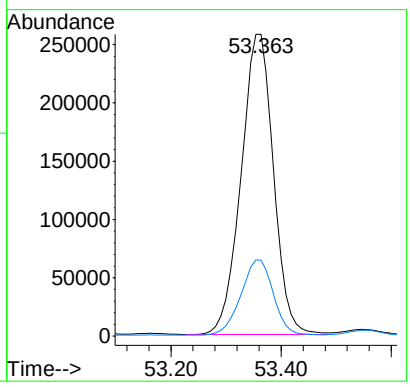


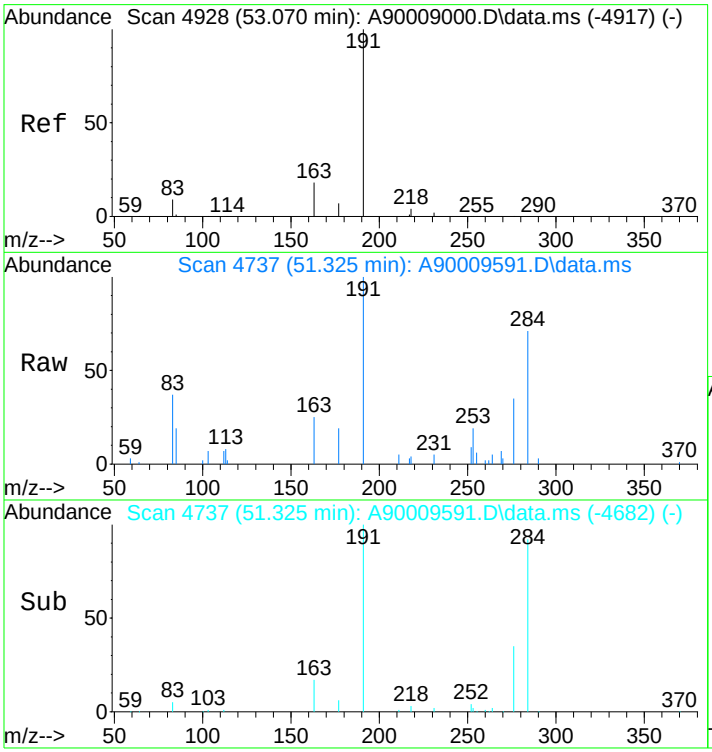


#93
Benzo[g,h,i]perylene
Concen: 3630.47 ng/mL
RT: 53.363 min Scan# 4960
Delta R.T. 0.027 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:276 Resp: 1050992

Ion	Ratio	Lower	Upper
276	100		
277	25.2	20.0	30.0

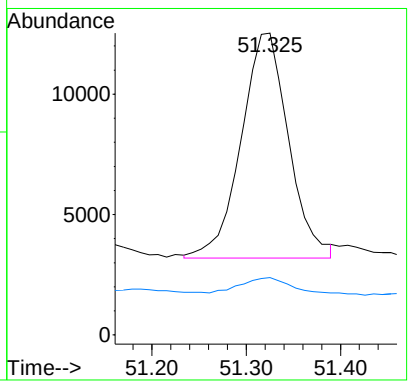


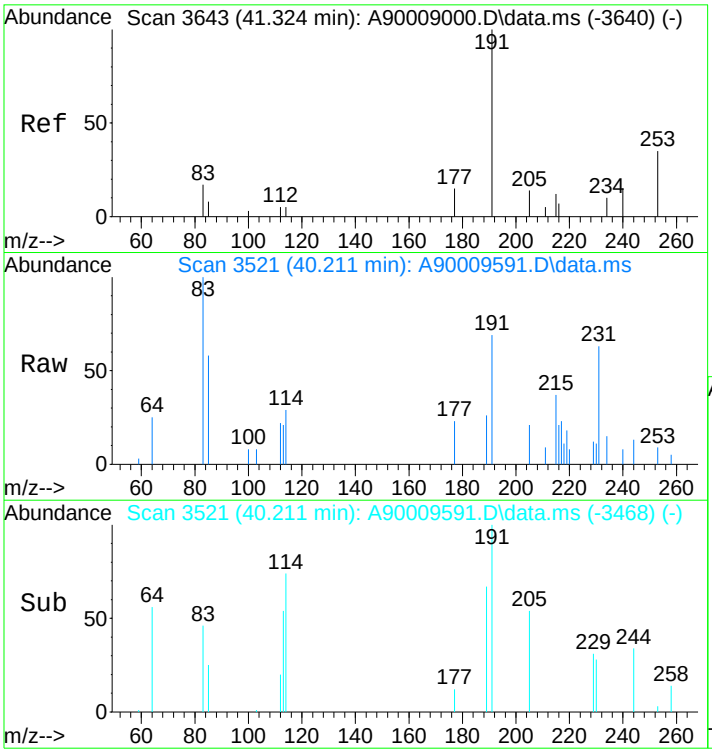


#94
Hopane (T19)
Concen: 298.04 ng/mL m
RT: 51.325 min Scan# 4737
Delta R.T. -0.000 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:191 Resp: 32588

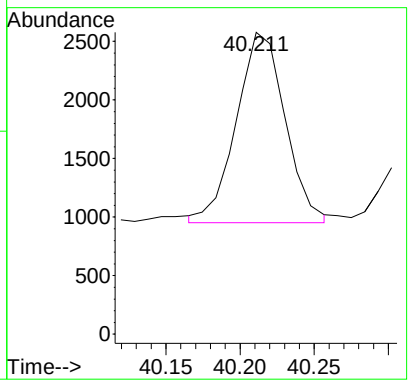
Ion	Ratio	Lower	Upper
191	100		
177	1.5	14.4	21.6#

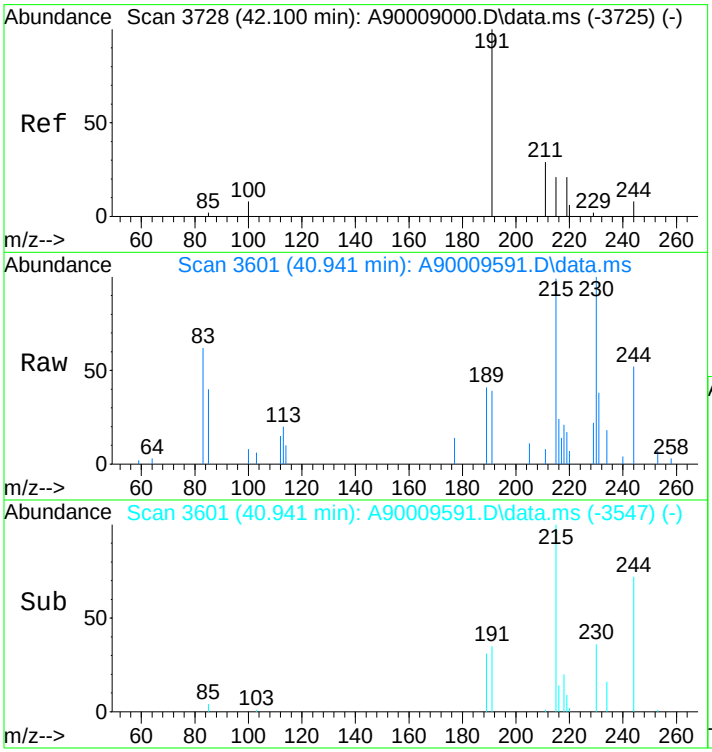




#96
C23 Tricyclic Terpane (T4)
Concen: 33.96 ng/ml m
RT: 40.211 min Scan# 3521
Delta R.T. -0.018 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

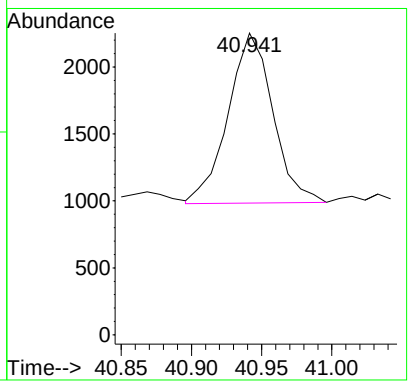
Tgt Ion:191 Resp: 3713

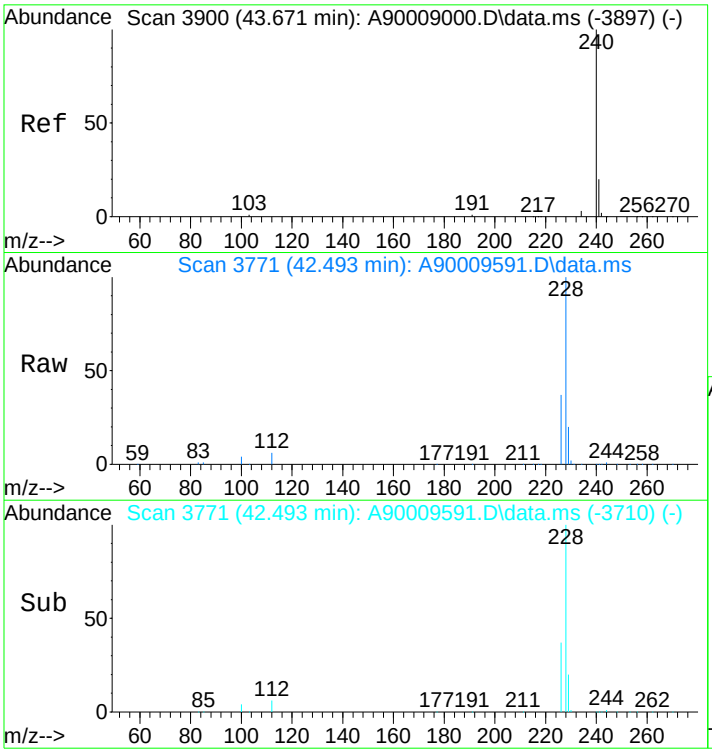




#97
C24 Tricyclic Terpane (T5)
Concen: 25.83 ng/ml
RT: 40.941 min Scan# 3601
Delta R.T. -0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

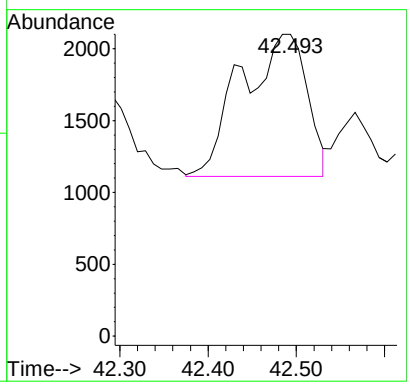
Tgt Ion:191 Resp: 2824

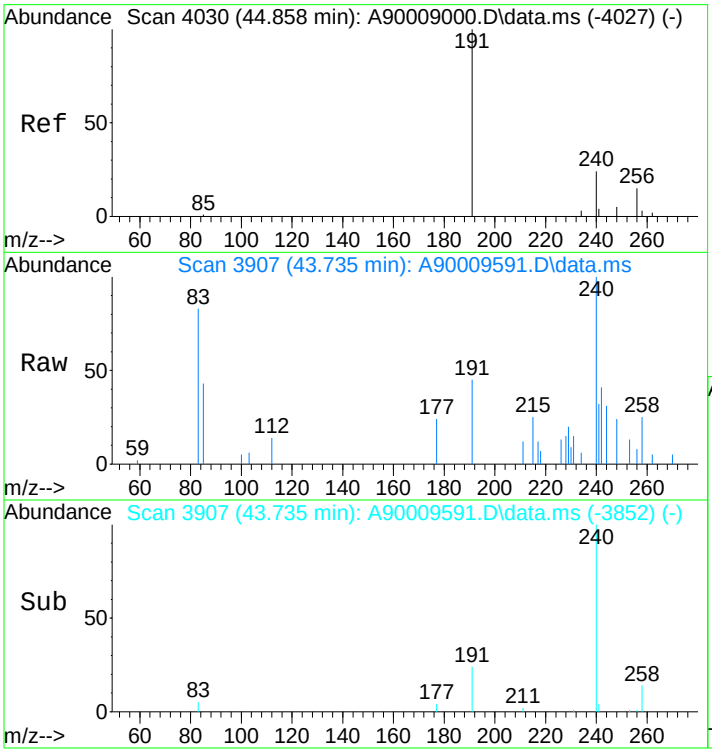




#98
C25 Tricyclic Terpane (T6)
Concen: 47.18 ng/ml m
RT: 42.493 min Scan# 3771
Delta R.T. 0.055 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

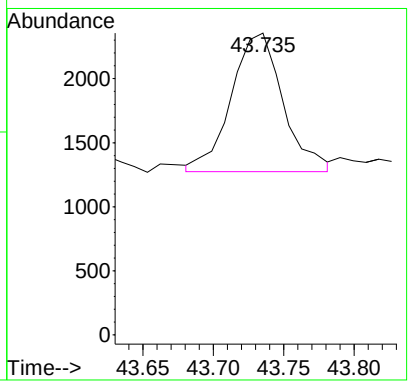
Tgt Ion:191 Resp: 5159

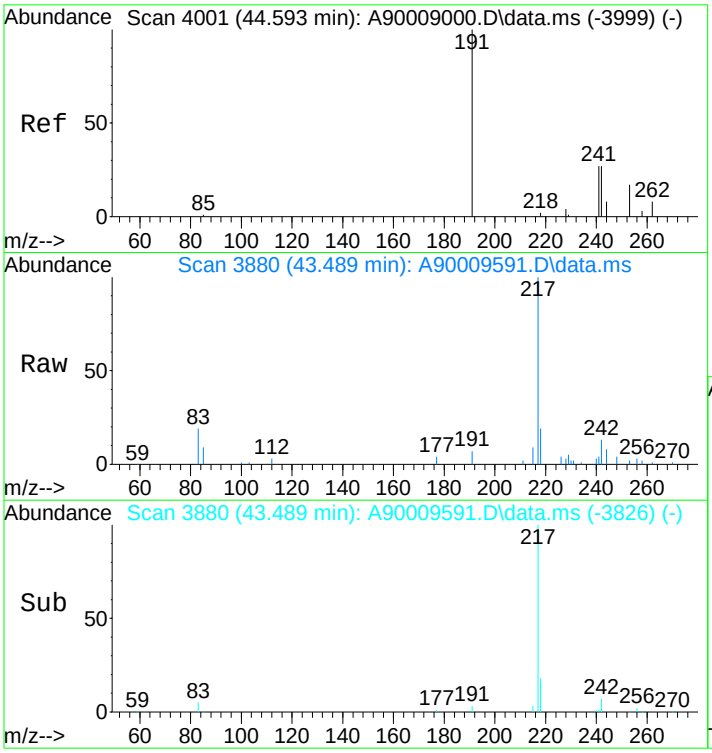




#99
C24 Tetracyclic Terpane (T6a)
Concen: 25.33 ng/ml m
RT: 43.735 min Scan# 3907
Delta R.T. 0.000 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

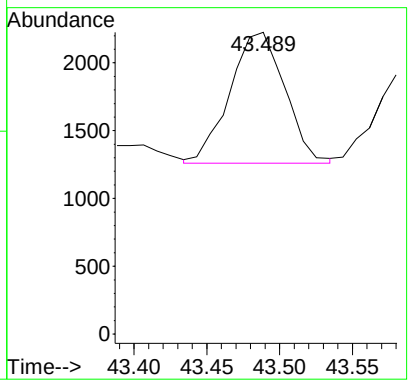
Tgt Ion:191 Resp: 2770

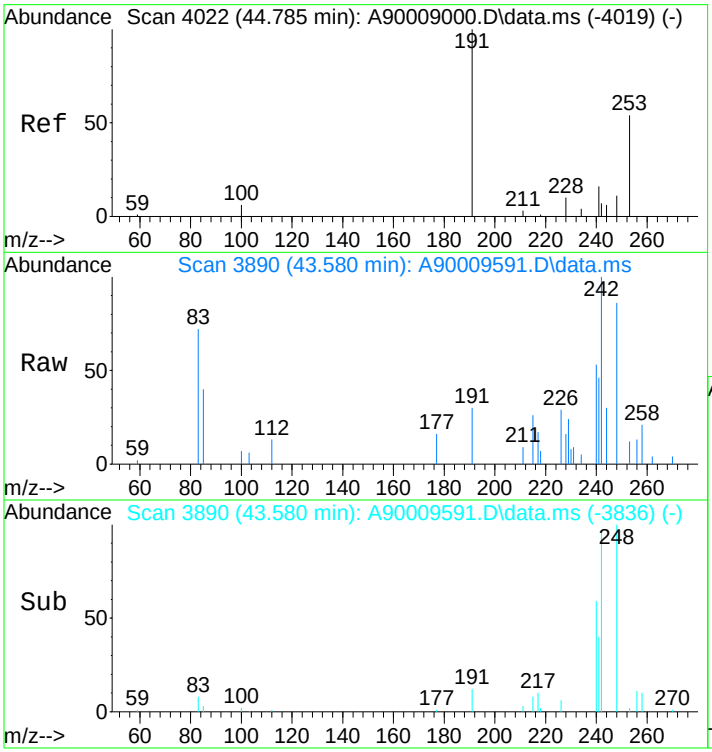




#100
C26 Tricyclic Terpane-22S (T6b)
Concen: 23.18 ng/ml m
RT: 43.489 min Scan# 3880
Delta R.T. -0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

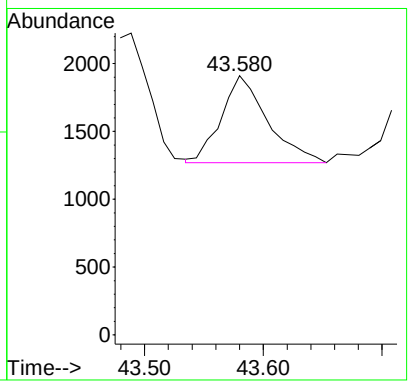
Tgt Ion:191 Resp: 2534

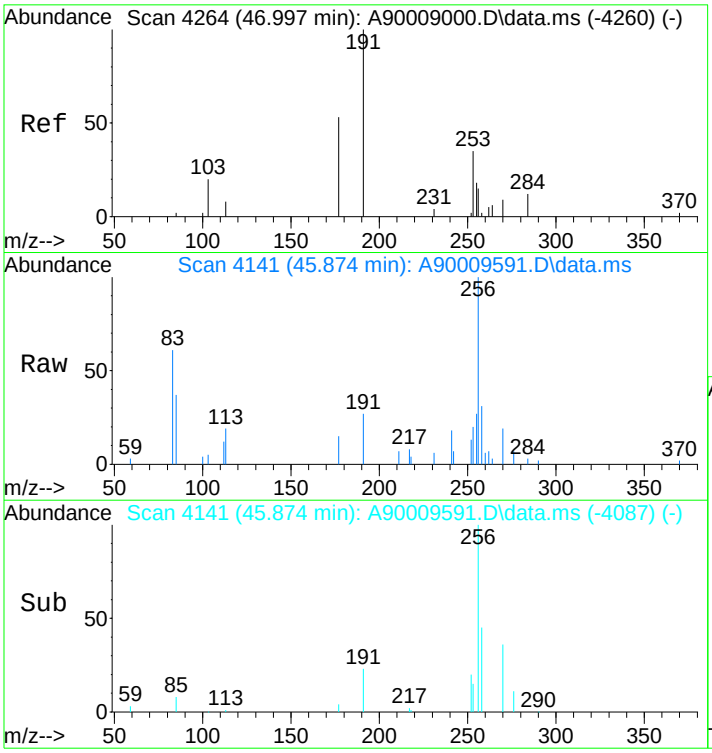




#101
C26 Tricyclic Terpane-22R (T6c)
Concen: 15.84 ng/ml
RT: 43.580 min Scan# 3890
Delta R.T. -0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

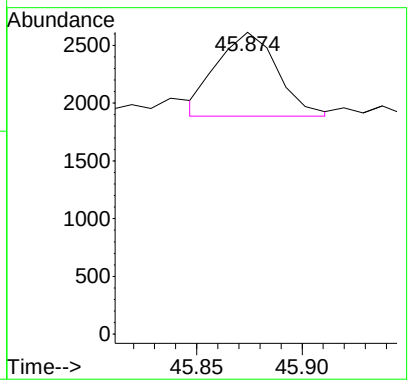
Tgt Ion:191 Resp: 1732

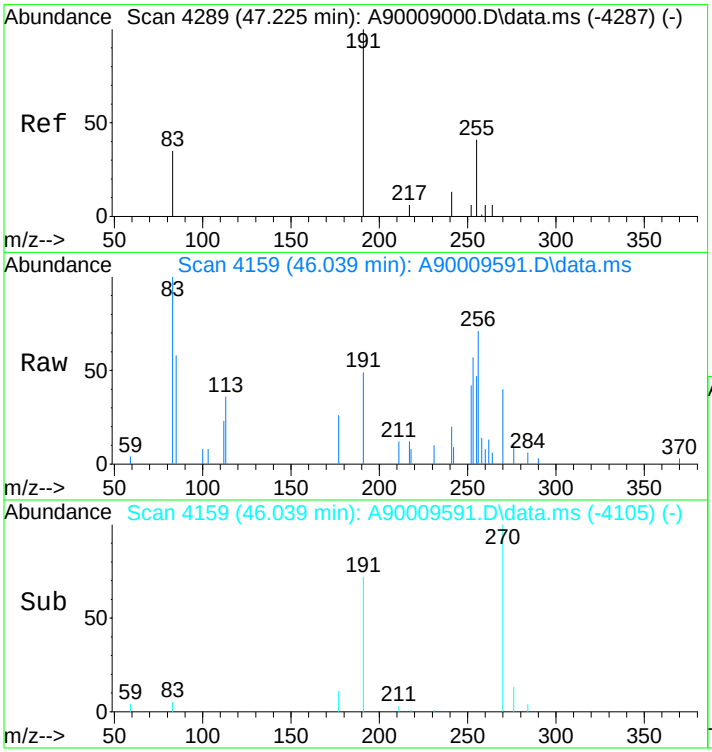




#102
C28 Tricyclic Terpane-22S (T7)
Concen: 13.28 ng/ml m
RT: 45.874 min Scan# 4141
Delta R.T. -0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

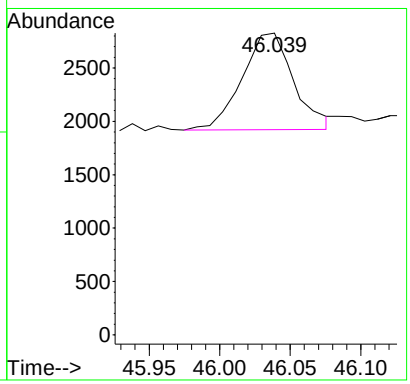
Tgt Ion:191 Resp: 1452

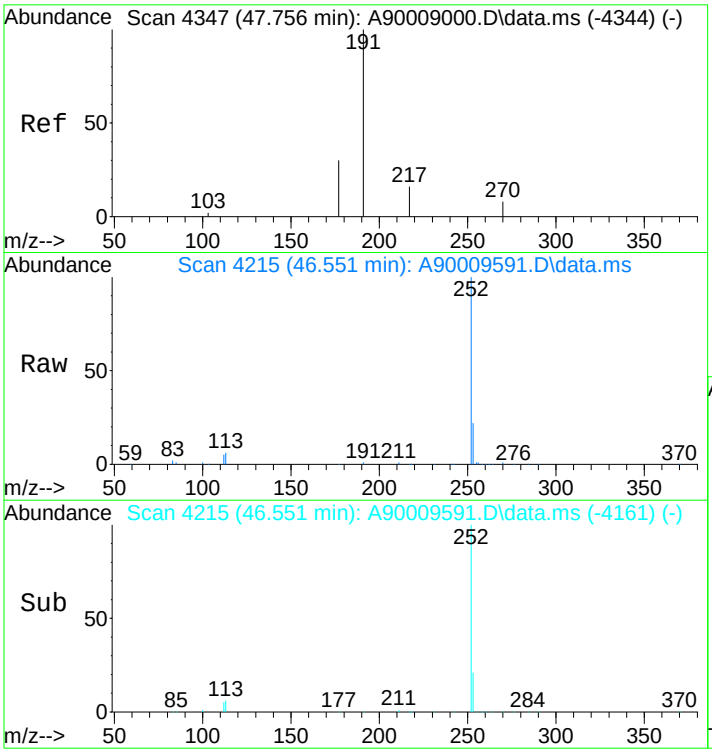




#103
C28 Tricyclic Terpane-22R (T8)
Concen: 21.06 ng/ml m
RT: 46.039 min Scan# 4159
Delta R.T. -0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

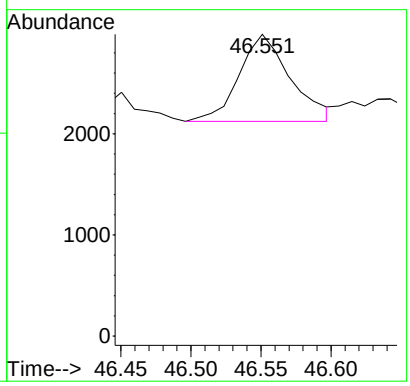
Tgt Ion:191 Resp: 2303

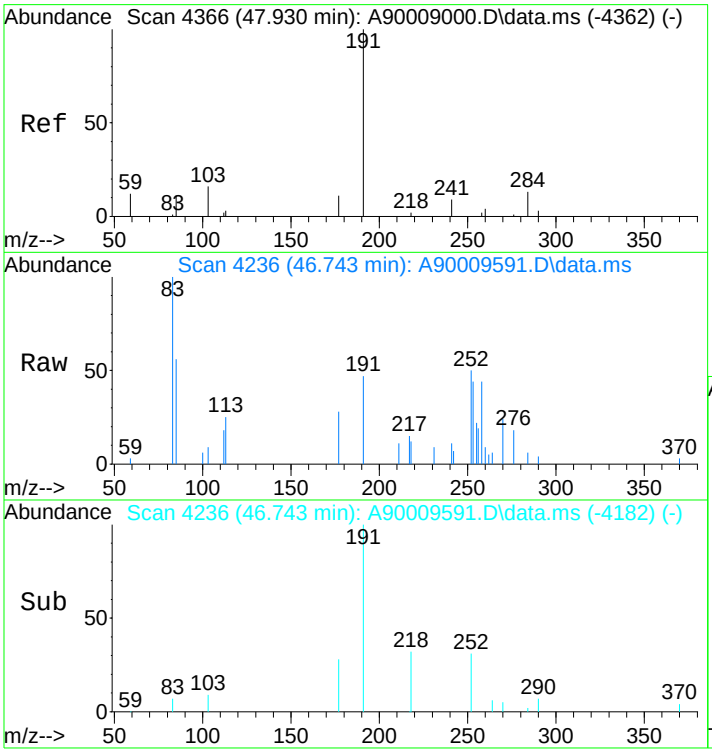




#104
C29 Tricyclic Terpane-22S (T9)
Concen: 20.11 ng/ml
RT: 46.551 min Scan# 4215
Delta R.T. -0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

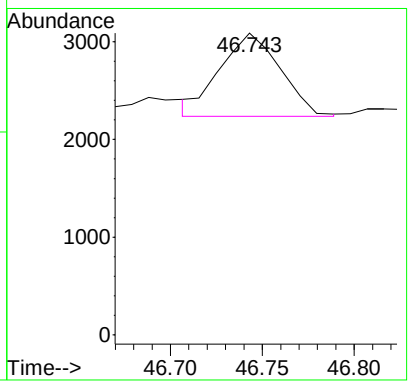
Tgt Ion:191 Resp: 2199

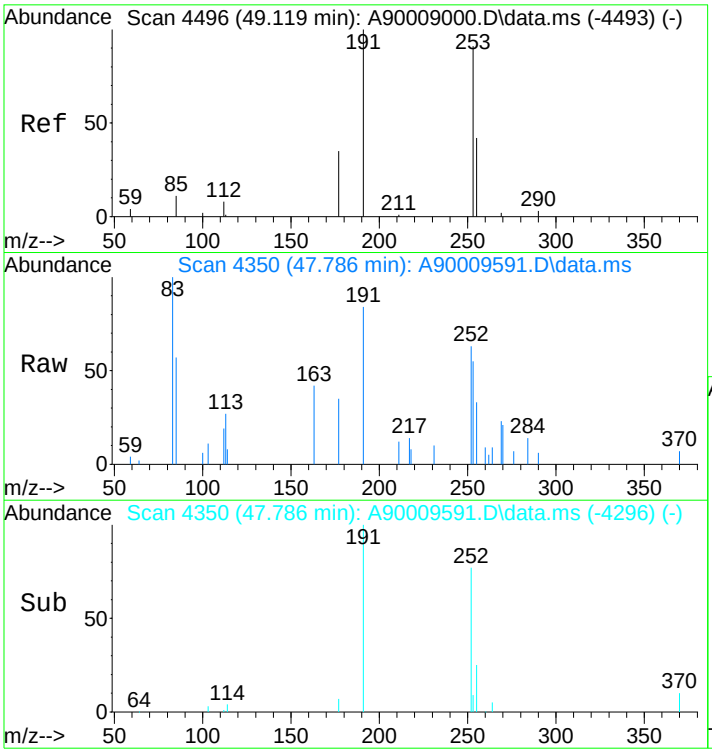




#105
C29 Tricyclic Terpane-22R (T10)
Concen: 17.72 ng/ml m
RT: 46.743 min Scan# 4236
Delta R.T. -0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

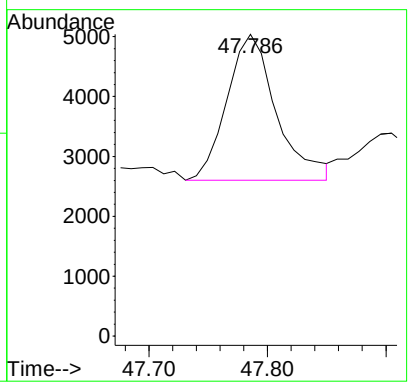
Tgt Ion:191 Resp: 1938

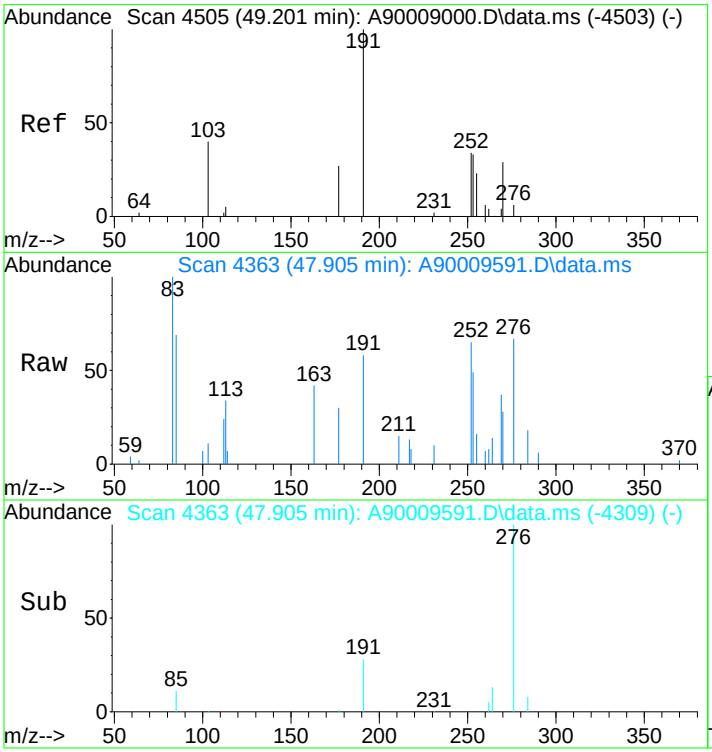




#106
18a-22,29,30-Trisnorneohopane-TS (T11)
Concen: 64.69 ng/ml
RT: 47.786 min Scan# 4350
Delta R.T. -0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

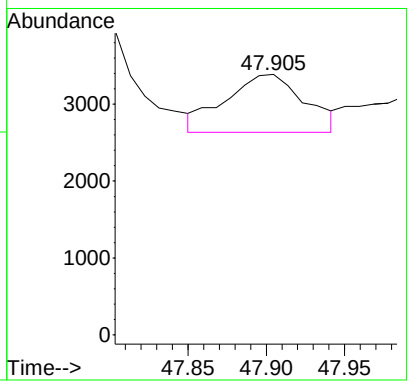
Tgt Ion:191 Resp: 7073

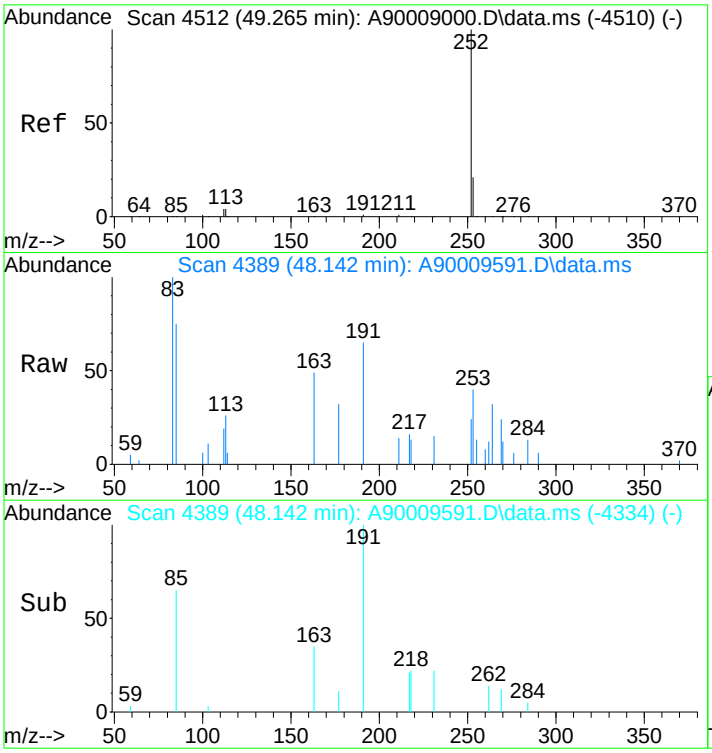




#107
C30 Tricyclic Terpane-22S
Concen: 24.14 ng/mL m
RT: 47.905 min Scan# 4363
Delta R.T. -0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

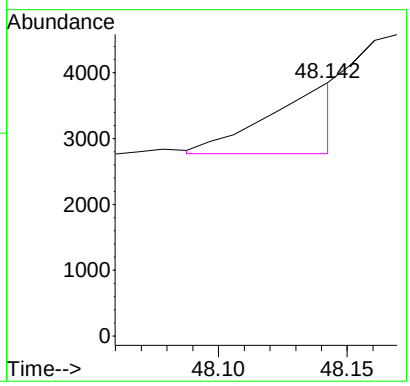
Tgt Ion:191 Resp: 2639

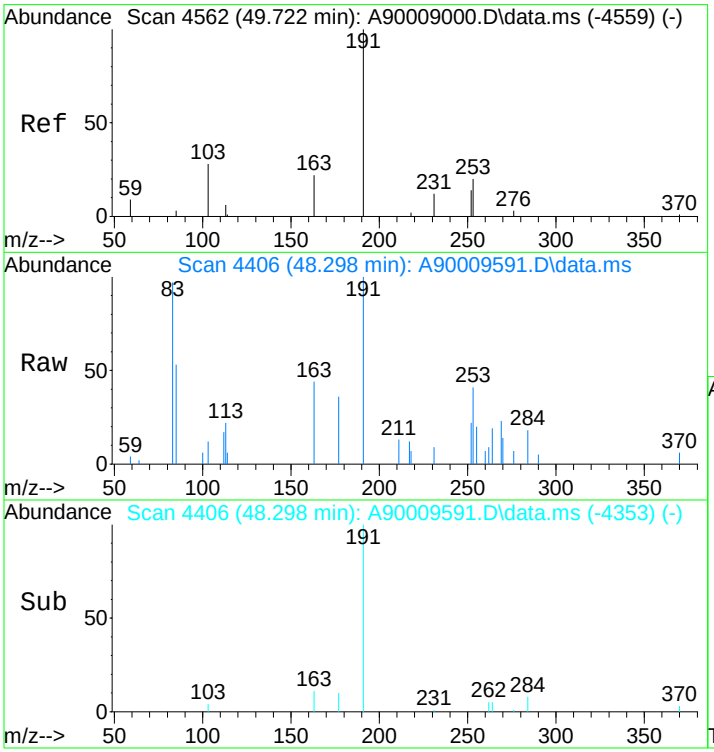




#108
C30 Tricyclic Terpane-22R
Concen: 17.90 ng/mL m
RT: 48.142 min Scan# 4389
Delta R.T. 0.000 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

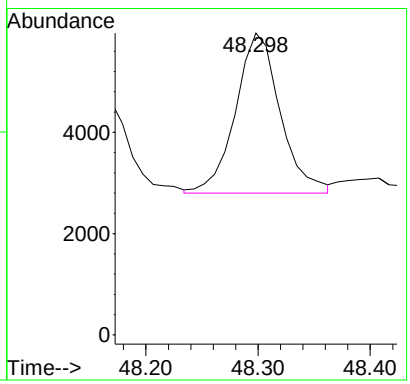
Tgt Ion:191 Resp: 1957

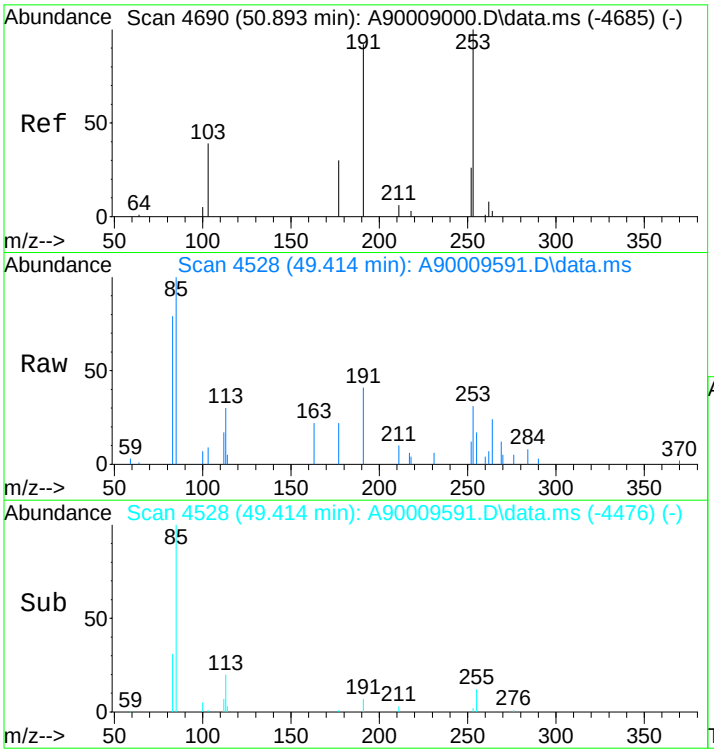




#109
17a(H)-22,29,30-Trisnorhopane-TM (T12)
Concen: 79.90 ng/ml m
RT: 48.298 min Scan# 4406
Delta R.T. -0.018 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

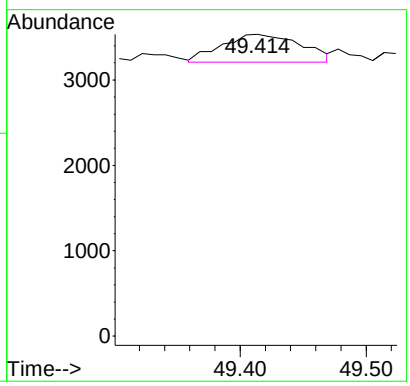
Tgt Ion:191 Resp: 8736

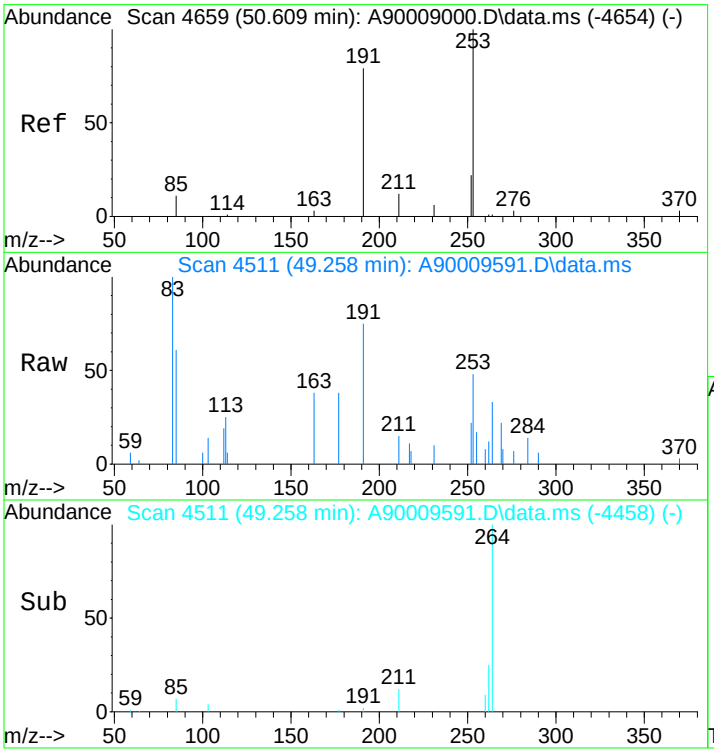




#110
17a/b,21b/a 28,30-Bisnorhopane (T14a)
Concen: 13.13 ng/ml m
RT: 49.414 min Scan# 4528
Delta R.T. -0.027 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

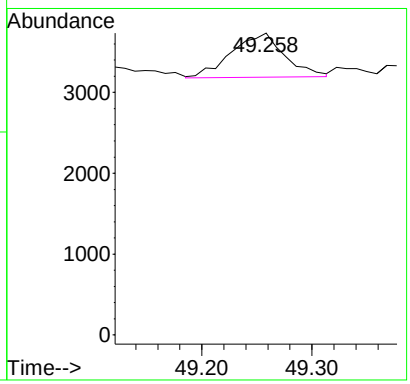
Tgt Ion:191 Resp: 1436

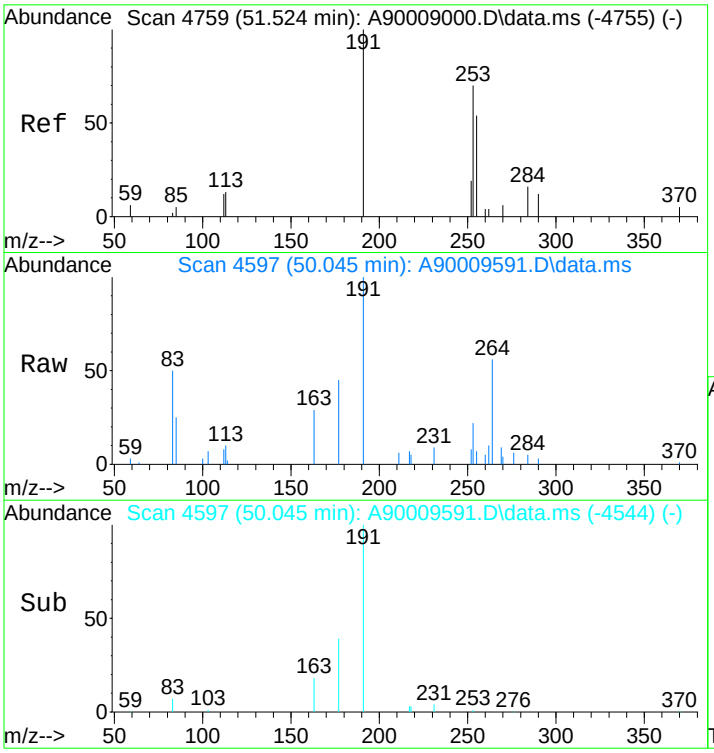




#111
17a(H),21b(H)-25-Norhopane (T14b)
Concen: 16.68 ng/ml
RT: 49.258 min Scan# 4511
Delta R.T. -0.018 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

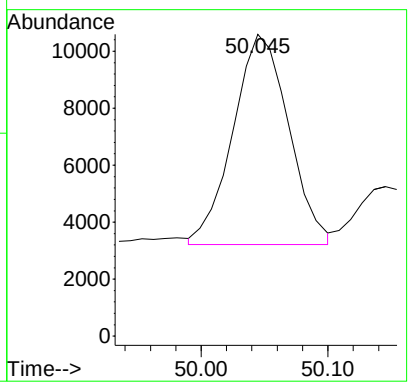
Tgt Ion:191 Resp: 1824

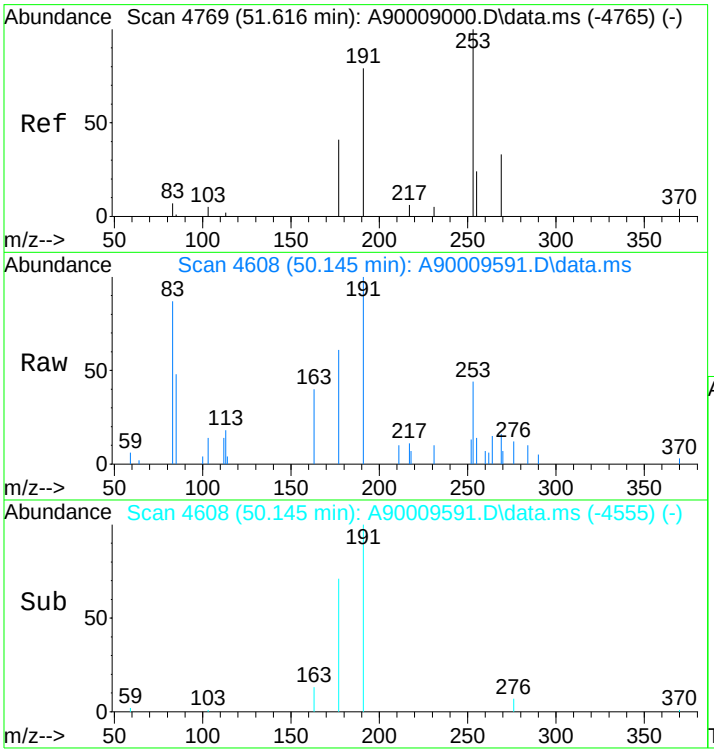




#112
30-Norhopane (T15)
Concen: 205.63 ng/ml m
RT: 50.045 min Scan# 4597
Delta R.T. -0.018 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

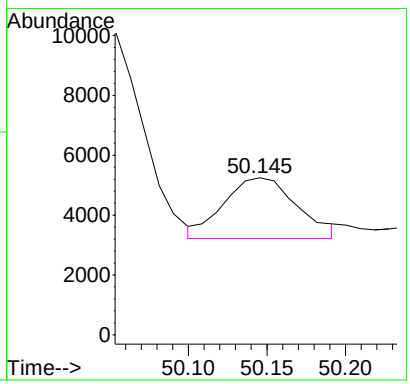
Tgt Ion:191 Resp: 22484

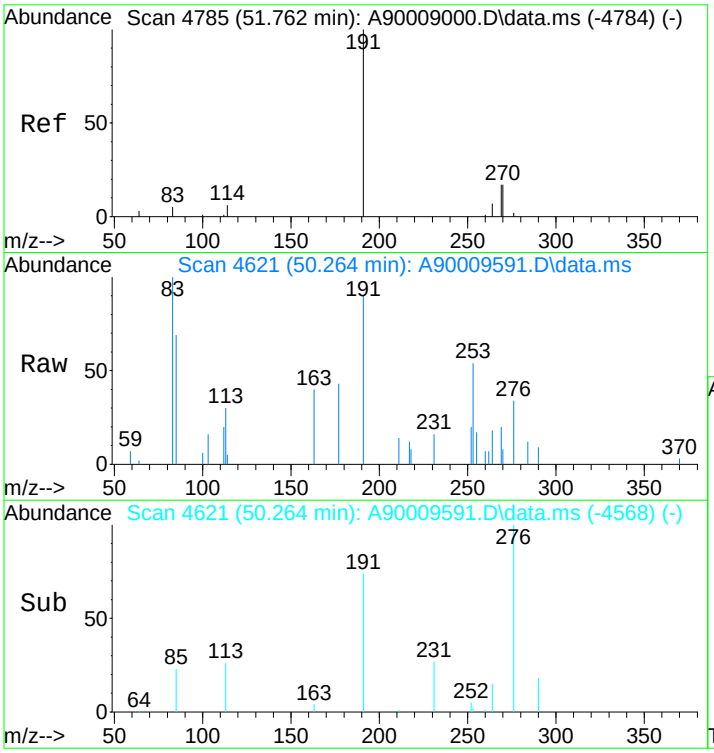




#113
18a(H)-30-Norneohopane-C29Ts (T16)
Concen: 60.29 ng/ml m
RT: 50.145 min Scan# 4608
Delta R.T. -0.018 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

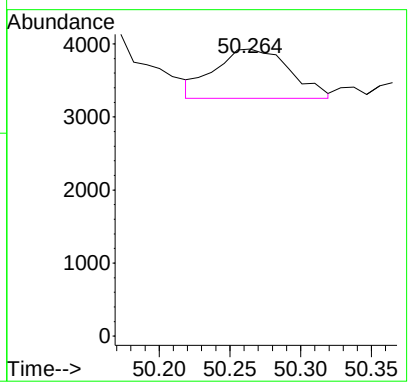
Tgt Ion:191 Resp: 6592

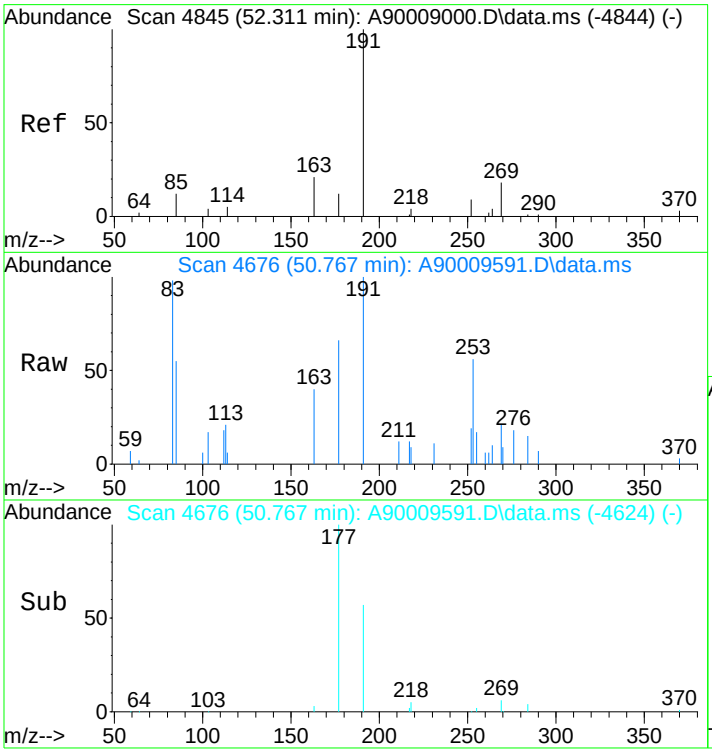




#114
17a(H)-Diahopane (X)
Concen: 22.80 ng/ml m
RT: 50.264 min Scan# 4621
Delta R.T. -0.018 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

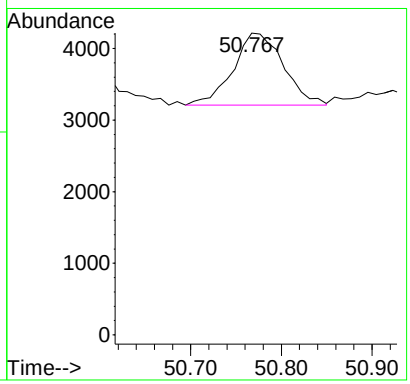
Tgt Ion:191 Resp: 2493

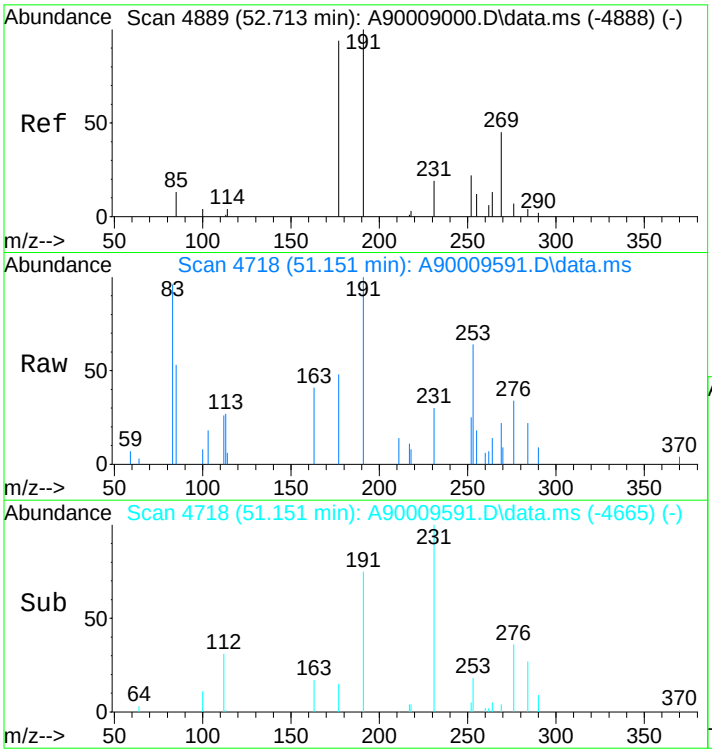




#115
30-Normoretane (T17)
Concen: 35.29 ng/ml
RT: 50.767 min Scan# 4676
Delta R.T. -0.027 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

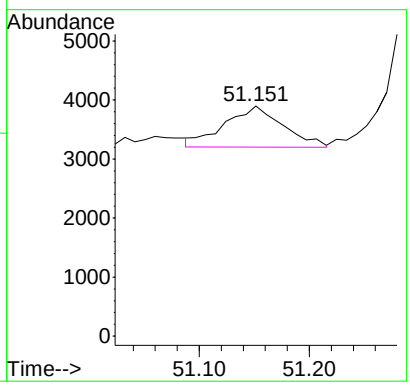
Tgt Ion:191 Resp: 3859

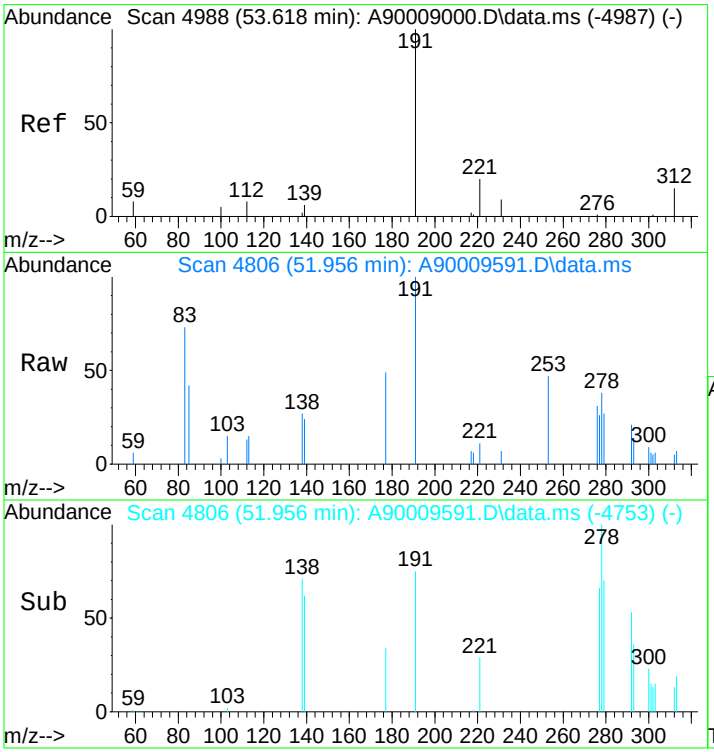




#116
18a(H)&18b(H)-Oleananes (T18)
Concen: 23.32 ng/ml
RT: 51.151 min Scan# 4718
Delta R.T. -0.018 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

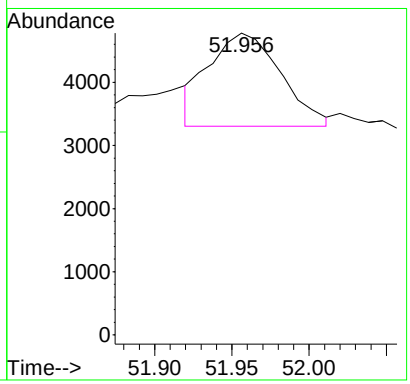
Tgt Ion:191 Resp: 2550

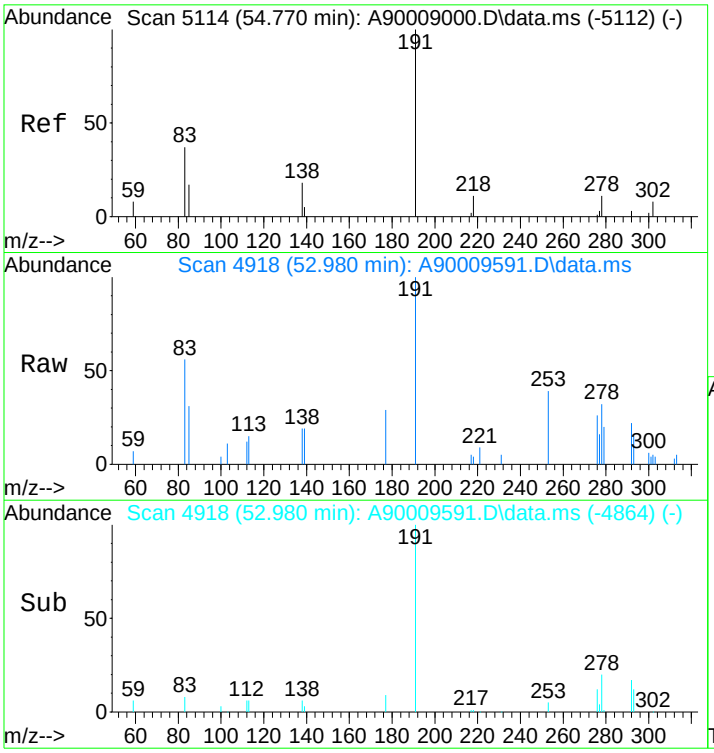




#117
Moretane (T20)
Concen: 43.72 ng/ml m
RT: 51.956 min Scan# 4806
Delta R.T. -0.018 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

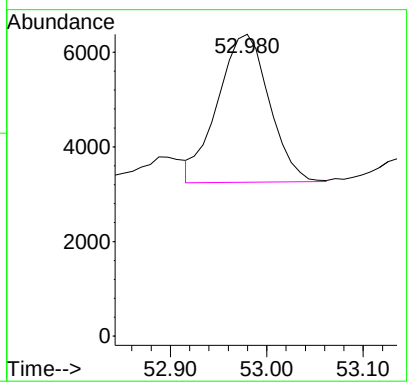
Tgt Ion:191 Resp: 4780

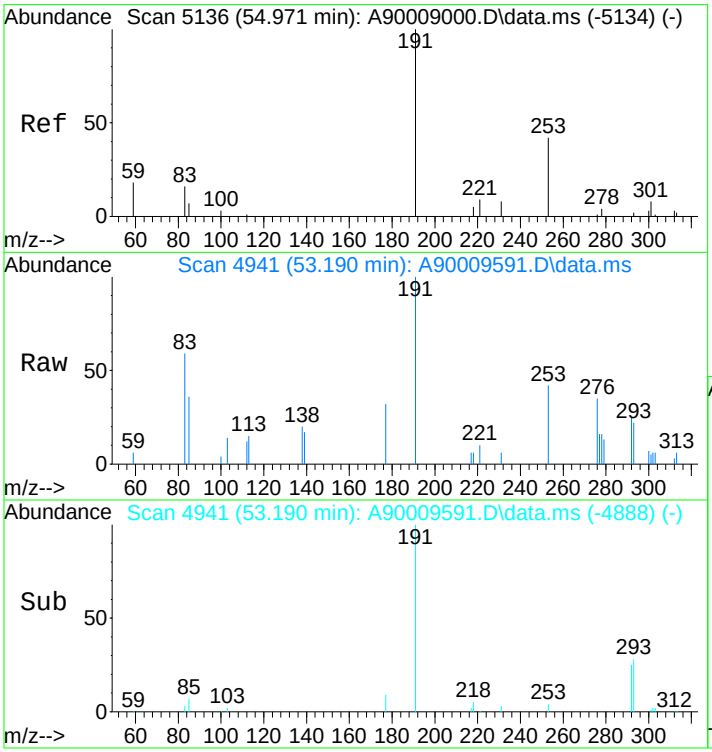




#118
30-Homohopane-22S (T21)
Concen: 105.54 ng/ml
RT: 52.980 min Scan# 4918
Delta R.T. -0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

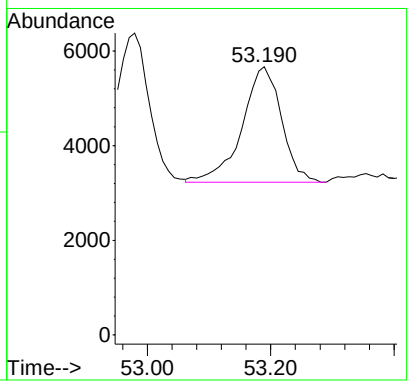
Tgt Ion:191 Resp: 11540

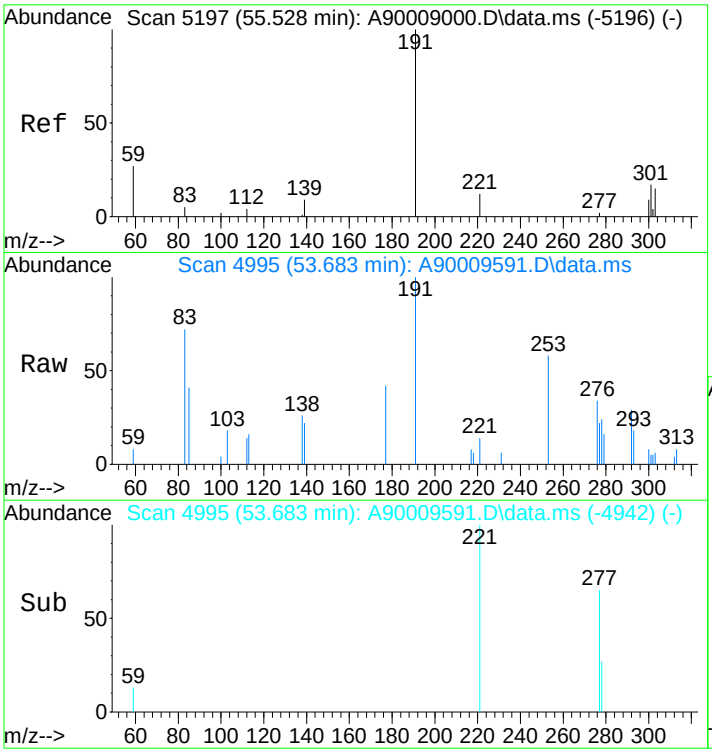




#119
30-Homohopane-22R (T22)
Concen: 99.30 ng/ml
RT: 53.190 min Scan# 4941
Delta R.T. -0.018 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

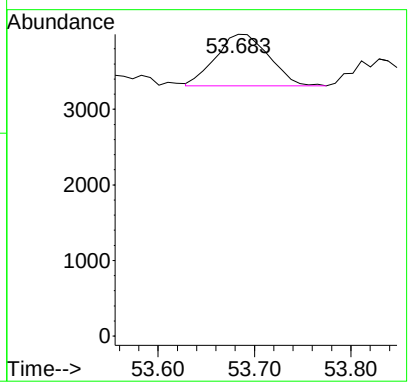
Tgt Ion:191 Resp: 10857

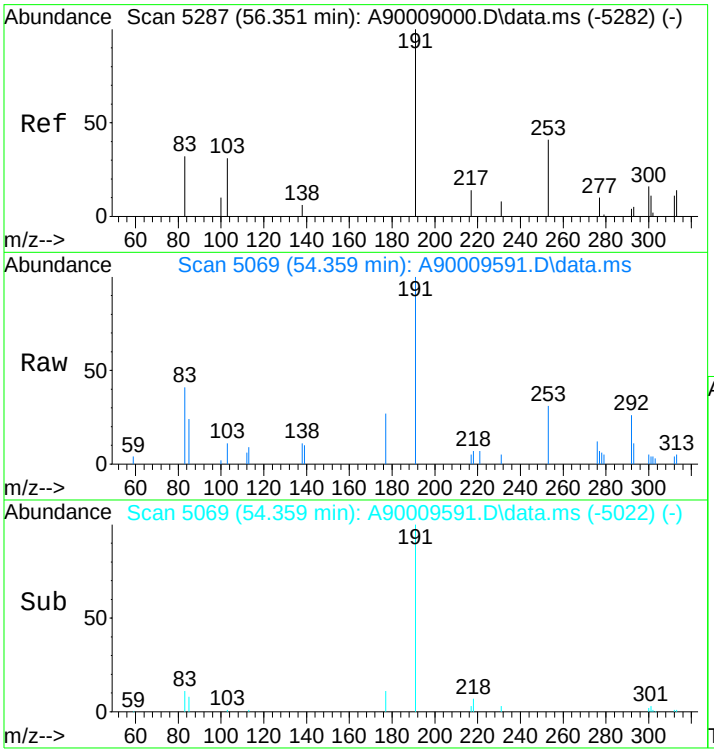




#120
Gammacerane/C32-diahopane
Concen: 23.78 ng/mL
RT: 53.683 min Scan# 4995
Delta R.T. -0.018 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

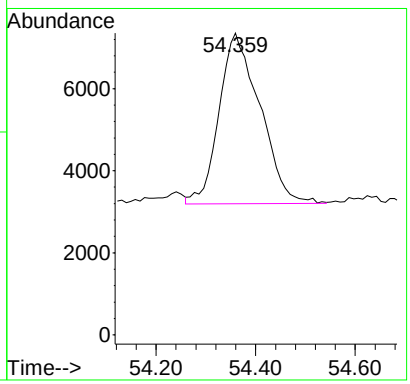
Tgt Ion:191 Resp: 2600

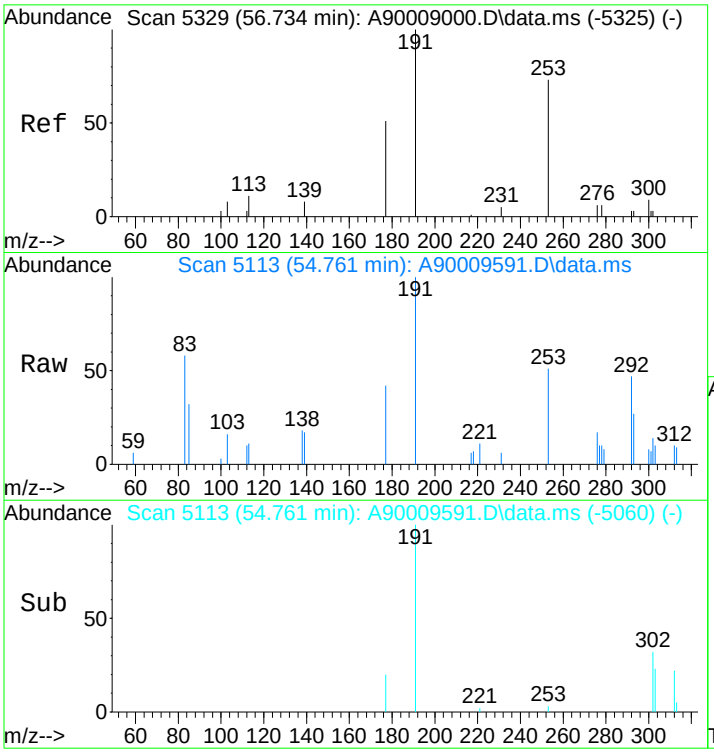




#121
30,31-Bishomohopane-22S (T26)
Concen: 216.51 ng/ml
RT: 54.359 min Scan# 5069
Delta R.T. -0.073 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

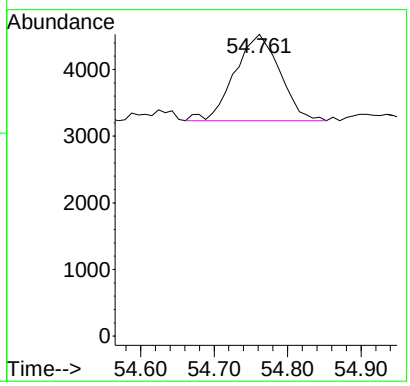
Tgt Ion:191 Resp: 23673

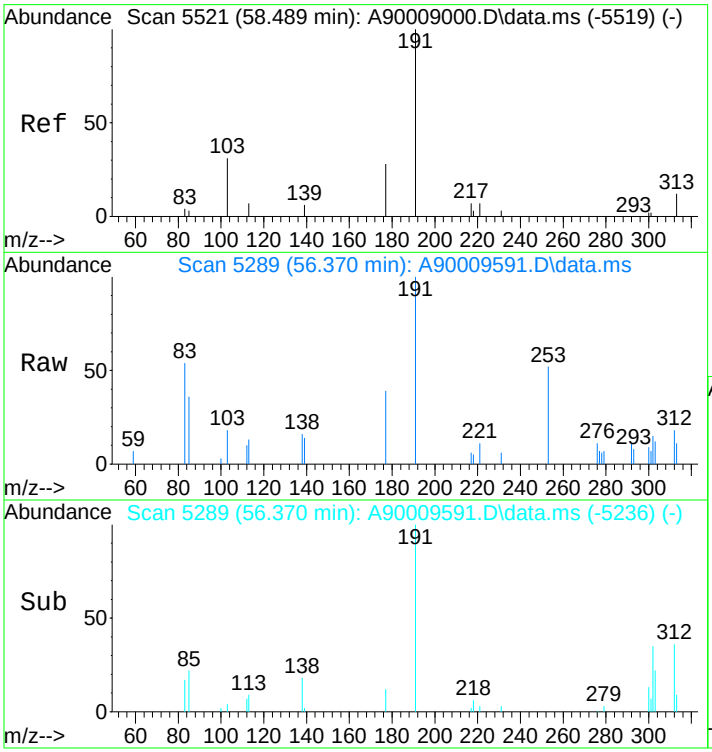




#122
30,31-Bishomohopane-22R (T27)
Concen: 50.99 ng/ml
RT: 54.761 min Scan# 5113
Delta R.T. -0.018 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

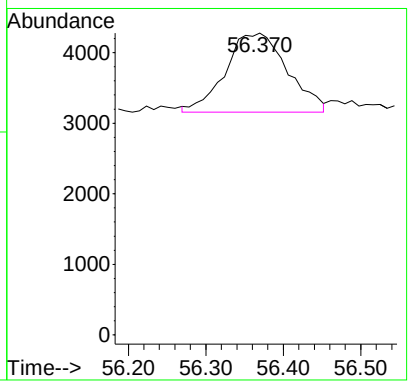
Tgt Ion:191 Resp: 5575

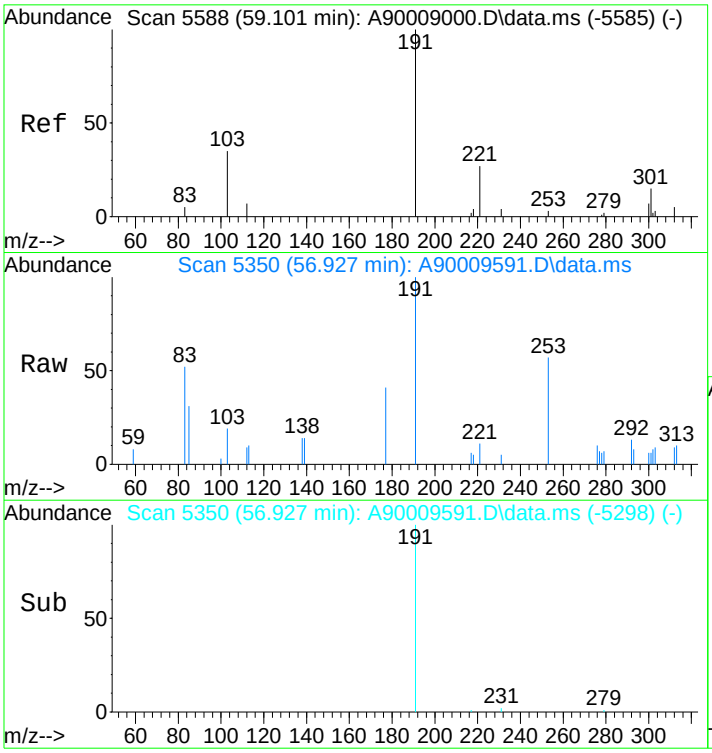




#123
30,31-Trishomohopane-22S (T30)
Concen: 57.16 ng/ml m
RT: 56.370 min Scan# 5289
Delta R.T. -0.018 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

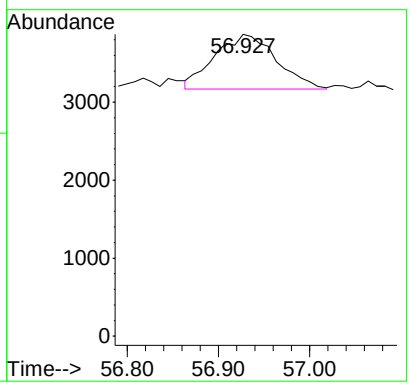
Tgt Ion:191 Resp: 6250

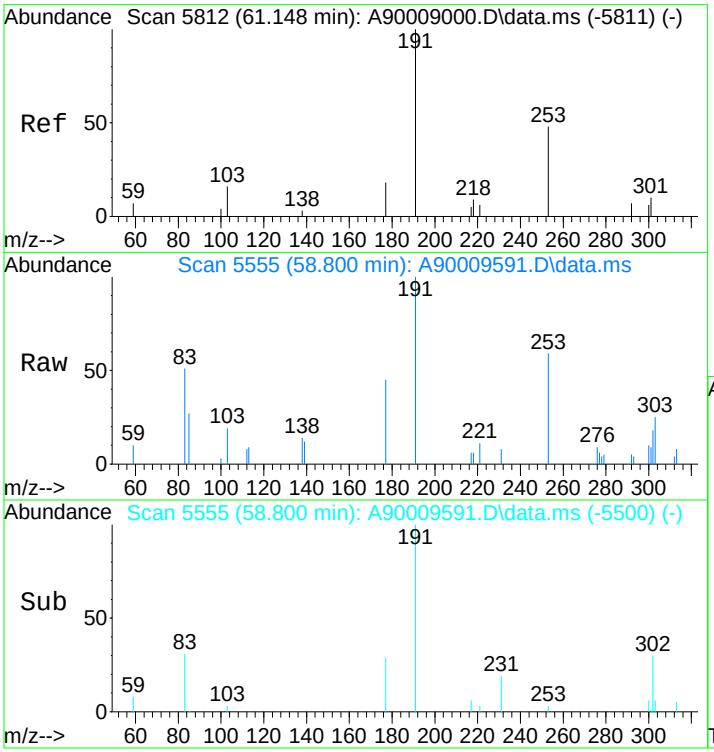




#124
30,31-Trishomohopane-22R (T31)
Concen: 30.11 ng/ml m
RT: 56.927 min Scan# 5350
Delta R.T. -0.027 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

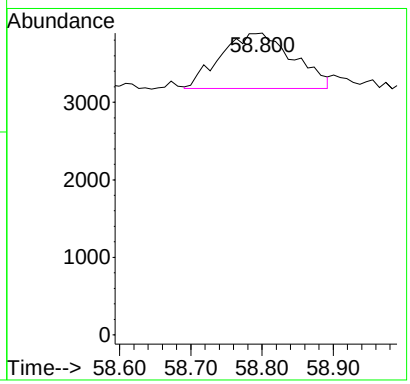
Tgt Ion:191 Resp: 3292

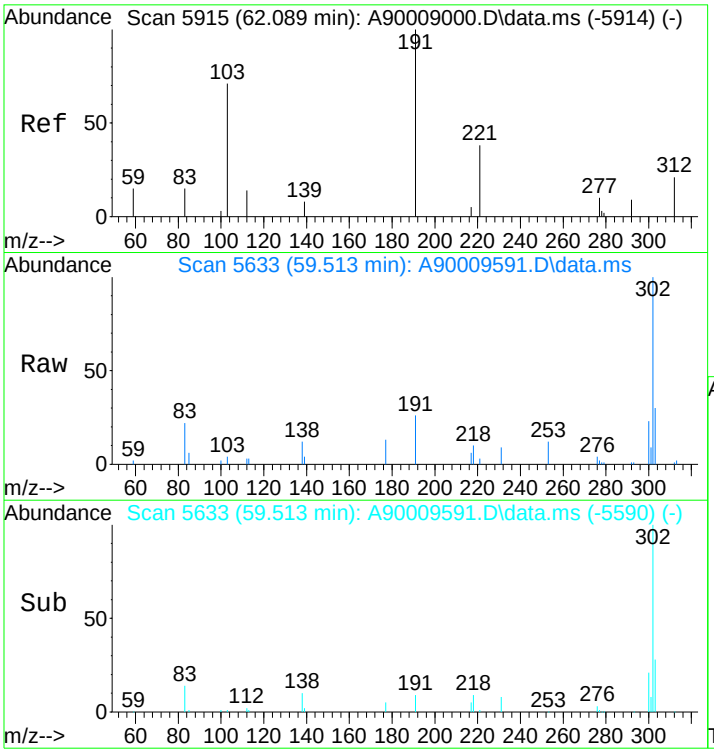




#125
Tetrakishomohopane-22S (T32)
Concen: 46.35 ng/ml m
RT: 58.800 min Scan# 5555
Delta R.T. 0.000 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

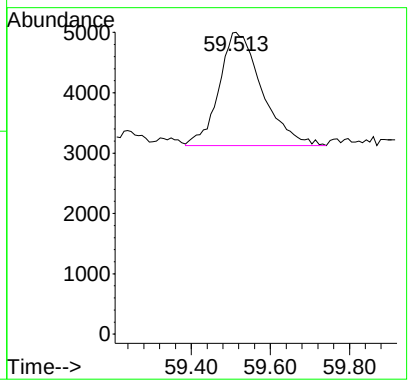
Tgt Ion:191 Resp: 5068

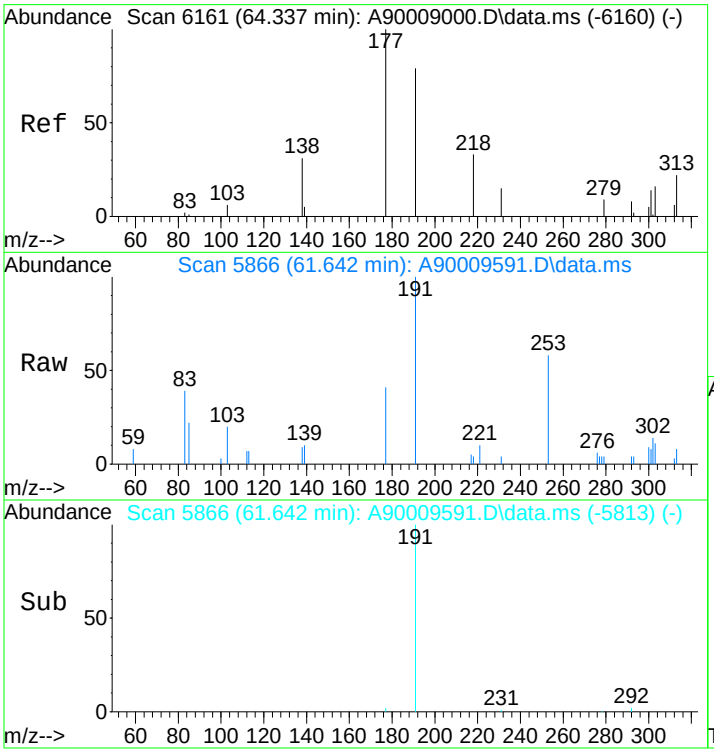




#126
Tetrakishomohopane-22R (T33)
Concen: 129.44 ng/ml
RT: 59.513 min Scan# 5633
Delta R.T. -0.109 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

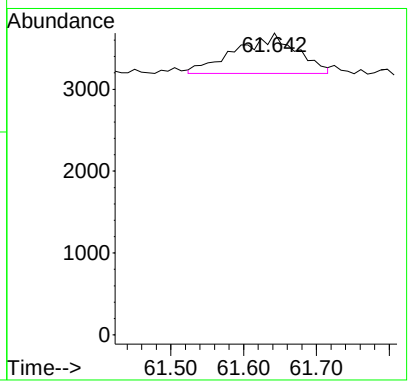
Tgt Ion:191 Resp: 14153

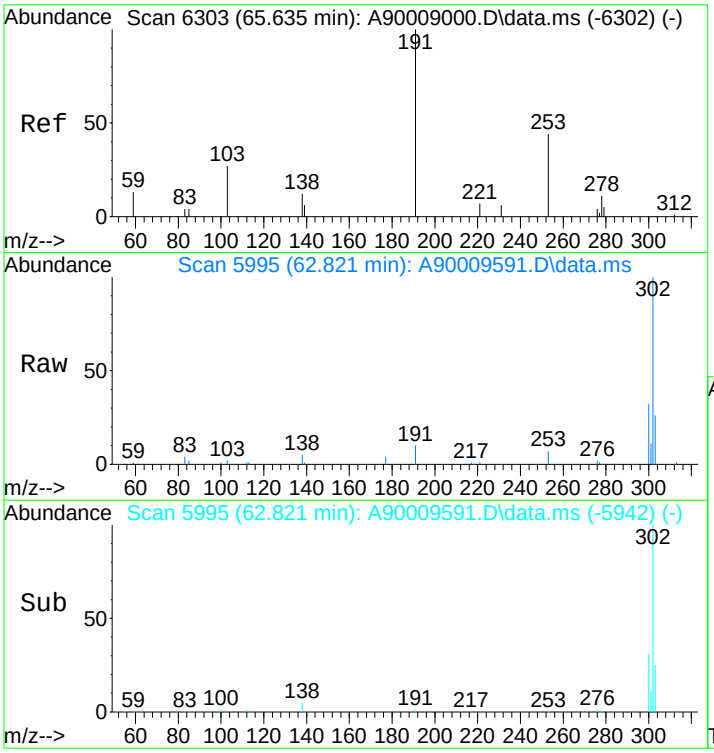




#127
Pentakishomohopane-22S (T34)
Concen: 25.67 ng/ml m
RT: 61.642 min Scan# 5866
Delta R.T. -0.018 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

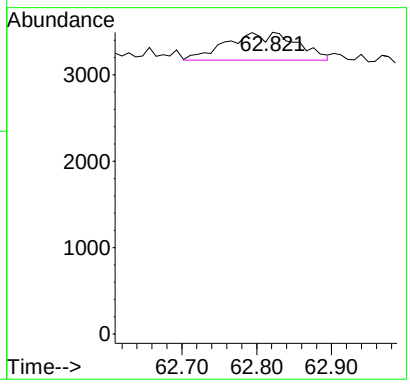
Tgt Ion:191 Resp: 2807

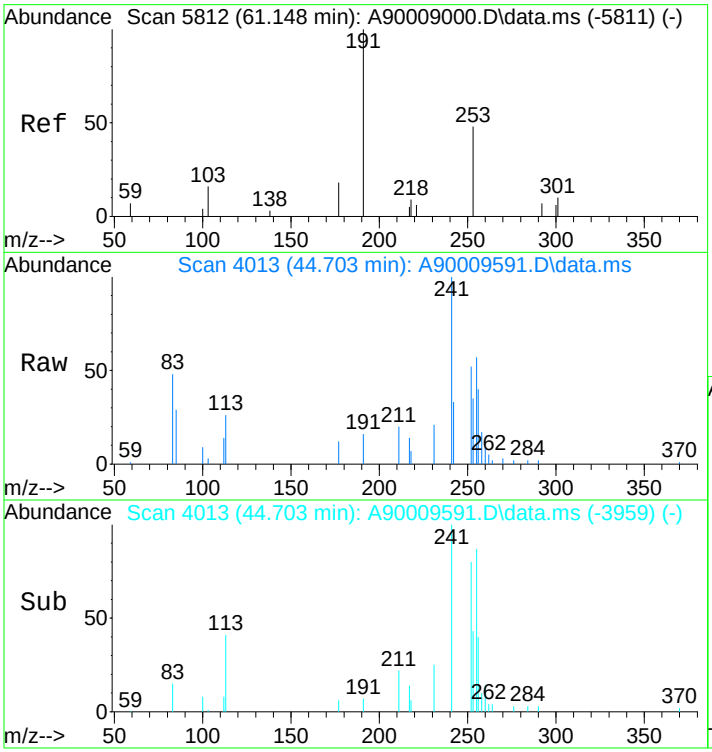




#128
Pentakishomohopane-22R (T35)
Concen: 19.28 ng/ml m
RT: 62.821 min Scan# 5995
Delta R.T. -0.018 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

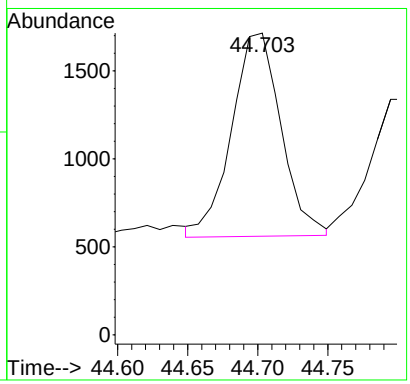
Tgt Ion:191 Resp: 2108

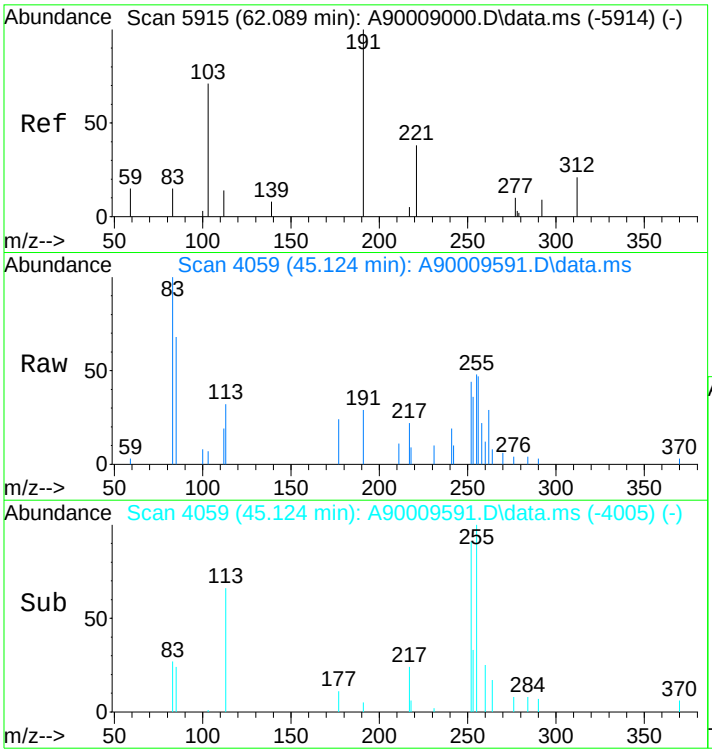




#130
13b(H),17a(H)-20S-Diacholestane (S4)
Concen: 54.34 ng/ml
RT: 44.703 min Scan# 4013
Delta R.T. -0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

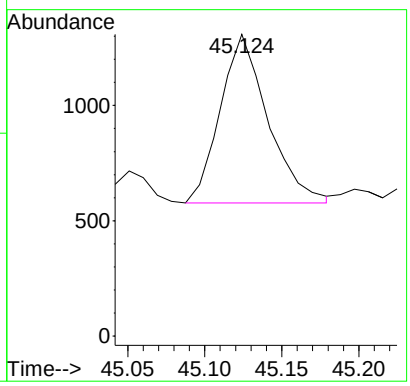
Tgt Ion:217 Resp: 2837

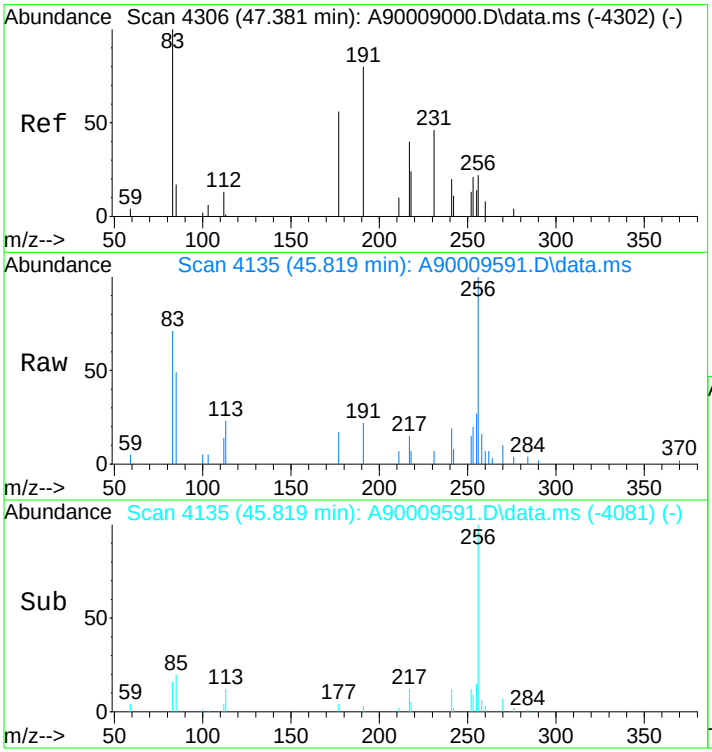




#131
13b(H),17a(H)-20R-Diacholestane (S5)
Concen: 30.11 ng/ml
RT: 45.124 min Scan# 4059
Delta R.T. -0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

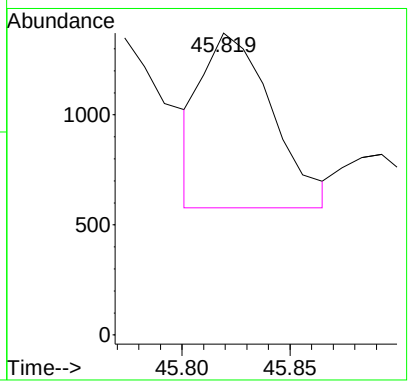
Tgt Ion:217 Resp: 1572

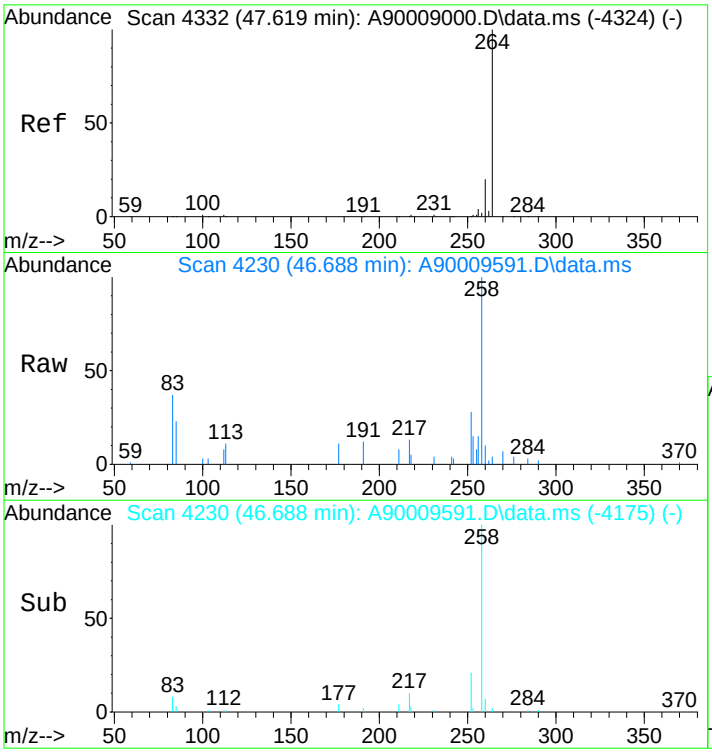




#132
13b,17a-20S-Methyldiacholestane (S8)
Concen: 34.38 ng/ml m
RT: 45.819 min Scan# 4135
Delta R.T. -0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

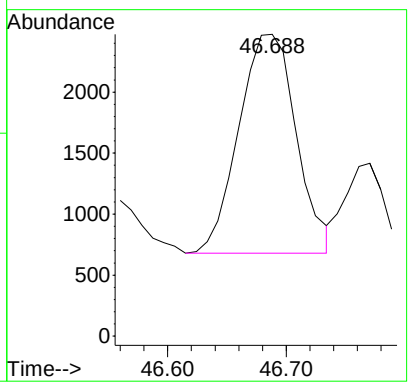
Tgt Ion:217 Resp: 1795

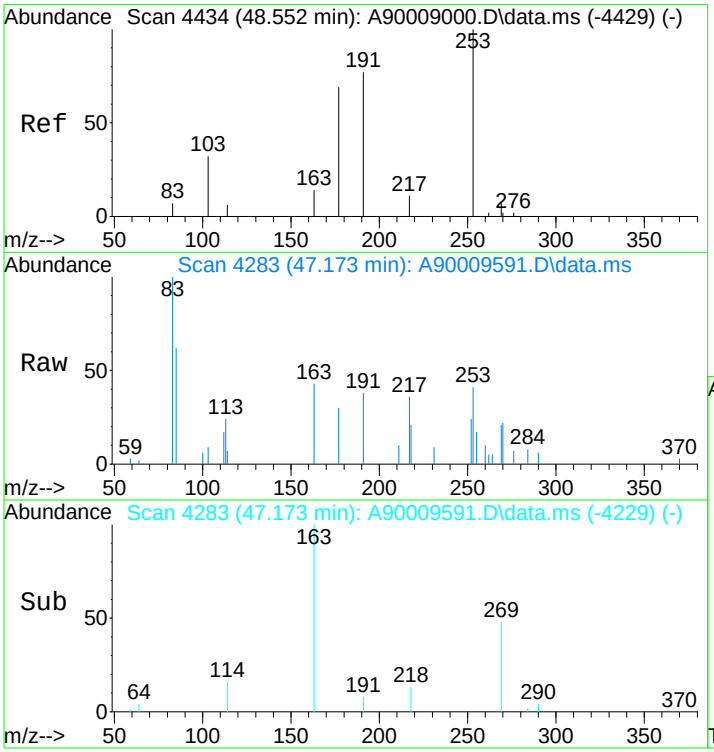




#133
14a,17a-20S-Chol/13b,17a-20S-Ethyldiach
Concen: 115.32 ng/ml
RT: 46.688 min Scan# 4230
Delta R.T. 0.000 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

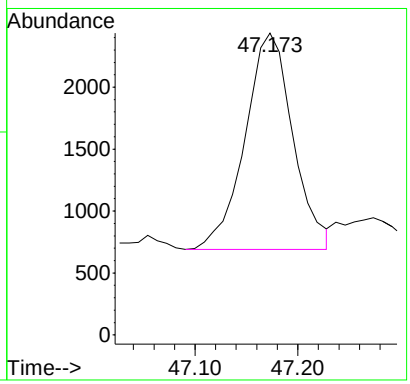
Tgt Ion:217 Resp: 6021

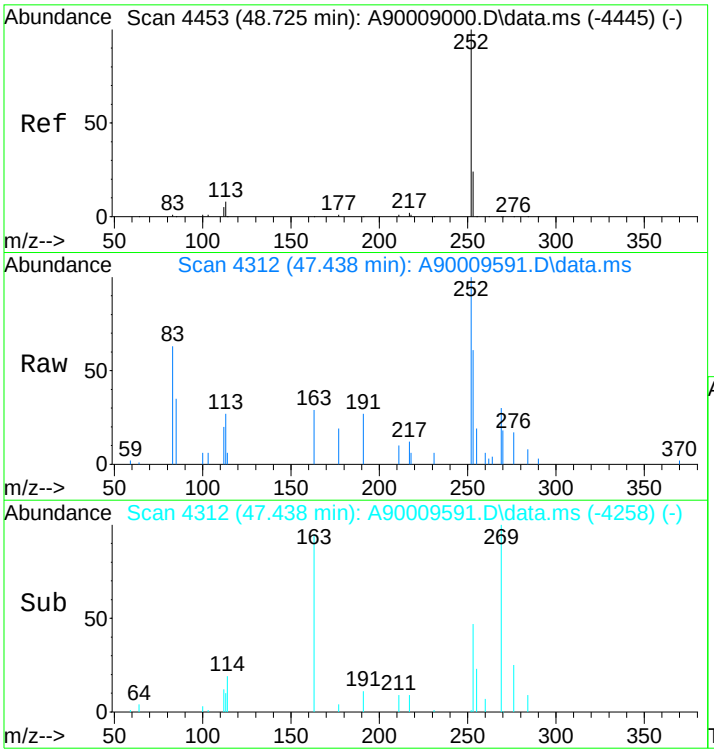




#134
14a,17a-20R-Chol/13b,17a-20R-Ethyldiach
Concen: 108.62 ng/ml
RT: 47.173 min Scan# 4283
Delta R.T. -0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

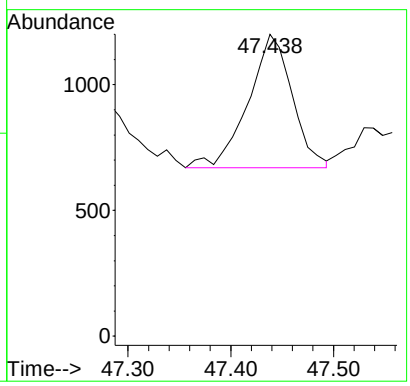
Tgt Ion:217 Resp: 5671

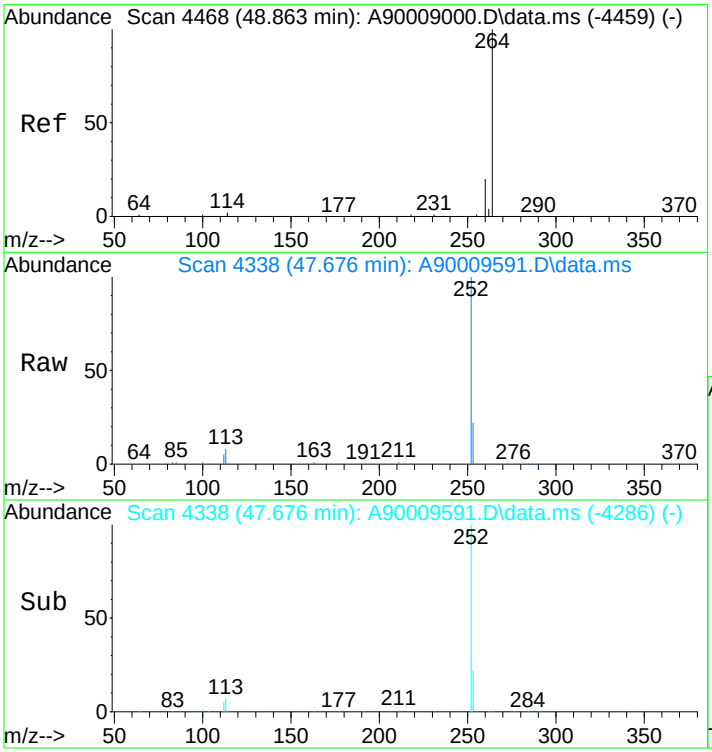




#135
Unknown Sterane (S18)
Concen: 30.17 ng/ml
RT: 47.438 min Scan# 4312
Delta R.T. -0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

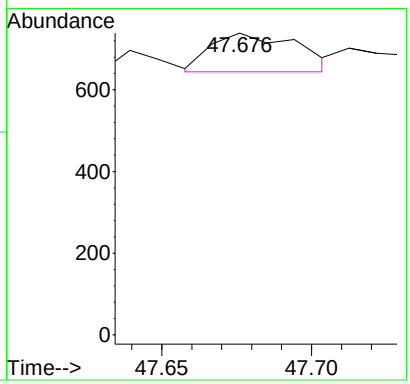
Tgt Ion:217 Resp: 1575

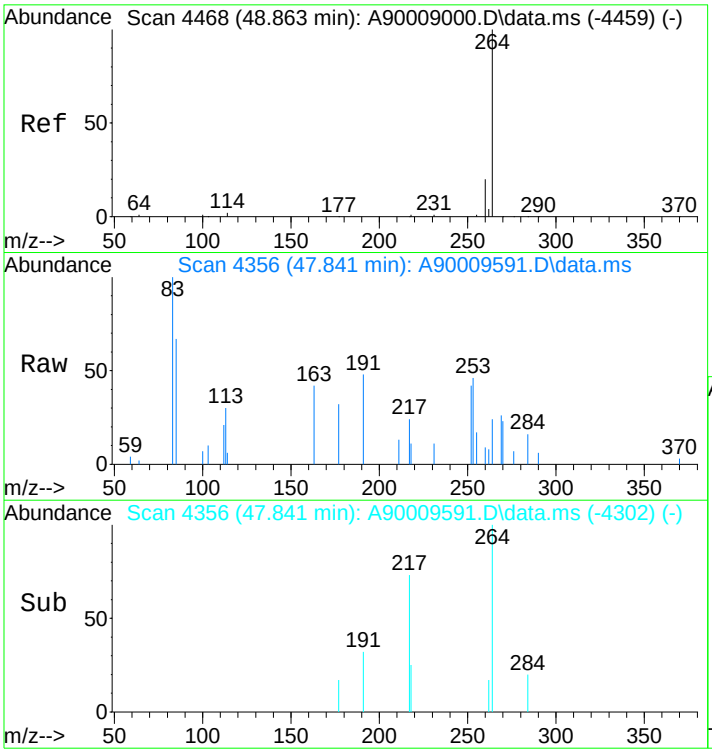




#136
13a,17b-20S-Ethyldiacholestane (S19)
Concen: 3.64 ng/ml m
RT: 47.676 min Scan# 4338
Delta R.T. -0.027 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

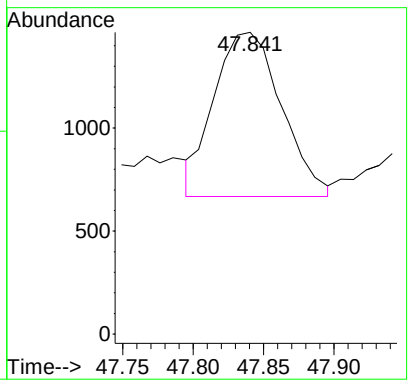
Tgt Ion:217 Resp: 190

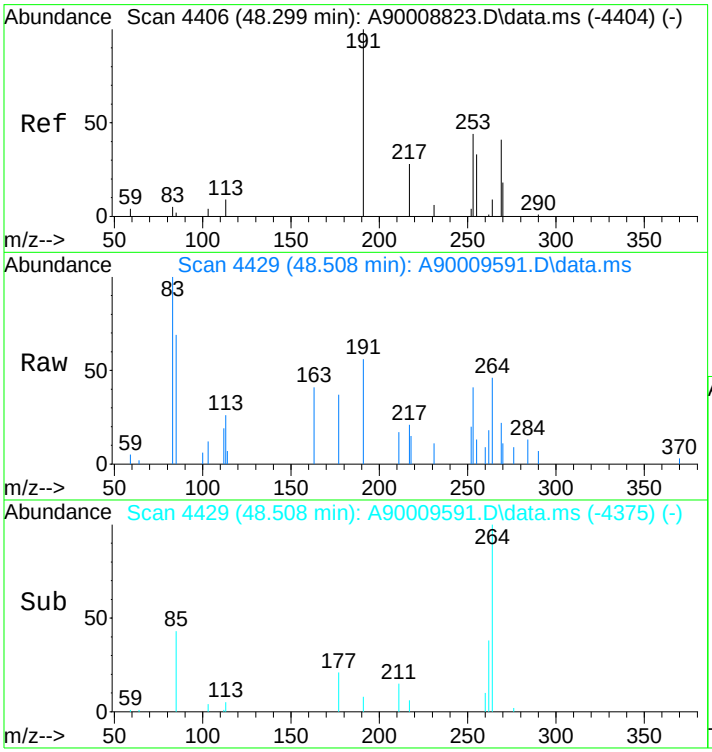




#137
14a,17a-20S-Methylcholestane (S20)
Concen: 50.64 ng/ml m
RT: 47.841 min Scan# 4356
Delta R.T. -0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

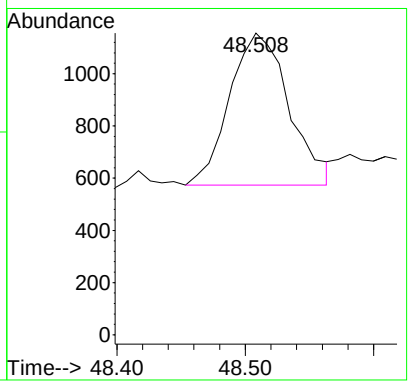
Tgt Ion:217 Resp: 2644

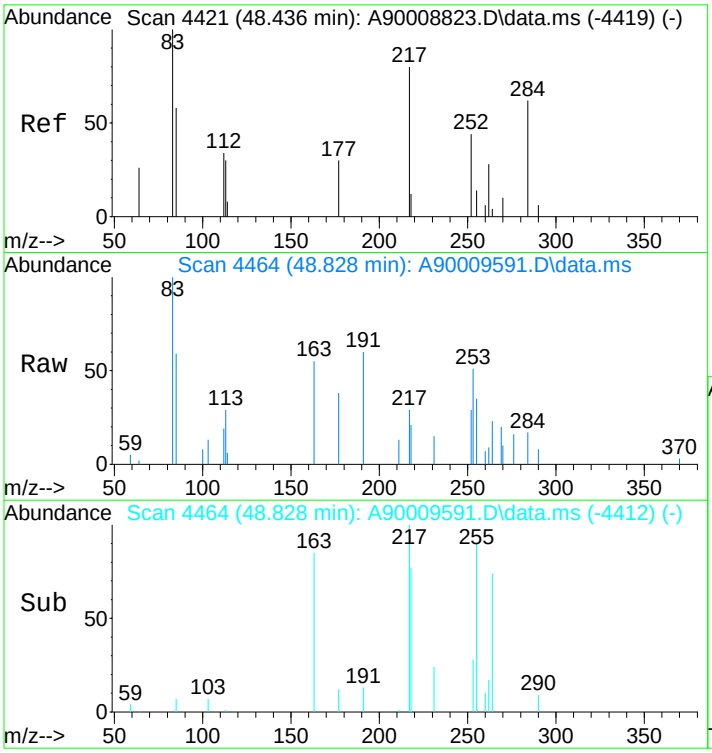




#138
14a,17a-20R-Methylcholestane (S24)
Concen: 35.89 ng/ml
RT: 48.508 min Scan# 4429
Delta R.T. -0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

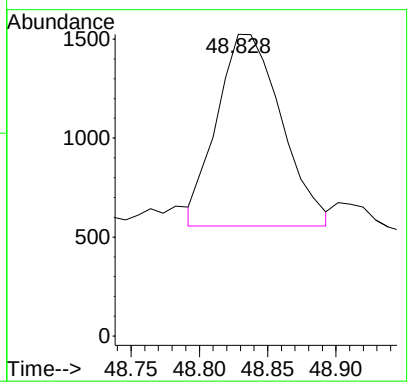
Tgt Ion:217 Resp: 1874

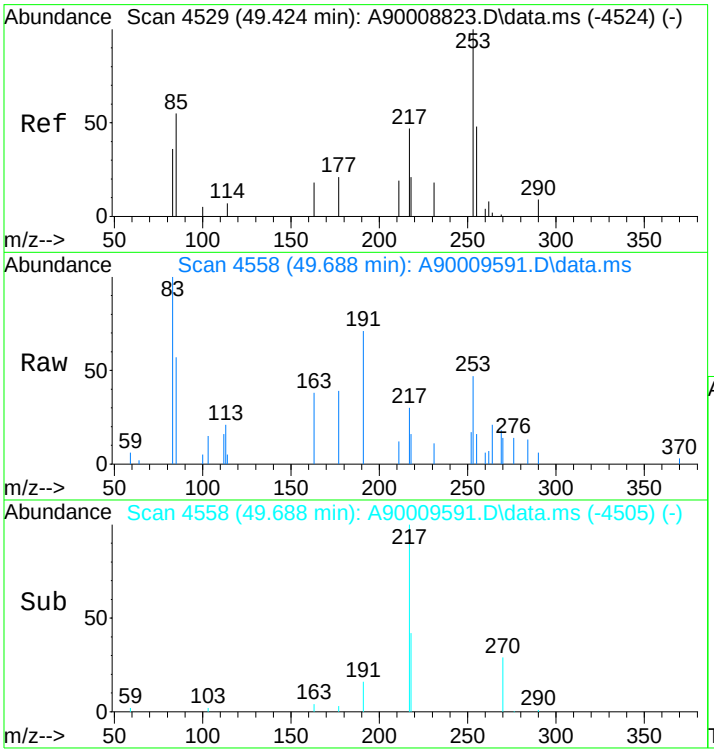




#139
14a(H),17a(H)-20S-Ethylcholestane (S25)
Concen: 60.52 ng/ml m
RT: 48.828 min Scan# 4464
Delta R.T. -0.027 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

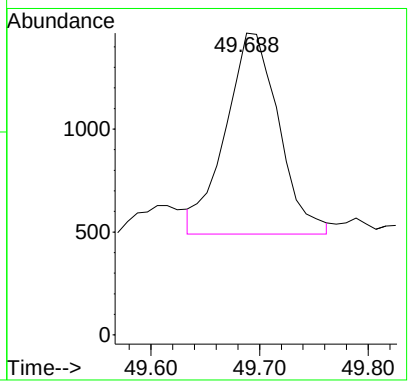
Tgt Ion:217 Resp: 3160

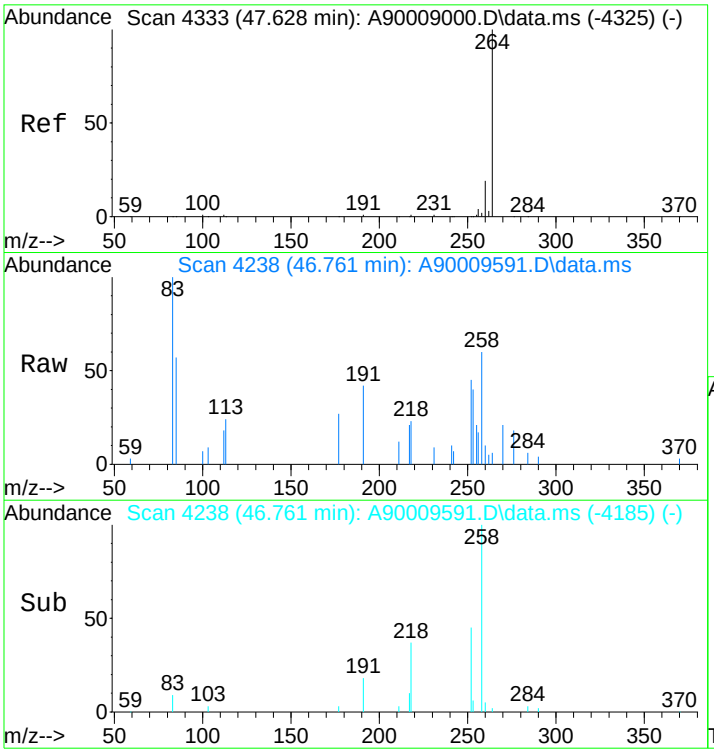




#140
14a(H),17a(H)-20R-Ethylcholestane (S28)
Concen: 63.65 ng/ml m
RT: 49.688 min Scan# 4558
Delta R.T. -0.018 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

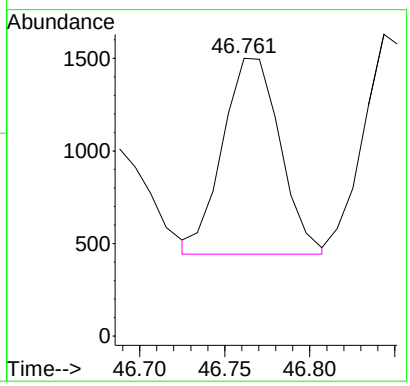
Tgt Ion:217 Resp: 3323

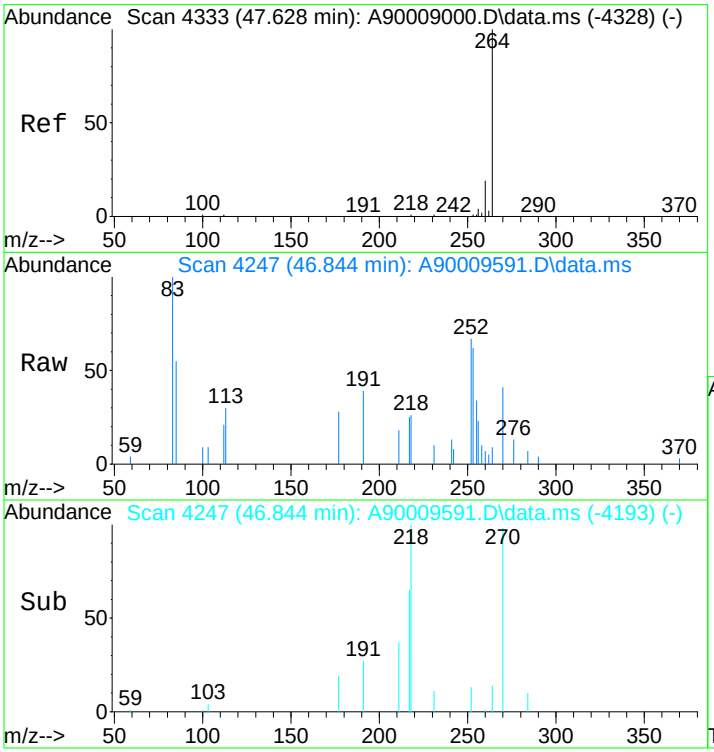




#141
14b(H),17b(H)-20R-Cholestane (S14)
Concen: 47.65 ng/ml m
RT: 46.761 min Scan# 4238
Delta R.T. -0.018 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

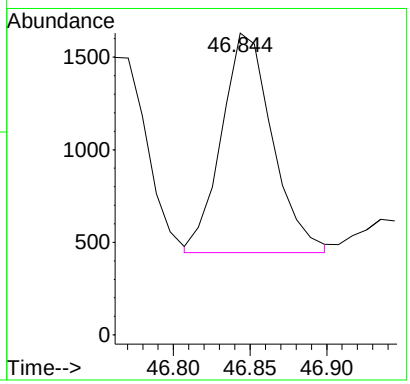
Tgt Ion:218 Resp: 2488

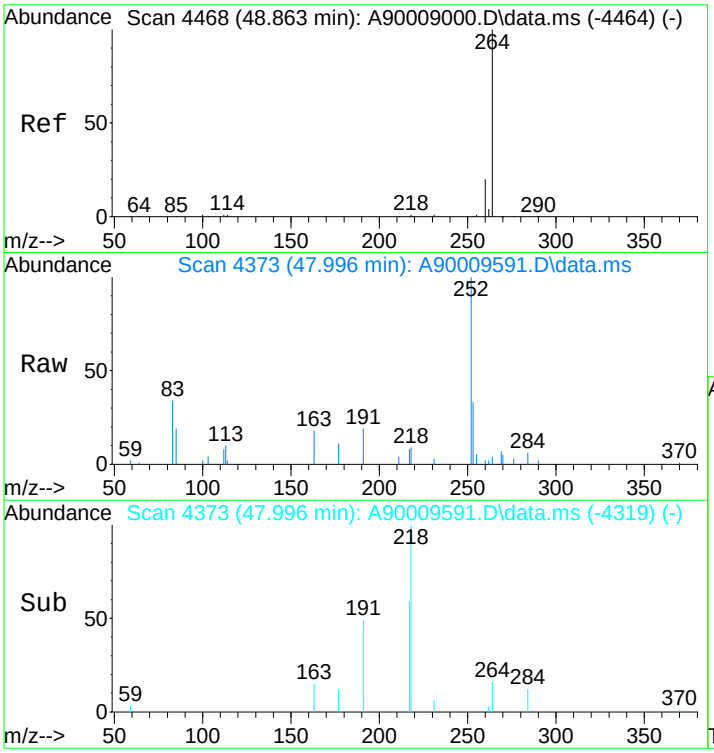




#142
14b(H),17b(H)-20S-Cholestane (S15)
Concen: 52.54 ng/ml m
RT: 46.844 min Scan# 4247
Delta R.T. -0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

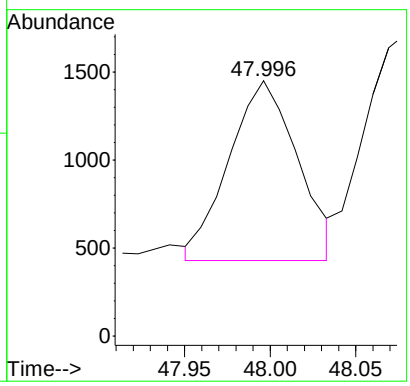
Tgt Ion:218 Resp: 2743

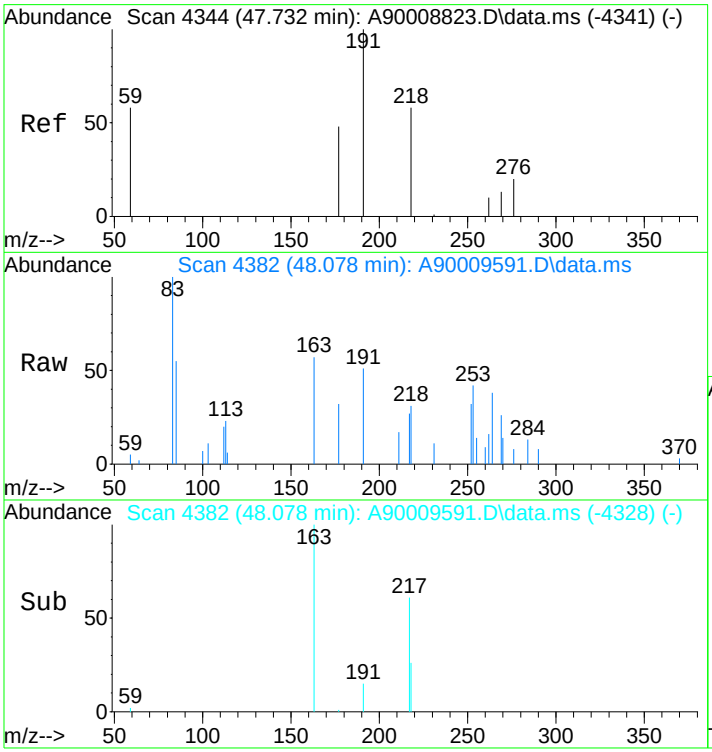




#143
14b,17b-20R-Methylcholestane (S22)
Concen: 54.51 ng/ml m
RT: 47.996 min Scan# 4373
Delta R.T. -0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

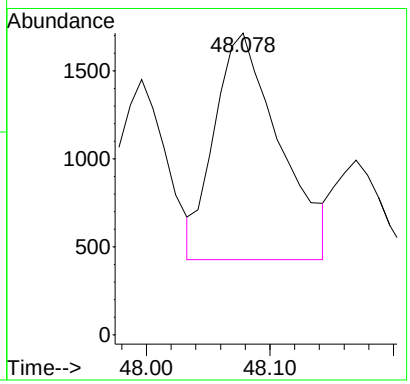
Tgt Ion:218 Resp: 2846

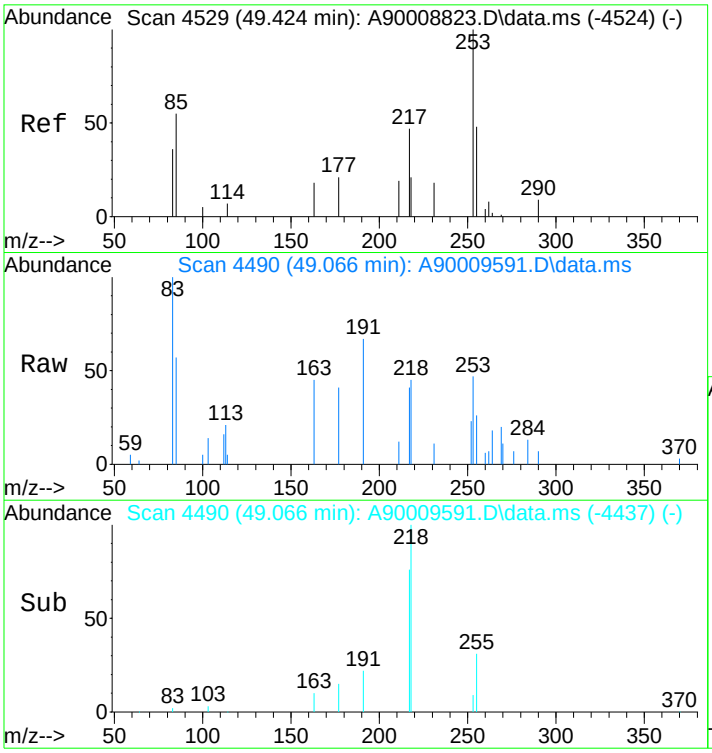




#144
14b,17b-20S-Methylcholestane (S23)
Concen: 90.14 ng/ml m
RT: 48.078 min Scan# 4382
Delta R.T. -0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

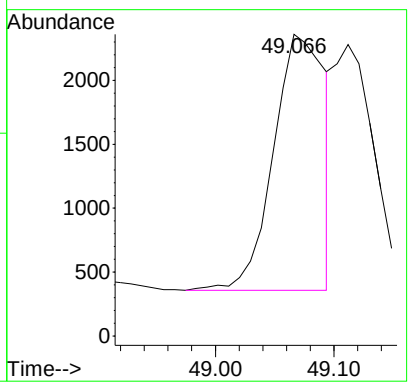
Tgt Ion:218 Resp: 4706

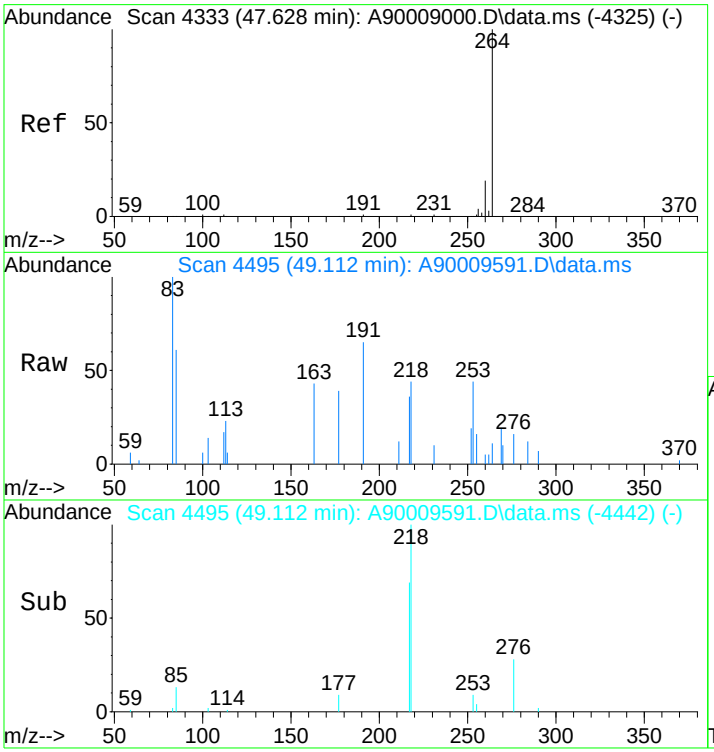




#145
14b(H),17b(H)-20R-Ethylcholestane (S26)
Concen: 115.99 ng/ml
RT: 49.066 min Scan# 4490
Delta R.T. -0.018 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

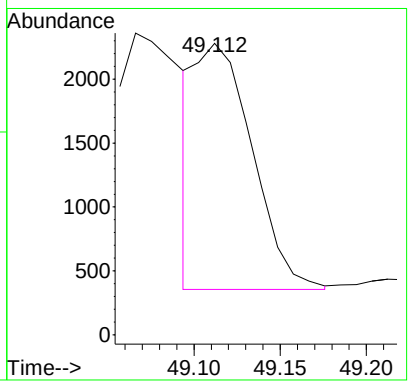
Tgt Ion:218 Resp: 6056

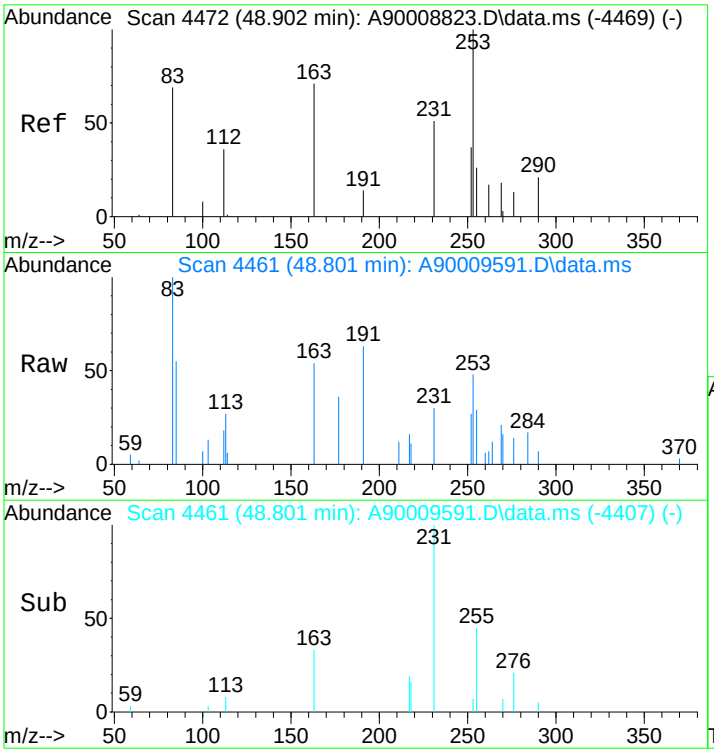




#146
14b(H),17b(H)-20S-Ethylcholestane (S27)
Concen: 85.35 ng/ml m
RT: 49.112 min Scan# 4495
Delta R.T. -0.018 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

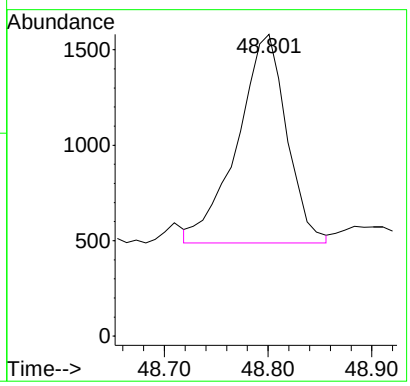
Tgt Ion:218 Resp: 4456

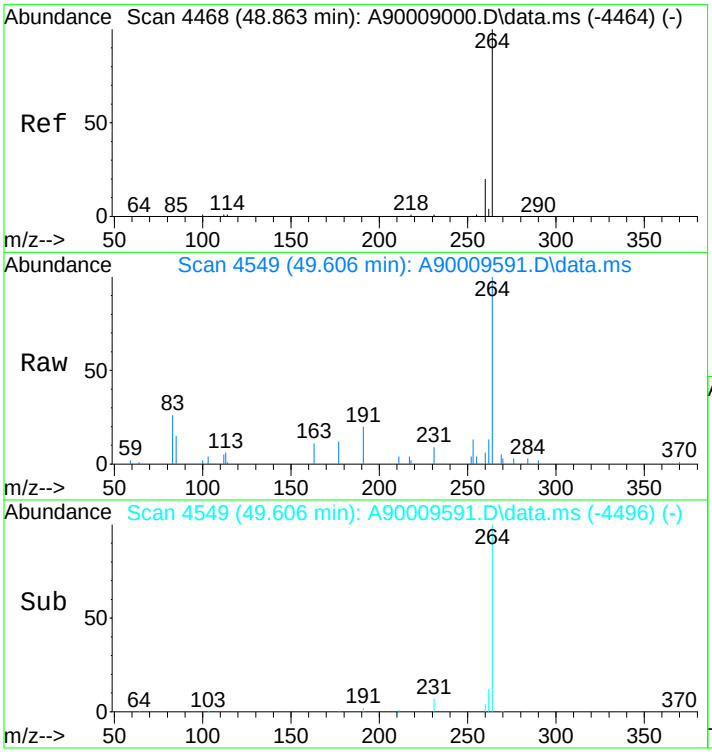




#147
C26,20R- +C27,20S- triaromatic steroid
Concen: 69.09 ng/mL m
RT: 48.801 min Scan# 4461
Delta R.T. -0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

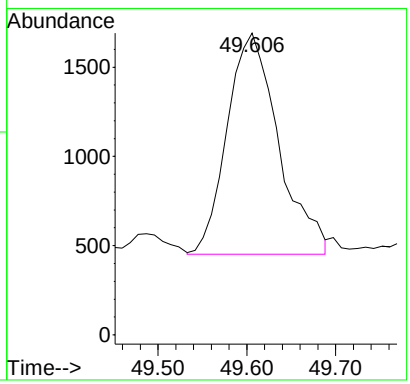
Tgt Ion:231 Resp: 3607

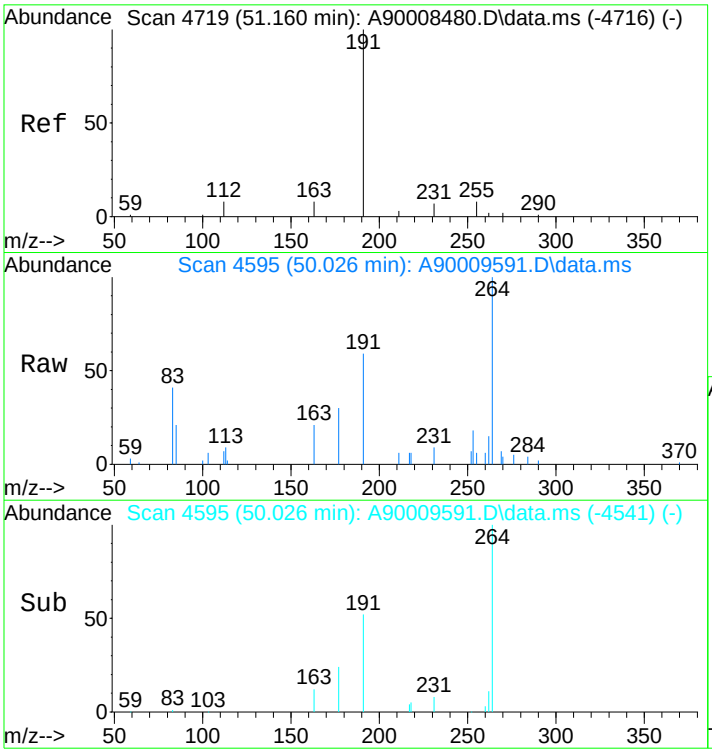




#148
C28,20S-triaromatic steroid
Concen: 95.71 ng/mL m
RT: 49.606 min Scan# 4549
Delta R.T. -0.018 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

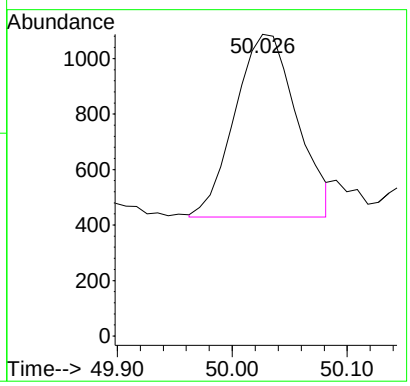
Tgt Ion:231 Resp: 4997

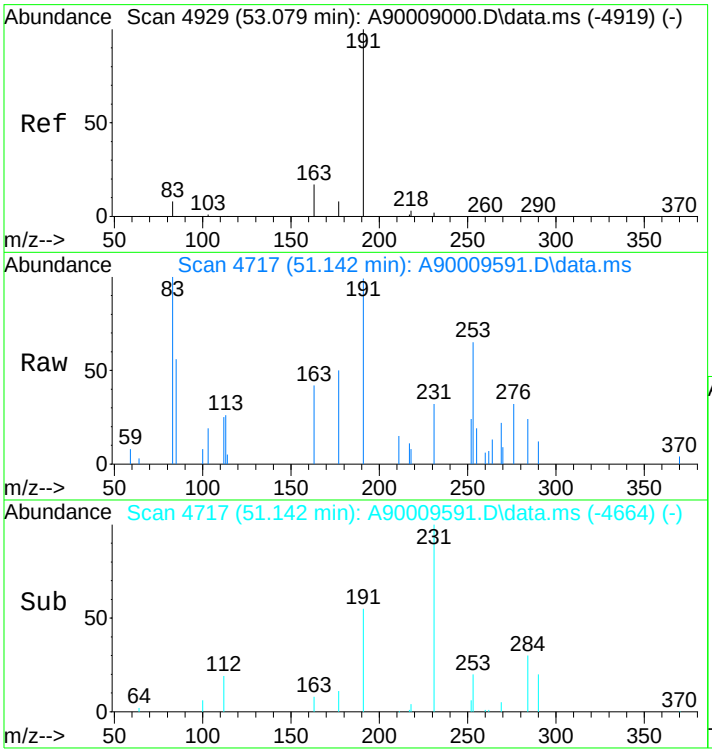




#149
C27,20R-triaromatic steroid
Concen: 47.25 ng/mL m
RT: 50.026 min Scan# 4595
Delta R.T. -0.009 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

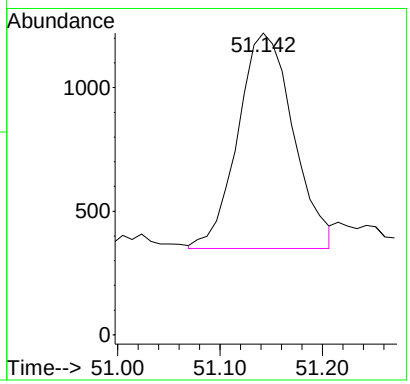
Tgt Ion:231 Resp: 2467





#150
C28,20R-triaromatic steroid
Concen: 62.80 ng/mL m
RT: 51.142 min Scan# 4717
Delta R.T. -0.018 min
Lab File: A90009591.D
Acq: 23 Dec 2012 11:47 am

Tgt Ion:231 Resp: 3279



Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009592.D
Acq On : 23 Dec 2012 1:12 pm
Operator : ps
Sample : 1212022-04
Misc : 1X
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Dec 27 14:19:37 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.156	164	68010	500.000	ng/mL	0.00
74) Chrysene-d12	42.566	240	127701	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.229	136	417928	1598.796	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 159.88%#			
42) Phenanthrene-d10	31.995	188	515085	2099.769	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 209.98%#			
83) Benzo[b]fluoranthene-d12	46.459	264	476964	2031.892	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 203.19%#			
88) Benzo[a]pyrene-d12	47.594	264	459796	1953.996	ng/mL	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 195.40%#			
129) 5B(H)Cholane - Surr	43.187	217	104918	1957.095	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 195.71%#			
Target Compounds						Qvalue
3) trans-Decalin	15.908	138	269	4.499	ng/mL	100
5) C1-Decalins	17.377	152	968M5	16.190	ng/mL	
6) C2-Decalins	19.138	166	2168M5	36.260	ng/mL	
7) C3-Decalins	21.146	180	2630M5	43.987	ng/mL	
8) C4-Decalins	24.960	194	4657M5	77.888	ng/mL	
10) Naphthalene	19.302	128	262375	978.094	ng/mL#	100
11) C1-Naphthalenes	21.985	142	105575M5	393.568	ng/mL	
12) C2-Naphthalenes	24.814	156	183158M5	682.785	ng/mL	
13) C3-Naphthalenes	27.141	170	288952M5	1077.170	ng/mL	
14) C4-Naphthalenes	31.137	184	181811M5	677.764	ng/mL	
16) 2-Methylnaphthalene	21.985	142	65047	370.790	ng/mL#	100
17) 1-Methylnaphthalene	22.405	142	40934	240.438	ng/mL#	100
18) Benzothiophene	19.531	134	7181M4	31.988	ng/mL	
19) C1-Benzo(b)thiophenes	22.168	148	5142M5	22.906	ng/mL	
20) C2-Benzo(b)thiophenes	24.522	162	7086M5	31.565	ng/mL	
21) C3-Benzo(b)thiophenes	26.621	176	15780M5	70.293	ng/mL	
22) C4-Benzo(b)thiophenes	29.066	190	11663M5	51.954	ng/mL	
23) Biphenyl	23.865	154	38621	168.232	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.477	156	43233	262.167	ng/mL#	100
25) Dibenzofuran	26.922	168	141707M4	578.732	ng/mL	
26) Acenaphthylene	25.544	152	322847	1169.945	ng/mL#	100
27) Acenaphthene	26.274	153	145365	837.826	ng/mL	100
28) 2,3,5-Trimethylnaphthalen	27.825	170	25781M3	170.046	ng/mL	
29) Fluorene	28.291	166	251098M4	1317.864	ng/mL	
30) C1-Fluorenes	30.508	180	196500M5	1031.311	ng/mL	
31) C2-Fluorenes	32.843	194	199077M5	1044.836	ng/mL	
32) C3-Fluorenes	35.336	208	128246M5	673.087	ng/mL	
33) Dibenzothiophene	31.584	184	208815	779.106	ng/mL#	90
34) 4-Methyldibenzothiophene(	33.364	198	57985	216.347	ng/mL#	100
35) 2/3-Methyldibenzothiophen	33.674	198	69271	258.456	ng/mL#	100
36) 1-Methyldibenzothiophene(	34.131	198	23851	88.990	ng/mL#	100
37) OTP	33.811	198	64223	239.621	ng/mL#	100
38) C1-Dibenzothiophenes	33.364	198	256037M5	955.295	ng/mL	
38) C1-Dibenzothiophenes BS	33.364	198	191814m	715.674	ng/mL	
39) C2-Dibenzothiophenes	35.043	212	192182M5	717.047	ng/mL	
40) C3-Dibenzothiophenes	36.851	226	117584M5	438.716	ng/mL	
41) C4-Dibenzothiophenes	38.531	240	46125M5	172.096	ng/mL	
43) Phenanthrene	32.095	178	3795891	13708.783	ng/mL	100
44) 3-Methylphenanthrene(3MP)	34.048	192	467951	1689.996	ng/mL	97

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009592.D
Acq On : 23 Dec 2012 1:12 pm
Operator : ps
Sample : 1212022-04
Misc : 1X
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Dec 27 14:19:37 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
45) 2-Methylphenanthrene(2MP)	34.158	192	558085	2015.513 ng/mL	97
46) 2-Methylanthracene(2MA)	34.322	192	335983	1213.396 ng/mL#	35
47) 9/4-Methylphenanthrene(9M	34.505	192	489024M3	1766.100 ng/mL	
48) 1-Methylphenanthrene(1MP)	34.587	192	356663	1288.081 ng/mL	96
49) C1-Phenanthrenes/Anthrace	34.158	192	2236453M5	8076.905 ng/mL	
50) C2-Phenanthrenes/Anthrace	36.312	206	1277074M5	4612.127 ng/mL	
50) C2-Phenanthrenes/Anthr BS	36.312	206	1277074m	4612.127 ng/mL	
52) C3-Phenanthrenes/Anthrace	38.147	220	494385M5	1785.461 ng/mL	
53) C4-Phenanthrenes/Anthrace	40.348	234	151413M5	546.825 ng/mL	
55) Anthracene	32.269	178	1245501	4843.879 ng/mL	100
56) Carbazole	32.944	167	185710	763.477 ng/mL	99
57) 1-Methylphenanthrene	34.587	192	356663	1745.848 ng/mL	100
58) Fluoranthene	36.869	202E	9196239	29730.513 ng/mL	98
59) Benzo(b)fluorene	39.362	216	641733M3	3488.537 ng/mL	
60) Pyrene	37.746	202E	8691775	27542.990 ng/mL	99
61) C1-Fluoranthenes/Pyrenes	39.124	216	4171042M5	13217.435 ng/mL	
62) C2-Fluoranthenes/Pyrenes	41.160	230	1381699M5	4378.406 ng/mL	
63) C3-Fluoranthenes/Pyrenes	43.050	244	520391M5	1649.045 ng/mL	
64) C4-Fluoranthenes/Pyrenes	43.333	258	296756M5	940.377 ng/mL	
66) Naphthobenzothiophene	41.571	234	408839	1493.078 ng/ml	95
67) Naphthobenzothiophene-2,1	41.571	234	408839	1493.078 ng/mL	95
68) Naphthobenzothiophene-1,2	41.909	234	95704M3	349.510 ng/mL	
69) Naphthobenzothiophene-2,3	42.201	234	149207M3	544.903 ng/mL	
70) C1-Naphthobenzothiophenes	42.968	248	343152M5	1253.189 ng/ml	
71) C2-Naphthobenzothiophenes	44.466	262	171336M5	625.718 ng/ml	
72) C3-Naphthobenzothiophenes	46.359	276	94716M5	345.902 ng/ml	
73) C4-Naphthobenzothiophenes	49.020	290	48767M5	178.097 ng/mL	
75) Benz[a]anthracene	42.512	228	4005376M3	13674.238 ng/mL	
77) Chrysene/Triphenylene	42.676	228	3656642	12692.777 ng/mL	98
78) C1-Chrysenes	44.137	242	1583896M5	5497.951 ng/mL	
79) C2-Chrysenes	45.837	256	705028M5	2447.263 ng/mL	
79) C2-Chrysenes BS	45.837	256	684970m	2377.638 ng/mL	
80) BBF-d12 Surr BKGD	46.459	256	20058	69.624 ng/mL	100
81) C3-Chrysenes	46.880	270	416877M5	1447.045 ng/mL	
82) C4-Chrysenes	48.334	284	140545M5	487.854 ng/mL	
84) Benzo[b]fluoranthene	46.560	252	3219632	10601.048 ng/mL	94
85) Benzo[j]+[k]fluoranthene	46.633	252	3256498	10912.755 ng/mL	93
86) Benzo[a]fluoranthene	46.908	252	906647	3038.238 ng/mL#	1
87) Benzo[e]pyrene	47.511	252	2367343	8208.736 ng/mL	91
89) Benzo[a]pyrene	47.694	252	3993686	14622.127 ng/mL	90
90) Perylene	47.969	252	1060938M3	3639.606 ng/mL	
91) Indeno[1,2,3-cd]pyrene	52.194	276	2495984M4	8251.486 ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.203	278	719443	2414.408 ng/mL	98
93) Benzo[g,h,i]perylene	53.400	276	2375201	7990.583 ng/mL	99
94) Hopane (T19)	51.325	191	66642M4	593.581 ng/mL	
96) C23 Tricyclic Terpane (T4	40.220	191	7171	63.872 ng/ml	100
97) C24 Tricyclic Terpane (T5	40.941	191	5289M4	47.109 ng/ml	
98) C25 Tricyclic Terpane (T6	42.512	191G	58125M1	517.720 ng/ml	
99) C24 Tetracyclic Terpane (	43.735	191	5271	46.949 ng/ml	100
100) C26 Tricyclic Terpane-22S	43.489	191	5153	45.898 ng/ml	100
101) C26 Tricyclic Terpane-22R	43.589	191	2723	24.254 ng/ml	100
102) C28 Tricyclic Terpane-22S	45.883	191	2795M4	24.895 ng/ml	
103) C28 Tricyclic Terpane-22R	46.039	191	3759	33.481 ng/ml	100
104) C29 Tricyclic Terpane-22S	46.560	191	3815M4	33.980 ng/ml	
105) C29 Tricyclic Terpane-22R	46.752	191	3308	29.464 ng/ml	100
106) 18a-22,29,30-Trisnorneoho	47.786	191	13488	120.138 ng/ml	100

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009592.D
Acq On : 23 Dec 2012 1:12 pm
Operator : ps
Sample : 1212022-04
Misc : 1X
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Dec 27 14:19:37 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

	Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
107)	C30 Tricyclic Terpane-22S	47.905	191	3601M4	32.074	ng/mL	
108)	C30 Tricyclic Terpane-22R	48.142	191	2941M3	26.196	ng/mL	
109)	17a(H)-22,29,30-Trisnorho	48.307	191	16997M4	151.393	ng/ml	
110)	17a/b,21b/a 28,30-Bisnorh	49.423	191	2439M4	21.724	ng/ml	
111)	17a(H),21b(H)-25-Norhopan	49.231	191	5970	53.175	ng/ml	100
112)	30-Norhopane (T15)	50.054	191	50253	447.604	ng/ml	100
113)	18a(H)-30-Norneohopane-C2	50.145	191	13981M4	124.529	ng/ml	
114)	17a(H)-Diahopane (X)	50.273	191	4275M4	38.078	ng/ml	
115)	30-Normoretane (T17)	50.776	191	8169	72.761	ng/ml	100
116)	18a(H)&18b(H)-Oleananes (	51.151	191	5077	45.221	ng/ml	100
117)	Moretane (T20)	51.965	191	11742M4	104.586	ng/ml	
118)	30-Homohopane-22S (T21)	52.989	191	25701	228.919	ng/ml	100
119)	30-Homohopane-22R (T22)	53.199	191	21768	193.888	ng/ml	100
120)	Gammacerane/C32-diahopane	53.701	191	7460	66.446	ng/mL	100
121)	30,31-Bishomohopane-22S (	54.369	191G	50206	447.186	ng/ml	100
122)	30,31-Bishomohopane-22R (	54.761	191	11946	106.403	ng/ml	100
123)	30,31-Trishomohopane-22S	56.370	191	13368	119.069	ng/ml	100
124)	30,31-Trishomohopane-22R	56.927	191	6465M4	57.584	ng/ml	
125)	Tetrakishomohopane-22S (T	58.800	191	10967	97.683	ng/ml	100
126)	Tetrakishomohopane-22R (T	59.541	191G	31549	281.008	ng/ml	100
127)	Pentakishomohopane-22S (T	61.651	191	7784M4	69.332	ng/ml	
128)	Pentakishomohopane-22R (T	62.821	191	5223M4	46.521	ng/ml	
130)	13b(H),17a(H)-20S-Diachol	44.703	217	5437M4	101.419	ng/ml	
131)	13b(H),17a(H)-20R-Diachol	45.124	217	2810	52.417	ng/ml	100
132)	13b,17a-20S-Methyldiachol	45.828	217	3317M4	61.874	ng/ml	
133)	14a,17a-20S-Chol/13b,17a-	46.688	217	10021	186.927	ng/ml	100
134)	14a,17a-20R-Chol/13b,17a-	47.173	217	9491	177.041	ng/ml	100
135)	Unknown Sterane (S18)	47.447	217	2312	43.127	ng/ml	100
136)	13a,17b-20S-Ethyldiachole	47.685	217	486	9.066	ng/ml	100
137)	14a,17a-20S-Methylcholest	47.841	217	5056M4	94.312	ng/ml	
138)	14a,17a-20R-Methylcholest	48.508	217	3193	59.561	ng/ml	100
139)	14a(H),17a(H)-20S-Ethylch	48.838	217	5600M4	104.460	ng/ml	
140)	14a(H),17a(H)-20R-Ethylch	49.697	217	5492M4	102.445	ng/ml	
141)	14b(H),17b(H)-20R-Cholest	46.770	218	4623M4	86.235	ng/ml	
142)	14b(H),17b(H)-20S-Cholest	46.853	218	4955M4	92.428	ng/ml	
143)	14b,17b-20R-Methylcholest	47.996	218	5445M4	101.569	ng/ml	
144)	14b,17b-20S-Methylcholest	48.078	218	7629M4	142.308	ng/ml	
145)	14b(H),17b(H)-20R-Ethylch	49.075	218	11166	208.286	ng/ml	100
146)	14b(H),17b(H)-20S-Ethylch	49.121	218	6472M3	120.726	ng/ml	
147)	C26,20R- +C27,20S- triaro	48.801	231	7997M4	149.173	ng/mL	
148)	C28,20S-triaromatic stero	49.606	231	10138	189.110	ng/mL	100
149)	C27,20R-triaromatic stero	50.036	231	5743M4	107.127	ng/mL	
150)	C28,20R-triaromatic stero	51.151	231	6983M4	130.258	ng/mL	

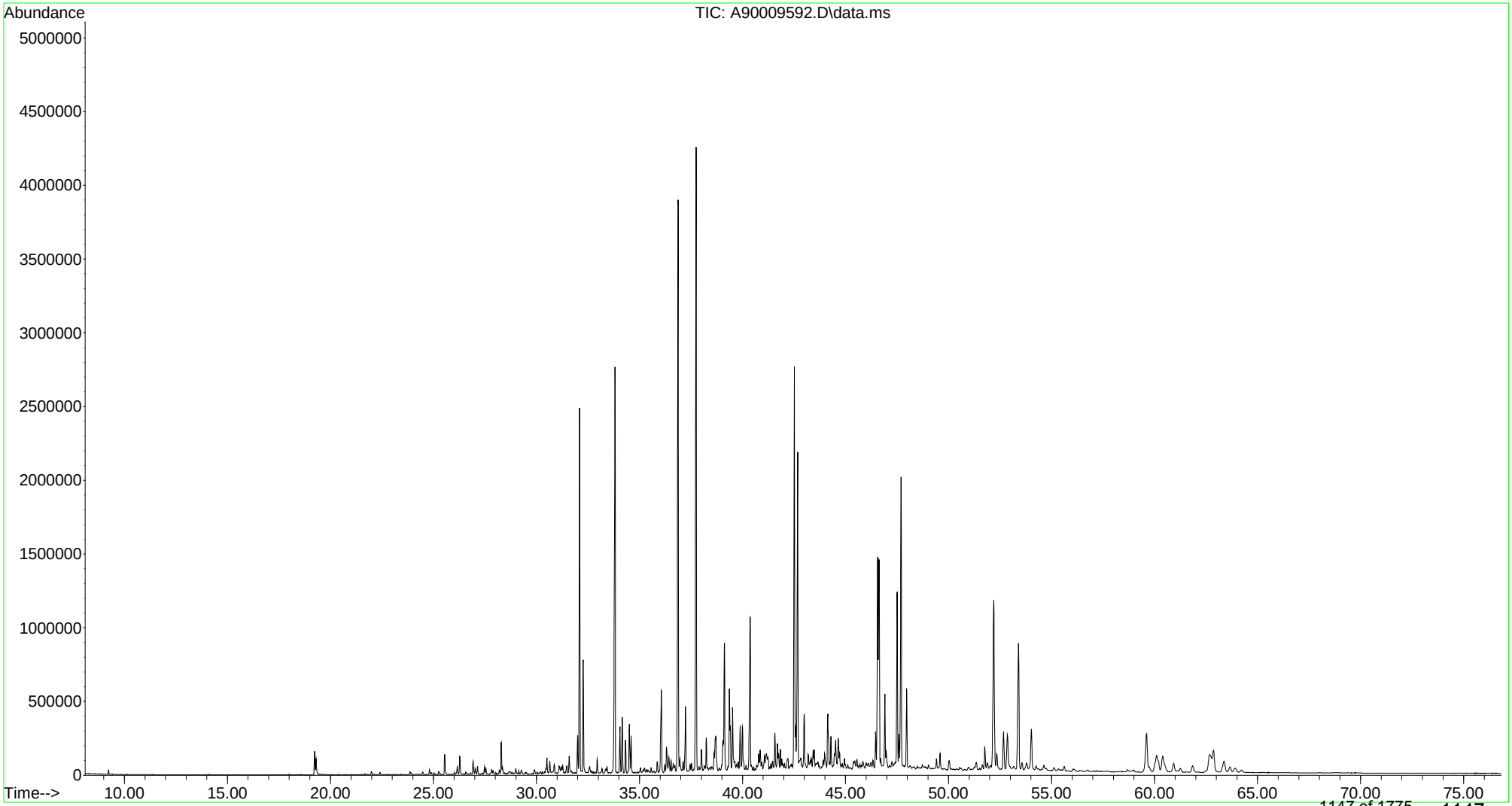
(#) = qualifier out of range (m) = manual integration (+) = signals summed

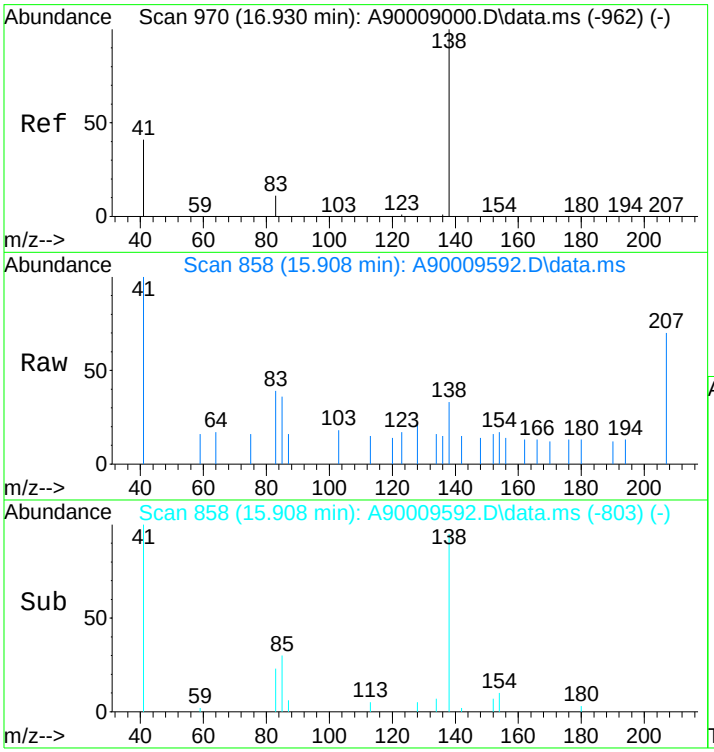
Quantitation Report (QT Reviewed)

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Data File : A90009592.D
Acq On : 23 Dec 2012 1:12 pm
Operator : ps
Sample : 1212022-04
Misc : 1X
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Dec 27 14:19:37 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

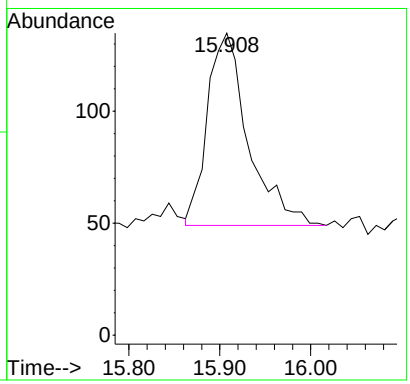
Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

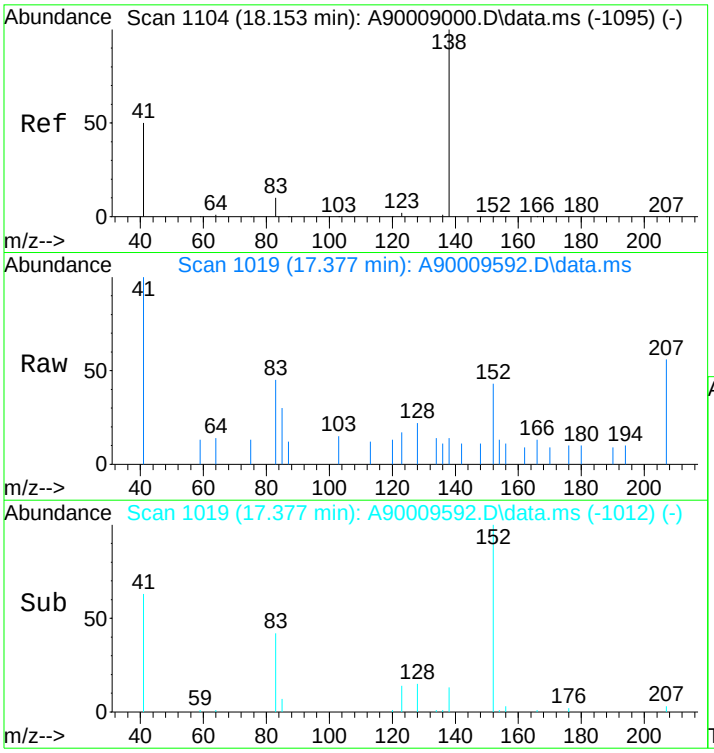




#3
trans-Decalin
Concen: 4.50 ng/mL
RT: 15.908 min Scan# 858
Delta R.T. -0.000 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

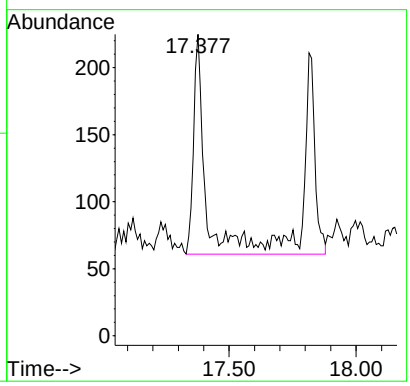
Tgt Ion:138 Resp: 269

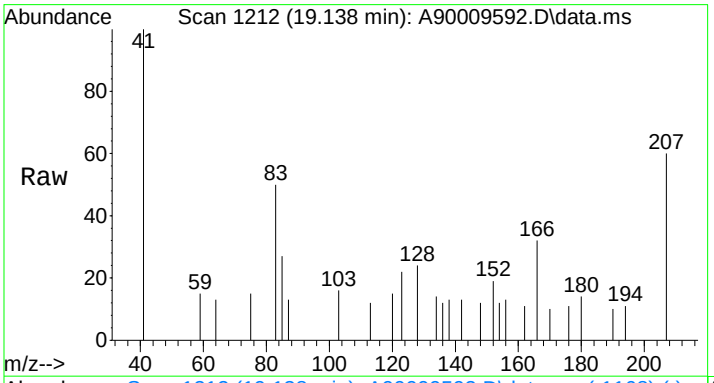




#5
C1-Decalins
Concen: 16.19 ng/mL m
RT: 17.377 min Scan# 1019
Delta R.T. -0.447 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

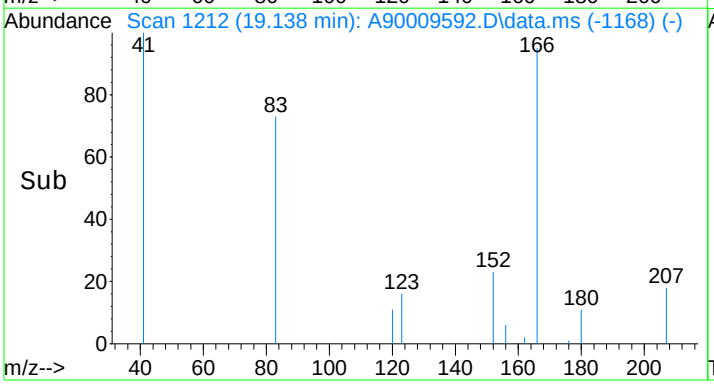
Tgt Ion:152 Resp: 968

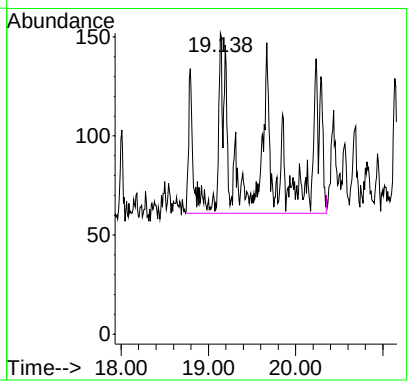


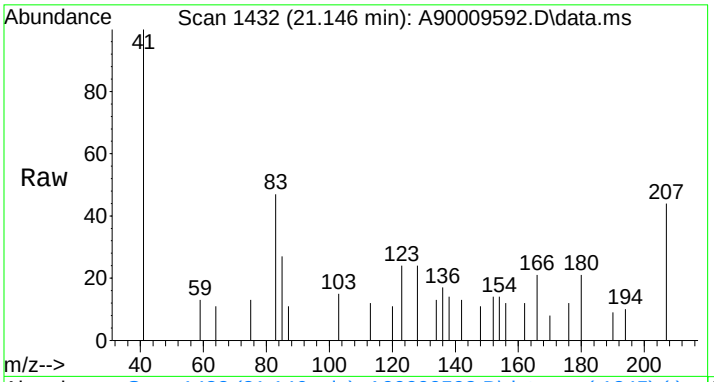


#6
C2-Decalins
Concen: 36.26 ng/mL m
RT: 19.138 min Scan# 1212
Delta R.T. -0.009 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:166 Resp: 2168

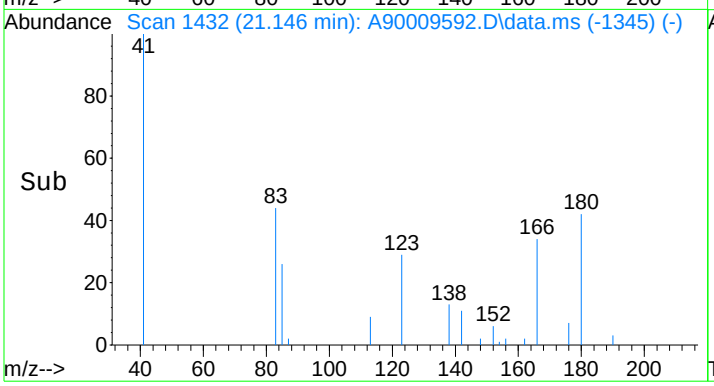


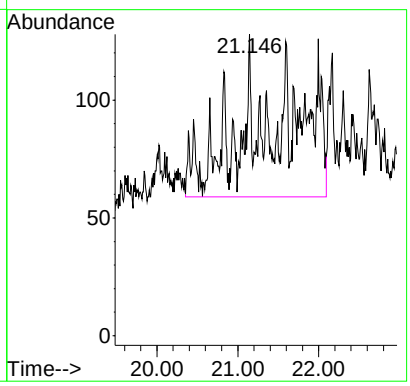


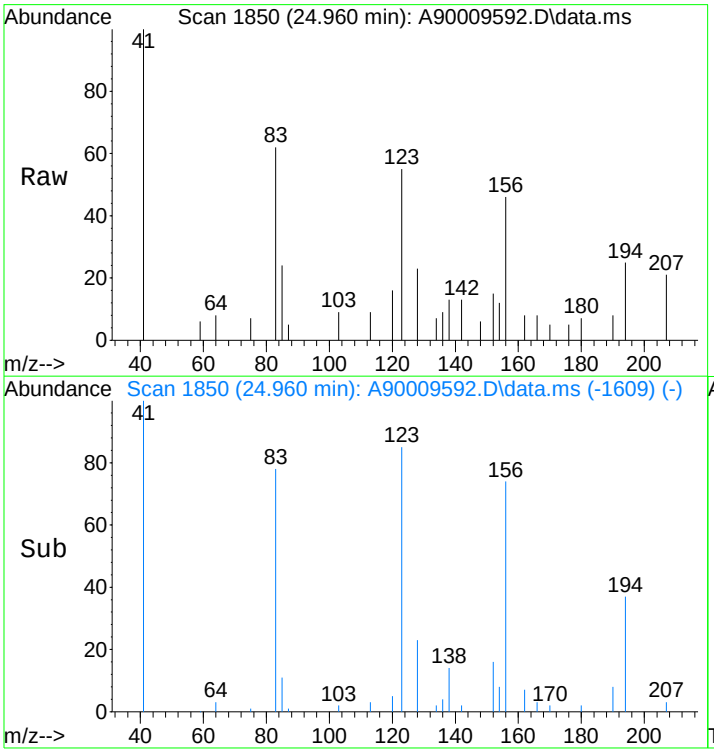


#7
C3-Decalins
Concen: 43.99 ng/mL m
RT: 21.146 min Scan# 1432
Delta R.T. -0.465 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:180 Resp: 2630

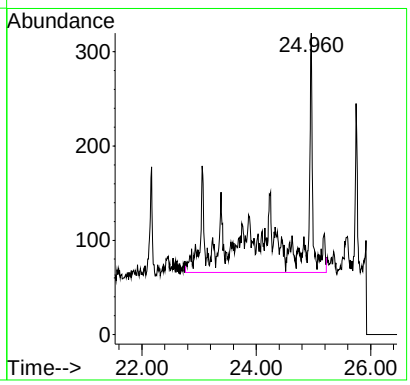


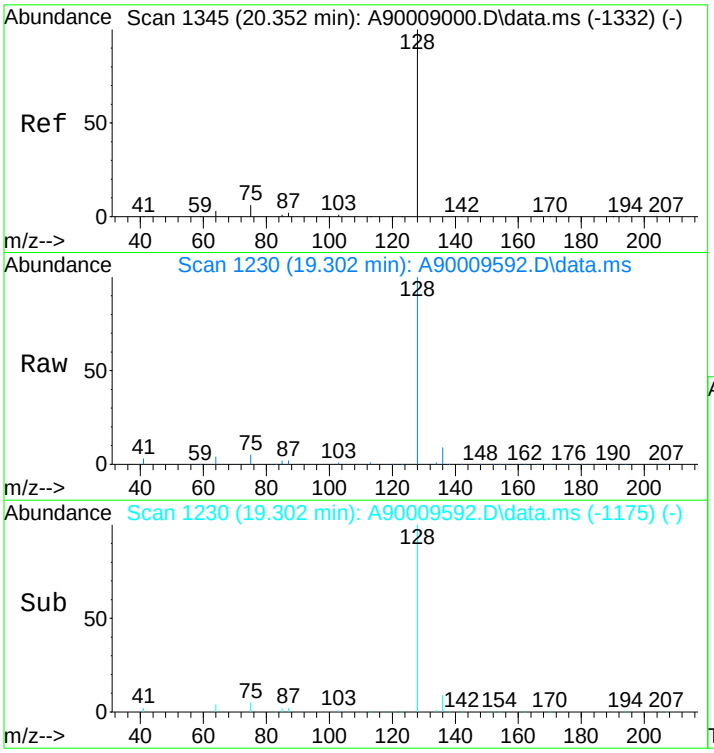




#8
C4-Decalins
Concen: 77.89 ng/mL m
RT: 24.960 min Scan# 1850
Delta R.T. -0.009 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:194 Resp: 4657

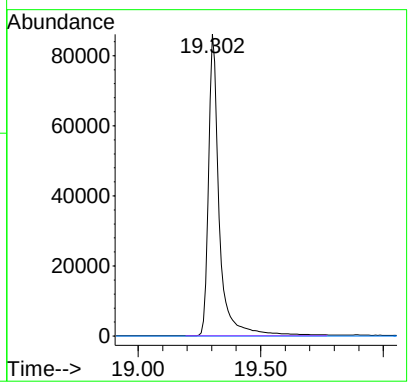


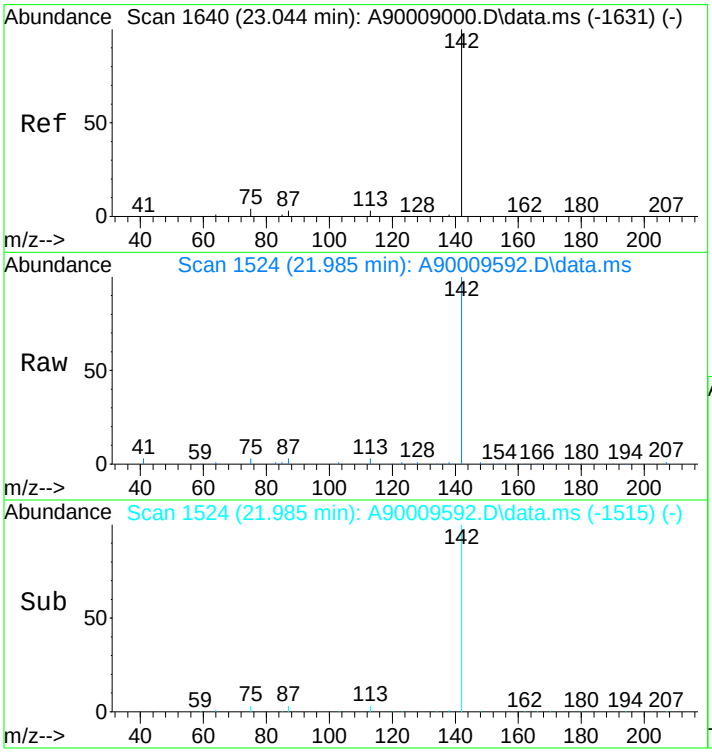


#10
Naphthalene
Concen: 978.09 ng/mL
RT: 19.302 min Scan# 1230
Delta R.T. -0.000 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:128 Resp: 262375

Ion	Ratio	Lower	Upper
128	100		
127	0.0	0.0	0.0

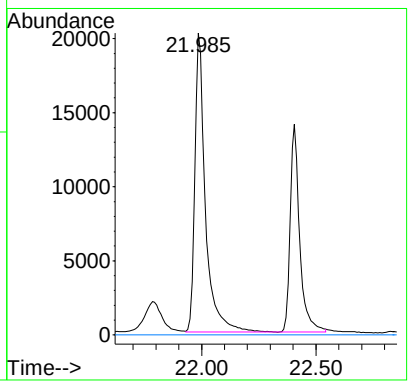


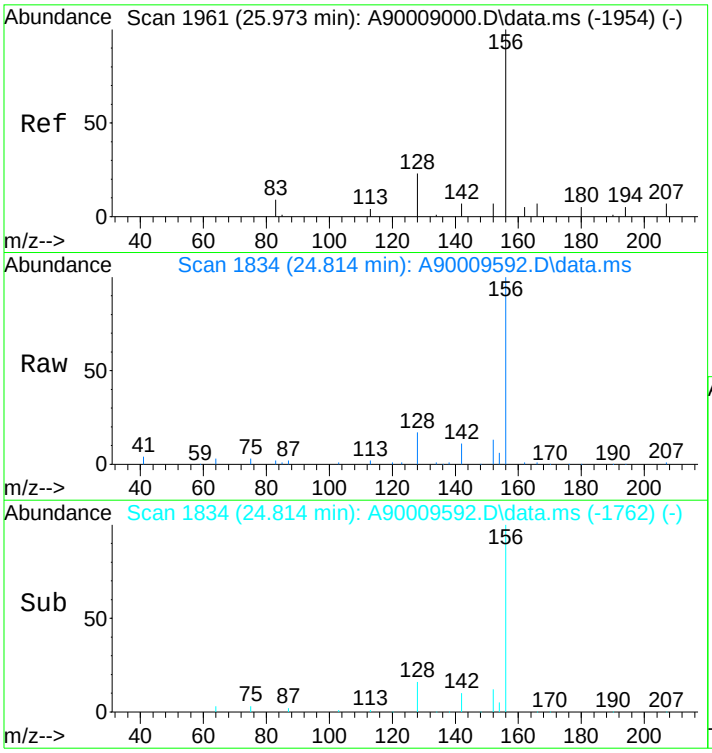


#11
C1-Naphthalenes
Concen: 393.57 ng/mL m
RT: 21.985 min Scan# 1524
Delta R.T. 0.000 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:142 Resp: 105575

Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	0.0

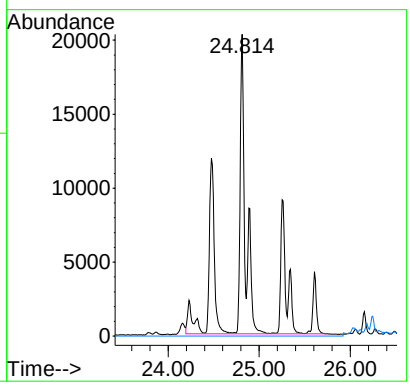


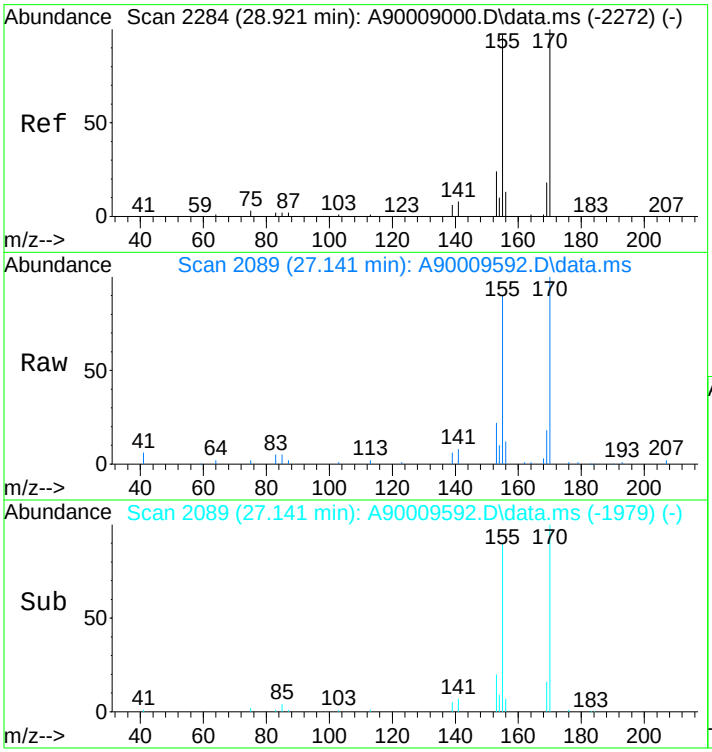


#12
C2-Naphthalenes
Concen: 682.79 ng/mL m
RT: 24.814 min Scan# 1834
Delta R.T. 0.000 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:156 Resp: 183158

Ion	Ratio	Lower	Upper
156	100		
141	0.0	0.0	0.0

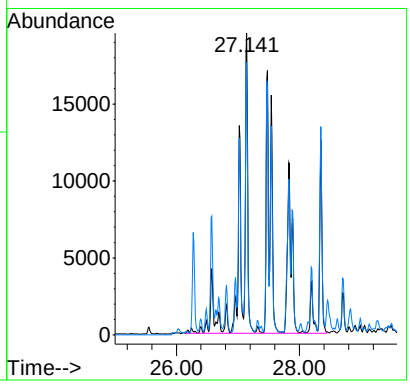


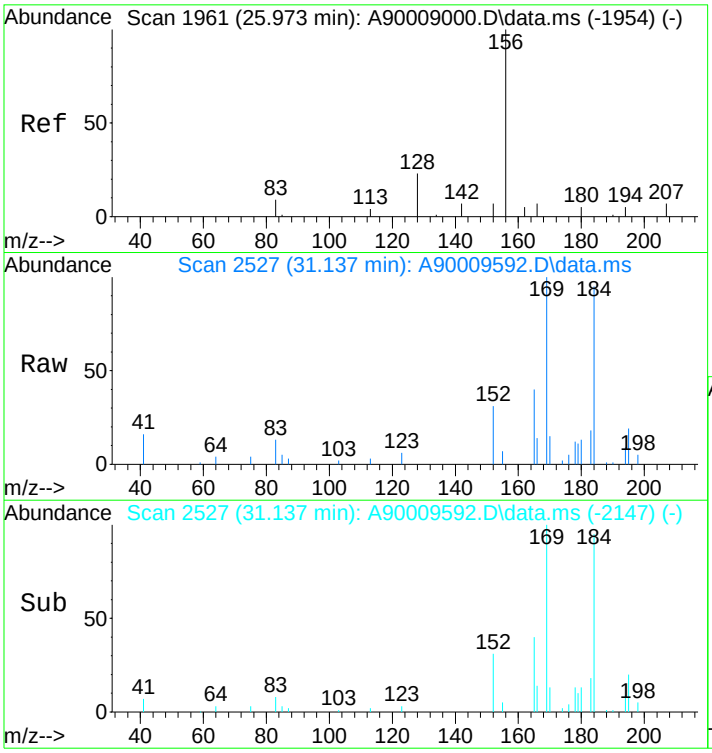


#13
C3-Naphthalenes
Concen: 1077.17 ng/mL m
RT: 27.141 min Scan# 2089
Delta R.T. 0.000 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:170 Resp: 288952

Ion	Ratio	Lower	Upper
170	100		
155	15.3	79.9	119.9#

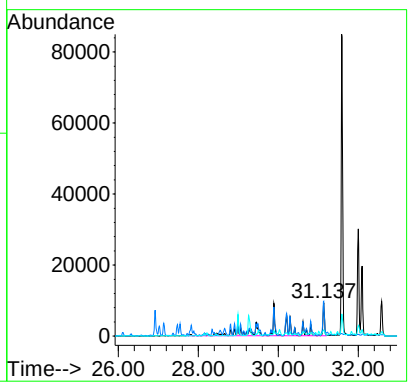


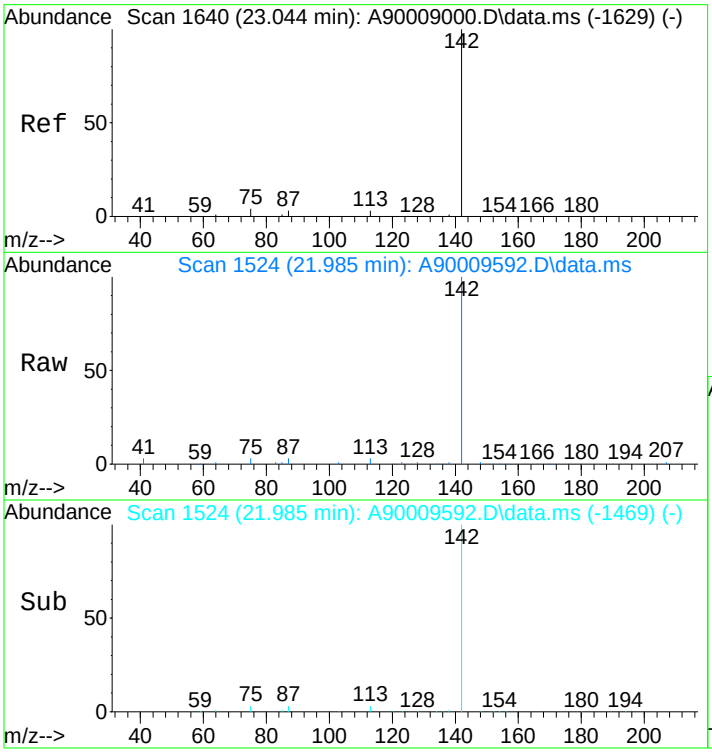


#14
C4-Naphthalenes
Concen: 677.76 ng/mL m
RT: 31.137 min Scan# 2527
Delta R.T. 1.241 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:184 Resp: 181811

Ion	Ratio	Lower	Upper
184	100		
169	10.5	76.6	115.0#
183	2.3	16.4	24.6#

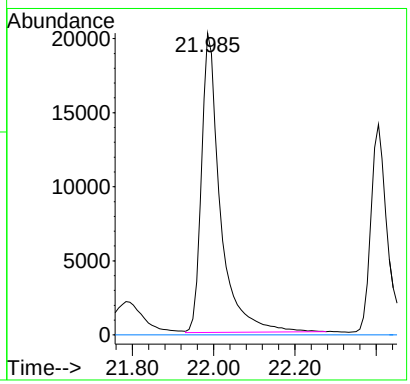


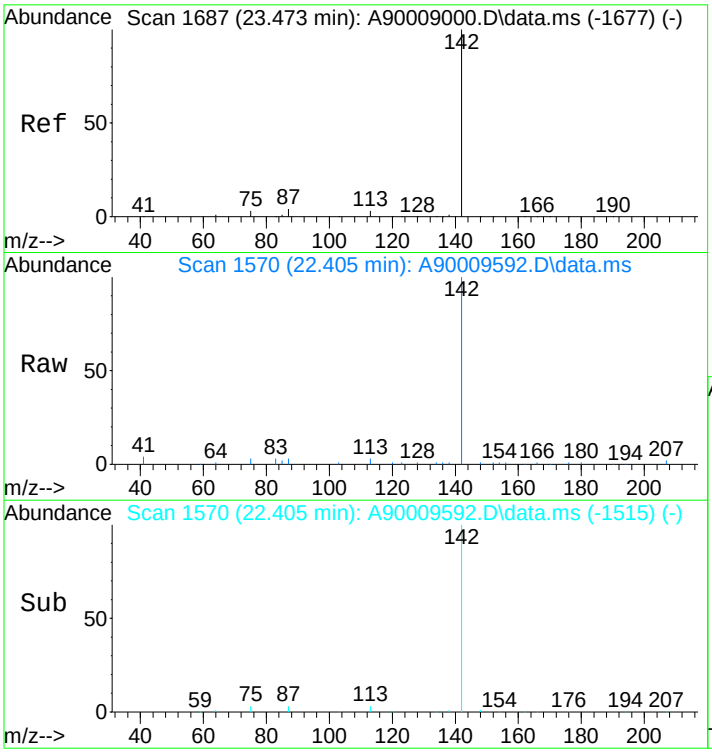


#16
2-Methylnaphthalene
Concen: 370.79 ng/mL
RT: 21.985 min Scan# 1524
Delta R.T. 0.000 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:142 Resp: 65047

Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	0.0

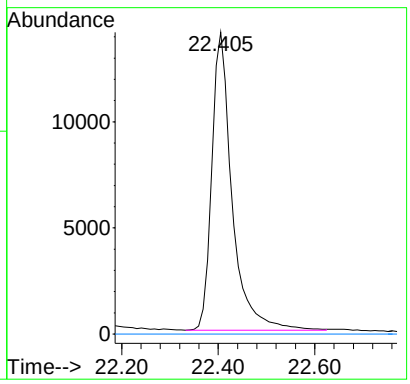


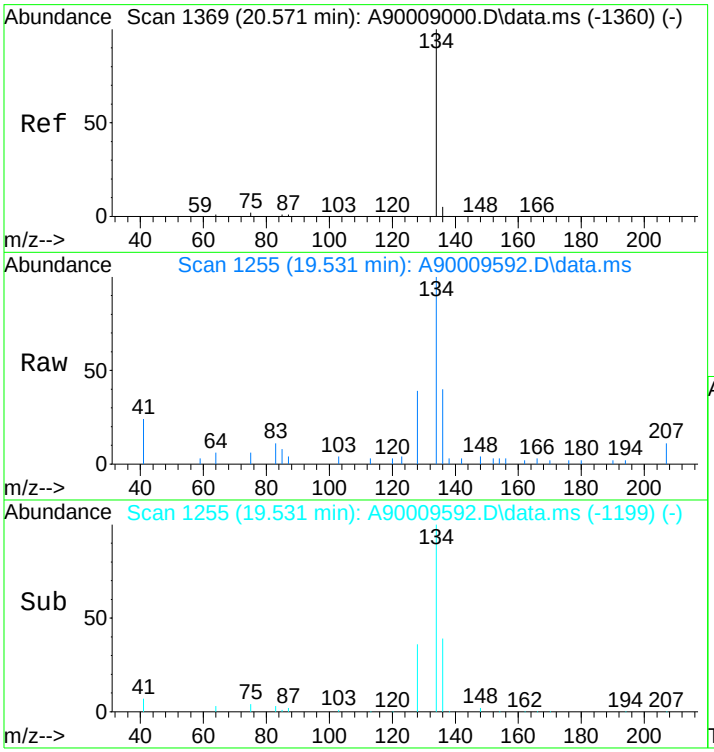


#17
1-Methylnaphthalene
Concen: 240.44 ng/mL
RT: 22.405 min Scan# 1570
Delta R.T. -0.000 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:142 Resp: 40934

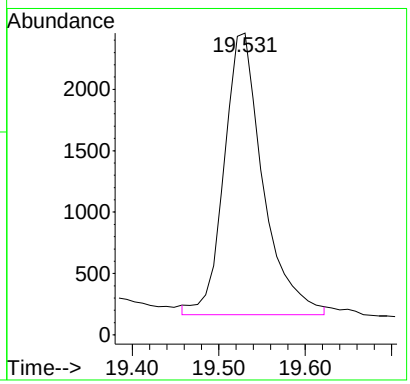
Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	20.0

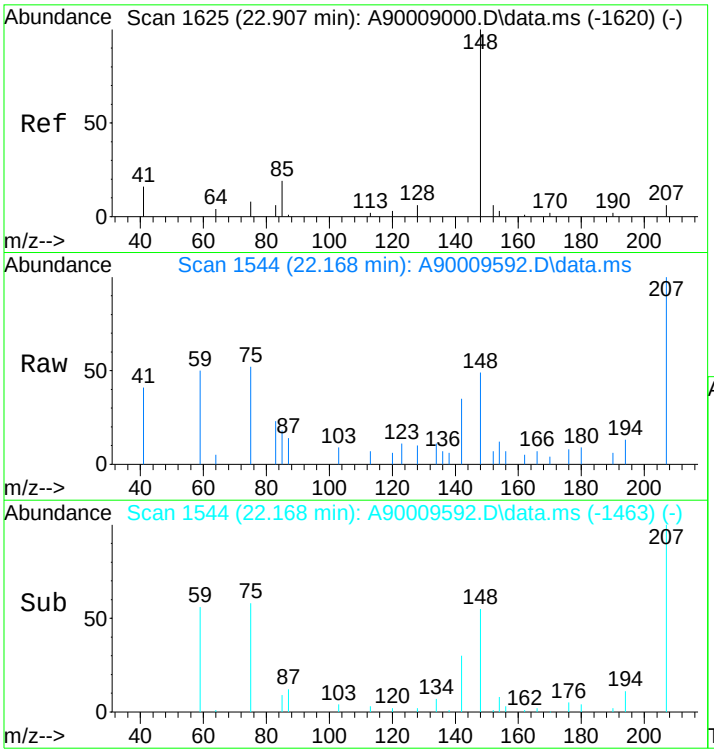




#18
Benzothiophene
Concen: 31.99 ng/mL m
RT: 19.531 min Scan# 1255
Delta R.T. 0.009 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

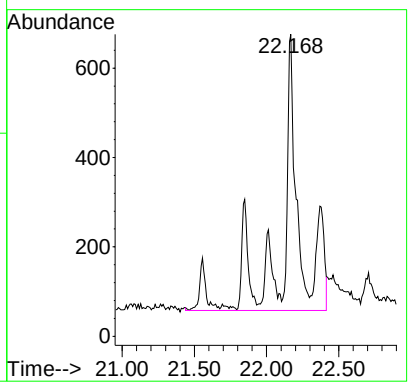
Tgt Ion:134 Resp: 7181

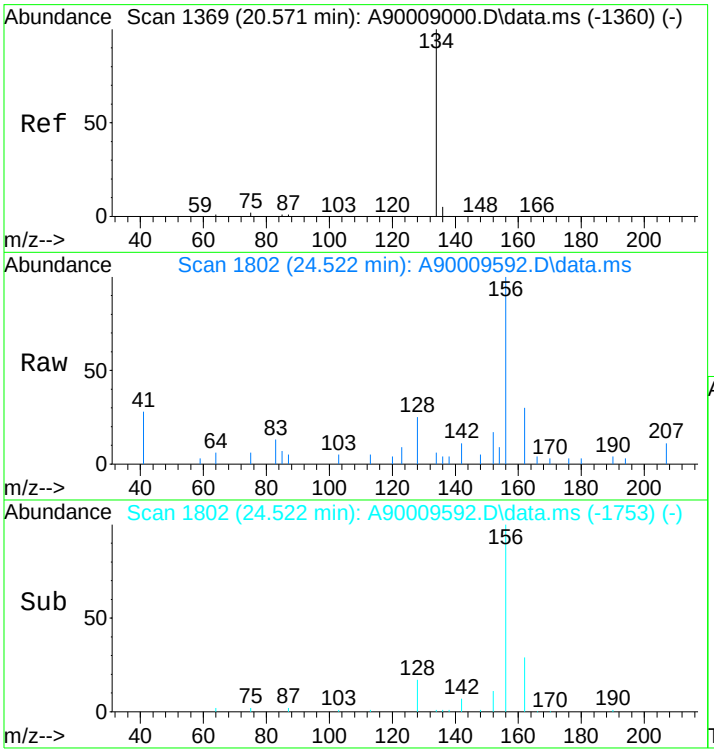




#19
C1-Benzo(b)thiophenes
Concen: 22.91 ng/mL m
RT: 22.168 min Scan# 1544
Delta R.T. 0.612 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

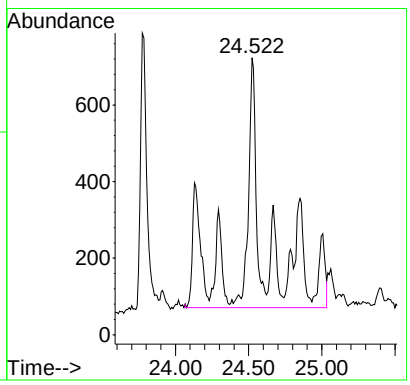
Tgt Ion:148 Resp: 5142

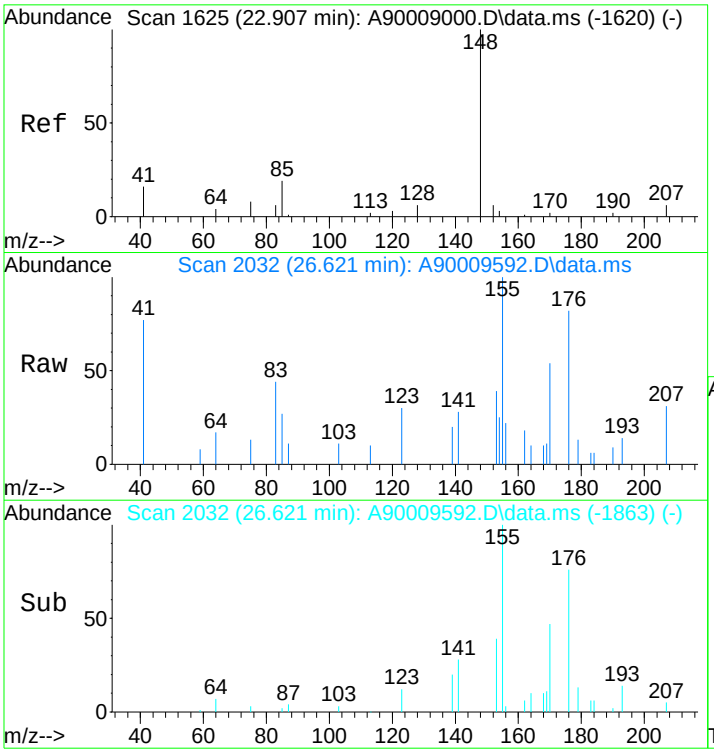




#20
C2-Benzo(b)thiophenes
Concen: 31.57 ng/mL m
RT: 24.522 min Scan# 1802
Delta R.T. -0.483 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

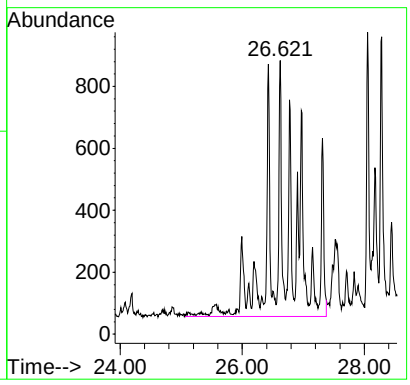
Tgt Ion:162 Resp: 7086

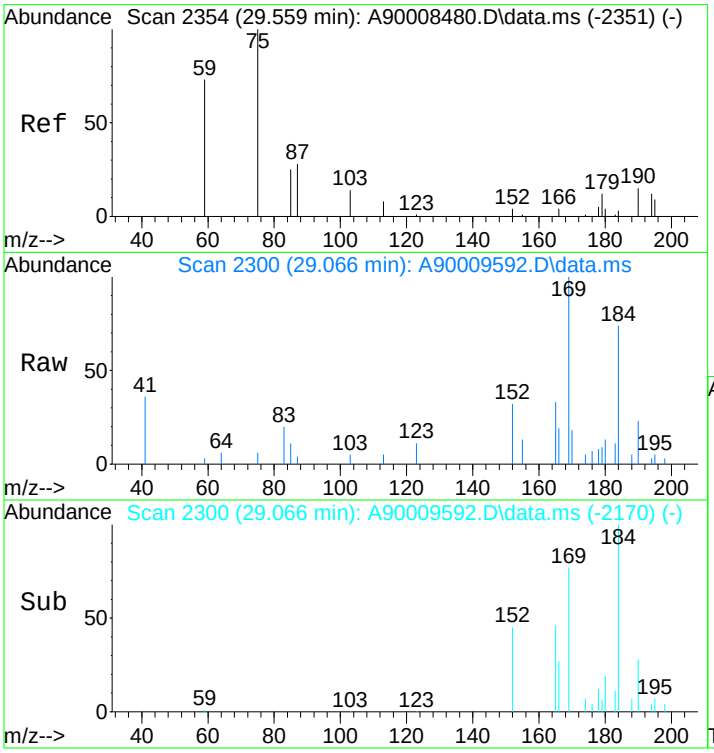




#21
C3-Benzo(b)thiophenes
Concen: 70.29 ng/mL m
RT: 26.621 min Scan# 2032
Delta R.T. -0.356 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

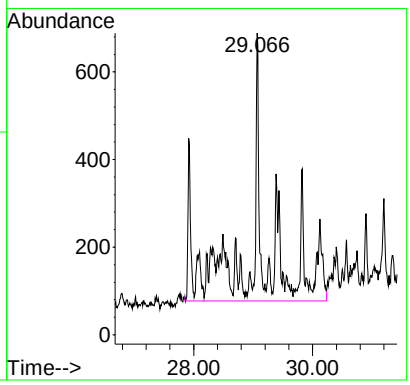
Tgt Ion:176 Resp: 15780

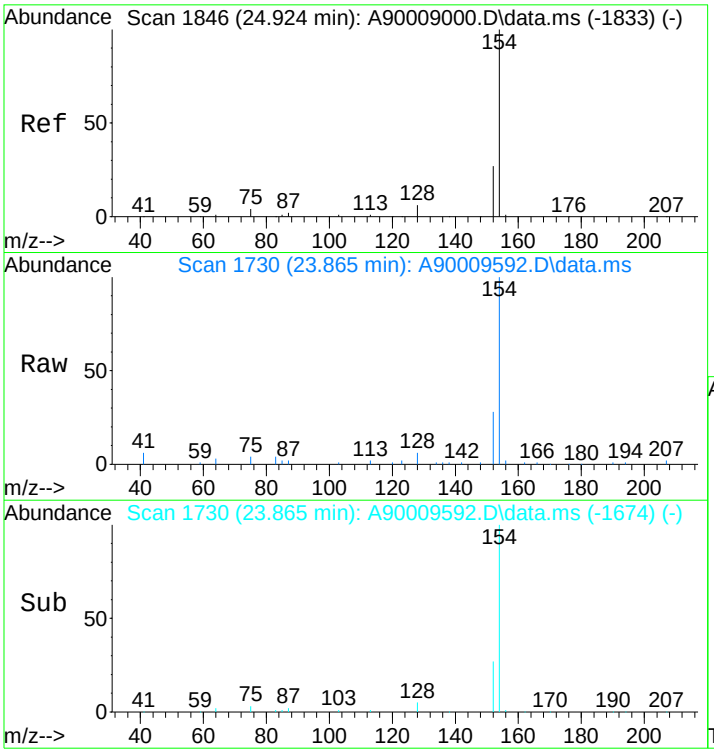




#22
C4-Benzo(b)thiophenes
Concen: 51.95 ng/mL m
RT: 29.066 min Scan# 2300
Delta R.T. -0.009 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:190 Resp: 11663

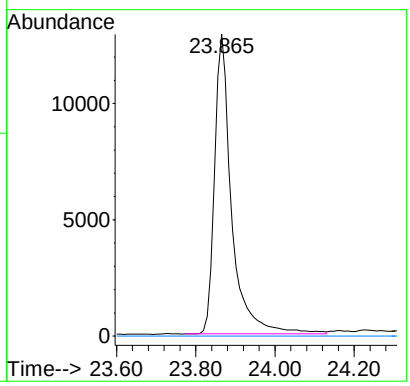


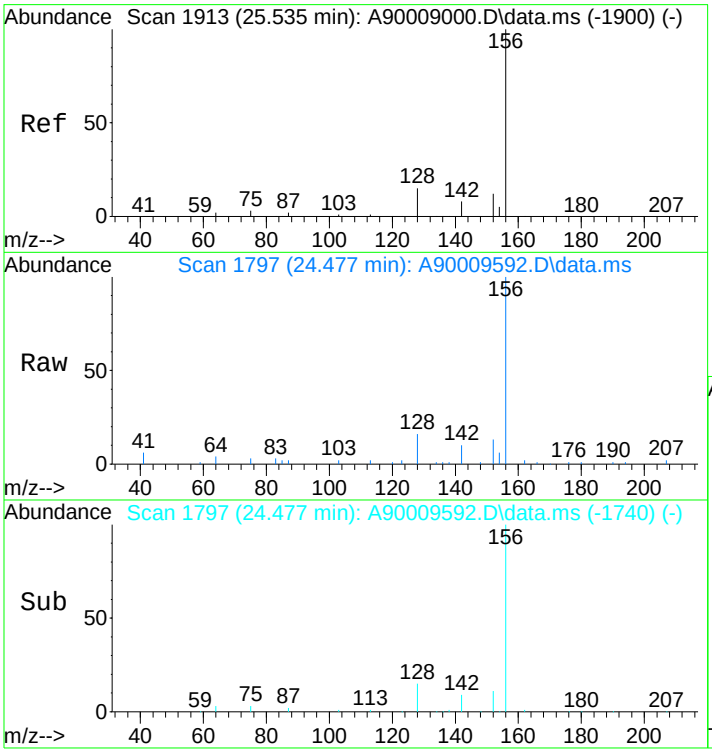


#23
Biphenyl
Concen: 168.23 ng/mL
RT: 23.865 min Scan# 1730
Delta R.T. 0.009 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:154 Resp: 38621

Ion	Ratio	Lower	Upper
154	100		
153	0.0	0.0	0.0

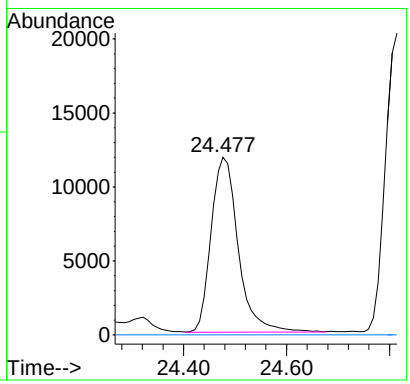


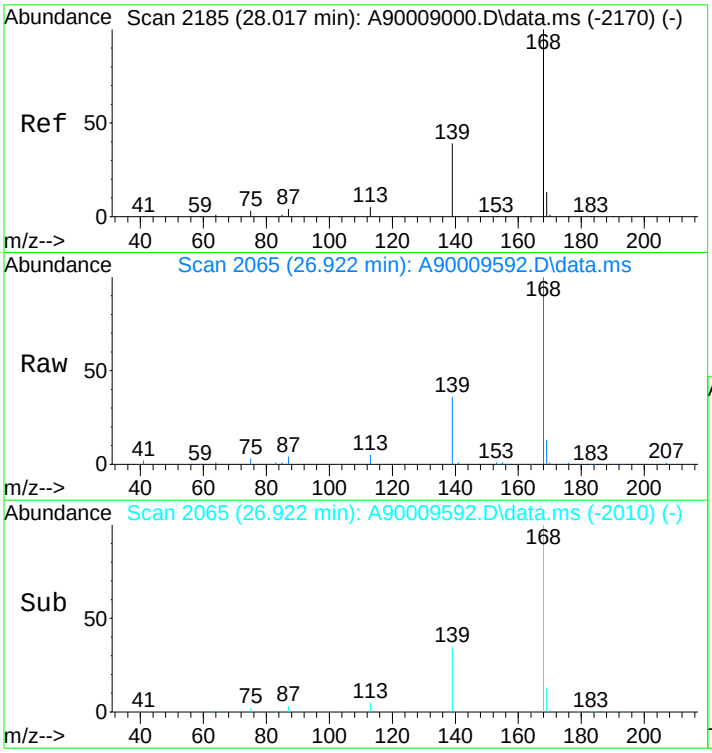


#24
2,6-Dimethylnaphthalene
Concen: 262.17 ng/mL
RT: 24.477 min Scan# 1797
Delta R.T. 0.018 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:156 Resp: 43233

Ion	Ratio	Lower	Upper
156	100		
155	0.0	0.0	0.0

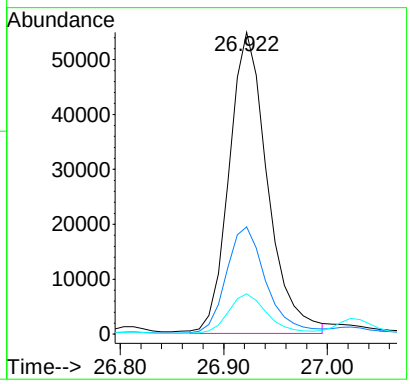


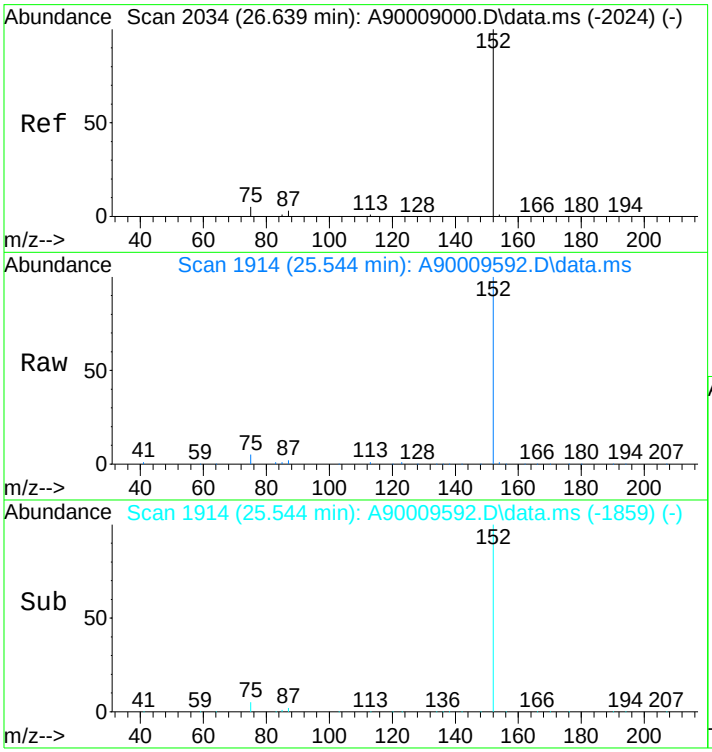


#25
Dibenzofuran
Concen: 578.73 ng/mL m
RT: 26.922 min Scan# 2065
Delta R.T. -0.000 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:168 Resp: 141707

Ion	Ratio	Lower	Upper
168	100		
139	36.4	28.0	42.0
169	13.1	10.6	15.8

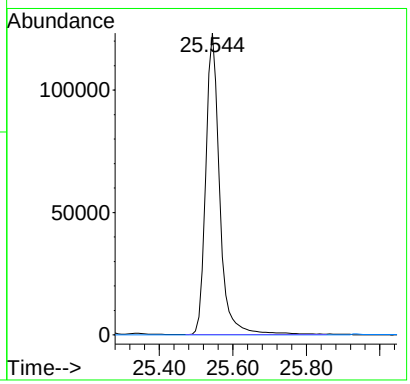


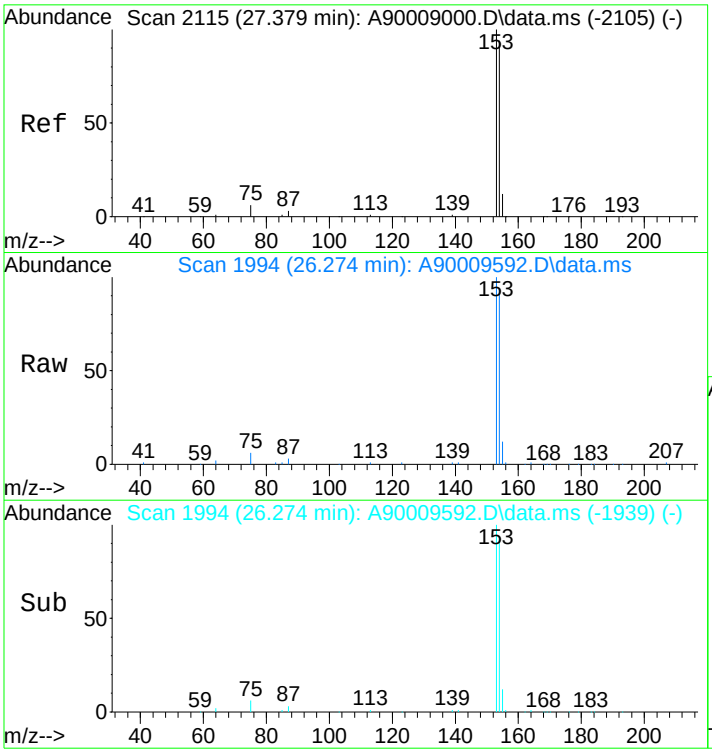


#26
Acenaphthylene
Concen: 1169.95 ng/mL
RT: 25.544 min Scan# 1914
Delta R.T. -0.000 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:152 Resp: 322847

Ion	Ratio	Lower	Upper
152	100		
153	0.0	0.0	0.0

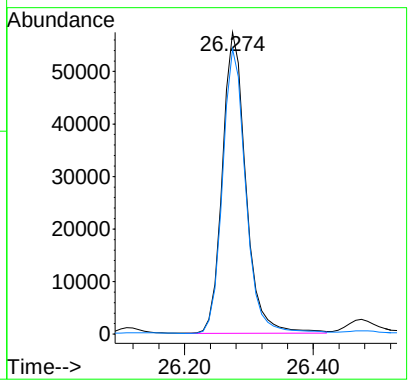


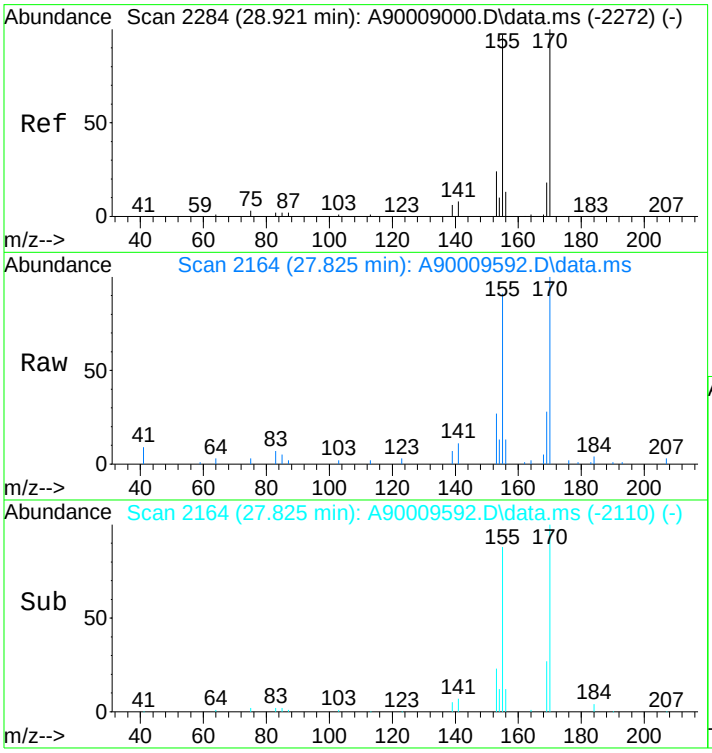


#27
Acenaphthene
Concen: 837.83 ng/mL
RT: 26.274 min Scan# 1994
Delta R.T. 0.000 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:153 Resp: 145365

Ion	Ratio	Lower	Upper
153	100		
154	93.7	75.4	113.0

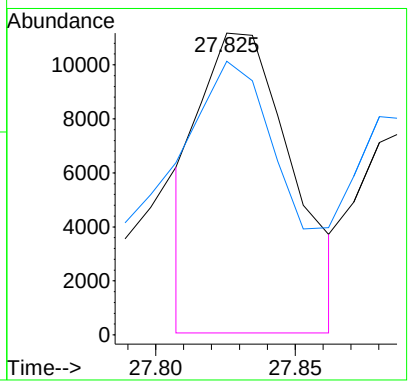


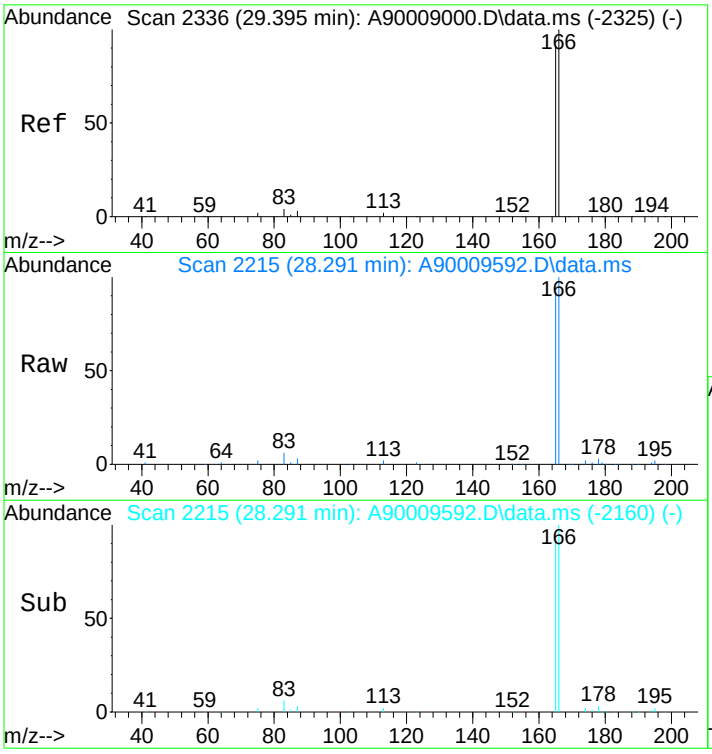


#28
2,3,5-Trimethylnaphthalene
Concen: 170.05 ng/mL m
RT: 27.825 min Scan# 2164
Delta R.T. -0.009 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:170 Resp: 25781

Ion	Ratio	Lower	Upper
170	100		
155	120.0	69.0	103.4#

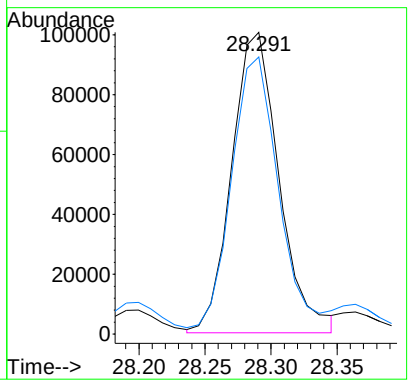


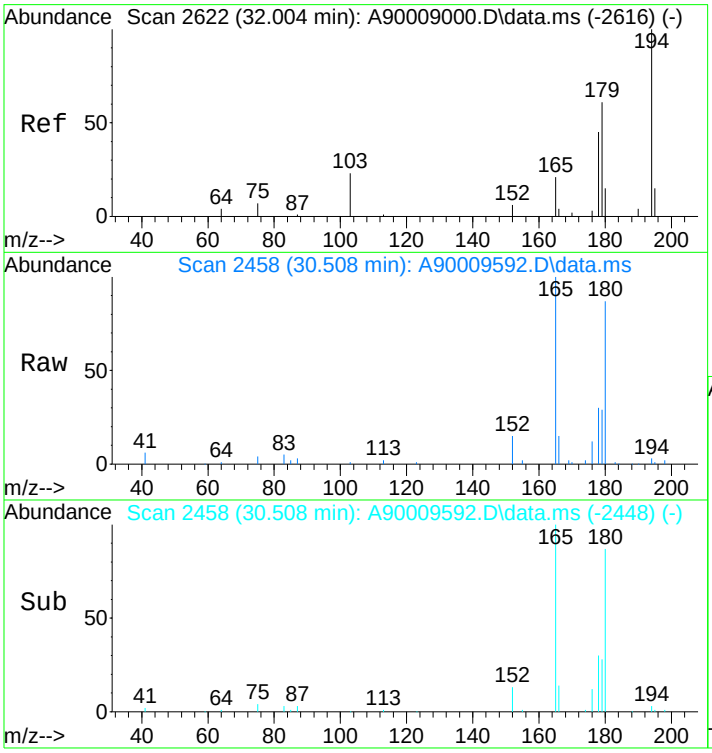


#29
Fluorene
Concen: 1317.86 ng/mL m
RT: 28.291 min Scan# 2215
Delta R.T. -0.000 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:166 Resp: 251098

Ion	Ratio	Lower	Upper
166	100		
165	88.8	73.4	110.0

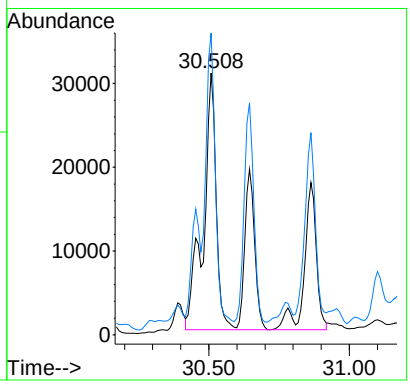


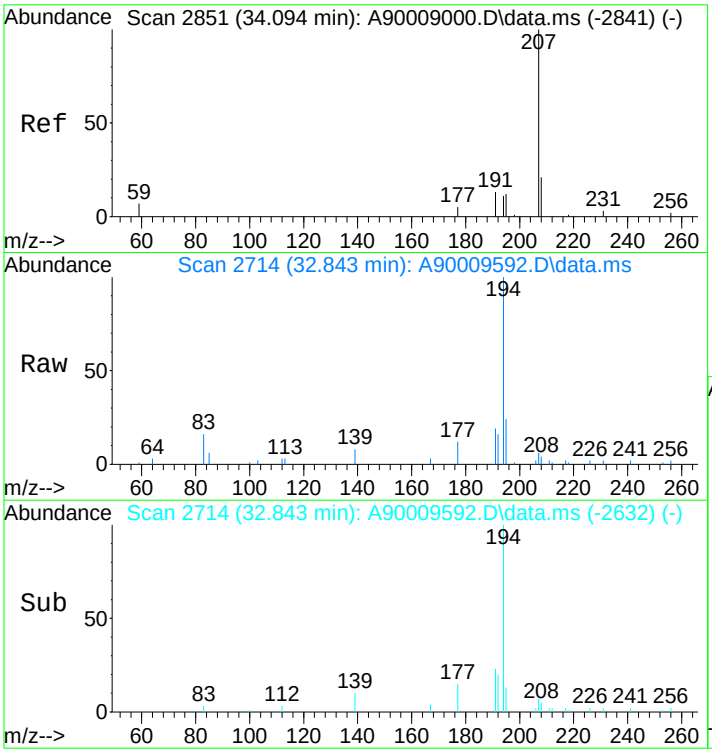


#30
C1-Fluorenes
Concen: 1031.31 ng/mL m
RT: 30.508 min Scan# 2458
Delta R.T. -0.137 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:180 Resp: 196500

Ion	Ratio	Lower	Upper
180	100		
165	31.6	117.5	176.3#

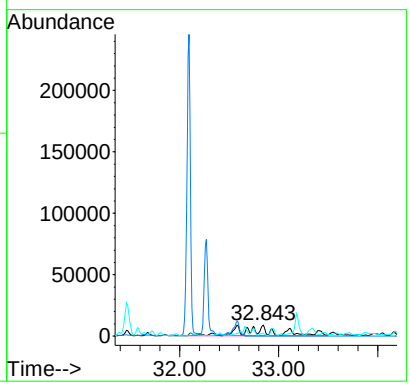


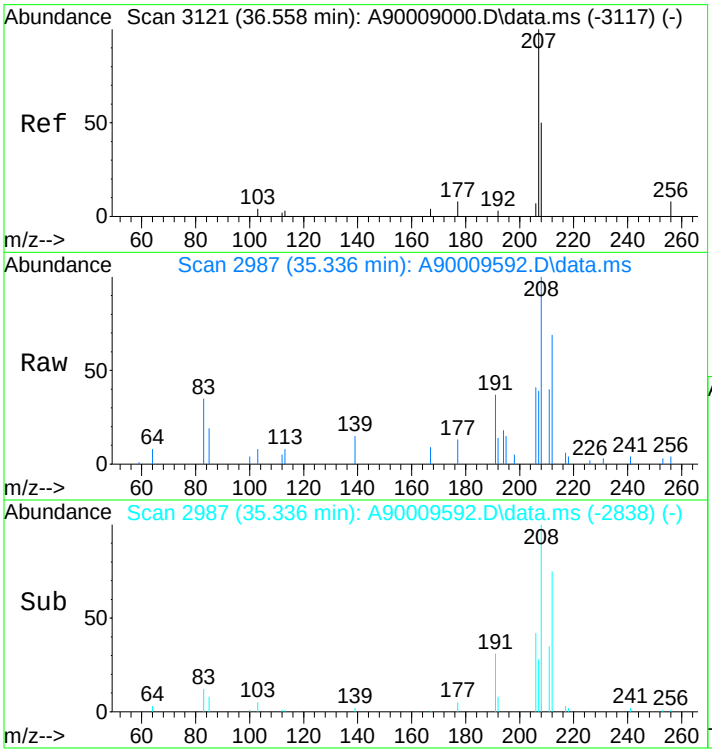


#31
C2-Fluorenes
Concen: 1044.84 ng/mL m
RT: 32.843 min Scan# 2714
Delta R.T. 0.000 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:194 Resp: 199077

Ion	Ratio	Lower	Upper
194	100		
179	0.0	0.0	0.0
195	2.7	26.3	39.5#

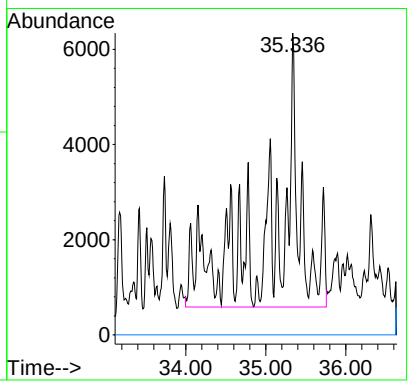


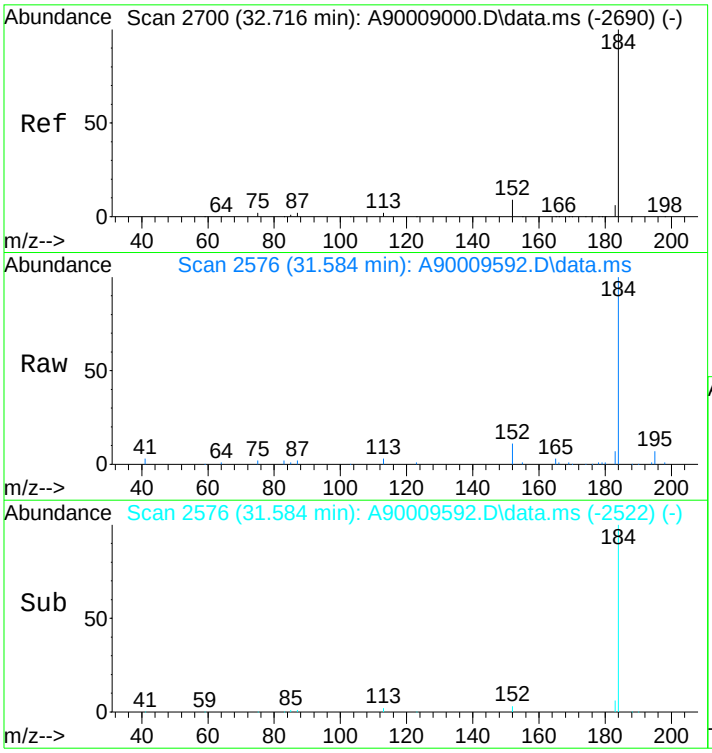


#32
C3-Fluorenes
Concen: 673.09 ng/mL m
RT: 35.336 min Scan# 2987
Delta R.T. 0.667 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:208 Resp: 128246

Ion	Ratio	Lower	Upper
208	100		
197	0.0	0.0	0.0

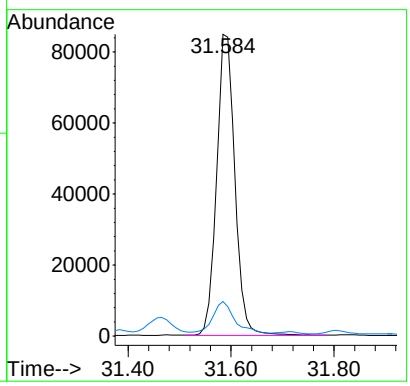


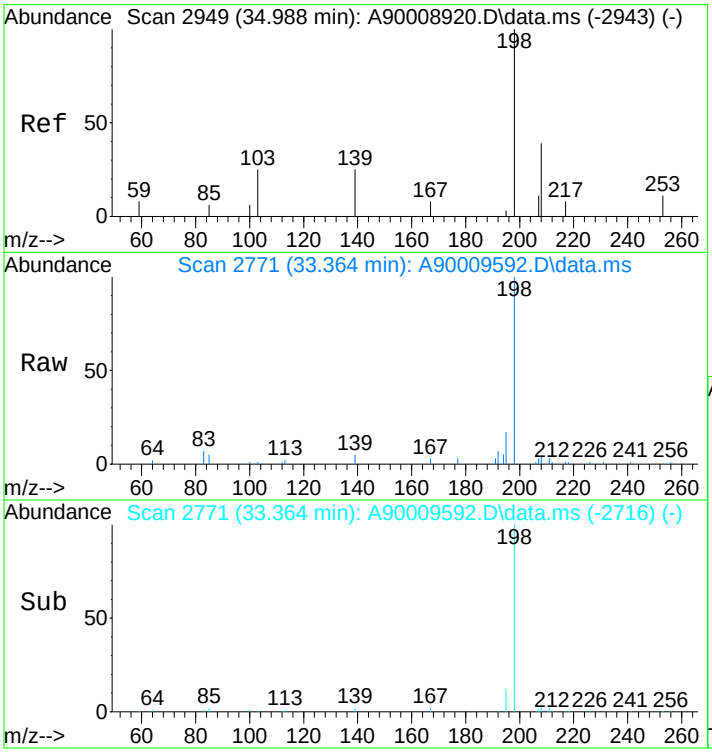


#33
Dibenzothiophene
Concen: 779.11 ng/mL
RT: 31.584 min Scan# 2576
Delta R.T. -0.009 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:184 Resp: 208815

Ion	Ratio	Lower	Upper
184	100		
152	12.2	7.0	10.4#

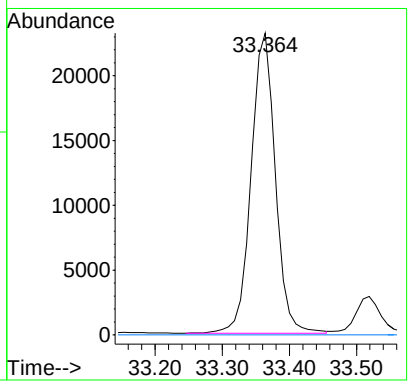


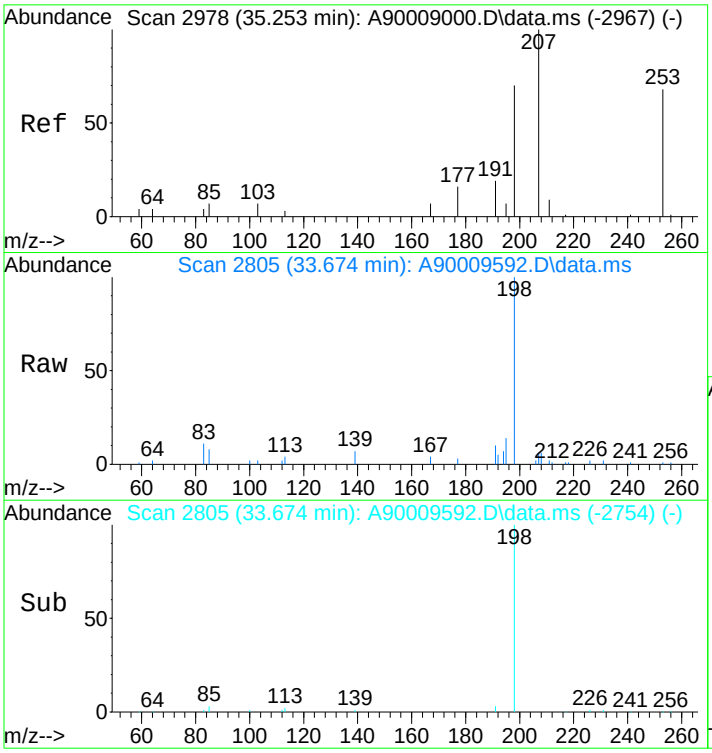


#34
4-Methyldibenzothiophene(4MDT)
Concen: 216.35 ng/mL
RT: 33.364 min Scan# 2771
Delta R.T. 0.000 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:198 Resp: 57985

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

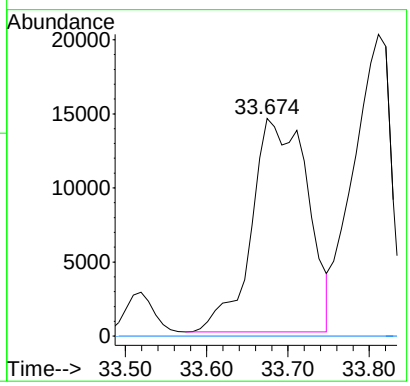


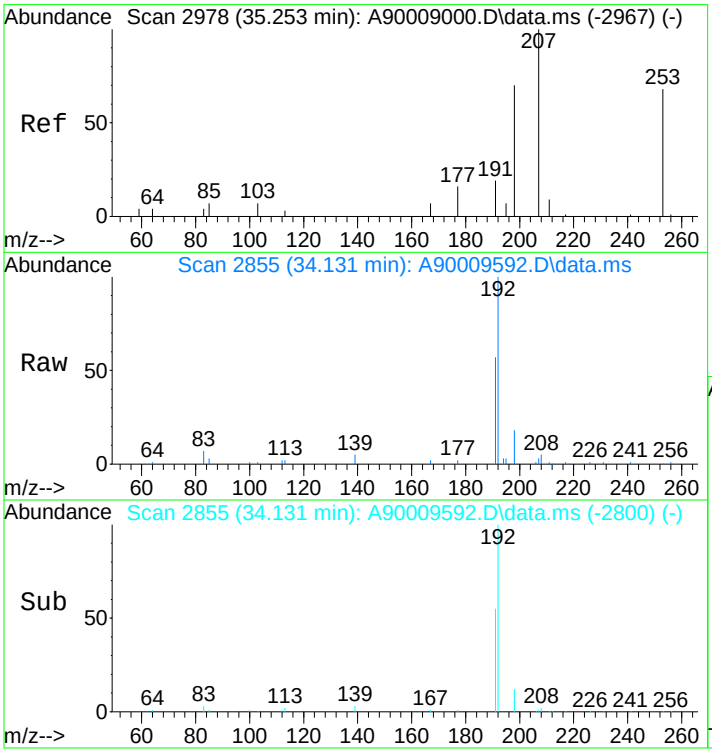


#35
2/3-Methyldibenzothiophene(2MDT)
Concen: 258.46 ng/mL
RT: 33.674 min Scan# 2805
Delta R.T. -0.036 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:198 Resp: 69271

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

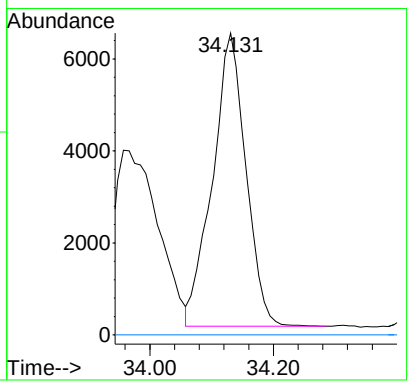


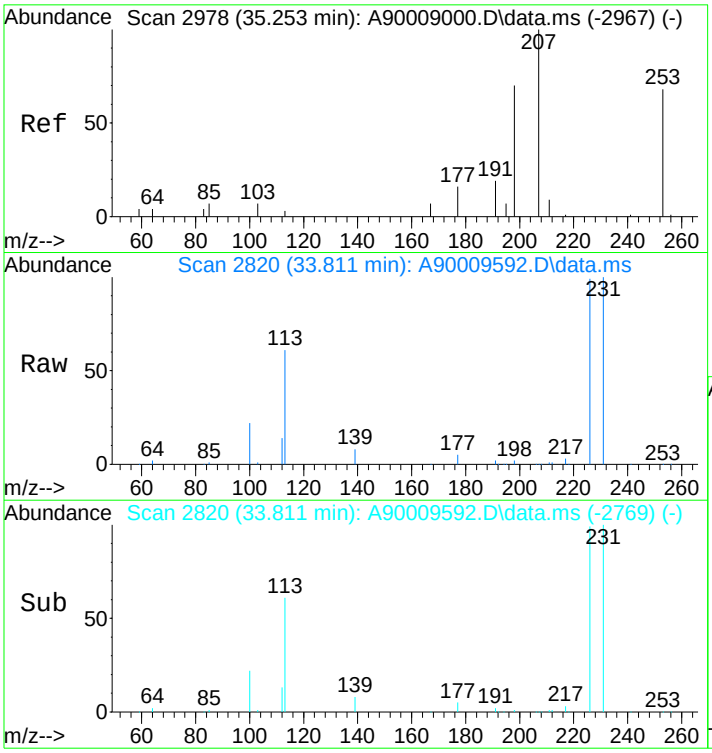


#36
1-Methyldibenzothiophene(1MDT)
Concen: 88.99 ng/mL
RT: 34.131 min Scan# 2855
Delta R.T. 0.000 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:198 Resp: 23851

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

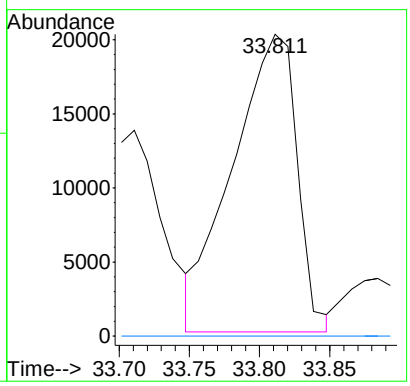


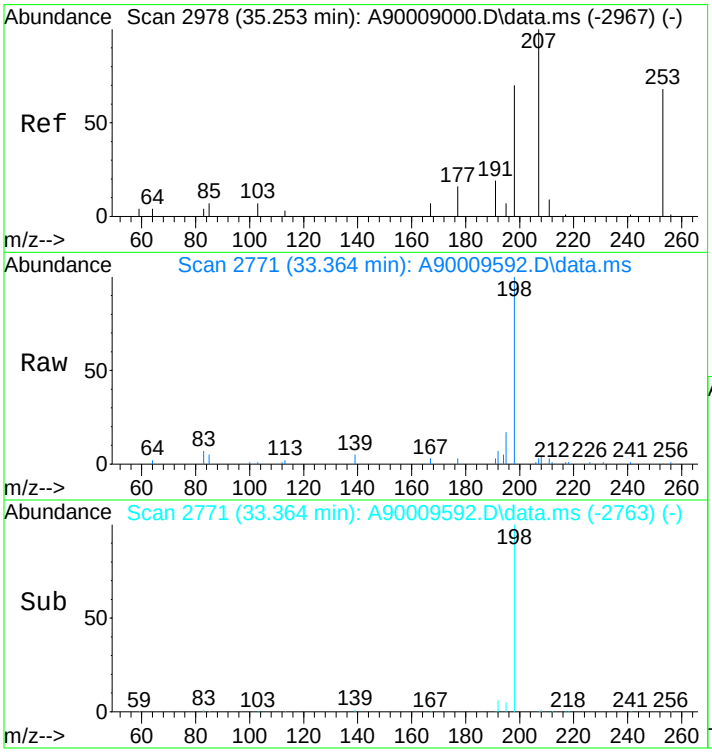


#37
OTP
Concen: 239.62 ng/mL
RT: 33.811 min Scan# 2820
Delta R.T. 0.019 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:198 Resp: 64223

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

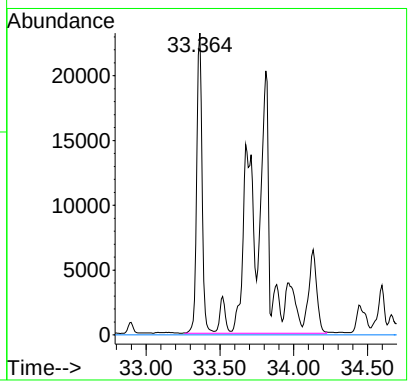


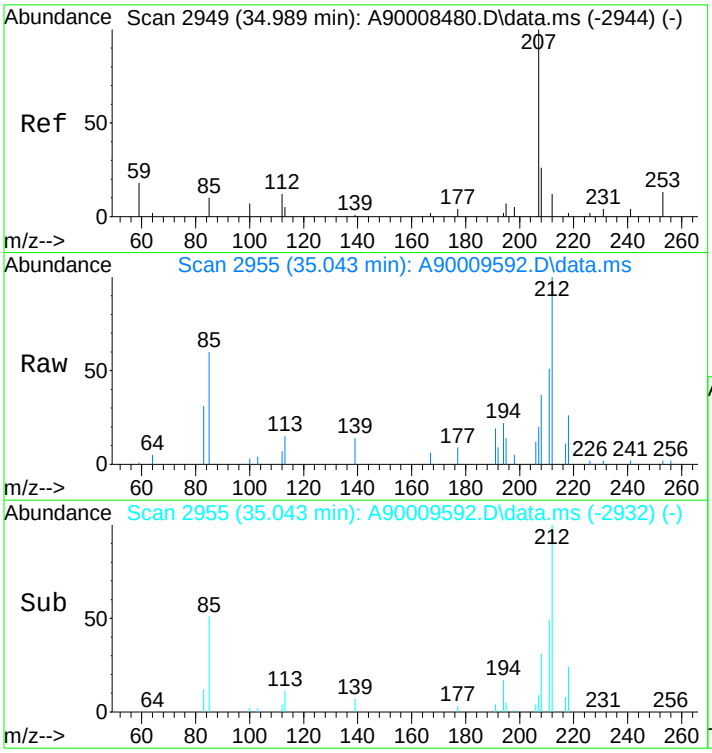


#38
C1-Dibenzothiophenes
Concen: 955.30 ng/mL m
RT: 33.364 min Scan# 2771
Delta R.T. 0.000 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:198 Resp: 256037

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

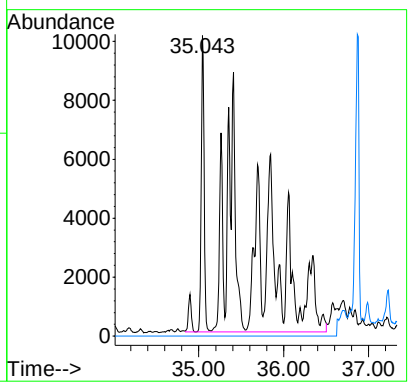


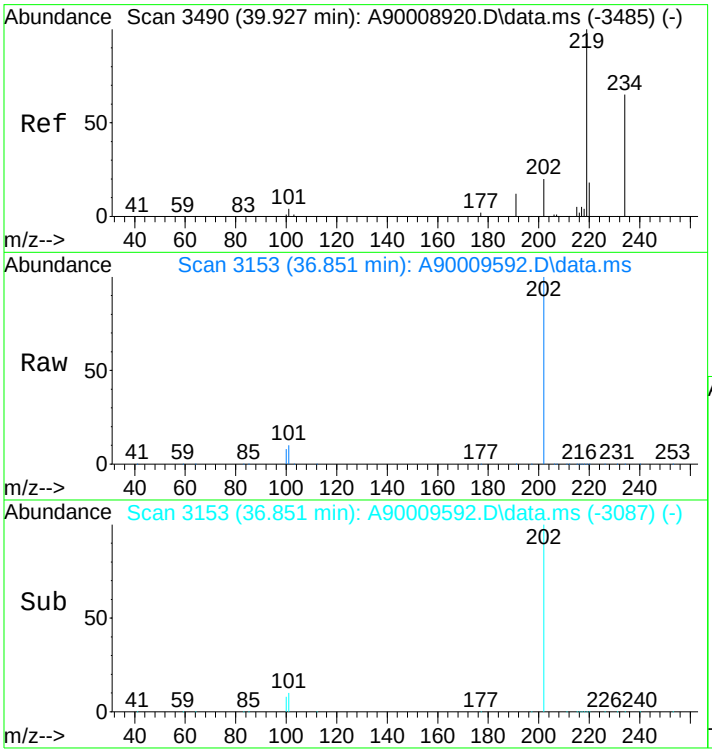


#39
C2-Dibenzothiophenes
Concen: 717.05 ng/mL m
RT: 35.043 min Scan# 2955
Delta R.T. -0.009 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:212 Resp: 192182

Ion	Ratio	Lower	Upper
212	100		
197	0.0	0.0	0.0

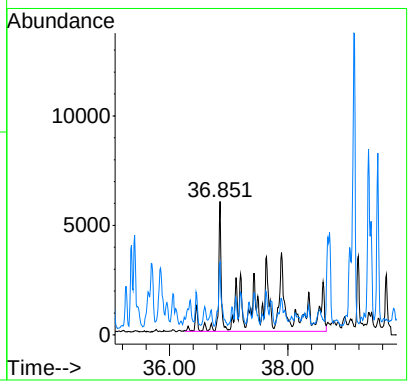


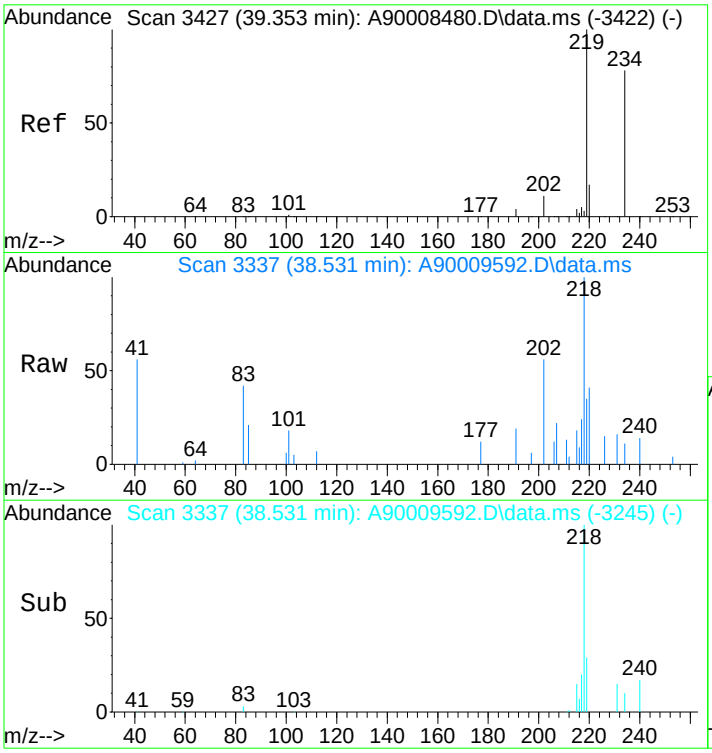


#40
C3-Dibenzothiophenes
Concen: 438.72 ng/mL m
RT: 36.851 min Scan# 3153
Delta R.T. 0.000 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:226 Resp: 117584

Ion	Ratio	Lower	Upper
226	100		
211	9.1	46.4	69.6#

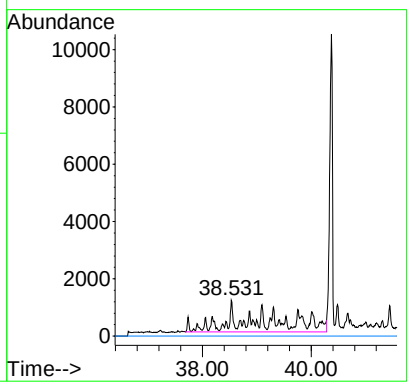


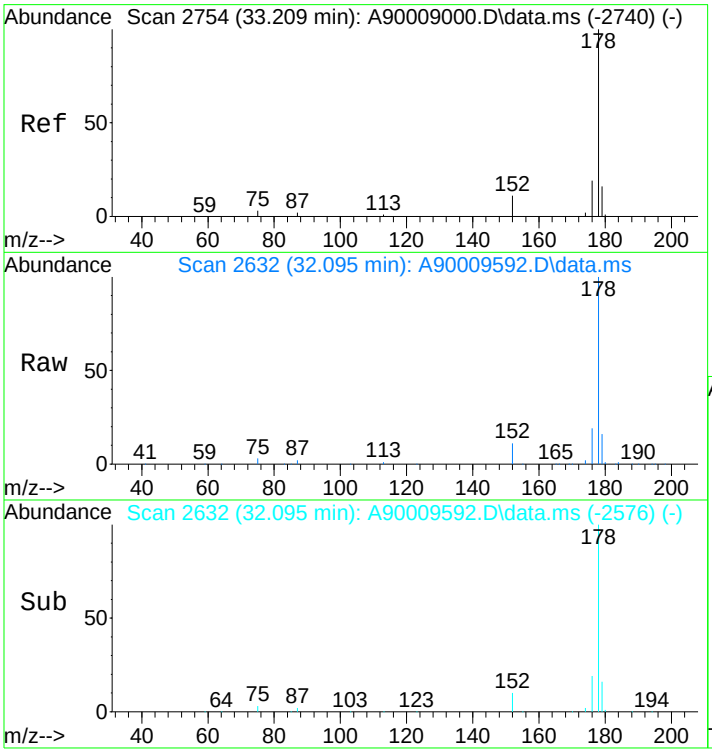


#41
C4-Dibenzothiophenes
Concen: 172.10 ng/mL m
RT: 38.531 min Scan# 3337
Delta R.T. -0.009 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:240 Resp: 46125

Ion	Ratio	Lower	Upper
240	100		
225	0.0	0.0	0.0

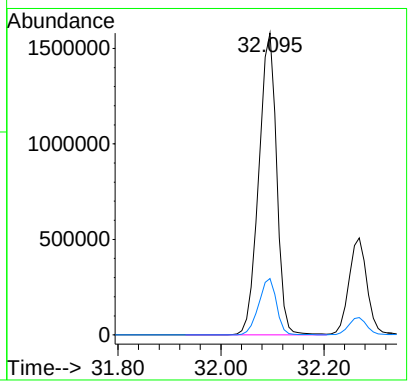


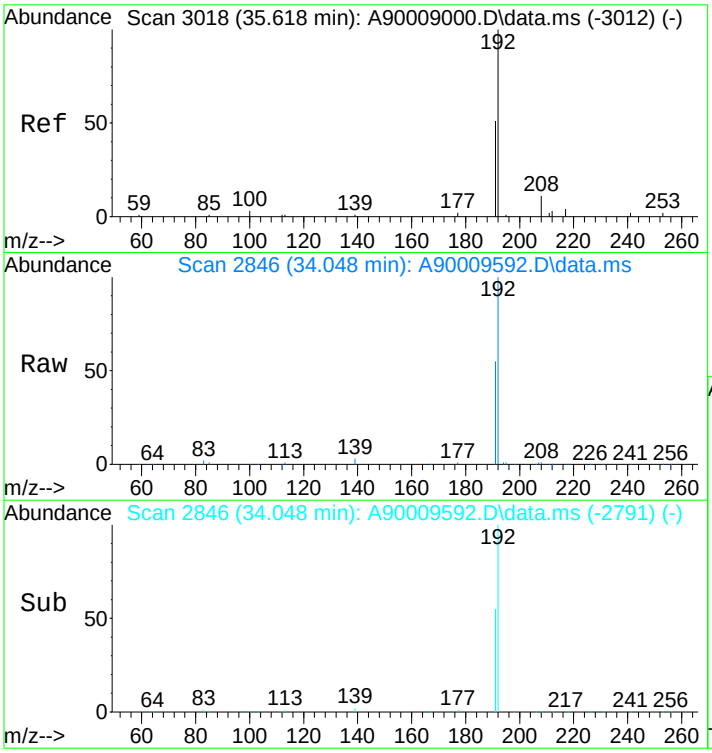


#43
Phenanthrene
Concen: 13708.78 ng/mL
RT: 32.095 min Scan# 2632
Delta R.T. 0.009 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:178 Resp: 3795891

Ion	Ratio	Lower	Upper
178	100		
176	18.7	15.1	22.7

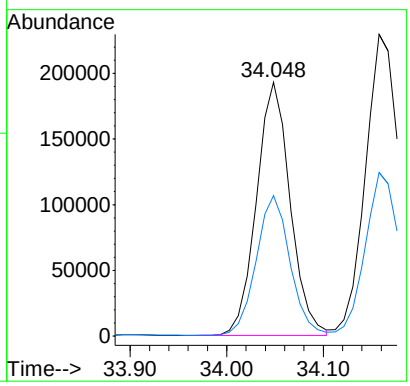


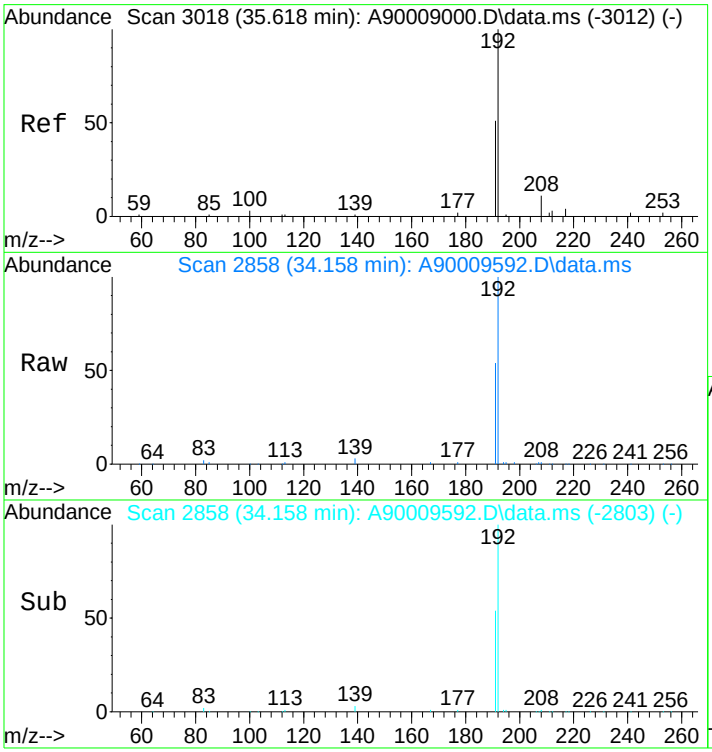


#44
3-Methylphenanthrene(3MP)
Concen: 1690.00 ng/mL
RT: 34.048 min Scan# 2846
Delta R.T. 0.000 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:192 Resp: 467951

Ion	Ratio	Lower	Upper
192	100		
191	55.3	45.9	68.9

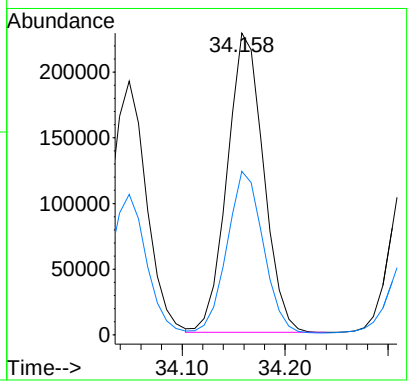


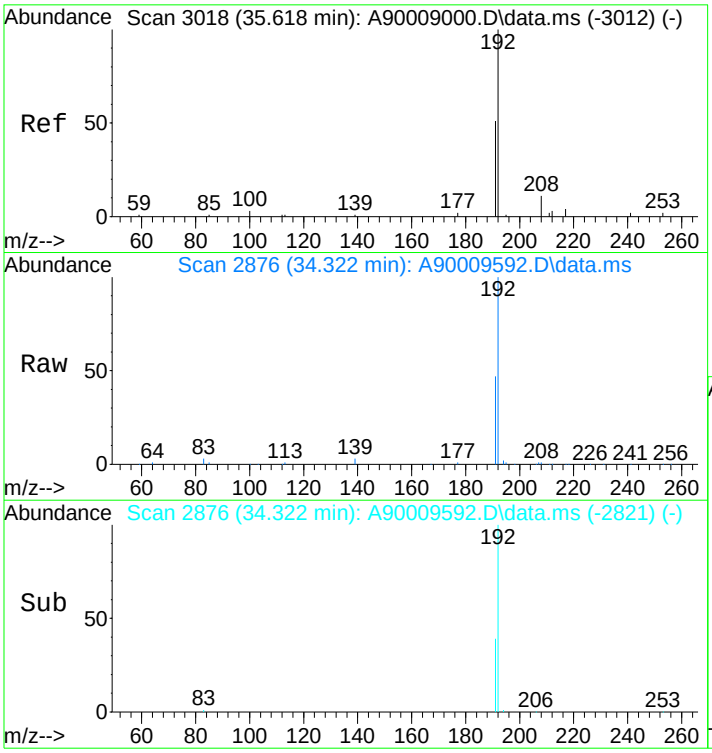


#45
2-Methylphenanthrene(2MP)
Concen: 2015.51 ng/mL
RT: 34.158 min Scan# 2858
Delta R.T. 0.000 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:192 Resp: 558085

Ion	Ratio	Lower	Upper
192	100		
191	53.7	44.9	67.3

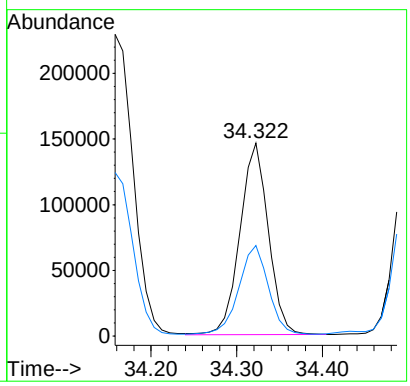


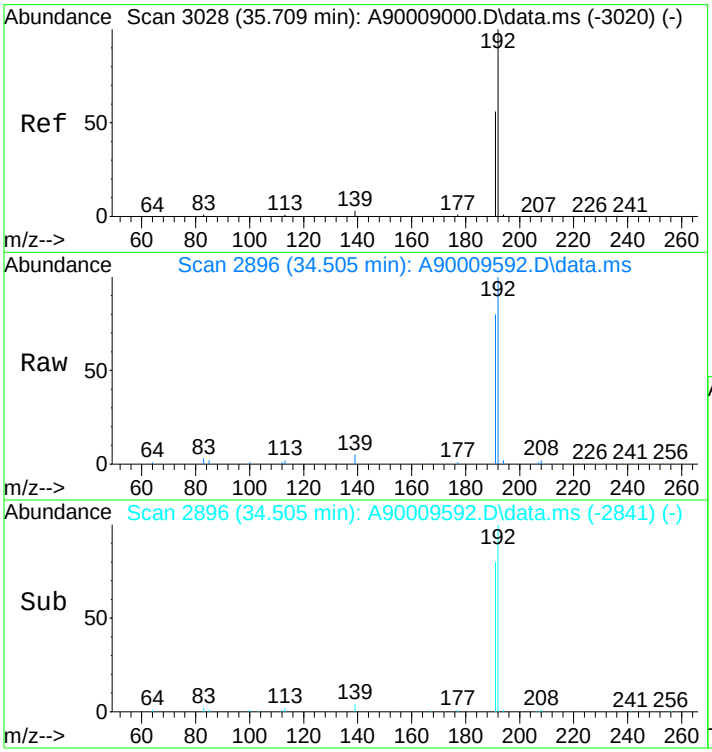


#46
2-Methylanthracene(2MA)
Concen: 1213.40 ng/mL
RT: 34.322 min Scan# 2876
Delta R.T. 0.000 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:192 Resp: 335983

Ion	Ratio	Lower	Upper
192	100		
191	48.3	96.8	145.2#

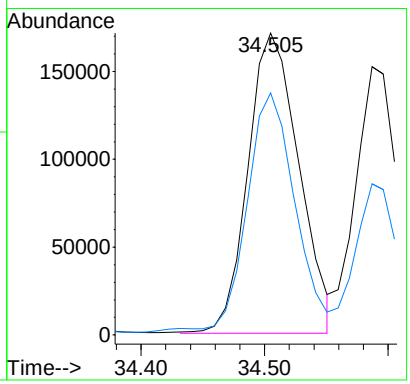


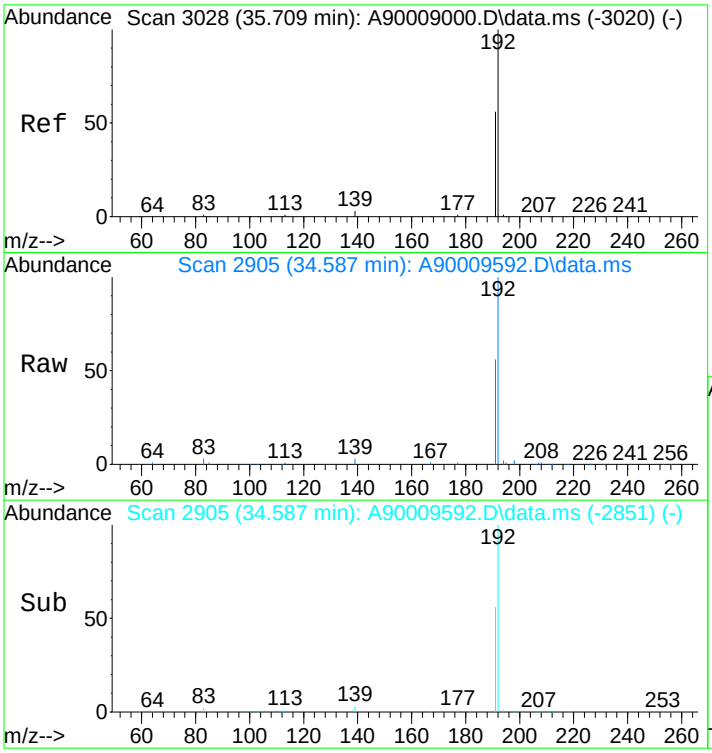


#47
9/4-Methylphenanthrene(9MP)
Concen: 1766.10 ng/mL m
RT: 34.505 min Scan# 2896
Delta R.T. 0.000 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:192 Resp: 489024

Ion	Ratio	Lower	Upper
192	100		
191	40.8	44.5	66.7#

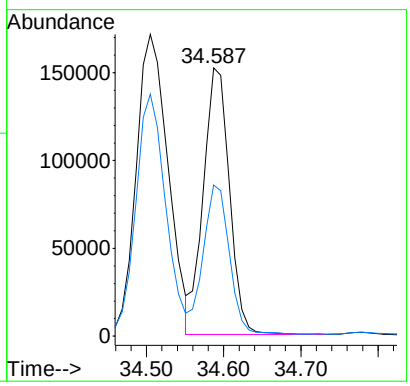


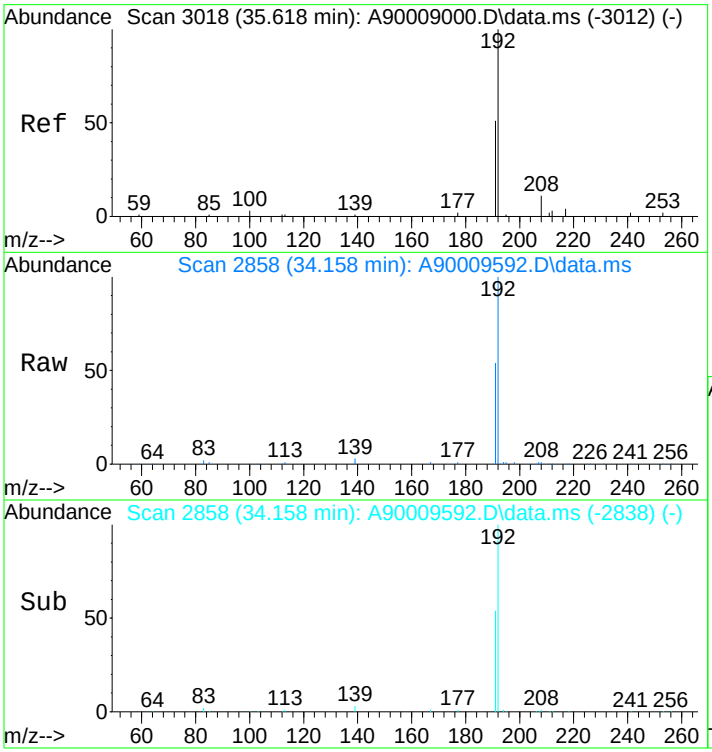


#48
1-Methylphenanthrene(1MP)
Concen: 1288.08 ng/mL
RT: 34.587 min Scan# 2905
Delta R.T. -0.009 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:192 Resp: 356663

Ion	Ratio	Lower	Upper
192	100		
191	55.9	46.9	70.3

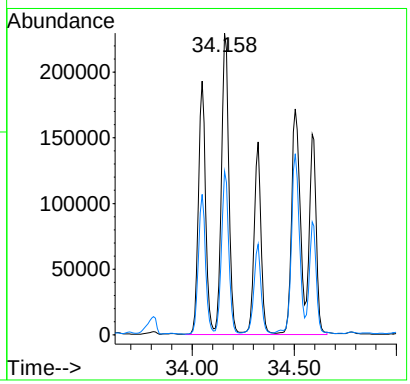


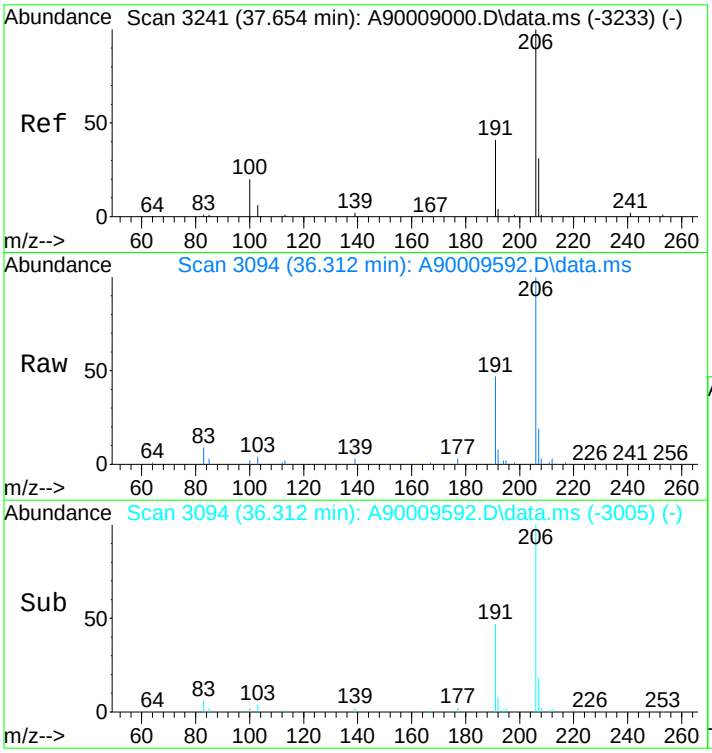


#49
C1-Phenanthrenes/Anthracenes
Concen: 8076.90 ng/mL m
RT: 34.158 min Scan# 2858
Delta R.T. -0.347 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:192 Resp: 2236453

Ion	Ratio	Lower	Upper
192	100		
191	6.5	44.5	66.7#

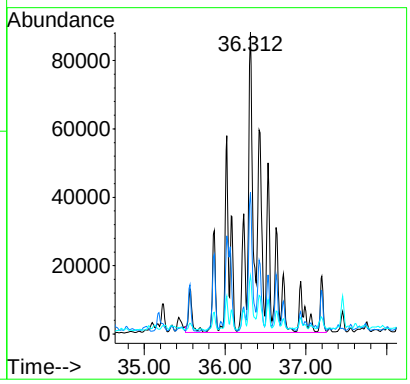


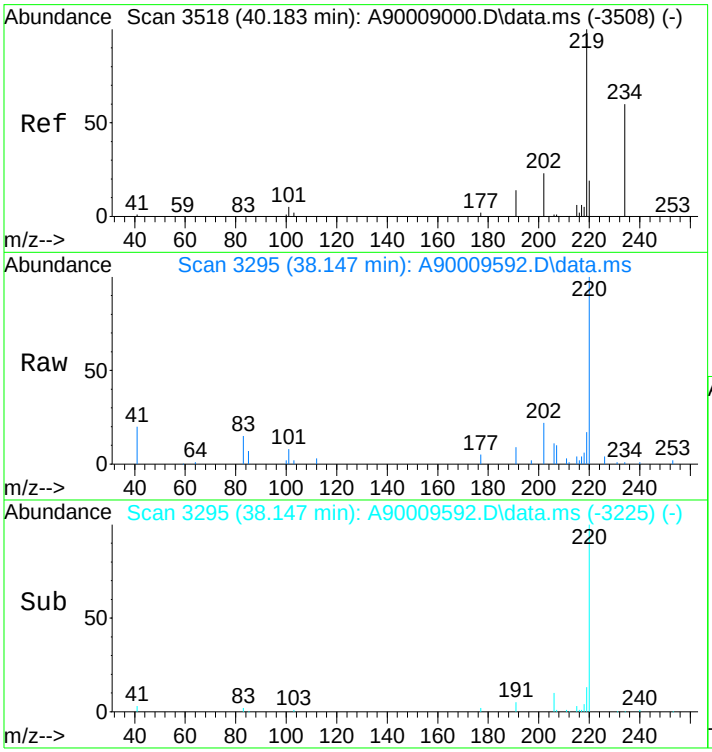


#50
C2-Phenanthrenes/Anthracenes
Concen: 4612.13 ng/mL m
RT: 36.312 min Scan# 3094
Delta R.T. 0.000 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:206 Resp: 1277074

Ion	Ratio	Lower	Upper
206	100		
191	3.0	41.0	61.4#
207	1.1	17.1	25.7#

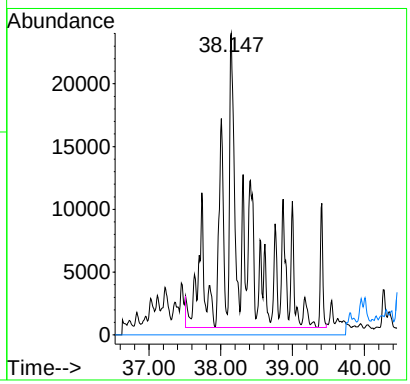


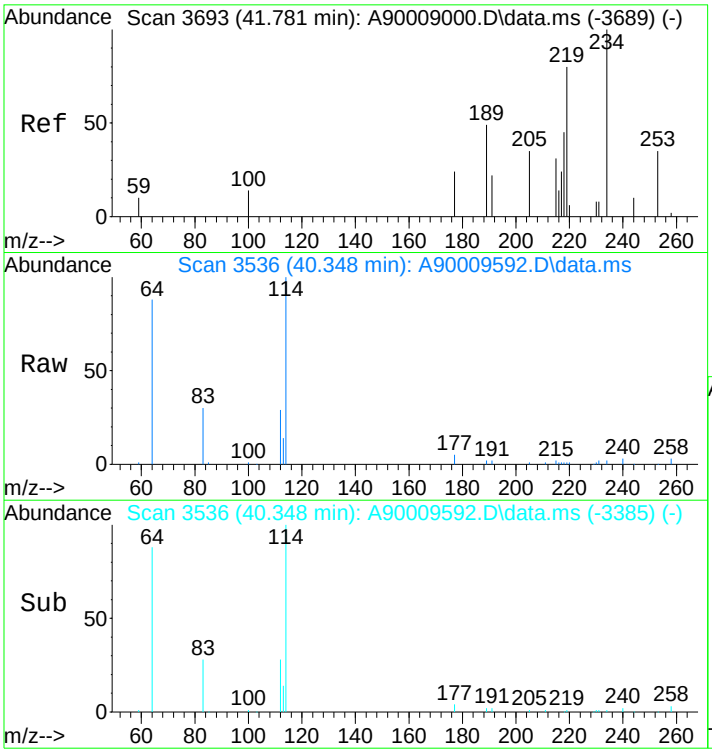


#52
C3-Phenanthrenes/Anthracenes
Concen: 1785.46 ng/mL m
RT: 38.147 min Scan# 3295
Delta R.T. 0.000 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:220 Resp: 494385

Ion	Ratio	Lower	Upper
220	100		
205	0.0	0.0	0.0

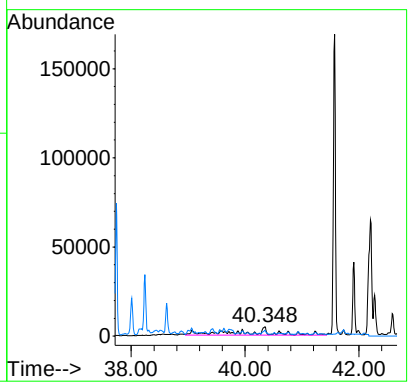


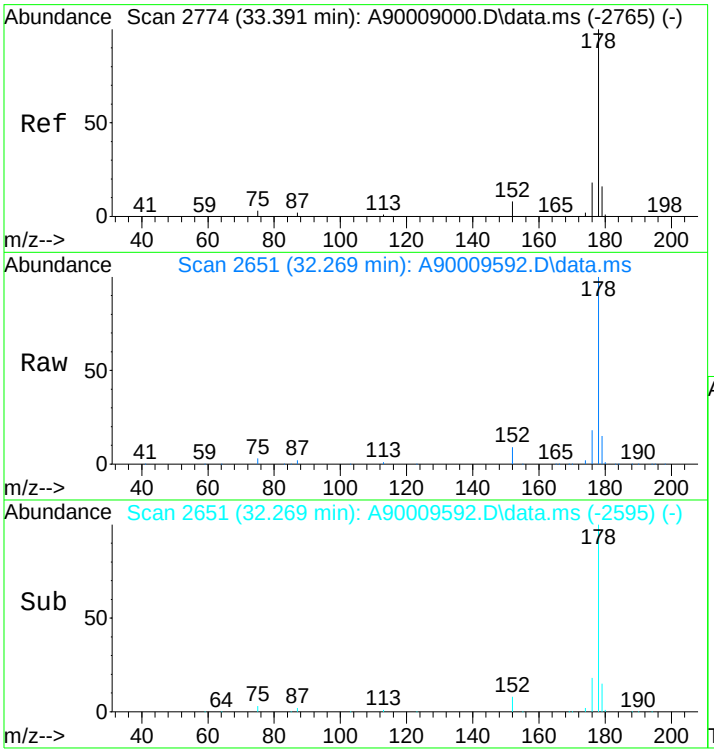


#53
C4-Phenanthrenes/Anthracenes
Concen: 546.82 ng/mL m
RT: 40.348 min Scan# 3536
Delta R.T. 0.019 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:234 Resp: 151413

Ion	Ratio	Lower	Upper
234	100		
219	0.6	52.1	78.1#

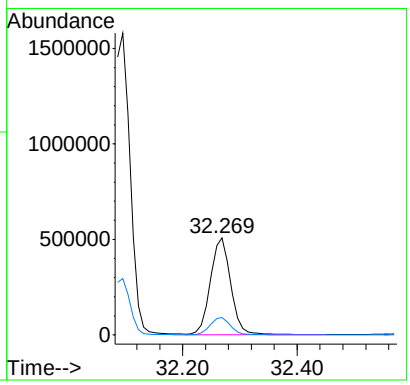


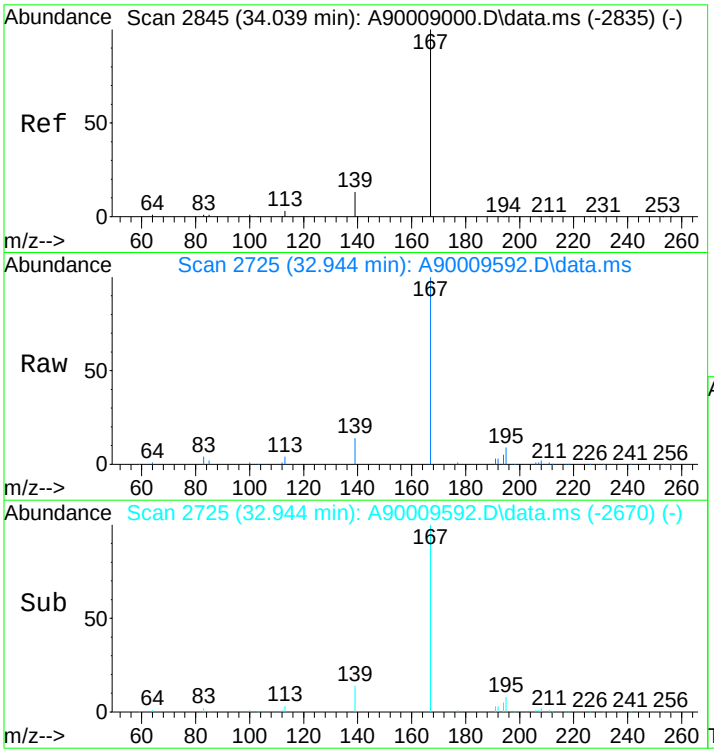


#55
Anthracene
Concen: 4843.88 ng/mL
RT: 32.269 min Scan# 2651
Delta R.T. 0.009 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:178 Resp: 1245501

Ion	Ratio	Lower	Upper
178	100		
176	18.1	14.6	21.8

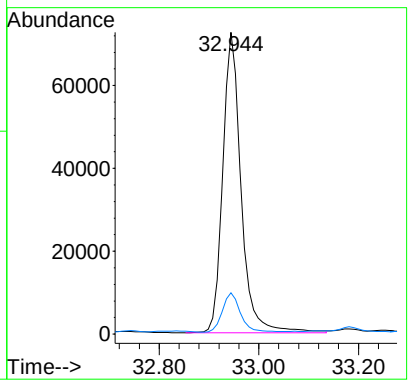


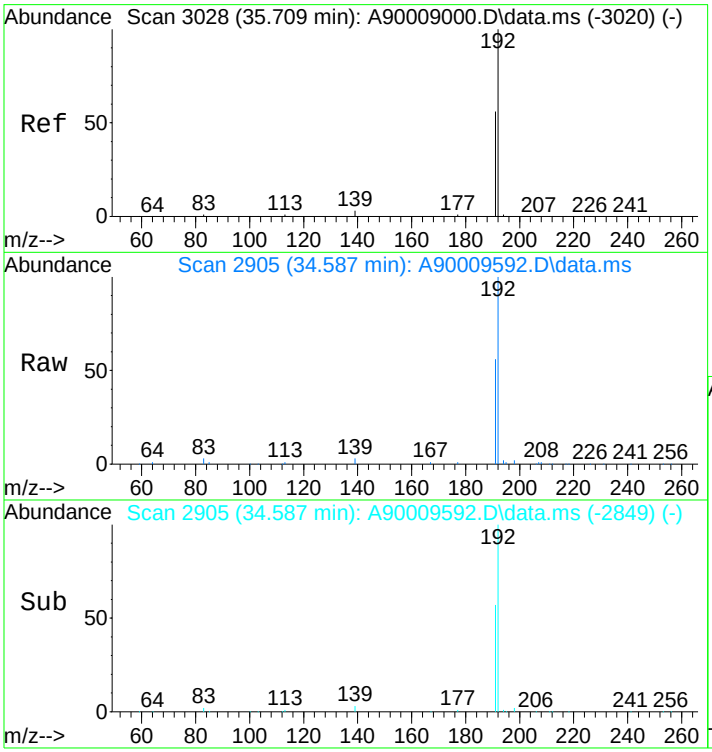


#56
Carbazole
Concen: 763.48 ng/mL
RT: 32.944 min Scan# 2725
Delta R.T. -0.000 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:167 Resp: 185710

Ion	Ratio	Lower	Upper
167	100		
139	13.2	10.2	15.2

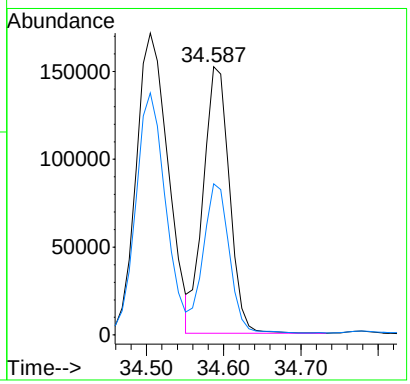


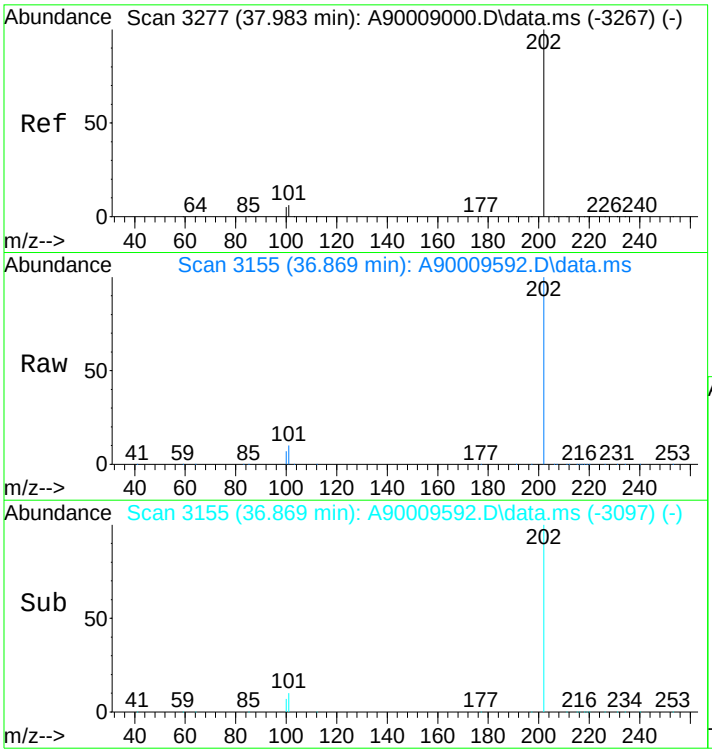


#57
1-Methylphenanthrene
Concen: 1745.85 ng/mL
RT: 34.587 min Scan# 2905
Delta R.T. 0.009 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:192 Resp: 356663

Ion	Ratio	Lower	Upper
192	100		
191	55.9	44.9	67.3

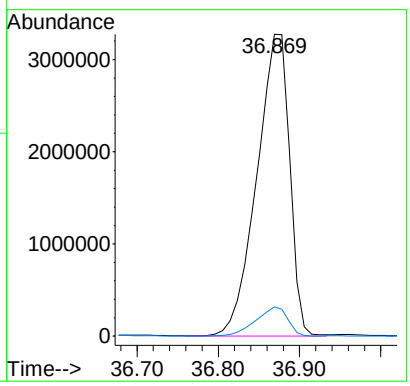


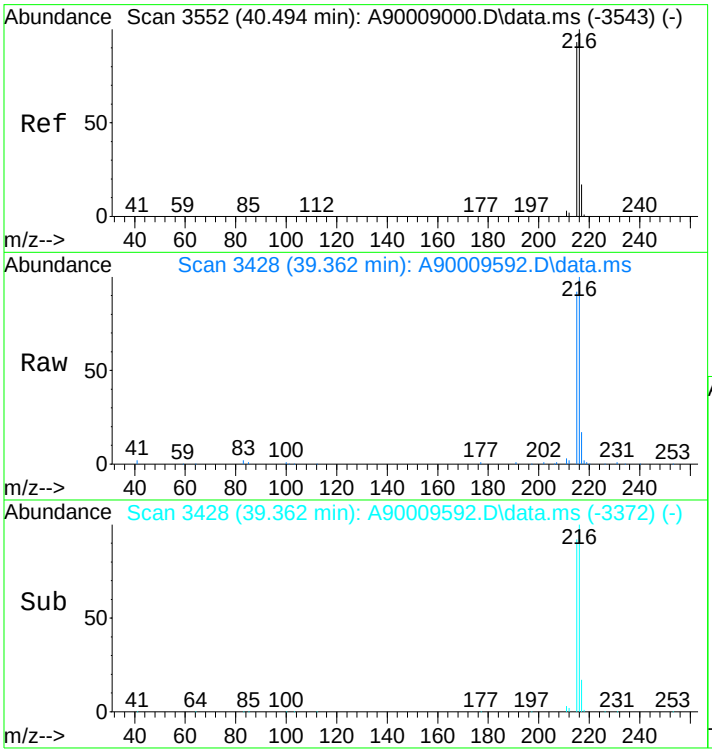


#58
Fluoranthene
Concen: 29730.51 ng/mL
RT: 36.869 min Scan# 3155
Delta R.T. 0.027 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:202 Resp: 9196239

Ion	Ratio	Lower	Upper
202	100		
101	9.4	8.2	12.2

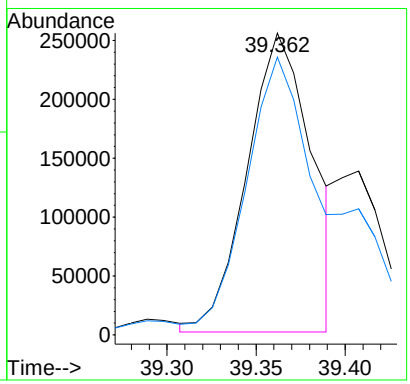


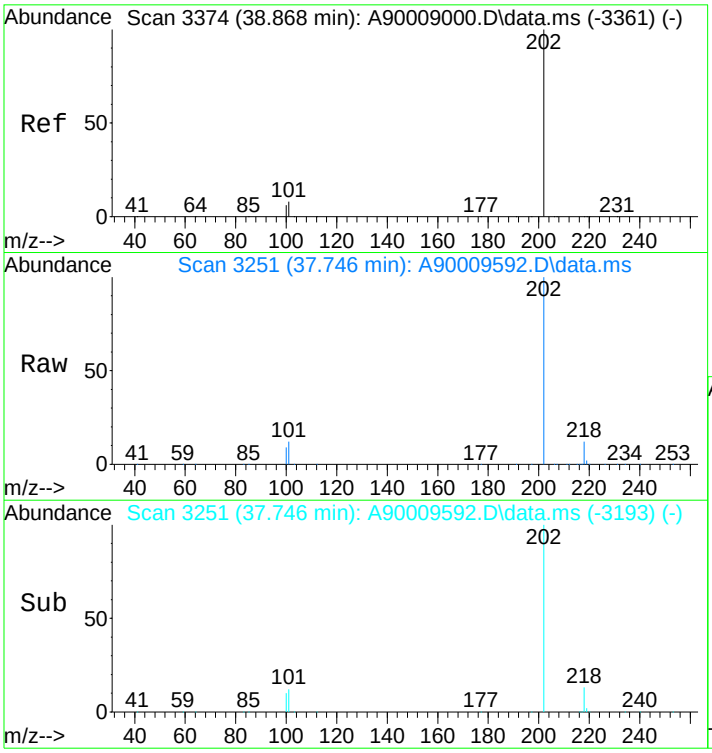


#59
Benzo(b)fluorene
Concen: 3488.54 ng/mL m
RT: 39.362 min Scan# 3428
Delta R.T. 0.009 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:216 Resp: 641733

Ion	Ratio	Lower	Upper
216	100		
215	119.4	73.4	110.2#

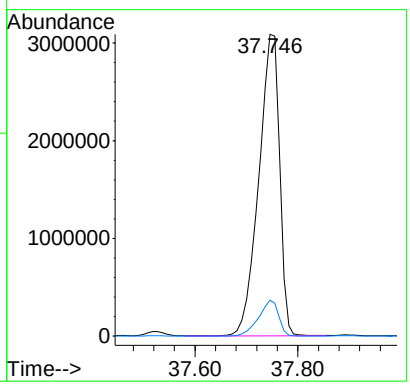


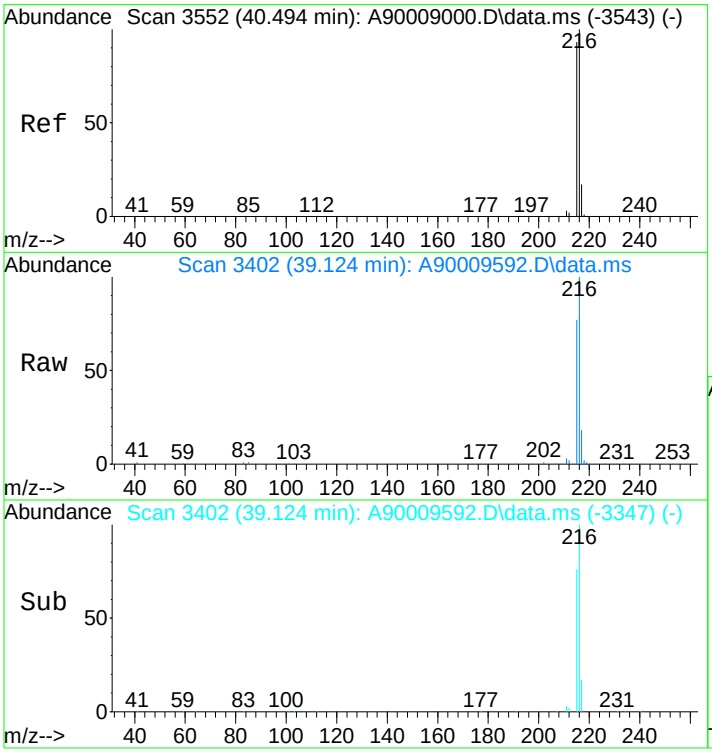


#60
Pyrene
Concen: 27542.99 ng/mL
RT: 37.746 min Scan# 3251
Delta R.T. 0.027 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:202 Resp: 8691775

Ion	Ratio	Lower	Upper
202	100		
101	11.5	9.5	14.3

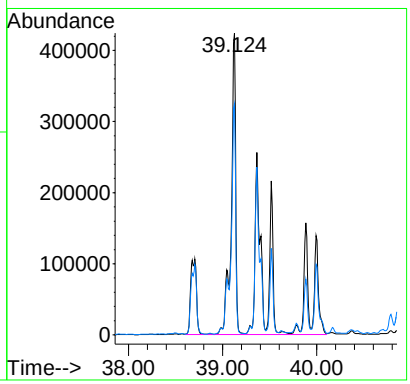


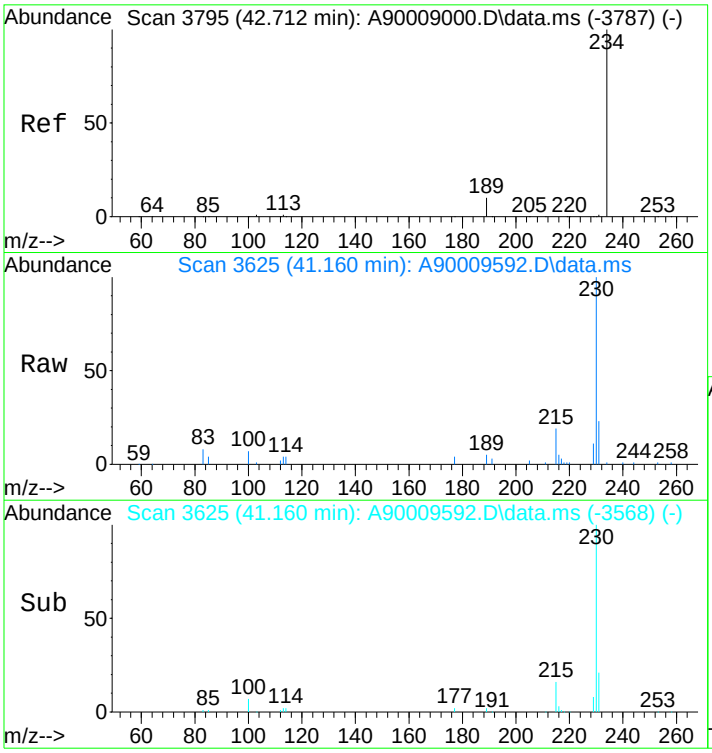


#61
C1-Fluoranthenes/Pyrenes
Concen: 13217.43 ng/mL m
RT: 39.124 min Scan# 3402
Delta R.T. 0.009 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:216 Resp: 4171042

Ion	Ratio	Lower	Upper
216	100		
215	21.2	73.5	110.3#

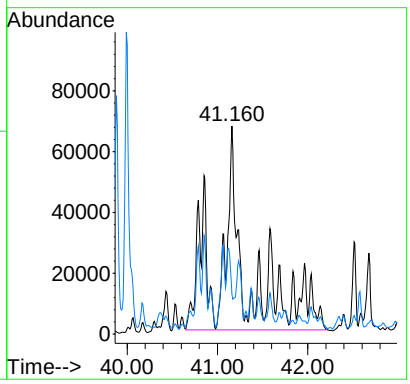


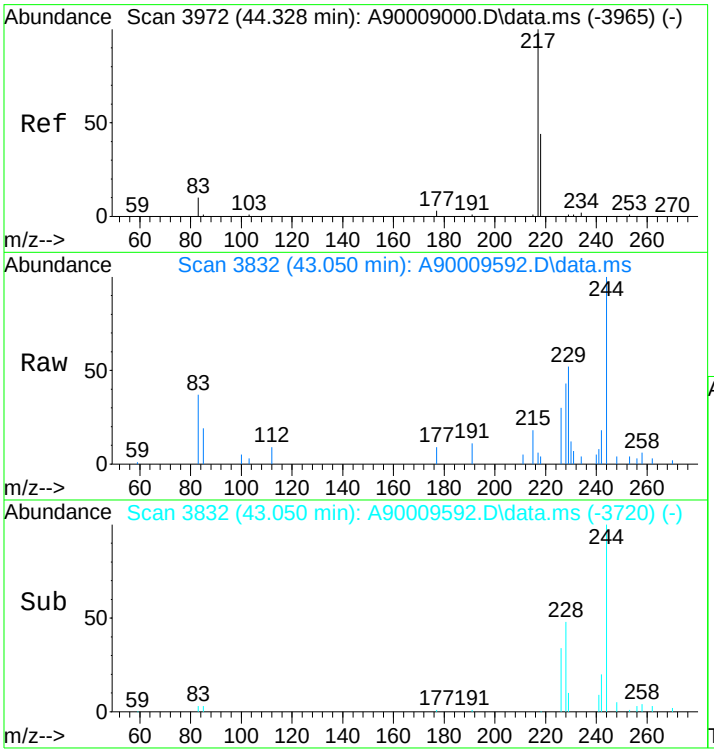


#62
C2-Fluoranthenes/Pyrenes
Concen: 4378.41 ng/mL m
RT: 41.160 min Scan# 3625
Delta R.T. 0.238 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:230 Resp: 1381699

Ion	Ratio	Lower	Upper
230	100		
215	2.4	93.1	139.7#

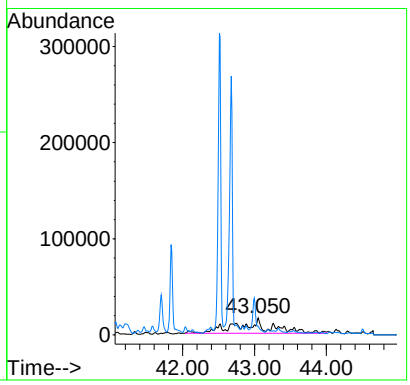


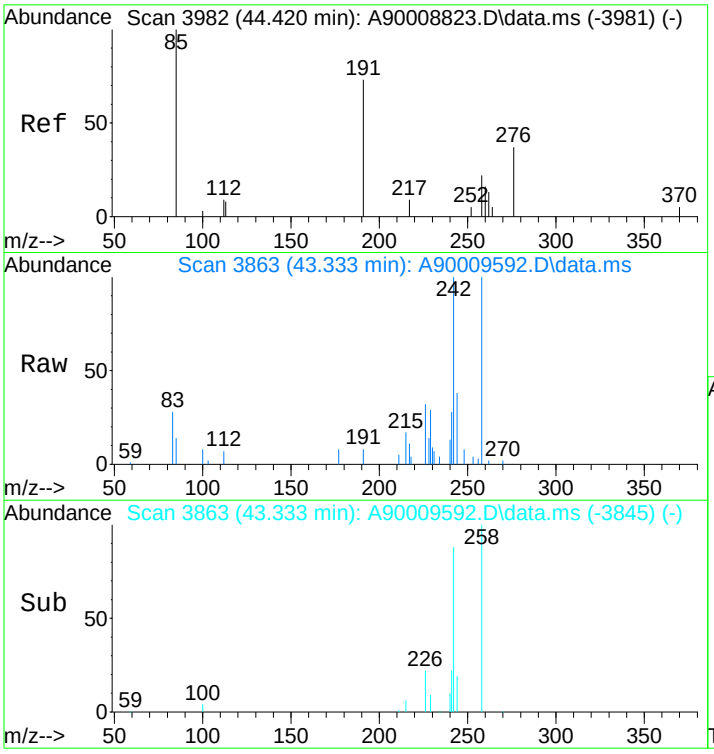


#63
C3-Fluoranthenes/Pyrenes
Concen: 1649.04 ng/mL m
RT: 43.050 min Scan# 3832
Delta R.T. 0.110 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:244 Resp: 520391

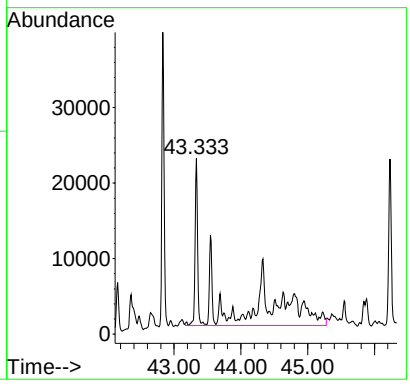
Ion	Ratio	Lower	Upper
244	100		
229	1.6	75.0	112.4#

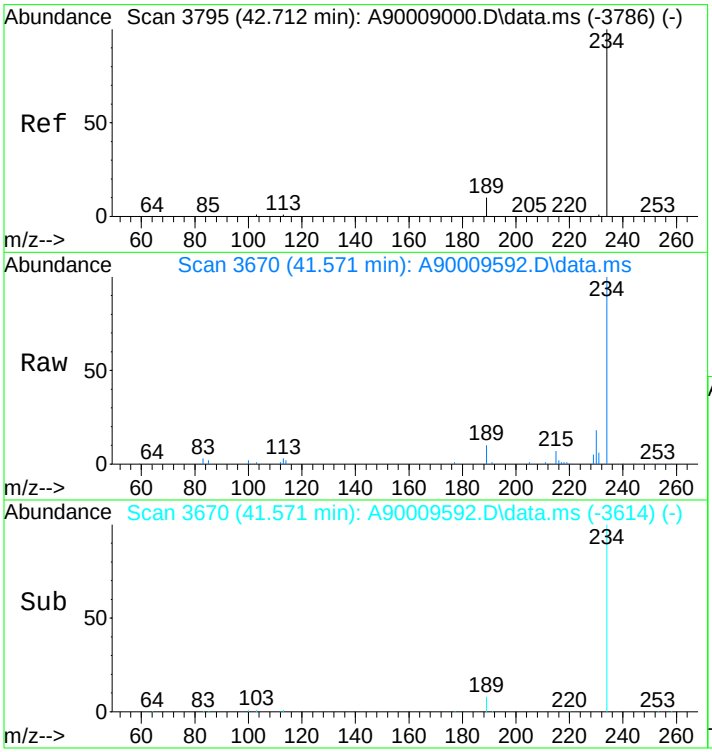




#64
C4-Fluoranthenes/Pyrenes
Concen: 940.38 ng/mL m
RT: 43.333 min Scan# 3863
Delta R.T. -0.959 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:258 Resp: 296756

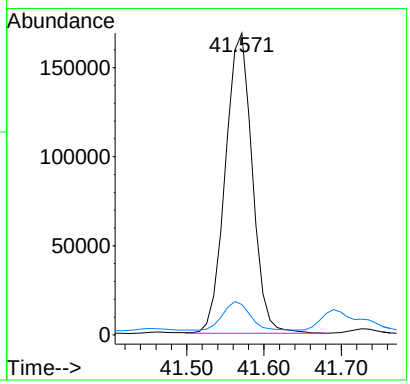


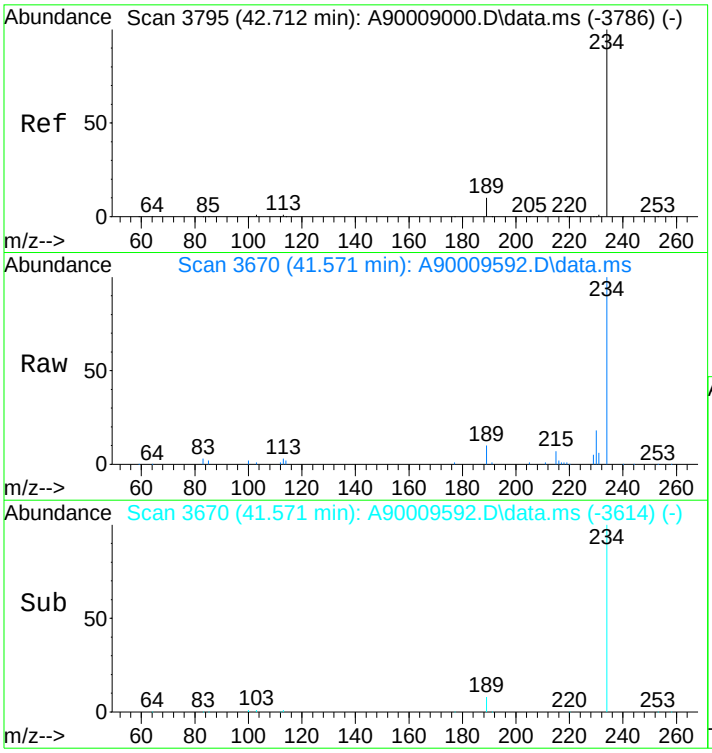


#66
Naphthobenzothiophene
Concen: 1493.08 ng/ml
RT: 41.571 min Scan# 3670
Delta R.T. 0.009 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:234 Resp: 408839

Ion	Ratio	Lower	Upper
234	100		
189	10.7	7.2	10.8

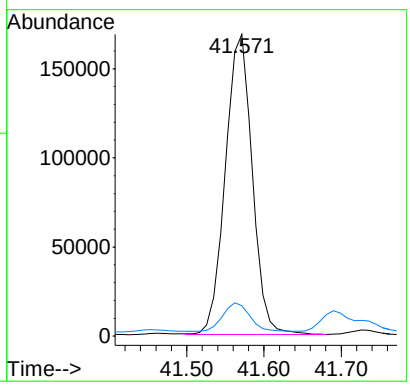


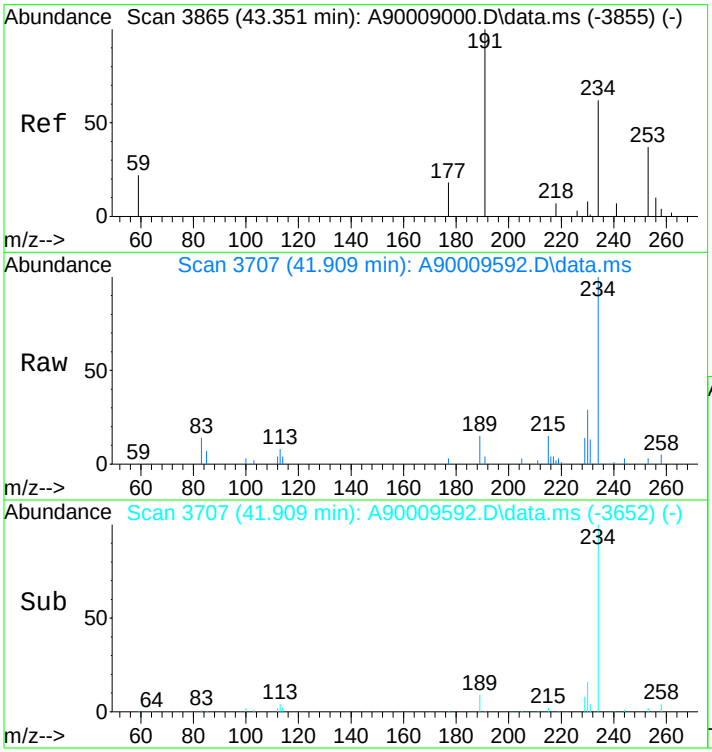


#67
Naphthobenzothiophene-2,1-D
Concen: 1493.08 ng/mL
RT: 41.571 min Scan# 3670
Delta R.T. 0.009 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:234 Resp: 408839

Ion	Ratio	Lower	Upper
234	100		
189	10.7	7.2	10.8

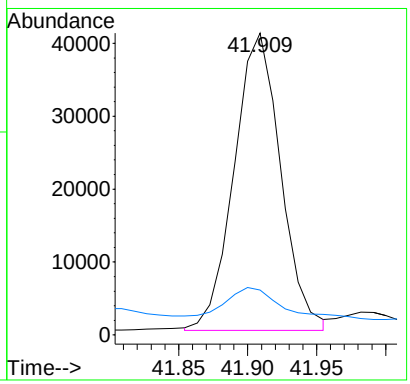


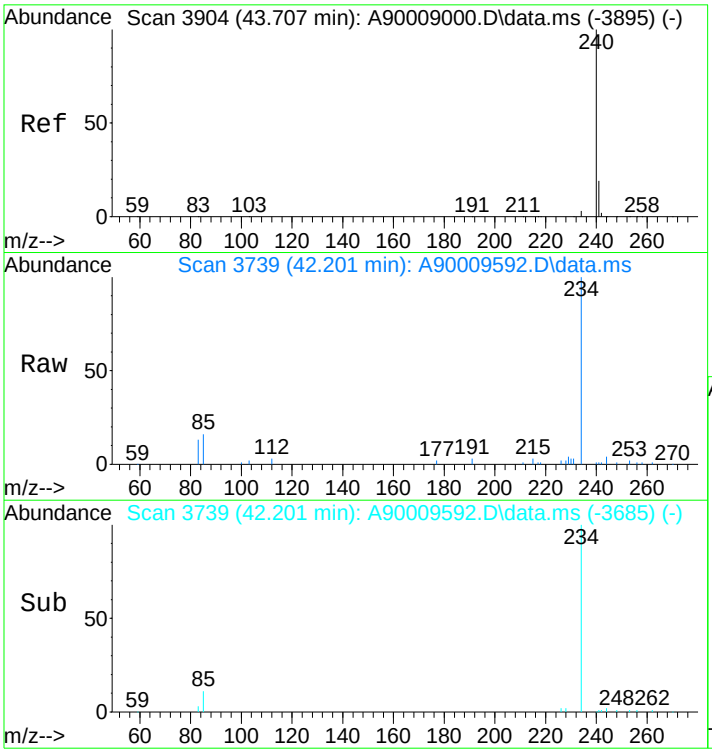


#68
Naphthobenzothiophene-1,2-D
Concen: 349.51 ng/mL m
RT: 41.909 min Scan# 3707
Delta R.T. 0.000 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:234 Resp: 95704

Ion	Ratio	Lower	Upper
234	100		
189	2.5	81.0	121.4#

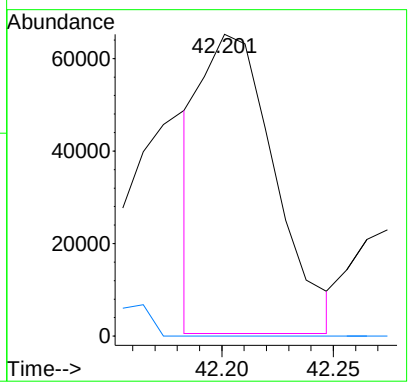


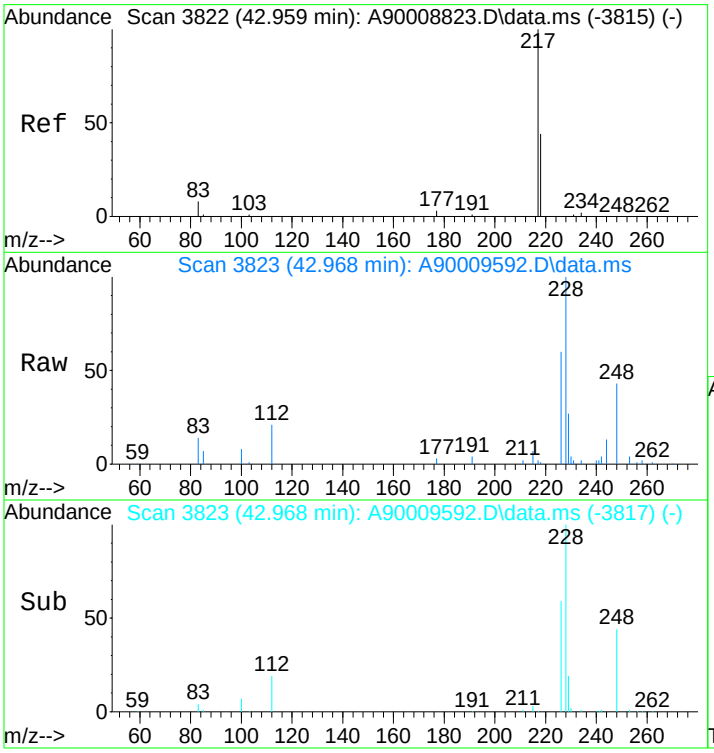


#69
Naphthobenzothiophene-2,3-D
Concen: 544.90 ng/mL m
RT: 42.201 min Scan# 3739
Delta R.T. -0.009 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:234 Resp: 149207

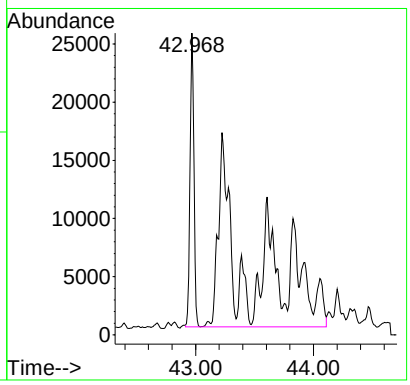
Ion	Ratio	Lower	Upper
234	100		
189	0.0	0.0	0.0

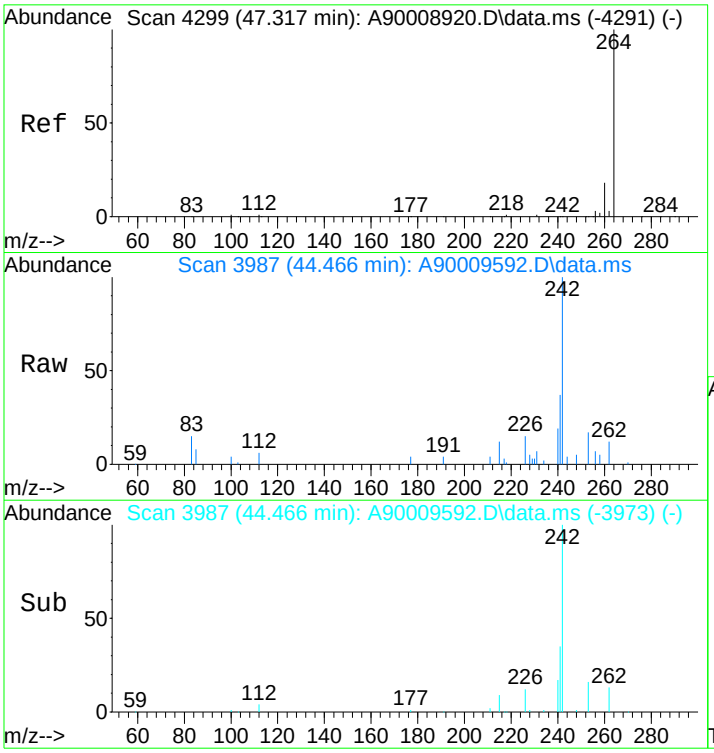




#70
C1-Naphthobenzothiophenes
Concen: 1253.19 ng/ml m
RT: 42.968 min Scan# 3823
Delta R.T. 0.000 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

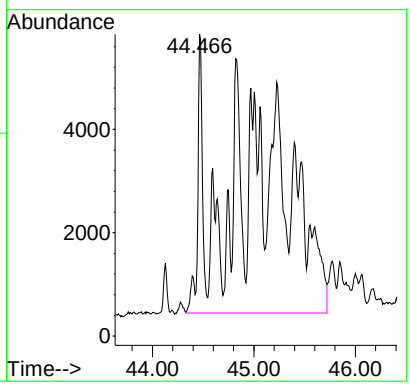
Tgt Ion:248 Resp: 343152

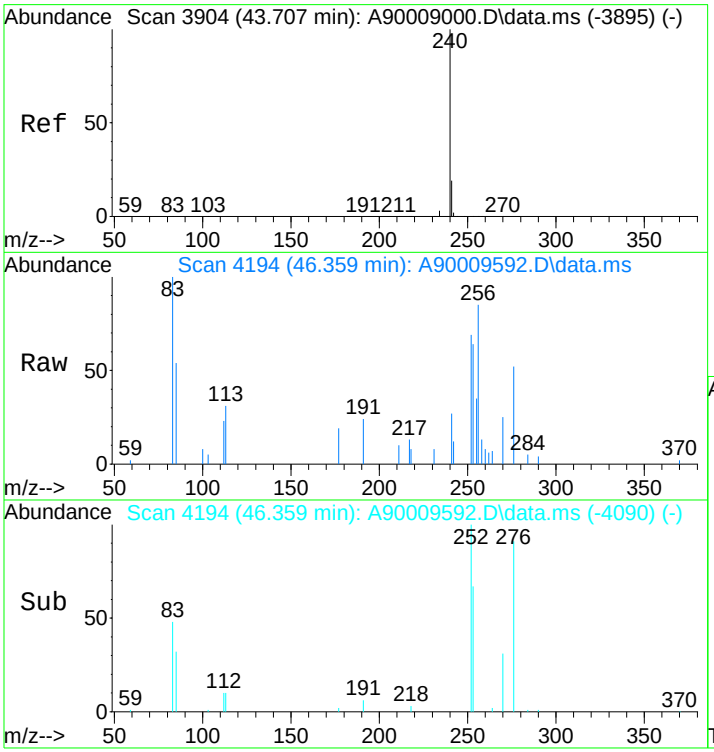




#71
C2-Naphthobenzothiophenes
Concen: 625.72 ng/ml m
RT: 44.466 min Scan# 3987
Delta R.T. -0.502 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

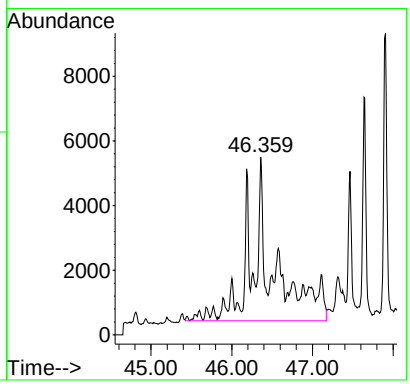
Tgt Ion:262 Resp: 171336

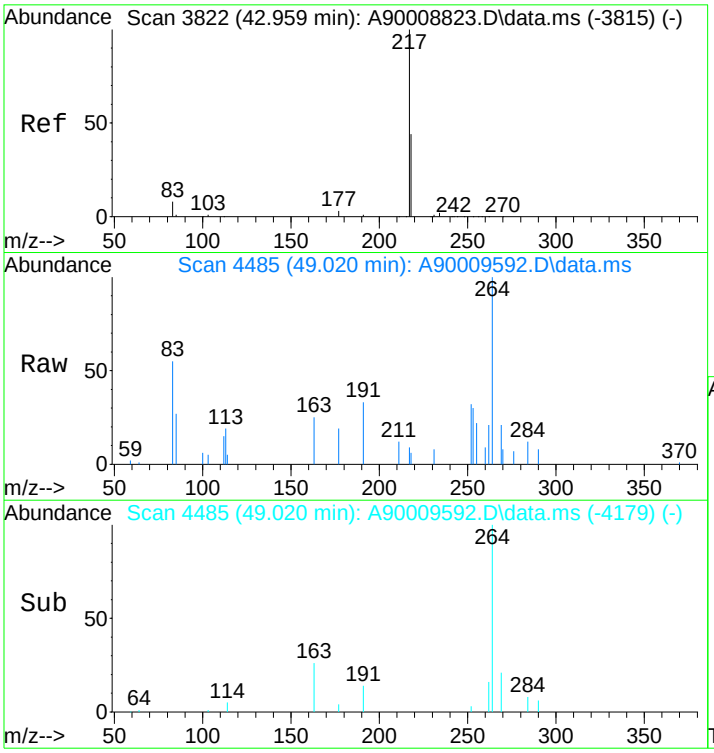




#72
C3-Naphthobenzothiophenes
Concen: 345.90 ng/ml m
RT: 46.359 min Scan# 4194
Delta R.T. -0.210 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

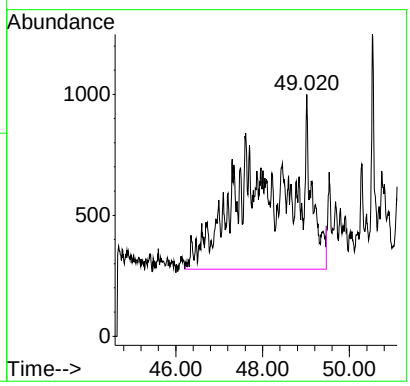
Tgt Ion:276 Resp: 94716

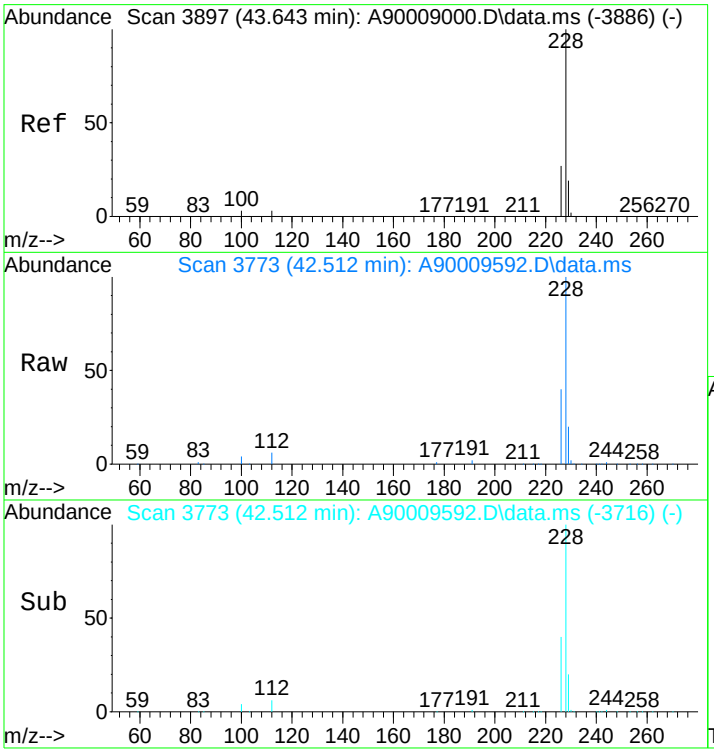




#73
C4-Naphthobenzothiophenes
Concen: 178.10 ng/mL m
RT: 49.020 min Scan# 4485
Delta R.T. 1.427 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:290 Resp: 48767

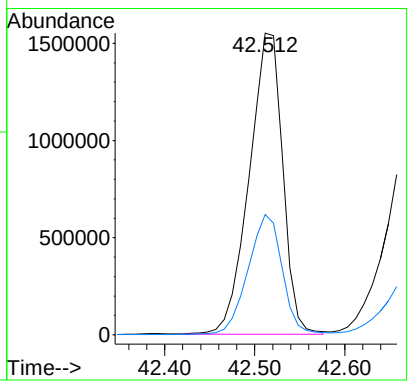


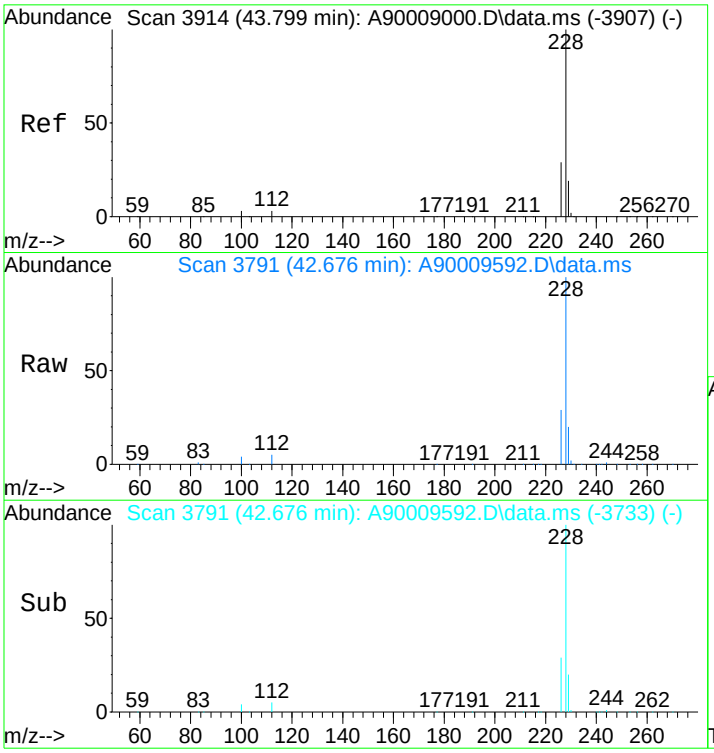


#75
Benz[a]anthracene
Concen: 13674.24 ng/mL m
RT: 42.512 min Scan# 3773
Delta R.T. 0.018 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:228 Resp: 4005376

Ion	Ratio	Lower	Upper
228	100		
226	27.4	20.8	31.2

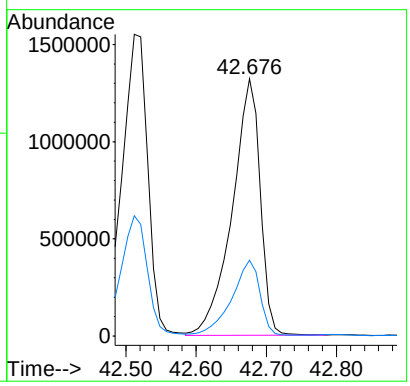


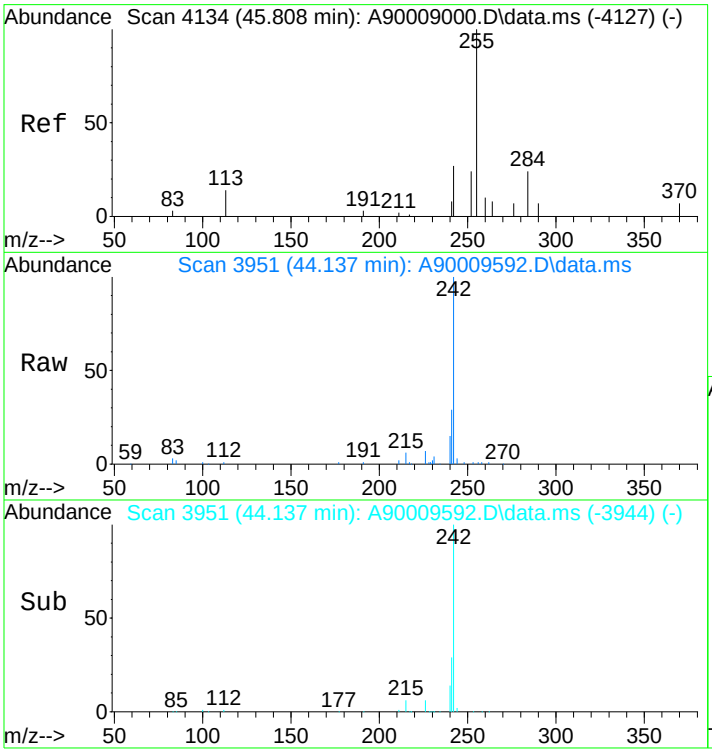


#77
Chrysene/Triphenylene
Concen: 12692.78 ng/mL
RT: 42.676 min Scan# 3791
Delta R.T. 0.027 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:228 Resp: 3656642

Ion	Ratio	Lower	Upper
228	100		
226	30.0	23.3	34.9

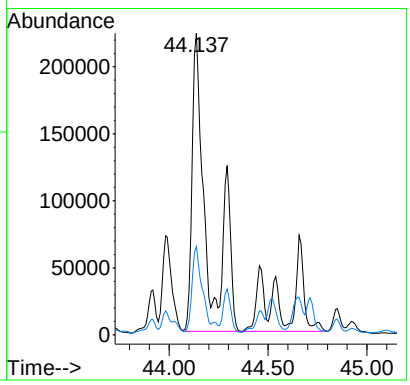


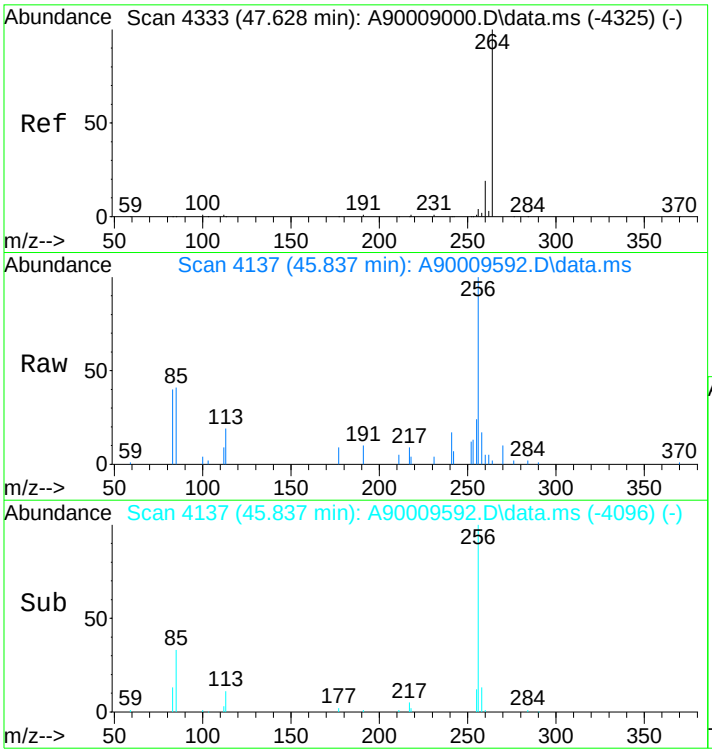


#78
C1-Chrysenes
Concen: 5497.95 ng/mL m
RT: 44.137 min Scan# 3951
Delta R.T. 0.000 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:242 Resp: 1583896

Ion	Ratio	Lower	Upper
242	100		
241	3.1	31.9	47.9#

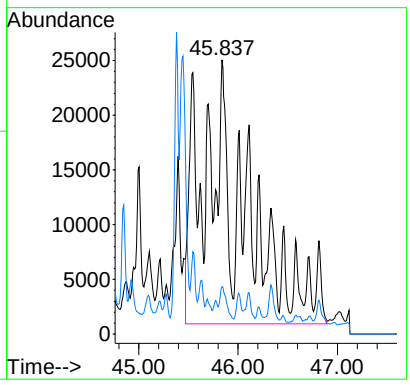


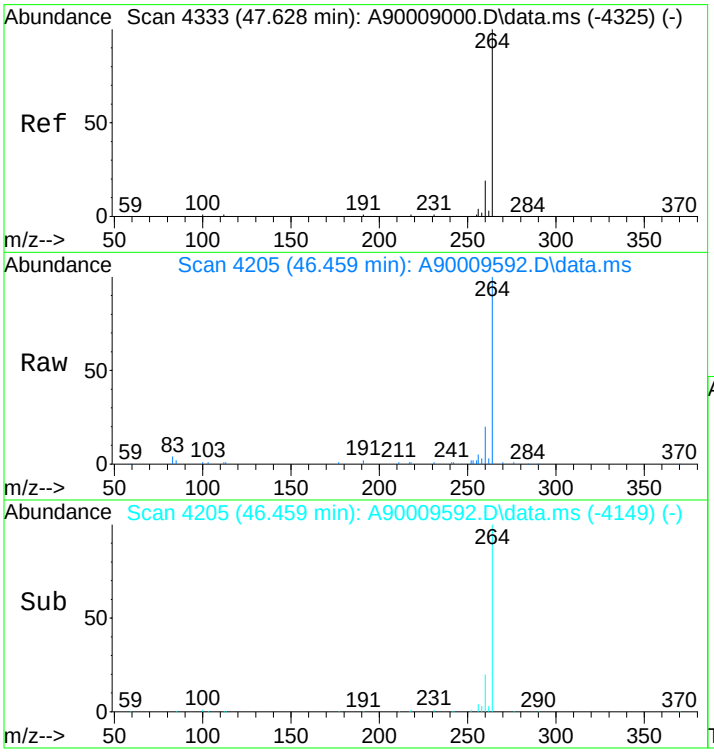


#79
C2-Chrysenes
Concen: 2447.26 ng/mL m
RT: 45.837 min Scan# 4137
Delta R.T. -0.978 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:256 Resp: 705028

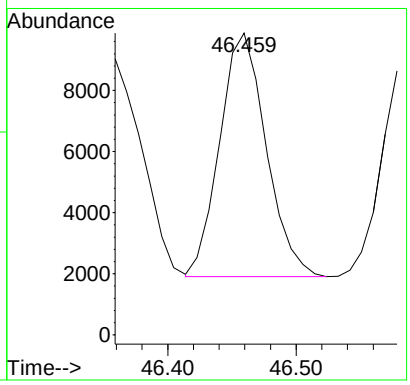
Ion	Ratio	Lower	Upper
256	100		
241	0.9	42.2	63.2#

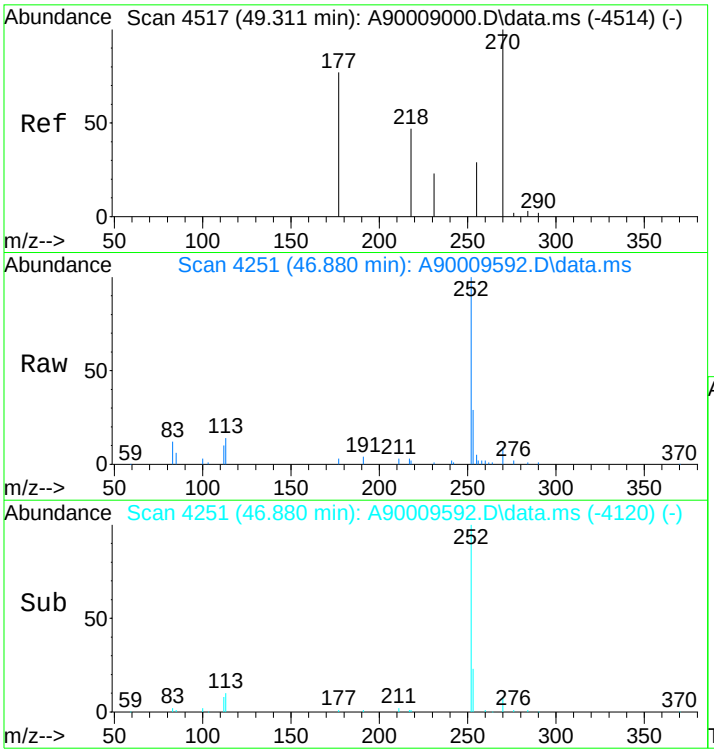




#80
BBF-d12 Surr BKGD
Concen: 69.62 ng/mL
RT: 46.459 min Scan# 4205
Delta R.T. 0.009 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:256 Resp: 20058

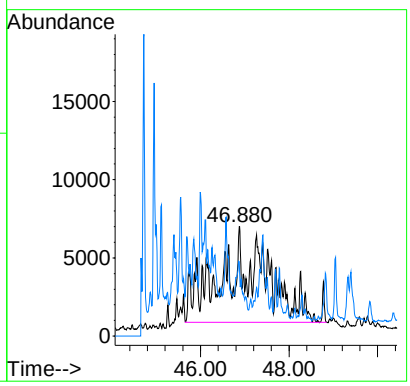


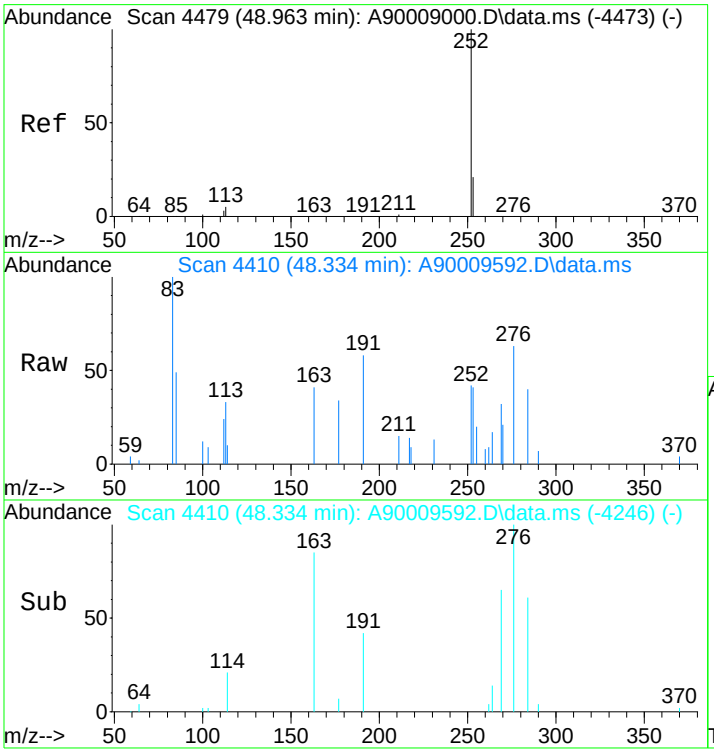


#81
C3-Chrysenes
Concen: 1447.05 ng/mL m
RT: 46.880 min Scan# 4251
Delta R.T. -1.902 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:270 Resp: 416877

Ion	Ratio	Lower	Upper
270	100		
255	0.2	48.2	72.4#

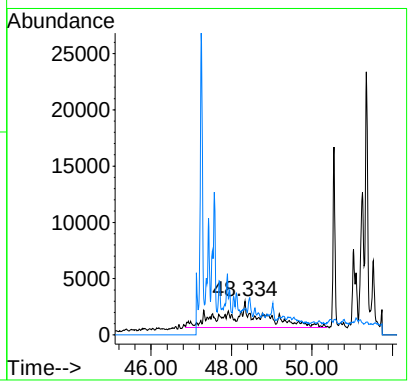


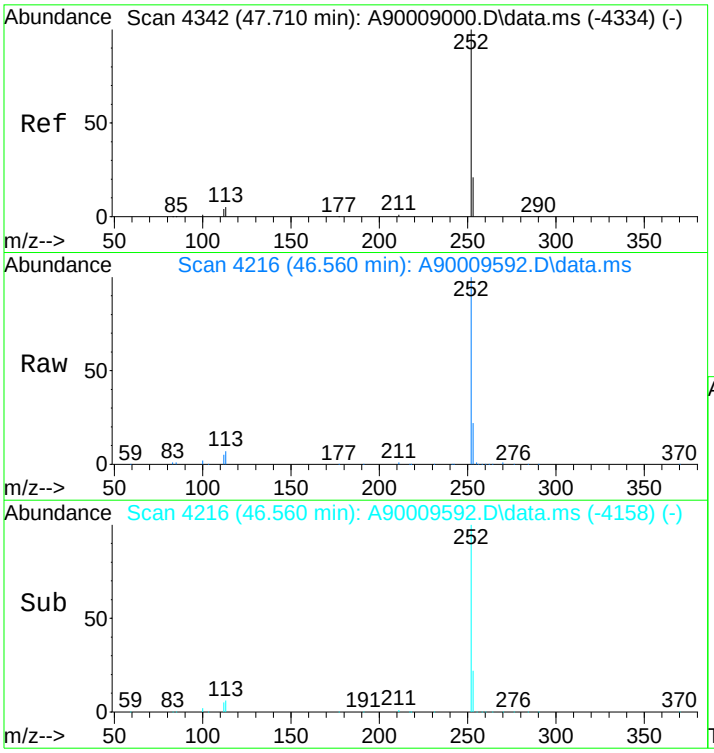


#82
C4-Chrysenes
Concen: 487.85 ng/mL m
RT: 48.334 min Scan# 4410
Delta R.T. -0.549 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:284 Resp: 140545

Ion	Ratio	Lower	Upper
284	100		
269	0.0	84.6	126.8#

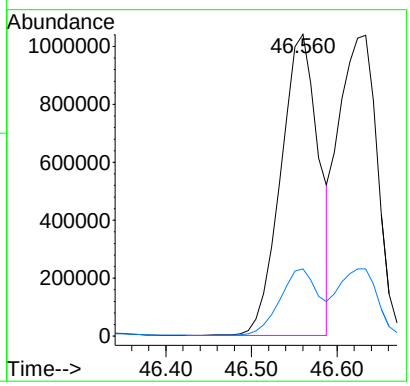


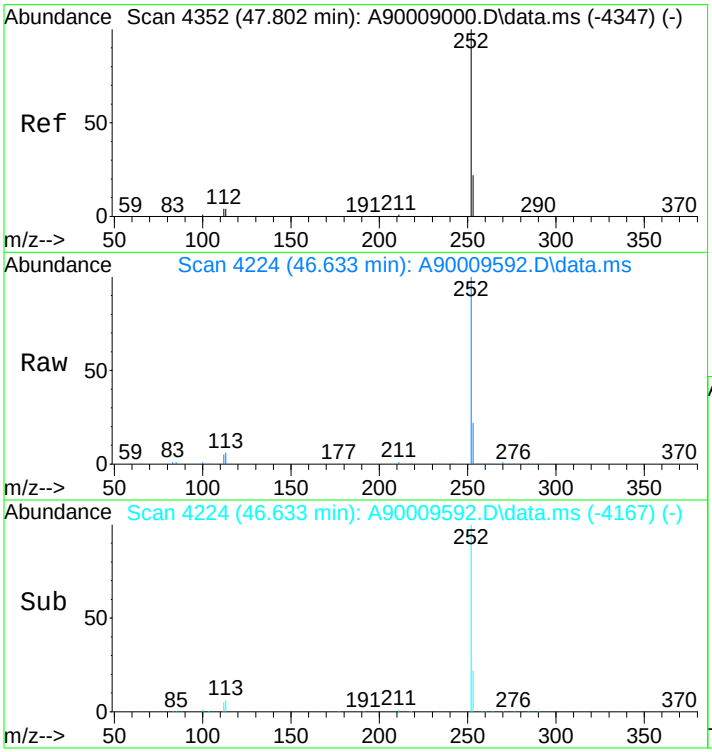


#84
Benzo[b]fluoranthene
Concen: 10601.05 ng/mL
RT: 46.560 min Scan# 4216
Delta R.T. 0.027 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:252 Resp: 3219632

Ion	Ratio	Lower	Upper
252	100		
253	22.5	20.3	30.5

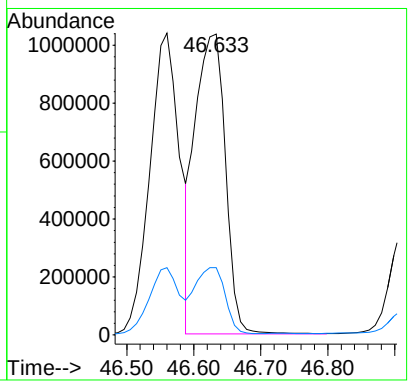


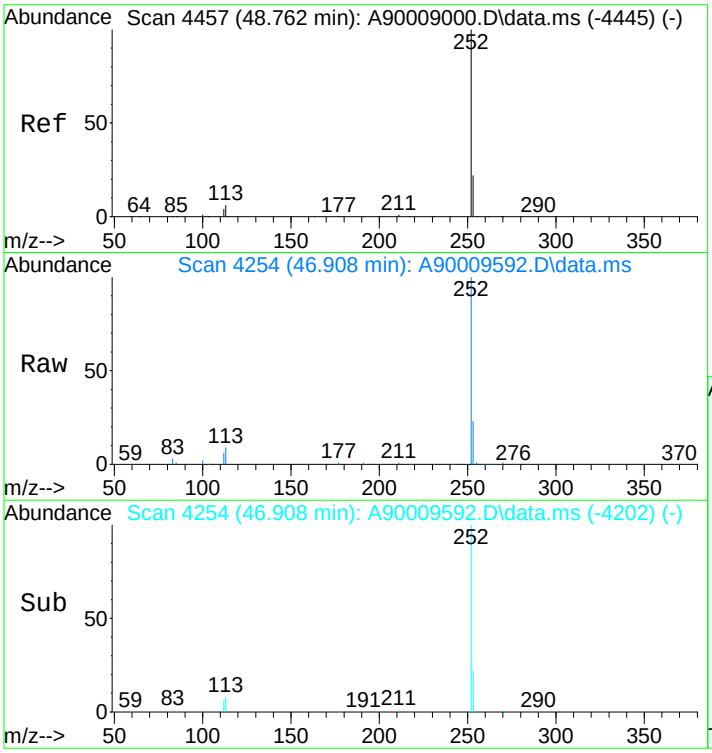


#85
Benzo[j]+[k]fluoranthene
Concen: 10912.75 ng/mL
RT: 46.633 min Scan# 4224
Delta R.T. 0.018 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:252 Resp: 3256498

Ion	Ratio	Lower	Upper
252	100		
253	21.8	20.2	30.4

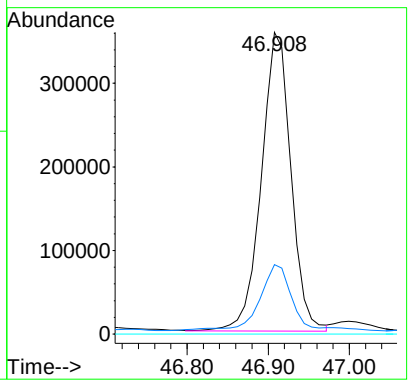


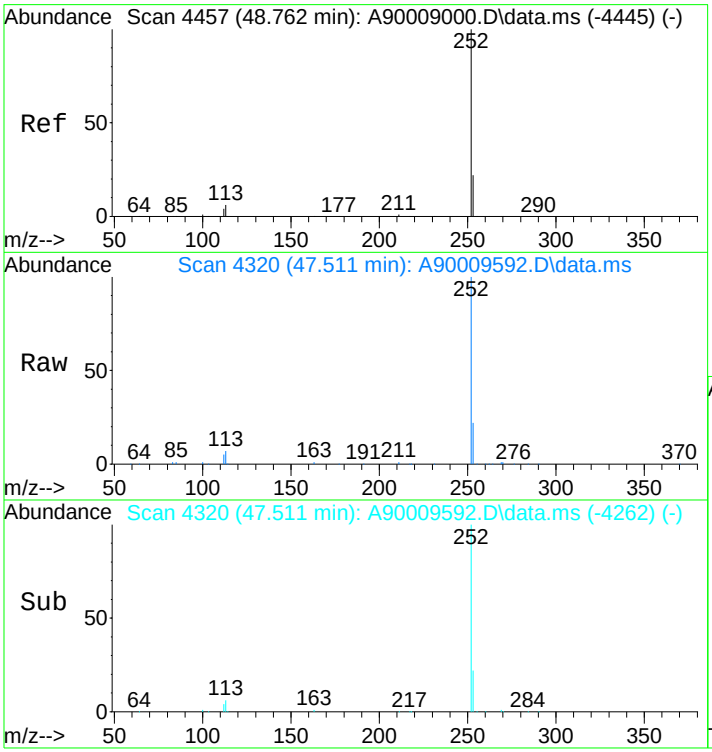


#86
Benzo[a]fluoranthene
Concen: 3038.24 ng/mL
RT: 46.908 min Scan# 4254
Delta R.T. -0.022 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:252 Resp: 906647

Ion	Ratio	Lower	Upper
252	100		
253	24.8	191.7	287.5#
125	0.0	0.0	0.0

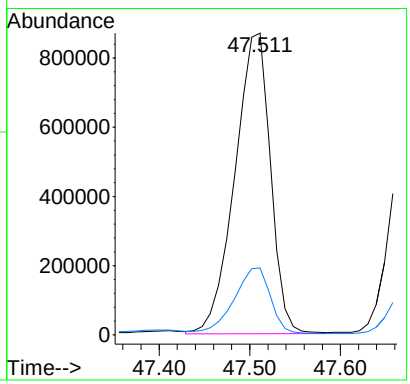


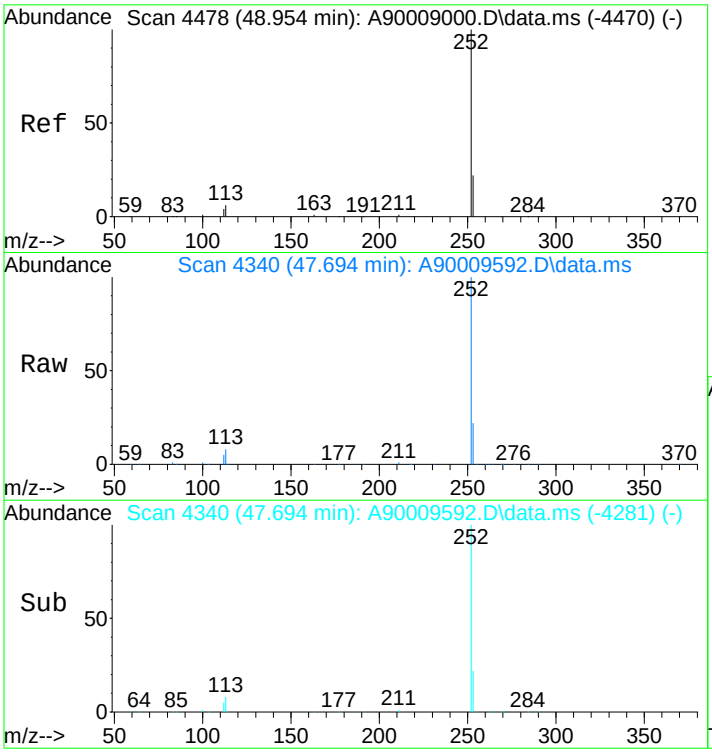


#87
Benzo[e]pyrene
Concen: 8208.74 ng/mL
RT: 47.511 min Scan# 4320
Delta R.T. 0.027 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:252 Resp: 2367343

Ion	Ratio	Lower	Upper
252	100		
253	22.3	21.4	32.0

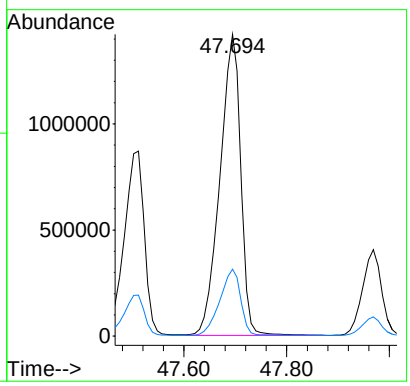


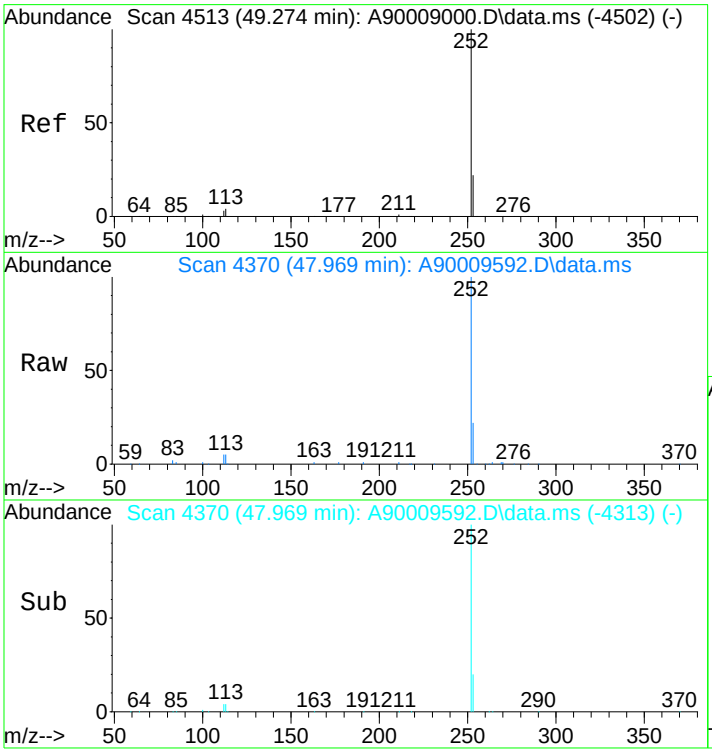


#89
Benzo[a]pyrene
Concen: 14622.13 ng/mL
RT: 47.694 min Scan# 4340
Delta R.T. 0.037 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:252 Resp: 3993686

Ion	Ratio	Lower	Upper
252	100		
253	22.3	21.9	32.9

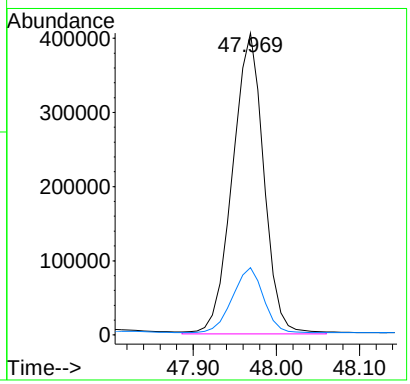


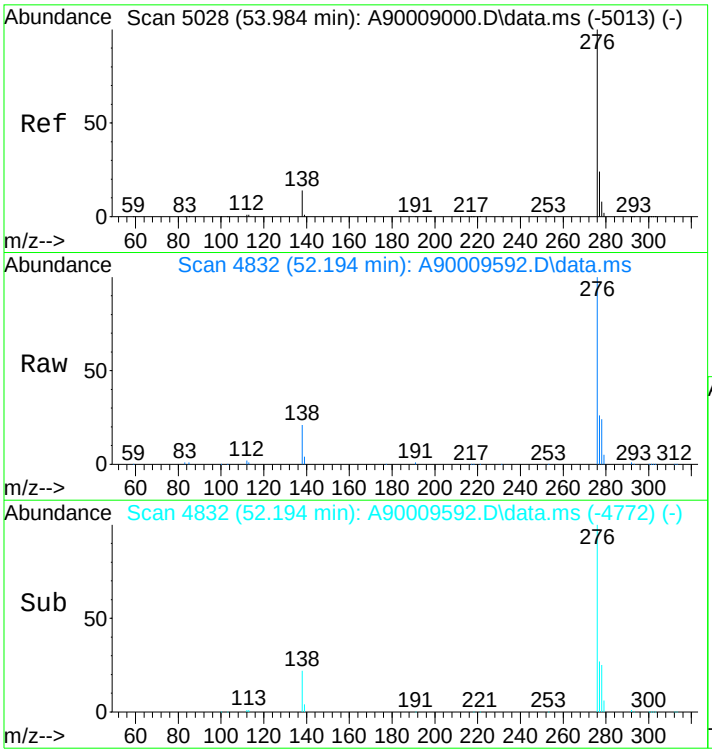


#90
Perylene
Concen: 3639.61 ng/mL m
RT: 47.969 min Scan# 4370
Delta R.T. 0.018 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:252 Resp: 1060938

Ion	Ratio	Lower	Upper
252	100		
253	83.8	22.2	33.2#

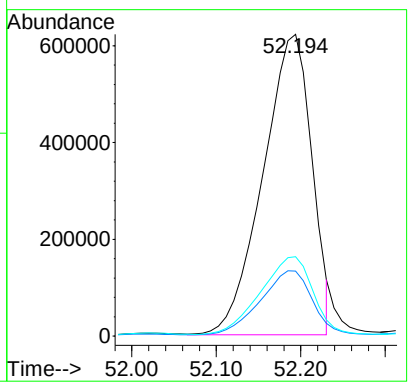


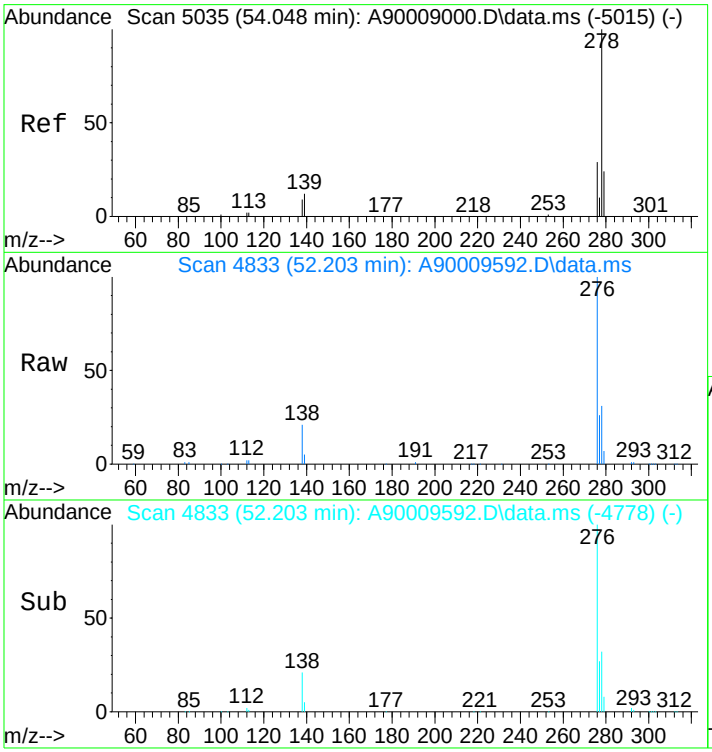


#91
Indeno[1,2,3-cd]pyrene
Concen: 8251.49 ng/mL m
RT: 52.194 min Scan# 4832
Delta R.T. 0.046 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:276 Resp: 2495984

Ion	Ratio	Lower	Upper
276	100		
138	23.4	17.7	26.5
277	29.0	20.2	30.4

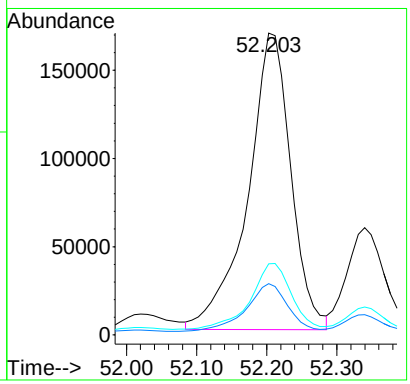


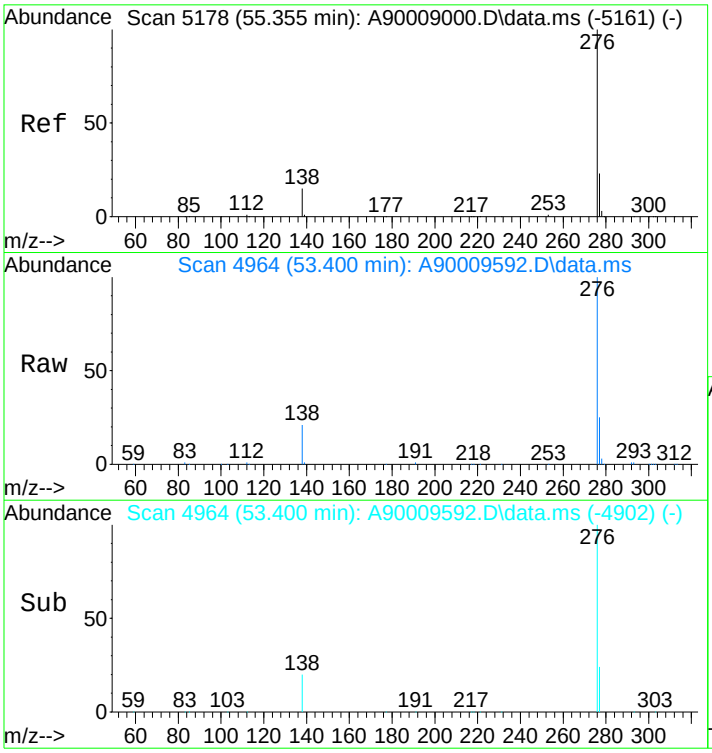


#92
Dibenz[ah]+[ac]anthracene
Concen: 2414.41 ng/mL
RT: 52.203 min Scan# 4833
Delta R.T. -0.000 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:278 Resp: 719443

Ion	Ratio	Lower	Upper
278	100		
139	15.2	13.3	19.9
279	23.8	19.3	28.9

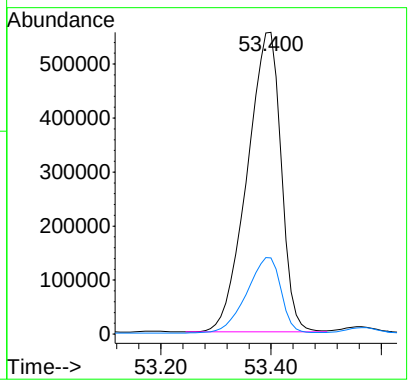


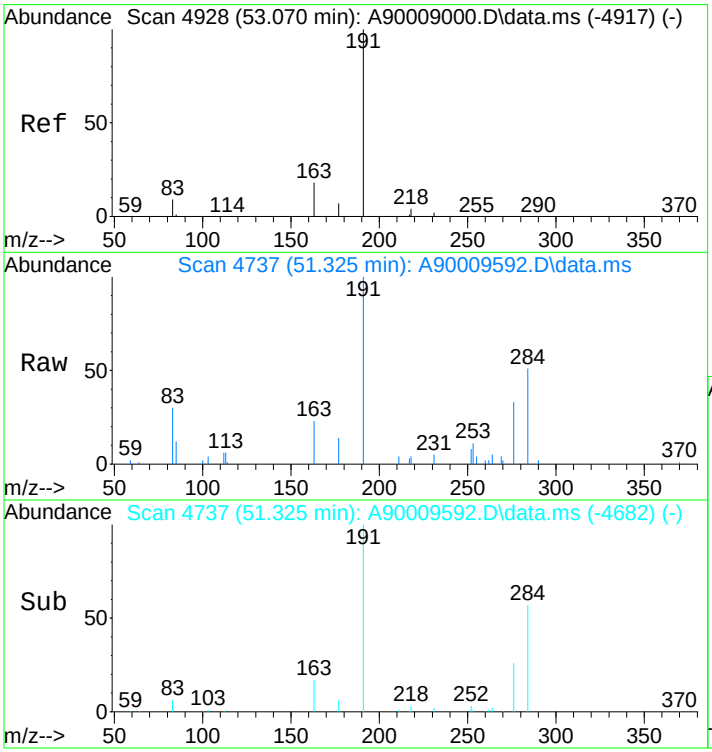


#93
Benzo[g,h,i]perylene
Concen: 7990.58 ng/mL
RT: 53.400 min Scan# 4964
Delta R.T. 0.064 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:276 Resp: 2375201

Ion	Ratio	Lower	Upper
276	100		
277	25.5	20.0	30.0

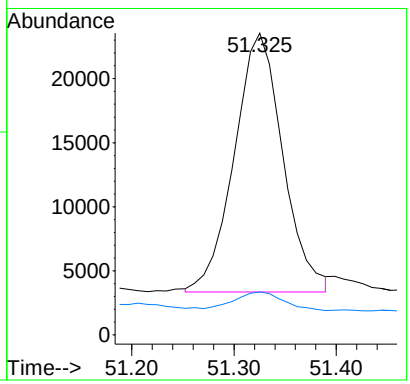


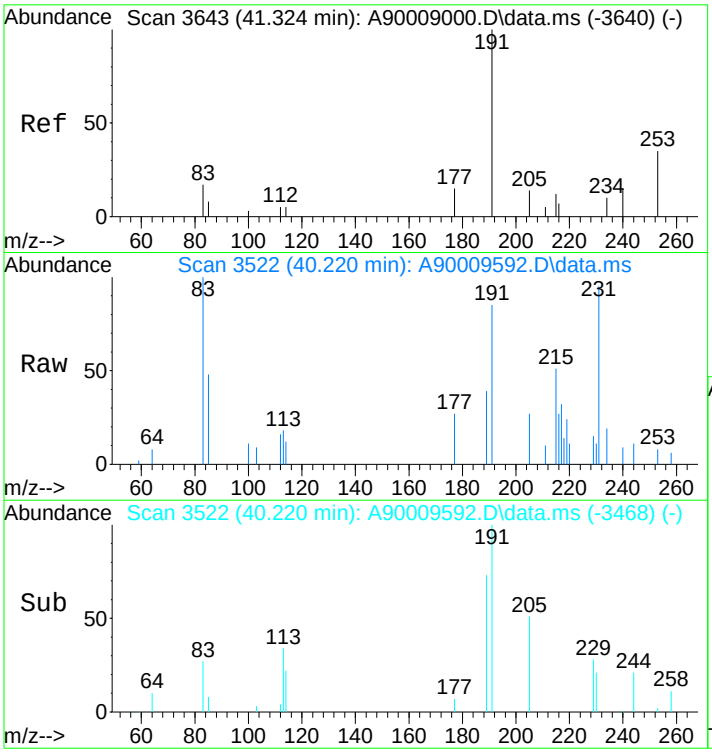


#94
Hopane (T19)
Concen: 593.58 ng/mL m
RT: 51.325 min Scan# 4737
Delta R.T. 0.000 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:191 Resp: 66642

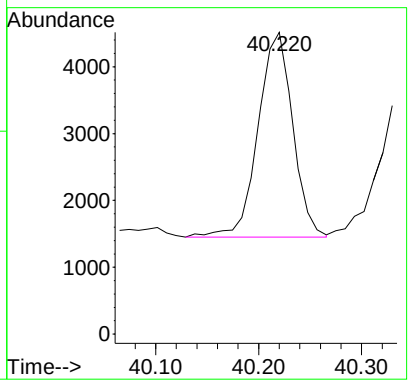
Ion	Ratio	Lower	Upper
191	100		
177	7.1	14.4	21.6#

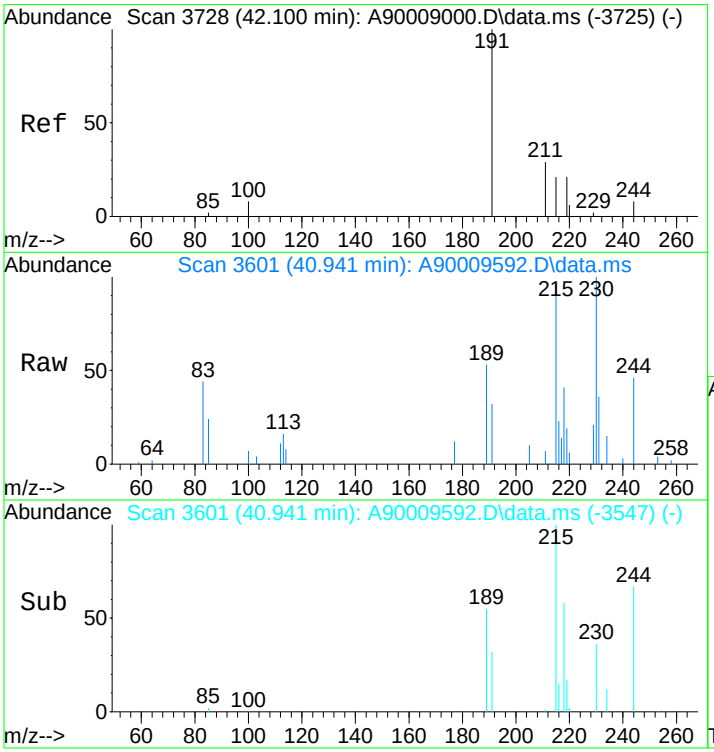




#96
C23 Tricyclic Terpane (T4)
Concen: 63.87 ng/ml
RT: 40.220 min Scan# 3522
Delta R.T. -0.009 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

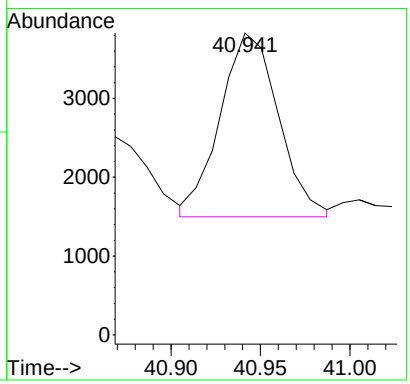
Tgt Ion:191 Resp: 7171

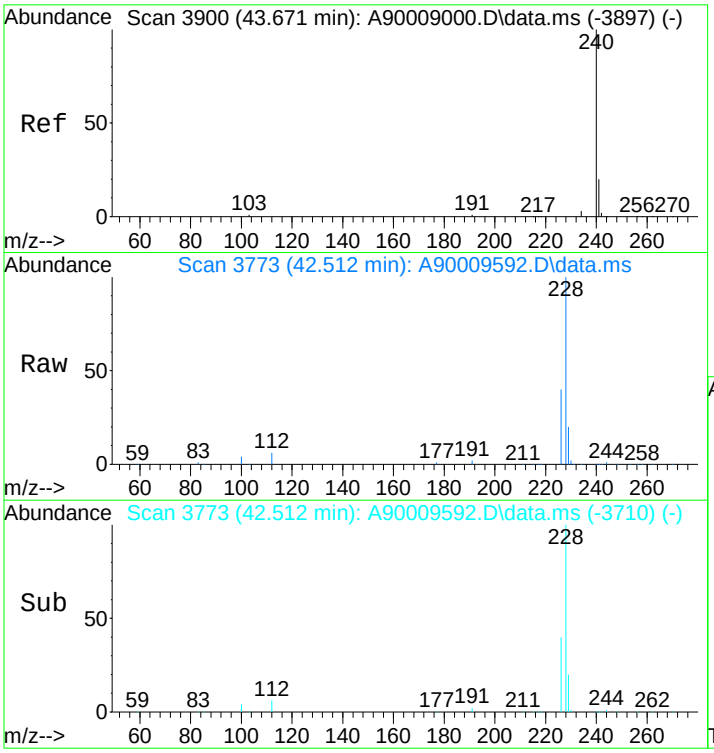




#97
C24 Tricyclic Terpane (T5)
Concen: 47.11 ng/ml m
RT: 40.941 min Scan# 3601
Delta R.T. -0.009 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

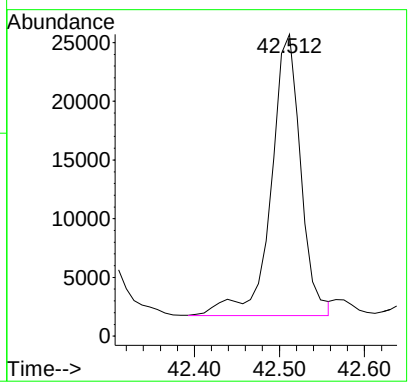
Tgt Ion:191 Resp: 5289

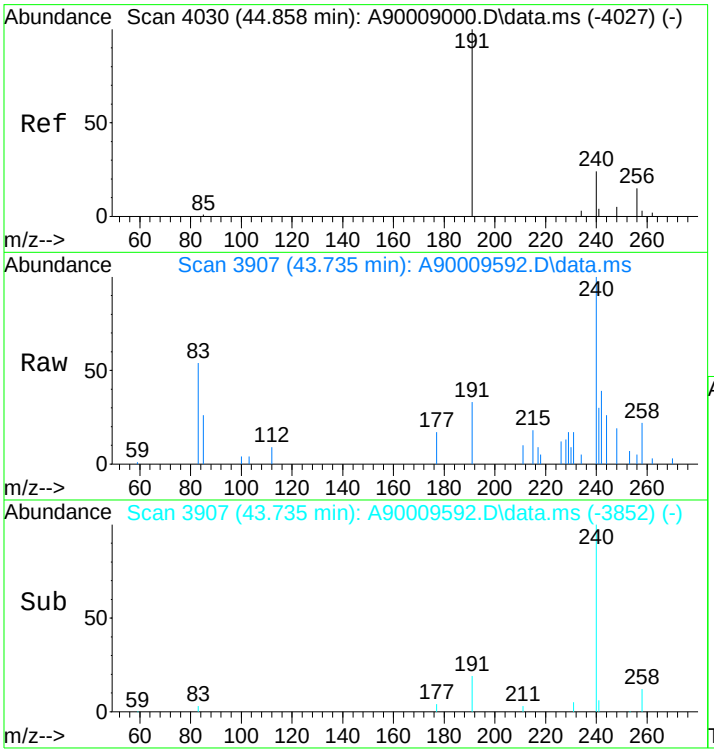




#98
C25 Tricyclic Terpane (T6)
Concen: 517.72 ng/ml m
RT: 42.512 min Scan# 3773
Delta R.T. 0.073 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

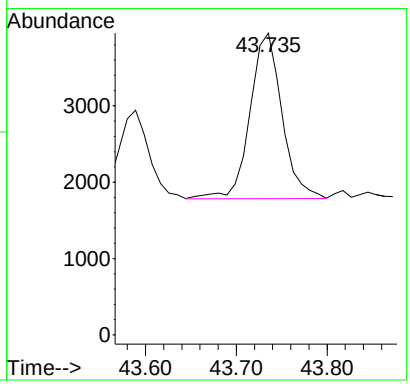
Tgt Ion:191 Resp: 58125

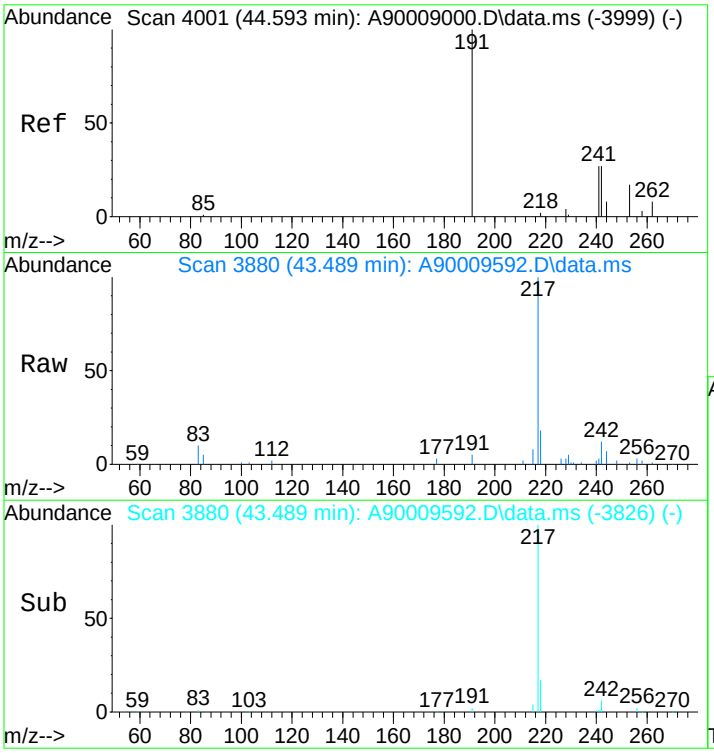




#99
C24 Tetracyclic Terpane (T6a)
Concen: 46.95 ng/ml
RT: 43.735 min Scan# 3907
Delta R.T. 0.000 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

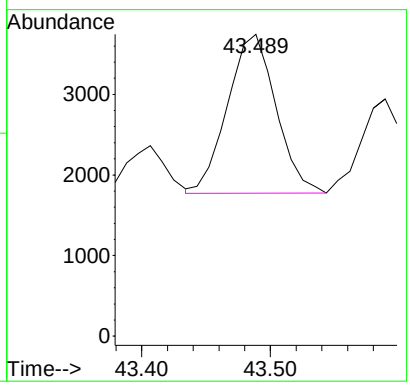
Tgt Ion:191 Resp: 5271

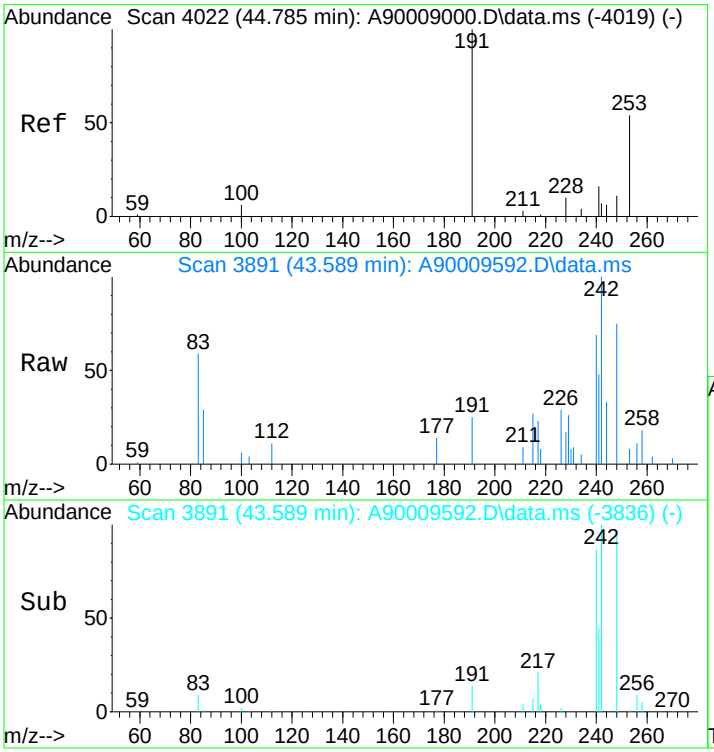




#100
C26 Tricyclic Terpane-22S (T6b)
Concen: 45.90 ng/ml
RT: 43.489 min Scan# 3880
Delta R.T. -0.009 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

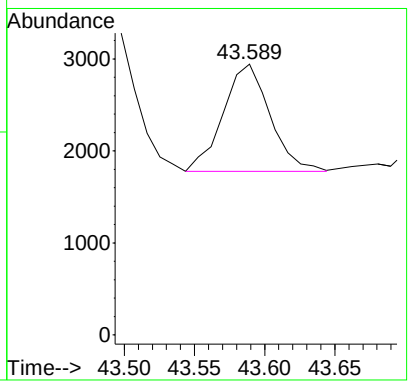
Tgt Ion:191 Resp: 5153

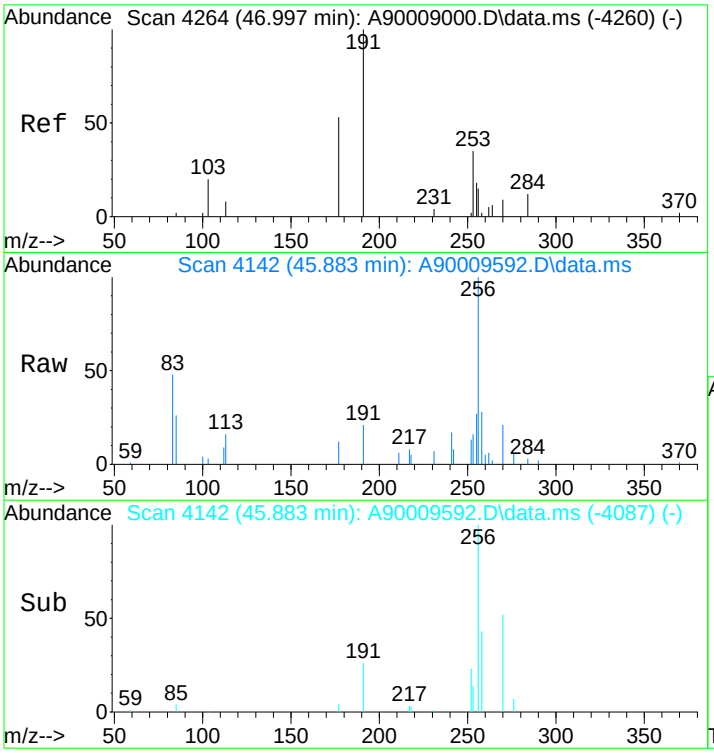




#101
C26 Tricyclic Terpane-22R (T6c)
Concen: 24.25 ng/ml
RT: 43.589 min Scan# 3891
Delta R.T. 0.000 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

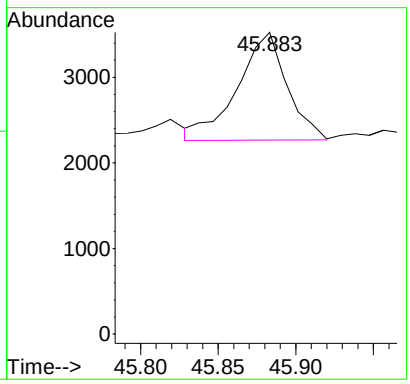
Tgt Ion:191 Resp: 2723

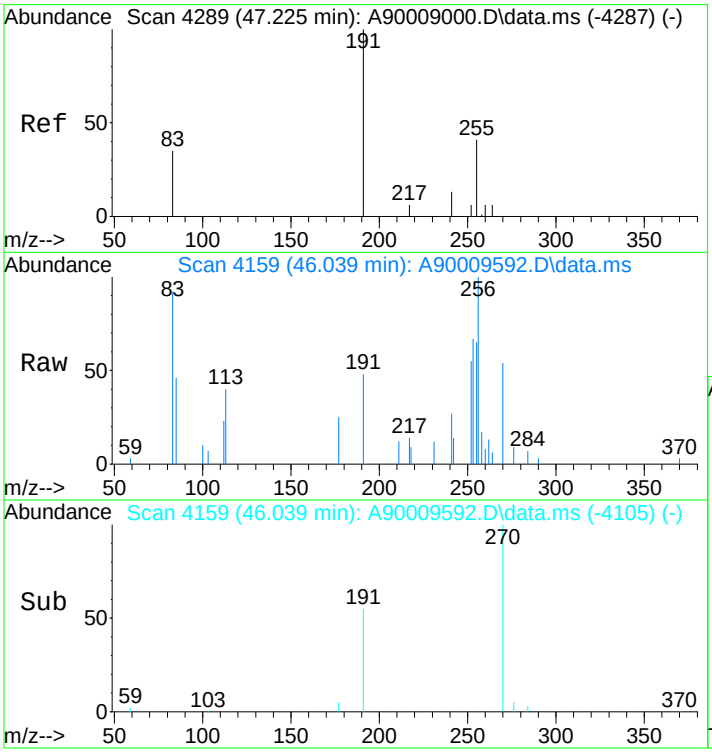




#102
C28 Tricyclic Terpane-22S (T7)
Concen: 24.90 ng/ml m
RT: 45.883 min Scan# 4142
Delta R.T. 0.000 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

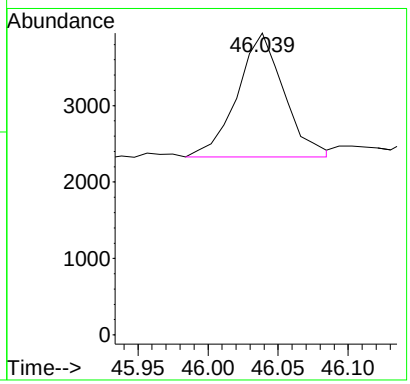
Tgt Ion:191 Resp: 2795

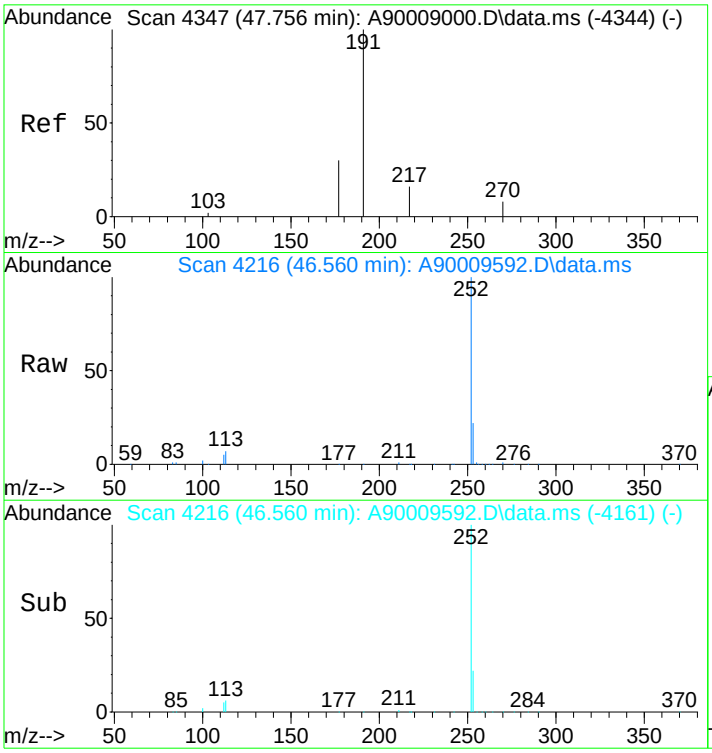




#103
C28 Tricyclic Terpane-22R (T8)
Concen: 33.48 ng/ml
RT: 46.039 min Scan# 4159
Delta R.T. -0.009 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

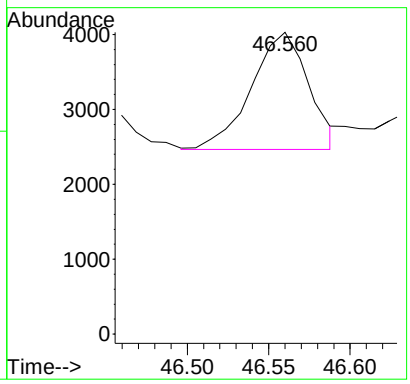
Tgt Ion:191 Resp: 3759

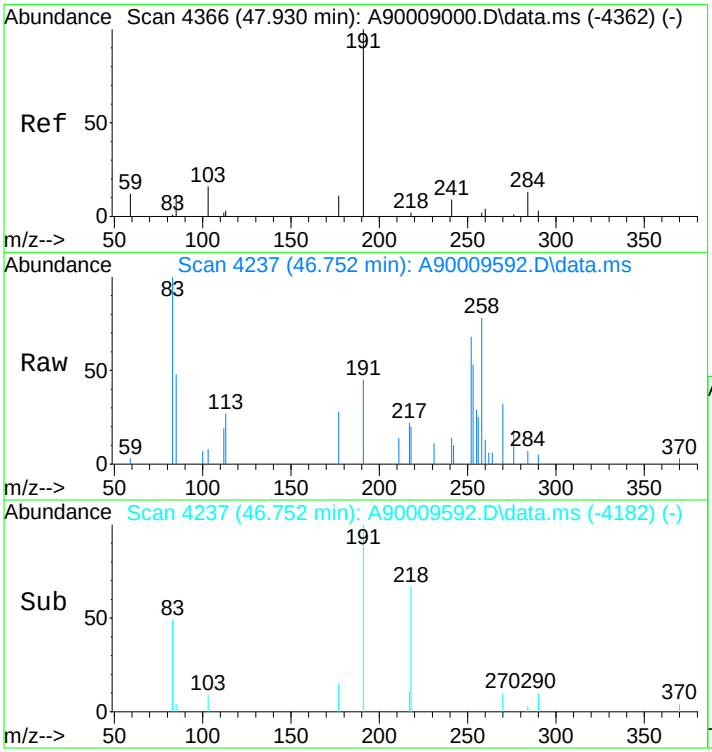




#104
C29 Tricyclic Terpane-22S (T9)
Concen: 33.98 ng/ml m
RT: 46.560 min Scan# 4216
Delta R.T. 0.000 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

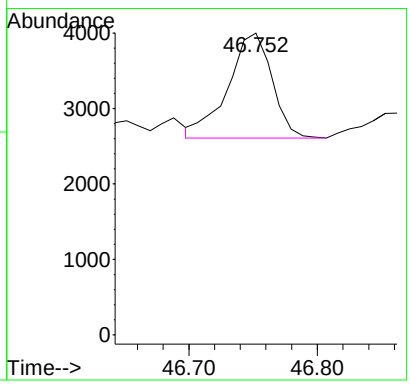
Tgt Ion:191 Resp: 3815

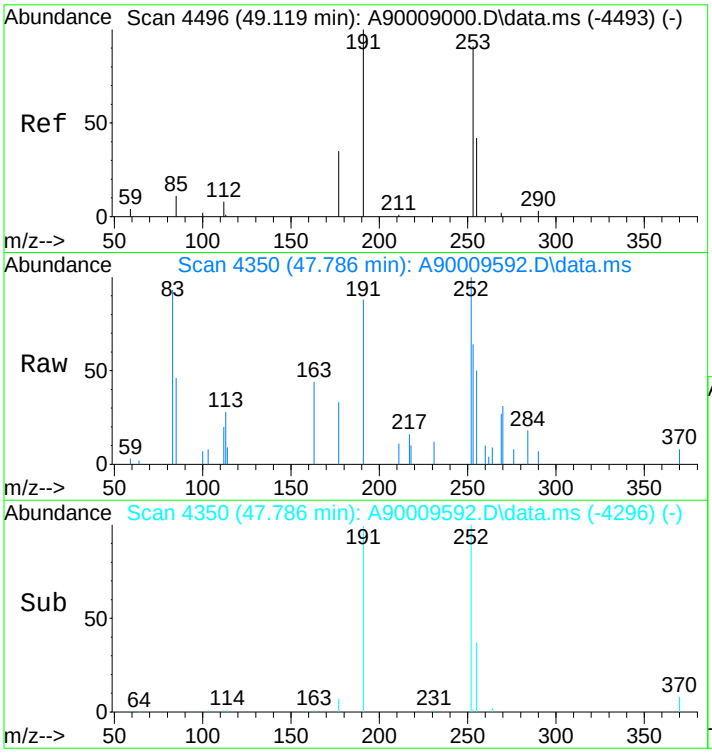




#105
C29 Tricyclic Terpane-22R (T10)
Concen: 29.46 ng/ml
RT: 46.752 min Scan# 4237
Delta R.T. 0.000 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

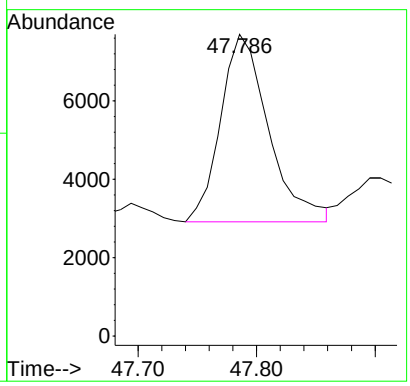
Tgt Ion:191 Resp: 3308

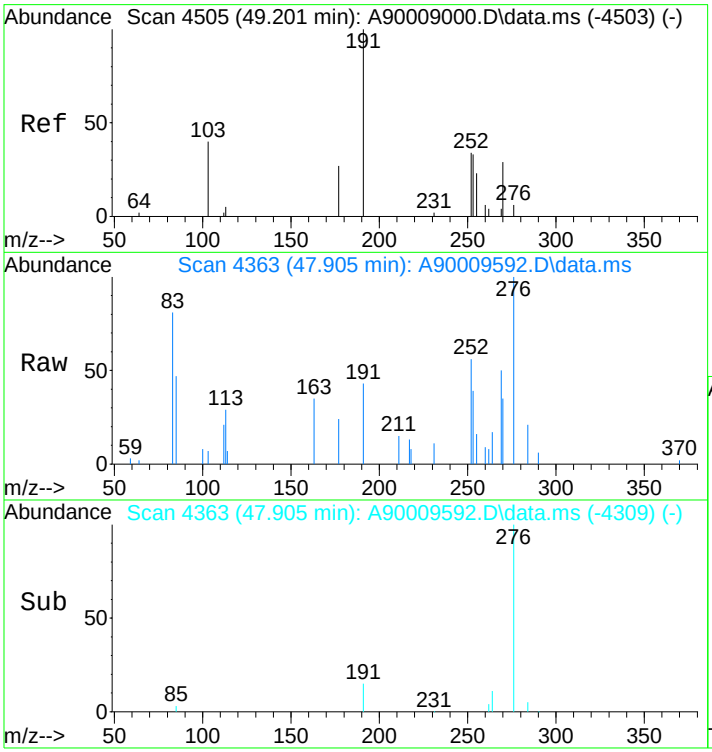




#106
18a-22,29,30-Trisnorneohopane-TS (T11)
Concen: 120.14 ng/ml
RT: 47.786 min Scan# 4350
Delta R.T. -0.009 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

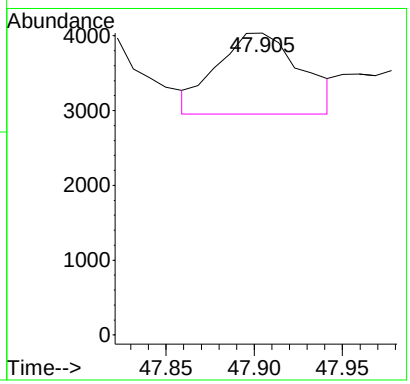
Tgt Ion:191 Resp: 13488

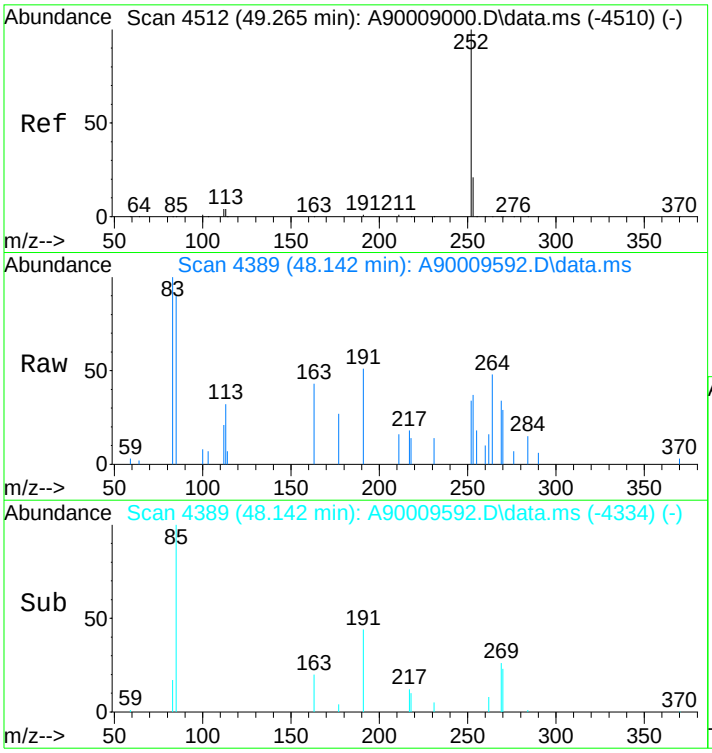




#107
C30 Tricyclic Terpane-22S
Concen: 32.07 ng/mL m
RT: 47.905 min Scan# 4363
Delta R.T. -0.009 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

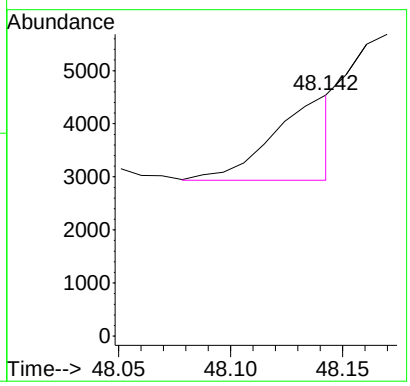
Tgt Ion:191 Resp: 3601

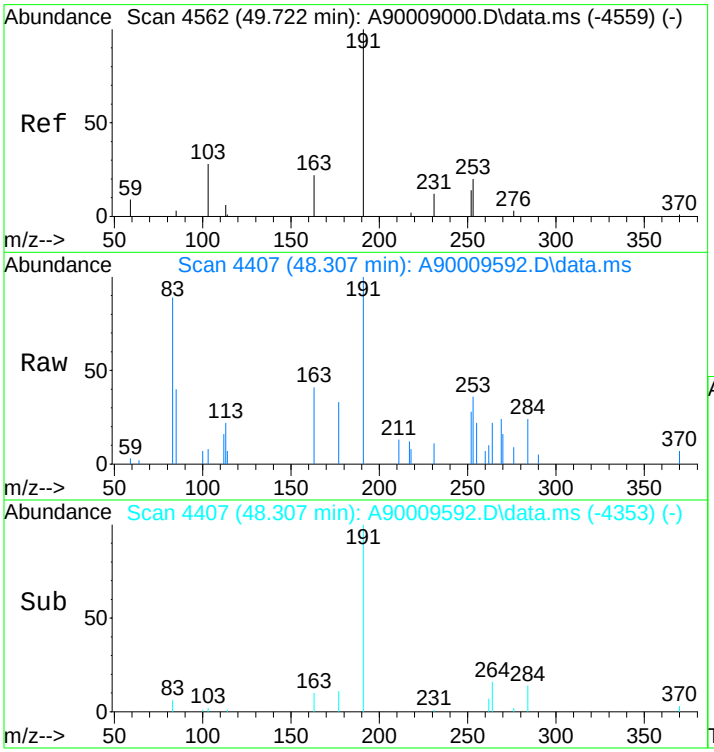




#108
C30 Tricyclic Terpane-22R
Concen: 26.20 ng/mL m
RT: 48.142 min Scan# 4389
Delta R.T. 0.000 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

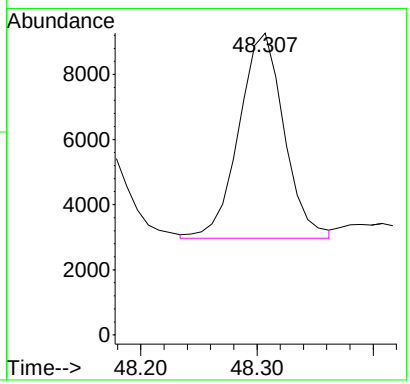
Tgt Ion:191 Resp: 2941

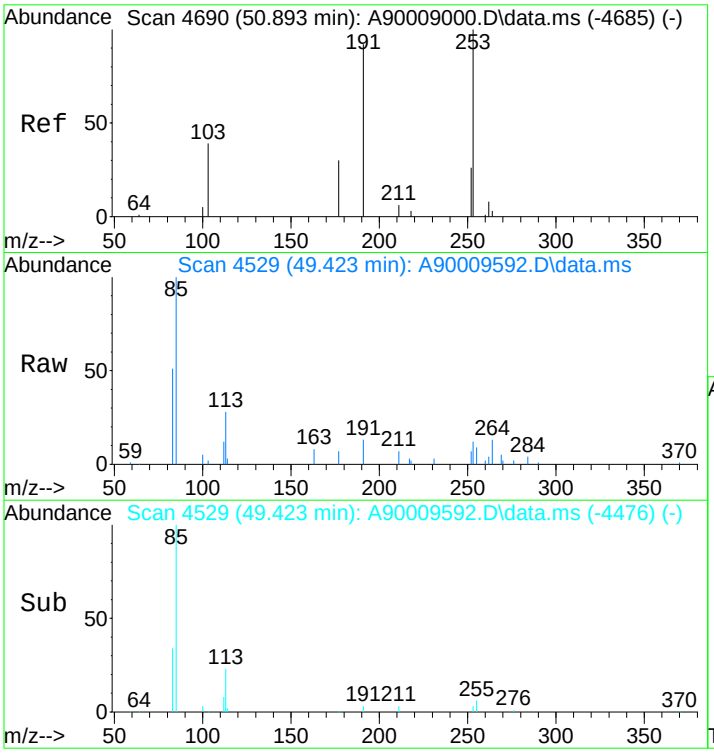




#109
17a(H)-22,29,30-Trisnorhopane-TM (T12)
Concen: 151.39 ng/ml m
RT: 48.307 min Scan# 4407
Delta R.T. -0.009 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

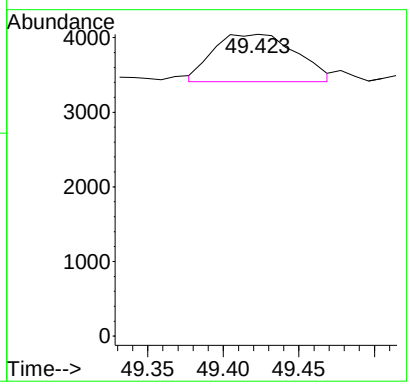
Tgt Ion:191 Resp: 16997

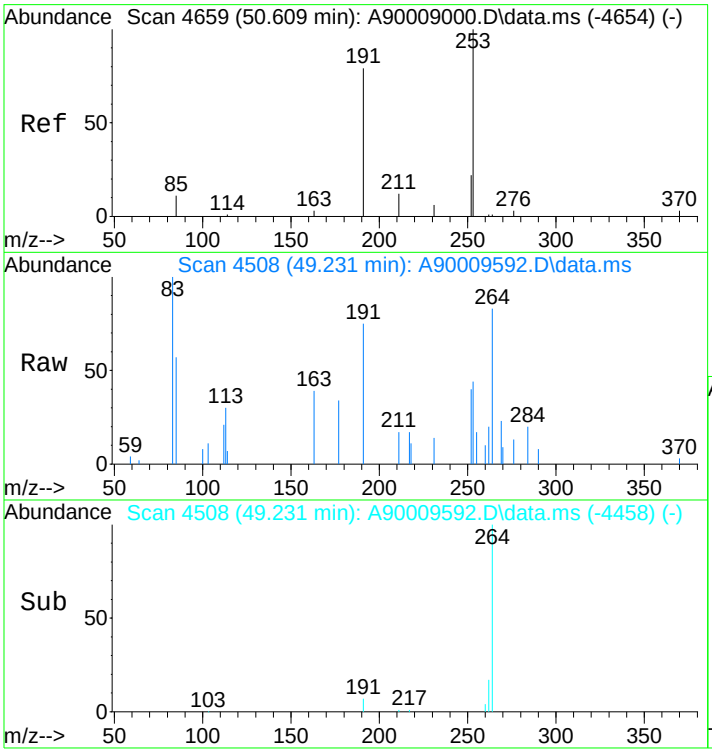




#110
17a/b,21b/a 28,30-Bisnorhopane (T14a)
Concen: 21.72 ng/ml m
RT: 49.423 min Scan# 4529
Delta R.T. -0.018 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

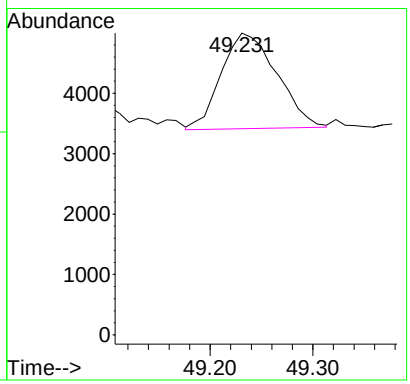
Tgt Ion:191 Resp: 2439

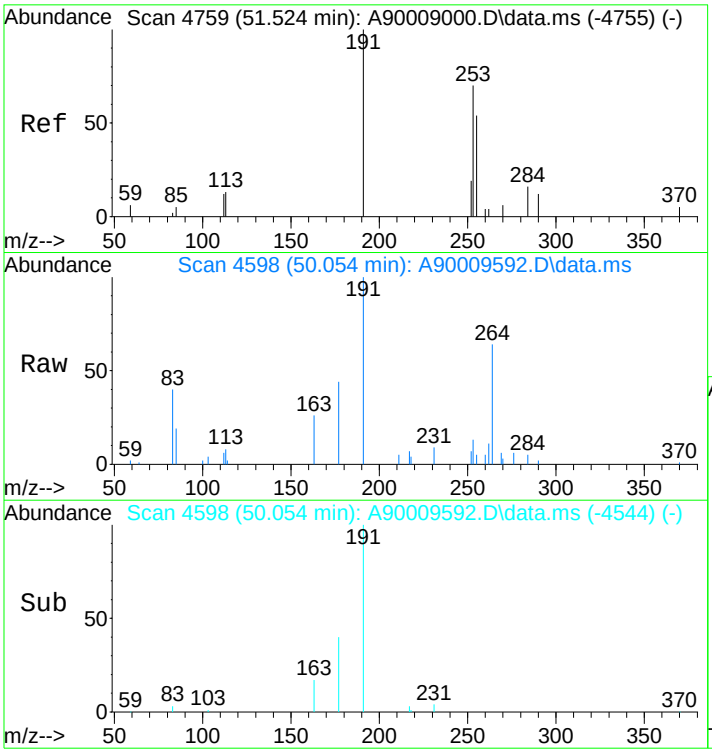




#111
17a(H),21b(H)-25-Norhopane (T14b)
Concen: 53.17 ng/ml
RT: 49.231 min Scan# 4508
Delta R.T. -0.045 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

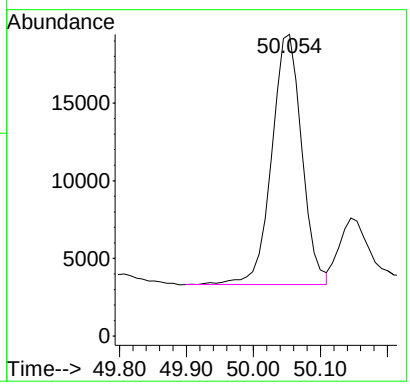
Tgt Ion:191 Resp: 5970

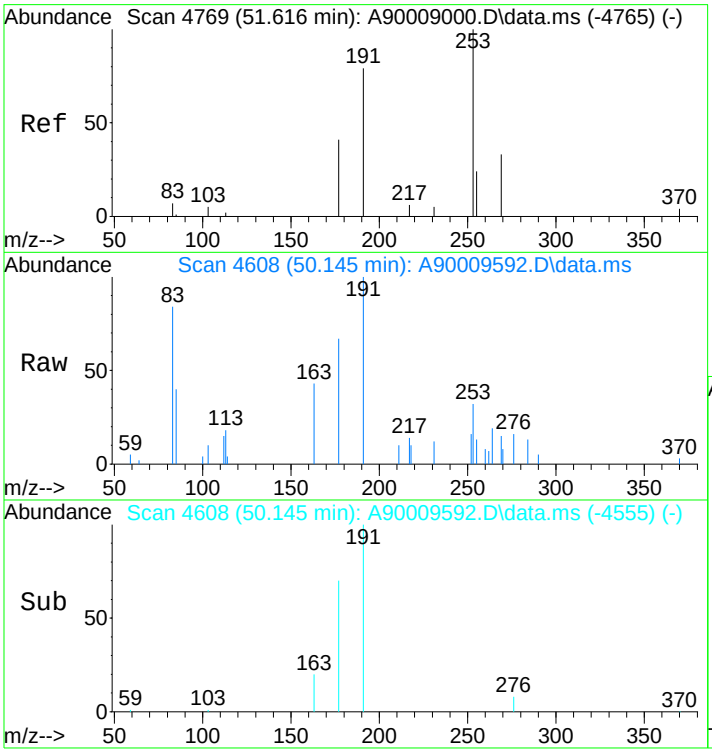




#112
30-Norhopane (T15)
Concen: 447.60 ng/ml
RT: 50.054 min Scan# 4598
Delta R.T. -0.009 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

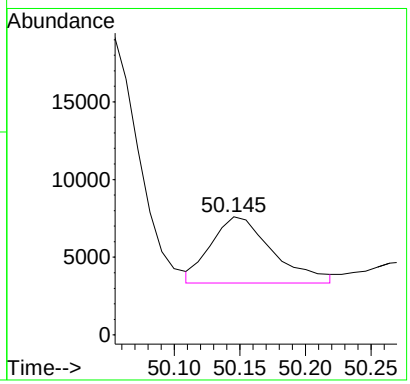
Tgt Ion:191 Resp: 50253

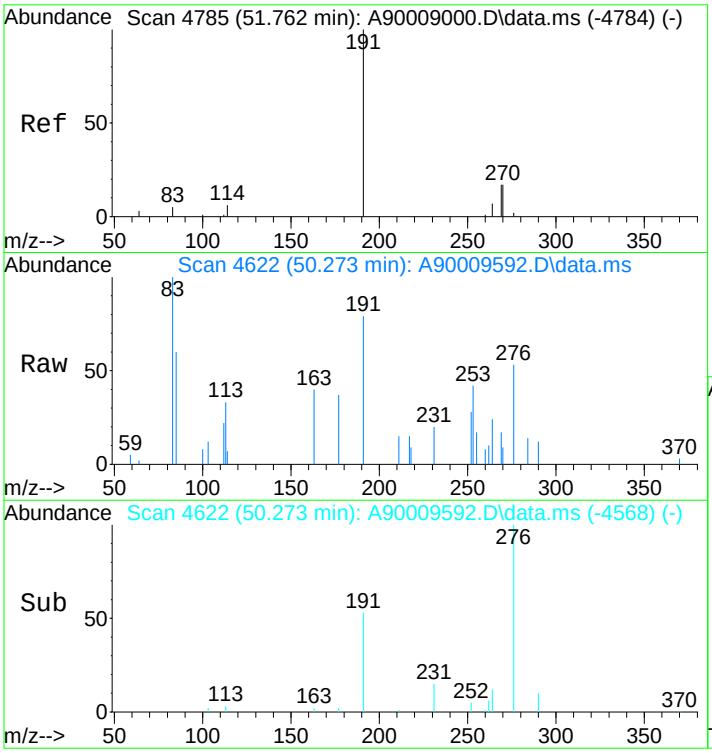




#113
18a(H)-30-Norneohopane-C29Ts (T16)
Concen: 124.53 ng/ml m
RT: 50.145 min Scan# 4608
Delta R.T. -0.018 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

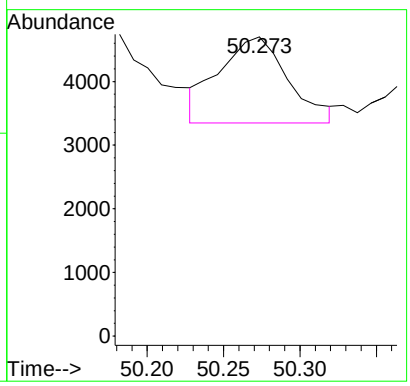
Tgt Ion:191 Resp: 13981

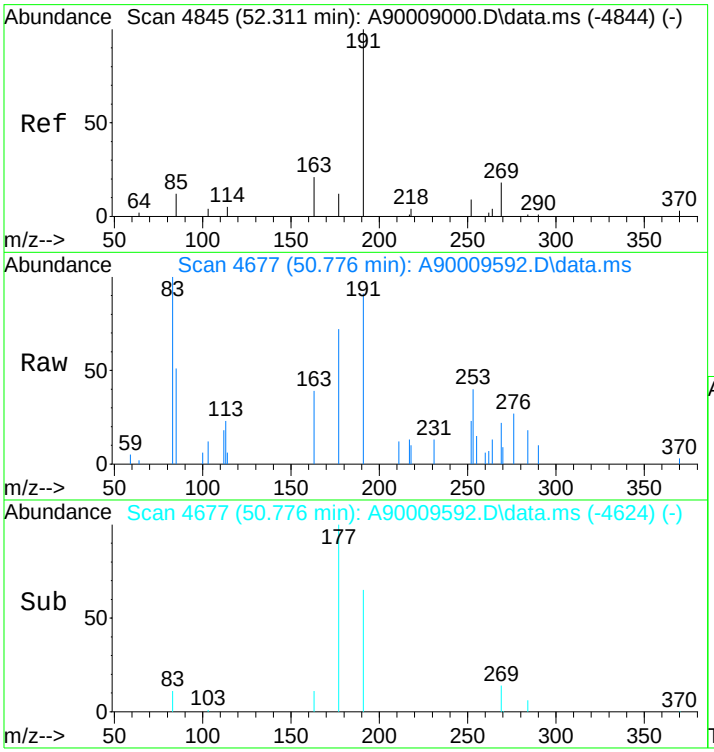




#114
17a(H)-Diahopane (X)
Concen: 38.08 ng/ml m
RT: 50.273 min Scan# 4622
Delta R.T. -0.009 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

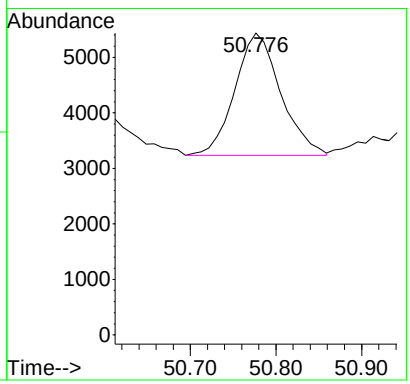
Tgt Ion:191 Resp: 4275

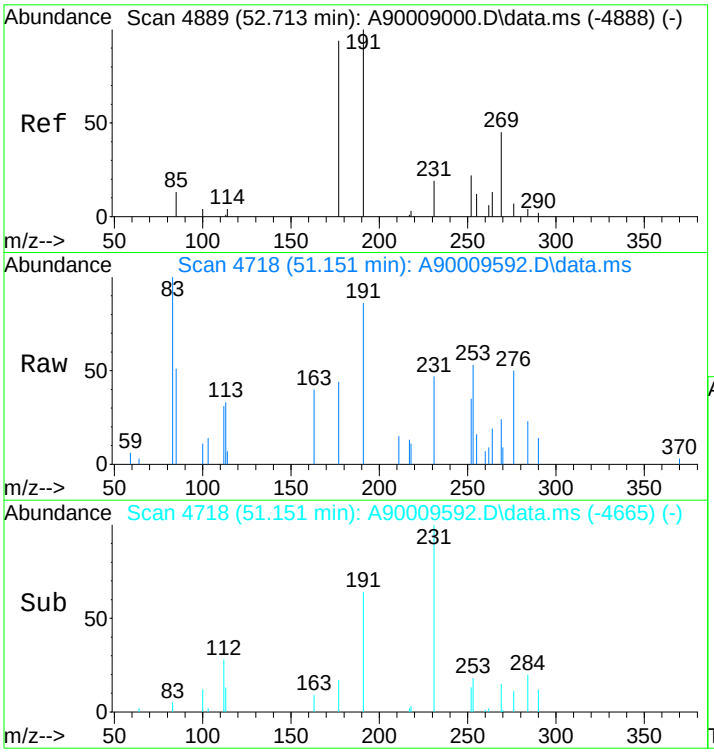




#115
30-Normoretane (T17)
Concen: 72.76 ng/ml
RT: 50.776 min Scan# 4677
Delta R.T. -0.018 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

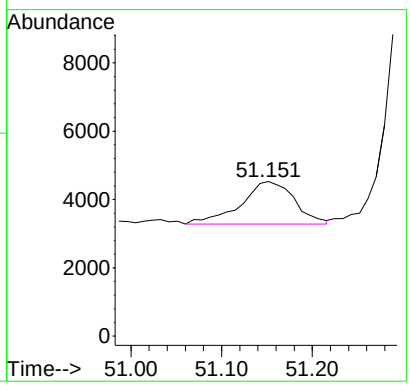
Tgt Ion:191 Resp: 8169

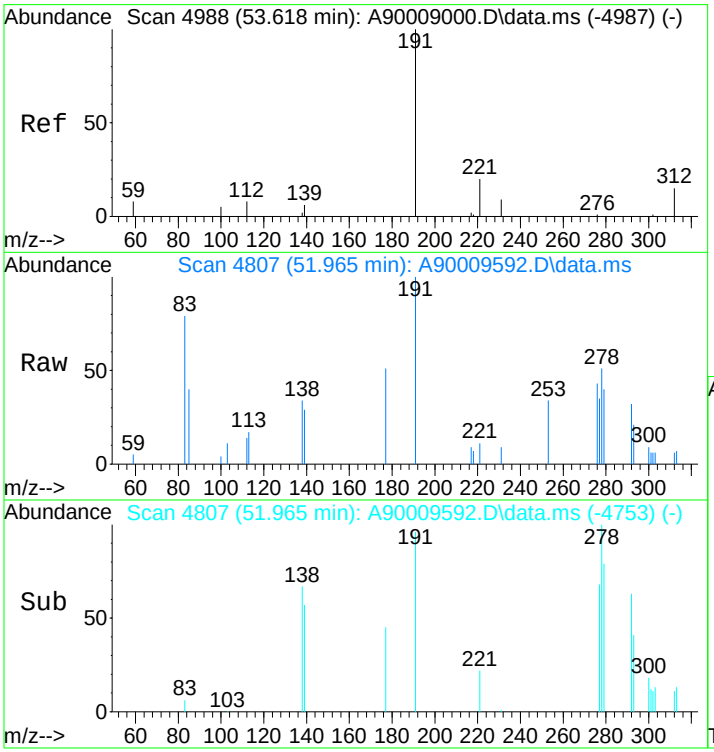




#116
18a(H)&18b(H)-Oleananes (T18)
Concen: 45.22 ng/ml
RT: 51.151 min Scan# 4718
Delta R.T. -0.018 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

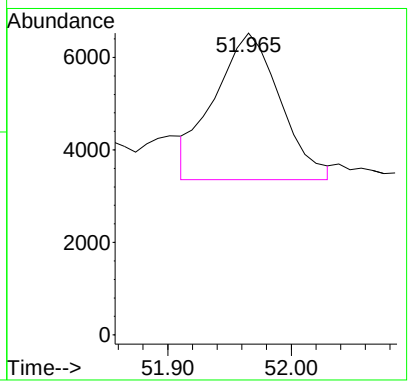
Tgt Ion:191 Resp: 5077

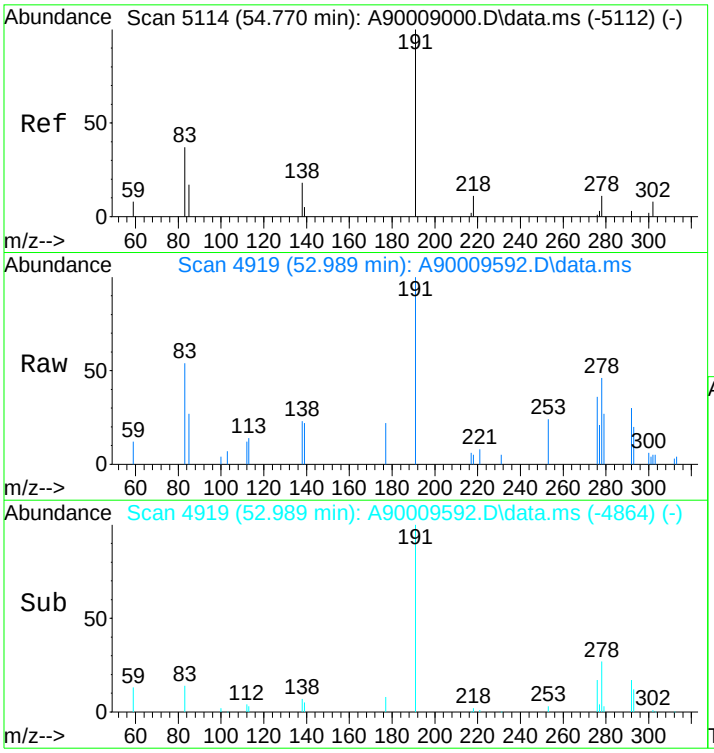




#117
Moretane (T20)
Concen: 104.59 ng/ml m
RT: 51.965 min Scan# 4807
Delta R.T. -0.009 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

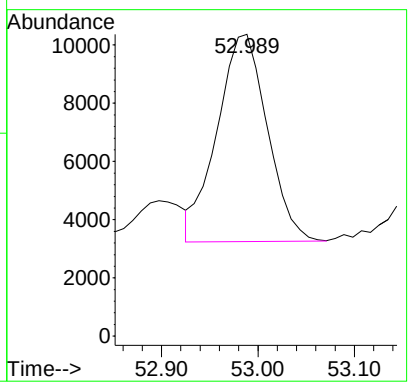
Tgt Ion:191 Resp: 11742

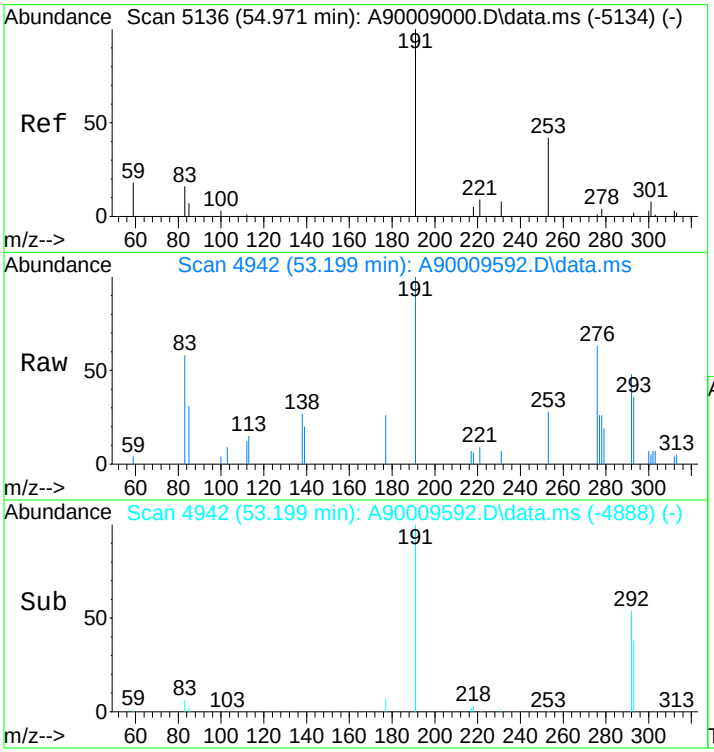




#118
30-Homohopane-22S (T21)
Concen: 228.92 ng/ml
RT: 52.989 min Scan# 4919
Delta R.T. 0.000 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

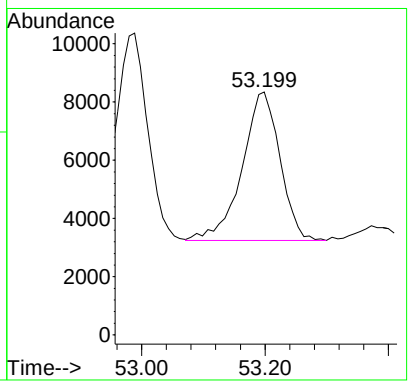
Tgt Ion:191 Resp: 25701

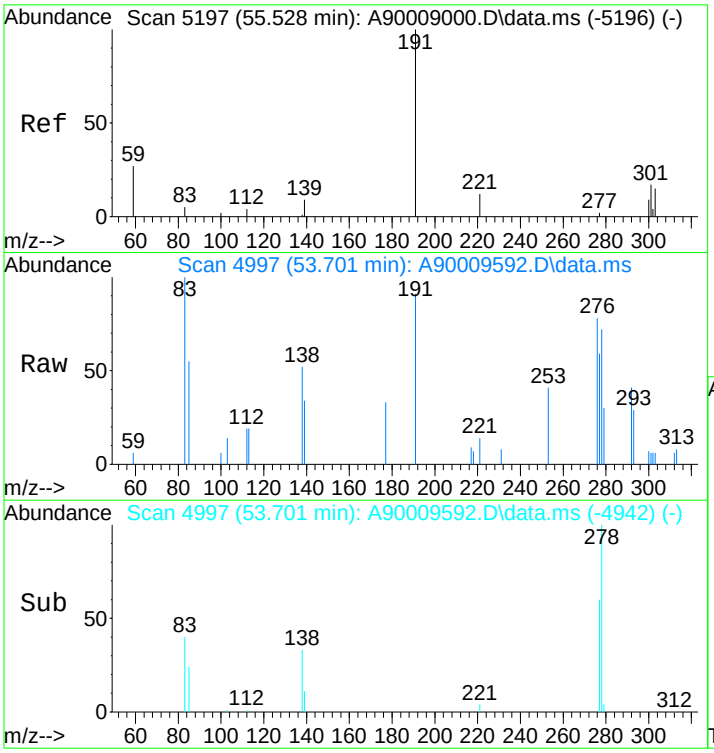




#119
30-Homohopane-22R (T22)
Concen: 193.89 ng/ml
RT: 53.199 min Scan# 4942
Delta R.T. -0.009 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

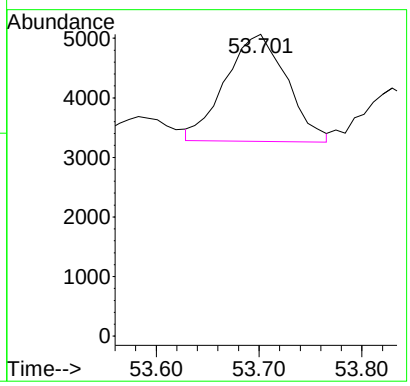
Tgt Ion:191 Resp: 21768

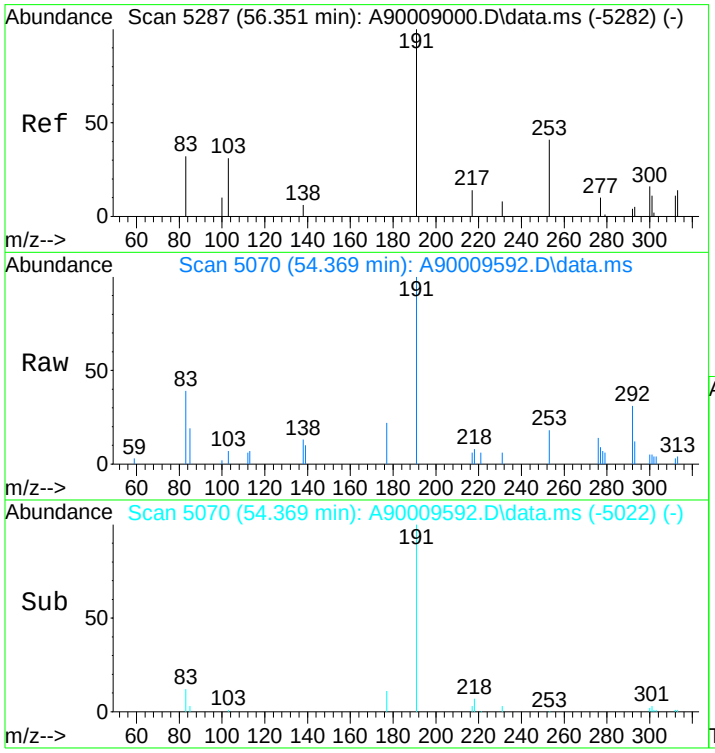




#120
Gammacerane/C32-diahopane
Concen: 66.45 ng/mL
RT: 53.701 min Scan# 4997
Delta R.T. 0.000 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

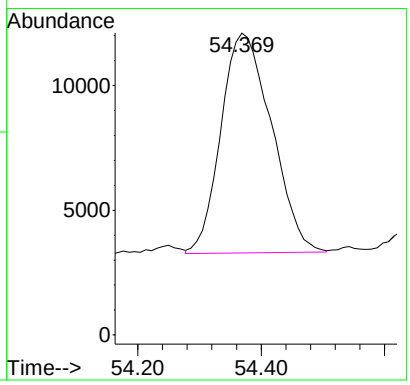
Tgt Ion:191 Resp: 7460

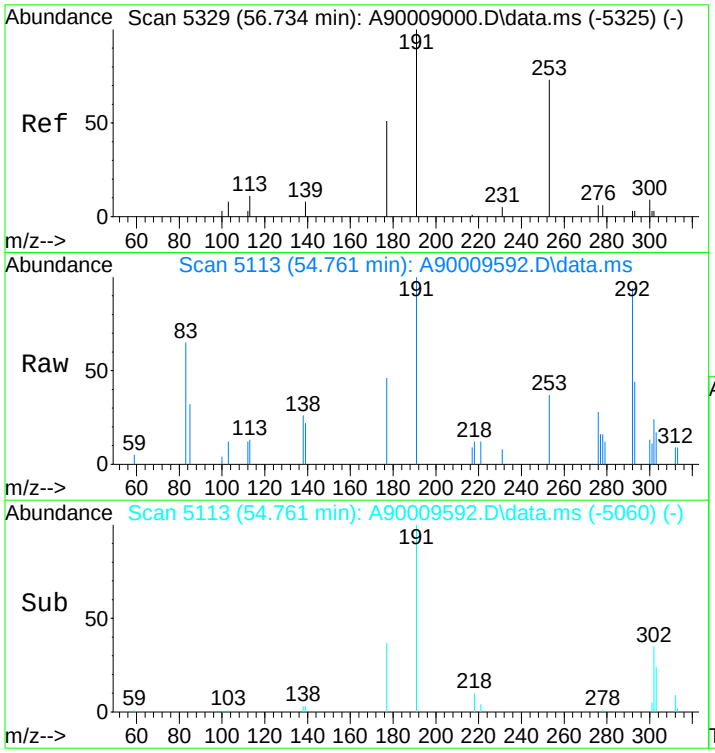




#121
30,31-Bishomohopane-22S (T26)
Concen: 447.19 ng/ml
RT: 54.369 min Scan# 5070
Delta R.T. -0.064 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

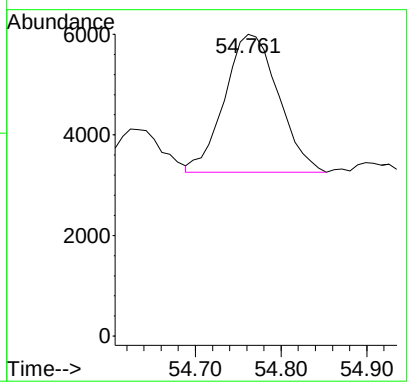
Tgt Ion:191 Resp: 50206

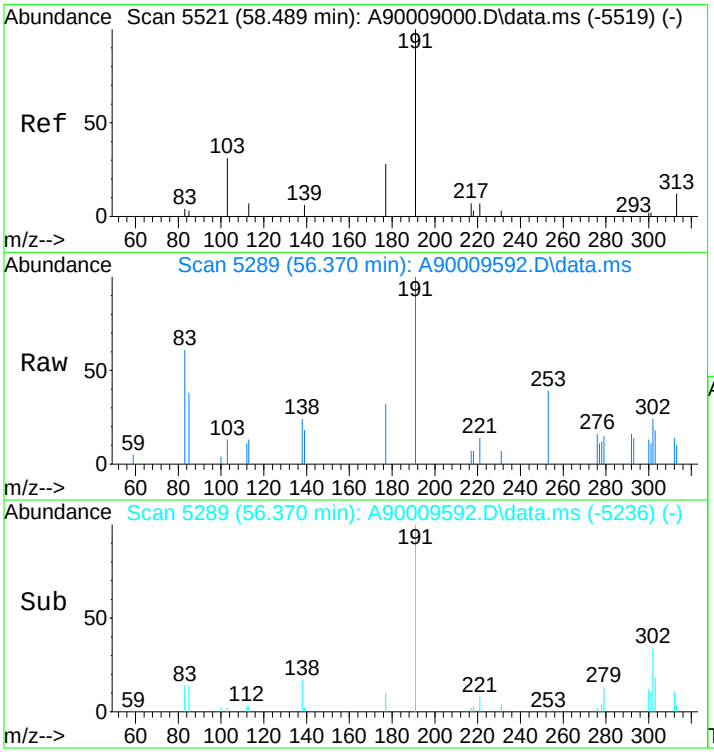




#122
30,31-Bishomohopane-22R (T27)
Concen: 106.40 ng/ml
RT: 54.761 min Scan# 5113
Delta R.T. -0.018 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

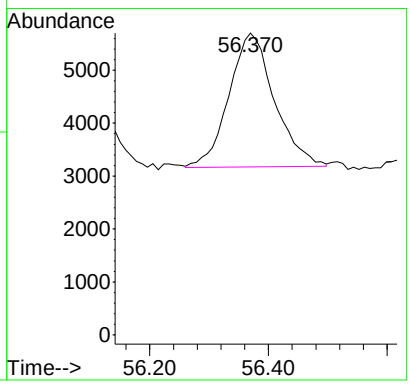
Tgt Ion:191 Resp: 11946

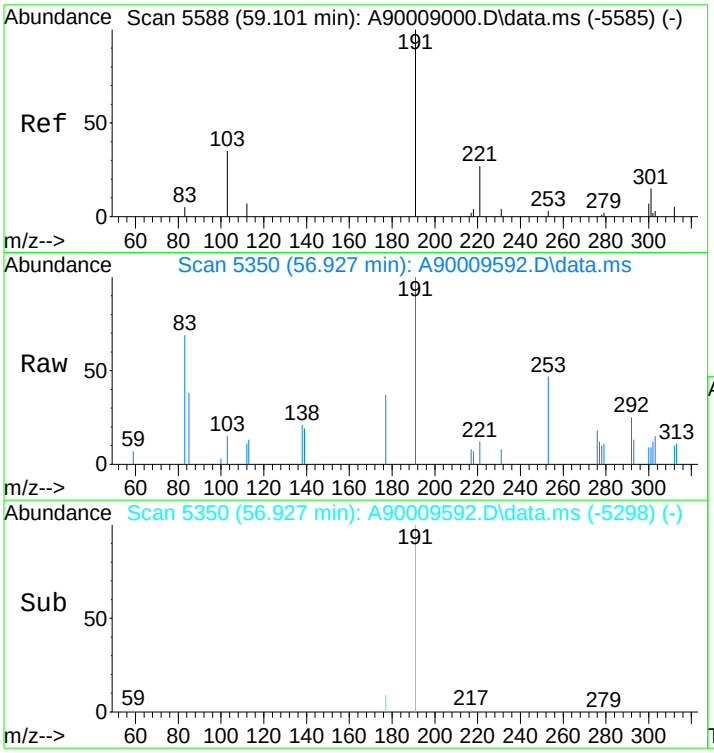




#123
30,31-Trishomohopane-22S (T30)
Concen: 119.07 ng/ml
RT: 56.370 min Scan# 5289
Delta R.T. -0.018 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

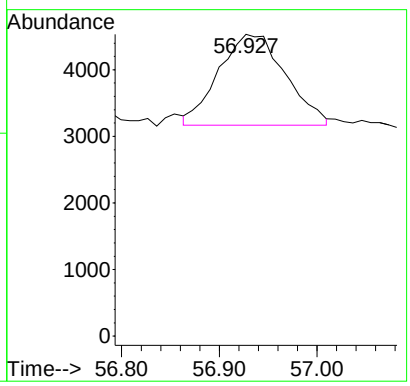
Tgt Ion:191 Resp: 13368

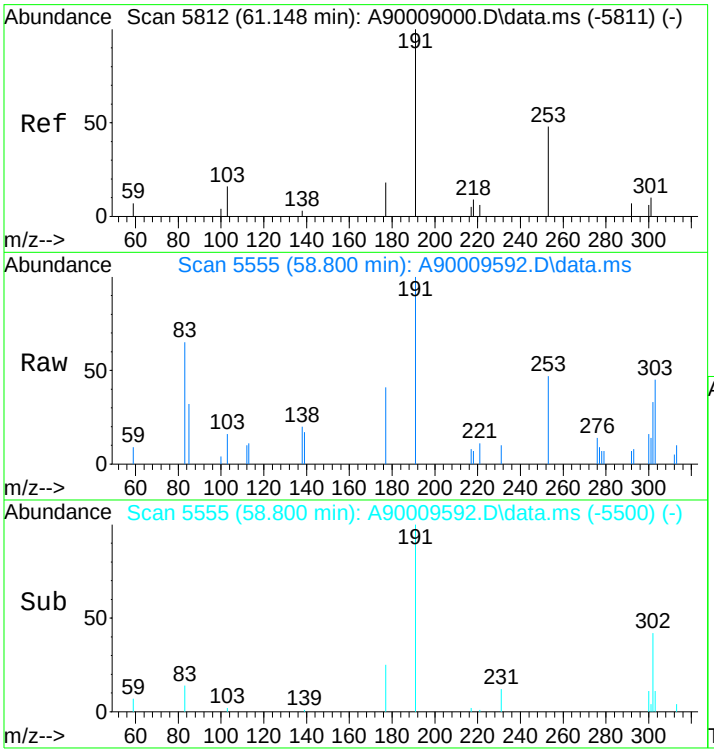




#124
30,31-Trishomohopane-22R (T31)
Concen: 57.58 ng/ml m
RT: 56.927 min Scan# 5350
Delta R.T. -0.027 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

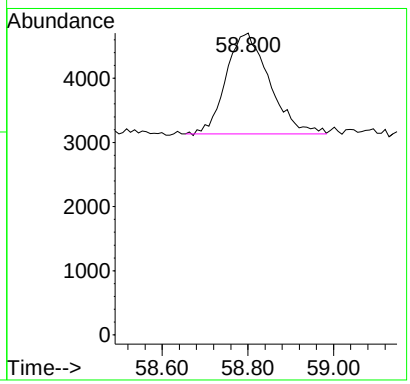
Tgt Ion:191 Resp: 6465

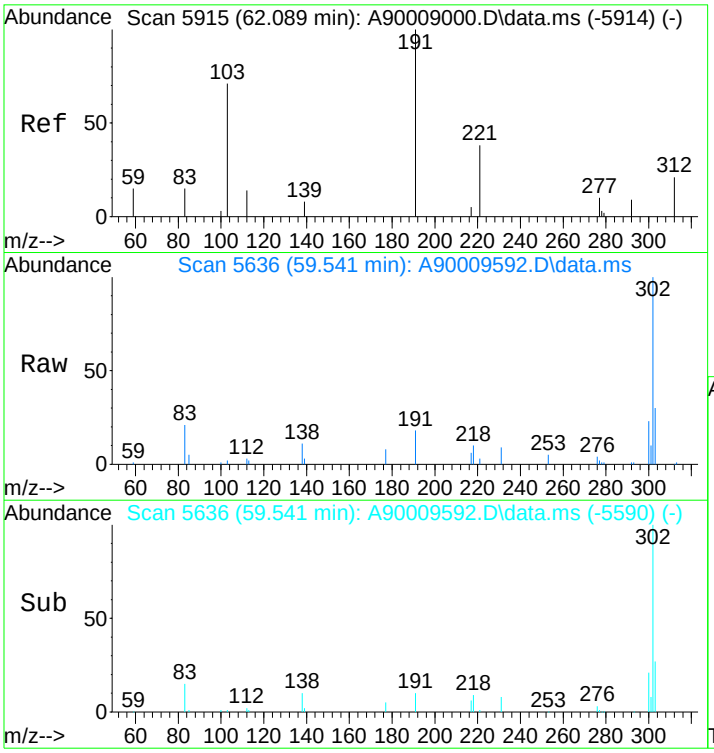




#125
Tetrakishomohopane-22S (T32)
Concen: 97.68 ng/ml
RT: 58.800 min Scan# 5555
Delta R.T. 0.000 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

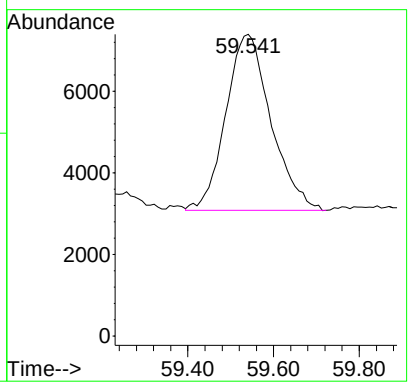
Tgt Ion:191 Resp: 10967

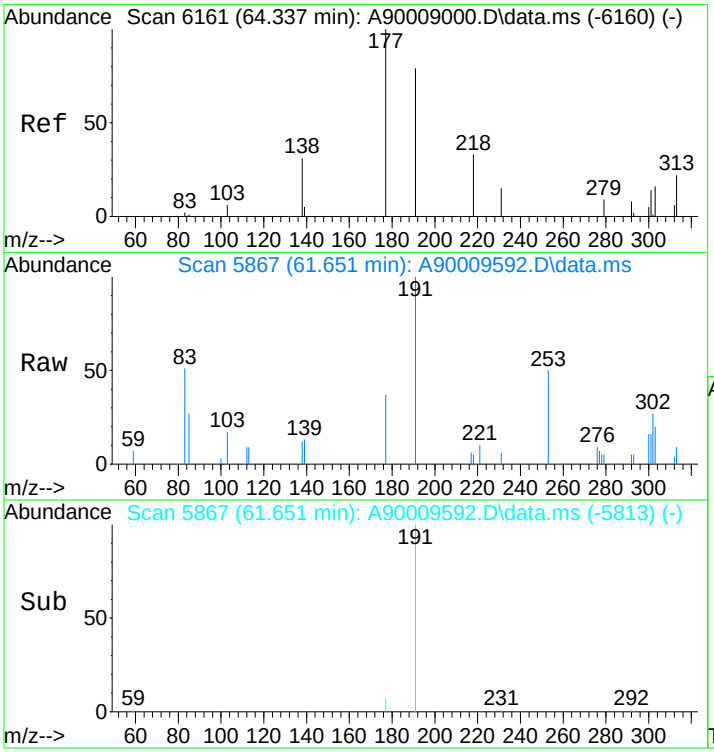




#126
Tetrakishomohopane-22R (T33)
Concen: 281.01 ng/ml
RT: 59.541 min Scan# 5636
Delta R.T. -0.082 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

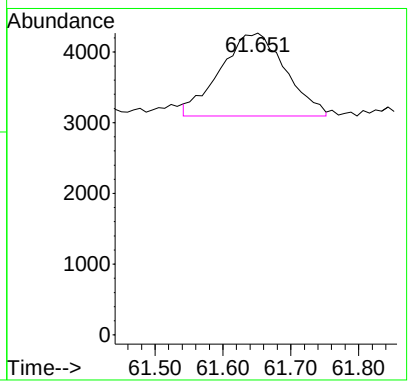
Tgt Ion:191 Resp: 31549

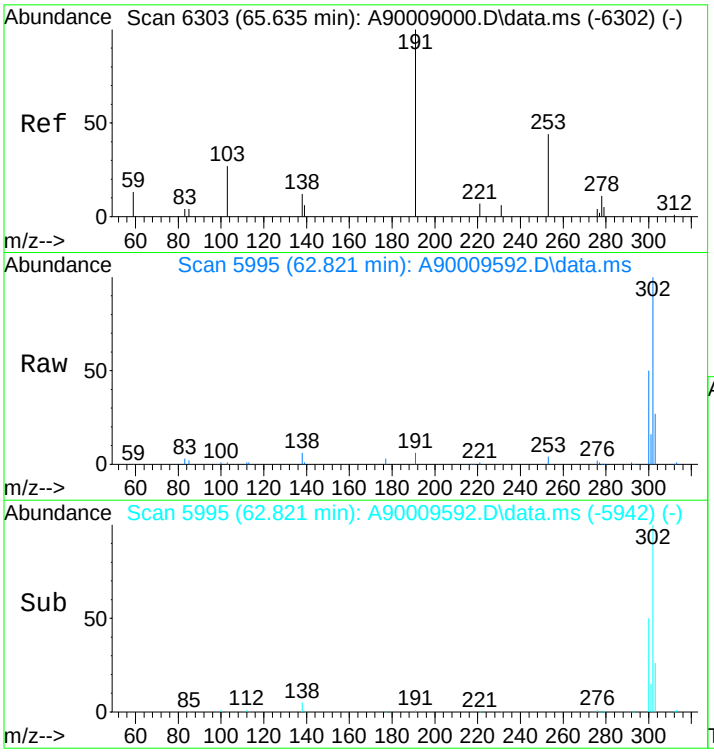




#127
Pentakishomohopane-22S (T34)
Concen: 69.33 ng/ml m
RT: 61.651 min Scan# 5867
Delta R.T. -0.009 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

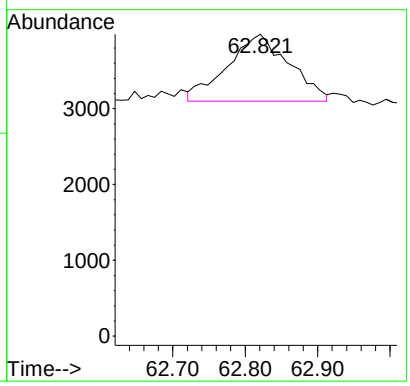
Tgt Ion:191 Resp: 7784

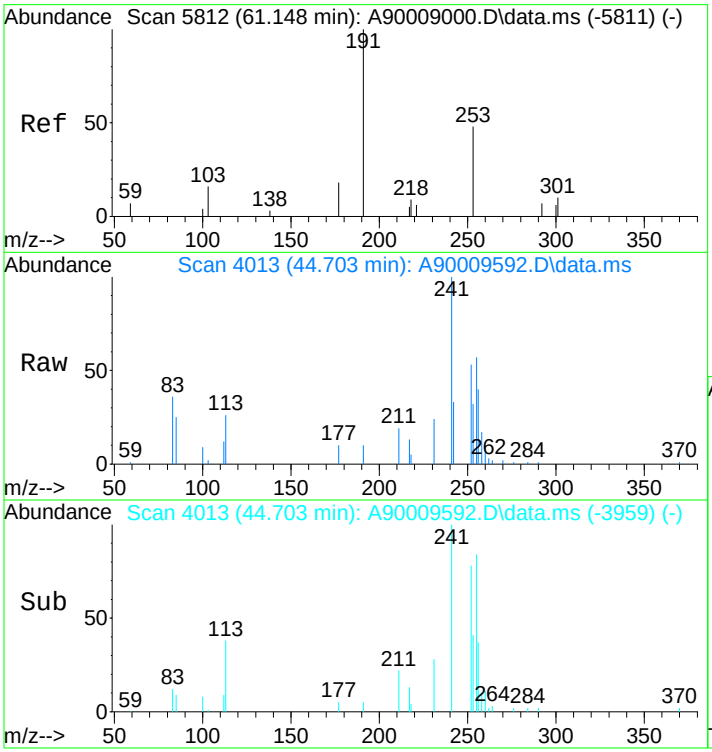




#128
Pentakishomohopane-22R (T35)
Concen: 46.52 ng/ml m
RT: 62.821 min Scan# 5995
Delta R.T. -0.018 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

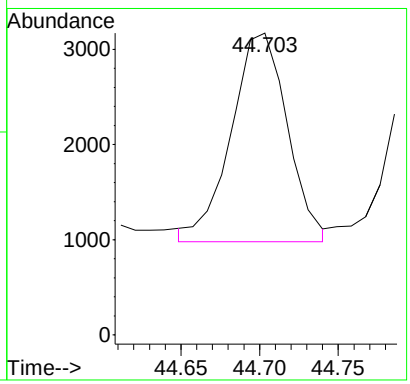
Tgt Ion:191 Resp: 5223

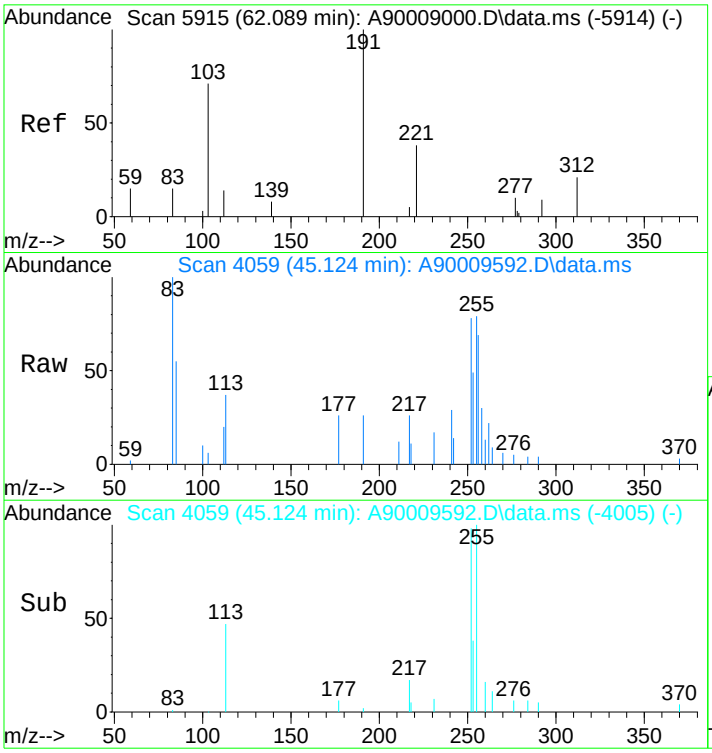




#130
13b(H),17a(H)-20S-Diacholestane (S4)
Concen: 101.42 ng/ml m
RT: 44.703 min Scan# 4013
Delta R.T. -0.009 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

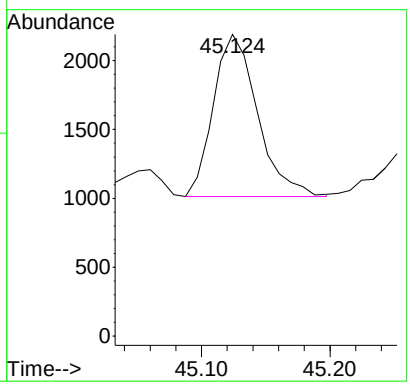
Tgt Ion:217 Resp: 5437

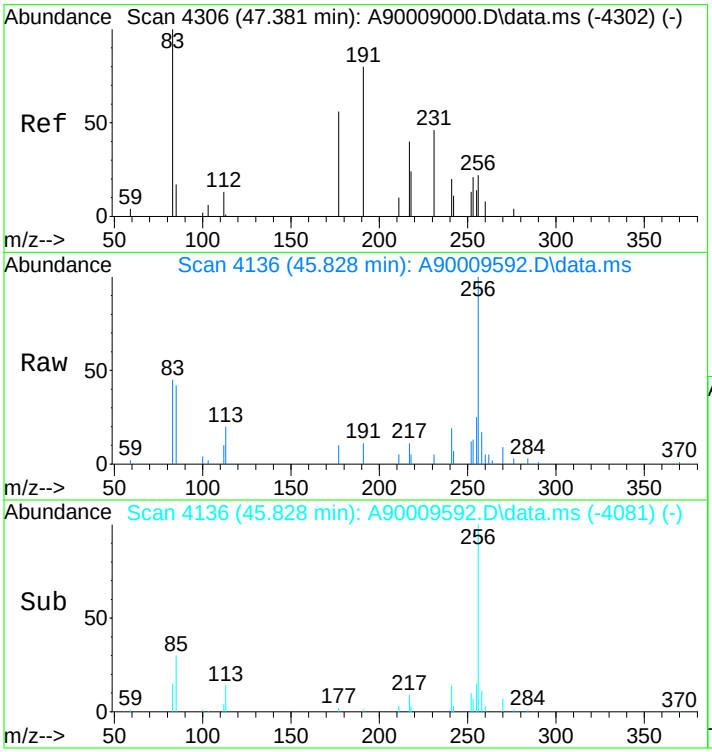




#131
13b(H),17a(H)-20R-Diacholestane (S5)
Concen: 52.42 ng/ml
RT: 45.124 min Scan# 4059
Delta R.T. -0.009 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

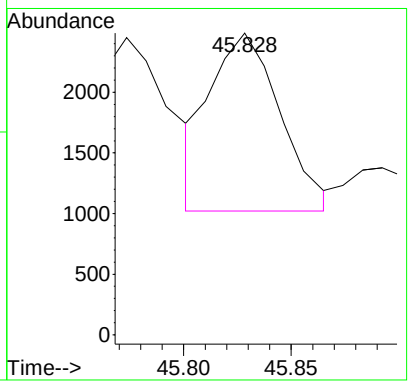
Tgt Ion:217 Resp: 2810

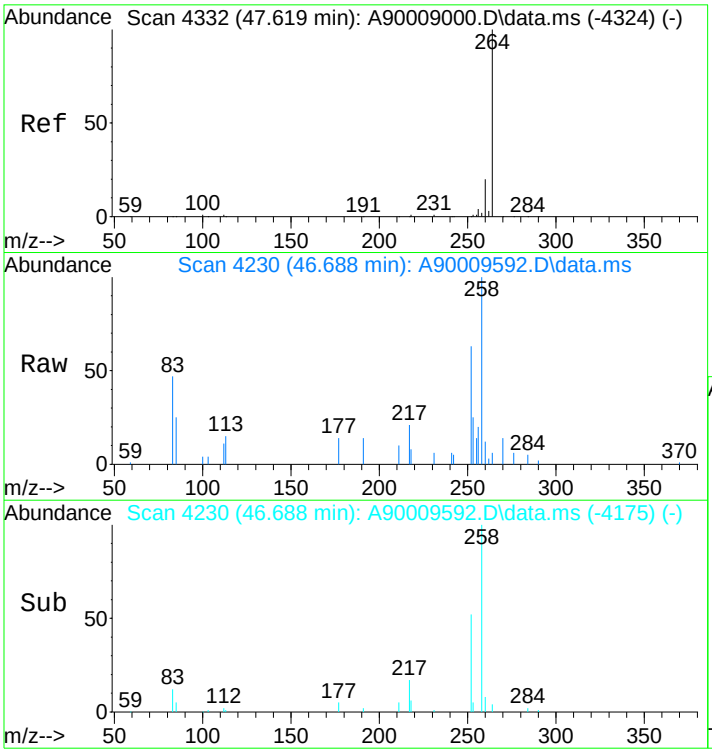




#132
13b,17a-20S-Methyldiacholestane (S8)
Concen: 61.87 ng/ml m
RT: 45.828 min Scan# 4136
Delta R.T. 0.000 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

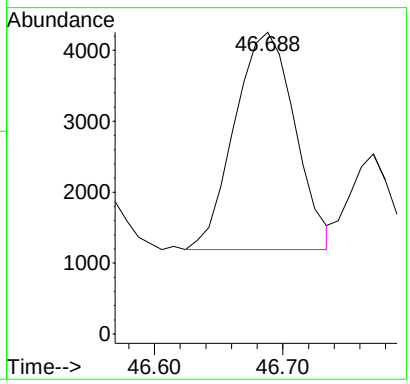
Tgt Ion:217 Resp: 3317

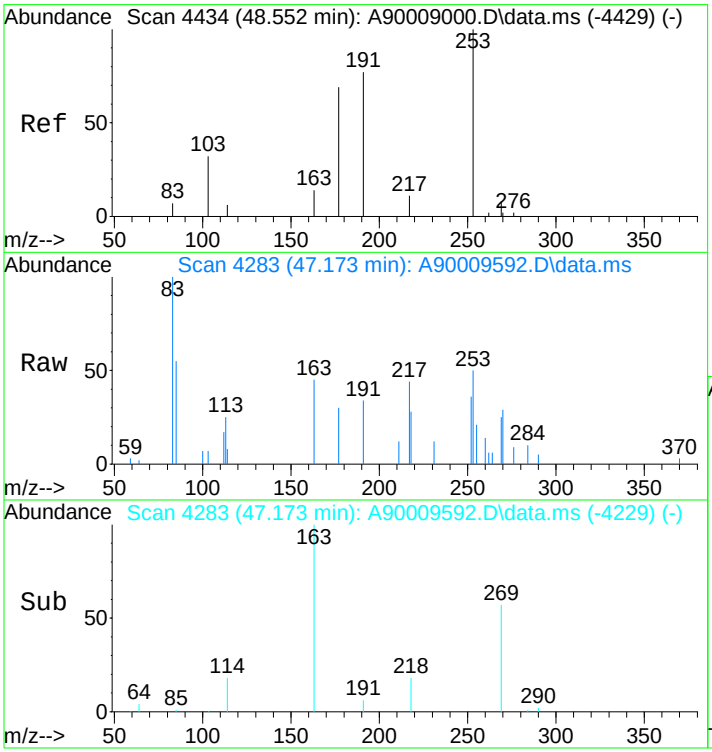




#133
14a,17a-20S-Chol/13b,17a-20S-Ethyldiach
Concen: 186.93 ng/ml
RT: 46.688 min Scan# 4230
Delta R.T. 0.000 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

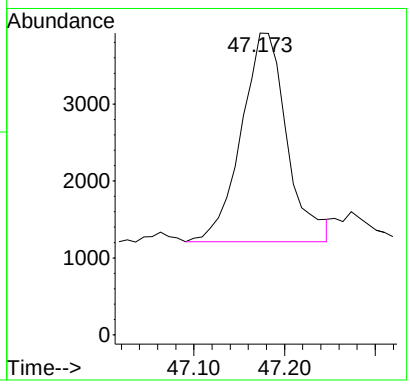
Tgt Ion:217 Resp: 10021

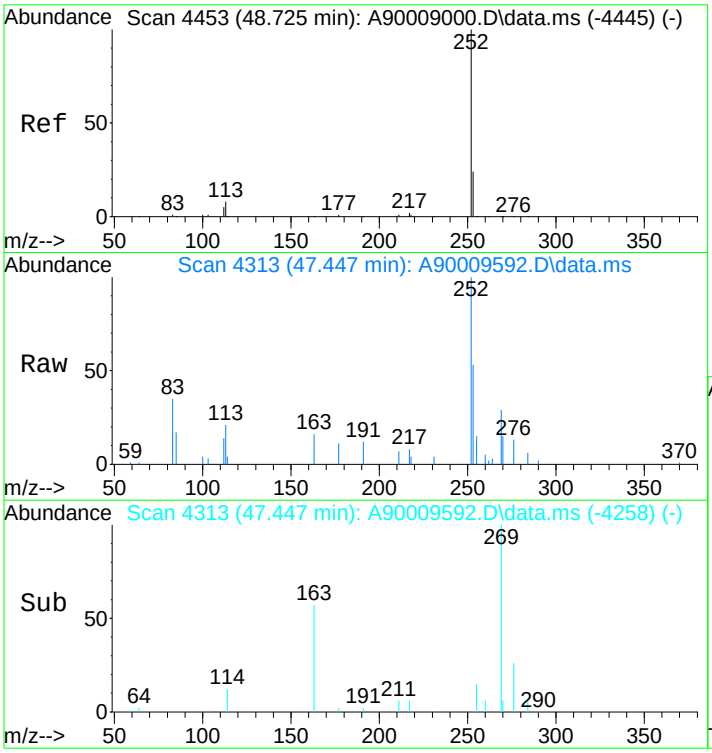




#134
14a,17a-20R-Chol/13b,17a-20R-Ethyldiach
Concen: 177.04 ng/ml
RT: 47.173 min Scan# 4283
Delta R.T. -0.009 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

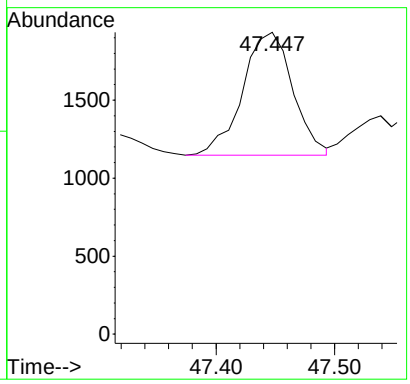
Tgt Ion:217 Resp: 9491

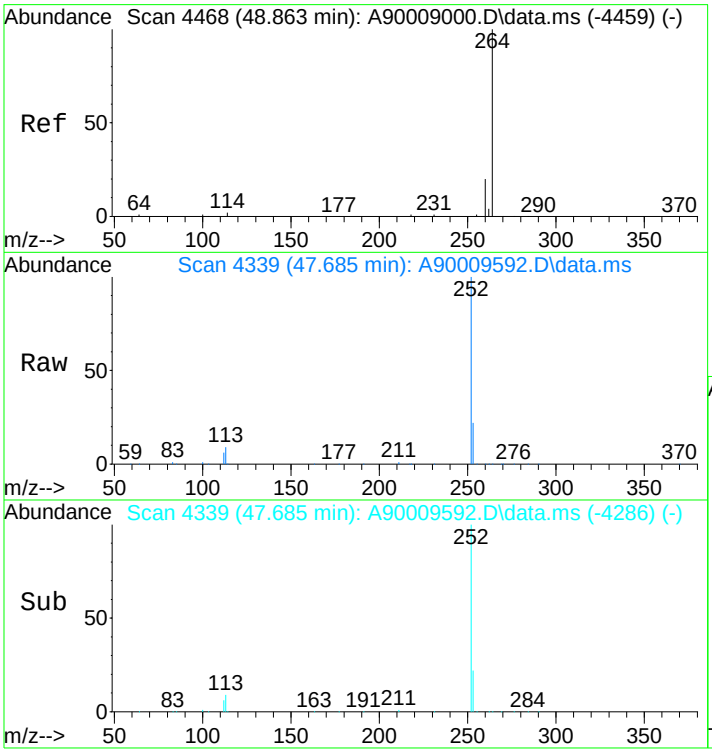




#135
Unknown Sterane (S18)
Concen: 43.13 ng/ml
RT: 47.447 min Scan# 4313
Delta R.T. 0.000 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

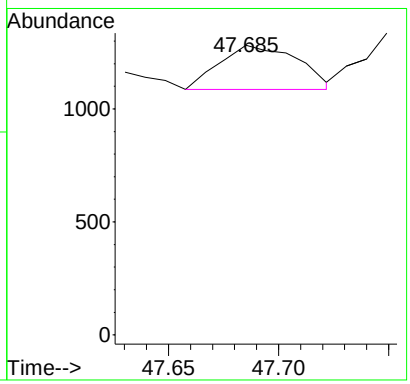
Tgt Ion:217 Resp: 2312

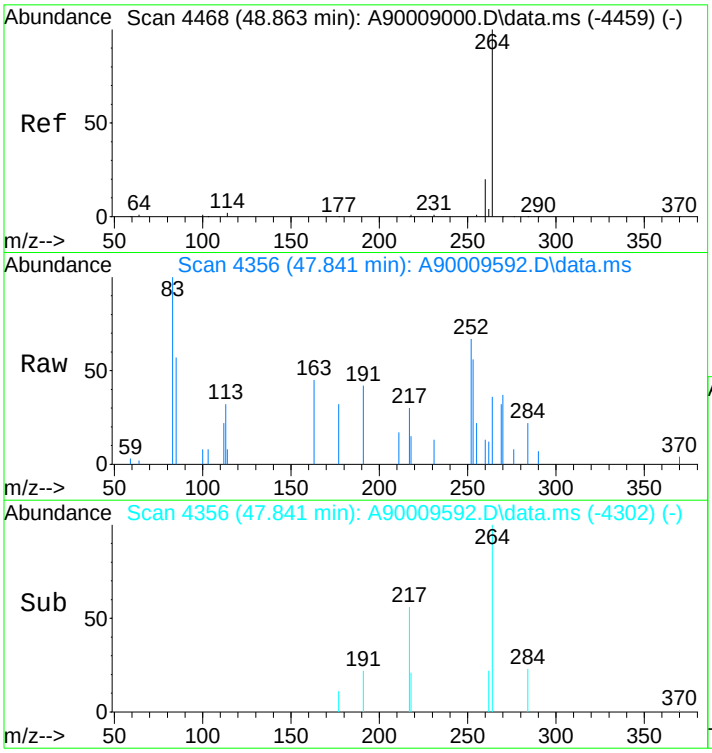




#136
13a,17b-20S-Ethyldiacholestane (S19)
Concen: 9.07 ng/ml
RT: 47.685 min Scan# 4339
Delta R.T. -0.018 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

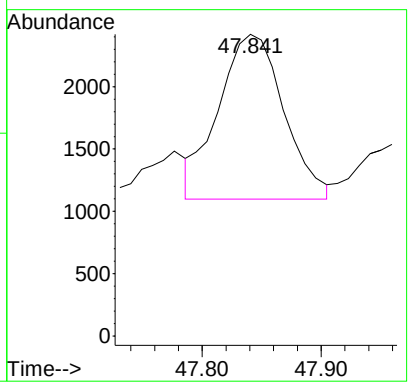
Tgt Ion:217 Resp: 486

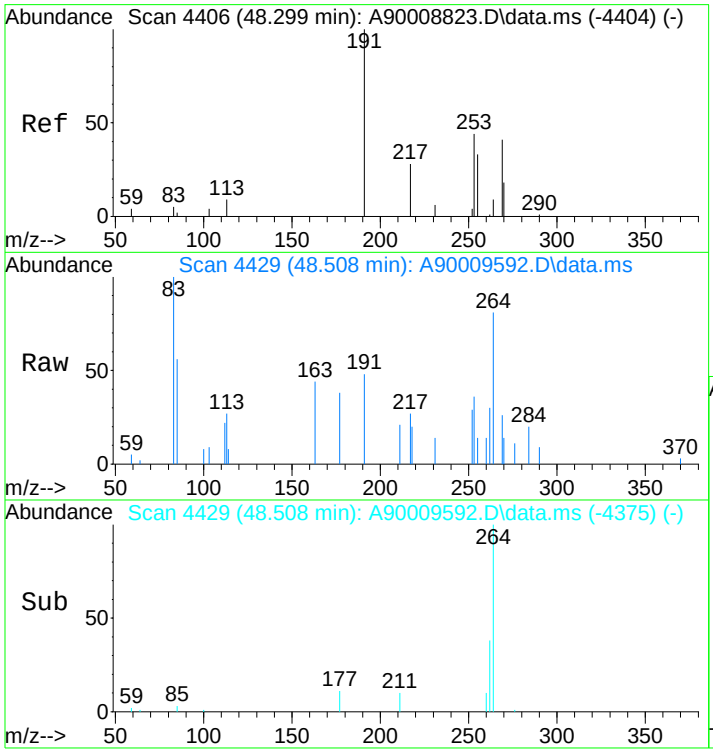




#137
14a,17a-20S-Methylcholestane (S20)
Concen: 94.31 ng/ml m
RT: 47.841 min Scan# 4356
Delta R.T. -0.009 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

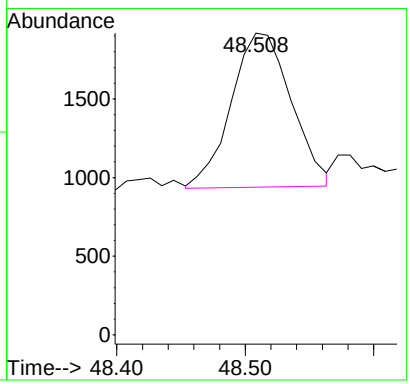
Tgt Ion:217 Resp: 5056

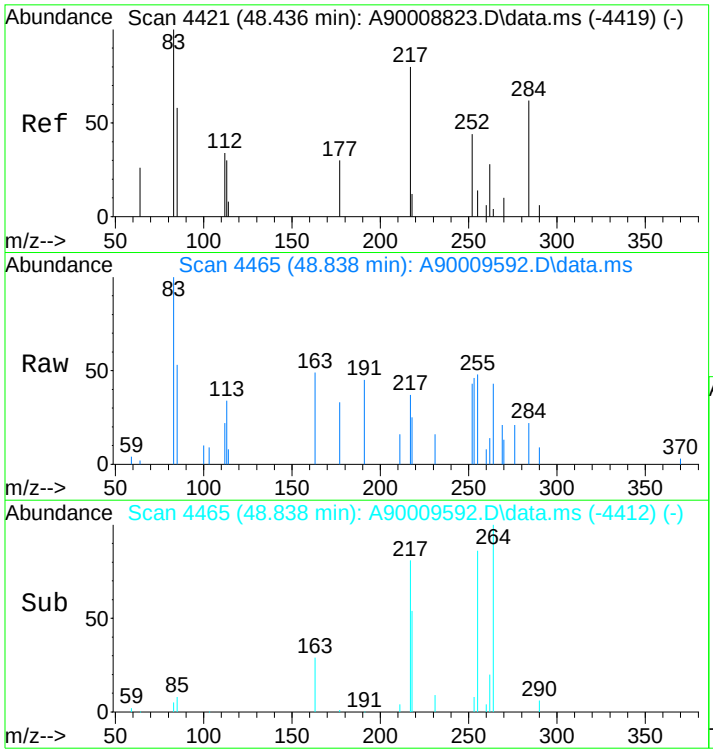




#138
14a,17a-20R-Methylcholestane (S24)
Concen: 59.56 ng/ml
RT: 48.508 min Scan# 4429
Delta R.T. -0.009 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

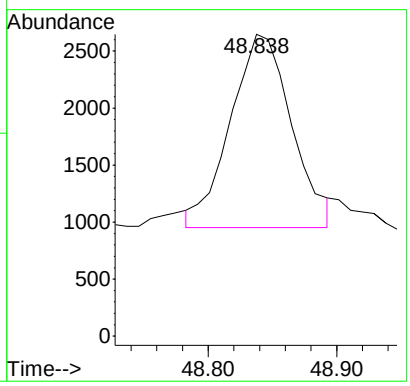
Tgt Ion:217 Resp: 3193

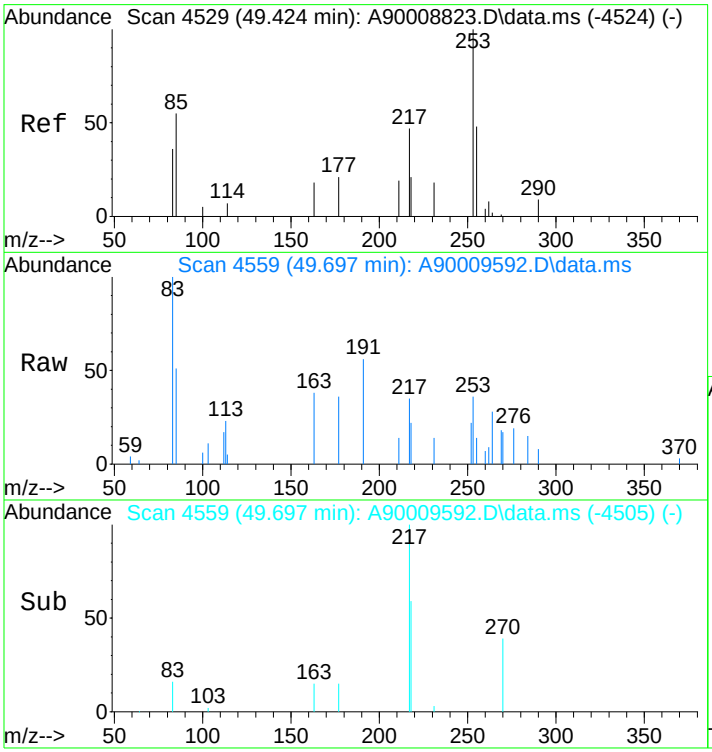




#139
14a(H),17a(H)-20S-Ethylcholestane (S25)
Concen: 104.46 ng/ml m
RT: 48.838 min Scan# 4465
Delta R.T. -0.018 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

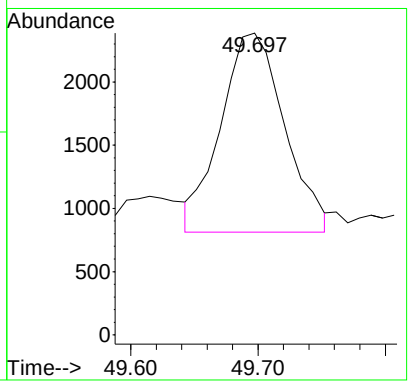
Tgt Ion:217 Resp: 5600

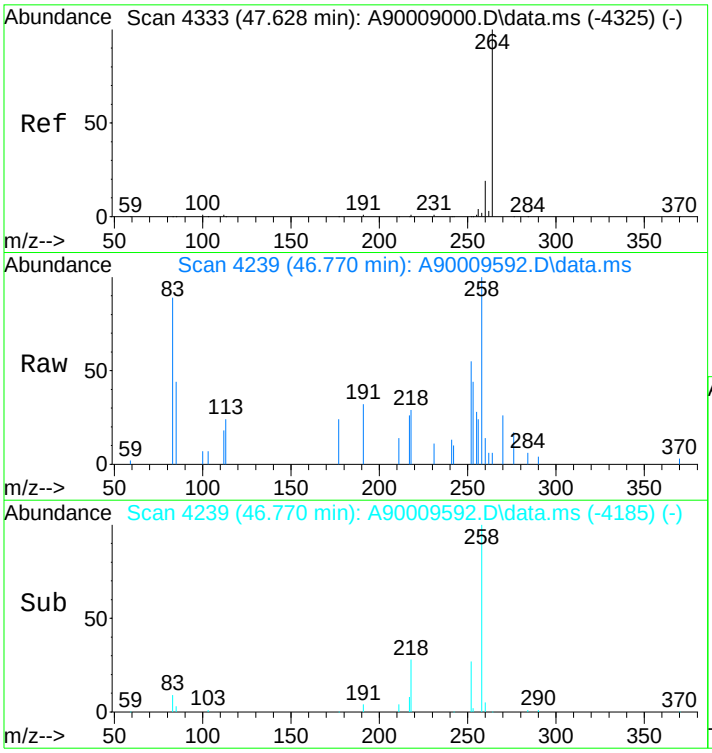




#140
14a(H),17a(H)-20R-Ethylcholestane (S28)
Concen: 102.45 ng/ml m
RT: 49.697 min Scan# 4559
Delta R.T. -0.009 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

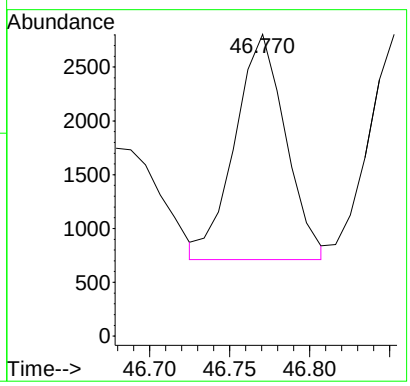
Tgt Ion:217 Resp: 5492

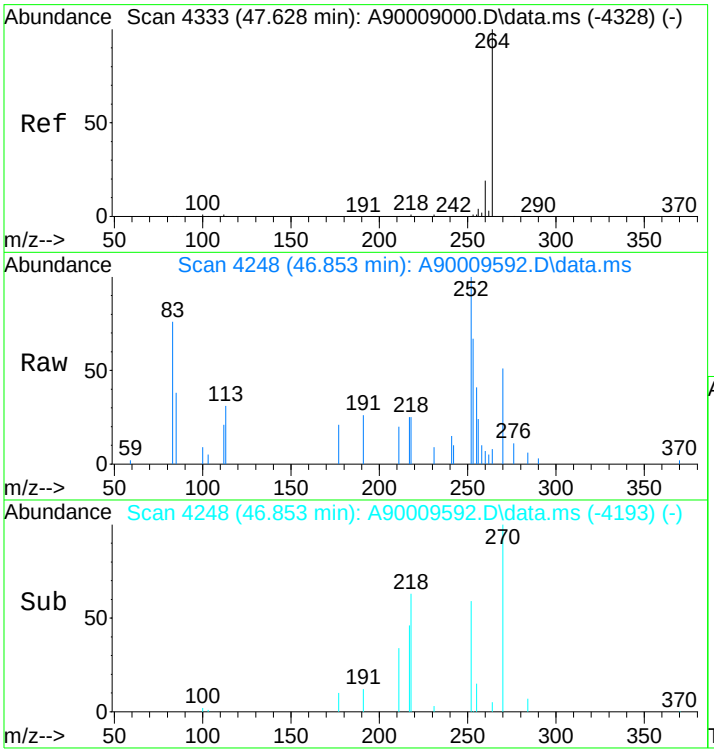




#141
14b(H),17b(H)-20R-Cholestane (S14)
Concen: 86.24 ng/ml m
RT: 46.770 min Scan# 4239
Delta R.T. -0.009 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

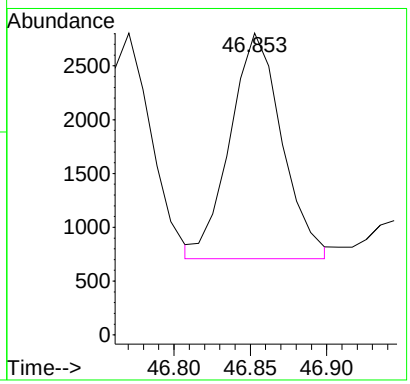
Tgt Ion:218 Resp: 4623

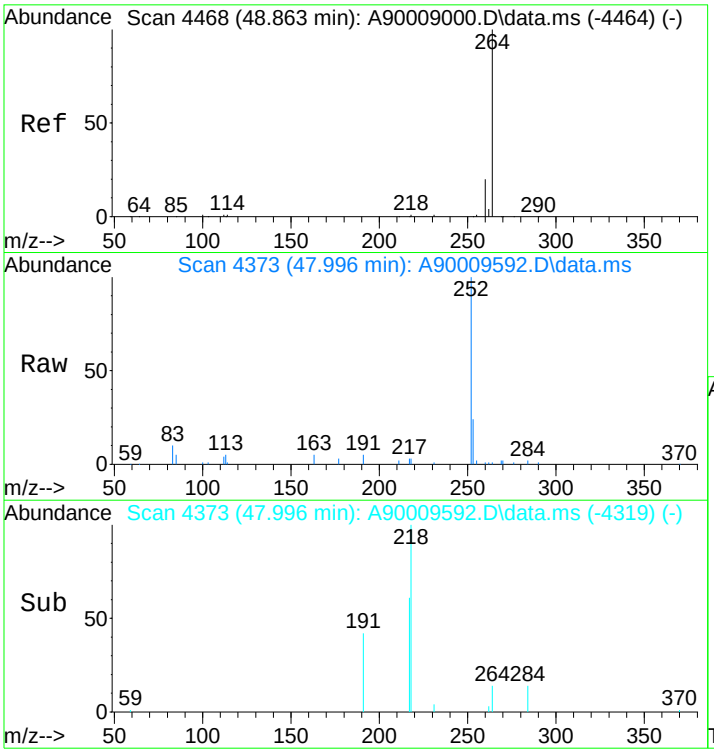




#142
14b(H),17b(H)-20S-Cholestane (S15)
Concen: 92.43 ng/ml m
RT: 46.853 min Scan# 4248
Delta R.T. 0.000 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

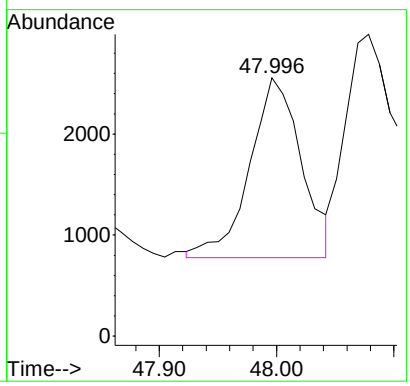
Tgt Ion:218 Resp: 4955

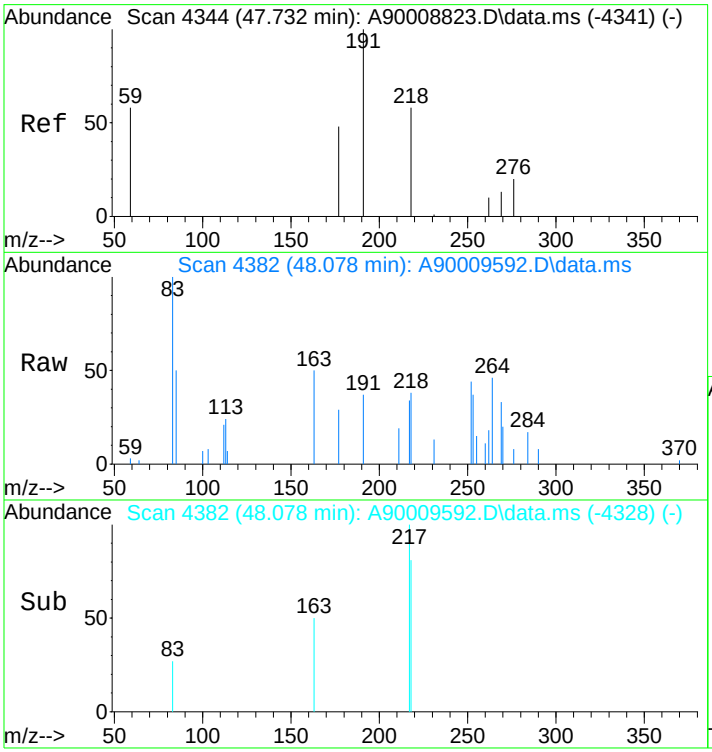




#143
14b,17b-20R-Methylcholestane (S22)
Concen: 101.57 ng/ml m
RT: 47.996 min Scan# 4373
Delta R.T. -0.009 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

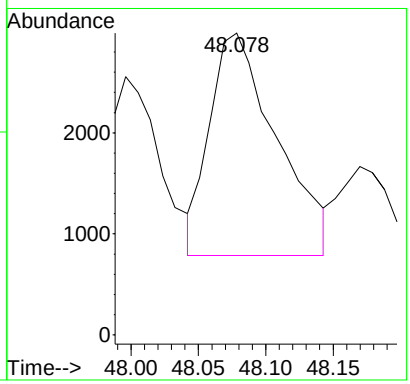
Tgt Ion:218 Resp: 5445

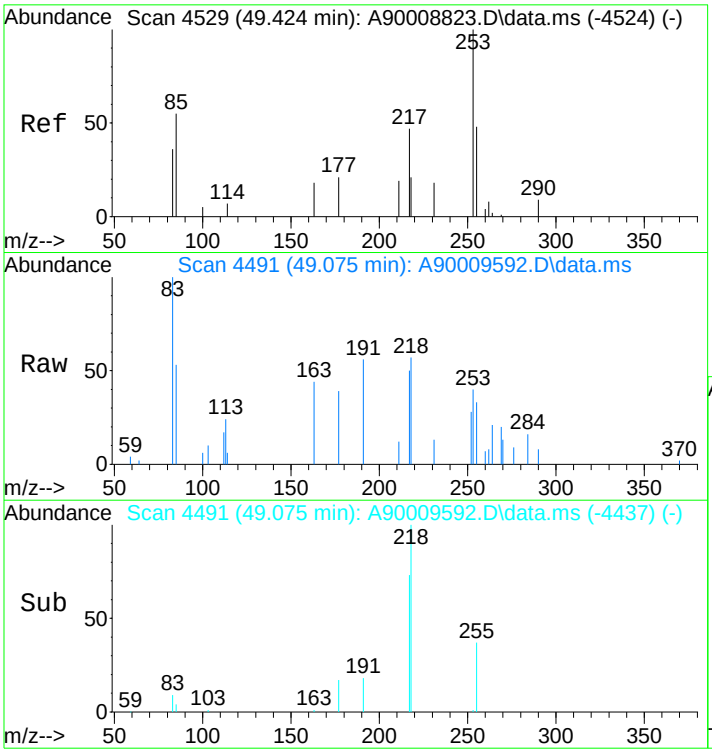




#144
14b,17b-20S-Methylcholestane (S23)
Concen: 142.31 ng/ml m
RT: 48.078 min Scan# 4382
Delta R.T. -0.009 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

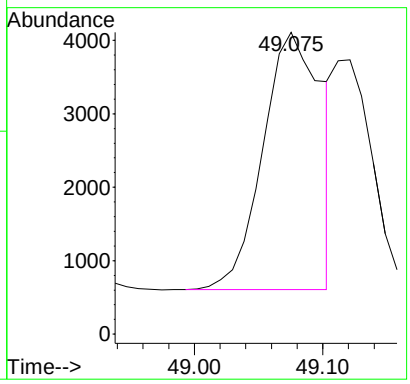
Tgt Ion:218 Resp: 7629

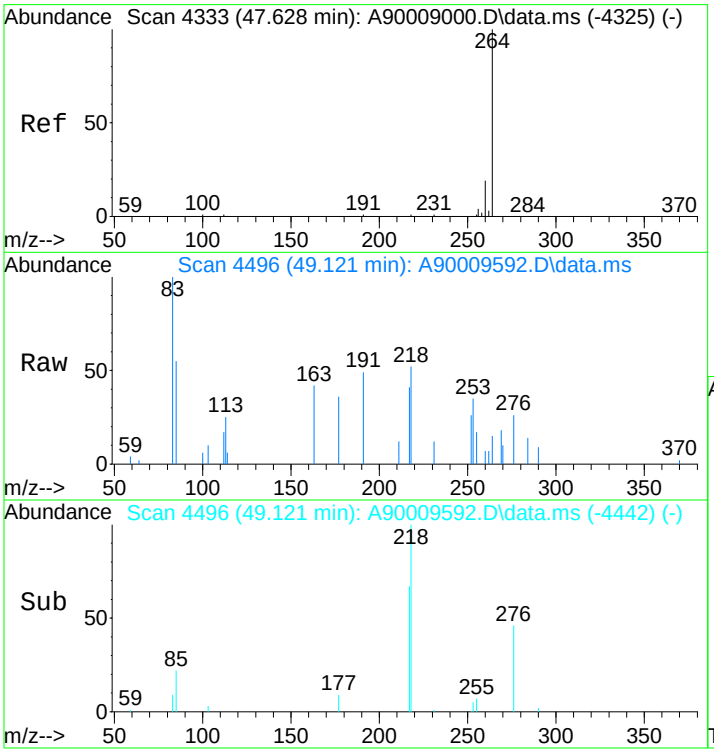




#145
14b(H),17b(H)-20R-Ethylcholestane (S26)
Concen: 208.29 ng/ml
RT: 49.075 min Scan# 4491
Delta R.T. -0.009 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

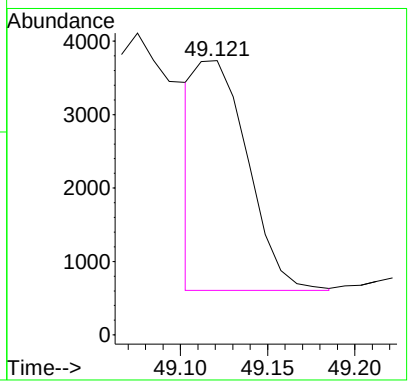
Tgt Ion:218 Resp: 11166

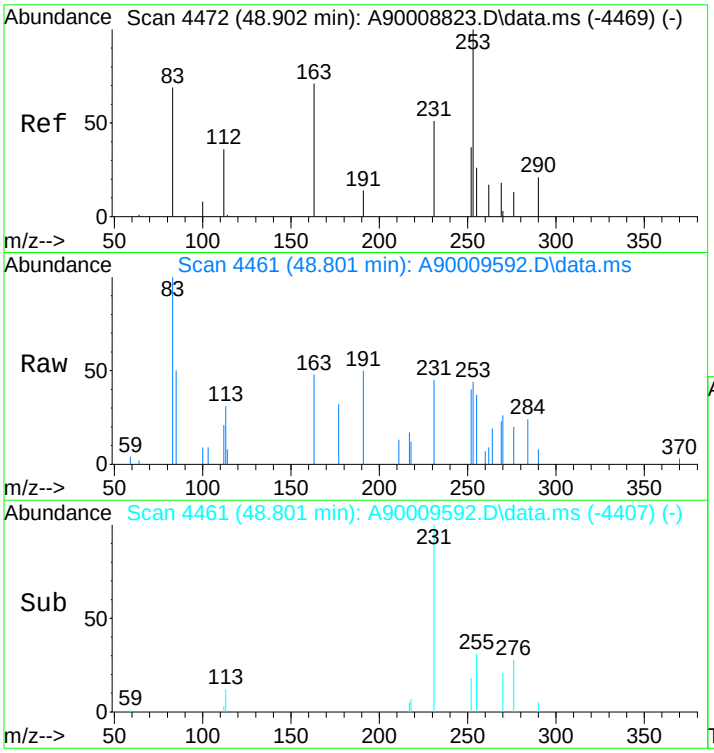




#146
14b(H),17b(H)-20S-Ethylcholestane (S27)
Concen: 120.73 ng/ml m
RT: 49.121 min Scan# 4496
Delta R.T. -0.009 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

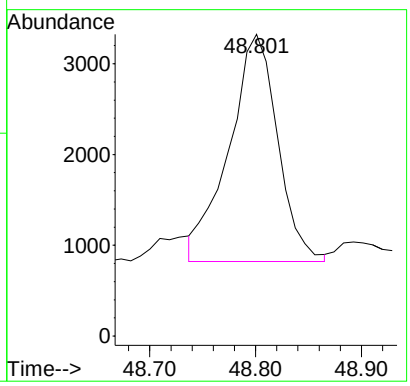
Tgt Ion:218 Resp: 6472

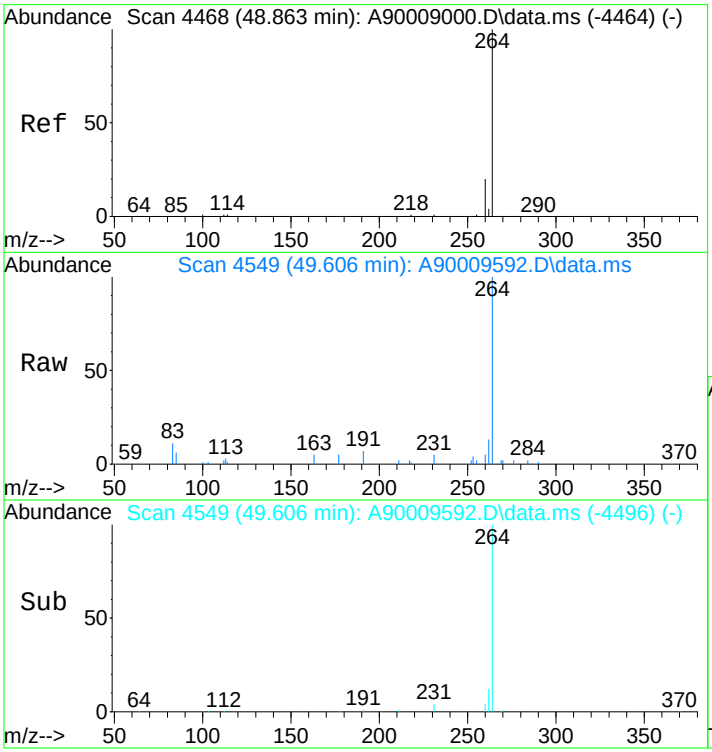




#147
C26,20R- +C27,20S- triaromatic steroid
Concen: 149.17 ng/mL m
RT: 48.801 min Scan# 4461
Delta R.T. -0.009 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

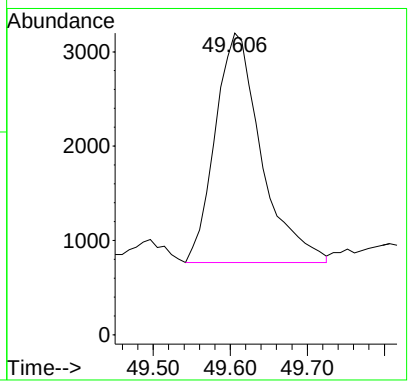
Tgt Ion:231 Resp: 7997

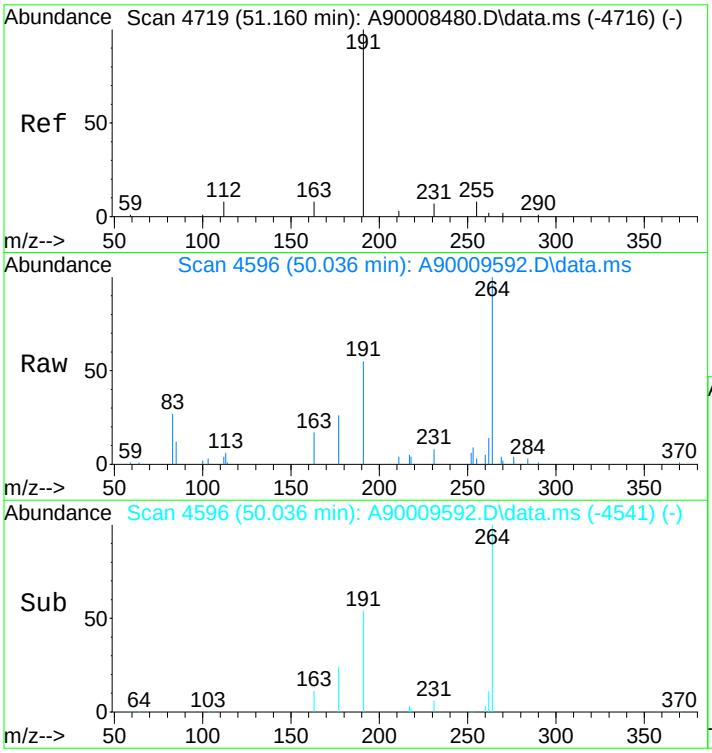




#148
C28,20S-triaromatic steroid
Concen: 189.11 ng/mL
RT: 49.606 min Scan# 4549
Delta R.T. -0.018 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

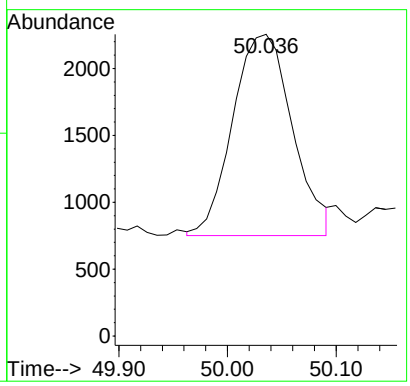
Tgt Ion:231 Resp: 10138

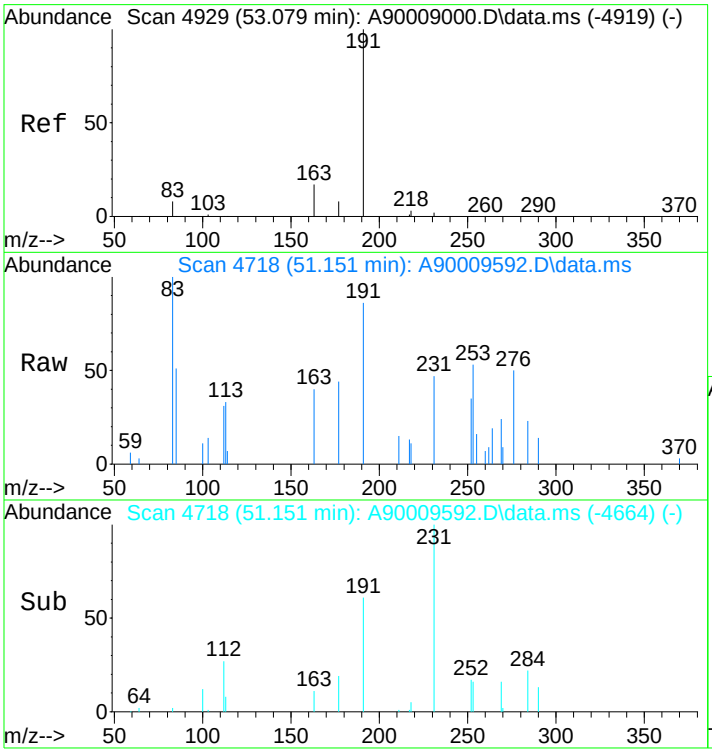




#149
C27,20R-triaromatic steroid
Concen: 107.13 ng/mL m
RT: 50.036 min Scan# 4596
Delta R.T. 0.000 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

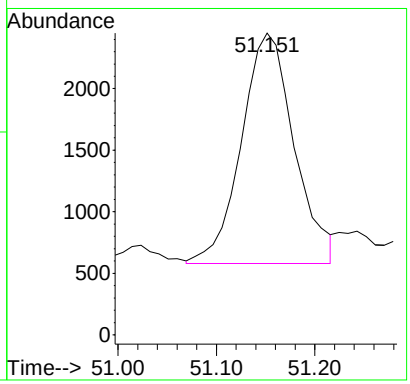
Tgt Ion:231 Resp: 5743





#150
C28,20R-triaromatic steroid
Concen: 130.26 ng/mL m
RT: 51.151 min Scan# 4718
Delta R.T. -0.009 min
Lab File: A90009592.D
Acq: 23 Dec 2012 1:12 pm

Tgt Ion:231 Resp: 6983



Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\
Data File : A90009630.D
Acq On : 26 Dec 2012 9:19 am
Operator : ps
Sample : SS122712ANC04
Misc : WHAR16:5.134mg/kg
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 27 15:37:25 2012
Quant Method : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 26 15:43:28 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.074	164	60559	500.000	ng/mL	0.00
74) Chrysene-d12	42.466	240	105548	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.147	136	214720	922.482	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 92.25%			
42) Phenanthrene-d10	31.913	188	218868	1002.003	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 100.20%			
83) Benzo[b]fluoranthene-d12	46.359	264	200908	1035.515	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 103.55%			
88) Benzo[a]pyrene-d12	47.475	264	197199	1013.929	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 101.39%			
129) 5B(H)Cholane - Surr	43.096	217	47768	1078.061	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 107.81%			
Target Compounds						Qvalue
3) trans-Decalin	15.826	138	123544M6	2320.489	ng/mL	
4) cis-Decalin	17.030	138	5738M6	137.668	ng/mL	
5) C1-Decalins	17.742	152	223295M5	4194.082	ng/mL	
6) C2-Decalins	19.065	166	201725M5	3788.939	ng/mL	
7) C3-Decalins	21.520	180	119117M5	2237.338	ng/mL	
8) C4-Decalins	24.887	194	118206M5	2220.227	ng/mL	
10) Naphthalene	19.220	128	686512	2874.091	ng/mL#	100
11) C1-Naphthalenes	21.903	142	1500422M5	6281.536	ng/mL	
12) C2-Naphthalenes	24.723	156	1922111M5	8046.942	ng/mL	
13) C3-Naphthalenes	27.059	170	1493010M5	6250.506	ng/mL	
14) C4-Naphthalenes	29.805	184	879217M5	3680.853	ng/mL	
16) 2-Methylnaphthalene	21.903	142	877667	5618.557	ng/mL#	100
17) 1-Methylnaphthalene	22.323	142	615436	4059.715	ng/mL#	100
18) Benzothiophene	19.449	134	6145M4	30.741	ng/mL	
19) C1-Benzo(b)thiophenes	21.474	148	36379M5	181.992	ng/mL	
20) C2-Benzo(b)thiophenes	24.915	162	54084M5	270.565	ng/mL	
21) C3-Benzo(b)thiophenes	26.886	176	119773M5	599.185	ng/mL	
22) C4-Benzo(b)thiophenes	28.619	190	107760M5	539.088	ng/mL	
23) Biphenyl	23.774	154	144559	707.169	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.386	156	478528	3258.842	ng/mL#	100
25) Dibenzofuran	26.840	168	57691	264.599	ng/mL#	82
26) Acenaphthylene	25.471	152	8766	35.675	ng/mL#	100
27) Acenaphthene	26.192	153	11797M4	76.359	ng/mL	
28) 2,3,5-Trimethylnaphthalen	27.744	170	111532M6	826.151	ng/mL	
29) Fluorene	28.200	166	65257M4	384.635	ng/mL	
30) C1-Fluorenes	30.563	180	154087M5	908.212	ng/mL	
31) C2-Fluorenes	32.752	194	254604M5	1500.675	ng/mL	
32) C3-Fluorenes	34.578	208	240423M5	1417.090	ng/mL	
33) Dibenzothiophene	31.502	184	171368	718.057	ng/mL#	78
34) 4-Methyldibenzothiophene(	33.273	198	168203	704.795	ng/mL#	100
35) 2/3-Methyldibenzothiophen	33.620	198	119307	499.914	ng/mL#	100
36) 1-Methyldibenzothiophene(	34.040	198	53592	224.558	ng/mL#	100
37) OTP	33.702	198	28447	119.197	ng/mL#	100
38) C1-Dibenzothiophenes	33.273	198	377959M5	1583.703	ng/mL	
38) C1-Dibenzothiophenes BS	33.273	198	349512m	1464.506	ng/mL	
39) C2-Dibenzothiophenes	34.961	212	500360M5	2096.581	ng/mL	
40) C3-Dibenzothiophenes	36.760	226	450979M5	1889.667	ng/mL	
41) C4-Dibenzothiophenes	38.449	240	244852M5	1025.965	ng/mL	
43) Phenanthrene	31.995	178	261543	1060.773	ng/mL	93

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\
Data File : A90009630.D
Acq On : 26 Dec 2012 9:19 am
Operator : ps
Sample : SS122712ANC04
Misc : WHAR16:5.134mg/kg
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 27 15:37:25 2012
Quant Method : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 26 15:43:28 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
44) 3-Methylphenanthrene(3MP)	33.957	192	118315	479.865	ng/mL	97
45) 2-Methylphenanthrene(2MP)	34.067	192	130485	529.224	ng/mL	97
46) 2-Methylanthracene(2MA)	34.231	192	4263	17.290	ng/mL#	66
47) 9/4-Methylphenanthrene(9M	34.405	192	182223	739.065	ng/mL	98
48) 1-Methylphenanthrene(1MP)	34.496	192	131225	532.226	ng/mL	97
49) C1-Phenanthrenes/Anthrace	34.405	192	567409M5	2301.312	ng/mL	
50) C2-Phenanthrenes/Anthrace	36.221	206	665118M5	2697.603	ng/mL	
50) C2-Phenanthrenes/Anthr BS	36.221	206	665118m	2697.603	ng/mL	
52) C3-Phenanthrenes/Anthrace	38.056	220	476819M5	1933.895	ng/mL	
53) C4-Phenanthrenes/Anthrace	40.230	234	184784M5	749.452	ng/mL	
56) Carbazole	32.853	167	7692M4	35.514	ng/mL	
57) 1-Methylphenanthrene	34.496	192	129975M4	714.500	ng/mL	
58) Fluoranthene	36.751	202	5847M4	21.229	ng/mL	
59) Benzo(b)fluorene	39.271	216	5131	31.325	ng/mL	91
60) Pyrene	37.636	202	19659M6	69.961	ng/mL	
61) C1-Fluoranthenes/Pyrenes	39.024	216	87209M5	310.354	ng/mL	
62) C2-Fluoranthenes/Pyrenes	40.832	230	141340M5	502.993	ng/mL	
63) C3-Fluoranthenes/Pyrenes	42.841	244	165128M5	587.648	ng/mL	
64) C4-Fluoranthenes/Pyrenes	44.192	258	144450M5	514.060	ng/mL	
66) Naphthobenzothiophene	41.471	234	37402M6	153.398	ng/ml	
67) Naphthobenzothiophene-2,1	41.471	234	37312M6	153.029	ng/mL	
68) Naphthobenzothiophene-1,2	41.809	234	9180M6	37.650	ng/mL	
69) Naphthobenzothiophene-2,3	42.110	234	4296M6	17.619	ng/mL	
70) C1-Naphthobenzothiophenes	42.868	248	140546M5	576.425	ng/ml	
71) C2-Naphthobenzothiophenes	44.868	262	180987M5	742.286	ng/ml	
72) C3-Naphthobenzothiophenes	46.469	276	134552M5	551.841	ng/ml	
73) C4-Naphthobenzothiophenes	47.493	290	96539M5	395.938	ng/mL	
75) Benz[a]anthracene	42.402	228	2762M3	11.408	ng/mL	
77) Chrysene/Triphenylene	42.530	228	45134M4	189.549	ng/mL	
78) C1-Chrysenes	44.037	242	84445M5	354.644	ng/mL	
79) C2-Chrysenes	46.716	256	111906M5	469.972	ng/mL	
79) C2-Chrysenes BS	46.716	256	103254m	433.636	ng/mL	
80) BBF-d12 Surr BKGD	46.350	256	8652M4	36.336	ng/mL	
81) C3-Chrysenes	48.664	270	131276M5	551.320	ng/mL	
82) C4-Chrysenes	48.765	284	71846M5	301.732	ng/mL	
84) Benzo[b]fluoranthene	46.442	252	6387	25.444	ng/mL	92
87) Benzo[e]pyrene	47.384	252	11752	49.303	ng/mL	98
89) Benzo[a]pyrene	47.557	252	1748M3	7.743	ng/mL	
90) Perylene	47.850	252	3248M6	13.481	ng/mL	
91) Indeno[1,2,3-cd]pyrene	52.020	276	895M6	3.580	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.048	278	1251M3	5.079	ng/mL	
93) Benzo[g,h,i]perylene	53.199	276	4080	16.607	ng/mL#	55
94) Hopane (T19)	51.188	191	68661M4	739.923	ng/mL	
96) C23 Tricyclic Terpane (T4	40.129	191	28719M4	309.490	ng/ml	
97) C24 Tricyclic Terpane (T5	40.859	191	17223	185.603	ng/ml	100
98) C25 Tricyclic Terpane (T6	42.338	191	18172M1	195.830	ng/ml	
99) C24 Tetracyclic Terpane (	43.635	191	6054M6	65.241	ng/ml	
100) C26 Tricyclic Terpane-22S	43.398	191	7126M4	76.793	ng/ml	
101) C26 Tricyclic Terpane-22R	43.498	191	6523	70.295	ng/ml	100
102) C28 Tricyclic Terpane-22S	45.783	191	5696M4	61.383	ng/ml	
103) C28 Tricyclic Terpane-22R	45.948	191	7019M6	75.640	ng/ml	
104) C29 Tricyclic Terpane-22S	46.460	191	9054	97.570	ng/ml	100
105) C29 Tricyclic Terpane-22R	46.652	191	8527	91.891	ng/ml	100
106) 18a-22,29,30-Trisnorneoho	47.676	191	11247	121.203	ng/ml	100
107) C30 Tricyclic Terpane-22S	47.804	191	5829M4	62.816	ng/mL	
108) C30 Tricyclic Terpane-22R	48.033	191	6998	75.414	ng/mL	100

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\
Data File : A90009630.D
Acq On : 26 Dec 2012 9:19 am
Operator : ps
Sample : SS122712ANC04
Misc : WHAR16:5.134mg/kg
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 27 15:37:25 2012
Quant Method : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 26 15:43:28 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

	Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
109)	17a(H)-22,29,30-Trisnorho	48.198	191	14158	152.573	ng/ml	100
110)	17a/b,21b/a 28,30-Bisnorh	49.286	191	3367M6	36.284	ng/ml	
111)	17a(H),21b(H)-25-Norhopan	49.149	191	3938	42.438	ng/ml	100
112)	30-Norhopane (T15)	49.926	191	41719	449.584	ng/ml	100
113)	18a(H)-30-Norneohopane-C2	50.027	191	10708M4	115.394	ng/ml	
114)	17a(H)-Diahopane (X)	50.137	191	6487M4	69.907	ng/ml	
115)	30-Normoretane (T17)	50.649	191	5325	57.385	ng/ml	100
117)	Moretane (T20)	51.819	191	6332M6	68.237	ng/ml	
118)	30-Homohopane-22S (T21)	52.825	191	29135	313.973	ng/ml	100
119)	30-Homohopane-22R (T22)	53.035	191	24802	267.278	ng/ml	100
120)	Gammacerane/C32-diahopane	53.528	191	5208	56.124	ng/mL	100
121)	30,31-Bishomohopane-22S (	54.241	191	21198	228.440	ng/ml	100
122)	30,31-Bishomohopane-22R (	54.588	191	16526	178.092	ng/ml	100
123)	30,31-Trishomohopane-22S	56.169	191	17010	183.308	ng/ml	100
124)	30,31-Trishomohopane-22R	56.726	191	10557M4	113.767	ng/ml	
125)	Tetrakishomohopane-22S (T	58.572	191	11939	128.660	ng/ml	100
126)	Tetrakishomohopane-22R (T	59.376	191	8136	87.677	ng/ml	100
127)	Pentakishomohopane-22S (T	61.396	191	12727	137.152	ng/ml	100
128)	Pentakishomohopane-22R (T	62.529	191	10025M4	108.034	ng/ml	
130)	13b(H),17a(H)-20S-Diachol	44.612	217	10524M6	237.513	ng/ml	
131)	13b(H),17a(H)-20R-Diachol	45.033	217	6019M6	135.841	ng/ml	
132)	13b,17a-20S-Methyldiachol	45.728	217	5604M4	126.475	ng/ml	
133)	14a,17a-20S-Chol/13b,17a-	46.588	217	14677	331.241	ng/ml	100
134)	14a,17a-20R-Chol/13b,17a-	47.073	217	16928	382.043	ng/ml	100
135)	Unknown Sterane (S18)	47.338	217	4459	100.634	ng/ml	100
136)	13a,17b-20S-Ethyldiachole	47.594	217	926	20.899	ng/ml	100
137)	14a,17a-20S-Methylcholest	47.750	217	7381	166.579	ng/ml	100
138)	14a,17a-20R-Methylcholest	48.408	217	7101	160.260	ng/ml	100
139)	14a(H),17a(H)-20S-Ethylch	48.737	217	10941M6	246.924	ng/ml	
140)	14a(H),17a(H)-20R-Ethylch	49.570	217	9410M4	212.371	ng/ml	
141)	14b(H),17b(H)-20R-Cholest	46.670	218	9045M4	204.134	ng/ml	
142)	14b(H),17b(H)-20S-Cholest	46.753	218	9180M4	207.180	ng/ml	
143)	14b,17b-20R-Methylcholest	47.896	218	9675	218.352	ng/ml	100
144)	14b,17b-20S-Methylcholest	47.969	218	12523M4	282.628	ng/ml	
145)	14b(H),17b(H)-20R-Ethylch	48.966	218	12602	284.411	ng/ml	100
146)	14b(H),17b(H)-20S-Ethylch	49.003	218	8693M3	196.190	ng/ml	
147)	C26,20R- +C27,20S- triaro	48.682	231	55414	1250.621	ng/mL	100
148)	C28,20S-triaromatic stero	49.487	231	33663	759.730	ng/mL	100
149)	C27,20R-triaromatic stero	49.908	231	33689	760.316	ng/mL	100
150)	C28,20R-triaromatic stero	51.006	231	28571	644.810	ng/mL	100

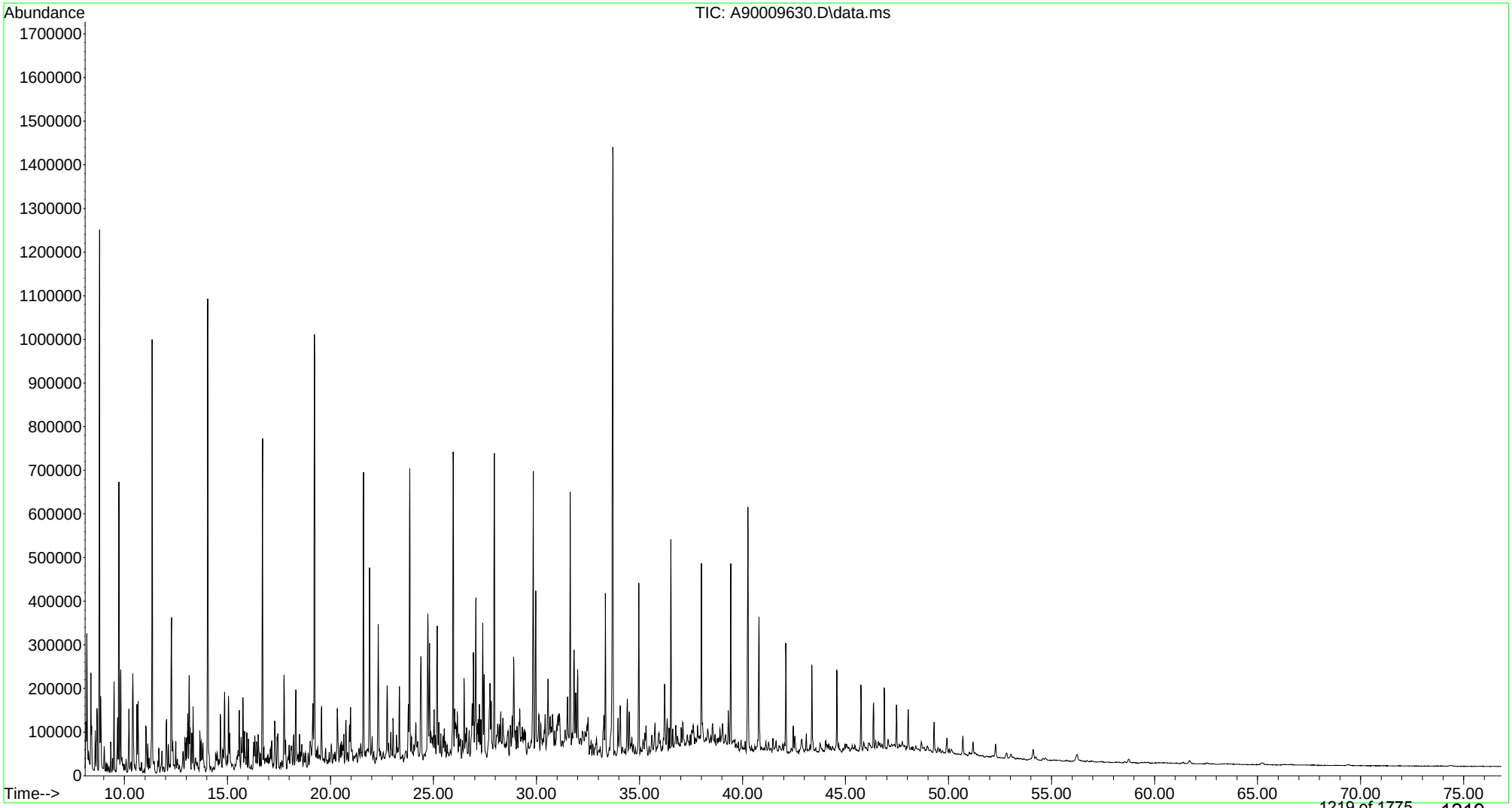
(#) = qualifier out of range (m) = manual integration (+) = signals summed

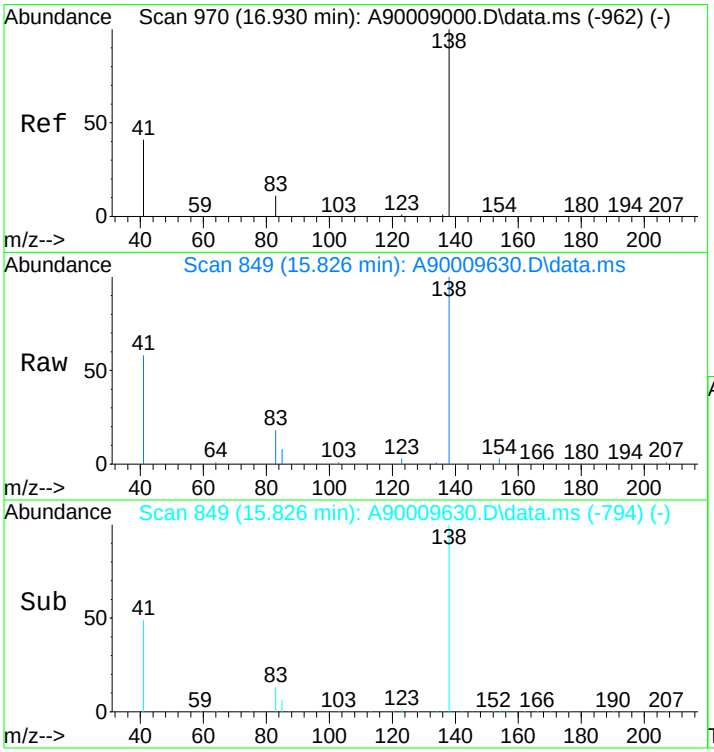
Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\
Data File : A90009630.D
Acq On : 26 Dec 2012 9:19 am
Operator : ps
Sample : SS122712ANC04
Misc : WHAR16:5.134mg/kg
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 27 15:37:25 2012
Quant Method : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 26 15:43:28 2012
Response via : Initial Calibration

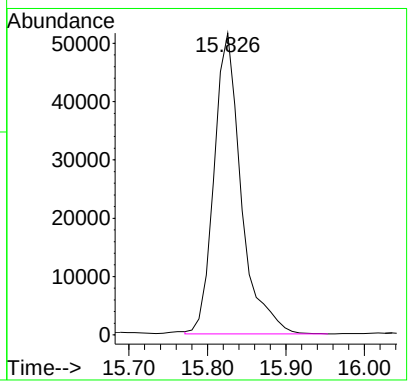
Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

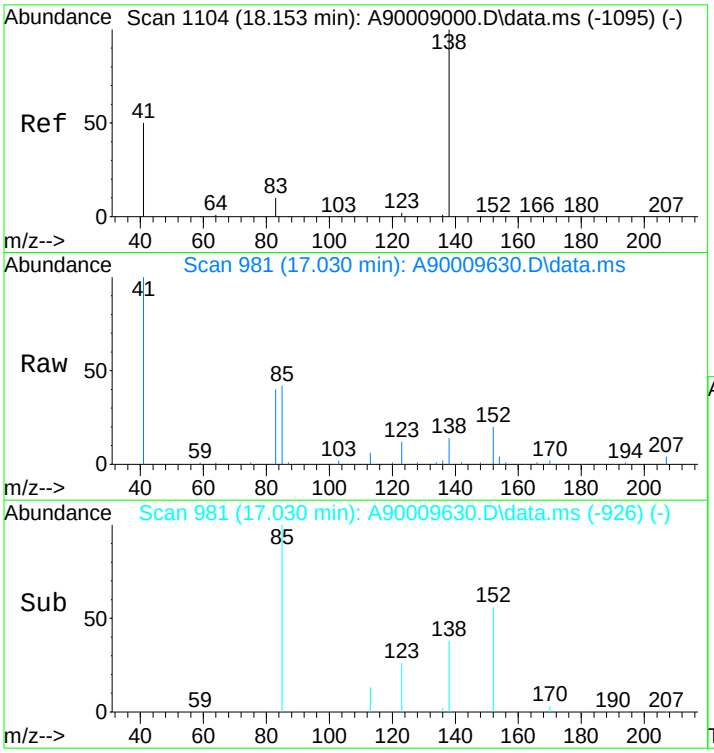




#3
trans-Decalin
Concen: 2320.49 ng/mL m
RT: 15.826 min Scan# 849
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

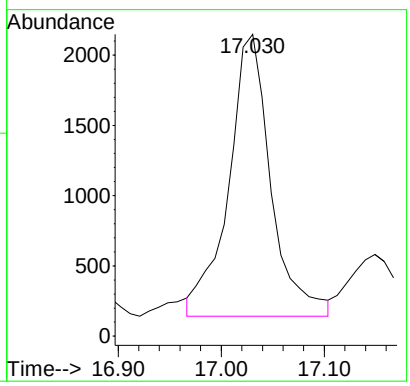
Tgt Ion:138 Resp: 123544

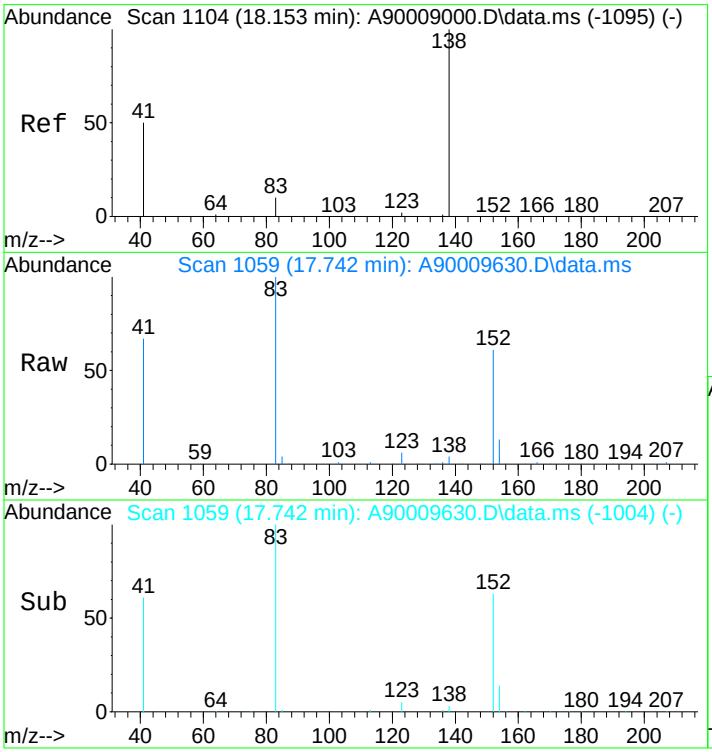




#4
cis-Decalin
Concen: 137.67 ng/mL m
RT: 17.030 min Scan# 981
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

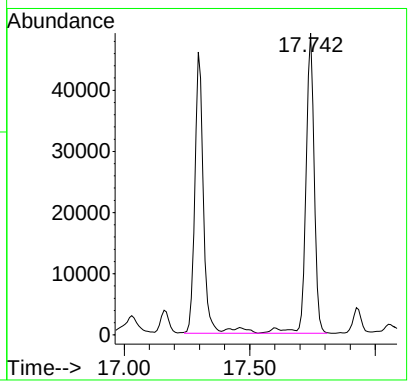
Tgt Ion:138 Resp: 5738

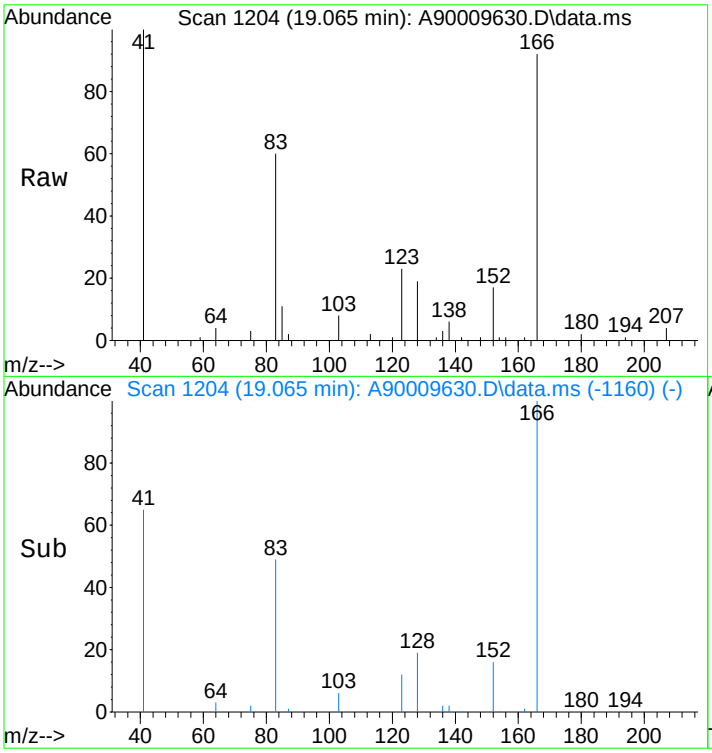




#5
C1-Decalins
Concen: 4194.08 ng/mL m
RT: 17.742 min Scan# 1059
Delta R.T. -0.019 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

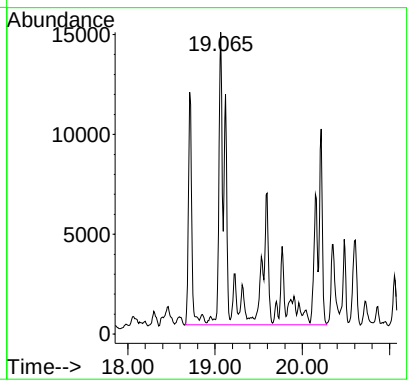
Tgt Ion:152 Resp: 223295

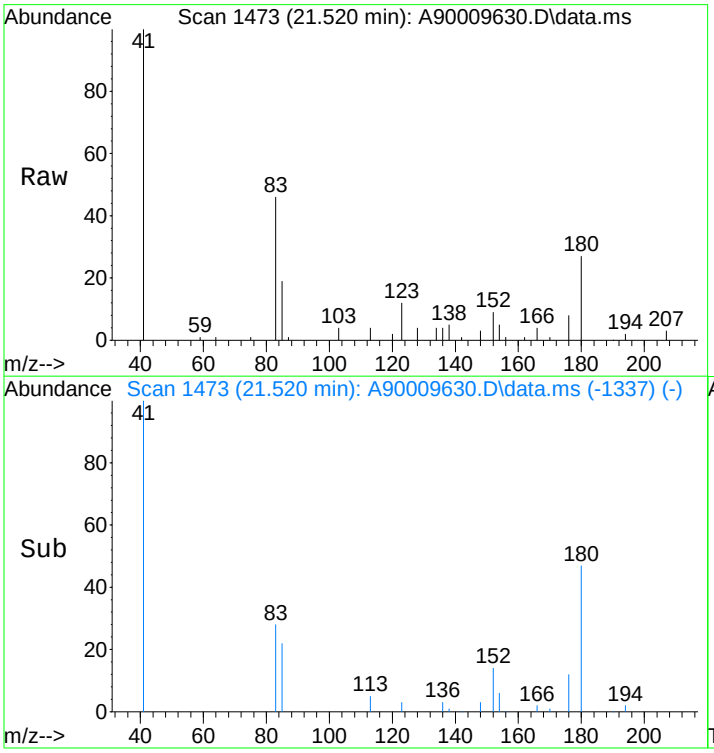




#6
C2-Decalins
Concen: 3788.94 ng/mL m
RT: 19.065 min Scan# 1204
Delta R.T. -0.015 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

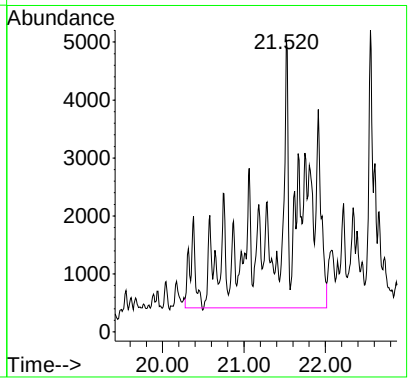
Tgt Ion:166 Resp: 201725

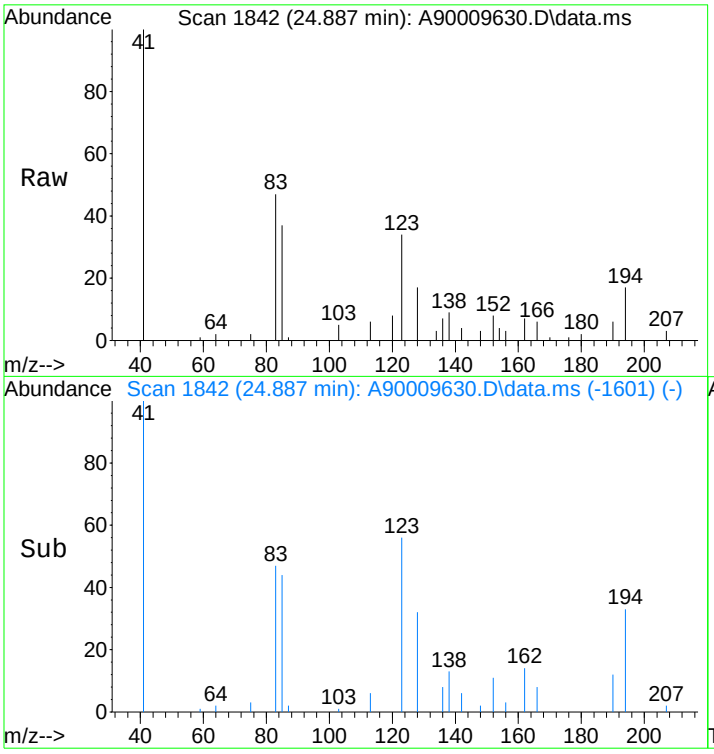




#7
C3-Decalins
Concen: 2237.34 ng/mL m
RT: 21.520 min Scan# 1473
Delta R.T. -0.015 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

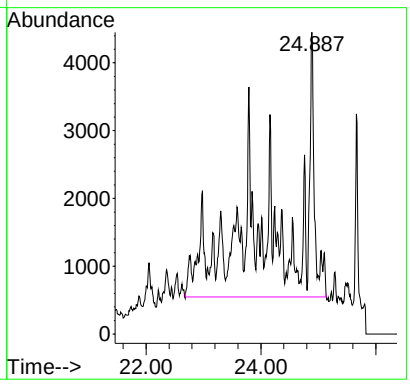
Tgt Ion:180 Resp: 119117

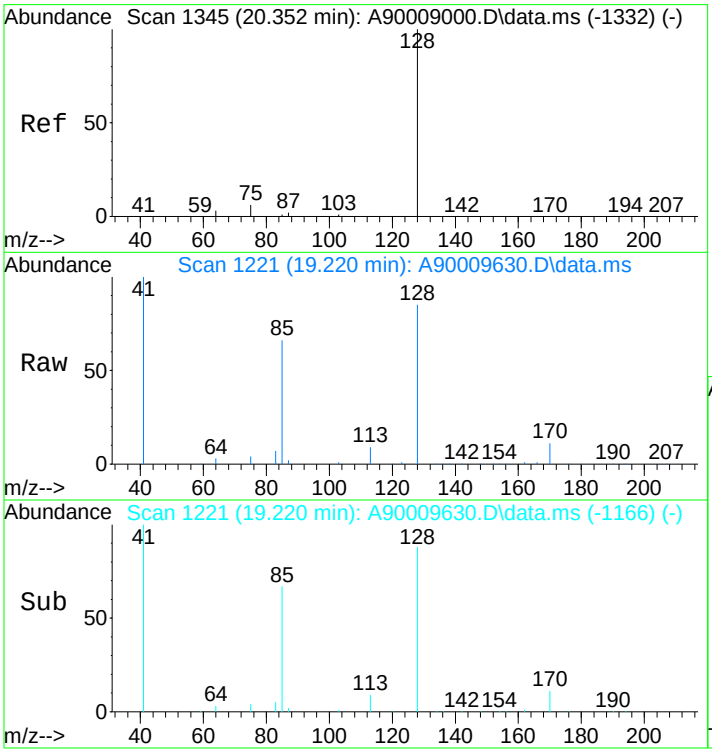




#8
C4-Decalins
Concen: 2220.23 ng/mL m
RT: 24.887 min Scan# 1842
Delta R.T. 0.006 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:194 Resp: 118206

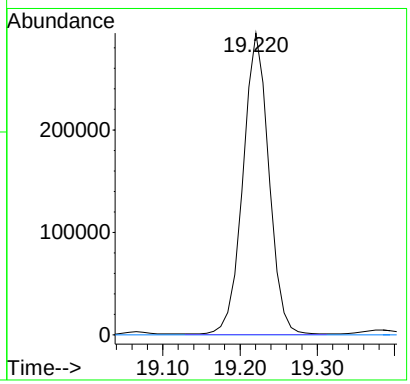


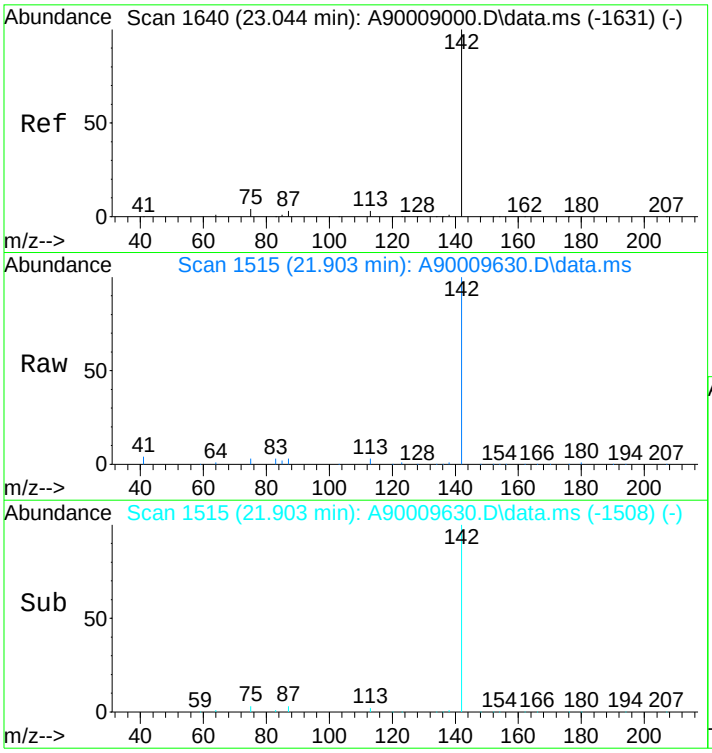


#10
Naphthalene
Concen: 2874.09 ng/mL
RT: 19.220 min Scan# 1221
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:128 Resp: 686512

Ion	Ratio	Lower	Upper
128	100		
127	0.0	0.0	0.0

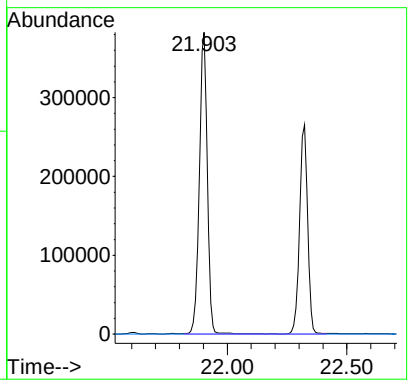


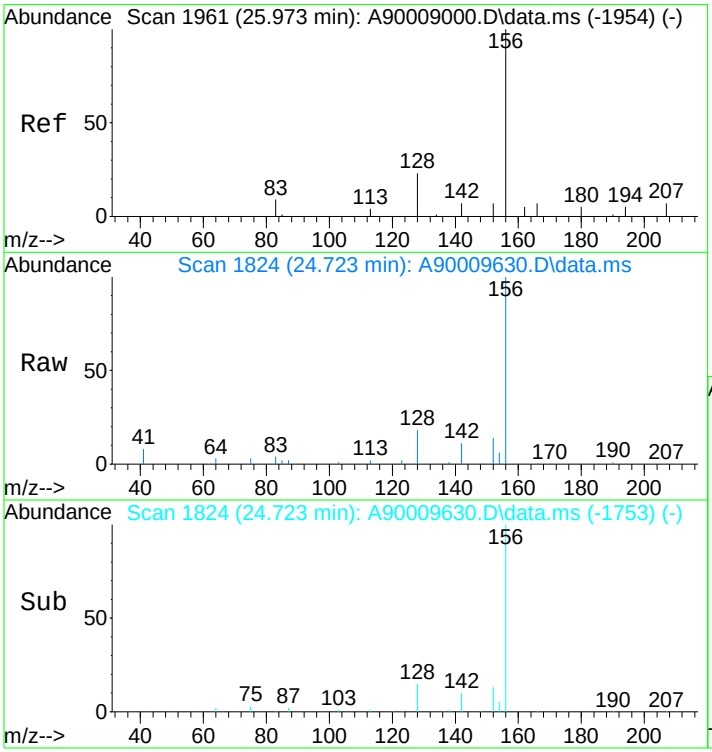


#11
C1-Naphthalenes
Concen: 6281.54 ng/mL m
RT: 21.903 min Scan# 1515
Delta R.T. -0.005 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:142 Resp: 1500422

Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	0.0

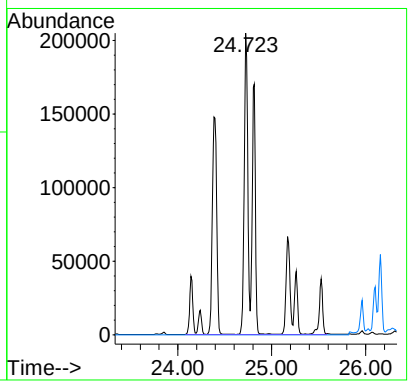


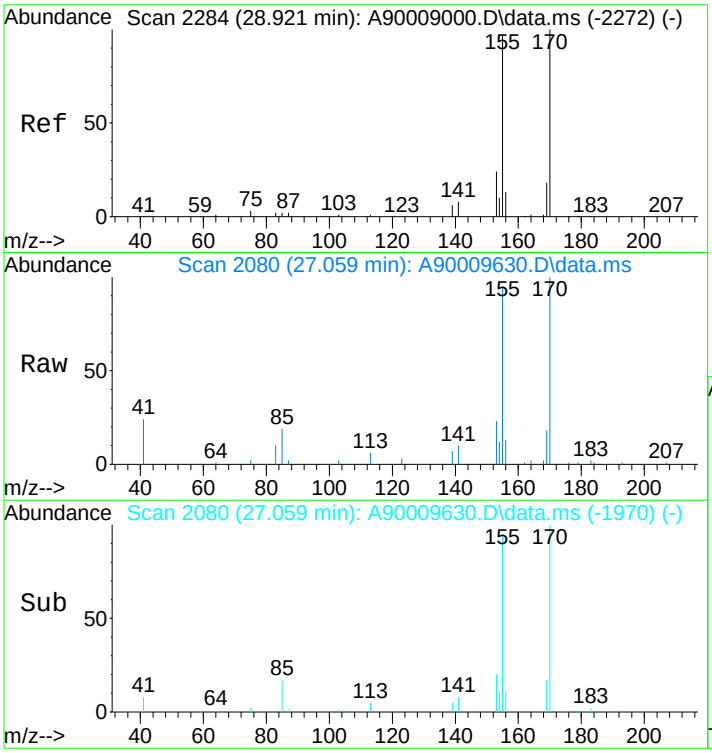


#12
C2-Naphthalenes
Concen: 8046.94 ng/mL m
RT: 24.723 min Scan# 1824
Delta R.T. -0.004 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:156 Resp: 1922111

Ion	Ratio	Lower	Upper
156	100		
141	0.0	0.0	0.0

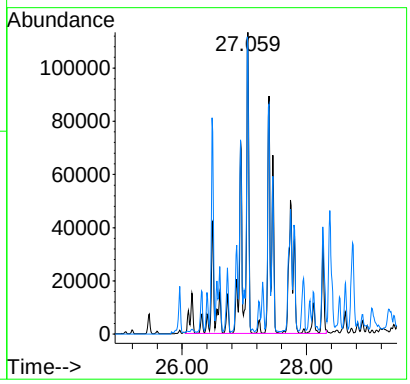


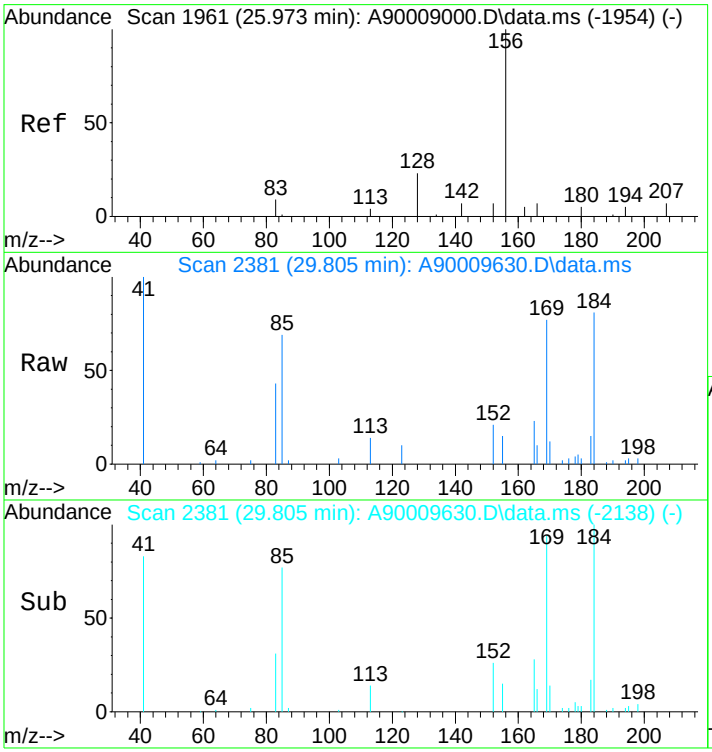


#13
C3-Naphthalenes
Concen: 6250.51 ng/mL m
RT: 27.059 min Scan# 2080
Delta R.T. 0.013 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:170 Resp: 1493010

Ion	Ratio	Lower	Upper
170	100		
155	16.8	79.9	119.9#

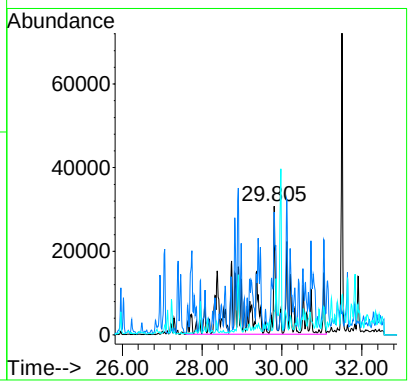


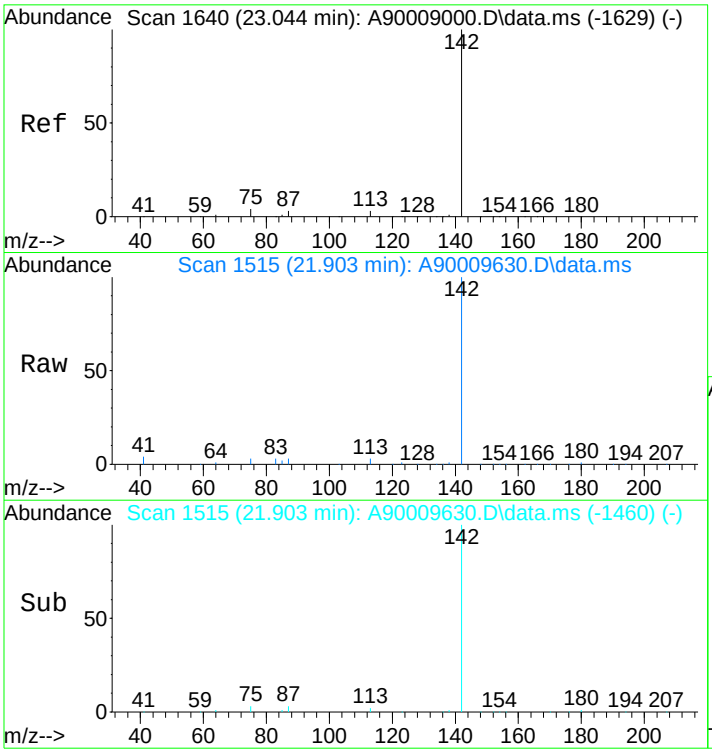


#14
C4-Naphthalenes
Concen: 3680.85 ng/mL m
RT: 29.805 min Scan# 2381
Delta R.T. 0.014 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:184 Resp: 879217

Ion	Ratio	Lower	Upper
184	100		
169	12.1	76.6	115.0#
183	0.0	16.4	24.6#

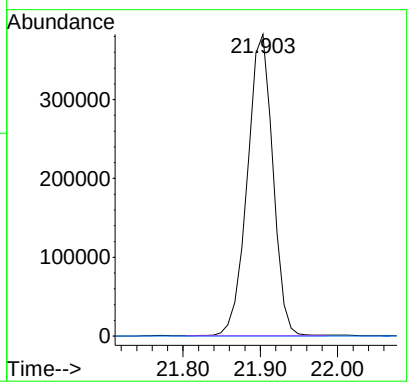


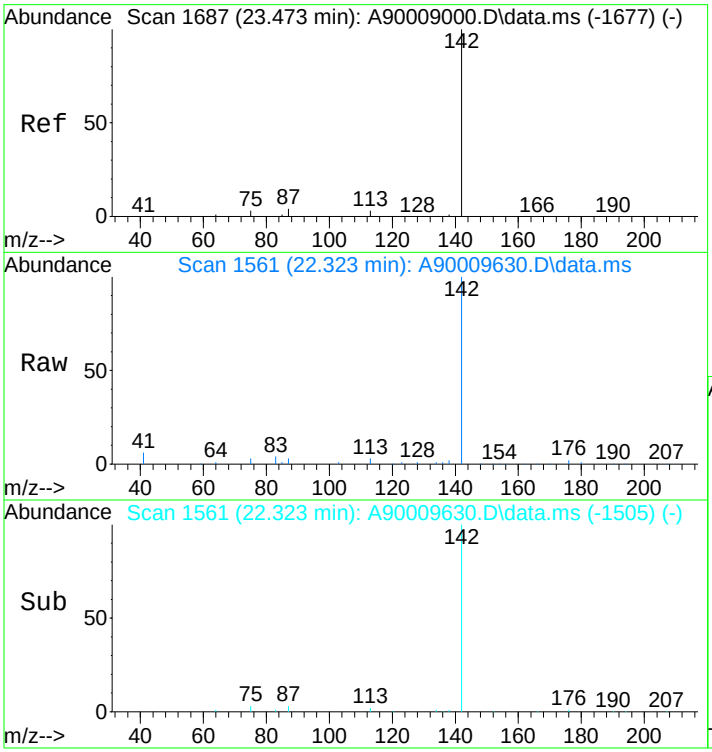


#16
2-Methylnaphthalene
Concen: 5618.56 ng/mL
RT: 21.903 min Scan# 1515
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:142 Resp: 877667

Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	0.0

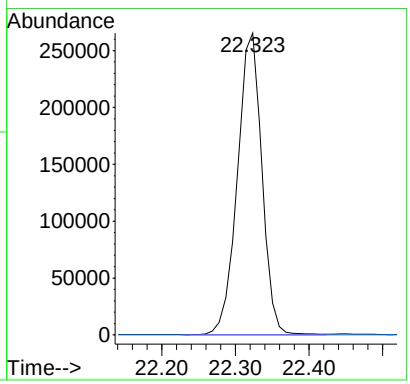


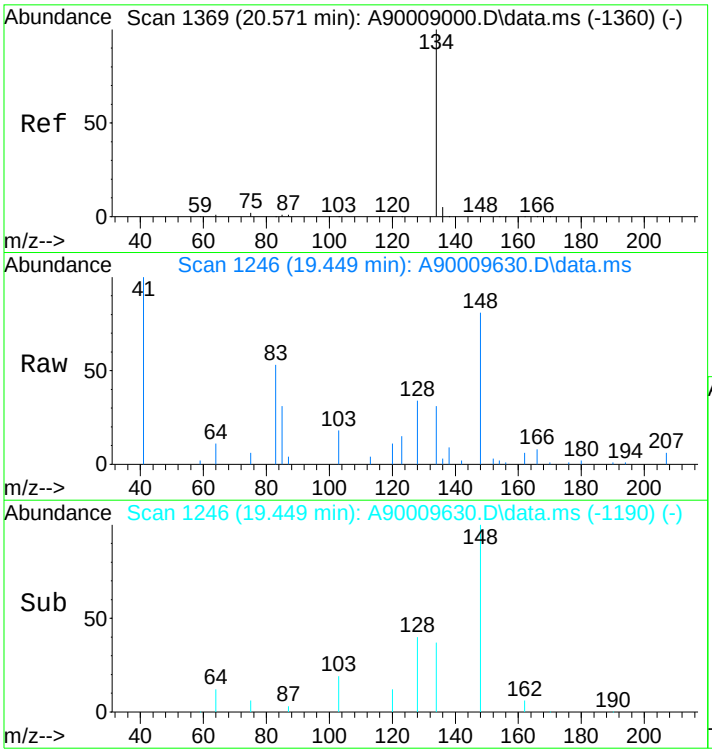


#17
1-Methylnaphthalene
Concen: 4059.71 ng/mL
RT: 22.323 min Scan# 1561
Delta R.T. 0.009 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:142 Resp: 615436

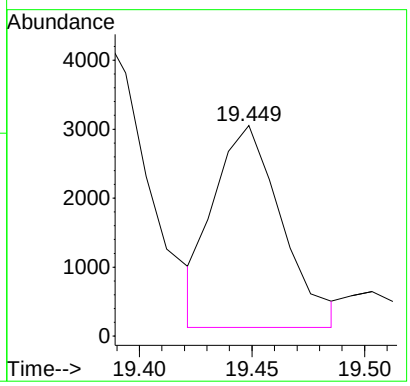
Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	20.0

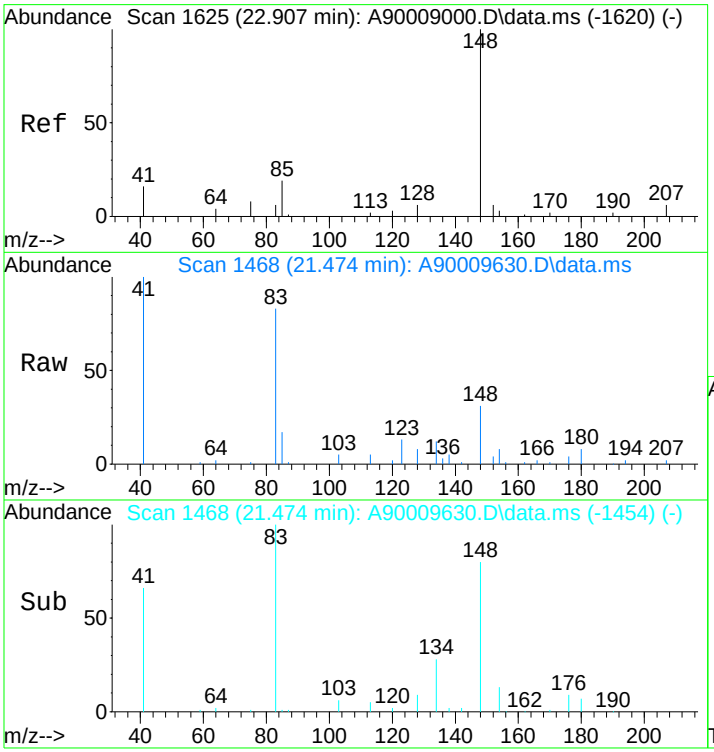




#18
Benzothiophene
Concen: 30.74 ng/mL m
RT: 19.449 min Scan# 1246
Delta R.T. 0.009 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

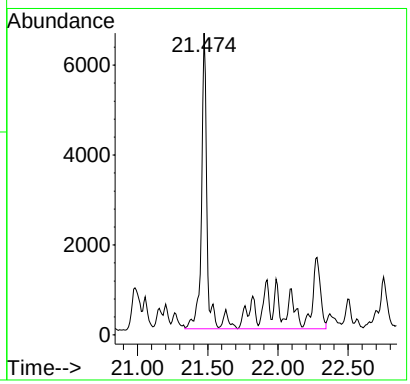
Tgt Ion:134 Resp: 6145

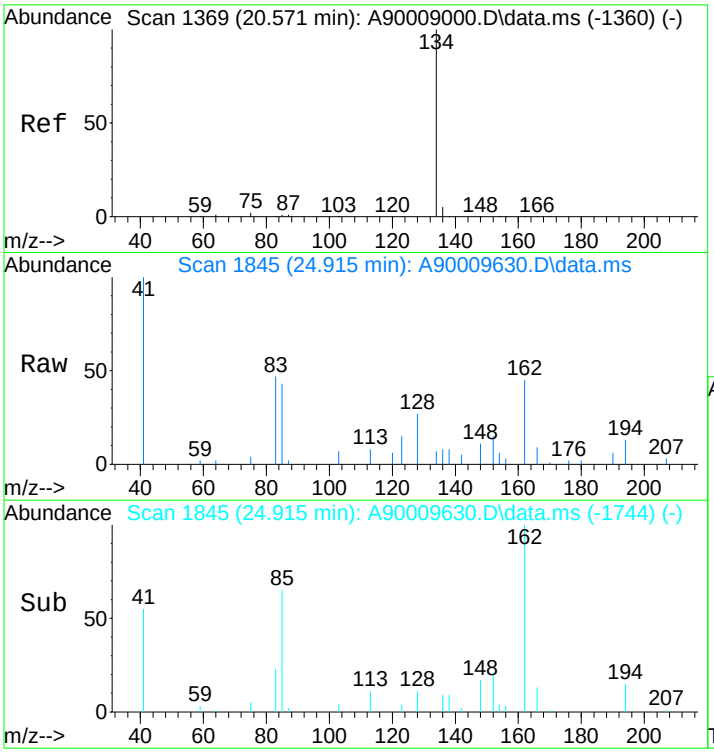




#19
C1-Benzo(b)thiophenes
Concen: 181.99 ng/mL m
RT: 21.474 min Scan# 1468
Delta R.T. -0.006 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

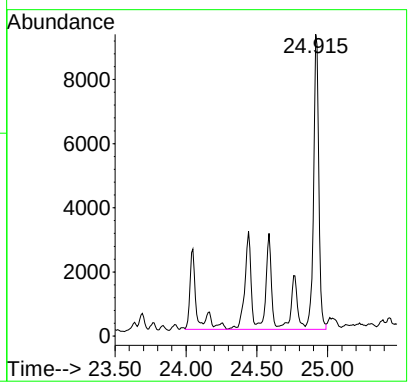
Tgt Ion:148 Resp: 36379

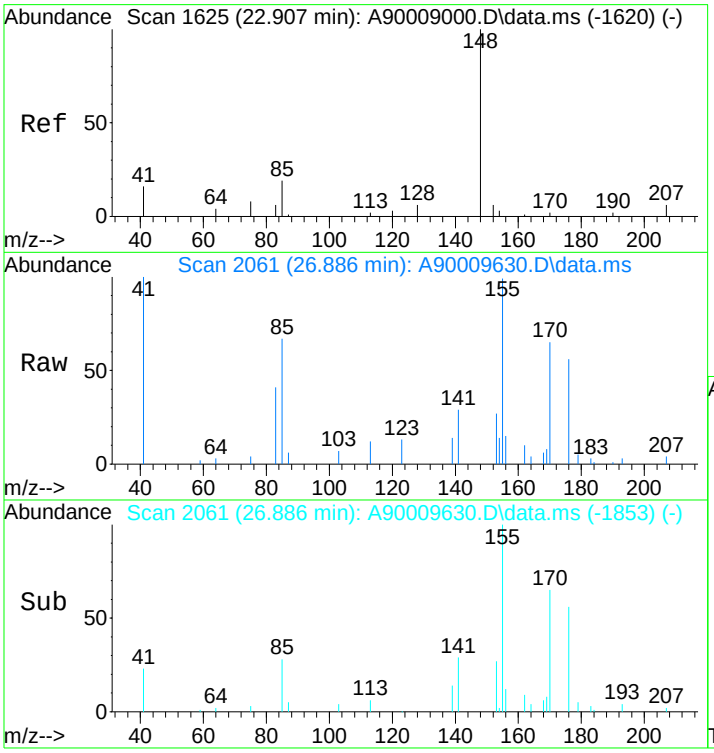




#20
C2-Benzo(b)thiophenes
Concen: 270.56 ng/mL m
RT: 24.915 min Scan# 1845
Delta R.T. -0.003 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

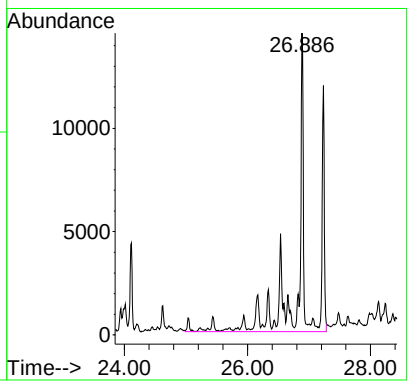
Tgt Ion:162 Resp: 54084

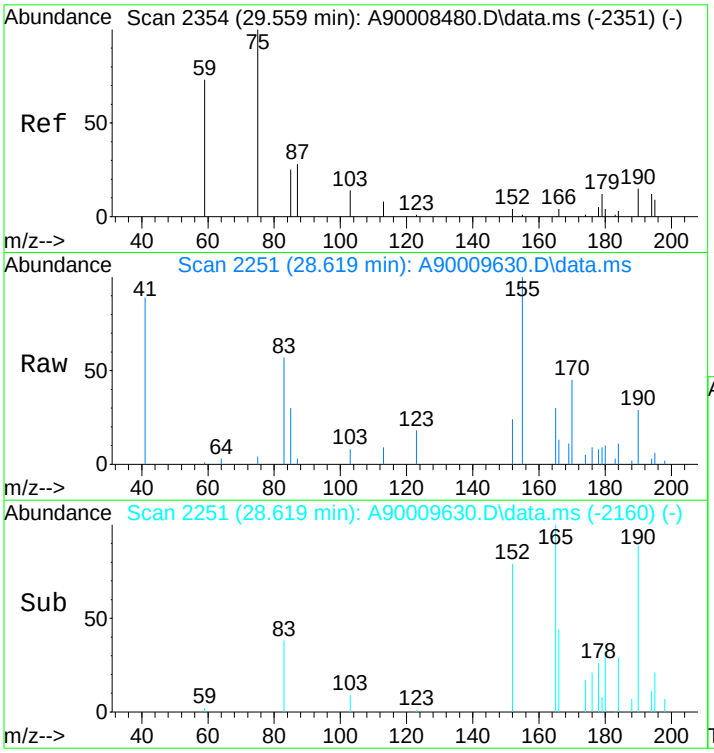




#21
C3-Benzo(b)thiophenes
Concen: 599.19 ng/mL m
RT: 26.886 min Scan# 2061
Delta R.T. 0.004 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

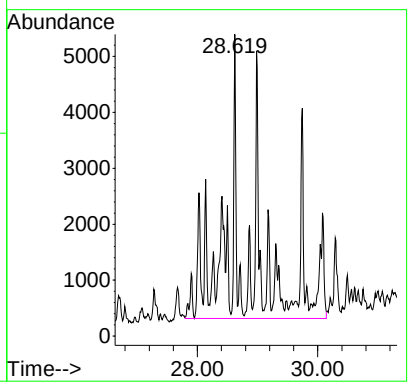
Tgt Ion:176 Resp: 119773

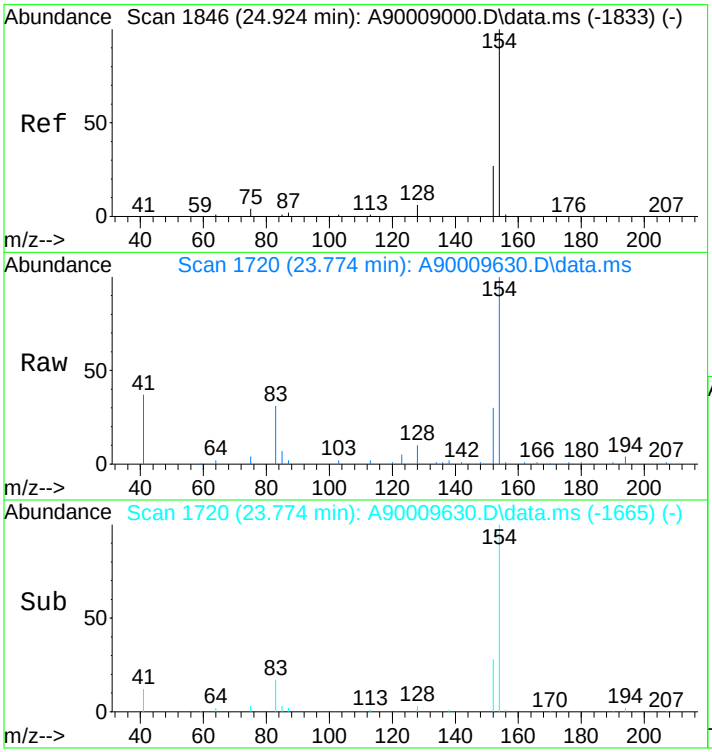




#22
C4-Benzo(b)thiophenes
Concen: 539.09 ng/mL m
RT: 28.619 min Scan# 2251
Delta R.T. -0.354 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:190 Resp: 107760

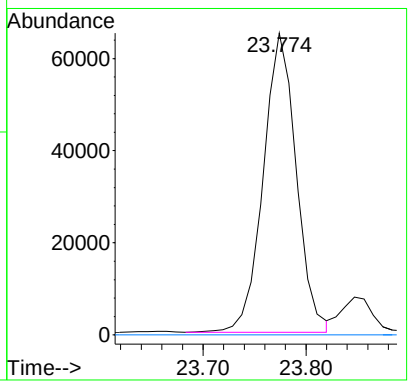


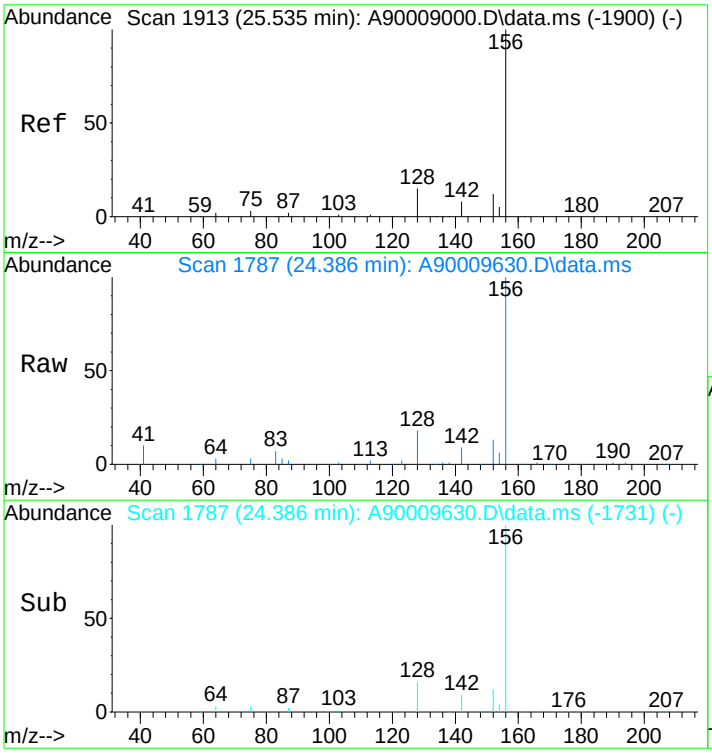


#23
Biphenyl
Concen: 707.17 ng/mL
RT: 23.774 min Scan# 1720
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:154 Resp: 144559

Ion	Ratio	Lower	Upper
154	100		
153	0.0	0.0	0.0

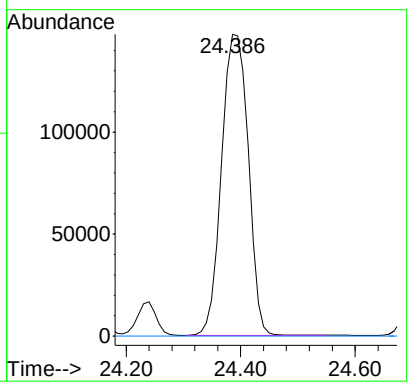


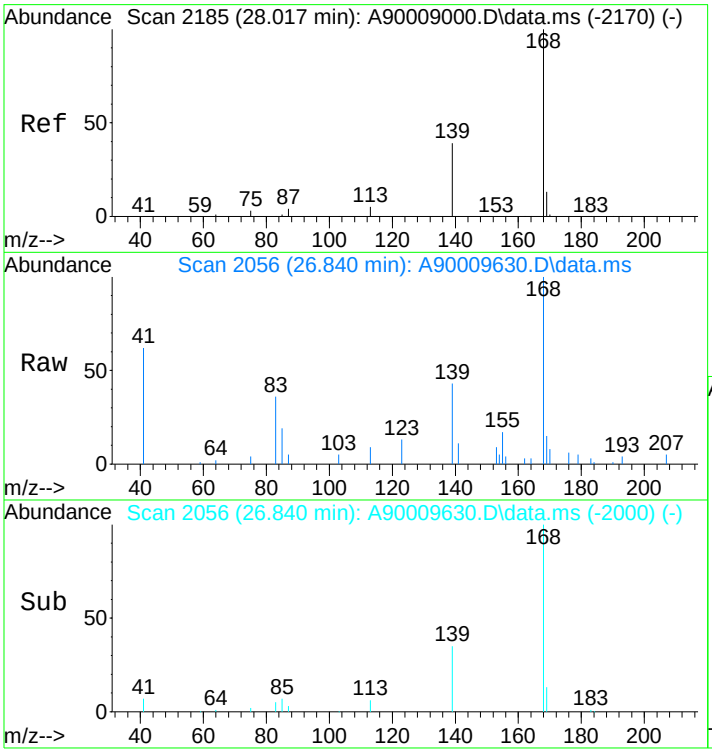


#24
2,6-Dimethylnaphthalene
Concen: 3258.84 ng/mL
RT: 24.386 min Scan# 1787
Delta R.T. 0.009 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:156 Resp: 478528

Ion	Ratio	Lower	Upper
156	100		
155	0.0	0.0	0.0

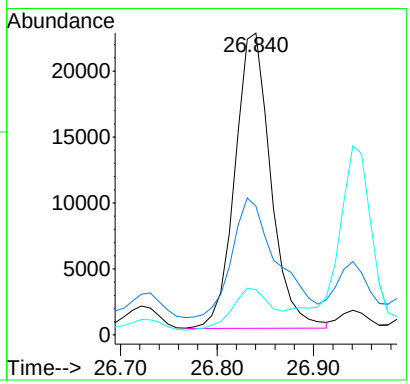


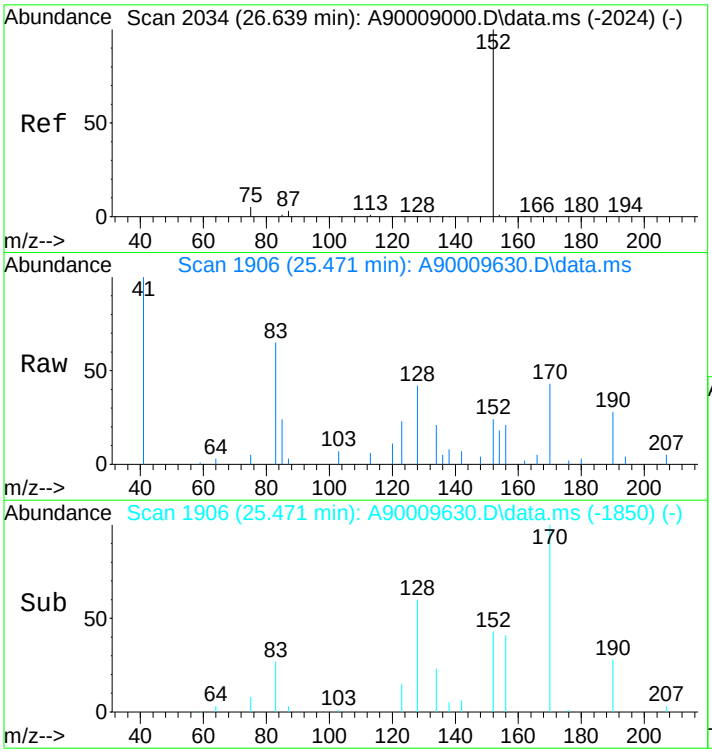


#25
Dibenzofuran
Concen: 264.60 ng/mL
RT: 26.840 min Scan# 2056
Delta R.T. 0.009 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:168 Resp: 57691

Ion	Ratio	Lower	Upper
168	100		
139	51.0	30.2	45.2#
169	15.8	10.8	16.2

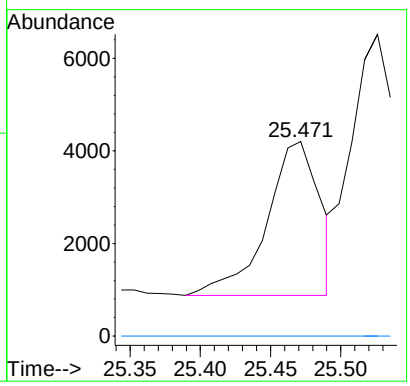


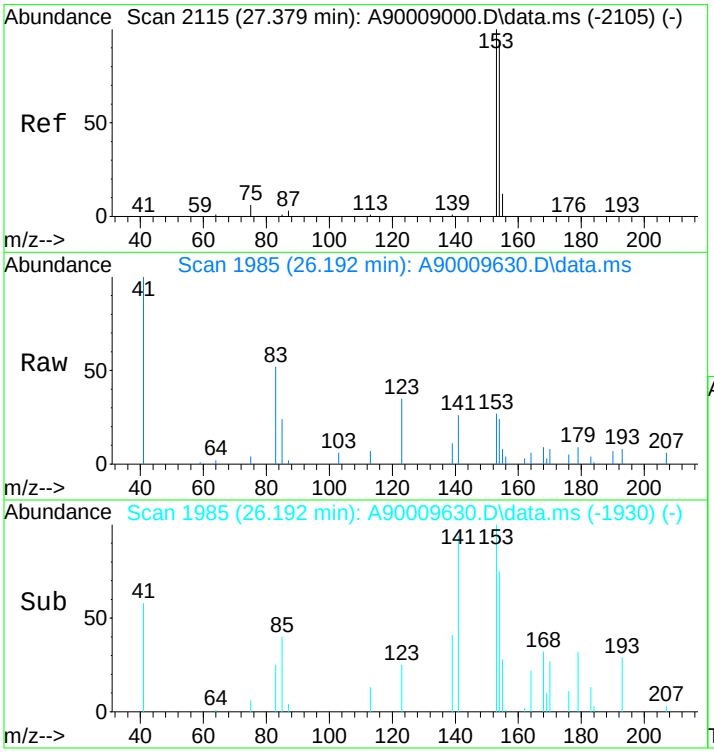


#26
Acenaphthylene
Concen: 35.68 ng/mL
RT: 25.471 min Scan# 1906
Delta R.T. 0.009 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:152 Resp: 8766

Ion	Ratio	Lower	Upper
152	100		
153	0.0	0.0	0.0

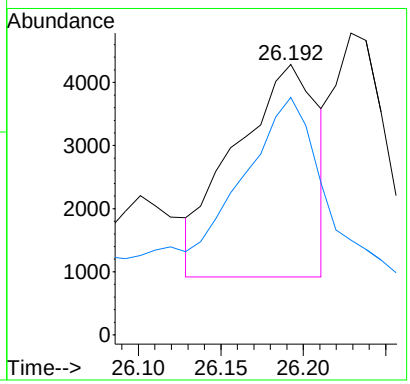


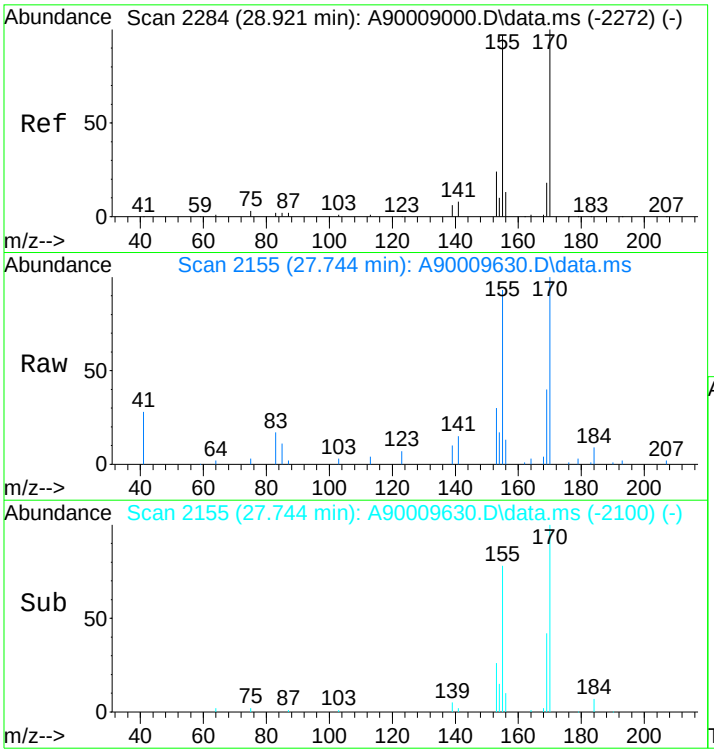


#27
Acenaphthene
Concen: 76.36 ng/mL m
RT: 26.192 min Scan# 1985
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:153 Resp: 11797

Ion	Ratio	Lower	Upper
153	100		
154	105.9	76.2	114.2

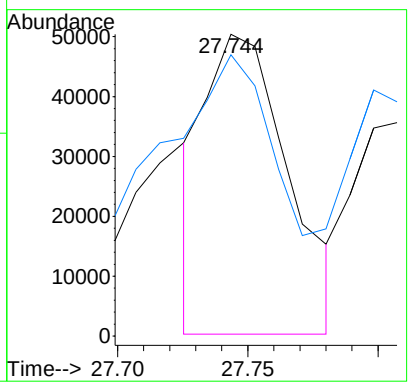


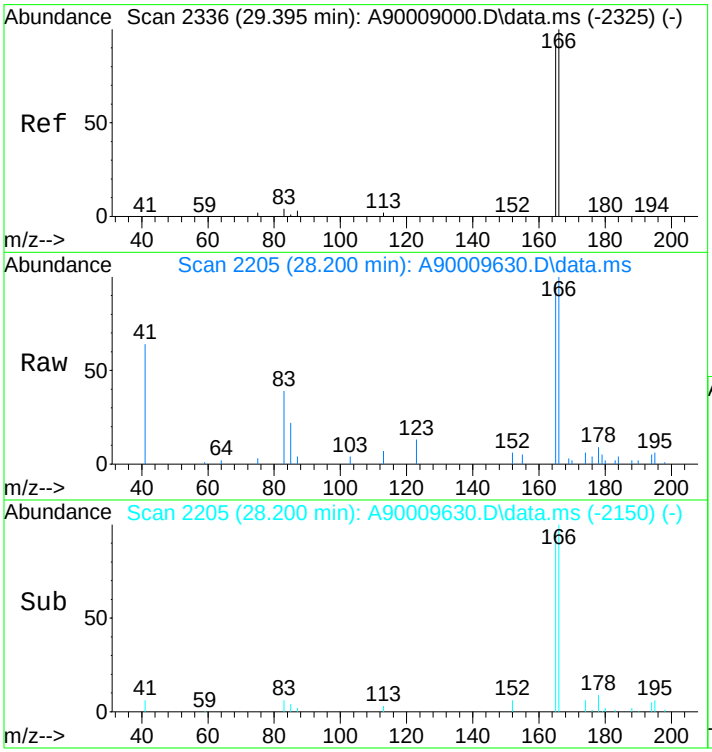


#28
2,3,5-Trimethylnaphthalene
Concen: 826.15 ng/mL m
RT: 27.744 min Scan# 2155
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:170 Resp: 111532

Ion	Ratio	Lower	Upper
170	100		
155	140.5	70.9	106.3#

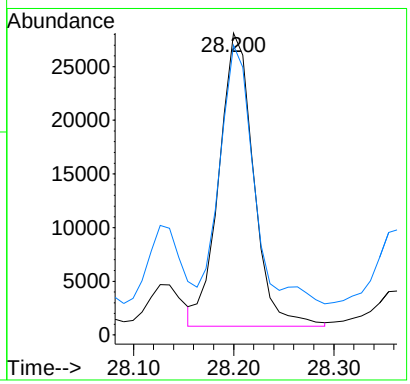


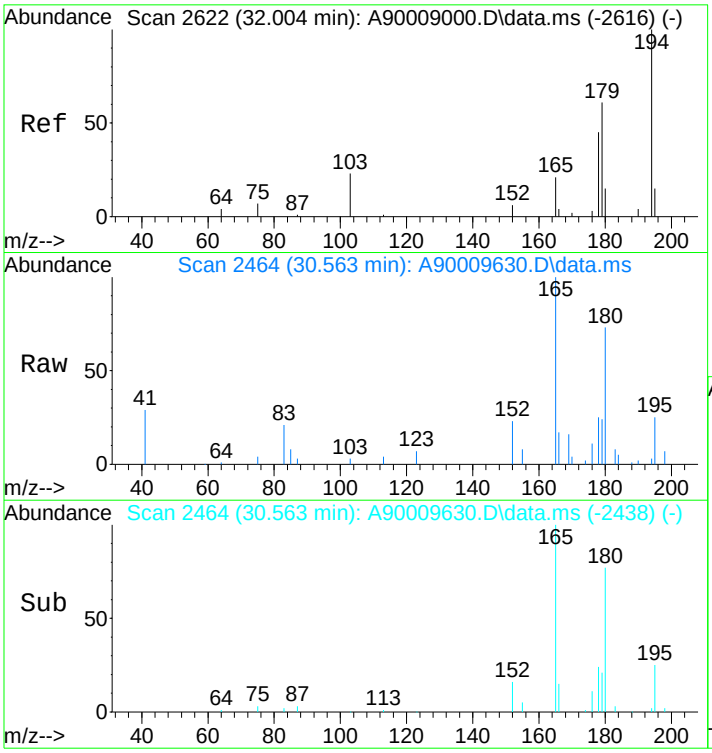


#29
Fluorene
Concen: 384.63 ng/mL m
RT: 28.200 min Scan# 2205
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:166 Resp: 65257

Ion	Ratio	Lower	Upper
166	100		
165	109.6	74.1	111.1

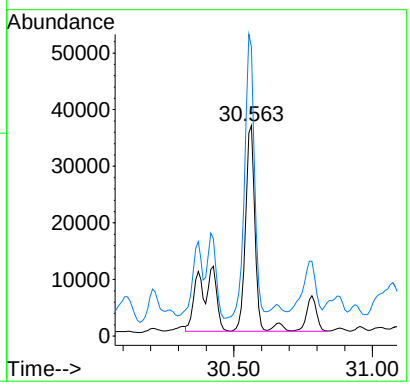


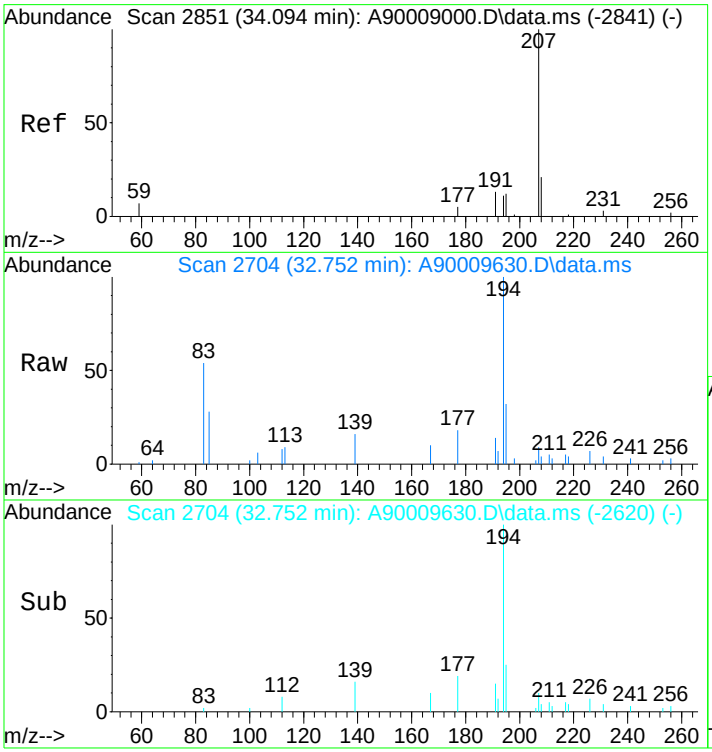


#30
C1-Fluorenes
Concen: 908.21 ng/mL m
RT: 30.563 min Scan# 2464
Delta R.T. 0.026 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:180 Resp: 154087

Ion	Ratio	Lower	Upper
180	100		
165	81.0	117.5	176.3#

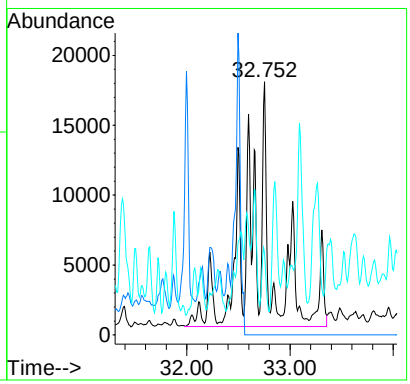


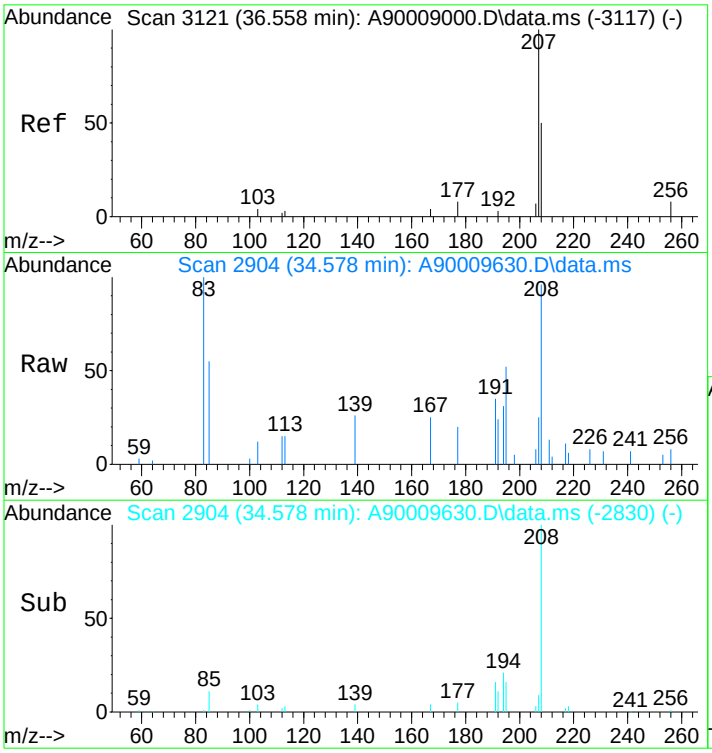


#31
C2-Fluorenes
Concen: 1500.67 ng/mL m
RT: 32.752 min Scan# 2704
Delta R.T. 0.024 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:194 Resp: 254604

Ion	Ratio	Lower	Upper
194	100		
179	0.0	0.0	0.0
195	4.6	26.3	39.5#

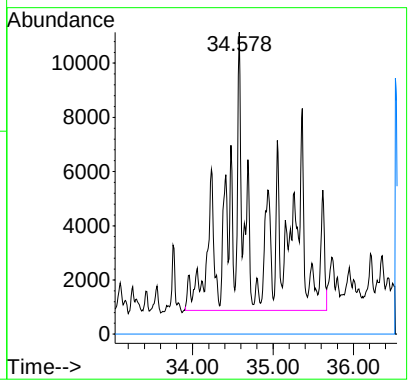


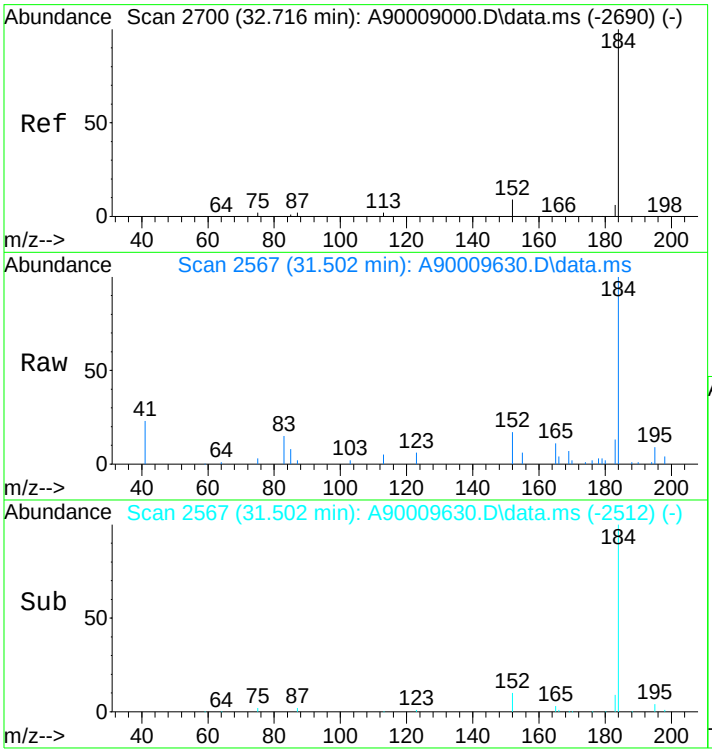


#32
C3-Fluorenes
Concen: 1417.09 ng/mL m
RT: 34.578 min Scan# 2904
Delta R.T. 0.031 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:208 Resp: 240423

Ion	Ratio	Lower	Upper
208	100		
197	0.0	0.0	0.0

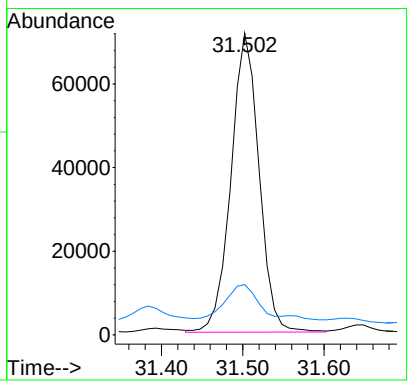


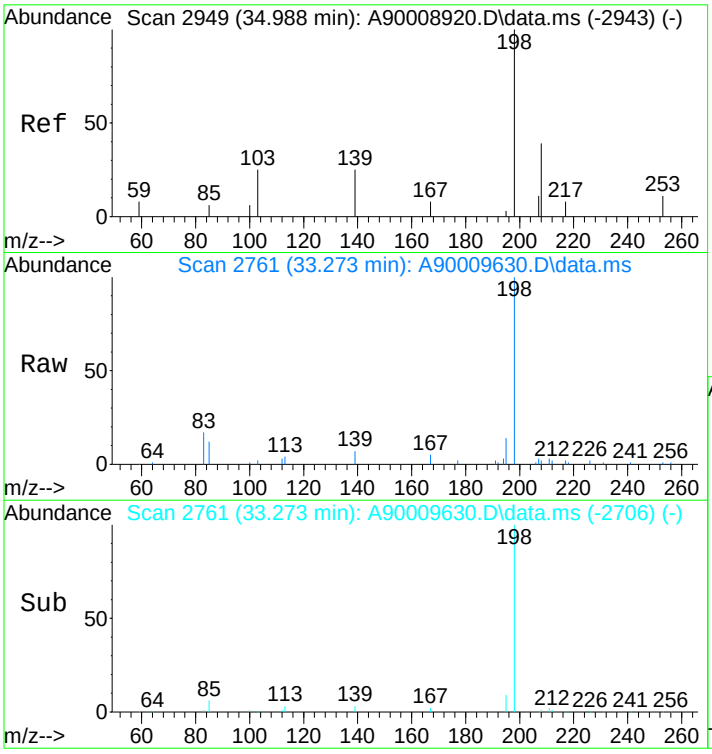


#33
Dibenzothiophene
Concen: 718.06 ng/mL
RT: 31.502 min Scan# 2567
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:184 Resp: 171368

Ion	Ratio	Lower	Upper
184	100		
152	16.9	7.2	10.8#

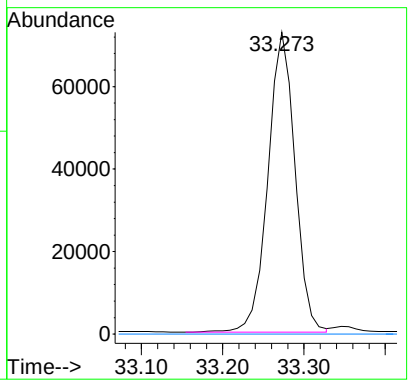


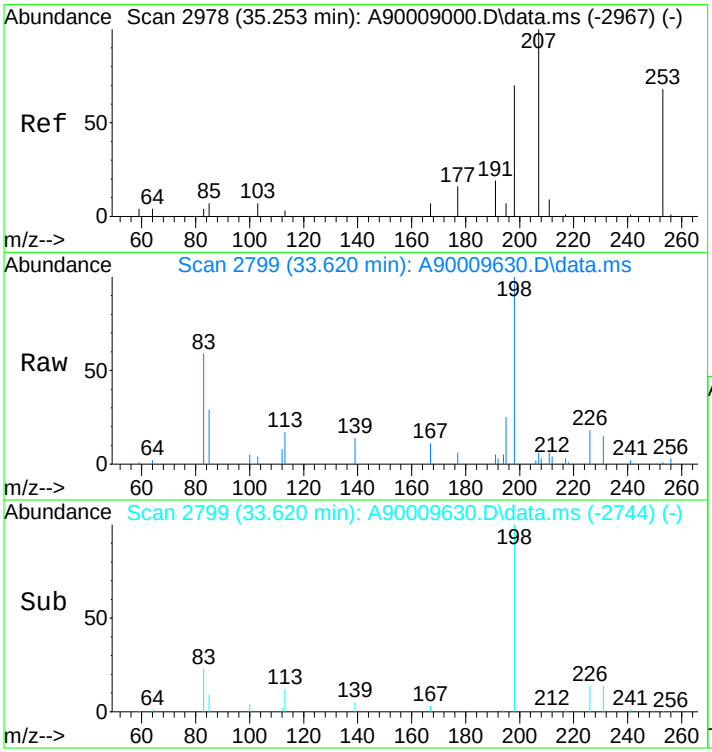


#34
4-Methyldibenzothiophene(4MDT)
Concen: 704.79 ng/mL
RT: 33.273 min Scan# 2761
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:198 Resp: 168203

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

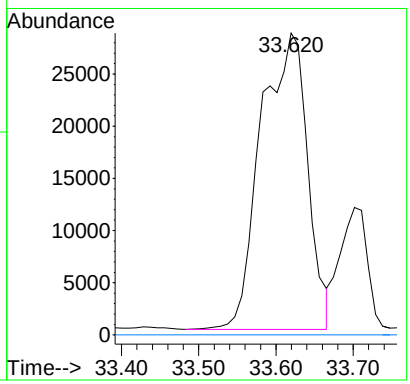


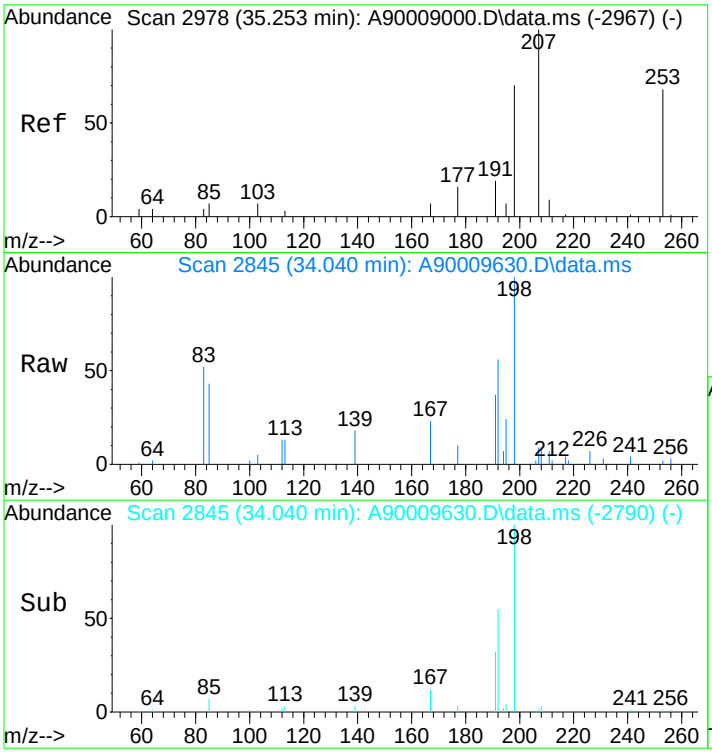


#35
2/3-Methyldibenzothiophene(2MDT)
Concen: 499.91 ng/mL
RT: 33.620 min Scan# 2799
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:198 Resp: 119307

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

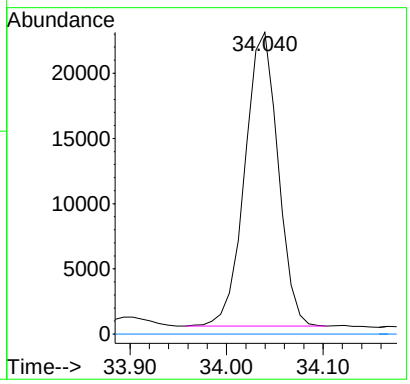


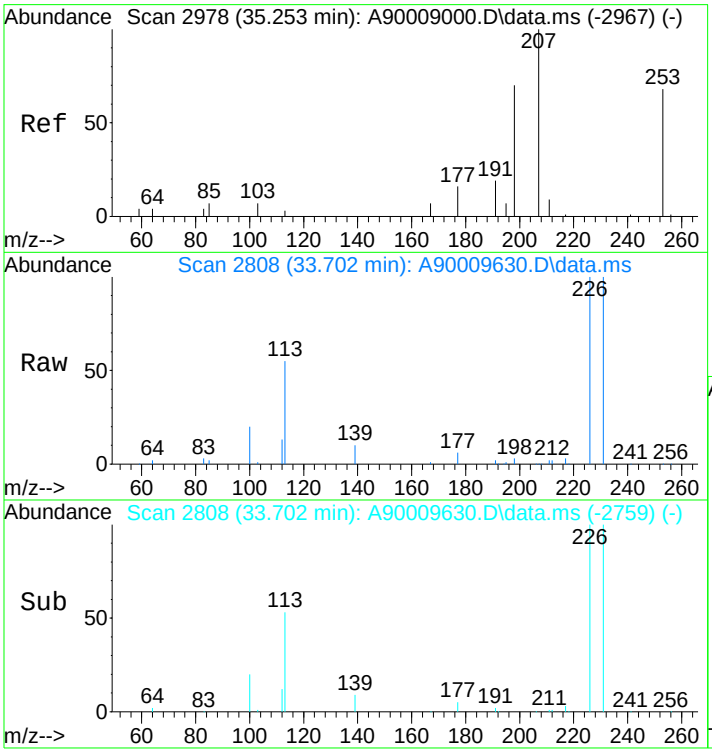


#36
1-Methyldibenzothiophene(1MDT)
Concen: 224.56 ng/mL
RT: 34.040 min Scan# 2845
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:198 Resp: 53592

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

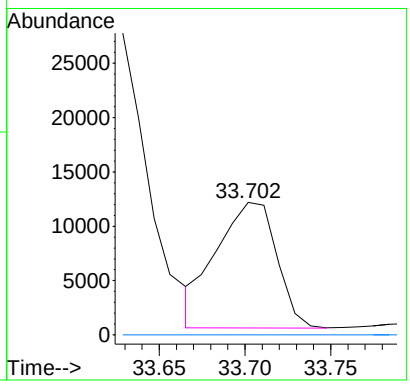


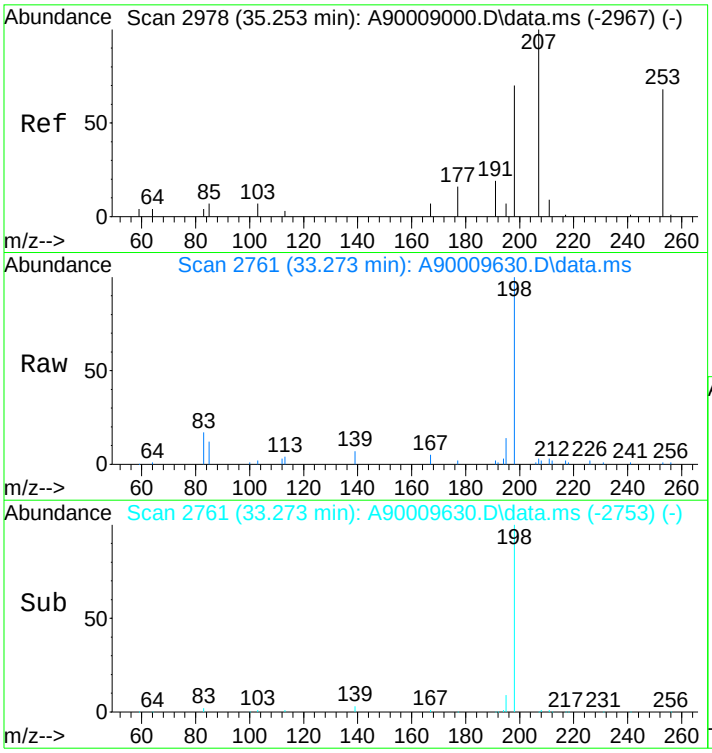


#37
OTP
Concen: 119.20 ng/mL
RT: 33.702 min Scan# 2808
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:198 Resp: 28447

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

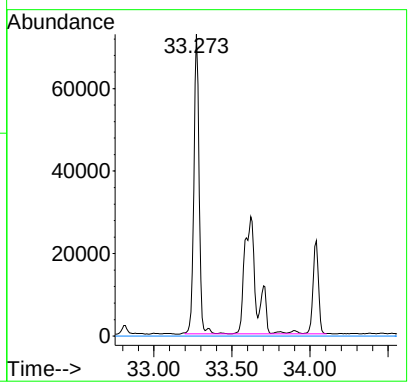


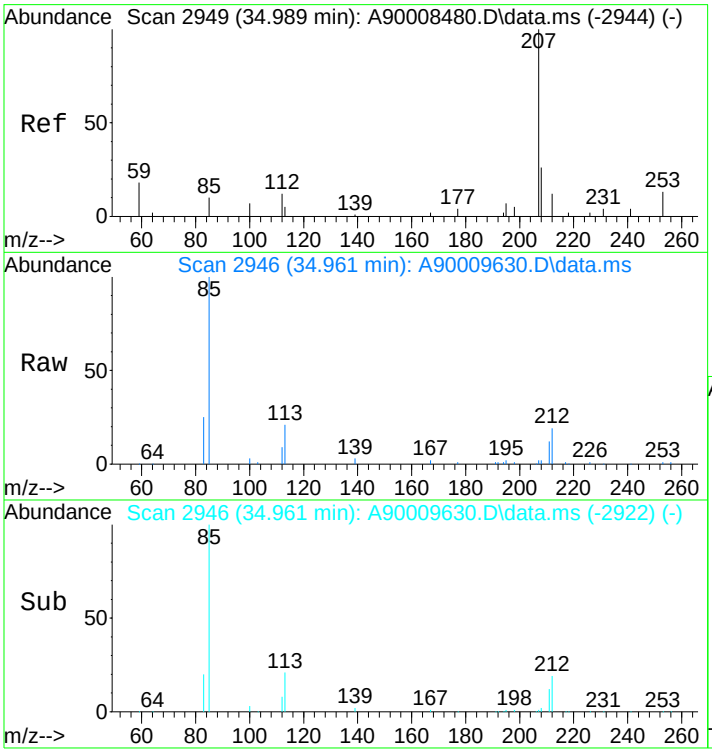


#38
C1-Dibenzothiophenes
Concen: 1583.70 ng/mL m
RT: 33.273 min Scan# 2761
Delta R.T. 0.026 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:198 Resp: 377959

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

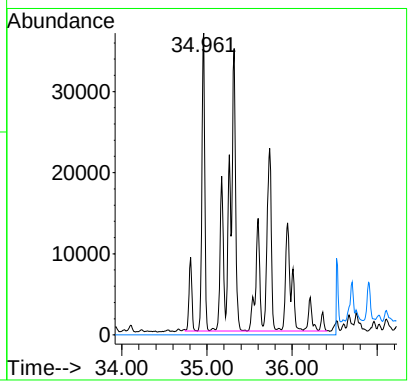


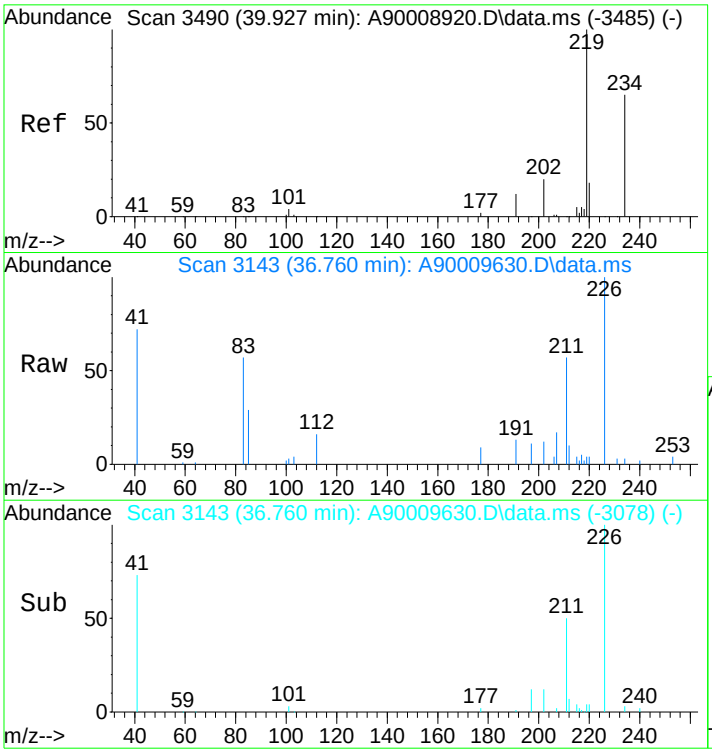


#39
C2-Dibenzothiophenes
Concen: 2096.58 ng/mL m
RT: 34.961 min Scan# 2946
Delta R.T. 0.032 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:212 Resp: 500360

Ion	Ratio	Lower	Upper
212	100		
197	0.0	0.0	0.0

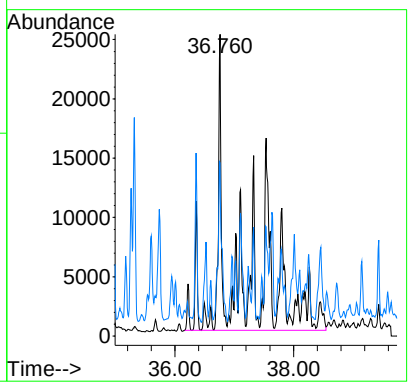


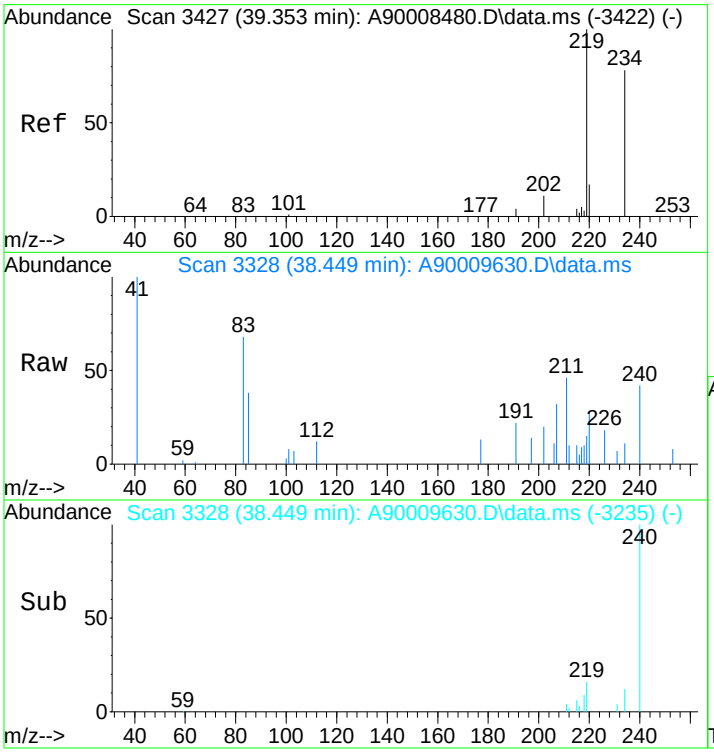


#40
C3-Dibenzothiophenes
Concen: 1889.67 ng/mL m
RT: 36.760 min Scan# 3143
Delta R.T. 0.038 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:226 Resp: 450979

Ion	Ratio	Lower	Upper
226	100		
211	1.8	46.4	69.6#

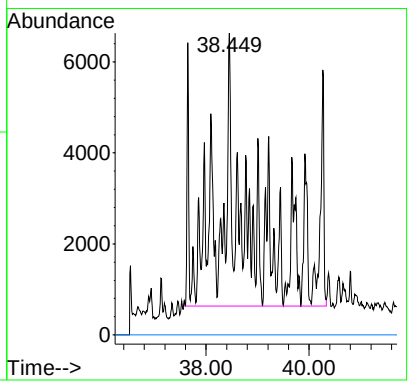


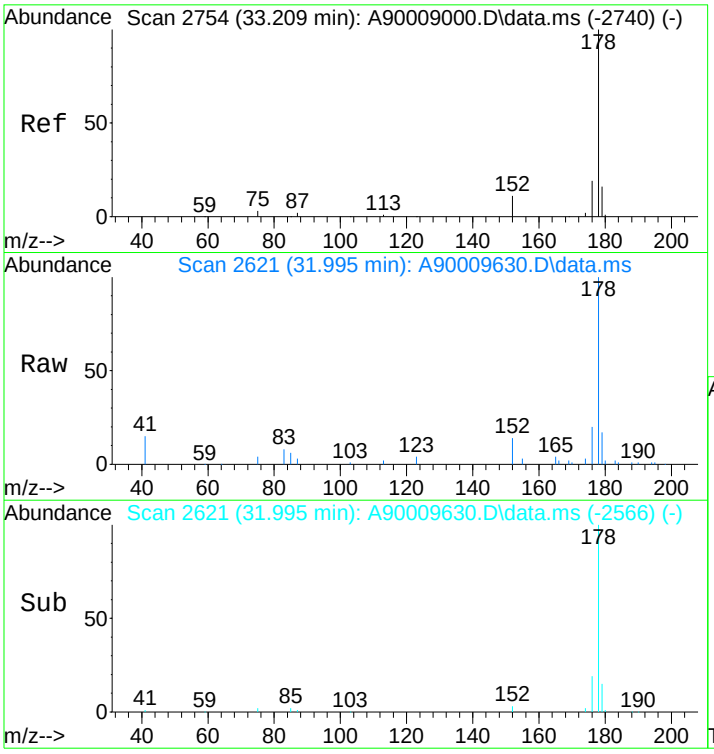


#41
C4-Dibenzothiophenes
Concen: 1025.97 ng/mL m
RT: 38.449 min Scan# 3328
Delta R.T. 0.044 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:240 Resp: 244852

Ion	Ratio	Lower	Upper
240	100		
225	0.0	0.0	0.0

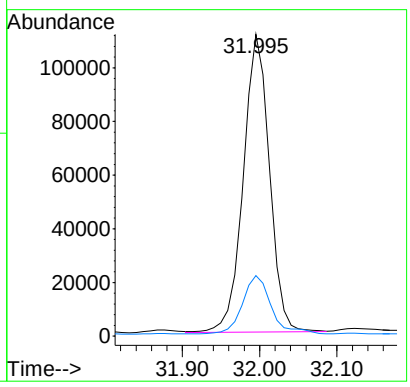


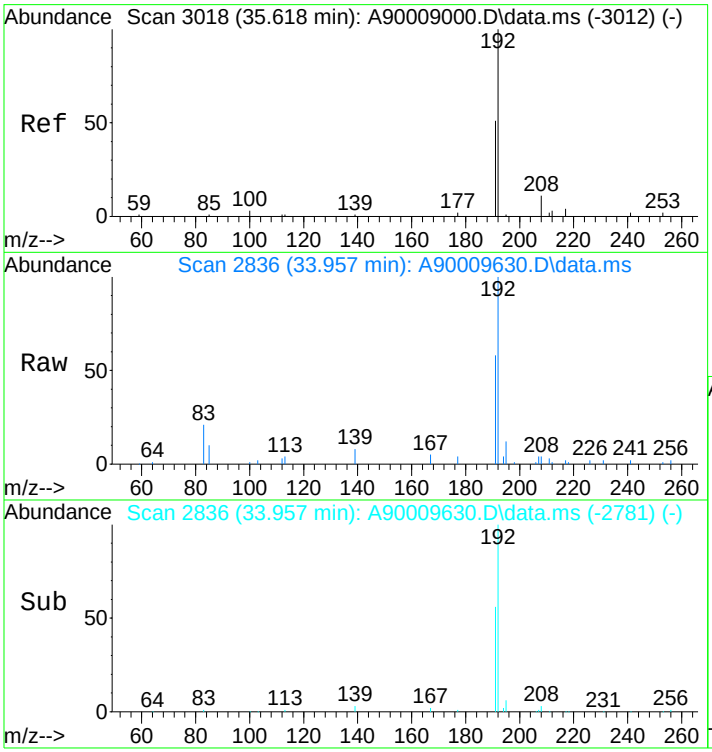


#43
Phenanthrene
Concen: 1060.77 ng/mL
RT: 31.995 min Scan# 2621
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:178 Resp: 261543

Ion	Ratio	Lower	Upper
178	100		
176	21.4	14.7	22.1

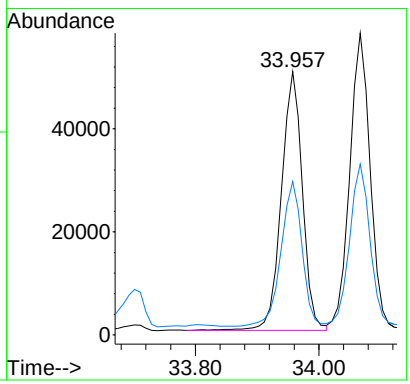


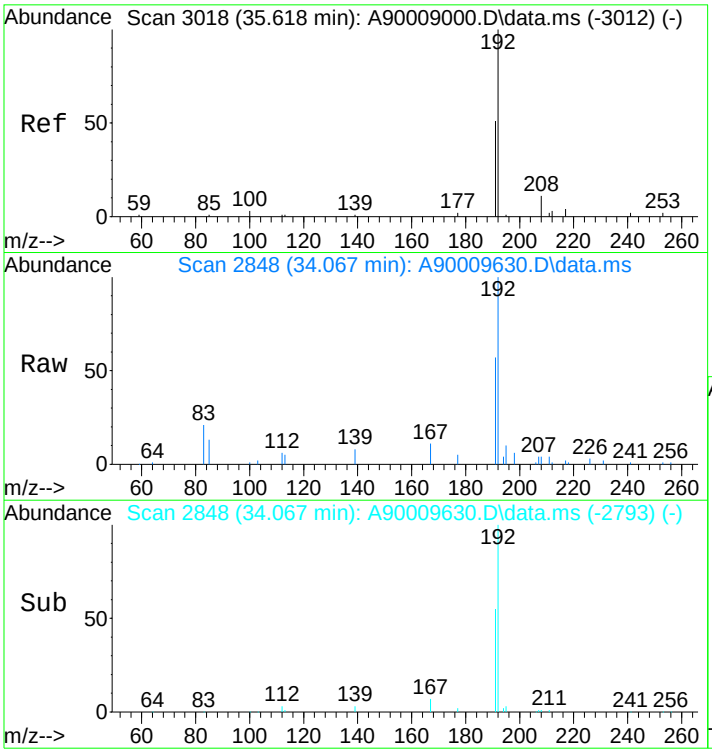


#44
3-Methylphenanthrene(3MP)
Concen: 479.86 ng/mL
RT: 33.957 min Scan# 2836
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:192 Resp: 118315

Ion	Ratio	Lower	Upper
192	100		
191	56.0	46.6	70.0

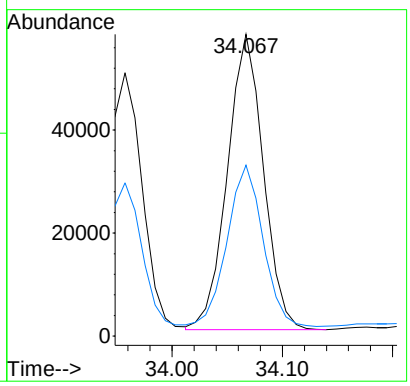


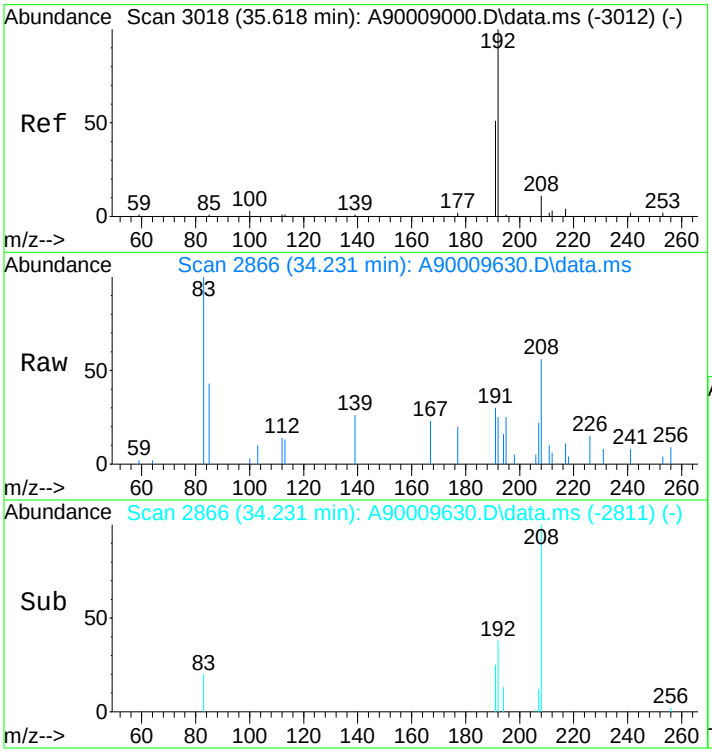


#45
2-Methylphenanthrene(2MP)
Concen: 529.22 ng/mL
RT: 34.067 min Scan# 2848
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:192 Resp: 130485

Ion	Ratio	Lower	Upper
192	100		
191	54.2	45.4	68.0

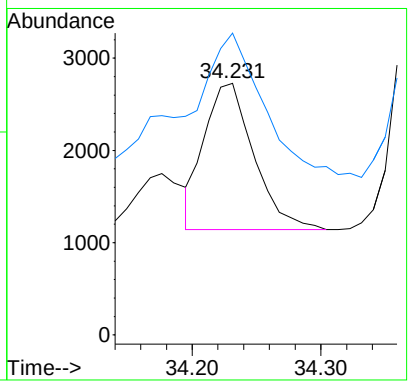


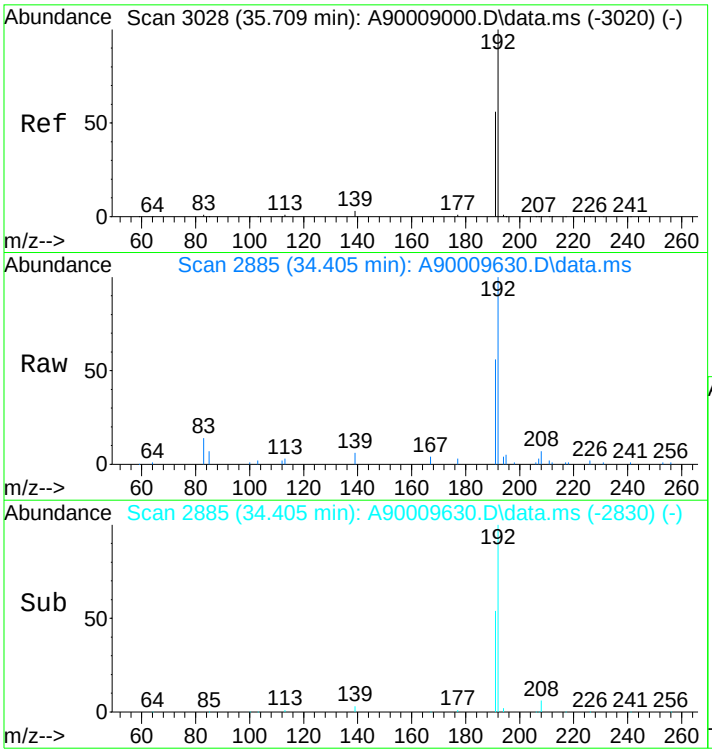


#46
2-Methylanthracene(2MA)
Concen: 17.29 ng/mL
RT: 34.231 min Scan# 2866
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:192 Resp: 4263

Ion	Ratio	Lower	Upper
192	100		
191	157.6	96.0	144.0#

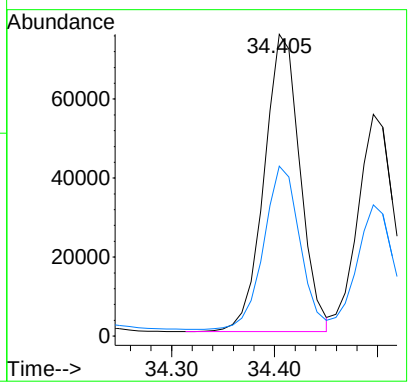


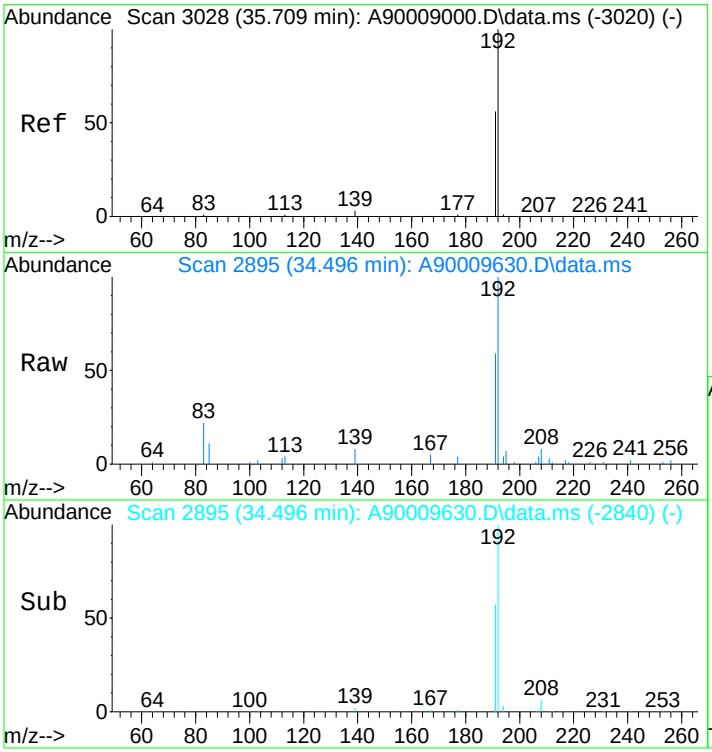


#47
9/4-Methylphenanthrene(9MP)
Concen: 739.06 ng/mL
RT: 34.405 min Scan# 2885
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:192 Resp: 182223

Ion	Ratio	Lower	Upper
192	100		
191	55.2	45.0	67.6

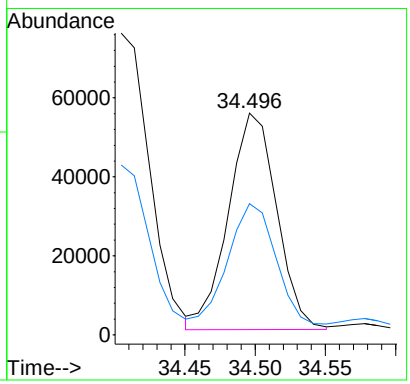


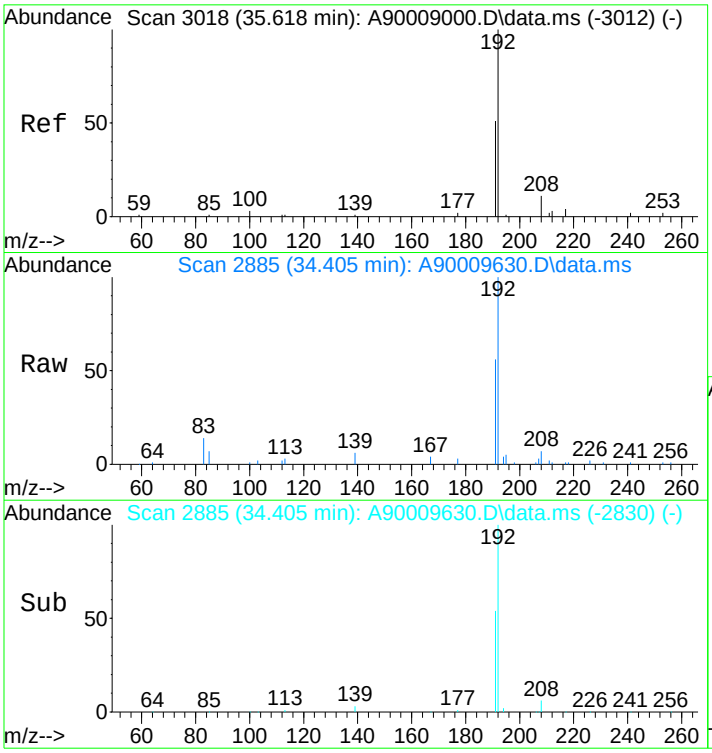


#48
1-Methylphenanthrene(1MP)
Concen: 532.23 ng/mL
RT: 34.496 min Scan# 2895
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:192 Resp: 131225

Ion	Ratio	Lower	Upper
192	100		
191	57.1	47.4	71.0

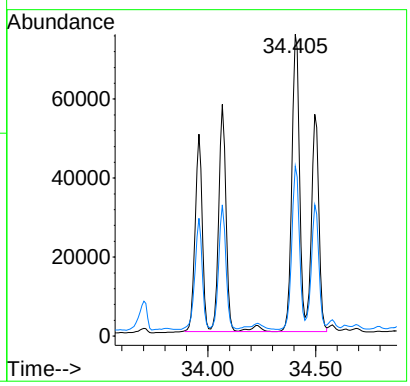


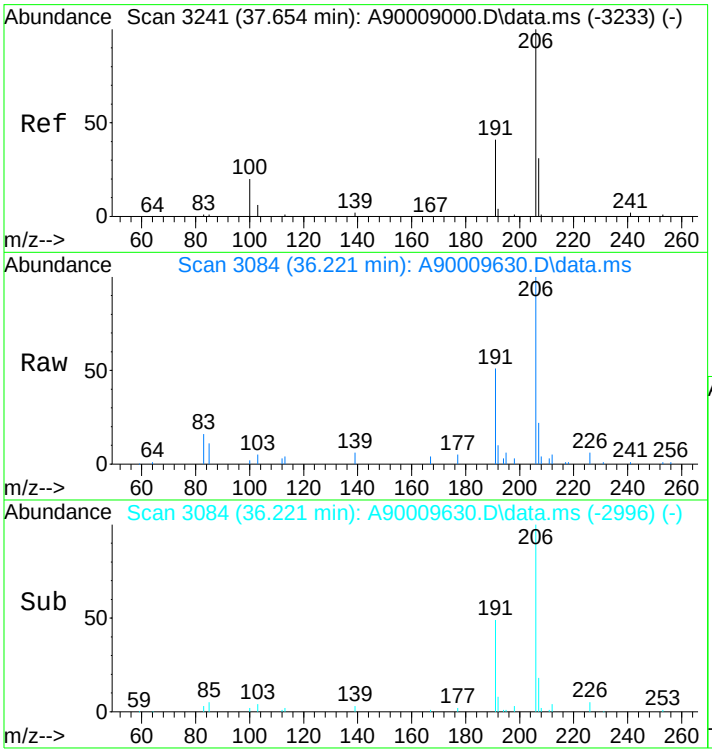


#49
C1-Phenanthrenes/Anthracenes
Concen: 2301.31 ng/mL m
RT: 34.405 min Scan# 2885
Delta R.T. 0.021 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:192 Resp: 567409

Ion	Ratio	Lower	Upper
192	100		
191	17.7	44.5	66.7#

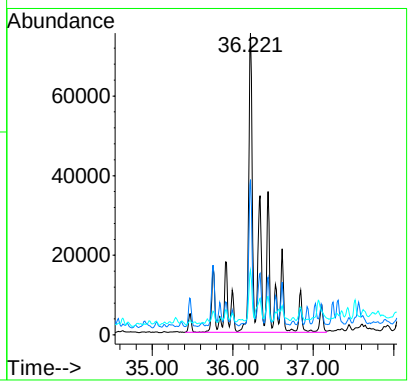


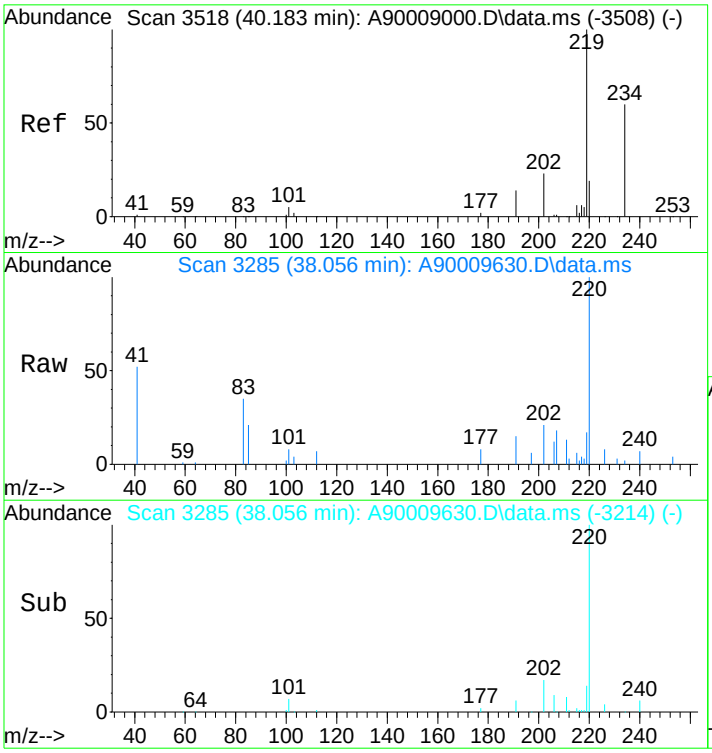


#50
C2-Phenanthrenes/Anthracenes
Concen: 2697.60 ng/mL m
RT: 36.221 min Scan# 3084
Delta R.T. 0.036 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:206 Resp: 665118

Ion	Ratio	Lower	Upper
206	100		
191	1.5	41.0	61.4#
207	0.7	17.1	25.7#

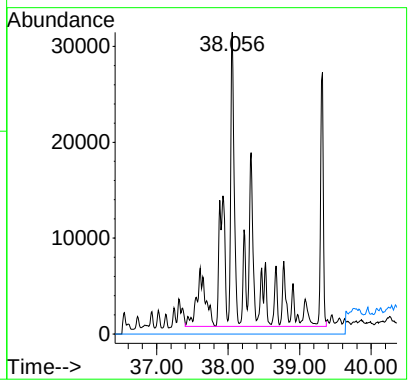


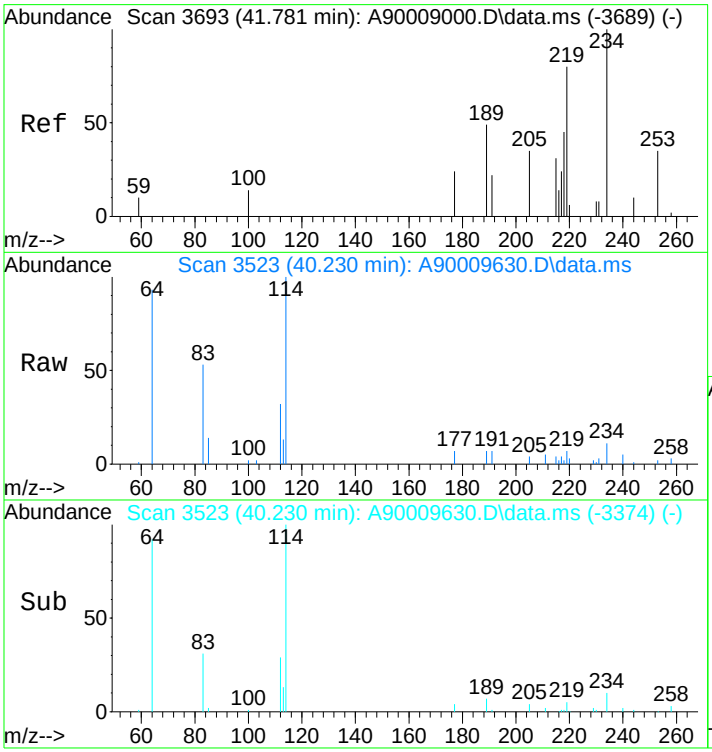


#52
C3-Phenanthrenes/Anthracenes
Concen: 1933.89 ng/mL m
RT: 38.056 min Scan# 3285
Delta R.T. 0.043 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:220 Resp: 476819

Ion	Ratio	Lower	Upper
220	100		
205	0.0	0.0	0.0

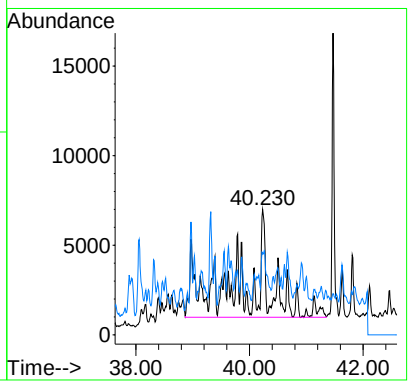


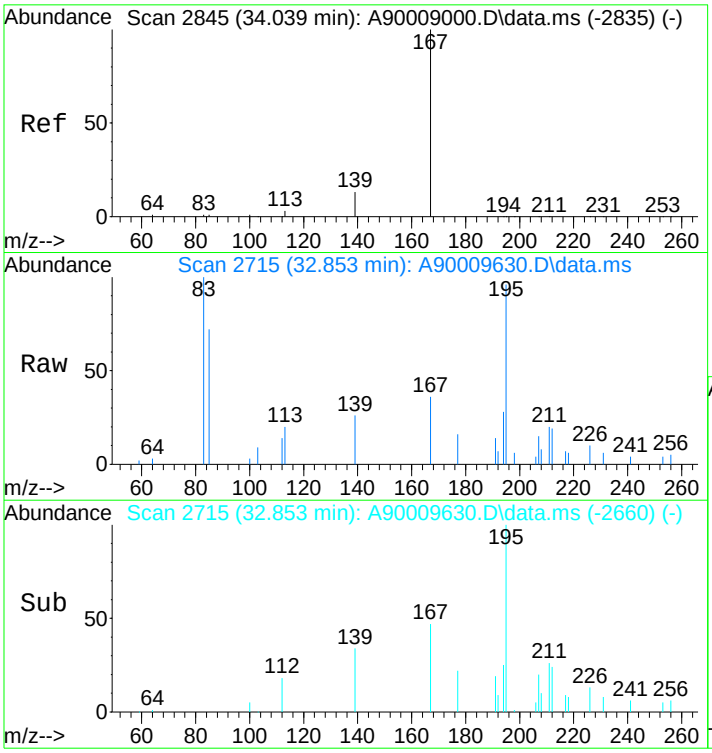


#53
C4-Phenanthrenes/Anthracenes
Concen: 749.45 ng/mL m
RT: 40.230 min Scan# 3523
Delta R.T. 0.041 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:234 Resp: 184784

Ion	Ratio	Lower	Upper
234	100		
219	2.4	52.1	78.1#

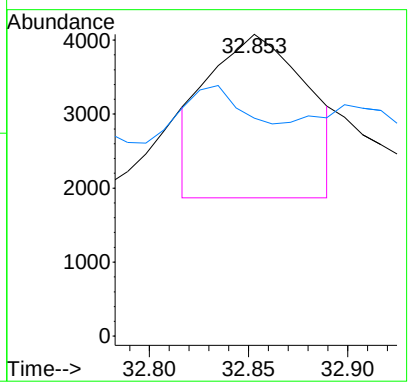


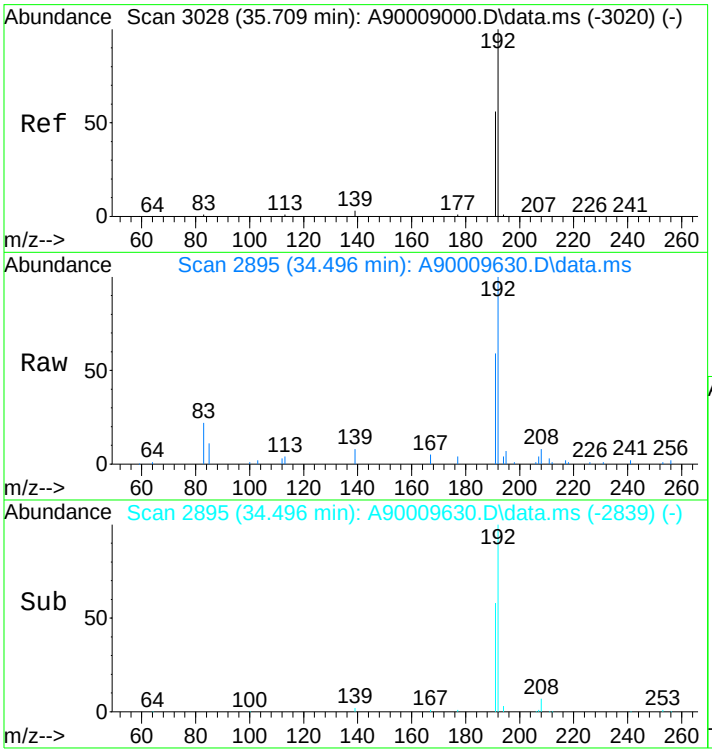


#56
Carbazole
Concen: 35.51 ng/mL m
RT: 32.853 min Scan# 2715
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:167 Resp: 7692

Ion	Ratio	Lower	Upper
167	100		
139	14.1	10.2	15.4

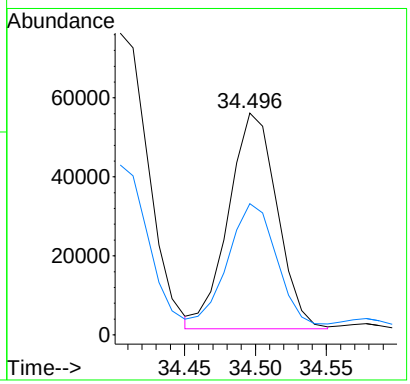


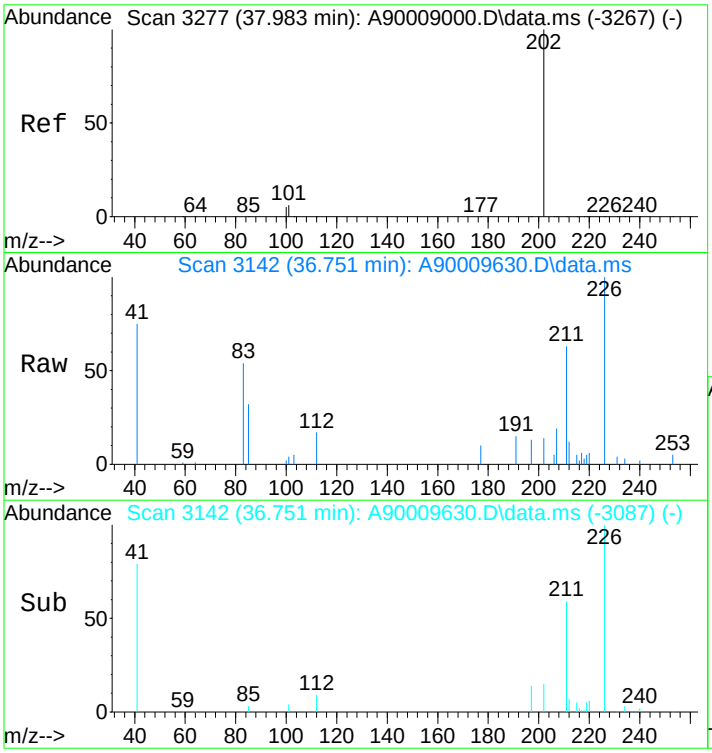


#57
1-Methylphenanthrene
Concen: 714.50 ng/mL m
RT: 34.496 min Scan# 2895
Delta R.T. 0.009 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:192 Resp: 129975

Ion	Ratio	Lower	Upper
192	100		
191	57.4	45.2	67.8

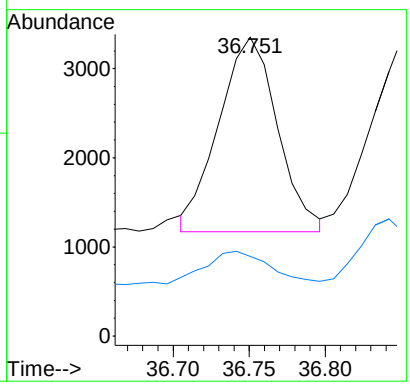


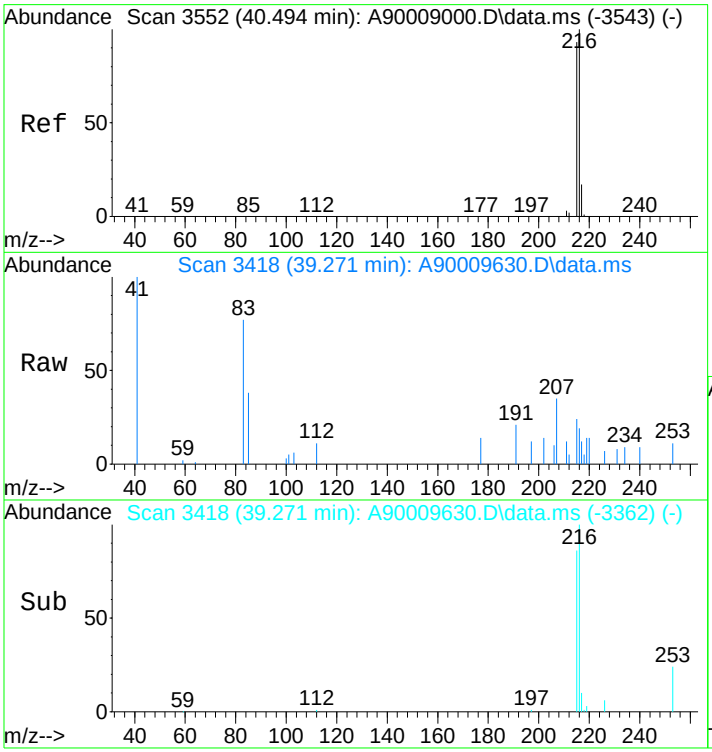


#58
Fluoranthene
Concen: 21.23 ng/mL m
RT: 36.751 min Scan# 3142
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:202 Resp: 5847

Ion	Ratio	Lower	Upper
202	100		
101	33.7	7.5	11.3#

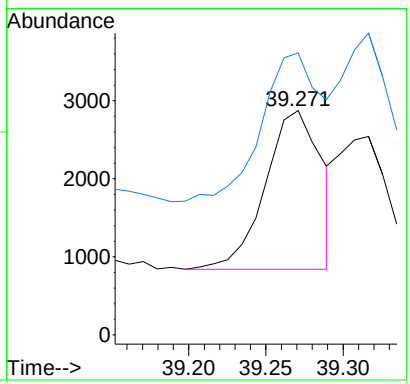


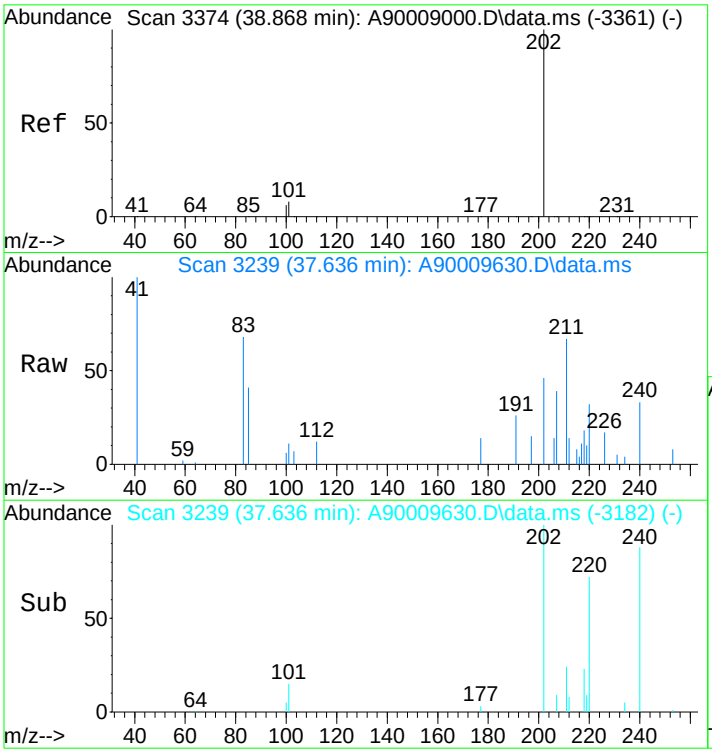


#59
Benzo(b)fluorene
Concen: 31.32 ng/mL
RT: 39.271 min Scan# 3418
Delta R.T. 0.009 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:216 Resp: 5131

Ion	Ratio	Lower	Upper
216	100		
215	100.0	72.9	109.3

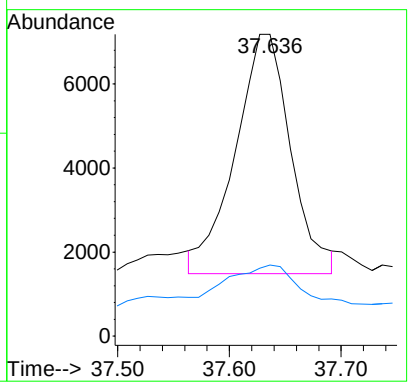


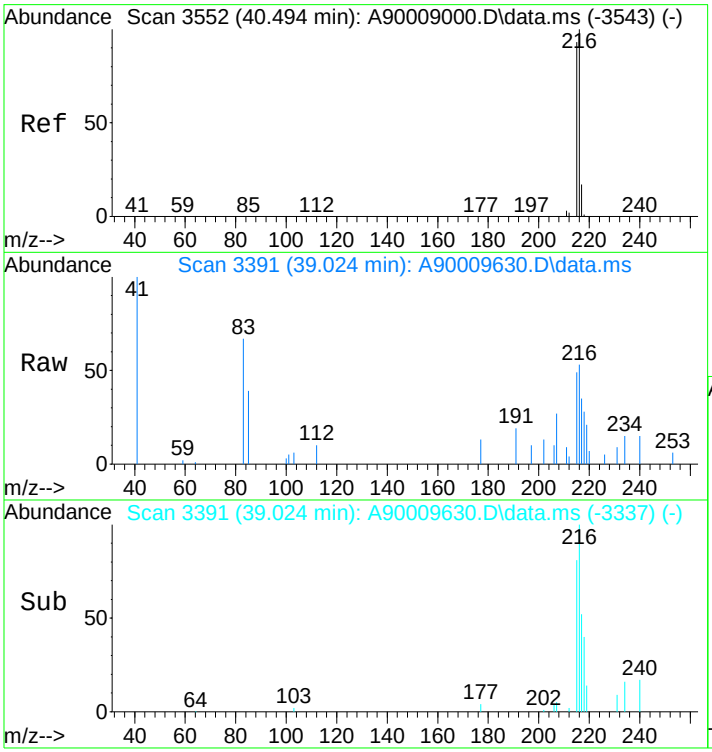


#60
Pyrene
Concen: 69.96 ng/mL m
RT: 37.636 min Scan# 3239
Delta R.T. 0.018 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:202 Resp: 19659

Ion	Ratio	Lower	Upper
202	100		
101	21.3	9.4	14.0#

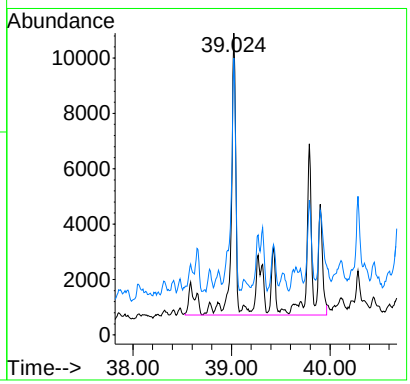


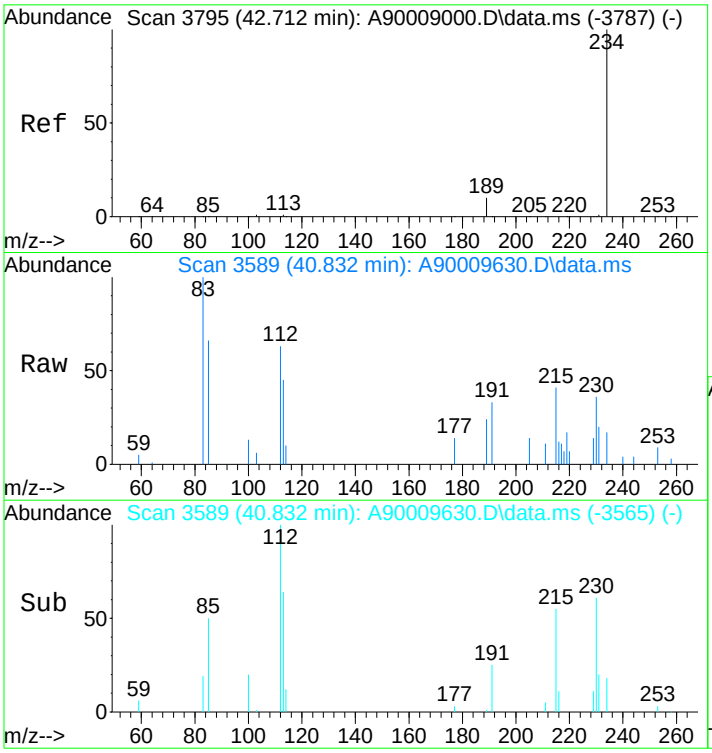


#61
C1-Fluoranthenes/Pyrenes
Concen: 310.35 ng/mL m
RT: 39.024 min Scan# 3391
Delta R.T. 0.046 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:216 Resp: 87209

Ion	Ratio	Lower	Upper
216	100		
215	31.0	73.5	110.3#

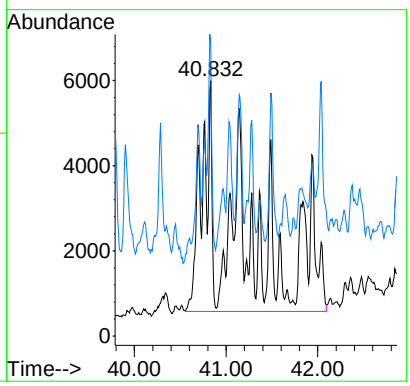


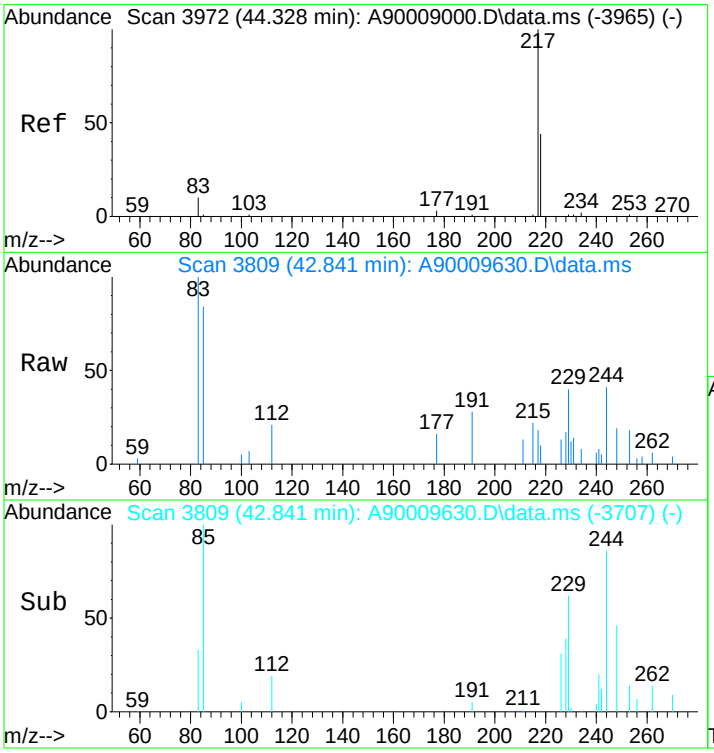


#62
C2-Fluoranthenes/Pyrenes
Concen: 502.99 ng/mL m
RT: 40.832 min Scan# 3589
Delta R.T. 0.052 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:230 Resp: 141340

Ion	Ratio	Lower	Upper
230	100		
215	9.3	93.1	139.7#

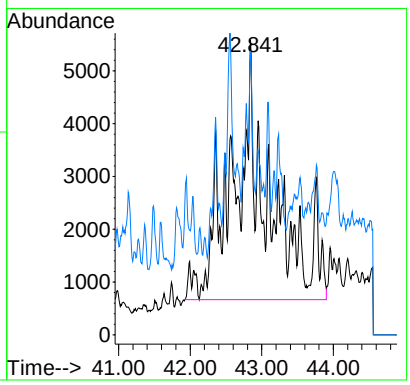


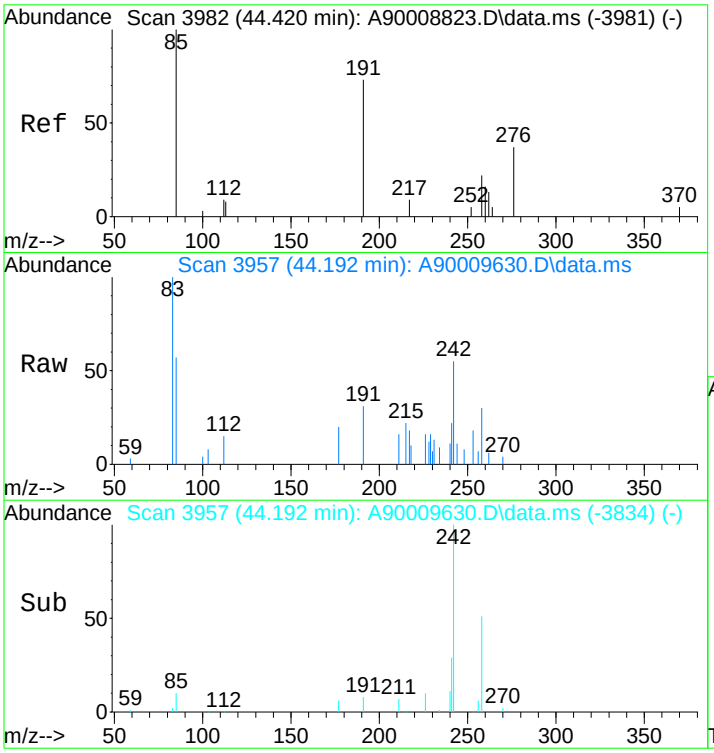


#63
C3-Fluoranthenes/Pyrenes
Concen: 587.65 ng/mL m
RT: 42.841 min Scan# 3809
Delta R.T. 0.050 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:244 Resp: 165128

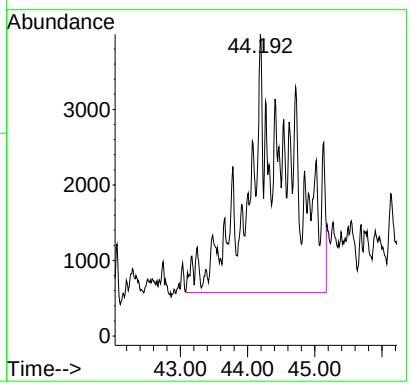
Ion	Ratio	Lower	Upper
244	100		
229	4.1	75.0	112.4#

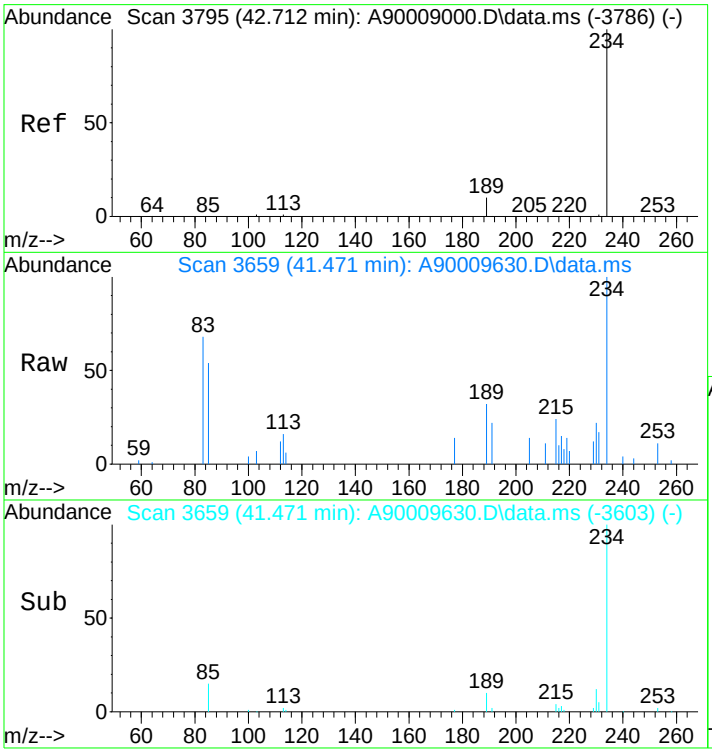




#64
C4-Fluoranthenes/Pyrenes
Concen: 514.06 ng/mL m
RT: 44.192 min Scan# 3957
Delta R.T. 0.055 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:258 Resp: 144450

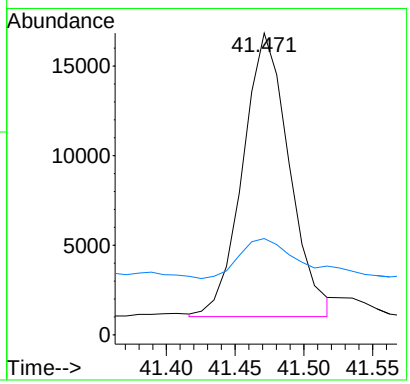


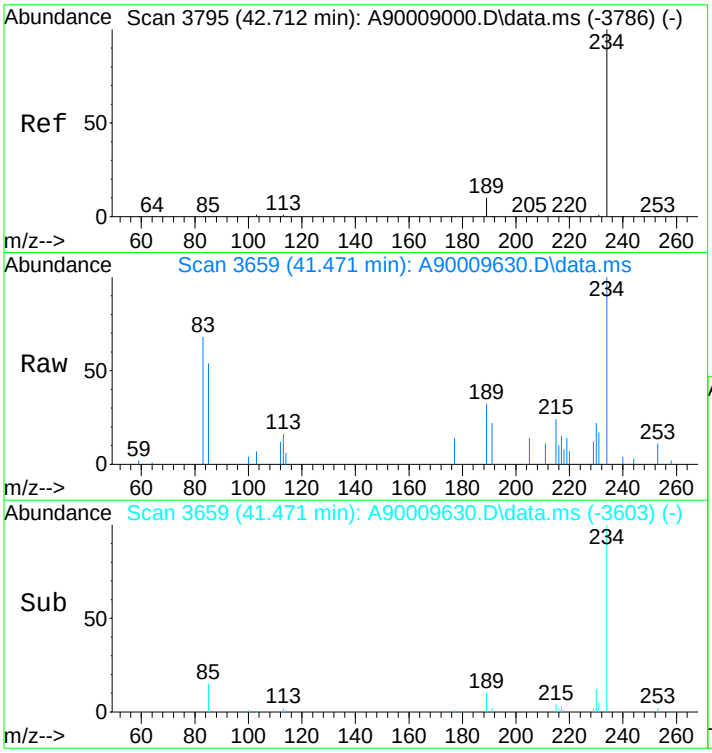


#66
Naphthobenzothiophene
Concen: 153.40 ng/ml m
RT: 41.471 min Scan# 3659
Delta R.T. 0.009 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:234 Resp: 37402

Ion	Ratio	Lower	Upper
234	100		
189	19.1	7.7	11.5#

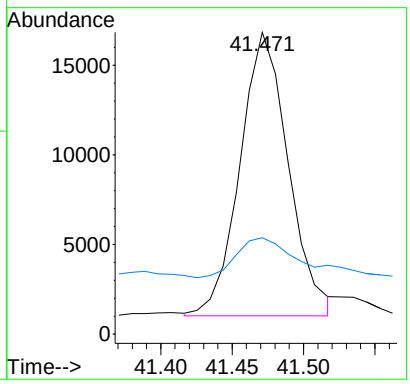


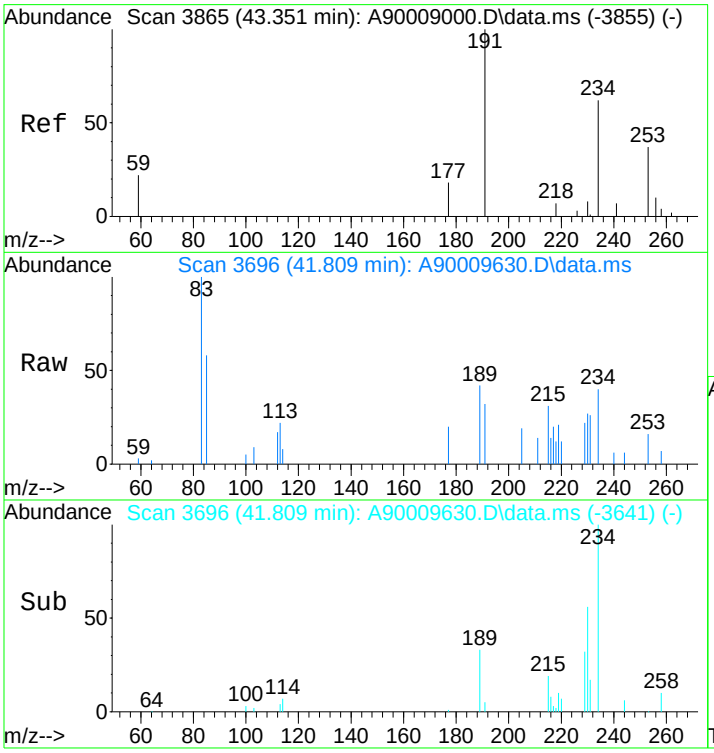


#67
Naphthobenzothiophene-2,1-D
Concen: 153.03 ng/mL m
RT: 41.471 min Scan# 3659
Delta R.T. 0.009 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:234 Resp: 37312

Ion	Ratio	Lower	Upper
234	100		
189	19.1	7.7	11.5#

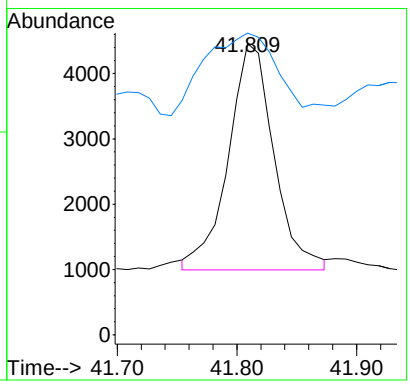


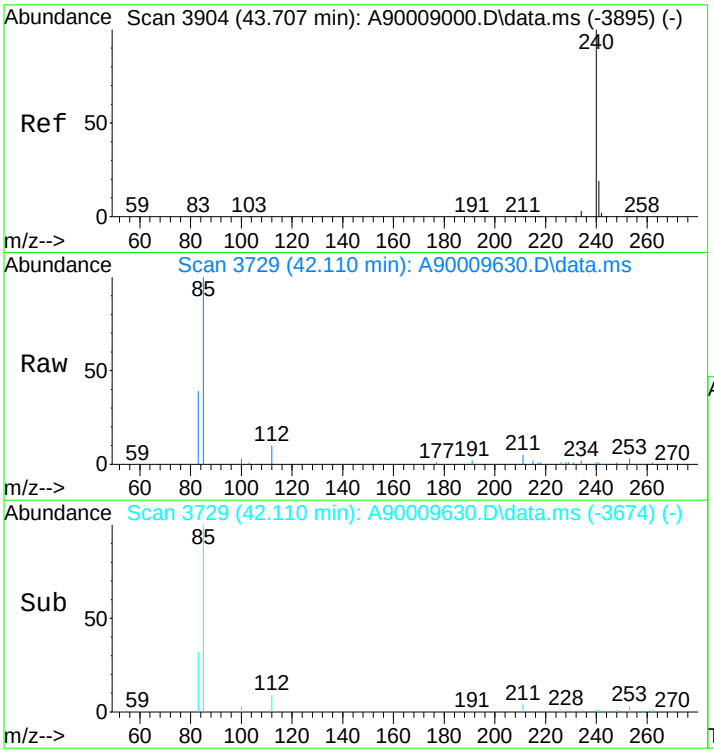


#68
Naphthobenzothiophene-1,2-D
Concen: 37.65 ng/mL m
RT: 41.809 min Scan# 3696
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:234 Resp: 9180

Ion	Ratio	Lower	Upper
234	100		
189	44.9	82.8	124.2#

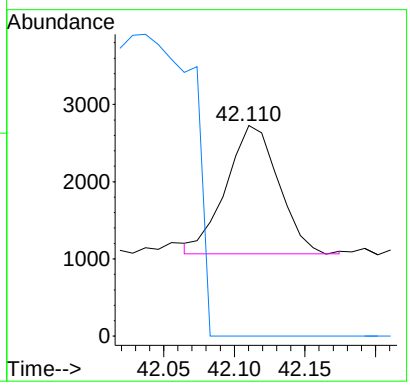


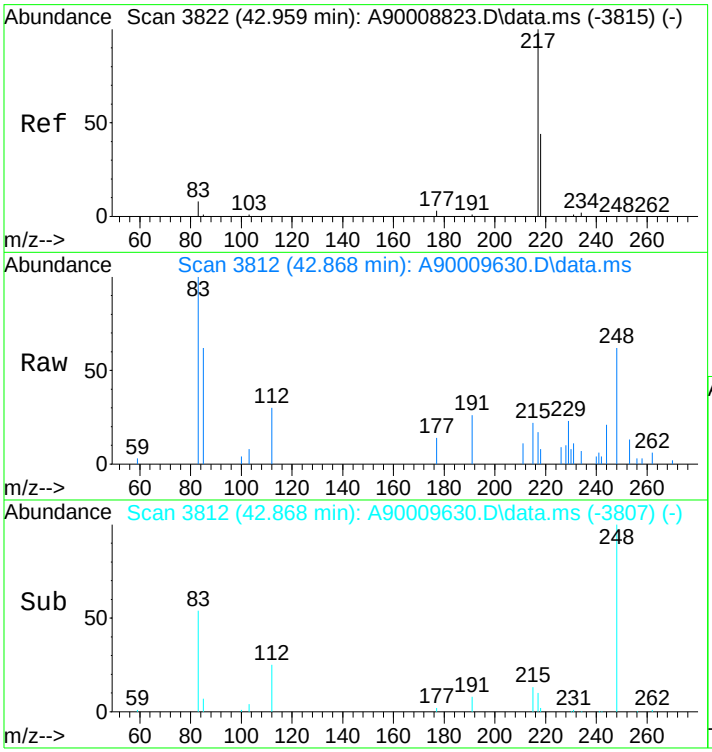


#69
Naphthobenzothiophene-2,3-D
Concen: 17.62 ng/mL m
RT: 42.110 min Scan# 3729
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:234 Resp: 4296

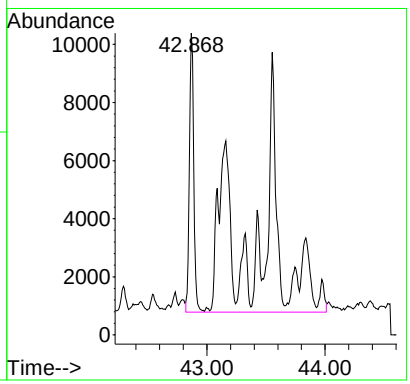
Ion	Ratio	Lower	Upper
234	100		
189	0.0	0.0	0.0

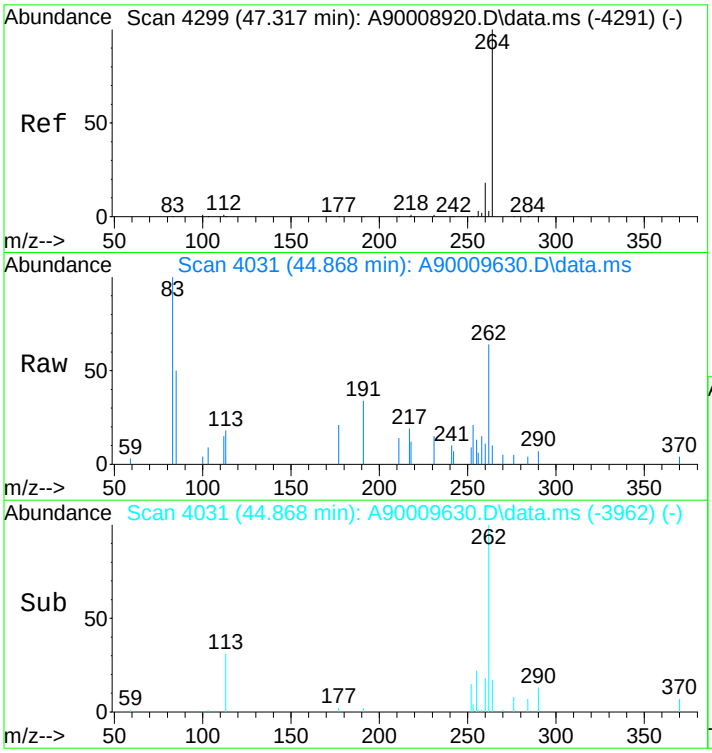




#70
C1-Naphthobenzothiophenes
Concen: 576.42 ng/ml m
RT: 42.868 min Scan# 3812
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

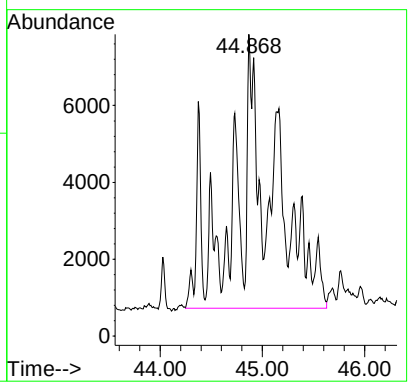
Tgt Ion:248 Resp: 140546

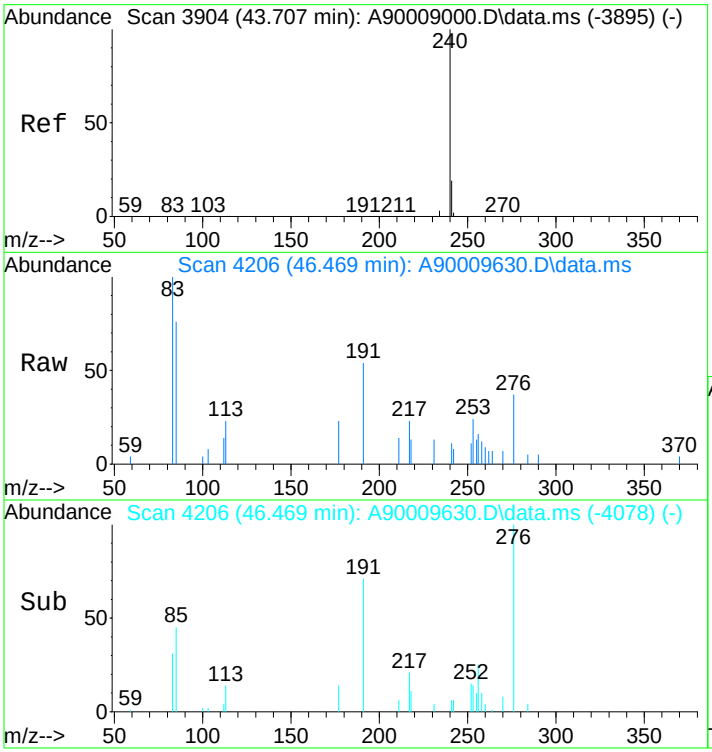




#71
C2-Naphthobenzothiophenes
Concen: 742.29 ng/ml m
RT: 44.868 min Scan# 4031
Delta R.T. 0.057 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

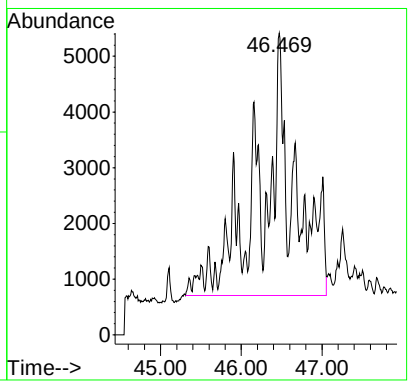
Tgt Ion:262 Resp: 180987

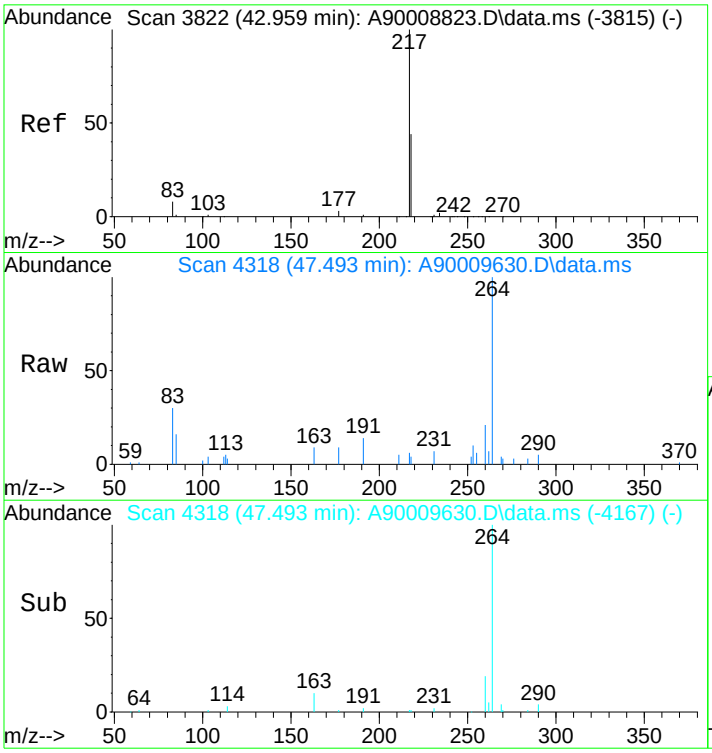




#72
C3-Naphthobenzothiophenes
Concen: 551.84 ng/ml m
RT: 46.469 min Scan# 4206
Delta R.T. 0.063 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

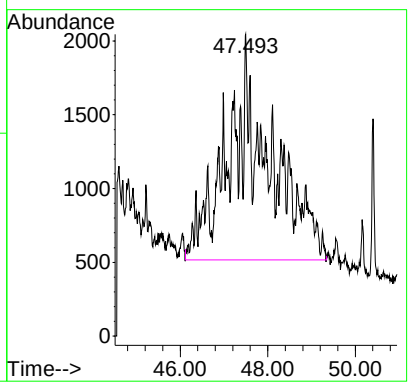
Tgt Ion:276 Resp: 134552

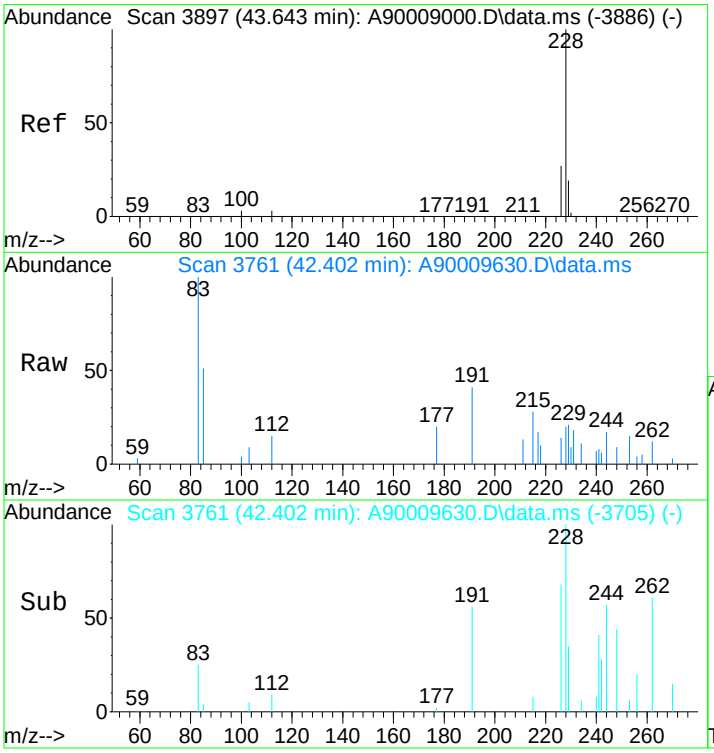




#73
C4-Naphthobenzothiophenes
Concen: 395.94 ng/mL m
RT: 47.493 min Scan# 4318
Delta R.T. 0.067 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:290 Resp: 96539

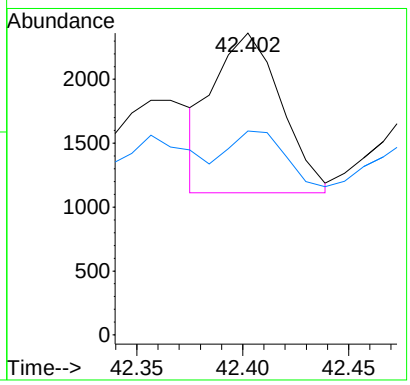


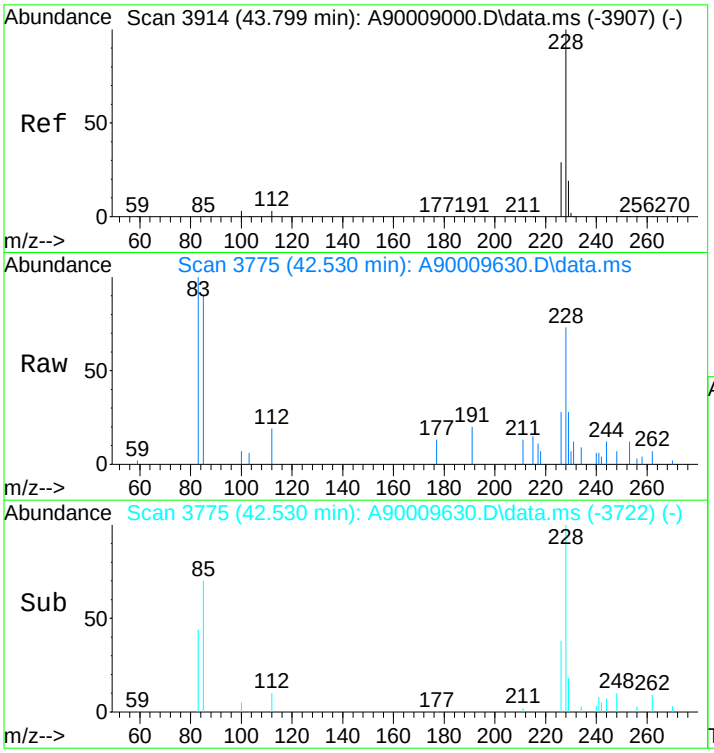


#75
Benz[a]anthracene
Concen: 11.41 ng/mL m
RT: 42.402 min Scan# 3761
Delta R.T. 0.009 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:228 Resp: 2762

Ion	Ratio	Lower	Upper
228	100		
226	493.4	20.9	31.3#

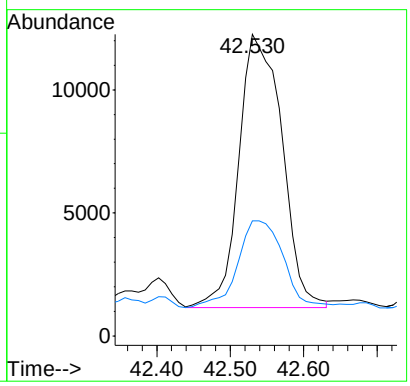


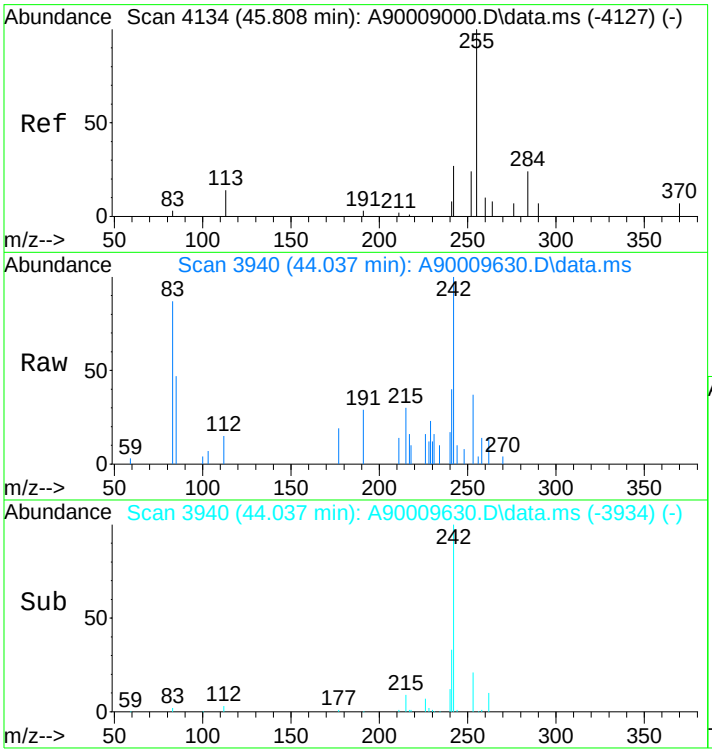


#77
Chrysene/Triphenylene
Concen: 189.55 ng/mL m
RT: 42.530 min Scan# 3775
Delta R.T. -0.018 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:228 Resp: 45134

Ion	Ratio	Lower	Upper
228	100		
226	30.2	23.4	35.2

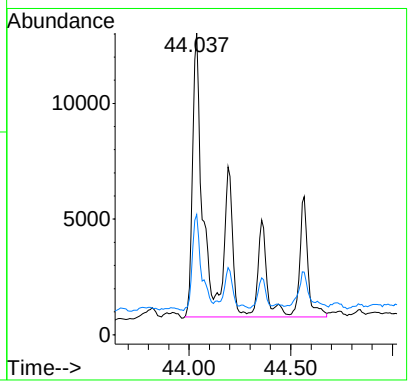


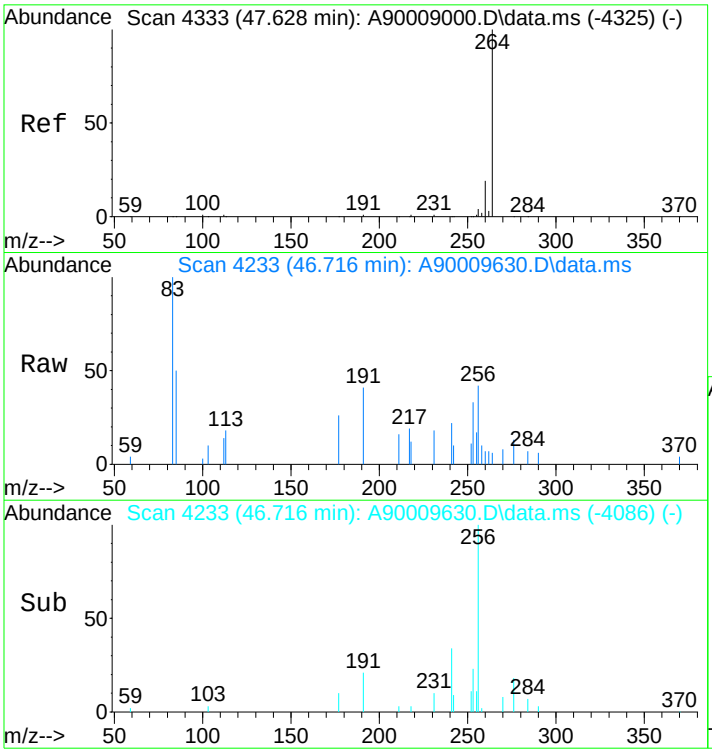


#78
C1-Chrysenes
Concen: 354.64 ng/mL m
RT: 44.037 min Scan# 3940
Delta R.T. 0.004 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:242 Resp: 84445

Ion	Ratio	Lower	Upper
242	100		
241	11.7	31.9	47.9#

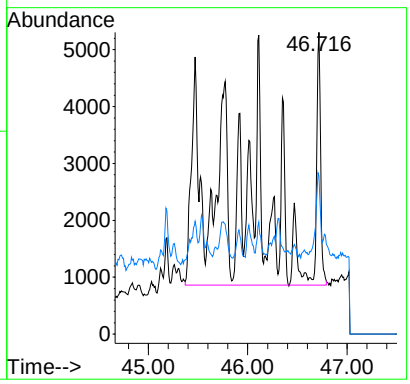


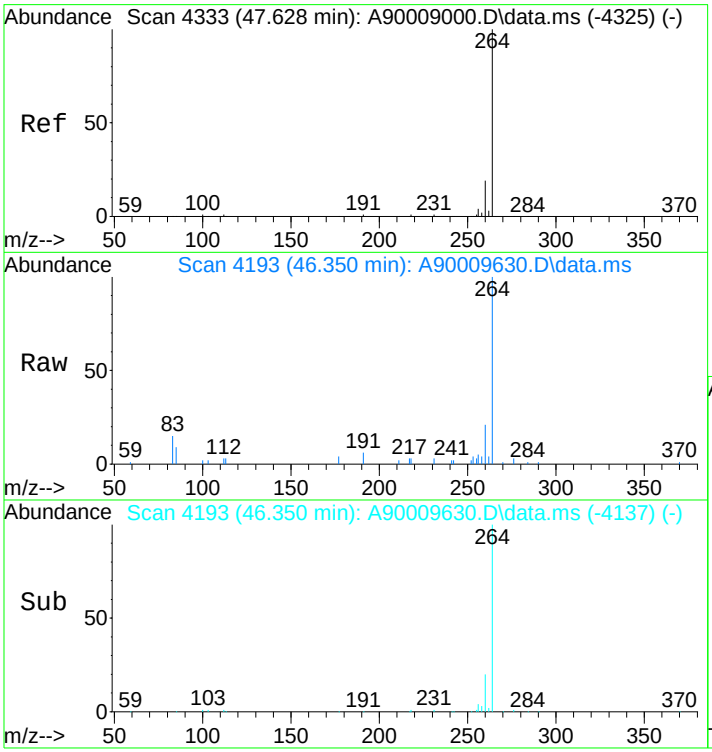


#79
C2-Chrysenes
Concen: 469.97 ng/mL m
RT: 46.716 min Scan# 4233
Delta R.T. 0.010 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:256 Resp: 111906

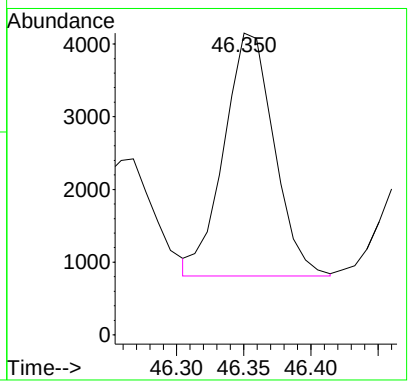
Ion	Ratio	Lower	Upper
256	100		
241	4.0	42.2	63.2#

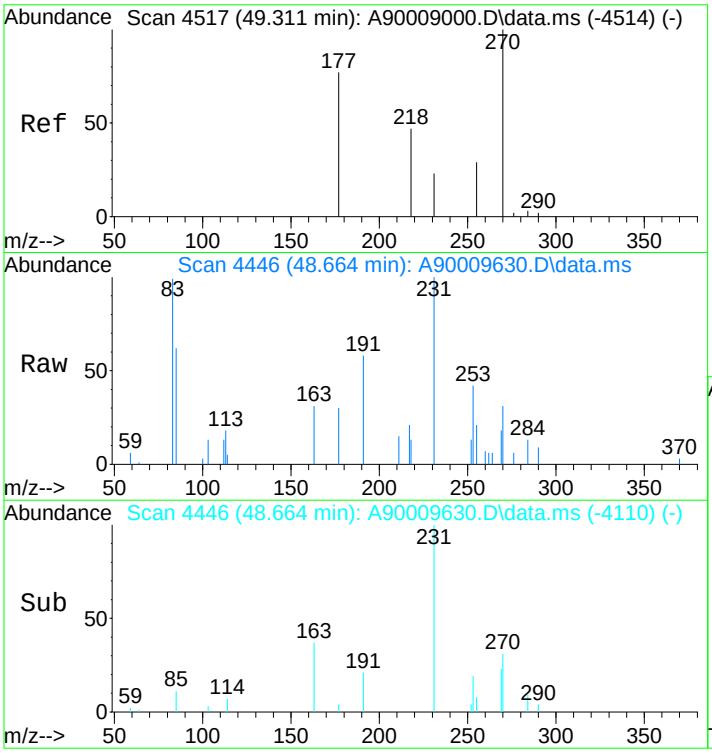




#80
BBF-d12 Surr BKGD
Concen: 36.34 ng/mL m
RT: 46.350 min Scan# 4193
Delta R.T. 0.016 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:256 Resp: 8652

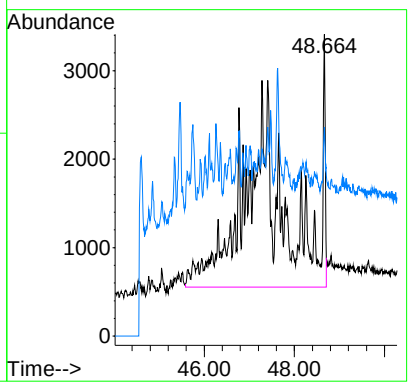


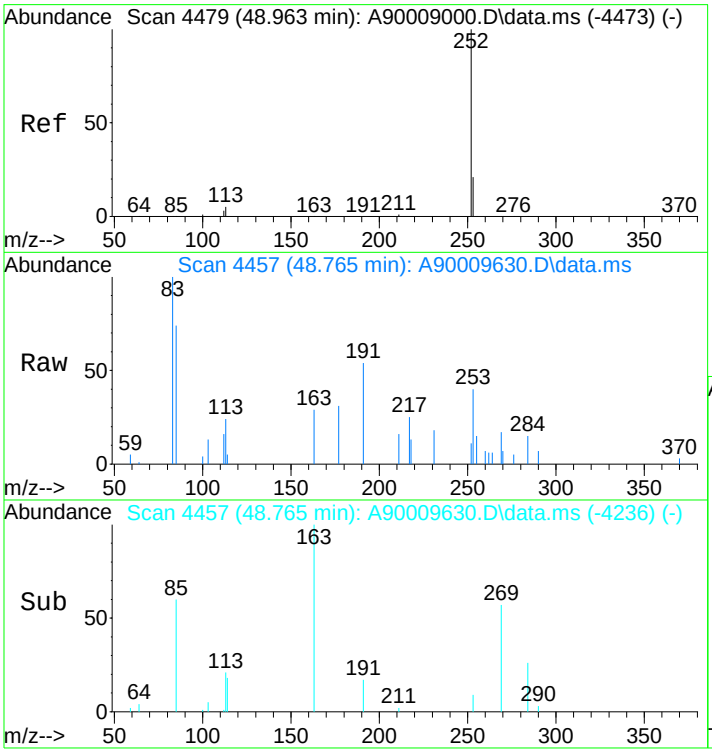


#81
C3-Chrysenes
Concen: 551.32 ng/mL m
RT: 48.664 min Scan# 4446
Delta R.T. -0.003 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:270 Resp: 131276

Ion	Ratio	Lower	Upper
270	100		
255	1.7	48.2	72.4#

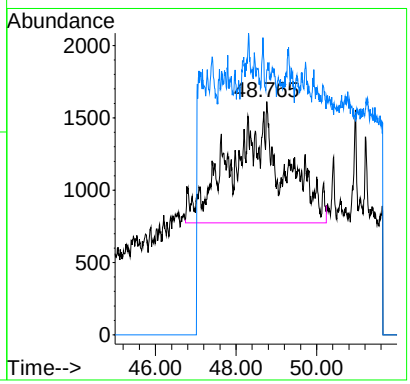


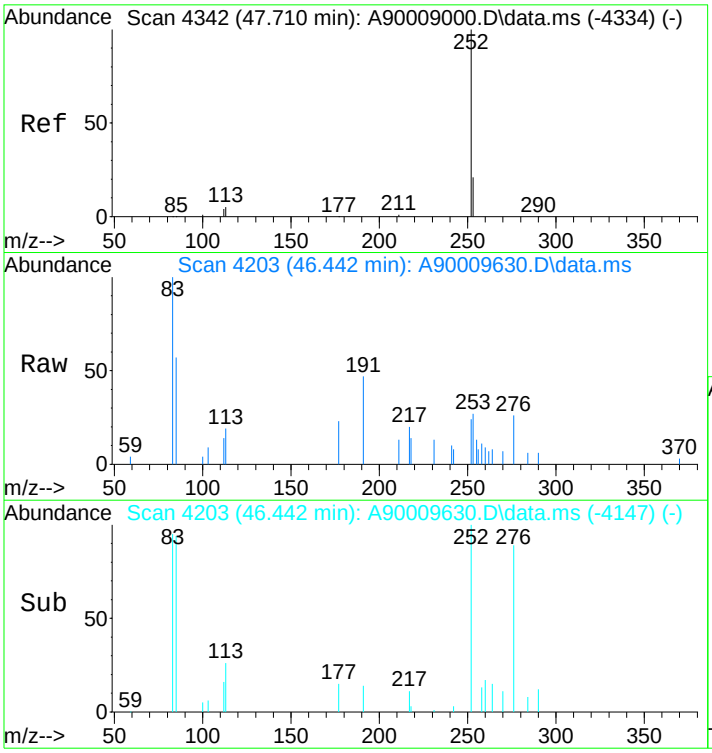


#82
C4-Chrysenes
Concen: 301.73 ng/mL m
RT: 48.765 min Scan# 4457
Delta R.T. -0.003 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:284 Resp: 71846

Ion	Ratio	Lower	Upper
284	100		
269	0.0	84.6	126.8#

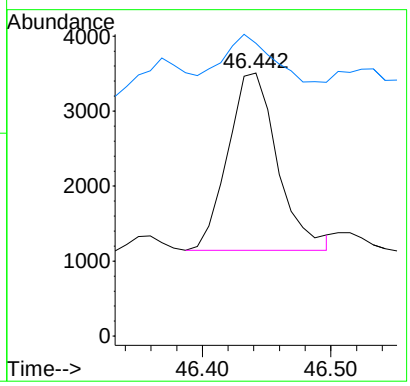


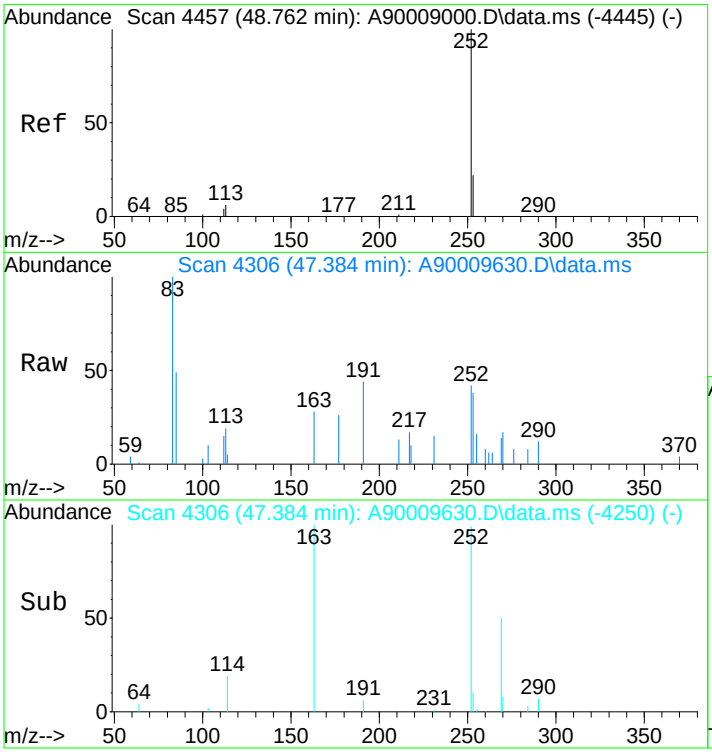


#84
Benzo[b]fluoranthene
Concen: 25.44 ng/mL
RT: 46.442 min Scan# 4203
Delta R.T. 0.009 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:252 Resp: 6387

Ion	Ratio	Lower	Upper
252	100		
253	24.6	23.0	34.4

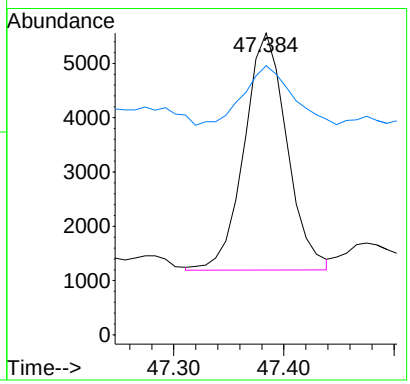


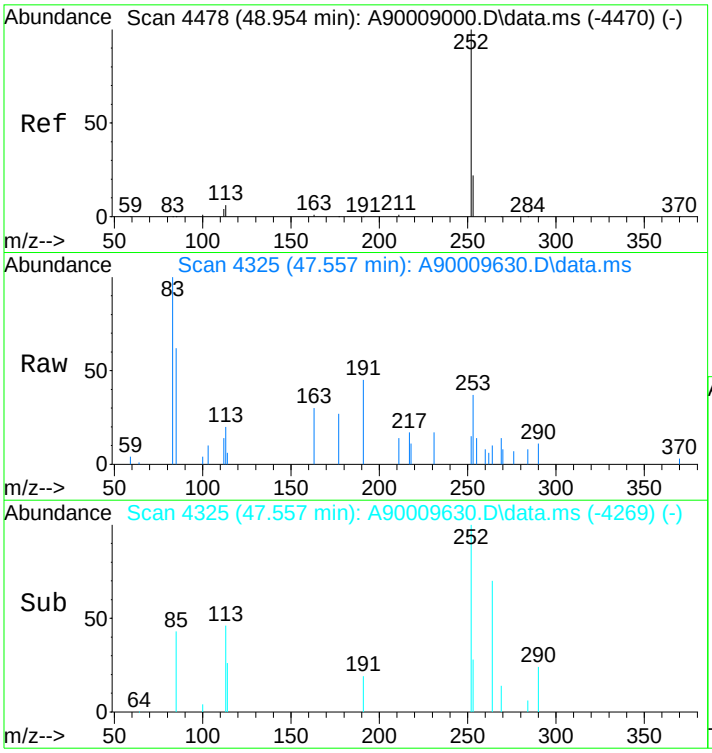


#87
Benzo[e]pyrene
Concen: 49.30 ng/mL
RT: 47.384 min Scan# 4306
Delta R.T. 0.009 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:252 Resp: 11752

Ion	Ratio	Lower	Upper
252	100		
253	31.9	24.6	36.8

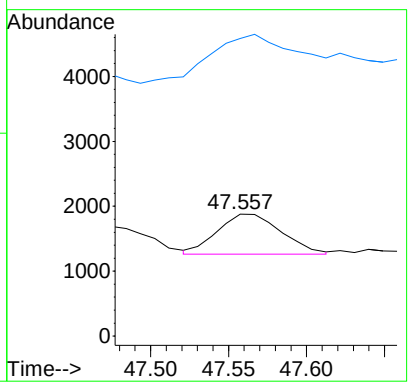


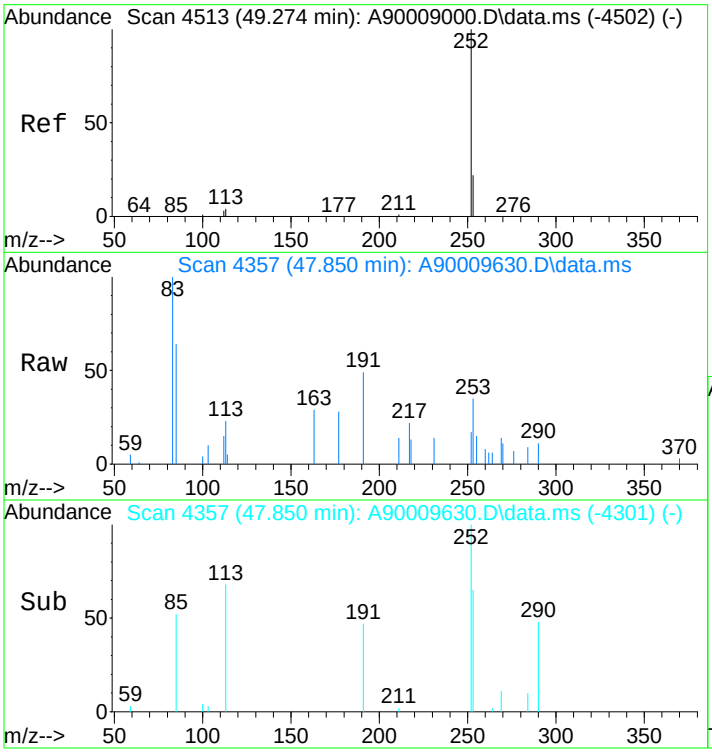


#89
Benzo[a]pyrene
Concen: 7.74 ng/mL m
RT: 47.557 min Scan# 4325
Delta R.T. 0.009 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:252 Resp: 1748

Ion	Ratio	Lower	Upper
252	100		
253	190.1	26.6	39.8#

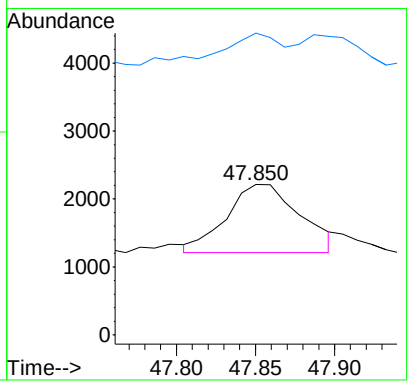


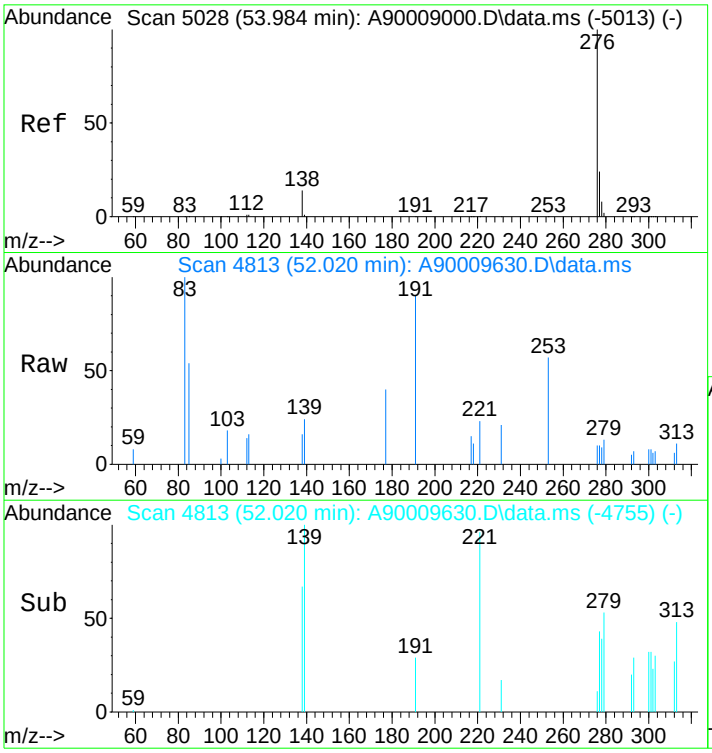


#90
Perylene
Concen: 13.48 ng/mL m
RT: 47.850 min Scan# 4357
Delta R.T. 0.009 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:252 Resp: 3248

Ion	Ratio	Lower	Upper
252	100		
253	39.4	26.4	39.6

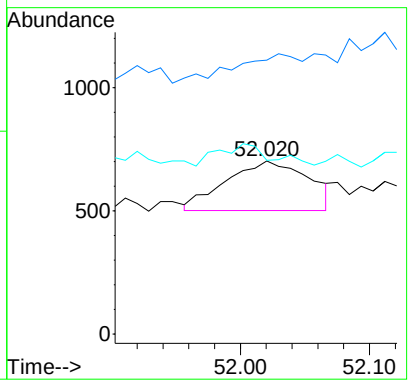


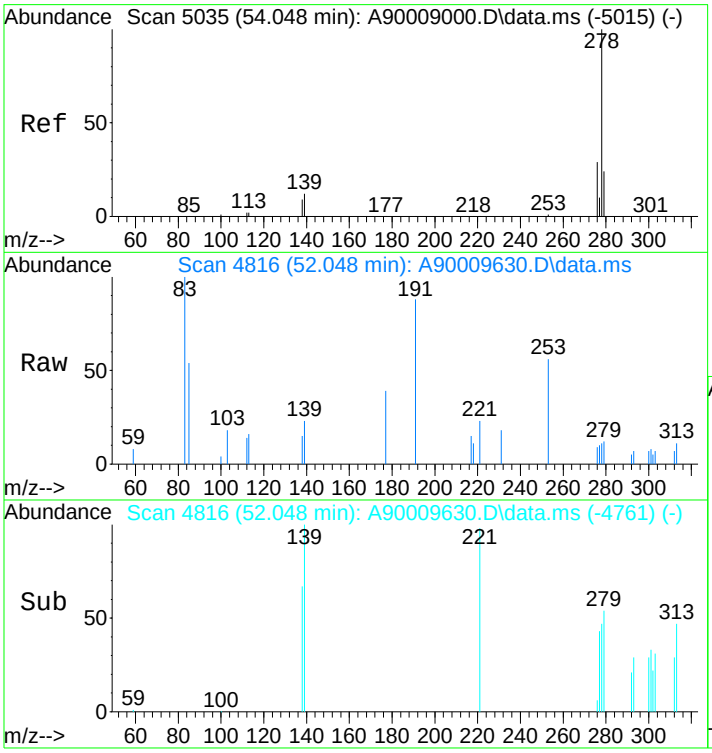


#91
Indeno[1,2,3-cd]pyrene
Concen: 3.58 ng/mL m
RT: 52.020 min Scan# 4813
Delta R.T. 0.028 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:276 Resp: 895

Ion	Ratio	Lower	Upper
276	100		
138	0.0	17.6	26.4#
277	0.0	20.6	30.8#

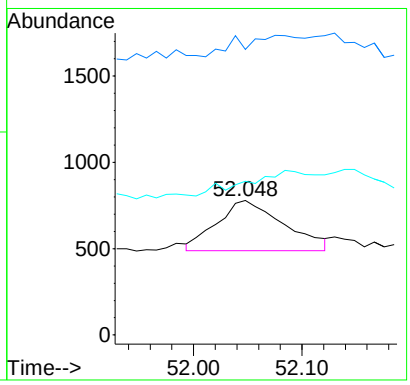


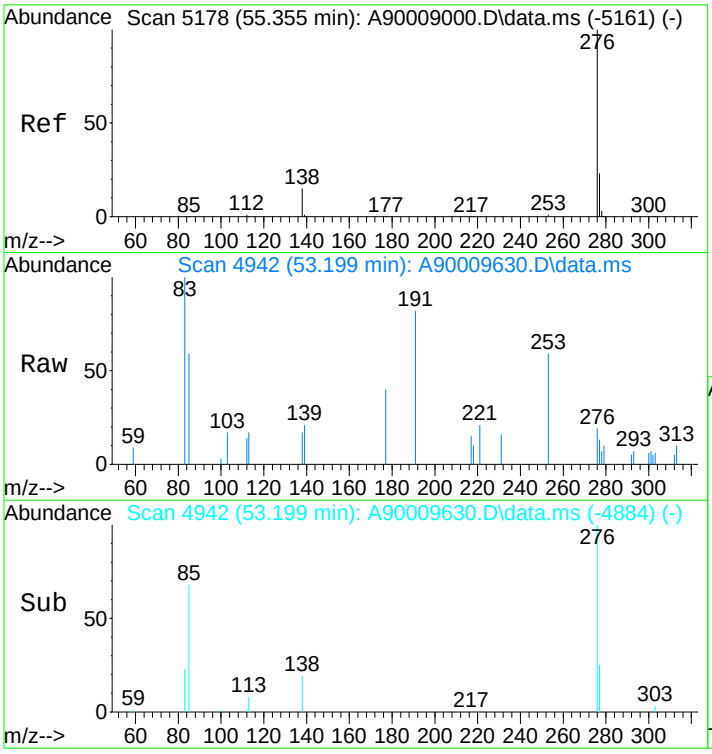


#92
Dibenz[ah]+[ac]anthracene
Concen: 5.08 ng/mL m
RT: 52.048 min Scan# 4816
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:278 Resp: 1251

Ion	Ratio	Lower	Upper
278	100		
139	287.3	12.9	19.3#
279	240.9	19.3	28.9#

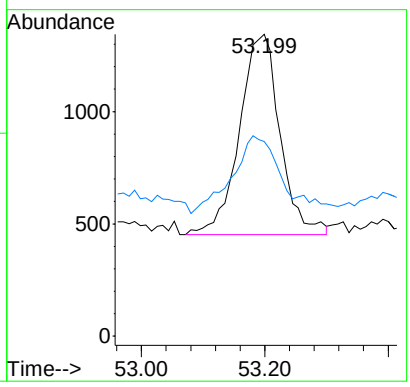


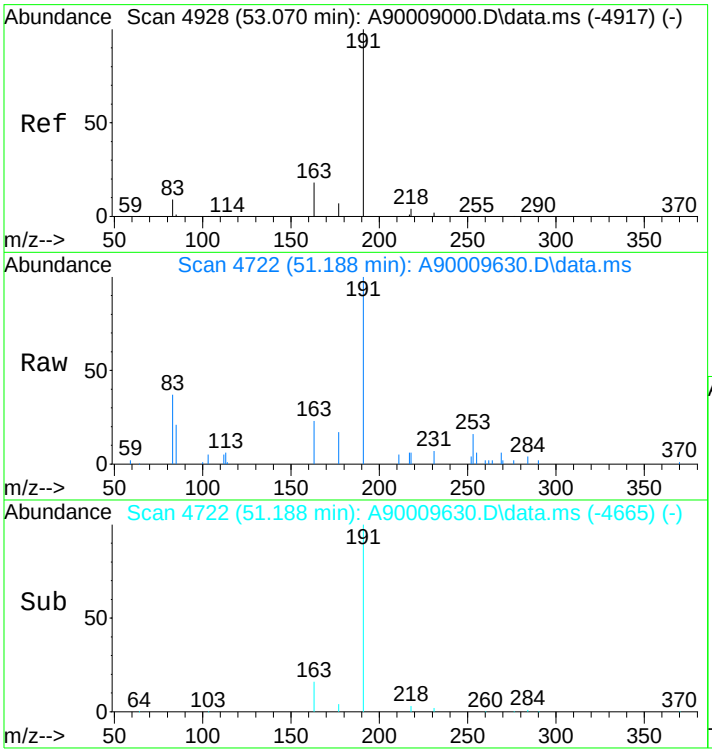


#93
Benzo[g,h,i]perylene
Concen: 16.61 ng/mL
RT: 53.199 min Scan# 4942
Delta R.T. 0.028 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:276 Resp: 4080

Ion	Ratio	Lower	Upper
276	100		
277	47.9	20.3	30.5#

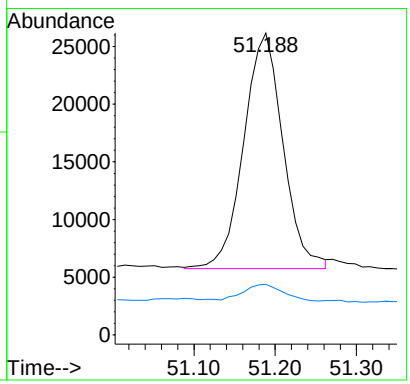


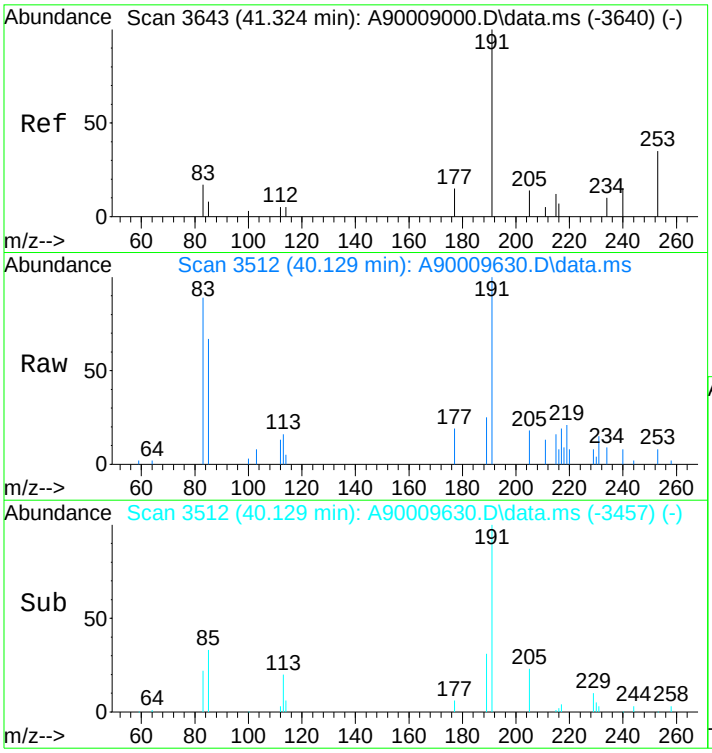


#94
Hopane (T19)
Concen: 739.92 ng/mL m
RT: 51.188 min Scan# 4722
Delta R.T. 0.018 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:191 Resp: 68661

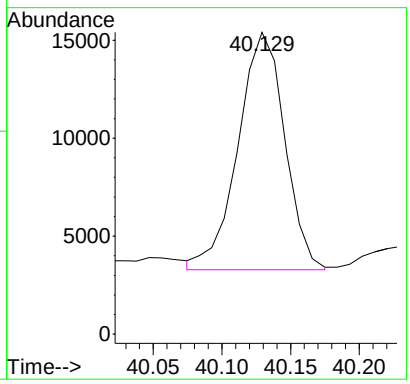
Ion	Ratio	Lower	Upper
191	100		
177	0.5	19.0	28.4#

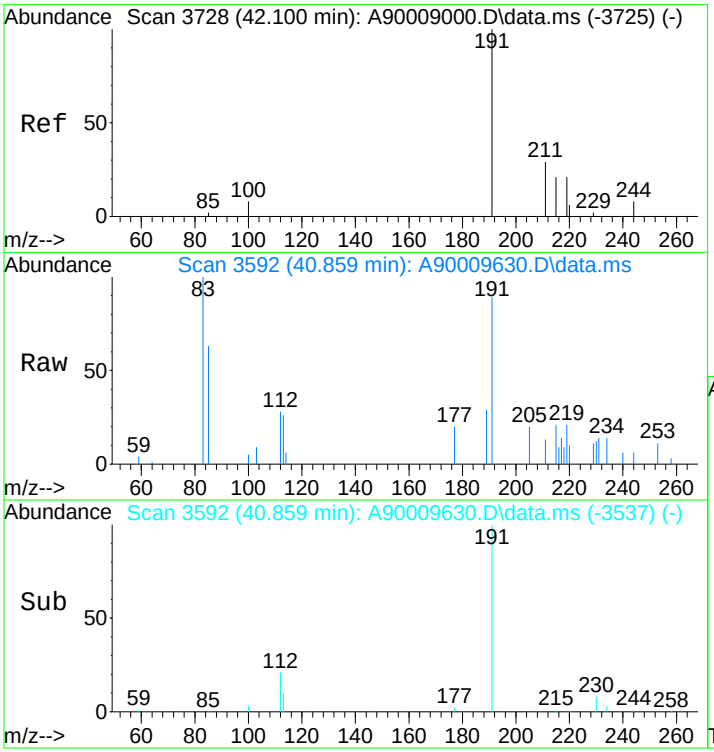




#96
C23 Tricyclic Terpane (T4)
Concen: 309.49 ng/ml m
RT: 40.129 min Scan# 3512
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

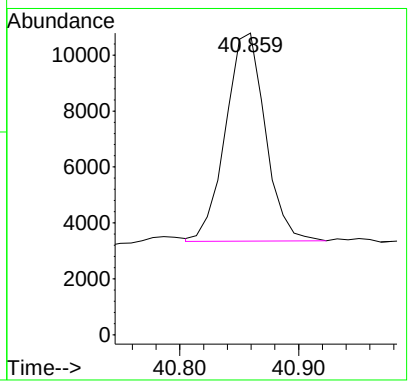
Tgt Ion:191 Resp: 28719

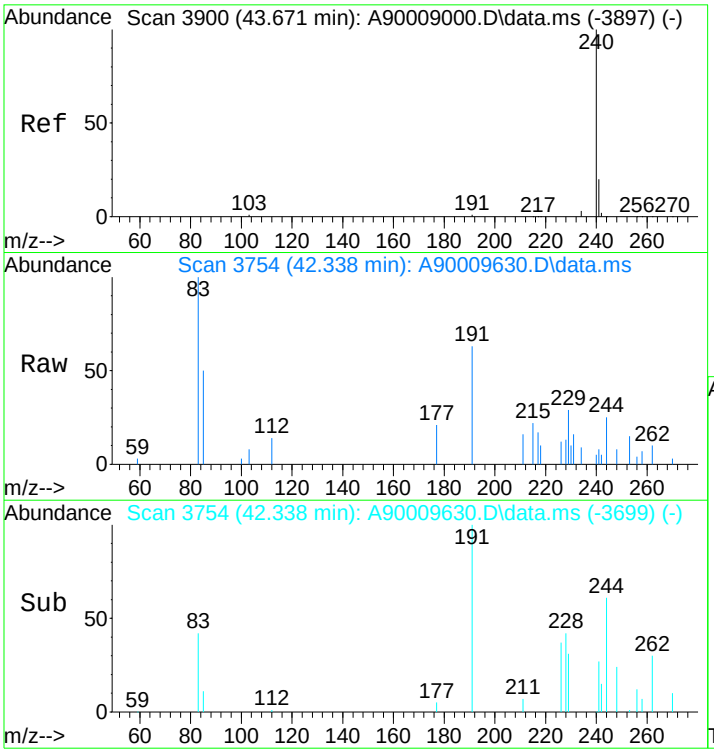




#97
C24 Tricyclic Terpane (T5)
Concen: 185.60 ng/ml
RT: 40.859 min Scan# 3592
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

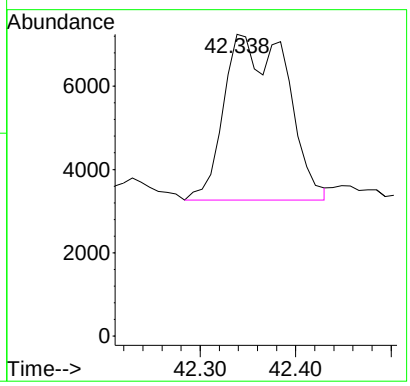
Tgt Ion:191 Resp: 17223

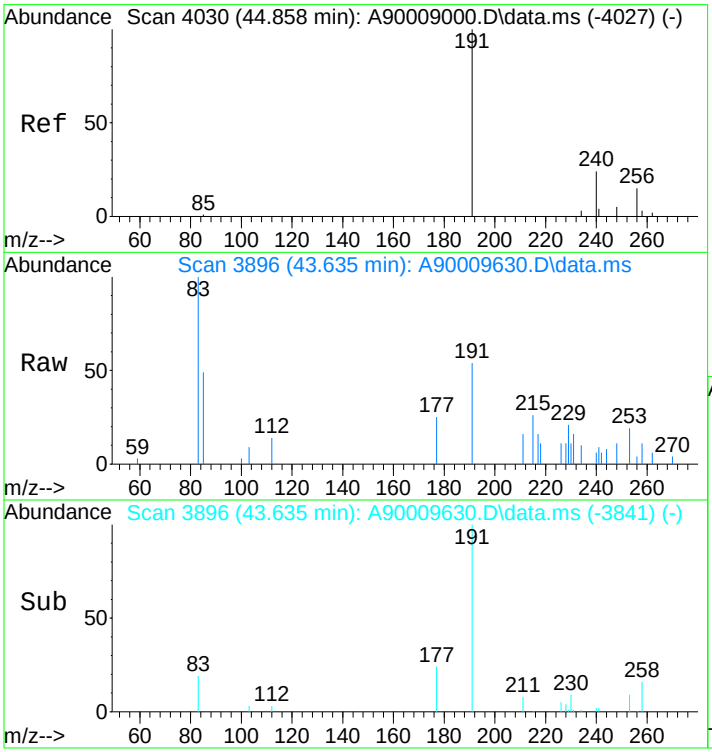




#98
C25 Tricyclic Terpane (T6)
Concen: 195.83 ng/ml m
RT: 42.338 min Scan# 3754
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

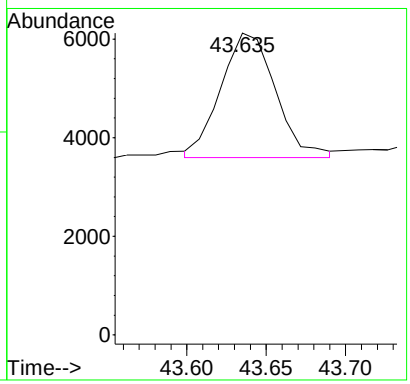
Tgt Ion:191 Resp: 18172

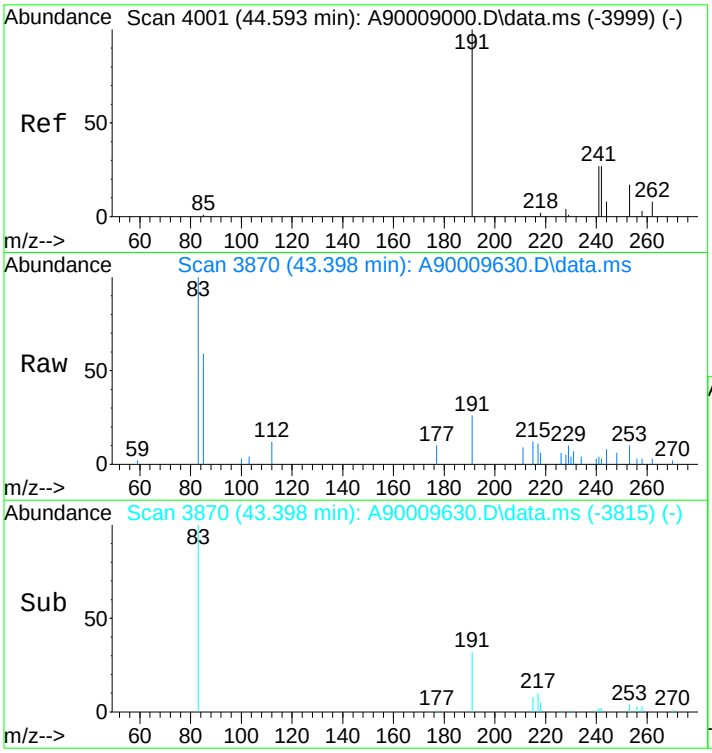




#99
C24 Tetracyclic Terpane (T6a)
Concen: 65.24 ng/ml m
RT: 43.635 min Scan# 3896
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

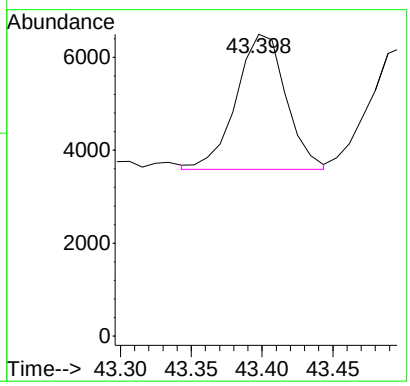
Tgt Ion:191 Resp: 6054

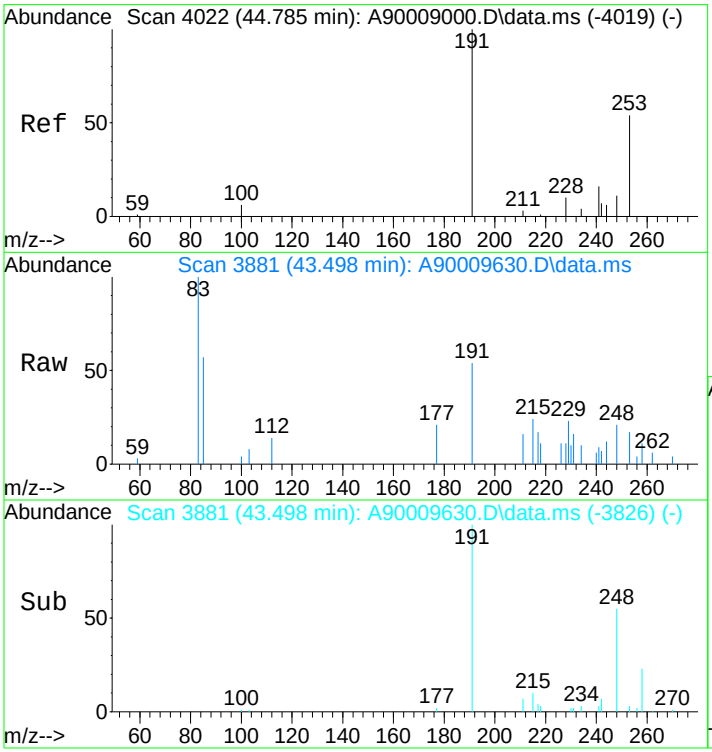




#100
C26 Tricyclic Terpane-22S (T6b)
Concen: 76.79 ng/ml m
RT: 43.398 min Scan# 3870
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

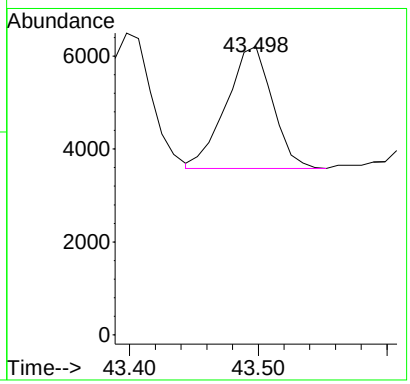
Tgt Ion:191 Resp: 7126

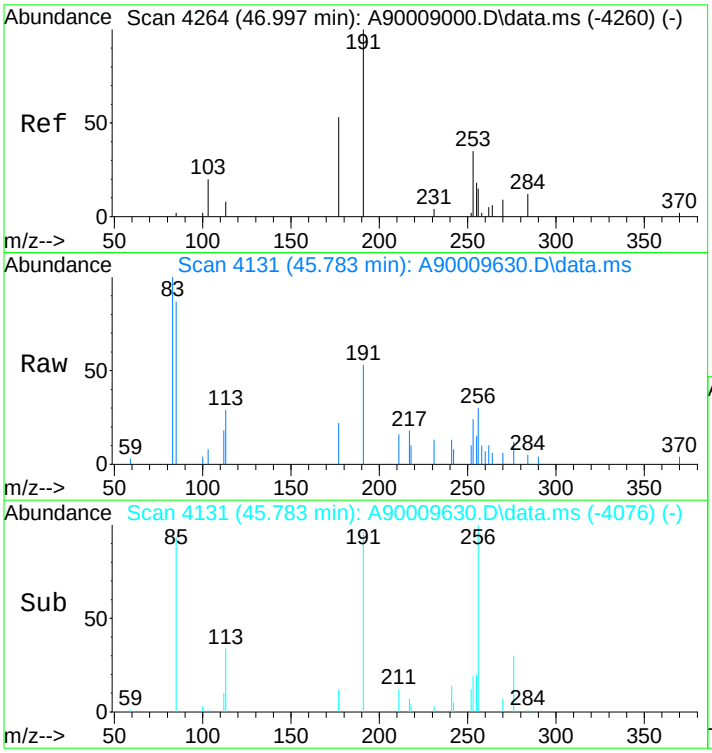




#101
C26 Tricyclic Terpane-22R (T6c)
Concen: 70.29 ng/ml
RT: 43.498 min Scan# 3881
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

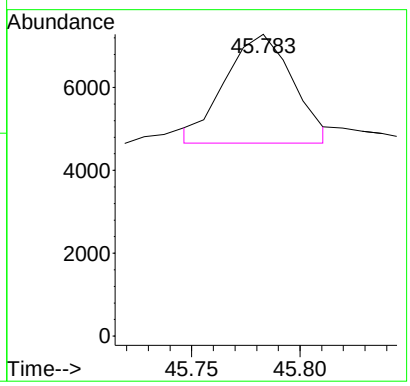
Tgt Ion:191 Resp: 6523

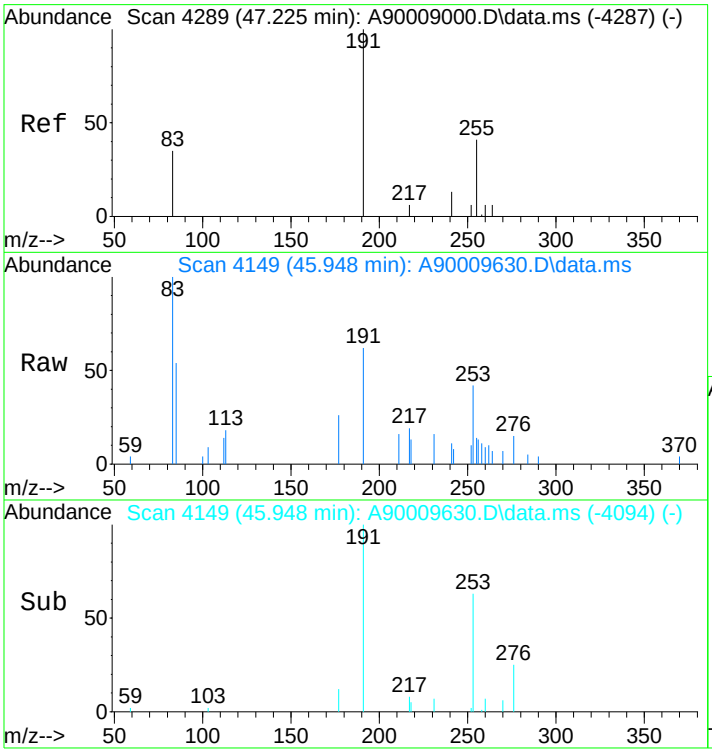




#102
C28 Tricyclic Terpane-22S (T7)
Concen: 61.38 ng/ml m
RT: 45.783 min Scan# 4131
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

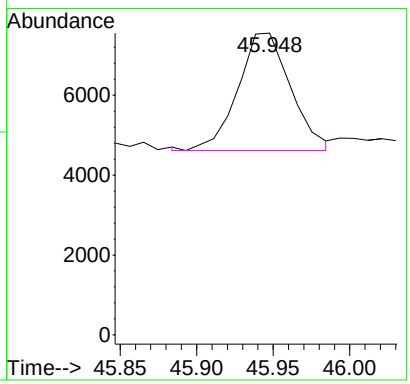
Tgt Ion:191 Resp: 5696

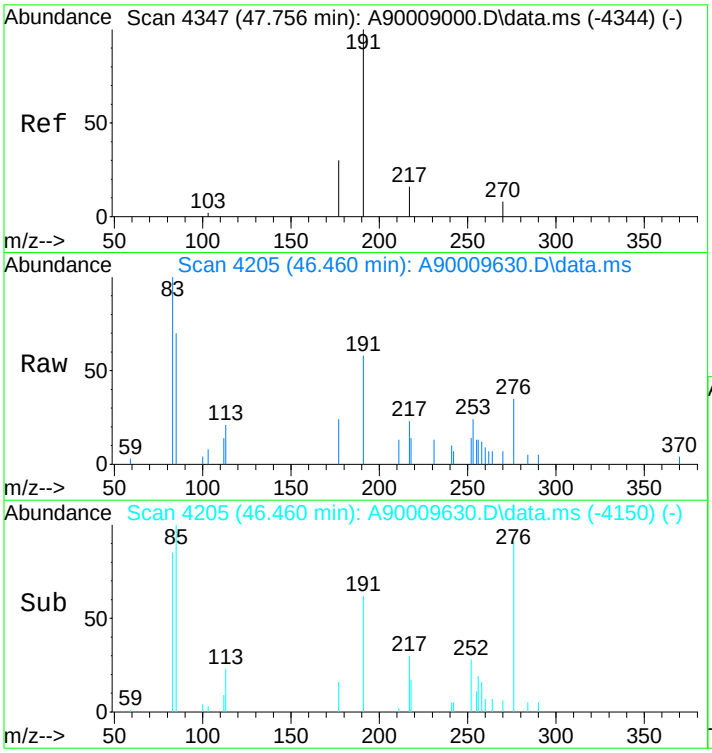




#103
C28 Tricyclic Terpane-22R (T8)
Concen: 75.64 ng/ml m
RT: 45.948 min Scan# 4149
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

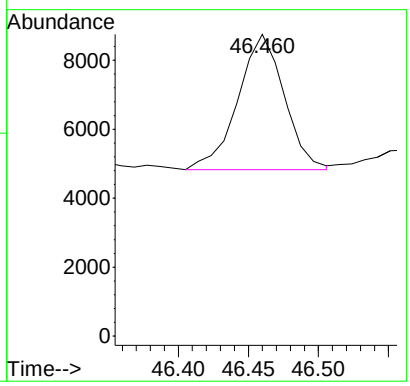
Tgt Ion:191 Resp: 7019

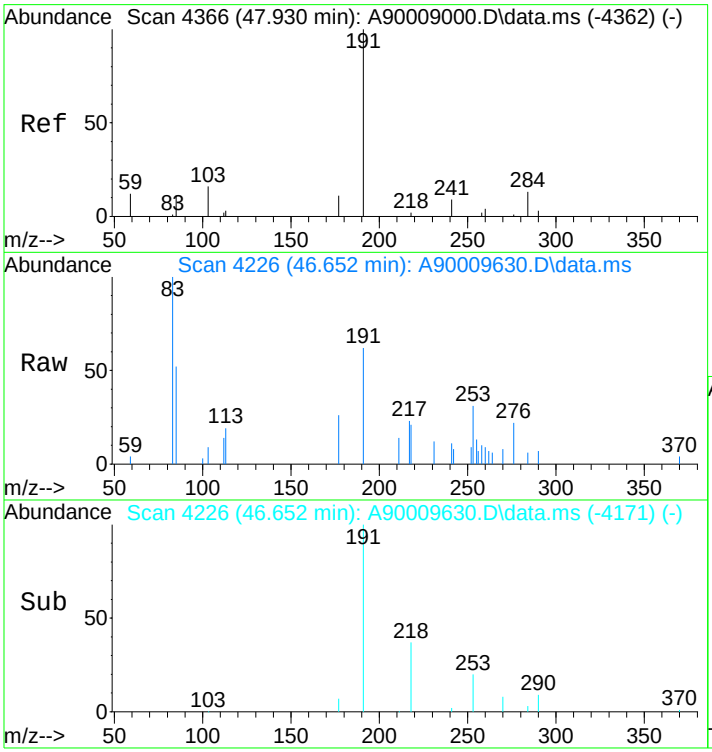




#104
C29 Tricyclic Terpane-22S (T9)
Concen: 97.57 ng/ml
RT: 46.460 min Scan# 4205
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

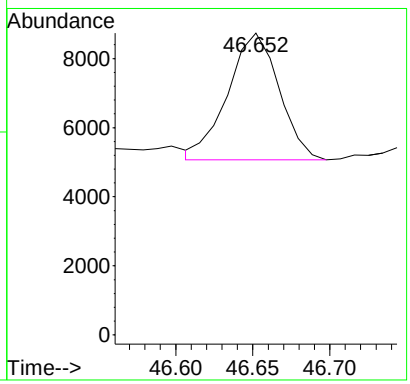
Tgt Ion:191 Resp: 9054

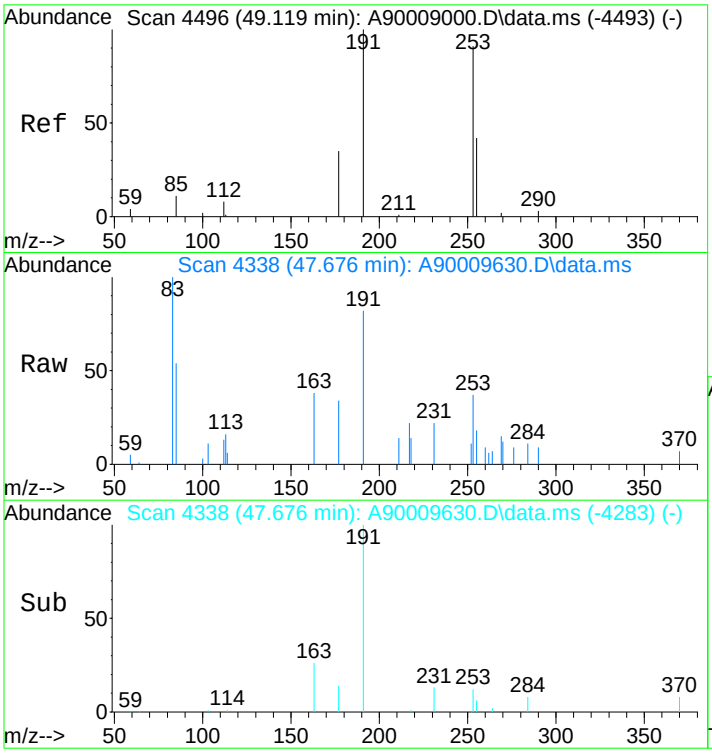




#105
C29 Tricyclic Terpane-22R (T10)
Concen: 91.89 ng/ml
RT: 46.652 min Scan# 4226
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

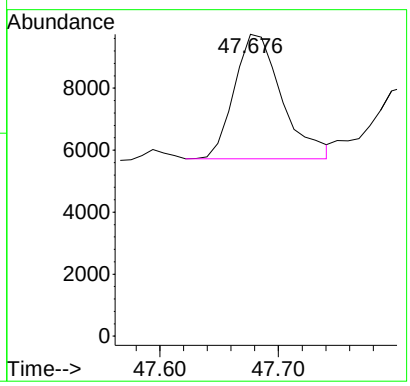
Tgt Ion:191 Resp: 8527

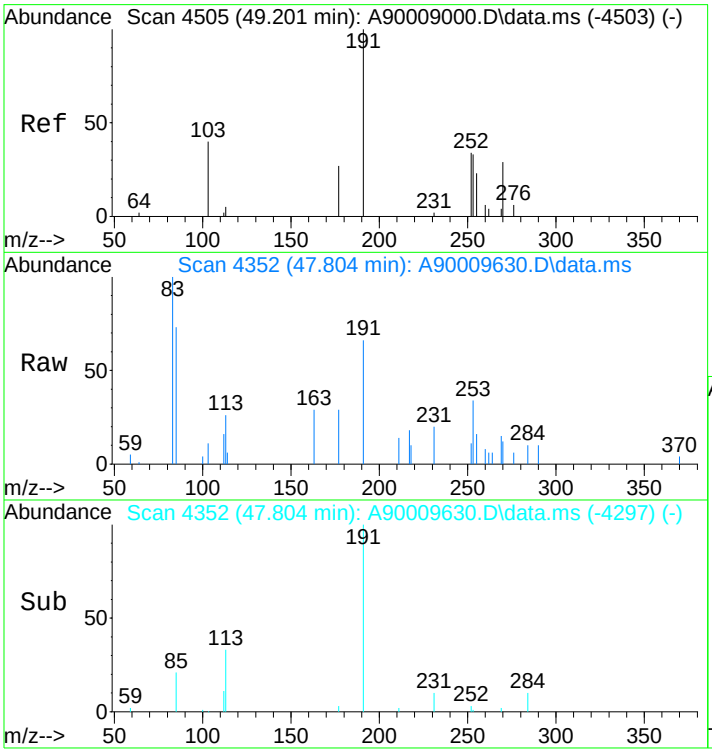




#106
18a-22,29,30-Trisnorneohopane-TS (T11)
Concen: 121.20 ng/ml
RT: 47.676 min Scan# 4338
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

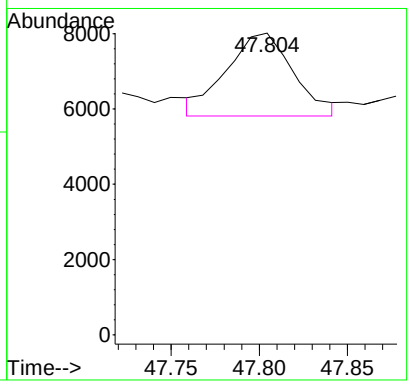
Tgt Ion:191 Resp: 11247

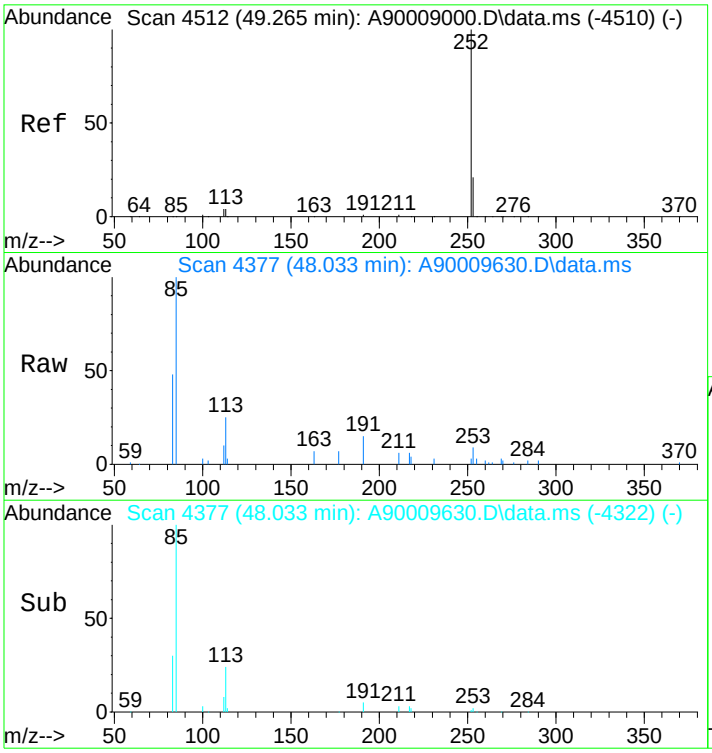




#107
C30 Tricyclic Terpane-22S
Concen: 62.82 ng/mL m
RT: 47.804 min Scan# 4352
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

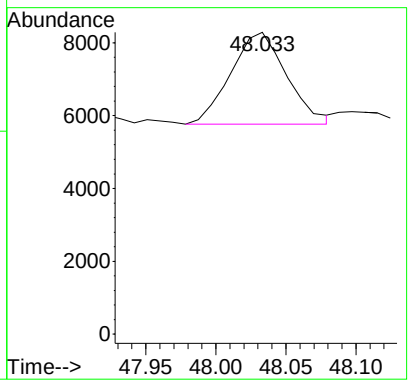
Tgt Ion:191 Resp: 5829

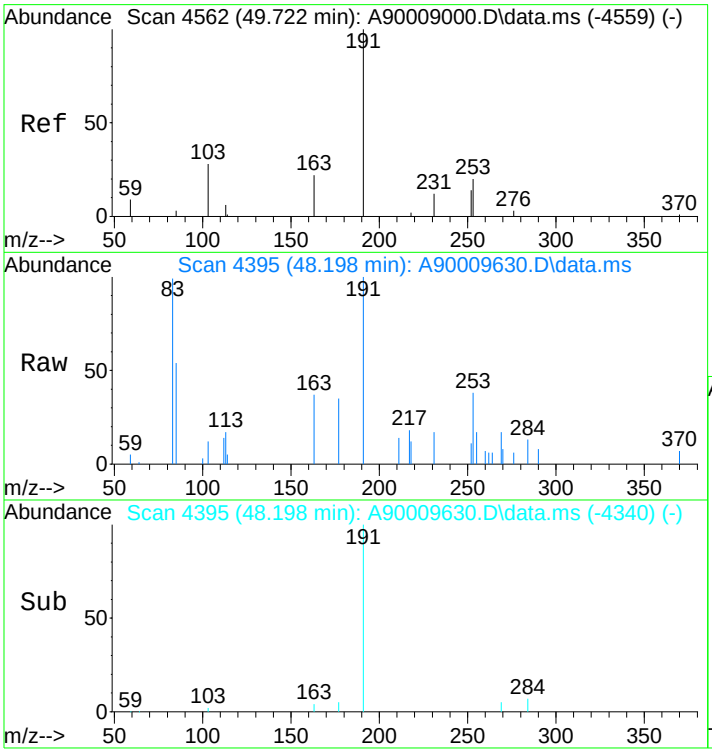




#108
C30 Tricyclic Terpane-22R
Concen: 75.41 ng/mL
RT: 48.033 min Scan# 4377
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

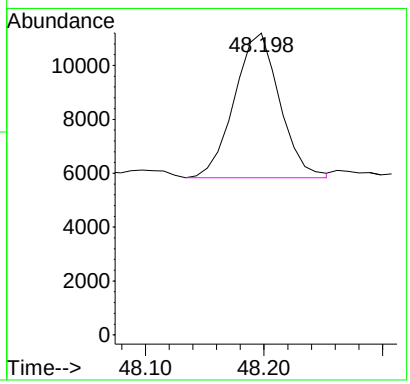
Tgt Ion:191 Resp: 6998

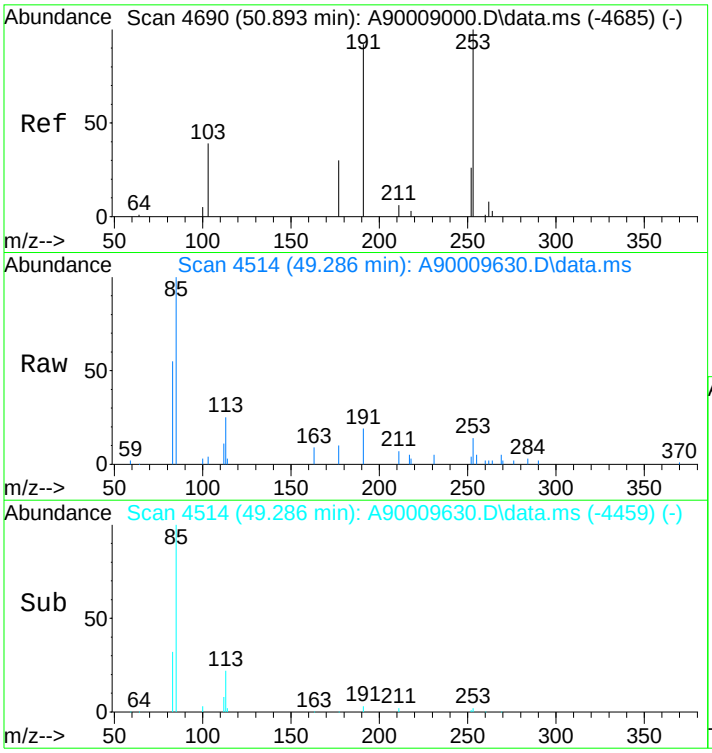




#109
17a(H)-22,29,30-Trisnorhopane-TM (T12)
Concen: 152.57 ng/ml
RT: 48.198 min Scan# 4395
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

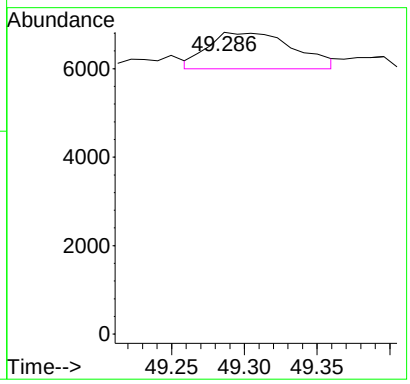
Tgt Ion:191 Resp: 14158

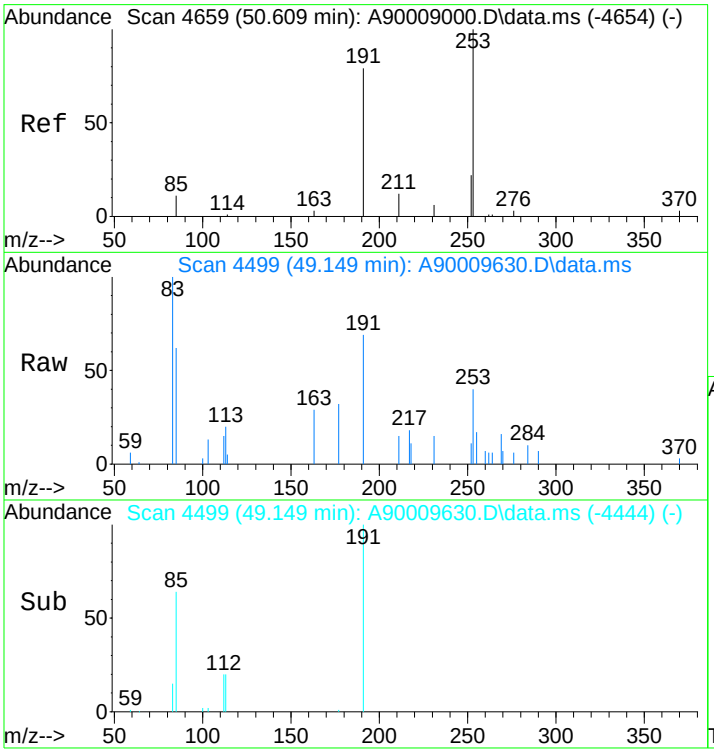




#110
17a/b,21b/a 28,30-Bisnorhopane (T14a)
Concen: 36.28 ng/ml m
RT: 49.286 min Scan# 4514
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

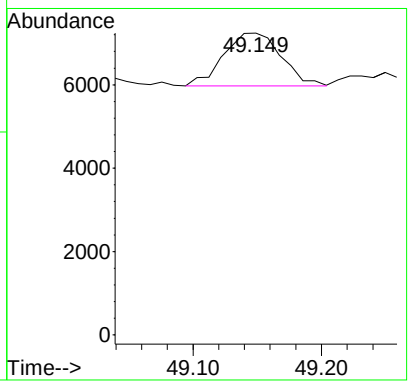
Tgt Ion:191 Resp: 3367

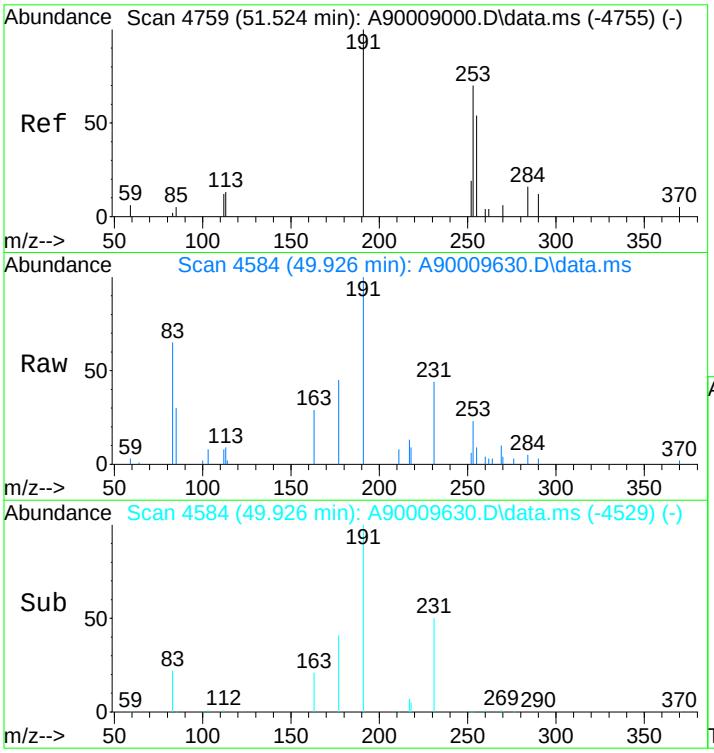




#111
17a(H),21b(H)-25-Norhopane (T14b)
Concen: 42.44 ng/ml
RT: 49.149 min Scan# 4499
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

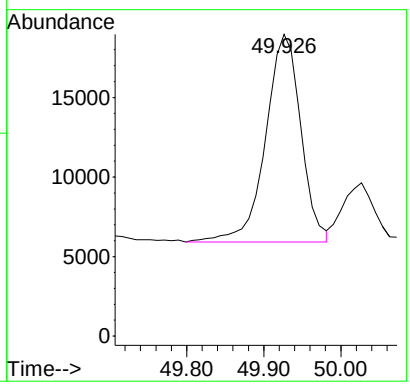
Tgt Ion:191 Resp: 3938

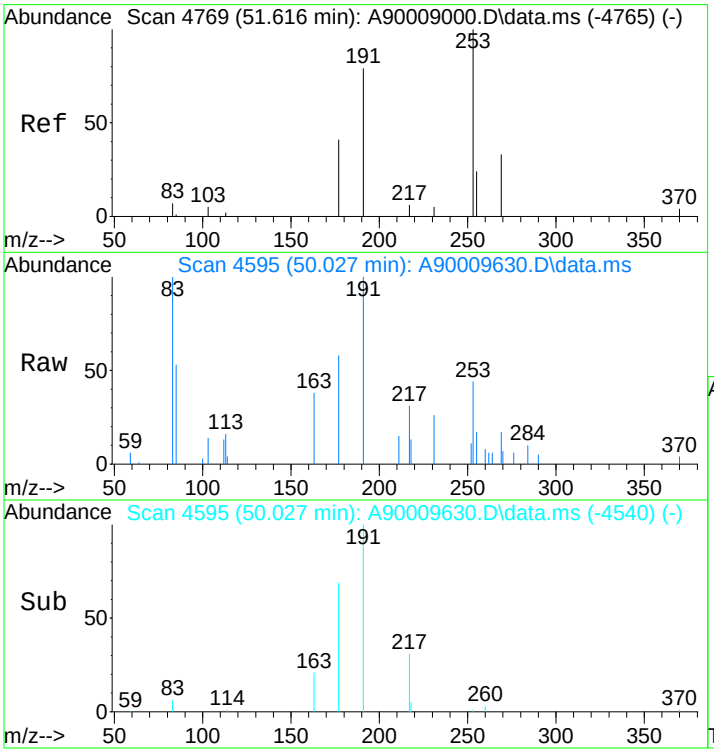




#112
30-Norhopane (T15)
Concen: 449.58 ng/ml
RT: 49.926 min Scan# 4584
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

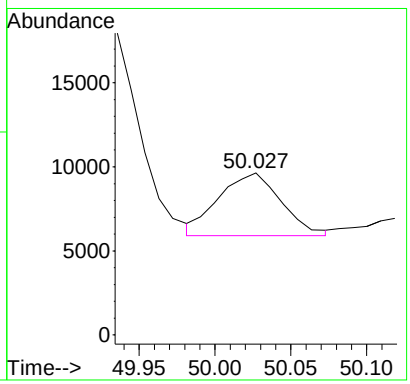
Tgt Ion:191 Resp: 41719

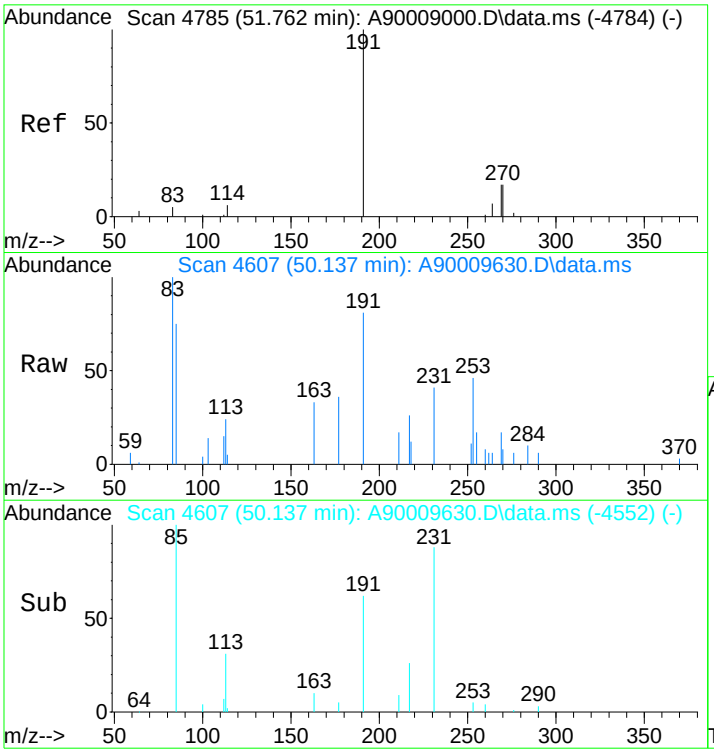




#113
18a(H)-30-Norneohopane-C29Ts (T16)
Concen: 115.39 ng/ml m
RT: 50.027 min Scan# 4595
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

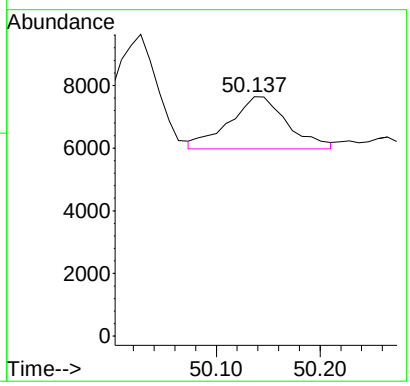
Tgt Ion:191 Resp: 10708

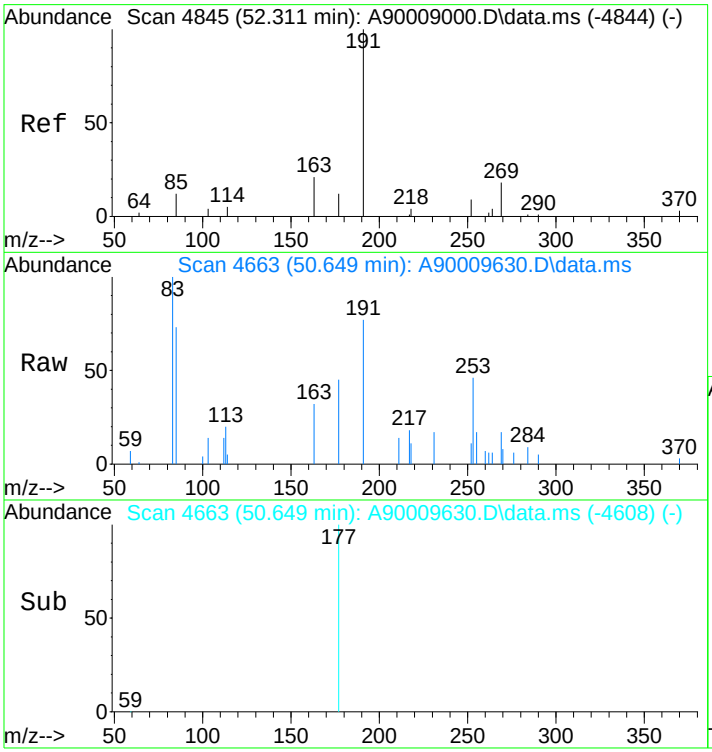




#114
17a(H)-Diahopane (X)
Concen: 69.91 ng/ml m
RT: 50.137 min Scan# 4607
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

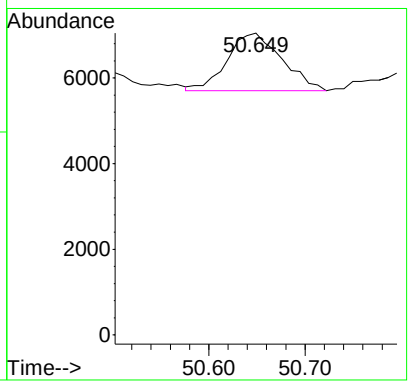
Tgt Ion:191 Resp: 6487

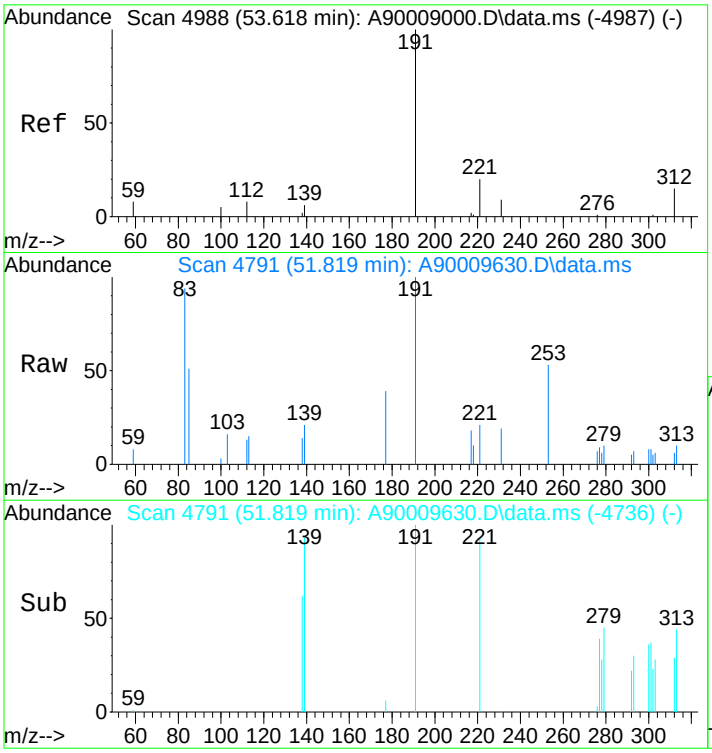




#115
30-Normoretane (T17)
Concen: 57.38 ng/ml
RT: 50.649 min Scan# 4663
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

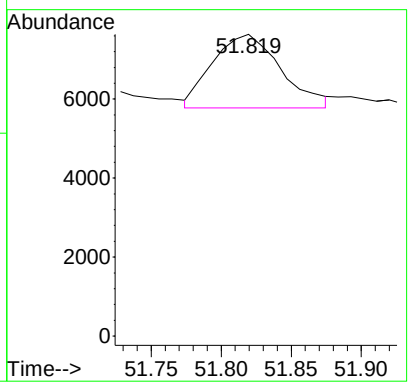
Tgt Ion:191 Resp: 5325

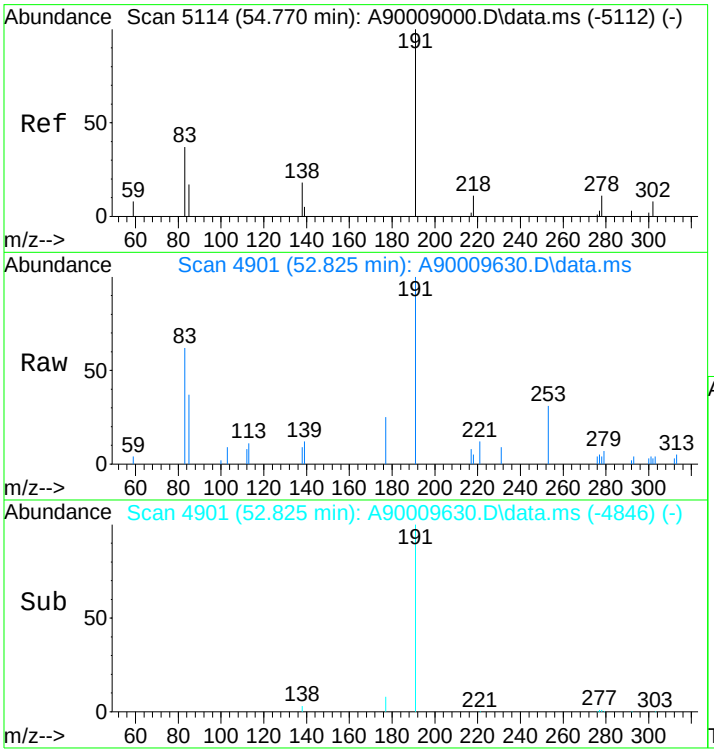




#117
Moretane (T20)
Concen: 68.24 ng/ml m
RT: 51.819 min Scan# 4791
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

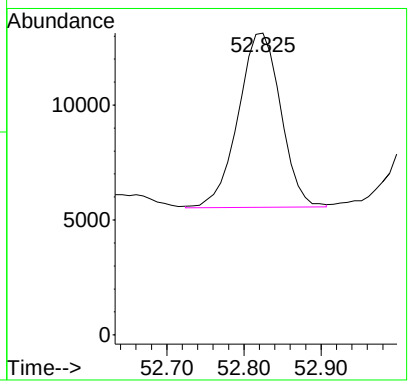
Tgt Ion:191 Resp: 6332

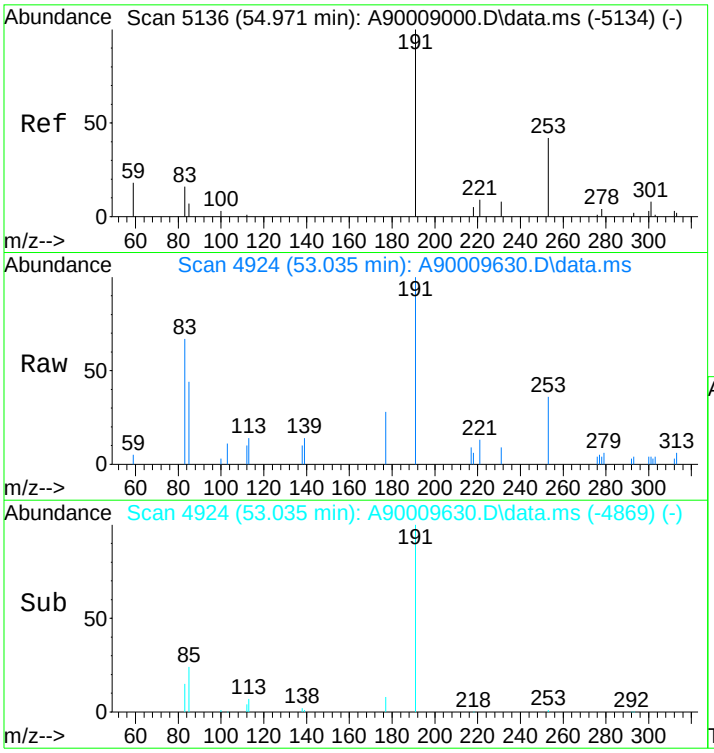




#118
30-Homohopane-22S (T21)
Concen: 313.97 ng/ml
RT: 52.825 min Scan# 4901
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

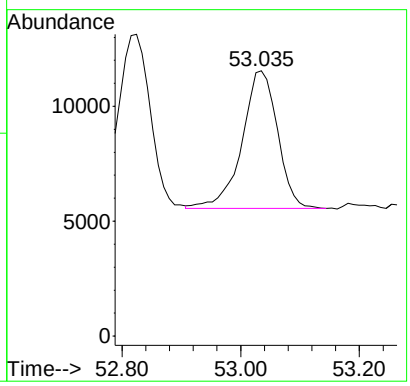
Tgt Ion:191 Resp: 29135

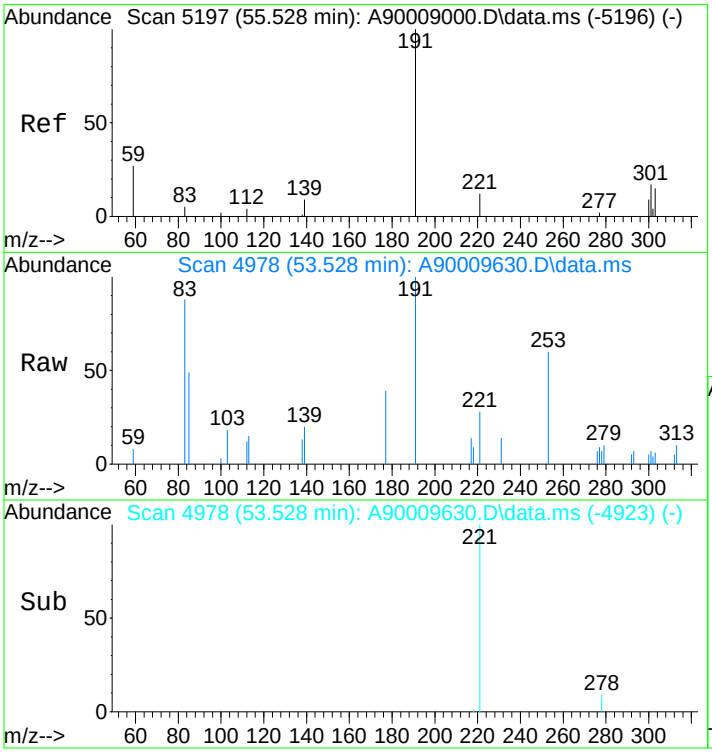




#119
30-Homohopane-22R (T22)
Concen: 267.28 ng/ml
RT: 53.035 min Scan# 4924
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

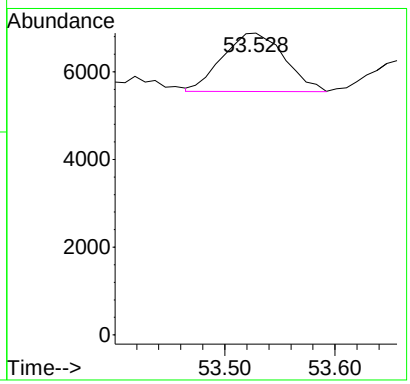
Tgt Ion:191 Resp: 24802

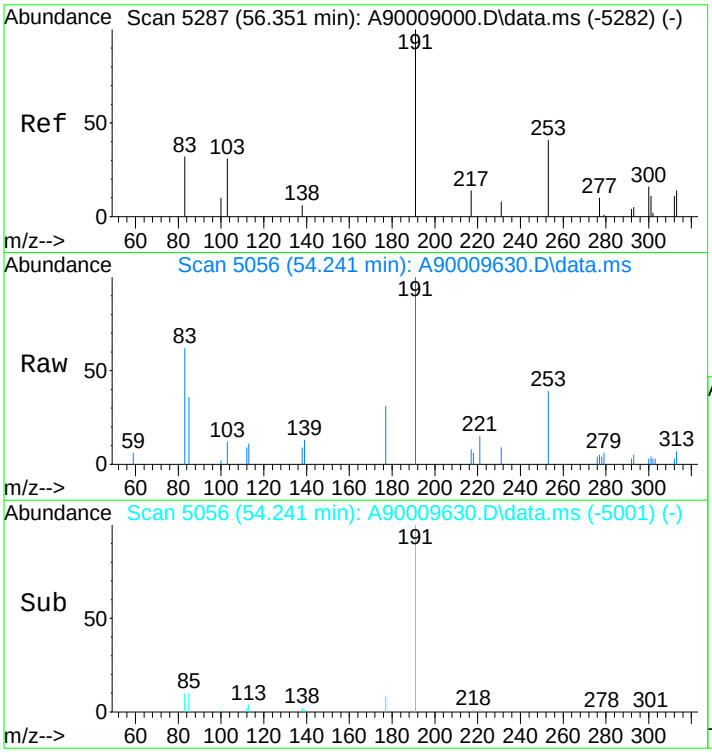




#120
Gammacerane/C32-diahopane
Concen: 56.12 ng/mL
RT: 53.528 min Scan# 4978
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

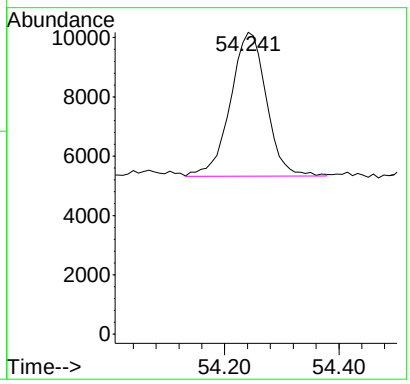
Tgt Ion:191 Resp: 5208

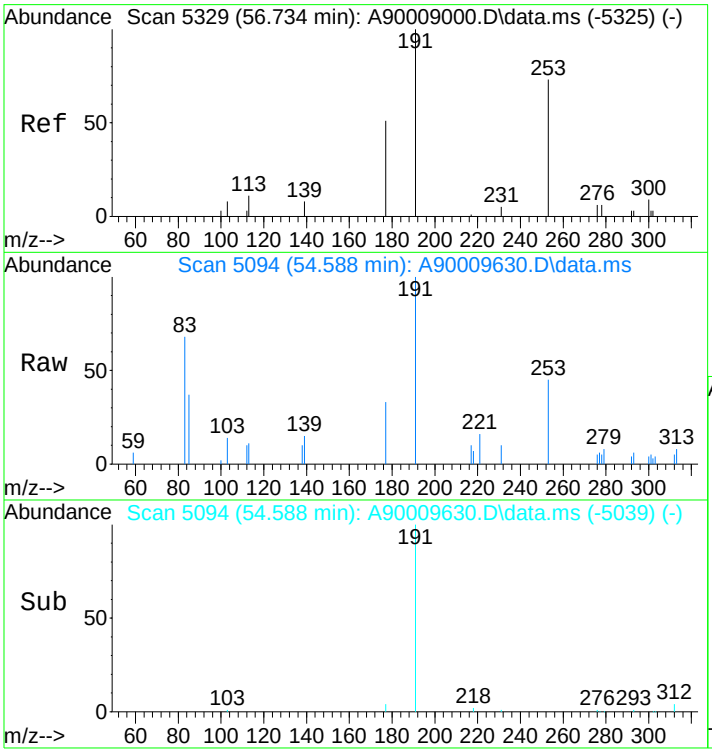




#121
30,31-Bishomohopane-22S (T26)
Concen: 228.44 ng/ml
RT: 54.241 min Scan# 5056
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

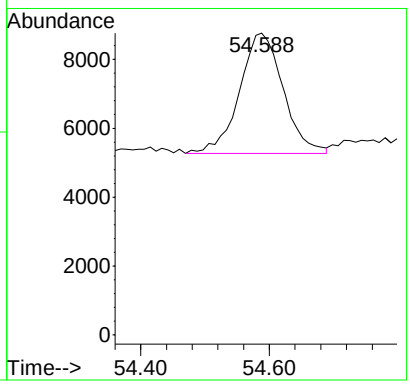
Tgt Ion:191 Resp: 21198

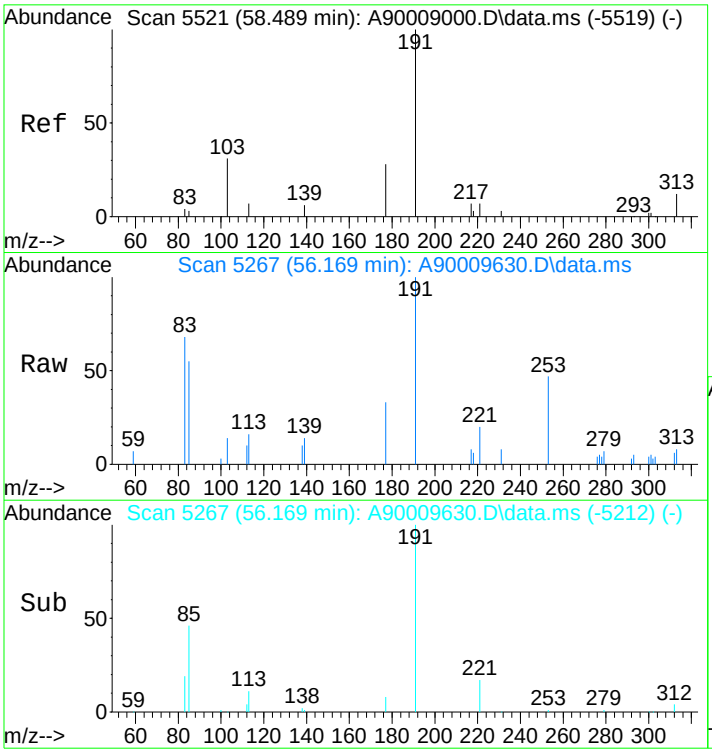




#122
30,31-Bishomohopane-22R (T27)
Concen: 178.09 ng/ml
RT: 54.588 min Scan# 5094
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

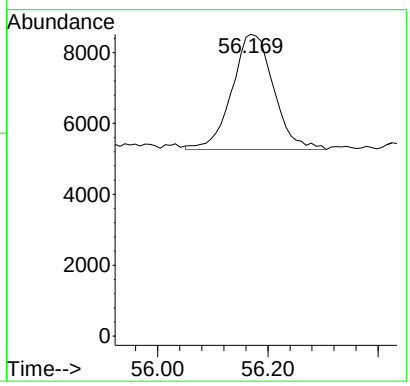
Tgt Ion:191 Resp: 16526

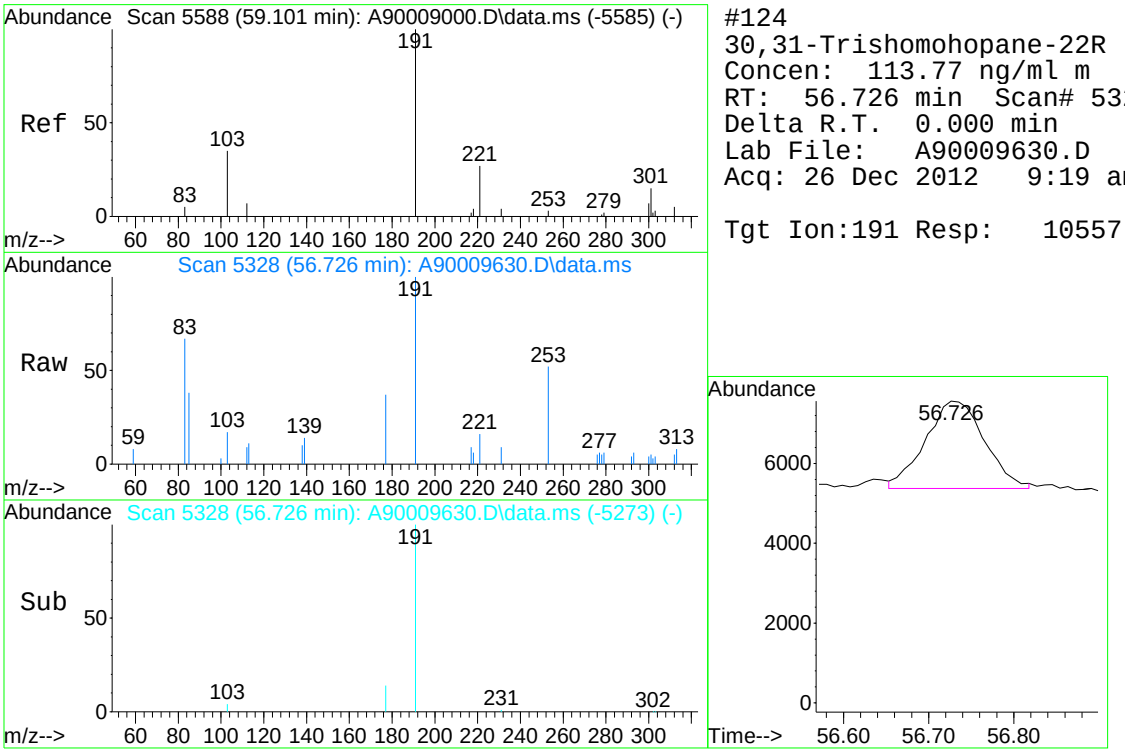




#123
30,31-Trishomohopane-22S (T30)
Concen: 183.31 ng/ml
RT: 56.169 min Scan# 5267
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

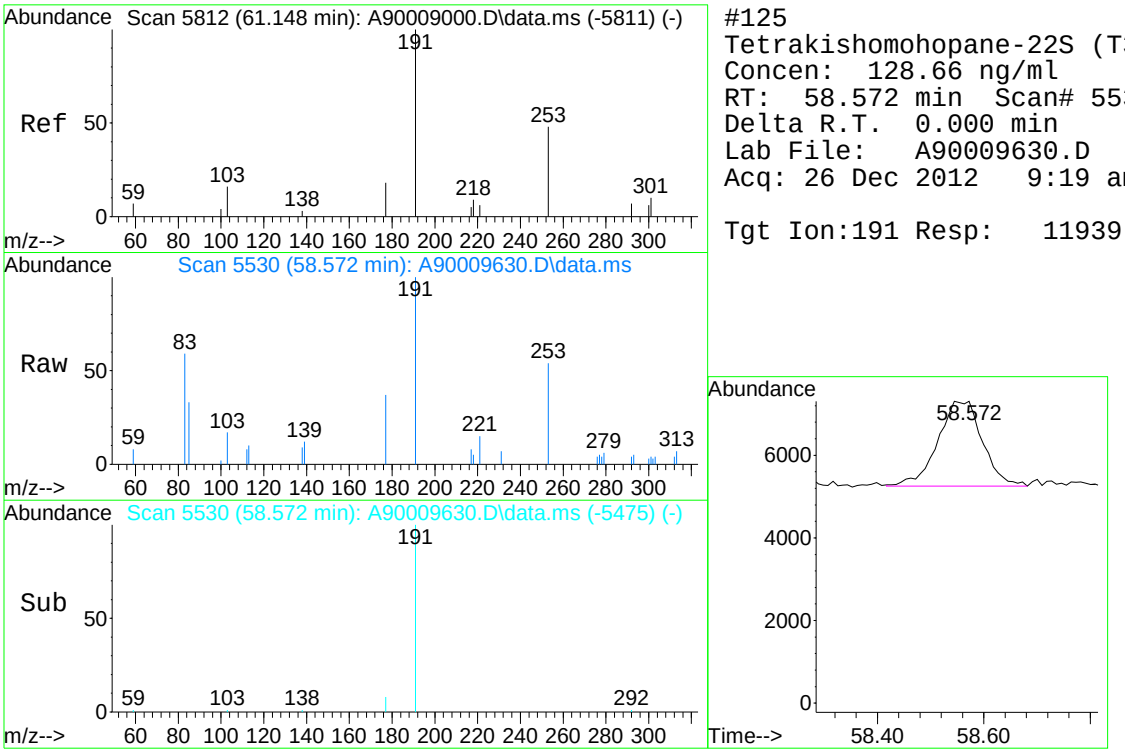
Tgt Ion:191 Resp: 17010





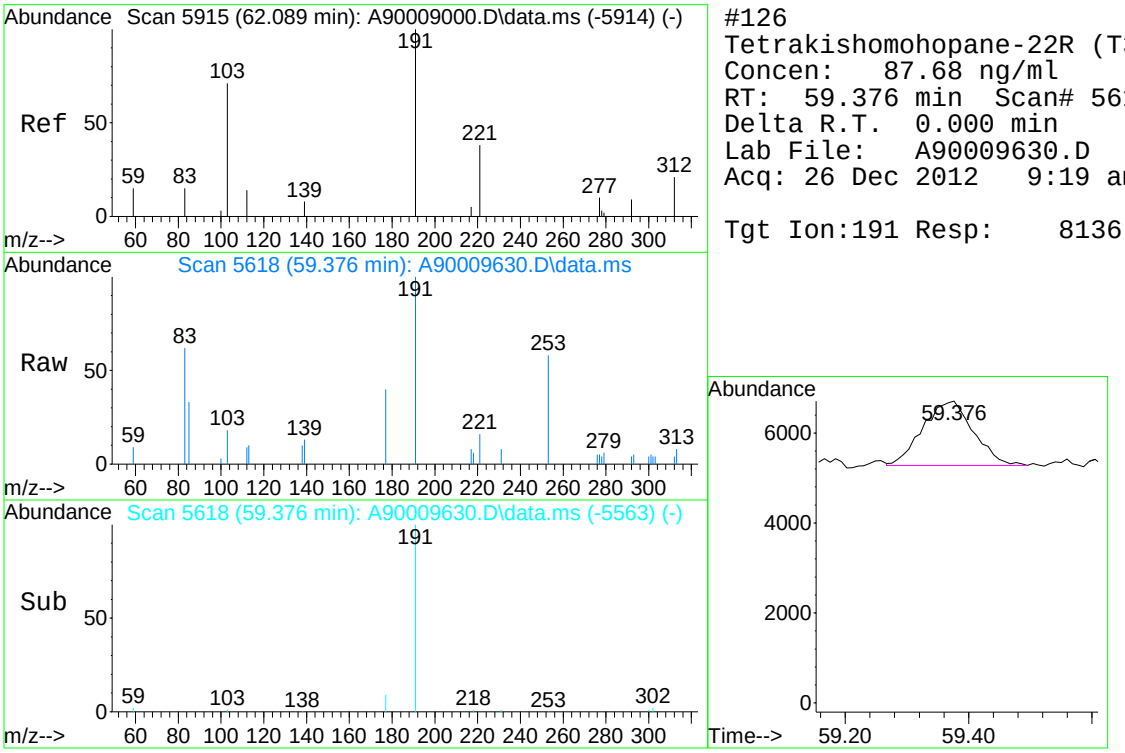
#124
30,31-Trishomohopane-22R (T31)
Concen: 113.77 ng/ml m
RT: 56.726 min Scan# 5328
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:191 Resp: 10557



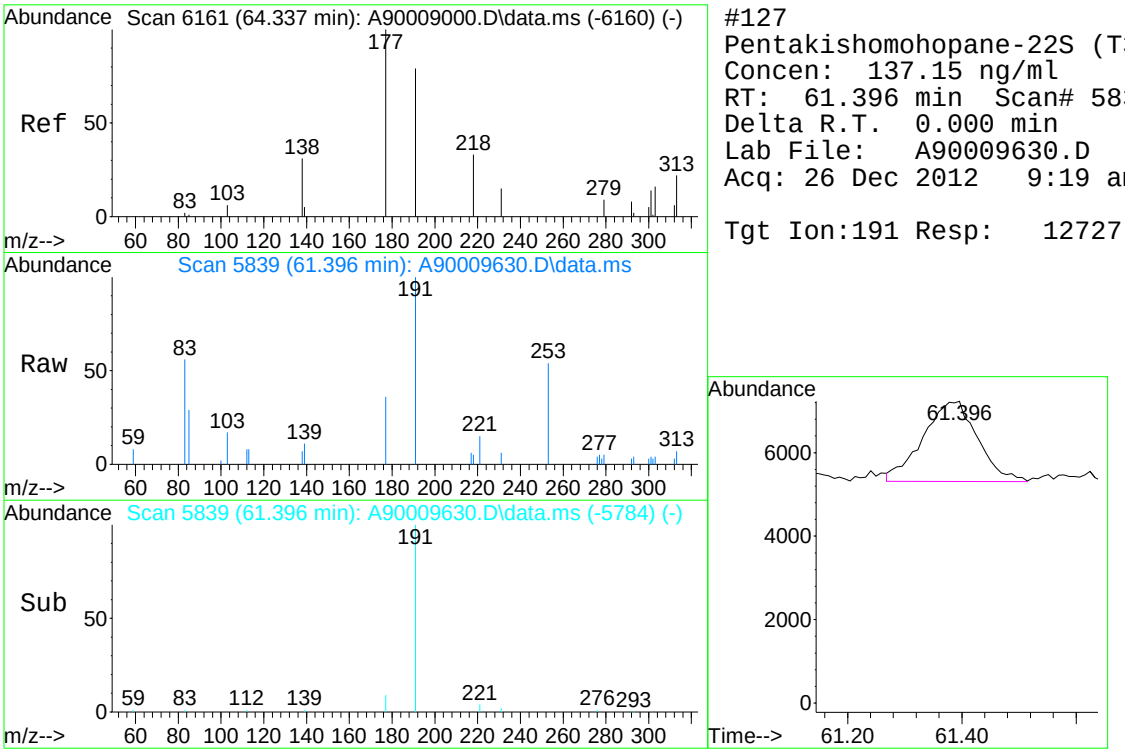
#125
Tetrakishomohopane-22S (T32)
Concen: 128.66 ng/ml
RT: 58.572 min Scan# 5530
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:191 Resp: 11939



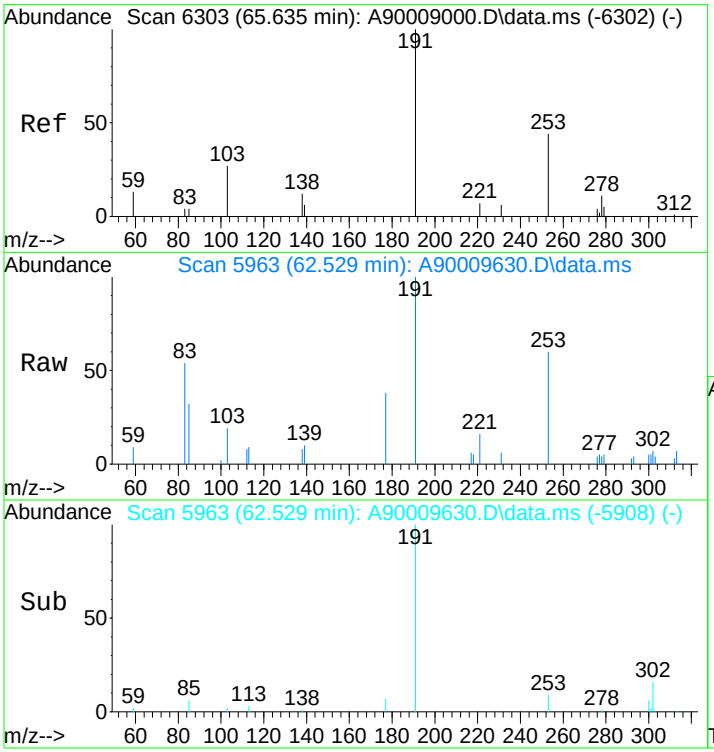
#126
Tetrakishomohopane-22R (T33)
Concen: 87.68 ng/ml
RT: 59.376 min Scan# 5618
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:191 Resp: 8136



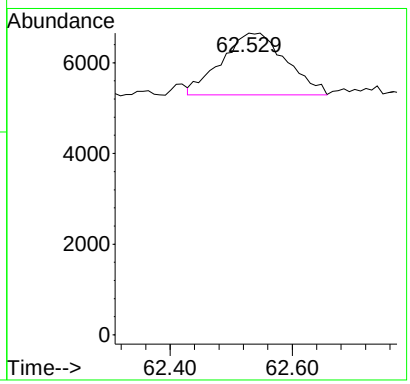
#127
Pentakishomohopane-22S (T34)
Concen: 137.15 ng/ml
RT: 61.396 min Scan# 5839
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

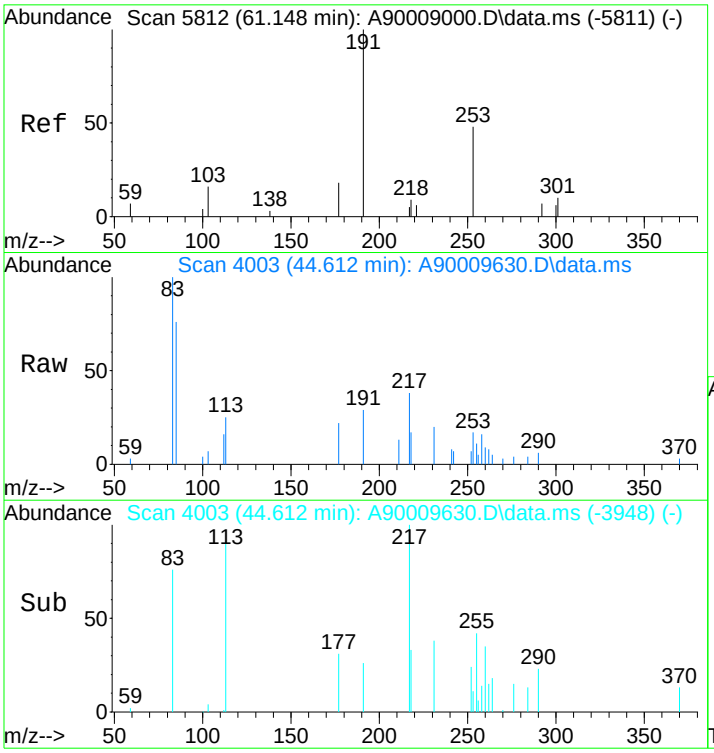
Tgt Ion:191 Resp: 12727



#128
Pentakishomohopane-22R (T35)
Concen: 108.03 ng/ml m
RT: 62.529 min Scan# 5963
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

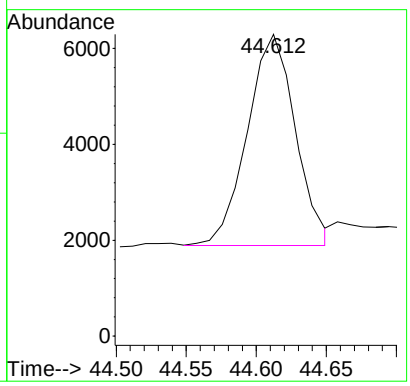
Tgt Ion:191 Resp: 10025

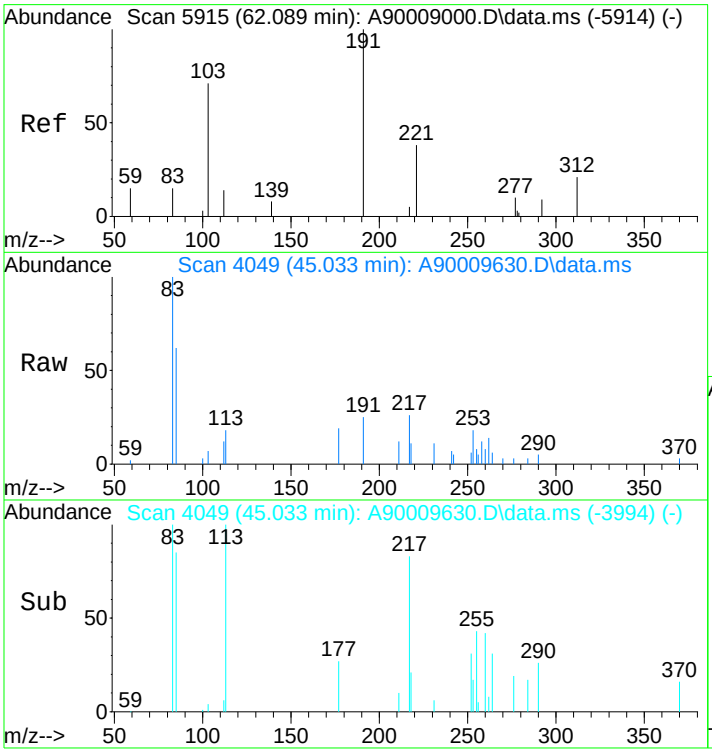




#130
13b(H),17a(H)-20S-Diacholestane (S4)
Concen: 237.51 ng/ml m
RT: 44.612 min Scan# 4003
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

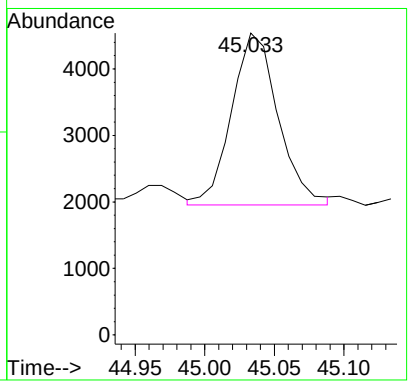
Tgt Ion:217 Resp: 10524

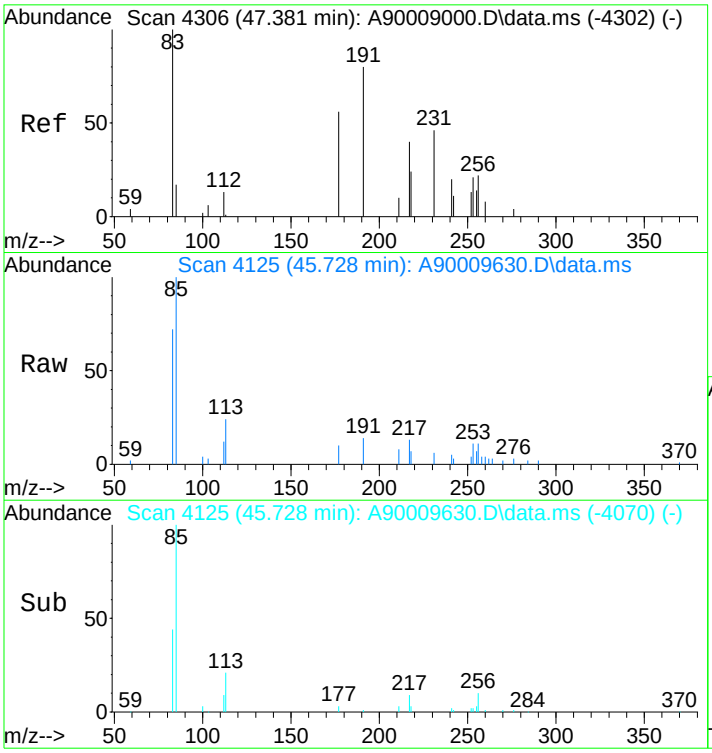




#131
13b(H),17a(H)-20R-Diacholestane (S5)
Concen: 135.84 ng/ml m
RT: 45.033 min Scan# 4049
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

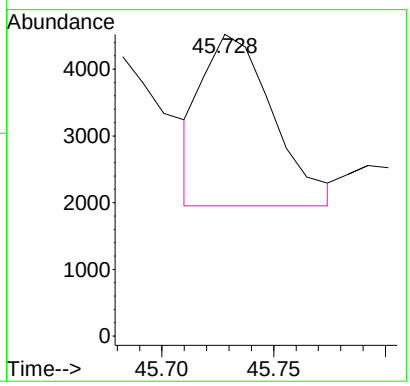
Tgt Ion:217 Resp: 6019

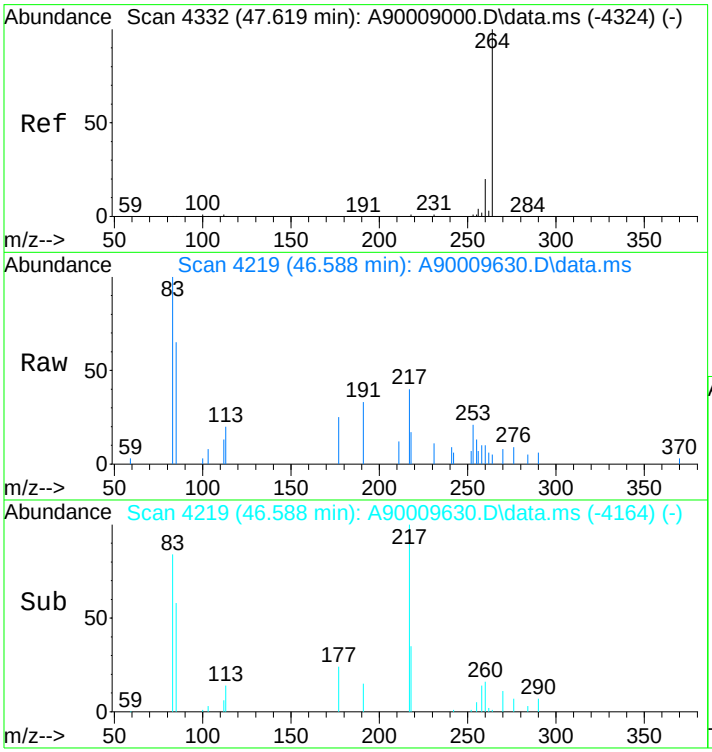




#132
13b,17a-20S-Methyldiacholestane (S8)
Concen: 126.47 ng/ml m
RT: 45.728 min Scan# 4125
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

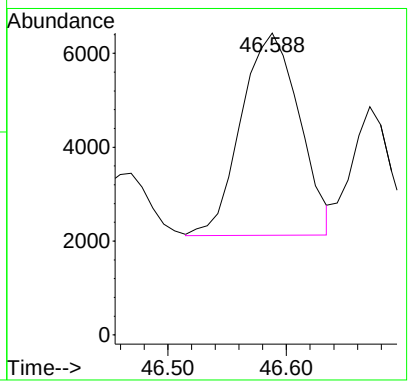
Tgt Ion:217 Resp: 5604

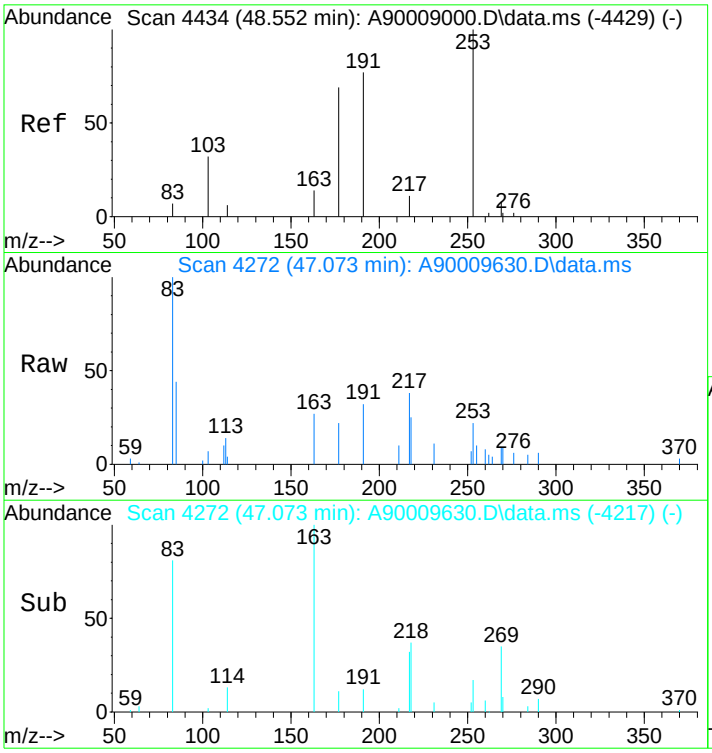




#133
14a,17a-20S-Chol/13b,17a-20S-Ethyldiach
Concen: 331.24 ng/ml
RT: 46.588 min Scan# 4219
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

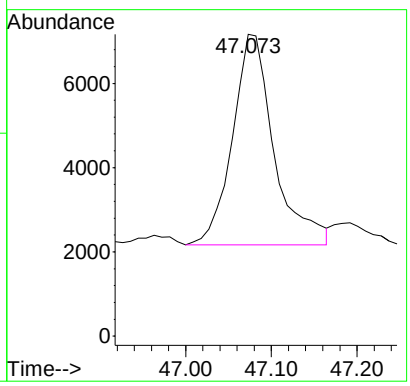
Tgt Ion:217 Resp: 14677

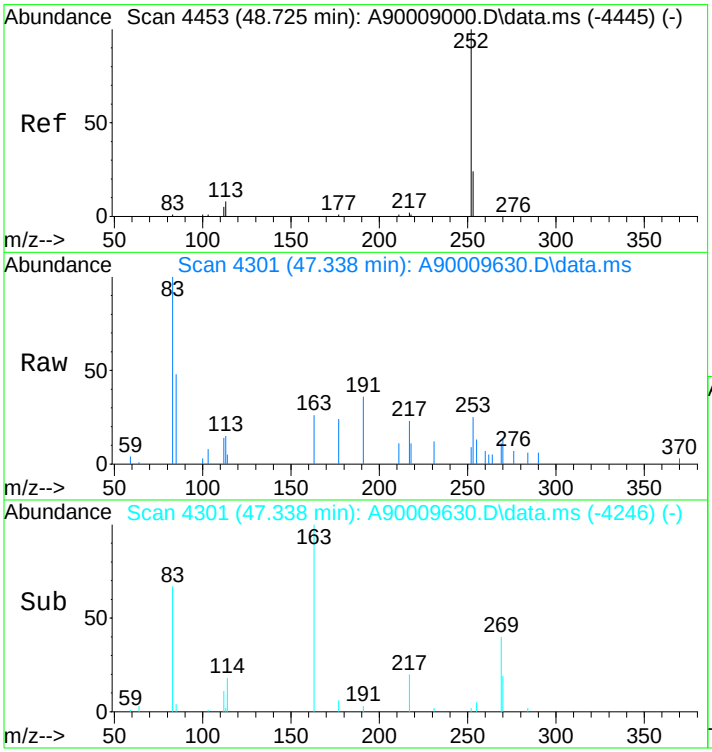




#134
14a,17a-20R-Chol/13b,17a-20R-Ethyldiach
Concen: 382.04 ng/ml
RT: 47.073 min Scan# 4272
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

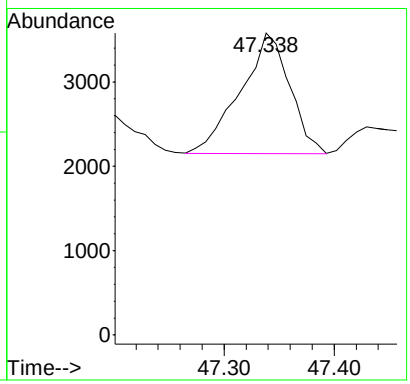
Tgt Ion:217 Resp: 16928

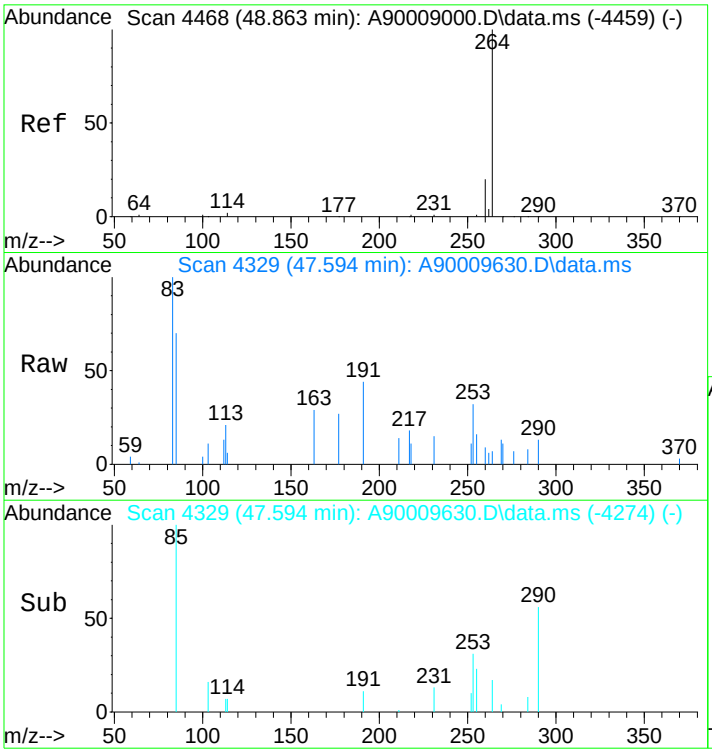




#135
Unknown Sterane (S18)
Concen: 100.63 ng/ml
RT: 47.338 min Scan# 4301
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

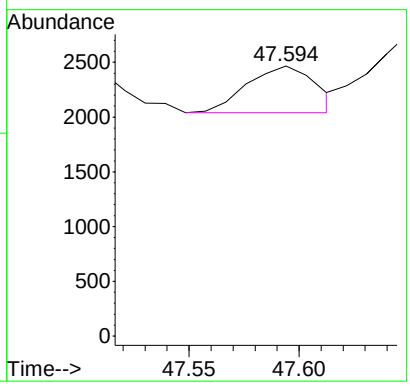
Tgt Ion:217 Resp: 4459

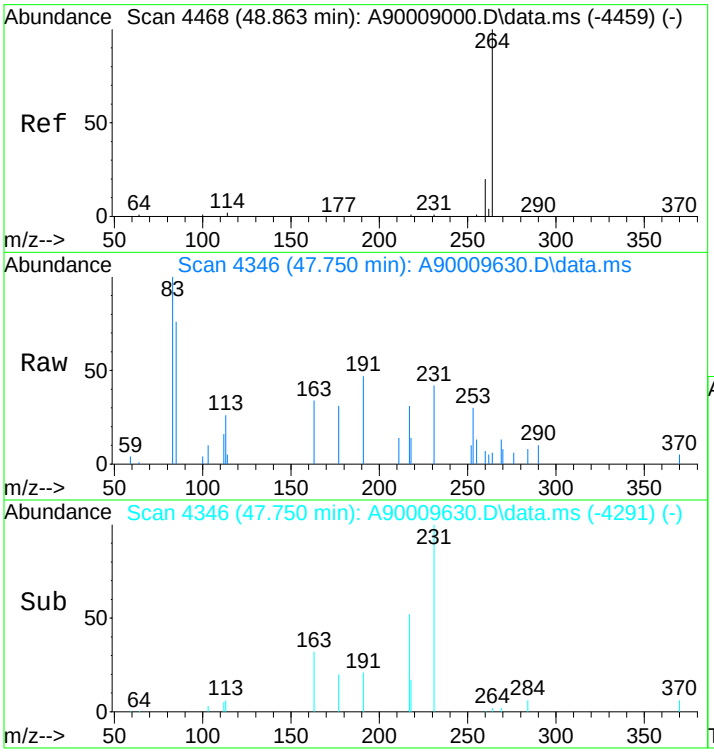




#136
13a,17b-20S-Ethyldiacholestane (S19)
Concen: 20.90 ng/ml
RT: 47.594 min Scan# 4329
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

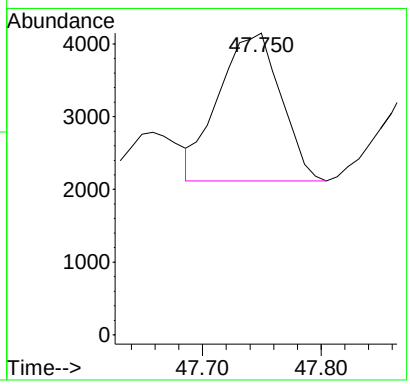
Tgt Ion:217 Resp: 926

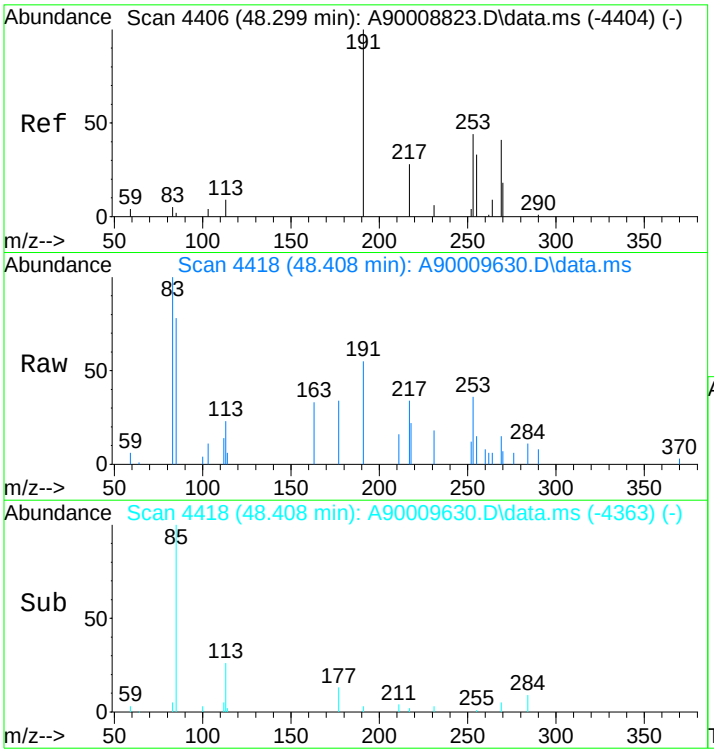




#137
14a,17a-20S-Methylcholestane (S20)
Concen: 166.58 ng/ml
RT: 47.750 min Scan# 4346
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

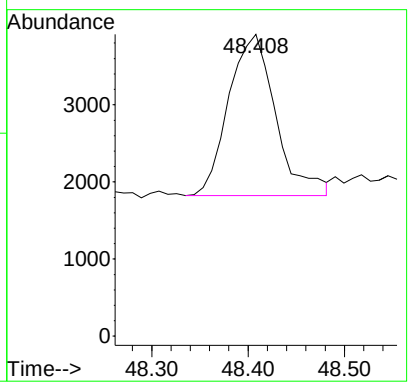
Tgt Ion:217 Resp: 7381

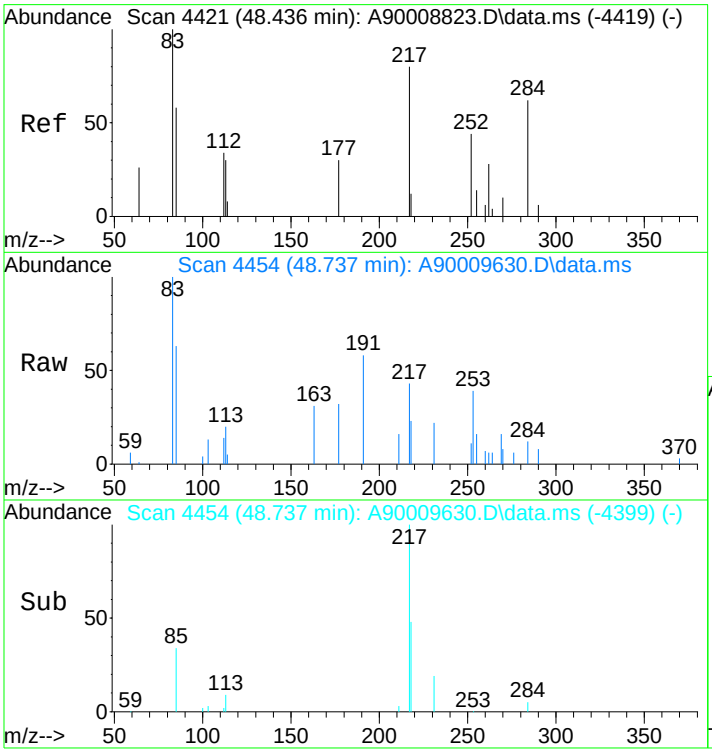




#138
14a,17a-20R-Methylcholestane (S24)
Concen: 160.26 ng/ml
RT: 48.408 min Scan# 4418
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

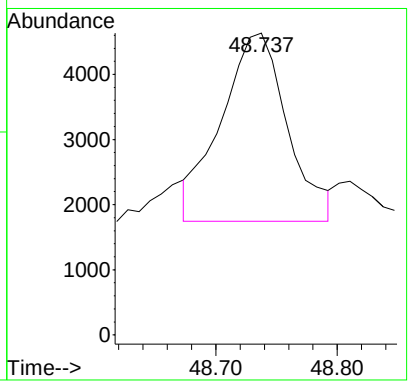
Tgt Ion:217 Resp: 7101

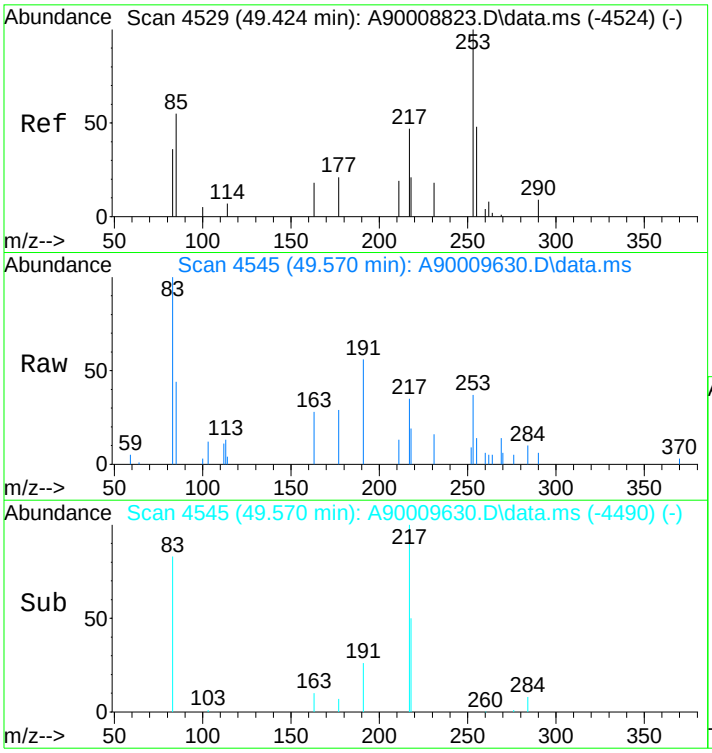




#139
14a(H),17a(H)-20S-Ethylcholestane (S25)
Concen: 246.92 ng/ml m
RT: 48.737 min Scan# 4454
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

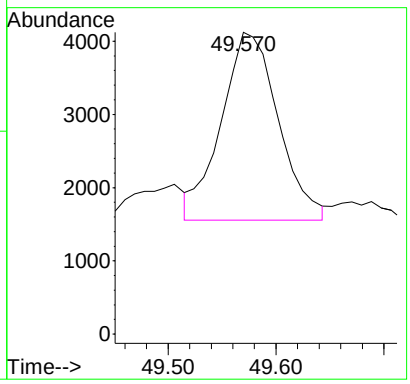
Tgt Ion:217 Resp: 10941

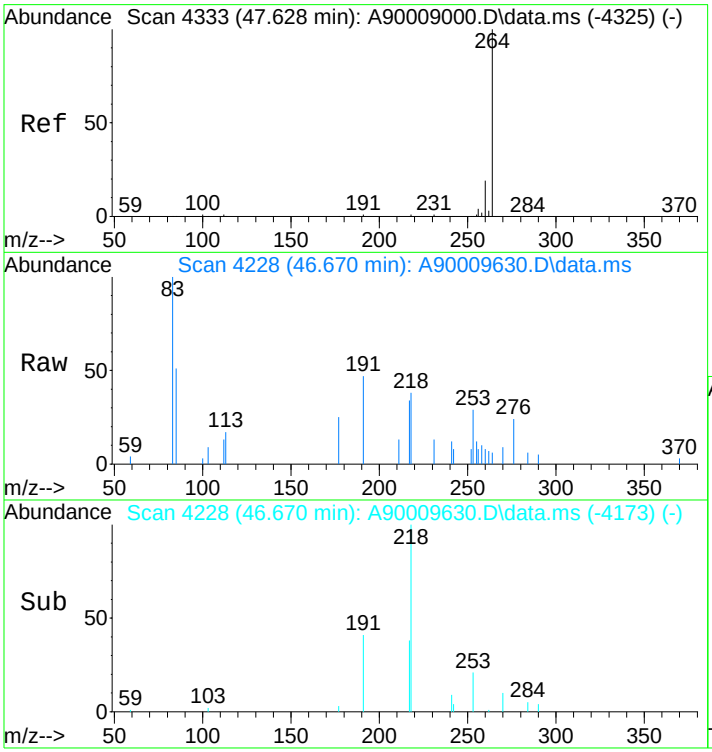




#140
14a(H),17a(H)-20R-Ethylcholestane (S28)
Concen: 212.37 ng/ml m
RT: 49.570 min Scan# 4545
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

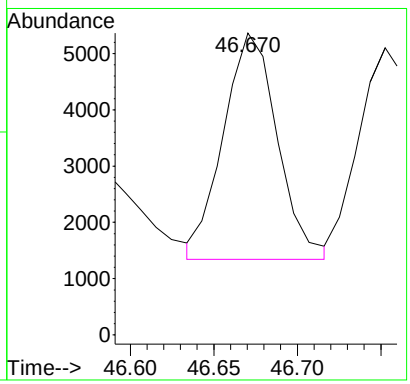
Tgt Ion:217 Resp: 9410

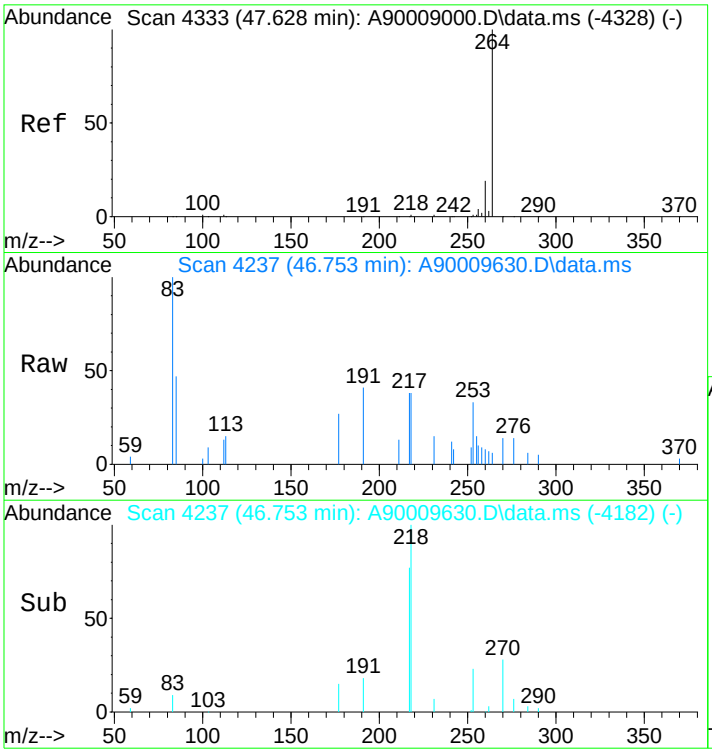




#141
14b(H),17b(H)-20R-Cholestane (S14)
Concen: 204.13 ng/ml m
RT: 46.670 min Scan# 4228
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

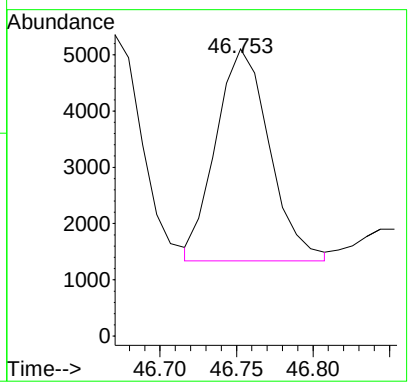
Tgt Ion:218 Resp: 9045

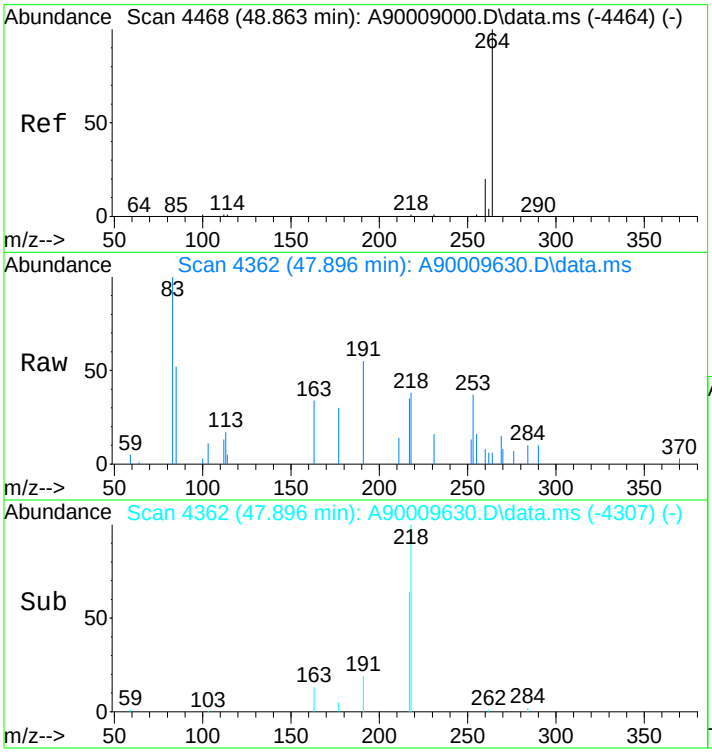




#142
14b(H),17b(H)-20S-Cholestane (S15)
Concen: 207.18 ng/ml m
RT: 46.753 min Scan# 4237
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

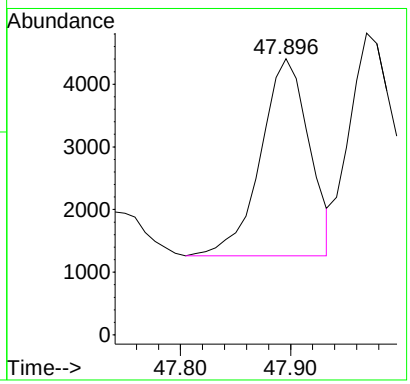
Tgt Ion:218 Resp: 9180

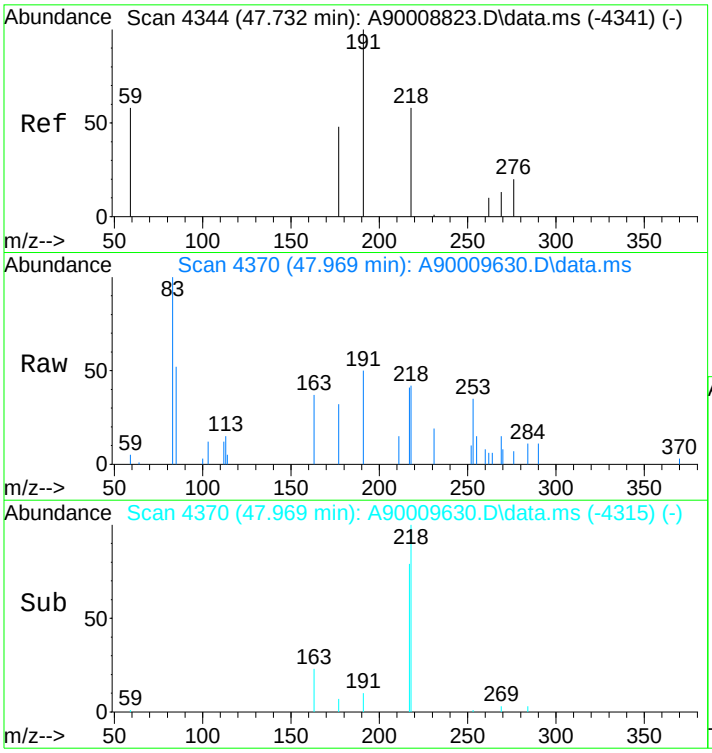




#143
14b,17b-20R-Methylcholestane (S22)
Concen: 218.35 ng/ml
RT: 47.896 min Scan# 4362
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

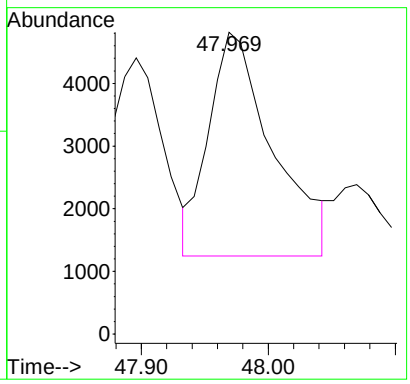
Tgt Ion:218 Resp: 9675

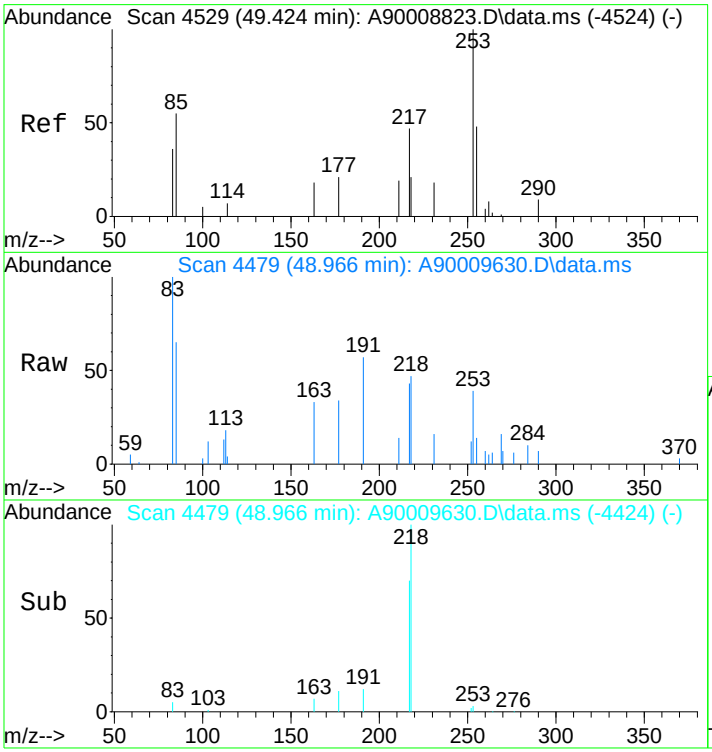




#144
14b,17b-20S-Methylcholestane (S23)
Concen: 282.63 ng/ml m
RT: 47.969 min Scan# 4370
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

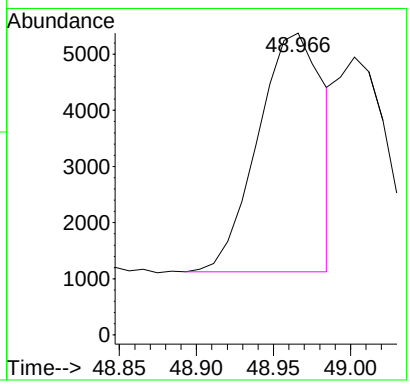
Tgt Ion:218 Resp: 12523

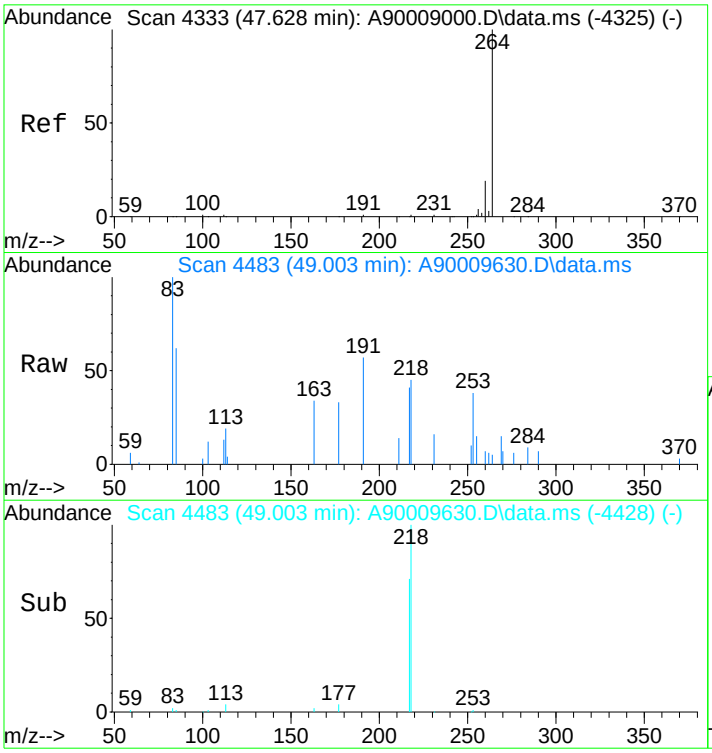




#145
14b(H),17b(H)-20R-Ethylcholestane (S26)
Concen: 284.41 ng/ml
RT: 48.966 min Scan# 4479
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

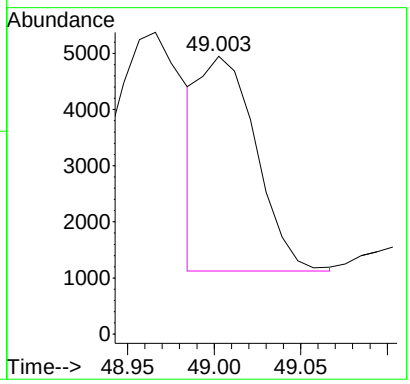
Tgt Ion:218 Resp: 12602

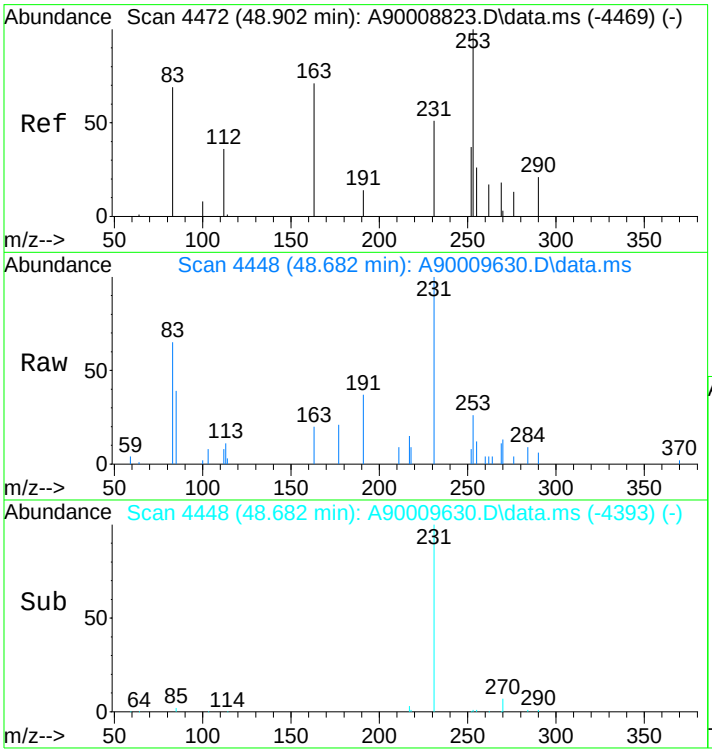




#146
14b(H),17b(H)-20S-Ethylcholestane (S27)
Concen: 196.19 ng/ml m
RT: 49.003 min Scan# 4483
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

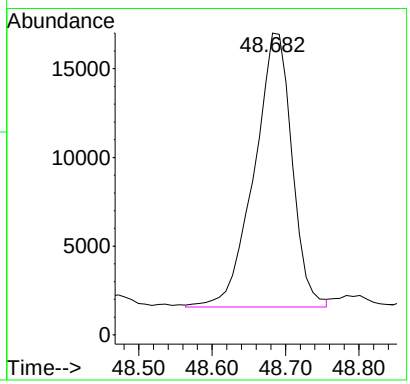
Tgt Ion:218 Resp: 8693

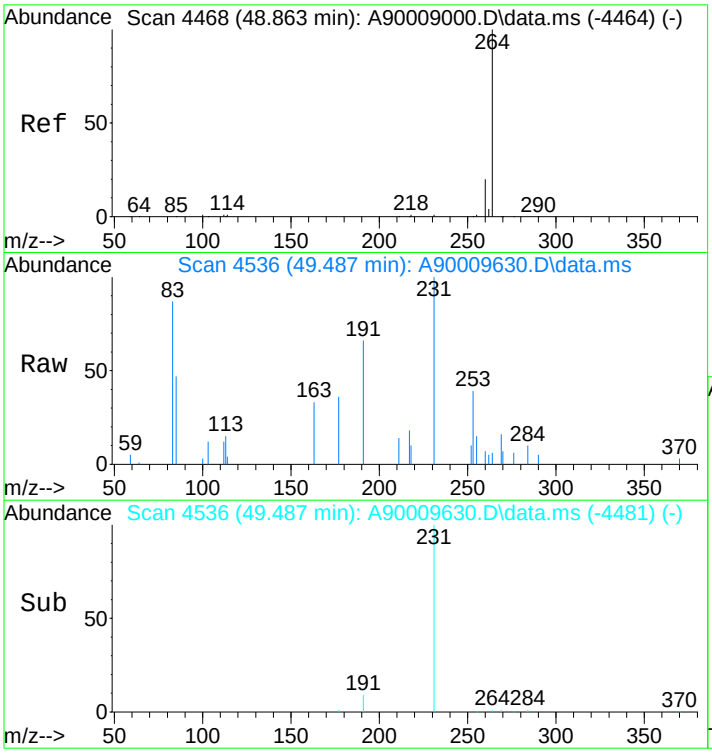




#147
C26,20R- +C27,20S- triaromatic steroid
Concen: 1250.62 ng/mL
RT: 48.682 min Scan# 4448
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

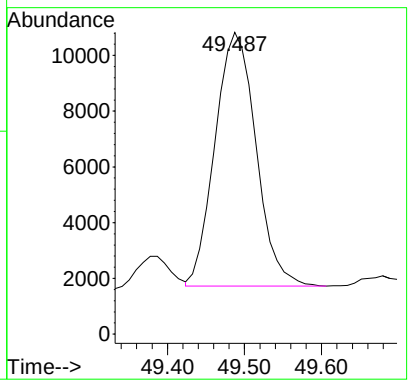
Tgt Ion:231 Resp: 55414

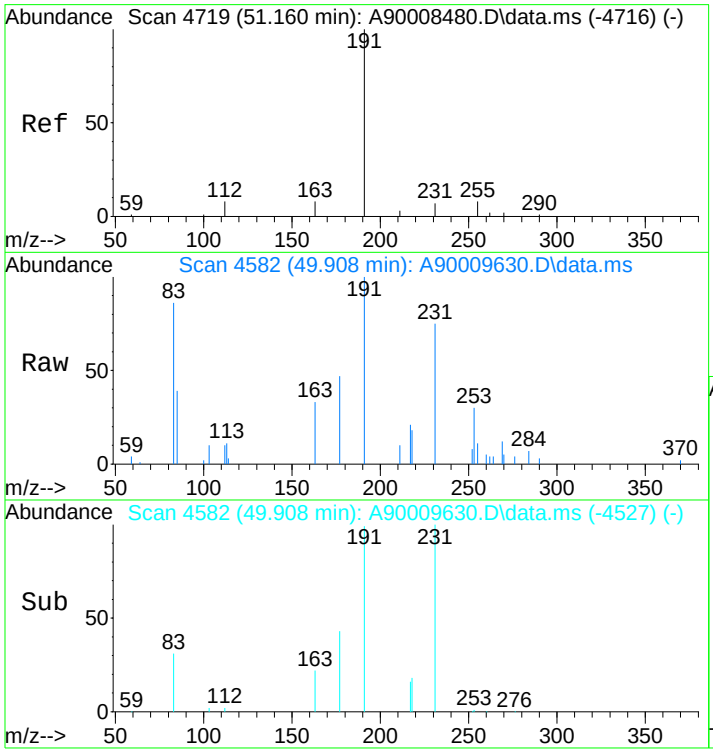




#148
C28,20S-triaromatic steroid
Concen: 759.73 ng/mL
RT: 49.487 min Scan# 4536
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

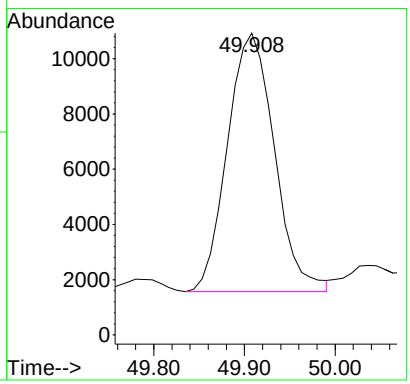
Tgt Ion:231 Resp: 33663

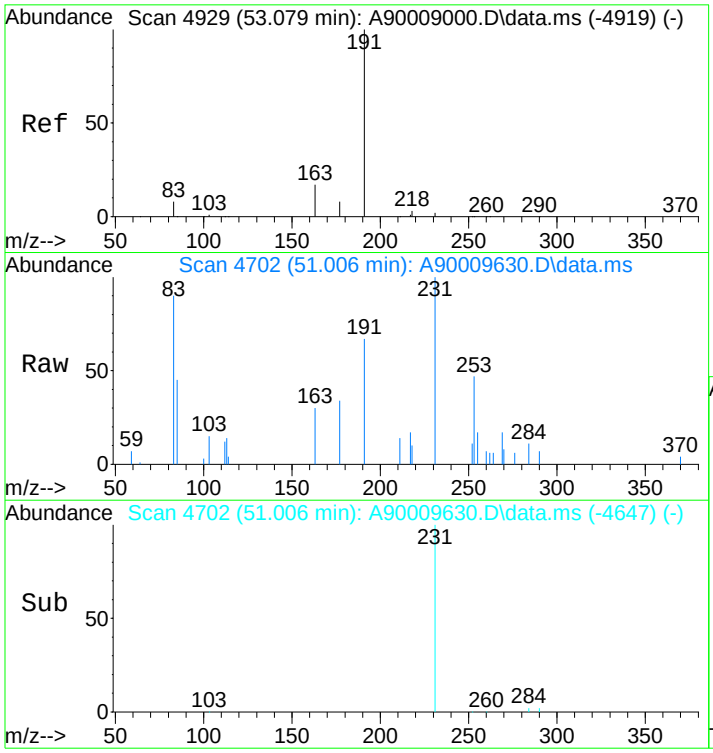




#149
C27,20R-triaromatic steroid
Concen: 760.32 ng/mL
RT: 49.908 min Scan# 4582
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

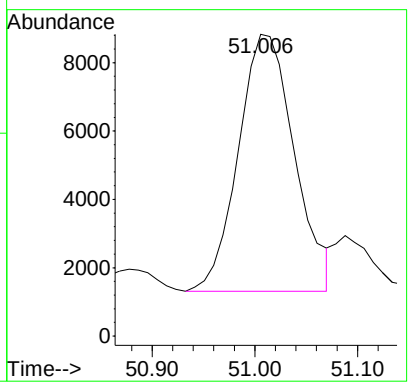
Tgt Ion:231 Resp: 33689





#150
C28,20R-triaromatic steroid
Concen: 644.81 ng/mL
RT: 51.006 min Scan# 4702
Delta R.T. 0.000 min
Lab File: A90009630.D
Acq: 26 Dec 2012 9:19 am

Tgt Ion:231 Resp: 28571



Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\
Data File : A90009633.D
Acq On : 26 Dec 2012 3:46 pm
Operator : ps
Sample : SS122712CL04
Misc : WHAQ74@5.064
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Dec 27 16:18:55 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Dec 27 11:30:11 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.065	164	103514	500.000	ng/mL	0.00
74) Chrysene-d12	42.466	240	189000	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.147	136	372264	935.656	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 93.57%			
42) Phenanthrene-d10	31.904	188	392274	1050.644	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 105.06%			
83) Benzo[b]fluoranthene-d12	46.359	264	361174	1039.594	ng/mL	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 103.96%			
88) Benzo[a]pyrene-d12	47.475	264	345735	992.737	ng/mL	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 99.27%			
129) 5B(H)Cholane - Surr	43.096	217	86488	1090.060	ng/ml	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 109.01%			
Target Compounds						Qvalue
3) trans-Decalin	15.826	138	60554	665.396	ng/mL	100
4) cis-Decalin	17.021	138	3693M3	51.836	ng/mL	
5) C1-Decalins	17.295	152	145907M5	1603.296	ng/mL	
6) C2-Decalins	18.709	166	223531M5	2456.265	ng/mL	
7) C3-Decalins	21.520	180	177426M5	1949.642	ng/mL	
8) C4-Decalins	24.157	194	170514M5	1873.689	ng/mL	
10) Naphthalene	19.220	128	135261	331.287	ng/mL#	100
11) C1-Naphthalenes	21.894	142	386867M5	947.532	ng/mL	
12) C2-Naphthalenes	24.723	156	856177M5	2096.986	ng/mL	
13) C3-Naphthalenes	27.397	170	1089036M5	2667.315	ng/mL	
14) C4-Naphthalenes	30.125	184	932714M5	2284.444	ng/mL	
16) 2-Methylnaphthalene	21.894	142	231523	867.099	ng/mL#	100
17) 1-Methylnaphthalene	22.314	142	152928	590.173	ng/mL#	100
18) Benzothiophene	19.439	134	14920M4	43.667	ng/mL	
19) C1-Benzo(b)thiophenes	21.474	148	85723M5	250.888	ng/mL	
20) C2-Benzo(b)thiophenes	24.915	162	151308M5	442.837	ng/mL	
21) C3-Benzo(b)thiophenes	26.886	176	279570M5	818.224	ng/mL	
22) C4-Benzo(b)thiophenes	28.984	190	308314M5	902.350	ng/mL	
23) Biphenyl	23.774	154	27607	79.009	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.385	156	212624	847.126	ng/mL#	100
25) Dibenzofuran	26.840	168	16080	43.147	ng/mL#	44
26) Acenaphthylene	25.471	152	6484M4	15.438	ng/mL	
27) Acenaphthene	26.192	153	19365M4	73.331	ng/mL	
28) 2,3,5-Trimethylnaphthalen	27.744	170	74713M3	323.769	ng/mL	
29) Fluorene	28.200	166	41289M3	142.375	ng/mL	
30) C1-Fluorenes	30.563	180	124153M5	428.113	ng/mL	
31) C2-Fluorenes	32.752	194	281855M5	971.911	ng/mL	
32) C3-Fluorenes	34.578	208	338385M5	1166.842	ng/mL	
33) Dibenzothiophene	31.502	184	134213	329.006	ng/mL#	65
34) 4-Methyldibenzothiophene(	33.273	198	180840	443.306	ng/mL#	100
35) 2/3-Methyldibenzothiophen	33.620	198	140330	344.001	ng/mL#	100
36) 1-Methyldibenzothiophene(	34.039	198	96367	236.231	ng/mL#	100
37) OTP	33.702	198	53408	130.923	ng/mL#	100
38) C1-Dibenzothiophenes	33.273	198	501464M5	1229.273	ng/mL	
38) C1-Dibenzothiophenes BS	33.273	198	448056m	1098.351	ng/mL	
39) C2-Dibenzothiophenes	34.952	212	851631M5	2087.662	ng/mL	
40) C3-Dibenzothiophenes	36.760	226	921915M5	2259.954	ng/mL	
41) C4-Dibenzothiophenes	38.449	240	640321M5	1569.663	ng/mL	
43) Phenanthrene	31.995	178	169045M3	401.108	ng/mL	

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\
Data File : A90009633.D
Acq On : 26 Dec 2012 3:46 pm
Operator : ps
Sample : SS122712CL04
Misc : WHAQ74@5.064
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Dec 27 16:18:55 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Dec 27 11:30:11 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
44) 3-Methylphenanthrene(3MP)	33.957	192	92654	219.848	ng/mL	90
45) 2-Methylphenanthrene(2MP)	34.067	192	107990	256.237	ng/mL	97
46) 2-Methylanthracene(2MA)	34.231	192	12916M4	30.647	ng/mL	
47) 9/4-Methylphenanthrene(9M	34.405	192	162313	385.134	ng/mL	99
48) 1-Methylphenanthrene(1MP)	34.496	192	94448	224.105	ng/mL	98
49) C1-Phenanthrenes/Anthrace	34.405	192	480297M5	1139.643	ng/mL	
50) C2-Phenanthrenes/Anthrace	36.221	206	741413M5	1759.216	ng/mL	
50) C2-Phenanthrenes/Anthr BS	36.221	206	741413m	1759.216	ng/mL	
52) C3-Phenanthrenes/Anthrace	39.307	220	702026M5	1665.759	ng/mL	
53) C4-Phenanthrenes/Anthrace	40.229	234	332756M5	789.559	ng/mL	
54) Retene	38.969	234	31101M4	268.439	ng/mL	
56) Carbazole	32.853	167	12364M3	33.396	ng/mL	
57) 1-Methylphenanthrene	34.496	192	94267	303.167	ng/mL	100
58) Fluoranthene	36.751	202	12918M4	27.439	ng/mL	
60) Pyrene	37.627	202	42441M4	88.361	ng/mL	
61) C1-Fluoranthenes/Pyrenes	39.024	216	152766M5	318.056	ng/mL	
62) C2-Fluoranthenes/Pyrenes	40.832	230	223207M5	464.712	ng/mL	
63) C3-Fluoranthenes/Pyrenes	42.841	244	271884M5	566.057	ng/mL	
64) C4-Fluoranthenes/Pyrenes	44.192	258	247858M5	516.035	ng/mL	
66) Naphthobenzothiophene	41.471	234	53645M4	128.716	ng/ml	
67) Naphthobenzothiophene-2,1	41.471	234	53645M4	128.716	ng/mL	
68) Naphthobenzothiophene-1,2	41.809	234	14374	34.489	ng/mL#	68
69) Naphthobenzothiophene-2,3	42.110	234	9811M3	23.541	ng/mL	
70) C1-Naphthobenzothiophenes	43.553	248	263025M5	631.104	ng/ml	
71) C2-Naphthobenzothiophenes	44.914	262	382110M5	916.837	ng/ml	
72) C3-Naphthobenzothiophenes	46.469	276	320081M5	768.004	ng/ml	
73) C4-Naphthobenzothiophenes	47.493	290	249924M5	599.669	ng/mL	
75) Benz[a]anthracene	42.402	228	8338M3	19.233	ng/mL	
77) Chrysene/Triphenylene	42.558	228	45092M4	105.756	ng/mL	
78) C1-Chrysenes	44.037	242	125040M5	293.262	ng/mL	
79) C2-Chrysenes	46.112	256	191326M5	448.725	ng/mL	
79) C2-Chrysenes BS	46.112	256	177646m	416.641	ng/mL	
80) BBF-d12 Surr BKGD	46.359	256	13680	32.084	ng/mL	100
81) C3-Chrysenes	48.664	270	231834M5	543.731	ng/mL	
82) C4-Chrysenes	48.765	284	143540M5	336.651	ng/mL	
84) Benzo[b]fluoranthene	46.442	252	11017	24.510	ng/mL	94
85) Benzo[j]+[k]fluoranthene	46.506	252	3802M3	8.609	ng/mL	
87) Benzo[e]pyrene	47.384	252	17319	40.576	ng/mL	99
89) Benzo[a]pyrene	47.557	252	9502M3	23.506	ng/mL	
90) Perylene	47.850	252	21408	49.622	ng/mL	88
91) Indeno[1,2,3-cd]pyrene	52.011	276	5609M4	12.529	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.048	278	2140M3	4.852	ng/mL	
93) Benzo[g,h,i]perylene	53.199	276	13493	30.670	ng/mL#	84
94) Hopane (T19)	51.188	191	197647M4	1189.474	ng/mL	
96) C23 Tricyclic Terpane (T4	40.129	191	83369	501.729	ng/ml	100
97) C24 Tricyclic Terpane (T5	40.850	191	46401	279.249	ng/ml	100
98) C25 Tricyclic Terpane (T6	42.338	191	41728M1	251.126	ng/ml	
99) C24 Tetracyclic Terpane (	43.635	191	14743	88.726	ng/ml	100
100) C26 Tricyclic Terpane-22S	43.398	191	15683	94.383	ng/ml	100
101) C26 Tricyclic Terpane-22R	43.498	191	15553	93.601	ng/ml	100
102) C28 Tricyclic Terpane-22S	45.783	191	17221M4	103.639	ng/ml	
103) C28 Tricyclic Terpane-22R	45.938	191	17959M4	108.080	ng/ml	
104) C29 Tricyclic Terpane-22S	46.460	191	21892	131.750	ng/ml	100
105) C29 Tricyclic Terpane-22R	46.652	191	21852	131.509	ng/ml	100
106) 18a-22,29,30-Trisnorneoho	47.676	191	23239	139.856	ng/ml	100
107) C30 Tricyclic Terpane-22S	47.804	191	17438M4	104.945	ng/mL	

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\
Data File : A90009633.D
Acq On : 26 Dec 2012 3:46 pm
Operator : ps
Sample : SS122712CL04
Misc : WHAQ74@5.064
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Dec 27 16:18:55 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Dec 27 11:30:11 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
108) C30 Tricyclic Terpane-22R	48.033	191	18857	113.485	ng/mL	100
109) 17a(H)-22,29,30-Trisnorho	48.198	191	54809M4	329.850	ng/ml	
110) 17a/b,21b/a 28,30-Bisnorh	49.304	191	34743M4	209.089	ng/ml	
111) 17a(H),21b(H)-25-Norhopan	49.149	191	10822	65.129	ng/ml	100
112) 30-Norhopane (T15)	49.926	191	143478M4	863.476	ng/ml	
113) 18a(H)-30-Norneohopane-C2	50.027	191	20041M4	120.610	ng/ml	
114) 17a(H)-Diahopane (X)	50.146	191	6643M4	39.979	ng/ml	
115) 30-Normoretane (T17)	50.649	191	14961	90.038	ng/ml	100
116) 18a(H)&18b(H)-Oleananes (	51.033	191	2462	14.817	ng/ml	100
117) Moretane (T20)	51.819	191	15016M4	90.369	ng/ml	
118) 30-Homohopane-22S (T21)	52.825	191	88047	529.882	ng/ml	100
119) 30-Homohopane-22R (T22)	53.035	191	71973	433.146	ng/ml	100
120) Gammacerane/C32-diahopane	53.519	191	32598	196.180	ng/mL	100
121) 30,31-Bishomohopane-22S (	54.241	191	56500	340.027	ng/ml	100
122) 30,31-Bishomohopane-22R (	54.588	191	42019	252.878	ng/ml	100
123) 30,31-Trishomohopane-22S	56.178	191	43616	262.489	ng/ml	100
124) 30,31-Trishomohopane-22R	56.745	191	28351M4	170.621	ng/ml	
125) Tetrakishomohopane-22S (T	58.554	191	29643	178.397	ng/ml	100
126) Tetrakishomohopane-22R (T	59.367	191	21507	129.433	ng/ml	100
127) Pentakishomohopane-22S (T	61.377	191	37624M4	226.428	ng/ml	
128) Pentakishomohopane-22R (T	62.547	191	23198M4	139.610	ng/ml	
130) 13b(H),17a(H)-20S-Diachol	44.612	217	12909M4	162.700	ng/ml	
131) 13b(H),17a(H)-20R-Diachol	45.033	217	7039	88.717	ng/ml	100
132) 13b,17a-20S-Methyldiachol	45.728	217	7015M4	88.414	ng/ml	
133) 14a,17a-20S-Chol/13b,17a-	46.579	217	23371	294.559	ng/ml	100
134) 14a,17a-20R-Chol/13b,17a-	47.082	217	28723	362.013	ng/ml	100
135) Unknown Sterane (S18)	47.347	217	5528	69.673	ng/ml	100
136) 13a,17b-20S-Ethyldiachole	47.585	217	2673	33.689	ng/ml	100
137) 14a,17a-20S-Methylcholest	47.740	217	10192	128.456	ng/ml	100
138) 14a,17a-20R-Methylcholest	48.399	217	9913	124.939	ng/ml	100
139) 14a(H),17a(H)-20S-Ethylch	48.737	217	21639M4	272.729	ng/ml	
140) 14a(H),17a(H)-20R-Ethylch	49.579	217	19322M4	243.527	ng/ml	
141) 14b(H),17b(H)-20R-Cholest	46.670	218	19301M4	243.262	ng/ml	
142) 14b(H),17b(H)-20S-Cholest	46.753	218	18948M4	238.813	ng/ml	
143) 14b,17b-20R-Methylcholest	47.896	218	15205	191.638	ng/ml	100
144) 14b,17b-20S-Methylcholest	47.969	218	22503M4	283.619	ng/ml	
145) 14b(H),17b(H)-20R-Ethylch	48.966	218	27591	347.746	ng/ml	100
146) 14b(H),17b(H)-20S-Ethylch	49.003	218	19561M3	246.539	ng/ml	
147) C26,20R- +C27,20S- triaro	48.692	231	94291	1188.405	ng/mL	100
148) C28,20S-triaromatic stero	49.487	231	75759M4	954.836	ng/mL	
149) C27,20R-triaromatic stero	49.908	231	60758	765.769	ng/mL	100
150) C28,20R-triaromatic stero	51.015	231	64582	813.965	ng/mL	100

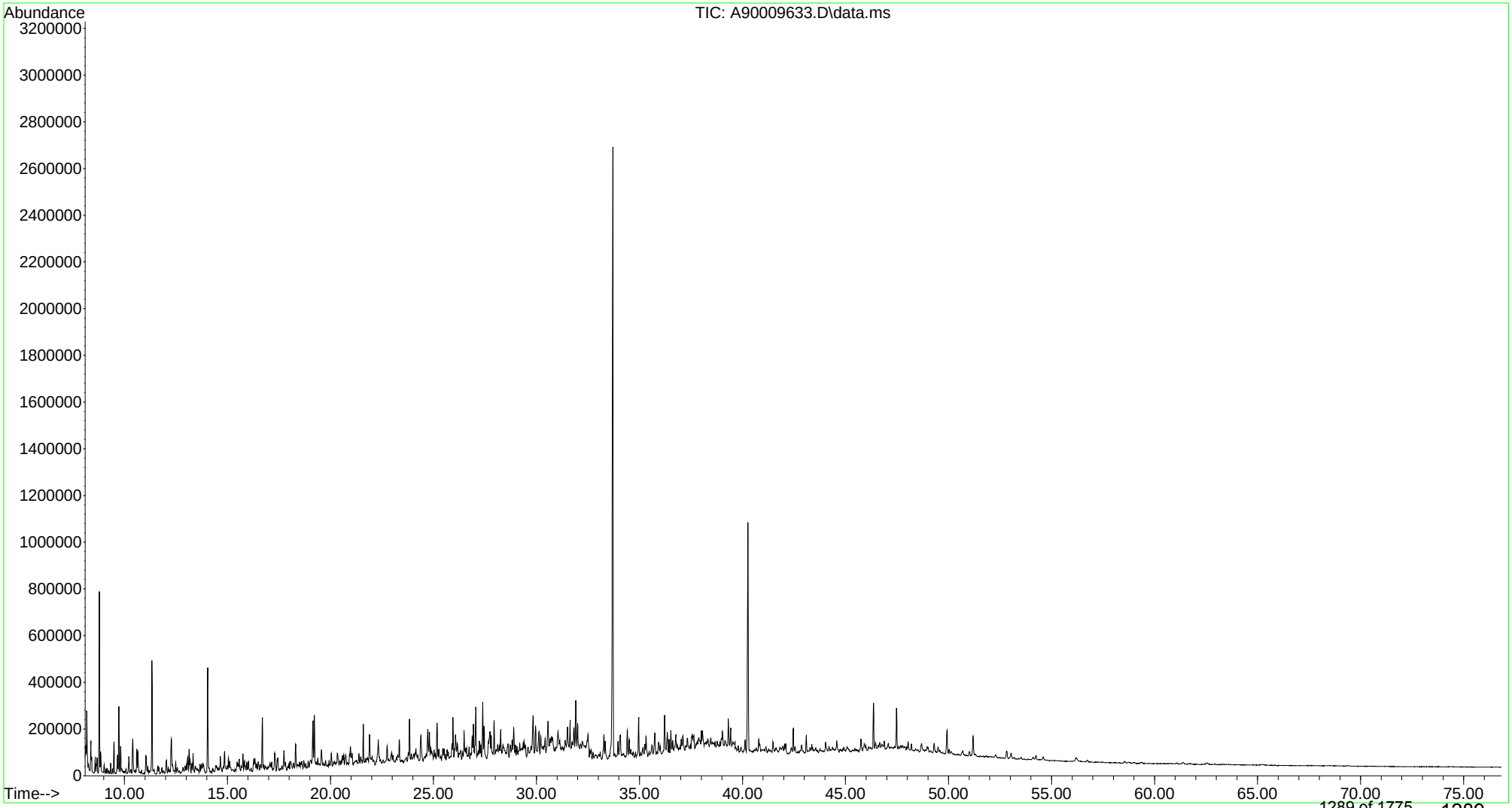
(#) = qualifier out of range (m) = manual integration (+) = signals summed

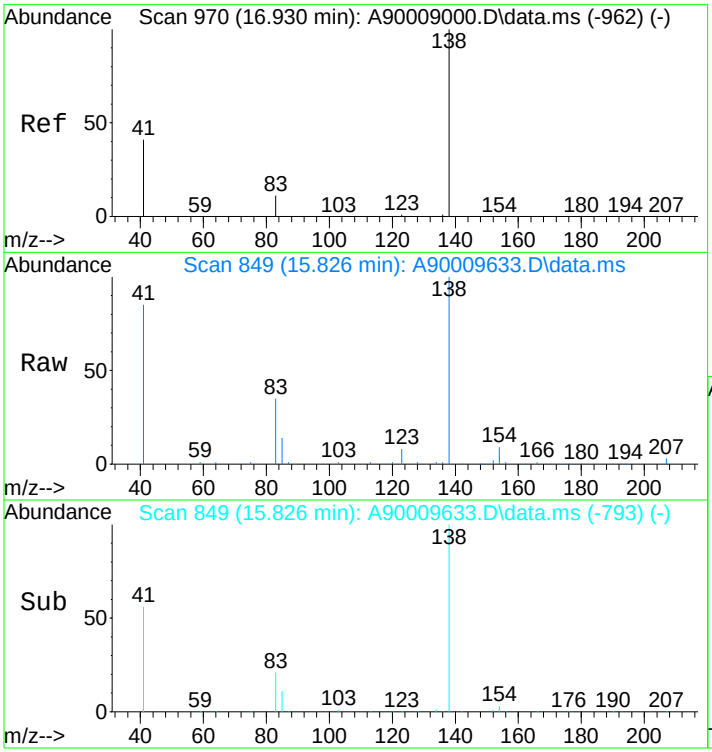
Quantitation Report (QT Reviewed)

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Data File : A90009633.D
Acq On : 26 Dec 2012 3:46 pm
Operator : ps
Sample : SS122712CL04
Misc : WHAQ74@5.064
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Dec 27 16:18:55 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Dec 27 11:30:11 2012
Response via : Initial Calibration

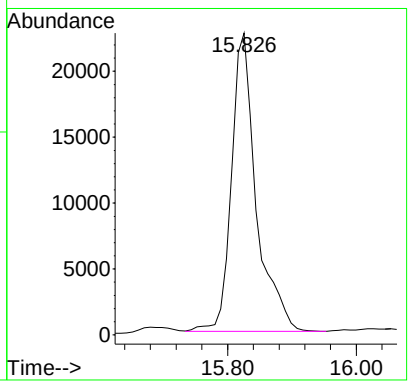
Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

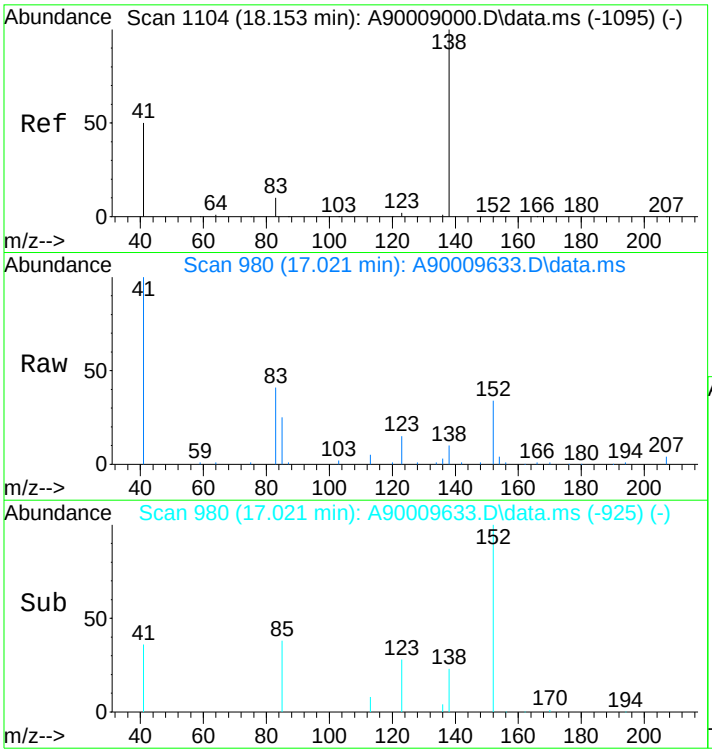




#3
trans-Decalin
Concen: 665.40 ng/mL
RT: 15.826 min Scan# 849
Delta R.T. 0.009 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

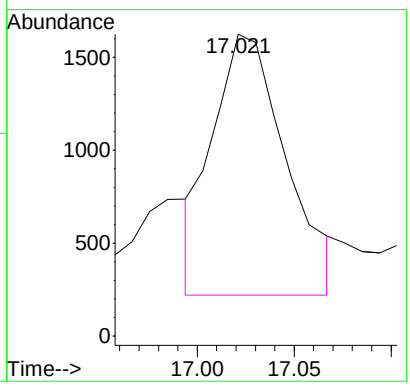
Tgt Ion:138 Resp: 60554

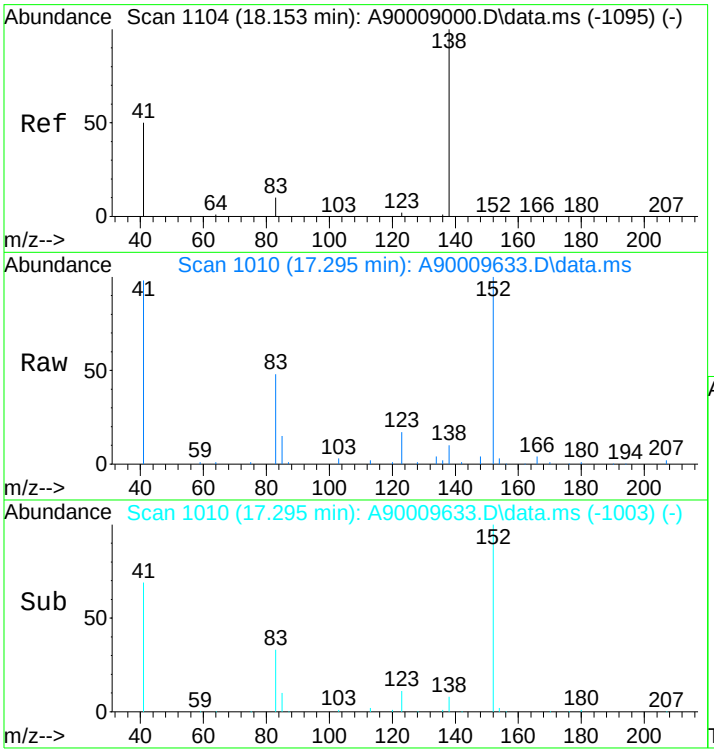




#4
cis-Decalin
Concen: 51.84 ng/mL m
RT: 17.021 min Scan# 980
Delta R.T. 0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

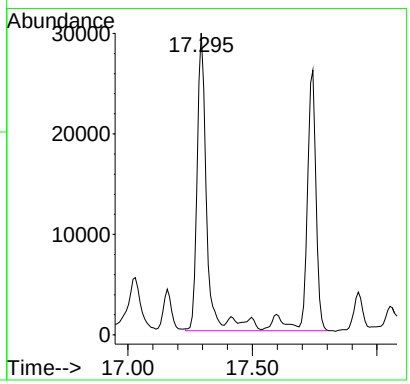
Tgt Ion:138 Resp: 3693

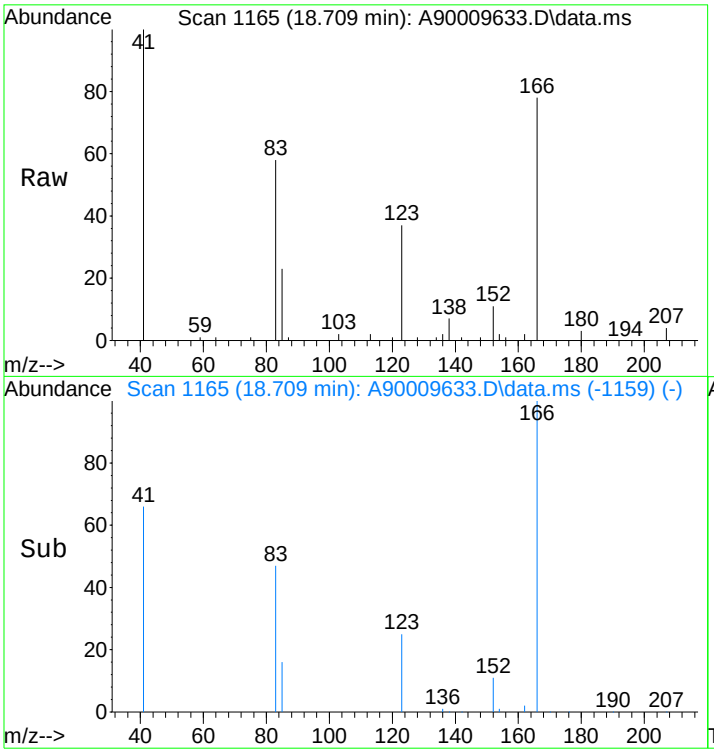




#5
C1-Decalins
Concen: 1603.30 ng/mL m
RT: 17.295 min Scan# 1010
Delta R.T. -0.447 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

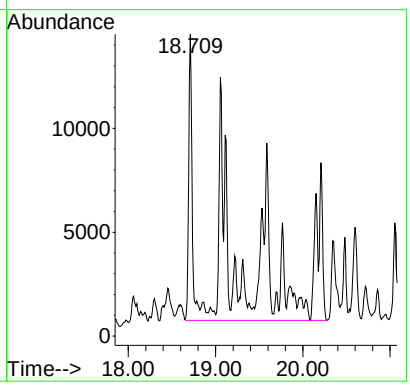
Tgt Ion:152 Resp: 145907

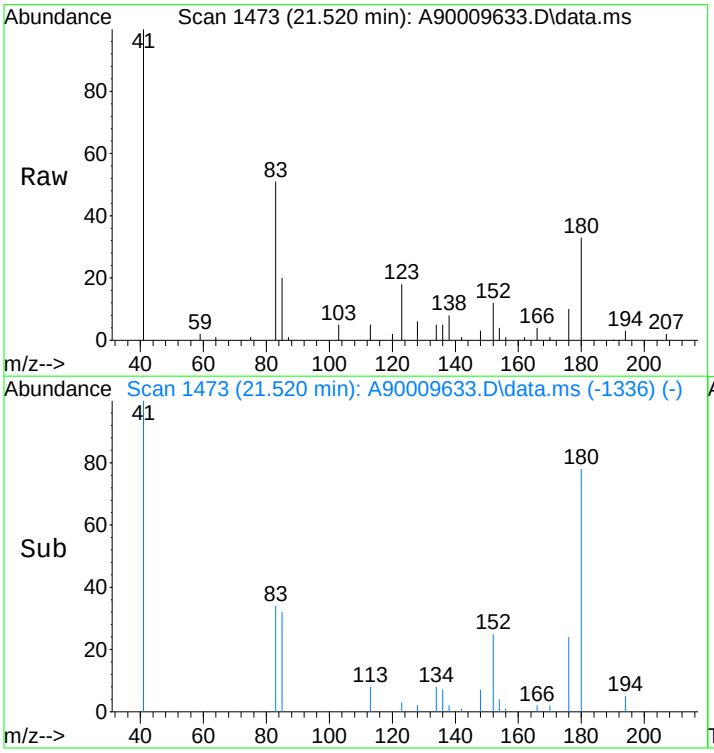




#6
C2-Decalins
Concen: 2456.27 ng/mL m
RT: 18.709 min Scan# 1165
Delta R.T. -0.356 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

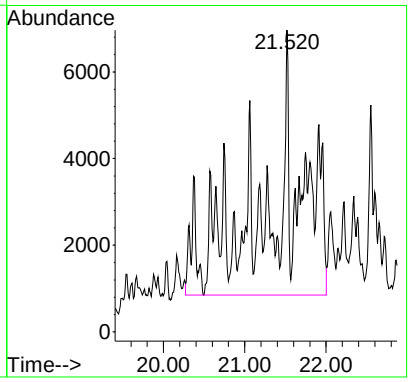
Tgt Ion:166 Resp: 223531

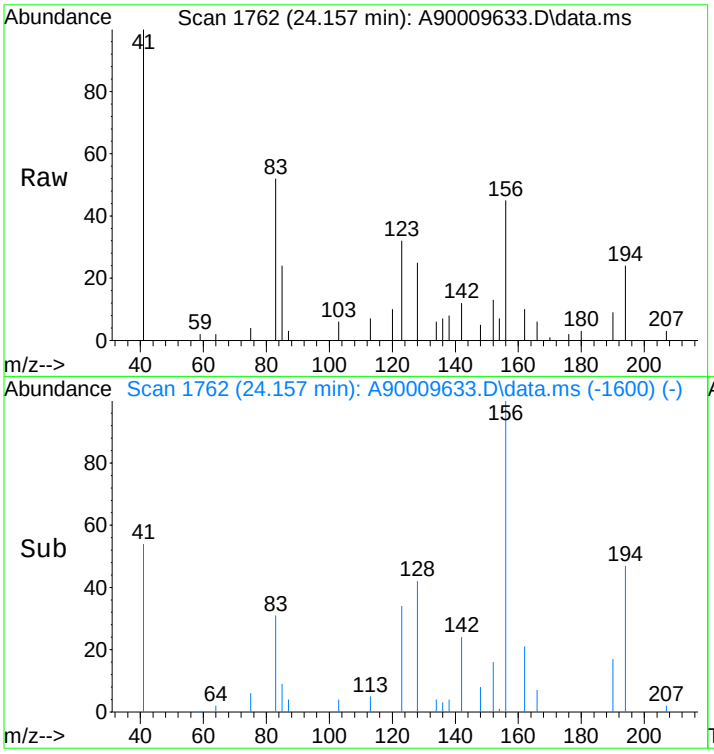




#7
C3-Decalins
Concen: 1949.64 ng/mL m
RT: 21.520 min Scan# 1473
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

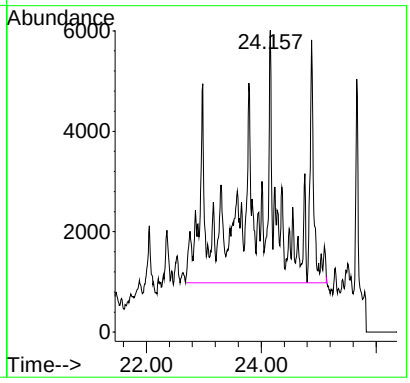
Tgt Ion:180 Resp: 177426

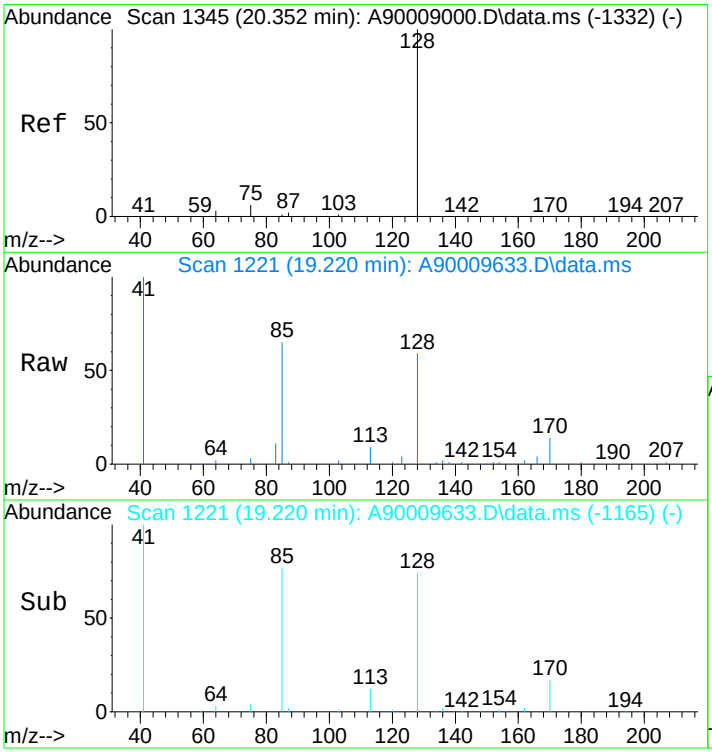




#8
C4-Decalins
Concen: 1873.69 ng/mL m
RT: 24.157 min Scan# 1762
Delta R.T. -0.734 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:194 Resp: 170514

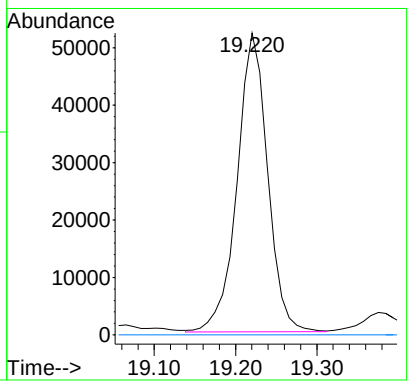


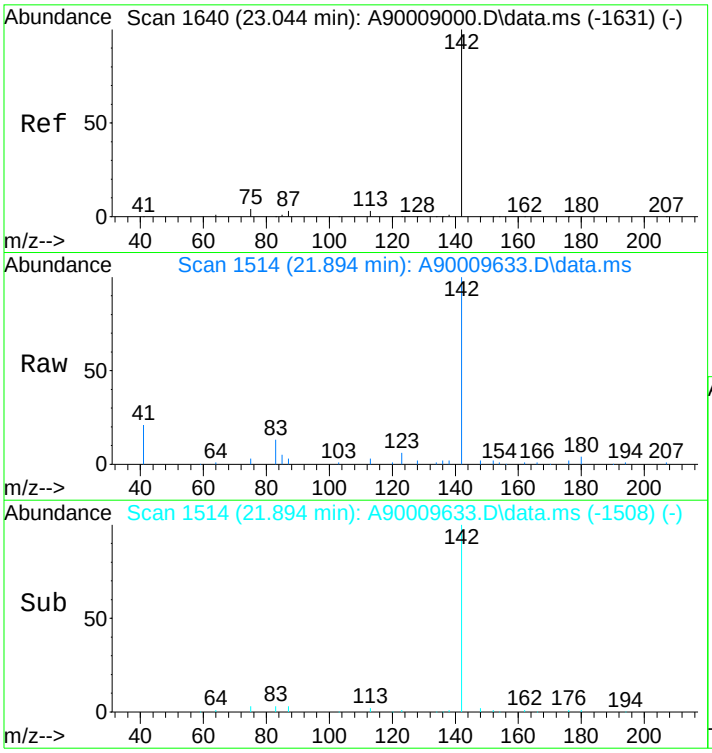


#10
Naphthalene
Concen: 331.29 ng/mL
RT: 19.220 min Scan# 1221
Delta R.T. 0.009 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:128 Resp: 135261

Ion	Ratio	Lower	Upper
128	100		
127	0.0	0.0	0.0

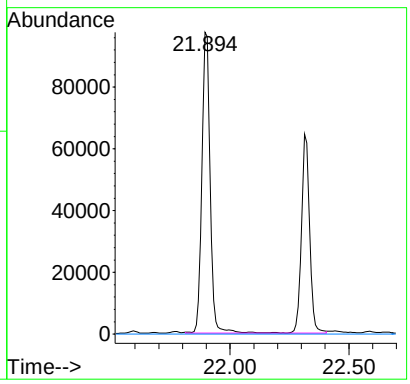


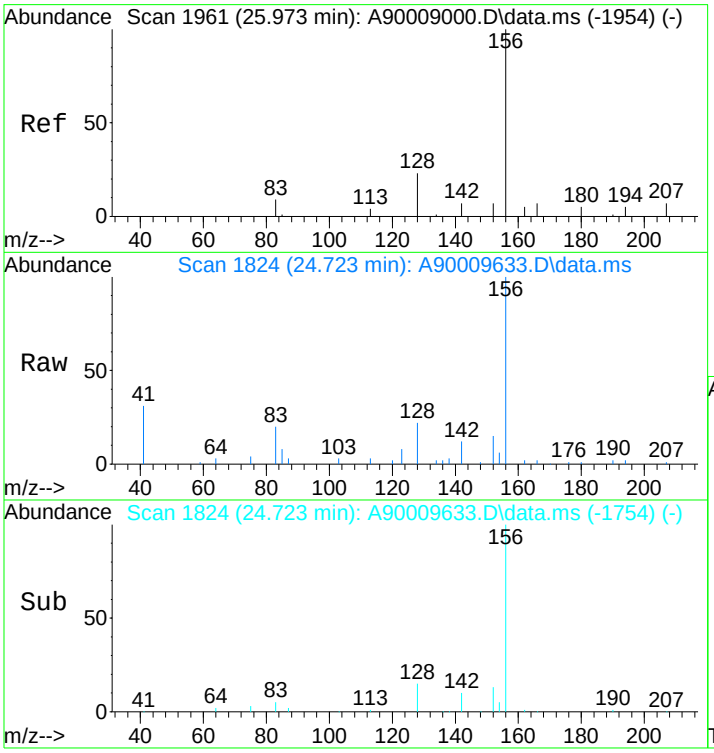


#11
C1-Naphthalenes
Concen: 947.53 ng/mL m
RT: 21.894 min Scan# 1514
Delta R.T. -0.022 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:142 Resp: 386867

Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	0.0

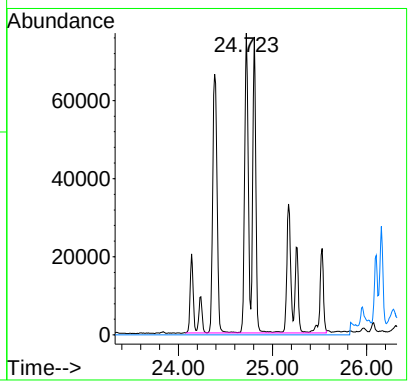


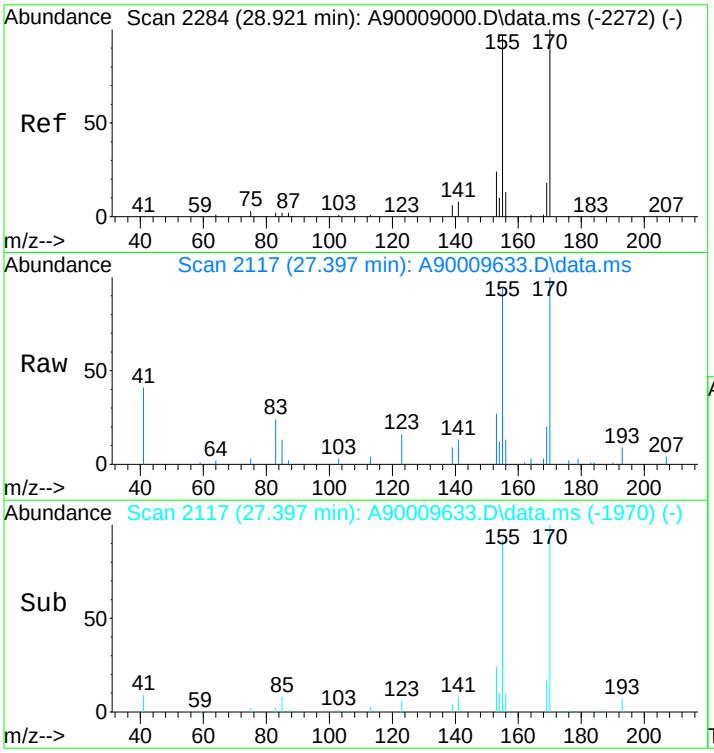


#12
C2-Naphthalenes
Concen: 2096.99 ng/mL m
RT: 24.723 min Scan# 1824
Delta R.T. -0.013 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:156 Resp: 856177

Ion	Ratio	Lower	Upper
156	100		
141	0.0	0.0	0.0

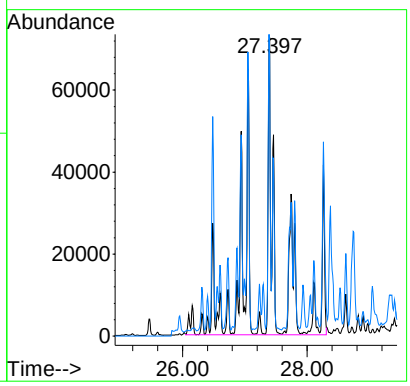


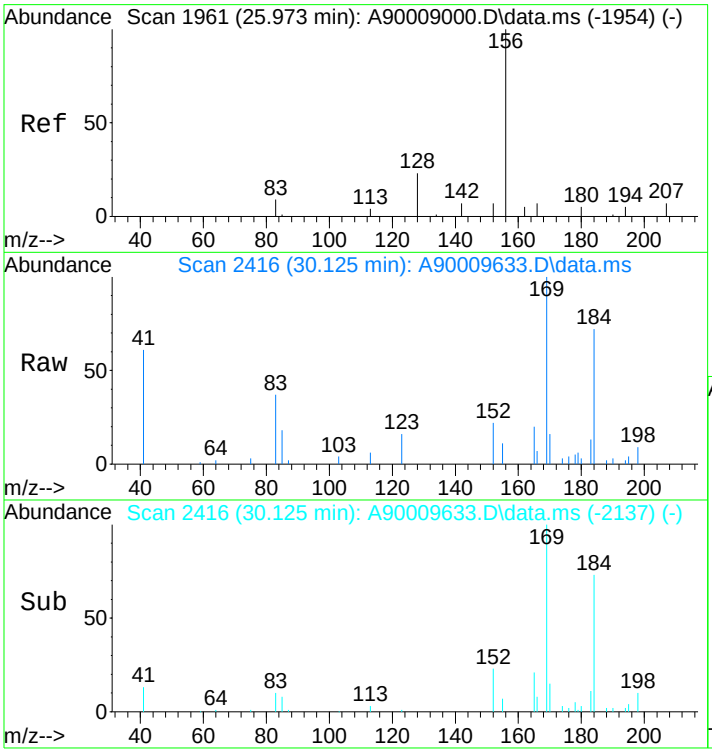


#13
C3-Naphthalenes
Concen: 2667.31 ng/mL m
RT: 27.397 min Scan# 2117
Delta R.T. 0.341 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:170 Resp: 1089036

Ion	Ratio	Lower	Upper
170	100		
155	13.7	79.9	119.9#

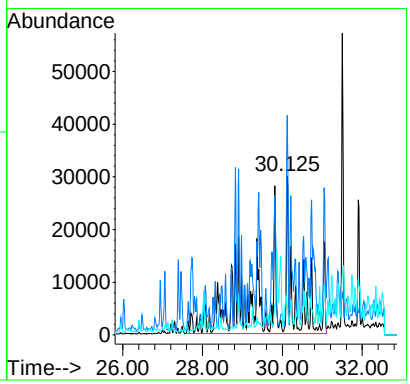


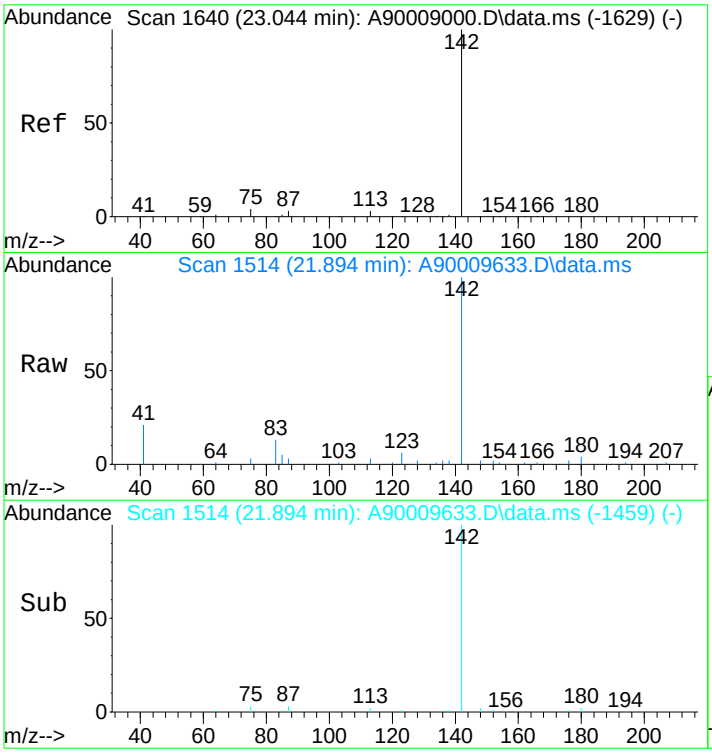


#14
C4-Naphthalenes
Concen: 2284.44 ng/mL m
RT: 30.125 min Scan# 2416
Delta R.T. 0.322 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:184 Resp: 932714

Ion	Ratio	Lower	Upper
184	100		
169	9.1	76.6	115.0#
183	0.0	16.4	24.6#

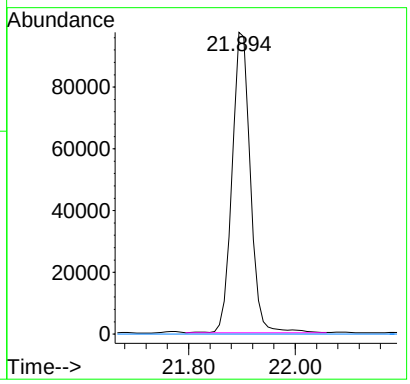


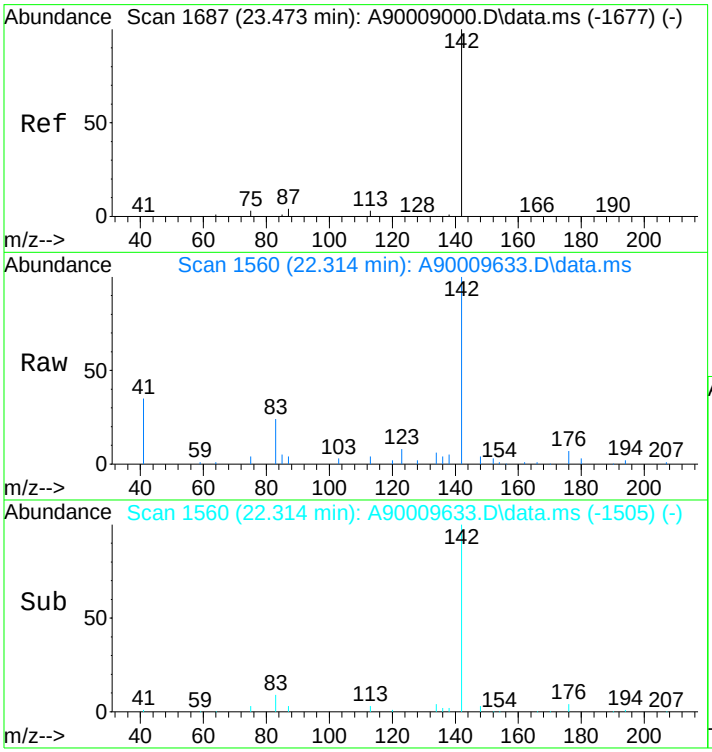


#16
2-Methylnaphthalene
Concen: 867.10 ng/mL
RT: 21.894 min Scan# 1514
Delta R.T. 0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:142 Resp: 231523

Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	0.0

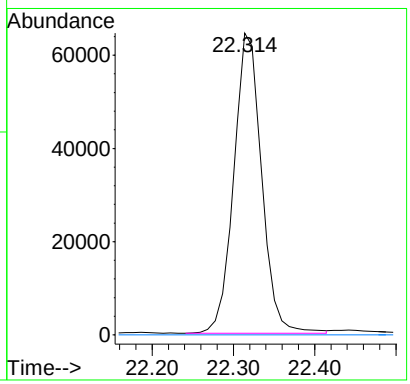


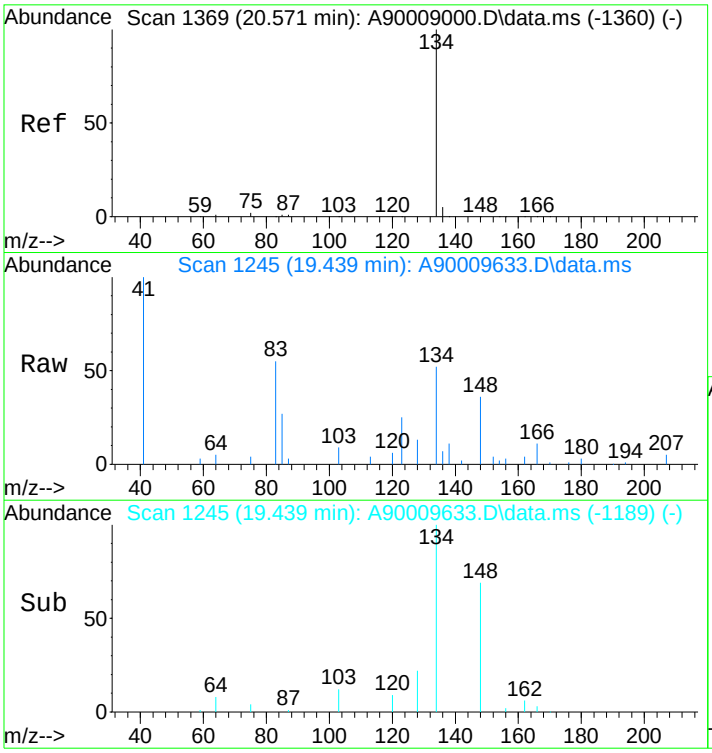


#17
1-Methylnaphthalene
Concen: 590.17 ng/mL
RT: 22.314 min Scan# 1560
Delta R.T. 0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:142 Resp: 152928

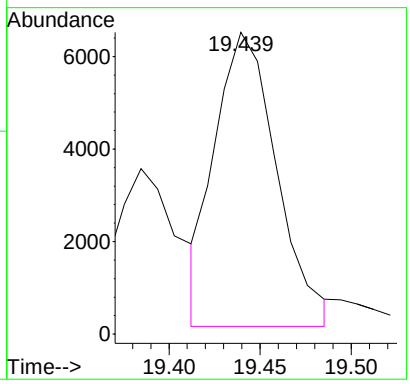
Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	20.0

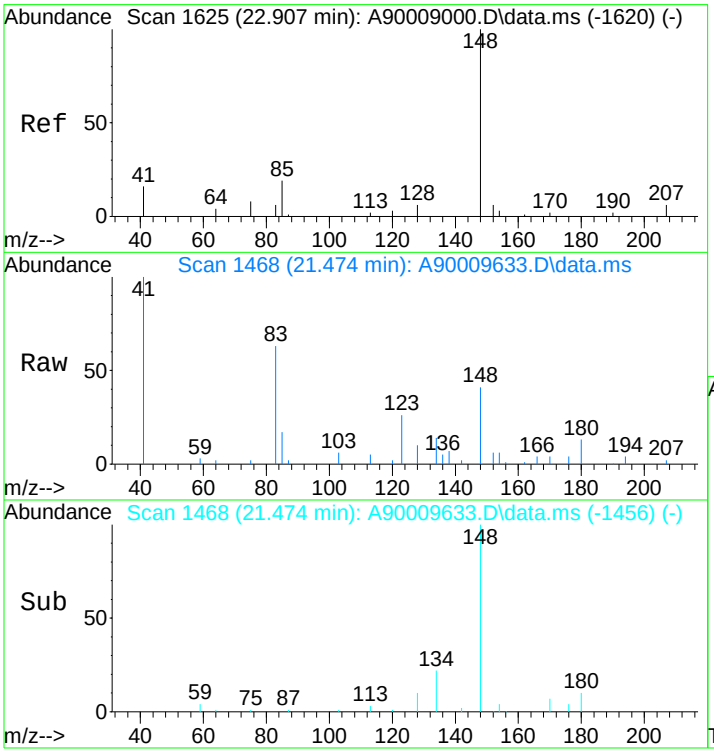




#18
Benzothiophene
Concen: 43.67 ng/mL m
RT: 19.439 min Scan# 1245
Delta R.T. 0.009 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

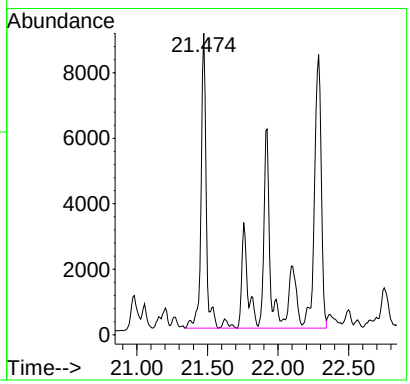
Tgt Ion:134 Resp: 14920

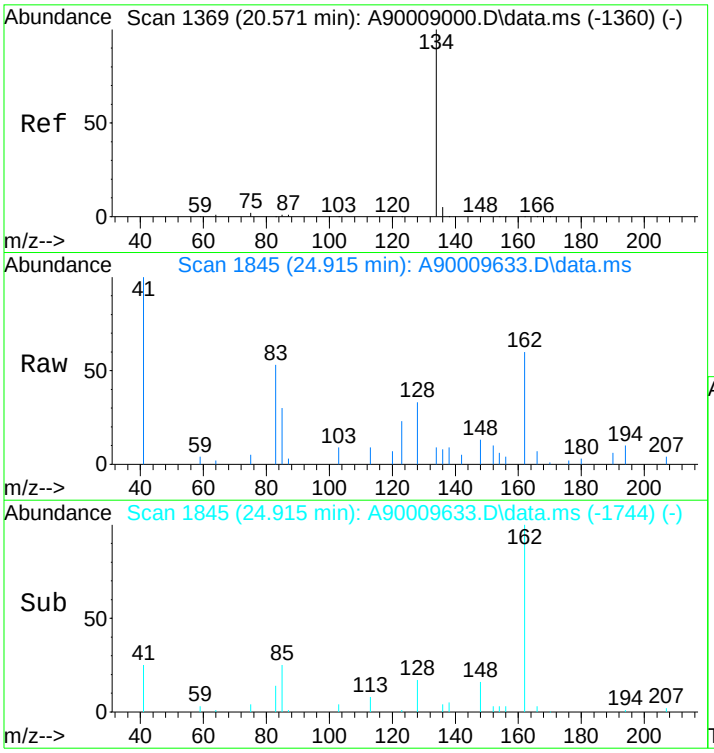




#19
C1-Benzo(b)thiophenes
Concen: 250.89 ng/mL m
RT: 21.474 min Scan# 1468
Delta R.T. -0.014 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

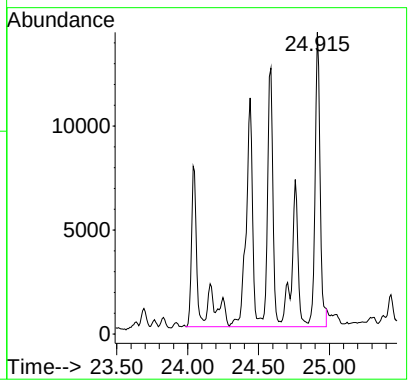
Tgt Ion:148 Resp: 85723

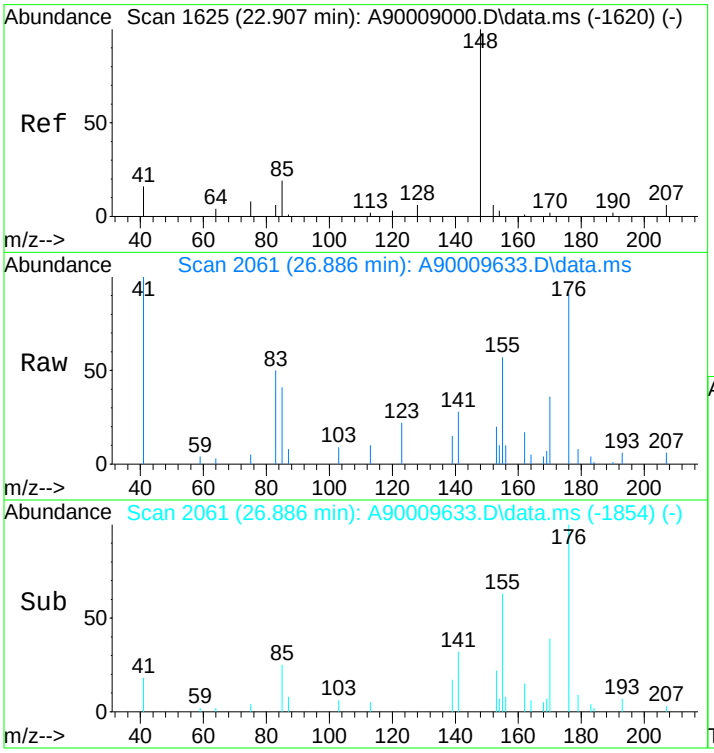




#20
C2-Benzo(b)thiophenes
Concen: 442.84 ng/mL m
RT: 24.915 min Scan# 1845
Delta R.T. -0.013 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

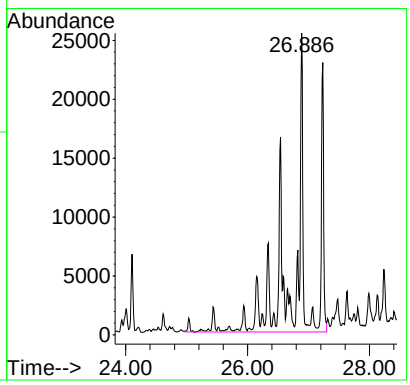
Tgt Ion:162 Resp: 151308

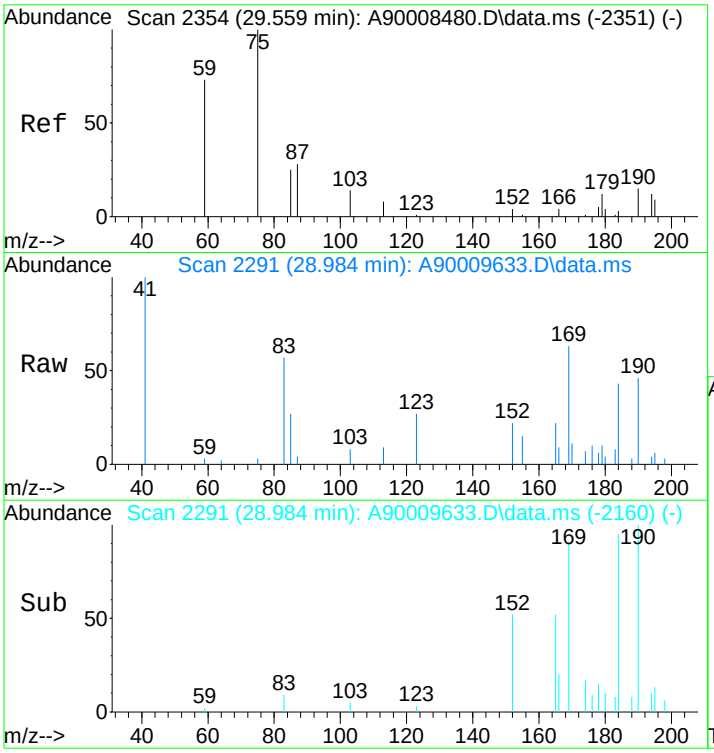




#21
C3-Benzo(b)thiophenes
Concen: 818.22 ng/mL m
RT: 26.886 min Scan# 2061
Delta R.T. -0.007 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

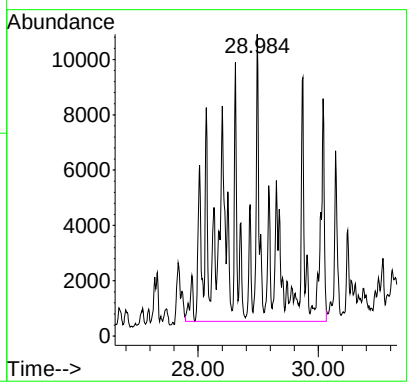
Tgt Ion:176 Resp: 279570

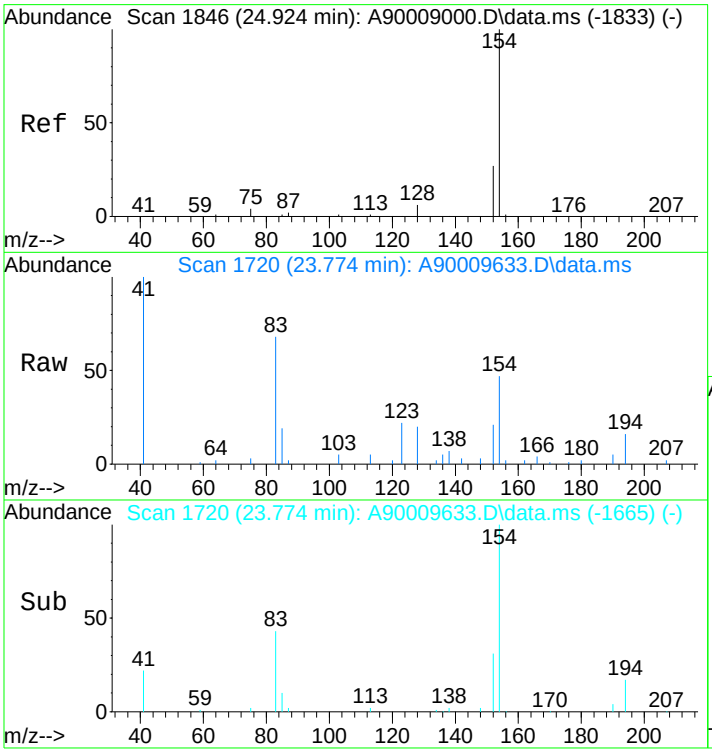




#22
C4-Benzo(b)thiophenes
Concen: 902.35 ng/mL m
RT: 28.984 min Scan# 2291
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:190 Resp: 308314

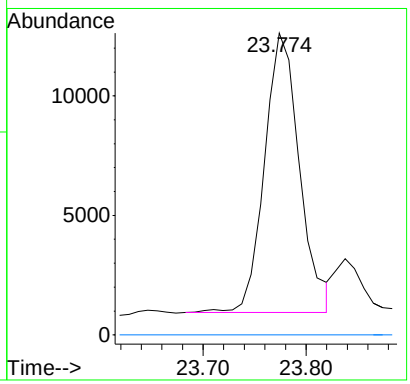


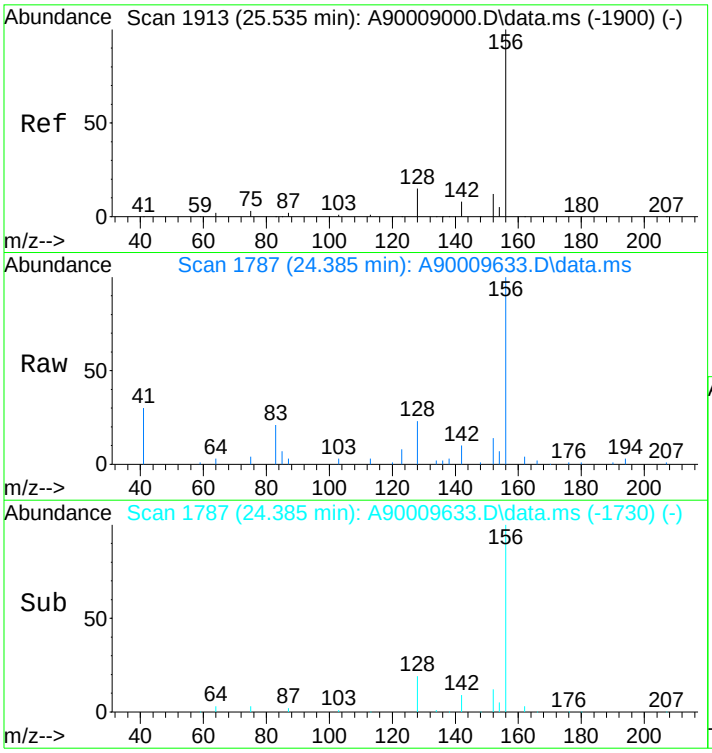


#23
Biphenyl
Concen: 79.01 ng/mL
RT: 23.774 min Scan# 1720
Delta R.T. 0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:154 Resp: 27607

Ion	Ratio	Lower	Upper
154	100		
153	0.0	0.0	0.0

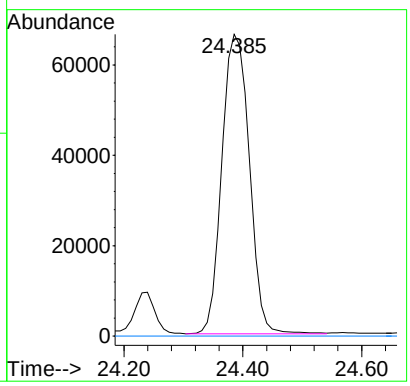


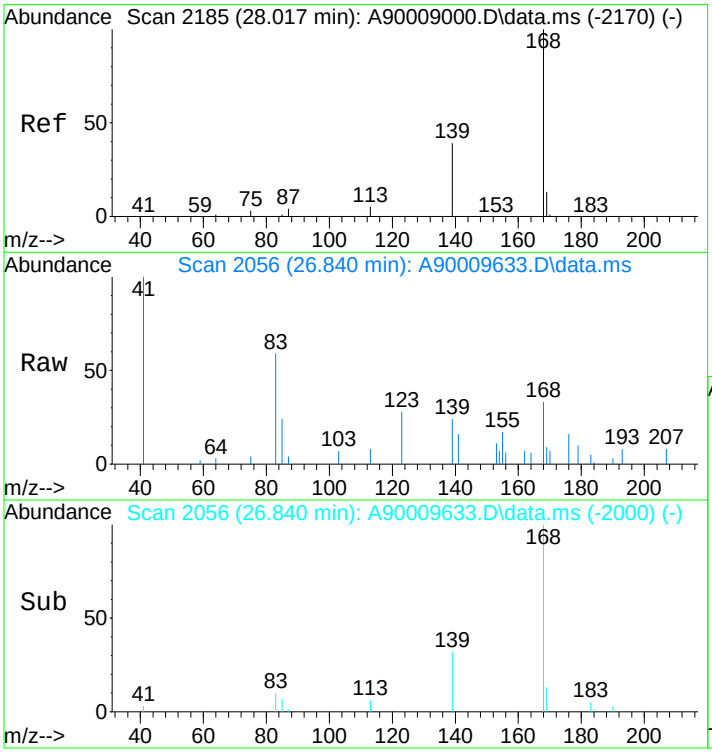


#24
2,6-Dimethylnaphthalene
Concen: 847.13 ng/mL
RT: 24.385 min Scan# 1787
Delta R.T. 0.018 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:156 Resp: 212624

Ion	Ratio	Lower	Upper
156	100		
155	0.0	0.0	0.0

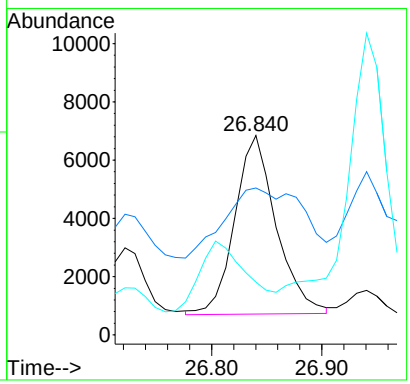


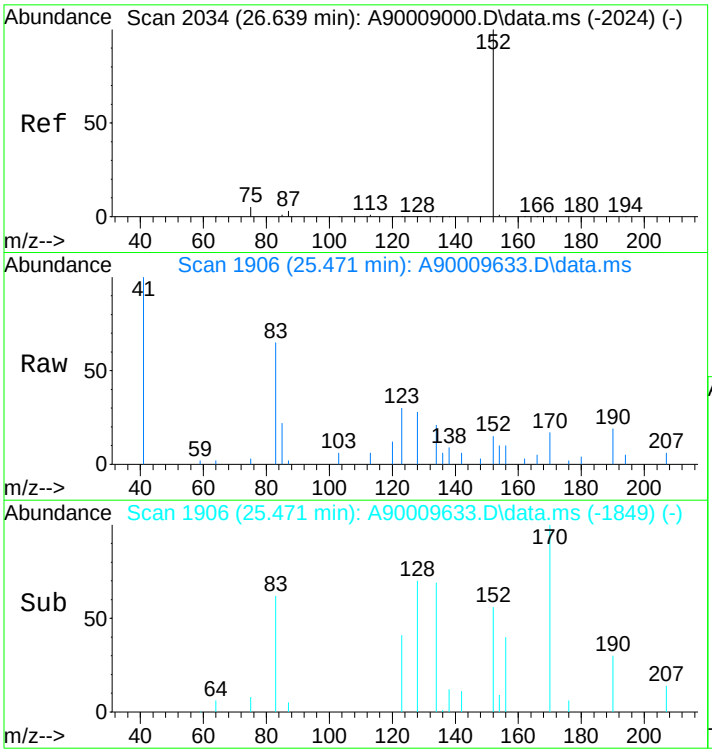


#25
Dibenzofuran
Concen: 43.15 ng/mL
RT: 26.840 min Scan# 2056
Delta R.T. 0.009 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:168 Resp: 16080

Ion	Ratio	Lower	Upper
168	100		
139	72.8	28.3	42.5#
169	0.0	10.6	15.8#

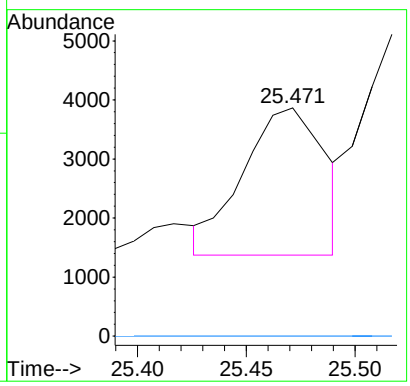


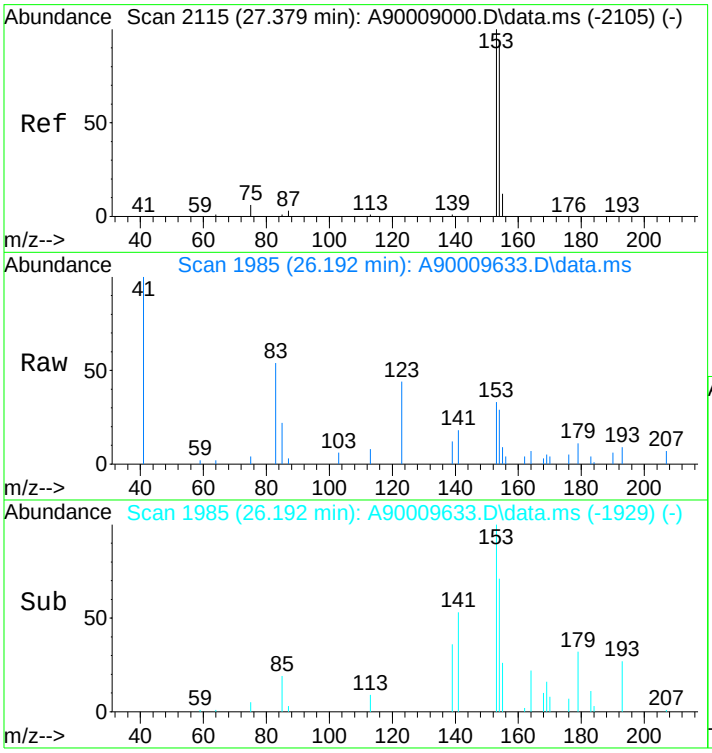


#26
Acenaphthylene
Concen: 15.44 ng/mL m
RT: 25.471 min Scan# 1906
Delta R.T. 0.018 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:152 Resp: 6484

Ion	Ratio	Lower	Upper
152	100		
153	0.0	0.0	0.0

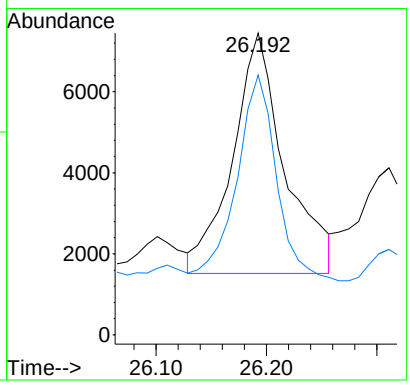


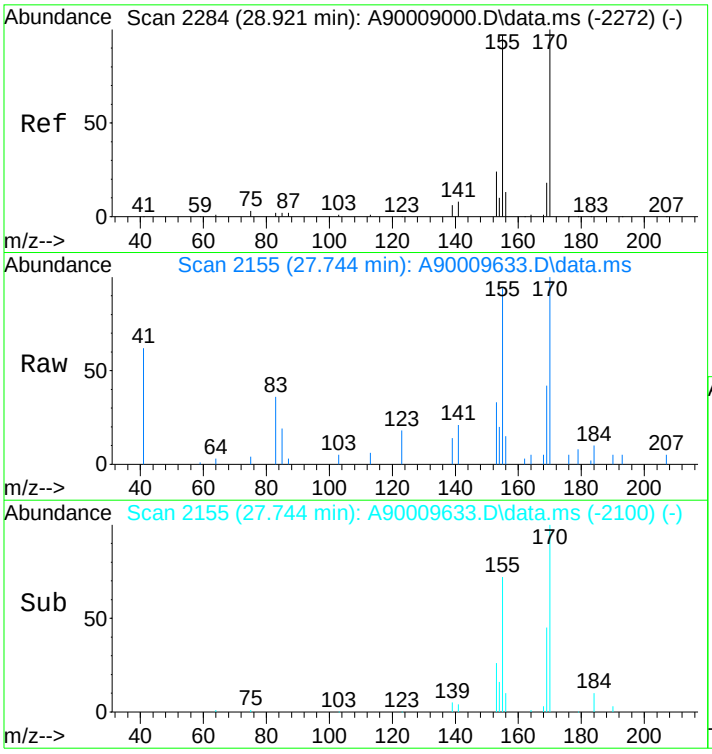


#27
Acenaphthene
Concen: 73.33 ng/mL m
RT: 26.192 min Scan# 1985
Delta R.T. 0.009 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:153 Resp: 19365

Ion	Ratio	Lower	Upper
153	100		
154	67.6	75.7	113.5#

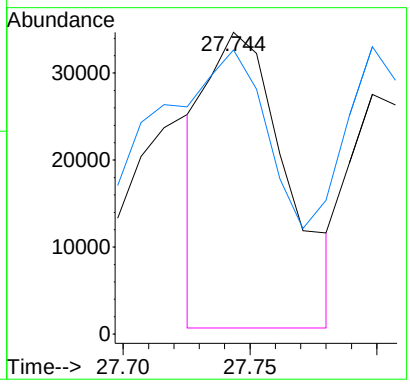


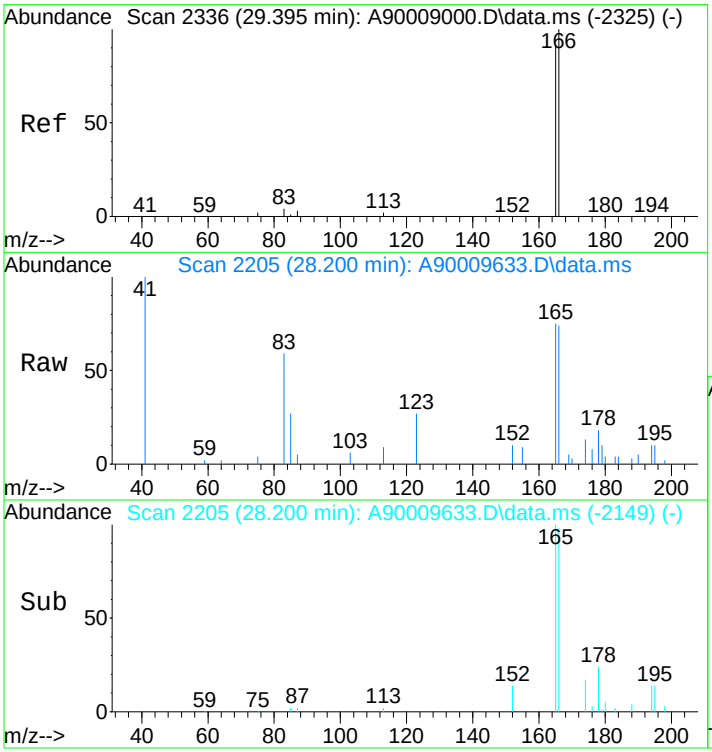


#28
2,3,5-Trimethylnaphthalene
Concen: 323.77 ng/mL m
RT: 27.744 min Scan# 2155
Delta R.T. 0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:170 Resp: 74713

Ion	Ratio	Lower	Upper
170	100		
155	152.4	68.9	103.3#

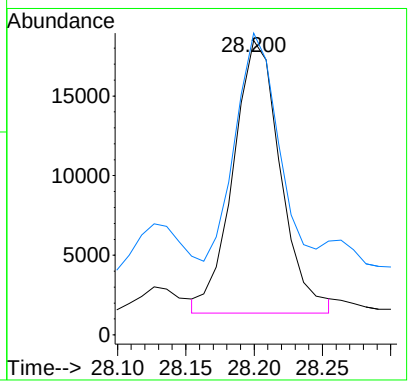


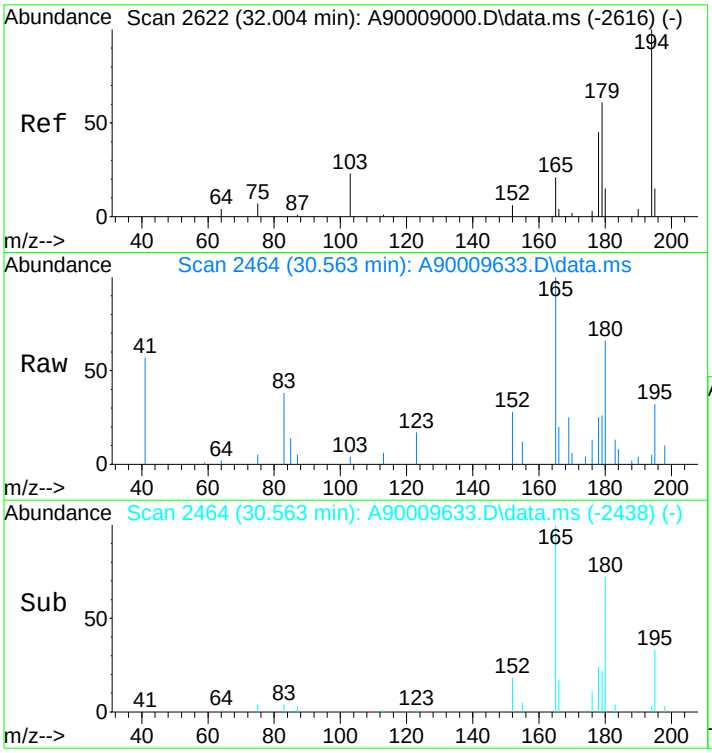


#29
Fluorene
Concen: 142.38 ng/mL m
RT: 28.200 min Scan# 2205
Delta R.T. 0.009 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:166 Resp: 41289

Ion	Ratio	Lower	Upper
166	100		
165	15.2	73.0	109.4#

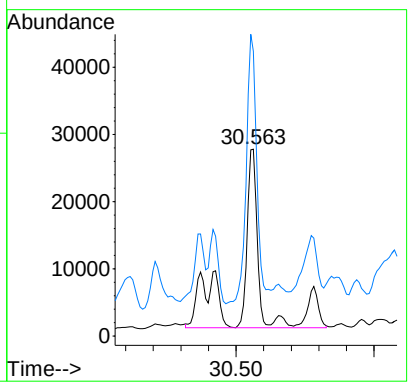


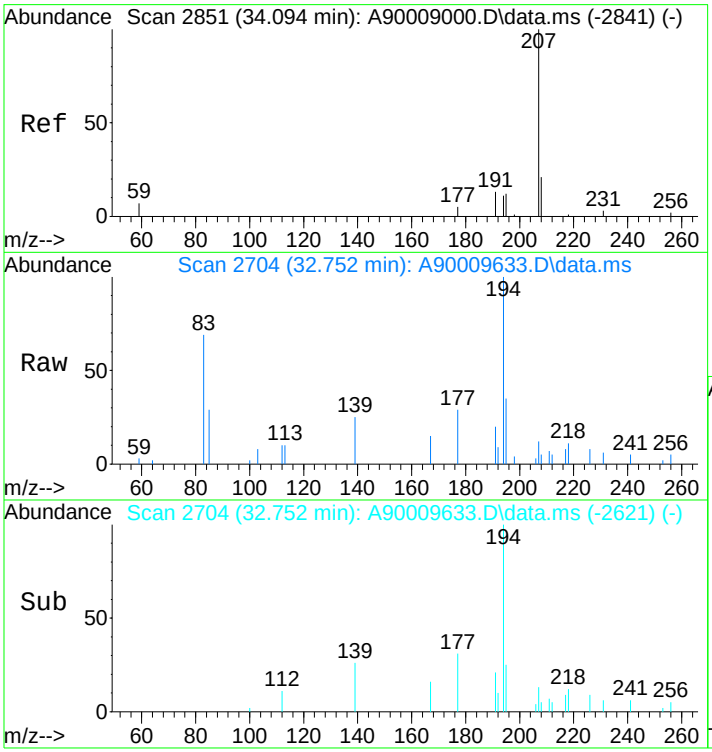


#30
C1-Fluorenes
Concen: 428.11 ng/mL m
RT: 30.563 min Scan# 2464
Delta R.T. 0.014 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:180 Resp: 124153

Ion	Ratio	Lower	Upper
180	100		
165	85.9	117.5	176.3#

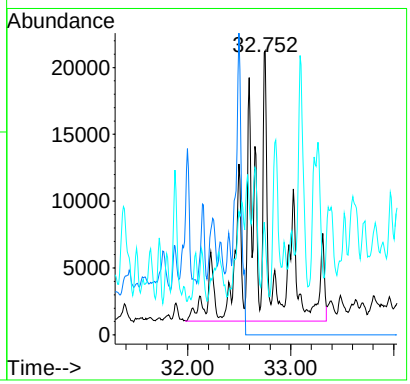


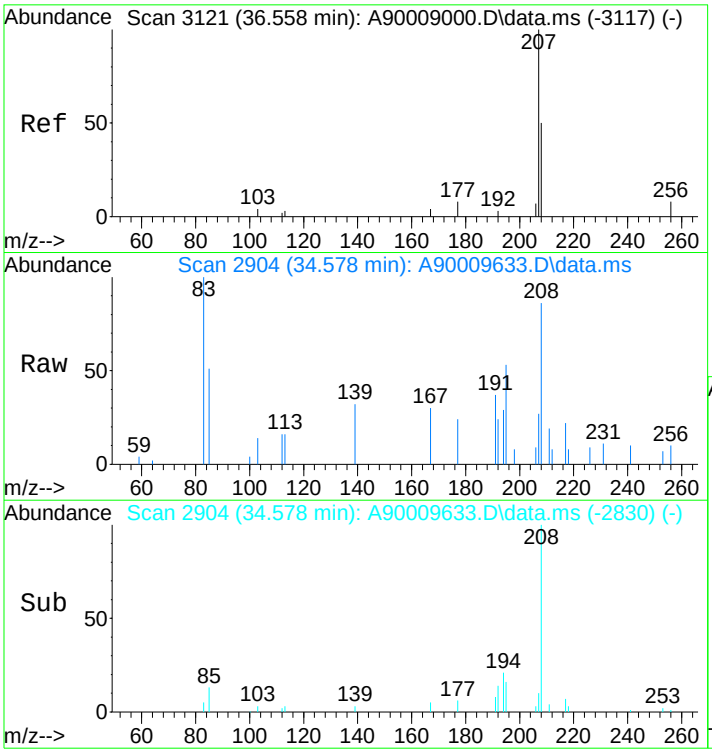


#31
C2-Fluorenes
Concen: 971.91 ng/mL m
RT: 32.752 min Scan# 2704
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:194 Resp: 281855

Ion	Ratio	Lower	Upper
194	100		
179	0.0	0.0	0.0
195	4.9	25.9	38.9#

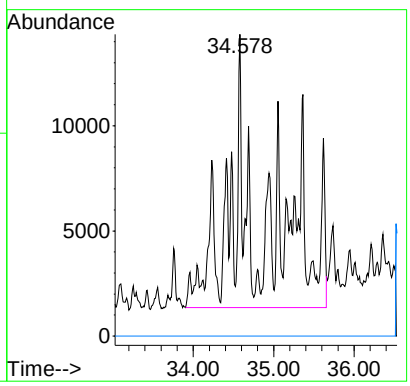


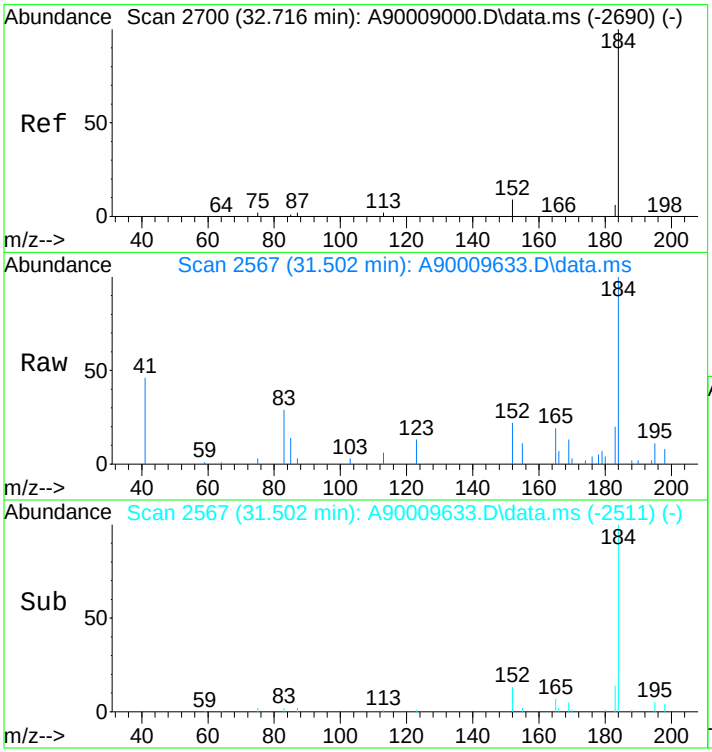


#32
C3-Fluorenes
Concen: 1166.84 ng/mL m
RT: 34.578 min Scan# 2904
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:208 Resp: 338385

Ion	Ratio	Lower	Upper
208	100		
197	0.0	0.0	0.0

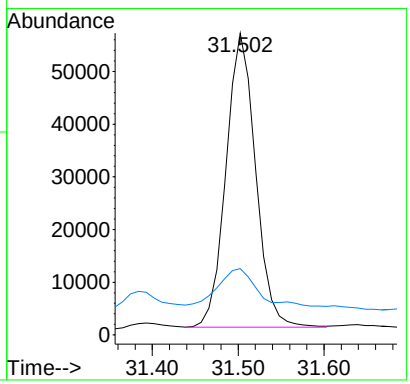


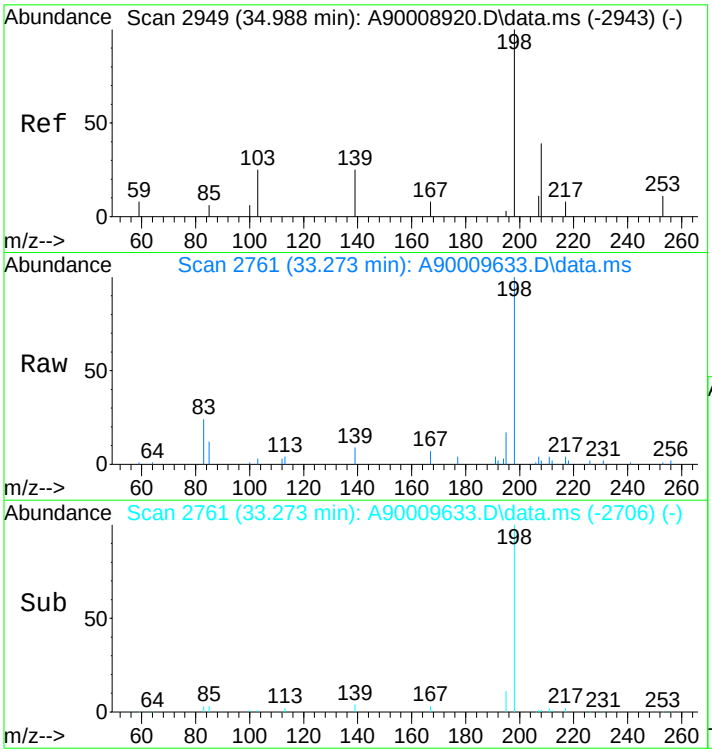


#33
Dibenzothiophene
Concen: 329.01 ng/mL
RT: 31.502 min Scan# 2567
Delta R.T. 0.009 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:184 Resp: 134213

Ion	Ratio	Lower	Upper
184	100		
152	22.2	7.6	11.4#

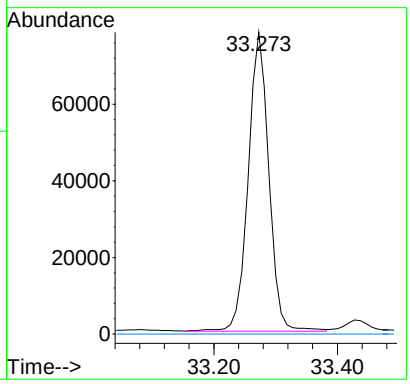


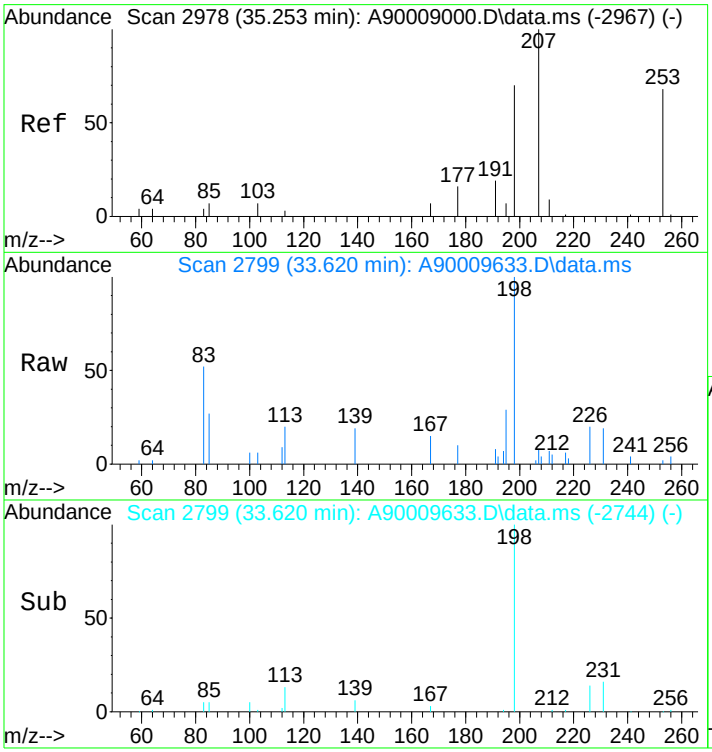


#34
4-Methyldibenzothiophene(4MDT)
Concen: 443.31 ng/mL
RT: 33.273 min Scan# 2761
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:198 Resp: 180840

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

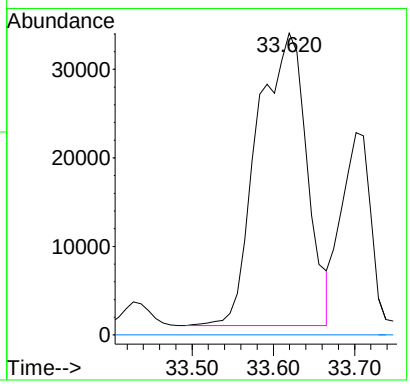


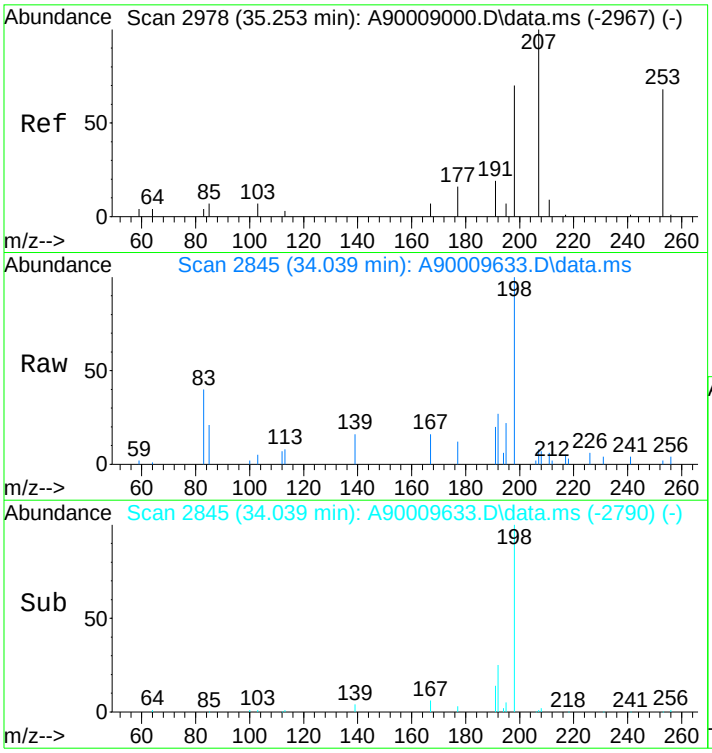


#35
2/3-Methyldibenzothiophene(2MDT)
Concen: 344.00 ng/mL
RT: 33.620 min Scan# 2799
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:198 Resp: 140330

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

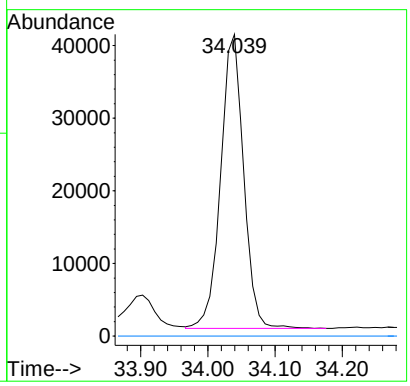


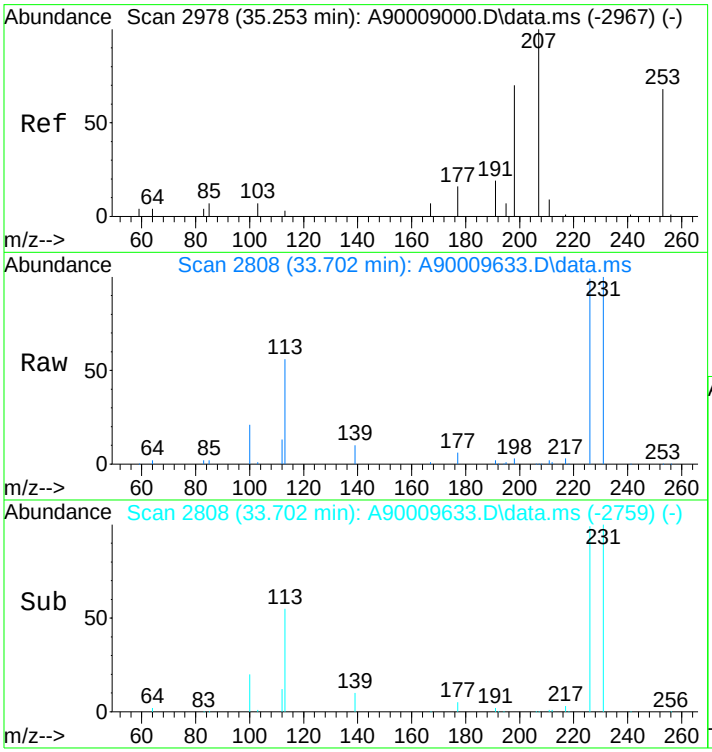


#36
1-Methyldibenzothiophene(1MDT)
Concen: 236.23 ng/mL
RT: 34.039 min Scan# 2845
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:198 Resp: 96367

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

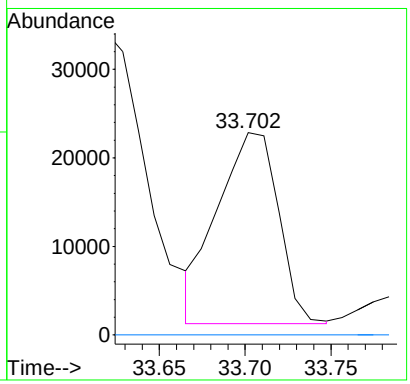


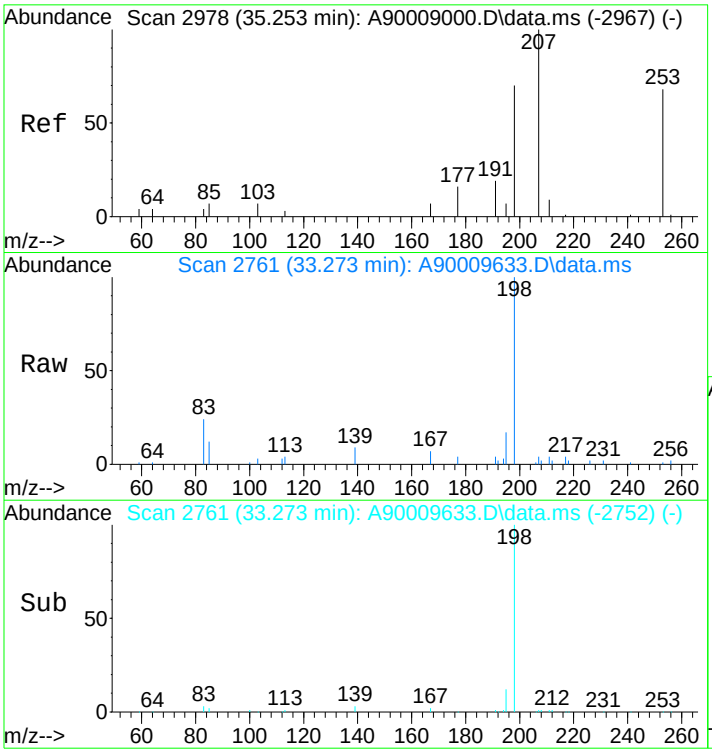


#37
OTP
Concen: 130.92 ng/mL
RT: 33.702 min Scan# 2808
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:198 Resp: 53408

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

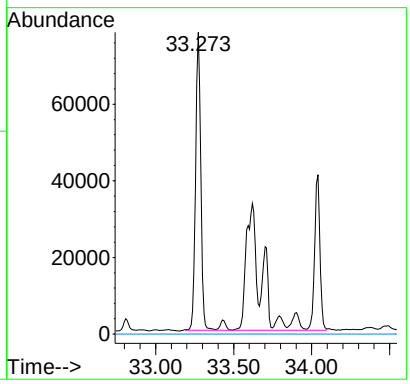


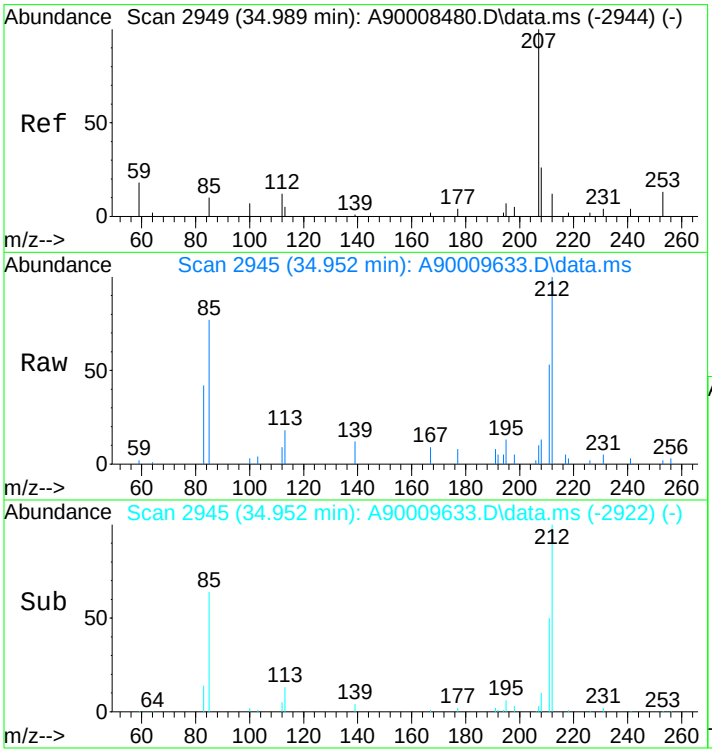


#38
C1-Dibenzothiophenes
Concen: 1229.27 ng/mL m
RT: 33.273 min Scan# 2761
Delta R.T. 0.013 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:198 Resp: 501464

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

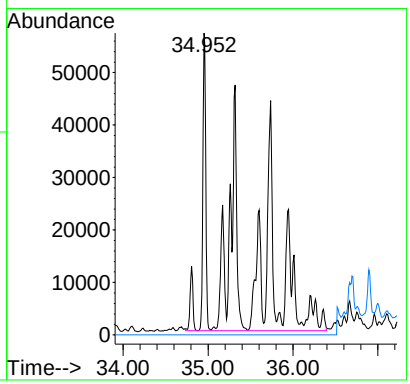


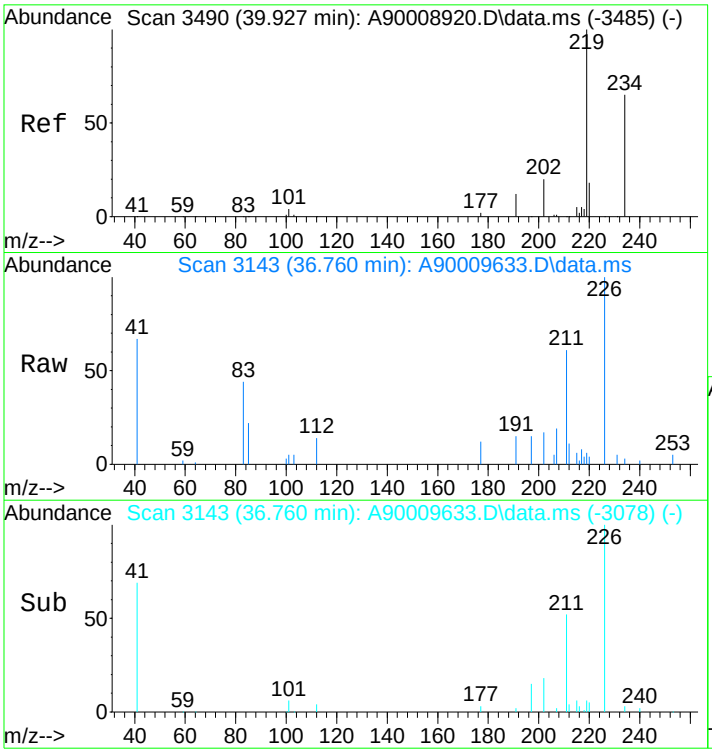


#39
C2-Dibenzothiophenes
Concen: 2087.66 ng/mL m
RT: 34.952 min Scan# 2945
Delta R.T. -0.009 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:212 Resp: 851631

Ion	Ratio	Lower	Upper
212	100		
197	0.0	0.0	0.0

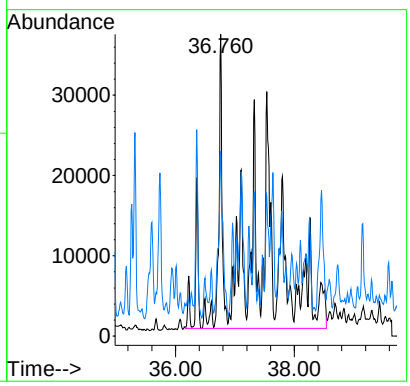


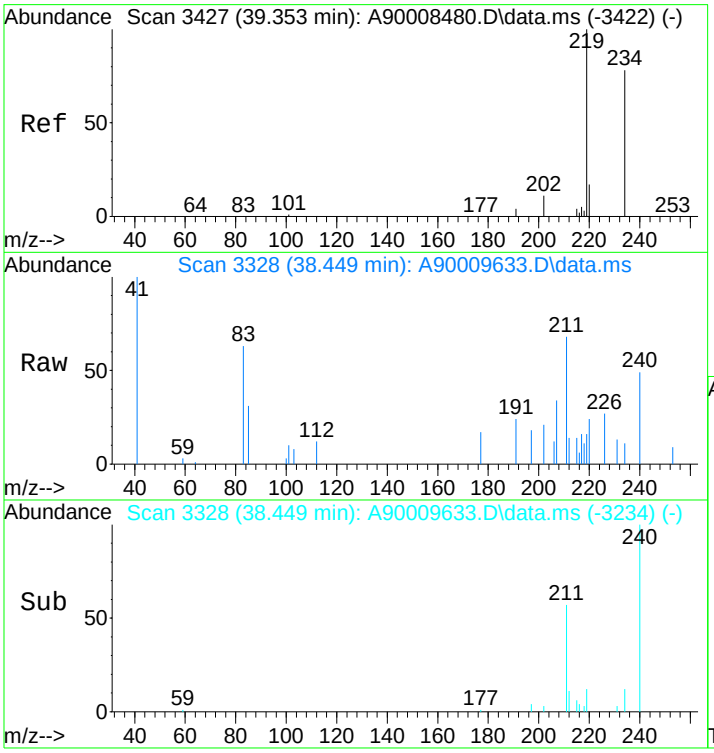


#40
C3-Dibenzothiophenes
Concen: 2259.95 ng/mL m
RT: 36.760 min Scan# 3143
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:226 Resp: 921915

Ion	Ratio	Lower	Upper
226	100		
211	3.4	45.9	68.9#

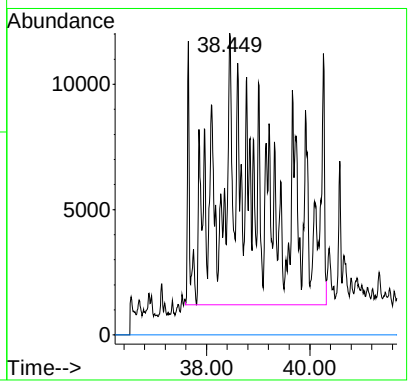


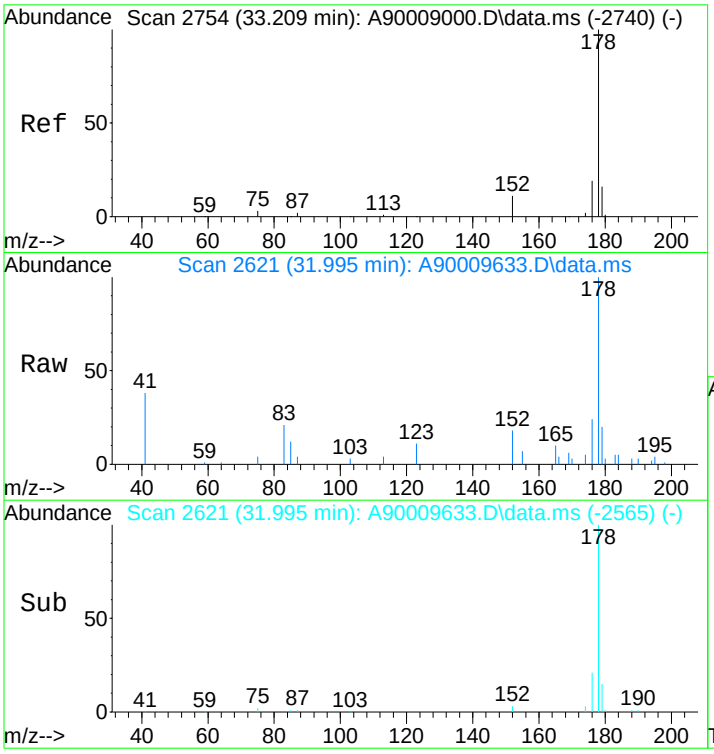


#41
C4-Dibenzothiophenes
Concen: 1569.66 ng/mL m
RT: 38.449 min Scan# 3328
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:240 Resp: 640321

Ion	Ratio	Lower	Upper
240	100		
225	0.0	0.0	0.0

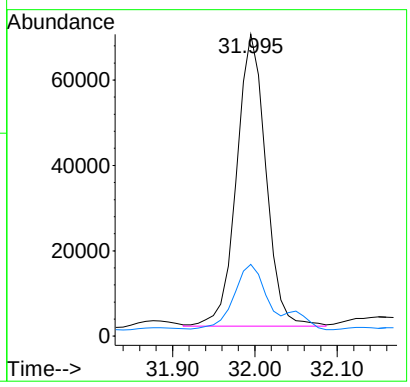


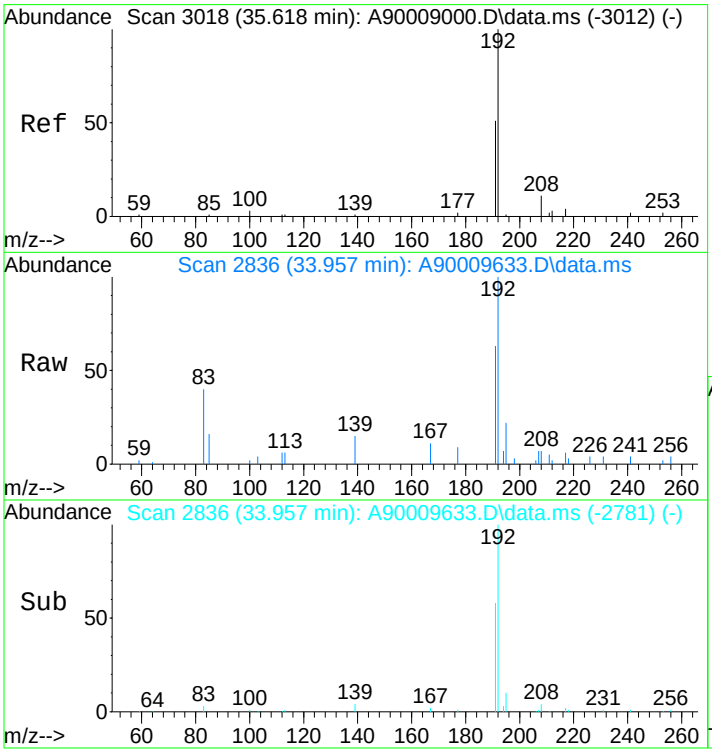


#43
Phenanthrene
Concen: 401.11 ng/mL m
RT: 31.995 min Scan# 2621
Delta R.T. 0.009 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:178 Resp: 169045

Ion	Ratio	Lower	Upper
178	100		
176	0.8	15.3	22.9#

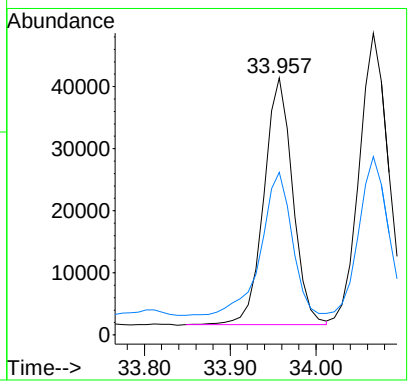


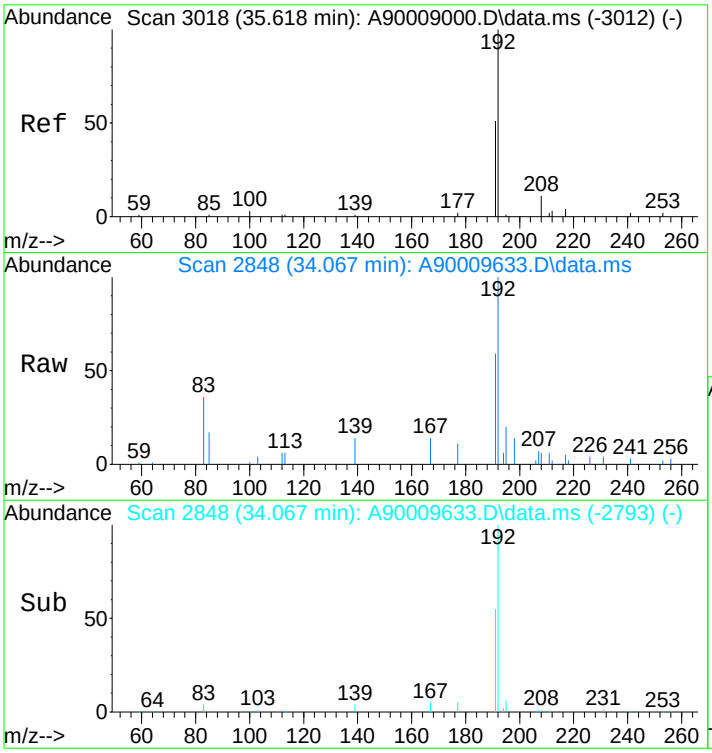


#44
3-Methylphenanthrene(3MP)
Concen: 219.85 ng/mL
RT: 33.957 min Scan# 2836
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:192 Resp: 92654

Ion	Ratio	Lower	Upper
192	100		
191	65.4	46.6	70.0

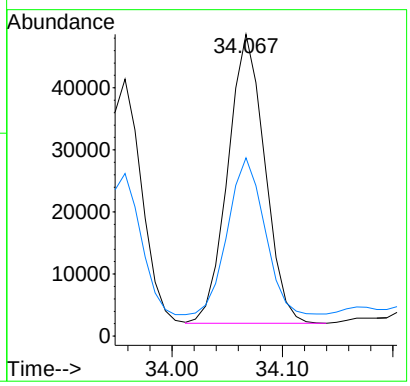


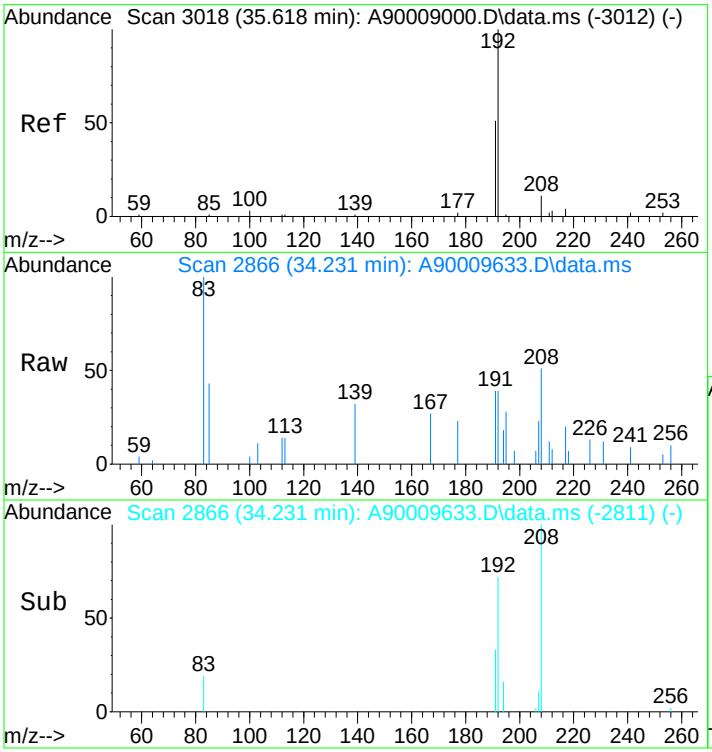


#45
2-Methylphenanthrene(2MP)
Concen: 256.24 ng/mL
RT: 34.067 min Scan# 2848
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:192 Resp: 107990

Ion	Ratio	Lower	Upper
192	100		
191	54.4	45.4	68.0

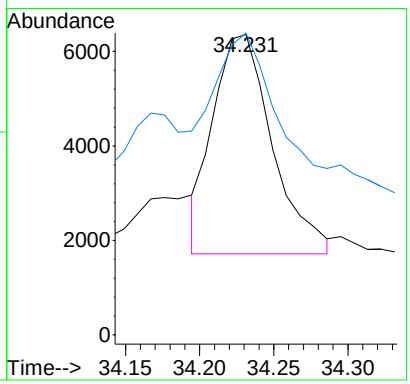


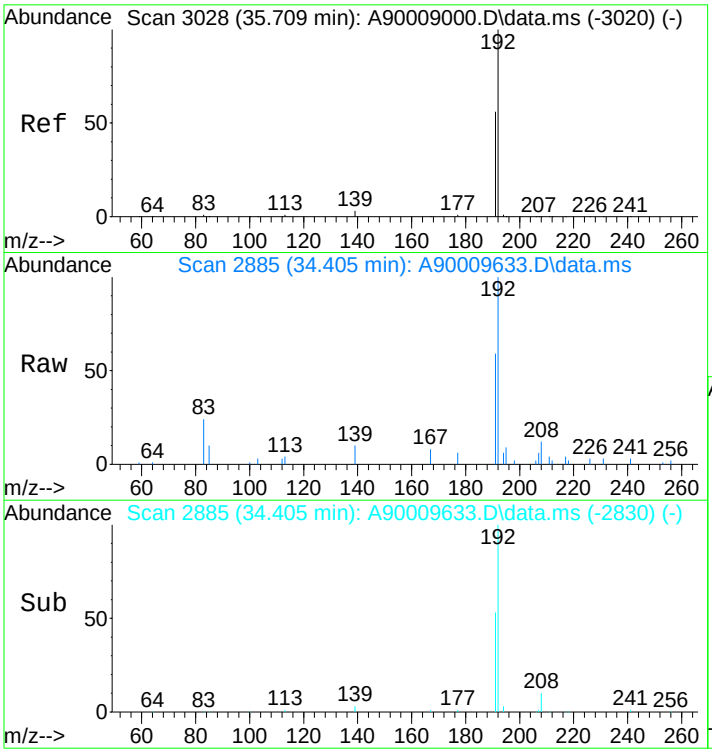


#46
2-Methylanthracene(2MA)
Concen: 30.65 ng/mL m
RT: 34.231 min Scan# 2866
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:192 Resp: 12916

Ion	Ratio	Lower	Upper
192	100		
191	89.3	96.0	144.0#

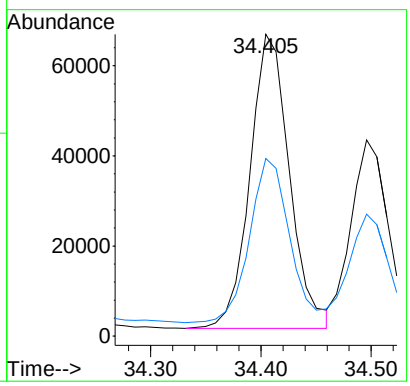


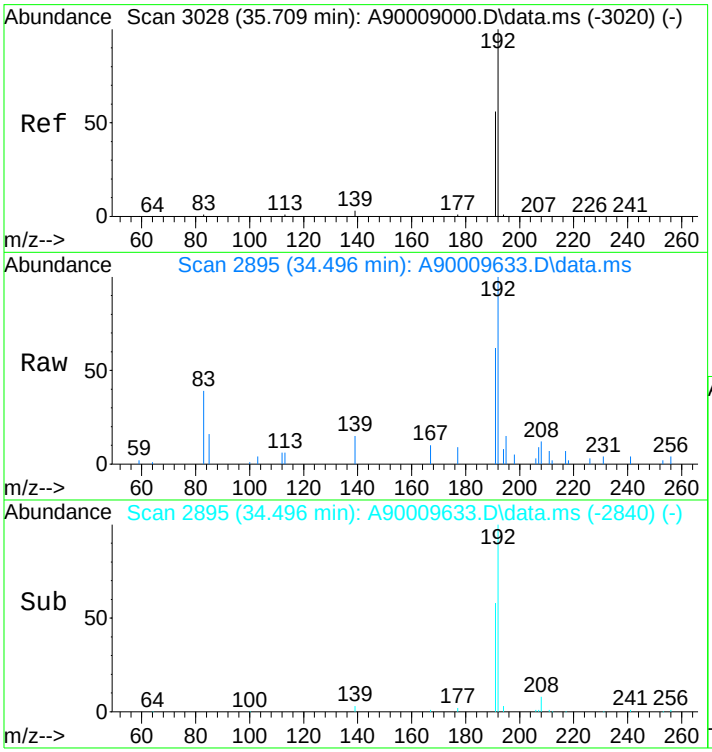


#47
9/4-Methylphenanthrene(9MP)
Concen: 385.13 ng/mL
RT: 34.405 min Scan# 2885
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:192 Resp: 162313

Ion	Ratio	Lower	Upper
192	100		
191	55.7	45.0	67.6

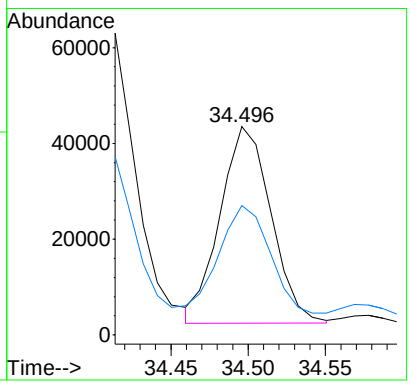


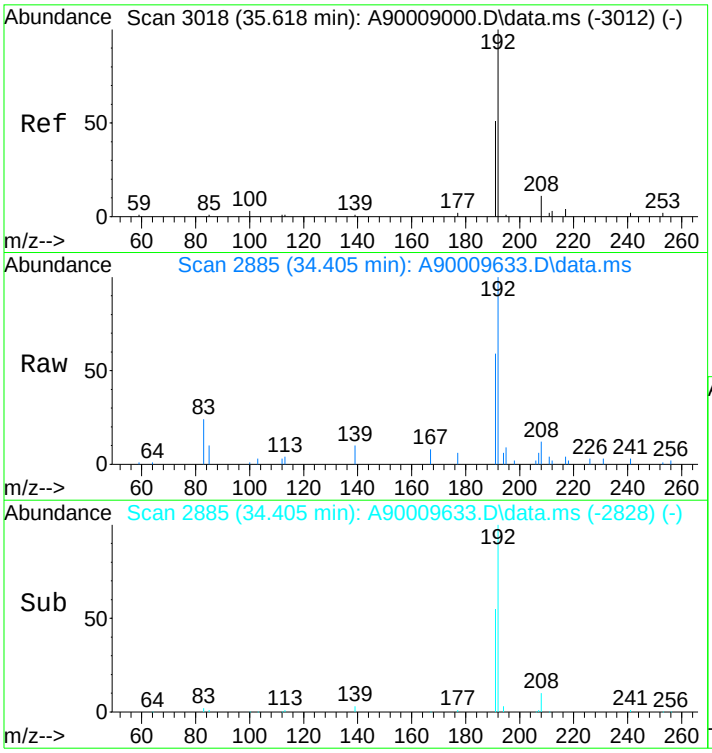


#48
1-Methylphenanthrene(1MP)
Concen: 224.11 ng/mL
RT: 34.496 min Scan# 2895
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:192 Resp: 94448

Ion	Ratio	Lower	Upper
192	100		
191	57.3	47.4	71.0

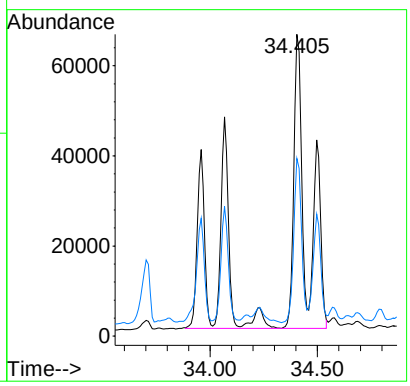


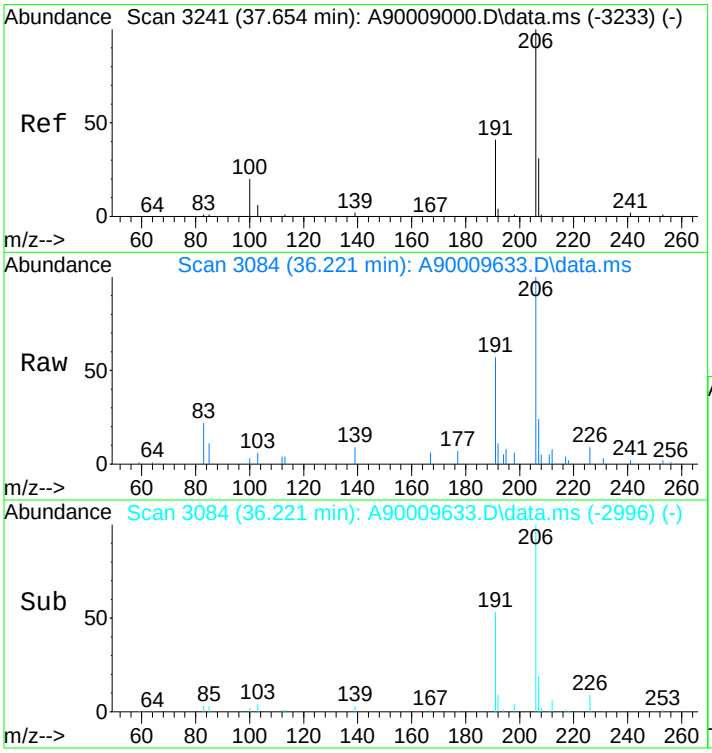


#49
C1-Phenanthrenes/Anthracenes
Concen: 1139.64 ng/mL m
RT: 34.405 min Scan# 2885
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:192 Resp: 480297

Ion	Ratio	Lower	Upper
192	100		
191	18.8	45.0	67.6#

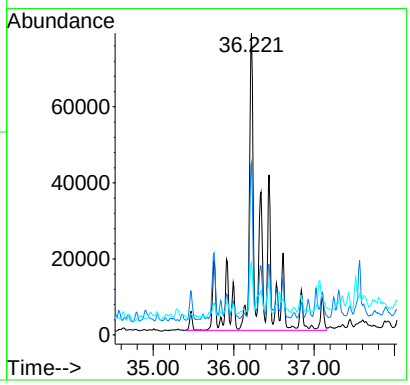


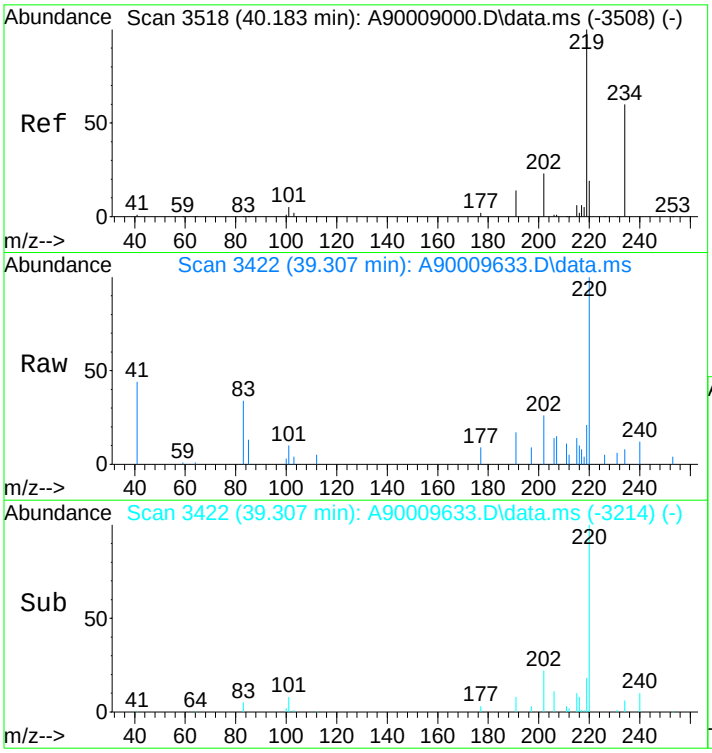


#50
C2-Phenanthrenes/Anthracenes
Concen: 1759.22 ng/mL m
RT: 36.221 min Scan# 3084
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:206 Resp: 741413

Ion	Ratio	Lower	Upper
206	100		
191	1.6	41.1	61.7#
207	0.8	17.2	25.8#

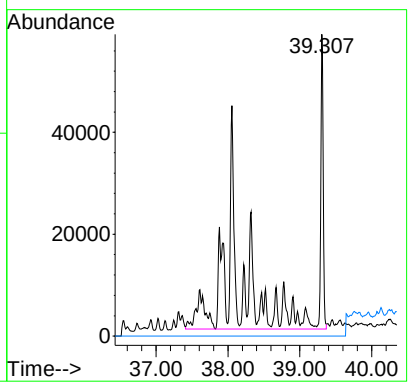


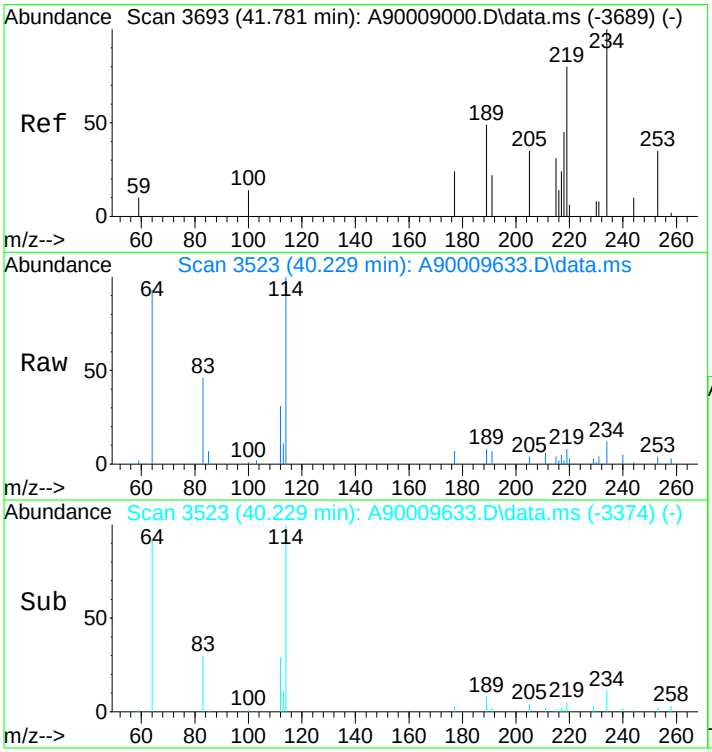


#52
C3-Phenanthrenes/Anthracenes
Concen: 1665.76 ng/mL m
RT: 39.307 min Scan# 3422
Delta R.T. 1.251 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:220 Resp: 702026

Ion	Ratio	Lower	Upper
220	100		
205	0.0	0.0	0.0

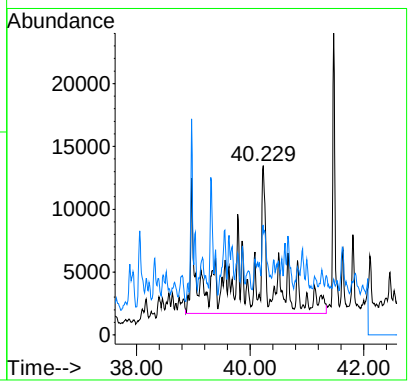


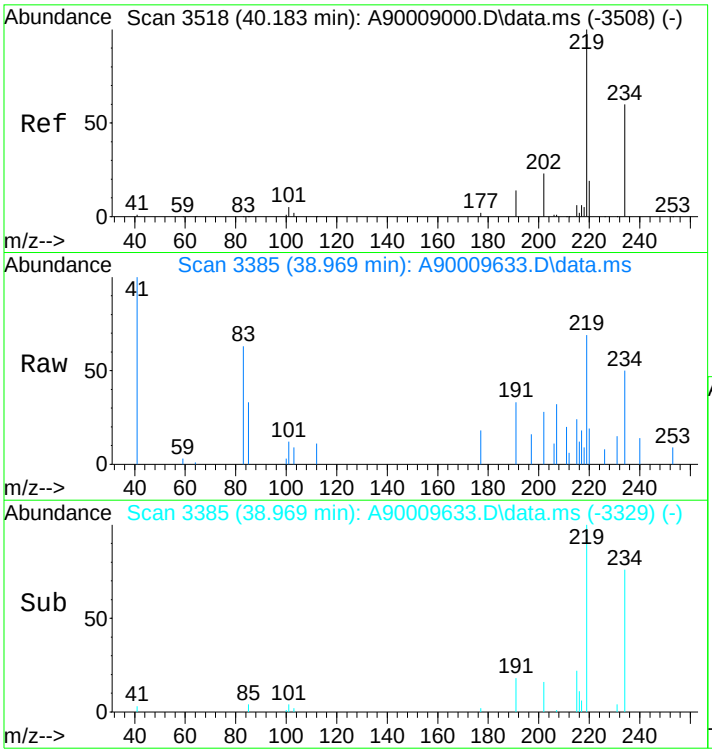


#53
C4-Phenanthrenes/Anthracenes
Concen: 789.56 ng/mL m
RT: 40.229 min Scan# 3523
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:234 Resp: 332756

Ion	Ratio	Lower	Upper
234	100		
219	2.1	52.4	78.6#

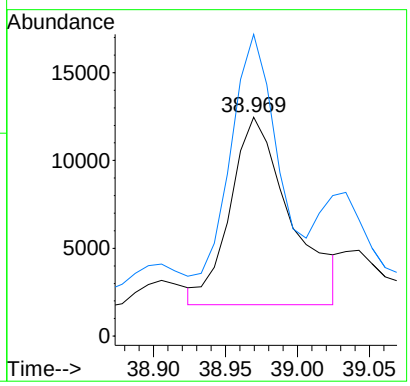


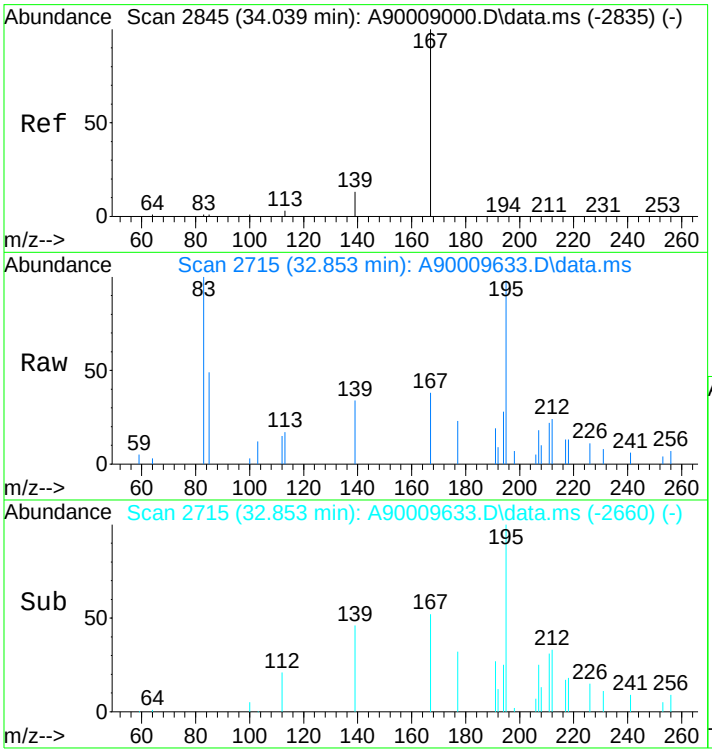


#54
Retene
Concen: 268.44 ng/mL m
RT: 38.969 min Scan# 3385
Delta R.T. 0.009 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:234 Resp: 31101

Ion	Ratio	Lower	Upper
234	100		
219	96.2	119.5	179.3#

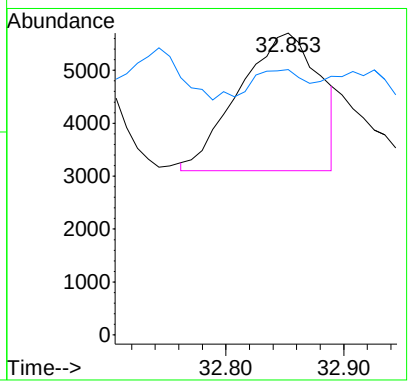


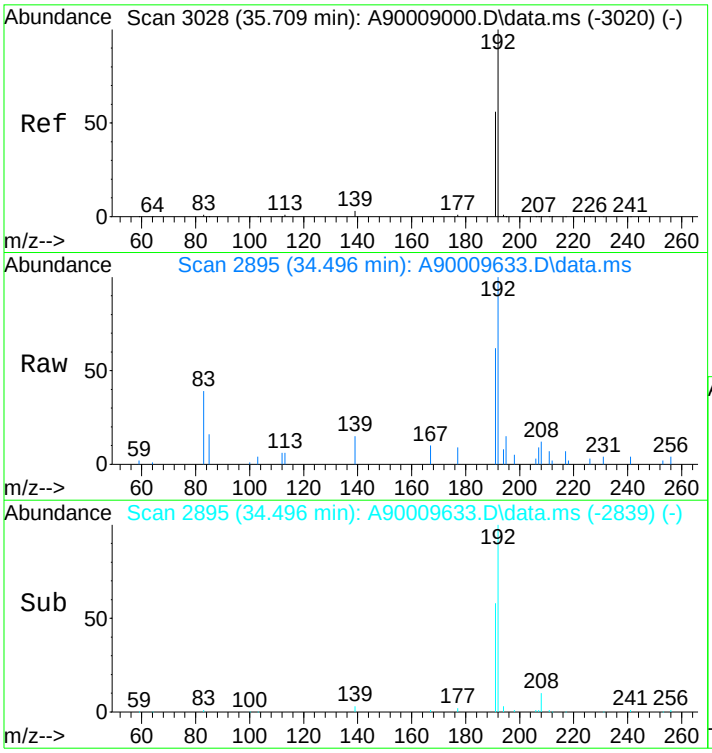


#56
Carbazole
Concen: 33.40 ng/mL m
RT: 32.853 min Scan# 2715
Delta R.T. 0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:167 Resp: 12364

Ion	Ratio	Lower	Upper
167	100		
139	0.0	10.6	15.8#

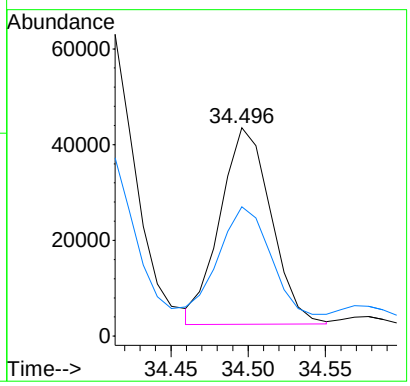


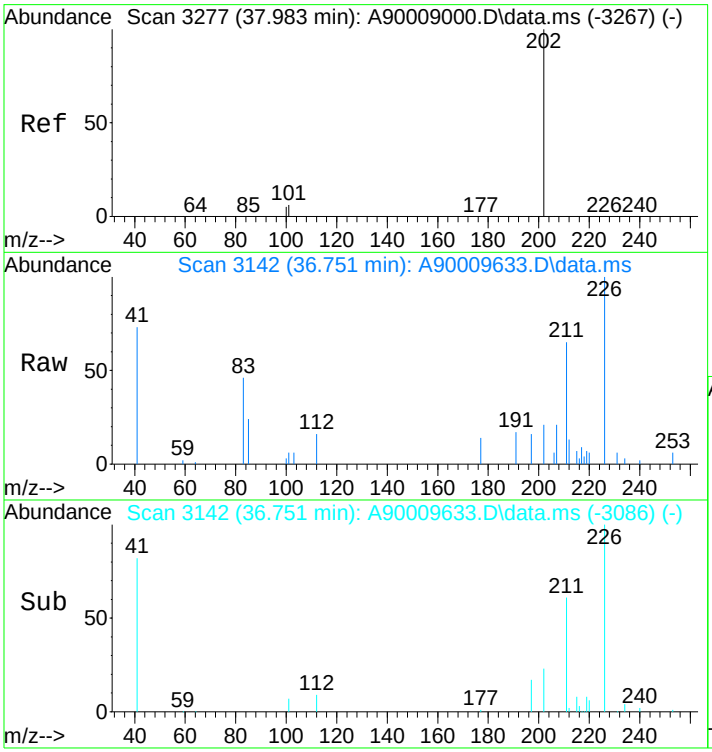


#57
1-Methylphenanthrene
Concen: 303.17 ng/mL
RT: 34.496 min Scan# 2895
Delta R.T. 0.009 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:192 Resp: 94267

Ion	Ratio	Lower	Upper
192	100		
191	56.0	44.8	67.2

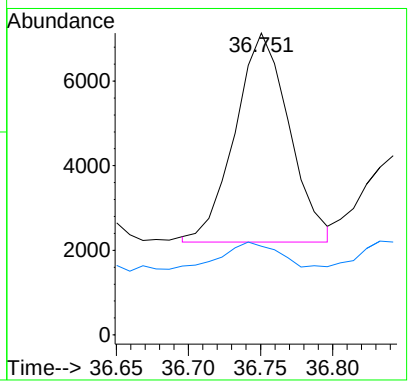


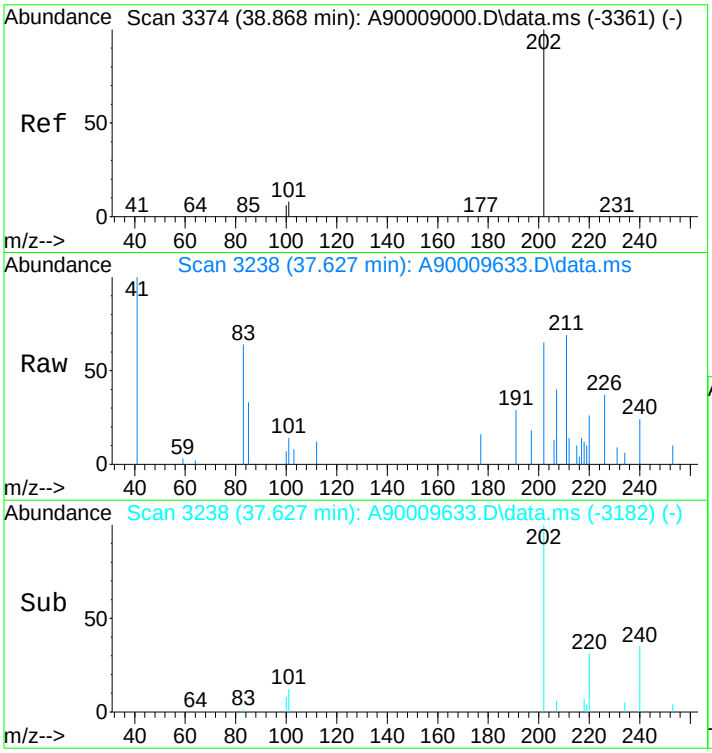


#58
Fluoranthene
Concen: 27.44 ng/mL m
RT: 36.751 min Scan# 3142
Delta R.T. 0.009 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:202 Resp: 12918

Ion	Ratio	Lower	Upper
202	100		
101	0.0	7.5	11.3#

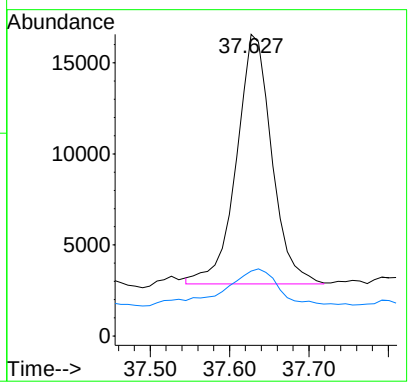


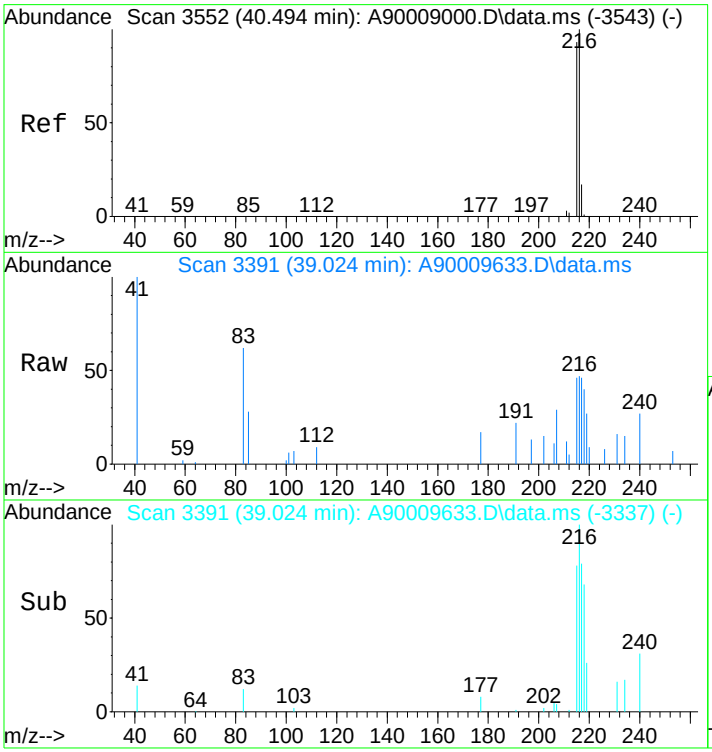


#60
Pyrene
Concen: 88.36 ng/mL m
RT: 37.627 min Scan# 3238
Delta R.T. 0.009 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:202 Resp: 42441

Ion	Ratio	Lower	Upper
202	100		
101	23.8	8.6	13.0#

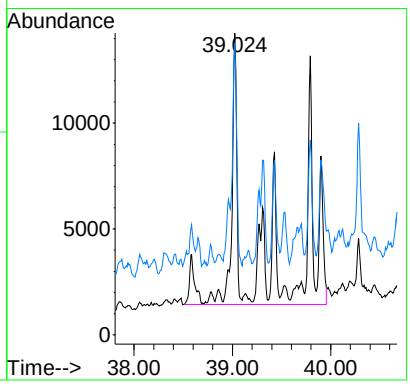


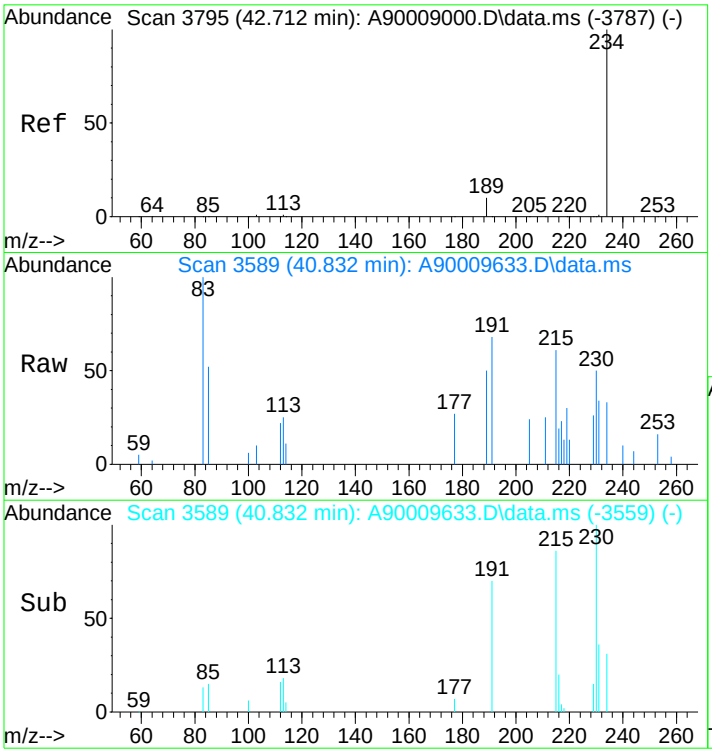


#61
C1-Fluoranthenes/Pyrenes
Concen: 318.06 ng/mL m
RT: 39.024 min Scan# 3391
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:216 Resp: 152766

Ion	Ratio	Lower	Upper
216	100		
215	19.7	73.4	110.0#

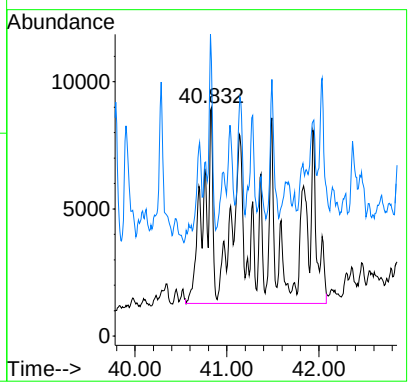


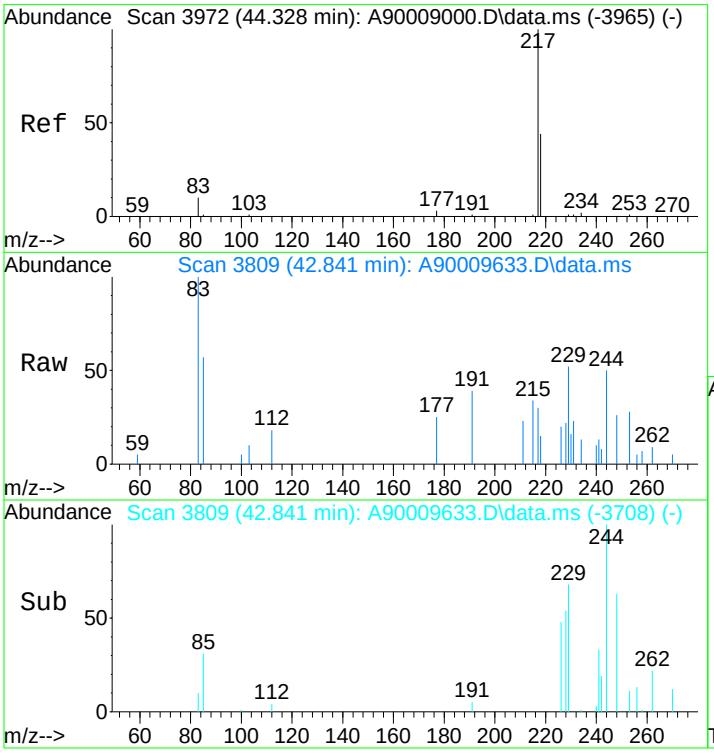


#62
C2-Fluoranthenes/Pyrenes
Concen: 464.71 ng/mL m
RT: 40.832 min Scan# 3589
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:230 Resp: 223207

Ion	Ratio	Lower	Upper
230	100		
215	8.4	91.0	136.4#

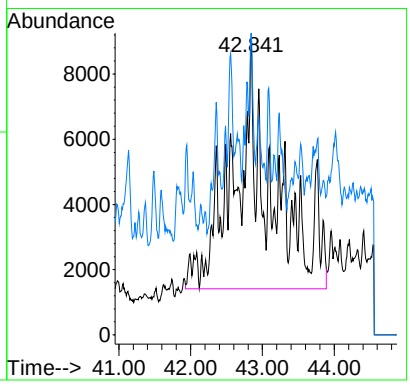


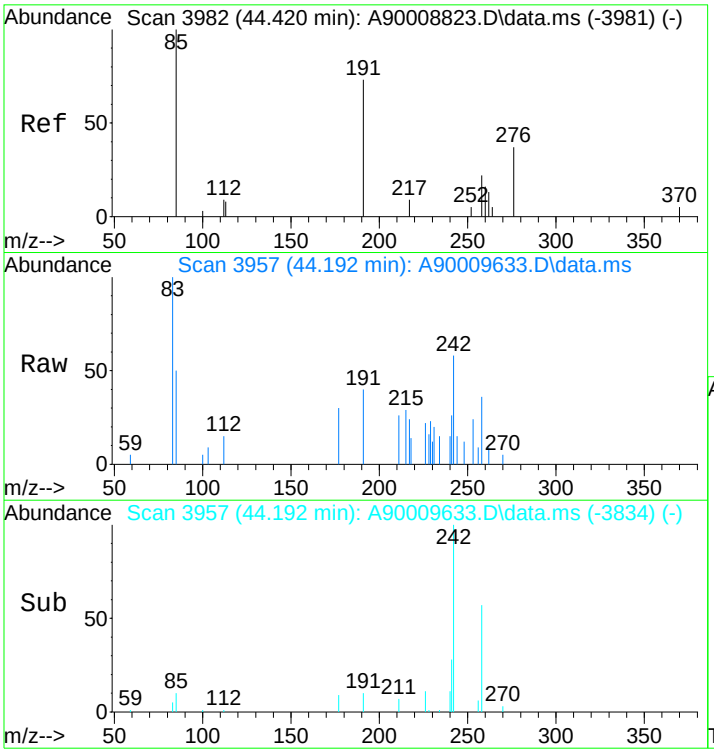


#63
C3-Fluoranthenes/Pyrenes
Concen: 566.06 ng/mL m
RT: 42.841 min Scan# 3809
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:244 Resp: 271884

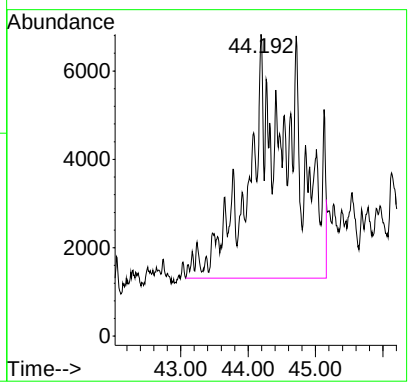
Ion	Ratio	Lower	Upper
244	100		
229	4.6	77.0	115.6#

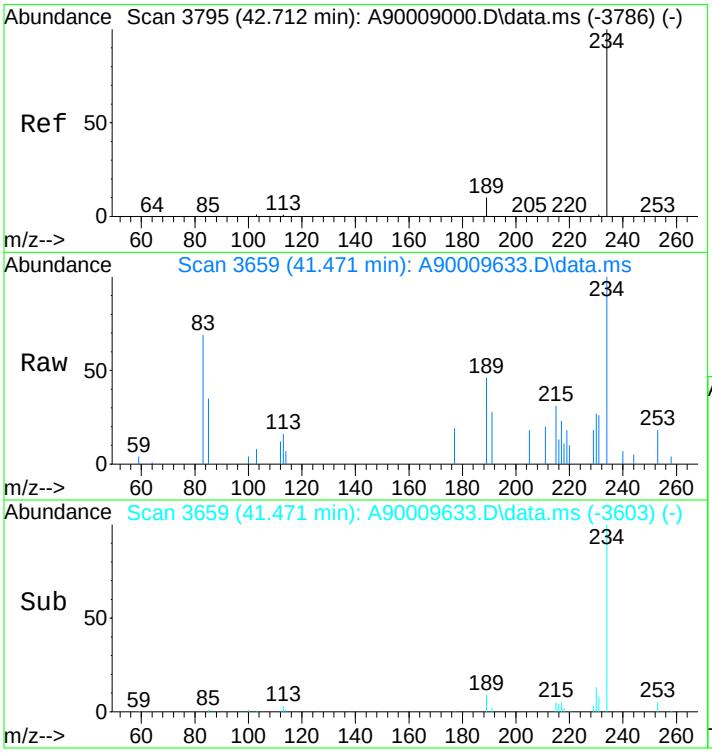




#64
C4-Fluoranthenes/Pyrenes
Concen: 516.04 ng/mL m
RT: 44.192 min Scan# 3957
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:258 Resp: 247858

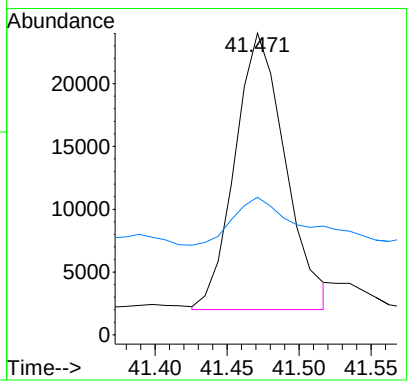


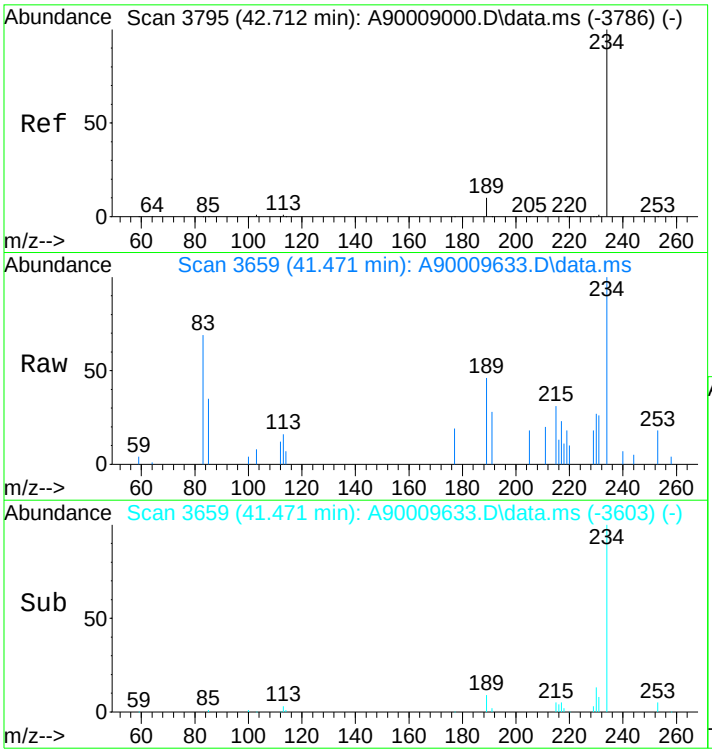


#66
Naphthobenzothiophene
Concen: 128.72 ng/ml m
RT: 41.471 min Scan# 3659
Delta R.T. 0.009 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:234 Resp: 53645

Ion	Ratio	Lower	Upper
234	100		
189	24.2	7.6	11.4#

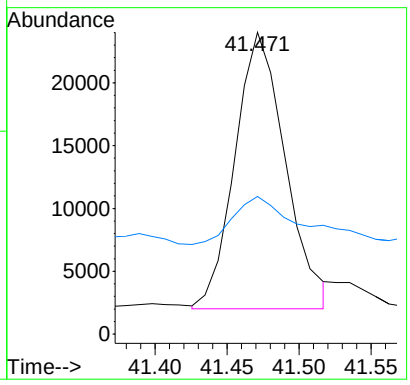


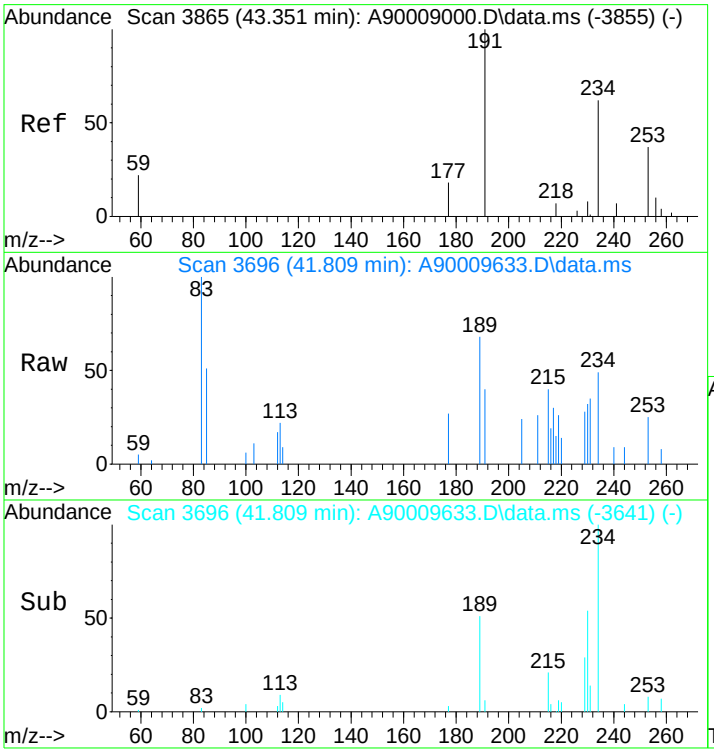


#67
Naphthobenzothiophene-2,1-D
Concen: 128.72 ng/mL m
RT: 41.471 min Scan# 3659
Delta R.T. 0.009 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:234 Resp: 53645

Ion	Ratio	Lower	Upper
234	100		
189	24.2	7.6	11.4#

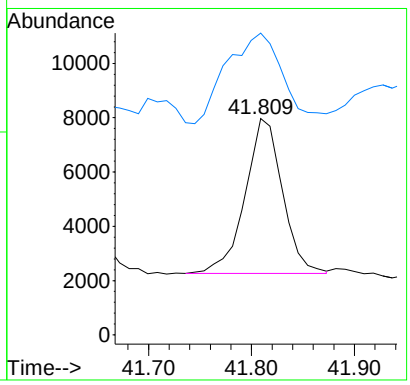


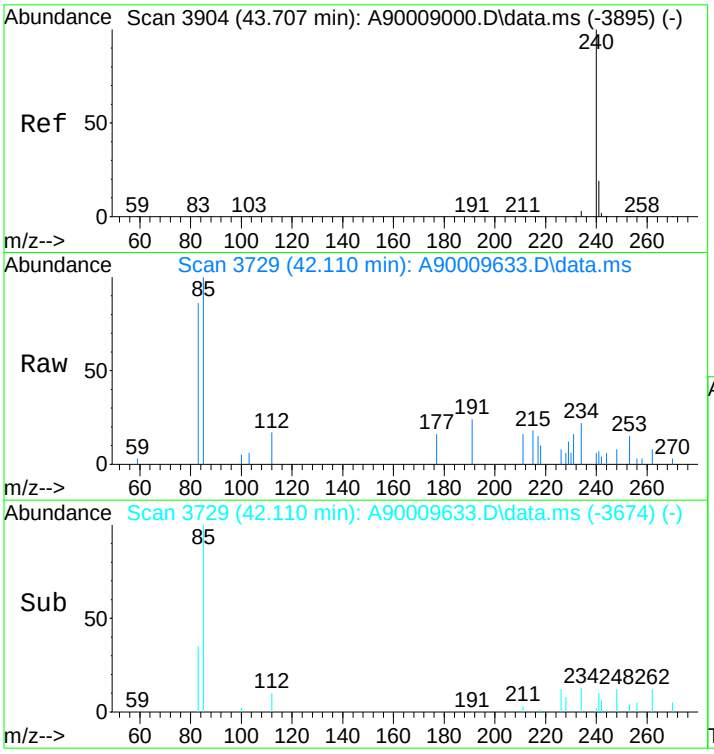


#68
Naphthobenzothiophene-1,2-D
Concen: 34.49 ng/mL
RT: 41.809 min Scan# 3696
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:234 Resp: 14374

Ion	Ratio	Lower	Upper
234	100		
189	70.6	82.8	124.2#

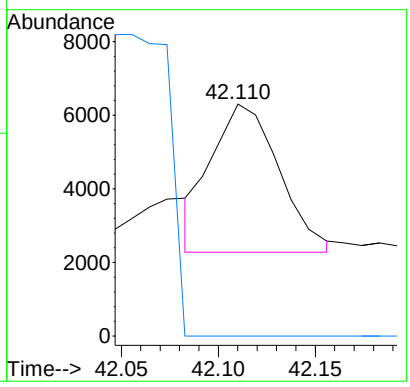


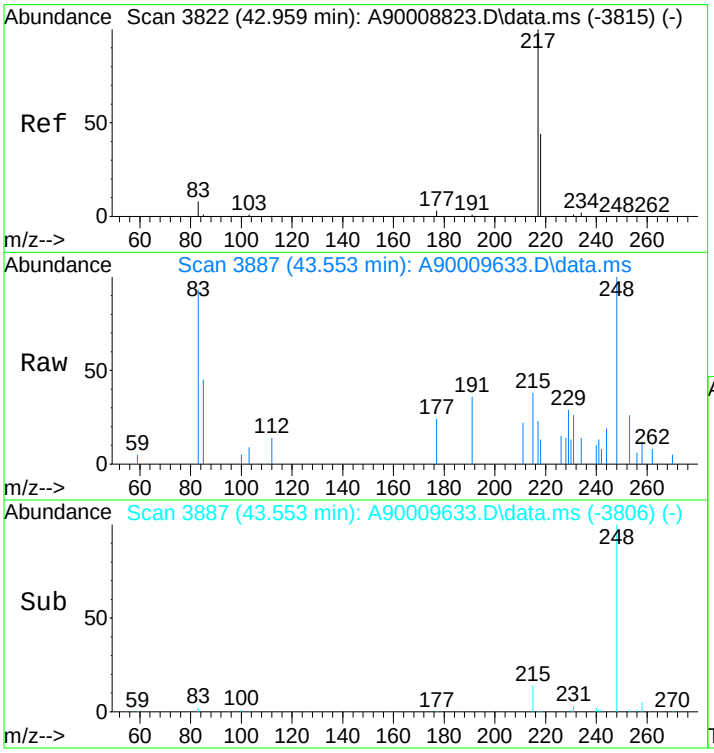


#69
Naphthobenzothiophene-2,3-D
Concen: 23.54 ng/mL m
RT: 42.110 min Scan# 3729
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:234 Resp: 9811

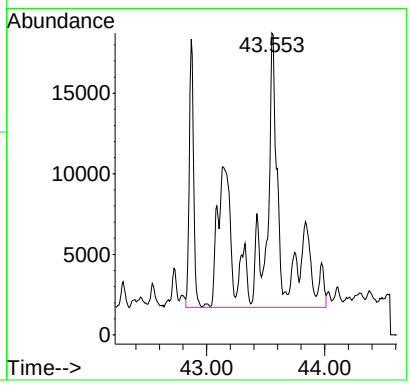
Ion	Ratio	Lower	Upper
234	100		
189	0.0	0.0	0.0

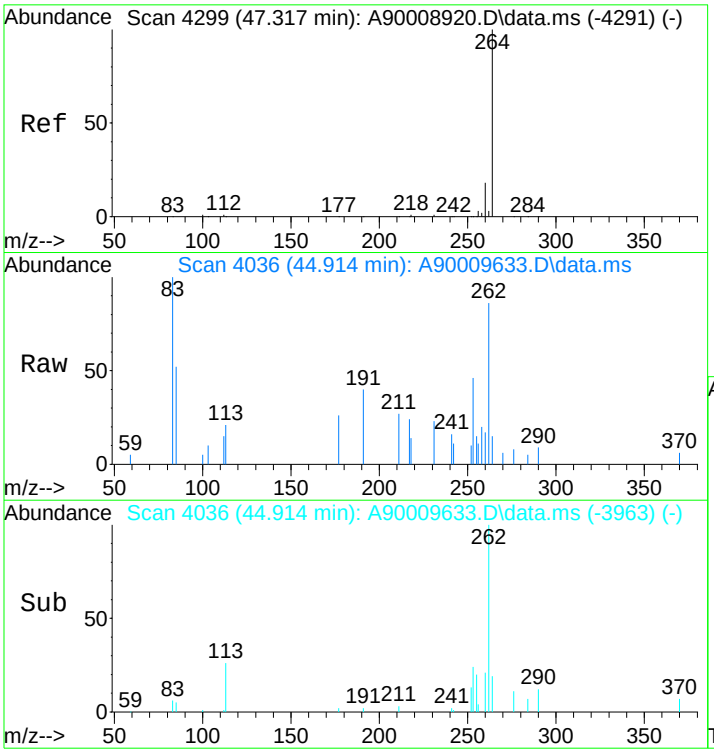




#70
C1-Naphthobenzothiophenes
Concen: 631.10 ng/ml m
RT: 43.553 min Scan# 3887
Delta R.T. 0.685 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

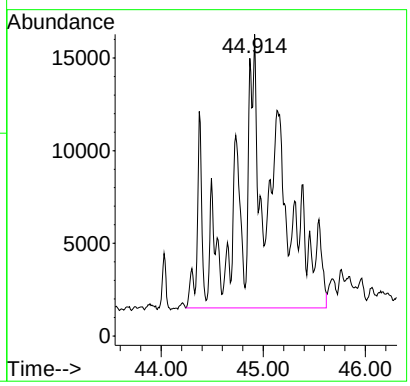
Tgt Ion:248 Resp: 263025

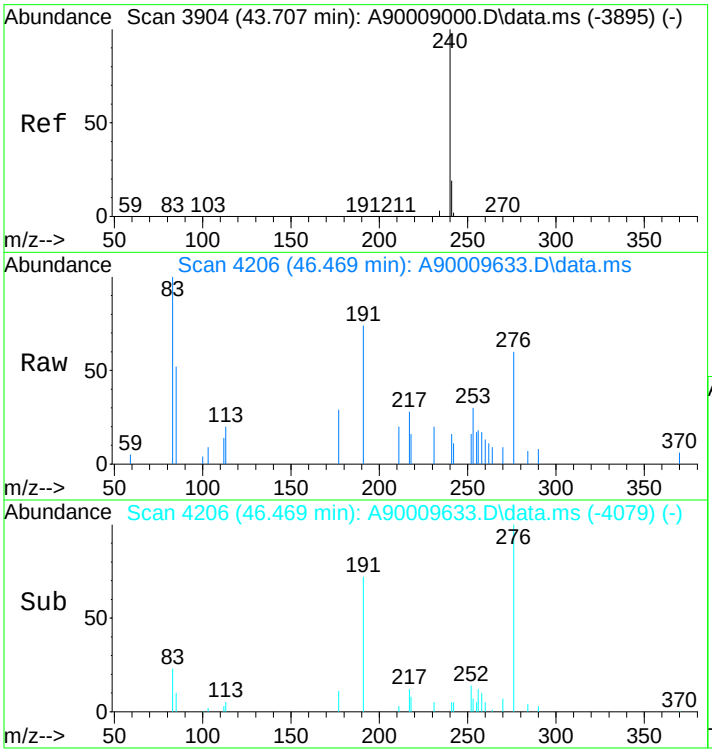




#71
C2-Naphthobenzothiophenes
Concen: 916.84 ng/ml m
RT: 44.914 min Scan# 4036
Delta R.T. 0.046 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

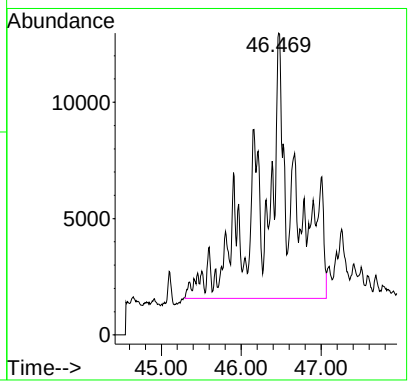
Tgt Ion:262 Resp: 382110

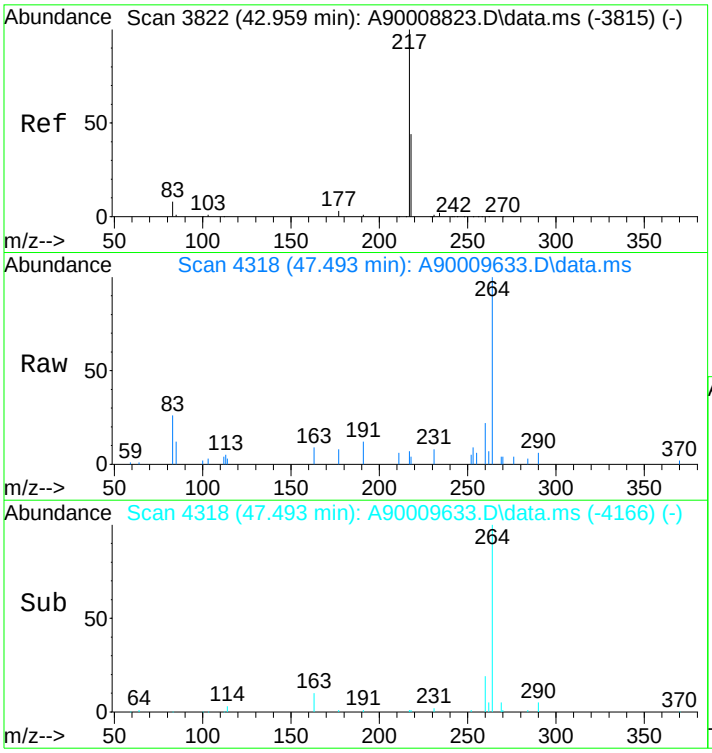




#72
C3-Naphthobenzothiophenes
Concen: 768.00 ng/ml m
RT: 46.469 min Scan# 4206
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

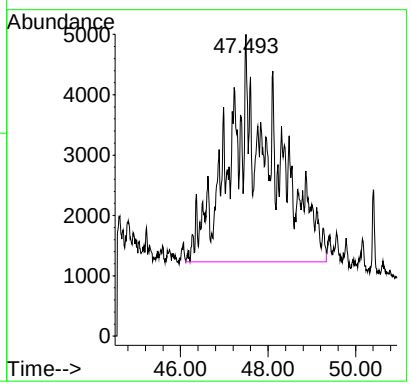
Tgt Ion:276 Resp: 320081

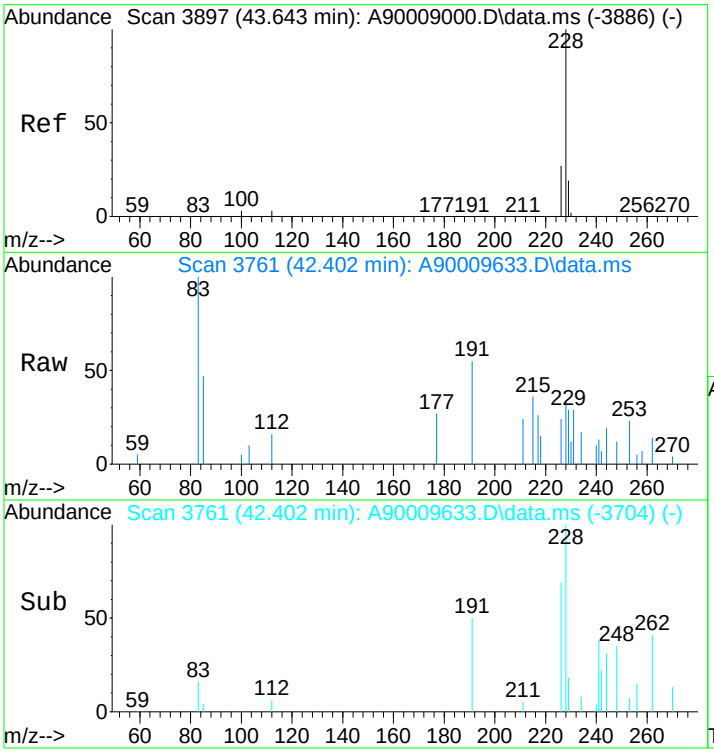




#73
C4-Naphthobenzothiophenes
Concen: 599.67 ng/mL m
RT: 47.493 min Scan# 4318
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:290 Resp: 249924

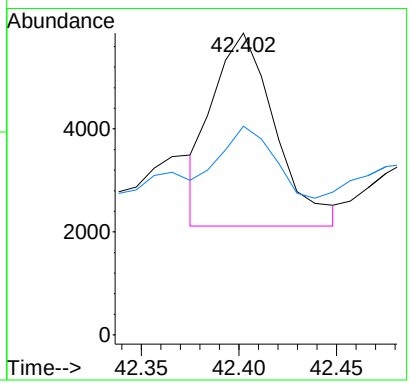


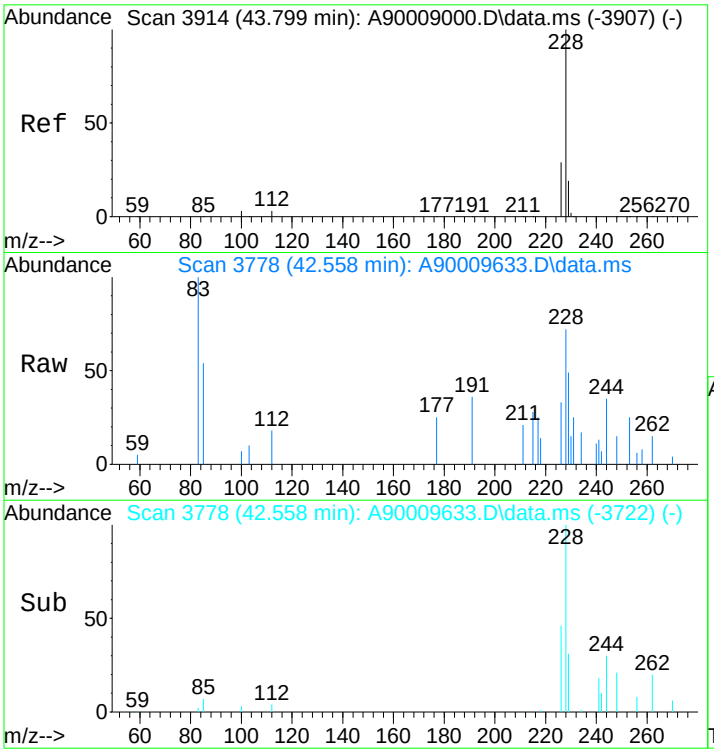


#75
Benz[a]anthracene
Concen: 19.23 ng/mL m
RT: 42.402 min Scan# 3761
Delta R.T. 0.018 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:228 Resp: 8338

Ion	Ratio	Lower	Upper
228	100		
226	159.3	21.5	32.3#

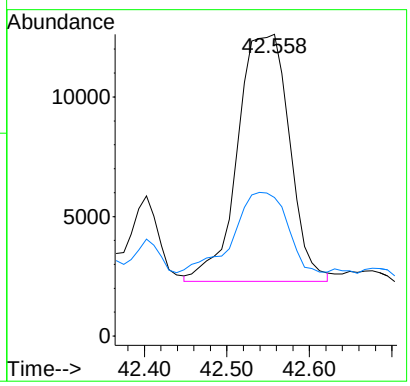


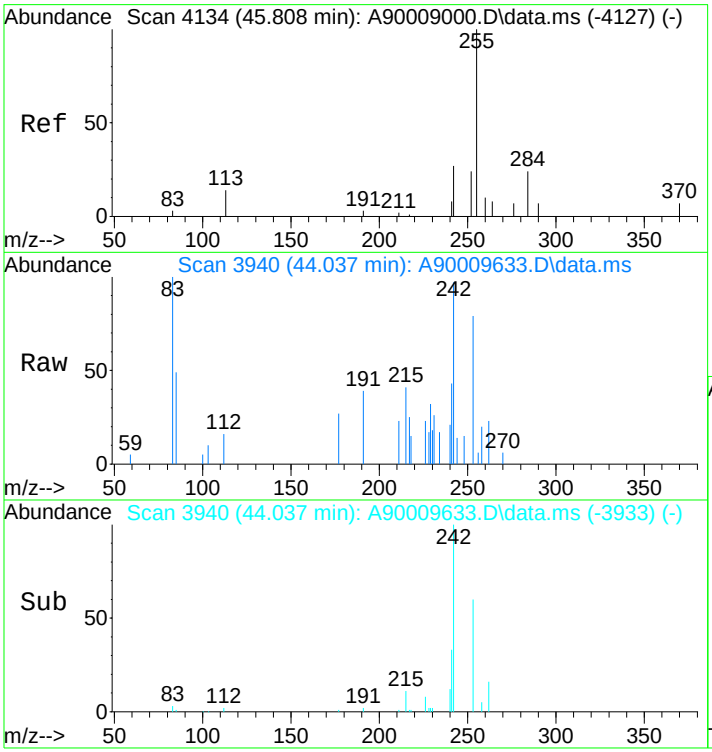


#77
Chrysene/Triphenylene
Concen: 105.76 ng/mL m
RT: 42.558 min Scan# 3778
Delta R.T. 0.009 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:228 Resp: 45092

Ion	Ratio	Lower	Upper
228	100		
226	29.5	23.6	35.4

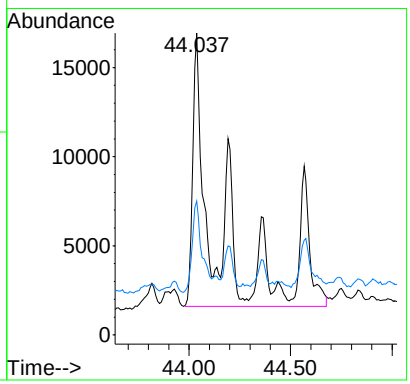


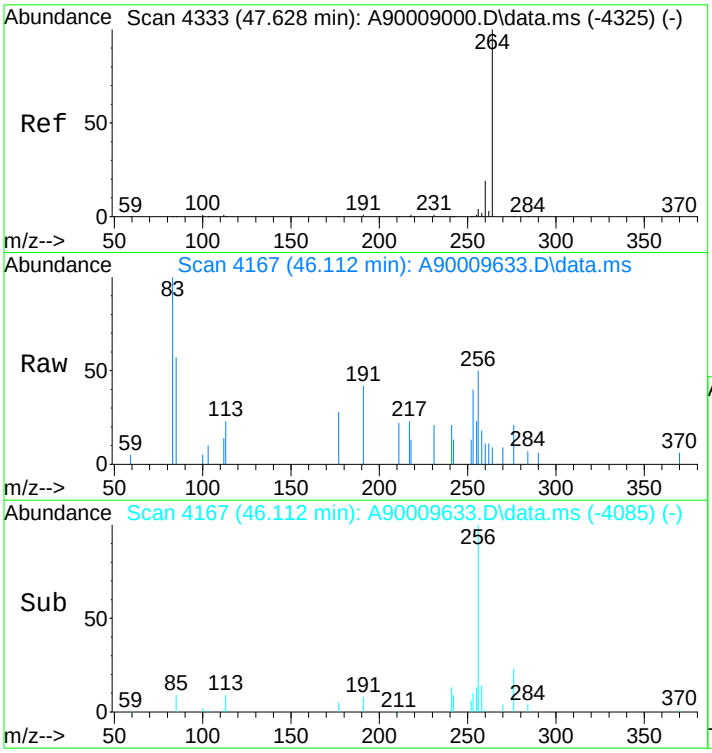


#78
C1-Chrysenes
Concen: 293.26 ng/mL m
RT: 44.037 min Scan# 3940
Delta R.T. -0.006 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:242 Resp: 125040

Ion	Ratio	Lower	Upper
242	100		
241	11.8	31.9	47.9#

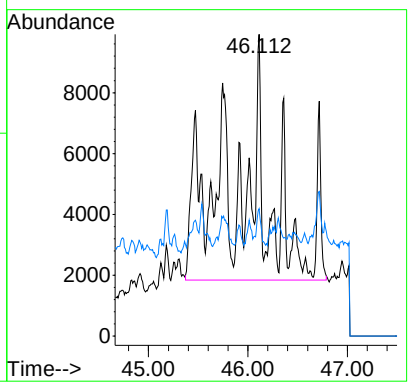


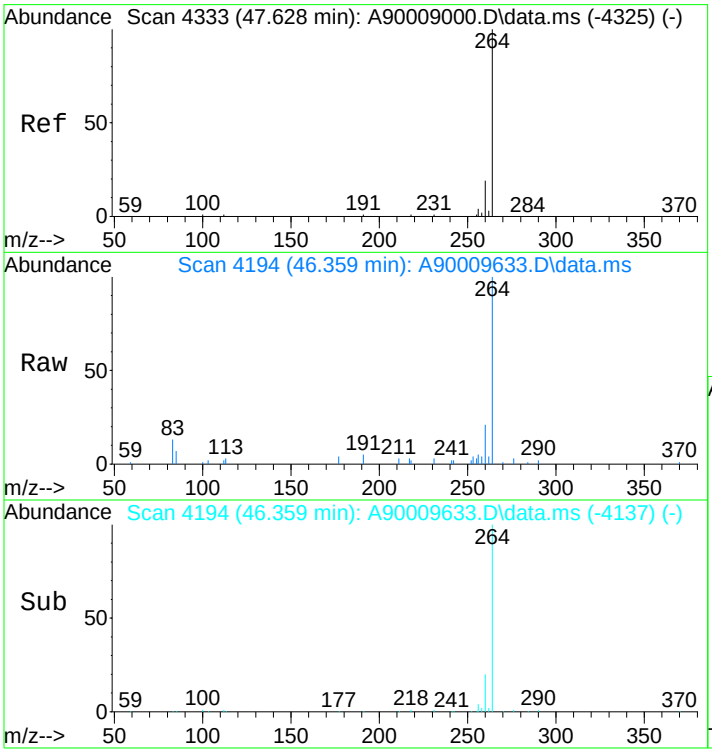


#79
C2-Chrysenes
Concen: 448.73 ng/mL m
RT: 46.112 min Scan# 4167
Delta R.T. -0.604 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:256 Resp: 191326

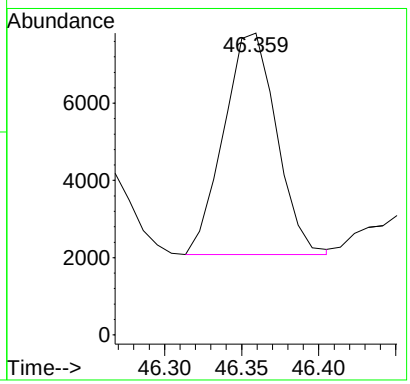
Ion	Ratio	Lower	Upper
256	100		
241	3.2	42.2	63.2#

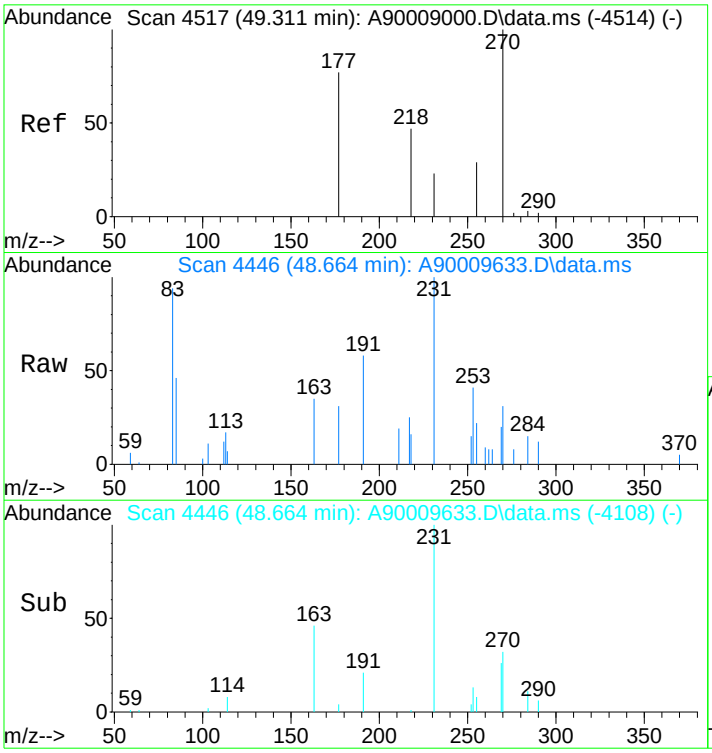




#80
BBF-d12 Surr BKGD
Concen: 32.08 ng/mL
RT: 46.359 min Scan# 4194
Delta R.T. 0.018 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:256 Resp: 13680

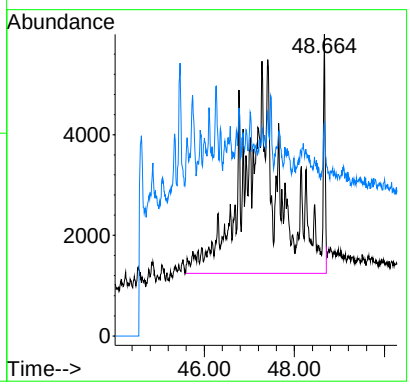


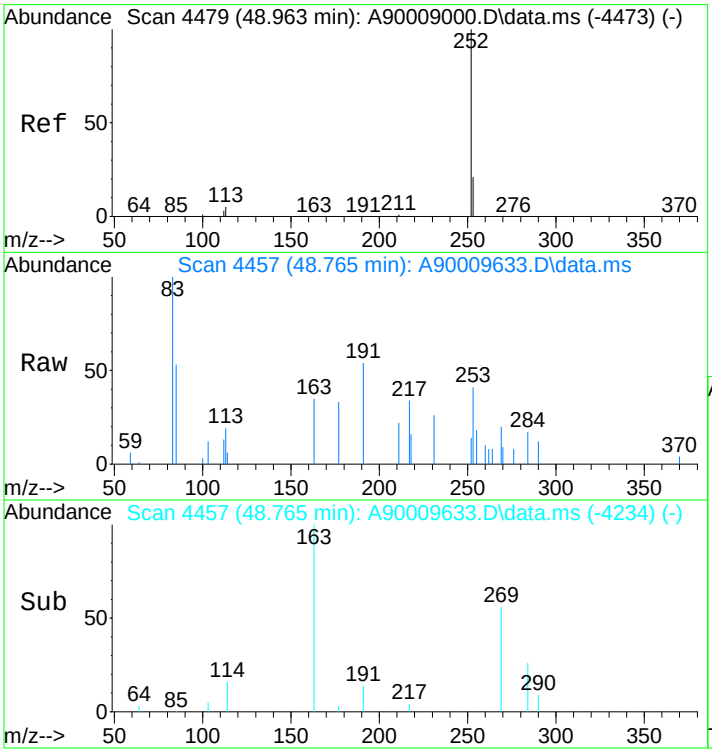


#81
C3-Chrysenes
Concen: 543.73 ng/mL m
RT: 48.664 min Scan# 4446
Delta R.T. -0.014 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:270 Resp: 231834

Ion	Ratio	Lower	Upper
270	100		
255	1.3	48.2	72.4#

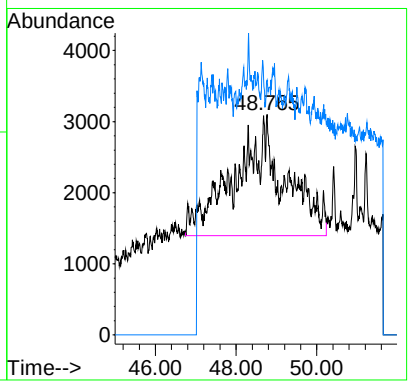


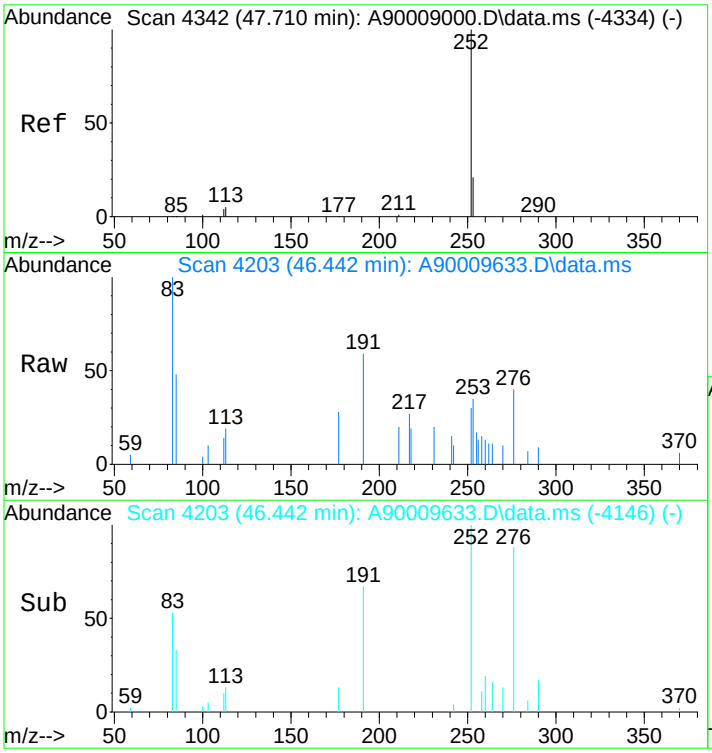


#82
C4-Chrysenes
Concen: 336.65 ng/mL m
RT: 48.765 min Scan# 4457
Delta R.T. -0.014 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:284 Resp: 143540

Ion	Ratio	Lower	Upper
284	100		
269	0.0	84.6	126.8#

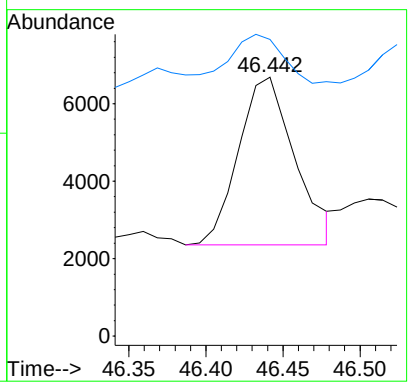


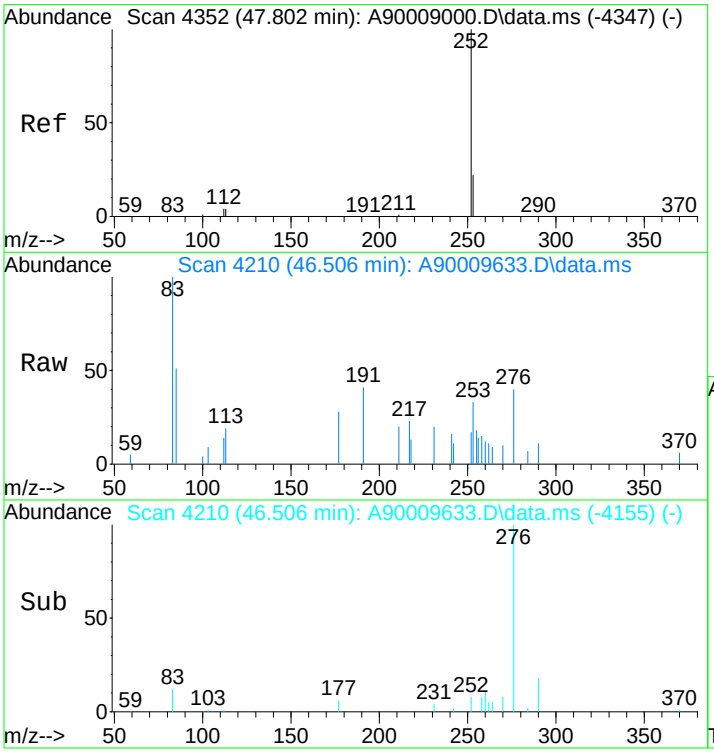


#84
Benzo[b]fluoranthene
Concen: 24.51 ng/mL
RT: 46.442 min Scan# 4203
Delta R.T. 0.018 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:252 Resp: 11017

Ion	Ratio	Lower	Upper
252	100		
253	27.2	24.5	36.7

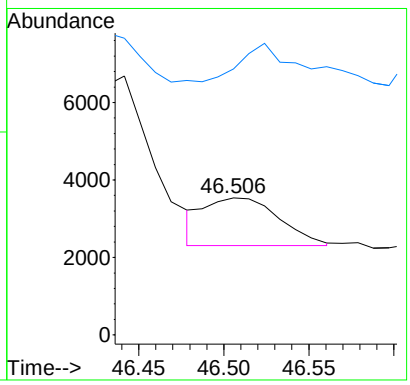


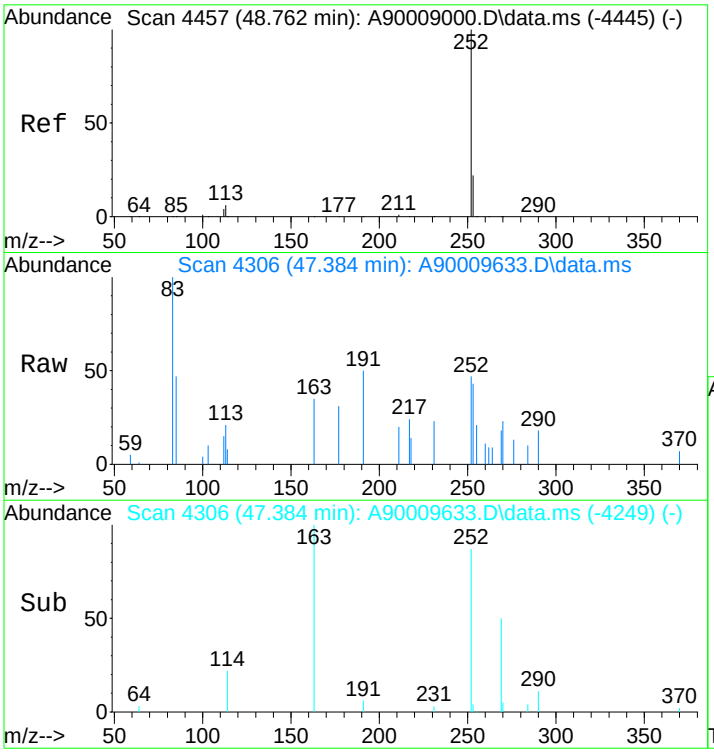


#85
Benzo[j]+[k]fluoranthene
Concen: 8.61 ng/mL m
RT: 46.506 min Scan# 4210
Delta R.T. 0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:252 Resp: 3802

Ion	Ratio	Lower	Upper
252	100		
253	89.8	25.1	37.7#

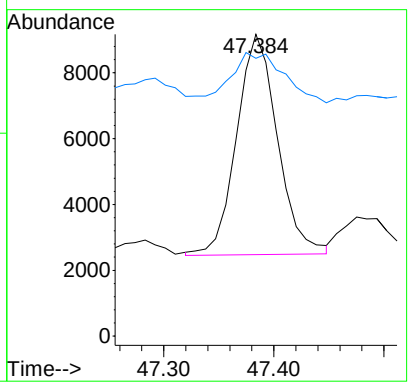


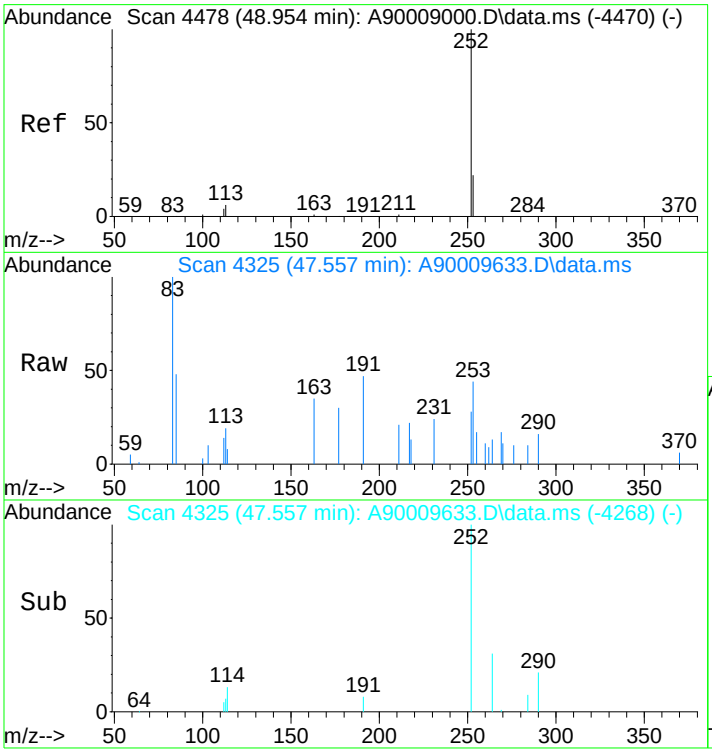


#87
Benzo[e]pyrene
Concen: 40.58 ng/mL
RT: 47.384 min Scan# 4306
Delta R.T. 0.018 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:252 Resp: 17319

Ion	Ratio	Lower	Upper
252	100		
253	34.4	28.1	42.1

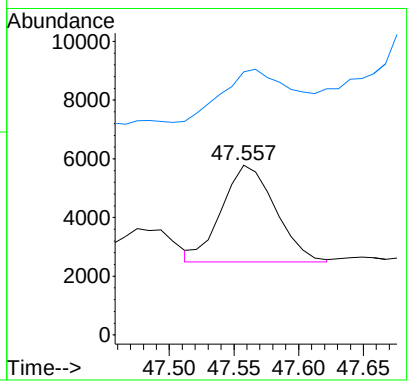


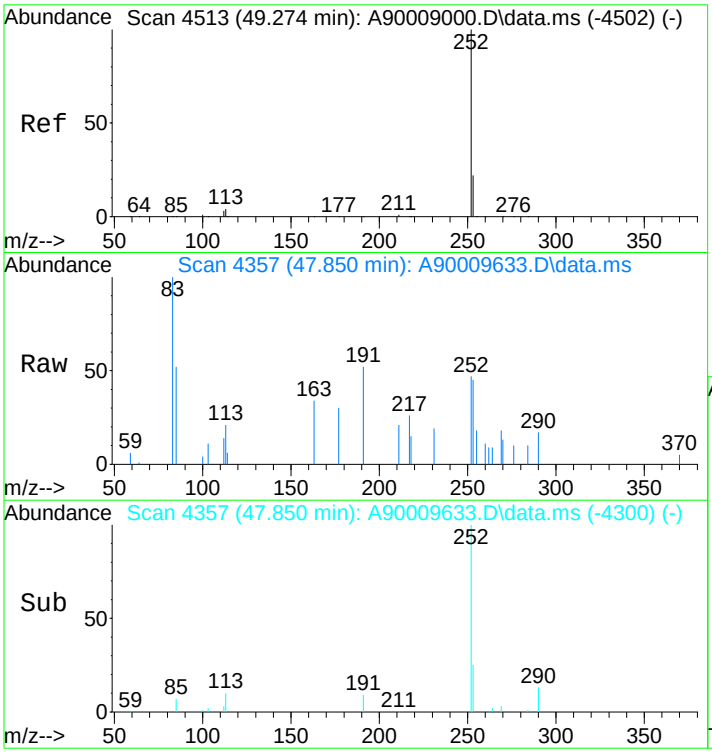


#89
Benzo[a]pyrene
Concen: 23.51 ng/mL m
RT: 47.557 min Scan# 4325
Delta R.T. 0.018 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:252 Resp: 9502

Ion	Ratio	Lower	Upper
252	100		
253	52.5	28.8	43.2#

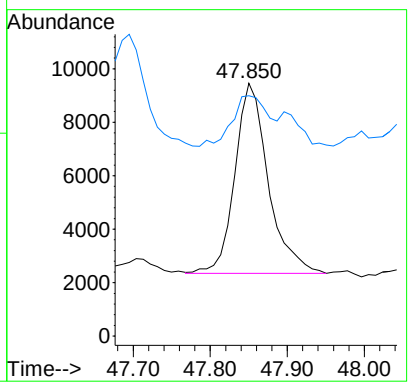


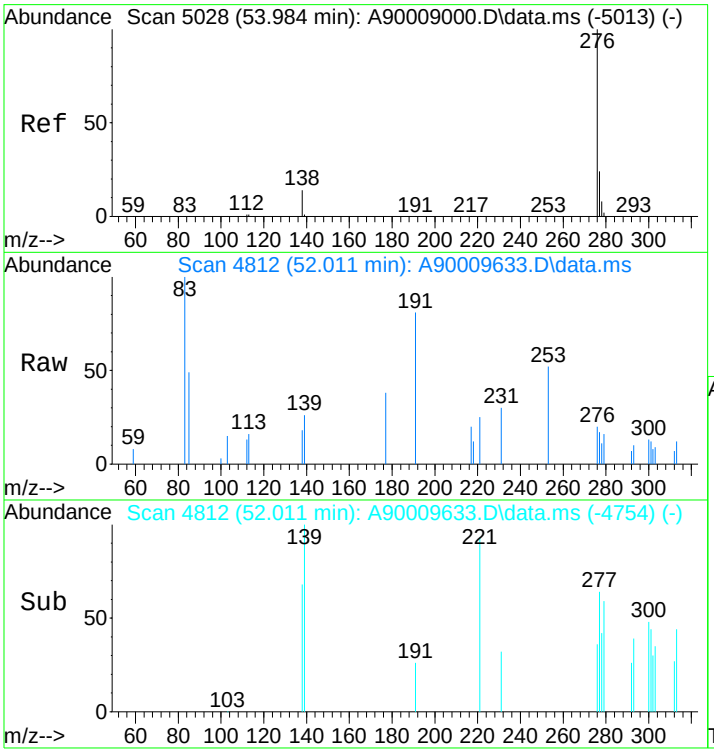


#90
Perylene
Concen: 49.62 ng/mL
RT: 47.850 min Scan# 4357
Delta R.T. 0.018 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:252 Resp: 21408

Ion	Ratio	Lower	Upper
252	100		
253	29.3	29.1	43.7

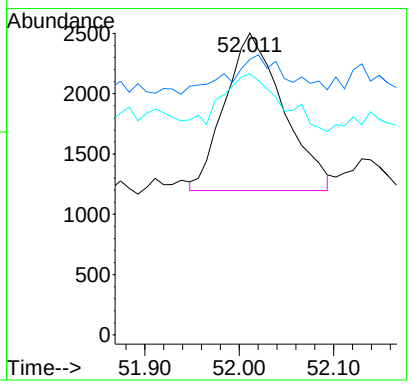


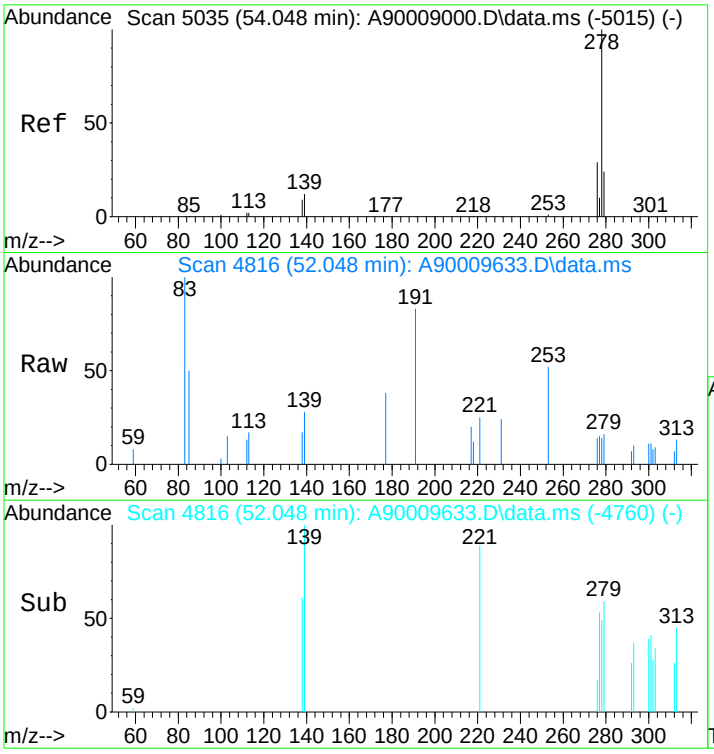


#91
Indeno[1,2,3-cd]pyrene
Concen: 12.53 ng/mL m
RT: 52.011 min Scan# 4812
Delta R.T. 0.028 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:276 Resp: 5609

Ion	Ratio	Lower	Upper
276	100		
138	0.0	18.4	27.6#
277	0.0	21.0	31.6#

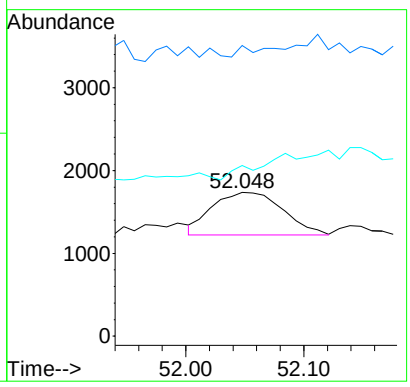


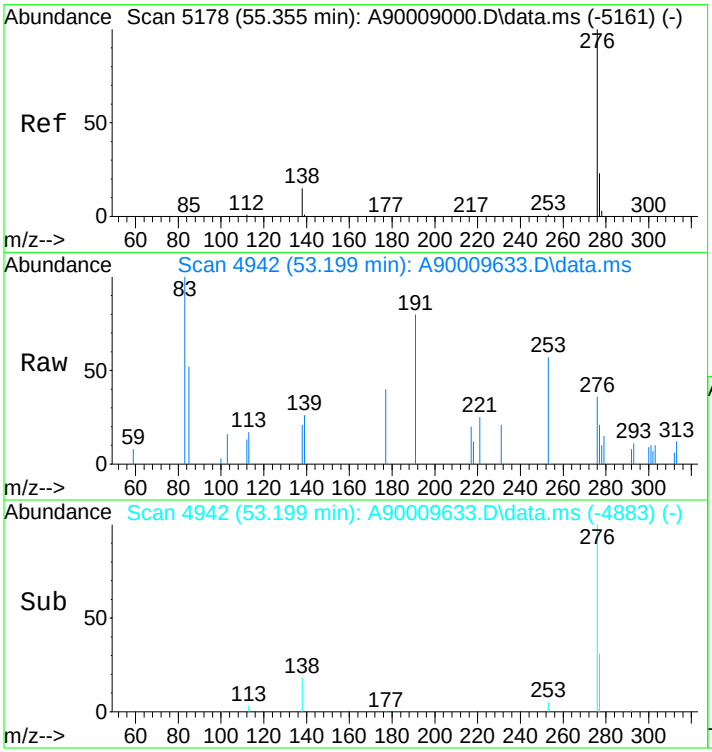


#92
Dibenz[ah]+[ac]anthracene
Concen: 4.85 ng/mL m
RT: 52.048 min Scan# 4816
Delta R.T. 0.009 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:278 Resp: 2140

Ion	Ratio	Lower	Upper
278	100		
139	440.6	13.8	20.8#
279	476.2	20.3	30.5#

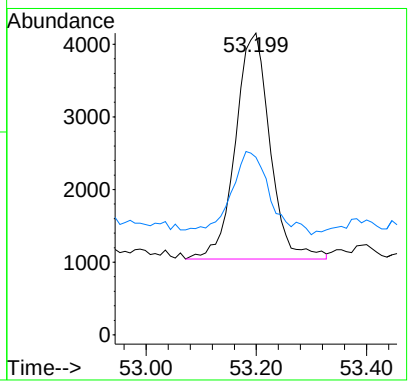


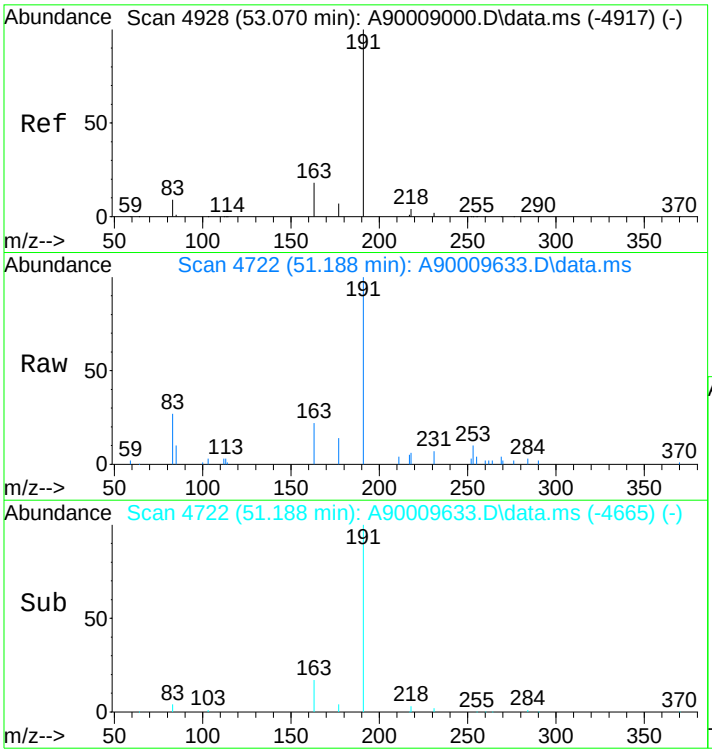


#93
Benzo[g,h,i]perylene
Concen: 30.67 ng/mL
RT: 53.199 min Scan# 4942
Delta R.T. 0.037 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:276 Resp: 13493

Ion	Ratio	Lower	Upper
276	100		
277	34.8	21.4	32.0#

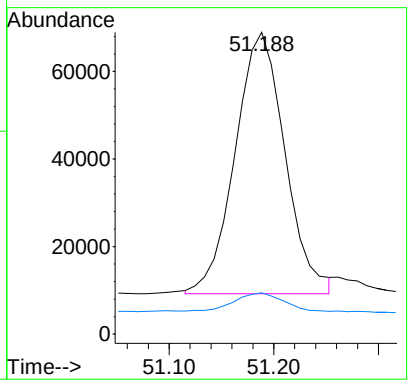


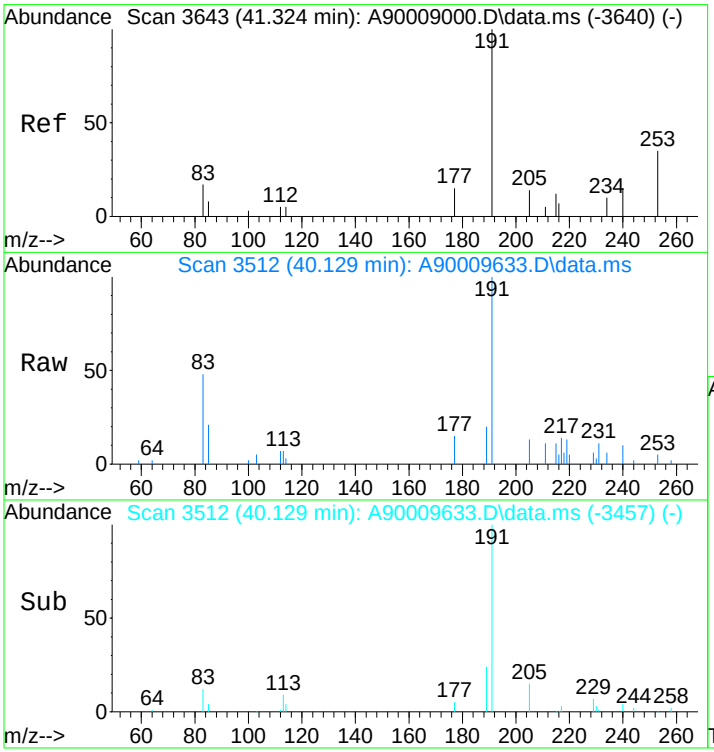


#94
Hopane (T19)
Concen: 1189.47 ng/mL m
RT: 51.188 min Scan# 4722
Delta R.T. 0.018 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:191 Resp: 197647

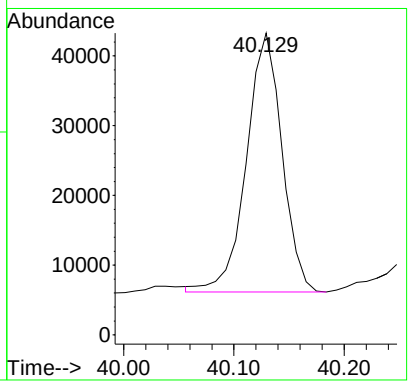
Ion	Ratio	Lower	Upper
191	100		
177	8.7	21.1	31.7#

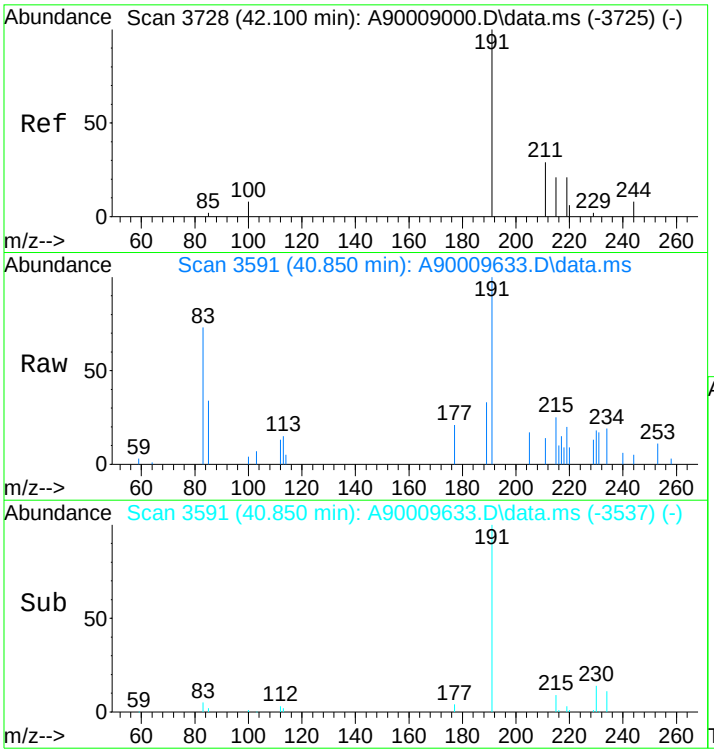




#96
C23 Tricyclic Terpane (T4)
Concen: 501.73 ng/ml
RT: 40.129 min Scan# 3512
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

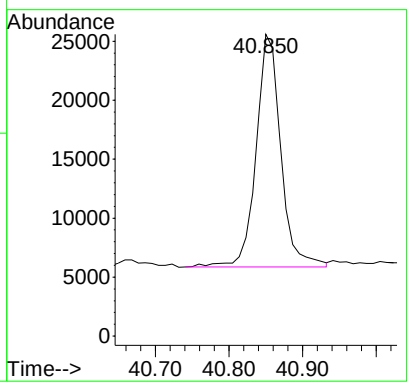
Tgt Ion:191 Resp: 83369

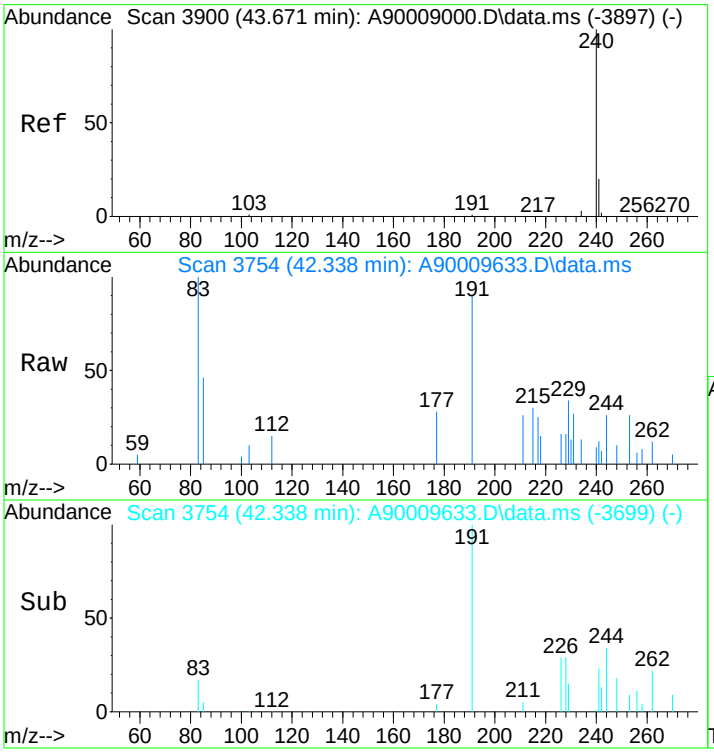




#97
C24 Tricyclic Terpane (T5)
Concen: 279.25 ng/ml
RT: 40.850 min Scan# 3591
Delta R.T. -0.009 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

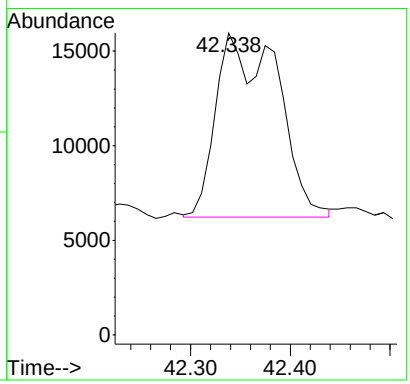
Tgt Ion:191 Resp: 46401

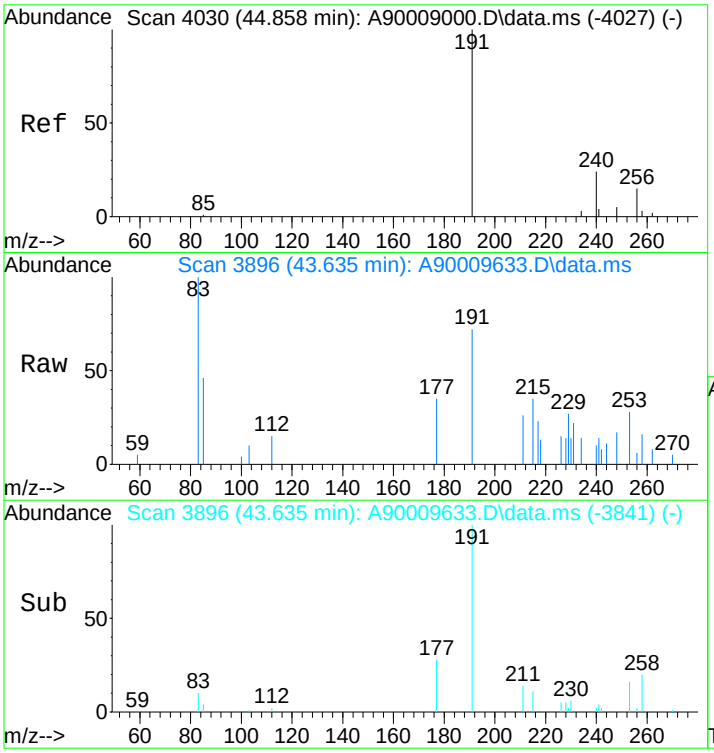




#98
C25 Tricyclic Terpane (T6)
Concen: 251.13 ng/ml m
RT: 42.338 min Scan# 3754
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

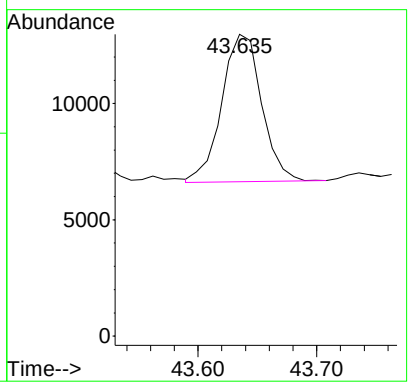
Tgt Ion:191 Resp: 41728

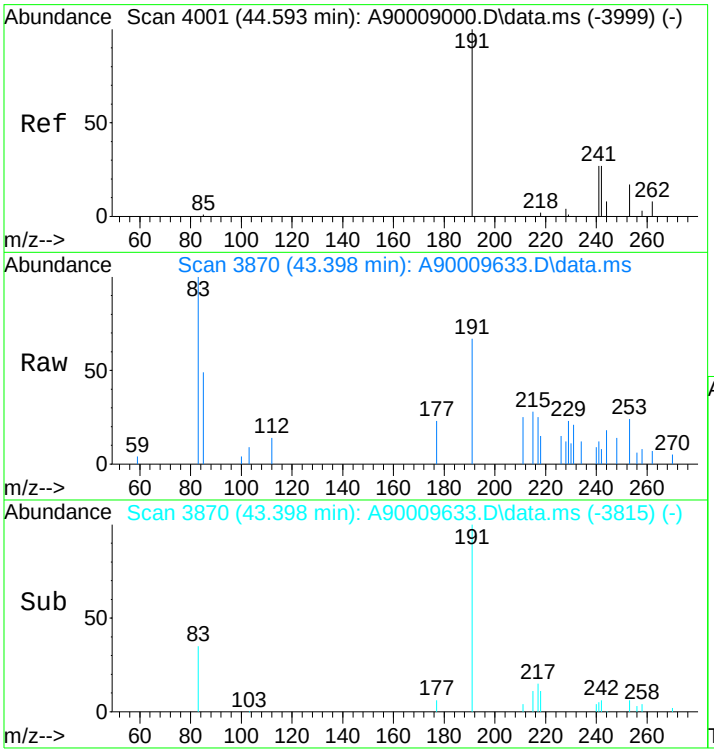




#99
C24 Tetracyclic Terpane (T6a)
Concen: 88.73 ng/ml
RT: 43.635 min Scan# 3896
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

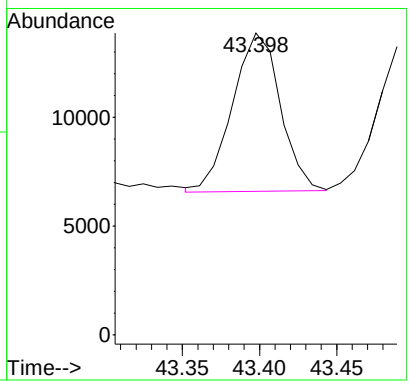
Tgt Ion:191 Resp: 14743

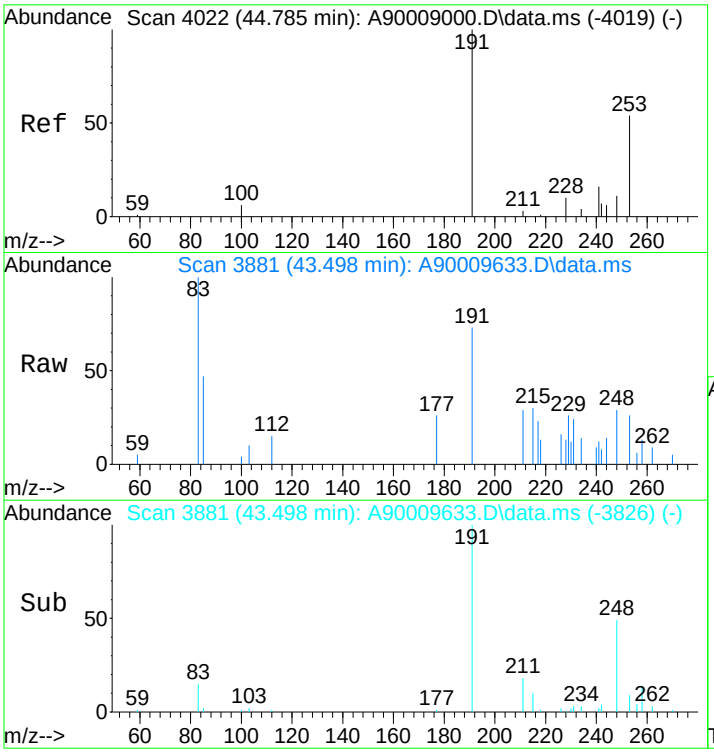




#100
C26 Tricyclic Terpane-22S (T6b)
Concen: 94.38 ng/ml
RT: 43.398 min Scan# 3870
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

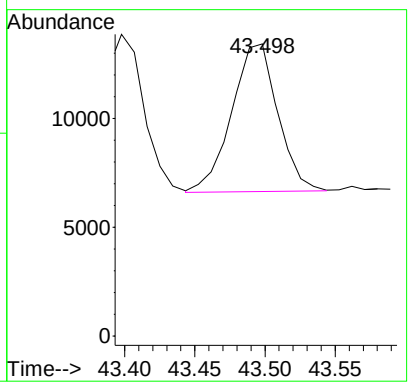
Tgt Ion:191 Resp: 15683

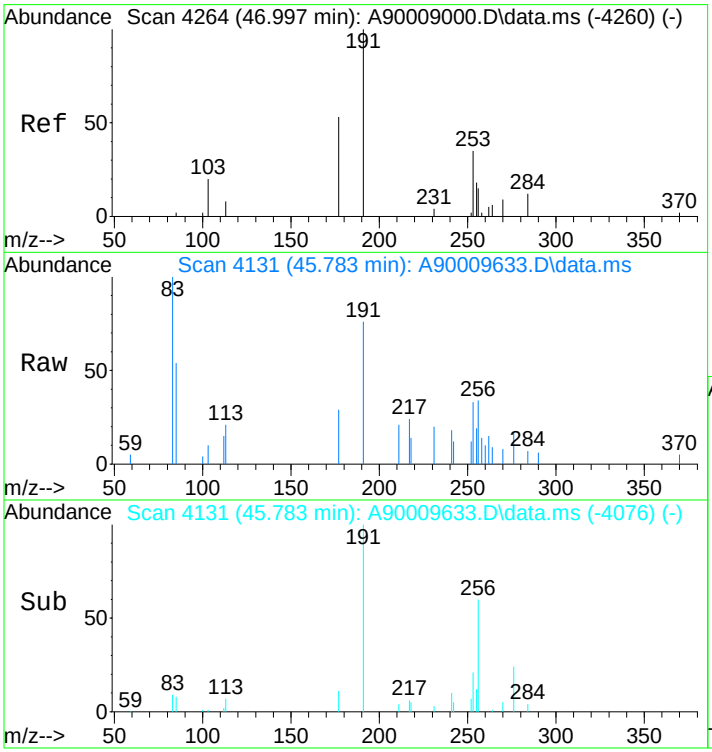




#101
C26 Tricyclic Terpane-22R (T6c)
Concen: 93.60 ng/ml
RT: 43.498 min Scan# 3881
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

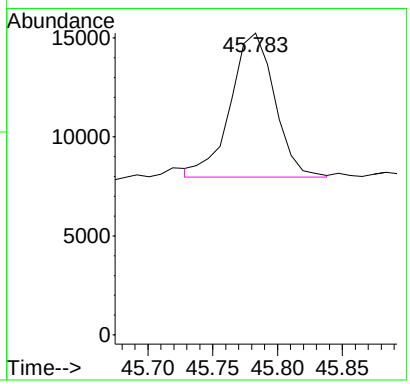
Tgt Ion:191 Resp: 15553

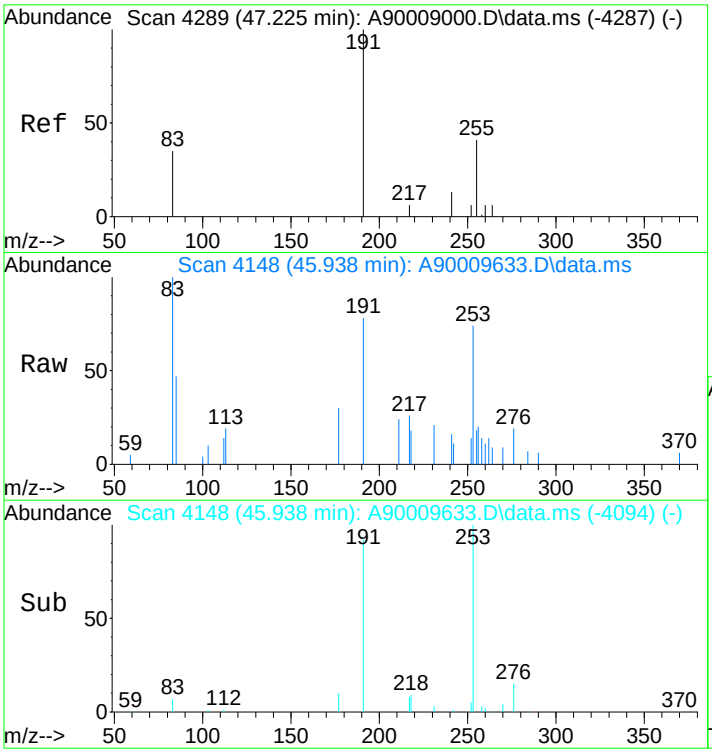




#102
C28 Tricyclic Terpane-22S (T7)
Concen: 103.64 ng/ml m
RT: 45.783 min Scan# 4131
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

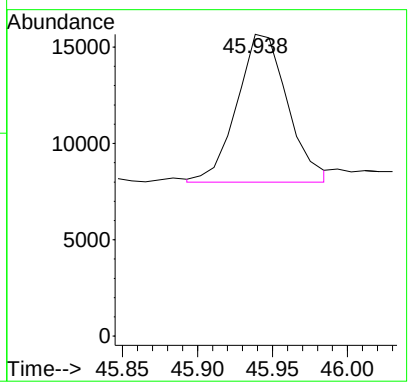
Tgt Ion:191 Resp: 17221

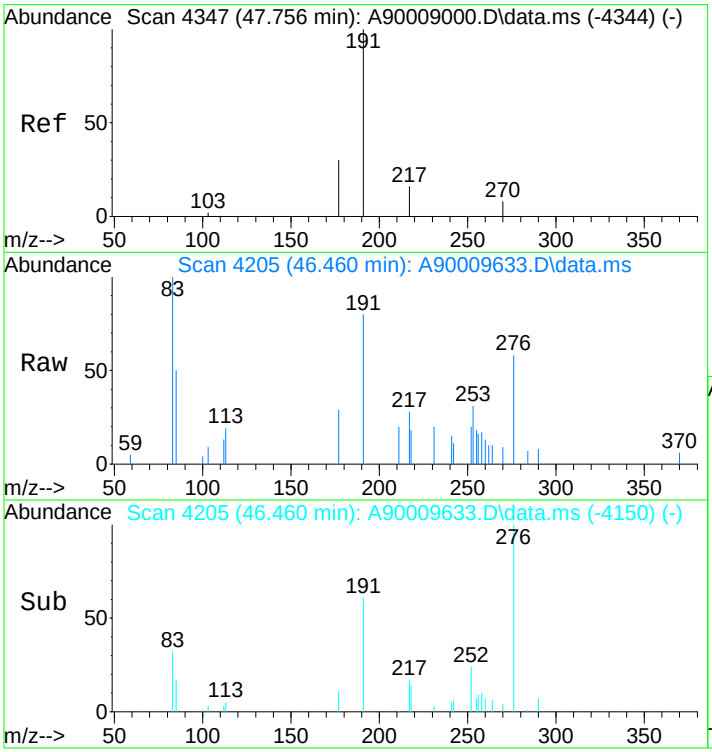




#103
C28 Tricyclic Terpane-22R (T8)
Concen: 108.08 ng/ml m
RT: 45.938 min Scan# 4148
Delta R.T. -0.009 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

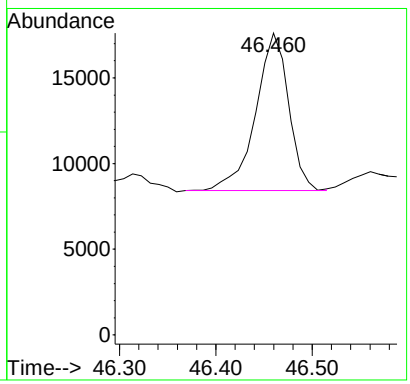
Tgt Ion:191 Resp: 17959

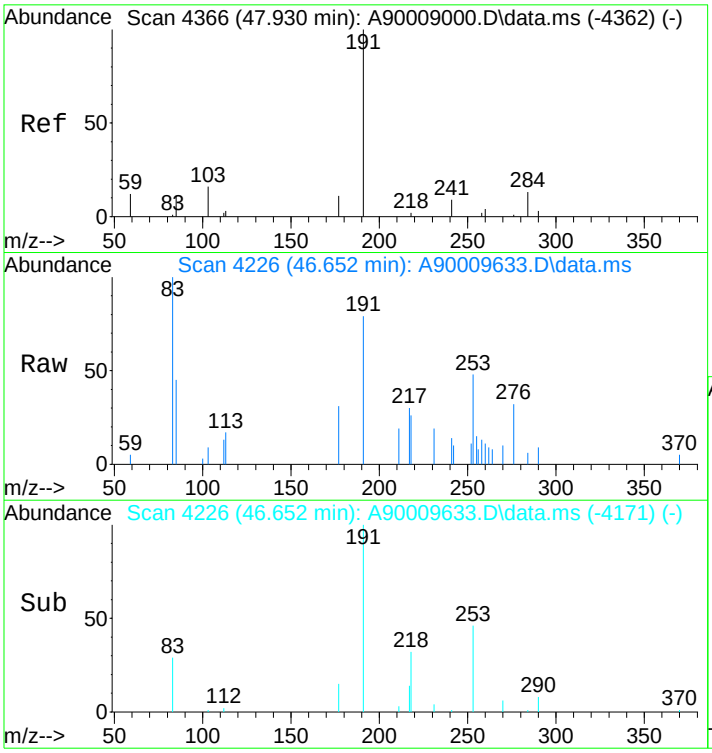




#104
C29 Tricyclic Terpane-22S (T9)
Concen: 131.75 ng/ml
RT: 46.460 min Scan# 4205
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

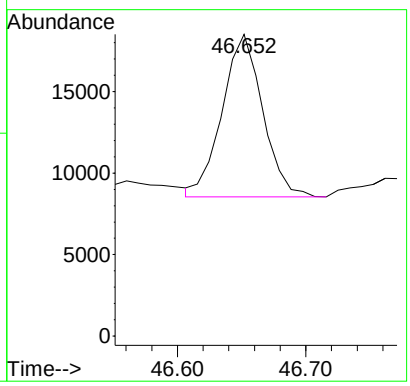
Tgt Ion:191 Resp: 21892

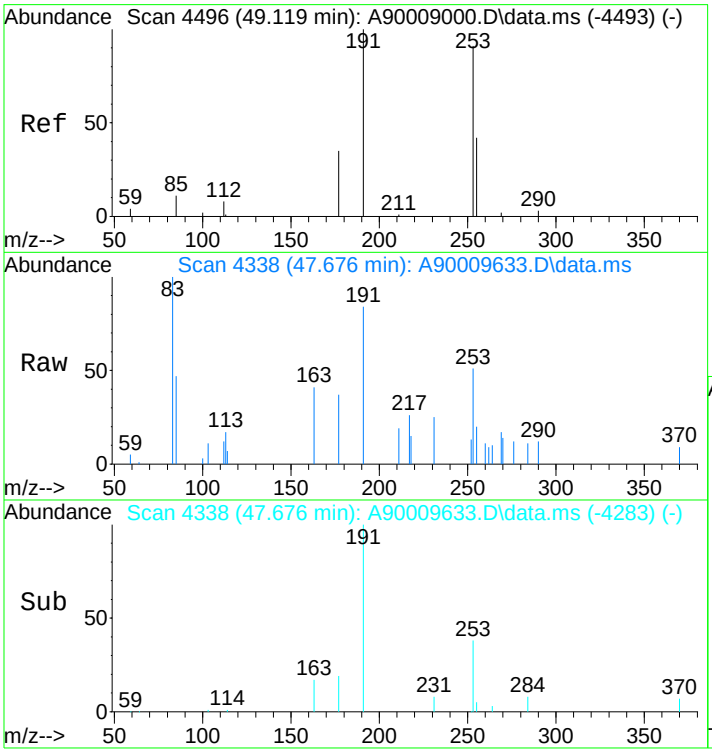




#105
C29 Tricyclic Terpane-22R (T10)
Concen: 131.51 ng/ml
RT: 46.652 min Scan# 4226
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

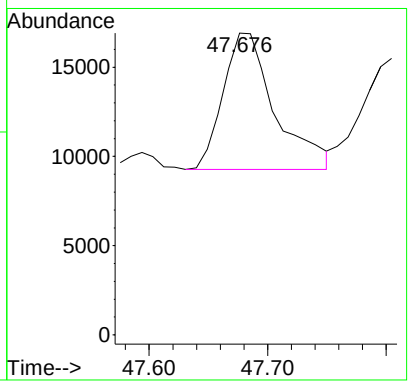
Tgt Ion:191 Resp: 21852

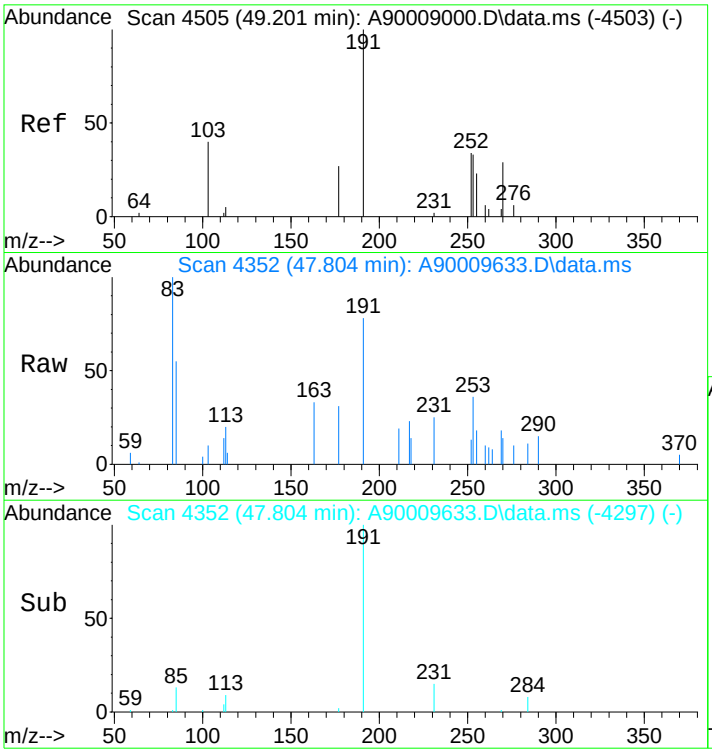




#106
18a-22,29,30-Trisnorneohopane-TS (T11)
Concen: 139.86 ng/ml
RT: 47.676 min Scan# 4338
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

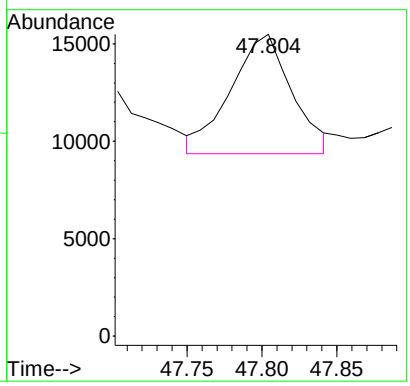
Tgt Ion:191 Resp: 23239

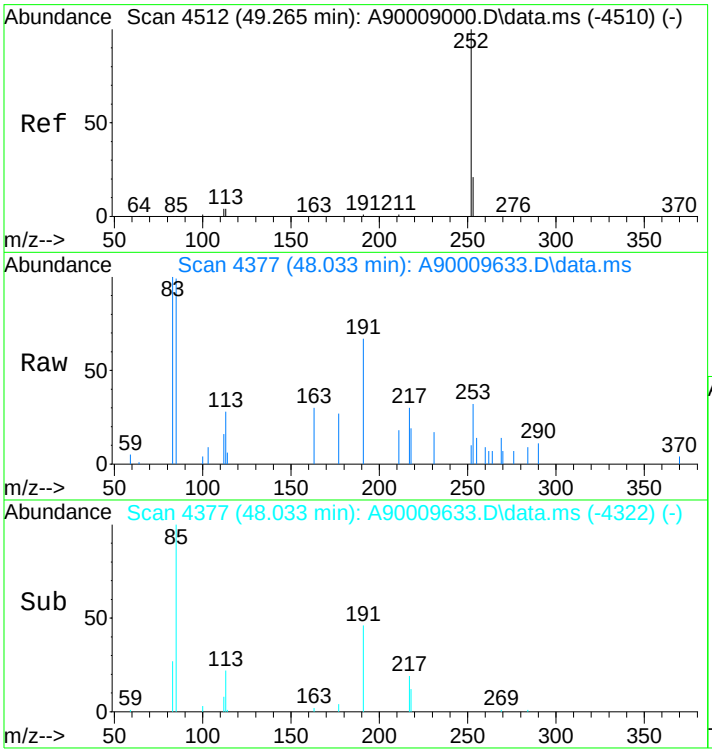




#107
C30 Tricyclic Terpane-22S
Concen: 104.94 ng/mL m
RT: 47.804 min Scan# 4352
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

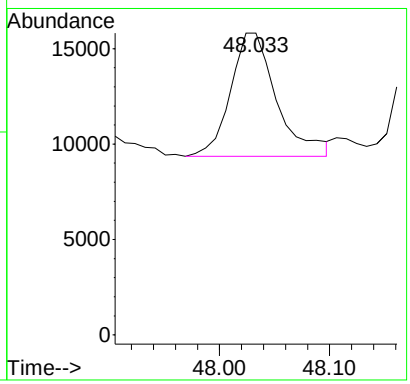
Tgt Ion:191 Resp: 17438

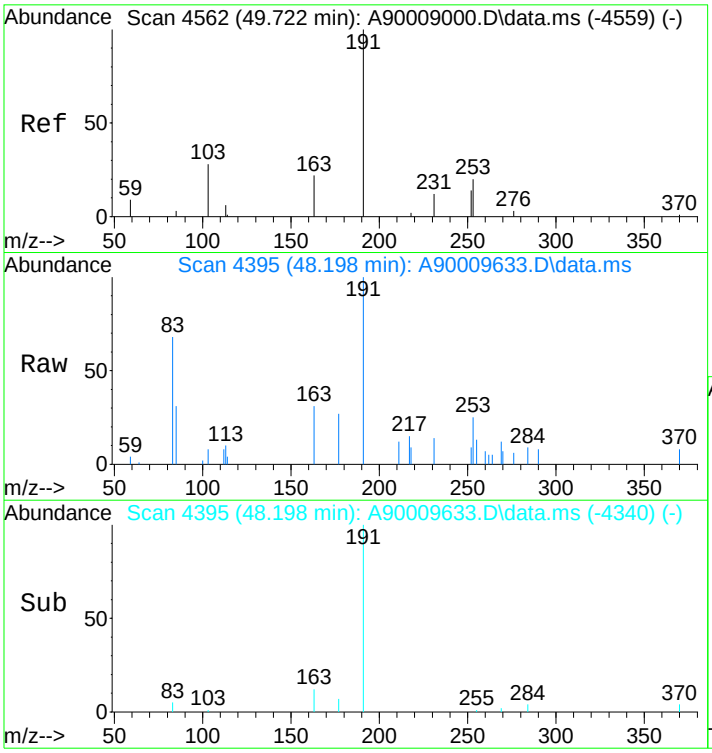




#108
C30 Tricyclic Terpane-22R
Concen: 113.48 ng/mL
RT: 48.033 min Scan# 4377
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

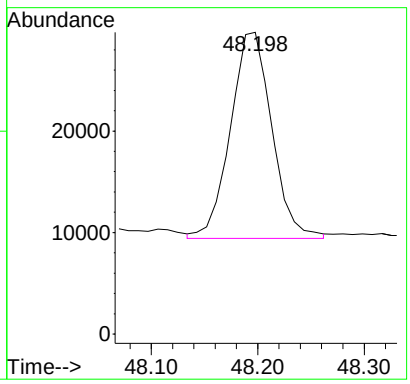
Tgt Ion:191 Resp: 18857

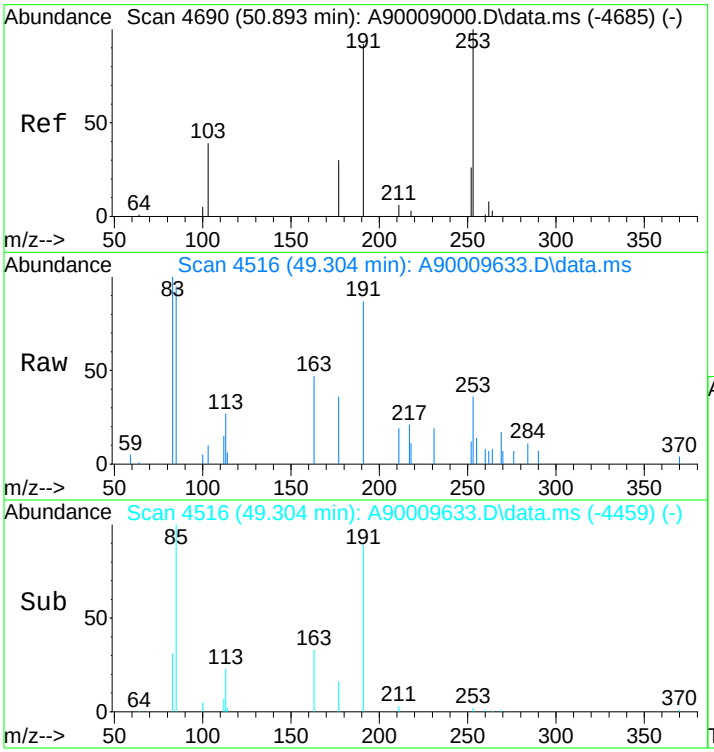




#109
17a(H)-22,29,30-Trisnorhopane-TM (T12)
Concen: 329.85 ng/ml m
RT: 48.198 min Scan# 4395
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

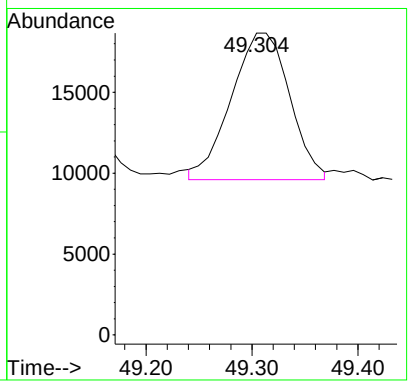
Tgt Ion:191 Resp: 54809

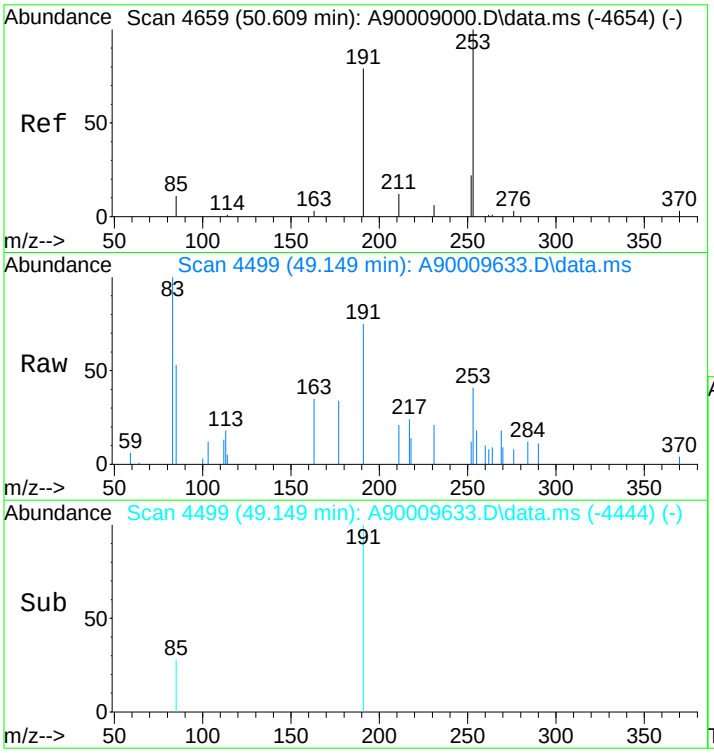




#110
17a/b,21b/a 28,30-Bisnorhopane (T14a)
Concen: 209.09 ng/ml m
RT: 49.304 min Scan# 4516
Delta R.T. 0.018 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

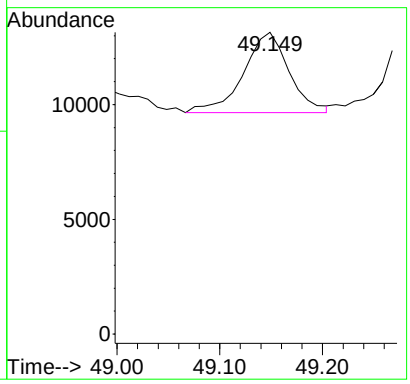
Tgt Ion:191 Resp: 34743

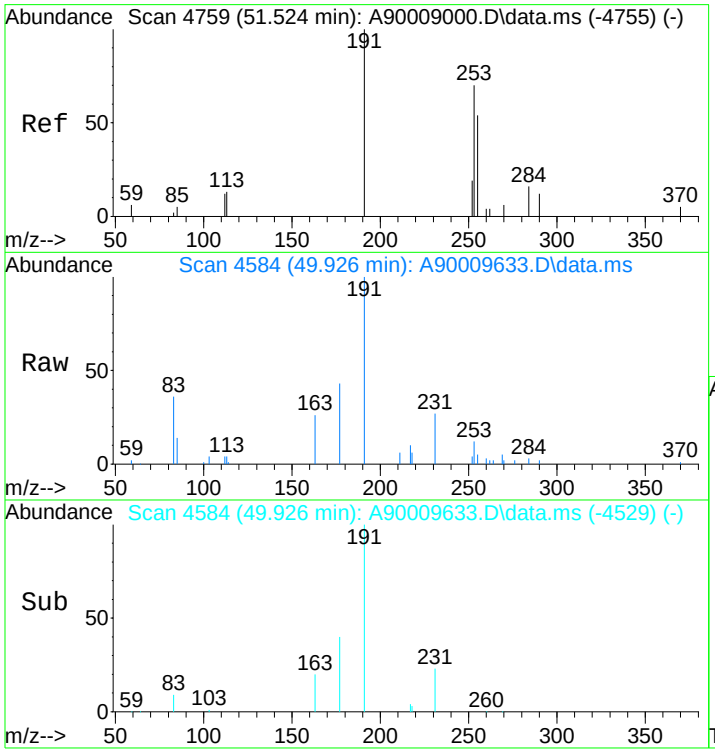




#111
17a(H),21b(H)-25-Norhopane (T14b)
Concen: 65.13 ng/ml
RT: 49.149 min Scan# 4499
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

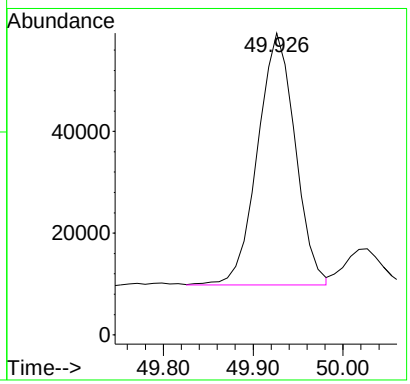
Tgt Ion:191 Resp: 10822

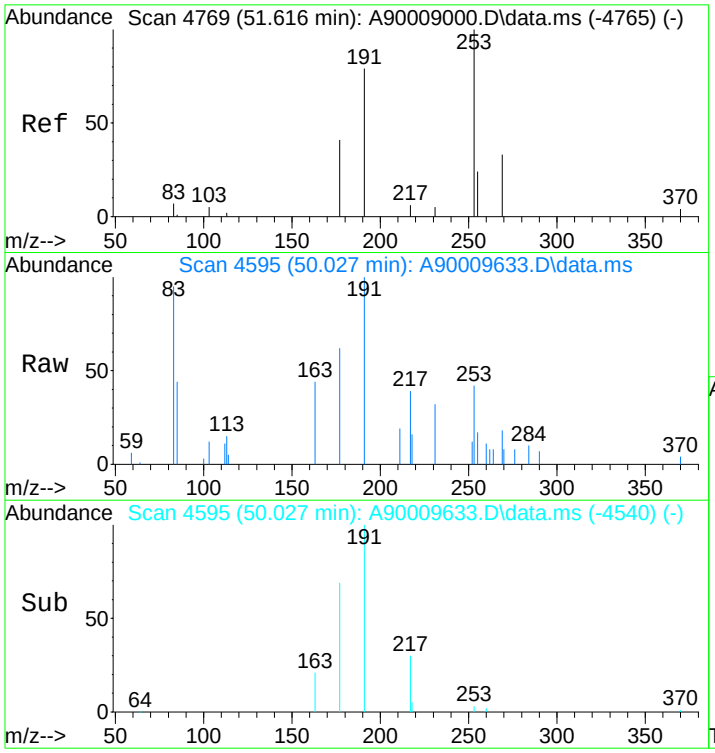




#112
30-Norhopane (T15)
Concen: 863.48 ng/ml m
RT: 49.926 min Scan# 4584
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

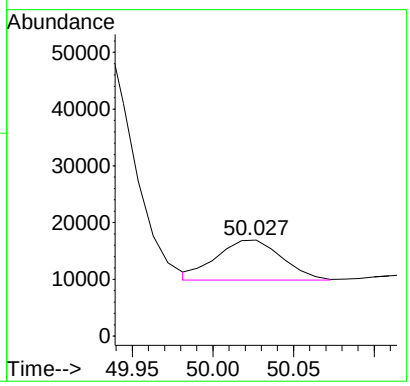
Tgt Ion:191 Resp: 143478

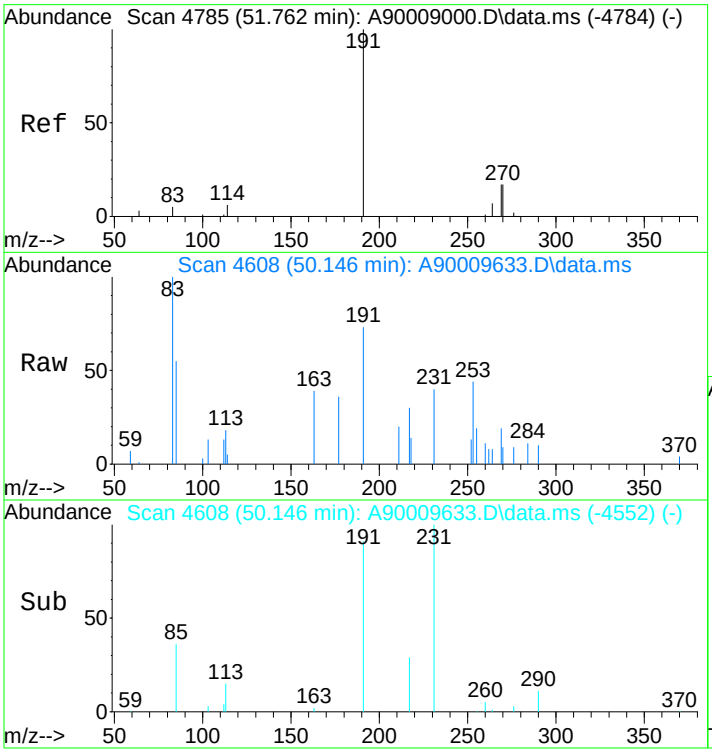




#113
18a(H)-30-Norneohopane-C29Ts (T16)
Concen: 120.61 ng/ml m
RT: 50.027 min Scan# 4595
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

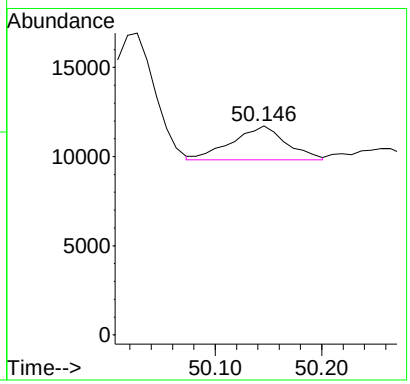
Tgt Ion:191 Resp: 20041

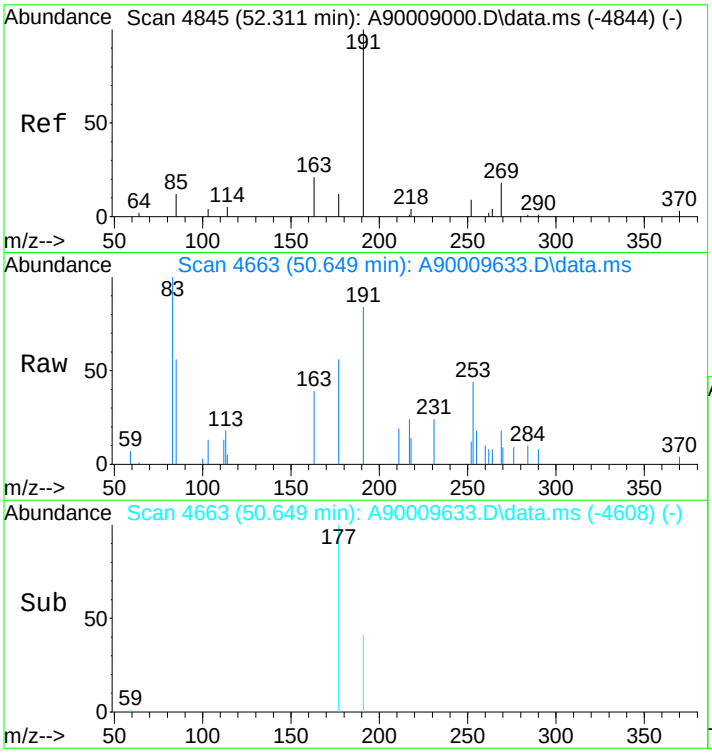




#114
17a(H)-Diahopane (X)
Concen: 39.98 ng/ml m
RT: 50.146 min Scan# 4608
Delta R.T. 0.009 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

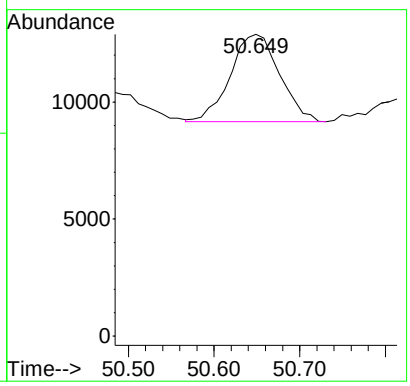
Tgt Ion:191 Resp: 6643

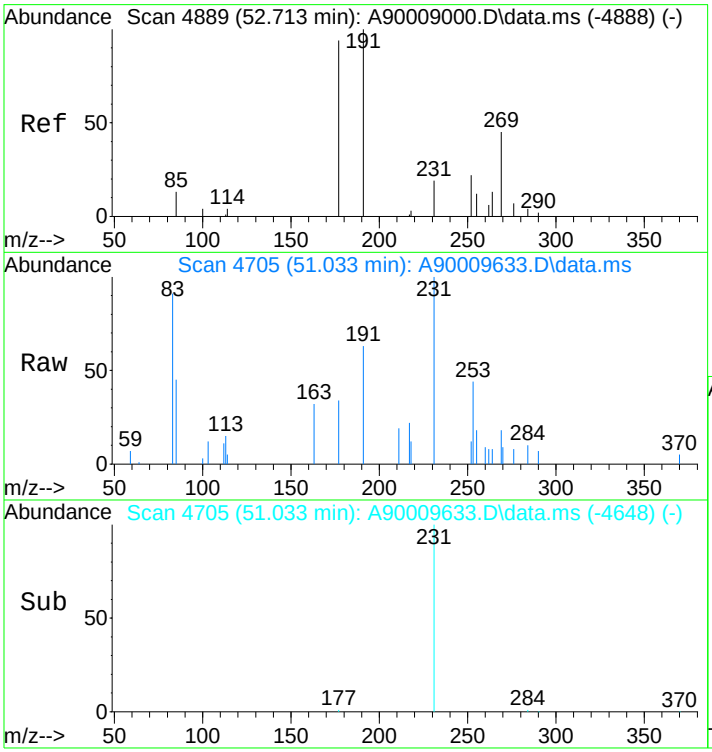




#115
30-Normoretane (T17)
Concen: 90.04 ng/ml
RT: 50.649 min Scan# 4663
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

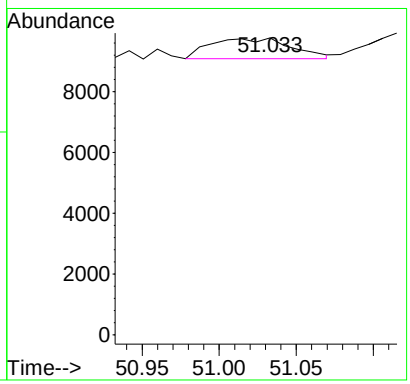
Tgt Ion:191 Resp: 14961

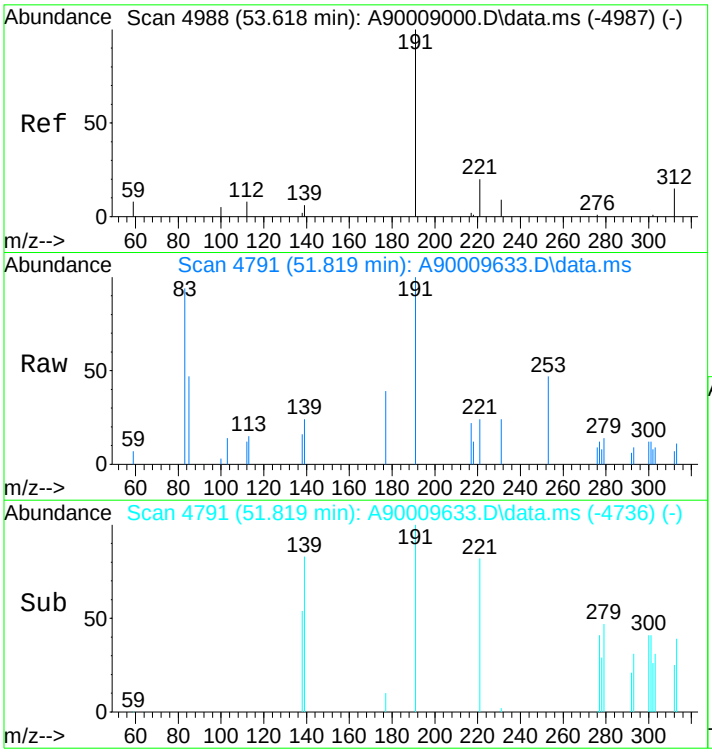




#116
18a(H)&18b(H)-Oleananes (T18)
Concen: 14.82 ng/ml
RT: 51.033 min Scan# 4705
Delta R.T. 0.018 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

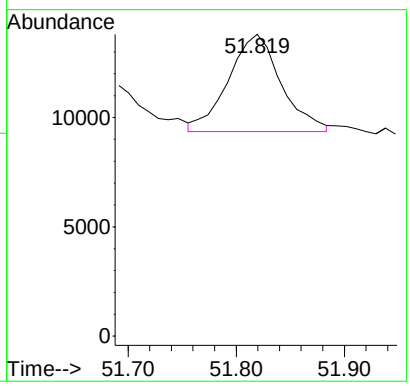
Tgt Ion:191 Resp: 2462

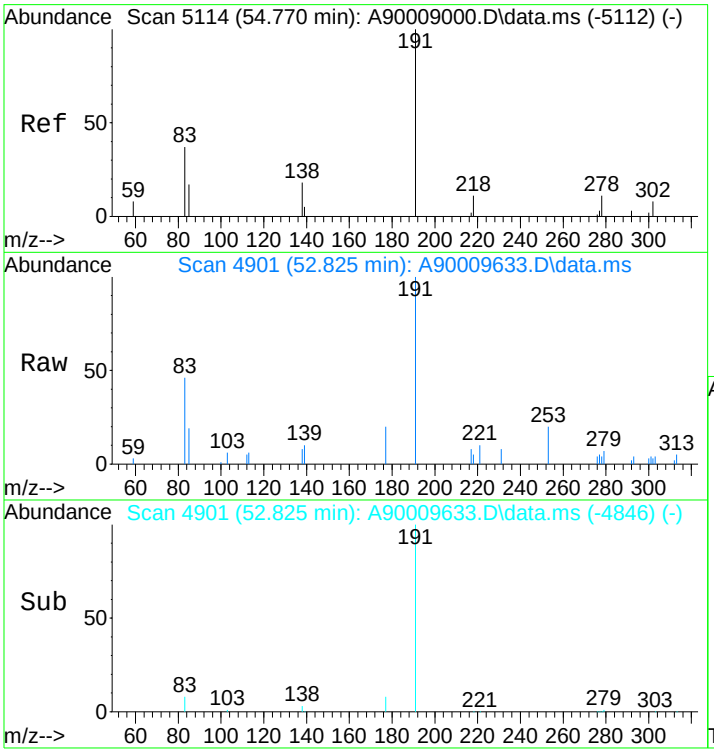




#117
Moretane (T20)
Concen: 90.37 ng/ml m
RT: 51.819 min Scan# 4791
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

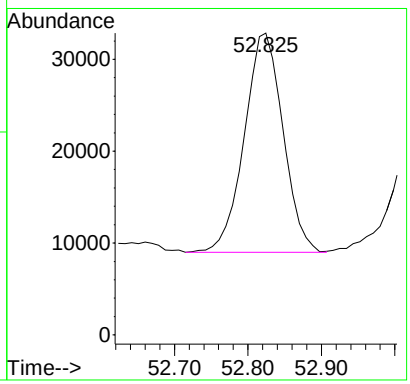
Tgt Ion:191 Resp: 15016

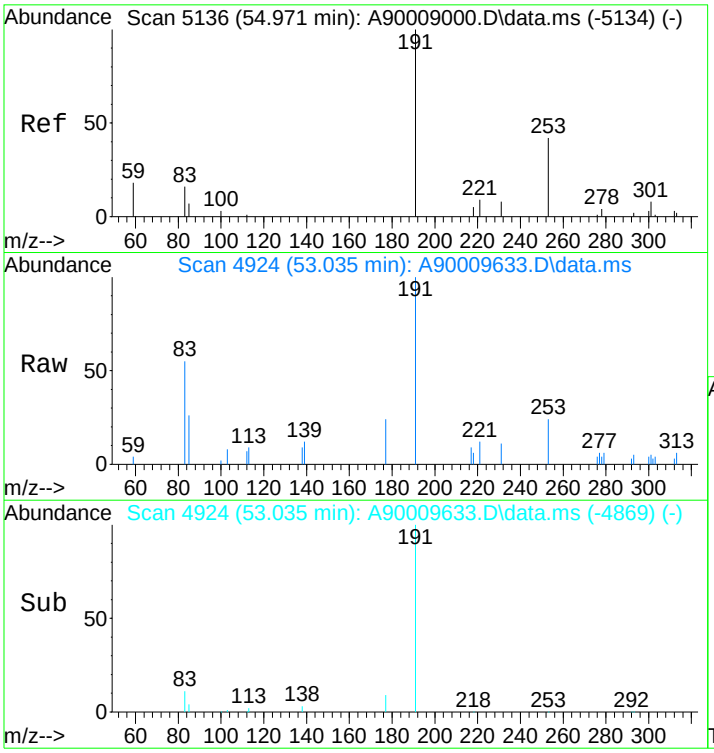




#118
30-Homohopane-22S (T21)
Concen: 529.88 ng/ml
RT: 52.825 min Scan# 4901
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

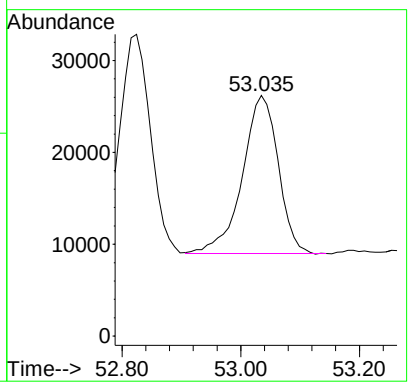
Tgt Ion:191 Resp: 88047

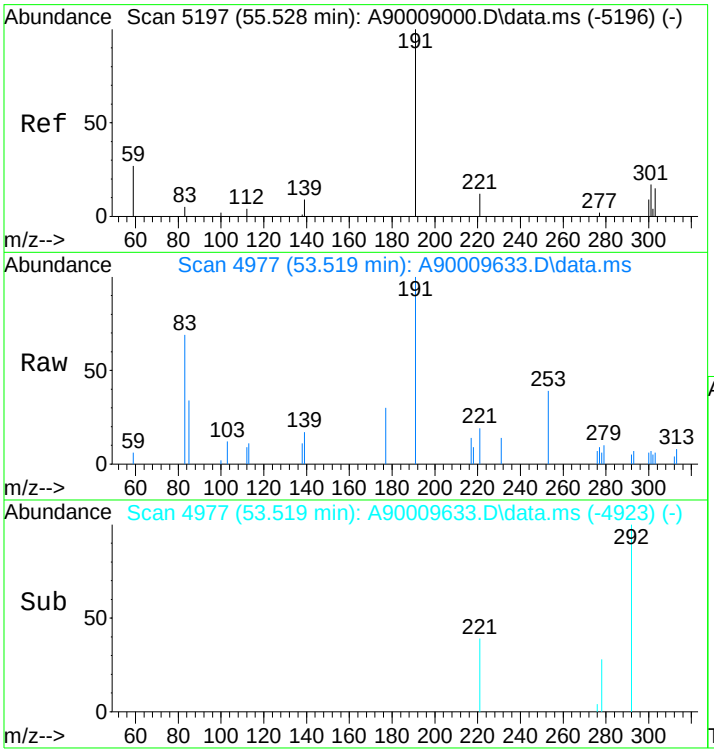




#119
30-Homohopane-22R (T22)
Concen: 433.15 ng/ml
RT: 53.035 min Scan# 4924
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

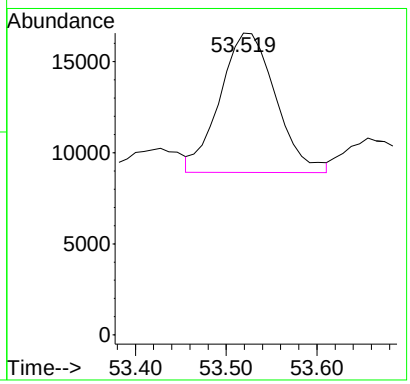
Tgt Ion:191 Resp: 71973

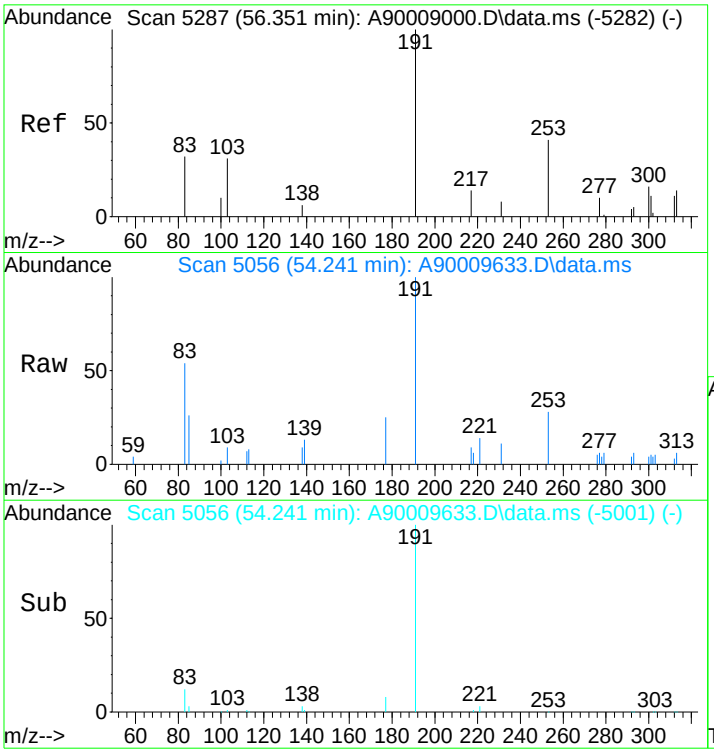




#120
Gammacerane/C32-diahopane
Concen: 196.18 ng/mL
RT: 53.519 min Scan# 4977
Delta R.T. -0.009 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

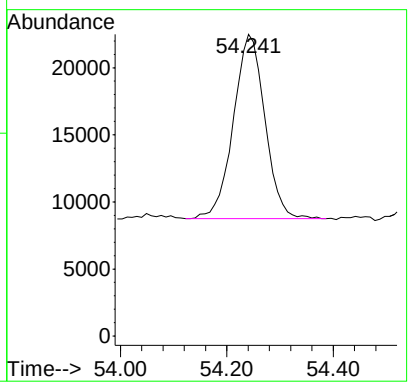
Tgt Ion:191 Resp: 32598

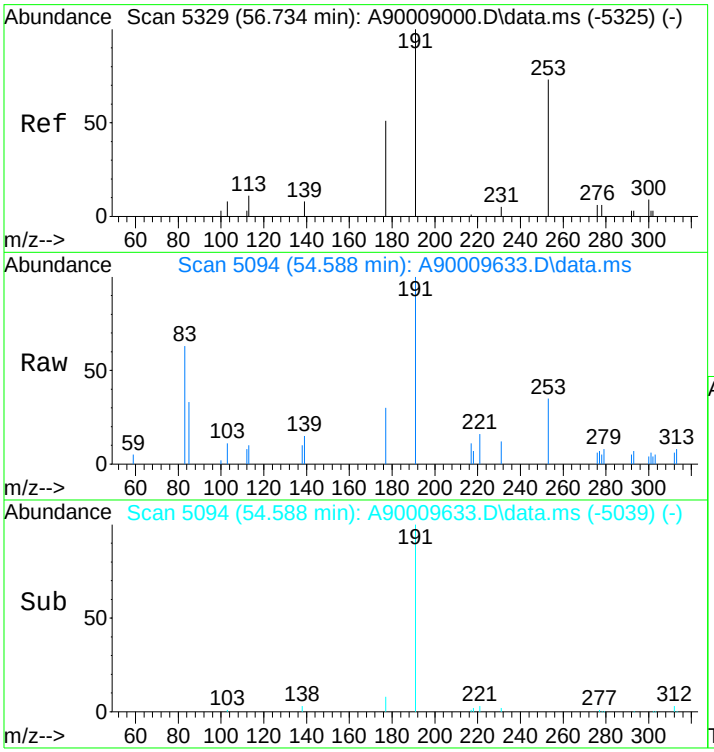




#121
30,31-Bishomohopane-22S (T26)
Concen: 340.03 ng/ml
RT: 54.241 min Scan# 5056
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

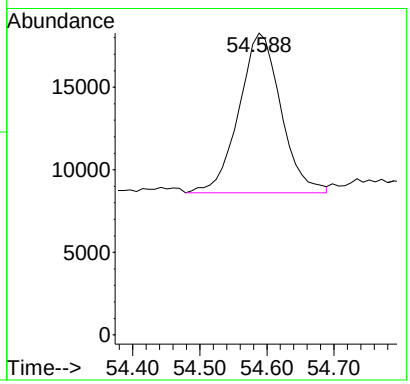
Tgt Ion:191 Resp: 56500

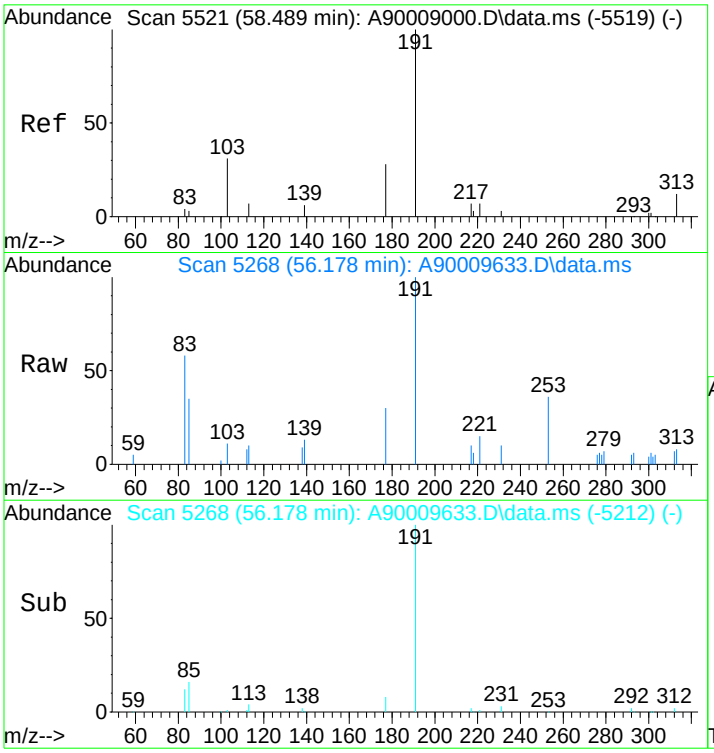




#122
30,31-Bishomohopane-22R (T27)
Concen: 252.88 ng/ml
RT: 54.588 min Scan# 5094
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

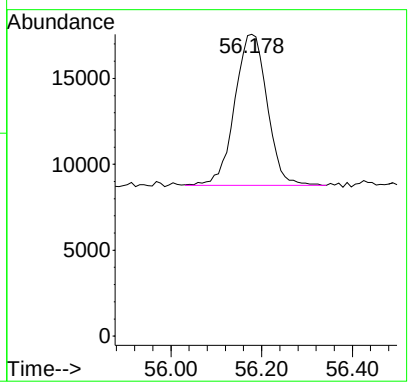
Tgt Ion:191 Resp: 42019

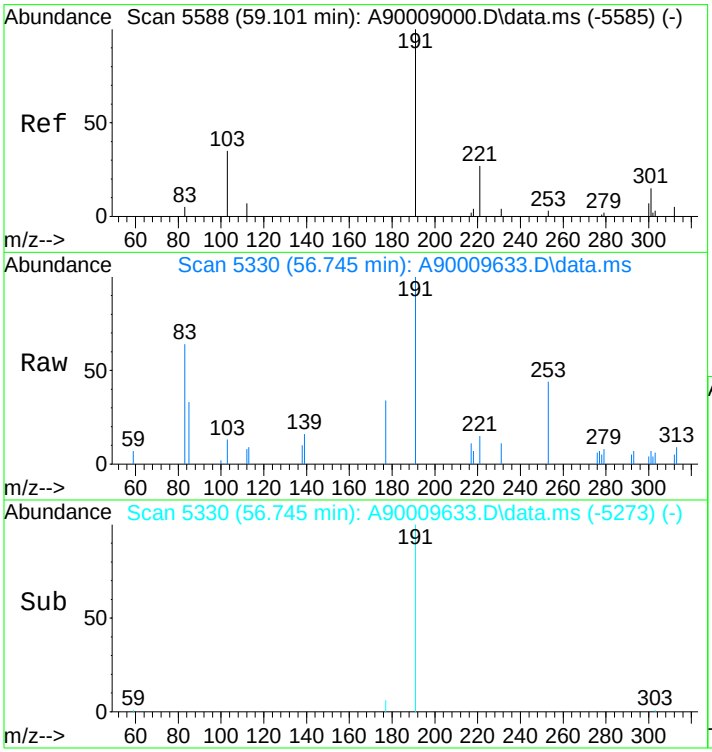




#123
30,31-Trishomohopane-22S (T30)
Concen: 262.49 ng/ml
RT: 56.178 min Scan# 5268
Delta R.T. 0.009 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

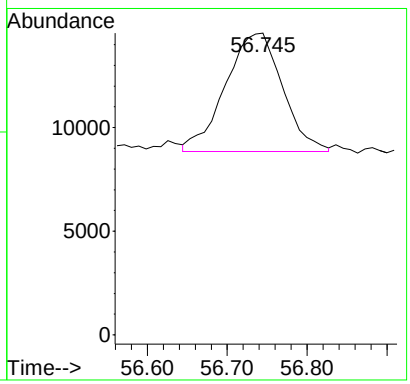
Tgt Ion:191 Resp: 43616

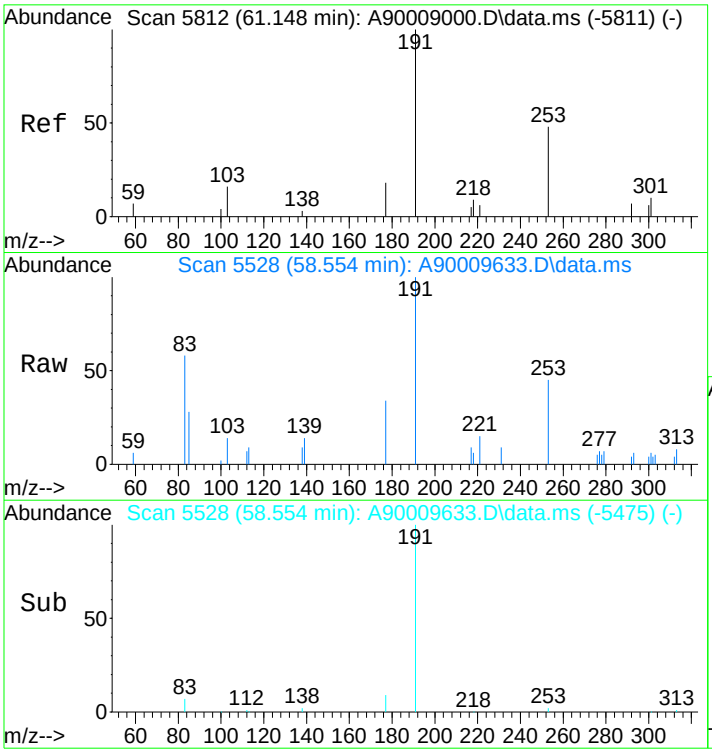




#124
30,31-Trishomohopane-22R (T31)
Concen: 170.62 ng/ml m
RT: 56.745 min Scan# 5330
Delta R.T. 0.018 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

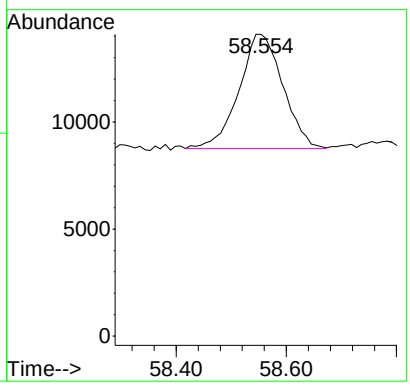
Tgt Ion:191 Resp: 28351

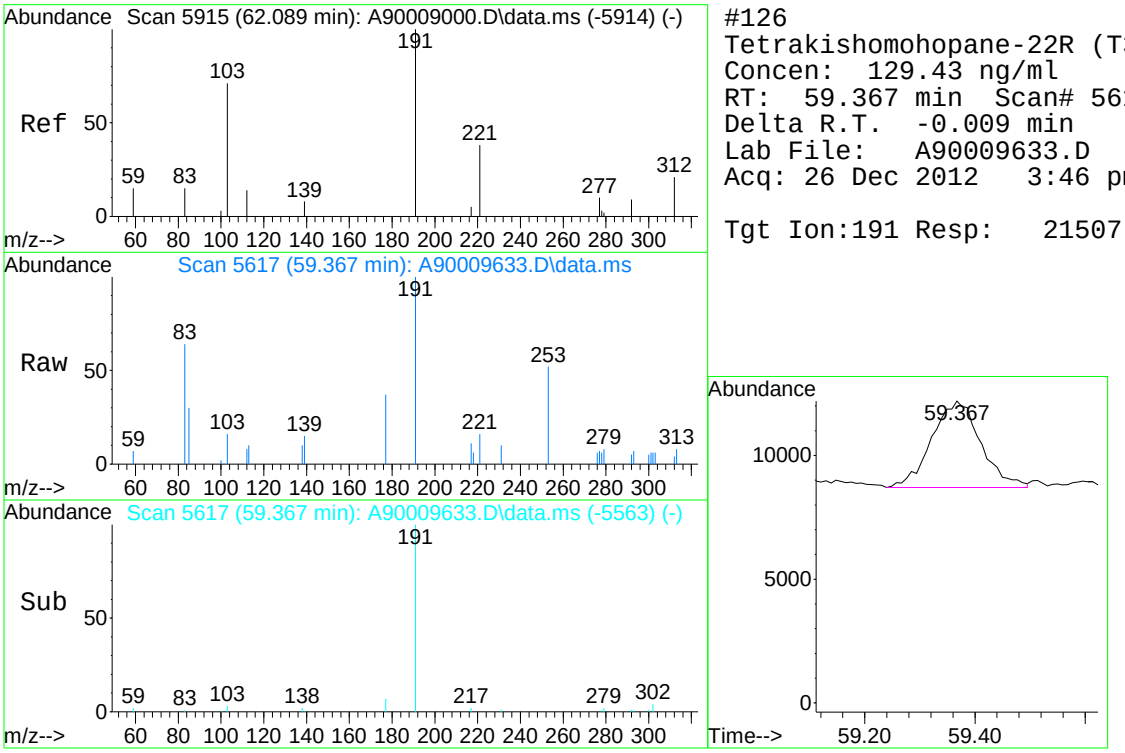




#125
Tetrakishomohopane-22S (T32)
Concen: 178.40 ng/ml
RT: 58.554 min Scan# 5528
Delta R.T. -0.018 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

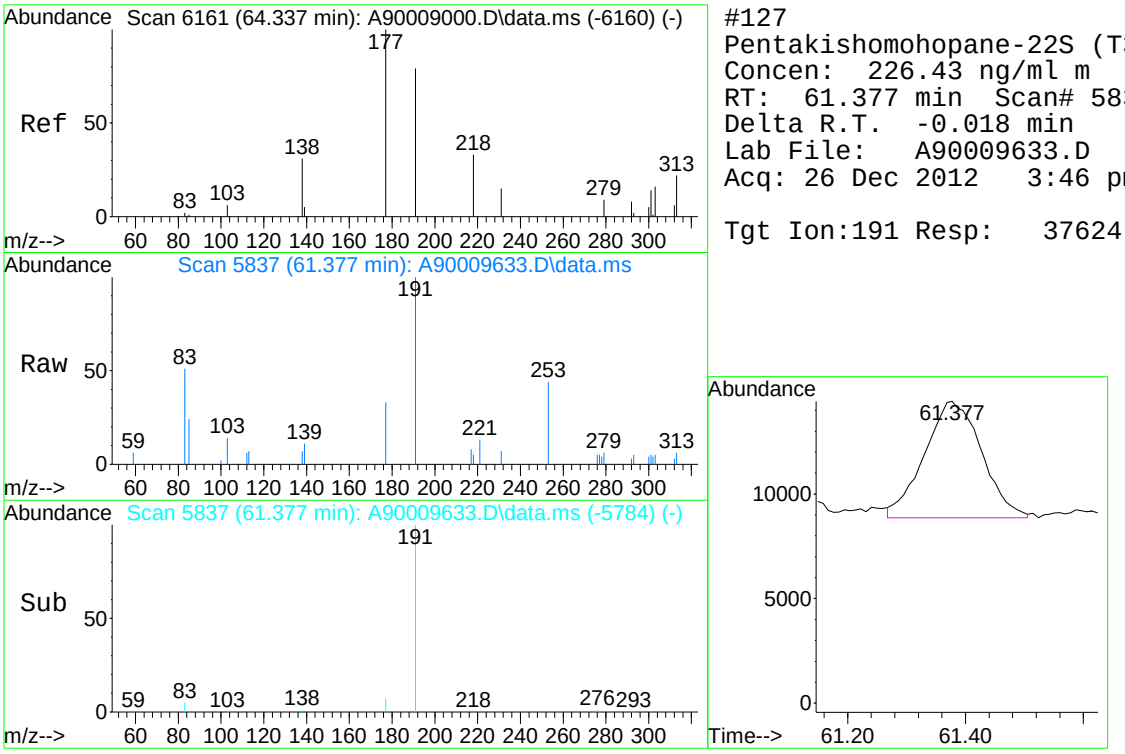
Tgt Ion:191 Resp: 29643





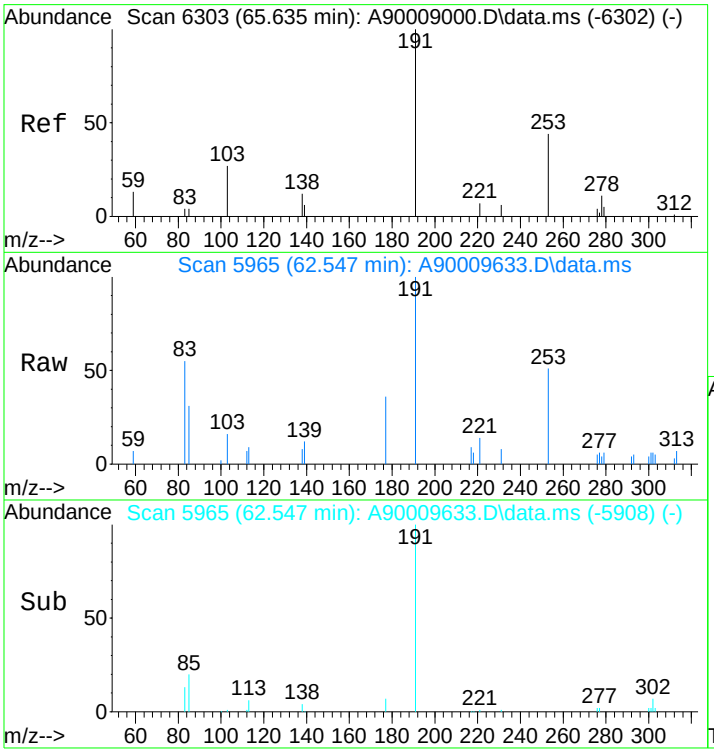
#126
Tetrakishomohopane-22R (T33)
Concen: 129.43 ng/ml
RT: 59.367 min Scan# 5617
Delta R.T. -0.009 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:191 Resp: 21507



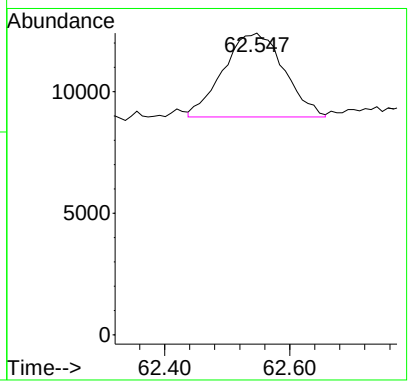
#127
Pentakishomohopane-22S (T34)
Concen: 226.43 ng/ml m
RT: 61.377 min Scan# 5837
Delta R.T. -0.018 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

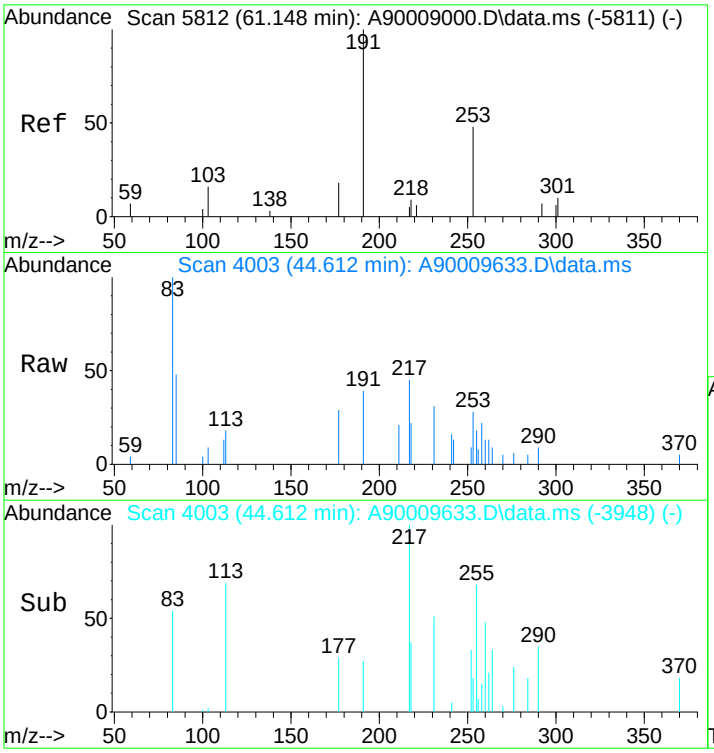
Tgt Ion:191 Resp: 37624



#128
Pentakishomohopane-22R (T35)
Concen: 139.61 ng/ml m
RT: 62.547 min Scan# 5965
Delta R.T. 0.018 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

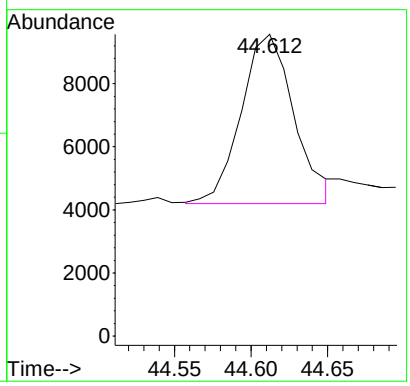
Tgt Ion:191 Resp: 23198

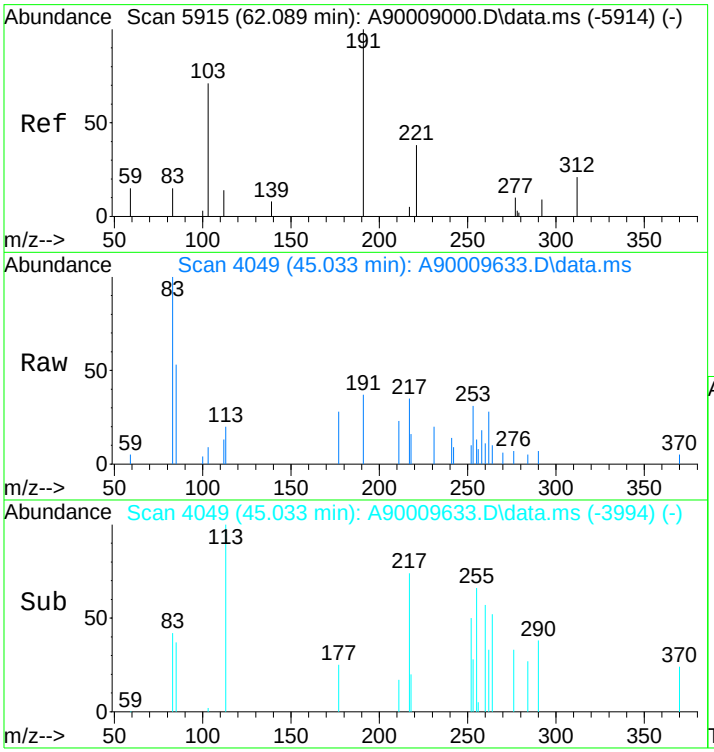




#130
13b(H),17a(H)-20S-Diacholestane (S4)
Concen: 162.70 ng/ml m
RT: 44.612 min Scan# 4003
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

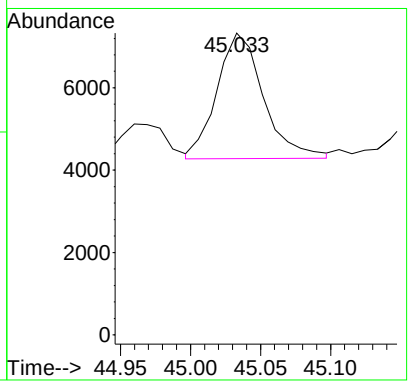
Tgt Ion:217 Resp: 12909

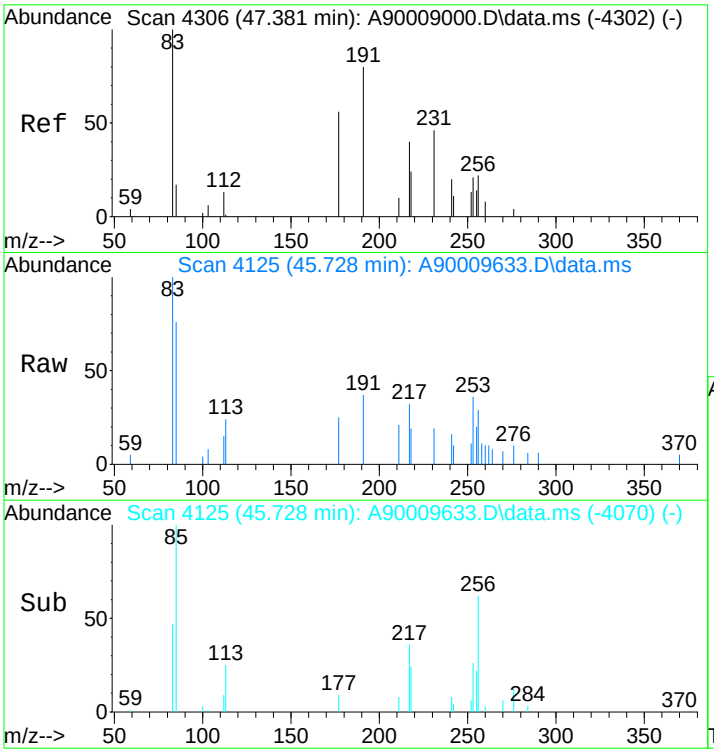




#131
13b(H),17a(H)-20R-Diacholestane (S5)
Concen: 88.72 ng/ml
RT: 45.033 min Scan# 4049
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

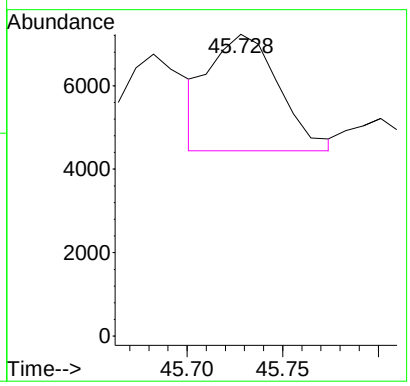
Tgt Ion:217 Resp: 7039

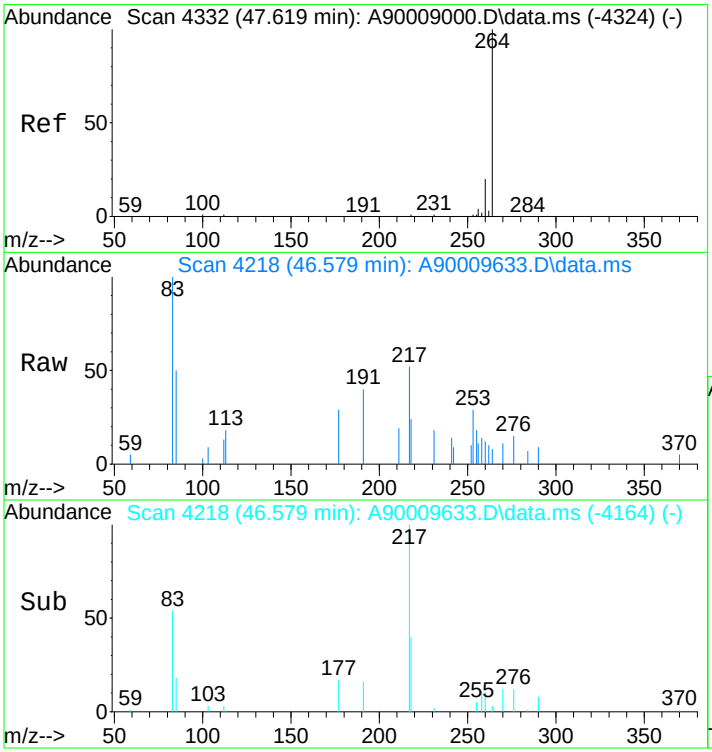




#132
13b,17a-20S-Methyldiacholestane (S8)
Concen: 88.41 ng/ml m
RT: 45.728 min Scan# 4125
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

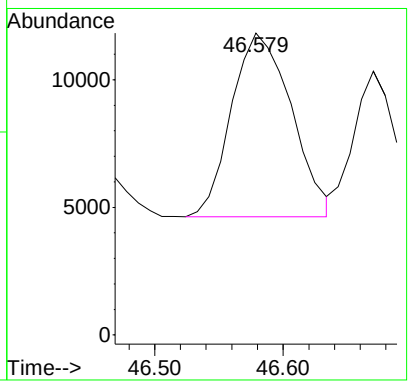
Tgt Ion:217 Resp: 7015

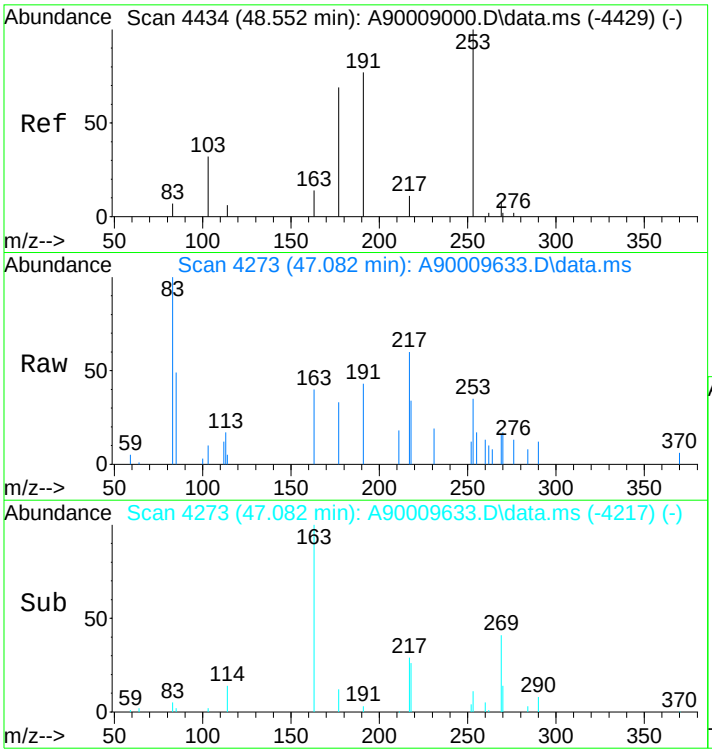




#133
14a,17a-20S-Chol/13b,17a-20S-Ethyldiach
Concen: 294.56 ng/ml
RT: 46.579 min Scan# 4218
Delta R.T. -0.009 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

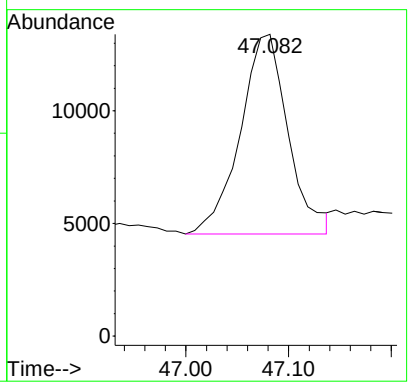
Tgt Ion:217 Resp: 23371

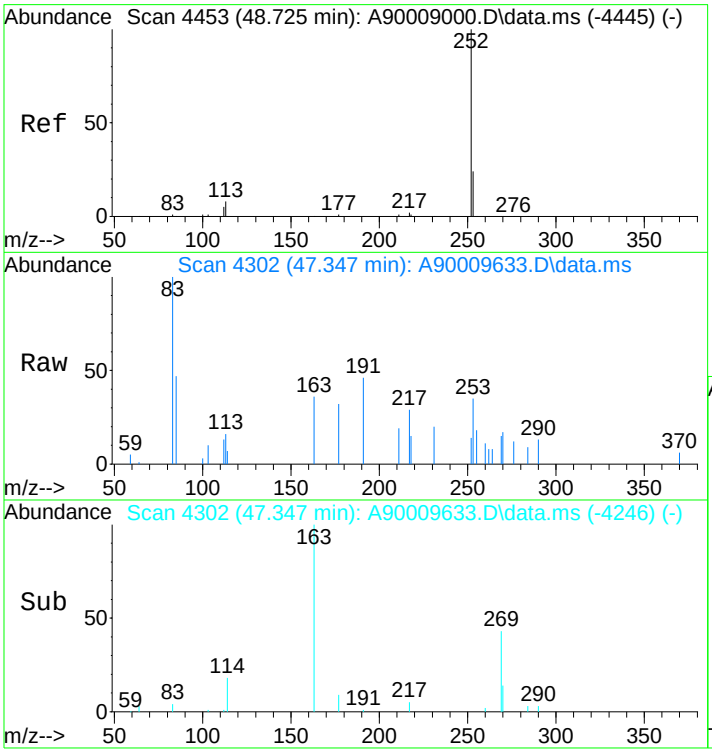




#134
14a,17a-20R-Chol/13b,17a-20R-Ethyldiach
Concen: 362.01 ng/ml
RT: 47.082 min Scan# 4273
Delta R.T. 0.009 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

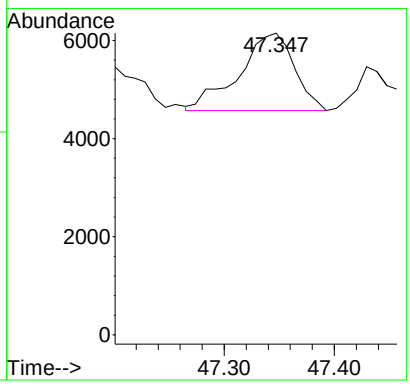
Tgt Ion:217 Resp: 28723

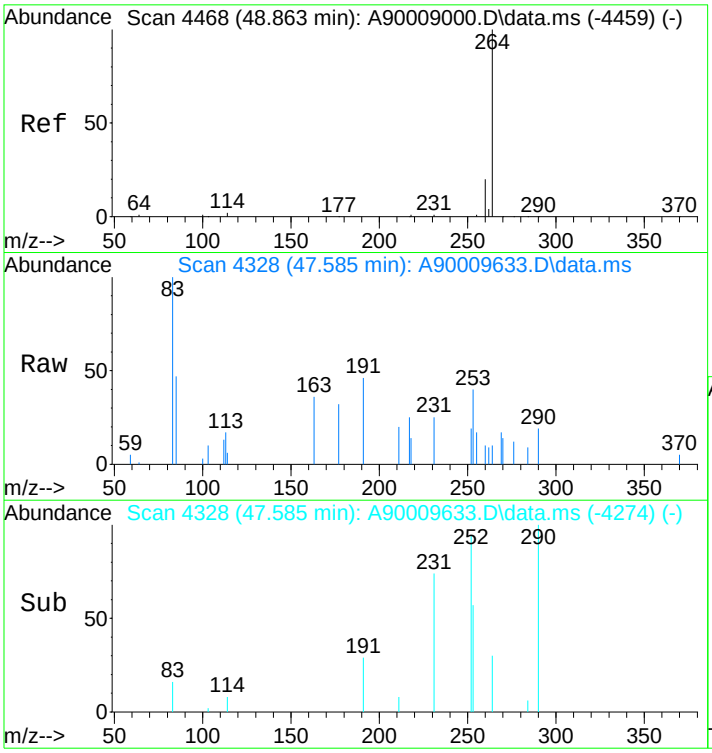




#135
Unknown Sterane (S18)
Concen: 69.67 ng/ml
RT: 47.347 min Scan# 4302
Delta R.T. 0.009 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

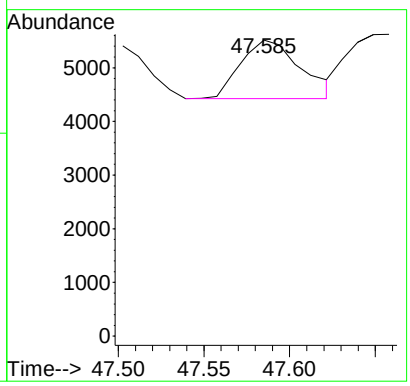
Tgt Ion:217 Resp: 5528

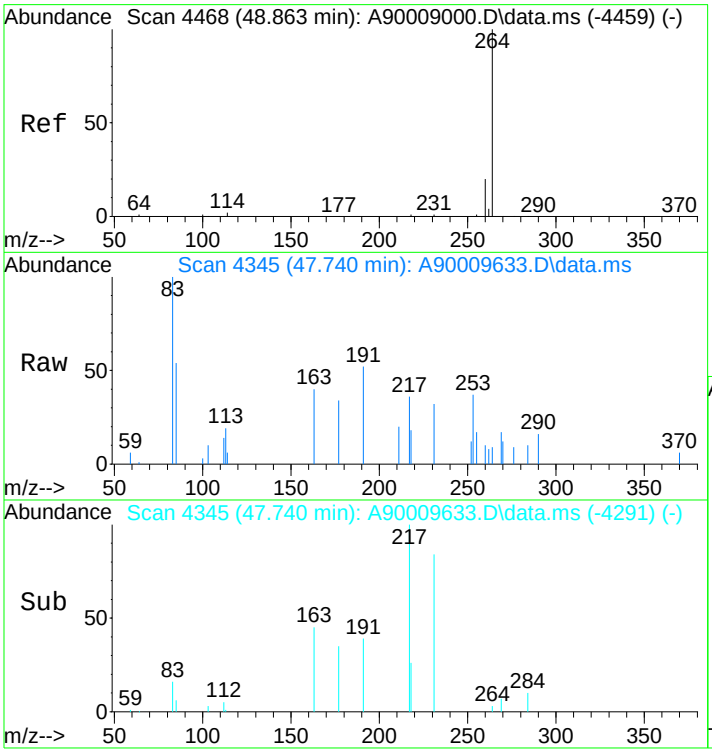




#136
13a,17b-20S-Ethyldiacholestane (S19)
Concen: 33.69 ng/ml
RT: 47.585 min Scan# 4328
Delta R.T. -0.009 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

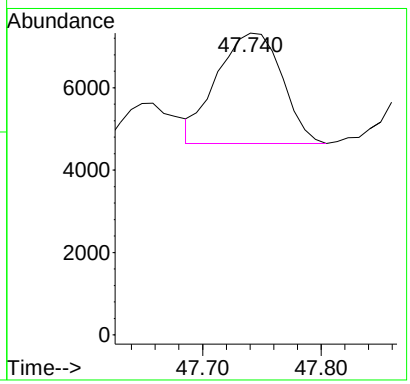
Tgt Ion:217 Resp: 2673

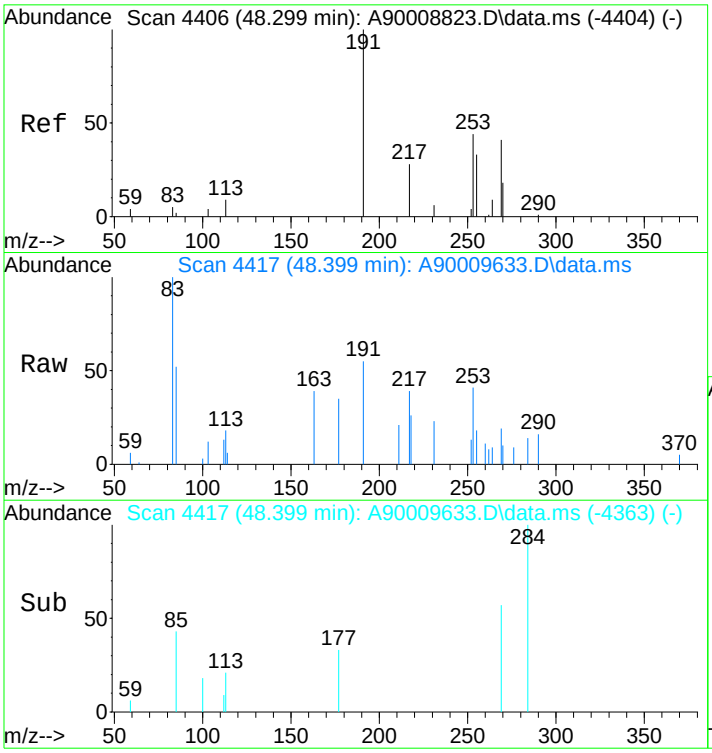




#137
14a,17a-20S-Methylcholestane (S20)
Concen: 128.46 ng/ml
RT: 47.740 min Scan# 4345
Delta R.T. -0.009 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

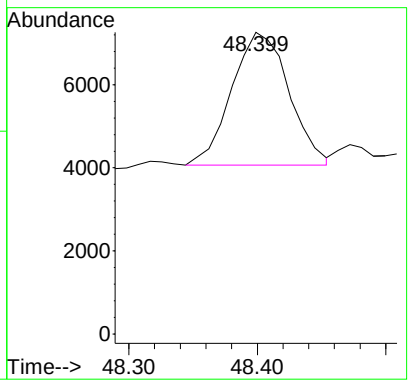
Tgt Ion:217 Resp: 10192

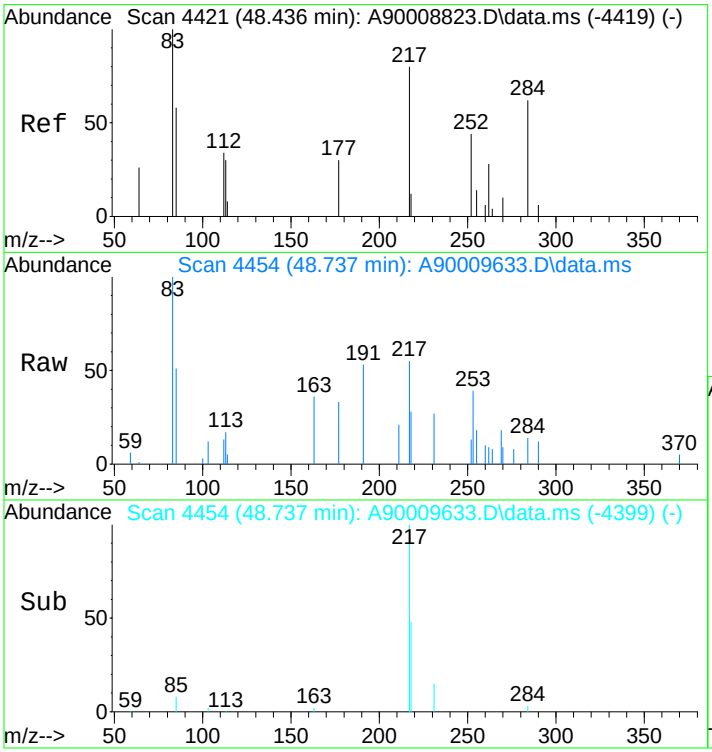




#138
14a,17a-20R-Methylcholestane (S24)
Concen: 124.94 ng/ml
RT: 48.399 min Scan# 4417
Delta R.T. -0.009 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

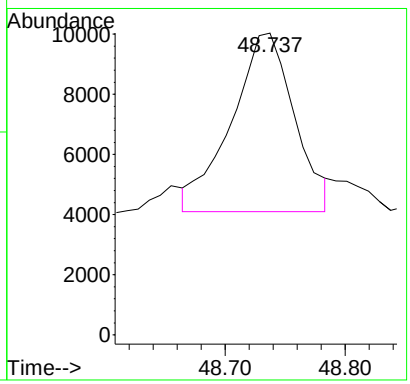
Tgt Ion:217 Resp: 9913

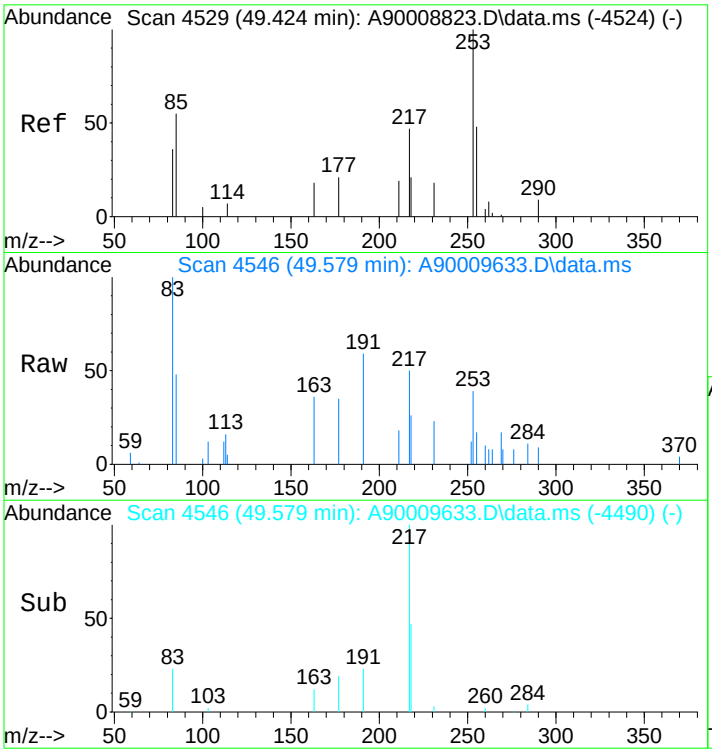




#139
14a(H),17a(H)-20S-Ethylcholestane (S25)
Concen: 272.73 ng/ml m
RT: 48.737 min Scan# 4454
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

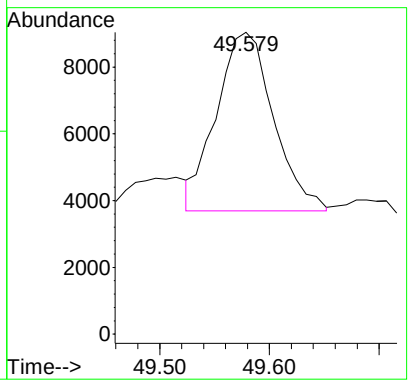
Tgt Ion:217 Resp: 21639

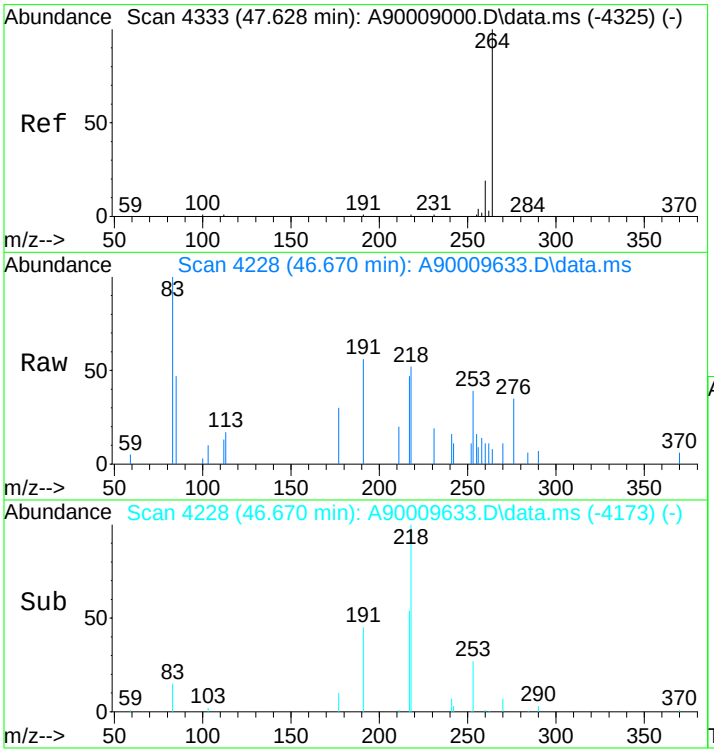




#140
14a(H),17a(H)-20R-Ethylcholestane (S28)
Concen: 243.53 ng/ml m
RT: 49.579 min Scan# 4546
Delta R.T. 0.009 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

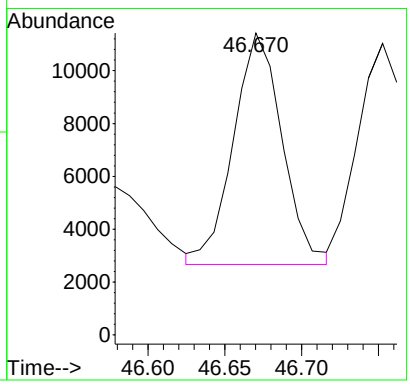
Tgt Ion:217 Resp: 19322

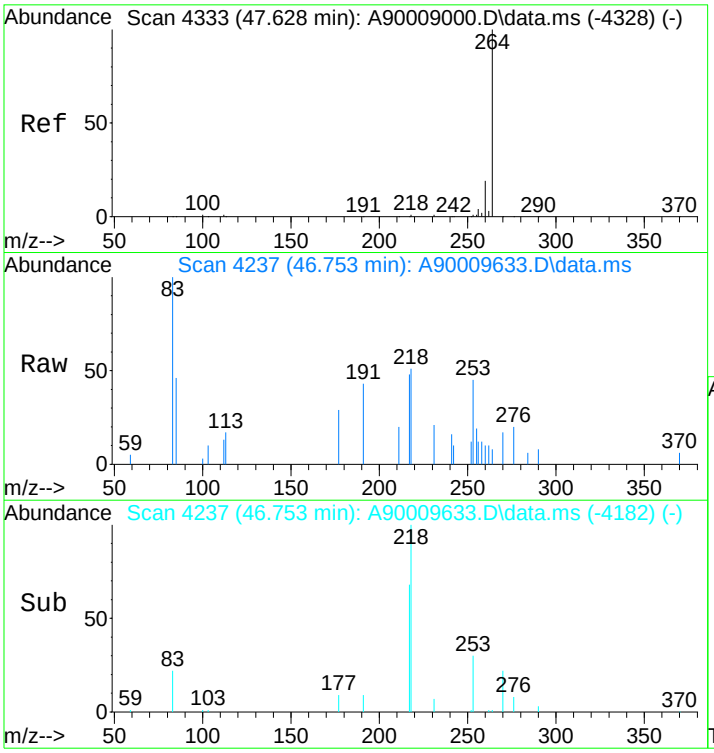




#141
14b(H),17b(H)-20R-Cholestane (S14)
Concen: 243.26 ng/ml m
RT: 46.670 min Scan# 4228
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

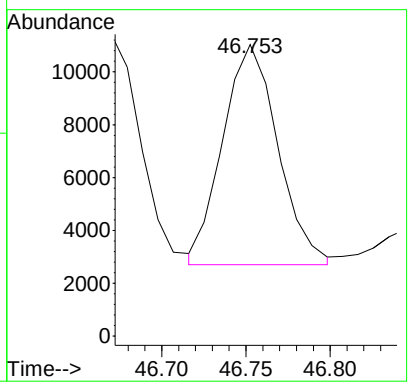
Tgt Ion:218 Resp: 19301

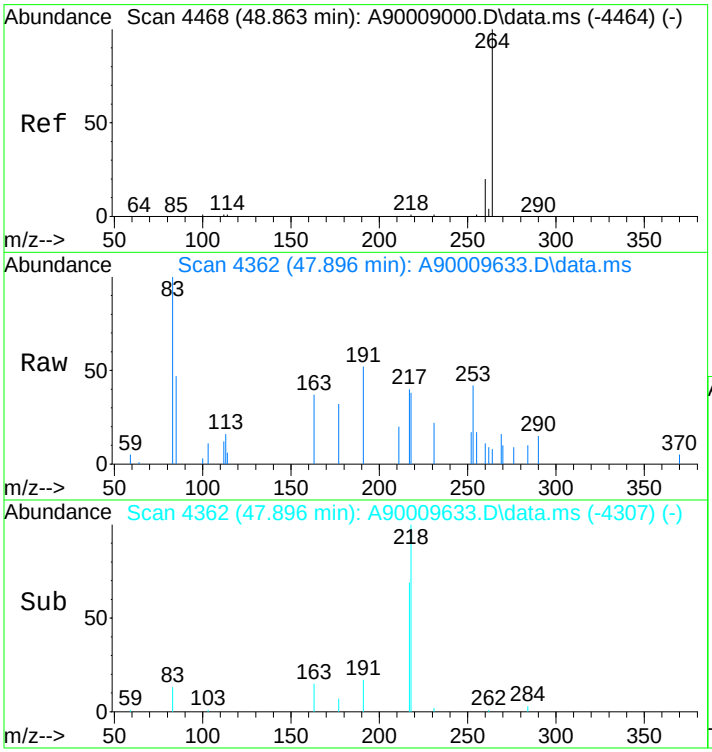




#142
14b(H),17b(H)-20S-Cholestane (S15)
Concen: 238.81 ng/ml m
RT: 46.753 min Scan# 4237
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

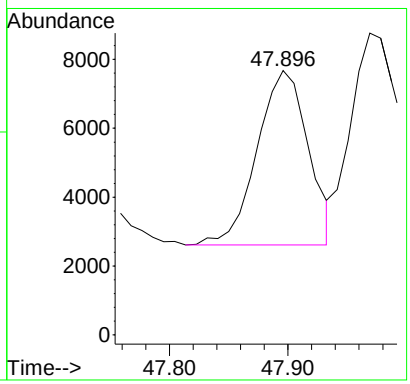
Tgt Ion:218 Resp: 18948

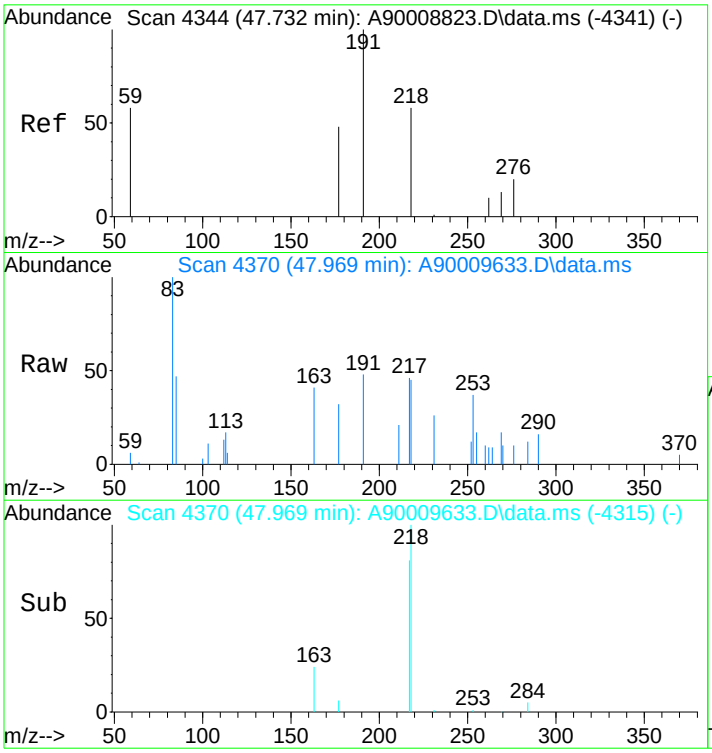




#143
14b,17b-20R-Methylcholestane (S22)
Concen: 191.64 ng/ml
RT: 47.896 min Scan# 4362
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

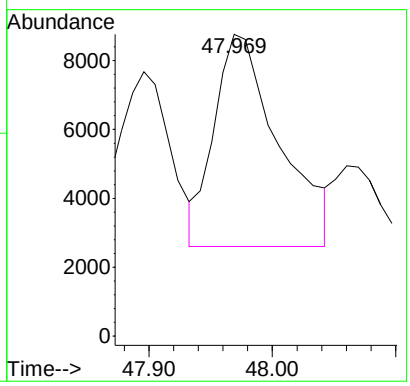
Tgt Ion:218 Resp: 15205

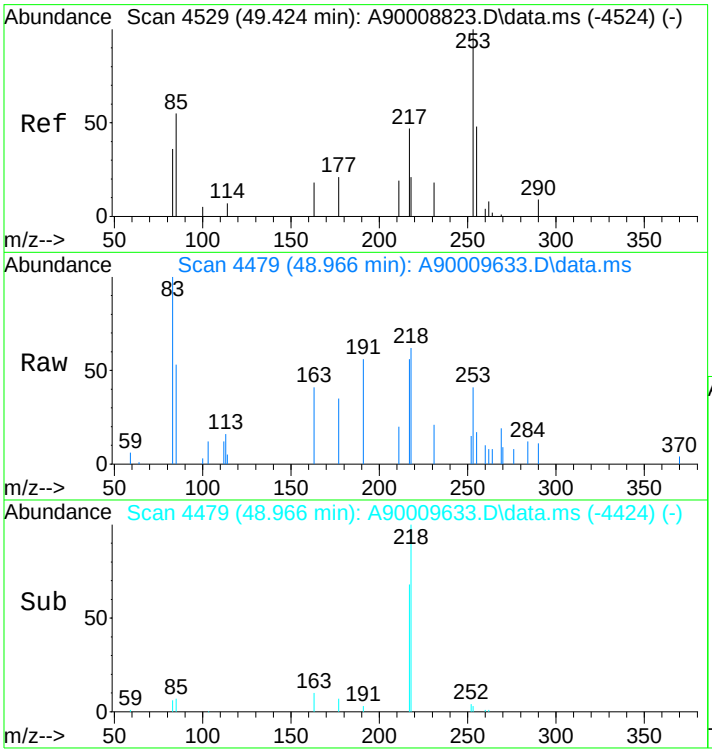




#144
14b,17b-20S-Methylcholestane (S23)
Concen: 283.62 ng/ml m
RT: 47.969 min Scan# 4370
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

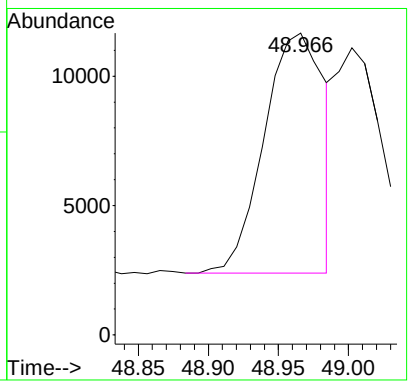
Tgt Ion:218 Resp: 22503

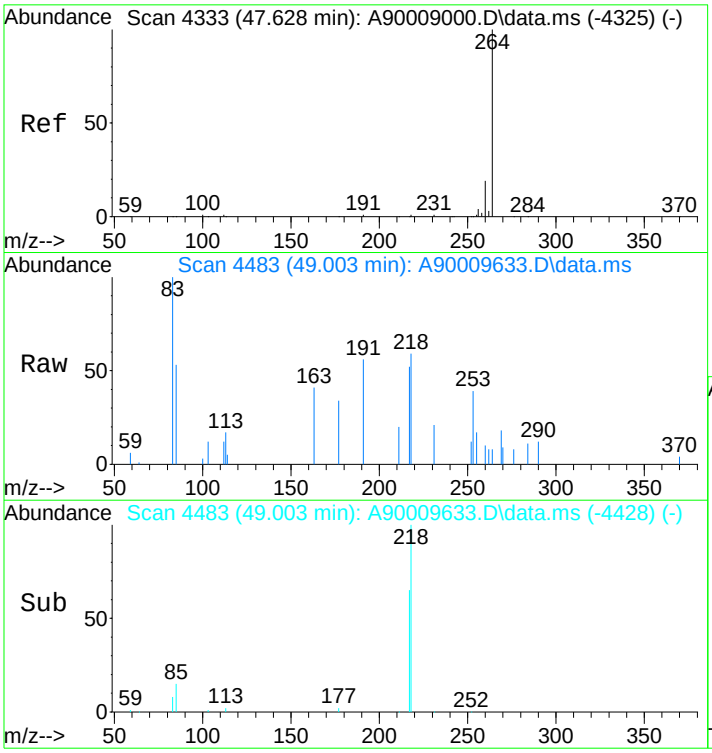




#145
14b(H),17b(H)-20R-Ethylcholestane (S26)
Concen: 347.75 ng/ml
RT: 48.966 min Scan# 4479
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

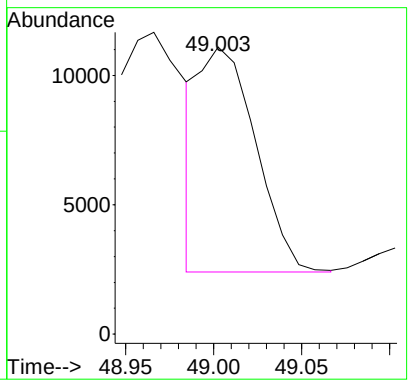
Tgt Ion:218 Resp: 27591

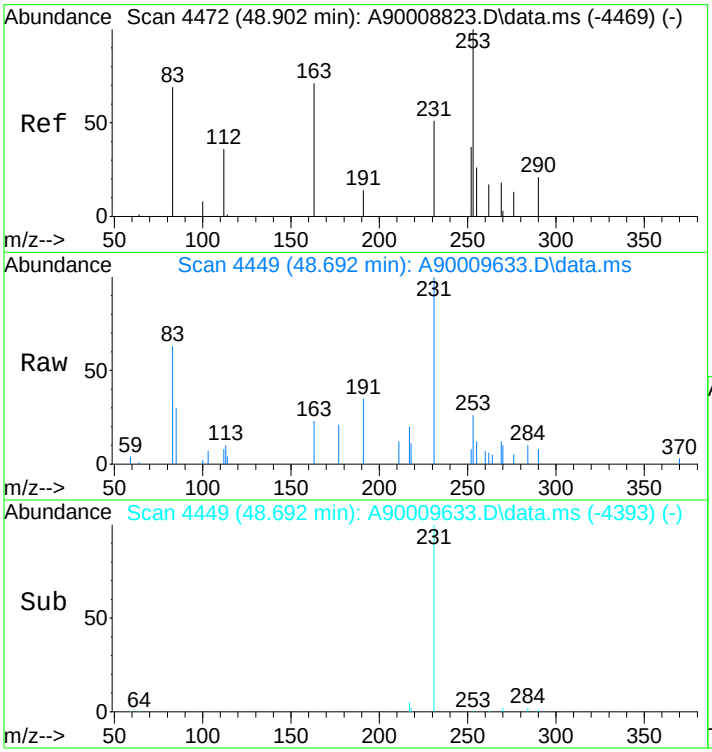




#146
14b(H),17b(H)-20S-Ethylcholestane (S27)
Concen: 246.54 ng/ml m
RT: 49.003 min Scan# 4483
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

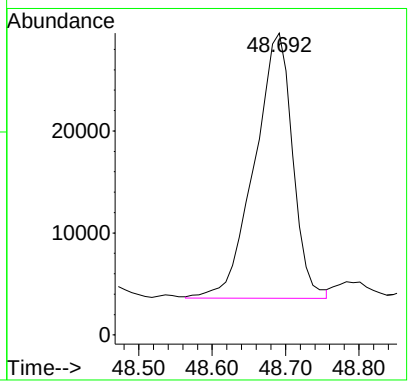
Tgt Ion:218 Resp: 19561

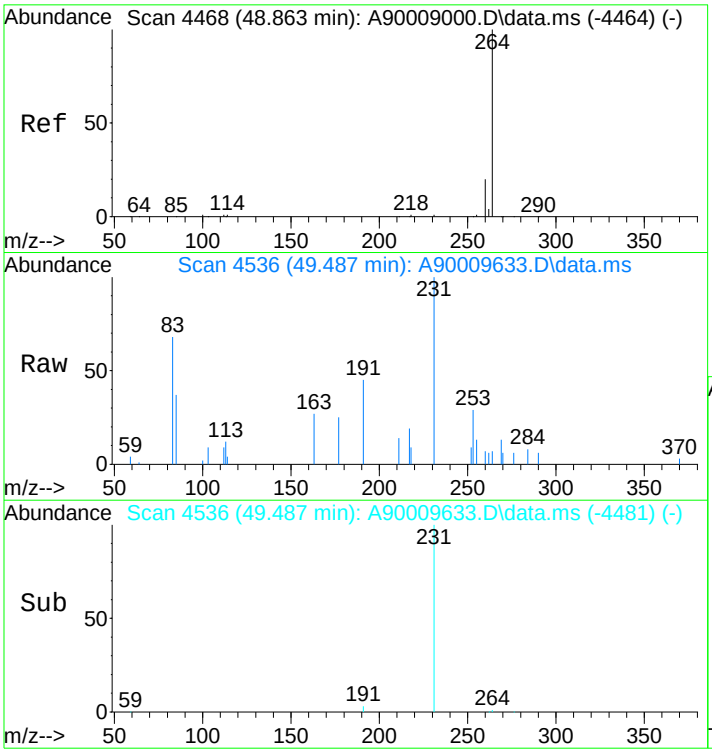




#147
C26,20R- +C27,20S- triaromatic steroid
Concen: 1188.41 ng/mL
RT: 48.692 min Scan# 4449
Delta R.T. 0.009 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

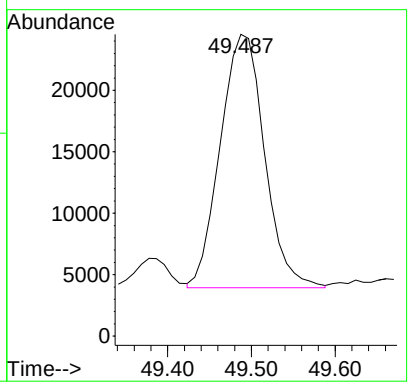
Tgt Ion:231 Resp: 94291

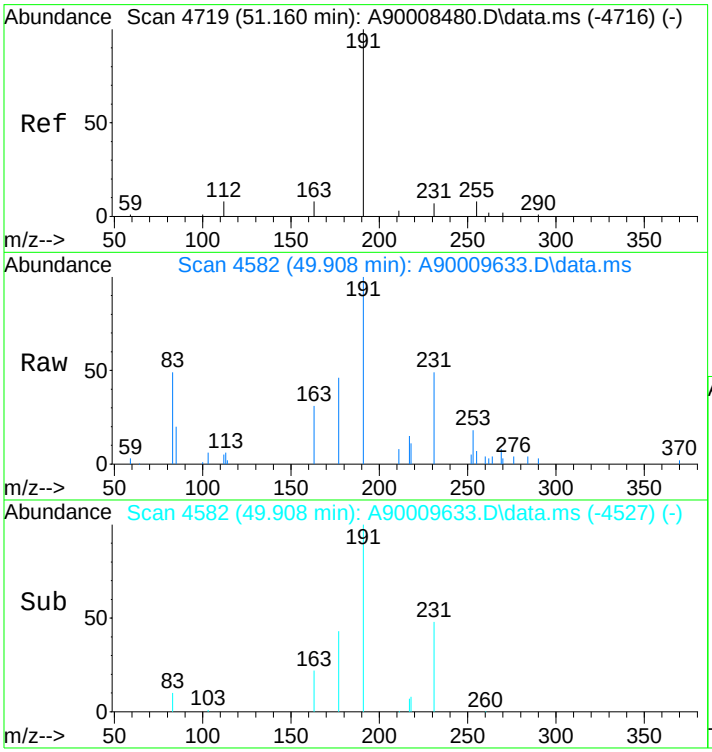




#148
C28,20S-triaromatic steroid
Concen: 954.84 ng/mL m
RT: 49.487 min Scan# 4536
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

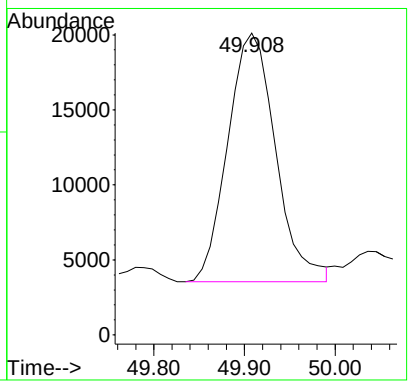
Tgt Ion:231 Resp: 75759

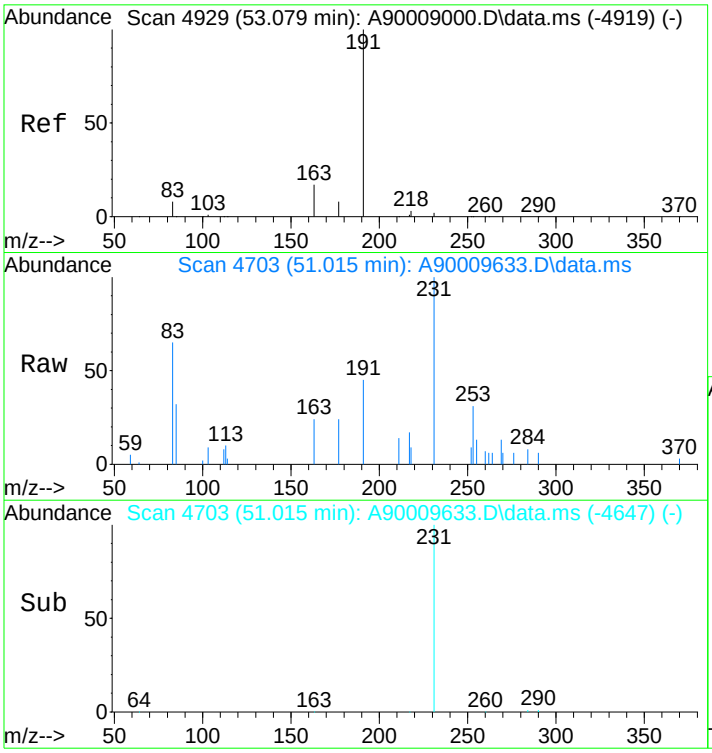




#149
C27,20R-triaromatic steroid
Concen: 765.77 ng/mL
RT: 49.908 min Scan# 4582
Delta R.T. -0.000 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

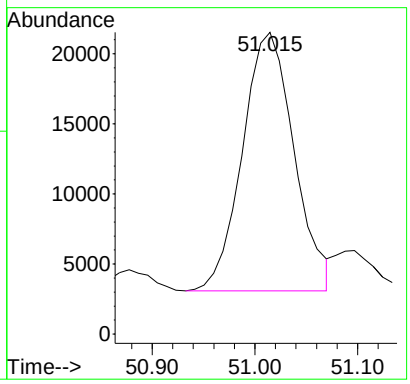
Tgt Ion:231 Resp: 60758





#150
C28,20R-triaromatic steroid
Concen: 813.97 ng/mL
RT: 51.015 min Scan# 4703
Delta R.T. 0.009 min
Lab File: A90009633.D
Acq: 26 Dec 2012 3:46 pm

Tgt Ion:231 Resp: 64582



Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\
Data File : A90009634.D
Acq On : 26 Dec 2012 5:11 pm
Operator : ps
Sample : SS122712WCS04
Misc : WHAQ73@5.036
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Dec 27 16:19:20 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Dec 27 11:30:11 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.074	164	103667	500.000	ng/mL	0.00
74) Chrysene-d12	42.466	240	192892	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.147	136	390023	978.845	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 97.88%			
42) Phenanthrene-d10	31.913	188	398525	1065.811	ng/mL	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 106.58%			
83) Benzo[b]fluoranthene-d12	46.359	264	373489	1053.350	ng/mL	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 105.34%			
88) Benzo[a]pyrene-d12	47.475	264	362176	1018.963	ng/mL	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 101.90%			
129) 5B(H)Cholane - Surr	43.096	217	87275	1077.784	ng/ml	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 107.78%			
Target Compounds						Qvalue
3) trans-Decalin	15.826	138	75192	825.026	ng/mL	100
4) cis-Decalin	17.021	138	4853M4	68.018	ng/mL	
5) C1-Decalins	17.295	152	170787M5	1873.919	ng/mL	
6) C2-Decalins	18.709	166	246383M5	2703.378	ng/mL	
7) C3-Decalins	21.520	180	192906M5	2116.615	ng/mL	
8) C4-Decalins	24.878	194	206172M5	2262.173	ng/mL	
10) Naphthalene	19.220	128	150911	369.072	ng/mL#	100
11) C1-Naphthalenes	21.894	142	428188M5	1047.189	ng/mL	
12) C2-Naphthalenes	24.723	156	1071174M5	2619.694	ng/mL	
13) C3-Naphthalenes	27.397	170	1299379M5	3177.799	ng/mL	
14) C4-Naphthalenes	29.805	184	1036299M5	2534.403	ng/mL	
16) 2-Methylnaphthalene	21.894	142	262234	980.668	ng/mL#	100
17) 1-Methylnaphthalene	22.314	142	162455	626.014	ng/mL#	100
18) Benzothiophene	19.439	134	11326M4	33.099	ng/mL	
19) C1-Benzo(b)thiophenes	21.474	148	68126M5	199.092	ng/mL	
20) C2-Benzo(b)thiophenes	24.915	162	107773M5	314.956	ng/mL	
21) C3-Benzo(b)thiophenes	26.886	176	232761M5	680.222	ng/mL	
22) C4-Benzo(b)thiophenes	28.984	190	245884M5	718.572	ng/mL	
23) Biphenyl	23.774	154	29895	85.431	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.385	156	273706	1088.876	ng/mL#	100
25) Dibenzofuran	26.840	168	15817	42.378	ng/mL#	83
26) Acenaphthylene	25.471	152	9249	21.989	ng/mL#	100
27) Acenaphthene	26.192	153	18364M4	69.437	ng/mL	
28) 2,3,5-Trimethylnaphthalen	27.744	170	91216M3	394.702	ng/mL	
29) Fluorene	28.200	166	46791M3	161.110	ng/mL	
30) C1-Fluorenes	30.563	180	133139M5	458.421	ng/mL	
31) C2-Fluorenes	32.752	194	309658M5	1066.208	ng/mL	
32) C3-Fluorenes	34.578	208	364865M5	1256.295	ng/mL	
33) Dibenzothiophene	31.502	184	123757	302.926	ng/mL#	73
34) 4-Methyldibenzothiophene(	33.273	198	163655	400.587	ng/mL#	100
35) 2/3-Methyldibenzothiophen	33.620	198	127461	311.993	ng/mL#	100
36) 1-Methyldibenzothiophene(	34.039	198	86262	211.148	ng/mL#	100
37) OTP	33.711	198	53295	130.453	ng/mL#	100
38) C1-Dibenzothiophenes	33.273	198	449743M5	1100.859	ng/mL	
38) C1-Dibenzothiophenes BS	33.273	198	396448m	970.406	ng/mL	
39) C2-Dibenzothiophenes	34.961	212	749990M5	1835.789	ng/mL	
40) C3-Dibenzothiophenes	36.760	226	826746M5	2023.668	ng/mL	
41) C4-Dibenzothiophenes	38.449	240	570752M5	1397.059	ng/mL	
43) Phenanthrene	31.995	178	177993M3	421.716	ng/mL	

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\
Data File : A90009634.D
Acq On : 26 Dec 2012 5:11 pm
Operator : ps
Sample : SS122712WCS04
Misc : WHAQ73@5.036
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Dec 27 16:19:20 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Dec 27 11:30:11 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

	Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
44)	3-Methylphenanthrene(3MP)	33.957	192	101003	239.305	ng/mL	95
45)	2-Methylphenanthrene(2MP)	34.067	192	114300	270.809	ng/mL	97
46)	2-Methylanthracene(2MA)	34.231	192	10321M3	24.453	ng/mL	
47)	9/4-Methylphenanthrene(9M	34.414	192	163054	386.322	ng/mL	100
48)	1-Methylphenanthrene(1MP)	34.496	192	98391	233.116	ng/mL	100
49)	C1-Phenanthrenes/Anthrace	34.414	192	492841M5	1167.681	ng/mL	
50)	C2-Phenanthrenes/Anthrace	36.221	206	757541M5	1794.831	ng/mL	
50)	C2-Phenanthrenes/Anthr BS	36.221	206	757541m	1794.831	ng/mL	
52)	C3-Phenanthrenes/Anthrace	39.316	220	679068M5	1608.906	ng/mL	
53)	C4-Phenanthrenes/Anthrace	38.969	234	337745M5	800.214	ng/mL	
54)	Retene	38.969	234	37768M4	325.502	ng/mL	
56)	Carbazole	32.844	167	11465M3	30.922	ng/mL	
57)	1-Methylphenanthrene	34.496	192	98391	315.963	ng/mL	97
58)	Fluoranthene	36.751	202	16514M4	35.025	ng/mL	
60)	Pyrene	37.636	202	53092M4	110.373	ng/mL	
61)	C1-Fluoranthenes/Pyrenes	39.024	216	178415M5	370.908	ng/mL	
62)	C2-Fluoranthenes/Pyrenes	40.832	230	242442M5	504.014	ng/mL	
63)	C3-Fluoranthenes/Pyrenes	42.841	244	290731M5	604.402	ng/mL	
64)	C4-Fluoranthenes/Pyrenes	44.192	258	279034M5	580.085	ng/mL	
66)	Naphthobenzothiophene	41.471	234	48133M4	115.320	ng/ml	
67)	Naphthobenzothiophene-2,1	41.471	234	48965M4	117.314	ng/mL	
68)	Naphthobenzothiophene-1,2	41.809	234	13934	33.384	ng/mL#	1
69)	Naphthobenzothiophene-2,3	42.119	234	9569M4	22.926	ng/mL	
70)	C1-Naphthobenzothiophenes	42.868	248	243045M5	582.303	ng/ml	
71)	C2-Naphthobenzothiophenes	44.914	262	363029M5	869.768	ng/ml	
72)	C3-Naphthobenzothiophenes	46.469	276	312231M5	748.063	ng/ml	
73)	C4-Naphthobenzothiophenes	47.503	290	248662M5	595.761	ng/mL	
75)	Benz[a]anthracene	42.402	228	8606M3	19.451	ng/mL	
77)	Chrysene/Triphenylene	42.558	228	44367M4	101.956	ng/mL	
78)	C1-Chrysenes	44.037	242	134903M5	310.010	ng/mL	
79)	C2-Chrysenes	46.112	256	207019M5	475.734	ng/mL	
79)	C2-Chrysenes BS	46.112	256	192471m	442.303	ng/mL	
80)	BBF-d12 Surr BKGD	46.359	256	14548	33.432	ng/mL	100
81)	C3-Chrysenes	47.283	270	252919M5	581.214	ng/mL	
82)	C4-Chrysenes	48.774	284	160655M5	369.189	ng/mL	
84)	Benzo[b]fluoranthene	46.442	252	12470	27.182	ng/mL	92
85)	Benzo[j]+[k]fluoranthene	46.515	252	4647M3	10.309	ng/mL	
87)	Benzo[e]pyrene	47.384	252	21500	49.355	ng/mL#	84
89)	Benzo[a]pyrene	47.567	252	11299M3	27.388	ng/mL	
90)	Perylene	47.859	252	22545	51.203	ng/mL	97
91)	Indeno[1,2,3-cd]pyrene	52.020	276	6264M4	13.710	ng/mL	
92)	Dibenz[ah]+[ac]anthracene	52.039	278	2801M3	6.223	ng/mL	
93)	Benzo[g,h,i]perylene	53.199	276	16701	37.196	ng/mL#	80
94)	Hopane (T19)	51.188	191	190366M4	1122.540	ng/mL	
96)	C23 Tricyclic Terpane (T4	40.129	191	84408M4	497.733	ng/ml	
97)	C24 Tricyclic Terpane (T5	40.859	191	47434	279.706	ng/ml	100
98)	C25 Tricyclic Terpane (T6	42.384	191	43264M1	255.117	ng/ml	
99)	C24 Tetracyclic Terpane (	43.635	191	15935M4	93.965	ng/ml	
100)	C26 Tricyclic Terpane-22S	43.398	191	16676	98.334	ng/ml	100
101)	C26 Tricyclic Terpane-22R	43.498	191	16882	99.549	ng/ml	100
102)	C28 Tricyclic Terpane-22S	45.783	191	17581M4	103.671	ng/ml	
103)	C28 Tricyclic Terpane-22R	45.948	191	18975	111.891	ng/ml	100
104)	C29 Tricyclic Terpane-22S	46.460	191	23024	135.767	ng/ml	100
105)	C29 Tricyclic Terpane-22R	46.652	191	21989	129.664	ng/ml	100
106)	18a-22,29,30-Trisnorneoho	47.685	191	25921	152.850	ng/ml	100
107)	C30 Tricyclic Terpane-22S	47.804	191	18411M4	108.565	ng/mL	

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\
Data File : A90009634.D
Acq On : 26 Dec 2012 5:11 pm
Operator : ps
Sample : SS122712WCS04
Misc : WHAQ73@5.036
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Dec 27 16:19:20 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Dec 27 11:30:11 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
108) C30 Tricyclic Terpane-22R	48.033	191	17750	104.667	ng/mL	100
109) 17a(H)-22,29,30-Trisnorho	48.198	191	53916M4	317.929	ng/ml	
110) 17a/b,21b/a 28,30-Bisnorh	49.313	191	32598M4	192.222	ng/ml	
111) 17a(H),21b(H)-25-Norhopan	49.149	191	8412M4	49.603	ng/ml	
112) 30-Norhopane (T15)	49.935	191	140700M4	829.672	ng/ml	
113) 18a(H)-30-Norneohopane-C2	50.027	191	20800M4	122.652	ng/ml	
114) 17a(H)-Diahopane (X)	50.146	191	7862M4	46.360	ng/ml	
115) 30-Normoretane (T17)	50.649	191	15051M4	88.752	ng/ml	
116) 18a(H)&18b(H)-Oleananes (	51.015	191	2245	13.238	ng/ml	100
117) Moretane (T20)	51.819	191	14384M4	84.819	ng/ml	
118) 30-Homohopane-22S (T21)	52.825	191	86657	510.994	ng/ml	100
119) 30-Homohopane-22R (T22)	53.035	191	69915	412.271	ng/ml	100
120) Gammacerane/C32-diahopane	53.528	191	29908M4	176.360	ng/mL	
121) 30,31-Bishomohopane-22S (	54.241	191	54664	322.340	ng/ml	100
122) 30,31-Bishomohopane-22R (	54.588	191	42466	250.411	ng/ml	100
123) 30,31-Trishomohopane-22S	56.178	191	42701	251.797	ng/ml	100
124) 30,31-Trishomohopane-22R	56.745	191	28658	168.989	ng/ml	100
125) Tetrakishomohopane-22S (T	58.563	191	29290	172.716	ng/ml	100
126) Tetrakishomohopane-22R (T	59.376	191	20529	121.054	ng/ml	100
127) Pentakishomohopane-22S (T	61.377	191	34991	206.333	ng/ml	100
128) Pentakishomohopane-22R (T	62.547	191	23408M4	138.031	ng/ml	
130) 13b(H),17a(H)-20S-Diachol	44.612	217	13963M4	172.433	ng/ml	
131) 13b(H),17a(H)-20R-Diachol	45.033	217	7148	88.273	ng/ml	100
132) 13b,17a-20S-Methyldiachol	45.728	217	6488M4	80.122	ng/ml	
133) 14a,17a-20S-Chol/13b,17a-	46.579	217	24575	303.484	ng/ml	100
134) 14a,17a-20R-Chol/13b,17a-	47.082	217	28843M4	356.191	ng/ml	
135) Unknown Sterane (S18)	47.347	217	5629	69.514	ng/ml	100
136) 13a,17b-20S-Ethyldiachole	47.585	217	2982	36.826	ng/ml	100
137) 14a,17a-20S-Methylcholest	47.749	217	10495	129.606	ng/ml	100
138) 14a,17a-20R-Methylcholest	48.408	217	9789	120.887	ng/ml	100
139) 14a(H),17a(H)-20S-Ethylch	48.737	217	20660M4	255.136	ng/ml	
140) 14a(H),17a(H)-20R-Ethylch	49.579	217	18911M4	233.537	ng/ml	
141) 14b(H),17b(H)-20R-Cholest	46.670	218	17850M4	220.435	ng/ml	
142) 14b(H),17b(H)-20S-Cholest	46.753	218	18507M4	228.548	ng/ml	
143) 14b,17b-20R-Methylcholest	47.896	218	14316	176.792	ng/ml	100
144) 14b,17b-20S-Methylcholest	47.978	218	21619M4	266.979	ng/ml	
145) 14b(H),17b(H)-20R-Ethylch	48.966	218	26174	323.230	ng/ml	100
146) 14b(H),17b(H)-20S-Ethylch	49.003	218	20255M3	250.135	ng/ml	
147) C26,20R- +C27,20S- triaro	48.692	231	93130	1150.089	ng/mL	100
148) C28,20S-triaromatic stero	49.487	231	77877M4	961.726	ng/mL	
149) C27,20R-triaromatic stero	49.908	231	61046M4	753.875	ng/mL	
150) C28,20R-triaromatic stero	51.015	231	67074	828.316	ng/mL	100

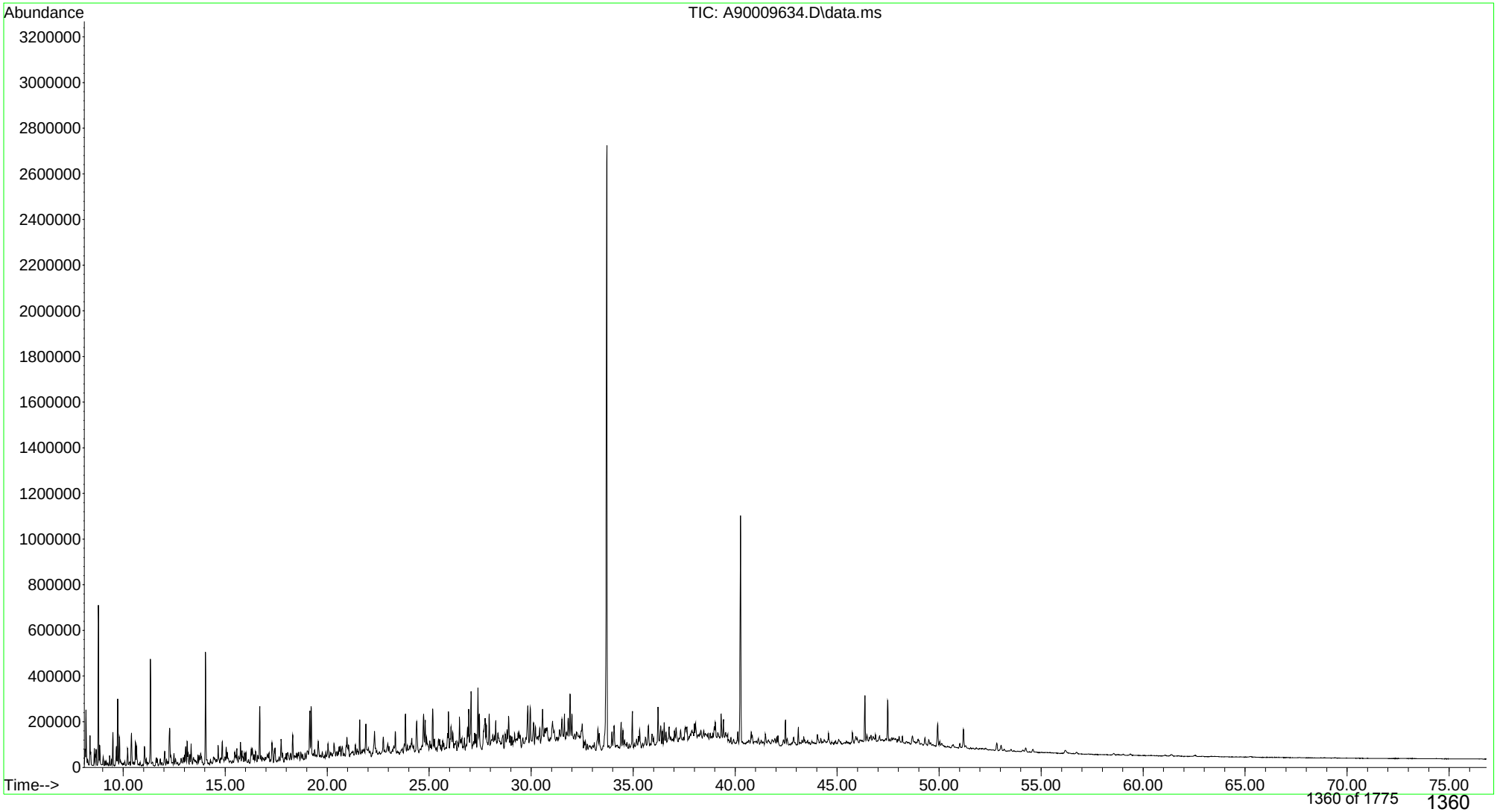
(#) = qualifier out of range (m) = manual integration (+) = signals summed

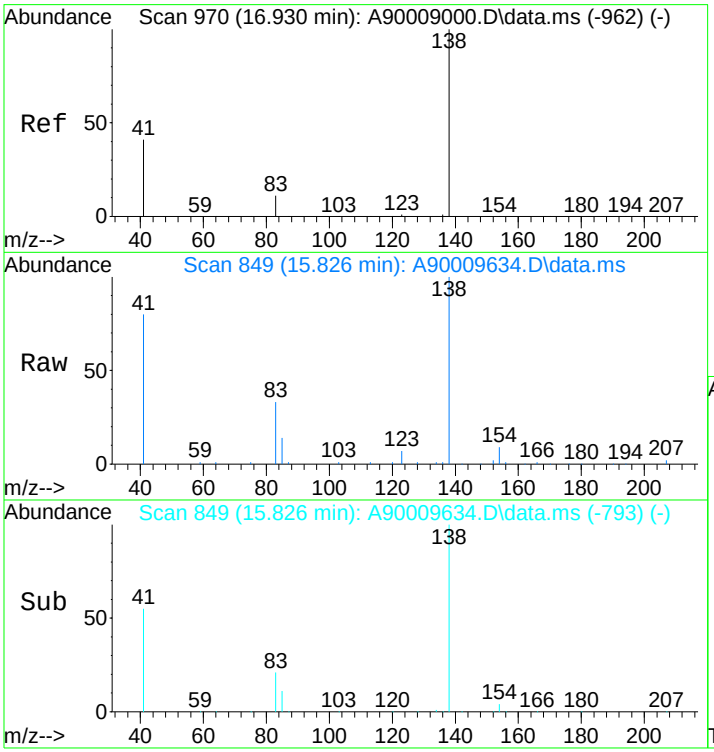
Quantitation Report (QT Reviewed)

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Data File : A90009634.D
Acq On : 26 Dec 2012 5:11 pm
Operator : ps
Sample : SS122712WCS04
Misc : WHAQ73@5.036
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Dec 27 16:19:20 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Dec 27 11:30:11 2012
Response via : Initial Calibration

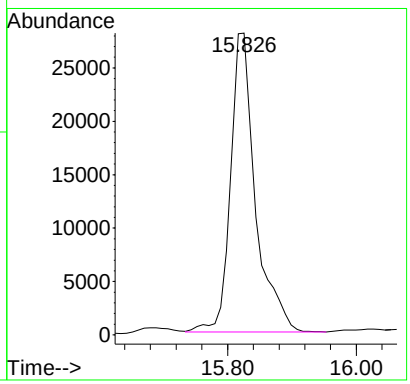
Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

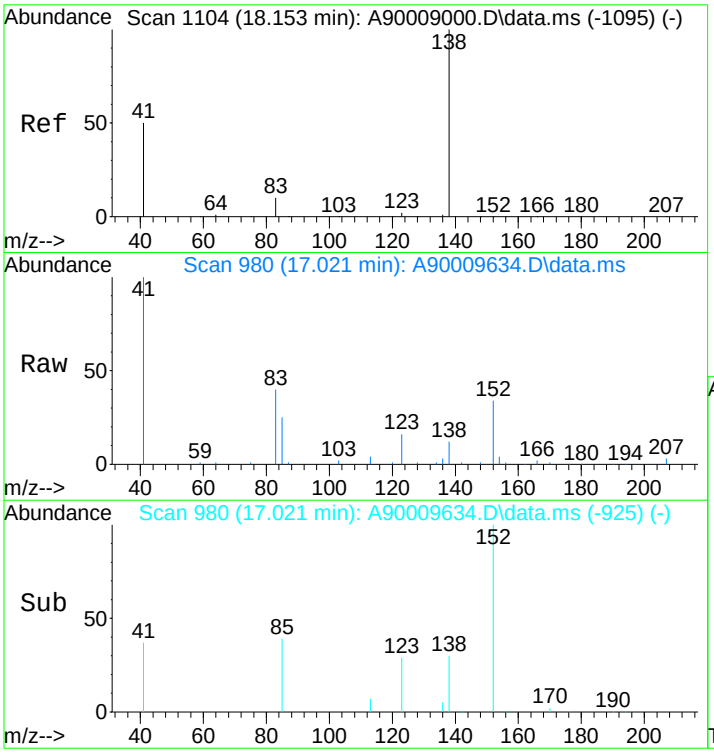




#3
trans-Decalin
Concen: 825.03 ng/mL
RT: 15.826 min Scan# 849
Delta R.T. 0.009 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

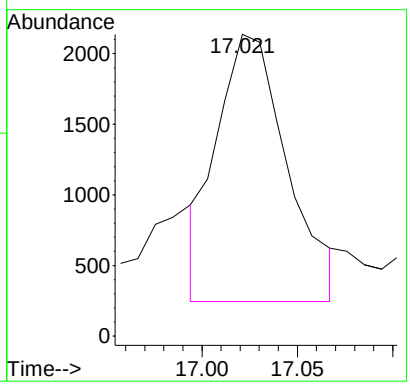
Tgt Ion:138 Resp: 75192

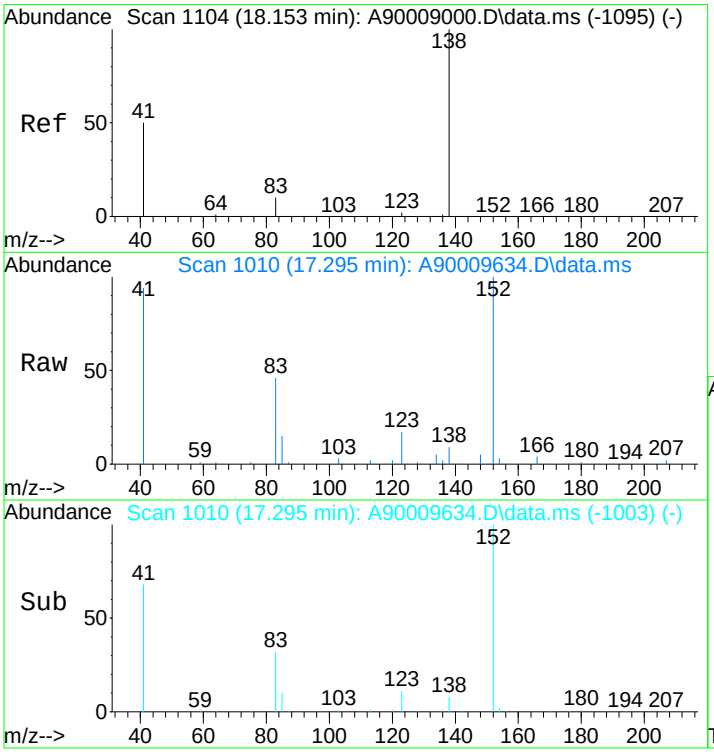




#4
cis-Decalin
Concen: 68.02 ng/mL m
RT: 17.021 min Scan# 980
Delta R.T. 0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

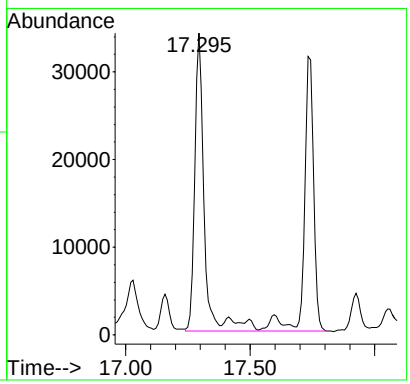
Tgt Ion:138 Resp: 4853

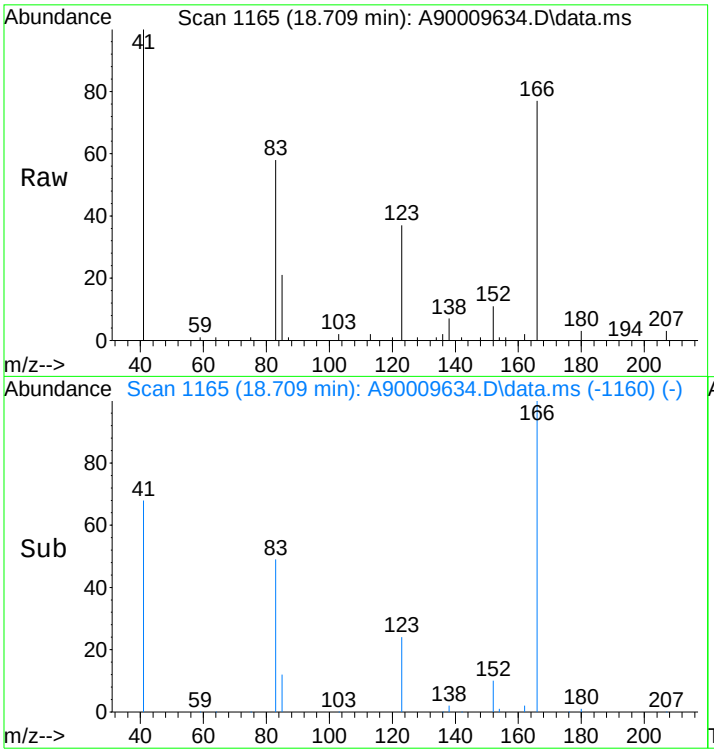




#5
C1-Decalins
Concen: 1873.92 ng/mL m
RT: 17.295 min Scan# 1010
Delta R.T. -0.447 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

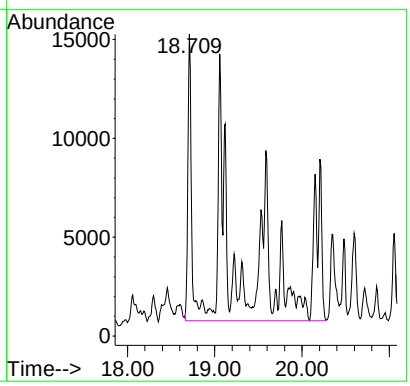
Tgt Ion:152 Resp: 170787

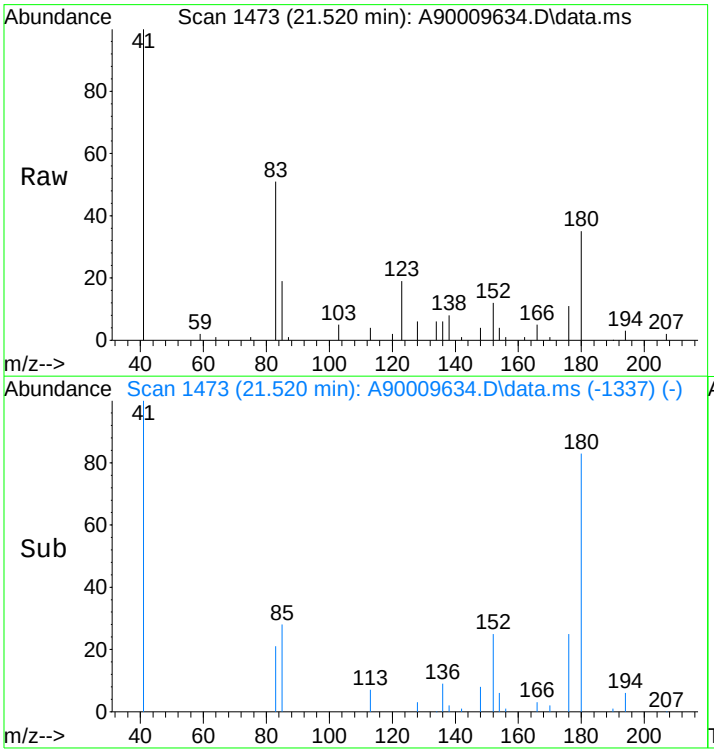




#6
C2-Decalins
Concen: 2703.38 ng/mL m
RT: 18.709 min Scan# 1165
Delta R.T. -0.356 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

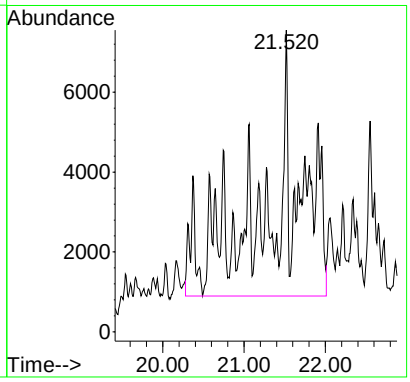
Tgt Ion:166 Resp: 246383

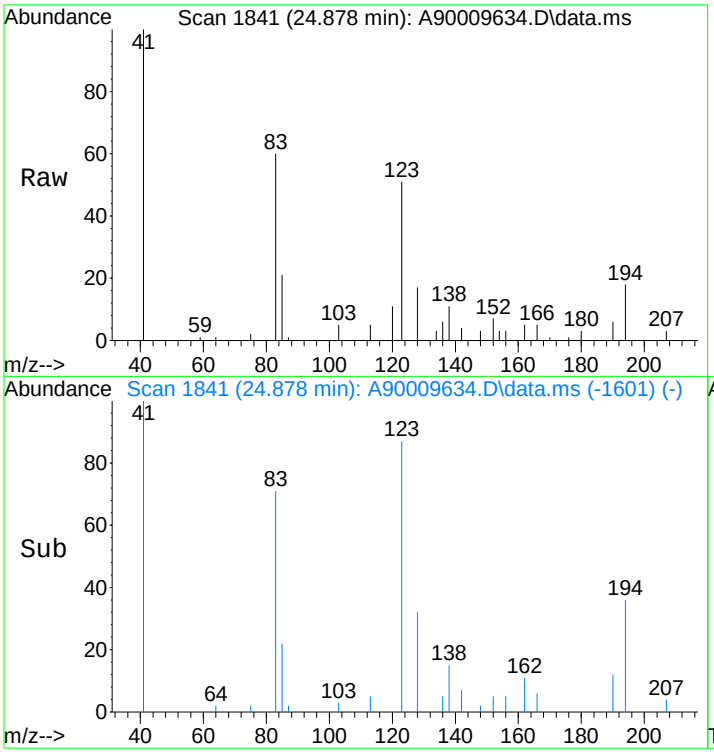




#7
C3-Decalins
Concen: 2116.61 ng/mL m
RT: 21.520 min Scan# 1473
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

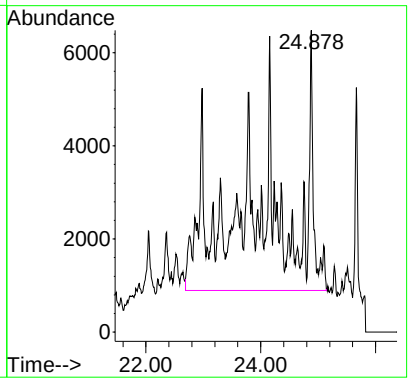
Tgt Ion:180 Resp: 192906

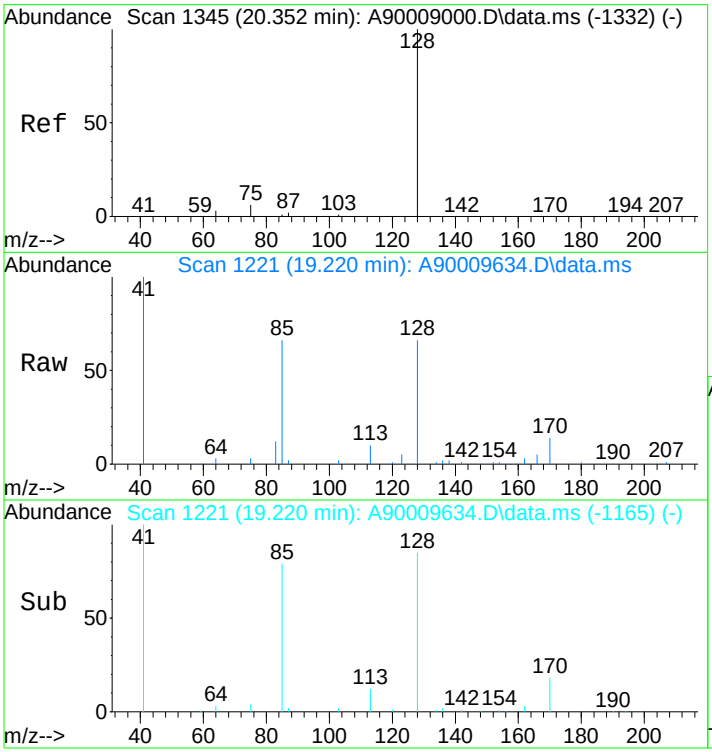




#8
C4-Decalins
Concen: 2262.17 ng/mL m
RT: 24.878 min Scan# 1841
Delta R.T. -0.013 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:194 Resp: 206172

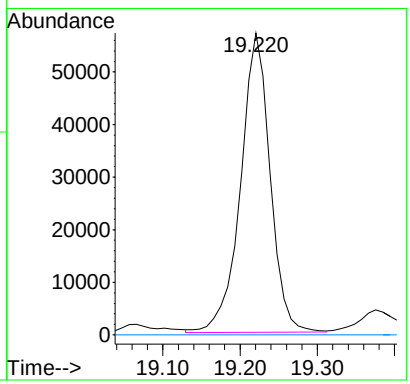


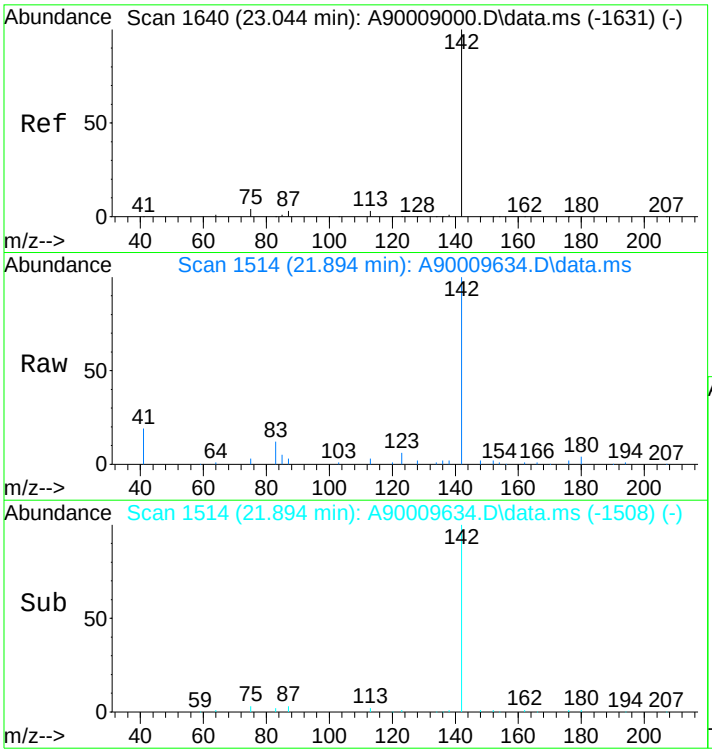


#10
Naphthalene
Concen: 369.07 ng/mL
RT: 19.220 min Scan# 1221
Delta R.T. 0.009 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:128 Resp: 150911

Ion	Ratio	Lower	Upper
128	100		
127	0.0	0.0	0.0

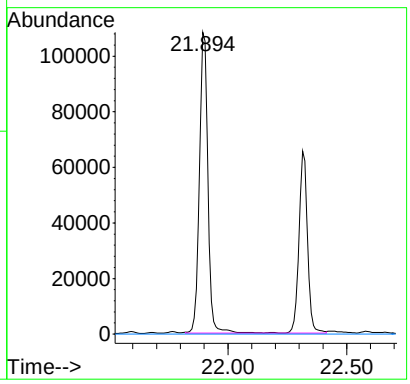


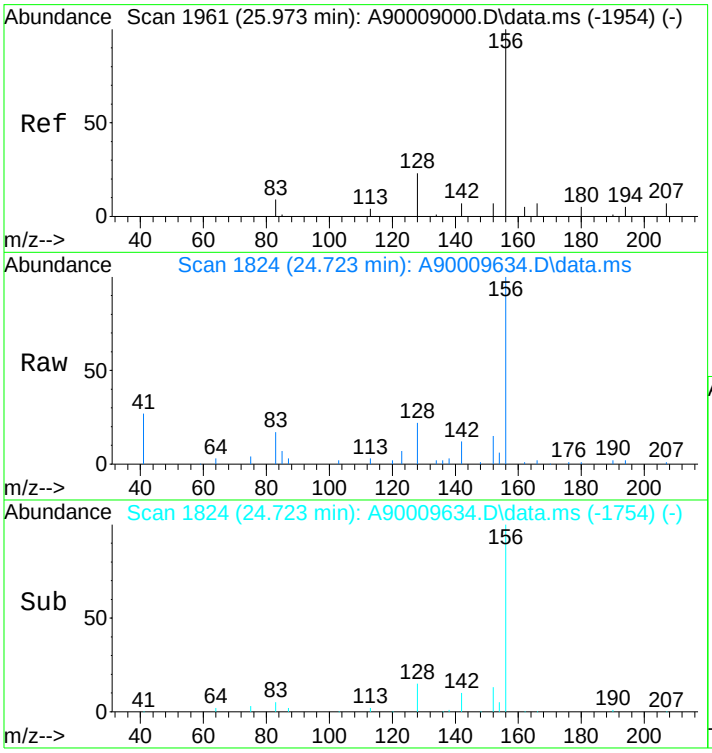


#11
C1-Naphthalenes
Concen: 1047.19 ng/mL m
RT: 21.894 min Scan# 1514
Delta R.T. -0.022 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:142 Resp: 428188

Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	0.0

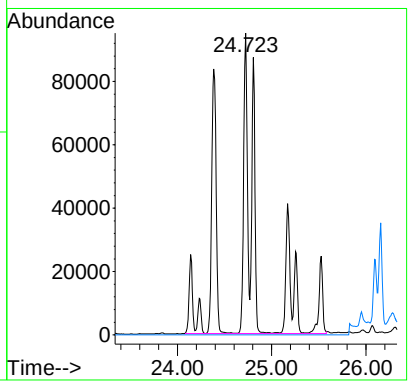


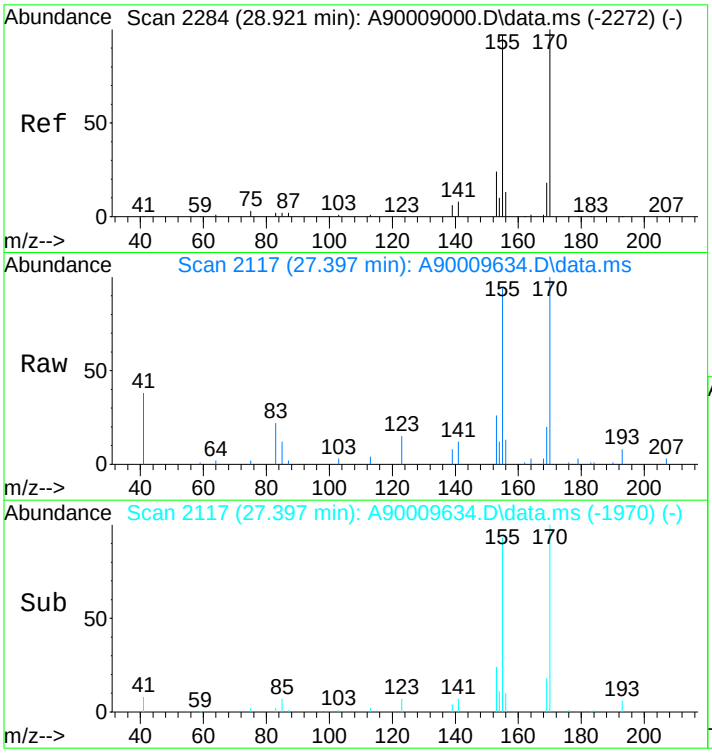


#12
C2-Naphthalenes
Concen: 2619.69 ng/mL m
RT: 24.723 min Scan# 1824
Delta R.T. -0.013 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:156 Resp: 1071174

Ion	Ratio	Lower	Upper
156	100		
141	0.0	0.0	0.0

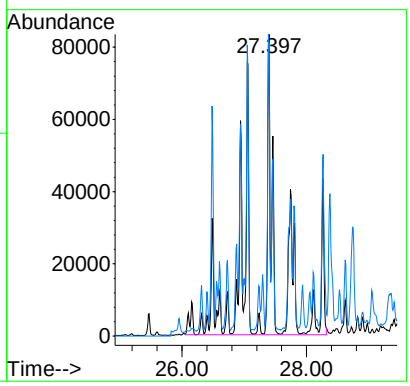


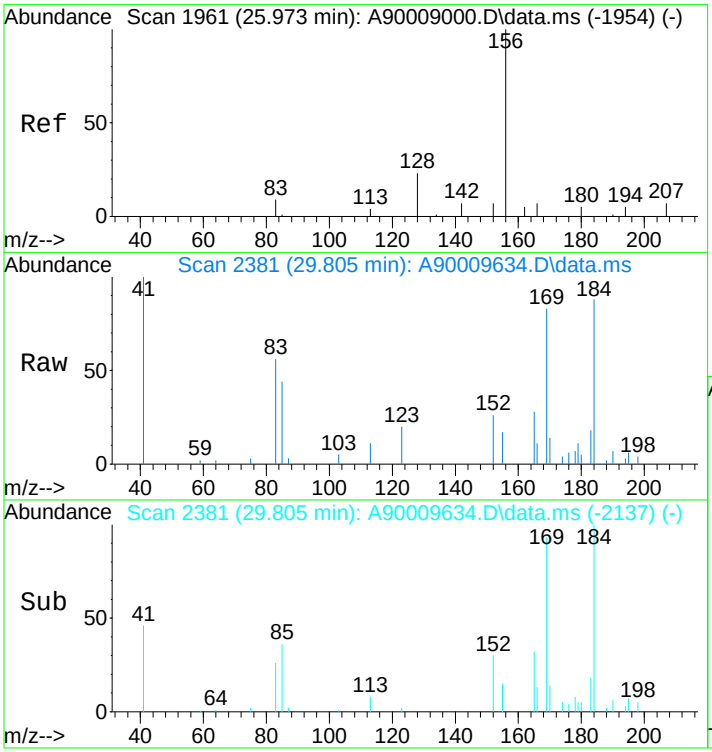


#13
C3-Naphthalenes
Concen: 3177.80 ng/mL m
RT: 27.397 min Scan# 2117
Delta R.T. 0.341 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:170 Resp: 1299379

Ion	Ratio	Lower	Upper
170	100		
155	13.9	79.9	119.9#

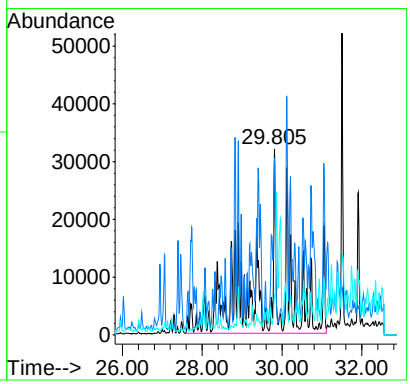


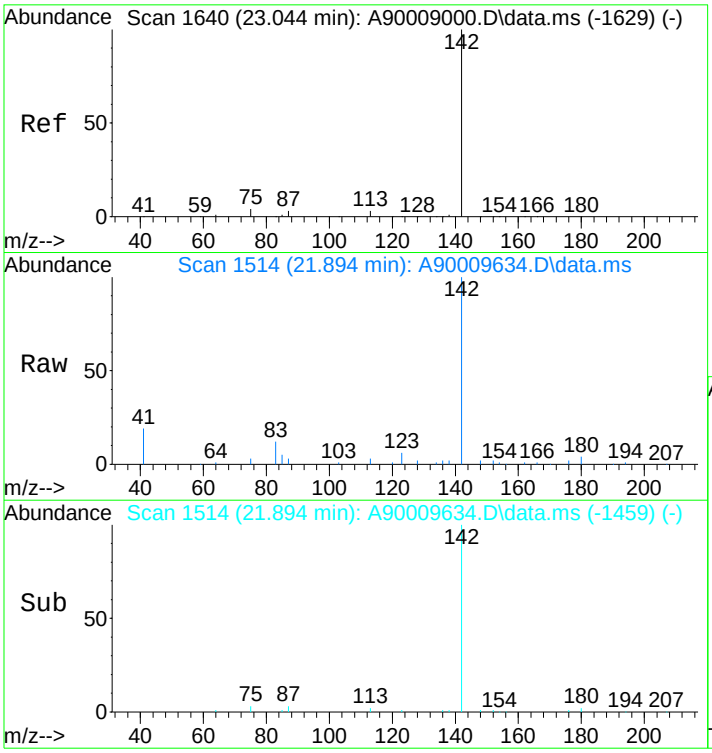


#14
C4-Naphthalenes
Concen: 2534.40 ng/mL m
RT: 29.805 min Scan# 2381
Delta R.T. 0.002 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:184 Resp: 1036299

Ion	Ratio	Lower	Upper
184	100		
169	9.1	76.6	115.0#
183	0.0	16.4	24.6#

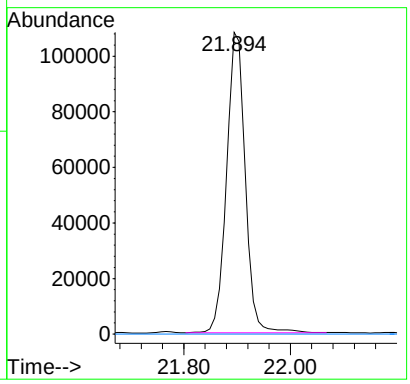


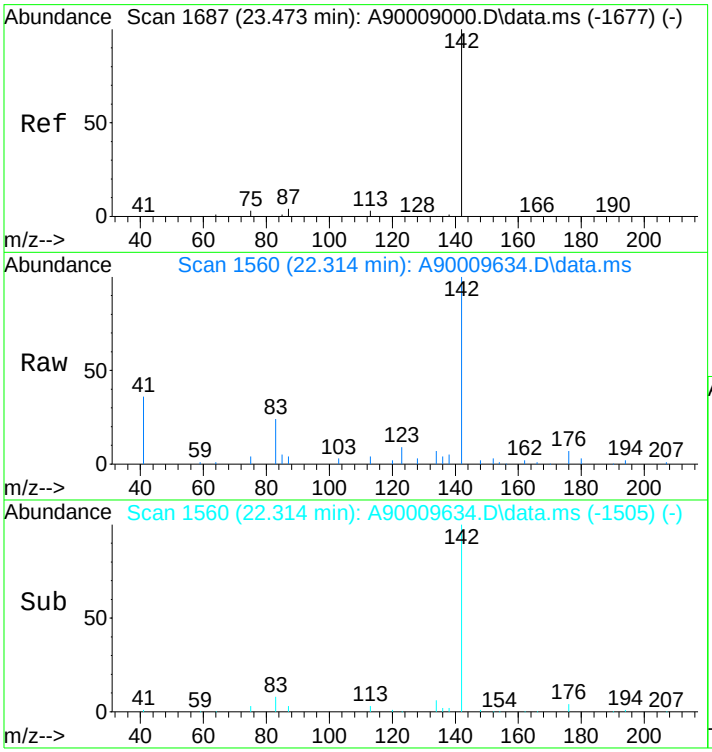


#16
2-Methylnaphthalene
Concen: 980.67 ng/mL
RT: 21.894 min Scan# 1514
Delta R.T. 0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:142 Resp: 262234

Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	0.0

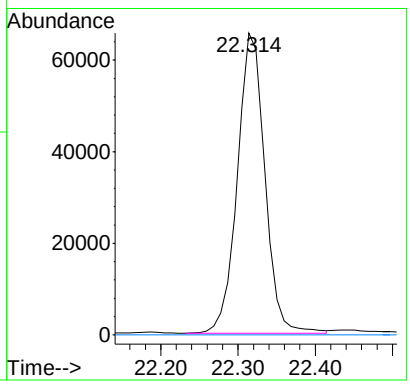


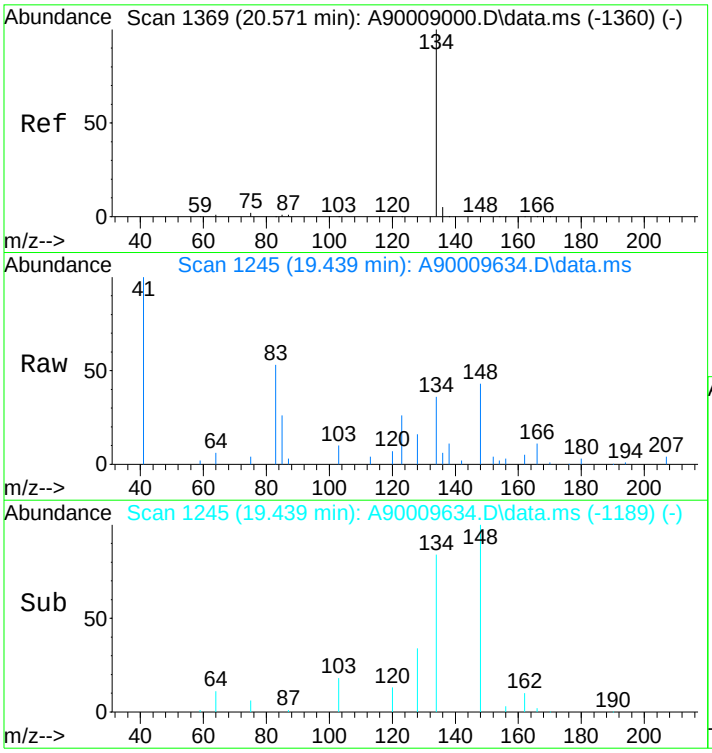


#17
1-Methylnaphthalene
Concen: 626.01 ng/mL
RT: 22.314 min Scan# 1560
Delta R.T. 0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:142 Resp: 162455

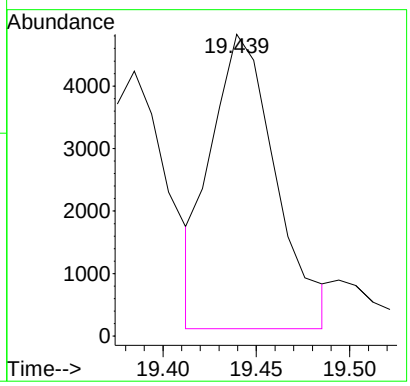
Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	20.0

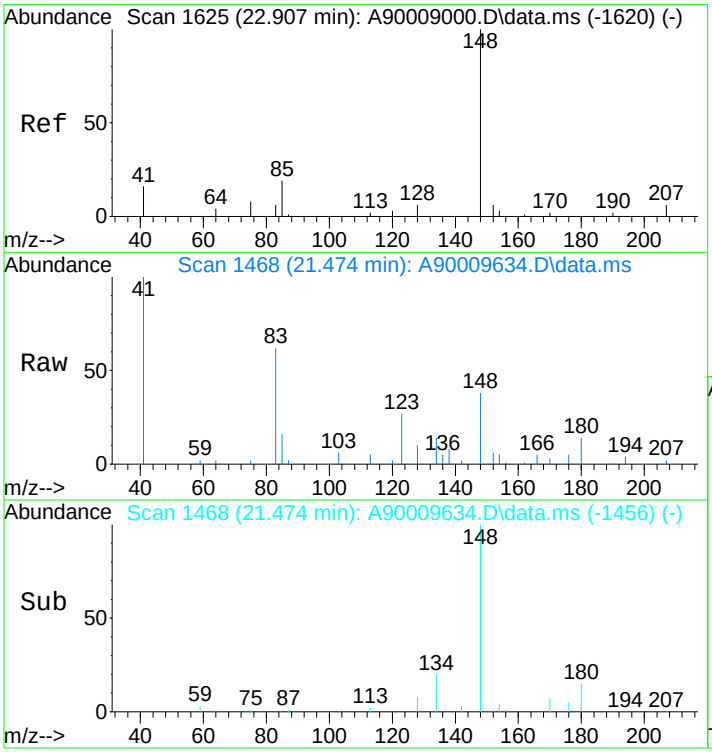




#18
Benzothiophene
Concen: 33.10 ng/mL m
RT: 19.439 min Scan# 1245
Delta R.T. 0.009 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

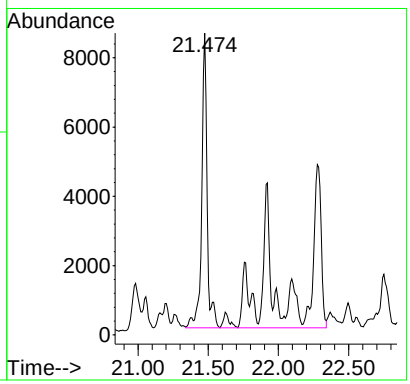
Tgt Ion:134 Resp: 11326

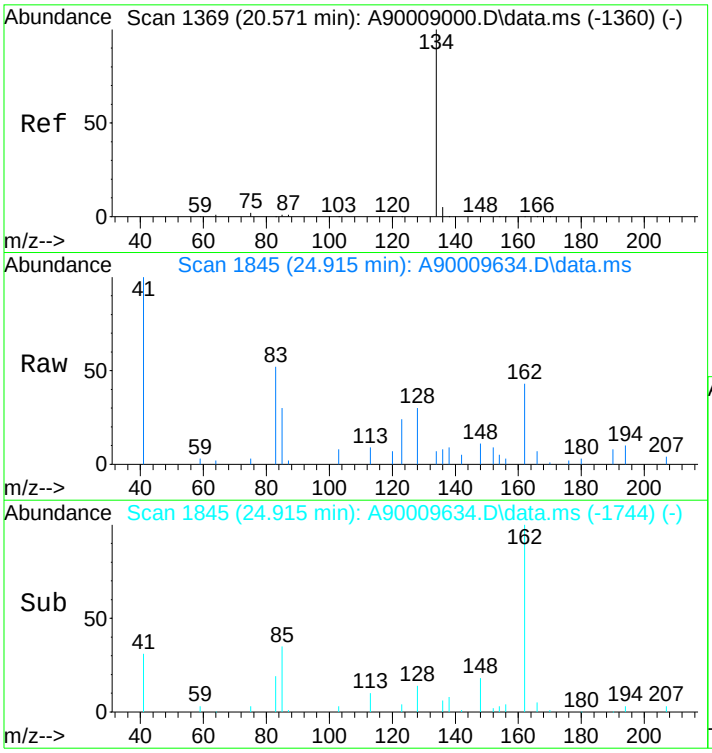




#19
C1-Benzo(b)thiophenes
Concen: 199.09 ng/mL m
RT: 21.474 min Scan# 1468
Delta R.T. -0.014 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

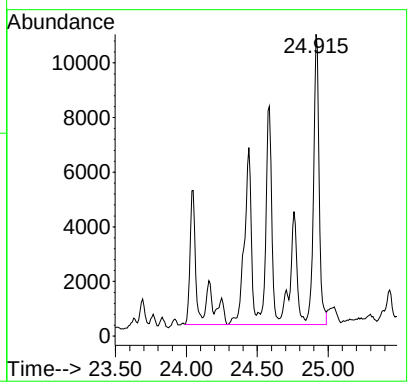
Tgt Ion:148 Resp: 68126

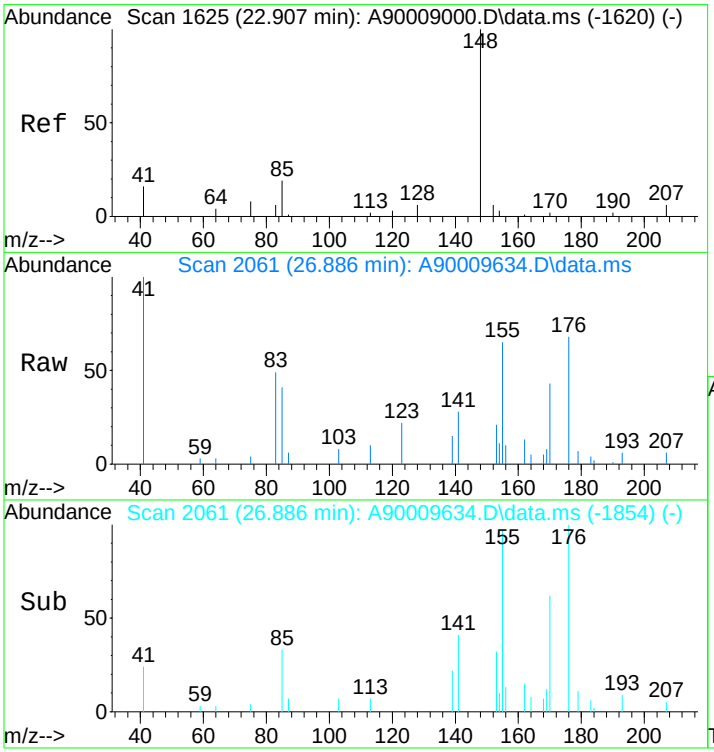




#20
C2-Benzo(b)thiophenes
Concen: 314.96 ng/mL m
RT: 24.915 min Scan# 1845
Delta R.T. -0.013 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

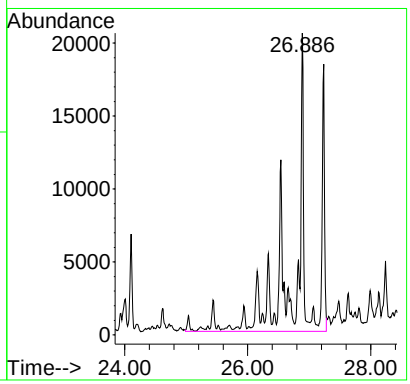
Tgt Ion:162 Resp: 107773

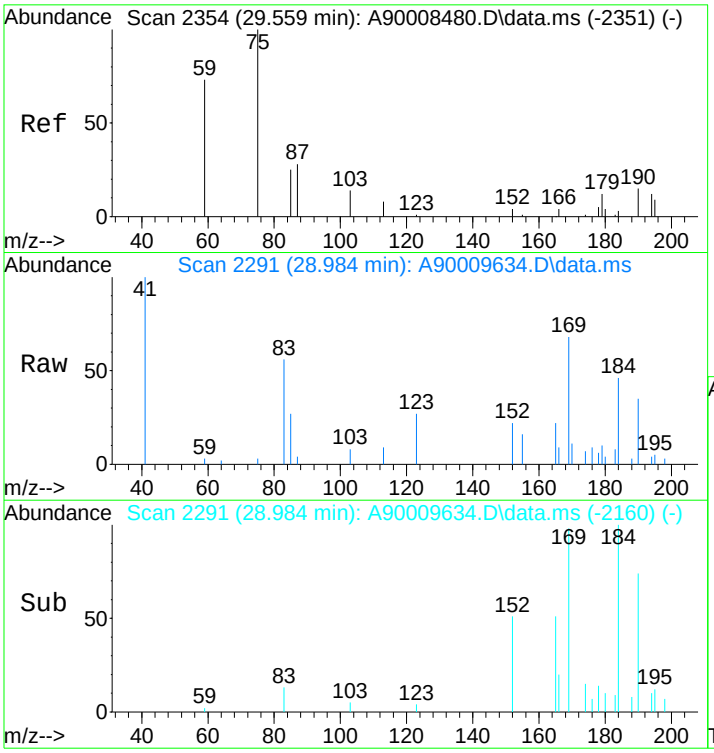




#21
C3-Benzo(b)thiophenes
Concen: 680.22 ng/mL m
RT: 26.886 min Scan# 2061
Delta R.T. -0.007 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

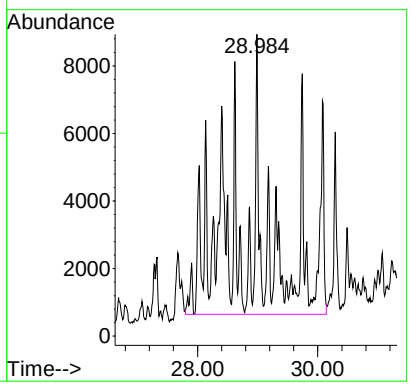
Tgt Ion:176 Resp: 232761

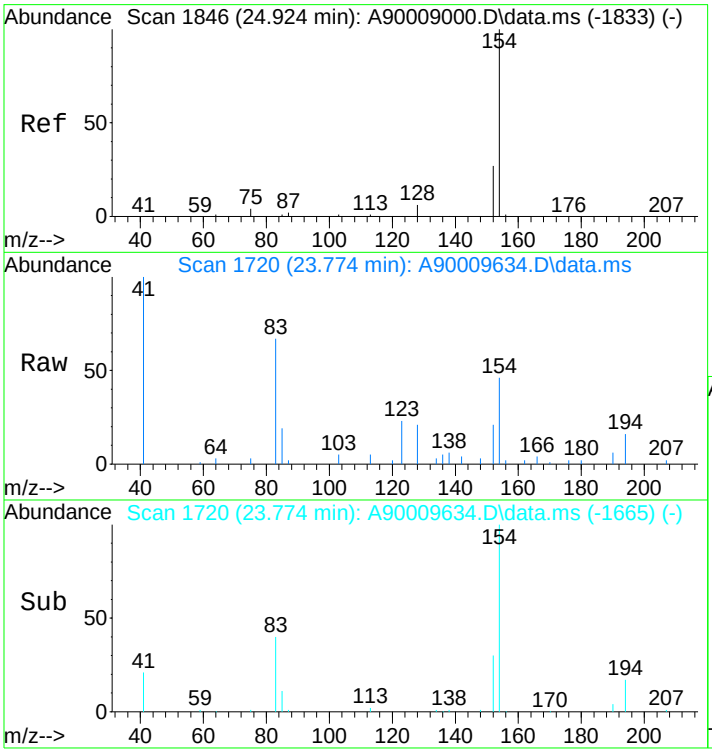




#22
C4-Benzo(b)thiophenes
Concen: 718.57 ng/mL m
RT: 28.984 min Scan# 2291
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:190 Resp: 245884

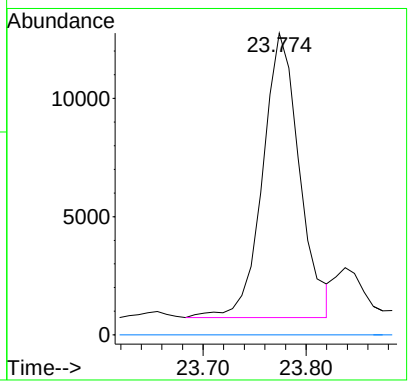


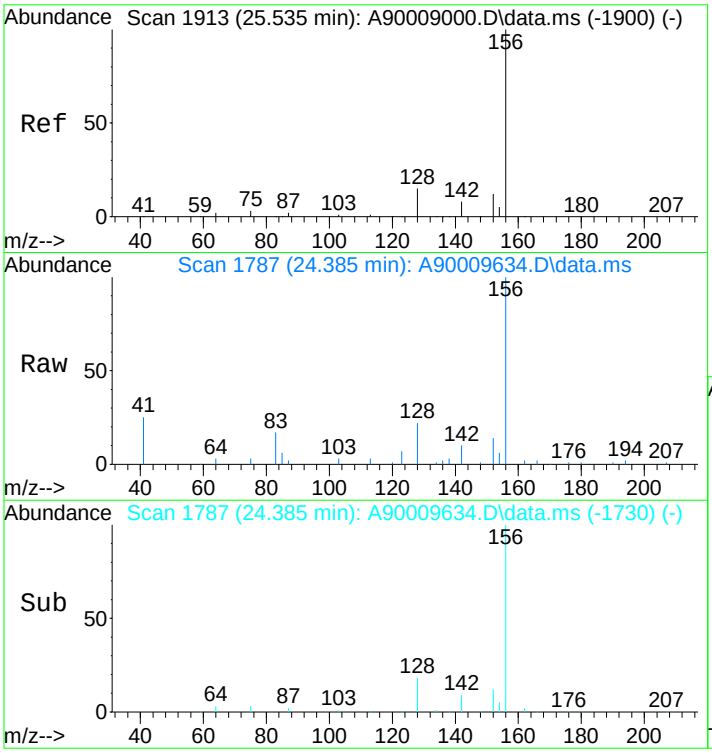


#23
Biphenyl
Concen: 85.43 ng/mL
RT: 23.774 min Scan# 1720
Delta R.T. 0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:154 Resp: 29895

Ion	Ratio	Lower	Upper
154	100		
153	0.0	0.0	0.0

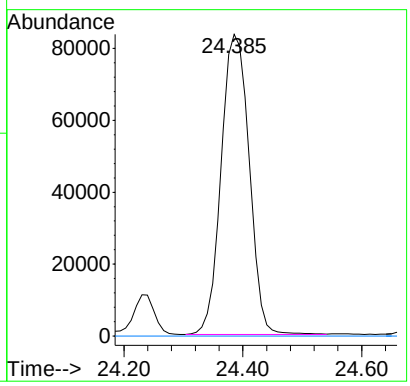


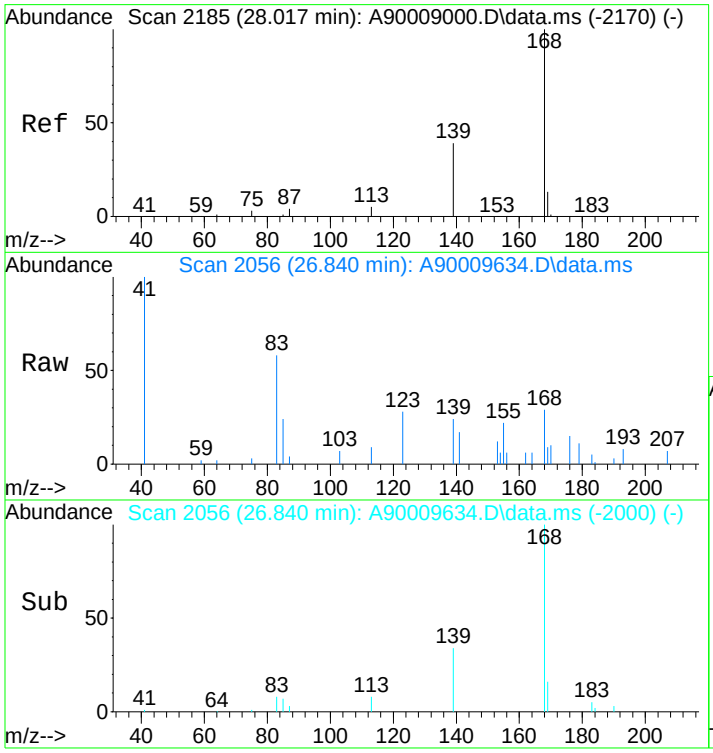


#24
2,6-Dimethylnaphthalene
Concen: 1088.88 ng/mL
RT: 24.385 min Scan# 1787
Delta R.T. 0.018 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:156 Resp: 273706

Ion	Ratio	Lower	Upper
156	100		
155	0.0	0.0	0.0

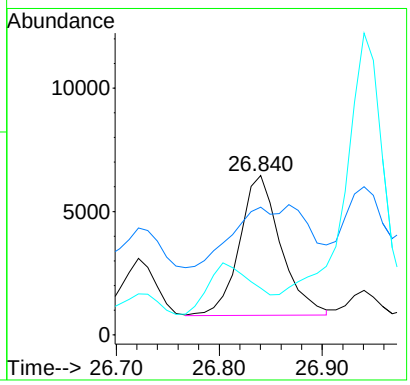


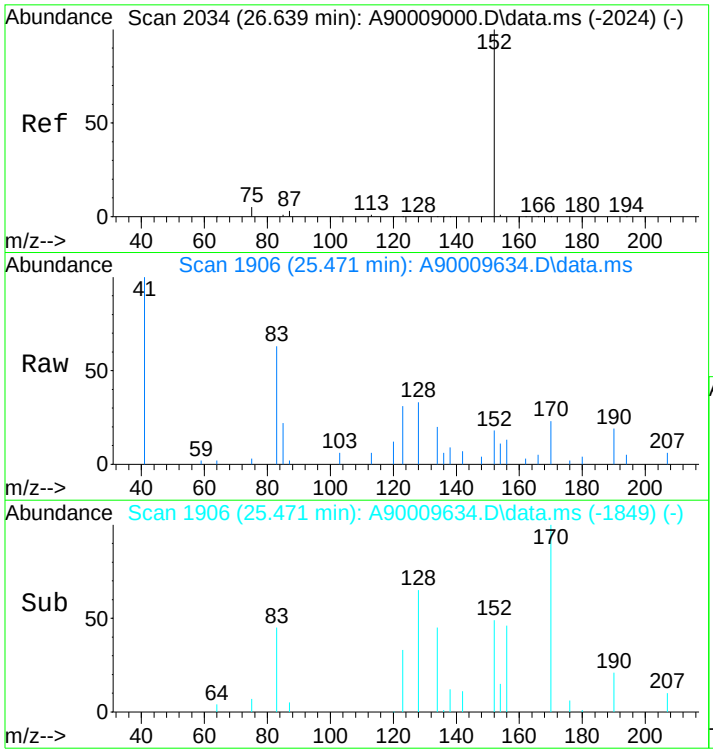


#25
Dibenzofuran
Concen: 42.38 ng/mL
RT: 26.840 min Scan# 2056
Delta R.T. 0.009 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:168 Resp: 15817

Ion	Ratio	Lower	Upper
168	100		
139	41.9	28.3	42.5
169	0.0	10.6	15.8#

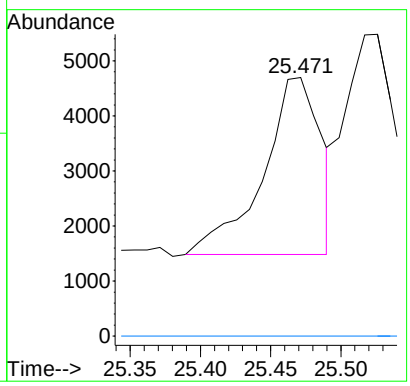


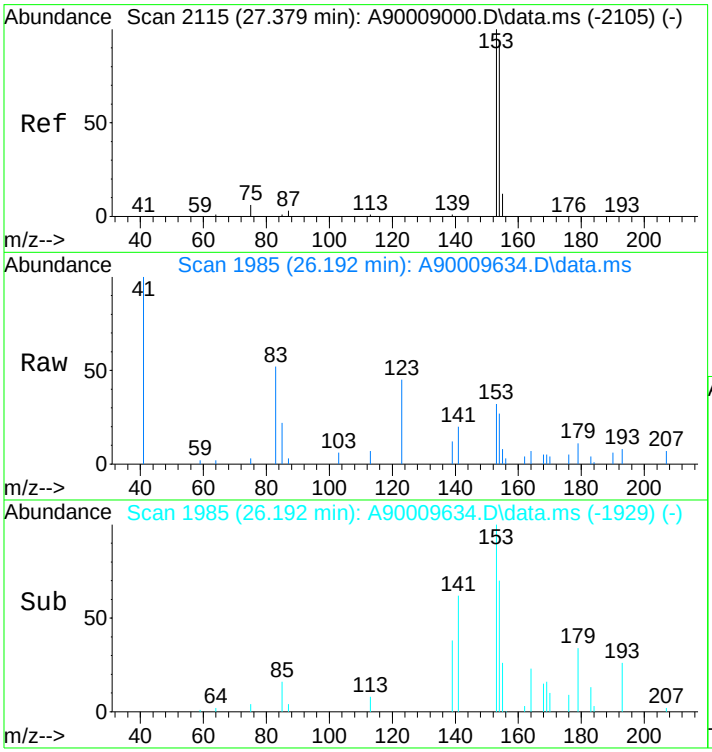


#26
Acenaphthylene
Concen: 21.99 ng/mL
RT: 25.471 min Scan# 1906
Delta R.T. 0.018 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:152 Resp: 9249

Ion	Ratio	Lower	Upper
152	100		
153	0.0	0.0	0.0

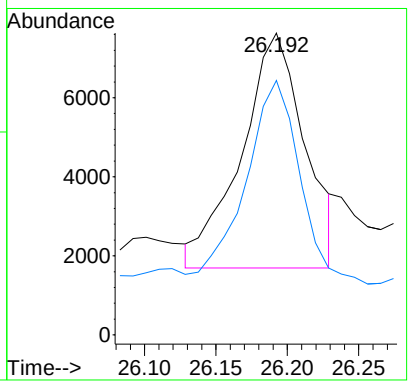


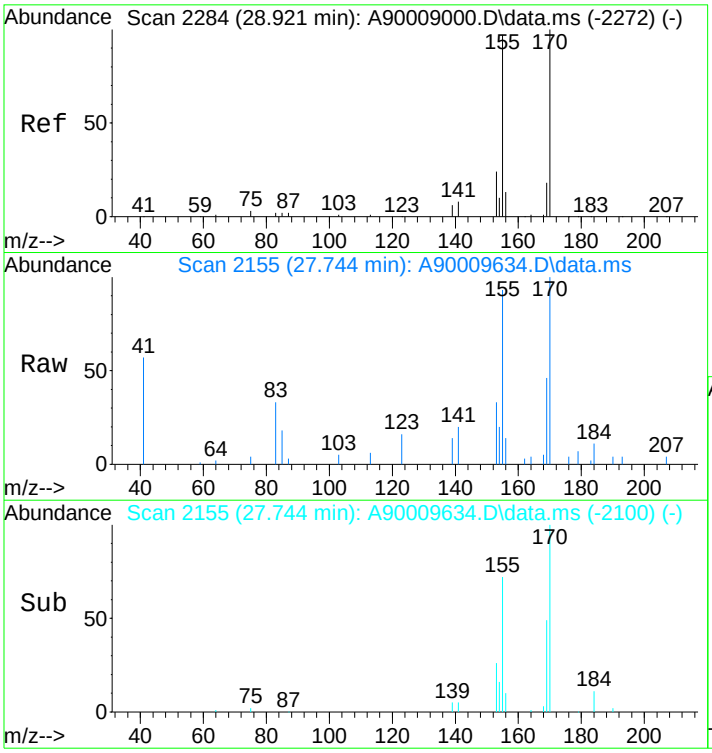


#27
Acenaphthene
Concen: 69.44 ng/mL m
RT: 26.192 min Scan# 1985
Delta R.T. 0.009 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:153 Resp: 18364

Ion	Ratio	Lower	Upper
153	100		
154	81.2	75.7	113.5

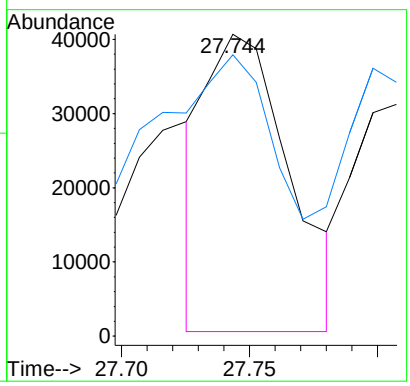


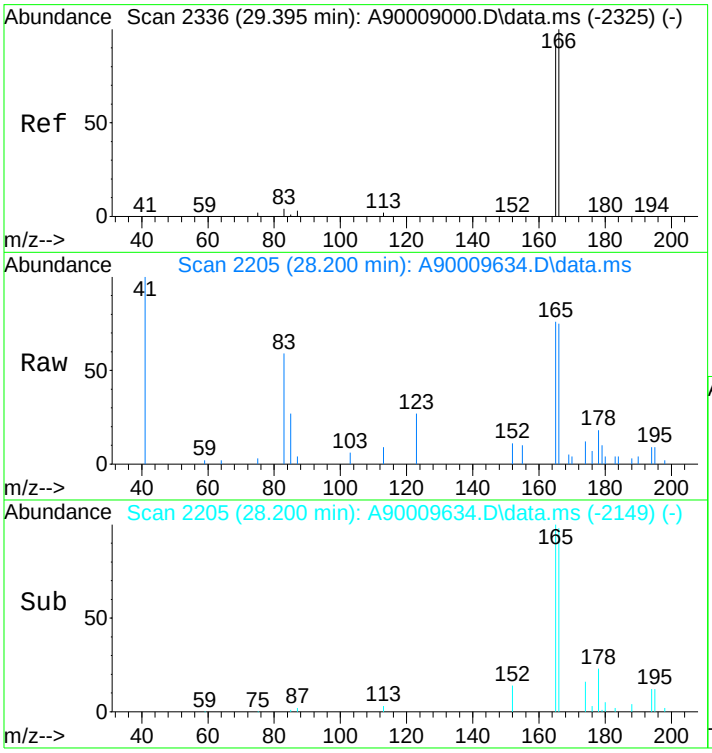


#28
2,3,5-Trimethylnaphthalene
Concen: 394.70 ng/mL m
RT: 27.744 min Scan# 2155
Delta R.T. 0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:170 Resp: 91216

Ion	Ratio	Lower	Upper
170	100		
155	149.5	68.9	103.3#

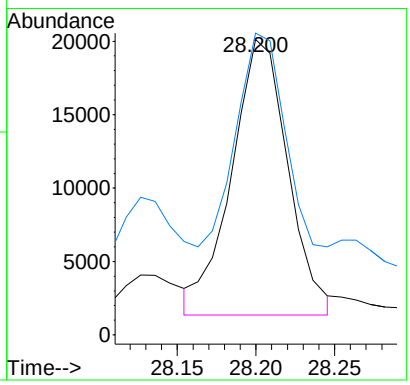


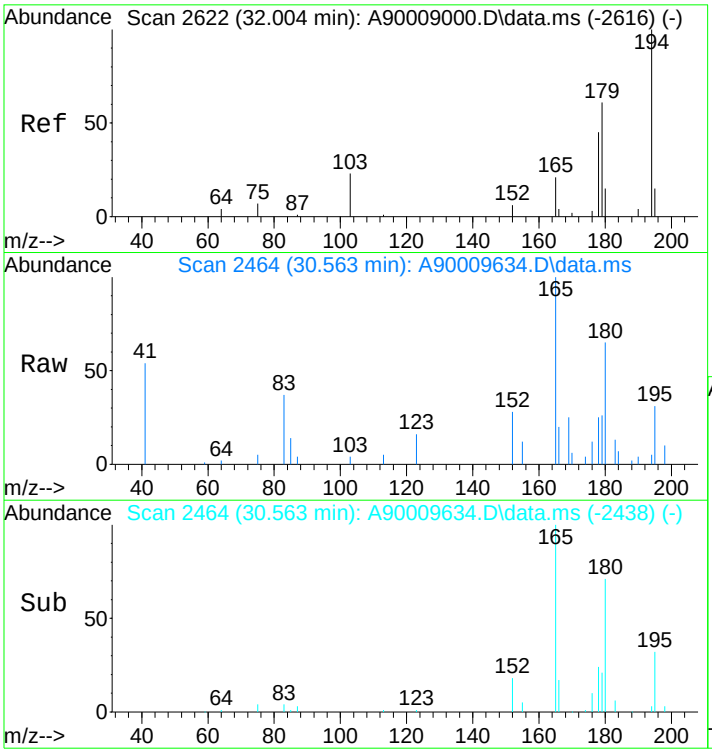


#29
Fluorene
Concen: 161.11 ng/mL m
RT: 28.200 min Scan# 2205
Delta R.T. 0.009 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:166 Resp: 46791

Ion	Ratio	Lower	Upper
166	100		
165	22.5	73.0	109.4#

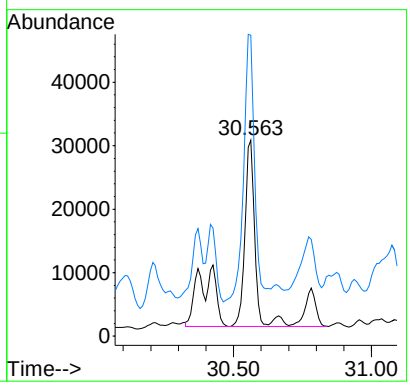


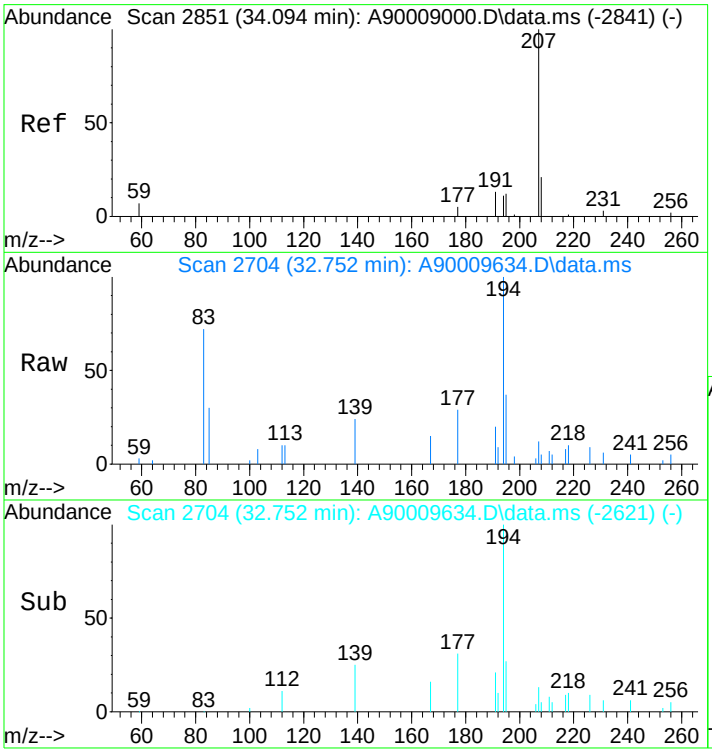


#30
C1-Fluorenes
Concen: 458.42 ng/mL m
RT: 30.563 min Scan# 2464
Delta R.T. 0.014 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:180 Resp: 133139

Ion	Ratio	Lower	Upper
180	100		
165	87.4	117.5	176.3#

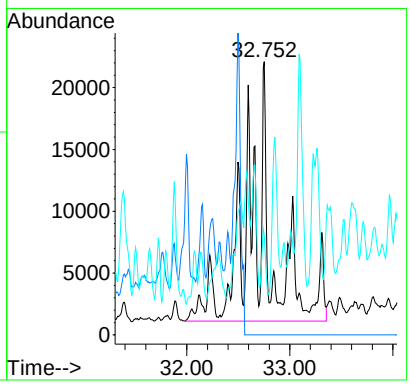


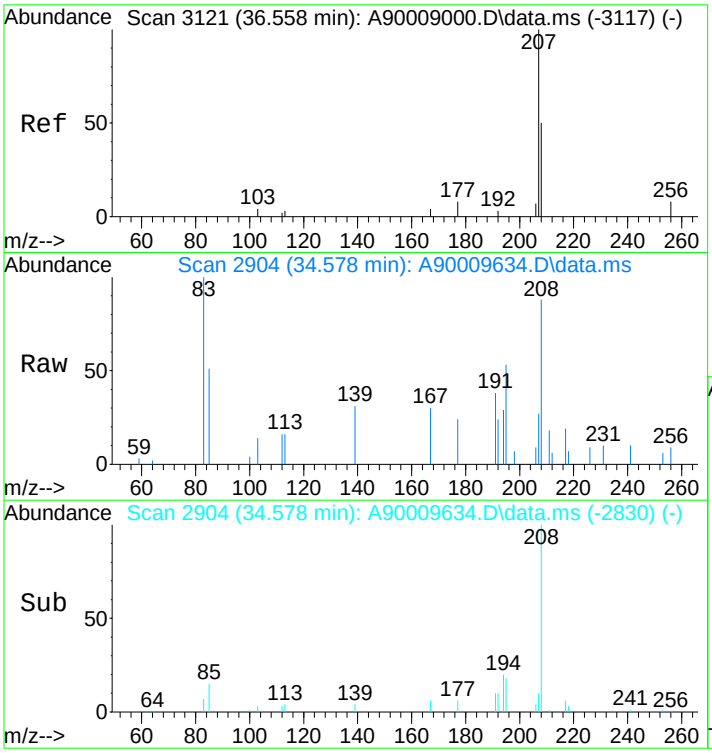


#31
C2-Fluorenes
Concen: 1066.21 ng/mL m
RT: 32.752 min Scan# 2704
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:194 Resp: 309658

Ion	Ratio	Lower	Upper
194	100		
179	0.0	0.0	0.0
195	4.4	25.9	38.9#

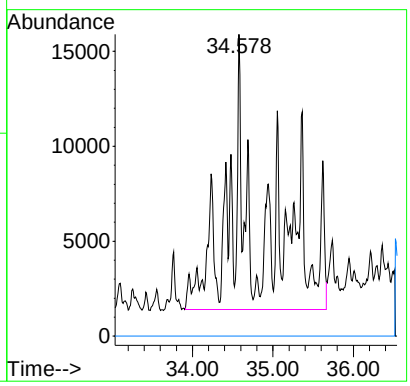


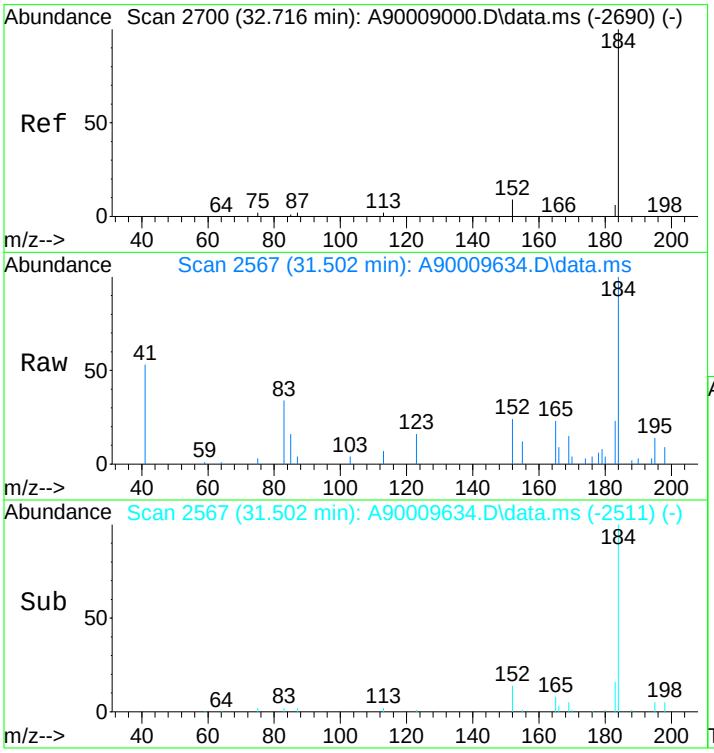


#32
C3-Fluorenes
Concen: 1256.30 ng/mL m
RT: 34.578 min Scan# 2904
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:208 Resp: 364865

Ion	Ratio	Lower	Upper
208	100		
197	0.0	0.0	0.0

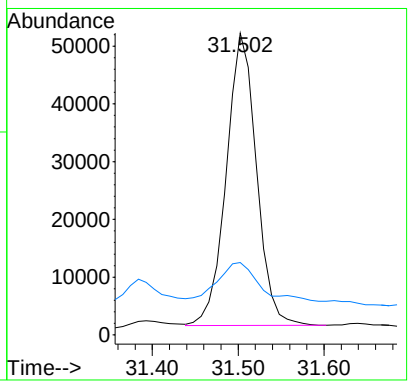


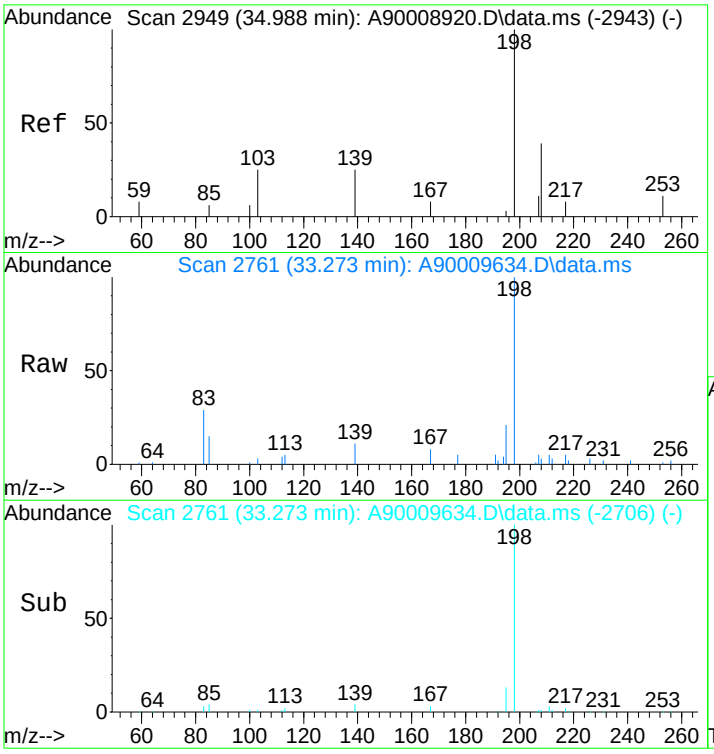


#33
Dibenzothiophene
Concen: 302.93 ng/mL
RT: 31.502 min Scan# 2567
Delta R.T. 0.009 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:184 Resp: 123757

Ion	Ratio	Lower	Upper
184	100		
152	19.3	7.6	11.4#

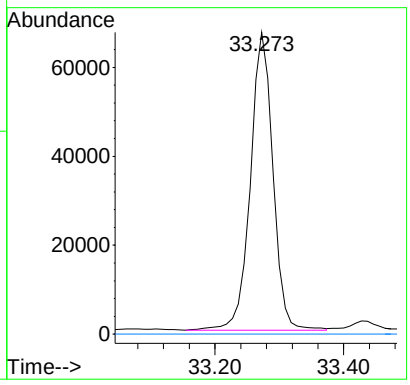


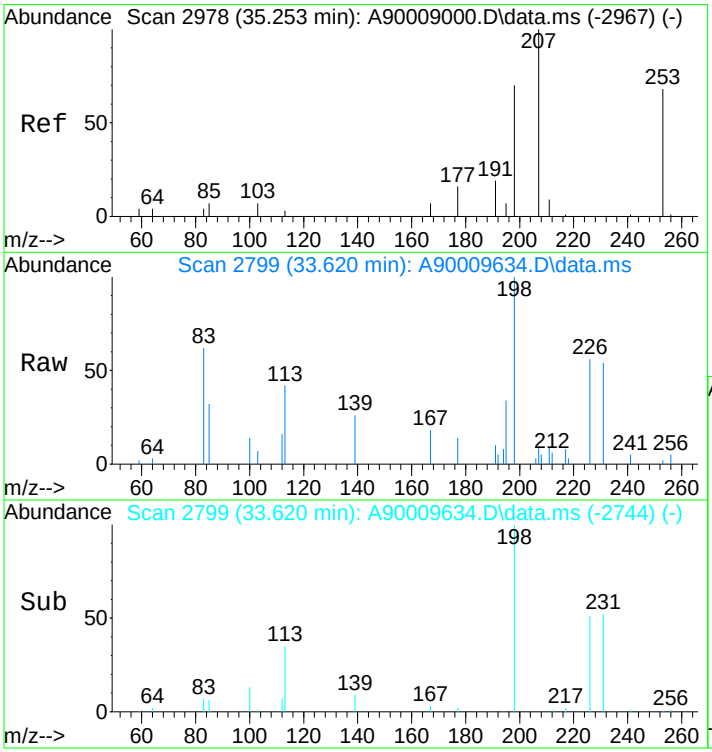


#34
4-Methyldibenzothiophene(4MDT)
Concen: 400.59 ng/mL
RT: 33.273 min Scan# 2761
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:198 Resp: 163655

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

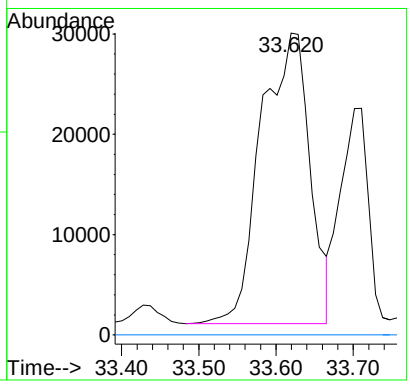


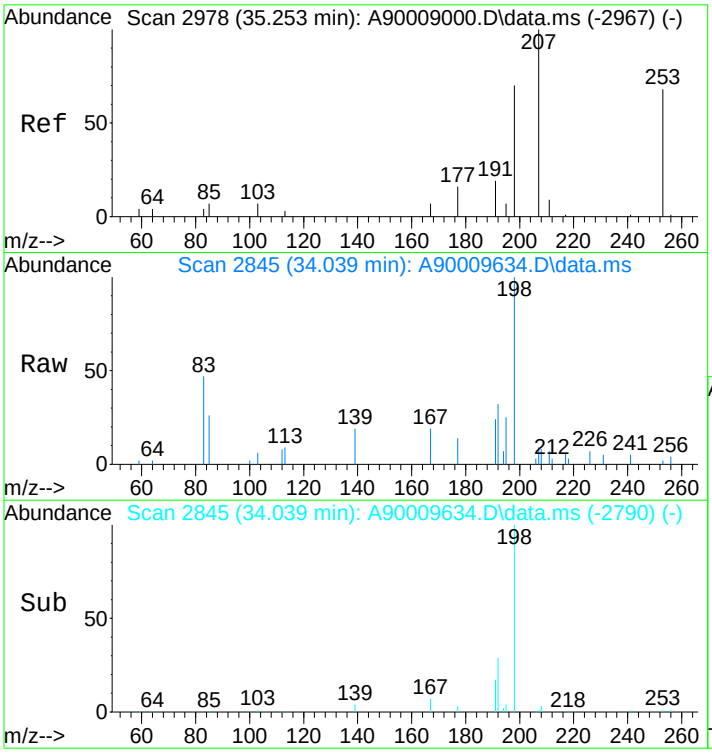


#35
2/3-Methyldibenzothiophene(2MDT)
Concen: 311.99 ng/mL
RT: 33.620 min Scan# 2799
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:198 Resp: 127461

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

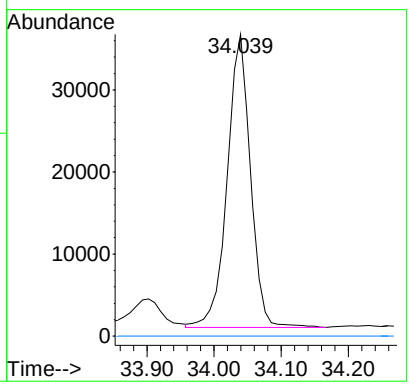


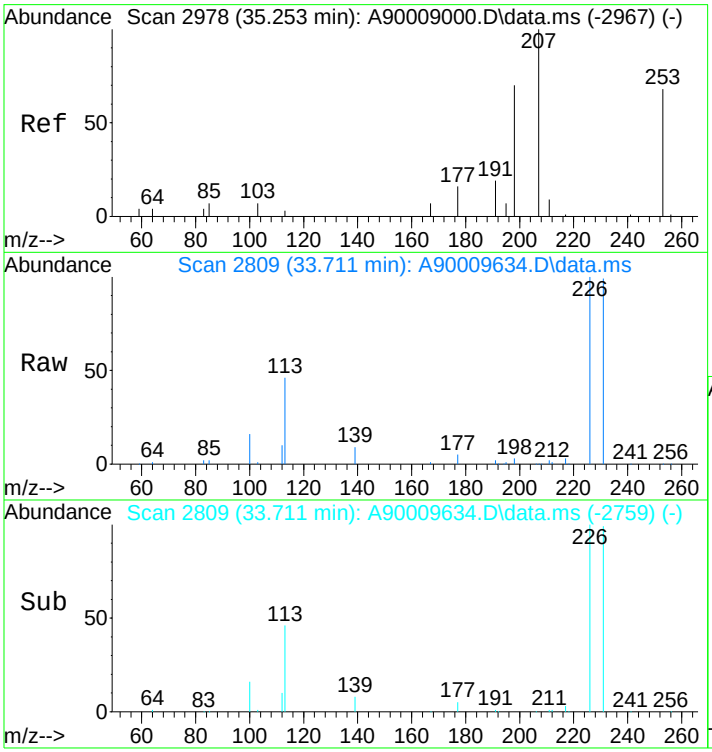


#36
1-Methyldibenzothiophene(1MDT)
Concen: 211.15 ng/mL
RT: 34.039 min Scan# 2845
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:198 Resp: 86262

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

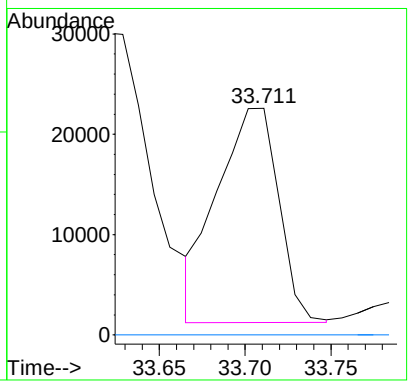


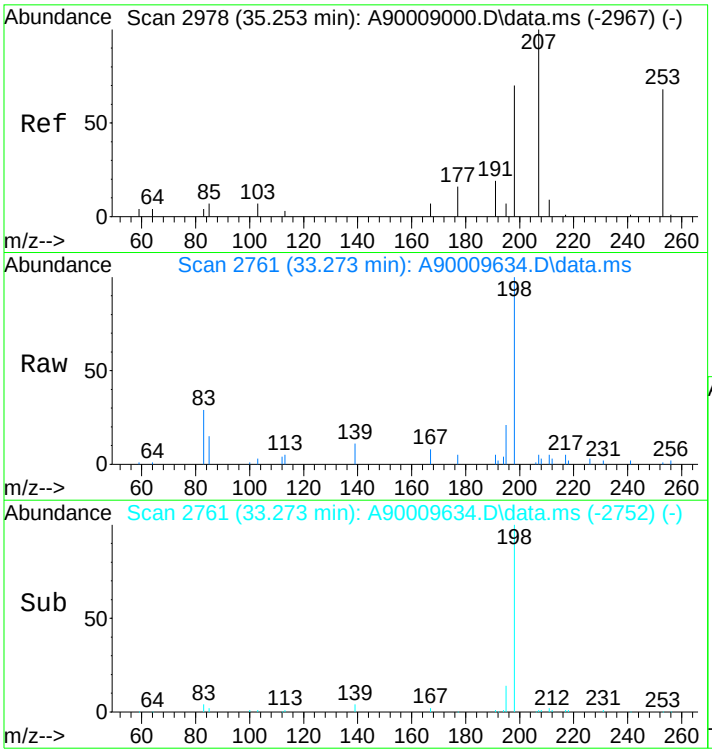


#37
OTP
Concen: 130.45 ng/mL
RT: 33.711 min Scan# 2809
Delta R.T. 0.009 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:198 Resp: 53295

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

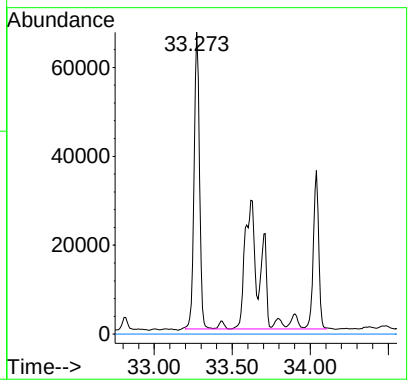


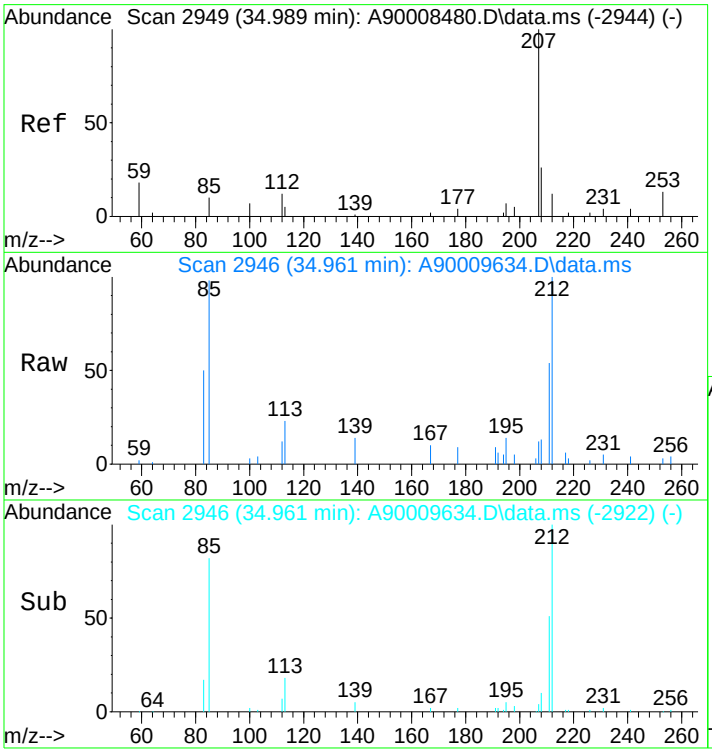


#38
C1-Dibenzothiophenes
Concen: 1100.86 ng/mL m
RT: 33.273 min Scan# 2761
Delta R.T. 0.013 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:198 Resp: 449743

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

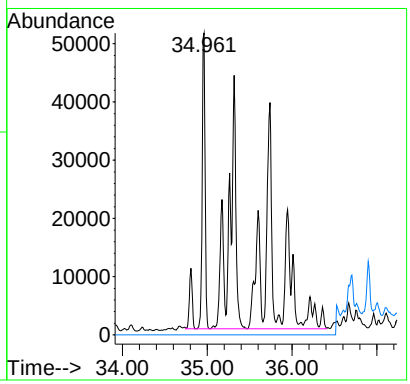


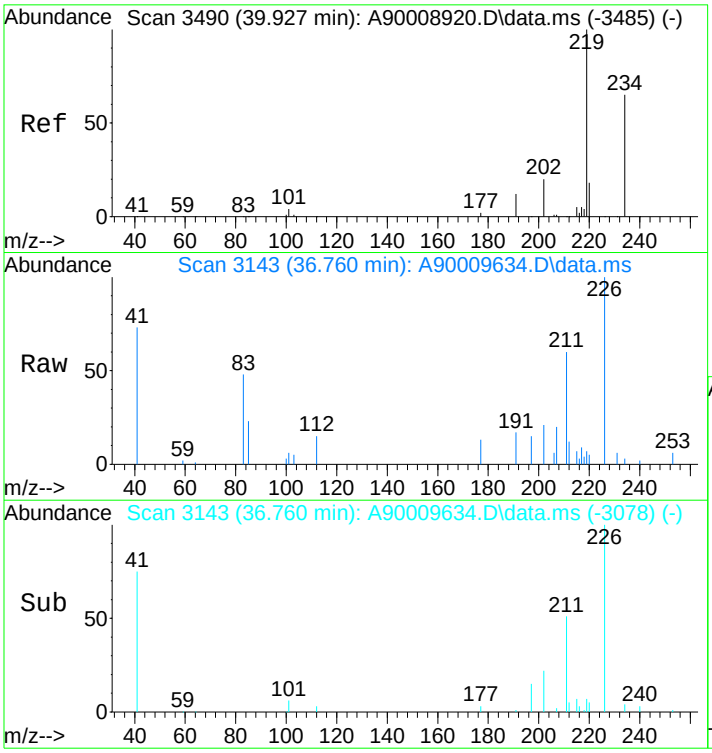


#39
C2-Dibenzothiophenes
Concen: 1835.79 ng/mL m
RT: 34.961 min Scan# 2946
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:212 Resp: 749990

Ion	Ratio	Lower	Upper
212	100		
197	0.0	0.0	0.0

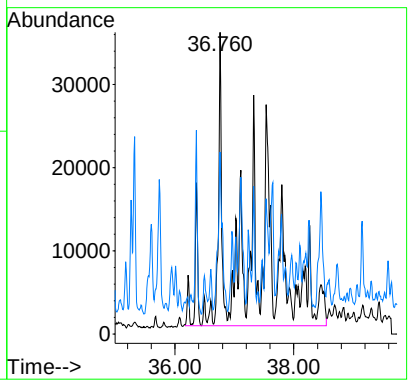


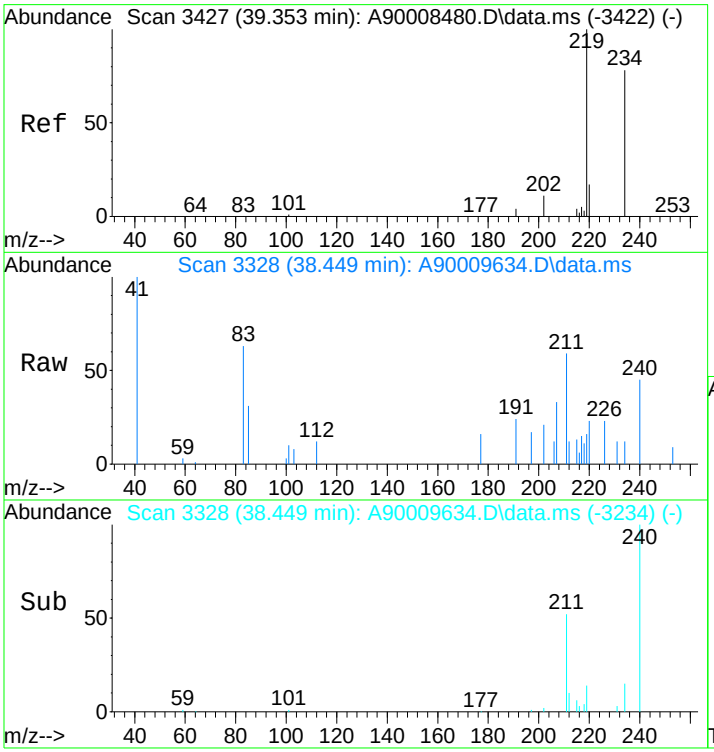


#40
C3-Dibenzothiophenes
Concen: 2023.67 ng/mL m
RT: 36.760 min Scan# 3143
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:226 Resp: 826746

Ion	Ratio	Lower	Upper
226	100		
211	3.7	45.9	68.9#

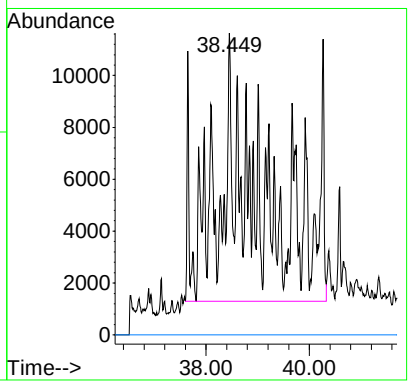


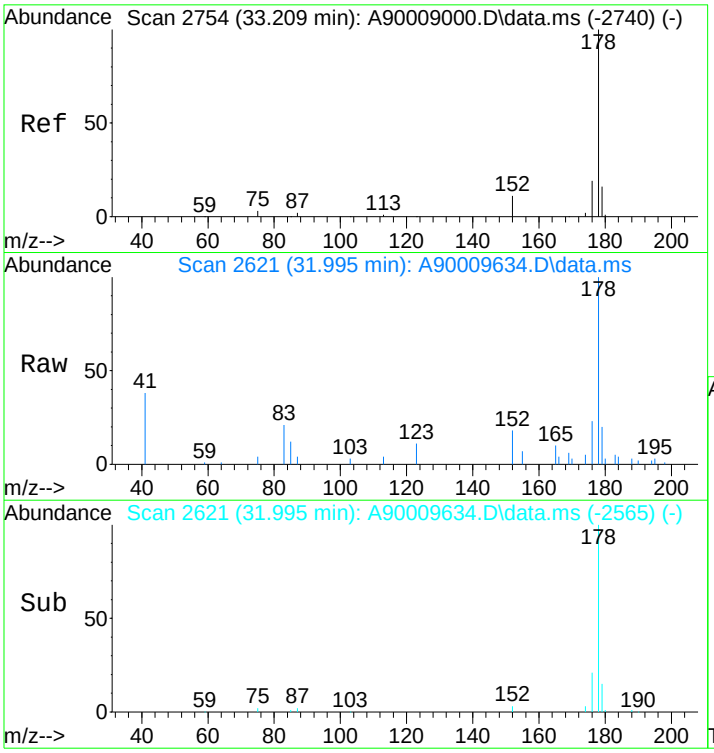


#41
C4-Dibenzothiophenes
Concen: 1397.06 ng/mL m
RT: 38.449 min Scan# 3328
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:240 Resp: 570752

Ion	Ratio	Lower	Upper
240	100		
225	0.0	0.0	0.0

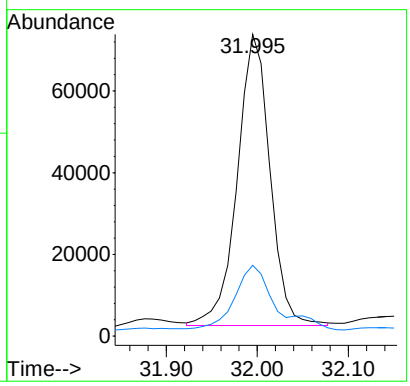


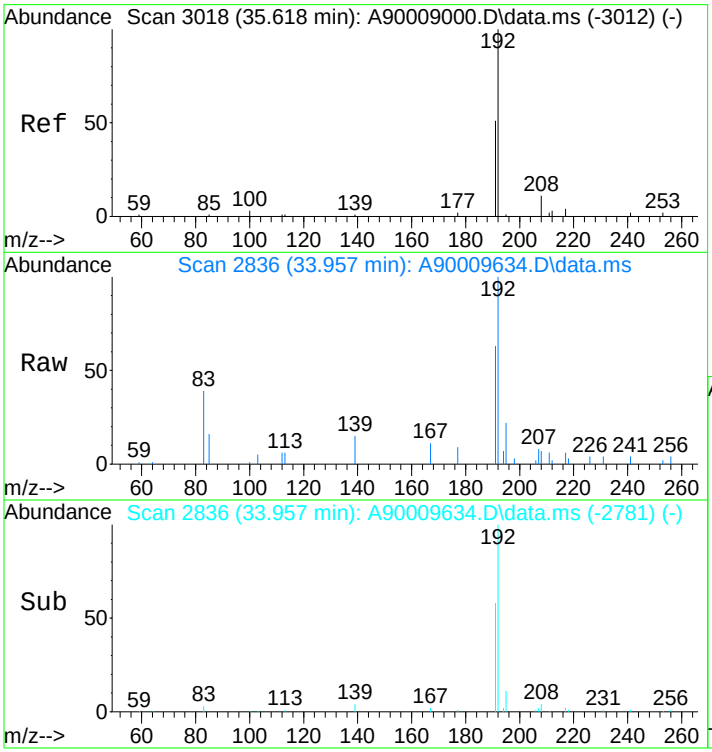


#43
Phenanthrene
Concen: 421.72 ng/mL m
RT: 31.995 min Scan# 2621
Delta R.T. 0.009 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:178 Resp: 177993

Ion	Ratio	Lower	Upper
178	100		
176	0.8	15.3	22.9#

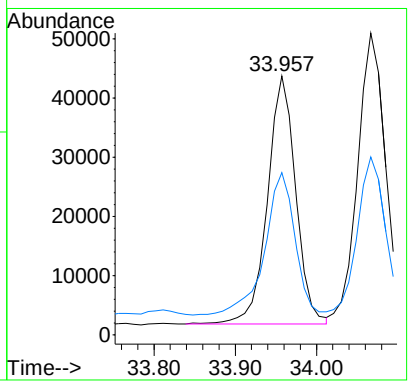


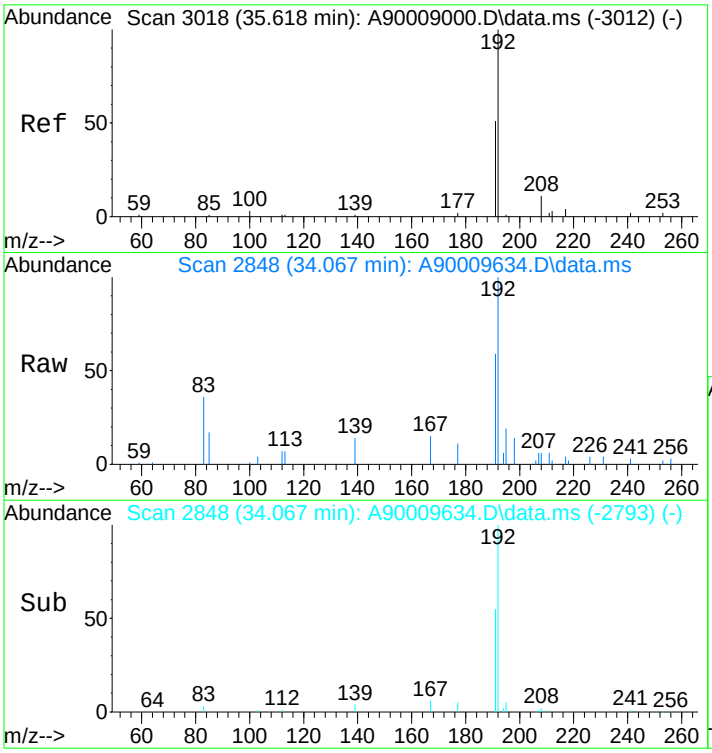


#44
3-Methylphenanthrene(3MP)
Concen: 239.30 ng/mL
RT: 33.957 min Scan# 2836
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:192 Resp: 101003

Ion	Ratio	Lower	Upper
192	100		
191	61.8	46.6	70.0

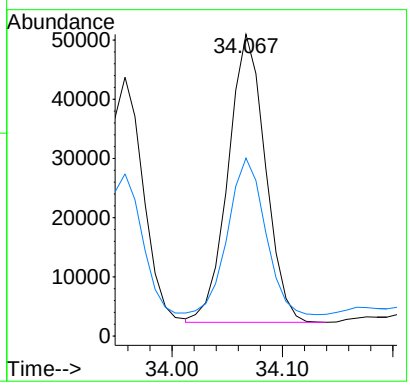


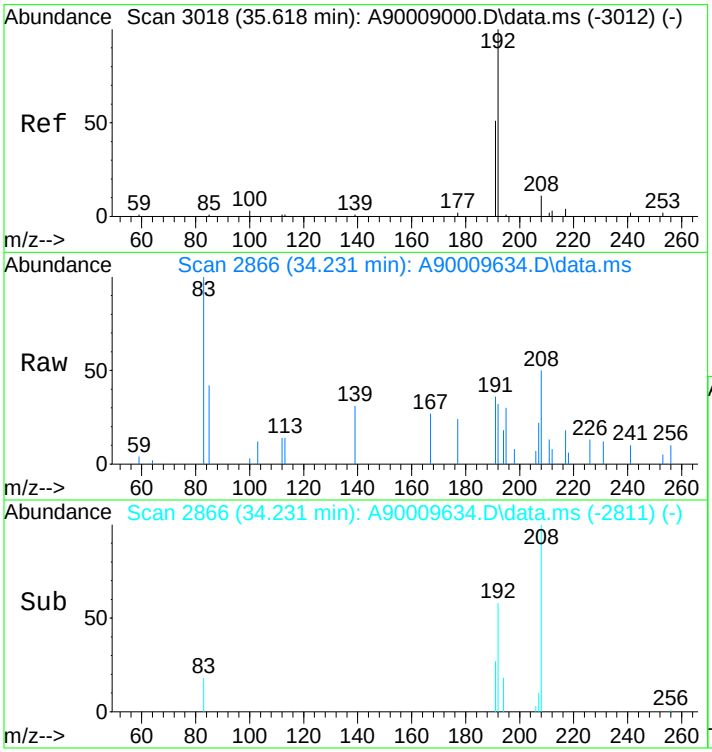


#45
2-Methylphenanthrene(2MP)
Concen: 270.81 ng/mL
RT: 34.067 min Scan# 2848
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:192 Resp: 114300

Ion	Ratio	Lower	Upper
192	100		
191	54.5	45.4	68.0

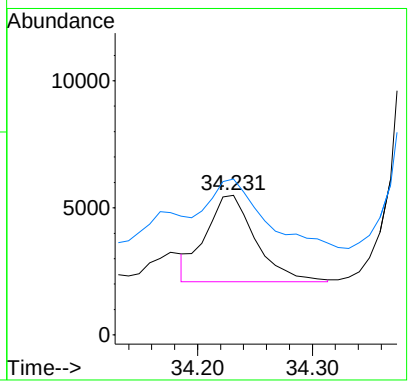


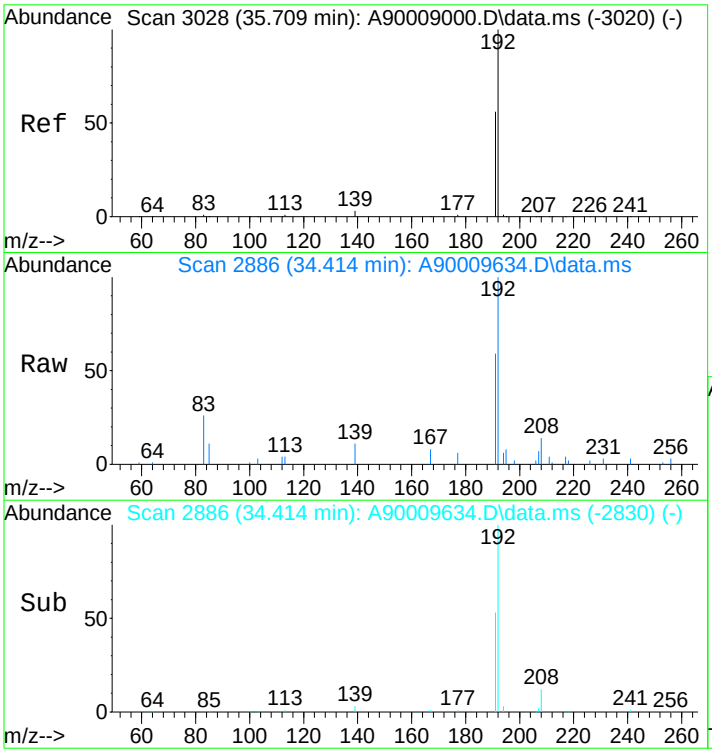


#46
2-Methylanthracene(2MA)
Concen: 24.45 ng/mL m
RT: 34.231 min Scan# 2866
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:192 Resp: 10321

Ion	Ratio	Lower	Upper
192	100		
191	15.1	96.0	144.0#

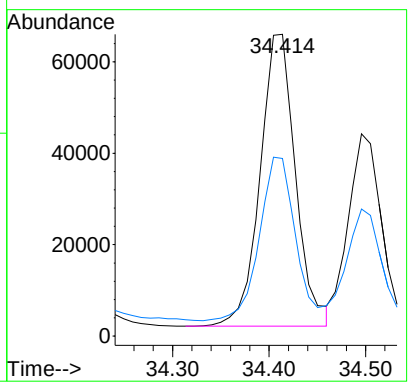


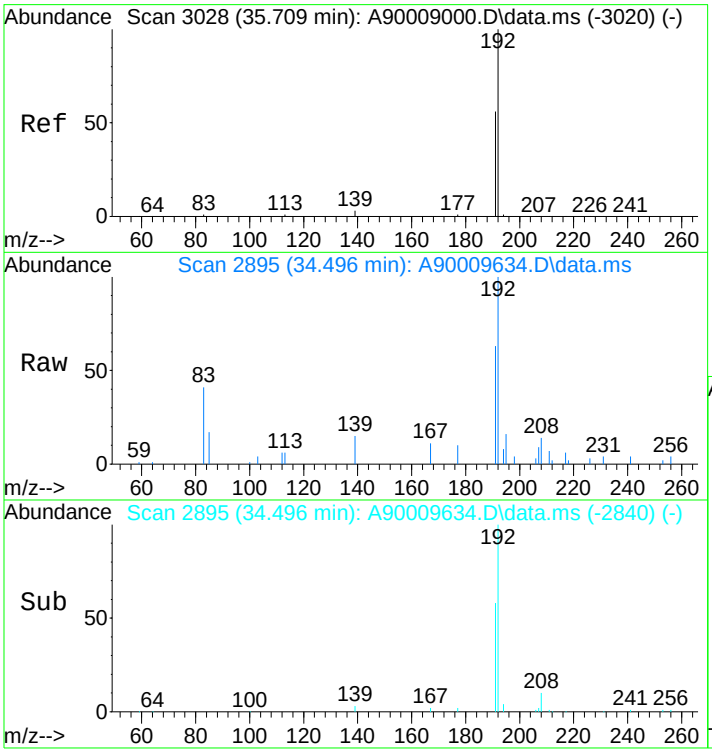


#47
9/4-Methylphenanthrene(9MP)
Concen: 386.32 ng/mL
RT: 34.414 min Scan# 2886
Delta R.T. 0.009 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:192 Resp: 163054

Ion	Ratio	Lower	Upper
192	100		
191	55.9	45.0	67.6

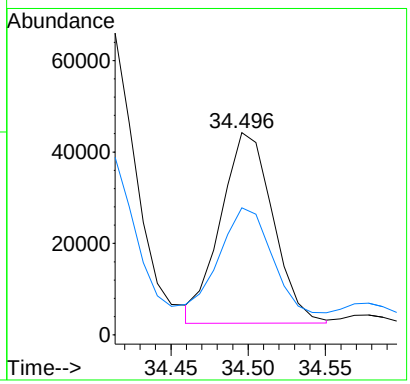


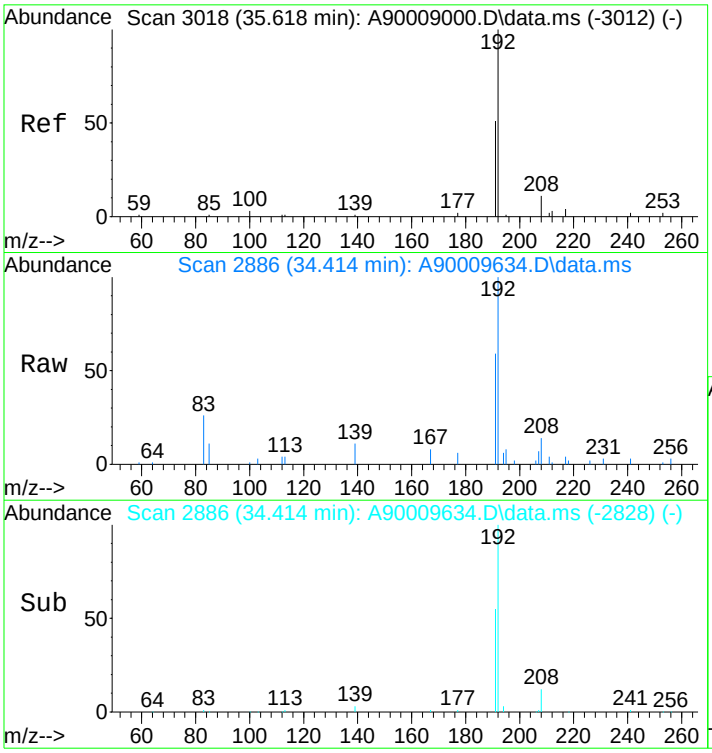


#48
1-Methylphenanthrene(1MP)
Concen: 233.12 ng/mL
RT: 34.496 min Scan# 2895
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:192 Resp: 98391

Ion	Ratio	Lower	Upper
192	100		
191	58.8	47.4	71.0

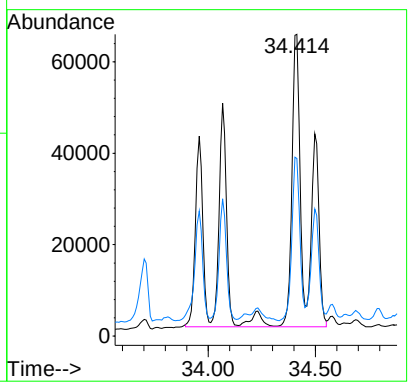


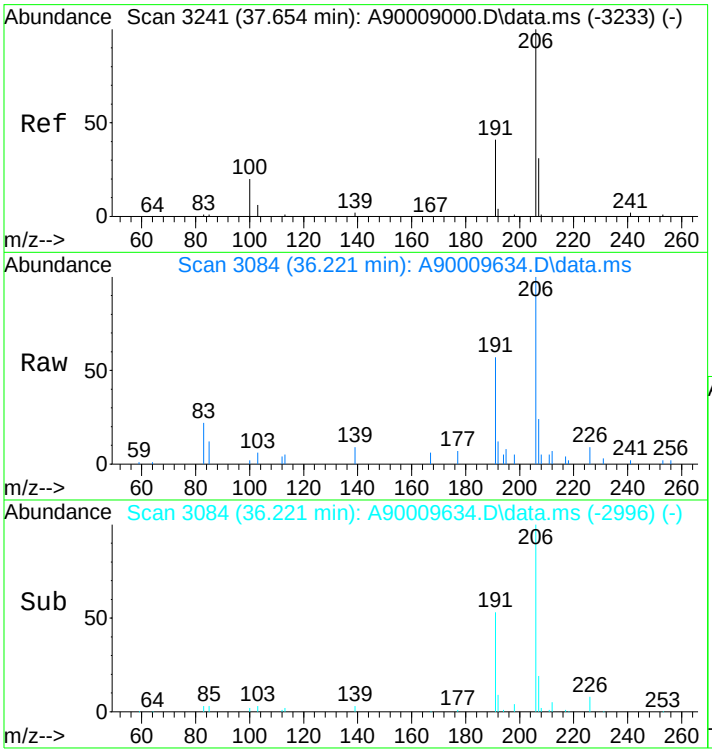


#49
C1-Phenanthrenes/Anthracenes
Concen: 1167.68 ng/mL m
RT: 34.414 min Scan# 2886
Delta R.T. 0.009 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:192 Resp: 492841

Ion	Ratio	Lower	Upper
192	100		
191	18.5	45.0	67.6#

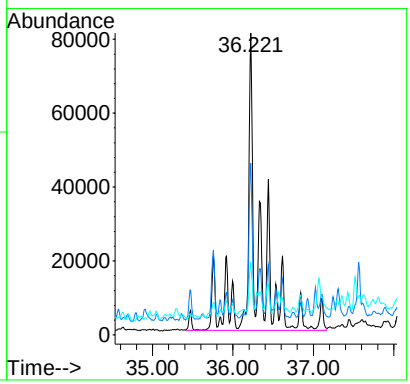


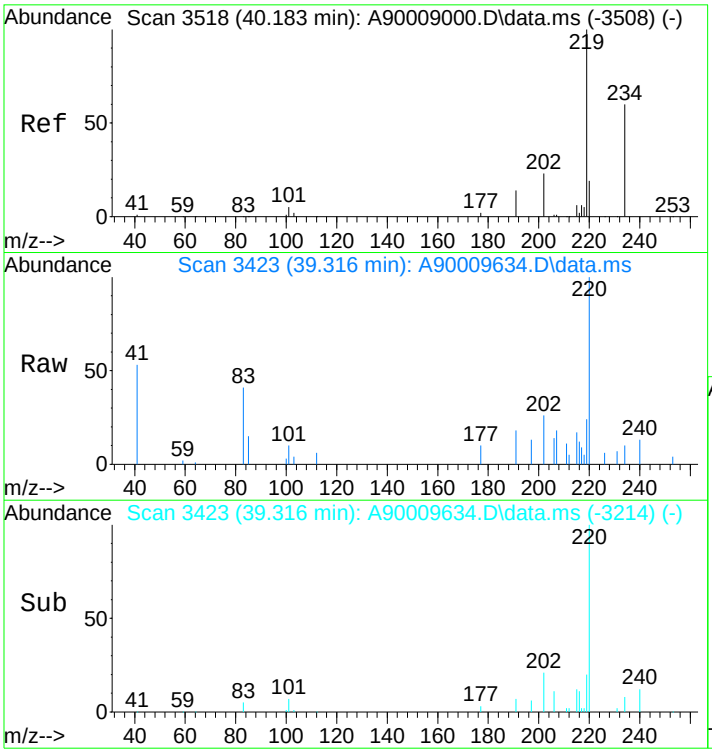


#50
C2-Phenanthrenes/Anthracenes
Concen: 1794.83 ng/mL m
RT: 36.221 min Scan# 3084
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:206 Resp: 757541

Ion	Ratio	Lower	Upper
206	100		
191	1.7	41.1	61.7#
207	0.8	17.2	25.8#

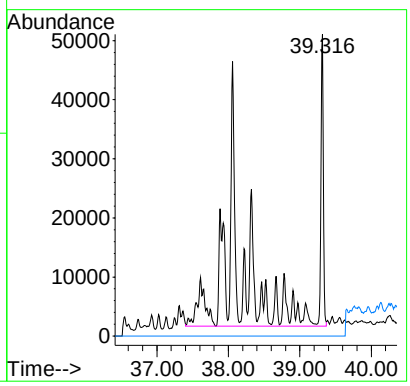


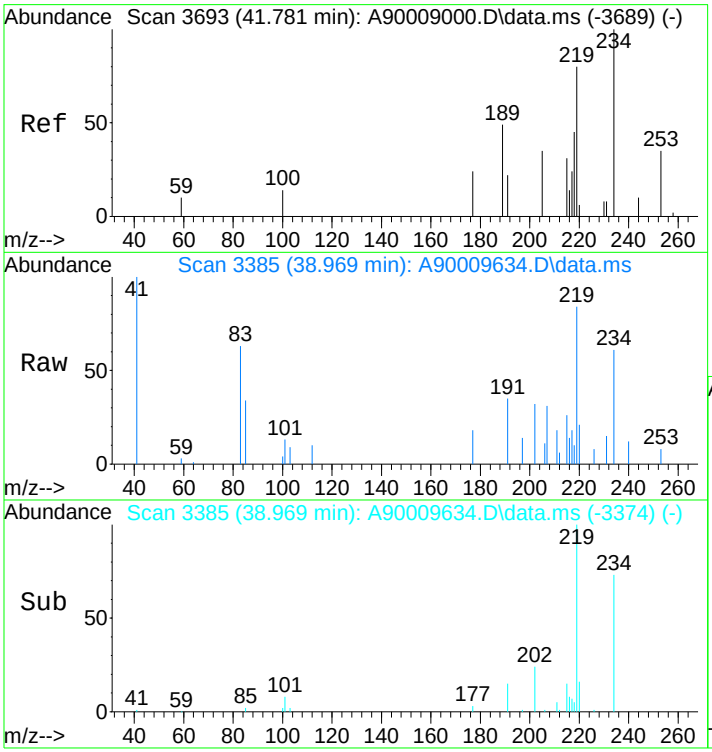


#52
C3-Phenanthrenes/Anthracenes
Concen: 1608.91 ng/mL m
RT: 39.316 min Scan# 3423
Delta R.T. 1.260 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:220 Resp: 679068

Ion	Ratio	Lower	Upper
220	100		
205	0.0	0.0	0.0

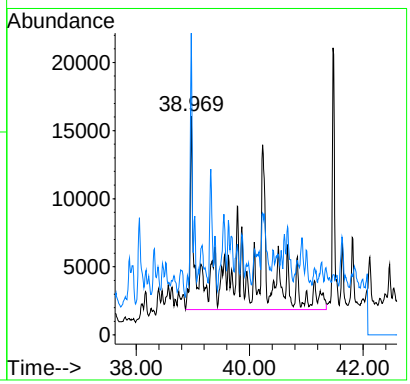


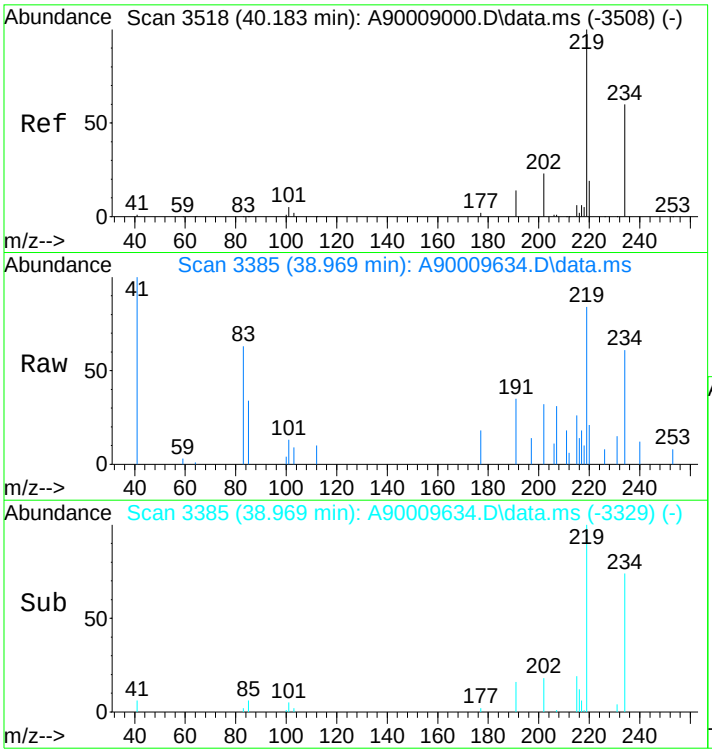


#53
C4-Phenanthrenes/Anthracenes
Concen: 800.21 ng/mL m
RT: 38.969 min Scan# 3385
Delta R.T. -1.260 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:234 Resp: 337745

Ion	Ratio	Lower	Upper
234	100		
219	2.3	52.4	78.6#

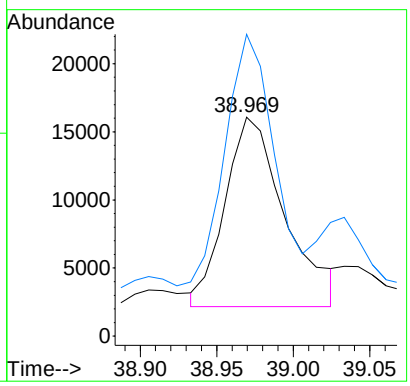


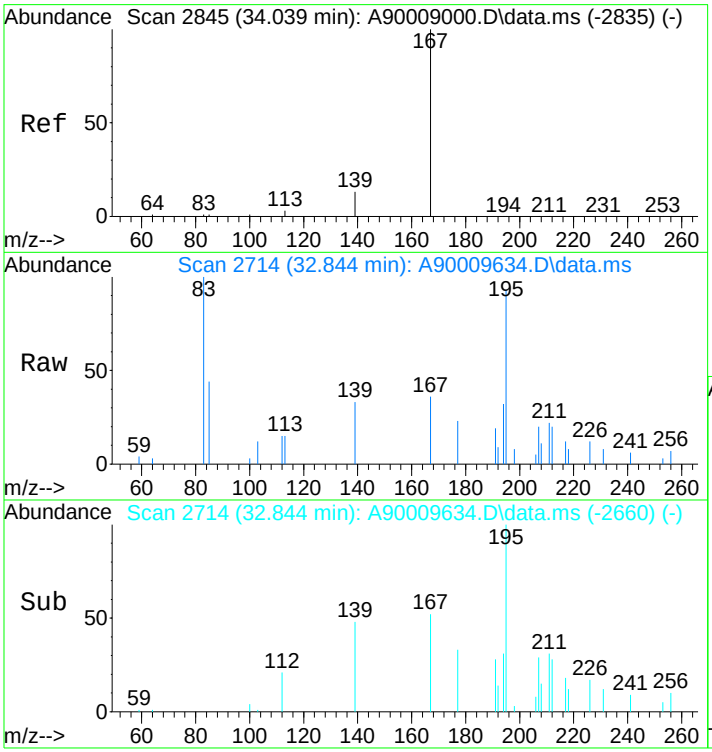


#54
Retene
Concen: 325.50 ng/mL m
RT: 38.969 min Scan# 3385
Delta R.T. 0.009 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:234 Resp: 37768

Ion	Ratio	Lower	Upper
234	100		
219	110.6	119.5	179.3#

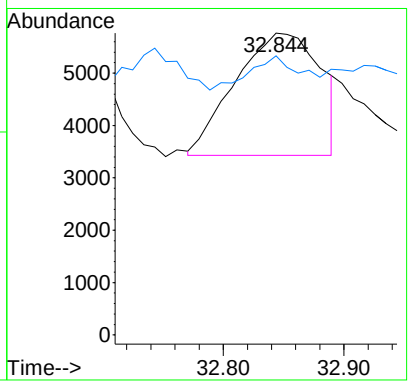


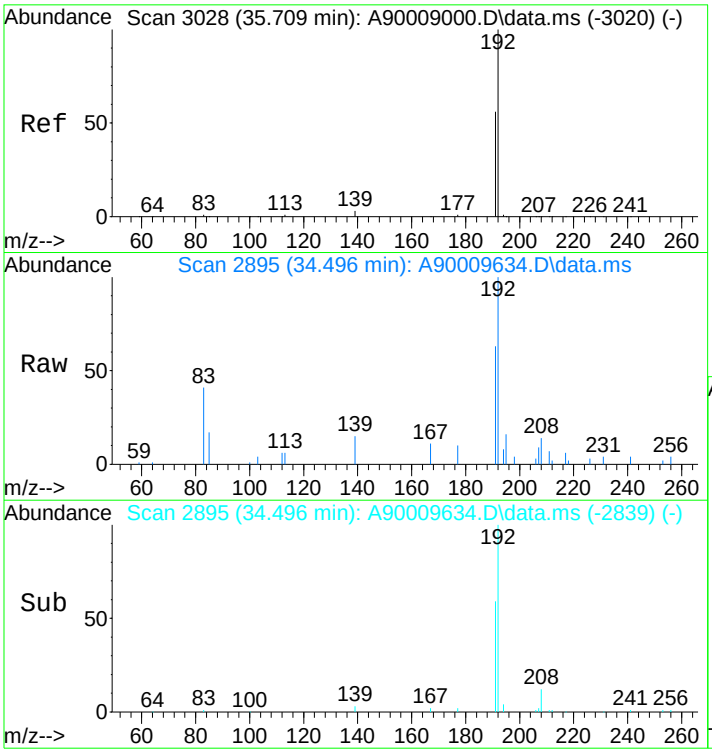


#56
Carbazole
Concen: 30.92 ng/mL m
RT: 32.844 min Scan# 2714
Delta R.T. -0.009 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:167 Resp: 11465

Ion	Ratio	Lower	Upper
167	100		
139	0.0	10.6	15.8#

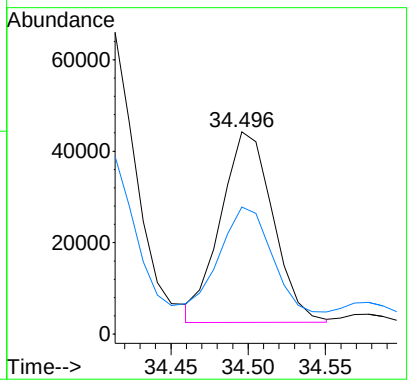


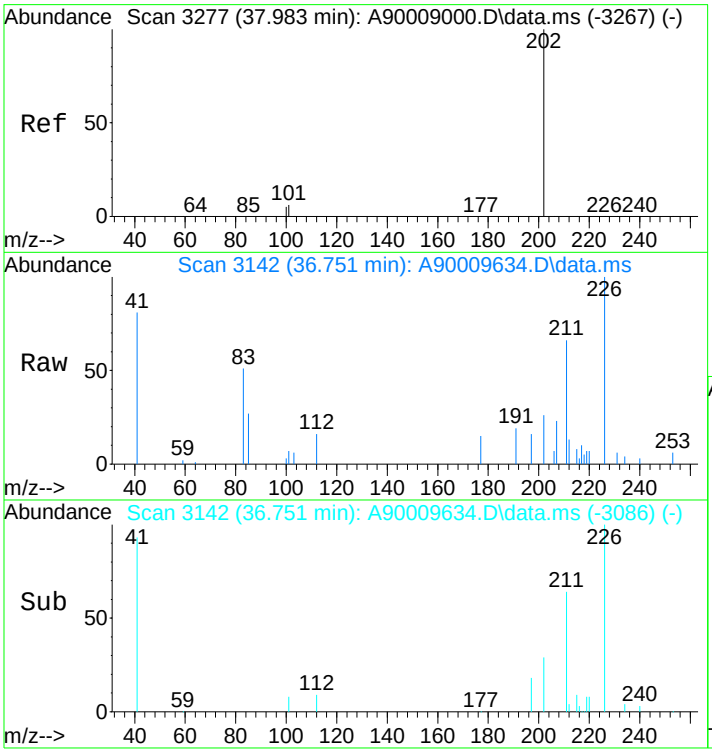


#57
1-Methylphenanthrene
Concen: 315.96 ng/mL
RT: 34.496 min Scan# 2895
Delta R.T. 0.009 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:192 Resp: 98391

Ion	Ratio	Lower	Upper
192	100		
191	58.3	44.8	67.2

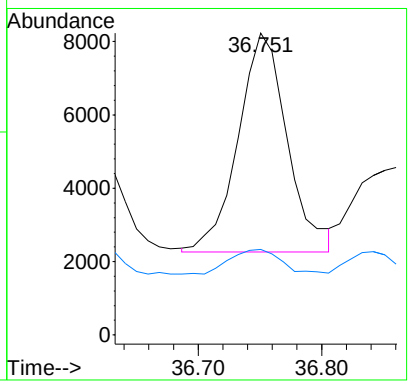


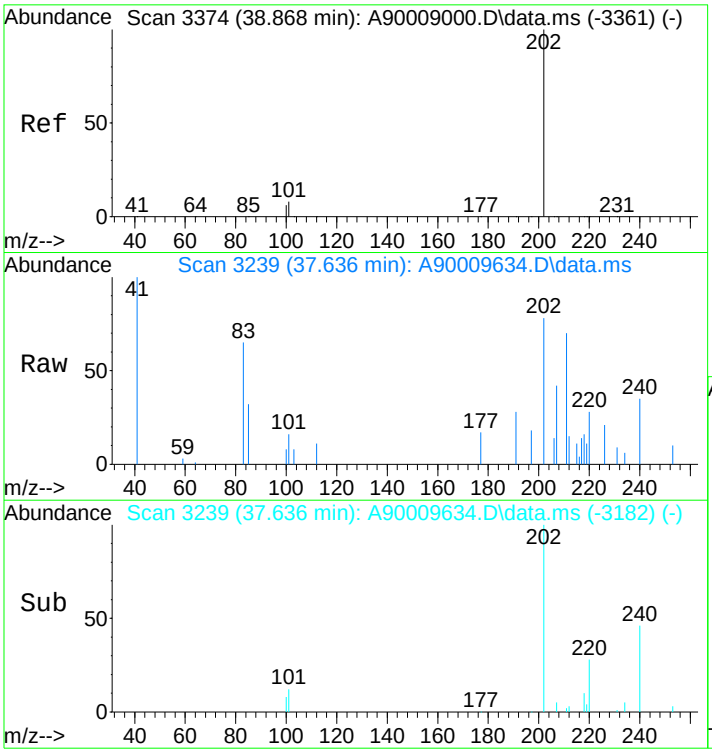


#58
Fluoranthene
Concen: 35.02 ng/mL m
RT: 36.751 min Scan# 3142
Delta R.T. 0.009 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:202 Resp: 16514

Ion	Ratio	Lower	Upper
202	100		
101	29.5	7.5	11.3#

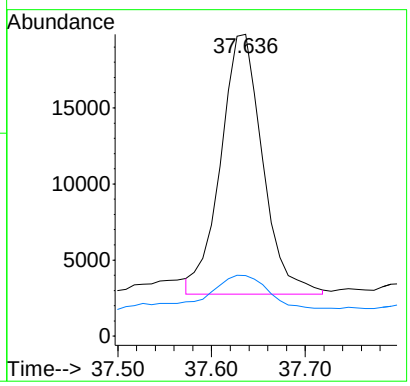


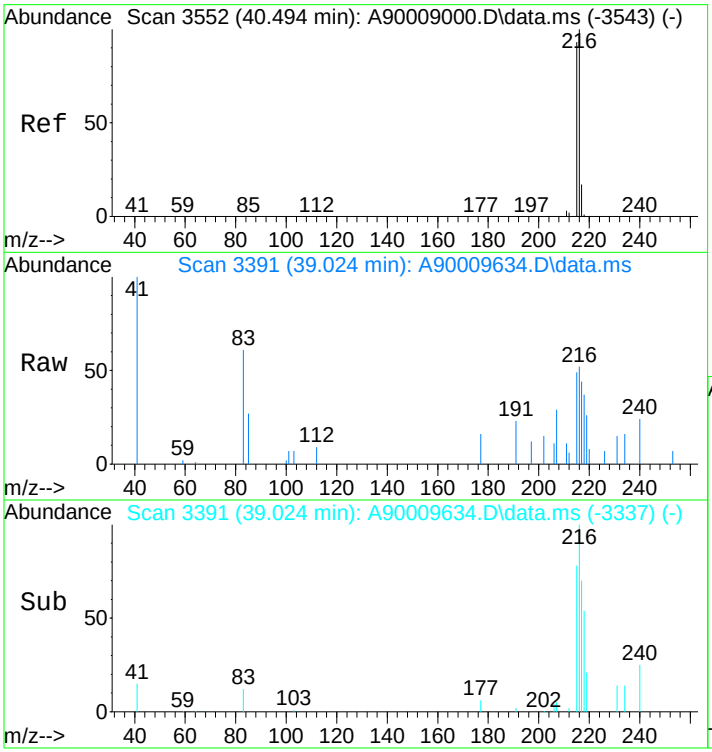


#60
Pyrene
Concen: 110.37 ng/mL m
RT: 37.636 min Scan# 3239
Delta R.T. 0.018 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:202 Resp: 53092

Ion	Ratio	Lower	Upper
202	100		
101	21.0	8.6	13.0#

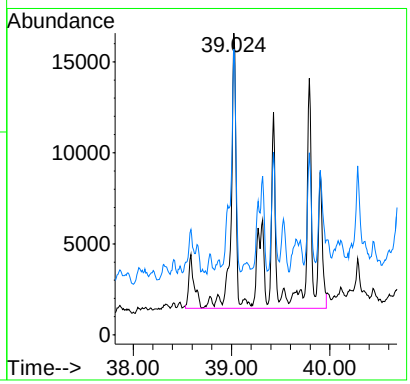


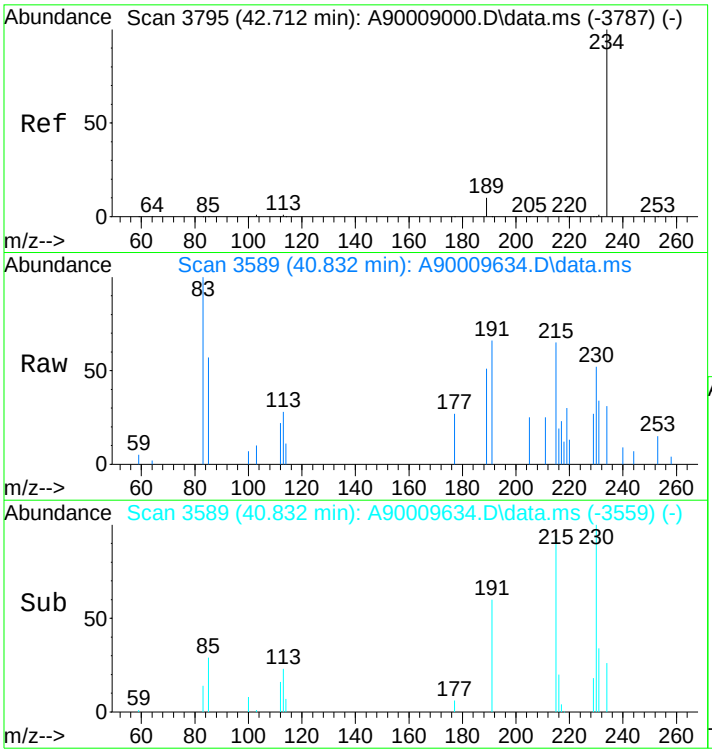


#61
C1-Fluoranthenes/Pyrenes
Concen: 370.91 ng/mL m
RT: 39.024 min Scan# 3391
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:216 Resp: 178415

Ion	Ratio	Lower	Upper
216	100		
215	25.2	73.4	110.0#

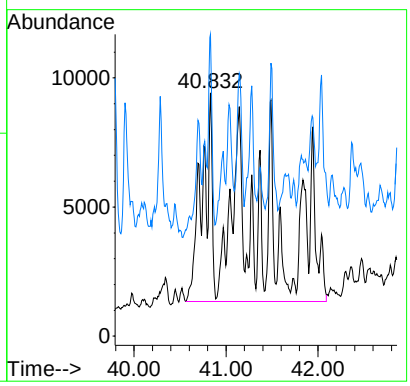


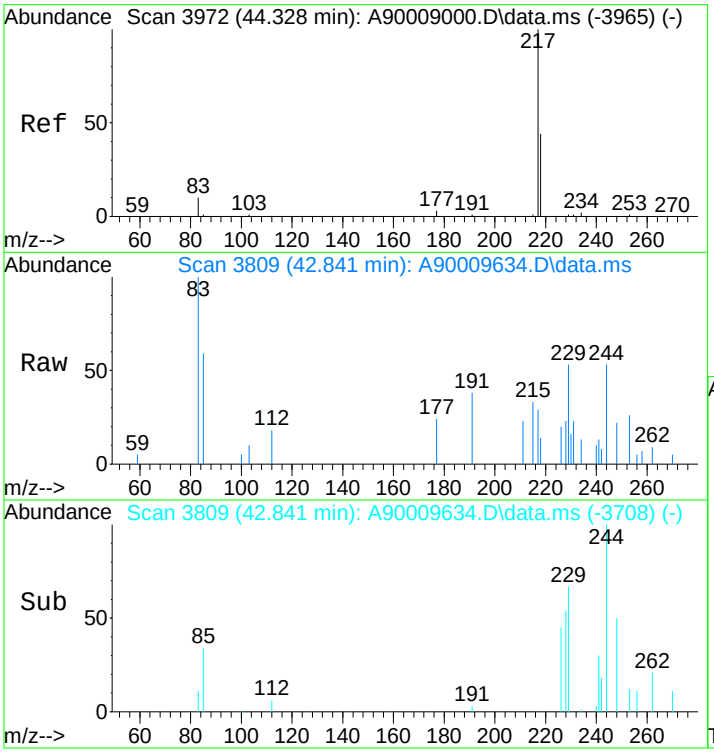


#62
C2-Fluoranthenes/Pyrenes
Concen: 504.01 ng/mL m
RT: 40.832 min Scan# 3589
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:230 Resp: 242442

Ion	Ratio	Lower	Upper
230	100		
215	7.6	91.0	136.4#

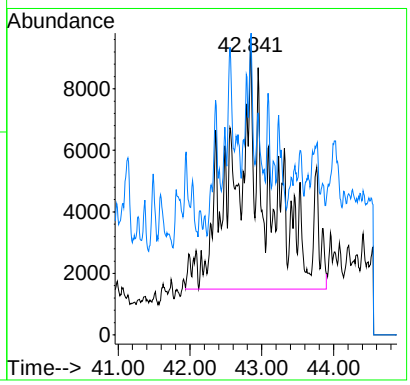


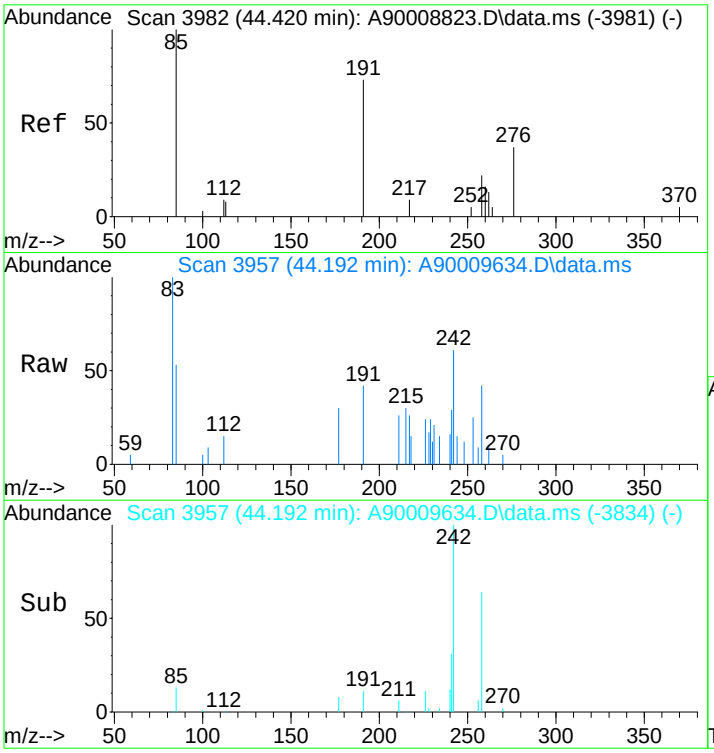


#63
C3-Fluoranthenes/Pyrenes
Concen: 604.40 ng/mL m
RT: 42.841 min Scan# 3809
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:244 Resp: 290731

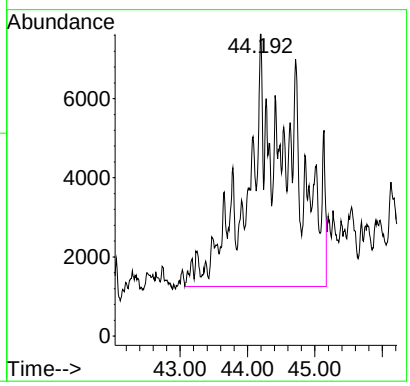
Ion	Ratio	Lower	Upper
244	100		
229	4.9	77.0	115.6#

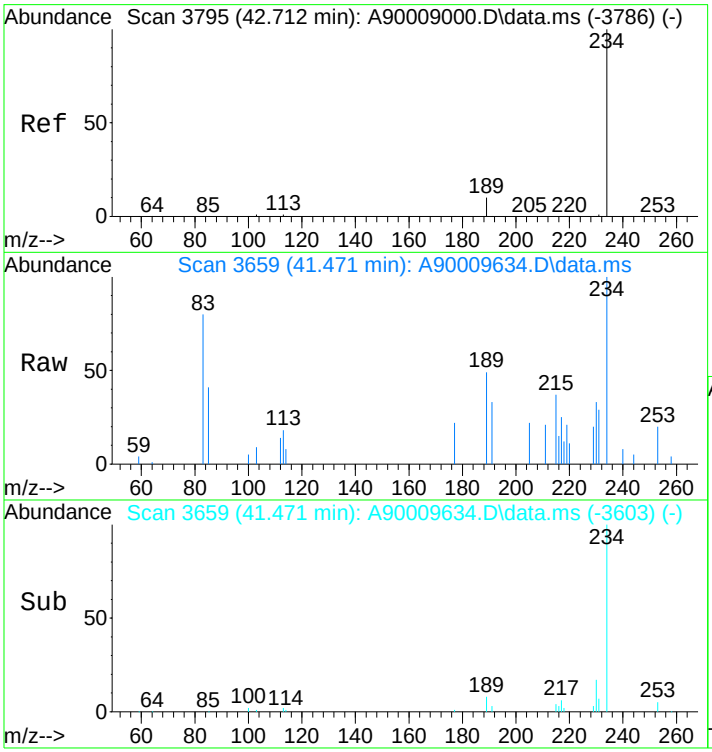




#64
C4-Fluoranthenes/Pyrenes
Concen: 580.09 ng/mL m
RT: 44.192 min Scan# 3957
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:258 Resp: 279034

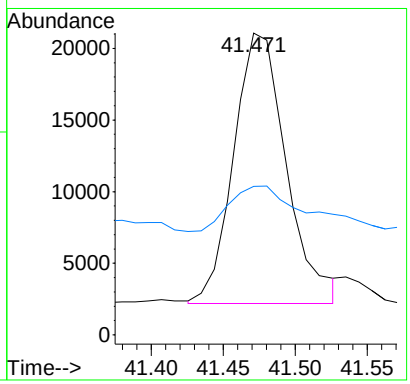


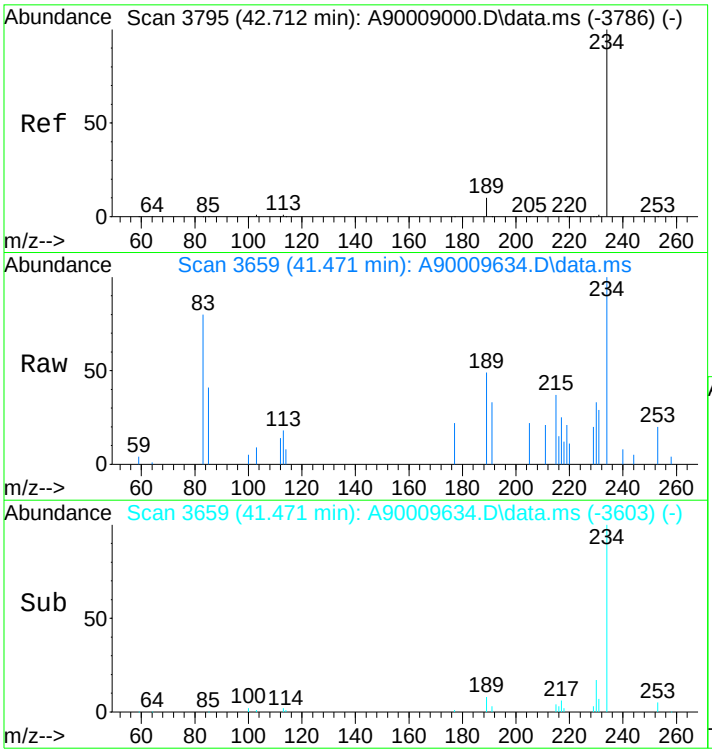


#66
Naphthobenzothiophene
Concen: 115.32 ng/ml m
RT: 41.471 min Scan# 3659
Delta R.T. 0.009 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:234 Resp: 48133

Ion	Ratio	Lower	Upper
234	100		
189	24.8	7.6	11.4#

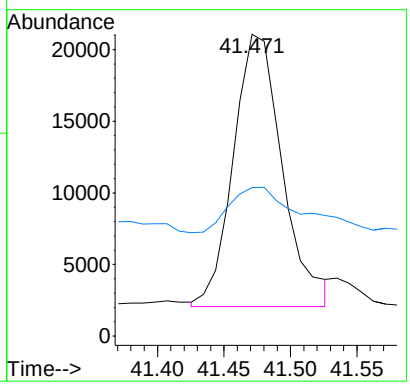


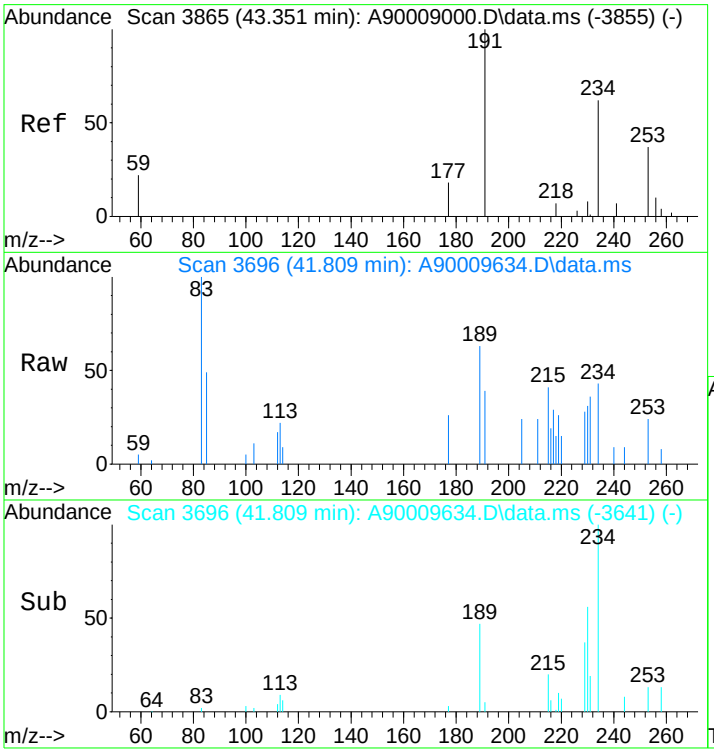


#67
Naphthobenzothiophene-2,1-D
Concen: 117.31 ng/mL m
RT: 41.471 min Scan# 3659
Delta R.T. 0.009 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:234 Resp: 48965

Ion	Ratio	Lower	Upper
234	100		
189	24.4	7.6	11.4#

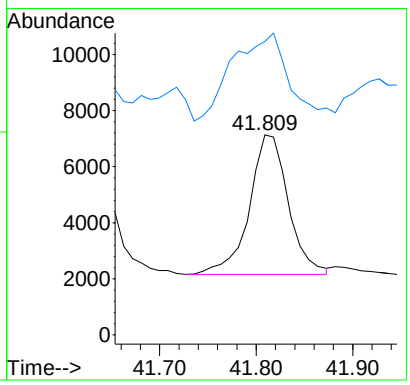


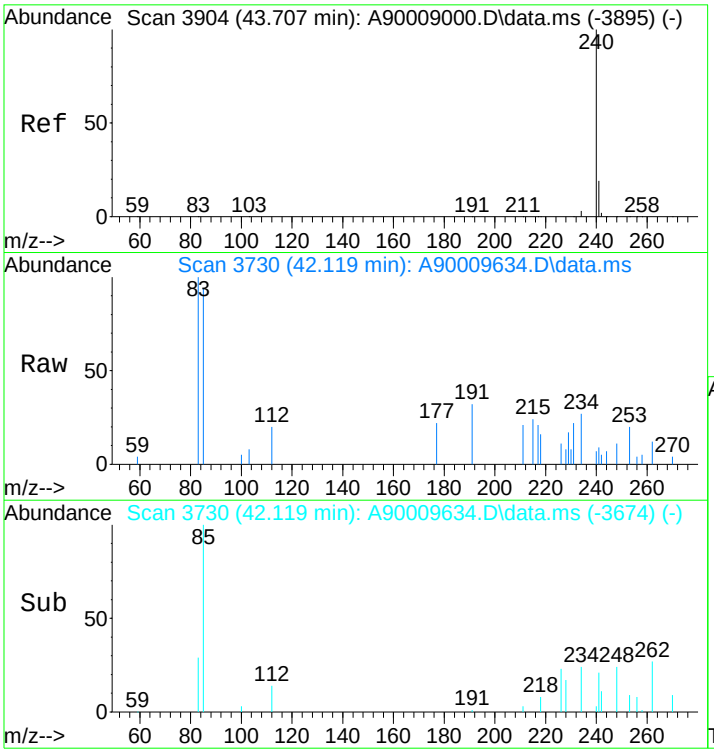


#68
Naphthobenzothiophene-1,2-D
Concen: 33.38 ng/mL
RT: 41.809 min Scan# 3696
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:234 Resp: 13934

Ion	Ratio	Lower	Upper
234	100		
189	0.0	82.8	124.2#

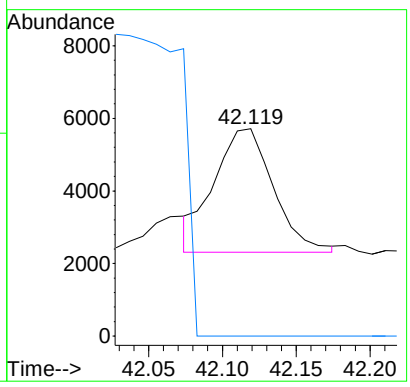


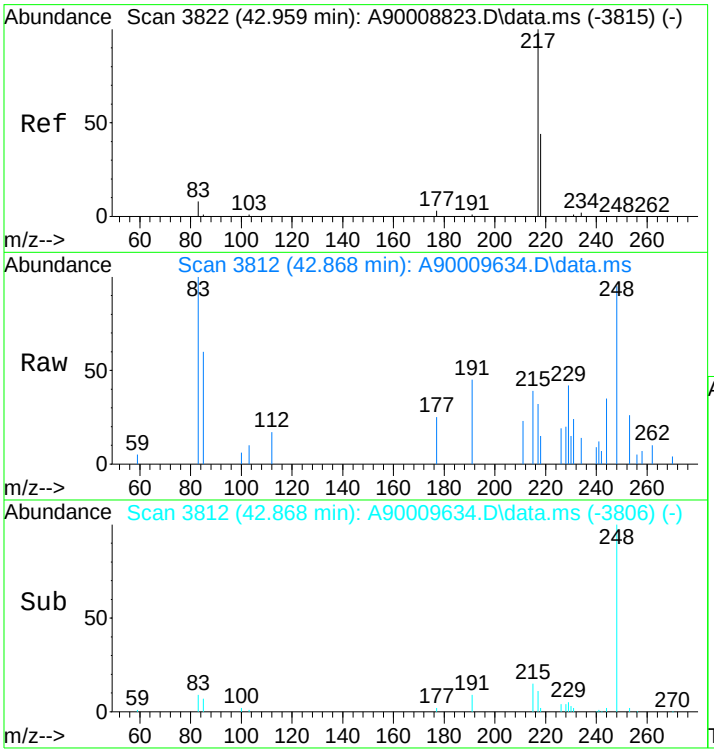


#69
Naphthobenzothiophene-2,3-D
Concen: 22.93 ng/mL m
RT: 42.119 min Scan# 3730
Delta R.T. 0.009 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:234 Resp: 9569

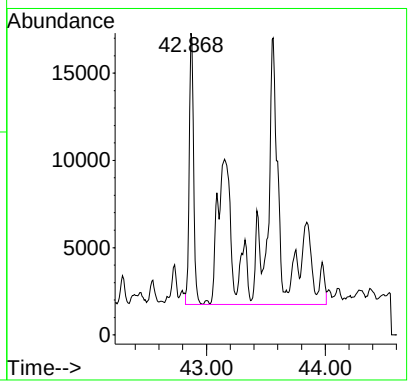
Ion	Ratio	Lower	Upper
234	100		
189	0.0	0.0	0.0

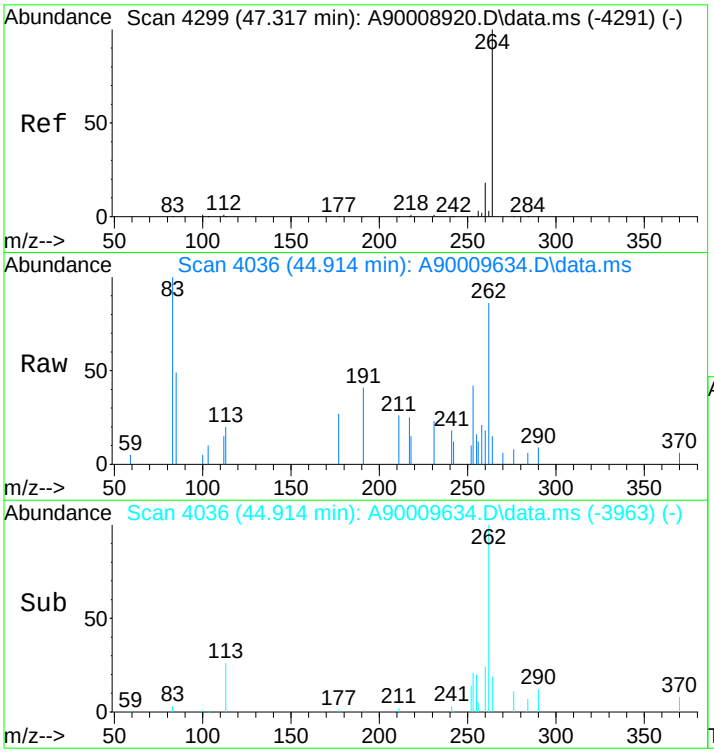




#70
C1-Naphthobenzothiophenes
Concen: 582.30 ng/ml m
RT: 42.868 min Scan# 3812
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

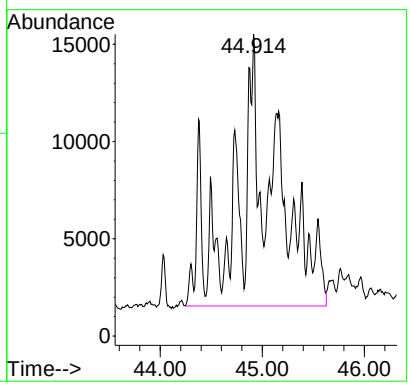
Tgt Ion:248 Resp: 243045

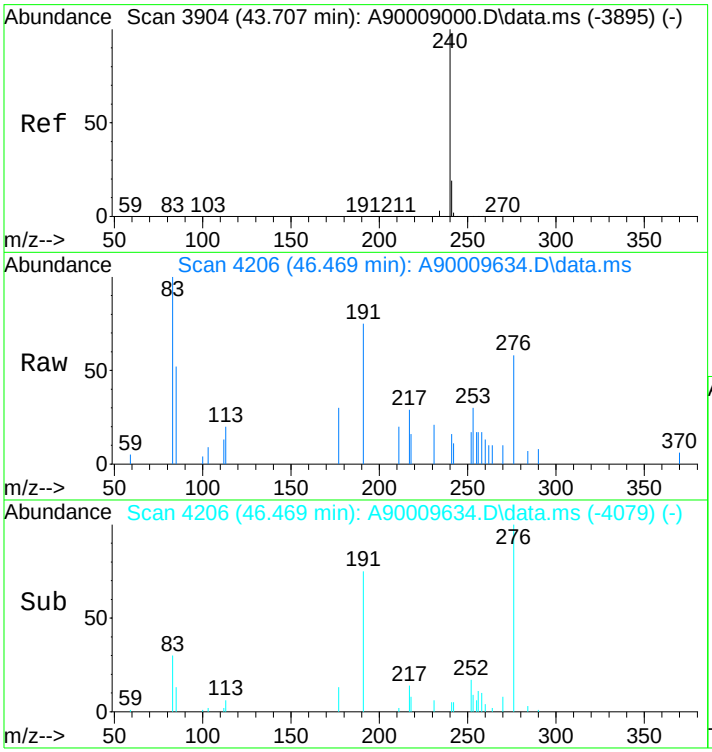




#71
C2-Naphthobenzothiophenes
Concen: 869.77 ng/ml m
RT: 44.914 min Scan# 4036
Delta R.T. 0.046 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

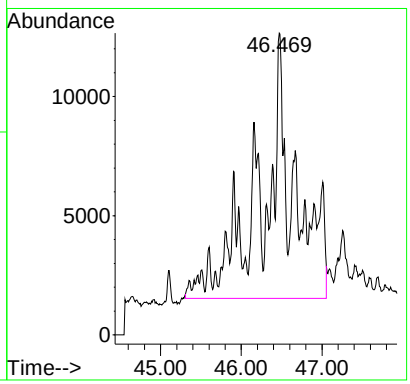
Tgt Ion:262 Resp: 363029

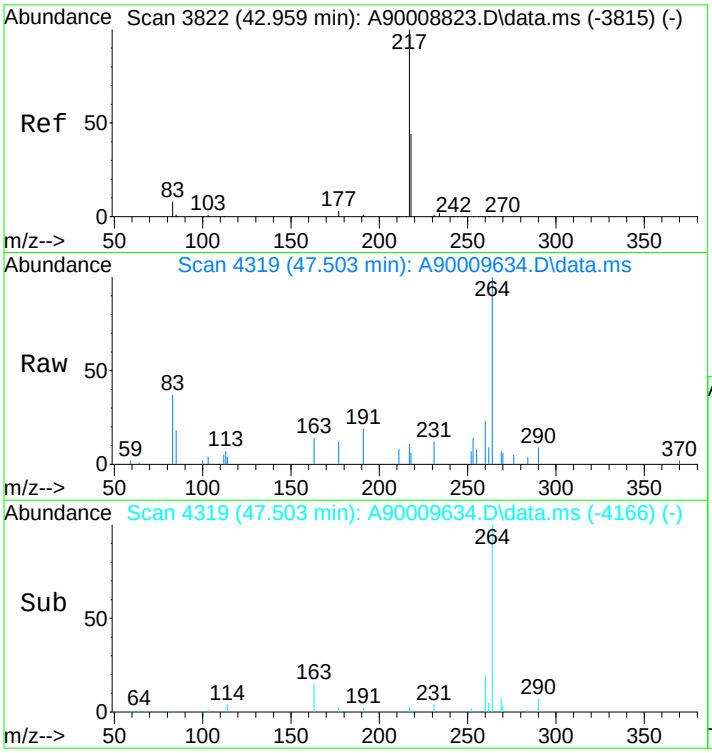




#72
C3-Naphthobenzothiophenes
Concen: 748.06 ng/ml m
RT: 46.469 min Scan# 4206
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

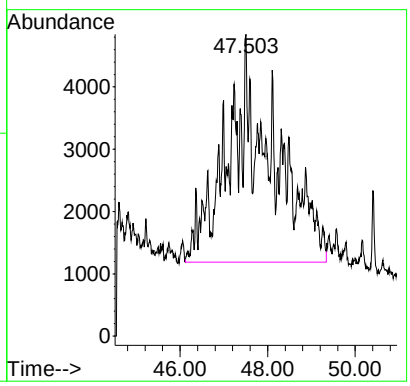
Tgt Ion:276 Resp: 312231

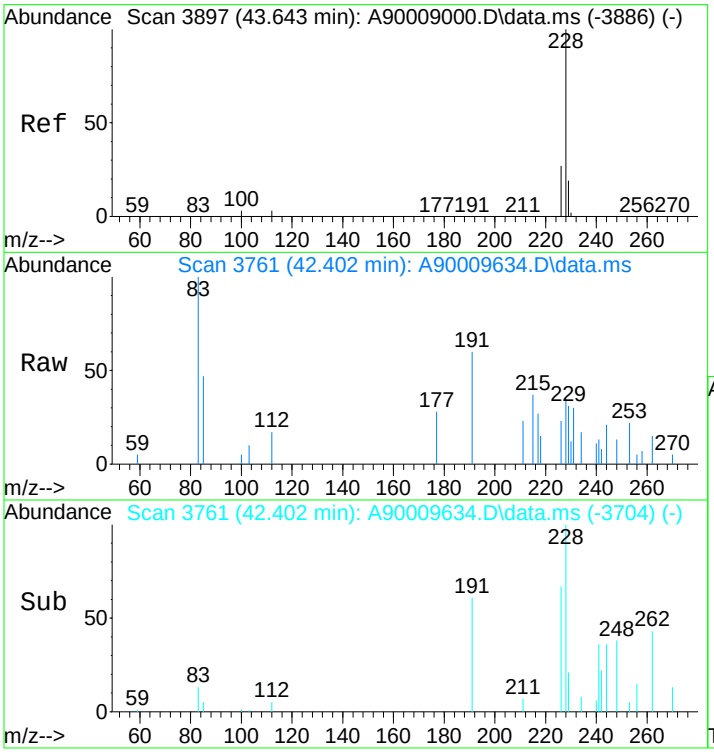




#73
C4-Naphthobenzothiophenes
Concen: 595.76 ng/mL m
RT: 47.503 min Scan# 4319
Delta R.T. 0.009 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:290 Resp: 248662

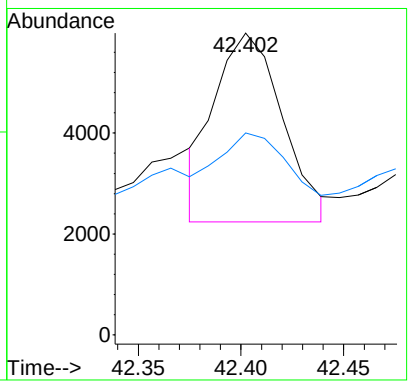


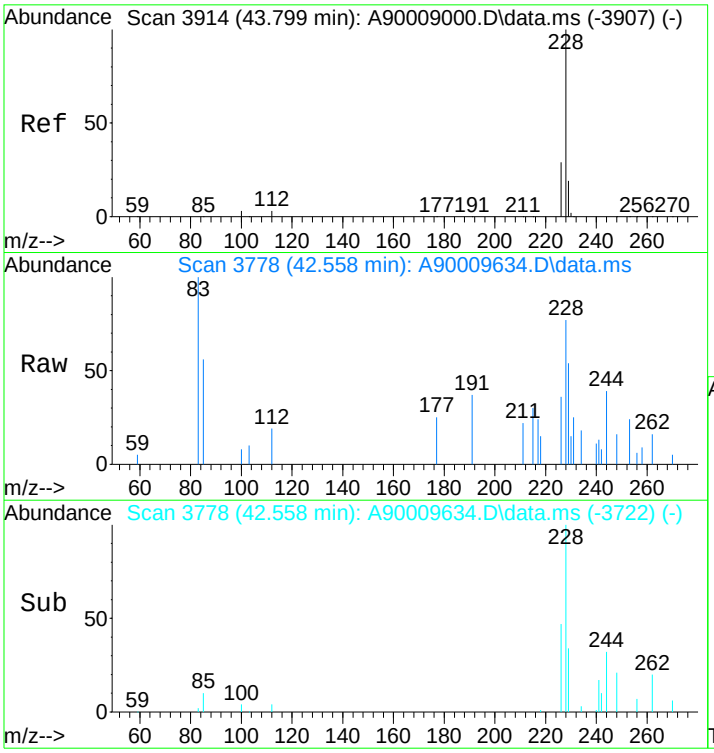


#75
Benz[a]anthracene
Concen: 19.45 ng/mL m
RT: 42.402 min Scan# 3761
Delta R.T. 0.018 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:228 Resp: 8606

Ion	Ratio	Lower	Upper
228	100		
226	164.7	21.5	32.3#

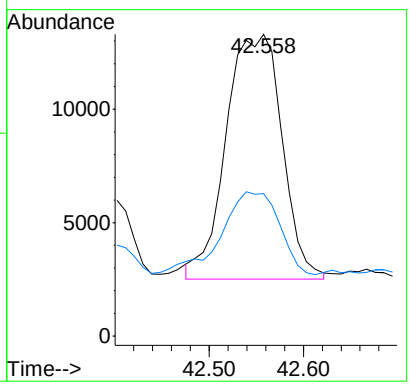


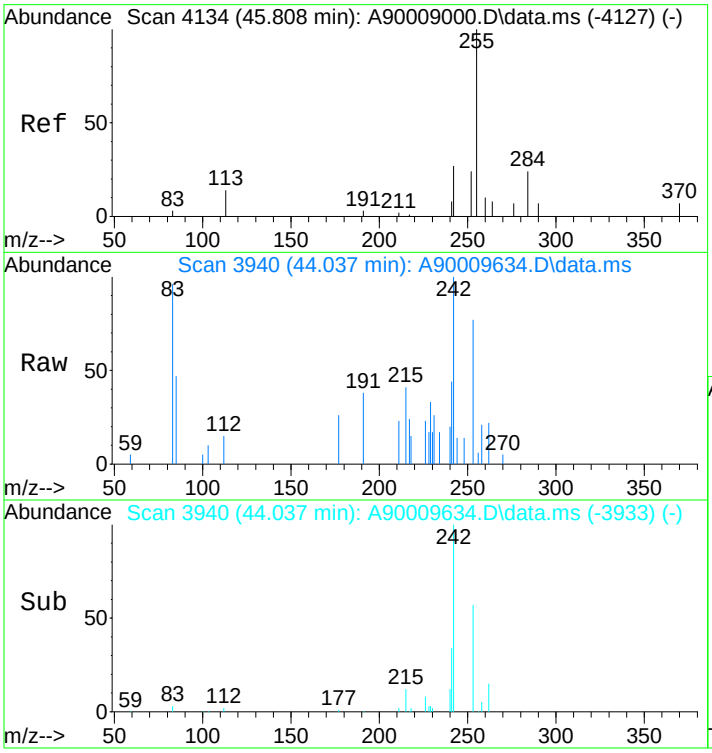


#77
Chrysene/Triphenylene
Concen: 101.96 ng/mL m
RT: 42.558 min Scan# 3778
Delta R.T. 0.009 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:228 Resp: 44367

Ion	Ratio	Lower	Upper
228	100		
226	32.0	23.6	35.4

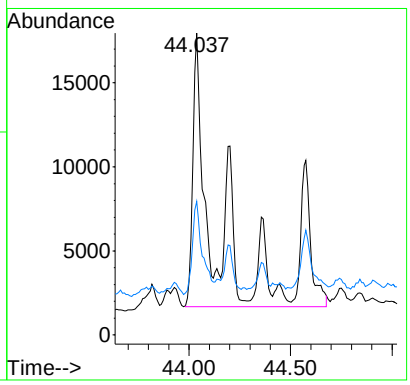


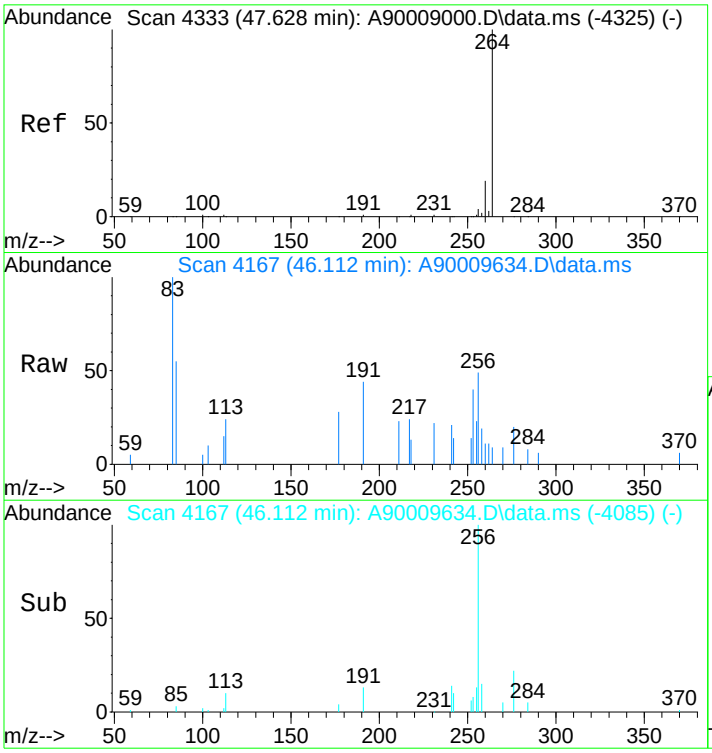


#78
C1-Chrysenes
Concen: 310.01 ng/mL m
RT: 44.037 min Scan# 3940
Delta R.T. -0.006 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:242 Resp: 134903

Ion	Ratio	Lower	Upper
242	100		
241	12.7	31.9	47.9#

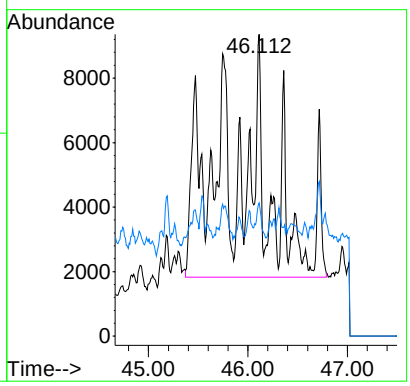


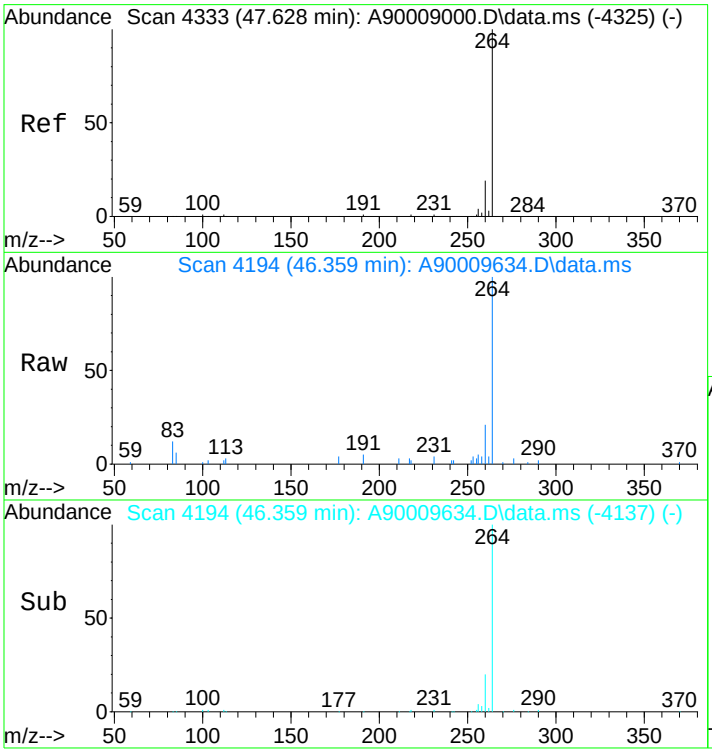


#79
C2-Chrysenes
Concen: 475.73 ng/mL m
RT: 46.112 min Scan# 4167
Delta R.T. -0.604 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:256 Resp: 207019

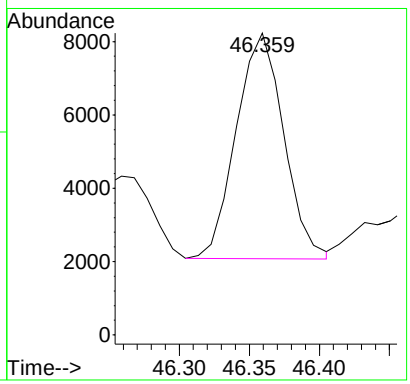
Ion	Ratio	Lower	Upper
256	100		
241	1.9	42.2	63.2#

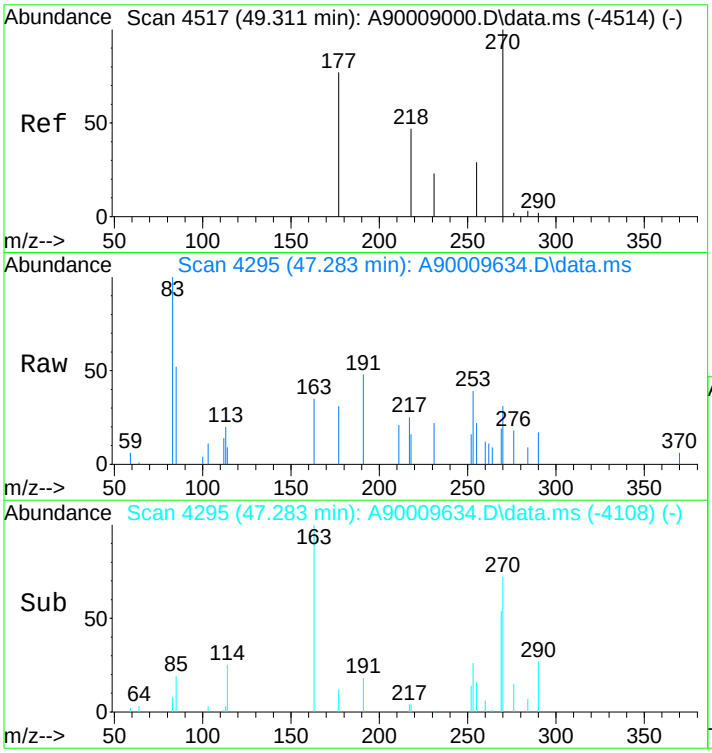




#80
BBF-d12 Surr BKGD
Concen: 33.43 ng/mL
RT: 46.359 min Scan# 4194
Delta R.T. 0.018 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:256 Resp: 14548

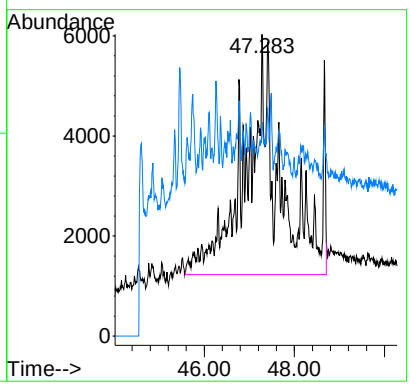


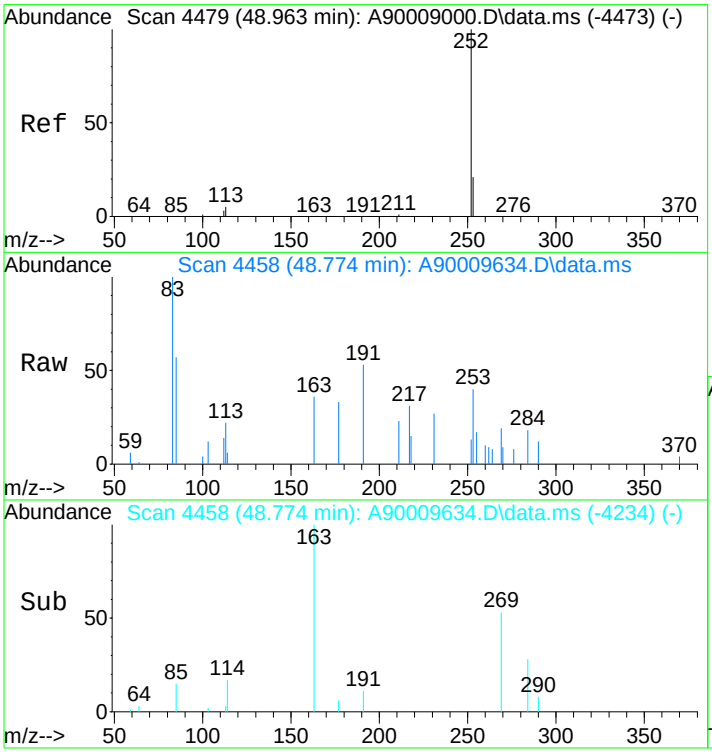


#81
C3-Chrysenes
Concen: 581.21 ng/mL m
RT: 47.283 min Scan# 4295
Delta R.T. -1.395 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:270 Resp: 252919

Ion	Ratio	Lower	Upper
270	100		
255	1.4	48.2	72.4#

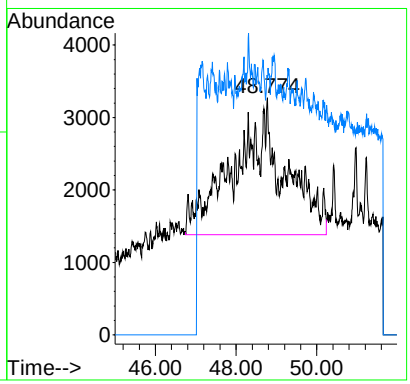


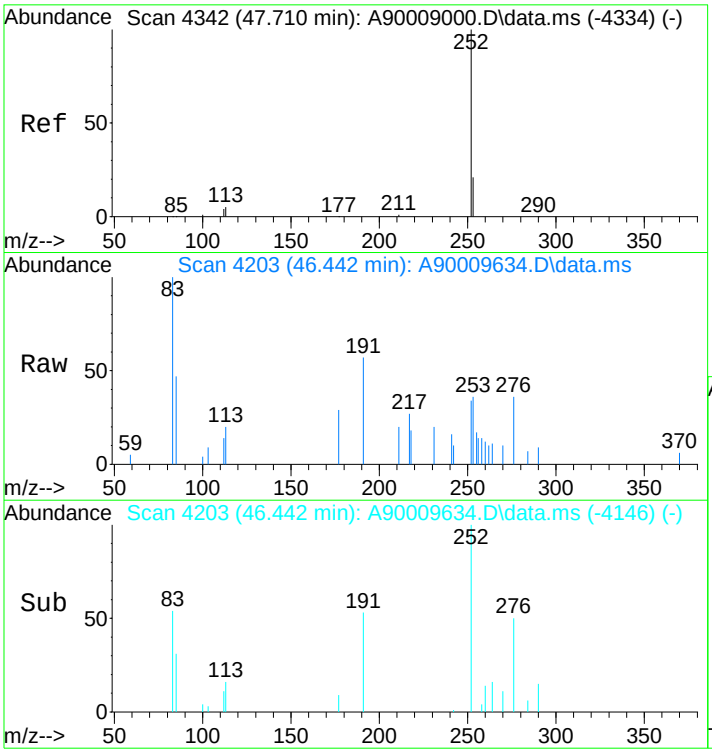


#82
C4-Chrysenes
Concen: 369.19 ng/mL m
RT: 48.774 min Scan# 4458
Delta R.T. -0.005 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:284 Resp: 160655

Ion	Ratio	Lower	Upper
284	100		
269	0.0	84.6	126.8#

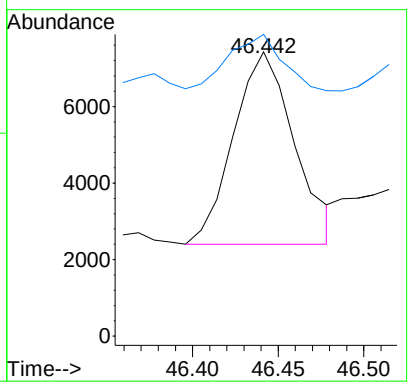


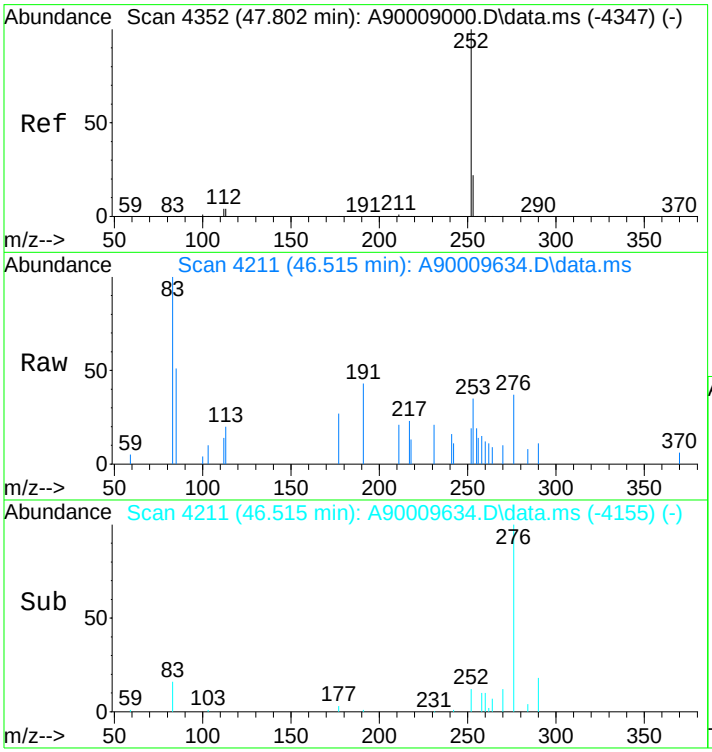


#84
Benzo[b]fluoranthene
Concen: 27.18 ng/mL
RT: 46.442 min Scan# 4203
Delta R.T. 0.018 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:252 Resp: 12470

Ion	Ratio	Lower	Upper
252	100		
253	26.1	24.5	36.7

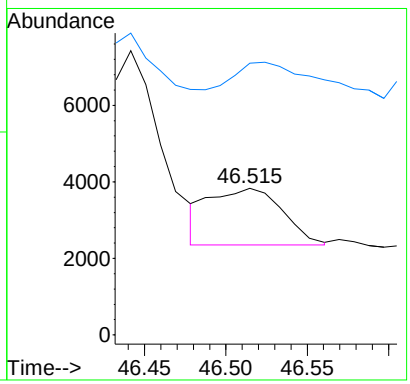


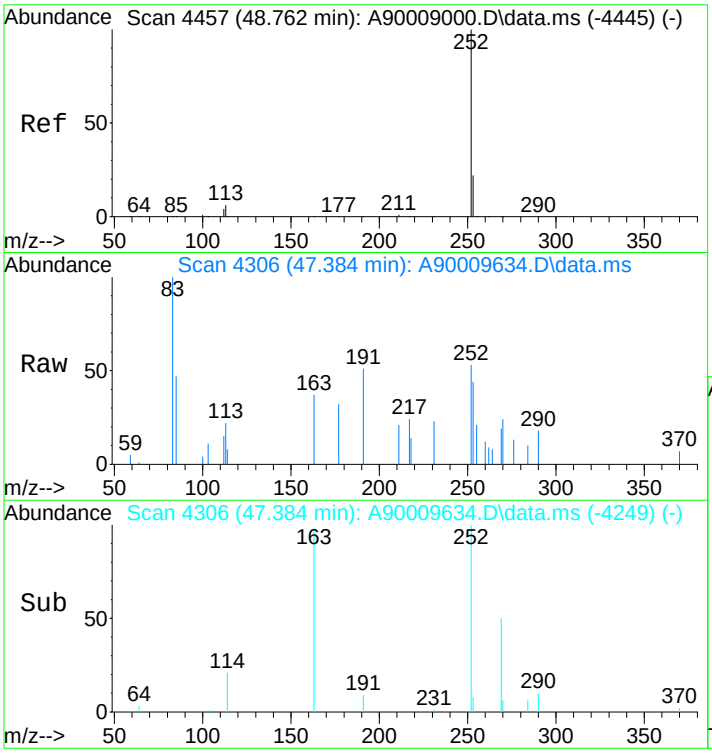


#85
Benzo[j]+[k]fluoranthene
Concen: 10.31 ng/mL m
RT: 46.515 min Scan# 4211
Delta R.T. 0.009 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:252 Resp: 4647

Ion	Ratio	Lower	Upper
252	100		
253	85.7	25.1	37.7#

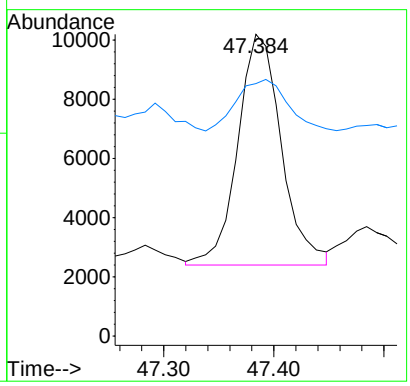


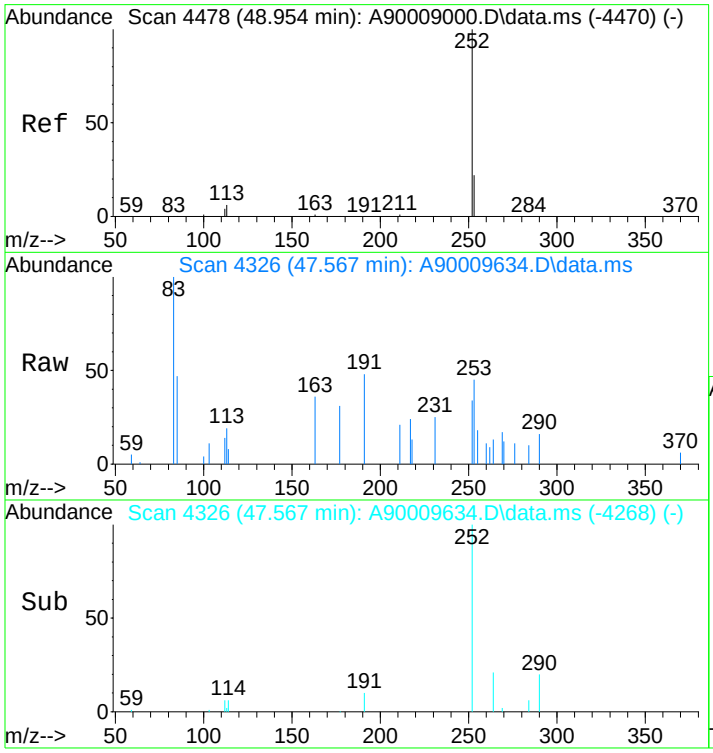


#87
Benzo[e]pyrene
Concen: 49.36 ng/mL
RT: 47.384 min Scan# 4306
Delta R.T. 0.018 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:252 Resp: 21500

Ion	Ratio	Lower	Upper
252	100		
253	26.1	28.1	42.1#

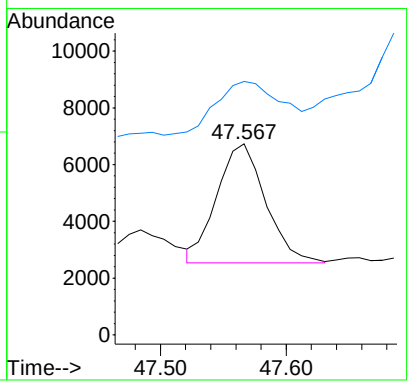


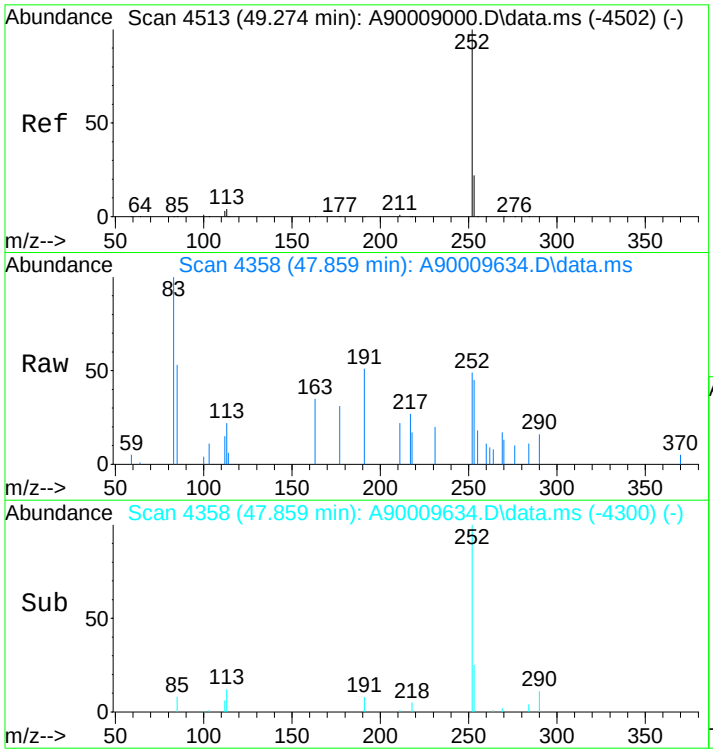


#89
Benzo[a]pyrene
Concen: 27.39 ng/mL m
RT: 47.567 min Scan# 4326
Delta R.T. 0.028 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:252 Resp: 11299

Ion	Ratio	Lower	Upper
252	100		
253	75.9	28.8	43.2#

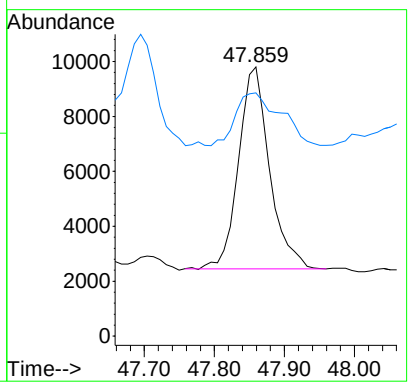


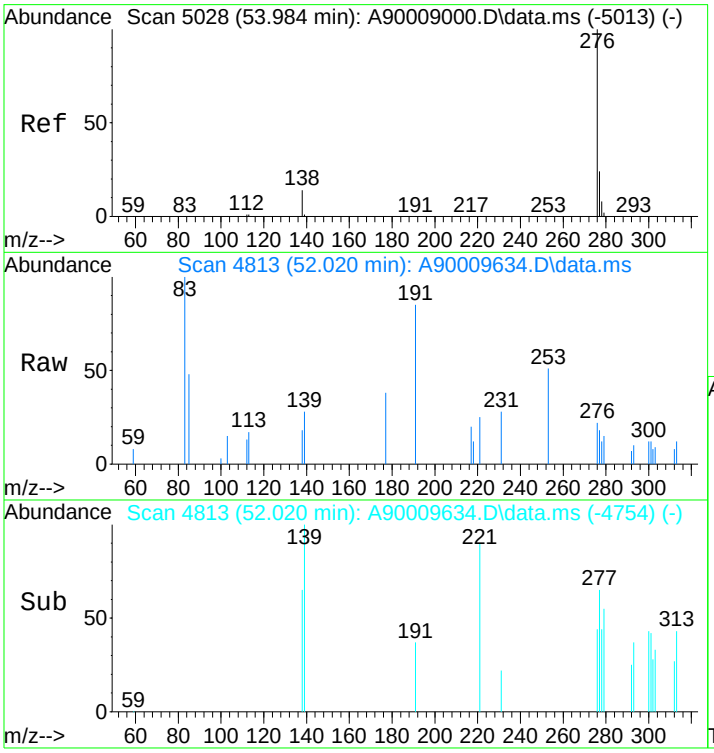


#90
Perylene
Concen: 51.20 ng/mL
RT: 47.859 min Scan# 4358
Delta R.T. 0.028 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:252 Resp: 22545

Ion	Ratio	Lower	Upper
252	100		
253	38.0	29.1	43.7

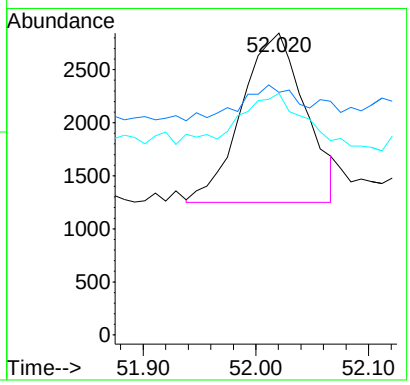


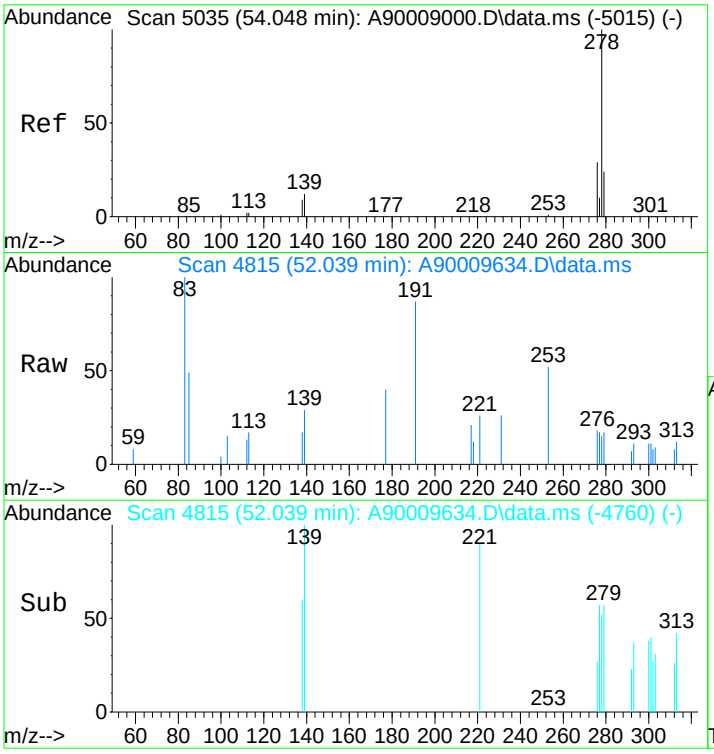


#91
Indeno[1,2,3-cd]pyrene
Concen: 13.71 ng/mL m
RT: 52.020 min Scan# 4813
Delta R.T. 0.037 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:276 Resp: 6264

Ion	Ratio	Lower	Upper
276	100		
138	0.0	18.4	27.6#
277	0.0	21.0	31.6#

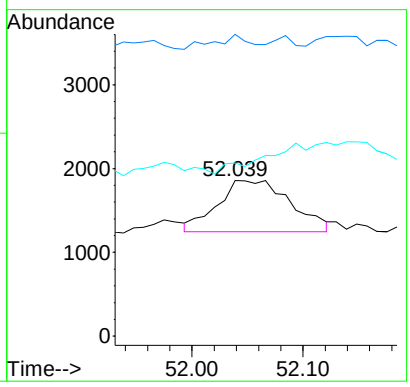


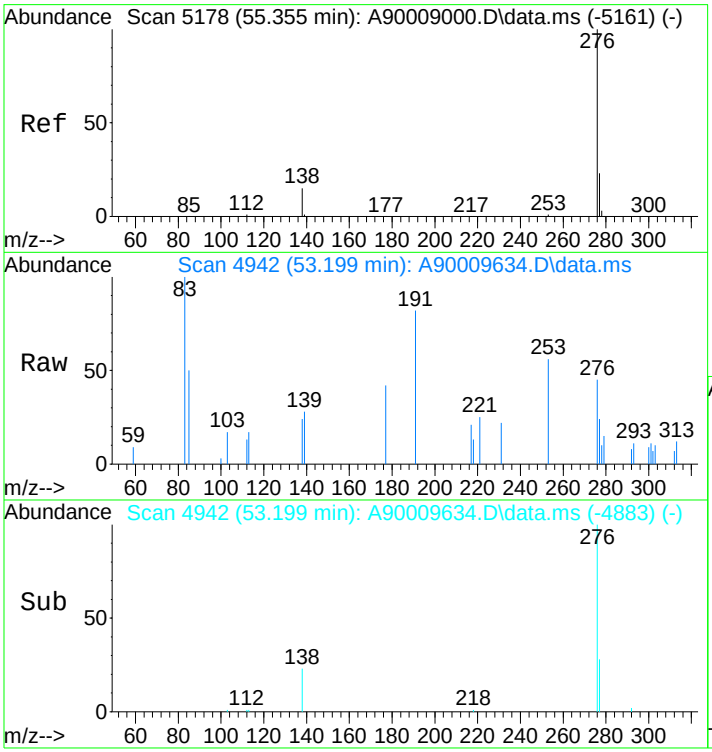


#92
Dibenz[ah]+[ac]anthracene
Concen: 6.22 ng/mL m
RT: 52.039 min Scan# 4815
Delta R.T. 0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:278 Resp: 2801

Ion	Ratio	Lower	Upper
278	100		
139	0.0	13.8	20.8#
279	0.0	20.3	30.5#

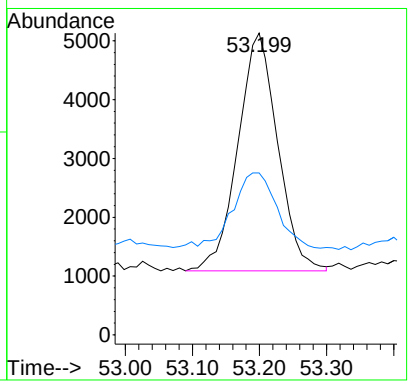


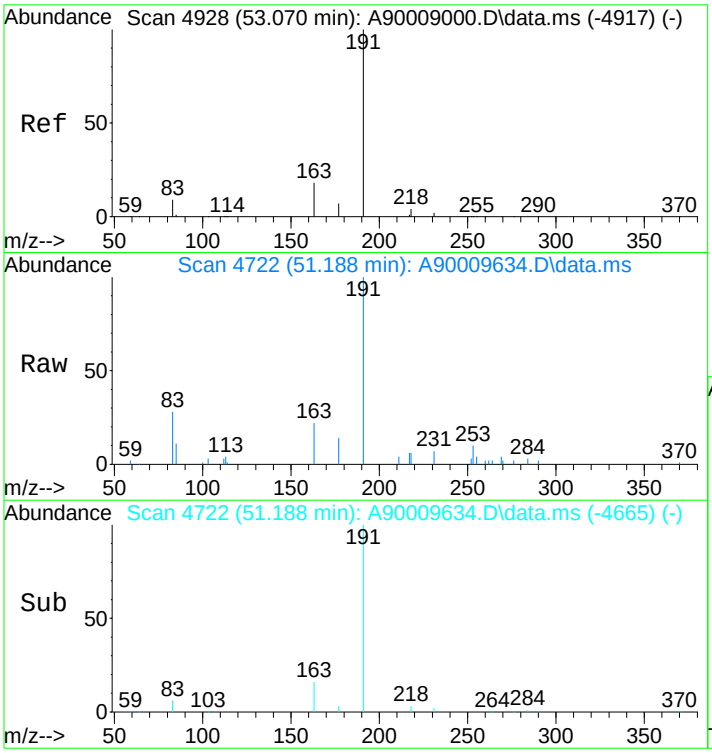


#93
Benzo[g,h,i]perylene
Concen: 37.20 ng/mL
RT: 53.199 min Scan# 4942
Delta R.T. 0.037 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:276 Resp: 16701

Ion	Ratio	Lower	Upper
276	100		
277	37.0	21.4	32.0#

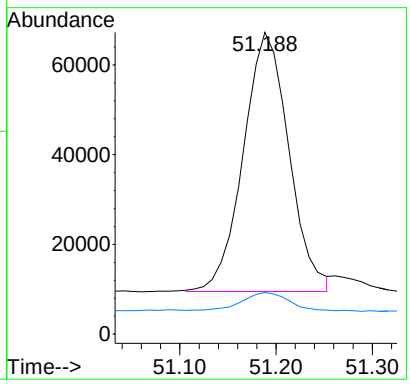


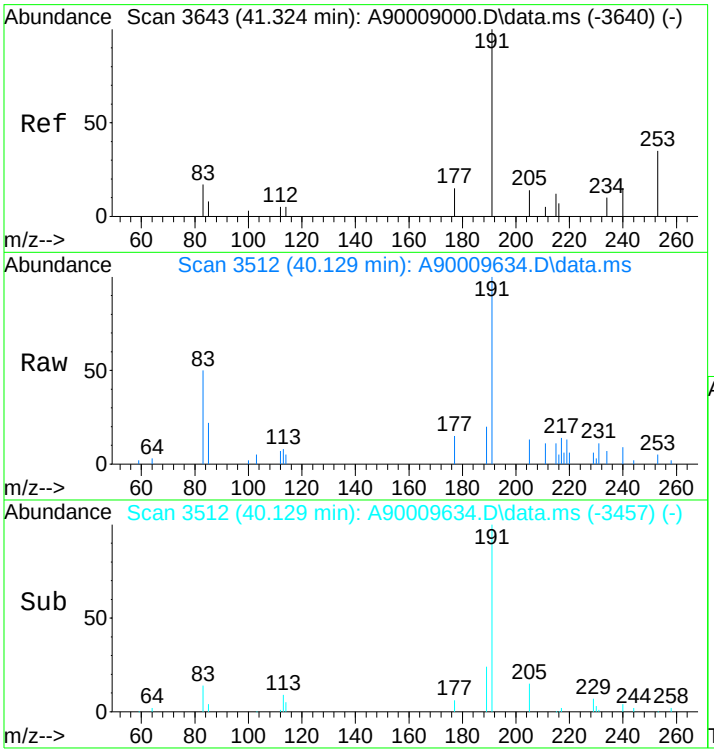


#94
Hopane (T19)
Concen: 1122.54 ng/mL m
RT: 51.188 min Scan# 4722
Delta R.T. 0.018 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:191 Resp: 190366

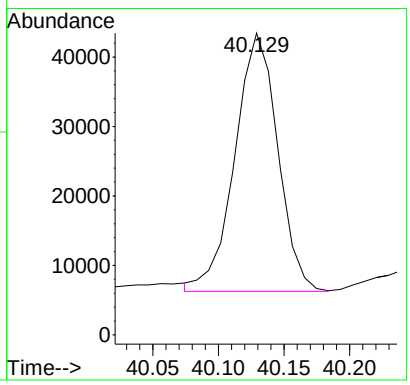
Ion	Ratio	Lower	Upper
191	100		
177	7.8	21.1	31.7#

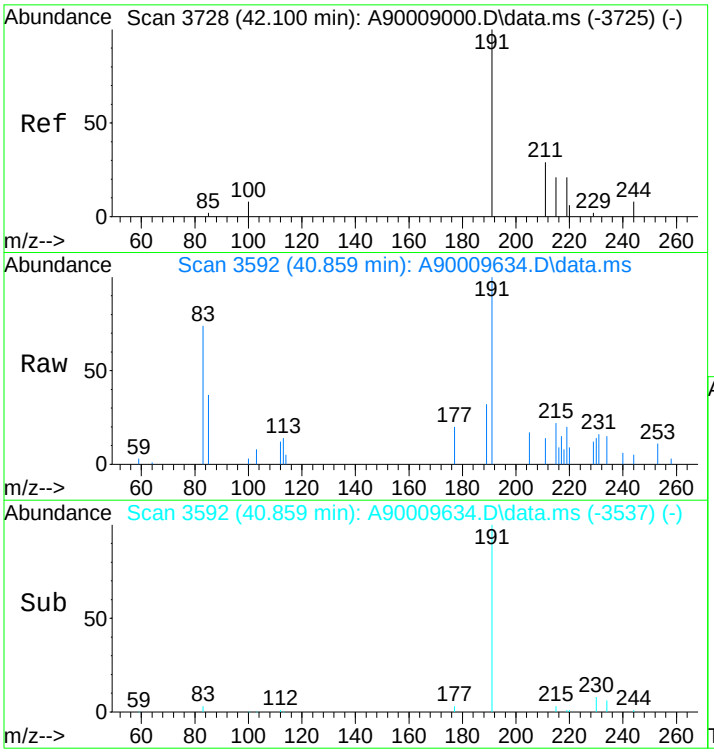




#96
C23 Tricyclic Terpane (T4)
Concen: 497.73 ng/ml m
RT: 40.129 min Scan# 3512
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

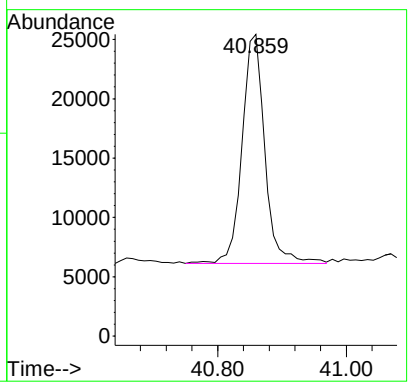
Tgt Ion:191 Resp: 84408

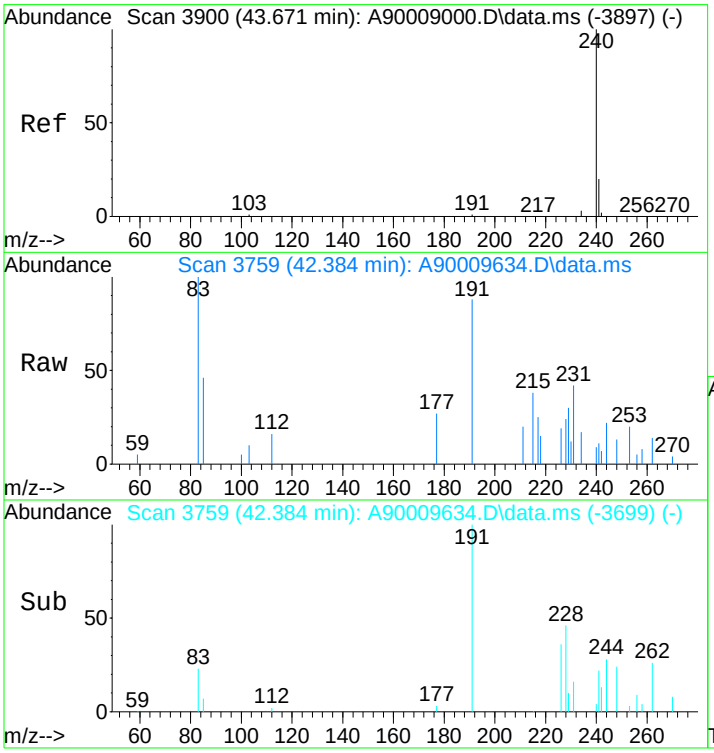




#97
C24 Tricyclic Terpane (T5)
Concen: 279.71 ng/ml
RT: 40.859 min Scan# 3592
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

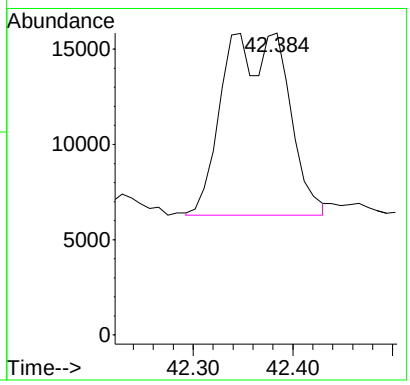
Tgt Ion:191 Resp: 47434

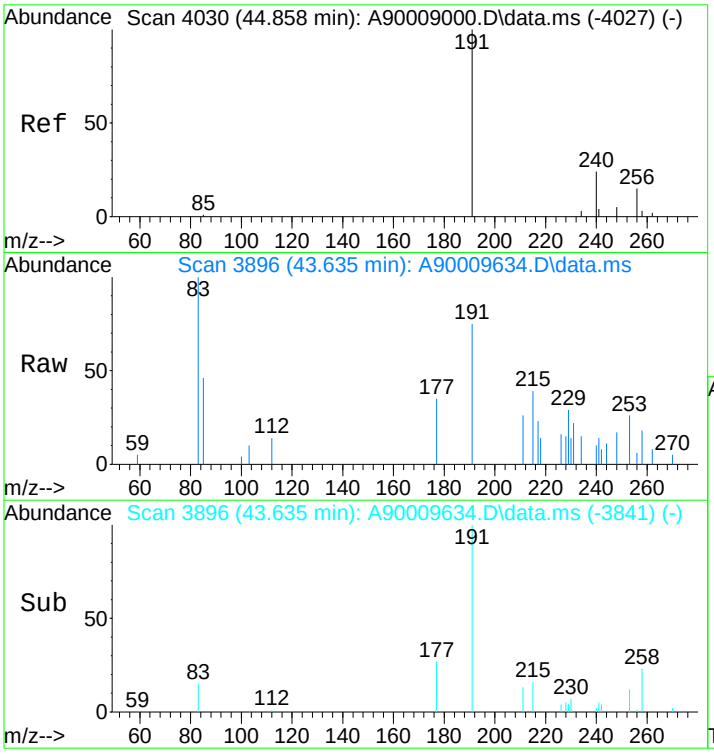




#98
C25 Tricyclic Terpane (T6)
Concen: 255.12 ng/ml m
RT: 42.384 min Scan# 3759
Delta R.T. 0.046 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

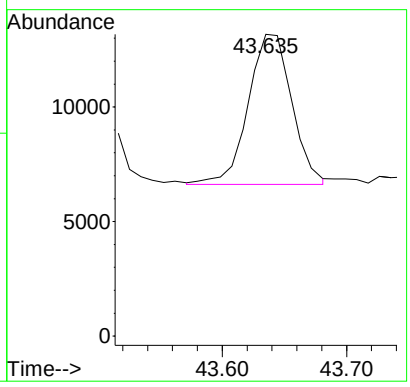
Tgt Ion:191 Resp: 43264

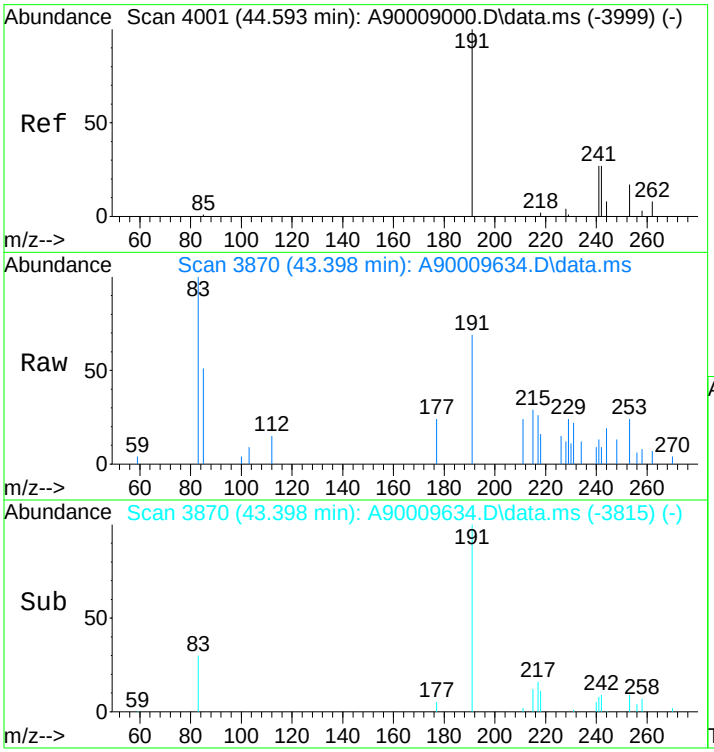




#99
C24 Tetracyclic Terpane (T6a)
Concen: 93.96 ng/ml m
RT: 43.635 min Scan# 3896
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

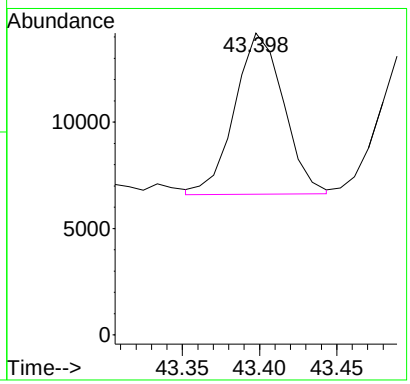
Tgt Ion:191 Resp: 15935

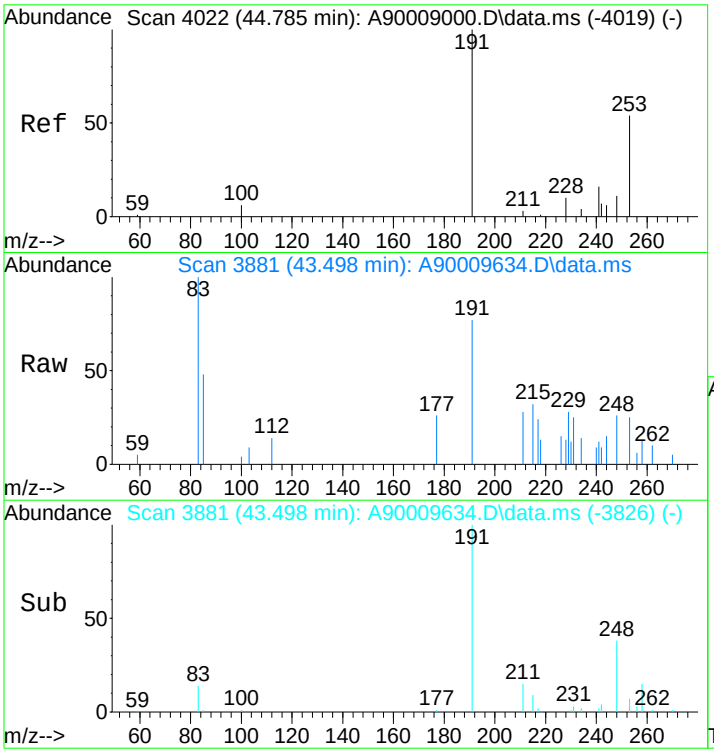




#100
C26 Tricyclic Terpane-22S (T6b)
Concen: 98.33 ng/ml
RT: 43.398 min Scan# 3870
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

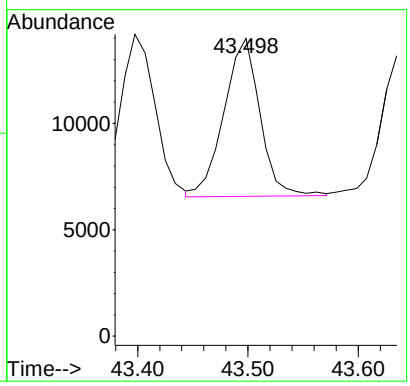
Tgt Ion:191 Resp: 16676

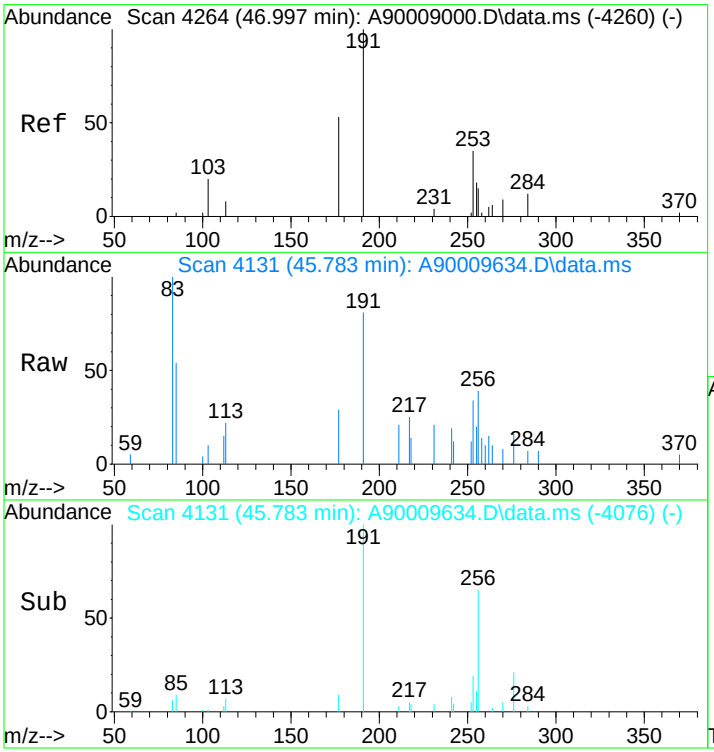




#101
C26 Tricyclic Terpane-22R (T6c)
Concen: 99.55 ng/ml
RT: 43.498 min Scan# 3881
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

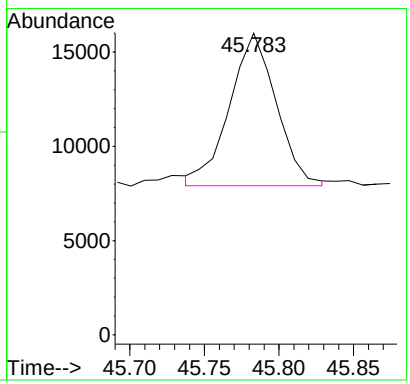
Tgt Ion:191 Resp: 16882

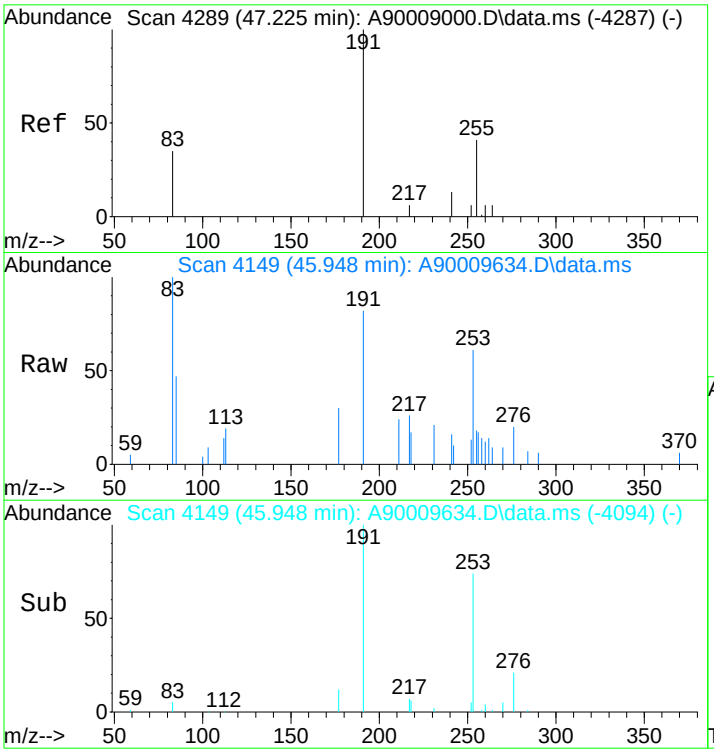




#102
C28 Tricyclic Terpane-22S (T7)
Concen: 103.67 ng/ml m
RT: 45.783 min Scan# 4131
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

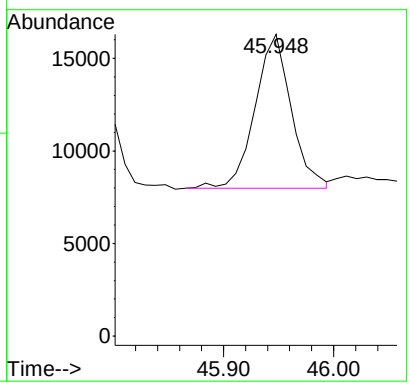
Tgt Ion:191 Resp: 17581

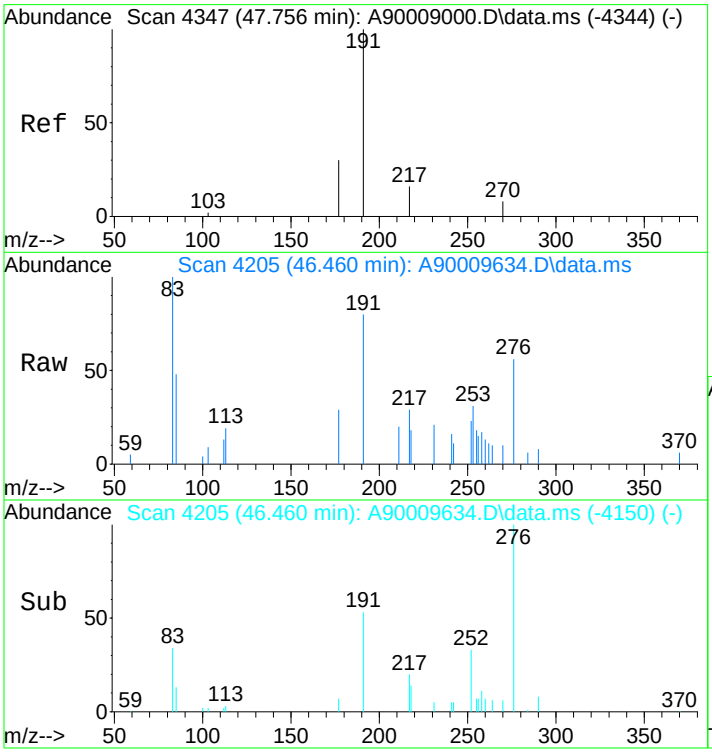




#103
C28 Tricyclic Terpane-22R (T8)
Concen: 111.89 ng/ml
RT: 45.948 min Scan# 4149
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

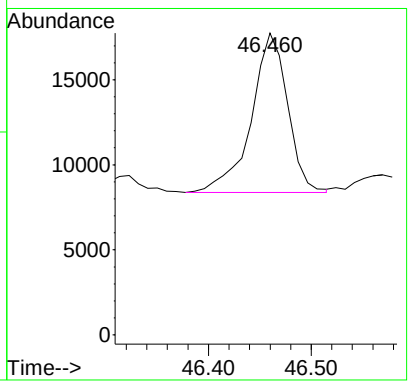
Tgt Ion:191 Resp: 18975

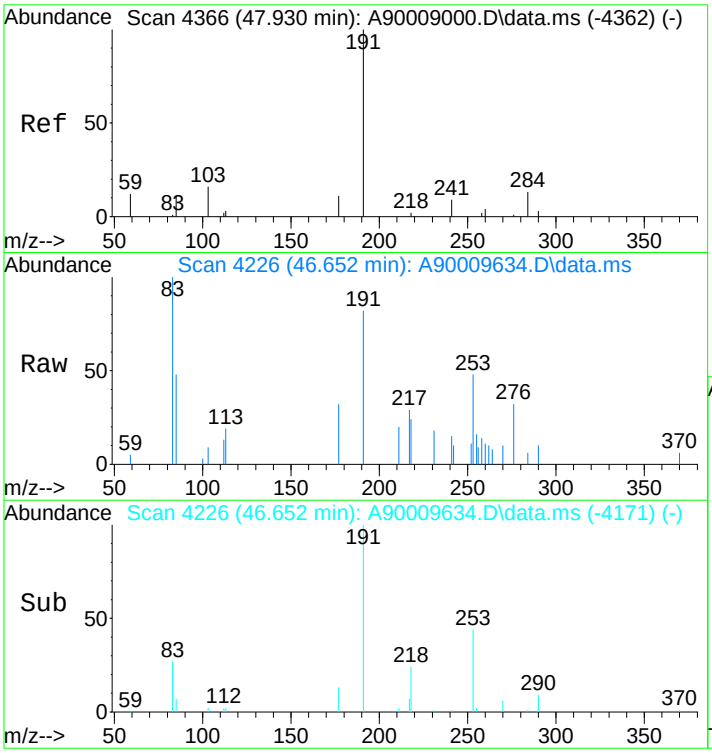




#104
C29 Tricyclic Terpane-22S (T9)
Concen: 135.77 ng/ml
RT: 46.460 min Scan# 4205
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

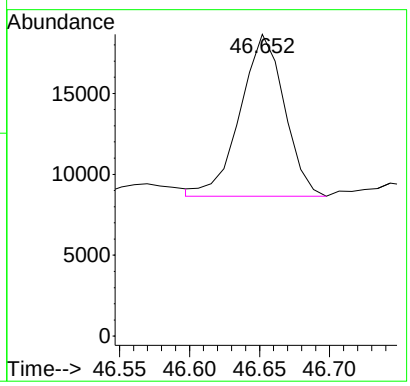
Tgt Ion:191 Resp: 23024

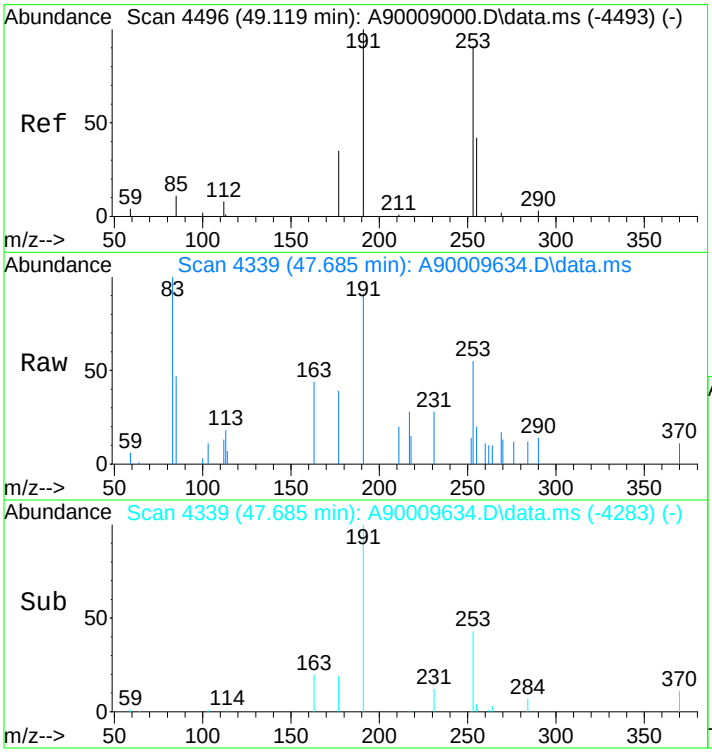




#105
C29 Tricyclic Terpane-22R (T10)
Concen: 129.66 ng/ml
RT: 46.652 min Scan# 4226
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

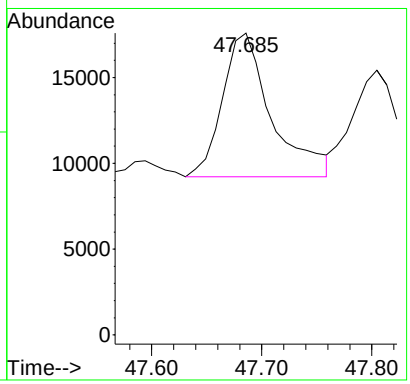
Tgt Ion:191 Resp: 21989

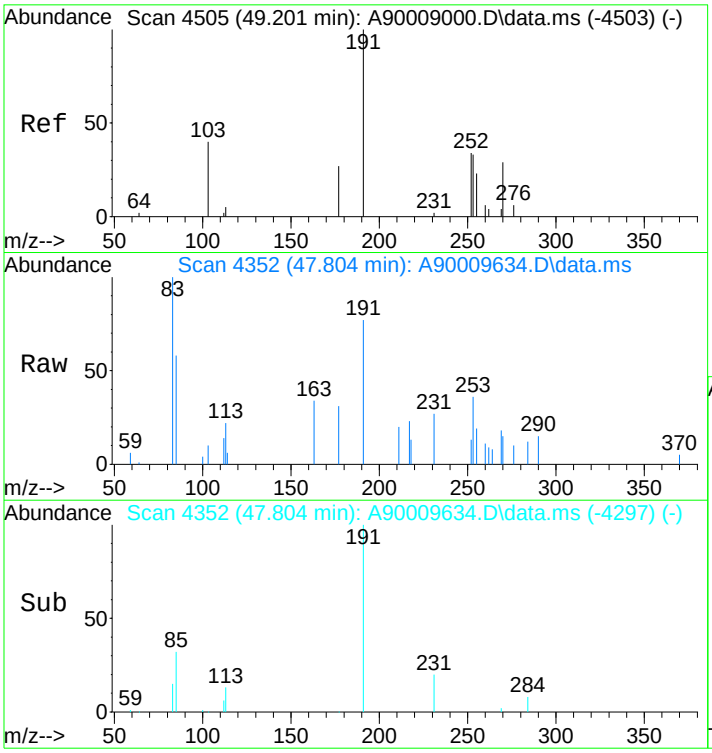




#106
18a-22,29,30-Trisnorneohopane-TS (T11)
Concen: 152.85 ng/ml
RT: 47.685 min Scan# 4339
Delta R.T. 0.009 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

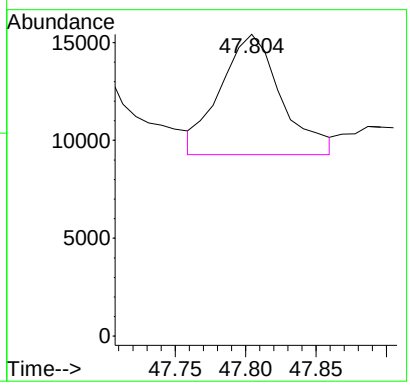
Tgt Ion:191 Resp: 25921

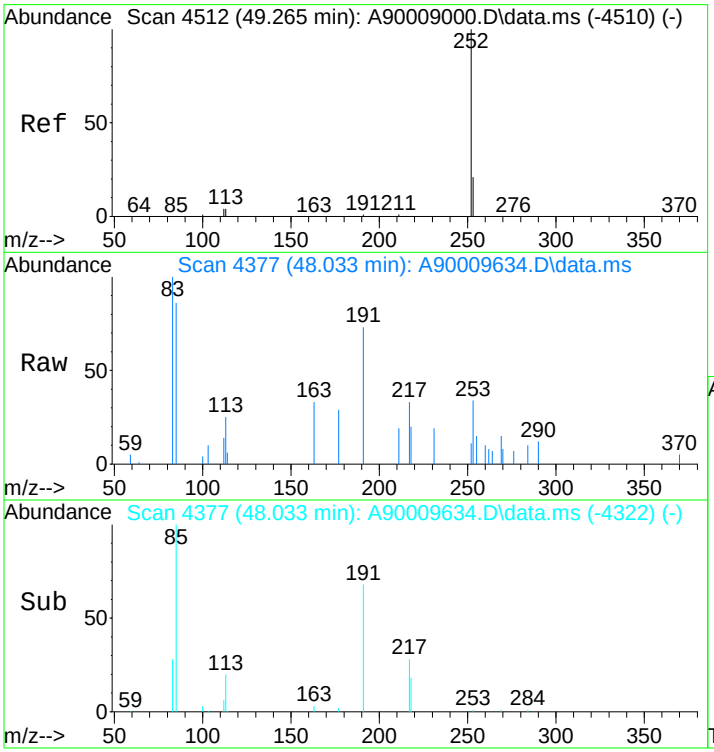




#107
C30 Tricyclic Terpane-22S
Concen: 108.56 ng/mL m
RT: 47.804 min Scan# 4352
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

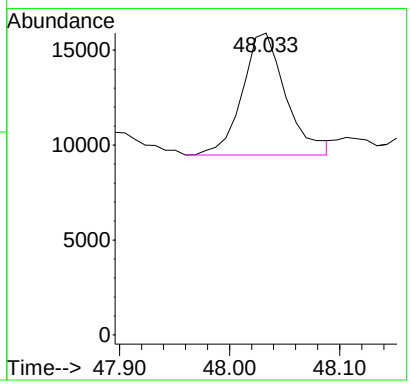
Tgt Ion:191 Resp: 18411

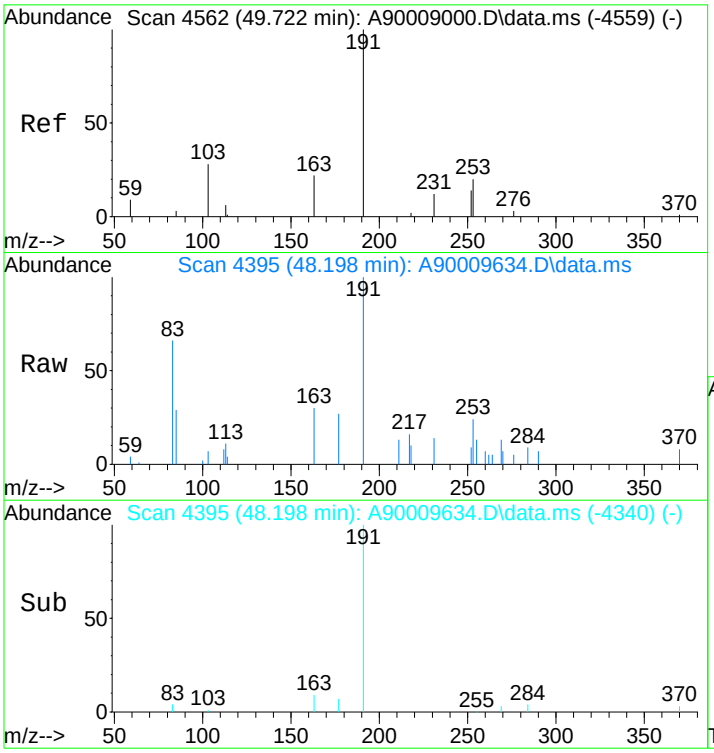




#108
C30 Tricyclic Terpane-22R
Concen: 104.67 ng/mL
RT: 48.033 min Scan# 4377
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

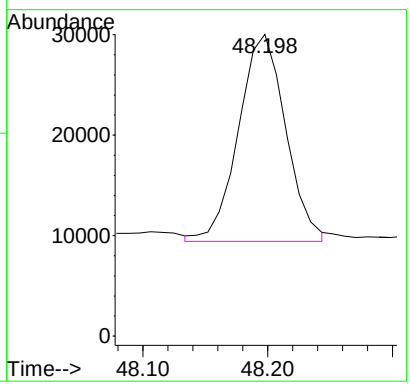
Tgt Ion:191 Resp: 17750

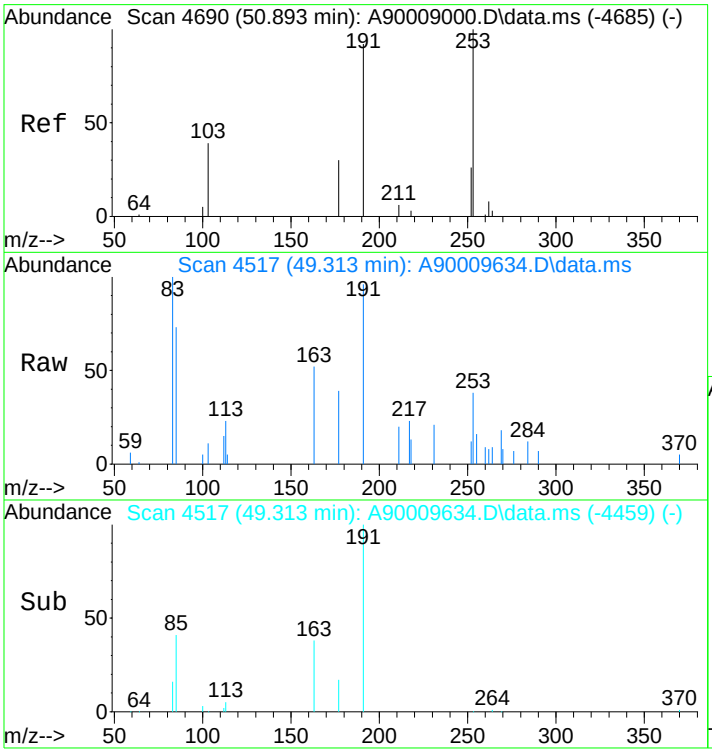




#109
17a(H)-22,29,30-Trisnorhopane-TM (T12)
Concen: 317.93 ng/ml m
RT: 48.198 min Scan# 4395
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

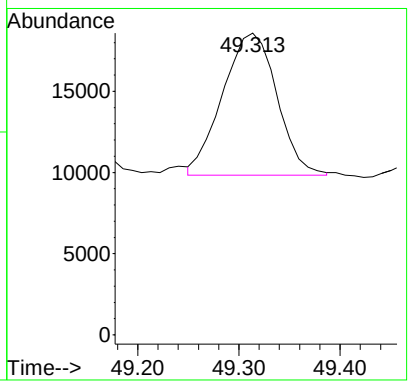
Tgt Ion:191 Resp: 53916

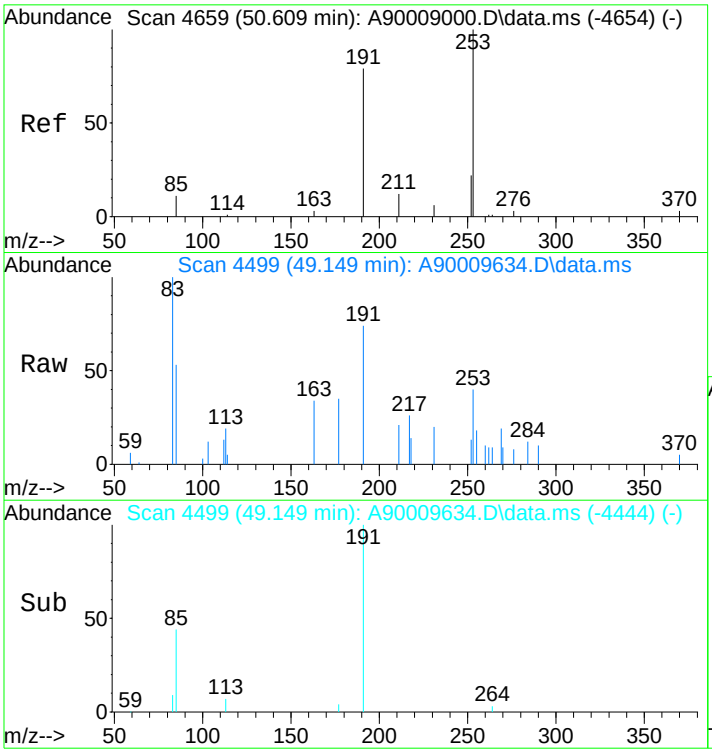




#110
17a/b,21b/a 28,30-Bisnorhopane (T14a)
Concen: 192.22 ng/ml m
RT: 49.313 min Scan# 4517
Delta R.T. 0.027 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

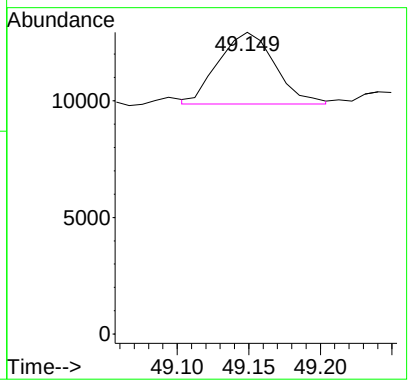
Tgt Ion:191 Resp: 32598

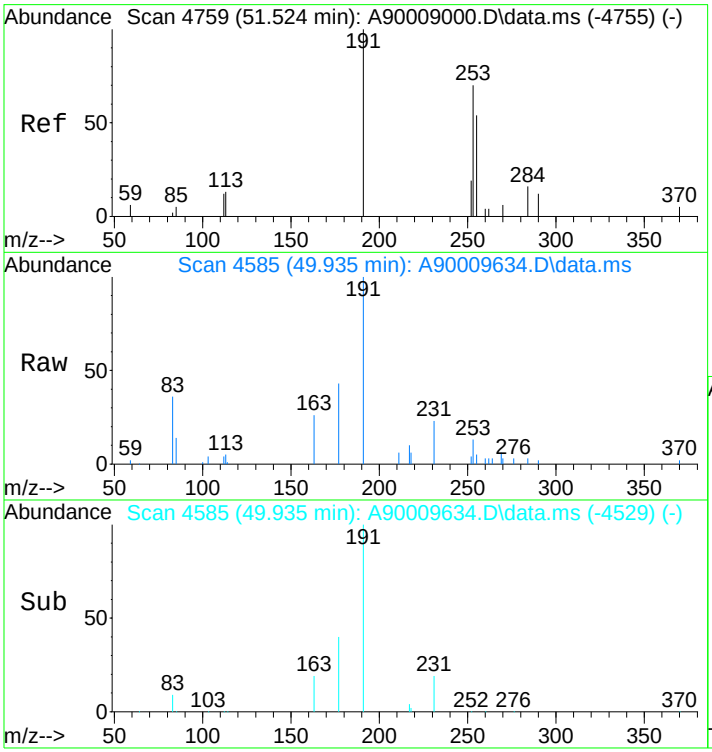




#111
17a(H),21b(H)-25-Norhopane (T14b)
Concen: 49.60 ng/ml m
RT: 49.149 min Scan# 4499
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

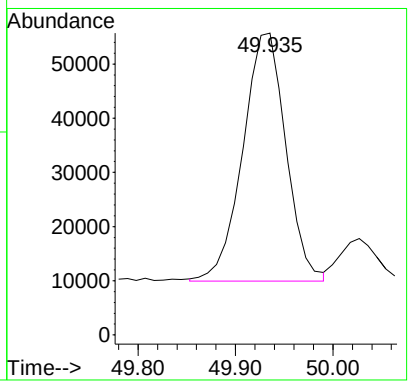
Tgt Ion:191 Resp: 8412

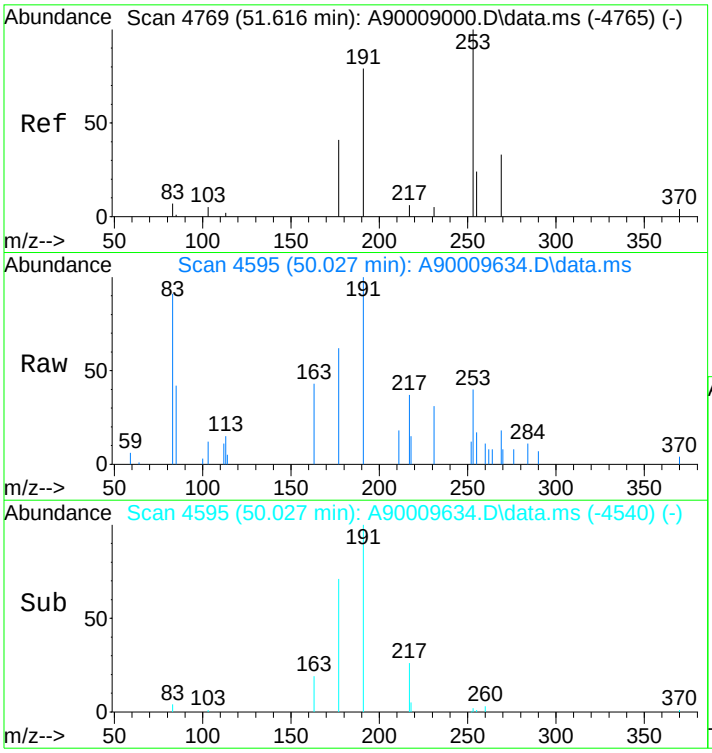




#112
30-Norhopane (T15)
Concen: 829.67 ng/ml m
RT: 49.935 min Scan# 4585
Delta R.T. 0.009 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

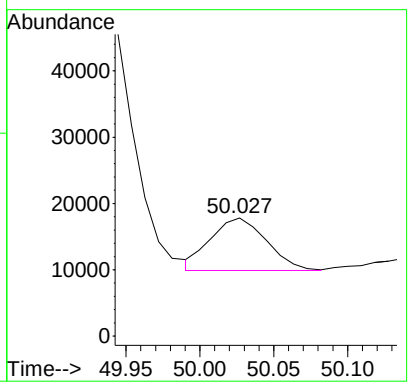
Tgt Ion:191 Resp: 140700

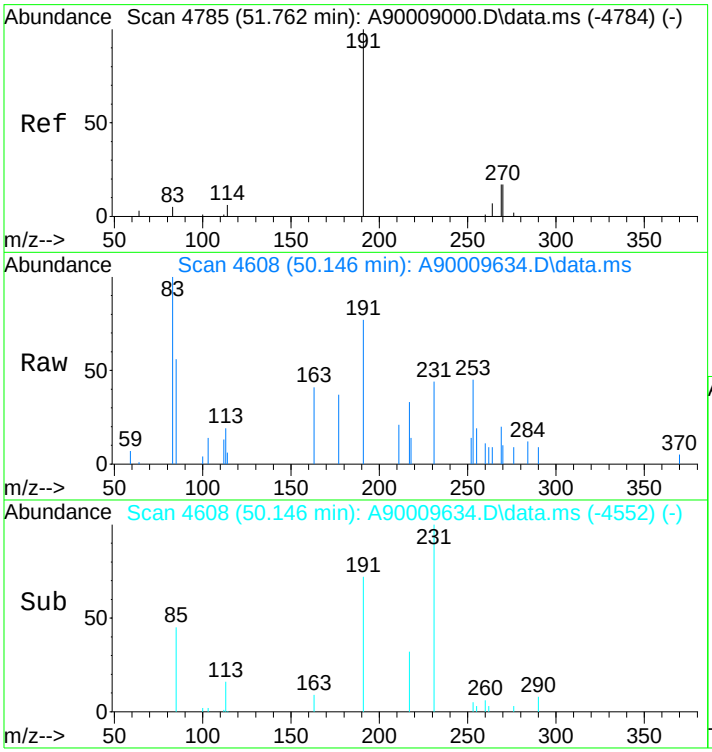




#113
18a(H)-30-Norneohopane-C29Ts (T16)
Concen: 122.65 ng/ml m
RT: 50.027 min Scan# 4595
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

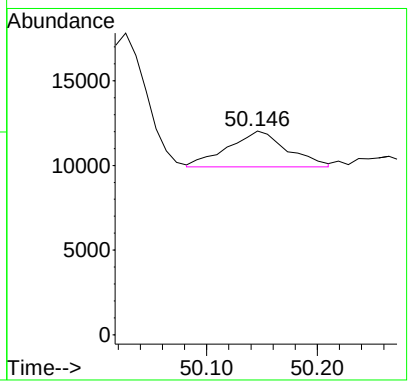
Tgt Ion:191 Resp: 20800

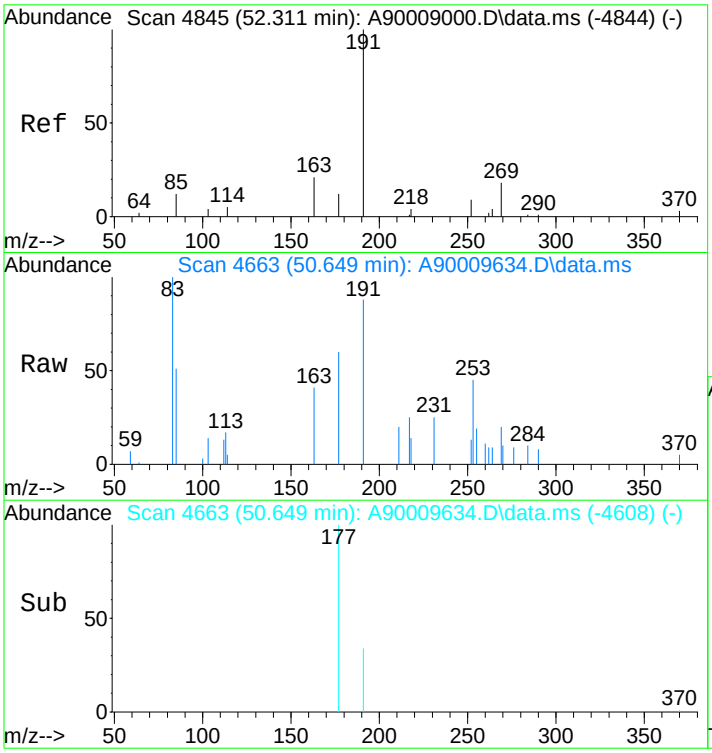




#114
17a(H)-Diahopane (X)
Concen: 46.36 ng/ml m
RT: 50.146 min Scan# 4608
Delta R.T. 0.009 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

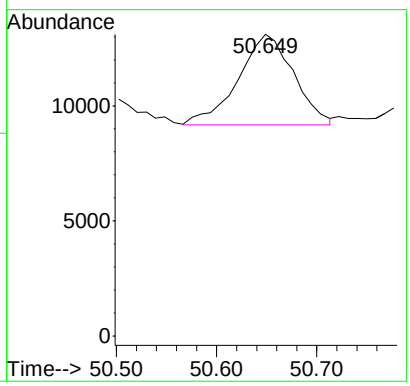
Tgt Ion:191 Resp: 7862

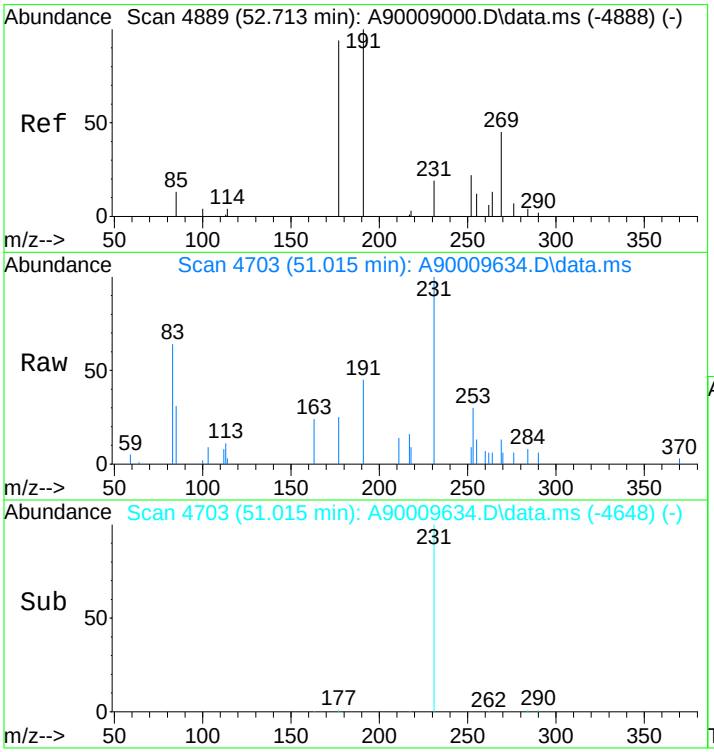




#115
30-Normoretane (T17)
Concen: 88.75 ng/ml m
RT: 50.649 min Scan# 4663
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

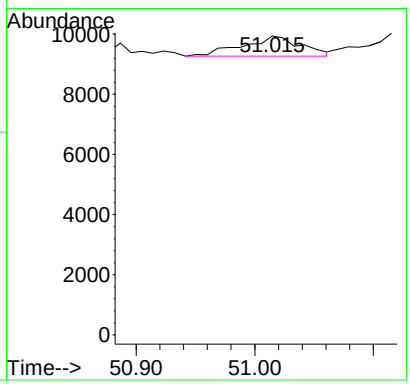
Tgt Ion:191 Resp: 15051

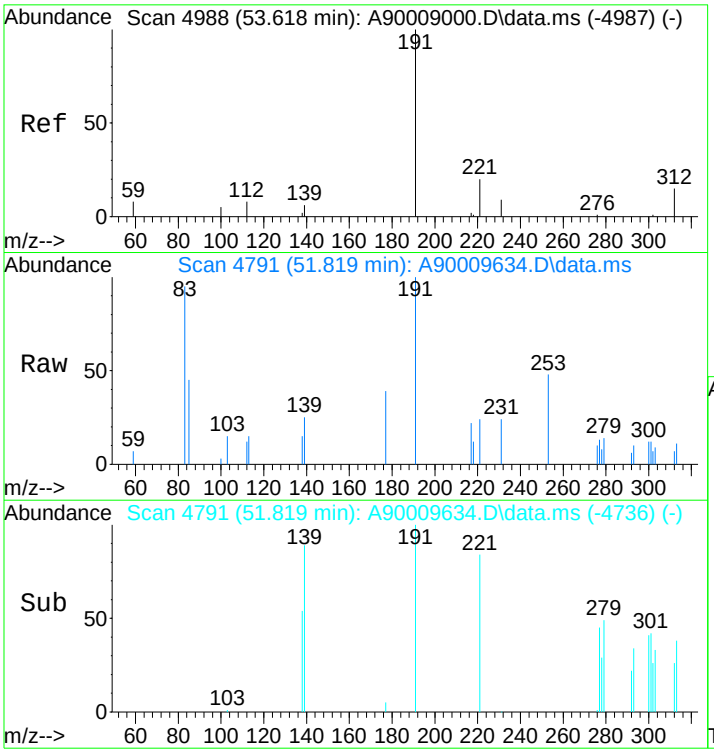




#116
18a(H)&18b(H)-Oleananes (T18)
Concen: 13.24 ng/ml
RT: 51.015 min Scan# 4703
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

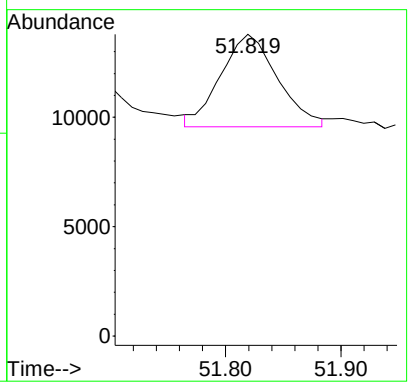
Tgt Ion:191 Resp: 2245

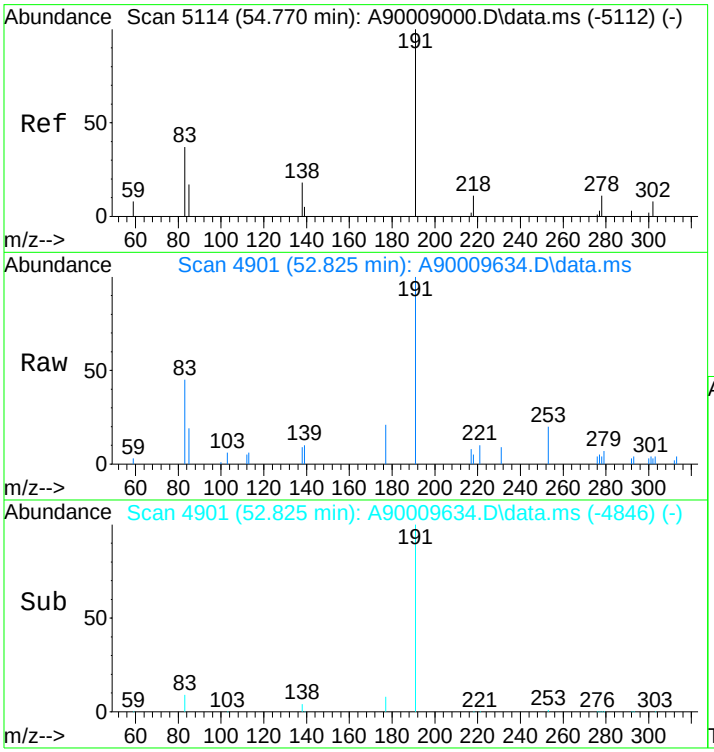




#117
Moretane (T20)
Concen: 84.82 ng/ml m
RT: 51.819 min Scan# 4791
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

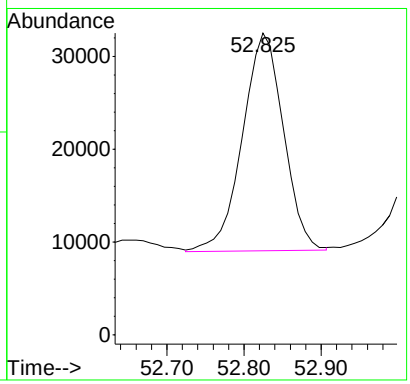
Tgt Ion:191 Resp: 14384

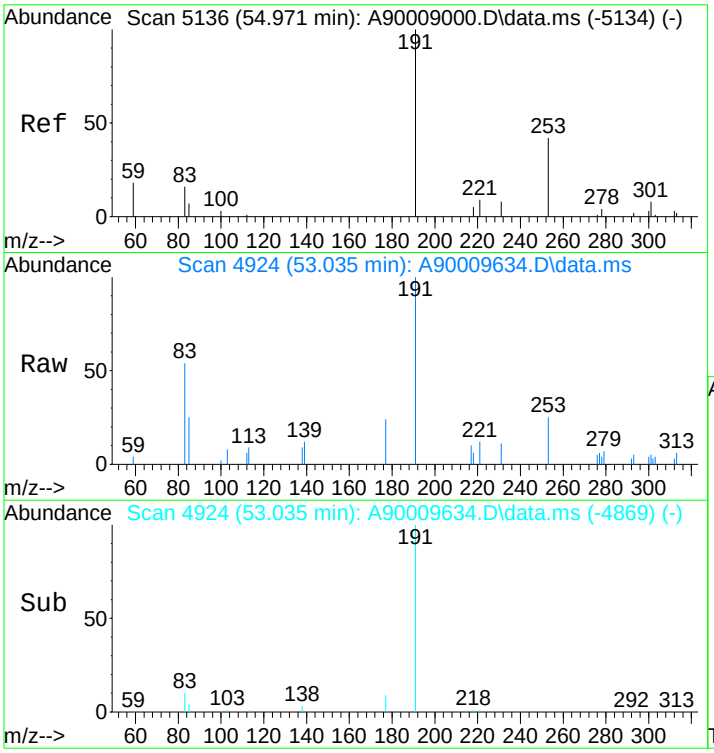




#118
30-Homohopane-22S (T21)
Concen: 510.99 ng/ml
RT: 52.825 min Scan# 4901
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

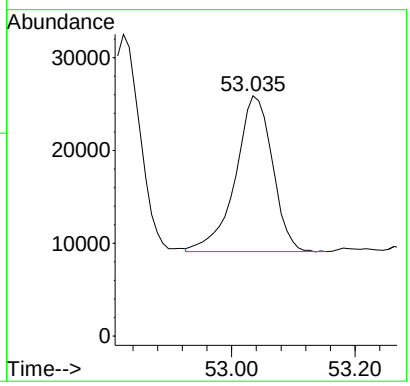
Tgt Ion:191 Resp: 86657

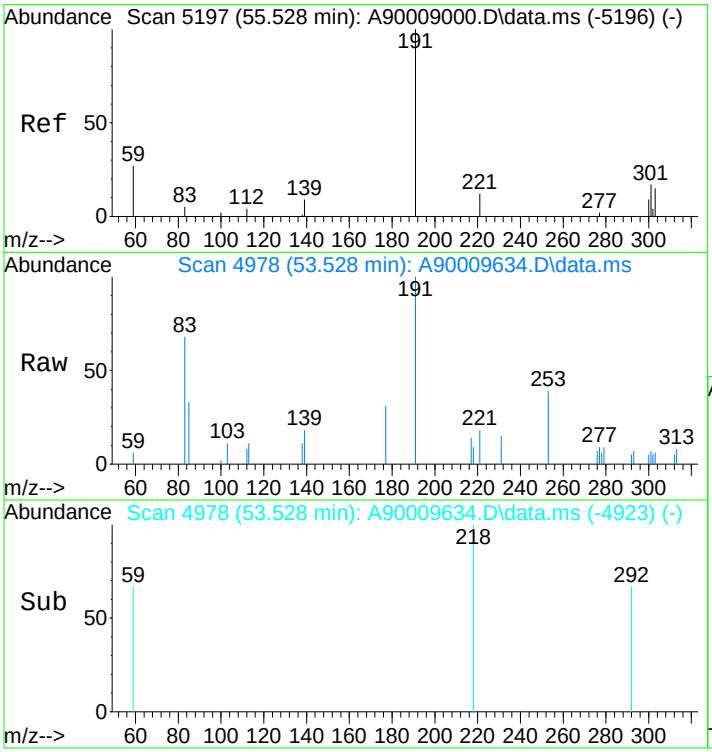




#119
30-Homohopane-22R (T22)
Concen: 412.27 ng/ml
RT: 53.035 min Scan# 4924
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

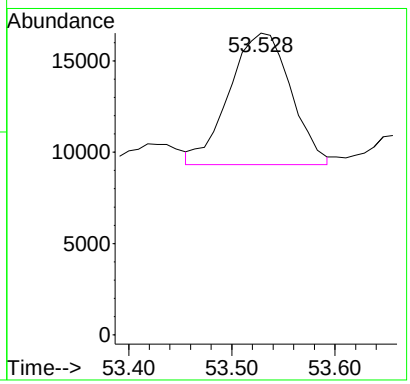
Tgt Ion:191 Resp: 69915

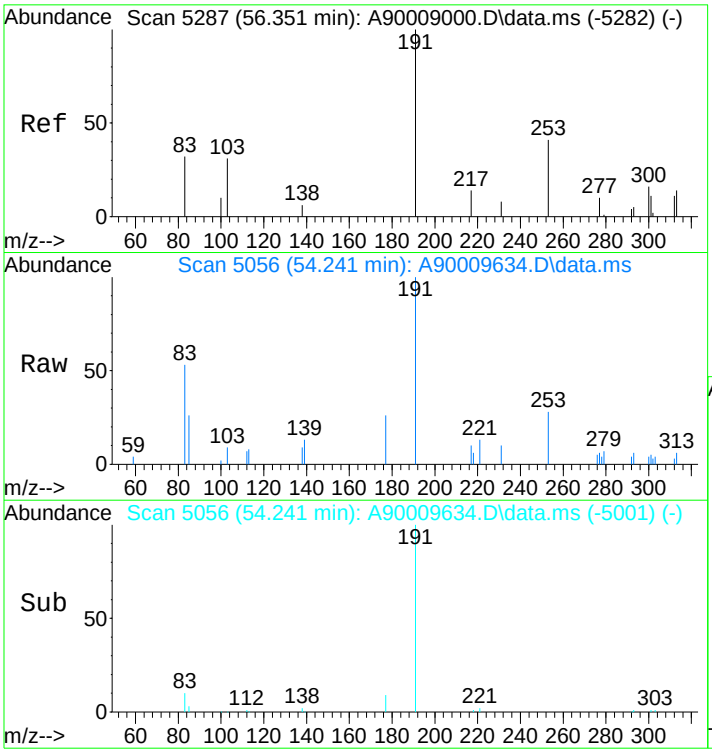




#120
Gammacerane/C32-diahopane
Concen: 176.36 ng/mL m
RT: 53.528 min Scan# 4978
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

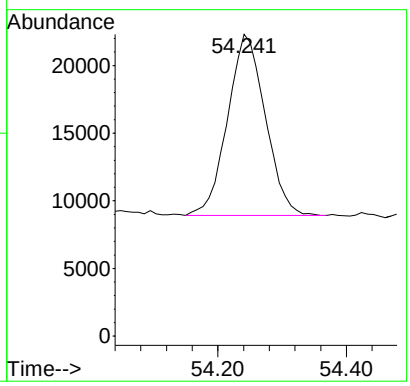
Tgt Ion:191 Resp: 29908

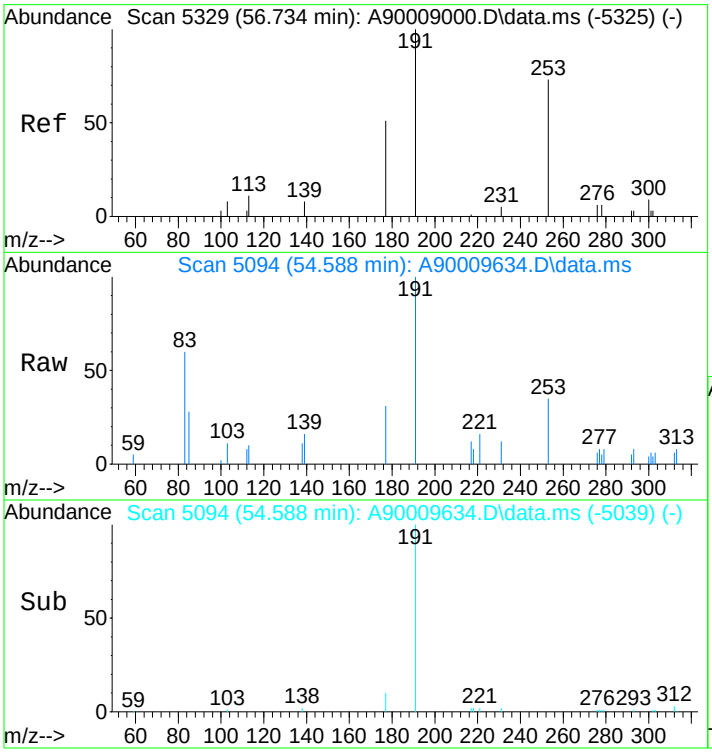




#121
30,31-Bishomohopane-22S (T26)
Concen: 322.34 ng/ml
RT: 54.241 min Scan# 5056
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

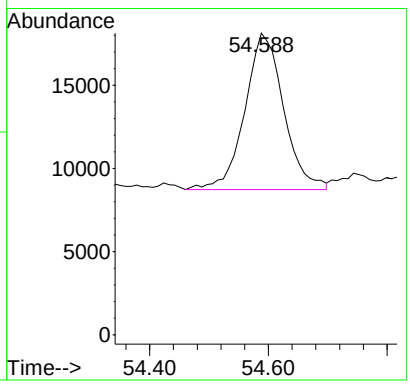
Tgt Ion:191 Resp: 54664

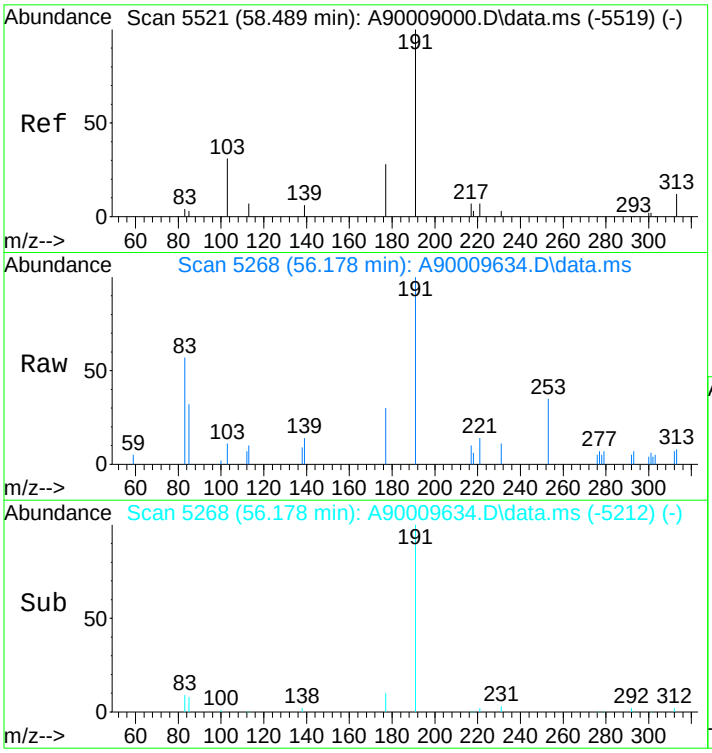




#122
30,31-Bishomohopane-22R (T27)
Concen: 250.41 ng/ml
RT: 54.588 min Scan# 5094
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

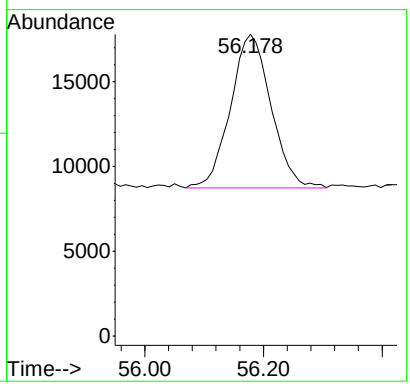
Tgt Ion:191 Resp: 42466

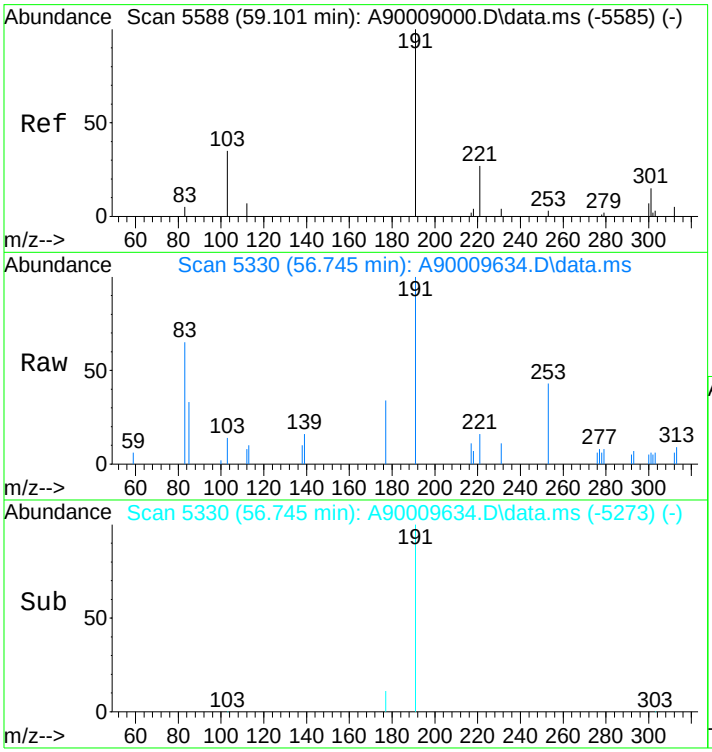




#123
30,31-Trishomohopane-22S (T30)
Concen: 251.80 ng/ml
RT: 56.178 min Scan# 5268
Delta R.T. 0.009 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

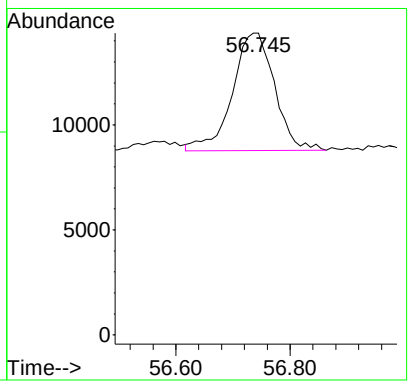
Tgt Ion:191 Resp: 42701

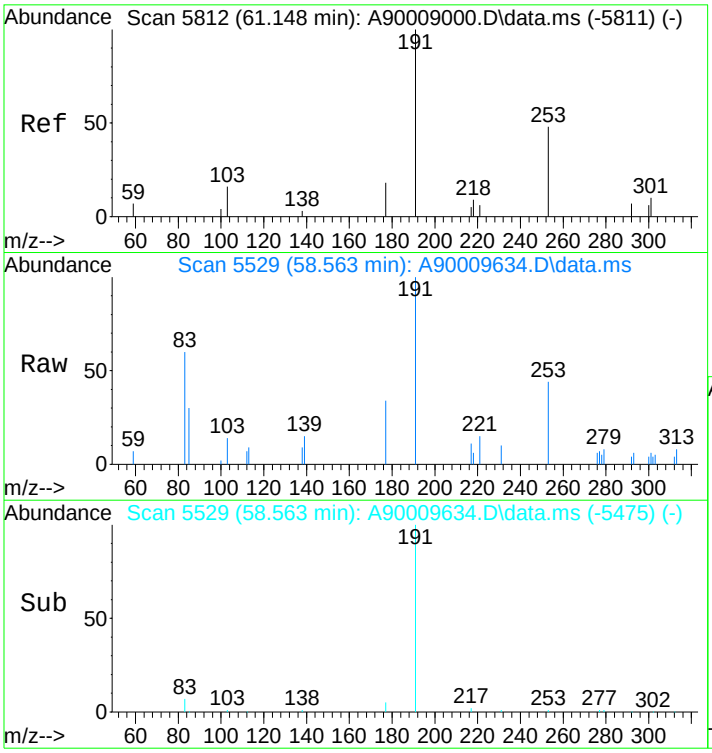




#124
30,31-Trishomohopane-22R (T31)
Concen: 168.99 ng/ml
RT: 56.745 min Scan# 5330
Delta R.T. 0.018 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

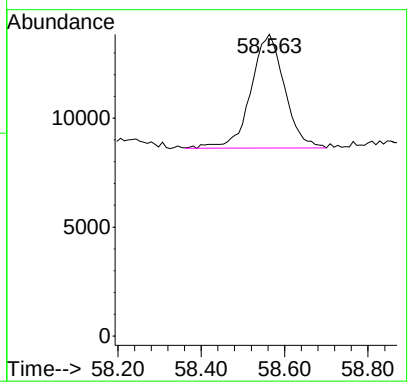
Tgt Ion:191 Resp: 28658

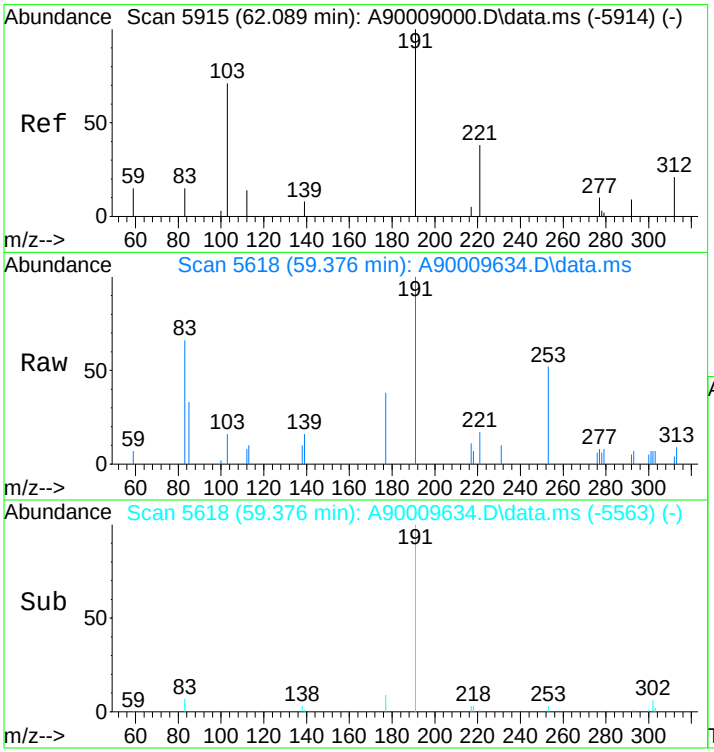




#125
Tetrakishomohopane-22S (T32)
Concen: 172.72 ng/ml
RT: 58.563 min Scan# 5529
Delta R.T. -0.009 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

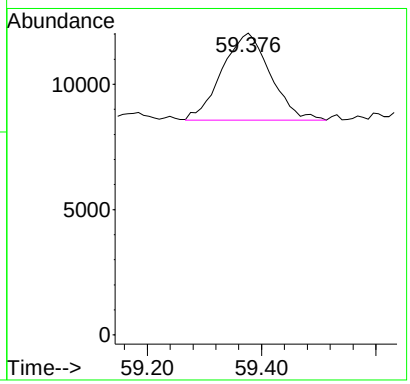
Tgt Ion:191 Resp: 29290

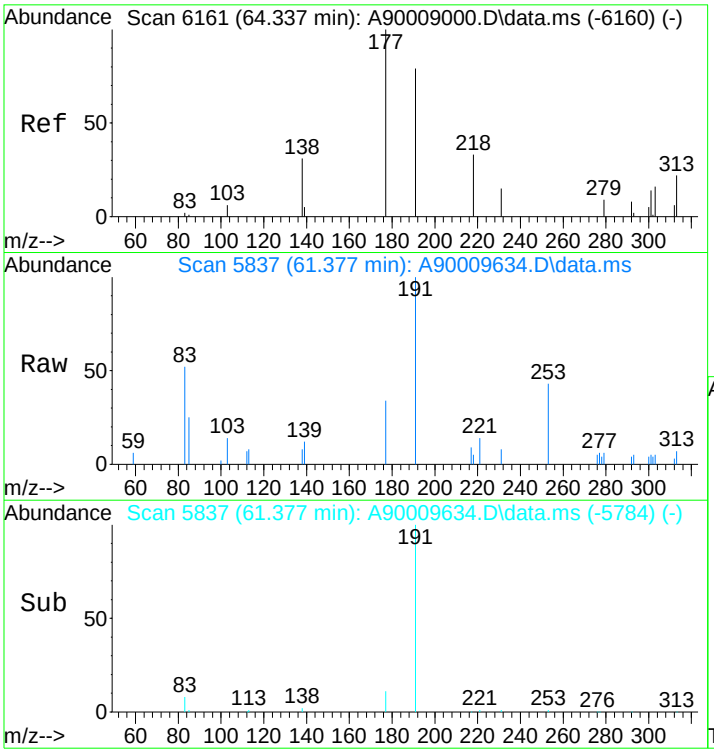




#126
Tetrakishomohopane-22R (T33)
Concen: 121.05 ng/ml
RT: 59.376 min Scan# 5618
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

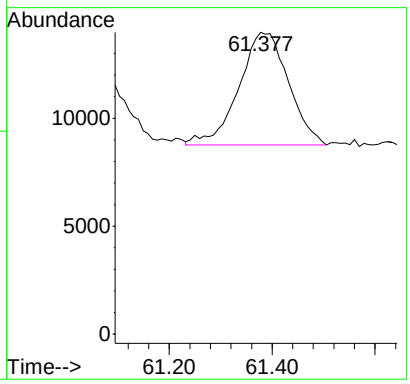
Tgt Ion:191 Resp: 20529

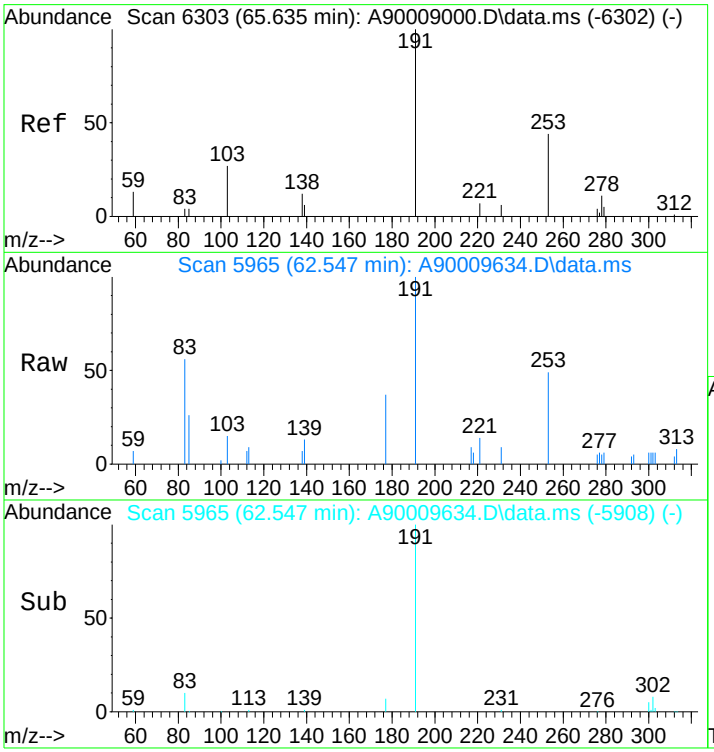




#127
Pentakishomohopane-22S (T34)
Concen: 206.33 ng/ml
RT: 61.377 min Scan# 5837
Delta R.T. -0.018 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

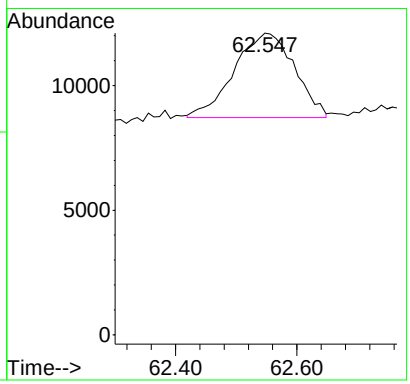
Tgt Ion:191 Resp: 34991

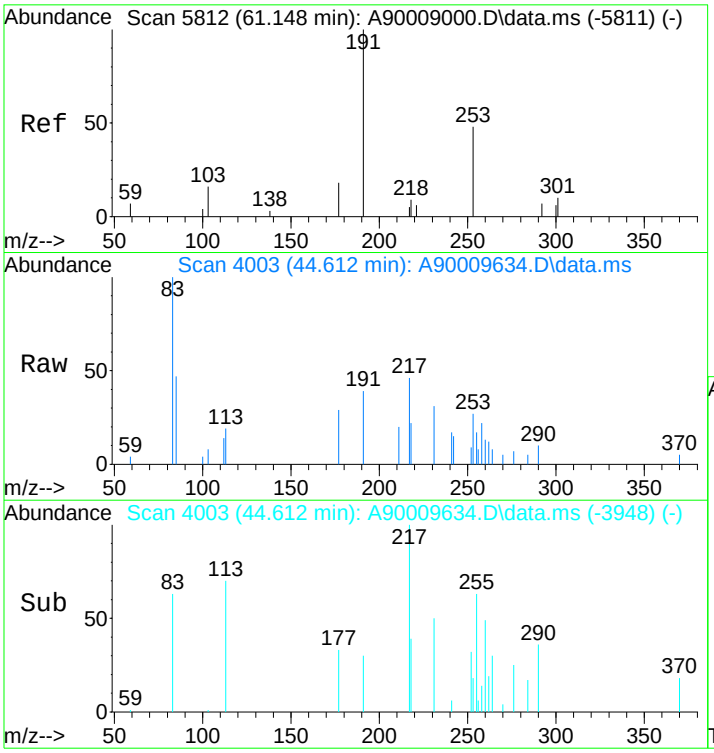




#128
Pentakishomohopane-22R (T35)
Concen: 138.03 ng/ml m
RT: 62.547 min Scan# 5965
Delta R.T. 0.018 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

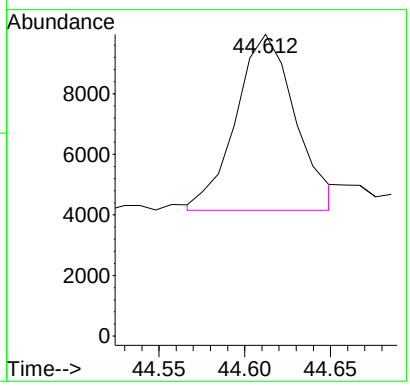
Tgt Ion:191 Resp: 23408

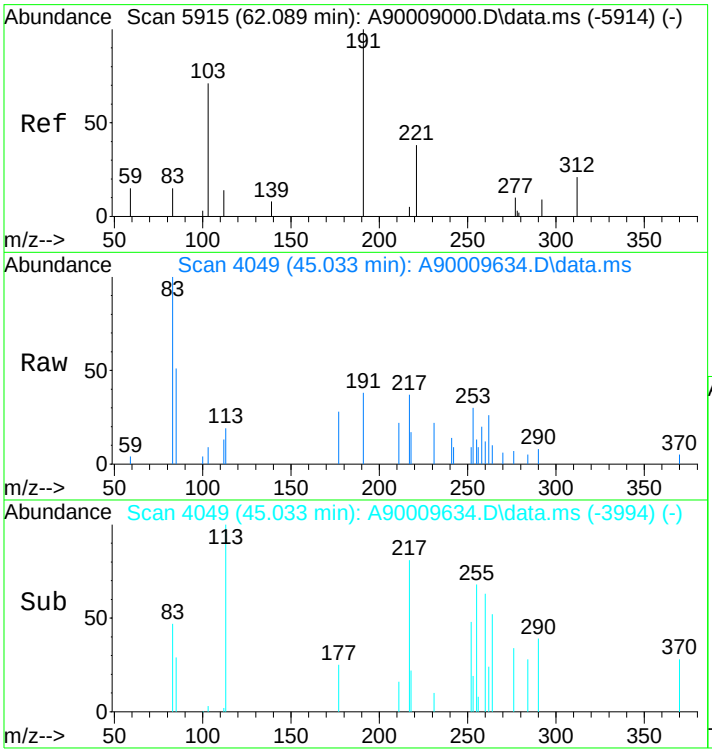




#130
13b(H),17a(H)-20S-Diacholestane (S4)
Concen: 172.43 ng/ml m
RT: 44.612 min Scan# 4003
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

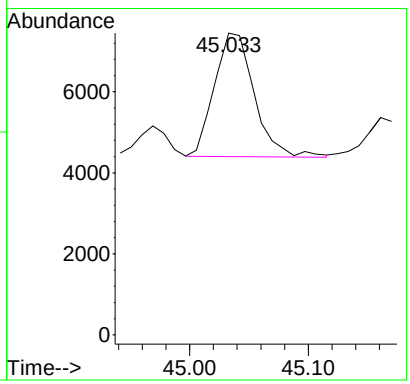
Tgt Ion:217 Resp: 13963

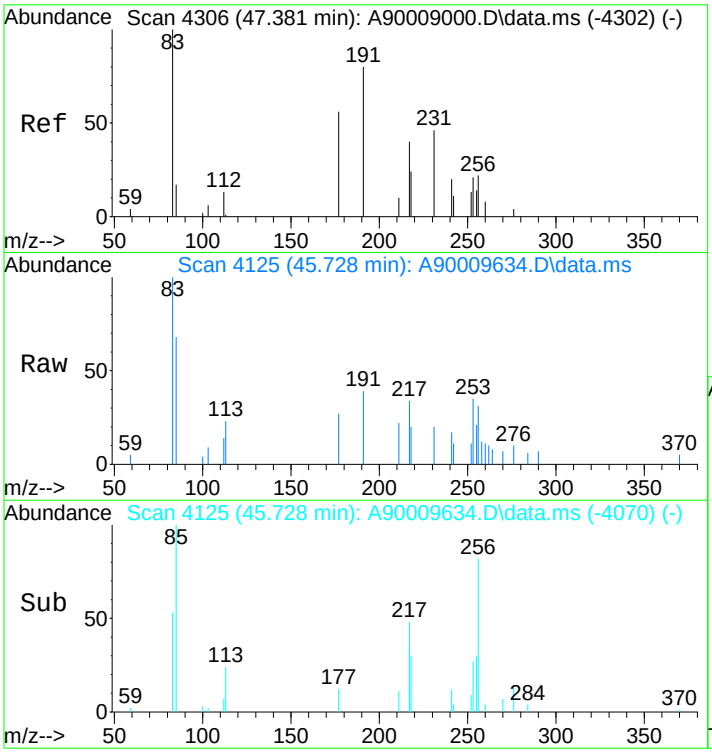




#131
13b(H),17a(H)-20R-Diacholestane (S5)
Concen: 88.27 ng/ml
RT: 45.033 min Scan# 4049
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

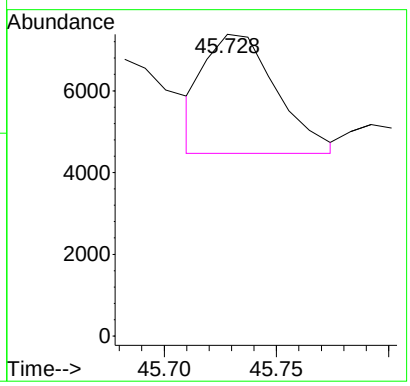
Tgt Ion:217 Resp: 7148

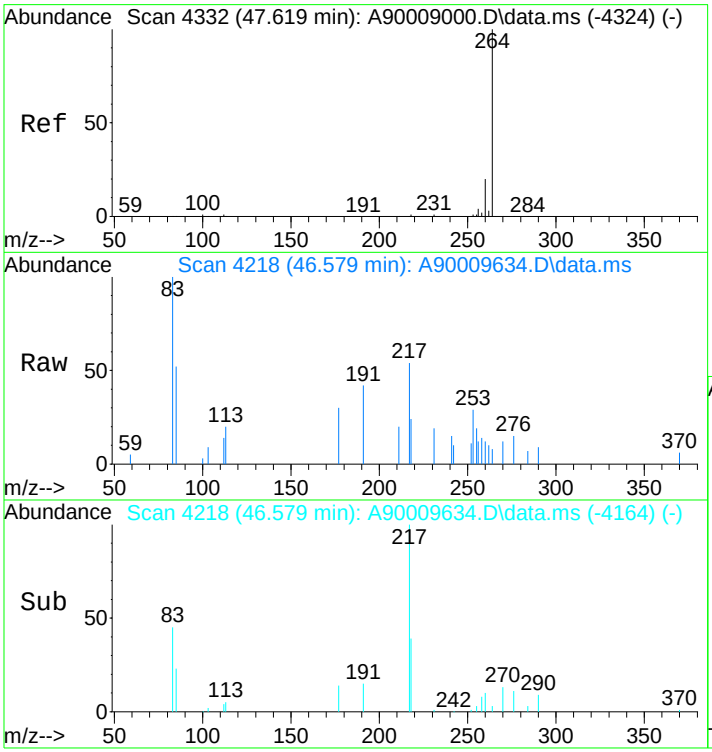




#132
13b,17a-20S-Methyldiacholestane (S8)
Concen: 80.12 ng/ml m
RT: 45.728 min Scan# 4125
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

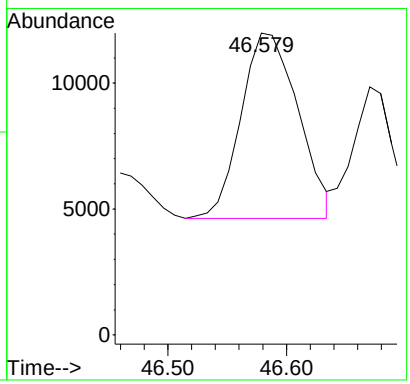
Tgt Ion:217 Resp: 6488

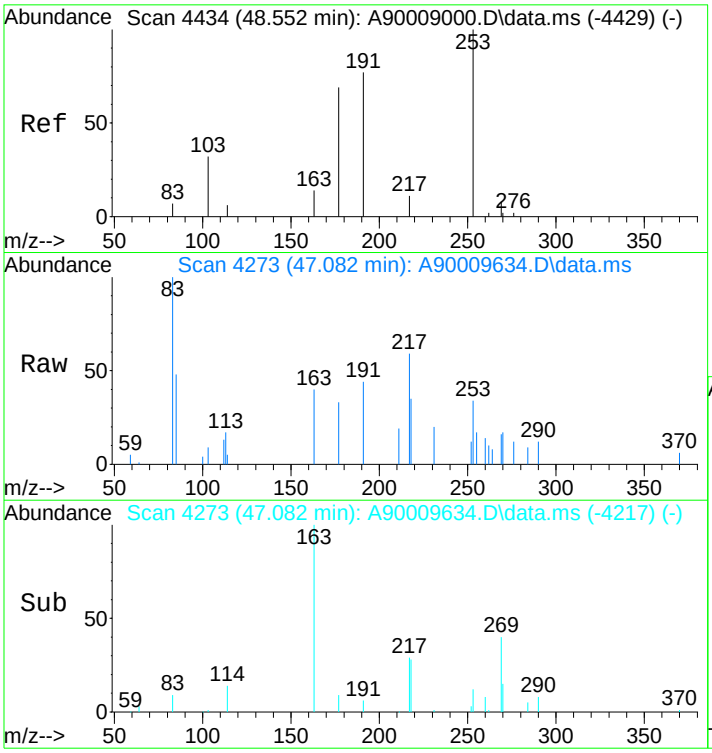




#133
14a,17a-20S-Chol/13b,17a-20S-Ethyldiach
Concen: 303.48 ng/ml
RT: 46.579 min Scan# 4218
Delta R.T. -0.009 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

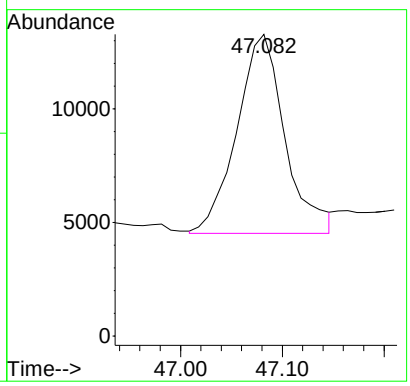
Tgt Ion:217 Resp: 24575

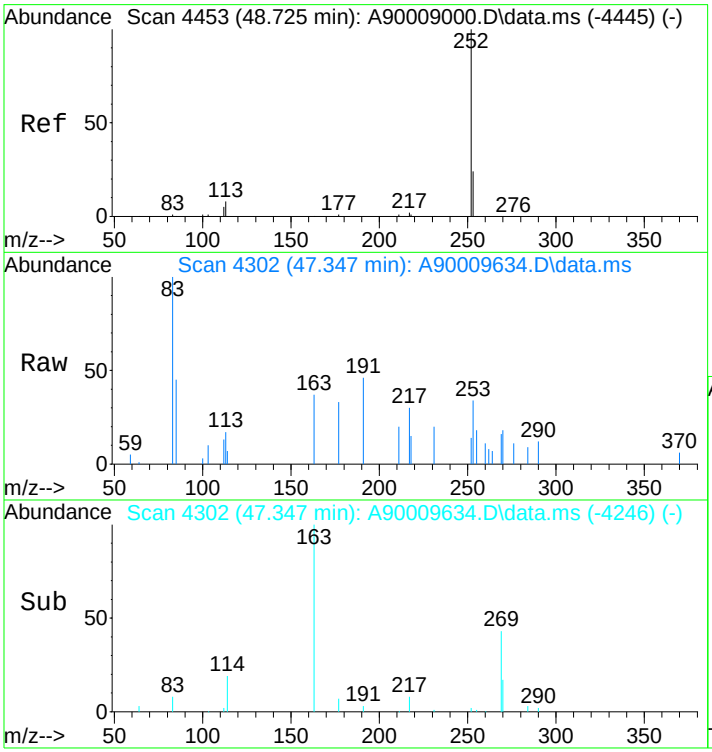




#134
14a,17a-20R-Chol/13b,17a-20R-Ethyldiach
Concen: 356.19 ng/ml m
RT: 47.082 min Scan# 4273
Delta R.T. 0.009 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

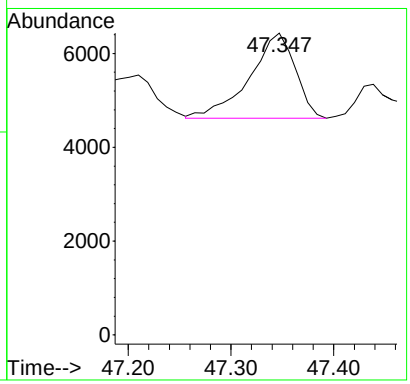
Tgt Ion:217 Resp: 28843

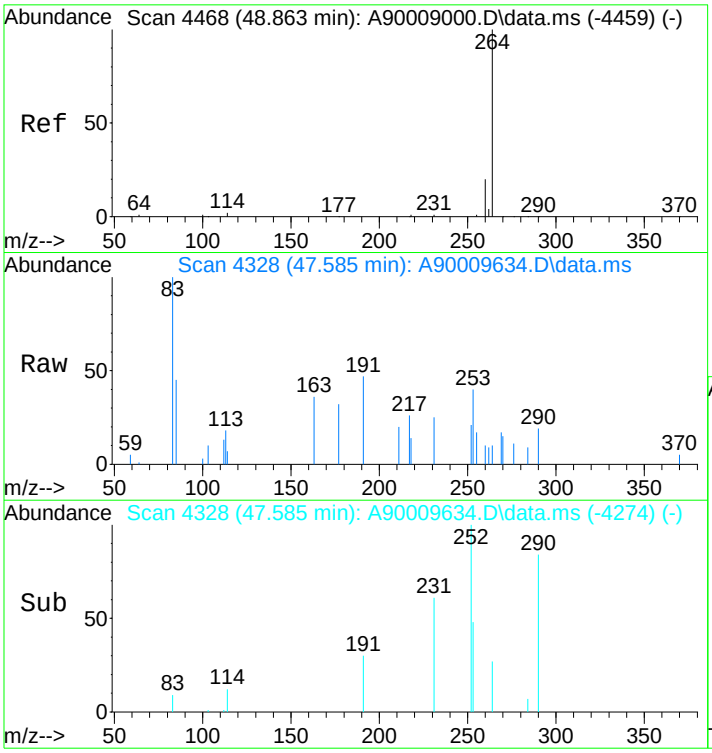




#135
Unknown Sterane (S18)
Concen: 69.51 ng/ml
RT: 47.347 min Scan# 4302
Delta R.T. 0.009 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

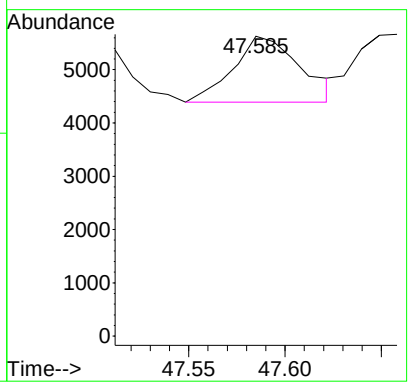
Tgt Ion:217 Resp: 5629

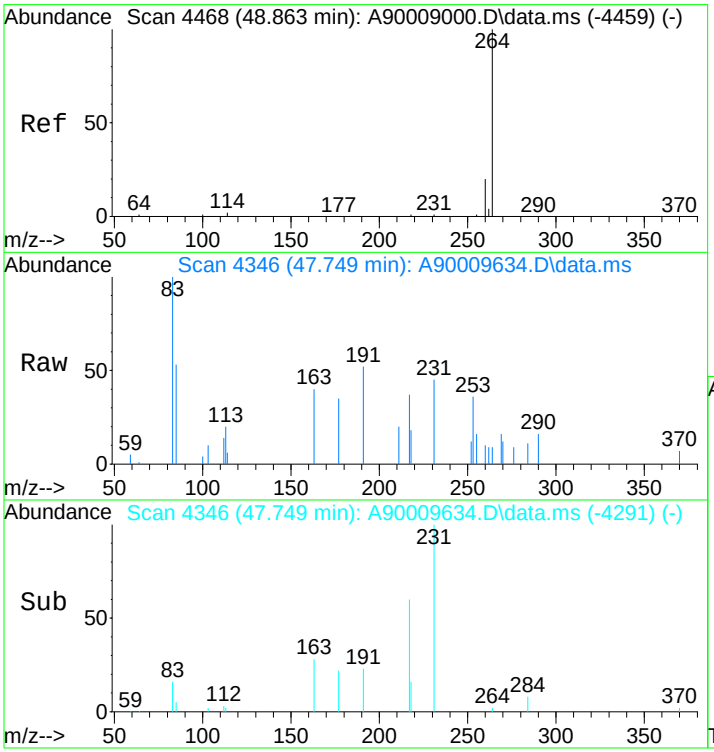




#136
13a,17b-20S-Ethyldiacholestane (S19)
Concen: 36.83 ng/ml
RT: 47.585 min Scan# 4328
Delta R.T. -0.009 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

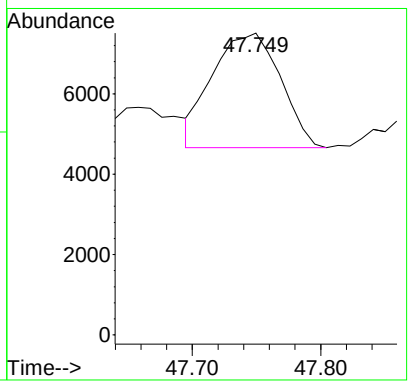
Tgt Ion:217 Resp: 2982

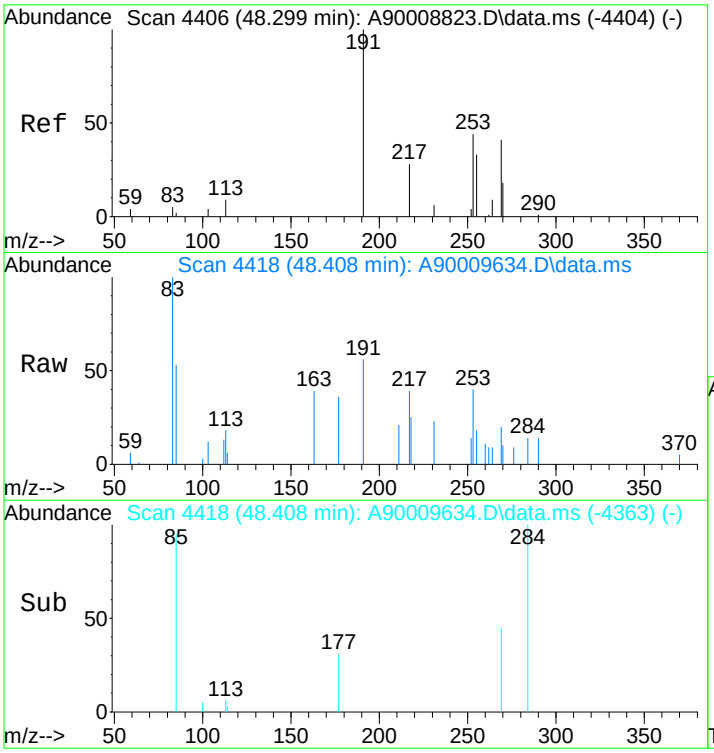




#137
14a,17a-20S-Methylcholestane (S20)
Concen: 129.61 ng/ml
RT: 47.749 min Scan# 4346
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

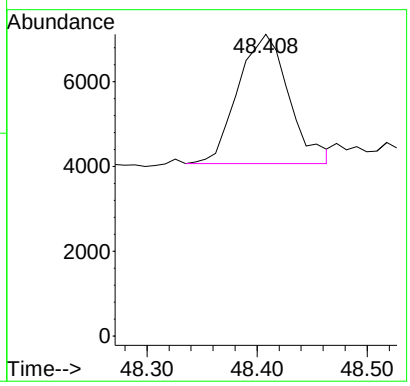
Tgt Ion:217 Resp: 10495

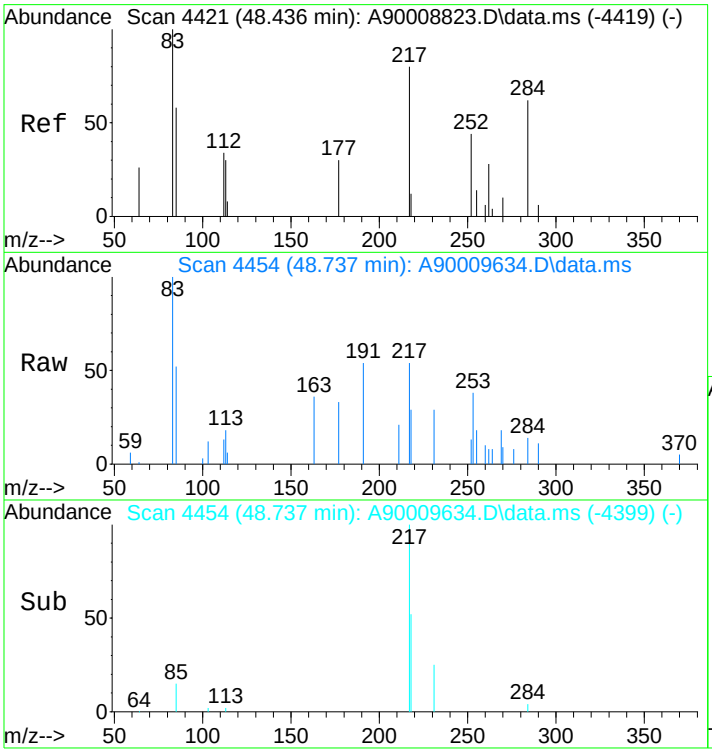




#138
14a,17a-20R-Methylcholestane (S24)
Concen: 120.89 ng/ml
RT: 48.408 min Scan# 4418
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

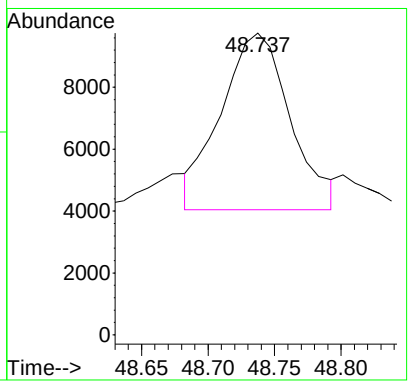
Tgt Ion:217 Resp: 9789

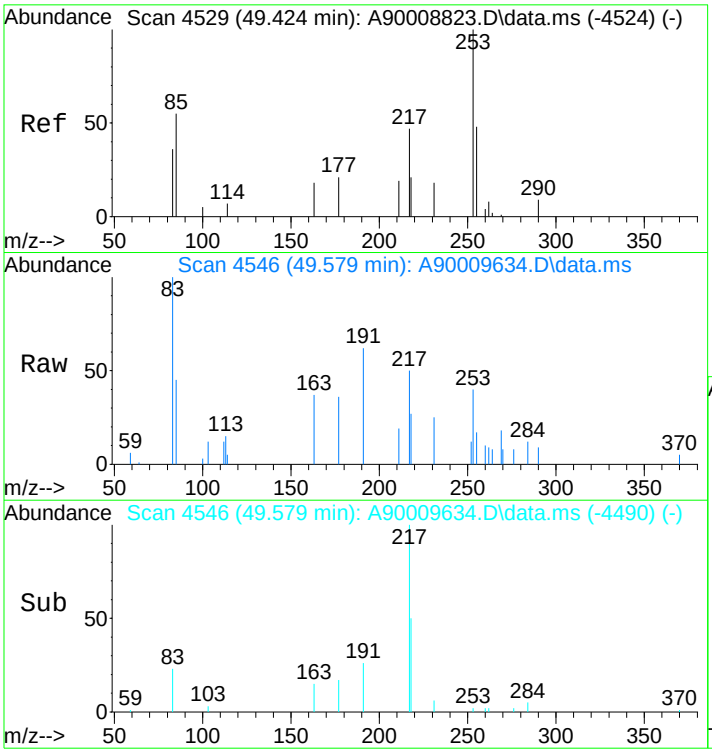




#139
14a(H),17a(H)-20S-Ethylcholestane (S25)
Concen: 255.14 ng/ml m
RT: 48.737 min Scan# 4454
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

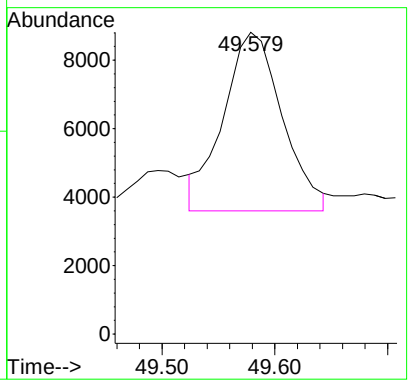
Tgt Ion:217 Resp: 20660

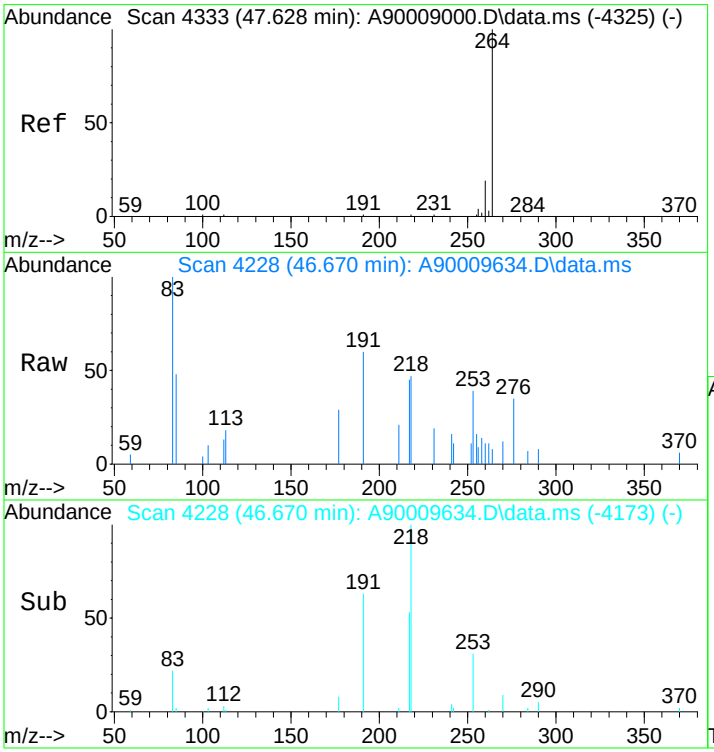




#140
14a(H),17a(H)-20R-Ethylcholestane (S28)
Concen: 233.54 ng/ml m
RT: 49.579 min Scan# 4546
Delta R.T. 0.009 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

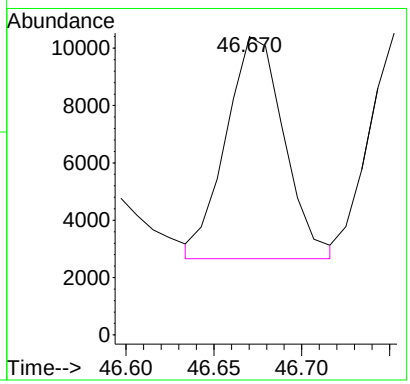
Tgt Ion:217 Resp: 18911

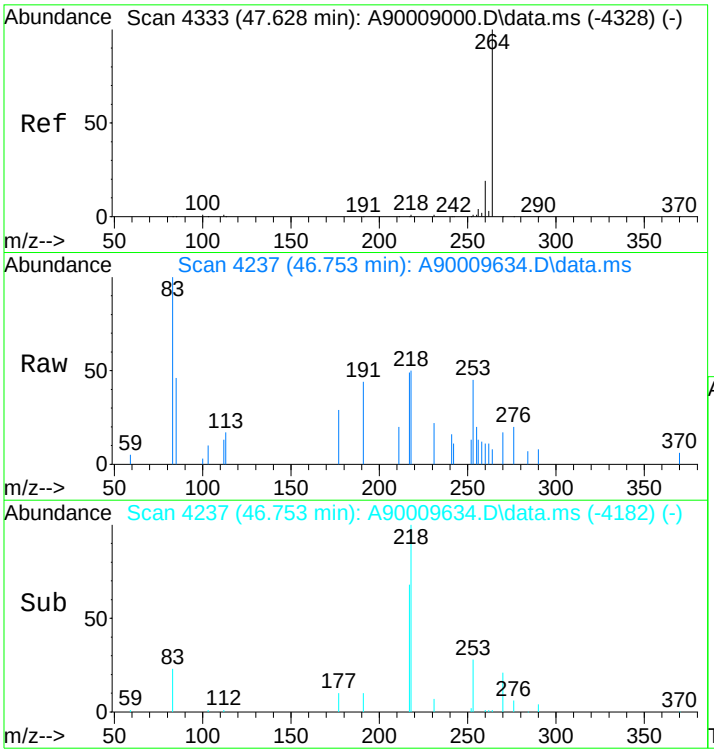




#141
14b(H),17b(H)-20R-Cholestane (S14)
Concen: 220.43 ng/ml m
RT: 46.670 min Scan# 4228
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

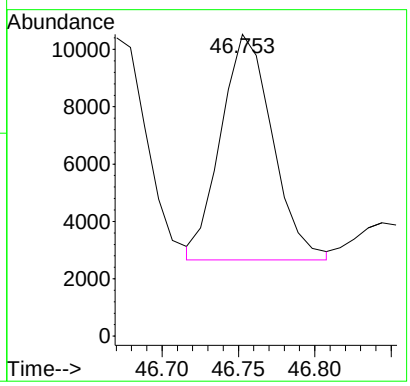
Tgt Ion:218 Resp: 17850

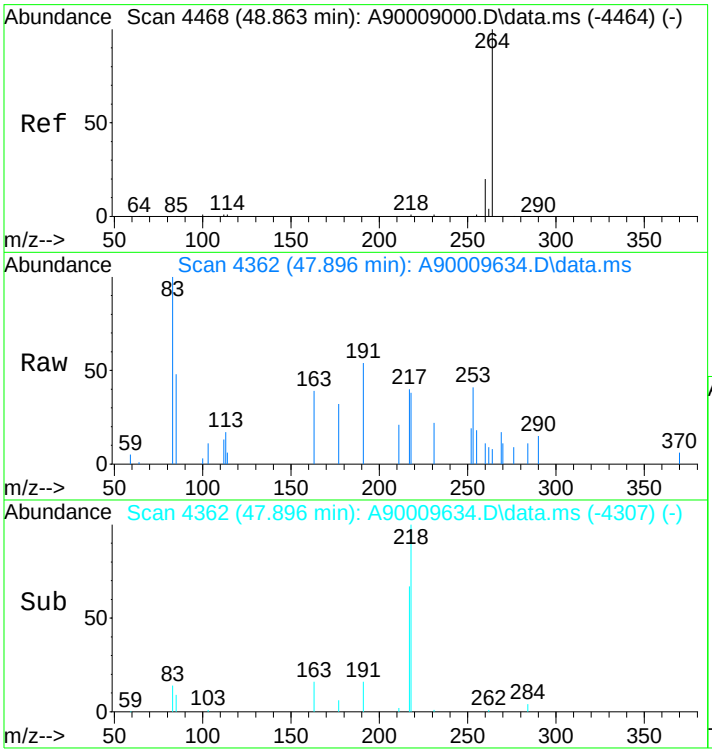




#142
14b(H),17b(H)-20S-Cholestane (S15)
Concen: 228.55 ng/ml m
RT: 46.753 min Scan# 4237
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

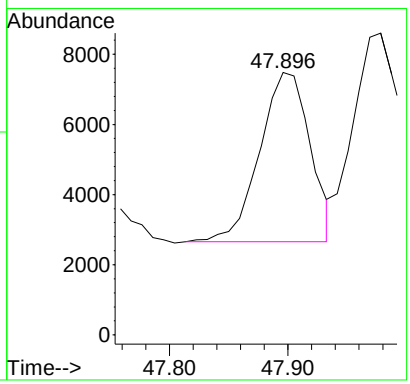
Tgt Ion:218 Resp: 18507

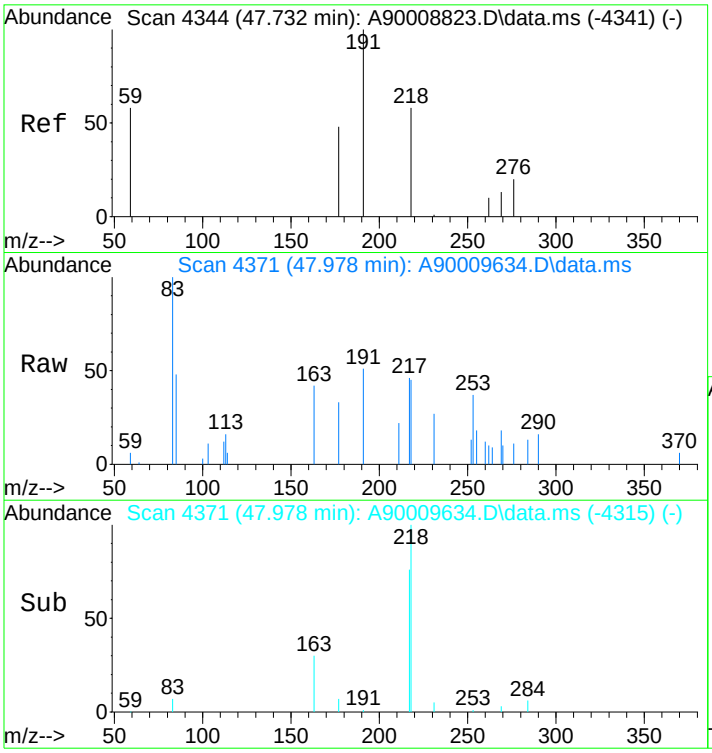




#143
14b,17b-20R-Methylcholestane (S22)
Concen: 176.79 ng/ml
RT: 47.896 min Scan# 4362
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

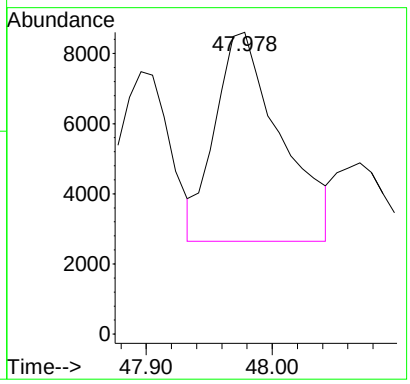
Tgt Ion:218 Resp: 14316

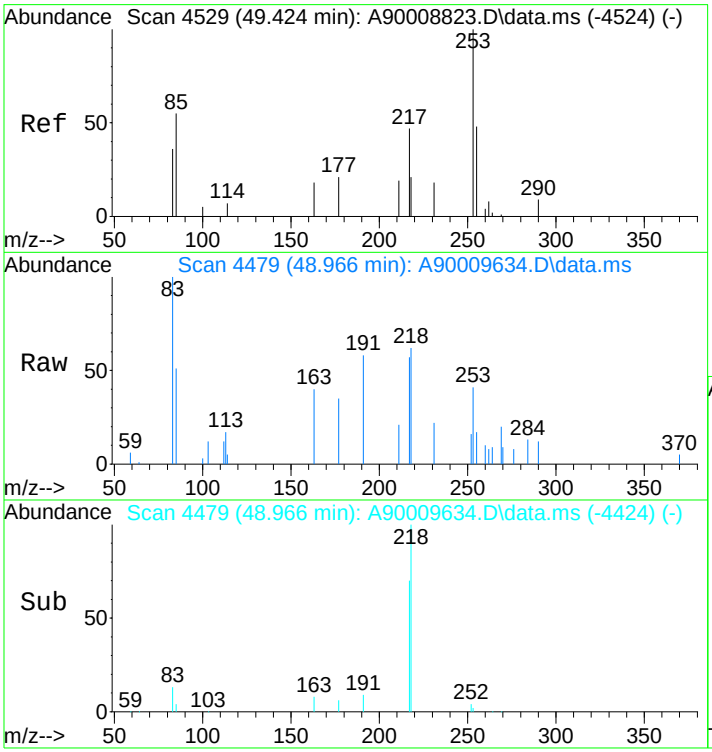




#144
14b,17b-20S-Methylcholestane (S23)
Concen: 266.98 ng/ml m
RT: 47.978 min Scan# 4371
Delta R.T. 0.009 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

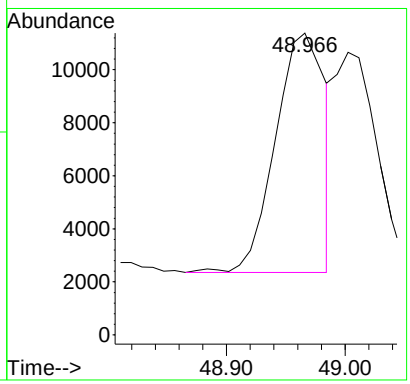
Tgt Ion:218 Resp: 21619

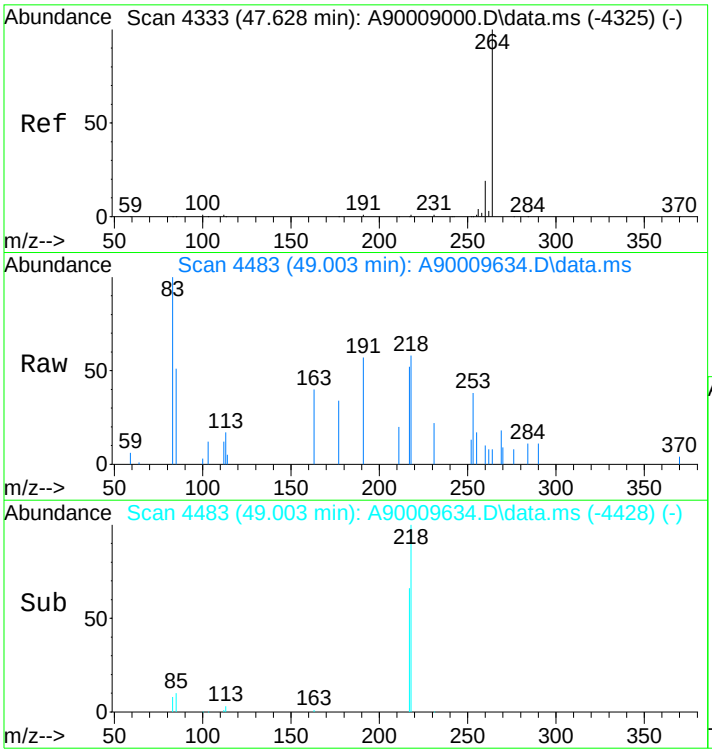




#145
14b(H),17b(H)-20R-Ethylcholestane (S26)
Concen: 323.23 ng/ml
RT: 48.966 min Scan# 4479
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

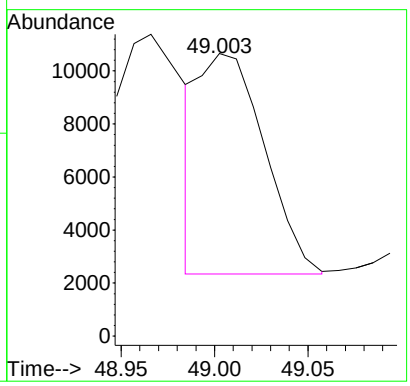
Tgt Ion:218 Resp: 26174

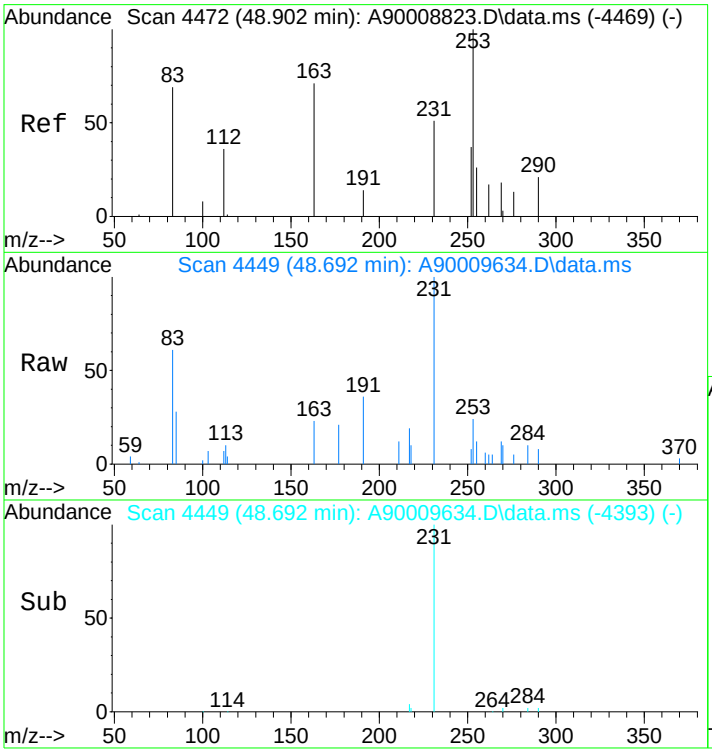




#146
14b(H),17b(H)-20S-Ethylcholestane (S27)
Concen: 250.13 ng/ml m
RT: 49.003 min Scan# 4483
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

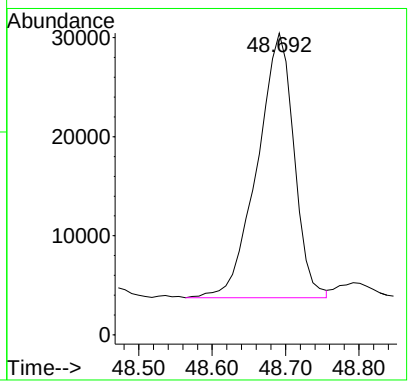
Tgt Ion:218 Resp: 20255

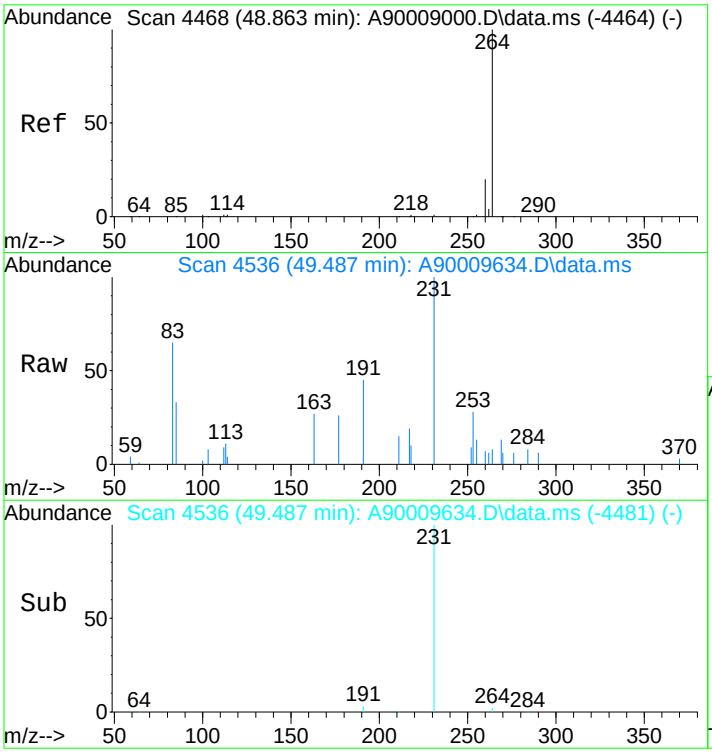




#147
C26,20R- +C27,20S- triaromatic steroid
Concen: 1150.09 ng/mL
RT: 48.692 min Scan# 4449
Delta R.T. 0.009 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

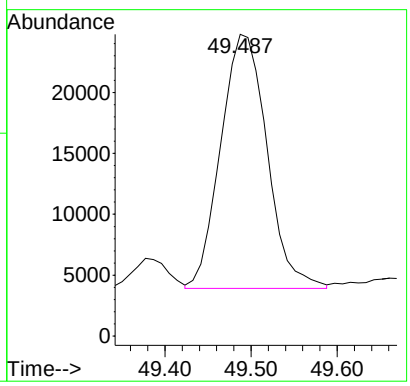
Tgt Ion:231 Resp: 93130

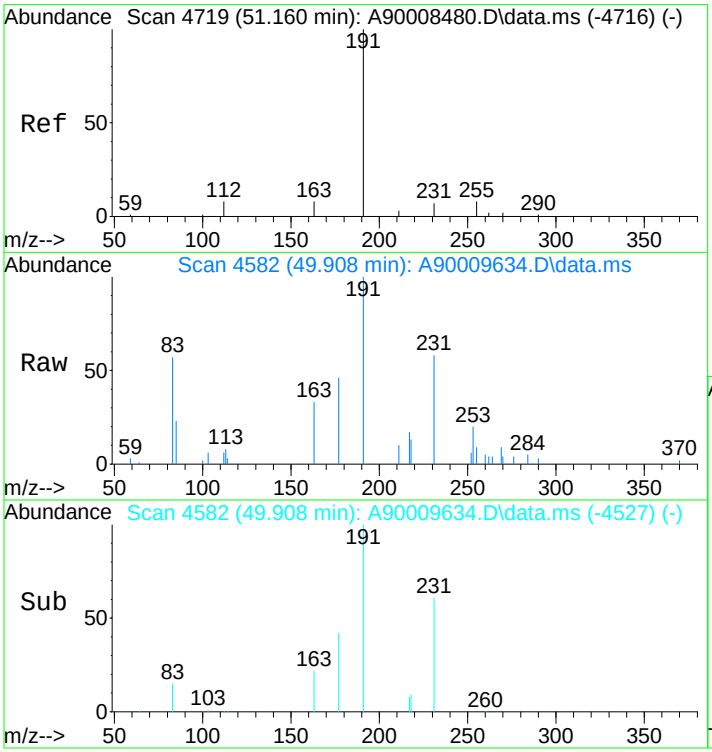




#148
C28,20S-triaromatic steroid
Concen: 961.73 ng/mL m
RT: 49.487 min Scan# 4536
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

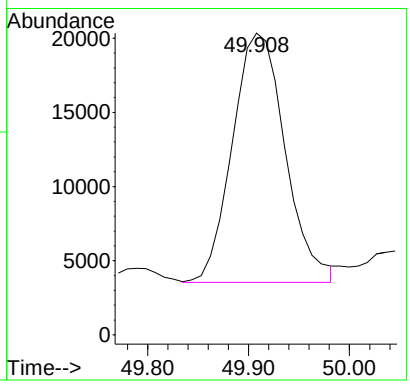
Tgt Ion:231 Resp: 77877

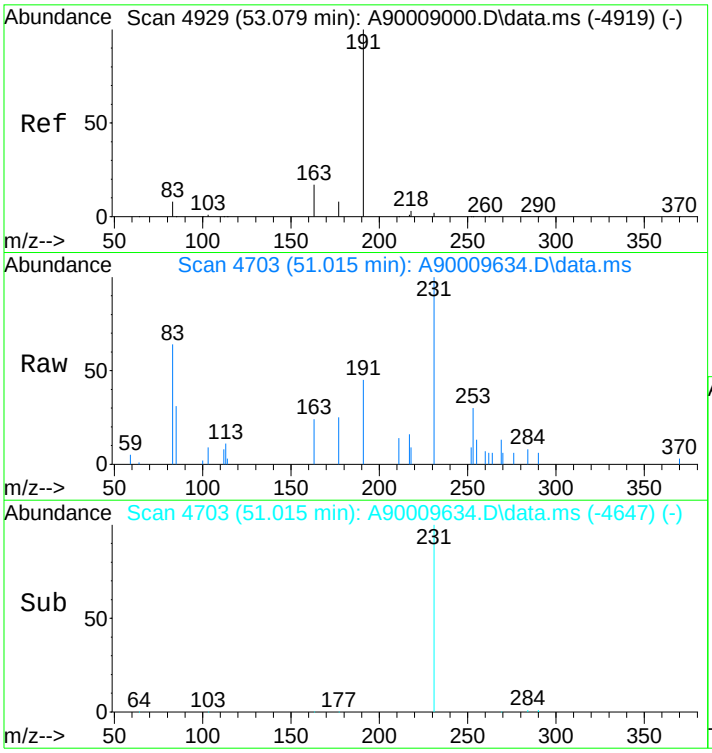




#149
C27,20R-triaromatic steroid
Concen: 753.87 ng/mL m
RT: 49.908 min Scan# 4582
Delta R.T. -0.000 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

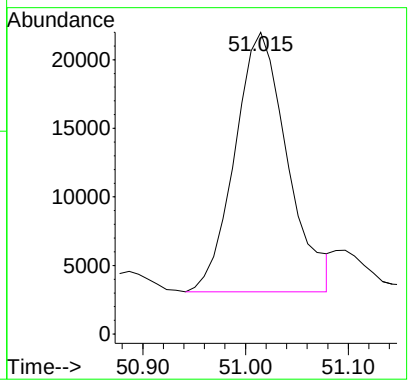
Tgt Ion:231 Resp: 61046





#150
C28,20R-triaromatic steroid
Concen: 828.32 ng/mL
RT: 51.015 min Scan# 4703
Delta R.T. 0.009 min
Lab File: A90009634.D
Acq: 26 Dec 2012 5:11 pm

Tgt Ion:231 Resp: 67074



Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\
Data File : A90009637.D
Acq On : 26 Dec 2012 9:24 pm
Operator : ps
Sample : 1212022-04-RE
Misc : 2X
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Dec 27 14:20:56 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Dec 27 11:30:11 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.064	164	94634	500.000	ng/mL	0.00
74) Chrysene-d12	42.466	240	180853	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.147	136	266040	731.415	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 73.14%			
42) Phenanthrene-d10	31.904	188	327802	960.350	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 96.03%			
83) Benzo[b]fluoranthene-d12	46.359	264	287513	864.850	ng/mL	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 86.48%			
88) Benzo[a]pyrene-d12	47.475	264	275211	825.834	ng/mL	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 82.58%			
129) 5B(H)Cholane - Surr	43.096	217	64149	844.929	ng/ml	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 84.49%			
Target Compounds						Qvalue
58) Fluoranthene	36.760	202	5841315	13571.516	ng/mL	99
60) Pyrene	37.636	202	5496381	12517.137	ng/mL	100

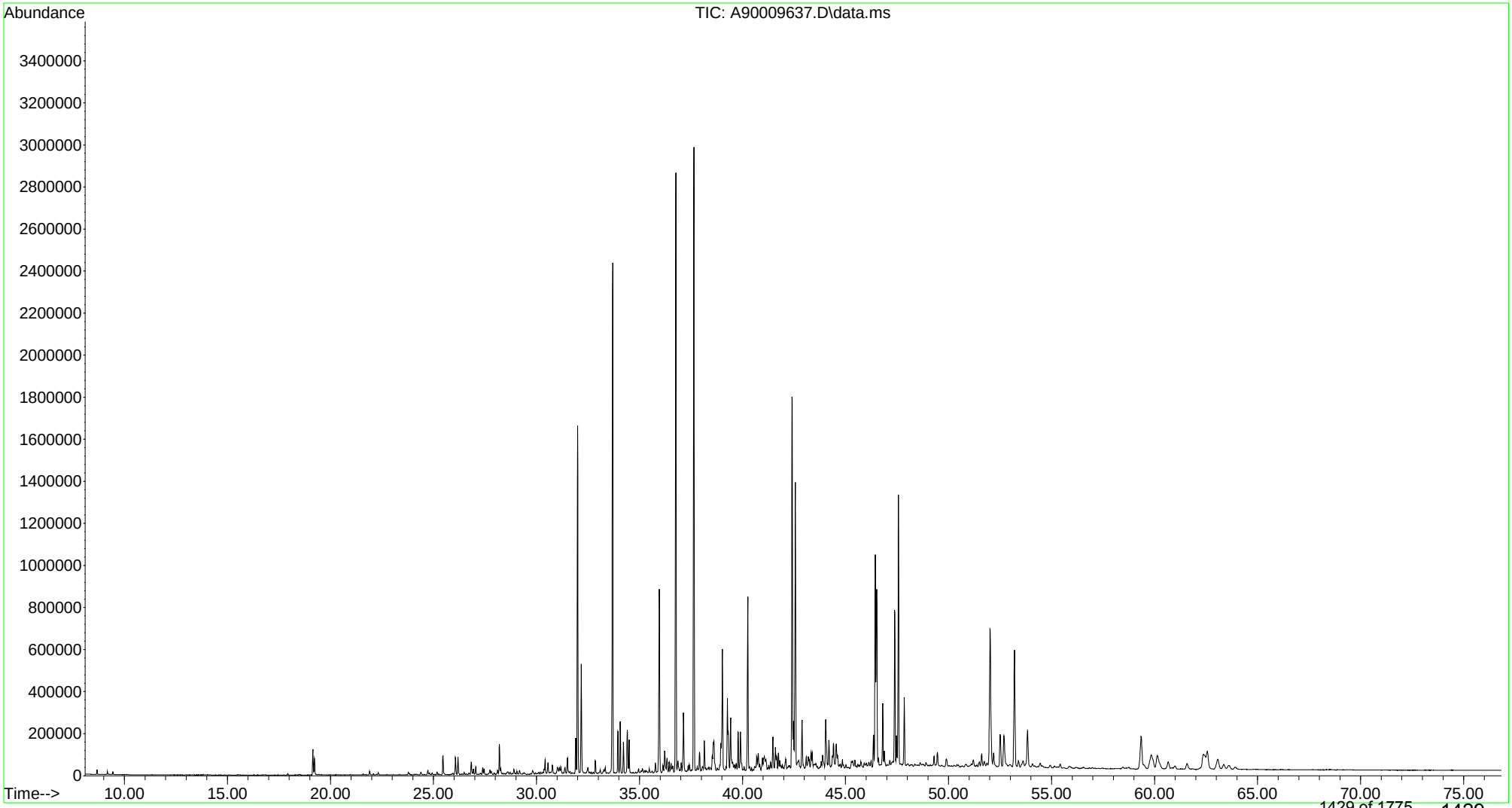
(#) = qualifier out of range (m) = manual integration (+) = signals summed

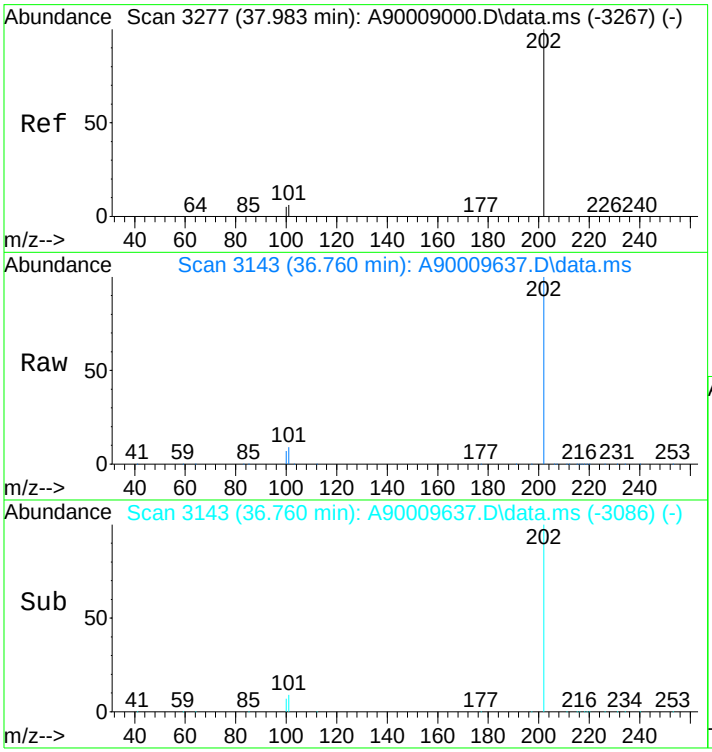
Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\
Data File : A90009637.D
Acq On : 26 Dec 2012 9:24 pm
Operator : ps
Sample : 1212022-04-RE
Misc : 2X
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Dec 27 14:20:56 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Dec 27 11:30:11 2012
Response via : Initial Calibration

Sub List : PIOB_ALTNEW_REV2 - PIOB+5 SURROGATES

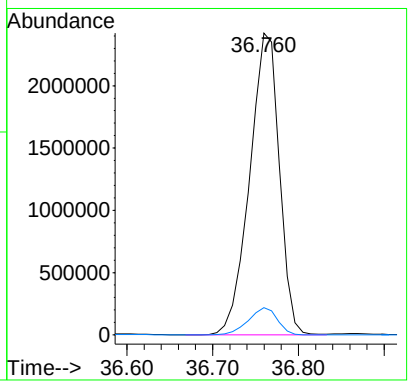


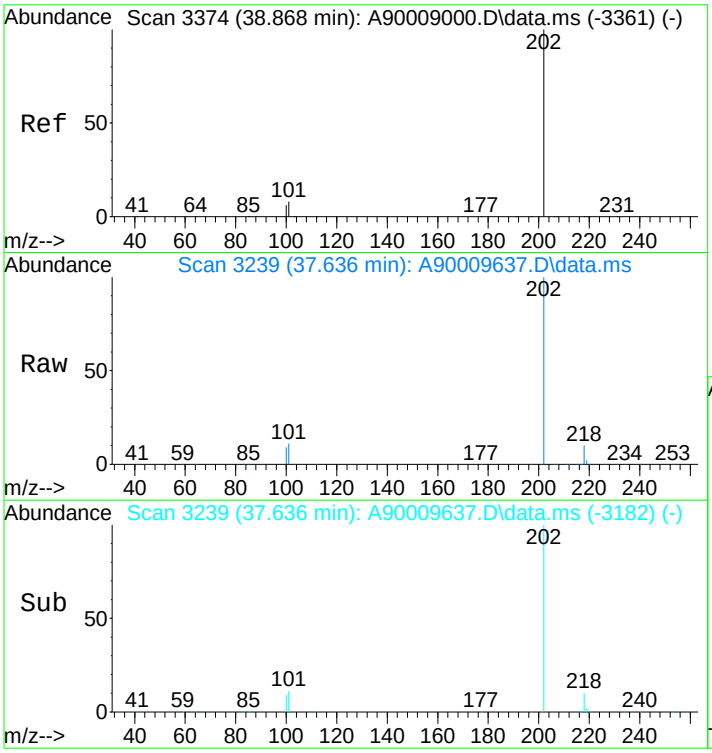


#58
Fluoranthene
Concen: 13571.52 ng/mL
RT: 36.760 min Scan# 3143
Delta R.T. 0.018 min
Lab File: A90009637.D
Acq: 26 Dec 2012 9:24 pm

Tgt Ion:202 Resp: 5841315

Ion	Ratio	Lower	Upper
202	100		
101	8.9	7.5	11.3

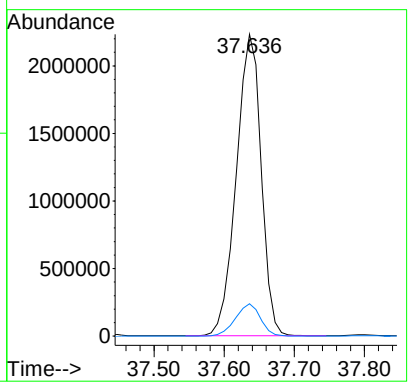




#60
Pyrene
Concen: 12517.14 ng/mL
RT: 37.636 min Scan# 3239
Delta R.T. 0.018 min
Lab File: A90009637.D
Acq: 26 Dec 2012 9:24 pm

Tgt Ion:202 Resp: 5496381

Ion	Ratio	Lower	Upper
202	100		
101	10.8	8.6	13.0



Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC4\
Data File : A90009333.D
Acq On : 5 Dec 2012 2:22 am
Operator : PS
Sample : I912041202
Misc : WHAQ84@25ng/ml
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Dec 06 10:35:07 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 09:47:55 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.557	164	64925	500.000	ng/mL	0.00
74) Chrysene-d12	42.959	240	106384	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.622	136	6357	28.815	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery =	2.88%#		
42) Phenanthrene-d10	32.406	188	5352	21.698	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery =	2.17%#		
83) Benzo[b]fluoranthene-d12	46.852	264	4860	26.939	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery =	2.69%#		
88) Benzo[a]pyrene-d12	48.014	264	4655	27.716	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery =	2.77%#		
129) 5B(H)Cholane - Surr	43.598	217	1054	23.570	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery =	2.36%#		
Target Compounds						Qvalue
3) trans-Decalin	16.291	138	714	14.413	ng/mL	100
4) cis-Decalin	17.496	138	543	14.191	ng/mL	100
10) Naphthalene	19.695	128	6617	29.402	ng/mL#	100
16) 2-Methylnaphthalene	22.378	142	4098	25.978	ng/mL#	100
17) 1-Methylnaphthalene	22.798	142	3999	26.377	ng/mL#	100
18) Benzothiophene	19.914	134	5427	28.686	ng/mL	100
23) Biphenyl	24.258	154	5237	25.210	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.860	156	3716	24.150	ng/mL#	100
25) Dibenzofuran	27.324	168	5328	23.083	ng/mL	98
26) Acenaphthylene	25.946	152	6176	25.549	ng/mL#	100
27) Acenaphthene	26.685	153	4034	26.546	ng/mL	99
28) 2,3,5-Trimethylnaphthalen	28.236	170	3439	24.701	ng/mL	93
29) Fluorene	28.692	166	4204	22.460	ng/mL	95
33) Dibenzothiophene	32.004	184	5646	21.198	ng/mL	98
43) Phenanthrene	32.497	178	5933	21.817	ng/mL	99
54) Retene	39.471	234	1649	21.056	ng/mL	95
55) Anthracene	32.670	178	5257M4	21.382	ng/mL	
56) Carbazole	33.346	167	4541M4	20.317	ng/mL	
57) 1-Methylphenanthrene	34.989	192	4256	20.574	ng/mL	100
58) Fluoranthene	37.253	202	6751	21.878	ng/mL	100
59) Benzo(b)fluorene	39.764	216	3843	19.253	ng/mL	100
60) Pyrene	38.129	202	6890	21.993	ng/mL	99
66) Naphthobenzothiophene	41.973	234	6023	21.299	ng/ml	95
67) Naphthobenzothiophene-2,1	41.973	234	6023	21.299	ng/mL	95
75) Benz[a]anthracene	42.895	228	5670M6	22.741	ng/mL	
76) Chrysene	43.059	228	5627	23.307	ng/mL	97
77) Chrysene/Triphenylene	43.059	228	5627	23.307	ng/mL	97
84) Benzo[b]fluoranthene	46.934	252	6072	26.086	ng/mL	100
85) Benzo[j]+[k]fluoranthene	47.017	252	5939M6	26.294	ng/mL	
87) Benzo[e]pyrene	47.913	252	5955	27.642	ng/mL	100
89) Benzo[a]pyrene	48.096	252	5481M2	27.088	ng/mL	
90) Perylene	48.398	252	5998M2	27.863	ng/mL	
91) Indeno[1,2,3-cd]pyrene	52.751	276	6178M6	28.721	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.806	278	6003	28.280	ng/mL	97
93) Benzo[g,h,i]perylene	53.994	276	6063	28.701	ng/mL	99
94) Hopane (T19)	51.910	191	2517M6	33.703	ng/mL	
95) 17a(H),21B(H)-hopane - C3	51.910	191	2484M6	33.261	ng/mL	

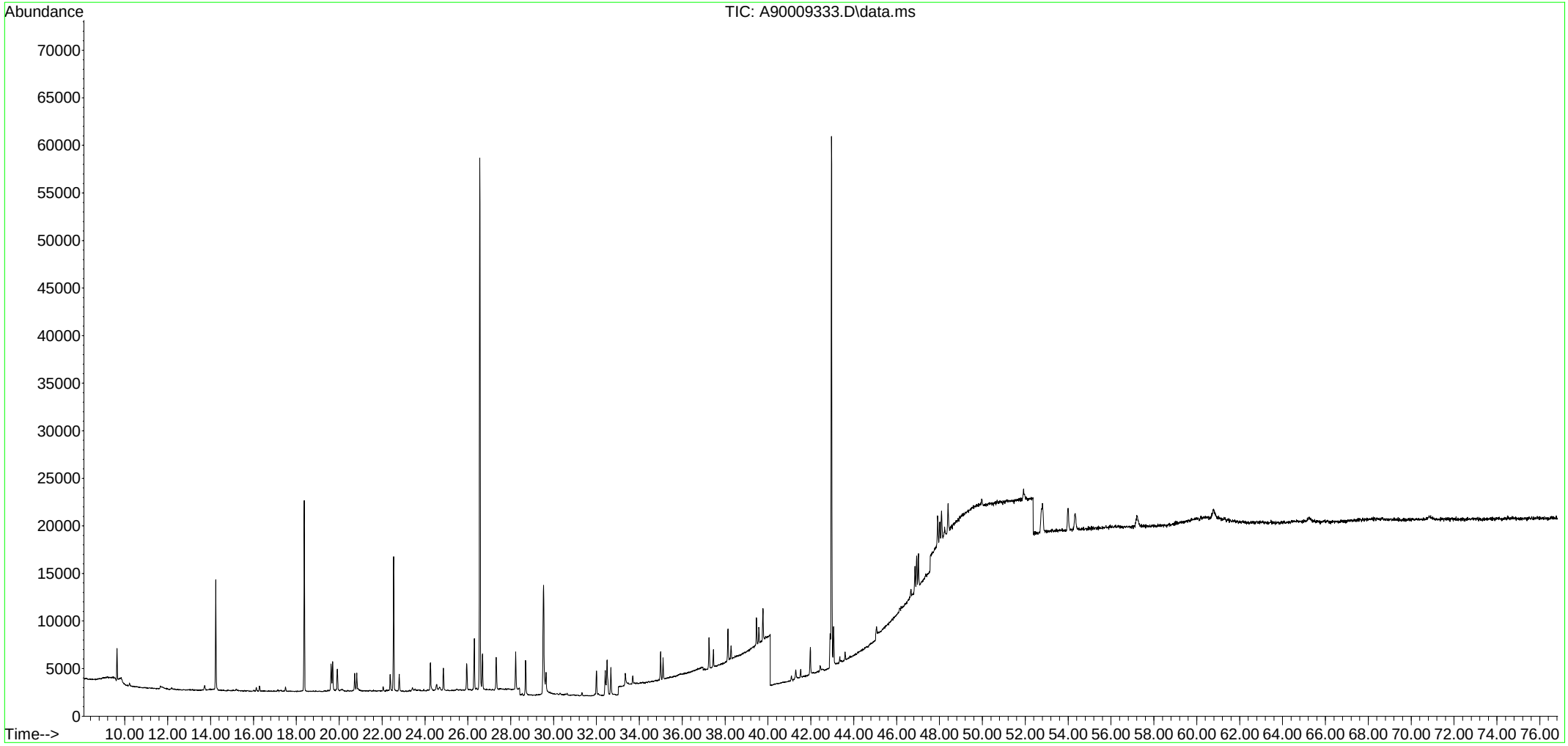
(#) = qualifier out of range (m) = manual integration (+) = signals summed

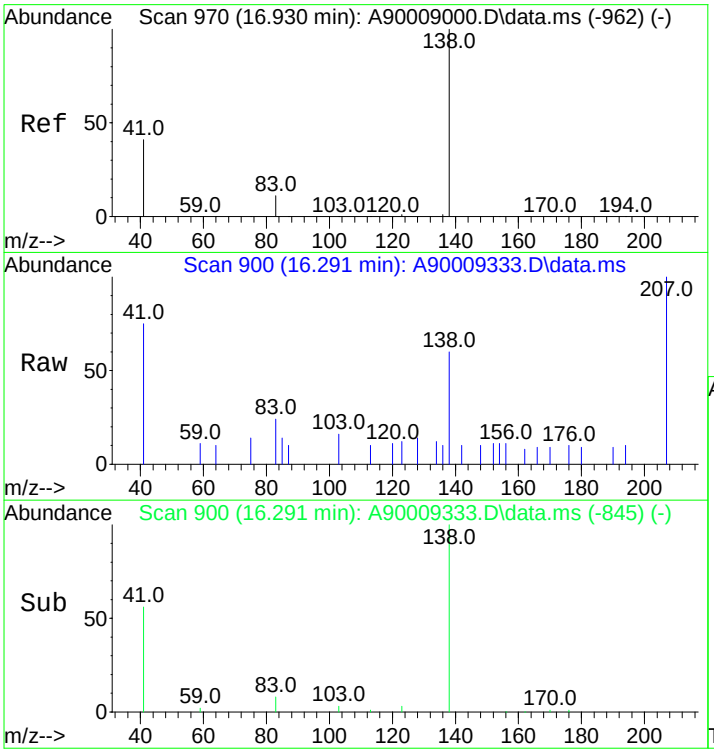
Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC4\
Data File : A90009333.D
Acq On : 5 Dec 2012 2:22 am
Operator : PS
Sample : I912041202
Misc : WHAQ84@25ng/ml
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Dec 06 10:35:07 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 09:47:55 2012
Response via : Initial Calibration

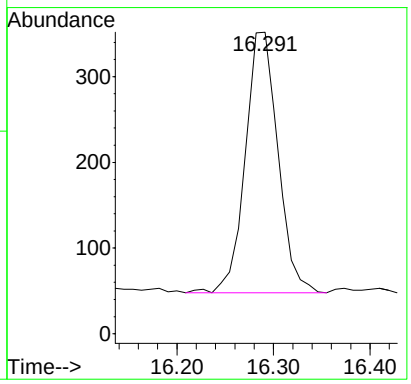
Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

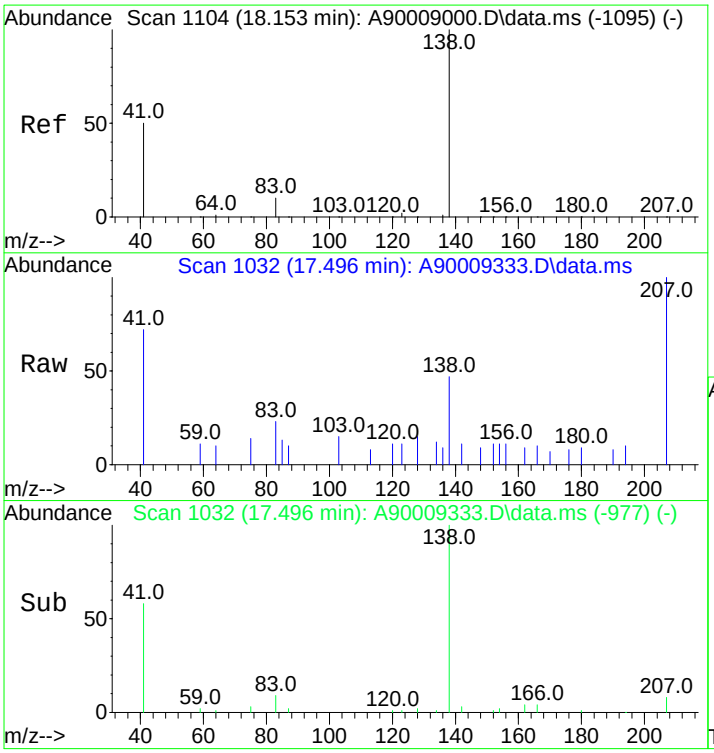




#3
trans-Decalin
Concen: 14.41 ng/mL
RT: 16.291 min Scan# 900
Delta R.T. 0.000 min
Lab File: A90009333.D
Acq: 5 Dec 2012 2:22 am

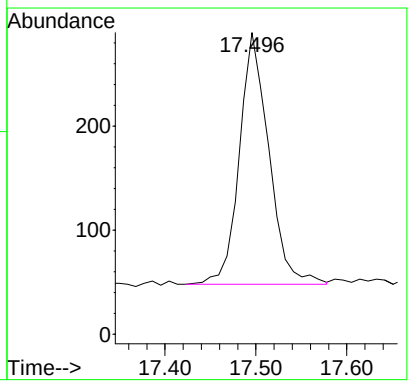
Tgt Ion:138 Resp: 714

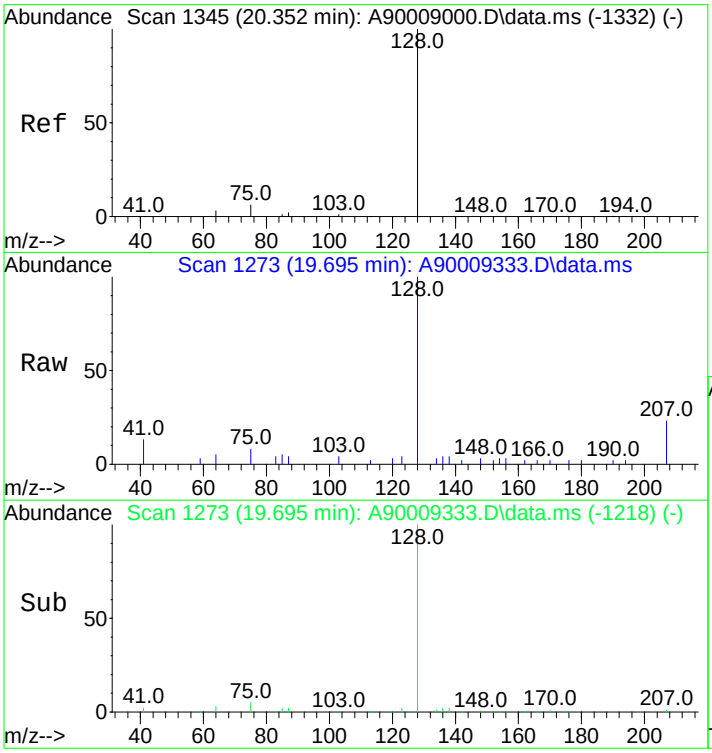




#4
cis-Decalin
Concen: 14.19 ng/mL
RT: 17.496 min Scan# 1032
Delta R.T. 0.000 min
Lab File: A90009333.D
Acq: 5 Dec 2012 2:22 am

Tgt Ion:138 Resp: 543

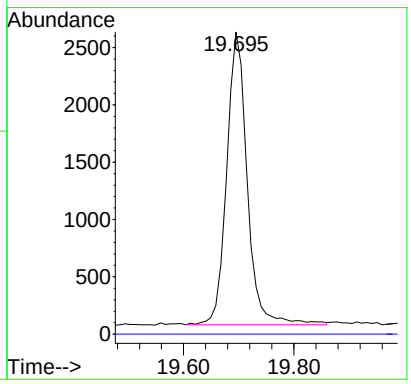


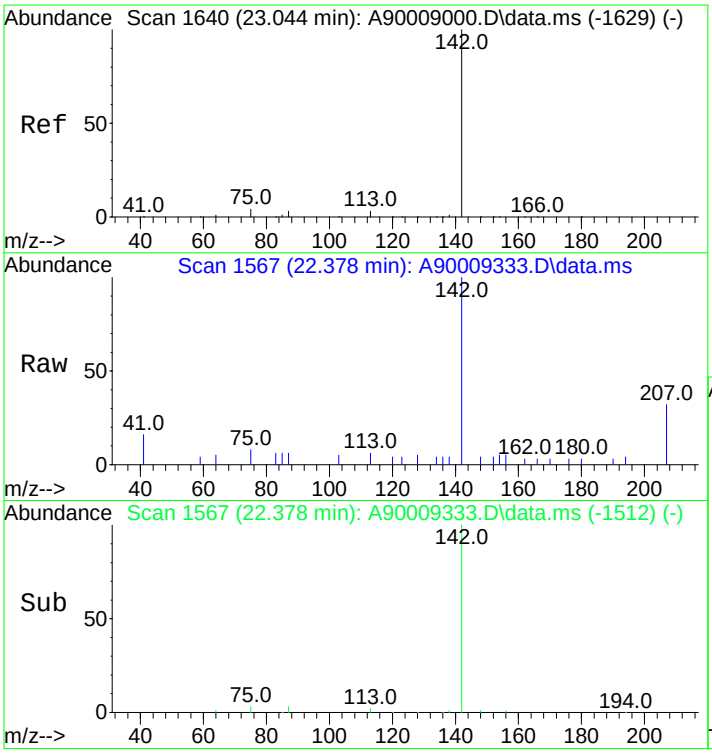


#10
Naphthalene
Concen: 29.40 ng/mL
RT: 19.695 min Scan# 1273
Delta R.T. 0.000 min
Lab File: A90009333.D
Acq: 5 Dec 2012 2:22 am

Tgt Ion:128 Resp: 6617

Ion	Ratio	Lower	Upper
128	100		
127	0.0	0.0	0.0

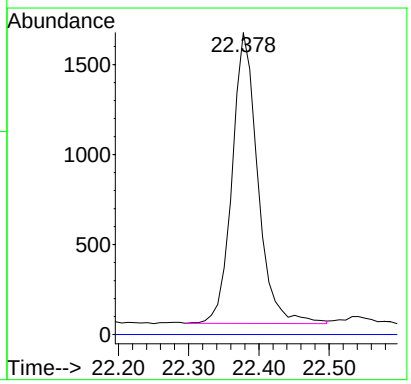


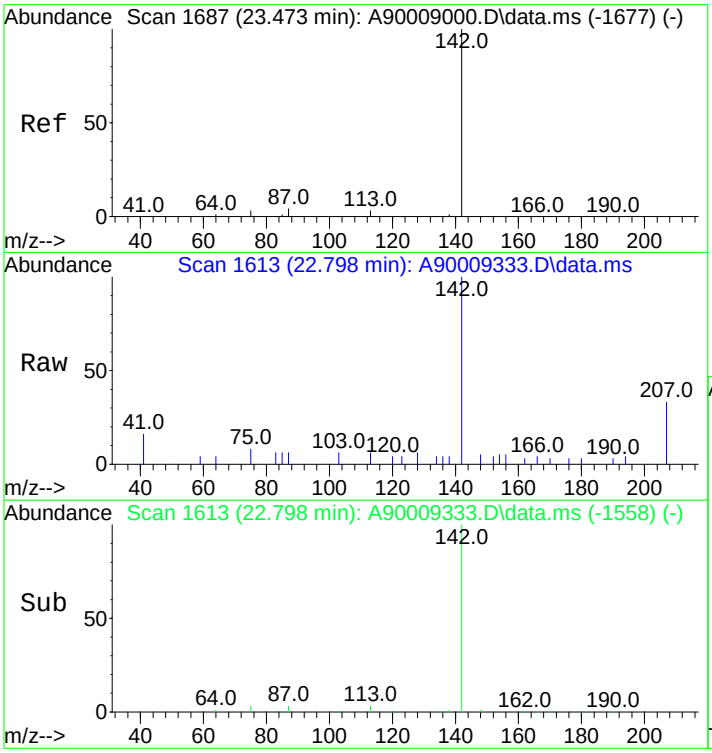


#16
2-Methylnaphthalene
Concen: 25.98 ng/mL
RT: 22.378 min Scan# 1567
Delta R.T. 0.000 min
Lab File: A90009333.D
Acq: 5 Dec 2012 2:22 am

Tgt Ion:142 Resp: 4098

Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	0.0

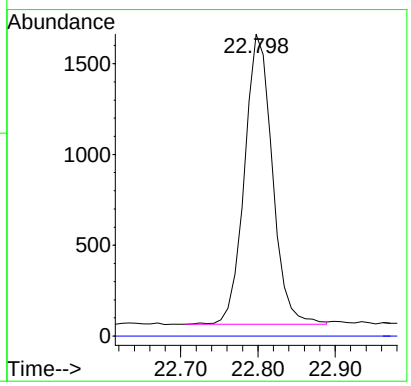


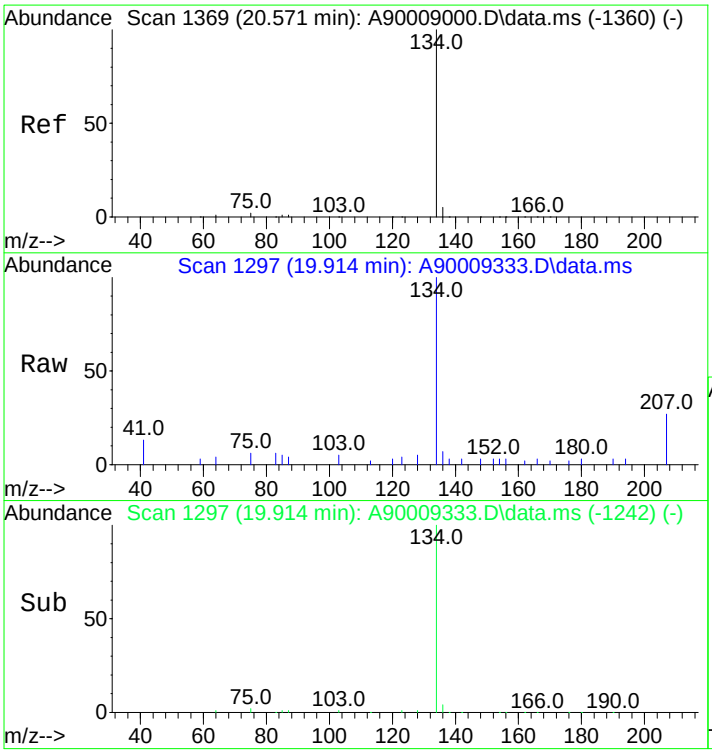


#17
1-Methylnaphthalene
Concen: 26.38 ng/mL
RT: 22.798 min Scan# 1613
Delta R.T. 0.000 min
Lab File: A90009333.D
Acq: 5 Dec 2012 2:22 am

Tgt Ion:142 Resp: 3999

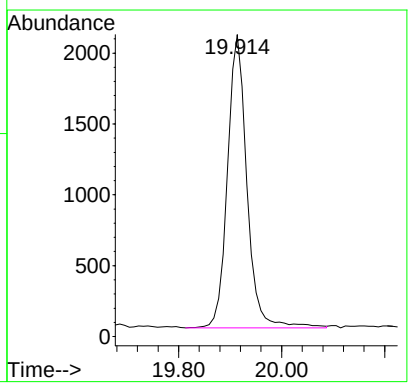
Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	20.0

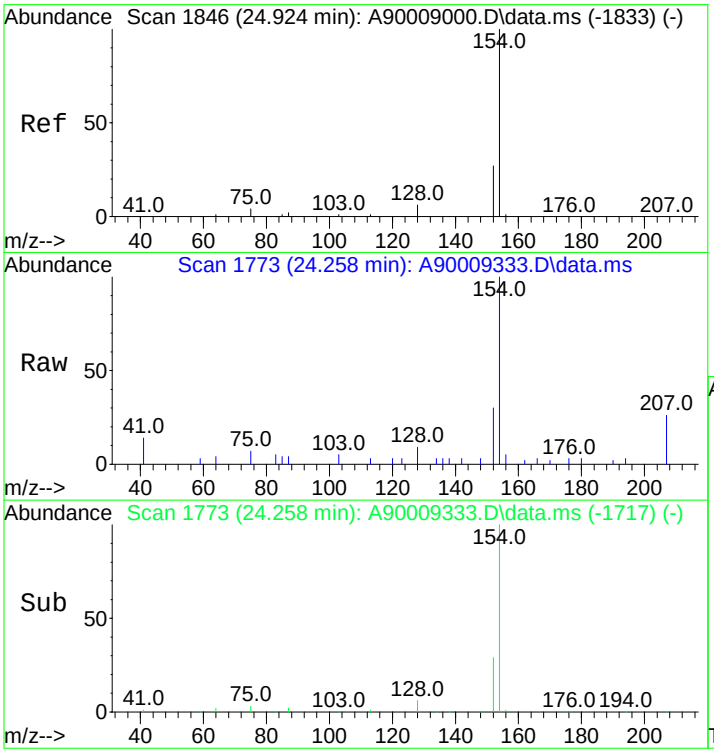




#18
Benzothiophene
Concen: 28.69 ng/mL
RT: 19.914 min Scan# 1297
Delta R.T. 0.000 min
Lab File: A90009333.D
Acq: 5 Dec 2012 2:22 am

Tgt Ion:134 Resp: 5427

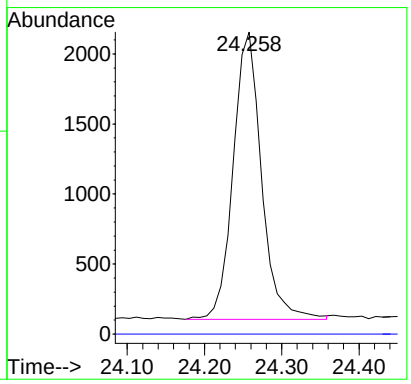


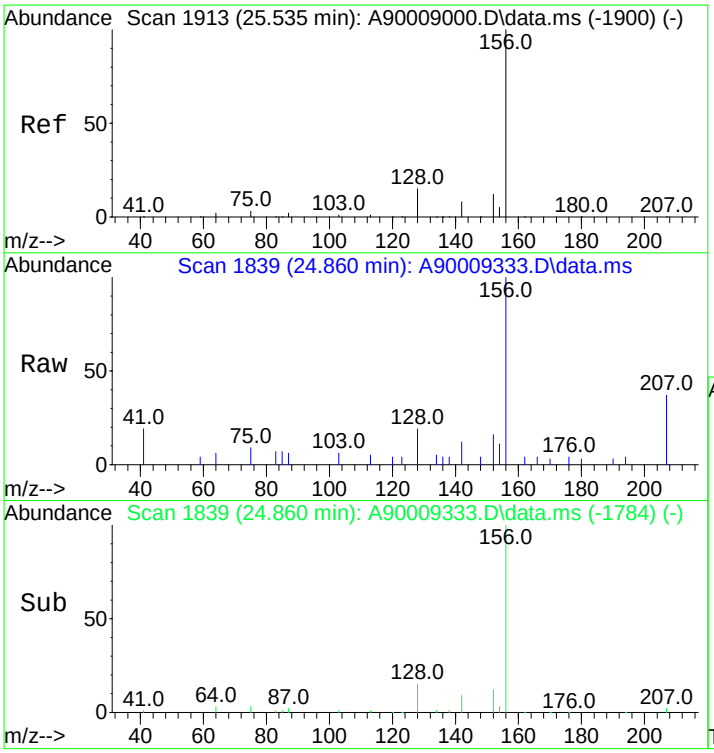


#23
Biphenyl
Concen: 25.21 ng/mL
RT: 24.258 min Scan# 1773
Delta R.T. 0.009 min
Lab File: A90009333.D
Acq: 5 Dec 2012 2:22 am

Tgt Ion:154 Resp: 5237

Ion	Ratio	Lower	Upper
154	100		
153	0.0	0.0	0.0

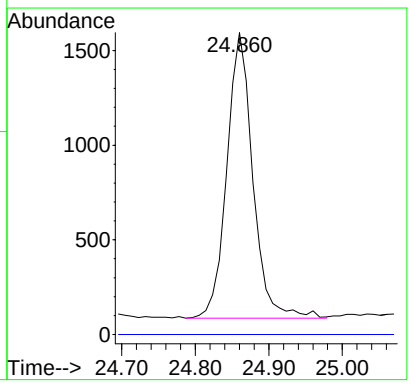


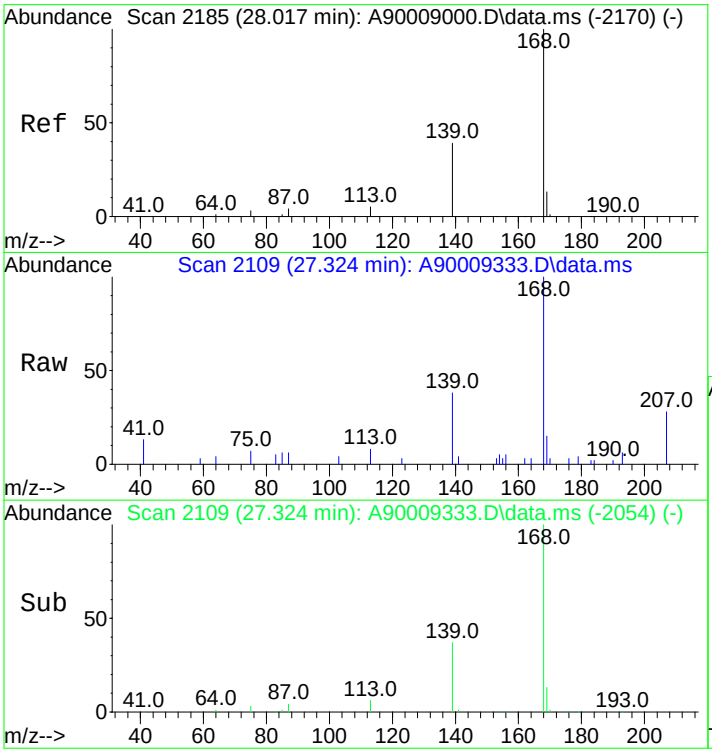


#24
2,6-Dimethylnaphthalene
Concen: 24.15 ng/mL
RT: 24.860 min Scan# 1839
Delta R.T. 0.000 min
Lab File: A90009333.D
Acq: 5 Dec 2012 2:22 am

Tgt Ion:156 Resp: 3716

Ion	Ratio	Lower	Upper
156	100		
155	0.0	0.0	0.0

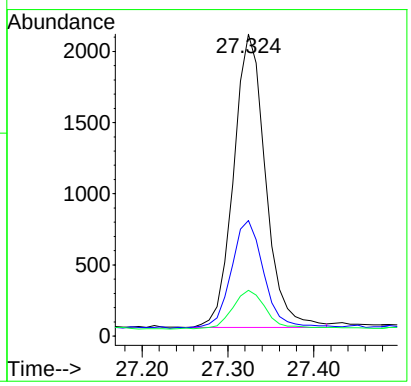


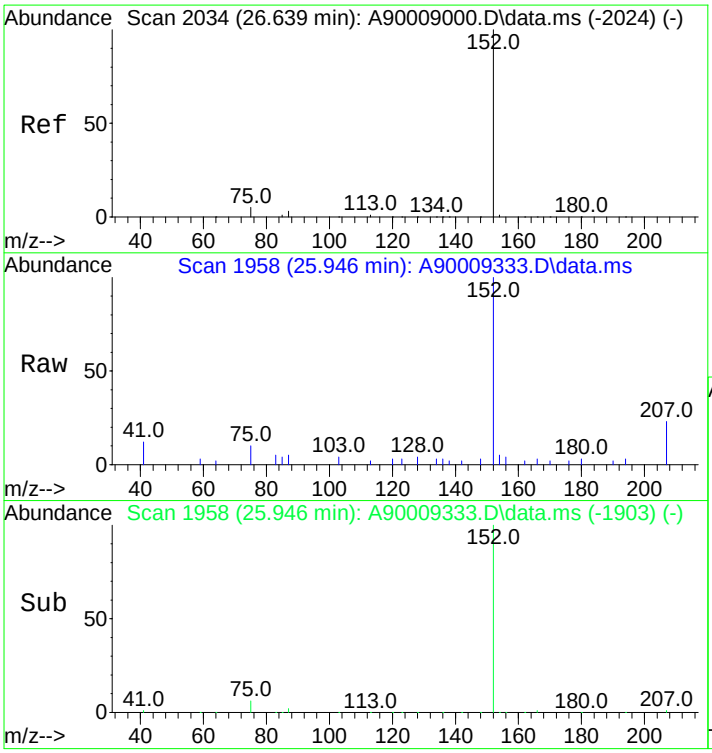


#25
Dibenzofuran
Concen: 23.08 ng/mL
RT: 27.324 min Scan# 2109
Delta R.T. 0.000 min
Lab File: A90009333.D
Acq: 5 Dec 2012 2:22 am

Tgt Ion:168 Resp: 5328

Ion	Ratio	Lower	Upper
168	100		
139	37.2	28.9	43.3
169	14.7	10.6	15.8

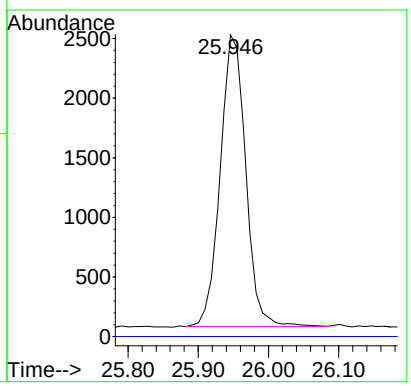


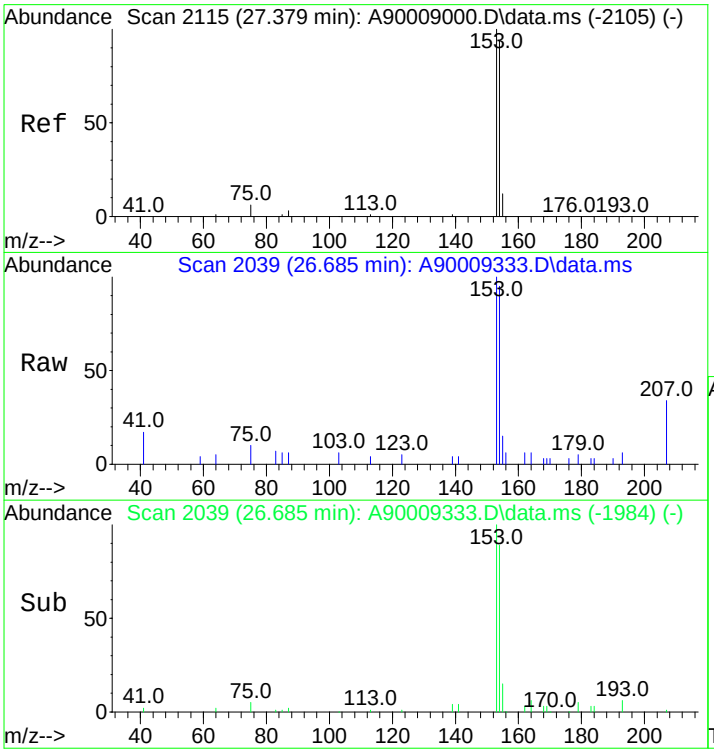


#26
Acenaphthylene
Concen: 25.55 ng/mL
RT: 25.946 min Scan# 1958
Delta R.T. 0.000 min
Lab File: A90009333.D
Acq: 5 Dec 2012 2:22 am

Tgt Ion:152 Resp: 6176

Ion	Ratio	Lower	Upper
152	100		
153	0.0	0.0	0.0

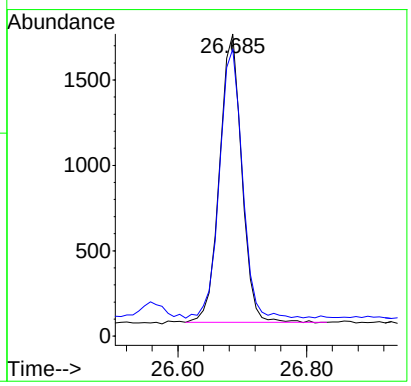


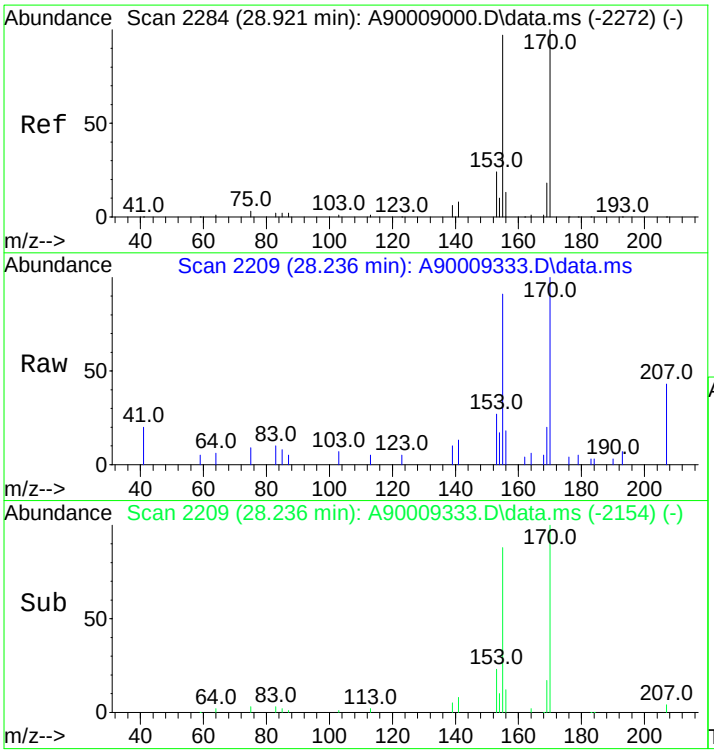


#27
Acenaphthene
Concen: 26.55 ng/mL
RT: 26.685 min Scan# 2039
Delta R.T. 0.000 min
Lab File: A90009333.D
Acq: 5 Dec 2012 2:22 am

Tgt Ion:153 Resp: 4034

Ion	Ratio	Lower	Upper
153	100		
154	96.5	76.2	114.4

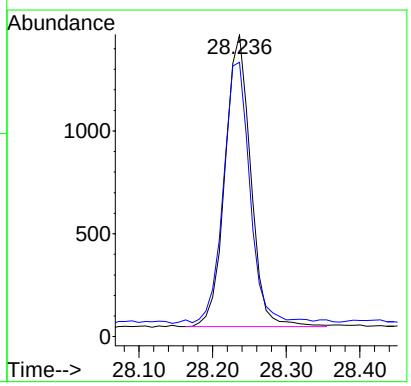


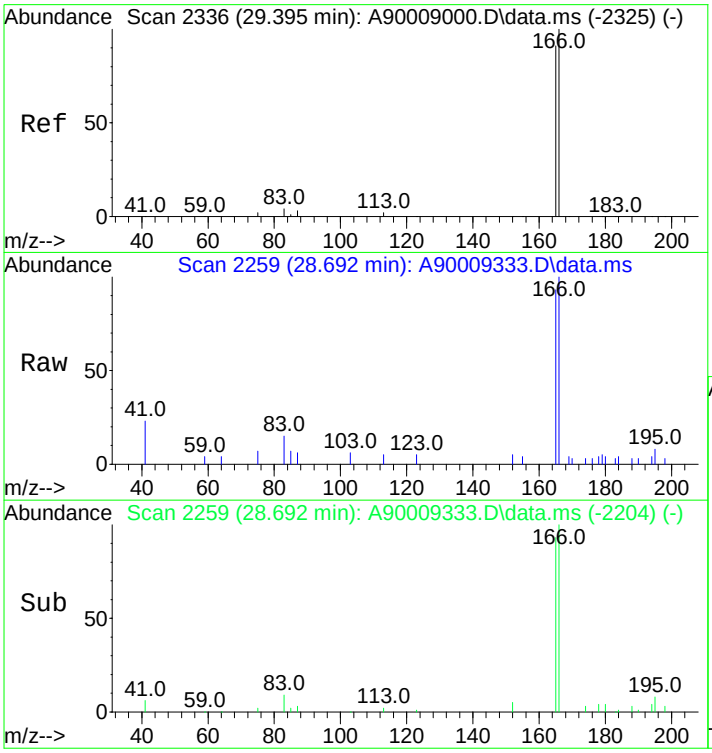


#28
2,3,5-Trimethylnaphthalene
Concen: 24.70 ng/mL
RT: 28.236 min Scan# 2209
Delta R.T. 0.000 min
Lab File: A90009333.D
Acq: 5 Dec 2012 2:22 am

Tgt Ion:170 Resp: 3439

Ion	Ratio	Lower	Upper
170	100		
155	93.1	69.0	103.6

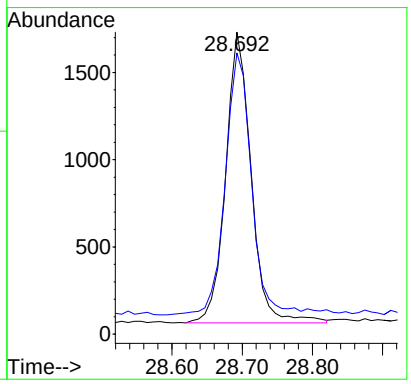


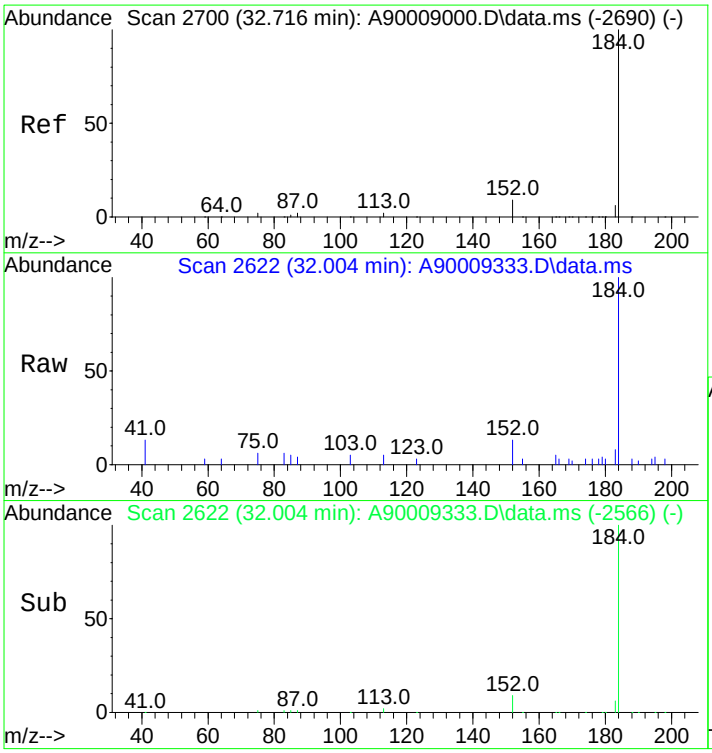


#29
Fluorene
Concen: 22.46 ng/mL
RT: 28.692 min Scan# 2259
Delta R.T. 0.000 min
Lab File: A90009333.D
Acq: 5 Dec 2012 2:22 am

Tgt Ion:166 Resp: 4204

Ion	Ratio	Lower	Upper
166	100		
165	87.7	73.8	110.6

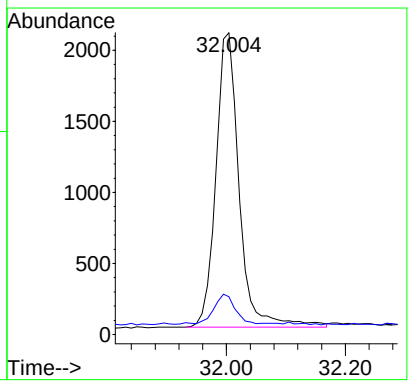


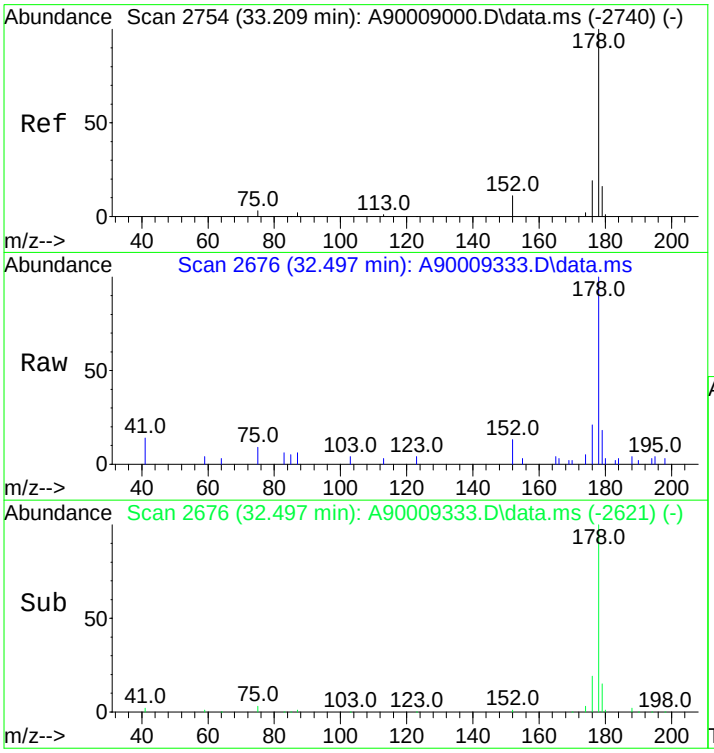


#33
Dibenzothiophene
Concen: 21.20 ng/mL
RT: 32.004 min Scan# 2622
Delta R.T. 0.009 min
Lab File: A90009333.D
Acq: 5 Dec 2012 2:22 am

Tgt Ion:184 Resp: 5646

Ion	Ratio	Lower	Upper
184	100		
152	9.5	8.2	12.4

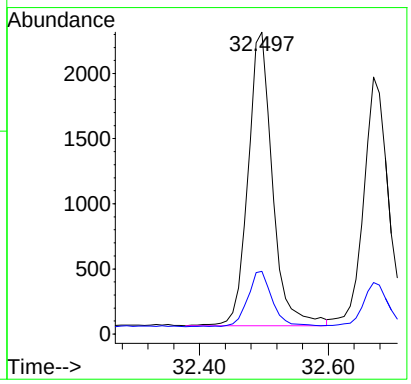


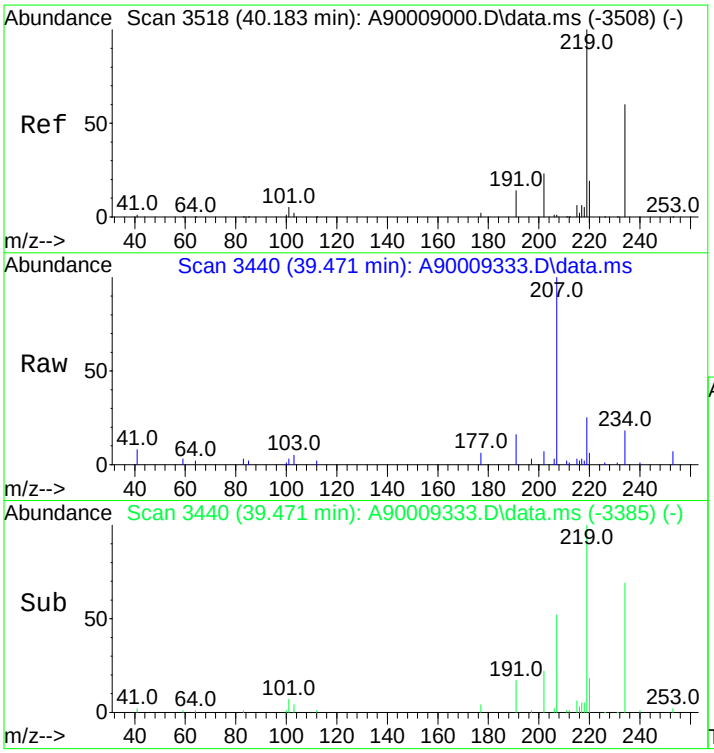


#43
Phenanthrene
Concen: 21.82 ng/mL
RT: 32.497 min Scan# 2676
Delta R.T. 0.000 min
Lab File: A90009333.D
Acq: 5 Dec 2012 2:22 am

Tgt Ion:178 Resp: 5933

Ion	Ratio	Lower	Upper
178	100		
176	18.9	14.9	22.3

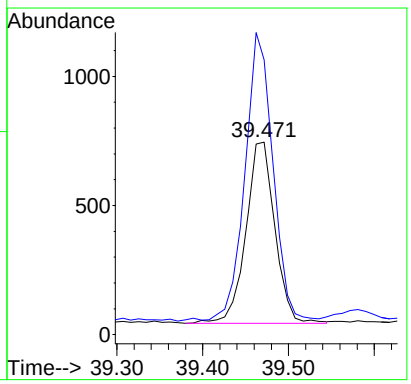


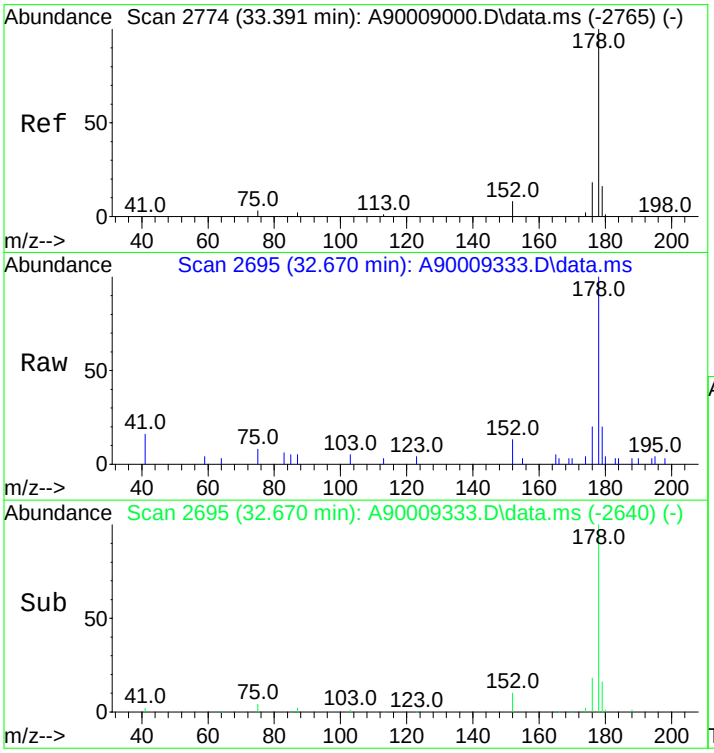


#54
Retene
Concen: 21.06 ng/mL
RT: 39.471 min Scan# 3440
Delta R.T. 0.000 min
Lab File: A90009333.D
Acq: 5 Dec 2012 2:22 am

Tgt Ion:234 Resp: 1649

Ion	Ratio	Lower	Upper
234	100		
219	153.7	117.9	176.9

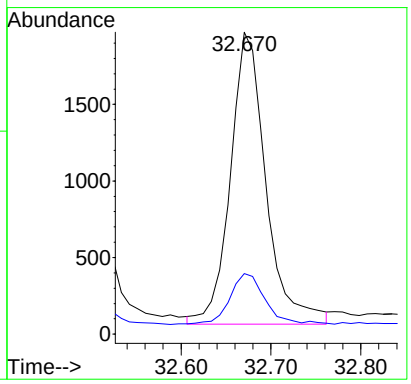


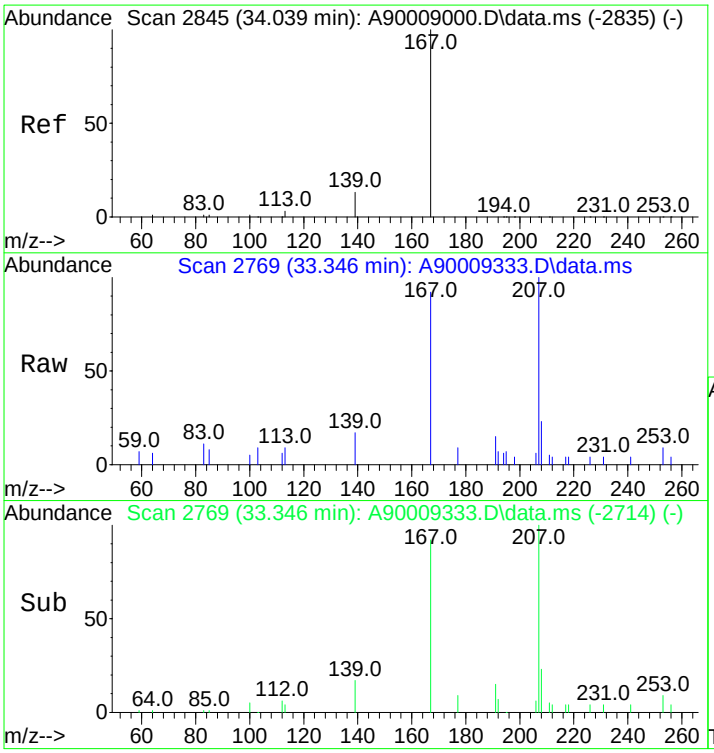


#55
Anthracene
Concen: 21.38 ng/mL m
RT: 32.670 min Scan# 2695
Delta R.T. 0.000 min
Lab File: A90009333.D
Acq: 5 Dec 2012 2:22 am

Tgt Ion:178 Resp: 5257

Ion	Ratio	Lower	Upper
178	100		
176	17.1	14.6	21.8

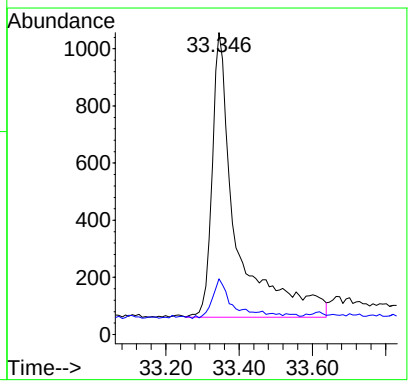


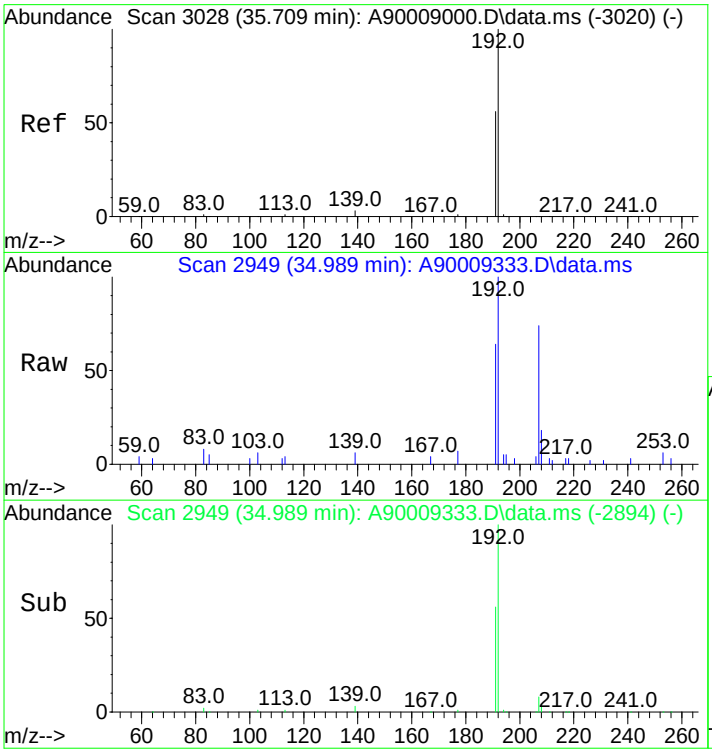


#56
Carbazole
Concen: 20.32 ng/mL m
RT: 33.346 min Scan# 2769
Delta R.T. 0.000 min
Lab File: A90009333.D
Acq: 5 Dec 2012 2:22 am

Tgt Ion:167 Resp: 4541

Ion	Ratio	Lower	Upper
167	100		
139	10.3	10.3	15.5

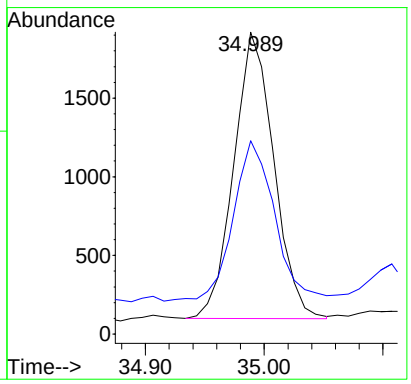


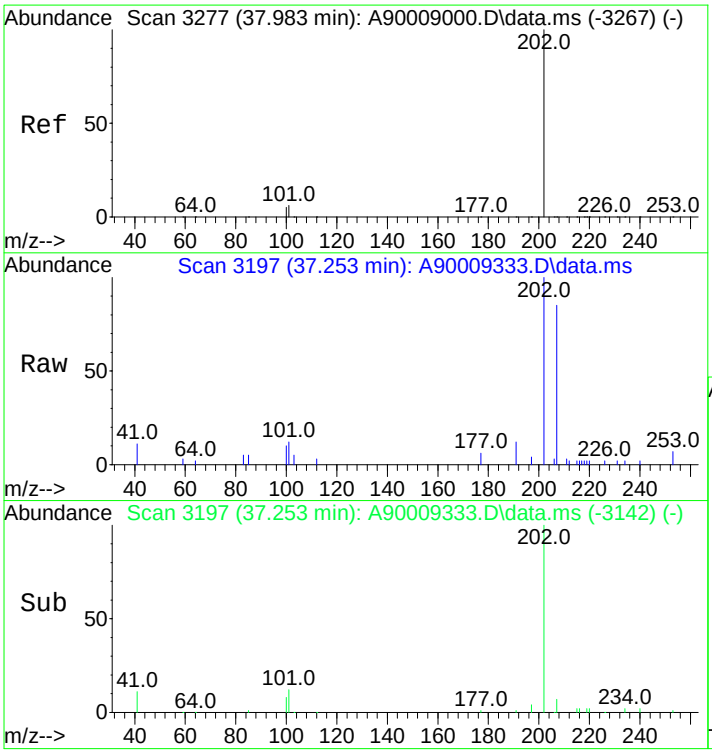


#57
1-Methylphenanthrene
Concen: 20.57 ng/mL
RT: 34.989 min Scan# 2949
Delta R.T. 0.000 min
Lab File: A90009333.D
Acq: 5 Dec 2012 2:22 am

Tgt Ion:192 Resp: 4256

Ion	Ratio	Lower	Upper
192	100		
191	56.1	44.8	67.2

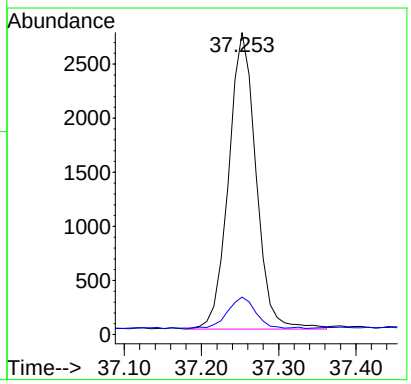


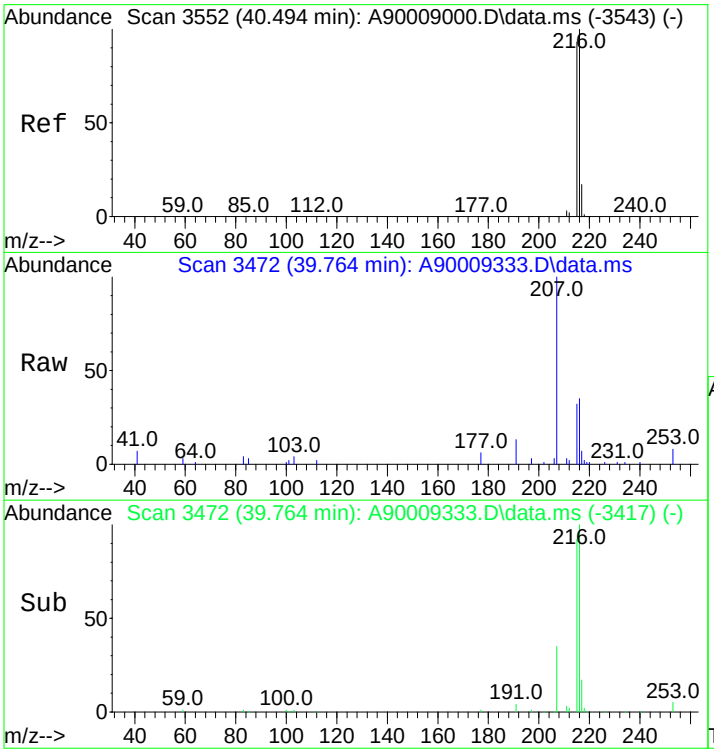


#58
Fluoranthene
Concen: 21.88 ng/mL
RT: 37.253 min Scan# 3197
Delta R.T. 0.000 min
Lab File: A90009333.D
Acq: 5 Dec 2012 2:22 am

Tgt Ion:202 Resp: 6751

Ion	Ratio	Lower	Upper
202	100		
101	10.8	8.5	12.7

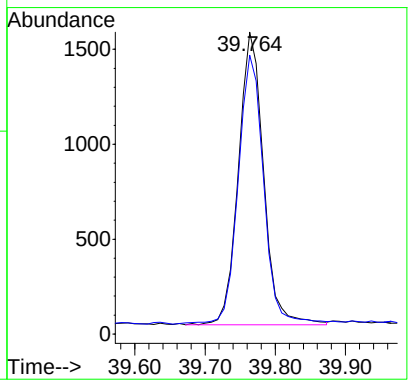


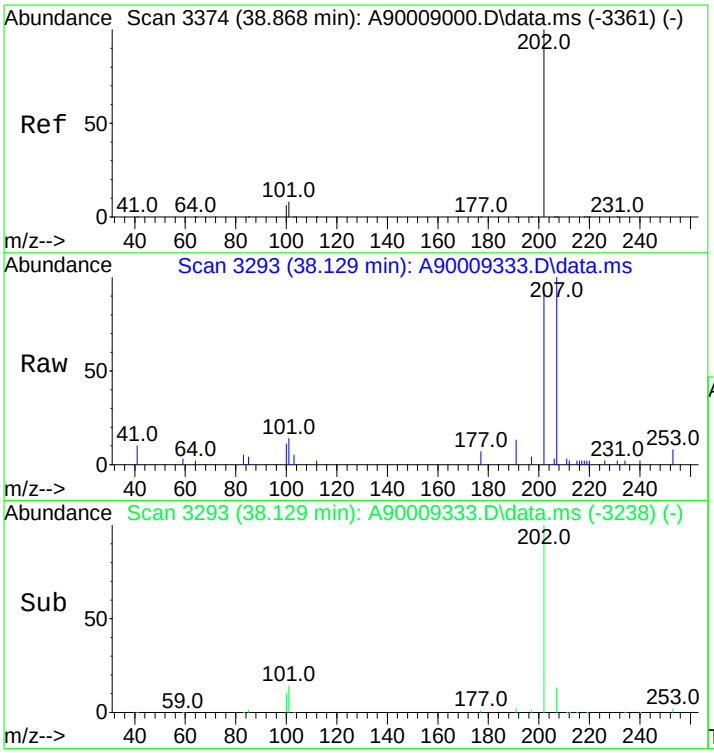


#59
Benzo(b)fluorene
Concen: 19.25 ng/mL
RT: 39.764 min Scan# 3472
Delta R.T. 0.000 min
Lab File: A90009333.D
Acq: 5 Dec 2012 2:22 am

Tgt Ion:216 Resp: 3843

Ion	Ratio	Lower	Upper
216	100		
215	93.3	74.8	112.2

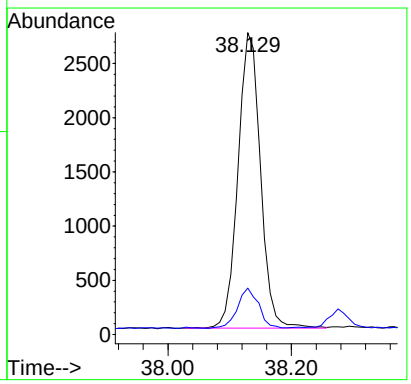


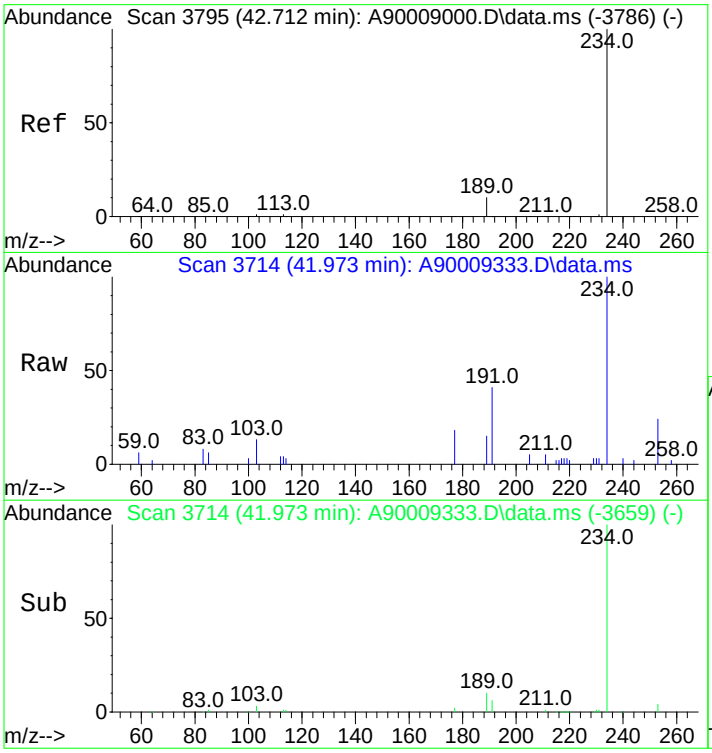


#60
Pyrene
Concen: 21.99 ng/mL
RT: 38.129 min Scan# 3293
Delta R.T. 0.000 min
Lab File: A90009333.D
Acq: 5 Dec 2012 2:22 am

Tgt Ion:202 Resp: 6890

Ion	Ratio	Lower	Upper
202	100		
101	12.9	10.1	15.1

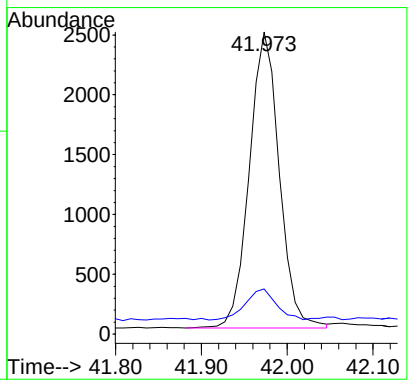


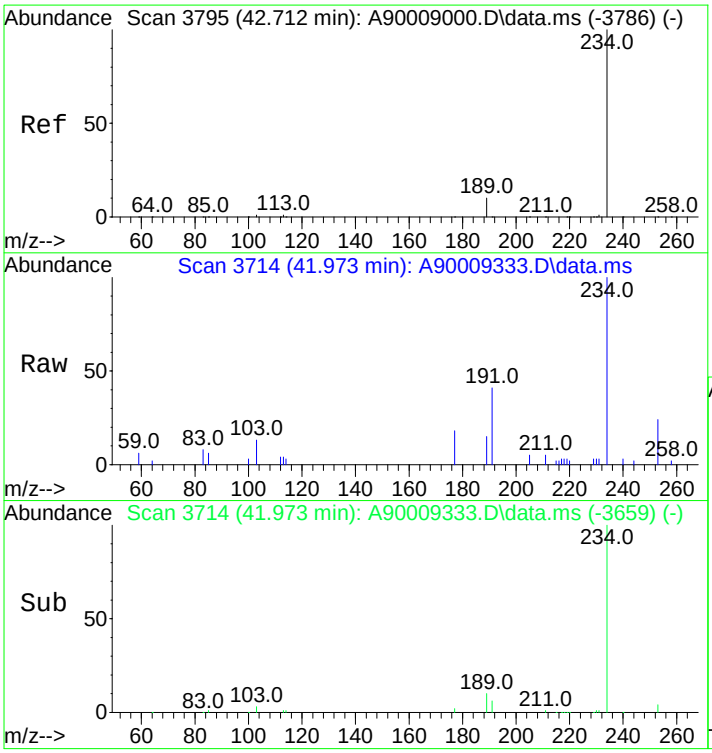


#66
Naphthobenzothiophene
Concen: 21.30 ng/ml
RT: 41.973 min Scan# 3714
Delta R.T. 0.000 min
Lab File: A90009333.D
Acq: 5 Dec 2012 2:22 am

Tgt Ion:234 Resp: 6023

Ion	Ratio	Lower	Upper
234	100		
189	11.1	7.4	11.2

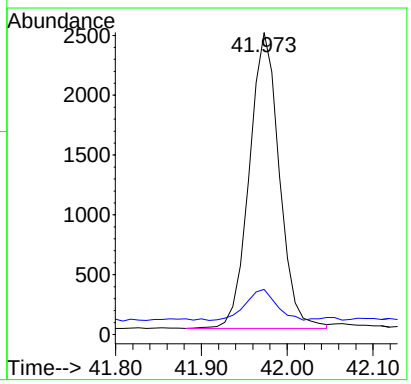


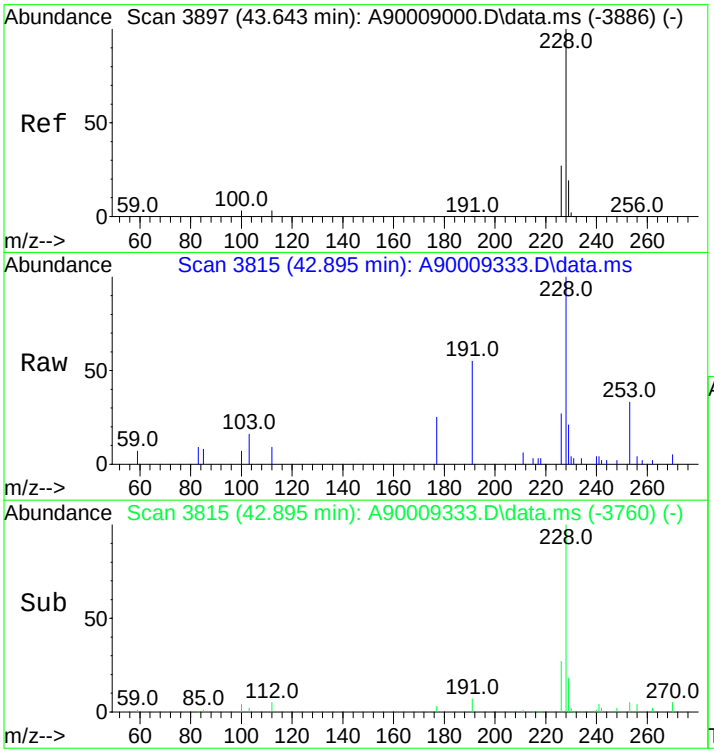


#67
Naphthobenzothiophene-2,1-D
Concen: 21.30 ng/mL
RT: 41.973 min Scan# 3714
Delta R.T. 0.000 min
Lab File: A90009333.D
Acq: 5 Dec 2012 2:22 am

Tgt Ion:234 Resp: 6023

Ion	Ratio	Lower	Upper
234	100		
189	11.1	7.4	11.2

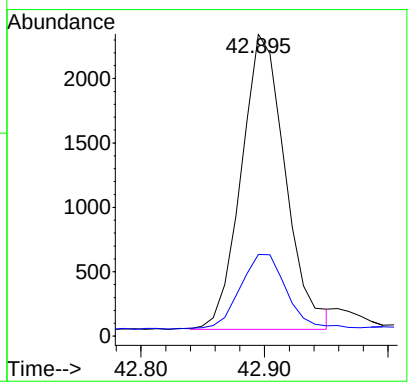


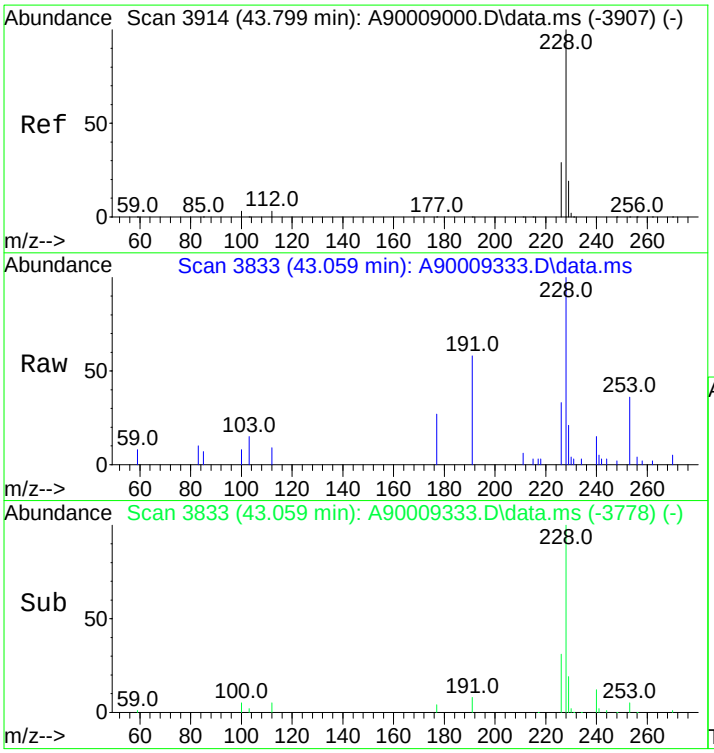


#75
Benz[a]anthracene
Concen: 22.74 ng/mL m
RT: 42.895 min Scan# 3815
Delta R.T. 0.000 min
Lab File: A90009333.D
Acq: 5 Dec 2012 2:22 am

Tgt Ion:228 Resp: 5670

Ion	Ratio	Lower	Upper
228	100		
226	26.3	21.3	31.9

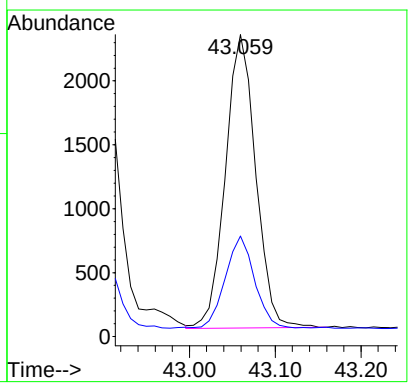


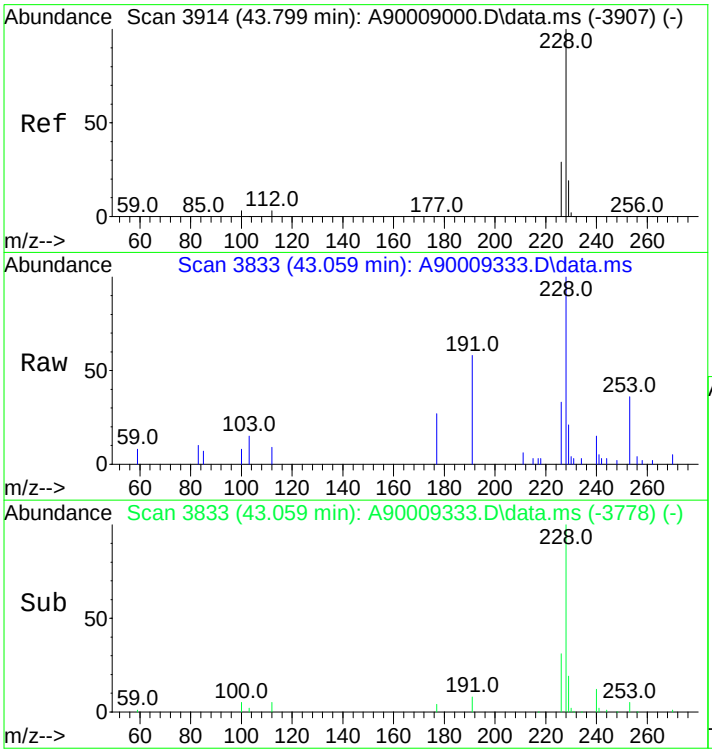


#76
Chrysene
Concen: 23.31 ng/mL
RT: 43.059 min Scan# 3833
Delta R.T. 0.000 min
Lab File: A90009333.D
Acq: 5 Dec 2012 2:22 am

Tgt Ion:228 Resp: 5627

Ion	Ratio	Lower	Upper
228	100		
226	30.7	23.4	35.0

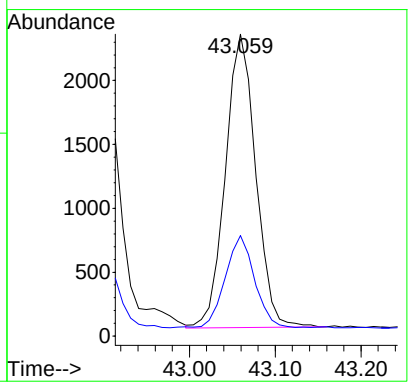


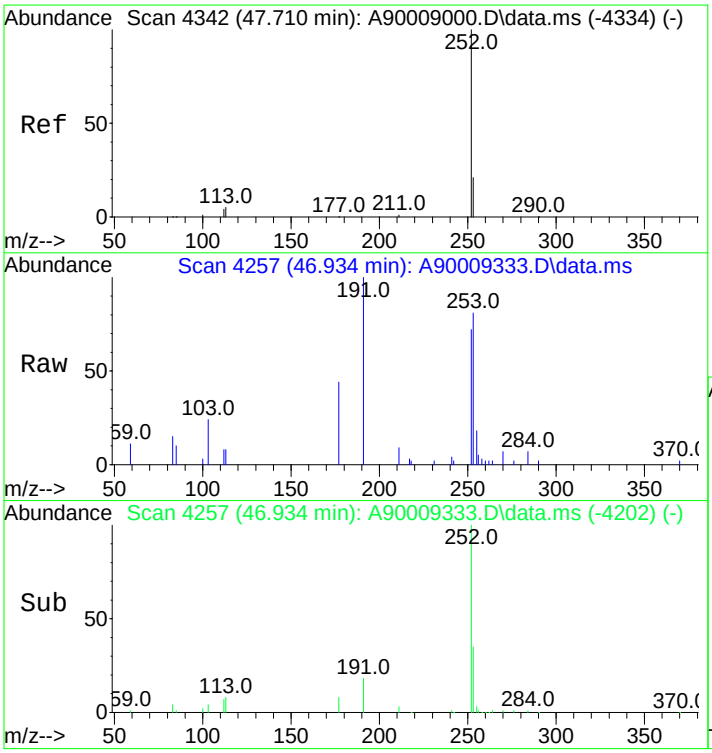


#77
Chrysene/Triphenylene
Concen: 23.31 ng/mL
RT: 43.059 min Scan# 3833
Delta R.T. 0.000 min
Lab File: A90009333.D
Acq: 5 Dec 2012 2:22 am

Tgt Ion:228 Resp: 5627

Ion	Ratio	Lower	Upper
228	100		
226	30.7	23.4	35.0

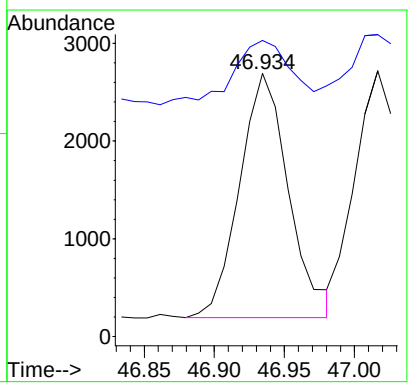


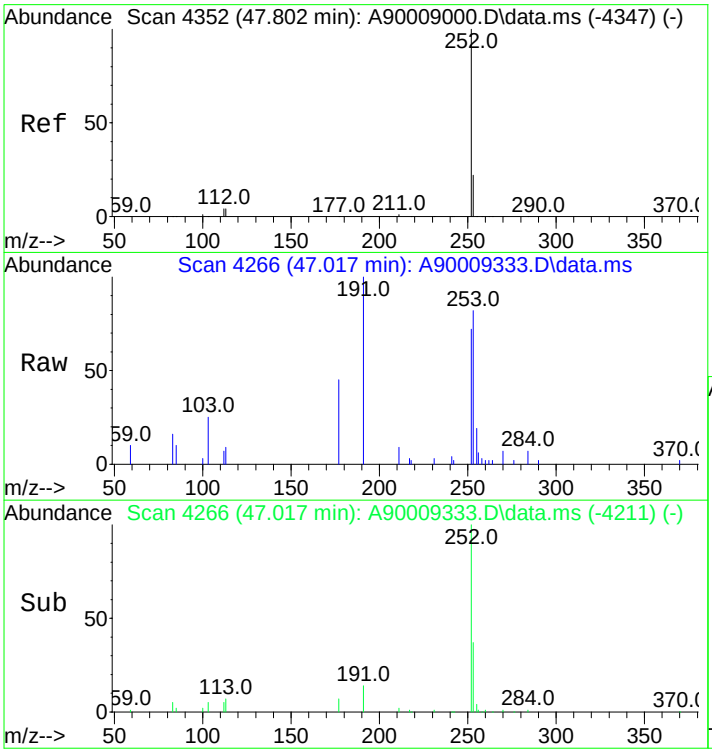


#84
Benzo[b]fluoranthene
Concen: 26.09 ng/mL
RT: 46.934 min Scan# 4257
Delta R.T. 0.000 min
Lab File: A90009333.D
Acq: 5 Dec 2012 2:22 am

Tgt Ion:252 Resp: 6072

Ion	Ratio	Lower	Upper
252	100		
253	26.3	20.9	31.3

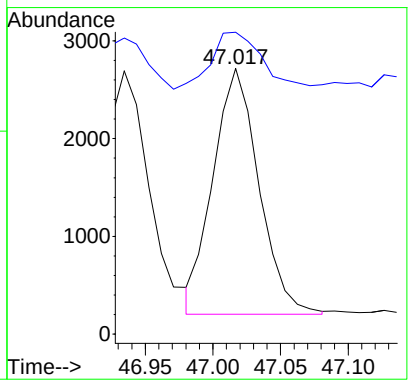


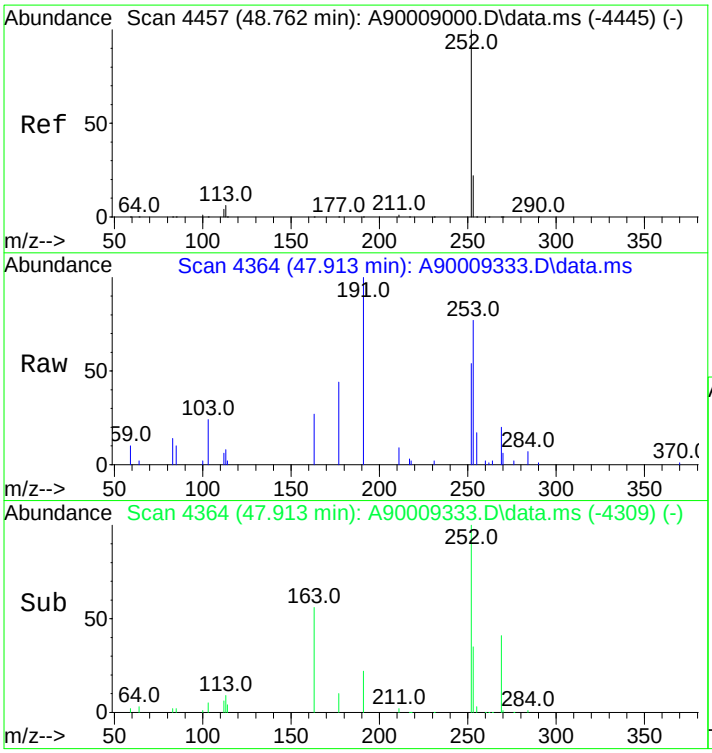


#85
Benzo[j]+[k]fluoranthene
Concen: 26.29 ng/mL m
RT: 47.017 min Scan# 4266
Delta R.T. 0.000 min
Lab File: A90009333.D
Acq: 5 Dec 2012 2:22 am

Tgt Ion:252 Resp: 5939

Ion	Ratio	Lower	Upper
252	100		
253	27.2	21.0	31.6

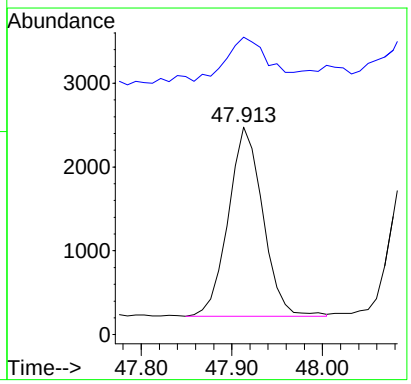


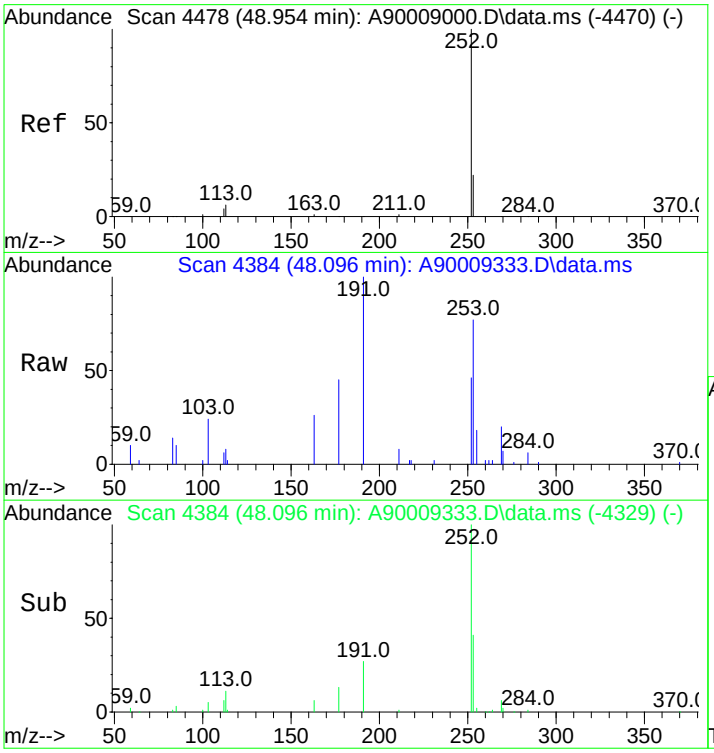


#87
Benzo[e]pyrene
Concen: 27.64 ng/mL
RT: 47.913 min Scan# 4364
Delta R.T. 0.000 min
Lab File: A90009333.D
Acq: 5 Dec 2012 2:22 am

Tgt Ion:252 Resp: 5955

Ion	Ratio	Lower	Upper
252	100		
253	27.6	22.1	33.1

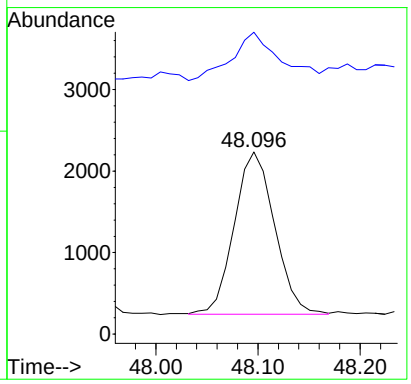


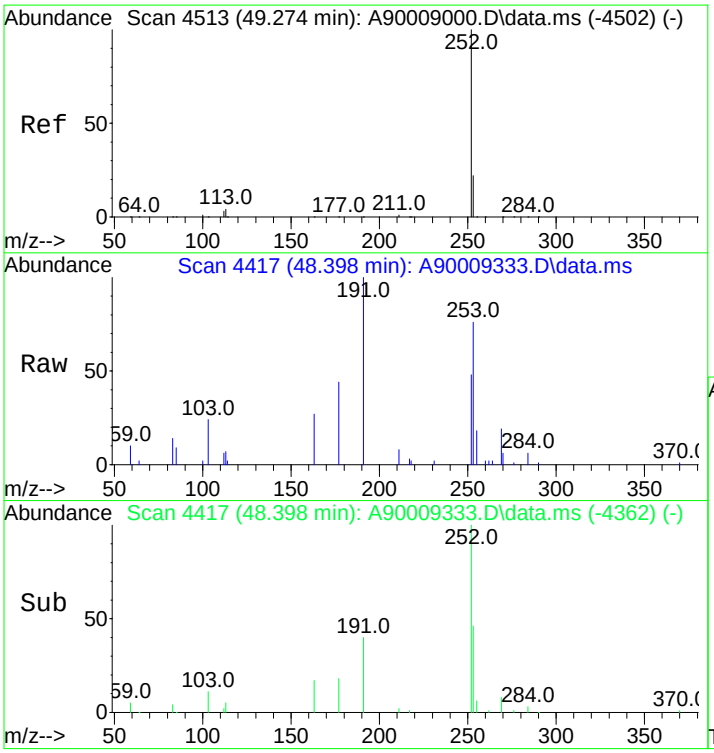


#89
Benzo[a]pyrene
Concen: 27.09 ng/mL m
RT: 48.096 min Scan# 4384
Delta R.T. 0.000 min
Lab File: A90009333.D
Acq: 5 Dec 2012 2:22 am

Tgt Ion:252 Resp: 5481

Ion	Ratio	Lower	Upper
252	100		
253	30.0	22.9	34.3

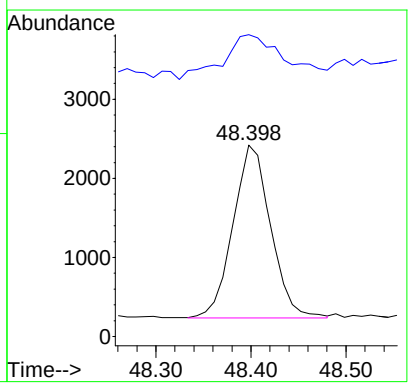


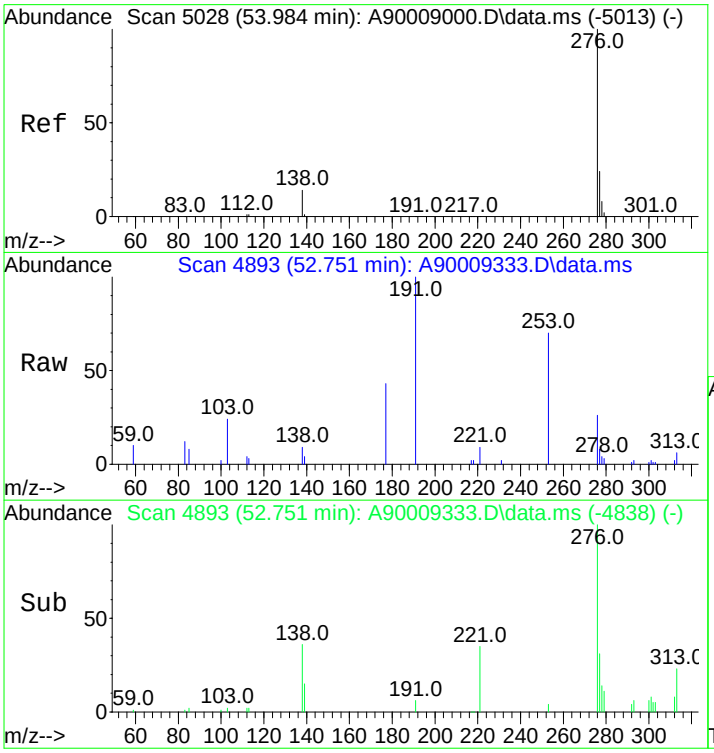


#90
Perylene
Concen: 27.86 ng/mL m
RT: 48.398 min Scan# 4417
Delta R.T. 0.000 min
Lab File: A90009333.D
Acq: 5 Dec 2012 2:22 am

Tgt Ion:252 Resp: 5998

Ion	Ratio	Lower	Upper
252	100		
253	32.0	23.4	35.2

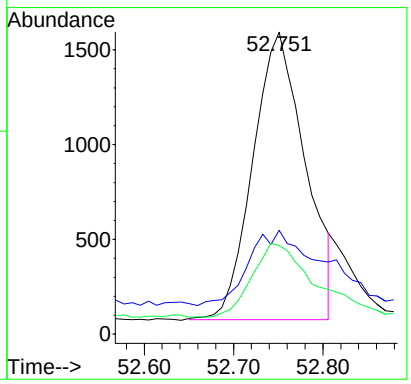


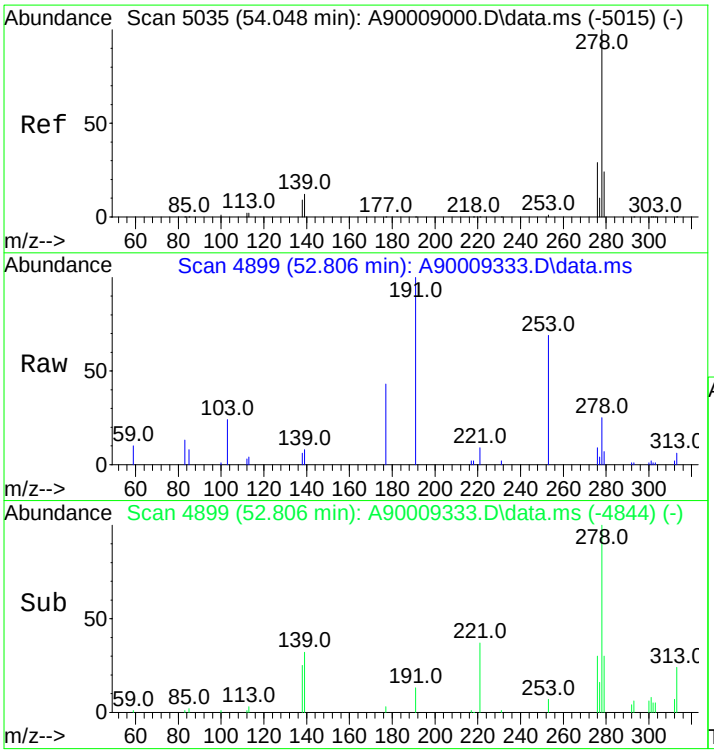


#91
Indeno[1,2,3-cd]pyrene
Concen: 28.72 ng/mL m
RT: 52.751 min Scan# 4893
Delta R.T. 0.000 min
Lab File: A90009333.D
Acq: 5 Dec 2012 2:22 am

Tgt Ion:276 Resp: 6178

Ion	Ratio	Lower	Upper
276	100		
138	34.3	20.2	30.4#
277	31.4	20.6	30.8#

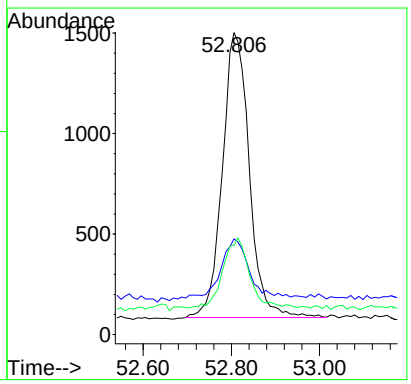


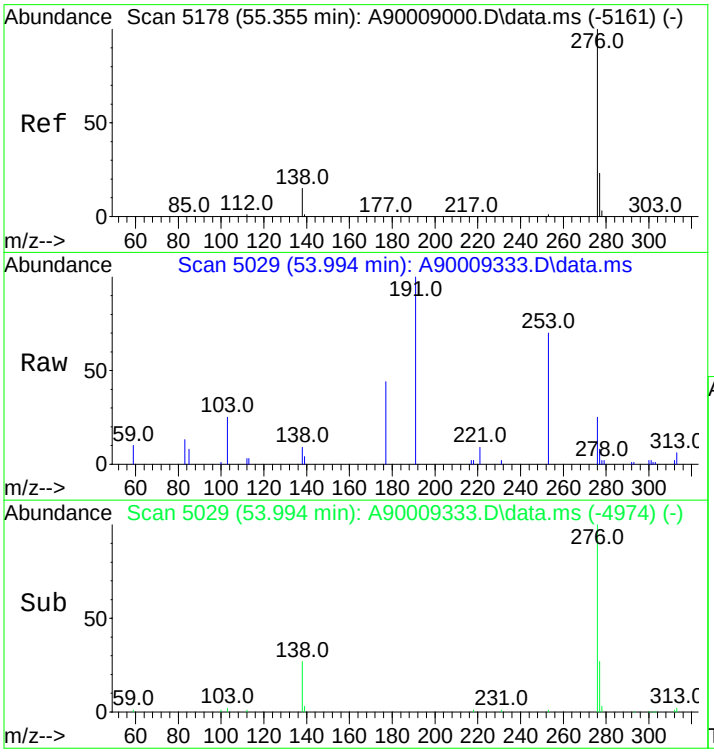


#92
Dibenz[ah]+[ac]anthracene
Concen: 28.28 ng/mL
RT: 52.806 min Scan# 4899
Delta R.T. 0.000 min
Lab File: A90009333.D
Acq: 5 Dec 2012 2:22 am

Tgt Ion:278 Resp: 6003

Ion	Ratio	Lower	Upper
278	100		
139	18.1	15.4	23.2
279	22.1	19.3	28.9

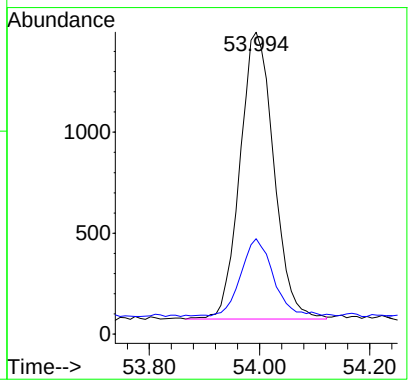


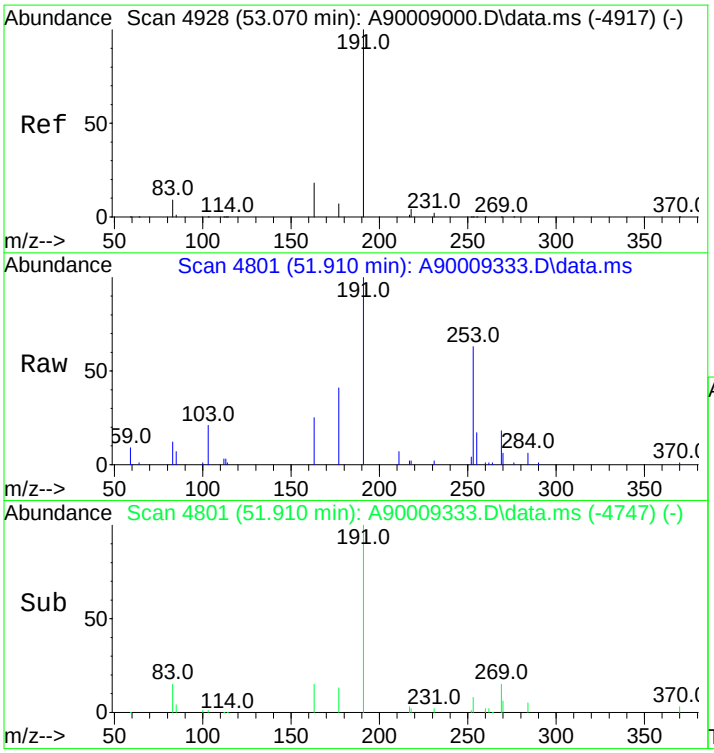


#93
Benzo[g,h,i]perylene
Concen: 28.70 ng/mL
RT: 53.994 min Scan# 5029
Delta R.T. 0.000 min
Lab File: A90009333.D
Acq: 5 Dec 2012 2:22 am

Tgt Ion:276 Resp: 6063

Ion	Ratio	Lower	Upper
276	100		
277	25.7	20.3	30.5

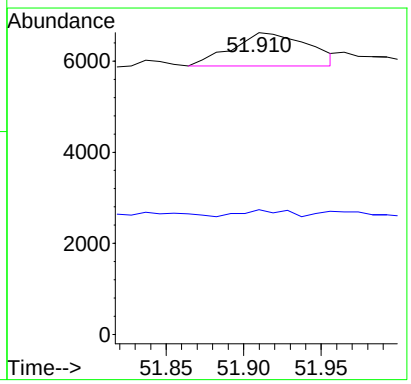


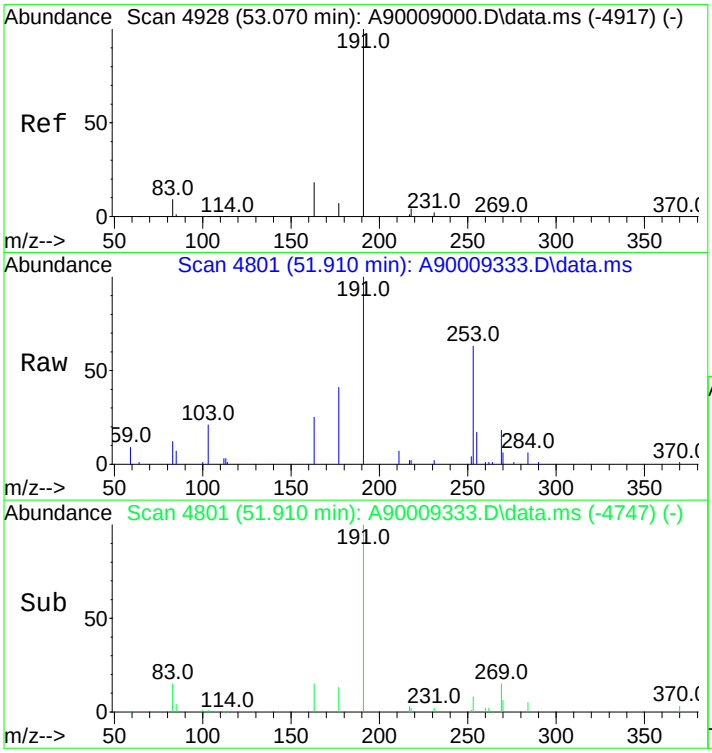


#94
Hopane (T19)
Concen: 33.70 ng/mL m
RT: 51.910 min Scan# 4801
Delta R.T. -0.009 min
Lab File: A90009333.D
Acq: 5 Dec 2012 2:22 am

Tgt Ion:191 Resp: 2517

Ion	Ratio	Lower	Upper
191	100		
177	11.4	15.3	22.9#

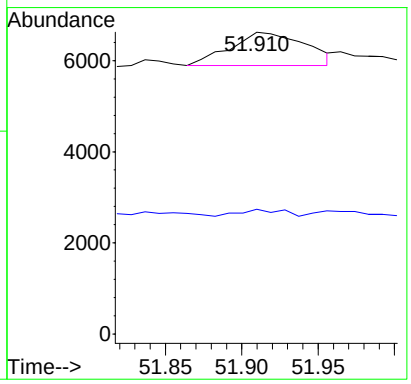




#95
17a(H),21B(H)-hopane - C30H52
Concen: 33.26 ng/mL m
RT: 51.910 min Scan# 4801
Delta R.T. -0.009 min
Lab File: A90009333.D
Acq: 5 Dec 2012 2:22 am

Tgt Ion:191 Resp: 2484

Ion	Ratio	Lower	Upper
191	100		
177	11.5	15.3	22.9#



Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC4\
Data File : A90009334.D
Acq On : 5 Dec 2012 3:47 am
Operator : PS
Sample : I912041203
Misc : WHAQ85@100ng/ml
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Dec 06 10:35:13 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 09:50:00 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.557	164	66685	500.000	ng/mL	0.00
74) Chrysene-d12	42.959	240	109399	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.622	136	26221	113.255	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 11.33%#			
42) Phenanthrene-d10	32.405	188	23294	93.463	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 9.35%#			
83) Benzo[b]fluoranthene-d12	46.852	264	19742	104.200	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 10.42%#			
88) Benzo[a]pyrene-d12	48.004	264	19000	107.532	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 10.75%#			
129) 5B(H)Cholane - Surr	43.598	217	4274	93.608	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 9.36%#			
Target Compounds						Qvalue
3) trans-Decalin	16.291	138	2830	54.297	ng/mL	100
4) cis-Decalin	17.495	138	2228	54.938	ng/mL	100
10) Naphthalene	19.695	128	26266	110.458	ng/mL#	100
16) 2-Methylnaphthalene	22.377	142	16847	103.059	ng/mL#	100
17) 1-Methylnaphthalene	22.797	142	16238	103.183	ng/mL#	100
18) Benzothiophene	19.914	134	21606	108.390	ng/mL	100
23) Biphenyl	24.248	154	21888	102.322	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.860	156	15402	97.324	ng/mL#	100
25) Dibenzofuran	27.323	168	23213	98.573	ng/mL	99
26) Acenaphthylene	25.945	152	25688	101.897	ng/mL#	100
27) Acenaphthene	26.685	153	16801	106.120	ng/mL	97
28) 2,3,5-Trimethylnaphthalen	28.236	170	14168	98.893	ng/mL	97
29) Fluorene	28.692	166	17678	93.261	ng/mL	100
33) Dibenzothiophene	32.004	184	24574	91.128	ng/mL	99
43) Phenanthrene	32.487	178	25559	92.643	ng/mL	99
54) Retene	39.471	234	6599	82.744	ng/mL	94
55) Anthracene	32.670	178	23496M4	94.505	ng/mL	
56) Carbazole	33.345	167	18971	84.289	ng/mL	99
57) 1-Methylphenanthrene	34.988	192	18350	87.480	ng/mL	99
58) Fluoranthene	37.252	202	27887	88.420	ng/mL	99
59) Benzo(b)fluorene	39.763	216	16004	79.632	ng/mL	99
60) Pyrene	38.129	202	28452	88.872	ng/mL	100
66) Naphthobenzothiophene	41.973	234	24893	86.635	ng/ml	99
67) Naphthobenzothiophene-2,1	41.973	234	24893	86.635	ng/mL	99
75) Benz[a]anthracene	42.895	228	23704	92.889	ng/mL	100
76) Chrysene	43.059	228	24283	98.297	ng/mL	99
77) Chrysene/Triphenylene	43.059	228	24283	98.297	ng/mL	99
84) Benzo[b]fluoranthene	46.934	252	24621	101.212	ng/mL	92
85) Benzo[j]+[k]fluoranthene	47.016	252	25307M2	107.318	ng/mL	
87) Benzo[e]pyrene	47.913	252	23739	104.422	ng/mL	92
89) Benzo[a]pyrene	48.096	252	22270	104.614	ng/mL	92
90) Perylene	48.397	252	23828	104.858	ng/mL	90
91) Indeno[1,2,3-cd]pyrene	52.741	276	24121M6	105.214	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.805	278	24241	107.971	ng/mL	99
93) Benzo[g,h,i]perylene	53.993	276	24452	109.481	ng/mL	100
94) Hopane (T19)	51.919	191	9992	122.578	ng/mL#	80
95) 17a(H),21B(H)-hopane - C3	51.919	191	9992	122.919	ng/mL#	80

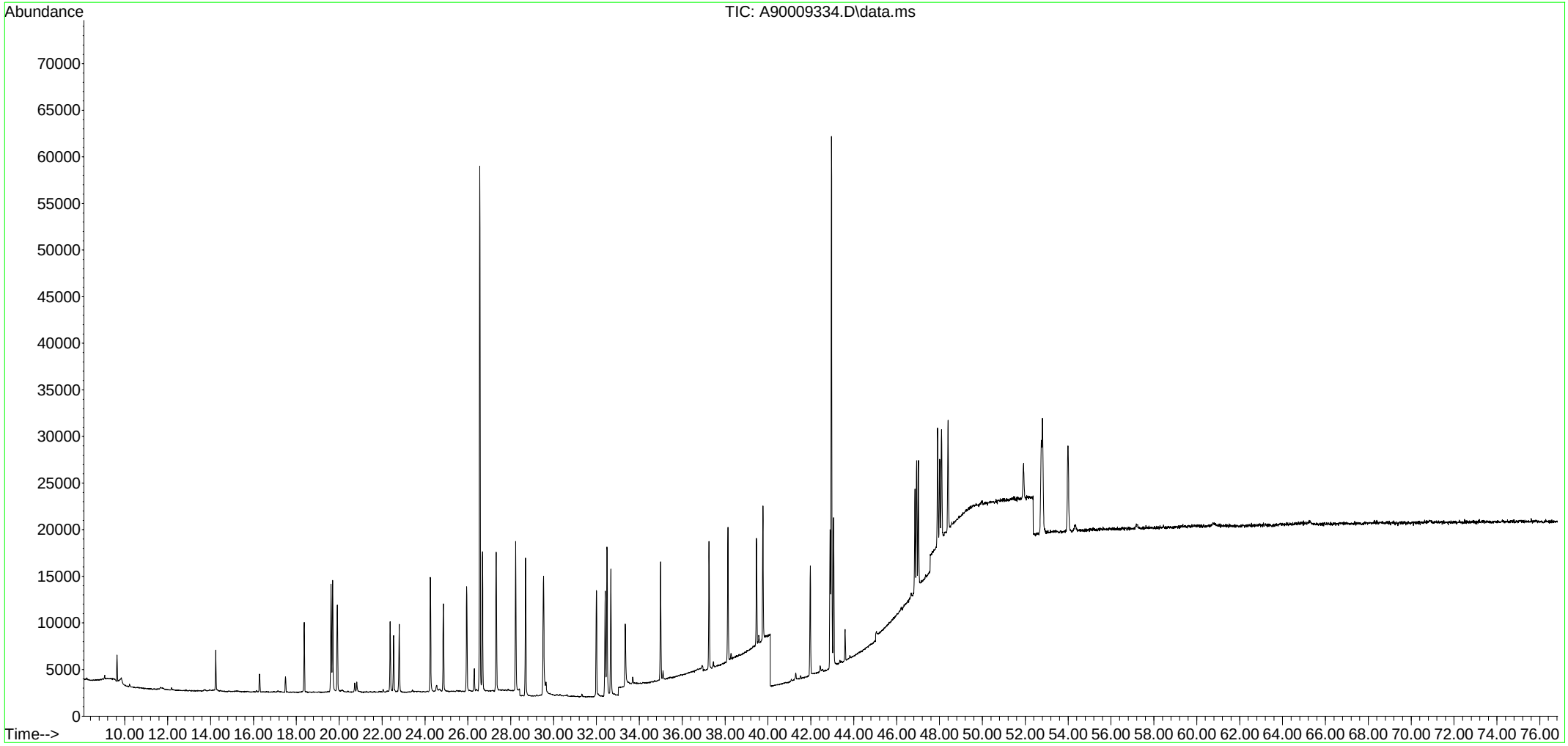
(#) = qualifier out of range (m) = manual integration (+) = signals summed

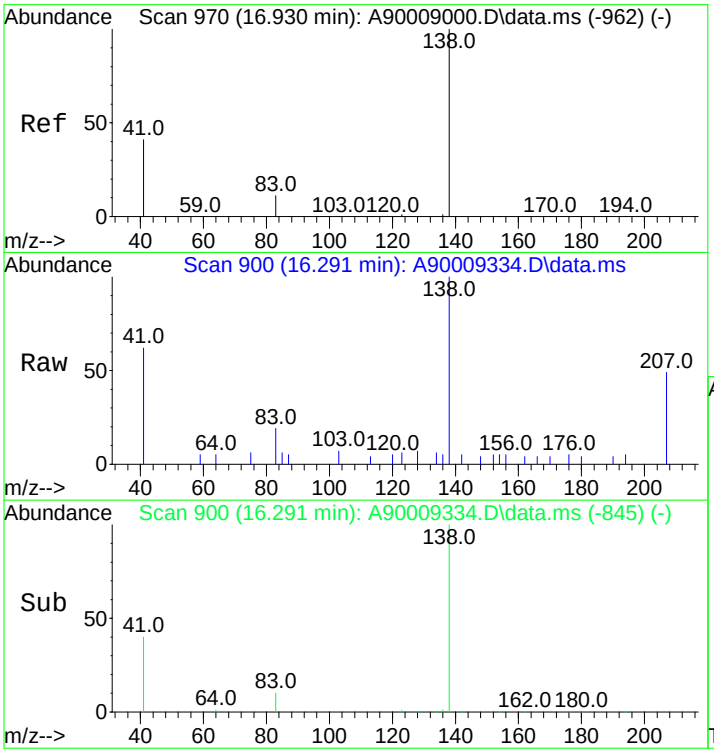
Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC4\
Data File : A90009334.D
Acq On : 5 Dec 2012 3:47 am
Operator : PS
Sample : I912041203
Misc : WHAQ85@100ng/ml
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Dec 06 10:35:13 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 09:50:00 2012
Response via : Initial Calibration

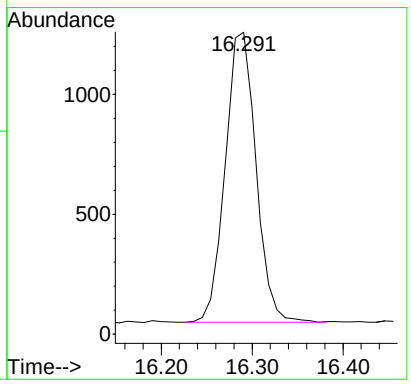
Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

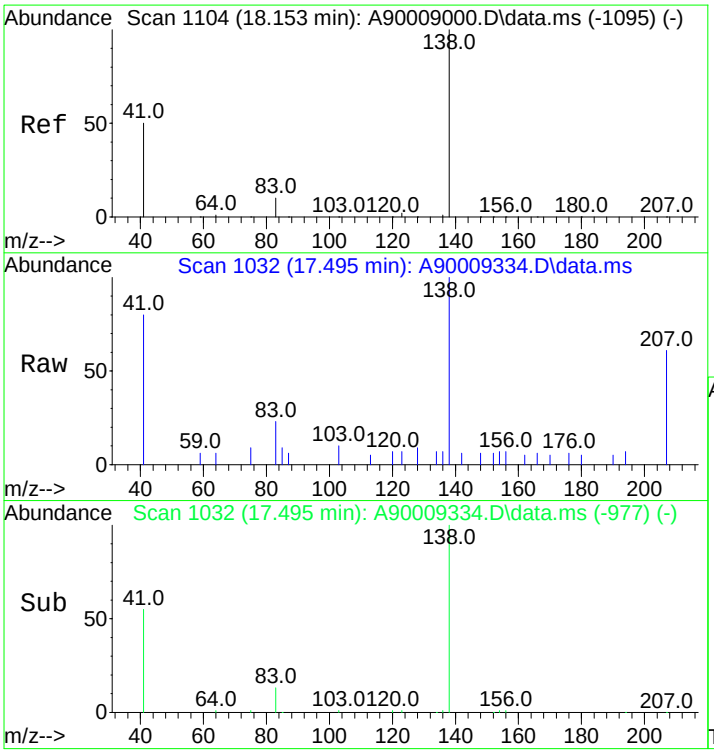




#3
trans-Decalin
Concen: 54.30 ng/mL
RT: 16.291 min Scan# 900
Delta R.T. -0.000 min
Lab File: A90009334.D
Acq: 5 Dec 2012 3:47 am

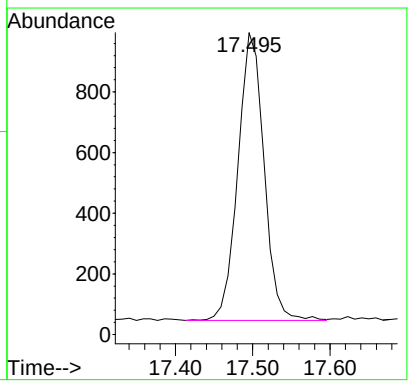
Tgt Ion:138 Resp: 2830

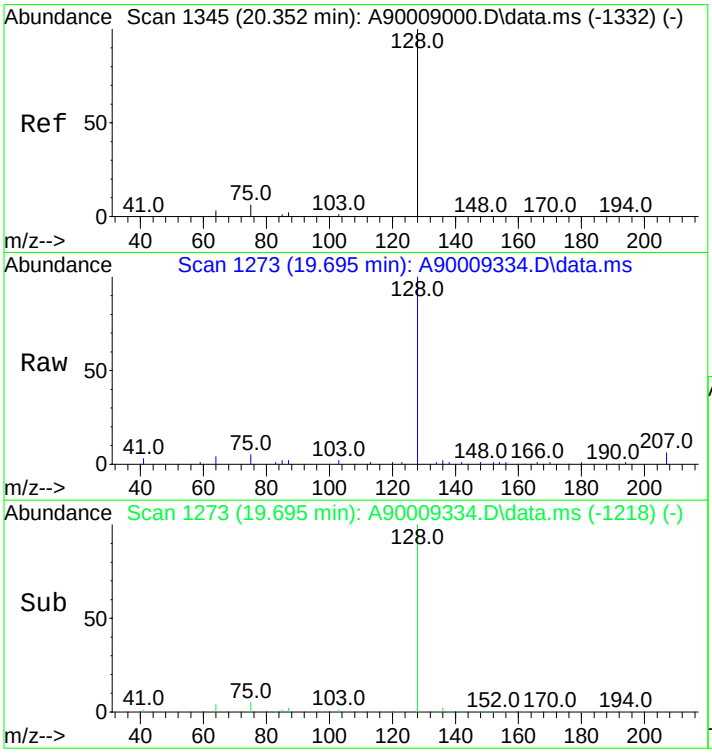




#4
cis-Decalin
Concen: 54.94 ng/mL
RT: 17.495 min Scan# 1032
Delta R.T. -0.000 min
Lab File: A90009334.D
Acq: 5 Dec 2012 3:47 am

Tgt Ion:138 Resp: 2228

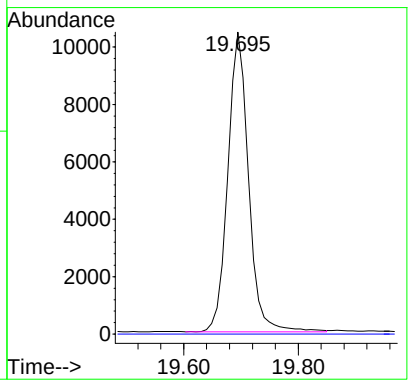


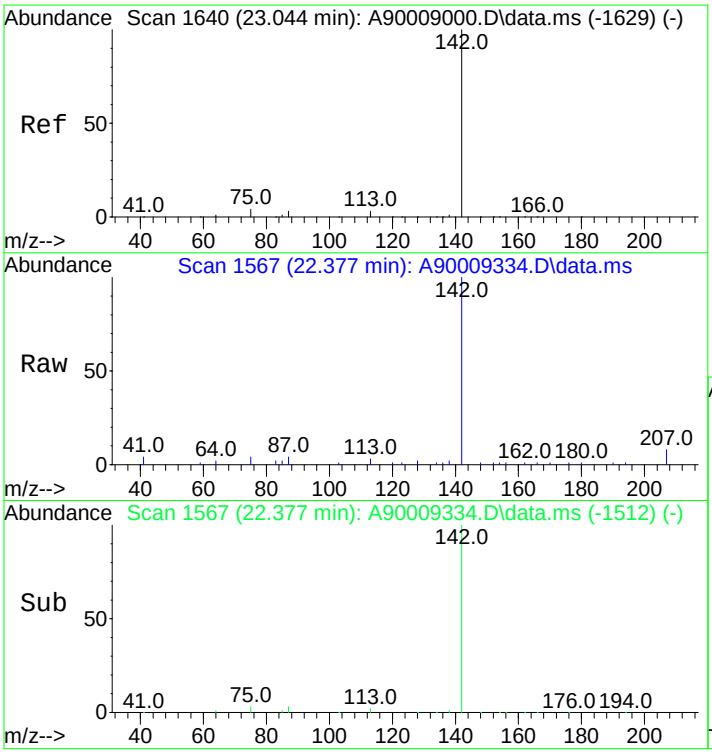


#10
Naphthalene
Concen: 110.46 ng/mL
RT: 19.695 min Scan# 1273
Delta R.T. -0.000 min
Lab File: A90009334.D
Acq: 5 Dec 2012 3:47 am

Tgt Ion:128 Resp: 26266

Ion	Ratio	Lower	Upper
128	100		
127	0.0	0.0	0.0

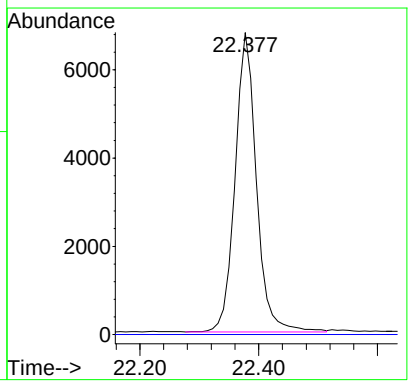


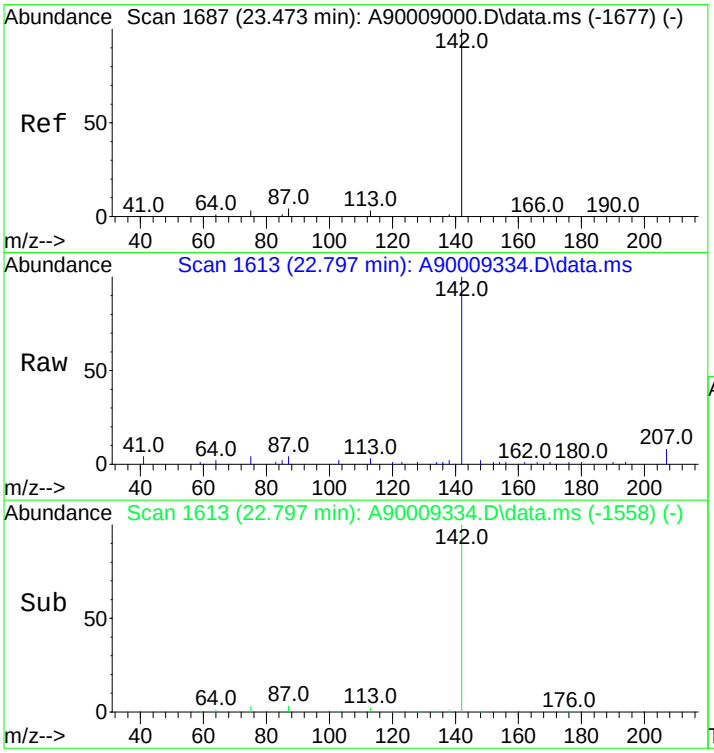


#16
2-Methylnaphthalene
Concen: 103.06 ng/mL
RT: 22.377 min Scan# 1567
Delta R.T. -0.000 min
Lab File: A90009334.D
Acq: 5 Dec 2012 3:47 am

Tgt Ion:142 Resp: 16847

Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	0.0

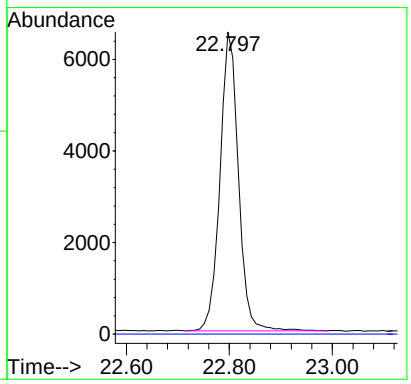


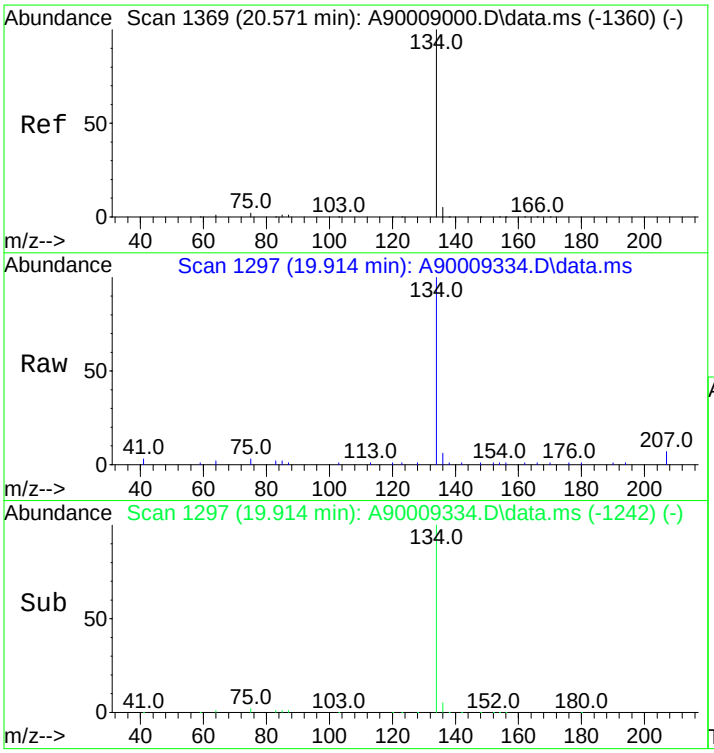


#17
1-Methylnaphthalene
Concen: 103.18 ng/mL
RT: 22.797 min Scan# 1613
Delta R.T. -0.000 min
Lab File: A90009334.D
Acq: 5 Dec 2012 3:47 am

Tgt Ion:142 Resp: 16238

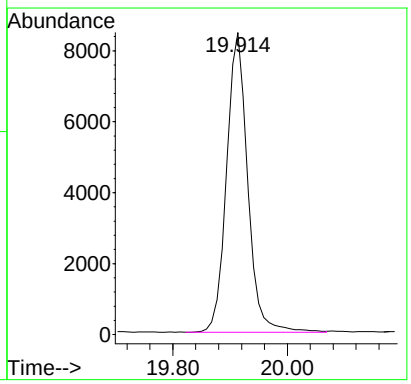
Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	20.0

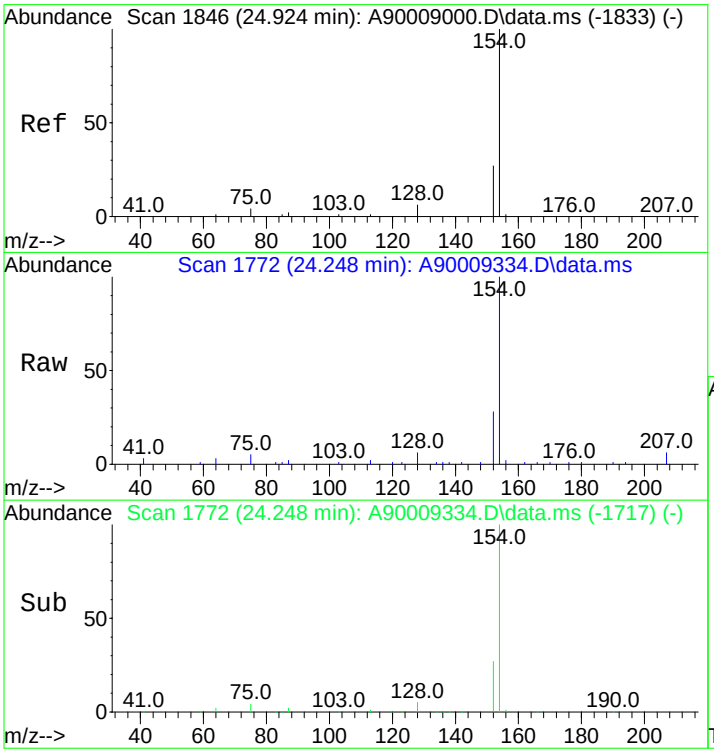




#18
Benzothiophene
Concen: 108.39 ng/mL
RT: 19.914 min Scan# 1297
Delta R.T. -0.000 min
Lab File: A90009334.D
Acq: 5 Dec 2012 3:47 am

Tgt Ion:134 Resp: 21606

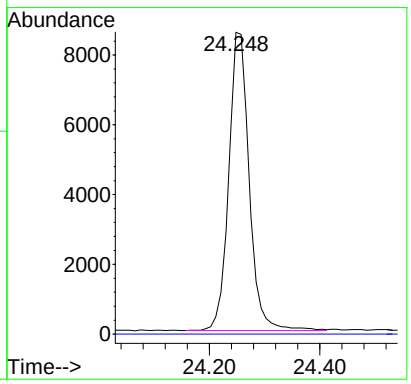


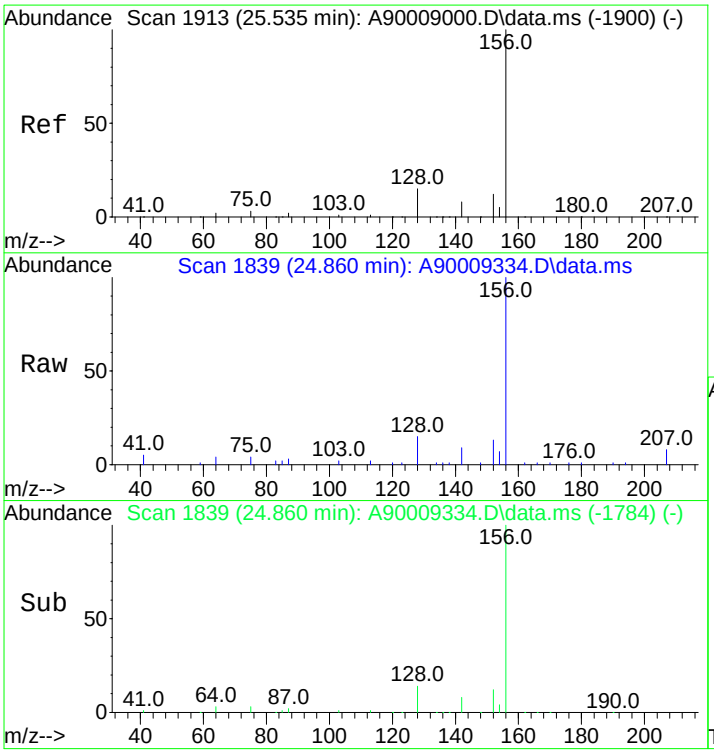


#23
Biphenyl
Concen: 102.32 ng/mL
RT: 24.248 min Scan# 1772
Delta R.T. -0.000 min
Lab File: A90009334.D
Acq: 5 Dec 2012 3:47 am

Tgt Ion:154 Resp: 21888

Ion	Ratio	Lower	Upper
154	100		
153	0.0	0.0	0.0

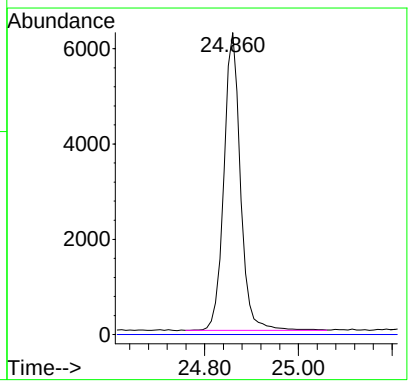


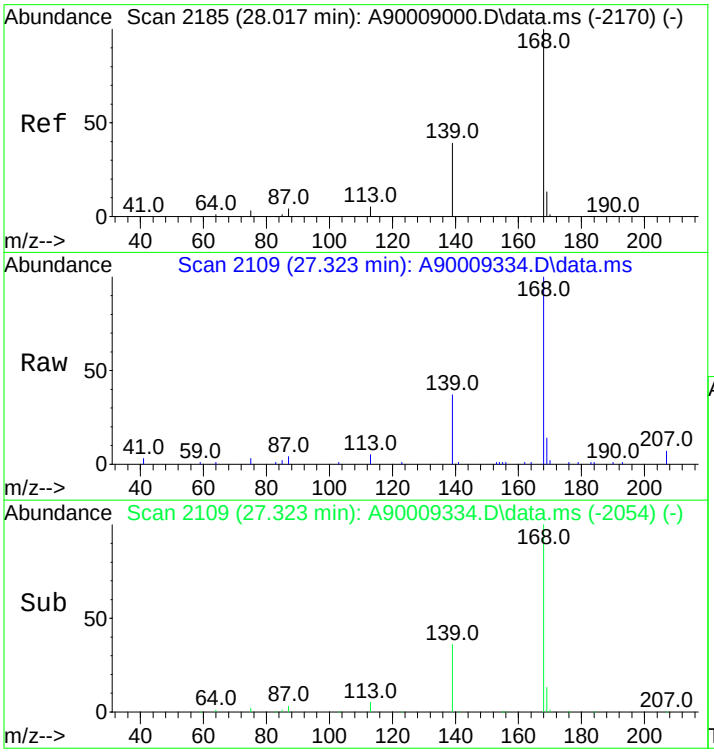


#24
2,6-Dimethylnaphthalene
Concen: 97.32 ng/mL
RT: 24.860 min Scan# 1839
Delta R.T. -0.000 min
Lab File: A90009334.D
Acq: 5 Dec 2012 3:47 am

Tgt Ion:156 Resp: 15402

Ion	Ratio	Lower	Upper
156	100		
155	0.0	0.0	0.0

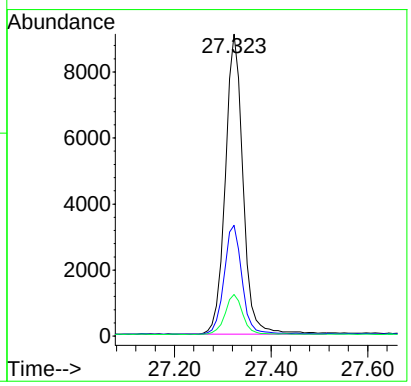


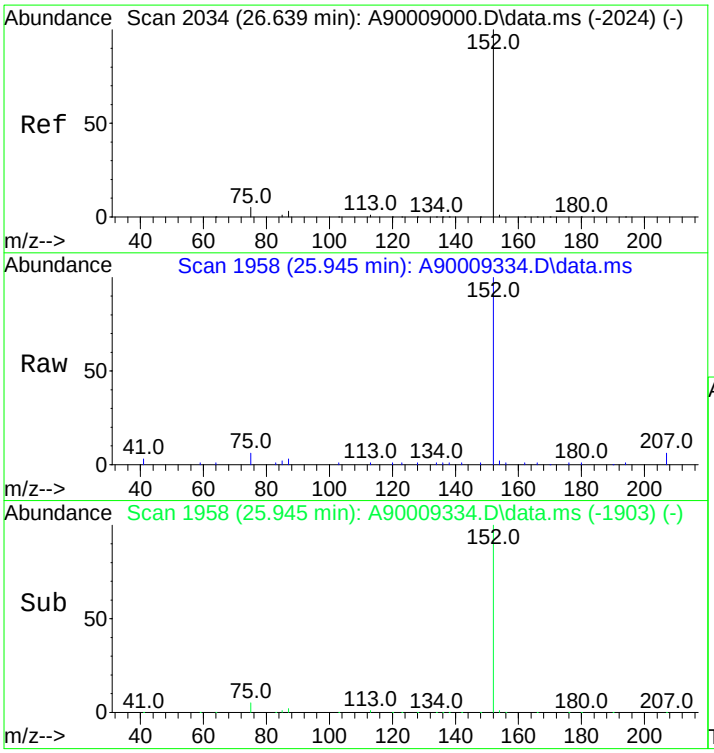


#25
Dibenzofuran
Concen: 98.57 ng/mL
RT: 27.323 min Scan# 2109
Delta R.T. -0.000 min
Lab File: A90009334.D
Acq: 5 Dec 2012 3:47 am

Tgt Ion:168 Resp: 23213

Ion	Ratio	Lower	Upper
168	100		
139	36.9	28.9	43.3
169	13.4	10.6	15.8

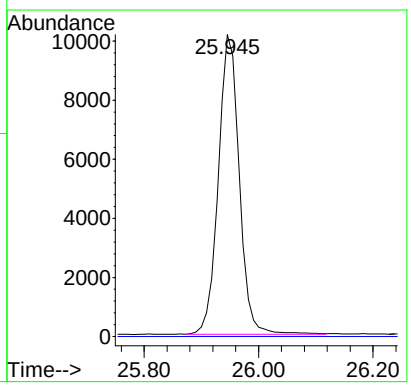


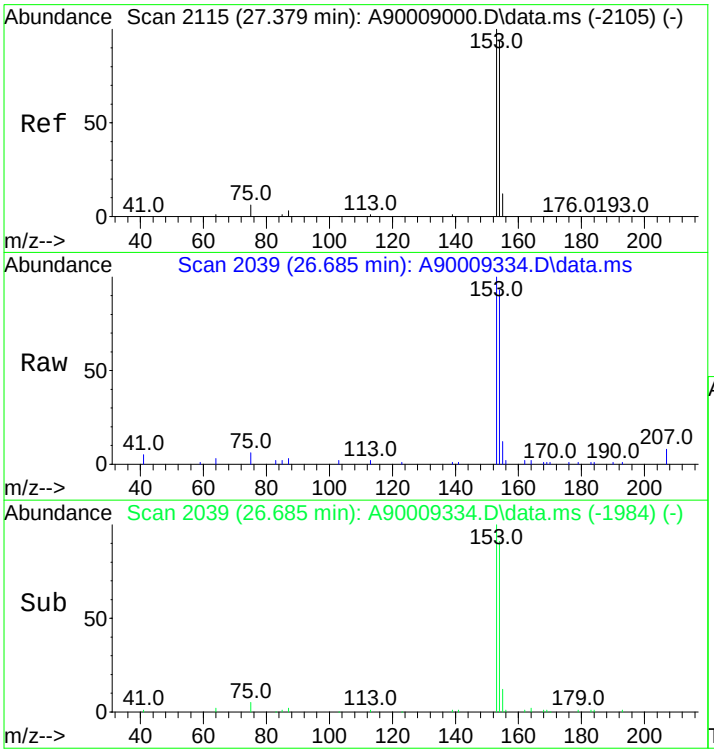


#26
Acenaphthylene
Concen: 101.90 ng/mL
RT: 25.945 min Scan# 1958
Delta R.T. -0.000 min
Lab File: A90009334.D
Acq: 5 Dec 2012 3:47 am

Tgt Ion:152 Resp: 25688

Ion	Ratio	Lower	Upper
152	100		
153	0.0	0.0	0.0

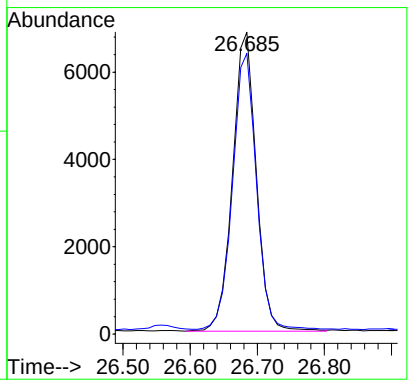


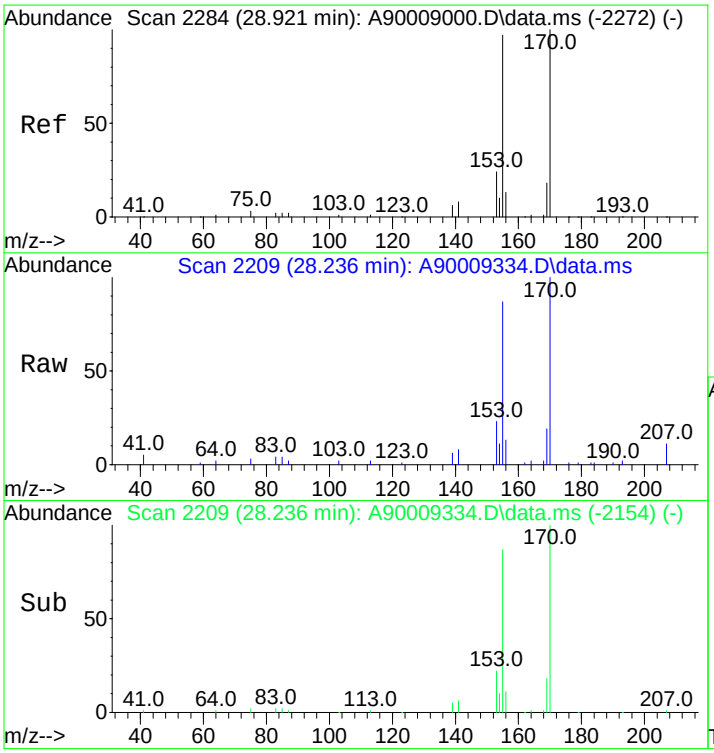


#27
Acenaphthene
Concen: 106.12 ng/mL
RT: 26.685 min Scan# 2039
Delta R.T. -0.000 min
Lab File: A90009334.D
Acq: 5 Dec 2012 3:47 am

Tgt Ion:153 Resp: 16801

Ion	Ratio	Lower	Upper
153	100		
154	92.5	76.2	114.4

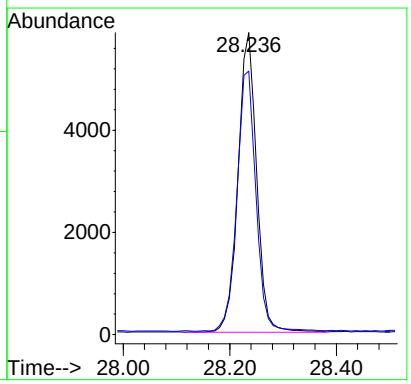


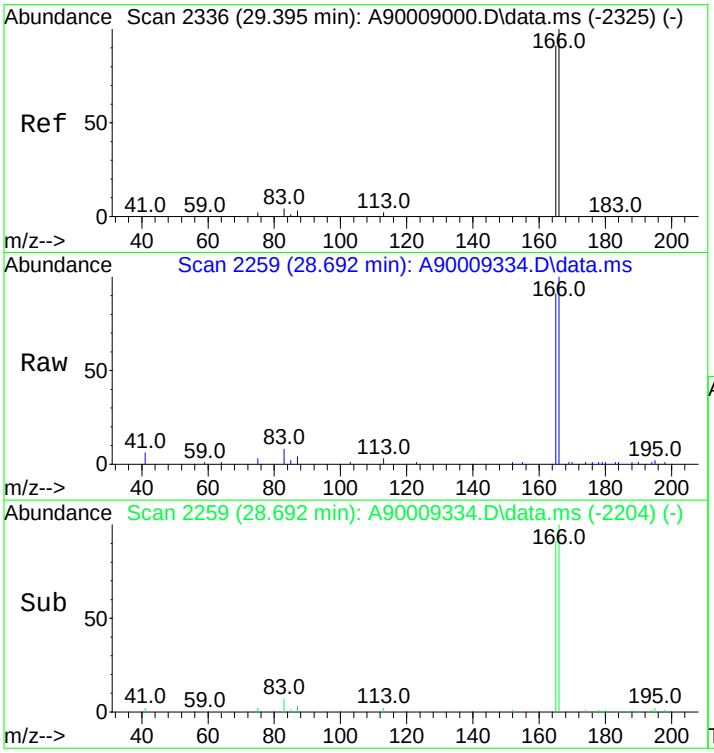


#28
2,3,5-Trimethylnaphthalene
Concen: 98.89 ng/mL
RT: 28.236 min Scan# 2209
Delta R.T. -0.000 min
Lab File: A90009334.D
Acq: 5 Dec 2012 3:47 am

Tgt Ion:170 Resp: 14168

Ion	Ratio	Lower	Upper
170	100		
155	89.4	69.0	103.6

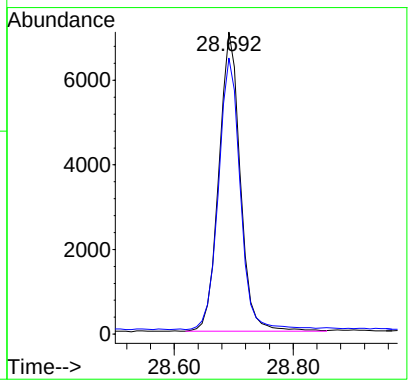


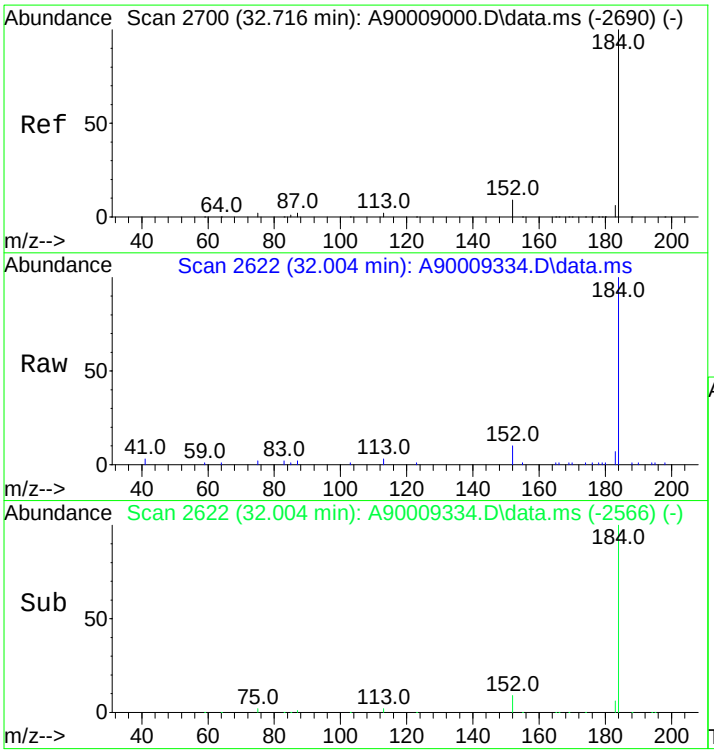


#29
Fluorene
Concen: 93.26 ng/mL
RT: 28.692 min Scan# 2259
Delta R.T. -0.000 min
Lab File: A90009334.D
Acq: 5 Dec 2012 3:47 am

Tgt Ion:166 Resp: 17678

Ion	Ratio	Lower	Upper
166	100		
165	92.1	73.8	110.6

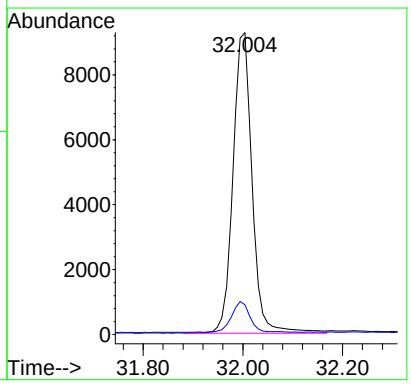


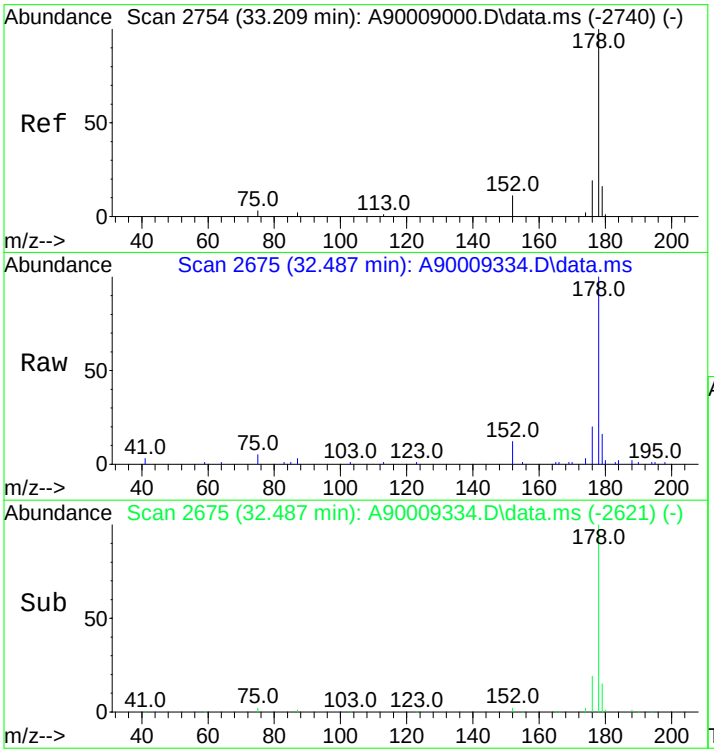


#33
Dibenzothiophene
Concen: 91.13 ng/mL
RT: 32.004 min Scan# 2622
Delta R.T. 0.009 min
Lab File: A90009334.D
Acq: 5 Dec 2012 3:47 am

Tgt Ion:184 Resp: 24574

Ion	Ratio	Lower	Upper
184	100		
152	10.0	8.2	12.4

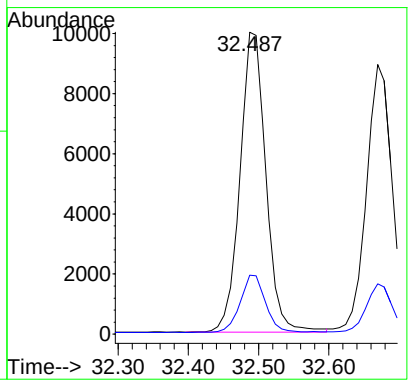


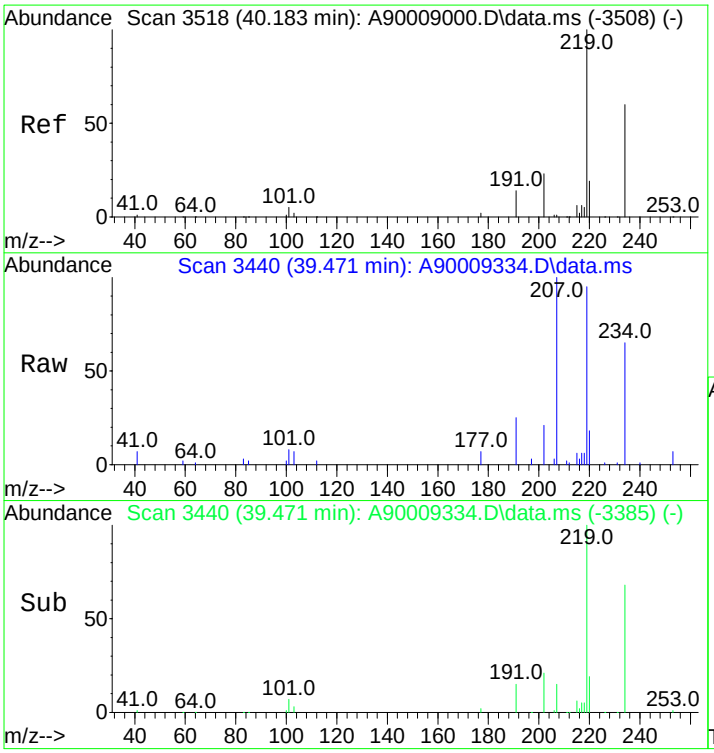


#43
Phenanthrene
Concen: 92.64 ng/mL
RT: 32.487 min Scan# 2675
Delta R.T. -0.010 min
Lab File: A90009334.D
Acq: 5 Dec 2012 3:47 am

Tgt Ion:178 Resp: 25559

Ion	Ratio	Lower	Upper
178	100		
176	18.8	14.9	22.3

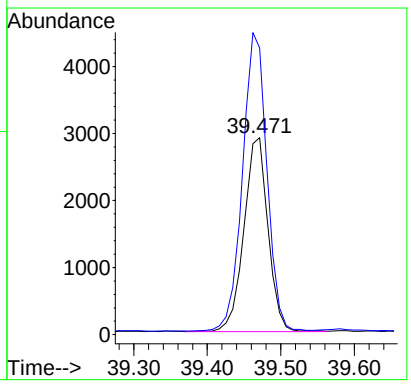


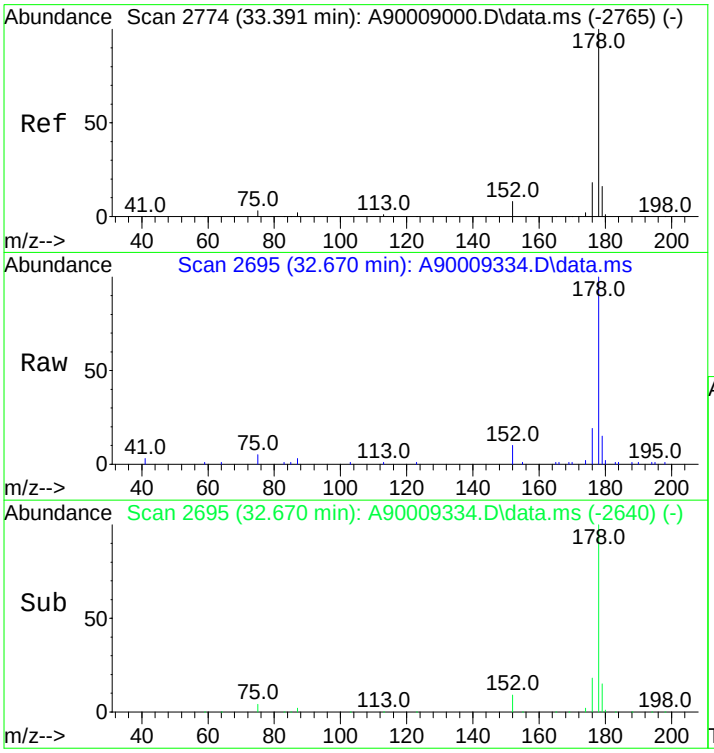


#54
Retene
Concen: 82.74 ng/mL
RT: 39.471 min Scan# 3440
Delta R.T. -0.000 min
Lab File: A90009334.D
Acq: 5 Dec 2012 3:47 am

Tgt Ion:234 Resp: 6599

Ion	Ratio	Lower	Upper
234	100		
219	155.5	117.9	176.9

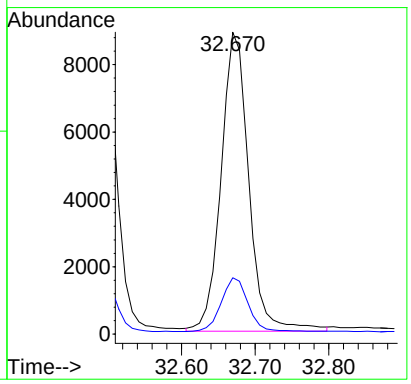


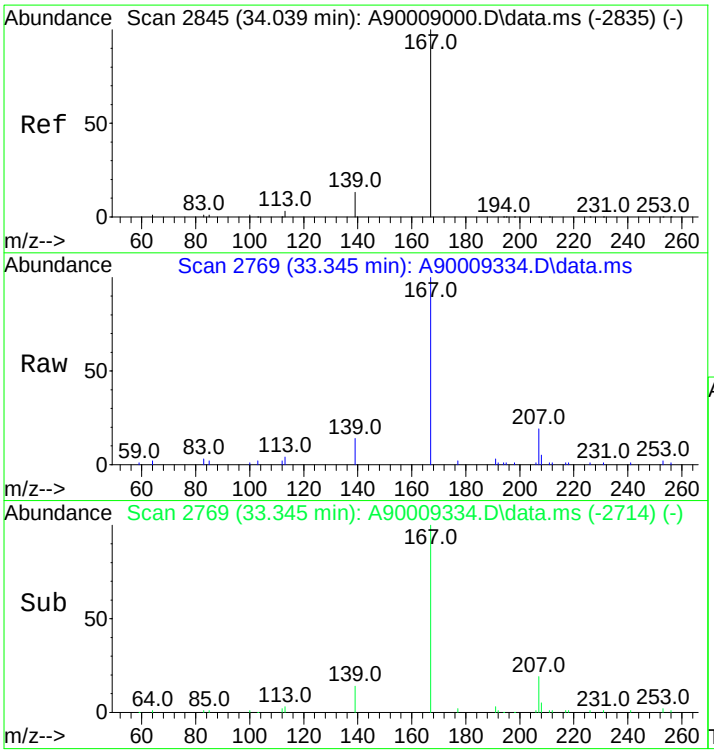


#55
Anthracene
Concen: 94.51 ng/mL m
RT: 32.670 min Scan# 2695
Delta R.T. -0.000 min
Lab File: A90009334.D
Acq: 5 Dec 2012 3:47 am

Tgt Ion:178 Resp: 23496

Ion	Ratio	Lower	Upper
178	100		
176	17.4	14.6	21.8

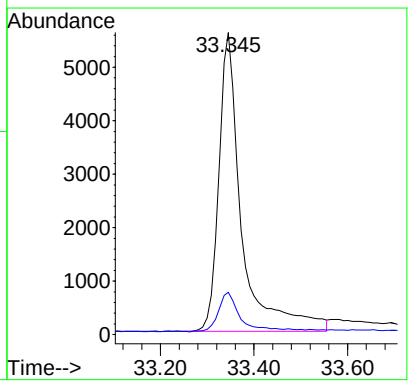


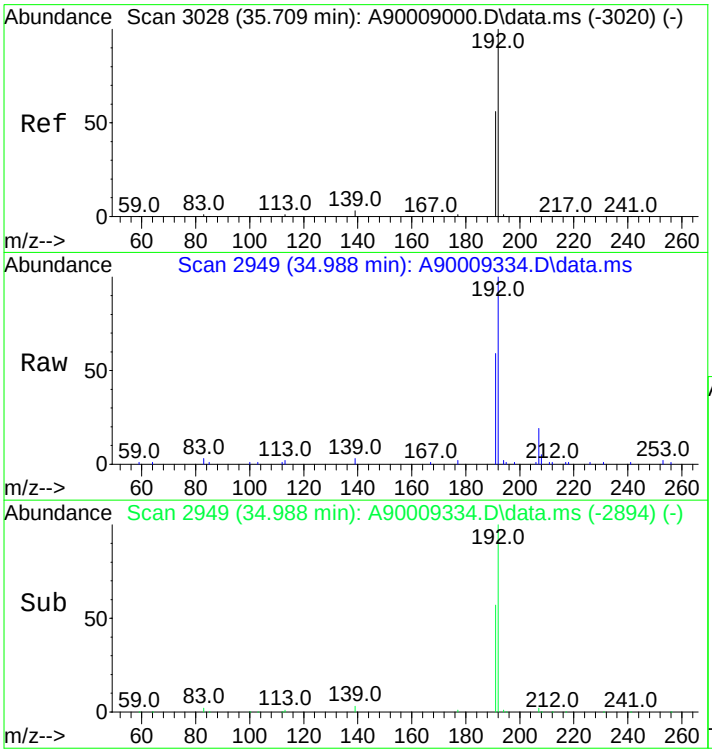


#56
Carbazole
Concen: 84.29 ng/mL
RT: 33.345 min Scan# 2769
Delta R.T. -0.000 min
Lab File: A90009334.D
Acq: 5 Dec 2012 3:47 am

Tgt Ion:167 Resp: 18971

Ion	Ratio	Lower	Upper
167	100		
139	13.2	10.3	15.5

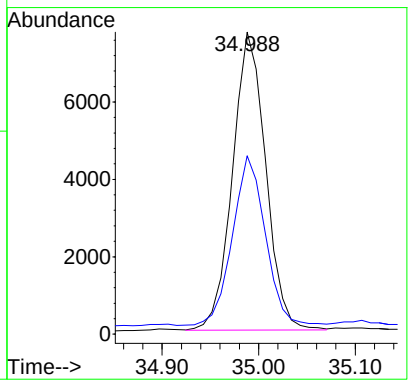


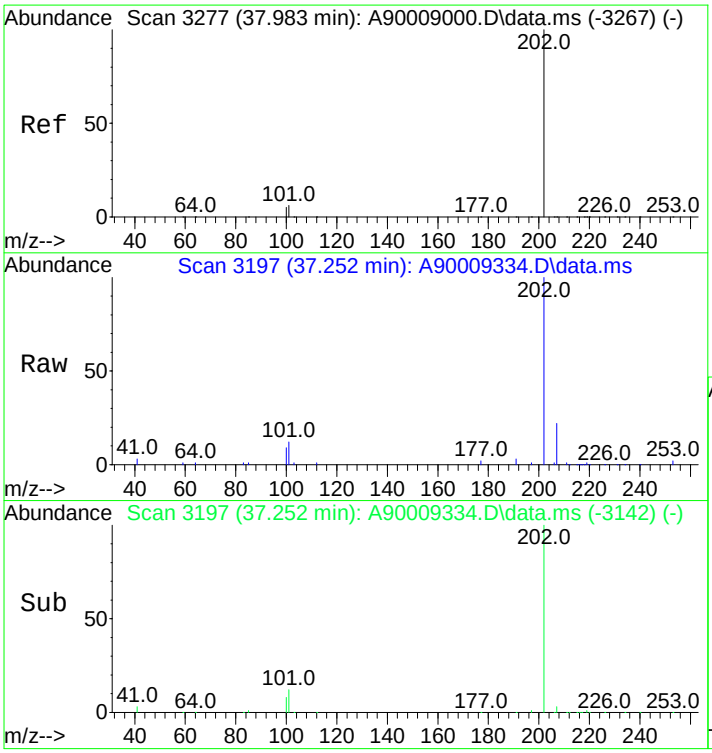


#57
1-Methylphenanthrene
Concen: 87.48 ng/mL
RT: 34.988 min Scan# 2949
Delta R.T. -0.000 min
Lab File: A90009334.D
Acq: 5 Dec 2012 3:47 am

Tgt Ion:192 Resp: 18350

Ion	Ratio	Lower	Upper
192	100		
191	56.4	44.8	67.2

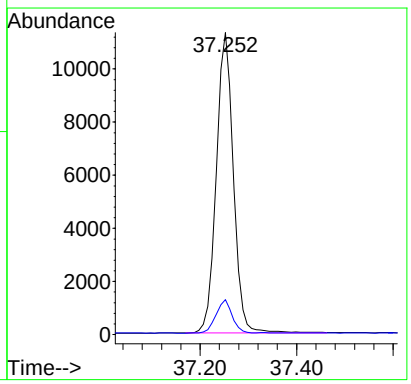


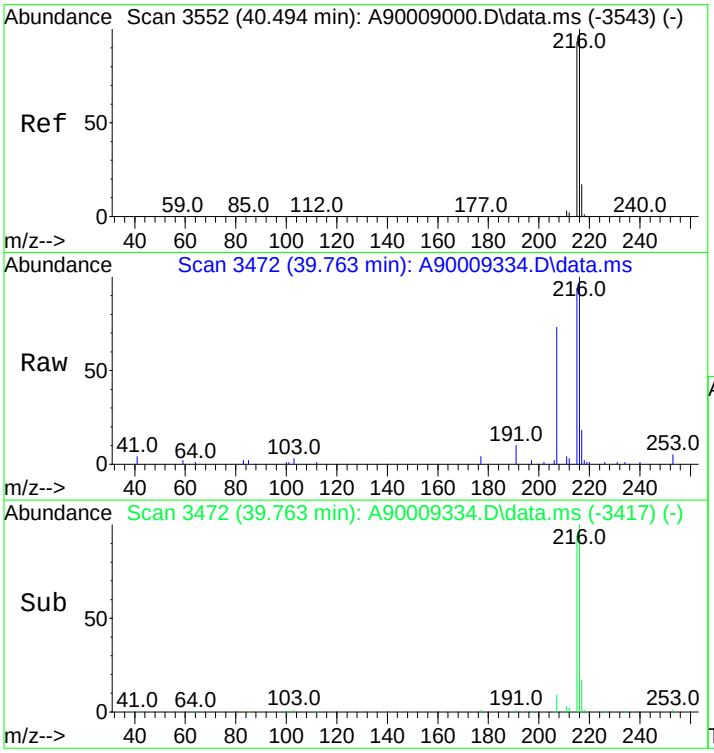


#58
Fluoranthene
Concen: 88.42 ng/mL
RT: 37.252 min Scan# 3197
Delta R.T. -0.000 min
Lab File: A90009334.D
Acq: 5 Dec 2012 3:47 am

Tgt Ion:202 Resp: 27887

Ion	Ratio	Lower	Upper
202	100		
101	10.4	8.5	12.7

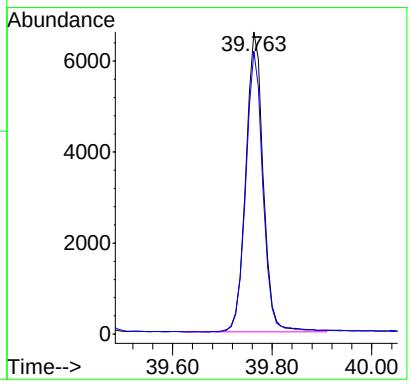


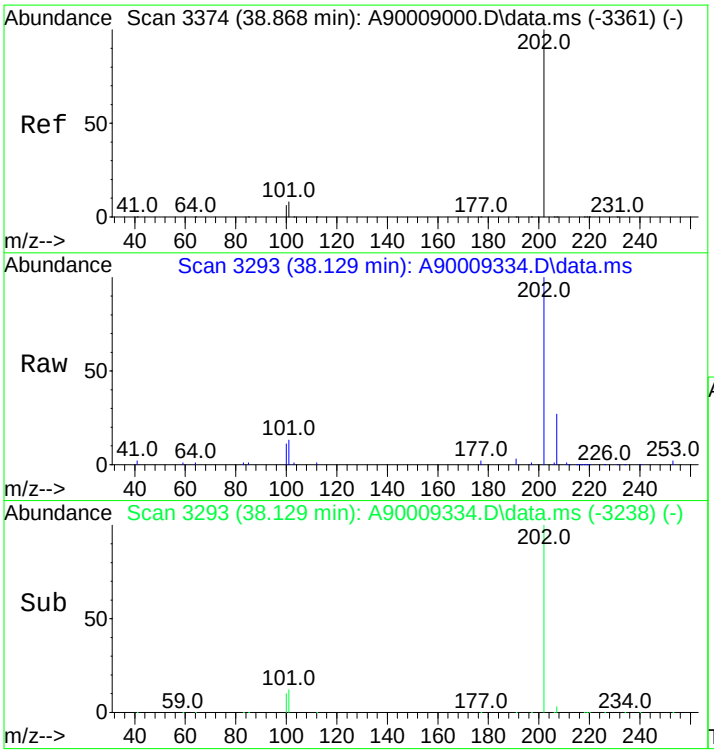


#59
Benzo(b)fluorene
Concen: 79.63 ng/mL
RT: 39.763 min Scan# 3472
Delta R.T. -0.000 min
Lab File: A90009334.D
Acq: 5 Dec 2012 3:47 am

Tgt Ion:216 Resp: 16004

Ion	Ratio	Lower	Upper
216	100		
215	92.5	74.8	112.2

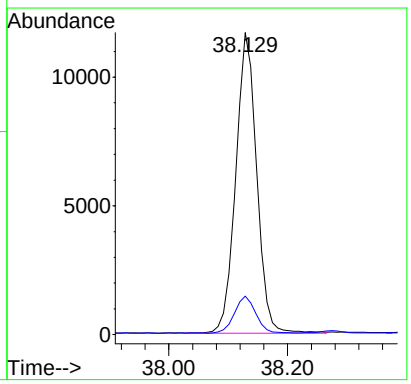


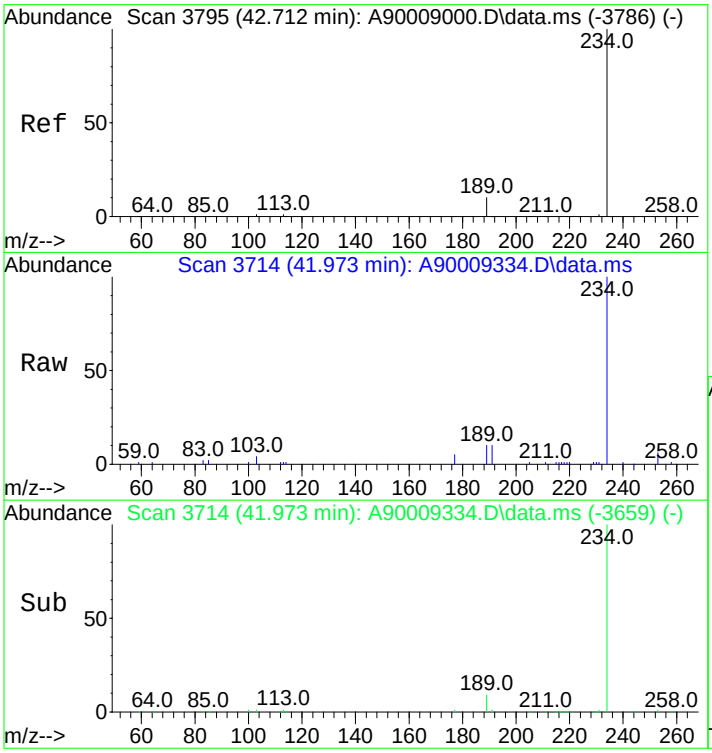


#60
Pyrene
Concen: 88.87 ng/mL
RT: 38.129 min Scan# 3293
Delta R.T. -0.000 min
Lab File: A90009334.D
Acq: 5 Dec 2012 3:47 am

Tgt Ion:202 Resp: 28452

Ion	Ratio	Lower	Upper
202	100		
101	12.5	10.1	15.1

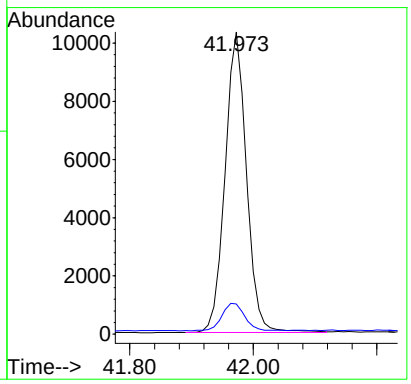


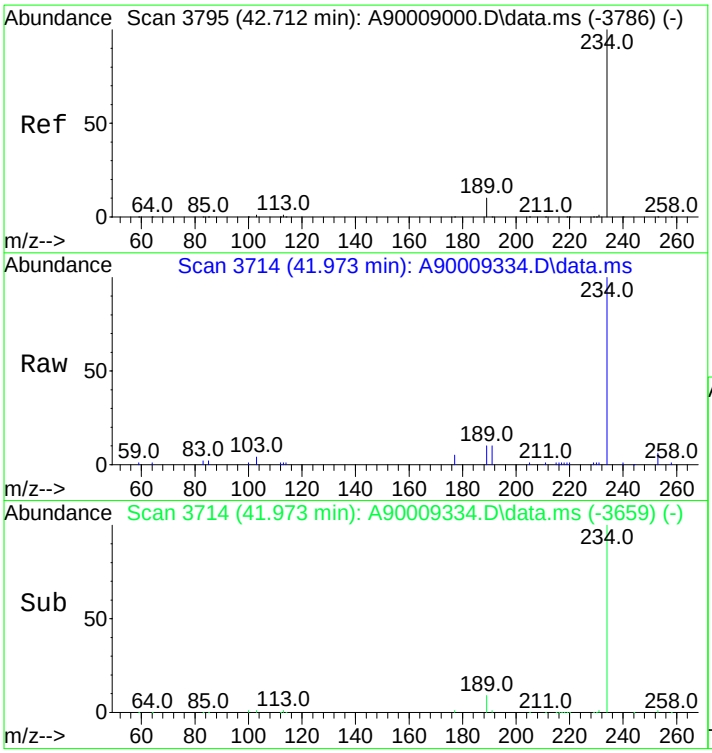


#66
Naphthobenzothiophene
Concen: 86.64 ng/ml
RT: 41.973 min Scan# 3714
Delta R.T. -0.000 min
Lab File: A90009334.D
Acq: 5 Dec 2012 3:47 am

Tgt Ion:234 Resp: 24893

Ion	Ratio	Lower	Upper
234	100		
189	9.8	7.4	11.2

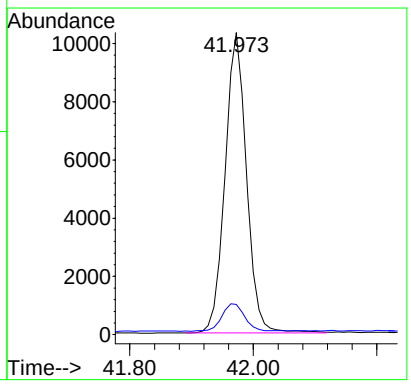


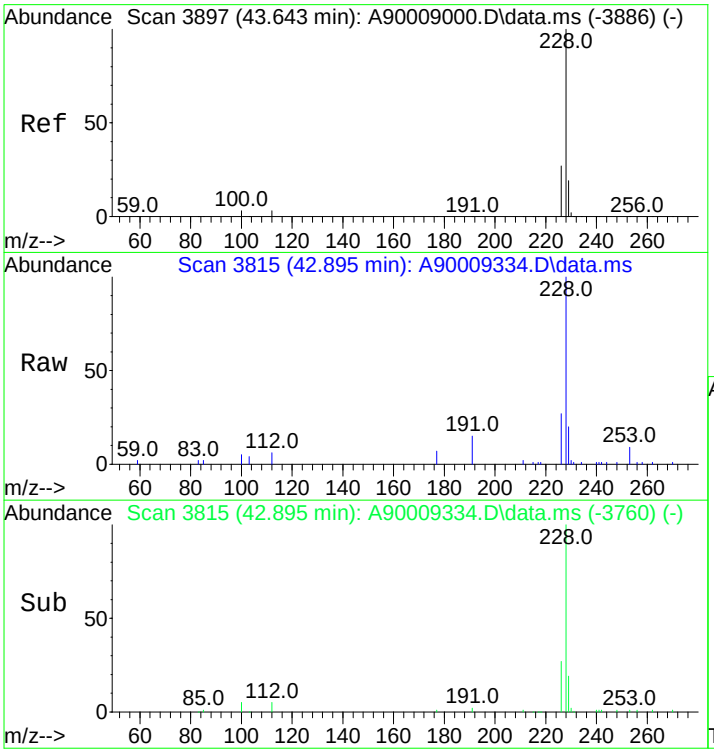


#67
Naphthobenzothiophene-2,1-D
Concen: 86.64 ng/mL
RT: 41.973 min Scan# 3714
Delta R.T. -0.000 min
Lab File: A90009334.D
Acq: 5 Dec 2012 3:47 am

Tgt Ion:234 Resp: 24893

Ion	Ratio	Lower	Upper
234	100		
189	9.8	7.4	11.2

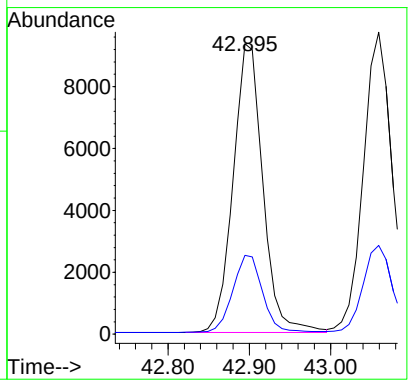


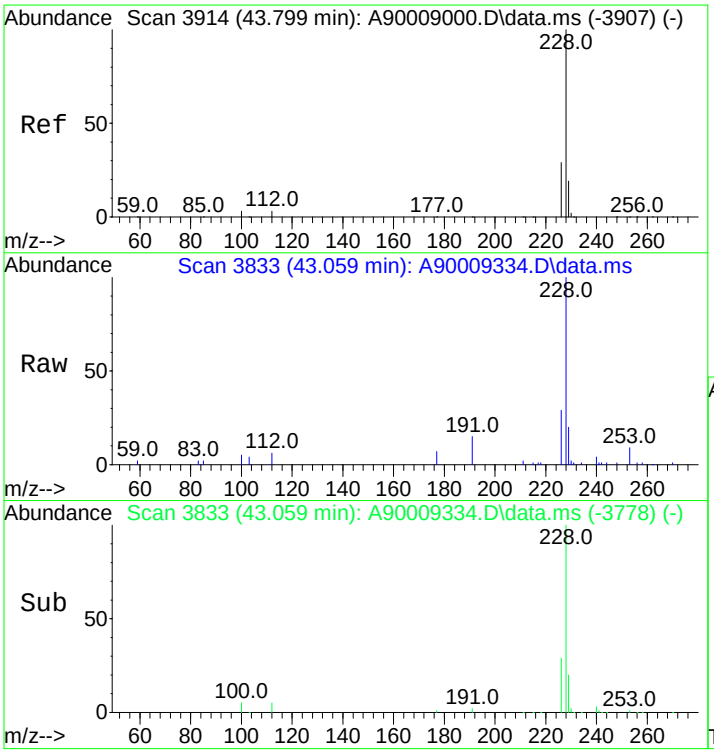


#75
Benz[a]anthracene
Concen: 92.89 ng/mL
RT: 42.895 min Scan# 3815
Delta R.T. -0.000 min
Lab File: A90009334.D
Acq: 5 Dec 2012 3:47 am

Tgt Ion:228 Resp: 23704

Ion	Ratio	Lower	Upper
228	100		
226	26.6	21.3	31.9

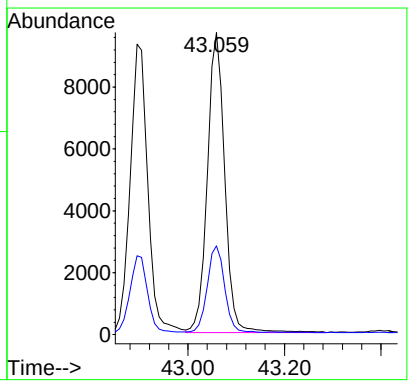


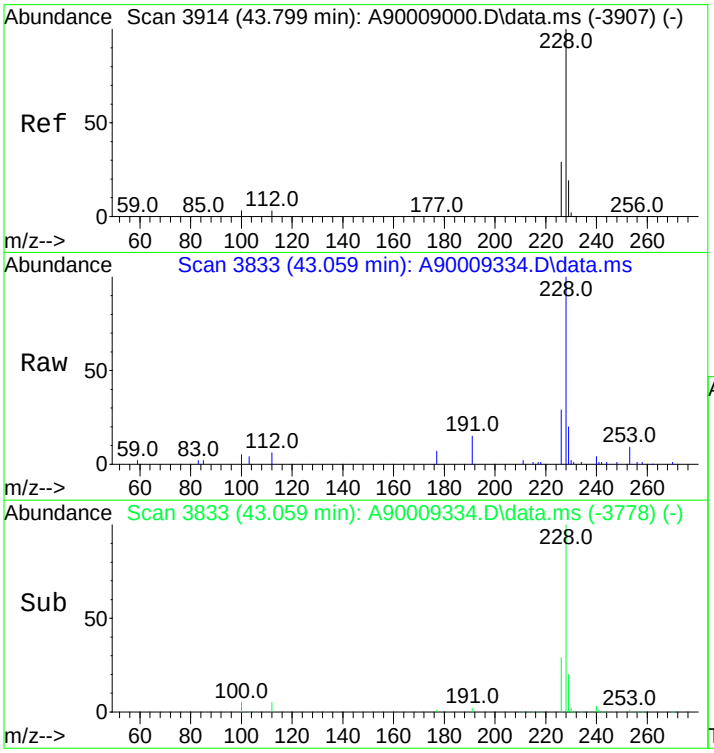


#76
Chrysene
Concen: 98.30 ng/mL
RT: 43.059 min Scan# 3833
Delta R.T. -0.000 min
Lab File: A90009334.D
Acq: 5 Dec 2012 3:47 am

Tgt Ion:228 Resp: 24283

Ion	Ratio	Lower	Upper
228	100		
226	28.7	23.4	35.0

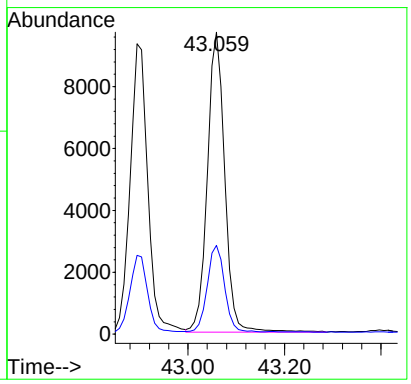


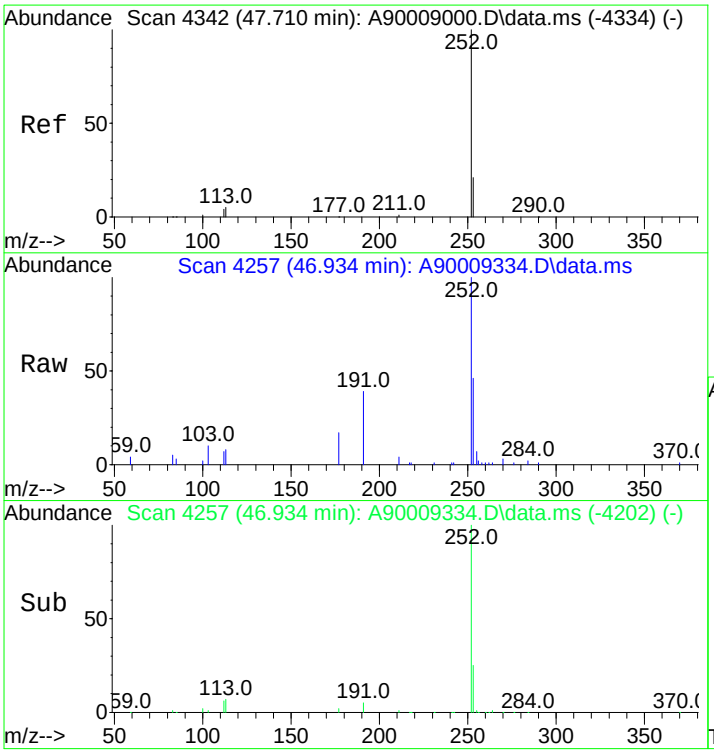


#77
Chrysene/Triphenylene
Concen: 98.30 ng/mL
RT: 43.059 min Scan# 3833
Delta R.T. -0.000 min
Lab File: A90009334.D
Acq: 5 Dec 2012 3:47 am

Tgt Ion:228 Resp: 24283

Ion	Ratio	Lower	Upper
228	100		
226	28.7	23.4	35.0

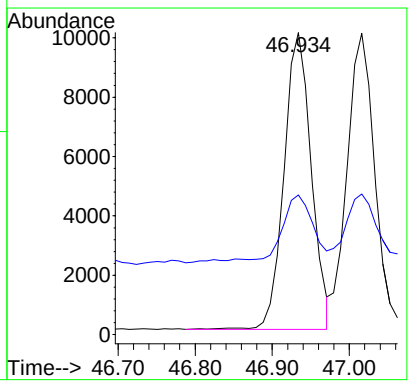


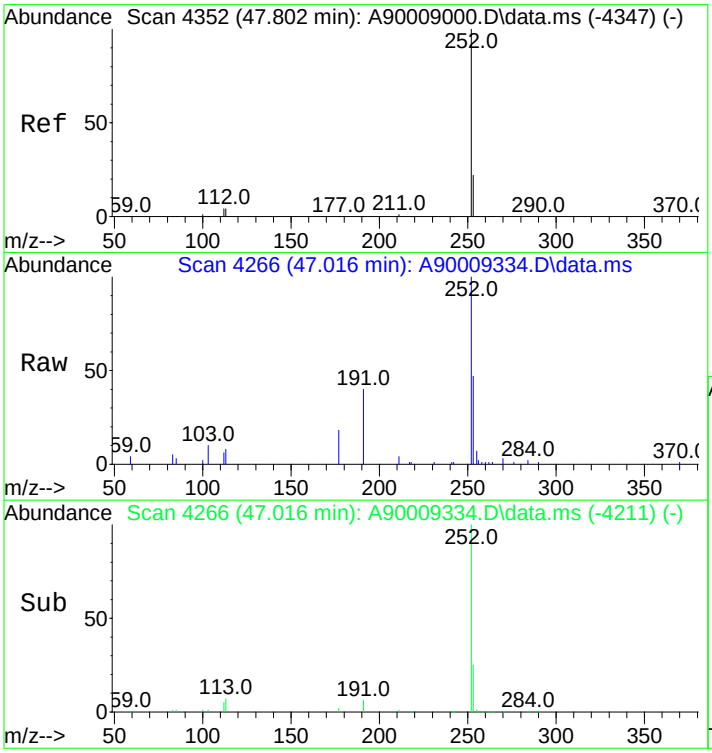


#84
Benzo[b]fluoranthene
Concen: 101.21 ng/mL
RT: 46.934 min Scan# 4257
Delta R.T. -0.000 min
Lab File: A90009334.D
Acq: 5 Dec 2012 3:47 am

Tgt Ion:252 Resp: 24621

Ion	Ratio	Lower	Upper
252	100		
253	22.2	20.9	31.3

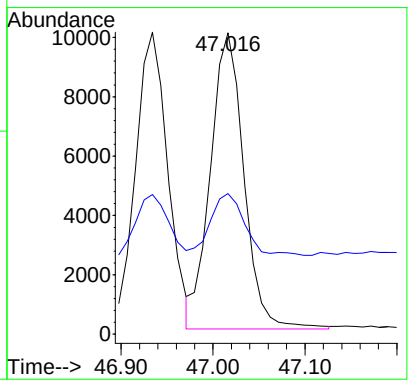


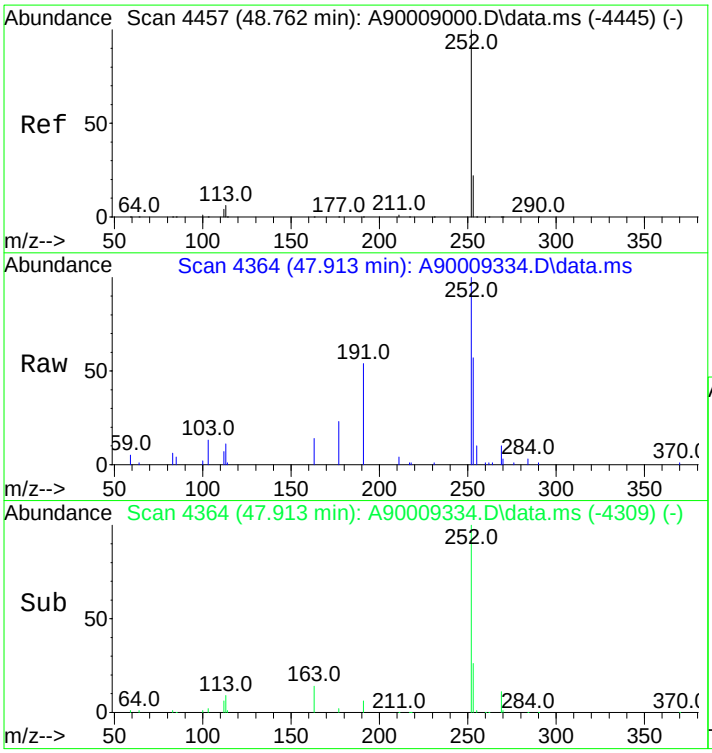


#85
Benzo[j]+[k]fluoranthene
Concen: 107.32 ng/mL m
RT: 47.016 min Scan# 4266
Delta R.T. -0.000 min
Lab File: A90009334.D
Acq: 5 Dec 2012 3:47 am

Tgt Ion:252 Resp: 25307

Ion	Ratio	Lower	Upper
252	100		
253	22.0	21.0	31.6

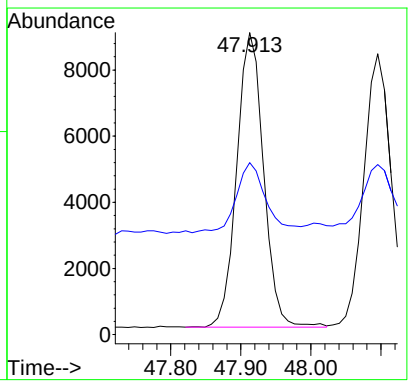


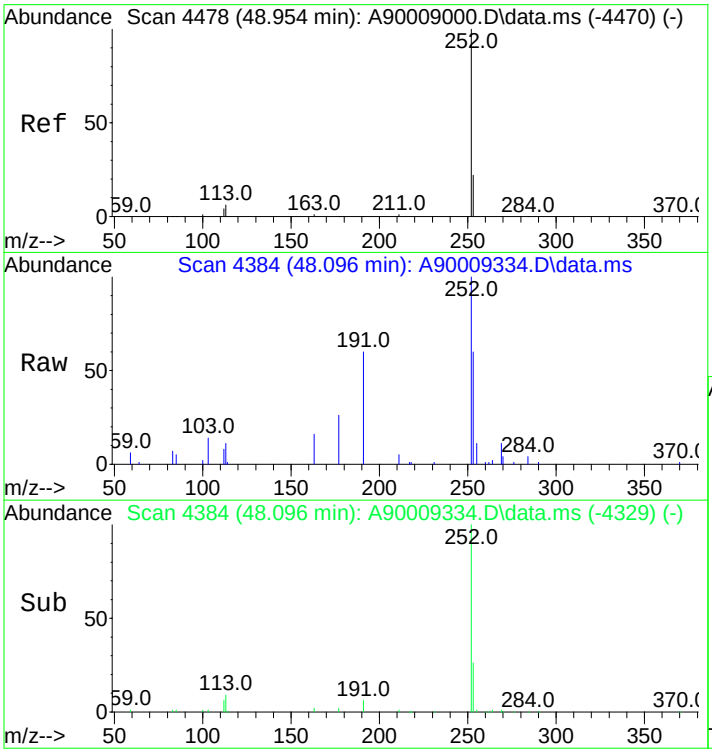


#87
Benzo[e]pyrene
Concen: 104.42 ng/mL
RT: 47.913 min Scan# 4364
Delta R.T. -0.000 min
Lab File: A90009334.D
Acq: 5 Dec 2012 3:47 am

Tgt Ion:252 Resp: 23739

Ion	Ratio	Lower	Upper
252	100		
253	23.5	22.1	33.1

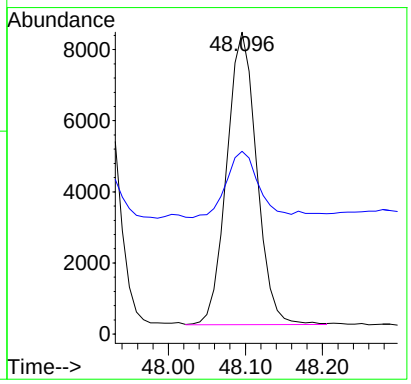


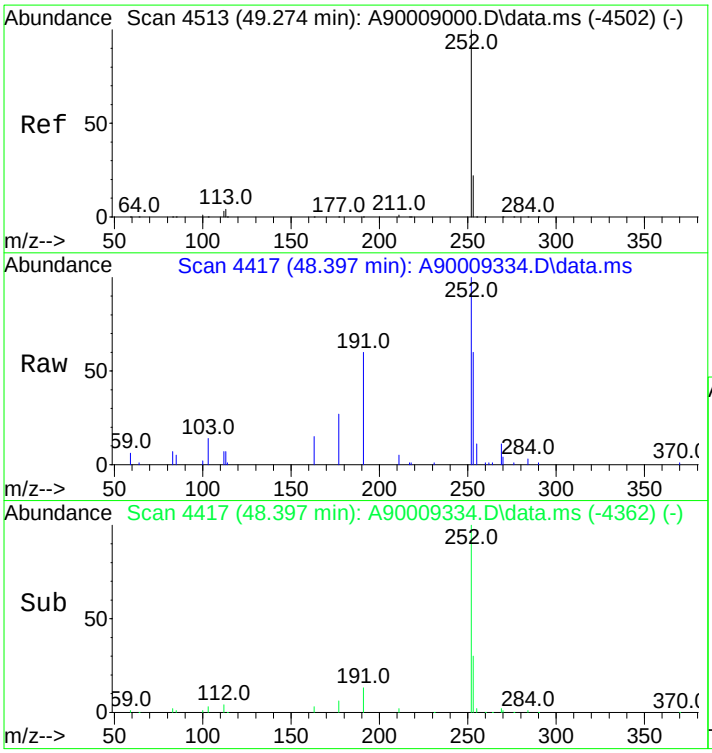


#89
Benzo[a]pyrene
Concen: 104.61 ng/mL
RT: 48.096 min Scan# 4384
Delta R.T. -0.000 min
Lab File: A90009334.D
Acq: 5 Dec 2012 3:47 am

Tgt Ion:252 Resp: 22270

Ion	Ratio	Lower	Upper
252	100		
253	24.4	22.9	34.3

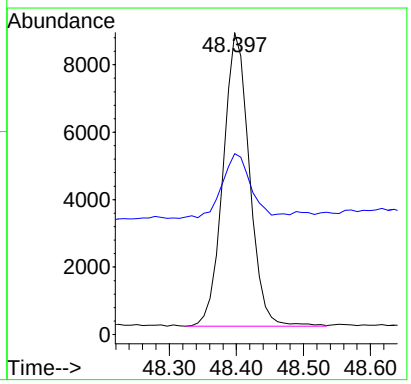


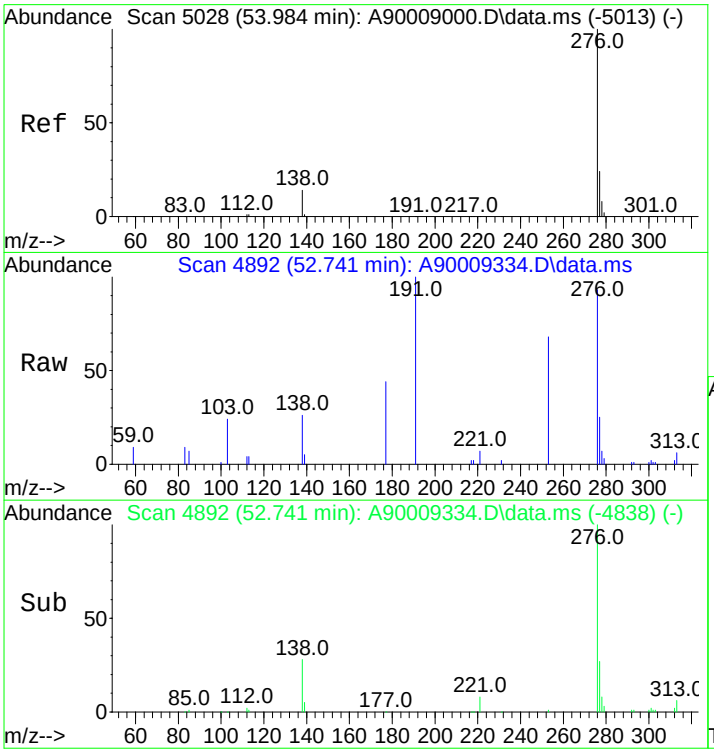


#90
Perylene
Concen: 104.86 ng/mL
RT: 48.397 min Scan# 4417
Delta R.T. -0.000 min
Lab File: A90009334.D
Acq: 5 Dec 2012 3:47 am

Tgt Ion:252 Resp: 23828

Ion	Ratio	Lower	Upper
252	100		
253	24.1	23.4	35.2

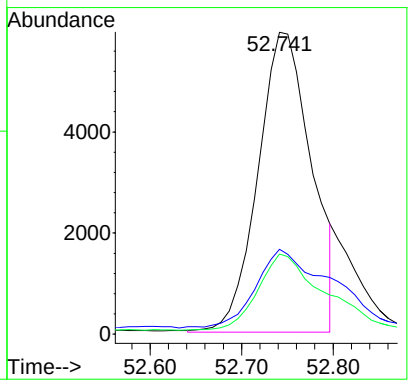


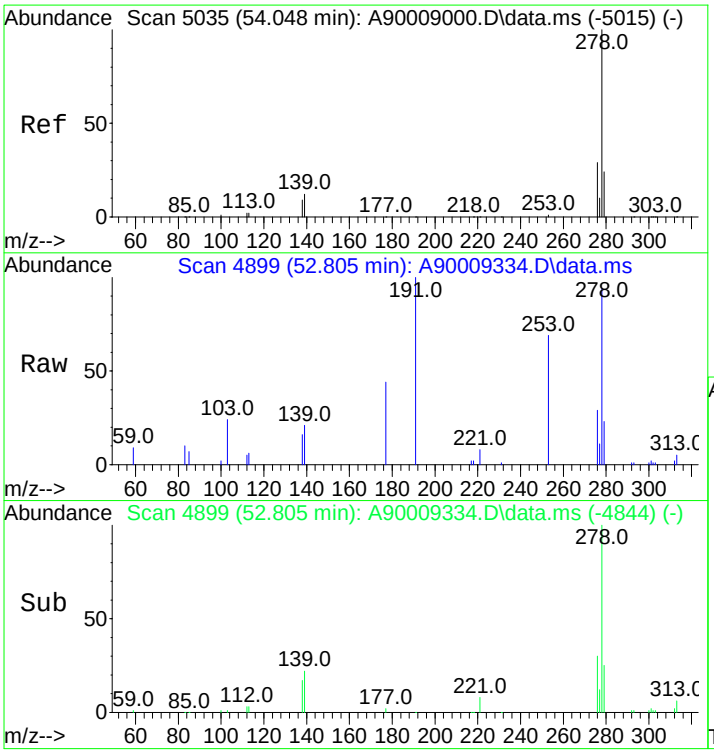


#91
Indeno[1,2,3-cd]pyrene
Concen: 105.21 ng/mL m
RT: 52.741 min Scan# 4892
Delta R.T. -0.010 min
Lab File: A90009334.D
Acq: 5 Dec 2012 3:47 am

Tgt Ion:276 Resp: 24121

Ion	Ratio	Lower	Upper
276	100		
138	36.8	20.2	30.4#
277	31.2	20.6	30.8#

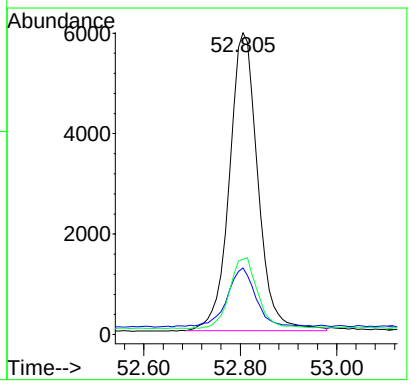


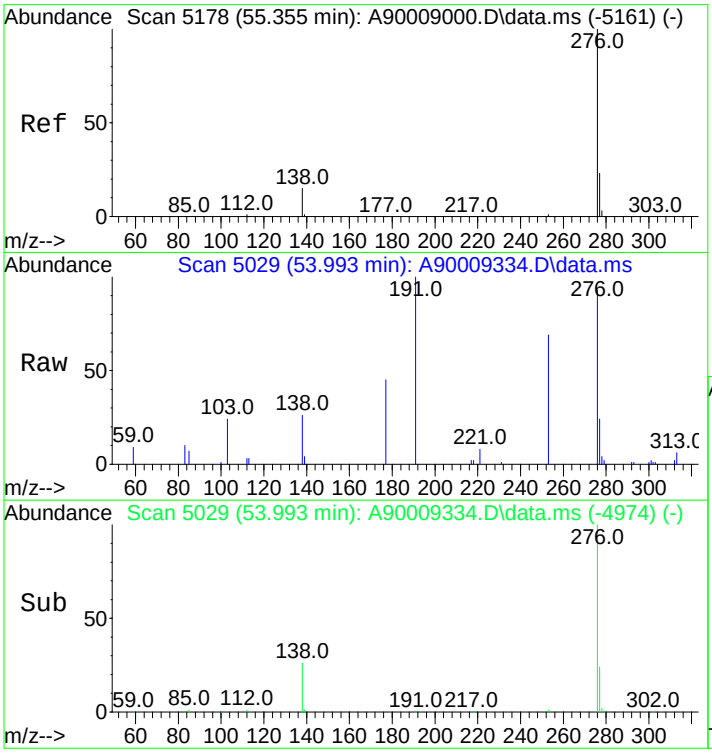


#92
Dibenz[ah]+[ac]anthracene
Concen: 107.97 ng/mL
RT: 52.805 min Scan# 4899
Delta R.T. -0.000 min
Lab File: A90009334.D
Acq: 5 Dec 2012 3:47 am

Tgt Ion:278 Resp: 24241

Ion	Ratio	Lower	Upper
278	100		
139	18.9	15.4	23.2
279	23.3	19.3	28.9

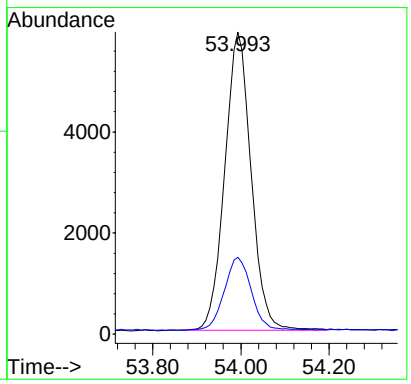


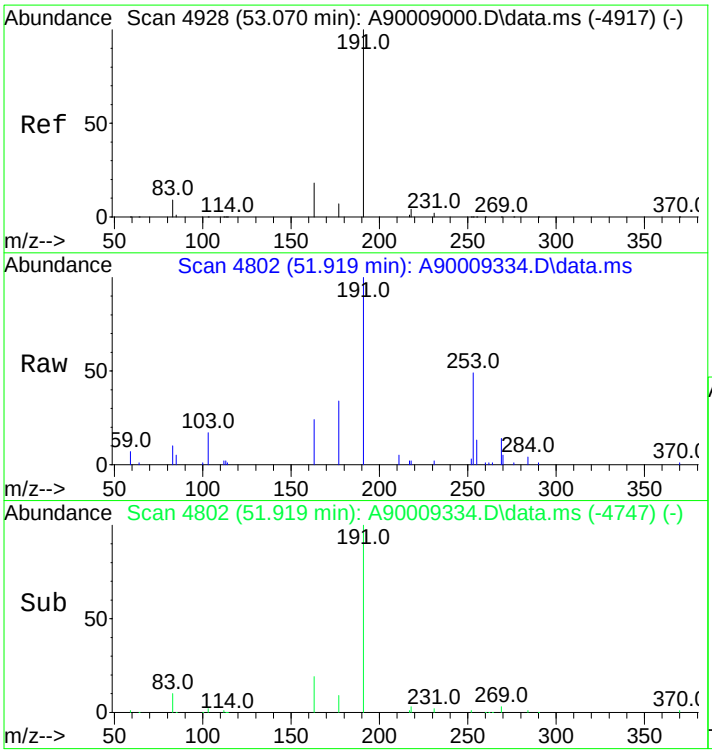


#93
Benzo[g,h,i]perylene
Concen: 109.48 ng/mL
RT: 53.993 min Scan# 5029
Delta R.T. -0.000 min
Lab File: A90009334.D
Acq: 5 Dec 2012 3:47 am

Tgt Ion:276 Resp: 24452

Ion	Ratio	Lower	Upper
276	100		
277	25.5	20.3	30.5

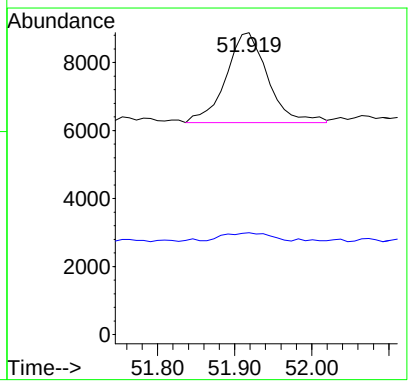


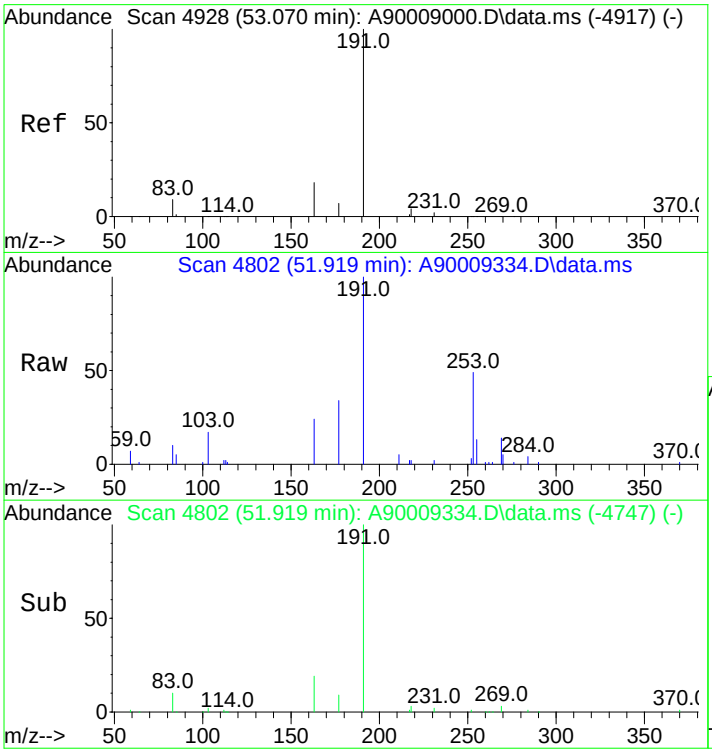


#94
Hopane (T19)
Concen: 122.58 ng/mL
RT: 51.919 min Scan# 4802
Delta R.T. -0.000 min
Lab File: A90009334.D
Acq: 5 Dec 2012 3:47 am

Tgt Ion:191 Resp: 9992

Ion	Ratio	Lower	Upper
191	100		
177	10.0	15.3	22.9#

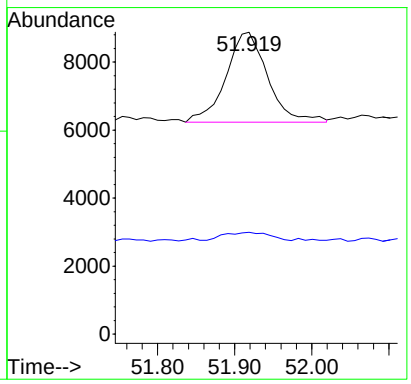




#95
17a(H),21B(H)-hopane - C30H52
Concen: 122.92 ng/mL
RT: 51.919 min Scan# 4802
Delta R.T. -0.000 min
Lab File: A90009334.D
Acq: 5 Dec 2012 3:47 am

Tgt Ion:191 Resp: 9992

Ion	Ratio	Lower	Upper
191	100		
177	10.0	15.3	22.9#



Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC4\
Data File : A90009335.D
Acq On : 5 Dec 2012 5:12 am
Operator : PS
Sample : I912041204
Misc : WHAQ86@500ng/ml
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Dec 06 10:35:20 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 09:51:33 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.557	164	68951	500.000	ng/mL	0.00
74) Chrysene-d12	42.959	240	116229	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.622	136	138589	564.824	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 56.48%			
42) Phenanthrene-d10	32.406	188	133650	523.843	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 52.38%			
83) Benzo[b]fluoranthene-d12	46.852	264	106936	522.137	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 52.21%			
88) Benzo[a]pyrene-d12	48.014	264	111053	579.233	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 57.92%			
129) 5B(H)Cholane - Surr	43.598	217	23773	491.301	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 49.13%#			
Target Compounds						Qvalue
3) trans-Decalin	16.291	138	14573	263.695	ng/mL	100
4) cis-Decalin	17.496	138	11396	263.967	ng/mL	100
10) Naphthalene	19.695	128	137010	544.472	ng/mL#	100
16) 2-Methylnaphthalene	22.378	142	88693	518.827	ng/mL#	100
17) 1-Methylnaphthalene	22.798	142	86329	524.137	ng/mL#	100
18) Benzothiophene	19.914	134	113253	537.980	ng/mL	100
23) Biphenyl	24.249	154	115788	518.551	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.860	156	82629	503.139	ng/mL#	100
25) Dibenzofuran	27.324	168	126487	519.426	ng/mL	99
26) Acenaphthylene	25.946	152	138854	523.976	ng/mL#	100
27) Acenaphthene	26.685	153	88773	533.419	ng/mL	99
28) 2,3,5-Trimethylnaphthalen	28.236	170	76318	510.734	ng/mL	97
29) Fluorene	28.692	166	96985	497.747	ng/mL	100
33) Dibenzothiophene	31.995	184	138836	501.362	ng/mL	99
43) Phenanthrene	32.497	178	145250	512.509	ng/mL	100
54) Retene	39.471	234	37321	457.319	ng/mL	94
55) Anthracene	32.670	178	138399M4	541.376	ng/mL	
56) Carbazole	33.346	167	125139	543.935	ng/mL	98
57) 1-Methylphenanthrene	34.989	192	104769	487.562	ng/mL	99
58) Fluoranthene	37.252	202	156787	483.176	ng/mL	100
59) Benzo(b)fluorene	39.764	216	91509	448.542	ng/mL	99
60) Pyrene	38.129	202	158979	482.594	ng/mL	100
66) Naphthobenzothiophene	41.973	234	137768	467.881	ng/ml	99
67) Naphthobenzothiophene-2,1	41.973	234	137768	467.881	ng/mL	99
75) Benz[a]anthracene	42.895	228	131312	486.440	ng/mL	100
76) Chrysene	43.059	228	133903	510.215	ng/mL	100
77) Chrysene/Triphenylene	43.059	228	133903	510.215	ng/mL	100
84) Benzo[b]fluoranthene	46.934	252	134890	514.329	ng/mL	93
85) Benzo[j]+[k]fluoranthene	47.017	252	136944	535.239	ng/mL	90
87) Benzo[e]pyrene	47.913	252	127112	515.857	ng/mL	91
89) Benzo[a]pyrene	48.096	252	122761	532.885	ng/mL#	87
90) Perylene	48.398	252	128383	520.544	ng/mL#	89
91) Indeno[1,2,3-cd]pyrene	52.751	276	129334M6	517.076	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.806	278	133214	544.086	ng/mL	99
93) Benzo[g,h,i]perylene	53.994	276	130423	534.038	ng/mL	99
94) Hopane (T19)	51.919	191	45663	497.247	ng/mL#	78
95) 17a(H),21B(H)-hopane - C3	51.919	191	45663	498.552	ng/mL#	78

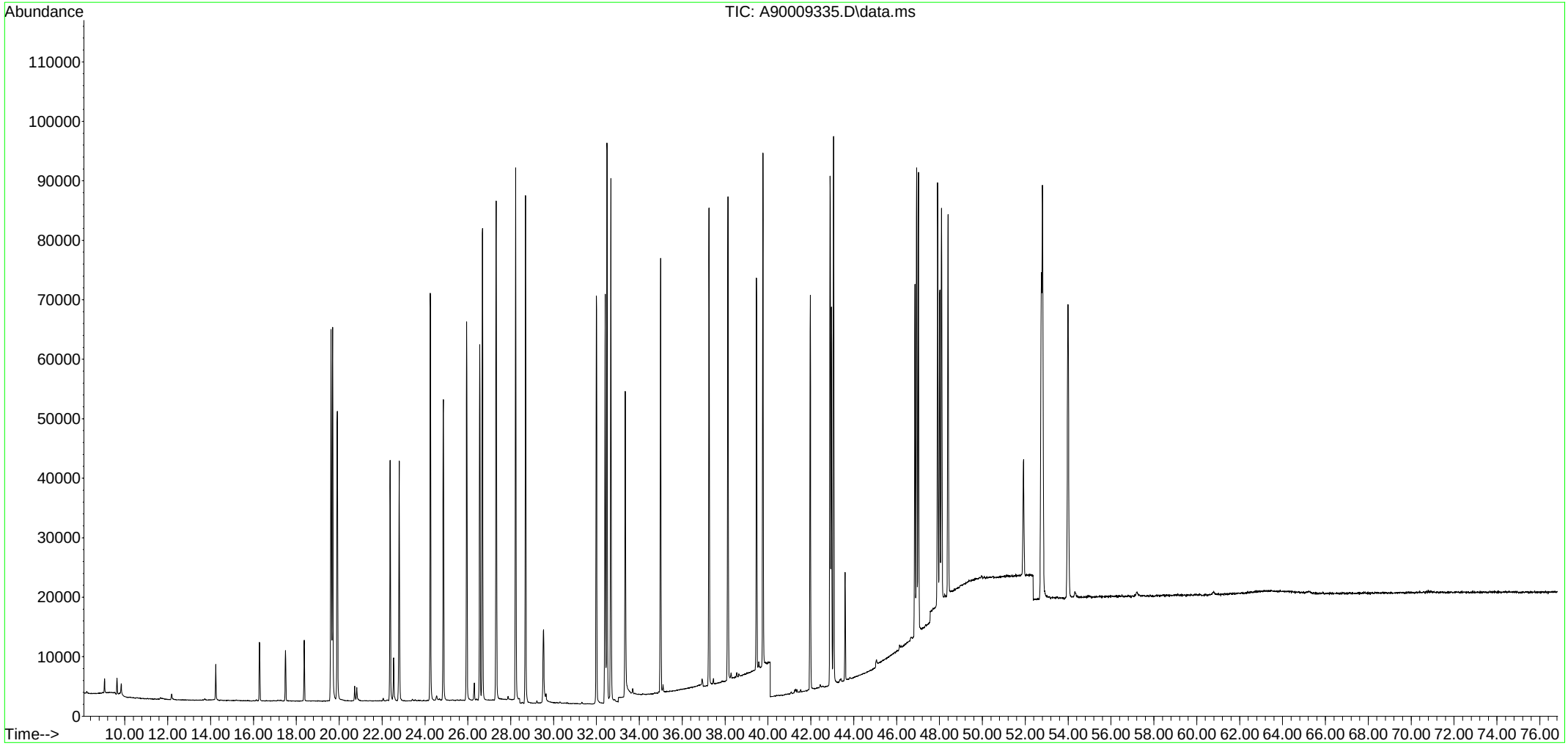
(#) = qualifier out of range (m) = manual integration (+) = signals summed

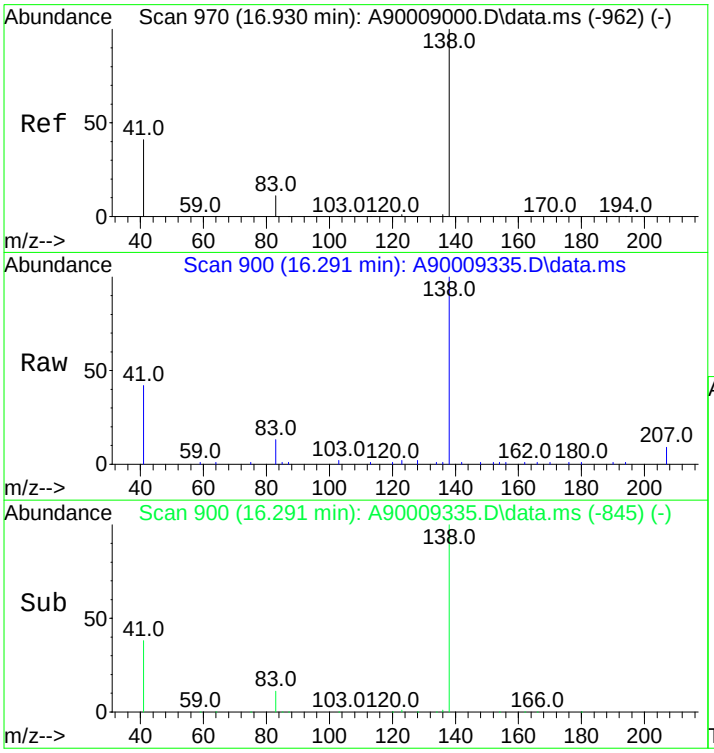
Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC4\
Data File : A90009335.D
Acq On : 5 Dec 2012 5:12 am
Operator : PS
Sample : I912041204
Misc : WHAQ86@500ng/ml
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Dec 06 10:35:20 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 09:51:33 2012
Response via : Initial Calibration

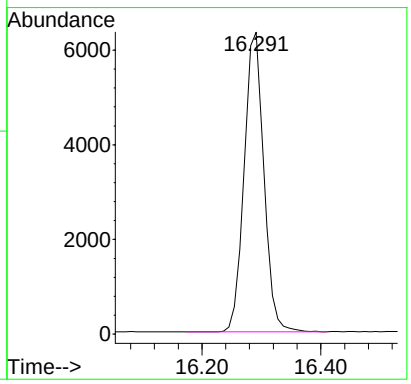
Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

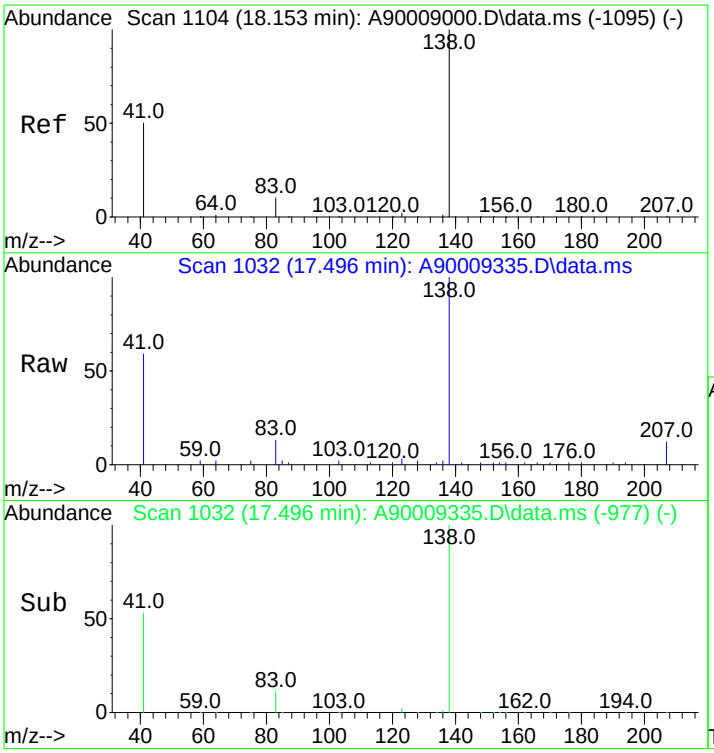




#3
trans-Decalin
Concen: 263.70 ng/mL
RT: 16.291 min Scan# 900
Delta R.T. 0.000 min
Lab File: A90009335.D
Acq: 5 Dec 2012 5:12 am

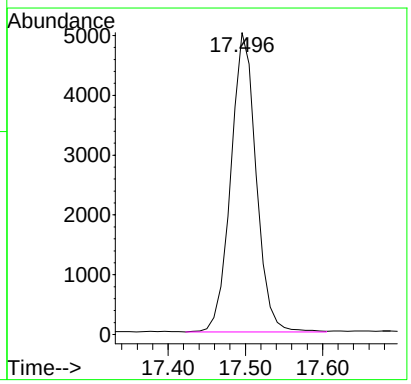
Tgt Ion:138 Resp: 14573

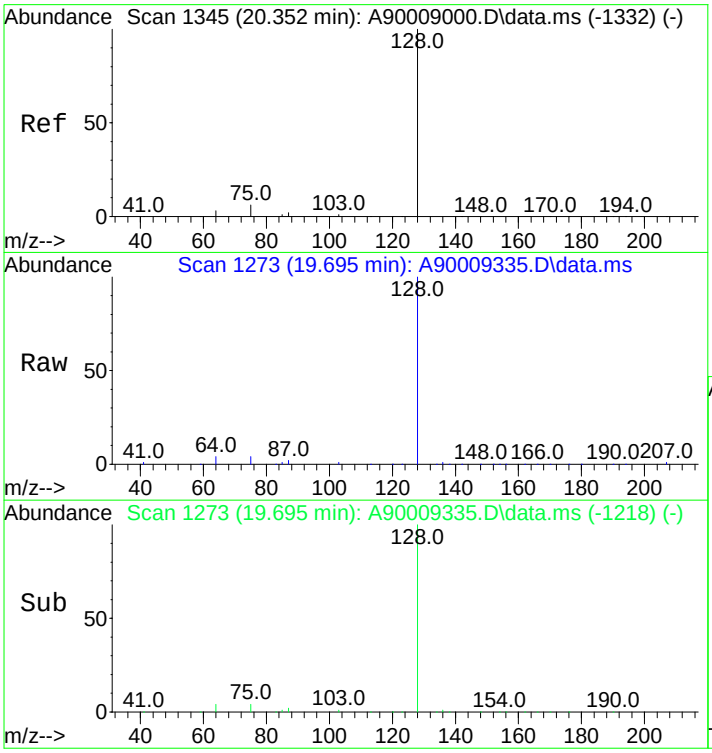




#4
cis-Decalin
Concen: 263.97 ng/mL
RT: 17.496 min Scan# 1032
Delta R.T. 0.000 min
Lab File: A90009335.D
Acq: 5 Dec 2012 5:12 am

Tgt Ion:138 Resp: 11396

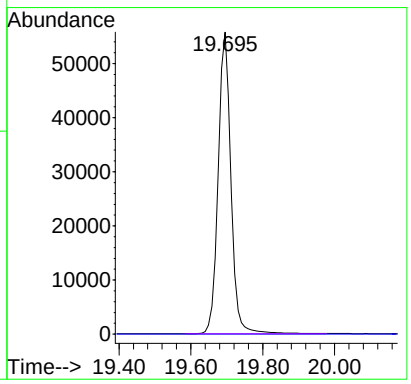


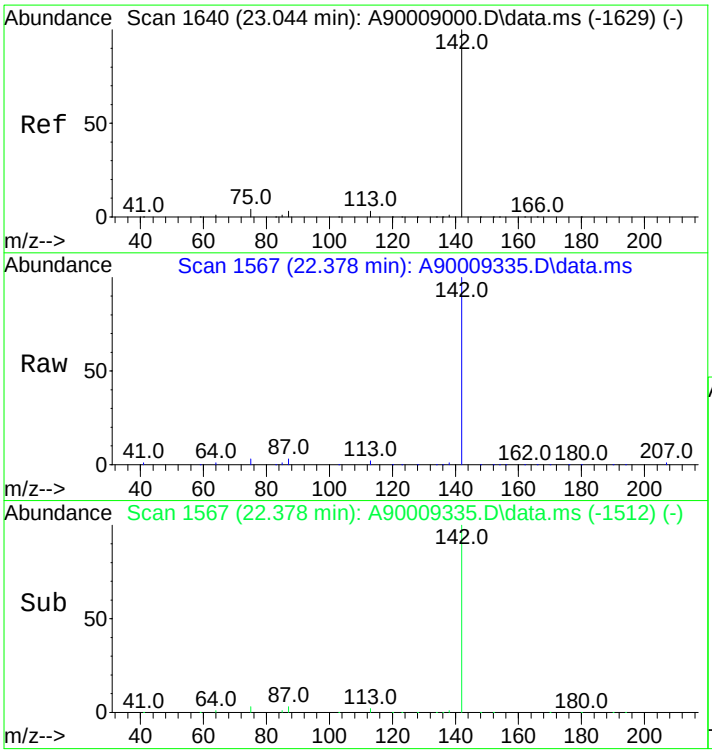


#10
Naphthalene
Concen: 544.47 ng/mL
RT: 19.695 min Scan# 1273
Delta R.T. 0.000 min
Lab File: A90009335.D
Acq: 5 Dec 2012 5:12 am

Tgt Ion:128 Resp: 137010

Ion	Ratio	Lower	Upper
128	100		
127	0.0	0.0	0.0

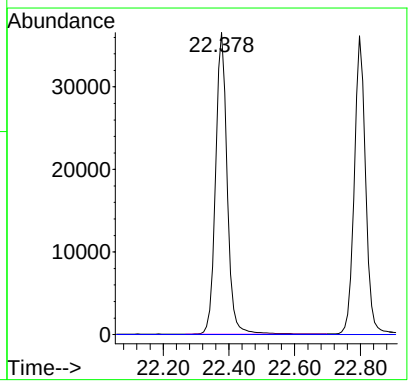


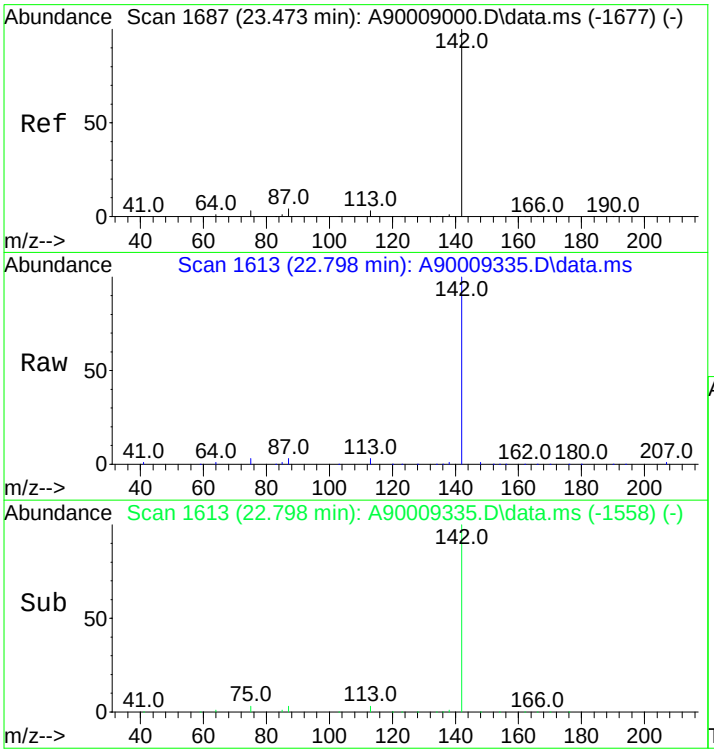


#16
2-Methylnaphthalene
Concen: 518.83 ng/mL
RT: 22.378 min Scan# 1567
Delta R.T. 0.000 min
Lab File: A90009335.D
Acq: 5 Dec 2012 5:12 am

Tgt Ion:142 Resp: 88693

Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	0.0

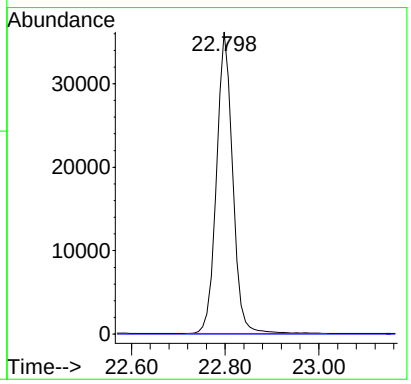


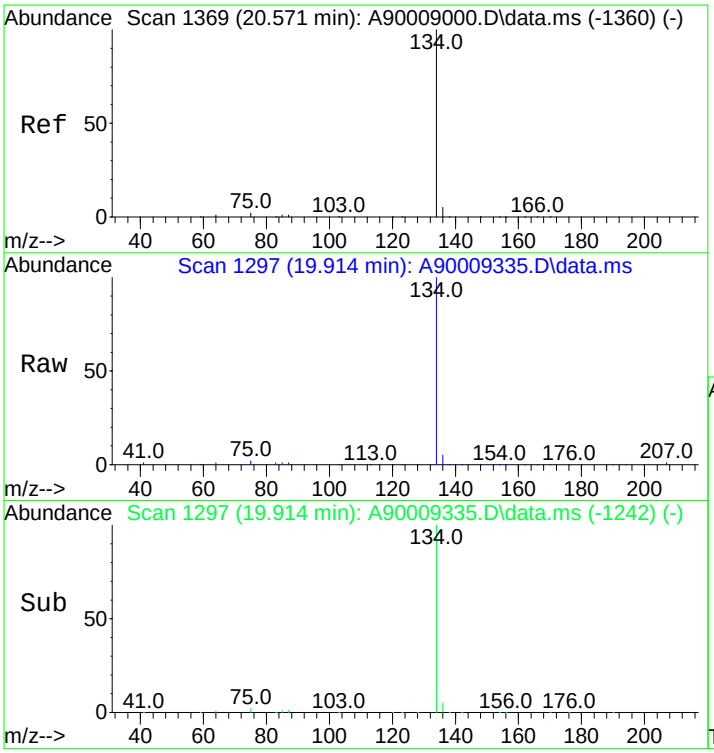


#17
1-Methylnaphthalene
Concen: 524.14 ng/mL
RT: 22.798 min Scan# 1613
Delta R.T. 0.000 min
Lab File: A90009335.D
Acq: 5 Dec 2012 5:12 am

Tgt Ion:142 Resp: 86329

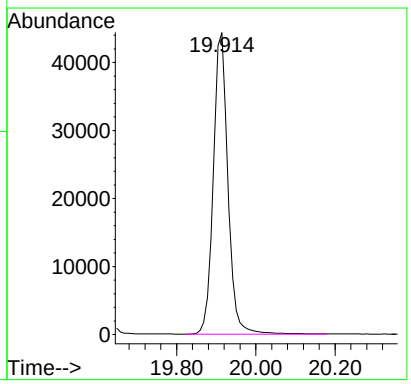
Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	20.0

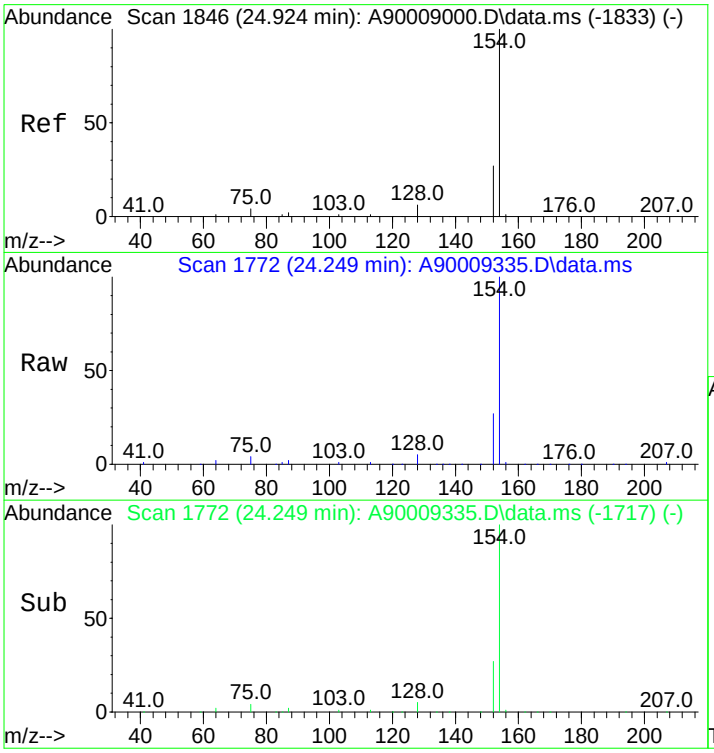




#18
Benzothiophene
Concen: 537.98 ng/mL
RT: 19.914 min Scan# 1297
Delta R.T. 0.000 min
Lab File: A90009335.D
Acq: 5 Dec 2012 5:12 am

Tgt Ion:134 Resp: 113253

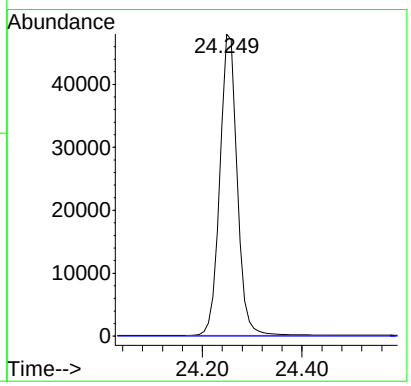


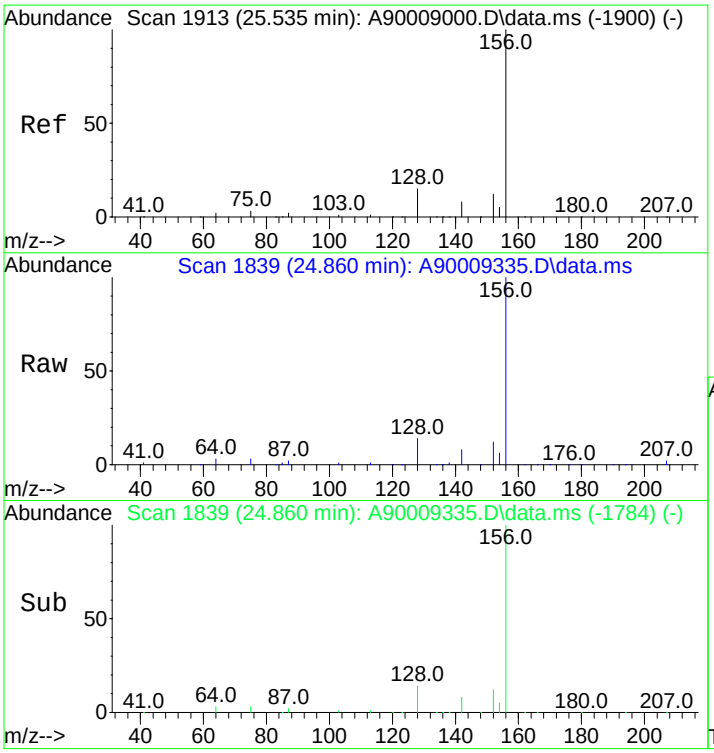


#23
Biphenyl
Concen: 518.55 ng/mL
RT: 24.249 min Scan# 1772
Delta R.T. 0.000 min
Lab File: A90009335.D
Acq: 5 Dec 2012 5:12 am

Tgt Ion:154 Resp: 115788

Ion	Ratio	Lower	Upper
154	100		
153	0.0	0.0	0.0

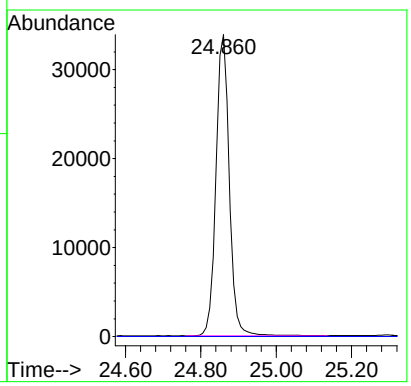


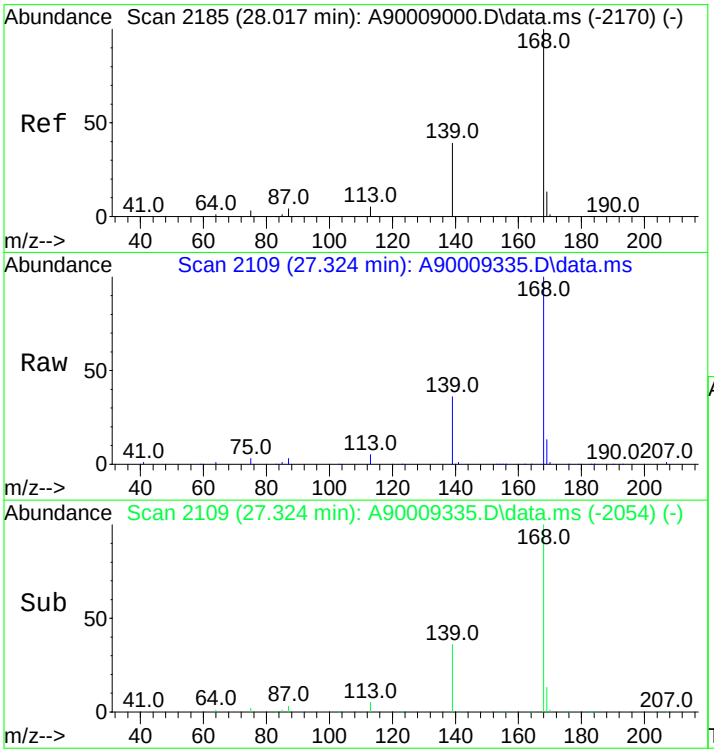


#24
2,6-Dimethylnaphthalene
Concen: 503.14 ng/mL
RT: 24.860 min Scan# 1839
Delta R.T. 0.000 min
Lab File: A90009335.D
Acq: 5 Dec 2012 5:12 am

Tgt Ion:156 Resp: 82629

Ion	Ratio	Lower	Upper
156	100		
155	0.0	0.0	0.0

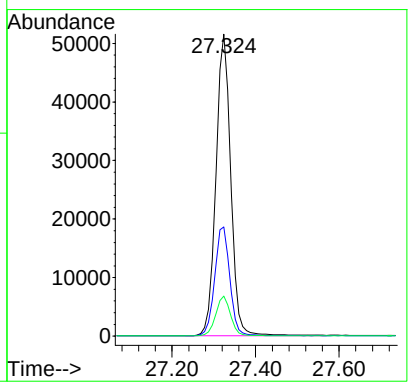


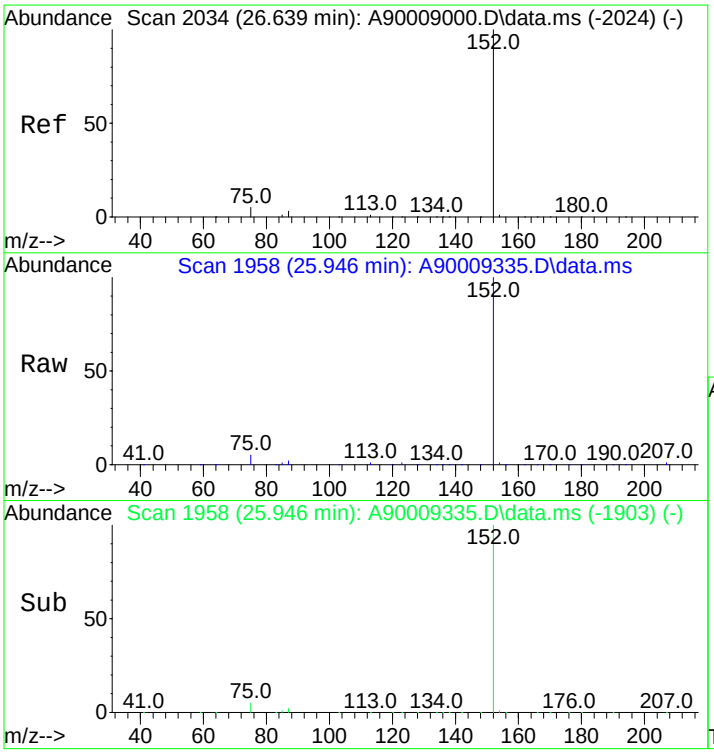


#25
Dibenzofuran
Concen: 519.43 ng/mL
RT: 27.324 min Scan# 2109
Delta R.T. 0.000 min
Lab File: A90009335.D
Acq: 5 Dec 2012 5:12 am

Tgt Ion:168 Resp: 126487

Ion	Ratio	Lower	Upper
168	100		
139	36.9	28.9	43.3
169	13.2	10.6	15.8

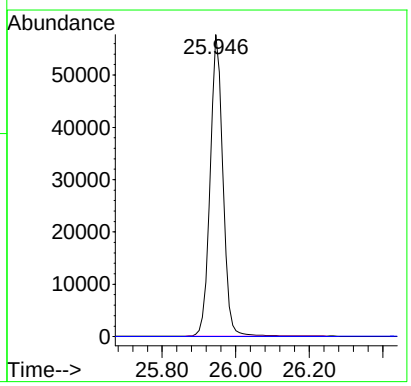


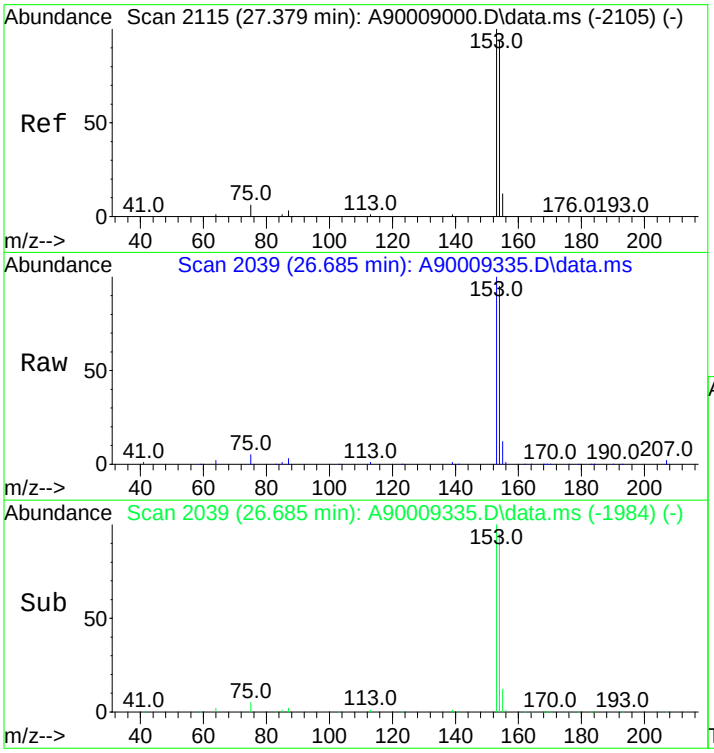


#26
Acenaphthylene
Concen: 523.98 ng/mL
RT: 25.946 min Scan# 1958
Delta R.T. 0.000 min
Lab File: A90009335.D
Acq: 5 Dec 2012 5:12 am

Tgt Ion:152 Resp: 138854

Ion	Ratio	Lower	Upper
152	100		
153	0.0	0.0	0.0

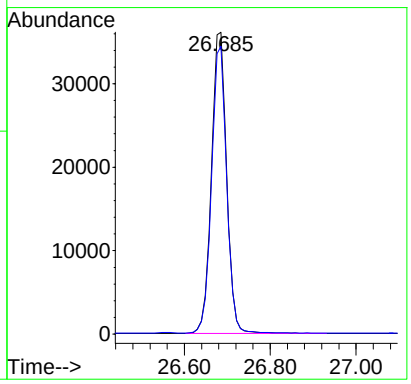


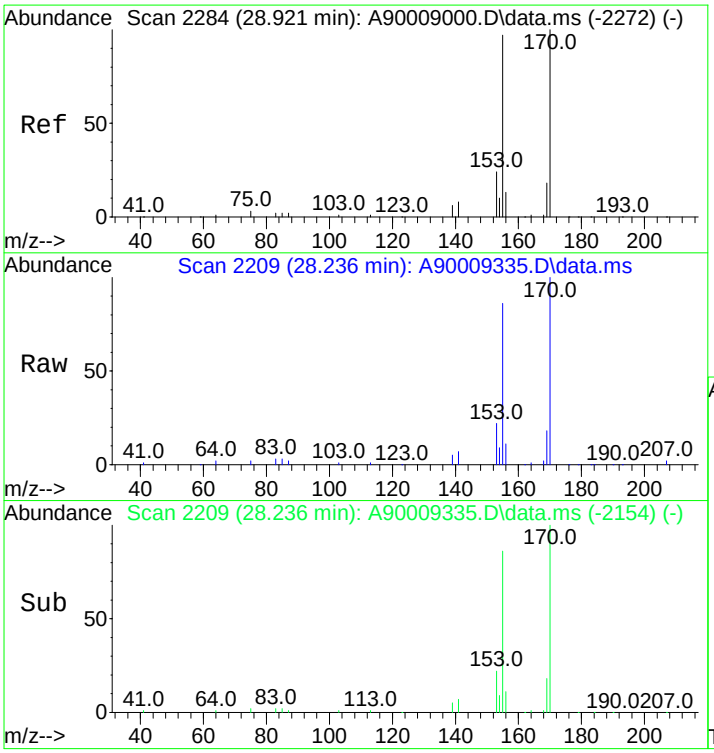


#27
Acenaphthene
Concen: 533.42 ng/mL
RT: 26.685 min Scan# 2039
Delta R.T. 0.000 min
Lab File: A90009335.D
Acq: 5 Dec 2012 5:12 am

Tgt Ion:153 Resp: 88773

Ion	Ratio	Lower	Upper
153	100		
154	94.3	76.2	114.4

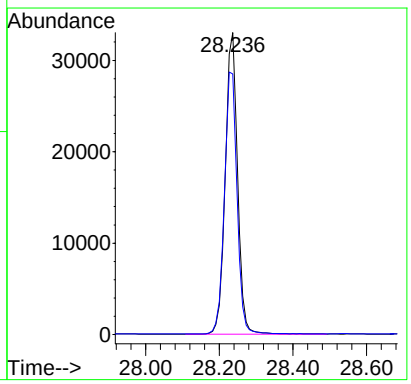


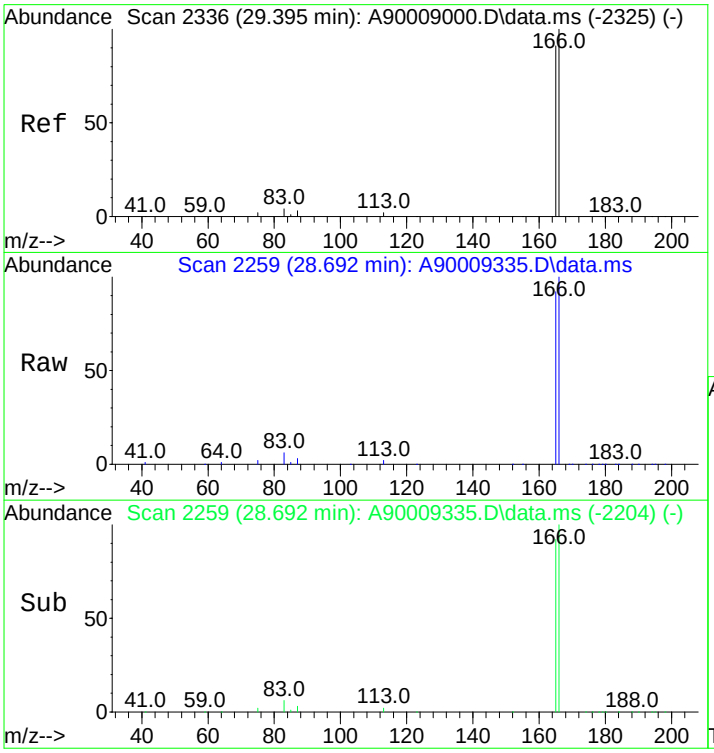


#28
2,3,5-Trimethylnaphthalene
Concen: 510.73 ng/mL
RT: 28.236 min Scan# 2209
Delta R.T. 0.000 min
Lab File: A90009335.D
Acq: 5 Dec 2012 5:12 am

Tgt Ion:170 Resp: 76318

Ion	Ratio	Lower	Upper
170	100		
155	89.5	69.0	103.6

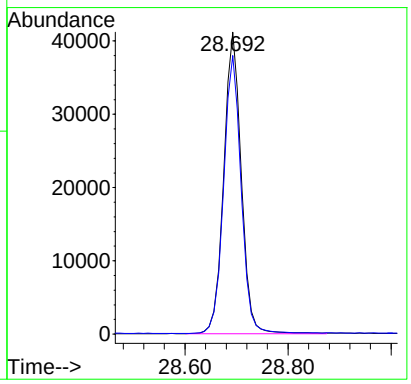


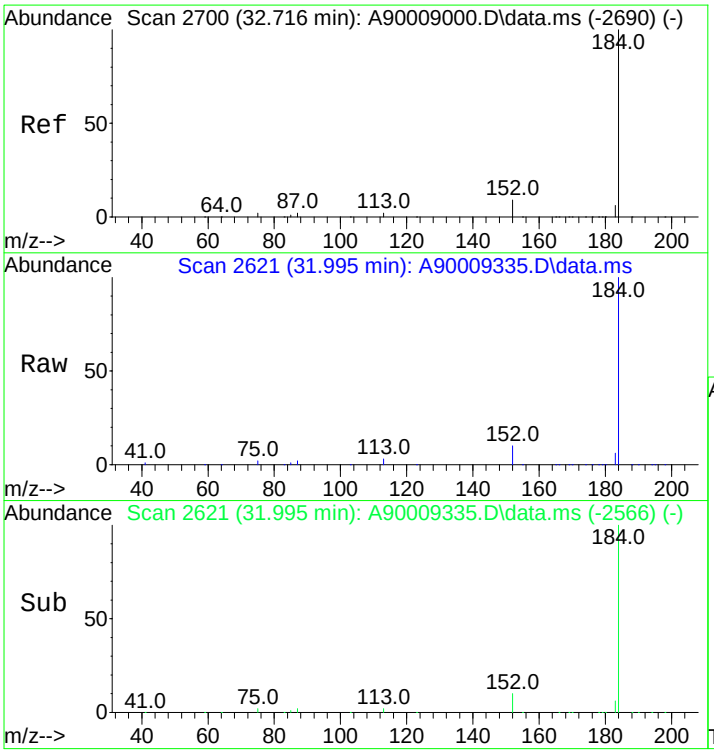


#29
Fluorene
Concen: 497.75 ng/mL
RT: 28.692 min Scan# 2259
Delta R.T. 0.000 min
Lab File: A90009335.D
Acq: 5 Dec 2012 5:12 am

Tgt Ion:166 Resp: 96985

Ion	Ratio	Lower	Upper
166	100		
165	91.8	73.8	110.6

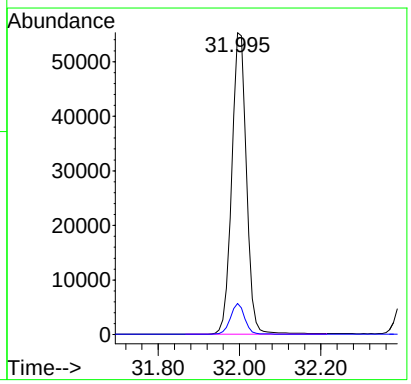


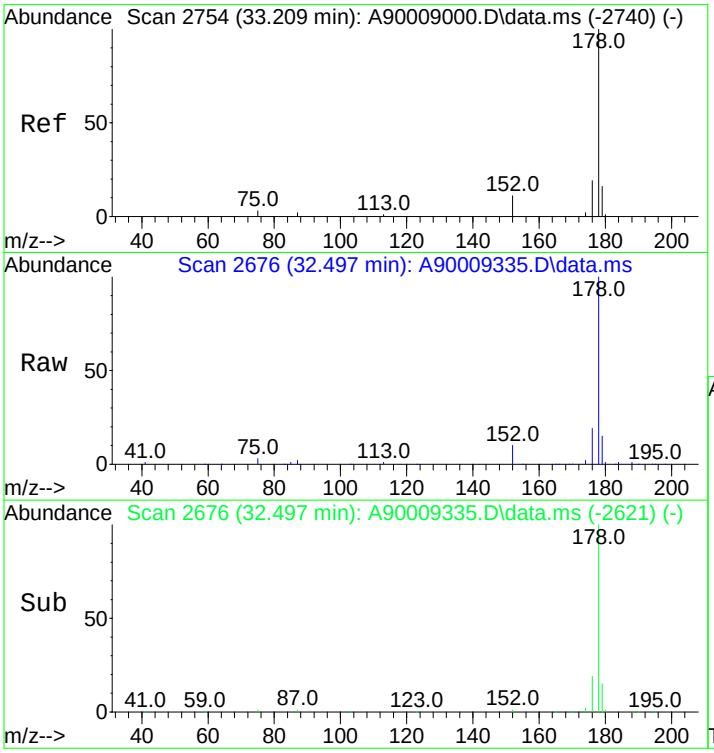


#33
Dibenzothiophene
Concen: 501.36 ng/mL
RT: 31.995 min Scan# 2621
Delta R.T. 0.000 min
Lab File: A90009335.D
Acq: 5 Dec 2012 5:12 am

Tgt Ion:184 Resp: 138836

Ion	Ratio	Lower	Upper
184	100		
152	9.8	8.2	12.4

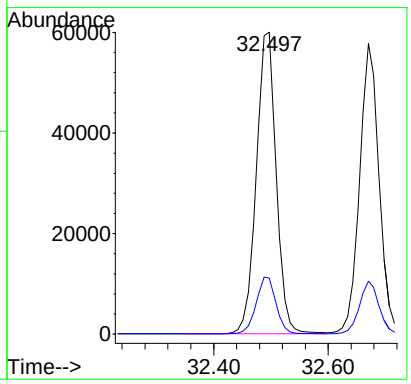


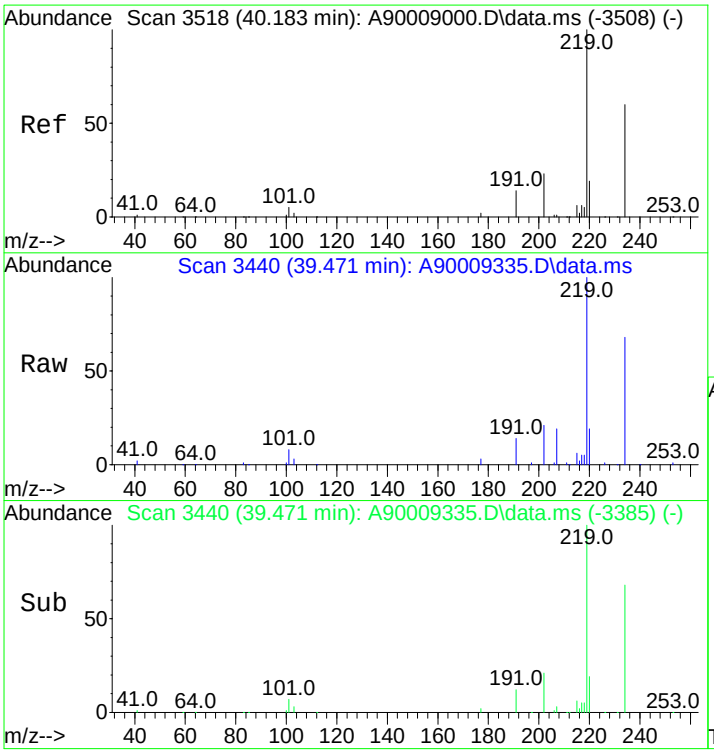


#43
Phenanthrene
Concen: 512.51 ng/mL
RT: 32.497 min Scan# 2676
Delta R.T. 0.000 min
Lab File: A90009335.D
Acq: 5 Dec 2012 5:12 am

Tgt Ion:178 Resp: 145250

Ion	Ratio	Lower	Upper
178	100		
176	18.8	14.9	22.3

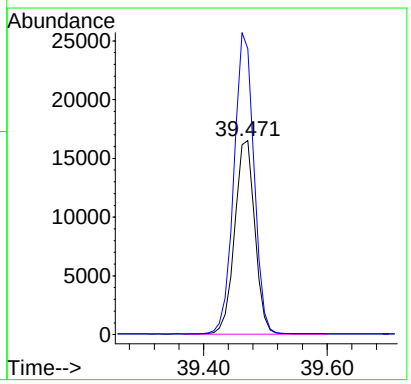


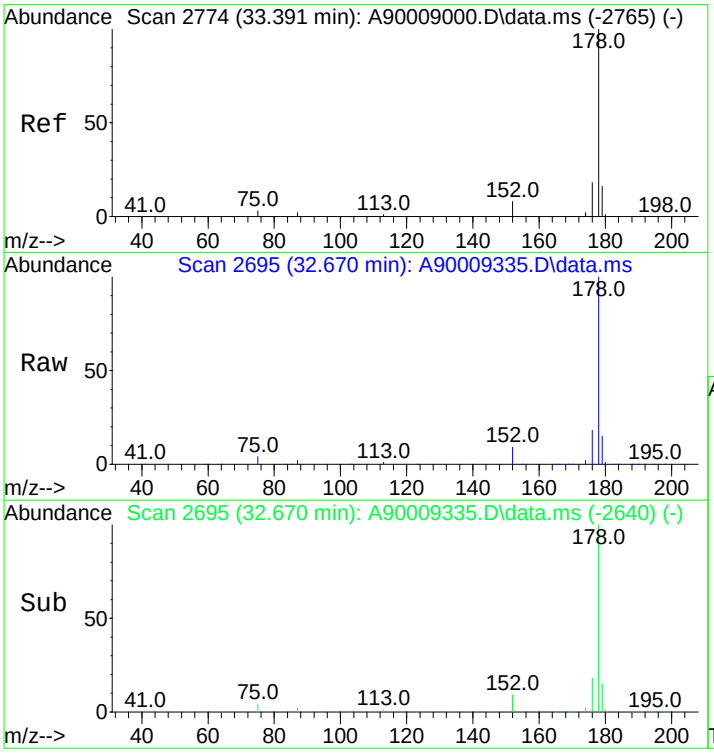


#54
Retene
Concen: 457.32 ng/mL
RT: 39.471 min Scan# 3440
Delta R.T. 0.000 min
Lab File: A90009335.D
Acq: 5 Dec 2012 5:12 am

Tgt Ion:234 Resp: 37321

Ion	Ratio	Lower	Upper
234	100		
219	154.3	117.9	176.9

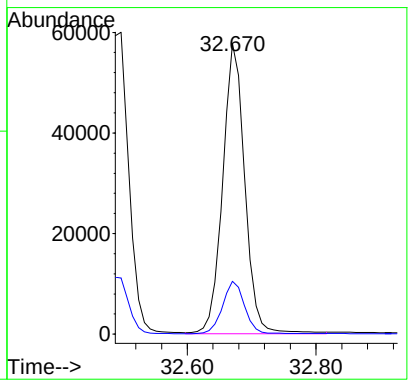


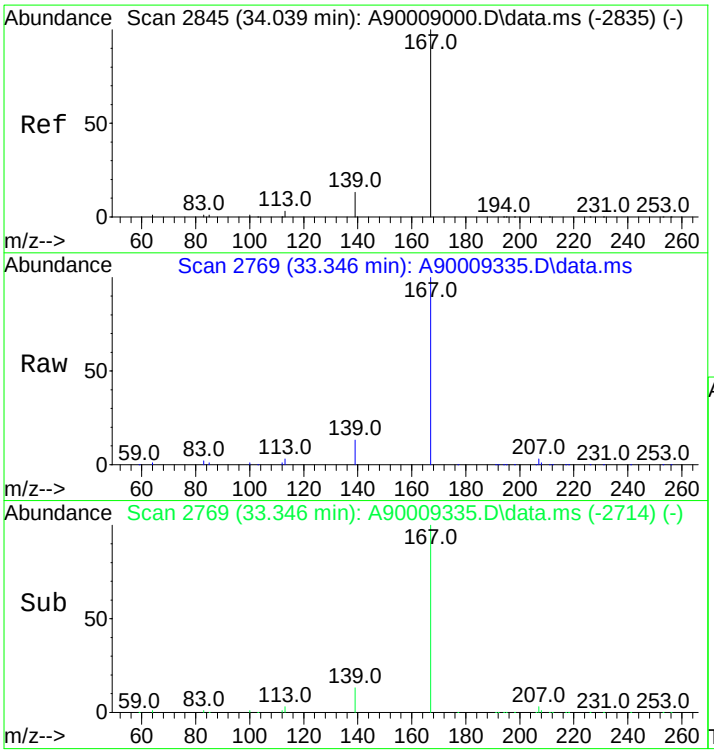


#55
Anthracene
Concen: 541.38 ng/mL m
RT: 32.670 min Scan# 2695
Delta R.T. 0.000 min
Lab File: A90009335.D
Acq: 5 Dec 2012 5:12 am

Tgt Ion:178 Resp: 138399

Ion	Ratio	Lower	Upper
178	100		
176	17.7	14.6	21.8

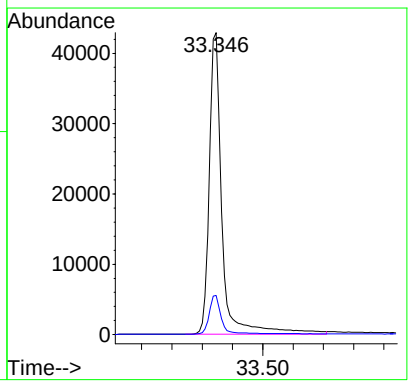


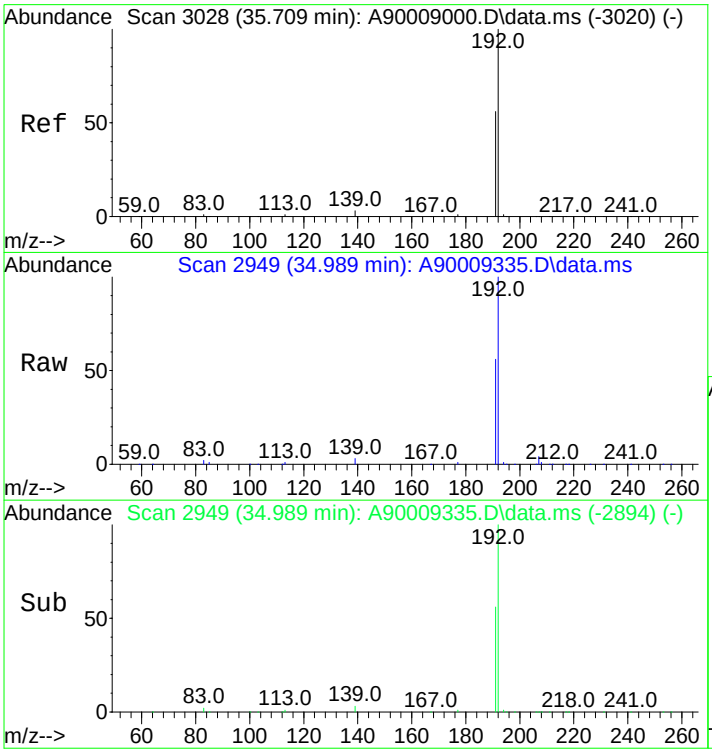


#56
Carbazole
Concen: 543.94 ng/mL
RT: 33.346 min Scan# 2769
Delta R.T. 0.000 min
Lab File: A90009335.D
Acq: 5 Dec 2012 5:12 am

Tgt Ion:167 Resp: 125139

Ion	Ratio	Lower	Upper
167	100		
139	12.1	10.3	15.5

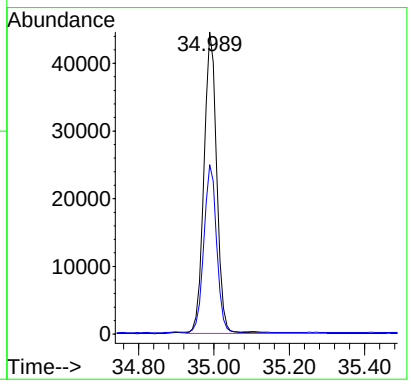


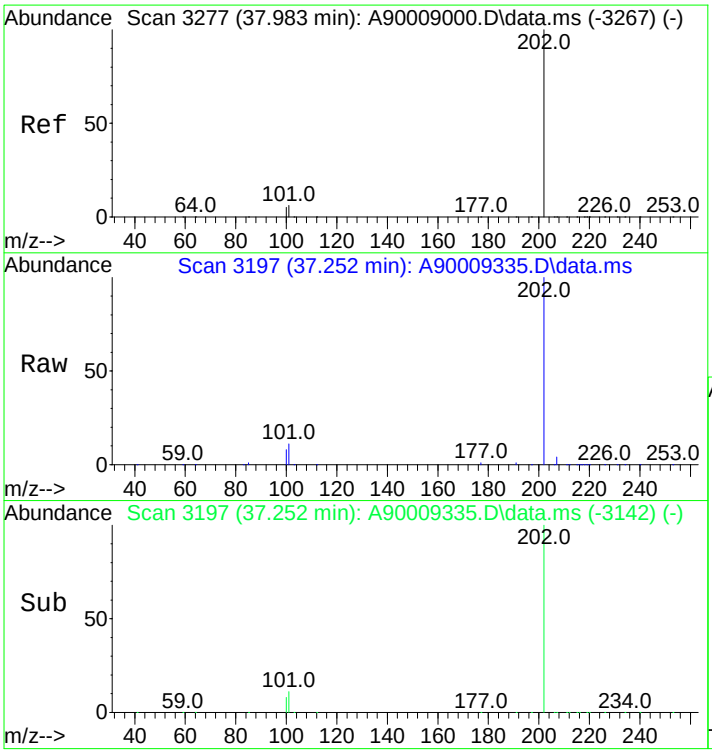


#57
1-Methylphenanthrene
Concen: 487.56 ng/mL
RT: 34.989 min Scan# 2949
Delta R.T. 0.000 min
Lab File: A90009335.D
Acq: 5 Dec 2012 5:12 am

Tgt Ion:192 Resp: 104769

Ion	Ratio	Lower	Upper
192	100		
191	55.4	44.8	67.2

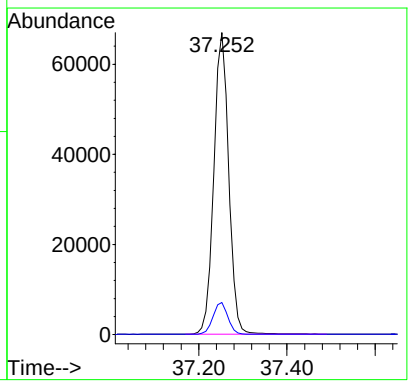


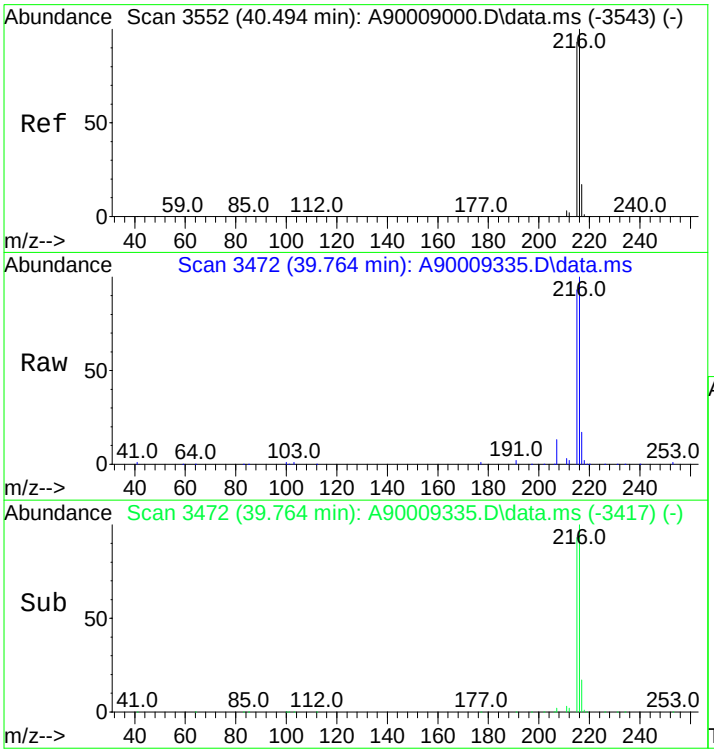


#58
Fluoranthene
Concen: 483.18 ng/mL
RT: 37.252 min Scan# 3197
Delta R.T. 0.000 min
Lab File: A90009335.D
Acq: 5 Dec 2012 5:12 am

Tgt Ion:202 Resp: 156787

Ion	Ratio	Lower	Upper
202	100		
101	10.6	8.5	12.7

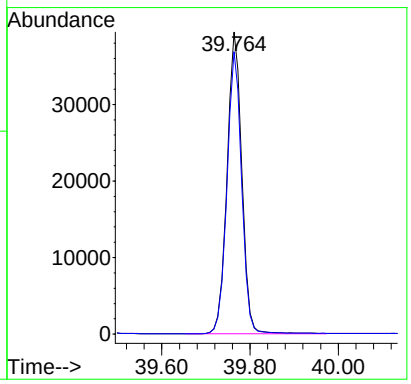


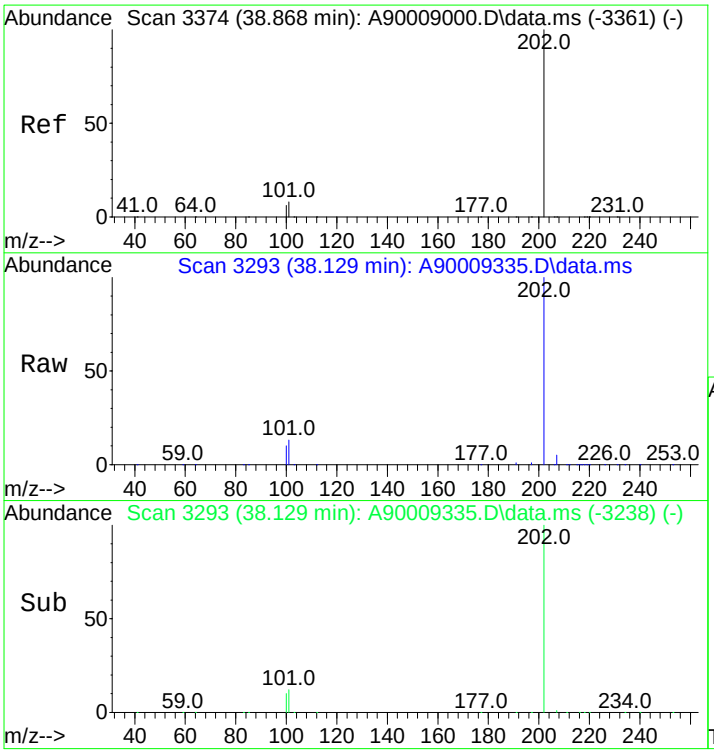


#59
Benzo(b)fluorene
Concen: 448.54 ng/mL
RT: 39.764 min Scan# 3472
Delta R.T. 0.000 min
Lab File: A90009335.D
Acq: 5 Dec 2012 5:12 am

Tgt Ion:216 Resp: 91509

Ion	Ratio	Lower	Upper
216	100		
215	92.7	74.8	112.2

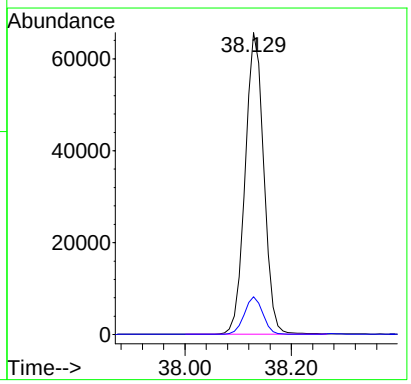


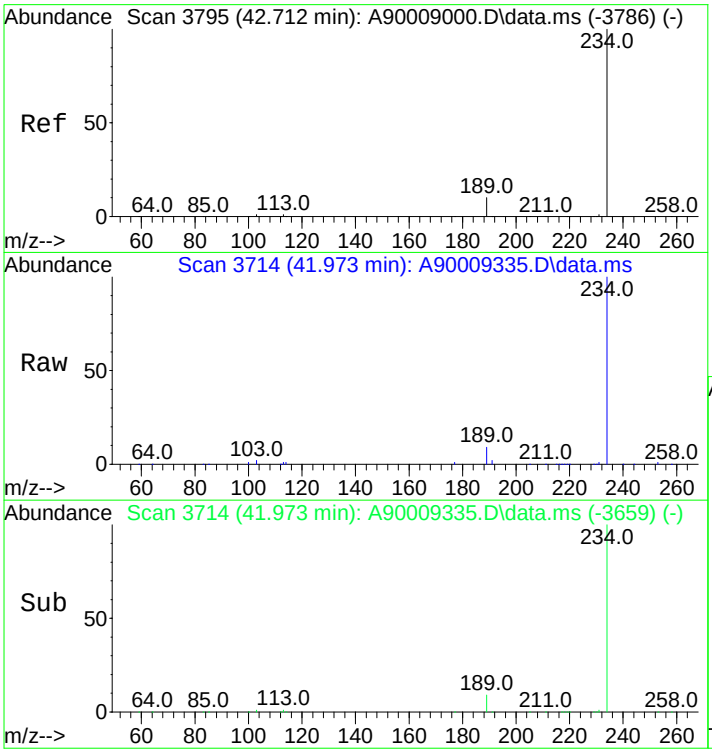


#60
Pyrene
Concen: 482.59 ng/mL
RT: 38.129 min Scan# 3293
Delta R.T. 0.000 min
Lab File: A90009335.D
Acq: 5 Dec 2012 5:12 am

Tgt Ion:202 Resp: 158979

Ion	Ratio	Lower	Upper
202	100		
101	12.5	10.1	15.1

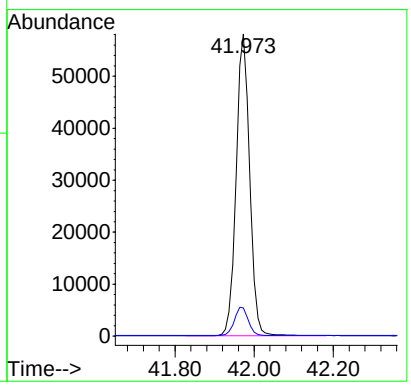


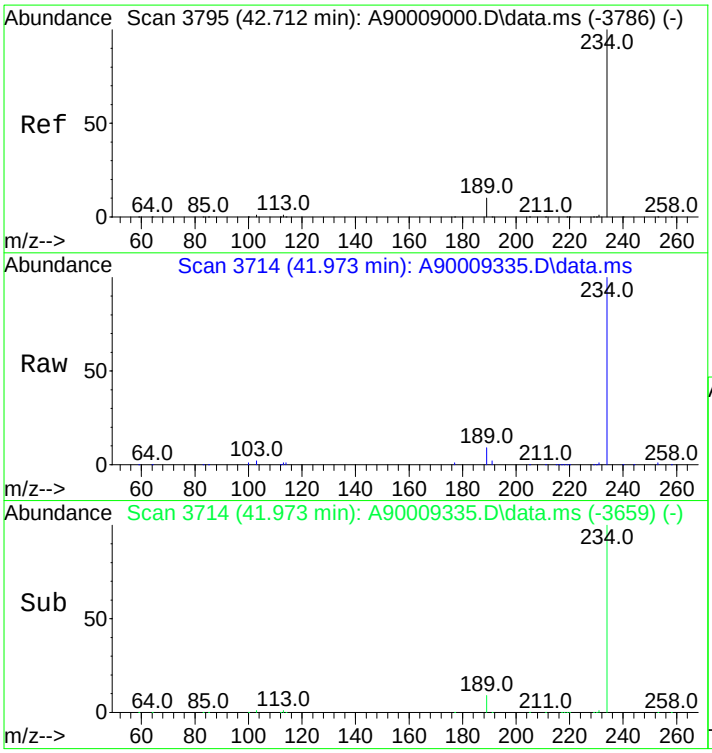


#66
Naphthobenzothiophene
Concen: 467.88 ng/ml
RT: 41.973 min Scan# 3714
Delta R.T. 0.000 min
Lab File: A90009335.D
Acq: 5 Dec 2012 5:12 am

Tgt Ion:234 Resp: 137768

Ion	Ratio	Lower	Upper
234	100		
189	9.6	7.4	11.2

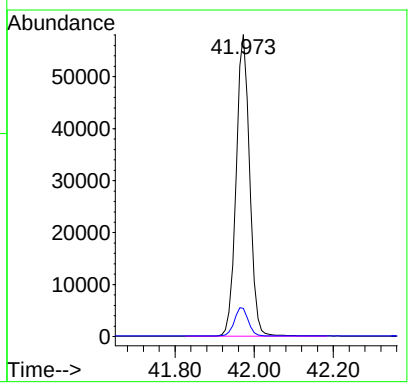


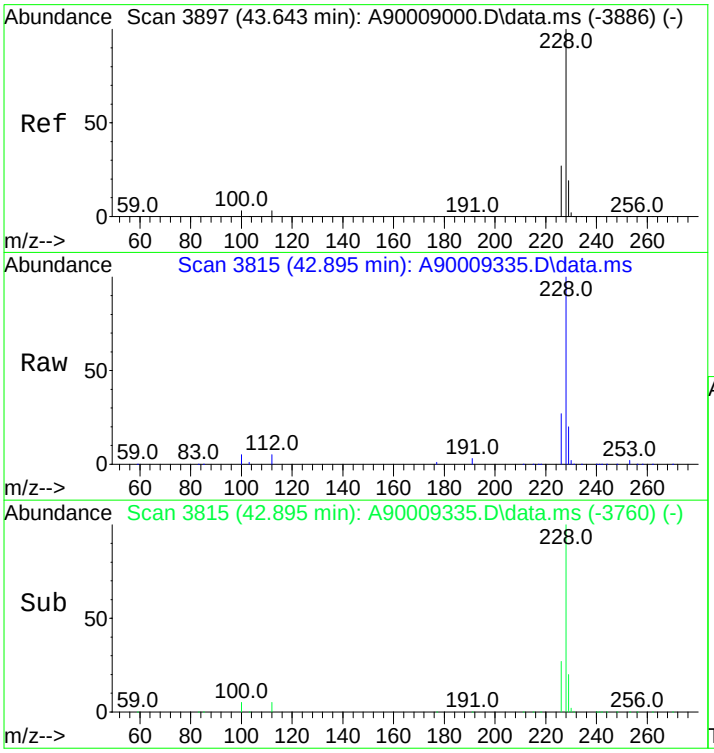


#67
Naphthobenzothiophene-2,1-D
Concen: 467.88 ng/mL
RT: 41.973 min Scan# 3714
Delta R.T. 0.000 min
Lab File: A90009335.D
Acq: 5 Dec 2012 5:12 am

Tgt Ion:234 Resp: 137768

Ion	Ratio	Lower	Upper
234	100		
189	9.6	7.4	11.2

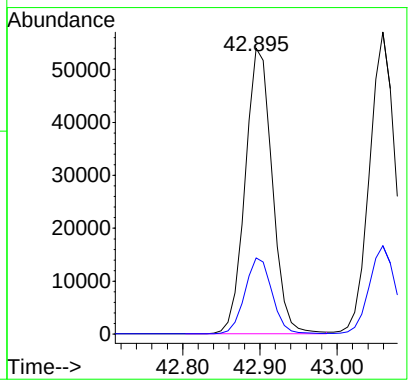


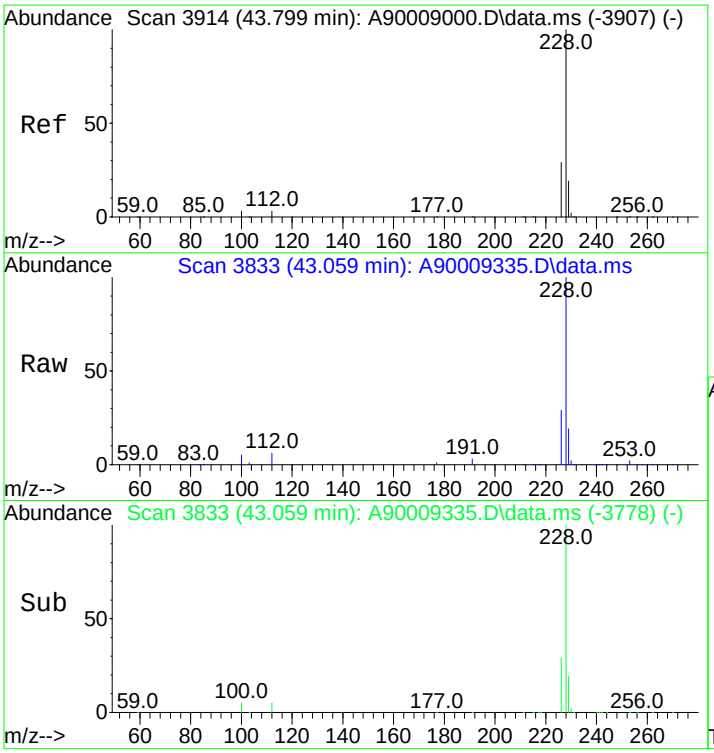


#75
Benz[a]anthracene
Concen: 486.44 ng/mL
RT: 42.895 min Scan# 3815
Delta R.T. 0.000 min
Lab File: A90009335.D
Acq: 5 Dec 2012 5:12 am

Tgt Ion:228 Resp: 131312

Ion	Ratio	Lower	Upper
228	100		
226	26.6	21.3	31.9

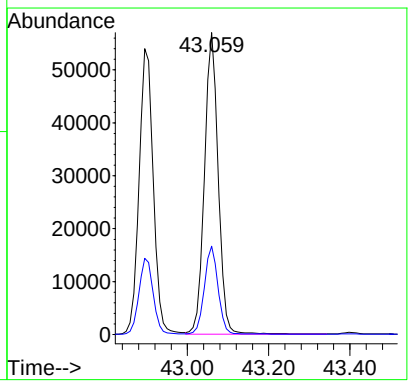


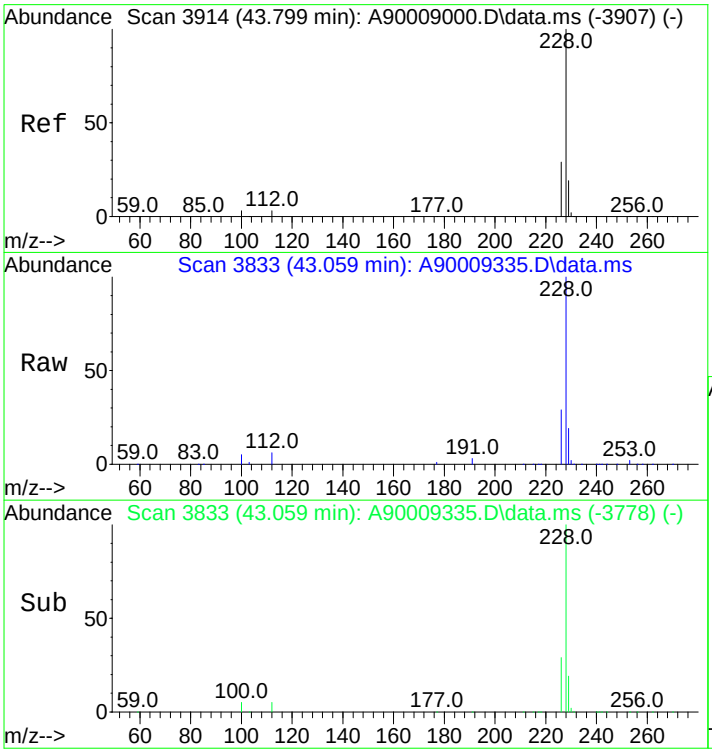


#76
Chrysene
Concen: 510.21 ng/mL
RT: 43.059 min Scan# 3833
Delta R.T. 0.000 min
Lab File: A90009335.D
Acq: 5 Dec 2012 5:12 am

Tgt Ion:228 Resp: 133903

Ion	Ratio	Lower	Upper
228	100		
226	29.1	23.4	35.0

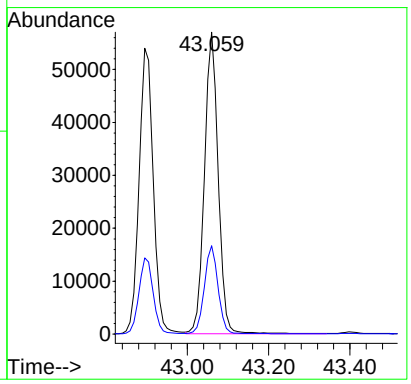


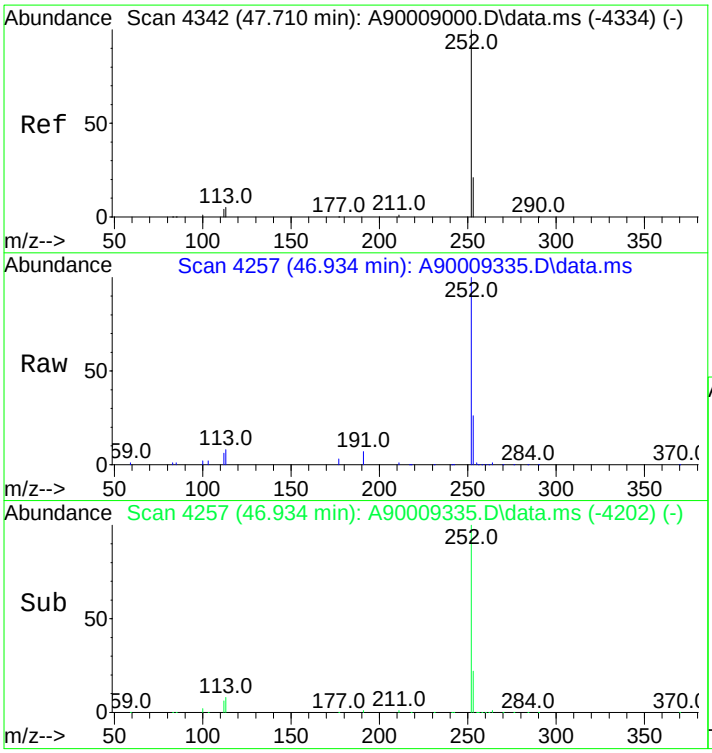


#77
Chrysene/Triphenylene
Concen: 510.21 ng/mL
RT: 43.059 min Scan# 3833
Delta R.T. 0.000 min
Lab File: A90009335.D
Acq: 5 Dec 2012 5:12 am

Tgt Ion:228 Resp: 133903

Ion	Ratio	Lower	Upper
228	100		
226	29.1	23.4	35.0

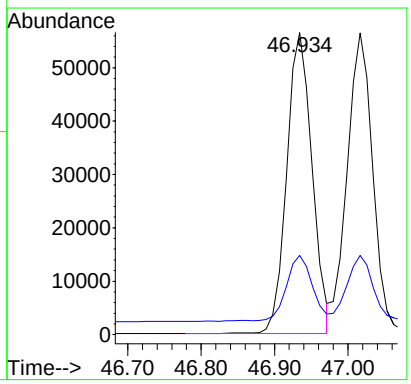


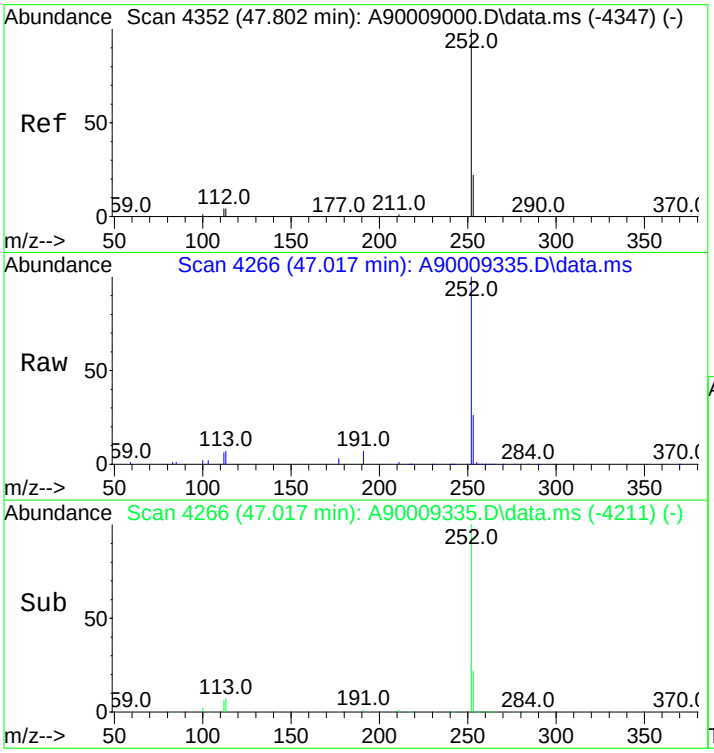


#84
Benzo[b]fluoranthene
Concen: 514.33 ng/mL
RT: 46.934 min Scan# 4257
Delta R.T. 0.000 min
Lab File: A90009335.D
Acq: 5 Dec 2012 5:12 am

Tgt Ion:252 Resp: 134890

Ion	Ratio	Lower	Upper
252	100		
253	22.6	20.9	31.3

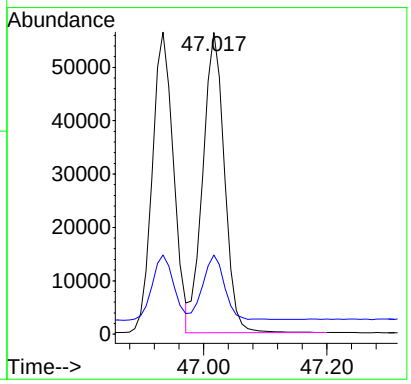


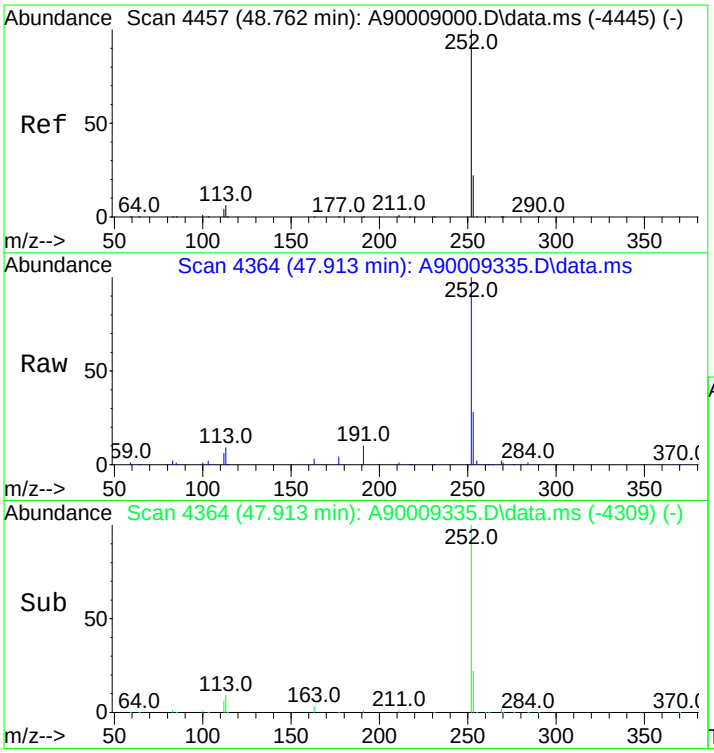


#85
Benzo[j]+[k]fluoranthene
Concen: 535.24 ng/mL
RT: 47.017 min Scan# 4266
Delta R.T. 0.000 min
Lab File: A90009335.D
Acq: 5 Dec 2012 5:12 am

Tgt Ion:252 Resp: 136944

Ion	Ratio	Lower	Upper
252	100		
253	21.3	21.0	31.6

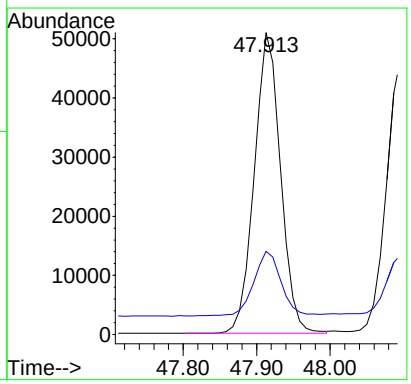


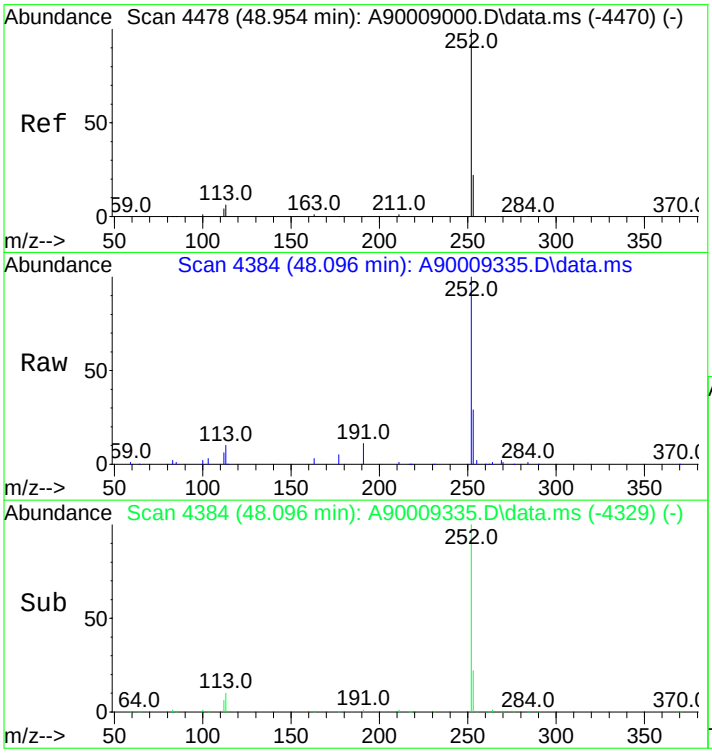


#87
Benzo[e]pyrene
Concen: 515.86 ng/mL
RT: 47.913 min Scan# 4364
Delta R.T. 0.000 min
Lab File: A90009335.D
Acq: 5 Dec 2012 5:12 am

Tgt Ion:252 Resp: 127112

Ion	Ratio	Lower	Upper
252	100		
253	22.6	22.1	33.1

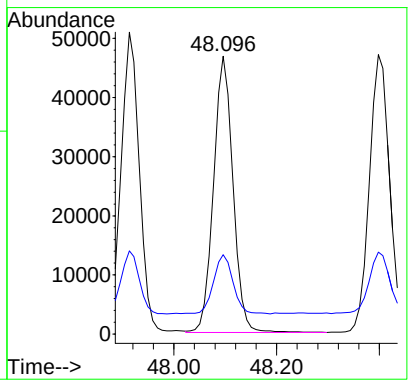


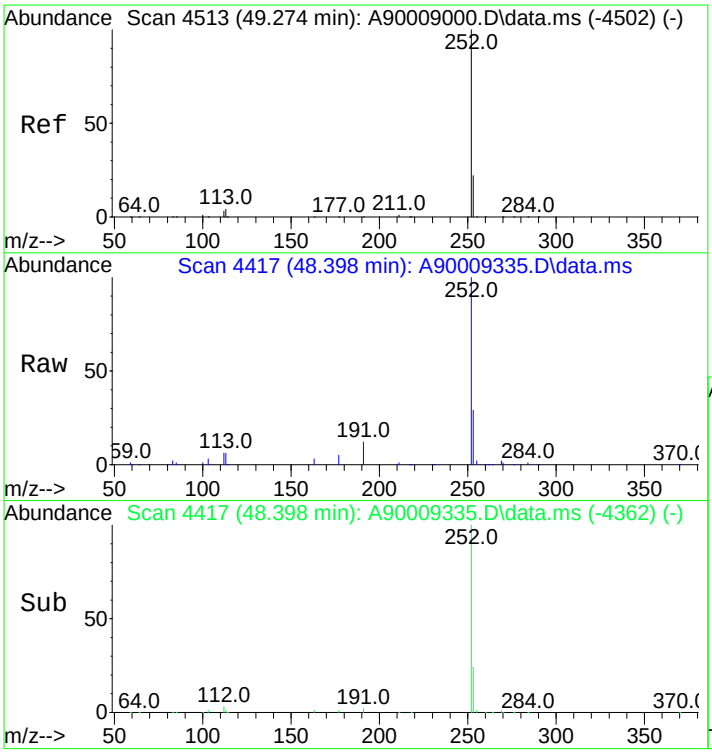


#89
Benzo[a]pyrene
Concen: 532.89 ng/mL
RT: 48.096 min Scan# 4384
Delta R.T. 0.000 min
Lab File: A90009335.D
Acq: 5 Dec 2012 5:12 am

Tgt Ion:252 Resp: 122761

Ion	Ratio	Lower	Upper
252	100		
253	21.7	22.9	34.3#

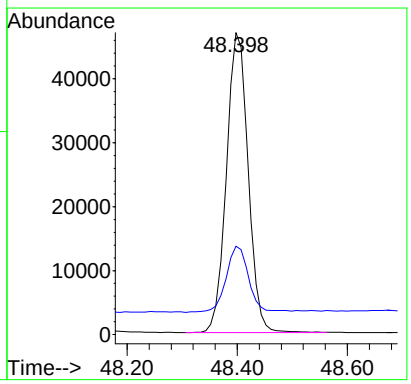


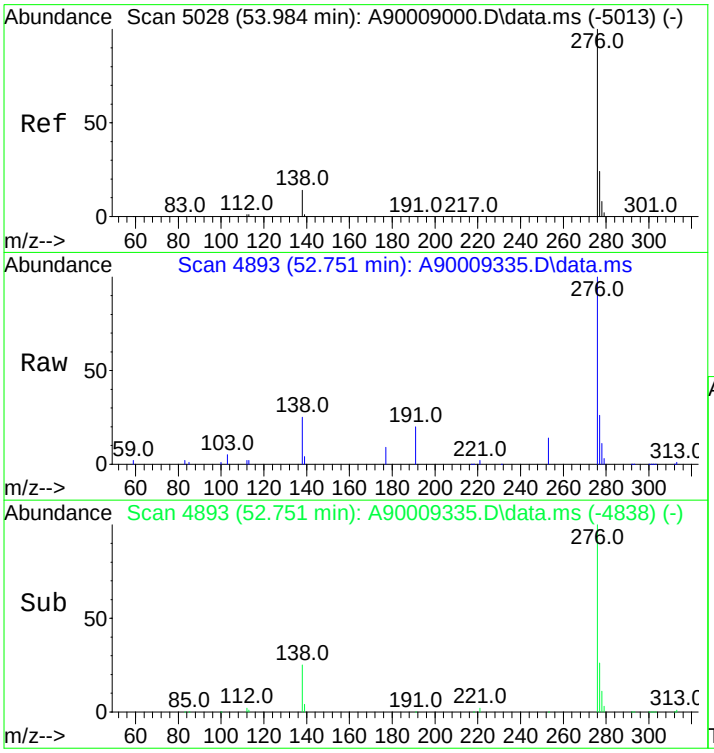


#90
Perylene
Concen: 520.54 ng/mL
RT: 48.398 min Scan# 4417
Delta R.T. 0.000 min
Lab File: A90009335.D
Acq: 5 Dec 2012 5:12 am

Tgt Ion:252 Resp: 128383

Ion	Ratio	Lower	Upper
252	100		
253	23.2	23.4	35.2#

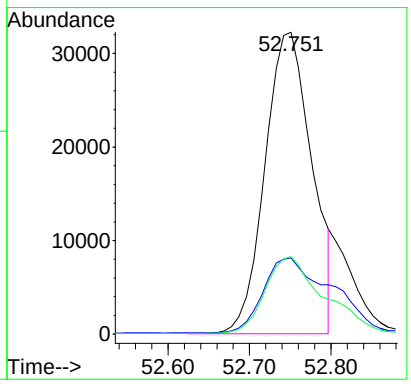


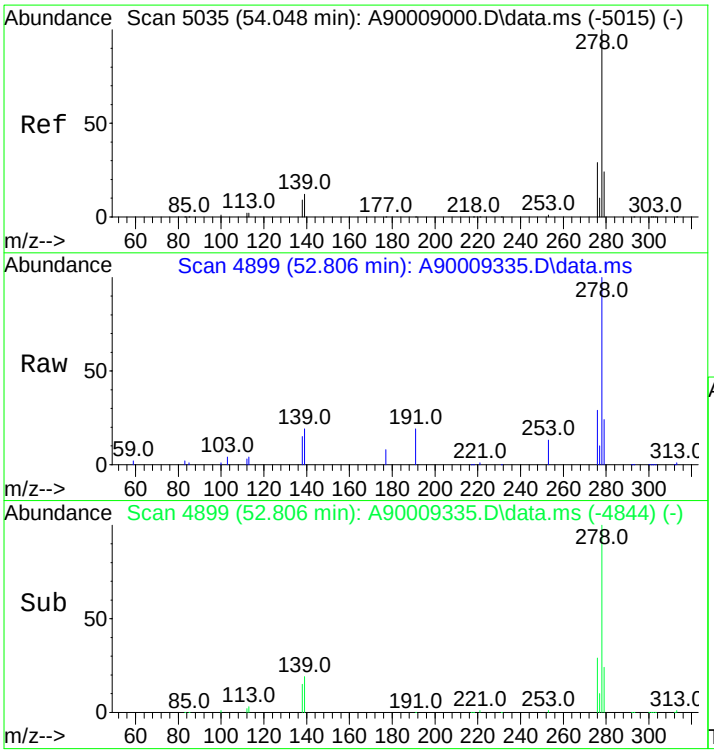


#91
Indeno[1,2,3-cd]pyrene
Concen: 517.08 ng/mL m
RT: 52.751 min Scan# 4893
Delta R.T. 0.000 min
Lab File: A90009335.D
Acq: 5 Dec 2012 5:12 am

Tgt Ion:276 Resp: 129334

Ion	Ratio	Lower	Upper
276	100		
138	36.2	20.2	30.4#
277	32.3	20.6	30.8#

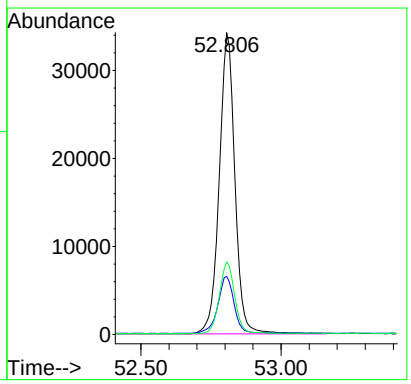


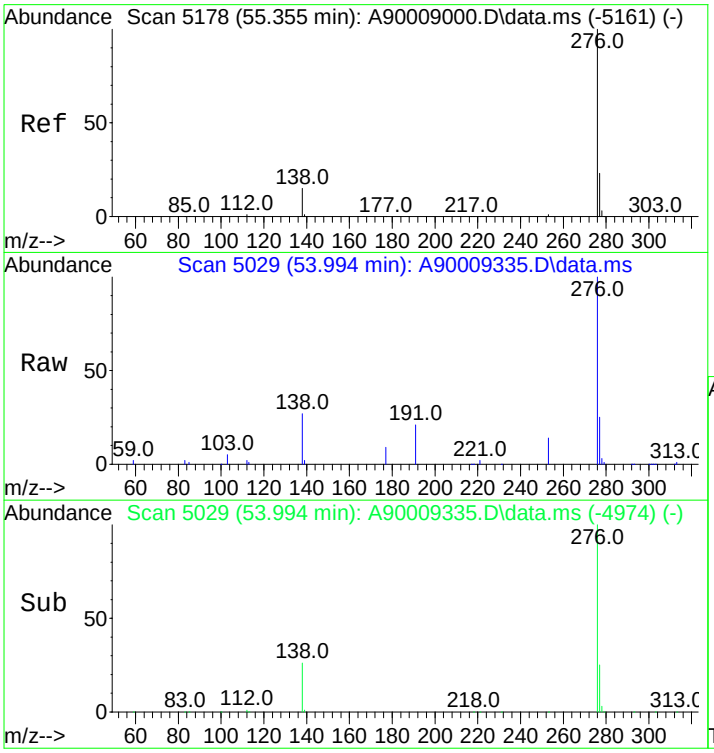


#92
Dibenz[ah]+[ac]anthracene
Concen: 544.09 ng/mL
RT: 52.806 min Scan# 4899
Delta R.T. 0.000 min
Lab File: A90009335.D
Acq: 5 Dec 2012 5:12 am

Tgt Ion:278 Resp: 133214

Ion	Ratio	Lower	Upper
278	100		
139	19.5	15.4	23.2
279	23.0	19.3	28.9

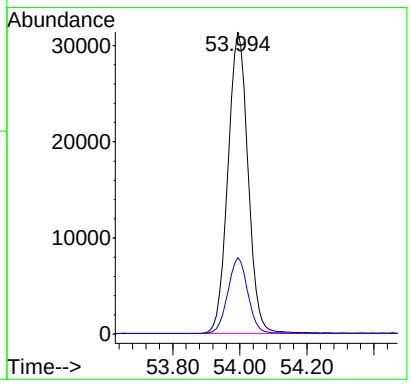


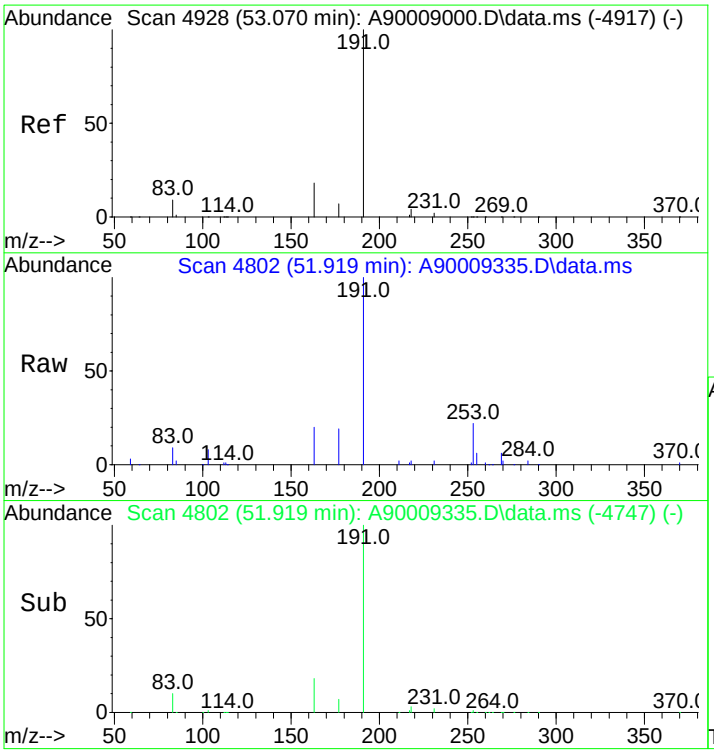


#93
Benzo[g,h,i]perylene
Concen: 534.04 ng/mL
RT: 53.994 min Scan# 5029
Delta R.T. 0.000 min
Lab File: A90009335.D
Acq: 5 Dec 2012 5:12 am

Tgt Ion:276 Resp: 130423

Ion	Ratio	Lower	Upper
276	100		
277	25.0	20.3	30.5

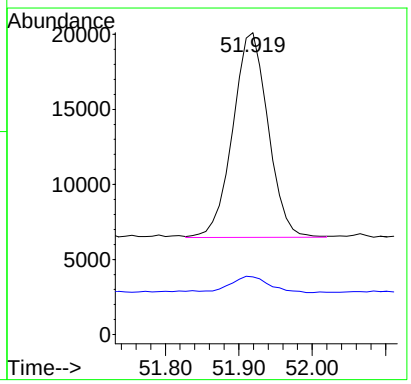


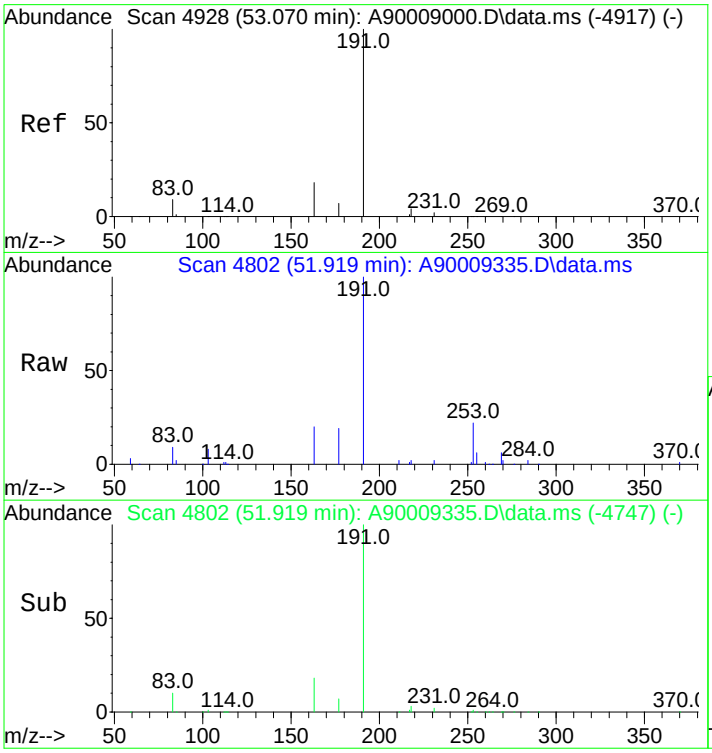


#94
Hopane (T19)
Concen: 497.25 ng/mL
RT: 51.919 min Scan# 4802
Delta R.T. 0.000 min
Lab File: A90009335.D
Acq: 5 Dec 2012 5:12 am

Tgt Ion:191 Resp: 45663

Ion	Ratio	Lower	Upper
191	100		
177	9.0	15.3	22.9#

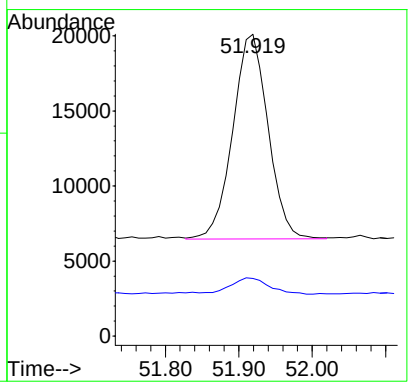




#95
17a(H),21B(H)-hopane - C30H52
Concen: 498.55 ng/mL
RT: 51.919 min Scan# 4802
Delta R.T. 0.000 min
Lab File: A90009335.D
Acq: 5 Dec 2012 5:12 am

Tgt Ion:191 Resp: 45663

Ion	Ratio	Lower	Upper
191	100		
177	9.0	15.3	22.9#



Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC4\
Data File : A90009336.D
Acq On : 5 Dec 2012 6:36 am
Operator : PS
Sample : I912041205
Misc : WHAQ87@5000ng/ml
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Dec 06 10:35:27 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 09:53:06 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.557	164	73870	500.000	ng/mL	0.00
74) Chrysene-d12	42.968	240	126799	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.622	136	1322669	4871.149	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 487.11%#			
42) Phenanthrene-d10	32.406	188	1351620	4920.356	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 492.04%#			
83) Benzo[b]fluoranthene-d12	46.861	264	1094920	4777.862	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 477.79%#			
88) Benzo[a]pyrene-d12	48.023	264	1152181	5278.972	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 527.90%#			
129) 5B(H)Cholane - Surr	43.598	217	278629	5259.034	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 525.90%#			
Target Compounds						Qvalue
3) trans-Decalin	16.282	138	164331	2711.634	ng/mL	100
4) cis-Decalin	17.496	138	128277	2703.825	ng/mL	100
10) Naphthalene	19.695	128	1505120	5459.710	ng/mL#	100
16) 2-Methylnaphthalene	22.378	142	1007417	5433.044	ng/mL#	100
17) 1-Methylnaphthalene	22.798	142	968591	5413.661	ng/mL#	100
18) Benzothiophene	19.914	134	1260013	5471.294	ng/mL	100
23) Biphenyl	24.249	154	1315090	5438.978	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.860	156	957062	5404.056	ng/mL#	100
25) Dibenzofuran	27.324	168	1453450	5550.997	ng/mL	99
26) Acenaphthylene	25.946	152	1657205M4	5747.157	ng/mL	
27) Acenaphthene	26.685	153	1000665	5521.590	ng/mL	100
28) 2,3,5-Trimethylnaphthalen	28.236	170	891880	5514.589	ng/mL	96
29) Fluorene	28.693	166	1144868	5497.611	ng/mL	99
33) Dibenzothiophene	32.004	184	1631245	5515.209	ng/mL	99
43) Phenanthrene	32.497	178	1674427	5523.362	ng/mL	100
54) Retene	39.471	234	464826	5361.062	ng/mL	94
55) Anthracene	32.679	178	1633983M4	5922.421	ng/mL	
56) Carbazole	33.346	167	1619877	6509.516	ng/mL	99
57) 1-Methylphenanthrene	34.998	192	1261945	5511.517	ng/mL	100
58) Fluoranthene	37.253	202	1886725M4	5449.974	ng/mL	
59) Benzo(b)fluorene	39.773	216	1146314	5335.623	ng/mL	98
60) Pyrene	38.138	202	1906384	5420.492	ng/mL	100
66) Naphthobenzothiophene	41.973	234	1660799	5313.794	ng/ml	99
67) Naphthobenzothiophene-2,1	41.973	234	1660799	5313.794	ng/mL	99
75) Benz[a]anthracene	42.904	228	1612840	5479.153	ng/mL	100
76) Chrysene	43.069	228	1554217	5411.022	ng/mL	100
77) Chrysene/Triphenylene	43.069	228	1554217	5411.022	ng/mL	100
84) Benzo[b]fluoranthene	46.944	252	1627505	5586.524	ng/mL	92
85) Benzo[j]+[k]fluoranthene	47.026	252	1580777	5540.707	ng/mL	91
87) Benzo[e]pyrene	47.931	252	1492105	5432.420	ng/mL#	89
89) Benzo[a]pyrene	48.114	252	1464576	5684.935	ng/mL#	87
90) Perylene	48.416	252	1553911	5643.425	ng/mL#	86
91) Indeno[1,2,3-cd]pyrene	52.769	276	1582184M6	5634.278	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.824	278	1594933	5784.937	ng/mL	99
93) Benzo[g,h,i]perylene	54.021	276	1566410	5701.157	ng/mL	99
94) Hopane (T19)	51.919	191	519450	4974.126	ng/mL#	74
95) 17a(H),21B(H)-hopane - C3	51.919	191	519450	4986.647	ng/mL#	74

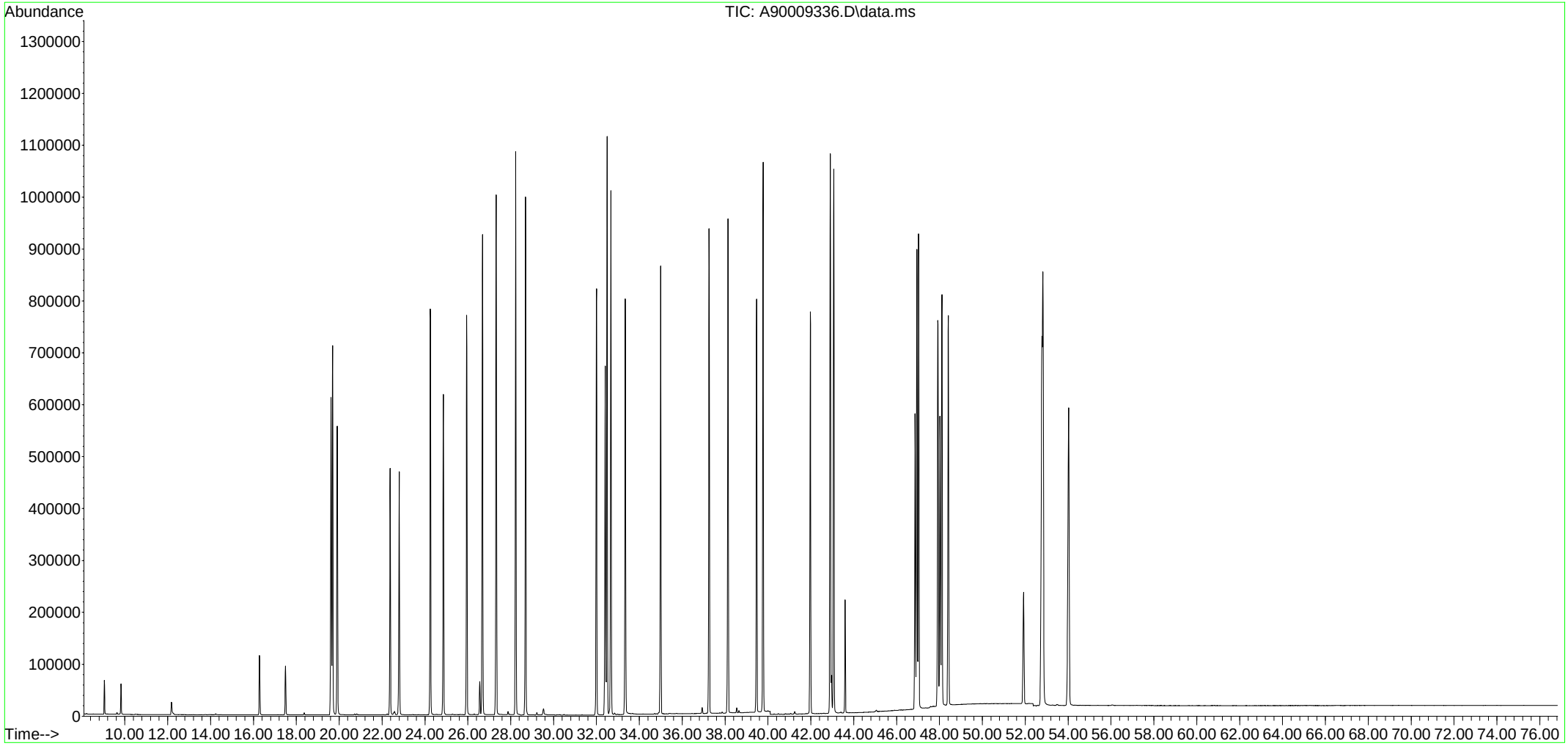
(#) = qualifier out of range (m) = manual integration (+) = signals summed

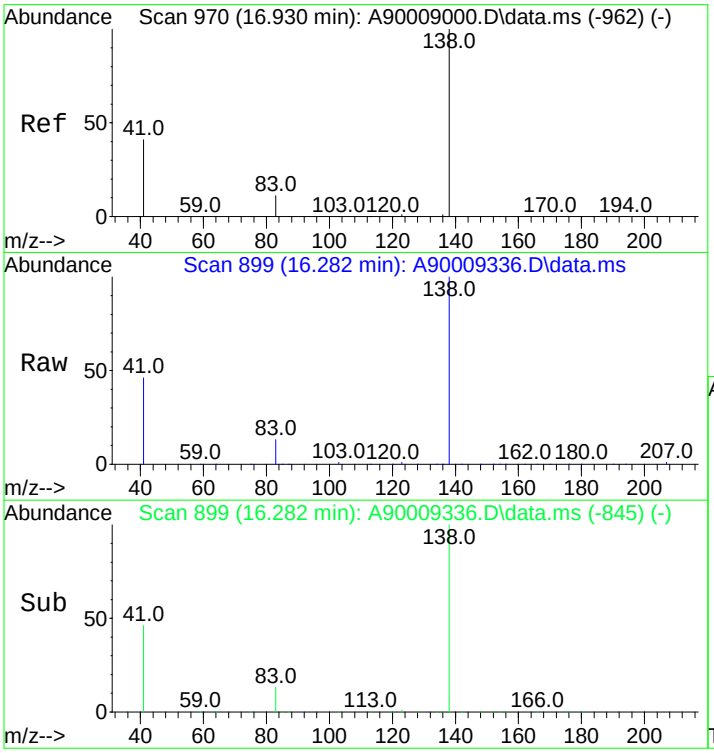
Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC4\
Data File : A90009336.D
Acq On : 5 Dec 2012 6:36 am
Operator : PS
Sample : I912041205
Misc : WHAQ87@5000ng/ml
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Dec 06 10:35:27 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 09:53:06 2012
Response via : Initial Calibration

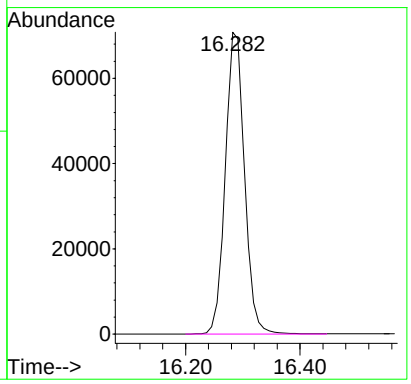
Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

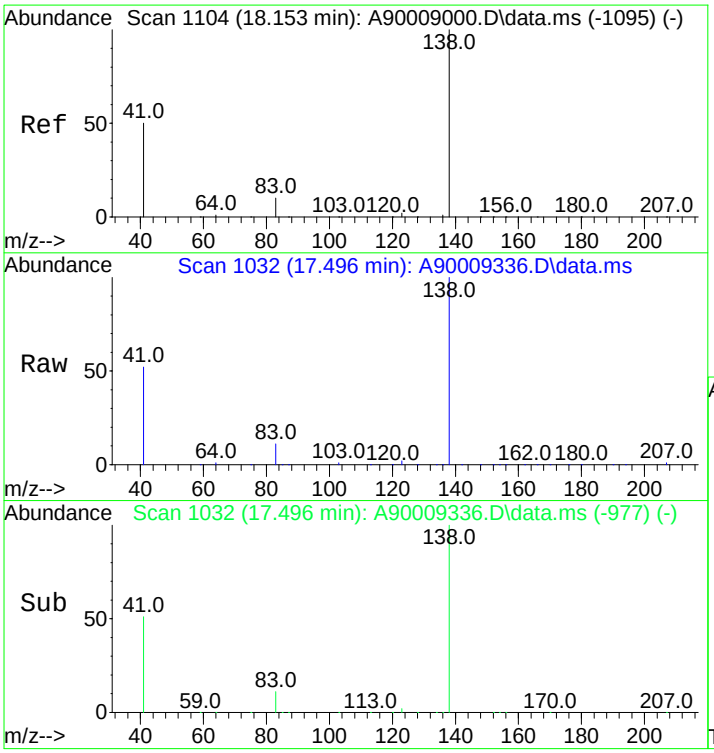




#3
trans-Decalin
Concen: 2711.63 ng/mL
RT: 16.282 min Scan# 899
Delta R.T. -0.009 min
Lab File: A90009336.D
Acq: 5 Dec 2012 6:36 am

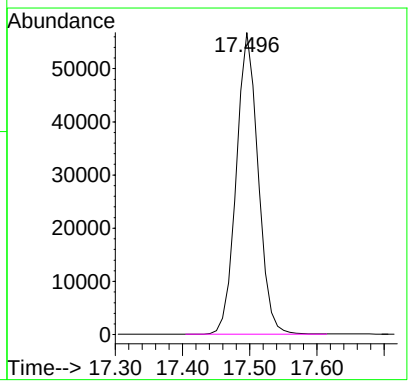
Tgt Ion:138 Resp: 164331

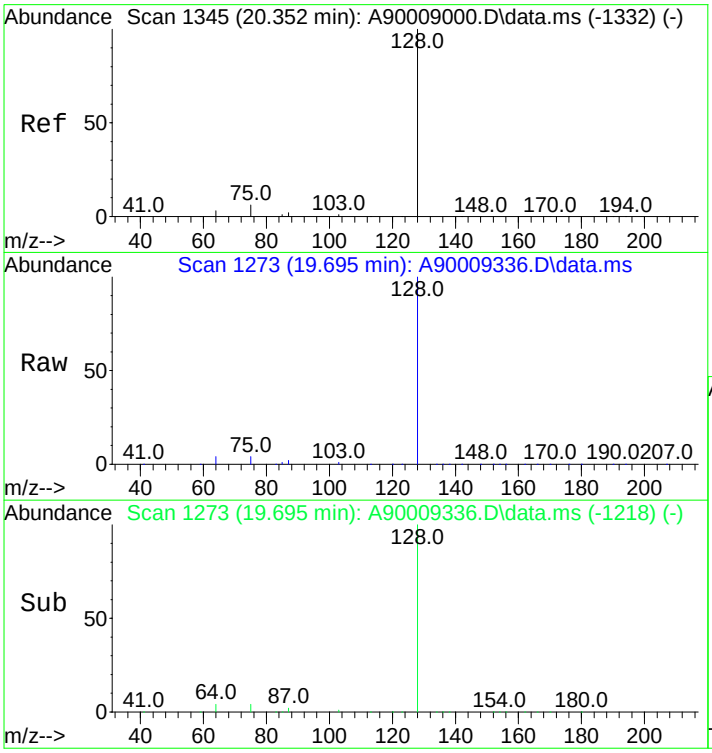




#4
cis-Decalin
Concen: 2703.82 ng/mL
RT: 17.496 min Scan# 1032
Delta R.T. 0.000 min
Lab File: A90009336.D
Acq: 5 Dec 2012 6:36 am

Tgt Ion:138 Resp: 128277

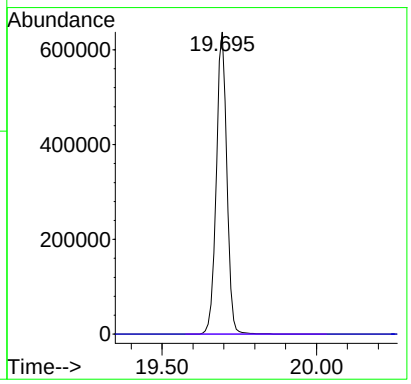


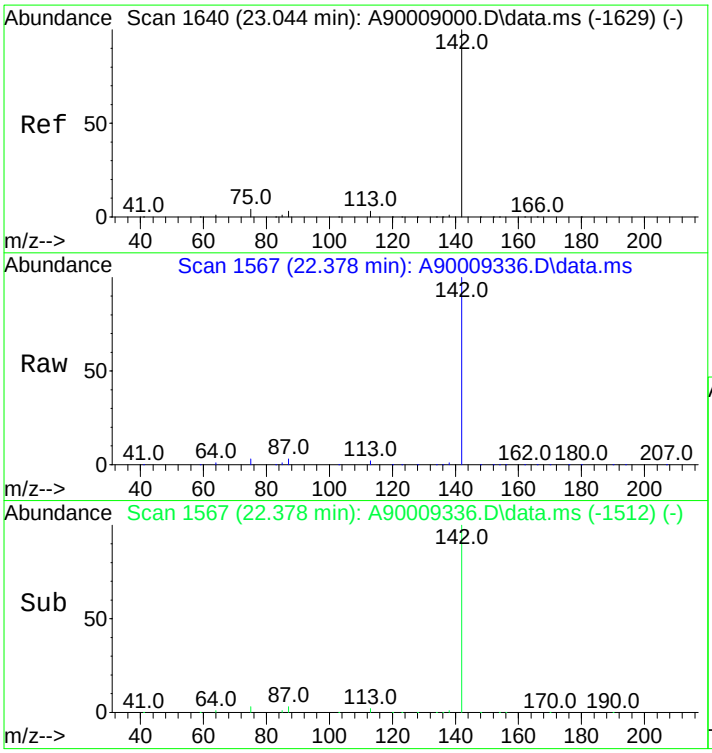


#10
Naphthalene
Concen: 5459.71 ng/mL
RT: 19.695 min Scan# 1273
Delta R.T. 0.000 min
Lab File: A90009336.D
Acq: 5 Dec 2012 6:36 am

Tgt Ion:128 Resp: 1505120

Ion	Ratio	Lower	Upper
128	100		
127	0.0	0.0	0.0

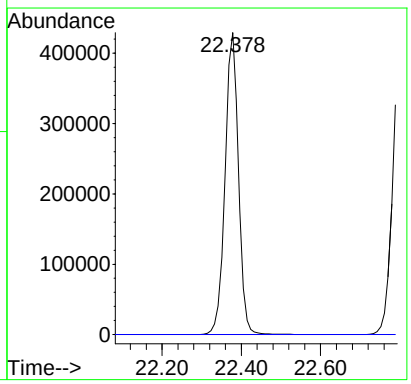


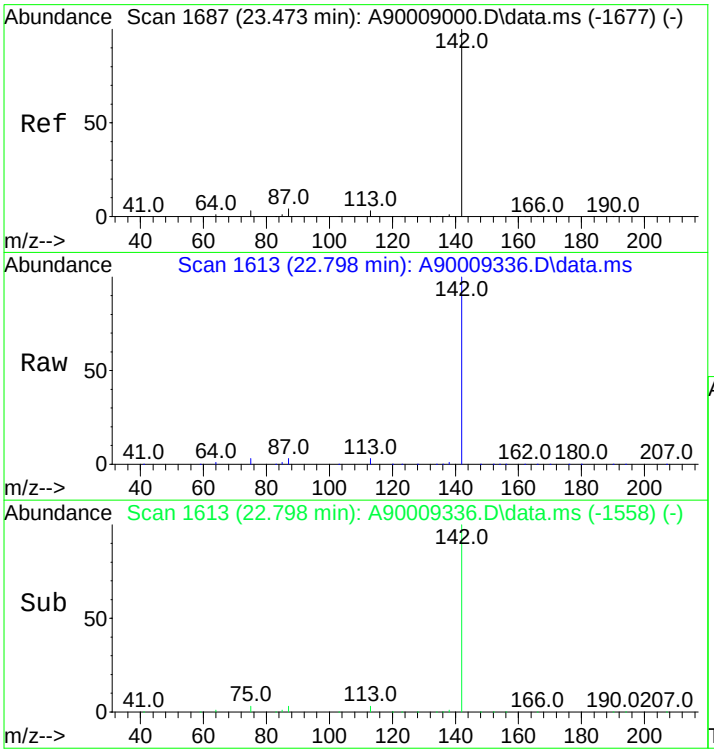


#16
2-Methylnaphthalene
Concen: 5433.04 ng/mL
RT: 22.378 min Scan# 1567
Delta R.T. 0.000 min
Lab File: A90009336.D
Acq: 5 Dec 2012 6:36 am

Tgt Ion:142 Resp: 1007417

Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	0.0

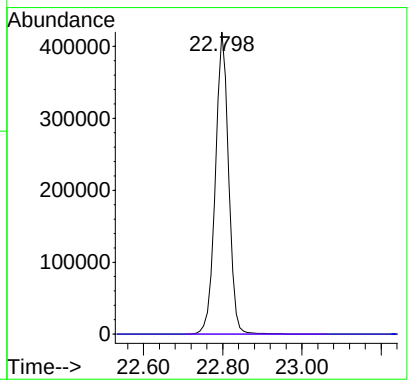


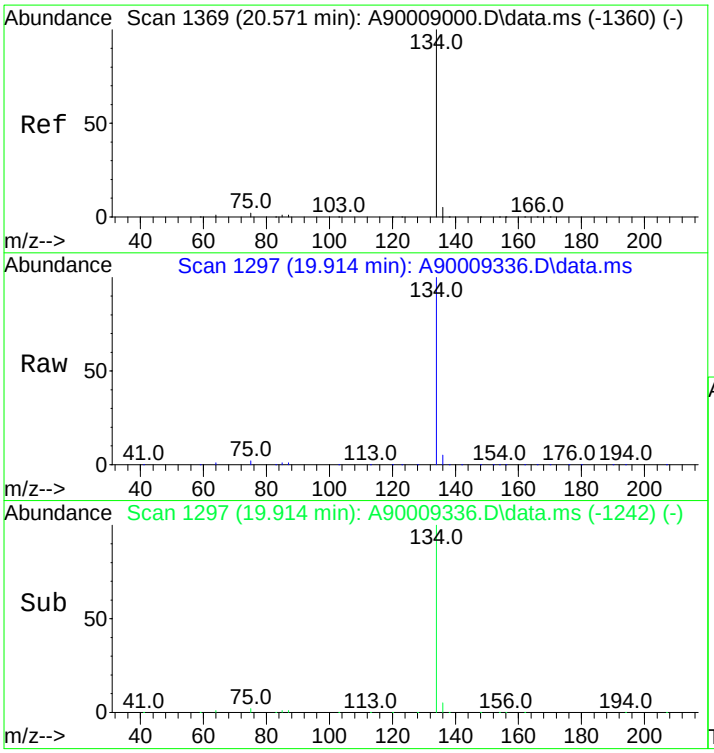


#17
1-Methylnaphthalene
Concen: 5413.66 ng/mL
RT: 22.798 min Scan# 1613
Delta R.T. 0.000 min
Lab File: A90009336.D
Acq: 5 Dec 2012 6:36 am

Tgt Ion:142 Resp: 968591

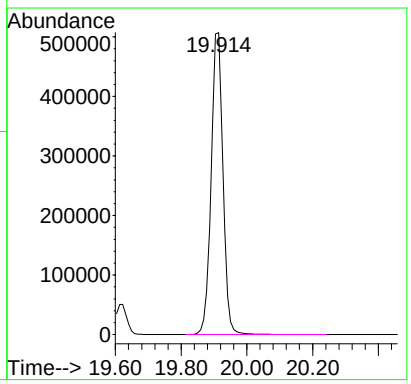
Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	20.0

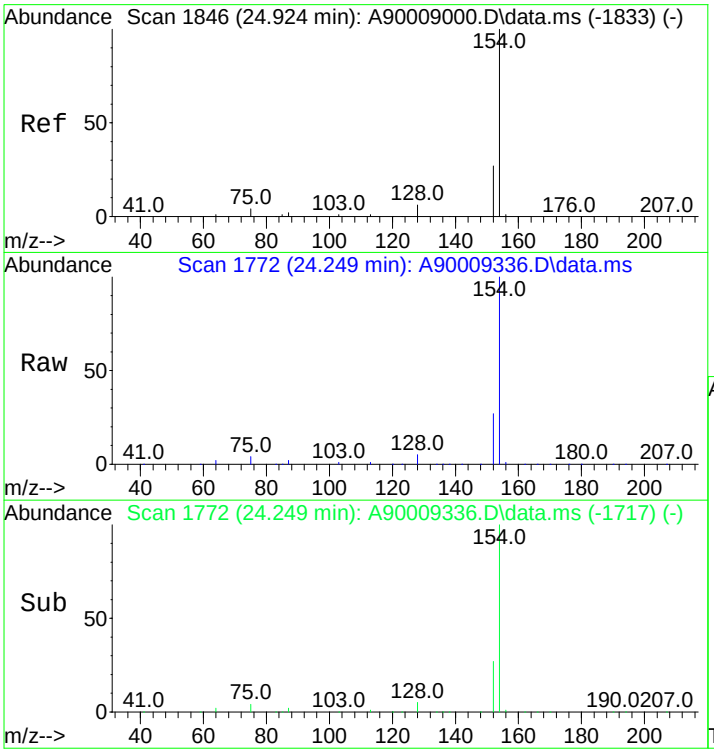




#18
Benzothiophene
Concen: 5471.29 ng/mL
RT: 19.914 min Scan# 1297
Delta R.T. 0.000 min
Lab File: A90009336.D
Acq: 5 Dec 2012 6:36 am

Tgt Ion:134 Resp: 1260013

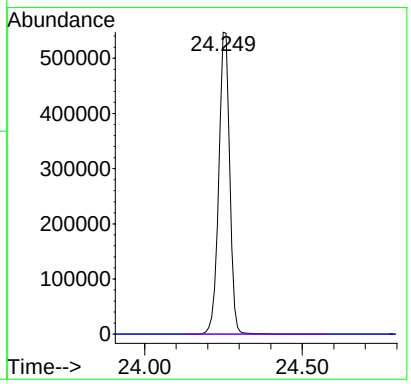


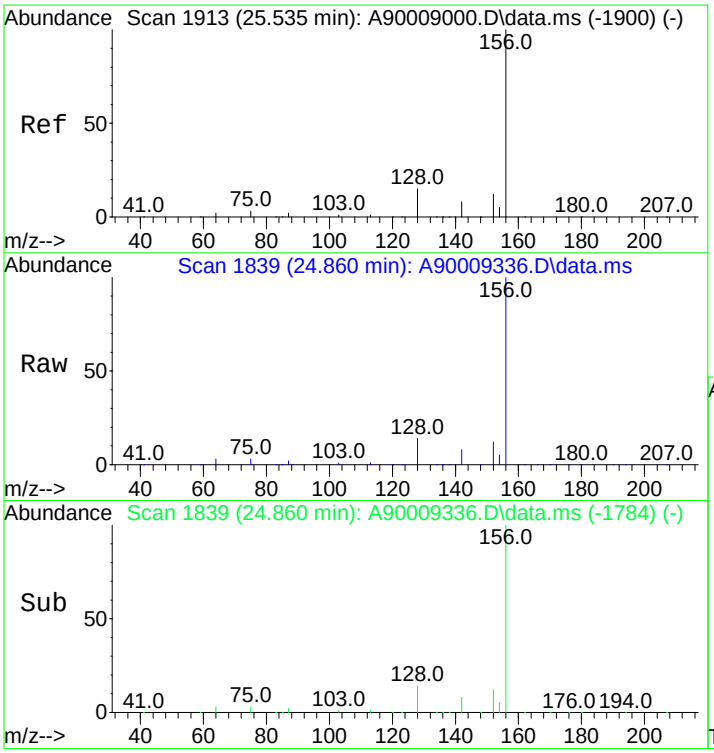


#23
Biphenyl
Concen: 5438.98 ng/mL
RT: 24.249 min Scan# 1772
Delta R.T. 0.000 min
Lab File: A90009336.D
Acq: 5 Dec 2012 6:36 am

Tgt Ion:154 Resp: 1315090

Ion	Ratio	Lower	Upper
154	100		
153	0.0	0.0	0.0

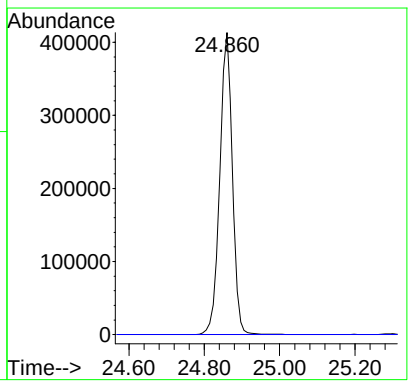


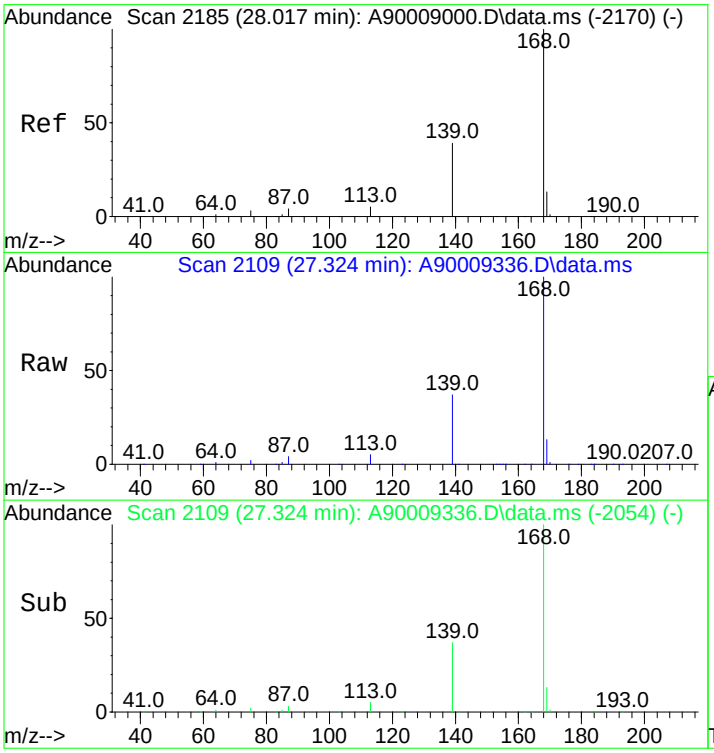


#24
2,6-Dimethylnaphthalene
Concen: 5404.06 ng/mL
RT: 24.860 min Scan# 1839
Delta R.T. 0.000 min
Lab File: A90009336.D
Acq: 5 Dec 2012 6:36 am

Tgt Ion:156 Resp: 957062

Ion	Ratio	Lower	Upper
156	100		
155	0.0	0.0	0.0

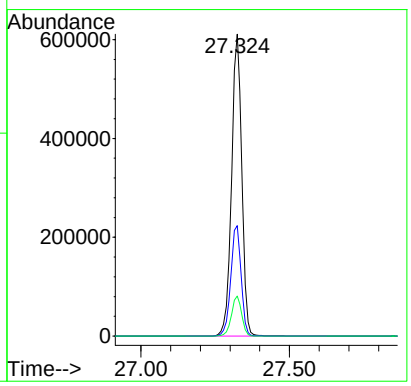


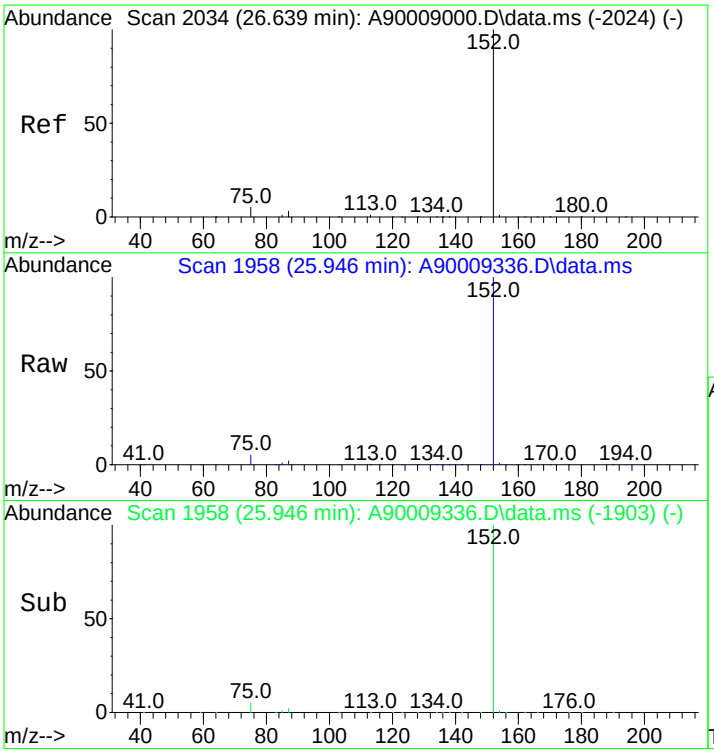


#25
Dibenzofuran
Concen: 5551.00 ng/mL
RT: 27.324 min Scan# 2109
Delta R.T. 0.000 min
Lab File: A90009336.D
Acq: 5 Dec 2012 6:36 am

Tgt Ion:168 Resp: 1453450

Ion	Ratio	Lower	Upper
168	100		
139	37.2	28.9	43.3
169	13.3	10.6	15.8

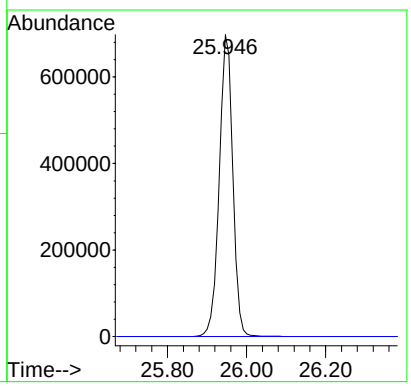


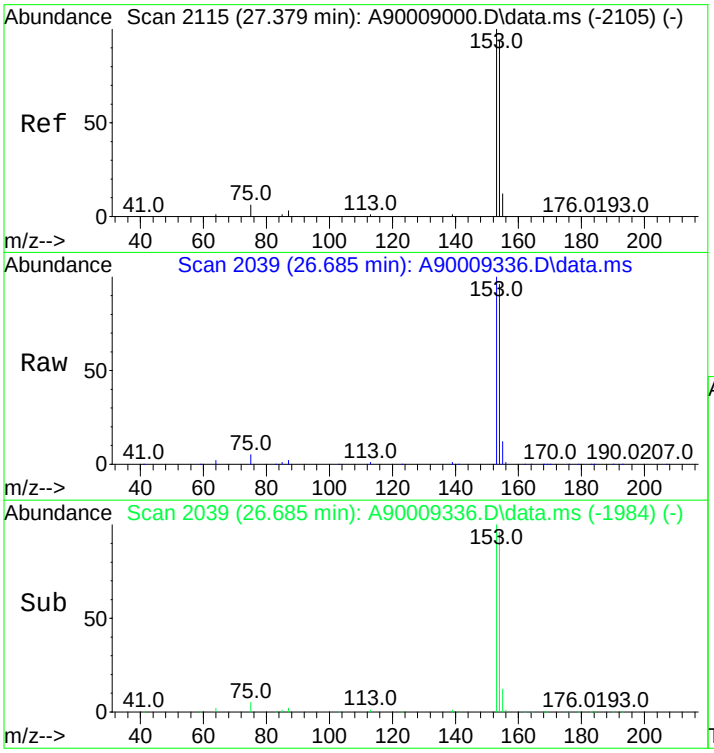


#26
Acenaphthylene
Concen: 5747.16 ng/mL m
RT: 25.946 min Scan# 1958
Delta R.T. 0.000 min
Lab File: A90009336.D
Acq: 5 Dec 2012 6:36 am

Tgt Ion:152 Resp: 1657205

Ion	Ratio	Lower	Upper
152	100		
153	0.0	0.0	0.0

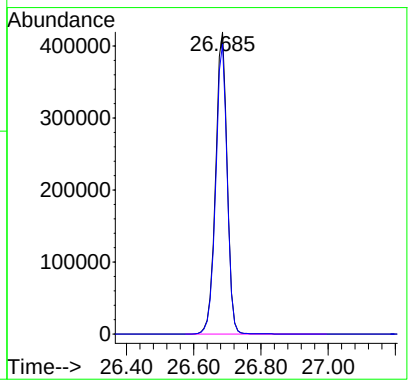


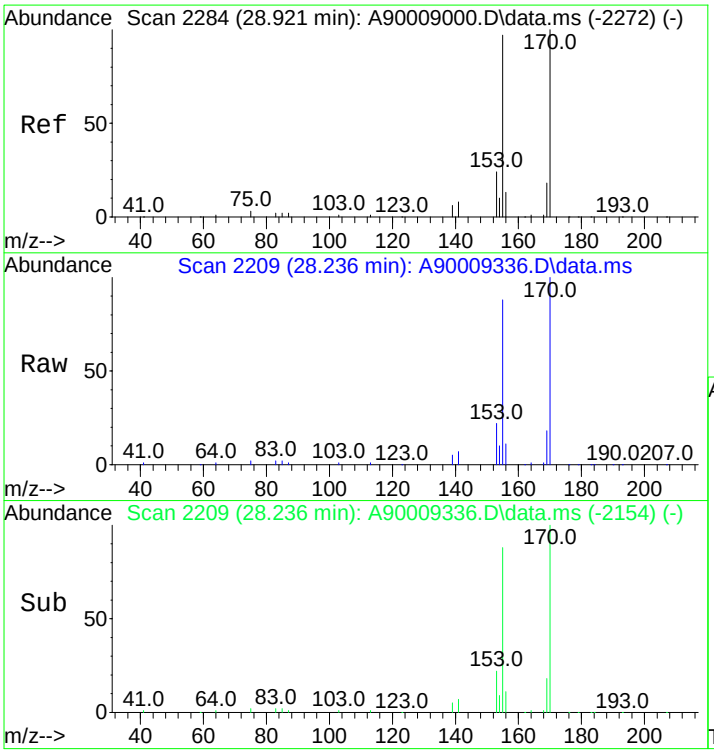


#27
Acenaphthene
Concen: 5521.59 ng/mL
RT: 26.685 min Scan# 2039
Delta R.T. 0.000 min
Lab File: A90009336.D
Acq: 5 Dec 2012 6:36 am

Tgt Ion:153 Resp: 1000665

Ion	Ratio	Lower	Upper
153	100		
154	95.3	76.2	114.4

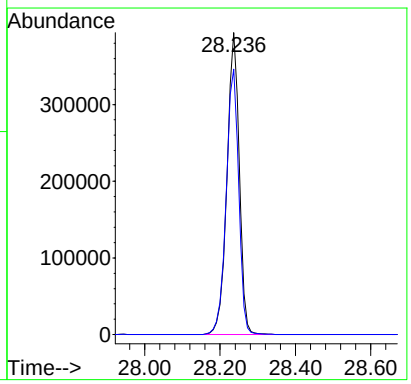


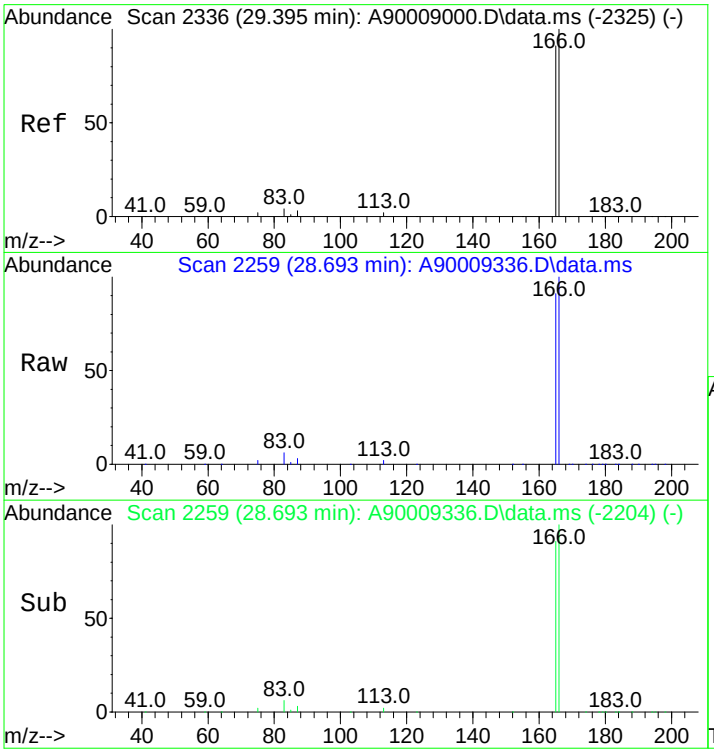


#28
2,3,5-Trimethylnaphthalene
Concen: 5514.59 ng/mL
RT: 28.236 min Scan# 2209
Delta R.T. 0.000 min
Lab File: A90009336.D
Acq: 5 Dec 2012 6:36 am

Tgt Ion:170 Resp: 891880

Ion	Ratio	Lower	Upper
170	100		
155	89.6	69.0	103.6

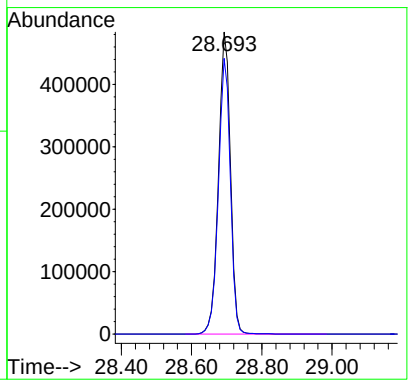


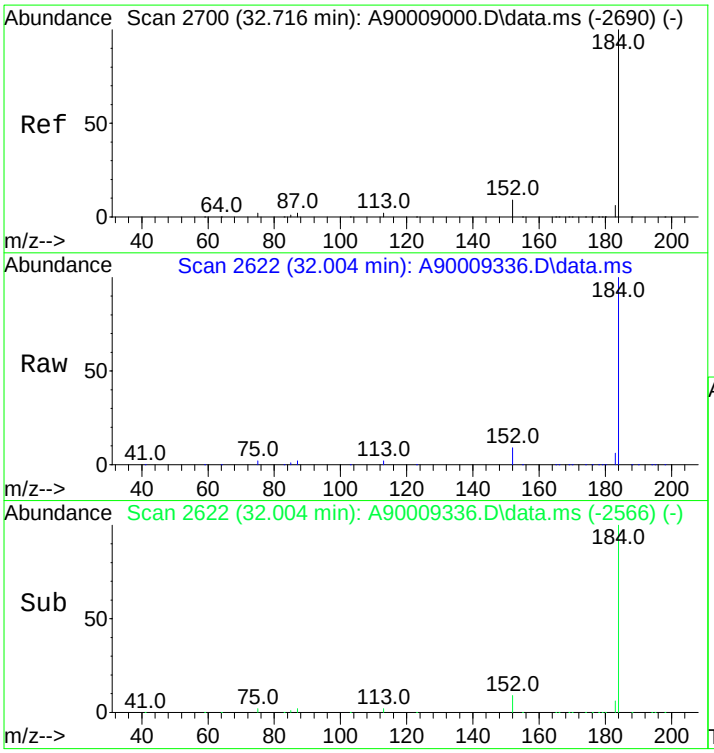


#29
Fluorene
Concen: 5497.61 ng/mL
RT: 28.693 min Scan# 2259
Delta R.T. 0.000 min
Lab File: A90009336.D
Acq: 5 Dec 2012 6:36 am

Tgt Ion:166 Resp: 1144868

Ion	Ratio	Lower	Upper
166	100		
165	91.4	73.8	110.6

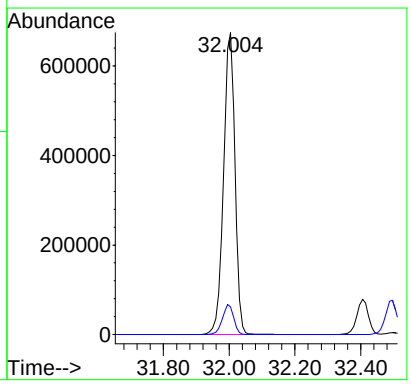


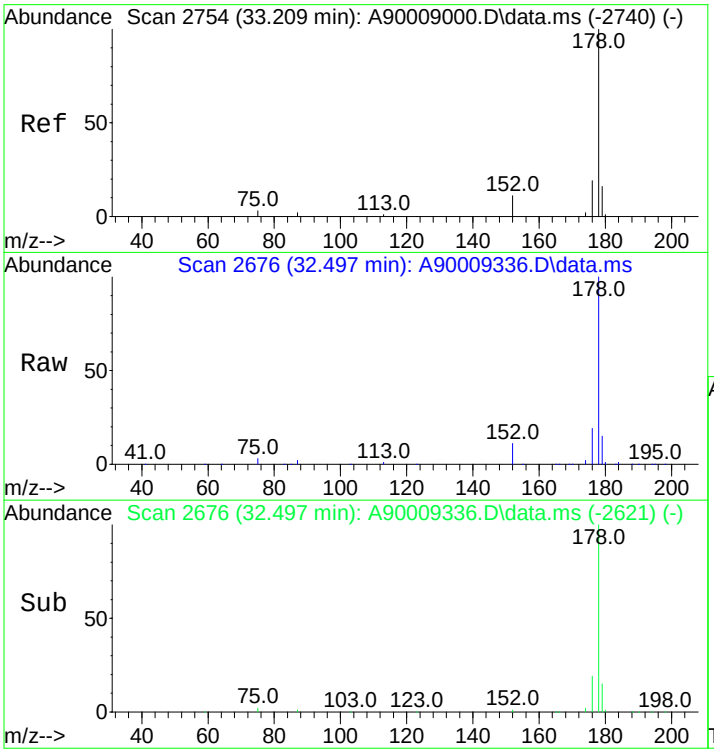


#33
Dibenzothiophene
Concen: 5515.21 ng/mL
RT: 32.004 min Scan# 2622
Delta R.T. 0.009 min
Lab File: A90009336.D
Acq: 5 Dec 2012 6:36 am

Tgt Ion:184 Resp: 1631245

Ion	Ratio	Lower	Upper
184	100		
152	9.8	8.2	12.4

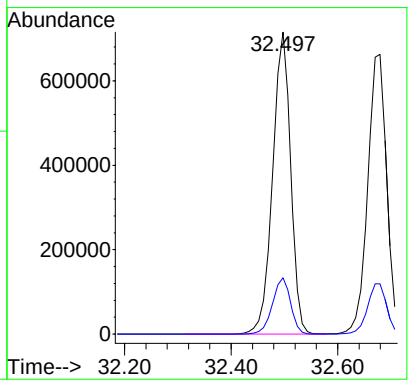


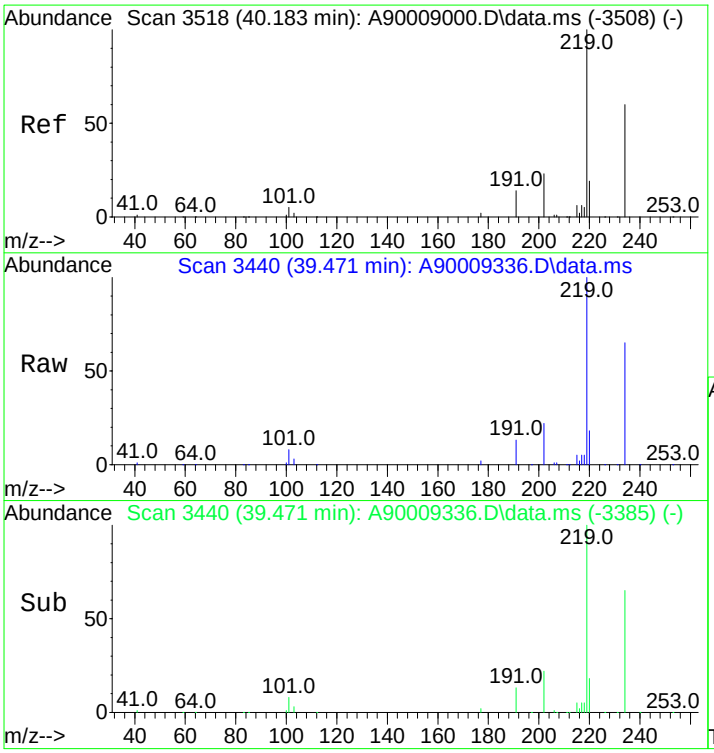


#43
Phenanthrene
Concen: 5523.36 ng/mL
RT: 32.497 min Scan# 2676
Delta R.T. 0.000 min
Lab File: A90009336.D
Acq: 5 Dec 2012 6:36 am

Tgt Ion:178 Resp: 1674427

Ion	Ratio	Lower	Upper
178	100		
176	18.7	14.9	22.3

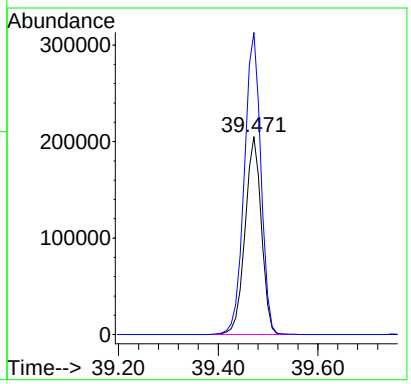


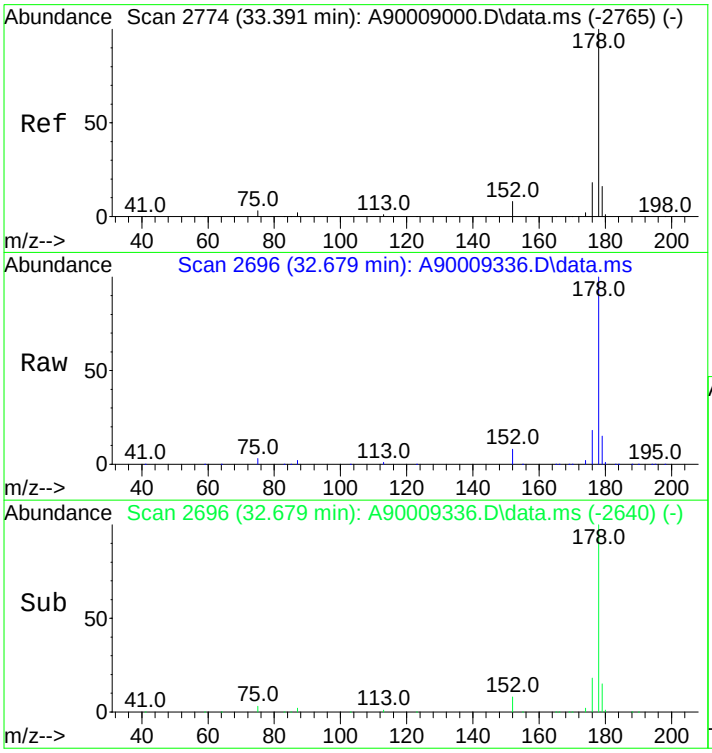


#54
Retene
Concen: 5361.06 ng/mL
RT: 39.471 min Scan# 3440
Delta R.T. 0.000 min
Lab File: A90009336.D
Acq: 5 Dec 2012 6:36 am

Tgt Ion:234 Resp: 464826

Ion	Ratio	Lower	Upper
234	100		
219	154.9	117.9	176.9

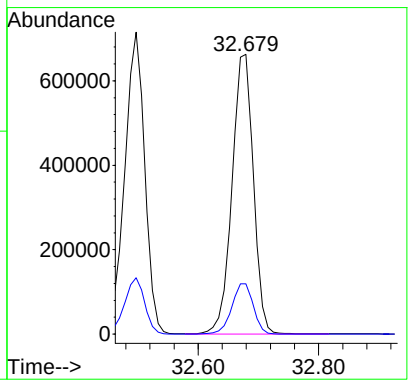


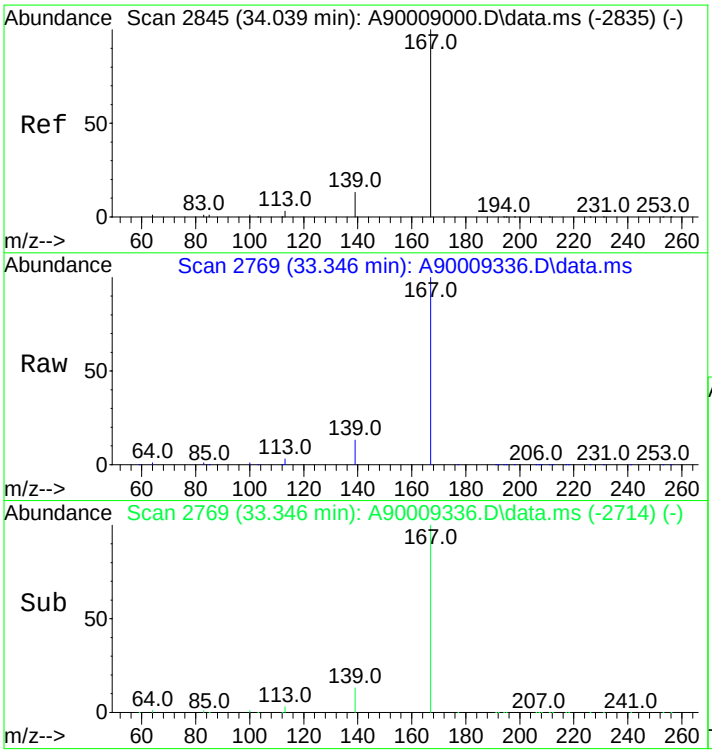


#55
Anthracene
Concen: 5922.42 ng/mL m
RT: 32.679 min Scan# 2696
Delta R.T. 0.009 min
Lab File: A90009336.D
Acq: 5 Dec 2012 6:36 am

Tgt Ion:178 Resp: 1633983

Ion	Ratio	Lower	Upper
178	100		
176	18.1	14.6	21.8

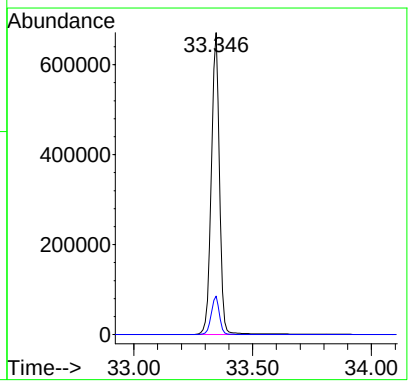


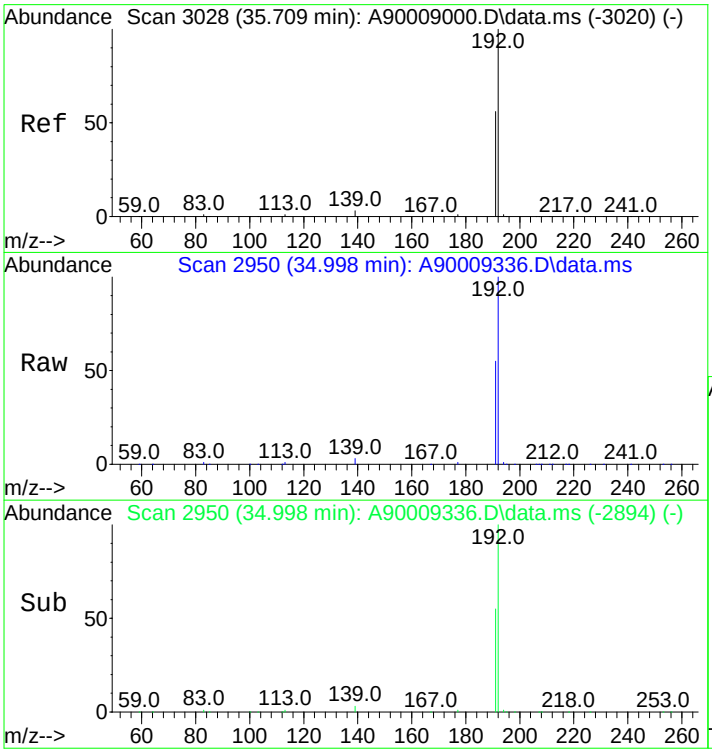


#56
Carbazole
Concen: 6509.52 ng/mL
RT: 33.346 min Scan# 2769
Delta R.T. 0.000 min
Lab File: A90009336.D
Acq: 5 Dec 2012 6:36 am

Tgt Ion:167 Resp: 1619877

Ion	Ratio	Lower	Upper
167	100		
139	12.7	10.3	15.5

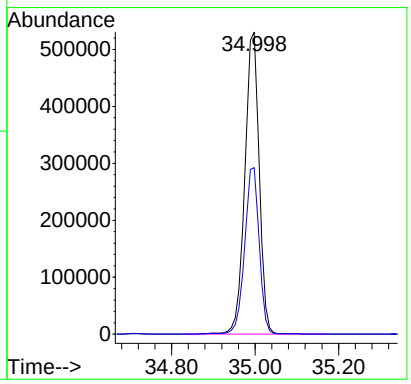


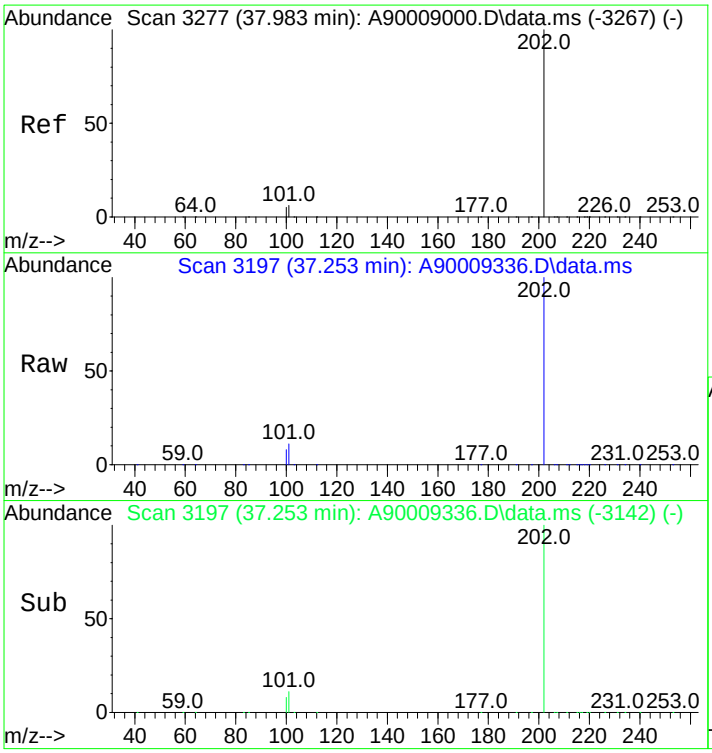


#57
1-Methylphenanthrene
Concen: 5511.52 ng/mL
RT: 34.998 min Scan# 2950
Delta R.T. 0.009 min
Lab File: A90009336.D
Acq: 5 Dec 2012 6:36 am

Tgt Ion:192 Resp: 1261945

Ion	Ratio	Lower	Upper
192	100		
191	55.8	44.8	67.2

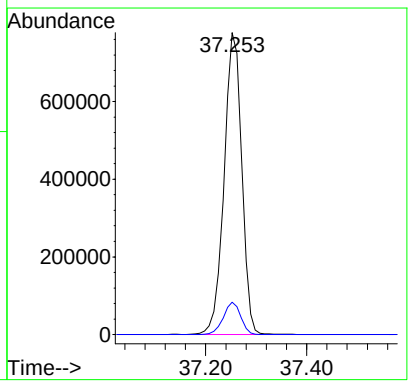


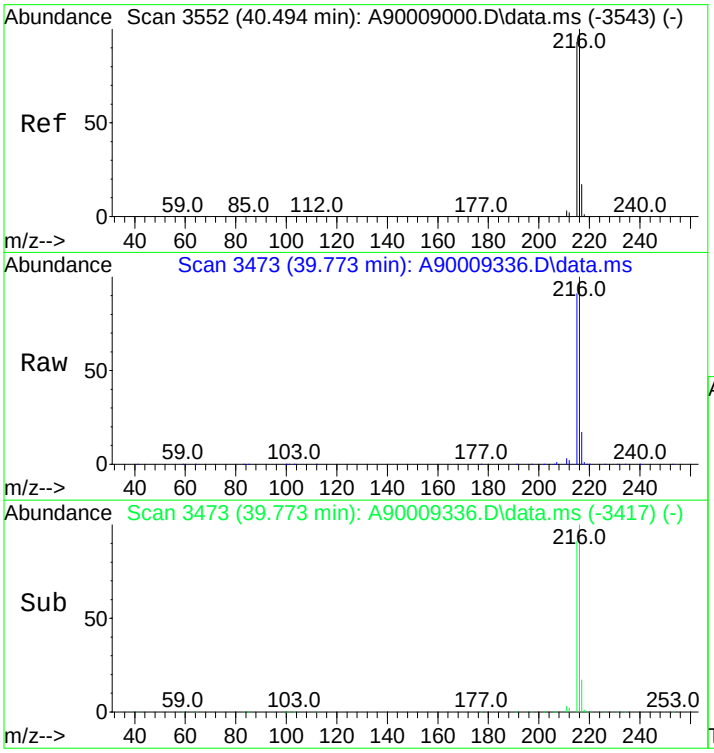


#58
Fluoranthene
Concen: 5449.97 ng/mL m
RT: 37.253 min Scan# 3197
Delta R.T. 0.000 min
Lab File: A90009336.D
Acq: 5 Dec 2012 6:36 am

Tgt Ion:202 Resp: 1886725

Ion	Ratio	Lower	Upper
202	100		
101	10.7	8.5	12.7

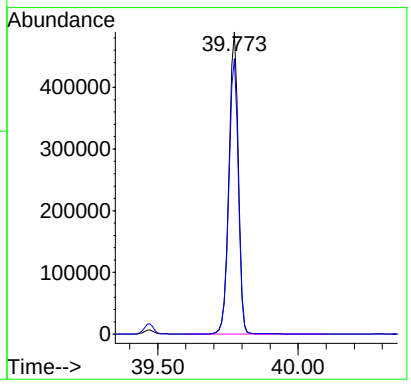


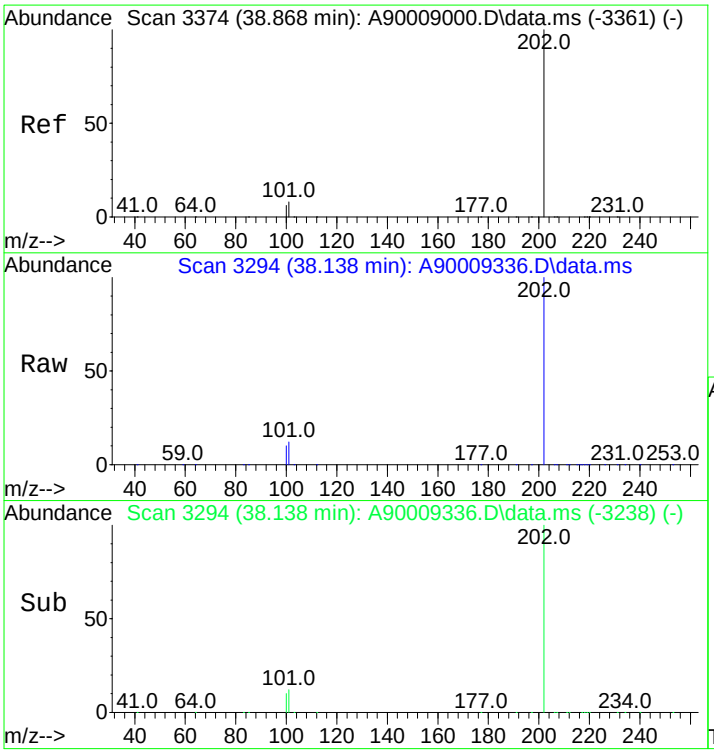


#59
Benzo(b)fluorene
Concen: 5335.62 ng/mL
RT: 39.773 min Scan# 3473
Delta R.T. 0.009 min
Lab File: A90009336.D
Acq: 5 Dec 2012 6:36 am

Tgt Ion:216 Resp: 1146314

Ion	Ratio	Lower	Upper
216	100		
215	91.7	74.8	112.2

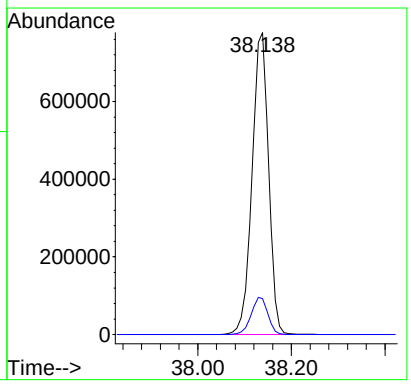


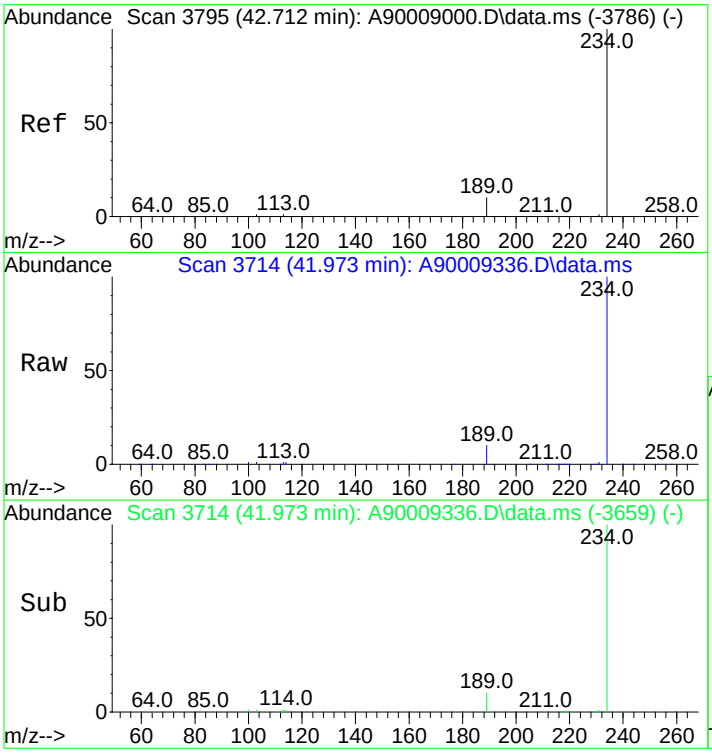


#60
Pyrene
Concen: 5420.49 ng/mL
RT: 38.138 min Scan# 3294
Delta R.T. 0.009 min
Lab File: A90009336.D
Acq: 5 Dec 2012 6:36 am

Tgt Ion:202 Resp: 1906384

Ion	Ratio	Lower	Upper
202	100		
101	12.4	10.1	15.1

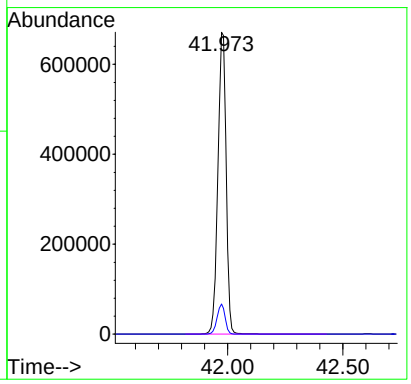


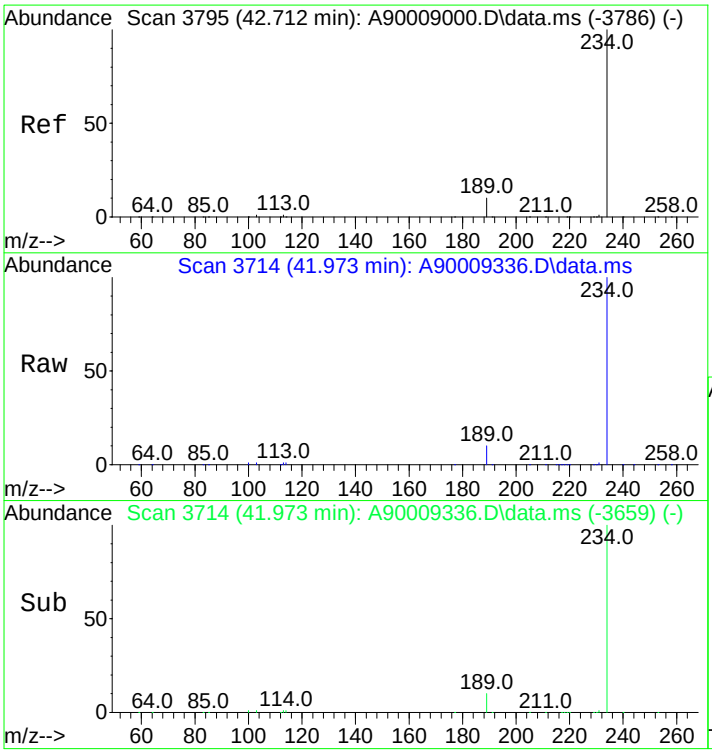


#66
Naphthobenzothiophene
Concen: 5313.79 ng/ml
RT: 41.973 min Scan# 3714
Delta R.T. 0.000 min
Lab File: A90009336.D
Acq: 5 Dec 2012 6:36 am

Tgt Ion:234 Resp: 1660799

Ion	Ratio	Lower	Upper
234	100		
189	9.6	7.4	11.2

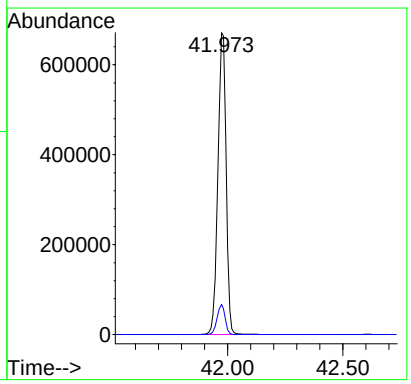


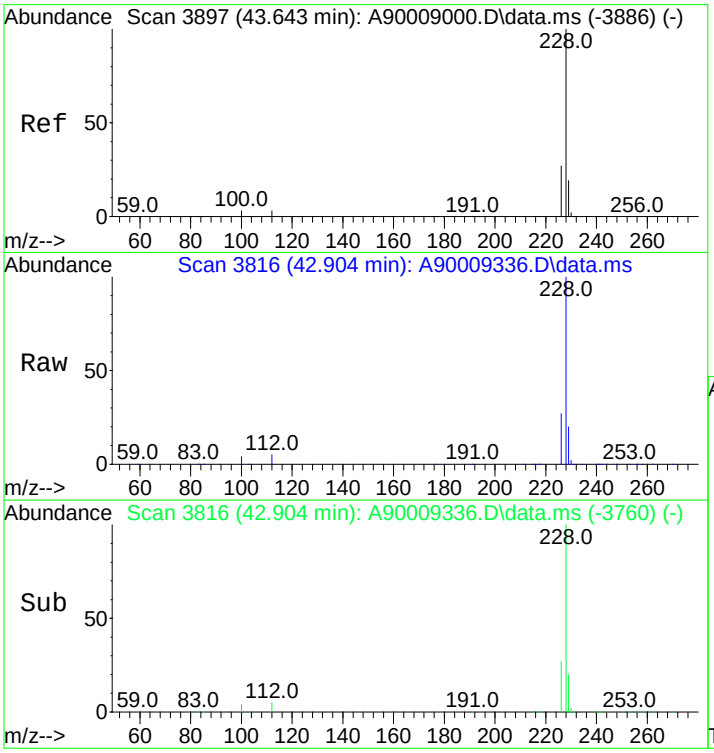


#67
Naphthobenzothiophene-2,1-D
Concen: 5313.79 ng/mL
RT: 41.973 min Scan# 3714
Delta R.T. 0.000 min
Lab File: A90009336.D
Acq: 5 Dec 2012 6:36 am

Tgt Ion:234 Resp: 1660799

Ion	Ratio	Lower	Upper
234	100		
189	9.6	7.4	11.2

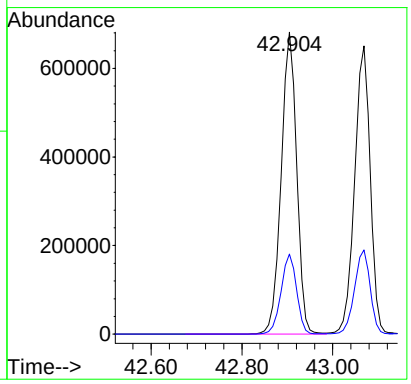


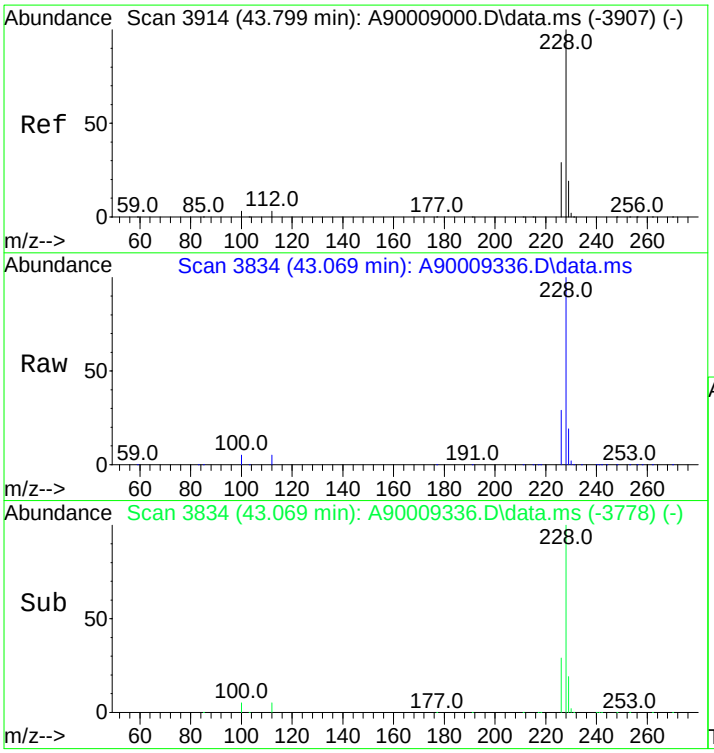


#75
Benz[a]anthracene
Concen: 5479.15 ng/mL
RT: 42.904 min Scan# 3816
Delta R.T. 0.009 min
Lab File: A90009336.D
Acq: 5 Dec 2012 6:36 am

Tgt Ion:228 Resp: 1612840

Ion	Ratio	Lower	Upper
228	100		
226	26.5	21.3	31.9

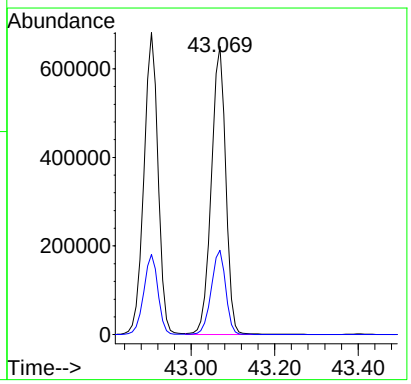


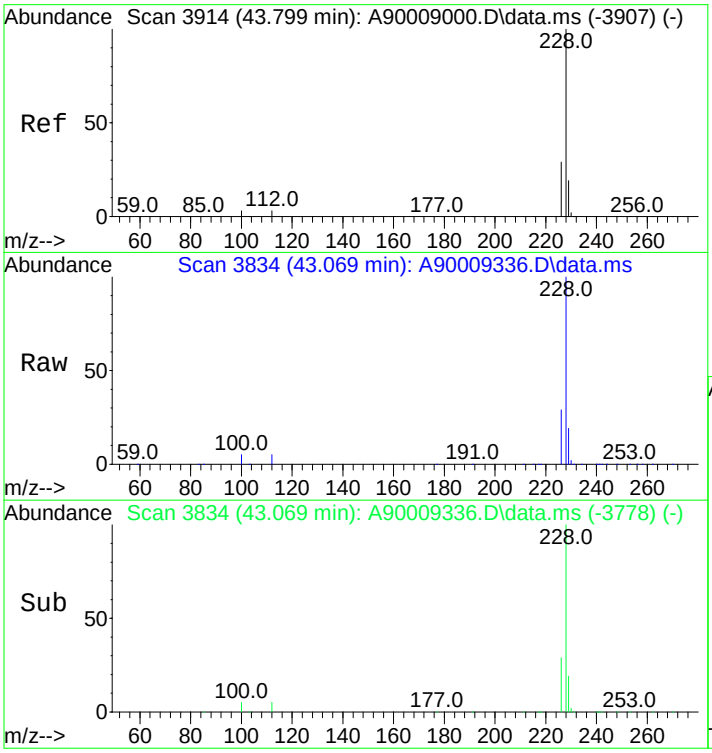


#76
Chrysene
Concen: 5411.02 ng/mL
RT: 43.069 min Scan# 3834
Delta R.T. 0.009 min
Lab File: A90009336.D
Acq: 5 Dec 2012 6:36 am

Tgt Ion:228 Resp: 1554217

Ion	Ratio	Lower	Upper
228	100		
226	29.2	23.4	35.0

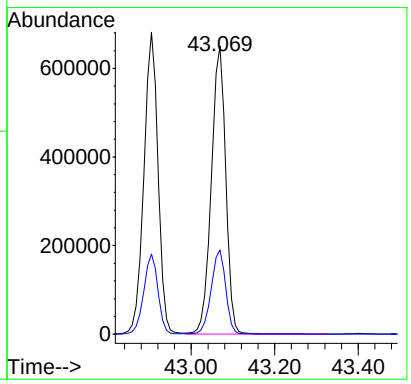


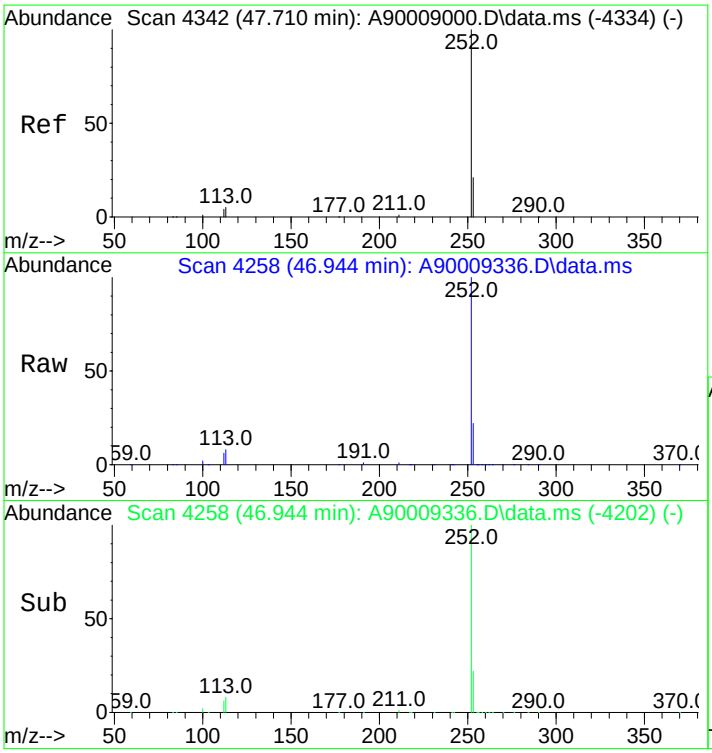


#77
Chrysene/Triphenylene
Concen: 5411.02 ng/mL
RT: 43.069 min Scan# 3834
Delta R.T. 0.009 min
Lab File: A90009336.D
Acq: 5 Dec 2012 6:36 am

Tgt Ion:228 Resp: 1554217

Ion	Ratio	Lower	Upper
228	100		
226	29.2	23.4	35.0

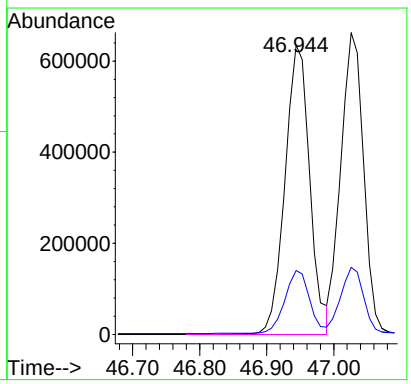


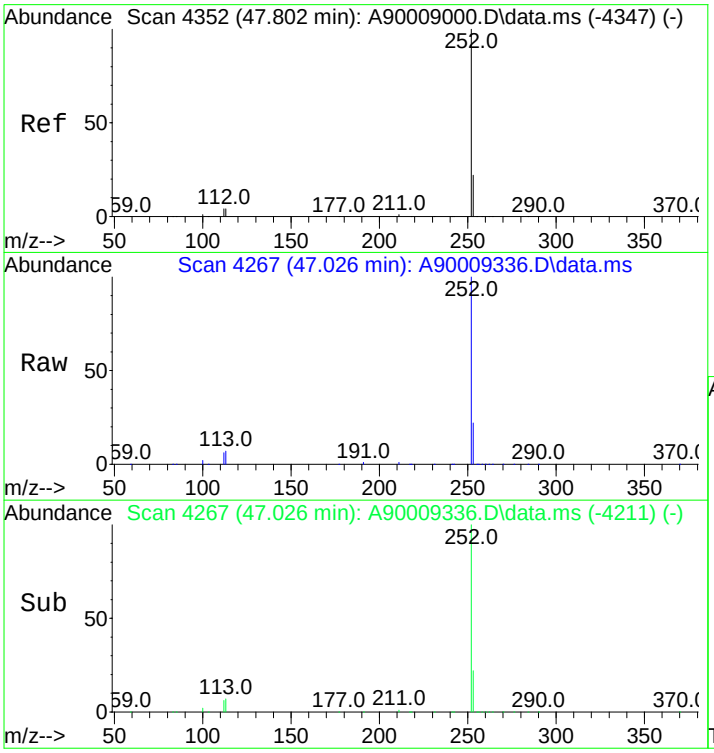


#84
Benzo[b]fluoranthene
Concen: 5586.52 ng/mL
RT: 46.944 min Scan# 4258
Delta R.T. 0.009 min
Lab File: A90009336.D
Acq: 5 Dec 2012 6:36 am

Tgt Ion:252 Resp: 1627505

Ion	Ratio	Lower	Upper
252	100		
253	21.8	20.9	31.3

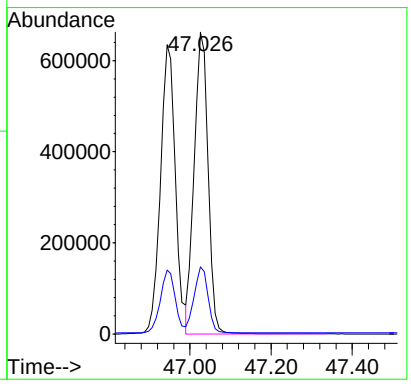


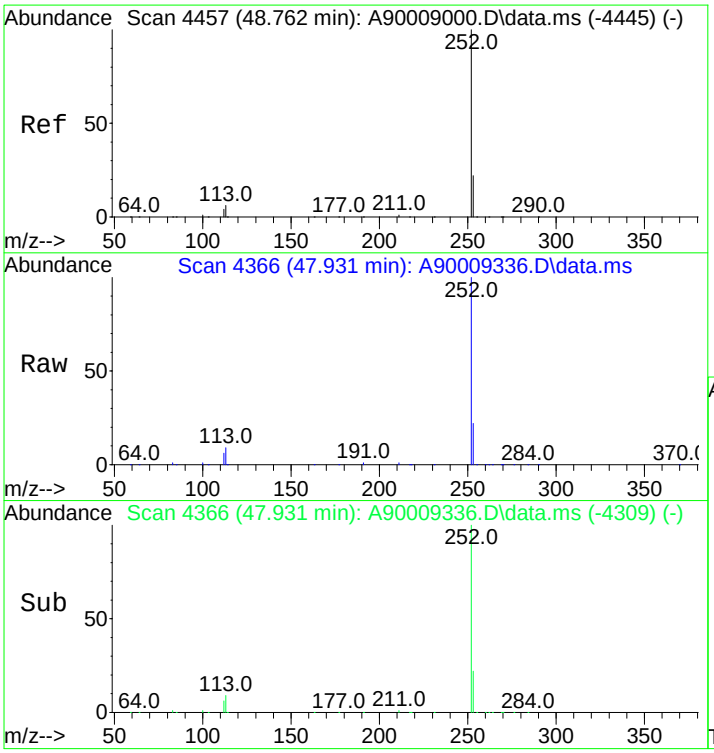


#85
Benzo[j]+[k]fluoranthene
Concen: 5540.71 ng/mL
RT: 47.026 min Scan# 4267
Delta R.T. 0.009 min
Lab File: A90009336.D
Acq: 5 Dec 2012 6:36 am

Tgt Ion:252 Resp: 1580777

Ion	Ratio	Lower	Upper
252	100		
253	21.7	21.0	31.6

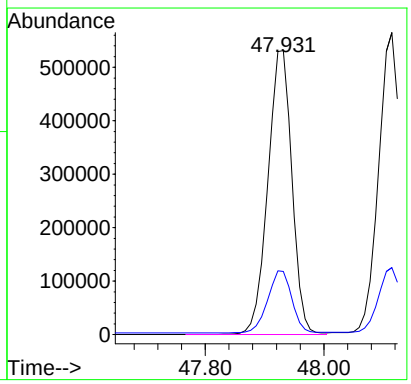


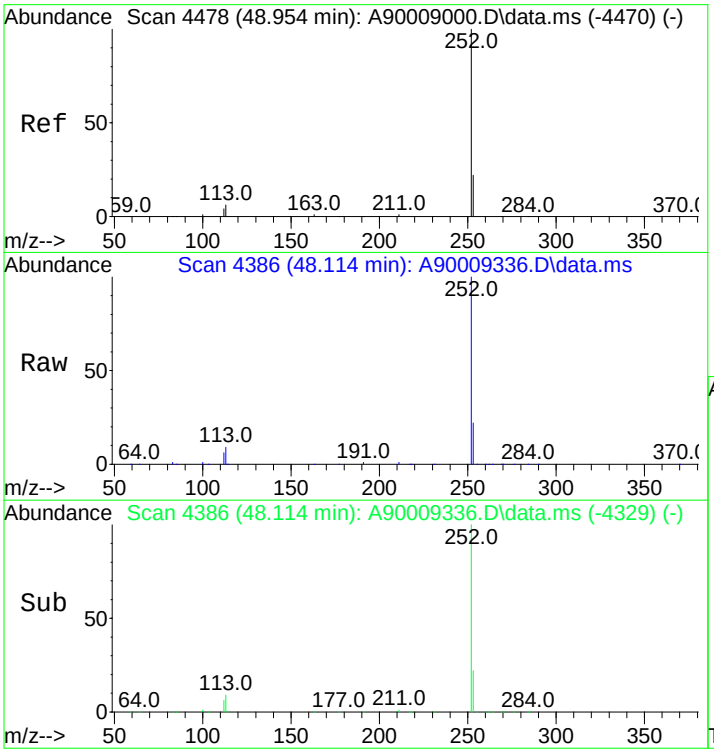


#87
Benzo[e]pyrene
Concen: 5432.42 ng/mL
RT: 47.931 min Scan# 4366
Delta R.T. 0.018 min
Lab File: A90009336.D
Acq: 5 Dec 2012 6:36 am

Tgt Ion:252 Resp: 1492105

Ion	Ratio	Lower	Upper
252	100		
253	21.8	22.1	33.1#

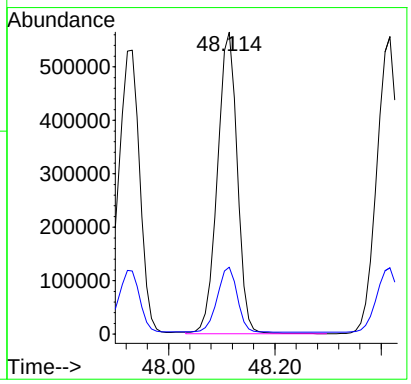


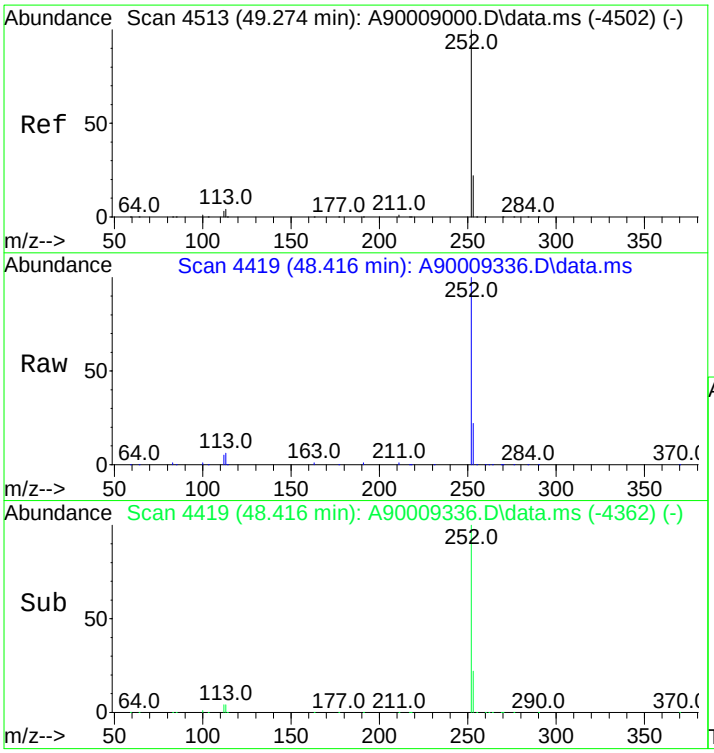


#89
Benzo[a]pyrene
Concen: 5684.94 ng/mL
RT: 48.114 min Scan# 4386
Delta R.T. 0.018 min
Lab File: A90009336.D
Acq: 5 Dec 2012 6:36 am

Tgt Ion:252 Resp: 1464576

Ion	Ratio	Lower	Upper
252	100		
253	21.7	22.9	34.3#

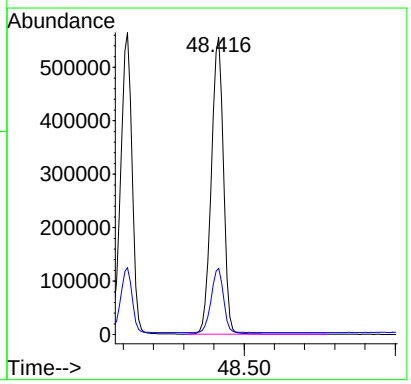


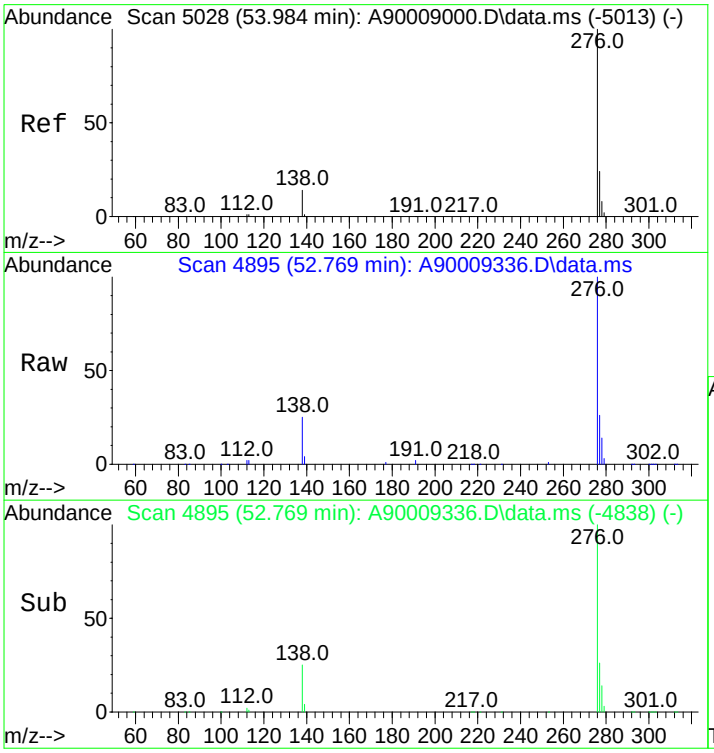


#90
Perylene
Concen: 5643.43 ng/mL
RT: 48.416 min Scan# 4419
Delta R.T. 0.018 min
Lab File: A90009336.D
Acq: 5 Dec 2012 6:36 am

Tgt Ion:252 Resp: 1553911

Ion	Ratio	Lower	Upper
252	100		
253	21.7	23.4	35.2#

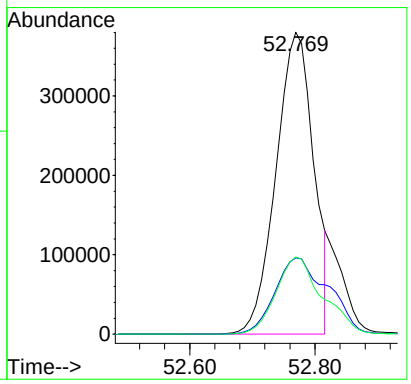


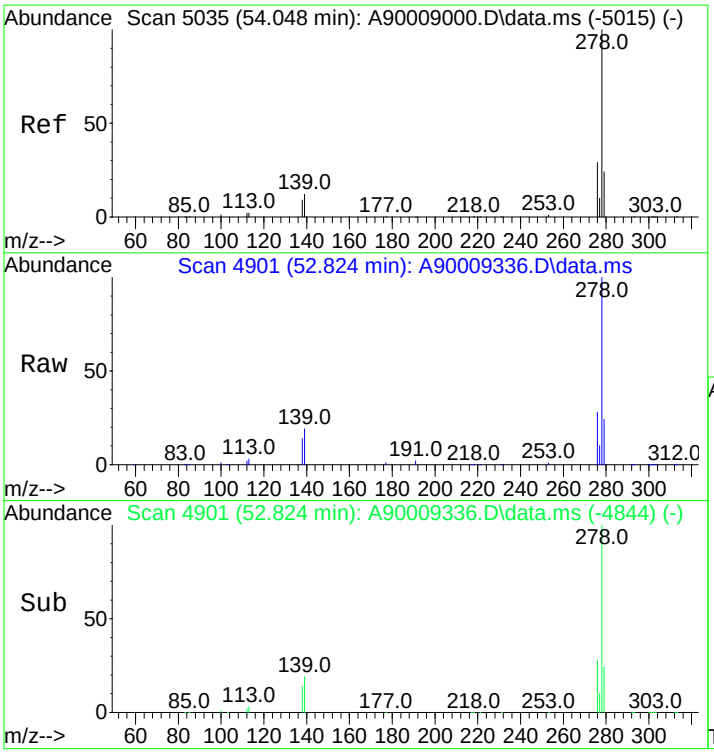


#91
Indeno[1,2,3-cd]pyrene
Concen: 5634.28 ng/mL m
RT: 52.769 min Scan# 4895
Delta R.T. 0.018 min
Lab File: A90009336.D
Acq: 5 Dec 2012 6:36 am

Tgt Ion:276 Resp: 1582184

Ion	Ratio	Lower	Upper
276	100		
138	35.8	20.2	30.4#
277	31.8	20.6	30.8#

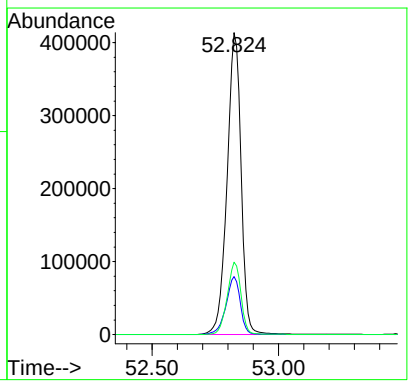


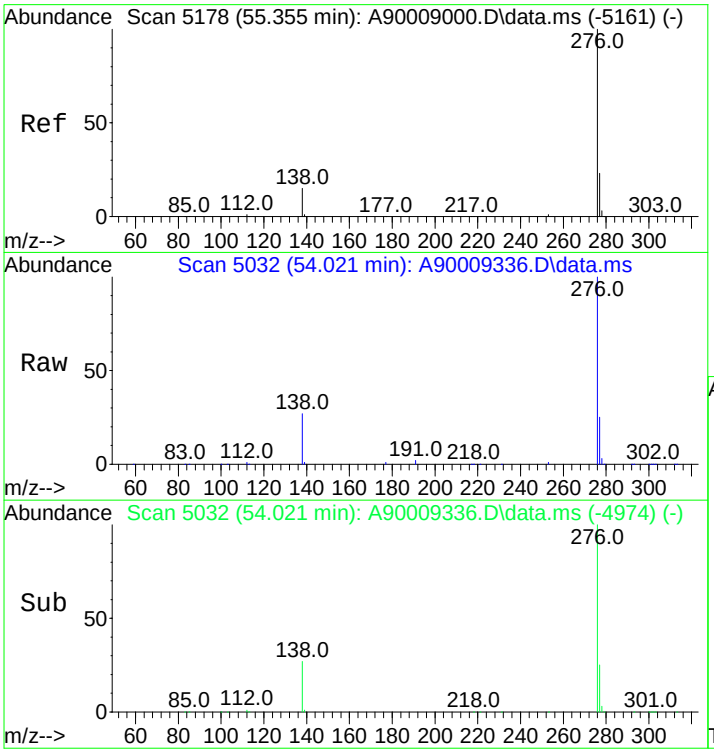


#92
Dibenz[ah]+[ac]anthracene
Concen: 5784.94 ng/mL
RT: 52.824 min Scan# 4901
Delta R.T. 0.018 min
Lab File: A90009336.D
Acq: 5 Dec 2012 6:36 am

Tgt Ion:278 Resp: 1594933

Ion	Ratio	Lower	Upper
278	100		
139	19.5	15.4	23.2
279	23.5	19.3	28.9

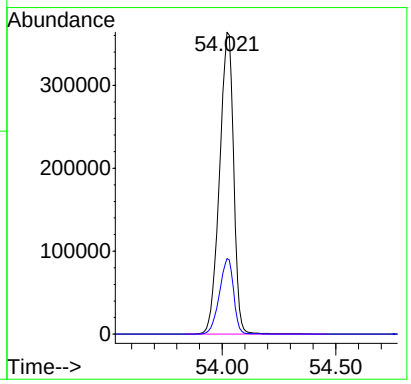


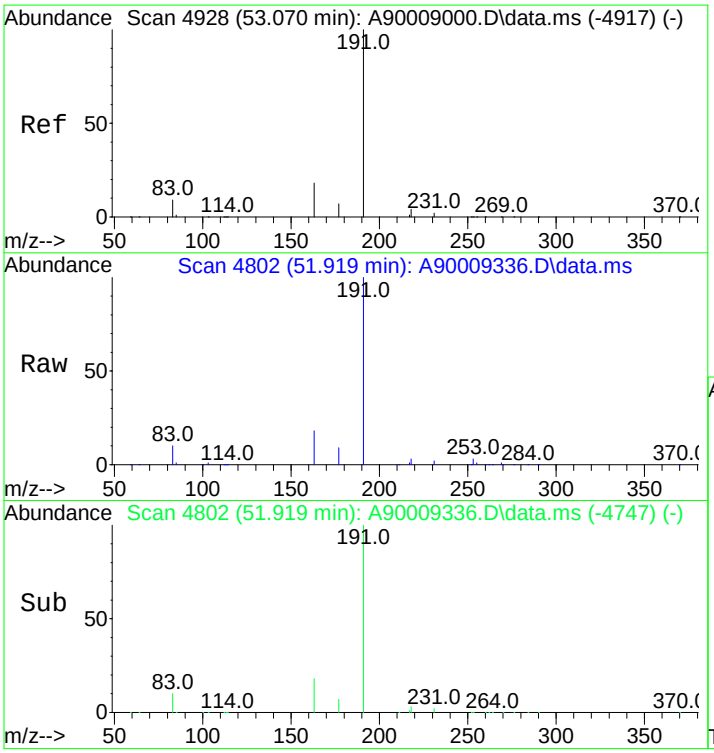


#93
Benzo[g,h,i]perylene
Concen: 5701.16 ng/mL
RT: 54.021 min Scan# 5032
Delta R.T. 0.028 min
Lab File: A90009336.D
Acq: 5 Dec 2012 6:36 am

Tgt Ion:276 Resp: 1566410

Ion	Ratio	Lower	Upper
276	100		
277	25.1	20.3	30.5

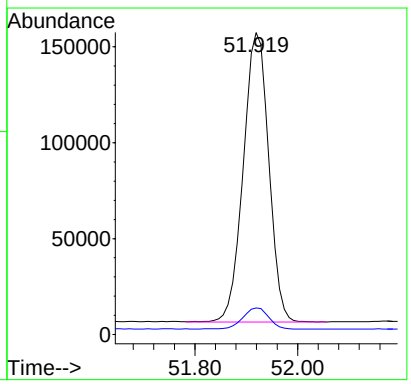


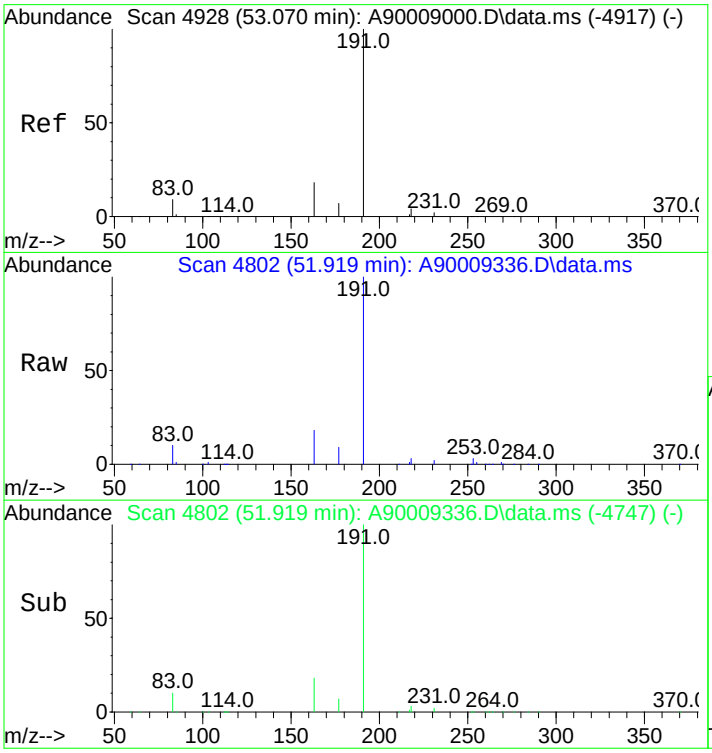


#94
Hopane (T19)
Concen: 4974.13 ng/mL
RT: 51.919 min Scan# 4802
Delta R.T. 0.000 min
Lab File: A90009336.D
Acq: 5 Dec 2012 6:36 am

Tgt Ion:191 Resp: 519450

Ion	Ratio	Lower	Upper
191	100		
177	7.4	15.3	22.9#

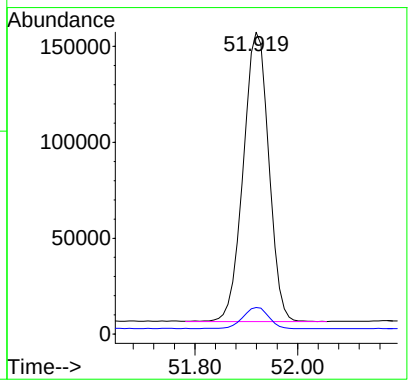




#95
17a(H),21B(H)-hopane - C30H52
Concen: 4986.65 ng/mL
RT: 51.919 min Scan# 4802
Delta R.T. 0.000 min
Lab File: A90009336.D
Acq: 5 Dec 2012 6:36 am

Tgt Ion:191 Resp: 519450

Ion	Ratio	Lower	Upper
191	100		
177	7.4	15.3	22.9#



Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC4\
Data File : A90009337.D
Acq On : 5 Dec 2012 8:01 am
Operator : PS
Sample : I912041206
Misc : WHAQ88@10000ng/ml
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Dec 06 10:35:31 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 09:56:52 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.557	164	69970	500.000	ng/mL	0.00
74) Chrysene-d12	42.968	240	121212	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.622	136	2546638	9714.434	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 971.44%#			
42) Phenanthrene-d10	32.415	188	2644037	10230.185	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 1023.02%#			
83) Benzo[b]fluoranthene-d12	46.870	264	2170812	9803.816	ng/mL	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 980.38%#			
88) Benzo[a]pyrene-d12	48.041	264	2280323	10638.825	ng/mL	0.03
Spiked Amount 1000.000	Range 50 - 130		Recovery = 1063.88%#			
129) 5B(H)Cholane - Surr	43.607	217	528529	10416.695	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 1041.67%#			
Target Compounds						Qvalue
3) trans-Decalin	16.282	138	298268	5055.466	ng/mL	100
4) cis-Decalin	17.496	138	232533	5032.490	ng/mL	100
10) Naphthalene	19.695	128	2691166	10067.326	ng/mL#	100
16) 2-Methylnaphthalene	22.378	142	1810167	10166.266	ng/mL#	100
17) 1-Methylnaphthalene	22.798	142	1742535	10124.330	ng/mL#	100
18) Benzothiophene	19.914	134	2256392	10100.148	ng/mL	100
23) Biphenyl	24.258	154	2357152	10143.403	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.860	156	1720818	10174.439	ng/mL#	100
25) Dibenzofuran	27.324	168	2619839	10477.432	ng/mL	99
26) Acenaphthylene	25.955	152	2981104M4	10729.954	ng/mL	
27) Acenaphthene	26.685	153	1798517	10299.168	ng/mL	100
28) 2,3,5-Trimethylnaphthalen	28.236	170	1612609	10418.756	ng/mL	97
29) Fluorene	28.702	166	2057880	10418.896	ng/mL	99
33) Dibenzothiophene	32.004	184	2954226	10574.412	ng/mL	99
43) Phenanthrene	32.506	178	3009810	10473.887	ng/mL	100
54) Retene	39.481	234	854300	10538.385	ng/mL	94
55) Anthracene	32.679	178	2911774M4	11121.988	ng/mL	
56) Carbazole	33.355	167	2938381	11876.798	ng/mL	100
57) 1-Methylphenanthrene	34.998	192	2294326	10658.504	ng/mL	99
58) Fluoranthene	37.262	202	3421936M4	10512.388	ng/mL	
59) Benzo(b)fluorene	39.782	216	2086031	10475.488	ng/mL	98
60) Pyrene	38.138	202	3445578	10406.048	ng/mL	100
66) Naphthobenzothiophene	41.982	234	3008173	10301.157	ng/ml	99
67) Naphthobenzothiophene-2,1	41.982	234	3008173	10301.157	ng/mL	99
75) Benz[a]anthracene	42.913	228	2938544M4	10442.235	ng/mL	
76) Chrysene	43.078	228	2806910	10186.893	ng/mL	100
77) Chrysene/Triphenylene	43.078	228	2806910	10186.893	ng/mL	100
84) Benzo[b]fluoranthene	46.962	252	2952567	10386.880	ng/mL	92
85) Benzo[j]+[k]fluoranthene	47.044	252	2858687	10295.741	ng/mL	91
87) Benzo[e]pyrene	47.941	252	2720002	10160.395	ng/mL#	89
89) Benzo[a]pyrene	48.124	252	2656767	10540.702	ng/mL#	87
90) Perylene	48.425	252	2828095	10500.105	ng/mL#	86
91) Indeno[1,2,3-cd]pyrene	52.788	276	2926201M4	10607.194	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.842	278	2923552	10748.396	ng/mL	99
93) Benzo[g,h,i]perylene	54.049	276	2890978	10687.910	ng/mL	100
94) Hopane (T19)	51.928	191	1010727	9820.048	ng/mL#	74
95) 17a(H),21B(H)-hopane - C3	51.928	191	1010727	9844.022	ng/mL#	74

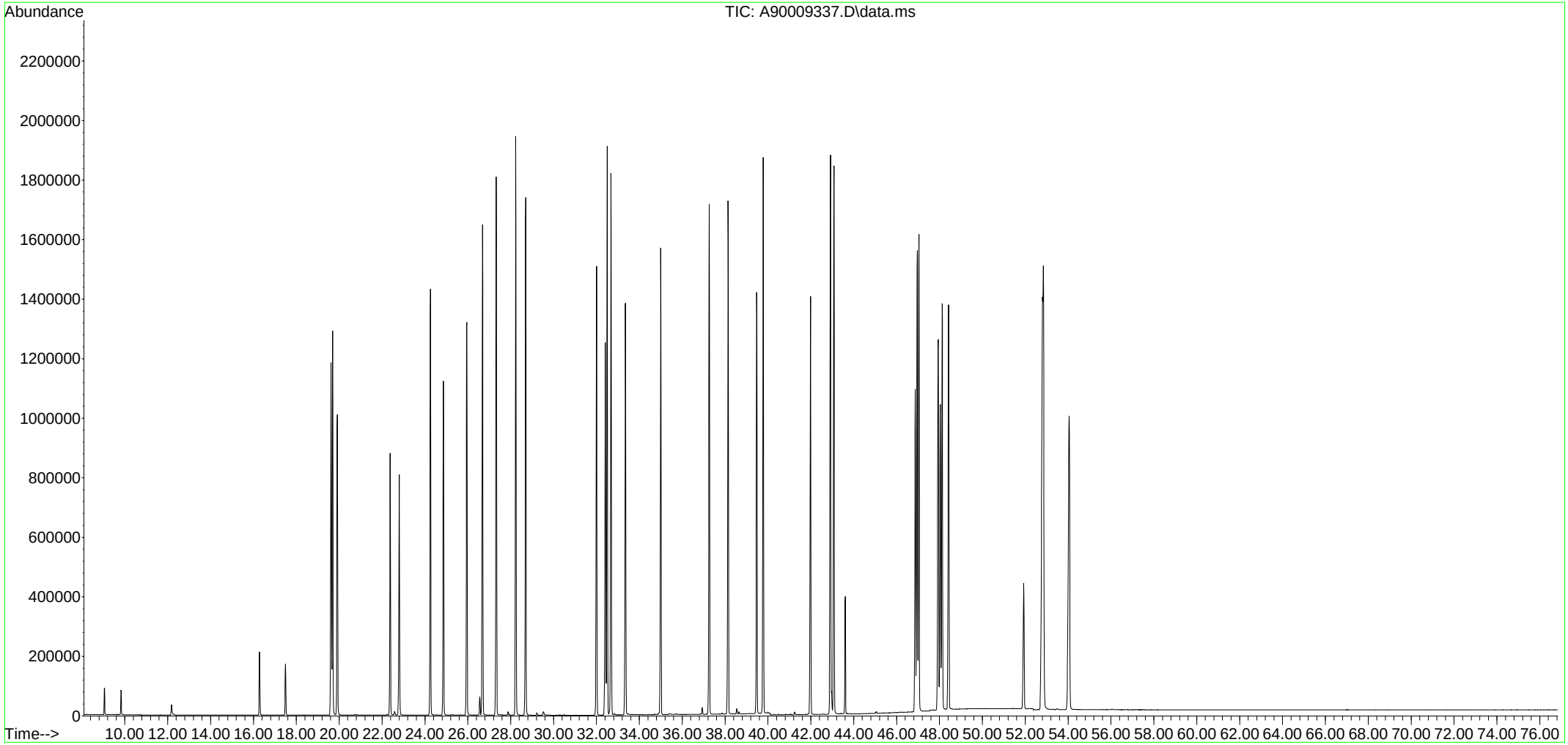
(#) = qualifier out of range (m) = manual integration (+) = signals summed

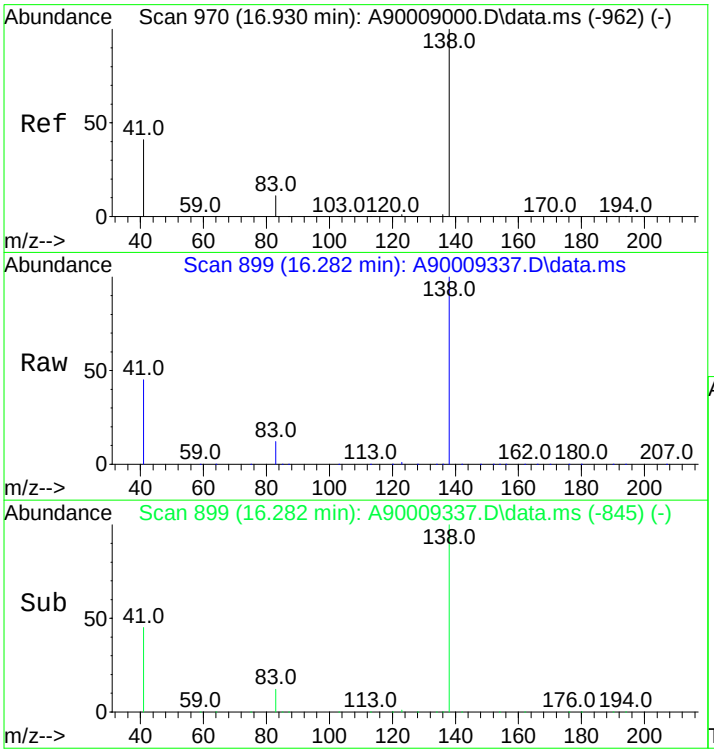
Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC4\
Data File : A90009337.D
Acq On : 5 Dec 2012 8:01 am
Operator : PS
Sample : I912041206
Misc : WHAQ88@10000ng/ml
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Dec 06 10:35:31 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 09:56:52 2012
Response via : Initial Calibration

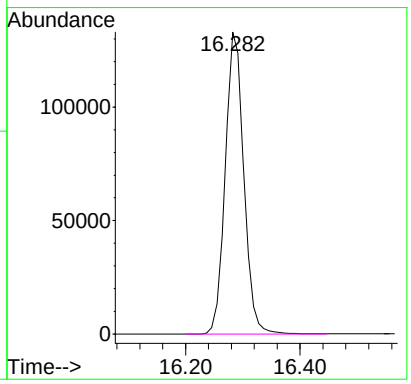
Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

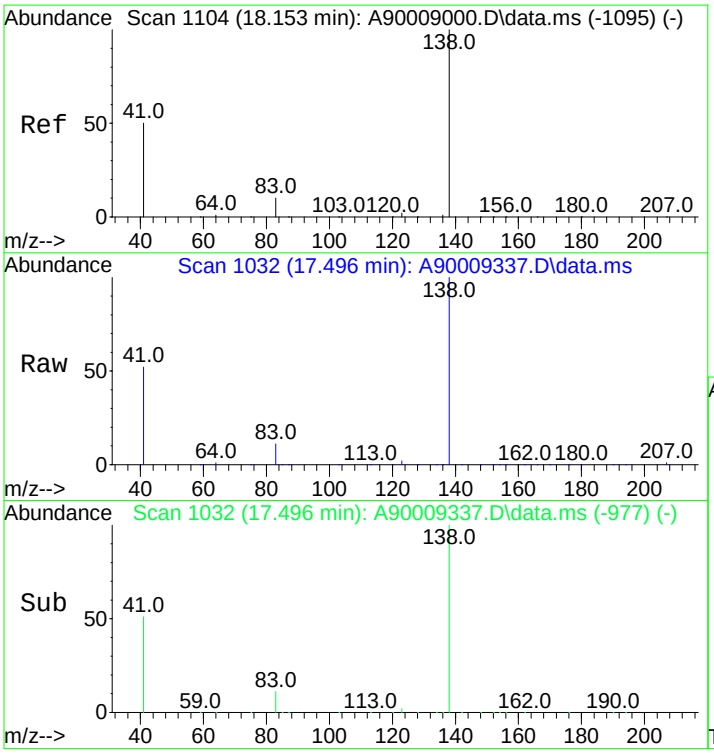




#3
trans-Decalin
Concen: 5055.47 ng/mL
RT: 16.282 min Scan# 899
Delta R.T. -0.009 min
Lab File: A90009337.D
Acq: 5 Dec 2012 8:01 am

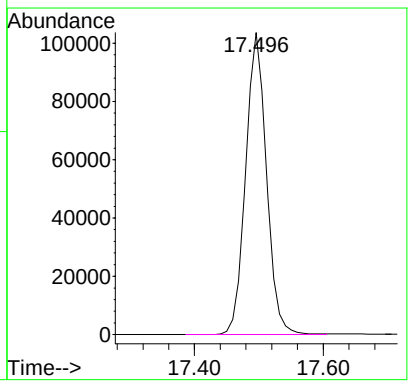
Tgt Ion:138 Resp: 298268

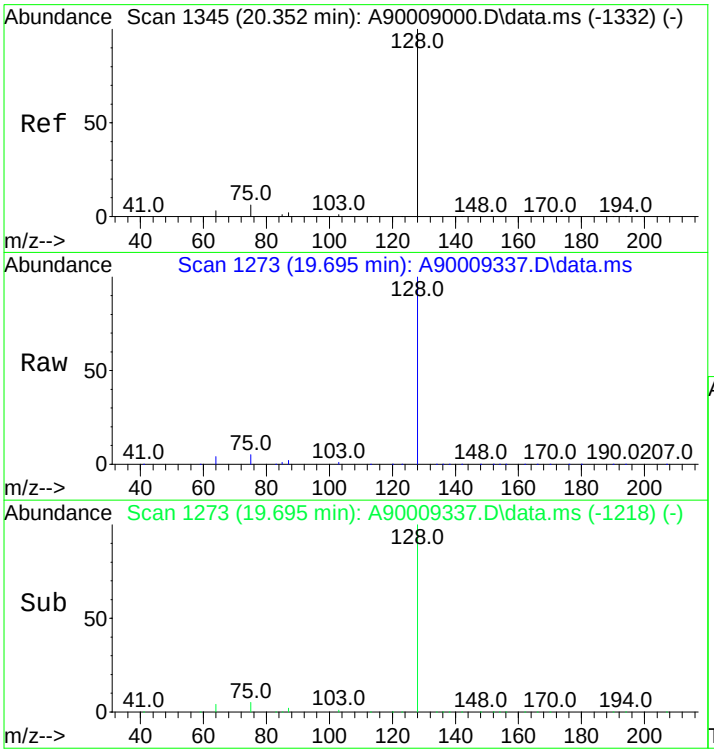




#4
cis-Decalin
Concen: 5032.49 ng/mL
RT: 17.496 min Scan# 1032
Delta R.T. 0.000 min
Lab File: A90009337.D
Acq: 5 Dec 2012 8:01 am

Tgt Ion:138 Resp: 232533

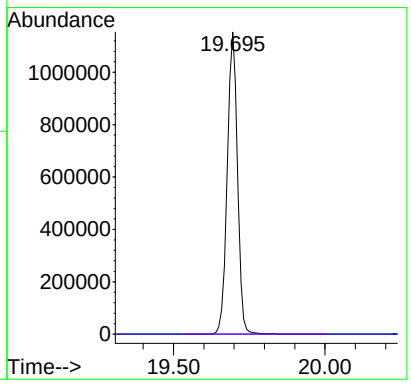


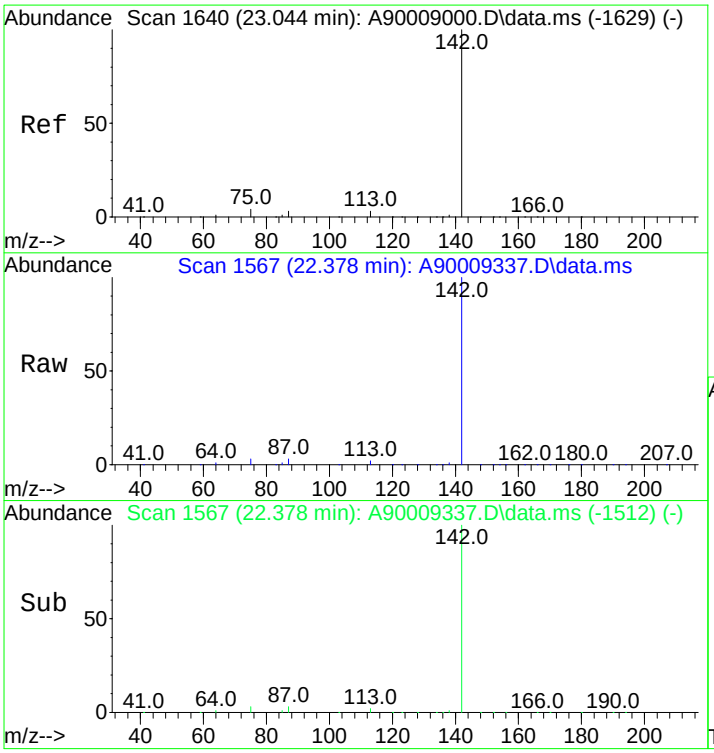


#10
Naphthalene
Concen: 10067.33 ng/mL
RT: 19.695 min Scan# 1273
Delta R.T. 0.000 min
Lab File: A90009337.D
Acq: 5 Dec 2012 8:01 am

Tgt Ion:128 Resp: 2691166

Ion	Ratio	Lower	Upper
128	100		
127	0.0	0.0	0.0

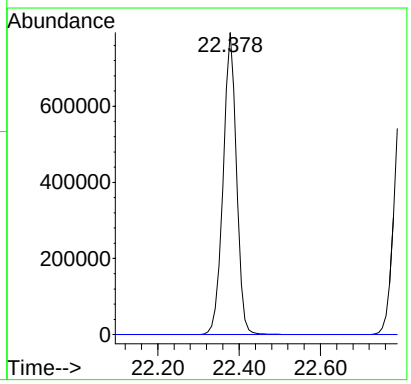


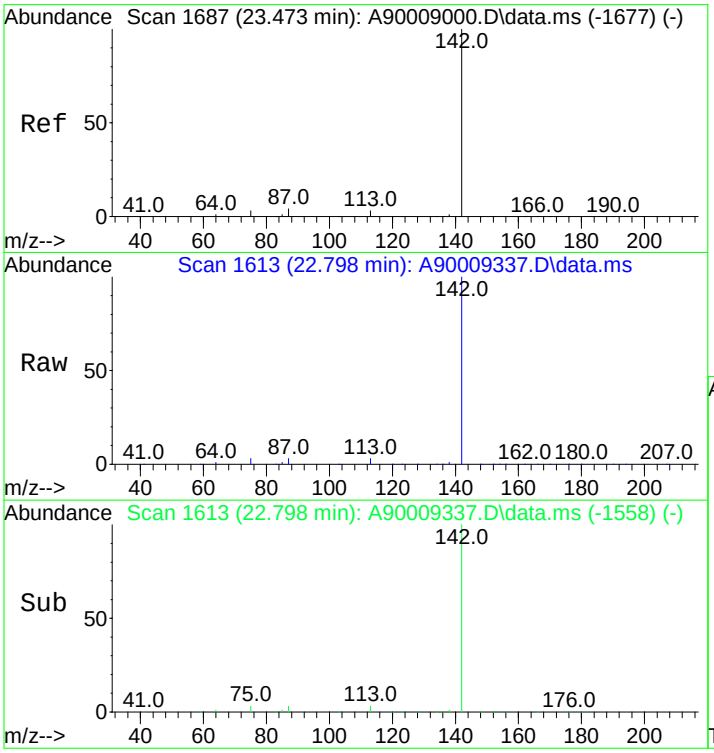


#16
2-Methylnaphthalene
Concen: 10166.27 ng/mL
RT: 22.378 min Scan# 1567
Delta R.T. 0.000 min
Lab File: A90009337.D
Acq: 5 Dec 2012 8:01 am

Tgt Ion:142 Resp: 1810167

Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	0.0

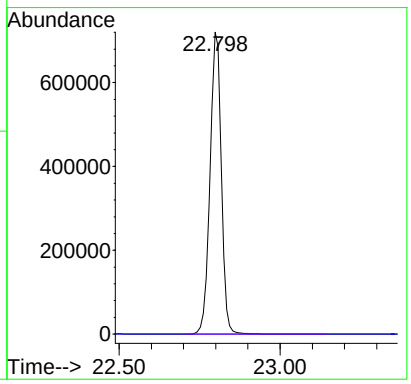


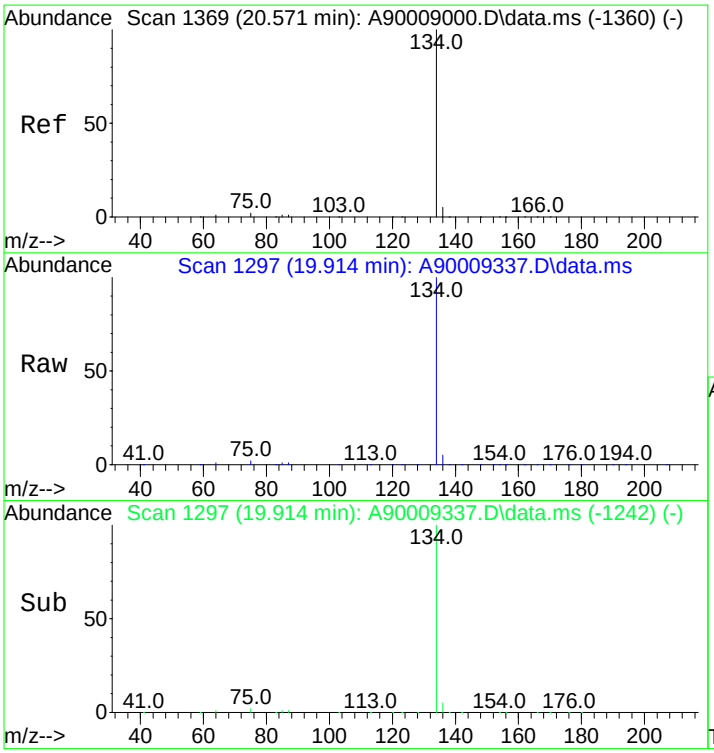


#17
1-Methylnaphthalene
Concen: 10124.33 ng/mL
RT: 22.798 min Scan# 1613
Delta R.T. 0.000 min
Lab File: A90009337.D
Acq: 5 Dec 2012 8:01 am

Tgt Ion:142 Resp: 1742535

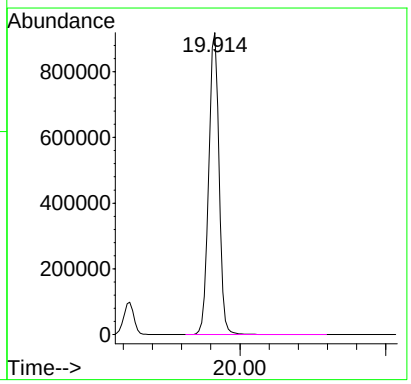
Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	20.0

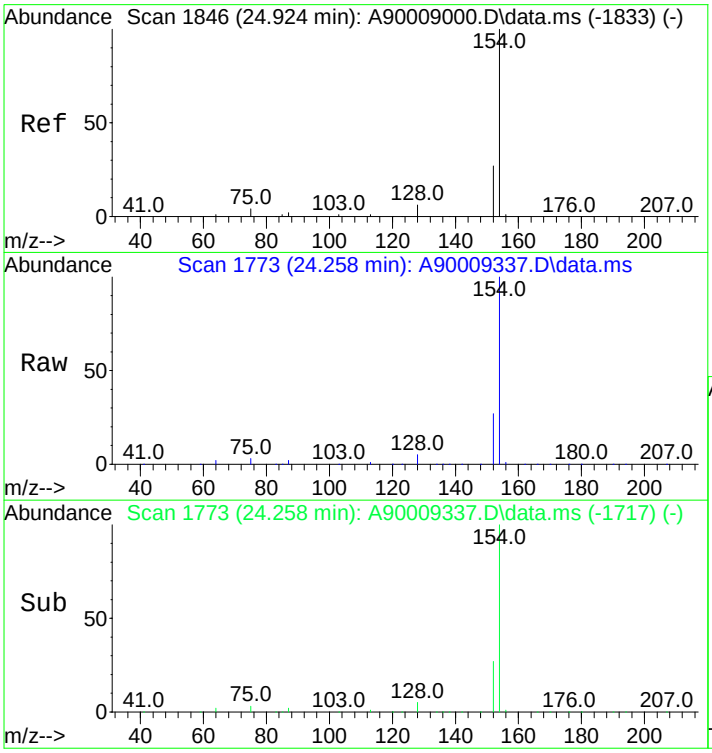




#18
Benzothiophene
Concen: 10100.15 ng/mL
RT: 19.914 min Scan# 1297
Delta R.T. 0.000 min
Lab File: A90009337.D
Acq: 5 Dec 2012 8:01 am

Tgt Ion:134 Resp: 2256392

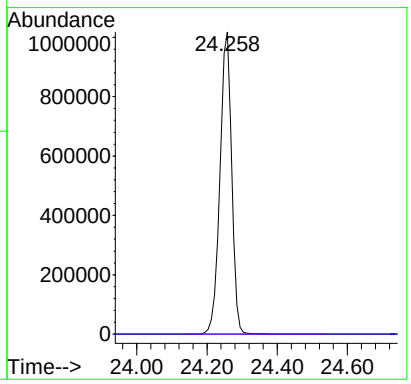


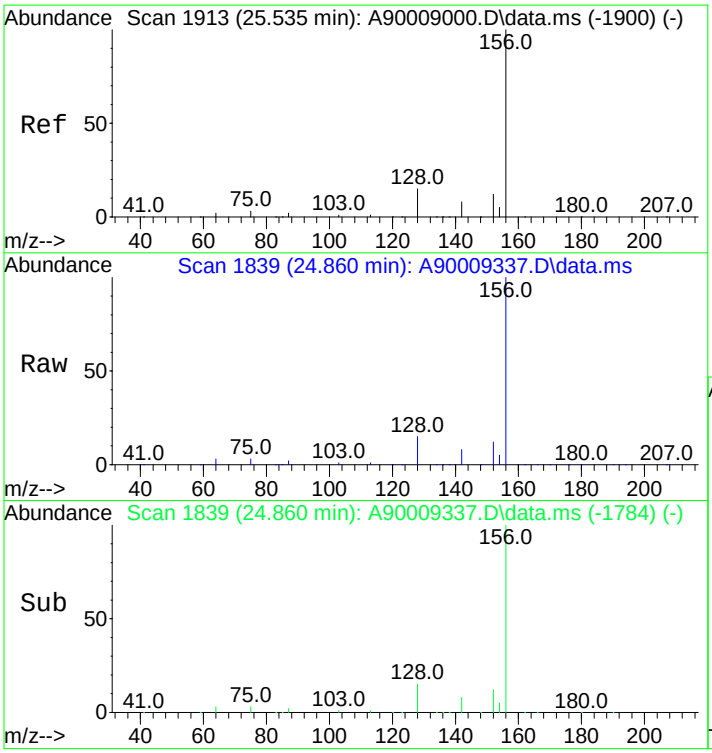


#23
Biphenyl
Concen: 10143.40 ng/mL
RT: 24.258 min Scan# 1773
Delta R.T. 0.009 min
Lab File: A90009337.D
Acq: 5 Dec 2012 8:01 am

Tgt Ion:154 Resp: 2357152

Ion	Ratio	Lower	Upper
154	100		
153	0.0	0.0	0.0

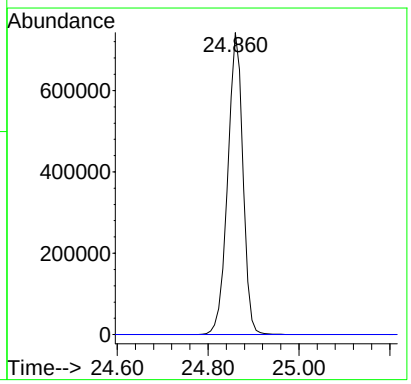


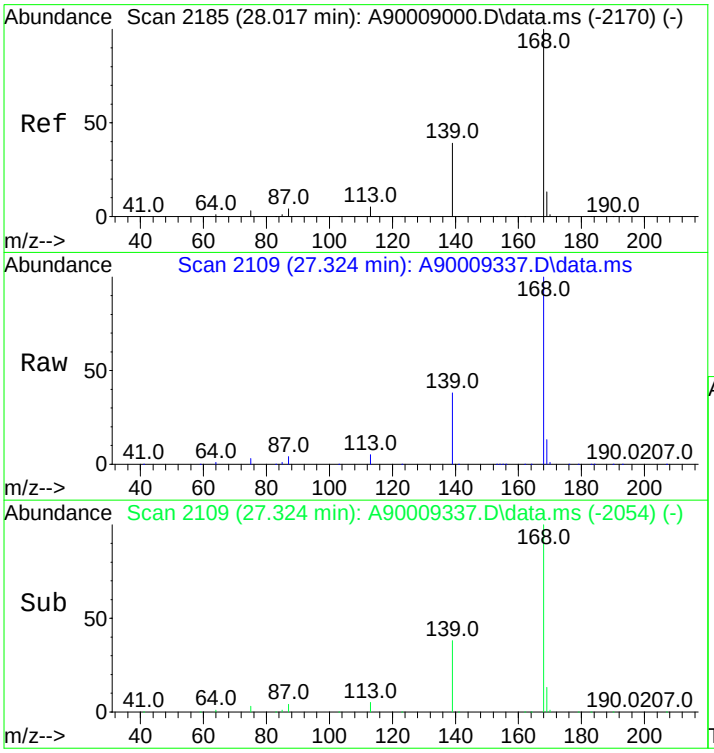


#24
2,6-Dimethylnaphthalene
Concen: 10174.44 ng/mL
RT: 24.860 min Scan# 1839
Delta R.T. 0.000 min
Lab File: A90009337.D
Acq: 5 Dec 2012 8:01 am

Tgt Ion:156 Resp: 1720818

Ion	Ratio	Lower	Upper
156	100		
155	0.0	0.0	0.0

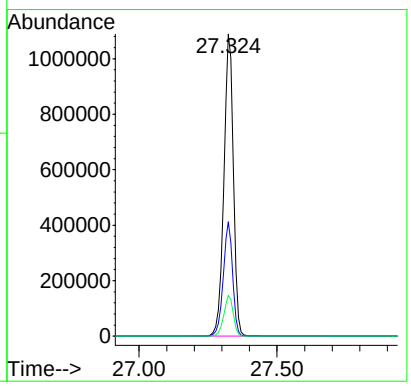


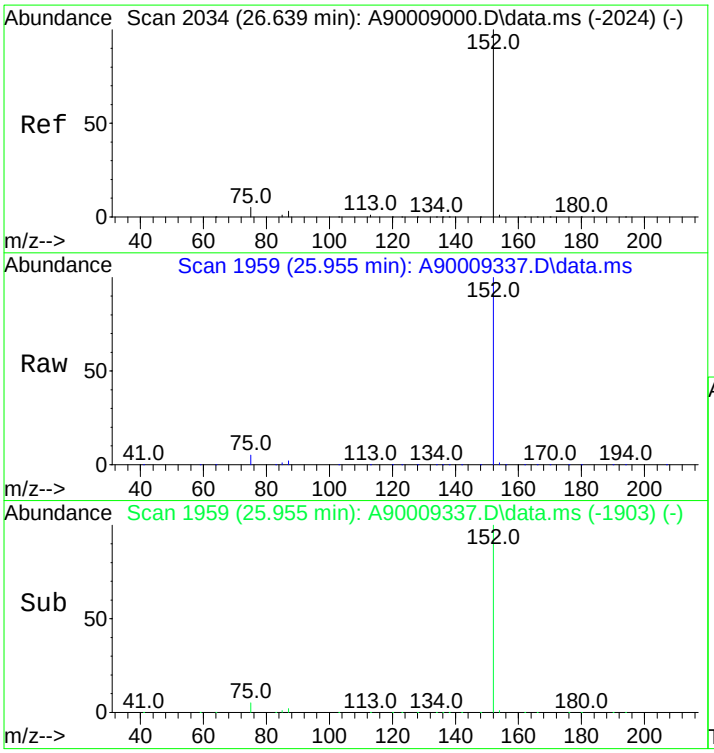


#25
Dibenzofuran
Concen: 10477.43 ng/mL
RT: 27.324 min Scan# 2109
Delta R.T. 0.000 min
Lab File: A90009337.D
Acq: 5 Dec 2012 8:01 am

Tgt Ion:168 Resp: 2619839

Ion	Ratio	Lower	Upper
168	100		
139	37.2	28.9	43.3
169	13.4	10.6	15.8

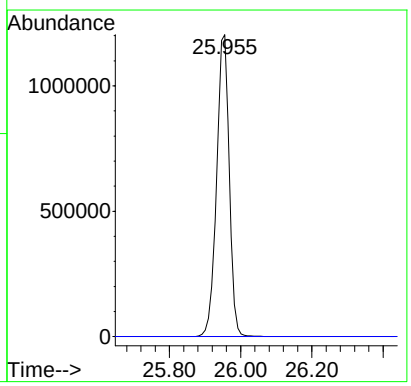


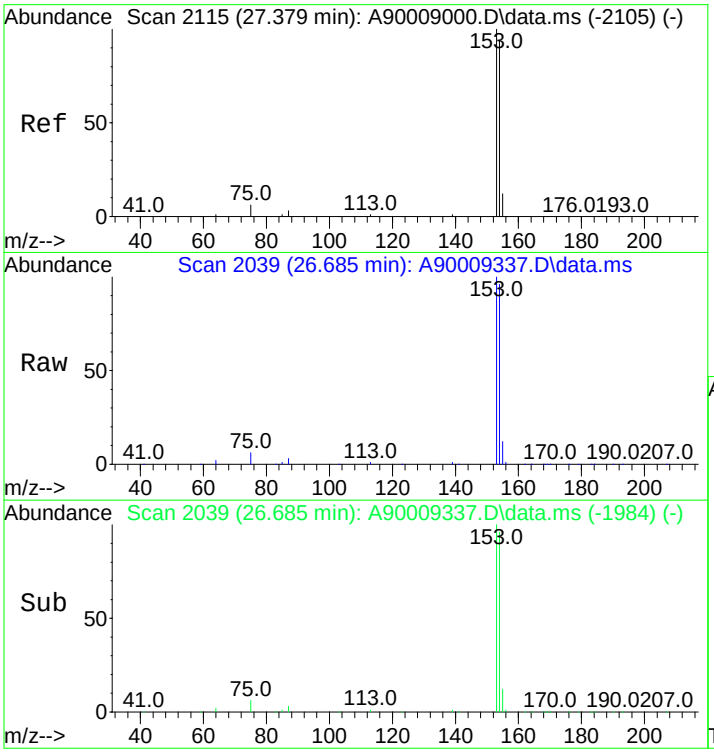


#26
Acenaphthylene
Concen: 10729.95 ng/mL m
RT: 25.955 min Scan# 1959
Delta R.T. 0.009 min
Lab File: A90009337.D
Acq: 5 Dec 2012 8:01 am

Tgt Ion:152 Resp: 2981104

Ion	Ratio	Lower	Upper
152	100		
153	0.0	0.0	0.0

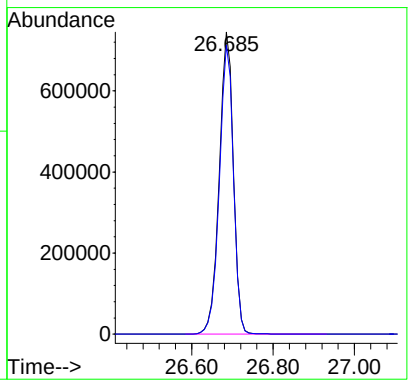


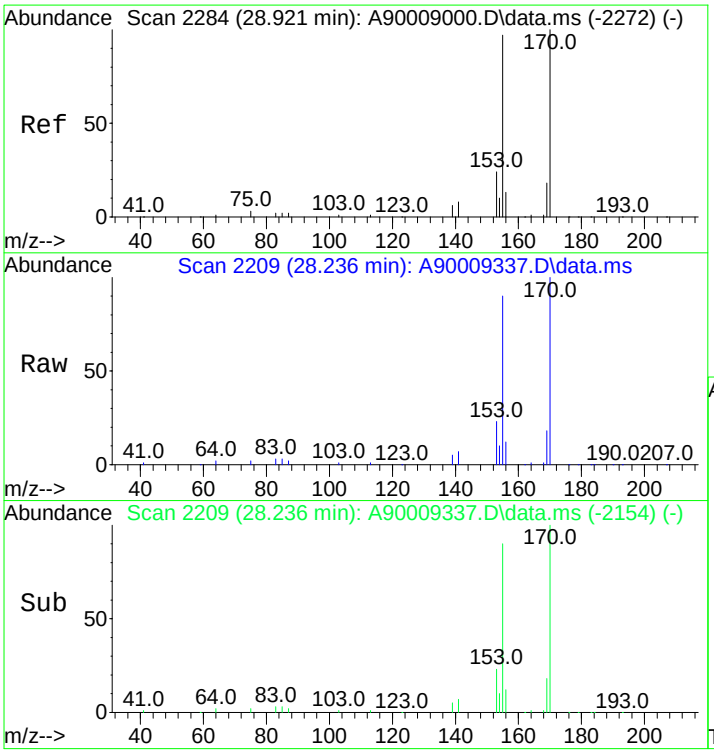


#27
Acenaphthene
Concen: 10299.17 ng/mL
RT: 26.685 min Scan# 2039
Delta R.T. 0.000 min
Lab File: A90009337.D
Acq: 5 Dec 2012 8:01 am

Tgt Ion:153 Resp: 1798517

Ion	Ratio	Lower	Upper
153	100		
154	95.5	76.2	114.4

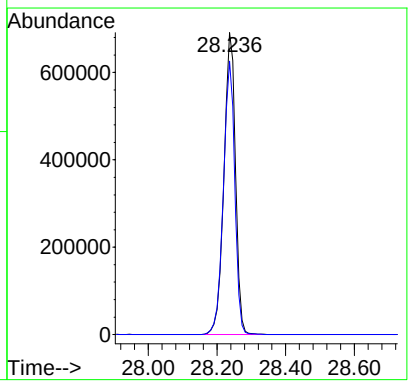


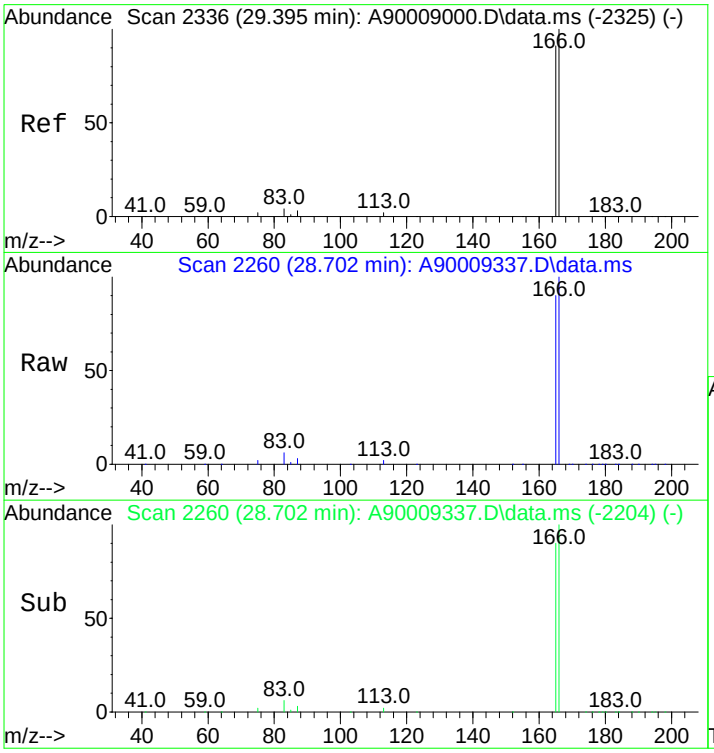


#28
2,3,5-Trimethylnaphthalene
Concen: 10418.76 ng/mL
RT: 28.236 min Scan# 2209
Delta R.T. 0.000 min
Lab File: A90009337.D
Acq: 5 Dec 2012 8:01 am

Tgt Ion:170 Resp: 1612609

Ion	Ratio	Lower	Upper
170	100		
155	89.5	69.0	103.6

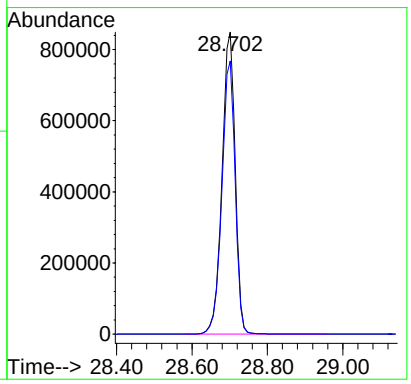


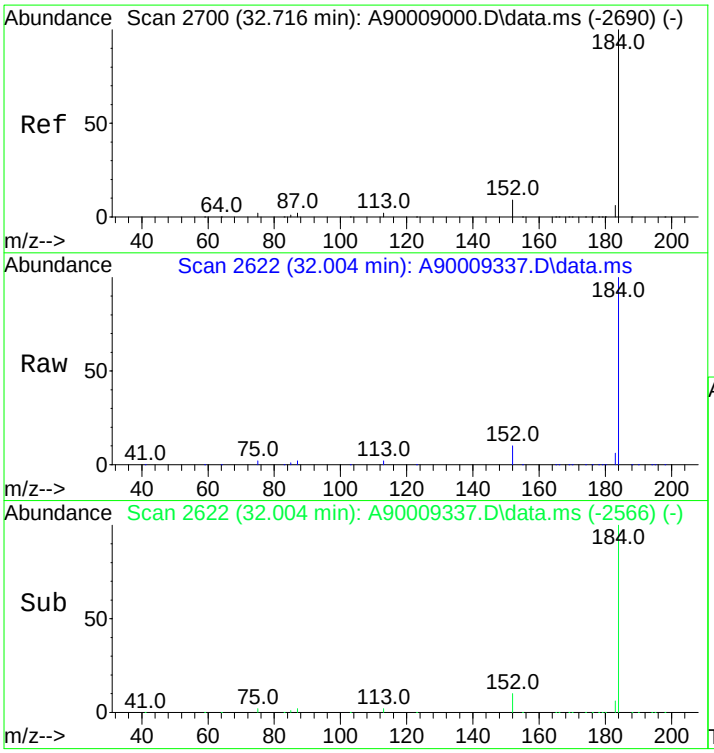


#29
Fluorene
Concen: 10418.90 ng/mL
RT: 28.702 min Scan# 2260
Delta R.T. 0.009 min
Lab File: A90009337.D
Acq: 5 Dec 2012 8:01 am

Tgt Ion:166 Resp: 2057880

Ion	Ratio	Lower	Upper
166	100		
165	90.9	73.8	110.6

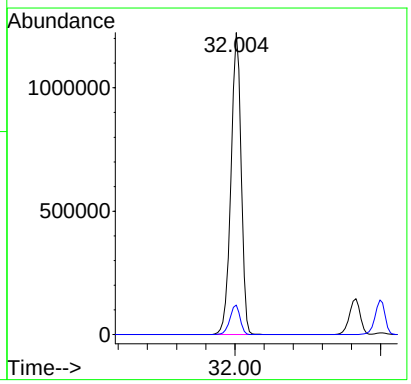


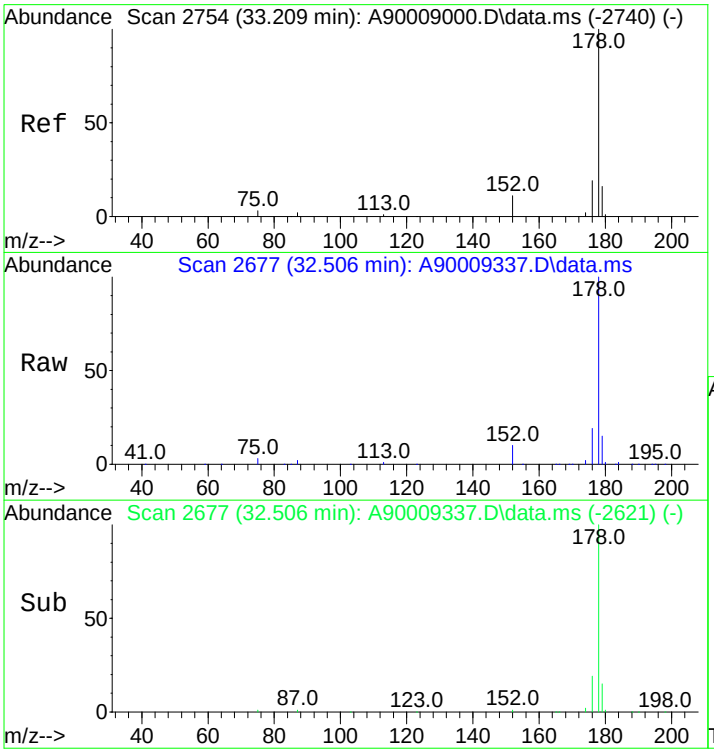


#33
Dibenzothiophene
Concen: 10574.41 ng/mL
RT: 32.004 min Scan# 2622
Delta R.T. 0.009 min
Lab File: A90009337.D
Acq: 5 Dec 2012 8:01 am

Tgt Ion:184 Resp: 2954226

Ion	Ratio	Lower	Upper
184	100		
152	9.8	8.2	12.4

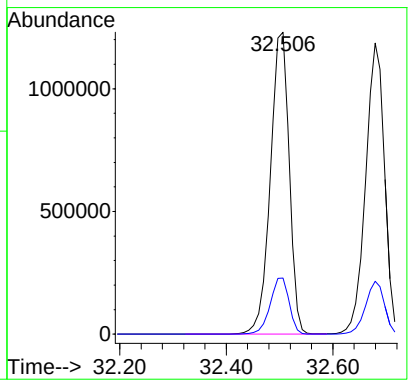


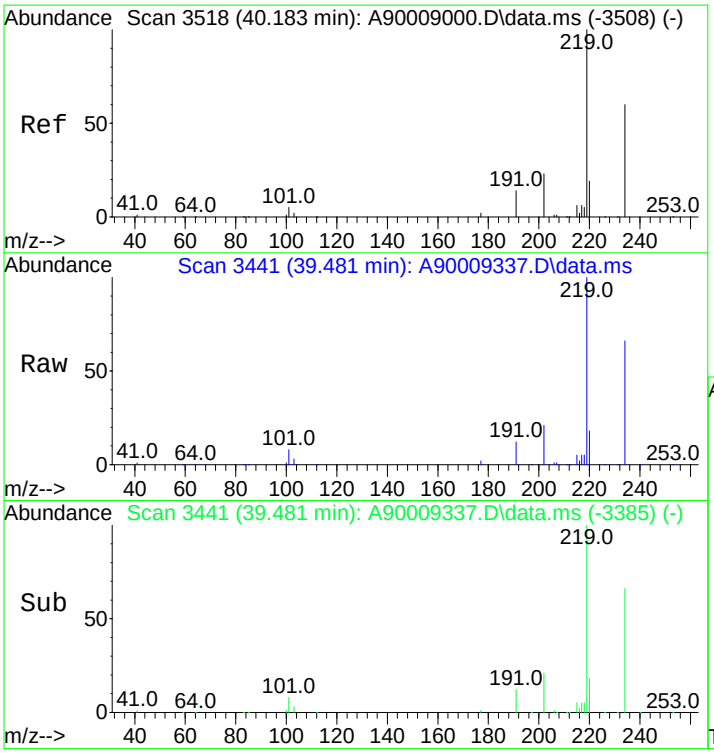


#43
Phenanthrene
Concen: 10473.89 ng/mL
RT: 32.506 min Scan# 2677
Delta R.T. 0.009 min
Lab File: A90009337.D
Acq: 5 Dec 2012 8:01 am

Tgt Ion:178 Resp: 3009810

Ion	Ratio	Lower	Upper
178	100		
176	18.7	14.9	22.3

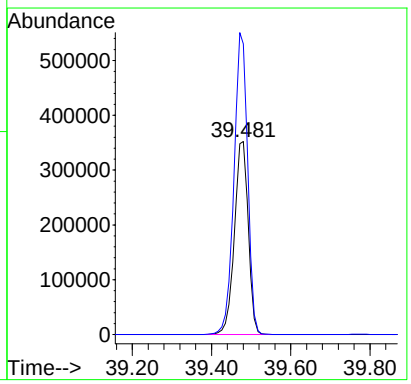


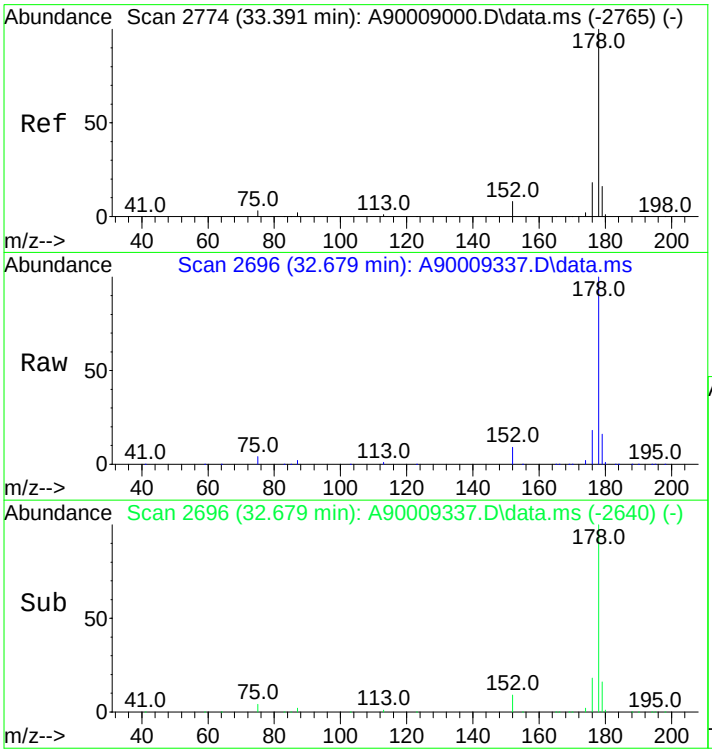


#54
Retene
Concen: 10538.38 ng/mL
RT: 39.481 min Scan# 3441
Delta R.T. 0.009 min
Lab File: A90009337.D
Acq: 5 Dec 2012 8:01 am

Tgt Ion:234 Resp: 854300

Ion	Ratio	Lower	Upper
234	100		
219	154.6	117.9	176.9

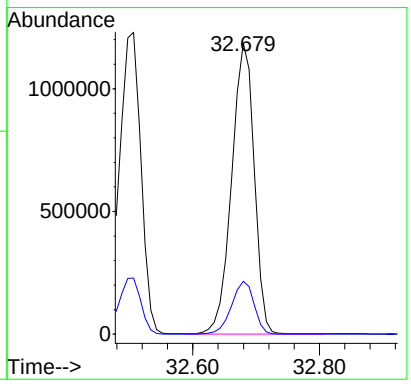


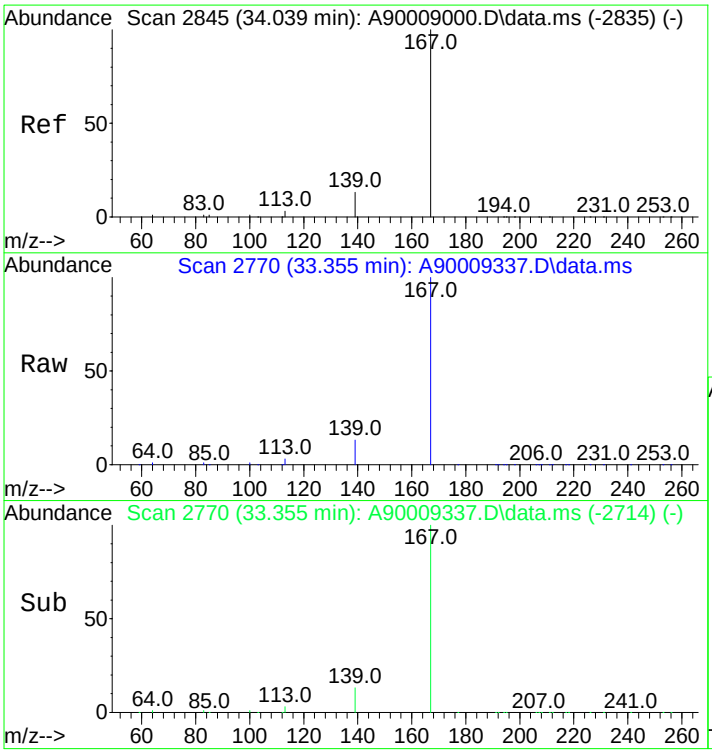


#55
Anthracene
Concen: 11121.99 ng/mL m
RT: 32.679 min Scan# 2696
Delta R.T. 0.009 min
Lab File: A90009337.D
Acq: 5 Dec 2012 8:01 am

Tgt Ion:178 Resp: 2911774

Ion	Ratio	Lower	Upper
178	100		
176	18.1	14.6	21.8

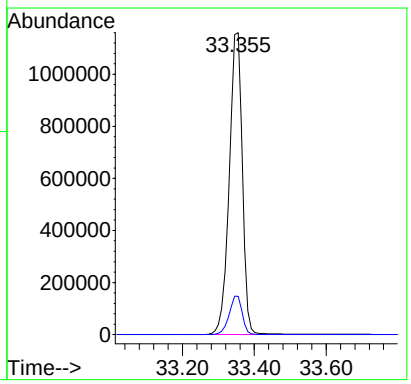


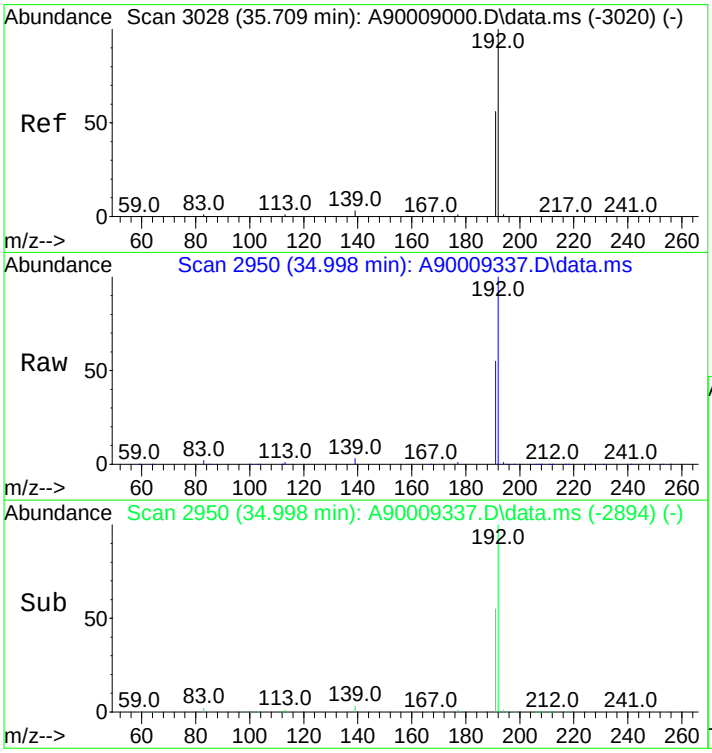


#56
Carbazole
Concen: 11876.80 ng/mL
RT: 33.355 min Scan# 2770
Delta R.T. 0.009 min
Lab File: A90009337.D
Acq: 5 Dec 2012 8:01 am

Tgt Ion:167 Resp: 2938381

Ion	Ratio	Lower	Upper
167	100		
139	12.7	10.3	15.5

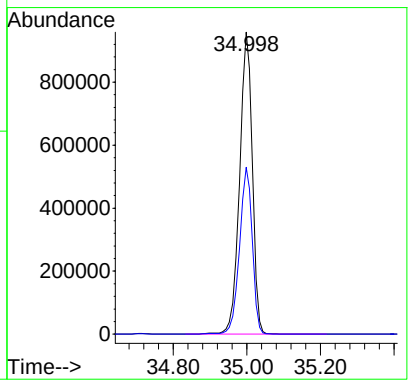


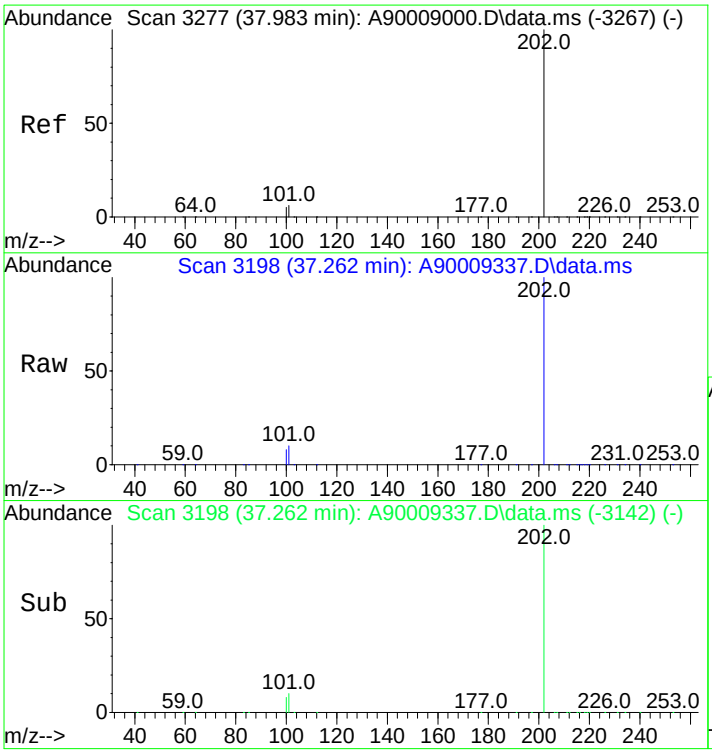


#57
1-Methylphenanthrene
Concen: 10658.50 ng/mL
RT: 34.998 min Scan# 2950
Delta R.T. 0.009 min
Lab File: A90009337.D
Acq: 5 Dec 2012 8:01 am

Tgt Ion:192 Resp: 2294326

Ion	Ratio	Lower	Upper
192	100		
191	55.4	44.8	67.2

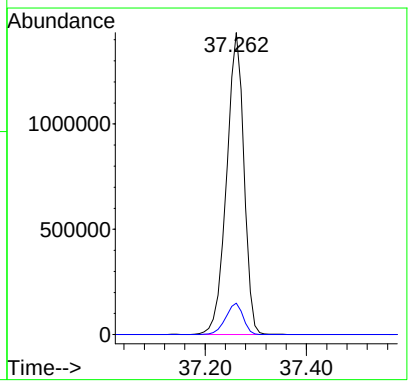


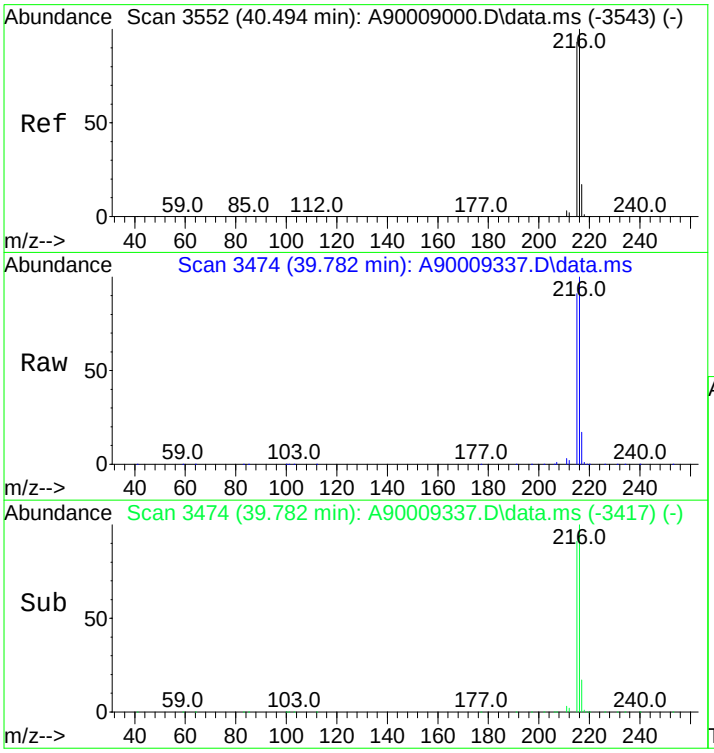


#58
Fluoranthene
Concen: 10512.39 ng/mL m
RT: 37.262 min Scan# 3198
Delta R.T. 0.009 min
Lab File: A90009337.D
Acq: 5 Dec 2012 8:01 am

Tgt Ion:202 Resp: 3421936

Ion	Ratio	Lower	Upper
202	100		
101	10.5	8.5	12.7

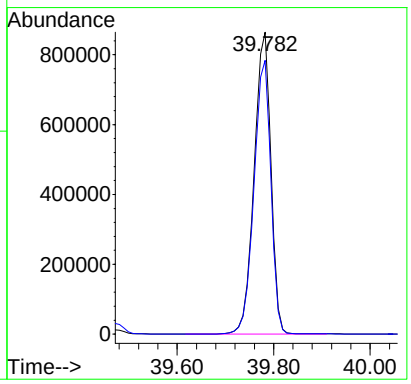


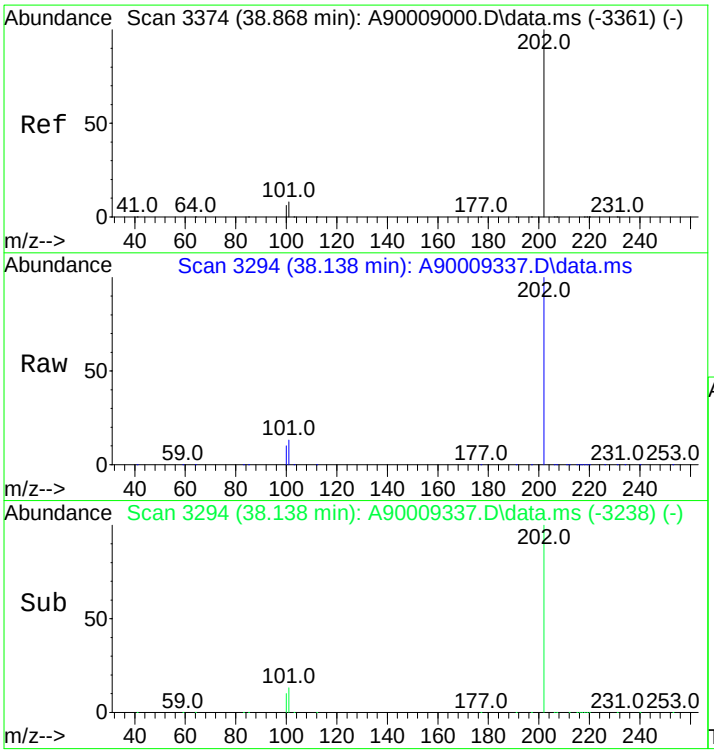


#59
Benzo(b)fluorene
Concen: 10475.49 ng/mL
RT: 39.782 min Scan# 3474
Delta R.T. 0.018 min
Lab File: A90009337.D
Acq: 5 Dec 2012 8:01 am

Tgt Ion:216 Resp: 2086031

Ion	Ratio	Lower	Upper
216	100		
215	91.3	74.8	112.2

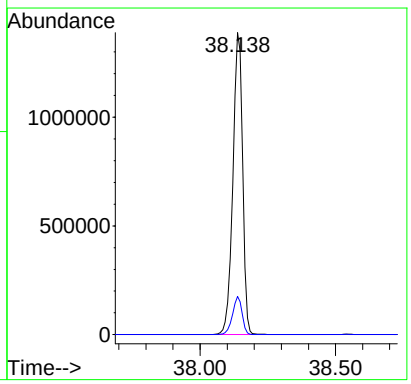


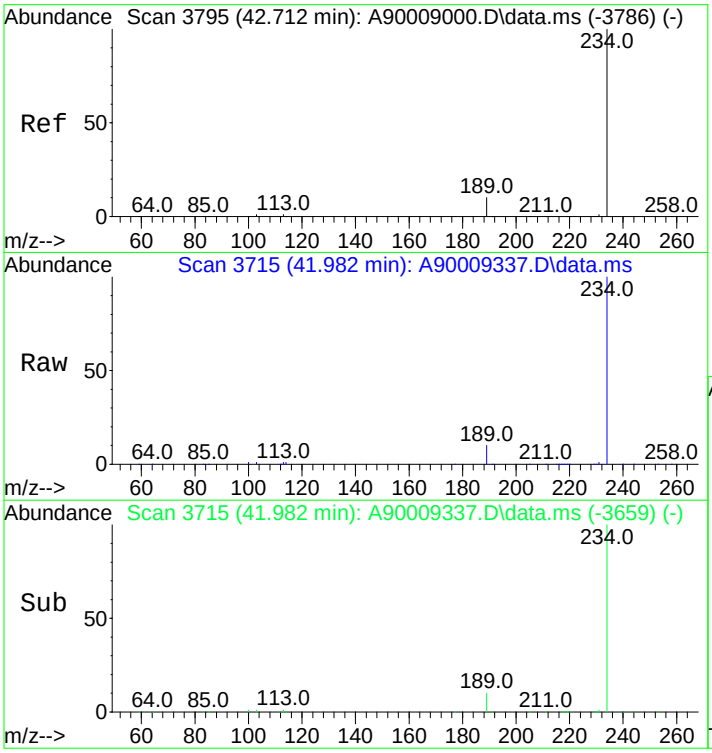


#60
Pyrene
Concen: 10406.05 ng/mL
RT: 38.138 min Scan# 3294
Delta R.T. 0.009 min
Lab File: A90009337.D
Acq: 5 Dec 2012 8:01 am

Tgt Ion:202 Resp: 3445578

Ion	Ratio	Lower	Upper
202	100		
101	12.4	10.1	15.1

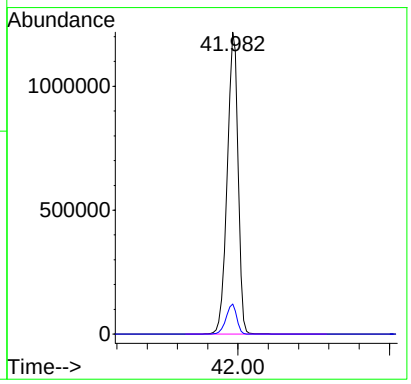


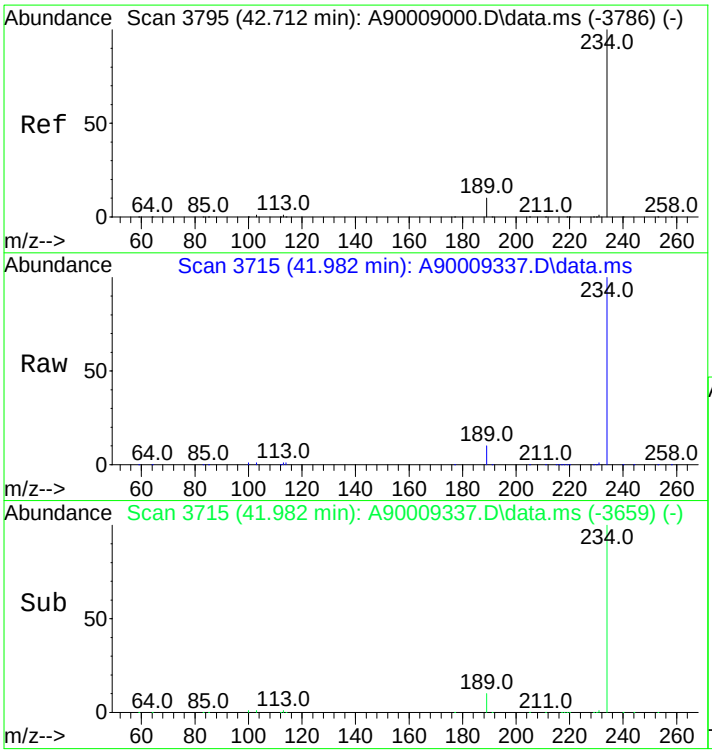


#66
Naphthobenzothiophene
Concen: 10301.16 ng/ml
RT: 41.982 min Scan# 3715
Delta R.T. 0.009 min
Lab File: A90009337.D
Acq: 5 Dec 2012 8:01 am

Tgt Ion:234 Resp: 3008173

Ion	Ratio	Lower	Upper
234	100		
189	9.8	7.4	11.2

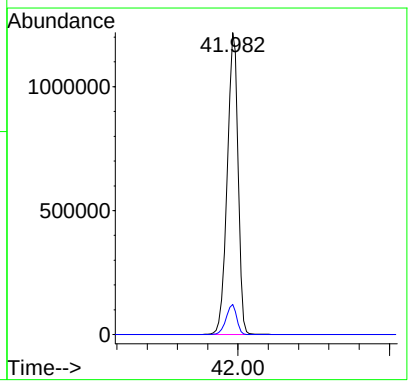


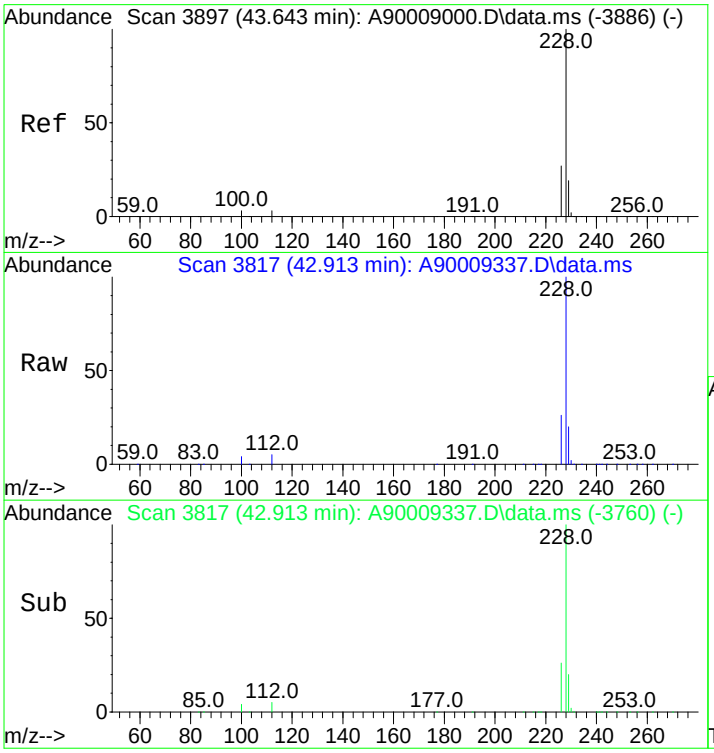


#67
Naphthobenzothiophene-2,1-D
Concen: 10301.16 ng/mL
RT: 41.982 min Scan# 3715
Delta R.T. 0.009 min
Lab File: A90009337.D
Acq: 5 Dec 2012 8:01 am

Tgt Ion:234 Resp: 3008173

Ion	Ratio	Lower	Upper
234	100		
189	9.8	7.4	11.2

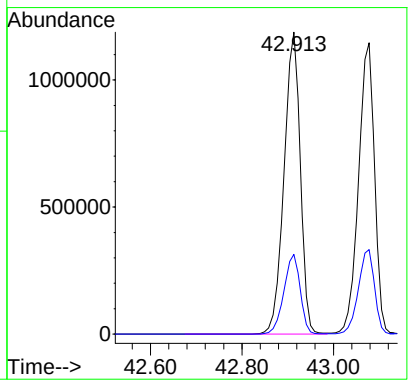


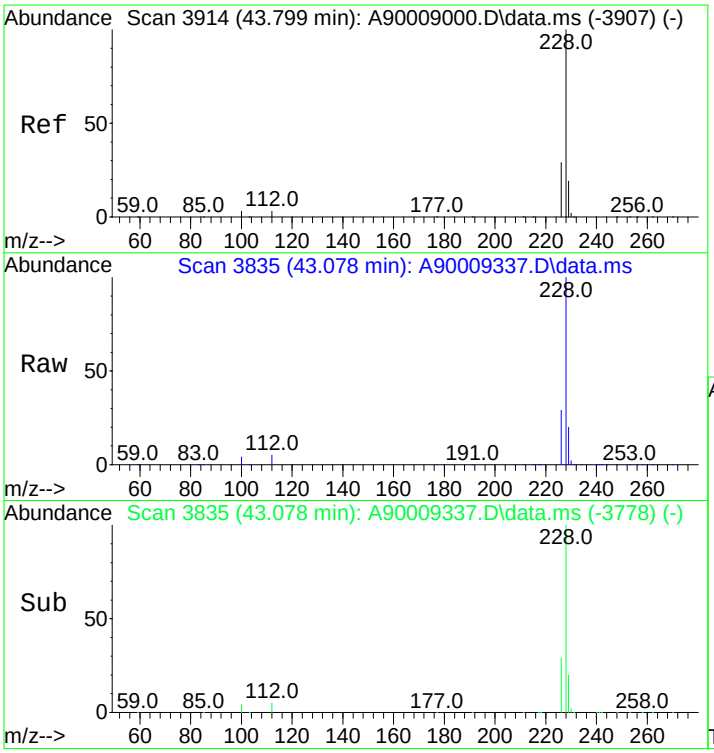


#75
Benz[a]anthracene
Concen: 10442.23 ng/mL m
RT: 42.913 min Scan# 3817
Delta R.T. 0.018 min
Lab File: A90009337.D
Acq: 5 Dec 2012 8:01 am

Tgt Ion:228 Resp: 2938544

Ion	Ratio	Lower	Upper
228	100		
226	26.5	21.3	31.9

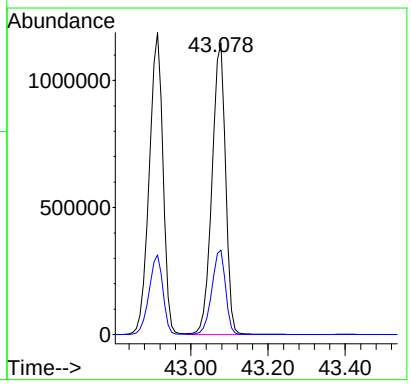


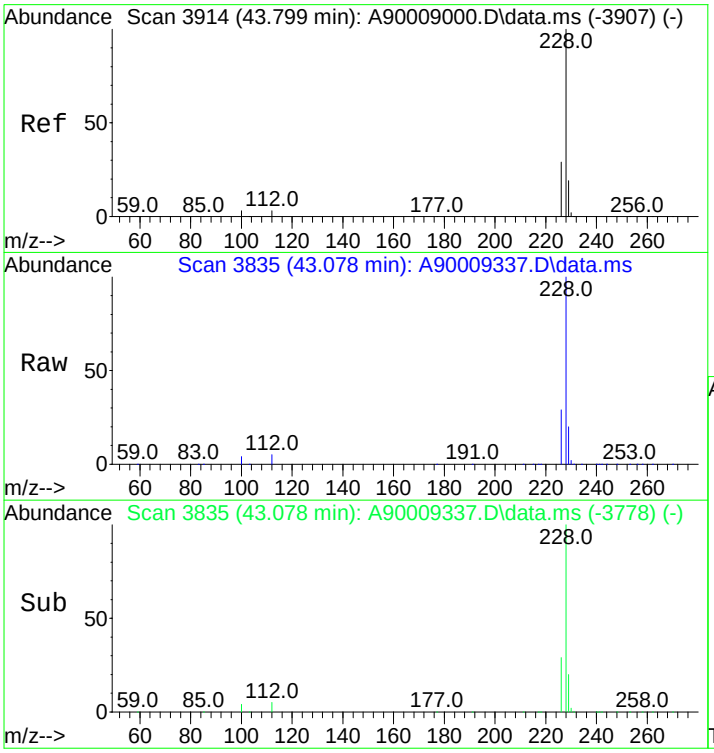


#76
Chrysene
Concen: 10186.89 ng/mL
RT: 43.078 min Scan# 3835
Delta R.T. 0.018 min
Lab File: A90009337.D
Acq: 5 Dec 2012 8:01 am

Tgt Ion:228 Resp: 2806910

Ion	Ratio	Lower	Upper
228	100		
226	29.3	23.4	35.0

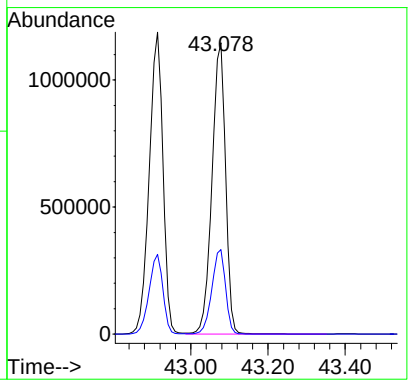


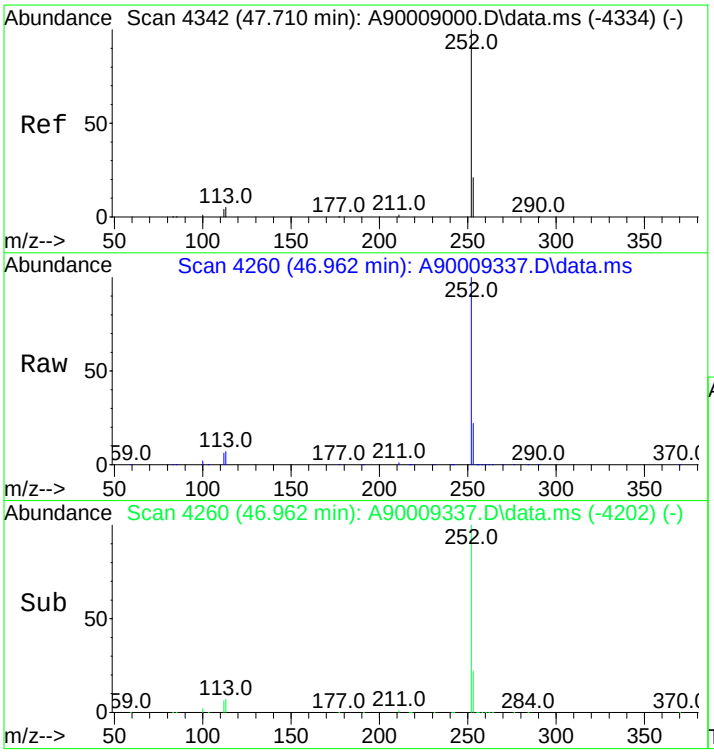


#77
Chrysene/Triphenylene
Concen: 10186.89 ng/mL
RT: 43.078 min Scan# 3835
Delta R.T. 0.018 min
Lab File: A90009337.D
Acq: 5 Dec 2012 8:01 am

Tgt Ion:228 Resp: 2806910

Ion	Ratio	Lower	Upper
228	100		
226	29.3	23.4	35.0

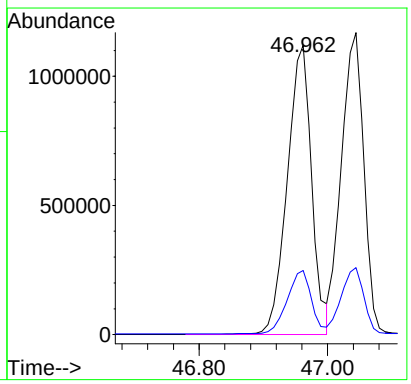


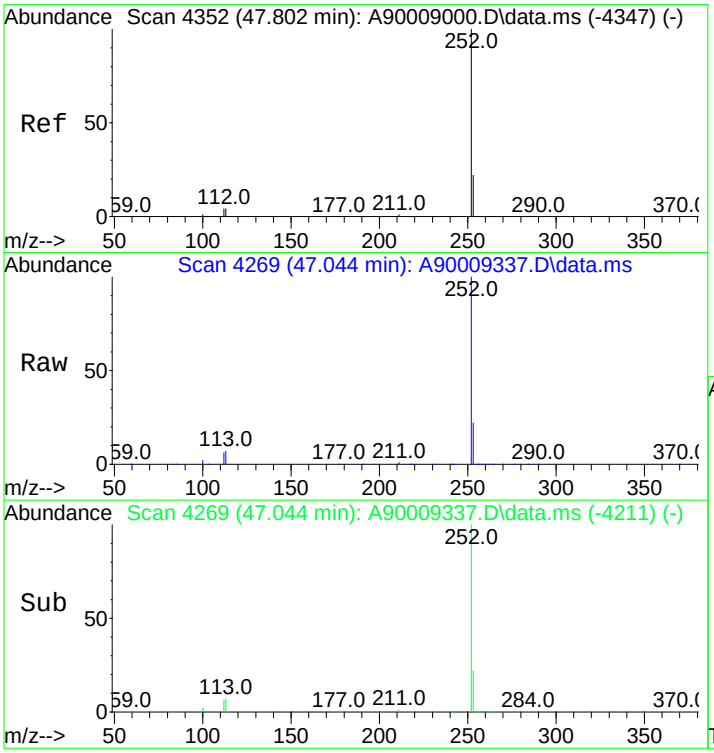


#84
Benzo[b]fluoranthene
Concen: 10386.88 ng/mL
RT: 46.962 min Scan# 4260
Delta R.T. 0.028 min
Lab File: A90009337.D
Acq: 5 Dec 2012 8:01 am

Tgt Ion:252 Resp: 2952567

Ion	Ratio	Lower	Upper
252	100		
253	22.0	20.9	31.3

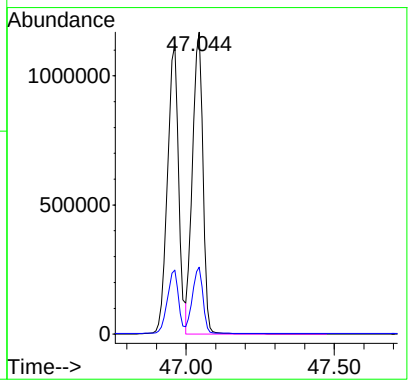


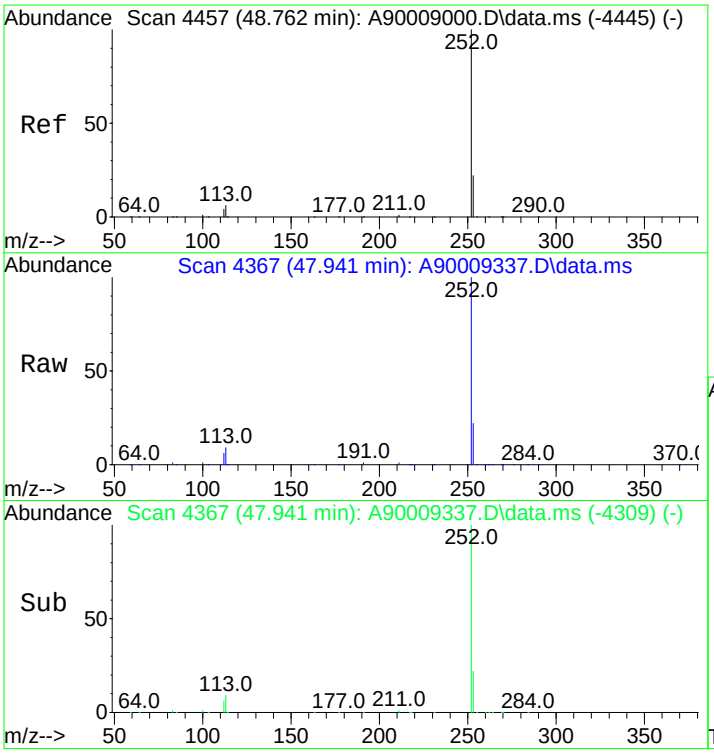


#85
Benzo[j]+[k]fluoranthene
Concen: 10295.74 ng/mL
RT: 47.044 min Scan# 4269
Delta R.T. 0.028 min
Lab File: A90009337.D
Acq: 5 Dec 2012 8:01 am

Tgt Ion:252 Resp: 2858687

Ion	Ratio	Lower	Upper
252	100		
253	21.9	21.0	31.6

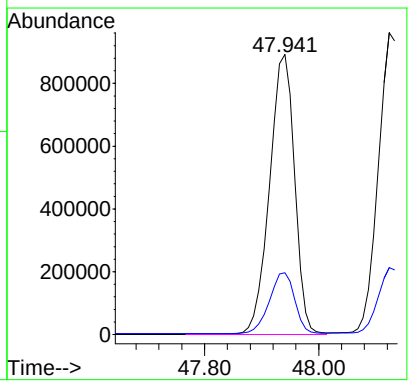


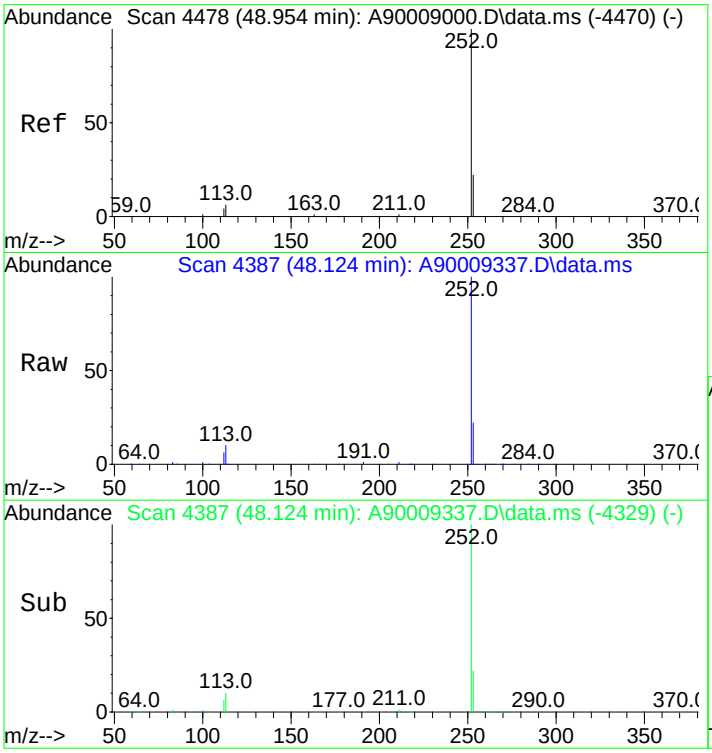


#87
Benzo[e]pyrene
Concen: 10160.40 ng/mL
RT: 47.941 min Scan# 4367
Delta R.T. 0.028 min
Lab File: A90009337.D
Acq: 5 Dec 2012 8:01 am

Tgt Ion:252 Resp: 2720002

Ion	Ratio	Lower	Upper
252	100		
253	21.9	22.1	33.1#

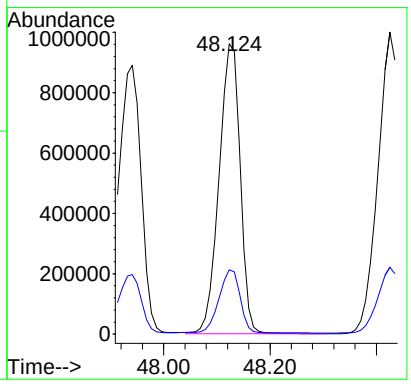


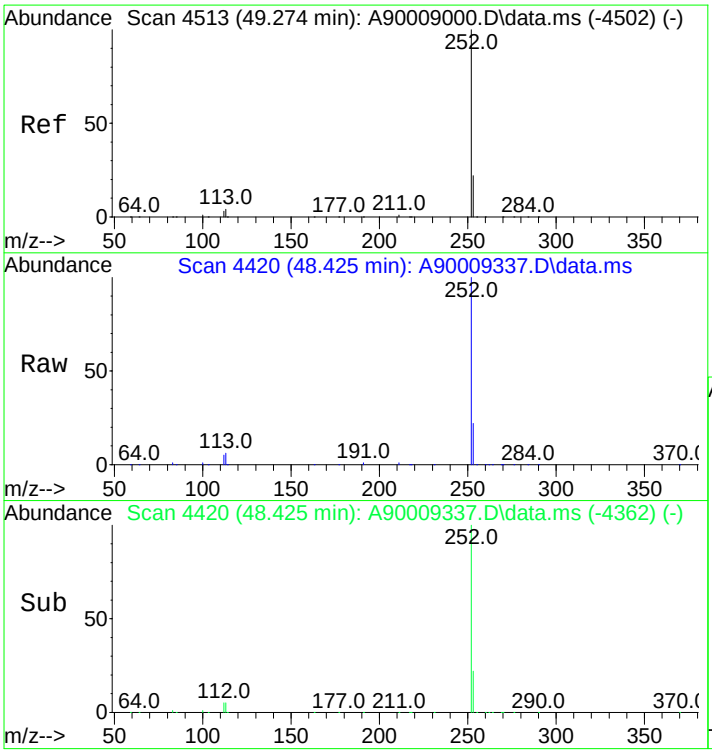


#89
Benzo[a]pyrene
Concen: 10540.70 ng/mL
RT: 48.124 min Scan# 4387
Delta R.T. 0.028 min
Lab File: A90009337.D
Acq: 5 Dec 2012 8:01 am

Tgt Ion:252 Resp: 2656767

Ion	Ratio	Lower	Upper
252	100		
253	21.9	22.9	34.3#

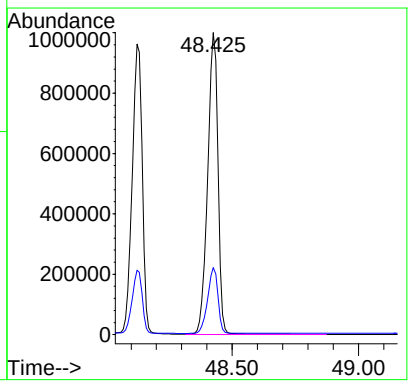


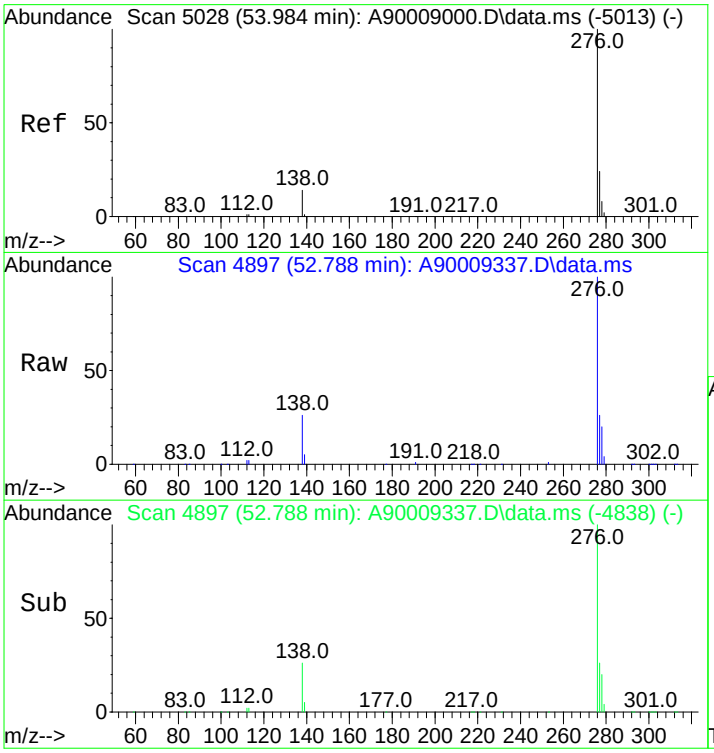


#90
Perylene
Concen: 10500.10 ng/mL
RT: 48.425 min Scan# 4420
Delta R.T. 0.028 min
Lab File: A90009337.D
Acq: 5 Dec 2012 8:01 am

Tgt Ion:252 Resp: 2828095

Ion	Ratio	Lower	Upper
252	100		
253	21.8	23.4	35.2#

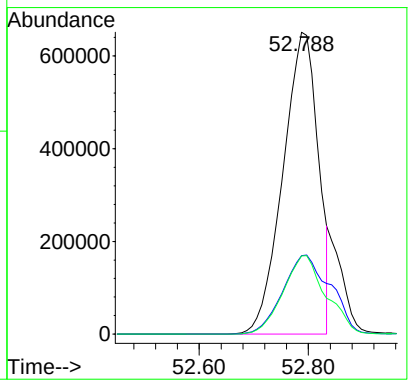


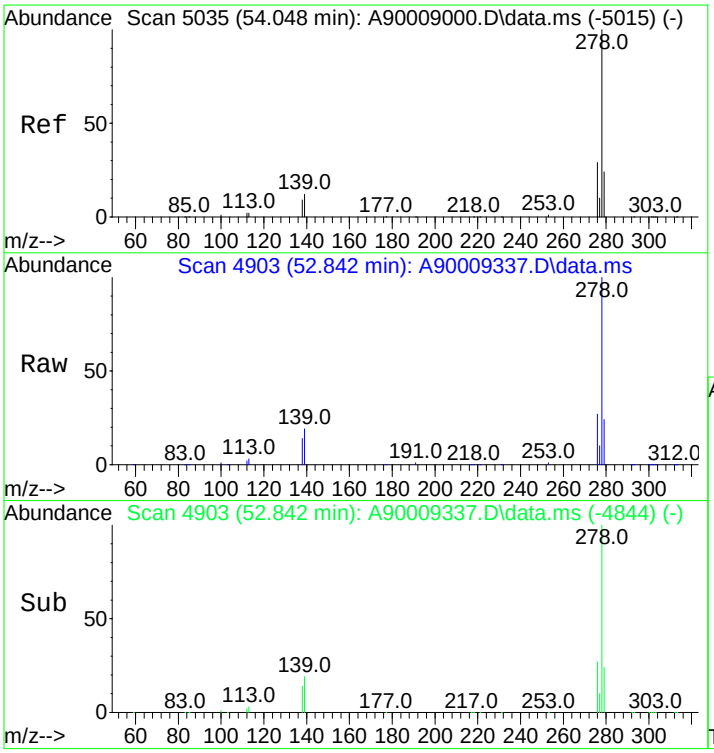


#91
Indeno[1,2,3-cd]pyrene
Concen: 10607.19 ng/mL m
RT: 52.788 min Scan# 4897
Delta R.T. 0.037 min
Lab File: A90009337.D
Acq: 5 Dec 2012 8:01 am

Tgt Ion:276 Resp: 2926201

Ion	Ratio	Lower	Upper
276	100		
138	35.3	20.2	30.4#
277	31.6	20.6	30.8#

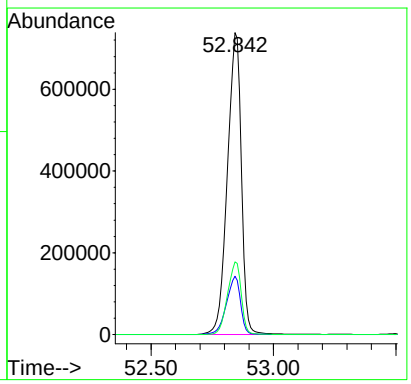


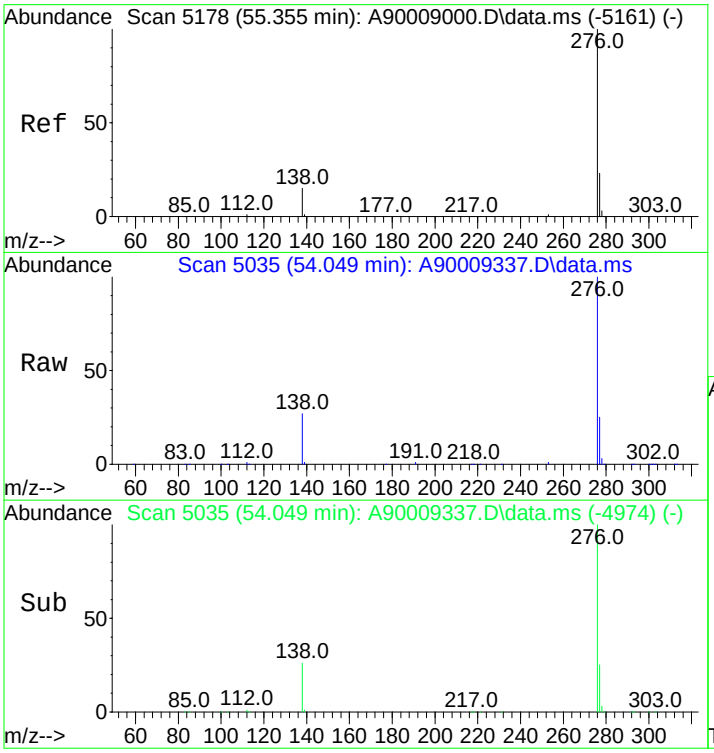


#92
Dibenz[ah]+[ac]anthracene
Concen: 10748.40 ng/mL
RT: 52.842 min Scan# 4903
Delta R.T. 0.037 min
Lab File: A90009337.D
Acq: 5 Dec 2012 8:01 am

Tgt Ion:278 Resp: 2923552

Ion	Ratio	Lower	Upper
278	100		
139	19.5	15.4	23.2
279	23.7	19.3	28.9

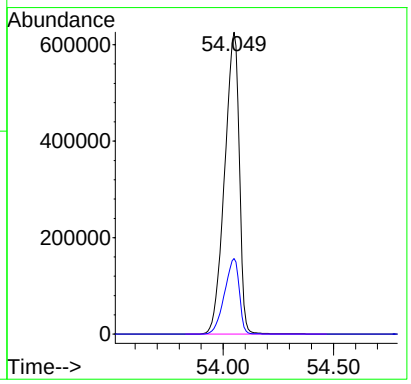


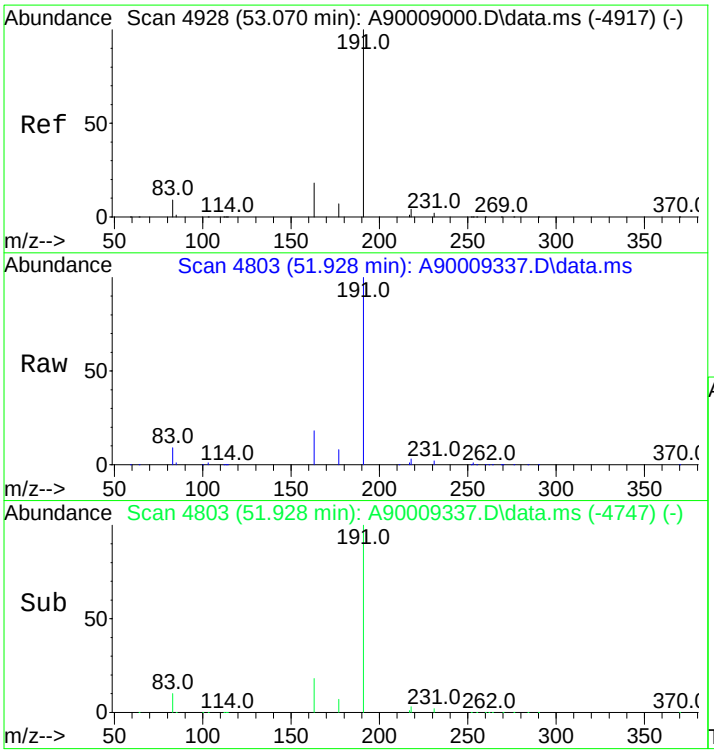


#93
Benzo[g,h,i]perylene
Concen: 10687.91 ng/mL
RT: 54.049 min Scan# 5035
Delta R.T. 0.055 min
Lab File: A90009337.D
Acq: 5 Dec 2012 8:01 am

Tgt Ion:276 Resp: 2890978

Ion	Ratio	Lower	Upper
276	100		
277	25.2	20.3	30.5

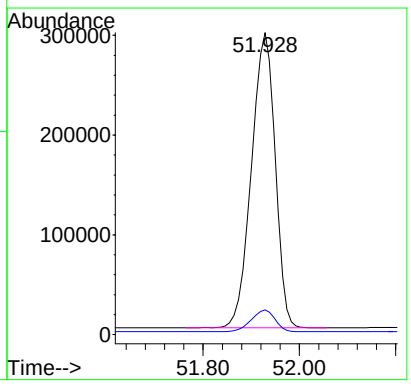


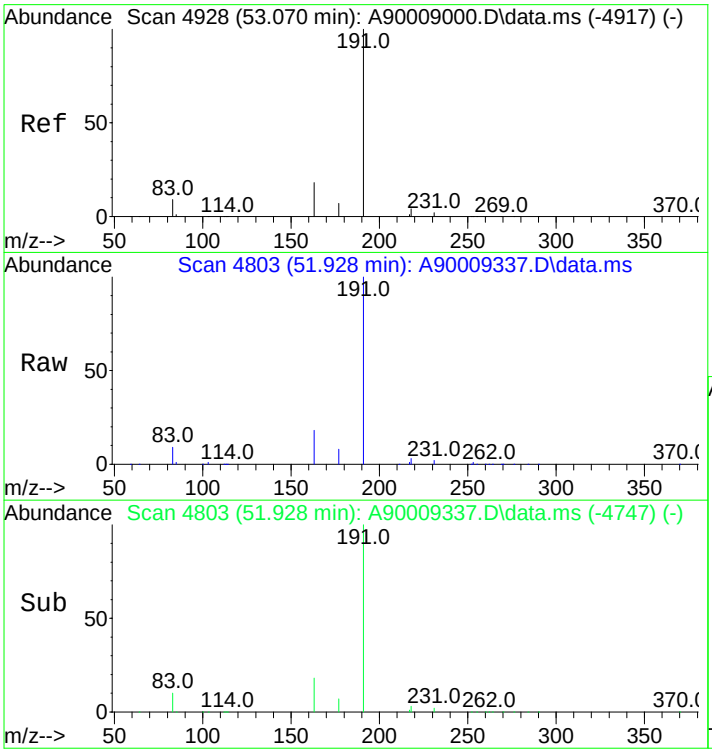


#94
Hopane (T19)
Concen: 9820.05 ng/mL
RT: 51.928 min Scan# 4803
Delta R.T. 0.009 min
Lab File: A90009337.D
Acq: 5 Dec 2012 8:01 am

Tgt Ion:191 Resp: 1010727

Ion	Ratio	Lower	Upper
191	100		
177	7.4	15.3	22.9#

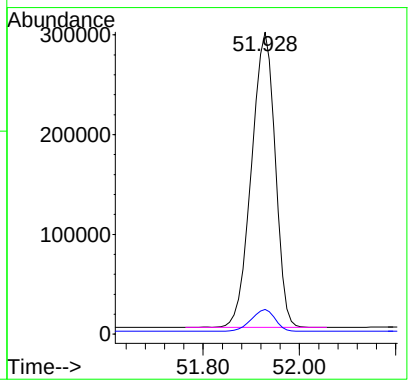




#95
17a(H),21B(H)-hopane - C30H52
Concen: 9844.02 ng/mL
RT: 51.928 min Scan# 4803
Delta R.T. 0.009 min
Lab File: A90009337.D
Acq: 5 Dec 2012 8:01 am

Tgt Ion:191 Resp: 1010727

Ion	Ratio	Lower	Upper
191	100		
177	7.4	15.3	22.9#



Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC4\
Data File : A90009338.D
Acq On : 5 Dec 2012 9:26 am
Operator : PS
Sample : I912041207
Misc : WHAQ89@20000ng/ml
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Dec 06 10:35:40 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 12:34:12 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.557	164	74295	500.000	ng/mL	0.00
74) Chrysene-d12	42.977	240	130115	500.000	ng/mL	0.02
System Monitoring Compounds						
9) Naphthalene-d8	19.622	136	5452802	19434.637	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 1943.46%#			
42) Phenanthrene-d10	32.424	188	5688582	21114.215	ng/mL	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 2111.42%#			
83) Benzo[b]fluoranthene-d12	46.888	264	4776443	20147.593	ng/mL	0.04
Spiked Amount 1000.000	Range 50 - 130		Recovery = 2014.76%#			
88) Benzo[a]pyrene-d12	48.068	264	4999701	21356.877	ng/mL	0.05
Spiked Amount 1000.000	Range 50 - 130		Recovery = 2135.69%#			
129) 5B(H)Cholane - Surr	43.616	217	1093635	19899.360	ng/ml	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 1989.94%#			
Target Compounds						Qvalue
3) trans-Decalin	16.282	138	613733	9557.478	ng/mL	100
4) cis-Decalin	17.496	138	479087	9527.626	ng/mL	100
10) Naphthalene	19.704	128	5383319	18566.474	ng/mL#	100
16) 2-Methylnaphthalene	22.387	142	3669728	19182.523	ng/mL#	100
17) 1-Methylnaphthalene	22.807	142	3518771	18994.195	ng/mL#	100
18) Benzothiophene	19.914	134	4538178	18719.886	ng/mL	100
23) Biphenyl	24.258	154	4755855	19022.622	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.869	156	3481024	19251.717	ng/mL#	100
25) Dibenzofuran	27.333	168	5296633	19781.282	ng/mL	98
26) Acenaphthylene	25.955	152	6007364M4	20026.970	ng/mL	
27) Acenaphthene	26.694	153	3607509	19135.078	ng/mL	99
28) 2,3,5-Trimethylnaphthalen	28.245	170	3266491	19697.178	ng/mL	97
29) Fluorene	28.711	166	4179619	19903.277	ng/mL	98
33) Dibenzothiophene	32.013	184	5977361	20173.945	ng/mL	99
43) Phenanthrene	32.515	178	6058963	19837.182	ng/mL	100
54) Retene	39.489	234	1750863	20581.730	ng/mL	95
55) Anthracene	32.688	178	5704716M4	20221.199	ng/mL	
56) Carbazole	33.364	167	5991083	22555.041	ng/mL	100
57) 1-Methylphenanthrene	35.007	192	4640727	20427.389	ng/mL	99
58) Fluoranthene	37.271	202	6915983M4	20134.243	ng/mL	
59) Benzo(b)fluorene	39.791	216	4228551	20380.455	ng/mL	97
60) Pyrene	38.156	202	6972922	19934.980	ng/mL	99
66) Naphthobenzothiophene	42.000	234	6106694	19945.717	ng/ml	98
67) Naphthobenzothiophene-2,1	42.000	234	6106694	19945.717	ng/mL	98
75) Benz[a]anthracene	42.922	228	5941501M4	19663.824	ng/mL	
76) Chrysene	43.096	228	5638105	19019.449	ng/mL	100
77) Chrysene/Triphenylene	43.096	228	5638105	19019.449	ng/mL	100
84) Benzo[b]fluoranthene	46.980	252	6072365	19629.314	ng/mL	92
85) Benzo[j]+[k]fluoranthene	47.062	252	5736680	18944.947	ng/mL	92
87) Benzo[e]pyrene	47.959	252	5584478	19123.704	ng/mL#	89
89) Benzo[a]pyrene	48.160	252	5444936	19697.212	ng/mL#	88
90) Perylene	48.453	252	5800344	19664.408	ng/mL#	86
91) Indeno[1,2,3-cd]pyrene	52.824	276	6371851M4	21060.660	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.879	278	6010745	20058.229	ng/mL	100
93) Benzo[g,h,i]perylene	54.094	276	5984340	20076.525	ng/mL	100

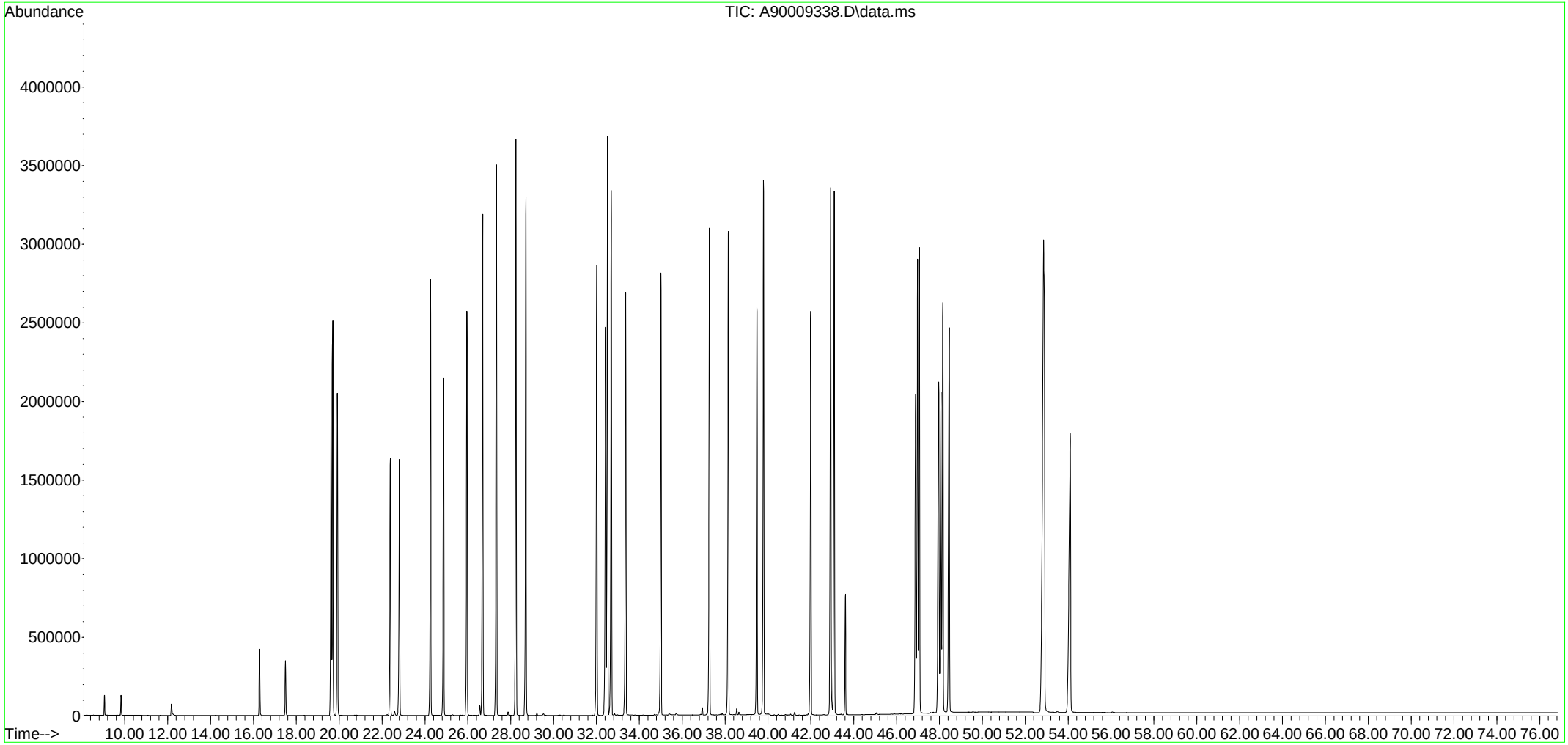
(#) = qualifier out of range (m) = manual integration (+) = signals summed

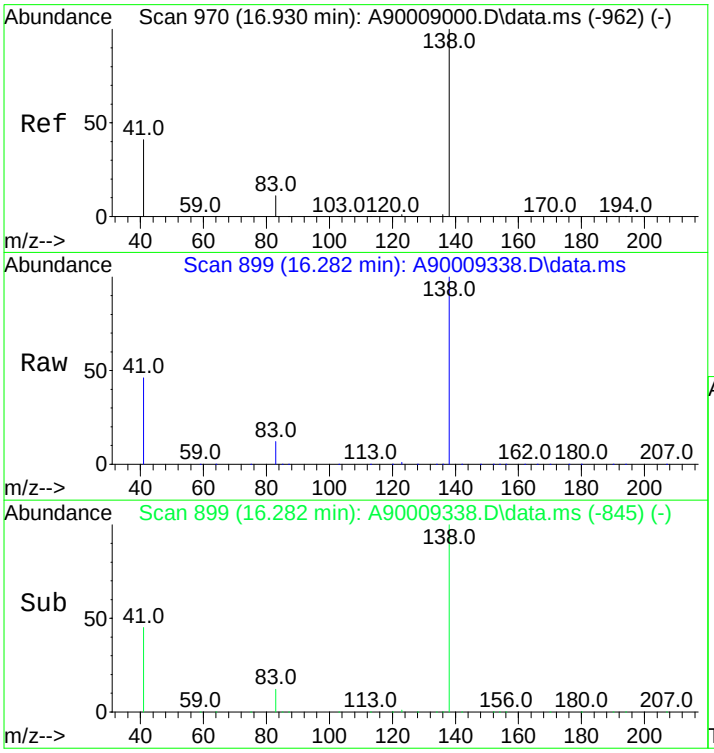
Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC4\
Data File : A90009338.D
Acq On : 5 Dec 2012 9:26 am
Operator : PS
Sample : I912041207
Misc : WHAQ89@20000ng/ml
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Dec 06 10:35:40 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 12:34:12 2012
Response via : Initial Calibration

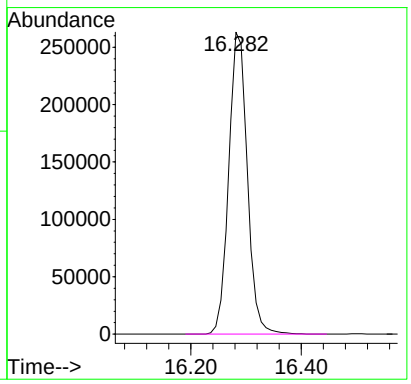
Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

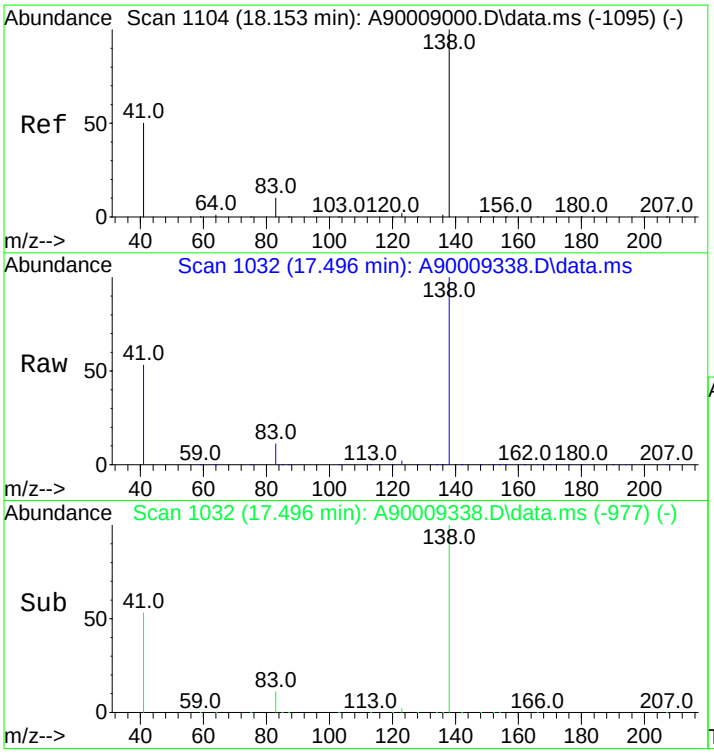




#3
trans-Decalin
Concen: 9557.48 ng/mL
RT: 16.282 min Scan# 899
Delta R.T. -0.009 min
Lab File: A90009338.D
Acq: 5 Dec 2012 9:26 am

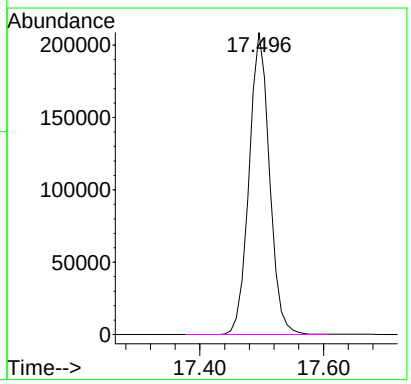
Tgt Ion:138 Resp: 613733

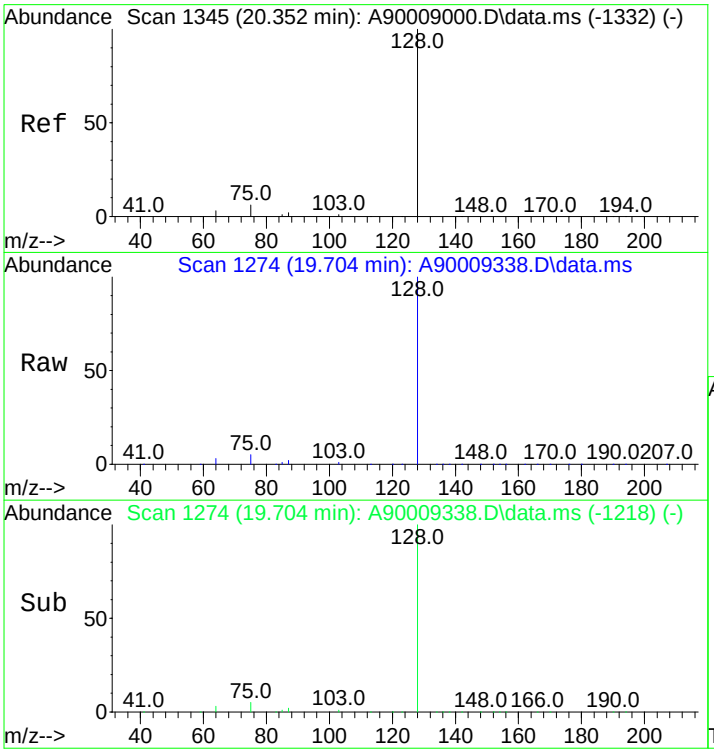




#4
cis-Decalin
Concen: 9527.63 ng/mL
RT: 17.496 min Scan# 1032
Delta R.T. -0.000 min
Lab File: A90009338.D
Acq: 5 Dec 2012 9:26 am

Tgt Ion:138 Resp: 479087

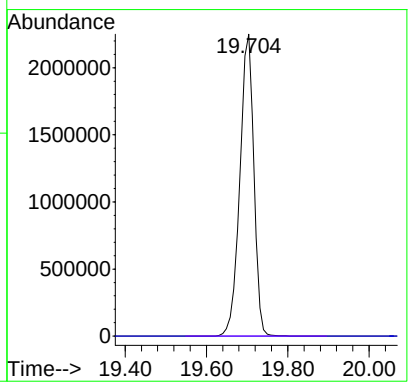


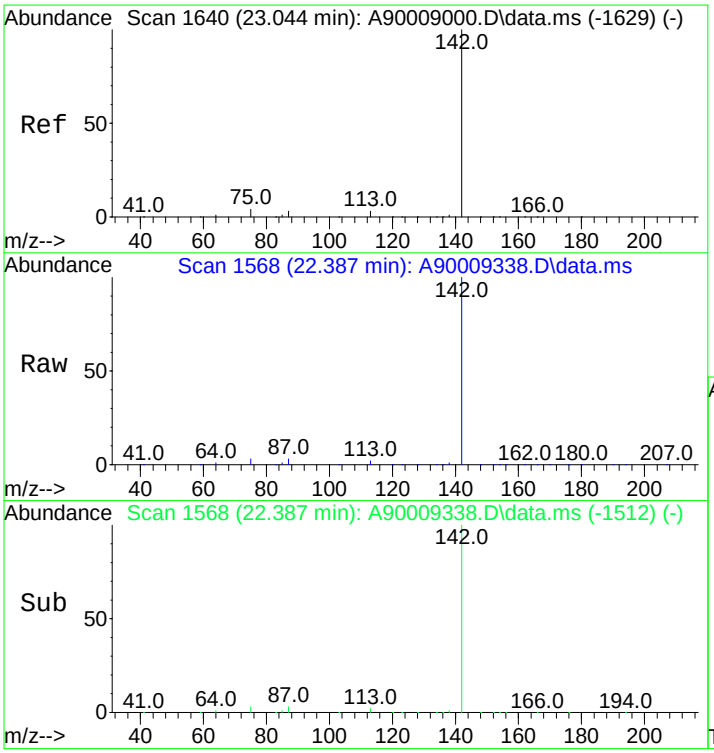


#10
Naphthalene
Concen: 18566.47 ng/mL
RT: 19.704 min Scan# 1274
Delta R.T. 0.009 min
Lab File: A90009338.D
Acq: 5 Dec 2012 9:26 am

Tgt Ion:128 Resp: 5383319

Ion	Ratio	Lower	Upper
128	100		
127	0.0	0.0	0.0

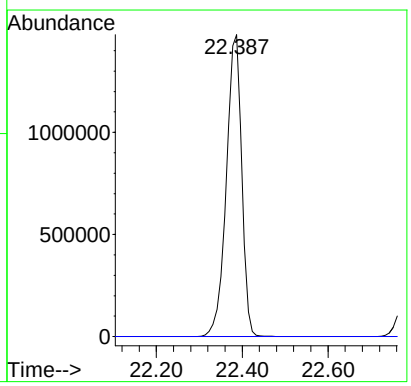


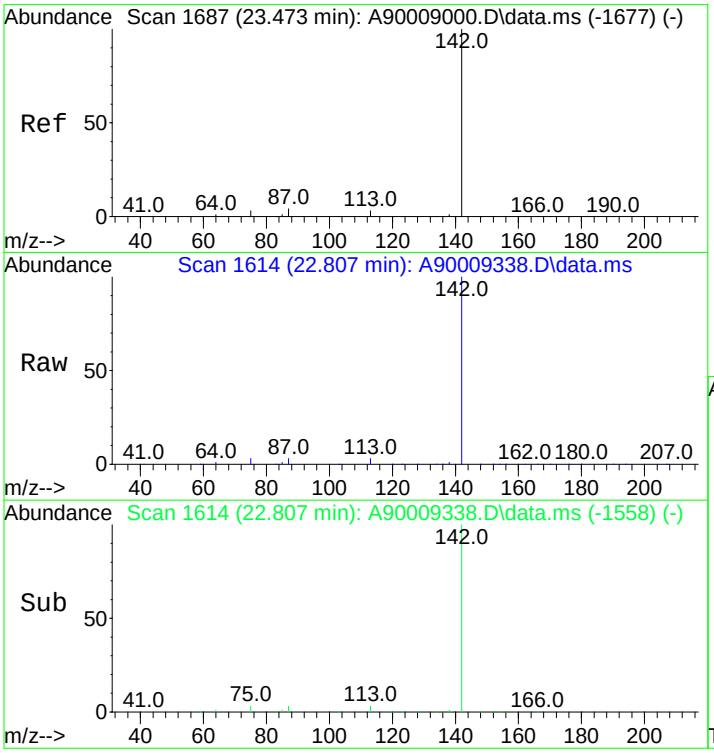


#16
2-Methylnaphthalene
Concen: 19182.52 ng/mL
RT: 22.387 min Scan# 1568
Delta R.T. 0.009 min
Lab File: A90009338.D
Acq: 5 Dec 2012 9:26 am

Tgt Ion:142 Resp: 3669728

Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	0.0

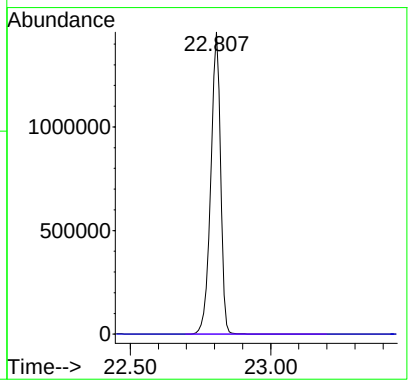


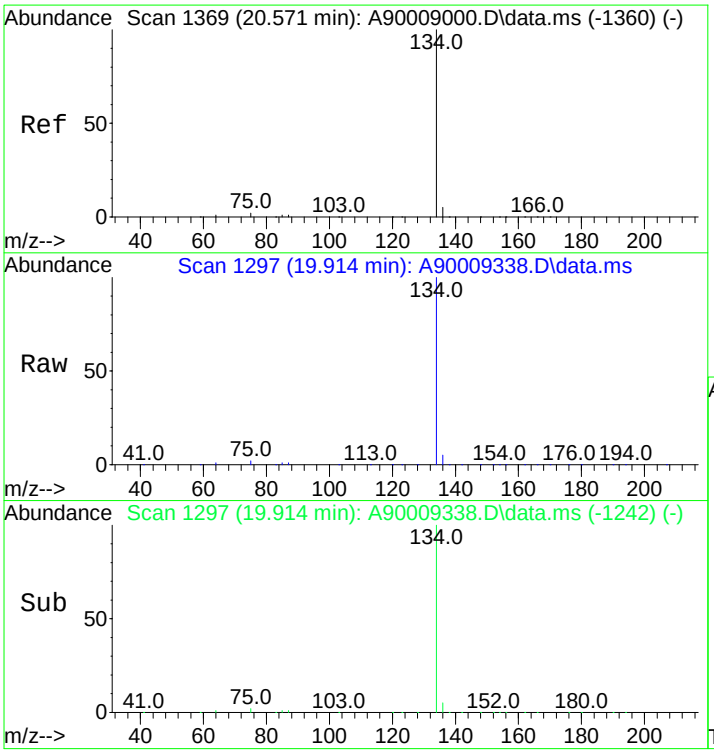


#17
1-Methylnaphthalene
Concen: 18994.19 ng/mL
RT: 22.807 min Scan# 1614
Delta R.T. 0.009 min
Lab File: A90009338.D
Acq: 5 Dec 2012 9:26 am

Tgt Ion:142 Resp: 3518771

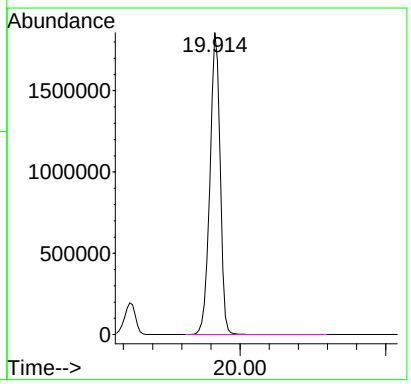
Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	20.0

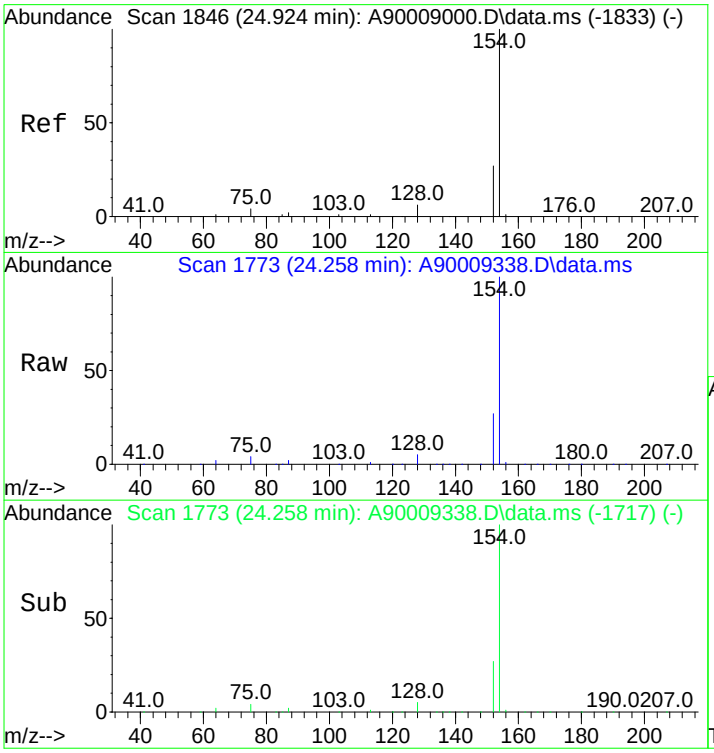




#18
Benzothiophene
Concen: 18719.89 ng/mL
RT: 19.914 min Scan# 1297
Delta R.T. -0.000 min
Lab File: A90009338.D
Acq: 5 Dec 2012 9:26 am

Tgt Ion:134 Resp: 4538178

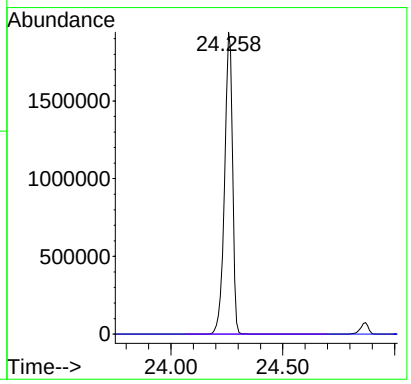


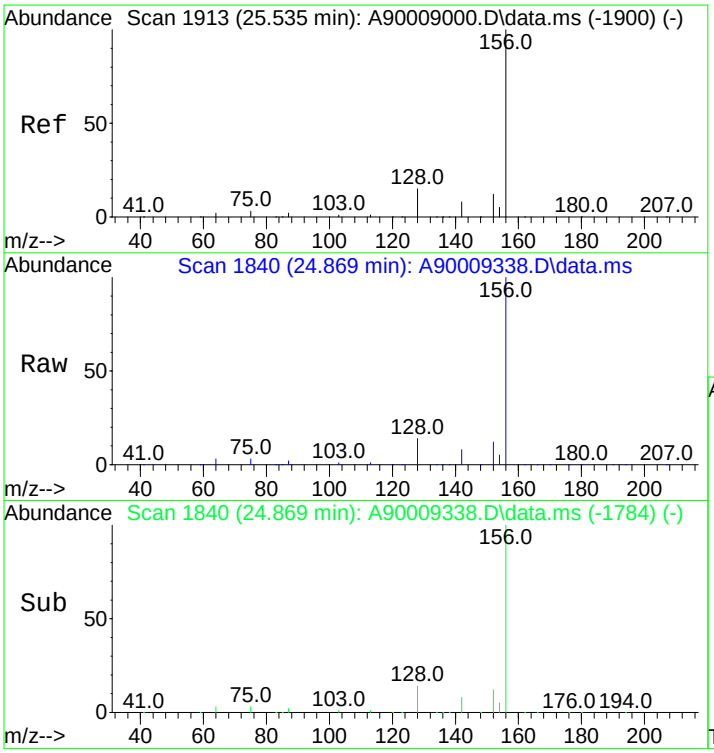


#23
Biphenyl
Concen: 19022.62 ng/mL
RT: 24.258 min Scan# 1773
Delta R.T. 0.009 min
Lab File: A90009338.D
Acq: 5 Dec 2012 9:26 am

Tgt Ion:154 Resp: 4755855

Ion	Ratio	Lower	Upper
154	100		
153	0.0	0.0	0.0

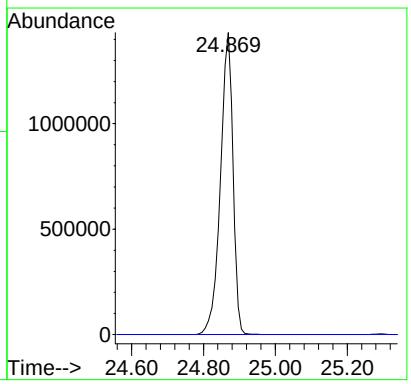


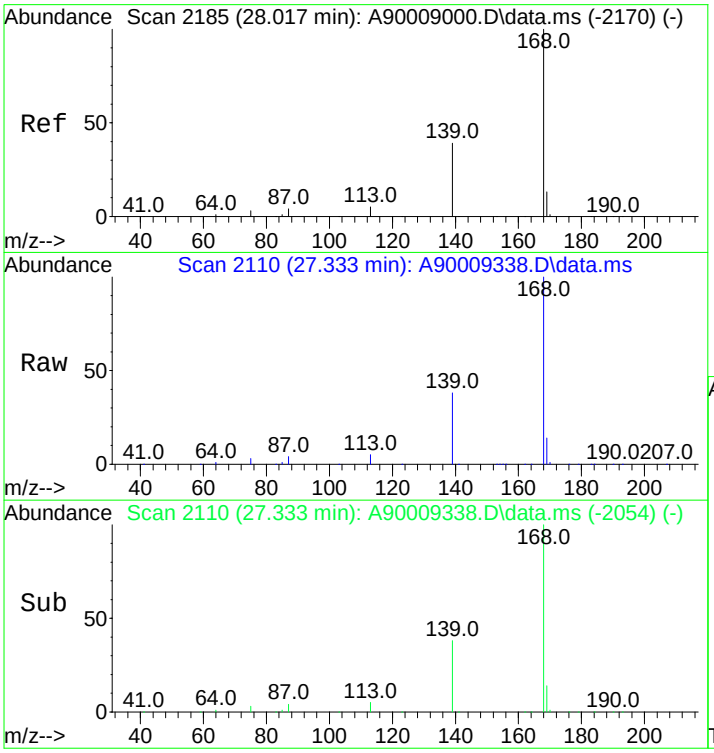


#24
2,6-Dimethylnaphthalene
Concen: 19251.72 ng/mL
RT: 24.869 min Scan# 1840
Delta R.T. 0.009 min
Lab File: A90009338.D
Acq: 5 Dec 2012 9:26 am

Tgt Ion:156 Resp: 3481024

Ion	Ratio	Lower	Upper
156	100		
155	0.0	0.0	0.0

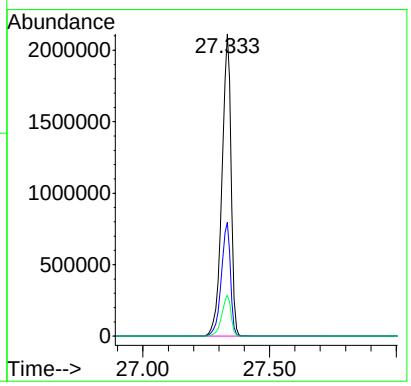


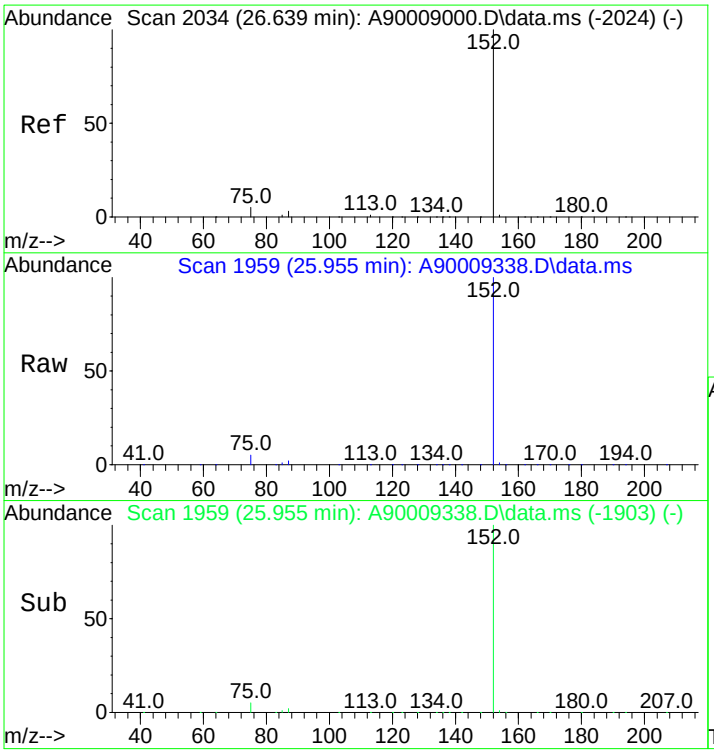


#25
Dibenzofuran
Concen: 19781.28 ng/mL
RT: 27.333 min Scan# 2110
Delta R.T. 0.009 min
Lab File: A90009338.D
Acq: 5 Dec 2012 9:26 am

Tgt Ion:168 Resp: 5296633

Ion	Ratio	Lower	Upper
168	100		
139	37.5	28.9	43.3
169	13.5	10.6	15.8

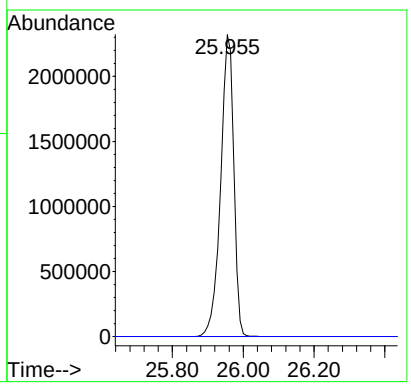


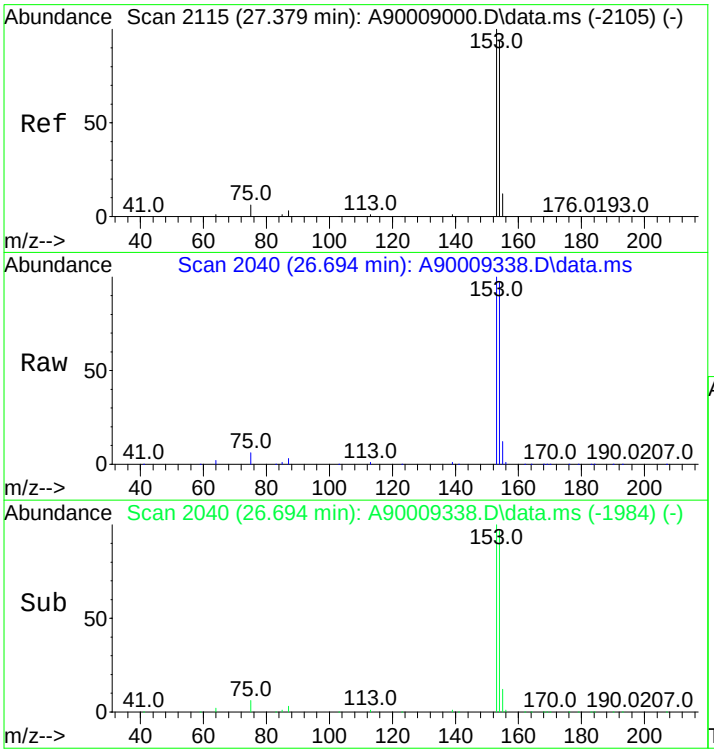


#26
Acenaphthylene
Concen: 20026.97 ng/mL m
RT: 25.955 min Scan# 1959
Delta R.T. 0.009 min
Lab File: A90009338.D
Acq: 5 Dec 2012 9:26 am

Tgt Ion:152 Resp: 6007364

Ion	Ratio	Lower	Upper
152	100		
153	0.0	0.0	0.0

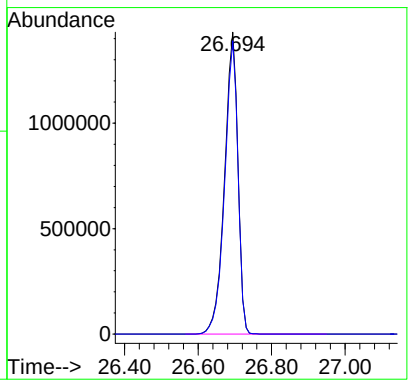


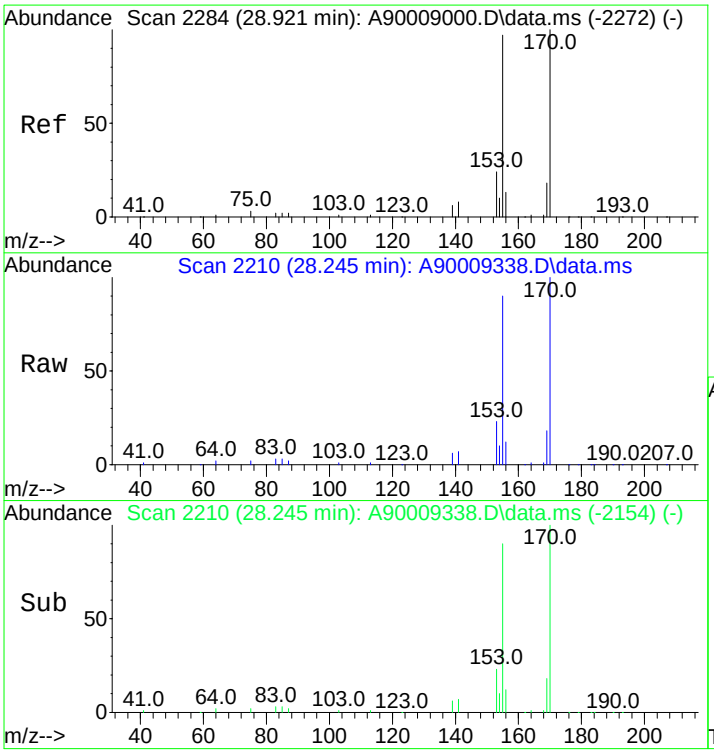


#27
Acenaphthene
Concen: 19135.08 ng/mL
RT: 26.694 min Scan# 2040
Delta R.T. 0.009 min
Lab File: A90009338.D
Acq: 5 Dec 2012 9:26 am

Tgt Ion:153 Resp: 3607509

Ion	Ratio	Lower	Upper
153	100		
154	96.5	76.2	114.4

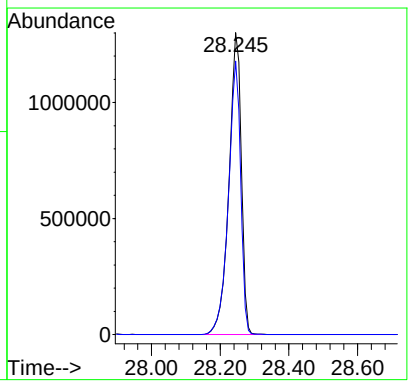


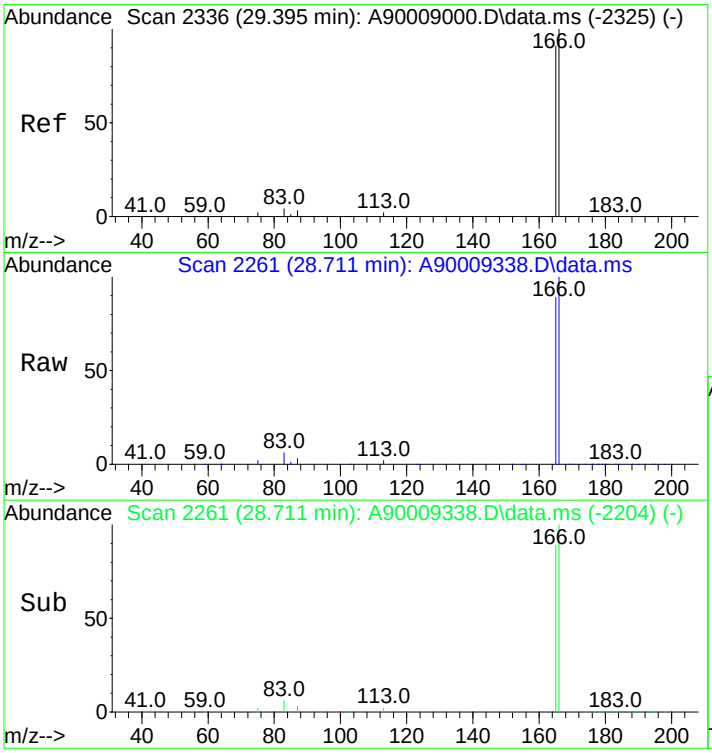


#28
2,3,5-Trimethylnaphthalene
Concen: 19697.18 ng/mL
RT: 28.245 min Scan# 2210
Delta R.T. 0.009 min
Lab File: A90009338.D
Acq: 5 Dec 2012 9:26 am

Tgt Ion:170 Resp: 3266491

Ion	Ratio	Lower	Upper
170	100		
155	89.4	69.0	103.6

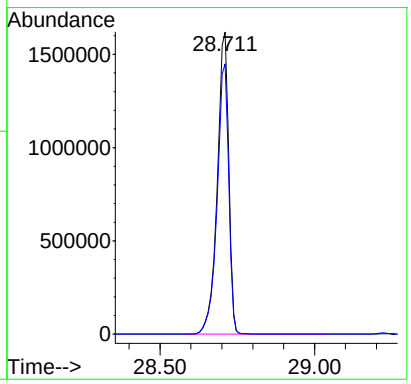


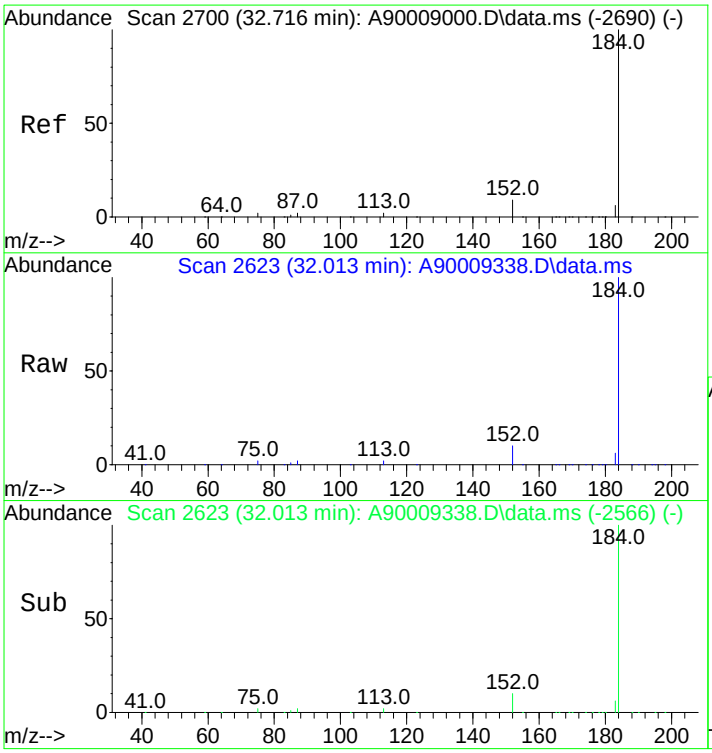


#29
Fluorene
Concen: 19903.28 ng/mL
RT: 28.711 min Scan# 2261
Delta R.T. 0.018 min
Lab File: A90009338.D
Acq: 5 Dec 2012 9:26 am

Tgt Ion:166 Resp: 4179619

Ion	Ratio	Lower	Upper
166	100		
165	90.1	73.8	110.6

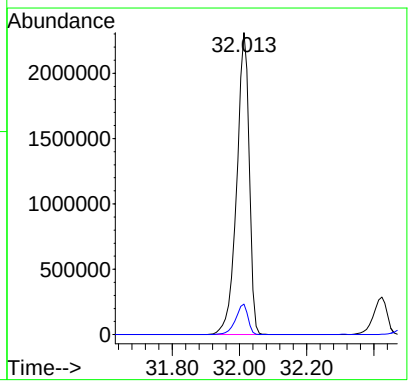


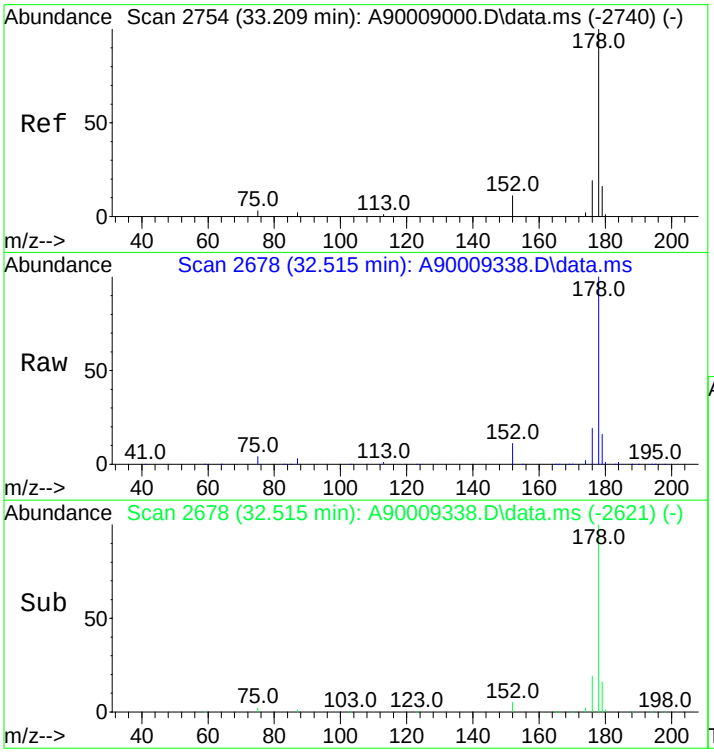


#33
Dibenzothiophene
Concen: 20173.95 ng/mL
RT: 32.013 min Scan# 2623
Delta R.T. 0.018 min
Lab File: A90009338.D
Acq: 5 Dec 2012 9:26 am

Tgt Ion:184 Resp: 5977361

Ion	Ratio	Lower	Upper
184	100		
152	10.0	8.2	12.4

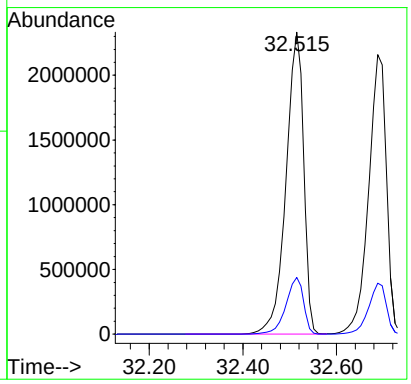


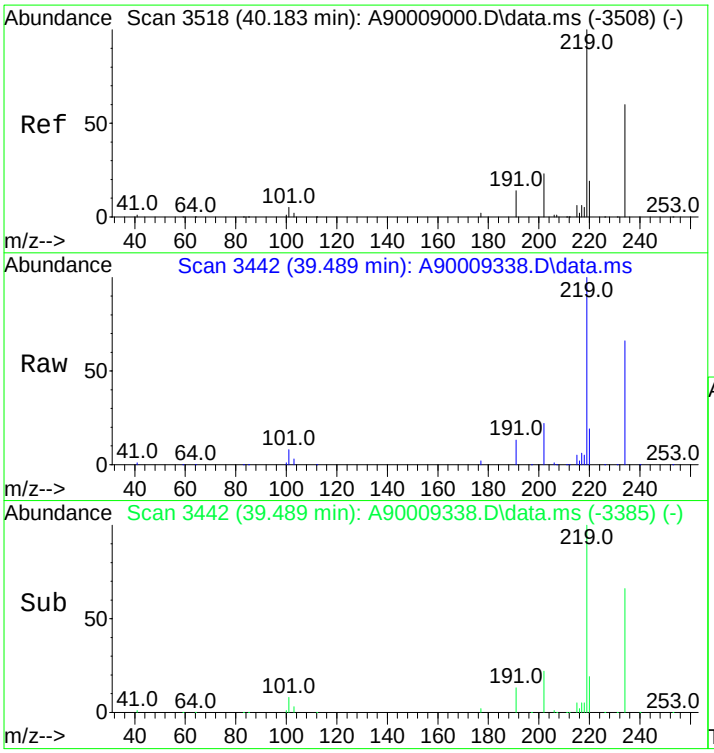


#43
Phenanthrene
Concen: 19837.18 ng/mL
RT: 32.515 min Scan# 2678
Delta R.T. 0.018 min
Lab File: A90009338.D
Acq: 5 Dec 2012 9:26 am

Tgt Ion:178 Resp: 6058963

Ion	Ratio	Lower	Upper
178	100		
176	18.8	14.9	22.3

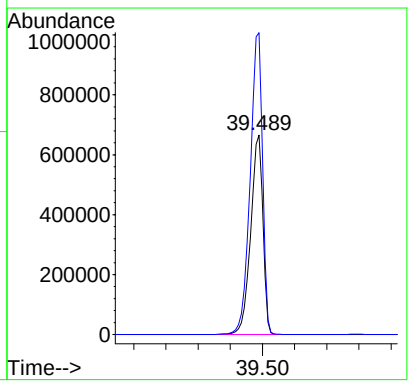


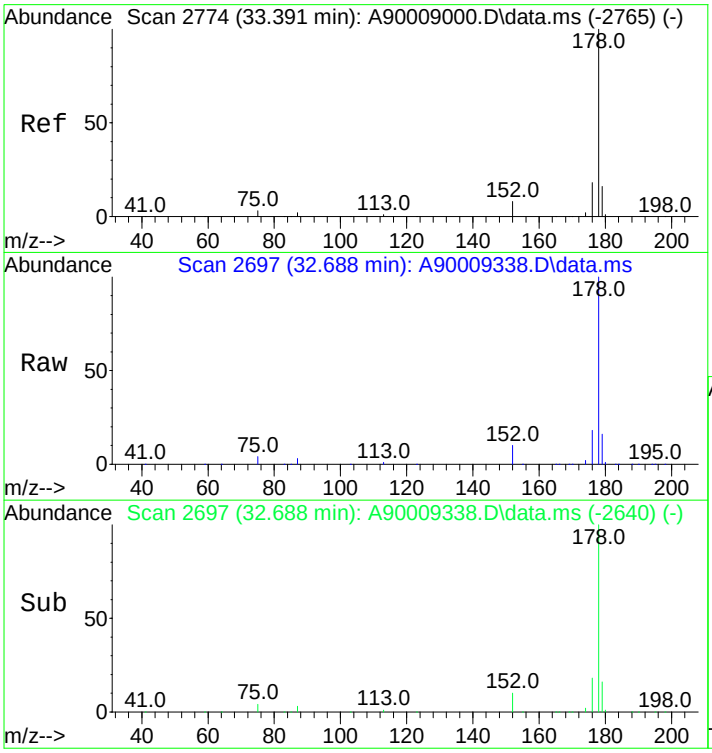


#54
Retene
Concen: 20581.73 ng/mL
RT: 39.489 min Scan# 3442
Delta R.T. 0.018 min
Lab File: A90009338.D
Acq: 5 Dec 2012 9:26 am

Tgt Ion:234 Resp: 1750863

Ion	Ratio	Lower	Upper
234	100		
219	153.8	117.9	176.9

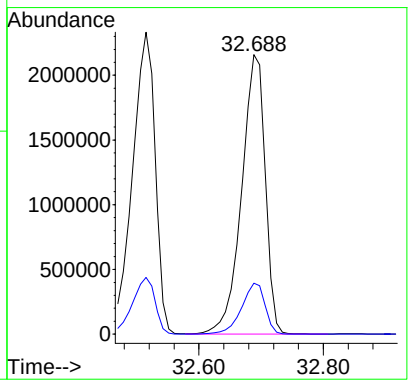


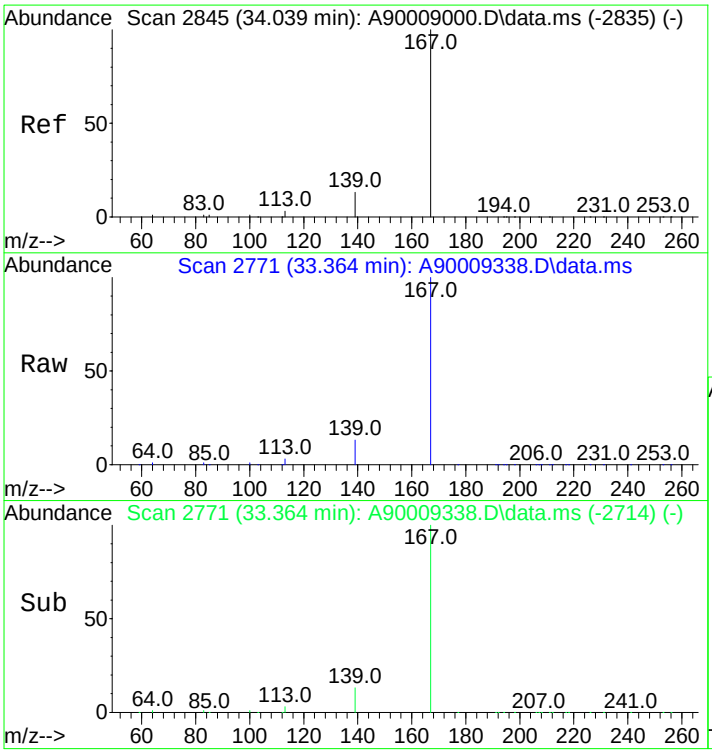


#55
Anthracene
Concen: 20221.20 ng/mL m
RT: 32.688 min Scan# 2697
Delta R.T. 0.018 min
Lab File: A90009338.D
Acq: 5 Dec 2012 9:26 am

Tgt Ion:178 Resp: 5704716

Ion	Ratio	Lower	Upper
178	100		
176	18.1	14.6	21.8

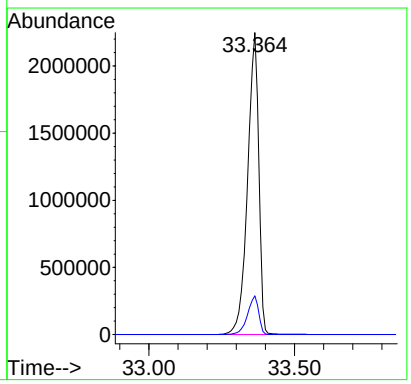


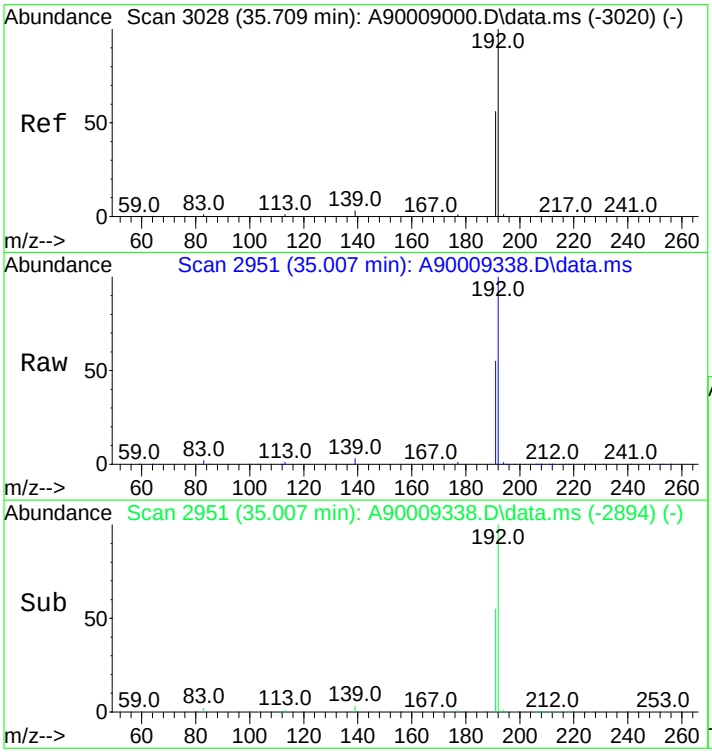


#56
Carbazole
Concen: 22555.04 ng/mL
RT: 33.364 min Scan# 2771
Delta R.T. 0.018 min
Lab File: A90009338.D
Acq: 5 Dec 2012 9:26 am

Tgt Ion:167 Resp: 5991083

Ion	Ratio	Lower	Upper
167	100		
139	12.8	10.3	15.5

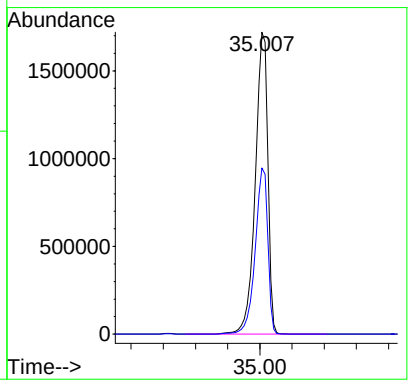


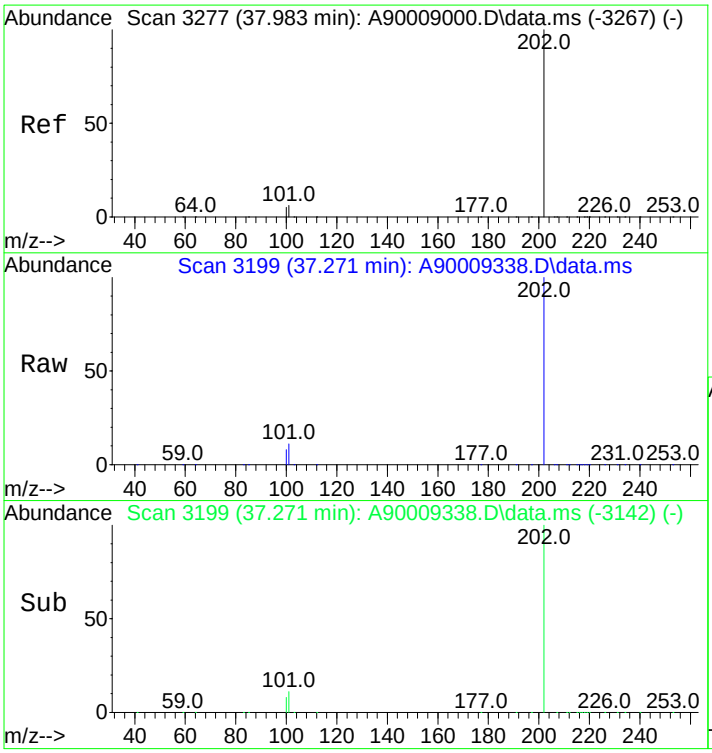


#57
1-Methylphenanthrene
Concen: 20427.39 ng/mL
RT: 35.007 min Scan# 2951
Delta R.T. 0.018 min
Lab File: A90009338.D
Acq: 5 Dec 2012 9:26 am

Tgt Ion:192 Resp: 4640727

Ion	Ratio	Lower	Upper
192	100		
191	55.2	44.8	67.2

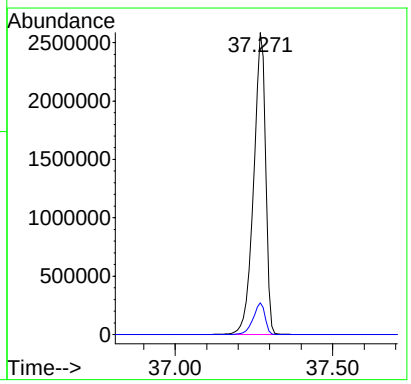


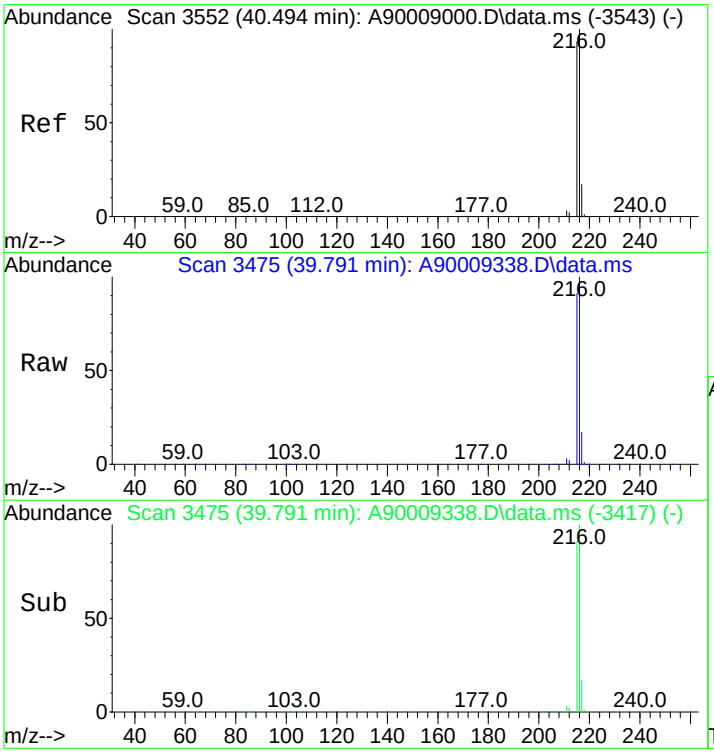


#58
Fluoranthene
Concen: 20134.24 ng/mL m
RT: 37.271 min Scan# 3199
Delta R.T. 0.018 min
Lab File: A90009338.D
Acq: 5 Dec 2012 9:26 am

Tgt Ion:202 Resp: 6915983

Ion	Ratio	Lower	Upper
202	100		
101	10.5	8.5	12.7

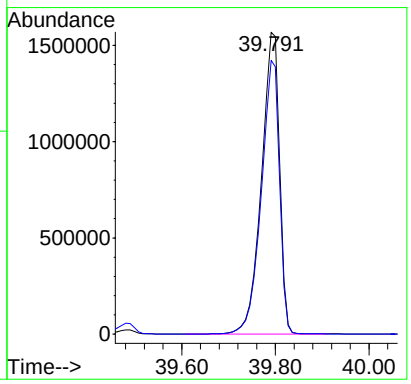


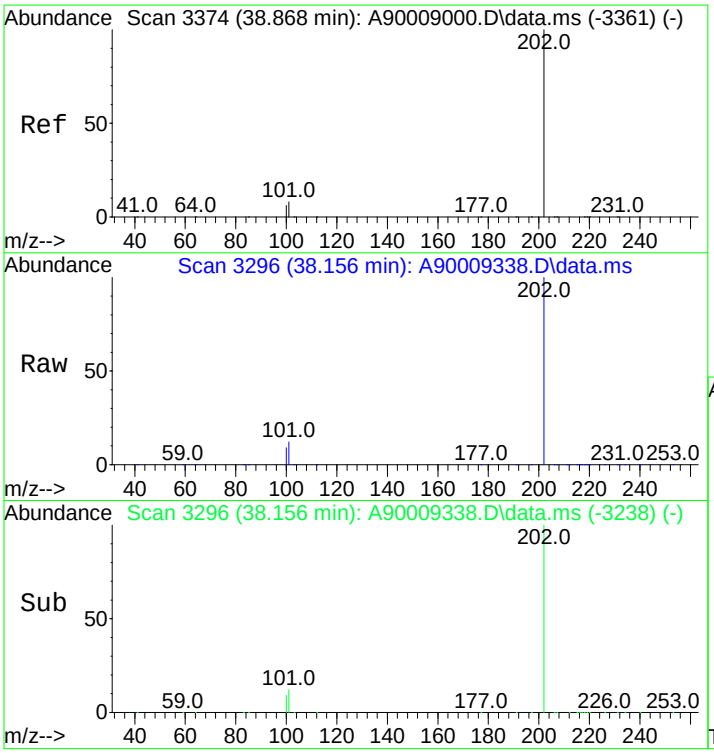


#59
Benzo(b)fluorene
Concen: 20380.45 ng/mL
RT: 39.791 min Scan# 3475
Delta R.T. 0.027 min
Lab File: A90009338.D
Acq: 5 Dec 2012 9:26 am

Tgt Ion:216 Resp: 4228551

Ion	Ratio	Lower	Upper
216	100		
215	90.8	74.8	112.2

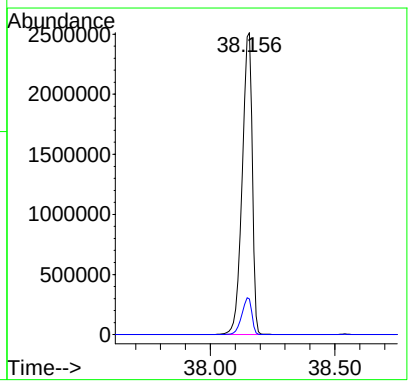


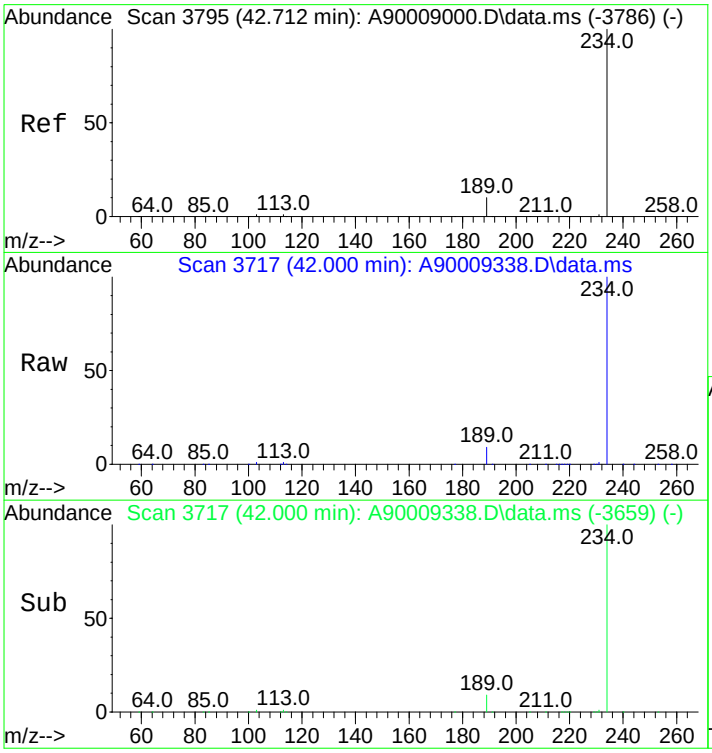


#60
Pyrene
Concen: 19934.98 ng/mL
RT: 38.156 min Scan# 3296
Delta R.T. 0.027 min
Lab File: A90009338.D
Acq: 5 Dec 2012 9:26 am

Tgt Ion:202 Resp: 6972922

Ion	Ratio	Lower	Upper
202	100		
101	12.2	10.1	15.1

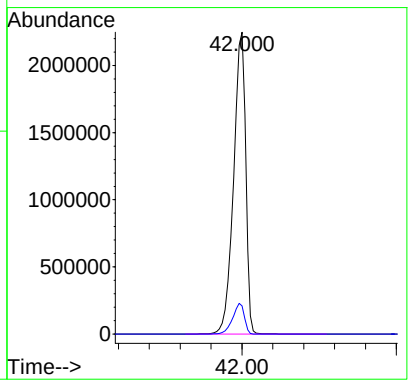


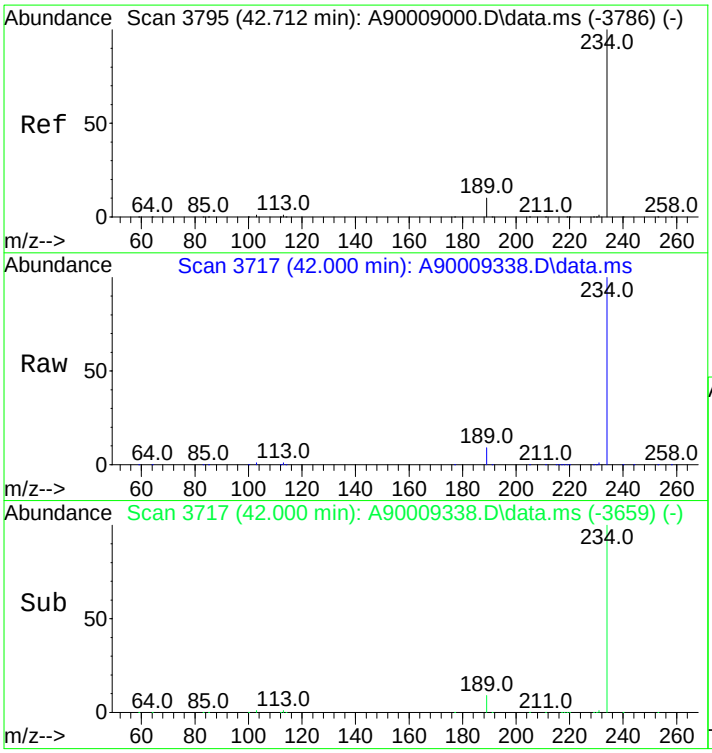


#66
Naphthobenzothiophene
Concen: 19945.72 ng/ml
RT: 42.000 min Scan# 3717
Delta R.T. 0.027 min
Lab File: A90009338.D
Acq: 5 Dec 2012 9:26 am

Tgt Ion:234 Resp: 6106694

Ion	Ratio	Lower	Upper
234	100		
189	9.9	7.4	11.2

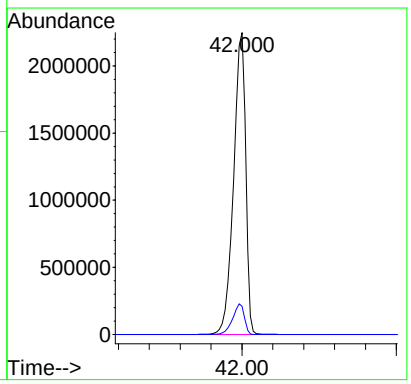


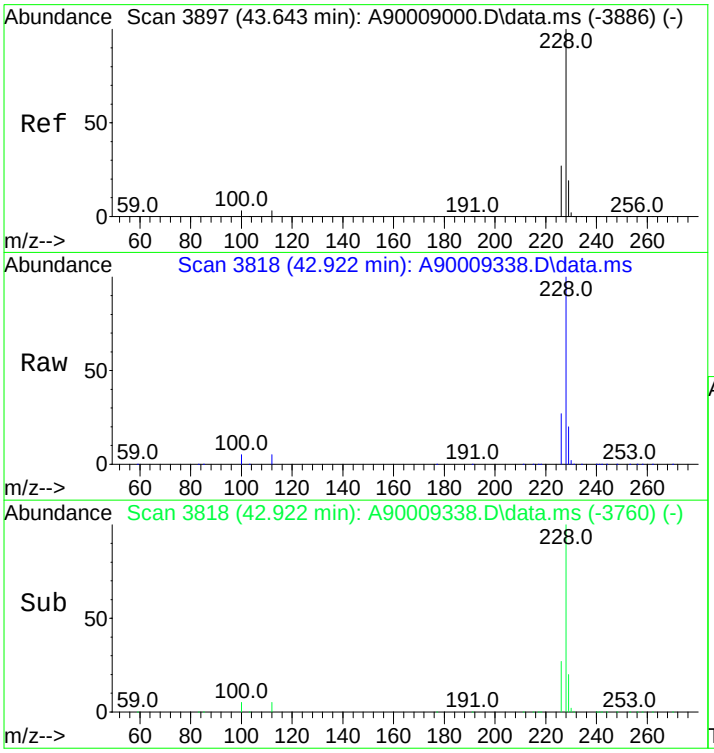


#67
Naphthobenzothiophene-2,1-D
Concen: 19945.72 ng/mL
RT: 42.000 min Scan# 3717
Delta R.T. 0.027 min
Lab File: A90009338.D
Acq: 5 Dec 2012 9:26 am

Tgt Ion:234 Resp: 6106694

Ion	Ratio	Lower	Upper
234	100		
189	9.9	7.4	11.2

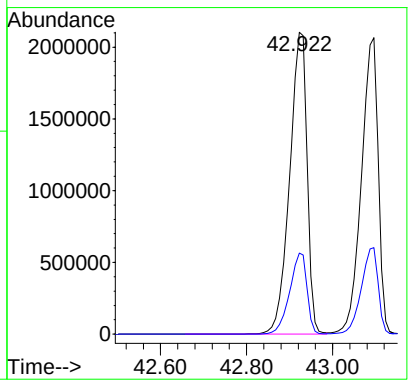


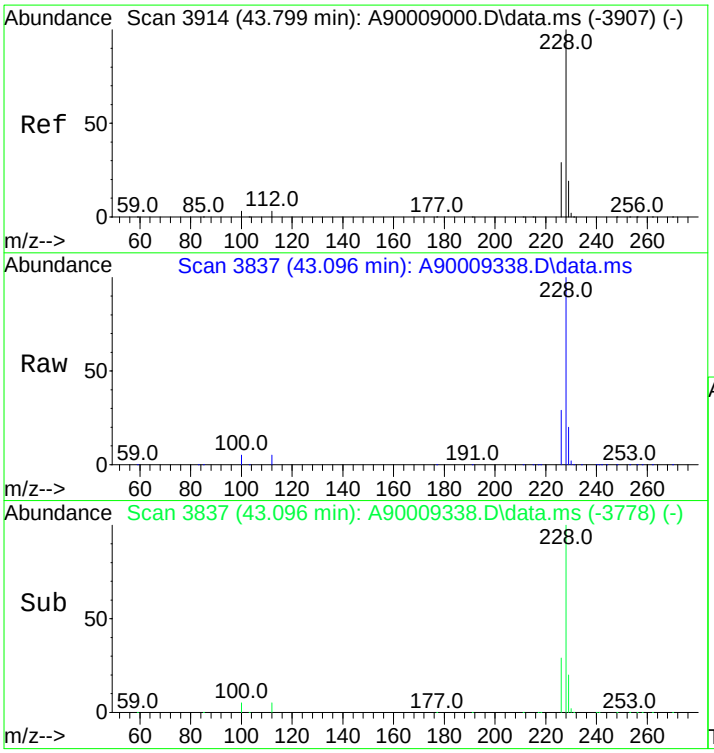


#75
Benz[a]anthracene
Concen: 19663.82 ng/mL m
RT: 42.922 min Scan# 3818
Delta R.T. 0.027 min
Lab File: A90009338.D
Acq: 5 Dec 2012 9:26 am

Tgt Ion:228 Resp: 5941501

Ion	Ratio	Lower	Upper
228	100		
226	26.6	21.3	31.9

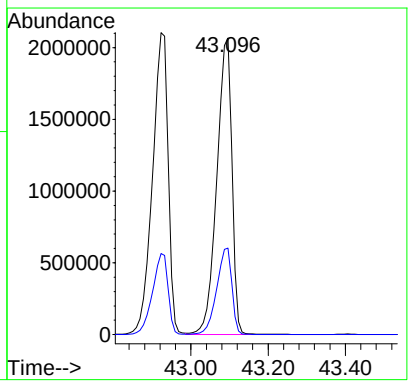


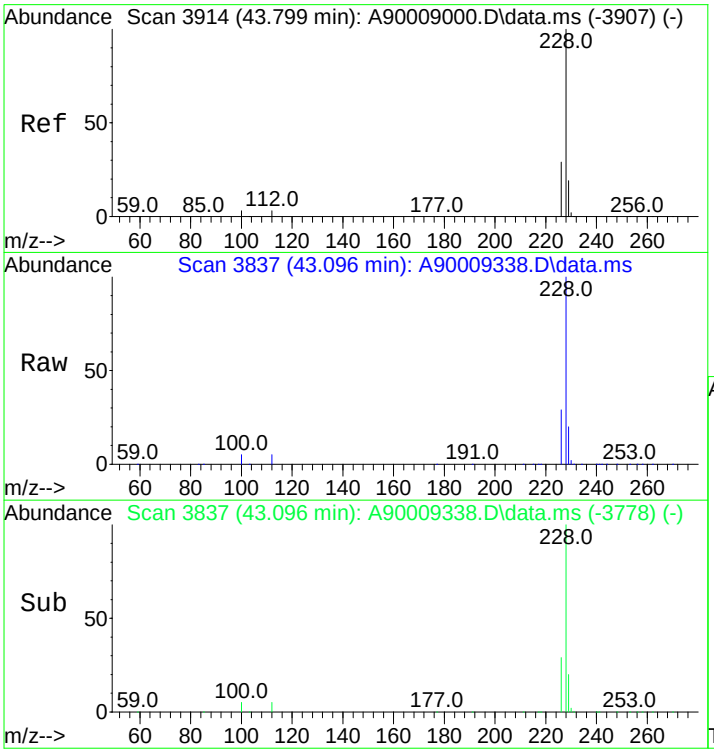


#76
Chrysene
Concen: 19019.45 ng/mL
RT: 43.096 min Scan# 3837
Delta R.T. 0.036 min
Lab File: A90009338.D
Acq: 5 Dec 2012 9:26 am

Tgt Ion:228 Resp: 5638105

Ion	Ratio	Lower	Upper
228	100		
226	29.3	23.4	35.0

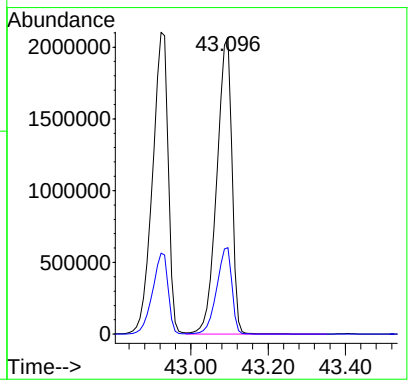


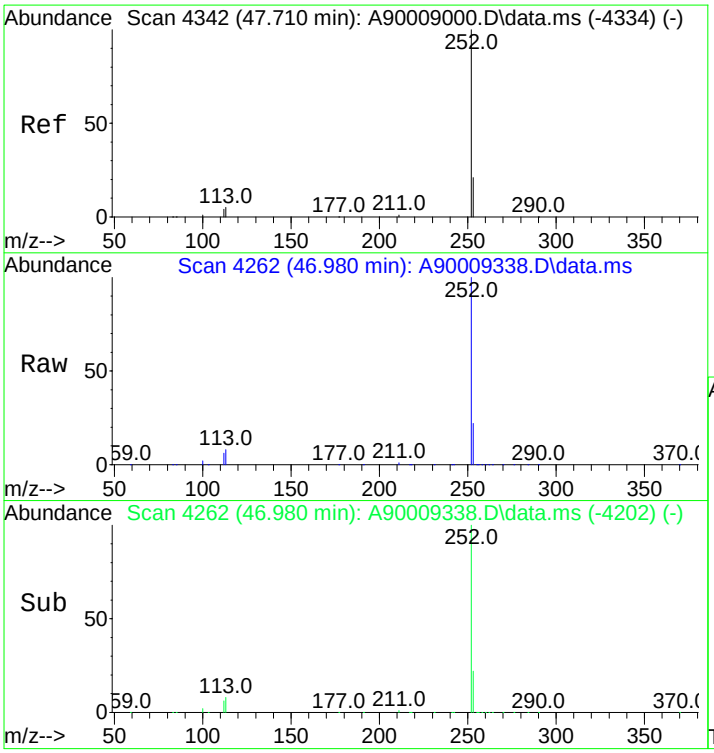


#77
Chrysene/Triphenylene
Concen: 19019.45 ng/mL
RT: 43.096 min Scan# 3837
Delta R.T. 0.036 min
Lab File: A90009338.D
Acq: 5 Dec 2012 9:26 am

Tgt Ion:228 Resp: 5638105

Ion	Ratio	Lower	Upper
228	100		
226	29.3	23.4	35.0

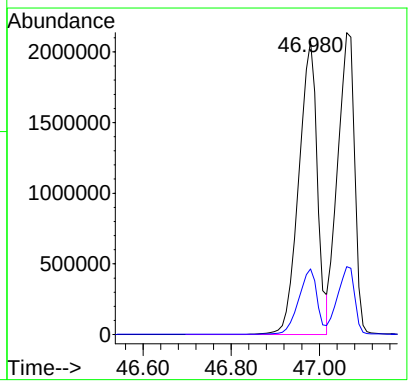


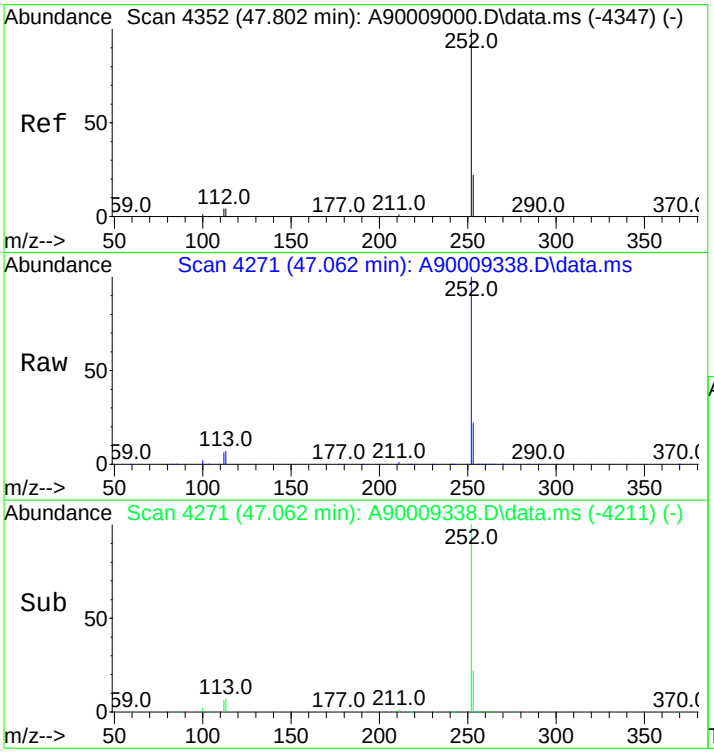


#84
Benzo[b]fluoranthene
Concen: 19629.31 ng/mL
RT: 46.980 min Scan# 4262
Delta R.T. 0.046 min
Lab File: A90009338.D
Acq: 5 Dec 2012 9:26 am

Tgt Ion:252 Resp: 6072365

Ion	Ratio	Lower	Upper
252	100		
253	22.2	20.9	31.3

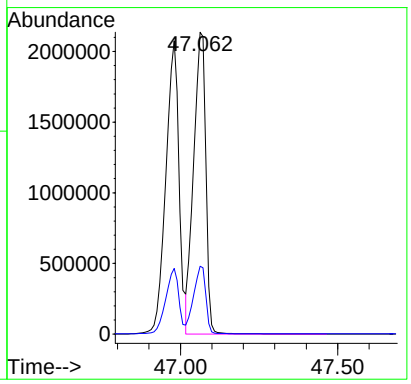


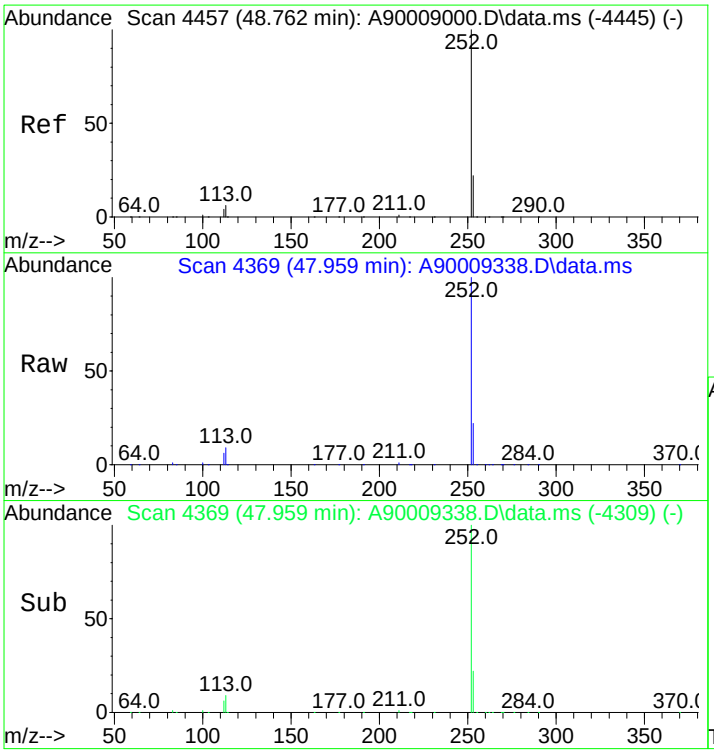


#85
Benzo[j]+[k]fluoranthene
Concen: 18944.95 ng/mL
RT: 47.062 min Scan# 4271
Delta R.T. 0.046 min
Lab File: A90009338.D
Acq: 5 Dec 2012 9:26 am

Tgt Ion:252 Resp: 5736680

Ion	Ratio	Lower	Upper
252	100		
253	22.2	21.0	31.6

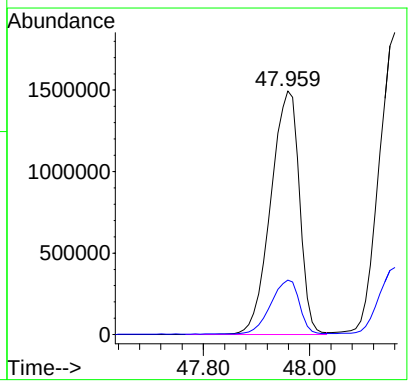


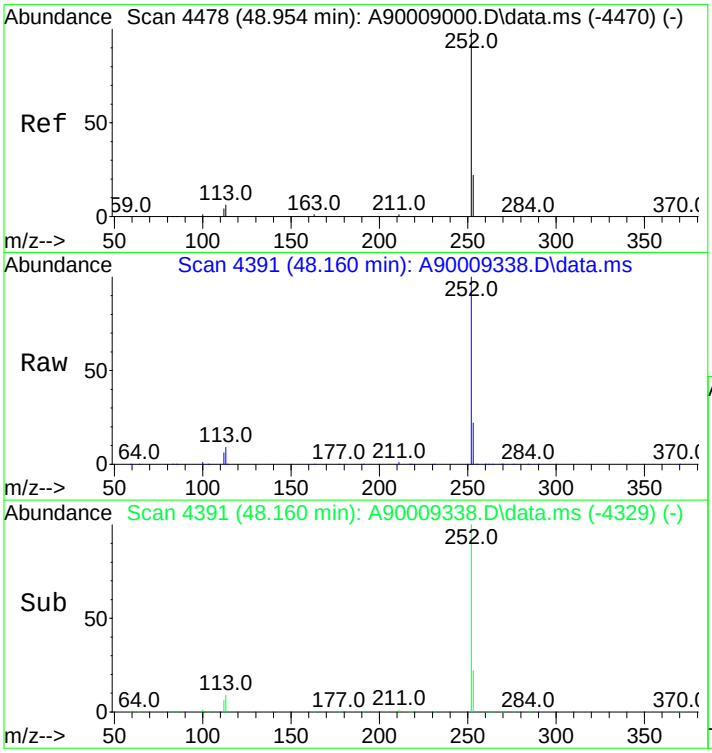


#87
Benzo[e]pyrene
Concen: 19123.70 ng/mL
RT: 47.959 min Scan# 4369
Delta R.T. 0.046 min
Lab File: A90009338.D
Acq: 5 Dec 2012 9:26 am

Tgt Ion:252 Resp: 5584478

Ion	Ratio	Lower	Upper
252	100		
253	22.1	22.1	33.1#

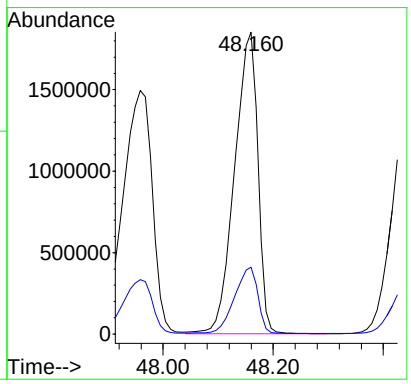


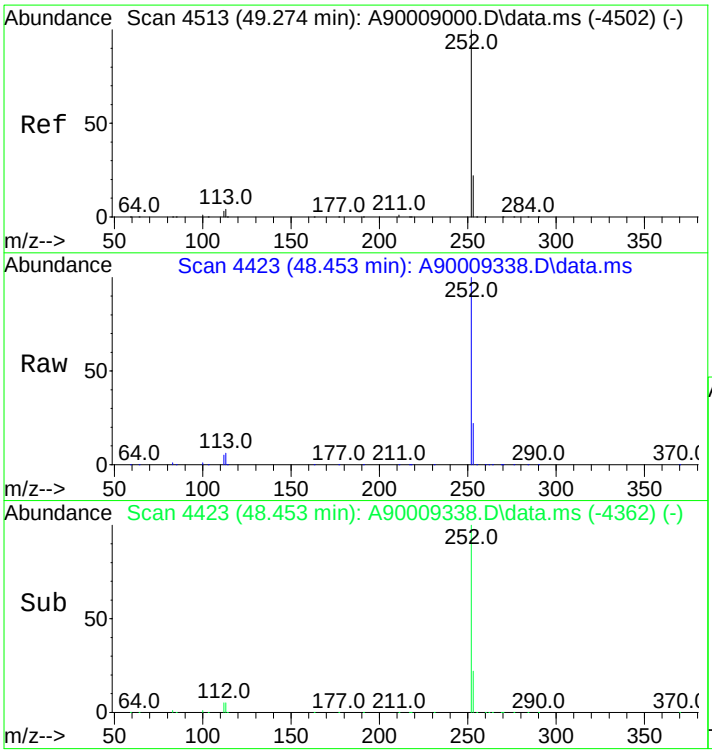


#89
Benzo[a]pyrene
Concen: 19697.21 ng/mL
RT: 48.160 min Scan# 4391
Delta R.T. 0.064 min
Lab File: A90009338.D
Acq: 5 Dec 2012 9:26 am

Tgt Ion:252 Resp: 5444936

Ion	Ratio	Lower	Upper
252	100		
253	22.1	22.9	34.3#

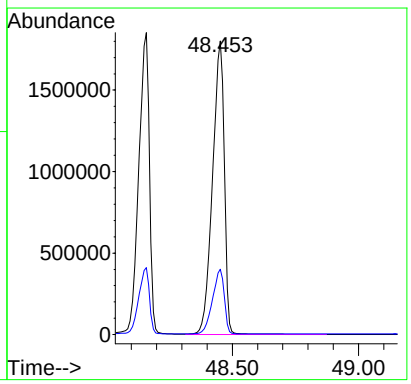


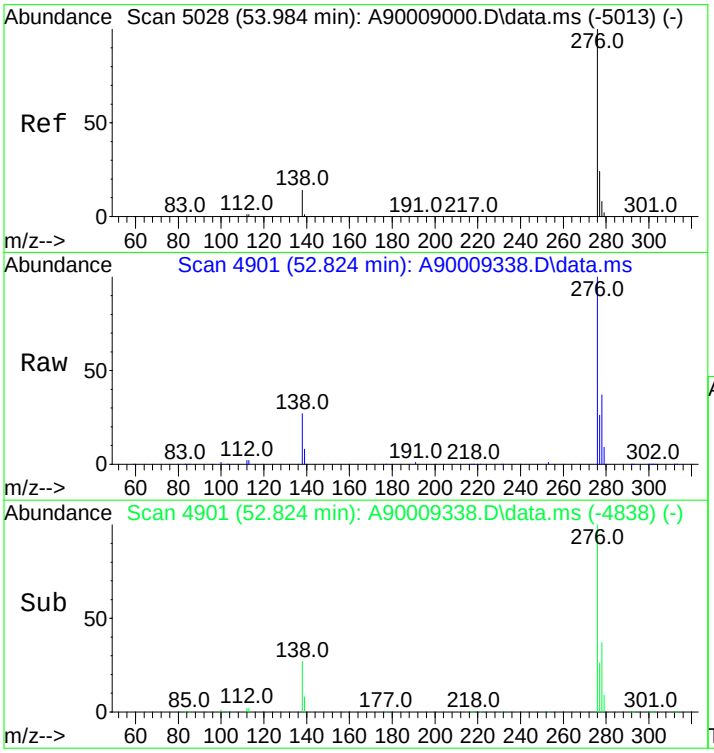


#90
Perylene
Concen: 19664.41 ng/mL
RT: 48.453 min Scan# 4423
Delta R.T. 0.055 min
Lab File: A90009338.D
Acq: 5 Dec 2012 9:26 am

Tgt Ion:252 Resp: 5800344

Ion	Ratio	Lower	Upper
252	100		
253	22.0	23.4	35.2#

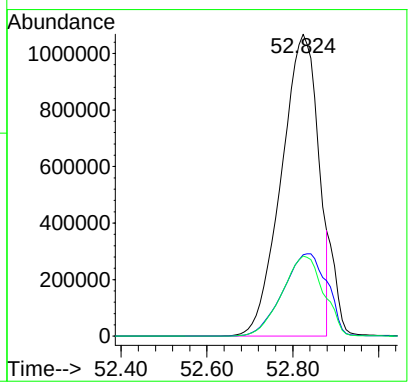


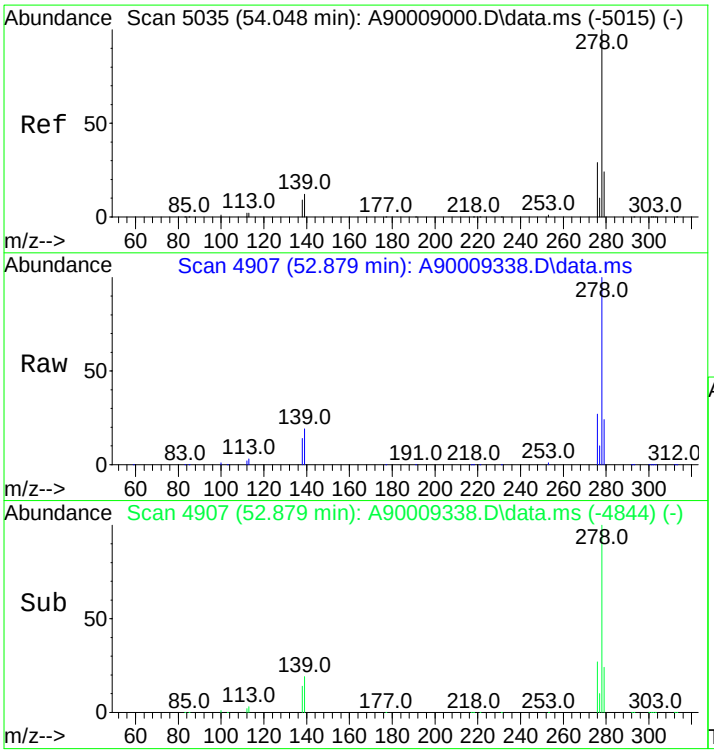


#91
Indeno[1,2,3-cd]pyrene
Concen: 21060.66 ng/mL m
RT: 52.824 min Scan# 4901
Delta R.T. 0.073 min
Lab File: A90009338.D
Acq: 5 Dec 2012 9:26 am

Tgt Ion:276 Resp: 6371851

Ion	Ratio	Lower	Upper
276	100		
138	32.9	20.2	30.4#
277	30.0	20.6	30.8

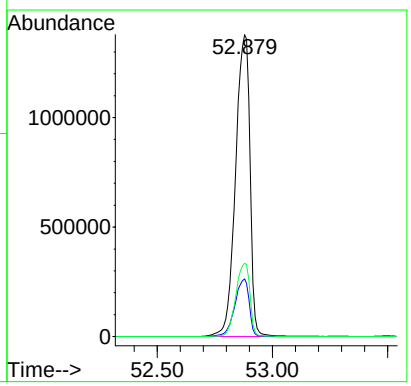


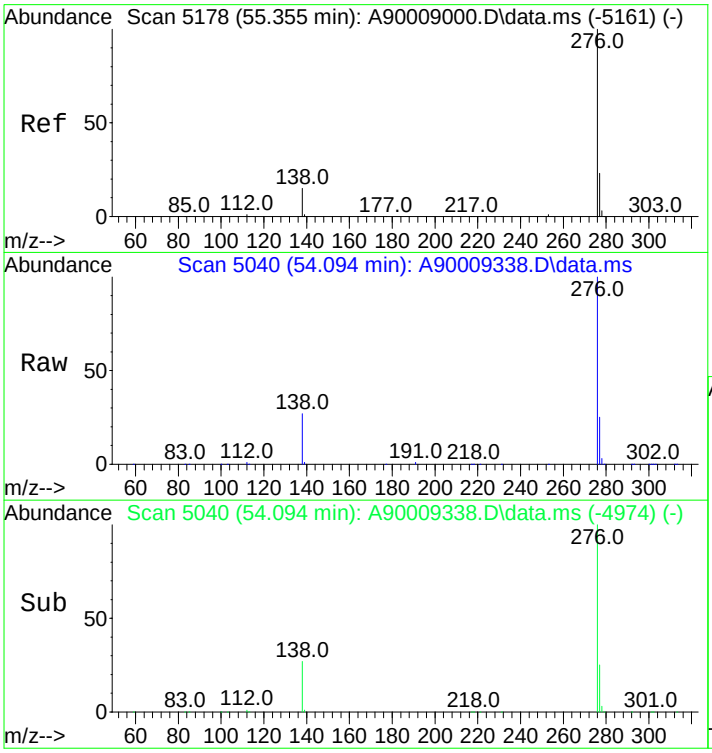


#92
Dibenz[ah]+[ac]anthracene
Concen: 20058.23 ng/mL
RT: 52.879 min Scan# 4907
Delta R.T. 0.073 min
Lab File: A90009338.D
Acq: 5 Dec 2012 9:26 am

Tgt Ion:278 Resp: 6010745

Ion	Ratio	Lower	Upper
278	100		
139	19.2	15.4	23.2
279	23.9	19.3	28.9

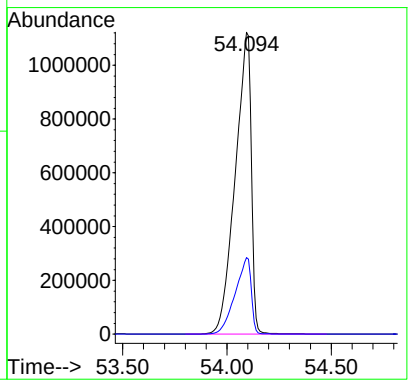




#93
Benzo[g,h,i]perylene
Concen: 20076.53 ng/mL
RT: 54.094 min Scan# 5040
Delta R.T. 0.100 min
Lab File: A90009338.D
Acq: 5 Dec 2012 9:26 am

Tgt Ion:276 Resp: 5984340

Ion	Ratio	Lower	Upper
276	100		
277	25.4	20.3	30.5



Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC4\
Data File : A90009340.D
Acq On : 5 Dec 2012 12:16 pm
Operator : PS
Sample : Q912041201
Misc : WHAQ50@500ng/ml
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Dec 06 10:35:45 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 12:42:35 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.557	164	77522	500.000	ng/mL	0.00
74) Chrysene-d12	42.959	240	132184	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.622	136	139493	468.157	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery =	46.82%#		
42) Phenanthrene-d10	32.406	188	136997	489.950	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery =	48.99%#		
83) Benzo[b]fluoranthene-d12	46.852	264	111879	460.446	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery =	46.04%#		
88) Benzo[a]pyrene-d12	48.014	264	105398	432.719	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery =	43.27%#		
129) 5B(H)Cholane - Surr	0.000	217	0	0.000	ng/ml	
Spiked Amount 1000.000	Range 50 - 130		Recovery =	0.00%#		
Target Compounds						Qvalue
3) trans-Decalin	16.282	138	15902	233.326	ng/mL	100
4) cis-Decalin	17.496	138	12343	231.339	ng/mL	100
10) Naphthalene	19.695	128	149292	488.250	ng/mL#	100
16) 2-Methylnaphthalene	22.378	142	93956	469.865	ng/mL#	100
17) 1-Methylnaphthalene	22.798	142	95652	492.902	ng/mL#	100
18) Benzothiophene	19.914	134	122730	479.630	ng/mL	100
23) Biphenyl	24.258	154	129687	495.597	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.860	156	90558	481.766	ng/mL#	100
25) Dibenzofuran	27.324	168	141331	506.374	ng/mL	100
26) Acenaphthylene	25.946	152	147690	469.535	ng/mL#	100
27) Acenaphthene	26.685	153	96552	488.206	ng/mL	99
28) 2,3,5-Trimethylnaphthalen	28.236	170	82933	479.889	ng/mL	97
29) Fluorene	28.692	166	106698	491.282	ng/mL	100
33) Dibenzothiophene	31.995	184	152901	500.487	ng/mL	98
43) Phenanthrene	32.488	178	159972	506.847	ng/mL	99
54) Retene	39.462	234	45546	524.923	ng/mL	94
55) Anthracene	32.670	178	148873M4	507.941	ng/mL	
56) Carbazole	33.345	167	133378	481.053	ng/mL	100
57) 1-Methylphenanthrene	34.989	192	113223	486.218	ng/mL	99
58) Fluoranthene	37.252	202	170050	482.299	ng/mL	100
59) Benzo(b)fluorene	39.763	216	97587	465.403	ng/mL	99
60) Pyrene	38.129	202	173089	481.194	ng/mL	100
66) Naphthobenzothiophene	41.973	234	149664	479.507	ng/ml	100
67) Naphthobenzothiophene-2,1	41.973	234	149664	479.507	ng/mL	100
75) Benz[a]anthracene	42.895	228	141695	467.337	ng/mL	100
76) Chrysene	43.059	228	149215	500.382	ng/mL	100
77) Chrysene/Triphenylene	43.059	228	149215	500.382	ng/mL	100
84) Benzo[b]fluoranthene	46.934	252	146172	464.967	ng/mL	94
85) Benzo[j]+[k]fluoranthene	47.017	252	149701	484.645	ng/mL	91
87) Benzo[e]pyrene	47.913	252	138981	465.571	ng/mL	90
89) Benzo[a]pyrene	48.096	252	135079	477.793	ng/mL#	87
90) Perylene	48.398	252	137432	455.478	ng/mL#	87
91) Indeno[1,2,3-cd]pyrene	52.751	276	136513M6	435.993	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.806	278	144769	469.359	ng/mL	99
93) Benzo[g,h,i]perylene	53.994	276	142158	462.024	ng/mL	99

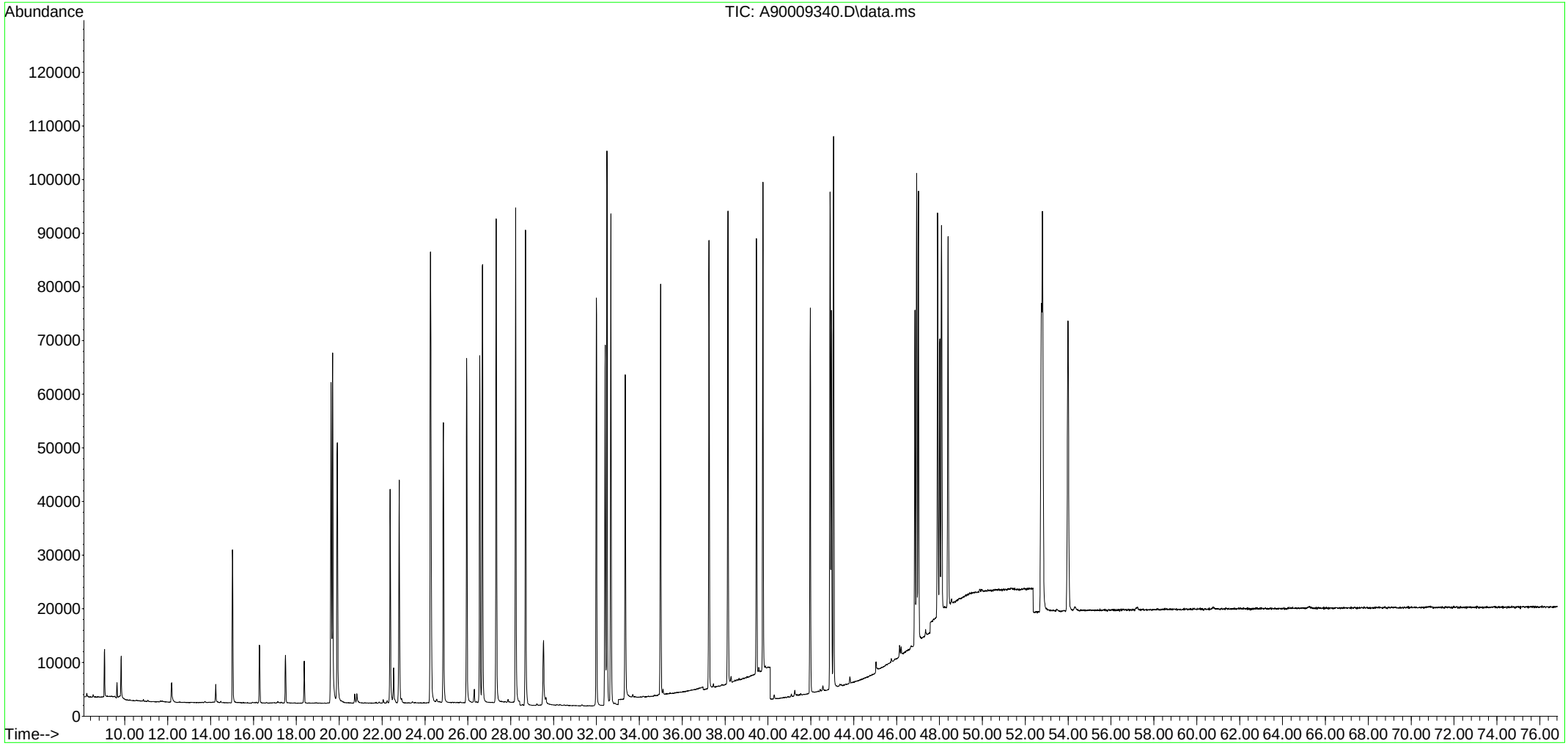
(#) = qualifier out of range (m) = manual integration (+) = signals summed

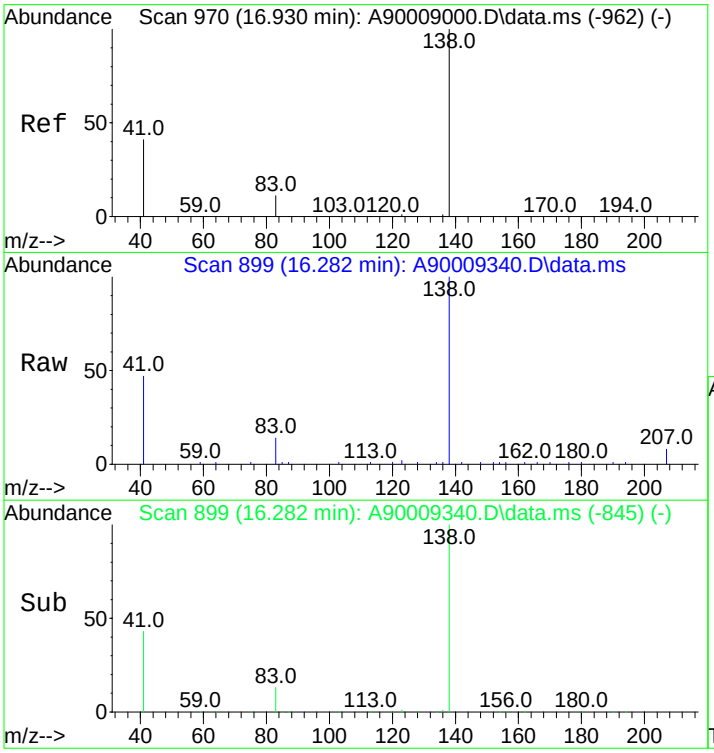
Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC4\
Data File : A90009340.D
Acq On : 5 Dec 2012 12:16 pm
Operator : PS
Sample : Q912041201
Misc : WHAQ50@500ng/ml
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Dec 06 10:35:45 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 12:42:35 2012
Response via : Initial Calibration

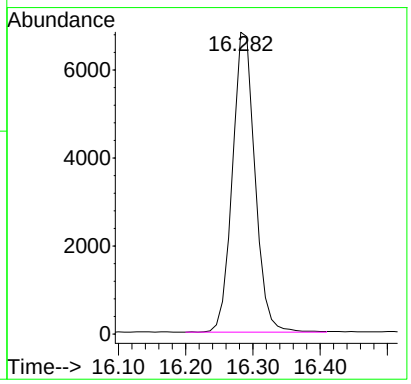
Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

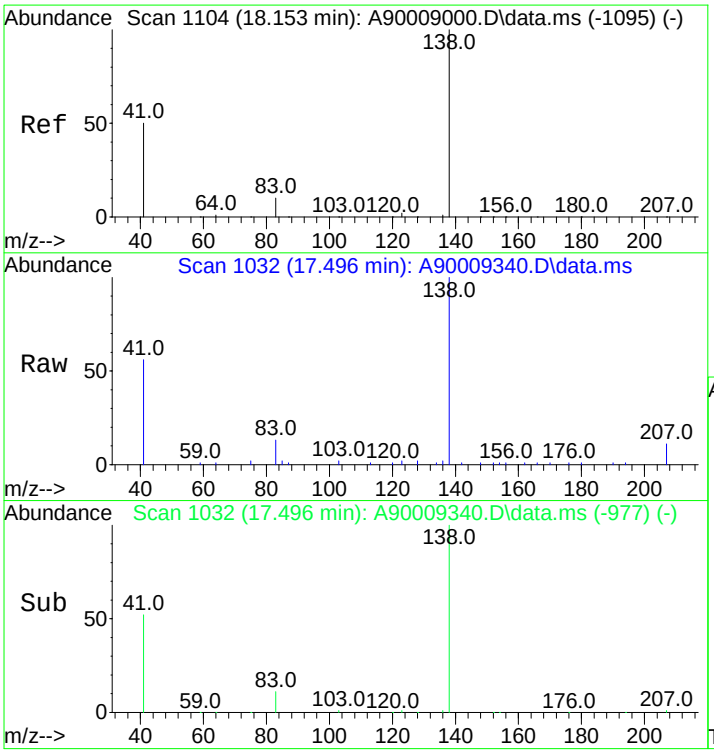




#3
trans-Decalin
Concen: 233.33 ng/mL
RT: 16.282 min Scan# 899
Delta R.T. -0.009 min
Lab File: A90009340.D
Acq: 5 Dec 2012 12:16 pm

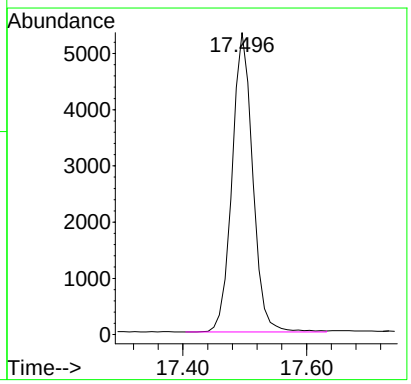
Tgt Ion:138 Resp: 15902

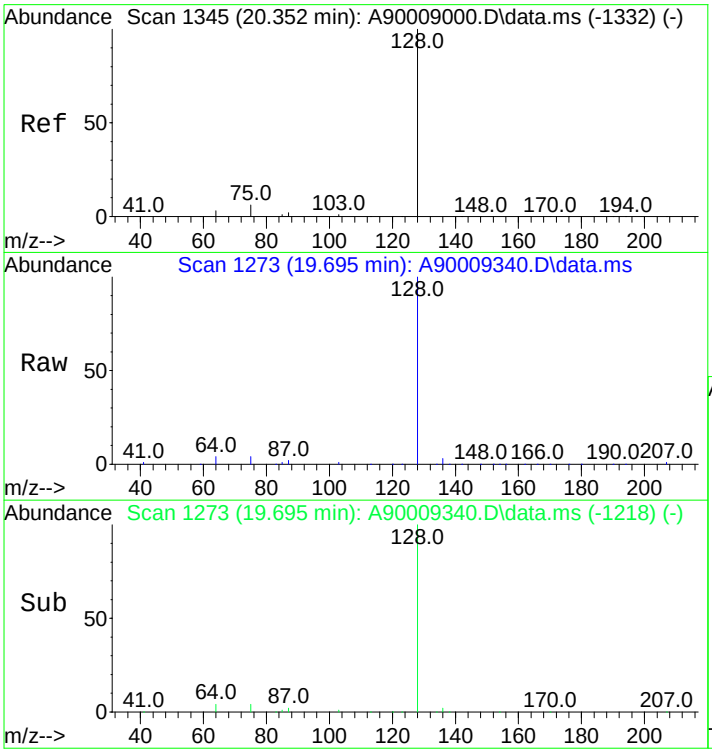




#4
cis-Decalin
Concen: 231.34 ng/mL
RT: 17.496 min Scan# 1032
Delta R.T. -0.000 min
Lab File: A90009340.D
Acq: 5 Dec 2012 12:16 pm

Tgt Ion:138 Resp: 12343

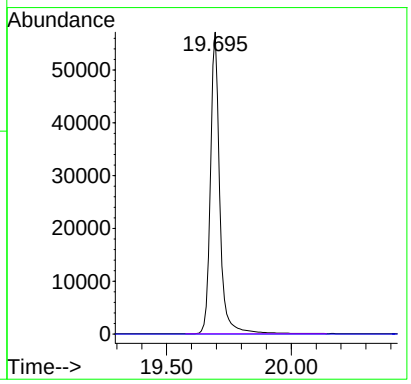


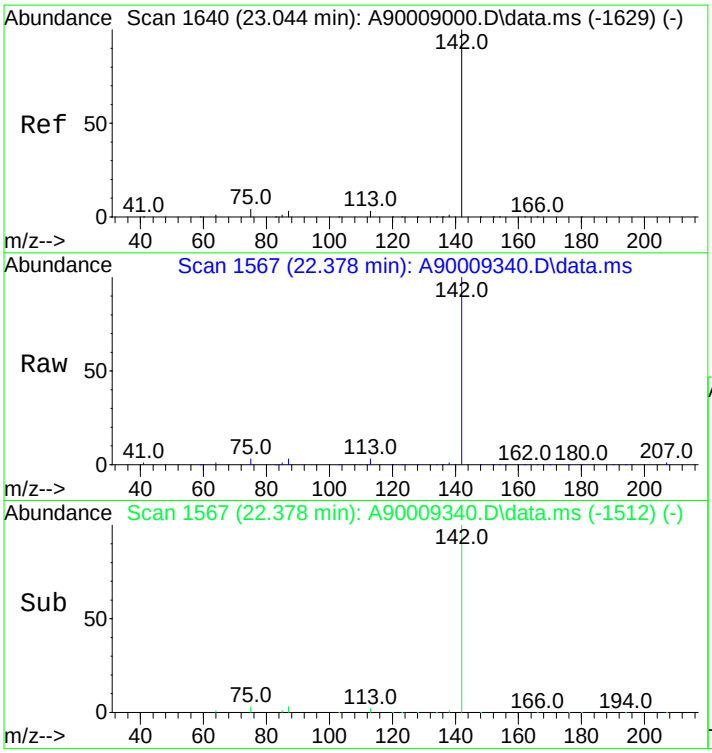


#10
Naphthalene
Concen: 488.25 ng/mL
RT: 19.695 min Scan# 1273
Delta R.T. -0.000 min
Lab File: A90009340.D
Acq: 5 Dec 2012 12:16 pm

Tgt Ion:128 Resp: 149292

Ion	Ratio	Lower	Upper
128	100		
127	0.0	0.0	0.0

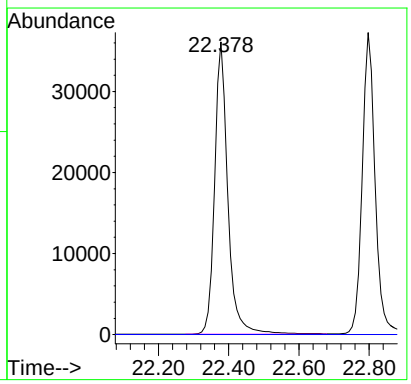


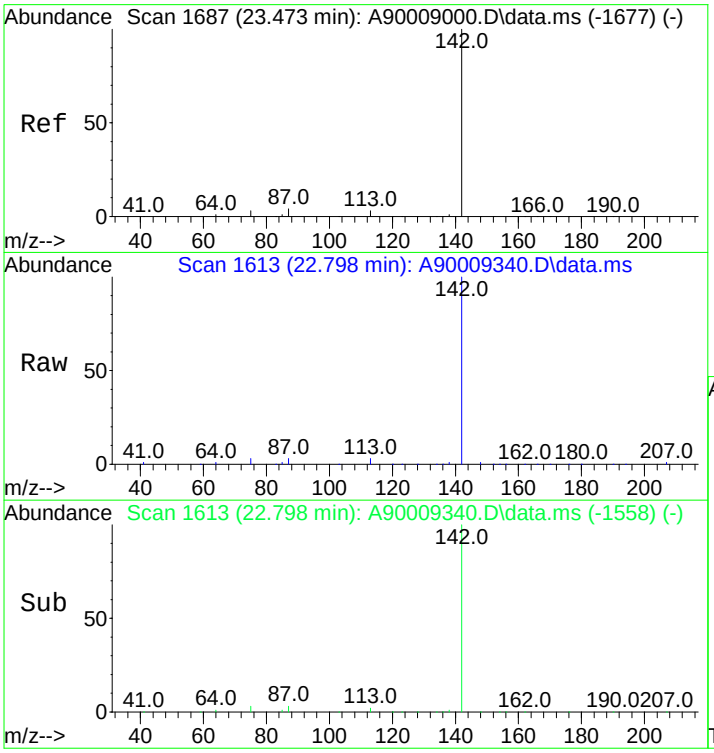


#16
2-Methylnaphthalene
Concen: 469.87 ng/mL
RT: 22.378 min Scan# 1567
Delta R.T. -0.000 min
Lab File: A90009340.D
Acq: 5 Dec 2012 12:16 pm

Tgt Ion:142 Resp: 93956

Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	0.0

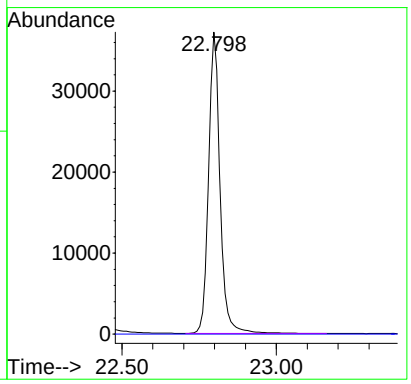


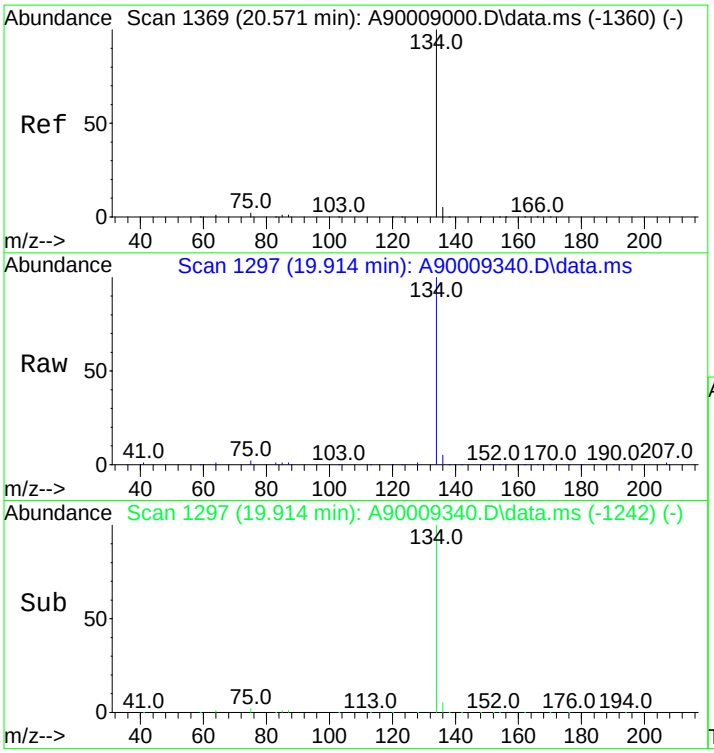


#17
1-Methylnaphthalene
Concen: 492.90 ng/mL
RT: 22.798 min Scan# 1613
Delta R.T. -0.000 min
Lab File: A90009340.D
Acq: 5 Dec 2012 12:16 pm

Tgt Ion:142 Resp: 95652

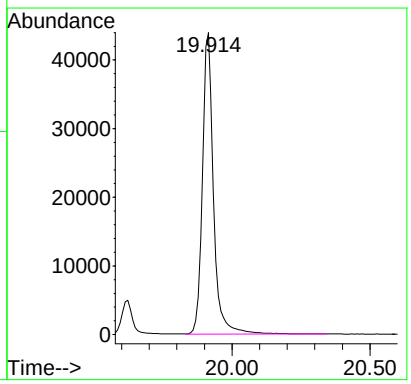
Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	20.0

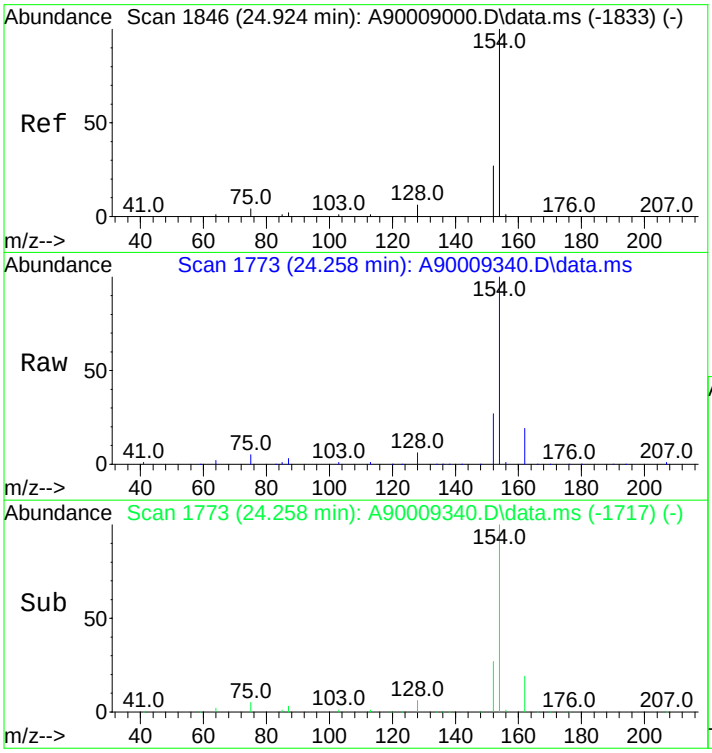




#18
Benzothiophene
Concen: 479.63 ng/mL
RT: 19.914 min Scan# 1297
Delta R.T. -0.000 min
Lab File: A90009340.D
Acq: 5 Dec 2012 12:16 pm

Tgt Ion:134 Resp: 122730

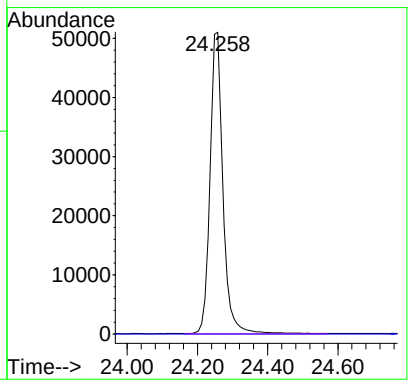


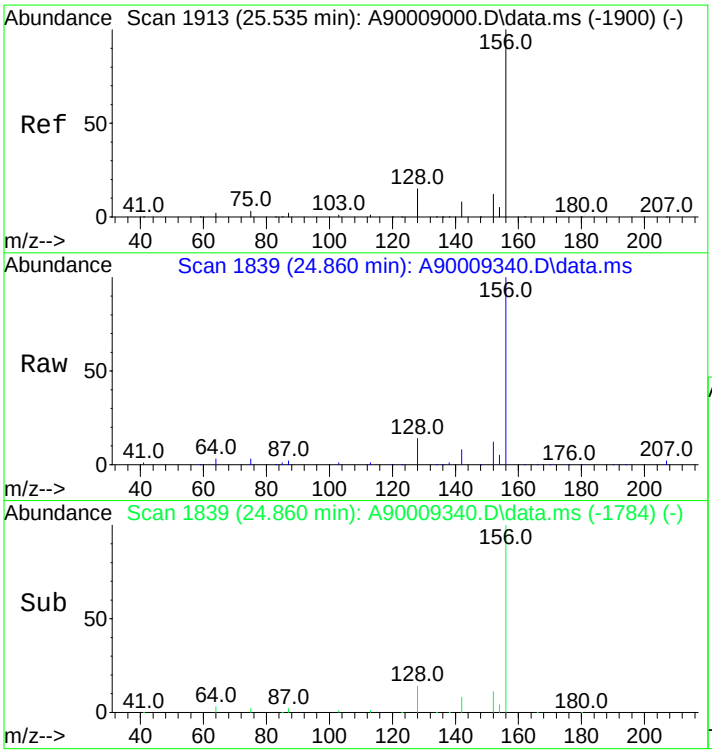


#23
Biphenyl
Concen: 495.60 ng/mL
RT: 24.258 min Scan# 1773
Delta R.T. 0.009 min
Lab File: A90009340.D
Acq: 5 Dec 2012 12:16 pm

Tgt Ion:154 Resp: 129687

Ion	Ratio	Lower	Upper
154	100		
153	0.0	0.0	0.0

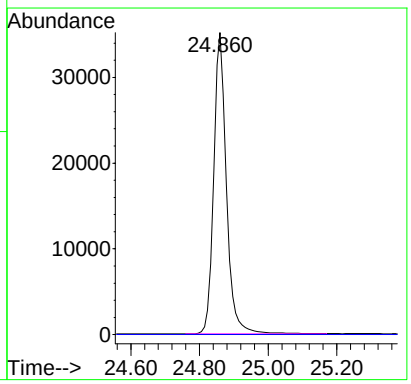


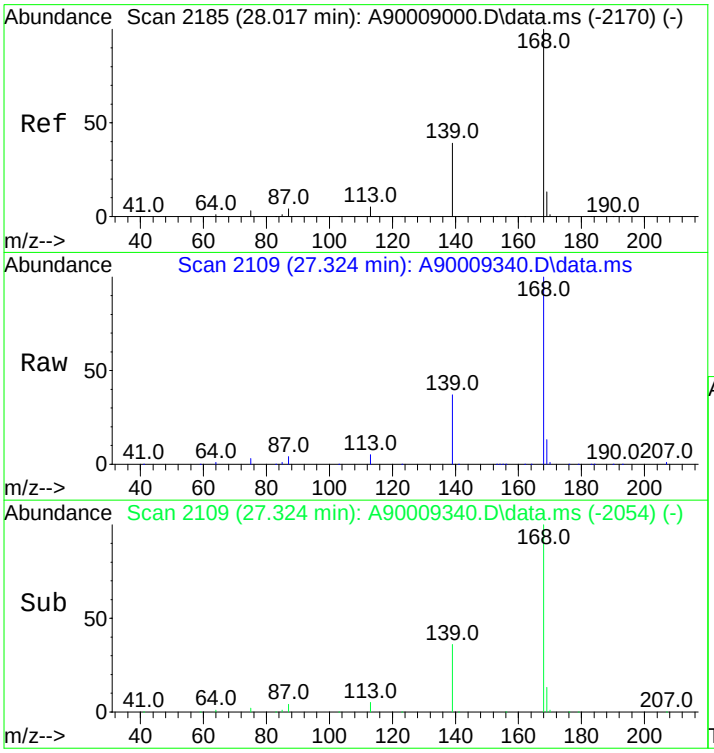


#24
2,6-Dimethylnaphthalene
Concen: 481.77 ng/mL
RT: 24.860 min Scan# 1839
Delta R.T. -0.000 min
Lab File: A90009340.D
Acq: 5 Dec 2012 12:16 pm

Tgt Ion:156 Resp: 90558

Ion	Ratio	Lower	Upper
156	100		
155	0.0	0.0	0.0

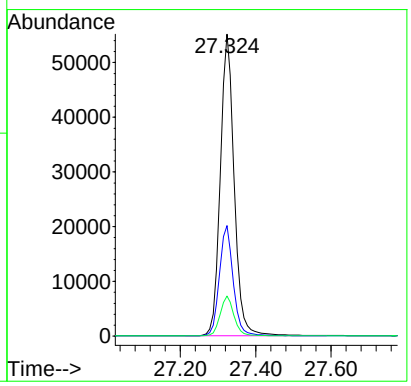


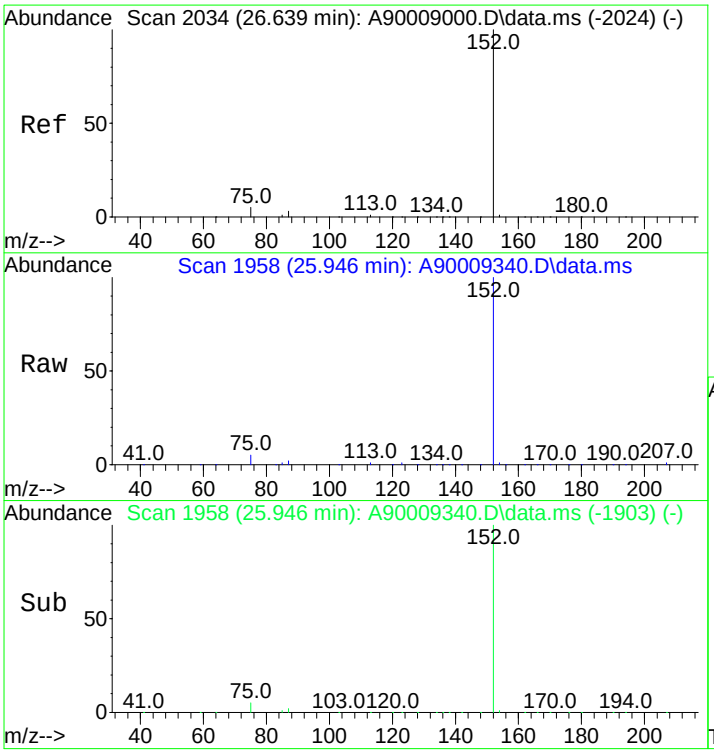


#25
Dibenzofuran
Concen: 506.37 ng/mL
RT: 27.324 min Scan# 2109
Delta R.T. -0.000 min
Lab File: A90009340.D
Acq: 5 Dec 2012 12:16 pm

Tgt Ion:168 Resp: 141331

Ion	Ratio	Lower	Upper
168	100		
139	36.4	28.9	43.3
169	13.2	10.6	15.8

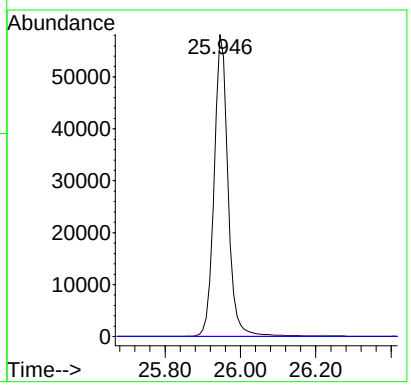


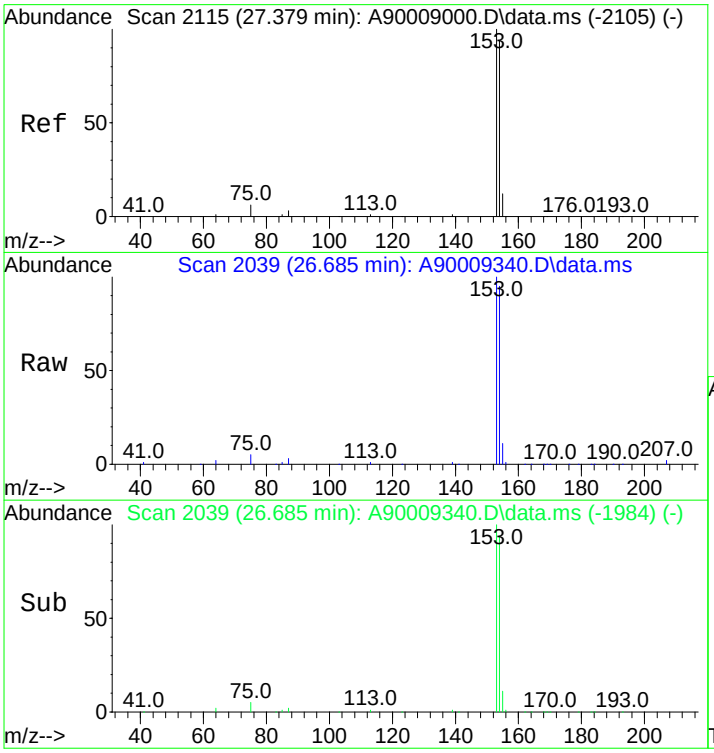


#26
Acenaphthylene
Concen: 469.53 ng/mL
RT: 25.946 min Scan# 1958
Delta R.T. -0.000 min
Lab File: A90009340.D
Acq: 5 Dec 2012 12:16 pm

Tgt Ion:152 Resp: 147690

Ion	Ratio	Lower	Upper
152	100		
153	0.0	0.0	0.0

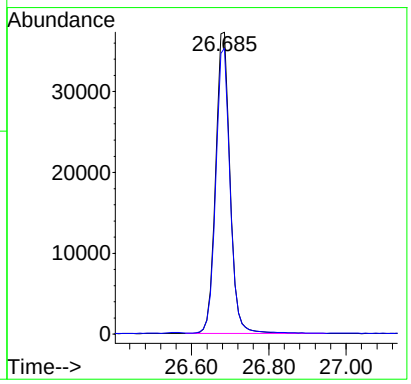


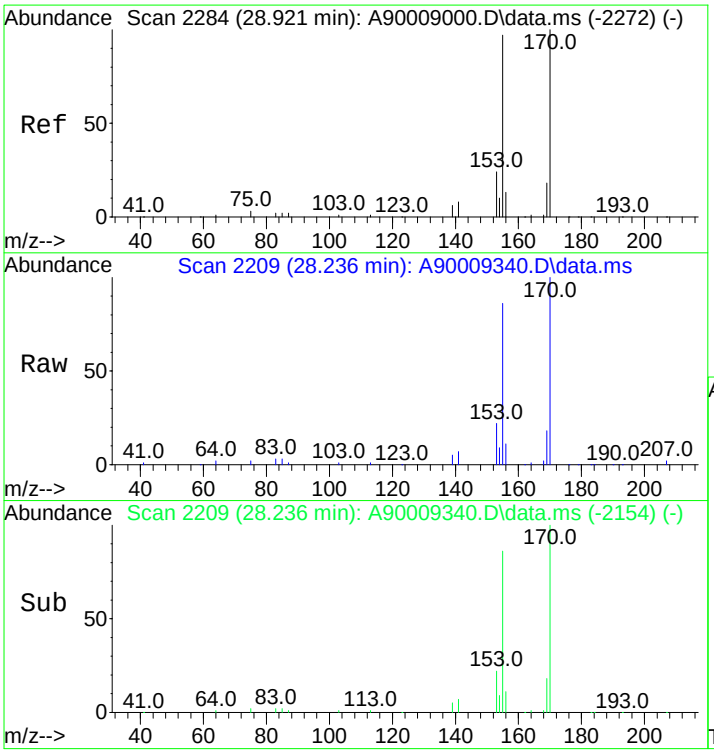


#27
Acenaphthene
Concen: 488.21 ng/mL
RT: 26.685 min Scan# 2039
Delta R.T. -0.000 min
Lab File: A90009340.D
Acq: 5 Dec 2012 12:16 pm

Tgt Ion:153 Resp: 96552

Ion	Ratio	Lower	Upper
153	100		
154	94.3	76.2	114.4

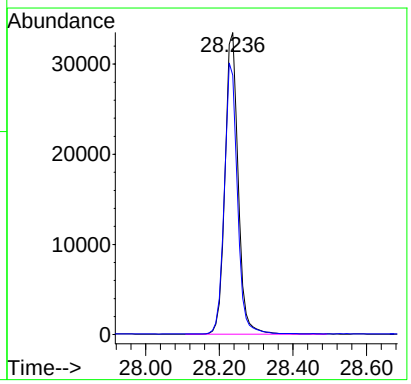


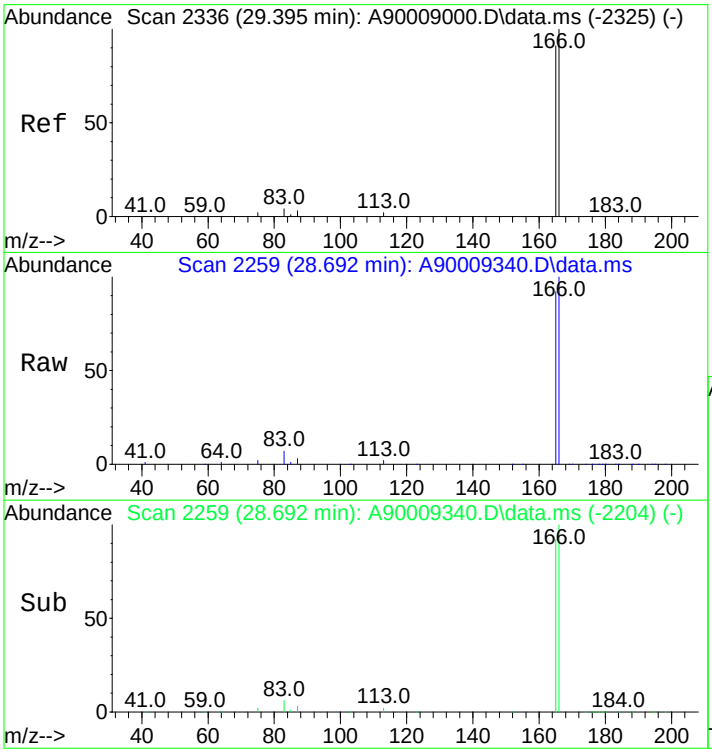


#28
2,3,5-Trimethylnaphthalene
Concen: 479.89 ng/mL
RT: 28.236 min Scan# 2209
Delta R.T. 0.000 min
Lab File: A90009340.D
Acq: 5 Dec 2012 12:16 pm

Tgt Ion:170 Resp: 82933

Ion	Ratio	Lower	Upper
170	100		
155	89.2	69.0	103.6

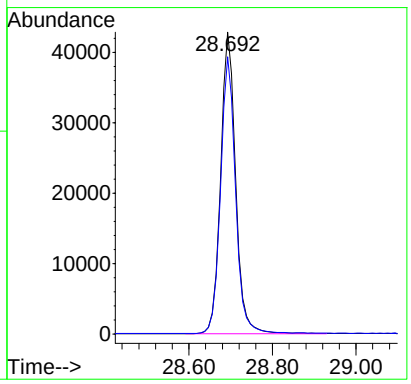


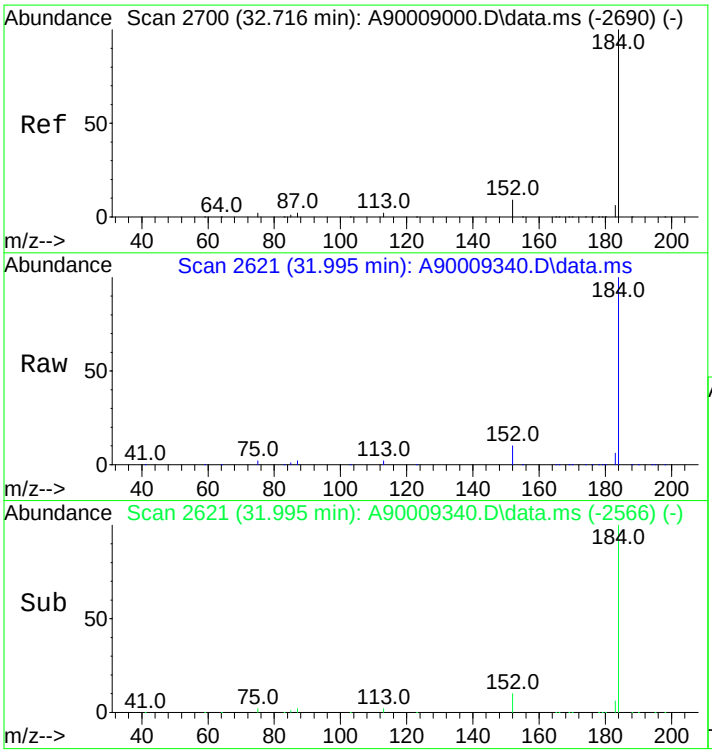


#29
Fluorene
Concen: 491.28 ng/mL
RT: 28.692 min Scan# 2259
Delta R.T. 0.000 min
Lab File: A90009340.D
Acq: 5 Dec 2012 12:16 pm

Tgt Ion:166 Resp: 106698

Ion	Ratio	Lower	Upper
166	100		
165	91.9	73.8	110.6

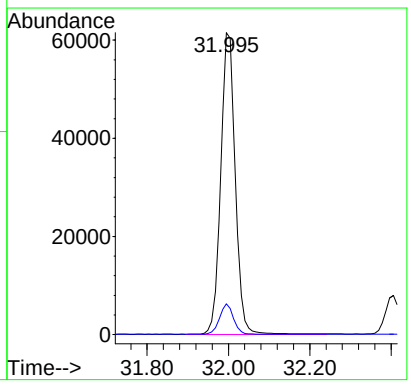


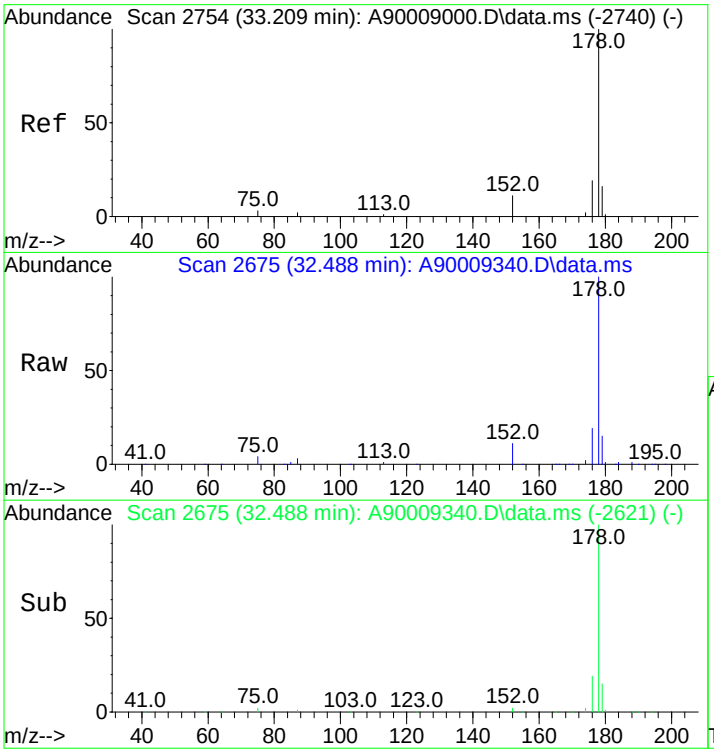


#33
Dibenzothiophene
Concen: 500.49 ng/mL
RT: 31.995 min Scan# 2621
Delta R.T. 0.000 min
Lab File: A90009340.D
Acq: 5 Dec 2012 12:16 pm

Tgt Ion:184 Resp: 152901

Ion	Ratio	Lower	Upper
184	100		
152	9.7	8.2	12.4

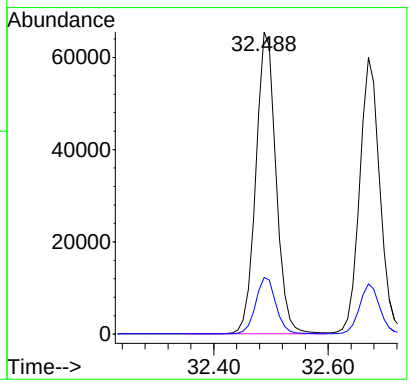


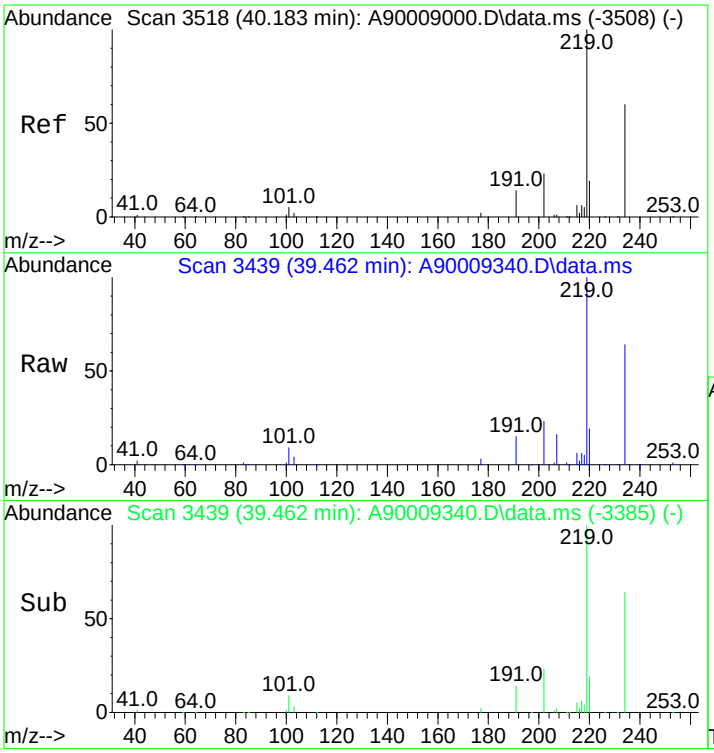


#43
Phenanthrene
Concen: 506.85 ng/mL
RT: 32.488 min Scan# 2675
Delta R.T. -0.009 min
Lab File: A90009340.D
Acq: 5 Dec 2012 12:16 pm

Tgt Ion:178 Resp: 159972

Ion	Ratio	Lower	Upper
178	100		
176	18.8	14.9	22.3

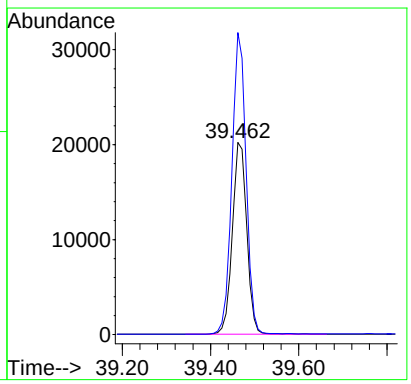


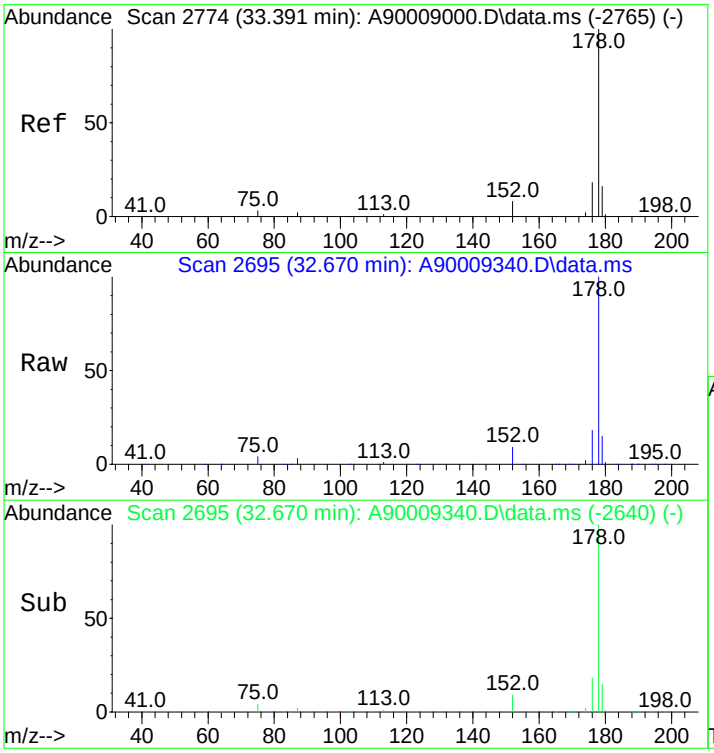


#54
Retene
Concen: 524.92 ng/mL
RT: 39.462 min Scan# 3439
Delta R.T. -0.009 min
Lab File: A90009340.D
Acq: 5 Dec 2012 12:16 pm

Tgt Ion:234 Resp: 45546

Ion	Ratio	Lower	Upper
234	100		
219	154.6	117.9	176.9

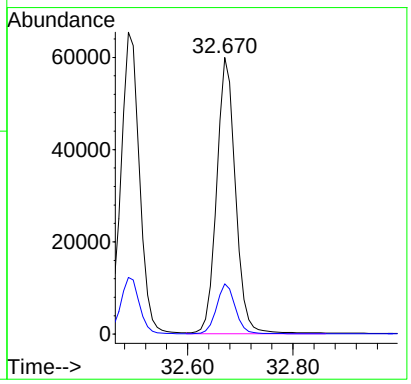


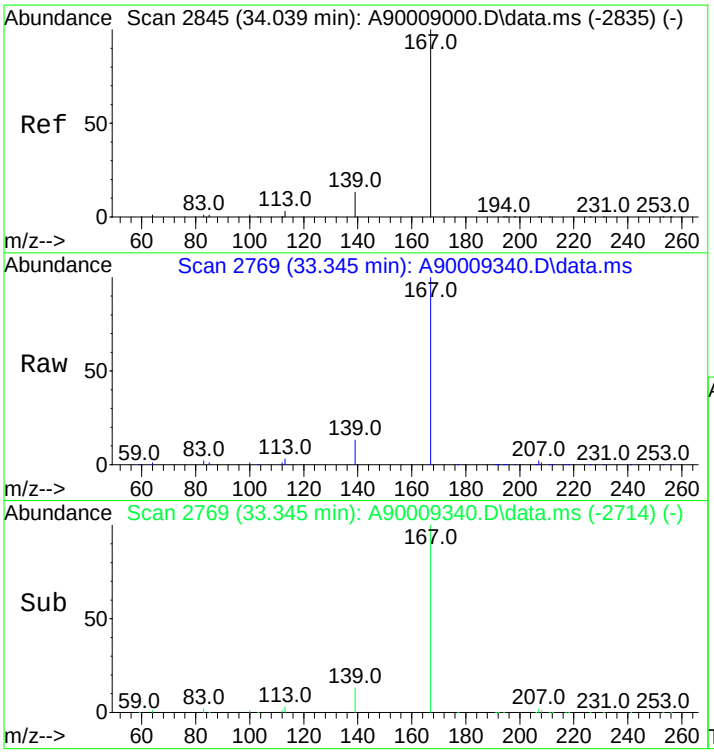


#55
Anthracene
Concen: 507.94 ng/mL m
RT: 32.670 min Scan# 2695
Delta R.T. 0.000 min
Lab File: A90009340.D
Acq: 5 Dec 2012 12:16 pm

Tgt Ion:178 Resp: 148873

Ion	Ratio	Lower	Upper
178	100		
176	18.0	14.6	21.8

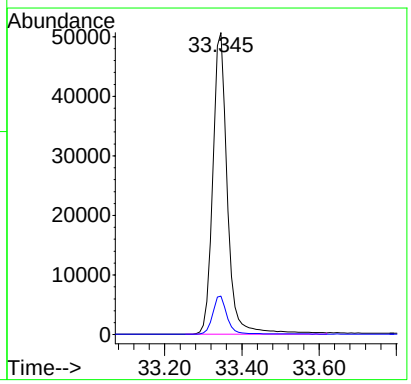


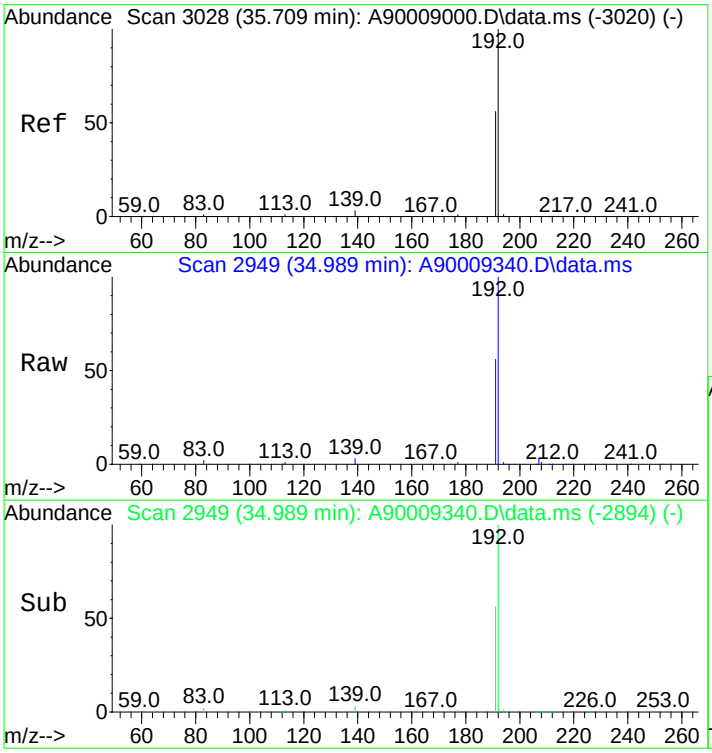


#56
Carbazole
Concen: 481.05 ng/mL
RT: 33.345 min Scan# 2769
Delta R.T. -0.001 min
Lab File: A90009340.D
Acq: 5 Dec 2012 12:16 pm

Tgt Ion:167 Resp: 133378

Ion	Ratio	Lower	Upper
167	100		
139	12.7	10.3	15.5

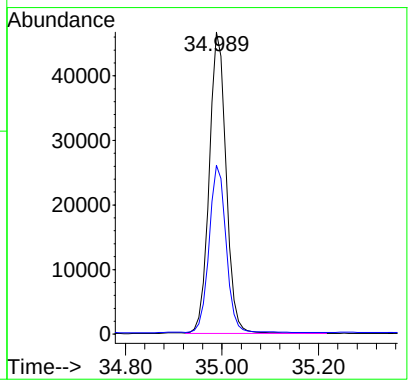


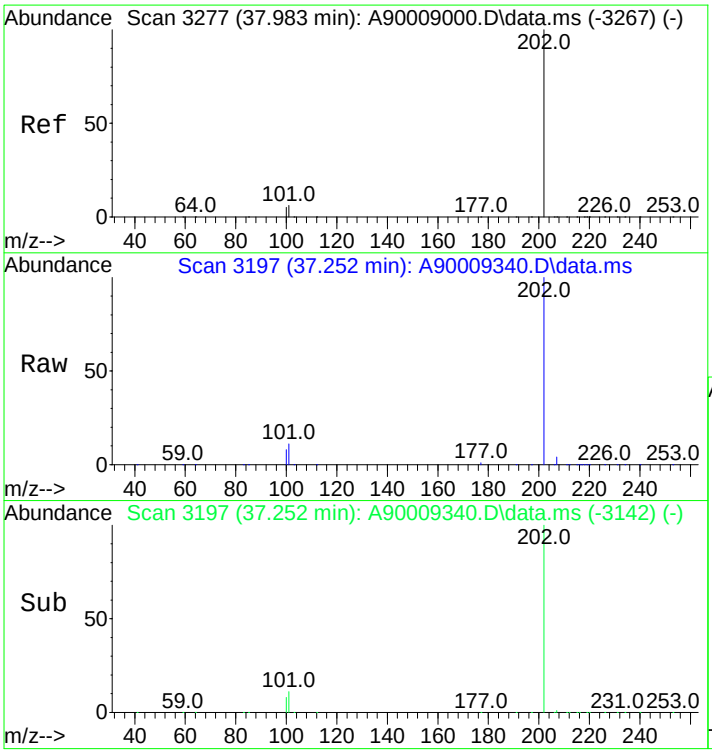


#57
1-Methylphenanthrene
Concen: 486.22 ng/mL
RT: 34.989 min Scan# 2949
Delta R.T. -0.000 min
Lab File: A90009340.D
Acq: 5 Dec 2012 12:16 pm

Tgt Ion:192 Resp: 113223

Ion	Ratio	Lower	Upper
192	100		
191	55.4	44.8	67.2

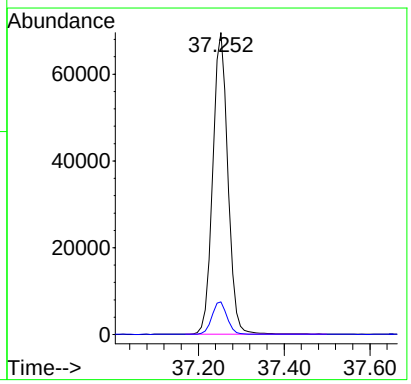


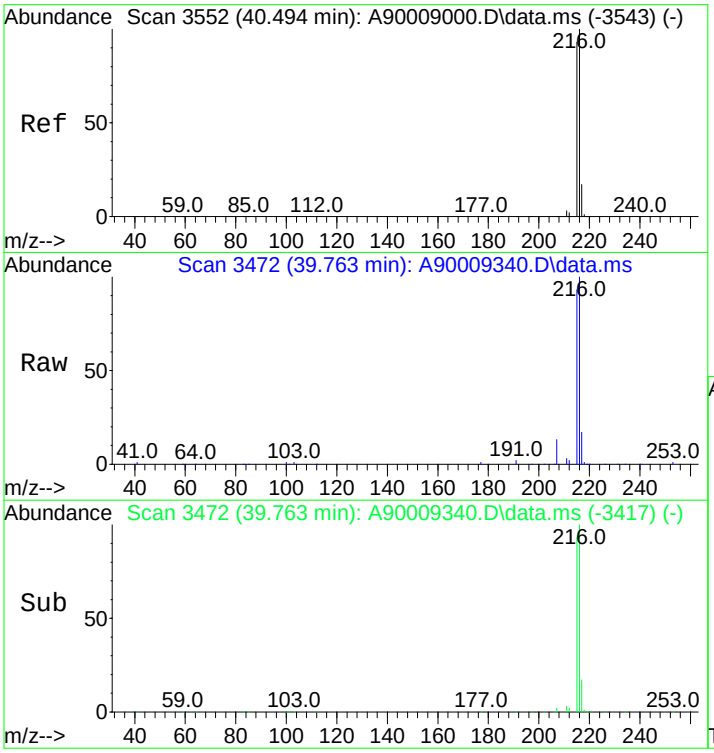


#58
Fluoranthene
Concen: 482.30 ng/mL
RT: 37.252 min Scan# 3197
Delta R.T. 0.000 min
Lab File: A90009340.D
Acq: 5 Dec 2012 12:16 pm

Tgt Ion:202 Resp: 170050

Ion	Ratio	Lower	Upper
202	100		
101	10.8	8.5	12.7

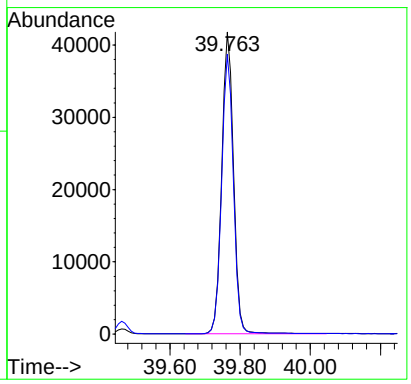


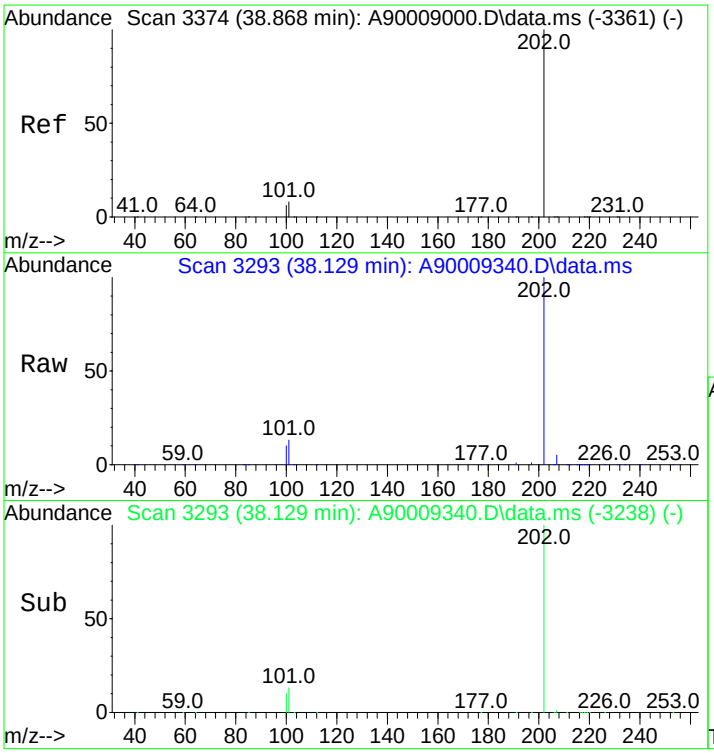


#59
Benzo(b)fluorene
Concen: 465.40 ng/mL
RT: 39.763 min Scan# 3472
Delta R.T. -0.001 min
Lab File: A90009340.D
Acq: 5 Dec 2012 12:16 pm

Tgt Ion:216 Resp: 97587

Ion	Ratio	Lower	Upper
216	100		
215	92.1	74.8	112.2

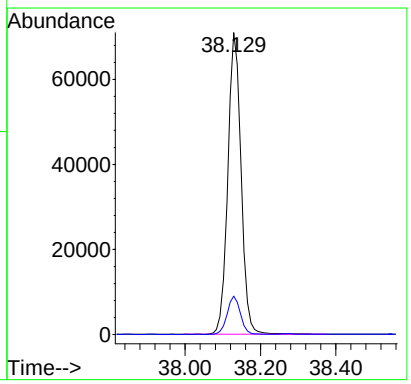


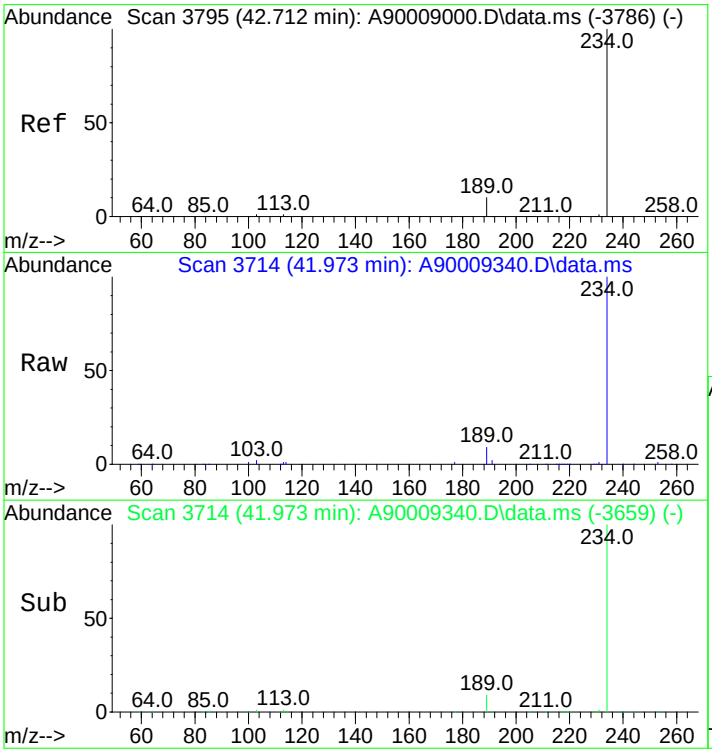


#60
Pyrene
Concen: 481.19 ng/mL
RT: 38.129 min Scan# 3293
Delta R.T. 0.000 min
Lab File: A90009340.D
Acq: 5 Dec 2012 12:16 pm

Tgt Ion:202 Resp: 173089

Ion	Ratio	Lower	Upper
202	100		
101	12.6	10.1	15.1

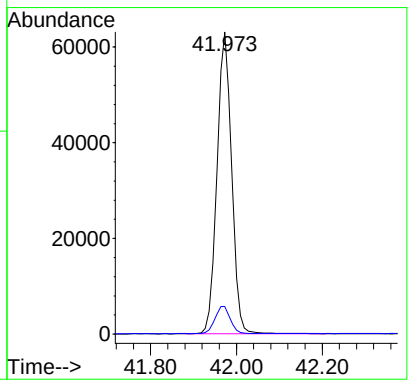


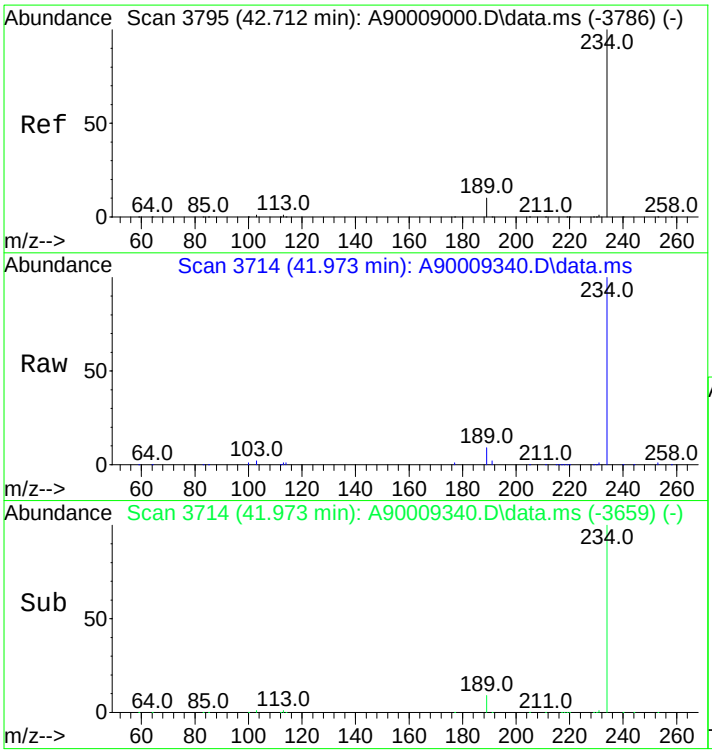


#66
Naphthobenzothiophene
Concen: 479.51 ng/ml
RT: 41.973 min Scan# 3714
Delta R.T. -0.000 min
Lab File: A90009340.D
Acq: 5 Dec 2012 12:16 pm

Tgt Ion:234 Resp: 149664

Ion	Ratio	Lower	Upper
234	100		
189	9.4	7.4	11.2

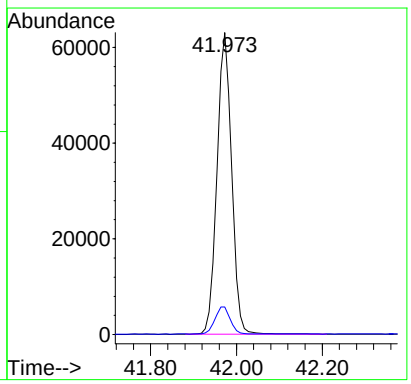


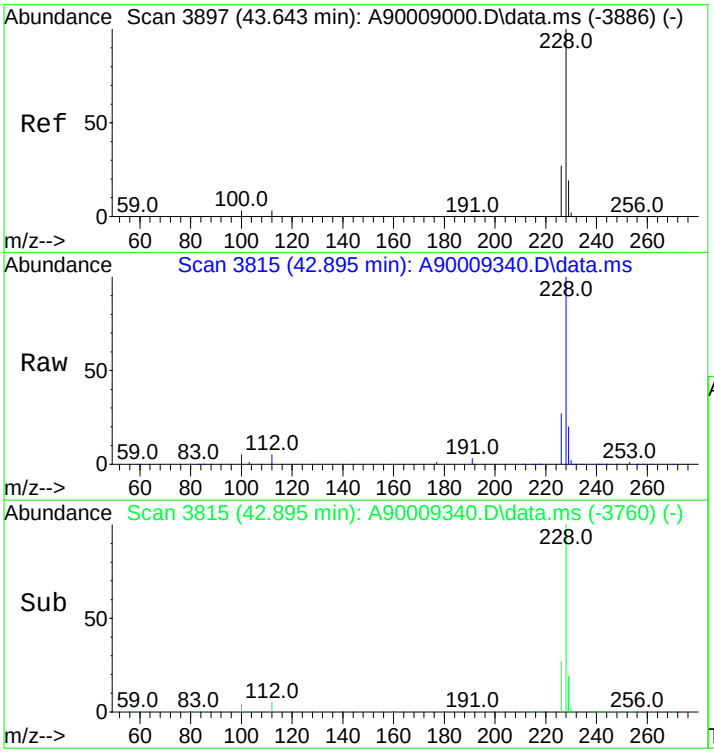


#67
Naphthobenzothiophene-2,1-D
Concen: 479.51 ng/mL
RT: 41.973 min Scan# 3714
Delta R.T. -0.000 min
Lab File: A90009340.D
Acq: 5 Dec 2012 12:16 pm

Tgt Ion:234 Resp: 149664

Ion	Ratio	Lower	Upper
234	100		
189	9.4	7.4	11.2

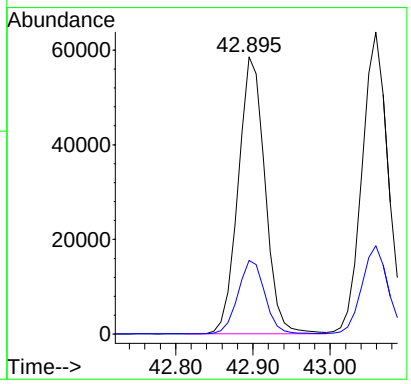


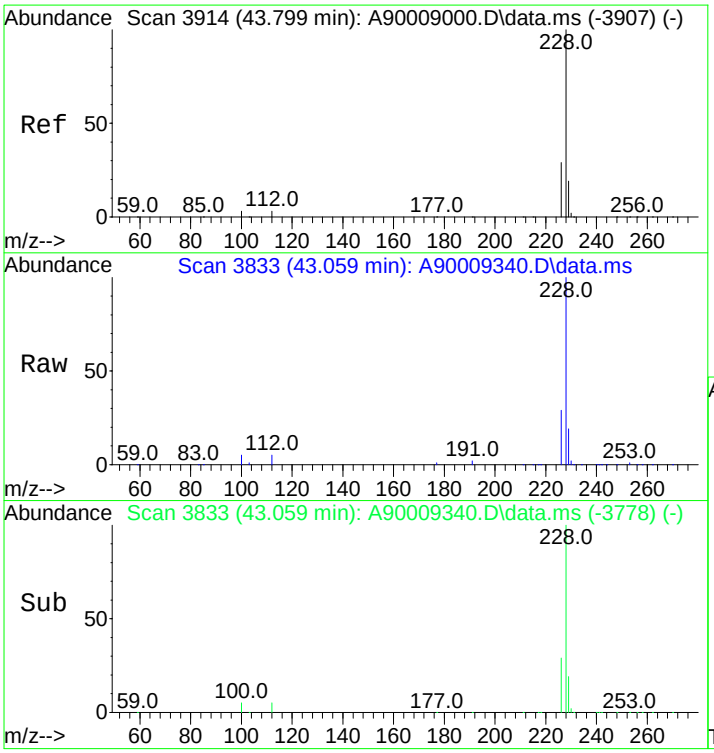


#75
Benz[a]anthracene
Concen: 467.34 ng/mL
RT: 42.895 min Scan# 3815
Delta R.T. -0.000 min
Lab File: A90009340.D
Acq: 5 Dec 2012 12:16 pm

Tgt Ion:228 Resp: 141695

Ion	Ratio	Lower	Upper
228	100		
226	26.5	21.3	31.9

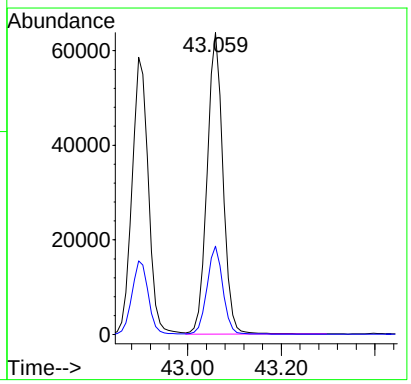


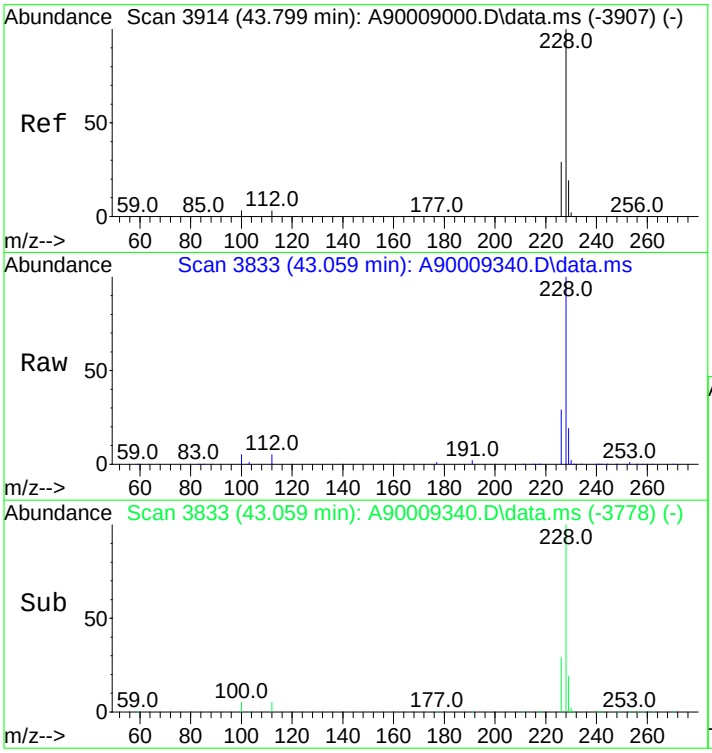


#76
Chrysene
Concen: 500.38 ng/mL
RT: 43.059 min Scan# 3833
Delta R.T. 0.000 min
Lab File: A90009340.D
Acq: 5 Dec 2012 12:16 pm

Tgt Ion:228 Resp: 149215

Ion	Ratio	Lower	Upper
228	100		
226	29.1	23.4	35.0

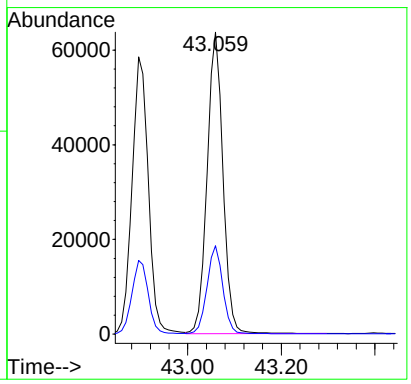


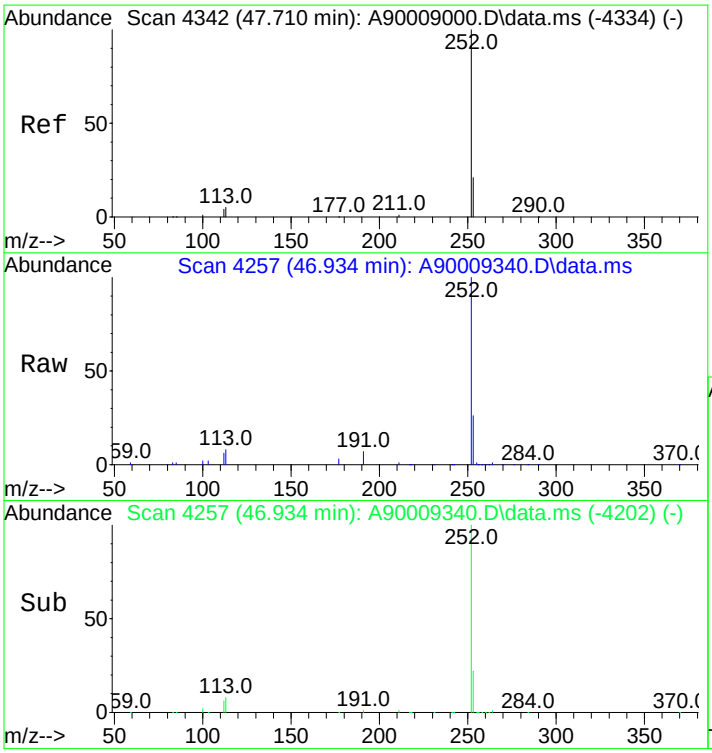


#77
Chrysene/Triphenylene
Concen: 500.38 ng/mL
RT: 43.059 min Scan# 3833
Delta R.T. 0.000 min
Lab File: A90009340.D
Acq: 5 Dec 2012 12:16 pm

Tgt Ion:228 Resp: 149215

Ion	Ratio	Lower	Upper
228	100		
226	29.1	23.4	35.0

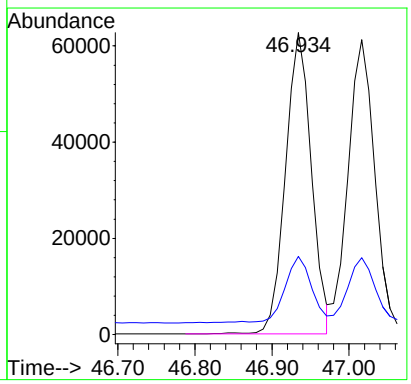


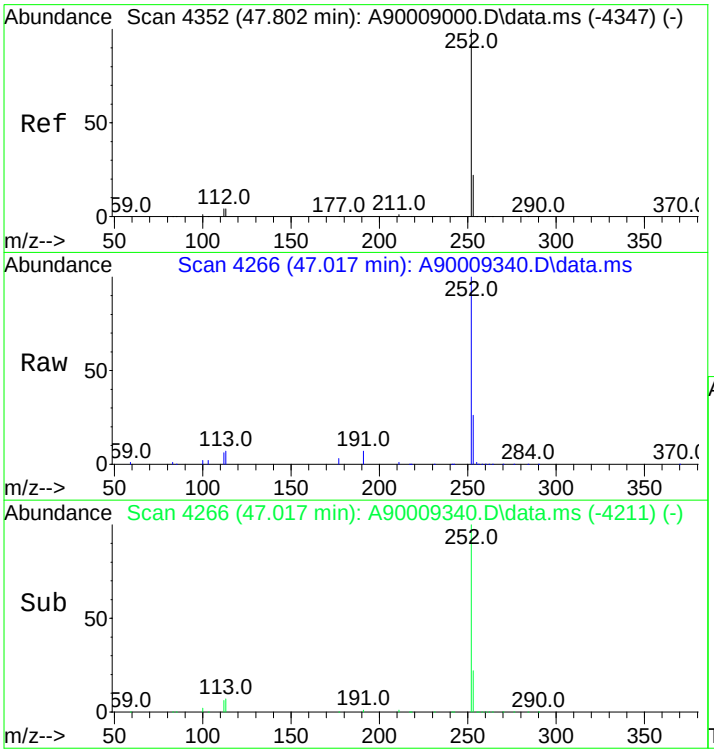


#84
Benzo[b]fluoranthene
Concen: 464.97 ng/mL
RT: 46.934 min Scan# 4257
Delta R.T. 0.000 min
Lab File: A90009340.D
Acq: 5 Dec 2012 12:16 pm

Tgt Ion:252 Resp: 146172

Ion	Ratio	Lower	Upper
252	100		
253	22.8	20.9	31.3

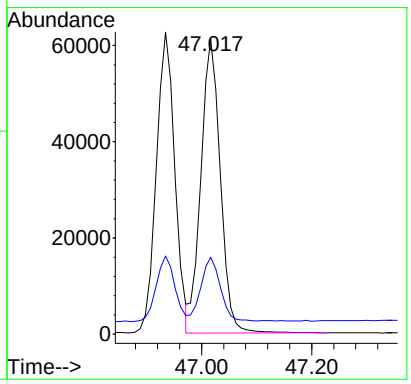


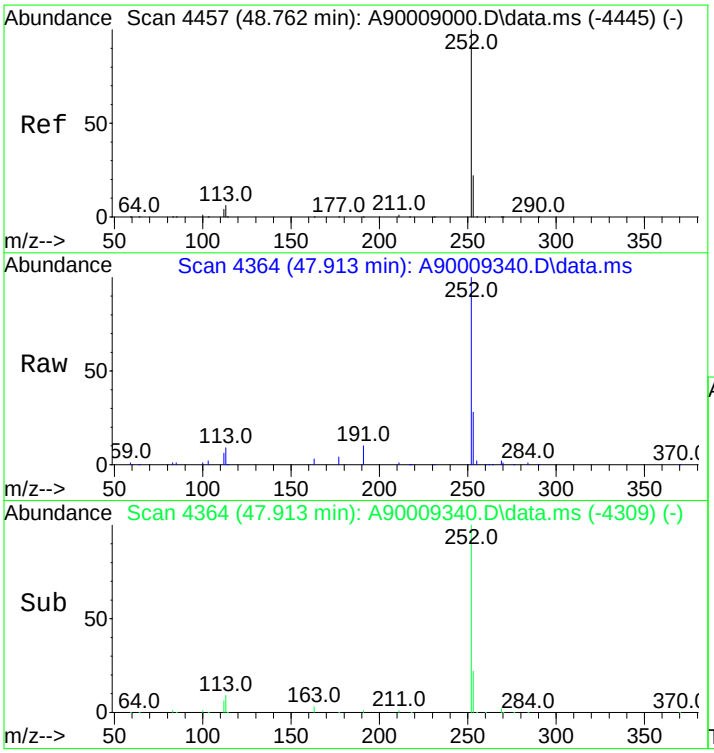


#85
Benzo[j]+[k]fluoranthene
Concen: 484.64 ng/mL
RT: 47.017 min Scan# 4266
Delta R.T. -0.000 min
Lab File: A90009340.D
Acq: 5 Dec 2012 12:16 pm

Tgt Ion:252 Resp: 149701

Ion	Ratio	Lower	Upper
252	100		
253	21.5	21.0	31.6

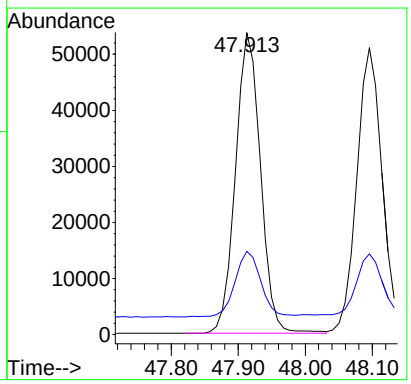


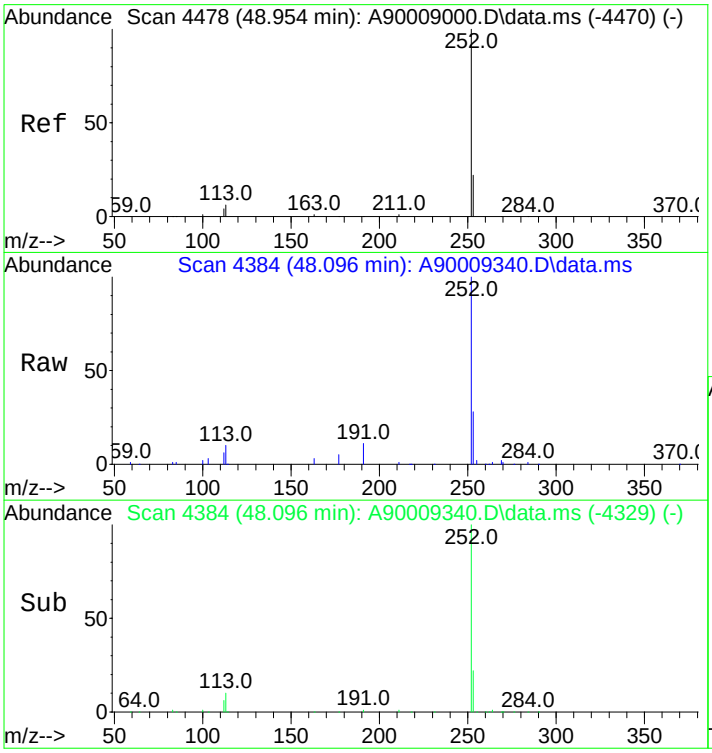


#87
Benzo[e]pyrene
Concen: 465.57 ng/mL
RT: 47.913 min Scan# 4364
Delta R.T. -0.000 min
Lab File: A90009340.D
Acq: 5 Dec 2012 12:16 pm

Tgt Ion:252 Resp: 138981

Ion	Ratio	Lower	Upper
252	100		
253	22.4	22.1	33.1

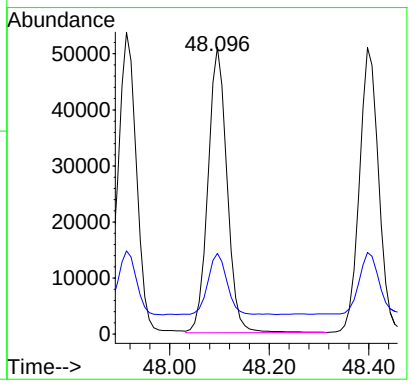


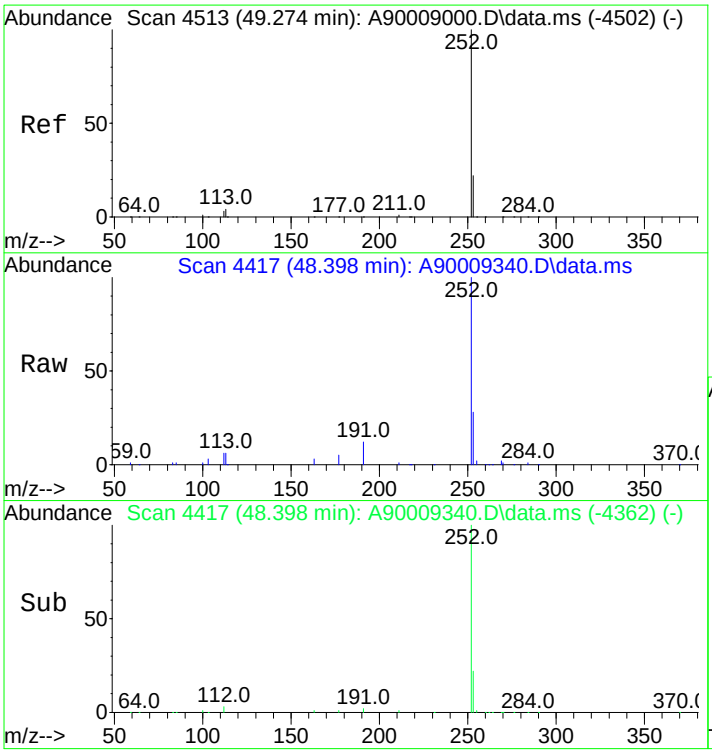


#89
Benzo[a]pyrene
Concen: 477.79 ng/mL
RT: 48.096 min Scan# 4384
Delta R.T. -0.000 min
Lab File: A90009340.D
Acq: 5 Dec 2012 12:16 pm

Tgt Ion:252 Resp: 135079

Ion	Ratio	Lower	Upper
252	100		
253	21.7	22.9	34.3#

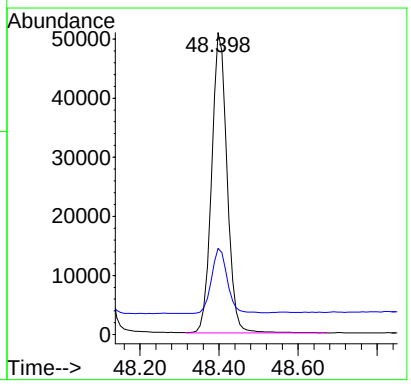


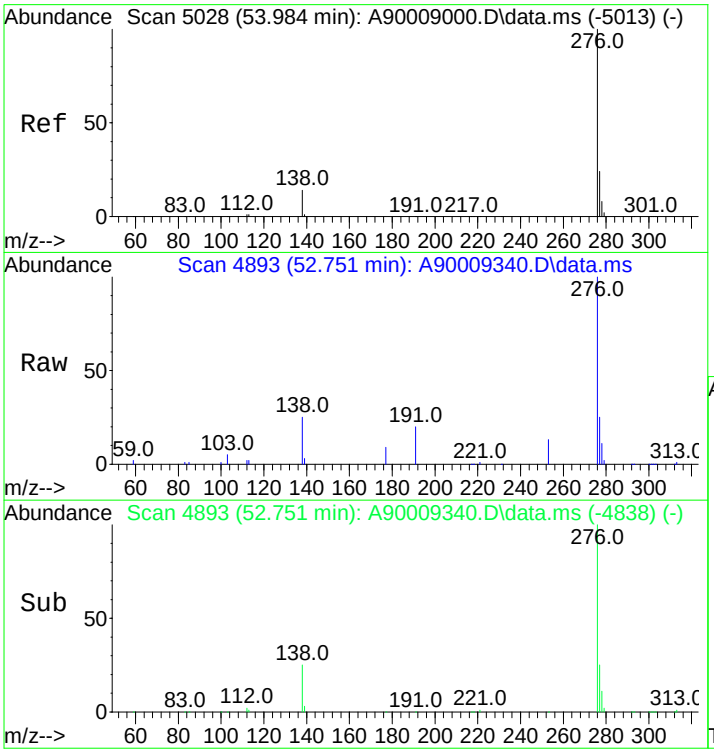


#90
Perylene
Concen: 455.48 ng/mL
RT: 48.398 min Scan# 4417
Delta R.T. -0.000 min
Lab File: A90009340.D
Acq: 5 Dec 2012 12:16 pm

Tgt Ion:252 Resp: 137432

Ion	Ratio	Lower	Upper
252	100		
253	22.2	23.4	35.2#

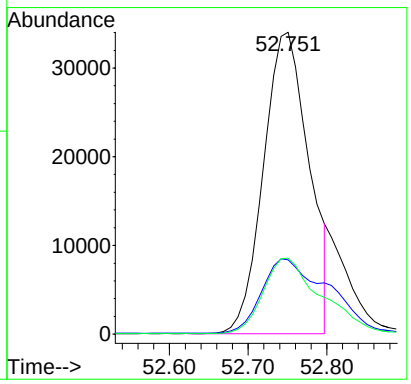


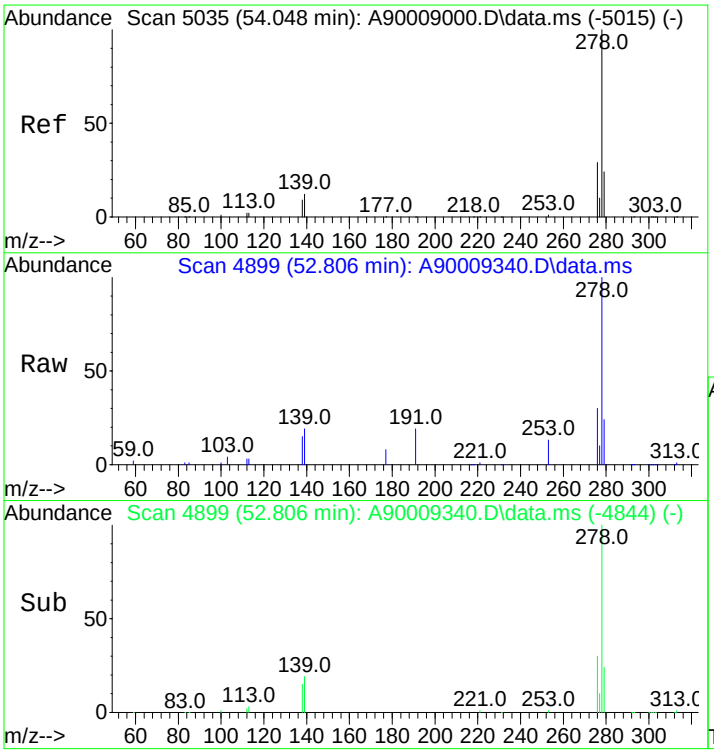


#91
Indeno[1,2,3-cd]pyrene
Concen: 435.99 ng/mL m
RT: 52.751 min Scan# 4893
Delta R.T. -0.000 min
Lab File: A90009340.D
Acq: 5 Dec 2012 12:16 pm

Tgt Ion:276 Resp: 136513

Ion	Ratio	Lower	Upper
276	100		
138	36.7	20.2	30.4#
277	32.3	20.6	30.8#

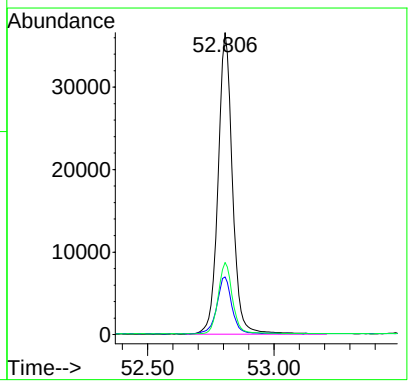


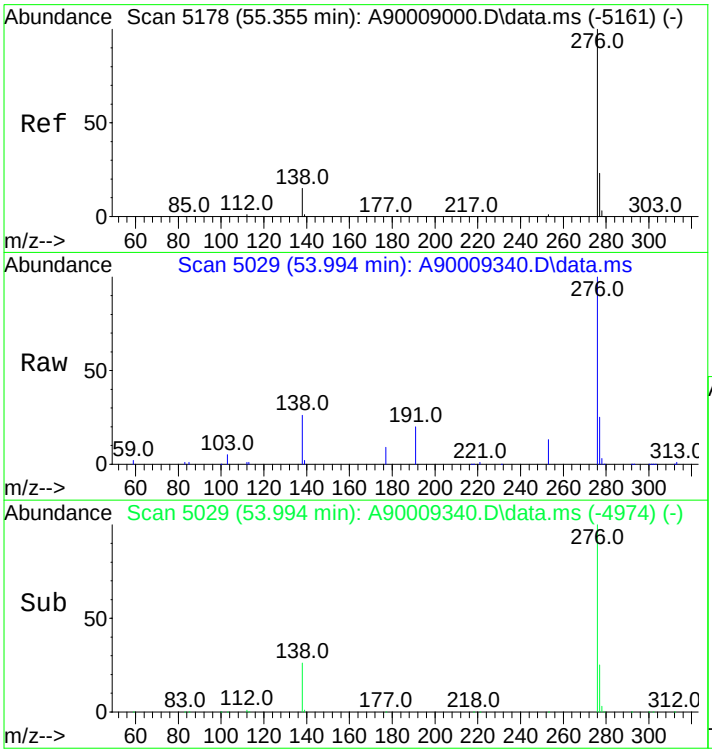


#92
Dibenz[ah]+[ac]anthracene
Concen: 469.36 ng/mL
RT: 52.806 min Scan# 4899
Delta R.T. -0.000 min
Lab File: A90009340.D
Acq: 5 Dec 2012 12:16 pm

Tgt Ion:278 Resp: 144769

Ion	Ratio	Lower	Upper
278	100		
139	19.3	15.4	23.2
279	23.1	19.3	28.9

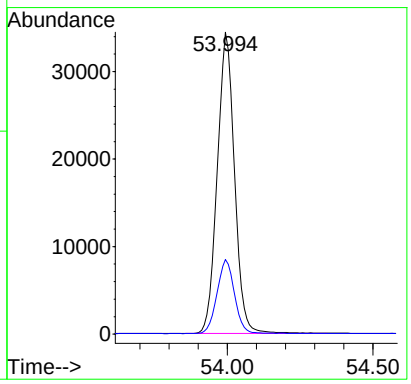




#93
Benzo[g,h,i]perylene
Concen: 462.02 ng/mL
RT: 53.994 min Scan# 5029
Delta R.T. -0.000 min
Lab File: A90009340.D
Acq: 5 Dec 2012 12:16 pm

Tgt Ion:276 Resp: 142158

Ion	Ratio	Lower	Upper
276	100		
277	24.7	20.3	30.5



Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC4\
Data File : A90009342.D
Acq On : 5 Dec 2012 4:08 pm
Operator : PS
Sample : ST120612ANC03
Misc : WHAQ46@5.076
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Dec 06 11:50:10 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Dec 06 08:20:21 2012
Response via : Initial Calibration

Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.557	164	96033	500.000	ng/mL	0.00
74) Chrysene-d12	42.968	240	153631	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.622	136	324880	880.170	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 88.02%			
42) Phenanthrene-d10	32.405	188	322936	932.312	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 93.23%			
83) Benzo[b]fluoranthene-d12	46.861	264	284771	1008.384	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 100.84%			
88) Benzo[a]pyrene-d12	48.023	264	278898	985.189	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 98.52%			
129) 5B(H)Cholane - Surr	43.607	217	71244	1104.652	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 110.47%			
Target Compounds						Qvalue
3) trans-Decalin	16.291	138	186009	2203.180	ng/mL	100
4) cis-Decalin	17.495	138	8991	136.032	ng/mL	100
5) C1-Decalins	18.216	152	331917M5	3931.385	ng/mL	
6) C2-Decalins	19.540	166	296316M5	3509.710	ng/mL	
7) C3-Decalins	22.003	180	174094M5	2062.053	ng/mL	
8) C4-Decalins	25.380	194	184227M5	2182.074	ng/mL	
10) Naphthalene	19.695	128	1018208	2688.111	ng/mL#	100
11) C1-Naphthalenes	22.378	142	2298440M5	6067.975	ng/mL	
12) C2-Naphthalenes	25.206	156	2952881M5	7795.726	ng/mL	
13) C3-Naphthalenes	27.542	170	2299451M5	6070.644	ng/mL	
14) C4-Naphthalenes	30.298	184	1310806M5	3460.581	ng/mL	
16) 2-Methylnaphthalene	22.378	142	1350414	5451.552	ng/mL#	100
17) 1-Methylnaphthalene	22.797	142	947322	3940.655	ng/mL#	100
18) Benzothiophene	19.914	134	8708M6	27.471	ng/mL	
19) C1-Benzo(b)thiophenes	21.949	148	53867M5	169.935	ng/mL	
20) C2-Benzo(b)thiophenes	25.407	162	82075M5	258.923	ng/mL	
21) C3-Benzo(b)thiophenes	27.378	176	178102M5	561.861	ng/mL	
22) C4-Benzo(b)thiophenes	29.112	190	158243M5	499.212	ng/mL	
23) Biphenyl	24.248	154	228429M6	704.673	ng/mL	
24) 2,6-Dimethylnaphthalene	24.869	156	733431	3149.730	ng/mL#	100
25) Dibenzofuran	27.323	168	87647	253.499	ng/mL#	83
26) Acenaphthylene	25.955	152	13158	33.768	ng/mL#	100
27) Acenaphthene	26.685	153	20452M6	83.480	ng/mL	
28) 2,3,5-Trimethylnaphthalen	28.236	170	157284M6	734.687	ng/mL	
29) Fluorene	28.692	166	98636M4	366.619	ng/mL	
30) C1-Fluorenes	31.055	180	232932M5	865.782	ng/mL	
31) C2-Fluorenes	33.245	194	374645M5	1392.514	ng/mL	
32) C3-Fluorenes	35.071	208	358747M5	1333.422	ng/mL	
33) Dibenzothiophene	32.004	184	261347	690.565	ng/mL#	89
34) 4-Methyldibenzothiophene(	33.774	198	253744	670.476	ng/mL#	100
35) 2/3-Methyldibenzothiophen	34.121	198	187800	496.230	ng/mL#	100
36) 1-Methyldibenzothiophene(	34.541	198	82398	217.723	ng/mL#	100
37) OTP	34.194	198	26884	71.036	ng/mL#	100
38) C1-Dibenzothiophenes	33.774	198	562272M5	1485.709	ng/mL	
38) C1-Dibenzothiophenes BS	33.774	198	535388m	1414.672	ng/mL	
39) C2-Dibenzothiophenes	35.454	212	741305M5	1958.773	ng/mL	
40) C3-Dibenzothiophenes	37.252	226	666283M5	1760.540	ng/mL	
41) C4-Dibenzothiophenes	38.941	240	351814M5	929.609	ng/mL	
43) Phenanthrene	32.497	178	399166	1020.918	ng/mL	94
44) 3-Methylphenanthrene(3MP)	34.459	192	180149	460.754	ng/mL	96
45) 2-Methylphenanthrene(2MP)	34.568	192	193816	495.709	ng/mL	98
46) 2-Methylanthracene(2MA)	34.724	192	5461M2	13.967	ng/mL	
47) 9/4-Methylphenanthrene(9M	34.906	192	288743	738.497	ng/mL	98
48) 1-Methylphenanthrene(1MP)	34.997	192	186665M4	477.420	ng/mL	

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC4\
Data File : A90009342.D
Acq On : 5 Dec 2012 4:08 pm
Operator : PS
Sample : ST120612ANC03
Misc : WHAQ46@5.076
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Dec 06 11:50:10 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Dec 06 08:20:21 2012
Response via : Initial Calibration

Sub List : Default - All compounds listed

	Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
49)	C1-Phenanthrenes/Anthrace	34.906	192	868961M5	2222.479	ng/mL	
50)	C2-Phenanthrenes/Anthrace	36.723	206	973577M5	2490.048	ng/mL	
50)	C2-Phenanthrenes/Anthr BS	36.723	206	973577m	2490.048	ng/mL	
52)	C3-Phenanthrenes/Anthrace	38.558	220	665387M5	1701.813	ng/mL	
53)	C4-Phenanthrenes/Anthrace	40.722	234	253280M5	647.796	ng/mL	
56)	Carbazole	33.345	167	9774M4	28.457	ng/mL	
57)	1-Methylphenanthrene	34.997	192	186743M4	647.359	ng/mL	
58)	Fluoranthene	37.252	202	9198M4	21.059	ng/mL	
59)	Benzo(b)fluorene	39.772	216	8841	34.036	ng/mL	84
60)	Pyrene	38.138	202	29545M6	66.304	ng/mL	
61)	C1-Fluoranthenes/Pyrenes	39.526	216	132288M5	296.876	ng/mL	
62)	C2-Fluoranthenes/Pyrenes	41.324	230	199084M5	446.777	ng/mL	
63)	C3-Fluoranthenes/Pyrenes	43.342	244	238973M5	536.295	ng/mL	
64)	C4-Fluoranthenes/Pyrenes	44.694	258	199527M5	447.772	ng/mL	
66)	Naphthobenzothiophene	41.982	234	58391	151.018	ng/ml#	79
67)	Naphthobenzothiophene-2,1	41.982	234	58391	151.018	ng/mL#	79
68)	Naphthobenzothiophene-1,2	42.320	234	13965M6	36.118	ng/mL	
69)	Naphthobenzothiophene-2,3	42.621	234	6755M6	17.471	ng/mL	
70)	C1-Naphthobenzothiophenes	43.379	248	203475M5	526.252	ng/ml	
71)	C2-Naphthobenzothiophenes	45.379	262	263802M5	682.276	ng/ml	
72)	C3-Naphthobenzothiophenes	46.980	276	197242M5	510.131	ng/ml	
73)	C4-Naphthobenzothiophenes	48.032	290	142466M5	368.463	ng/mL	
75)	Benz[a]anthracene	42.904	228	4058M2	11.516	ng/mL	
76)	Chrysene	43.041	228	64526M4	186.176	ng/mL	
77)	Chrysene/Triphenylene	43.041	228	64658M4	186.557	ng/mL	
78)	C1-Chrysenes	44.538	242	119009M5	343.376	ng/mL	
79)	C2-Chrysenes	46.614	256	163911M5	472.931	ng/mL	
79)	C2-Chrysenes BS	46.614	256	152260m	439.314	ng/mL	
80)	BBF-d12 Surr BKGD	46.861	256	11651	33.617	ng/mL	100
81)	C3-Chrysenes	49.257	270	174005M5	502.055	ng/mL	
82)	C4-Chrysenes	49.349	284	96750M5	279.152	ng/mL	
84)	Benzo[b]fluoranthene	46.943	252	9155M4	25.056	ng/mL	
87)	Benzo[e]pyrene	47.922	252	17896M4	51.581	ng/mL	
89)	Benzo[a]pyrene	48.114	252	3282M2	9.988	ng/mL	
90)	Perylene	48.416	252	5893M6	16.804	ng/mL	
91)	Indeno[1,2,3-cd]pyrene	52.769	276	1561M6	4.290	ng/mL	
92)	Dibenz[ah]+[ac]anthracene	52.806	278	1962M4	5.473	ng/mL	
93)	Benzo[g,h,i]perylene	54.012	276	6410	17.925	ng/mL#	88
94)	Hopane (T19)	51.928	191	107329M2	794.630	ng/mL	
95)	17a(H),21B(H)-hopane - C3	51.928	191	107376M2	794.978	ng/mL	
96)	C23 Tricyclic Terpane (T4	40.631	191	41963M4	310.681	ng/ml	
97)	C24 Tricyclic Terpane (T5	41.361	191	27130	200.862	ng/ml	100
98)	C25 Tricyclic Terpane (T6	42.849	191	25641M4	189.838	ng/ml	
99)	C24 Tetracyclic Terpane (	44.155	191	8572	63.464	ng/ml	100
100)	C26 Tricyclic Terpane-22S	43.899	191	10118M4	74.910	ng/ml	
101)	C26 Tricyclic Terpane-22R	43.991	191	9258	68.543	ng/ml	100
102)	C28 Tricyclic Terpane-22S	46.285	191	10010M4	74.111	ng/ml	
103)	C28 Tricyclic Terpane-22R	46.440	191	10863	80.426	ng/ml	100
104)	C29 Tricyclic Terpane-22S	46.962	191	13096	96.959	ng/ml	100
105)	C29 Tricyclic Terpane-22R	47.154	191	13549M6	100.312	ng/ml	
106)	18a-22,29,30-Trisnorneoho	48.251	191	19668	145.616	ng/ml	100
107)	C30 Tricyclic Terpane-22S	48.352	191	10319M4	76.399	ng/mL	
108)	C30 Tricyclic Terpane-22R	48.590	191	10346M6	76.598	ng/mL	
109)	17a(H)-22,29,30-Trisnorho	48.791	191	23042	170.596	ng/ml	100
110)	17a/b,21b/a 28,30-Bisnorh	49.943	191	4310	31.910	ng/ml	100
111)	17a(H),21b(H)-25-Norhopan	49.760	191	5179	38.344	ng/ml	100
112)	30-Norhopane (T15)	50.602	191	64469	477.308	ng/ml	100
113)	18a(H)-30-Norneohopane-C2	50.702	191	16118M4	119.333	ng/ml	
114)	17a(H)-Diahopane (X)	50.821	191	9668M4	71.579	ng/ml	
115)	30-Normoretane (T17)	51.352	191	7648	56.623	ng/ml	100
117)	Moretane (T20)	52.586	191	11365M6	84.143	ng/ml	

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC4\
Data File : A90009342.D
Acq On : 5 Dec 2012 4:08 pm
Operator : PS
Sample : ST120612ANC03
Misc : WHAQ46@5.076
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Dec 06 11:50:10 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Dec 06 08:20:21 2012
Response via : Initial Calibration

Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
118) 30-Homohopane-22S (T21)	53.655	191	45823	339.259	ng/ml	100
119) 30-Homohopane-22R (T22)	53.884	191	39201	290.232	ng/ml	100
120) Gammacerane/C32-diahopane	54.405	191	8176	60.533	ng/mL	100
121) 30,31-Bishomohopane-22S (	55.163	191	33126	245.254	ng/ml	100
122) 30,31-Bishomohopane-22R (	55.529	191	25395	188.017	ng/ml	100
123) 30,31-Trishomohopane-22S	57.219	191	26174	193.784	ng/ml	100
124) 30,31-Trishomohopane-22R	57.813	191	17938	132.807	ng/ml	100
125) Tetrakishomohopane-22S (T	59.741	191	18357	135.909	ng/ml	100
126) Tetrakishomohopane-22R (T	60.618	191	12887	95.411	ng/ml	100
127) Pentakishomohopane-22S (T	62.757	191	19585	145.001	ng/ml	100
128) Pentakishomohopane-22R (T	63.999	191	15943M4	118.037	ng/ml	
130) 13b(H),17a(H)-20S-Diachol	45.114	217	16602M4	257.417	ng/ml	
131) 13b(H),17a(H)-20R-Diachol	45.535	217	8183M4	126.879	ng/ml	
132) 13b,17a-20S-Methyldiachol	46.230	217	7724M4	119.762	ng/ml	
133) 14a,17a-20S-Chol/13b,17a-	47.090	217	19957	309.437	ng/ml	100
134) 14a,17a-20R-Chol/13b,17a-	47.602	217	23854	369.861	ng/ml	100
135) Unknown Sterane (S18)	47.876	217	6673	103.466	ng/ml	100
136) 13a,17b-20S-Ethyldiachole	48.132	217	1263	19.583	ng/ml	100
137) 14a,17a-20S-Methylcholest	48.288	217	10428	161.688	ng/ml	100
138) 14a,17a-20R-Methylcholest	48.992	217	10706M6	165.999	ng/ml	
139) 14a(H),17a(H)-20S-Ethylch	49.330	217	17068	264.643	ng/ml	100
140) 14a(H),17a(H)-20R-Ethylch	50.218	217	12646M4	196.079	ng/ml	
141) 14b(H),17b(H)-20R-Cholest	47.181	218	13274M4	205.816	ng/ml	
142) 14b(H),17b(H)-20S-Cholest	47.263	218	13517M4	209.584	ng/ml	
143) 14b,17b-20R-Methylcholest	48.462	218	14937	231.601	ng/ml	100
144) 14b,17b-20S-Methylcholest	48.535	218	17973M4	278.675	ng/ml	
145) 14b(H),17b(H)-20R-Ethylch	49.577	218	19603	303.948	ng/ml	100
146) 14b(H),17b(H)-20S-Ethylch	49.614	218	13098M2	203.087	ng/ml	
147) C26,20R- +C27,20S- triaro	49.285	231	80824	1253.192	ng/mL	100
148) C28,20S-triaromatic stero	50.126	231	51030	791.230	ng/mL	100
149) C27,20R-triaromatic stero	50.556	231	48424M3	750.824	ng/mL	
150) C28,20R-triaromatic stero	51.727	231	41563	644.443	ng/mL	100

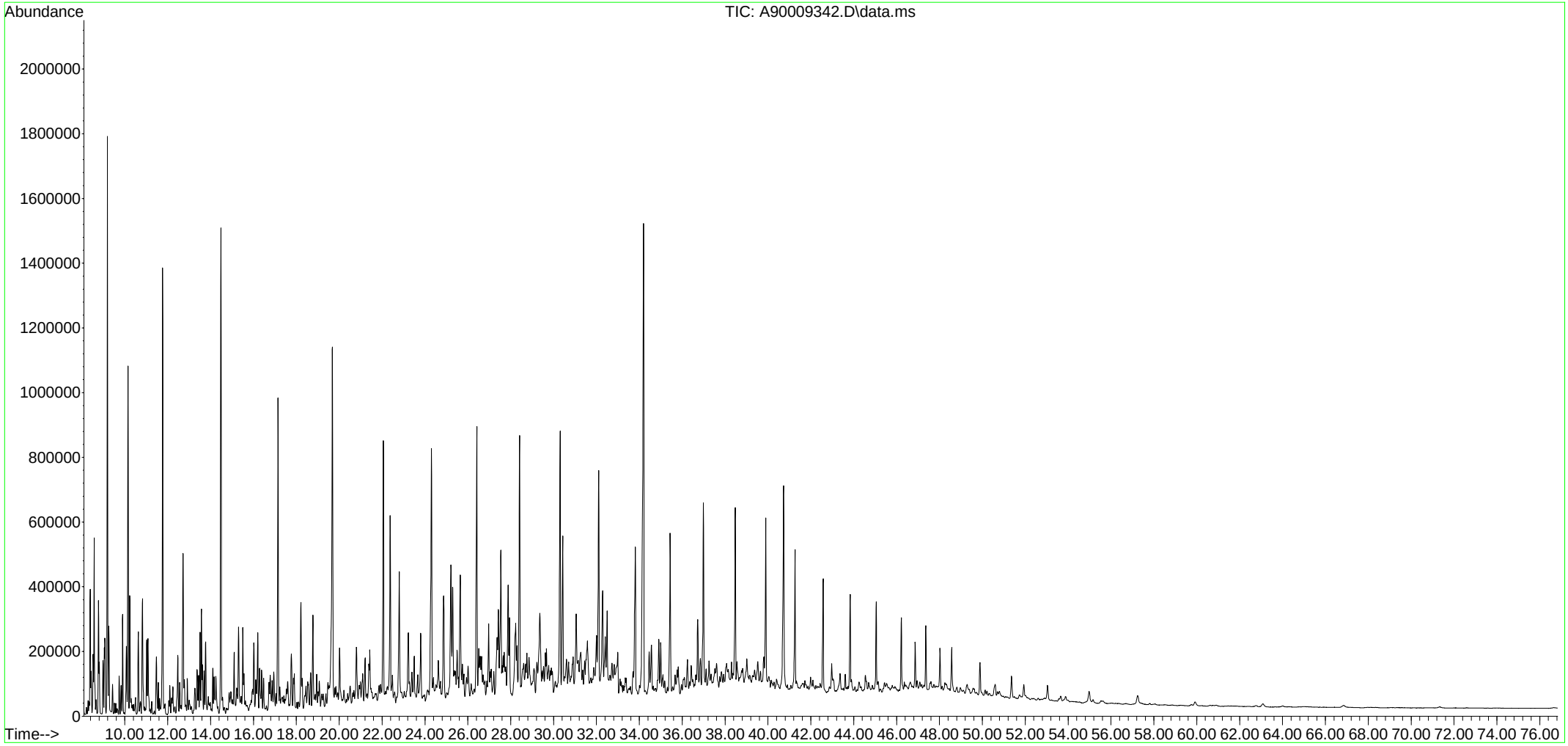
(#) = qualifier out of range (m) = manual integration (+) = signals summed

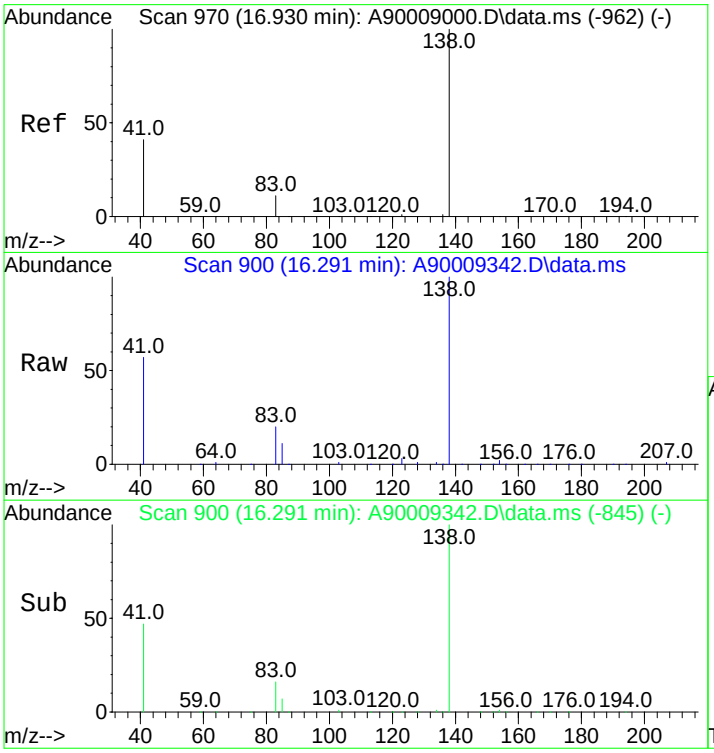
Quantitation Report (QT Reviewed)

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Data File : A90009342.D
Acq On : 5 Dec 2012 4:08 pm
Operator : PS
Sample : ST120612ANC03
Misc : WHAQ46@5.076
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Dec 06 11:50:10 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Dec 06 08:20:21 2012
Response via : Initial Calibration

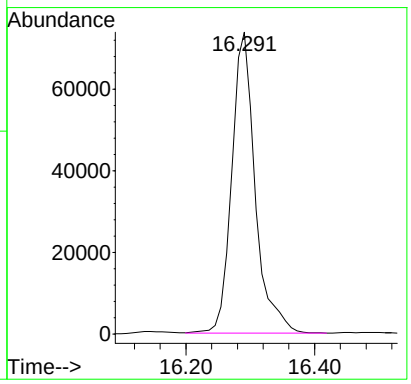
Sub List : Default - All compounds listed

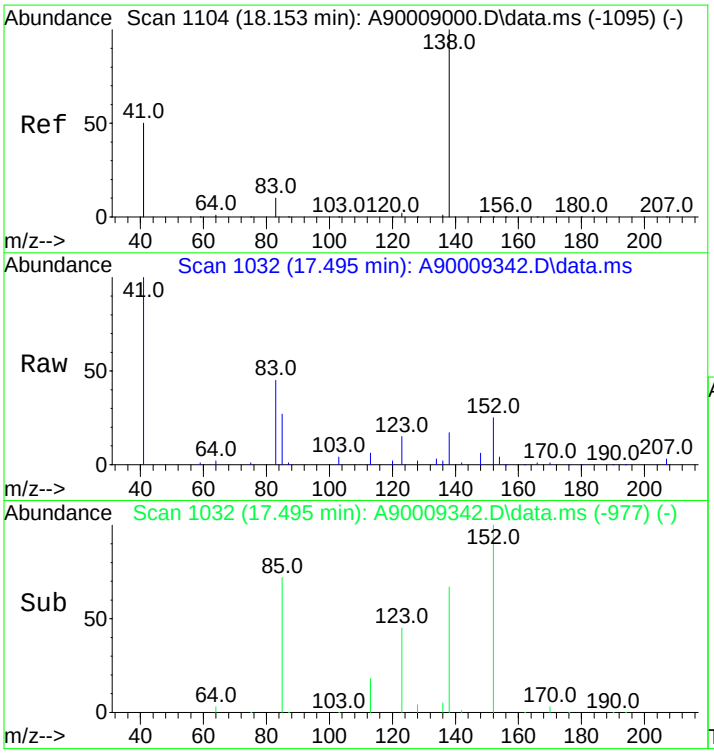




#3
trans-Decalin
Concen: 2203.18 ng/mL
RT: 16.291 min Scan# 900
Delta R.T. -0.000 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

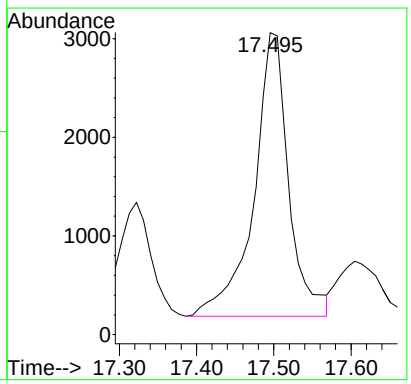
Tgt Ion:138 Resp: 186009

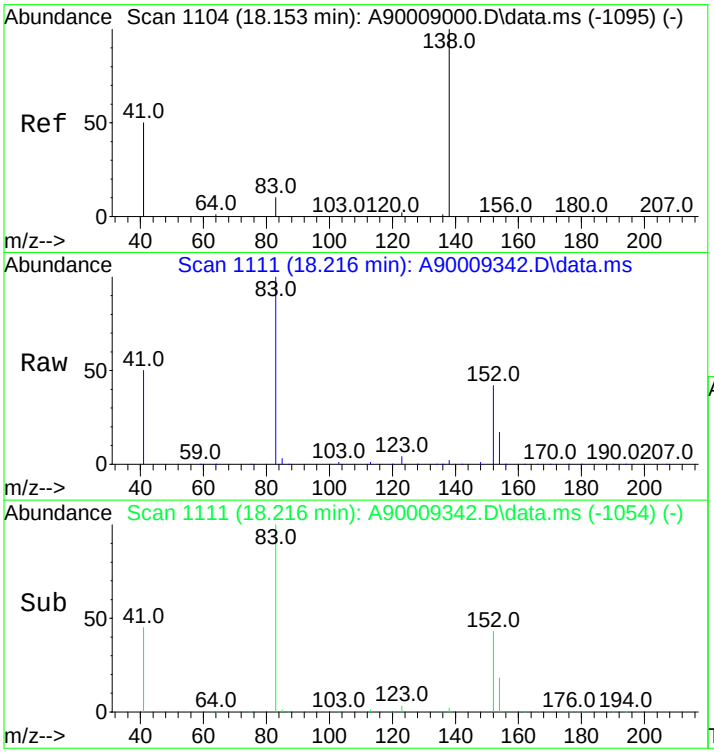




#4
cis-Decalin
Concen: 136.03 ng/mL
RT: 17.495 min Scan# 1032
Delta R.T. -0.001 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

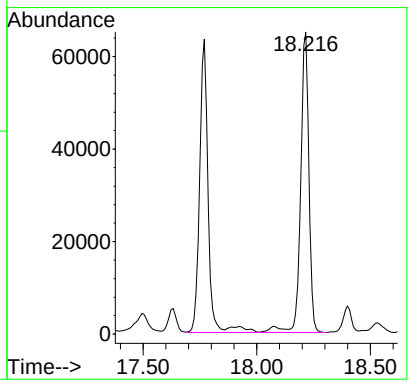
Tgt Ion:138 Resp: 8991

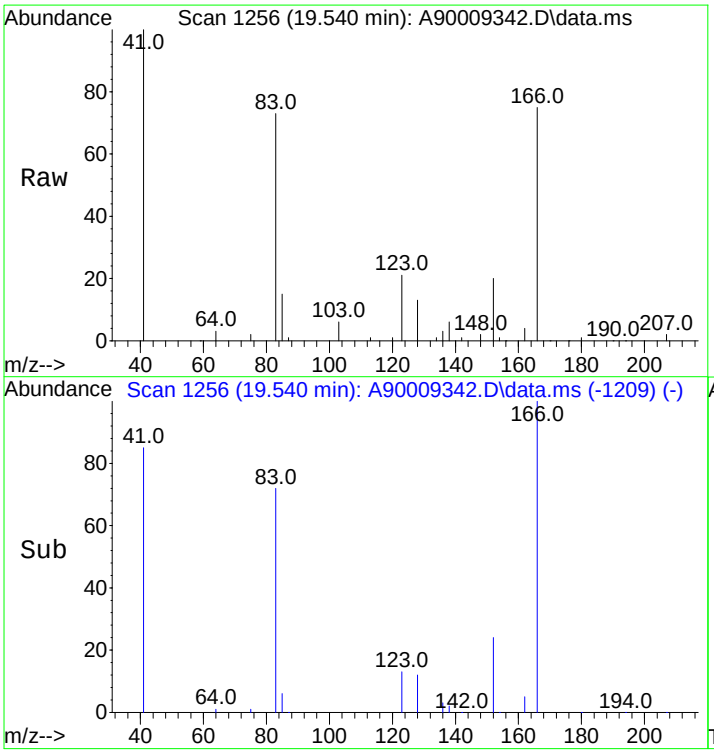




#5
C1-Decalins
Concen: 3931.39 ng/mL m
RT: 18.216 min Scan# 1111
Delta R.T. 0.277 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

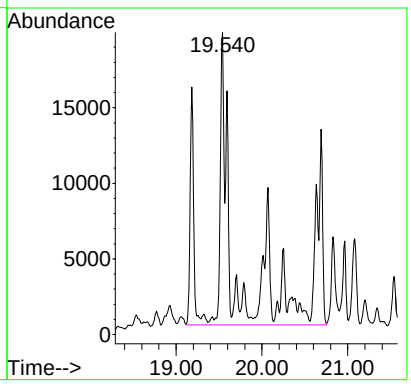
Tgt Ion:152 Resp: 331917

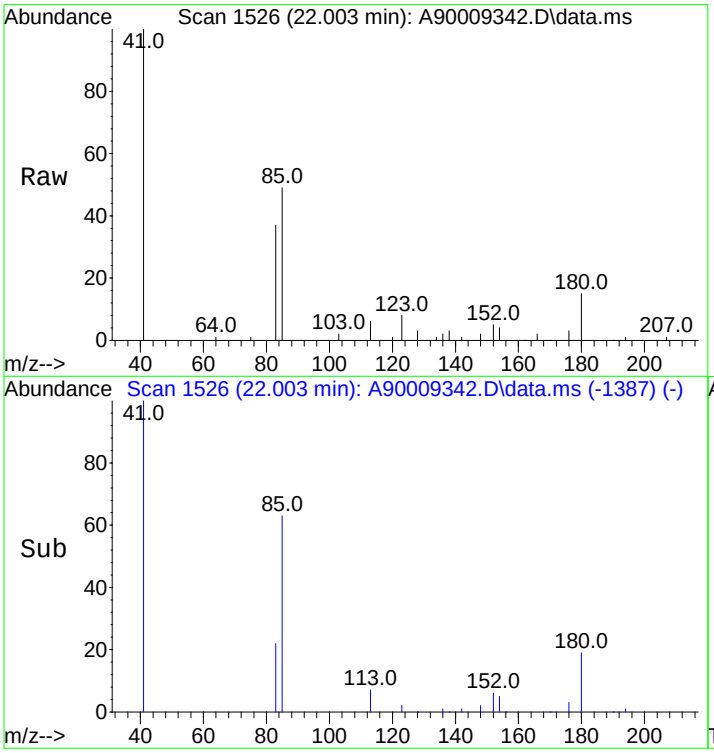




#6
C2-Decalins
Concen: 3509.71 ng/mL m
RT: 19.540 min Scan# 1256
Delta R.T. -0.058 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

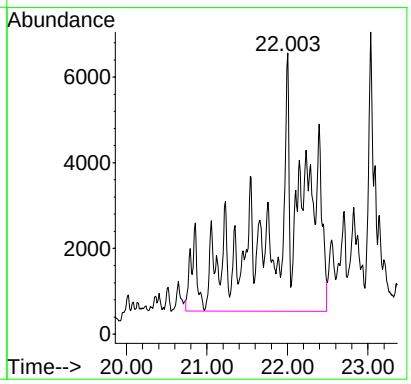
Tgt Ion:166 Resp: 296316

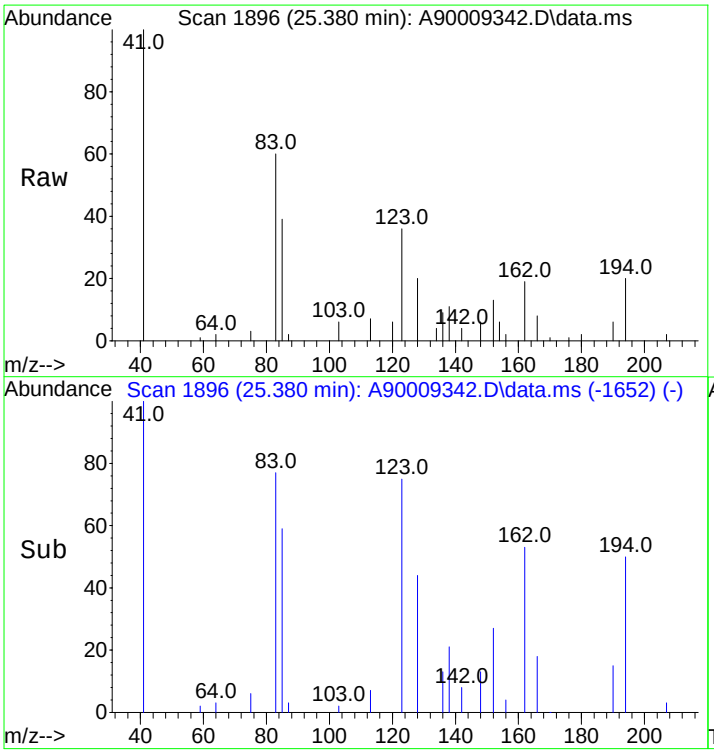




#7
C3-Decalins
Concen: 2062.05 ng/mL m
RT: 22.003 min Scan# 1526
Delta R.T. -0.032 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

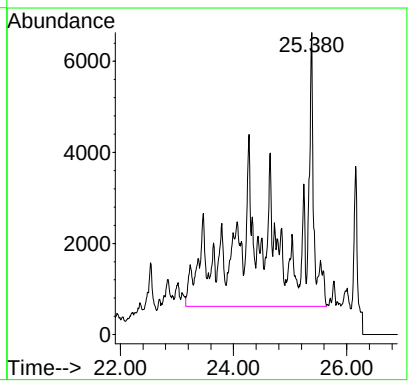
Tgt Ion:180 Resp: 174094

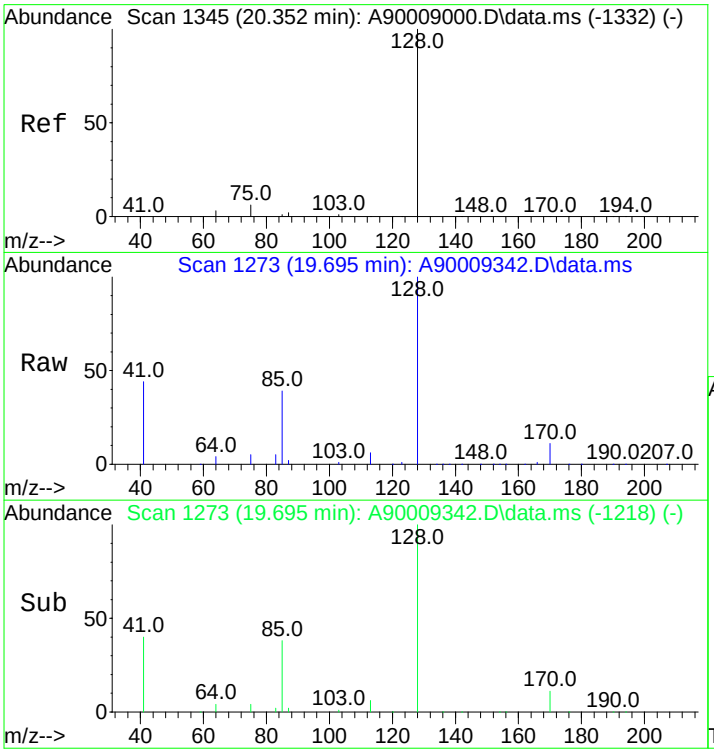




#8
C4-Decalins
Concen: 2182.07 ng/mL m
RT: 25.380 min Scan# 1896
Delta R.T. -0.185 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:194 Resp: 184227

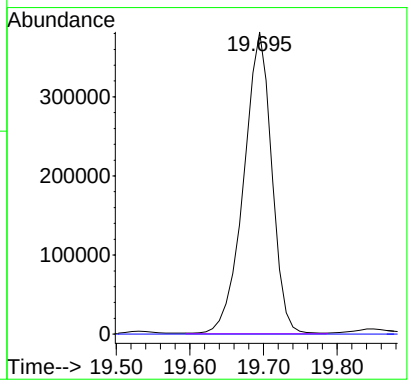


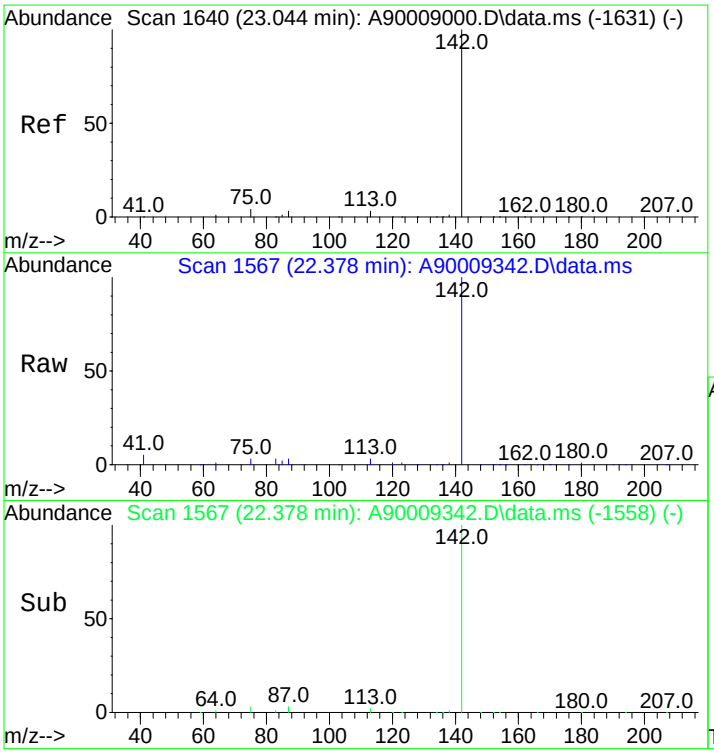


#10
Naphthalene
Concen: 2688.11 ng/mL
RT: 19.695 min Scan# 1273
Delta R.T. -0.000 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:128 Resp: 1018208

Ion	Ratio	Lower	Upper
128	100		
127	0.0	0.0	0.0

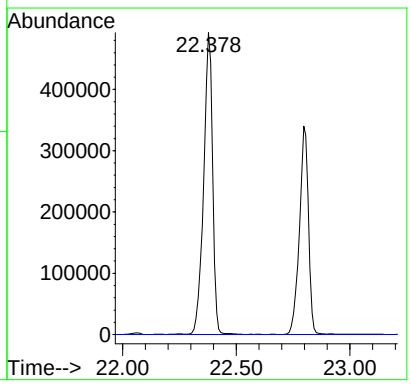


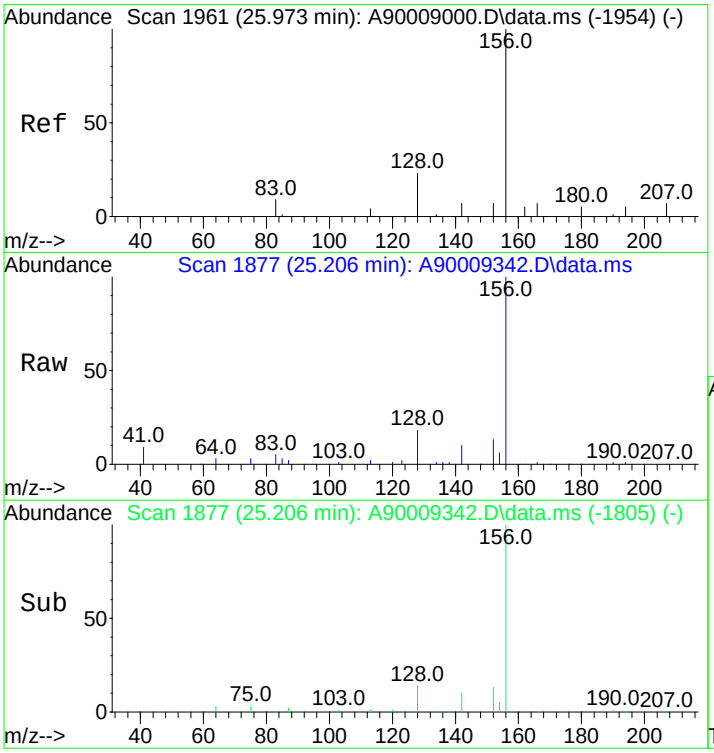


#11
C1-Naphthalenes
Concen: 6067.98 ng/mL m
RT: 22.378 min Scan# 1567
Delta R.T. -0.079 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:142 Resp: 2298440

Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	0.0

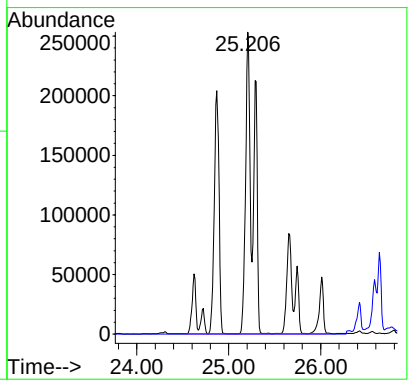


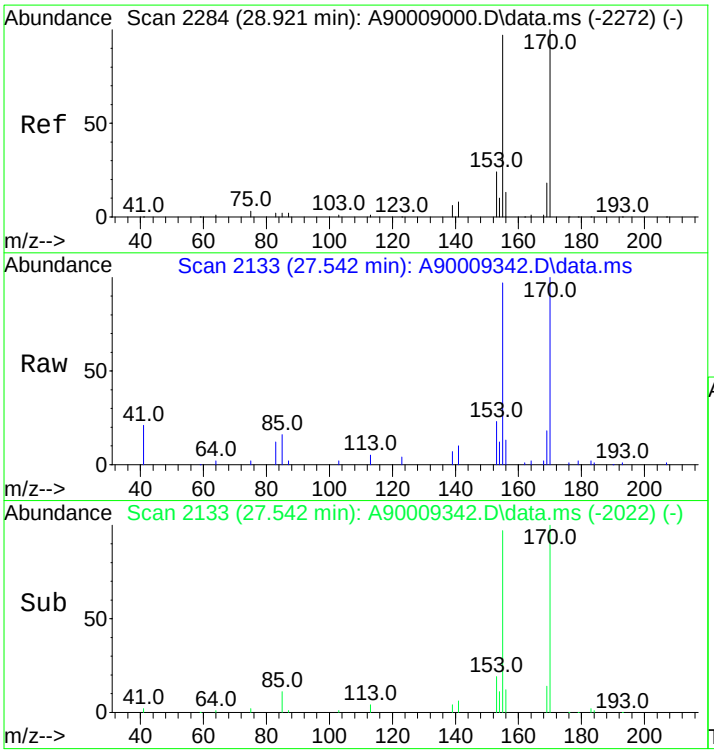


#12
C2-Naphthalenes
Concen: 7795.73 ng/mL m
RT: 25.206 min Scan# 1877
Delta R.T. -0.106 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:156 Resp: 2952881

Ion	Ratio	Lower	Upper
156	100		
141	0.0	0.0	0.0

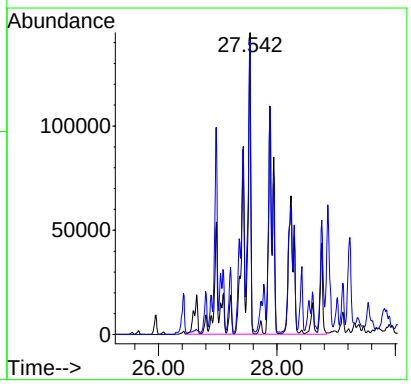


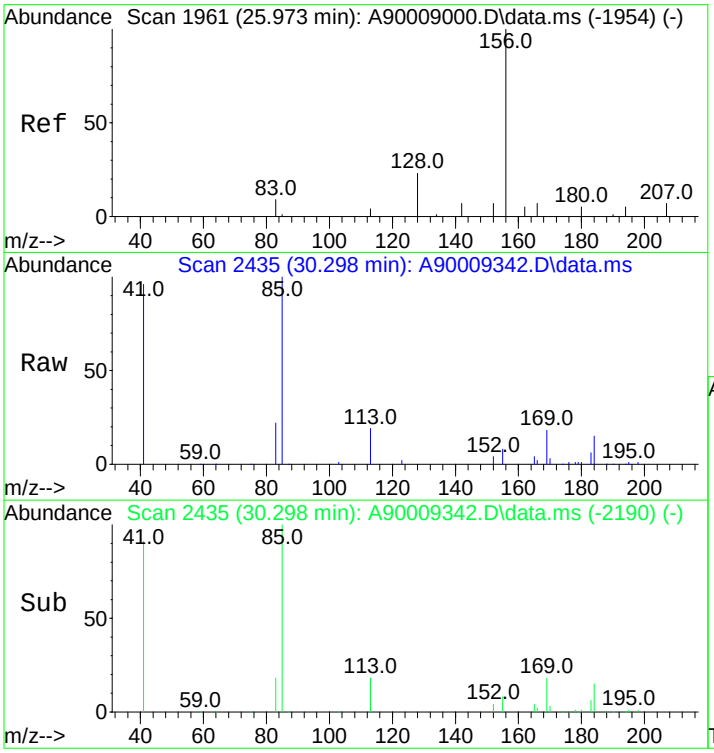


#13
C3-Naphthalenes
Concen: 6070.64 ng/mL m
RT: 27.542 min Scan# 2133
Delta R.T. -0.642 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:170 Resp: 2299451

Ion	Ratio	Lower	Upper
170	100		
155	11.6	84.0	126.0#

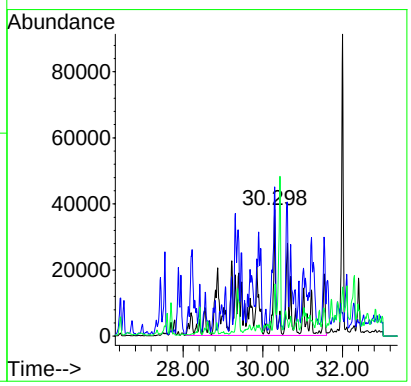


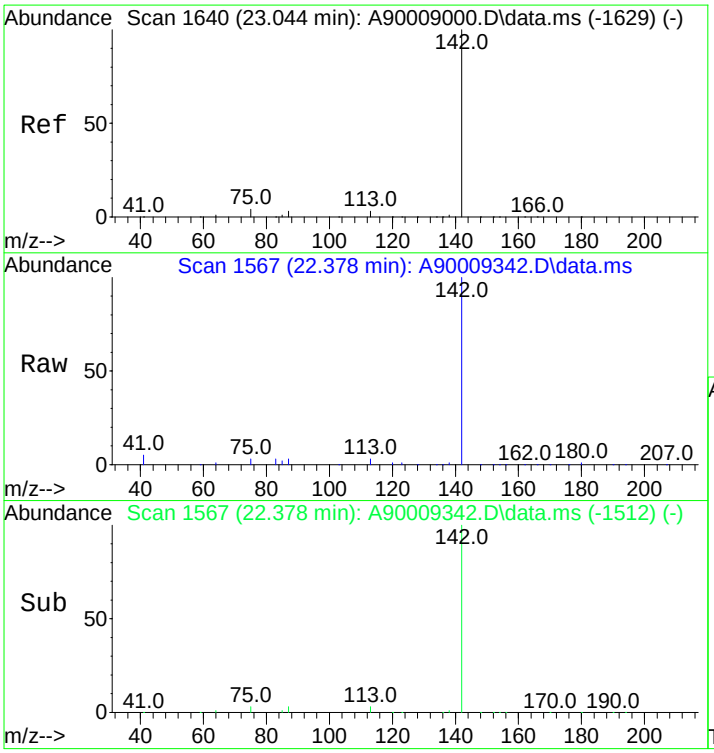


#14
C4-Naphthalenes
Concen: 3460.58 ng/mL m
RT: 30.298 min Scan# 2435
Delta R.T. -0.095 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:184 Resp: 1310806

Ion	Ratio	Lower	Upper
184	100		
169	3.9	97.4	146.2#
183	1.0	29.2	43.8#

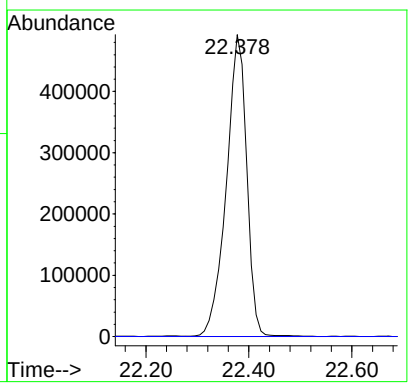


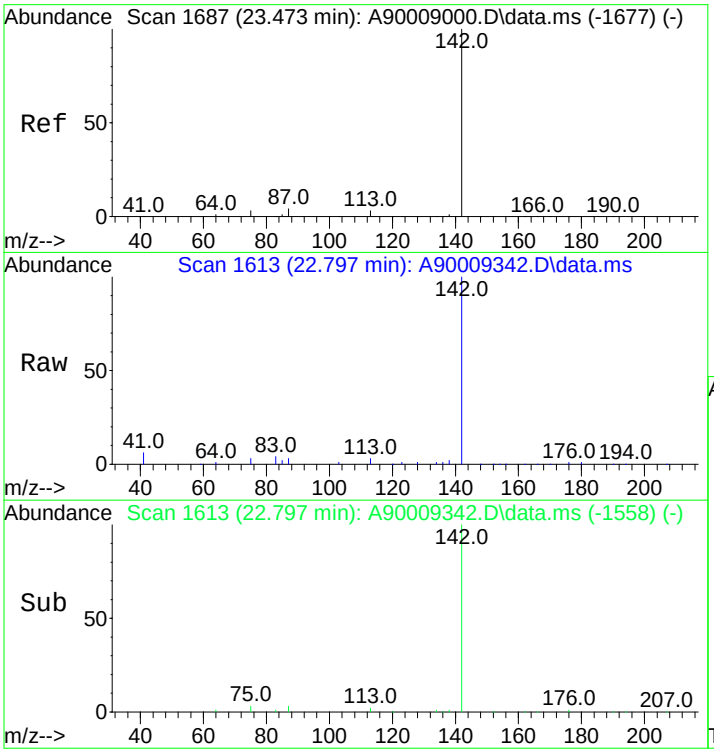


#16
2-Methylnaphthalene
Concen: 5451.55 ng/mL
RT: 22.378 min Scan# 1567
Delta R.T. -0.000 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:142 Resp: 1350414

Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	0.0

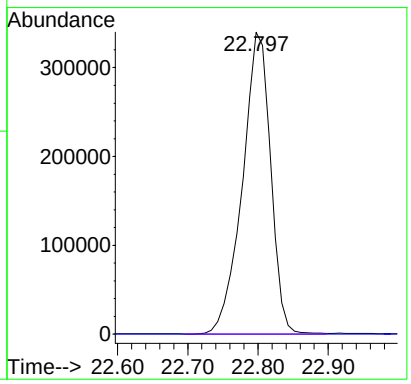


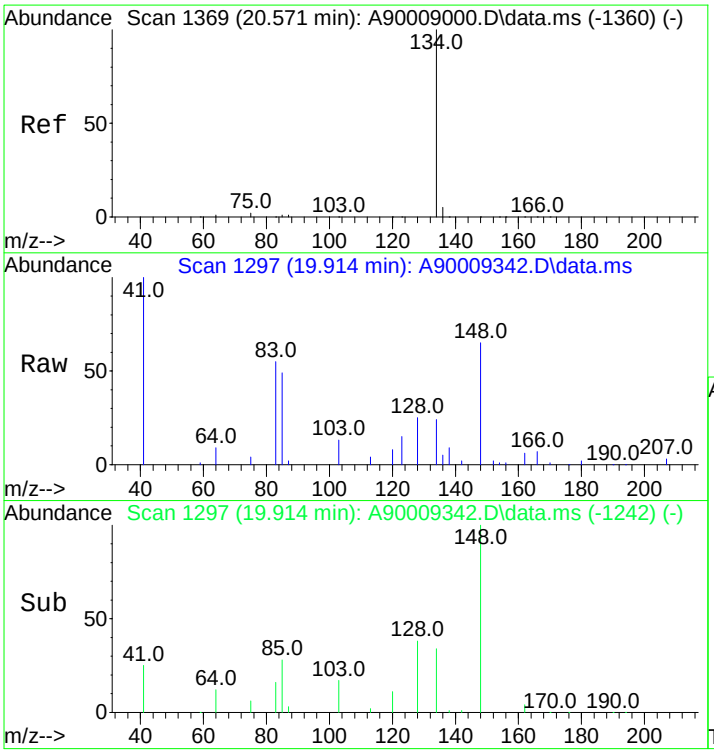


#17
1-Methylnaphthalene
Concen: 3940.66 ng/mL
RT: 22.797 min Scan# 1613
Delta R.T. -0.001 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:142 Resp: 947322

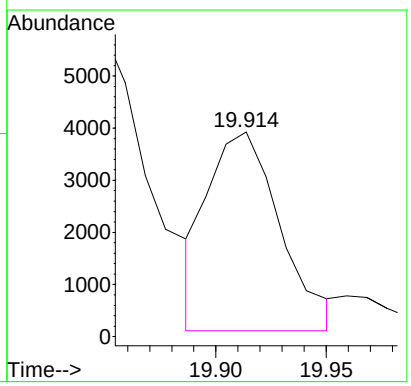
Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	20.0

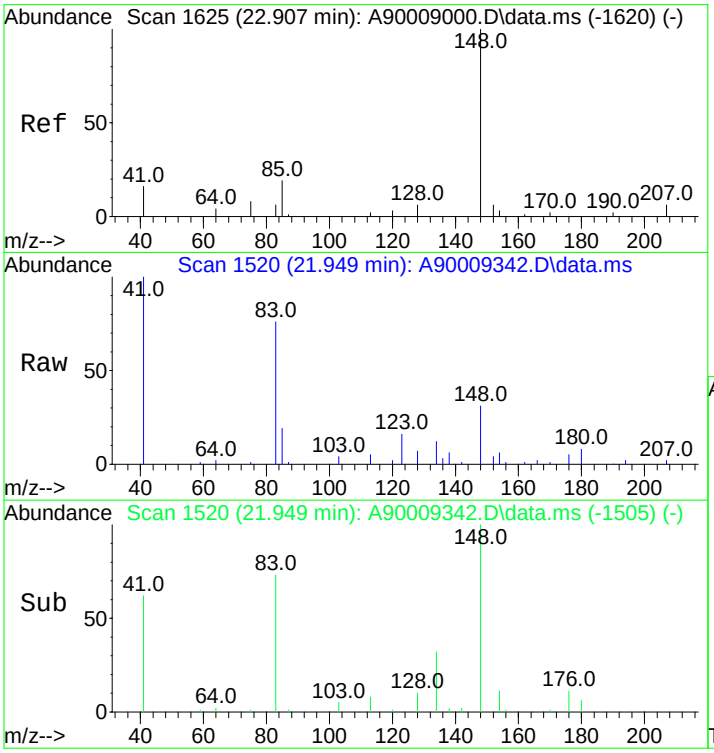




#18
Benzothiophene
Concen: 27.47 ng/mL m
RT: 19.914 min Scan# 1297
Delta R.T. -0.000 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

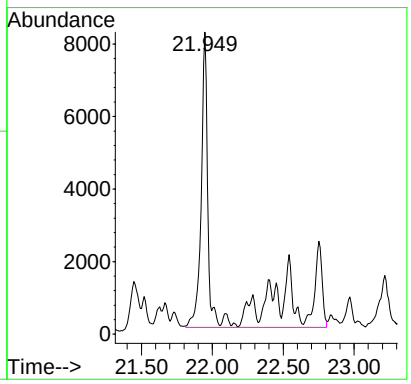
Tgt Ion:134 Resp: 8708

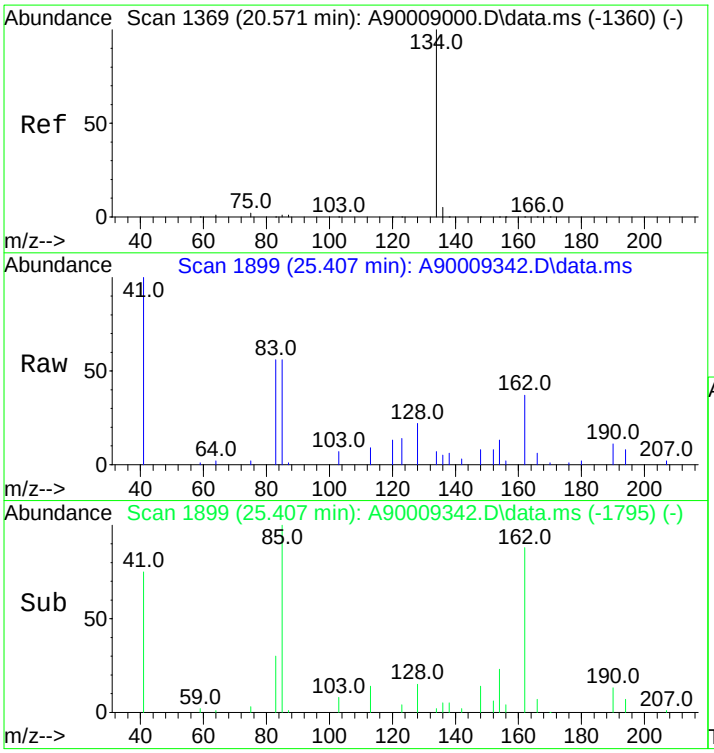




#19
C1-Benzo(b)thiophenes
Concen: 169.94 ng/mL m
RT: 21.949 min Scan# 1520
Delta R.T. -0.375 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

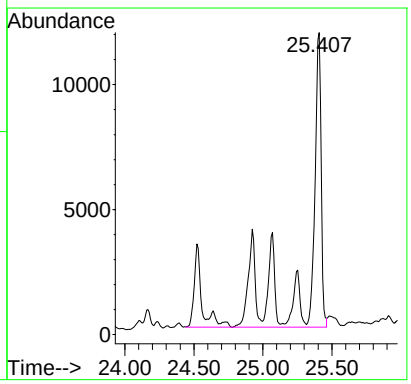
Tgt Ion:148 Resp: 53867

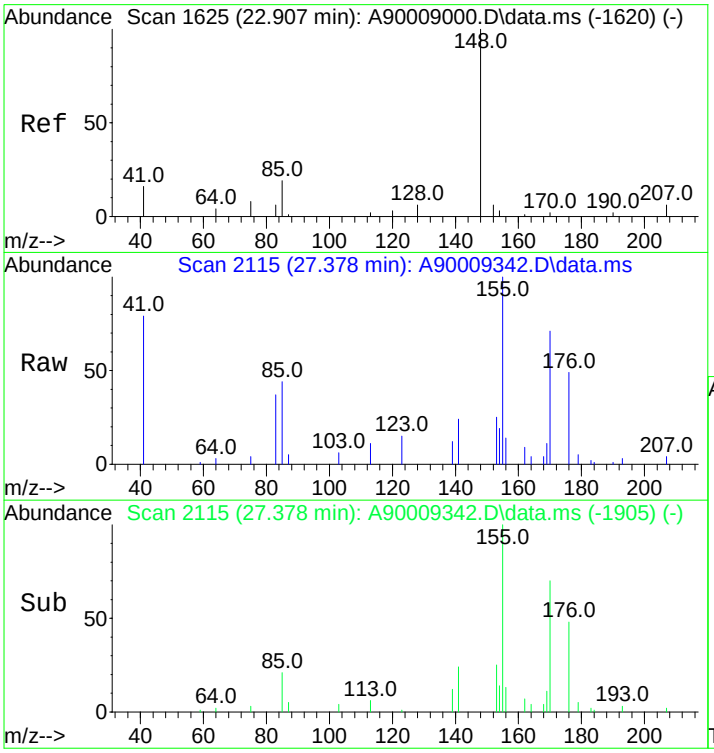




#20
C2-Benzo(b)thiophenes
Concen: 258.92 ng/mL m
RT: 25.407 min Scan# 1899
Delta R.T. 0.528 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

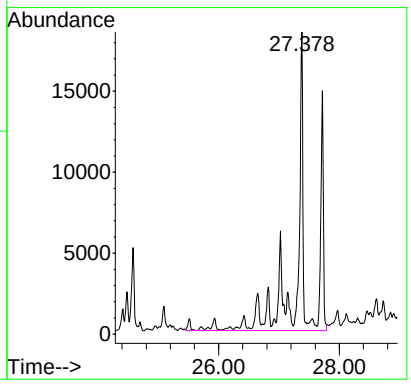
Tgt Ion:162 Resp: 82075

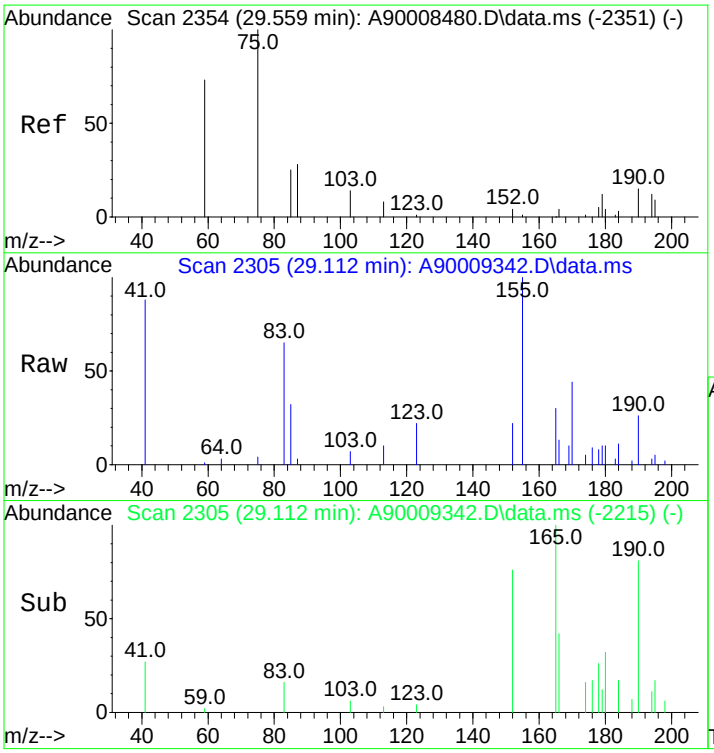




#21
C3-Benzo(b)thiophenes
Concen: 561.86 ng/mL m
RT: 27.378 min Scan# 2115
Delta R.T. -0.163 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

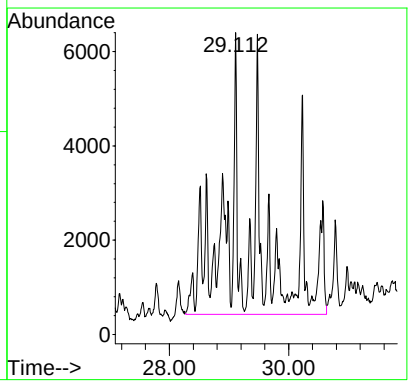
Tgt Ion:176 Resp: 178102

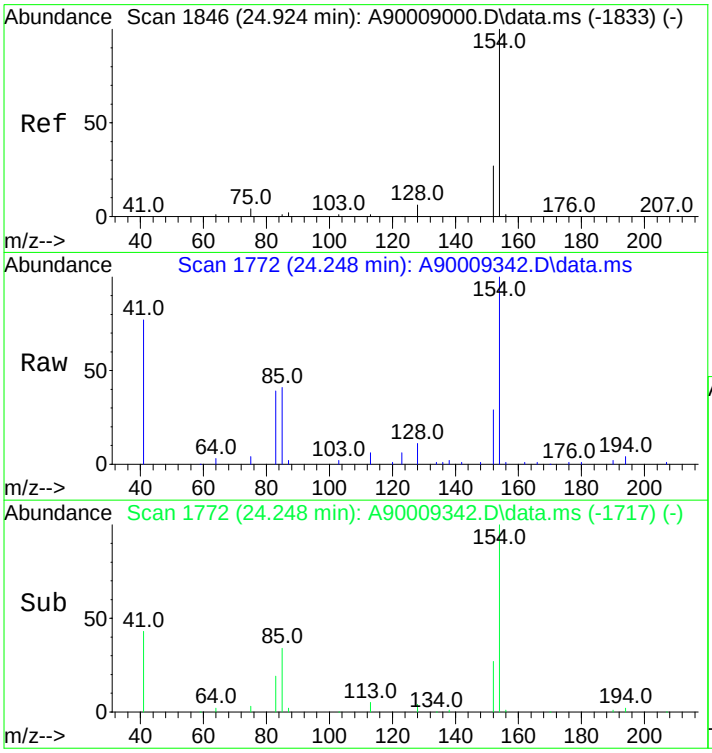




#22
C4-Benzo(b)thiophenes
Concen: 499.21 ng/mL m
RT: 29.112 min Scan# 2305
Delta R.T. -1.144 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:190 Resp: 158243

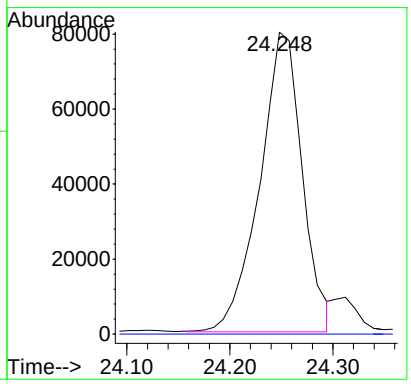


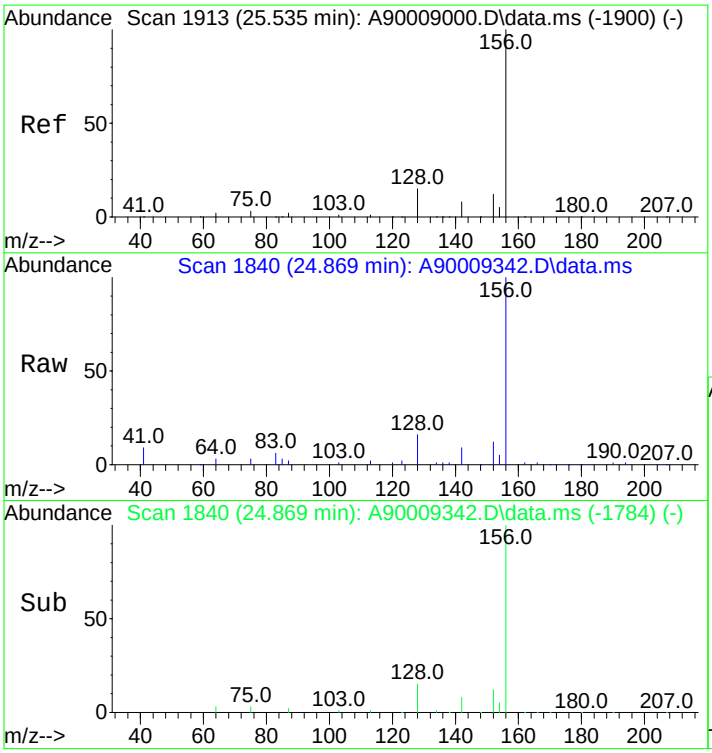


#23
Biphenyl
Concen: 704.67 ng/mL m
RT: 24.248 min Scan# 1772
Delta R.T. -0.001 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:154 Resp: 228429

Ion	Ratio	Lower	Upper
154	100		
153	0.0	0.0	0.0

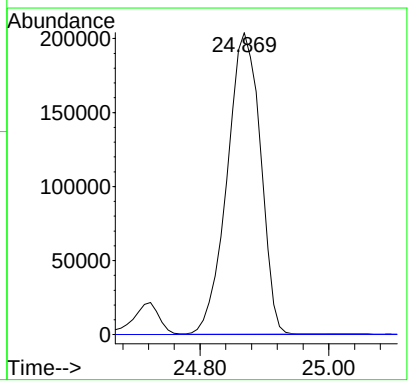


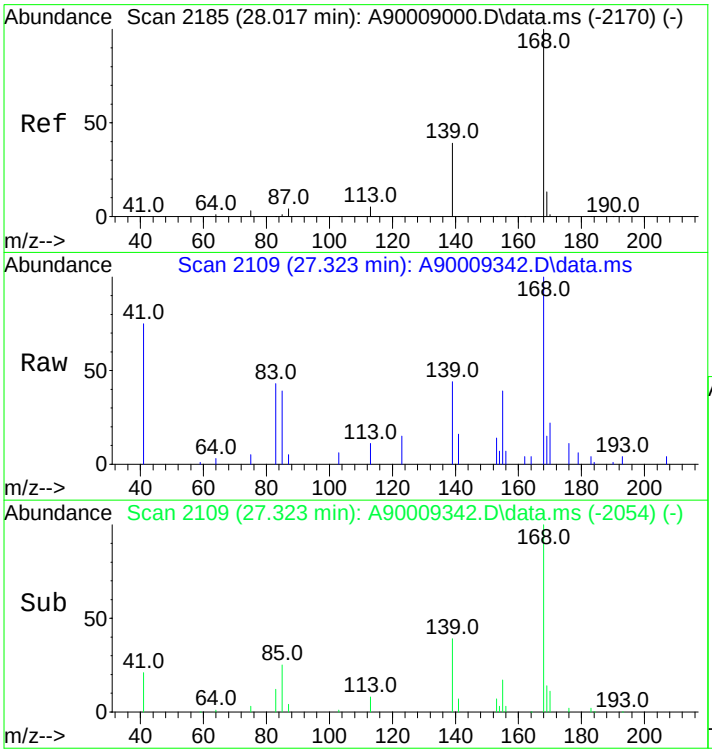


#24
2,6-Dimethylnaphthalene
Concen: 3149.73 ng/mL
RT: 24.869 min Scan# 1840
Delta R.T. 0.009 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:156 Resp: 733431

Ion	Ratio	Lower	Upper
156	100		
155	0.0	0.0	0.0

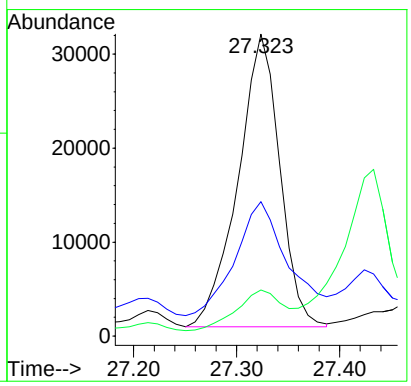


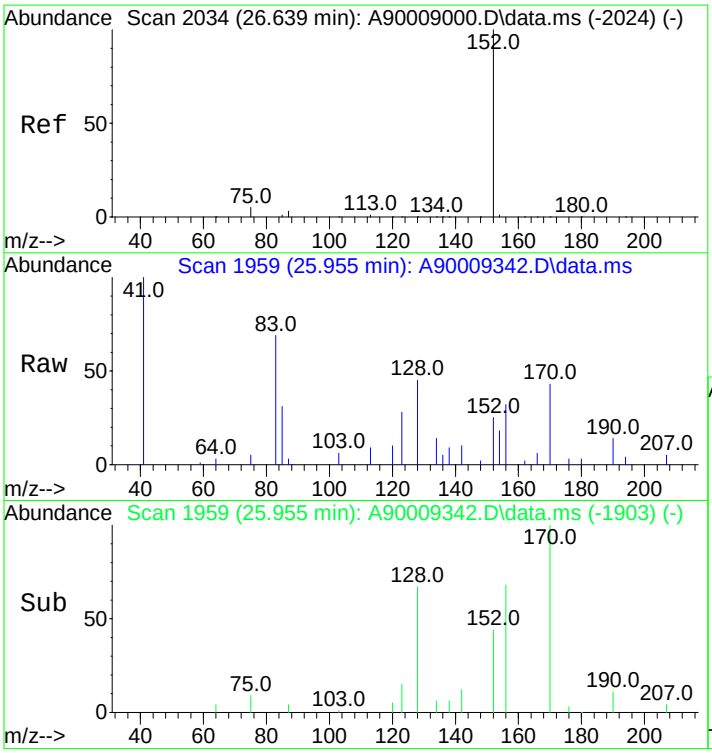


#25
Dibenzofuran
Concen: 253.50 ng/mL
RT: 27.323 min Scan# 2109
Delta R.T. -0.001 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:168 Resp: 87647

Ion	Ratio	Lower	Upper
168	100		
139	48.6	28.9	43.3#
169	15.2	10.6	15.8

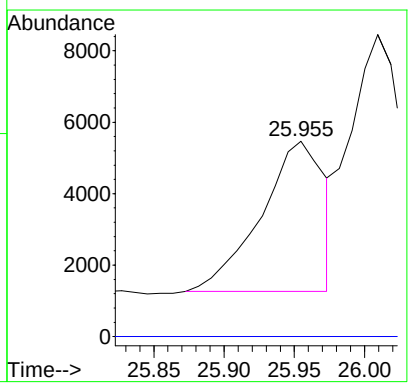


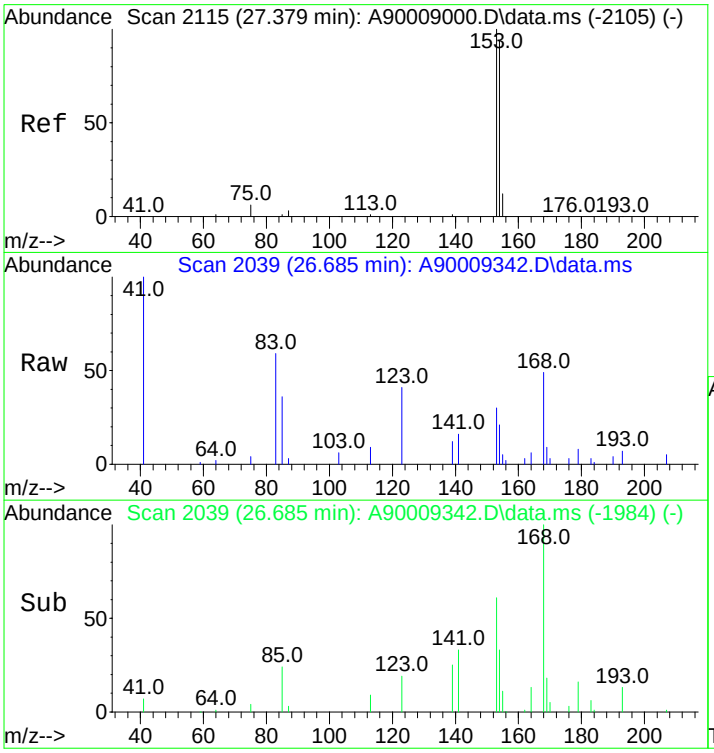


#26
Acenaphthylene
Concen: 33.77 ng/mL
RT: 25.955 min Scan# 1959
Delta R.T. 0.009 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:152 Resp: 13158

Ion	Ratio	Lower	Upper
152	100		
153	0.0	0.0	0.0

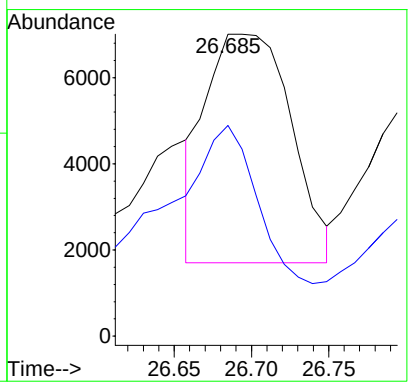


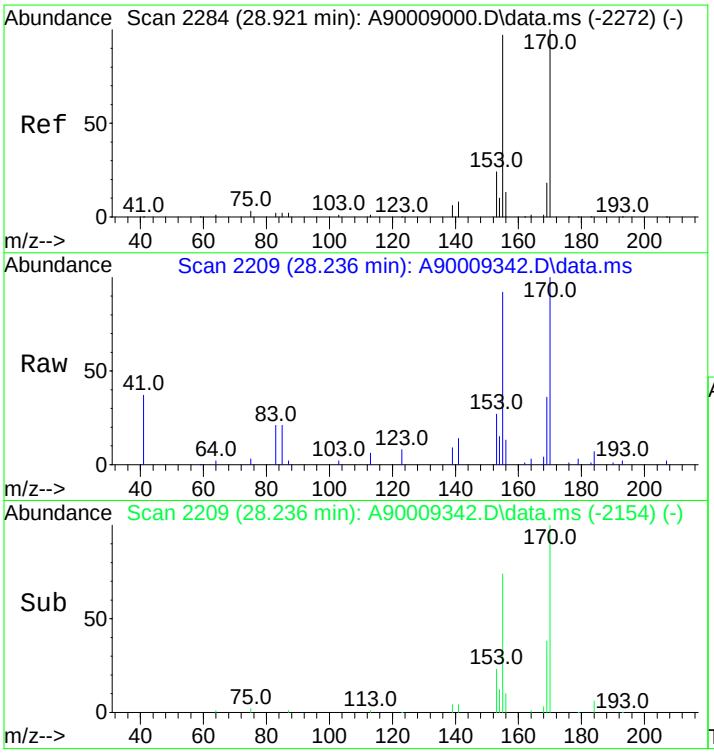


#27
Acenaphthene
Concen: 83.48 ng/mL m
RT: 26.685 min Scan# 2039
Delta R.T. -0.000 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:153 Resp: 20452

Ion	Ratio	Lower	Upper
153	100		
154	88.8	76.2	114.4

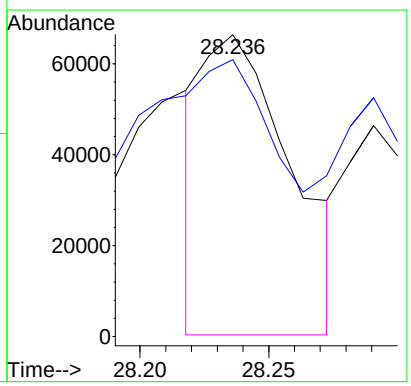


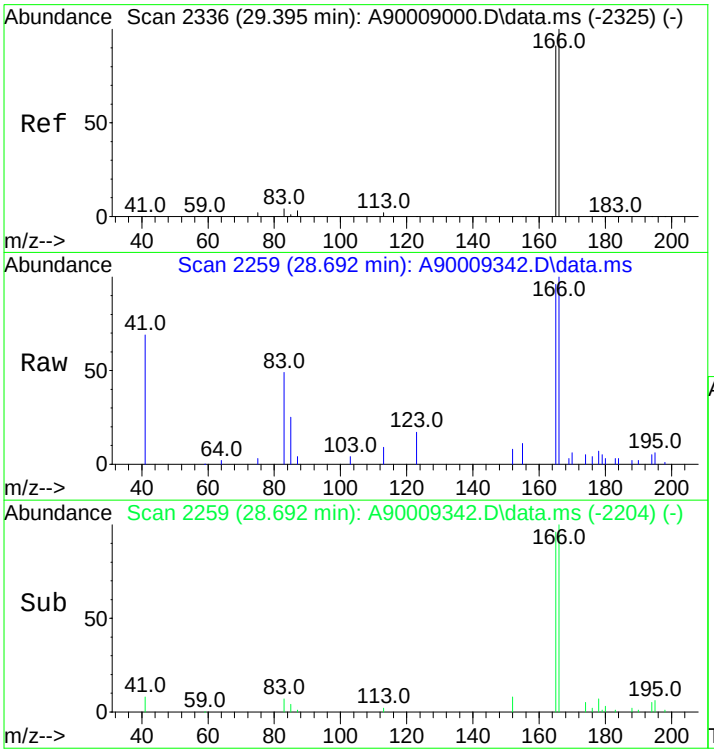


#28
2,3,5-Trimethylnaphthalene
Concen: 734.69 ng/mL m
RT: 28.236 min Scan# 2209
Delta R.T. -0.000 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:170 Resp: 157284

Ion	Ratio	Lower	Upper
170	100		
155	170.3	69.0	103.6#

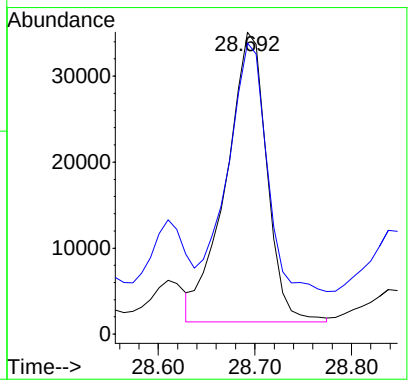


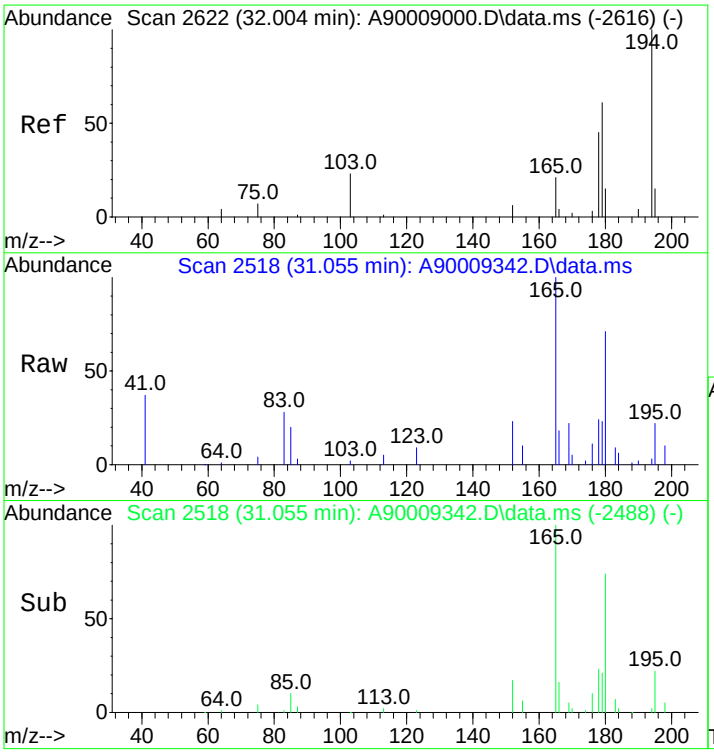


#29
Fluorene
Concen: 366.62 ng/mL m
RT: 28.692 min Scan# 2259
Delta R.T. 0.000 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:166 Resp: 98636

Ion	Ratio	Lower	Upper
166	100		
165	111.0	73.8	110.6#

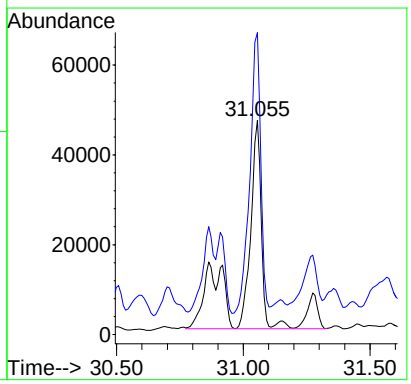


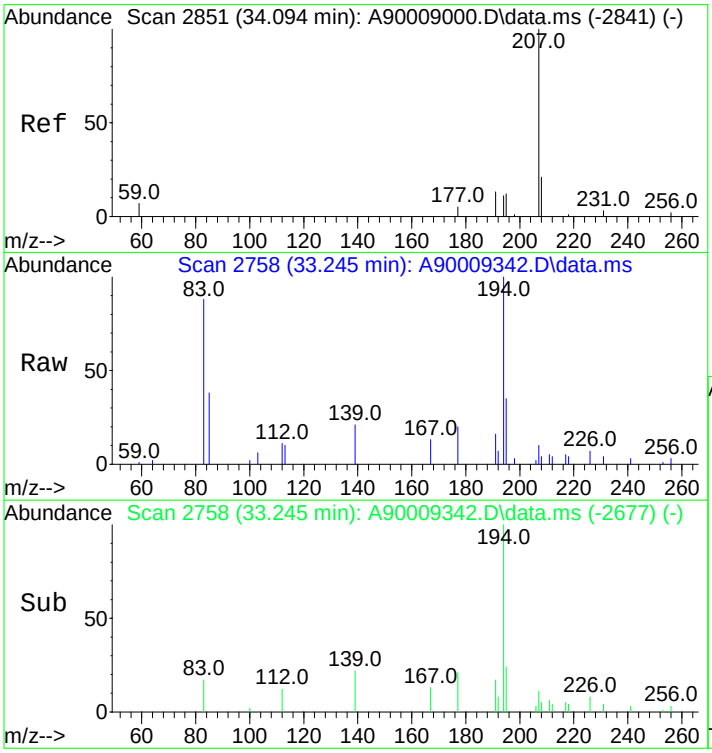


#30
C1-Fluorenes
Concen: 865.78 ng/mL m
RT: 31.055 min Scan# 2518
Delta R.T. -0.135 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:180 Resp: 232932

Ion	Ratio	Lower	Upper
180	100		
165	16.3	121.9	182.9#

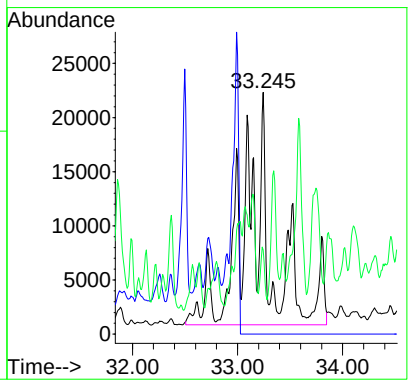


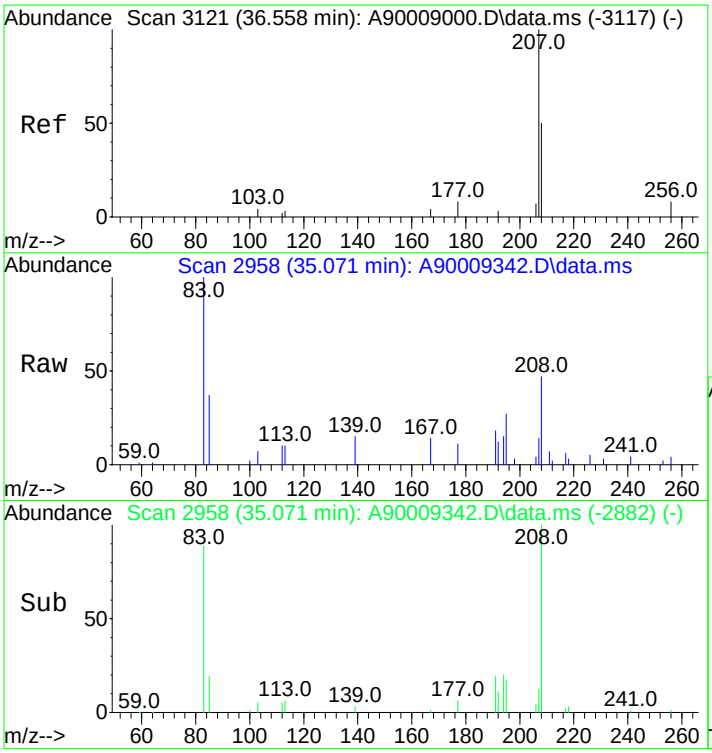


#31
C2-Fluorenes
Concen: 1392.51 ng/mL m
RT: 33.245 min Scan# 2758
Delta R.T. 0.019 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:194 Resp: 374645

Ion	Ratio	Lower	Upper
194	100		
179	0.0	0.0	0.0
195	3.3	28.7	43.1#

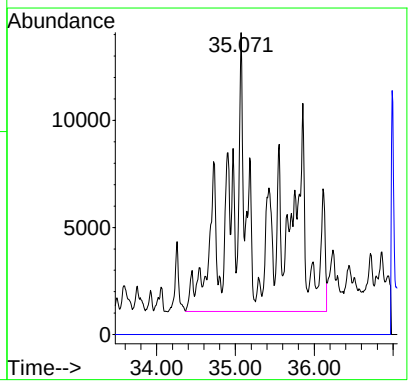


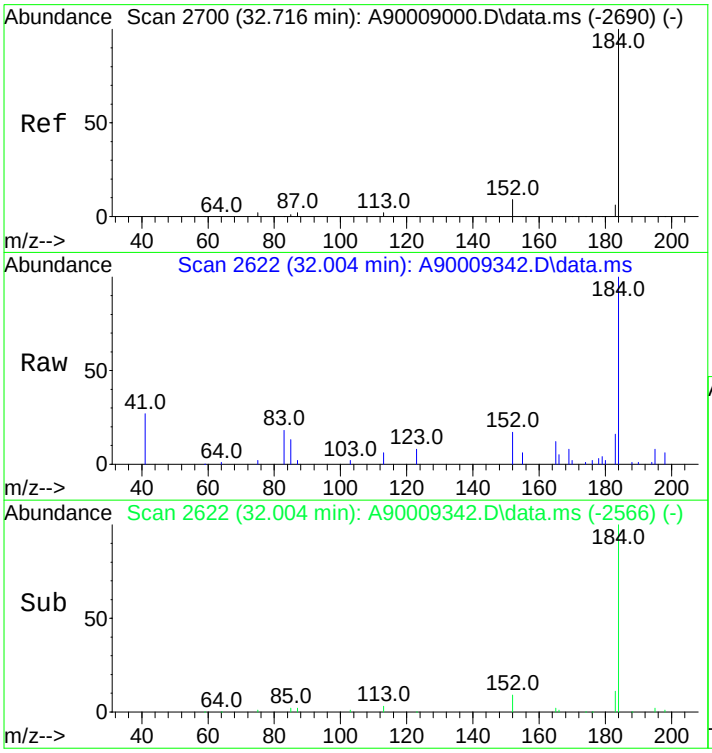


#32
C3-Fluorenes
Concen: 1333.42 ng/mL m
RT: 35.071 min Scan# 2958
Delta R.T. -0.557 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:208 Resp: 358747

Ion	Ratio	Lower	Upper
208	100		
197	0.0	0.0	0.0

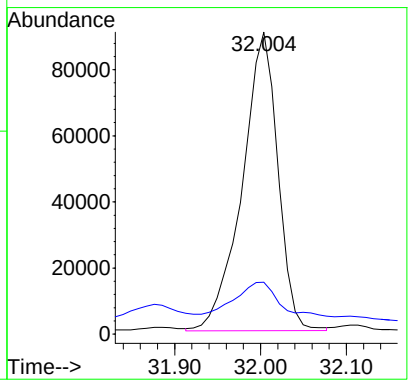


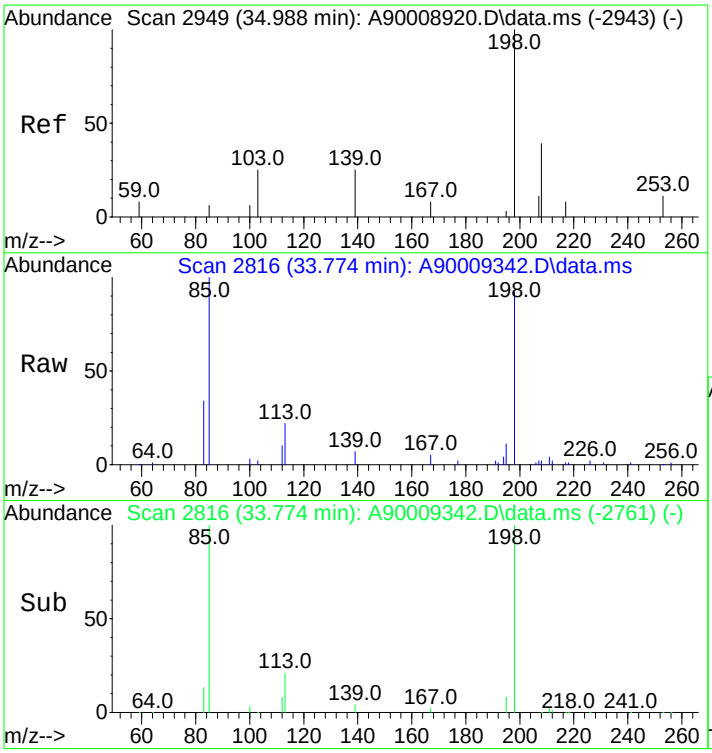


#33
Dibenzothiophene
Concen: 690.57 ng/mL
RT: 32.004 min Scan# 2622
Delta R.T. 0.009 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:184 Resp: 261347

Ion	Ratio	Lower	Upper
184	100		
152	14.4	8.2	12.4#

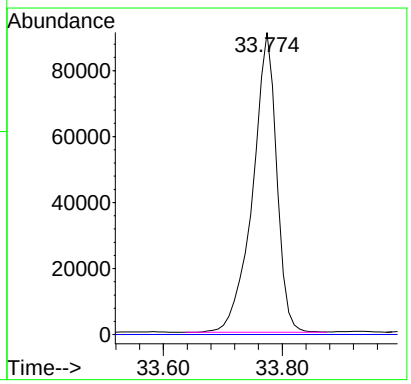


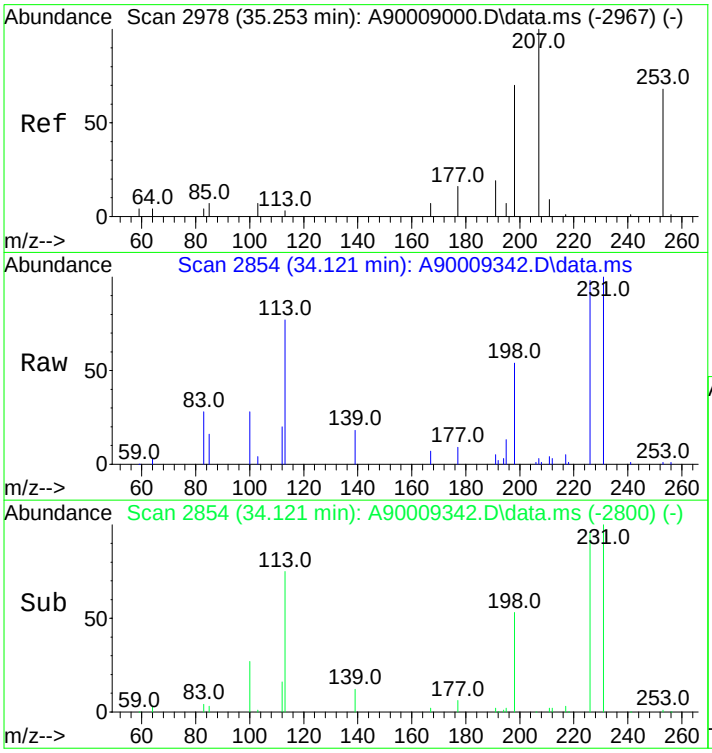


#34
4-Methyldibenzothiophene(4MDT)
Concen: 670.48 ng/mL
RT: 33.774 min Scan# 2816
Delta R.T. 0.000 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:198 Resp: 253744

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

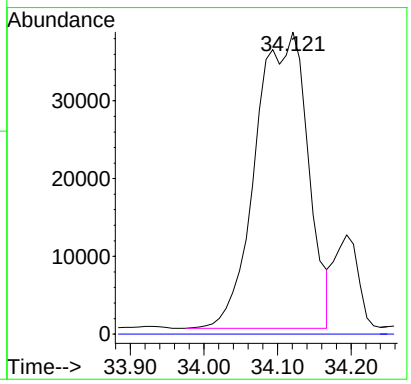


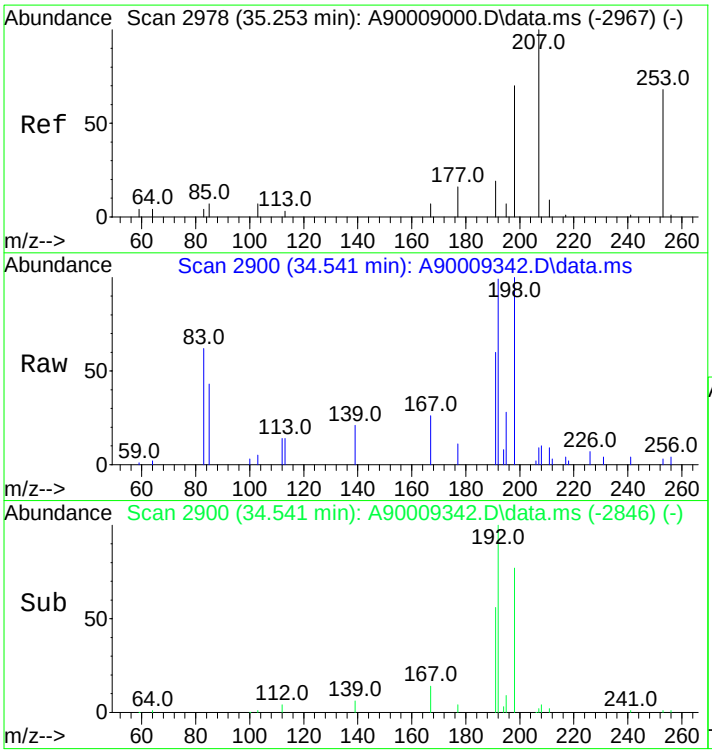


#35
2/3-Methyldibenzothiophene(2MDT)
Concen: 496.23 ng/mL
RT: 34.121 min Scan# 2854
Delta R.T. -0.009 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:198 Resp: 187800

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

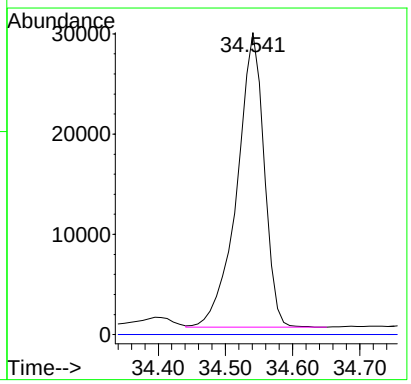


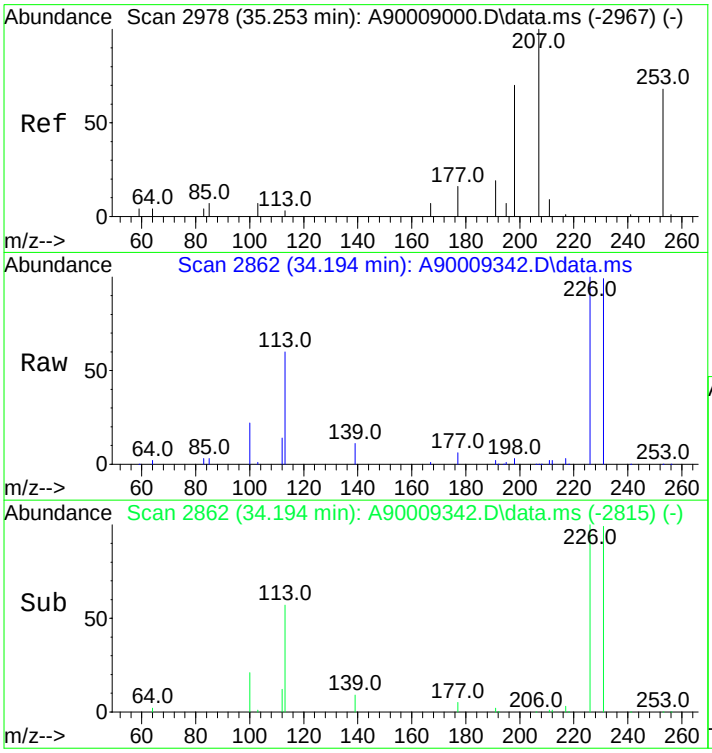


#36
1-Methyldibenzothiophene(1MDT)
Concen: 217.72 ng/mL
RT: 34.541 min Scan# 2900
Delta R.T. -0.009 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:198 Resp: 82398

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

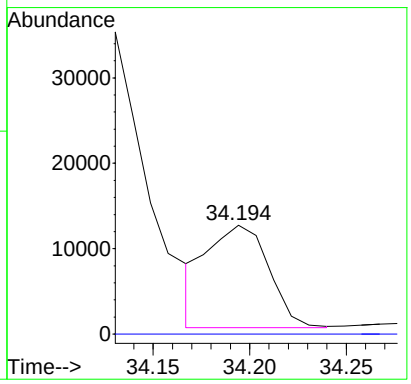


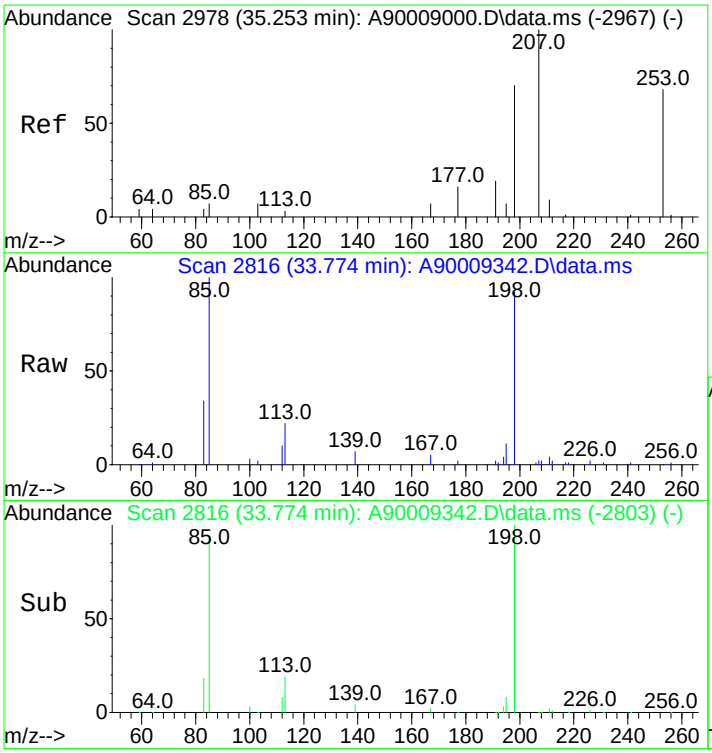


#37
OTP
Concen: 71.04 ng/mL
RT: 34.194 min Scan# 2862
Delta R.T. -0.019 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:198 Resp: 26884

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

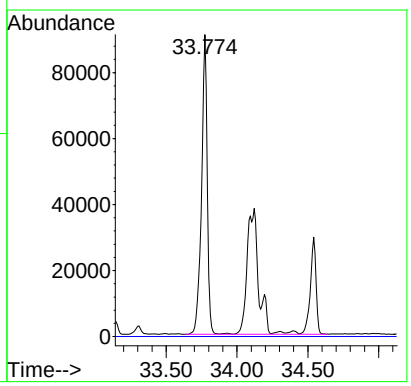


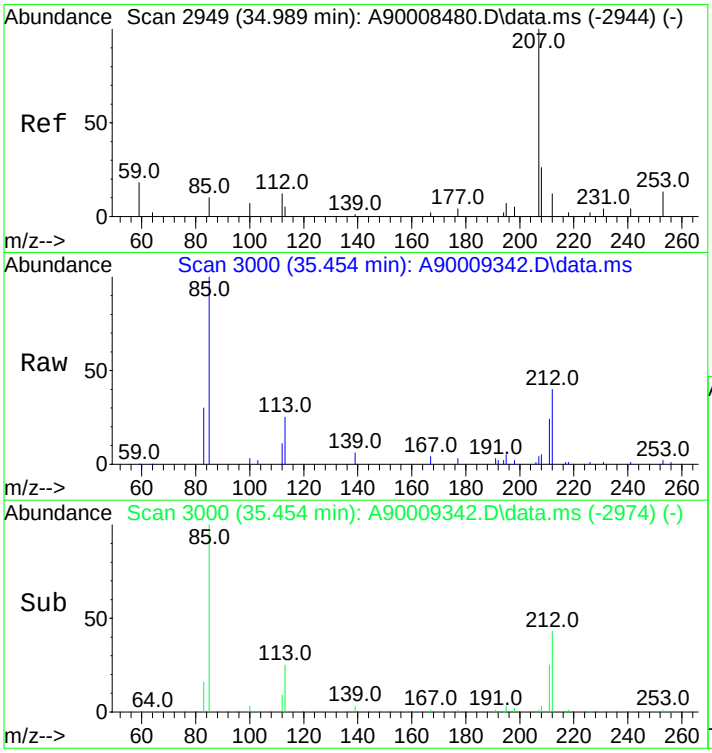


#38
C1-Dibenzothiophenes
Concen: 1485.71 ng/mL m
RT: 33.774 min Scan# 2816
Delta R.T. -0.582 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:198 Resp: 562272

Ion	Ratio	Lower	Upper
198	100		
197	0.0	0.0	0.0

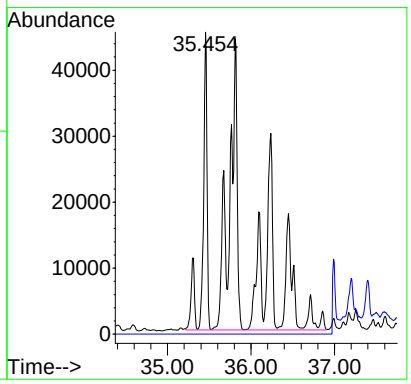


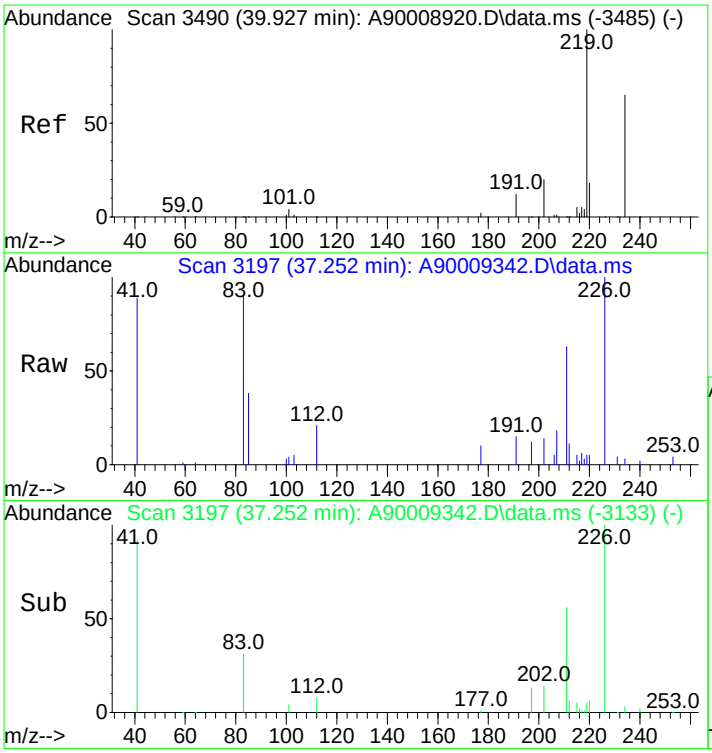


#39
C2-Dibenzothiophenes
Concen: 1958.77 ng/mL m
RT: 35.454 min Scan# 3000
Delta R.T. -0.761 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:212 Resp: 741305

Ion	Ratio	Lower	Upper
212	100		
197	0.0	0.0	0.0

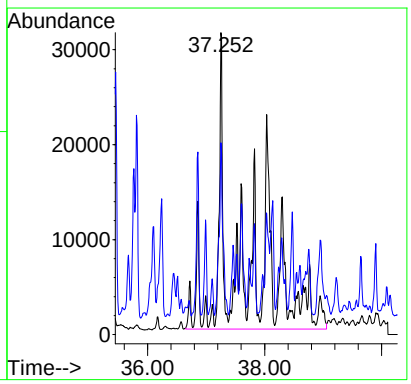


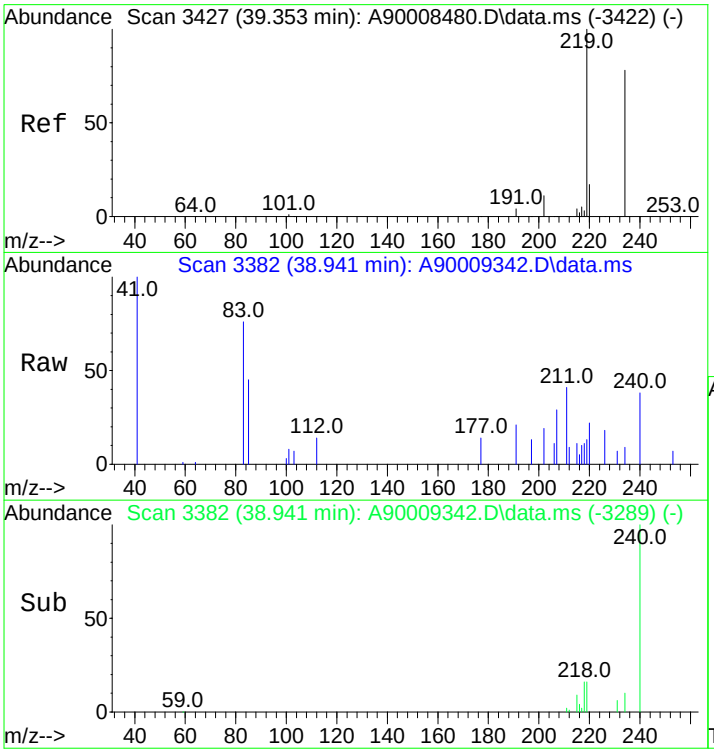


#40
C3-Dibenzothiophenes
Concen: 1760.54 ng/mL m
RT: 37.252 min Scan# 3197
Delta R.T. 0.561 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:226 Resp: 666283

Ion	Ratio	Lower	Upper
226	100		
211	2.1	47.8	71.8#

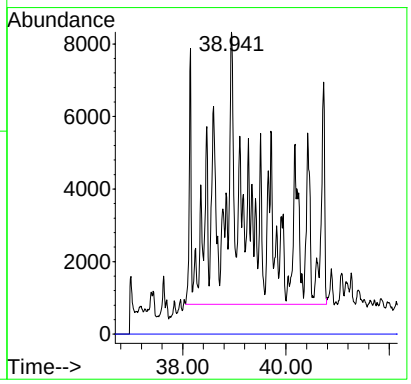


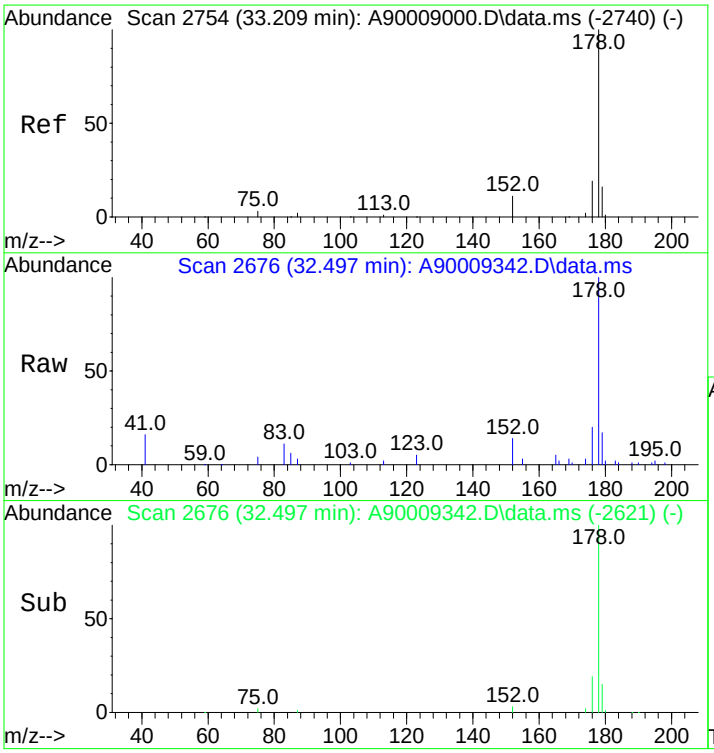


#41
C4-Dibenzothiophenes
Concen: 929.61 ng/mL m
RT: 38.941 min Scan# 3382
Delta R.T. -0.877 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:240 Resp: 351814

Ion	Ratio	Lower	Upper
240	100		
225	0.0	0.0	0.0

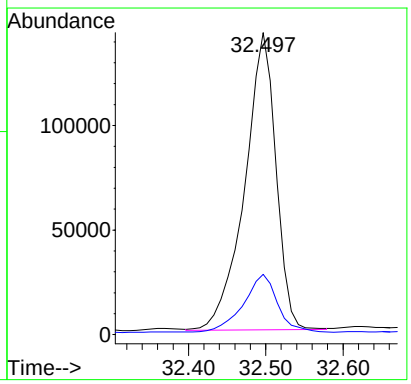


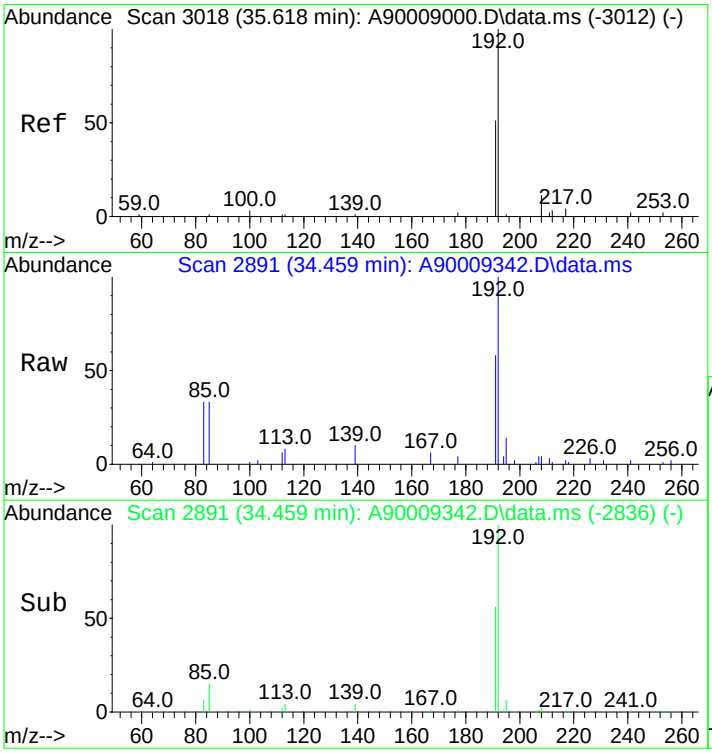


#43
Phenanthrene
Concen: 1020.92 ng/mL
RT: 32.497 min Scan# 2676
Delta R.T. -0.000 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:178 Resp: 399166

Ion	Ratio	Lower	Upper
178	100		
176	21.1	14.9	22.3

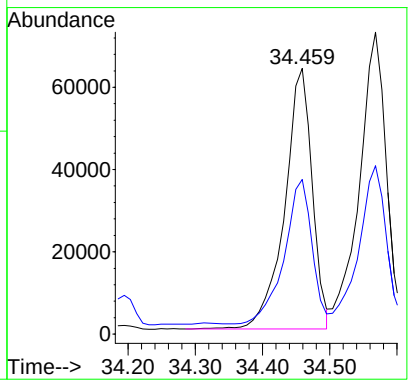


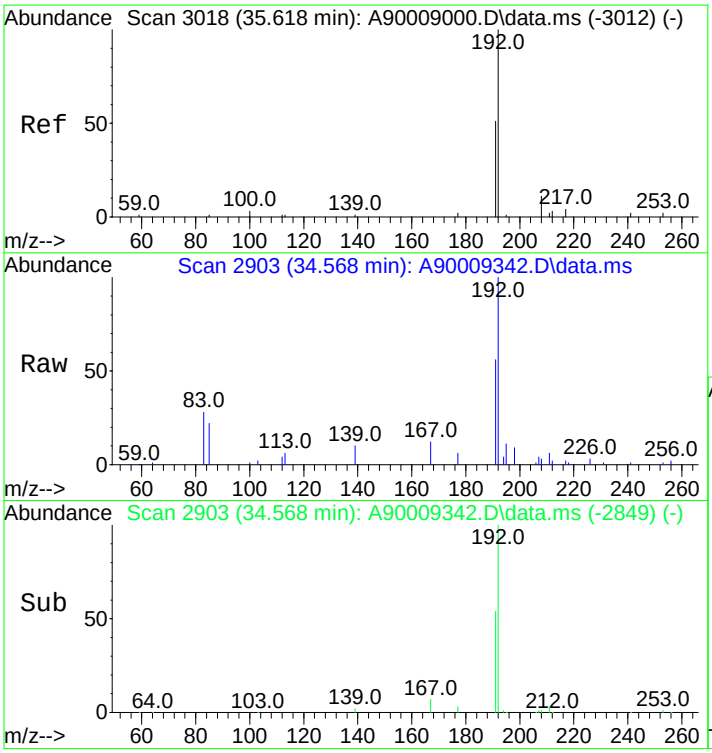


#44
3-Methylphenanthrene(3MP)
Concen: 460.75 ng/mL
RT: 34.459 min Scan# 2891
Delta R.T. -0.000 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:192 Resp: 180149

Ion	Ratio	Lower	Upper
192	100		
191	55.5	46.7	70.1

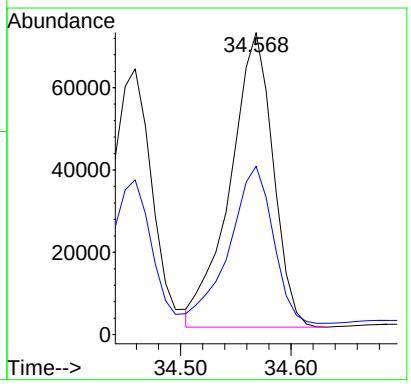


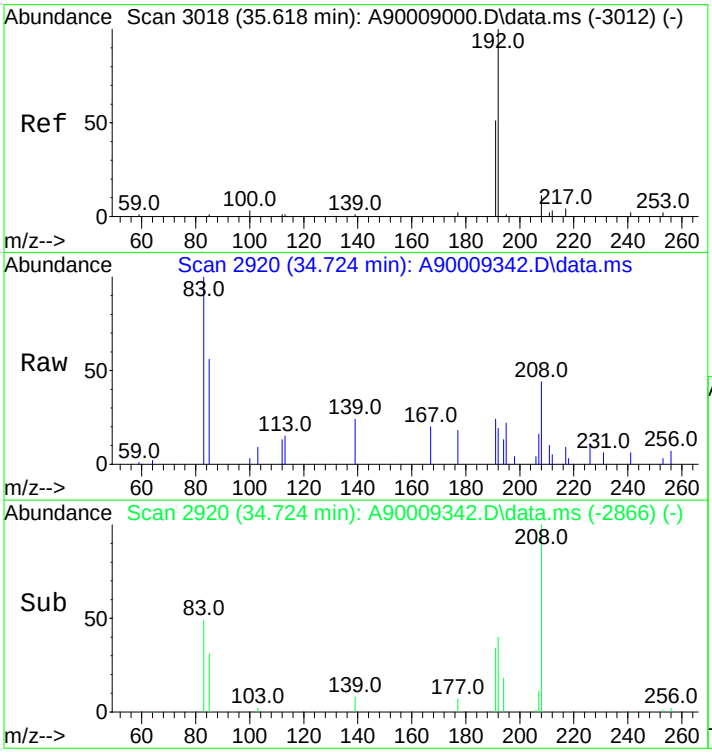


#45
2-Methylphenanthrene(2MP)
Concen: 495.71 ng/mL
RT: 34.568 min Scan# 2903
Delta R.T. -0.010 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:192 Resp: 193816

Ion	Ratio	Lower	Upper
192	100		
191	54.7	45.0	67.6

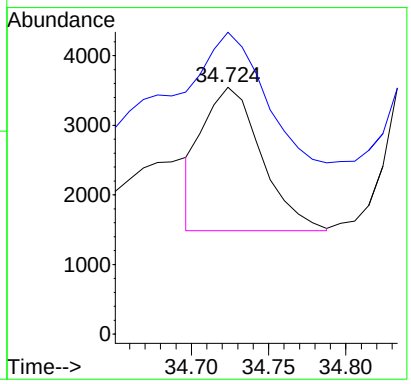


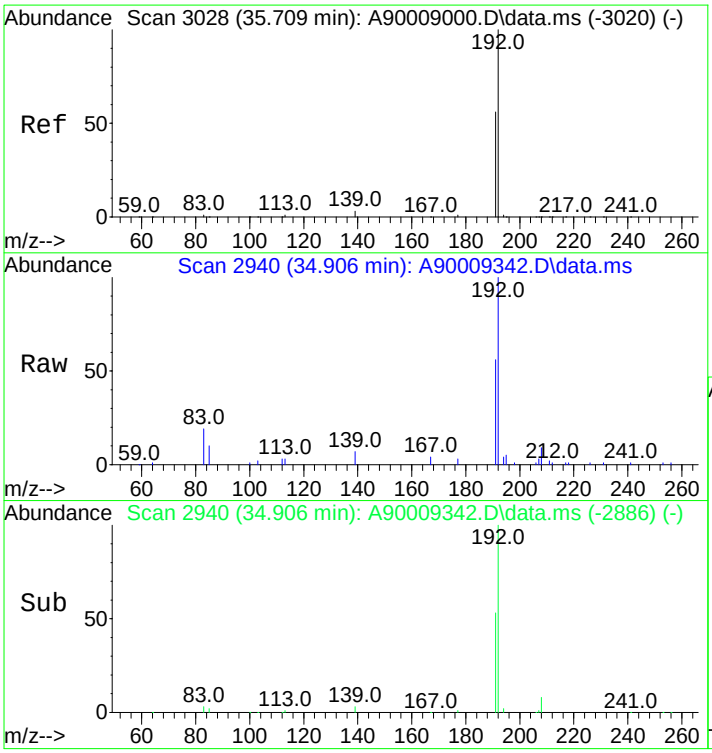


#46
2-Methylanthracene(2MA)
Concen: 13.97 ng/mL m
RT: 34.724 min Scan# 2920
Delta R.T. -0.009 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:192 Resp: 5461

Ion	Ratio	Lower	Upper
192	100		
191	17.6	98.6	148.0#

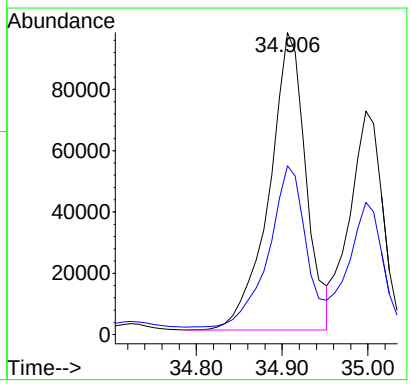


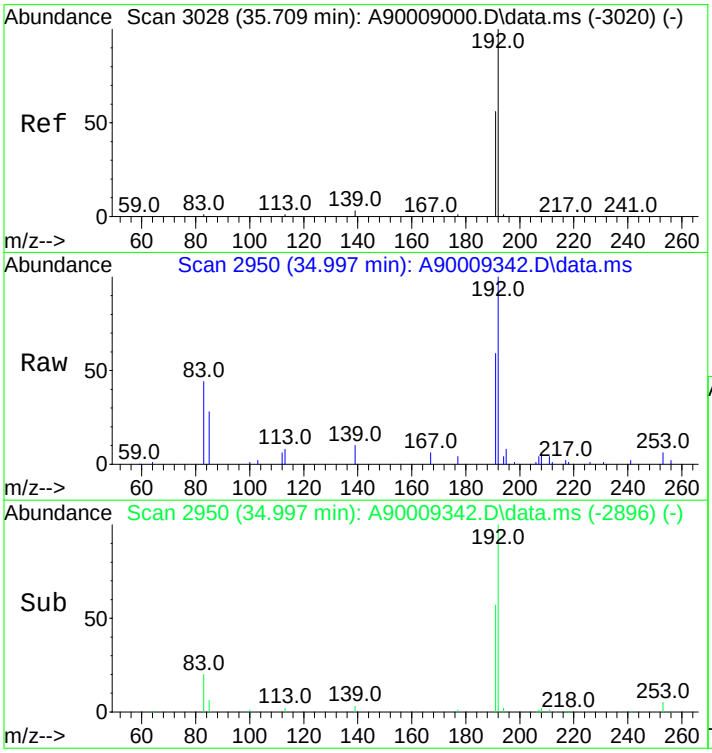


#47
9/4-Methylphenanthrene(9MP)
Concen: 738.50 ng/mL
RT: 34.906 min Scan# 2940
Delta R.T. -0.009 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:192 Resp: 288743

Ion	Ratio	Lower	Upper
192	100		
191	55.0	45.3	67.9

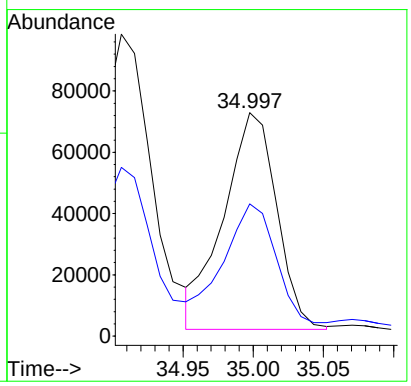


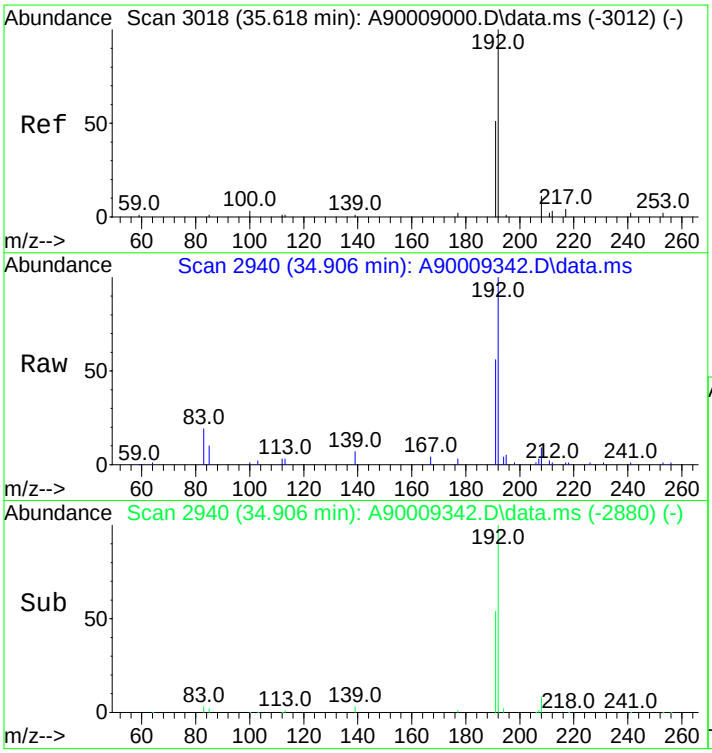


#48
1-Methylphenanthrene(1MP)
Concen: 477.42 ng/mL m
RT: 34.997 min Scan# 2950
Delta R.T. -0.010 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:192 Resp: 186665

Ion	Ratio	Lower	Upper
192	100		
191	57.9	47.4	71.0

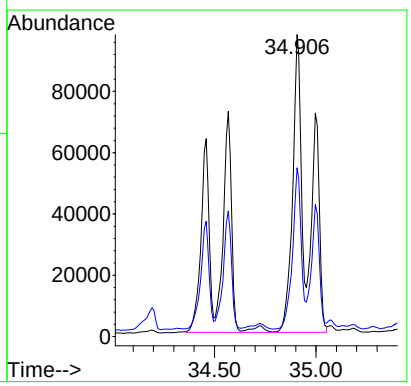


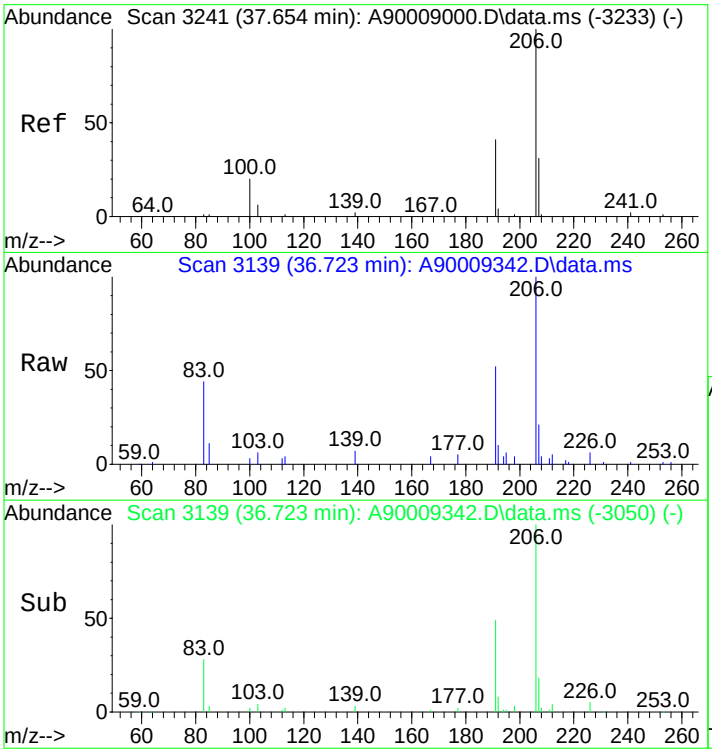


#49
C1-Phenanthrenes/Anthracenes
Concen: 2222.48 ng/mL m
RT: 34.906 min Scan# 2940
Delta R.T. 0.195 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:192 Resp: 868961

Ion	Ratio	Lower	Upper
192	100		
191	12.2	44.6	67.0#

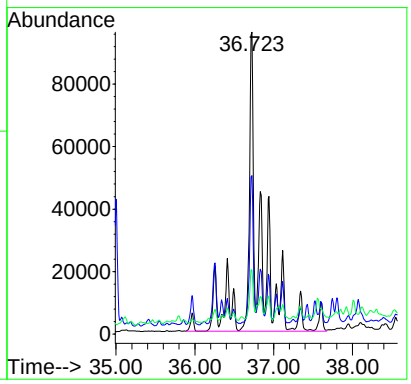


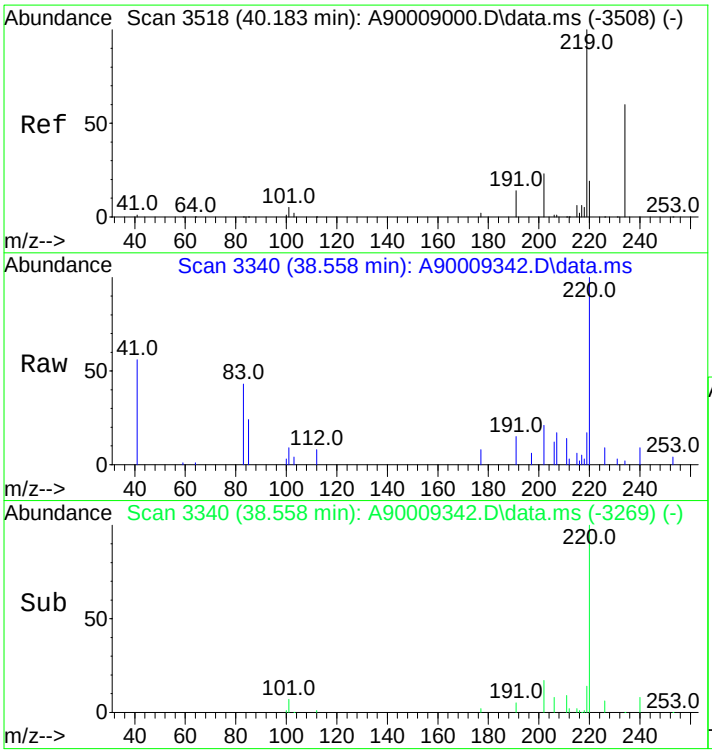


#50
C2-Phenanthrenes/Anthracenes
Concen: 2490.05 ng/mL m
RT: 36.723 min Scan# 3139
Delta R.T. 0.028 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:206 Resp: 973577

Ion	Ratio	Lower	Upper
206	100		
191	3.5	42.2	63.4#
207	1.2	16.8	25.2#

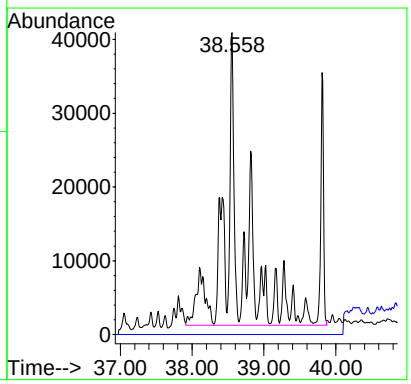


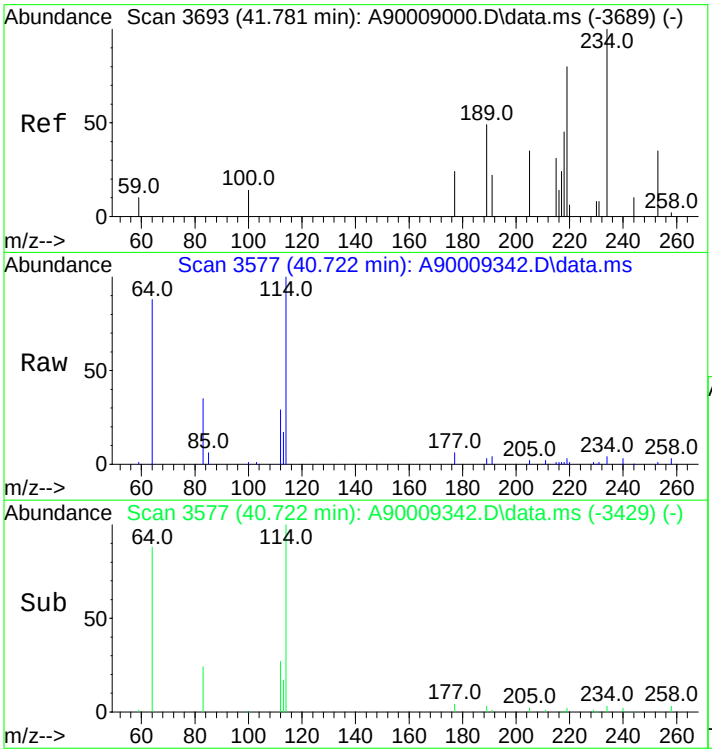


#52
C3-Phenanthrenes/Anthracenes
Concen: 1701.81 ng/mL m
RT: 38.558 min Scan# 3340
Delta R.T. -0.602 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:220 Resp: 665387

Ion	Ratio	Lower	Upper
220	100		
205	0.0	0.0	0.0

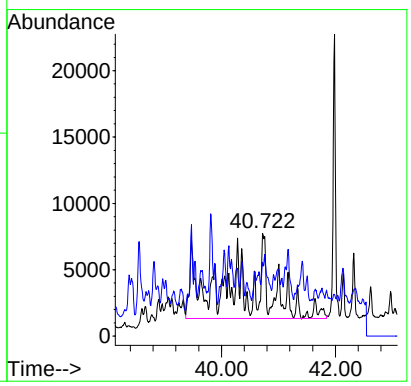


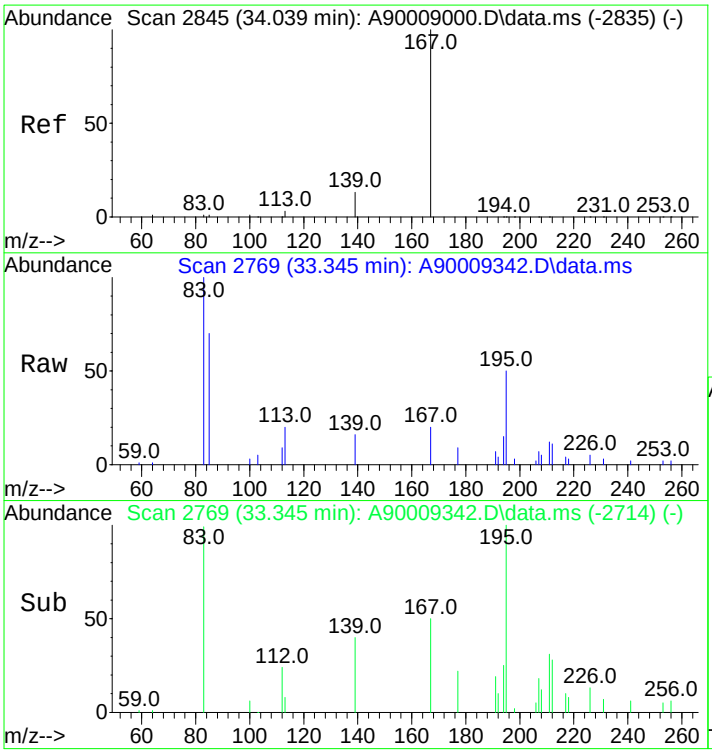


#53
C4-Phenanthrenes/Anthracenes
Concen: 647.80 ng/mL m
RT: 40.722 min Scan# 3577
Delta R.T. 0.005 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:234 Resp: 253280

Ion	Ratio	Lower	Upper
234	100		
219	2.2	56.0	84.0#

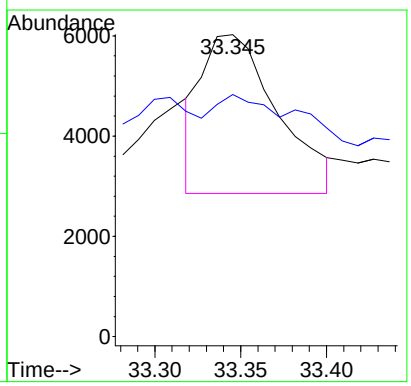


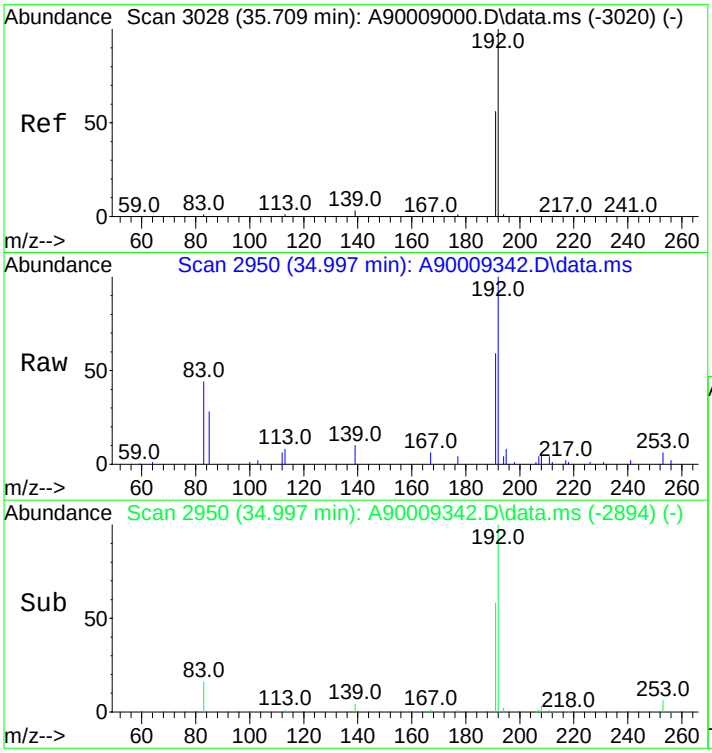


#56
Carbazole
Concen: 28.46 ng/mL m
RT: 33.345 min Scan# 2769
Delta R.T. -0.001 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:167 Resp: 9774

Ion	Ratio	Lower	Upper
167	100		
139	0.0	10.3	15.5#

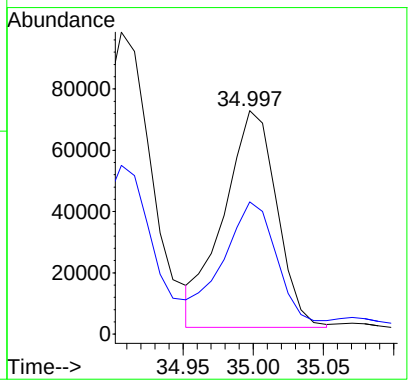


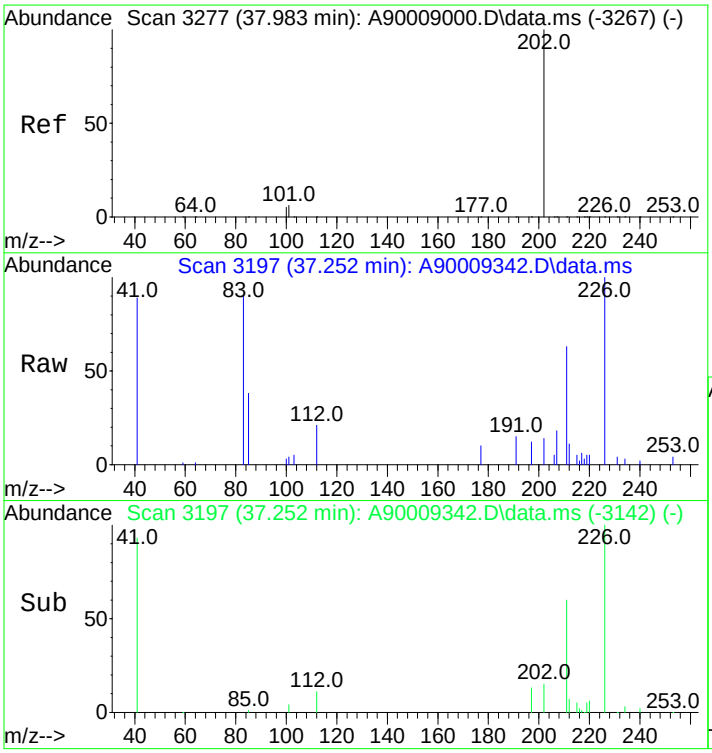


#57
1-Methylphenanthrene
Concen: 647.36 ng/mL m
RT: 34.997 min Scan# 2950
Delta R.T. 0.008 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:192 Resp: 186743

Ion	Ratio	Lower	Upper
192	100		
191	57.3	44.8	67.2

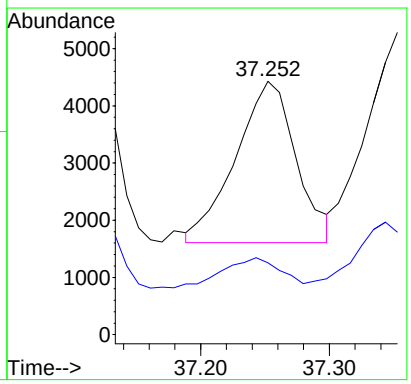


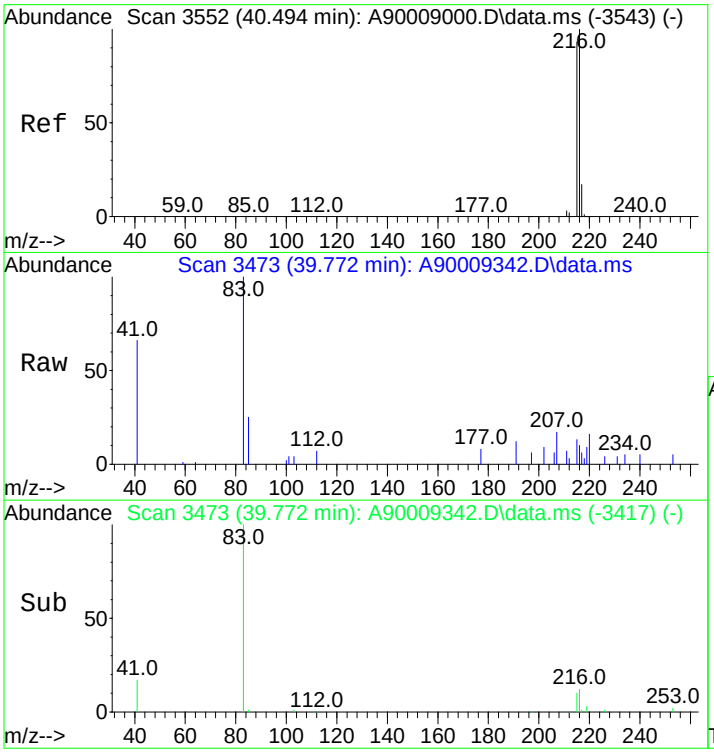


#58
Fluoranthene
Concen: 21.06 ng/mL m
RT: 37.252 min Scan# 3197
Delta R.T. 0.000 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:202 Resp: 9198

Ion	Ratio	Lower	Upper
202	100		
101	28.5	8.5	12.7#

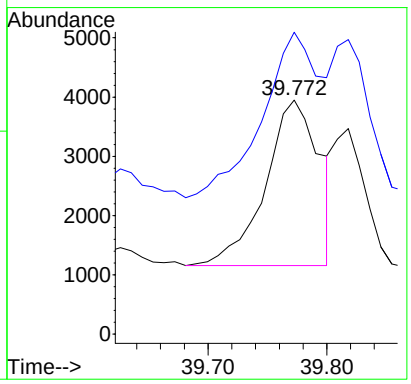


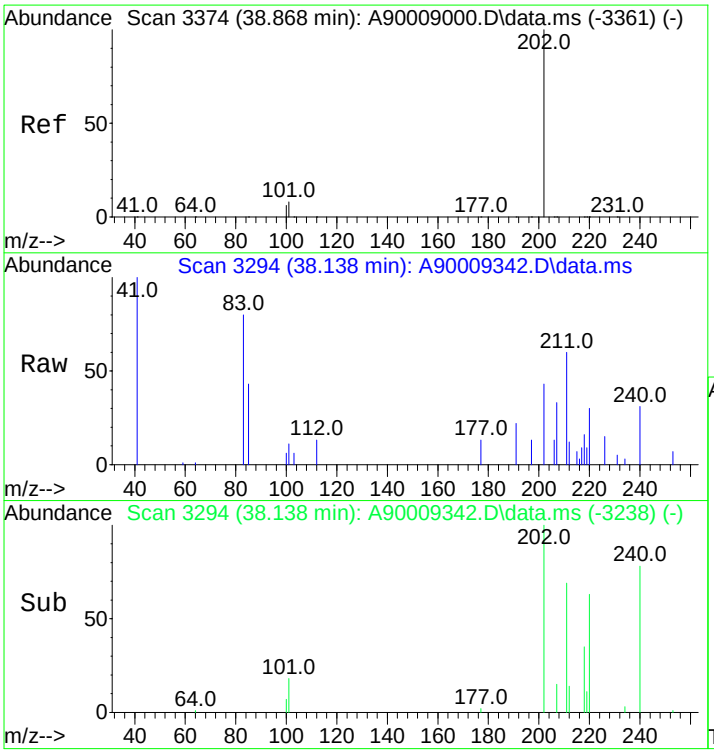


#59
Benzo(b)fluorene
Concen: 34.04 ng/mL
RT: 39.772 min Scan# 3473
Delta R.T. 0.008 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:216 Resp: 8841

Ion	Ratio	Lower	Upper
216	100		
215	108.5	74.8	112.2

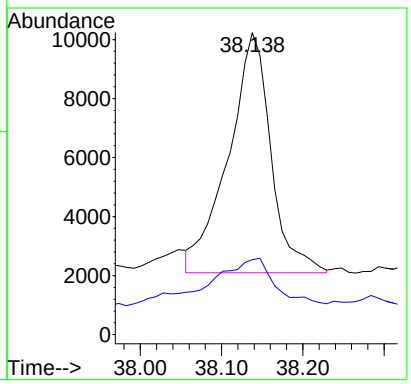


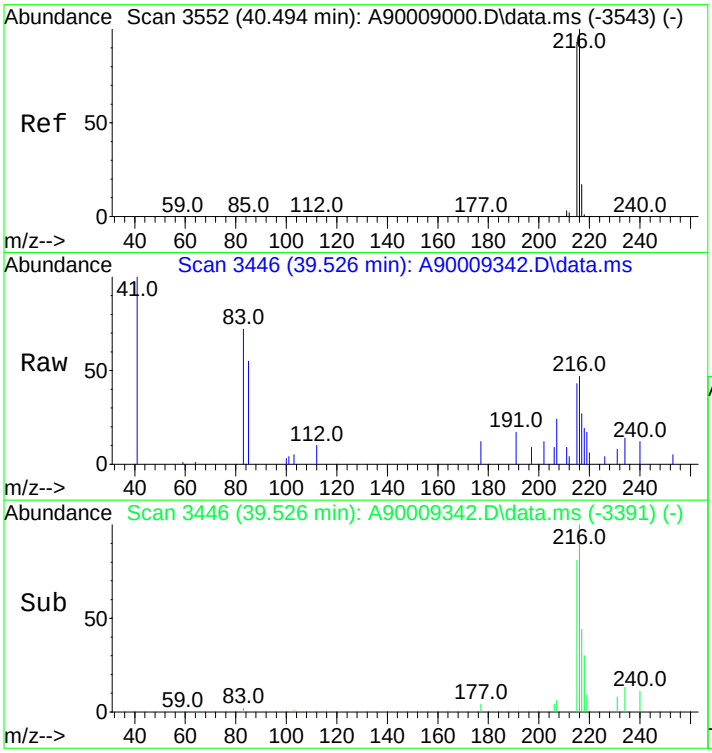


#60
Pyrene
Concen: 66.30 ng/mL m
RT: 38.138 min Scan# 3294
Delta R.T. 0.009 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:202 Resp: 29545

Ion	Ratio	Lower	Upper
202	100		
101	31.0	10.1	15.1#

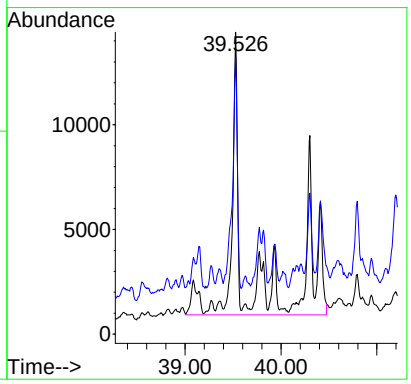


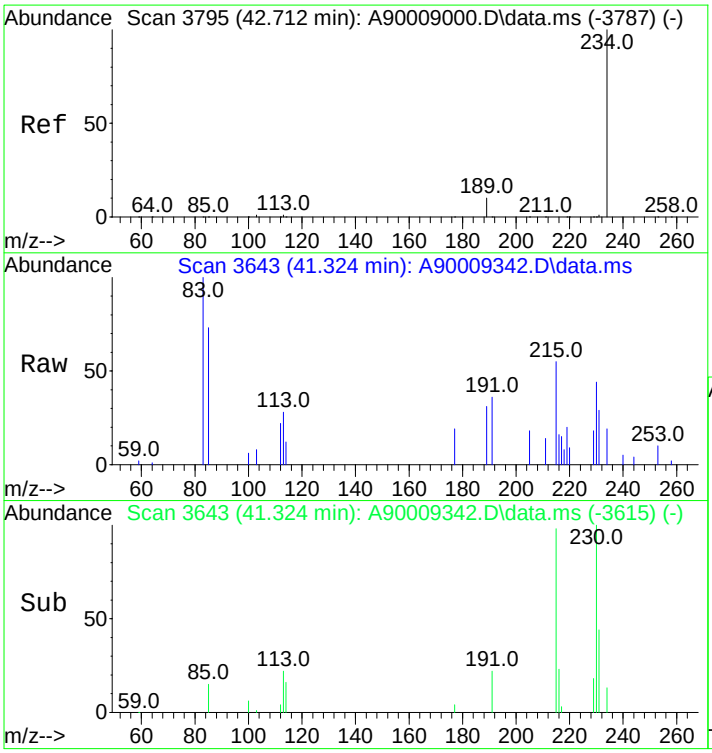


#61
C1-Fluoranthenes/Pyrenes
Concen: 296.88 ng/mL m
RT: 39.526 min Scan# 3446
Delta R.T. 0.063 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:216 Resp: 132288

Ion	Ratio	Lower	Upper
216	100		
215	30.3	74.4	111.6#

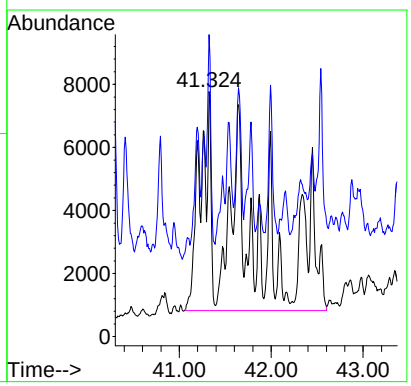


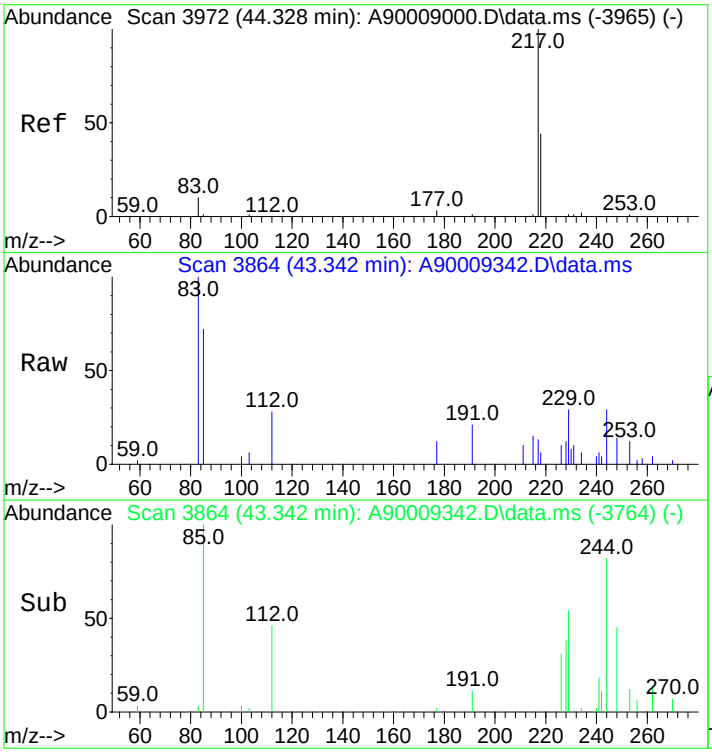


#62
C2-Fluoranthenes/Pyrenes
Concen: 446.78 ng/mL m
RT: 41.324 min Scan# 3643
Delta R.T. -0.301 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:230 Resp: 199084

Ion	Ratio	Lower	Upper
230	100		
215	3.9	101.0	151.6#

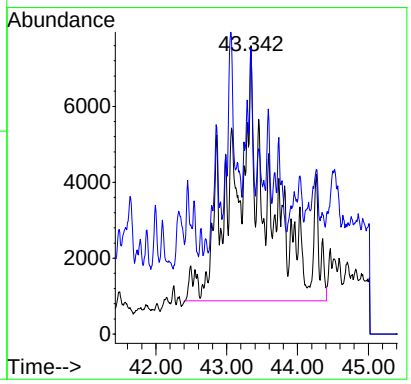


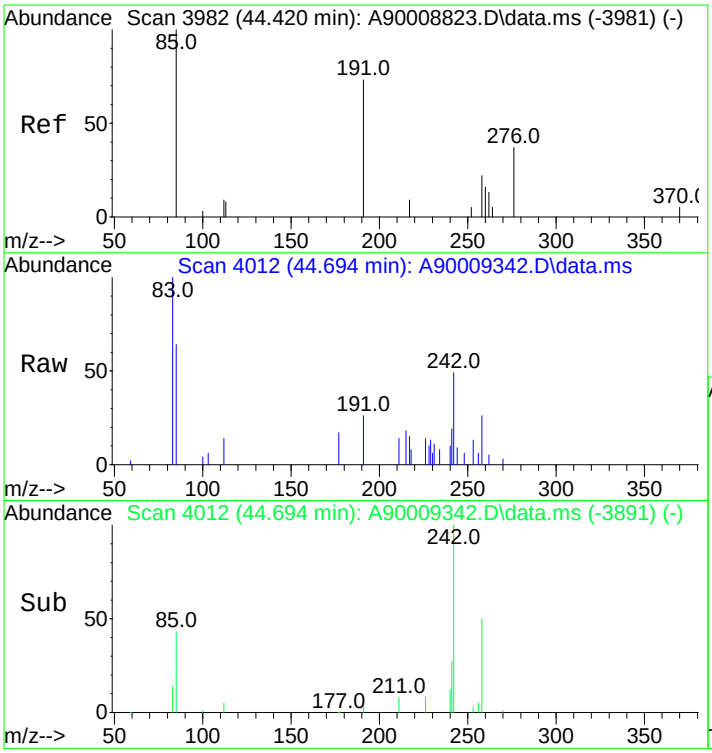


#63
C3-Fluoranthenes/Pyrenes
Concen: 536.29 ng/mL m
RT: 43.342 min Scan# 3864
Delta R.T. 0.142 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:244 Resp: 238973

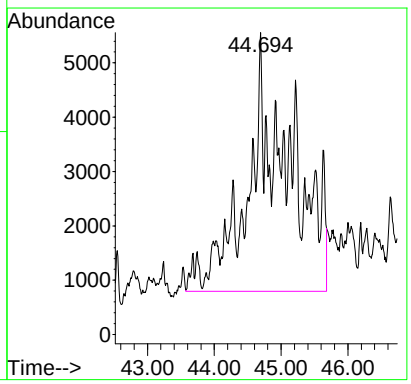
Ion	Ratio	Lower	Upper
244	100		
229	2.7	87.3	130.9#

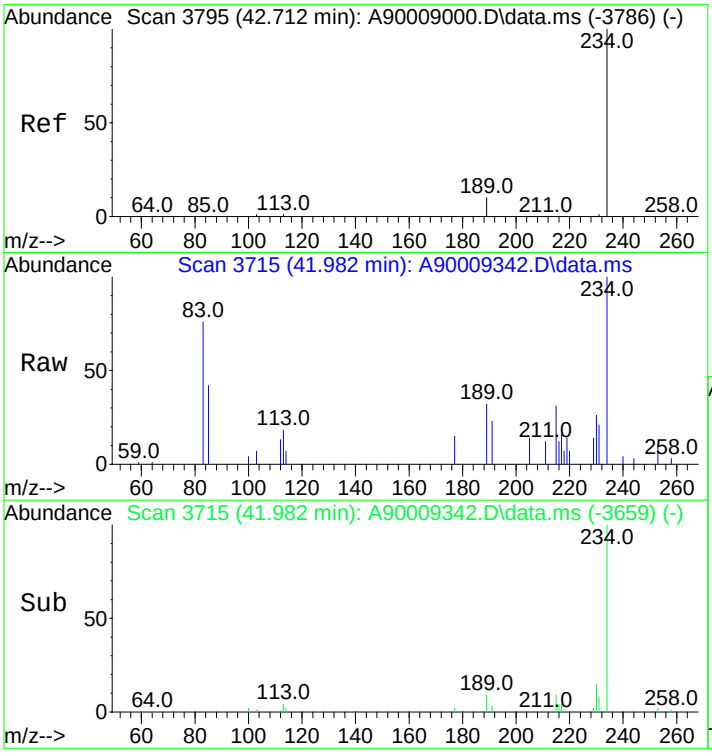




#64
C4-Fluoranthenes/Pyrenes
Concen: 447.77 ng/mL m
RT: 44.694 min Scan# 4012
Delta R.T. 0.400 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:258 Resp: 199527

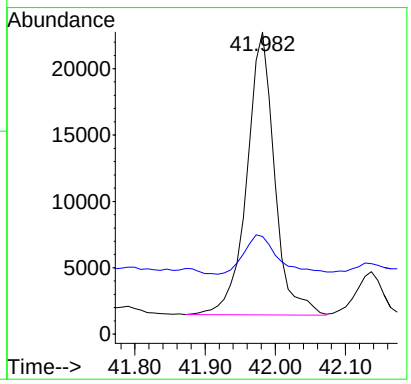


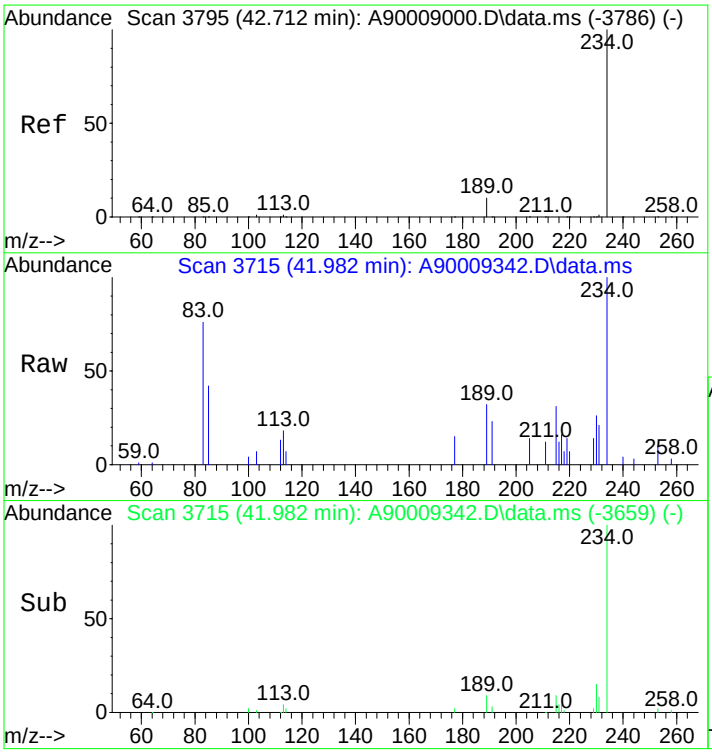


#66
Naphthobenzothiophene
Concen: 151.02 ng/ml
RT: 41.982 min Scan# 3715
Delta R.T. 0.009 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:234 Resp: 58391

Ion	Ratio	Lower	Upper
234	100		
189	17.1	7.4	11.2#

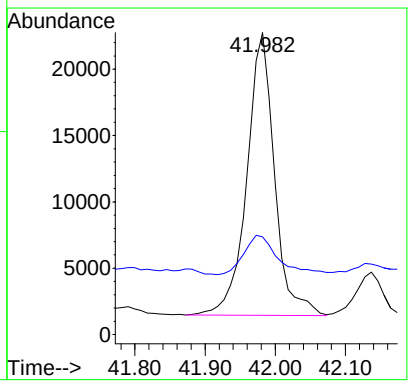


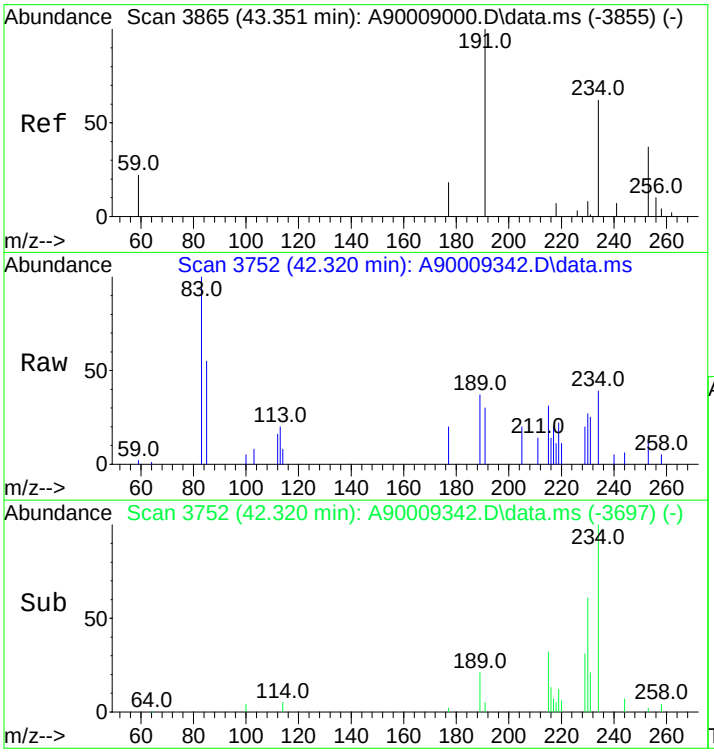


#67
Naphthobenzothiophene-2,1-D
Concen: 151.02 ng/mL
RT: 41.982 min Scan# 3715
Delta R.T. 0.009 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:234 Resp: 58391

Ion	Ratio	Lower	Upper
234	100		
189	17.1	7.4	11.2#

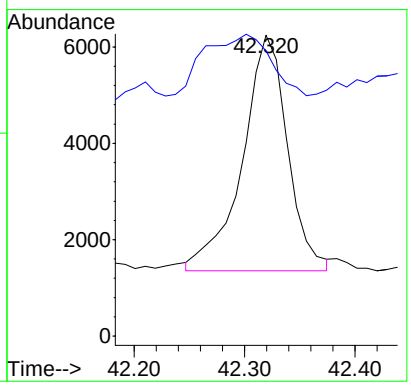


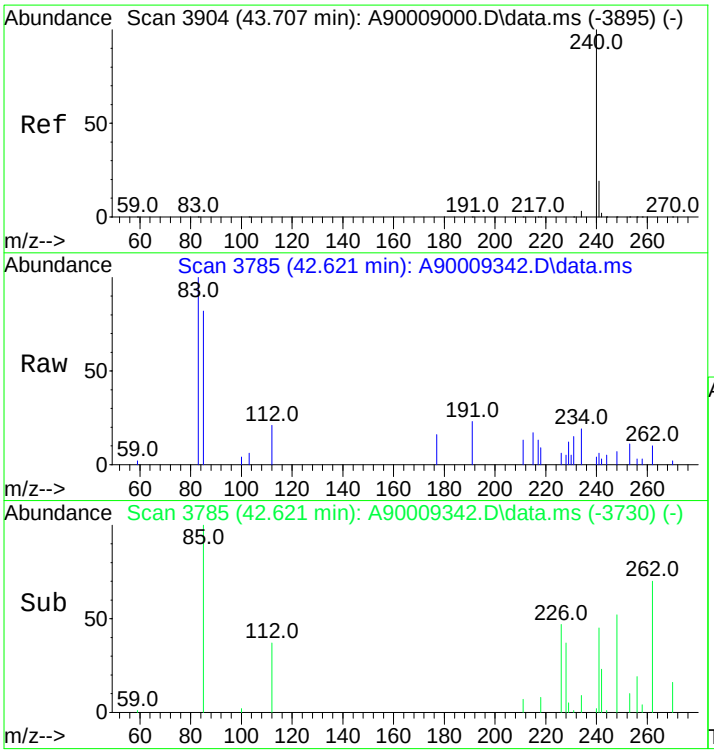


#68
Naphthobenzothiophene-1,2-D
Concen: 36.12 ng/mL m
RT: 42.320 min Scan# 3752
Delta R.T. -0.000 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:234 Resp: 13965

Ion	Ratio	Lower	Upper
234	100		
189	0.0	84.3	126.5#

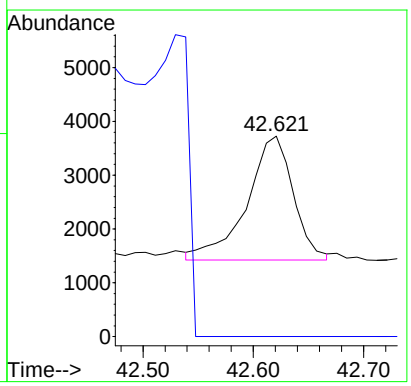


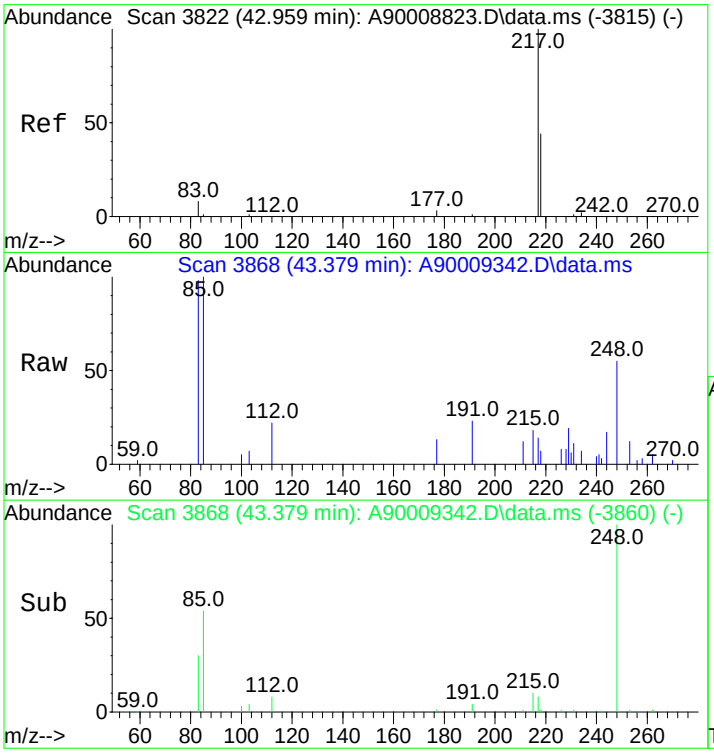


#69
Naphthobenzothiophene-2,3-D
Concen: 17.47 ng/mL m
RT: 42.621 min Scan# 3785
Delta R.T. -0.000 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:234 Resp: 6755

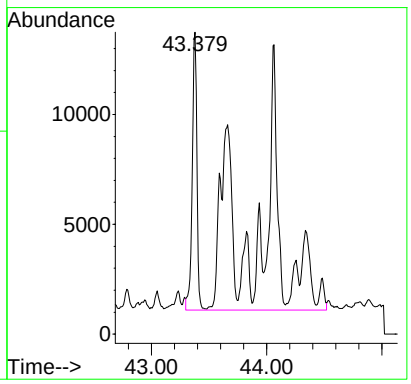
Ion	Ratio	Lower	Upper
234	100		
189	0.0	0.0	0.0

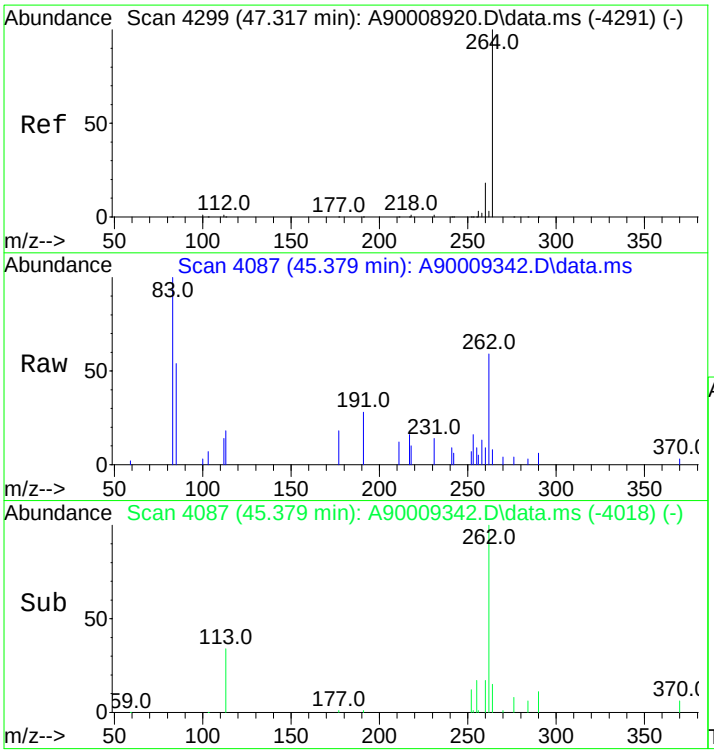




#70
C1-Naphthobenzothiophenes
Concen: 526.25 ng/ml m
RT: 43.379 min Scan# 3868
Delta R.T. -0.000 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

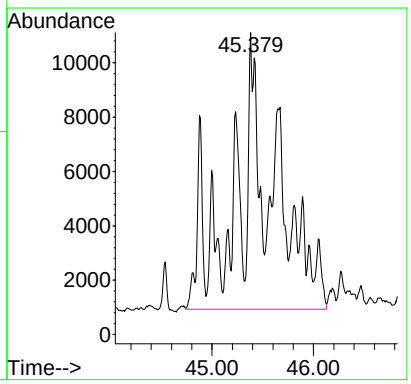
Tgt Ion:248 Resp: 203475

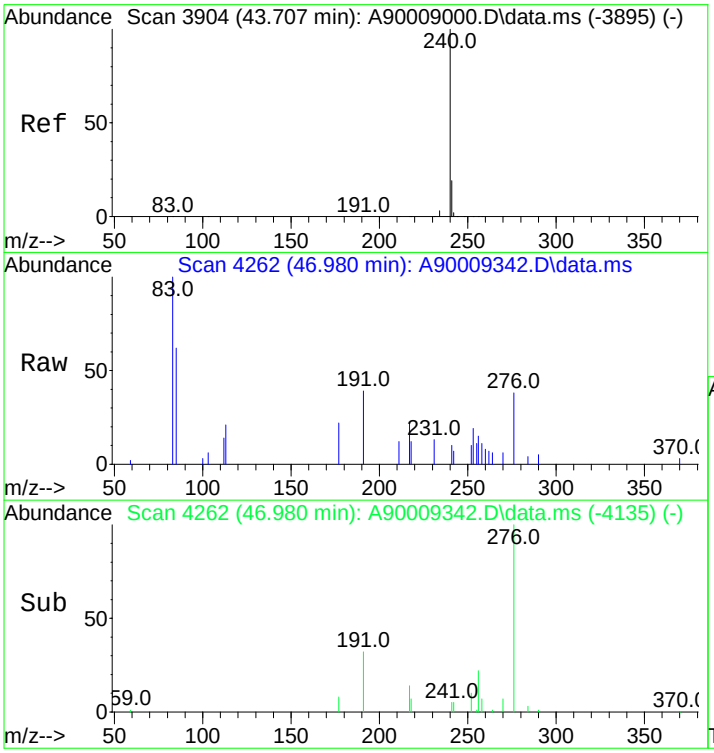




#71
C2-Naphthobenzothiophenes
Concen: 682.28 ng/ml m
RT: 45.379 min Scan# 4087
Delta R.T. 0.274 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

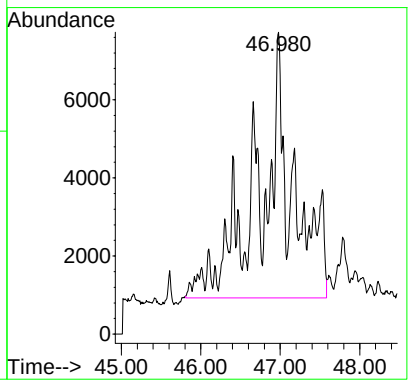
Tgt Ion:262 Resp: 263802

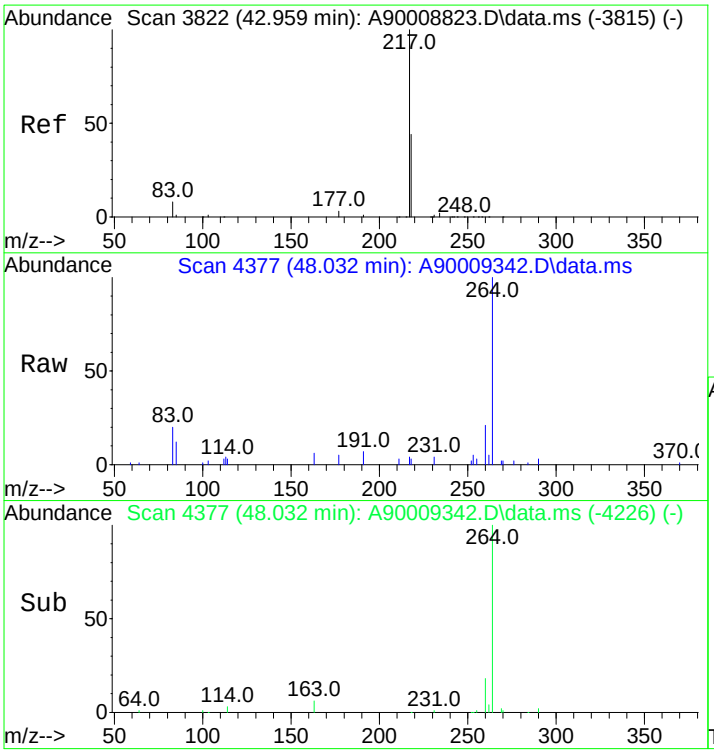




#72
C3-Naphthobenzothiophenes
Concen: 510.13 ng/ml m
RT: 46.980 min Scan# 4262
Delta R.T. 0.345 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

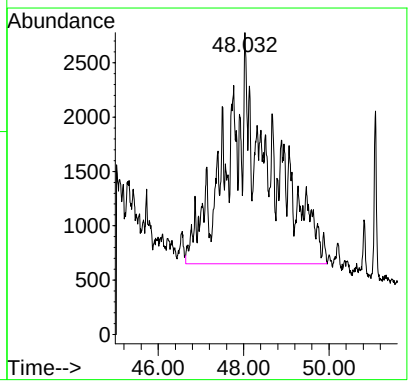
Tgt Ion:276 Resp: 197242

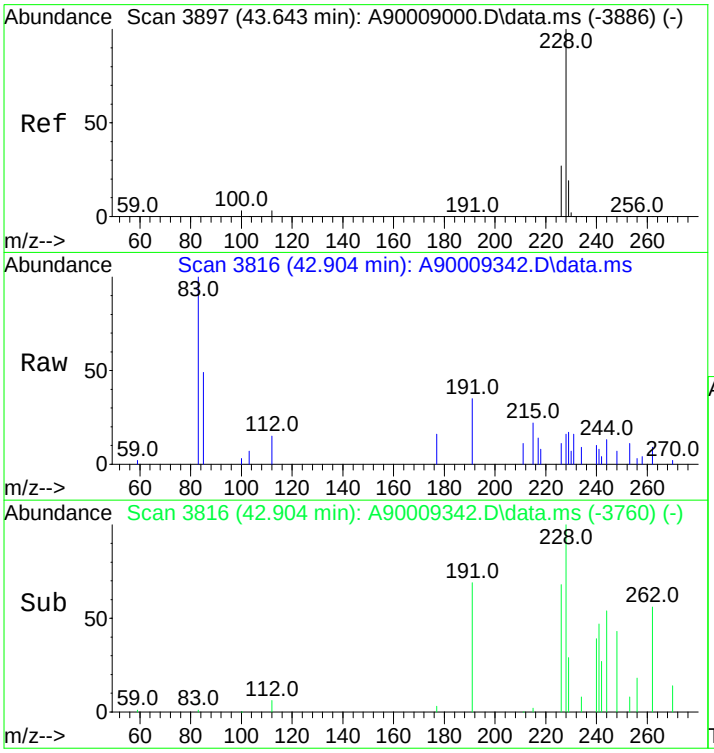




#73
C4-Naphthobenzothiophenes
Concen: 368.46 ng/mL m
RT: 48.032 min Scan# 4377
Delta R.T. 0.326 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:290 Resp: 142466

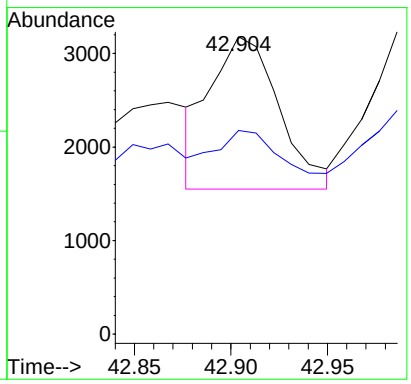


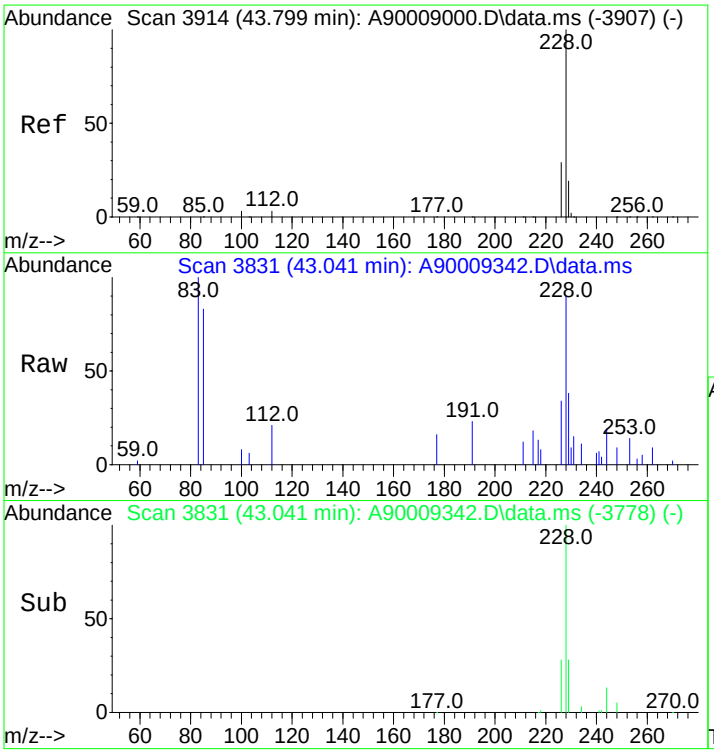


#75
Benz[a]anthracene
Concen: 11.52 ng/mL m
RT: 42.904 min Scan# 3816
Delta R.T. 0.009 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:228 Resp: 4058

Ion	Ratio	Lower	Upper
228	100		
226	509.8	21.3	31.9#

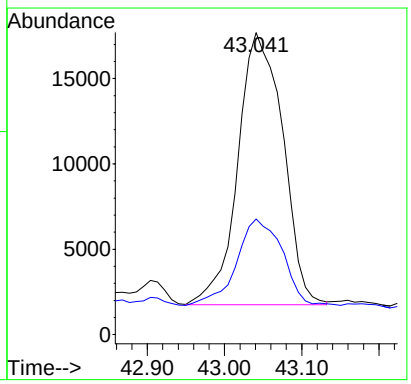


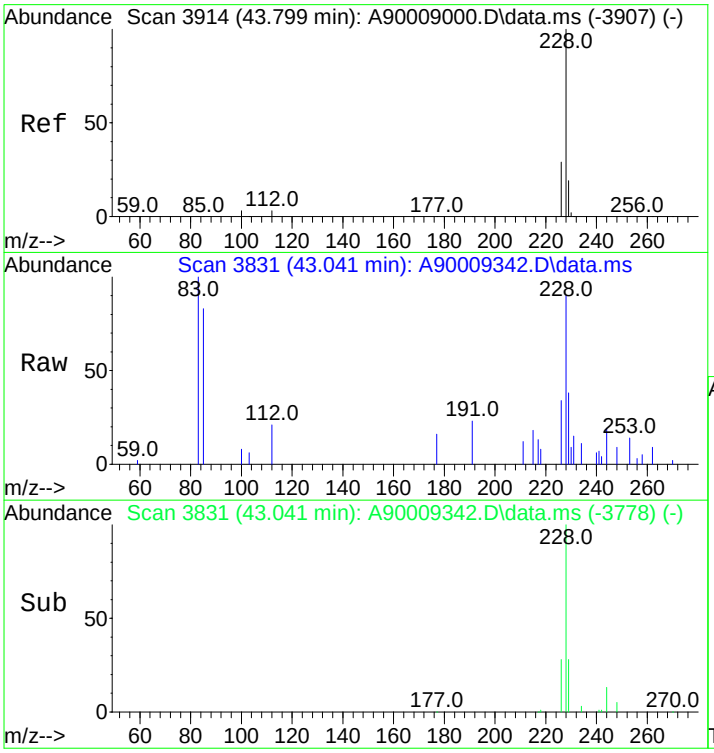


#76
Chrysene
Concen: 186.18 ng/mL m
RT: 43.041 min Scan# 3831
Delta R.T. -0.018 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:228 Resp: 64526

Ion	Ratio	Lower	Upper
228	100		
226	33.7	23.4	35.0

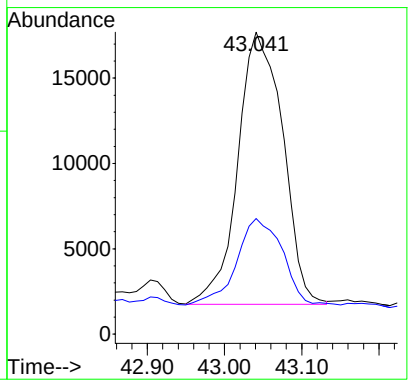


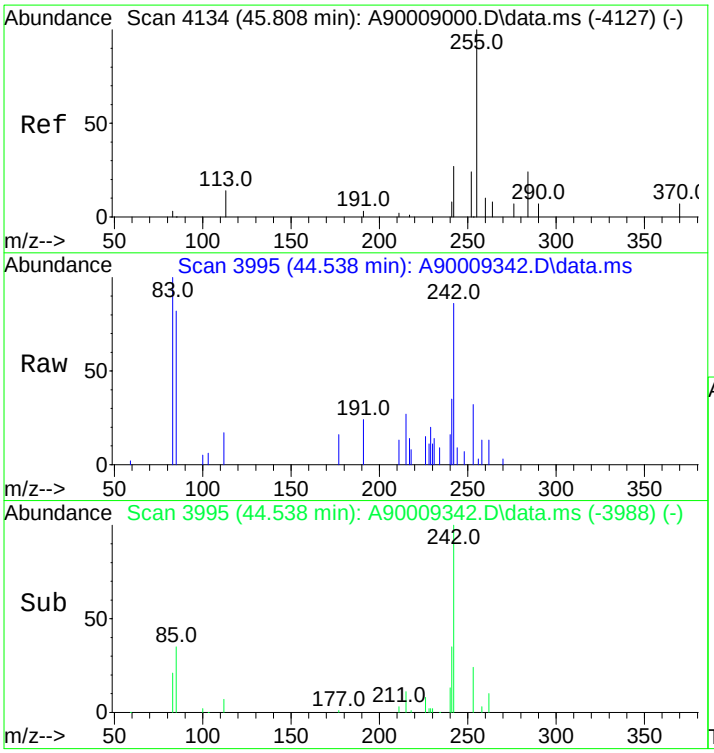


#77
Chrysene/Triphenylene
Concen: 186.56 ng/mL m
RT: 43.041 min Scan# 3831
Delta R.T. -0.018 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:228 Resp: 64658

Ion	Ratio	Lower	Upper
228	100		
226	33.7	23.4	35.0

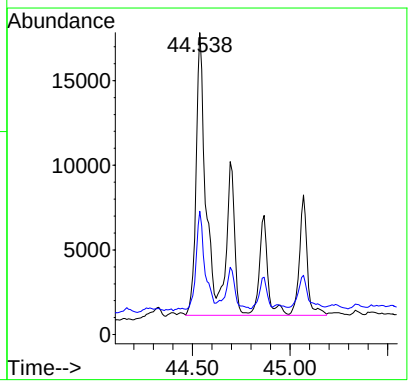


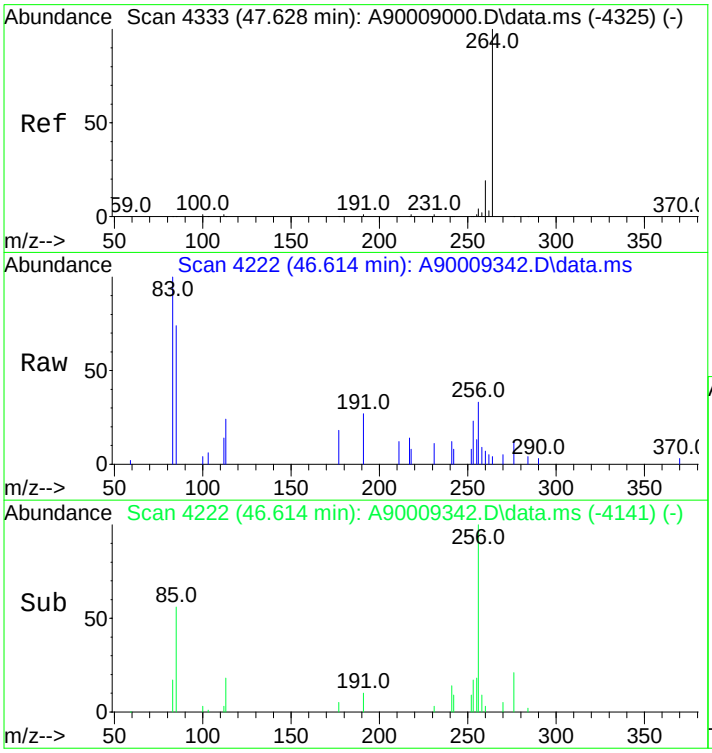


#78
C1-Chrysenes
Concen: 343.38 ng/mL m
RT: 44.538 min Scan# 3995
Delta R.T. -0.486 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:242 Resp: 119009

Ion	Ratio	Lower	Upper
242	100		
241	5.1	35.6	53.4#

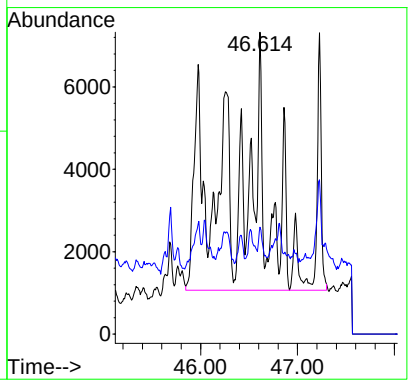


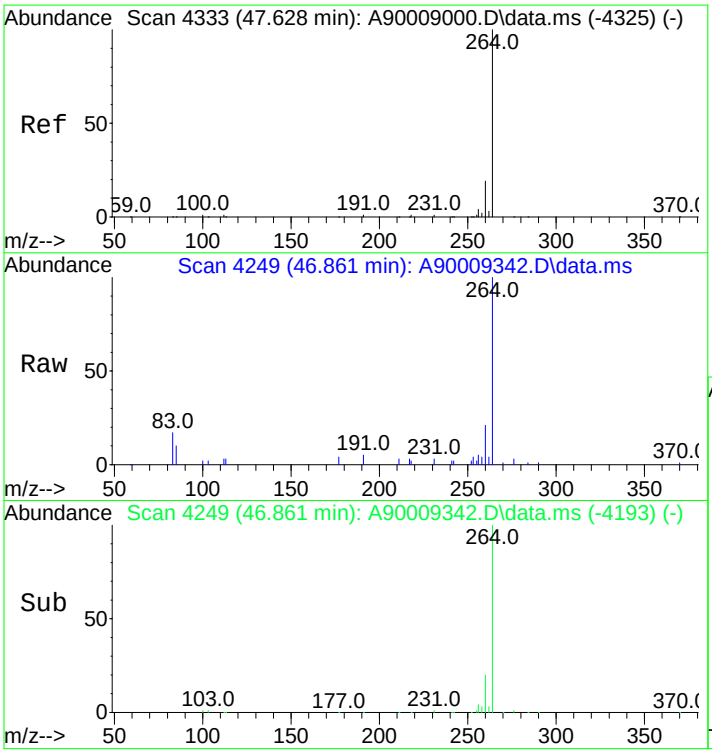


#79
C2-Chrysenes
Concen: 472.93 ng/mL m
RT: 46.614 min Scan# 4222
Delta R.T. -0.199 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:256 Resp: 163911

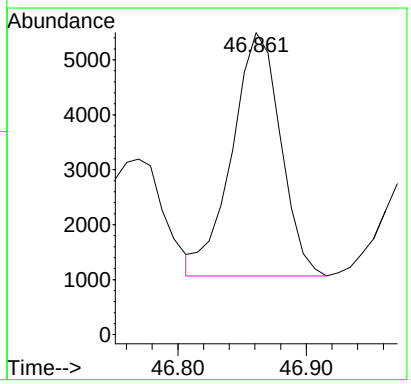
Ion	Ratio	Lower	Upper
256	100		
241	3.5	33.9	50.9#

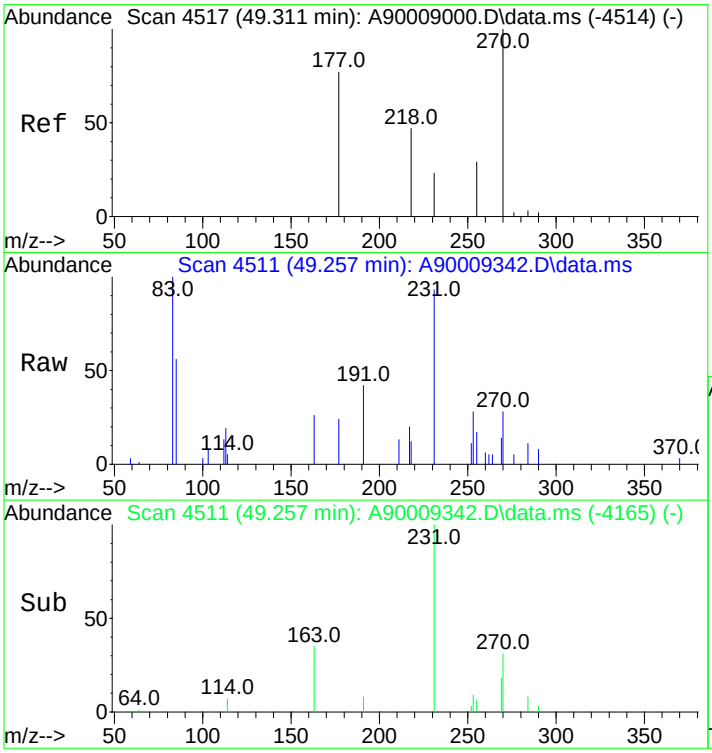




#80
BBF-d12 Surr BKGD
Concen: 33.62 ng/mL
RT: 46.861 min Scan# 4249
Delta R.T. 0.009 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:256 Resp: 11651

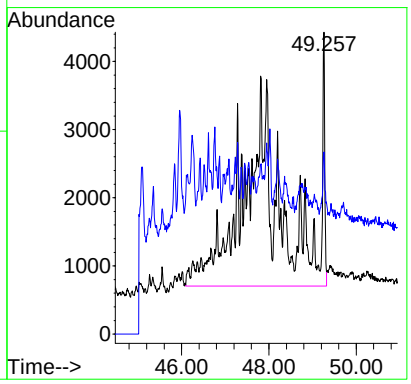


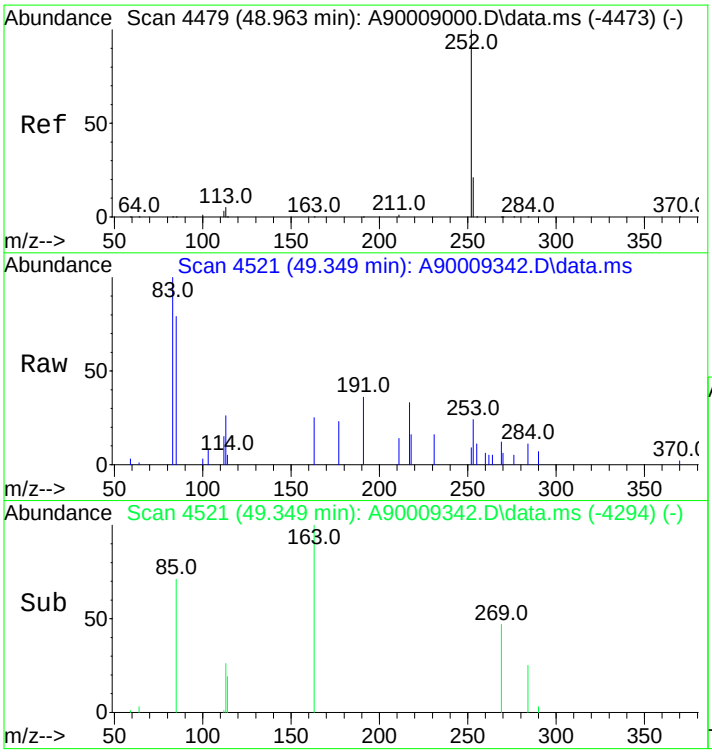


#81
C3-Chrysenes
Concen: 502.06 ng/mL m
RT: 49.257 min Scan# 4511
Delta R.T. 0.790 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:270 Resp: 174005

Ion	Ratio	Lower	Upper
270	100		
255	1.4	49.4	74.2#

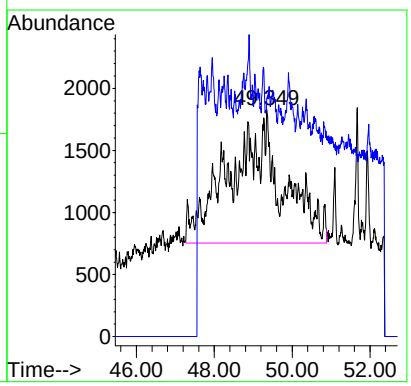


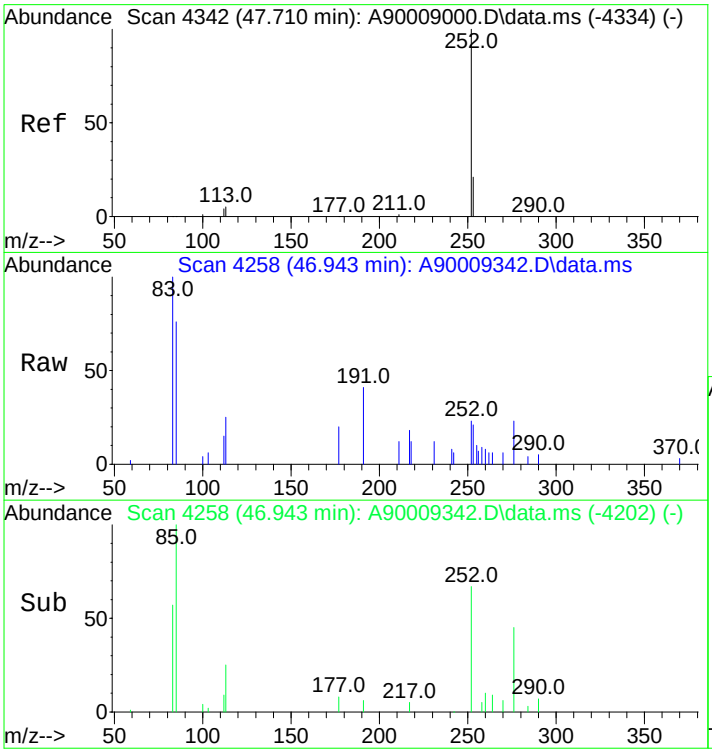


#82
C4-Chrysenes
Concen: 279.15 ng/mL m
RT: 49.349 min Scan# 4521
Delta R.T. 1.224 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:284 Resp: 96750

Ion	Ratio	Lower	Upper
284	100		
269	0.0	88.5	132.7#

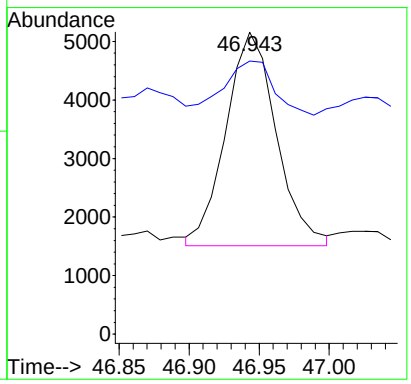


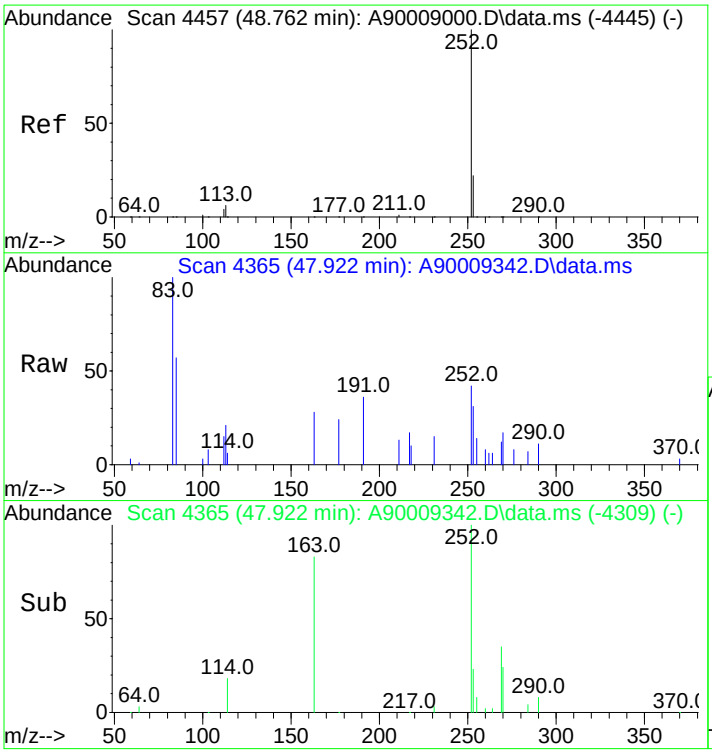


#84
Benzo[b]fluoranthene
Concen: 25.06 ng/mL m
RT: 46.943 min Scan# 4258
Delta R.T. 0.009 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:252 Resp: 9155

Ion	Ratio	Lower	Upper
252	100		
253	25.2	20.9	31.3

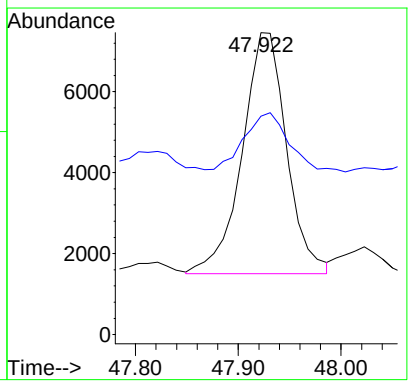


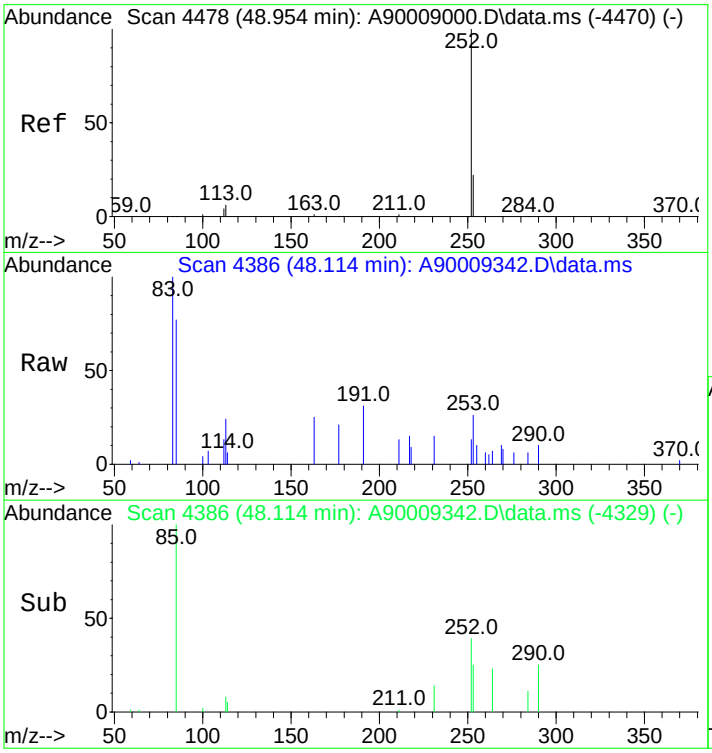


#87
Benzo[e]pyrene
Concen: 51.58 ng/mL m
RT: 47.922 min Scan# 4365
Delta R.T. 0.009 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:252 Resp: 17896

Ion	Ratio	Lower	Upper
252	100		
253	30.2	22.1	33.1

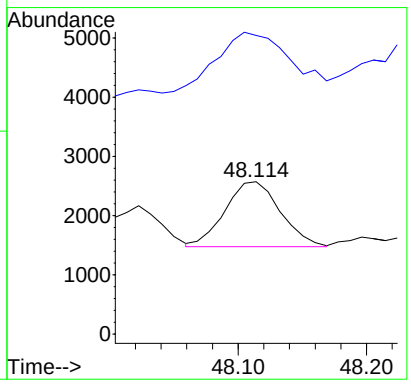


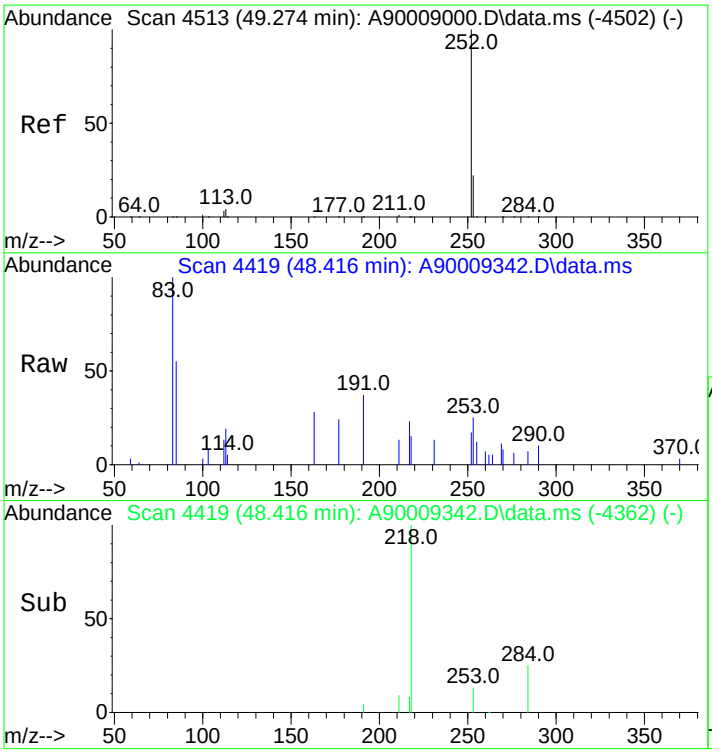


#89
Benzo[a]pyrene
Concen: 9.99 ng/mL m
RT: 48.114 min Scan# 4386
Delta R.T. 0.018 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:252 Resp: 3282

Ion	Ratio	Lower	Upper
252	100		
253	137.5	22.9	34.3#

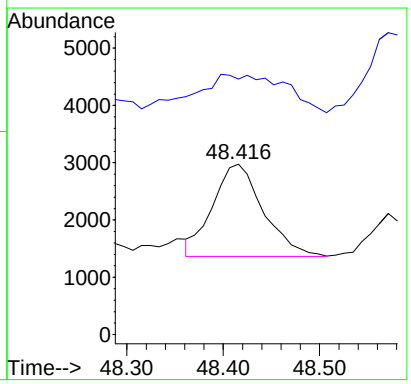


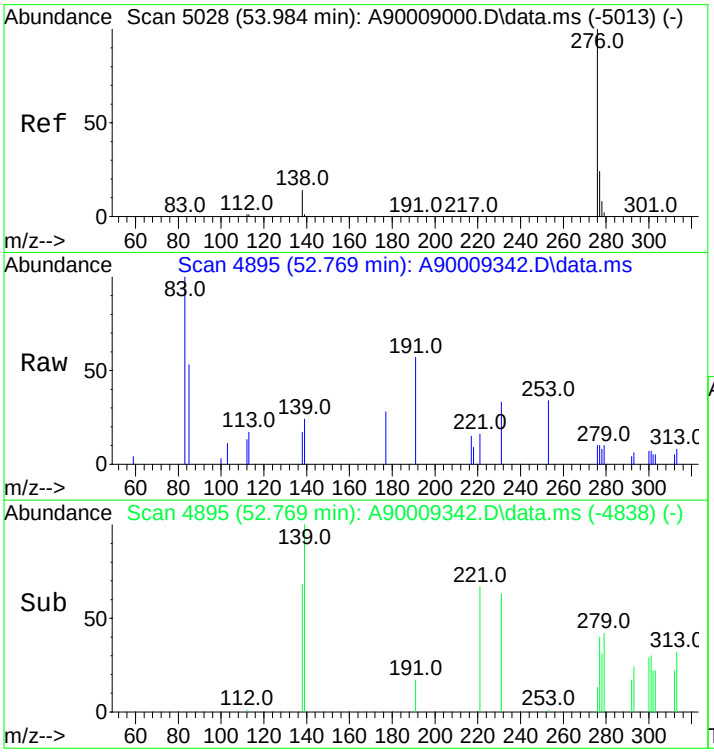


#90
Perylene
Concen: 16.80 ng/mL m
RT: 48.416 min Scan# 4419
Delta R.T. 0.018 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:252 Resp: 5893

Ion	Ratio	Lower	Upper
252	100		
253	74.8	23.4	35.2#

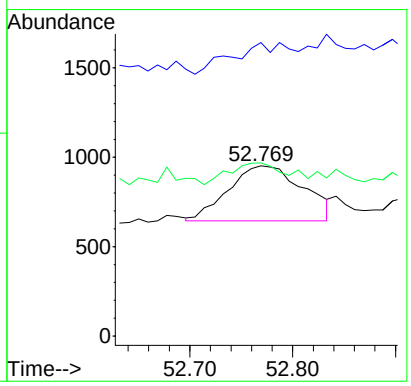


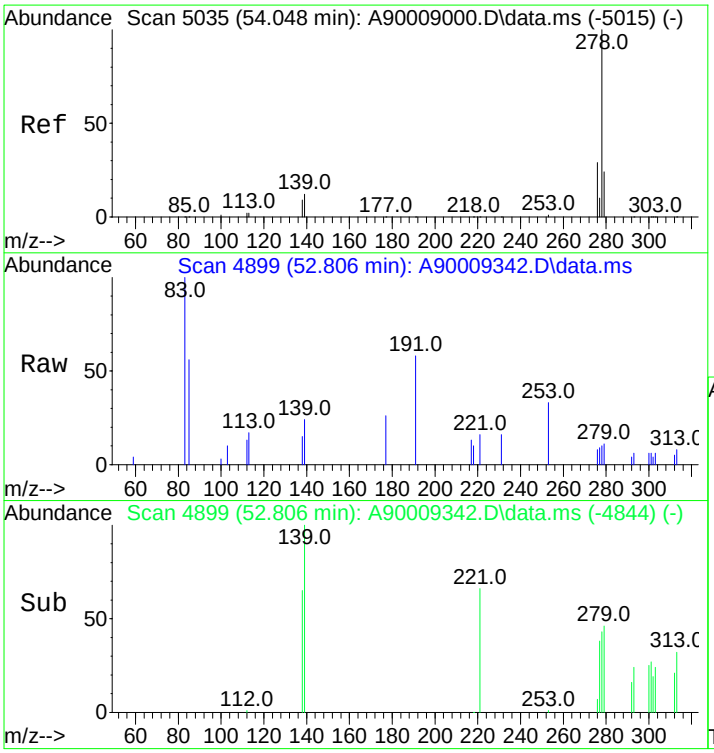


#91
Indeno[1,2,3-cd]pyrene
Concen: 4.29 ng/mL m
RT: 52.769 min Scan# 4895
Delta R.T. 0.018 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:276 Resp: 1561

Ion	Ratio	Lower	Upper
276	100		
138	0.0	20.2	30.4#
277	0.0	20.6	30.8#

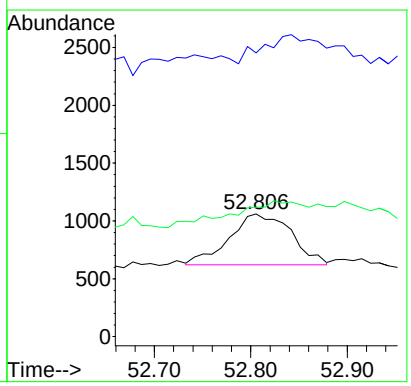


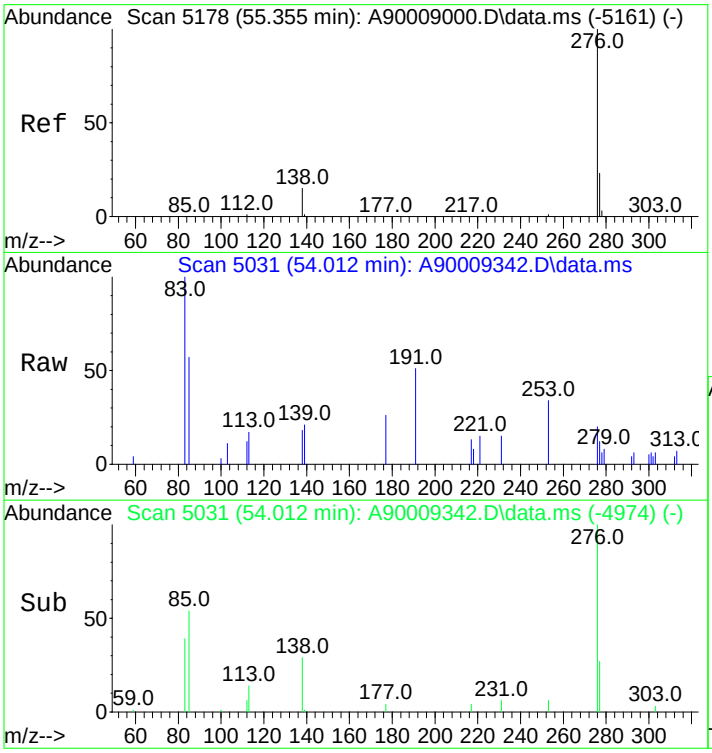


#92
Dibenz[ah]+[ac]anthracene
Concen: 5.47 ng/mL m
RT: 52.806 min Scan# 4899
Delta R.T. -0.000 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:278 Resp: 1962

Ion	Ratio	Lower	Upper
278	100		
139	0.0	15.4	23.2#
279	0.0	19.3	28.9#

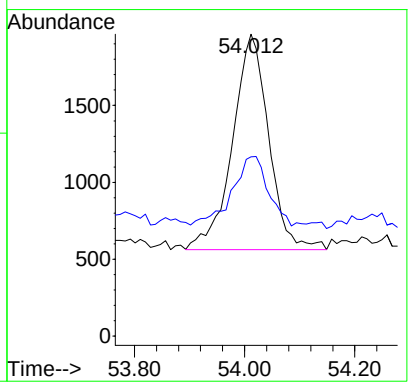


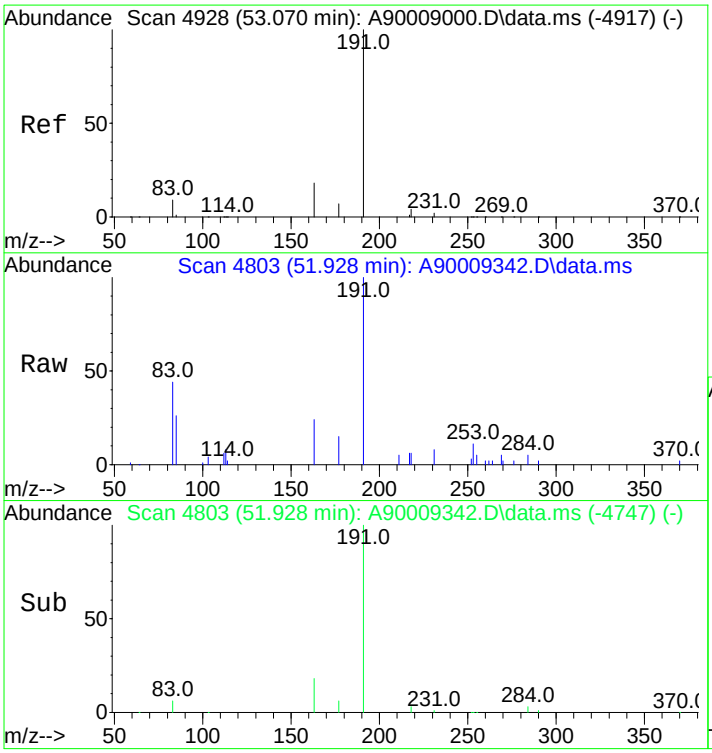


#93
Benzo[g,h,i]perylene
Concen: 17.92 ng/mL
RT: 54.012 min Scan# 5031
Delta R.T. 0.018 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:276 Resp: 6410

Ion	Ratio	Lower	Upper
276	100		
277	31.3	20.3	30.5#

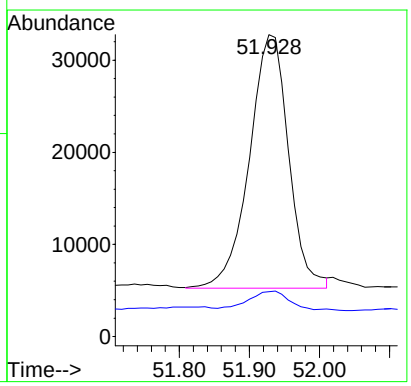


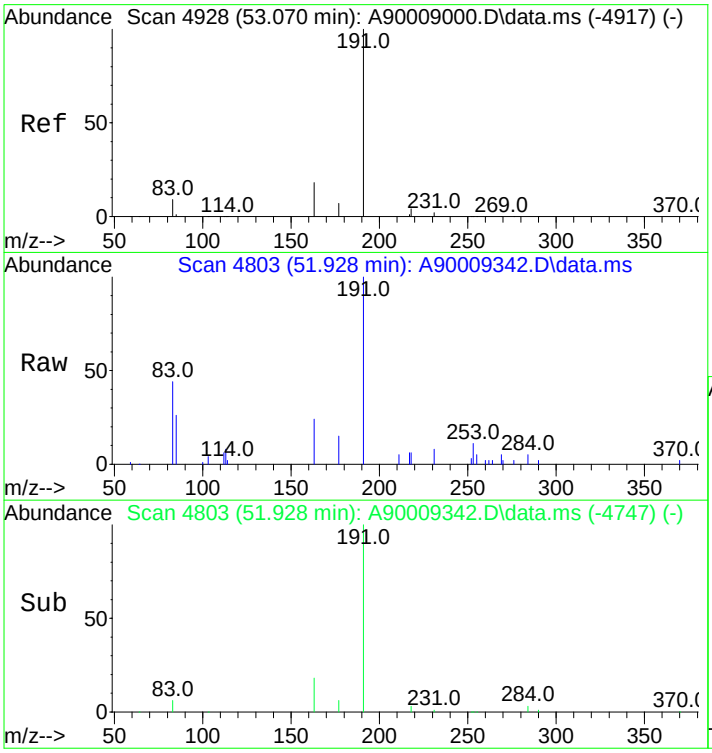


#94
Hopane (T19)
Concen: 794.63 ng/mL m
RT: 51.928 min Scan# 4803
Delta R.T. 0.009 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:191 Resp: 107329

Ion	Ratio	Lower	Upper
191	100		
177	0.4	15.3	22.9#

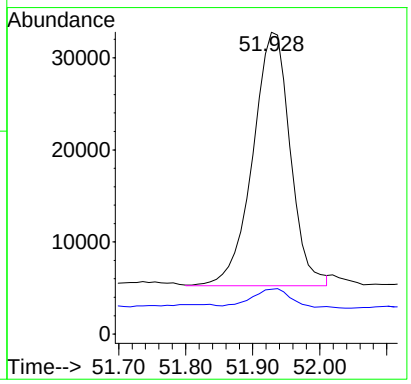


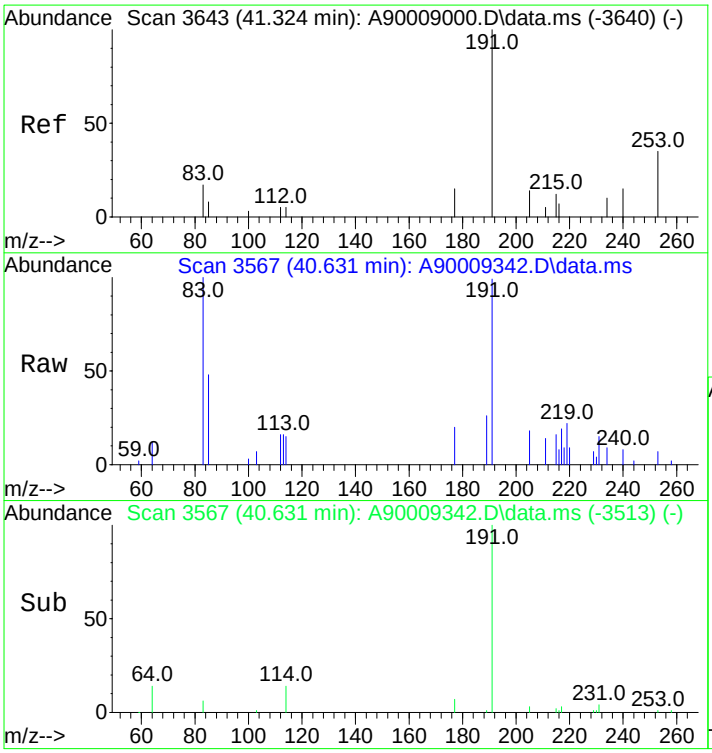


#95
17a(H),21B(H)-hopane - C30H52
Concen: 794.98 ng/mL m
RT: 51.928 min Scan# 4803
Delta R.T. 0.009 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:191 Resp: 107376

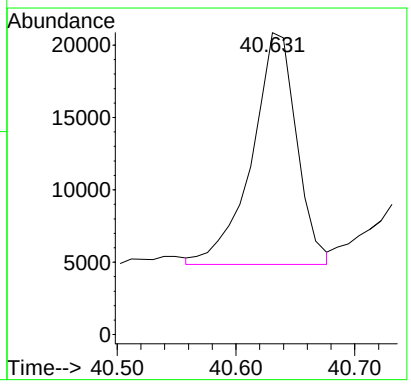
Ion	Ratio	Lower	Upper
191	100		
177	0.4	15.3	22.9#

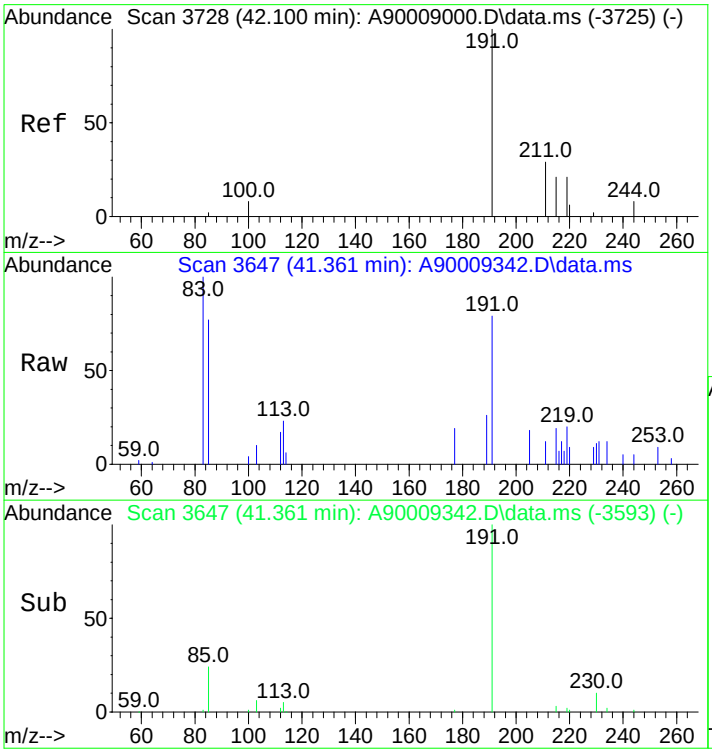




#96
C23 Tricyclic Terpane (T4)
Concen: 310.68 ng/ml m
RT: 40.631 min Scan# 3567
Delta R.T. -0.009 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

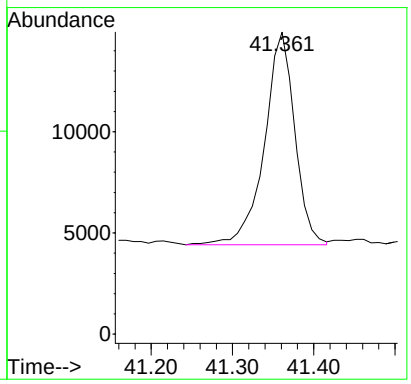
Tgt Ion:191 Resp: 41963

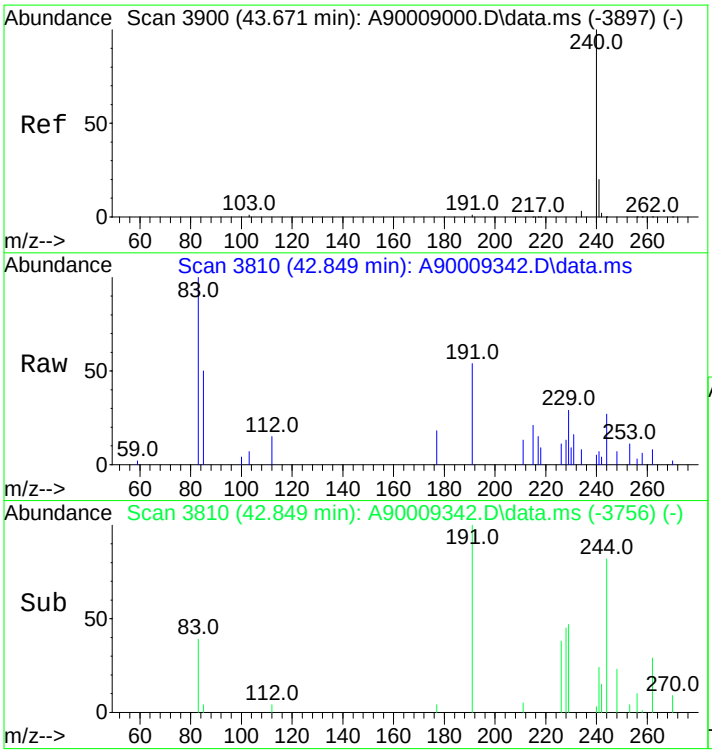




#97
C24 Tricyclic Terpane (T5)
Concen: 200.86 ng/ml
RT: 41.361 min Scan# 3647
Delta R.T. -0.009 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

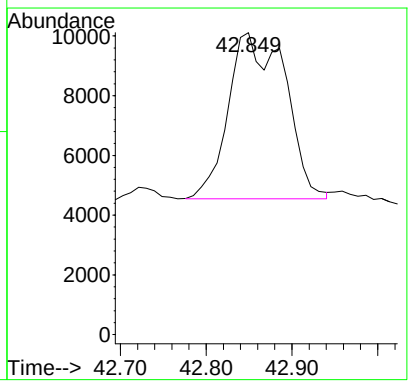
Tgt Ion:191 Resp: 27130

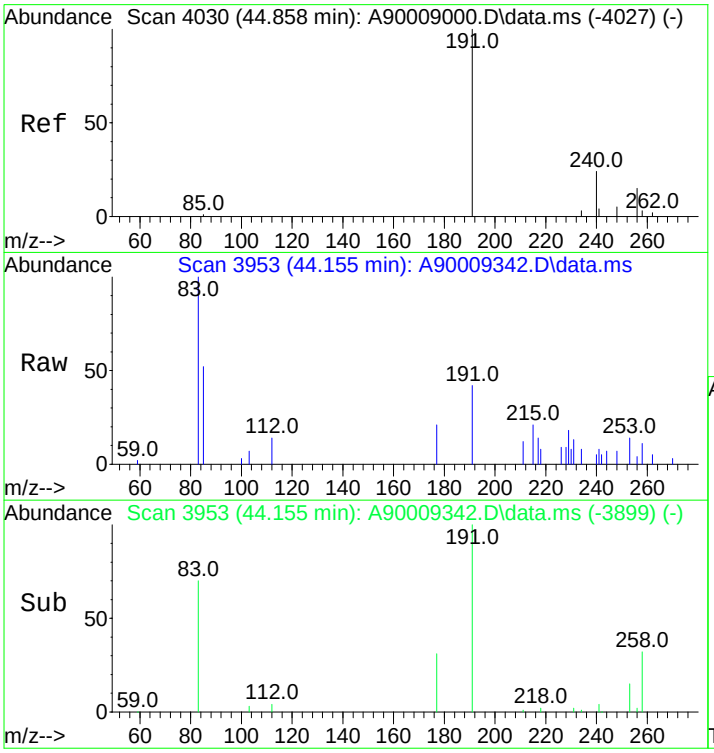




#98
C25 Tricyclic Terpane (T6)
Concen: 189.84 ng/ml m
RT: 42.849 min Scan# 3810
Delta R.T. -0.009 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

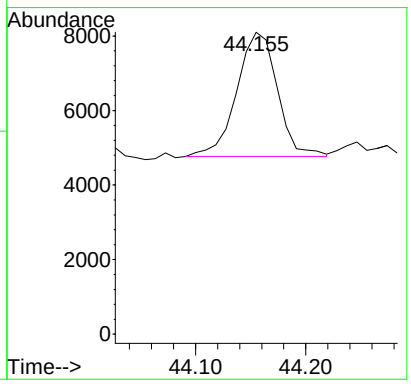
Tgt Ion:191 Resp: 25641

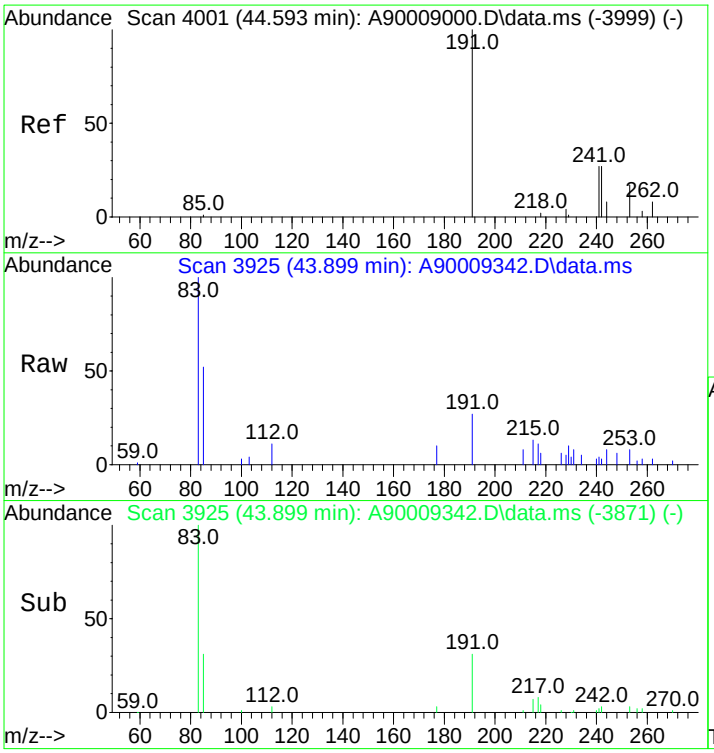




#99
C24 Tetracyclic Terpane (T6a)
Concen: 63.46 ng/ml
RT: 44.155 min Scan# 3953
Delta R.T. -0.009 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

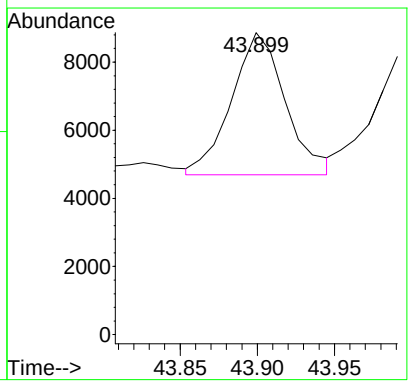
Tgt Ion:191 Resp: 8572

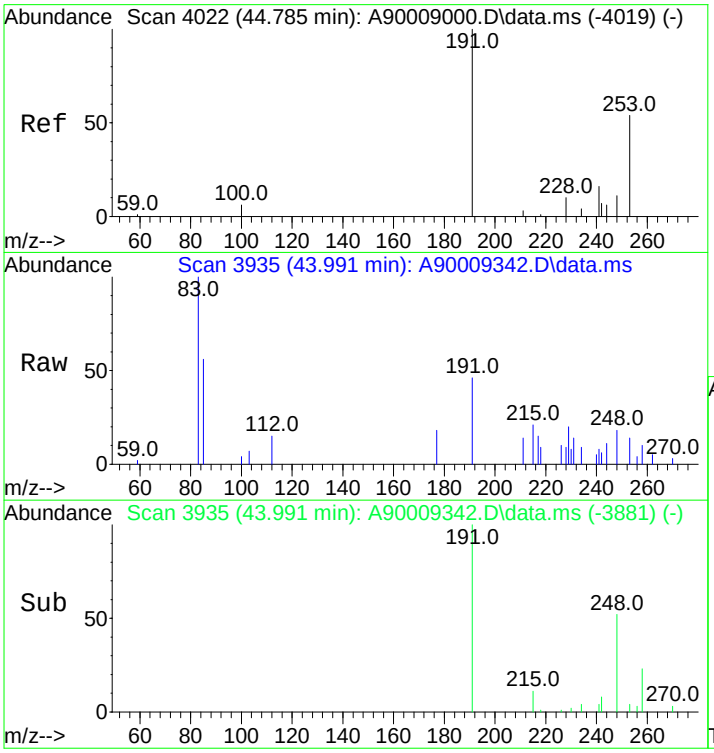




#100
C26 Tricyclic Terpane-22S (T6b)
Concen: 74.91 ng/ml m
RT: 43.899 min Scan# 3925
Delta R.T. -0.010 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

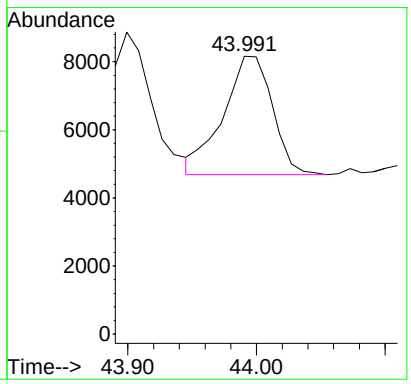
Tgt Ion:191 Resp: 10118

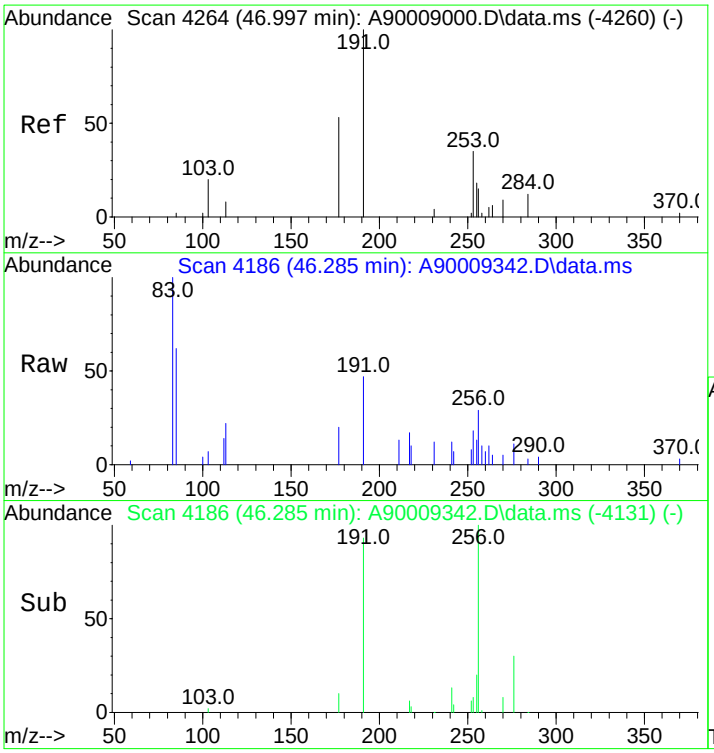




#101
C26 Tricyclic Terpane-22R (T6c)
Concen: 68.54 ng/ml
RT: 43.991 min Scan# 3935
Delta R.T. -0.009 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

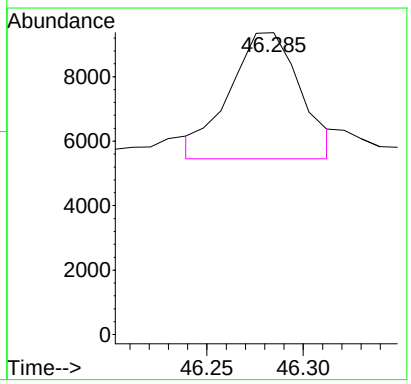
Tgt Ion:191 Resp: 9258

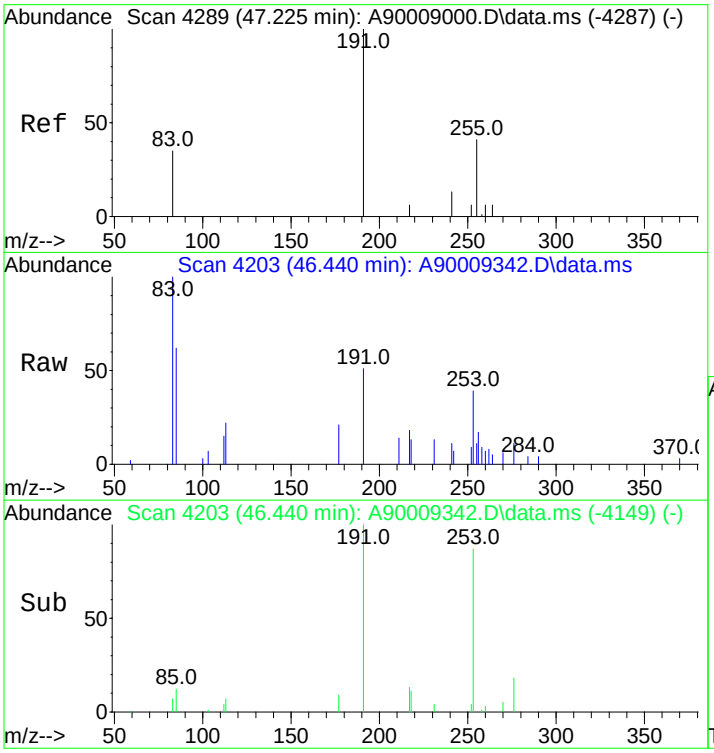




#102
C28 Tricyclic Terpane-22S (T7)
Concen: 74.11 ng/ml m
RT: 46.285 min Scan# 4186
Delta R.T. -0.000 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

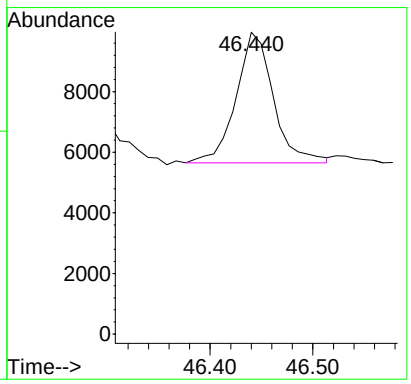
Tgt Ion:191 Resp: 10010

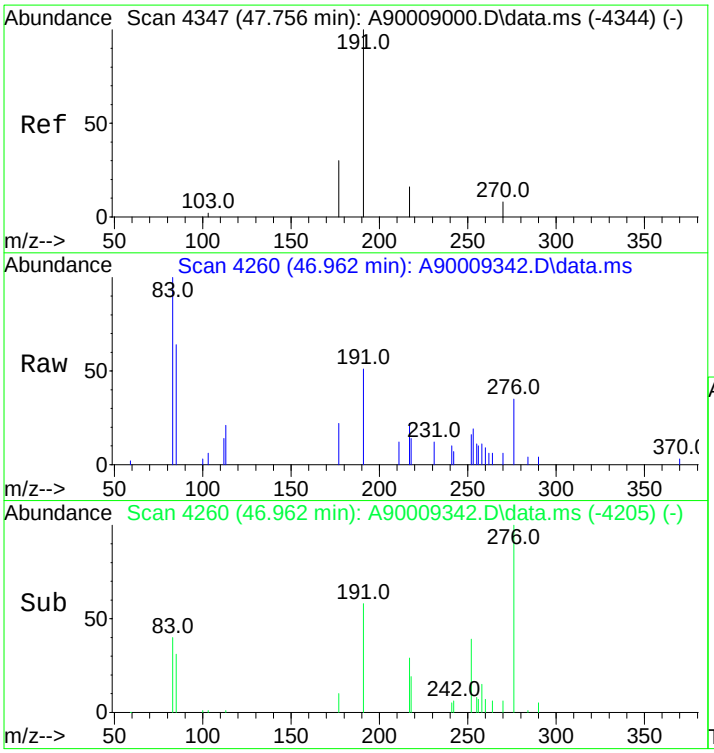




#103
C28 Tricyclic Terpane-22R (T8)
Concen: 80.43 ng/ml
RT: 46.440 min Scan# 4203
Delta R.T. -0.009 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

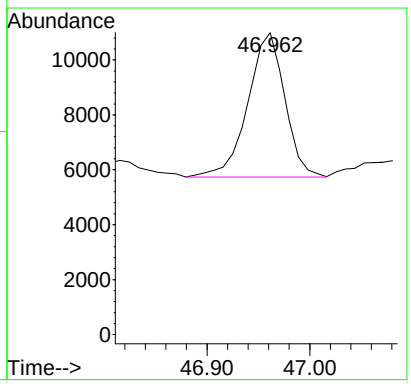
Tgt Ion:191 Resp: 10863

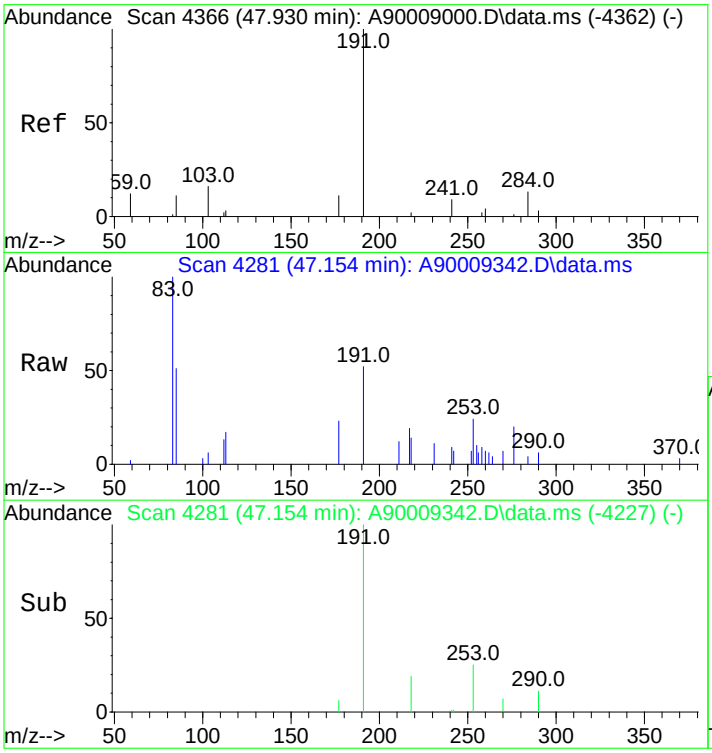




#104
C29 Tricyclic Terpane-22S (T9)
Concen: 96.96 ng/ml
RT: 46.962 min Scan# 4260
Delta R.T. -0.000 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

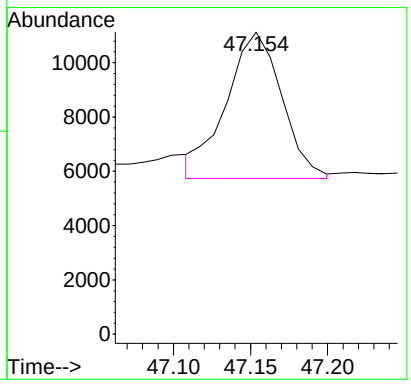
Tgt Ion:191 Resp: 13096

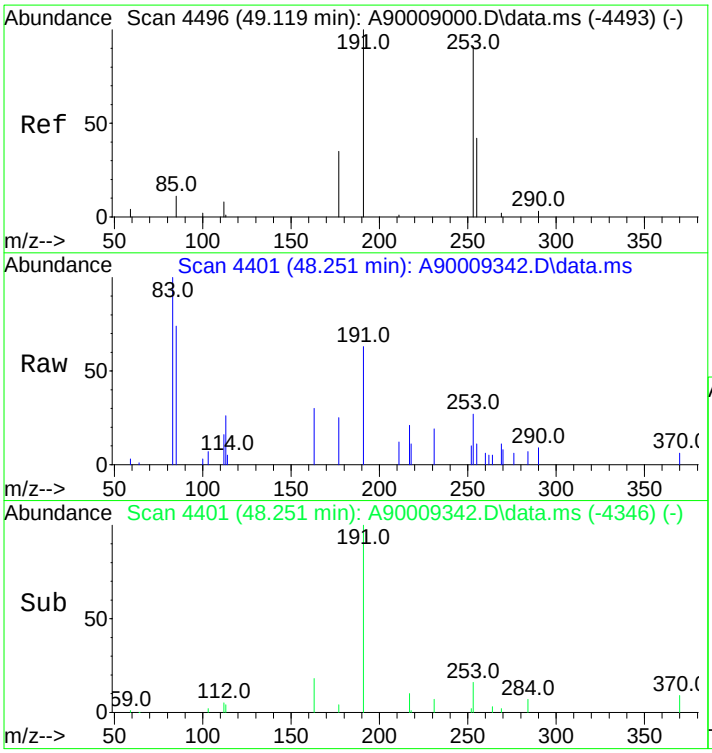




#105
C29 Tricyclic Terpane-22R (T10)
Concen: 100.31 ng/ml m
RT: 47.154 min Scan# 4281
Delta R.T. -0.009 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

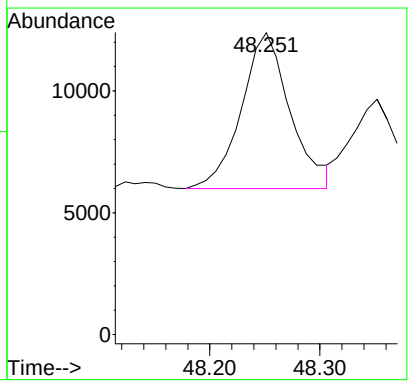
Tgt Ion:191 Resp: 13549

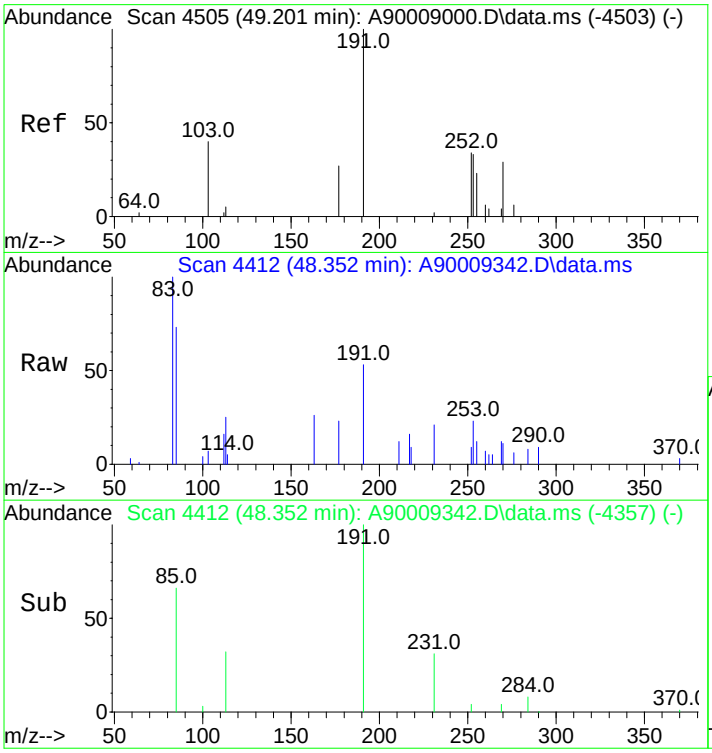




#106
18a-22,29,30-Trisnorneohopane-TS (T11)
Concen: 145.62 ng/ml
RT: 48.251 min Scan# 4401
Delta R.T. 0.000 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

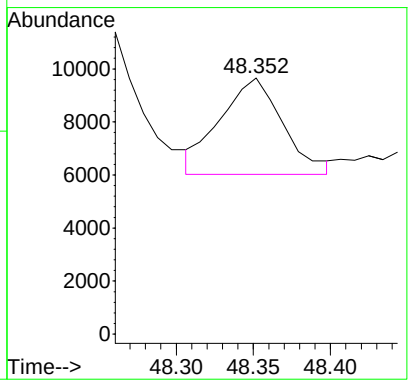
Tgt Ion:191 Resp: 19668

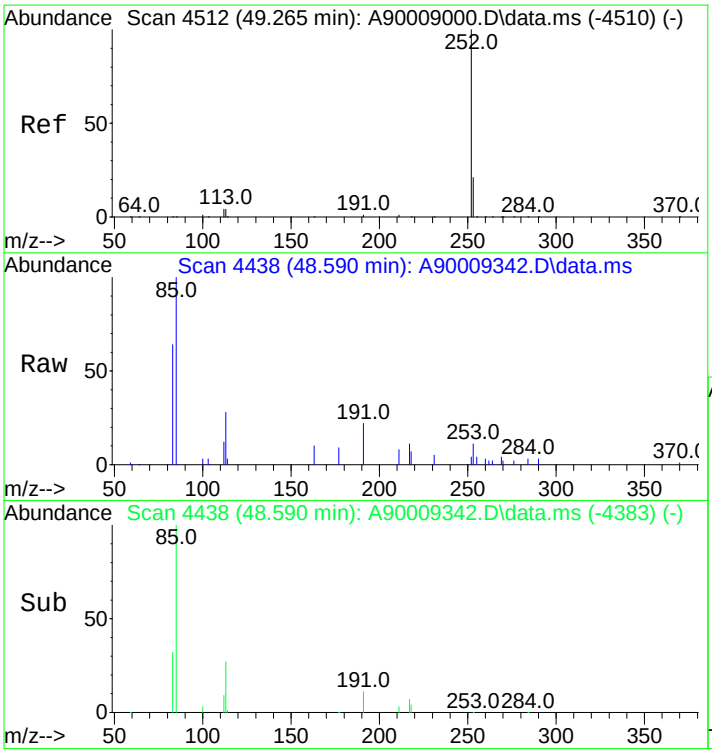




#107
C30 Tricyclic Terpane-22S
Concen: 76.40 ng/mL m
RT: 48.352 min Scan# 4412
Delta R.T. -0.000 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

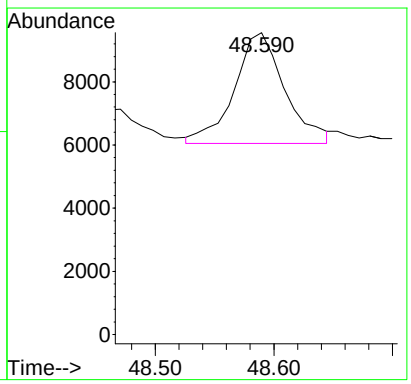
Tgt Ion:191 Resp: 10319

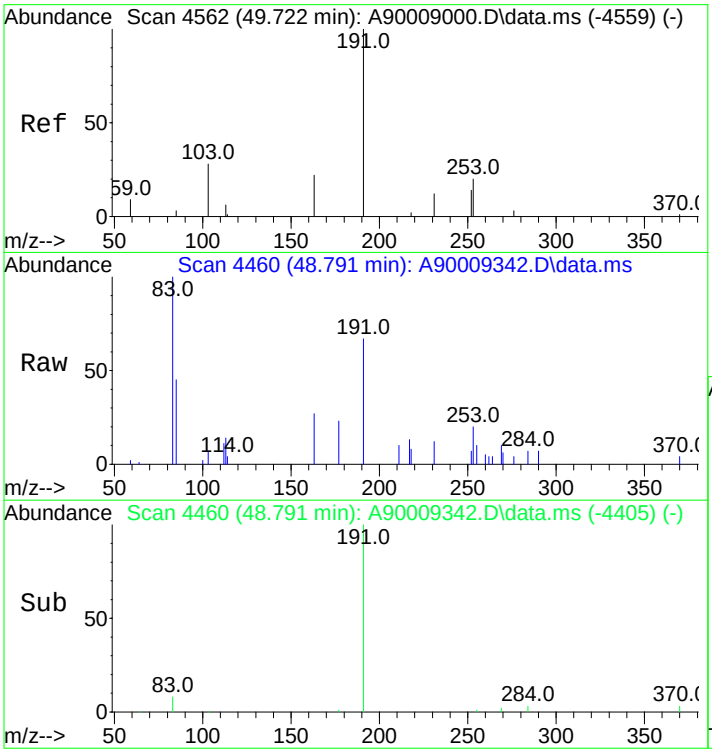




#108
C30 Tricyclic Terpane-22R
Concen: 76.60 ng/mL m
RT: 48.590 min Scan# 4438
Delta R.T. -0.000 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

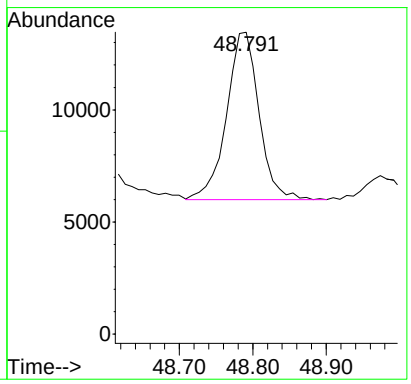
Tgt Ion:191 Resp: 10346

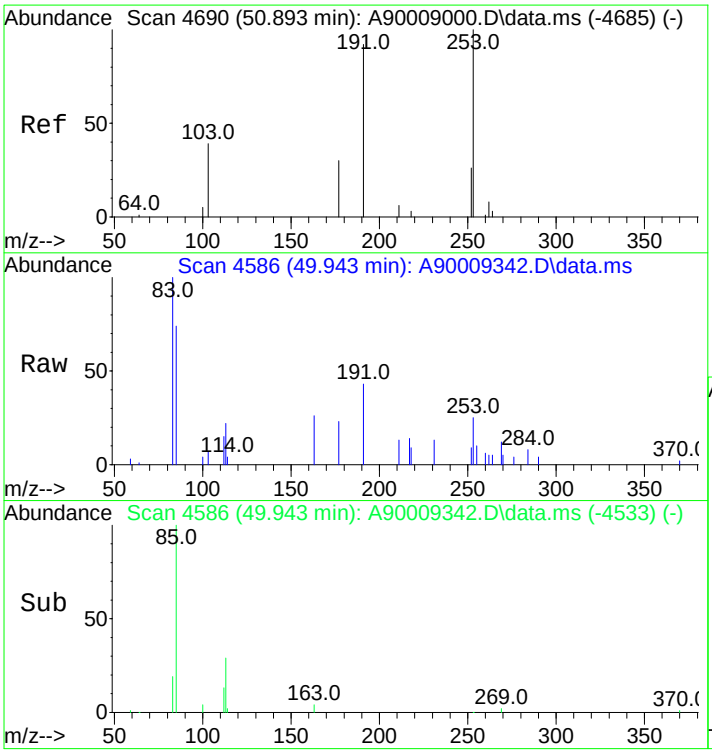




#109
17a(H)-22,29,30-Trisnorhopane-TM (T12)
Concen: 170.60 ng/ml
RT: 48.791 min Scan# 4460
Delta R.T. -0.000 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

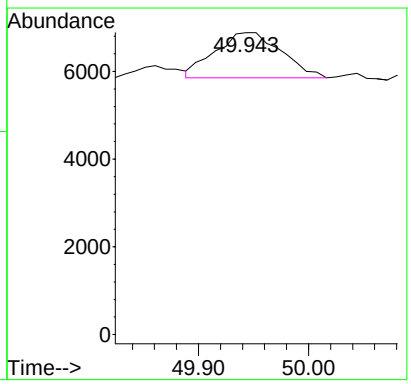
Tgt Ion:191 Resp: 23042

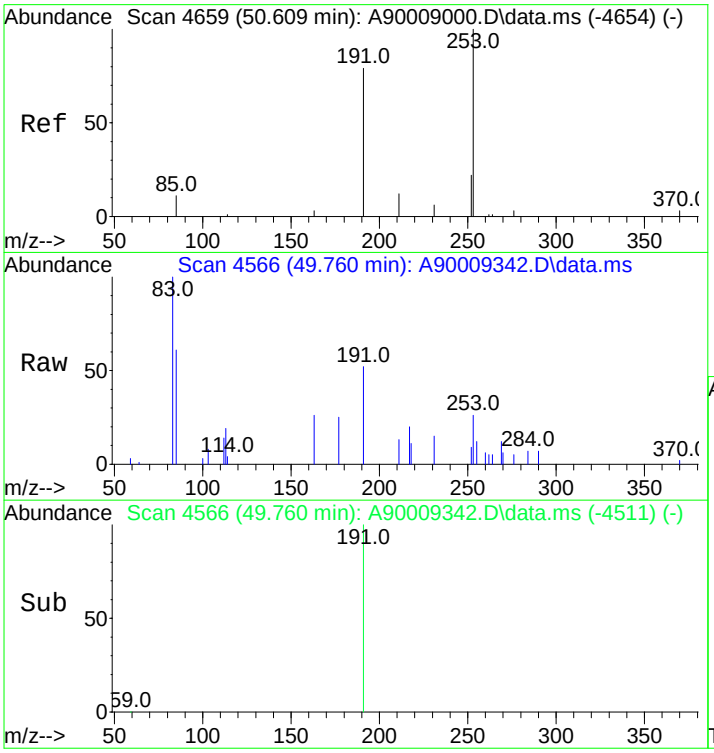




#110
17a/b,21b/a 28,30-Bisnorhopane (T14a)
Concen: 31.91 ng/ml
RT: 49.943 min Scan# 4586
Delta R.T. -0.019 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

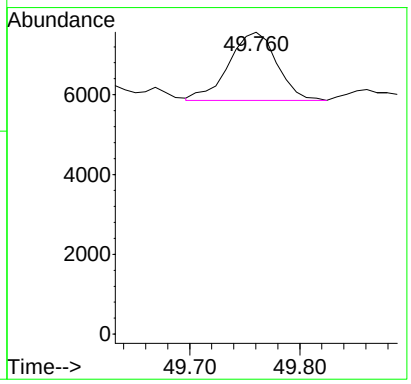
Tgt Ion:191 Resp: 4310

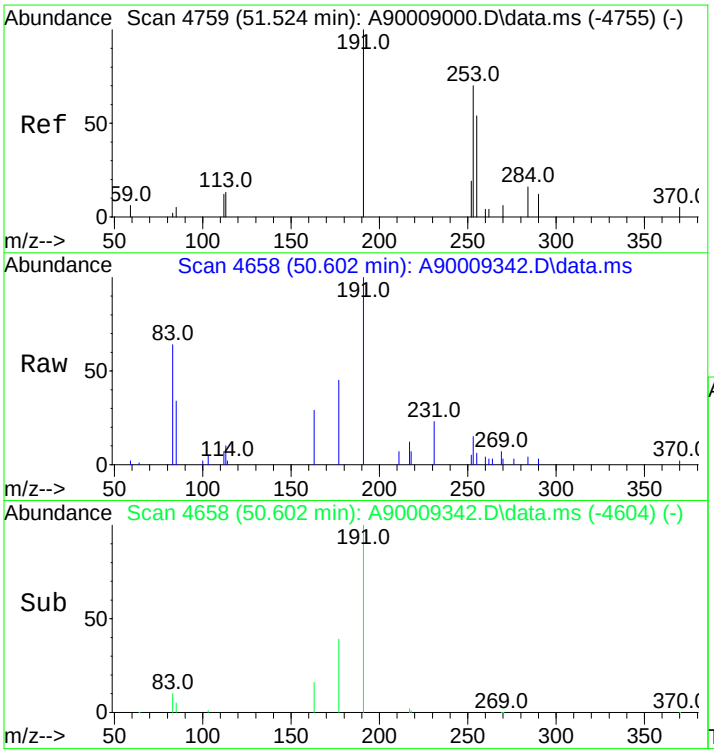




#111
17a(H),21b(H)-25-Norhopane (T14b)
Concen: 38.34 ng/ml
RT: 49.760 min Scan# 4566
Delta R.T. 0.000 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

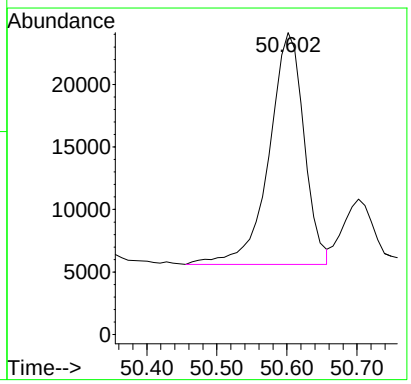
Tgt Ion:191 Resp: 5179

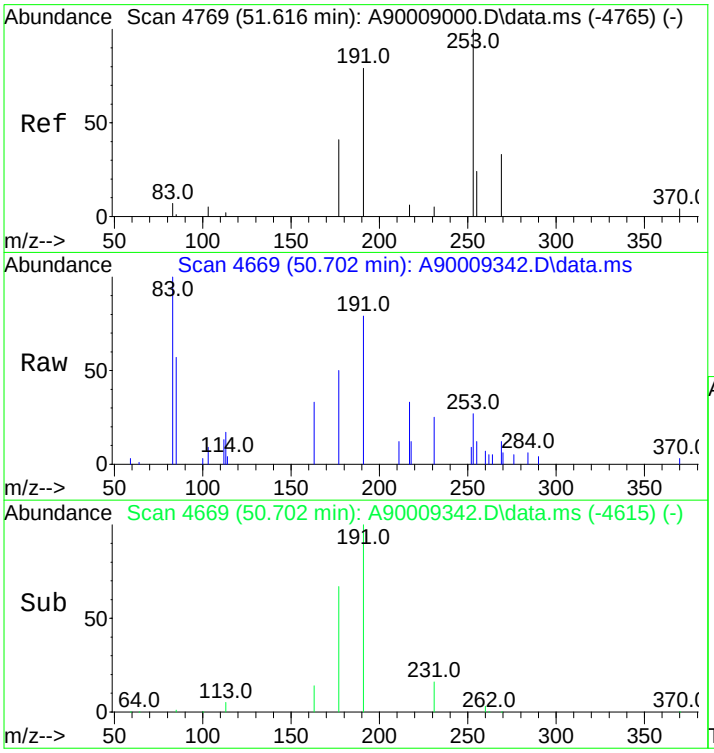




#112
30-Norhopane (T15)
Concen: 477.31 ng/ml
RT: 50.602 min Scan# 4658
Delta R.T. -0.009 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

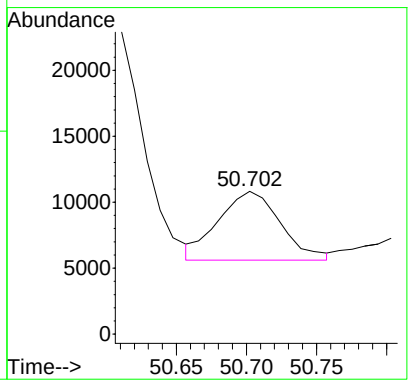
Tgt Ion:191 Resp: 64469

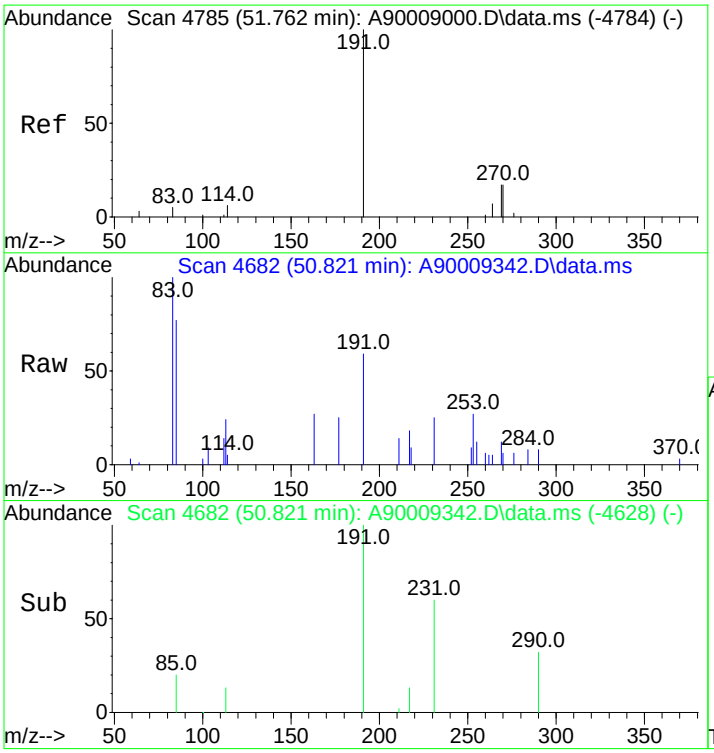




#113
18a(H)-30-Norneohopane-C29Ts (T16)
Concen: 119.33 ng/ml m
RT: 50.702 min Scan# 4669
Delta R.T. -0.010 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

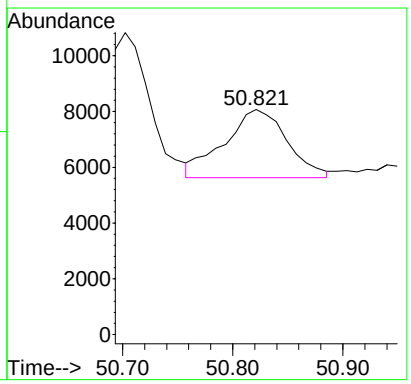
Tgt Ion:191 Resp: 16118

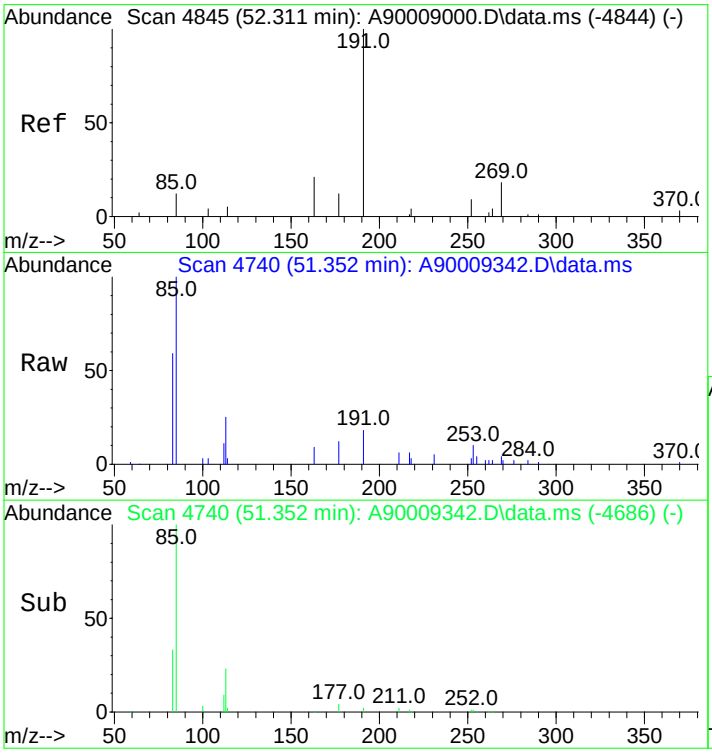




#114
17a(H)-Diahopane (X)
Concen: 71.58 ng/ml m
RT: 50.821 min Scan# 4682
Delta R.T. -0.010 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

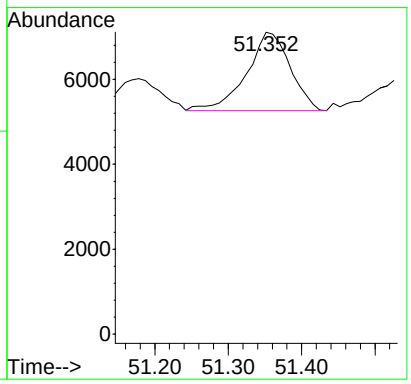
Tgt Ion:191 Resp: 9668

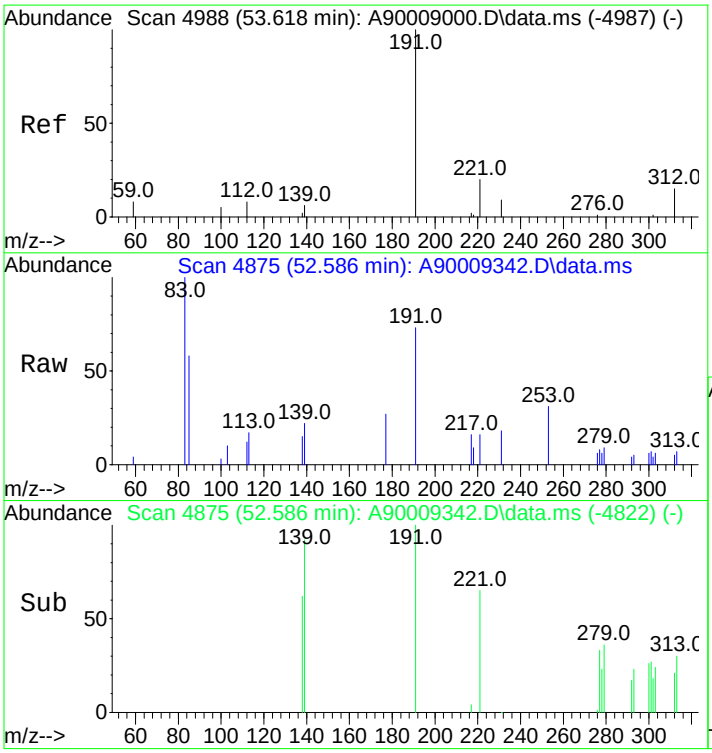




#115
30-Normoretane (T17)
Concen: 56.62 ng/ml
RT: 51.352 min Scan# 4740
Delta R.T. -0.009 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

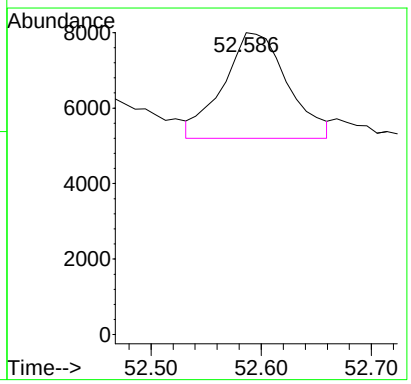
Tgt Ion:191 Resp: 7648

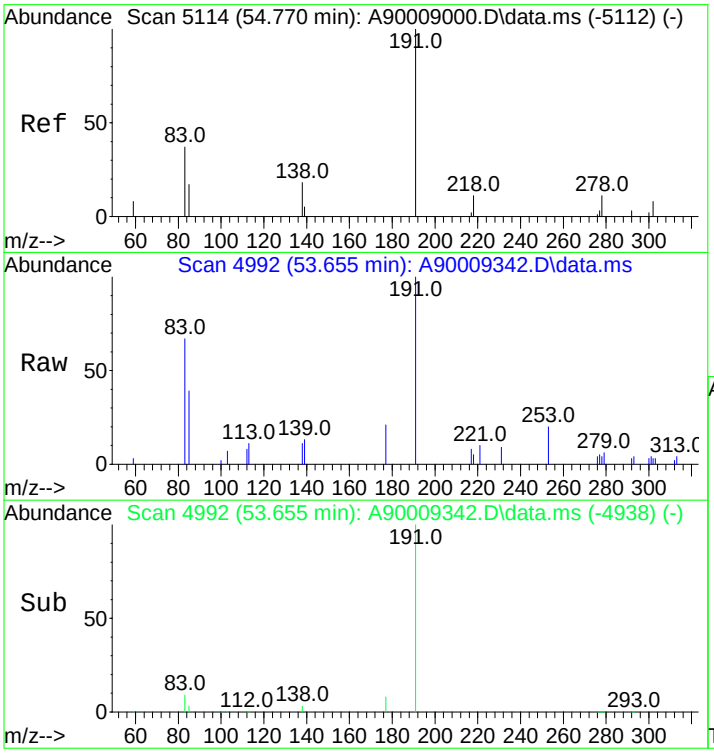




#117
Moretane (T20)
Concen: 84.14 ng/ml m
RT: 52.586 min Scan# 4875
Delta R.T. -0.019 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

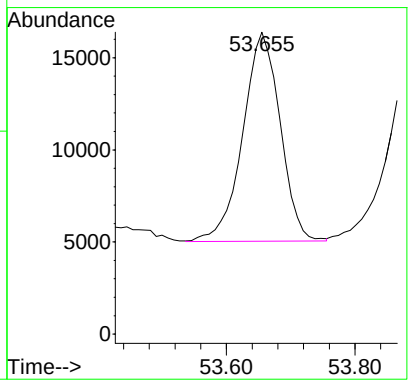
Tgt Ion:191 Resp: 11365

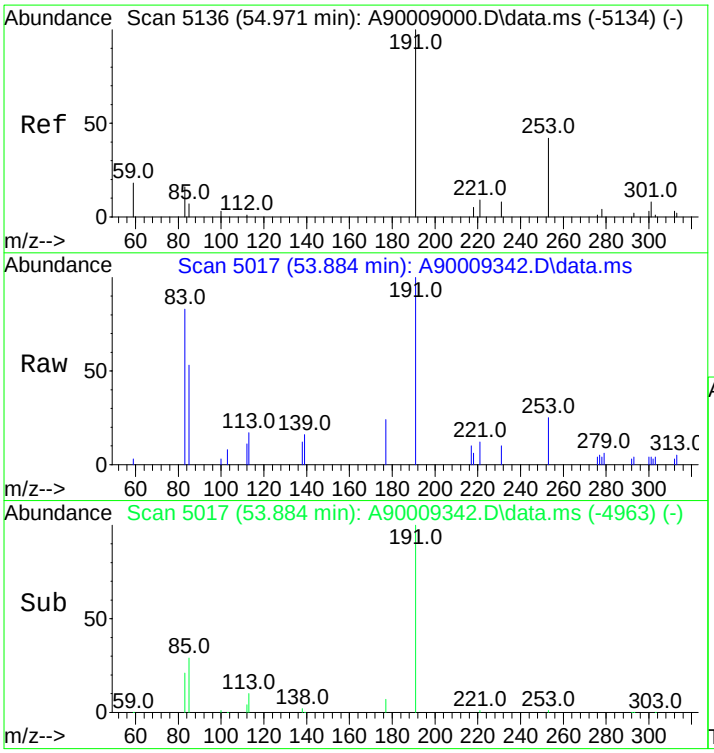




#118
30-Homohopane-22S (T21)
Concen: 339.26 ng/ml
RT: 53.655 min Scan# 4992
Delta R.T. -0.010 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

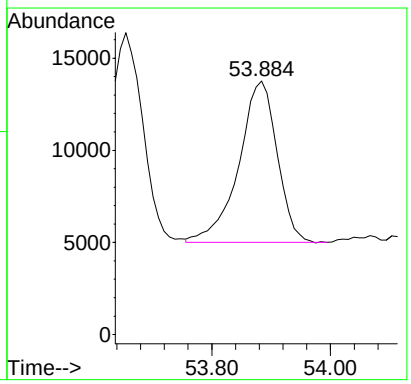
Tgt Ion:191 Resp: 45823

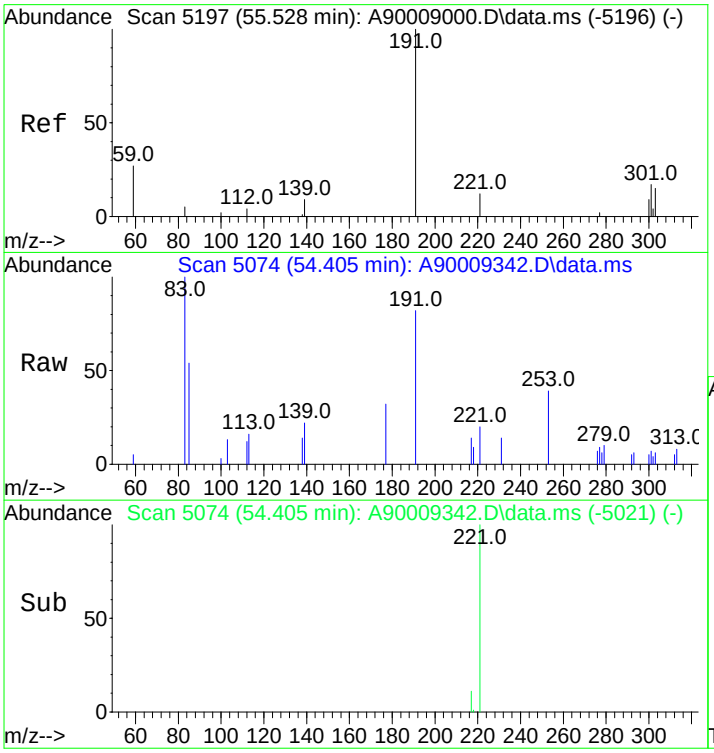




#119
30-Homohopane-22R (T22)
Concen: 290.23 ng/ml
RT: 53.884 min Scan# 5017
Delta R.T. -0.009 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

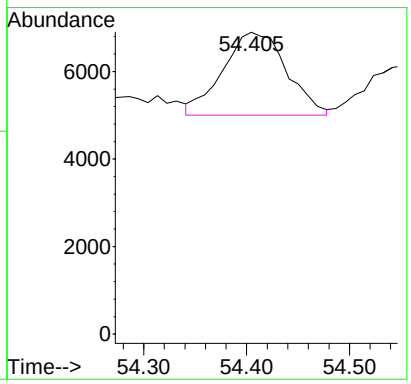
Tgt Ion:191 Resp: 39201

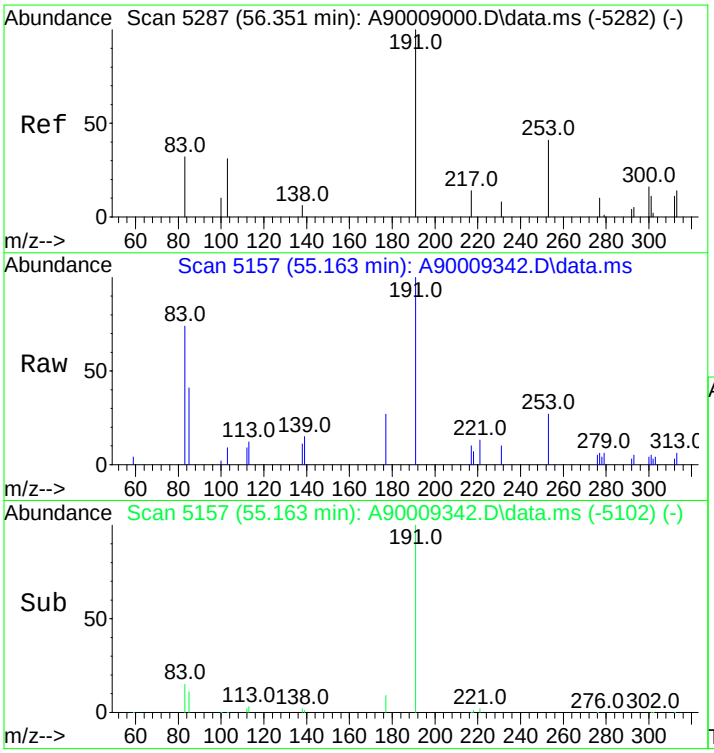




#120
Gammacerane/C32-diahopane
Concen: 60.53 ng/mL
RT: 54.405 min Scan# 5074
Delta R.T. -0.018 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

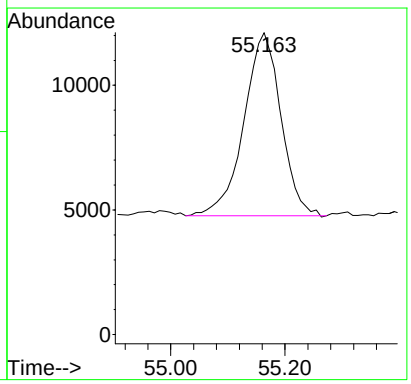
Tgt Ion:191 Resp: 8176

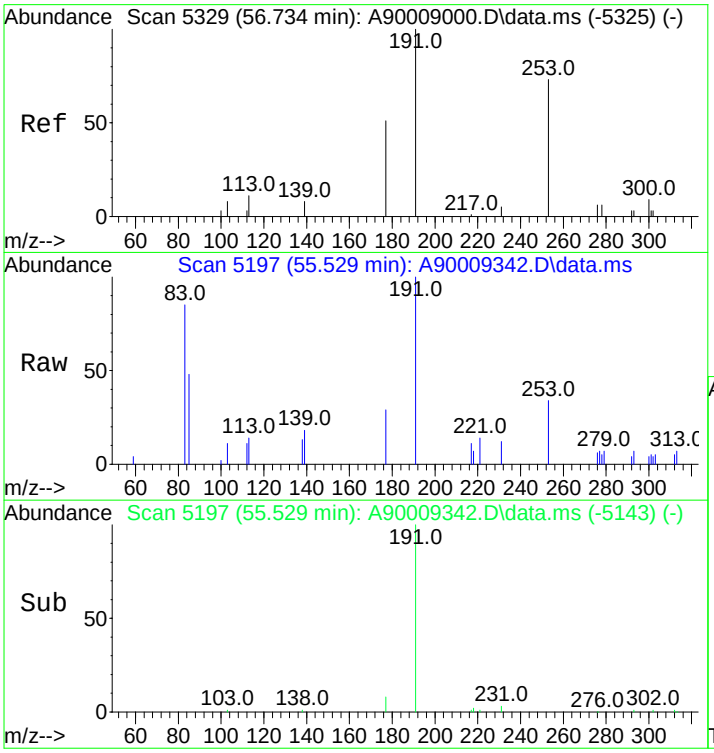




#121
30,31-Bishomohopane-22S (T26)
Concen: 245.25 ng/ml
RT: 55.163 min Scan# 5157
Delta R.T. 0.000 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

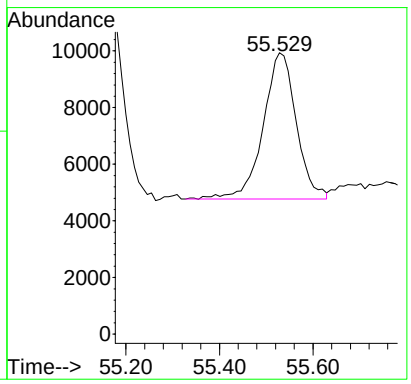
Tgt Ion:191 Resp: 33126

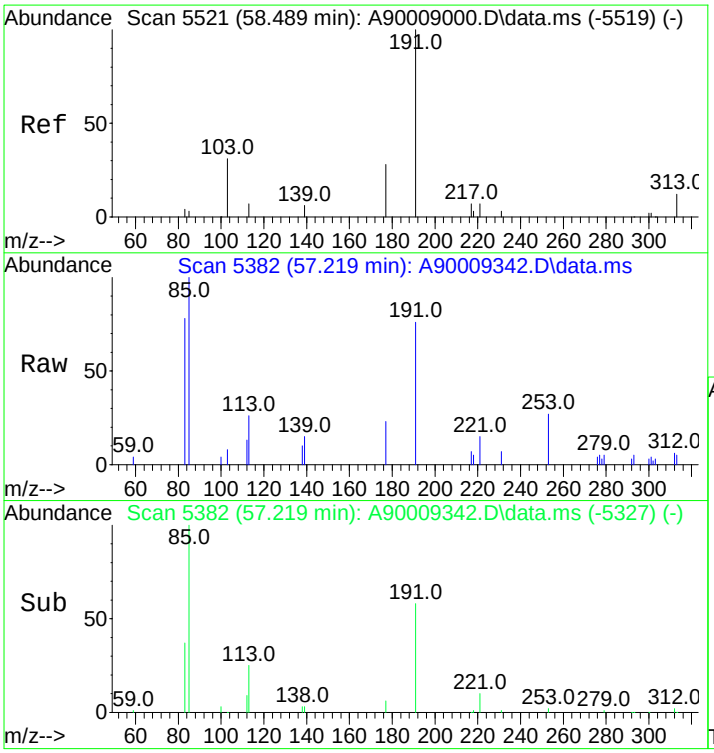




#122
30,31-Bishomohopane-22R (T27)
Concen: 188.02 ng/ml
RT: 55.529 min Scan# 5197
Delta R.T. -0.009 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

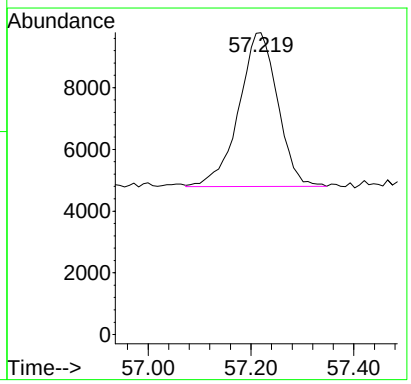
Tgt Ion:191 Resp: 25395

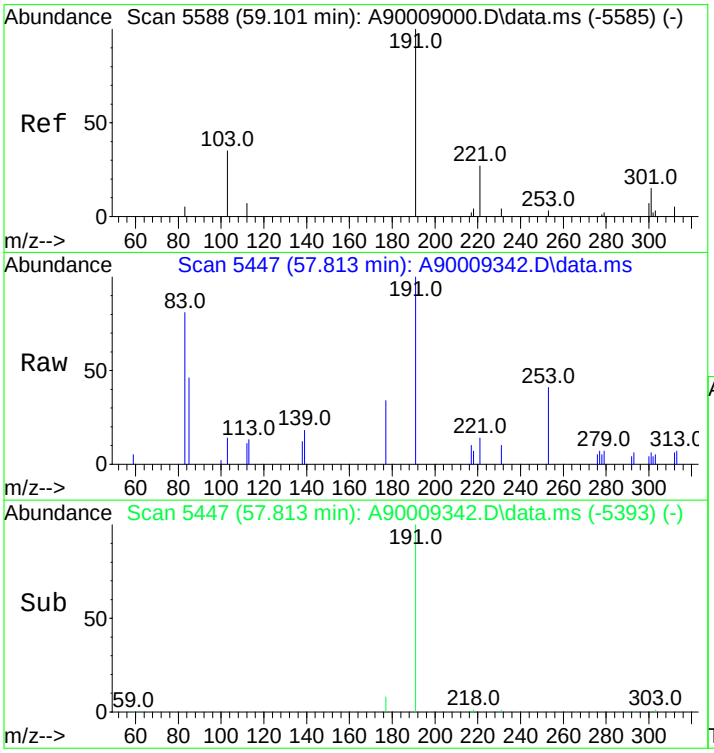




#123
30,31-Trishomohopane-22S (T30)
Concen: 193.78 ng/ml
RT: 57.219 min Scan# 5382
Delta R.T. 0.000 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

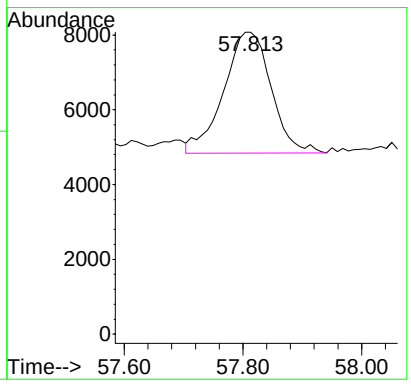
Tgt Ion:191 Resp: 26174

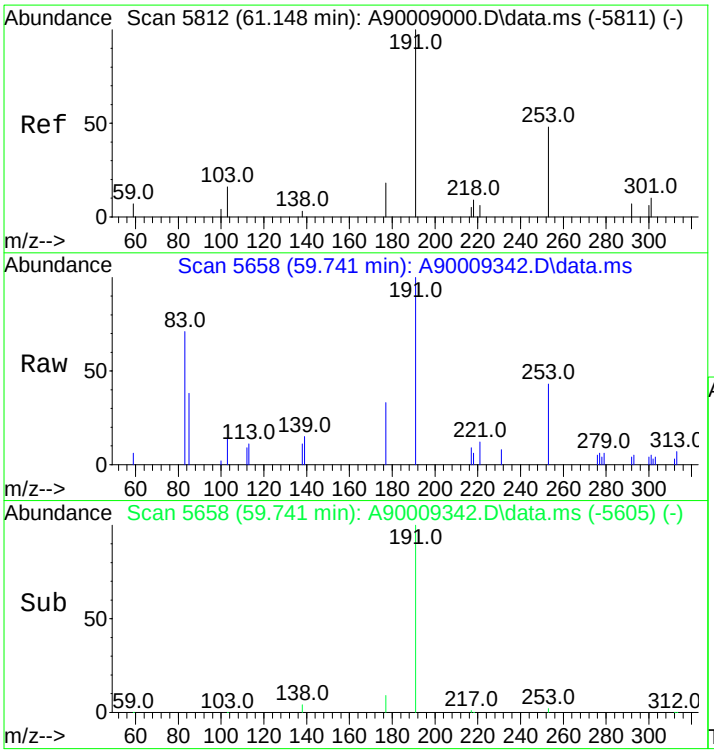




#124
30,31-Trishomohopane-22R (T31)
Concen: 132.81 ng/ml
RT: 57.813 min Scan# 5447
Delta R.T. -0.009 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

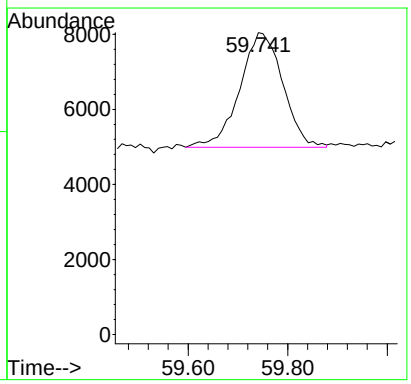
Tgt Ion:191 Resp: 17938

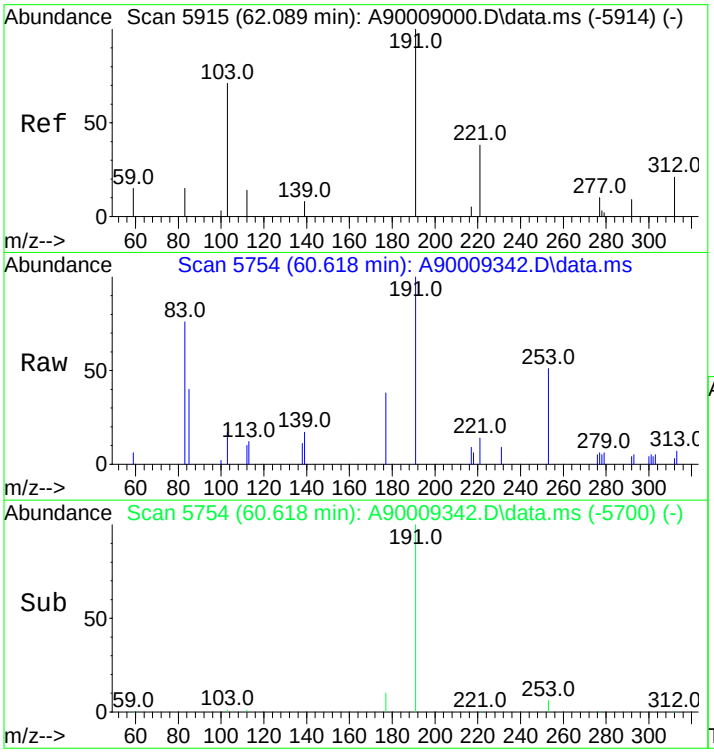




#125
Tetrakishomohopane-22S (T32)
Concen: 135.91 ng/ml
RT: 59.741 min Scan# 5658
Delta R.T. -0.019 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

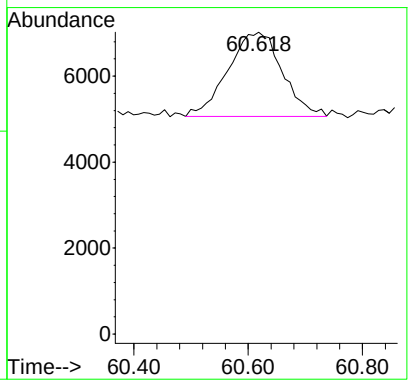
Tgt Ion:191 Resp: 18357

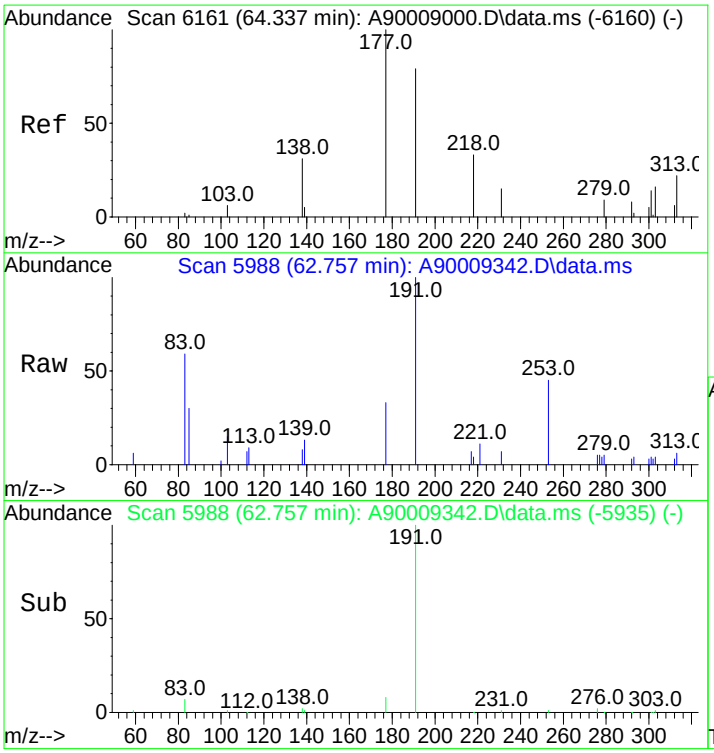




#126
Tetrakishomohopane-22R (T33)
Concen: 95.41 ng/ml
RT: 60.618 min Scan# 5754
Delta R.T. -0.010 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

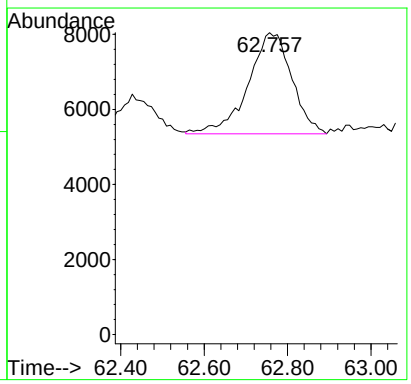
Tgt Ion:191 Resp: 12887

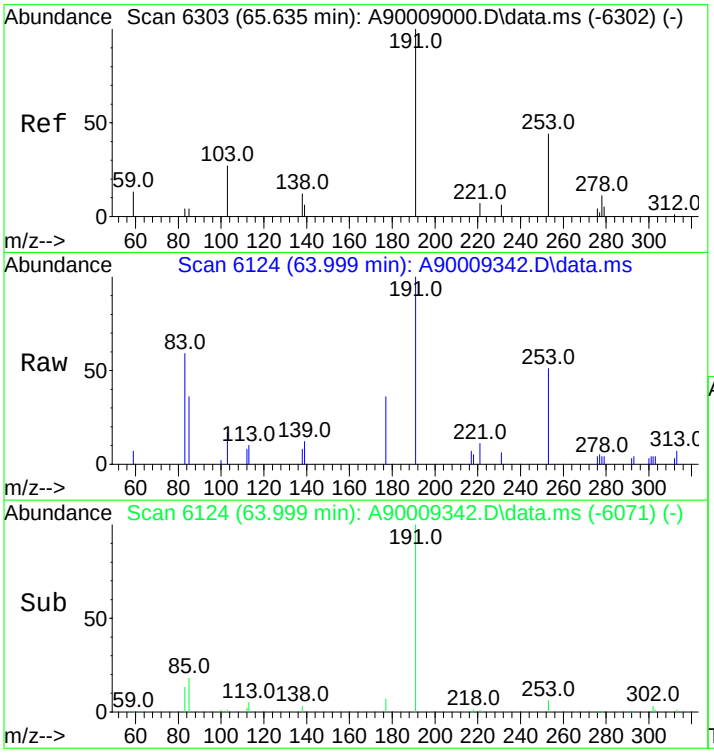




#127
Pentakishomohopane-22S (T34)
Concen: 145.00 ng/ml
RT: 62.757 min Scan# 5988
Delta R.T. -0.018 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

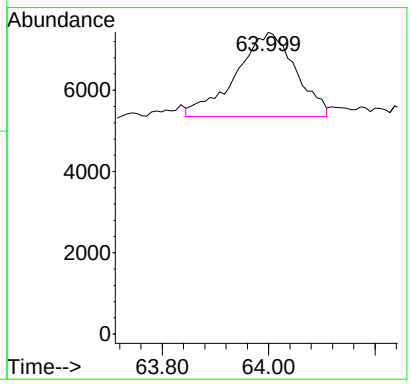
Tgt Ion:191 Resp: 19585

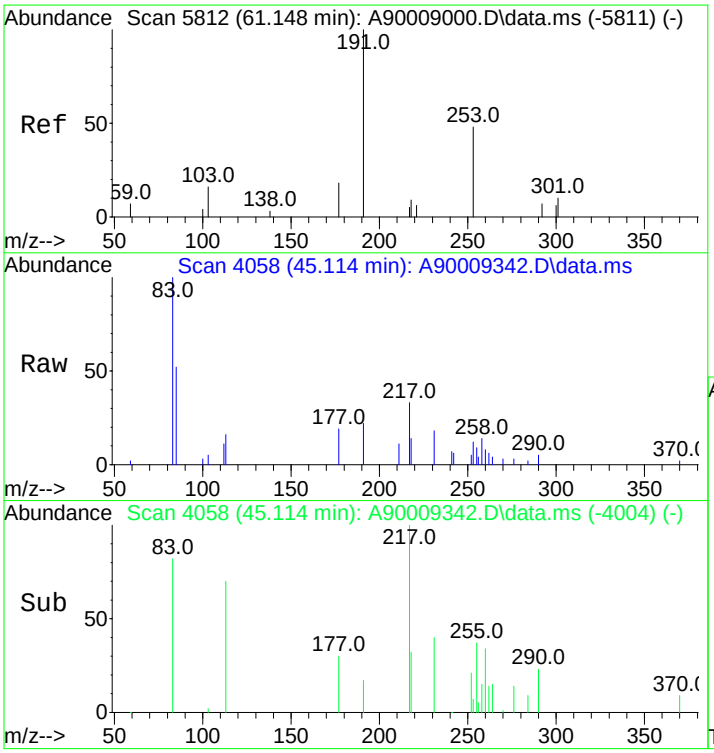




#128
Pentakishomohopane-22R (T35)
Concen: 118.04 ng/ml m
RT: 63.999 min Scan# 6124
Delta R.T. -0.019 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

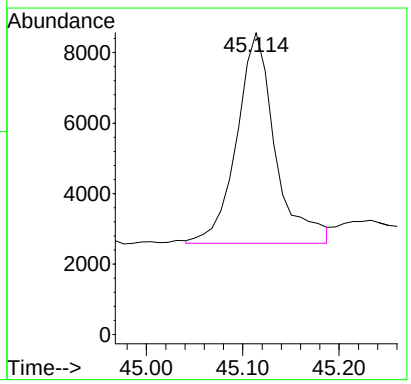
Tgt Ion:191 Resp: 15943

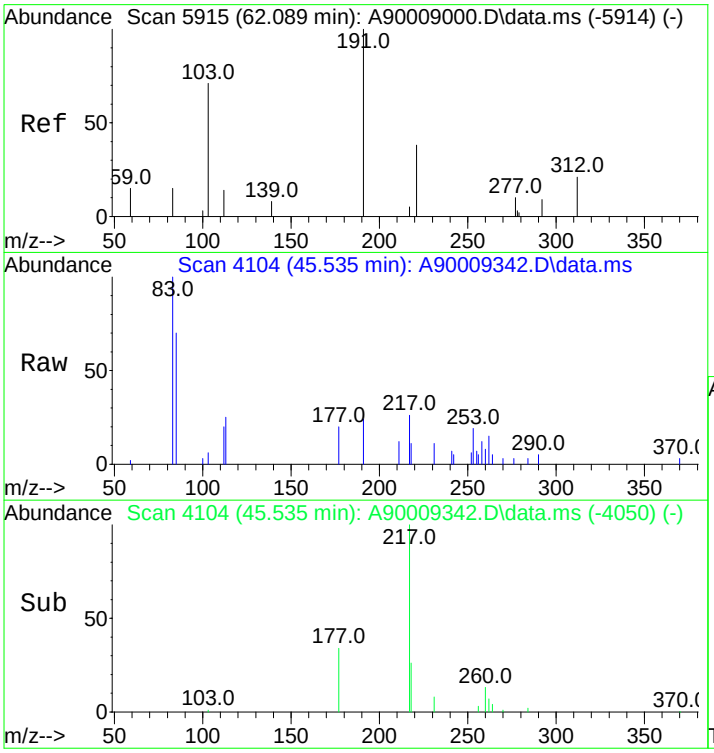




#130
13b(H),17a(H)-20S-Diacholestane (S4)
Concen: 257.42 ng/ml m
RT: 45.114 min Scan# 4058
Delta R.T. -0.009 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

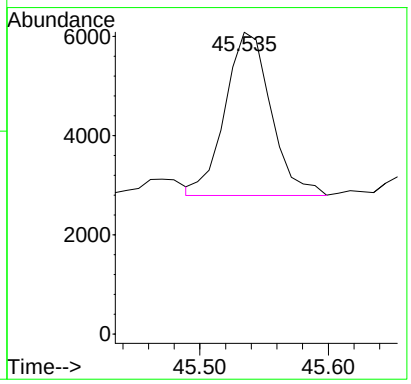
Tgt Ion:217 Resp: 16602

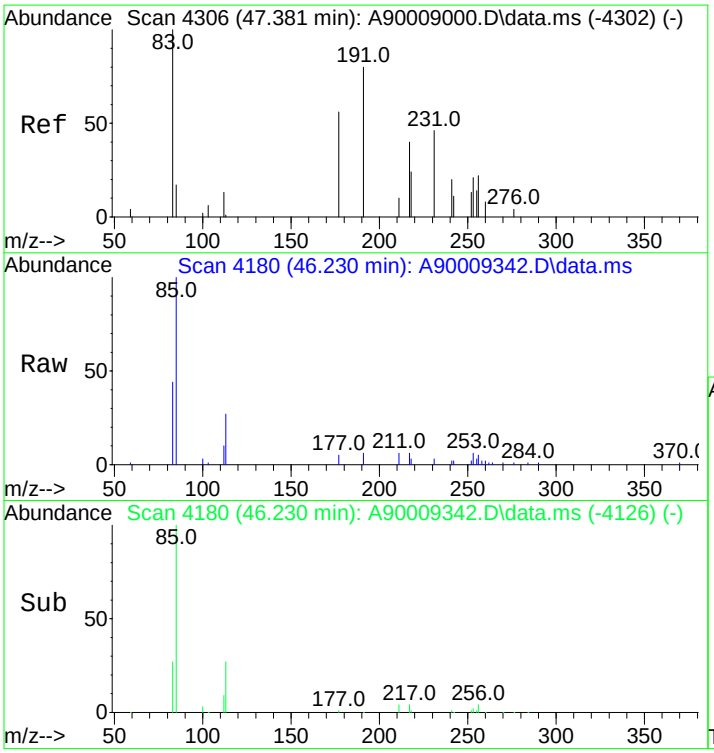




#131
13b(H),17a(H)-20R-Diacholestane (S5)
Concen: 126.88 ng/ml m
RT: 45.535 min Scan# 4104
Delta R.T. -0.009 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

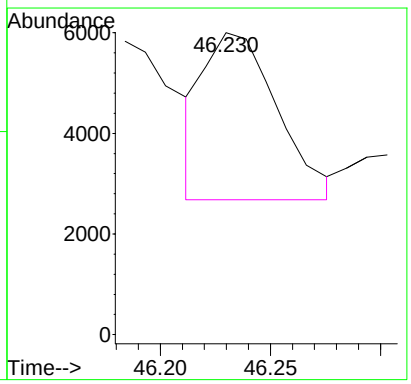
Tgt Ion:217 Resp: 8183

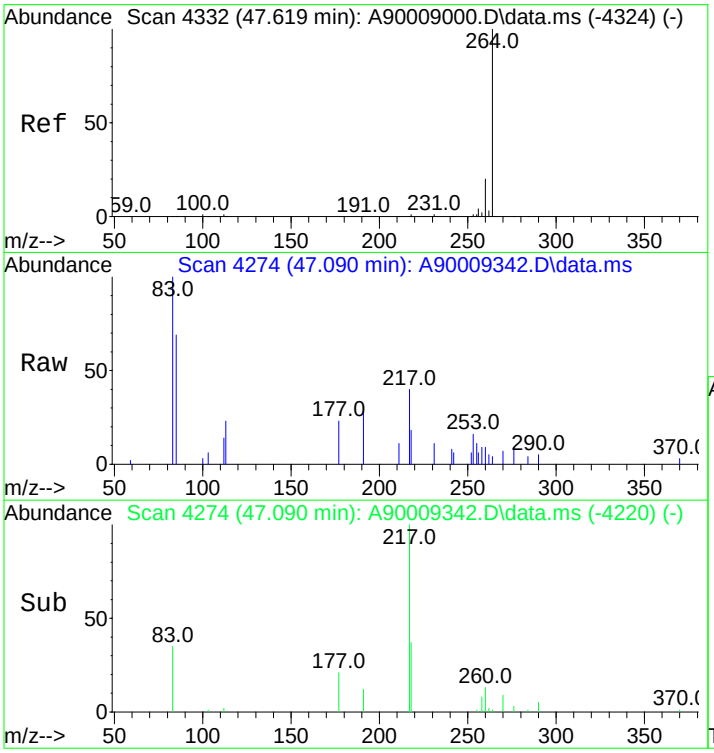




#132
13b,17a-20S-Methyldiacholestane (S8)
Concen: 119.76 ng/ml m
RT: 46.230 min Scan# 4180
Delta R.T. -0.009 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

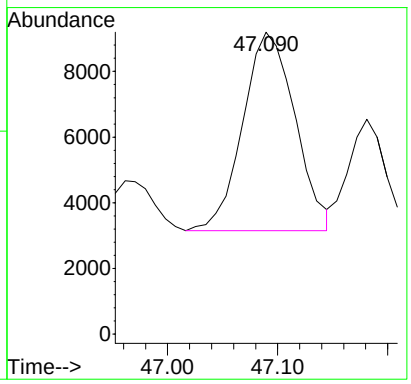
Tgt Ion:217 Resp: 7724

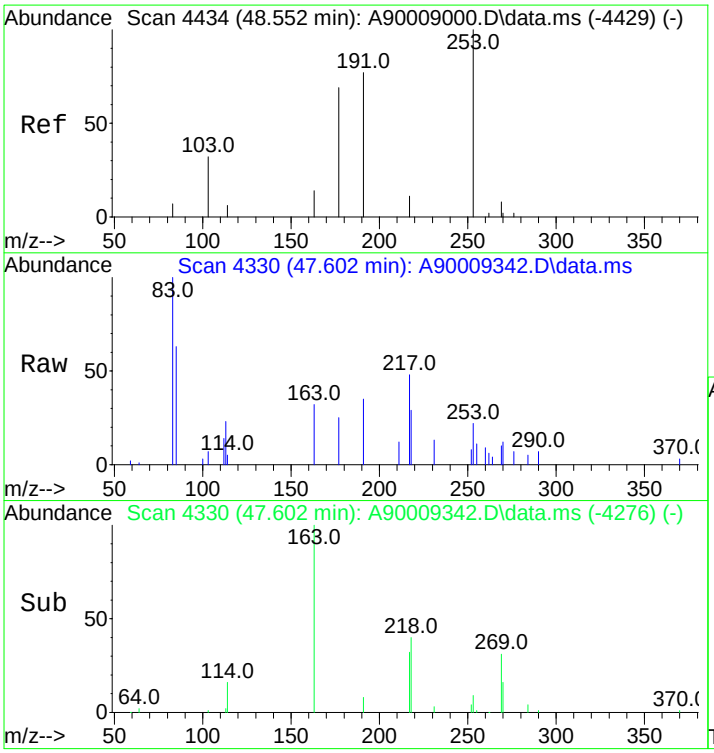




#133
14a,17a-20S-Chol/13b,17a-20S-Ethyldiach
Concen: 309.44 ng/ml
RT: 47.090 min Scan# 4274
Delta R.T. -0.009 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

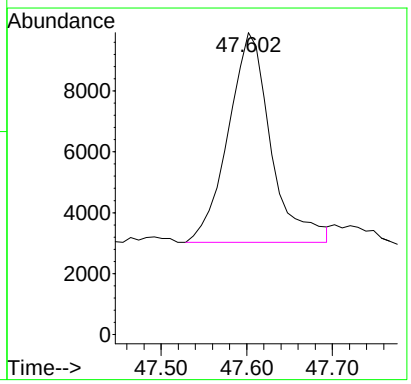
Tgt Ion:217 Resp: 19957

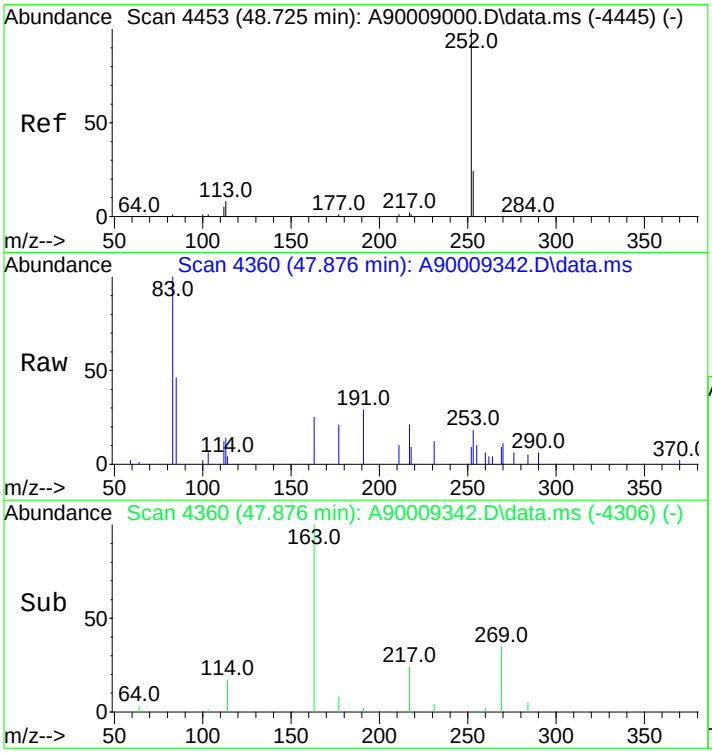




#134
14a,17a-20R-Chol/13b,17a-20R-Ethyldiach
Concen: 369.86 ng/ml
RT: 47.602 min Scan# 4330
Delta R.T. -0.009 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

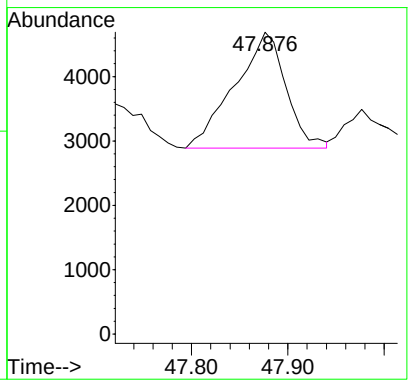
Tgt Ion:217 Resp: 23854

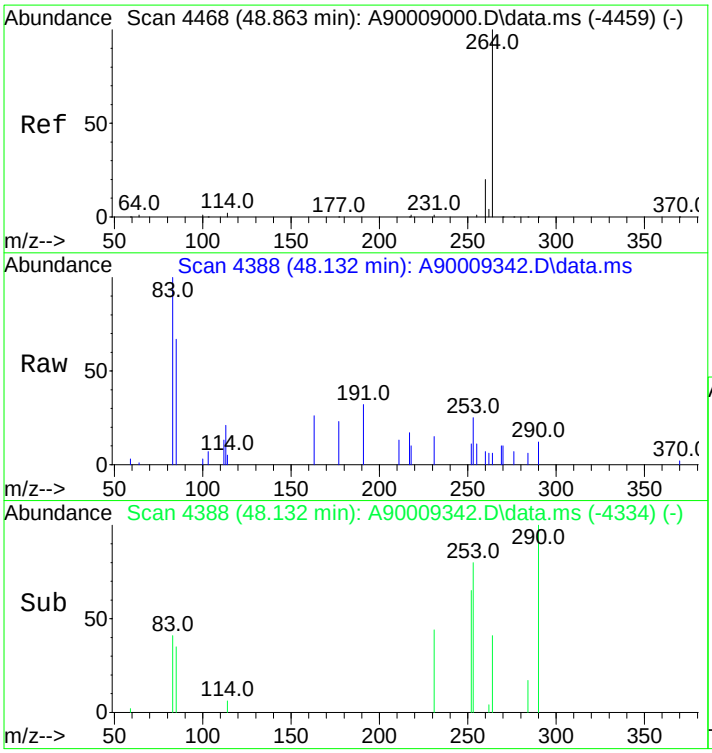




#135
Unknown Sterane (S18)
Concen: 103.47 ng/ml
RT: 47.876 min Scan# 4360
Delta R.T. -0.010 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

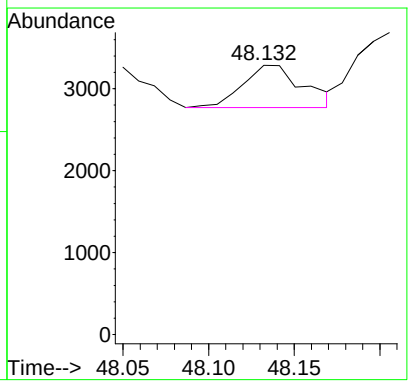
Tgt Ion:217 Resp: 6673

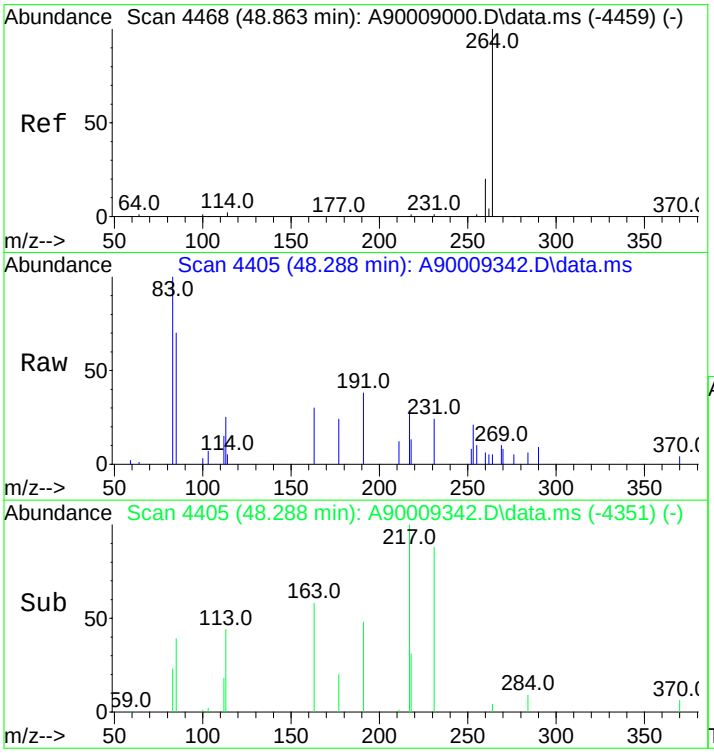




#136
13a,17b-20S-Ethyldiacholestane (S19)
Concen: 19.58 ng/ml
RT: 48.132 min Scan# 4388
Delta R.T. -0.010 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

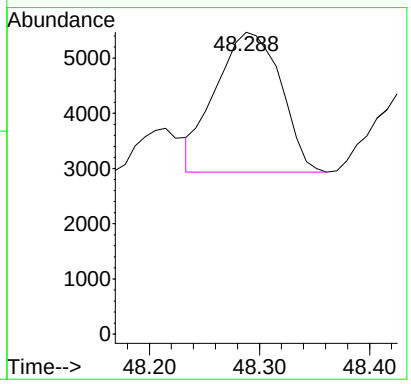
Tgt Ion:217 Resp: 1263

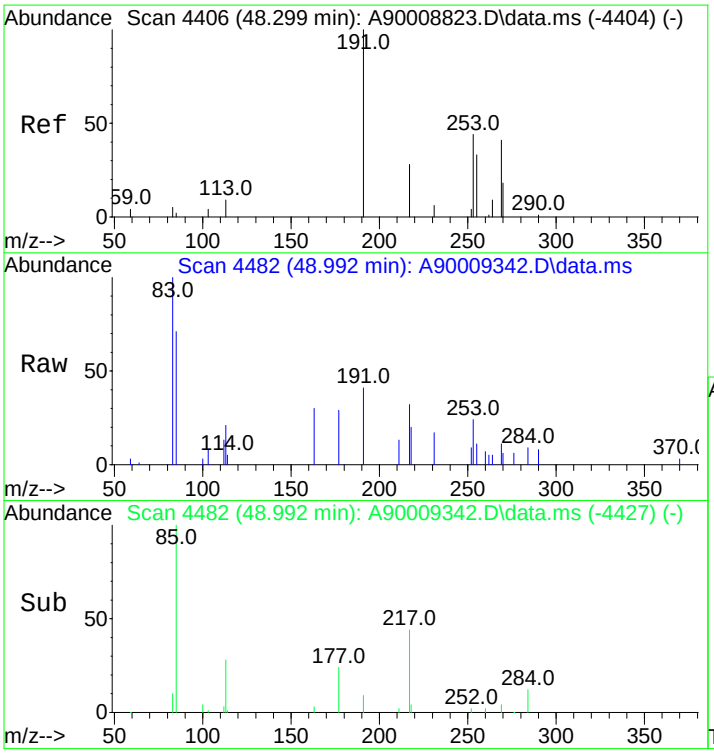




#137
14a,17a-20S-Methylcholestane (S20)
Concen: 161.69 ng/ml
RT: 48.288 min Scan# 4405
Delta R.T. -0.009 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

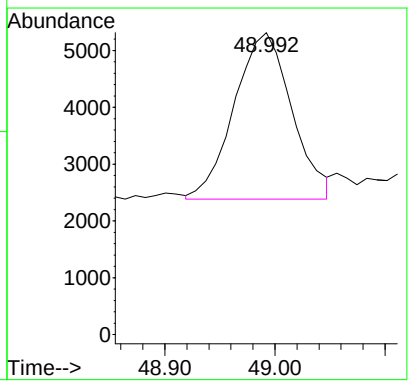
Tgt Ion:217 Resp: 10428

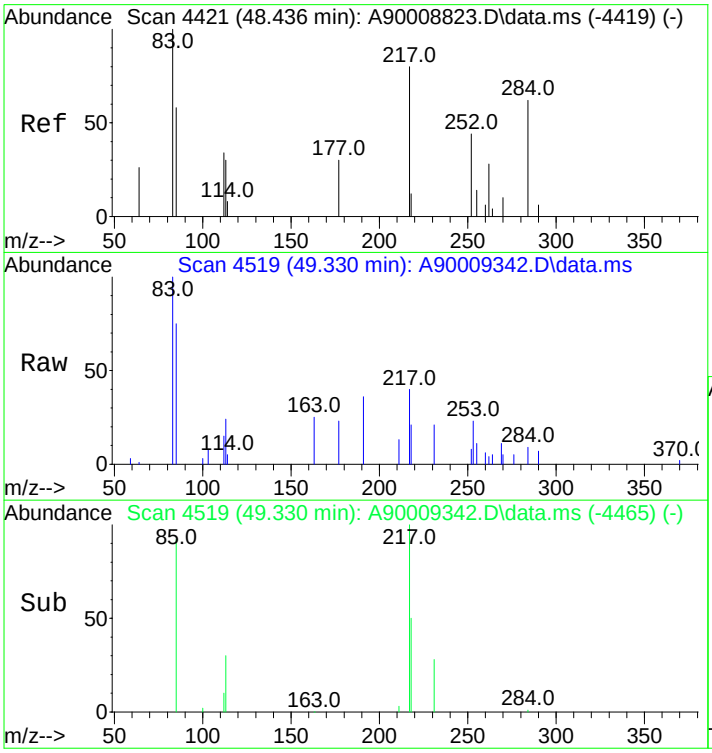




#138
14a,17a-20R-Methylcholestane (S24)
Concen: 166.00 ng/ml m
RT: 48.992 min Scan# 4482
Delta R.T. 0.000 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

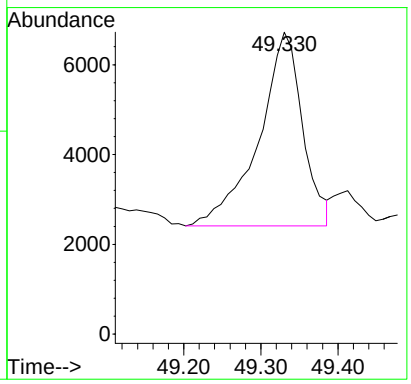
Tgt Ion:217 Resp: 10706

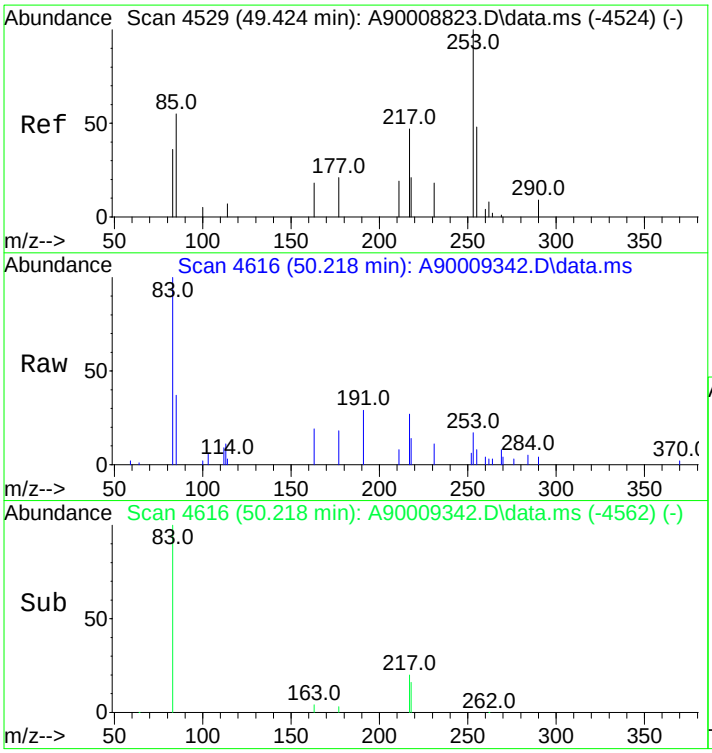




#139
14a(H),17a(H)-20S-Ethylcholestane (S25)
Concen: 264.64 ng/ml
RT: 49.330 min Scan# 4519
Delta R.T. -0.010 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

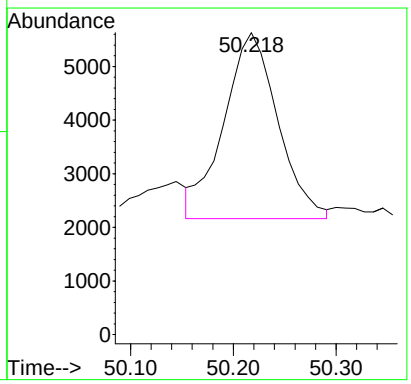
Tgt Ion:217 Resp: 17068

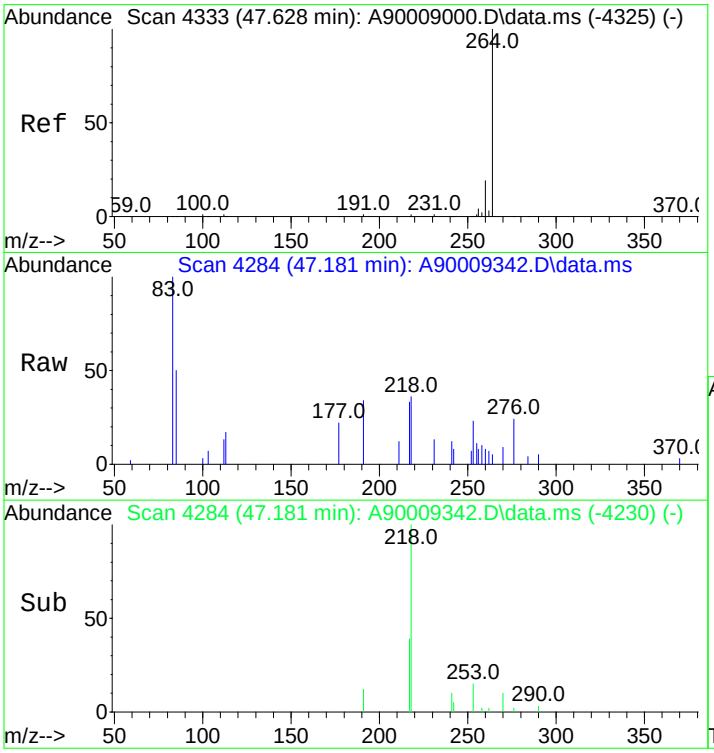




#140
14a(H),17a(H)-20R-Ethylcholestane (S28)
Concen: 196.08 ng/ml m
RT: 50.218 min Scan# 4616
Delta R.T. -0.009 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

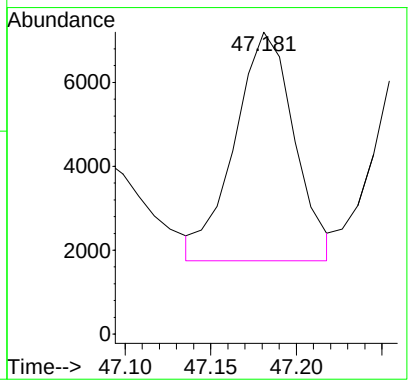
Tgt Ion:217 Resp: 12646

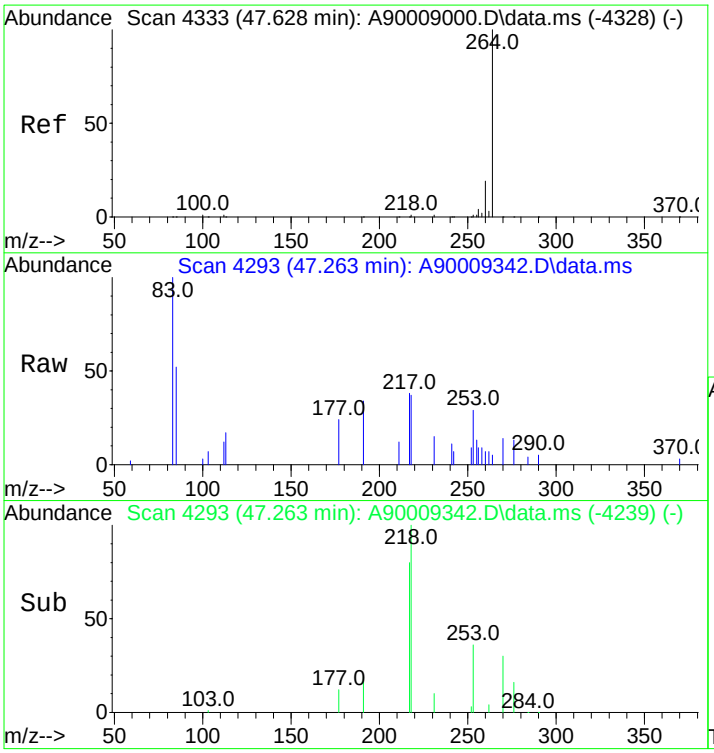




#141
14b(H),17b(H)-20R-Cholestane (S14)
Concen: 205.82 ng/ml m
RT: 47.181 min Scan# 4284
Delta R.T. -0.009 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

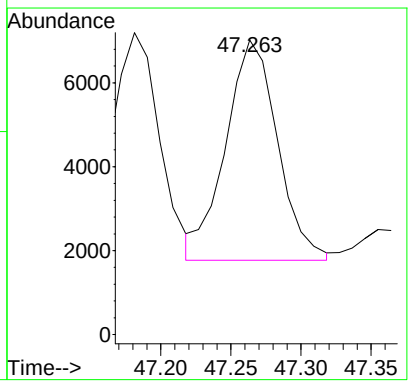
Tgt Ion:218 Resp: 13274

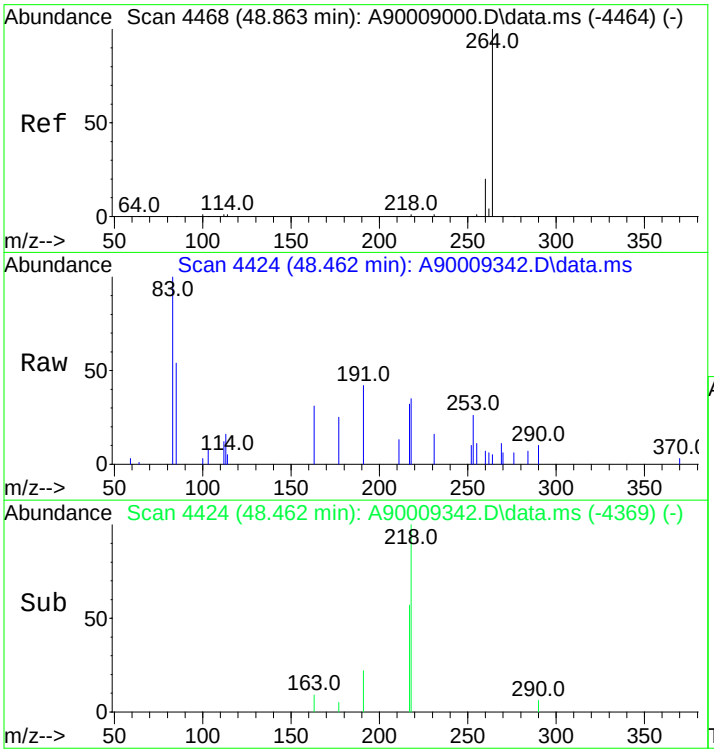




#142
14b(H),17b(H)-20S-Cholestane (S15)
Concen: 209.58 ng/ml m
RT: 47.263 min Scan# 4293
Delta R.T. -0.010 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

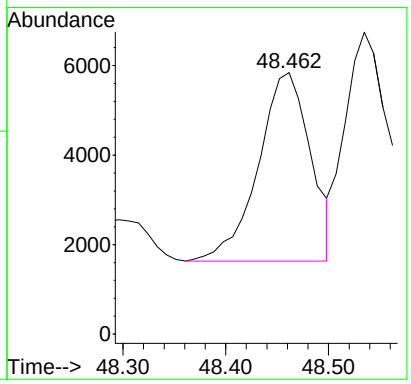
Tgt Ion:218 Resp: 13517

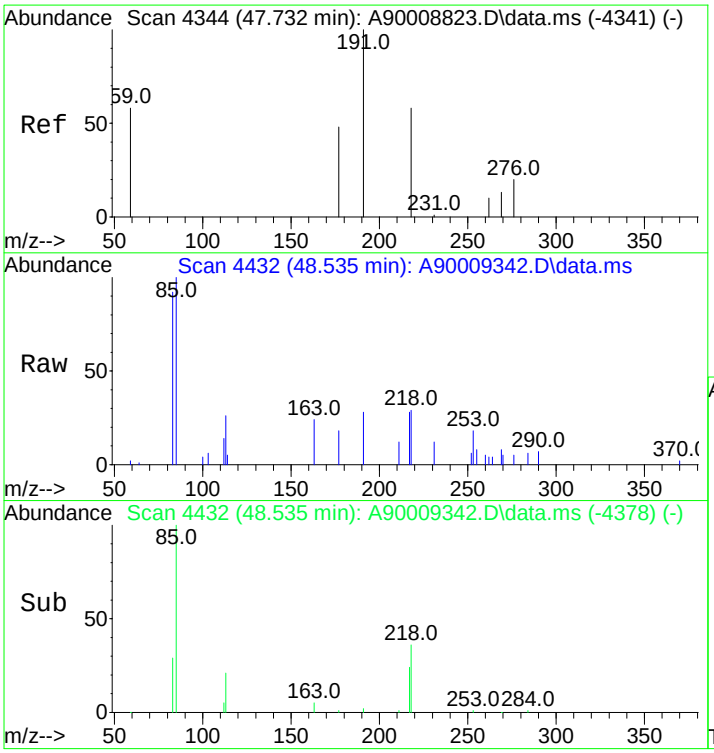




#143
14b,17b-20R-Methylcholestane (S22)
Concen: 231.60 ng/ml
RT: 48.462 min Scan# 4424
Delta R.T. -0.000 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

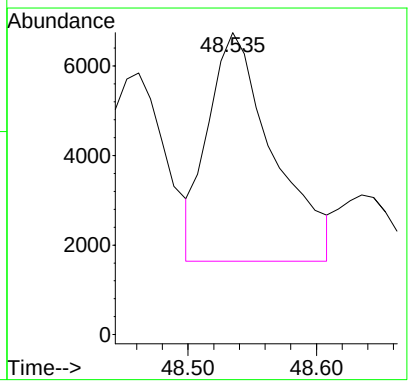
Tgt Ion:218 Resp: 14937

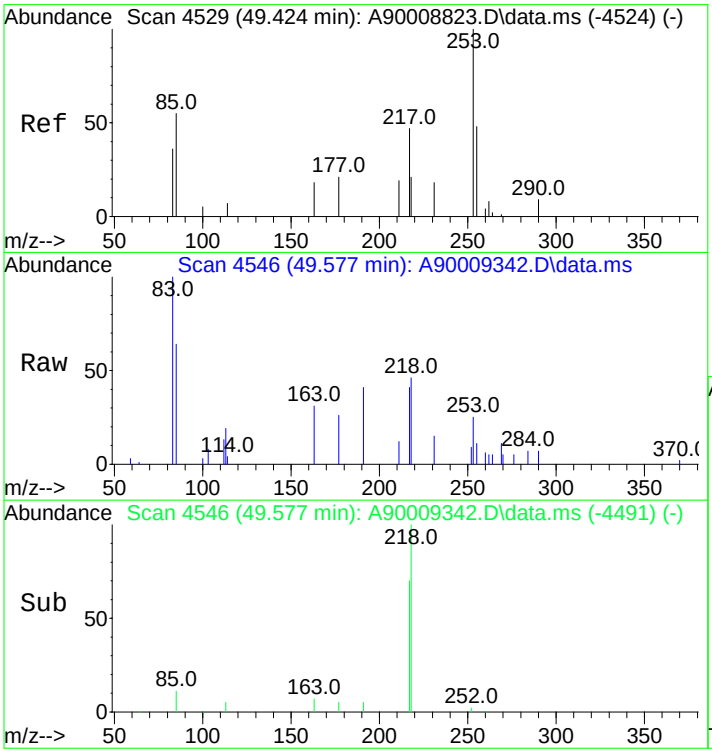




#144
14b,17b-20S-Methylcholestane (S23)
Concen: 278.67 ng/ml m
RT: 48.535 min Scan# 4432
Delta R.T. -0.009 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

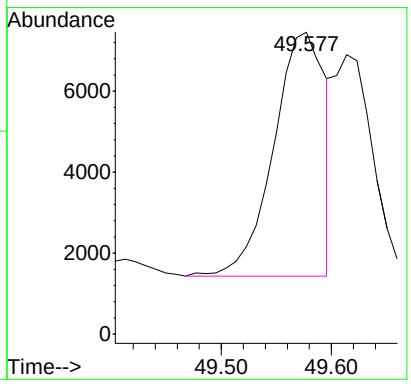
Tgt Ion:218 Resp: 17973

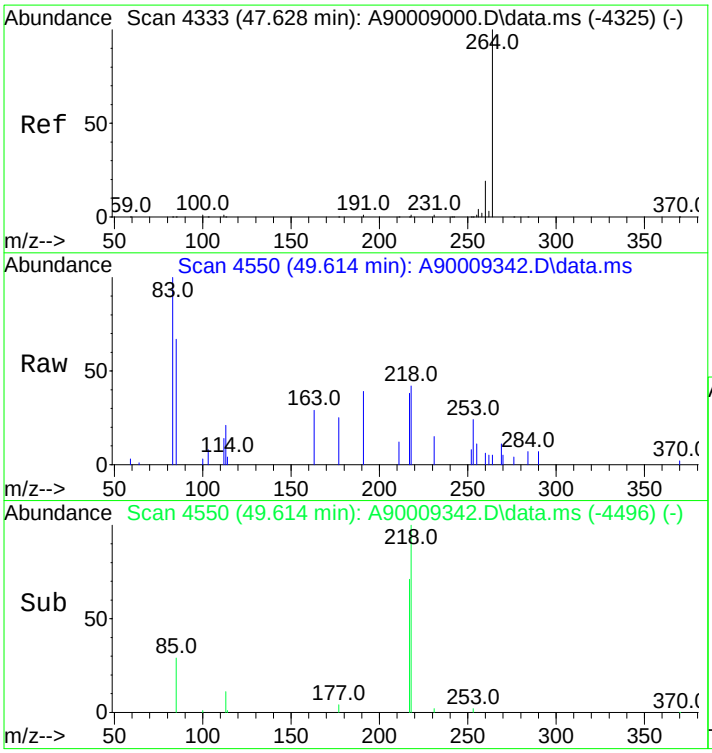




#145
14b(H),17b(H)-20R-Ethylcholestane (S26)
Concen: 303.95 ng/ml
RT: 49.577 min Scan# 4546
Delta R.T. -0.001 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

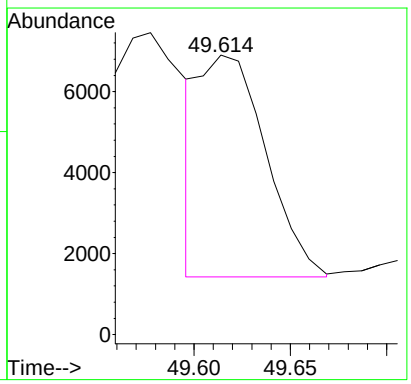
Tgt Ion:218 Resp: 19603

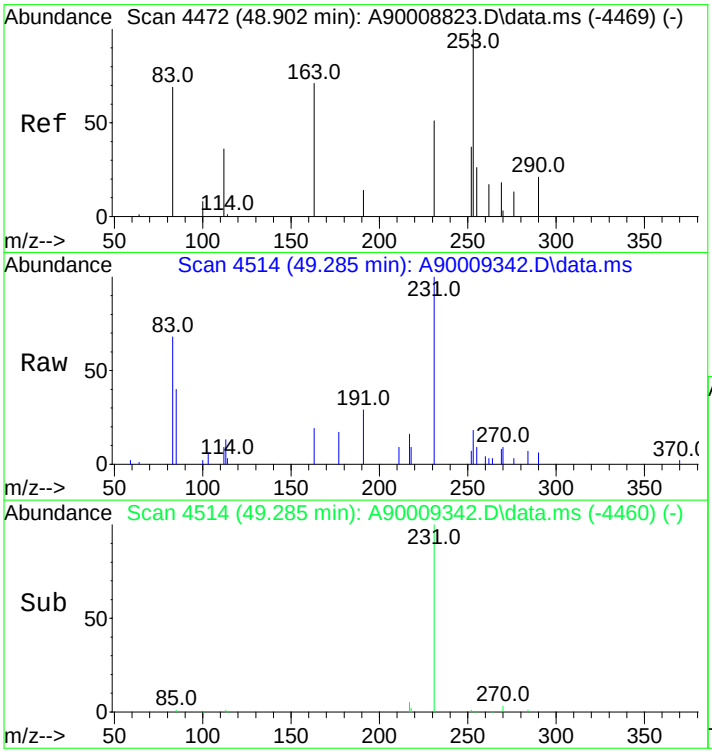




#146
14b(H),17b(H)-20S-Ethylcholestane (S27)
Concen: 203.09 ng/ml m
RT: 49.614 min Scan# 4550
Delta R.T. -0.009 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

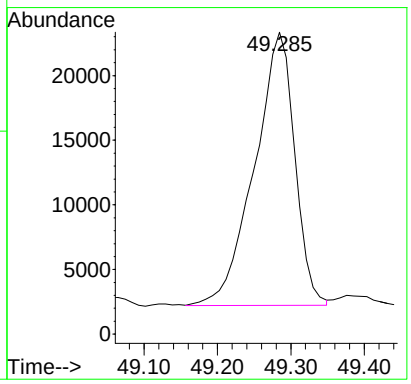
Tgt Ion:218 Resp: 13098

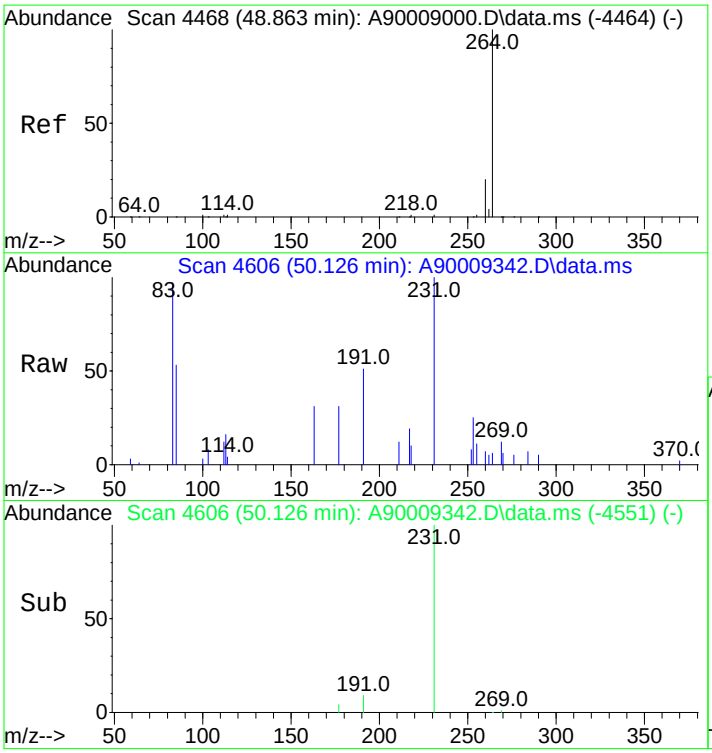




#147
C26,20R- +C27,20S- triaromatic steroid
Concen: 1253.19 ng/mL
RT: 49.285 min Scan# 4514
Delta R.T. -0.009 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

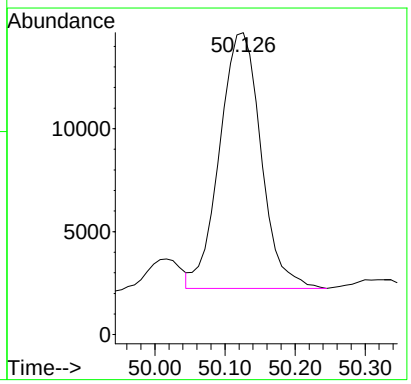
Tgt Ion:231 Resp: 80824

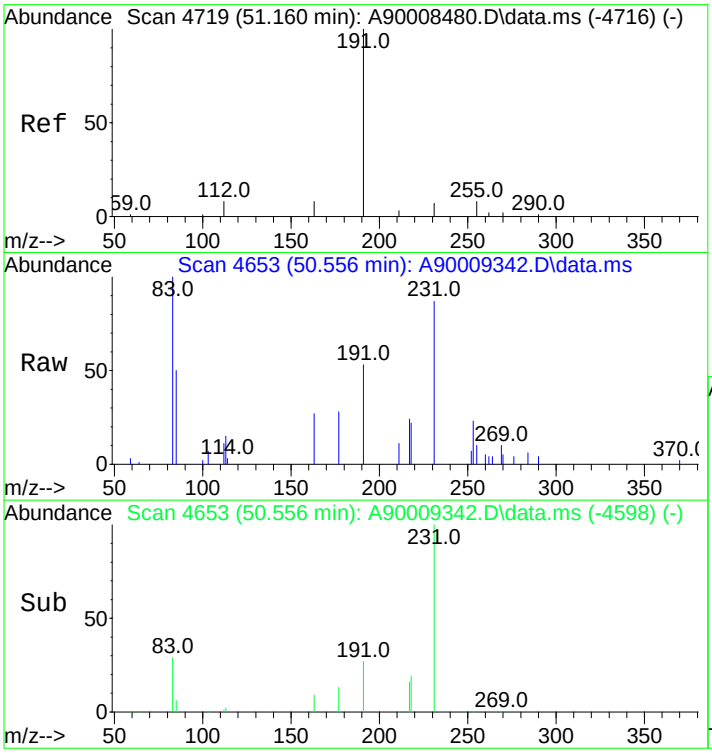




#148
C28,20S-triaromatic steroid
Concen: 791.23 ng/mL
RT: 50.126 min Scan# 4606
Delta R.T. 0.000 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

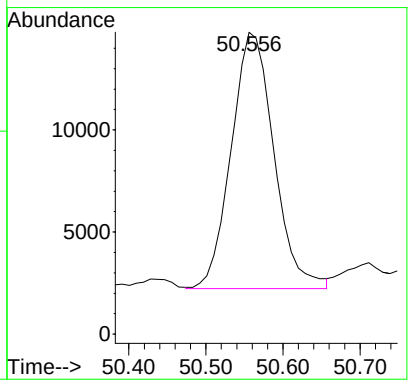
Tgt Ion:231 Resp: 51030

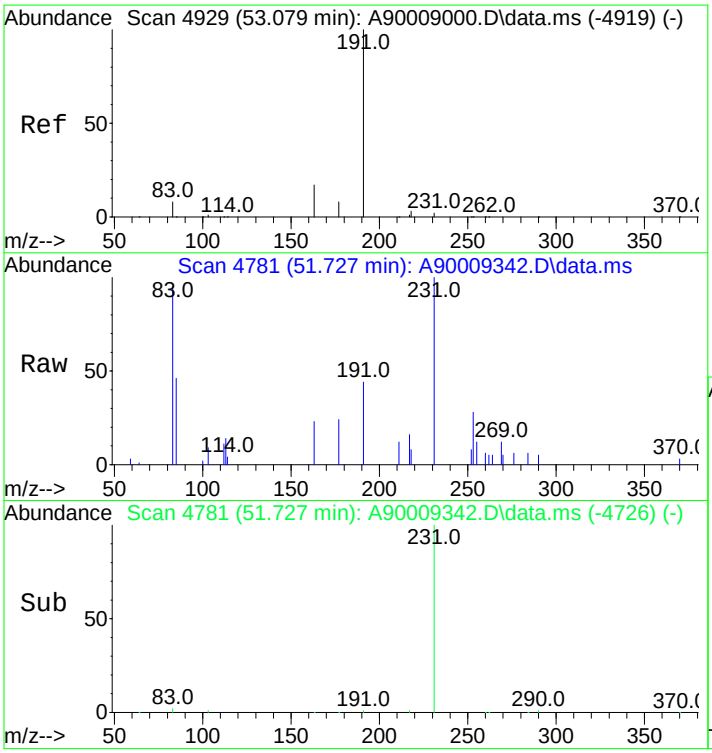




#149
C27,20R-triaromatic steroid
Concen: 750.82 ng/mL m
RT: 50.556 min Scan# 4653
Delta R.T. 0.000 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

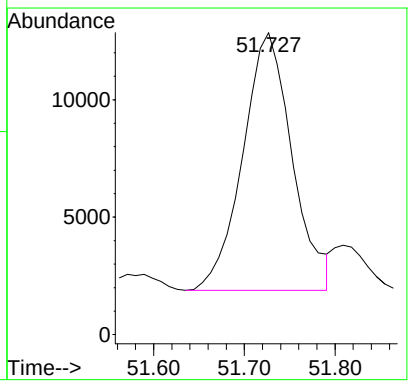
Tgt Ion:231 Resp: 48424





#150
C28,20R-triaromatic steroid
Concen: 644.44 ng/mL
RT: 51.727 min Scan# 4781
Delta R.T. 0.000 min
Lab File: A90009342.D
Acq: 5 Dec 2012 4:08 pm

Tgt Ion:231 Resp: 41563



Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC4\
Data File : A90009332.D
Acq On : 5 Dec 2012 12:58 am
Operator : PS
Sample : I912041201
Misc : WHAQ83@10ng/ml
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Dec 06 10:35:00 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 09:30:42 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.557	164	67219	500.000	ng/mL	0.00
74) Chrysene-d12	42.959	240	109897	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.622	136	2787	12.642	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery =	1.26%#		
42) Phenanthrene-d10	32.406	188	2228	8.621	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery =	0.86%#		
83) Benzo[b]fluoranthene-d12	46.852	264	2244	12.452	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery =	1.25%#		
88) Benzo[a]pyrene-d12	48.014	264	2067	12.240	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery =	1.22%#		
129) 5B(H)Cholane - Surr	43.598	217	491	10.549	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery =	1.05%#		
Target Compounds						Qvalue
3) trans-Decalin	16.291	138	340M6	6.924	ng/mL	
4) cis-Decalin	17.505	138	274M6	7.294	ng/mL	
10) Naphthalene	19.695	128	2740	12.092	ng/mL#	100
16) 2-Methylnaphthalene	22.378	142	1780	11.155	ng/mL#	100
17) 1-Methylnaphthalene	22.798	142	1774	11.568	ng/mL#	100
18) Benzothiophene	19.914	134	2384	12.640	ng/mL	100
23) Biphenyl	24.258	154	2441	11.615	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.860	156	1737	11.050	ng/mL#	100
25) Dibenzofuran	27.324	168	2370	9.917	ng/mL	96
26) Acenaphthylene	25.946	152	2640	10.750	ng/mL#	100
27) Acenaphthene	26.685	153	1728	11.181	ng/mL	97
28) 2,3,5-Trimethylnaphthalen	28.236	170	1499	10.559	ng/mL	89
29) Fluorene	28.693	166	1817	9.326	ng/mL	96
33) Dibenzothiophene	32.004	184	2510	9.057	ng/mL	96
43) Phenanthrene	32.497	178	2612	9.232	ng/mL	98
54) Retene	39.471	234	732	8.989	ng/mL	100
55) Anthracene	32.670	178	2194M4	8.482	ng/mL	
56) Carbazole	33.346	167	2115M4	9.047	ng/mL	
57) 1-Methylphenanthrene	34.989	192	1879M4	8.704	ng/mL	
58) Fluoranthene	37.253	202	2887	9.039	ng/mL	98
59) Benzo(b)fluorene	39.764	216	1735	8.314	ng/mL	95
60) Pyrene	38.129	202	3078	9.489	ng/mL	100
66) Naphthobenzothiophene	41.973	234	2580	8.777	ng/ml#	87
67) Naphthobenzothiophene-2,1	41.973	234	2580	8.777	ng/mL#	87
75) Benz[a]anthracene	42.895	228	2469M4	9.580	ng/mL	
76) Chrysene	43.060	228	2438	9.809	ng/mL	100
77) Chrysene/Triphenylene	43.060	228	2438	9.809	ng/mL	100
84) Benzo[b]fluoranthene	46.934	252	2700	11.493	ng/mL#	88
85) Benzo[j]+[k]fluoranthene	47.017	252	2636M4	11.562	ng/mL	
87) Benzo[e]pyrene	47.913	252	2713	12.554	ng/mL	94
89) Benzo[a]pyrene	48.096	252	2383	11.658	ng/mL#	78
90) Perylene	48.398	252	2553	11.765	ng/mL	90
91) Indeno[1,2,3-cd]pyrene	52.751	276	2714M6	12.787	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.815	278	2562	12.145	ng/mL	96
93) Benzo[g,h,i]perylene	53.994	276	2615	12.369	ng/mL	96
94) Hopane (T19)	51.928	191	1073	14.652	ng/mL#	53
95) 17a(H),21B(H)-hopane - C3	51.928	191	1073	14.652	ng/mL#	53

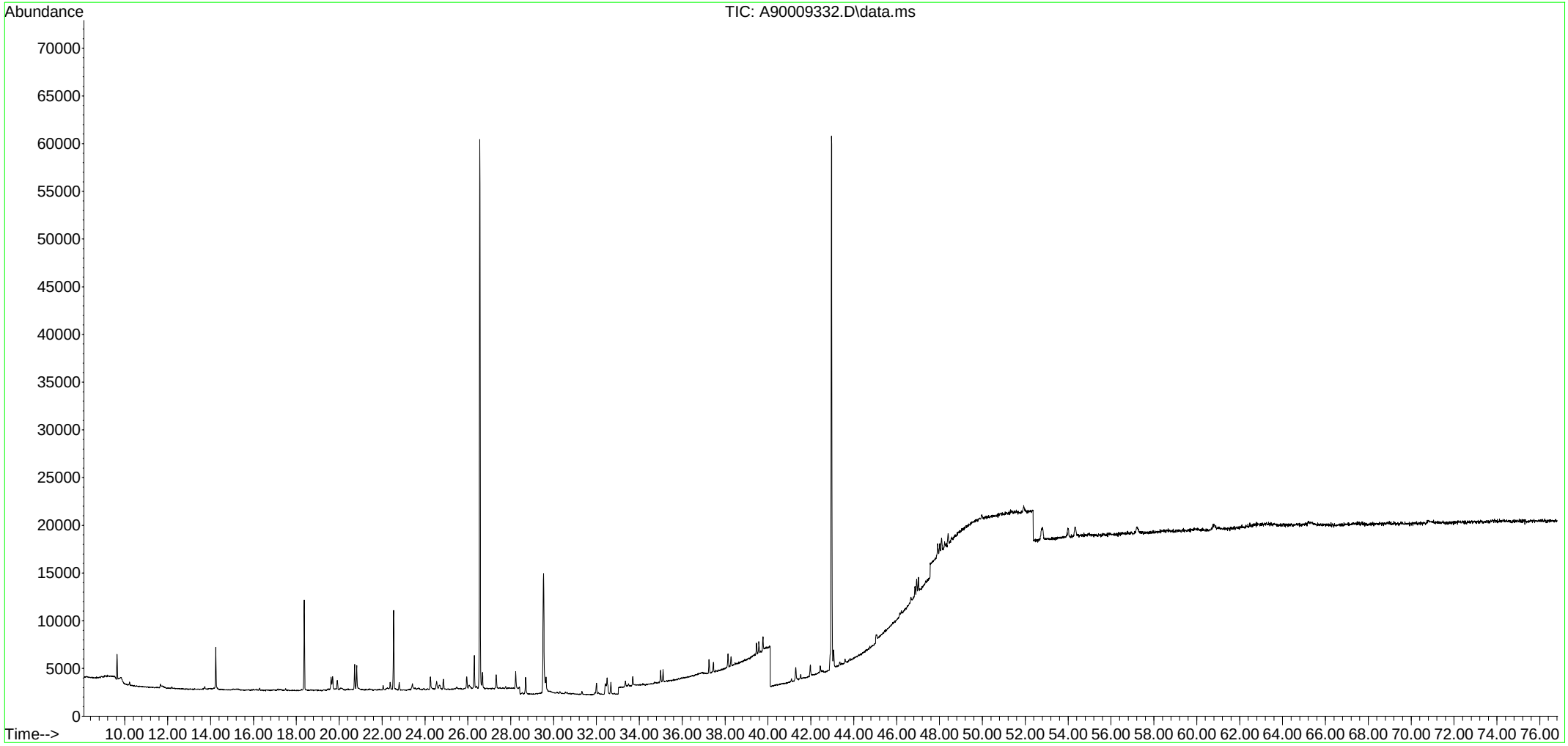
(#) = qualifier out of range (m) = manual integration (+) = signals summed

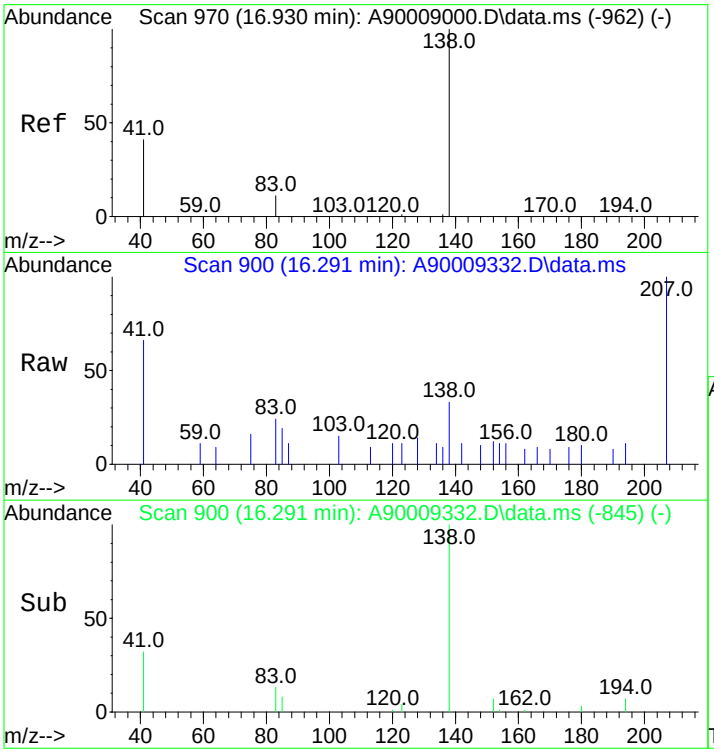
Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC4\
Data File : A90009332.D
Acq On : 5 Dec 2012 12:58 am
Operator : PS
Sample : I912041201
Misc : WHAQ83@10ng/ml
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Dec 06 10:35:00 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC4\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Wed Dec 05 09:30:42 2012
Response via : Initial Calibration

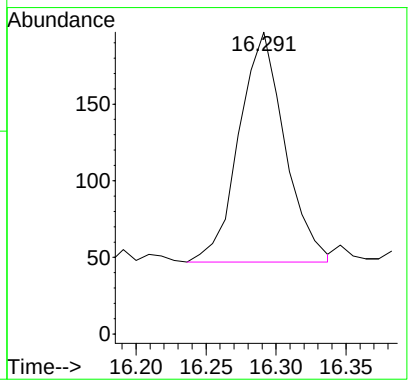
Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

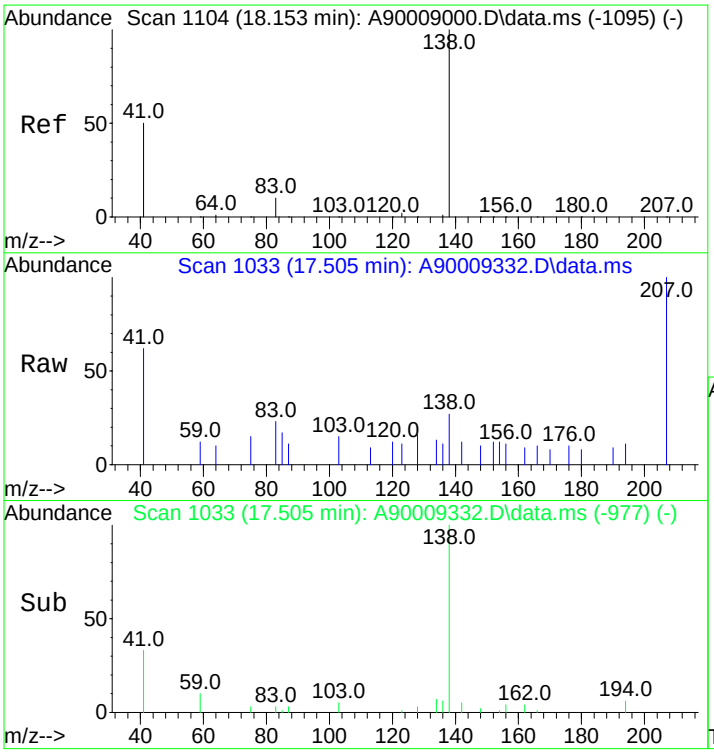




#3
trans-Decalin
Concen: 6.92 ng/mL m
RT: 16.291 min Scan# 900
Delta R.T. 0.000 min
Lab File: A90009332.D
Acq: 5 Dec 2012 12:58 am

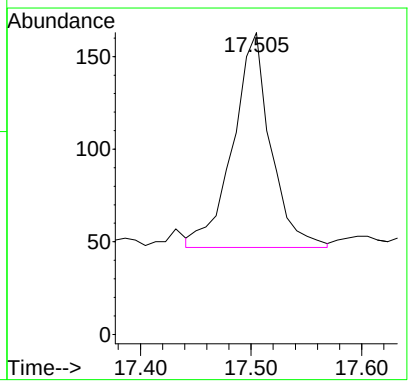
Tgt Ion:138 Resp: 340

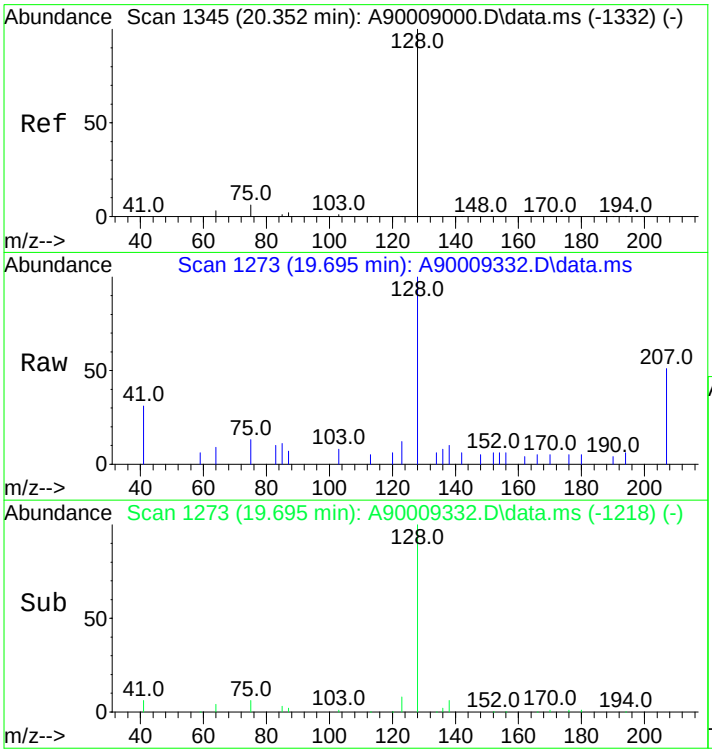




#4
cis-Decalin
Concen: 7.29 ng/mL m
RT: 17.505 min Scan# 1033
Delta R.T. 0.009 min
Lab File: A90009332.D
Acq: 5 Dec 2012 12:58 am

Tgt Ion:138 Resp: 274

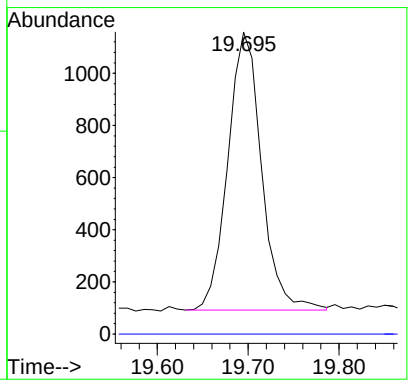


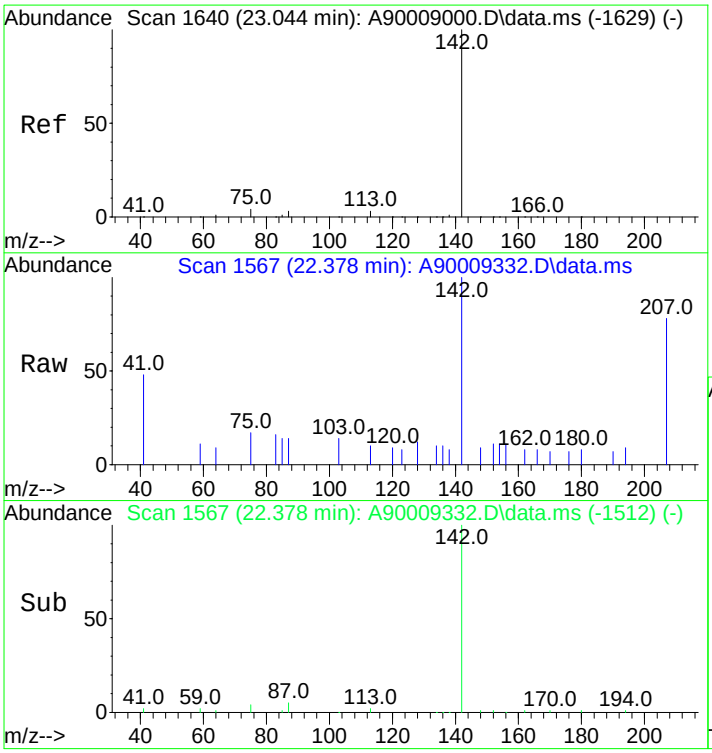


#10
Naphthalene
Concen: 12.09 ng/mL
RT: 19.695 min Scan# 1273
Delta R.T. 0.000 min
Lab File: A90009332.D
Acq: 5 Dec 2012 12:58 am

Tgt Ion:128 Resp: 2740

Ion	Ratio	Lower	Upper
128	100		
127	0.0	0.0	0.0

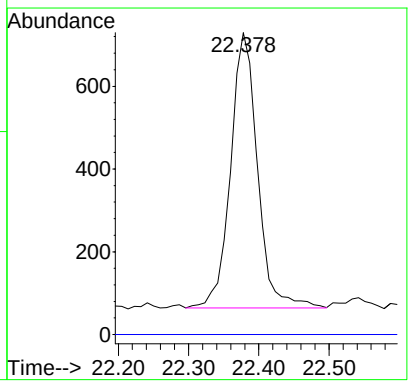


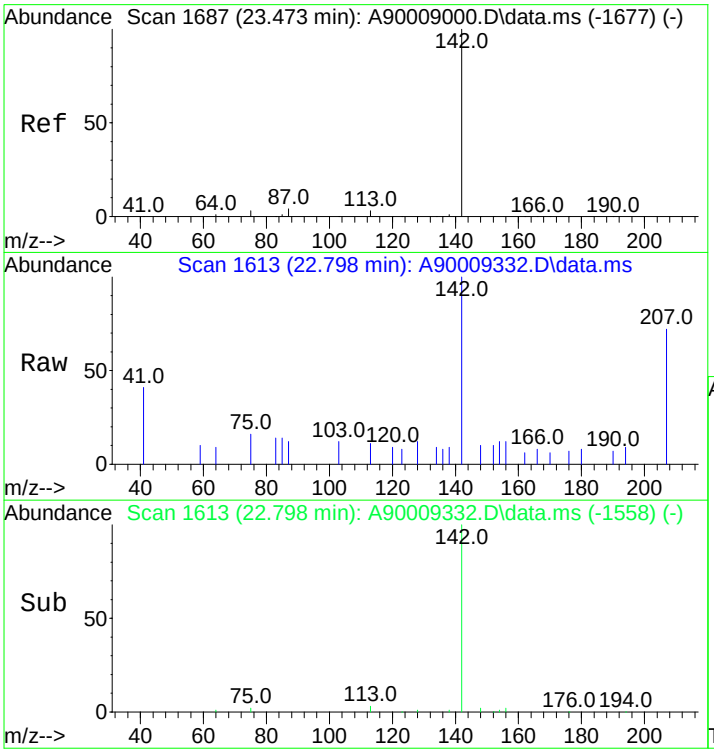


#16
2-Methylnaphthalene
Concen: 11.16 ng/mL
RT: 22.378 min Scan# 1567
Delta R.T. 0.000 min
Lab File: A90009332.D
Acq: 5 Dec 2012 12:58 am

Tgt Ion:142 Resp: 1780

Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	0.0

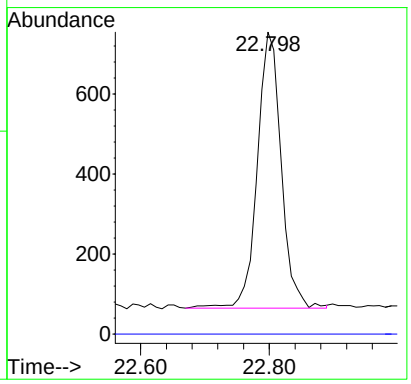


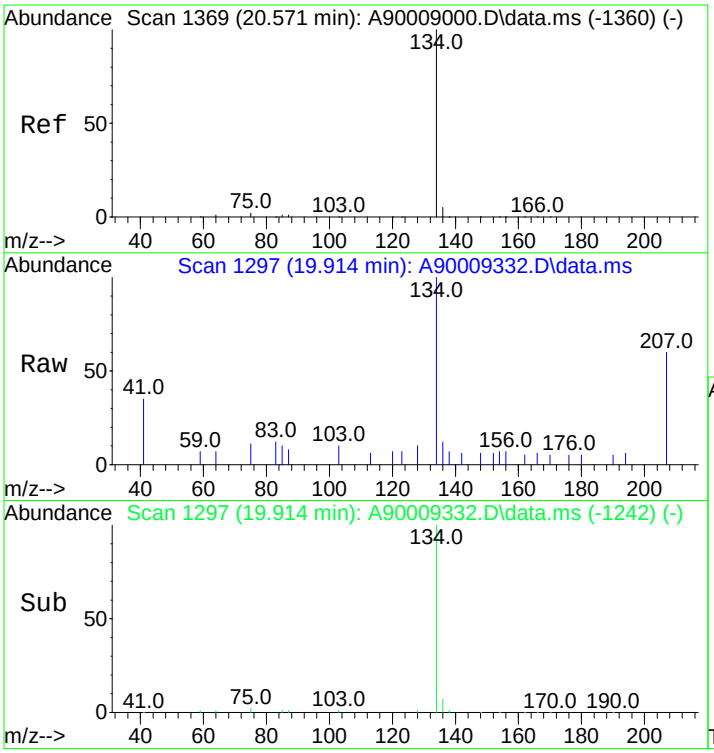


#17
1-Methylnaphthalene
Concen: 11.57 ng/mL
RT: 22.798 min Scan# 1613
Delta R.T. 0.000 min
Lab File: A90009332.D
Acq: 5 Dec 2012 12:58 am

Tgt Ion:142 Resp: 1774

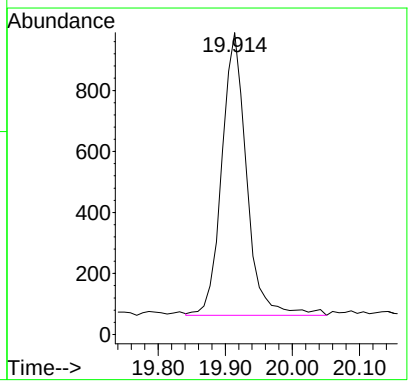
Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	20.0

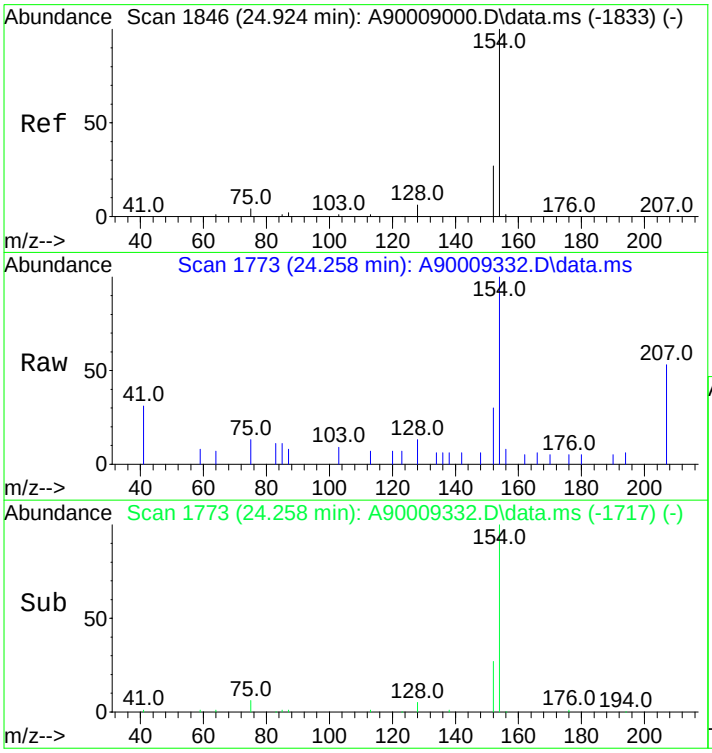




#18
Benzothiophene
Concen: 12.64 ng/mL
RT: 19.914 min Scan# 1297
Delta R.T. 0.000 min
Lab File: A90009332.D
Acq: 5 Dec 2012 12:58 am

Tgt Ion:134 Resp: 2384

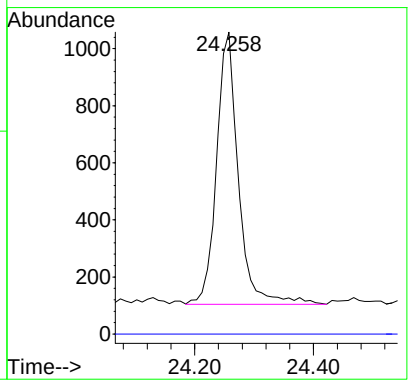


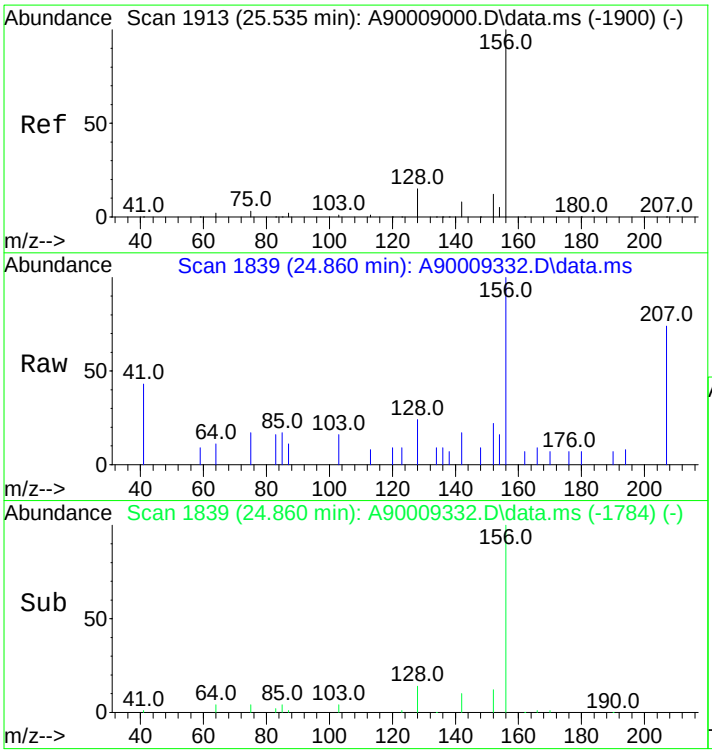


#23
Biphenyl
Concen: 11.61 ng/mL
RT: 24.258 min Scan# 1773
Delta R.T. 0.009 min
Lab File: A90009332.D
Acq: 5 Dec 2012 12:58 am

Tgt Ion:154 Resp: 2441

Ion	Ratio	Lower	Upper
154	100		
153	0.0	0.0	0.0

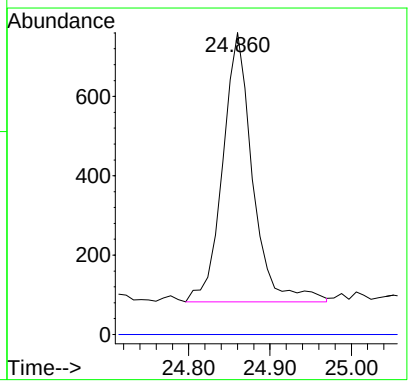


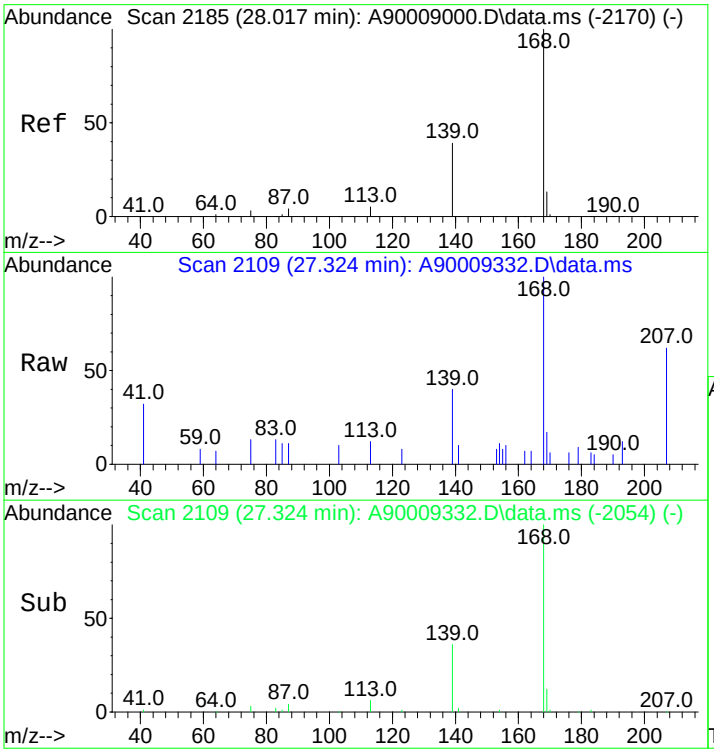


#24
2,6-Dimethylnaphthalene
Concen: 11.05 ng/mL
RT: 24.860 min Scan# 1839
Delta R.T. 0.000 min
Lab File: A90009332.D
Acq: 5 Dec 2012 12:58 am

Tgt Ion:156 Resp: 1737

Ion	Ratio	Lower	Upper
156	100		
155	0.0	0.0	0.0

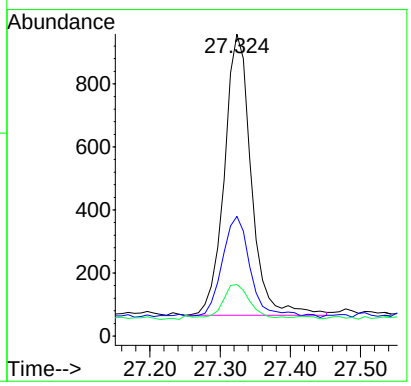


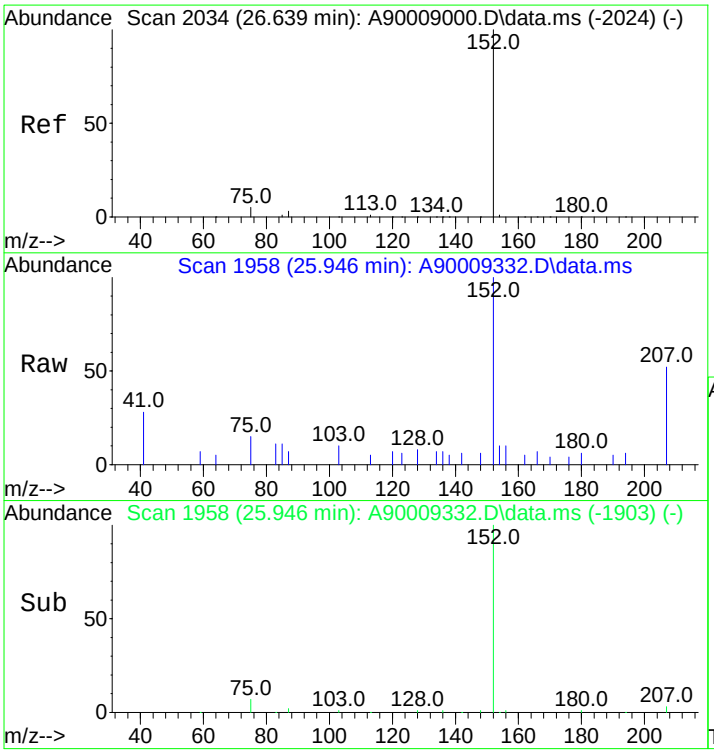


#25
Dibenzofuran
Concen: 9.92 ng/mL
RT: 27.324 min Scan# 2109
Delta R.T. 0.000 min
Lab File: A90009332.D
Acq: 5 Dec 2012 12:58 am

Tgt Ion:168 Resp: 2370

Ion	Ratio	Lower	Upper
168	100		
139	38.3	28.9	43.3
169	10.8	10.6	15.8

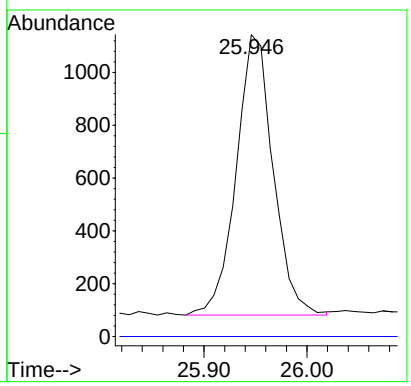


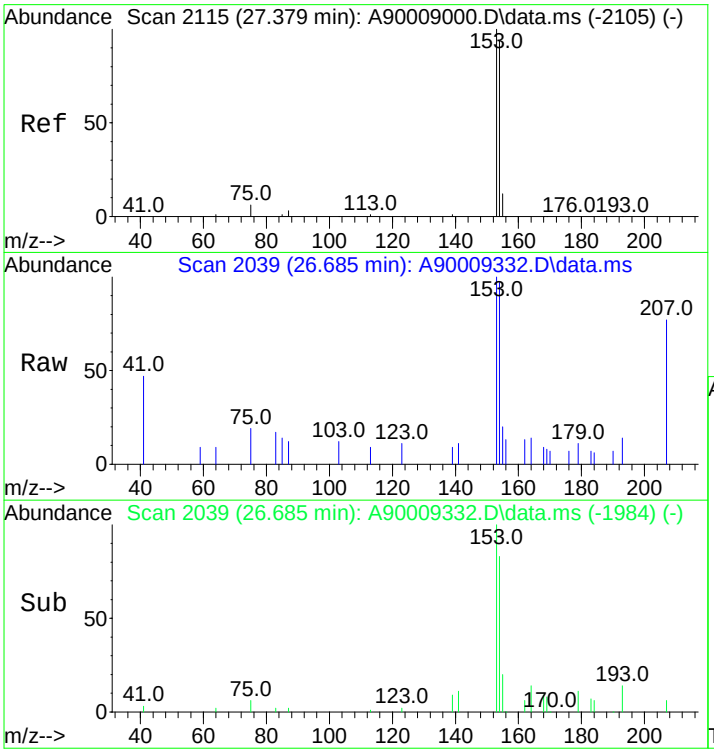


#26
Acenaphthylene
Concen: 10.75 ng/mL
RT: 25.946 min Scan# 1958
Delta R.T. 0.000 min
Lab File: A90009332.D
Acq: 5 Dec 2012 12:58 am

Tgt Ion:152 Resp: 2640

Ion	Ratio	Lower	Upper
152	100		
153	0.0	0.0	0.0

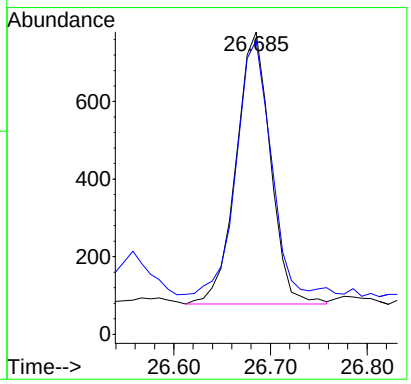


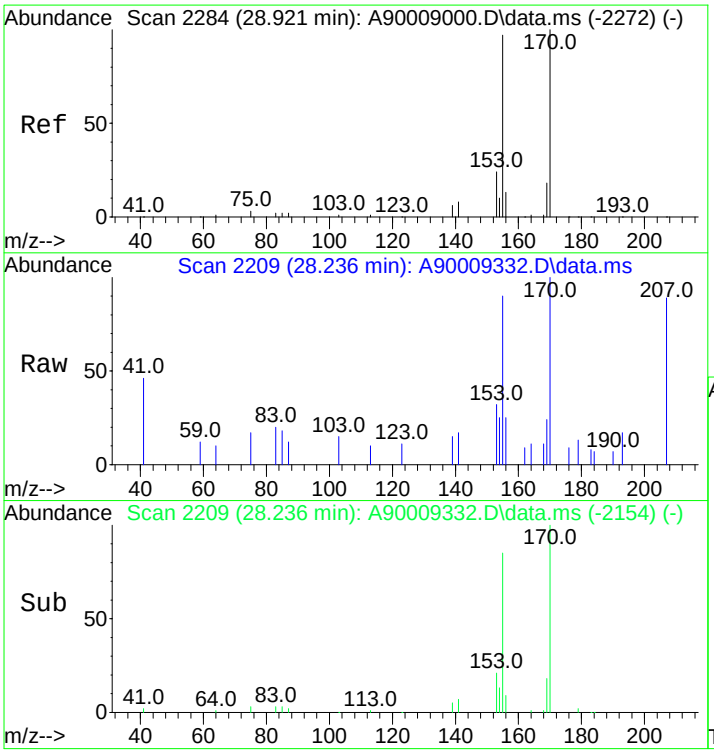


#27
Acenaphthene
Concen: 11.18 ng/mL
RT: 26.685 min Scan# 2039
Delta R.T. 0.000 min
Lab File: A90009332.D
Acq: 5 Dec 2012 12:58 am

Tgt Ion:153 Resp: 1728

Ion	Ratio	Lower	Upper
153	100		
154	92.3	76.2	114.4

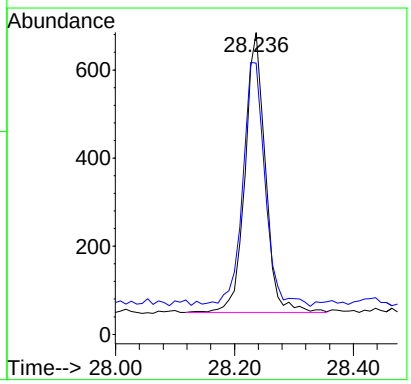


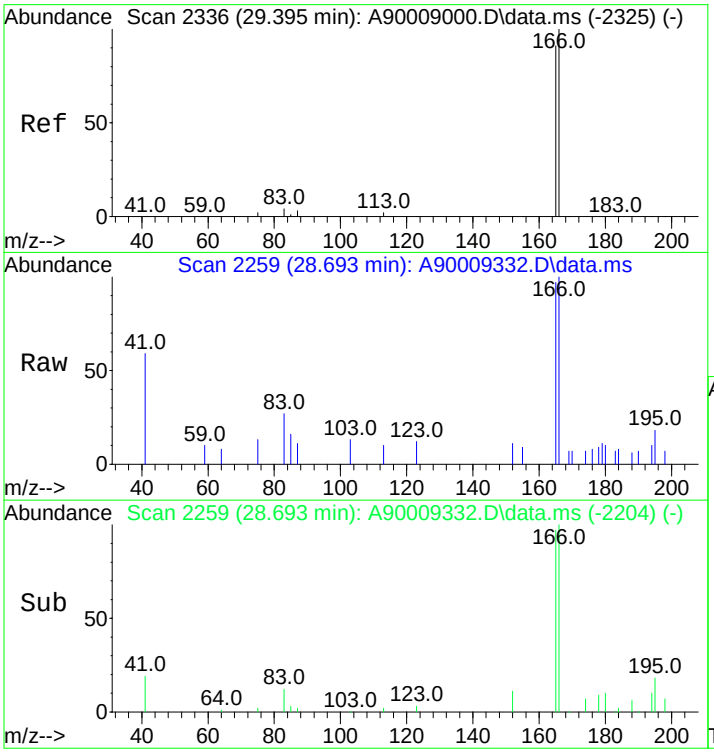


#28
2,3,5-Trimethylnaphthalene
Concen: 10.56 ng/mL
RT: 28.236 min Scan# 2209
Delta R.T. 0.000 min
Lab File: A90009332.D
Acq: 5 Dec 2012 12:58 am

Tgt Ion:170 Resp: 1499

Ion	Ratio	Lower	Upper
170	100		
155	96.3	69.0	103.6

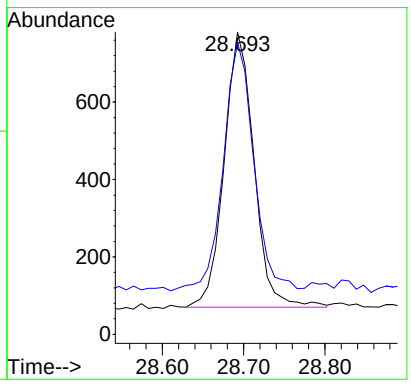


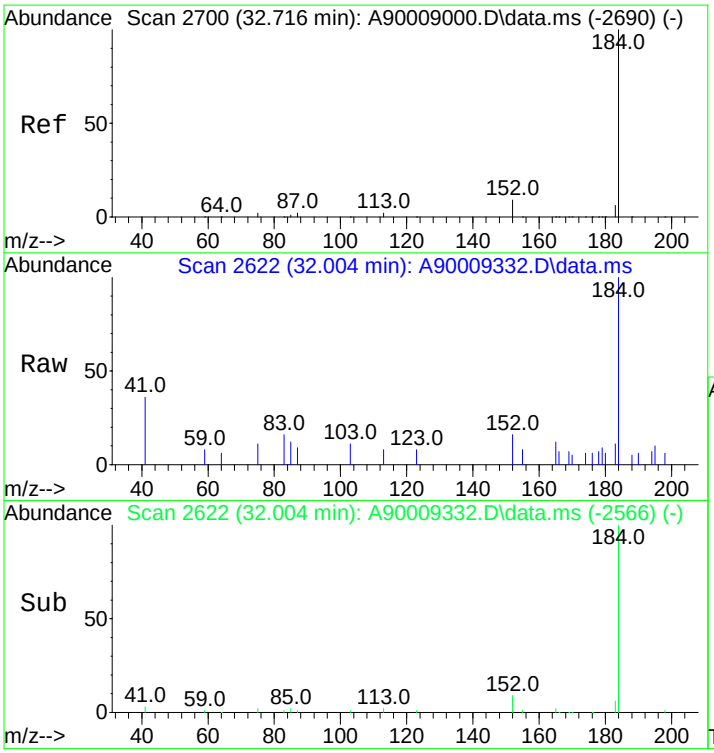


#29
Fluorene
Concen: 9.33 ng/mL
RT: 28.693 min Scan# 2259
Delta R.T. 0.000 min
Lab File: A90009332.D
Acq: 5 Dec 2012 12:58 am

Tgt Ion:166 Resp: 1817

Ion	Ratio	Lower	Upper
166	100		
165	88.6	73.8	110.6

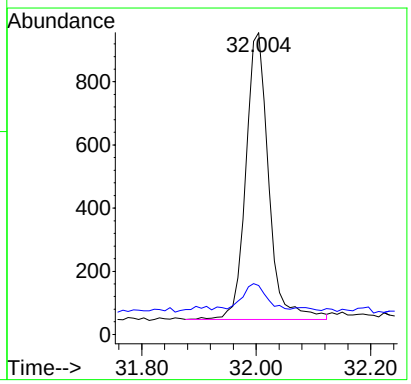


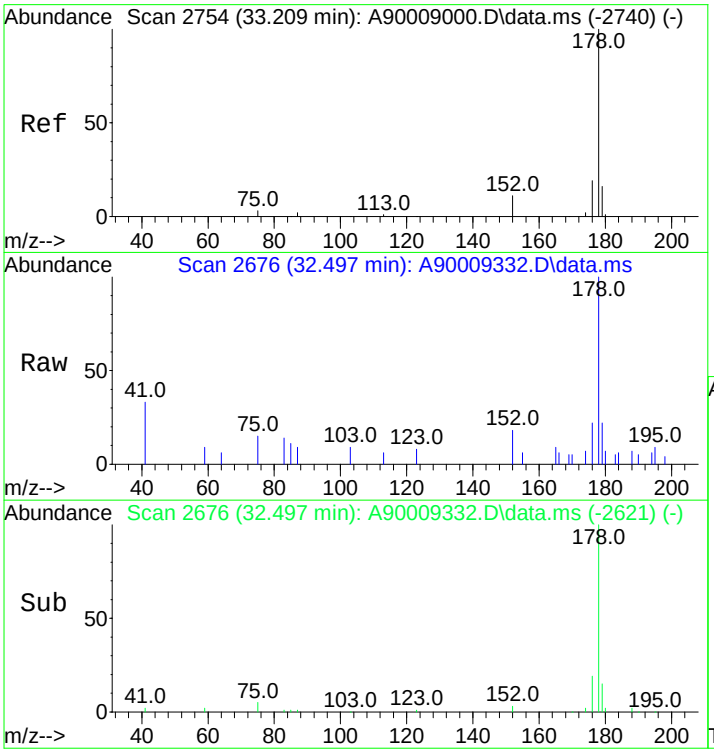


#33
Dibenzothiophene
Concen: 9.06 ng/mL
RT: 32.004 min Scan# 2622
Delta R.T. 0.009 min
Lab File: A90009332.D
Acq: 5 Dec 2012 12:58 am

Tgt Ion:184 Resp: 2510

Ion	Ratio	Lower	Upper
184	100		
152	8.7	8.2	12.4

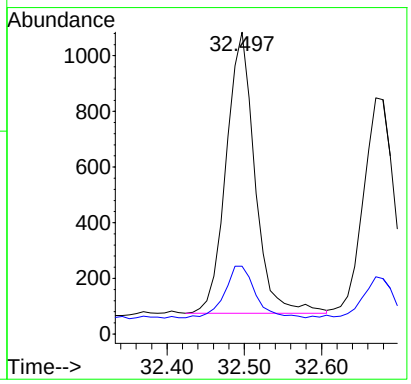


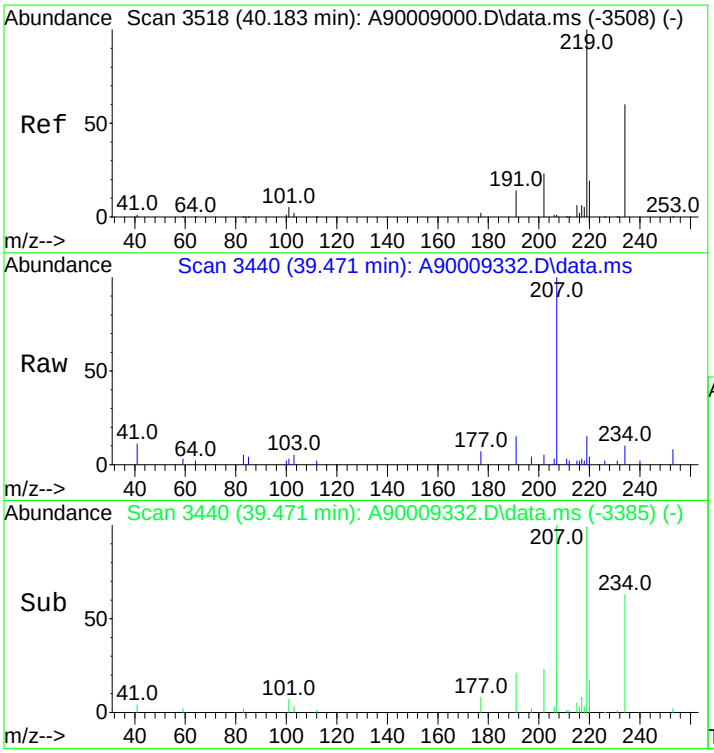


#43
Phenanthrene
Concen: 9.23 ng/mL
RT: 32.497 min Scan# 2676
Delta R.T. 0.000 min
Lab File: A90009332.D
Acq: 5 Dec 2012 12:58 am

Tgt Ion:178 Resp: 2612

Ion	Ratio	Lower	Upper
178	100		
176	19.4	14.9	22.3

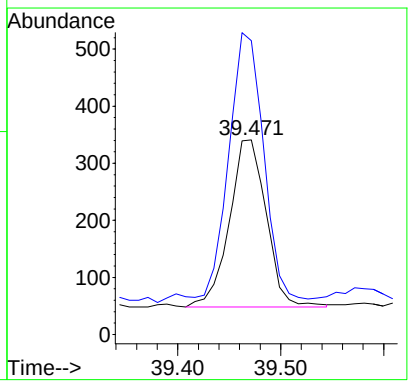


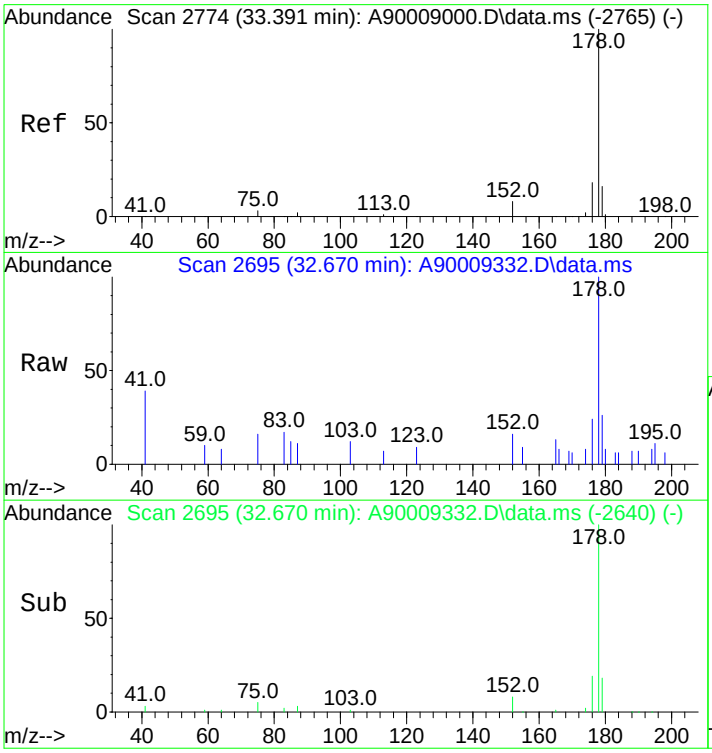


#54
Retene
Concen: 8.99 ng/mL
RT: 39.471 min Scan# 3440
Delta R.T. 0.000 min
Lab File: A90009332.D
Acq: 5 Dec 2012 12:58 am

Tgt Ion:234 Resp: 732

Ion	Ratio	Lower	Upper
234	100		
219	147.8	117.9	176.9

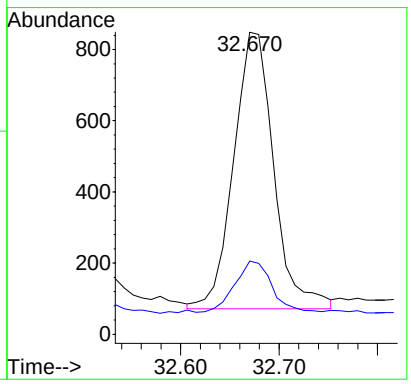


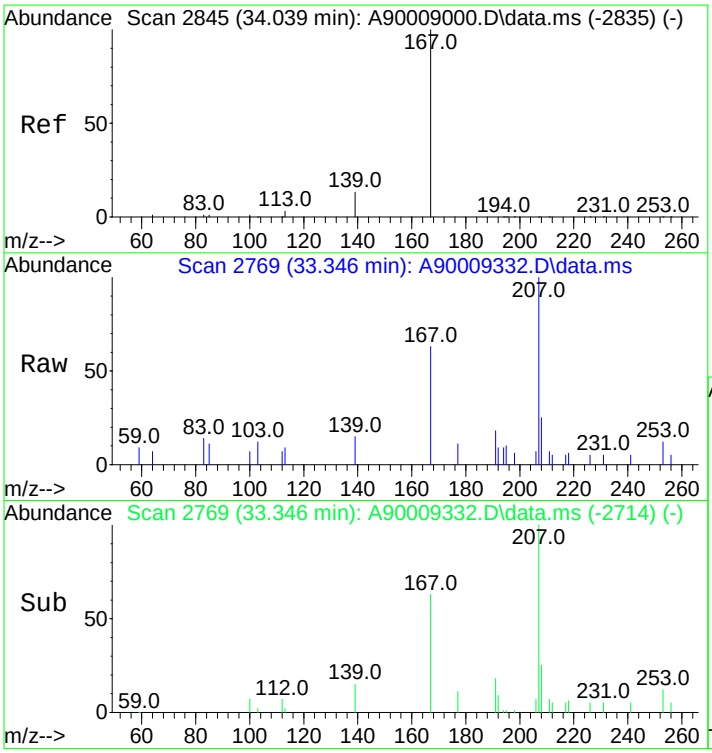


#55
Anthracene
Concen: 8.48 ng/mL m
RT: 32.670 min Scan# 2695
Delta R.T. 0.000 min
Lab File: A90009332.D
Acq: 5 Dec 2012 12:58 am

Tgt Ion:178 Resp: 2194

Ion	Ratio	Lower	Upper
178	100		
176	16.5	14.6	21.8

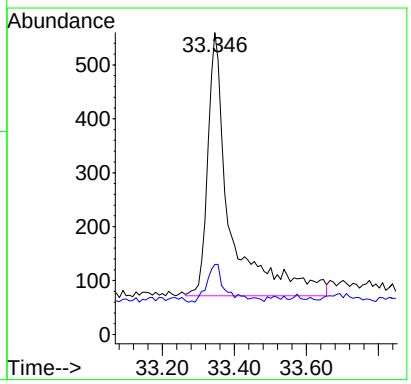


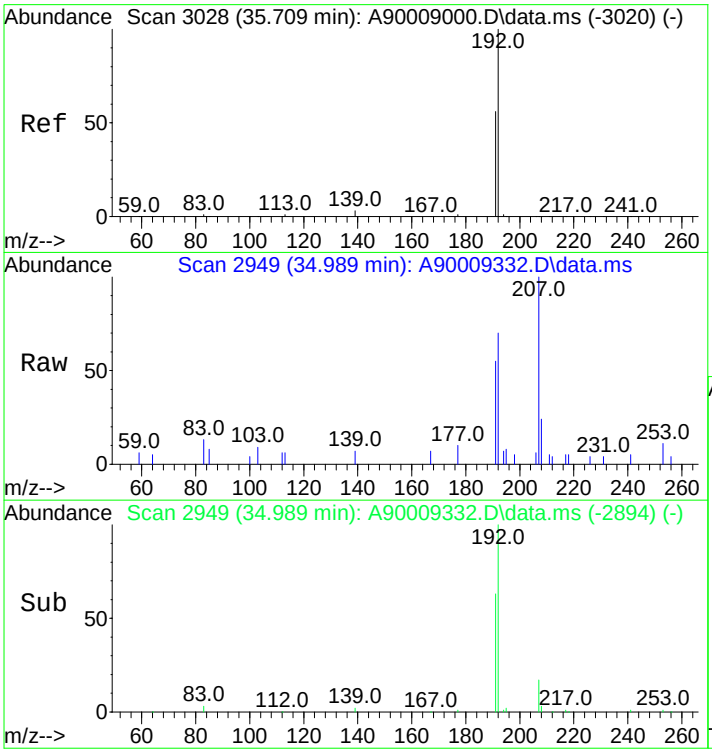


#56
Carbazole
Concen: 9.05 ng/mL m
RT: 33.346 min Scan# 2769
Delta R.T. 0.000 min
Lab File: A90009332.D
Acq: 5 Dec 2012 12:58 am

Tgt Ion:167 Resp: 2115

Ion	Ratio	Lower	Upper
167	100		
139	11.5	10.3	15.5

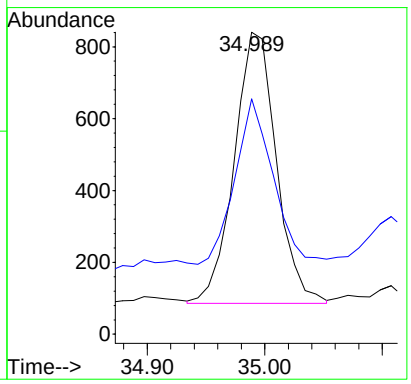


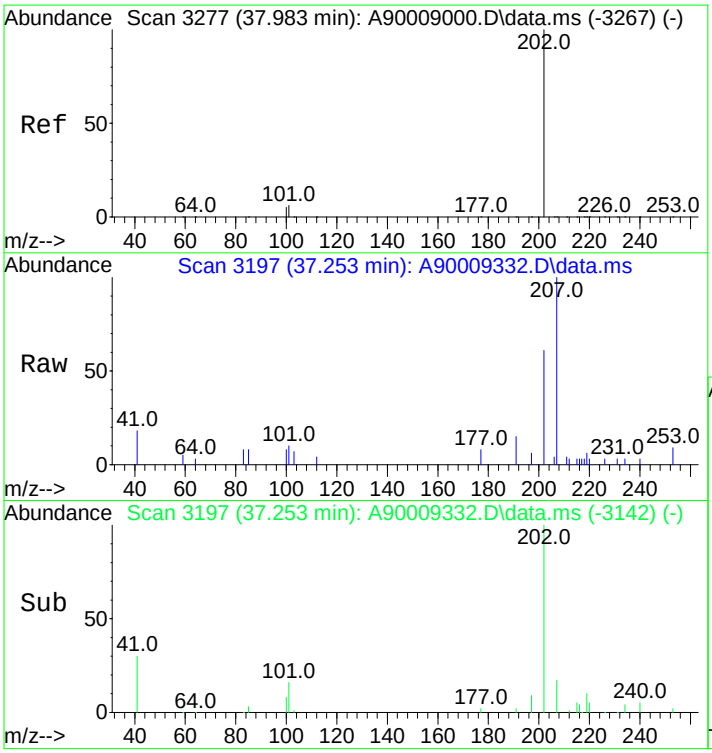


#57
1-Methylphenanthrene
Concen: 8.70 ng/mL m
RT: 34.989 min Scan# 2949
Delta R.T. 0.000 min
Lab File: A90009332.D
Acq: 5 Dec 2012 12:58 am

Tgt Ion:192 Resp: 1879

Ion	Ratio	Lower	Upper
192	100		
191	55.4	44.8	67.2

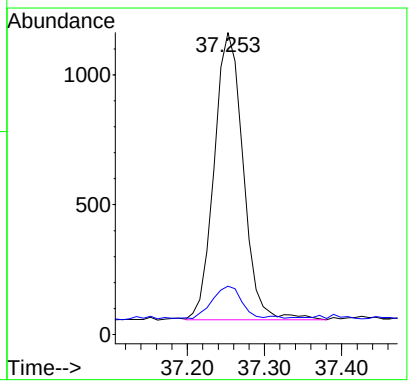


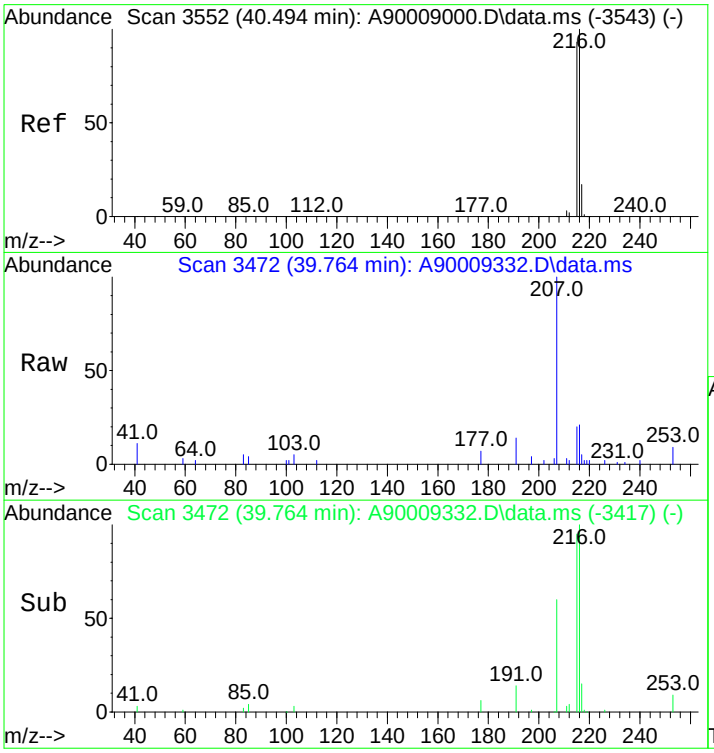


#58
Fluoranthene
Concen: 9.04 ng/mL
RT: 37.253 min Scan# 3197
Delta R.T. 0.000 min
Lab File: A90009332.D
Acq: 5 Dec 2012 12:58 am

Tgt Ion:202 Resp: 2887

Ion	Ratio	Lower	Upper
202	100		
101	11.2	8.5	12.7

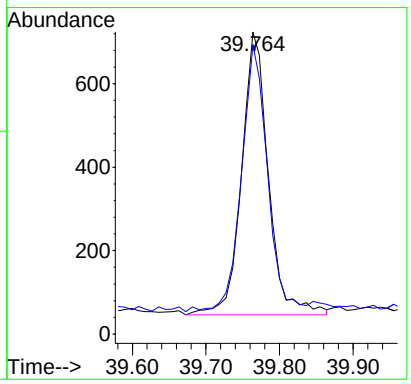


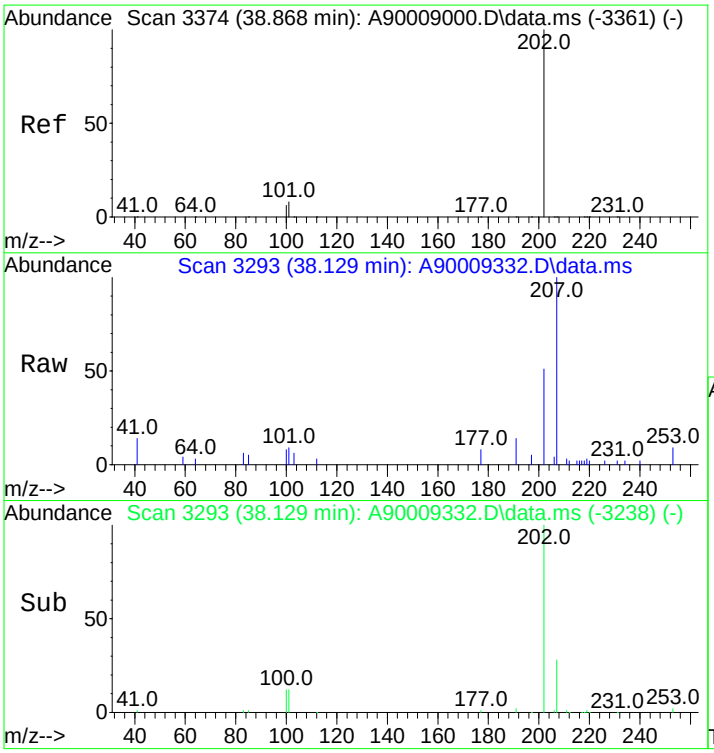


#59
Benzo(b)fluorene
Concen: 8.31 ng/mL
RT: 39.764 min Scan# 3472
Delta R.T. 0.000 min
Lab File: A90009332.D
Acq: 5 Dec 2012 12:58 am

Tgt Ion:216 Resp: 1735

Ion	Ratio	Lower	Upper
216	100		
215	88.5	74.8	112.2

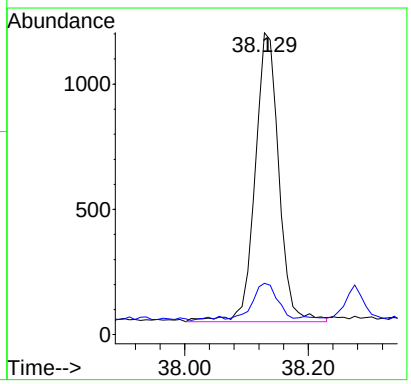


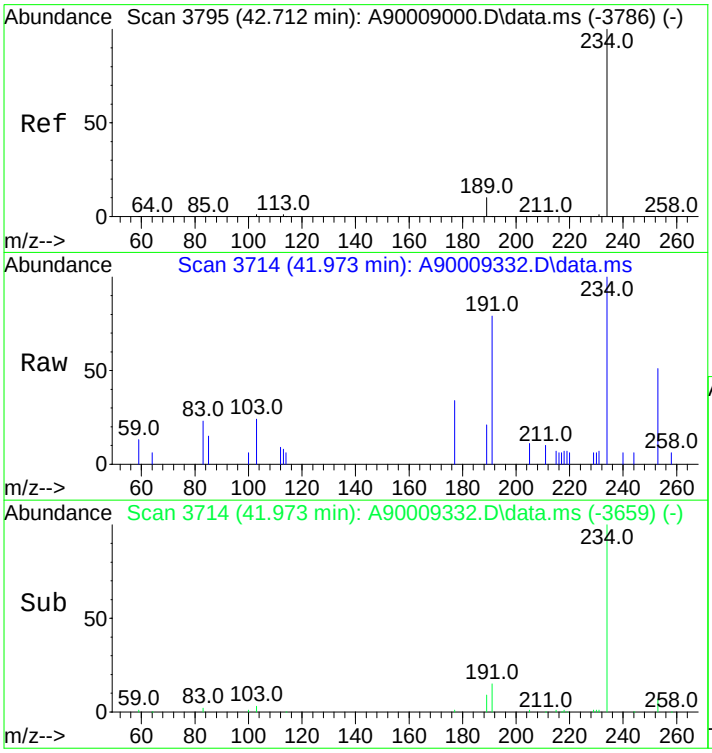


#60
Pyrene
Concen: 9.49 ng/mL
RT: 38.129 min Scan# 3293
Delta R.T. 0.000 min
Lab File: A90009332.D
Acq: 5 Dec 2012 12:58 am

Tgt Ion:202 Resp: 3078

Ion	Ratio	Lower	Upper
202	100		
101	12.6	10.1	15.1

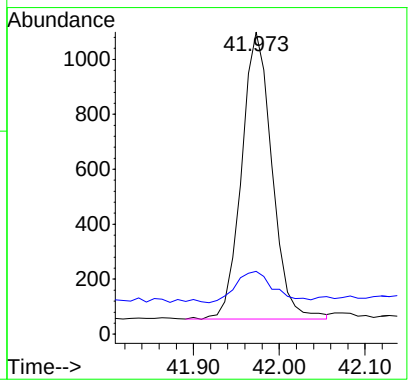


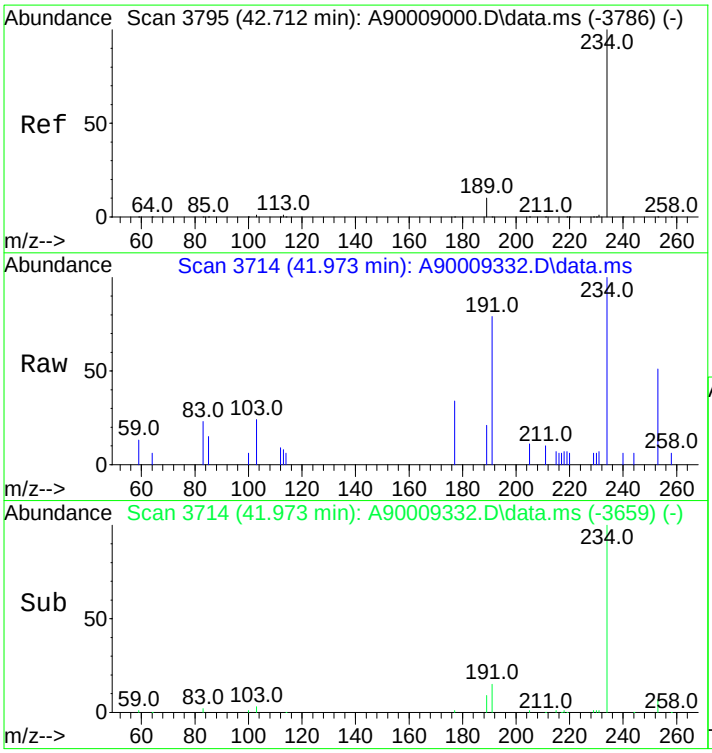


#66
Naphthobenzothiophene
Concen: 8.78 ng/ml
RT: 41.973 min Scan# 3714
Delta R.T. 0.000 min
Lab File: A90009332.D
Acq: 5 Dec 2012 12:58 am

Tgt Ion:234 Resp: 2580

Ion	Ratio	Lower	Upper
234	100		
189	13.9	7.4	11.2#

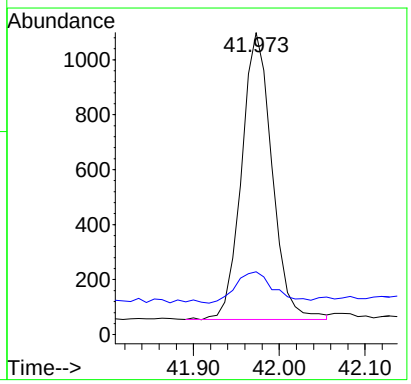


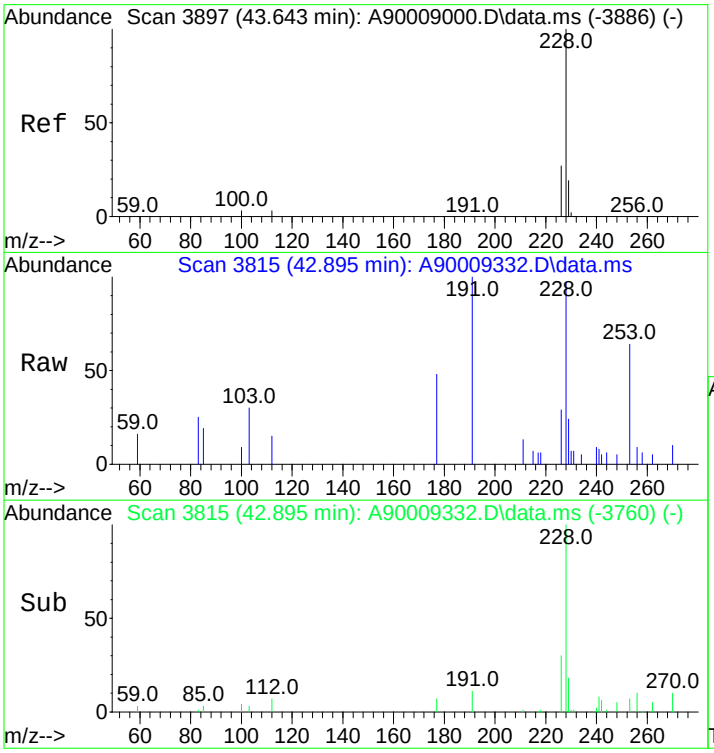


#67
Naphthobenzothiophene-2,1-D
Concen: 8.78 ng/mL
RT: 41.973 min Scan# 3714
Delta R.T. 0.000 min
Lab File: A90009332.D
Acq: 5 Dec 2012 12:58 am

Tgt Ion:234 Resp: 2580

Ion	Ratio	Lower	Upper
234	100		
189	13.9	7.4	11.2#

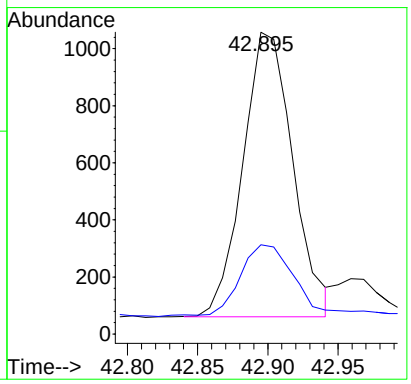


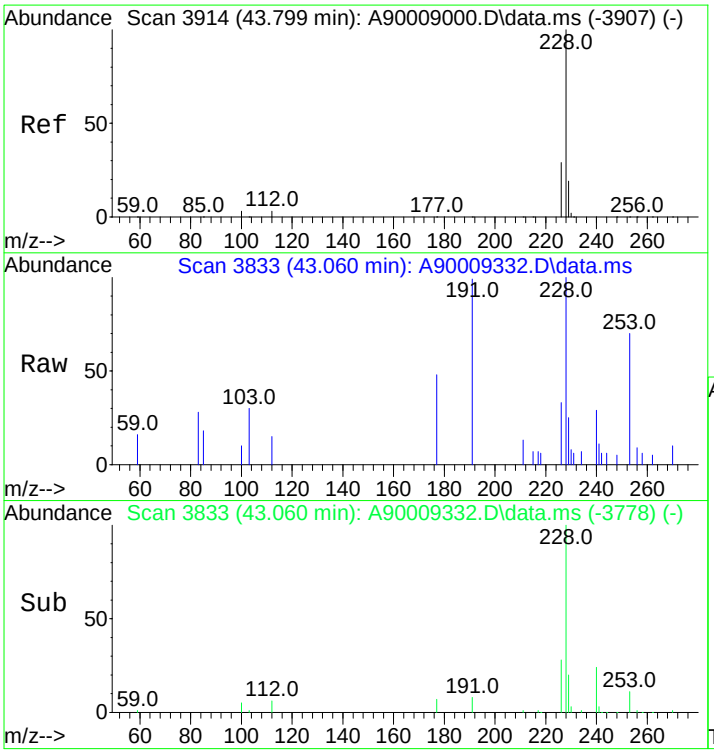


#75
Benz[a]anthracene
Concen: 9.58 ng/mL m
RT: 42.895 min Scan# 3815
Delta R.T. 0.000 min
Lab File: A90009332.D
Acq: 5 Dec 2012 12:58 am

Tgt Ion:228 Resp: 2469

Ion	Ratio	Lower	Upper
228	100		
226	27.0	21.3	31.9

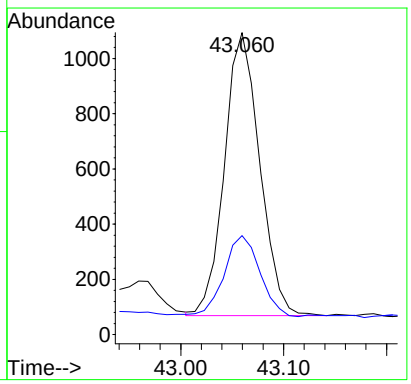


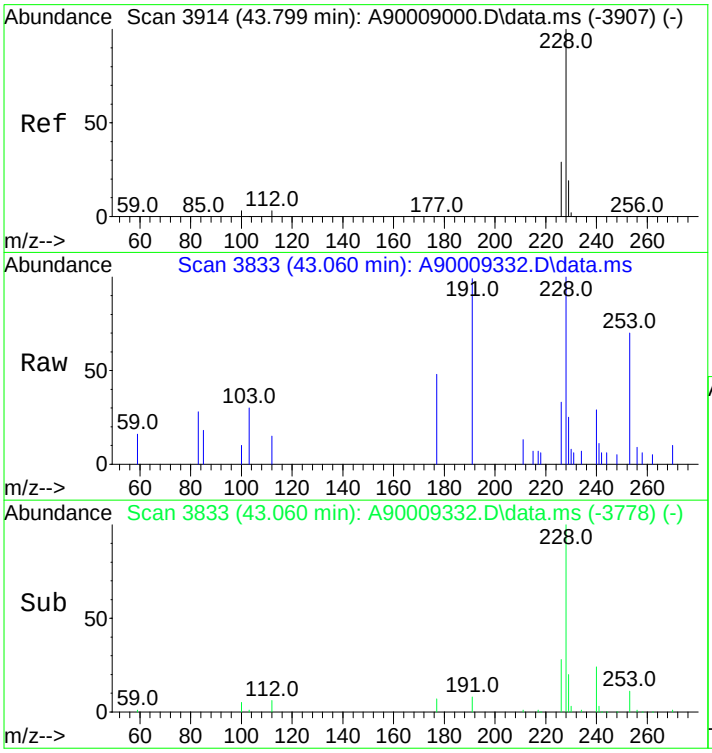


#76
Chrysene
Concen: 9.81 ng/mL
RT: 43.060 min Scan# 3833
Delta R.T. 0.000 min
Lab File: A90009332.D
Acq: 5 Dec 2012 12:58 am

Tgt Ion:228 Resp: 2438

Ion	Ratio	Lower	Upper
228	100		
226	29.2	23.4	35.0

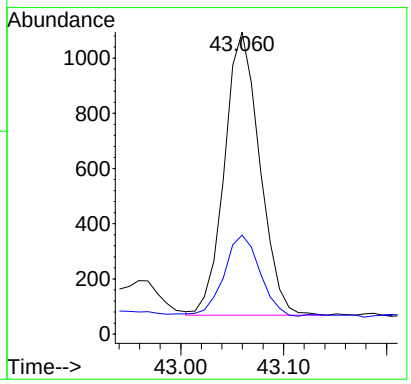


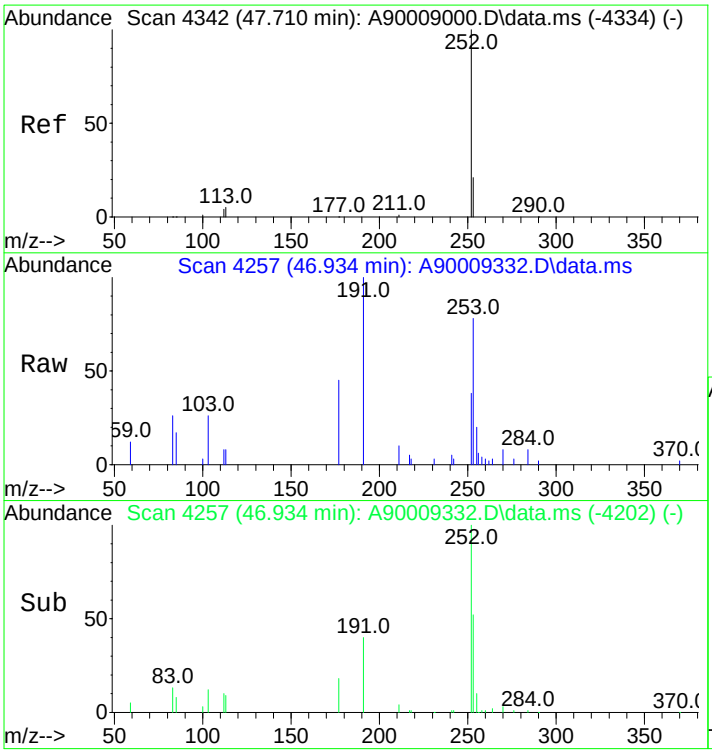


#77
Chrysene/Triphenylene
Concen: 9.81 ng/mL
RT: 43.060 min Scan# 3833
Delta R.T. 0.000 min
Lab File: A90009332.D
Acq: 5 Dec 2012 12:58 am

Tgt Ion:228 Resp: 2438

Ion	Ratio	Lower	Upper
228	100		
226	29.2	23.4	35.0

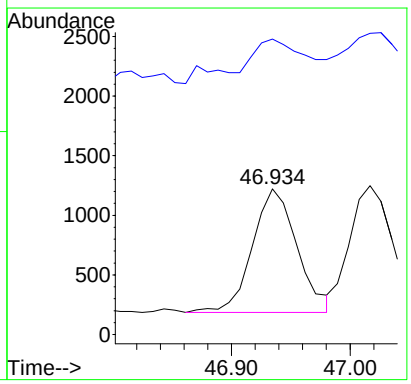


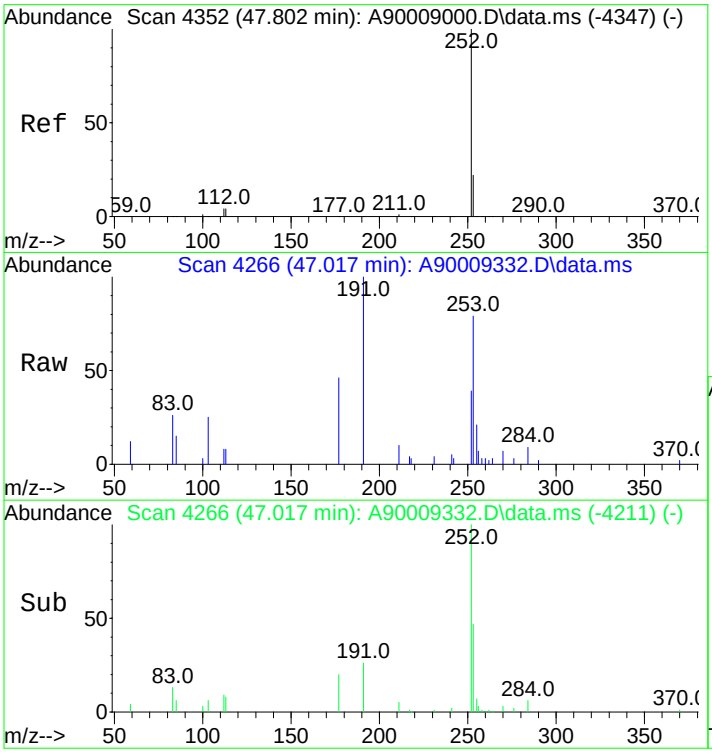


#84
Benzo[b]fluoranthene
Concen: 11.49 ng/mL
RT: 46.934 min Scan# 4257
Delta R.T. 0.000 min
Lab File: A90009332.D
Acq: 5 Dec 2012 12:58 am

Tgt Ion:252 Resp: 2700

Ion	Ratio	Lower	Upper
252	100		
253	32.2	20.9	31.3#

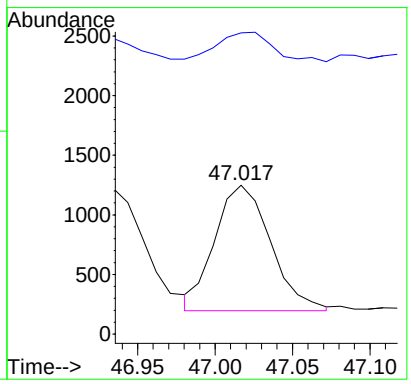


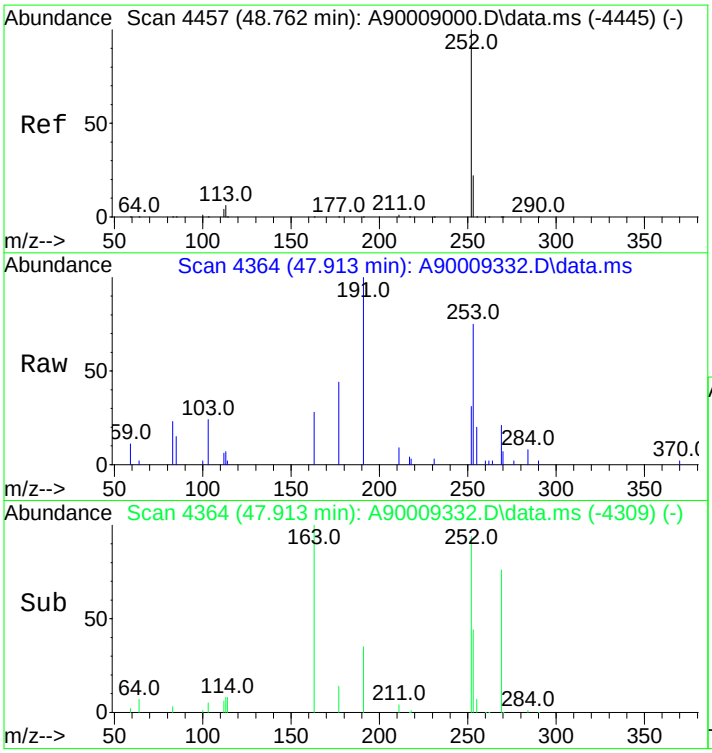


#85
Benzo[j]+[k]fluoranthene
Concen: 11.56 ng/mL m
RT: 47.017 min Scan# 4266
Delta R.T. 0.000 min
Lab File: A90009332.D
Acq: 5 Dec 2012 12:58 am

Tgt Ion:252 Resp: 2636

Ion	Ratio	Lower	Upper
252	100		
253	31.6	21.0	31.6#

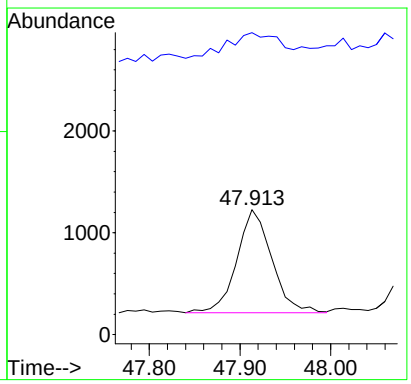


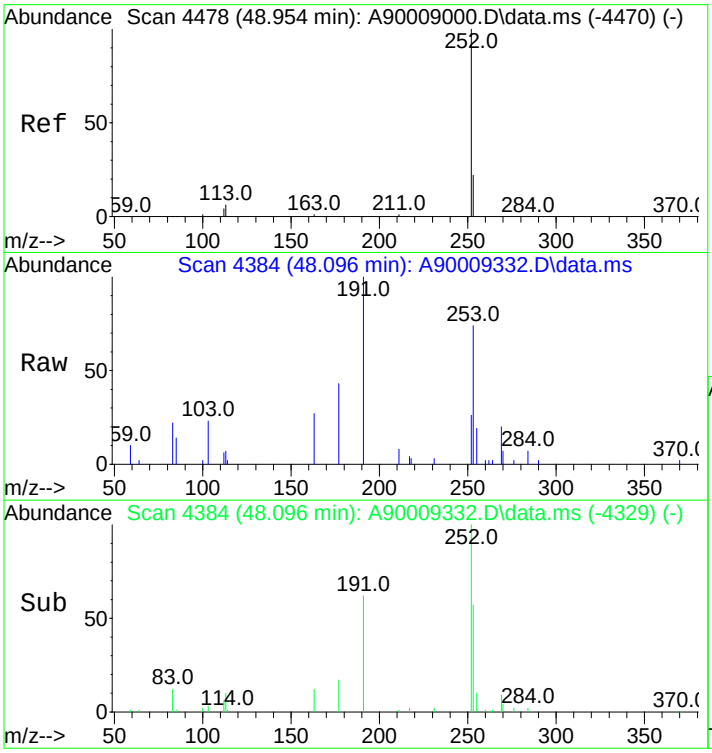


#87
Benzo[e]pyrene
Concen: 12.55 ng/mL
RT: 47.913 min Scan# 4364
Delta R.T. 0.000 min
Lab File: A90009332.D
Acq: 5 Dec 2012 12:58 am

Tgt Ion:252 Resp: 2713

Ion	Ratio	Lower	Upper
252	100		
253	30.9	22.1	33.1

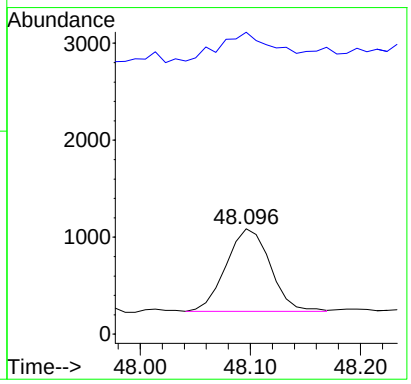


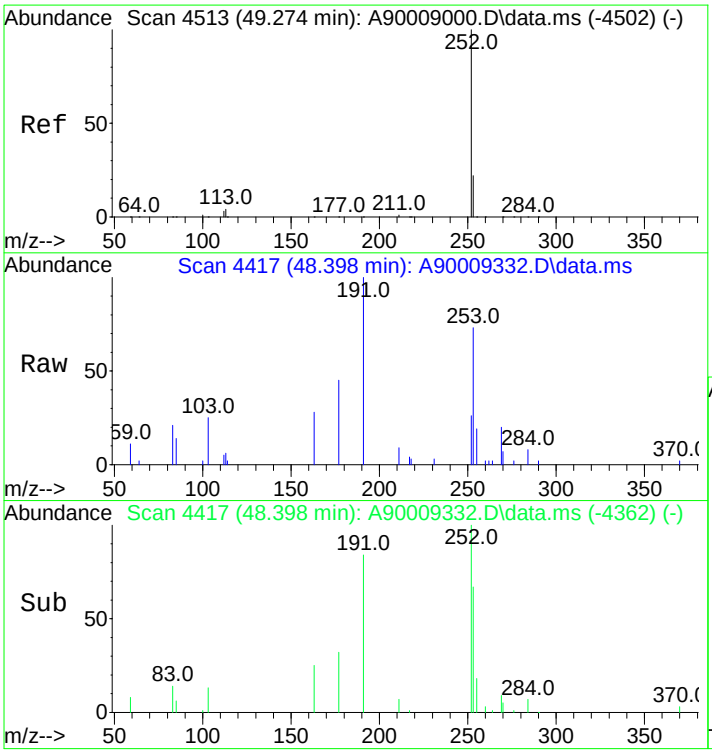


#89
Benzo[a]pyrene
Concen: 11.66 ng/mL
RT: 48.096 min Scan# 4384
Delta R.T. 0.000 min
Lab File: A90009332.D
Acq: 5 Dec 2012 12:58 am

Tgt Ion:252 Resp: 2383

Ion	Ratio	Lower	Upper
252	100		
253	40.3	22.9	34.3#

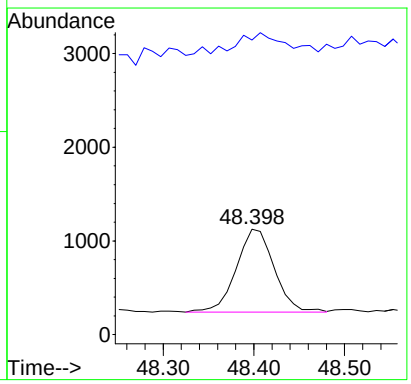


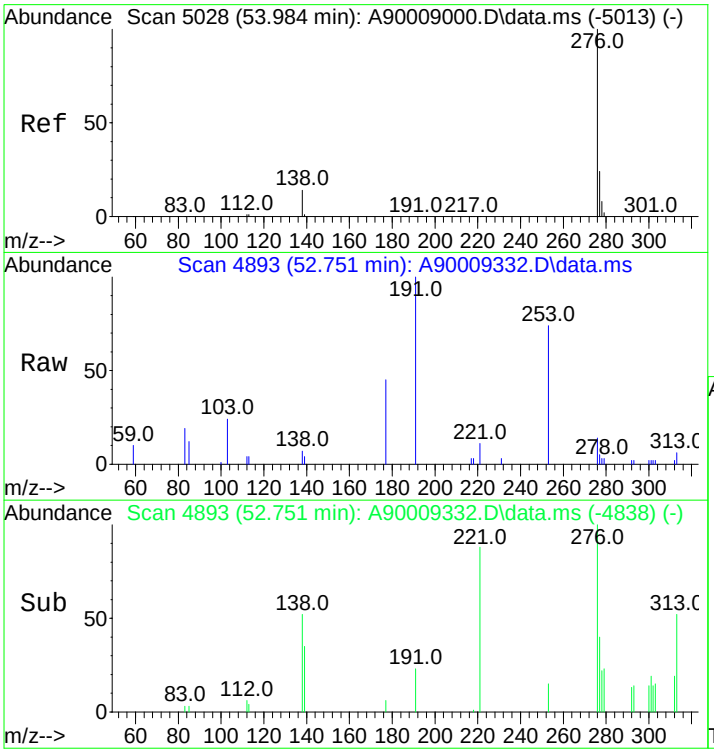


#90
Perylene
Concen: 11.76 ng/mL
RT: 48.398 min Scan# 4417
Delta R.T. 0.000 min
Lab File: A90009332.D
Acq: 5 Dec 2012 12:58 am

Tgt Ion:252 Resp: 2553

Ion	Ratio	Lower	Upper
252	100		
253	23.7	23.4	35.2

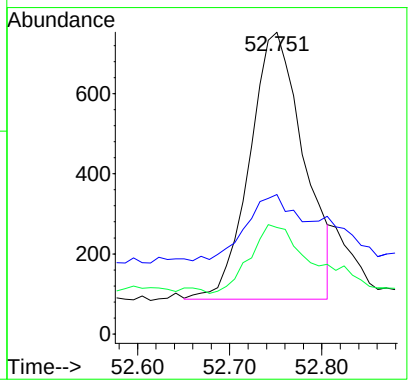


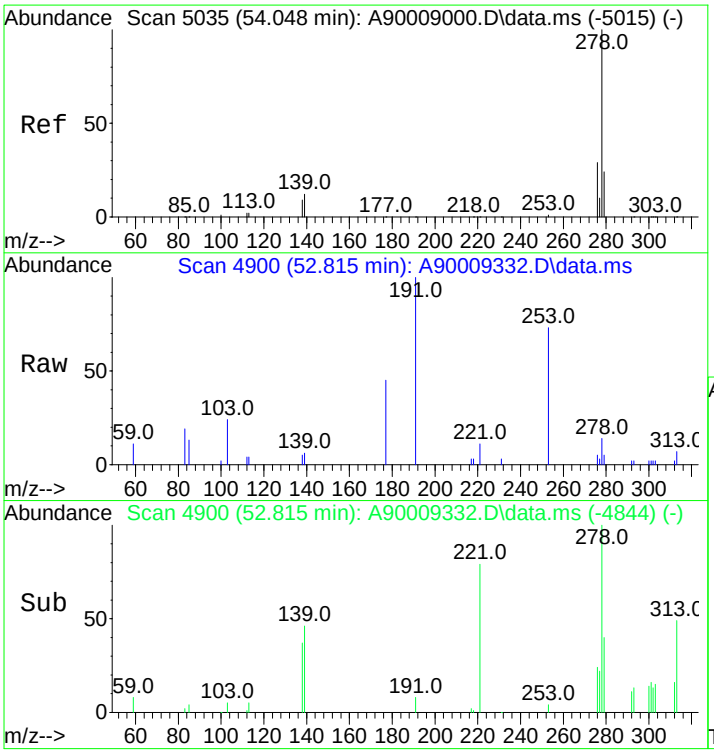


#91
Indeno[1,2,3-cd]pyrene
Concen: 12.79 ng/mL m
RT: 52.751 min Scan# 4893
Delta R.T. 0.000 min
Lab File: A90009332.D
Acq: 5 Dec 2012 12:58 am

Tgt Ion:276 Resp: 2714

Ion	Ratio	Lower	Upper
276	100		
138	20.1	20.2	30.4#
277	28.8	20.6	30.8

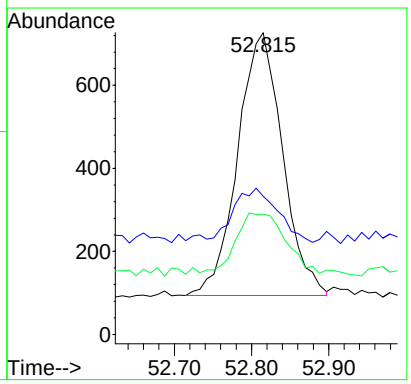


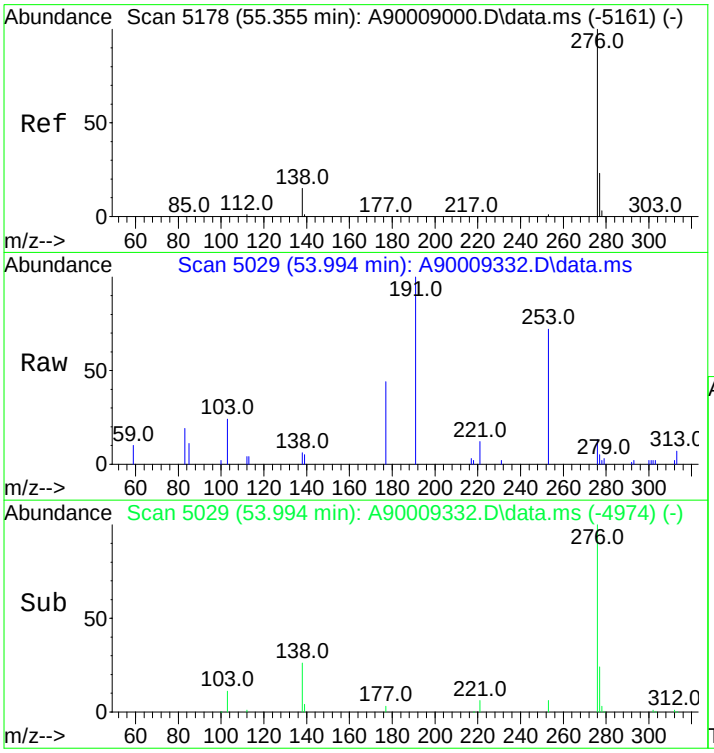


#92
Dibenz[ah]+[ac]anthracene
Concen: 12.15 ng/mL
RT: 52.815 min Scan# 4900
Delta R.T. 0.009 min
Lab File: A90009332.D
Acq: 5 Dec 2012 12:58 am

Tgt Ion:278 Resp: 2562

Ion	Ratio	Lower	Upper
278	100		
139	19.1	15.4	23.2
279	27.4	19.3	28.9

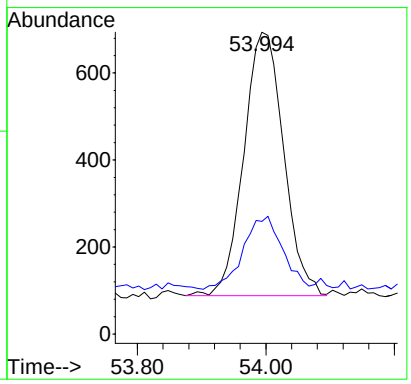


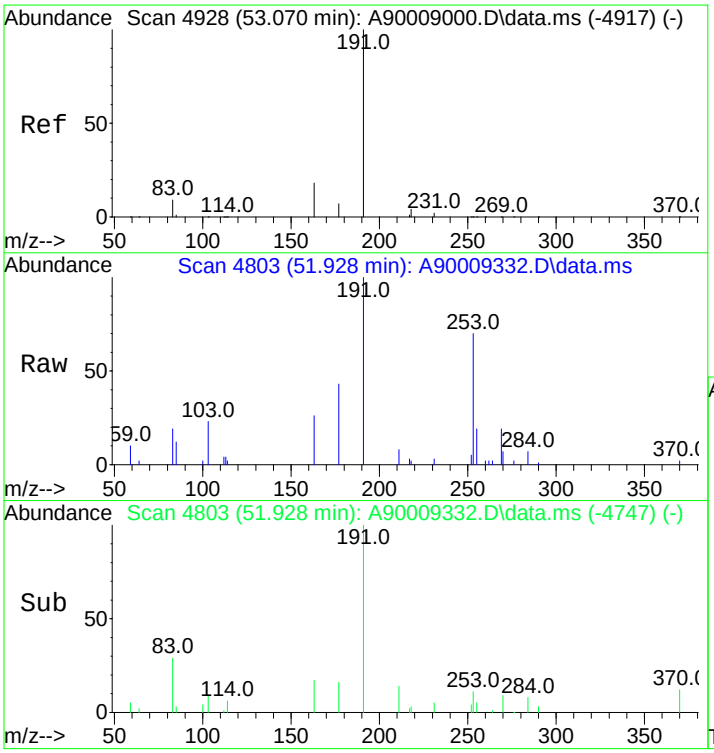


#93
Benzo[g,h,i]perylene
Concen: 12.37 ng/mL
RT: 53.994 min Scan# 5029
Delta R.T. 0.000 min
Lab File: A90009332.D
Acq: 5 Dec 2012 12:58 am

Tgt Ion:276 Resp: 2615

Ion	Ratio	Lower	Upper
276	100		
277	27.3	20.3	30.5

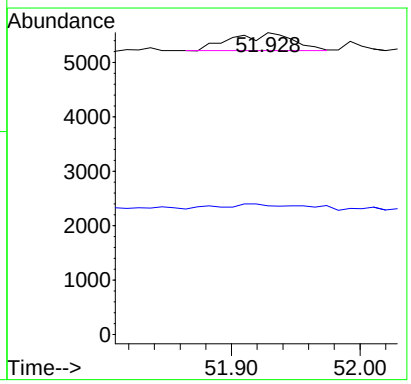


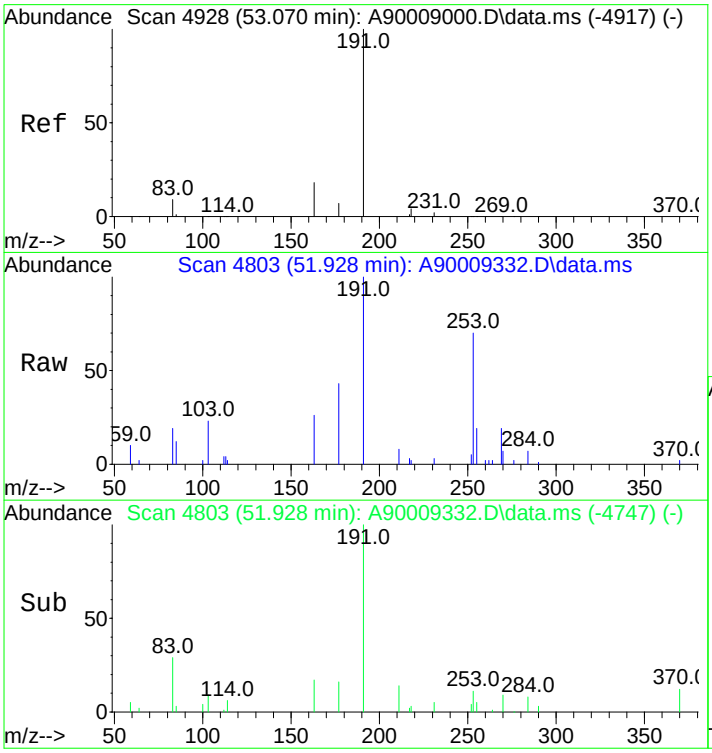


#94
Hopane (T19)
Concen: 14.65 ng/mL
RT: 51.928 min Scan# 4803
Delta R.T. 0.009 min
Lab File: A90009332.D
Acq: 5 Dec 2012 12:58 am

Tgt Ion:191 Resp: 1073

Ion	Ratio	Lower	Upper
191	100		
177	40.5	15.3	22.9#

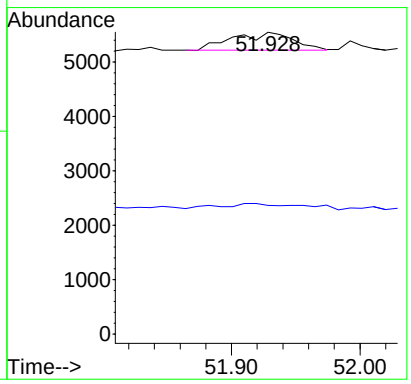




#95
17a(H),21B(H)-hopane - C30H52
Concen: 14.65 ng/mL
RT: 51.928 min Scan# 4803
Delta R.T. 0.009 min
Lab File: A90009332.D
Acq: 5 Dec 2012 12:58 am

Tgt Ion:191 Resp: 1073

Ion	Ratio	Lower	Upper
191	100		
177	40.5	15.3	22.9#



Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009572.D
Acq On : 22 Dec 2012 8:52 am
Operator : ps
Sample : C912221201
Misc : WHAQ46:5.076mg/kg
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 27 14:55:22 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC22\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Dec 22 11:35:35 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.156	164	68298	500.000	ng/mL	0.00
74) Chrysene-d12	42.557	240	128366	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.229	136	137651	524.367	ng/mL	-0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 52.44%			
42) Phenanthrene-d10	31.995	188	139785	567.437	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 56.74%			
83) Benzo[b]fluoranthene-d12	46.450	264	119285	505.528	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 50.55%			
88) Benzo[a]pyrene-d12	47.575	264	122951	519.798	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 51.98%			
129) 5B(H)Cholane - Surr	43.187	217	25870	480.068	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 48.01%#			
Target Compounds						Qvalue
3) trans-Decalin	15.908	138	14864	247.551	ng/mL	100
4) cis-Decalin	17.103	138	11615	247.095	ng/mL	100
10) Naphthalene	19.302	128	134158	498.012	ng/mL#	100
16) 2-Methylnaphthalene	21.985	142	86258	489.627	ng/mL#	100
17) 1-Methylnaphthalene	22.405	142	83485	488.306	ng/mL#	100
18) Benzothiophene	19.521	134	111948	496.580	ng/mL	100
23) Biphenyl	23.856	154	114974	498.710	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.458	156	81808	493.995	ng/mL#	100
25) Dibenzofuran	26.922	168	127524	518.613	ng/mL	99
26) Acenaphthylene	25.544	152	136359	492.059	ng/mL#	100
27) Acenaphthene	26.274	153	84741	486.354	ng/mL	100
28) 2,3,5-Trimethylnaphthalen	27.835	170	76527	502.626	ng/mL	99
29) Fluorene	28.291	166	97419	509.138	ng/mL	100
33) Dibenzothiophene	31.593	184	141596	526.079	ng/mL	100
43) Phenanthrene	32.086	178	145394	522.873	ng/mL	100
54) Retene	39.061	234	41688	545.347	ng/mL	100
55) Anthracene	32.260	178	141219M4	546.899	ng/mL	
56) Carbazole	32.944	167	131388	537.875	ng/mL	100
57) 1-Methylphenanthrene	34.578	192	108105M4	526.937	ng/mL	
58) Fluoranthene	36.842	202	163494M4	526.331	ng/mL	
59) Benzo(b)fluorene	39.353	216	97277	526.579	ng/mL	99
60) Pyrene	37.718	202	164388	518.725	ng/mL	99
66) Naphthobenzothiophene	41.562	234	146762	533.714	ng/ml	99
67) Naphthobenzothiophene-2,1	41.562	234	146762	533.714	ng/mL	99
75) Benz[a]anthracene	42.493	228	141062	479.087	ng/mL	99
76) Chrysene	42.649	228	141548	488.790	ng/mL	100
77) Chrysene/Triphenylene	42.649	228	141548	488.790	ng/mL	100
84) Benzo[b]fluoranthene	46.533	252	145585	476.874	ng/mL	96
85) Benzo[j]+[k]fluoranthene	46.615	252	145207	484.078	ng/mL	95
87) Benzo[e]pyrene	47.484	252	135527	467.504	ng/mL	95
89) Benzo[a]pyrene	47.658	252	130503M4	475.337	ng/mL	
90) Perylene	47.950	252	137780	470.213	ng/mL	93
91) Indeno[1,2,3-cd]pyrene	52.148	276	142419M4	468.385	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.203	278	143971	480.655	ng/mL	99
93) Benzo[g,h,i]perylene	53.336	276	140919	471.620	ng/mL	100
94) Hopane (T19)	51.325	191	46035M4	407.910	ng/mL	
95) 17a(H),21B(H)-hopane - C3	51.325	191	45921M4	406.900	ng/mL	

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009572.D
Acq On : 22 Dec 2012 8:52 am
Operator : ps
Sample : C912221201
Misc : WHAQ46:5.076mg/kg
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 27 14:55:22 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC22\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Dec 22 11:35:35 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

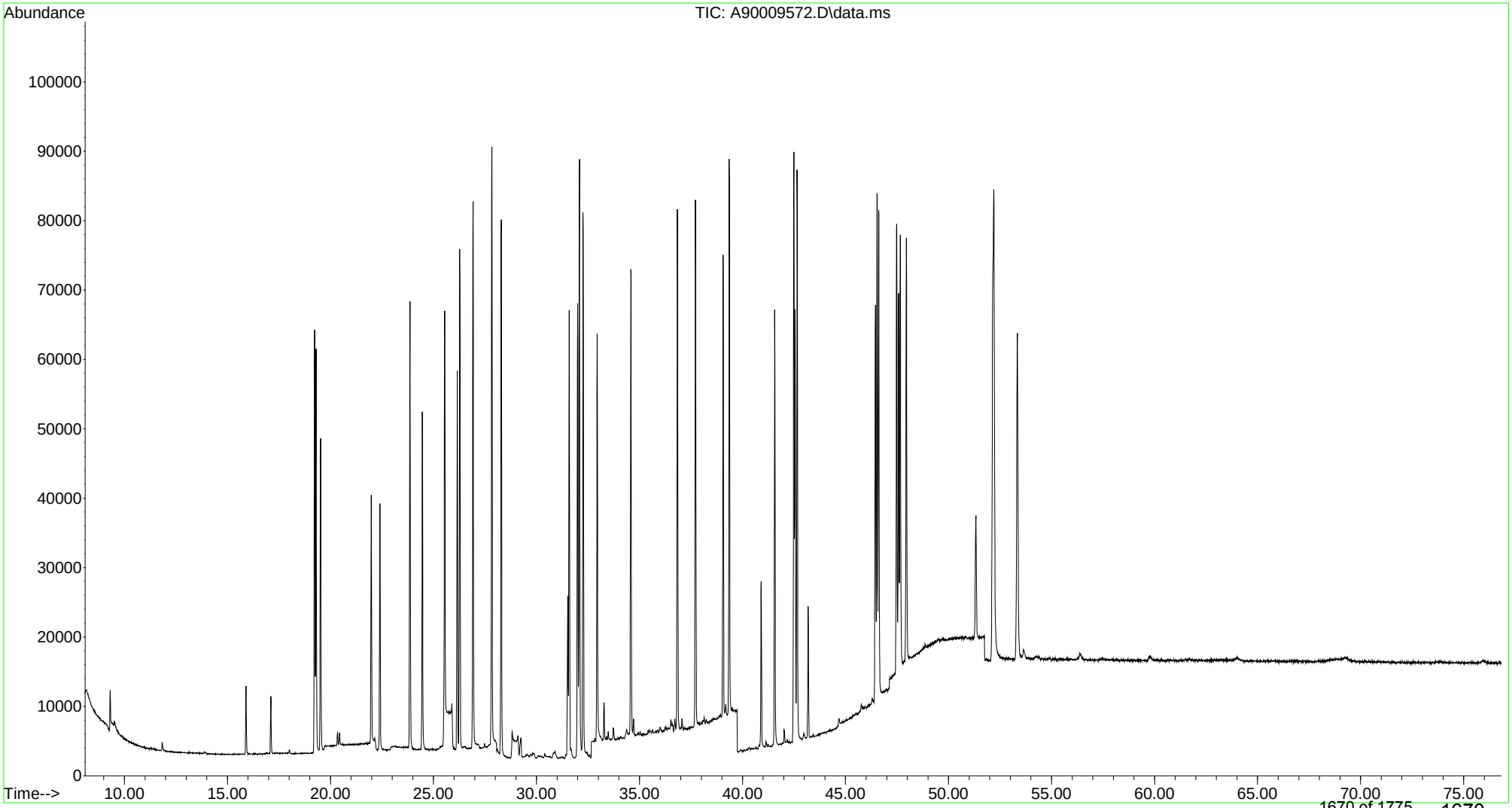
(#) = qualifier out of range (m) = manual integration (+) = signals summed

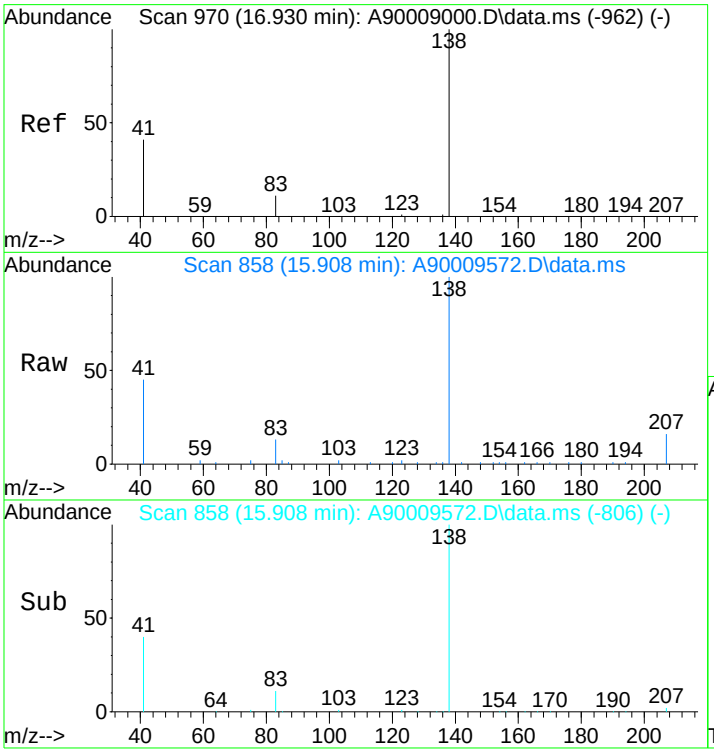
Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009572.D
Acq On : 22 Dec 2012 8:52 am
Operator : ps
Sample : C912221201
Misc : WHAQ46:5.076mg/kg
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 27 14:55:22 2012
Quant Method : O:\Forensics\Data\PAH9\2012\DEC12\DEC22\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Dec 22 11:35:35 2012
Response via : Initial Calibration

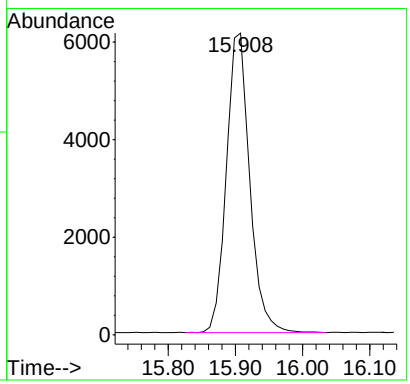
Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

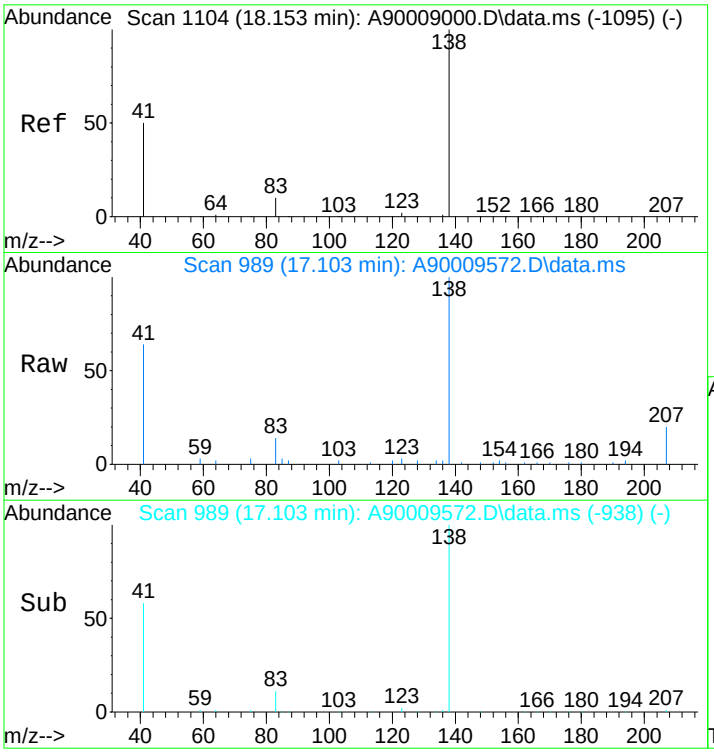




#3
trans-Decalin
Concen: 247.55 ng/mL
RT: 15.908 min Scan# 858
Delta R.T. -0.025 min
Lab File: A90009572.D
Acq: 22 Dec 2012 8:52 am

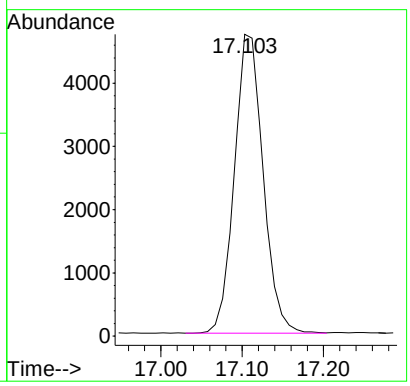
Tgt Ion:138 Resp: 14864

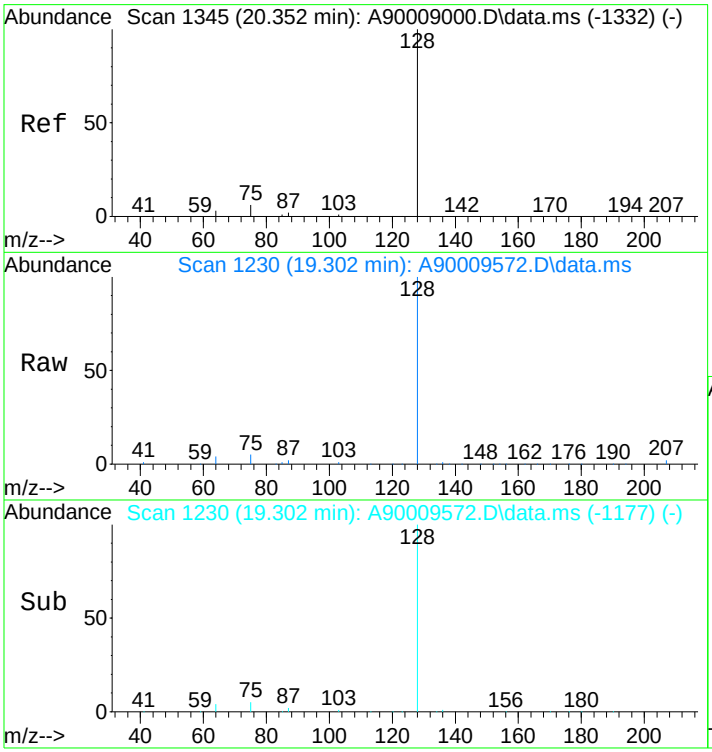




#4
cis-Decalin
Concen: 247.09 ng/mL
RT: 17.103 min Scan# 989
Delta R.T. -0.031 min
Lab File: A90009572.D
Acq: 22 Dec 2012 8:52 am

Tgt Ion:138 Resp: 11615

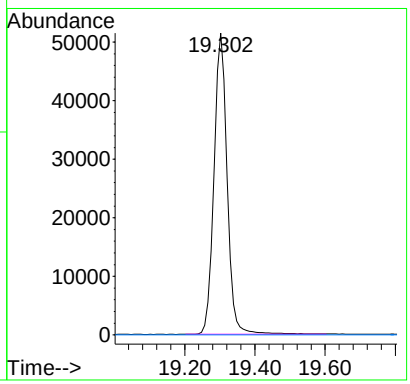


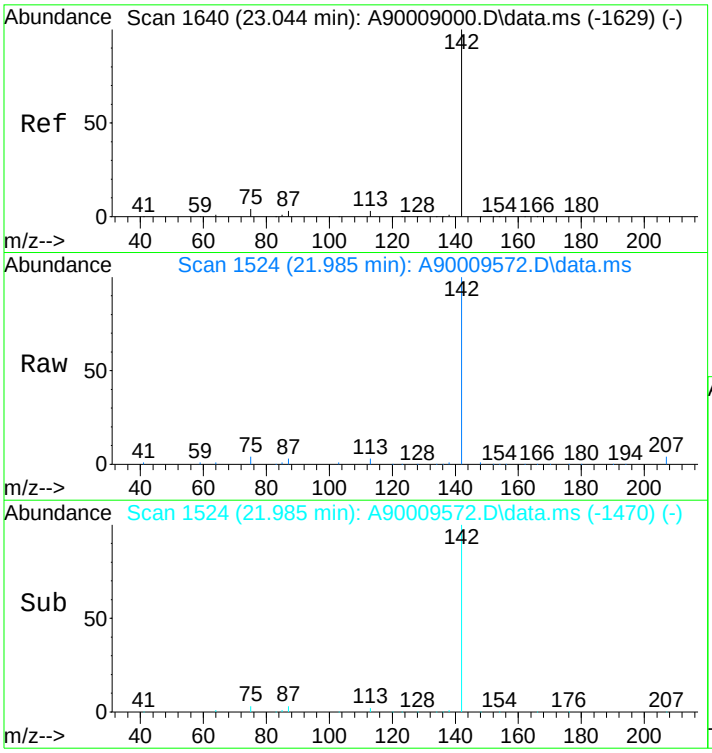


#10
Naphthalene
Concen: 498.01 ng/mL
RT: 19.302 min Scan# 1230
Delta R.T. -0.017 min
Lab File: A90009572.D
Acq: 22 Dec 2012 8:52 am

Tgt Ion:128 Resp: 134158

Ion	Ratio	Lower	Upper
128	100		
127	0.0	0.0	0.0

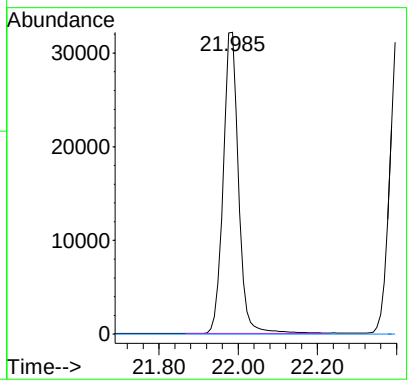


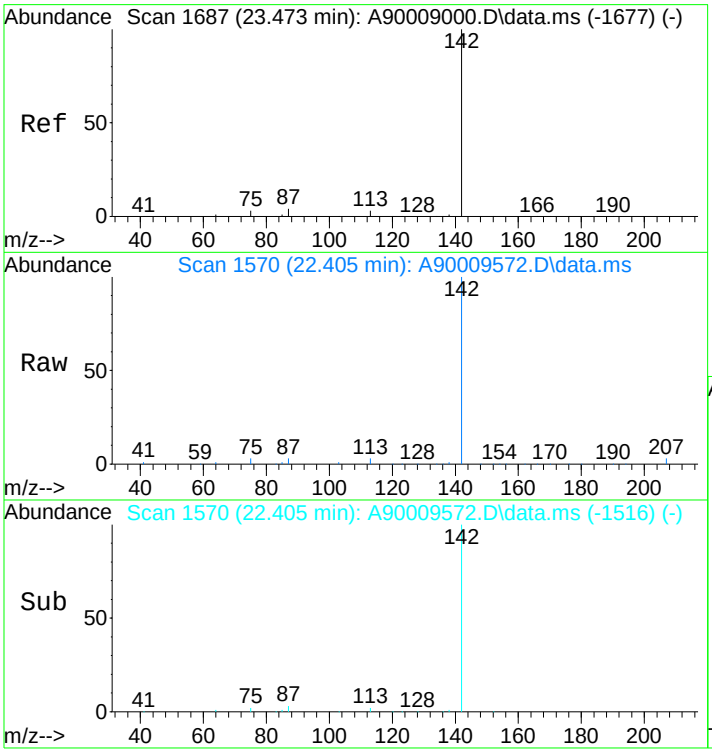


#16
2-Methylnaphthalene
Concen: 489.63 ng/mL
RT: 21.985 min Scan# 1524
Delta R.T. -0.010 min
Lab File: A90009572.D
Acq: 22 Dec 2012 8:52 am

Tgt Ion:142 Resp: 86258

Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	0.0

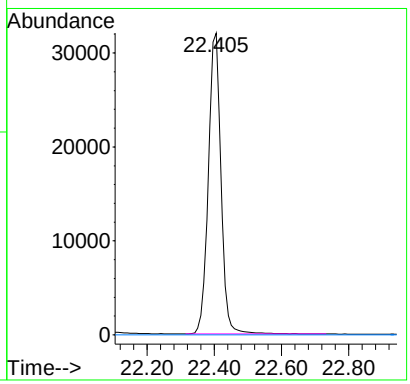


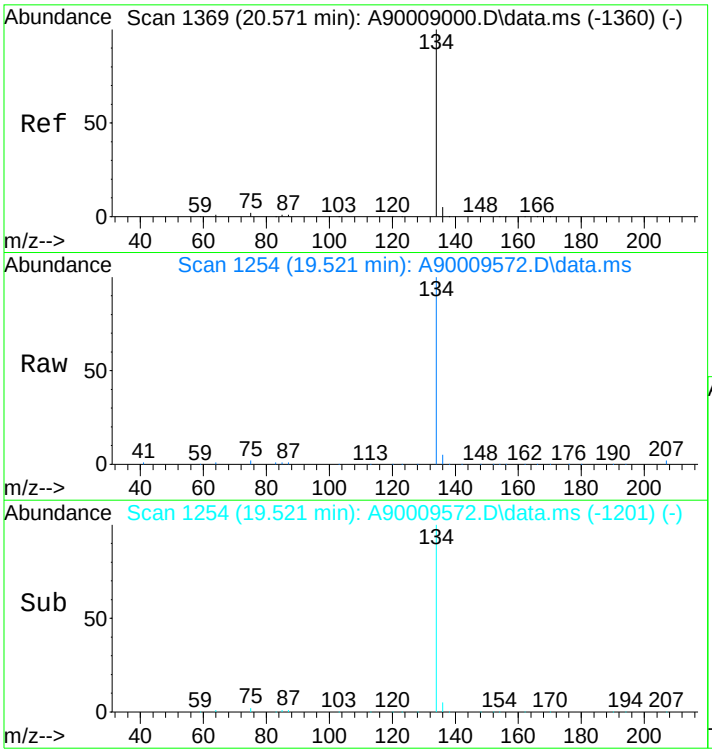


#17
1-Methylnaphthalene
Concen: 488.31 ng/mL
RT: 22.405 min Scan# 1570
Delta R.T. -0.009 min
Lab File: A90009572.D
Acq: 22 Dec 2012 8:52 am

Tgt Ion:142 Resp: 83485

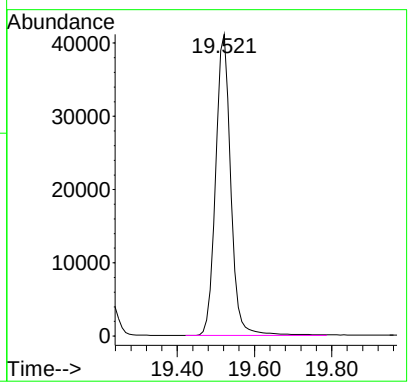
Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	20.0

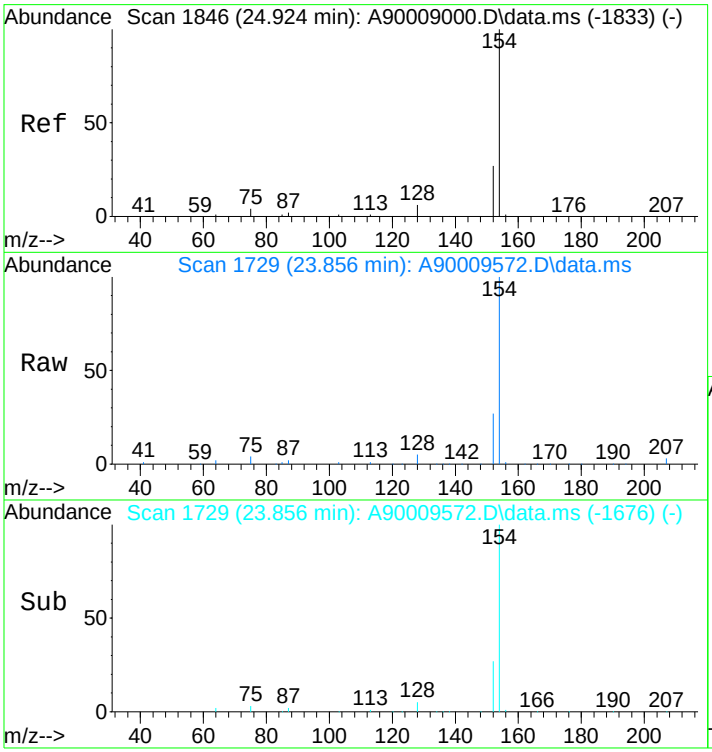




#18
Benzothiophene
Concen: 496.58 ng/mL
RT: 19.521 min Scan# 1254
Delta R.T. -0.016 min
Lab File: A90009572.D
Acq: 22 Dec 2012 8:52 am

Tgt Ion:134 Resp: 111948

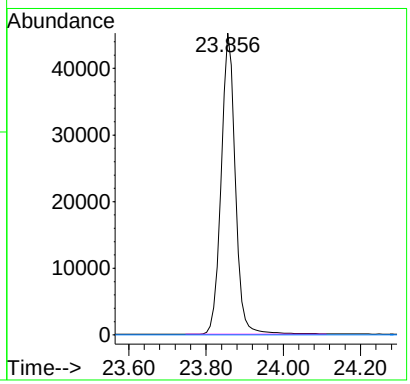


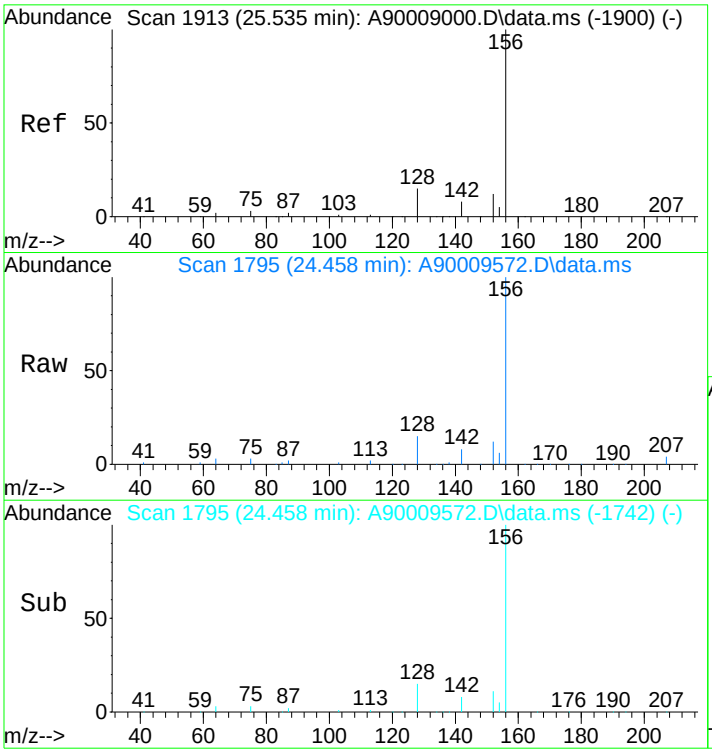


#23
Biphenyl
Concen: 498.71 ng/mL
RT: 23.856 min Scan# 1729
Delta R.T. -0.015 min
Lab File: A90009572.D
Acq: 22 Dec 2012 8:52 am

Tgt Ion:154 Resp: 114974

Ion	Ratio	Lower	Upper
154	100		
153	0.0	0.0	0.0

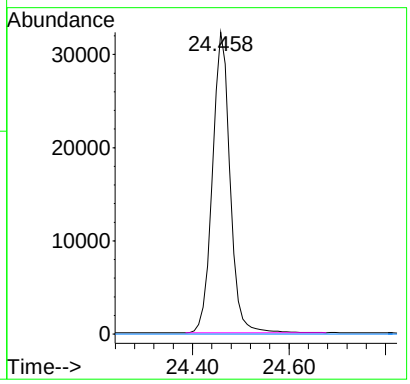


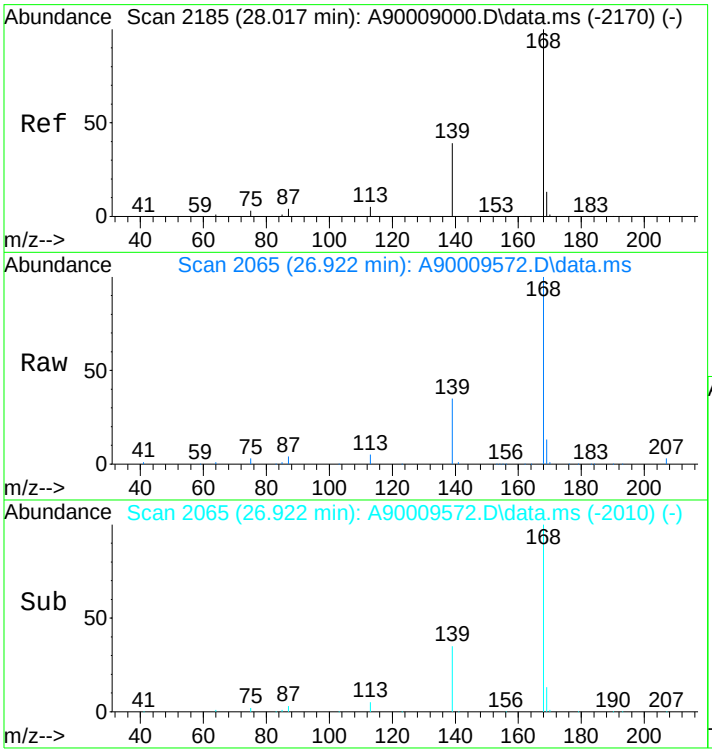


#24
2,6-Dimethylnaphthalene
Concen: 493.99 ng/mL
RT: 24.458 min Scan# 1795
Delta R.T. -0.013 min
Lab File: A90009572.D
Acq: 22 Dec 2012 8:52 am

Tgt Ion:156 Resp: 81808

Ion	Ratio	Lower	Upper
156	100		
155	0.0	0.0	0.0

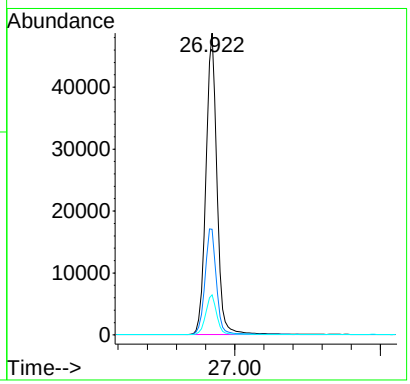


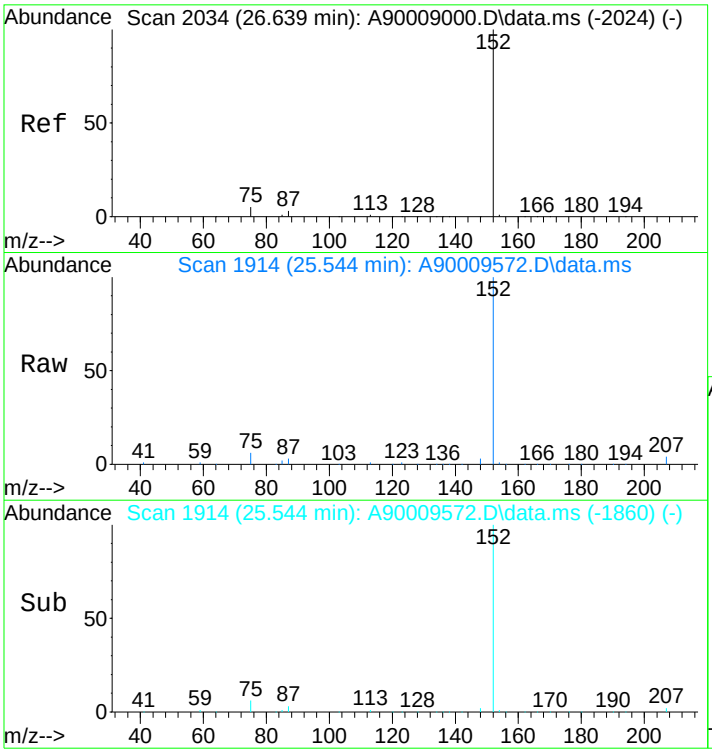


#25
Dibenzofuran
Concen: 518.61 ng/mL
RT: 26.922 min Scan# 2065
Delta R.T. 0.002 min
Lab File: A90009572.D
Acq: 22 Dec 2012 8:52 am

Tgt Ion:168 Resp: 127524

Ion	Ratio	Lower	Upper
168	100		
139	36.2	29.5	44.3
169	13.1	10.6	16.0

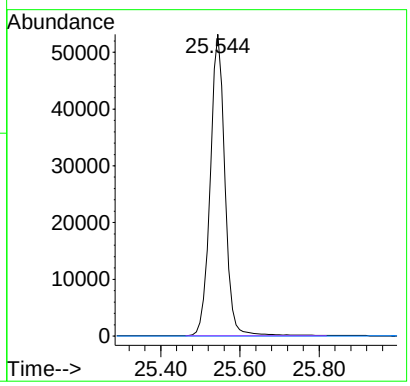


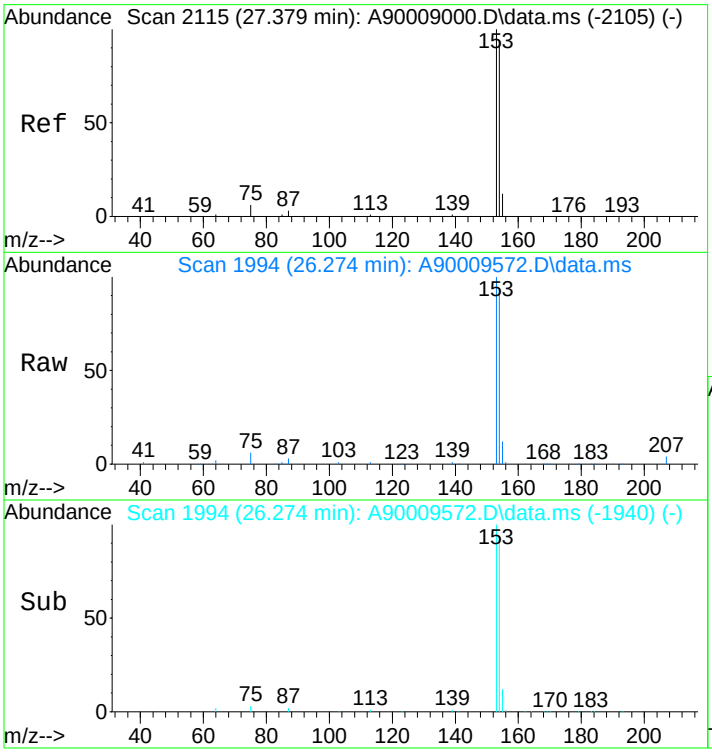


#26
Acenaphthylene
Concen: 492.06 ng/mL
RT: 25.544 min Scan# 1914
Delta R.T. -0.011 min
Lab File: A90009572.D
Acq: 22 Dec 2012 8:52 am

Tgt Ion:152 Resp: 136359

Ion	Ratio	Lower	Upper
152	100		
153	0.0	0.0	0.0

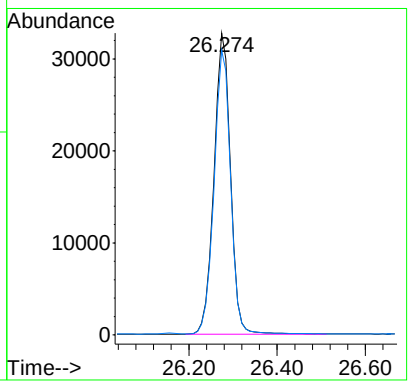


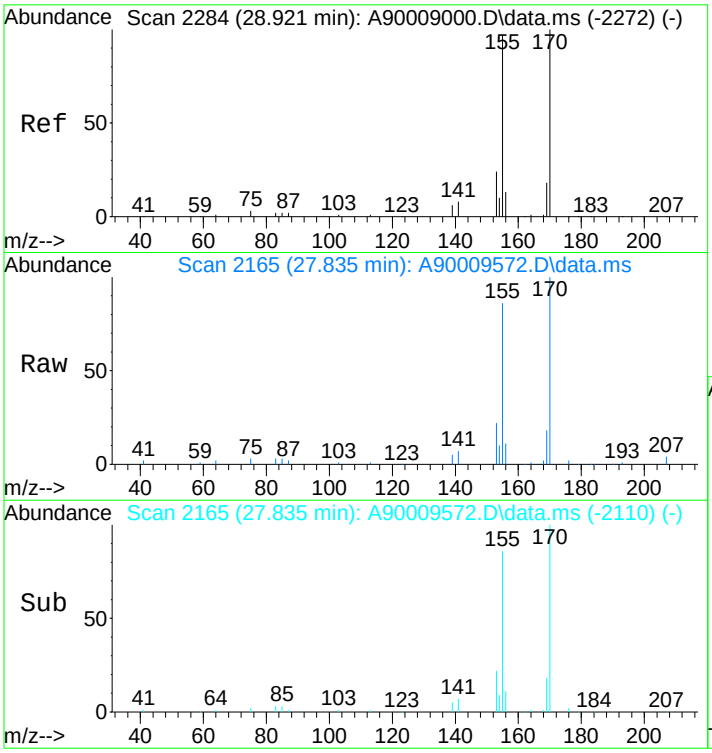


#27
Acenaphthene
Concen: 486.35 ng/mL
RT: 26.274 min Scan# 1994
Delta R.T. -0.009 min
Lab File: A90009572.D
Acq: 22 Dec 2012 8:52 am

Tgt Ion:153 Resp: 84741

Ion	Ratio	Lower	Upper
153	100		
154	94.6	75.8	113.6

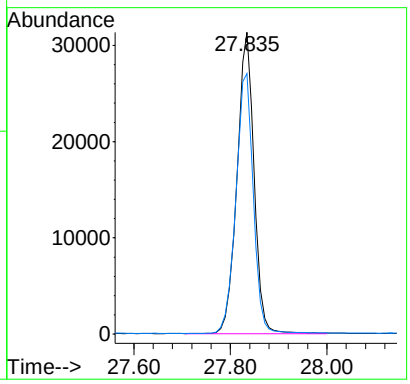


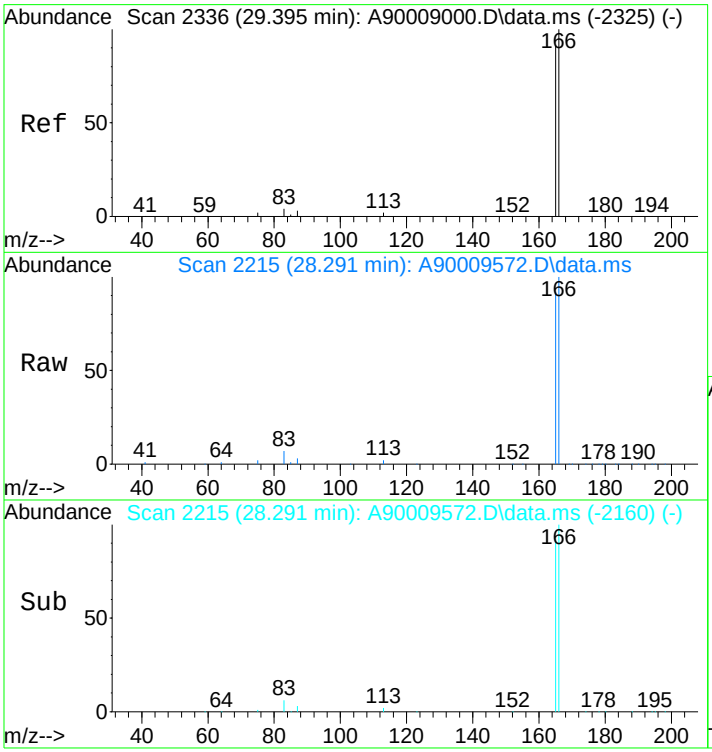


#28
2,3,5-Trimethylnaphthalene
Concen: 502.63 ng/mL
RT: 27.835 min Scan# 2165
Delta R.T. 0.004 min
Lab File: A90009572.D
Acq: 22 Dec 2012 8:52 am

Tgt Ion:170 Resp: 76527

Ion	Ratio	Lower	Upper
170	100		
155	88.4	71.5	107.3

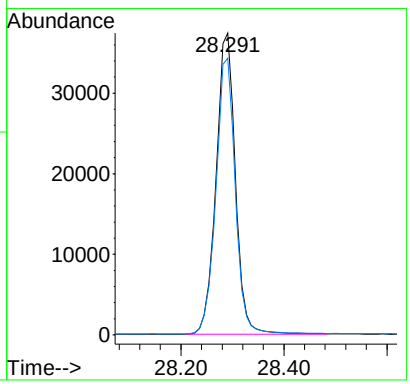


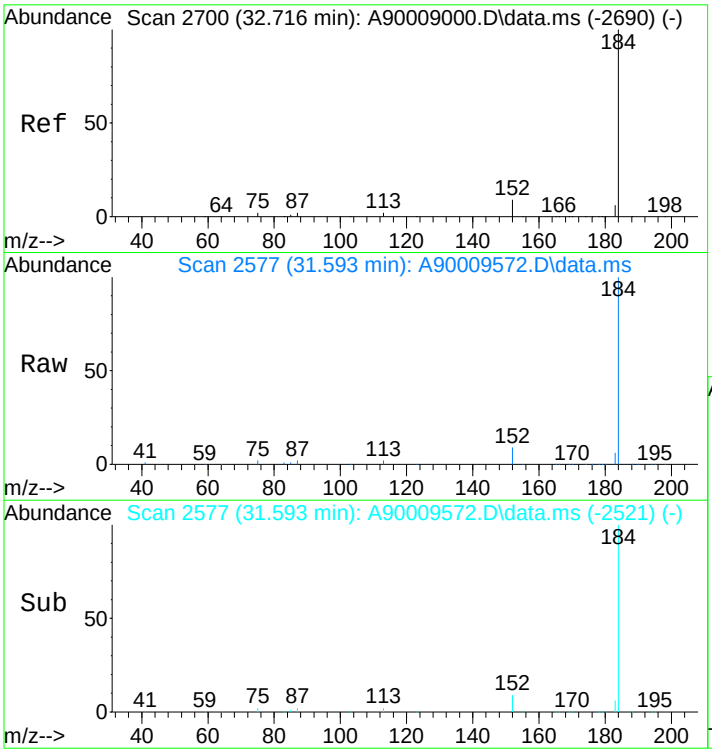


#29
Fluorene
Concen: 509.14 ng/mL
RT: 28.291 min Scan# 2215
Delta R.T. 0.005 min
Lab File: A90009572.D
Acq: 22 Dec 2012 8:52 am

Tgt Ion:166 Resp: 97419

Ion	Ratio	Lower	Upper
166	100		
165	91.9	73.9	110.9

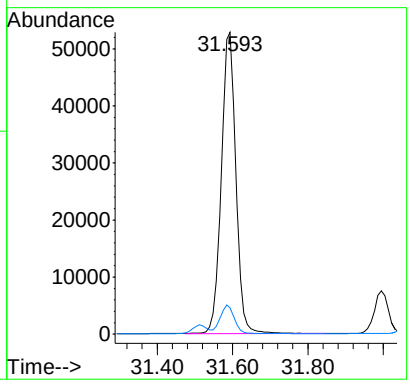


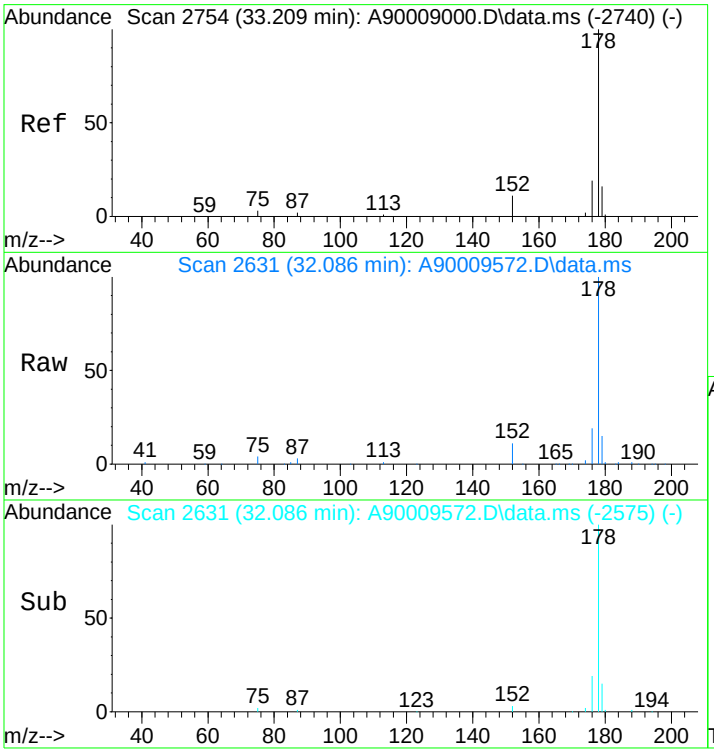


#33
Dibenzothiophene
Concen: 526.08 ng/mL
RT: 31.593 min Scan# 2577
Delta R.T. 0.013 min
Lab File: A90009572.D
Acq: 22 Dec 2012 8:52 am

Tgt Ion:184 Resp: 141596

Ion	Ratio	Lower	Upper
184	100		
152	9.4	7.6	11.4

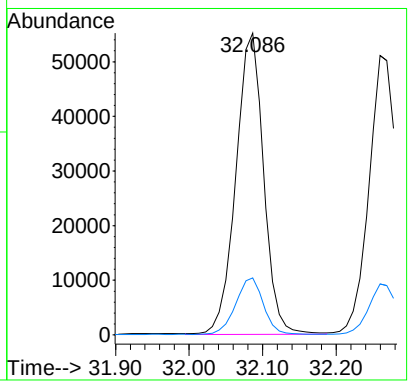


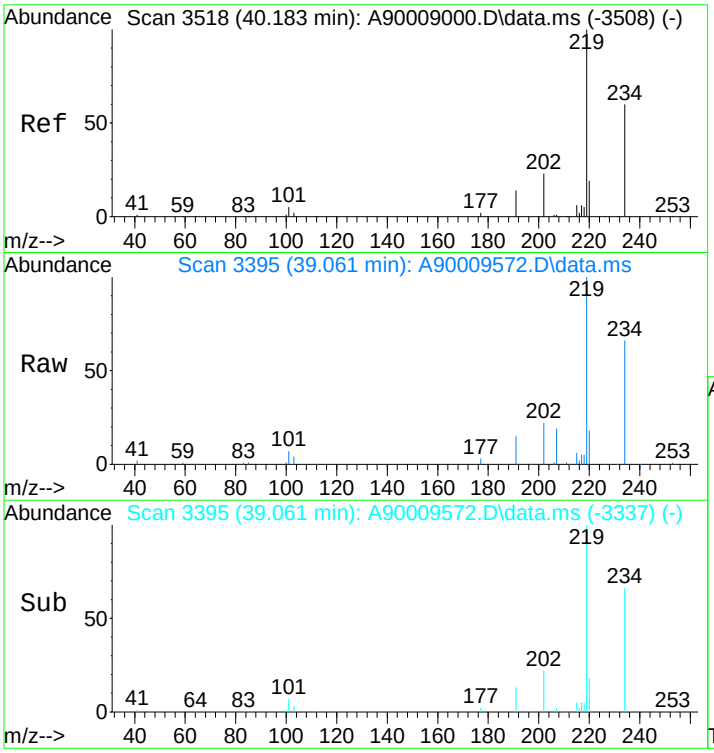


#43
Phenanthrene
Concen: 522.87 ng/mL
RT: 32.086 min Scan# 2631
Delta R.T. 0.014 min
Lab File: A90009572.D
Acq: 22 Dec 2012 8:52 am

Tgt Ion:178 Resp: 145394

Ion	Ratio	Lower	Upper
178	100		
176	18.8	15.1	22.7

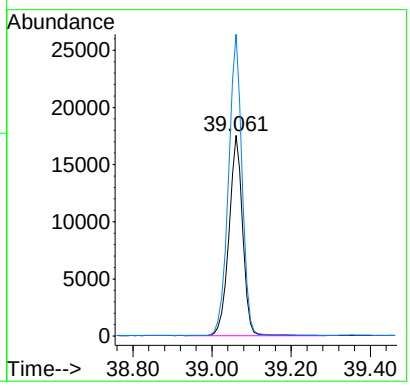


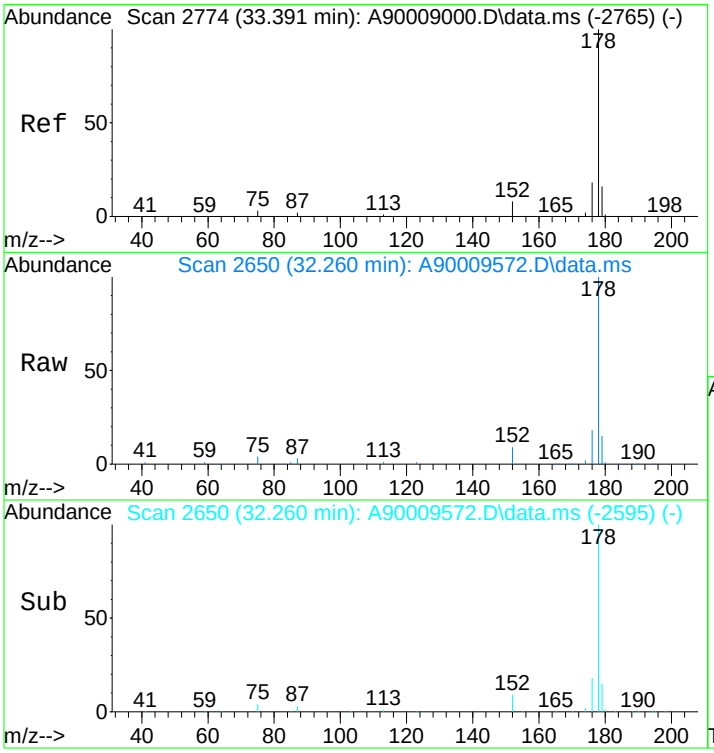


#54
Retene
Concen: 545.35 ng/mL
RT: 39.061 min Scan# 3395
Delta R.T. 0.032 min
Lab File: A90009572.D
Acq: 22 Dec 2012 8:52 am

Tgt Ion:234 Resp: 41688

Ion	Ratio	Lower	Upper
234	100		
219	149.8	119.8	179.6

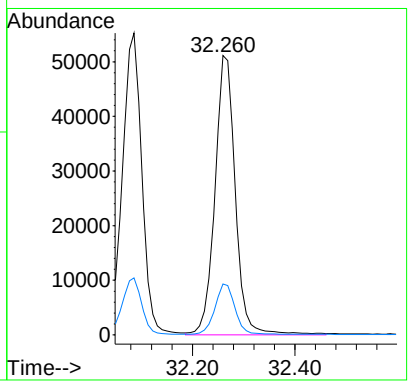


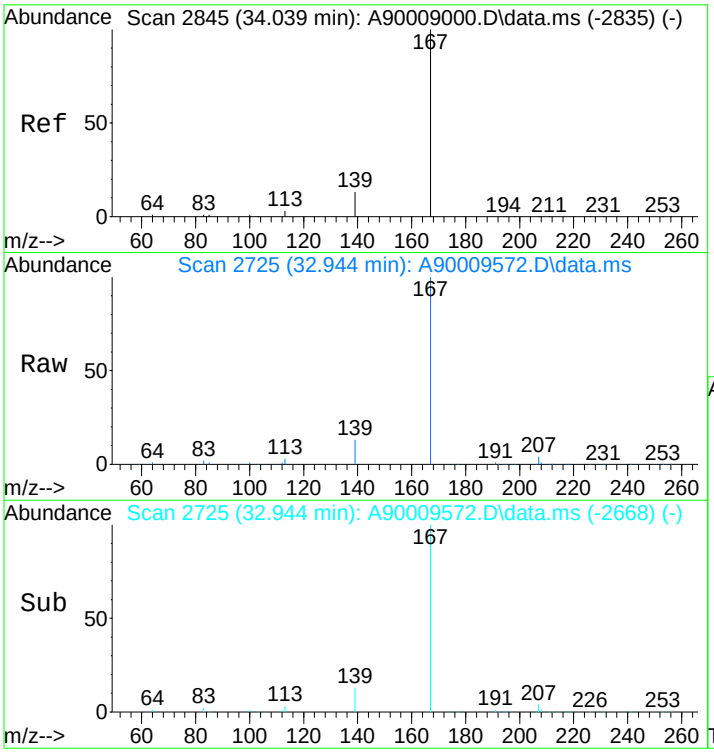


#55
Anthracene
Concen: 546.90 ng/mL m
RT: 32.260 min Scan# 2650
Delta R.T. 0.006 min
Lab File: A90009572.D
Acq: 22 Dec 2012 8:52 am

Tgt Ion:178 Resp: 141219

Ion	Ratio	Lower	Upper
178	100		
176	17.6	14.5	21.7

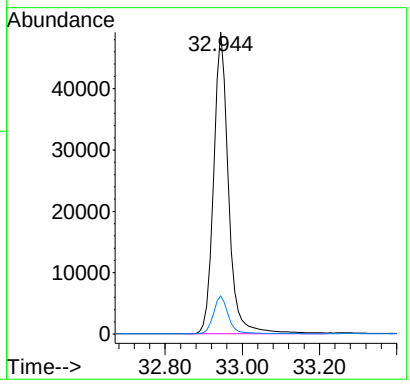


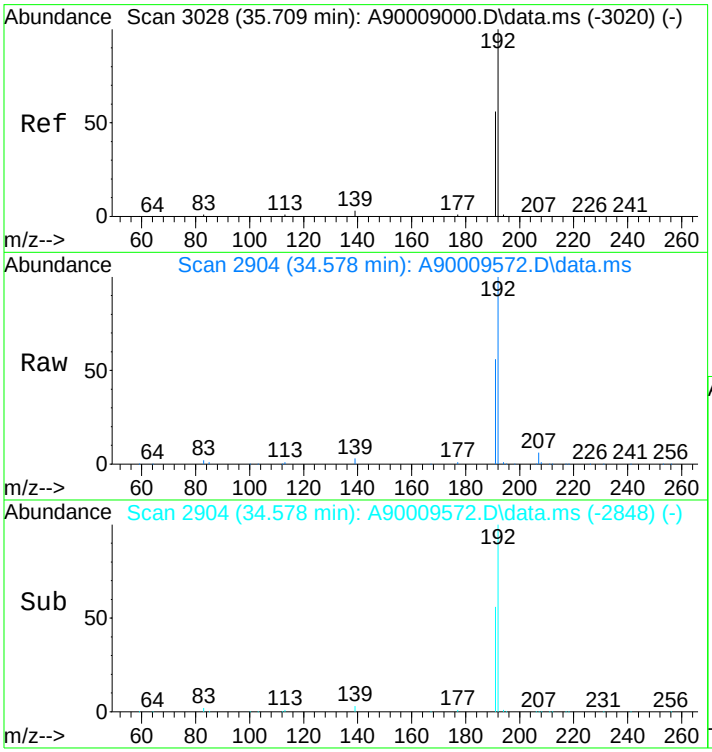


#56
Carbazole
Concen: 537.87 ng/mL
RT: 32.944 min Scan# 2725
Delta R.T. 0.017 min
Lab File: A90009572.D
Acq: 22 Dec 2012 8:52 am

Tgt Ion:167 Resp: 131388

Ion	Ratio	Lower	Upper
167	100		
139	12.5	10.1	15.1

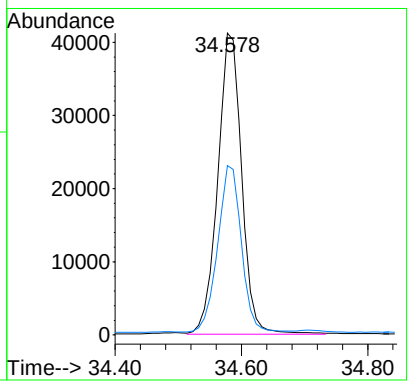


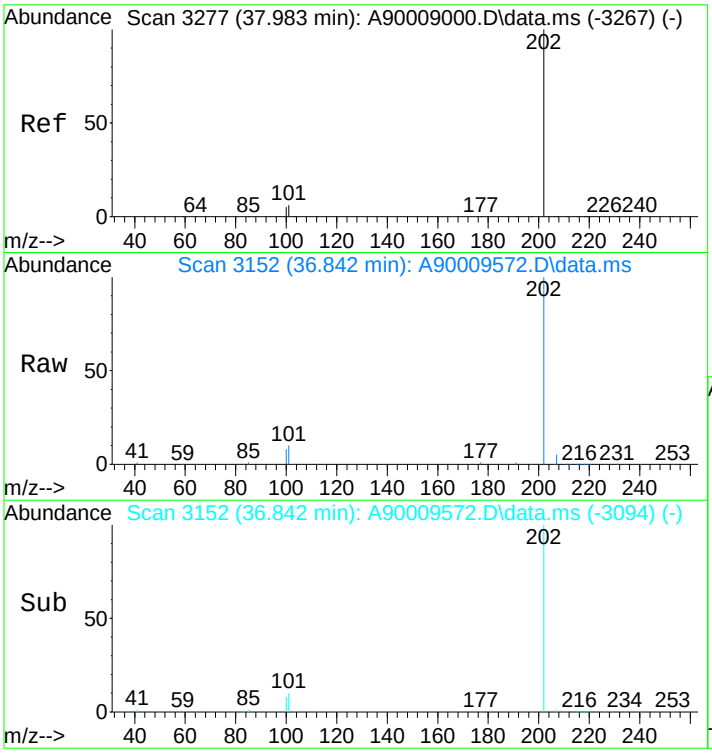


#57
1-Methylphenanthrene
Concen: 526.94 ng/mL m
RT: 34.578 min Scan# 2904
Delta R.T. 0.012 min
Lab File: A90009572.D
Acq: 22 Dec 2012 8:52 am

Tgt Ion:192 Resp: 108105

Ion	Ratio	Lower	Upper
192	100		
191	55.0	44.5	66.7

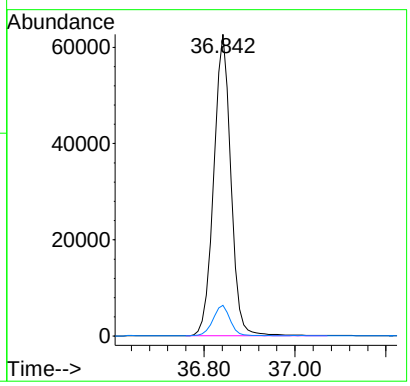


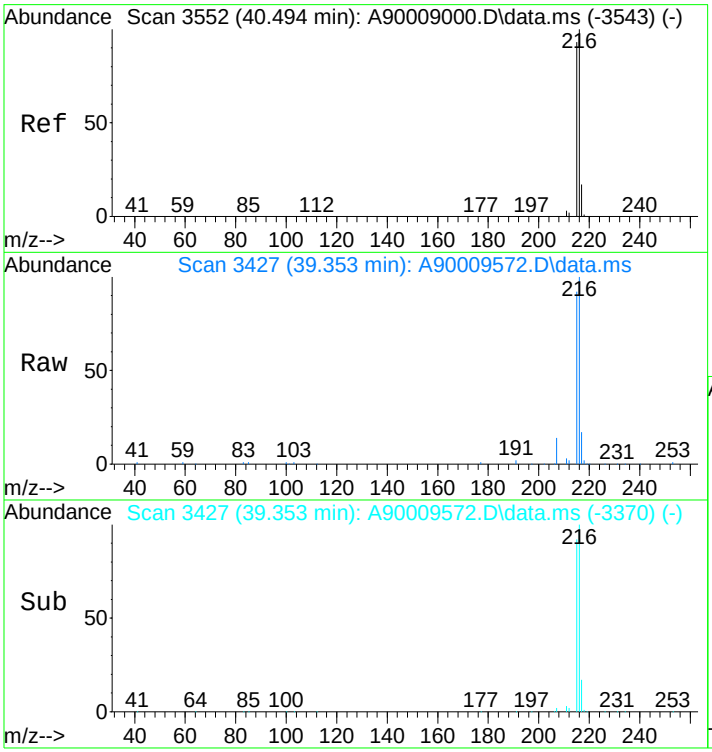


#58
Fluoranthene
Concen: 526.33 ng/mL m
RT: 36.842 min Scan# 3152
Delta R.T. 0.026 min
Lab File: A90009572.D
Acq: 22 Dec 2012 8:52 am

Tgt Ion:202 Resp: 163494

Ion	Ratio	Lower	Upper
202	100		
101	10.0	8.6	12.8

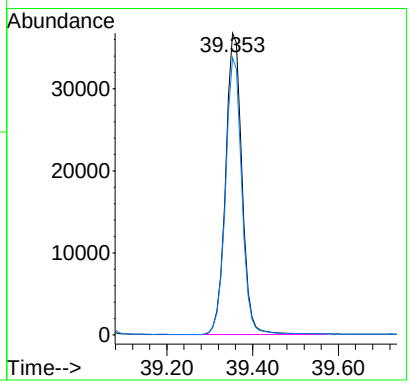


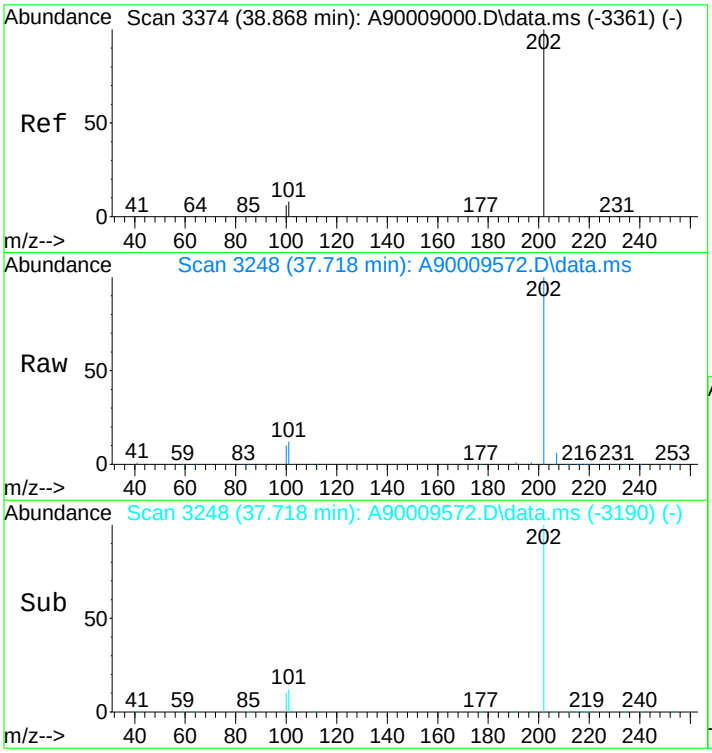


#59
Benzo(b)fluorene
Concen: 526.58 ng/mL
RT: 39.353 min Scan# 3427
Delta R.T. 0.023 min
Lab File: A90009572.D
Acq: 22 Dec 2012 8:52 am

Tgt Ion:216 Resp: 97277

Ion	Ratio	Lower	Upper
216	100		
215	91.4	72.4	108.6

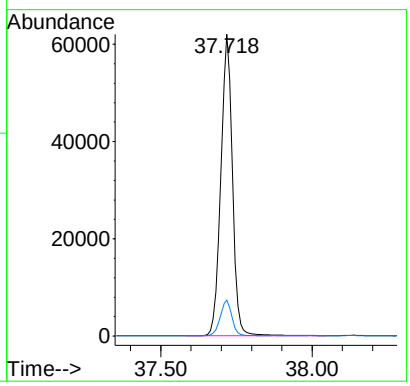


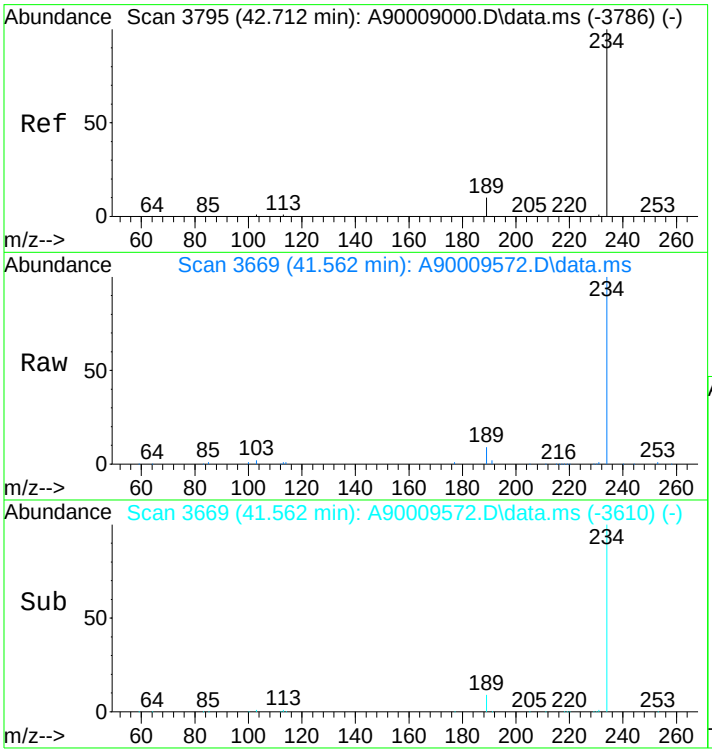


#60
Pyrene
Concen: 518.73 ng/mL
RT: 37.718 min Scan# 3248
Delta R.T. 0.028 min
Lab File: A90009572.D
Acq: 22 Dec 2012 8:52 am

Tgt Ion:202 Resp: 164388

Ion	Ratio	Lower	Upper
202	100		
101	11.9	9.8	14.6

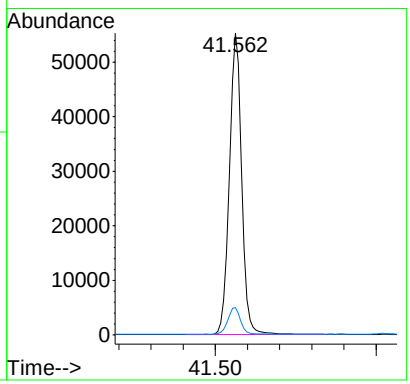


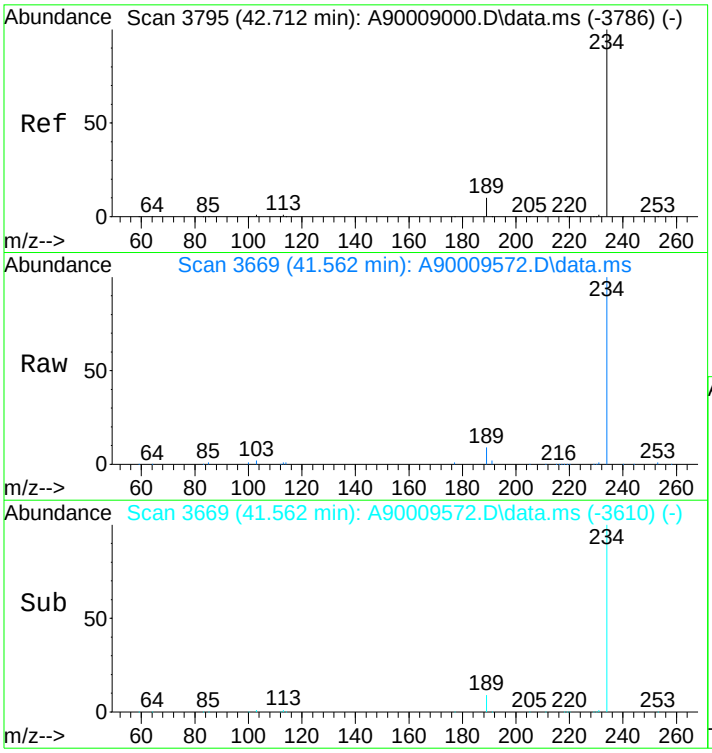


#66
Naphthobenzothiophene
Concen: 533.71 ng/ml
RT: 41.562 min Scan# 3669
Delta R.T. 0.038 min
Lab File: A90009572.D
Acq: 22 Dec 2012 8:52 am

Tgt Ion:234 Resp: 146762

Ion	Ratio	Lower	Upper
234	100		
189	9.0	7.4	11.2

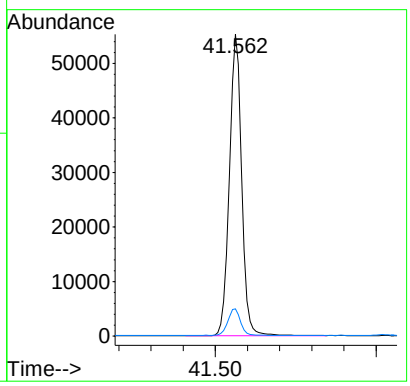


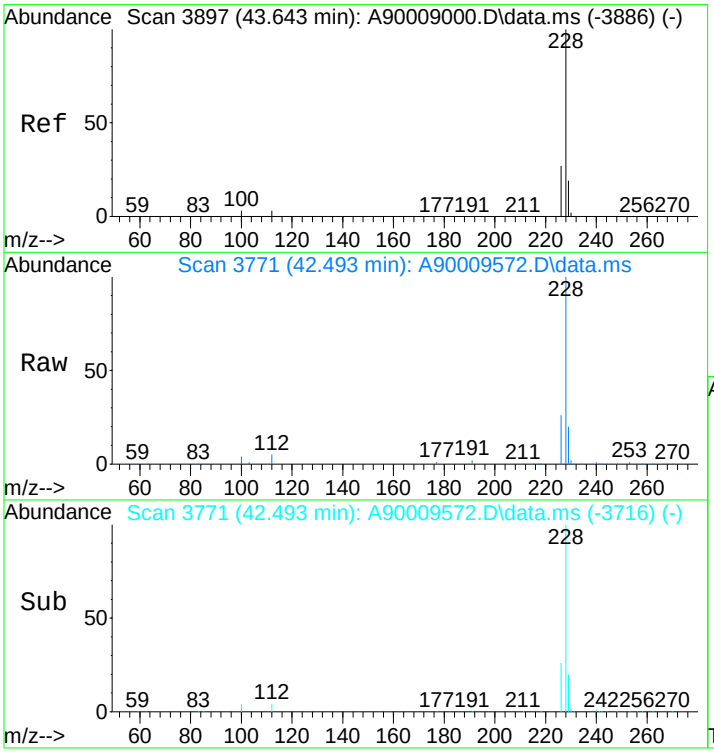


#67
Naphthobenzothiophene-2,1-D
Concen: 533.71 ng/mL
RT: 41.562 min Scan# 3669
Delta R.T. 0.038 min
Lab File: A90009572.D
Acq: 22 Dec 2012 8:52 am

Tgt Ion:234 Resp: 146762

Ion	Ratio	Lower	Upper
234	100		
189	9.0	7.4	11.2

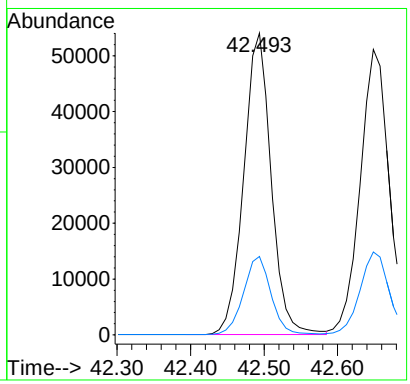


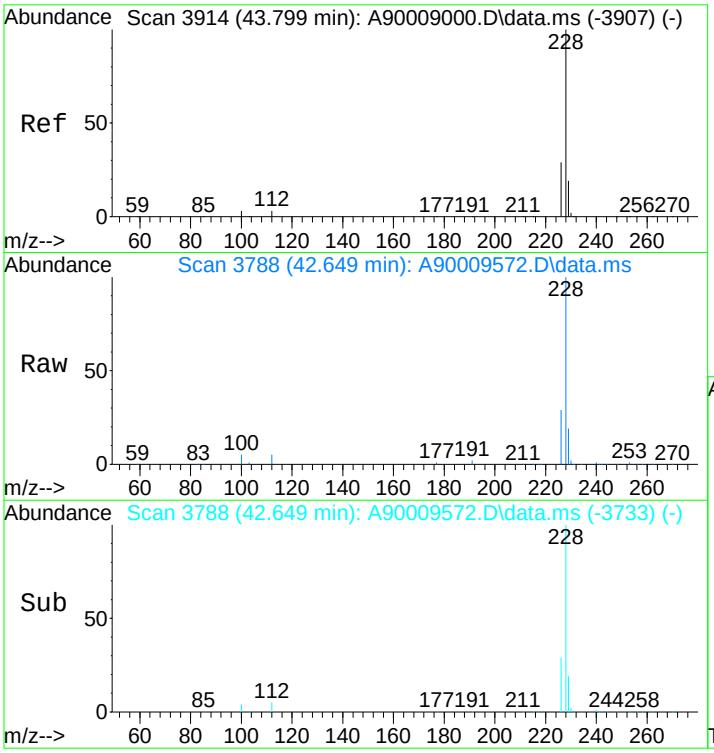


#75
Benz[a]anthracene
Concen: 479.09 ng/mL
RT: 42.493 min Scan# 3771
Delta R.T. -0.000 min
Lab File: A90009572.D
Acq: 22 Dec 2012 8:52 am

Tgt Ion:228 Resp: 141062

Ion	Ratio	Lower	Upper
228	100		
226	26.0	21.2	31.8

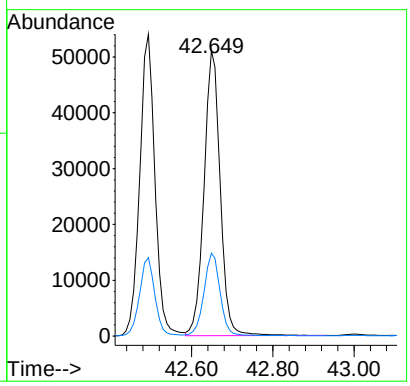


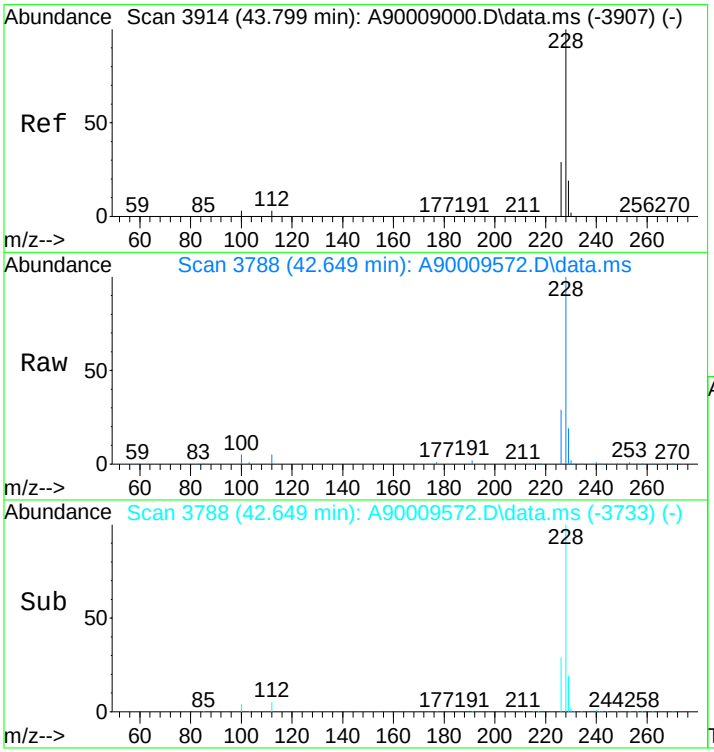


#76
Chrysene
Concen: 488.79 ng/mL
RT: 42.649 min Scan# 3788
Delta R.T. 0.000 min
Lab File: A90009572.D
Acq: 22 Dec 2012 8:52 am

Tgt Ion:228 Resp: 141548

Ion	Ratio	Lower	Upper
228	100		
226	29.1	23.4	35.0

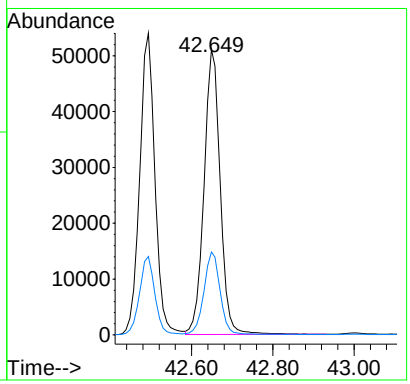


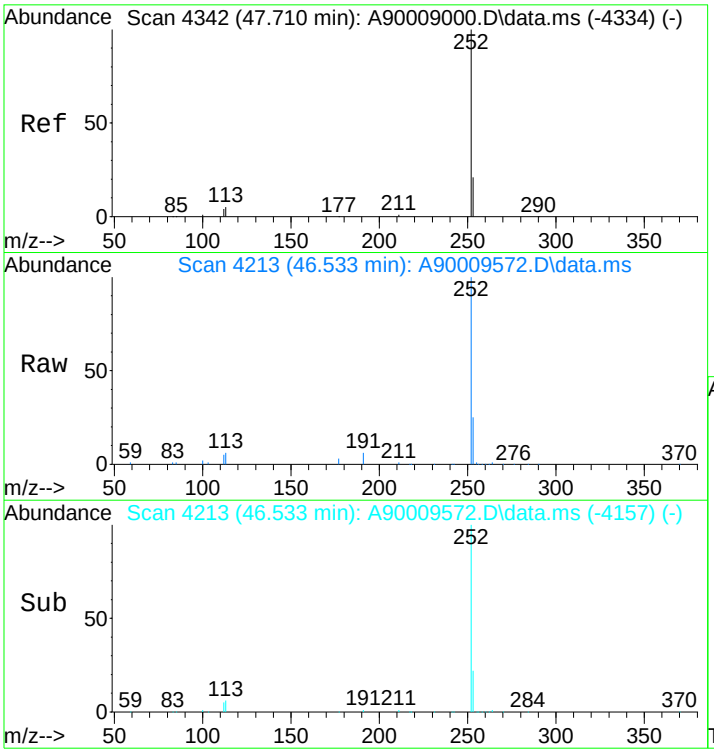


#77
Chrysene/Triphenylene
Concen: 488.79 ng/mL
RT: 42.649 min Scan# 3788
Delta R.T. 0.000 min
Lab File: A90009572.D
Acq: 22 Dec 2012 8:52 am

Tgt Ion:228 Resp: 141548

Ion	Ratio	Lower	Upper
228	100		
226	29.1	23.4	35.0

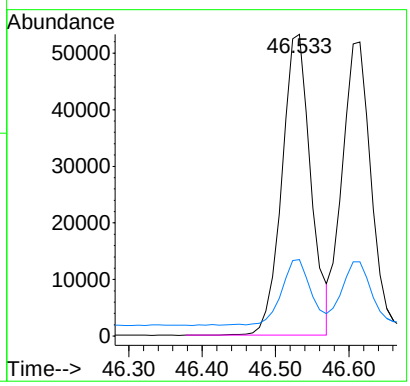


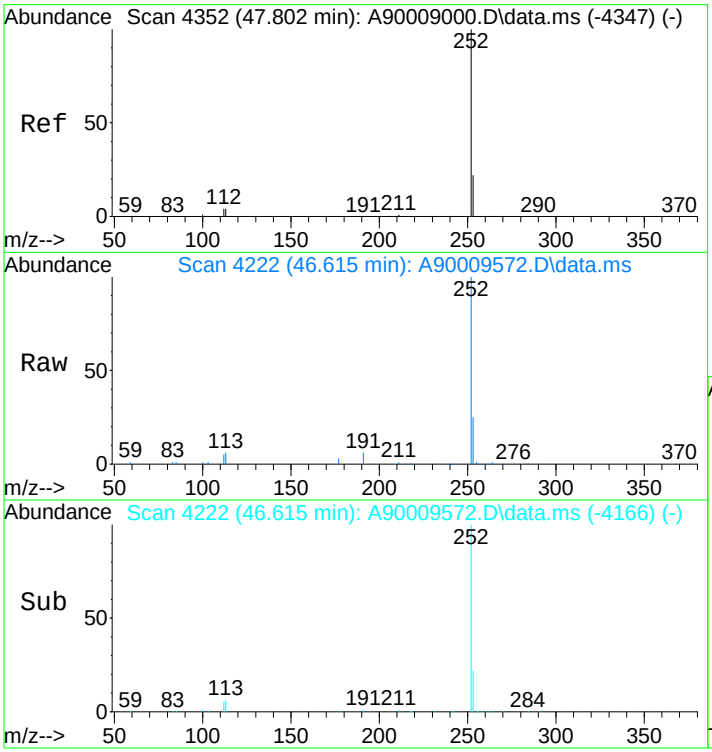


#84
Benzo[b]fluoranthene
Concen: 476.87 ng/mL
RT: 46.533 min Scan# 4213
Delta R.T. 0.015 min
Lab File: A90009572.D
Acq: 22 Dec 2012 8:52 am

Tgt Ion:252 Resp: 145585

Ion	Ratio	Lower	Upper
252	100		
253	21.9	19.2	28.8

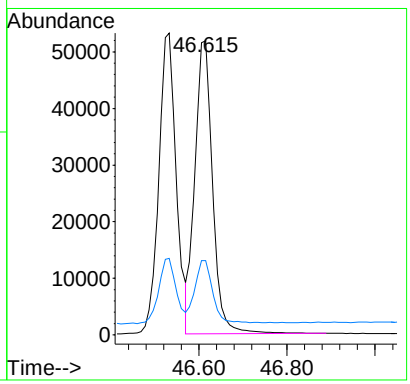


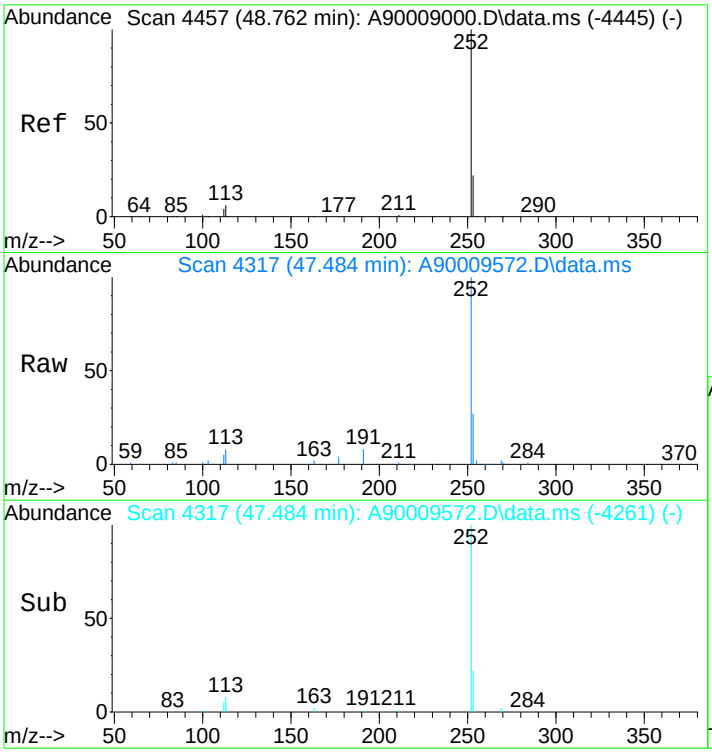


#85
Benzo[j]+[k]fluoranthene
Concen: 484.08 ng/mL
RT: 46.615 min Scan# 4222
Delta R.T. 0.016 min
Lab File: A90009572.D
Acq: 22 Dec 2012 8:52 am

Tgt Ion:252 Resp: 145207

Ion	Ratio	Lower	Upper
252	100		
253	21.4	19.1	28.7

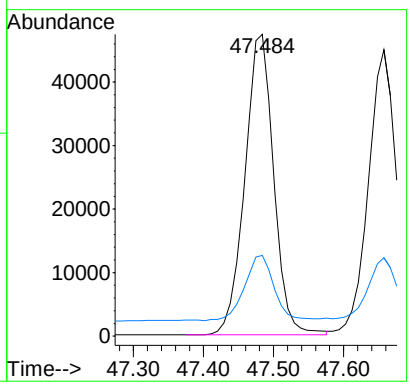


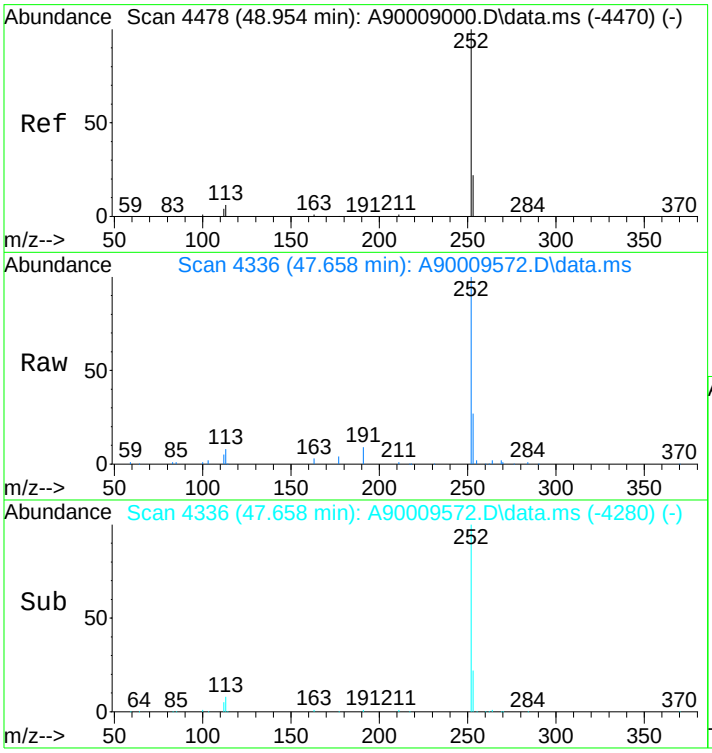


#87
Benzo[e]pyrene
Concen: 467.50 ng/mL
RT: 47.484 min Scan# 4317
Delta R.T. 0.008 min
Lab File: A90009572.D
Acq: 22 Dec 2012 8:52 am

Tgt Ion:252 Resp: 135527

Ion	Ratio	Lower	Upper
252	100		
253	22.5	19.8	29.8

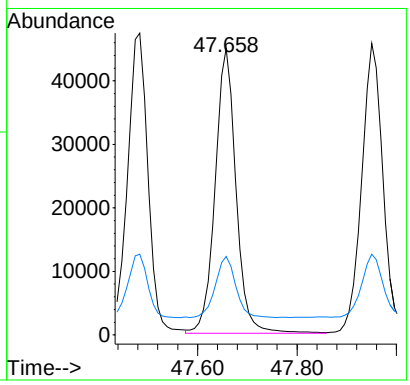


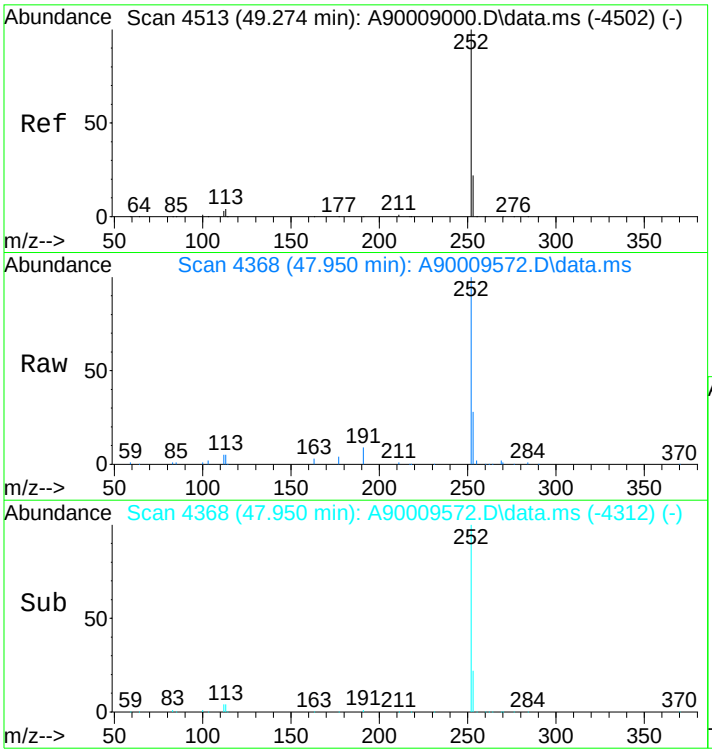


#89
Benzo[a]pyrene
Concen: 475.34 ng/mL m
RT: 47.658 min Scan# 4336
Delta R.T. 0.008 min
Lab File: A90009572.D
Acq: 22 Dec 2012 8:52 am

Tgt Ion:252 Resp: 130503

Ion	Ratio	Lower	Upper
252	100		
253	21.4	20.0	30.0

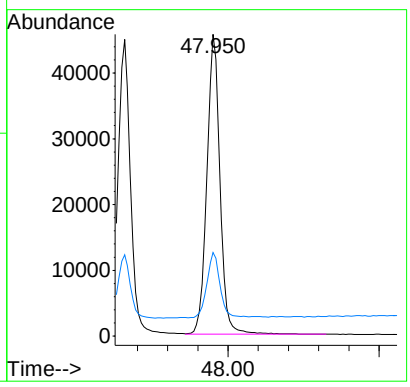


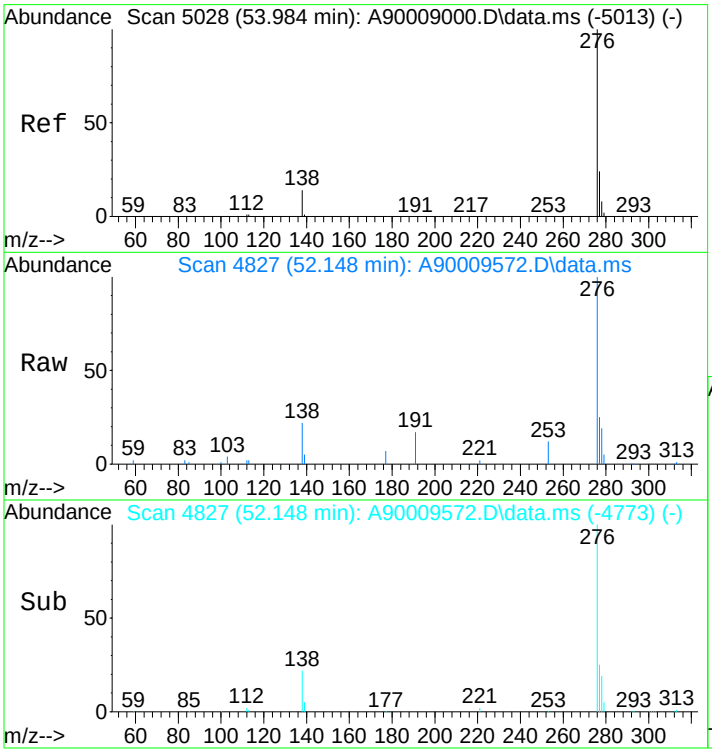


#90
Perylene
Concen: 470.21 ng/mL
RT: 47.950 min Scan# 4368
Delta R.T. 0.008 min
Lab File: A90009572.D
Acq: 22 Dec 2012 8:52 am

Tgt Ion:252 Resp: 137780

Ion	Ratio	Lower	Upper
252	100		
253	21.7	20.1	30.1

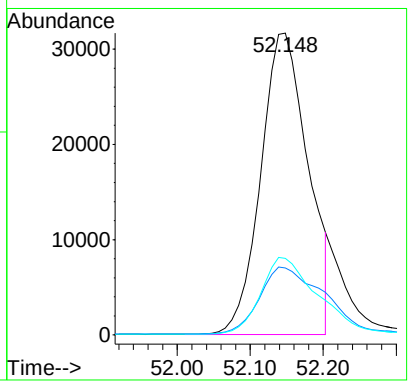


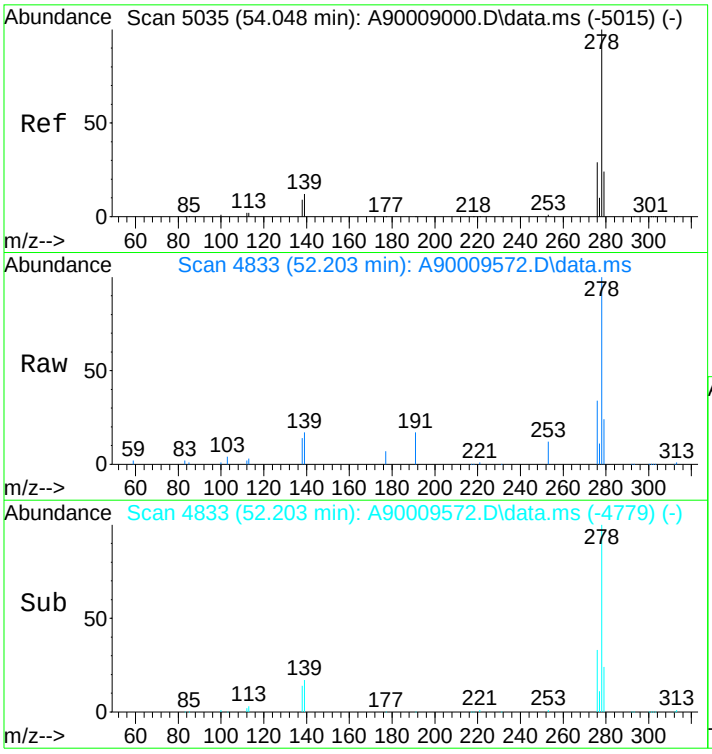


#91
Indeno[1,2,3-cd]pyrene
Concen: 468.38 ng/mL m
RT: 52.148 min Scan# 4827
Delta R.T. -0.004 min
Lab File: A90009572.D
Acq: 22 Dec 2012 8:52 am

Tgt Ion:276 Resp: 142419

Ion	Ratio	Lower	Upper
276	100		
138	30.7	0.0	0.0#
277	31.3	0.0	0.0#

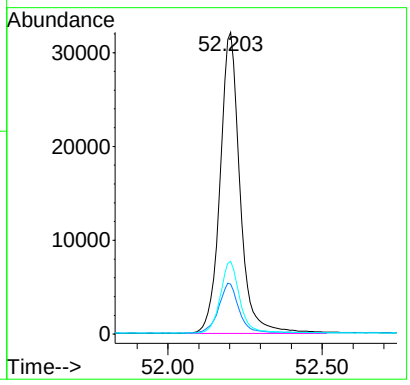


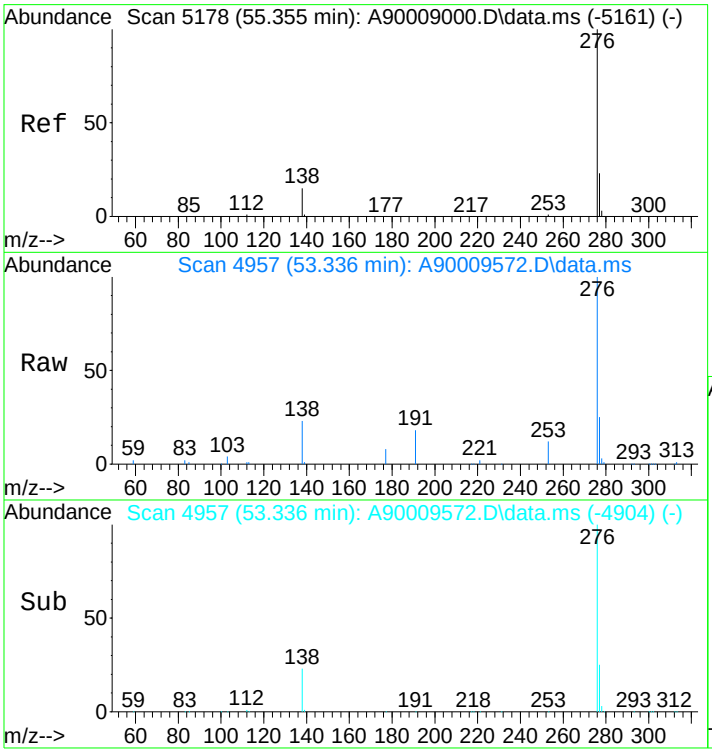


#92
Dibenz[ah]+[ac]anthracene
Concen: 480.66 ng/mL
RT: 52.203 min Scan# 4833
Delta R.T. -0.004 min
Lab File: A90009572.D
Acq: 22 Dec 2012 8:52 am

Tgt Ion:278 Resp: 143971

Ion	Ratio	Lower	Upper
278	100		
139	16.7	13.0	19.6
279	23.2	19.2	28.8

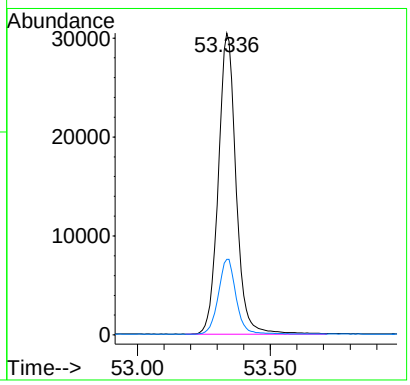


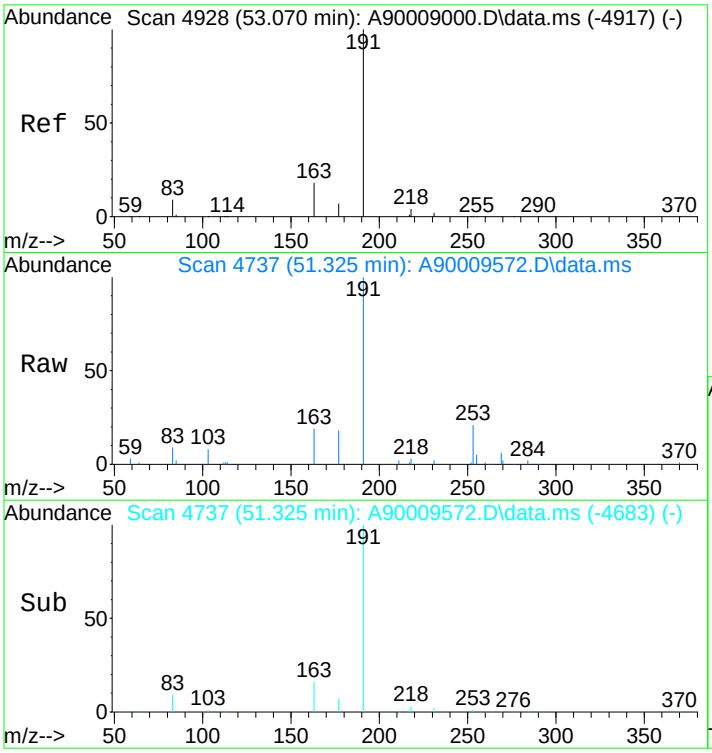


#93
Benzo[g,h,i]perylene
Concen: 471.62 ng/mL
RT: 53.336 min Scan# 4957
Delta R.T. -0.011 min
Lab File: A90009572.D
Acq: 22 Dec 2012 8:52 am

Tgt Ion:276 Resp: 140919

Ion	Ratio	Lower	Upper
276	100		
277	25.0	20.1	30.1

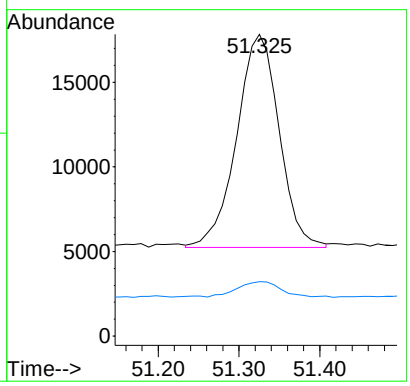


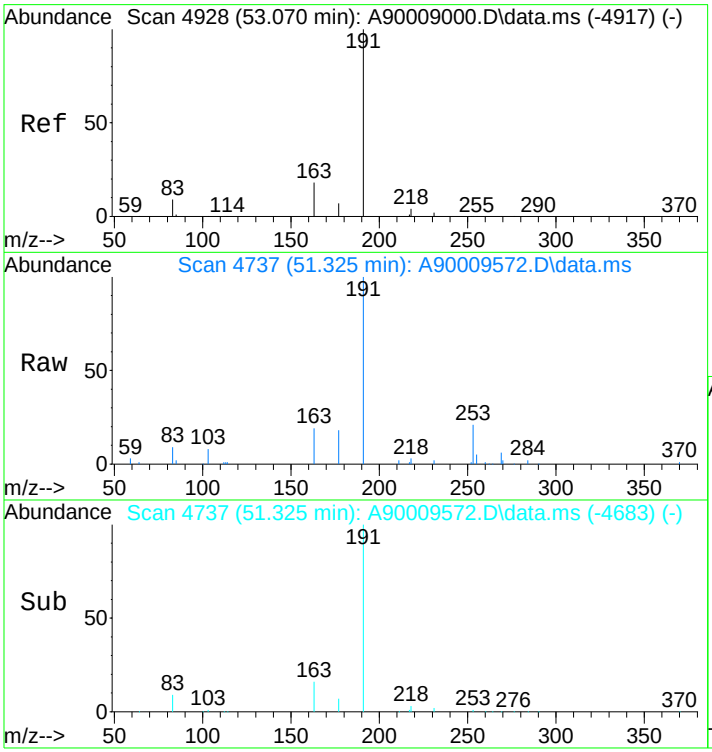


#94
Hopane (T19)
Concen: 407.91 ng/mL m
RT: 51.325 min Scan# 4737
Delta R.T. -0.005 min
Lab File: A90009572.D
Acq: 22 Dec 2012 8:52 am

Tgt Ion:191 Resp: 46035

Ion	Ratio	Lower	Upper
191	100		
177	8.1	12.2	18.4#

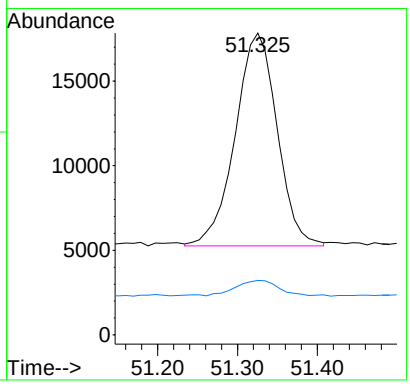




#95
17a(H),21B(H)-hopane - C30H52
Concen: 406.90 ng/mL m
RT: 51.325 min Scan# 4737
Delta R.T. -0.005 min
Lab File: A90009572.D
Acq: 22 Dec 2012 8:52 am

Tgt Ion:191 Resp: 45921

Ion	Ratio	Lower	Upper
191	100		
177	8.1	12.2	18.4#



Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009581.D
Acq On : 22 Dec 2012 9:41 pm
Operator : ps
Sample : C912221202
Misc : WHAQ86@500ng/ml
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Dec 27 14:58:21 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.156	164	73430	500.000	ng/mL	0.00
74) Chrysene-d12	42.558	240	139545	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.230	136	136822	484.782	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 48.48%#			
42) Phenanthrene-d10	31.995	188	147823	558.128	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 55.81%			
83) Benzo[b]fluoranthene-d12	46.451	264	130021	506.884	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 50.69%			
88) Benzo[a]pyrene-d12	47.576	264	132816	516.522	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 51.65%			
129) 5B(H)Cholane - Surr	43.188	217	27034	461.479	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 46.15%#			
Target Compounds						Qvalue
3) trans-Decalin	15.899	138	15034	232.883	ng/mL	100
4) cis-Decalin	17.103	138	11523	228.005	ng/mL	100
10) Naphthalene	19.303	128	136404	470.961	ng/mL#	100
16) 2-Methylnaphthalene	21.986	142	88634	467.951	ng/mL#	100
17) 1-Methylnaphthalene	22.405	142	87322M4	475.052	ng/mL	
18) Benzothiophene	19.522	134	112418	463.813	ng/mL	100
23) Biphenyl	23.865	154	119005	480.119	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.468	156	84438	474.241	ng/mL#	100
25) Dibenzofuran	26.931	168	132564	501.431	ng/mL	99
26) Acenaphthylene	25.544	152	140349M4	471.061	ng/mL	
27) Acenaphthene	26.274	153	90712	484.237	ng/mL	100
28) 2,3,5-Trimethylnaphthalen	27.835	170	79680	486.759	ng/mL	100
29) Fluorene	28.291	166	101077	491.336	ng/mL	100
33) Dibenzothiophene	31.594	184	147851	510.927	ng/mL	98
43) Phenanthrene	32.086	178	153096	512.092	ng/mL	100
54) Retene	39.061	234	43364	527.626	ng/mL	99
55) Anthracene	32.269	178	146040M4	526.042	ng/mL	
56) Carbazole	32.953	167	133501	508.329	ng/mL	99
57) 1-Methylphenanthrene	34.587	192	111155	503.937	ng/mL	99
58) Fluoranthene	36.842	202	169472	507.445	ng/mL	100
59) Benzo(b)fluorene	39.362	216	100868	507.857	ng/mL	100
60) Pyrene	37.718	202	171656	503.803	ng/mL	100
66) Naphthobenzothiophene	41.562	234	153991	520.864	ng/ml	99
67) Naphthobenzothiophene-2,1	41.562	234	153991	520.864	ng/mL	99
75) Benz[a]anthracene	42.494	228	146613	458.049	ng/mL	100
76) Chrysene	42.649	228	153210	486.678	ng/mL	99
77) Chrysene/Triphenylene	42.649	228	153210	486.678	ng/mL	99
84) Benzo[b]fluoranthene	46.533	252	152819	460.468	ng/mL	93
85) Benzo[j]+[k]fluoranthene	46.606	252	160664	492.700	ng/mL	92
87) Benzo[e]pyrene	47.475	252	146017	463.339	ng/mL	91
89) Benzo[a]pyrene	47.658	252	139690M3	468.039	ng/mL	
90) Perylene	47.951	252	145833	457.826	ng/mL#	89
91) Indeno[1,2,3-cd]pyrene	52.148	276	149283M3	451.628	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.203	278	152979	469.814	ng/mL	98
93) Benzo[g,h,i]perylene	53.345	276	148685	457.747	ng/mL	100
94) Hopane (T19)	51.316	191	46650	380.245	ng/mL#	77
95) 17a(H),21B(H)-hopane - C3	51.316	191	46650	380.245	ng/mL#	77

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009581.D
Acq On : 22 Dec 2012 9:41 pm
Operator : ps
Sample : C912221202
Misc : WHAQ86@500ng/ml
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Dec 27 14:58:21 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

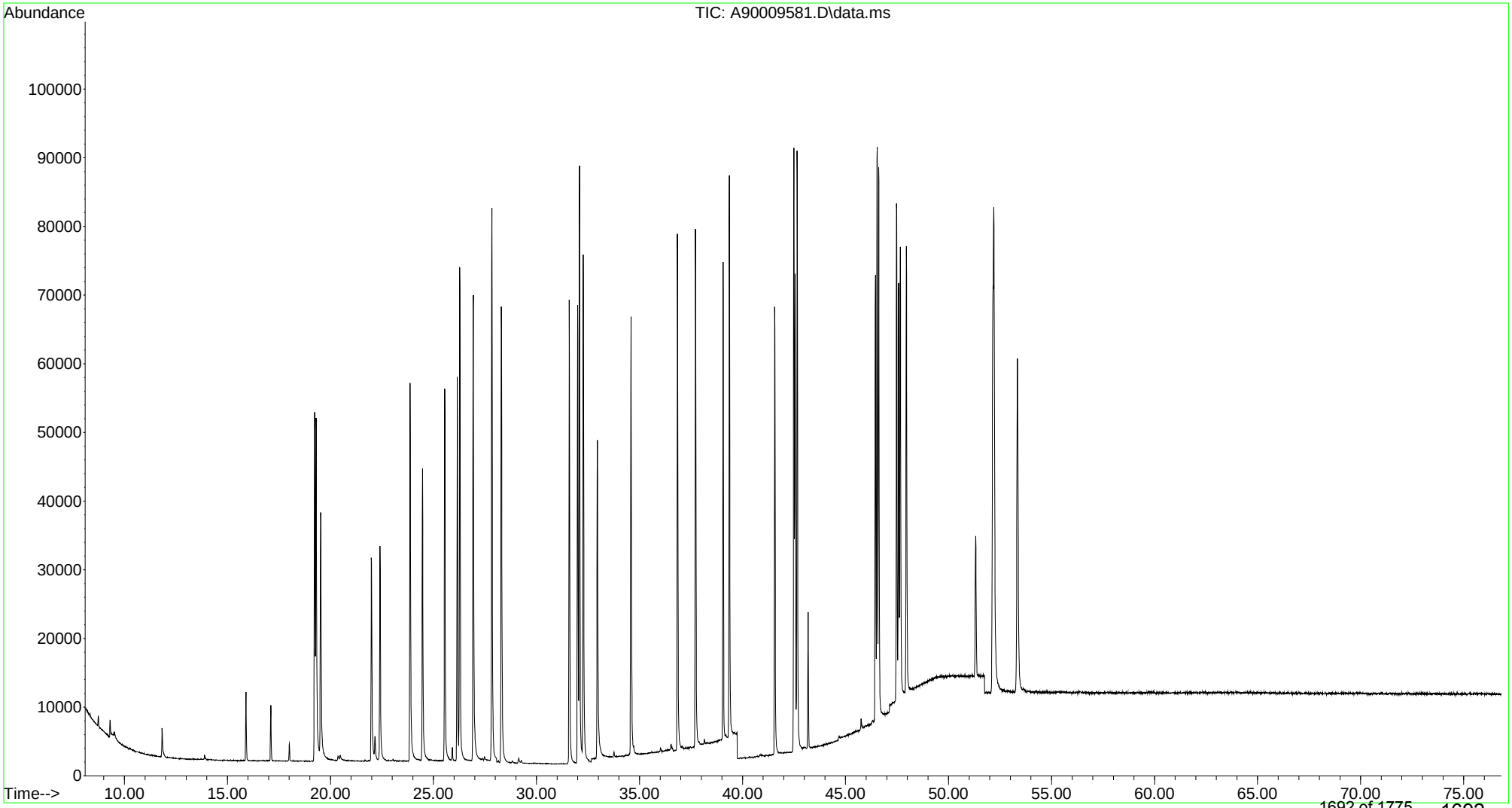
(#) = qualifier out of range (m) = manual integration (+) = signals summed

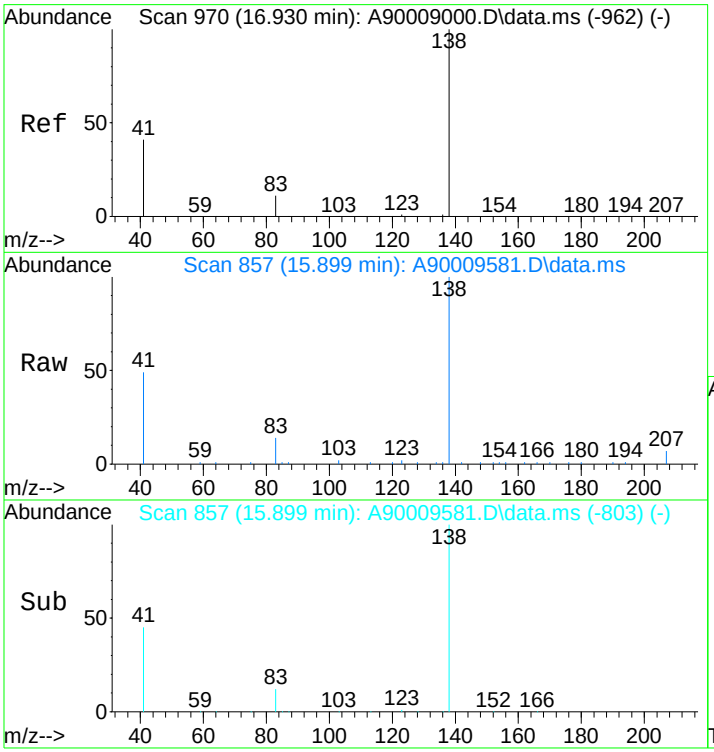
Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009581.D
Acq On : 22 Dec 2012 9:41 pm
Operator : ps
Sample : C912221202
Misc : WHAQ86@500ng/ml
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Dec 27 14:58:21 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

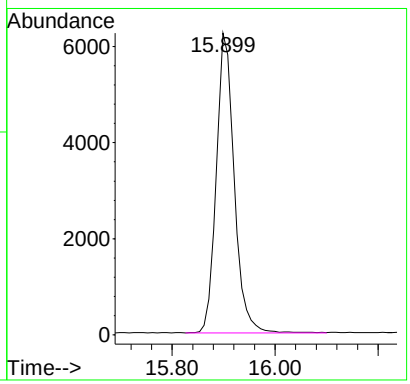
Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

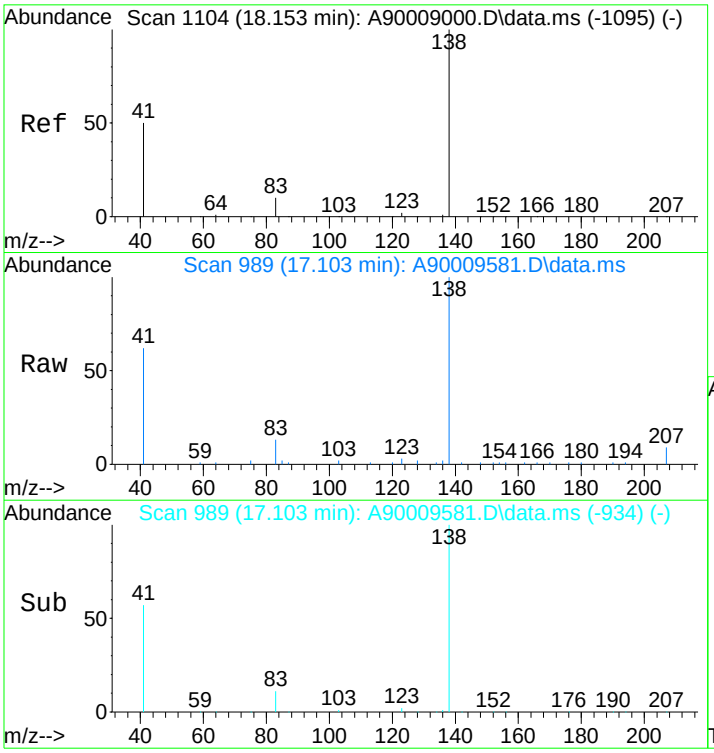




#3
trans-Decalin
Concen: 232.88 ng/mL
RT: 15.899 min Scan# 857
Delta R.T. -0.009 min
Lab File: A90009581.D
Acq: 22 Dec 2012 9:41 pm

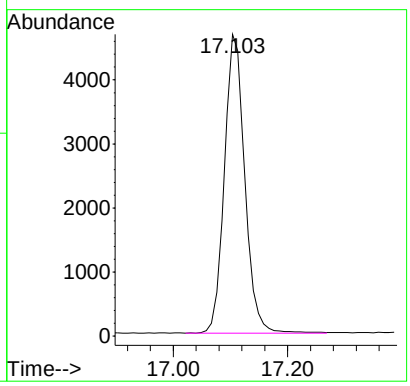
Tgt Ion:138 Resp: 15034

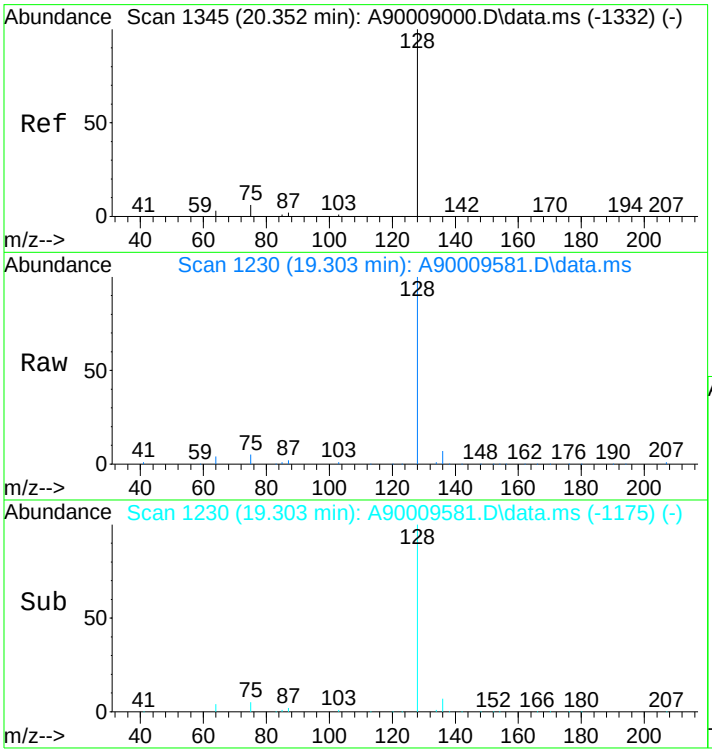




#4
cis-Decalin
Concen: 228.00 ng/mL
RT: 17.103 min Scan# 989
Delta R.T. 0.000 min
Lab File: A90009581.D
Acq: 22 Dec 2012 9:41 pm

Tgt Ion:138 Resp: 11523

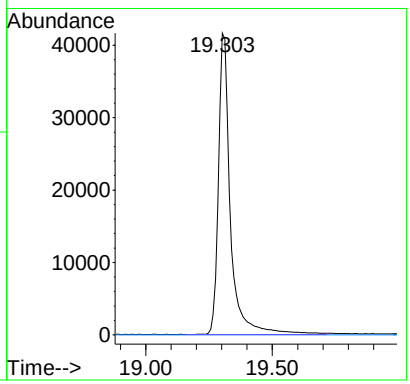


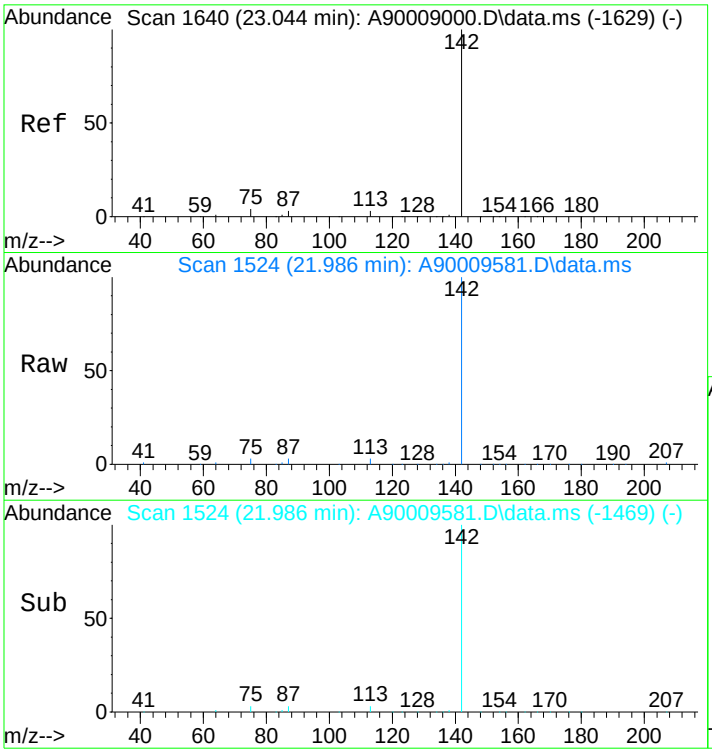


#10
Naphthalene
Concen: 470.96 ng/mL
RT: 19.303 min Scan# 1230
Delta R.T. 0.000 min
Lab File: A90009581.D
Acq: 22 Dec 2012 9:41 pm

Tgt Ion:128 Resp: 136404

Ion	Ratio	Lower	Upper
128	100		
127	0.0	0.0	0.0

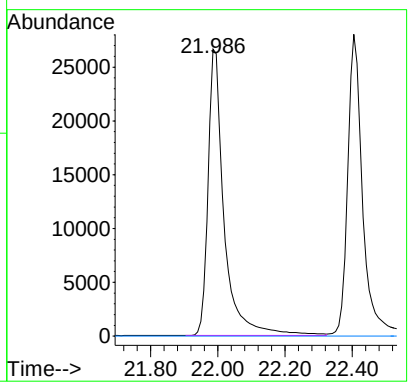


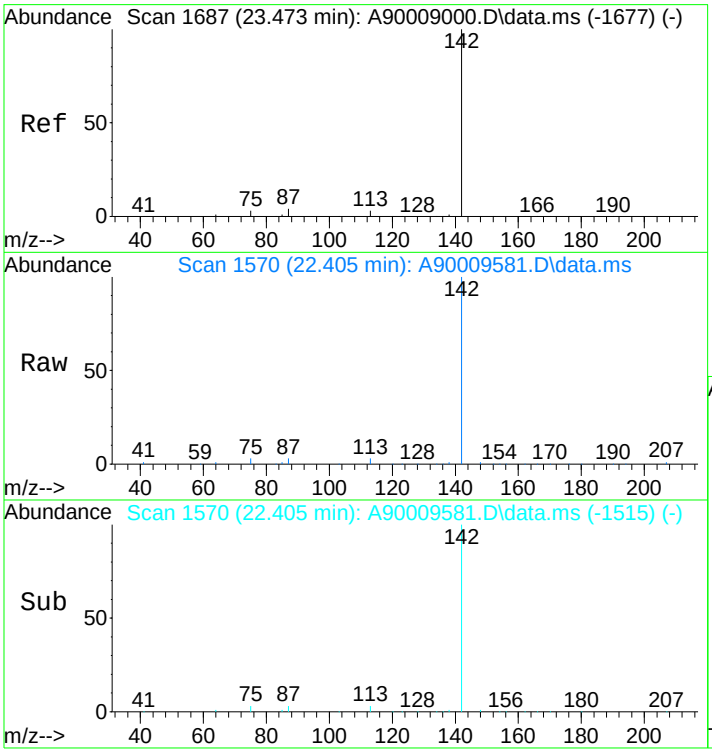


#16
2-Methylnaphthalene
Concen: 467.95 ng/mL
RT: 21.986 min Scan# 1524
Delta R.T. 0.000 min
Lab File: A90009581.D
Acq: 22 Dec 2012 9:41 pm

Tgt Ion:142 Resp: 88634

Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	0.0

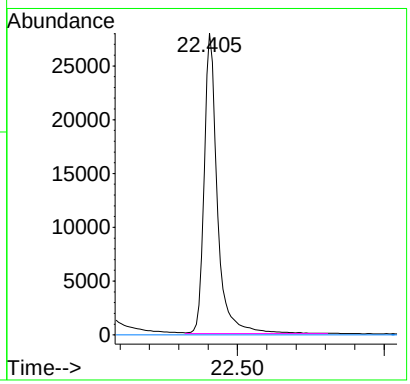


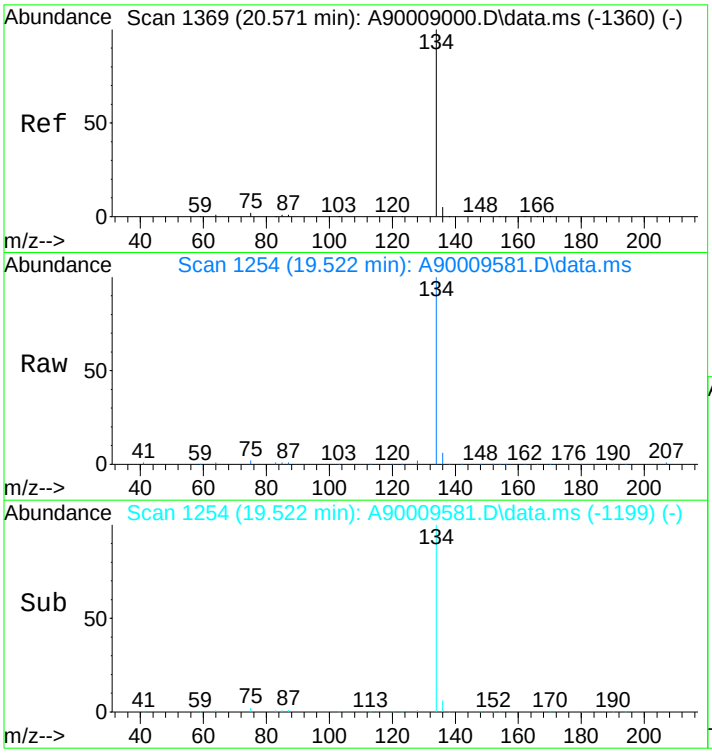


#17
1-Methylnaphthalene
Concen: 475.05 ng/mL m
RT: 22.405 min Scan# 1570
Delta R.T. 0.000 min
Lab File: A90009581.D
Acq: 22 Dec 2012 9:41 pm

Tgt Ion:142 Resp: 87322

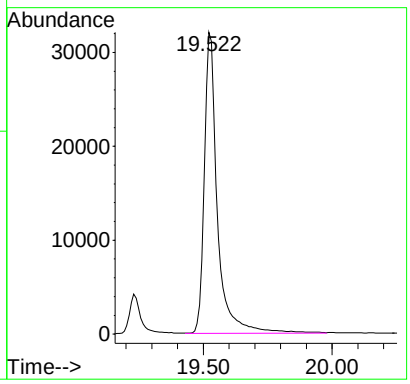
Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	20.0

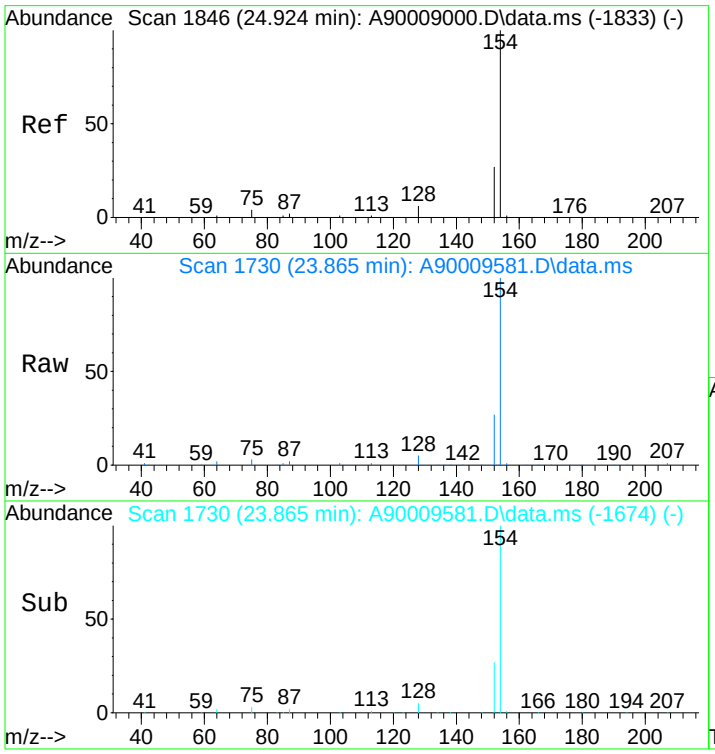




#18
Benzothiophene
Concen: 463.81 ng/mL
RT: 19.522 min Scan# 1254
Delta R.T. 0.000 min
Lab File: A90009581.D
Acq: 22 Dec 2012 9:41 pm

Tgt Ion:134 Resp: 112418

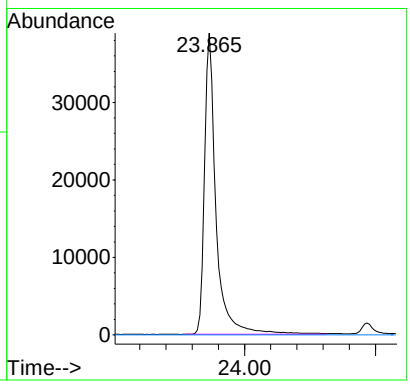


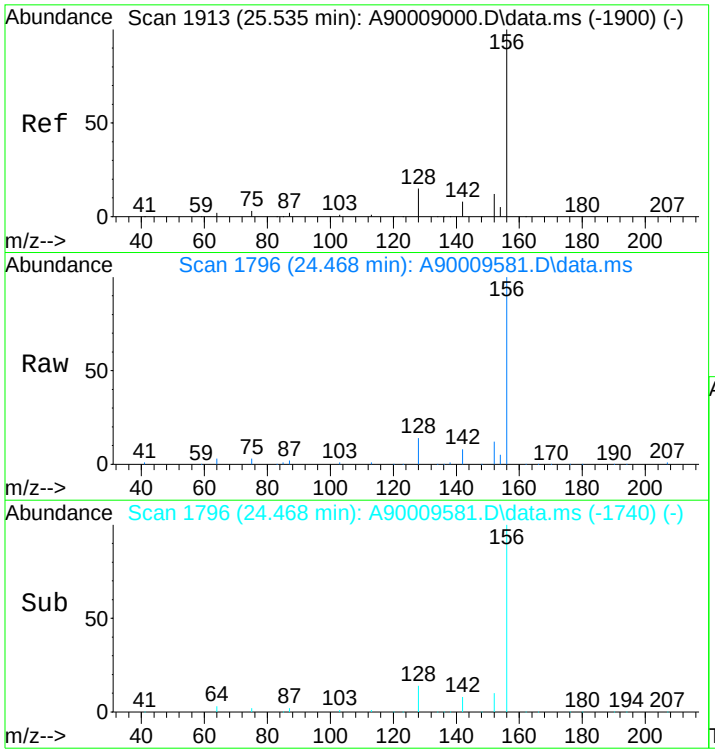


#23
Biphenyl
Concen: 480.12 ng/mL
RT: 23.865 min Scan# 1730
Delta R.T. 0.009 min
Lab File: A90009581.D
Acq: 22 Dec 2012 9:41 pm

Tgt Ion:154 Resp: 119005

Ion	Ratio	Lower	Upper
154	100		
153	0.0	0.0	0.0

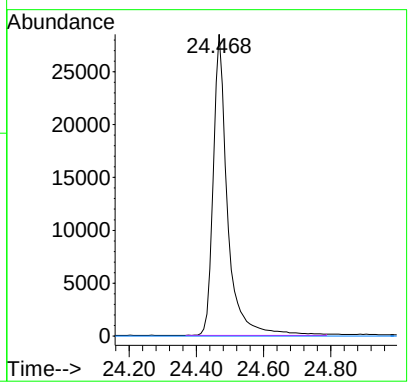


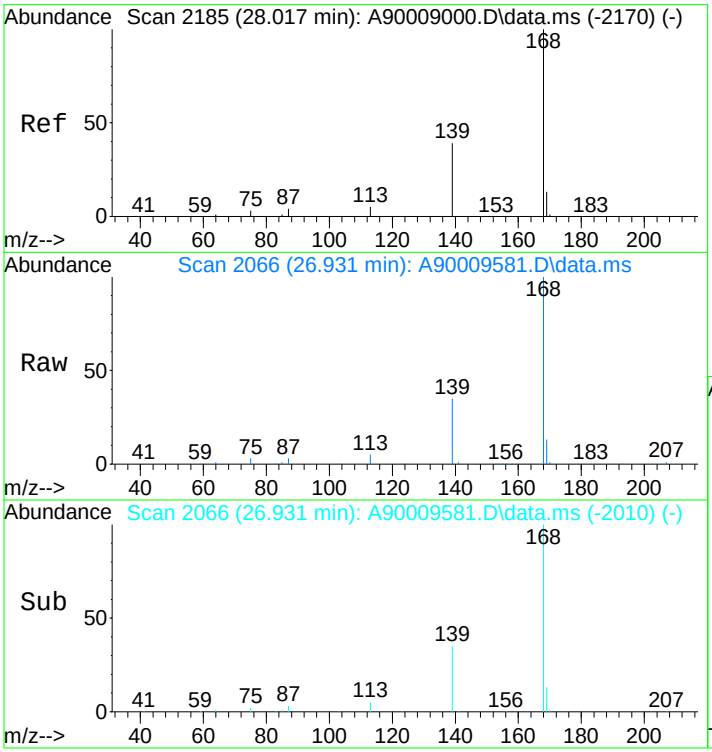


#24
2,6-Dimethylnaphthalene
Concen: 474.24 ng/mL
RT: 24.468 min Scan# 1796
Delta R.T. 0.009 min
Lab File: A90009581.D
Acq: 22 Dec 2012 9:41 pm

Tgt Ion:156 Resp: 84438

Ion	Ratio	Lower	Upper
156	100		
155	0.0	0.0	0.0

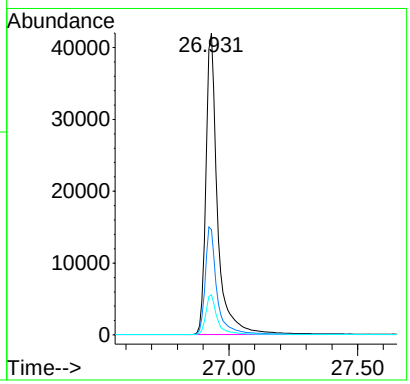


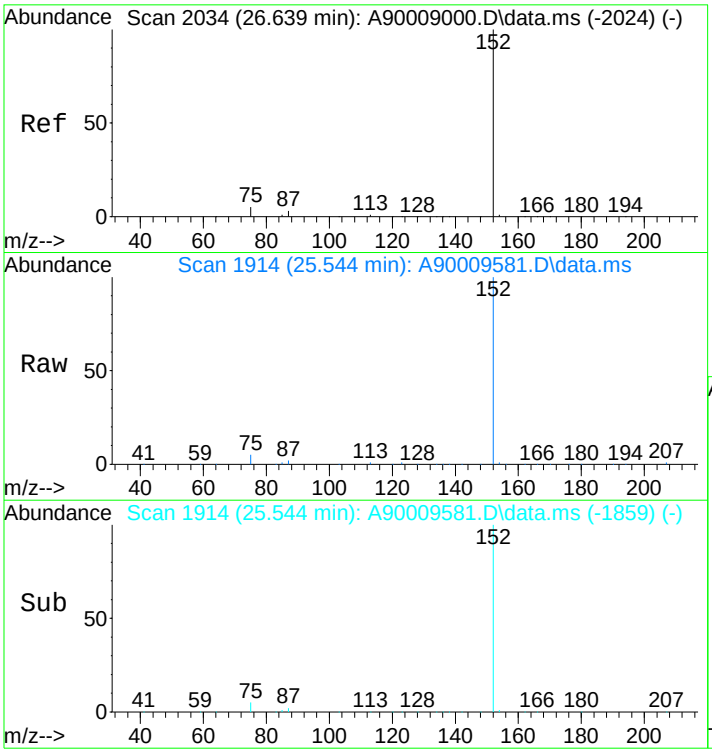


#25
Dibenzofuran
Concen: 501.43 ng/mL
RT: 26.931 min Scan# 2066
Delta R.T. 0.009 min
Lab File: A90009581.D
Acq: 22 Dec 2012 9:41 pm

Tgt Ion:168 Resp: 132564

Ion	Ratio	Lower	Upper
168	100		
139	35.9	28.0	42.0
169	13.2	10.6	15.8

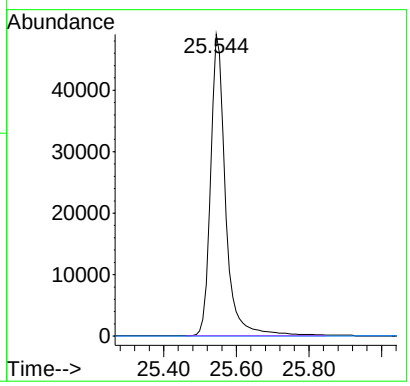


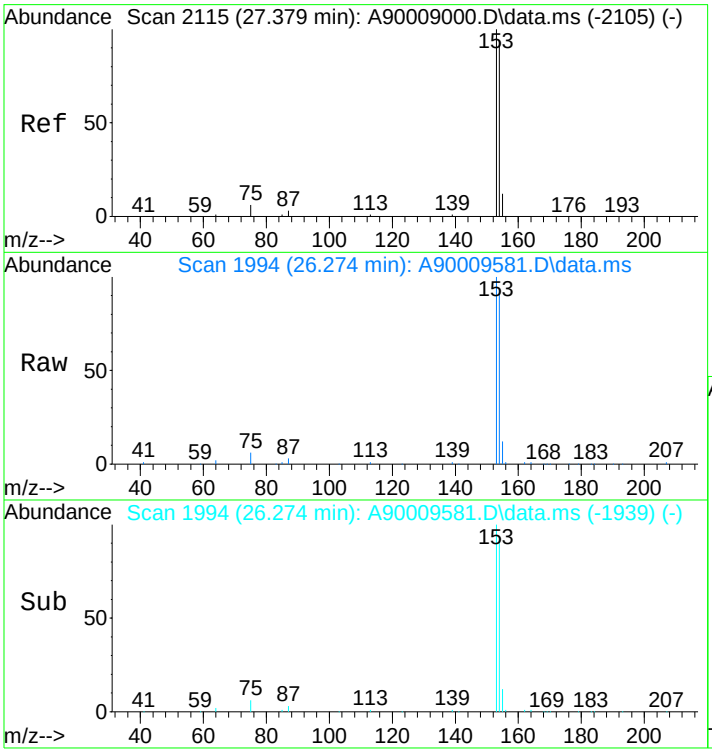


#26
Acenaphthylene
Concen: 471.06 ng/mL m
RT: 25.544 min Scan# 1914
Delta R.T. 0.000 min
Lab File: A90009581.D
Acq: 22 Dec 2012 9:41 pm

Tgt Ion:152 Resp: 140349

Ion	Ratio	Lower	Upper
152	100		
153	0.0	0.0	0.0

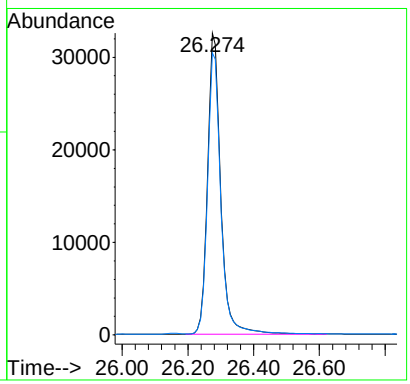


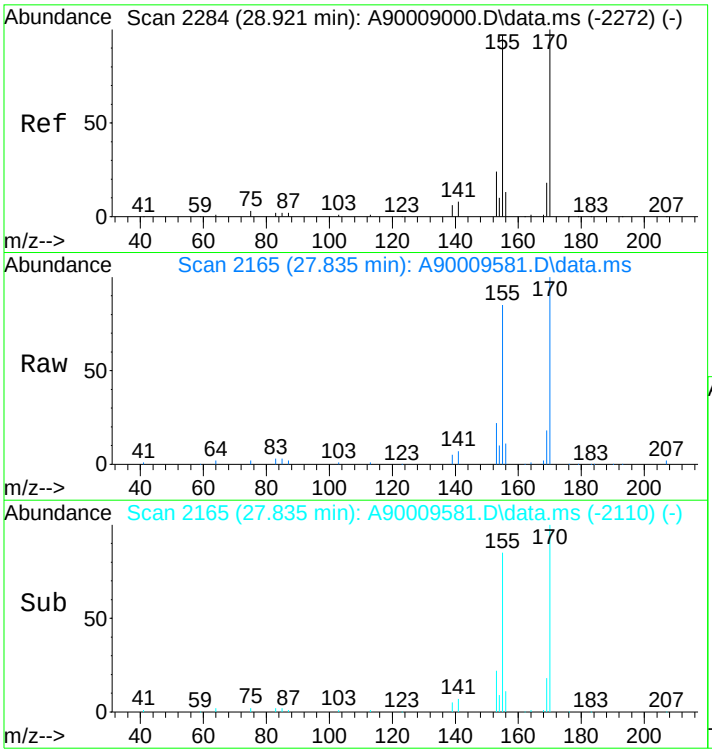


#27
Acenaphthene
Concen: 484.24 ng/mL
RT: 26.274 min Scan# 1994
Delta R.T. 0.000 min
Lab File: A90009581.D
Acq: 22 Dec 2012 9:41 pm

Tgt Ion:153 Resp: 90712

Ion	Ratio	Lower	Upper
153	100		
154	94.2	75.4	113.0

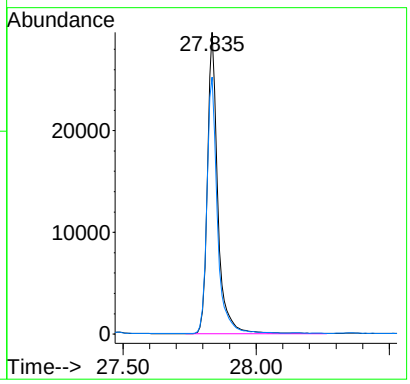


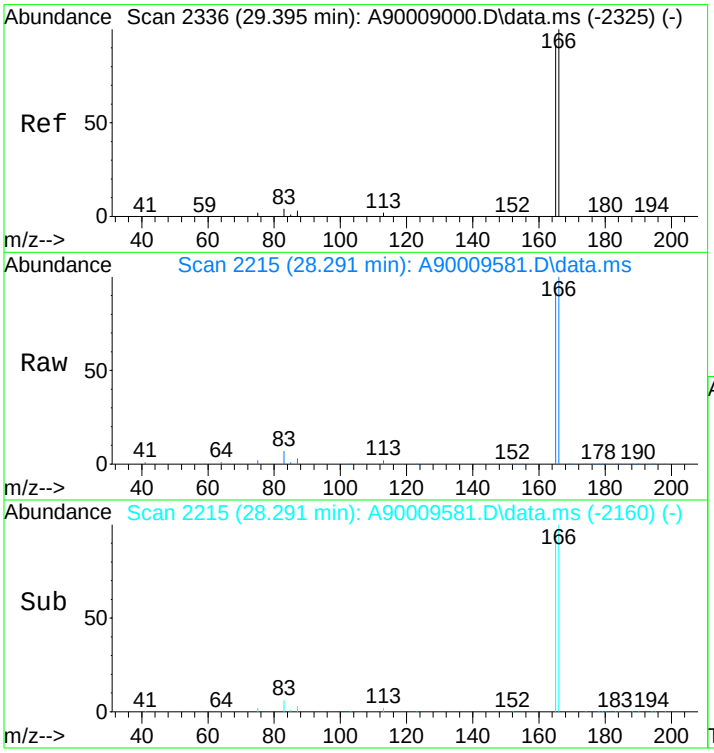


#28
2,3,5-Trimethylnaphthalene
Concen: 486.76 ng/mL
RT: 27.835 min Scan# 2165
Delta R.T. 0.000 min
Lab File: A90009581.D
Acq: 22 Dec 2012 9:41 pm

Tgt Ion:170 Resp: 79680

Ion	Ratio	Lower	Upper
170	100		
155	86.6	69.0	103.4

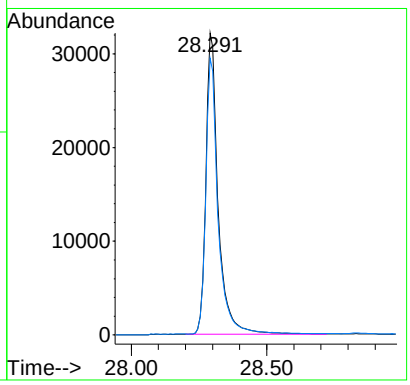


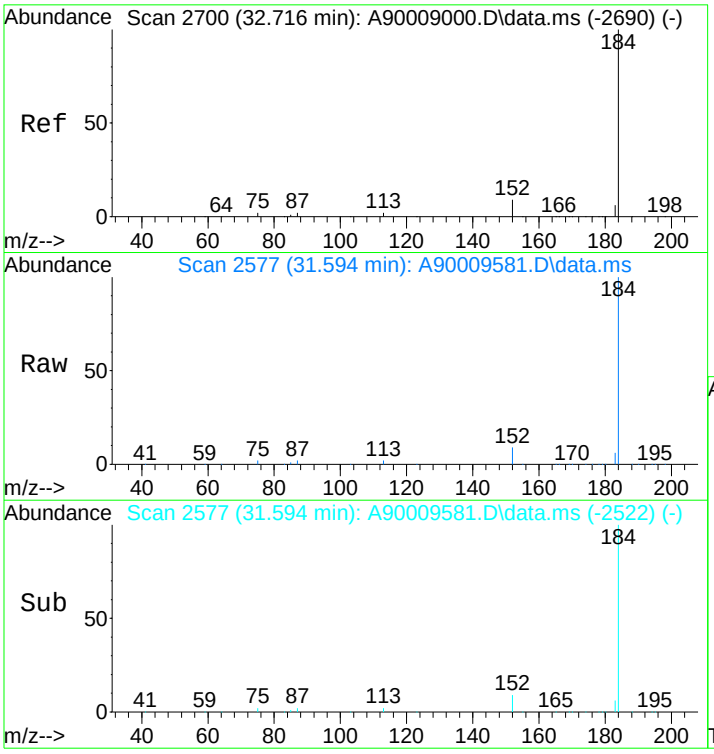


#29
Fluorene
Concen: 491.34 ng/mL
RT: 28.291 min Scan# 2215
Delta R.T. 0.000 min
Lab File: A90009581.D
Acq: 22 Dec 2012 9:41 pm

Tgt Ion:166 Resp: 101077

Ion	Ratio	Lower	Upper
166	100		
165	91.6	73.4	110.0

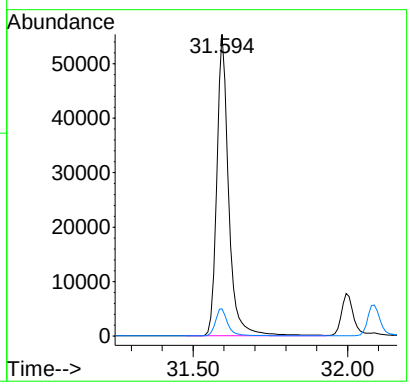


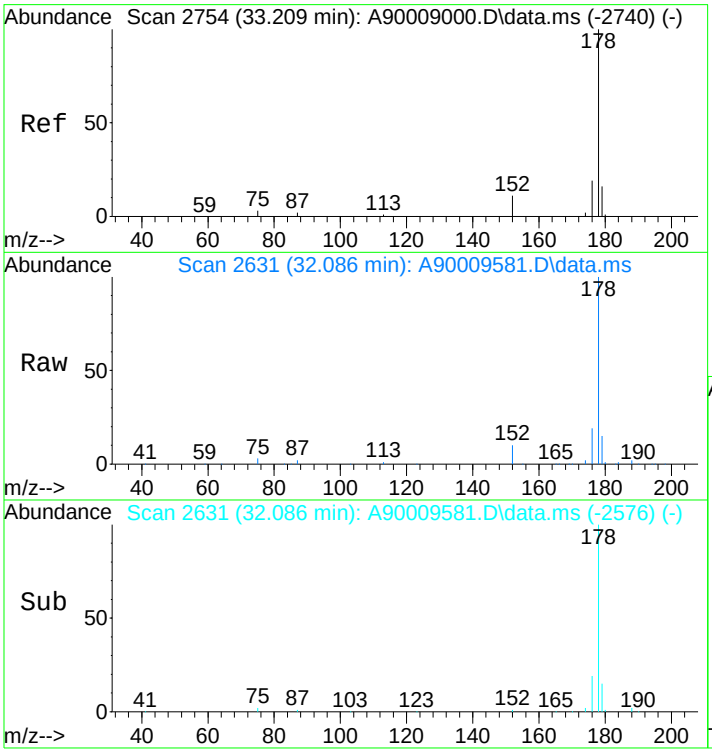


#33
Dibenzothiophene
Concen: 510.93 ng/mL
RT: 31.594 min Scan# 2577
Delta R.T. 0.000 min
Lab File: A90009581.D
Acq: 22 Dec 2012 9:41 pm

Tgt Ion:184 Resp: 147851

Ion	Ratio	Lower	Upper
184	100		
152	9.3	7.0	10.4

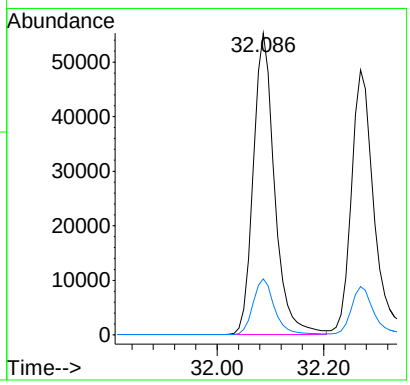


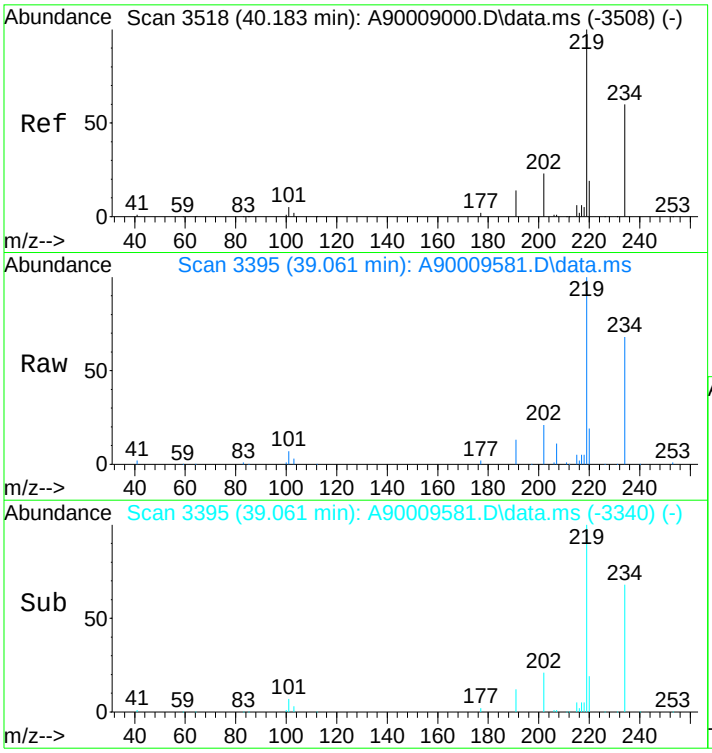


#43
Phenanthrene
Concen: 512.09 ng/mL
RT: 32.086 min Scan# 2631
Delta R.T. 0.000 min
Lab File: A90009581.D
Acq: 22 Dec 2012 9:41 pm

Tgt Ion:178 Resp: 153096

Ion	Ratio	Lower	Upper
178	100		
176	18.7	15.1	22.7

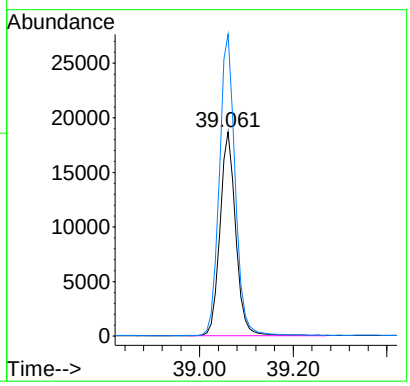


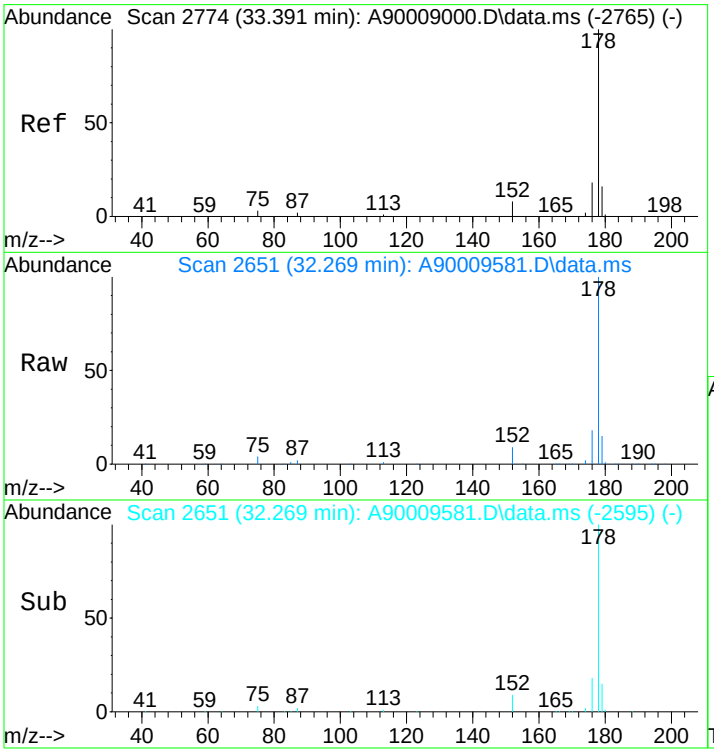


#54
Retene
Concen: 527.63 ng/mL
RT: 39.061 min Scan# 3395
Delta R.T. 0.000 min
Lab File: A90009581.D
Acq: 22 Dec 2012 9:41 pm

Tgt Ion:234 Resp: 43364

Ion	Ratio	Lower	Upper
234	100		
219	149.8	120.4	180.6

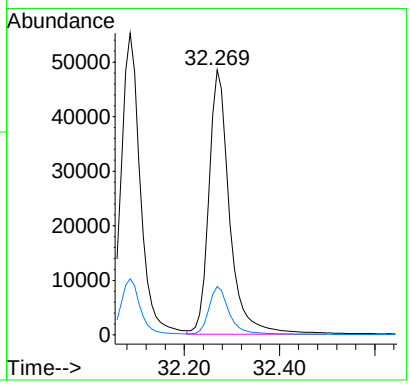


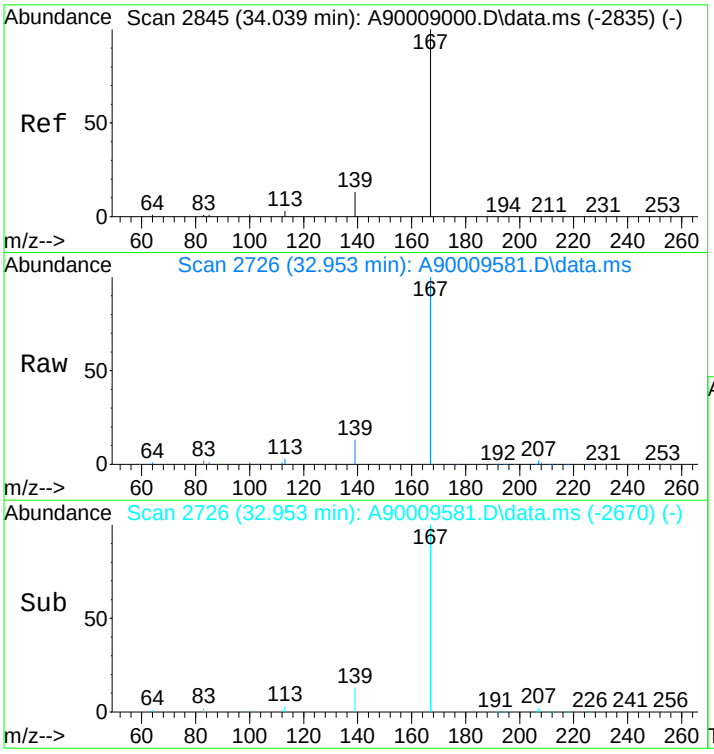


#55
Anthracene
Concen: 526.04 ng/mL m
RT: 32.269 min Scan# 2651
Delta R.T. 0.009 min
Lab File: A90009581.D
Acq: 22 Dec 2012 9:41 pm

Tgt Ion:178 Resp: 146040

Ion	Ratio	Lower	Upper
178	100		
176	18.1	14.6	21.8

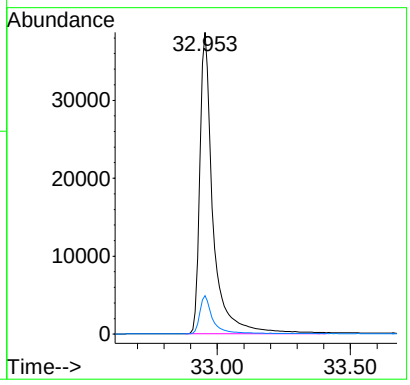


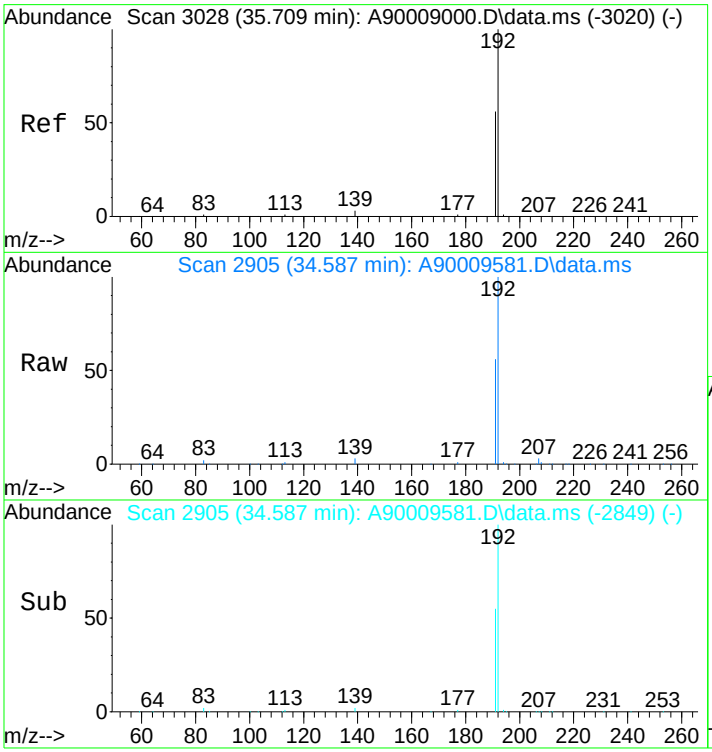


#56
Carbazole
Concen: 508.33 ng/mL
RT: 32.953 min Scan# 2726
Delta R.T. 0.009 min
Lab File: A90009581.D
Acq: 22 Dec 2012 9:41 pm

Tgt Ion:167 Resp: 133501

Ion	Ratio	Lower	Upper
167	100		
139	12.4	10.2	15.2

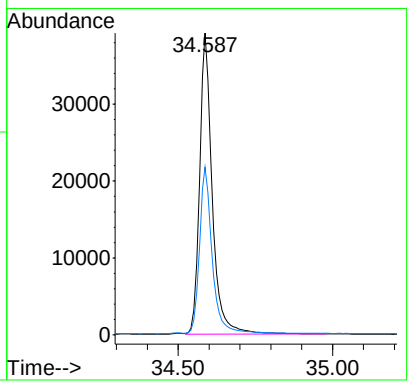


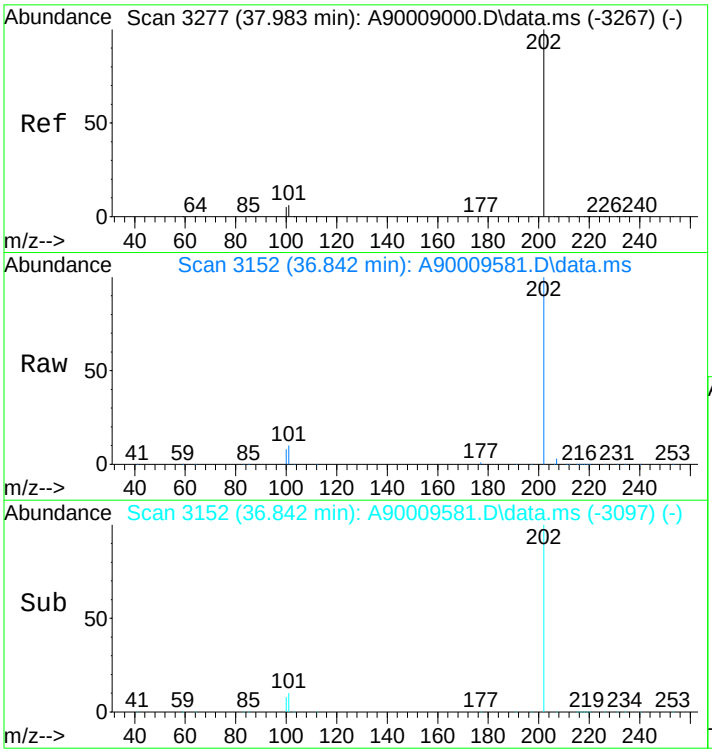


#57
1-Methylphenanthrene
Concen: 503.94 ng/mL
RT: 34.587 min Scan# 2905
Delta R.T. 0.009 min
Lab File: A90009581.D
Acq: 22 Dec 2012 9:41 pm

Tgt Ion:192 Resp: 111155

Ion	Ratio	Lower	Upper
192	100		
191	55.5	44.9	67.3

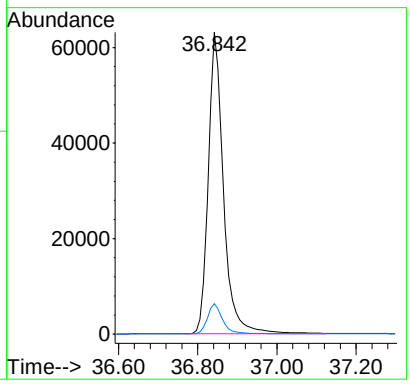


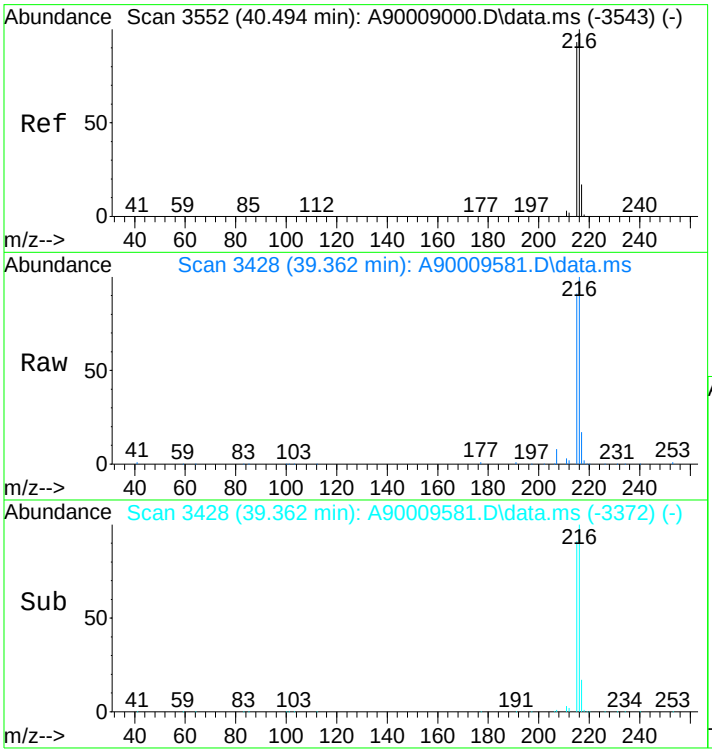


#58
Fluoranthene
Concen: 507.45 ng/mL
RT: 36.842 min Scan# 3152
Delta R.T. 0.000 min
Lab File: A90009581.D
Acq: 22 Dec 2012 9:41 pm

Tgt Ion:202 Resp: 169472

Ion	Ratio	Lower	Upper
202	100		
101	10.1	8.2	12.2

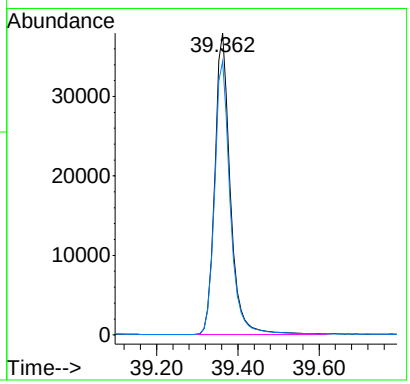


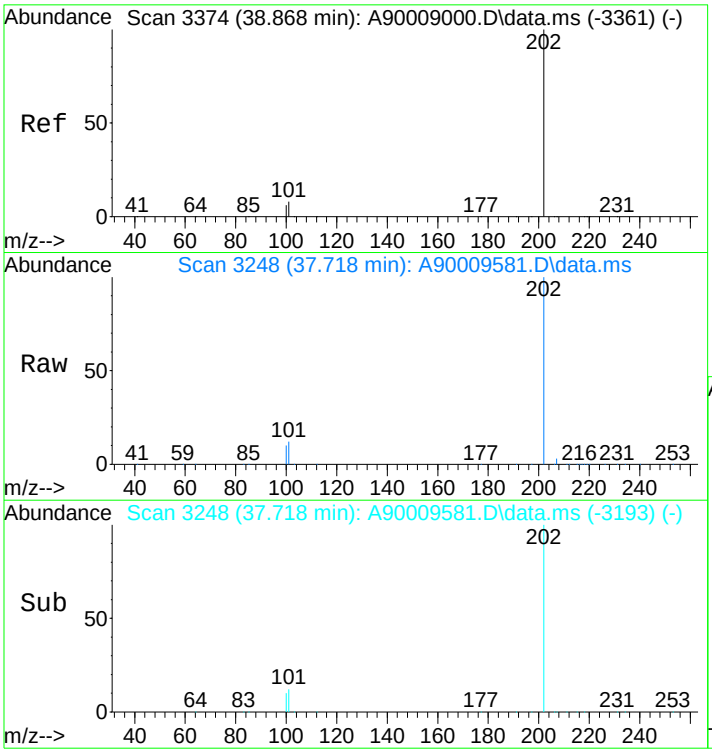


#59
Benzo(b)fluorene
Concen: 507.86 ng/mL
RT: 39.362 min Scan# 3428
Delta R.T. 0.009 min
Lab File: A90009581.D
Acq: 22 Dec 2012 9:41 pm

Tgt Ion:216 Resp: 100868

Ion	Ratio	Lower	Upper
216	100		
215	92.0	73.4	110.2

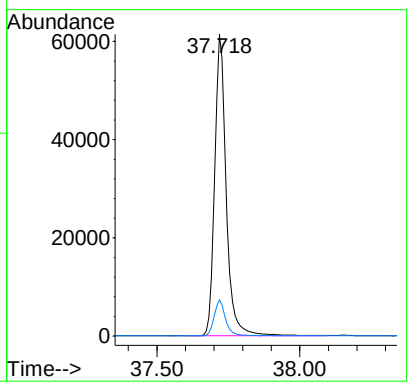


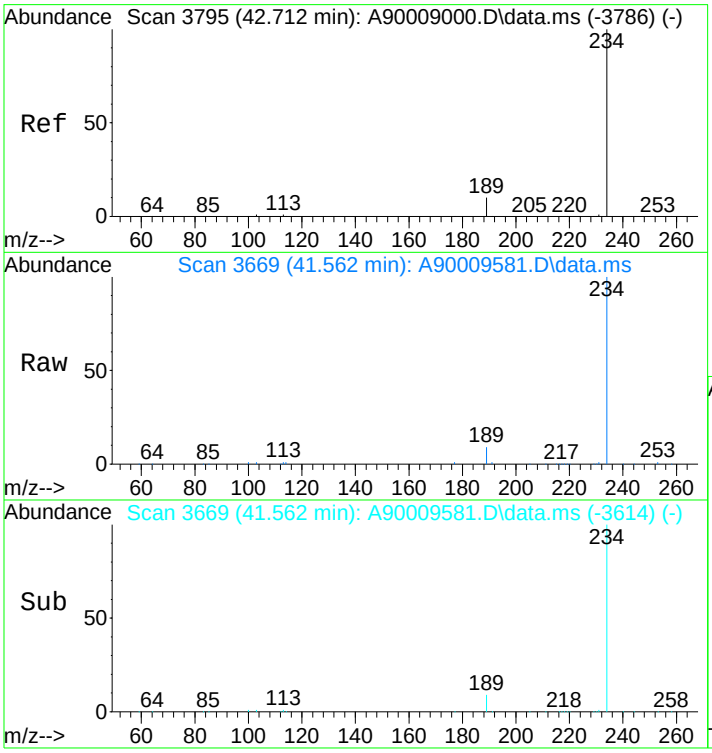


#60
Pyrene
Concen: 503.80 ng/mL
RT: 37.718 min Scan# 3248
Delta R.T. 0.000 min
Lab File: A90009581.D
Acq: 22 Dec 2012 9:41 pm

Tgt Ion:202 Resp: 171656

Ion	Ratio	Lower	Upper
202	100		
101	11.7	9.5	14.3

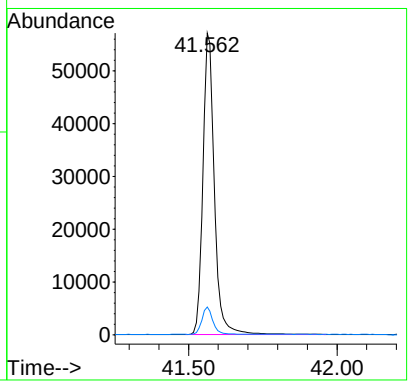


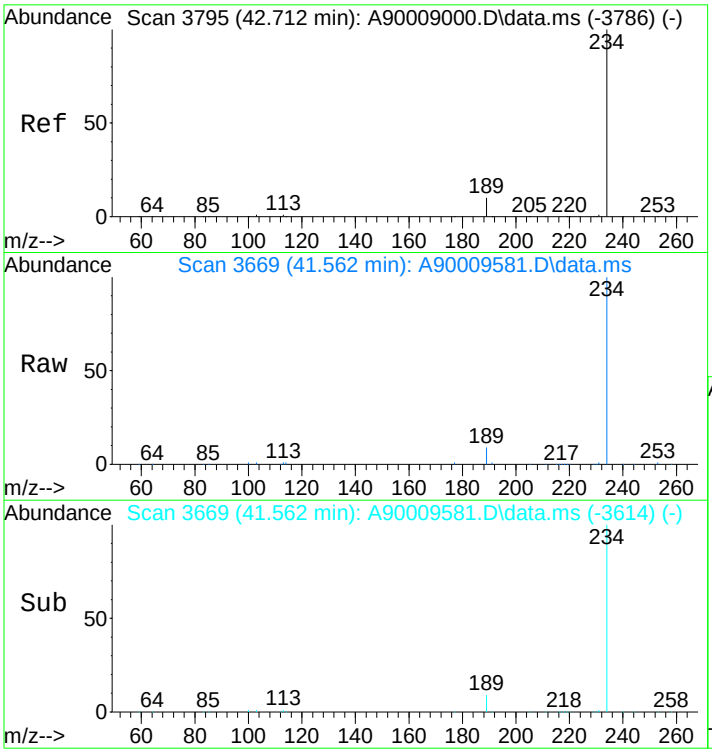


#66
Naphthobenzothiophene
Concen: 520.86 ng/ml
RT: 41.562 min Scan# 3669
Delta R.T. 0.000 min
Lab File: A90009581.D
Acq: 22 Dec 2012 9:41 pm

Tgt Ion:234 Resp: 153991

Ion	Ratio	Lower	Upper
234	100		
189	8.7	7.2	10.8

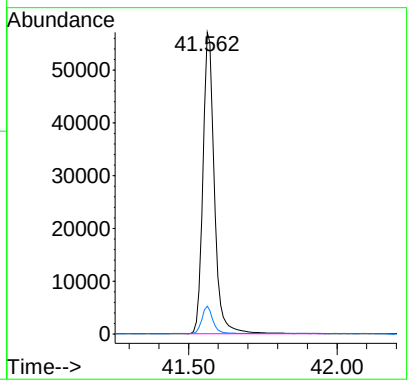


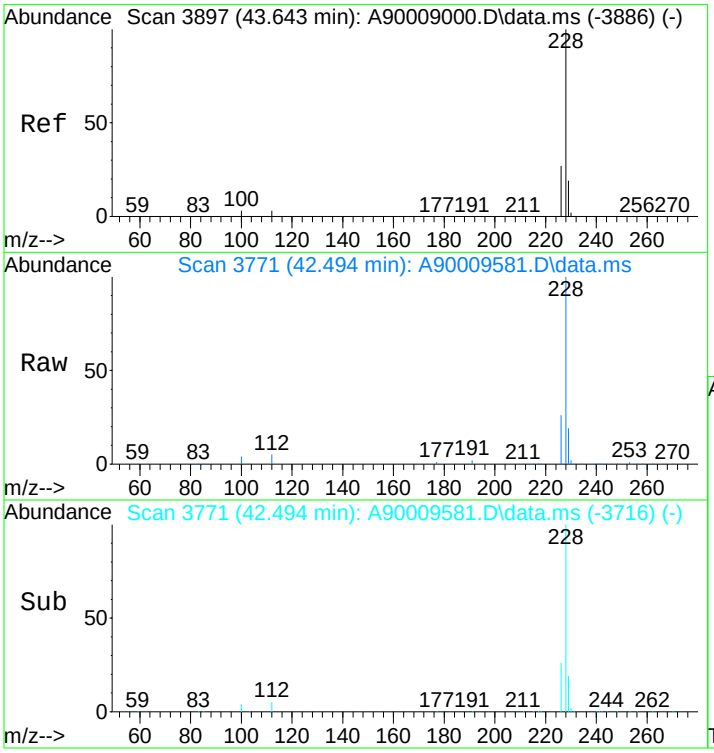


#67
Naphthobenzothiophene-2,1-D
Concen: 520.86 ng/mL
RT: 41.562 min Scan# 3669
Delta R.T. 0.000 min
Lab File: A90009581.D
Acq: 22 Dec 2012 9:41 pm

Tgt Ion:234 Resp: 153991

Ion	Ratio	Lower	Upper
234	100		
189	8.7	7.2	10.8

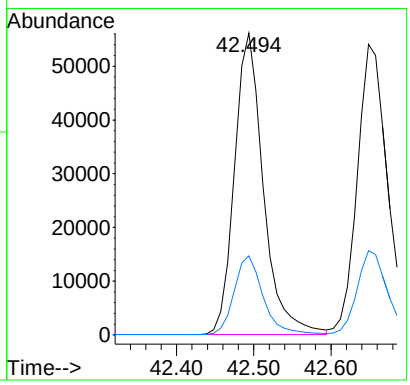


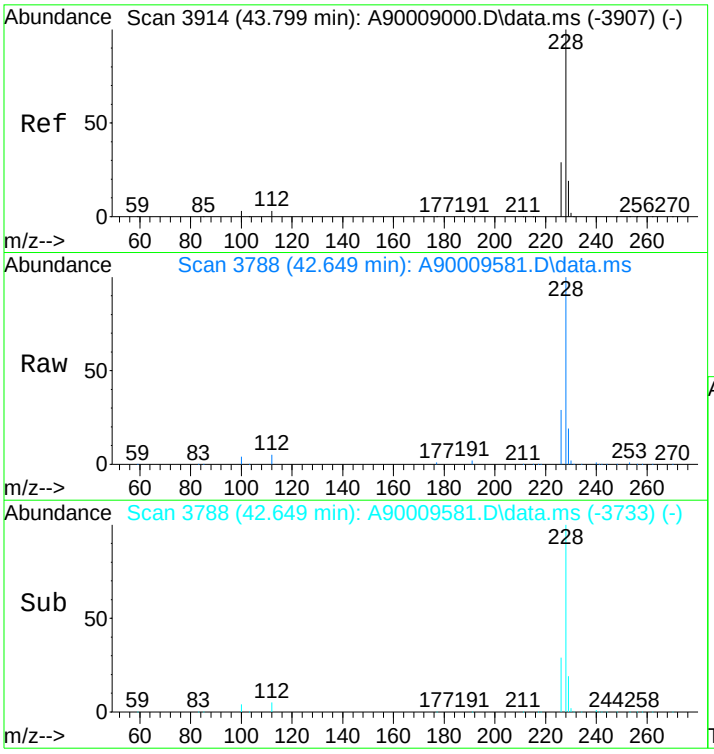


#75
Benz[a]anthracene
Concen: 458.05 ng/mL
RT: 42.494 min Scan# 3771
Delta R.T. 0.000 min
Lab File: A90009581.D
Acq: 22 Dec 2012 9:41 pm

Tgt Ion:228 Resp: 146613

Ion	Ratio	Lower	Upper
228	100		
226	26.2	20.8	31.2

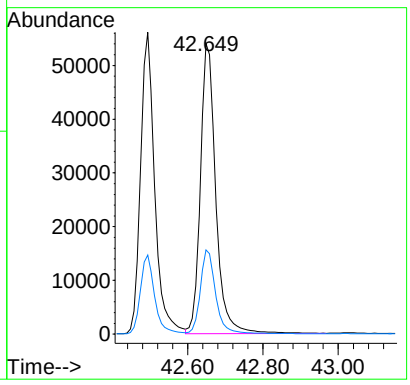


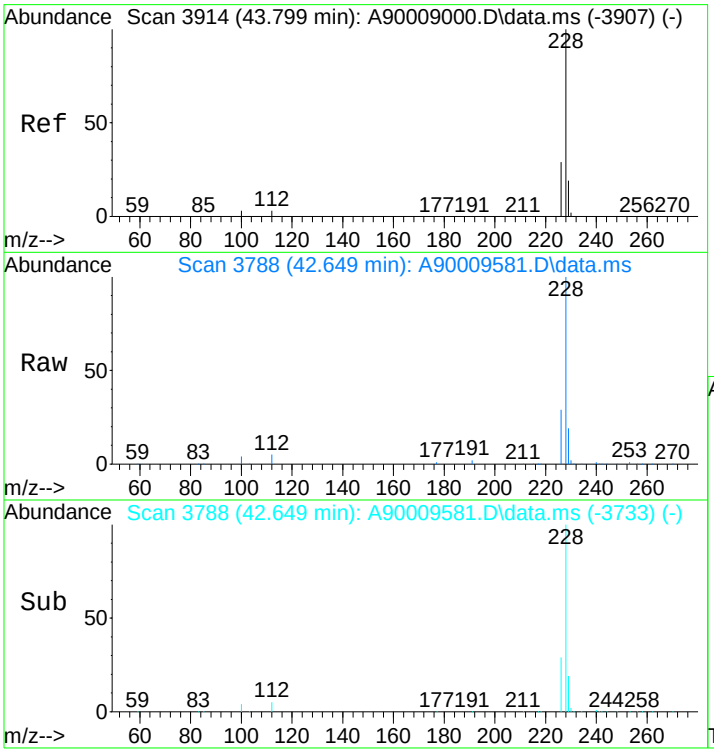


#76
Chrysene
Concen: 486.68 ng/mL
RT: 42.649 min Scan# 3788
Delta R.T. 0.000 min
Lab File: A90009581.D
Acq: 22 Dec 2012 9:41 pm

Tgt Ion:228 Resp: 153210

Ion	Ratio	Lower	Upper
228	100		
226	28.6	23.3	34.9

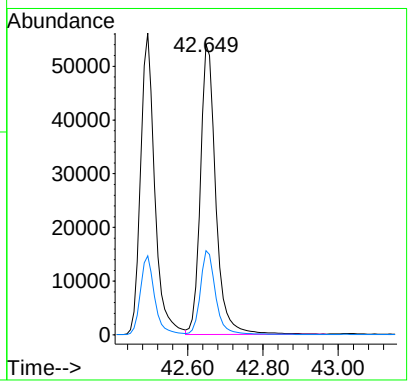


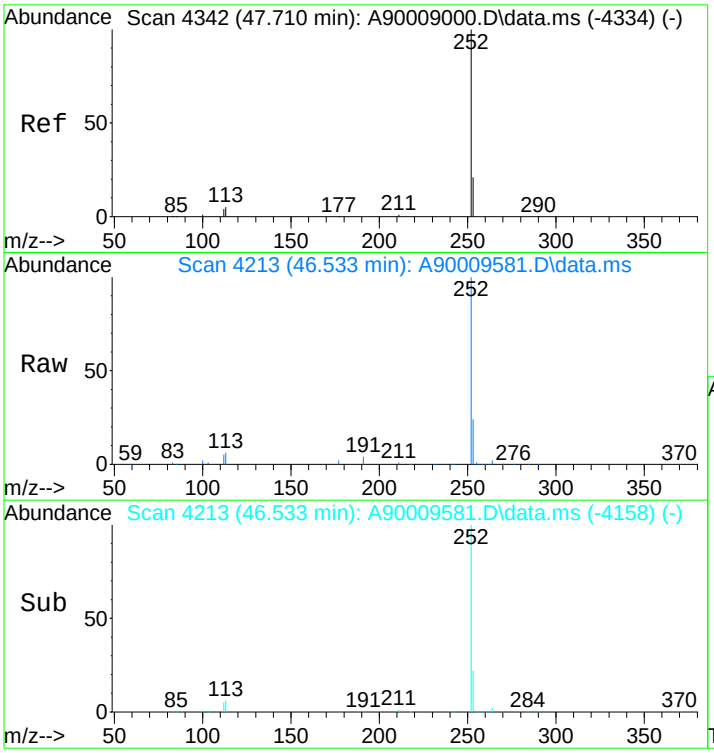


#77
Chrysene/Triphenylene
Concen: 486.68 ng/mL
RT: 42.649 min Scan# 3788
Delta R.T. 0.000 min
Lab File: A90009581.D
Acq: 22 Dec 2012 9:41 pm

Tgt Ion:228 Resp: 153210

Ion	Ratio	Lower	Upper
228	100		
226	28.6	23.3	34.9

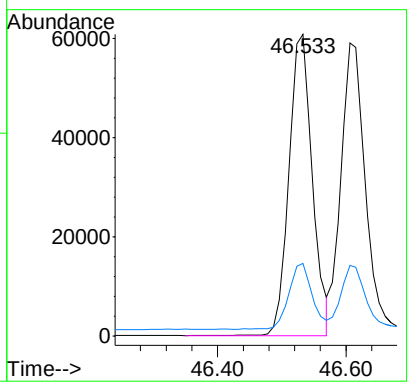


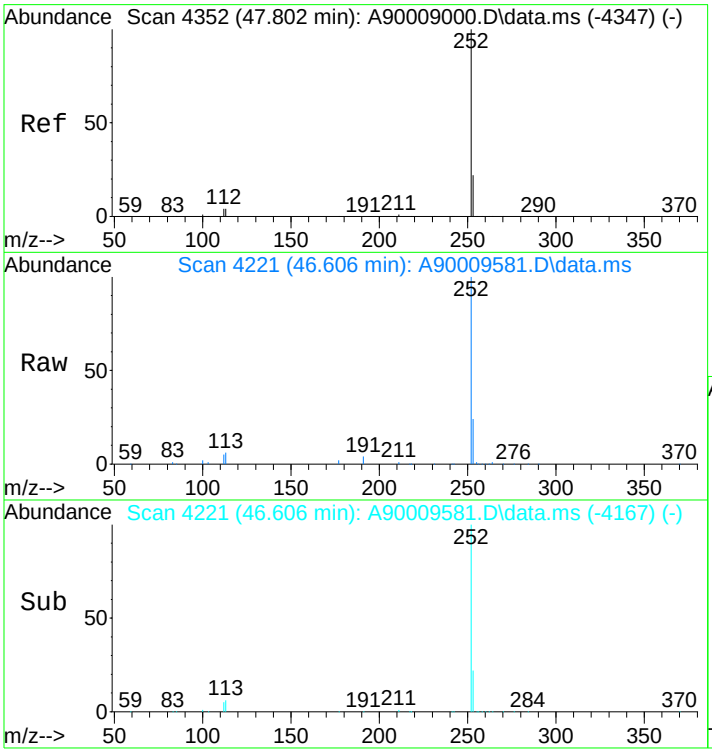


#84
Benzo[b]fluoranthene
Concen: 460.47 ng/mL
RT: 46.533 min Scan# 4213
Delta R.T. 0.000 min
Lab File: A90009581.D
Acq: 22 Dec 2012 9:41 pm

Tgt Ion:252 Resp: 152819

Ion	Ratio	Lower	Upper
252	100		
253	21.9	20.3	30.5

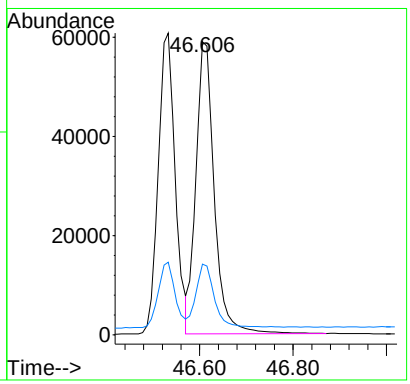


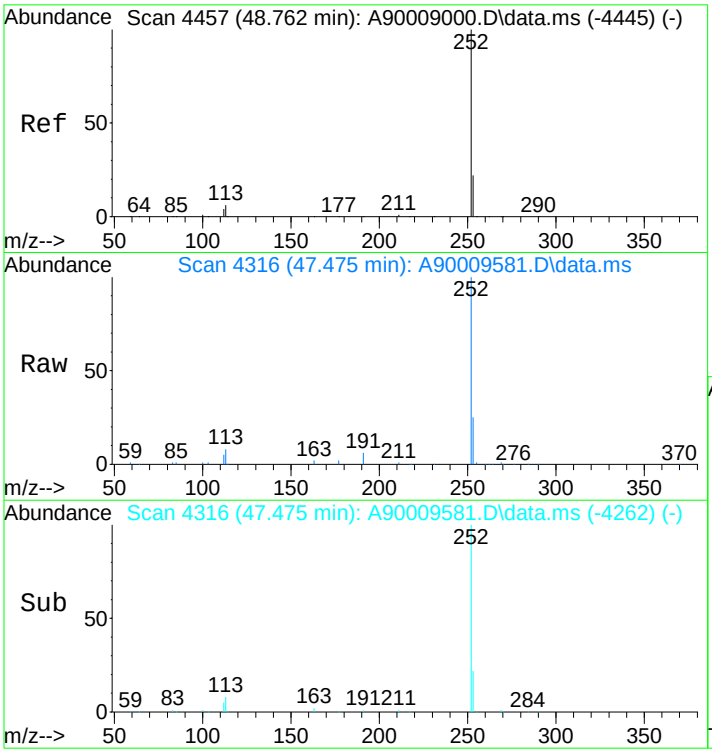


#85
Benzo[j]+[k]fluoranthene
Concen: 492.70 ng/mL
RT: 46.606 min Scan# 4221
Delta R.T. -0.009 min
Lab File: A90009581.D
Acq: 22 Dec 2012 9:41 pm

Tgt Ion:252 Resp: 160664

Ion	Ratio	Lower	Upper
252	100		
253	21.2	20.2	30.4

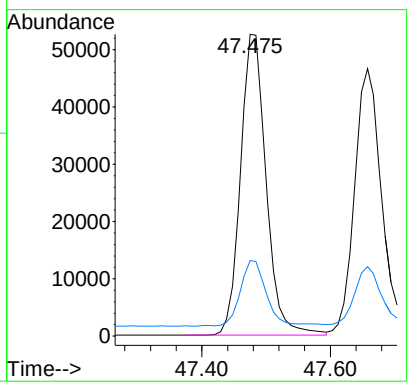


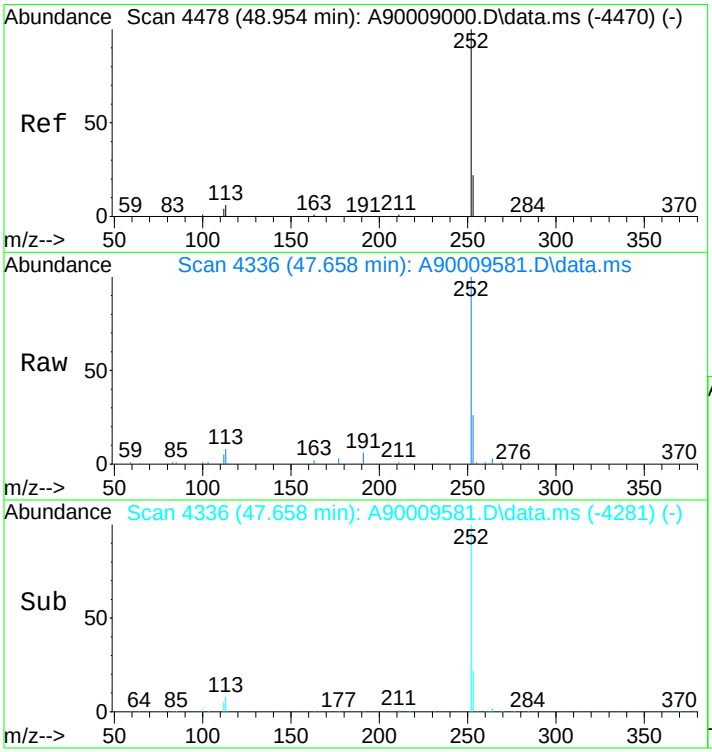


#87
Benzo[e]pyrene
Concen: 463.34 ng/mL
RT: 47.475 min Scan# 4316
Delta R.T. -0.009 min
Lab File: A90009581.D
Acq: 22 Dec 2012 9:41 pm

Tgt Ion:252 Resp: 146017

Ion	Ratio	Lower	Upper
252	100		
253	22.2	21.4	32.0

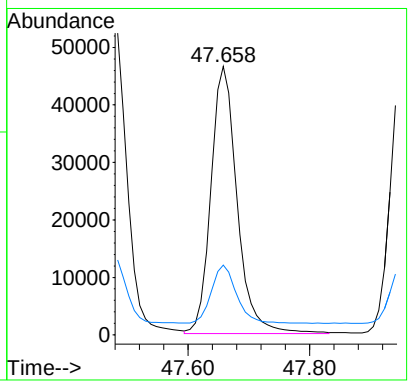


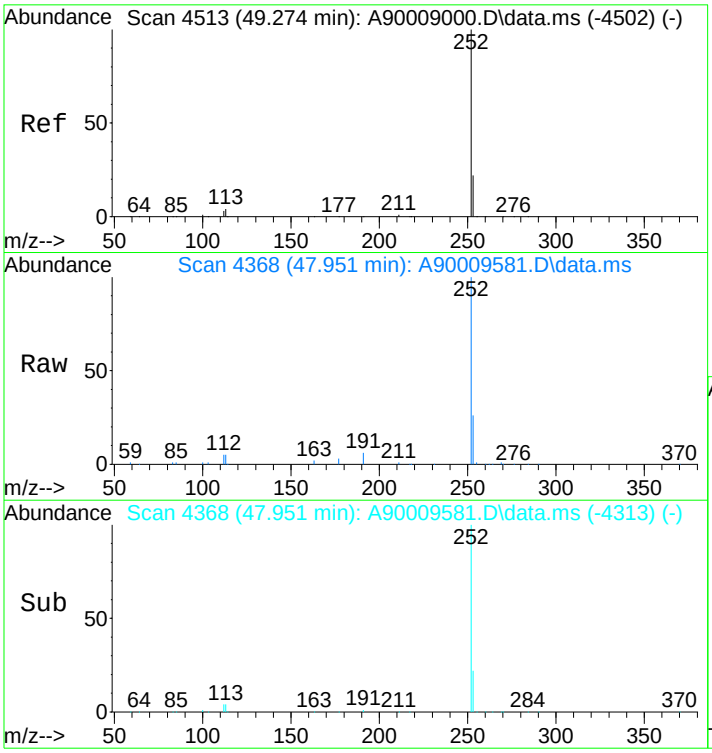


#89
Benzo[a]pyrene
Concen: 468.04 ng/mL m
RT: 47.658 min Scan# 4336
Delta R.T. 0.000 min
Lab File: A90009581.D
Acq: 22 Dec 2012 9:41 pm

Tgt Ion:252 Resp: 139690

Ion	Ratio	Lower	Upper
252	100		
253	23.2	21.9	32.9

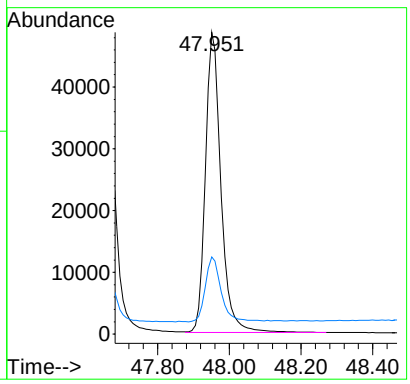


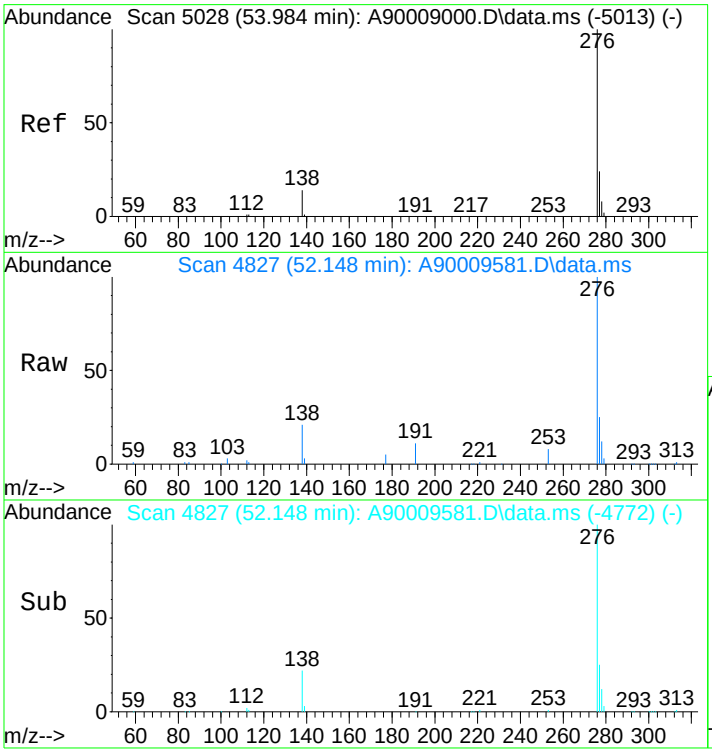


#90
Perylene
Concen: 457.83 ng/mL
RT: 47.951 min Scan# 4368
Delta R.T. 0.000 min
Lab File: A90009581.D
Acq: 22 Dec 2012 9:41 pm

Tgt Ion:252 Resp: 145833

Ion	Ratio	Lower	Upper
252	100		
253	22.1	22.2	33.2#

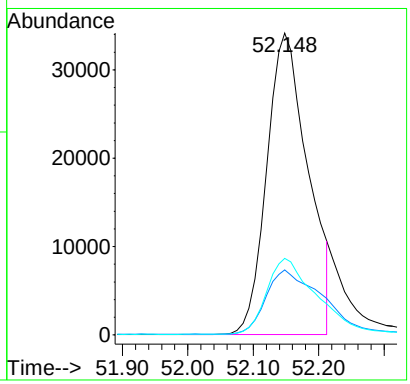


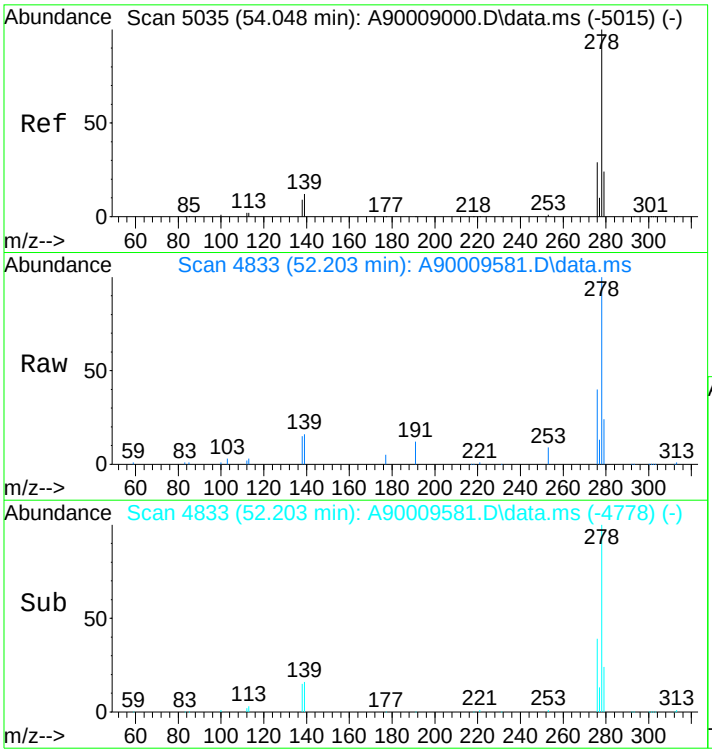


#91
Indeno[1,2,3-cd]pyrene
Concen: 451.63 ng/mL m
RT: 52.148 min Scan# 4827
Delta R.T. 0.000 min
Lab File: A90009581.D
Acq: 22 Dec 2012 9:41 pm

Tgt Ion:276 Resp: 149283

Ion	Ratio	Lower	Upper
276	100		
138	30.2	17.7	26.5#
277	31.7	20.2	30.4#

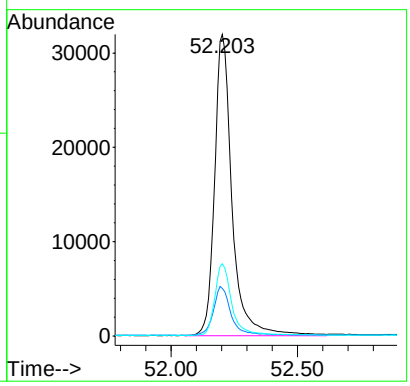


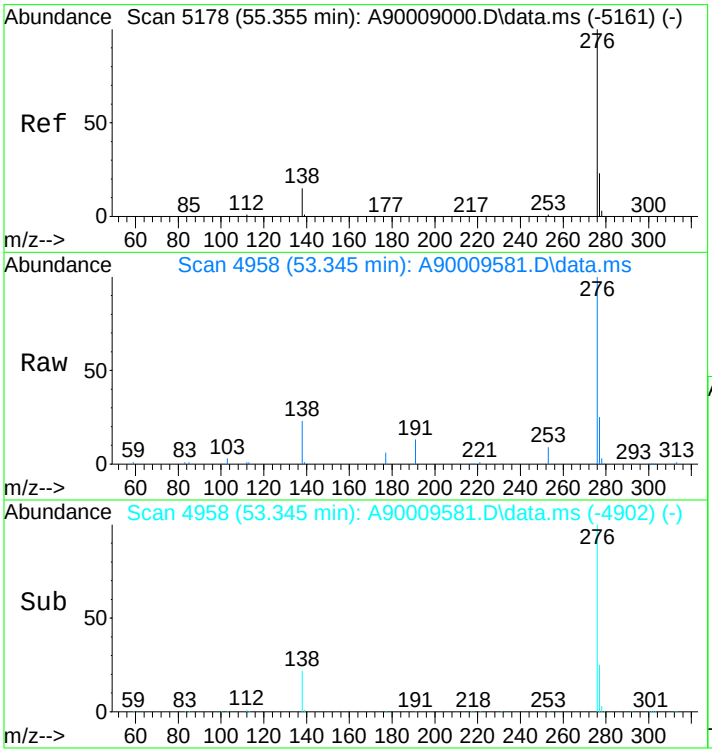


#92
Dibenz[ah]+[ac]anthracene
Concen: 469.81 ng/mL
RT: 52.203 min Scan# 4833
Delta R.T. 0.000 min
Lab File: A90009581.D
Acq: 22 Dec 2012 9:41 pm

Tgt Ion:278 Resp: 152979

Ion	Ratio	Lower	Upper
278	100		
139	15.8	13.3	19.9
279	22.9	19.3	28.9

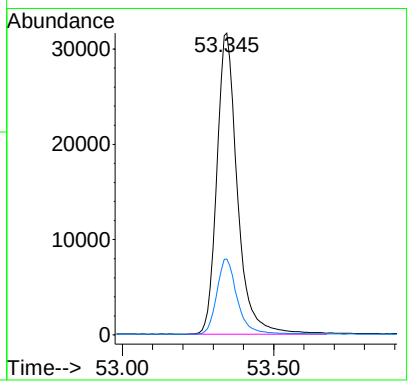


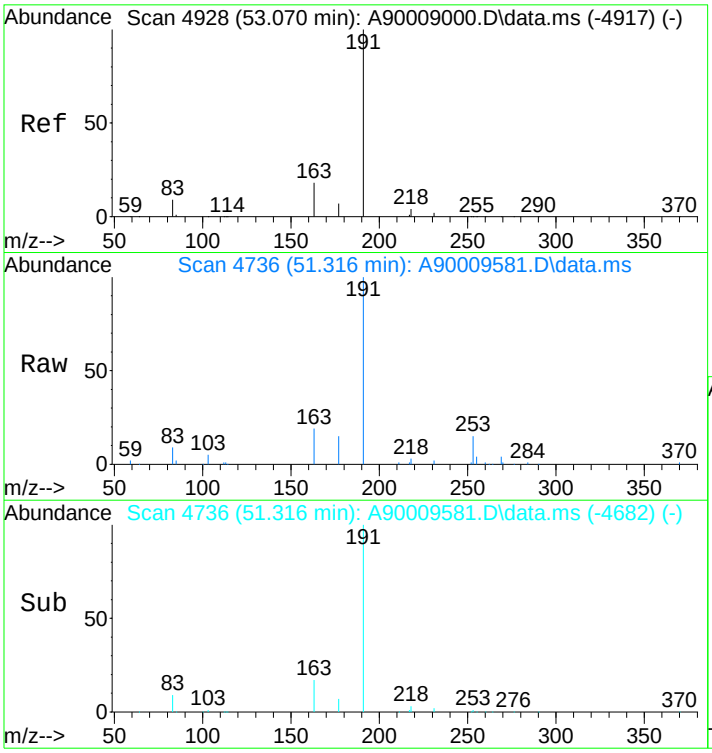


#93
Benzo[g,h,i]perylene
Concen: 457.75 ng/mL
RT: 53.345 min Scan# 4958
Delta R.T. 0.009 min
Lab File: A90009581.D
Acq: 22 Dec 2012 9:41 pm

Tgt Ion:276 Resp: 148685

Ion	Ratio	Lower	Upper
276	100		
277	25.0	20.0	30.0

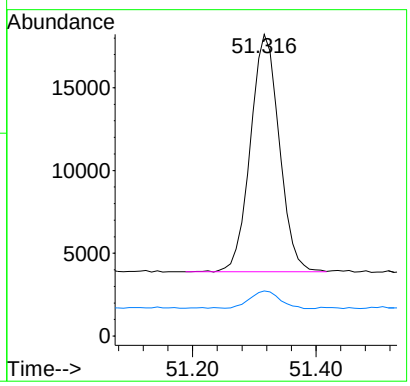


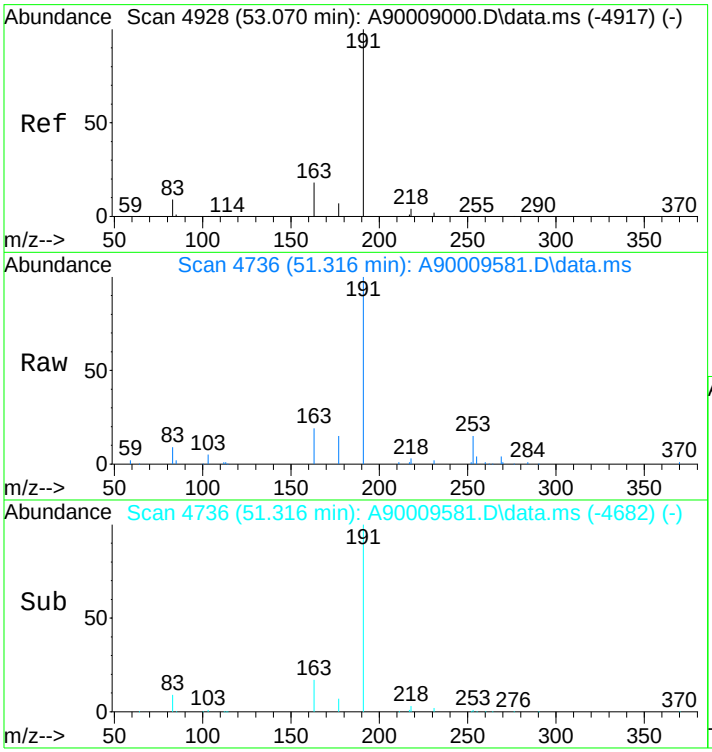


#94
Hopane (T19)
Concen: 380.25 ng/mL
RT: 51.316 min Scan# 4736
Delta R.T. -0.009 min
Lab File: A90009581.D
Acq: 22 Dec 2012 9:41 pm

Tgt Ion:191 Resp: 46650

Ion	Ratio	Lower	Upper
191	100		
177	7.6	14.4	21.6#

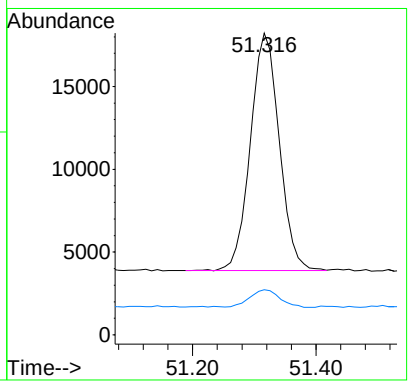




#95
17a(H),21B(H)-hopane - C30H52
Concen: 380.25 ng/mL
RT: 51.316 min Scan# 4736
Delta R.T. -0.009 min
Lab File: A90009581.D
Acq: 22 Dec 2012 9:41 pm

Tgt Ion:191 Resp: 46650

Ion	Ratio	Lower	Upper
191	100		
177	7.6	14.4	21.6#



Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009593.D
Acq On : 23 Dec 2012 2:36 pm
Operator : ps
Sample : C912221203
Misc : WHAQ86@500ng/ml
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Dec 27 15:11:24 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.156	164	77006	500.000	ng/mL	0.00
74) Chrysene-d12	42.558	240	147905	500.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.239	136	139247	470.463	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 47.05%#			
42) Phenanthrene-d10	32.004	188	155679	560.494	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 56.05%			
83) Benzo[b]fluoranthene-d12	46.451	264	140382	516.342	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 51.63%			
88) Benzo[a]pyrene-d12	47.576	264	143864	527.864	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 52.79%			
129) 5B(H)Cholane - Surr	43.178	217	29853	480.797	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 48.08%#			
Target Compounds						Qvalue
3) trans-Decalin	15.899	138	14773	218.213	ng/mL	100
4) cis-Decalin	17.103	138	11292	213.058	ng/mL	100
10) Naphthalene	19.312	128	139510	459.316	ng/mL#	100
16) 2-Methylnaphthalene	21.995	142	91633	461.319	ng/mL#	100
17) 1-Methylnaphthalene	22.405	142	88779	460.550	ng/mL#	100
18) Benzothiophene	19.531	134	114401	450.076	ng/mL	100
23) Biphenyl	23.875	154	124080	477.347	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.477	156	88501	473.978	ng/mL#	100
25) Dibenzofuran	26.932	168	138551	499.740	ng/mL	99
26) Acenaphthylene	25.554	152	150127M4	480.481	ng/mL	
27) Acenaphthene	26.284	153	95621	486.738	ng/mL	100
28) 2,3,5-Trimethylnaphthalen	27.835	170	84320	491.184	ng/mL	100
29) Fluorene	28.300	166	106976	495.863	ng/mL	100
33) Dibenzothiophene	31.603	184	155974	513.967	ng/mL	98
43) Phenanthrene	32.096	178	158912	506.862	ng/mL	100
54) Retene	39.061	234	48819	566.414	ng/mL	99
55) Anthracene	32.278	178	153138M4	525.993	ng/mL	
56) Carbazole	32.962	167	144542	524.811	ng/mL	99
57) 1-Methylphenanthrene	34.596	192	119520M4	516.698	ng/mL	
58) Fluoranthene	36.851	202	184510M4	526.818	ng/mL	
59) Benzo(b)fluorene	39.371	216	111162	533.695	ng/mL	100
60) Pyrene	37.728	202	184725	516.983	ng/mL	99
66) Naphthobenzothiophene	41.572	234	165425	533.555	ng/ml	100
67) Naphthobenzothiophene-2,1	41.572	234	165425	533.555	ng/mL	100
75) Benz[a]anthracene	42.494	228	162409	478.720	ng/mL	98
76) Chrysene	42.658	228	162331	486.505	ng/mL	100
77) Chrysene/Triphenylene	42.658	228	162331	486.505	ng/mL	100
84) Benzo[b]fluoranthene	46.533	252	161063	457.878	ng/mL	92
85) Benzo[j]+[k]fluoranthene	46.615	252	174897	506.031	ng/mL	92
87) Benzo[e]pyrene	47.484	252	155636	465.947	ng/mL	91
89) Benzo[a]pyrene	47.658	252	149603M4	472.921	ng/mL	
90) Perylene	47.960	252	158278	468.809	ng/mL#	89
91) Indeno[1,2,3-cd]pyrene	52.157	276	171616M3	489.846	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.203	278	169501	491.132	ng/mL	98
93) Benzo[g,h,i]perylene	53.354	276	163692	475.463	ng/mL	100
94) Hopane (T19)	51.316	191	50762	390.375	ng/mL#	78
95) 17a(H),21B(H)-hopane - C3	51.316	191	50762	390.375	ng/mL#	78

Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009593.D
Acq On : 23 Dec 2012 2:36 pm
Operator : ps
Sample : C912221203
Misc : WHAQ86@500ng/ml
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Dec 27 15:11:24 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

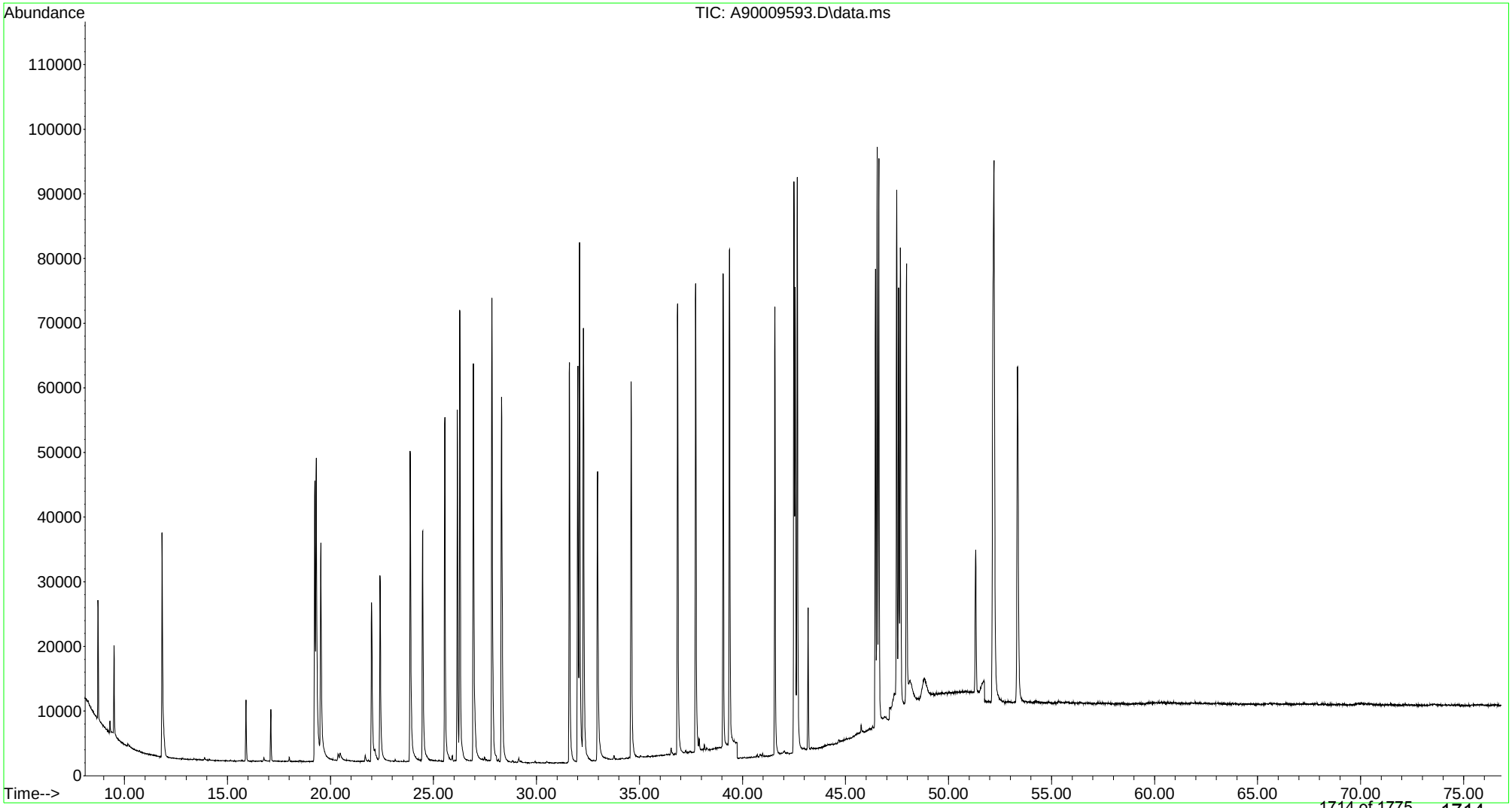
(#) = qualifier out of range (m) = manual integration (+) = signals summed

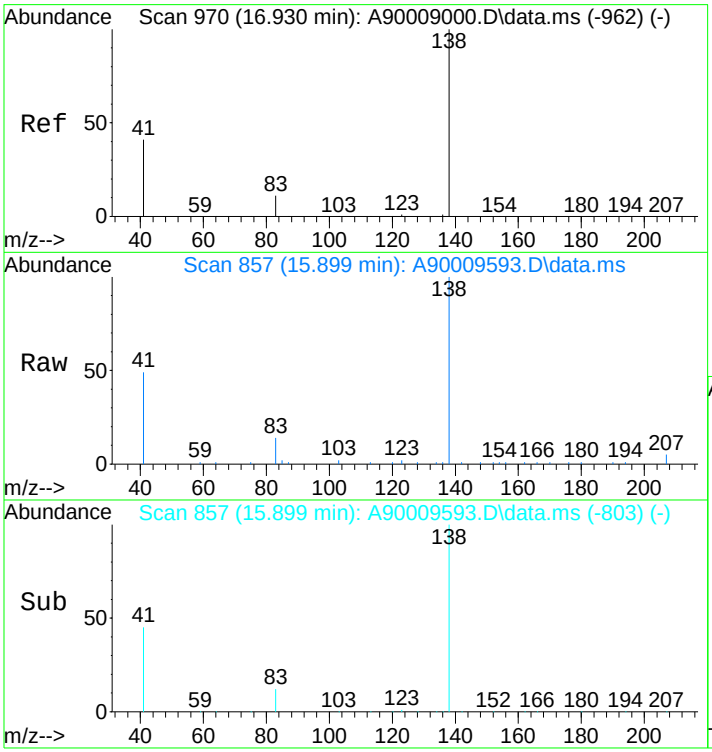
Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC22\
Data File : A90009593.D
Acq On : 23 Dec 2012 2:36 pm
Operator : ps
Sample : C912221203
Misc : WHAQ86@500ng/ml
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Dec 27 15:11:24 2012
Quant Method : C:\msdchem\1\METHODS\PAH9\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Dec 23 16:32:01 2012
Response via : Initial Calibration

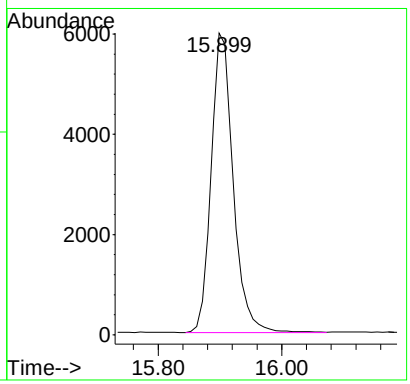
Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

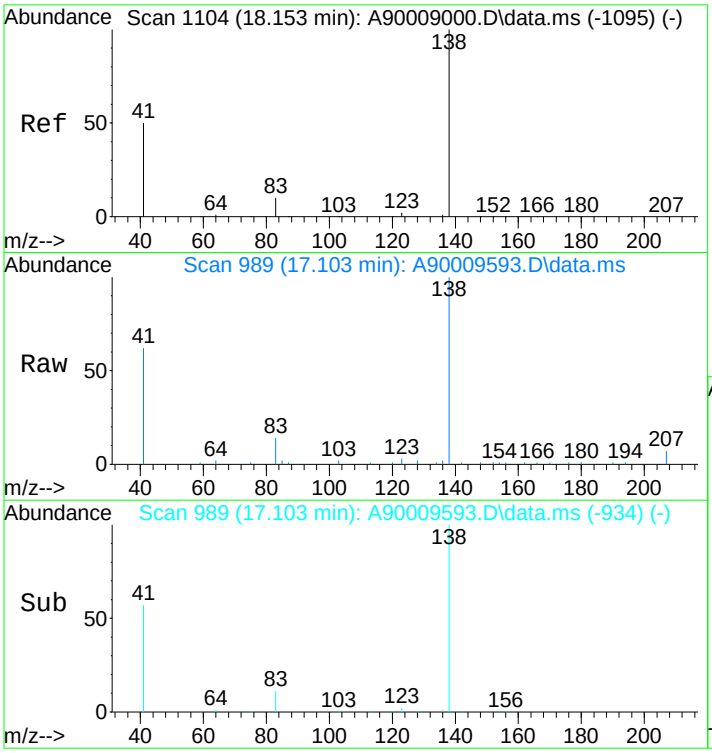




#3
trans-Decalin
Concen: 218.21 ng/mL
RT: 15.899 min Scan# 857
Delta R.T. -0.009 min
Lab File: A90009593.D
Acq: 23 Dec 2012 2:36 pm

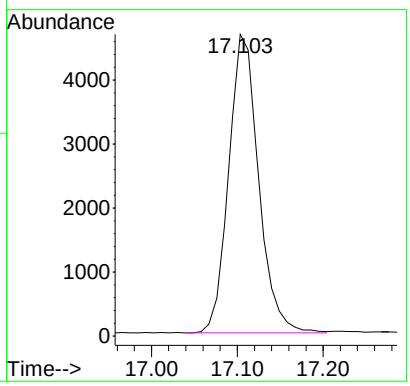
Tgt Ion:138 Resp: 14773

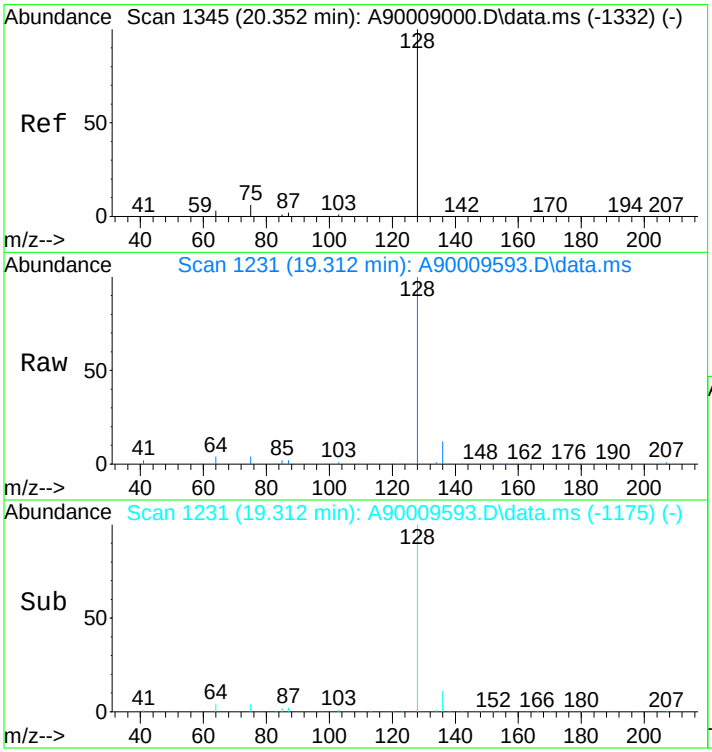




#4
cis-Decalin
Concen: 213.06 ng/mL
RT: 17.103 min Scan# 989
Delta R.T. 0.000 min
Lab File: A90009593.D
Acq: 23 Dec 2012 2:36 pm

Tgt Ion:138 Resp: 11292

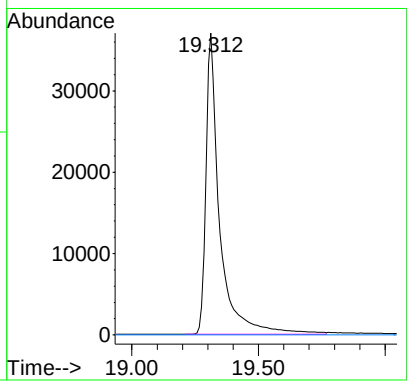


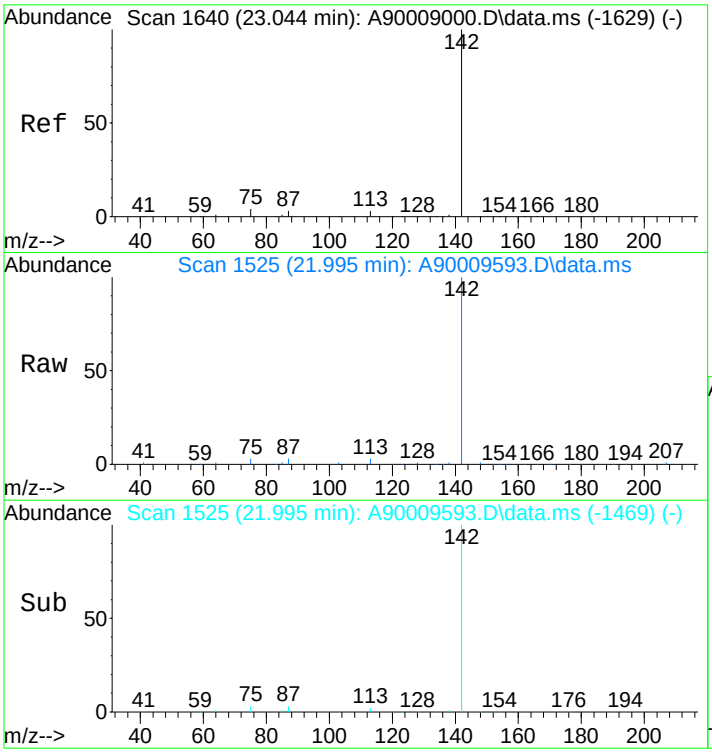


#10
Naphthalene
Concen: 459.32 ng/mL
RT: 19.312 min Scan# 1231
Delta R.T. 0.009 min
Lab File: A90009593.D
Acq: 23 Dec 2012 2:36 pm

Tgt Ion:128 Resp: 139510

Ion	Ratio	Lower	Upper
128	100		
127	0.0	0.0	0.0

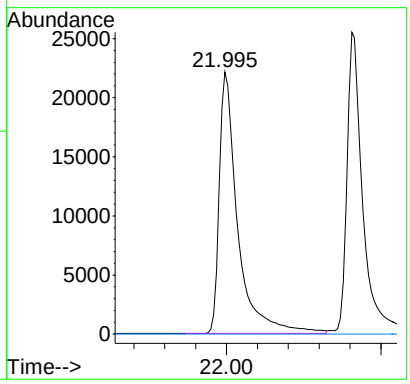


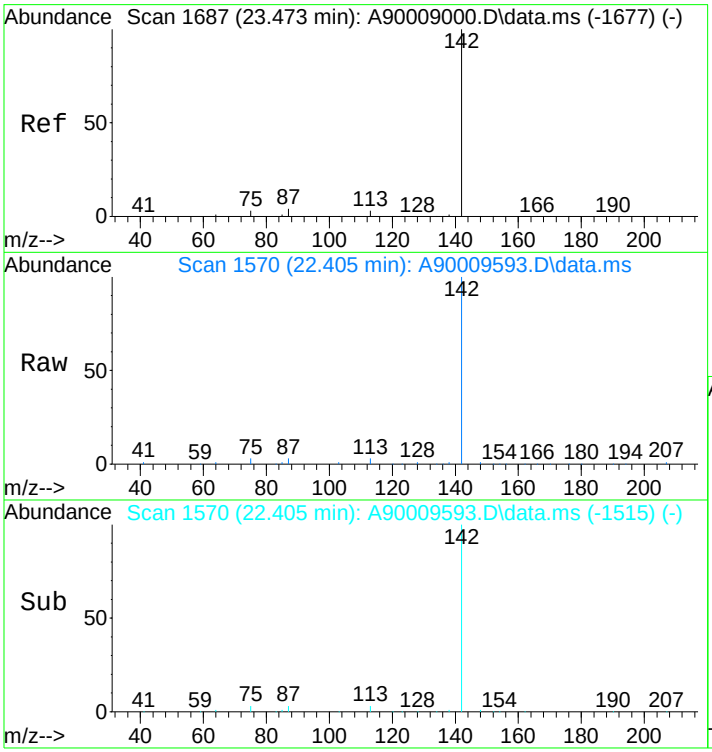


#16
2-Methylnaphthalene
Concen: 461.32 ng/mL
RT: 21.995 min Scan# 1525
Delta R.T. 0.009 min
Lab File: A90009593.D
Acq: 23 Dec 2012 2:36 pm

Tgt Ion:142 Resp: 91633

Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	0.0

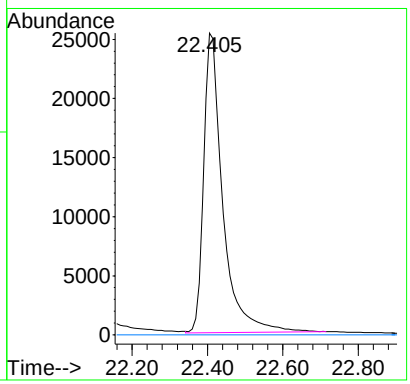


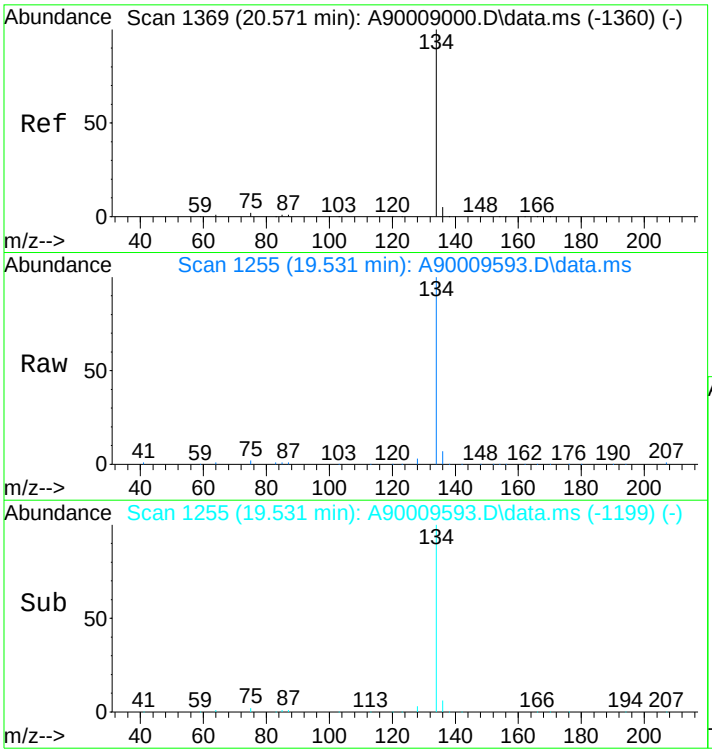


#17
1-Methylnaphthalene
Concen: 460.55 ng/mL
RT: 22.405 min Scan# 1570
Delta R.T. 0.000 min
Lab File: A90009593.D
Acq: 23 Dec 2012 2:36 pm

Tgt Ion:142 Resp: 88779

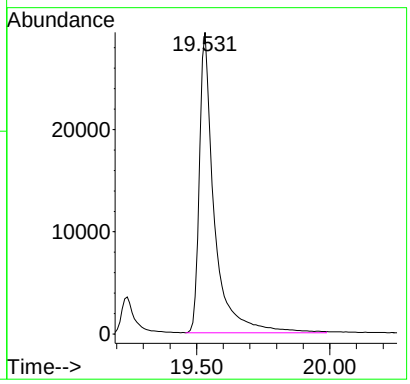
Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	20.0

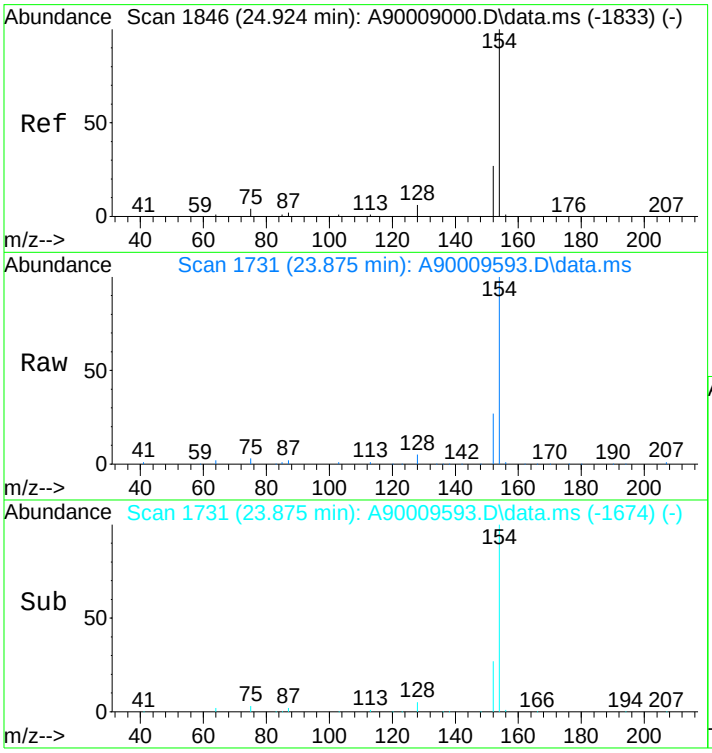




#18
Benzothiophene
Concen: 450.08 ng/mL
RT: 19.531 min Scan# 1255
Delta R.T. 0.009 min
Lab File: A90009593.D
Acq: 23 Dec 2012 2:36 pm

Tgt Ion:134 Resp: 114401

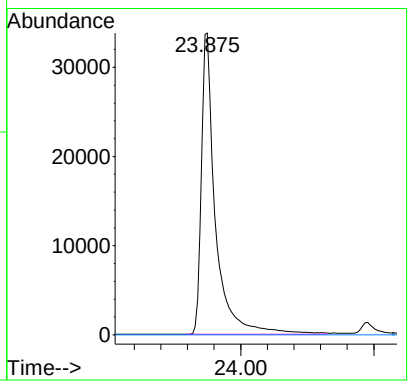


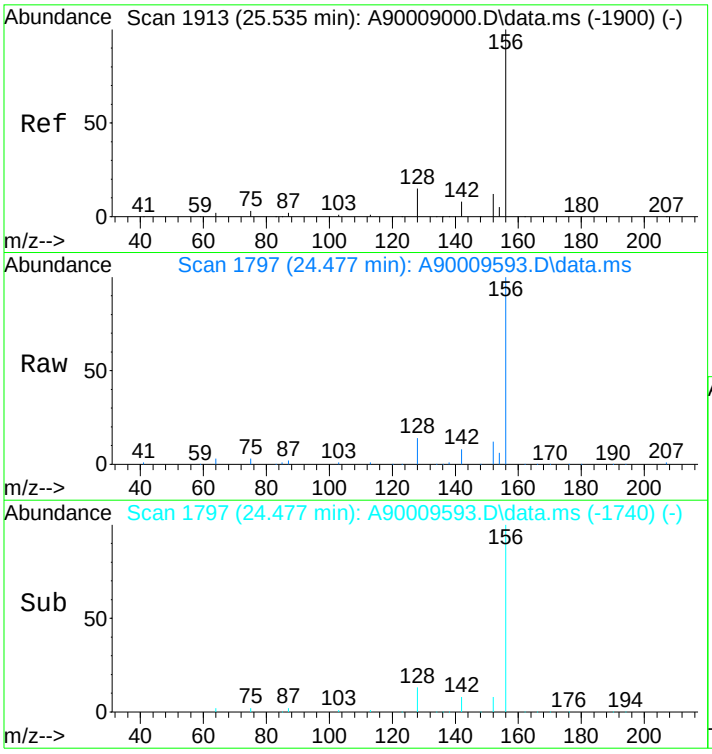


#23
Biphenyl
Concen: 477.35 ng/mL
RT: 23.875 min Scan# 1731
Delta R.T. 0.018 min
Lab File: A90009593.D
Acq: 23 Dec 2012 2:36 pm

Tgt Ion:154 Resp: 124080

Ion	Ratio	Lower	Upper
154	100		
153	0.0	0.0	0.0

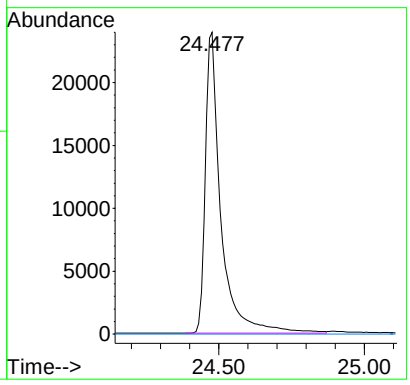


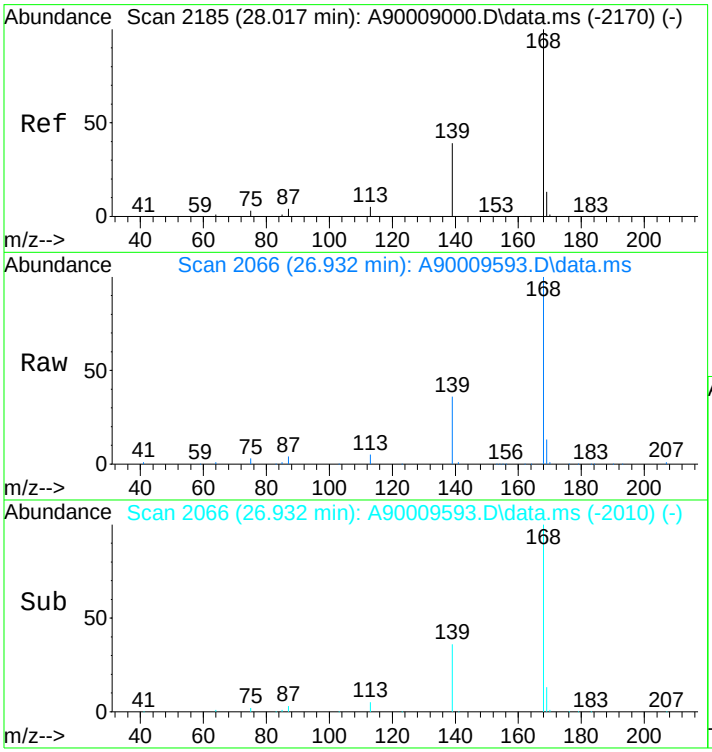


#24
2,6-Dimethylnaphthalene
Concen: 473.98 ng/mL
RT: 24.477 min Scan# 1797
Delta R.T. 0.018 min
Lab File: A90009593.D
Acq: 23 Dec 2012 2:36 pm

Tgt Ion:156 Resp: 88501

Ion	Ratio	Lower	Upper
156	100		
155	0.0	0.0	0.0

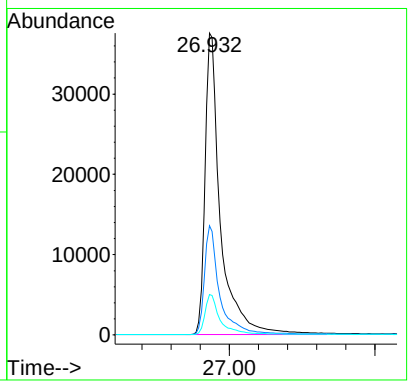


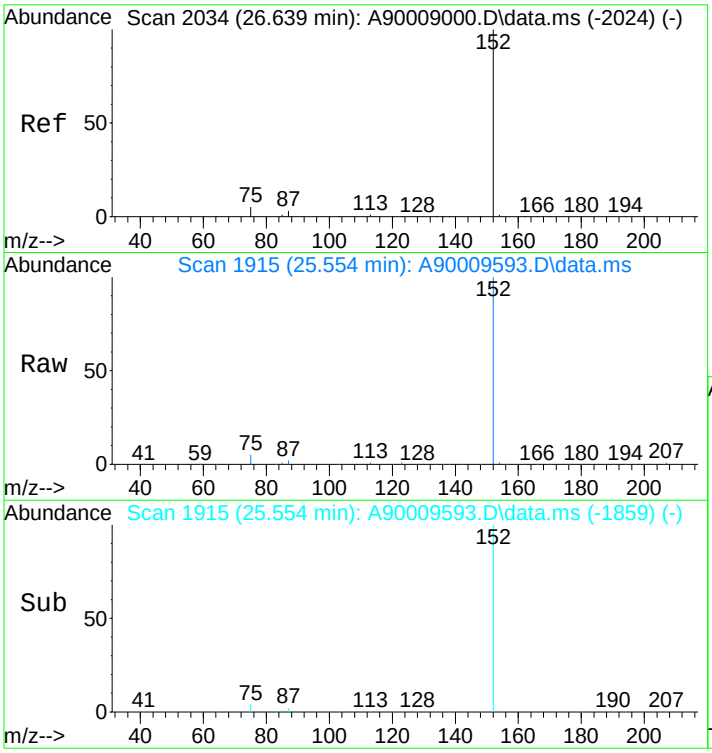


#25
Dibenzofuran
Concen: 499.74 ng/mL
RT: 26.932 min Scan# 2066
Delta R.T. 0.009 min
Lab File: A90009593.D
Acq: 23 Dec 2012 2:36 pm

Tgt Ion:168 Resp: 138551

Ion	Ratio	Lower	Upper
168	100		
139	35.6	28.0	42.0
169	13.2	10.6	15.8

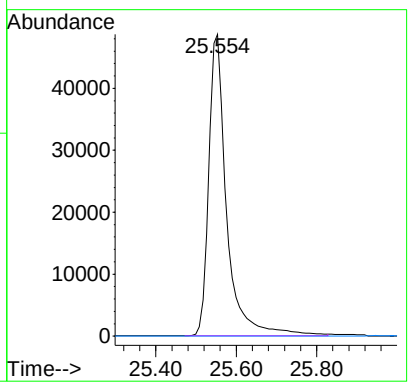


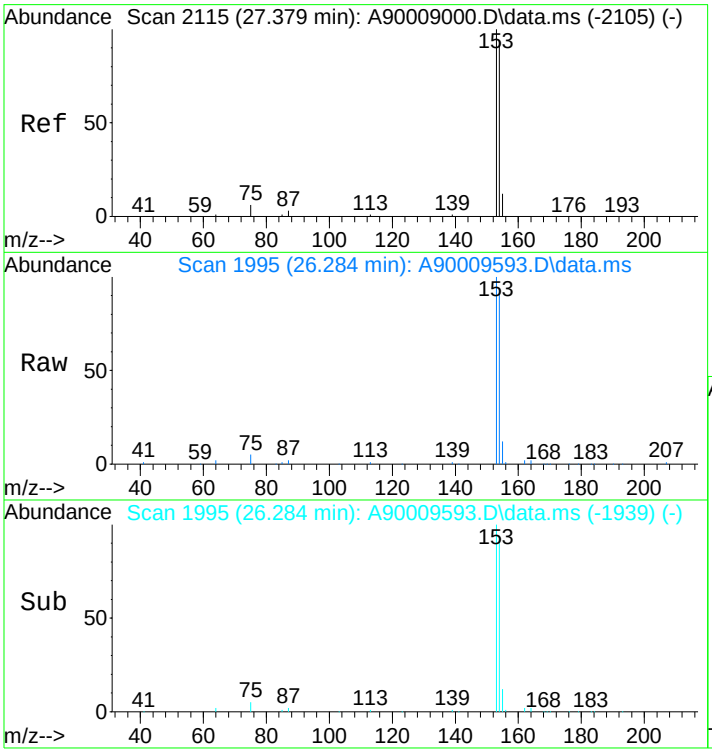


#26
Acenaphthylene
Concen: 480.48 ng/mL m
RT: 25.554 min Scan# 1915
Delta R.T. 0.009 min
Lab File: A90009593.D
Acq: 23 Dec 2012 2:36 pm

Tgt Ion:152 Resp: 150127

Ion	Ratio	Lower	Upper
152	100		
153	0.0	0.0	0.0

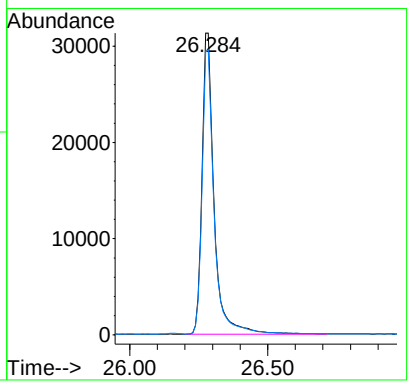


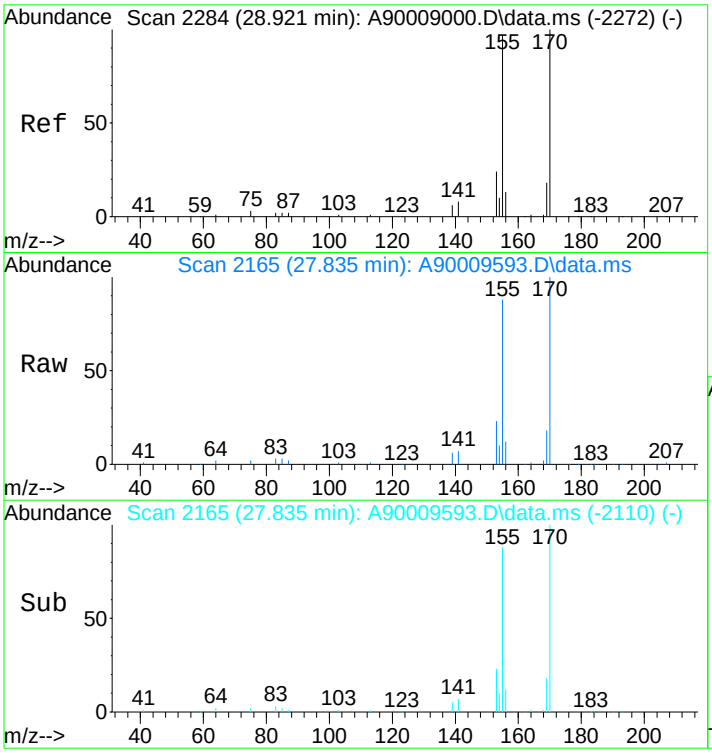


#27
Acenaphthene
Concen: 486.74 ng/mL
RT: 26.284 min Scan# 1995
Delta R.T. 0.009 min
Lab File: A90009593.D
Acq: 23 Dec 2012 2:36 pm

Tgt Ion:153 Resp: 95621

Ion	Ratio	Lower	Upper
153	100		
154	93.9	75.4	113.0

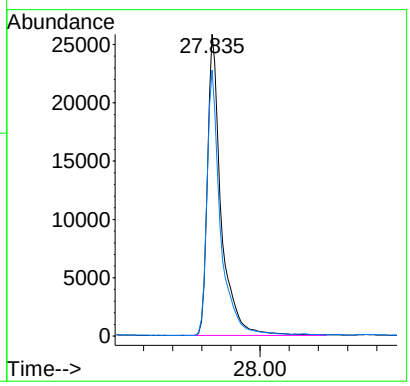


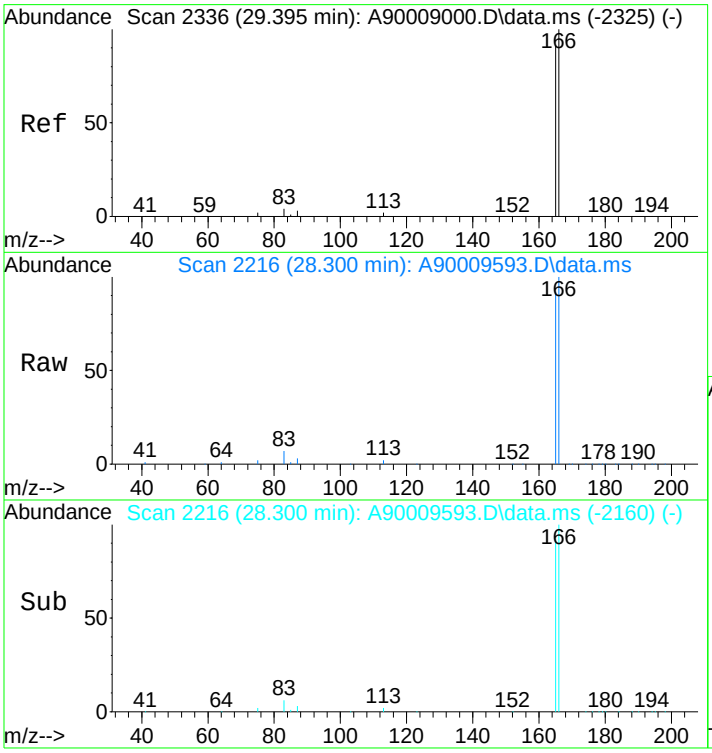


#28
2,3,5-Trimethylnaphthalene
Concen: 491.18 ng/mL
RT: 27.835 min Scan# 2165
Delta R.T. 0.000 min
Lab File: A90009593.D
Acq: 23 Dec 2012 2:36 pm

Tgt Ion:170 Resp: 84320

Ion	Ratio	Lower	Upper
170	100		
155	86.6	69.0	103.4

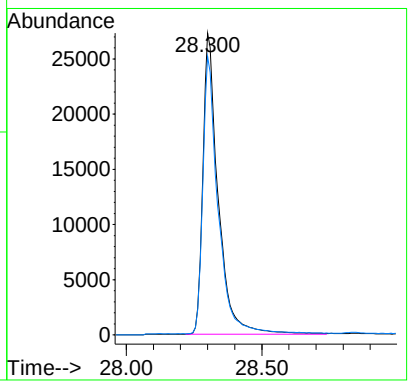


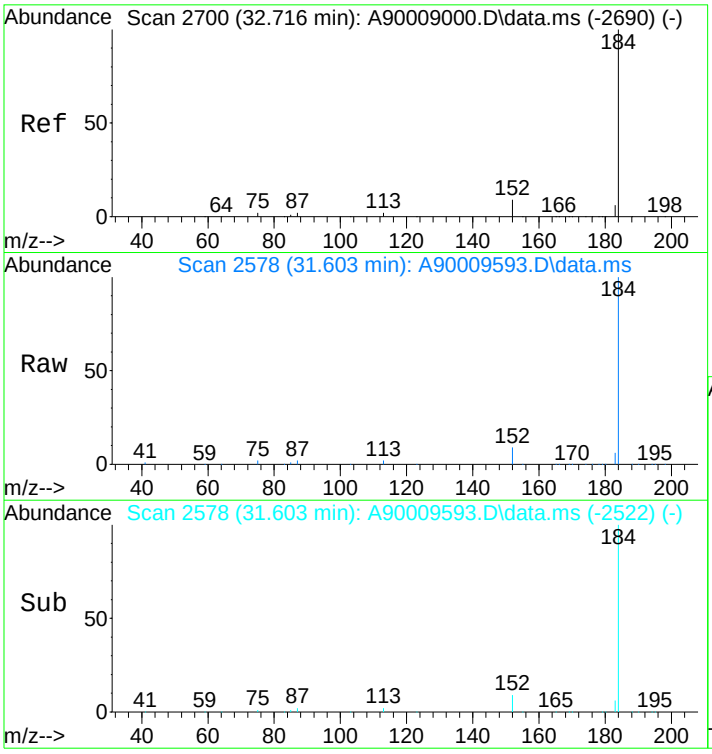


#29
Fluorene
Concen: 495.86 ng/mL
RT: 28.300 min Scan# 2216
Delta R.T. 0.009 min
Lab File: A90009593.D
Acq: 23 Dec 2012 2:36 pm

Tgt Ion:166 Resp: 106976

Ion	Ratio	Lower	Upper
166	100		
165	91.7	73.4	110.0

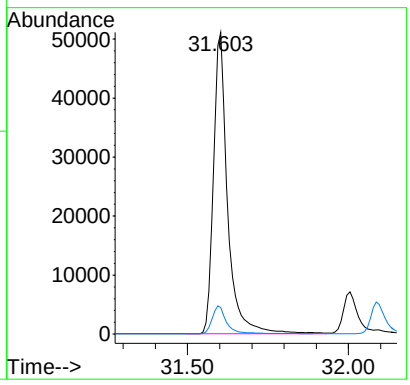


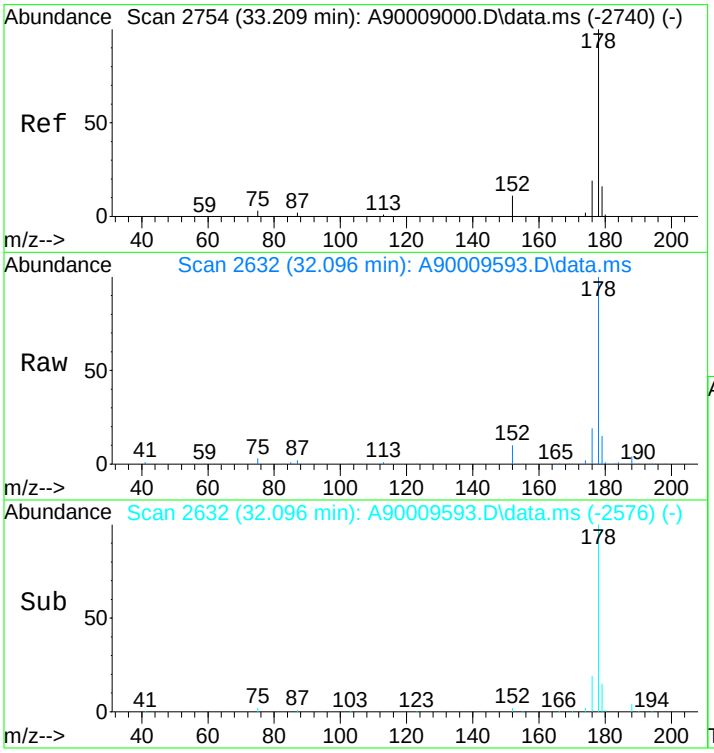


#33
Dibenzothiophene
Concen: 513.97 ng/mL
RT: 31.603 min Scan# 2578
Delta R.T. 0.009 min
Lab File: A90009593.D
Acq: 23 Dec 2012 2:36 pm

Tgt Ion:184 Resp: 155974

Ion	Ratio	Lower	Upper
184	100		
152	9.3	7.0	10.4

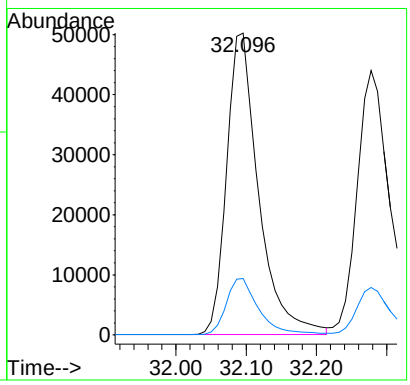


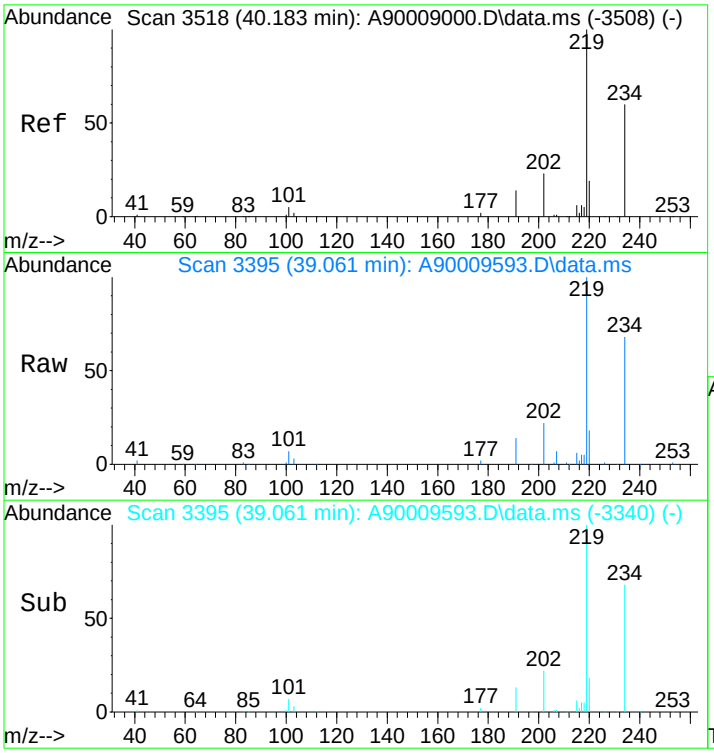


#43
Phenanthrene
Concen: 506.86 ng/mL
RT: 32.096 min Scan# 2632
Delta R.T. 0.009 min
Lab File: A90009593.D
Acq: 23 Dec 2012 2:36 pm

Tgt Ion:178 Resp: 158912

Ion	Ratio	Lower	Upper
178	100		
176	18.7	15.1	22.7

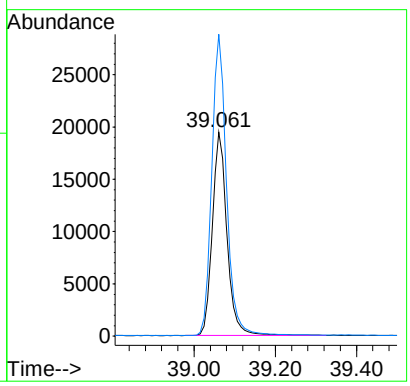


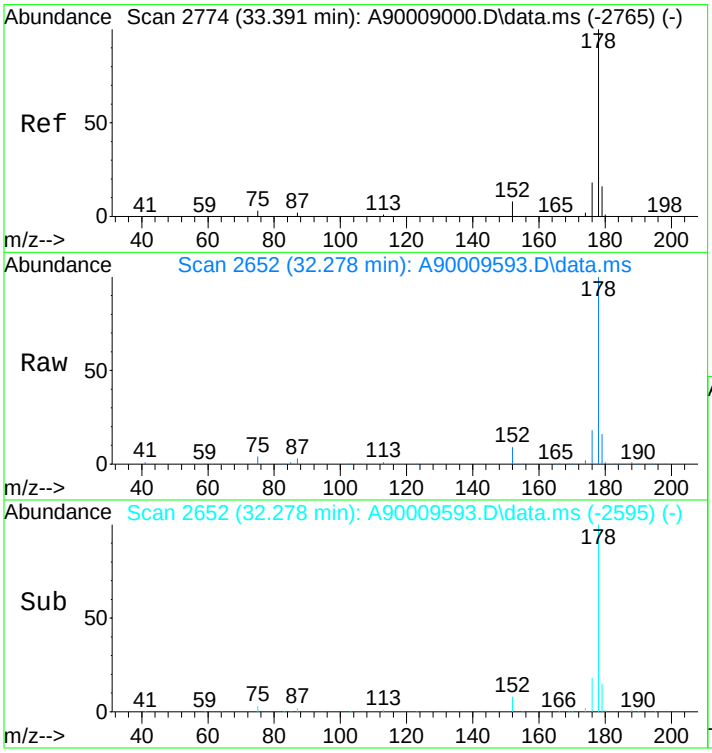


#54
Retene
Concen: 566.41 ng/mL
RT: 39.061 min Scan# 3395
Delta R.T. 0.000 min
Lab File: A90009593.D
Acq: 23 Dec 2012 2:36 pm

Tgt Ion:234 Resp: 48819

Ion	Ratio	Lower	Upper
234	100		
219	149.5	120.4	180.6

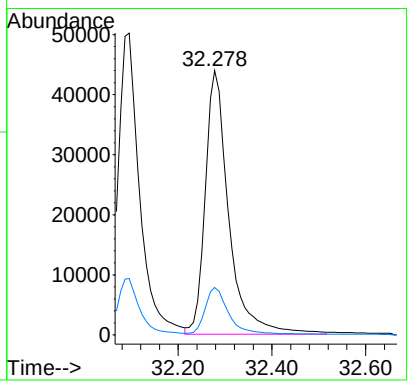


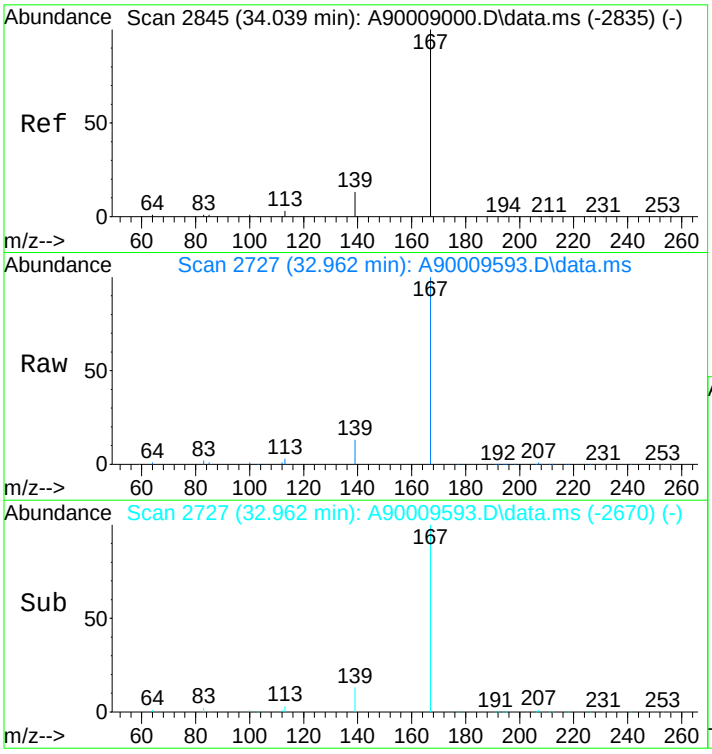


#55
Anthracene
Concen: 525.99 ng/mL m
RT: 32.278 min Scan# 2652
Delta R.T. 0.018 min
Lab File: A90009593.D
Acq: 23 Dec 2012 2:36 pm

Tgt Ion:178 Resp: 153138

Ion	Ratio	Lower	Upper
178	100		
176	19.6	14.6	21.8

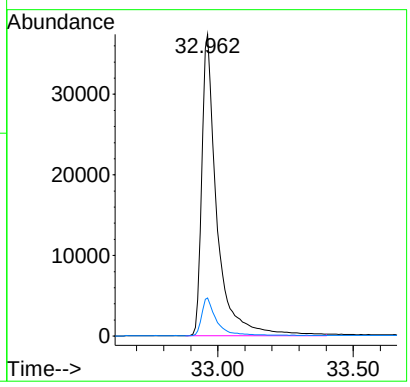


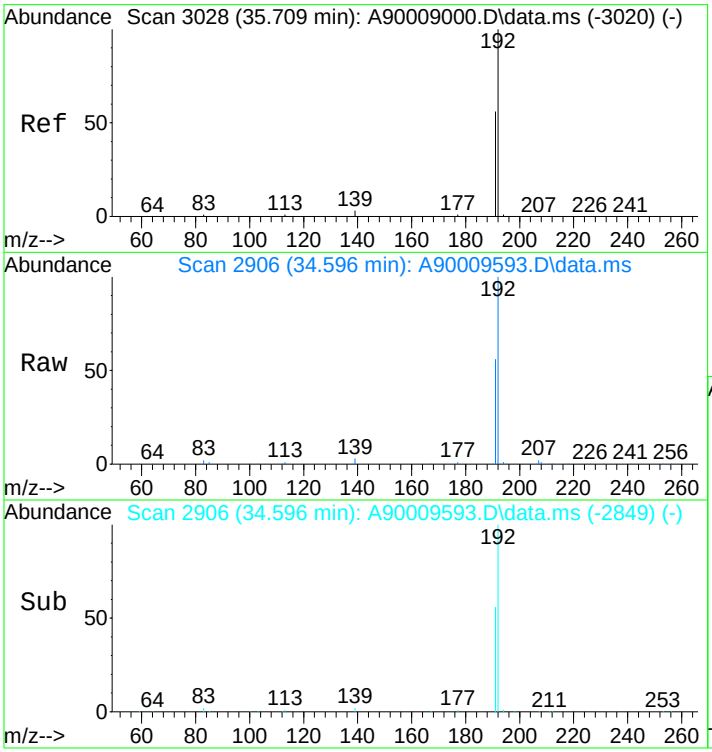


#56
Carbazole
Concen: 524.81 ng/mL
RT: 32.962 min Scan# 2727
Delta R.T. 0.018 min
Lab File: A90009593.D
Acq: 23 Dec 2012 2:36 pm

Tgt Ion:167 Resp: 144542

Ion	Ratio	Lower	Upper
167	100		
139	12.2	10.2	15.2

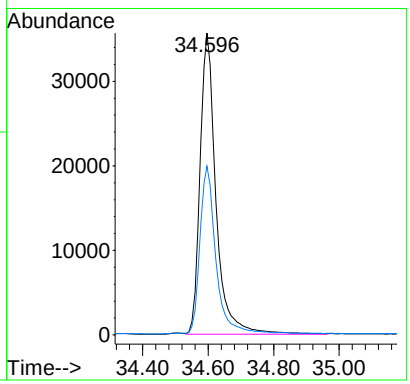


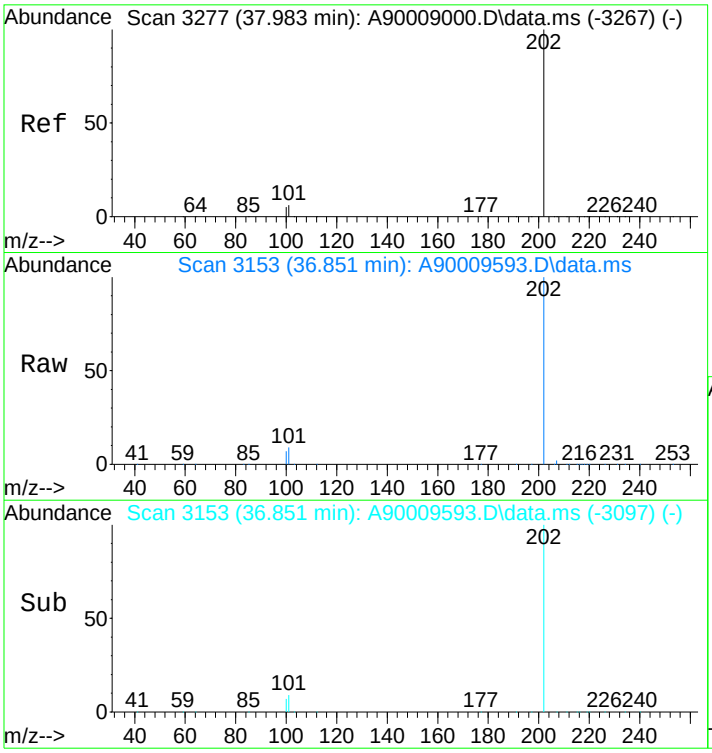


#57
1-Methylphenanthrene
Concen: 516.70 ng/mL m
RT: 34.596 min Scan# 2906
Delta R.T. 0.018 min
Lab File: A90009593.D
Acq: 23 Dec 2012 2:36 pm

Tgt Ion:192 Resp: 119520

Ion	Ratio	Lower	Upper
192	100		
191	55.2	44.9	67.3

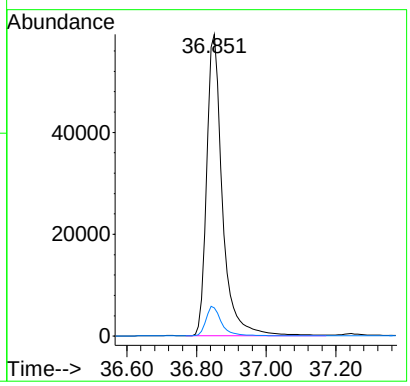


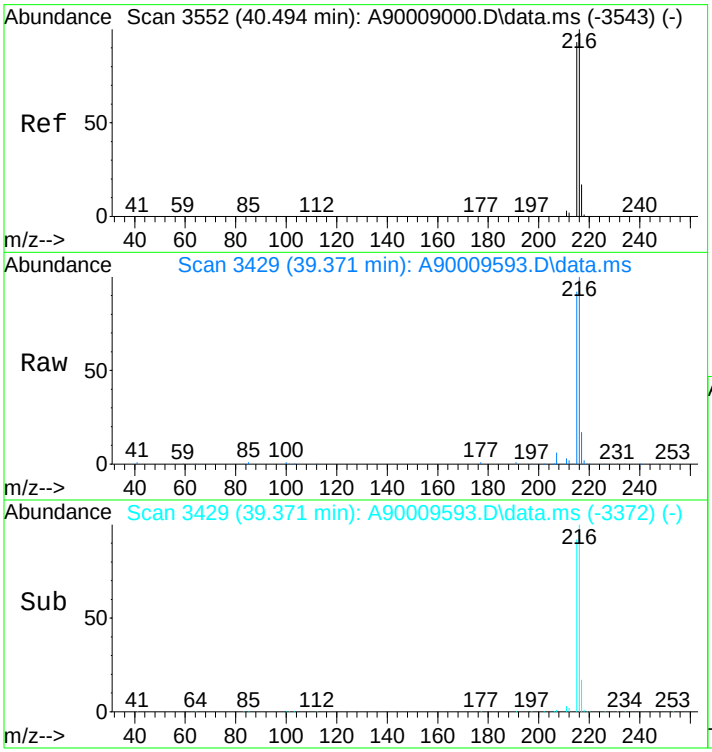


#58
Fluoranthene
Concen: 526.82 ng/mL m
RT: 36.851 min Scan# 3153
Delta R.T. 0.009 min
Lab File: A90009593.D
Acq: 23 Dec 2012 2:36 pm

Tgt Ion:202 Resp: 184510

Ion	Ratio	Lower	Upper
202	100		
101	9.7	8.2	12.2

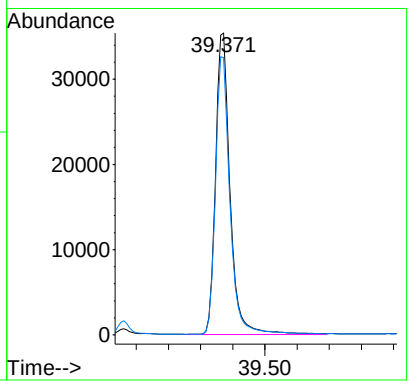


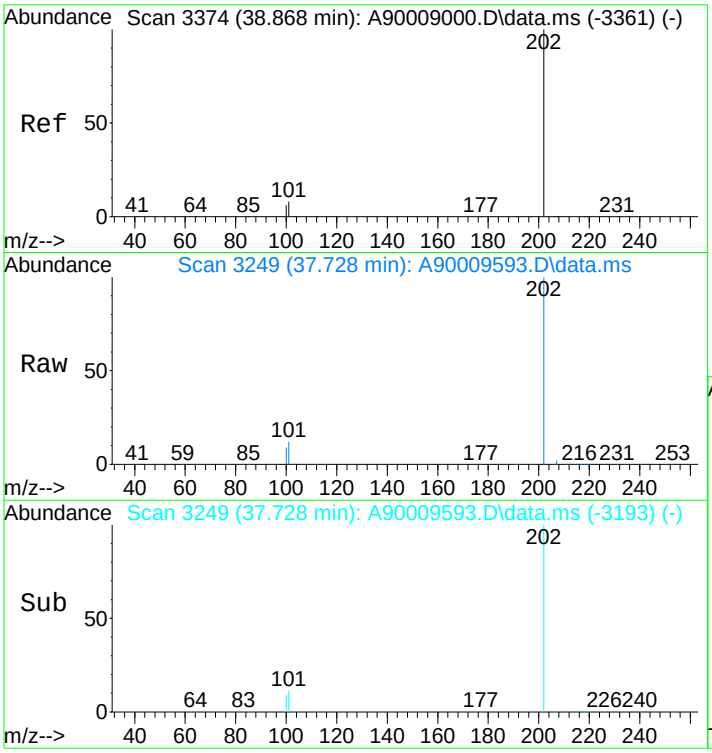


#59
Benzo(b)fluorene
Concen: 533.70 ng/mL
RT: 39.371 min Scan# 3429
Delta R.T. 0.018 min
Lab File: A90009593.D
Acq: 23 Dec 2012 2:36 pm

Tgt Ion:216 Resp: 111162

Ion	Ratio	Lower	Upper
216	100		
215	91.8	73.4	110.2

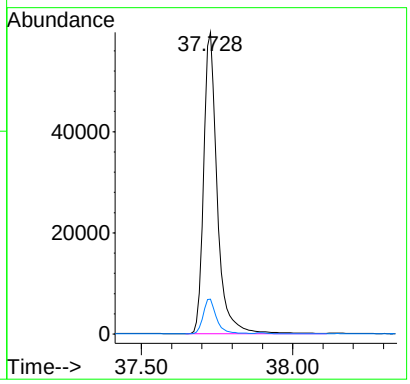


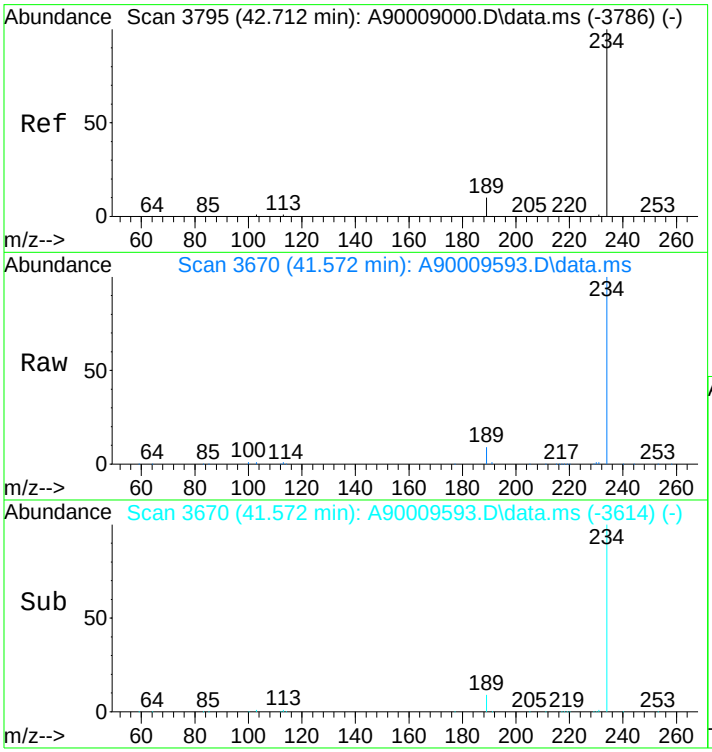


#60
Pyrene
Concen: 516.98 ng/mL
RT: 37.728 min Scan# 3249
Delta R.T. 0.009 min
Lab File: A90009593.D
Acq: 23 Dec 2012 2:36 pm

Tgt Ion:202 Resp: 184725

Ion	Ratio	Lower	Upper
202	100		
101	11.4	9.5	14.3

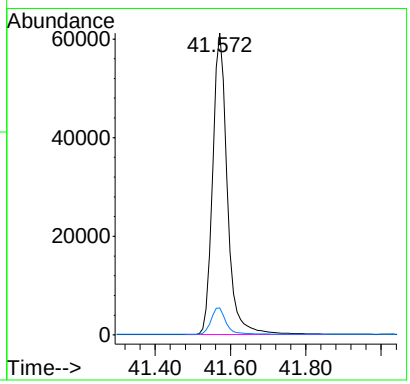


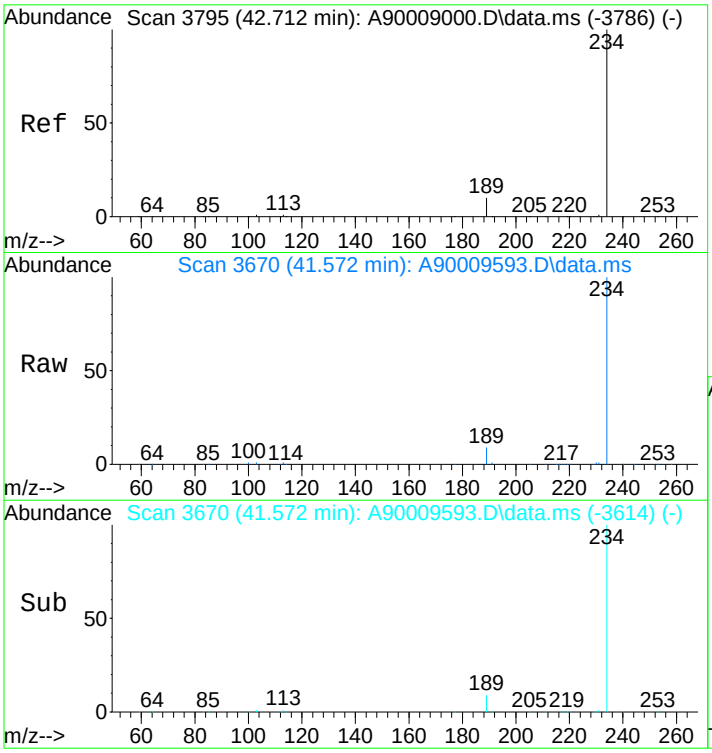


#66
Naphthobenzothiophene
Concen: 533.56 ng/ml
RT: 41.572 min Scan# 3670
Delta R.T. 0.009 min
Lab File: A90009593.D
Acq: 23 Dec 2012 2:36 pm

Tgt Ion:234 Resp: 165425

Ion	Ratio	Lower	Upper
234	100		
189	8.9	7.2	10.8

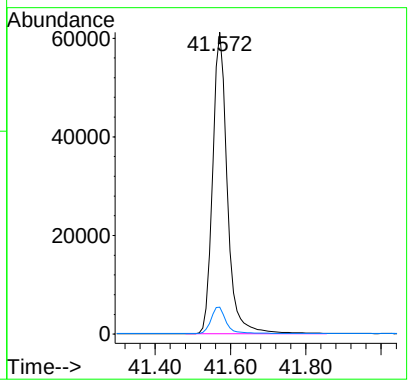


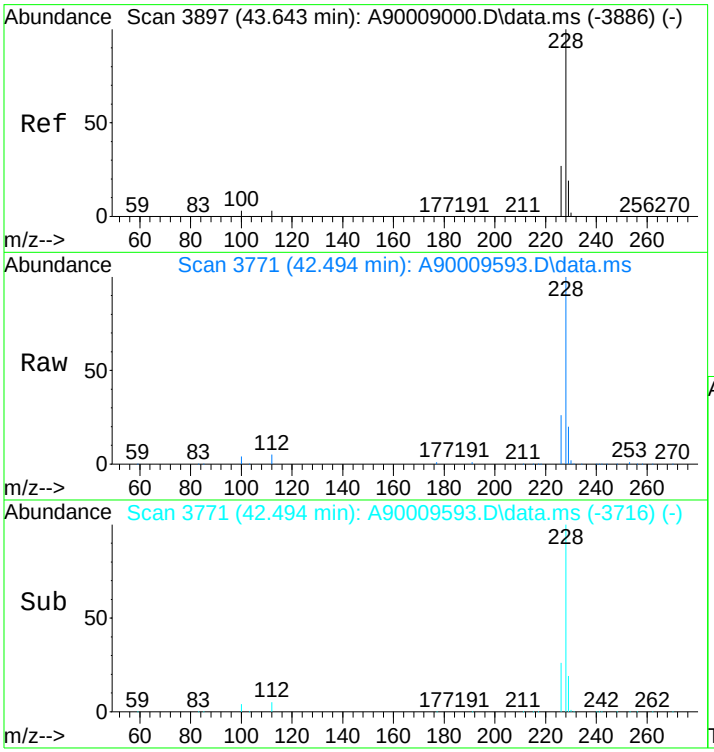


#67
Naphthobenzothiophene-2,1-D
Concen: 533.56 ng/mL
RT: 41.572 min Scan# 3670
Delta R.T. 0.009 min
Lab File: A90009593.D
Acq: 23 Dec 2012 2:36 pm

Tgt Ion:234 Resp: 165425

Ion	Ratio	Lower	Upper
234	100		
189	8.9	7.2	10.8

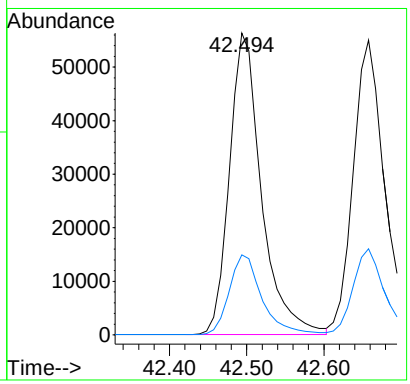


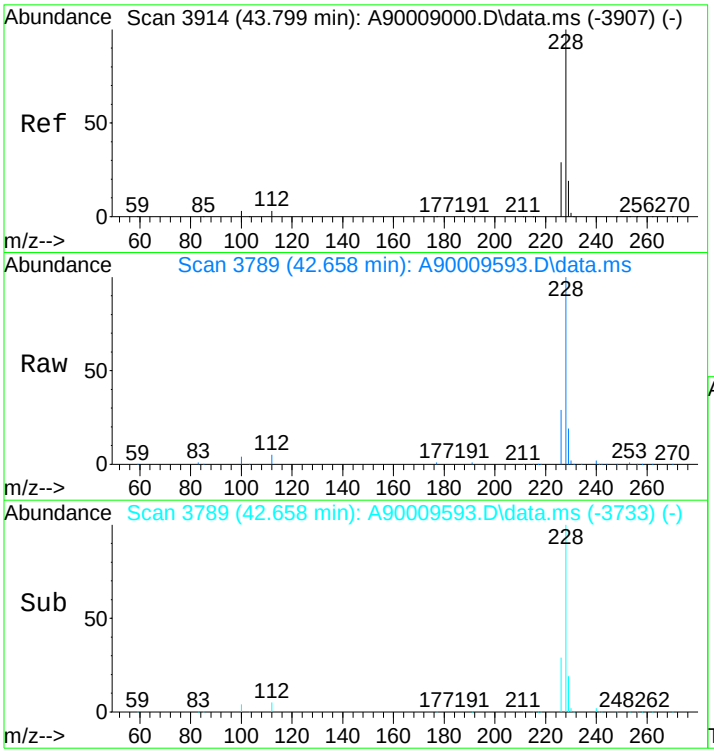


#75
Benz[a]anthracene
Concen: 478.72 ng/mL
RT: 42.494 min Scan# 3771
Delta R.T. 0.000 min
Lab File: A90009593.D
Acq: 23 Dec 2012 2:36 pm

Tgt Ion:228 Resp: 162409

Ion	Ratio	Lower	Upper
228	100		
226	26.9	20.8	31.2

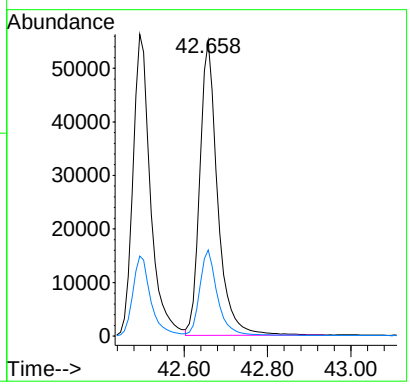


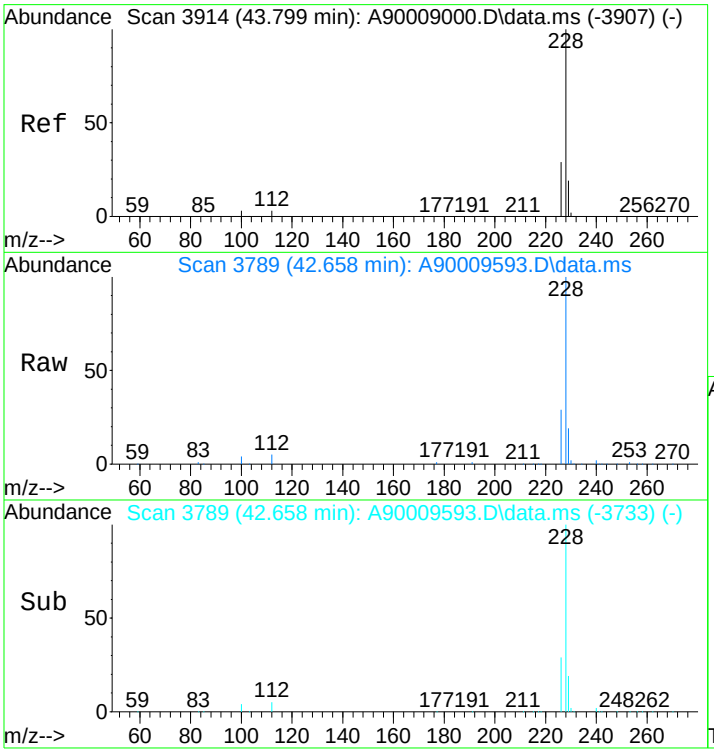


#76
Chrysene
Concen: 486.50 ng/mL
RT: 42.658 min Scan# 3789
Delta R.T. 0.009 min
Lab File: A90009593.D
Acq: 23 Dec 2012 2:36 pm

Tgt Ion:228 Resp: 162331

Ion	Ratio	Lower	Upper
228	100		
226	29.0	23.3	34.9

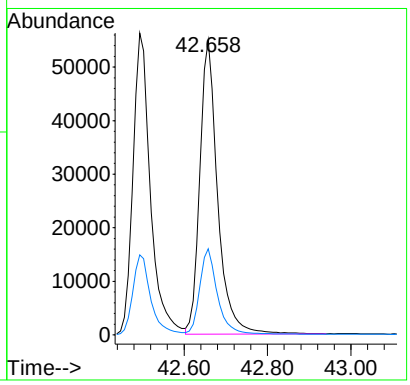


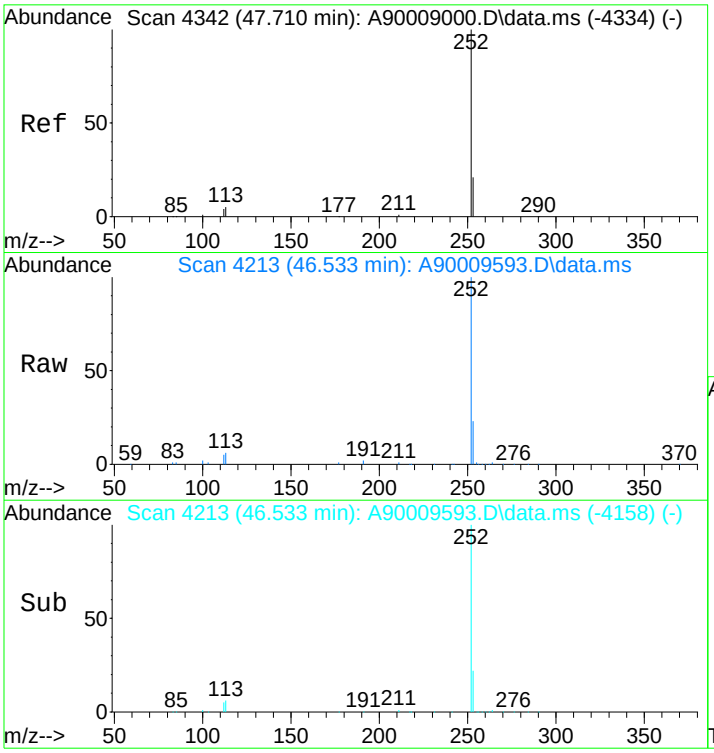


#77
Chrysene/Triphenylene
Concen: 486.50 ng/mL
RT: 42.658 min Scan# 3789
Delta R.T. 0.009 min
Lab File: A90009593.D
Acq: 23 Dec 2012 2:36 pm

Tgt Ion:228 Resp: 162331

Ion	Ratio	Lower	Upper
228	100		
226	29.0	23.3	34.9

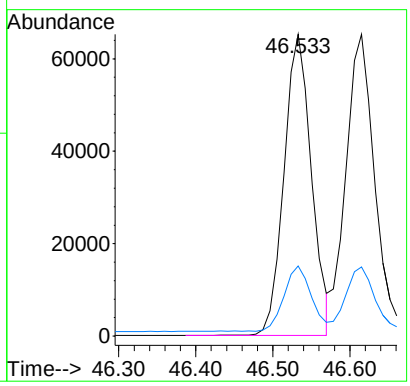


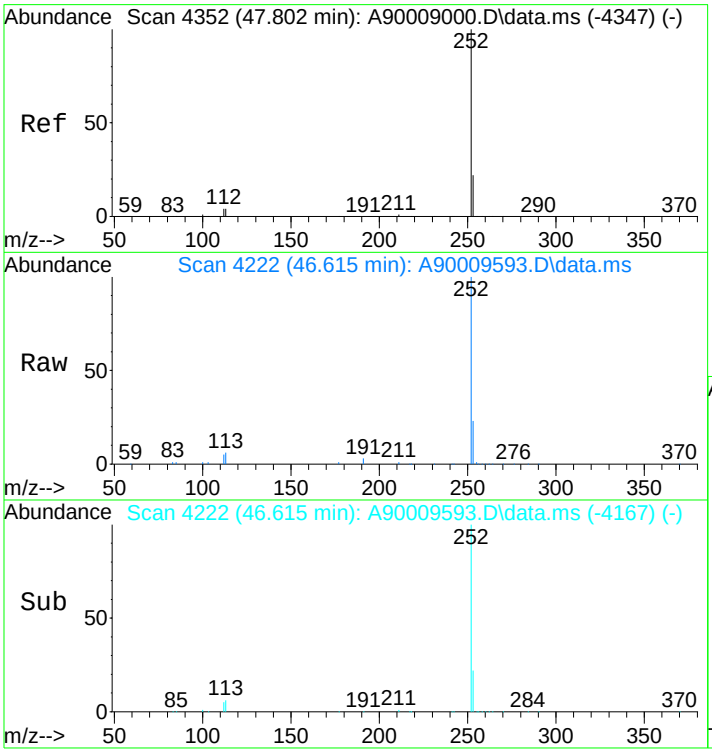


#84
Benzo[b]fluoranthene
Concen: 457.88 ng/mL
RT: 46.533 min Scan# 4213
Delta R.T. 0.000 min
Lab File: A90009593.D
Acq: 23 Dec 2012 2:36 pm

Tgt Ion:252 Resp: 161063

Ion	Ratio	Lower	Upper
252	100		
253	21.5	20.3	30.5

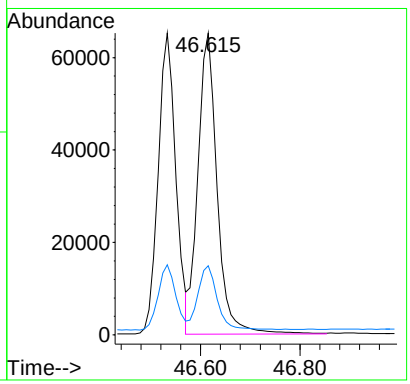


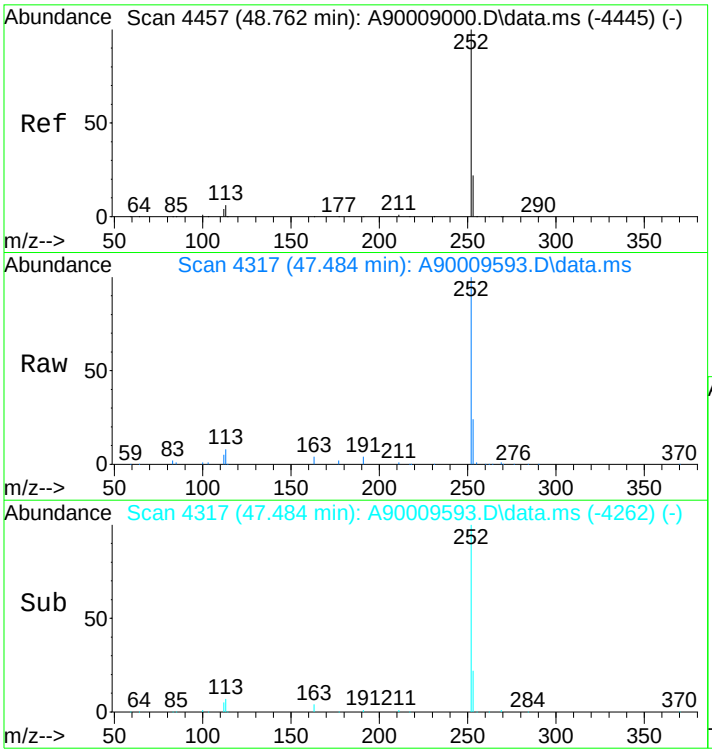


#85
Benzo[j]+[k]fluoranthene
Concen: 506.03 ng/mL
RT: 46.615 min Scan# 4222
Delta R.T. 0.000 min
Lab File: A90009593.D
Acq: 23 Dec 2012 2:36 pm

Tgt Ion:252 Resp: 174897

Ion	Ratio	Lower	Upper
252	100		
253	21.2	20.2	30.4

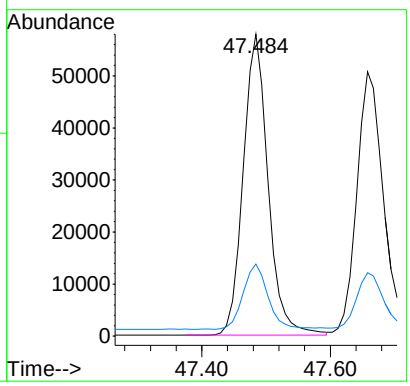


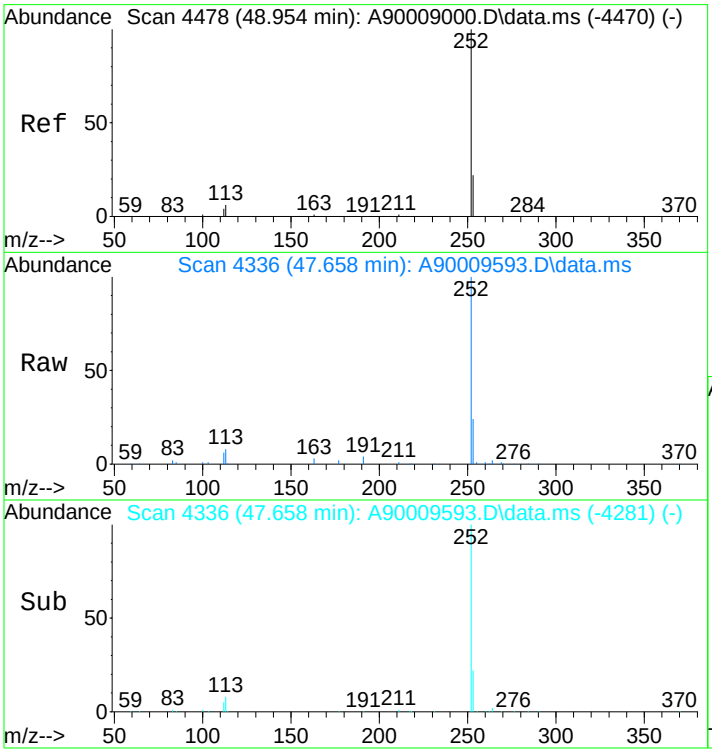


#87
Benzo[e]pyrene
Concen: 465.95 ng/mL
RT: 47.484 min Scan# 4317
Delta R.T. 0.000 min
Lab File: A90009593.D
Acq: 23 Dec 2012 2:36 pm

Tgt Ion:252 Resp: 155636

Ion	Ratio	Lower	Upper
252	100		
253	21.9	21.4	32.0

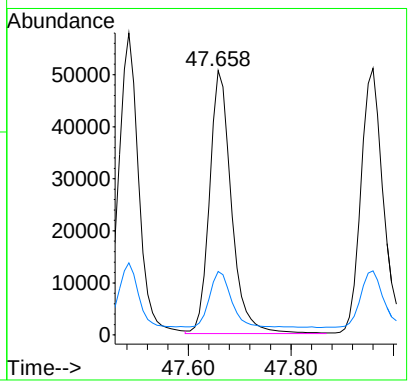


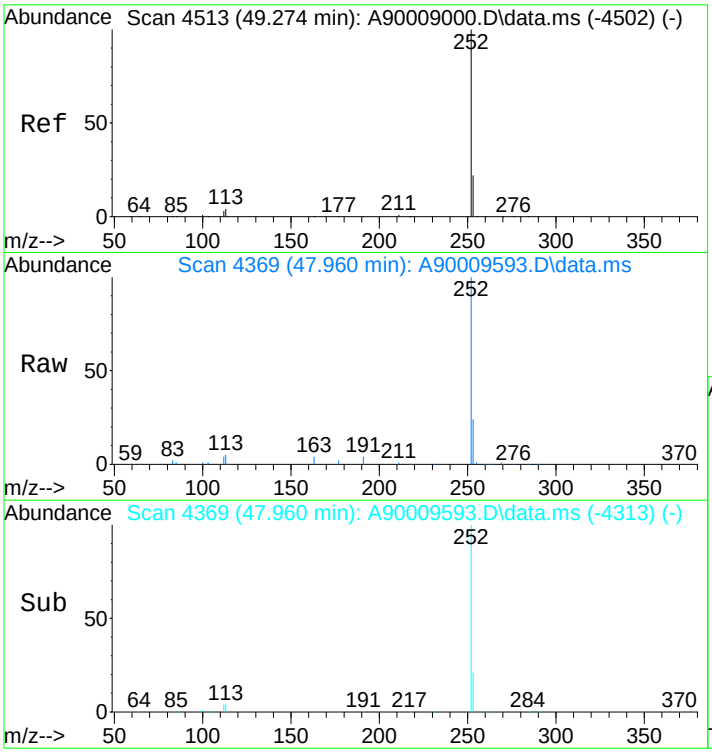


#89
Benzo[a]pyrene
Concen: 472.92 ng/mL m
RT: 47.658 min Scan# 4336
Delta R.T. 0.000 min
Lab File: A90009593.D
Acq: 23 Dec 2012 2:36 pm

Tgt Ion:252 Resp: 149603

Ion	Ratio	Lower	Upper
252	100		
253	22.0	21.9	32.9

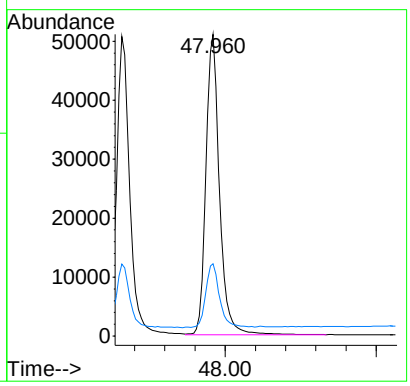


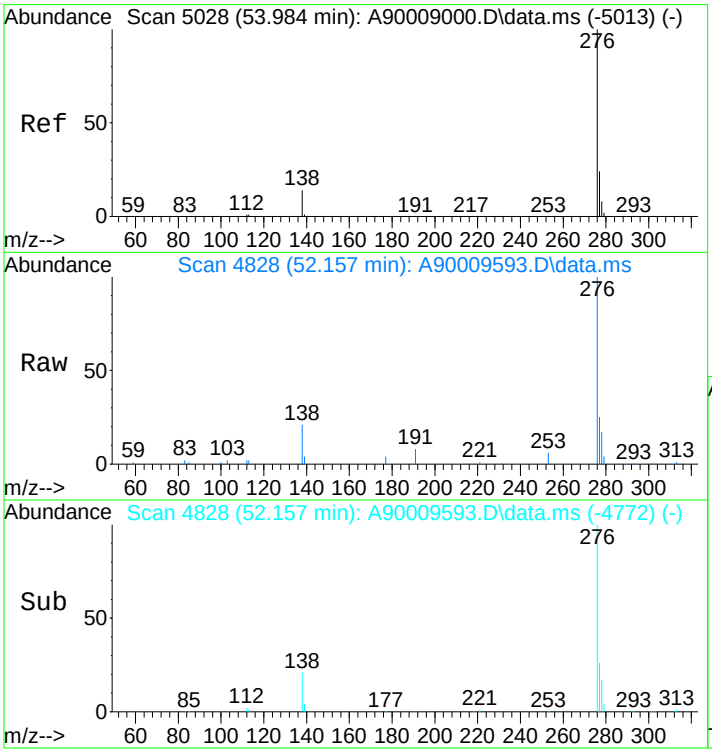


#90
Perylene
Concen: 468.81 ng/mL
RT: 47.960 min Scan# 4369
Delta R.T. 0.009 min
Lab File: A90009593.D
Acq: 23 Dec 2012 2:36 pm

Tgt Ion:252 Resp: 158278

Ion	Ratio	Lower	Upper
252	100		
253	21.9	22.2	33.2#

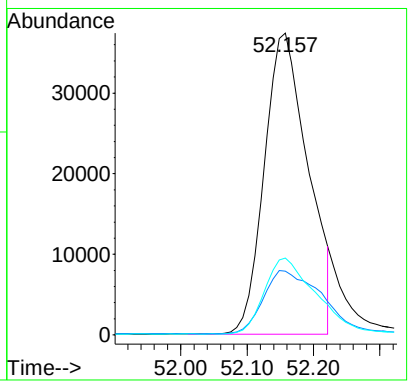


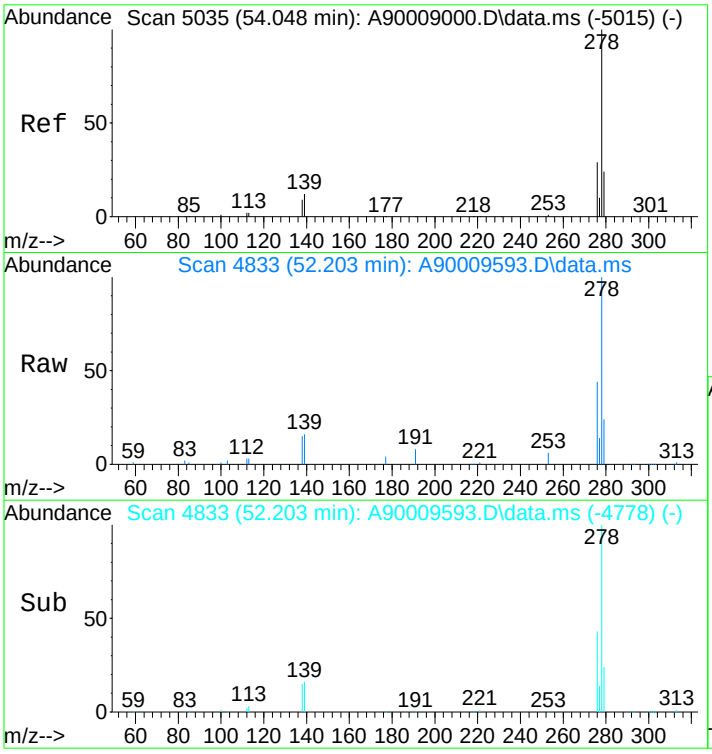


#91
Indeno[1,2,3-cd]pyrene
Concen: 489.85 ng/mL m
RT: 52.157 min Scan# 4828
Delta R.T. 0.009 min
Lab File: A90009593.D
Acq: 23 Dec 2012 2:36 pm

Tgt Ion:276 Resp: 171616

Ion	Ratio	Lower	Upper
276	100		
138	28.7	17.7	26.5#
277	30.5	20.2	30.4#

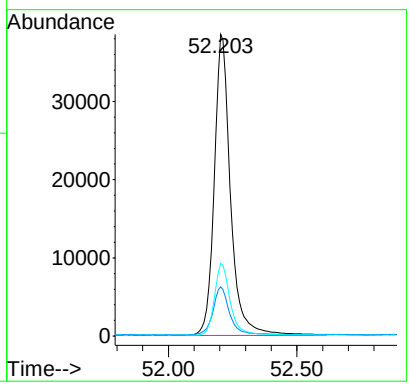


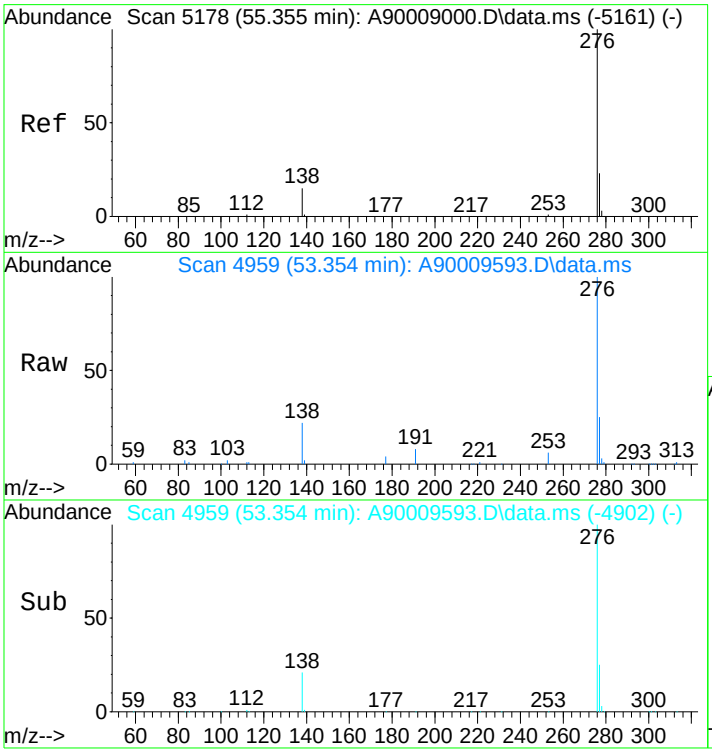


#92
Dibenz[ah]+[ac]anthracene
Concen: 491.13 ng/mL
RT: 52.203 min Scan# 4833
Delta R.T. 0.000 min
Lab File: A90009593.D
Acq: 23 Dec 2012 2:36 pm

Tgt Ion:278 Resp: 169501

Ion	Ratio	Lower	Upper
278	100		
139	16.0	13.3	19.9
279	23.3	19.3	28.9

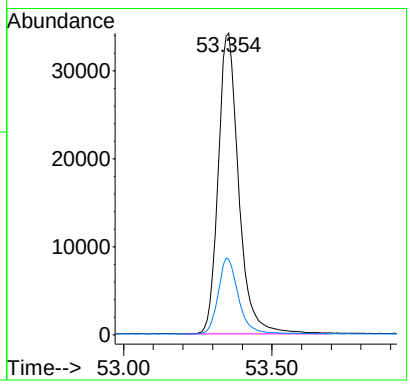


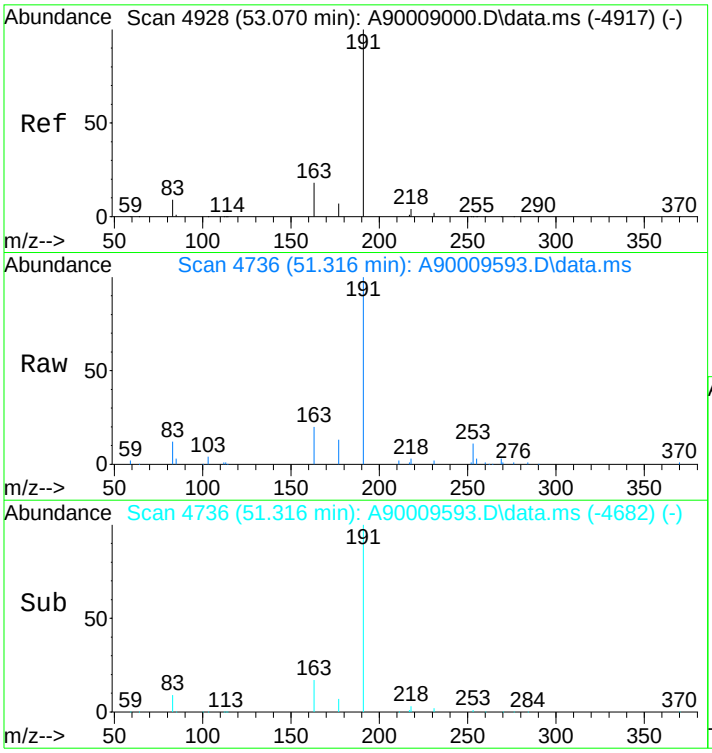


#93
Benzo[g,h,i]perylene
Concen: 475.46 ng/mL
RT: 53.354 min Scan# 4959
Delta R.T. 0.019 min
Lab File: A90009593.D
Acq: 23 Dec 2012 2:36 pm

Tgt Ion:276 Resp: 163692

Ion	Ratio	Lower	Upper
276	100		
277	24.8	20.0	30.0

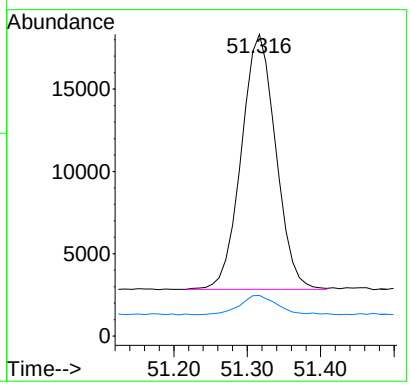


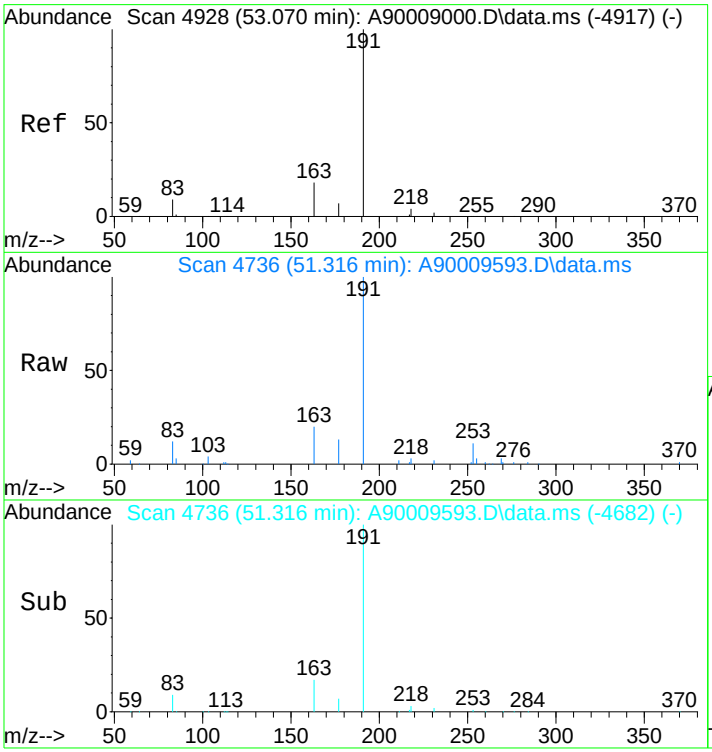


#94
Hopane (T19)
Concen: 390.38 ng/mL
RT: 51.316 min Scan# 4736
Delta R.T. -0.009 min
Lab File: A90009593.D
Acq: 23 Dec 2012 2:36 pm

Tgt Ion:191 Resp: 50762

Ion	Ratio	Lower	Upper
191	100		
177	8.4	14.4	21.6#

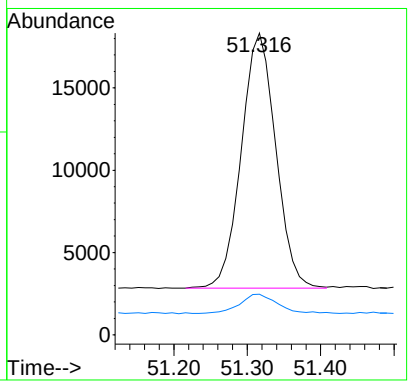




#95
17a(H),21B(H)-hopane - C30H52
Concen: 390.38 ng/mL
RT: 51.316 min Scan# 4736
Delta R.T. -0.009 min
Lab File: A90009593.D
Acq: 23 Dec 2012 2:36 pm

Tgt Ion:191 Resp: 50762

Ion	Ratio	Lower	Upper
191	100		
177	8.4	14.4	21.6#



Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\
Data File : A90009632.D
Acq On : 26 Dec 2012 1:53 pm
Operator : ps
Sample : C912261202
Misc : WHAR30@500ng/ml
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Dec 28 11:59:22 2012
Quant Method : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Fri Dec 28 11:59:09 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

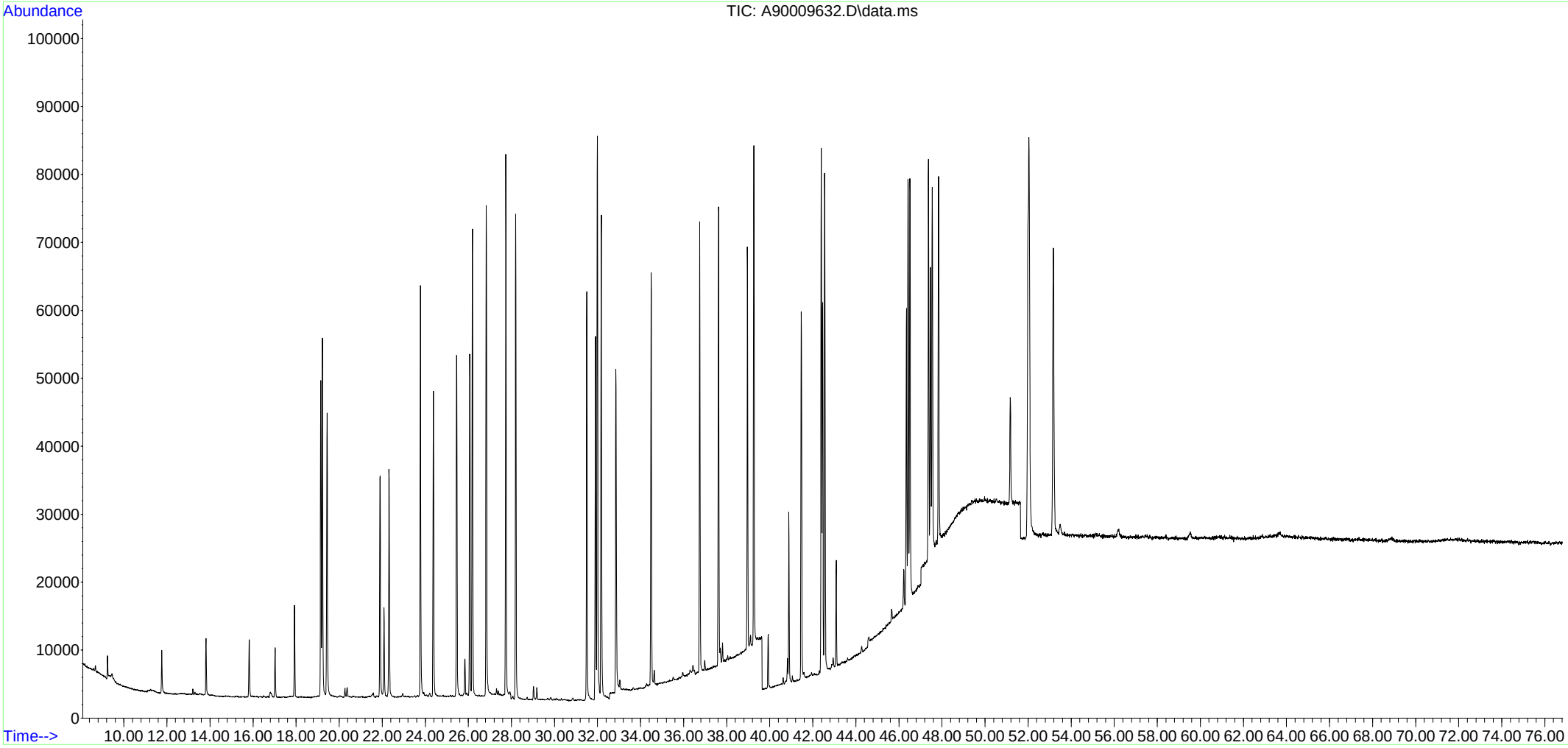
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.064	164	57717	250.000	ng/mL	0.00
74) Chrysene-d12	42.457	240	102349	250.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.147	136	101159	228.000	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 22.80%#			
42) Phenanthrene-d10	31.904	188	104005	249.796	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 24.98%#			
83) Benzo[b]fluoranthene-d12	46.350	264	82414	219.026	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 21.90%#			
88) Benzo[a]pyrene-d12	47.466	264	84801	224.823	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 22.48%#			
129) 5B(H)Cholane - Surr	43.087	217	20014	232.904	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 23.29%#			
Target Compounds						Qvalue
3) trans-Decalin	15.826	138	12845	126.572	ng/mL	100
4) cis-Decalin	17.030	138	9983	125.655	ng/mL	100
10) Naphthalene	19.220	128	115964	254.695	ng/mL#	100
16) 2-Methylnaphthalene	21.903	142	75560M6	253.765	ng/mL	
17) 1-Methylnaphthalene	22.314	142	72693M6	251.565	ng/mL	
18) Benzothiophene	19.439	134	96521	253.320	ng/mL	100
23) Biphenyl	23.774	154	101816	261.300	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.376	156	70702M6	252.600	ng/mL	
25) Dibenzofuran	26.831	168	110835	266.687	ng/mL	99
26) Acenaphthylene	25.462	152	116220	248.135	ng/mL#	100
27) Acenaphthene	26.192	153	75566	256.602	ng/mL	98
28) 2,3,5-Trimethylnaphtha...	27.743	170	65847	255.883	ng/mL	99
29) Fluorene	28.200	166	83692	258.792	ng/mL	99
33) Dibenzothiophene	31.502	184	121954	268.083	ng/mL	99
43) Phenanthrene	31.995	178	126916M6	270.048	ng/mL	
54) Retene	38.969	234	35121M6	271.834	ng/mL	
55) Anthracene	32.177	178	119344M4	273.457	ng/mL	
56) Carbazole	32.853	167	110940	268.713	ng/mL	99
57) 1-Methylphenanthrene	34.487	192	90288M4	260.386	ng/mL	
58) Fluoranthene	36.751	202	138708M4	264.200	ng/mL	
59) Benzo(b)fluorene	39.262	216	82379	263.842	ng/mL	99
60) Pyrene	37.618	202	140360	262.051	ng/mL	99
66) Naphthobenzothiophene	41.462	234	119410	256.927	ng/ml	99
67) Naphthobenzothiophene-...	41.462	234	119410	256.927	ng/mL	99
75) Benz[a]anthracene	42.393	228	115460	245.908	ng/mL	100
76) Chrysene	42.548	228	116644M4	252.591	ng/mL	
77) Chrysene/Triphenylene	42.548	228	116601M4	252.498	ng/mL	
84) Benzo[b]fluoranthene	46.432	252	114389M4	234.967	ng/mL	
85) Benzo[j]+[k]fluoranthene	46.505	252	118412M4	247.548	ng/mL	
87) Benzo[e]pyrene	47.374	252	109029	235.851	ng/mL#	85
89) Benzo[a]pyrene	47.548	252	104666M4	239.069	ng/mL	
90) Perylene	47.841	252	108885	233.031	ng/mL#	84
91) Indeno[1,2,3-cd]pyrene	51.993	276	113733M6	234.562	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.048	278	116785	244.502	ng/mL	98
93) Benzo[g,h,i]perylene	53.172	276	115207	241.790	ng/mL	99
94) Hopane (T19)	51.170	191	36346M6	201.962	ng/mL	
95) 17a(H),21B(H)-hopane -...	51.170	191	36316M6	201.795	ng/mL	

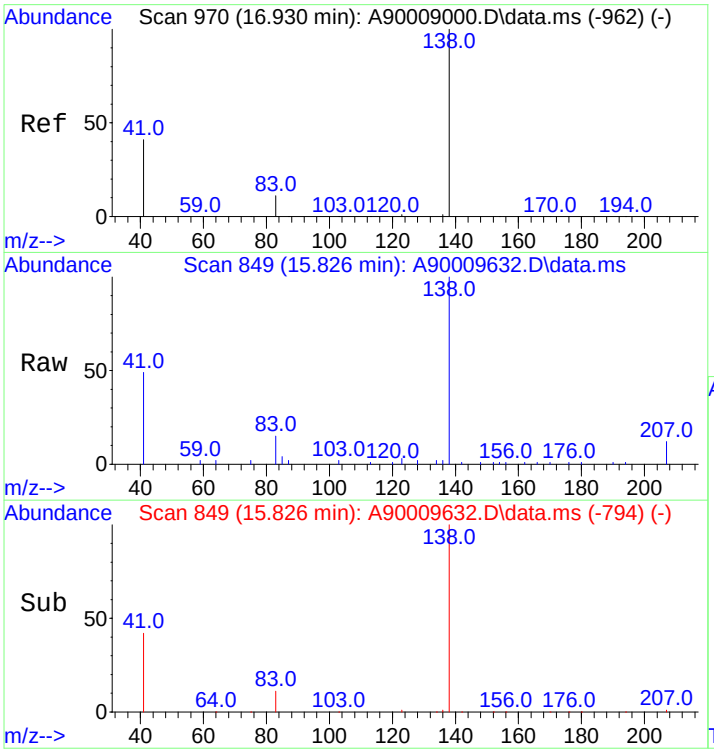
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\
Data File : A90009632.D
Acq On : 26 Dec 2012 1:53 pm
Operator : ps
Sample : C912261202
Misc : WHAR30@500ng/ml
ALS Vial : 2 Sample Multiplier: 1

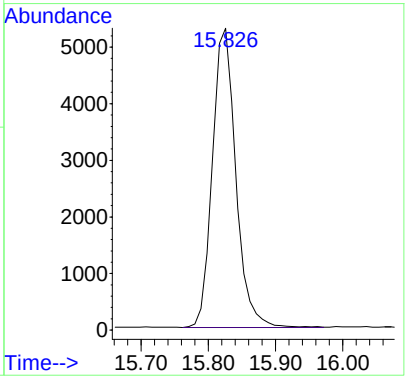
Quant Time: Dec 28 11:59:22 2012
Quant Method : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Fri Dec 28 11:59:09 2012
Response via : Initial Calibration

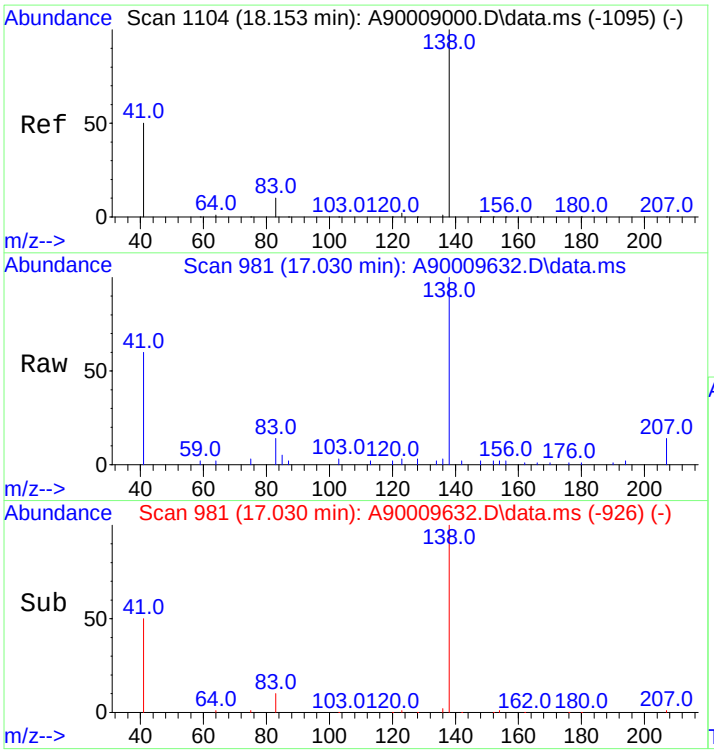




#3
trans-Decalin
Concen: 126.57 ng/mL
RT: 15.826 min Scan# 849
Delta R.T. -0.000 min
Lab File: A90009632.D
Acq: 26 Dec 2012 1:53 pm

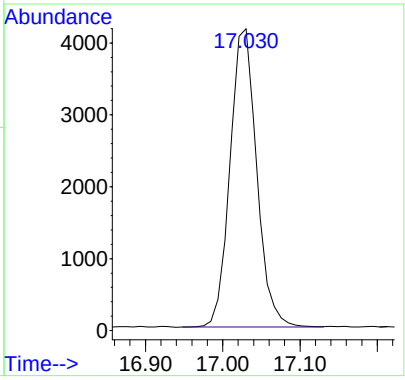
Tgt Ion:138 Resp: 12845

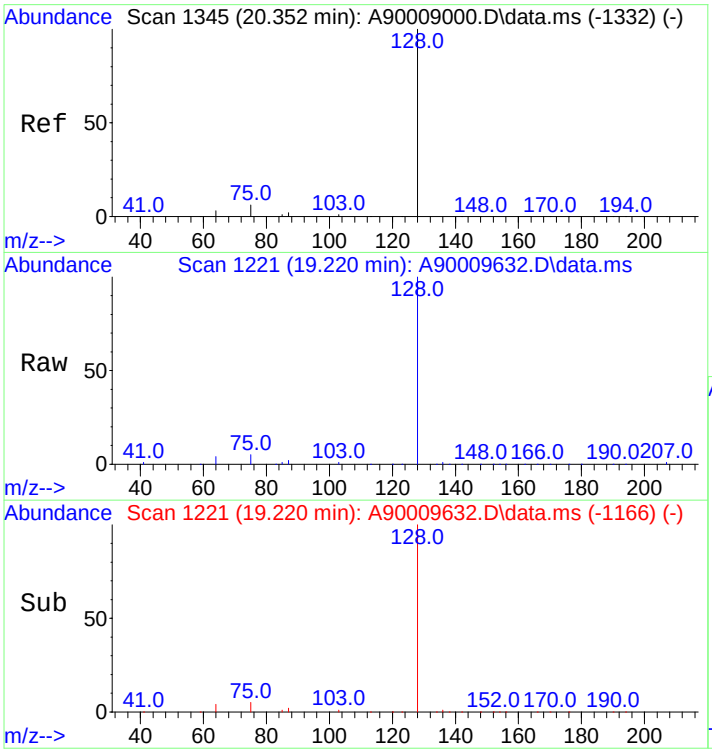




#4
cis-Decalin
Concen: 125.65 ng/mL
RT: 17.030 min Scan# 981
Delta R.T. 0.000 min
Lab File: A90009632.D
Acq: 26 Dec 2012 1:53 pm

Tgt Ion:138 Resp: 9983

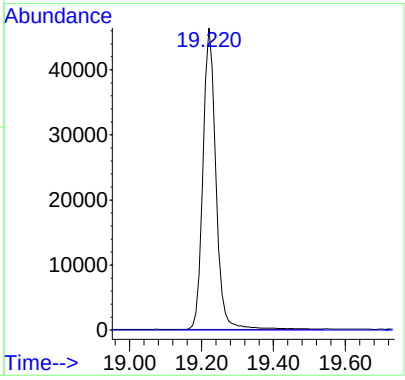


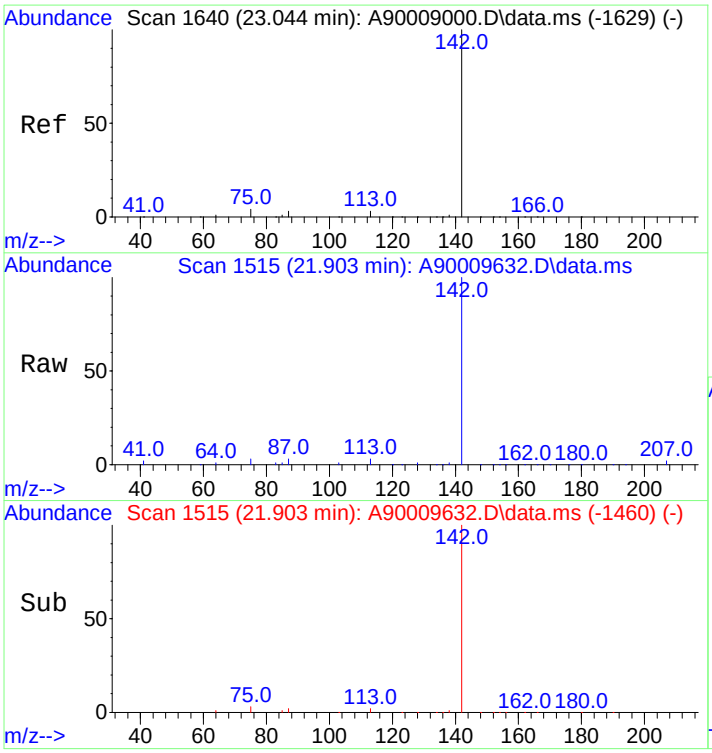


#10
Naphthalene
Concen: 254.70 ng/mL
RT: 19.220 min Scan# 1221
Delta R.T. 0.000 min
Lab File: A90009632.D
Acq: 26 Dec 2012 1:53 pm

Tgt Ion:128 Resp: 115964

Ion	Ratio	Lower	Upper
128	100		
127	0.0	0.0	0.0

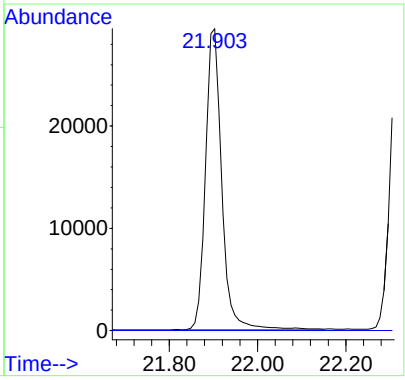


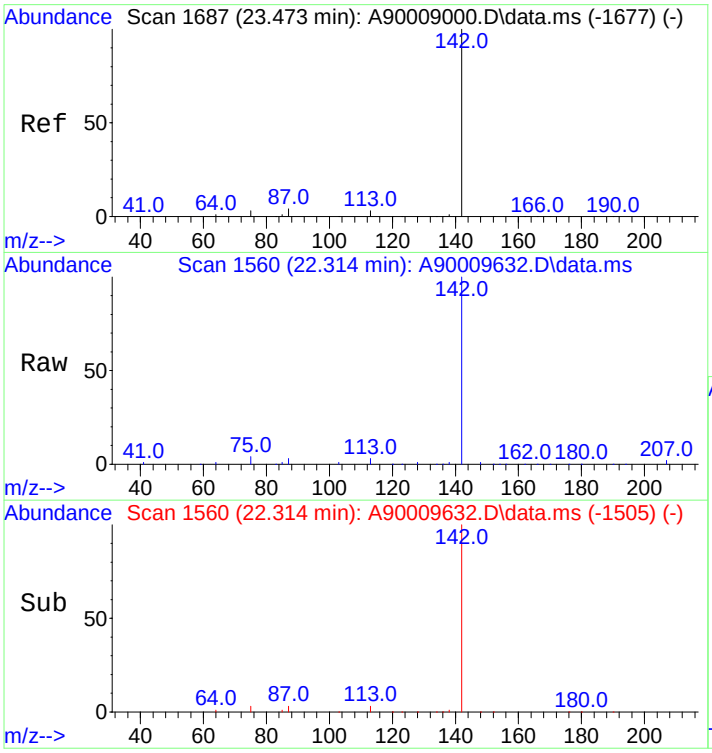


#16
2-Methylnaphthalene
Concen: 253.77 ng/mL m
RT: 21.903 min Scan# 1515
Delta R.T. 0.000 min
Lab File: A90009632.D
Acq: 26 Dec 2012 1:53 pm

Tgt Ion:142 Resp: 75560

Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	0.0

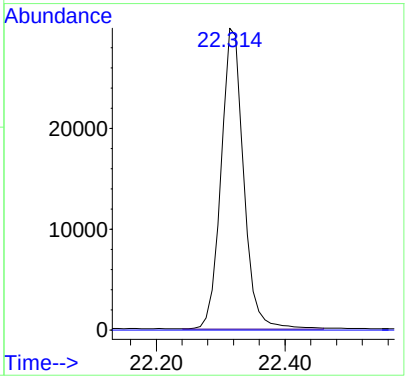


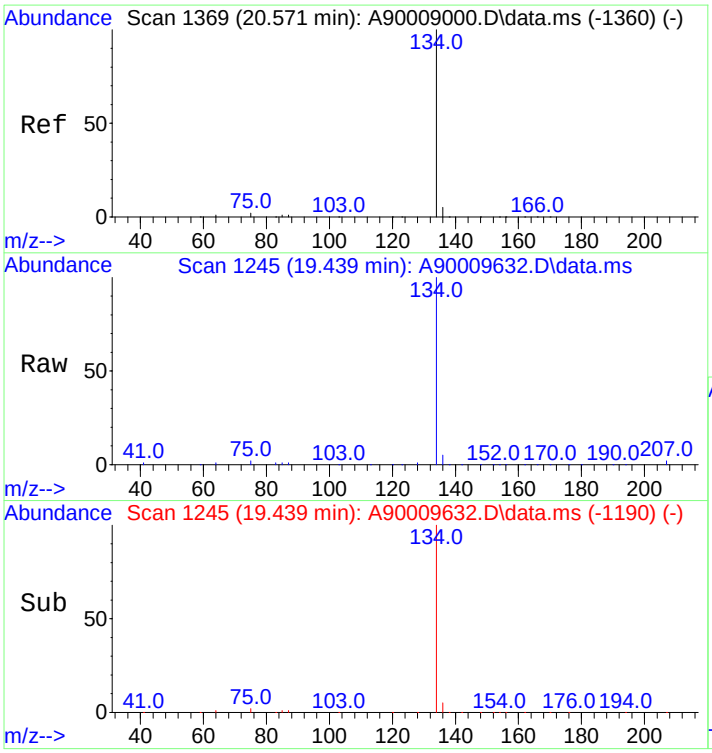


#17
1-Methylnaphthalene
Concen: 251.56 ng/mL m
RT: 22.314 min Scan# 1560
Delta R.T. -0.000 min
Lab File: A90009632.D
Acq: 26 Dec 2012 1:53 pm

Tgt Ion:142 Resp: 72693

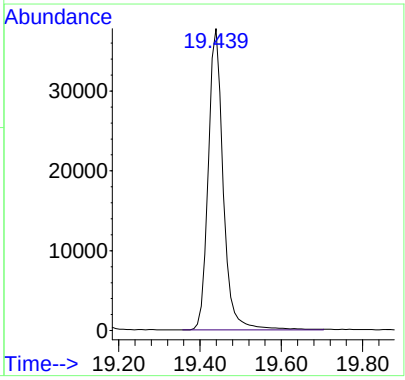
Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	20.0

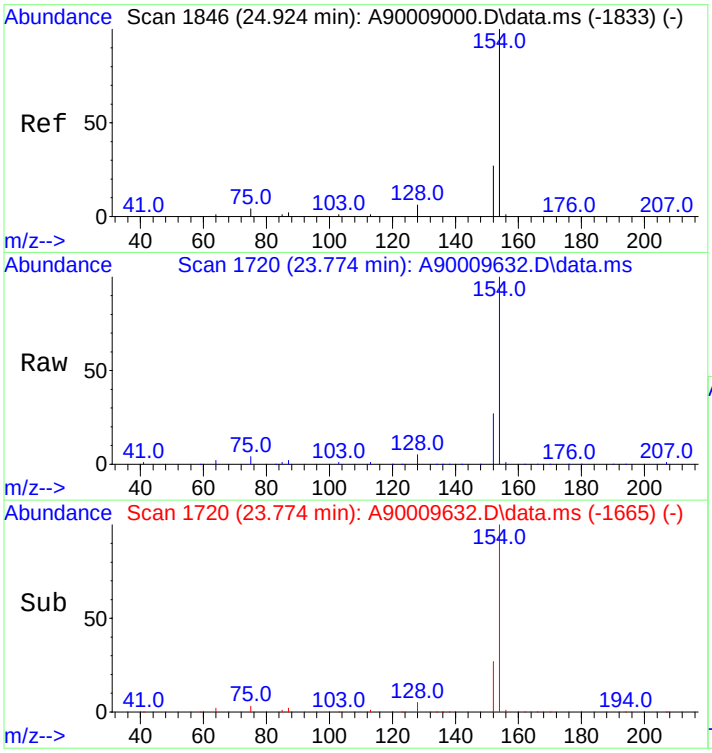




#18
Benzothiophene
Concen: 253.32 ng/mL
RT: 19.439 min Scan# 1245
Delta R.T. 0.000 min
Lab File: A90009632.D
Acq: 26 Dec 2012 1:53 pm

Tgt Ion:134 Resp: 96521

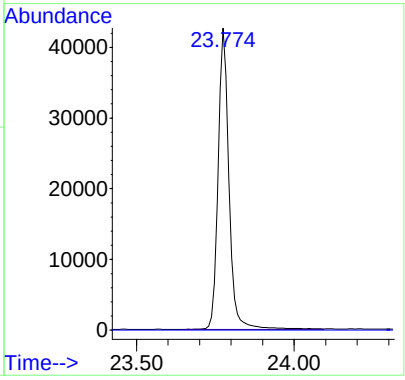


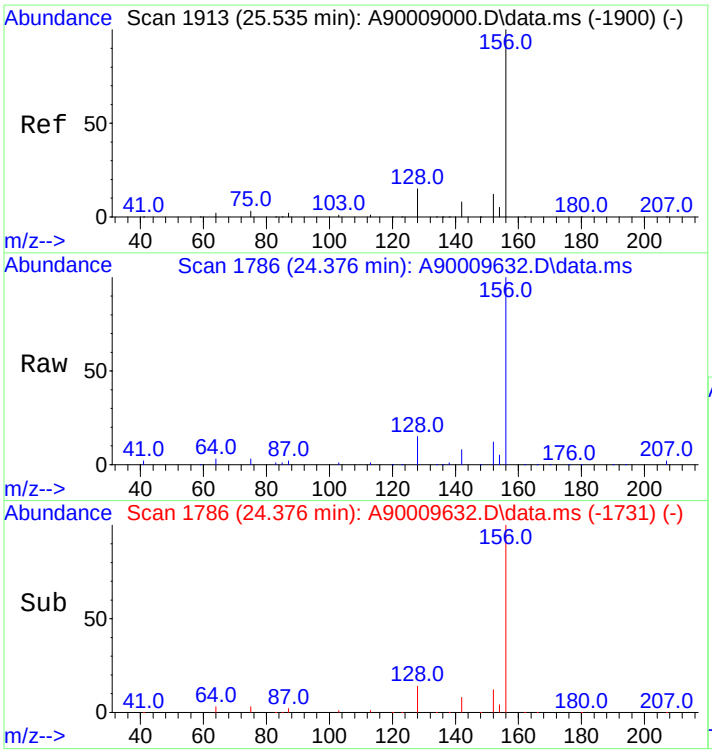


#23
Biphenyl
Concen: 261.30 ng/mL
RT: 23.774 min Scan# 1720
Delta R.T. -0.000 min
Lab File: A90009632.D
Acq: 26 Dec 2012 1:53 pm

Tgt Ion:154 Resp: 101816

Ion	Ratio	Lower	Upper
154	100		
153	0.0	0.0	0.0

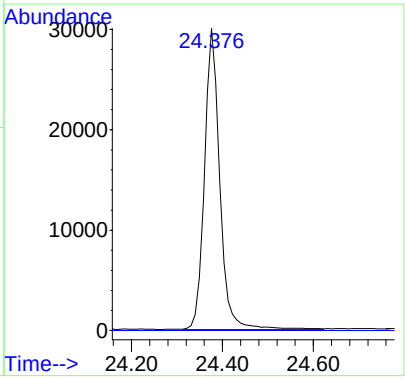


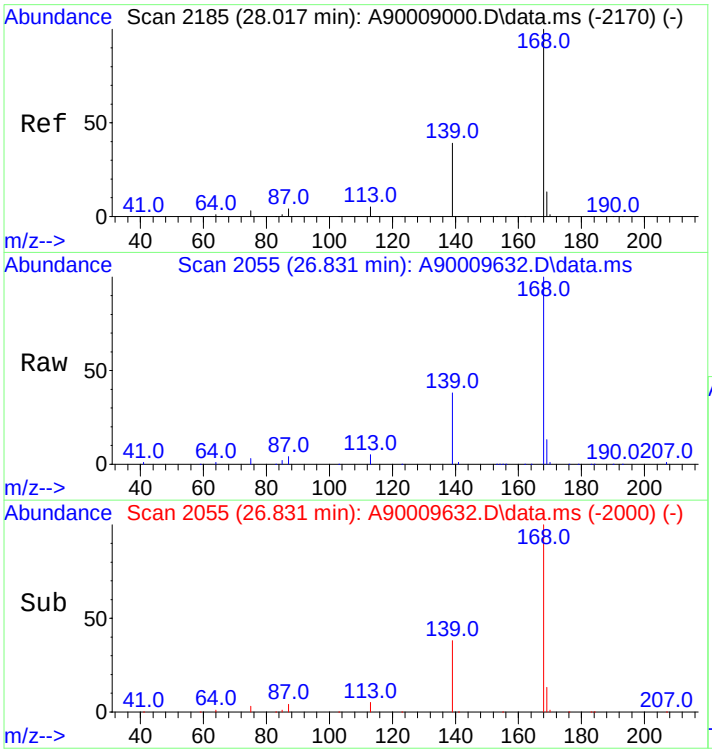


#24
2,6-Dimethylnaphthalene
Concen: 252.60 ng/mL m
RT: 24.376 min Scan# 1786
Delta R.T. 0.000 min
Lab File: A90009632.D
Acq: 26 Dec 2012 1:53 pm

Tgt Ion:156 Resp: 70702

Ion	Ratio	Lower	Upper
156	100		
155	0.0	0.0	0.0

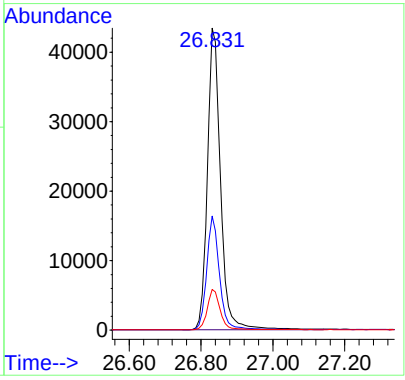


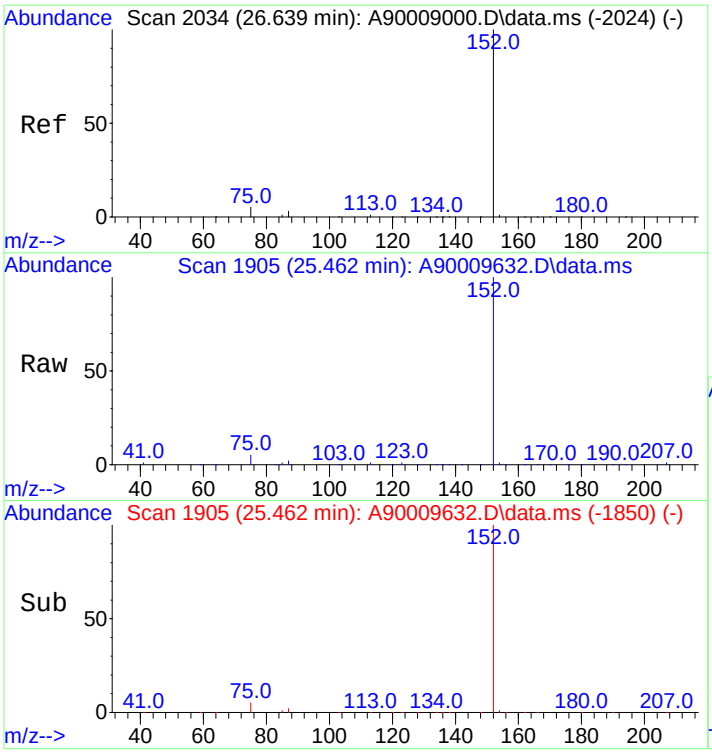


#25
Dibenzofuran
Concen: 266.69 ng/mL
RT: 26.831 min Scan# 2055
Delta R.T. -0.000 min
Lab File: A90009632.D
Acq: 26 Dec 2012 1:53 pm

Tgt Ion:168 Resp: 110835

Ion	Ratio	Lower	Upper
168	100		
139	36.8	30.2	45.2
169	13.1	10.8	16.2

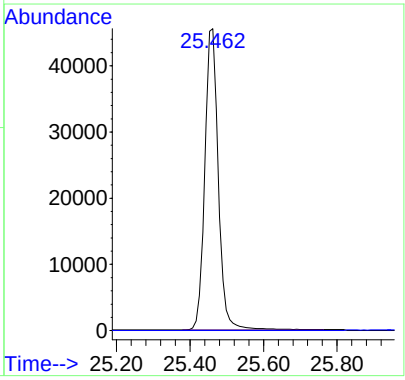


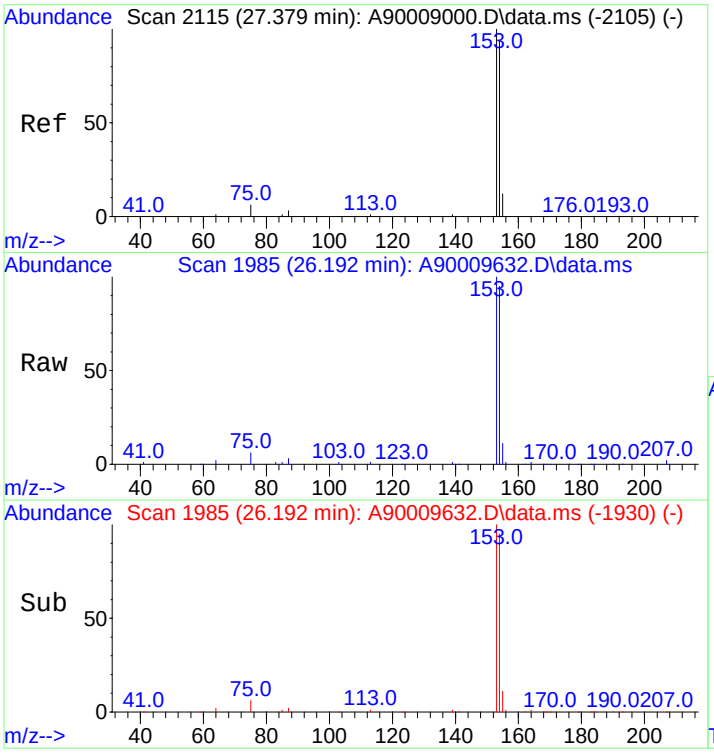


#26
Acenaphthylene
Concen: 248.14 ng/mL
RT: 25.462 min Scan# 1905
Delta R.T. 0.000 min
Lab File: A90009632.D
Acq: 26 Dec 2012 1:53 pm

Tgt Ion:152 Resp: 116220

Ion	Ratio	Lower	Upper
152	100		
153	0.0	0.0	0.0

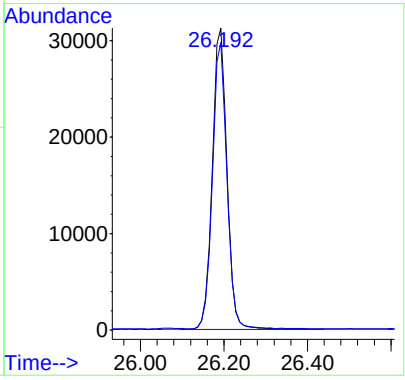


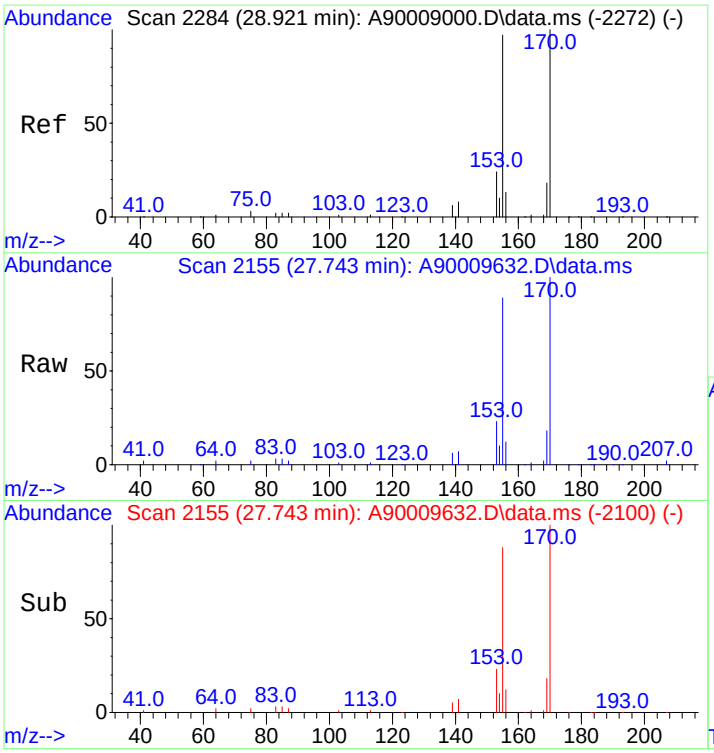


#27
Acenaphthene
Concen: 256.60 ng/mL
RT: 26.192 min Scan# 1985
Delta R.T. 0.000 min
Lab File: A90009632.D
Acq: 26 Dec 2012 1:53 pm

Tgt Ion:153 Resp: 75566

Ion	Ratio	Lower	Upper
153	100		
154	93.6	76.2	114.2

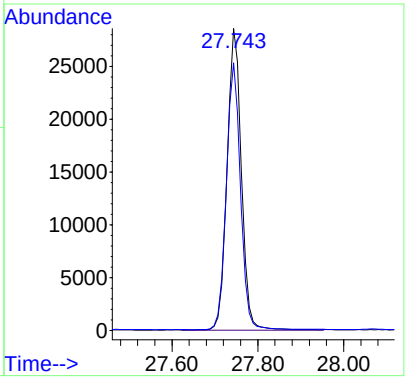


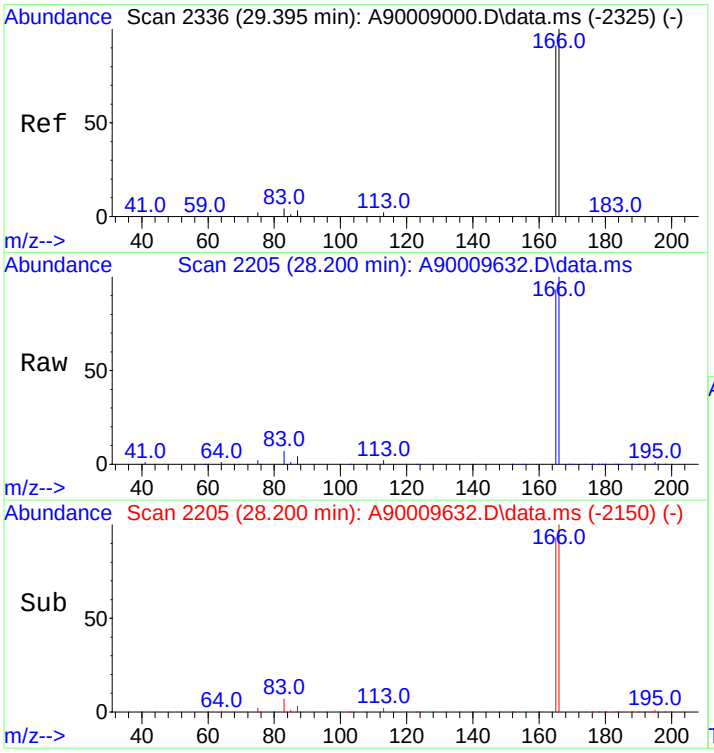


#28
2,3,5-Trimethylnaphthalene
Concen: 255.88 ng/mL
RT: 27.743 min Scan# 2155
Delta R.T. 0.000 min
Lab File: A90009632.D
Acq: 26 Dec 2012 1:53 pm

Tgt Ion:170 Resp: 65847

Ion	Ratio	Lower	Upper
170	100		
155	87.8	70.9	106.3

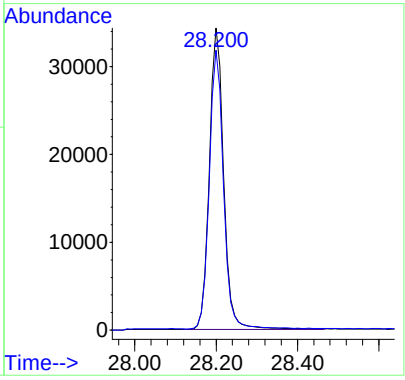


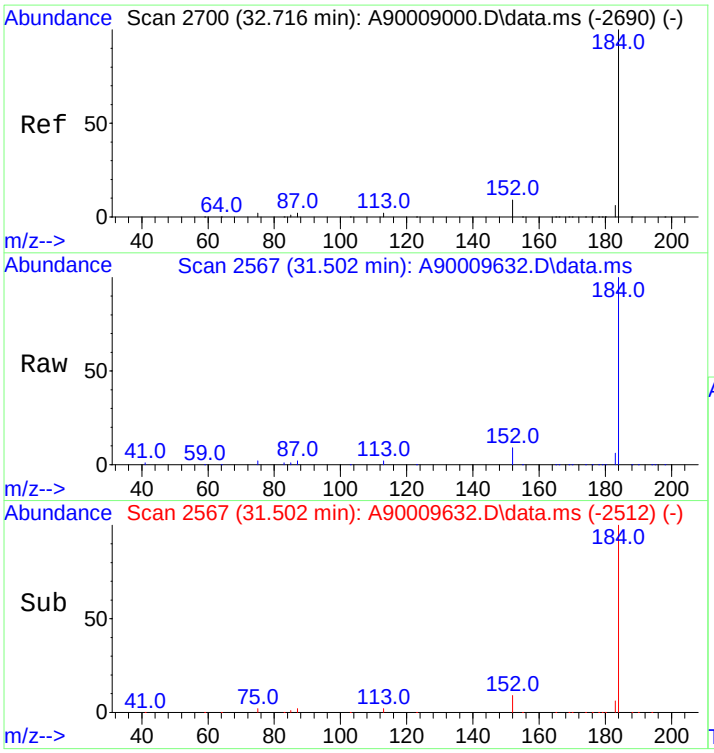


#29
Fluorene
Concen: 258.79 ng/mL
RT: 28.200 min Scan# 2205
Delta R.T. -0.000 min
Lab File: A90009632.D
Acq: 26 Dec 2012 1:53 pm

Tgt Ion:166 Resp: 83692

Ion	Ratio	Lower	Upper
166	100		
165	91.6	74.1	111.1

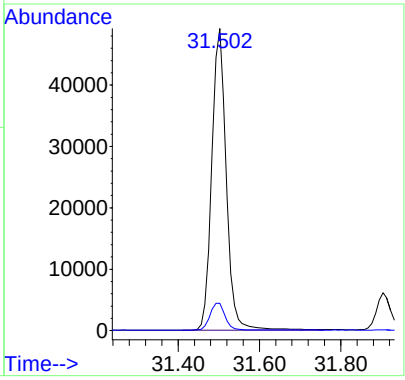


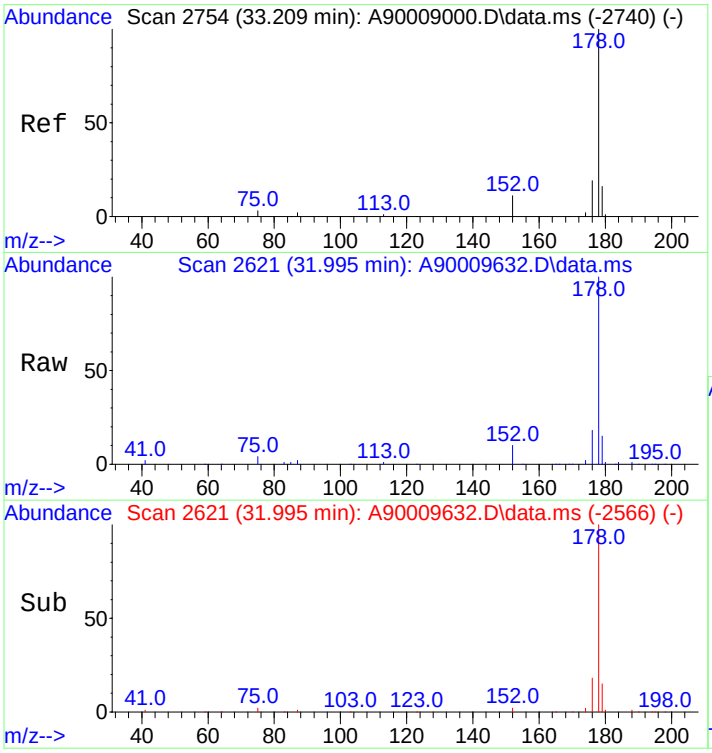


#33
Dibenzothiophene
Concen: 268.08 ng/mL
RT: 31.502 min Scan# 2567
Delta R.T. 0.000 min
Lab File: A90009632.D
Acq: 26 Dec 2012 1:53 pm

Tgt Ion:184 Resp: 121954

Ion	Ratio	Lower	Upper
184	100		
152	9.3	7.2	10.8

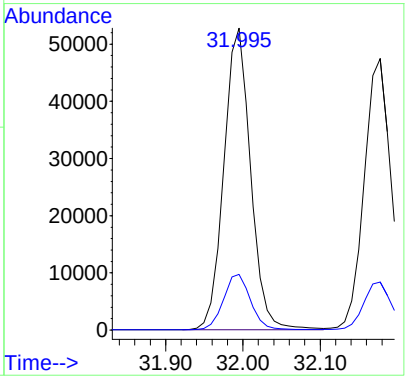


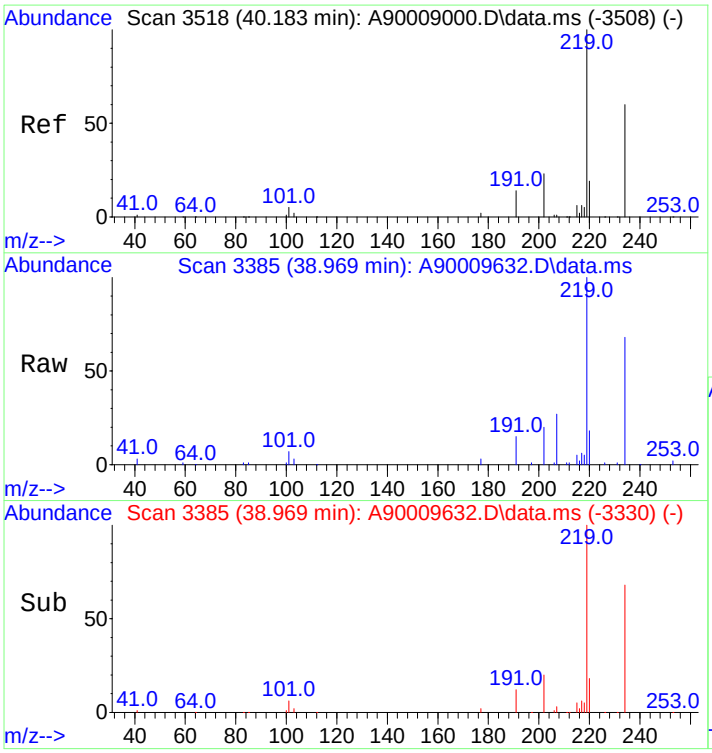


#43
Phenanthrene
Concen: 270.05 ng/mL m
RT: 31.995 min Scan# 2621
Delta R.T. -0.000 min
Lab File: A90009632.D
Acq: 26 Dec 2012 1:53 pm

Tgt Ion:178 Resp: 126916

Ion	Ratio	Lower	Upper
178	100		
176	18.7	14.7	22.1

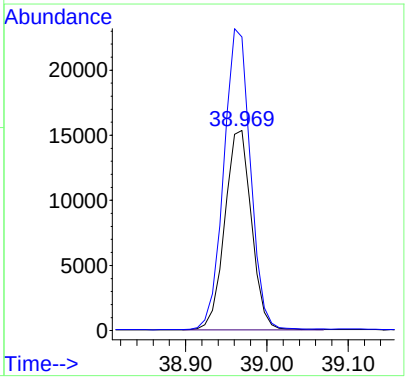


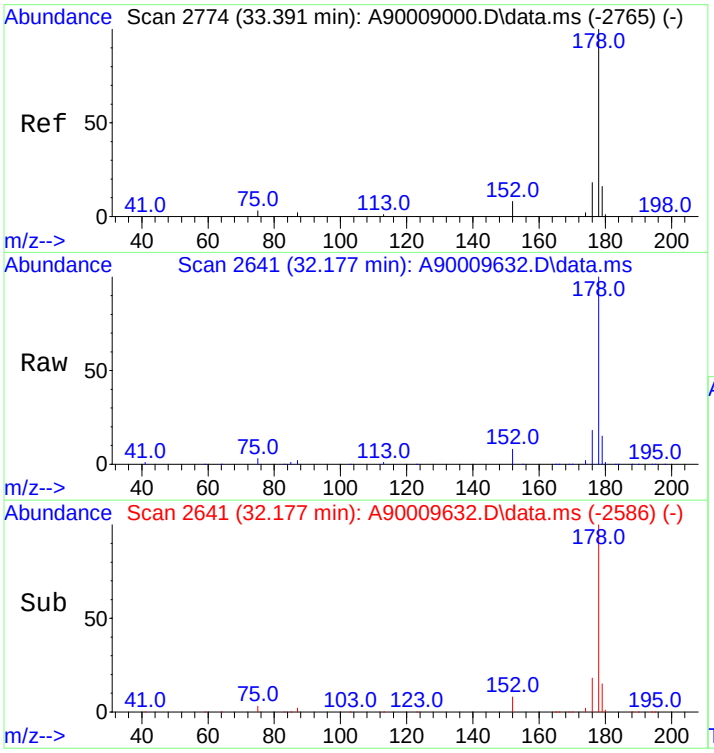


#54
Retene
Concen: 271.83 ng/mL m
RT: 38.969 min Scan# 3385
Delta R.T. 0.000 min
Lab File: A90009632.D
Acq: 26 Dec 2012 1:53 pm

Tgt Ion:234 Resp: 35121

Ion	Ratio	Lower	Upper
234	100		
219	150.6	117.4	176.2

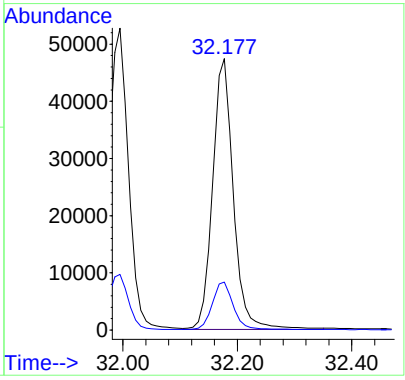


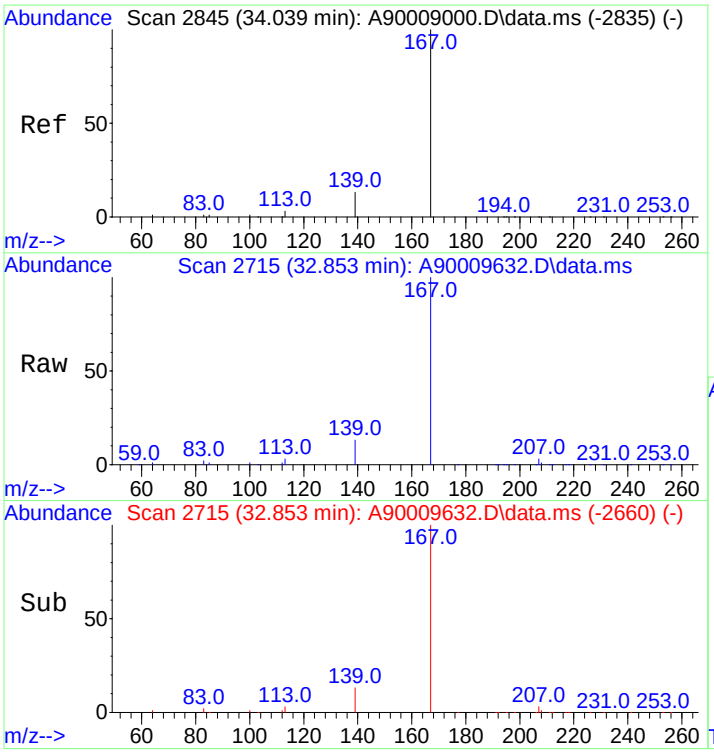


#55
Anthracene
Concen: 273.46 ng/mL m
RT: 32.177 min Scan# 2641
Delta R.T. 0.000 min
Lab File: A90009632.D
Acq: 26 Dec 2012 1:53 pm

Tgt Ion:178 Resp: 119344

Ion	Ratio	Lower	Upper
178	100		
176	17.5	14.2	21.2

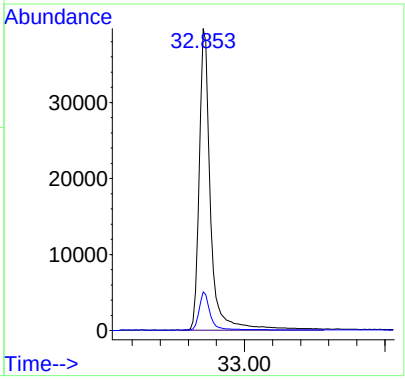


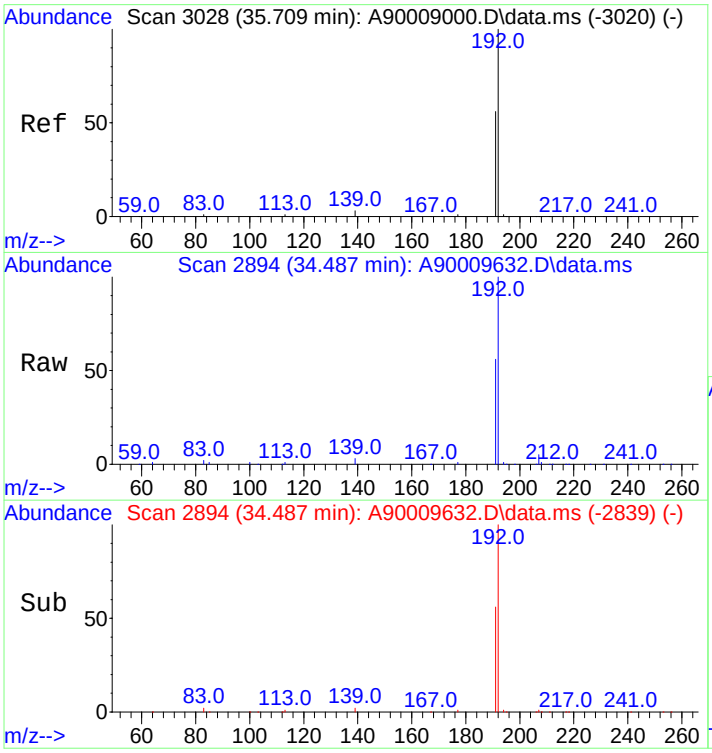


#56
Carbazole
Concen: 268.71 ng/mL
RT: 32.853 min Scan# 2715
Delta R.T. -0.000 min
Lab File: A90009632.D
Acq: 26 Dec 2012 1:53 pm

Tgt Ion:167 Resp: 110940

Ion	Ratio	Lower	Upper
167	100		
139	12.5	10.2	15.4

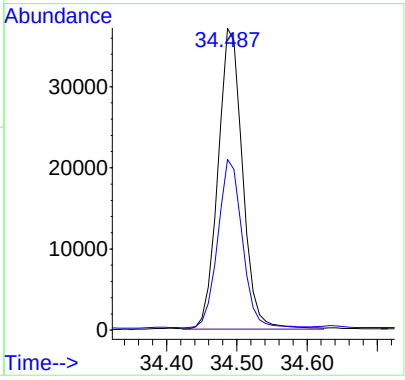


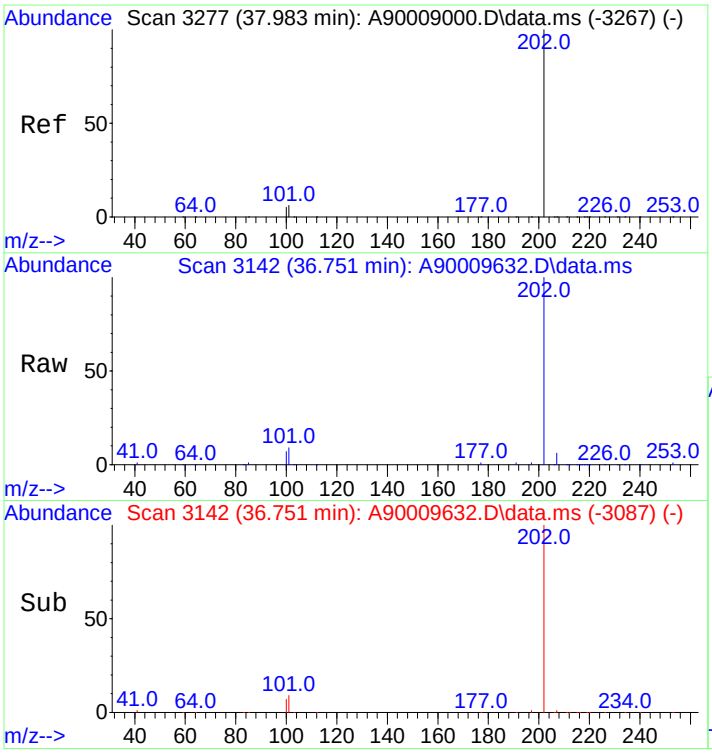


#57
1-Methylphenanthrene
Concen: 260.39 ng/mL m
RT: 34.487 min Scan# 2894
Delta R.T. -0.000 min
Lab File: A90009632.D
Acq: 26 Dec 2012 1:53 pm

Tgt Ion:192 Resp: 90288

Ion	Ratio	Lower	Upper
192	100		
191	55.7	45.2	67.8

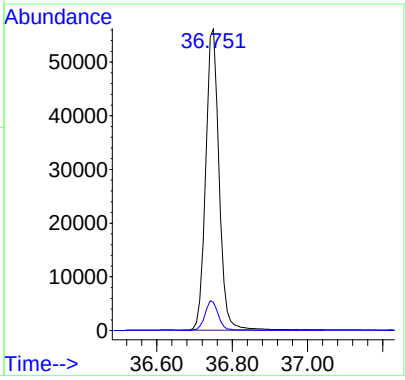


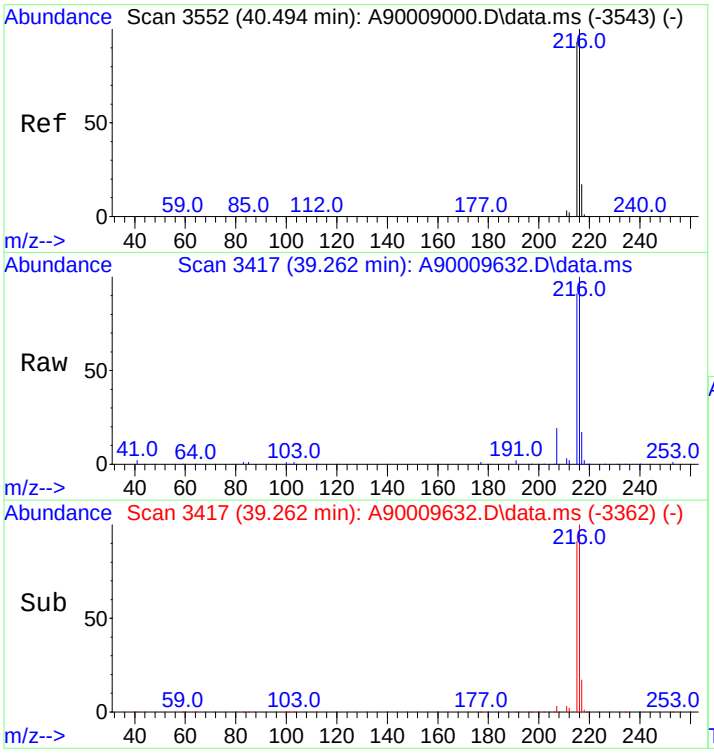


#58
Fluoranthene
Concen: 264.20 ng/mL m
RT: 36.751 min Scan# 3142
Delta R.T. -0.000 min
Lab File: A90009632.D
Acq: 26 Dec 2012 1:53 pm

Tgt Ion:202 Resp: 138708

Ion	Ratio	Lower	Upper
202	100		
101	9.6	7.5	11.3

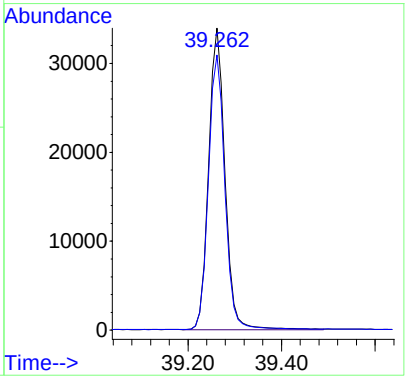


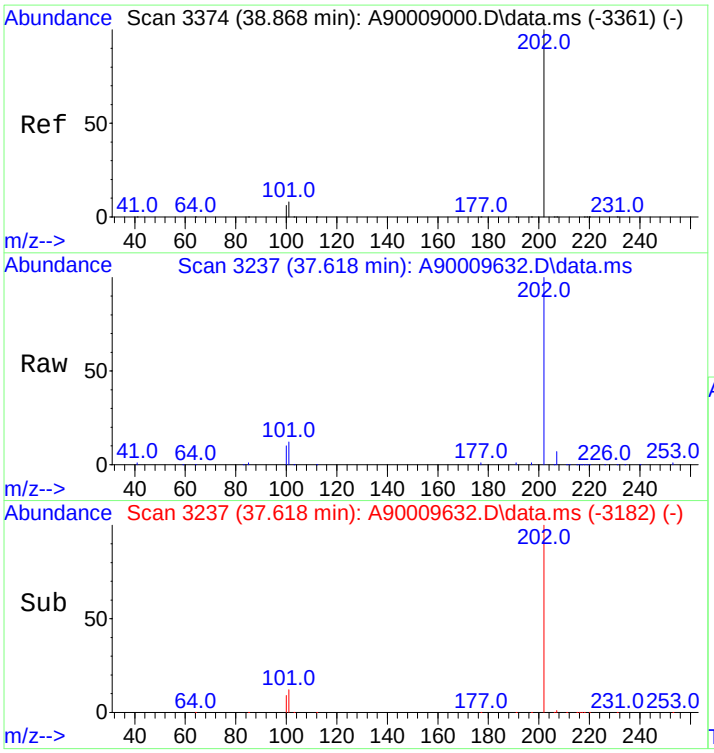


#59
Benzo(b)fluorene
Concen: 263.84 ng/mL
RT: 39.262 min Scan# 3417
Delta R.T. -0.000 min
Lab File: A90009632.D
Acq: 26 Dec 2012 1:53 pm

Tgt Ion:216 Resp: 82379

Ion	Ratio	Lower	Upper
216	100		
215	92.1	72.9	109.3

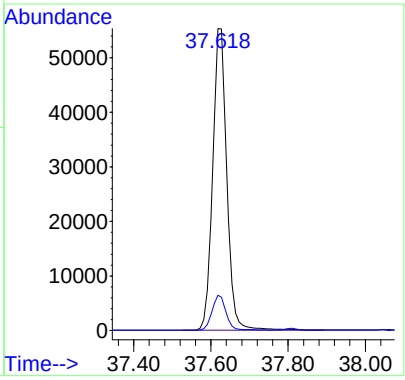


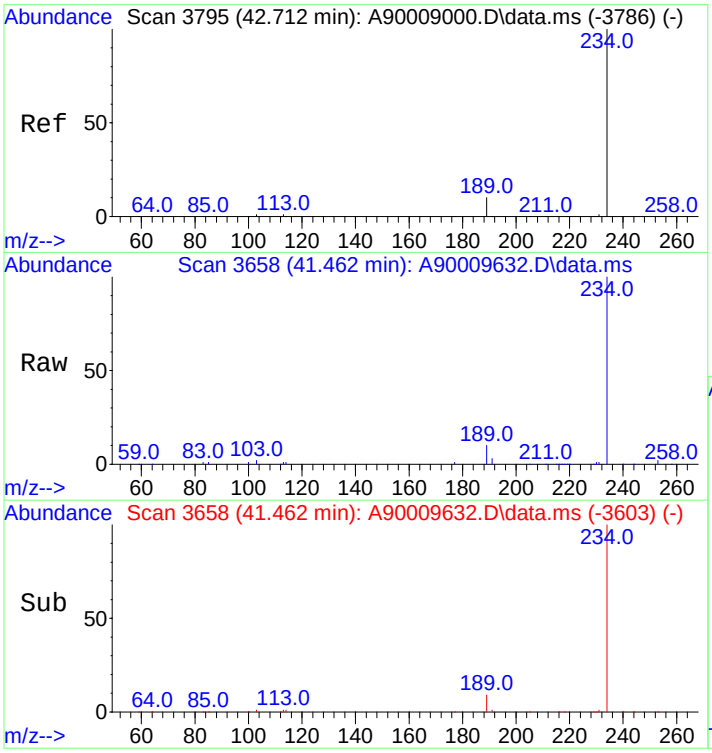


#60
Pyrene
Concen: 262.05 ng/mL
RT: 37.618 min Scan# 3237
Delta R.T. -0.000 min
Lab File: A90009632.D
Acq: 26 Dec 2012 1:53 pm

Tgt Ion:202 Resp: 140360

Ion	Ratio	Lower	Upper
202	100		
101	11.5	9.4	14.0

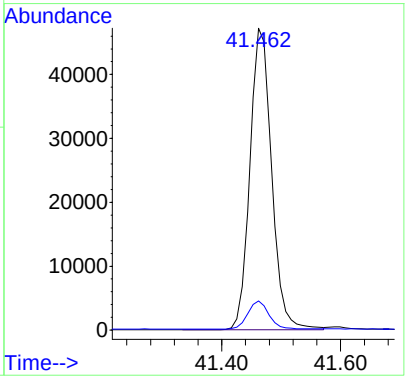


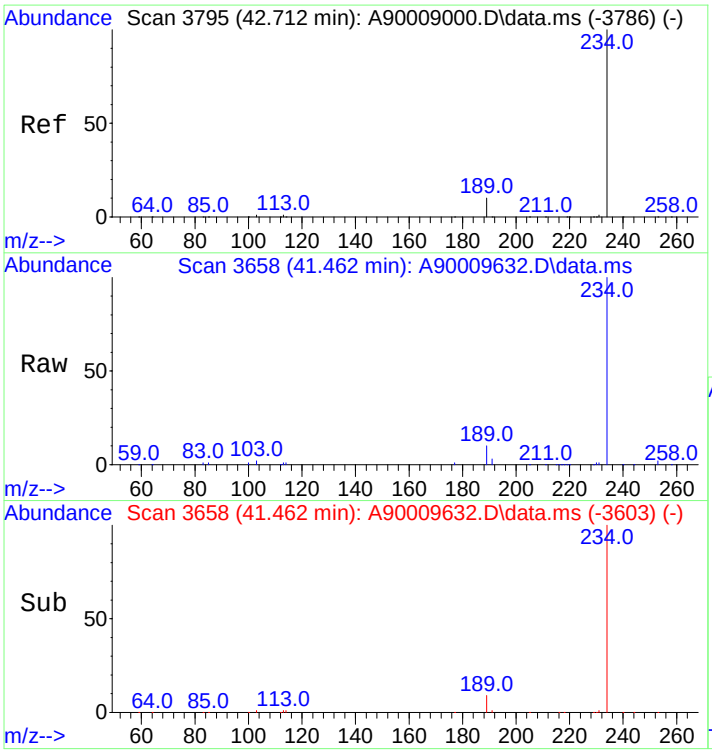


#66
Naphthobenzothiophene
Concen: 256.93 ng/ml
RT: 41.462 min Scan# 3658
Delta R.T. -0.000 min
Lab File: A90009632.D
Acq: 26 Dec 2012 1:53 pm

Tgt Ion:234 Resp: 119410

Ion	Ratio	Lower	Upper
234	100		
189	9.2	7.7	11.5

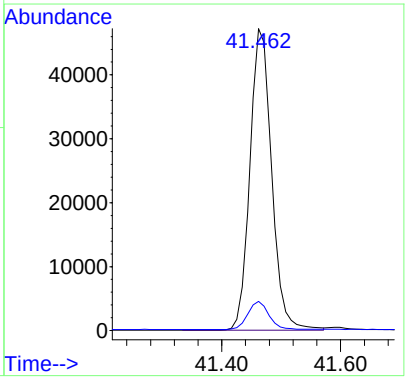


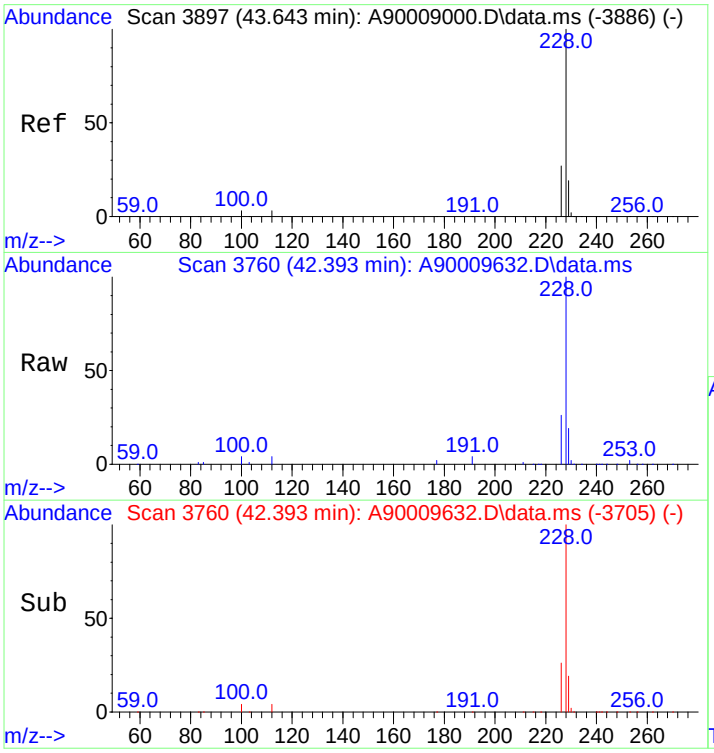


#67
Naphthobenzothiophene-2,1-D
Concen: 256.93 ng/mL
RT: 41.462 min Scan# 3658
Delta R.T. -0.000 min
Lab File: A90009632.D
Acq: 26 Dec 2012 1:53 pm

Tgt Ion:234 Resp: 119410

Ion	Ratio	Lower	Upper
234	100		
189	9.2	7.7	11.5

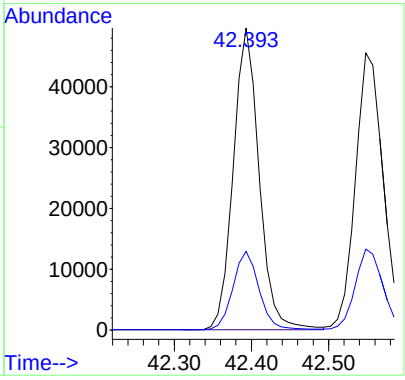


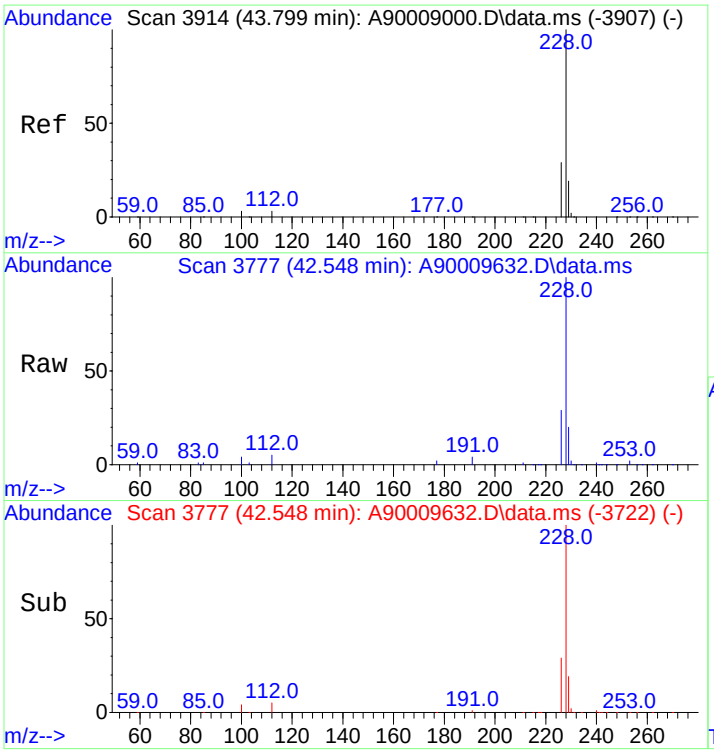


#75
Benz[a]anthracene
Concen: 245.91 ng/mL
RT: 42.393 min Scan# 3760
Delta R.T. 0.000 min
Lab File: A90009632.D
Acq: 26 Dec 2012 1:53 pm

Tgt Ion:228 Resp: 115460

Ion	Ratio	Lower	Upper
228	100		
226	26.2	20.9	31.3

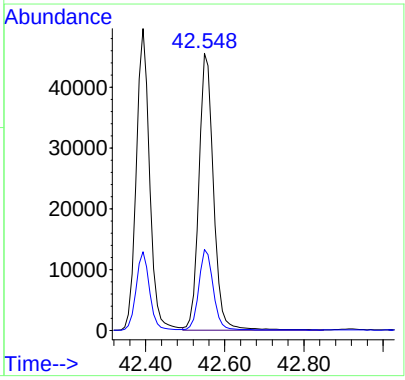


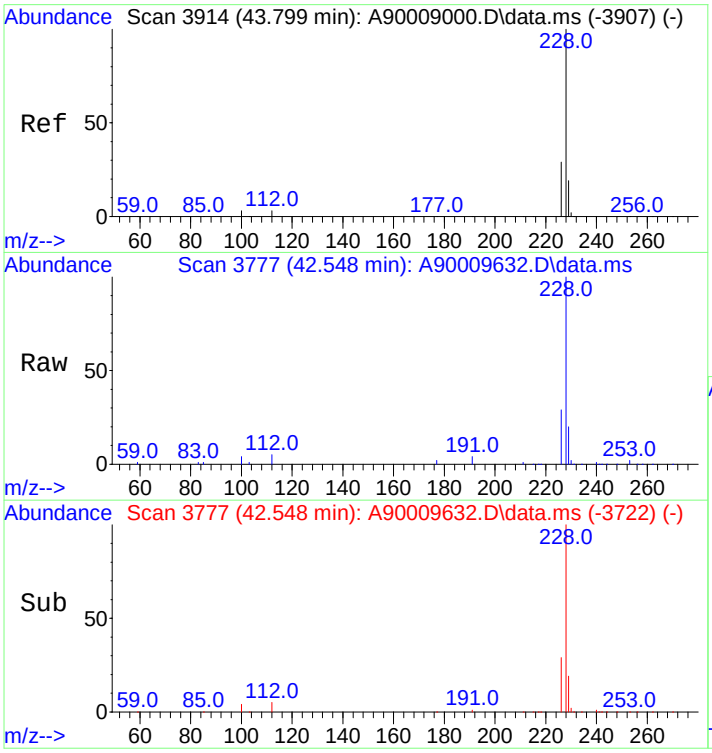


#76
Chrysene
Concen: 252.59 ng/mL m
RT: 42.548 min Scan# 3777
Delta R.T. 0.000 min
Lab File: A90009632.D
Acq: 26 Dec 2012 1:53 pm

Tgt Ion:228 Resp: 116644

Ion	Ratio	Lower	Upper
228	100		
226	28.8	23.4	35.2

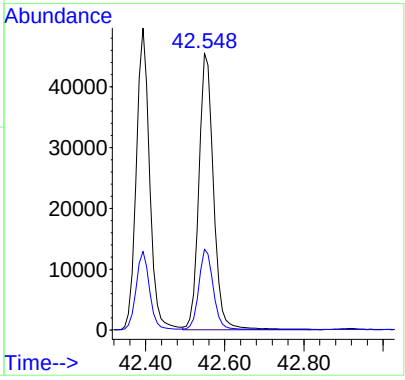


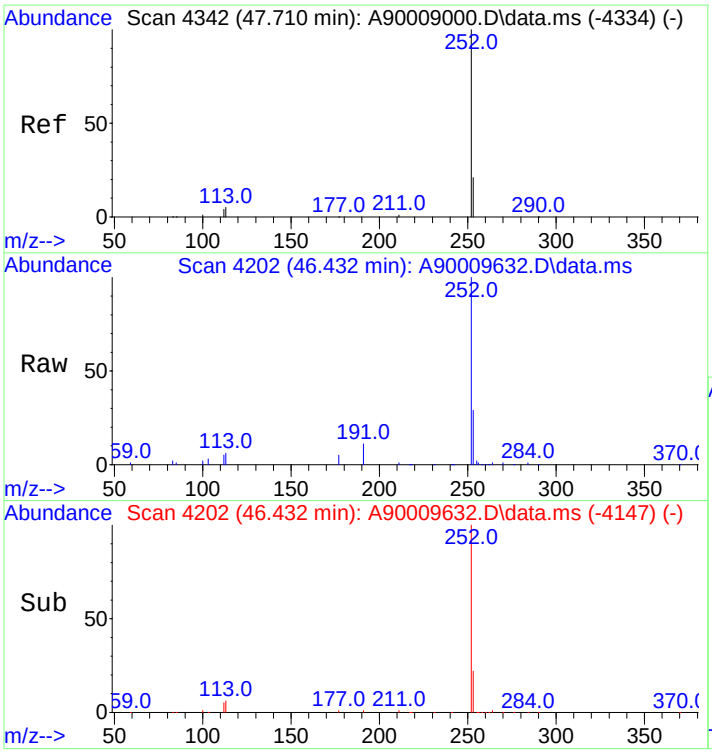


#77
Chrysene/Triphenylene
Concen: 252.50 ng/mL m
RT: 42.548 min Scan# 3777
Delta R.T. 0.000 min
Lab File: A90009632.D
Acq: 26 Dec 2012 1:53 pm

Tgt Ion:228 Resp: 116601

Ion	Ratio	Lower	Upper
228	100		
226	28.8	23.4	35.2

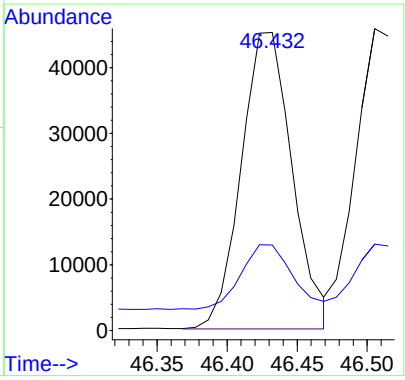


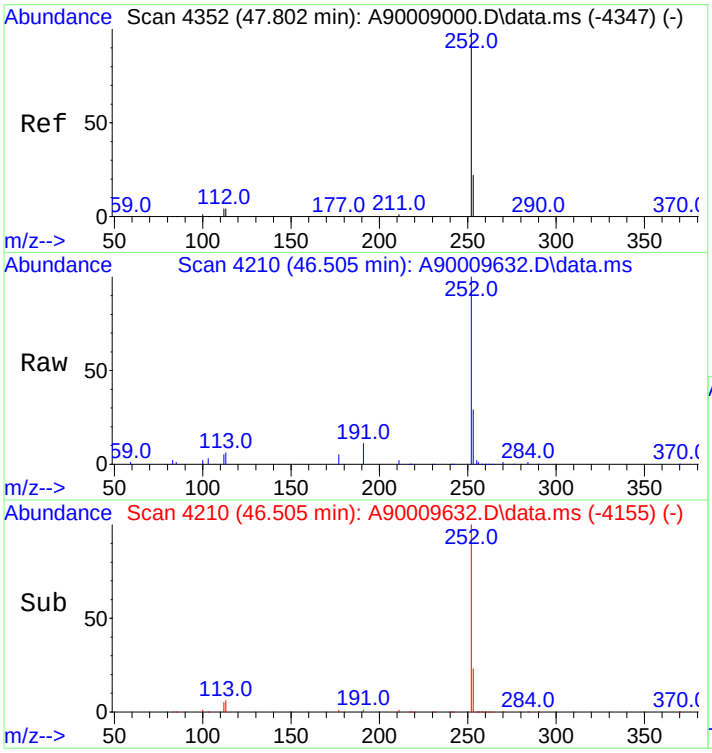


#84
Benzo[b]fluoranthene
Concen: 234.97 ng/mL m
RT: 46.432 min Scan# 4202
Delta R.T. 0.000 min
Lab File: A90009632.D
Acq: 26 Dec 2012 1:53 pm

Tgt Ion:252 Resp: 114389

Ion	Ratio	Lower	Upper
252	100		
253	21.9	23.0	34.4#

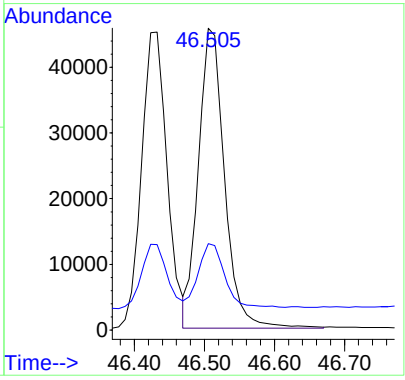


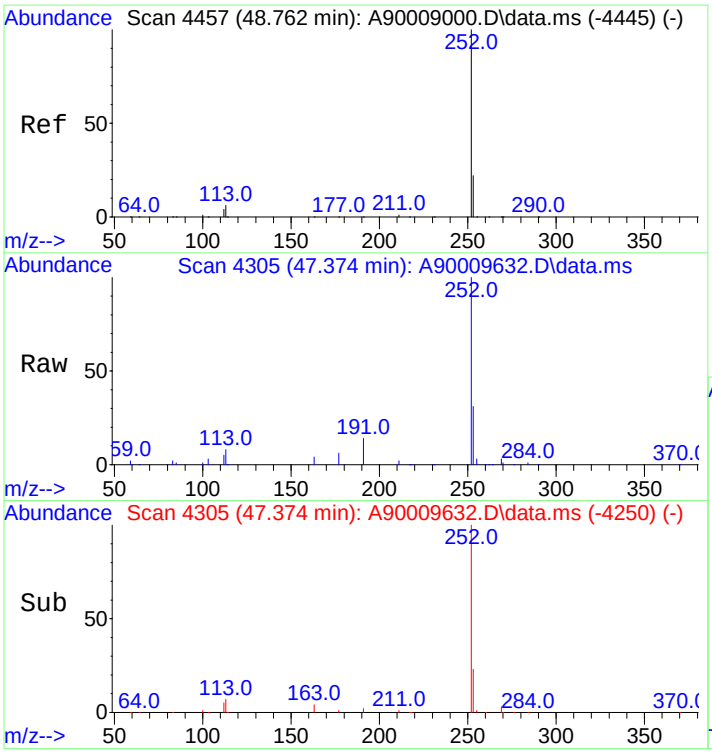


#85
Benzo[j]+[k]fluoranthene
Concen: 247.55 ng/mL m
RT: 46.505 min Scan# 4210
Delta R.T. 0.000 min
Lab File: A90009632.D
Acq: 26 Dec 2012 1:53 pm

Tgt Ion:252 Resp: 118412

Ion	Ratio	Lower	Upper
252	100		
253	21.5	23.0	34.4#

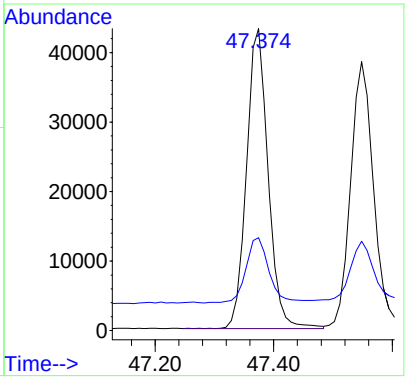


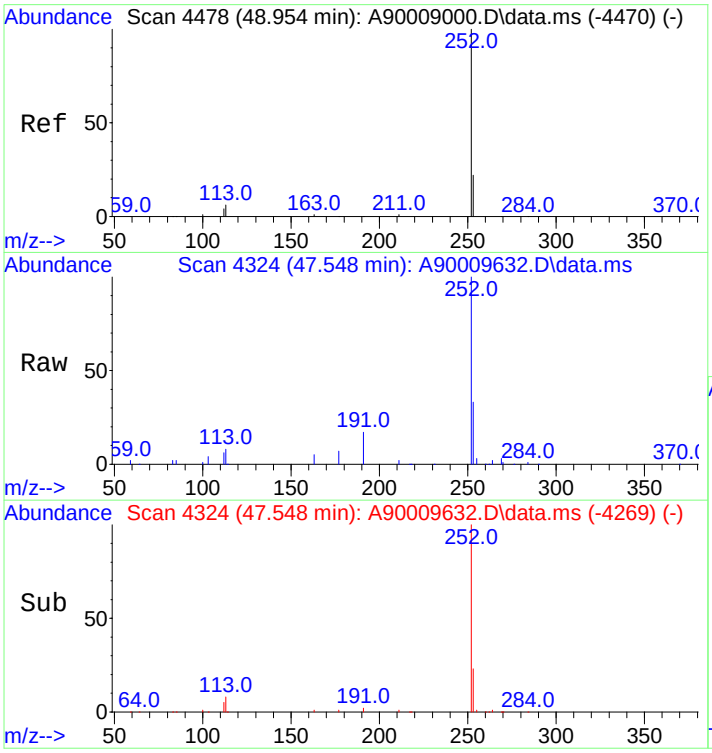


#87
Benzo[e]pyrene
Concen: 235.85 ng/mL
RT: 47.374 min Scan# 4305
Delta R.T. 0.000 min
Lab File: A90009632.D
Acq: 26 Dec 2012 1:53 pm

Tgt Ion:252 Resp: 109029

Ion	Ratio	Lower	Upper
252	100		
253	22.6	24.6	36.8#

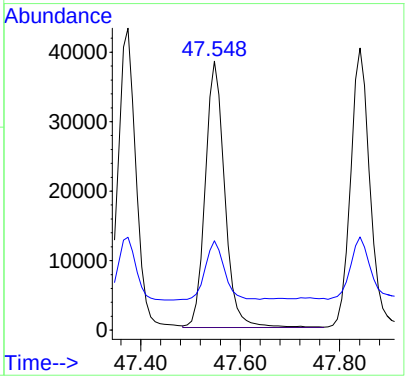


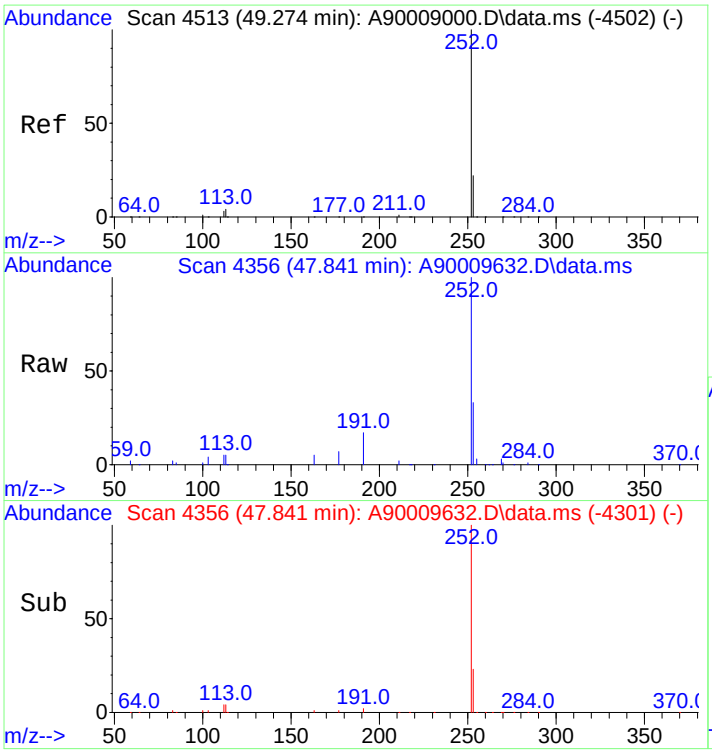


#89
Benzo[a]pyrene
Concen: 239.07 ng/mL m
RT: 47.548 min Scan# 4324
Delta R.T. 0.000 min
Lab File: A90009632.D
Acq: 26 Dec 2012 1:53 pm

Tgt Ion:252 Resp: 104666

Ion	Ratio	Lower	Upper
252	100		
253	22.0	26.6	39.8#

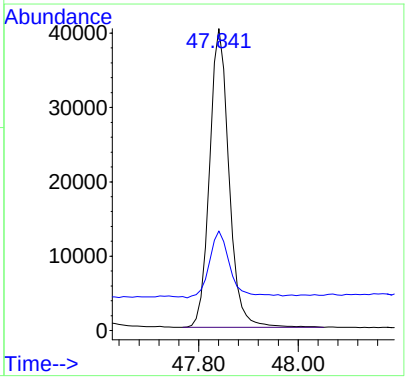


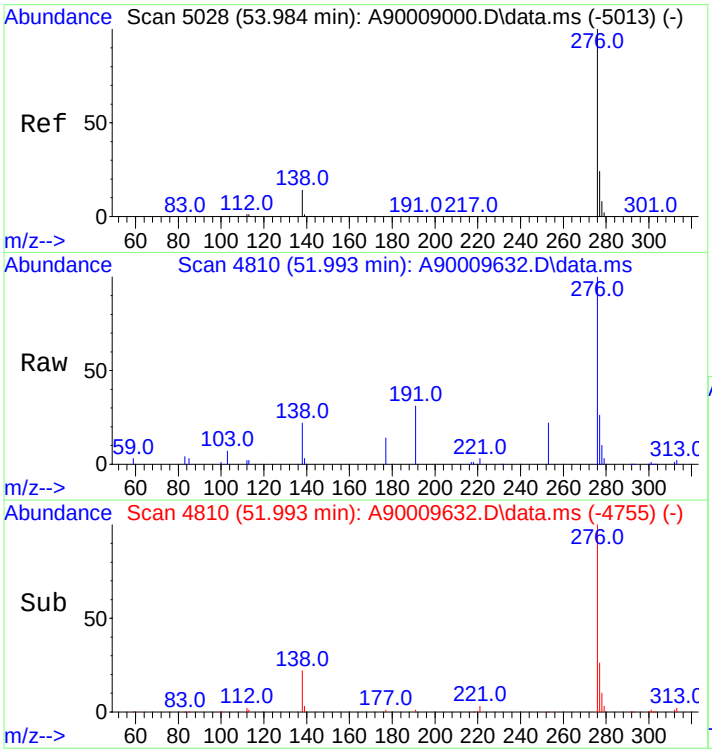


#90
Perylene
Concen: 233.03 ng/mL
RT: 47.841 min Scan# 4356
Delta R.T. -0.000 min
Lab File: A90009632.D
Acq: 26 Dec 2012 1:53 pm

Tgt Ion:252 Resp: 108885

Ion	Ratio	Lower	Upper
252	100		
253	24.2	26.4	39.6#

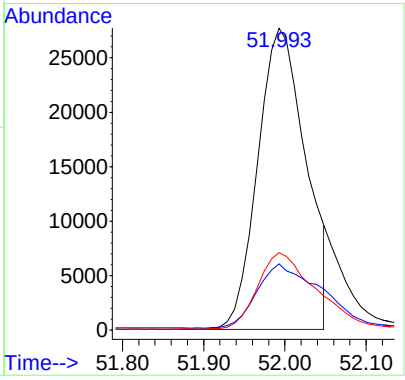


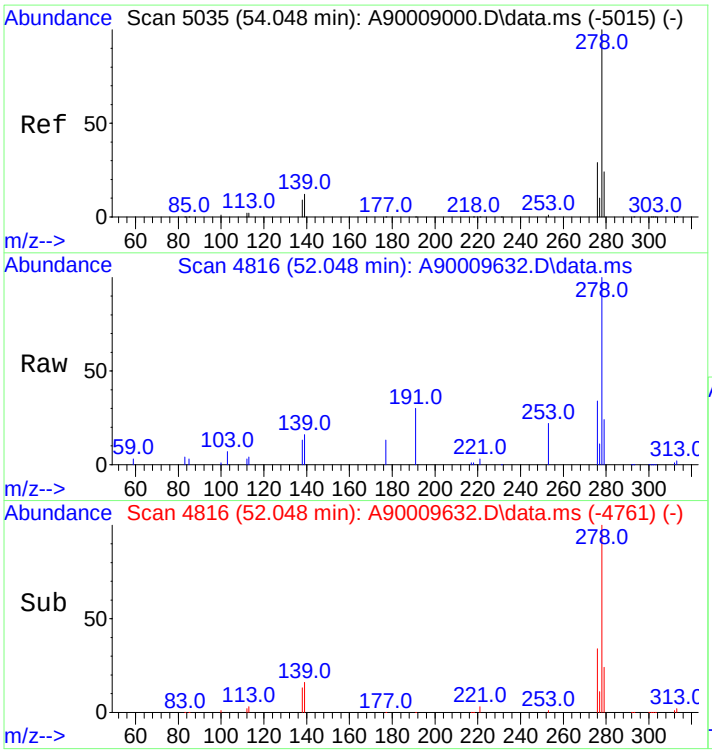


#91
Indeno[1,2,3-cd]pyrene
Concen: 234.56 ng/mL m
RT: 51.993 min Scan# 4810
Delta R.T. -0.000 min
Lab File: A90009632.D
Acq: 26 Dec 2012 1:53 pm

Tgt Ion:276 Resp: 113733

Ion	Ratio	Lower	Upper
276	100		
138	29.2	17.6	26.4#
277	31.7	20.6	30.8#

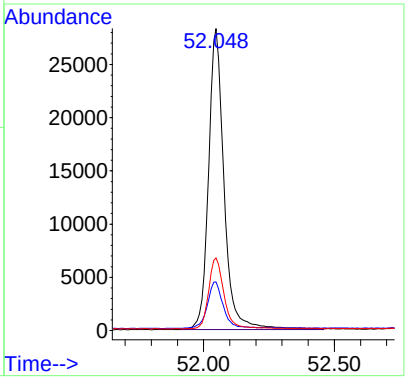


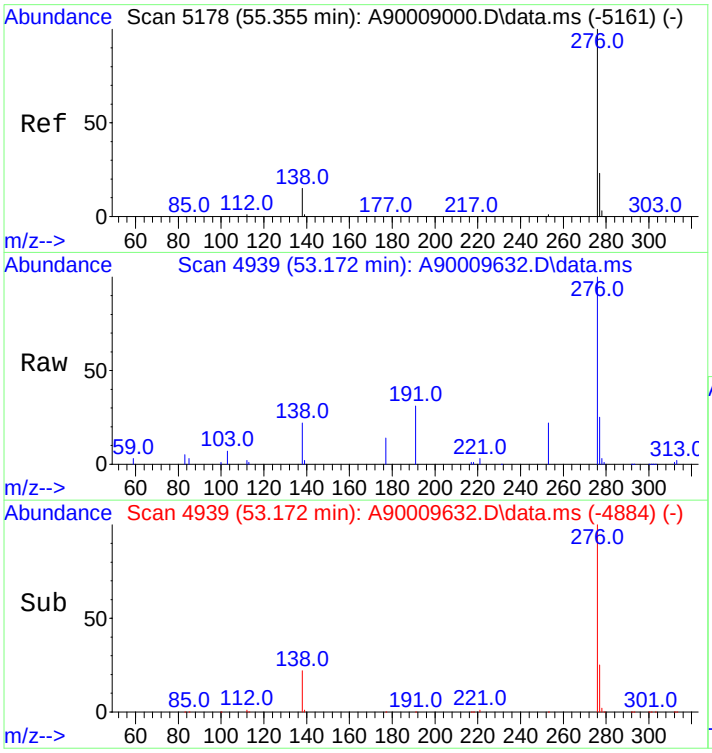


#92
Dibenz[ah]+[ac]anthracene
Concen: 244.50 ng/mL
RT: 52.048 min Scan# 4816
Delta R.T. -0.000 min
Lab File: A90009632.D
Acq: 26 Dec 2012 1:53 pm

Tgt Ion:278 Resp: 116785

Ion	Ratio	Lower	Upper
278	100		
139	15.3	12.9	19.3
279	23.0	19.3	28.9

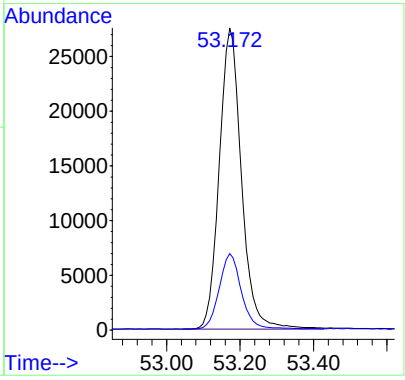


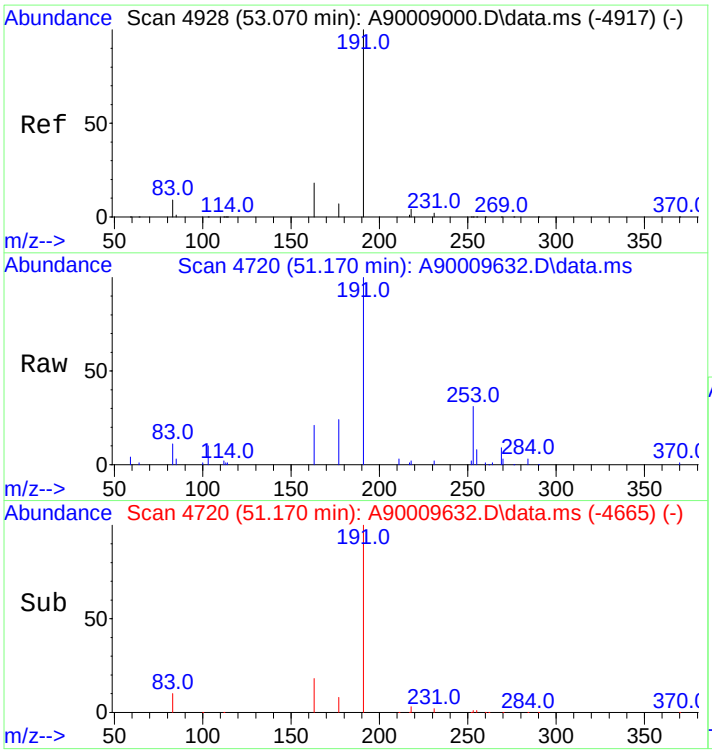


#93
Benzo[g,h,i]perylene
Concen: 241.79 ng/mL
RT: 53.172 min Scan# 4939
Delta R.T. -0.000 min
Lab File: A90009632.D
Acq: 26 Dec 2012 1:53 pm

Tgt Ion:276 Resp: 115207

Ion	Ratio	Lower	Upper
276	100		
277	25.1	20.3	30.5

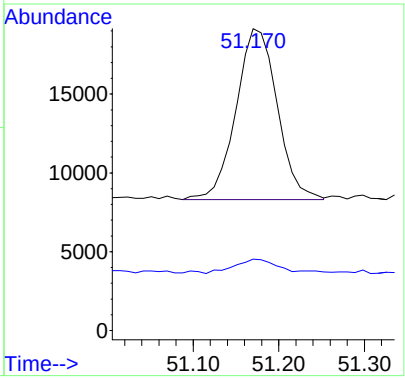


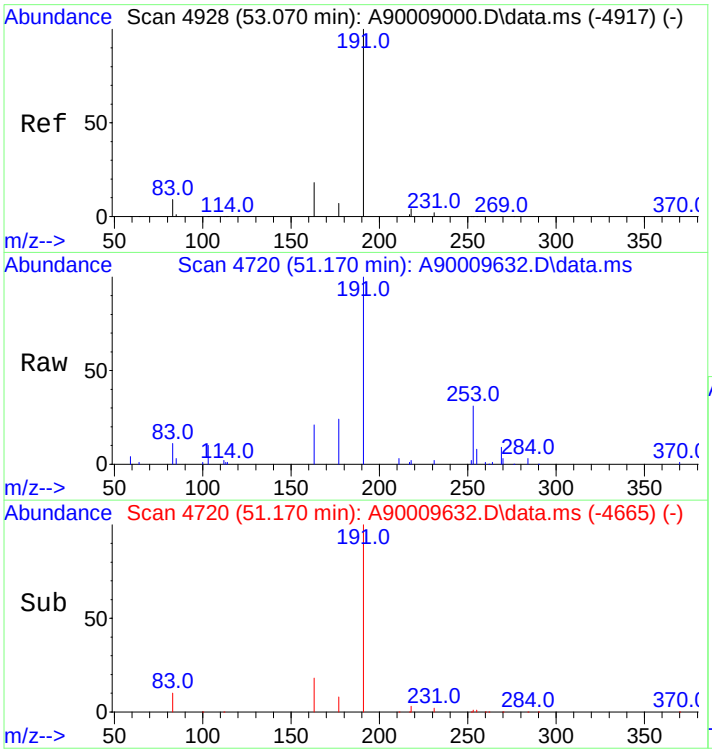


#94
Hopane (T19)
Concen: 201.96 ng/mL m
RT: 51.170 min Scan# 4720
Delta R.T. 0.000 min
Lab File: A90009632.D
Acq: 26 Dec 2012 1:53 pm

Tgt Ion:191 Resp: 36346

Ion	Ratio	Lower	Upper
191	100		
177	8.9	19.0	28.4#

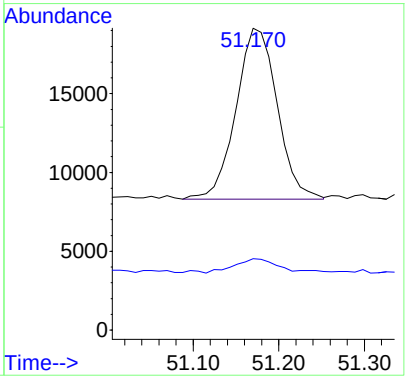




#95
17a(H),21B(H)-hopane - C30H52
Concen: 201.80 ng/mL m
RT: 51.170 min Scan# 4720
Delta R.T. 0.000 min
Lab File: A90009632.D
Acq: 26 Dec 2012 1:53 pm

Tgt Ion:191 Resp: 36316

Ion	Ratio	Lower	Upper
191	100		
177	8.9	19.0	28.4#



Quantitation Report (QT Reviewed)

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\
Data File : A90009638.D
Acq On : 26 Dec 2012 10:48 pm
Operator : ps
Sample : C912261203
Misc : WHAR30@500ng/ml
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Dec 28 12:00:57 2012
Quant Method : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Fri Dec 28 12:00:44 2012
Response via : Initial Calibration

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

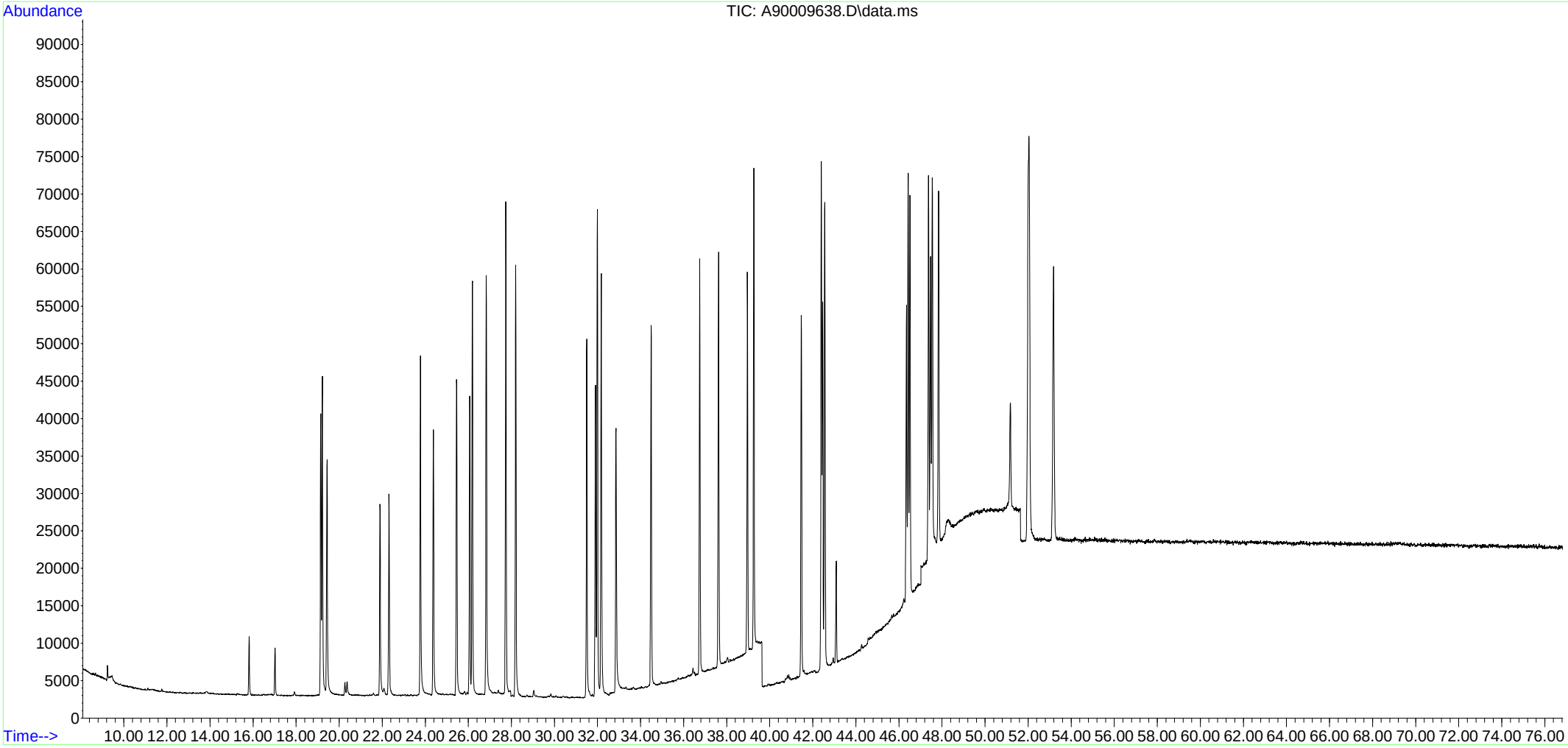
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	26.064	164	54255	250.000	ng/mL	0.00
74) Chrysene-d12	42.457	240	101243	250.000	ng/mL	0.00
System Monitoring Compounds						
9) Naphthalene-d8	19.147	136	91764	220.022	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 22.00%#			
42) Phenanthrene-d10	31.904	188	96491	246.537	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 24.65%#			
83) Benzo[b]fluoranthene-d12	46.350	264	83628	224.681	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 22.47%#			
88) Benzo[a]pyrene-d12	47.466	264	86434	231.655	ng/mL	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 23.17%#			
129) 5B(H)Cholane - Surr	43.087	217	20470	240.813	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 24.08%#			
Target Compounds						Qvalue
3) trans-Decalin	15.816	138	11840	124.113	ng/mL	100
4) cis-Decalin	17.021	138	9222	123.483	ng/mL	100
10) Naphthalene	19.220	128	104332	243.769	ng/mL#	100
16) 2-Methylnaphthalene	21.894	142	68552	244.920	ng/mL#	100
17) 1-Methylnaphthalene	22.314	142	67087	246.979	ng/mL#	100
18) Benzothiophene	19.439	134	87135	243.278	ng/mL	100
23) Biphenyl	23.774	154	92224	251.786	ng/mL#	100
24) 2,6-Dimethylnaphthalene	24.376	156	65579	249.247	ng/mL#	100
25) Dibenzofuran	26.831	168	101762	260.480	ng/mL	99
26) Acenaphthylene	25.453	152	111990	254.361	ng/mL#	100
27) Acenaphthene	26.183	153	70505	254.693	ng/mL	99
28) 2,3,5-Trimethylnaphtha...	27.743	170	62372	257.845	ng/mL	99
29) Fluorene	28.200	166	78143	257.052	ng/mL	99
33) Dibenzothiophene	31.502	184	112520	263.128	ng/mL	99
43) Phenanthrene	31.995	178	116626	263.988	ng/mL	99
54) Retene	38.960	234	34261	282.098	ng/mL	96
55) Anthracene	32.177	178	113497M4	276.654	ng/mL	
56) Carbazole	32.862	167	100663	259.378	ng/mL	98
57) 1-Methylphenanthrene	34.487	192	87013	266.953	ng/mL	99
58) Fluoranthene	36.750	202	132744	268.974	ng/mL	99
59) Benzo(b)fluorene	39.262	216	80398	273.929	ng/mL	99
60) Pyrene	37.627	202	133847	265.836	ng/mL	98
66) Naphthobenzothiophene	41.462	234	119635	273.836	ng/ml	99
67) Naphthobenzothiophene-...	41.462	234	119635	273.836	ng/mL	99
75) Benz[a]anthracene	42.393	228	115670	249.046	ng/mL	98
76) Chrysene	42.557	228	115328	252.469	ng/mL	98
77) Chrysene/Triphenylene	42.557	228	115328	252.469	ng/mL	98
84) Benzo[b]fluoranthene	46.432	252	118464	245.996	ng/mL#	87
85) Benzo[j]+[k]fluoranthene	46.515	252	114572	242.137	ng/mL#	85
87) Benzo[e]pyrene	47.374	252	108377	237.002	ng/mL#	84
89) Benzo[a]pyrene	47.548	252	105858	244.433	ng/mL#	80
90) Perylene	47.841	252	110148	238.309	ng/mL#	82
91) Indeno[1,2,3-cd]pyrene	52.002	276	118054M4	246.133	ng/mL	
92) Dibenz[ah]+[ac]anthracene	52.048	278	115850	245.194	ng/mL	97
93) Benzo[g,h,i]perylene	53.181	276	111563	236.700	ng/mL	99
94) Hopane (T19)	51.179	191	35823M4	201.230	ng/mL	
95) 17a(H),21B(H)-hopane -...	51.179	191	35799M4	201.096	ng/mL	

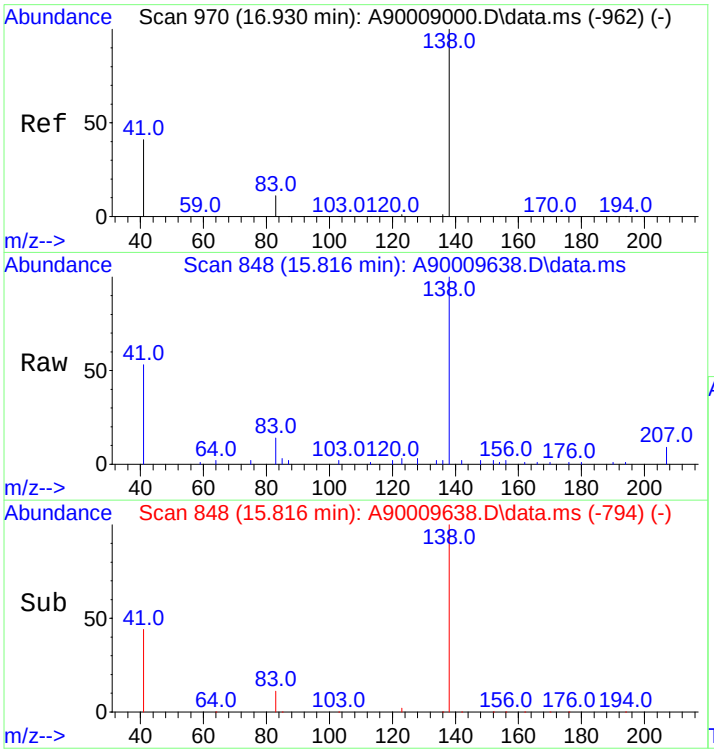
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : ICAL_CCALT_NEW_Default_REV2 - CC with 5 surrogates

Data Path : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\
Data File : A90009638.D
Acq On : 26 Dec 2012 10:48 pm
Operator : ps
Sample : C912261203
Misc : WHAR30@500ng/ml
ALS Vial : 8 Sample Multiplier: 1

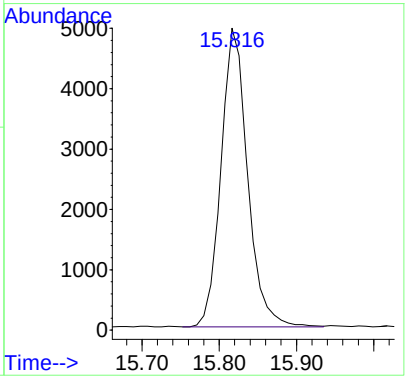
Quant Time: Dec 28 12:00:57 2012
Quant Method : O:\FORENSICS\DATA\PAH9\2012\DEC12\DEC26\PAH9120412.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Fri Dec 28 12:00:44 2012
Response via : Initial Calibration

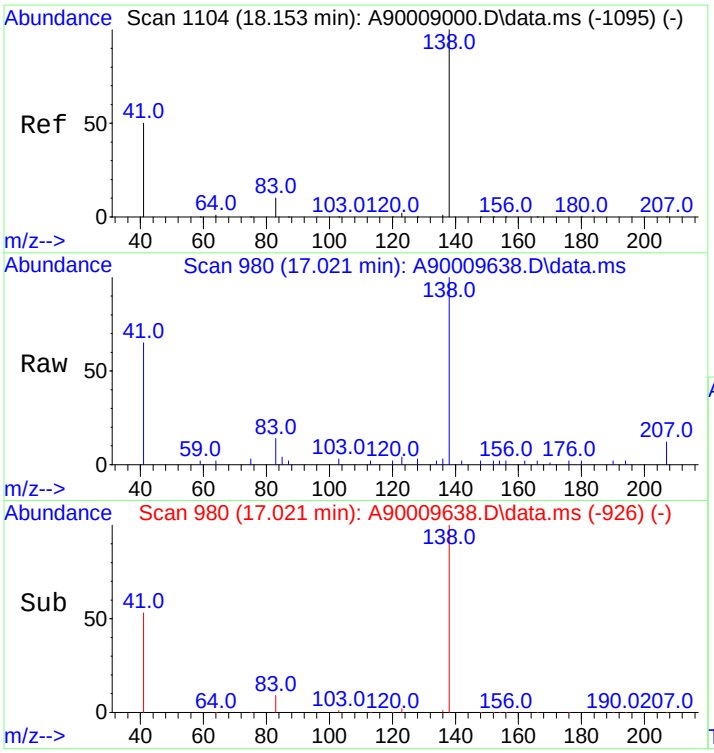




#3
trans-Decalin
Concen: 124.11 ng/mL
RT: 15.816 min Scan# 848
Delta R.T. -0.010 min
Lab File: A90009638.D
Acq: 26 Dec 2012 10:48 pm

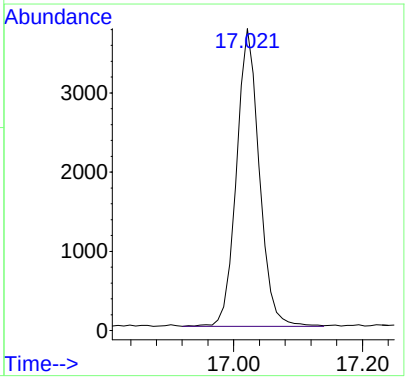
Tgt Ion:138 Resp: 11840

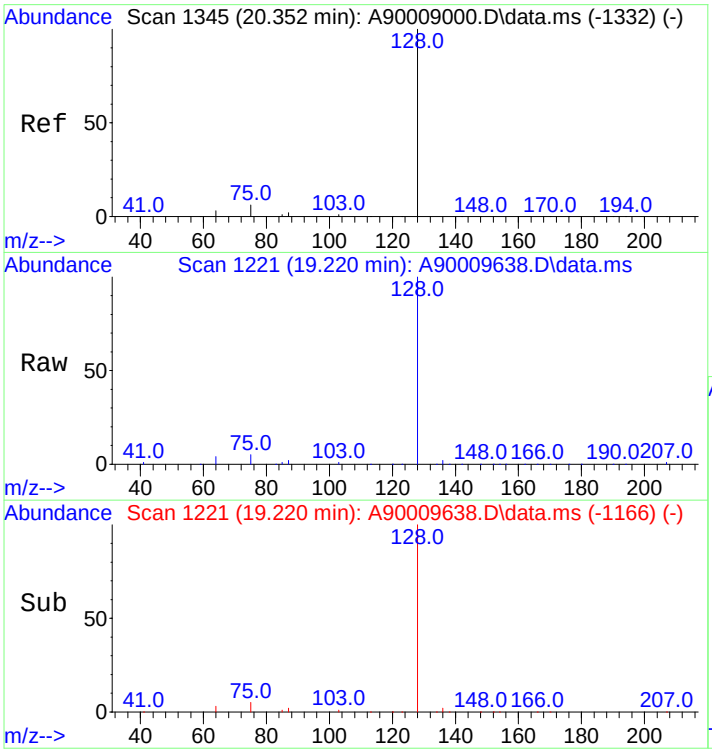




#4
cis-Decalin
Concen: 123.48 ng/mL
RT: 17.021 min Scan# 980
Delta R.T. -0.009 min
Lab File: A90009638.D
Acq: 26 Dec 2012 10:48 pm

Tgt Ion:138 Resp: 9222

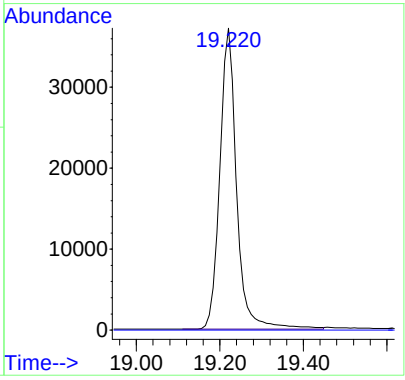


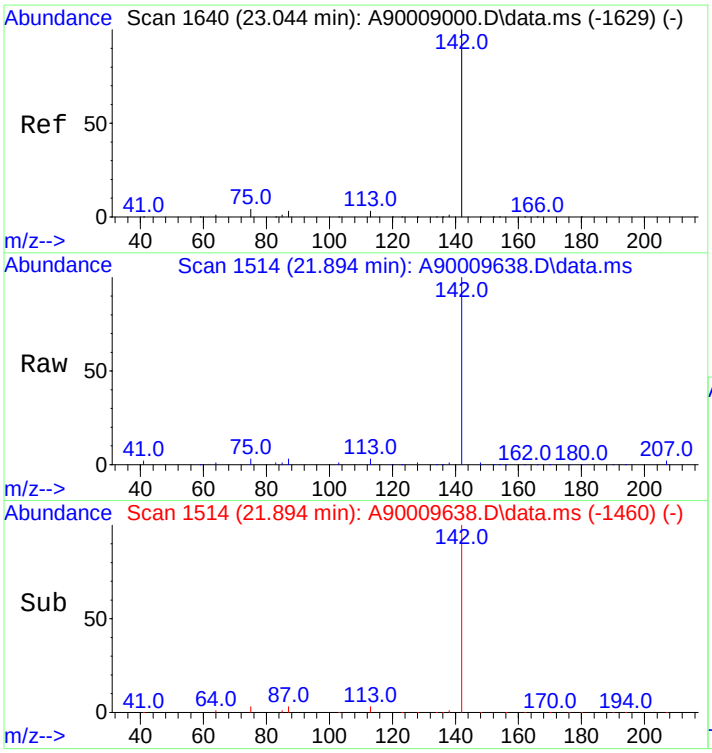


#10
Naphthalene
Concen: 243.77 ng/mL
RT: 19.220 min Scan# 1221
Delta R.T. 0.000 min
Lab File: A90009638.D
Acq: 26 Dec 2012 10:48 pm

Tgt Ion:128 Resp: 104332

Ion	Ratio	Lower	Upper
128	100		
127	0.0	0.0	0.0

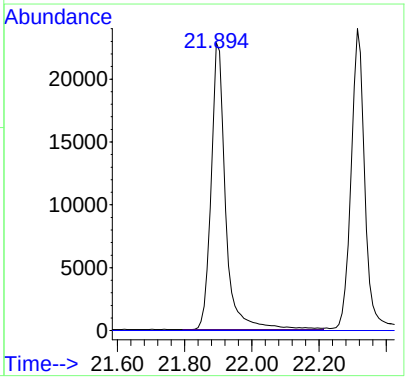


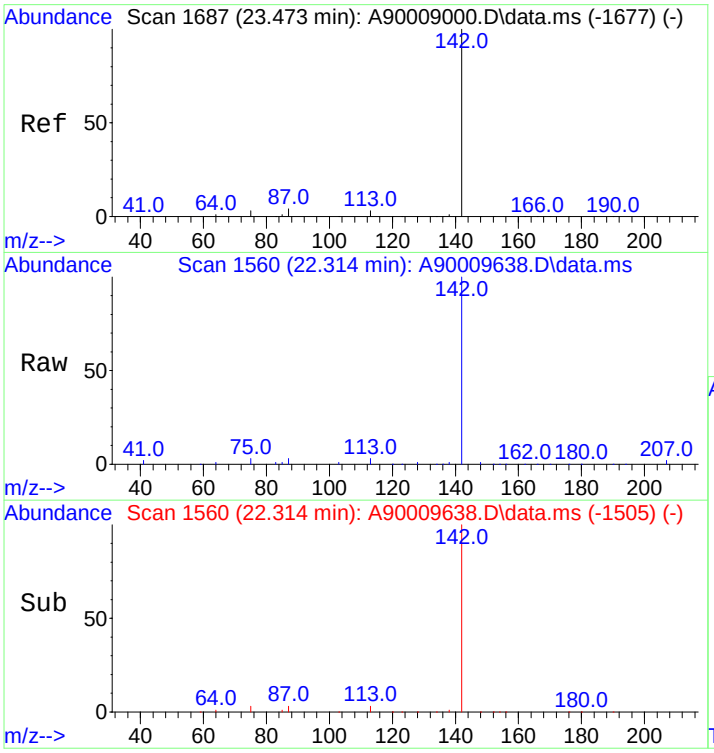


#16
2-Methylnaphthalene
Concen: 244.92 ng/mL
RT: 21.894 min Scan# 1514
Delta R.T. -0.009 min
Lab File: A90009638.D
Acq: 26 Dec 2012 10:48 pm

Tgt Ion:142 Resp: 68552

Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	0.0

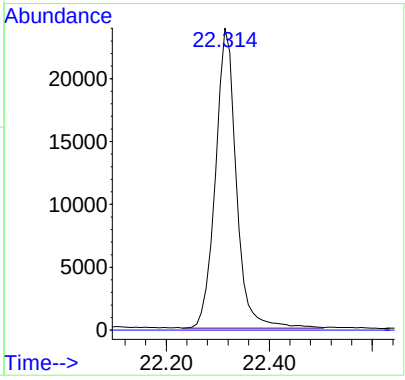


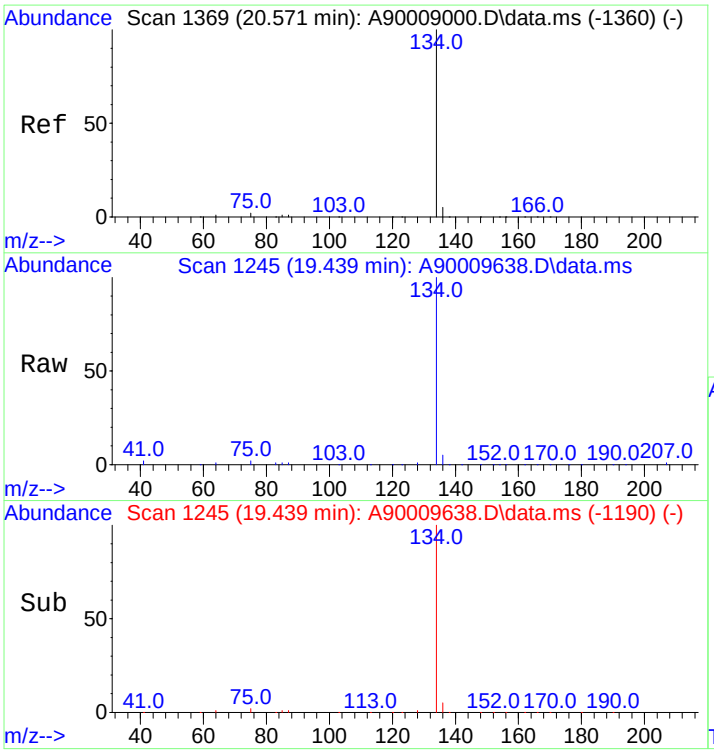


#17
1-Methylnaphthalene
Concen: 246.98 ng/mL
RT: 22.314 min Scan# 1560
Delta R.T. -0.000 min
Lab File: A90009638.D
Acq: 26 Dec 2012 10:48 pm

Tgt Ion:142 Resp: 67087

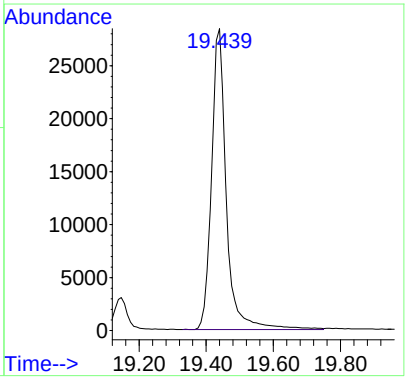
Ion	Ratio	Lower	Upper
142	100		
141	0.0	0.0	20.0

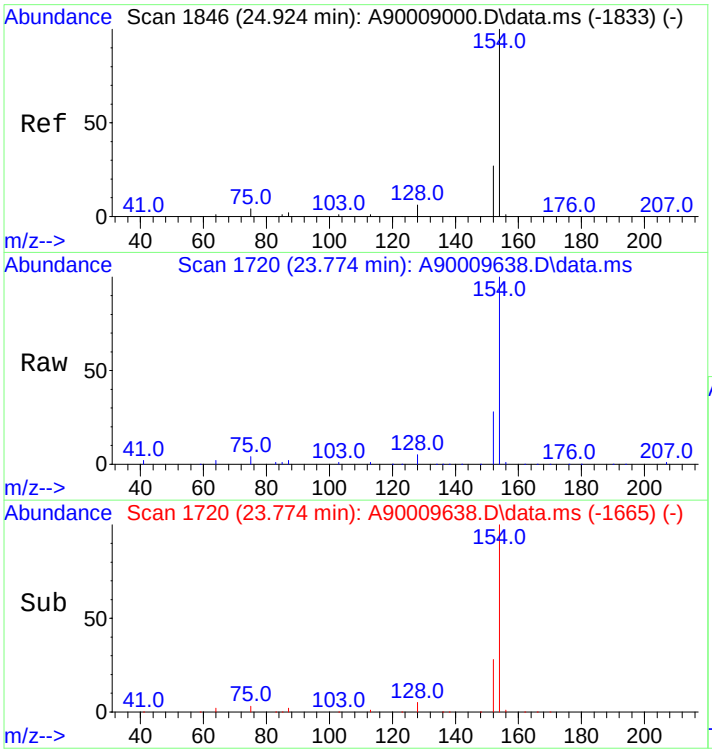




#18
Benzothiophene
Concen: 243.28 ng/mL
RT: 19.439 min Scan# 1245
Delta R.T. 0.000 min
Lab File: A90009638.D
Acq: 26 Dec 2012 10:48 pm

Tgt Ion:134 Resp: 87135

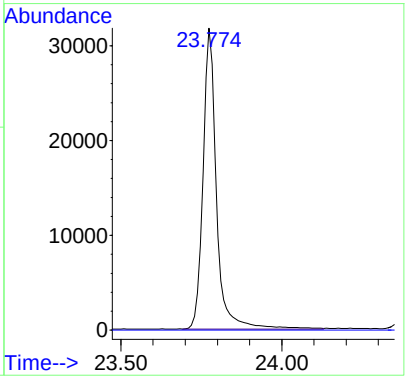


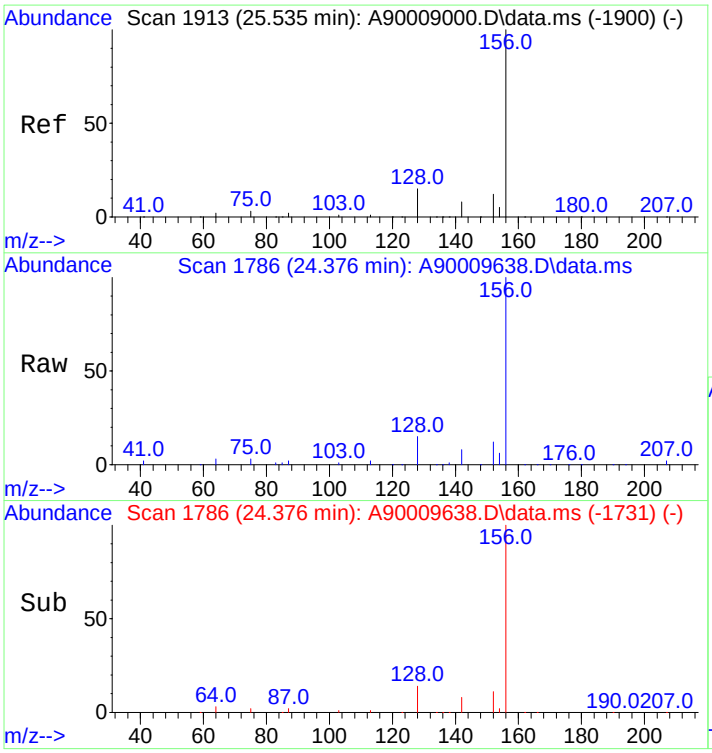


#23
Biphenyl
Concen: 251.79 ng/mL
RT: 23.774 min Scan# 1720
Delta R.T. -0.000 min
Lab File: A90009638.D
Acq: 26 Dec 2012 10:48 pm

Tgt Ion:154 Resp: 92224

Ion	Ratio	Lower	Upper
154	100		
153	0.0	0.0	0.0

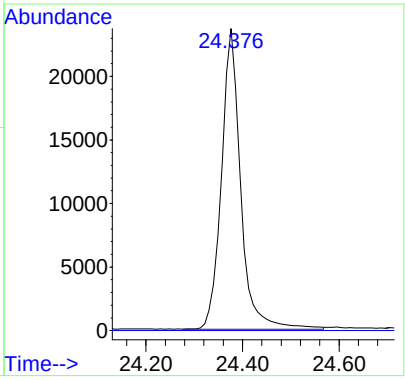


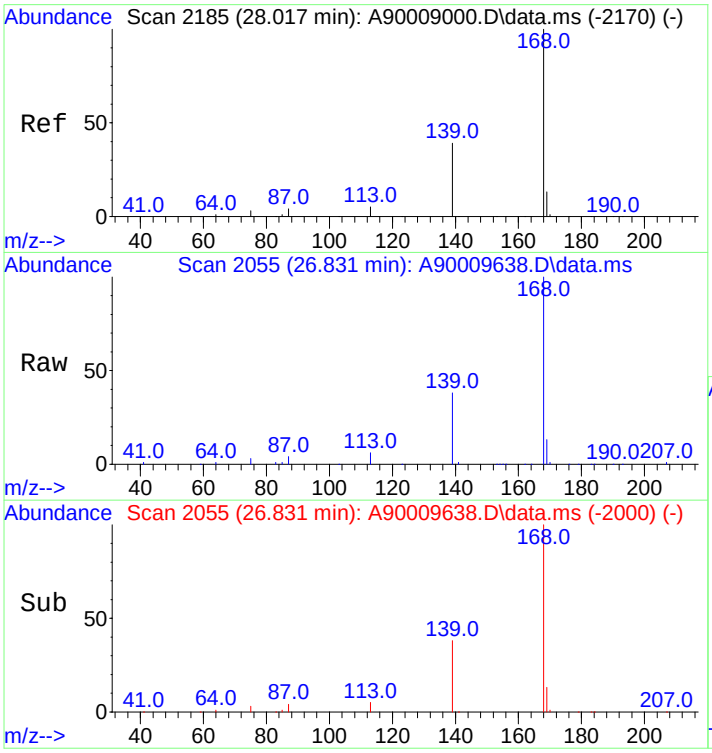


#24
2,6-Dimethylnaphthalene
Concen: 249.25 ng/mL
RT: 24.376 min Scan# 1786
Delta R.T. 0.000 min
Lab File: A90009638.D
Acq: 26 Dec 2012 10:48 pm

Tgt Ion:156 Resp: 65579

Ion	Ratio	Lower	Upper
156	100		
155	0.0	0.0	0.0

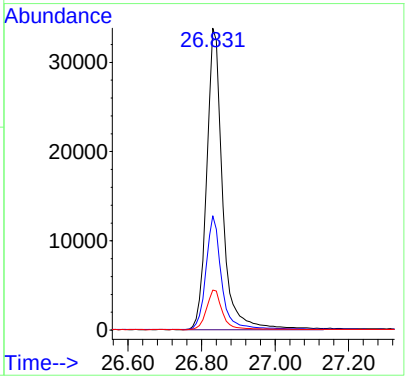


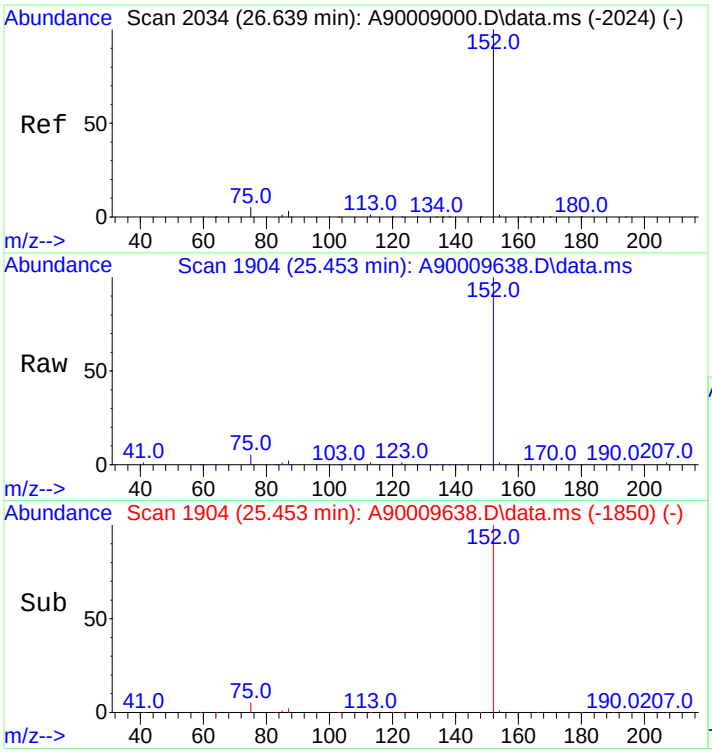


#25
Dibenzofuran
Concen: 260.48 ng/mL
RT: 26.831 min Scan# 2055
Delta R.T. -0.000 min
Lab File: A90009638.D
Acq: 26 Dec 2012 10:48 pm

Tgt Ion:168 Resp: 101762

Ion	Ratio	Lower	Upper
168	100		
139	36.8	30.2	45.2
169	13.3	10.8	16.2

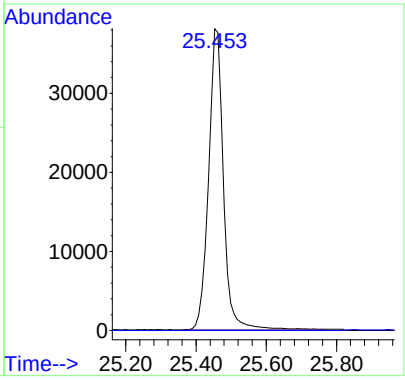


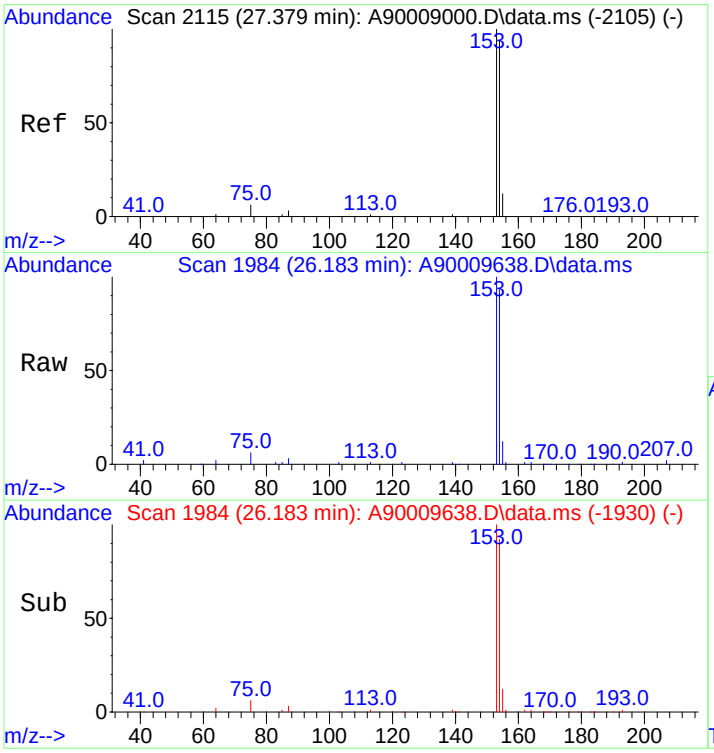


#26
Acenaphthylene
Concen: 254.36 ng/mL
RT: 25.453 min Scan# 1904
Delta R.T. -0.009 min
Lab File: A90009638.D
Acq: 26 Dec 2012 10:48 pm

Tgt Ion:152 Resp: 111990

Ion	Ratio	Lower	Upper
152	100		
153	0.0	0.0	0.0

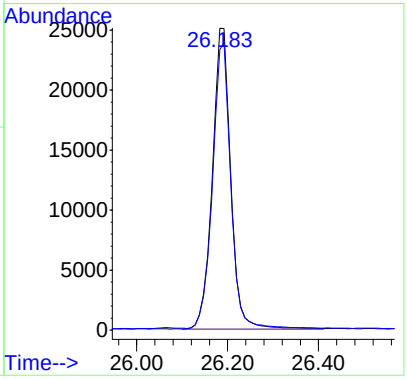


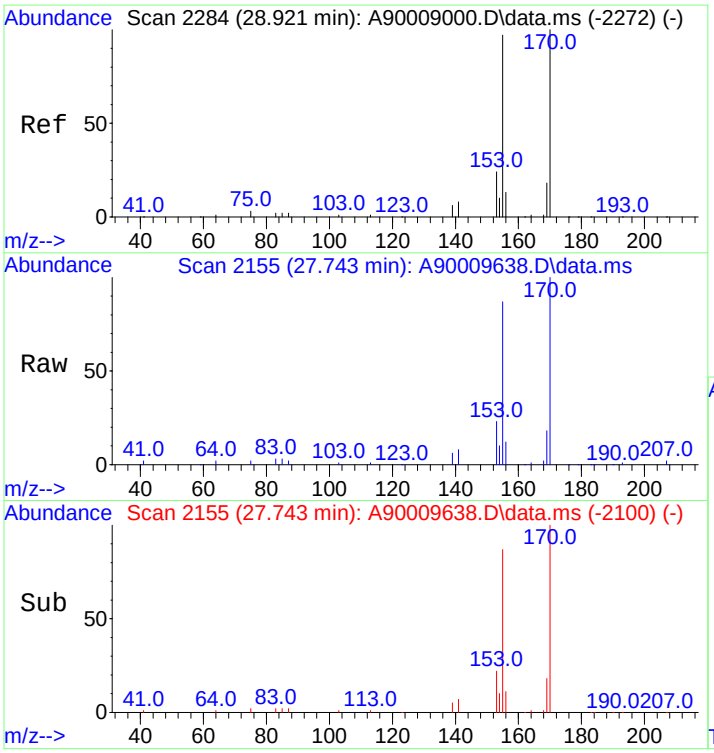


#27
Acenaphthene
Concen: 254.69 ng/mL
RT: 26.183 min Scan# 1984
Delta R.T. -0.009 min
Lab File: A90009638.D
Acq: 26 Dec 2012 10:48 pm

Tgt Ion:153 Resp: 70505

Ion	Ratio	Lower	Upper
153	100		
154	94.1	76.2	114.2

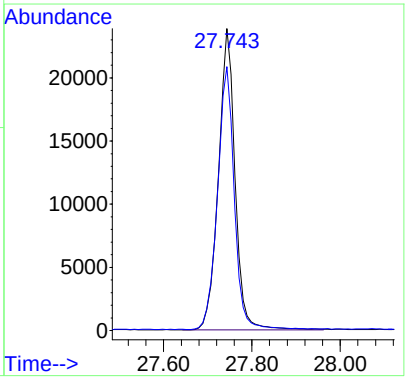


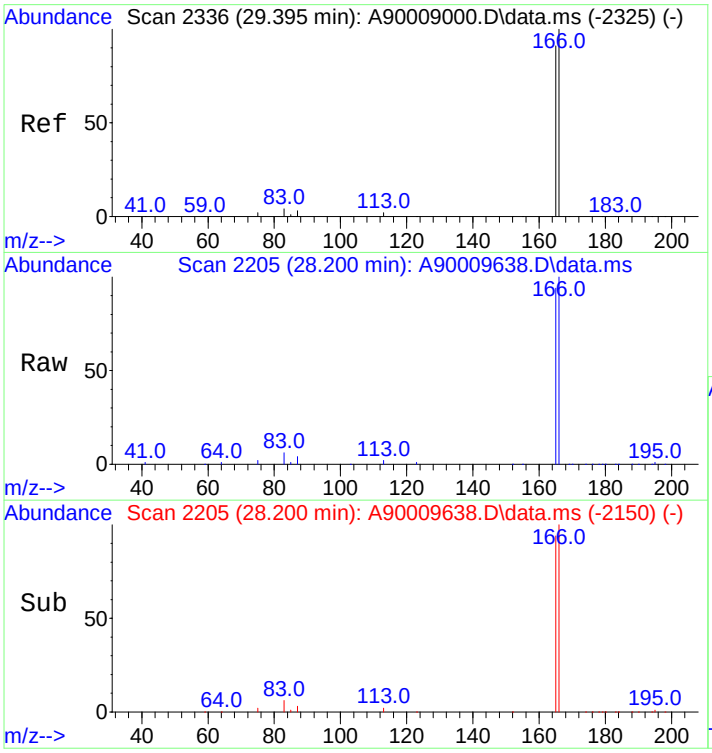


#28
2,3,5-Trimethylnaphthalene
Concen: 257.84 ng/mL
RT: 27.743 min Scan# 2155
Delta R.T. 0.000 min
Lab File: A90009638.D
Acq: 26 Dec 2012 10:48 pm

Tgt Ion:170 Resp: 62372

Ion	Ratio	Lower	Upper
170	100		
155	88.0	70.9	106.3

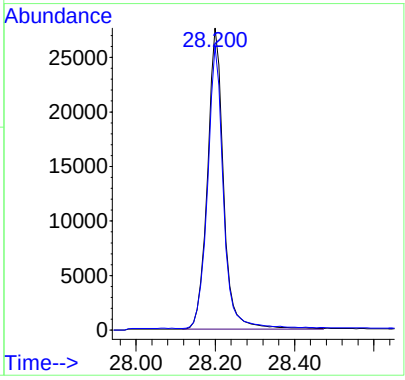


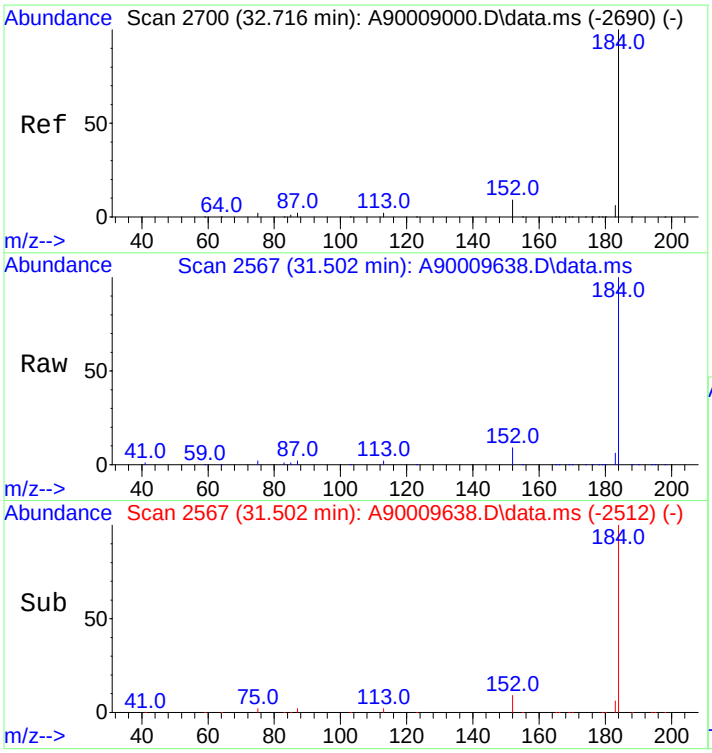


#29
Fluorene
Concen: 257.05 ng/mL
RT: 28.200 min Scan# 2205
Delta R.T. -0.000 min
Lab File: A90009638.D
Acq: 26 Dec 2012 10:48 pm

Tgt Ion:166 Resp: 78143

Ion	Ratio	Lower	Upper
166	100		
165	92.0	74.1	111.1

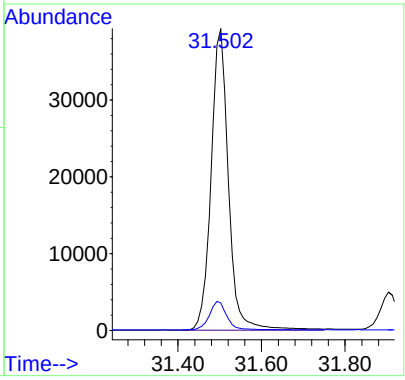


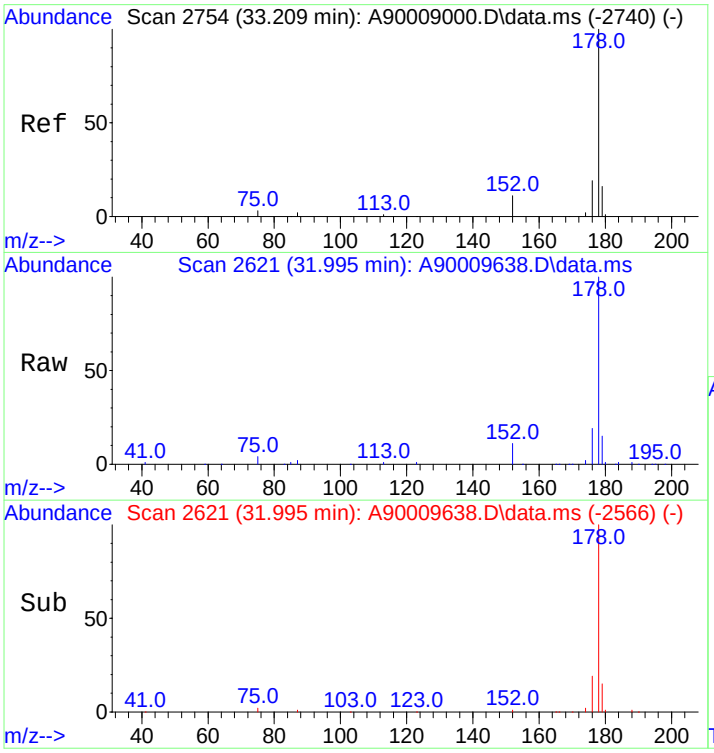


#33
Dibenzothiophene
Concen: 263.13 ng/mL
RT: 31.502 min Scan# 2567
Delta R.T. 0.000 min
Lab File: A90009638.D
Acq: 26 Dec 2012 10:48 pm

Tgt Ion:184 Resp: 112520

Ion	Ratio	Lower	Upper
184	100		
152	9.5	7.2	10.8

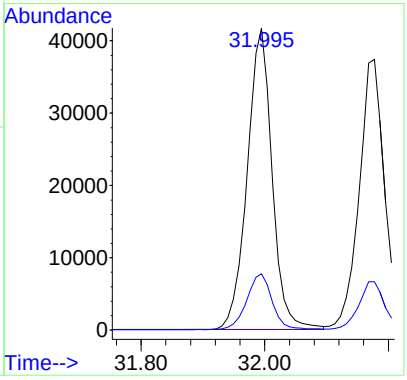


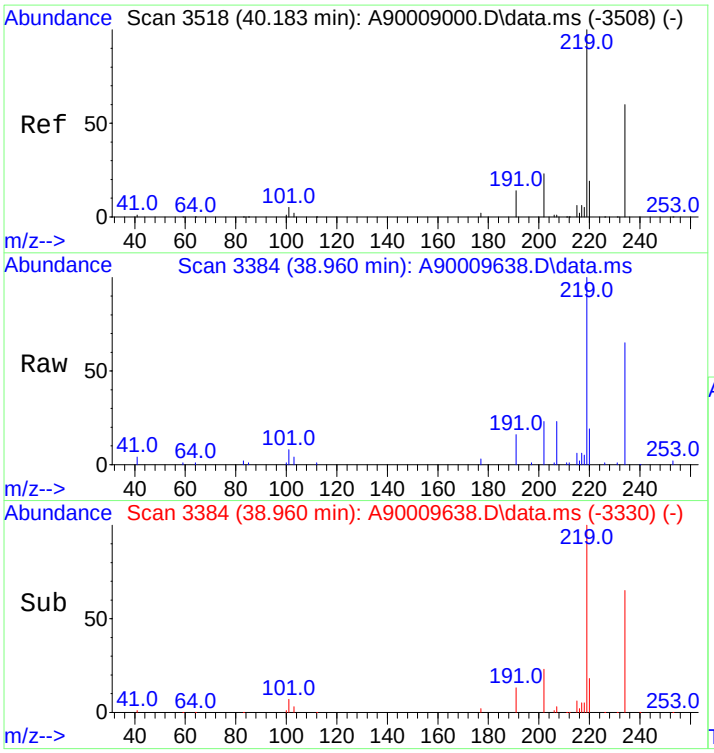


#43
Phenanthrene
Concen: 263.99 ng/mL
RT: 31.995 min Scan# 2621
Delta R.T. -0.000 min
Lab File: A90009638.D
Acq: 26 Dec 2012 10:48 pm

Tgt Ion:178 Resp: 116626

Ion	Ratio	Lower	Upper
178	100		
176	18.8	14.7	22.1

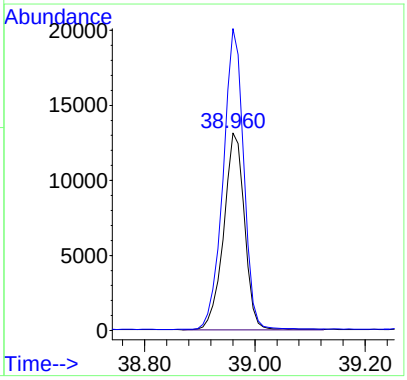


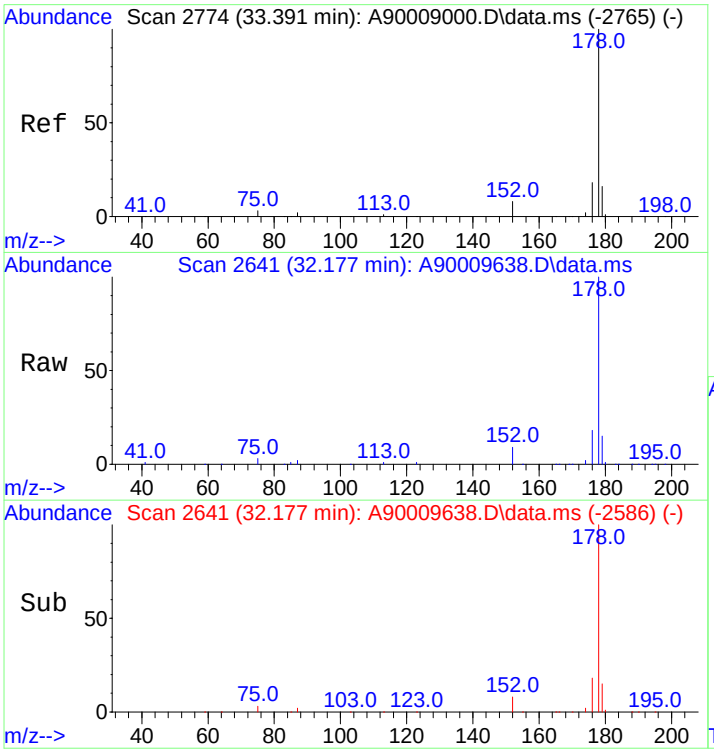


#54
Retene
Concen: 282.10 ng/mL
RT: 38.960 min Scan# 3384
Delta R.T. -0.009 min
Lab File: A90009638.D
Acq: 26 Dec 2012 10:48 pm

Tgt Ion:234 Resp: 34261

Ion	Ratio	Lower	Upper
234	100		
219	151.4	117.4	176.2

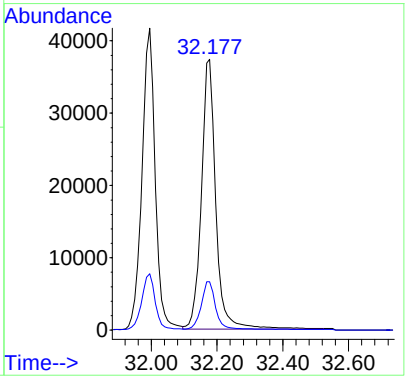


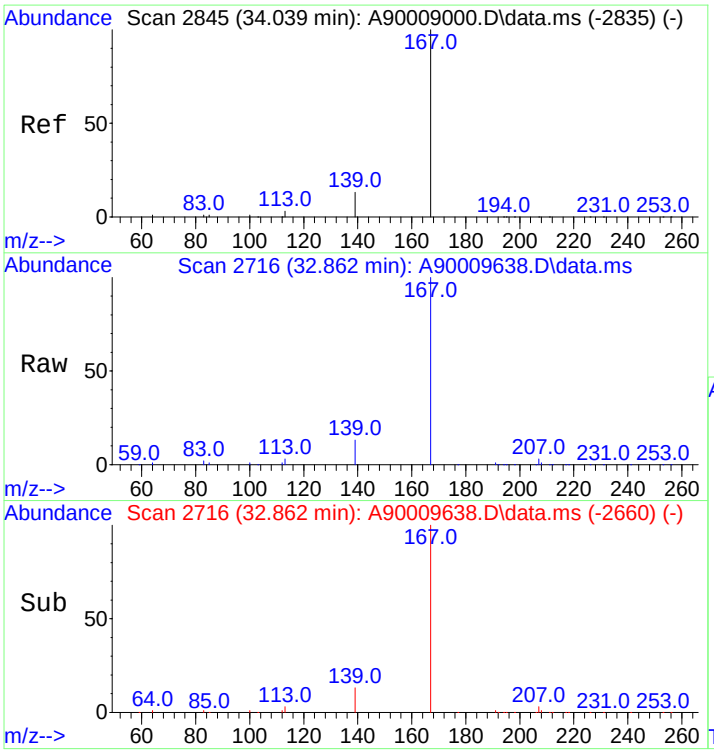


#55
Anthracene
Concen: 276.65 ng/mL m
RT: 32.177 min Scan# 2641
Delta R.T. 0.000 min
Lab File: A90009638.D
Acq: 26 Dec 2012 10:48 pm

Tgt Ion:178 Resp: 113497

Ion	Ratio	Lower	Upper
178	100		
176	17.3	14.2	21.2

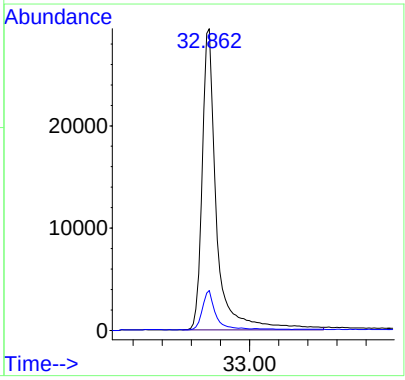


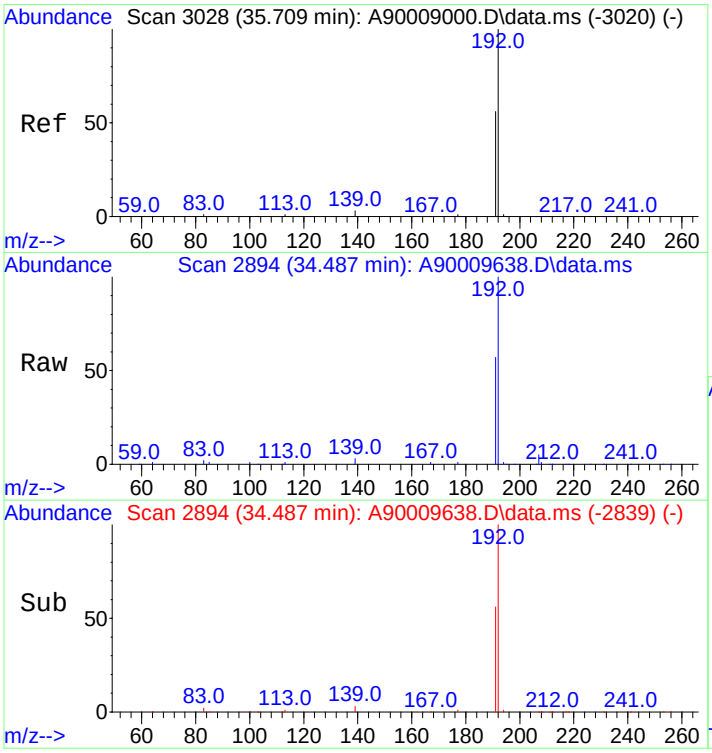


#56
Carbazole
Concen: 259.38 ng/mL
RT: 32.862 min Scan# 2716
Delta R.T. 0.009 min
Lab File: A90009638.D
Acq: 26 Dec 2012 10:48 pm

Tgt Ion:167 Resp: 100663

Ion	Ratio	Lower	Upper
167	100		
139	12.0	10.2	15.4

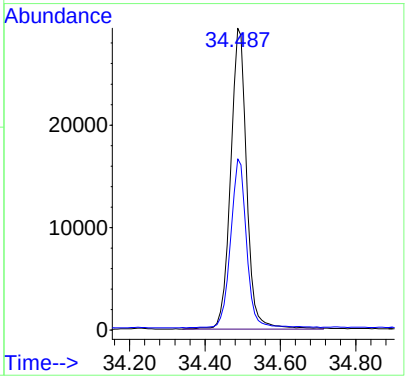


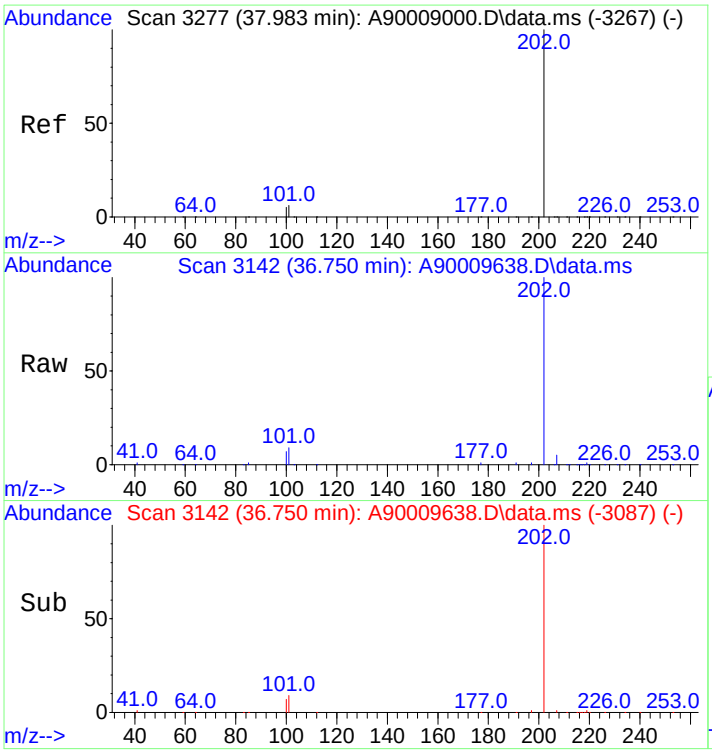


#57
1-Methylphenanthrene
Concen: 266.95 ng/mL
RT: 34.487 min Scan# 2894
Delta R.T. -0.000 min
Lab File: A90009638.D
Acq: 26 Dec 2012 10:48 pm

Tgt Ion:192 Resp: 87013

Ion	Ratio	Lower	Upper
192	100		
191	56.1	45.2	67.8

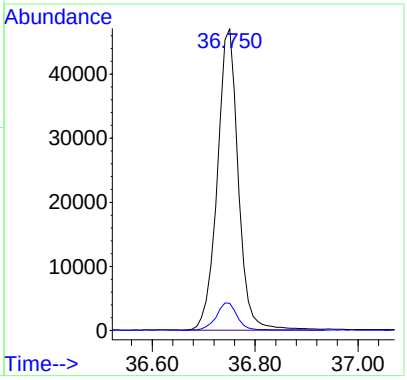


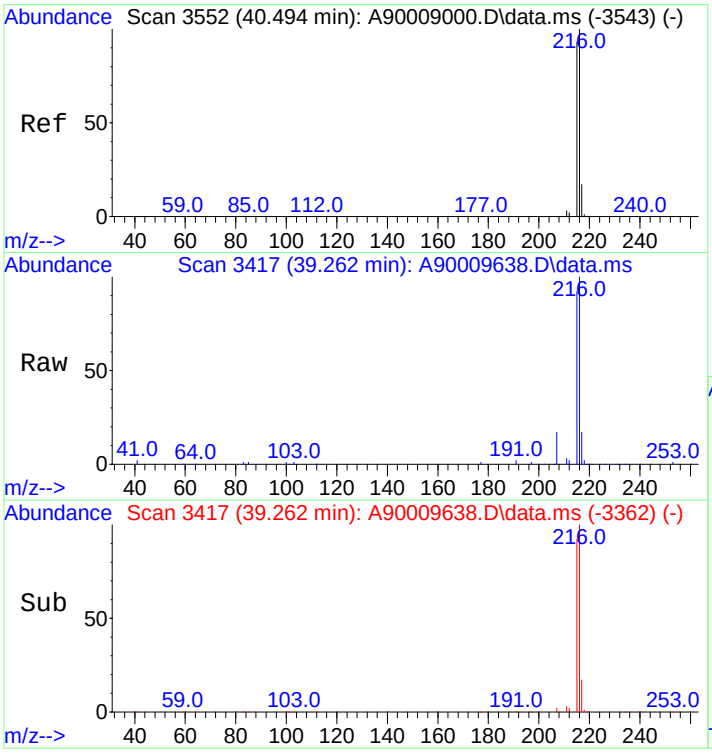


#58
Fluoranthene
Concen: 268.97 ng/mL
RT: 36.750 min Scan# 3142
Delta R.T. -0.001 min
Lab File: A90009638.D
Acq: 26 Dec 2012 10:48 pm

Tgt Ion:202 Resp: 132744

Ion	Ratio	Lower	Upper
202	100		
101	9.1	7.5	11.3

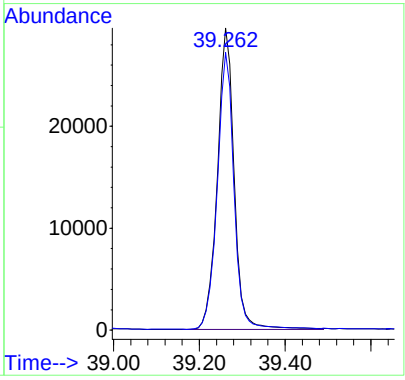


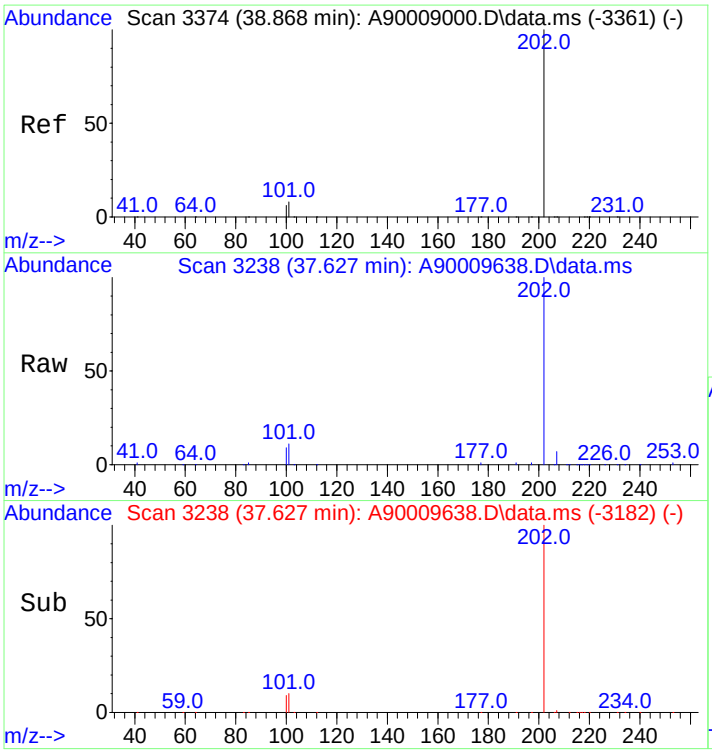


#59
Benzo(b)fluorene
Concen: 273.93 ng/mL
RT: 39.262 min Scan# 3417
Delta R.T. -0.000 min
Lab File: A90009638.D
Acq: 26 Dec 2012 10:48 pm

Tgt Ion:216 Resp: 80398

Ion	Ratio	Lower	Upper
216	100		
215	91.7	72.9	109.3

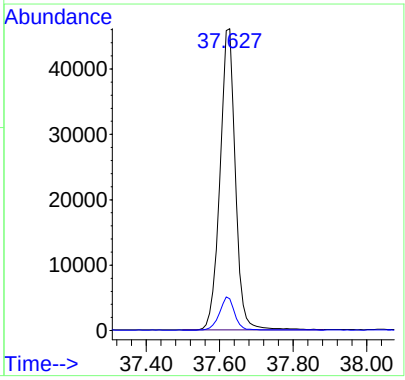


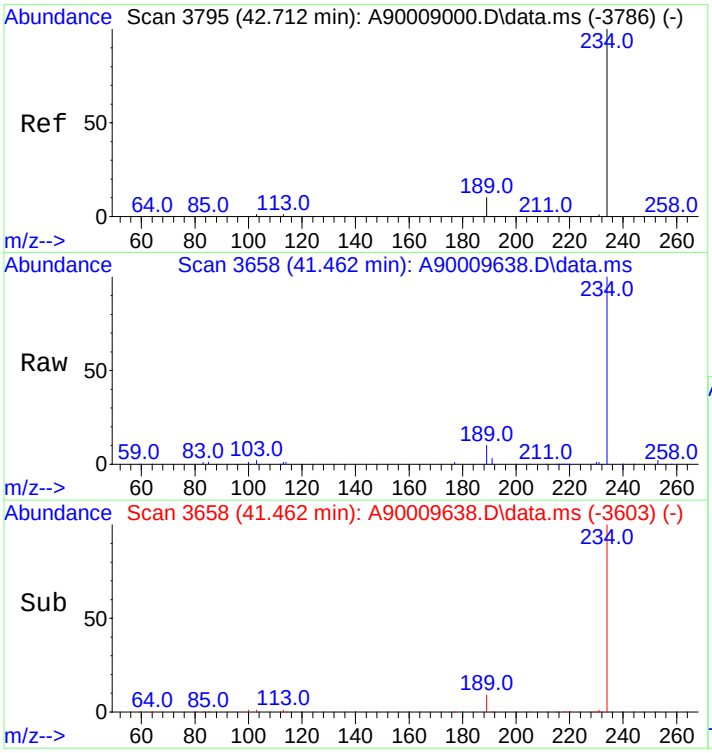


#60
Pyrene
Concen: 265.84 ng/mL
RT: 37.627 min Scan# 3238
Delta R.T. 0.009 min
Lab File: A90009638.D
Acq: 26 Dec 2012 10:48 pm

Tgt Ion:202 Resp: 133847

Ion	Ratio	Lower	Upper
202	100		
101	10.9	9.4	14.0

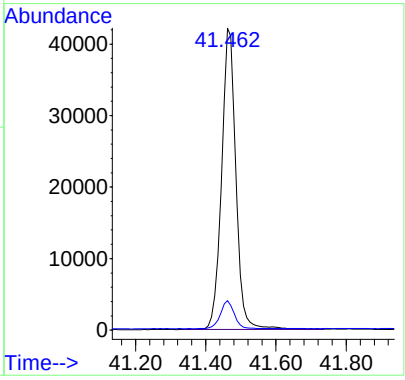


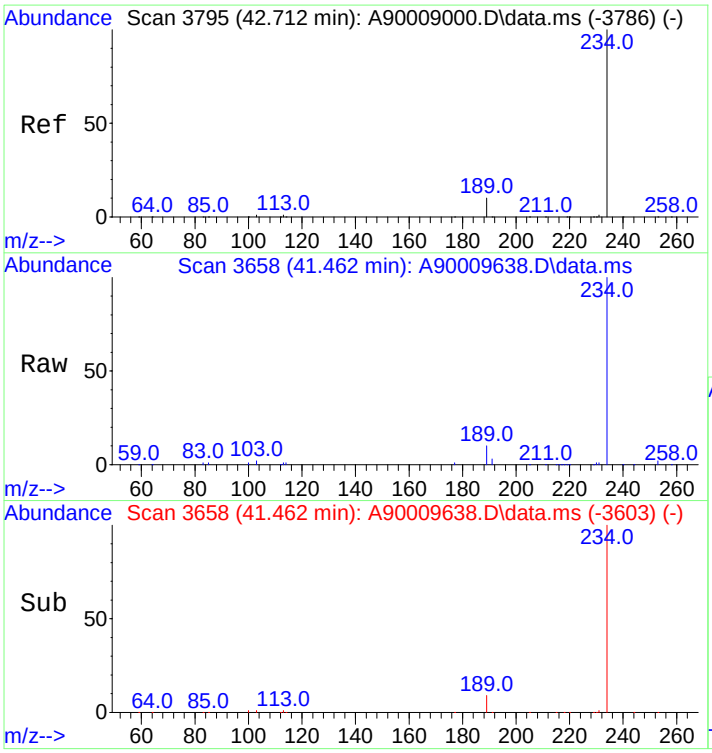


#66
Naphthobenzothiophene
Concen: 273.84 ng/ml
RT: 41.462 min Scan# 3658
Delta R.T. -0.000 min
Lab File: A90009638.D
Acq: 26 Dec 2012 10:48 pm

Tgt Ion:234 Resp: 119635

Ion	Ratio	Lower	Upper
234	100		
189	9.1	7.7	11.5

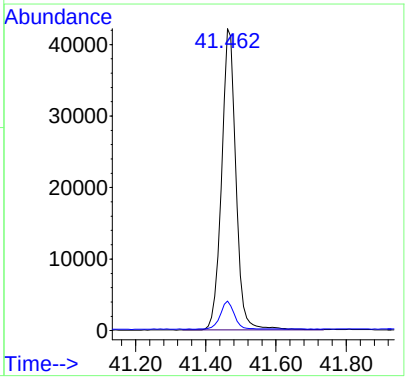


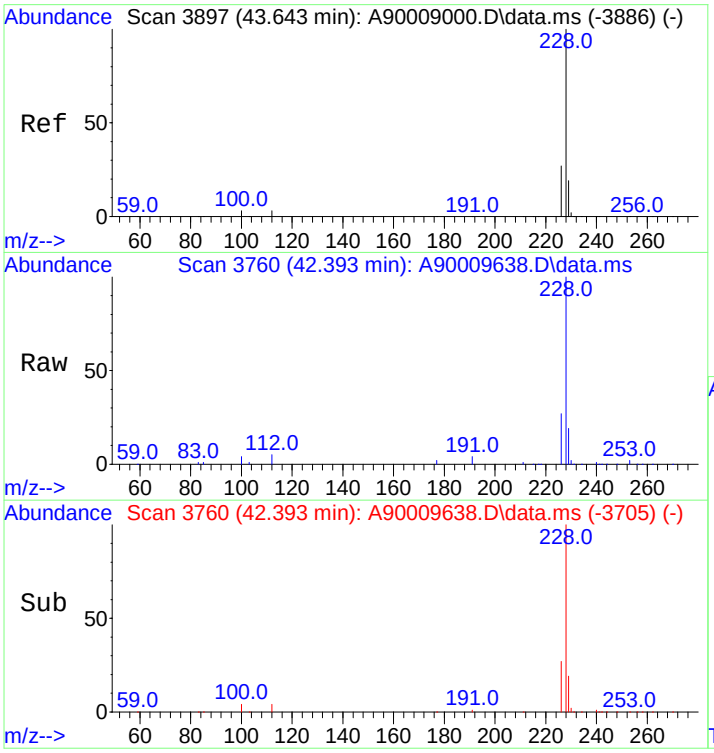


#67
Naphthobenzothiophene-2,1-D
Concen: 273.84 ng/mL
RT: 41.462 min Scan# 3658
Delta R.T. -0.000 min
Lab File: A90009638.D
Acq: 26 Dec 2012 10:48 pm

Tgt Ion:234 Resp: 119635

Ion	Ratio	Lower	Upper
234	100		
189	9.1	7.7	11.5

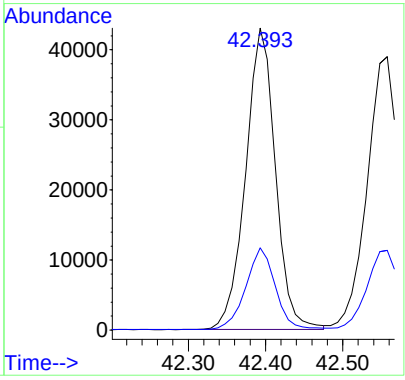


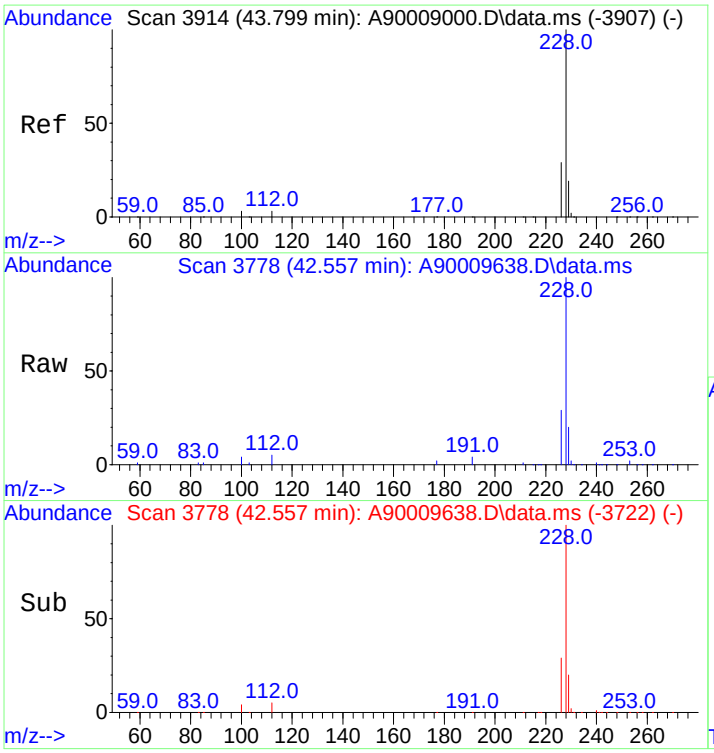


#75
Benz[a]anthracene
Concen: 249.05 ng/mL
RT: 42.393 min Scan# 3760
Delta R.T. 0.000 min
Lab File: A90009638.D
Acq: 26 Dec 2012 10:48 pm

Tgt Ion:228 Resp: 115670

Ion	Ratio	Lower	Upper
228	100		
226	26.9	20.9	31.3

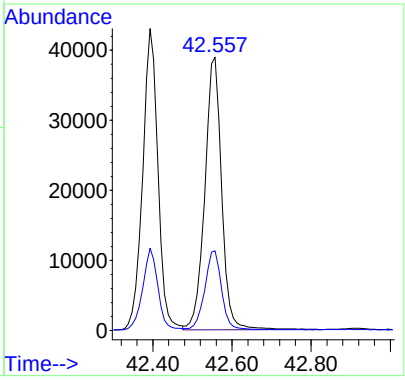


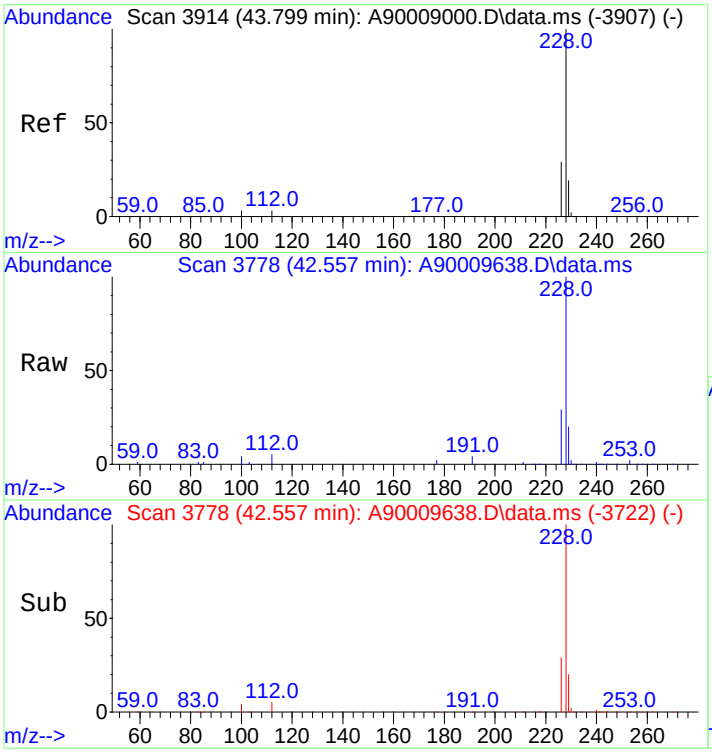


#76
Chrysene
Concen: 252.47 ng/mL
RT: 42.557 min Scan# 3778
Delta R.T. 0.009 min
Lab File: A90009638.D
Acq: 26 Dec 2012 10:48 pm

Tgt Ion:228 Resp: 115328

Ion	Ratio	Lower	Upper
228	100		
226	28.3	23.4	35.2

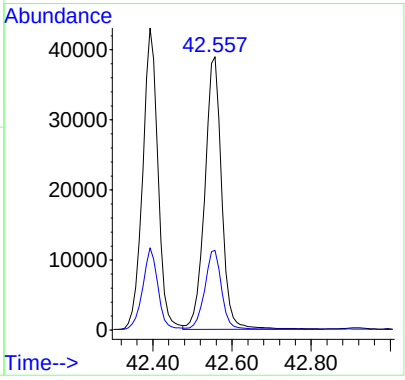


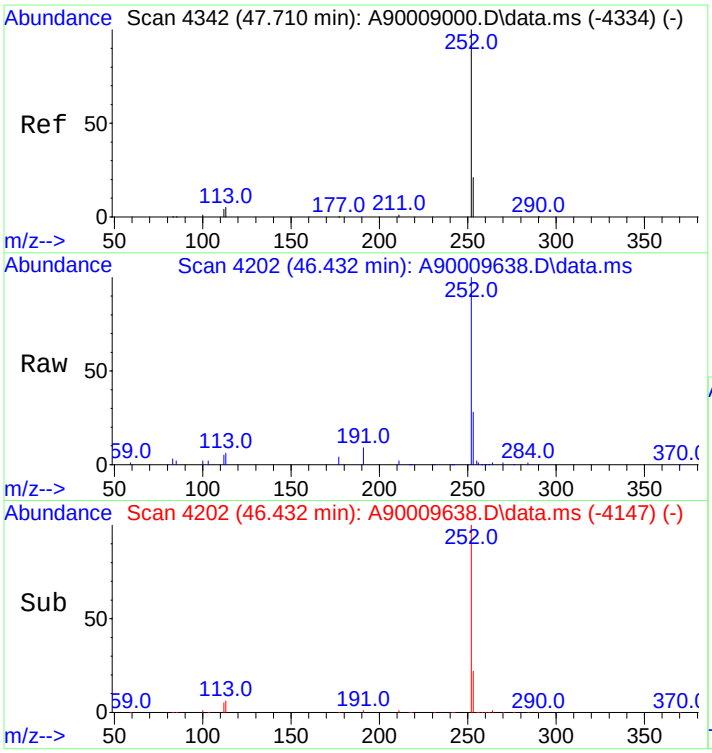


#77
Chrysene/Triphenylene
Concen: 252.47 ng/mL
RT: 42.557 min Scan# 3778
Delta R.T. 0.009 min
Lab File: A90009638.D
Acq: 26 Dec 2012 10:48 pm

Tgt Ion:228 Resp: 115328

Ion	Ratio	Lower	Upper
228	100		
226	28.3	23.4	35.2

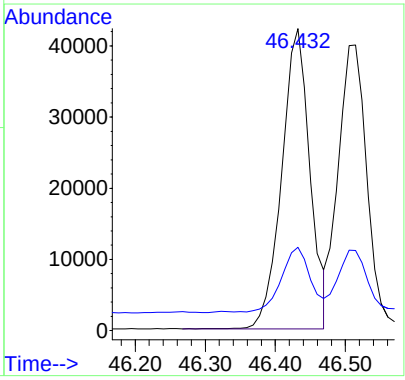


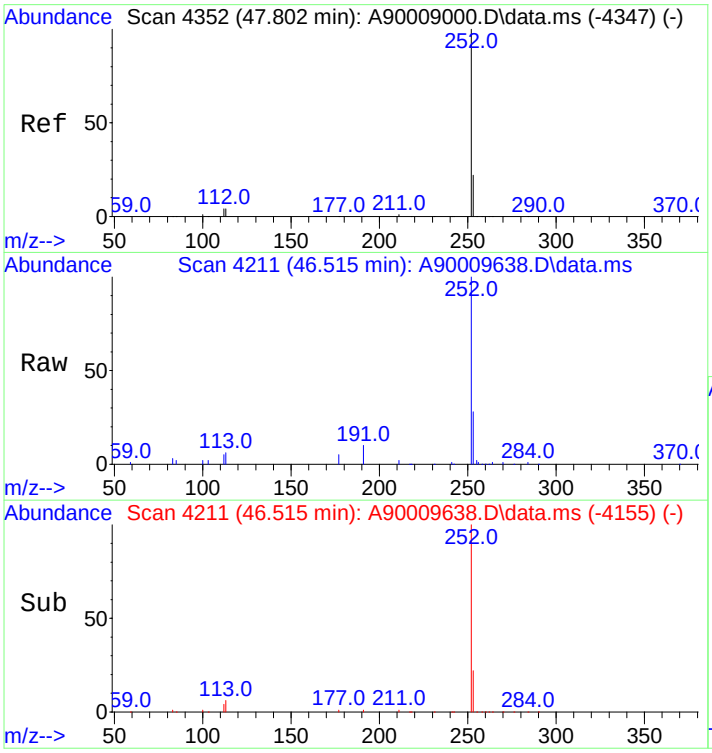


#84
Benzo[b]fluoranthene
Concen: 246.00 ng/mL
RT: 46.432 min Scan# 4202
Delta R.T. 0.000 min
Lab File: A90009638.D
Acq: 26 Dec 2012 10:48 pm

Tgt Ion:252 Resp: 118464

Ion	Ratio	Lower	Upper
252	100		
253	21.7	23.0	34.4#

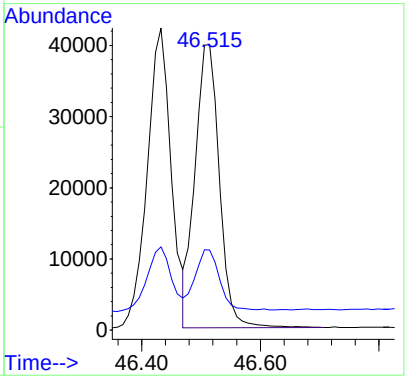


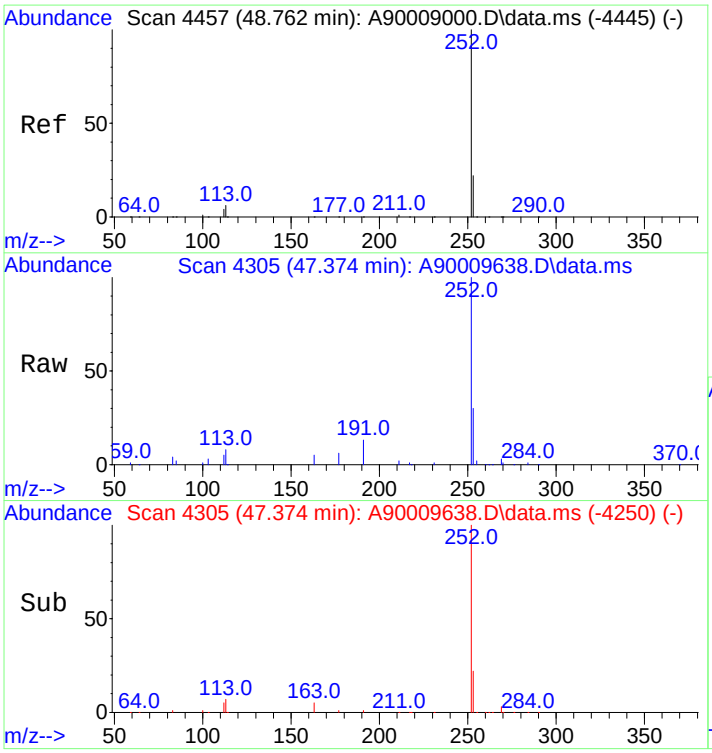


#85
Benzo[j]+[k]fluoranthene
Concen: 242.14 ng/mL
RT: 46.515 min Scan# 4211
Delta R.T. 0.010 min
Lab File: A90009638.D
Acq: 26 Dec 2012 10:48 pm

Tgt Ion:252 Resp: 114572

Ion	Ratio	Lower	Upper
252	100		
253	20.9	23.0	34.4#

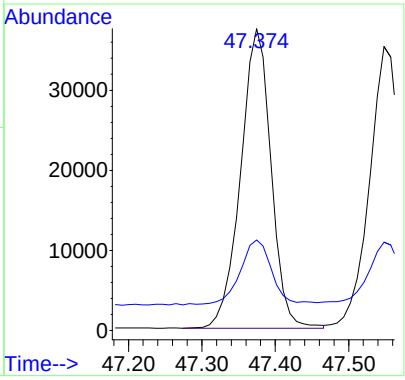


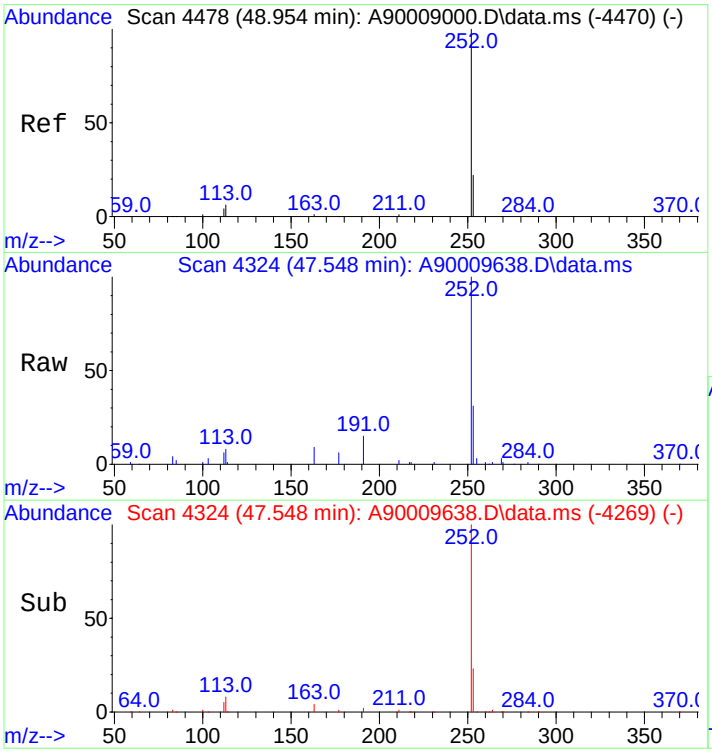


#87
Benzo[e]pyrene
Concen: 237.00 ng/mL
RT: 47.374 min Scan# 4305
Delta R.T. 0.000 min
Lab File: A90009638.D
Acq: 26 Dec 2012 10:48 pm

Tgt Ion:252 Resp: 108377

Ion	Ratio	Lower	Upper
252	100		
253	21.8	24.6	36.8#

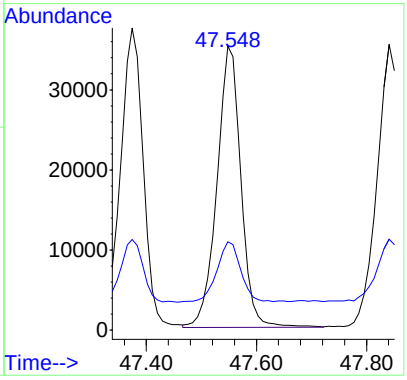


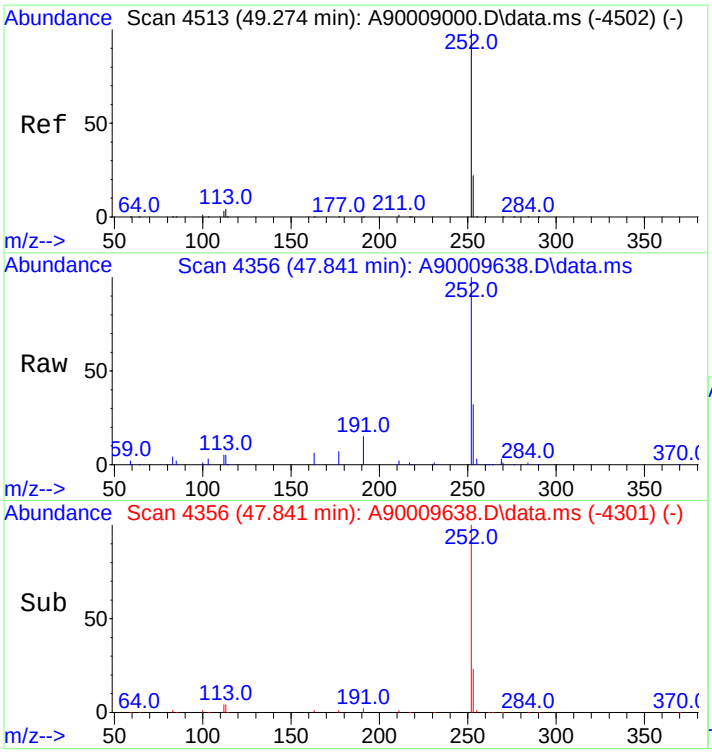


#89
Benzo[a]pyrene
Concen: 244.43 ng/mL
RT: 47.548 min Scan# 4324
Delta R.T. 0.000 min
Lab File: A90009638.D
Acq: 26 Dec 2012 10:48 pm

Tgt Ion:252 Resp: 105858

Ion	Ratio	Lower	Upper
252	100		
253	21.8	26.6	39.8#

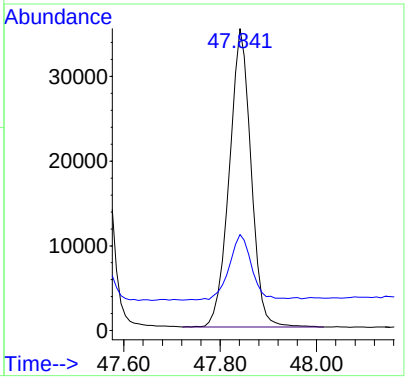


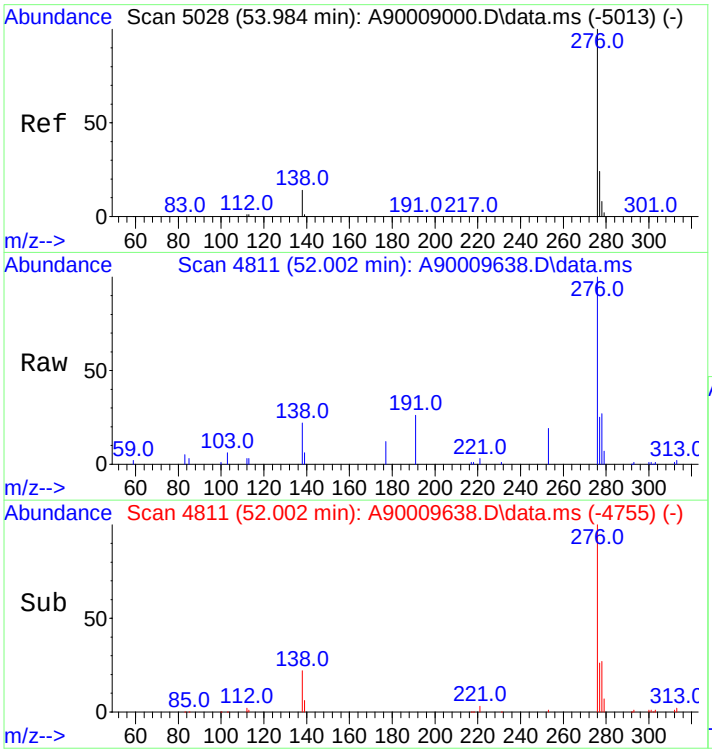


#90
Perylene
Concen: 238.31 ng/mL
RT: 47.841 min Scan# 4356
Delta R.T. -0.000 min
Lab File: A90009638.D
Acq: 26 Dec 2012 10:48 pm

Tgt Ion:252 Resp: 110148

Ion	Ratio	Lower	Upper
252	100		
253	22.8	26.4	39.6#

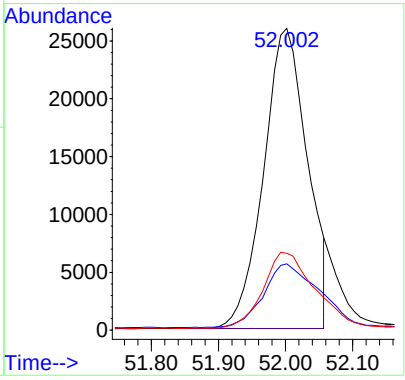


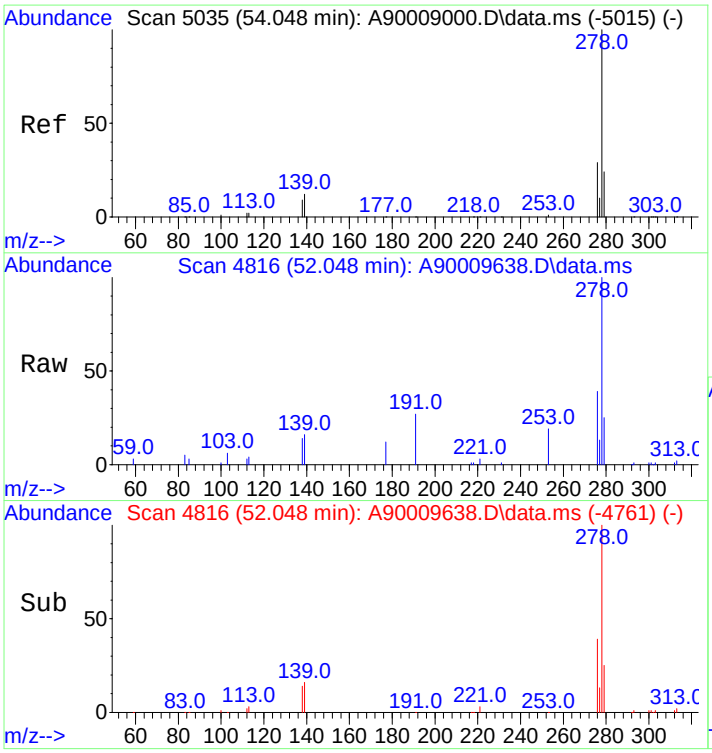


#91
Indeno[1,2,3-cd]pyrene
Concen: 246.13 ng/mL m
RT: 52.002 min Scan# 4811
Delta R.T. 0.009 min
Lab File: A90009638.D
Acq: 26 Dec 2012 10:48 pm

Tgt Ion:276 Resp: 118054

Ion	Ratio	Lower	Upper
276	100		
138	27.0	17.6	26.4#
277	30.5	20.6	30.8

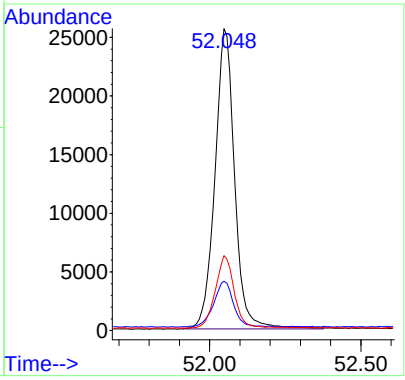


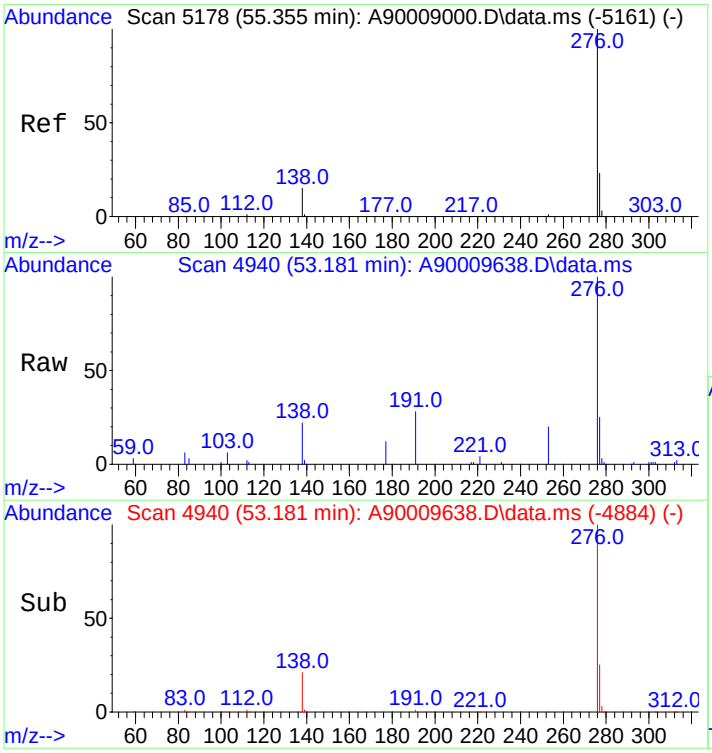


#92
Dibenz[ah]+[ac]anthracene
Concen: 245.19 ng/mL
RT: 52.048 min Scan# 4816
Delta R.T. -0.000 min
Lab File: A90009638.D
Acq: 26 Dec 2012 10:48 pm

Tgt Ion:278 Resp: 115850

Ion	Ratio	Lower	Upper
278	100		
139	14.7	12.9	19.3
279	22.8	19.3	28.9

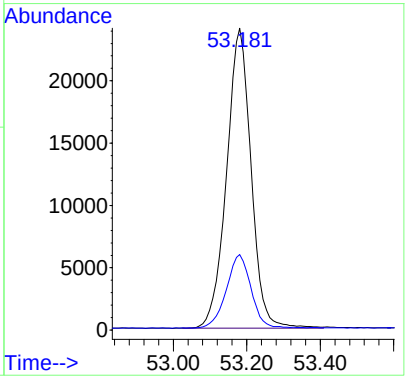


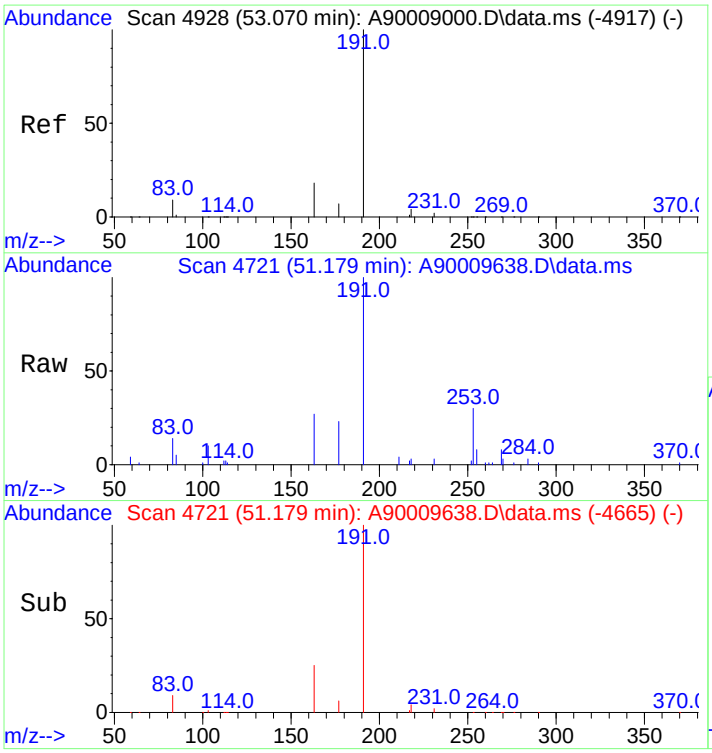


#93
Benzo[g,h,i]perylene
Concen: 236.70 ng/mL
RT: 53.181 min Scan# 4940
Delta R.T. 0.009 min
Lab File: A90009638.D
Acq: 26 Dec 2012 10:48 pm

Tgt Ion:276 Resp: 111563

Ion	Ratio	Lower	Upper
276	100		
277	24.7	20.3	30.5

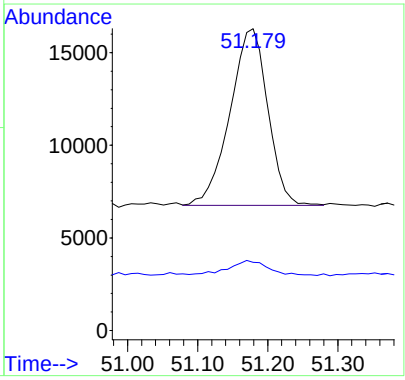


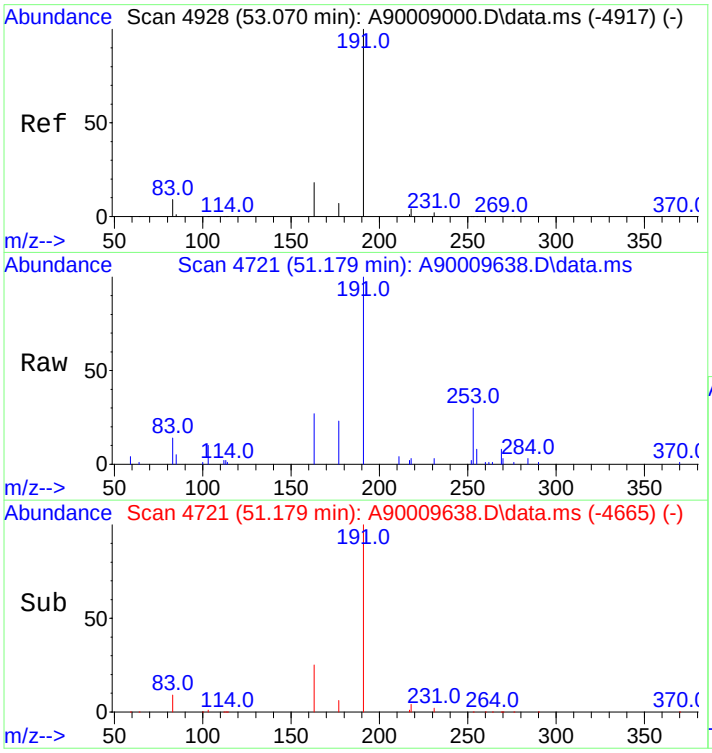


#94
Hopane (T19)
Concen: 201.23 ng/mL m
RT: 51.179 min Scan# 4721
Delta R.T. 0.009 min
Lab File: A90009638.D
Acq: 26 Dec 2012 10:48 pm

Tgt Ion:191 Resp: 35823

Ion	Ratio	Lower	Upper
191	100		
177	8.7	19.0	28.4#

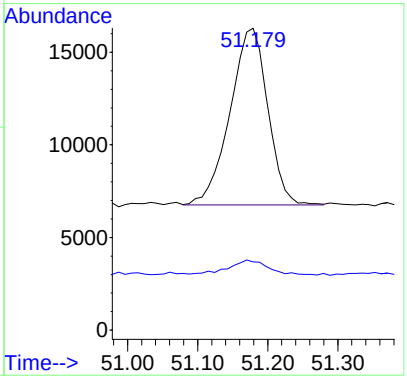




#95
17a(H),21B(H)-hopane - C30H52
Concen: 201.10 ng/mL m
RT: 51.179 min Scan# 4721
Delta R.T. 0.009 min
Lab File: A90009638.D
Acq: 26 Dec 2012 10:48 pm

Tgt Ion:191 Resp: 35799

Ion	Ratio	Lower	Upper
191	100		
177	8.7	19.0	28.4#



Enbridge Line 6B MP 608 Pipeline Release

Marshall, Michigan

Appendix C

Analytical Data Reports for Samples Taken Prior to December 1, 2012

Analytical Data Reports

Prepared for U.S. EPA and MDEQ

Enbridge Energy, Limited Partnership

Submitted: January 23, 2013

21-Nov-2012

Alison Schoeff
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall Surface Water 11/3/12** Work Order: **1211468**

Dear Alison,

ALS Environmental received 16 samples on 14-Nov-2012 05:00 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 31.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

Certificate No: MN331938

ALS Group USA, Corp

Date: 21-Nov-12

Client: AECOM Environment
Project: Marshall Surface Water 11/3/12
Work Order: **1211468**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1211468-01	WSE11131053JTC1	Surface Water		11/13/2012 10:53	11/14/2012 17:00	☐
1211468-02	WSE11131043JTC1	Surface Water		11/13/2012 10:43	11/14/2012 17:00	☐
1211468-03	WSB11131635JTC1	Surface Water		11/13/2012 16:35	11/14/2012 17:00	☐
1211468-04	WSE11131157JTC1	Surface Water		11/13/2012 11:57	11/14/2012 17:00	☐
1211468-05	WSF11130845JTC1	Surface Water		11/13/2012 08:45	11/14/2012 17:00	☐
1211468-06	WSE11131255JTC1	Surface Water		11/13/2012 12:55	11/14/2012 17:00	☐
1211468-07	WSE11131315JTC1	Surface Water		11/13/2012 13:15	11/14/2012 17:00	☐
1211468-08	WSE11131110JTC3	Surface Water		11/13/2012 11:10	11/14/2012 17:00	☐
1211468-09	WSE11131035JTC1	Surface Water		11/13/2012 10:35	11/14/2012 17:00	☐
1211468-10	WSC11131600JTC1	Surface Water		11/13/2012 16:00	11/14/2012 17:00	☐
1211468-11	WSC11131600JTC2	Surface Water		11/13/2012 16:00	11/14/2012 17:00	☐
1211468-12	WSC11131535JTC1	Surface Water		11/13/2012 15:35	11/14/2012 17:00	☐
1211468-13	WSC11131445JTC1	Surface Water		11/13/2012 14:45	11/14/2012 17:00	☐
1211468-14	WSC11131412JTC1	Surface Water		11/13/2012 14:12	11/14/2012 17:00	☐
1211468-15	WSE11131345JTC1	Surface Water		11/13/2012 13:45	11/14/2012 17:00	☐
1211468-16	WSE11130915JTC1	Surface Water		11/13/2012 09:15	11/14/2012 17:00	☐

Client: AECOM Environment
Project: Marshall Surface Water 11/3/12
Work Order: 1211468

Case Narrative

Batch 44821 sample WSE11131110JTC3 MS/MSD recoveries for Benzo(g,h,i)perylene were below control limits. The corresponding reporting limit in the parent sample may be biased low for this compound. A second set of MS/MSD data for PAHs is not related to this project's samples. No data requires qualification.

Batch 44820 MS/MSD data for PAHs is not related to this project's samples. No data requires qualification.

ALS Group USA, Corp

Date: 21-Nov-12

Client: AECOM Environment
Project: Marshall Surface Water 11/3/12
WorkOrder: **1211468**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
SD	Serial Dilution
TDL	Target Detection Limit

Units Reported	Description
µg/L	Micrograms per Liter
mg/L	Milligrams per Liter

ALS Group USA, Corp

Date: *21-Nov-12*

Client:	AECOM Environment	**Client Sample ID:**	WSE11131053JTC1
Work Order:	1211468	**Collection Date:**	11/13/2012 10:53:00 AM
Project:	Marshall Surface Water 11/3/12		
Lab ID:	1211468-01	**Matrix:**	SURFACE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
METALS BY ICP-MS			**SW6020A**		Prep Date: **11/17/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	11/20/2012
Molybdenum	ND	0.050	0.050		mg/L	1	11/20/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	11/20/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **11/19/2012**		Analyst: **CW**
Acenaphthene	ND	5.0	5.0		µg/L	1	11/20/2012
Acenaphthylene	ND	5.0	5.0		µg/L	1	11/20/2012
Anthracene	ND	5.0	5.0		µg/L	1	11/20/2012
Benzo(a)anthracene	ND	1.0	1.0		µg/L	1	11/20/2012
Benzo(a)pyrene	ND	1.0	1.0		µg/L	1	11/20/2012
Benzo(b)fluoranthene	ND	1.0	1.0		µg/L	1	11/20/2012
Benzo(g,h,i)perylene	ND	1.0	1.0		µg/L	1	11/20/2012
Benzo(k)fluoranthene	ND	1.0	1.0		µg/L	1	11/20/2012
Chrysene	ND	1.0	1.0		µg/L	1	11/20/2012
Dibenzo(a,h)anthracene	ND	2.0	2.0		µg/L	1	11/20/2012
Fluoranthene	ND	1.0	1.0		µg/L	1	11/20/2012
Fluorene	ND	5.0	5.0		µg/L	1	11/20/2012
Indeno(1,2,3-cd)pyrene	ND	2.0	2.0		µg/L	1	11/20/2012
Phenanthrene	ND	2.0	2.0		µg/L	1	11/20/2012
Pyrene	ND	5.0	5.0		µg/L	1	11/20/2012
Surr: 2-Fluorobiphenyl	*58.9*	*32-100*			*%REC*	1	11/20/2012
Surr: 4-Terphenyl-d14	*82.4*	*23-112*			*%REC*	1	11/20/2012
Surr: Nitrobenzene-d5	*64.5*	*31-93*			*%REC*	1	11/20/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Nov-12*

Client:	AECOM Environment	**Client Sample ID:**	WSE11131043JTC1
Work Order:	1211468	**Collection Date:**	11/13/2012 10:43:00 AM
Project:	Marshall Surface Water 11/3/12		
Lab ID:	1211468-02	**Matrix:**	SURFACE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
METALS BY ICP-MS			**SW6020A**		Prep Date: **11/17/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	11/20/2012
Molybdenum	ND	0.050	0.050		mg/L	1	11/20/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	11/20/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **11/19/2012**		Analyst: **CW**
Acenaphthene	ND	5.0	5.0		µg/L	1	11/20/2012
Acenaphthylene	ND	5.0	5.0		µg/L	1	11/20/2012
Anthracene	ND	5.0	5.0		µg/L	1	11/20/2012
Benzo(a)anthracene	ND	1.0	1.0		µg/L	1	11/20/2012
Benzo(a)pyrene	ND	1.0	1.0		µg/L	1	11/20/2012
Benzo(b)fluoranthene	ND	1.0	1.0		µg/L	1	11/20/2012
Benzo(g,h,i)perylene	ND	1.0	1.0		µg/L	1	11/20/2012
Benzo(k)fluoranthene	ND	1.0	1.0		µg/L	1	11/20/2012
Chrysene	ND	1.0	1.0		µg/L	1	11/20/2012
Dibenzo(a,h)anthracene	ND	2.0	2.0		µg/L	1	11/20/2012
Fluoranthene	ND	1.0	1.0		µg/L	1	11/20/2012
Fluorene	ND	5.0	5.0		µg/L	1	11/20/2012
Indeno(1,2,3-cd)pyrene	ND	2.0	2.0		µg/L	1	11/20/2012
Phenanthrene	ND	2.0	2.0		µg/L	1	11/20/2012
Pyrene	ND	5.0	5.0		µg/L	1	11/20/2012
Surr: 2-Fluorobiphenyl	*59.2*	*32-100*			*%REC*	1	11/20/2012
Surr: 4-Terphenyl-d14	*76.6*	*23-112*			*%REC*	1	11/20/2012
Surr: Nitrobenzene-d5	*65.1*	*31-93*			*%REC*	1	11/20/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Nov-12*

Client:	AECOM Environment	**Client Sample ID:**	WSB11131635JTC1
Work Order:	1211468	**Collection Date:**	11/13/2012 4:35:00 PM
Project:	Marshall Surface Water 11/3/12		
Lab ID:	1211468-03	**Matrix:**	SURFACE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
METALS BY ICP-MS			**SW6020A**		Prep Date: **11/17/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	11/20/2012
Molybdenum	ND	0.050	0.050		mg/L	1	11/20/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	11/20/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **11/19/2012**		Analyst: **CW**
Acenaphthene	ND	5.0	5.0		µg/L	1	11/20/2012
Acenaphthylene	ND	5.0	5.0		µg/L	1	11/20/2012
Anthracene	ND	5.0	5.0		µg/L	1	11/20/2012
Benzo(a)anthracene	ND	1.0	1.0		µg/L	1	11/20/2012
Benzo(a)pyrene	ND	1.0	1.0		µg/L	1	11/20/2012
Benzo(b)fluoranthene	ND	1.0	1.0		µg/L	1	11/20/2012
Benzo(g,h,i)perylene	ND	1.0	1.0		µg/L	1	11/20/2012
Benzo(k)fluoranthene	ND	1.0	1.0		µg/L	1	11/20/2012
Chrysene	ND	1.0	1.0		µg/L	1	11/20/2012
Dibenzo(a,h)anthracene	ND	2.0	2.0		µg/L	1	11/20/2012
Fluoranthene	ND	1.0	1.0		µg/L	1	11/20/2012
Fluorene	ND	5.0	5.0		µg/L	1	11/20/2012
Indeno(1,2,3-cd)pyrene	ND	2.0	2.0		µg/L	1	11/20/2012
Phenanthrene	ND	2.0	2.0		µg/L	1	11/20/2012
Pyrene	ND	5.0	5.0		µg/L	1	11/20/2012
Surr: 2-Fluorobiphenyl	*43.1*	*32-100*			*%REC*	1	11/20/2012
Surr: 4-Terphenyl-d14	*86.0*	*23-112*			*%REC*	1	11/20/2012
Surr: Nitrobenzene-d5	*47.2*	*31-93*			*%REC*	1	11/20/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Nov-12*

Client:	AECOM Environment	**Client Sample ID:**	WSE11131157JTC1
Work Order:	1211468	**Collection Date:**	11/13/2012 11:57:00 AM
Project:	Marshall Surface Water 11/3/12		
Lab ID:	1211468-04	**Matrix:**	SURFACE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
METALS BY ICP-MS			**SW6020A**		Prep Date: **11/17/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	11/20/2012
Molybdenum	ND	0.050	0.050		mg/L	1	11/20/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	11/20/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **11/19/2012**		Analyst: **CW**
Acenaphthene	ND	5.0	5.0		µg/L	1	11/20/2012
Acenaphthylene	ND	5.0	5.0		µg/L	1	11/20/2012
Anthracene	ND	5.0	5.0		µg/L	1	11/20/2012
Benzo(a)anthracene	ND	1.0	1.0		µg/L	1	11/20/2012
Benzo(a)pyrene	ND	1.0	1.0		µg/L	1	11/20/2012
Benzo(b)fluoranthene	ND	1.0	1.0		µg/L	1	11/20/2012
Benzo(g,h,i)perylene	ND	1.0	1.0		µg/L	1	11/20/2012
Benzo(k)fluoranthene	ND	1.0	1.0		µg/L	1	11/20/2012
Chrysene	ND	1.0	1.0		µg/L	1	11/20/2012
Dibenzo(a,h)anthracene	ND	2.0	2.0		µg/L	1	11/20/2012
Fluoranthene	ND	1.0	1.0		µg/L	1	11/20/2012
Fluorene	ND	5.0	5.0		µg/L	1	11/20/2012
Indeno(1,2,3-cd)pyrene	ND	2.0	2.0		µg/L	1	11/20/2012
Phenanthrene	ND	2.0	2.0		µg/L	1	11/20/2012
Pyrene	ND	5.0	5.0		µg/L	1	11/20/2012
Surr: 2-Fluorobiphenyl	*50.9*	*32-100*			*%REC*	1	11/20/2012
Surr: 4-Terphenyl-d14	*86.6*	*23-112*			*%REC*	1	11/20/2012
Surr: Nitrobenzene-d5	*55.6*	*31-93*			*%REC*	1	11/20/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Nov-12*

Client:	AECOM Environment	**Client Sample ID:**	WSF11130845JTC1
Work Order:	1211468	**Collection Date:**	11/13/2012 8:45:00 AM
Project:	Marshall Surface Water 11/3/12		
Lab ID:	1211468-05	**Matrix:**	SURFACE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
METALS BY ICP-MS			**SW6020A**		Prep Date: **11/17/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	11/20/2012
Molybdenum	ND	0.050	0.050		mg/L	1	11/20/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	11/20/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **11/19/2012**		Analyst: **HL**
Acenaphthene	ND	5.0	5.0		µg/L	1	11/19/2012
Acenaphthylene	ND	5.0	5.0		µg/L	1	11/19/2012
Anthracene	ND	5.0	5.0		µg/L	1	11/19/2012
Benzo(a)anthracene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(a)pyrene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(b)fluoranthene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(g,h,i)perylene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(k)fluoranthene	ND	1.0	1.0		µg/L	1	11/19/2012
Chrysene	ND	1.0	1.0		µg/L	1	11/19/2012
Dibenzo(a,h)anthracene	ND	2.0	2.0		µg/L	1	11/19/2012
Fluoranthene	ND	1.0	1.0		µg/L	1	11/19/2012
Fluorene	ND	5.0	5.0		µg/L	1	11/19/2012
Indeno(1,2,3-cd)pyrene	ND	2.0	2.0		µg/L	1	11/19/2012
Phenanthrene	ND	2.0	2.0		µg/L	1	11/19/2012
Pyrene	ND	5.0	5.0		µg/L	1	11/19/2012
Surr: 2-Fluorobiphenyl	*41.8*	*32-100*			*%REC*	1	11/19/2012
Surr: 4-Terphenyl-d14	*77.6*	*23-112*			*%REC*	1	11/19/2012
Surr: Nitrobenzene-d5	*48.9*	*31-93*			*%REC*	1	11/19/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Nov-12*

Client:	AECOM Environment	**Client Sample ID:**	WSE11131255JTC1
Work Order:	1211468	**Collection Date:**	11/13/2012 12:55:00 PM
Project:	Marshall Surface Water 11/3/12		
Lab ID:	1211468-06	**Matrix:**	SURFACE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
METALS BY ICP-MS			**SW6020A**		Prep Date: **11/17/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	11/20/2012
Molybdenum	ND	0.050	0.050		mg/L	1	11/20/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	11/20/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **11/19/2012**		Analyst: **HL**
Acenaphthene	ND	5.0	5.0		µg/L	1	11/19/2012
Acenaphthylene	ND	5.0	5.0		µg/L	1	11/19/2012
Anthracene	ND	5.0	5.0		µg/L	1	11/19/2012
Benzo(a)anthracene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(a)pyrene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(b)fluoranthene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(g,h,i)perylene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(k)fluoranthene	ND	1.0	1.0		µg/L	1	11/19/2012
Chrysene	ND	1.0	1.0		µg/L	1	11/19/2012
Dibenzo(a,h)anthracene	ND	2.0	2.0		µg/L	1	11/19/2012
Fluoranthene	ND	1.0	1.0		µg/L	1	11/19/2012
Fluorene	ND	5.0	5.0		µg/L	1	11/19/2012
Indeno(1,2,3-cd)pyrene	ND	2.0	2.0		µg/L	1	11/19/2012
Phenanthrene	ND	2.0	2.0		µg/L	1	11/19/2012
Pyrene	ND	5.0	5.0		µg/L	1	11/19/2012
Surr: 2-Fluorobiphenyl	*51.1*	*32-100*			*%REC*	1	11/19/2012
Surr: 4-Terphenyl-d14	*82.3*	*23-112*			*%REC*	1	11/19/2012
Surr: Nitrobenzene-d5	*59.8*	*31-93*			*%REC*	1	11/19/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Nov-12*

Client:	AECOM Environment	**Client Sample ID:**	WSE11131315JTC1
Work Order:	1211468	**Collection Date:**	11/13/2012 1:15:00 PM
Project:	Marshall Surface Water 11/3/12		
Lab ID:	1211468-07	**Matrix:**	SURFACE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
METALS BY ICP-MS			**SW6020A**		Prep Date: **11/17/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	11/20/2012
Molybdenum	ND	0.050	0.050		mg/L	1	11/20/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	11/20/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **11/19/2012**		Analyst: **CW**
Acenaphthene	ND	5.0	5.0		µg/L	1	11/19/2012
Acenaphthylene	ND	5.0	5.0		µg/L	1	11/19/2012
Anthracene	ND	5.0	5.0		µg/L	1	11/19/2012
Benzo(a)anthracene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(a)pyrene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(b)fluoranthene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(g,h,i)perylene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(k)fluoranthene	ND	1.0	1.0		µg/L	1	11/19/2012
Chrysene	ND	1.0	1.0		µg/L	1	11/19/2012
Dibenzo(a,h)anthracene	ND	2.0	2.0		µg/L	1	11/19/2012
Fluoranthene	ND	1.0	1.0		µg/L	1	11/19/2012
Fluorene	ND	5.0	5.0		µg/L	1	11/19/2012
Indeno(1,2,3-cd)pyrene	ND	2.0	2.0		µg/L	1	11/19/2012
Phenanthrene	ND	2.0	2.0		µg/L	1	11/19/2012
Pyrene	ND	5.0	5.0		µg/L	1	11/19/2012
Surr: 2-Fluorobiphenyl	*53.8*	*32-100*			*%REC*	1	11/19/2012
Surr: 4-Terphenyl-d14	*68.8*	*23-112*			*%REC*	1	11/19/2012
Surr: Nitrobenzene-d5	*54.5*	*31-93*			*%REC*	1	11/19/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Nov-12*

Client:	AECOM Environment	**Client Sample ID:**	WSE11131110JTC3
Work Order:	1211468	**Collection Date:**	11/13/2012 11:10:00 AM
Project:	Marshall Surface Water 11/3/12		
Lab ID:	1211468-08	**Matrix:**	SURFACE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
METALS BY ICP-MS			**SW6020A**		Prep Date: **11/17/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	11/20/2012
Molybdenum	ND	0.050	0.050		mg/L	1	11/20/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	11/20/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **11/19/2012**		Analyst: **HL**
Acenaphthene	ND	5.0	5.0		µg/L	1	11/19/2012
Acenaphthylene	ND	5.0	5.0		µg/L	1	11/19/2012
Anthracene	ND	5.0	5.0		µg/L	1	11/19/2012
Benzo(a)anthracene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(a)pyrene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(b)fluoranthene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(g,h,i)perylene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(k)fluoranthene	ND	1.0	1.0		µg/L	1	11/19/2012
Chrysene	ND	1.0	1.0		µg/L	1	11/19/2012
Dibenzo(a,h)anthracene	ND	2.0	2.0		µg/L	1	11/19/2012
Fluoranthene	ND	1.0	1.0		µg/L	1	11/19/2012
Fluorene	ND	5.0	5.0		µg/L	1	11/19/2012
Indeno(1,2,3-cd)pyrene	ND	2.0	2.0		µg/L	1	11/19/2012
Phenanthrene	ND	2.0	2.0		µg/L	1	11/19/2012
Pyrene	ND	5.0	5.0		µg/L	1	11/19/2012
Surr: 2-Fluorobiphenyl	*53.9*	*32-100*			*%REC*	1	11/19/2012
Surr: 4-Terphenyl-d14	*82.3*	*23-112*			*%REC*	1	11/19/2012
Surr: Nitrobenzene-d5	*61.9*	*31-93*			*%REC*	1	11/19/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Nov-12*

Client:	AECOM Environment	**Client Sample ID:**	WSE11131035JTC1
Work Order:	1211468	**Collection Date:**	11/13/2012 10:35:00 AM
Project:	Marshall Surface Water 11/3/12		
Lab ID:	1211468-09	**Matrix:**	SURFACE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
METALS BY ICP-MS			**SW6020A**		Prep Date: **11/17/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	11/20/2012
Molybdenum	ND	0.050	0.050		mg/L	1	11/20/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	11/20/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **11/19/2012**		Analyst: **CW**
Acenaphthene	ND	5.0	5.0		µg/L	1	11/19/2012
Acenaphthylene	ND	5.0	5.0		µg/L	1	11/19/2012
Anthracene	ND	5.0	5.0		µg/L	1	11/19/2012
Benzo(a)anthracene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(a)pyrene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(b)fluoranthene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(g,h,i)perylene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(k)fluoranthene	ND	1.0	1.0		µg/L	1	11/19/2012
Chrysene	ND	1.0	1.0		µg/L	1	11/19/2012
Dibenzo(a,h)anthracene	ND	2.0	2.0		µg/L	1	11/19/2012
Fluoranthene	ND	1.0	1.0		µg/L	1	11/19/2012
Fluorene	ND	5.0	5.0		µg/L	1	11/19/2012
Indeno(1,2,3-cd)pyrene	ND	2.0	2.0		µg/L	1	11/19/2012
Phenanthrene	ND	2.0	2.0		µg/L	1	11/19/2012
Pyrene	ND	5.0	5.0		µg/L	1	11/19/2012
Surr: 2-Fluorobiphenyl	*57.2*	*32-100*			*%REC*	1	11/19/2012
Surr: 4-Terphenyl-d14	*65.7*	*23-112*			*%REC*	1	11/19/2012
Surr: Nitrobenzene-d5	*58.2*	*31-93*			*%REC*	1	11/19/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Nov-12*

Client:	AECOM Environment	**Client Sample ID:**	WSC11131600JTC1
Work Order:	1211468	**Collection Date:**	11/13/2012 4:00:00 PM
Project:	Marshall Surface Water 11/3/12		
Lab ID:	1211468-10	**Matrix:**	SURFACE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
METALS BY ICP-MS			**SW6020A**		Prep Date: **11/17/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	11/20/2012
Molybdenum	ND	0.050	0.050		mg/L	1	11/20/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	11/20/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **11/19/2012**		Analyst: **CW**
Acenaphthene	ND	5.0	5.0		µg/L	1	11/19/2012
Acenaphthylene	ND	5.0	5.0		µg/L	1	11/19/2012
Anthracene	ND	5.0	5.0		µg/L	1	11/19/2012
Benzo(a)anthracene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(a)pyrene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(b)fluoranthene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(g,h,i)perylene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(k)fluoranthene	ND	1.0	1.0		µg/L	1	11/19/2012
Chrysene	ND	1.0	1.0		µg/L	1	11/19/2012
Dibenzo(a,h)anthracene	ND	2.0	2.0		µg/L	1	11/19/2012
Fluoranthene	ND	1.0	1.0		µg/L	1	11/19/2012
Fluorene	ND	5.0	5.0		µg/L	1	11/19/2012
Indeno(1,2,3-cd)pyrene	ND	2.0	2.0		µg/L	1	11/19/2012
Phenanthrene	ND	2.0	2.0		µg/L	1	11/19/2012
Pyrene	ND	5.0	5.0		µg/L	1	11/19/2012
Surr: 2-Fluorobiphenyl	*60.3*	*32-100*			*%REC*	1	11/19/2012
Surr: 4-Terphenyl-d14	*69.2*	*23-112*			*%REC*	1	11/19/2012
Surr: Nitrobenzene-d5	*62.7*	*31-93*			*%REC*	1	11/19/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Nov-12*

Client:	AECOM Environment	**Client Sample ID:**	WSC11131600JTC2
Work Order:	1211468	**Collection Date:**	11/13/2012 4:00:00 PM
Project:	Marshall Surface Water 11/3/12		
Lab ID:	1211468-11	**Matrix:**	SURFACE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
METALS BY ICP-MS			**SW6020A**		Prep Date: **11/17/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	11/20/2012
Molybdenum	ND	0.050	0.050		mg/L	1	11/20/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	11/20/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **11/19/2012**		Analyst: **CW**
Acenaphthene	ND	5.0	5.0		µg/L	1	11/19/2012
Acenaphthylene	ND	5.0	5.0		µg/L	1	11/19/2012
Anthracene	ND	5.0	5.0		µg/L	1	11/19/2012
Benzo(a)anthracene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(a)pyrene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(b)fluoranthene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(g,h,i)perylene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(k)fluoranthene	ND	1.0	1.0		µg/L	1	11/19/2012
Chrysene	ND	1.0	1.0		µg/L	1	11/19/2012
Dibenzo(a,h)anthracene	ND	2.0	2.0		µg/L	1	11/19/2012
Fluoranthene	ND	1.0	1.0		µg/L	1	11/19/2012
Fluorene	ND	5.0	5.0		µg/L	1	11/19/2012
Indeno(1,2,3-cd)pyrene	ND	2.0	2.0		µg/L	1	11/19/2012
Phenanthrene	ND	2.0	2.0		µg/L	1	11/19/2012
Pyrene	ND	5.0	5.0		µg/L	1	11/19/2012
Surr: 2-Fluorobiphenyl	*59.3*	*32-100*			*%REC*	1	11/19/2012
Surr: 4-Terphenyl-d14	*69.5*	*23-112*			*%REC*	1	11/19/2012
Surr: Nitrobenzene-d5	*62.3*	*31-93*			*%REC*	1	11/19/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Nov-12*

Client:	AECOM Environment	**Client Sample ID:**	WSC11131535JTC1
Work Order:	1211468	**Collection Date:**	11/13/2012 3:35:00 PM
Project:	Marshall Surface Water 11/3/12		
Lab ID:	1211468-12	**Matrix:**	SURFACE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
METALS BY ICP-MS			**SW6020A**		Prep Date: **11/17/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	11/20/2012
Molybdenum	ND	0.050	0.050		mg/L	1	11/20/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	11/20/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **11/19/2012**		Analyst: **CW**
Acenaphthene	ND	5.0	5.0		µg/L	1	11/19/2012
Acenaphthylene	ND	5.0	5.0		µg/L	1	11/19/2012
Anthracene	ND	5.0	5.0		µg/L	1	11/19/2012
Benzo(a)anthracene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(a)pyrene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(b)fluoranthene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(g,h,i)perylene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(k)fluoranthene	ND	1.0	1.0		µg/L	1	11/19/2012
Chrysene	ND	1.0	1.0		µg/L	1	11/19/2012
Dibenzo(a,h)anthracene	ND	2.0	2.0		µg/L	1	11/19/2012
Fluoranthene	ND	1.0	1.0		µg/L	1	11/19/2012
Fluorene	ND	5.0	5.0		µg/L	1	11/19/2012
Indeno(1,2,3-cd)pyrene	ND	2.0	2.0		µg/L	1	11/19/2012
Phenanthrene	ND	2.0	2.0		µg/L	1	11/19/2012
Pyrene	ND	5.0	5.0		µg/L	1	11/19/2012
Surr: 2-Fluorobiphenyl	*57.9*	*32-100*			*%REC*	1	11/19/2012
Surr: 4-Terphenyl-d14	*65.5*	*23-112*			*%REC*	1	11/19/2012
Surr: Nitrobenzene-d5	*60.9*	*31-93*			*%REC*	1	11/19/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Nov-12*

Client:	AECOM Environment	**Client Sample ID:**	WSC11131445JTC1
Work Order:	1211468	**Collection Date:**	11/13/2012 2:45:00 PM
Project:	Marshall Surface Water 11/3/12		
Lab ID:	1211468-13	**Matrix:**	SURFACE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
METALS BY ICP-MS			**SW6020A**		Prep Date: **11/17/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	11/20/2012
Molybdenum	ND	0.050	0.050		mg/L	1	11/20/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	11/20/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **11/19/2012**		Analyst: **CW**
Acenaphthene	ND	5.0	5.0		µg/L	1	11/19/2012
Acenaphthylene	ND	5.0	5.0		µg/L	1	11/19/2012
Anthracene	ND	5.0	5.0		µg/L	1	11/19/2012
Benzo(a)anthracene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(a)pyrene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(b)fluoranthene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(g,h,i)perylene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(k)fluoranthene	ND	1.0	1.0		µg/L	1	11/19/2012
Chrysene	ND	1.0	1.0		µg/L	1	11/19/2012
Dibenzo(a,h)anthracene	ND	2.0	2.0		µg/L	1	11/19/2012
Fluoranthene	ND	1.0	1.0		µg/L	1	11/19/2012
Fluorene	ND	5.0	5.0		µg/L	1	11/19/2012
Indeno(1,2,3-cd)pyrene	ND	2.0	2.0		µg/L	1	11/19/2012
Phenanthrene	ND	2.0	2.0		µg/L	1	11/19/2012
Pyrene	ND	5.0	5.0		µg/L	1	11/19/2012
Surr: 2-Fluorobiphenyl	*61.6*	*32-100*			*%REC*	1	11/19/2012
Surr: 4-Terphenyl-d14	*68.6*	*23-112*			*%REC*	1	11/19/2012
Surr: Nitrobenzene-d5	*55.5*	*31-93*			*%REC*	1	11/19/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Nov-12*

Client:	AECOM Environment	**Client Sample ID:**	WSC11131412JTC1
Work Order:	1211468	**Collection Date:**	11/13/2012 2:12:00 PM
Project:	Marshall Surface Water 11/3/12		
Lab ID:	1211468-14	**Matrix:**	SURFACE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
METALS BY ICP-MS			**SW6020A**		Prep Date: **11/17/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	11/20/2012
Molybdenum	ND	0.050	0.050		mg/L	1	11/20/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	11/20/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **11/19/2012**		Analyst: **CW**
Acenaphthene	ND	5.0	5.0		µg/L	1	11/19/2012
Acenaphthylene	ND	5.0	5.0		µg/L	1	11/19/2012
Anthracene	ND	5.0	5.0		µg/L	1	11/19/2012
Benzo(a)anthracene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(a)pyrene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(b)fluoranthene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(g,h,i)perylene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(k)fluoranthene	ND	1.0	1.0		µg/L	1	11/19/2012
Chrysene	ND	1.0	1.0		µg/L	1	11/19/2012
Dibenzo(a,h)anthracene	ND	2.0	2.0		µg/L	1	11/19/2012
Fluoranthene	ND	1.0	1.0		µg/L	1	11/19/2012
Fluorene	ND	5.0	5.0		µg/L	1	11/19/2012
Indeno(1,2,3-cd)pyrene	ND	2.0	2.0		µg/L	1	11/19/2012
Phenanthrene	ND	2.0	2.0		µg/L	1	11/19/2012
Pyrene	ND	5.0	5.0		µg/L	1	11/19/2012
Surr: 2-Fluorobiphenyl	*53.4*	*32-100*			*%REC*	1	11/19/2012
Surr: 4-Terphenyl-d14	*66.6*	*23-112*			*%REC*	1	11/19/2012
Surr: Nitrobenzene-d5	*56.6*	*31-93*			*%REC*	1	11/19/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Nov-12*

Client:	AECOM Environment	**Client Sample ID:**	WSE11131345JTC1
Work Order:	1211468	**Collection Date:**	11/13/2012 1:45:00 PM
Project:	Marshall Surface Water 11/3/12		
Lab ID:	1211468-15	**Matrix:**	SURFACE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
METALS BY ICP-MS			**SW6020A**		Prep Date: **11/17/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	11/21/2012
Molybdenum	ND	0.050	0.050		mg/L	1	11/21/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	11/21/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **11/19/2012**		Analyst: **CW**
Acenaphthene	ND	5.0	5.0		µg/L	1	11/19/2012
Acenaphthylene	ND	5.0	5.0		µg/L	1	11/19/2012
Anthracene	ND	5.0	5.0		µg/L	1	11/19/2012
Benzo(a)anthracene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(a)pyrene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(b)fluoranthene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(g,h,i)perylene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(k)fluoranthene	ND	1.0	1.0		µg/L	1	11/19/2012
Chrysene	ND	1.0	1.0		µg/L	1	11/19/2012
Dibenzo(a,h)anthracene	ND	2.0	2.0		µg/L	1	11/19/2012
Fluoranthene	ND	1.0	1.0		µg/L	1	11/19/2012
Fluorene	ND	5.0	5.0		µg/L	1	11/19/2012
Indeno(1,2,3-cd)pyrene	ND	2.0	2.0		µg/L	1	11/19/2012
Phenanthrene	ND	2.0	2.0		µg/L	1	11/19/2012
Pyrene	ND	5.0	5.0		µg/L	1	11/19/2012
Surr: 2-Fluorobiphenyl	*54.9*	*32-100*			*%REC*	1	11/19/2012
Surr: 4-Terphenyl-d14	*67.3*	*23-112*			*%REC*	1	11/19/2012
Surr: Nitrobenzene-d5	*57.3*	*31-93*			*%REC*	1	11/19/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *21-Nov-12*

Client:	AECOM Environment	**Client Sample ID:**	WSE11130915JTC1
Work Order:	1211468	**Collection Date:**	11/13/2012 9:15:00 AM
Project:	Marshall Surface Water 11/3/12		
Lab ID:	1211468-16	**Matrix:**	SURFACE WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
METALS BY ICP-MS			**SW6020A**		Prep Date: **11/17/2012**		Analyst: **RH**
Beryllium	ND	0.0010	0.0010		mg/L	1	11/21/2012
Molybdenum	ND	0.050	0.050		mg/L	1	11/21/2012
Vanadium	ND	0.0040	0.0040		mg/L	1	11/21/2012
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW8270**		Prep Date: **11/19/2012**		Analyst: **CW**
Acenaphthene	ND	5.0	5.0		µg/L	1	11/19/2012
Acenaphthylene	ND	5.0	5.0		µg/L	1	11/19/2012
Anthracene	ND	5.0	5.0		µg/L	1	11/19/2012
Benzo(a)anthracene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(a)pyrene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(b)fluoranthene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(g,h,i)perylene	ND	1.0	1.0		µg/L	1	11/19/2012
Benzo(k)fluoranthene	ND	1.0	1.0		µg/L	1	11/19/2012
Chrysene	ND	1.0	1.0		µg/L	1	11/19/2012
Dibenzo(a,h)anthracene	ND	2.0	2.0		µg/L	1	11/19/2012
Fluoranthene	ND	1.0	1.0		µg/L	1	11/19/2012
Fluorene	ND	5.0	5.0		µg/L	1	11/19/2012
Indeno(1,2,3-cd)pyrene	ND	2.0	2.0		µg/L	1	11/19/2012
Phenanthrene	ND	2.0	2.0		µg/L	1	11/19/2012
Pyrene	ND	5.0	5.0		µg/L	1	11/19/2012
Surr: 2-Fluorobiphenyl	*58.5*	*32-100*			*%REC*	1	11/19/2012
Surr: 4-Terphenyl-d14	*71.1*	*23-112*			*%REC*	1	11/19/2012
Surr: Nitrobenzene-d5	*61.1*	*31-93*			*%REC*	1	11/19/2012

Note: See Qualifiers page for a list of qualifiers and their definitions.

Batch ID: **44809** Instrument ID **ICPMS1** Method: **SW6020A**

MBLK Sample ID: **MBLK-44809-44809** Units: **mg/L** Analysis Date: **11/20/2012 03:31 PM**
Client ID: Run ID: **ICPMS1_121120A** SeqNo: **2146442** Prep Date: **11/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	ND	0.0020								
Molybdenum	ND	0.0050								
Vanadium	ND	0.0050								

LCS Sample ID: **LCS-44809-44809** Units: **mg/L** Analysis Date: **11/20/2012 03:37 PM**
Client ID: Run ID: **ICPMS1_121120A** SeqNo: **2146443** Prep Date: **11/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.09444	0.0020	0.1	0	94.4	80-120	0			
Molybdenum	0.08959	0.0050	0.1	0	89.6	80-120	0			
Vanadium	0.09255	0.0050	0.1	0	92.6	80-120	0			

MS Sample ID: **1211468-08AMS** Units: **mg/L** Analysis Date: **11/20/2012 05:57 PM**
Client ID: **WSE11131110JTC3** Run ID: **ICPMS1_121120A** SeqNo: **2146848** Prep Date: **11/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.08386	0.0020	0.1	-0.00002158	83.9	75-125	0			
Molybdenum	0.0843	0.0050	0.1	0.001023	83.3	75-125	0			
Vanadium	0.08587	0.0050	0.1	0.0005769	85.3	75-125	0			

MSD Sample ID: **1211468-08AMSD** Units: **mg/L** Analysis Date: **11/20/2012 06:03 PM**
Client ID: **WSE11131110JTC3** Run ID: **ICPMS1_121120A** SeqNo: **2146849** Prep Date: **11/17/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Beryllium	0.09166	0.0020	0.1	-0.00002158	91.7	75-125	0.08386	8.89	20	
Molybdenum	0.09276	0.0050	0.1	0.001023	91.7	75-125	0.0843	9.56	20	
Vanadium	0.09355	0.0050	0.1	0.0005769	93	75-125	0.08587	8.56	20	

The following samples were analyzed in this batch:

1211468-01A	1211468-02A	1211468-03A
1211468-04A	1211468-05A	1211468-06A
1211468-07A	1211468-08A	1211468-09A
1211468-10A	1211468-11A	1211468-12A
1211468-13A	1211468-14A	1211468-15A
1211468-16A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1211468
Project: Marshall Surface Water 11/3/12

QC BATCH REPORT

Batch ID: **44820** Instrument ID **SVMS5** Method: **SW8270**

MBLK Sample ID: **SBLKW1-44820-44820** Units: **µg/L** Analysis Date: **11/19/2012 08:20 PM**
Client ID: Run ID: **SVMS5_121119A** SeqNo: **2146231** Prep Date: **11/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	ND	5.0								
Acenaphthylene	ND	5.0								
Anthracene	ND	5.0								
Benzo(a)anthracene	ND	5.0								
Benzo(a)pyrene	ND	5.0								
Benzo(b)fluoranthene	ND	5.0								
Benzo(g,h,i)perylene	ND	5.0								
Benzo(k)fluoranthene	ND	5.0								
Chrysene	ND	5.0								
Dibenzo(a,h)anthracene	ND	5.0								
Fluoranthene	ND	5.0								
Fluorene	ND	5.0								
Indeno(1,2,3-cd)pyrene	ND	5.0								
Phenanthrene	ND	5.0								
Pyrene	ND	5.0								
Surr: 2-Fluorobiphenyl	*28.61*	0	*50*	0	*57.2*	*32-100*	0			
Surr: 4-Terphenyl-d14	*38.2*	0	*50*	0	*76.4*	*23-112*	0			
Surr: Nitrobenzene-d5	*31.87*	0	*50*	0	*63.7*	*31-93*	0			

LCS Sample ID: **SLCSW1-44820-44820** Units: **µg/L** Analysis Date: **11/19/2012 08:53 PM**
Client ID: Run ID: **SVMS5_121119A** SeqNo: **2146233** Prep Date: **11/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	14.08	5.0	20	0	70.4	45-110	0			
Acenaphthylene	14.63	5.0	20	0	73.2	50-105	0			
Anthracene	15.14	5.0	20	0	75.7	55-110	0			
Benzo(a)anthracene	15.36	5.0	20	0	76.8	55-110	0			
Benzo(a)pyrene	15.79	5.0	20	0	79	55-110	0			
Benzo(b)fluoranthene	18.22	5.0	20	0	91.1	45-120	0			
Benzo(g,h,i)perylene	15.72	5.0	20	0	78.6	40-125	0			
Benzo(k)fluoranthene	14.14	5.0	20	0	70.7	45-125	0			
Chrysene	15.69	5.0	20	0	78.4	55-110	0			
Dibenzo(a,h)anthracene	15.81	5.0	20	0	79	40-125	0			
Fluoranthene	16.64	5.0	20	0	83.2	55-115	0			
Fluorene	15.02	5.0	20	0	75.1	50-110	0			
Indeno(1,2,3-cd)pyrene	15.8	5.0	20	0	79	45-125	0			
Phenanthrene	14.74	5.0	20	0	73.7	50-115	0			
Pyrene	16.44	5.0	20	0	82.2	50-130	0			
Surr: 2-Fluorobiphenyl	*30.15*	0	*50*	0	*60.3*	*32-100*	0			
Surr: 4-Terphenyl-d14	*27.45*	0	*50*	0	*54.9*	*23-112*	0			
Surr: Nitrobenzene-d5	*32.18*	0	*50*	0	*64.4*	*31-93*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1211468
Project: Marshall Surface Water 11/3/12

QC BATCH REPORT

Batch ID: **44820** Instrument ID **SVMS5** Method: **SW8270**

MS Sample ID: **1211438-39B MS** Units: **µg/L** Analysis Date: **11/19/2012 09:25 PM**
Client ID: Run ID: **SVMS5_121119A** SeqNo: **2146235** Prep Date: **11/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	126.3	50	200	0	63.2	45-110	0			
Acenaphthylene	133.4	50	200	0	66.7	50-105	0			
Anthracene	137	50	200	0	68.5	55-110	0			
Benzo(a)anthracene	141.1	50	200	0	70.6	55-110	0			
Benzo(a)pyrene	144.3	50	200	0	72.2	55-110	0			
Benzo(b)fluoranthene	153.1	50	200	0	76.6	45-120	0			
Benzo(g,h,i)perylene	145.6	50	200	0	72.8	40-125	0			
Benzo(k)fluoranthene	143.6	50	200	0	71.8	45-125	0			
Chrysene	142.1	50	200	0	71	55-110	0			
Dibenzo(a,h)anthracene	142.1	50	200	0	71	40-125	0			
Fluoranthene	150.1	50	200	0	75	55-115	0			
Fluorene	135.2	50	200	0	67.6	50-110	0			
Indeno(1,2,3-cd)pyrene	144.6	50	200	0	72.3	45-125	0			
Phenanthrene	133.7	50	200	0	66.8	50-115	0			
Pyrene	148.6	50	200	0	74.3	50-130	0			
Surr: 2-Fluorobiphenyl	*275.5*	0	*1000*	0	*27.6*	*32-100*	0			*S*
Surr: 4-Terphenyl-d14	*318.4*	0	*500*	0	*63.7*	*23-112*	0			
Surr: Nitrobenzene-d5	*297.5*	0	*500*	0	*59.5*	*31-93*	0			

MSD Sample ID: **1211438-39B MSD** Units: **µg/L** Analysis Date: **11/19/2012 09:58 PM**
Client ID: Run ID: **SVMS5_121119A** SeqNo: **2146236** Prep Date: **11/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	125	50	200	0	62.5	45-110	126.3	1.03	30	
Acenaphthylene	130.2	50	200	0	65.1	50-105	133.4	2.43	30	
Anthracene	135	50	200	0	67.5	55-110	137	1.47	30	
Benzo(a)anthracene	138.6	50	200	0	69.3	55-110	141.1	1.79	30	
Benzo(a)pyrene	143.9	50	200	0	72	55-110	144.3	0.278	30	
Benzo(b)fluoranthene	150.5	50	200	0	75.2	45-120	153.1	1.71	30	
Benzo(g,h,i)perylene	141	50	200	0	70.5	40-125	145.6	3.21	30	
Benzo(k)fluoranthene	142.4	50	200	0	71.2	45-125	143.6	0.839	30	
Chrysene	139.5	50	200	0	69.8	55-110	142.1	1.85	30	
Dibenzo(a,h)anthracene	141.4	50	200	0	70.7	40-125	142.1	0.494	30	
Fluoranthene	148.3	50	200	0	74.2	55-115	150.1	1.21	30	
Fluorene	132.6	50	200	0	66.3	50-110	135.2	1.94	30	
Indeno(1,2,3-cd)pyrene	141.9	50	200	0	71	45-125	144.6	1.88	30	
Phenanthrene	131.2	50	200	0	65.6	50-115	133.7	1.89	30	
Pyrene	144.3	50	200	0	72.2	50-130	148.6	2.94	30	
Surr: 2-Fluorobiphenyl	*273.2*	0	*500*	0	*54.6*	*32-100*	275.5	*0.838*	*40*	
Surr: 4-Terphenyl-d14	*295.2*	0	*500*	0	*59*	*23-112*	318.4	*7.56*	*40*	
Surr: Nitrobenzene-d5	*293.7*	0	*500*	0	*58.7*	*31-93*	297.5	*1.29*	*40*	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1211468
Project: Marshall Surface Water 11/3/12

QC BATCH REPORT

Batch ID: **44820** Instrument ID **SVMS5** Method: **SW8270**

The following samples were analyzed in this batch:	1211468-01B	1211468-02B	1211468-03B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1211468
Project: Marshall Surface Water 11/3/12

QC BATCH REPORT

Batch ID: **44821** Instrument ID **SVMS5** Method: **SW8270**

MBLK Sample ID: **SBLKW1-44821-44821** Units: **µg/L** Analysis Date: **11/19/2012 05:37 PM**
Client ID: Run ID: **SVMS5_121119A** SeqNo: **2146224** Prep Date: **11/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	ND	5.0								
Acenaphthylene	ND	5.0								
Anthracene	ND	5.0								
Benzo(a)anthracene	ND	5.0								
Benzo(a)pyrene	ND	5.0								
Benzo(b)fluoranthene	ND	5.0								
Benzo(g,h,i)perylene	ND	5.0								
Benzo(k)fluoranthene	ND	5.0								
Chrysene	ND	5.0								
Dibenzo(a,h)anthracene	ND	5.0								
Fluoranthene	ND	5.0								
Fluorene	ND	5.0								
Indeno(1,2,3-cd)pyrene	ND	5.0								
Phenanthrene	ND	5.0								
Pyrene	ND	5.0								
Surr: 2-Fluorobiphenyl	*30.56*	0	*50*	0	*61.1*	*32-100*	0			
Surr: 4-Terphenyl-d14	*34.08*	0	*50*	0	*68.2*	*23-112*	0			
Surr: Nitrobenzene-d5	*33.64*	0	*50*	0	*67.3*	*31-93*	0			

LCS Sample ID: **SLCSW1-44821-44821** Units: **µg/L** Analysis Date: **11/19/2012 06:10 PM**
Client ID: Run ID: **SVMS5_121119A** SeqNo: **2146225** Prep Date: **11/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	12.6	5.0	20	0	63	45-110	0			
Acenaphthylene	12.89	5.0	20	0	64.4	50-105	0			
Anthracene	13.15	5.0	20	0	65.8	55-110	0			
Benzo(a)anthracene	13.39	5.0	20	0	67	55-110	0			
Benzo(a)pyrene	14.04	5.0	20	0	70.2	55-110	0			
Benzo(b)fluoranthene	16.12	5.0	20	0	80.6	45-120	0			
Benzo(g,h,i)perylene	13.69	5.0	20	0	68.4	40-125	0			
Benzo(k)fluoranthene	12.98	5.0	20	0	64.9	45-125	0			
Chrysene	14.26	5.0	20	0	71.3	55-110	0			
Dibenzo(a,h)anthracene	13.81	5.0	20	0	69	40-125	0			
Fluoranthene	14.52	5.0	20	0	72.6	55-115	0			
Fluorene	12.93	5.0	20	0	64.6	50-110	0			
Indeno(1,2,3-cd)pyrene	13.98	5.0	20	0	69.9	45-125	0			
Phenanthrene	12.84	5.0	20	0	64.2	50-115	0			
Pyrene	14.55	5.0	20	0	72.8	50-130	0			
Surr: 2-Fluorobiphenyl	*28.83*	0	*50*	0	*57.7*	*32-100*	0			
Surr: 4-Terphenyl-d14	*29.01*	0	*50*	0	*58*	*23-112*	0			
Surr: Nitrobenzene-d5	*30.78*	0	*50*	0	*61.6*	*31-93*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1211468
Project: Marshall Surface Water 11/3/12

QC BATCH REPORT

Batch ID: **44821** Instrument ID **SVMS5** Method: **SW8270**

MS Sample ID: **1211468-08B MS** Units: **µg/L** Analysis Date: **11/19/2012 05:57 PM**
Client ID: **WSE11131110JTC3** Run ID: **SVMS6_121119A** SeqNo: **2146005** Prep Date: **11/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	129.2	50	200	0	64.6	45-110	0			
Acenaphthylene	132.9	50	200	0	66.4	50-105	0			
Anthracene	141.5	50	200	0	70.8	55-110	0			
Benzo(a)anthracene	150	50	200	0	75	55-110	0			
Benzo(a)pyrene	154.2	50	200	0	77.1	55-110	0			
Benzo(b)fluoranthene	158.7	50	200	0	79.4	45-120	0			
Benzo(g,h,i)perylene	65.7	50	200	0	32.8	40-125	0			S
Benzo(k)fluoranthene	186.8	50	200	0	93.4	45-125	0			
Chrysene	145.8	50	200	0	72.9	55-110	0			
Dibenzo(a,h)anthracene	85.7	50	200	0	42.8	40-125	0			
Fluoranthene	147.8	50	200	0	73.9	55-115	0			
Fluorene	140.9	50	200	0	70.4	50-110	0			
Indeno(1,2,3-cd)pyrene	101.9	50	200	0	51	45-125	0			
Phenanthrene	136.1	50	200	0	68	50-115	0			
Pyrene	148.3	50	200	0	74.2	50-130	0			
Surr: 2-Fluorobiphenyl	*278.3*	0	*500*	0	*55.7*	*32-100*	0			
Surr: 4-Terphenyl-d14	*360.4*	0	*500*	0	*72.1*	*23-112*	0			
Surr: Nitrobenzene-d5	*313.1*	0	*500*	0	*62.6*	*31-93*	0			

MS Sample ID: **1211438-63B MS** Units: **µg/L** Analysis Date: **11/19/2012 06:42 PM**
Client ID: Run ID: **SVMS5_121119A** SeqNo: **2146227** Prep Date: **11/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	260.8	50	400	0	65.2	45-110	0			
Acenaphthylene	277.3	50	400	0	69.3	50-105	0			
Anthracene	297.3	50	400	0	74.3	55-110	0			
Benzo(a)anthracene	288.3	50	400	0	72.1	55-110	0			
Benzo(a)pyrene	291.4	50	400	0	72.8	55-110	0			
Benzo(b)fluoranthene	355.2	50	400	0	88.8	45-120	0			
Benzo(g,h,i)perylene	276.3	50	400	0	69.1	40-125	0			
Benzo(k)fluoranthene	273.4	50	400	0	68.4	45-125	0			
Chrysene	288.4	50	400	0	72.1	55-110	0			
Dibenzo(a,h)anthracene	286.5	50	400	0	71.6	40-125	0			
Fluoranthene	320.2	50	400	0	80	55-115	0			
Fluorene	285.1	50	400	0	71.3	50-110	0			
Indeno(1,2,3-cd)pyrene	281.4	50	400	0	70.4	45-125	0			
Phenanthrene	288.6	50	400	0	72.2	50-115	0			
Pyrene	308.9	50	400	0	77.2	50-130	0			
Surr: 2-Fluorobiphenyl	*301.5*	0	*500*	0	*60.3*	*32-100*	0			
Surr: 4-Terphenyl-d14	*194.4*	0	*500*	0	*38.9*	*23-112*	0			
Surr: Nitrobenzene-d5	*325.2*	0	*500*	0	*65*	*31-93*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1211468
Project: Marshall Surface Water 11/3/12

QC BATCH REPORT

Batch ID: **44821** Instrument ID **SVMS5** Method: **SW8270**

MSD Sample ID: **1211468-08B MSD** Units: **µg/L** Analysis Date: **11/19/2012 06:22 PM**
Client ID: **WSE11131110JTC3** Run ID: **SVMS6_121119A** SeqNo: **2146006** Prep Date: **11/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	131.3	50	200	0	65.6	45-110	129.2	1.61	30	
Acenaphthylene	136.2	50	200	0	68.1	50-105	132.9	2.45	30	
Anthracene	141.5	50	200	0	70.8	55-110	141.5	0	30	
Benzo(a)anthracene	150.2	50	200	0	75.1	55-110	150	0.133	30	
Benzo(a)pyrene	153.2	50	200	0	76.6	55-110	154.2	0.651	30	
Benzo(b)fluoranthene	153.1	50	200	0	76.6	45-120	158.7	3.59	30	
Benzo(g,h,i)perylene	72.1	50	200	0	36	40-125	65.7	9.29	30	S
Benzo(k)fluoranthene	183	50	200	0	91.5	45-125	186.8	2.06	30	
Chrysene	145.2	50	200	0	72.6	55-110	145.8	0.412	30	
Dibenzo(a,h)anthracene	92.6	50	200	0	46.3	40-125	85.7	7.74	30	
Fluoranthene	147	50	200	0	73.5	55-115	147.8	0.543	30	
Fluorene	142.9	50	200	0	71.4	50-110	140.9	1.41	30	
Indeno(1,2,3-cd)pyrene	109.8	50	200	0	54.9	45-125	101.9	7.46	30	
Phenanthrene	137.2	50	200	0	68.6	50-115	136.1	0.805	30	
Pyrene	148.1	50	200	0	74	50-130	148.3	0.135	30	
Surr: 2-Fluorobiphenyl	*284.4*	0	*500*	0	*56.9*	*32-100*	278.3	*2.17*	*40*	
Surr: 4-Terphenyl-d14	*311.5*	0	*500*	0	*62.3*	*23-112*	360.4	*14.6*	*40*	
Surr: Nitrobenzene-d5	*324*	0	*500*	0	*64.8*	*31-93*	313.1	*3.42*	*40*	

MSD Sample ID: **1211438-63B MSD** Units: **µg/L** Analysis Date: **11/19/2012 07:15 PM**
Client ID: Run ID: **SVMS5_121119A** SeqNo: **2146228** Prep Date: **11/19/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	129.4	50	200	0	64.7	45-110	260.8	67.4	30	R
Acenaphthylene	135.7	50	200	0	67.8	50-105	277.3	68.6	30	R
Anthracene	138.2	50	200	0	69.1	55-110	297.3	73.1	30	R
Benzo(a)anthracene	141.9	50	200	0	71	55-110	288.3	68.1	30	R
Benzo(a)pyrene	142.9	50	200	0	71.4	55-110	291.4	68.4	30	R
Benzo(b)fluoranthene	150.7	50	200	0	75.4	45-120	355.2	80.8	30	R
Benzo(g,h,i)perylene	145.6	50	200	0	72.8	40-125	276.3	62	30	R
Benzo(k)fluoranthene	142.8	50	200	0	71.4	45-125	273.4	62.8	30	R
Chrysene	144.4	50	200	0	72.2	55-110	288.4	66.5	30	R
Dibenzo(a,h)anthracene	141.9	50	200	0	71	40-125	286.5	67.5	30	R
Fluoranthene	151.4	50	200	0	75.7	55-115	320.2	71.6	30	R
Fluorene	136	50	200	0	68	50-110	285.1	70.8	30	R
Indeno(1,2,3-cd)pyrene	142.6	50	200	0	71.3	45-125	281.4	65.5	30	R
Phenanthrene	135.9	50	200	0	68	50-115	288.6	71.9	30	R
Pyrene	148.2	50	200	0	74.1	50-130	308.9	70.3	30	R
Surr: 2-Fluorobiphenyl	*298.2*	0	*500*	0	*59.6*	*32-100*	301.5	*1.1*	*40*	
Surr: 4-Terphenyl-d14	*275.9*	0	*500*	0	*55.2*	*23-112*	194.4	*34.7*	*40*	
Surr: Nitrobenzene-d5	*316.8*	0	*500*	0	*63.4*	*31-93*	325.2	*2.62*	*40*	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: AECOM Environment
Work Order: 1211468
Project: Marshall Surface Water 11/3/12

QC BATCH REPORT

Batch ID: **44821** Instrument ID **SVMS5** Method: **SW8270**

The following samples were analyzed in this batch:

1211468-04B	1211468-05B	1211468-06B
1211468-07B	1211468-08B	1211468-09B
1211468-10B	1211468-11B	1211468-12B
1211468-13B	1211468-14B	1211468-15B
1211468-16B		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

1211468

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

COC #	ENBRIDGE_111312_JTC1	Task: SWMON	
Total # of Samples: 16			Event Complete?
Turn Around Time	5 Day	Rush	No
BILLING CODE: 7.00			

Lab Information:
Lab Name: ALS Laboratory Group
Address: 3352 128th Ave. Holland, MI 49424-9263
Lab PM: Ann Preston
Phone/Fax: 1-616-399-6070/1-616-399-6185
Lab PM email: ann.preston@alsglobal.com
Applicable Lab Quote #:

Project Information:
Site ID #:
Project #: 60162778
Site Address: 5555 Glenwood Parkway SE Suite 200
City: Grand Rapids State, Zip: MI
Site PM Name: Bryan Stiemsma
Phone/Fax: [redacted]
Site PM Email: Bryan.Stiemsma@aecom.com

Other Information:
Send Invoice to: Enbridge Energy - ATTN Accounts Payable
Address: 1100 Louisiana Suite 1100
City/State: Houson, TX Phone #: 713-821-2000
PO #:
Send EDD to:
CC Hardcopy report:
CC Hardcopy report:

ITEM #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	MATRIX CODE	G=GRAB C=COMP	SAMPLE DATE	#OF CONTAINERS	Comments/Lab Sample I.D.	Preservative: HNO3	Preservative: None	Analysis: Be,Mo,V	Analysis: PNAs by 8270
1	WSE11131053JTC1	ML-10	WS	G	11/13/2012 10:53	3				X	X
2	WSE11131043JTC1	ML-7	WS	G	11/13/2012 10:43	3				X	X
3	WSB11131635JTC1	SW-105	WS	G	11/13/2012 16:35	3				X	X
4	WSE11131157JTC1	SW-110	WS	G	11/13/2012 11:57	3				X	X
5	WSF11130845JTC1	SW-112	WS	G	11/13/2012 08:45	3				X	X
6	WSE11131255JTC1	SW-115	WS	G	11/13/2012 12:55	3				X	X
7	WSE11131315JTC1	SW-120	WS	G	11/13/2012 13:15	3				X	X
8	WSE11131110JTC3	SW-935	WS	G	11/13/2012 11:10	9	MS/MSD			X	X
9	WSE11131035JTC1	SW-937	WS	G	11/13/2012 10:35	3				X	X
10	WSC11131600JTC1	SWKR0510C01	WS	G	11/13/2012 16:00	3				X	X
11	WSC11131600JTC2	SWKR0510C01	WS	G	11/13/2012 16:00	3	DUPLICATE			X	X
12	WSC11131535JTC1	SWKR0600C01	WS	G	11/13/2012 15:35	3				X	X
13	WSC11131445JTC1	SWKR1480C01	WS	G	11/13/2012 14:45	3				X	X
14	WSC11131412JTC1	SWKR1565C01	WS	G	11/13/2012 14:12	3				X	X
15	WSE11131345JTC1	SWKR1948C01	WS	G	11/13/2012 13:45	3				X	X
16	WSE11130915JTC1	SWKR3980C01	WS	G	11/13/2012 09:15	3				X	X

Additional Comments/Special Instructions:

3.2 5.0°C

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
	11-14-12	1045		11-14-12	1045
	11-14-12	1500		11/14/12	1700

Sample Receipt Conditions

Temp in OC	Samples on Ice?	Sample Intact?	Trip Blank?
32-5.0°C	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N

SHIPPING INFO:
Company:
Tracking #:

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: JON CARVETH (JTC1), LORRI LEGO
SIGNATURE of SAMPLER:
DATE Signed:
Time:

ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **14-Nov-12 17:00**

Work Order: **1211468** Received by: **PD**

Checklist completed by Keith Wierenga (eSignature) 15-Nov-12 (Date) Reviewed by: Ann Preston (eSignature) 18-Nov-12 (Date)

Matrices: Surface Water
Carrier name: ALSHN

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	3.2 - 5.0 C		
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	11/15/2012 10:54:54 AM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

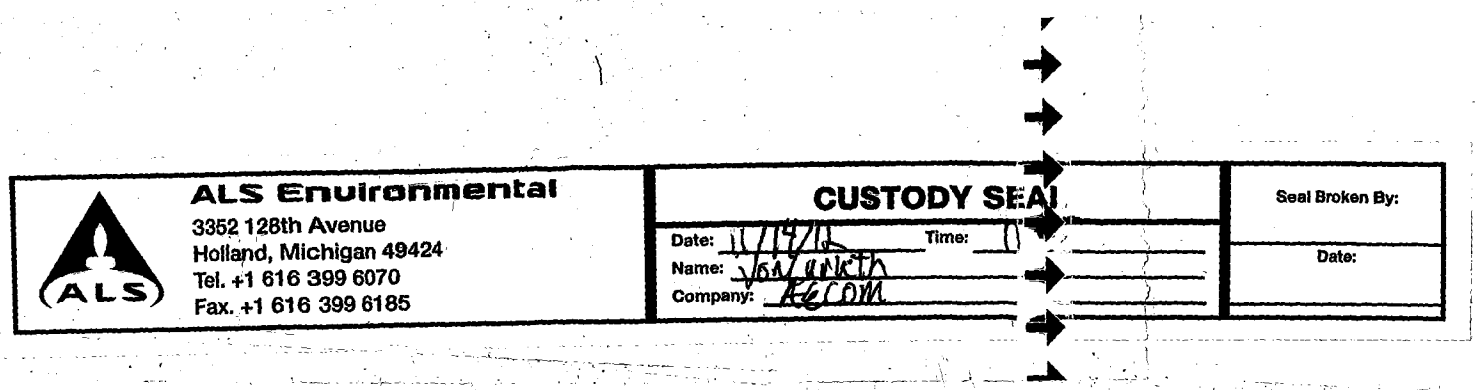
Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

SW



ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL
Date: 11/19/20 Time: 10
Name: Jon Lunkth
Company: AECOM

Seal Broken By:
Date:

ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL
Date: 11/19/20 Time: 1115
Name: Jon Lunkth
Company: AECOM

Seal Broken By:
Date:

ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL
Date: 11/19/20 Time: 1110
Name: Jon Lunkth
Company: Aecom

Seal Broken By:
Date:

5.0

4.8

3.2

Enbridge Line 6B MP 608 Pipeline Release

Marshall, Michigan

Appendix D

Level 1 Reviews of Laboratory Analytical Results

Prepared for U.S. EPA and MDEQ

Enbridge Energy, Limited Partnership

Submitted: January 23, 2013

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212320-08
Property ID: C1520E6
COC Sample ID: WPD12071040JTC3B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

101 S Mason Ave, Battle Creek, MI 49037

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPD12071040JTC3B	1212320-08	N	12/7/2012, 10:40	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212320-08
Property ID: C1520E6
COC Sample ID: WPD12071040JTC3B

Summary of Analytical Results:

Sample ID: WPD12071040JTC3B **Well ID: C1520E6WP1** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	Not Detected	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212172-03
Property ID: C024723
COC Sample ID: WPE12031057JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

10461 Miller Dr, Galesburg, MI 49053-9581

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPE12031057JTC1B	1212172-03	N	12/3/2012, 10:57	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212172-03
Property ID: C024723
COC Sample ID: WPE12031057JTC1B

Summary of Analytical Results:

Sample ID: WPE12031057JTC1B **Well ID: C024723PW1** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0016	mg/l
Iron	7439-89-6	Not Detected	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212172-04
Property ID: C0252ED
COC Sample ID: WPE12031154JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

10629 Miller Dr, Galesburg, MI 49053-8607

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPE12031154JTC1B	1212172-04	N	12/3/2012, 11:54	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212172-04
Property ID: C0252ED
COC Sample ID: WPE12031154JTC1B

Summary of Analytical Results:

Sample ID: WPE12031154JTC1B **Well ID: C0252EDA** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	Not Detected	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212318-01
Property ID: C07198A
COC Sample ID: WPE12051642JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

11493 Climax Dr, Galesburg, MI

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPE12051642JTC1B	1212318-01	N	12/5/2012, 16:42	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212318-01
Property ID: C07198A
COC Sample ID: WPE12051642JTC1B

Summary of Analytical Results:

Sample ID: WPE12051642JTC1B **Well ID: C07198APW1** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	3.8	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212172-05
Property ID: C0269A6
COC Sample ID: WPE12031425JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

11531 Climax Dr, Galesburg, MI 49053-9665

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPE12031425JTC1B	1212172-05	N	12/3/2012, 14:25	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212172-05
Property ID: C0269A6
COC Sample ID: WPE12031425JTC1B

Summary of Analytical Results:

Sample ID: WPE12031425JTC1B **Well ID: C0269A6PW1** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	Not Detected	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212318-07
Property ID: C0271D5
COC Sample ID: WPE12051128JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

11584 E Michigan Ave, Galesburg, MI 49053-9690

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPE12051128JTC1B	1212318-07	N	12/5/2012, 11:28	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212318-07
Property ID: C0271D5
COC Sample ID: WPE12051128JTC1B

Summary of Analytical Results:

Sample ID: WPE12051128JTC1B **Well ID: C0271D5PW1** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	Not Detected	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212172-02
Property ID: C01948D
COC Sample ID: WPE12031255JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

11623 E Michigan Ave, Galesburg, MI 49053-9690

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPE12031255JTC1B	1212172-02	N	12/3/2012, 12:55	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212172-02
Property ID: C01948D
COC Sample ID: WPE12031255JTC1B

Summary of Analytical Results:

Sample ID: WPE12031255JTC1B **Well ID: C01948DPW1** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0016	mg/l
Iron	7439-89-6	Not Detected	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212172-07 and 1212172-10
Property ID: C0730AC
COC Sample ID: WPE12031334JTC1B and WPE12031334JTC2B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

11642 Climax Dr, Galesburg, MI

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPE12031334JTC1B	1212172-07	N	12/3/2012, 13:34	1,2,3,4
WPE12031334JTC2B	1212172-10	FD	12/3/2012, 13:34	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on pages two and three of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212172-07 and 1212172-10
Property ID: C0730AC
COC Sample ID: WPE12031334JTC1B and WPE12031334JTC2B

Summary of Analytical Results:

Sample ID: WPE12031334JTC1B **Well ID: C0730ACPW1** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	Not Detected	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212172-07 and 1212172-10
Property ID: C0730AC
COC Sample ID: WPE12031334JTC1B and WPE12031334JTC2B

Sample ID: WPE12031334JTC2B **Well ID: C0730ACPW1** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	Not Detected	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212173-03
Property ID: C001311
COC Sample ID: WPC12041242JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

117 Friendship Lane, Marshall, MI 49068-9545

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPC12041242JTC1B	1212173-03	N	12/4/2012, 12:42	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212173-03
Property ID: C001311
COC Sample ID: WPC12041242JTC1B

Summary of Analytical Results:

Sample ID: WPC12041242JTC1B **Well ID: C001311A** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	0.88	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212420-07
Property ID: C0949C5
COC Sample ID: WPC12111147JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

117 S River Dr, Battle Creek, MI 49014

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPC12111147JTC1B	1212420-07	N	12/11/2012, 11:47	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212420-07
Property ID: C0949C5
COC Sample ID: WPC12111147JTC1B

Summary of Analytical Results:

Sample ID: WPC12111147JTC1B **Well ID: C0949C5WP1** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	0.65	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212421-03
Property ID: C0273F9
COC Sample ID: WPC12101642JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

11722 E Dr. N, Ceresco, MI 49033

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPC12101642JTC1B	1212421-03	N	12/10/2012, 16:42	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212421-03
Property ID: C0273F9
COC Sample ID: WPC12101642JTC1B

Summary of Analytical Results:

Sample ID: WPC12101642JTC1B **Well ID: C0273F9WP1** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	0.61	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Marshall Line 6B Incident
Laboratory: Alpha Analytical, Inc.
Laboratory Report No.: 1206067R PAH/BIO Reanalysis
Matrix: Sheen

The laboratory report cited above contained the results for nine field samples, two field duplicates and two trip blanks.

Level 1 review was performed using the laboratory report and electronic data deliverable. The review included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody;
- Verification of field sample IDs;
- Review of the sample receipt forms for proper sample preservation.
- Identification of potential data usability issues based on holding times, recoveries of surrogates, laboratory control samples, or matrix spikes, and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *USEPA National Functional Guidelines for Organic Data Review, USEPA National Functional Guidelines for Inorganic Data Review*, and the Kalamazoo River Analytical Quality Assurance Plan (version 2.2).

The following samples were reviewed:

Sample ID	Lab ID	Sample Date	Re-analyses
SWKR1050L001S062512HX	1206067-01R	06/25/2012	1
SWKR1040C001S062512HX	1206067-02R	06/25/2012	1
SWKR1075L001S062512HX	1206067-03R	06/25/2012	1
SWKR0848C001S062512HX	1206067-04R	06/25/2012	1
SWKR0575C001D062512HX	1206067-05R	06/25/2012	1
SWKR0575C001S062512HX	1206067-06R	06/25/2012	1
SWKR1050L001T062512HX	1206067-07R	06/25/2012	1
SWKR1121L001S062512HX	1206067-08R	06/25/2012	1
SWKR1179L001S062512HX	1206067-09R	06/25/2012	1
SWKR1475R001S062512HX	1206067-10R	06/25/2012	1
SWKR1475R001D062512HX	1206067-11R	06/25/2012	1
SWKR1925L001S062512HX	1206067-12R	06/25/2012	1
SWKR1925L001T062512HX	1206067-13R	06/25/2012	1

Re-analyses Performed Codes:
[1] Alkylated PAHs/Biomarkers by GC/MS Modified8270C-SIM

Results:

- All requested analyses identified on the Chain-of-Custody were performed.

- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data are therefore considered acceptable for use with the following advisories:

Samples 1206067-01 through 1206067-13 were reanalyzed for PAH/BIO only. All QC elements and samples included in the reanalysis have been reported with an “R” appended the QC element or sample ID. The method blank had low level detects and some analytes are B flagged when the sample concentration is less than 10X the method blank concentration. Some detected compounds may be negated during Level 2 data validation.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212319-09
Property ID: C0920E7
COC Sample ID: WPD12061250JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

124 Quail St, Battle Creek, MI 49037-1034

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPD12061250JTC1B	1212319-09	N	12/6/2012, 12:50	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212319-09
Property ID: C0920E7
COC Sample ID: WPD12061250JTC1B

Summary of Analytical Results:

Sample ID: WPD12061250JTC1B **Well ID: C0920E7PW1** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	Not Detected	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212421-08 and 1212421-11
Property ID: C0298FF
COC Sample ID: WPC12101008JTC1B and WPC12101028JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

126 Parrish St, Battle Creek, MI 49037-8452

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPC12101008JTC1B	1212421-08	N	12/10/2012, 10:08	1,2,3,4
WPC12101028JTC1B	1212421-11	N	12/10/2012, 10:28	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on pages two and three of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Summary of Analytical Results:

Sample ID: WPC12101008JTC1B **Well ID: C0298FFWP1** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	1.7	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212421-08 and 1212421-11
Property ID: C0298FF
COC Sample ID: WPC12101008JTC1B and WPC12101028JTC1B

Sample ID: WPC12101028JTC1B **Well ID: C0298FFWP2** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	1.6	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212172-06
Property ID: C030917
COC Sample ID: WPE12031453JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

12929 Fort Custer Dr, Galesburg, MI 49053-8732

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPE12031453JTC1B	1212172-06	N	12/3/2012, 14:53	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212172-06
Property ID: C030917
COC Sample ID: WPE12031453JTC1B

Summary of Analytical Results:

Sample ID: WPE12031453JTC1B **Well ID: C030917WP1** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	1.2	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212173-05
Property ID: C0310F2
COC Sample ID: WPC12041219JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

13 Friendship Lane, Marshall, MI 49068-9524

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPC12041219JTC1B	1212173-05	N	12/4/2012, 12:19	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212173-05
Property ID: C0310F2
COC Sample ID: WPC12041219JTC1B

Summary of Analytical Results:

Sample ID: WPC12041219JTC1B **Well ID: C0310F2PW1** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	0.90	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212320-01 and 1212320-02
Property ID: C0042C2
COC Sample ID: WPC12071314JTC1B and WPC12071314JTC2B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

130 S River Dr., Battle Creek, MI 49014

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPC12071314JTC1B	1212320-02	N	12/7/2012, 13:14	1,2,3,4
WPC12071314JTC2B	1212320-01	FD	12/7/2012, 13:14	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on pages two and three of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Summary of Analytical Results:

Sample ID: WPC12071314JTC1B **Well ID: C0042C2A** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	0.53	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Sample ID: WPC12071314JTC2B				
Well ID: C0042C2A				
Analyte	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	0.53	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212320-03
Property ID: C00474D
COC Sample ID: WPC12071340JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

134 S River Dr., Battle Creek, MI 49014-4557

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPC12071340JTC1B	1212320-03	N	12/7/2012, 13:40	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212320-03
Property ID: C00474D
COC Sample ID: WPC12071340JTC1B

Summary of Analytical Results:

Sample ID: WPC12071340JTC1B **Well ID: C00474DA** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	0.51	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212319-01
Property ID: C0048DC
COC Sample ID: WPD12061224JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

135 Quail St., Battle Creek, MI 49037

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPD12061224JTC1B	1212319-01	N	12/6/2012, 12:24	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212319-01
Property ID: C0048DC
COC Sample ID: WPD12061224JTC1B

Summary of Analytical Results:

Sample ID: WPD12061224JTC1B **Well ID: C0048DCA** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	Not Detected	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212319-02
Property ID: C00589D
COC Sample ID: WPD12061156JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

141 Quail St., Battle Creek, MI 49037-1033

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPD12061156JTC1B	1212319-02	N	12/6/2012, 11:56	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212319-02
Property ID: C00589D
COC Sample ID: WPD12061156JTC1B

Summary of Analytical Results:

Sample ID: WPD12061156JTC1B **Well ID: C00589DA** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	0.61	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212172-08
Property ID: C07824B
COC Sample ID: WPE12031608JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

14962 E Augusta Dr, Augusta, MI

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPE12031608JTC1B	1212172-08	N	12/3/2012, 16:08	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212172-08
Property ID: C07824B
COC Sample ID: WPE12031608JTC1B

Summary of Analytical Results:

Sample ID: WPE12031608JTC1B **Well ID: C07824BPW1** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	0.98	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212318-08
Property ID: C0337D3
COC Sample ID: WPE12051405JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

15148 E Augusta Dr, Augusta, MI 49012-9628

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPE12051405JTC1B	1212318-08	N	12/5/2012, 14:05	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212318-08
Property ID: C0337D3
COC Sample ID: WPE12051405JTC1B

Summary of Analytical Results:

Sample ID: WPE12051405JTC1B **Well ID: C0337D3WP1** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	0.70	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212318-02
Property ID: C00856D
COC Sample ID: WPE12051333JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

15200 E Augusta Dr, Augusta, MI 49012-9628

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPE12051333JTC1B	1212318-02	N	12/5/2012, 13:33	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212318-02
Property ID: C00856D
COC Sample ID: WPE12051333JTC1B

Summary of Analytical Results:

Sample ID: WPE12051333JTC1B **Well ID: C00856DA** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	1.0	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212318-09
Property ID: C03429B
COC Sample ID: WPE12051304JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

15340 E Augusta Dr, Augusta, MI 49012-9628

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPE12051304JTC1B	1212318-09	N	12/5/2012, 13:04	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212318-09
Property ID: C03429B
COC Sample ID: WPE12051304JTC1B

Summary of Analytical Results:

Sample ID: WPE12051304JTC1B **Well ID: C03429BWP1** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	0.39	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212318-03 and 1212318-04
Property ID: C00928F
COC Sample ID: WPE12051230JTC1B and WPE12051230JTC2B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

15470 Augusta Dr, Augusta, MI 49012-9628

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPE12051230JTC1B	1212318-04	N	12/5/2012, 12:30	1,2,3,4
WPE12051230JTC2B	1212318-03	FD	12/5/2012, 12:30	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on pages two and three of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Summary of Analytical Results:

Sample ID: WPE12051230JTC1B **Well ID: C00928FA** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	Not Detected	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212318-03 and 1212318-04
Property ID: C00928F
COC Sample ID: WPE12051230JTC1B and WPE12051230JTC2B

Sample ID: WPE12051230JTC2B **Well ID: C00928FA** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	Not Detected	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212319-10
Property ID: C14123E
COC Sample ID: WPD12061500JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

155 Lynn Dr, Battle Creek, MI 49017

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPD12061500JTC1B	1212319-10	N	12/6/2012, 15:00	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Summary of Analytical Results:

Sample ID: WPD12061500JTC1B **Well ID: C14123EWP1** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	2.6	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212421-06
Property ID: C088276
COC Sample ID: WPC12101617JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

170 Main St, Ceresco, MI 49033

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPC12101617JTC1B	1212421-06	N	12/10/2012, 16:17	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212421-06
Property ID: C088276
COC Sample ID: WPC12101617JTC1B

Summary of Analytical Results:

Sample ID: WPC12101617JTC1B **Well ID: C088276WP1** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	0.41	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212421-01 and 1212421-02
Property ID: C011485
COC Sample ID: WPC12101527JTC1B and WPC12101527JTC2B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

173 S Main St, Ceresco, MI 49033-9707

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPC12101527JTC1B	1212421-02	N	12/10/2012, 15:27	1,2,3,4
WPC12101527JTC2B	1212421-01	FD	12/10/2012, 15:27	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on pages two and three of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Summary of Analytical Results:

Sample ID: WPC12101527JTC1B **Well ID: C011485A** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	1.3	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Sample ID: WPC12101527JTC2B				
Well ID: C011485A				
Analyte	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	2.1	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212421-05
Property ID: C0881CC
COC Sample ID: WPC12101553JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

176 Main St, Ceresco, MI 49033

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPC12101553JTC1B	1212421-05	N	12/10/2012, 15:53	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212421-05
Property ID: C0881CC
COC Sample ID: WPC12101553JTC1B

Summary of Analytical Results:

Sample ID: WPC12101553JTC1B **Well ID: C0881CCWP1** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	1.2	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212319-11
Property ID: C1509C0
COC Sample ID: WPD12061437JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

220 Feld Ave, Battle Creek, MI

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPD12061437JTC1B	1212319-11	N	12/6/2012, 14:37	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212319-11
Property ID: C1509C0
COC Sample ID: WPD12061437JTC1B

Summary of Analytical Results:

Sample ID: WPD12061437JTC1B **Well ID: C1509C0WP1** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	2.8	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212421-04
Property ID: C03868E
COC Sample ID: WPC12101505JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

227 S Main St, Ceresco, MI 49033-9707

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPC12101505JTC1B	1212421-04	N	12/10/2012, 15:05	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212421-04
Property ID: C03868E
COC Sample ID: WPC12101505JTC1B

Summary of Analytical Results:

Sample ID: WPC12101505JTC1B **Well ID: C03868EWP1** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	Not Detected	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212173-04
Property ID: C0137BD
COC Sample ID: WPC12041313JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

237 Squaw Creek Rd, Marshall, MI 49068-9507

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPC12041313JTC1B	1212173-04	N	12/4/2012, 13:13	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212173-04
Property ID: C0137BD
COC Sample ID: WPC12041313JTC1B

Summary of Analytical Results:

Sample ID: WPC12041313JTC1B **Well ID: C0137BDA** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	0.29	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212319-07 and 1212319-08
Property ID: C046713
COC Sample ID: WPD12061125JTC1B and WPD12061125JTC2B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

3580 Kalamazoo Ave, Battle Creek, MI 49037-1020

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPD12061125JTC1B	1212319-08	N	12/6/2012, 11:25	1,2,3,4
WPD12061125JTC2B	1212319-07	FD	12/6/2012, 11:25	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on pages two and three of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Summary of Analytical Results:

Sample ID: WPD12061125JTC1B **Well ID: C046713WP1** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	Not Detected	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212319-07 and 1212319-08
Property ID: C046713
COC Sample ID: WPD12061125JTC1B and WPD12061125JTC2B

Sample ID: WPD12061125JTC2B **Well ID: C046713WP1** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	Not Detected	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212172-09
Property ID: C087736
COC Sample ID: WPE12031405JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

364 Streamside Dr, Galesburg, MI 49053

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPE12031405JTC1B	1212172-09	N	12/3/2012, 14:05	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212172-09
Property ID: C087736
COC Sample ID: WPE12031405JTC1B

Summary of Analytical Results:

Sample ID: WPE12031405JTC1B **Well ID: C087736WP1** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	Not Detected	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212421-07
Property ID: C0229A2M
COC Sample ID: WPC12101400JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

391 S Shore Dr, Battle Creek, MI 49015

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPC12101400JTC1B	1212421-07	N	12/10/2012, 14:00	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212421-07
Property ID: C0229A2M
COC Sample ID: WPC12101400JTC1B

Summary of Analytical Results:

Sample ID: WPC12101400JTC1B **Well ID: C0229A2A** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	2.6	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212421-09
Property ID: C04879DM
COC Sample ID: WPC12101418JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

395 S Shore Dr., Battle Creek, MI 49014-5400

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPC12101418JTC1B	1212421-09	N	12/10/2012, 14:18	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212421-09
Property ID: C04879DM
COC Sample ID: WPC12101418JTC1B

Summary of Analytical Results:

Sample ID: WPC12101418JTC1B **Well ID: C04879DWP1** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	2.6	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212318-06
Property ID: C023047
COC Sample ID: WPD12051523JTC1

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

4039 San Juan Ave, Battle Creek, MI 49037-1040

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPD12051523JTC1B	1212318-06	N	12/5/2012, 15:23	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212318-06
Property ID: C023047
COC Sample ID: WPD12051523JTC1

Summary of Analytical Results:

Sample ID: WPD12051523JTC1B **Well ID: C023047A** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	1.1	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212318-05
Property ID: C015322
COC Sample ID: WPD12051544JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

4057 San Juan Ave, Battle Creek, MI 49037-1040

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPD12051544JTC1B	1212318-05	N	12/5/2012, 15:44	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212318-05
Property ID: C015322
COC Sample ID: WPD12051544JTC1B

Summary of Analytical Results:

Sample ID: WPD12051544JTC1B **Well ID: C015322A** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	1.1	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212319-03
Property ID: C015481
COC Sample ID: WPD12060937JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

4059 San Juan Ave, Battle Creek, MI 49037-1040

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPD12060937JTC1B	1212319-03	N	12/6/2012, 9:37	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212319-03
Property ID: C015481
COC Sample ID: WPD12060937JTC1B

Summary of Analytical Results:

Sample ID: WPD12060937JTC1B **Well ID: C015481A** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	1.1	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	0.030	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212319-06
Property ID: C0231D1
COC Sample ID: WPD12061000JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

4060 San Juan Ave, Battle Creek, MI 49037-1041

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPD12061000JTC1B	1212319-06	N	12/6/2012, 10:00	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212319-06
Property ID: C0231D1
COC Sample ID: WPD12061000JTC1B

Summary of Analytical Results:

Sample ID: WPD12061000JTC1B **Well ID: C0231D1A** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	1.6	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212319-04
Property ID: C0156AD
COC Sample ID: WPD12061020JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

4075 San Juan Ave, Battle Creek, MI 49037-1040

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPD12061020JTC1B	1212319-04	N	12/6/2012, 10:20	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212319-04
Property ID: C0156AD
COC Sample ID: WPD12061020JTC1B

Summary of Analytical Results:

Sample ID: WPD12061020JTC1B **Well ID: C0156ADA** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	0.00030	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	1.3	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	0.021	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212319-05
Property ID: C01573B
COC Sample ID: WPD12061042JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

4077 San Juan Ave, Battle Creek, MI 49037-1040

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPD12061042JTC1B	1212319-05	N	12/6/2012, 10:42	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Summary of Analytical Results:

Sample ID: WPD12061042JTC1B **Well ID: C01573BA** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	0.41	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212320-07
Property ID: C0876A0
COC Sample ID: WPD12071011JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

500 River Rd W, Battle Creek, MI 49037-6103

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPD12071011JTC1B	1212320-07	N	12/7/2012, 10:11	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212320-07
Property ID: C0876A0
COC Sample ID: WPD12071011JTC1B

Summary of Analytical Results:

Sample ID: WPD12071011JTC1B **Well ID: C0876A0WP1** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	2.4	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212421-10
Property ID: C05354D
COC Sample ID: WPC12101320JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

545 S Shore Dr., Battle Creek, MI 49014-5432

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPC12101320JTC1B	1212421-10	N	12/10/2012, 13:20	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212421-10
Property ID: C05354D
COC Sample ID: WPC12101320JTC1B

Summary of Analytical Results:

Sample ID: WPC12101320JTC1B **Well ID: C05354DA** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	2.0	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212320-06
Property ID: C053761
COC Sample ID: WPD12071207JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

555 Industrial Park Dr, Battle Creek, MI 49037-7446

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPD12071207JTC1B	1212320-06	N	12/7/2012, 12:07	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212320-06
Property ID: C053761
COC Sample ID: WPD12071207JTC1B

Summary of Analytical Results:

Sample ID: WPD12071207JTC1B **Well ID: C053761WP1** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	3.6	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212318-10
Property ID: C1346E7
COC Sample ID: WPE12051005JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

599 Shillito, Galesburg, MI 49053

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPE12051005JTC1B	1212318-10	N	12/5/2012, 10:05	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212318-10
Property ID: C1346E7
COC Sample ID: WPE12051005JTC1B

Summary of Analytical Results:

Sample ID: WPE12051005JTC1B **Well ID: C1346E7WP1** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	Not Detected	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212420-01
Property ID: C0165D4M
COC Sample ID: WPC12110934JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

601 S Shore Dr., Suite 226, Battle Creek, MI 49014-5422

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPC12110934JTC1B	1212420-01	N	12/11/2012, 9:34	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212420-01
Property ID: C0165D4M
COC Sample ID: WPC12110934JTC1B

Summary of Analytical Results:

Sample ID: WPC12110934JTC1B **Well ID: C0165D4PW1** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	Not Detected	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212318-11
Property ID: C14332A
COC Sample ID: WPE12051051JTC3B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

650 S Lincoln St, Augusta, MI 49012

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPE12051051JTC3B	1212318-11	N	12/5/2012, 10:51	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212318-11
Property ID: C14332A
COC Sample ID: WPE12051051JTC3B

Summary of Analytical Results:

Sample ID: WPE12051051JTC3B **Well ID: C14332AWP1** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	1.2	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212420-03
Property ID: C0572EA
COC Sample ID: WPC12111012JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

703 Columbia Ave E, Battle Creek, MI 49014-5414

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPC12111012JTC1B	1212420-03	N	12/11/2012, 10:12	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212420-03
Property ID: C0572EA
COC Sample ID: WPC12111012JTC1B

Summary of Analytical Results:

Sample ID: WPC12111012JTC1B **Well ID: C0572EAWP1** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	7.1	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212420-04
Property ID: C0574DF
COC Sample ID: WPC12111325JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

709 Columbia Ave E, Battle Creek, MI 49014-5414

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPC12111325JTC1B	1212420-04	N	12/11/2012, 13:25	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212420-04
Property ID: C0574DF
COC Sample ID: WPC12111325JTC1B

Summary of Analytical Results:

Sample ID: WPC12111325JTC1B **Well ID: C0574DFWP1** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	Not Detected	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212420-10
Property ID: C145599
COC Sample ID: WPC12111437JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

8152 River Rd East, Battle Creek, MI 49014

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPC12111437JTC1B	1212420-10	N	12/11/2012, 14:37	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212420-10
Property ID: C145599
COC Sample ID: WPC12111437JTC1B

Summary of Analytical Results:

Sample ID: WPC12111437JTC1B **Well ID: C145599A** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	0.90	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212420-11
Property ID: C0693AB
COC Sample ID: WPC12111515JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

8264 River Rd E, Battle Creek, MI 49014

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPC12111515JTC1B	1212420-11	N	12/11/2012, 15:15	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212420-11
Property ID: C0693AB
COC Sample ID: WPC12111515JTC1B

Summary of Analytical Results:

Sample ID: WPC12111515JTC1B **Well ID: C0693ABPW1** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	0.32	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212420-08 and 1212420-09
Property ID: C145623
COC Sample ID: WPC12111354JTC1B and WPC12111354JTC2B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

8300 River Rd, Battle Creek, MI 49014

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPC12111354JTC1B	1212420-08	N	12/11/2012, 13:54	1,2,3,4
WPC12111354JTC2B	1212420-09	FD	12/11/2012, 13:54	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on pages two and three of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Summary of Analytical Results:

Sample ID: WPC12111354JTC1B **Well ID: C145623WP1** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	Not Detected	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212420-08 and 1212420-09
Property ID: C145623
COC Sample ID: WPC12111354JTC1B and WPC12111354JTC2B

Sample ID: WPC12111354JTC2B **Well ID: C145623WP1** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	Not Detected	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212420-05
Property ID: C059451
COC Sample ID: WPC12111646JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

8375 River Rd E, Battle Creek, MI 49014-8271

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPC12111646JTC1B	1212420-05	N	12/11/2012, 16:46	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212420-05
Property ID: C059451
COC Sample ID: WPC12111646JTC1B

Summary of Analytical Results:

Sample ID: WPC12111646JTC1B **Well ID: C059451PW1** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	Not Detected	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212320-04
Property ID: C017595
COC Sample ID: WPC12071136JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

905 Belton, Battle Creek, MI 49015

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPC12071136JTC1B	1212320-04	N	12/7/2012, 11:36	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212320-04
Property ID: C017595
COC Sample ID: WPC12071136JTC1B

Summary of Analytical Results:

Sample ID: WPC12071136JTC1B **Well ID: C017595PW1** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	1.4	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212320-05
Property ID: C0177B9
COC Sample ID: WPC12071244JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

917 Belton Ave, Battle Creek, MI 49015

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPC12071244JTC1B	1212320-05	N	12/7/2012, 12:44	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212320-05
Property ID: C0177B9
COC Sample ID: WPC12071244JTC1B

Summary of Analytical Results:

Sample ID: WPC12071244JTC1B **Well ID: C0177B9A** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	1.8	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212420-02
Property ID: C0180D5
COC Sample ID: WPC12111215JTC3B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

937 Belton Ave, Battle Creek, MI 49014-4505

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPC12111215JTC3B	1212420-02	N	12/11/2012, 12:15	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212420-02
Property ID: C0180D5
COC Sample ID: WPC12111215JTC3B

Summary of Analytical Results:

Sample ID: WPC12111215JTC3B **Well ID: C0180D5A** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	1.8	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212420-06
Property ID: C06162C
COC Sample ID: WPC12111055JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

97 Kenosha Ave, Battle Creek, MI 49014-4254

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPC12111055JTC1B	1212420-06	N	12/11/2012, 10:55	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212420-06
Property ID: C06162C
COC Sample ID: WPC12111055JTC1B

Summary of Analytical Results:

Sample ID: WPC12111055JTC1B **Well ID: C06162CPW1** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	5.3	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212172-01
Property ID: C018776
COC Sample ID: WPE12031030JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

9845 Miller Dr, Galesburg, MI 49053

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPE12031030JTC1B	1212172-01	N	12/3/2012, 10:30	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212172-01
Property ID: C018776
COC Sample ID: WPE12031030JTC1B

Summary of Analytical Results:

Sample ID: WPE12031030JTC1B **Well ID: C018776A** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0016	mg/l
Iron	7439-89-6	Not Detected	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212173-01 and 1212173-06
Property ID: C086970
COC Sample ID: WPE12041100JTC1B and WPE12041110JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

Augusta Municipal Wells, Augusta, MI 49012

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPE12041100JTC1B	1212173-01	N	12/4/2012, 11:00	1,2,3,4
WPE12041110JTC1B	1212173-06	N	12/4/2012, 11:10	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on pages two and three of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Summary of Analytical Results:

Sample ID: WPE12041100JTC1B **Well ID: C086970PW1** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	0.39	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Sample ID: WPE12041110JTC1B **Well ID: C086970PW2** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	0.55	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212173-02
Property ID: C0889FE
COC Sample ID: WPE12040945JTC1B

Introduction:

Level 1 review was performed using the laboratory report and electronic data deliverable. The laboratory report cited above contained the results for sample(s) collected at the following address:

Lyth Rd, Galesburg, MI 49053

The Level 1 review performed by AECOM included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody,
- Verification of field sample IDs,
- Review of the sample receipt forms for proper sample preservation, and
- Identification of potential data usability issues based on:
    - holding times,
    - recoveries of surrogates,
    - laboratory control samples, or matrix spikes,
    - and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *U.S. EPA National Functional Guidelines for Organic Data Review*, *U.S. EPA National Functional Guidelines for Inorganic Data Review*, and the *Enbridge 2011 Quality Assurance Project Plan.*

Analytical Results:

The analytical results for the following sample(s) was reviewed

Sample ID	Lab ID	Type	Sample Date	Analyses
WPE12040945JTC1B	1212173-02	N	12/4/2012, 9:45	1,2,3,4

Notes: N = Normal Field Sample , FD = Field Duplicate

Analyses Performed Codes:
[1] Metals by EPA Method 200.8
[2] Mercury by EPA Method 245.1
[3] Volatile Organic Compounds by EPA Method 524.2
[4] Semivolatile Organic Compounds by EPA Method 525.2

Analytical results are located on page two of this report.

Level 1 Review Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data is therefore considered acceptable for use.

Conclusion:

- The data is considered acceptable for use.

Project Name: Potable Water
Laboratory: ALS
Laboratory Sample ID.: 1212173-02
Property ID: C0889FE
COC Sample ID: WPE12040945JTC1B

Summary of Analytical Results:

Sample ID: WPE12040945JTC1B **Well ID: C0889FEWP1** **Analyte**	**CAS No.**	**Result**	**Reporting Limit**	**Units**
Mercury by EPA Method 245.1				
Mercury (Total)	7439-97-6	Not Detected	0.00020	mg/l
Metals by EPA Method 200.8				
Beryllium	7440-41-7	Not Detected	0.0010	mg/l
Iron	7439-89-6	Not Detected	0.20	mg/l
Molybdenum	7439-98-7	Not Detected	0.050	mg/l
Nickel	7440-02-0	Not Detected	0.020	mg/l
Titanium	7440-32-6	Not Detected	0.0050	mg/l
Vanadium	7440-62-2	Not Detected	0.0040	mg/l
Semivolatile Organic Compounds by EPA Method 525.2				
Phenanthrene	85-01-8	Not Detected	2.0	ug/l
Volatile Organic Compounds by EPA Method 524.2				
1,2,3-Trimethylbenzene	526-73-8	Not Detected	5.0	ug/l
1,2,4-Trimethylbenzene	95-63-6	Not Detected	1.0	ug/l
1,3,5-Trimethylbenzene	108-67-8	Not Detected	1.0	ug/l
2-Methylnaphthalene	91-57-6	Not Detected	5.0	ug/l
Benzene	71-43-2	Not Detected	1.0	ug/l
Cyclohexane	110-82-7	Not Detected	10	ug/l
Ethylbenzene	100-41-4	Not Detected	1.0	ug/l
Isopropyl benzene	98-82-8	Not Detected	5.0	ug/l
m&p-Xylene	136777-61-2	Not Detected	2.0	ug/l
Naphthalene	91-20-3	Not Detected	5.0	ug/l
n-Propylbenzene	103-65-1	Not Detected	1.0	ug/l
o-Xylene	95-47-6	Not Detected	1.0	ug/l
p-Isopropyl toluene (p-Cymene)	99-87-6	Not Detected	5.0	ug/l
sec-Butylbenzene	135-98-8	Not Detected	1.0	ug/l
Toluene	108-88-3	Not Detected	1.0	ug/l

Enbridge Line 6B MP 608 Pipeline Release

Marshall, Michigan

Appendix E

Waste Disposal

Hazardous Waste Manifests

Prepared for U.S. EPA and MDEQ

Enbridge Energy, Limited Partnership

Submitted: January 23, 2013

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number: MIR 7523 [illegible]

2. Page 1 of: 1

3. Emergency Response Phone: 218-[illegible]

4. Manifest Tracking Number: 008821367 JJK

GENERATOR

5. Generator's Name and Mailing Address
Enbridge Energy Partners
1601 Pratt
Manistee MI 49660

Generator's Site Address (if different than mailing address)
N 1/2 Section 2 T19N R13W
Manistee Co. [illegible]

Generator's Phone: [redacted]

6. Transporter 1 Company Name
Valley City Environmental Services Inc

U.S. EPA ID Number
MID [illegible]

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address
Pioneers Environmental
10075 Senator Industrial Drive
Bay City Center MI 48315

U.S. EPA ID Number

Facility's Phone: 517/[illegible]

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
	1. Non RCRA / DOT Regulated Water [illegible]	[illegible]	TT	12.5 T	[illegible]	[illegible]
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information
ERG [illegible] App #
1. Non Hazardous (800)878-2996

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: [illegible]

Signature

Month: 12 Day: 17 Year: 12

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: [illegible]

Signature

Month: / Day: / Year: /

Transporter 2 Printed/Typed Name

Signature

Month: Day: Year:

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator)

U.S. EPA ID Number

Facility's Phone:

18c. Signature of Alternate Facility (or Generator)

Month: Day: Year:

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name

Signature

Month: Day: Year:

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

GENERATOR'S INITIAL COPY

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number
MIK752366161	1	218-269-0366	008821367 JJK

GENERATOR

5. Generator's Name and Mailing Address
Enbridge Energy Partners
1601 Prattville
Generator's Phone: MI 49068 [redacted]

Generator's Site Address (if different than mailing address)
N 1/2 Section 2 T3SR6W
Marshall MI 49068

6. Transporter 1 Company Name: Valley City Environmental Services Inc — U.S. EPA ID Number: MID981956063

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address
Plummers Environmental
10075 Sedroc Industrial Drive
Facility's Phone: Center MI 49315 616/877-3930

U.S. EPA ID Number: MIK111229563

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
	1. , Non RCRA / DOT Regulated Water, , , (029L)	001	TT	12,500	G	029L
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information
ERG: App #:
1 Non hazardous (800)878-3996

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: Alison Schaeff On behalf of Enbridge Energy, Limited Partnership — Signature: [signature] — Month 12 Day 07 Year 12

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: GARY EDEMA — Signature: [signature] — Month 12 Day 7 Year 12

Transporter 2 Printed/Typed Name — Signature — Month Day Year

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

18c. Signature of Alternate Facility (or Generator) — Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name — Signature — Month Day Year

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number
MIK 2523611	1	218 269-6360	008821366 JJK

GENERATOR

5. Generator's Name and Mailing Address

Enbridge Energy Partners
1601 Prairi
Marshall MI 49068

Generator's Site Address (if different than mailing address)

N 1/2 Section 7 T3SR6W
Marshall MI 49068

Generator's Phone: [redacted]

6. Transporter 1 Company Name — U.S. EPA ID Number

Valley City Environmental Services Inc — MID 980 614 [illegible]

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address — U.S. EPA ID Number

Plummers Environmental
19075 Sedore Industrial Drive
Sauk Centre MN 56378 — 320/352-2400

Facility's Phone:

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
	1. Non RCRA / DOT Regulated Water, (Oil)	1	TT	1	G	
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information

ERG — App #

1. Non hazardous (800)878-3990

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name — Signature — Month 12 — Day 7 — Year 12

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name — Signature — Month 12 — Day 7 — Year 12

Transporter 2 Printed/Typed Name — Signature — Month — Day — Year

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

18c. Signature of Alternate Facility (or Generator) — Month — Day — Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name — Signature — Month — Day — Year

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

GENERATOR'S INITIAL COPY

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number
MIK752366161	1	218-269-0366	008821366 JJK

GENERATOR

5. Generator's Name and Mailing Address
Enbridge Energy Partners
1601 Pratt
Marshall MI 49068
Generator's Phone: [redacted]

Generator's Site Address (if different than mailing address)
N 1/2 Section 2 T3SR6W
Marshall MI 49068

6. Transporter 1 Company Name: Valley City Environmental Services Inc — U.S. EPA ID Number: MID981956063

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address
Plummers Environmental
10075 Sedroc Industrial Drive
Fraser Center MI 49315
Facility's Phone: 616/877-3930
U.S. EPA ID Number: MIK111229563

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
	1. , Non RCRA / DOT Regulated Water, , , (029L)	001	TT	12,500	G	029L
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information
ERG: App #:
1. Non hazardous (800)878-3996

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: Alisan Schaeff — On behalf of Enbridge Energy, Limited Partnership — Signature — Month 12 Day 7 Year 12

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: GARY EDEMA — Signature — Month 12 Day 7 Year 12
Transporter 2 Printed/Typed Name — Signature — Month Day Year

DESIGNATED FACILITY

18. Discrepancy
18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:

18b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:

18c. Signature of Alternate Facility (or Generator) — Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)
1. 2. 3. 4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a
Printed/Typed Name — Signature — Month Day Year

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number
MIK 752366 1	1	218-269-0366	008821359 JJK

GENERATOR

5. Generator's Name and Mailing Address
Enbridge Energy Partners
1601 Dan
Marshall MI 49068
Generator's Phone: [redacted]

Generator's Site Address (if different than mailing address)
N 1/2 Section 2 T3SR6W
Marshall MI 49068

6. Transporter 1 Company Name: Valley City Environmental Services Inc.
U.S. EPA ID Number: MID 98 195 6063

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
Pioneers Environmental
1007 S Sedgwick Drive
Owosso MI 48867
Facility's Phone: 616/837-2038
U.S. EPA ID Number

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
	1. Non RCRA / DOT Regulated Water, , (0000)	001	TT	2	G	
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information
ERG: App #:
1. Non hazardous (800)678-3996

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name | Signature | Month | Day | Year

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name | Signature | Month | Day | Year

Transporter 2 Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator) | U.S. EPA ID Number
Facility's Phone:

18c. Signature of Alternate Facility (or Generator) | Month | Day | Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name | Signature | Month | Day | Year

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

GENERATOR'S INITIAL COPY

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number: MIK752366161
2. Page 1 of: 1
3. Emergency Response Phone: 269-209-0365
4. Manifest Tracking Number: 008821359 JJK

GENERATOR

5. Generator's Name and Mailing Address: Enbridge Energy Partners [illegible]
Generator's Site Address (if different than mailing address): N 1/2 Section 2 T3SR6W Marshall MI 49068
Generator's Phone: [illegible] [redacted]

6. Transporter 1 Company Name: Veolia ES Environmental Services Inc
U.S. EPA ID Number: [illegible]

7. Transporter 2 Company Name:
U.S. EPA ID Number:

8. Designated Facility Name and Site Address: Pollution Environmental [illegible] 10075 Seeley Industrial Drive [illegible]
U.S. EPA ID Number: [illegible]
Facility's Phone: [illegible]

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
	1. [illegible]	001		10,000		
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information
[illegible]

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: Alison Schoeff On Behalf of Enbridge Energy, Limited Partnerships
Signature: [signature]
Month: 12 Day: 21 Year: 12

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Ronald Koopman
Signature: Ronald Koopman
Month: 12 Day: 21 Year: 12

Transporter 2 Printed/Typed Name:
Signature:
Month: Day: Year:

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator)
U.S. EPA ID Number:
Facility's Phone:

18c. Signature of Alternate Facility (or Generator)
Month: Day: Year:

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name:
Signature:
Month: Day: Year:

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number
MIK752364161	1	248-360-0636	008821349 JJK

GENERATOR

5. Generator's Name and Mailing Address
Enbridge Energy Partners
1681 Pratt
Marquette MI 49855
Generator's Phone: [redacted]

Generator's Site Address (if different than mailing address)
N 1/2 Section 1 T42N R26W
Republic MI 49879

6. Transporter 1 Company Name
Valley City Environmental Services Inc

U.S. EPA ID Number
MID048143000

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address
Pharmers Environmental
10075 Senator Industrial Drive
Mt Pleasant MI 48858 989/772-3930

U.S. EPA ID Number
MID980994344

Facility's Phone:

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
	1. Non RCRA / DOT Regulated Water, ... (0798)	1	TT	1	G	D001
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information
ERG App #
1. Non hazardous (800)878-3906

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name | Signature | Month | Day | Year

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name | Signature | Month | Day | Year

Transporter 2 Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator) | U.S. EPA ID Number

Facility's Phone:

18c. Signature of Alternate Facility (or Generator) | Month | Day | Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name | Signature | Month | Day | Year

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

GENERATOR'S INITIAL COPY

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number: MIKTT[illegible]

2. Page 1 of: 1

3. Emergency Response Phone: 815 [illegible]

4. Manifest Tracking Number: 008821349 JJK

GENERATOR

5. Generator's Name and Mailing Address
Enbridge Energy Partners
[illegible]
[illegible] MI 49058
Generator's Phone: [illegible]

Generator's Site Address (if different than mailing address)
N 1/2 Section 2 T35S R1W
Marshall MI 49068

6. Transporter 1 Company Name: Valley Oil Environmental Services Inc
U.S. EPA ID Number: MID[illegible]

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
Planners Environmental
10075 Secor Industrial Drive
Facility's Phone: Emer MI 49315 616/577-3990
U.S. EPA ID Number: MIA[illegible]

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
	1. Non RCRA / DOT Regulated Water, , , (129L)	001	TT	10,000	G	129L
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information
ERG: Acct #:
Non-hazardous (616)878-9626

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: Alison Scheff On Behalf of Enbridge Energy, Limited Partnership
Signature: [signature]
Month: 12 Day: 21 Year: 12

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Ronald Koopman
Signature: Ronald Koopman
Month: 12 Day: 21 Year: 12

Transporter 2 Printed/Typed Name:
Signature:
Month: Day: Year:

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

18c. Signature of Alternate Facility (or Generator)
Month: Day: Year:

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name:
Signature:
Month: Day: Year:

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

Enbridge Line 6B MP 608 Pipeline Release

Marshall, Michigan

Appendix E

Waste Disposal

Non-Hazardous Waste Manifests

Prepared for U.S. EPA and MDEQ

Enbridge Energy, Limited Partnership

Submitted: January 23, 2013

MANIFEST NUMBER
706138

NON-HAZARDOUS SPECIAL WASTE MANIFEST

Directions: Print or type all information except where signature is required.
Make sure information is transmitted on all copies.

GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY LTD PTNRSHP b. Generator Location: C.C.

c. Address: 601 PRATT AVE. d. Address: Box # 2021

MARSHALL, MI 49068

e. Phone No.: [redacted] f. Phone No.:

g. Waste Common Name: ~~SOIL FROM PIPELINE RELEASE~~ ANS Crude oil Cont. Media / Debris

Color: Odor: Foam

h. Special Waste Approval Number: ~~EGLE 11 0003~~ ANS 5007 10 13029 1,381

i. Customer Account Number:

J. Containers No.	Type	K. Total Quantity	L. Unit Wt/Vol
01	DT	25	Y

On behalf of Enbridge Energy. Limited Partnership

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Alan Schoff Signature Shipment Date: 12 20 12

Generator Authorized Agent Name

TYPE	
DM	METAL DRUM
DP	PLASTIC DRUM
DF	FIBER DRUM
BG	BAG
TR	TRUCK
OT	OTHER

UNITS	
P	POUNDS
Y	CUBIC YARDS
T	TONS
O	OTHER

TRANSPORTER INFORMATION

TRANSPORTER 1

a. Name: Universal

b. Address: 1040 Wright St
Grand Rapids MI

c. Driver Name: Mark Emmons

d. Phone [redacted] e. Truck No.: 92

f. Vehicle License No./State:

Acknowledgement of Receipt of Materials Described Above.

g. Driver Signature Shipment Date: 12 20 12

TRANSPORTER 2

h. Name:

i. Address:

j. Driver Name:

k. Phone No.: l. Truck No.:

m. Vehicle License No./State:

Acknowledgement of Receipt of Materials Described Above.

n. Driver Signature Shipment Date

DISPOSAL FACILITY INFORMATION

a. Site Name: C&C LANDFILL b. Phone No.: 269-781-9742

c. Physical Address: 14800 P. DRIVE NORTH d. Mailing Address:

MARSHALL, MI 49068

e. TICKET No.: 225907

I hereby certify that the material described above has been accepted for disposal at this facility.

f. Authorized Agent Name Signature Shipment Date: 12 20 12

White - Disposal Facility Yellow - Transporter Copy Pink - Generator 2nd Copy Gold - Generator 1st Copy

MANIFEST NUMBER
706138

NON-HAZARDOUS SPECIAL WASTE MANIFEST

Directions: Print or type all information except where signature is required.
Make sure information is transmitted on all copies.

GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY LTD PTNRSHIP

b. Generator Location: [illegible]

c. Address: 601 PRATT AVE.

MARSHALL, MI 49068

d. Address: [illegible] #2021

e. Phone No.: [redacted]

f. Phone No.: [illegible]

g. Waste Common Name: ~~SOIL FROM PIPELINE RELEASE~~ ANS Crude oil Cont. Media / Debris

Color: [illegible]

Odor: [illegible]

h. Special Waste Approval Number: ~~EGLE 11 0205~~ ANS 500710 13039

i. Customer Account Number: [illegible]

On behalf of Enbridge Energy, Limited Partnership

J. Containers No.	Type	K. Total Quantity	L. Unit Wt/Vol
01	OT	25	Y

TYPE		
DM	-	METAL DRUM
DP	-	PLASTIC DRUM
DF	-	FIBER DRUM
BG	-	BAG
TR	-	TRUCK
OT	-	OTHER
UNITS		
P	-	POUNDS
Y	-	CUBIC YARDS
T	-	TONS
O	-	OTHER

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Alan Shoff — Generator Authorized Agent Name

Signature

12/20/12 — Shipment Date

TRANSPORTER INFORMATION

TRANSPORTER 1

a. Name: [illegible]

b. Address: 1040 Hunt Rd SE

Grand Rapids MI

c. Driver Name: Mark Emmons

d. Phone No.: [redacted] e. Truck No.: 92

f. Vehicle License No./State: [illegible]

Acknowledgement of Receipt of Materials Described Above.

g. [signature] — Driver Signature

12/20/12 — Shipment Date

TRANSPORTER 2

h. Name: [illegible]

i. Address: [illegible]

j. Driver Name: [illegible]

k. Phone No.: [illegible] l. Truck No.: [illegible]

m. Vehicle License No./State: [illegible]

Acknowledgement of Receipt of Materials Described Above.

n. [illegible] — Driver Signature

Shipment Date

DISPOSAL FACILITY INFORMATION

a. Site Name: C&C LANDFILL

b. Phone No.: 269-781-9742

c. Physical Address: 14800 P. DRIVE NORTH

MARSHALL, MI 49068

d. Mailing Address: [illegible]

e. TICKET No.: 225907

I hereby certify that the material described above has been accepted for disposal at this facility.

f. [illegible] — Authorized Agent Name

[illegible] — Signature

12/20/12 — Shipment Date

White - Disposal Facility | Yellow - Transporter Copy | Pink - Generator 2nd Copy | Gold - Generator 1st Copy

00017794

C&C LANDFILL
14800 F DRIVE NORTH
MARSHALL MI
49068
000728
SET ENVIRONMENTAL INC
450 SUMAC ROAD
WHEELING, IL 60090

Contract: 50071013039

SITE 46	TICKET 125907	GRID
AMY B		WEIGHMASTER
DATE IN 10 December 2012		TIME IN 1:37 pm
DATE OUT 10 December 2012		TIME OUT 1:37 pm
VEHICLE 9FL92T250		ROLL OFF
REFERENCE 70s138	ORIGIN CALHOUN	

Gross Weight 36,640.00 lb
Stored Tare Weight 33,880.00 lb Inbound - TICKET
Net Weight 2,760.00 lb 1.38 TN

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
1.38	TN	SW-CONT SOIL				
		Manifest:				

NET AMOUNT
TENDERED
CHANGE
CHECK NO.

THANK YOU ! HAVE A GREAT DAY !
****** HOURS ******
MONDAY THRU FRIDAY 7 TO 4:30
SATURDAY 7:00 TO NOON

REPUBLIC SERVICES, INC.

SIGNATURE _____

REV 06/12

RS-F04

MANIFEST NUMBER
706137

NON-HAZARDOUS SPECIAL WASTE MANIFEST

Directions: Print or type all information except where signature is required.
Make sure information is transmitted on all copies.

GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY LTD PTNRSHP b. Generator Location: FTC

c. Address: 1601 PRATT AVE. d. Address: Box # 2047

MARSHALL, MI 49068

e. Phone No.: [redacted] f. Phone No.:

g. Waste Common Name: ~~SOIL FROM PIPELINE RELEASE~~ MNS Crude Oil Cont. Media / Debris

Color: Odor:

h. Special Waste Approval Number: ~~MNS 6007 11 0003~~ 5007 10 13039 0.81 Tn

i. Customer Account Number:

On behalf of Enbridge Energy, Limited Partnership

J. Containers No.	J. Containers Type	K. Total Quantity	L. Unit Wt/Vol
01	01	25	Y

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Alison Shoff — Generator Authorized Agent Name

Signature

Shipment Date: 12/06/12

TYPE	
DM	METAL DRUM
DP	PLASTIC DRUM
DF	FIBER DRUM
BG	BAG
TR	TRUCK
OT	OTHER

UNITS	
P	POUNDS
Y	CUBIC YARDS
T	TONS
O	OTHER

TRANSPORTER INFORMATION

TRANSPORTER 1

a. Name: Valley City Environmental Services

b. Address: 6850 Quality Way

Portage MI 49024

c. Driver Name: Arnulfo Perez

d. Phone No.: [redacted] e. Truck No.: 92

f. Vehicle License No./State: HC4468 M.

Acknowledgement of Receipt of Materials Described Above.

g. Arnulfo Perez — Driver Signature

Shipment Date: 12/06/12

TRANSPORTER 2

h. Name:

i. Address:

j. Driver Name:

k. Phone No.: l. Truck No.:

m. Vehicle License No./State:

Acknowledgement of Receipt of Materials Described Above.

n. Driver Signature

Shipment Date

DISPOSAL FACILITY INFORMATION

a. Site Name: C&C LANDFILL b. Phone No.: 269-781-9742

c. Physical Address: 14300 P. DRIVE NORTH d. Mailing Address:

MARSHALL, MI 49068

e. TICKET No.: 224326

I hereby certify that the material described above has been accepted for disposal at this facility.

Authorized Agent Name

Signature

Shipment Date: 12/06/12

White - Disposal Facility Yellow - Transporter Copy Pink - Generator 2nd Copy Gold - Generator 1st Copy

MANIFEST NUMBER
706137

NON-HAZARDOUS SPECIAL WASTE MANIFEST

Directions: Print or type all information except where signature is required.
Make sure information is transmitted on all copies.

GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY LTD PTNRSHP b. Generator Location: FTC

c. Address: 1409 PRATT AVE. d. Address: Box # 2047

MARSHALL, MI 49068

e. Phone No.: [redacted] f. Phone No.:

g. Waste Common Name: ~~SOIL FROM MNS PIPELINE RELEASE~~ Crude Oil Cont. Media / Debris

Color: Odor:

h. Special Waste Approval Number: ~~MNS-0003~~ 5C07 10 13039 0.81 Ty

i. Customer Account Number:

J. Containers No.	J. Containers Type	K. Total Quantity	L. Unit Wt/Vol
01	01	25	Y

On behalf of Enbridge Energy, Limited Partnership

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Alison Schoff — Generator Authorized Agent Name — Signature — Shipment Date: 12/06/12

TYPE	
DM	METAL DRUM
DP	PLASTIC DRUM
DF	FIBER DRUM
BG	BAG
TR	TRUCK
OT	OTHER

UNITS	
P	POUNDS
Y	CUBIC YARDS
T	TONS
O	OTHER

TRANSPORTER INFORMATION

TRANSPORTER 1

a. Name: Valley City Environmental Services

b. Address: 850 Quality Way
Portage MI 49024

c. Driver Name: Angelo Perez

d. Phone No.: [redacted] e. Truck No.: 92

f. Vehicle License No./State: MC4563 MI

Acknowledgement of Receipt of Materials Described Above.

g. Angelo Perez — Driver Signature — Shipment Date: 12/06/12

TRANSPORTER 2

h. Name:

i. Address:

j. Driver Name:

k. Phone No.: l. Truck No.:

m. Vehicle License No./State:

Acknowledgement of Receipt of Materials Described Above.

n. Driver Signature — Shipment Date:

DISPOSAL FACILITY INFORMATION

a. Site Name: C&C LANDFILL b. Phone No.: 269-781-9742

c. Physical Address: 14300 P. DRIVE NORTH d. Mailing Address:

MARSHALL, MI 49068

e. TICKET No.: 224326

I hereby certify that the material described above has been accepted for disposal at this facility.

f. Authorized Agent Name — Signature — Shipment Date: 12/06/12

White - Disposal Facility Yellow - Transporter Copy Pink - Generator 2nd Copy Gold - Generator 1st Copy

00029207

C&C LANDFILL
14800 F DRIVE NORTH
MARSHALL MI
49068
000728
SET ENVIRONMENTAL INC
450 SUMAC ROAD
WHEELING, IL 60090

Contract: 50071013039

SITE	TICKET	GRID
16	224326	

WEIGHMASTER: AMY B

DATE IN	TIME IN
6 December 2012	7:49 am

DATE OUT	TIME OUT
6 December 2012	7:49 am

VEHICLE	ROLL OFF
VAL92T250	

REFERENCE	ORIGIN
706137	CALHOUN

Gross Weight 35,500.00 lb
Stored Tare Weight 33,880.00 lb Inbound -- TICKET
Net Weight 1,620.00 lb 0.81 TN

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
0.81	TN	SW-CONT SOIL				
		Manifest:				

NET AMOUNT
TENDERED
CHANGE
CHECK NO.

THANK YOU ! HAVE A GREAT DAY !
****** HOURS ******
MONDAY THRU FRIDAY 7 TO 4:30
SATURDAY 7:00 TO NOON

REPUBLIC SERVICES, INC.

SIGNATURE

REV 06/12

RS-F04

MANIFEST NUMBER
706136

NON-HAZARDOUS SPECIAL WASTE MANIFEST

Directions: Print or type all information except where signature is required.
Make sure information is transmitted on all copies.

GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY LTD PTNRSHP

b. Generator Location: [illegible]

c. Address: 1001 PRATT AVE.

MARSHALL, MI 49068

d. Address: Box ± 7021

e. Phone No.: [redacted]

f. Phone No.:

g. Waste Common Name: ~~SOIL FROM PIPELINE RELEASE~~ MNS Crude Oil Cont. Media & Debris

Color:

Odor:

h. Special Waste Approval Number: ~~5007 11 0005~~ MNS 5007 10 13039

0.77 tn

i. Customer Account Number:

On behalf of Enbridge Energy, Limited Partnership

J. Containers No.	Type	K. Total Quantity	L. Unit Wt/Vol
01	OT	55	Y

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Alison Schoff — Generator Authorized Agent Name

Signature

Shipment Date: 12/03/12

TYPE		
DM	-	METAL DRUM
DP	-	PLASTIC DRUM
DF	-	FIBER DRUM
BG	-	BAG
TR	-	TRUCK
OT	-	OTHER
UNITS		
P	-	POUNDS
Y	-	CUBIC YARDS
T	-	TONS
O	-	OTHER

TRANSPORTER INFORMATION

TRANSPORTER 1

a. Name: Valley City Environ. Service

b. Address: 6850 Quality Way

Portage, MI 49024

c. Driver Name: Arnulfo Perez

d. Phone N[redacted] e. Truck No.: 92

f. Vehicle License No./State: AC44568 MI

Acknowledgement of Receipt of Materials Described Above.

g. Driver Signature

Shipment Date: 12/03/12

TRANSPORTER 2

h. Name:

i. Address:

j. Driver Name:

k. Phone No.: l. Truck No.:

m. Vehicle License No./State:

Acknowledgement of Receipt of Materials Described Above.

n. Driver Signature

Shipment Date

DISPOSAL FACILITY INFORMATION

a. Site Name: C&C LANDFILL

b. Phone No.: 269-781-9742

c. Physical Address: 14300 P. DRIVE NORTH

MARSHALL, MI 49068

d. Mailing Address:

e. TICKET No.: 223825

I hereby certify that the material described above has been accepted for disposal at this facility.

f. Amy Seattle — Authorized Agent Name

Signature

Shipment Date: 12/03/12

White - Disposal Facility Yellow - Transporter Copy Pink - Generator 2nd Copy Gold - Generator 1st Copy

MANIFEST NUMBER
706136

NON-HAZARDOUS SPECIAL WASTE MANIFEST

Directions: Print or type all information except where signature is required.
Make sure information is transmitted on all copies.

GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY LTD PTNRSHP
b. Generator Location: T4

c. Address: 601 PRATT AVE.
MARSHALL, MI 49068
d. Address: 8/31/2021

e. Phone No.: [redacted]
f. Phone No.:

g. Waste Common Name: ~~SEE FROM PIPELINE RELEASE~~ ANS Crude Oil Cont. Media & Debris

Color:
Odor:

h. Special Waste Approval Number: ~~5007 II 0000~~ ANS 5007 10 13039 0.77 tn

i. Customer Account Number:
On behalf of Enbridge Energy, Limited Partnership

J. Containers No.	Type	K. Total Quantity	L. Unit Wt/Vol
01	OT	05	Y

TYPE	
DM	METAL DRUM
DP	PLASTIC DRUM
DF	FIBER DRUM
BG	BAG
TR	TRUCK
OT	OTHER

UNITS	
P	POUNDS
Y	CUBIC YARDS
T	TONS
O	OTHER

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Alison Schaff — Generator Authorized Agent Name
Signature
12/3/12 — Shipment Date

TRANSPORTER INFORMATION

TRANSPORTER 1

a. Name: Valley City Environ. Service
b. Address: 12250 Quality Way
Portage MI 49024
c. Driver Name: Arnulfo Perez
d. Phone N[redacted] e. Truck No.: 92
f. Vehicle License No./State: AMC4456B MI
Acknowledgement of Receipt of Materials Described Above.
g. Driver Signature — Shipment Date: 12/3/12

TRANSPORTER 2

h. Name:
i. Address:
j. Driver Name:
k. Phone No.: l. Truck No.:
m. Vehicle License No./State:
Acknowledgement of Receipt of Materials Described Above.
n. Driver Signature — Shipment Date:

DISPOSAL FACILITY INFORMATION

a. Site Name: C&C LANDFILL
b. Phone No.: 269-781-9742
c. Physical Address: 14900 P. DRIVE NORTH
MARSHALL, MI 49068
d. Mailing Address:

e. TICKET No.: 223825

I hereby certify that the material described above has been accepted for disposal at this facility.

f. Authorized Agent Name — Signature — Shipment Date: 12/3/12

White - Disposal Facility Yellow - Transporter Copy Pink - Generator 2nd Copy Gold - Generator 1st Copy

00012715

C&C LANDFILL
14800 F DRIVE NORTH
MARSHALL MI
49068
000728
SET ENVIRONMENTAL INC
450 SUMAC ROAD
WHEELING, IL 60090

Contract: 500710130

SITE 16	TICKET 2238825	GRID
AMY B	WEIGHMASTER	
DATE IN 5 December 2012		TIME IN 8:47 am
DATE OUT 5 December 2012		TIME OUT 8:47 am
VEHICLE 9HL927250		ROLL OFF
REFERENCE 706136	ORIGIN CALHOUN	

Gross Weight 35,420.00 lb
Stored Tare Weight 33,880.00 lb Inbound - TICKET
Net Weight 1,540.00 lb 0.77 TN

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
0.77	TN	SW-CONT SOIL				
		Manifest:				

THANK YOU ! HAVE A GREAT DAY !
****** HOURS ******
MONDAY THRU FRIDAY 7 TO 4:30
SATURDAY 7:00 TO NOON

NET AMOUNT
TENDERED
CHANGE
CHECK NO.

REPUBLIC SERVICES, INC.

SIGNATURE

REV 06/12

RS-F04

MANIFEST NUMBER
706135

NON-HAZARDOUS SPECIAL WASTE MANIFEST

Directions: Print or type all information except where signature is required.
Make sure information is transmitted on all copies.

GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY LTD PTNRS L.P. b. Generator Location: E4

c. Address: 1601 PRATT AVE. d. Address: Box # 2012

MARSHALL, MI 49068

e. Phone No.: [redacted] f. Phone No.:

g. Waste Common Name: ~~SOIL FROM PIPELINE RELEASE~~ ANS Crude Oil Cut Media + Debris

Color: Odor:

h. Special Waste Approval Number: ~~EGLE 11 0000~~ ANS 5007 10 13039 0.86 tn

i. Customer Account Number:

J. Containers No.	J. Containers Type	K. Total Quantity	L. Unit Wt/Vol
01	BT	25	Y

On behalf of Enbridge Energy, Limited Partnership

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Alison Schoeff — Generator Authorized Agent Name; Signature; Shipment Date 11/26/12

TYPE	
DM	METAL DRUM
DP	PLASTIC DRUM
DF	FIBER DRUM
BG	BAG
TR	TRUCK
OT	OTHER

UNITS	
P	POUNDS
Y	CUBIC YARDS
T	TONS
O	OTHER

TRANSPORTER INFORMATION

TRANSPORTER 1

a. Name: Valley City Environmental Serv.

b. Address: 6850 Quality Way

Portage Mi. 49024

c. Driver Name: Arnulfo Perez

d. Phone No: [redacted] e. Truck No.: 92

f. Vehicle License No./State: AC44568 Mi.

Acknowledgement of Receipt of Materials Described Above.

g. Driver Signature; Shipment Date 11/26/12

TRANSPORTER 2

h. Name:

i. Address:

j. Driver Name:

k. Phone No.: l. Truck No.:

m. Vehicle License No./State:

Acknowledgement of Receipt of Materials Described Above.

n. Driver Signature; Shipment Date

DISPOSAL FACILITY INFORMATION

a. Site Name: C&C LANDFILL b. Phone No.: 269-781-9742

c. Physical Address: 14800 P. DRIVE NORTH d. Mailing Address:

MARSHALL, MI 49068

e. TICKET No.: 223012

I hereby certify that the material described above has been accepted for disposal at this facility.

f. Amy Beattie — Authorized Agent Name; Signature; Shipment Date 11/26/12

White - Disposal Facility Yellow - Transporter Copy Pink - Generator 2nd Copy Gold - Generator 1st Copy

MANIFEST NUMBER
706135

NON-HAZARDOUS SPECIAL WASTE MANIFEST

Directions: Print or type all information except where signature is required.
Make sure information is transmitted on all copies.

GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY LTD PTNRSHIP

b. Generator Location: E4

c. Address: 1601 PRATT AVE.

MARSHALL, MI 49068

d. Address: Box # 2017

e. Phone No.: [redacted]

f. Phone No.:

g. Waste Common Name: ~~SOIL FROM PIPELINE RELEASE~~ Crude Oil Cut Metal + Doors

Color:

Odor:

h. Special Waste Approval Number: ~~EGLE 11 0208~~ 5007 10 13039 0.86 tn

i. Customer Account Number:

On behalf of Enbridge Energy, Limited Partnership

J. Containers No.	Type	K. Total Quantity	L. Unit Wt/Vol
01	6T	25	Y

TYPE		
DM	-	METAL DRUM
DP	-	PLASTIC DRUM
DF	-	FIBER DRUM
BG	-	BAG
TR	-	TRUCK
OT	-	OTHER
UNITS		
P	-	POUNDS
Y	-	CUBIC YARDS
T	-	TONS
O	-	OTHER

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Alison Shoaff — Generator Authorized Agent Name

Signature

11/26/12 — Shipment Date

TRANSPORTER INFORMATION

TRANSPORTER 1

a. Name: Valley City Environmental Svc.

b. Address: 6550 Quality Way

Portage MI. 49024

c. Driver Name: Arnulfo Perez

d. Phone No: [redacted] e. Truck No.: 92

f. Vehicle License No./State: AC44568 MI.

Acknowledgement of Receipt of Materials Described Above.

g. Driver Signature — Shipment Date: 11/26/12

TRANSPORTER 2

h. Name:

i. Address:

j. Driver Name:

k. Phone No.: l. Truck No.:

m. Vehicle License No./State:

Acknowledgement of Receipt of Materials Described Above.

n. Driver Signature — Shipment Date

DISPOSAL FACILITY INFORMATION

a. Site Name: C&C LANDFILL

b. Phone No.: 269-781-9742

c. Physical Address: 14300 P. DRIVE NORTH

MARSHALL, MI 49068

d. Mailing Address:

e. TICKET No.: 223012

I hereby certify that the material described above has been accepted for disposal at this facility.

f. Amy Beattie — Authorized Agent Name

Signature

11/26/12 — Shipment Date

White - Disposal Facility Yellow - Transporter Copy Pink - Generator 2nd Copy Gold - Generator 1st Copy

00011878

C&C LANDFILL
14800 F DRIVE NORTH
MARSHALL MI
49068
000728
SET ENVIRONMENTAL INC
450 SUMAC ROAD
WHEELING, IL 60090

Contract: 50071013039

SITE 16	TICKET 223012	GRID
AMY B	WEIGHMASTER	
DATE IN 28 November 2012		TIME IN 9:22 am
DATE OUT 28 November 2012		TIME OUT 9:22 am
VEHICLE VAL92T250		ROLL OFF
REFERENCE 706135	ORIGIN CALHOUN	

Gross Weight 35,600.00 lb
Stored Tare Weight 33,880.00 lb Inbound - TICKET
Net Weight 1,720.00 lb 0.86 TN

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
0.86	TN	SW-CONT SOIL				
		Manifest:				

THANK YOU ! HAVE A GREAT DAY !
****** HOURS ******
MONDAY THRU FRIDAY 7 TO 4:30
SATURDAY 7:00 TO NOON

NET AMOUNT
TENDERED
CHANGE
CHECK NO.

REPUBLIC SERVICES, INC.

REV 06/12

SIGNATURE _____

RS-F04

MANIFEST NUMBER
697179

NON-HAZARDOUS SPECIAL WASTE MANIFEST

Directions: Print or type all information except where signature is required.
Make sure information is transmitted on all copies.

GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY COMPAN
b. Generator Location: FTC
c. Address: 1601 PRATT AVE.
MARSHALL, MI 49068
d. Address: BOX #: 2053
e. Phone No.: [redacted]
f. Phone No.: LOC:
g. Waste Common Name: ~~SOIL FROM PIPELINE RELEASE~~ MSW
Color:
Odor:
h. Special Waste Approval Number: ~~5007 10T 3039~~ ~~5007 11 0000~~ PO# 216908
0.83T
i. Customer Account Number:

J. Containers No.	Type	K. Total Quantity	L. Unit Wt/Vol
01	OT	25	Y

On behalf of Enbridge Energy, Limited Partnership

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Alisa Schoeff — Generator Authorized Agent Name
Signature
12/06/12 — Shipment Date

TYPE	
DM	METAL DRUM
DP	PLASTIC DRUM
DF	FIBER DRUM
BG	BAG
TR	TRUCK
OT	OTHER

UNITS	
P	POUNDS
Y	CUBIC YARDS
T	TONS
O	OTHER

TRANSPORTER INFORMATION

TRANSPORTER 1

a. Name: Valley City Environmental Serv.
b. Address: 6850 Quality Way
Portage MI. 49024
c. Driver Name: Arnulfo Perez
d. Phone No [redacted]
e. Truck No.: 92
f. Vehicle License No./State: AC44568 MI
Acknowledgement of Receipt of Materials Described Above.
g. Arnulfo Perez — Driver Signature
12/06/12 — Shipment Date

TRANSPORTER 2

h. Name:
i. Address:
j. Driver Name:
k. Phone No.:
l. Truck No.:
m. Vehicle License No./State:
Acknowledgement of Receipt of Materials Described Above.
n. Driver Signature
Shipment Date

DISPOSAL FACILITY INFORMATION

a. Site Name: C&C LANDFILL
b. Phone No.: 269-781-9742
c. Physical Address: 14300 P. DRIVE NORTH
MARSHALL, MI 49068
d. Mailing Address:
e. TICKET No.: 224357

I hereby certify that the material described above has been accepted for disposal at this facility.

f. Authorized Agent Name
Signature
12/06/12 — Shipment Date

White - Disposal Facility Yellow - Transporter Copy Pink - Generator 2nd Copy Gold - Generator 1st Copy

MANIFEST NUMBER
697179

NON-HAZARDOUS SPECIAL WASTE MANIFEST

Directions: Print or type all information except where signature is required.
Make sure information is transmitted on all copies.

GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY COMPANY

b. Generator Location: FTC

c. Address: 601 PRATT AVE.

MARSHALL, MI 49068

d. Address: BOX # 2053

e. Phone No.: [redacted]

f. Phone No.: LOC

g. Waste Common Name: SOIL FROM PIPELINE RELEASE MSW

Color: _____ Odor: _____

h. Special Waste Approval Number: 5007101303 9 ~~5007110266~~ PO# 2[illegible]08

0.43 T

i. Customer Account Number: _____

On behalf of Enbridge Energy, Limited Partnership

J. Containers No.	J. Containers Type	K. Total Quantity	L. Unit Wt/Vol
01	OT	25	Y

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Alison Scholl _____ _____ 12/06/17

Generator Authorized Agent Name | Signature | Shipment Date

TYPE		
DM	-	METAL DRUM
DP	-	PLASTIC DRUM
DF	-	FIBER DRUM
BG	-	BAG
TR	-	TRUCK
OT	-	OTHER
UNITS		
P	-	POUNDS
Y	-	CUBIC YARDS
T	-	TONS
O	-	OTHER

TRANSPORTER INFORMATION

TRANSPORTER 1

a. Name: Valley City Environmental Services

b. Address: 6550 Quality Way

Portage MI 49024

c. Driver Name: Arnulfo Perez

d. Phone No [redacted] e. Truck No.: 92

f. Vehicle License No./State: MC14568 MI

Acknowledgement of Receipt of Materials Described Above.

g. _____ 12/06/17

Driver Signature | Shipment Date

TRANSPORTER 2

h. Name: _____

i. Address: _____

j. Driver Name: _____

k. Phone No.: _____ l. Truck No.: _____

m. Vehicle License No./State: _____

Acknowledgement of Receipt of Materials Described Above.

n. _____

Driver Signature | Shipment Date

DISPOSAL FACILITY INFORMATION

a. Site Name: C&C LANDFILL

b. Phone No.: 269-781-9742

c. Physical Address: 14800 P. DRIVE NORTH

MARSHALL, MI 49068

d. Mailing Address: _____

e. TICKET No.: 224357

I hereby certify that the material described above has been accepted for disposal at this facility.

f. _____ _____ 12/06/17

Authorized Agent Name | Signature | Shipment Date

White - Disposal Facility | Yellow - Transporter Copy | Pink - Generator 2nd Copy | Gold - Generator 1st Copy

00029238

C&C LANDFILL
14800 F DRIVE NORTH
MARSHALL MI
49068
000728
SET ENVIRONMENTAL INC
450 SUMAC ROAD
WHEELING, IL 60090

Contract: 500710130039

SITE	TICKET	GRID
16	524357	

WEIGHMASTER: AMY B

DATE IN	TIME IN
5 December 2012	11:05 am

DATE OUT	TIME OUT
5 December 2012	11:05 am

VEHICLE	ROLL OFF
VAL92T250	

REFERENCE	ORIGIN
572179	CALHOUN

Gross Weight 35,540.00 lb
Stored Tare Weight 33,880.00 lb Inbound - TICKET
Net Weight 1,660.00 lb 0.83 TN

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
0.83	TN	SW-CONT SOIL				
		Manifest:				

NET AMOUNT
TENDERED
CHANGE
CHECK NO.

THANK YOU ! HAVE A GREAT DAY !

****** HOURS ******

MONDAY THRU FRIDAY 7 TO 4:30
SATURDAY 7:00 TO NOON

REPUBLIC SERVICES, INC.

SIGNATURE _____

REV 06/12

RS-F04

MANIFEST NUMBER
697034

NON-HAZARDOUS SPECIAL WASTE MANIFEST

Directions: Print or type all information except where signature is required.
Make sure information is transmitted on all copies.

GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY COMPANY
b. Generator Location: LOC 4

c. Address: 1601 PRATT AVE.
MARSHALL, MI 49068

d. Address: BOX # 2045

e. Phone No.: [redacted]

f. Phone No.: LOC#

g. Waste Common Name: ANS ~~SOIL FROM PIPELINE RELEASE~~ Crude Oil Cont Media + Debris/Vegetation

Color:

Odor: 3.13 TN

h. Special Waste Approval Number: ANS ~~500711 0000~~ ANS ~~ROW 21 0308~~ 500710 13039

i. Customer Account Number:
On behalf of Enbridge Energy, Limited Partnership

J. Containers No.	J. Containers Type	K. Total Quantity	L. Unit Wt/Vol
01	CT	25	Y

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Alison Schoell — Generator Authorized Agent Name
Signature
9/18/12 — Shipment Date

TYPE		
DM	-	METAL DRUM
DP	-	PLASTIC DRUM
DF	-	FIBER DRUM
BG	-	BAG
TR	-	TRUCK
OT	-	OTHER

UNITS		
P	-	POUNDS
Y	-	CUBIC YARDS
T	-	TONS
O	-	OTHER

TRANSPORTER INFORMATION

TRANSPORTER 1

a. Name: Valley City Environmental Service
b. Address: 6330 Quality Way
Portage MI 49024
c. Driver Name: Raul C Perez
d. Phone N[redacted] e. Truck No.: 92
f. Vehicle License No./State: MC 44568 MI
Acknowledgement of Receipt of Materials Described Above.
g. Driver Signature
9/18/12 — Shipment Date

TRANSPORTER 2

h. Name:
i. Address:
j. Driver Name:
k. Phone No.: l. Truck No.:
m. Vehicle License No./State:
Acknowledgement of Receipt of Materials Described Above.
n. Driver Signature
Shipment Date

DISPOSAL FACILITY INFORMATION

a. Site Name: C&C LANDFILL
b. Phone No.: 269-781-9742
c. Physical Address: 14300 P. DRIVE NORTH
MARSHALL, MI 49068
d. Mailing Address:
e. TICKET No.: 225535

I hereby certify that the material described above has been accepted for disposal at this facility.

f. DEB BOUGHTON — Authorized Agent Name
Signature
9/18/12 — Shipment Date

White - Disposal Facility | Yellow - Transporter Copy | Pink - Generator 2nd Copy | Gold - Generator 1st Copy

MANIFEST NUMBER
697034

NON-HAZARDOUS SPECIAL WASTE MANIFEST

Directions: Print or type all information except where signature is required.
Make sure information is transmitted on all copies.

GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY COMPANY b. Generator Location: [illegible] 4

c. Address: 1601 PRATT AVE. d. Address:

MARSHALL, MI 49068 BOX [illegible] 2045

e. Phone No.: [redacted] f. Phone No.: LOC:

g. Waste Common Name: ~~SOIL FROM PIPELINE RELEASE~~ ANS Crude Oil Contaminated Soil Debris/Vegetation

Color: Odor: 3.13 TN

h. Special Waste Approval Number: ~~EGLE 11 4806~~ ANS ~~EGLE 21-008~~ 500710 13039

i. Customer Account Number:

On behalf of Enbridge Energy, Limited Partnership

J. Containers No.	Type	K. Total Quantity	L. Unit Wt/Vol
01	7	25	Y

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Alison Schoeff — Generator Authorized Agent Name

Signature

Shipment Date: 12/15/12

TYPE	
DM	METAL DRUM
DP	PLASTIC DRUM
DF	FIBER DRUM
BG	BAG
TR	TRUCK
OT	OTHER

UNITS	
P	POUNDS
Y	CUBIC YARDS
T	TONS
O	OTHER

TRANSPORTER INFORMATION

TRANSPORTER 1

a. Name: Viking Environmental Service

b. Address: 6350 Quality Way

Portage MI 49024

c. Driver Name: [illegible]

d. Phone No: [redacted] e. Truck No.: 42

f. Vehicle License No./State: MC 49568 MI

Acknowledgement of Receipt of Materials Described Above.

g. [signature] — Driver Signature

Shipment Date: 12/18/12

TRANSPORTER 2

h. Name:

i. Address:

j. Driver Name:

k. Phone No.: l. Truck No.:

m. Vehicle License No./State:

Acknowledgement of Receipt of Materials Described Above.

n. Driver Signature

Shipment Date:

DISPOSAL FACILITY INFORMATION

a. Site Name: C&C LANDFILL b. Phone No.: 269-781-9742

c. Physical Address: 14300 P. DRIVE NORTH

MARSHALL, MI 49068

d. Mailing Address:

e. TICKET No.: 225535

I hereby certify that the material described above has been accepted for disposal at this facility.

f. DEB BOULTON — Authorized Agent Name

Signature

Shipment Date: 12/18/12

White - Disposal Facility Yellow - Transporter Copy Pink - Generator 2nd Copy Gold - Generator 1st Copy

00017422

C&C LANDFILL
14800 F DRIVE NORTH
MARSHALL MI
49068
000728
SET ENVIRONMENTAL INC
450 SUMAC ROAD
WHEELING, IL 60090

Contract: 50071013039

SITE 4	TICKET [illegible]	GRID
DB000008 DEBORAH D WEIGHMASTER		
DATE IN 10 December 2012		TIME IN 8:16 am
DATE OUT 10 December 2012		TIME OUT 8:16 am
VEHICLE VAL92T280		ROLL OFF
REFERENCE 697034	ORIGIN CALHOUN	

00 Gross Weight 40,140.00 lb
Stored Tare Weight 33,880.00 lb Inbound - TICKET
Net Weight 6,260.00 lb 3.13 TN

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
3.13	TN	SW-CONT SOIL				

Manifest:

THANK YOU ! HAVE A GREAT DAY !
HOURS
MONDAY THRU FRIDAY 7 TO 4:30
SATURDAY 7:00 TO NOON

NET AMOUNT
TENDERED
CHANGE
CHECK NO.

REPUBLIC SERVICES, INC.

SIGNATURE _____

REV 06/12

RS-F04