

US EPA ARCHIVE DOCUMENT

Vapor Intrusion Interim Measures Quarterly Report No. 7

Chamberlain Manufacturing Corporation
Former Facility at
550 Esther Street
Waterloo Iowa
EPA Docket Nos.
RCRA-07-2010-002
CERCLA-07-2010-0005

April 30, 2013
Terracon Project No. 07107020

Prepared for:
Chamberlain Manufacturing Corporation
Elmhurst, Illinois

Prepared by:
Terracon Consultants, Inc.
Omaha, Nebraska

Offices Nationwide
Employee-Owned

Established in 1965
terracon.com

Terracon

April 30, 2013

United States Environmental Protection Agency
Region 7 - Air and Waste Management Division
11201 Renner Blvd
Lenexa, Kansas 66219

Attn: Mr. Bruce Morrison

Re: Vapor Intrusion Interim Measures Quarterly Report No. 7
Chamberlain Manufacturing Corporation
Former Facility at 550 Esther Street
Waterloo, Iowa
EPA Docket Nos. RCRA-07-2010-002 and CERCLA-07-2010-0005

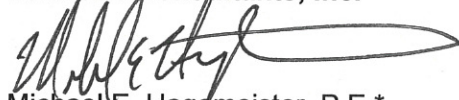
Dear Mr. Morrison:

Terracon Consultants, Inc. (Terracon) is pleased to submit this Vapor Intrusion Interim Measures (VIIM) Quarterly Report for activities conducted between January 1, 2013, and March 31, 2013, in conjunction with the site referenced above. The VIIM Quarterly Report presents a summary of activities related to the installation, operation, and monitoring of vapor mitigation systems in residential structures as requested by the EPA.

Should you have any questions or require additional information, please do not hesitate to contact our office.

Sincerely,

Terracon Consultants, Inc.



Michael E. Hagemeister, P.E.*
Senior Principal
*Licensed in NE

STW/MEH/DMS:stw/leb



David M. Svingen, P.E.
Senior Principal
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ACRONYMS & ABBREVIATIONS

CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
City	City of Waterloo
COC	Chain of Custody
EPA	Environmental Protection Agency
Facility	Chamberlain Manufacturing facility
HASP	Health and Safety Plan
HVAC	Heating, Ventilating, and Air Conditioning
IAQ	Indoor Air Quality
NELAC	National Environmental Laboratory Accreditation Conference
PCE	Tetrachloroethene (or Perchloroethene)
PID	Photoionization Detector
ppm	parts per million
QA	Quality Assurance
QAM	Quality Assurance Manual
QAPP	Quality Assurance Project Plan
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
RSL	Regional Screening Level
SOP	Standard Operating Procedure
SOW	Statement of Work
TCE	Trichloroethene
TestAmerica	TestAmerica, Inc.
TSOP	Terracon Standard Operating Procedure
UAO	Unilateral Administrative Order
USEPA	United States Environmental Protection Agency
VIC	Vapor Intrusion Characterization
VIIM	Vapor Intrusion Interim Measures
VMS	Vapor Mitigation System
VOC	Volatile Organic Compound

**VAPOR INTRUSION INTERIM MEASURES
QUARTERLY REPORT NO. 7
CHAMBERLAIN MANUFACTURING CORPORATION
FORMER FACILITY AT
550 ESTHER STREET
WATERLOO, IOWA**

**Terracon Project No. 07107020
April 30, 2013**

1.0 INTRODUCTION

Terracon has developed this VIIM Quarterly Report to identify interim remedial measures completed in residential structures in which vapor concentrations related to shallow groundwater contamination from the former Chamberlain Manufacturing Facility (Facility) exceed indoor air screening levels for the period of January 1, 2013, through March 31, 2013. This VIIM Quarterly Report is submitted in accordance with the requirements of the UAO, Docket Nos. RCRA 07-2010-002 and CERCLA 07-2010-005 dated April 20, 2010, and Task IA of the SOW attached to the UAO. Capitalized terms not defined herein have the definitions set for the in the UAO or the SOW.

This VIIM Quarterly Report also provides a summary of indoor analytical results that have been obtained from the residences sampled during the period from January 1, 2013, through March 31, 2013. The residences sampled this period have not required the installation of vapor mitigation based on concentrations observed at these properties.

1.1 Site Conditions

The Facility is an irregularly shaped parcel containing approximately 22.8 acres and located at 550 Esther Street in Waterloo, Iowa. A Topographic Vicinity Map is included as Exhibit 1, Appendix A. A Site Diagram is included as Exhibit 2, Appendix A.

The Facility manufactured metal washer wringers and projectile metal parts from approximately 1919 until 1996 when it was sold to Atlas Warehouse L.C. for use as a storage facility. The Facility was subsequently abandoned and is currently vacant. The City of Waterloo (City) acquired the Facility from Atlas Warehouse L.C in 2005 in an effort to facilitate redevelopment and has demolished a significant portion of the Facility.

The Facility is zoned Heavy Industrial (M-2) by the City. The Facility is adjoined by park land to the north and south, single family residential housing to the west, and Virden Creek followed by a golf course to the east. Virden Creek is within approximately 100 feet of the Facility at its closest point. Gates Park adjoins the Facility to the north across Louise Street, to the east across Virden Creek, and to the south across the railroad tracks. Single family residences are located across East 4th Street to the west of the Facility. Single family residences are also located along the east side of East 4th between Anita and Louise Streets.

1.2 Previous Assessment Activities

Beginning in 2004, the City conducted an environmental assessment of the site using a USEPA Brownfields Grant. Results of assessment activities identified impacts to soil and groundwater at the site including a chlorinated solvent plume that extends offsite to the south and west. Site assessment activities were not completed due to funding restrictions of the Brownfields Grant program.

Subsequently, environmental assessment activities of onsite soil and groundwater conditions and the offsite chlorinated solvent plume were conducted by Chamberlain. The lateral extent of the chlorinated solvent plume extends south and west from the Facility into an area of residential development. The USEPA's preliminary evaluation identified the potential for vapor intrusion into residential structures based on the vapor intrusion to indoor air pathway resulting from the groundwater contaminant plume.

To further evaluate the vapor intrusion pathway, the USEPA conducted subslab vapor sampling of selected residences in November 2008. Due to problems with the sampling and analysis equipment, the sampling activities were repeated in April and May 2009. Subslab vapor samples were collected from ten homes located along and near East 4th Street and analyzed for VOCs. In addition, one indoor air sample was collected from one of the ten homes. The results of sampling activities identified PCE and TCE in excess of subslab vapor screening levels. The elevated concentrations were generally located within the 2200, 2300, and 2400 block of East 4th Street.

In accordance with the approved VIC Work Plan, Terracon initially conducted vapor intrusion characterization at 22 residences that responded with completed Sampling Request Forms and Access Agreements from both the property owner and current renter. Initial subslab, indoor air, and ambient air sampling was conducted between April 25, 2011, and May 3, 2011. Additional indoor air samples were collected from four residences on June 16, 2011, and from one residence on September 14, 2011. Based on the analytical results, the reported concentrations of indoor air samples in seven residences were greater than the applicable indoor air screening levels. Subslab and indoor air sample results were presented in the VIC Report dated July 5, 2011.

In accordance with the approved VIC Report, Terracon offered vapor sampling to 14 additional residences located on the west side of the 300 block of Boston Avenue and the east side of the 400 block of Boston Avenue. Terracon also reoffered vapor sampling to those residences that did not respond to previous submittals and contacted residences that requested sampling through the USEPA or that had previously authorized sampling, but could not be reached to schedule an appointment. Supplemental subslab, indoor air, and ambient air sampling was conducted at nine residences between December 12, and December 14, 2011. Analytical results for subslab samples collected from two residences exceeded subslab screening levels and as such, additional indoor air samples were collected at these locations on March 23, 2012. Analytical results for supplemental sampling activities were submitted to the USEPA on April 19, 2012. During the second quarter 2012, indoor air samples were collected at Residences 48 and 73 and were reported in Terracon's July 19, 2012, VIIM Quarterly Report No. 4.

Terracon's October 29, 2012, VIIM Quarterly Report No. 5 summarized analytical results of a semiannual air monitoring event that included eight homes and results of a routine annual interim mitigation system inspection. As indicated in the January 31, 2013, VIIM Quarterly Report No. 6, residence No. 73 opted for semiannual monitoring over a mitigation system due to reported concentrations of TCE that exceeded screening levels, but with an apparent downward trend.

1.3 Project Objectives

The objective of this VIIM Quarterly Report is to present the information required by Section 4.0 of the approved VIIM Work Plan dated October 14, 2010, revised on August 1, 2011, and amended July 19, 2011. This information includes system design "as-builts," information on the expected operational life of the system, a recommendation for the frequency for monitoring and maintaining the system, criteria for determining its effectiveness, a schedule for system replacement in whole or in part (as appropriate), the frequency of system inspection by the Respondent, the results of post-installation system monitoring and any approved deviations from the approved VIIM Work Plan.

2.0 SCOPE OF SERVICES

2.1 Mitigation Determination

During the 1st quarter of 2013, indoor air samples were collected from six residences. Based on sampling activities this period, no residences are proposed to have mitigation systems installed.

2.2 Site Access Protocol

Residents were contacted at least 48 hours in advance of sampling to arrange a time and date for conducting the proposed activities.

3.0 PROCEDURES FOR SYSTEM DESIGN, INSTALLATION AND COMMISSIONING

Vapor mitigation systems were not designed, installed, commissioned or decommissioned during the 1st calendar quarter of 2013.

4.0 COMPLETED SYSTEM INSTALLATIONS

Interim mitigation systems were previously offered to, accepted by, and installed at eight Residences. Interim mitigation systems were subsequently shut off at three Residences. System installations were not conducted during the 1st calendar quarter of 2013.

5.0 COMPLETED SYSTEM INSPECTION AND REPAIR

In accordance with the approved VIIM Work Plan, system inspections are to occur on an annual basis following installation through the period of required operation. The purpose of the site inspection is to check each operating system for general condition using visual observation. The inspection includes checking for: proper operation of the blower, possible cracks or disconnections in visible piping, piping attachments, and checking manometer to confirm system vacuum. System inspections were last conducted in the 3rd quarter of 2012 and the results were reported in the October 29, 2012, VIIM Quarterly Report No. 5. The next scheduled system inspection and repair event will occur during the 3rd quarter of 2013.

6.0 INDOOR AIR MONITORING RESULTS

6.1 Sampling Activities

Indoor air sampling was conducted at Residences 20, 33, 38, 40, 47, and 60 on March 18, and March 19, 2013. The residences sampled during this period do not have active mitigation systems. Residence No. 38 had a system that was shut down with USEPA approval based on

air analytical data. Residences 20, 33, 38, 40, 47, and 60 were sampled as part of the semiannual sampling program conducted in March 2013. Semiannual indoor air monitoring was conducted in accordance with the approved VIC Report where sub-slab concentrations exceeded sub-slab screening levels, but indoor air concentrations were below indoor air screening levels.

Based on conversations held with tenants prior to scheduling the March 2013 semiannual indoor air monitoring event, Terracon requested permission from Mr. Bruce Morrison (EPA Region 7) to delay sampling of two homes that are part of the semiannual sampling program; Home No. 73 and Home No. 76. The Resident(s) at Home No. 73 reported that the home had a backed up sewer and that it would not be cleaned up in time for the scheduled sampling event. The Resident(s) at Home No. 76 reported that a fire had occurred in the home and renovation efforts were underway. As the reported situations at Homes No. 73 and No. 76 had the potential to affect IAQ and produce artifacts, Mr. Morrison agreed to delay sampling of Homes No. 73 and No. 76 for three months. As such, the next scheduled IAQ event at Homes No. 73 and No. 76 is set for June 2013.

Terracon was unable to collect IAQ samples at Home No. 48 during the March monitoring event. Terracon contacted the homeowner for Residence No. 48 and established a March 18, 2013 scheduled event. The homeowner did not respond at the time of the scheduled event. Several follow-up attempts were made during the reporting period to schedule a convenient time with the homeowner for the collection of IAQ samples; however, the homeowner was not responsive.

Indoor air samples were collected using laboratory prepared 6-liter Summa canisters and flow controllers. The flow controllers were pre-set by the laboratory to collect samples over a 24-hour period. Terracon requested that occupants close doors and windows and operate the HVAC system for the period beginning 24-hours prior to the start of sample collection to the end of sample collection.

Consistent with VIC activities and in accordance with the EPA approval letter dated January 6, 2011, indoor air sampling was conducted in the basement and in the lowest occupied living area of each residence. A finished basement is considered to be an occupied living space. Terracon attempted to position sample containers in the same general location used for previous indoor air sampling.

Terracon field personnel connected the flow controller to the Summa canister by removing the brass cap on the canister and tightening the stainless steel Swagelok fitting on the flow controller to the threads on the canister. A wrench was used to firmly tighten the fitting.

Once sample containers were positioned, pertinent information on the air sampling forms (i.e. project information, equipment identifiers, sample location, and start time) was entered and the

forms were attached to the canisters. A Soil Vapor/Indoor Air Sampling Information Form indicating appropriate project and sample collection information was executed for each indoor air sample. A COC indicating the collection date and times for each sample was also executed and maintained throughout the sampling event.

To open the canister, the valve was rotated counter-clockwise at least one full turn or otherwise opened. After 24-hours from opening the canisters, Terracon personnel returned to the Residences, closed the valve on each canister and recorded the time and vacuum remaining in the Summa canister on the Terracon sampling forms and on the COC. The canisters and flow controllers were then transported to the laboratory.

Indoor air monitoring activities are summarized in Table 6-1.

Table 6-1 Semiannual Indoor Air Monitoring

Residence No.	Sample Date	Basement Sample	1 st Floor Sample
20	03/19/13	X	---
33	03/19/13	X	X
38	03/19/13	X	X
40	03/19/13	X	X
47	03/19/13	X	X
60	03/19/13	X	X

¹ – Basement contains a finished family room; therefore, the basement is the lowest occupied level. Per the USEPA letter of January 6, 2011, sampling is not required on the first floor.

6.2 Air Monitoring Results

Indoor air samples were collected using 6-liter Summa canisters. The Summa canisters were submitted for analysis of PCE, TCE, vinyl chloride, trans-1,2-dichloroethene (trans-DCE), cis-1,2-dichloroethene (cis-DCE), 1,1-dichloroethene, 1,1-dichloroethane, 1,1,1-trichloroethane (TCA), and 1,1,2-trichloroethane, using EPA Method TO-15.

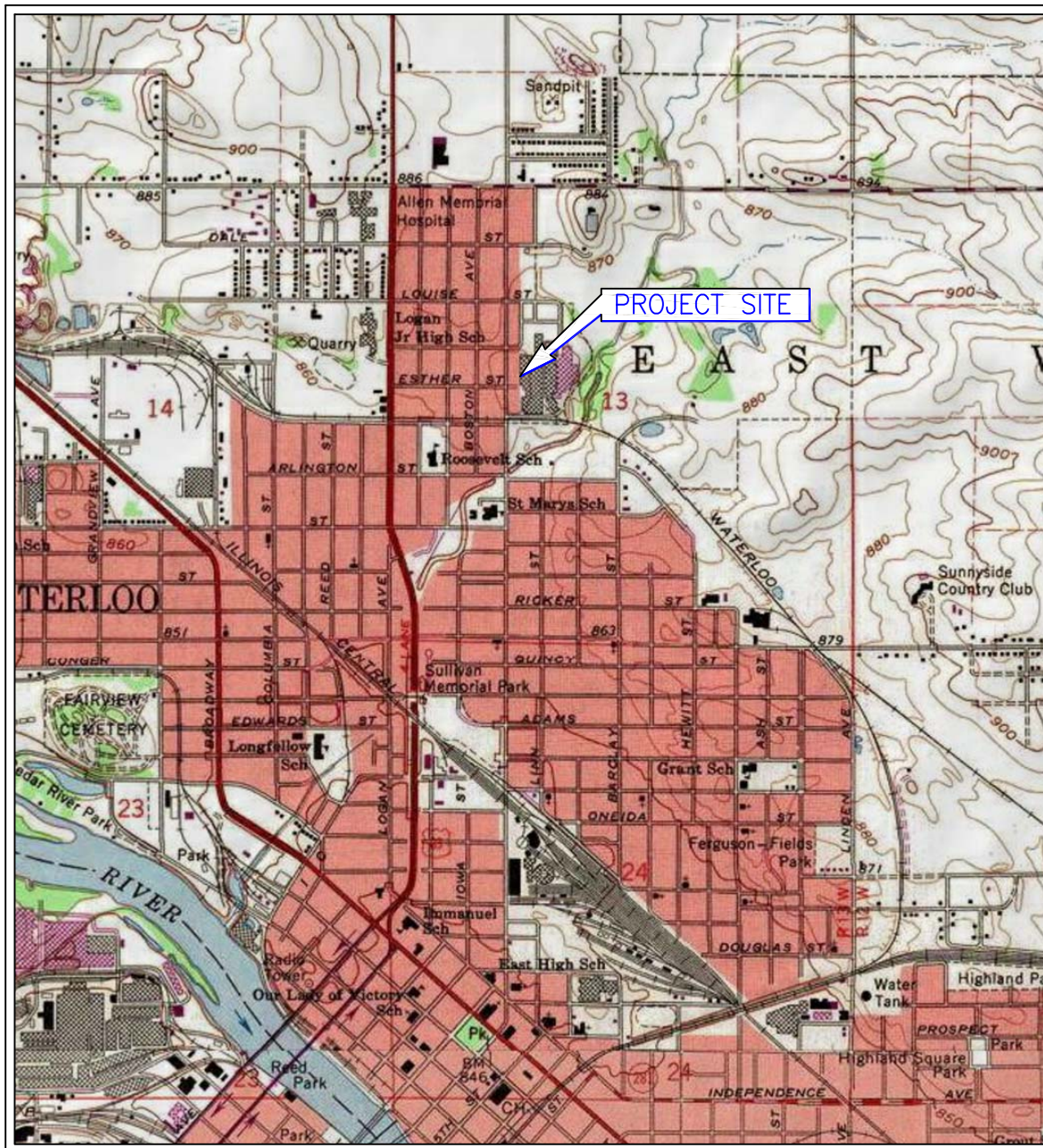
Laboratory procedures were conducted by TestAmerica of Knoxville, Tennessee. TestAmerica is NELAC accredited for the laboratory methods referenced above. The laboratory QAM is on file with the USEPA. A copy of the SOPs for the specified method was included as Appendix F of the VIC Work Plan. The TestAmerica data is reported in accordance with the QAM and SOP. Results of indoor air monitoring activities conducted over this current period are summarized in Table 1, Appendix B. Copies of analytical reports for samples collected over this period are provided in Appendix C.

The analytical results for air samples collected at Residences 20, 33, 38, 40, 47, and 60 had reported concentrations that were below applicable thresholds established in the VIC Work Plan and subsequent USEPA-approved modifications. As such, the installation of additional vapor mitigation systems is not required based on analytical results covered under this report. Since posted sub-slab samples at these locations exceeded sub-slab screening levels, semiannual monitoring will continue in accordance with the approved VIC Report. Homes No. 73 and No. 76 will be sampled in June 2013, at which point sampling at these two homes will return to a semiannual schedule. In addition, Residence 48 will also be sampled during the 3rd quarter 2013 provided that the resident allows access. The next scheduled monitoring event will occur during the 3rd quarter of 2013.

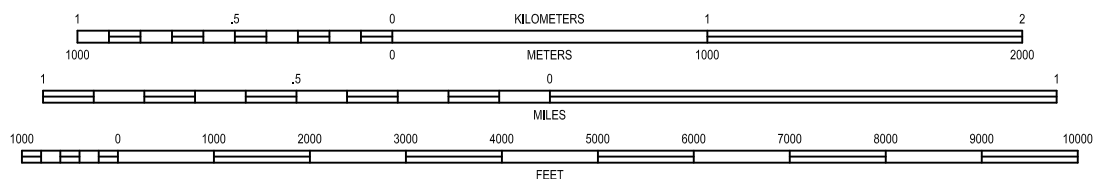
Appendix A – Exhibits

Exhibit 1 – Topographic Vicinity Map

Exhibit 2 – Site Diagram



SCALE 1:24,000



CONTOUR INTERVAL 10 FEET

NATIONAL GEODETTIC VERTICAL DATUM OF 1929

WATERLOO NORTH, IOWA
QUADRANGLE

1972

7.5 MINUTE SERIES (TOPOGRAPHIC)



Project Mngnr:	MEH
Drawn By:	PAI
Checked By:	MEH
Approved By:	DMS
Project No.	07122020
Scale:	AS SHOWN
File No.	07122020C05
Date:	4/30/13

Terracon
Consulting Engineers and Scientists

15080 A CIRCLE OMAHA, NE 68144
PH. (402) 330-2202 FAX. (402) 330-7606

SITE LOCATION TOPOGRAPHIC MAP

VIIM QUARTERLY REPORT NO. 6

FORMER CHAMBERLAIN MANUFACTURING FACILITY

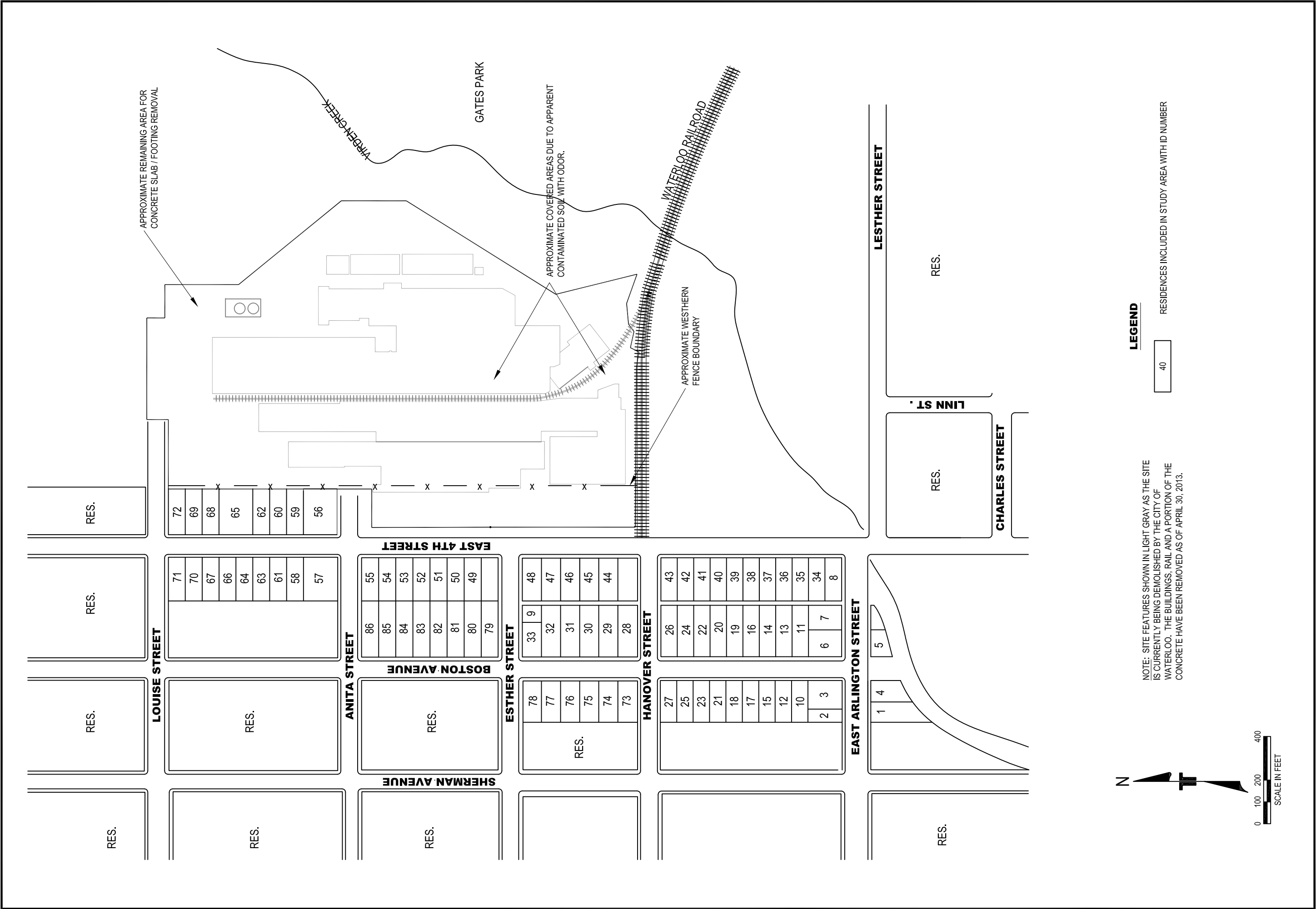
550 ESTHER STREET

WATERLOO

IOWA

EXHIBIT

1



REV.	DATE	BY	DESCRIPTION

Terracon
Consulting Engineers and Scientists

15080 A CIRCLE
PH. (402) 330-2202

OMAHA, NE 68144
FAX. (402) 330-7606

DEMOLITION STATUS MAP

VIIM QUARTERLY REPORT NO. 6
FORMER CHAMBERLAIN MANUFACTURING FACILITY

WATERLOO
550 ESTHER STREET
IOWA

EXHIBIT

PROJECT MGR: MEH
DRAWN BY: PAI
APP'D. BY: DMS
SCALE: AS SHOWN
DATE: 4/30/13
PROJECT NO. 0712020
FILE NAME: 0712020C05
SHEET NO.: 2 OF 2

Appendix B –Tables

Table 1 – Indoor Air Analytical Results – 1st Quarter 2013

TABLE 1
INDOOR AIR ANALYTICAL RESULTS
3rd Quarter 2012
VAPOR INTRUSION INTERIM MEASURES QUARTERLY REPORT NO. 5
CHAMBERLAIN MANUFACTURING

										Reporting Limit	Analytical Method Detection Limit	Indoor Air Screening Level ²
	Sample ID	IA-B-38-4	IA-I-38-4	IA-I-47-3	IA-B-47-3	IA-B-20-6	IA-I-40-4	IA-B-40-4	IA-I-60-3			
	Date	3/19/2013	3/19/2013	3/19/2013	3/19/2013	3/19/2013	3/19/2013	3/19/2013	3/19/2013			
Analyte	Units											
Tetrachloroethene	µg/m ³	0.26 J	0.19 J	0.19 J	0.30 J	0.12 J	0.14 J	0.12 J	0.13 J	0.54	0.11	9.4 ³
Trichloroethene	µg/m ³	<0.21	<0.21	0.084 J	<0.21	<0.21	<0.21	<0.21	<0.21	0.21	0.075	0.43 ⁴
Vinyl chloride	µg/m ³	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.2 ¹	0.074	0.165
trans-1,2-Dichloroethene	µg/m ³	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	0.32	0.079	63
cis-1,2-Dichloroethene	µg/m ³	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	0.32	0.095	63
1,1-Dichloroethene	µg/m ³	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	0.32	0.052	210
1,1-Dichloroethane	µg/m ³	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	0.32	0.04	1.5
1,1,1-Trichloroethane	µg/m ³	0.11 J	0.13 J	<0.44	<0.44	0.65	<0.44	<0.44	<0.44	0.44	0.065	5200
1,1,2-Trichloroethane	µg/m ³	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	0.44 ¹	0.11	0.15

	Sample ID	IA-B-60-3	IA-B-60-30 (Dup)	IA-I-33-4	IA-B-33-4	Reporting Limit	Analytical Method Detection Limit	Indoor Air Screening Level ²
	Date	3/19/2013	3/19/2013	3/19/2013	3/19/2013			
Analyte	Units							
Tetrachloroethene	µg/m ³	0.12 J	<0.54	<0.54	<0.54	0.54	0.11	9.4 ³
Trichloroethene	µg/m ³	<0.21	<0.21	<0.21	<0.21	0.21	0.075	0.43 ⁴
Vinyl chloride	µg/m ³	<0.20	<0.20	<0.20	<0.20	0.2 ¹	0.074	0.165
trans-1,2-Dichloroethene	µg/m ³	<0.32	<0.32	<0.32	<0.32	0.32	0.079	63
cis-1,2-Dichloroethene	µg/m ³	<0.32	<0.32	<0.32	<0.32	0.32	0.095	63
1,1-Dichloroethene	µg/m ³	<0.32	<0.32	<0.32	<0.32	0.32	0.052	210
1,1-Dichloroethane	µg/m ³	<0.32	<0.32	<0.32	<0.32	0.32	0.04	1.5
1,1,1-Trichloroethane	µg/m ³	<0.44	<0.44	<0.44	0.075 J	0.44	0.065	5200
1,1,2-Trichloroethane	µg/m ³	<0.44	<0.44	<0.44	<0.44	0.44 ¹	0.11	0.15

NOTES: µg/m3 - micrograms per cubic meter
ppm - parts per million
J - The contaminant is present at a concentration greater than the Analytical Method Detection Limit, but less than the Reporting Limit.

¹ - Indoor Air Screening Level is less than Reporting Limit. The USEPA has approved the use of the Reporting Limit as the screening level for this site due to the technical inability to accurately quantify the detection of these compounds at the current USEPA screening level.

² - Per USEPA approved VIC Work Plan

³ - Revised Action Threshold for PCE per USEPA e-mail dated February 17, 2012

⁴ - Revised per USEPA's letter dated October 27, 2011 and as an accommodation to USEPA without waiver of Chamberlain's concerns expressed in its email to USEPA dated November 14, 2011.

SAMPLE ID NOMENCLATURE: First 2 letters identify sample type: SS - Sub-Slab, IA - Indoor Air, AA - Ambient Air, and EB - Equipment Blank
The numeric value following the sample type identify the Residence ID Number

Appendix C – Analytical Reports

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Cedar Falls

704 Enterprise Drive

Cedar Falls, IA 50613

Tel: (319)277-2401

TestAmerica Job ID: 310-4480-1

Client Project/Site: Air - Chamberlain

For:

Terracon Consulting Eng & Scientists

15080 A Circle

Omaha, Nebraska 68144

Attn: Mr. Mike Hagemeister



Authorized for release by:

3/27/2013 8:20:56 AM

Brian Graettinger

Project Manager I

brian.graettinger@testamericainc.com

LINKS

Review your project
results through

TotalAccess

Have a Question?



Visit us at:

www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Sample Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Air - Chamberlain

TestAmerica Job ID: 310-4480-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-4480-1	IA-B-38-4	Air	03/19/13 09:08	03/19/13 14:10
310-4480-2	IA-I-38-4	Air	03/19/13 09:13	03/19/13 14:10
310-4480-3	IA-I-47-3	Air	03/19/13 09:53	03/19/13 14:10
310-4480-4	IA-B-47-3	Air	03/19/13 10:04	03/19/13 14:10
310-4480-5	IA-B-20-6	Air	03/19/13 10:33	03/19/13 14:10
310-4480-6	IA-I-40-4	Air	03/19/13 10:56	03/19/13 14:10
310-4480-7	IA-B-40-4	Air	03/19/13 11:00	03/19/13 14:10
310-4480-8	IA-I-60-3	Air	03/19/13 11:37	03/19/13 14:10
310-4480-9	IA-B-60-3	Air	03/19/13 11:42	03/19/13 14:10
310-4480-10	IA-I-33-4	Air	03/19/13 12:16	03/19/13 14:10
310-4480-11	IA-B-33-4	Air	03/19/13 12:20	03/19/13 14:10
310-4480-12	Blind Duplicate	Air	03/19/13 11:52	03/19/13 14:10

US EPA ARCHIVE DOCUMENT

TestAmerica Cedar Falls

H3C200413 Analytical Report	1
Sample Receipt Documentation	32
Total Number of Pages	35

ANALYTICAL REPORT

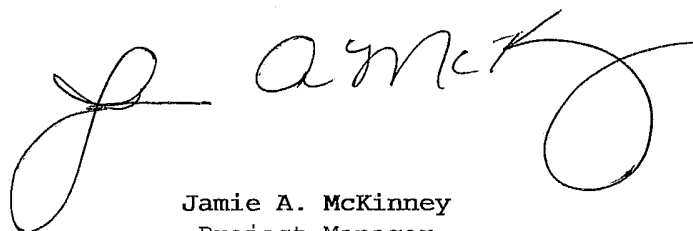
Terracon

Lot #: H3C200413

Brian Graettinger

TestAmerica Cedar Falls
704 Enterprise Drive
Cedar Falls, IA 50613-0625

TESTAMERICA LABORATORIES, INC.



Jamie A. McKinney
Project Manager

March 26, 2013

ANALYTICAL METHODS SUMMARY

H3C200413

<u>PARAMETER</u>	<u>ANALYTICAL METHOD</u>
Volatile Organics by TO15	EPA-2 TO-15

References:

EPA-2 "Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air", EPA-625/R-96/010b, January 1999.

SAMPLE SUMMARY

H3C200413

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
MOETW	001	IA-B-38-4	03/19/13	09:08
MOET2	002	IA-I-38-4	03/19/13	09:13
MOET5	003	IA-I-47-3	03/19/13	09:53
MOET6	004	IA-B-47-3	03/19/13	10:04
MOET8	005	IA-B-20-6	03/19/13	10:33
MOEVA	006	IA-I-40-4	03/19/13	10:56
MOEVD	007	IA-B-40-4	03/19/13	11:00
MOEVE	008	IA-I-60-3	03/19/13	11:37
MOEVG	009	IA-B-60-3	03/19/13	11:42
MOEVH	010	IA-I-33-4	03/19/13	12:16
MOEVK	011	IA-B-33-4	03/19/13	12:20
MOEVL	012	BLIND DUPLICATE	03/19/13	11:52

NOTE(S) :

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

PROJECT NARRATIVE

H3C200413

The results reported herein are applicable to the samples submitted for analysis only. If you have any questions about this report, please call (865) 291-3000 to speak with the TestAmerica project manager listed on the cover page.

This report shall not be reproduced except in full, without the written approval of the laboratory.

The original chain of custody documentation is included with this report.

Sample Receipt

There were no problems with the condition of the samples received.

Quality Control and Data Interpretation

Unless otherwise noted, all holding times and QC criteria were met and the test results shown in this report meet all applicable NELAC requirements.

EPA methods TO-14A and TO-15 specify the use of humidified "zero air" as the blank reagent for canister cleaning, instrument calibration and sample analysis. Ultra-high purity humidified nitrogen from a cryogenic reservoir is used in place of "zero air" by TestAmerica Knoxville.

CERTIFICATION SUMMARY

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica Knoxville	ACLASS	DoD ELAP		ADE-1434
TestAmerica Knoxville	Arkansas	State Program	6	88-0688
TestAmerica Knoxville	California	State Program	9	2423
TestAmerica Knoxville	Colorado	State Program	8	N/A
TestAmerica Knoxville	Connecticut	State Program	1	PH-0223
TestAmerica Knoxville	Florida	NELAC	4	E87177
TestAmerica Knoxville	Georgia	State Program	4	906
TestAmerica Knoxville	Hawaii	State Program	9	N/A
TestAmerica Knoxville	Indiana	State Program	5	C-TN-02
TestAmerica Knoxville	Iowa	State Program	7	375
TestAmerica Knoxville	Kansas	NELAC	7	E-10349
TestAmerica Knoxville	Kentucky	State Program	4	90101
TestAmerica Knoxville	Louisiana	NELAC	6	LA110001
TestAmerica Knoxville	Louisiana	NELAC	6	83979
TestAmerica Knoxville	Maryland	State Program	3	277
TestAmerica Knoxville	Michigan	State Program	5	9933
TestAmerica Knoxville	Minnesota	NELAC	5	047-999-429
TestAmerica Knoxville	Nevada	State Program	9	TN00009
TestAmerica Knoxville	New Jersey	NELAC	2	TN001
TestAmerica Knoxville	New York	NELAC	2	10781
TestAmerica Knoxville	North Carolina	North Carolina DENR	4	64
TestAmerica Knoxville	North Carolina	North Carolina PHL	4	21705
TestAmerica Knoxville	Ohio	OVAP	5	CL0059
TestAmerica Knoxville	Oklahoma	State Program	6	9415
TestAmerica Knoxville	Pennsylvania	NELAC	3	68-00576
TestAmerica Knoxville	South Carolina	State Program	4	84001
TestAmerica Knoxville	Tennessee	State Program	4	2014
TestAmerica Knoxville	Texas	NELAC	6	T104704380-TX
TestAmerica Knoxville	USDA	USDA		P330-11-00035
TestAmerica Knoxville	Utah	NELAC	8	QUAN3
TestAmerica Knoxville	Virginia	State Program	3	165
TestAmerica Knoxville	Washington	State Program	10	C593
TestAmerica Knoxville	West Virginia	West Virginia DEP	3	345
TestAmerica Knoxville	West Virginia	West Virginia DHHR (DW)	3	9955C
TestAmerica Knoxville	Wisconsin	State Program	5	998044300

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

TestAmerica Cedar Falls
Client Sample ID: IA-B-38-4
GC/MS Volatiles

Lot-Sample # H3C200413 - 001 Work Order # M0ETW1AA Matrix.....: AIR

Date Sampled...: 03/19/2013 Date Received...: 03/20/2013
Prep Date.....: 03/20/2013 Analysis Time....: 03/20/2013
Prep Batch #....: 3079035 Analysis Time....: 19:44
Dilution Factor.: 1 Method.....: TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	MDL (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)	MDL (ug/m3)
1,1,2-Trichloroethane	ND	0.080	0.021	ND	0.44	0.11
cis-1,2-Dichloroethene	ND	0.080	0.024	ND	0.32	0.095
Tetrachloroethene	0.038 J	0.080	0.016	0.26 J	0.54	0.11
Vinyl chloride	ND	0.080	0.029	ND	0.20	0.074
1,1,1-Trichloroethane	0.020 J	0.080	0.012	0.11 J	0.44	0.065
1,1-Dichloroethane	ND	0.080	0.010	ND	0.32	0.040
Trichloroethene	ND	0.040	0.014	ND	0.21	0.075
1,1-Dichloroethene	ND	0.080	0.014	ND	0.32	0.056
trans-1,2-Dichloroethene	ND	0.080	0.020	ND	0.32	0.079

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	99	60 - 140

Qualifiers

J Estimated result. Result is less than RL.

Result (ug/m3) = Result (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

Reporting Limit (ug/m3) = Reporting Limit (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

MDL (ug/m3) = MDL (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

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TestAmerica Cedar Falls
Client Sample ID: IA-I-38-4
GC/MS Volatiles

Lot-Sample # H3C200413 - 002 Work Order # M0ET21AA Matrix.....: AIR

Date Sampled...: 03/19/2013 Date Received...: 03/20/2013
Prep Date.....: 03/20/2013 Analysis Time....: 03/20/2013
Prep Batch #....: 3079035 Analysis Time....: 20:39
Dilution Factor.: 1 Method.....: TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	MDL (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)	MDL (ug/m3)
trans-1,2-Dichloroethene	ND	0.080	0.020	ND	0.32	0.079
1,1-Dichloroethene	ND	0.080	0.014	ND	0.32	0.056
Trichloroethene	ND	0.040	0.014	ND	0.21	0.075
1,1-Dichloroethane	ND	0.080	0.010	ND	0.32	0.040
1,1,1-Trichloroethane	0.024 J	0.080	0.012	0.13 J	0.44	0.065
Vinyl chloride	ND	0.080	0.029	ND	0.20	0.074
Tetrachloroethene	0.027 J	0.080	0.016	0.19 J	0.54	0.11
cis-1,2-Dichloroethene	ND	0.080	0.024	ND	0.32	0.095
1,1,2-Trichloroethane	ND	0.080	0.021	ND	0.44	0.11

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	99	60 - 140

Qualifiers

J Estimated result. Result is less than RL.

Result (ug/m3) = Result (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

Reporting Limit (ug/m3) = Reporting Limit (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

MDL (ug/m3) = MDL (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

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TestAmerica Cedar Falls
Client Sample ID: IA-I-47-3
GC/MS Volatiles

Lot-Sample # H3C200413 - 003 Work Order # M0ET51AA Matrix.....: AIR

Date Sampled...: 03/19/2013 Date Received...: 03/20/2013
Prep Date.....: 03/20/2013 Analysis Time....: 03/20/2013
Prep Batch #....: 3079035 Analysis Time....: 21:34
Dilution Factor.: 1 Method.....: TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	MDL (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)	MDL (ug/m3)
1,1,2-Trichloroethane	ND	0.080	0.021	ND	0.44	0.11
cis-1,2-Dichloroethene	ND	0.080	0.024	ND	0.32	0.095
Tetrachloroethene	0.029 J	0.080	0.016	0.19 J	0.54	0.11
1,1-Dichloroethane	ND	0.080	0.010	ND	0.32	0.040
Vinyl chloride	ND	0.080	0.029	ND	0.20	0.074
1,1,1-Trichloroethane	ND	0.080	0.012	ND	0.44	0.065
Trichloroethene	0.016 J	0.040	0.014	0.084 J	0.21	0.075
1,1-Dichloroethene	ND	0.080	0.014	ND	0.32	0.056
trans-1,2-Dichloroethene	ND	0.080	0.020	ND	0.32	0.079

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	96	60 - 140

Qualifiers

J Estimated result. Result is less than RL.

Result (ug/m3) = Result (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

Reporting Limit (ug/m3) = Reporting Limit (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

MDL (ug/m3) = MDL (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

TestAmerica Cedar Falls
Client Sample ID: IA-B-47-3
GC/MS Volatiles

Lot-Sample # H3C200413 - 004 Work Order # M0ET61AA Matrix.....: AIR

Date Sampled...: 03/19/2013 Date Received...: 03/20/2013
Prep Date.....: 03/20/2013 Analysis Time....: 03/20/2013
Prep Batch #....: 3079035 Analysis Time....: 22:29
Dilution Factor.: 1 Method.....: TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	MDL (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)	MDL (ug/m3)
trans-1,2-Dichloroethene	ND	0.080	0.020	ND	0.32	0.079
1,1-Dichloroethene	ND	0.080	0.014	ND	0.32	0.056
Trichloroethene	ND	0.040	0.014	ND	0.21	0.075
1,1,1-Trichloroethane	ND	0.080	0.012	ND	0.44	0.065
Vinyl chloride	ND	0.080	0.029	ND	0.20	0.074
1,1-Dichloroethane	ND	0.080	0.010	ND	0.32	0.040
Tetrachloroethene	0.044 J	0.080	0.016	0.30 J	0.54	0.11
cis-1,2-Dichloroethene	ND	0.080	0.024	ND	0.32	0.095
1,1,2-Trichloroethane	ND	0.080	0.021	ND	0.44	0.11

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	97	60 - 140

Qualifiers

J Estimated result. Result is less than RL.

Result (ug/m3) = Result (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

Reporting Limit (ug/m3) = Reporting Limit (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

MDL (ug/m3) = MDL (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

TestAmerica Cedar Falls
Client Sample ID: IA-B-20-6
GC/MS Volatiles

Lot-Sample # H3C200413 - 005 Work Order # M0ET81AA Matrix.....: AIR

Date Sampled...: 03/19/2013 Date Received...: 03/20/2013
Prep Date.....: 03/20/2013 Analysis Time....: 03/20/2013
Prep Batch #....: 3079035 Analysis Time....: 23:26
Dilution Factor.: 1 Method.....: TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	MDL (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)	MDL (ug/m3)
1,1,2-Trichloroethane	ND	0.080	0.021	ND	0.44	0.11
cis-1,2-Dichloroethene	ND	0.080	0.024	ND	0.32	0.095
Tetrachloroethene	0.017 J	0.080	0.016	0.12 J	0.54	0.11
Vinyl chloride	ND	0.080	0.029	ND	0.20	0.074
1,1,1-Trichloroethane	0.12	0.080	0.012	0.65	0.44	0.065
1,1-Dichloroethane	ND	0.080	0.010	ND	0.32	0.040
Trichloroethene	ND	0.040	0.014	ND	0.21	0.075
trans-1,2-Dichloroethene	ND	0.080	0.020	ND	0.32	0.079
1,1-Dichloroethene	ND	0.080	0.014	ND	0.32	0.056

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	97	60 - 140

Qualifiers

J Estimated result. Result is less than RL.

Result (ug/m3) = Result (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

Reporting Limit (ug/m3) = Reporting Limit (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

MDL (ug/m3) = MDL (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

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TestAmerica Cedar Falls
Client Sample ID: IA-I-40-4
GC/MS Volatiles

Lot-Sample # H3C200413 - 006 Work Order # M0EVA1AA Matrix.....: AIR

Date Sampled...: 03/19/2013 Date Received...: 03/20/2013
Prep Date.....: 03/20/2013 Analysis Time....: 03/21/2013
Prep Batch #.....: 3079035 Analysis Time....: 00:21
Dilution Factor.: 1 Method.....: TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	MDL (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)	MDL (ug/m3)
1,1-Dichloroethene	ND	0.080	0.014	ND	0.32	0.056
trans-1,2-Dichloroethene	ND	0.080	0.020	ND	0.32	0.079
Trichloroethene	ND	0.040	0.014	ND	0.21	0.075
1,1-Dichloroethane	ND	0.080	0.010	ND	0.32	0.040
1,1,1-Trichloroethane	ND	0.080	0.012	ND	0.44	0.065
Vinyl chloride	ND	0.080	0.029	ND	0.20	0.074
Tetrachloroethene	0.021 J	0.080	0.016	0.14 J	0.54	0.11
cis-1,2-Dichloroethene	ND	0.080	0.024	ND	0.32	0.095
1,1,2-Trichloroethane	ND	0.080	0.021	ND	0.44	0.11

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	98	60 - 140

Qualifiers

J Estimated result. Result is less than RL.

Result (ug/m3) = Result (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

Reporting Limit (ug/m3) = Reporting Limit (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

MDL (ug/m3) = MDL (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

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TestAmerica Cedar Falls
Client Sample ID: IA-B-40-4
GC/MS Volatiles

Lot-Sample # H3C200413 - 007 Work Order # M0EVD1AA Matrix.....: AIR

Date Sampled...: 03/19/2013 Date Received...: 03/20/2013
Prep Date.....: 03/20/2013 Analysis Time....: 03/21/2013
Prep Batch #.....: 3079035 Analysis Time....: 01:17
Dilution Factor.: 1 Method.....: TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	MDL (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)	MDL (ug/m3)
1,1,2-Trichloroethane	ND	0.080	0.021	ND	0.44	0.11
cis-1,2-Dichloroethene	ND	0.080	0.024	ND	0.32	0.095
Tetrachloroethene	0.018 J	0.080	0.016	0.12 J	0.54	0.11
1,1-Dichloroethane	ND	0.080	0.010	ND	0.32	0.040
Vinyl chloride	ND	0.080	0.029	ND	0.20	0.074
1,1,1-Trichloroethane	ND	0.080	0.012	ND	0.44	0.065
Trichloroethene	ND	0.040	0.014	ND	0.21	0.075
1,1-Dichloroethene	ND	0.080	0.014	ND	0.32	0.056
trans-1,2-Dichloroethene	ND	0.080	0.020	ND	0.32	0.079

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	98	60 - 140

Qualifiers

J Estimated result. Result is less than RL.

Result (ug/m3) = Result (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

Reporting Limit (ug/m3) = Reporting Limit (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

MDL (ug/m3) = MDL (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

TestAmerica Cedar Falls
Client Sample ID: IA-I-60-3
GC/MS Volatiles

Lot-Sample # H3C200413 - 008 Work Order # M0EVE1AA Matrix.....: AIR

Date Sampled...: 03/19/2013 Date Received...: 03/20/2013
Prep Date.....: 03/20/2013 Analysis Time....: 03/21/2013
Prep Batch #....: 3079035 Analysis Time....: 02:13
Dilution Factor.: 1 Method.....: TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	MDL (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)	MDL (ug/m3)
trans-1,2-Dichloroethene	ND	0.080	0.020	ND	0.32	0.079
1,1-Dichloroethene	ND	0.080	0.014	ND	0.32	0.056
Trichloroethene	ND	0.040	0.014	ND	0.21	0.075
1,1,1-Trichloroethane	ND	0.080	0.012	ND	0.44	0.065
Vinyl chloride	ND	0.080	0.029	ND	0.20	0.074
1,1-Dichloroethane	ND	0.080	0.010	ND	0.32	0.040
Tetrachloroethene	0.019 J	0.080	0.016	0.13 J	0.54	0.11
cis-1,2-Dichloroethene	ND	0.080	0.024	ND	0.32	0.095
1,1,2-Trichloroethane	ND	0.080	0.021	ND	0.44	0.11

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	98	60 - 140

Qualifiers

J Estimated result. Result is less than RL.

Result (ug/m3) = Result (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

Reporting Limit (ug/m3) = Reporting Limit (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

MDL (ug/m3) = MDL (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

TestAmerica Cedar Falls
Client Sample ID: IA-B-60-3
GC/MS Volatiles

Lot-Sample # H3C200413 - 009 Work Order # M0EVG1AA Matrix.....: AIR

Date Sampled...: 03/19/2013 Date Received...: 03/20/2013
Prep Date.....: 03/20/2013 Analysis Time....: 03/21/2013
Prep Batch #.....: 3079035 Analysis Time....: 03:08
Dilution Factor.: 1 Method.....: TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	MDL (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)	MDL (ug/m3)
1,1,2-Trichloroethane	ND	0.080	0.021	ND	0.44	0.11
cis-1,2-Dichloroethene	ND	0.080	0.024	ND	0.32	0.095
Tetrachloroethene	0.018 J	0.080	0.016	0.12 J	0.54	0.11
Vinyl chloride	ND	0.080	0.029	ND	0.20	0.074
1,1-Dichloroethane	ND	0.080	0.010	ND	0.32	0.040
1,1,1-Trichloroethane	ND	0.080	0.012	ND	0.44	0.065
Trichloroethene	ND	0.040	0.014	ND	0.21	0.075
trans-1,2-Dichloroethene	ND	0.080	0.020	ND	0.32	0.079
1,1-Dichloroethene	ND	0.080	0.014	ND	0.32	0.056

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	97	60 - 140

Qualifiers

J Estimated result. Result is less than RL.

Result (ug/m3) = Result (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

Reporting Limit (ug/m3) = Reporting Limit (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

MDL (ug/m3) = MDL (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

TestAmerica Cedar Falls
Client Sample ID: IA-I-33-4
GC/MS Volatiles

Lot-Sample # H3C200413 - 010 Work Order # M0EVH1AA Matrix.....: AIR

Date Sampled...: 03/19/2013 Date Received...: 03/20/2013
Prep Date.....: 03/20/2013 Analysis Time....: 03/21/2013
Prep Batch #.....: 3079035 Analysis Time....: 04:02
Dilution Factor.: 1 Method.....: TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	MDL (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)	MDL (ug/m3)
1,1-Dichloroethene	ND	0.080	0.014	ND	0.32	0.056
trans-1,2-Dichloroethene	ND	0.080	0.020	ND	0.32	0.079
Trichloroethene	ND	0.040	0.014	ND	0.21	0.075
1,1,1-Trichloroethane	ND	0.080	0.012	ND	0.44	0.065
1,1-Dichloroethane	ND	0.080	0.010	ND	0.32	0.040
Vinyl chloride	ND	0.080	0.029	ND	0.20	0.074
Tetrachloroethene	ND	0.080	0.016	ND	0.54	0.11
cis-1,2-Dichloroethene	ND	0.080	0.024	ND	0.32	0.095
1,1,2-Trichloroethane	ND	0.080	0.021	ND	0.44	0.11

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	97	60 - 140

Result (ug/m3) = Result (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

Reporting Limit (ug/m3) = Reporting Limit (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

MDL (ug/m3) = MDL (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

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TestAmerica Cedar Falls
Client Sample ID: IA-B-33-4
GC/MS Volatiles

Lot-Sample # H3C200413 - 011 **Work Order #** M0EVK1AA **Matrix.....:** AIR

Date Sampled...: 03/19/2013 **Date Received...:** 03/20/2013
Prep Date.....: 03/20/2013 **Analysis Time....:** 03/21/2013
Prep Batch #.....: 3079035 **Analysis Time....:** 04:58
Dilution Factor.: 1 **Method.....:** TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	MDL (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)	MDL (ug/m3)
1,1,2-Trichloroethane	ND	0.080	0.021	ND	0.44	0.11
cis-1,2-Dichloroethene	ND	0.080	0.024	ND	0.32	0.095
Tetrachloroethene	ND	0.080	0.016	ND	0.54	0.11
1,1-Dichloroethane	ND	0.080	0.010	ND	0.32	0.040
Vinyl chloride	ND	0.080	0.029	ND	0.20	0.074
1,1,1-Trichloroethane	0.014 J	0.080	0.012	0.075 J	0.44	0.065
Trichloroethene	ND	0.040	0.014	ND	0.21	0.075
1,1-Dichloroethene	ND	0.080	0.014	ND	0.32	0.056
trans-1,2-Dichloroethene	ND	0.080	0.020	ND	0.32	0.079

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	98	60 - 140

Qualifiers

J Estimated result. Result is less than RL.

Result (ug/m3) = Result (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

Reporting Limit (ug/m3) = Reporting Limit (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

MDL (ug/m3) = MDL (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

TO-14 _rev5MDL_DOD.rpt version 5.004 09/13/2011

TestAmerica Cedar Falls
Client Sample ID: BLIND DUPLICATE
GC/MS Volatiles

Lot-Sample # H3C200413 - 012 Work Order # M0EVL1AA Matrix.....: AIR

Date Sampled...: 03/19/2013 Date Received...: 03/20/2013
Prep Date.....: 03/20/2013 Analysis Time....: 03/21/2013
Prep Batch #....: 3079035 Analysis Time....: 05:53
Dilution Factor.: 1 Method.....: TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	MDL (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)	MDL (ug/m3)
trans-1,2-Dichloroethene	ND	0.080	0.020	ND	0.32	0.079
1,1-Dichloroethene	ND	0.080	0.014	ND	0.32	0.056
Trichloroethene	ND	0.040	0.014	ND	0.21	0.075
1,1,1-Trichloroethane	ND	0.080	0.012	ND	0.44	0.065
Vinyl chloride	ND	0.080	0.029	ND	0.20	0.074
1,1-Dichloroethane	ND	0.080	0.010	ND	0.32	0.040
Tetrachloroethene	ND	0.080	0.016	ND	0.54	0.11
cis-1,2-Dichloroethene	ND	0.080	0.024	ND	0.32	0.095
1,1,2-Trichloroethane	ND	0.080	0.021	ND	0.44	0.11

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	100	60 - 140

Result (ug/m3) = Result (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

Reporting Limit (ug/m3) = Reporting Limit (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

MDL (ug/m3) = MDL (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

TO-14 _rev5MDL_DOD.rpt version 5.004 09/13/2011

TestAmerica Cedar Falls
Client Sample ID: INTRA-LAB BLANK
GC/MS Volatiles

Lot-Sample # H3C200000 - 035B **Work Order #** M0E2D1AA **Matrix.....:** AIR

Prep Date.....: 03/19/2013 **Date Received..:** 03/20/2013
Prep Date.....: 03/20/2013 **Analysis Time....:** 03/20/2013
Prep Batch #.....: 3079035 **Analysis Time....:** 17:00
Dilution Factor.: 1 **Method.....:** TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	MDL (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)	MDL (ug/m3)
1,1,2-Trichloroethane	ND	0.080	0.021	ND	0.44	0.11
cis-1,2-Dichloroethene	ND	0.080	0.024	ND	0.32	0.095
Tetrachloroethene	ND	0.080	0.016	ND	0.54	0.11
Vinyl chloride	ND	0.080	0.029	ND	0.20	0.074
1,1-Dichloroethane	ND	0.080	0.010	ND	0.32	0.040
1,1,1-Trichloroethane	ND	0.080	0.012	ND	0.44	0.065
Trichloroethene	ND	0.040	0.014	ND	0.21	0.075
1,1-Dichloroethene	ND	0.080	0.014	ND	0.32	0.056
trans-1,2-Dichloroethene	ND	0.080	0.020	ND	0.32	0.079

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	100	60 - 140

Result (ug/m3) = Result (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

Reporting Limit (ug/m3) = Reporting Limit (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

MDL (ug/m3) = MDL (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

TO-14 _rev5MDL_DOD.rpt version 5.004 09/13/2011

TestAmerica Cedar Falls
Client Sample ID: CHECK SAMPLE
GC/MS Volatiles

Lot-Sample # H3C200000 - 035C Work Order # M0E2D1AC Matrix.....: AIR

Prep Date.....: 03/19/2013 Date Received..: 03/20/2013
Prep Date.....: 03/20/2013 Analysis Time....: 03/20/2013
Prep Batch #.....: 3079035 Analysis Time....: 15:06
Dilution Factor.: 1 Method.....: TO-15

PARAMETER	SPIKE AMOUNT (ppb(v/v))	MEASURED AMOUNT (ppb(v/v))	SPIKE AMOUNT (ug/m3)	MEASURED AMOUNT (ug/m3)	PERCENT RECOVERY	RECOVERY LIMITS
trans-1,2-Dichloroethene	5.00	4.81	19.8	19.1	96	70 - 130
1,1-Dichloroethene	5.00	4.91	19.8	19.5	98	70 - 130
Trichloroethene	5.00	4.06	26.9	21.8	81	70 - 130
1,1,1-Trichloroethane	5.00	5.43	27.3	29.6	109	70 - 130
1,1-Dichloroethane	5.00	4.99	20.2	20.2	100	70 - 130
Vinyl chloride	5.00	4.60	12.8	11.8	92	70 - 130
Tetrachloroethene	5.00	4.13	33.9	28.0	83	70 - 130
cis-1,2-Dichloroethene	5.00	4.72	19.8	18.7	94	70 - 130
1,1,2-Trichloroethane	5.00	3.94	27.3	21.5	79	70 - 130

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	103	60 - 140

Result (ug/m3) = Result (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

Reporting Limit (ug/m3) = Reporting Limit (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

MDL (ug/m3) = MDL (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

TO-14 _rev5MDL_DOD.rpt version 5.004 09/13/2011

Test America Knoxville GC/MS Volatiles

Lot ID: H3C200413

Batch #: 10406

Matrix: Air

Can #: 93132

MethCod: 7M

Method: EPA-2 TO-15

Parameter	Result	Reporting Limit	Units
cis-1,2-Dichloroethene	ND	0.080	ppb (v/v)
trans-1,2-Dichloroethene	ND	0.080	ppb (v/v)
Tetrachloroethene	ND	0.080	ppb (v/v)
Trichloroethene	ND	0.040	ppb (v/v)
Vinyl chloride	ND	0.080	ppb (v/v)
1,1-Dichloroethane	ND	0.080	ppb (v/v)
1,1-Dichloroethene	ND	0.080	ppb (v/v)
1,1,1-Trichloroethane	ND	0.080	ppb (v/v)
1,1,2-Trichloroethane	ND	0.080	ppb (v/v)

Test America Knoxville GC/MS Volatiles

Lot ID: H3C200413

Batch #: 10406

Matrix: Air

Can #: 7974

MethCod: 7M

Method: EPA-2 TO-15

Parameter	Result	Reporting Limit	Units
cis-1,2-Dichloroethene	ND	0.080	ppb (v/v)
trans-1,2-Dichloroethene	ND	0.080	ppb (v/v)
Tetrachloroethene	ND	0.080	ppb (v/v)
Trichloroethene	ND	0.040	ppb (v/v)
Vinyl chloride	ND	0.080	ppb (v/v)
1,1-Dichloroethane	ND	0.080	ppb (v/v)
1,1-Dichloroethene	ND	0.080	ppb (v/v)
1,1,1-Trichloroethane	ND	0.080	ppb (v/v)
1,1,2-Trichloroethane	ND	0.080	ppb (v/v)

Test America Knoxville GC/MS Volatiles

Lot ID: H3C200413Batch #: 10416Matrix: AirCan #: 04191MethCod: 7MMethod: EPA-2 TO-15

Parameter	Result	Reporting Limit	Units
cis-1,2-Dichloroethene	ND	0.080	ppb (v/v)
trans-1,2-Dichloroethene	ND	0.080	ppb (v/v)
Tetrachloroethene	ND	0.080	ppb (v/v)
Trichloroethene	ND	0.040	ppb (v/v)
Vinyl chloride	ND	0.080	ppb (v/v)
1,1-Dichloroethane	ND	0.080	ppb (v/v)
1,1-Dichloroethene	ND	0.080	ppb (v/v)
1,1,1-Trichloroethane	ND	0.080	ppb (v/v)
1,1,2-Trichloroethane	ND	0.080	ppb (v/v)

Test America Knoxville GC/MS Volatiles

Lot ID: H3C200413

Batch #: 10403

Matrix: Air

Can #: 6125

MethCod: 7M

Method: EPA-2 TO-15

Parameter	Result	Reporting Limit	Units
cis-1,2-Dichloroethene	ND	0.080	ppb (v/v)
trans-1,2-Dichloroethene	ND	0.080	ppb (v/v)
Tetrachloroethene	ND	0.080	ppb (v/v)
Trichloroethene	ND	0.040	ppb (v/v)
Vinyl chloride	ND	0.080	ppb (v/v)
1,1-Dichloroethane	ND	0.080	ppb (v/v)
1,1-Dichloroethene	ND	0.080	ppb (v/v)
1,1,1-Trichloroethane	ND	0.080	ppb (v/v)
1,1,2-Trichloroethane	ND	0.080	ppb (v/v)

Test America Knoxville GC/MS Volatiles

Lot ID: H3C200413

Batch #: 10415

Matrix: Air

Can #: 93270

MethCod: 7M

Method: EPA-2 TO-15

Parameter	Result	Reporting Limit	Units
cis-1,2-Dichloroethene	ND	0.080	ppb (v/v)
trans-1,2-Dichloroethene	ND	0.080	ppb (v/v)
Tetrachloroethene	ND	0.080	ppb (v/v)
Trichloroethene	ND	0.040	ppb (v/v)
Vinyl chloride	ND	0.080	ppb (v/v)
1,1-Dichloroethane	ND	0.080	ppb (v/v)
1,1-Dichloroethene	ND	0.080	ppb (v/v)
1,1,1-Trichloroethane	ND	0.080	ppb (v/v)
1,1,2-Trichloroethane	ND	0.080	ppb (v/v)

Test America Knoxville GC/MS Volatiles

Lot ID: H3C200413

Batch #: 10411

Matrix: Air

Can #: 93146

MethCod: 7M

Method: EPA-2 TO-15

Parameter	Result	Reporting Limit	Units
cis-1,2-Dichloroethene	ND	0.080	ppb (v/v)
trans-1,2-Dichloroethene	ND	0.080	ppb (v/v)
Tetrachloroethene	ND	0.080	ppb (v/v)
Trichloroethene	ND	0.040	ppb (v/v)
Vinyl chloride	ND	0.080	ppb (v/v)
1,1-Dichloroethane	ND	0.080	ppb (v/v)
1,1-Dichloroethene	ND	0.080	ppb (v/v)
1,1,1-Trichloroethane	ND	0.080	ppb (v/v)
1,1,2-Trichloroethane	ND	0.080	ppb (v/v)

US EPA ARCHIVE DOCUMENT

Test America Knoxville GC/MS Volatiles

Lot ID: H3C200413

Batch #: 10410

Matrix: Air

Can #: 02643

MethCod: 7M

Method: EPA-2 TO-15

Parameter	Result	Reporting Limit	Units
cis-1,2-Dichloroethene	ND	0.080	ppb (v/v)
trans-1,2-Dichloroethene	ND	0.080	ppb (v/v)
Tetrachloroethene	ND	0.080	ppb (v/v)
Trichloroethene	ND	0.040	ppb (v/v)
Vinyl chloride	ND	0.080	ppb (v/v)
1,1-Dichloroethane	ND	0.080	ppb (v/v)
1,1-Dichloroethene	ND	0.080	ppb (v/v)
1,1,1-Trichloroethane	ND	0.080	ppb (v/v)
1,1,2-Trichloroethane	ND	0.080	ppb (v/v)

Test America Knoxville GC/MS Volatiles

Lot ID: H3C200413

Batch #: 10399

Matrix: Air

Can #: 04306

MethCod: 7M

Method: EPA-2 TO-15

Parameter	Result	Reporting Limit	Units
cis-1,2-Dichloroethene	ND	0.080	ppb (v/v)
trans-1,2-Dichloroethene	ND	0.080	ppb (v/v)
Tetrachloroethene	ND	0.080	ppb (v/v)
Trichloroethene	ND	0.040	ppb (v/v)
Vinyl chloride	ND	0.080	ppb (v/v)
1,1-Dichloroethane	ND	0.080	ppb (v/v)
1,1-Dichloroethene	ND	0.080	ppb (v/v)
1,1,1-Trichloroethane	ND	0.080	ppb (v/v)
1,1,2-Trichloroethane	ND	0.080	ppb (v/v)

Test America Knoxville GC/MS Volatiles

Lot ID: H3C200413

Batch #: 10414

Matrix: Air

Can #: 12649

MethCod: 7M

Method: EPA-2 TO-15

Parameter	Result	Reporting Limit	Units
cis-1,2-Dichloroethene	ND	0.080	ppb (v/v)
trans-1,2-Dichloroethene	ND	0.080	ppb (v/v)
Tetrachloroethene	ND	0.080	ppb (v/v)
Trichloroethene	ND	0.040	ppb (v/v)
Vinyl chloride	ND	0.080	ppb (v/v)
1,1-Dichloroethane	ND	0.080	ppb (v/v)
1,1-Dichloroethene	ND	0.080	ppb (v/v)
1,1,1-Trichloroethane	ND	0.080	ppb (v/v)
1,1,2-Trichloroethane	ND	0.080	ppb (v/v)

Test America Knoxville GC/MS Volatiles

Lot ID: H3C200413

Batch #: 10408

Matrix: Air

Can #: 6619

MethCod: 7M

Method: EPA-2 TO-15

Parameter	Result	Reporting Limit	Units
cis-1,2-Dichloroethene	ND	0.080	ppb (v/v)
trans-1,2-Dichloroethene	ND	0.080	ppb (v/v)
Tetrachloroethene	ND	0.080	ppb (v/v)
Trichloroethene	ND	0.040	ppb (v/v)
Vinyl chloride	ND	0.080	ppb (v/v)
1,1-Dichloroethane	ND	0.080	ppb (v/v)
1,1-Dichloroethene	ND	0.080	ppb (v/v)
1,1,1-Trichloroethane	ND	0.080	ppb (v/v)
1,1,2-Trichloroethane	ND	0.080	ppb (v/v)

Test America Knoxville GC/MS Volatiles

Lot ID: H3C200413

Batch #: 10402

Matrix: Air

Can #: 12455

MethCod: 7M

Method: EPA-2 TO-15

Parameter	Result	Reporting Limit	Units
cis-1,2-Dichloroethene	ND	0.080	ppb (v/v)
trans-1,2-Dichloroethene	ND	0.080	ppb (v/v)
Tetrachloroethene	ND	0.080	ppb (v/v)
Trichloroethene	ND	0.040	ppb (v/v)
Vinyl chloride	ND	0.080	ppb (v/v)
1,1-Dichloroethane	ND	0.080	ppb (v/v)
1,1-Dichloroethene	ND	0.080	ppb (v/v)
1,1,1-Trichloroethane	ND	0.080	ppb (v/v)
1,1,2-Trichloroethane	ND	0.080	ppb (v/v)

Test America Knoxville GC/MS Volatiles

Lot ID: H3C200413Batch #: 10408Matrix: AirCan #: 1119MethCod: 7MMethod: EPA-2 TO-15

Parameter	Result	Reporting Limit	Units
cis-1,2-Dichloroethene	ND	0.080	ppb (v/v)
trans-1,2-Dichloroethene	ND	0.080	ppb (v/v)
Tetrachloroethene	ND	0.080	ppb (v/v)
Trichloroethene	ND	0.040	ppb (v/v)
Vinyl chloride	ND	0.080	ppb (v/v)
1,1-Dichloroethane	ND	0.080	ppb (v/v)
1,1-Dichloroethene	ND	0.080	ppb (v/v)
1,1,1-Trichloroethane	ND	0.080	ppb (v/v)
1,1,2-Trichloroethane	ND	0.080	ppb (v/v)

TAL Knoxville

5815 Middlebrook Pike

Knoxville, TN 37921

phone 865-291-3000 fax 865-584-4315

H3ca00H13

Canister Samples Chain of Custody Record

TestAmerica assumes no liability with respect to the collection and shipment of these samples.

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Client Contact Information				Project Manager:		Sampled By:		2 of 2 COCs											
Company:				Phone:															
Address:				Site Contact:															
City/State/Zip				TAL Contact:															
Phone:																			
FAX:																			
Project Name:				Analysis Turnaround Time															
Site/location:				Standard (Specify)															
PO #				Rush (Specify)															
Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Flow Controller ID	Canister ID	TO-15	TO-14A	EPA 3C	EPA 26C	ASTM D-1946	Other (Please specify in notes section)	Sample Type	Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (Please specify in notes section)
IA-B-40-4	3-18-13	1106	1100	-27.0	-3.5	K519	02643	X							X				
IA-1-60-3		1136	1137	-27.5	-5.5	K481	052930	X							X				
IA-B-60-3		1146	1142	-28.0	-5.0	K513	12649	X							X				
IA-1-33-4		1215	1216	-24.5	-6.0	K494	6019	X							X				
IA-B-33-4		1221	1220	-28.5	-5.0	K237	12455	X							X				
Blind Duplicate		1155	1152	-29.0	-6.5	K210	1119	X							X				
Sampled by:				Temperature (Fahrenheit)															
				Interior															
				Start															
				Stop															
				Pressure (inches of Hg)															
				Interior															
				Start															
				Stop															
Special Instructions/QC Requirements & Comments:																			
Canisters Shipped by:				Date/Time:				Canisters Received by:				Date/Time:							
Dropped @ TestAmerica				3/19/13 1410				Shelley Pace				3/15/13				1910			
Samples Relinquished by:				Date/Time:				Received by:				Date/Time:							
Kot B. Egan				3/19/13 1410				Shelley Pace				3-20-13 10:00							
Relinquished by:				Date/Time:				Received by:				Date/Time:							

TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST

Lot Number: A3C200713

Review Items	Yes	No	NA	If No, what was the problem?	Comments/Actions Taken
1. Do sample container labels match COC? (IDs, Dates, Times)	☒			☐ 1a Do not match COC ☐ 1b Incomplete information ☐ 1c Marking smeared ☐ 1d Label torn ☐ 1e No label ☐ 1f COC not received ☐ 1g Other:	
2. Is the cooler temperature within limits? (> freezing temp. of water to 6°C, VOST: 10°C)			☒	☐ 2a Temp Blank = _____ ☐ 2b Cooler Temp = _____ ☐ 2c Cooling initiated for recently collected samples, ice present. ☐ 3a Sample preservative =	
3. Were samples received with correct chemical preservative (excluding Encore)?			☒	☐ 4a Not present ☐ 4b Not intact ☐ 4c Other:	
4. Were custody seals present/intact on cooler and/or containers?	☒			☐ 5a Samples received-not on COC ☐ 5b Samples not received-on COC ☐ 6a Leaking ☐ 6b Broken	
5. Were all of the samples listed on the COC received?	☒			☐ 7a Headspace (VOA only) ☐ 8a Improper container	
6. Were all of the sample containers received intact?	☒			☐ 9a Could not be determined due to matrix interference ☐ 10a Holding time expired ☐ Incomplete information If no, was pH adjusted to pH 7 - 9 with sulfuric acid?	
7. Were VOA samples received without headspace?	☒			☐ 13a Leaking ☐ 13b Other:	
8. Were samples received in appropriate containers?	☒			☐ 14a Not relinquished ☐ 15a Incomplete information	
9. Did you check for residual chlorine, if necessary?	☒			☐ 15a Incomplete information ☐ 15a Incomplete information	
10. Were samples received within holding time?	☒			☐ 15a Incomplete information ☐ 15a Incomplete information	
11. For rad samples, was sample activity info. provided?	☒			☐ 15a Incomplete information ☐ 15a Incomplete information	
12. For 1613B water samples is pH<9?	☒			☐ 15a Incomplete information ☐ 15a Incomplete information	
13. Are the shipping containers intact?	☒			☐ 15a Incomplete information ☐ 15a Incomplete information	
14. Was COC relinquished? (Signed/Dated/Timed)	☒			☐ 15a Incomplete information ☐ 15a Incomplete information	
15. Are tests/parameters listed for each sample?	☒			☐ 15a Incomplete information ☐ 15a Incomplete information	
16. Is the matrix of the samples noted?	☒			☐ 15a Incomplete information ☐ 15a Incomplete information	
17. Is the date/time of sample collection noted?	☒			☐ 15a Incomplete information ☐ 15a Incomplete information	
18. Is the client and project name/# identified?	☒			☐ 15a Incomplete information ☐ 15a Incomplete information	
19. Was the sampler identified on the COC?	☒			☐ 15a Incomplete information ☐ 15a Incomplete information	
Quote #: <u>87209</u> PM Instructions: <u>NA</u>					
Sample Receiving Associate: <u>Wynne Cannon</u> Date: <u>3/20/13</u>					

QA026R23.doc, 022812

Lot Number: H3C200413

Initial Can Pressure										Subsequent Dilutions									
Analyst/Date	Can ID	Baro ID	Sample ID	Can #	Pres. upon receipt (-in or + psig)	Adj. Initial Pres. (- in or + psig)	Analyst/Date	I /	Baro ID	Initial Pres. Pi (in)	Final Pres. Pf (psig)	First In-can Final Pres. Pf (psig)	Second In-can Final Pres. Pf (psig)	Third In-can Final Pres. Pf (psig)	Serial Dilution Can #	Vol (mL)	Final Pres. Pf (psig)	Comments	
1/3/2013	15100	2890	MOETW	93132	-3.8													10406 R 3/7 ✓	
			MOET2	7974	6.0													↓	
			MOET5	04191	-6.0													10416 R 3/12 ✓	
			MOET6	6125	-5.5													10403 R 3/5 ✓	
			MOET8	93270	-3.9													10415 R 3/10 ✓	
			MOEVA	93146	0.0													10411 ↓	
			MOEVD	02643	-3.3													10410 R 3/8 ✓	
			MOEVE	04306	-6.0													10399 R 3/5 ✓	
			MOEVG	12649	-3.9													10414 R 3/10 ✓	
			MOEVH	6619	-6.3													10408 J 3/8 ✓	
			MOEVK	12455	-5.0													10402 R 3/6 ✓	
			MOEVL	1119	-5.4													10408 J 3/8 ✓	

TAL Knoxville

5815 Middlebrook Pike
Knoxville, TN 37921
phone 865-291-3000 fax 865-584-4315

Canister Samples Chain of Custody Record

TestAmerica assumes no liability with respect to the collection and shipment of these samples.

310-4480 Chain of

Client Contact Information		Project Manager: <u>Mike Hagemeister</u>		Sampled By: <u>Rob Bergman</u>		1 of 2 COCs	
Company: <u>Terracon</u>		Phone: <u>402-330-2802</u>					
Address: <u>6612 Chancellor Dr. Ste 102</u>		Site Contact: <u></u>					
City/State/Zip: <u>Cedar Falls, IA 50613</u>		TAL Contact: <u></u>					
Phone: <u>319-277-4016</u>							
FAX: <u></u>							
Project Name: <u>Chamberlain Hfg.</u>		Analysis Turnaround Time					
Site/location: <u>Waterloo, IA</u>		(Standard) (Specify)					
PO # <u>07107020</u>		Rush (Specify)					
Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Flow Controller ID	Canister ID
IA-B-38-4	3-18-13 3-19-13	0900	0908	-27.0	-3.0	K342	93132
IA-1-38-4		0910	0913	-28.5	-0.5	K306	7974
IA-1-47-3		0949	0953	-27.0	-4.5	K134	04191
IA-B-47-3		0957	1004	-28.5	-6.5	K165	6125
IA-B-20-6		1036	1033	-27.5	-3.5	K333	93270
IA-1-40-4		1058	1056	-28.0	0.0	K095	93146
Sampled by: <u>Rob Bergman</u>		Temperature (Fahrenheit)					
		Interior					
		Ambient					
		Start					
		Stop					
		Pressure (inches of Hg)					
		Interior					
		Ambient					
		Start					
		Stop					
Special Instructions/QC Requirements & Comments:							
email results to decleary@terracon.com and mehagemeister@terracon.com							
Canisters Shipped by: <u>Dropped @ TestAmerica</u>		Date/Time: <u>3/19/13 1410</u>		Canisters Received by: <u>Mike Taggart</u>		Date/Time: <u>3/19/13 1410</u>	
Samples Relinquished by: <u>Rob Bergman</u>		Date/Time: <u>3/19/13 1410</u>		Received by: <u></u>			
Relinquished by: <u>McClary</u>		Date/Time: <u>3/19/13 1420</u>		Received by: <u></u>			

TAL Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921

phone 865-291-3000 fax 865-584-4315

Canister Samples Chain of Custody Record

TestAmerica assumes no liability with respect to the collection and shipment of these samples.

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Client Contact Information				Project Manager:		Sampled By:		2 of 2 COCs											
Company:				Phone:															
Address:				Site Contact:															
City/State/Zip				TAL Contact:															
Phone:																			
FAX:																			
Project Name:				Analysis Turnaround Time															
Site/location:				Standard (Specify)															
PO #				Rush (Specify)															
Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Flow Controller ID	Canister ID	TO-15	TO-14A	EPA 3C	EPA 25C	ASTM D-1946	Other (Please specify in notes section)	Sample Type	Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (Please specify in notes section)
IA-B-40-4	3-18-13	1106	1100	-27.0	-3.5	K519	02643	X							X				
IA-1-60-3		1136	1137	-27.5	-5.5	K481	052930	X							X				
IA-B-60-3		1146	1142	-28.0	-5.0	K513	12649	X							X				
IA-1-33-4		1215	1216	-24.5	-6.0	K494	6619	X							X				
IA-B-33-4		1221	1220	-28.5	-5.0	K237	12455	X							X				
Blank Duplicate		1155	1152	-29.0	-6.5	K5210	1119	X							X				
Sampled by:				Temperature (Fahrenheit)															
				Interior				Ambient											
				Start															
				Stop															
				Interior				Ambient											
				Start															
				Stop															
Special Instructions/QC Requirements & Comments:																			
Canisters Shipped by:				Date/Time:				Canisters Received by:				Date/Time:							
Dropped e TestAmerica				3/19/13 1410				Theresa Vacker				3/19/13 1910							
Samples Relinquished by:				Date/Time:				Received by:				Date/Time:							
Paul Bergman				3/19/13 1410								3/19/13							
Relinquished by:				Date/Time:				Received by:				Date/Time:							
B.C. Hay				3/19/13 1420															