Tier III Data Validation Report Summary

Client: Chevron Environmental Management Company	Laboratory: Air Toxics Limited (LTD)
Project Name: Risk Assessment/Hooven Vapor Investigation	Sample Matrix: Vapor
Project Number: 500-016-012	Sample Start Date: September 30, 2009
Date Validated: November 2, 2009	Sample End Date: October 1, 2009
Parameters: Volatile Organic Compounds (VOCs) by Modified Method TO-15, and Fixed Gases with Helium by Modified American Society for Testing of Materials (ASTM) D-1946	
Laboratory Project IDs: 0910189A (TO-15), 0910189B (TO-15), 0910189C (ASTM D-1946), and 0910189D (ASTM D1946)	
Data Validator: Justin Hildenbrand, Environmental Chemist	

DATA EVALUATION CRITERIA SUMMARY

A Tier III Data Validation was performed by Trihydro Corporation's Chemical Data Evaluation Services group on the analytical data report package generated by Air Toxics LTD evaluating samples from the Chevron Site located in Cincinnati, Ohio.

Precision, accuracy, method compliance, and completeness of this data package were assessed during this data review. Precision was determined by evaluating the calculated relative percent difference (RPD) values of samples from field duplicate pairs and laboratory duplicate pairs. Laboratory accuracy was established by reviewing the demonstrated percent recovery of laboratory control samples (LCS) to verify that none of the data were biased. Additionally, field accuracy was established by collecting trip blanks to monitor for possible ambient or cross contamination during sampling. Method compliance was established by reviewing holding times, detection limits, surrogate recoveries, method blanks, and LCS percent recoveries against method specific requirements. Completeness was evaluated by determining the overall ratio of the number of samples planned versus the number of samples with valid analyses. Determination of completeness included a review of the chain-of-custody, laboratory analytical methods, and all other necessary documents associated with this analytical data set.

Data were evaluated in general accordance with validation criteria set forth in the United States Environmental Protection Agency (USEPA) Contract Laboratory Program (CLP) National Functional Guidelines for Superfund Organic Methods Data Review, document number USEPA-540-R-08-01, June 2008, with additional reference to USEPA CLP National Functional Guidelines for Organic Data Review, document number EPA 540/R-99-008 of October 1999 and the USEPA CLP National Functional Guidelines (NFG) for Inorganic Data Review, document number EPA 540R-04-004, October 2004. Review of duplicates is conducted in accordance with USEPA Region 1 Laboratory Data Validation Functional Guidelines for Evaluation of Organic Analysis, December 1996 or as specified by the method. In addition to the above mentioned guidance documents, the USEPA Hazardous Waste Support Branch Validating Air Samples Volatile Organic Analysis of Ambient Air in Canister by Method TO-15, SOP # HW-31, October 2006, document and the applicable methods were used for verification of the data.

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SAMPLE NUMBERS TABLE

Client Sample ID	Sample Number Method TO-15	Sample Number Method ASTM D-1946
VW-93(45),093009	0910189A-01A	0910189C-01A
VW-93(35),093009	0910189A-02A	0910189C-02A
VW-93(30),093009	0910189A-03A	0910189C-03A
VW-93(25),093009	0910189A-04A	0910189C-04A
VW-93(20),093009	0910189A-05A	0910189C-05A
VW-93(15),093009	0910189A-06A	0910189C-06A
VW-93(10),093009	0910189A-07A	0910189C-07A
VW-93(40),093009	0910189A-08A	0910189C-08A
VW-128(5),100109	0910189A-09A	0910189C-09A
VW-128(5),100109 Lab Duplicate	0910189A-09AA	Not Applicable
VW-128(10),100109	0910189A-10A	0910189C-10A
VW-128(10),100109 Lab Duplicate	Not Applicable	0910189C-10AA
TB-1,093009	0910189B-11A	0910189D-11A
VW-139(10),093009	0910189B-12A	0910189D-12A
VW-139(15),093009	0910189B-13A	0910189D-13A
VW-139(20),093009	0910189B-14A	0910189D-14A
BD1,093009	0910189B-15A	0910189D-15A
VW-139(30),093009	0910189B-16A	0910189D-16A
VW-139(40),093009	0910189B-17A	0910189D-17A
VW-93(60),093009	0910189B-18A	0910189D-18A
VW-93(50),093009	0910189B-19A	0910189D-19A
VW-93(55),093009	0910189B-20A	0910189D-20A
VW-93(55),093009 Lab Duplicate	0910189B-20AA	Not Applicable
BD2,093009	0910189B-21A	0910189D-21A
BD2,093009 Lab Duplicate	Not Applicable	0910189D-21AA

Tier III Data Validation Report Summary

The samples were analyzed for client-specified analytes. The samples were shipped to Air Toxics LTD under chain-of-custody (COC) documents included for work order 0910189. The laboratory data were reviewed to evaluate compliance with the required methods and the quality of the reported data. A leading check mark (✓) indicates that the referenced data was deemed acceptable. A preceding crossed circle (⊗) signifies problems with the referenced data that may have warranted attaching qualifiers to the data.

- ✓ Data Completeness
- ✓ COC Documentation
- ✓ Holding Times and Preservation
- ✓ Laboratory Blanks
- ⊗ Initial and Continued Calibrations
- ✓ Instrument Calibrations
- ✓ System Monitoring Compounds (i.e. Surrogates)
- ⊗ Laboratory Control Samples (LCS)
- ⊗ Field Duplicates
- ✓ Laboratory Duplicate
- ✓ Trip Blank

OVERALL DATA PACKAGE ASSESSMENT

Based on a data validation review, the data are acceptable as delivered. Air Toxics LTD did not qualify any data for these data sets. The laboratory assigned data qualifier was reviewed and found to be valid and correct. The purpose of validating data and assigning qualifiers is to assist in proper data interpretation. Data which are not qualified meet the site data quality objectives. If values are assigned qualifiers other than an "R", the data may be used for site evaluation, with the reasons for qualification being given consideration when interpreting sample concentrations. Data points which are assigned an "R" qualifier should not be used for any site evaluation purposes. A total of 192 additional data points were qualified with J or UJ data flags as a result of this data validation review. Some of the qualified data points are useful only for qualitative purposes with the professional judgment of the project manager and associated technical staff. Data were qualified due to high field duplicate RPD values, TO-15 calibration data outside of acceptable limits, and low LCS recoveries in the TO-15 analyses.

Data qualifiers used during this validation included:

J – Estimated concentration

UJ – Estimated reporting limit

Data Completeness

All analyses were performed as requested on the chain-of-custody records. All samples were received by the laboratory and analyzed properly. Excluding the trip blank sample, the complete data package consisted of 1520 data points, total. No data points were rejected. The data completeness measure for this data package is 100% and is acceptable.

TABLE 1. GENERAL VALIDATION CRITERIA CHECKLIST

1. Was the report free of non-conformances related to the analytical data identified by the laboratory? No

Comments: The laboratory listed the following non-conformances related to the analytical data.

Modified Method TO-15

Data sets 0910189A and 0910189B: The Chain of Custody (COC) information for sample VW-93(20),093009 did not match the information on the canister with regard to canister identification. The client was notified of the discrepancy and the information on the canister was used to process and report the sample.

The reported CCV for each daily batch may be derived from more than one analytical file due to the client's request for non-standard compounds.

Non-standard compounds may have different acceptance criteria than the standard TO-14A/TO-15 compound list as per contract or verbal agreement.

Data set 0910189A: All Quality Control Limit failures and affected sample results are noted by flags. Each flag is defined at the bottom of this Case Narrative and on each Sample Result Summary page. Target compound non-detects in the samples that are associated with high bias in QC analyses have not been flagged.

The laboratory noted the following for the initial calibrations.

Data Set 09010189:

A 7 point initial calibration was analyzed on MSD-Y on 10/01/2009.

The following compounds used 0.3 ppbv as the lowest calibration concentration:

1. 1,3-Butadiene
2. Chloroform
3. Benzene
4. Styrene
5. 1,2-Dibromoethane
6. Cumene
7. 1,3,5-Trimethylbenzene
8. 1,2,4-Trimethylbenzene
9. Methyl tert-Butyl Ether
10. 1,2-Dichlorobenzene
11. 1,4-Dichlorobenzene

A 7 point initial calibration was analyzed on MSD-X on 8/21/2009.

The following compounds used 0.3ppbv as the lowest calibration concentration:

1. 1,3-Butadiene
2. Chloroform
3. 1,2-Dibromoethane
4. Styrene
5. Cumene
6. 1,3,5-Trimethylbenzene
7. 1,2,4-Trimethylbenzene
8. Benzene

A three-pt [point calibration] curve for Methanol was performed at 45, 600, and 1200ppbv on 8/24/2009.
A three-pt [point calibration] curve for Aerojet was performed at 2, 50, and 200ppbv on 9/17/2009 (no Butyl benzene).
A three-pt [point calibration] curve for 2-Methylnaphthalene was performed at 10, 25, and 50ppbv on 9/18/2009.
A five-pt [point calibration] curve for Butyl benzene was performed at 2, 25, 50, 100, and 200 ppbv on 9/18/2009.
A three-pt [point calibration] curve for Methanol was performed at 45, 187.5, and 600ppbv on 10/5/2009.
A three-pt [point calibration] curve for Ethyl Acetate was performed at 2, 50, and 200ppbv on 10/14/2009.
A three-pt [point calibration] curve for Octane was performed at 2, 50, and 200ppbv on 10/15/2009.
A four-pt [point calibration] curve for Acrolein was performed at 2, 10, 25, and 50ppbv on 10/15/2009.
A four-pt [point calibration] curve for AT Special was performed at 2, 5, 50, and 200ppbv on 10/15/2009.

Data Set 09010189B: A 7 point initial calibration was analyzed on MSD-D on 10/7/2009.

The following compounds used 0.3 as the lowest calibration concentration: 1.3-Butadiene, Chloroform, Benzene, 1,2-Dibromoethane, Styrene, Cumene, 1,3,5-Trimethylbenzene and 1,2,4-Trimethylbenzene

A 3pt [three-point calibration] for Aerojet was performed at 2, 50, and 200 ppbv on 10/16/2009

TABLE 1. GENERAL VALIDATION CRITERIA CHECKLIST	
A seven-point initial calibration was analyzed on 08/30/2009 on MSD-B. Benzene used 3.0 ppbv as the lowest calibration concentration Top of the curve for Ethyl Acetate is 200ppbv. Top of the curve for Naphthalene is 2500ppbv. Top of the curve for all other compounds is 1000ppbv. On 09/04/09, [a] three point calibration of Methanol was included in the calibration curve. The resulting response factors are updated in calibration b0950830b.m. On 09/15/09, [a] three point calibrations Acteonitrile, Acrylonitrile, and Ethyl Acetate and seven point calibration of Naphthalene were included in the calibration curve. The resulting response factors are updated in calibration b0950830c.m. On 10/1/09, [a] three point calibration of Isobutylene was included in the calibration curve. The resulting response factors are updated in calibration b0950830c.m. <u>Modified Method ASTM D-1946</u> On the analytical column employed for this analysis, Oxygen coelutes with Argon. The corresponding peak is quantitated as Oxygen. Since Nitrogen is used to pressurize samples, the reported Nitrogen values are calculated by adding all the sample components and subtracting from 100%. Data set 0910189D: The trip blank, sample TB-1,093009, has a reportable level of Oxygen present. Reanalysis confirmed the initial results. The laboratory noted the following for the initial calibrations. Data Set 09010189C and 09010189D: A 7 point initial calibration was analyzed on GC-9 on 04/29/2009. As noted on the accompanying analytical run log, calibration level 6 was reanalyzed due to an unacceptable linearity for compound Butane.	
2. Were data qualification flags used by the laboratory? If yes, define.	Yes
Comments: The following data qualifier flag was used by the laboratory. J – Estimated value UJ -- Non-detected compound associated with low bias in the CCV Q - Exceeds quality control limits	
3. Were sample COC forms complete?	No
Comments: The COC records from field to laboratory were complete, and custody was maintained as evidenced by field and laboratory personnel signatures, dates, and times of receipt, with one exception noted below. The laboratory noted that the COC information for sample VW-93(20),093009 for data set 0910189A did not match the information on the canister with regard to the canister identification number. The project team was notified of the discrepancy and the information on the canister was used to process and report the sample. No further action was necessary as sample identification and the time and date of sampling were properly recorded on both the COC and the sample label, and therefore the sample was clearly identified.	
4. Were detection limits in accordance with the quality assurance project plan (QAPP), permit, or method, or indicated as acceptable by the Tier I validator?	Yes
Comments: Detection limits were reviewed and determined to be acceptable. For Method TO-15, the laboratory reported required dilutions between 2.13 and 632 times. For Method ASTM D-1946, the laboratory reported required dilutions between 2.13 to 4.38 times.	
5. Were the requested analytical methods in compliance with the QAPP, permit, or COC?	Yes
Comments: The requested analytical methods were performed in accordance with the chain-of-custody forms.	

TABLE 1. GENERAL VALIDATION CRITERIA CHECKLIST	
6. Were samples received in good condition within method specified requirements?	Yes
Comments: Samples were received intact and in good condition. The final vacuums from the field and receipt vacuums measured by the laboratory were compared and the vacuums appeared to be acceptable, with pressure/vacuum changes from the field to the laboratory less than five inches of mercury for each sample. The canisters used for sampling were 100% certified by the laboratory. The canister certification results were reviewed and found to be acceptable. The laboratory and field helium results were compared to evaluate the possible intrusion of ambient air into the sample canisters. The differences between the results were determined to be within acceptable limits. In addition, oxygen results were evaluated to determine acceptability of the data. For each sample, oxygen results were below 21% and were acceptable.	
7. Were samples analyzed within method specified or technical holding times?	Yes
Comments: The samples were analyzed within method specified holding times for analysis of Summa canisters and the respective methods.	
8. Were reported units appropriate for the associated sample matrix/matrices and method(s) of analyses?	Yes
Comments: The results for Method TO-15 were reported in units of part per billion by volume (ppbv) and micrograms per cubic meter ($\mu g/m^3$). The results for Method ASTM D-1946 for fixed gases were reported as percentages (%). These units are appropriate for the air matrix and for the methods used.	
9. Do the laboratory reports include all constituents requested to be reported as indicated by the Tier I validator?	Yes
Comments: The requested constituents were reported as requested.	
10. Were the field duplicates collected equal to at least 10% of the total number of samples, or as required by the project guidelines, QAPP, SAP, or permit, or as indicated by the Tier I validator?	Yes
Comments: Two field duplicates were collected for this sampling event, resulting in a collection frequency of 10% of the total number of samples. Sample BD1, 093009 was collected as a duplicate of sample VW-139(40), 093009. Sample BD2, 093009 was collected as a duplicate of sample VW-93(50).	
11. Were field duplicate RPD values within data validation QC limits (soil 0-50%, water 0-30%, or air 0-25%)?	No
Comments: Precision based on field duplicate RPD results was determined to be acceptable with one exception, summarized at the end of this section. Field duplicate RPD values are reported in the Field Duplicate Summary table at the end of this data validation review. Analytes where both the parent and duplicate samples were non-detect are omitted from the Field Duplicate Summary table since precision could not be assessed for these data. If an analyte was detected in one sample but not in the other sample for the duplicate pair, a valid RPD could not be calculated and the RPD was reported as DL. For analytes where both the parent and duplicate results were detected at less than two times the reporting limit, a valid RPD could not be calculated and the result was reported as +/- RL. **For the sample pair BD1, 093009/VW-139(40), 093009, the analyte m,p-xylene demonstrated poor precision and was qualified J for the parent and duplicate sample.** **For the sample pair BD2, 093009/VW-93(50), the analytes toluene, ethyl benzene, m,p-xylene, o-xylene, heptane, propylbenzene, carbon disulfide, 2-hexanone, and butylbenzene demonstrated extremely poor precision and were qualified J for detections and UJ for non-detections for each reported sample based on professional judgment. The analytes benzene, 1,3,5-trimethylbenzene, 1,2,4-trimethylbenzene, cumene, acetone, 4-ethyltoluene, ethanol, and methylcyclohexane also demonstrated poor precision and were qualified J for detections and UJ for non-detections for the parent and duplicate sample only.**	
12. Was the number of equipment, trip, or field blanks collected equal to at least 10% of the total number of samples, or as required by the project guidelines, QAPP, SAP, or permit, or as indicated by the Tier I validator?	No
Comments: One trip blank, TB-1, was collected and submitted with the samples reported in these laboratory reports, resulting in a collection frequency of less than 10% of the total number of samples. Equipment and field blanks were not collected with the reported samples.	

TABLE 1. GENERAL VALIDATION CRITERIA CHECKLIST	
13. Were the trip blank, field blank, and/or equipment blank samples free of analyte contamination?	No

Comments: Oxygen was reported in the trip blank at 0.14%. The presence of oxygen in the trip blank indicates that the trip blank canister may have not sealed completely between preparation at the laboratory before sampling and analysis. Similar oxygen results were reported for other trip blank canisters analyzed for this sampling effort. Based on professional judgment, the severity of any potential leakage appeared insufficient to adversely affect the sample data, and no data were qualified based on this occurrence. Since other reported analytes were not detected in the trip blank sample, no further action was necessary.

TABLE 2. VALIDATION CRITERIA CHECKLIST FOR VOC ANALYSES (TO-15 MODIFIED)

1. Were instrument calibrations within method or data validation quality control (QC) limits? — No

Comments: Initial and continuing calibrations results were within acceptable limits, with the following exception.

Data Set 0910189A

In the initial calibration verification (ICV) performed on October 2, 2009, and associated with the initial calibration performed on October 1, 2009, through October 16, 2009, the analyte chloroethane was recovered below the laboratory limits of 70-130% at 65.39%. Associated data were qualified J for detections and UJ for non-detections due to a possible low bias.

In the initial calibration performed on August 21, 2009, through October 15, 2009, the %RSD for sec-butylbenzene was above the data validation limit of 30% at 31.760%. Data reported for sec-butylbenzene were non-detect for the associated samples, and therefore associated results were qualified UJ.

In the continuing calibration verification (CCV) associated with the initial calibration performed on August 21, 2009 through October 15. 2009, and performed on October 17, 2009, at 9:33 AM, the analytes Freon 12 and bromomethane had percent difference values above the method limit of 30% at 31.98% and 40.17%, respectively. No qualification was necessary since samples analyzed using the associated initial calibration was analyzed on October 19, 2009, using a separate CCV for verification.

The CCV performed on October 19, 2009, at 7:09 AM, and associated with the initial calibration performed on August 21, 2009 through October 15. 2009, demonstrated a percent difference value for naphthalene of 34.25%. Associated data were qualified J for detections and UJ for non-detections.

Data Set 0910189B

In the initial calibration performed on August 30, 2009, through October 1, 2009, the %RSD values for the analytes 1,2,4-trichlorobenzene and hexachlorobutadiene were above the data validation limit of 30% at 38.925% and 37.517%, respectively. Data reported for 1,2,4-trichlorobenzene and hexachlorobutadiene were non-detect for the associated samples, and therefore associated results were qualified UJ.

2. Were the instrument tunes within method control limits? — Yes

Comments: Instrument tunes were within method control limits.

3. Were the internal standards within method control limits? — Yes

Comments: Internal standard areas and retention times were within method control limits.

4. Was the total number of laboratory blank samples prepared equal to at least 5% of the total number of samples, or analyzed as required by the method? — Yes

Comments: Laboratory blanks were prepared at a frequency equal to at least 5% of the total number of samples.

5. Were laboratory blank samples free of target analyte contamination? — Yes

Comments: Detections were not reported in the laboratory blanks.

6. Was the total number of LCSs analyzed equal to at least 5% of the total number of samples, or analyzed as required by the method? — Yes

Comments: The LCS samples were analyzed at a frequency equal to at least 5% of the total number of samples.

7. Were LCS/LCSD percent recoveries and LCS/LCSD RPDs within laboratory limits? — No

Comments: The LCS recoveries were within acceptable limits, with the following exceptions.

The LCS recoveries for ethanol, 1,2,4-trichlorobenzene, and/or hexachlorobutadiene for samples associated with data sets 0910189A and 0910189B were outside of the laboratory limits, as noted in the table below.

Data Set	LCS Analysis Date	Analyte	Percent Recovery	Laboratory Recovery Limits
0910189A	10/19/09	Ethanol	57.94%	60-140%
0910189B	10/15/09	Ethanol	51.82%	60-140%
0910189B	10/16/09	Ethanol	52.41%	60-140%
0910189B	10/21/09	1,2,4-Trichlorobenzene	69.89%	70-130%
0910189B	10/21/09	Hexachlorobutadiene	65.35%	70-130%

Associated sample data, as determined from the analytical run log and by analysis dates, were qualified J for

TABLE 2. VALIDATION CRITERIA CHECKLIST FOR VOC ANALYSES (TO-15 MODIFIED)	
detections and UJ for non-detections due to a possible low bias.	
8. Was the total number of MS samples prepared equal to at least 5% of the total number of samples, or analyzed as required by the method?	No
Comments: Matrix spike samples were not prepared and are not required for analysis by Method TO-15 Modified.	
9. Were MS/MSD percent recoveries and MS/MSD RPDs within data validations or laboratory QC limits?	N/A
Comments: Matrix spike samples were not prepared and are not required for analysis by Method TO-15 Modified.	
10. Were surrogate recoveries within laboratory QC limits?	Yes
Comments: Surrogate recoveries were within laboratory QC limits.	
11. Were laboratory duplicate RPD values acceptable?	Yes
Comments: Laboratory duplicates were prepared from samples VW-128(5),100109 and VW-93(55),093009. Laboratory duplicate RPD values were within acceptable QC limits, were not calculated since one or both results were non-detect, or were not valid since the results for one or both samples were within five times the reporting limit.	

TABLE 3. VALIDATION CRITERIA CHECKLIST FOR HELIUM AND FIXED GAS ANALYSES (ASTM D-1946 MODIFIED)	
1. Were instrument calibrations within method or data validation QC limits?	Yes
Comments: The initial and continuing calibration verifications were within acceptable limits.	
2. Were the instrument tunes within method QC limits?	N/A
Comments: Instrument tunes are not required by Method ASTM D-1946 Modified.	
3. Were the internal standards within method QC limits?	N/A
Comments: Internal standards are not required by Method ASTM D-1946 Modified.	
4. Was the total number of laboratory blank samples prepared equal to at least 5% of the total number of samples, or analyzed as required by the method?	Yes
Comments: Laboratory blank samples were prepared at a frequency equal to at least 5% of the total number of samples.	
5. Were laboratory blank samples free of analyte contamination?	Yes
Comments: Detections were not reported in the laboratory blanks. For the method blank analyzed on October 19, 2009, the laboratory qualified the non-detected result for naphthalene UJ as estimated since it was associated with low bias in the CCV.	
6. Was the total number of LCSs analyzed equal to at least 5% of the total number of samples, or analyzed as required by the method?	Yes
Comments: The LCS samples were analyzed at a frequency equal to at least 5% of the total number of samples.	
7. Were LCS/LCSD percent recoveries and LCS/LCSD RPDs within laboratory QC limits?	Yes
Comments: The LCS percent recoveries were within laboratory QC limits.	
8. Was the total number of MS samples prepared equal to at least 5% of the total number of samples, or analyzed as required by the method?	N/A
Comments: Matrix spike samples were not prepared and are not required for analysis by Method ASTM D-1946 Modified.	
9. Were MS/MSD percent recoveries and MS/MSD RPDs within data validation or laboratory QC limits?	N/A
Comments: Matrix spike samples were not prepared and are not required for analysis by Method ASTM D-1946 Modified.	
10. Were surrogate recoveries within laboratory QC limits?	N/A
Comments: Surrogates are not required for analysis by Method ASTM D-1946 Modified.	
12. Were laboratory duplicate RPD values acceptable?	Yes
Comments: Laboratory duplicates were prepared from samples VW-128(10),100109 and BD2,093009. Laboratory duplicate RPD values were within acceptable QC limits.	

TABLE 4. DATA QUALIFICATION, CHEVRON SITE, CINCINNATI, OHIO (0910189A/B/C/D)

Analyte	Client Sample ID	Laboratory Assigned ID	Laboratory Result	Reviewer Qualifier	Reason for Qualification
1,2,4-Trichlorobenzene	BD1,093009	0910189B-15A	ND(93000 ug/m3)	UJ	% RSD above QC limit
1,2,4-Trichlorobenzene	VW-139(40),093009	0910189B-17A	ND(94000 ug/m3)	UJ	% RSD above QC limit
Chloroethane	VW-93(45),093009	0910189A-01A	ND(3.2 ug/m3)	UJ	% RSD above QC limit
Chloroethane	VW-93(35),093009	0910189A-02A	ND(3 ug/m3)	UJ	% RSD above QC limit
Chloroethane	VW-93(30),093009	0910189A-03A	ND(3.2 ug/m3)	UJ	% RSD above QC limit
Chloroethane	VW-93(25),093009	0910189A-04A	ND(3 ug/m3)	UJ	% RSD above QC limit
Chloroethane	VW-93(20),093009	0910189A-05A	ND(3 ug/m3)	UJ	% RSD above QC limit
Chloroethane	VW-93(15),093009	0910189A-06A	ND(2.8 ug/m3)	UJ	% RSD above QC limit
Hexachlorobutadiene	BD1,093009	0910189B-15A	ND(130000 ug/m3)	UJ	% RSD above QC limit
Hexachlorobutadiene	VW-139(40),093009	0910189B-17A	ND(130000 ug/m3)	UJ	% RSD above QC limit
Naphthalene	VW-93(10),093009	0910189A-07A	ND(25 ug/m3)	UJ	% RSD above QC limit
Naphthalene	VW-93(40),093009	0910189A-08A	ND(25 ug/m3)	UJ	% RSD above QC limit
Naphthalene	VW-128(5),100109	0910189A-09A	ND(25 ug/m3)	UJ	% RSD above QC limit
Naphthalene	VW-128(10),100109	0910189A-10A	ND(22 ug/m3)	UJ	% RSD above QC limit
sec-Butylbenzene	VW-93(10),093009	0910189A-07A	ND(26 ug/m3)	UJ	% RSD above QC limit
sec-Butylbenzene	VW-93(40),093009	0910189A-08A	ND(26 ug/m3)	UJ	% RSD above QC limit
sec-Butylbenzene	VW-128(5),100109	0910189A-09A	ND(26 ug/m3)	UJ	% RSD above QC limit
sec-Butylbenzene	VW-128(10),100109	0910189A-10A	ND(23 ug/m3)	UJ	% RSD above QC limit
1,2,4-Trimethylbenzene	VW-93(50),093009	0910189B-19A	65 ug/m3	J	High field duplicate RPD value
1,2,4-Trimethylbenzene	BD2,093009	0910189B-21A	140 ug/m3	J	High field duplicate RPD value
1,3,5-Trimethylbenzene	VW-93(50),093009	0910189B-19A	22 ug/m3	J	High field duplicate RPD value
1,3,5-Trimethylbenzene	BD2,093009	0910189B-21A	62 ug/m3	J	High field duplicate RPD value
2-Hexanone	VW-93(45),093009	0910189A-01A	ND(20 ug/m3)	UJ	High field duplicate RPD value
2-Hexanone	VW-93(35),093009	0910189A-02A	ND(19 ug/m3)	UJ	High field duplicate RPD value
2-Hexanone	VW-93(30),093009	0910189A-03A	ND(20 ug/m3)	UJ	High field duplicate RPD value
2-Hexanone	VW-93(25),093009	0910189A-04A	ND(19 ug/m3)	UJ	High field duplicate RPD value
2-Hexanone	VW-93(20),093009	0910189A-05A	ND(19 ug/m3)	UJ	High field duplicate RPD value
2-Hexanone	VW-93(15),093009	0910189A-06A	ND(18 ug/m3)	UJ	High field duplicate RPD value

Analyte	Client Sample ID	Laboratory Assigned ID	Laboratory Result	Reviewer Qualifier	Reason for Qualification
2-Hexanone	VW-93(10),093009	0910189A-07A	ND(20 ug/m3)	UJ	High field duplicate RPD value
2-Hexanone	VW-93(40),093009	0910189A-08A	ND(19 ug/m3)	UJ	High field duplicate RPD value
2-Hexanone	VW-128(5),100109	0910189A-09A	ND(19 ug/m3)	UJ	High field duplicate RPD value
2-Hexanone	VW-128(10),100109	0910189A-10A	ND(17 ug/m3)	UJ	High field duplicate RPD value
2-Hexanone	TB-1,093009	0910189B-11A	ND(8.2 ug/m3)	UJ	High field duplicate RPD value
2-Hexanone	VW-139(10),093009	0910189B-12A	ND(19 ug/m3)	UJ	High field duplicate RPD value
2-Hexanone	VW-139(15),093009	0910189B-13A	ND(19 ug/m3)	UJ	High field duplicate RPD value
2-Hexanone	VW-139(20),093009	0910189B-14A	ND(18 ug/m3)	UJ	High field duplicate RPD value
2-Hexanone	BD1,093009	0910189B-15A	ND(51000 ug/m3)	UJ	High field duplicate RPD value
2-Hexanone	VW-139(30),093009	0910189B-16A	ND(19 ug/m3)	UJ	High field duplicate RPD value
2-Hexanone	VW-139(40),093009	0910189B-17A	ND(52000 ug/m3)	UJ	High field duplicate RPD value
2-Hexanone	VW-93(60),093009	0910189B-18A	ND(20 ug/m3)	UJ	High field duplicate RPD value
2-Hexanone	VW-93(50),093009	0910189B-19A	ND(20 ug/m3)	UJ	High field duplicate RPD value
2-Hexanone	VW-93(55),093009	0910189B-20A	ND(20 ug/m3)	UJ	High field duplicate RPD value
2-Hexanone	BD2,093009	0910189B-21A	23 ug/m3	J	High field duplicate RPD value
4-Ethyltoluene	VW-93(50),093009	0910189B-19A	52 ug/m3	J	High field duplicate RPD value
4-Ethyltoluene	BD2,093009	0910189B-21A	150 ug/m3	J	High field duplicate RPD value
Acetone	VW-93(50),093009	0910189B-19A	57 ug/m3	J	High field duplicate RPD value
Acetone	BD2,093009	0910189B-21A	34 ug/m3	J	High field duplicate RPD value
Carbon Disulfide	VW-93(45),093009	0910189A-01A	8.1 ug/m3	J	High field duplicate RPD value
Carbon Disulfide	VW-93(35),093009	0910189A-02A	ND(3.6 ug/m3)	UJ	High field duplicate RPD value
Carbon Disulfide	VW-93(30),093009	0910189A-03A	24 ug/m3	J	High field duplicate RPD value
Carbon Disulfide	VW-93(25),093009	0910189A-04A	28 ug/m3	J	High field duplicate RPD value
Carbon Disulfide	VW-93(20),093009	0910189A-05A	ND(3.6 ug/m3)	UJ	High field duplicate RPD value
Carbon Disulfide	VW-93(15),093009	0910189A-06A	ND(3.4 ug/m3)	UJ	High field duplicate RPD value
Carbon Disulfide	VW-93(10),093009	0910189A-07A	ND(3.8 ug/m3)	UJ	High field duplicate RPD value
Carbon Disulfide	VW-93(40),093009	0910189A-08A	10 ug/m3	J	High field duplicate RPD value
Carbon Disulfide	VW-128(5),100109	0910189A-09A	ND(3.7 ug/m3)	UJ	High field duplicate RPD value
Carbon Disulfide	VW-128(10),100109	0910189A-10A	5.5 ug/m3	J	High field duplicate RPD value

Analyte	Client Sample ID	Laboratory Assigned ID	Laboratory Result	Reviewer Qualifier	Reason for Qualification
Carbon Disulfide	TB-1,093009	0910189B-11A	ND(1.6 ug/m3)	UJ	High field duplicate RPD value
Carbon Disulfide	VW-139(10),093009	0910189B-12A	18 ug/m3	J	High field duplicate RPD value
Carbon Disulfide	VW-139(15),093009	0910189B-13A	ND(3.6 ug/m3)	UJ	High field duplicate RPD value
Carbon Disulfide	VW-139(20),093009	0910189B-14A	ND(3.4 ug/m3)	UJ	High field duplicate RPD value
Carbon Disulfide	BD1,093009	0910189B-15A	ND(9700 ug/m3)	UJ	High field duplicate RPD value
Carbon Disulfide	VW-139(30),093009	0910189B-16A	ND(3.6 ug/m3)	UJ	High field duplicate RPD value
Carbon Disulfide	VW-139(40),093009	0910189B-17A	ND(9800 ug/m3)	UJ	High field duplicate RPD value
Carbon Disulfide	VW-93(60),093009	0910189B-18A	47 ug/m3	J	High field duplicate RPD value
Carbon Disulfide	VW-93(50),093009	0910189B-19A	14 ug/m3	J	High field duplicate RPD value
Carbon Disulfide	VW-93(55),093009	0910189B-20A	ND(3.8 ug/m3)	UJ	High field duplicate RPD value
Carbon Disulfide	BD2,093009	0910189B-21A	ND(3.8 ug/m3)	UJ	High field duplicate RPD value
Ethylbenzene	VW-93(45),093009	0910189A-01A	ND(5.2 ug/m3)	UJ	High field duplicate RPD value
Ethylbenzene	VW-93(35),093009	0910189A-02A	ND(5 ug/m3)	UJ	High field duplicate RPD value
Ethylbenzene	VW-93(30),093009	0910189A-03A	ND(5.2 ug/m3)	UJ	High field duplicate RPD value
Ethylbenzene	VW-93(25),093009	0910189A-04A	ND(5 ug/m3)	UJ	High field duplicate RPD value
Ethylbenzene	VW-93(20),093009	0910189A-05A	ND(5 ug/m3)	UJ	High field duplicate RPD value
Ethylbenzene	VW-93(15),093009	0910189A-06A	7.5 ug/m3	J	High field duplicate RPD value
Ethylbenzene	VW-93(10),093009	0910189A-07A	ND(5.2 ug/m3)	UJ	High field duplicate RPD value
Ethylbenzene	VW-93(40),093009	0910189A-08A	ND(5.1 ug/m3)	UJ	High field duplicate RPD value
Ethylbenzene	VW-128(5),100109	0910189A-09A	ND(5.1 ug/m3)	UJ	High field duplicate RPD value
Ethylbenzene	VW-128(10),100109	0910189A-10A	ND(4.6 ug/m3)	UJ	High field duplicate RPD value
Ethylbenzene	TB-1,093009	0910189B-11A	ND(2.2 ug/m3)	UJ	High field duplicate RPD value
Ethylbenzene	VW-139(10),093009	0910189B-12A	ND(5 ug/m3)	UJ	High field duplicate RPD value
Ethylbenzene	VW-139(15),093009	0910189B-13A	ND(4.9 ug/m3)	UJ	High field duplicate RPD value
Ethylbenzene	VW-139(20),093009	0910189B-14A	ND(4.7 ug/m3)	UJ	High field duplicate RPD value
Ethylbenzene	BD1,093009	0910189B-15A	14000 ug/m3	J	High field duplicate RPD value
Ethylbenzene	VW-139(30),093009	0910189B-16A	ND(5 ug/m3)	UJ	High field duplicate RPD value
Ethylbenzene	VW-139(40),093009	0910189B-17A	ND(14000 ug/m3)	UJ	High field duplicate RPD value
Ethylbenzene	VW-93(60),093009	0910189B-18A	ND(5.2 ug/m3)	UJ	High field duplicate RPD value

Analyte	Client Sample ID	Laboratory Assigned ID	Laboratory Result	Reviewer Qualifier	Reason for Qualification
Ethylbenzene	VW-93(50),093009	0910189B-19A	26 ug/m3	J	High field duplicate RPD value
Ethylbenzene	VW-93(55),093009	0910189B-20A	ND(5.3 ug/m3)	UJ	High field duplicate RPD value
Ethylbenzene	BD2,093009	0910189B-21A	120 ug/m3	J	High field duplicate RPD value
Heptane	VW-93(45),093009	0910189A-01A	ND(5 ug/m3)	UJ	High field duplicate RPD value
Heptane	VW-93(35),093009	0910189A-02A	ND(4.7 ug/m3)	UJ	High field duplicate RPD value
Heptane	VW-93(30),093009	0910189A-03A	ND(4.9 ug/m3)	UJ	High field duplicate RPD value
Heptane	VW-93(25),093009	0910189A-04A	ND(4.7 ug/m3)	UJ	High field duplicate RPD value
Heptane	VW-93(20),093009	0910189A-05A	ND(4.7 ug/m3)	UJ	High field duplicate RPD value
Heptane	VW-93(15),093009	0910189A-06A	ND(4.4 ug/m3)	UJ	High field duplicate RPD value
Heptane	VW-93(10),093009	0910189A-07A	ND(4.9 ug/m3)	UJ	High field duplicate RPD value
Heptane	VW-93(40),093009	0910189A-08A	ND(4.8 ug/m3)	UJ	High field duplicate RPD value
Heptane	VW-128(5),100109	0910189A-09A	ND(4.8 ug/m3)	UJ	High field duplicate RPD value
Heptane	VW-128(10),100109	0910189A-10A	ND(4.4 ug/m3)	UJ	High field duplicate RPD value
Heptane	TB-1,093009	0910189B-11A	ND(2 ug/m3)	UJ	High field duplicate RPD value
Heptane	VW-139(10),093009	0910189B-12A	ND(4.7 ug/m3)	UJ	High field duplicate RPD value
Heptane	VW-139(15),093009	0910189B-13A	ND(4.7 ug/m3)	UJ	High field duplicate RPD value
Heptane	VW-139(20),093009	0910189B-14A	ND(4.4 ug/m3)	UJ	High field duplicate RPD value
Heptane	BD1,093009	0910189B-15A	310000 ug/m3	J	High field duplicate RPD value
Heptane	VW-139(30),093009	0910189B-16A	ND(4.7 ug/m3)	UJ	High field duplicate RPD value
Heptane	VW-139(40),093009	0910189B-17A	260000 ug/m3	J	High field duplicate RPD value
Heptane	VW-93(60),093009	0910189B-18A	ND(5 ug/m3)	UJ	High field duplicate RPD value
Heptane	VW-93(50),093009	0910189B-19A	5.2 ug/m3	J	High field duplicate RPD value
Heptane	VW-93(55),093009	0910189B-20A	ND(5 ug/m3)	UJ	High field duplicate RPD value
Heptane	BD2,093009	0910189B-21A	22 ug/m3	J	High field duplicate RPD value
Isopropylbenzene	VW-93(50),093009	0910189B-19A	ND(6 ug/m3)	UJ	High field duplicate RPD value
Isopropylbenzene	BD2,093009	0910189B-21A	14 ug/m3	J	High field duplicate RPD value
m,p-Xylene	VW-93(45),093009	0910189A-01A	ND(5.2 ug/m3)	UJ	High field duplicate RPD value
m,p-Xylene	VW-93(35),093009	0910189A-02A	ND(5 ug/m3)	UJ	High field duplicate RPD value
m,p-Xylene	VW-93(30),093009	0910189A-03A	ND(5.2 ug/m3)	UJ	High field duplicate RPD value

Analyte	Client Sample ID	Laboratory Assigned ID	Laboratory Result	Reviewer Qualifier	Reason for Qualification
m,p-Xylene	VW-93(25),093009	0910189A-04A	ND(5 ug/m3)	UJ	High field duplicate RPD value
m,p-Xylene	VW-93(20),093009	0910189A-05A	ND(5 ug/m3)	UJ	High field duplicate RPD value
m,p-Xylene	VW-93(15),093009	0910189A-06A	25 ug/m3	J	High field duplicate RPD value
m,p-Xylene	VW-93(10),093009	0910189A-07A	ND(5.2 ug/m3)	UJ	High field duplicate RPD value
m,p-Xylene	VW-93(40),093009	0910189A-08A	ND(5.1 ug/m3)	UJ	High field duplicate RPD value
m,p-Xylene	VW-128(5),100109	0910189A-09A	ND(5.1 ug/m3)	UJ	High field duplicate RPD value
m,p-Xylene	VW-128(10),100109	0910189A-10A	ND(4.6 ug/m3)	UJ	High field duplicate RPD value
m,p-Xylene	TB-1,093009	0910189B-11A	ND(2.2 ug/m3)	UJ	High field duplicate RPD value
m,p-Xylene	VW-139(10),093009	0910189B-12A	ND(5 ug/m3)	UJ	High field duplicate RPD value
m,p-Xylene	VW-139(15),093009	0910189B-13A	5 ug/m3	J	High field duplicate RPD value
m,p-Xylene	VW-139(20),093009	0910189B-14A	ND(4.7 ug/m3)	UJ	High field duplicate RPD value
m,p-Xylene	BD1,093009	0910189B-15A	31000 ug/m3	J	High field duplicate RPD value
m,p-Xylene	VW-139(30),093009	0910189B-16A	ND(5 ug/m3)	UJ	High field duplicate RPD value
m,p-Xylene	VW-139(40),093009	0910189B-17A	24000 ug/m3	J	High field duplicate RPD value
m,p-Xylene	VW-93(60),093009	0910189B-18A	ND(5.2 ug/m3)	UJ	High field duplicate RPD value
m,p-Xylene	VW-93(50),093009	0910189B-19A	110 ug/m3	J	High field duplicate RPD value
m,p-Xylene	VW-93(55),093009	0910189B-20A	ND(5.3 ug/m3)	UJ	High field duplicate RPD value
m,p-Xylene	BD2,093009	0910189B-21A	570 ug/m3	J	High field duplicate RPD value
Methyl cyclohexane	VW-93(50),093009	0910189B-19A	ND(20 ug/m3)	UJ	High field duplicate RPD value
Methyl cyclohexane	BD2,093009	0910189B-21A	45 ug/m3	J	High field duplicate RPD value
n-Butylbenzene	VW-93(45),093009	0910189A-01A	ND(26 ug/m3)	UJ	High field duplicate RPD value
n-Butylbenzene	VW-93(35),093009	0910189A-02A	ND(25 ug/m3)	UJ	High field duplicate RPD value
n-Butylbenzene	VW-93(30),093009	0910189A-03A	ND(26 ug/m3)	UJ	High field duplicate RPD value
n-Butylbenzene	VW-93(25),093009	0910189A-04A	ND(25 ug/m3)	UJ	High field duplicate RPD value
n-Butylbenzene	VW-93(20),093009	0910189A-05A	ND(25 ug/m3)	UJ	High field duplicate RPD value
n-Butylbenzene	VW-93(15),093009	0910189A-06A	ND(24 ug/m3)	UJ	High field duplicate RPD value
n-Butylbenzene	VW-93(10),093009	0910189A-07A	ND(26 ug/m3)	UJ	High field duplicate RPD value
n-Butylbenzene	VW-93(40),093009	0910189A-08A	ND(26 ug/m3)	UJ	High field duplicate RPD value
n-Butylbenzene	VW-128(5),100109	0910189A-09A	ND(26 ug/m3)	UJ	High field duplicate RPD value

Analyte	Client Sample ID	Laboratory Assigned ID	Laboratory Result	Reviewer Qualifier	Reason for Qualification
n-Butylbenzene	VW-128(10),100109	0910189A-10A	ND(23 ug/m3)	UJ	High field duplicate RPD value
n-Butylbenzene	TB-1,093009	0910189B-11A	ND(11 ug/m3)	UJ	High field duplicate RPD value
n-Butylbenzene	VW-139(10),093009	0910189B-12A	ND(25 ug/m3)	UJ	High field duplicate RPD value
n-Butylbenzene	VW-139(15),093009	0910189B-13A	ND(25 ug/m3)	UJ	High field duplicate RPD value
n-Butylbenzene	VW-139(20),093009	0910189B-14A	ND(24 ug/m3)	UJ	High field duplicate RPD value
n-Butylbenzene	BD1,093009	0910189B-15A	ND(69000 ug/m3)	UJ	High field duplicate RPD value
n-Butylbenzene	VW-139(30),093009	0910189B-16A	ND(25 ug/m3)	UJ	High field duplicate RPD value
n-Butylbenzene	VW-139(40),093009	0910189B-17A	ND(69000 ug/m3)	UJ	High field duplicate RPD value
n-Butylbenzene	VW-93(60),093009	0910189B-18A	ND(26 ug/m3)	UJ	High field duplicate RPD value
n-Butylbenzene	VW-93(50),093009	0910189B-19A	27 ug/m3	J	High field duplicate RPD value
n-Butylbenzene	VW-93(55),093009	0910189B-20A	ND(27 ug/m3)	UJ	High field duplicate RPD value
n-Butylbenzene	BD2,093009	0910189B-21A	ND(27 ug/m3)	UJ	High field duplicate RPD value
n-Propylbenzene	VW-93(45),093009	0910189A-01A	ND(5.9 ug/m3)	UJ	High field duplicate RPD value
n-Propylbenzene	VW-93(35),093009	0910189A-02A	ND(5.6 ug/m3)	UJ	High field duplicate RPD value
n-Propylbenzene	VW-93(30),093009	0910189A-03A	ND(5.9 ug/m3)	UJ	High field duplicate RPD value
n-Propylbenzene	VW-93(25),093009	0910189A-04A	ND(5.6 ug/m3)	UJ	High field duplicate RPD value
n-Propylbenzene	VW-93(20),093009	0910189A-05A	ND(5.7 ug/m3)	UJ	High field duplicate RPD value
n-Propylbenzene	VW-93(15),093009	0910189A-06A	ND(5.3 ug/m3)	UJ	High field duplicate RPD value
n-Propylbenzene	VW-93(10),093009	0910189A-07A	ND(5.9 ug/m3)	UJ	High field duplicate RPD value
n-Propylbenzene	VW-93(40),093009	0910189A-08A	ND(5.8 ug/m3)	UJ	High field duplicate RPD value
n-Propylbenzene	VW-128(5),100109	0910189A-09A	ND(5.8 ug/m3)	UJ	High field duplicate RPD value
n-Propylbenzene	VW-128(10),100109	0910189A-10A	ND(5.2 ug/m3)	UJ	High field duplicate RPD value
n-Propylbenzene	TB-1,093009	0910189B-11A	ND(2.4 ug/m3)	UJ	High field duplicate RPD value
n-Propylbenzene	VW-139(10),093009	0910189B-12A	ND(5.6 ug/m3)	UJ	High field duplicate RPD value
n-Propylbenzene	VW-139(15),093009	0910189B-13A	ND(5.6 ug/m3)	UJ	High field duplicate RPD value
n-Propylbenzene	VW-139(20),093009	0910189B-14A	ND(5.3 ug/m3)	UJ	High field duplicate RPD value
n-Propylbenzene	BD1,093009	0910189B-15A	ND(15000 ug/m3)	UJ	High field duplicate RPD value
n-Propylbenzene	VW-139(30),093009	0910189B-16A	ND(5.7 ug/m3)	UJ	High field duplicate RPD value
n-Propylbenzene	VW-139(40),093009	0910189B-17A	ND(16000 ug/m3)	UJ	High field duplicate RPD value

Analyte	Client Sample ID	Laboratory Assigned ID	Laboratory Result	Reviewer Qualifier	Reason for Qualification
n-Propylbenzene	VW-93(60),093009	0910189B-18A	ND(5.9 ug/m3)	UJ	High field duplicate RPD value
n-Propylbenzene	VW-93(50),093009	0910189B-19A	7.8 ug/m3	J	High field duplicate RPD value
n-Propylbenzene	VW-93(55),093009	0910189B-20A	ND(6 ug/m3)	UJ	High field duplicate RPD value
n-Propylbenzene	BD2,093009	0910189B-21A	37 ug/m3	J	High field duplicate RPD value
o-Xylene	VW-93(45),093009	0910189A-01A	ND(5.2 ug/m3)	UJ	High field duplicate RPD value
o-Xylene	VW-93(35),093009	0910189A-02A	ND(5 ug/m3)	UJ	High field duplicate RPD value
o-Xylene	VW-93(30),093009	0910189A-03A	ND(5.2 ug/m3)	UJ	High field duplicate RPD value
o-Xylene	VW-93(25),093009	0910189A-04A	ND(5 ug/m3)	UJ	High field duplicate RPD value
o-Xylene	VW-93(20),093009	0910189A-05A	ND(5 ug/m3)	UJ	High field duplicate RPD value
o-Xylene	VW-93(15),093009	0910189A-06A	6.5 ug/m3	J	High field duplicate RPD value
o-Xylene	VW-93(10),093009	0910189A-07A	ND(5.2 ug/m3)	UJ	High field duplicate RPD value
o-Xylene	VW-93(40),093009	0910189A-08A	ND(5.1 ug/m3)	UJ	High field duplicate RPD value
o-Xylene	VW-128(5),100109	0910189A-09A	ND(5.1 ug/m3)	UJ	High field duplicate RPD value
o-Xylene	VW-128(10),100109	0910189A-10A	ND(4.6 ug/m3)	UJ	High field duplicate RPD value
o-Xylene	TB-1,093009	0910189B-11A	ND(2.2 ug/m3)	UJ	High field duplicate RPD value
o-Xylene	VW-139(10),093009	0910189B-12A	ND(5 ug/m3)	UJ	High field duplicate RPD value
o-Xylene	VW-139(15),093009	0910189B-13A	ND(5 ug/m3)	UJ	High field duplicate RPD value
o-Xylene	VW-139(20),093009	0910189B-14A	ND(4.7 ug/m3)	UJ	High field duplicate RPD value
o-Xylene	BD1,093009	0910189B-15A	ND(14000 ug/m3)	UJ	High field duplicate RPD value
o-Xylene	VW-139(30),093009	0910189B-16A	ND(5 ug/m3)	UJ	High field duplicate RPD value
o-Xylene	VW-139(40),093009	0910189B-17A	ND(14000 ug/m3)	UJ	High field duplicate RPD value
o-Xylene	VW-93(60),093009	0910189B-18A	ND(5.2 ug/m3)	UJ	High field duplicate RPD value
o-Xylene	VW-93(50),093009	0910189B-19A	48 ug/m3	J	High field duplicate RPD value
o-Xylene	VW-93(55),093009	0910189B-20A	ND(5.3 ug/m3)	UJ	High field duplicate RPD value
o-Xylene	BD2,093009	0910189B-21A	250 ug/m3	J	High field duplicate RPD value
Toluene	VW-93(45),093009	0910189A-01A	ND(4.6 ug/m3)	UJ	High field duplicate RPD value
Toluene	VW-93(35),093009	0910189A-02A	ND(4.3 ug/m3)	UJ	High field duplicate RPD value
Toluene	VW-93(30),093009	0910189A-03A	ND(4.5 ug/m3)	UJ	High field duplicate RPD value
Toluene	VW-93(25),093009	0910189A-04A	ND(4.3 ug/m3)	UJ	High field duplicate RPD value

Analyte	Client Sample ID	Laboratory Assigned ID	Laboratory Result	Reviewer Qualifier	Reason for Qualification
Toluene	VW-93(20),093009	0910189A-05A	ND(4.4 ug/m3)	UJ	High field duplicate RPD value
Toluene	VW-93(15),093009	0910189A-06A	120 ug/m3	J	High field duplicate RPD value
Toluene	VW-93(10),093009	0910189A-07A	ND(4.5 ug/m3)	UJ	High field duplicate RPD value
Toluene	VW-93(40),093009	0910189A-08A	ND(4.5 ug/m3)	UJ	High field duplicate RPD value
Toluene	VW-128(5),100109	0910189A-09A	ND(4.5 ug/m3)	UJ	High field duplicate RPD value
Toluene	VW-128(10),100109	0910189A-10A	ND(4 ug/m3)	UJ	High field duplicate RPD value
Toluene	TB-1,093009	0910189B-11A	ND(1.9 ug/m3)	UJ	High field duplicate RPD value
Toluene	VW-139(10),093009	0910189B-12A	ND(4.3 ug/m3)	UJ	High field duplicate RPD value
Toluene	VW-139(15),093009	0910189B-13A	ND(4.3 ug/m3)	UJ	High field duplicate RPD value
Toluene	VW-139(20),093009	0910189B-14A	ND(4.1 ug/m3)	UJ	High field duplicate RPD value
Toluene	BD1,093009	0910189B-15A	ND(12000 ug/m3)	UJ	High field duplicate RPD value
Toluene	VW-139(30),093009	0910189B-16A	ND(4.4 ug/m3)	UJ	High field duplicate RPD value
Toluene	VW-139(40),093009	0910189B-17A	ND(12000 ug/m3)	UJ	High field duplicate RPD value
Toluene	VW-93(60),093009	0910189B-18A	ND(4.6 ug/m3)	UJ	High field duplicate RPD value
Toluene	VW-93(50),093009	0910189B-19A	79 ug/m3	J	High field duplicate RPD value
Toluene	VW-93(55),093009	0910189B-20A	ND(4.6 ug/m3)	UJ	High field duplicate RPD value
Toluene	BD2,093009	0910189B-21A	380 ug/m3	J	High field duplicate RPD value
Ethanol	VW-93(10),093009	0910189A-07A	ND(9.1 ug/m3)	UJ	The LCS and/or LCSD recovery(ies) were below the acceptable limits indicating a possible low bias.
Ethanol	VW-93(40),093009	0910189A-08A	ND(8.9 ug/m3)	UJ	The LCS and/or LCSD recovery(ies) were below the acceptable limits indicating a possible low bias.
Ethanol	VW-128(5),100109	0910189A-09A	ND(8.9 ug/m3)	UJ	The LCS and/or LCSD recovery(ies) were below the acceptable limits indicating a possible low bias.
Ethanol	VW-128(10),100109	0910189A-10A	ND(8 ug/m3)	UJ	The LCS and/or LCSD recovery(ies) were below the acceptable limits indicating a possible low bias.

Analyte	Client Sample ID	Laboratory Assigned ID	Laboratory Result	Reviewer Qualifier	Reason for Qualification
Ethanol	TB-1,093009	0910189B-11A	ND(3.8 ug/m3)	UJ	The LCS and/or LCSD recovery(ies) were below the acceptable limits indicating a possible low bias.
Ethanol	VW-139(10),093009	0910189B-12A	ND(8.7 ug/m3)	UJ	The LCS and/or LCSD recovery(ies) were below the acceptable limits indicating a possible low bias.
Ethanol	VW-139(15),093009	0910189B-13A	12 ug/m3	J	The LCS and/or LCSD recovery(ies) were below the acceptable limits indicating a possible low bias.
Ethanol	VW-139(20),093009	0910189B-14A	21 ug/m3	J	The LCS and/or LCSD recovery(ies) were below the acceptable limits indicating a possible low bias.
Ethanol	VW-139(30),093009	0910189B-16A	ND(8.7 ug/m3)	UJ	The LCS and/or LCSD recovery(ies) were below the acceptable limits indicating a possible low bias.
Ethanol	VW-93(60),093009	0910189B-18A	11 ug/m3	J	The LCS and/or LCSD recovery(ies) were below the acceptable limits indicating a possible low bias.
Ethanol	VW-93(50),093009	0910189B-19A	26 ug/m3	J	The LCS and/or LCSD recovery(ies) were below the acceptable limits indicating a possible low bias.
Ethanol	VW-93(55),093009	0910189B-20A	ND(9.2 ug/m3)	UJ	The LCS and/or LCSD recovery(ies) were below the acceptable limits indicating a possible low bias.
Ethanol	BD2,093009	0910189B-21A	11 ug/m3	J	The LCS and/or LCSD recovery(ies) were below the acceptable limits indicating a possible low bias.
Benzene	VW-93(50),093009	0910189B-19A	8 ug/m3	J	The parent sample and blind duplicate RPD was greater than 30% indication poor repeatability.

Analyte	Client Sample ID	Laboratory Assigned ID	Laboratory Result	Reviewer Qualifier	Reason for Qualification
Benzene	BD2,093009	0910189B-21A	ND(3.9 ug/m3)	UJ	The parent sample and blind duplicate RPD was greater than 30% indication poor repeatability.

TABLE 5. FIELD DUPLICATE SUMMARY, CHEVRON SITE, CINCINNATI, OHIO (0910189B/D)

Client Sample ID: BD1, 093009 Field Duplicate Sample ID: VW-139(40), 093009			
Analyte	**Laboratory Result**	**Duplicate Result**	**Relative Percent Difference (RPD)**
Hexane	320000 µg/m3	370000 µg/m3	14.5%
Cyclohexane	440000 µg/m3	510000 µg/m3	14.7%
2,2,4-Trimethylpentane	2400000 µg/m3	2800000 µg/m3	15.4%
Heptane	260000 µg/m3	310000 µg/m3	17.5%
Ethyl Benzene	ND(14000 µg/m3)	14000 µg/m3	DL
m,p-Xylene	**24000 µg/m3**	**31000 µg/m3**	**25.5%**
1,2,4-Trimethylbenzene	ND(16000 µg/m3)	22000 µg/m3	DL
Isopentane	1200000 µg/m3	1400000 µg/m3	15.4%
Butane	34000 µg/m3	38000 µg/m3	+/- RL
Methylcyclohexane	780000 µg/m3	920000 µg/m3	16.5%
Oxygen	1.6%	1.5%	6.5%
Nitrogen	90%	90%	0.0%
Methane	2%	2%	0.0%
Carbon Dioxide	5.8%	5.8%	0.0%

Field duplicate RPD control limits should not exceed 30% for water, 50% for soil, or 25% for air or vapor as established by USEPA Region 1 Laboratory Data Validation Function Guidelines for Evaluation of Organic Analysis, December 1996.

DL – Indicates that one result was detected and one was non-detect. An RPD could not be calculated. No data were qualified since the detections were within two times the reporting limit. **The analyte m,p-xylene demonstrated poor precision and was qualified J for the parent and duplicate sample.**

+/-RL – Indicates that the detections in the samples are within two times the reporting limit. No qualification of data is required.

TABLE 6. FIELD DUPLICATE SUMMARY, CHEVRON SITE, CINCINNATI, OHIO (0910189B/D)

Client Sample ID: VW-93(50) Field Duplicate Sample ID: BD2, 093009			
Analyte	**Laboratory Result**	**Duplicate Result**	**Relative Percent Difference (RPD)**
Benzene	**8 µg/m3**	**ND(3.9 µg/m3)**	**DL**
Toluene	**79 µg/m3**	**380 µg/m3**	**131.2%**
Ethyl Benzene	**26 µg/m3**	**120 µg/m3**	**128.8%**
m,p-Xylene	**110 µg/m3**	**570 µg/m3**	**135.3%**
o-Xylene	**48 µg/m3**	**250 µg/m3**	**135.6%**
1,3,5-Trimethylbenzene	**22 µg/m3**	**62 µg/m3**	**95.2%**
1,2,4-Trimethylbenzene	**65 µg/m3**	**140 µg/m3**	**73.2%**
Heptane	**5.2 µg/m3**	**22 µg/m3**	**123.5%**
Cumene	**ND(6 µg/m3)**	**14 µg/m3**	**DL**
Propylbenzene	**7.8 µg/m3**	**37 µg/m3**	**130.4%**
Acetone	**57 µg/m3**	**34 µg/m3**	**50.5%**
Carbon Disulfide	**14 µg/m3**	**ND(3.8 µg/m3)**	**DL**
2-Butanone (Methyl Ethyl Ketone)	17 µg/m3	17 µg/m3	0.0%
2-Hexanone	ND(20 µg/m3)	23 µg/m3	DL
4-Ethyltoluene	**52 µg/m3**	**150 µg/m3**	**97.0%**
Ethanol	**26 µg/m3**	**11 µg/m3**	**81.1%**
Butylbenzene	27 µg/m3	ND(27 µg/m3)	DL
Methylcyclohexane	**ND(20 µg/m3)**	**45 µg/m3**	**DL**
Oxygen	17%	17%	0.0%
Nitrogen	80%	80%	0.0%
Carbon Dioxide	3.2%	3.2%	0.0%

Field duplicate RPD control limits should not exceed 30% for water, 50% for soil, or 25% for air or vapor as established by USEPA Region 1 Laboratory Data Validation Function Guidelines for Evaluation of Organic Analysis, December 1996. **The analytes toluene, ethyl benzene, m,p-xylene, o-xylene, heptane, and propylbenzene demonstrated extremely poor precision and were qualified J for detections and UJ for non-detections for each reported sample based on professional judgment. The analytes 1,3,5-trimethylbenzene, 1,2,4-trimethylbenzene, acetone, 4-ethyltoluene, and ethanol also demonstrated poor precision and were qualified J for detections and UJ for non-detections for the parent and duplicate sample only.**

DL – Indicates that one result was detected and one was non-detect. An RPD could not be calculated. No data were qualified where both detections were within two times the reporting limit. **Data for carbon disulfide were qualified J for detections and UJ for non-detections for each reported sample based on professional judgment due to the large difference between the non-detect value's reporting limit and the detected concentration. Data for benzene, cumene, and methylcyclohexane were qualified J for detections and UJ for non-detections for the parent and duplicate samples only.**

+/-RL – Indicates that the detections in the samples are within two times the reporting limit. No qualification of data is required.