

US EPA ARCHIVE DOCUMENT

# Vapor Intrusion Interim Measures Quarterly Report No. 2

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

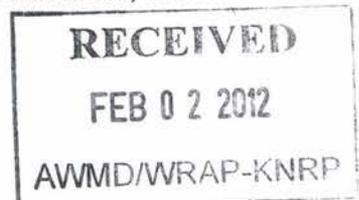
January 30, 2012  
Terracon Project No. 07107020

**Prepared for:**

Chamberlain Manufacturing Corporation  
Elmhurst, Illinois

**Prepared by:**

Terracon Consultants, Inc.  
Bettendorf, Iowa



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Geotechnical ■ Environmental ■ Construction Materials ■ Facilities



January 30, 2012

United States Environmental Protection Agency  
Region 7  
Air, RCRA and Toxics Division  
901 North 5th Street  
Kansas City, KS 66101

Attention: Mr. Bruce Morrison

Re: Vapor Intrusion Interim Measures Quarterly Report No. 2  
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 completed between October 1, 2011 and December 31, 2011 in conjunction with the site referenced above. The VIIM Quarterly Report presents a summary of completed activities related to the installation 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.**

John F. Brimeyer, PE  
Environmental Manager

  
for  
Dennis R. Sensenbrenner, PG  
Senior Associate

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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
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
VOC .....	Volatile Organic Compound

VAPOR INTRUSION INTERIM MEASURES QUARTERLY REPORT NO. 2  
CHAMBERLAIN MANUFACTURING CORPORATION  
FORMER FACILITY AT  
550 ESTHER STREET  
WATERLOO, IOWA

Project No. 07107020  
January 30, 2012

## 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 October 1, 2011 to December 31, 2011. 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.

### 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 in Appendix A. A Site Diagram is included as Exhibit 2.

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 completed by Chamberlain. The lateral extent of the chlorinated solvent plume has been determined to extend south and west from the Facility into an area of residential development. USEPA's preliminary evaluation of the vapor intrusion to indoor air pathway resulting from the groundwater plume identified the potential for vapor intrusion into residential structures.

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/May 2009. Subslab vapor samples were collected from ten homes located along and near East 4<sup>th</sup> 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 4<sup>th</sup> Street.

In accordance with the approved VIC Work Plan, Terracon completed 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 indoor air screening level. 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 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. A summary of each Resident that has responded to the original sampling offer or subsequent sampling offers either by returning signed forms or by contacting the USEPA is provided in Table 1-1.

Table 1-1 Vapor Sampling Summary

Residence No.	Date Signed Forms Received	Date Sampling Scheduled	Date Sampling Completed
3	4/20/2011	Property was sold - New owner could not be reached to obtain access	Not scheduled
8	2/9/2011	12/1/2011	12/13/2011
9	2/8/2011	Sampling schedule could not be coordinated	Not scheduled
18	4/4/2011	Renter could not be reached to obtain access	Not scheduled
23	3/7/2011	Owner decided to withdraw from program	Not scheduled
27	2/14/2011	Owner could not be reached to obtain access	Not scheduled
32	4/4/2011	Renter could not be reached to obtain access	Not scheduled
36	9/29/2011	12/5/2011	12/14/2011
43	12/12/2011	12/12/2011	12/14/2011
53	10/14/2011	12/1/2011	12/14/2011
66	Owner's son could not be reached to obtain signed forms	Not authorized	Not scheduled
68	4/4/2011	12/7/2011	12/13/2011
69	Owner could not be reached to obtain signed forms	Not authorized	Not scheduled
72	2/19/2011	12/1/2011	12/15/2011
73	11/7/2011	12/2/2011	12/15/2011
76	11/2/11	12/1/2011	12/14/2011
84	11/14/11	12/7/2011	12/14/2011
85	11/1/2011	12/1/2011	Resident not available at scheduled time

Supplemental subslab, indoor air, and ambient air sampling was conducted between December 12, and December 14, 2011. Analytical results for supplemental sampling activities are being reviewed and validated by Terracon and will be submitted to the USEPA in accordance with the approved schedule.

### 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 and revised on August 1, 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**

In November 2011, The USEPA updated the RSL Summary Table which is the guidance used by the USEPA for determining indoor air screening values. The updates resulted in a decrease of the TCE indoor air screening level from 1.2  $\mu\text{g}/\text{m}^3$  to 0.43  $\mu\text{g}/\text{m}^3$ . Based on the revisions to the RSL Summary Table, the USEPA requested that a mitigation system be installed at Residence No. 4. Although Chamberlain questions whether the reduction in indoor air screening levels is supported by the documentation cited by the USEPA, Chamberlain agreed to install a mitigation system at this Residence.

### **2.2 Mitigation Activities**

A soil vapor mitigation system, similar to a radon mitigation system, will be installed as a preventive measure beneath the existing slab at Residence No. 4. The system functions as a subslab depressurization system to induce a negative pressure in the subslab soils (relative to the pressure within the residence) in order to provide a preferential pathway for subslab soil vapors to bypass the residence.

#### **2.2.1 Site Access**

Based on the revised TCE indoor air screening level and as directed by the USEPA, notification was provided to a Residence where requested by the USEPA. The notification provided an offer to complete the installation of a vapor mitigation system and included a Mitigation System Request Form and a Permission to Install and Inspect Mitigation System form. Terracon received executed forms on December 5, 2011.

#### **2.2.2 System Installation Activities**

Vapor mitigation systems were not installed during the 4<sup>th</sup> calendar quarter of 2011. The proposed system will be installed by Crystal Heating & Plumbing, Inc. (Crystal), an Iowa Department of Public Health credentialed radon mitigation specialist, under a subcontract agreement with Terracon.

## **2.3 Site Access Protocol**

Upon receipt of the executed Mitigation System Request Form and a Permission to Install and Inspect Mitigation System form, Terracon contacted the resident to arrange a time and date for installation services. At the request of the resident, installation services were delayed until January 2012. Terracon installed the system on January 19, 2012. Information pertaining to the design, installation, and commissioning of the vapor mitigation system will be included in the next quarterly report.

## **3.0 PROCEDURES FOR SYSTEM DESIGN, INSTALLATION AND COMMISSIONING**

Vapor mitigation systems were not designed, installed, or commissioned during the 4<sup>th</sup> calendar quarter of 2011.

## **4.0 COMPLETED SYSTEM INSTALLATIONS**

Interim mitigation systems were previously offered to, accepted by, and installed at seven Residences. System installations were not completed during the 4<sup>th</sup> calendar quarter of 2011.

## **5.0 INITIAL INDOOR AIR MONITORING RESULTS**

### **5.1 Sampling Activities**

Initial indoor air monitoring was conducted within 30-days following completion of system installation in accordance with the VIIM Work Plan and ITRC Guidance. Indoor air sampling was conducted at three Residences during this quarterly reporting period where systems were installed during September 2011. In addition, indoor air sampling was repeated at one Residence where the results of initial post-installation monitoring continued to exceed indoor air screening levels.

Indoor air samples were collected using laboratory prepared six-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 heating, ventilating, and air conditioning (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 USEPA 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, air sampling forms (project information, equipment identifiers, sample location, and start time) were filled out and attached to the canisters. A Soil Vapor/Indoor Air Sampling Information Form indicating pertinent project and sample collection information was completed for each indoor air sample. A COC was completed indicating the start time for the samples.

To open the canister, the valve was rotated counter-clockwise at least one full turn or otherwise opened. After the 24-hours, Terracon personnel returned to the Residence, closed the valve on the 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.

Initial indoor air monitoring activities are summarized in Table 5-1.

Table 5-1 Initial Indoor Air Monitoring

Residence No.	Sample Date	Basement Sample	1 <sup>st</sup> Floor Sample
22	10/13/11	X	X
28	10/13/11	X	---
37	10/13/11	X	X
48	11/15/11	X	X

<sup>1</sup> - 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.

## 5.2 Air Monitoring Results

Indoor air samples were collected using six-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 performed by TestAmerica, 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 pre-installation and post-installation monitoring are summarized in Table 1 through Table 4, Appendix B. Copies of analytical reports are provided in Appendix C.

Analytical results indicate that the reported concentration of contaminants of concern in post-installation indoor air samples are less than the pre-installation system indoor air concentrations and are below indoor air screening levels identified in the VIC Work Plan at Residence Nos. 22 and 28. Monitoring activities at these Residences will continue in accordance with the post-installation monitoring schedule.

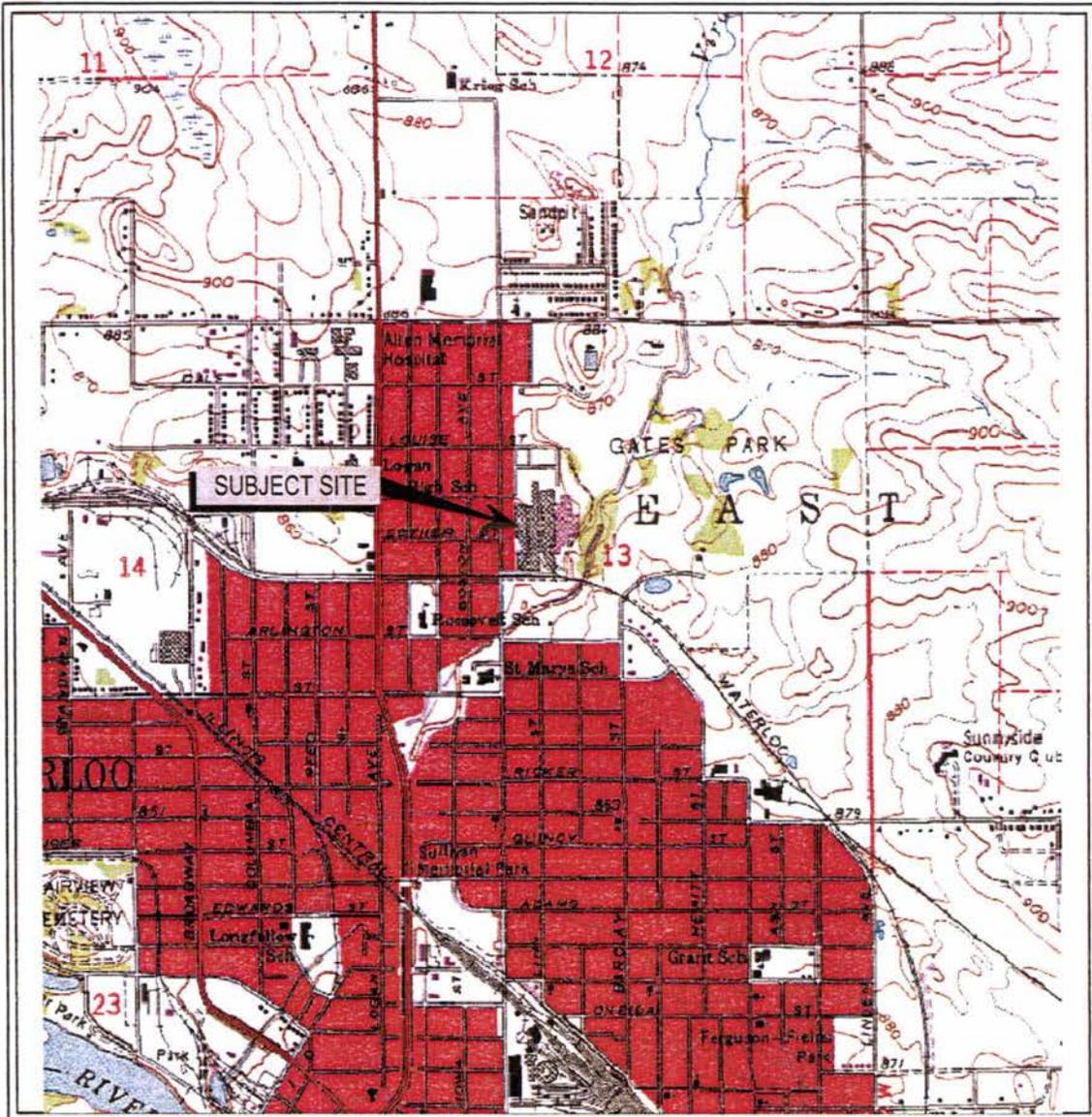
The reported PCE concentration of post-installation samples collected on the main floor of Residence No. 37 are less than the pre-installation concentrations, but continue to exceed the indoor air screening level. The elevated PCE concentrations are indicative of a possible indoor air source. As such, post-installation monitoring will be repeated and the Occupied Dwelling Questionnaire will be reviewed with the resident during the first quarter 2012.

The reported PCE concentration of the second post installation samples collected at Residence No. 48 continue to exceed the indoor air screening level. However, the PCE concentrations are less than the laboratory reporting limit. The USEPA has approved the use of the Reporting Limit as the screening level due to the technical inability to quantify the detection at the current USEPA screening level. The reported TCE concentration of a sample collected on the first floor at Residence No. 48 exceeds the indoor air screening level and is greater than the pre-installation TCE concentration and the first post-installation TCE concentration of samples collected at this location. Terracon observed that a basement floor drain does not appear to receive any flow which may have allowed the drain trap to dry out creating a possible vapor migration pathway. Terracon's proposal to pour water into the basement floor drain to eliminate the potential pathway and resample the Residence was approved by the USEPA. Subsequent observations on January 19, 2012 determined that the floor drain trap is plugged and the clean-out plug has been removed allowing for a direct vapor migration pathway from the sewer line into the Residence. Terracon has partially cleaned out the floor drain and will install a wing-nut plug in the clean-out plug opening during the first calendar quarter of 2012.

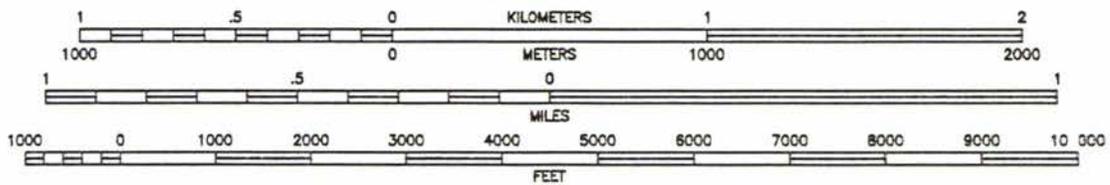
**Appendix A – Exhibits**

Exhibit 1 – Topographic Vicinity Map

Exhibit 2 – Site Diagram



SCALE 1:24 000



CONTOUR INTERVAL FEET  
 NATIONAL GEODETIC VERTICAL DATUM OF 1929  
 TOPO LINES REPRESENT 10-FOOT CONTOURS

WATERLOO NORTH QUADRANGLE

7.5 MINUTE SERIES (TOPOGRAPHIC)



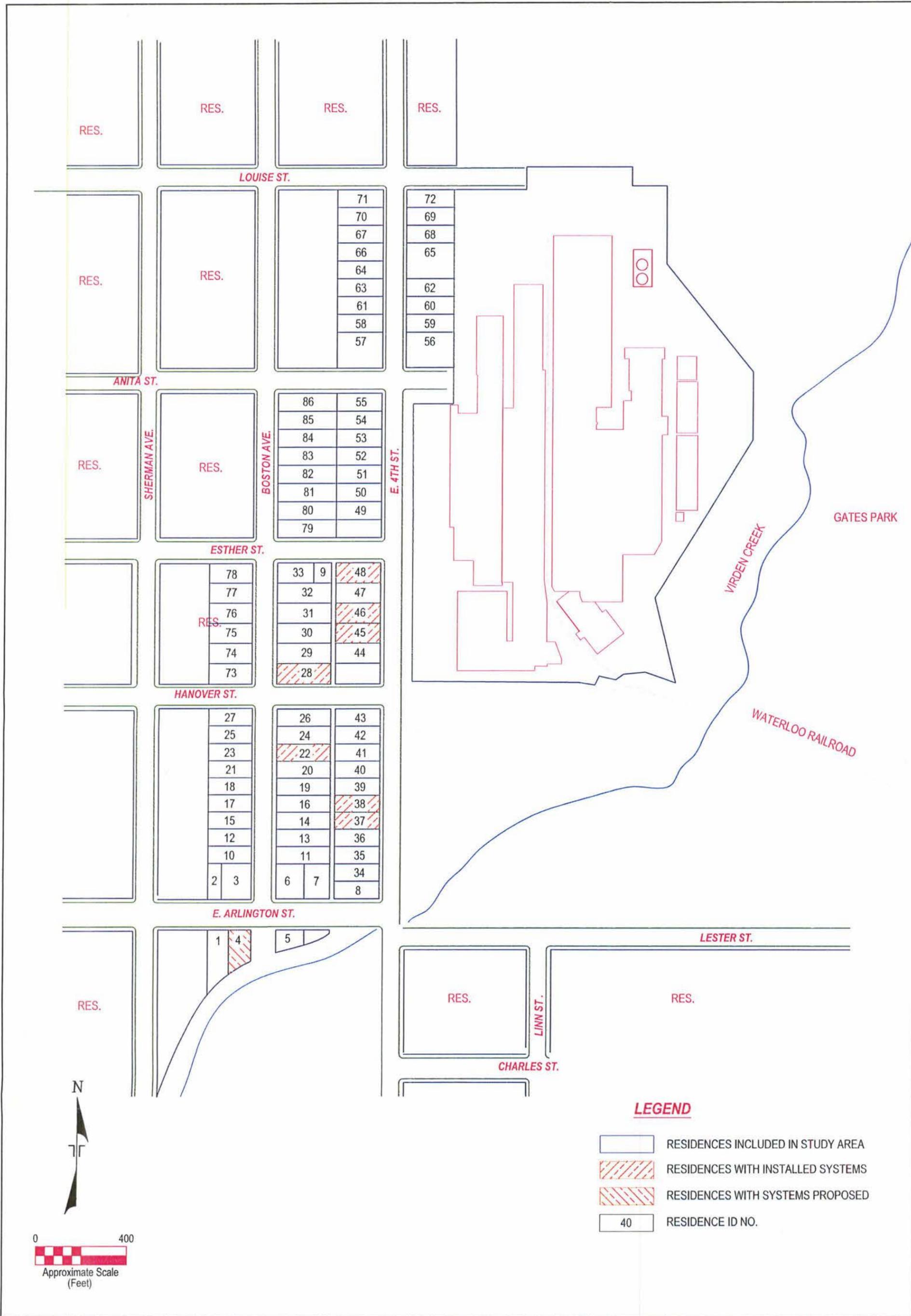
Project Mgr:	JFB	Project No.	07107020
Drawn By:	JFB	Scale:	AS SHOWN
Checked By:	JFB	File No.	07107020-VIMQR-FIG1
Approved By:	JFB	Date:	JAN 2012

**Terracon**  
 Consulting Engineers and Scientists

870 40th Avenue Bettendorf, Iowa 52722  
 (563) 355-0702 (563) 355-4789

TOPOGRAPHIC VICINITY MAP  
 VIIM QUARTERLY REPORT NO 2  
 FORMER CHAMBERLAIN MANUFACTURING FACILITY  
 550 ESTHER ST.  
 WATERLOO, IOWA

FIG. No.  
 1



REV.	DATE	BY	DESCRIPTION

**Terracon**  
Consulting Engineers and Scientists

870 40th Avenue      Battendorf, Iowa 52722  
(563) 355-0702      (563) 355-4789

**SITE PLAN**

VIIM QUARTERLY REPORT NO 2  
FORMER CHAMBERLAIN MANUFACTURING FACILITY  
550 ESTHER STREET

WATERLOO      IOWA

EXHIBIT 2	
PROJECT MGR:	JFB
DRAWN BY:	JFB
APPVD. BY:	JFB
SCALE:	AS SHOWN
DATE:	JAN 2012
PROJECT NO.:	07107020
FILE NAME:	07107020-VIIMQR
SHEET NO.:	2 OF 2

**Appendix B – Tables**

Table 1 – Indoor Air Analytical Results – Residence No. 22

Table 2 – Indoor Air Analytical Results – Residence No. 28

Table 3 – Indoor Air Analytical Results – Residence No. 37

Table 4 – Indoor Air Analytical Results – Residence No. 48

**TABLE 1**  
**INDOOR AIR ANALYTICAL RESULTS**  
**RESIDENCE NO. 22**  
**VAPOR INTRUSION INTERIM MEASURES QUARTERLY REPORT NO. 2**  
**CHAMBERLAIN MANUFACTURING**

Analyte	Units	Pre-Installation		Post Installation		Reporting Limit	Analytical Method Detection Limit	Indoor Air Screening Level <sup>2</sup>	
		Sample ID	IA-22-ML	IA-22-LL	IA-1-22-2				IA-B-22-2
		Date	6/16/2011	6/16/2011	10/13/2011				10/13/2011
Tetrachloroethene	µg/m <sup>3</sup>		3.1	0.6	<0.54	0.12 J	0.54 <sup>1</sup>	0.11	0.41
Trichloroethene	µg/m <sup>3</sup>		1.5	0.21 J	0.097 J	<0.21	0.215	0.075	1.2
Vinyl chloride	µg/m <sup>3</sup>		<0.2	<0.32	<0.2	<0.2	0.204 <sup>1</sup>	0.074	0.165
trans-1,2-Dichloroethene	µg/m <sup>3</sup>		<0.32	<0.49	<0.32	<0.32	0.317	0.079	63
cis-1,2-Dichloroethene	µg/m <sup>3</sup>		<0.32	<0.49	<0.32	<0.32	0.317	0.095	63
1,1-Dichloroethene	µg/m <sup>3</sup>		<0.32	<0.49	<0.32	<0.32	0.317	0.052	210
1,1-Dichloroethane	µg/m <sup>3</sup>		<0.32	<0.50	<0.32	<0.32	0.324	0.040	1.5
1,1,1-Trichloroethane	µg/m <sup>3</sup>		0.08 J	<0.68	<0.44	<0.44	0.436	0.065	5200
1,1,2-Trichloroethane	µg/m <sup>3</sup>		<0.44	<0.68	<0.44	<0.44	0.36 <sup>1</sup>	0.11	0.15

**NOTES:** µg/m<sup>3</sup> - 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.

<sup>1</sup> - 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.

<sup>2</sup> - Per USEPA approved VIC Work Plan

**SAMPLE ID NOMENCLATURE:** First 2 letters identify sample type: SS - Sub-Slab, IA - Indoor Air, AA - Ambient Air, and EB - Equipment Blank  
 A "D" following the first two letters or at the end of the Sample ID designates a sample duplicate  
 The numeric value following the sample type identify the Residence ID Number

**TABLE 2**  
**INDOOR AIR ANALYTICAL RESULTS**  
**RESIDENCE NO. 28**  
**VAPOR INTRUSION INTERIM MEASURES QUARTERLY REPORT NO. 2**  
**CHAMBERLAIN MANUFACTURING**

Analyte	Units	Pre-Installation	Post Installation	Reporting Limit	Analytical Method Detection Limit	Indoor Air Screening Level <sup>2</sup>
		IA-28	IA-B-28-2			
		Date				
		6/16/2011	10/13/2011			
Tetrachloroethene	µg/m <sup>3</sup>	0.6	0.14 J	0.54 <sup>1</sup>	0.11	0.41
Trichloroethene	µg/m <sup>3</sup>	2.9	0.13 J	0.215	0.075	1.2
Vinyl chloride	µg/m <sup>3</sup>	<0.2	<0.2	0.204 <sup>1</sup>	0.074	0.165
trans-1,2-Dichloroethene	µg/m <sup>3</sup>	<0.32	<0.32	0.317	0.079	63
cis-1,2-Dichloroethene	µg/m <sup>3</sup>	<0.32	<0.32	0.317	0.095	63
1,1-Dichloroethene	µg/m <sup>3</sup>	<0.32	0.073 J	0.317	0.052	210
1,1-Dichloroethane	µg/m <sup>3</sup>	<0.32	<0.32	0.324	0.040	1.5
1,1,1-Trichloroethane	µg/m <sup>3</sup>	0.23 J	<0.44	0.436	0.065	5200
1,1,2-Trichloroethane	µg/m <sup>3</sup>	<0.44	<0.44	0.36 <sup>1</sup>	0.11	0.15

**NOTES:** µg/m<sup>3</sup> - 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.

<sup>1</sup> - 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.

<sup>2</sup> - Per USEPA approved VIC Work Plan

**SAMPLE ID NOMENCLATURE:** First 2 letters identify sample type: SS - Sub-Slab, IA - Indoor Air, AA - Ambient Air, and EB - Equipment Blank  
 A "D" following the first two letters or at the end of the Sample ID designates a sample duplicate  
 The numeric value following the sample type identify the Residence ID Number

**TABLE 3**  
**INDOOR AIR ANALYTICAL RESULTS**  
**RESIDENCE NO. 37**  
**VAPOR INTRUSION INTERIM MEASURES QUARTERLY REPORT NO. 2**  
**CHAMBERLAIN MANUFACTURING**

Analyte	Sample ID	Pre-installation		Post Installation		Reporting Limit	Analytical Method Detection Limit	Indoor Air Screening Level <sup>2</sup>
		IA-37-ML	IA-37-LL	IA-B-37-2	IA-1-37-2			
		Date	6/16/2011	6/16/2011	10/13/2011			
Units								
Tetrachloroethene		1.7	0.84	0.33 J	0.72	0.54 <sup>1</sup>	0.11	0.41
Trichloroethene		0.20 J	0.28	0.23	<0.21	0.215	0.075	1.2
Vinyl chloride		<0.2	<0.2	<0.2	<0.2	0.204 <sup>1</sup>	0.074	0.165
trans-1,2-Dichloroethene		<0.32	<0.32	<0.32	<0.32	0.317	0.079	63
cis-1,2-Dichloroethene		<0.32	<0.32	0.23 J	<0.32	0.317	0.095	63
1,1-Dichloroethene		<0.32	<0.32	0.079 J	<0.32	0.317	0.052	210
1,1-Dichloroethane		<0.32	<0.32	<0.32	<0.32	0.324	0.040	1.5
1,1,1-Trichloroethane		7	3.5	1.9	3.9	0.436	0.065	5200
1,1,2-Trichloroethane		<0.44	<0.44	<0.44	<0.44	0.36 <sup>1</sup>	0.11	0.15

**NOTES:** µg/m<sup>3</sup> - 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.

<sup>1</sup> - 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.

<sup>2</sup> - Per USEPA approved VIC Work Plan

**SAMPLE ID NOMENCLATURE:** First 2 letters identify sample type: SS - Sub-Slab, IA - Indoor Air, AA - Ambient Air, and EB - Equipment Blank  
 A "D" following the first two letters or at the end of the Sample ID designates a sample duplicate  
 The numeric value following the sample type identify the Residence ID Number

**TABLE 4**  
**INDOOR AIR ANALYTICAL RESULTS**  
**RESIDENCE NO. 48**  
**VAPOR INTRUSION INTERIM MEASURES QUARTERLY REPORT NO. 2**  
**CHAMBERLAIN MANUFACTURING**

Analyte	Units	Pre-Installation			Post Installation		Post Installation		Reporting Limit	Analytical Method Detection Limit	Indoor Air Screening Level <sup>2</sup>	
		Sample ID	IA-48-B	IA-48-B-D	IA-48-MF	IA-B-48-2	IA-1-48-2	IA-B-48-3				IA-1-48-3
		Date	4/29/11	4/29/11	4/29/11	8/30/11	8/30/11	11/15/11				11/15/11
Tetrachloroethene	µg/m <sup>3</sup>	1.7	2.5	0.69	0.81	0.91	0.42 J	0.42 J	0.54 <sup>1</sup>	0.11	0.41	
Trichloroethene	µg/m <sup>3</sup>	0.18 J	0.2 J	0.16 J	0.095 J	0.27	0.15 J	0.49	0.215	0.075	1.2	
Vinyl chloride	µg/m <sup>3</sup>	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.204 <sup>1</sup>	0.074	0.165	
trans-1,2-Dichloroethene	µg/m <sup>3</sup>	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	0.317	0.079	63	
cis-1,2-Dichloroethene	µg/m <sup>3</sup>	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	0.19 J	0.317	0.095	63	
1,1-Dichloroethene	µg/m <sup>3</sup>	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	0.317	0.052	210	
1,1-Dichloroethane	µg/m <sup>3</sup>	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	0.324	0.040	1.5	
1,1,1-Trichloroethane	µg/m <sup>3</sup>	0.13 J	0.12 J	0.12 J	<0.44	0.069 J	<0.44	<0.44	0.436	0.065	5200	
1,1,2-Trichloroethane	µg/m <sup>3</sup>	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	0.36 <sup>1</sup>	0.11	0.15	

**NOTES:** µg/m<sup>3</sup> - 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.

<sup>1</sup> - 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.

<sup>2</sup> - Per USEPA approved VIC Work Plan

**SAMPLE ID NOMENCLATURE:** First 2 letters identify sample type: SS - Sub-Slab, IA - Indoor Air, AA - Ambient Air, and EB - Equipment Blank  
A "D" following the first two letters or at the end of the Sample ID designates a sample duplicate  
The numeric value following the sample type identify the Residence ID Number  
The letter or number indicates the location for Indoor Air samples: B - Basement, 1 or MF - 1st or Main Floor

Appendix C – Analytical Reports

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

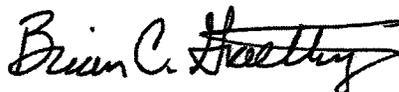
## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Cedar Falls  
704 Enterprise Drive  
Cedar Falls, IA 50613  
Tel: 800-750-2401

TestAmerica Job ID: CUK1201  
Client Project/Site: Chamberlain Vapor Sampling  
Client Project Description: TO-15 Scans

For:  
TERRACON - BETTENDORF  
870 40th Avenue  
Bettendorf, IA 52722

Attn: John Brimeyer



Authorized for release by:  
11/30/2011 8:41:42 AM

Brian C. Graettinger  
Operations Manager  
brian.graettinger@testamericainc.com

### LINKS

Review your project results through

**Total Access**

Have a Question?

**Ask The Expert**

Visit us at:  
[www.testamericainc.com](http://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.*

## Case Narrative

TestAmerica Job ID: CUK1201

Client: TERRACON - BETTENDORF  
Project/Site: Chamberlain Vapor Sampling

---

Job ID: CUK1201

---

Laboratory: TestAmerica Cedar Falls

---

Narrative

---

Analyzed by TestAmerica - Knoxville, TN.

US EPA ARCHIVE DOCUMENT

# Sample Summary

Client: TERRACON - BETTENDORF  
Project/Site: Chamberlain Vapor Sampling

TestAmerica Job ID: CUK1201

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
CUK1201-01	IA-B-48-3	Air	11/15/11 16:06	11/16/11 00:00
CUK1201-02	IA-1-48-3	Air	11/15/11 16:12	11/16/11 00:00



# Client Sample Results

Client: TERRACON - BETTENDORF  
Project/Site: Chamberlain Vapor Sampling

TestAmerica Job ID: CUK1201

Client Sample ID: IA-B-48-3

Lab Sample ID: CUK1201-01

Date Collected: 11/15/11 16:06

Matrix: Air

Date Received: 11/16/11 00:00

Sample Container: Summa Canister

Method: EPA TO-15 - Air Sample Analysis - Subcontract

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyst	Analyzed	DII Fac
Volatile Organic Compounds	See Attached Report.		0.10		mg		BCG	11/17/11 00:00	1.0

Client Sample ID: IA-1-48-3

Lab Sample ID: CUK1201-02

Date Collected: 11/15/11 16:12

Matrix: Air

Date Received: 11/16/11 00:00

Sample Container: Summa Canister

Method: EPA TO-15 - Air Sample Analysis - Subcontract

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyst	Analyzed	DII Fac
Volatile Organic Compounds	See Attached Report.		0.10		mg		BCG	11/17/11 00:00	1.0

US EPA ARCHIVE DOCUMENT

<b>H1K160427 Analytical Report .....</b>	<b>1</b>
<b>Sample Receipt Documentation .....</b>	<b>10</b>
<b>Total Number of Pages .....</b>	<b>12</b>



TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

**ANALYTICAL REPORT**

PROJECT NO. CUK1201

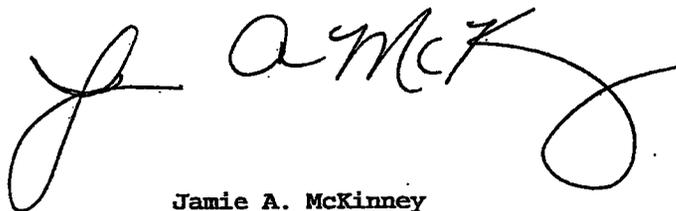
Terracon

Lot #: H1K160427

Brian Graettinger

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

TESTAMERICA LABORATORIES, INC.



Jamie A. McKinney  
Project Manager

November 29, 2011

# ANALYTICAL METHODS SUMMARY

HLK160427

<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.

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# SAMPLE SUMMARY

HLK160427

WO #	SAMPLE#	CLIENT	SAMPLE ID	SAMPLED DATE	SAMP TIME
MN21T	001	IA-B-48-3		11/15/11	16:06
MN21V	002	IA-1-48-3		11/15/11	16:12

**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.

US EPA ARCHIVE DOCUMENT

**PROJECT NARRATIVE  
H1K160427**

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.

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## 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.

US EPA ARCHIVE DOCUMENT

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TestAmerica Cedar Falls  
Client Sample ID: IA-B-48-3  
GC/MS Volatiles

Lot-Sample # H1K160427 - 001 Work Order # MN21T1AA Matrix.....: AIR  
Date Sampled...: 11/15/2011 Date Received..: 11/16/2011  
Prep Date.....: 11/16/2011 Analysis Time....: 11/17/2011  
Prep Batch #....: 1320232 Analysis Time....: 04:05  
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)
cis-1,2-Dichloroethene	ND	0.080	0.024	ND	0.32	0.095
Tetrachloroethene	0.062 J	0.080	0.016	0.42 J	0.54	0.11
1,1-Dichloroethene	ND	0.080	0.013	ND	0.32	0.052
trans-1,2-Dichloroethene	ND	0.080	0.020	ND	0.32	0.079
1,1,2-Trichloroethane	ND	0.080	0.021	ND	0.44	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	0.028 J	0.040	0.014	0.15 J	0.21	0.075

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	102	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-1-48-3

GC/MS Volatiles

Lot-Sample # H1K160427 - 002      Work Order # MN21V1AA      Matrix.....: AIR  
 Date Sampled...: 11/15/2011      Date Received..: 11/16/2011  
 Prep Date.....: 11/16/2011      Analysis Time...: 11/17/2011  
 Prep Batch #....: 1320232      Analysis Time...: 04:59  
 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)
Vinyl chloride	ND	0.080	0.029	ND	0.20	0.074
Trichloroethene	0.091	0.040	0.014	0.49	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
1,1,2-Trichloroethane	ND	0.080	0.021	ND	0.44	0.11
1,1-Dichloroethane	ND	0.080	0.013	ND	0.32	0.052
trans-1,2-Dichloroethene	ND	0.080	0.020	ND	0.32	0.079
cis-1,2-Dichloroethene	0.047 J	0.080	0.024	0.19 J	0.32	0.095
Tetrachloroethene	0.062 J	0.080	0.016	0.42 J	0.54	0.11

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	102	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: INTRA-LAB BLANK  
GC/MS Volatiles

Lot-Sample # HIK160000 - 232B Work Order # MN3MD1AA Matrix.....: AIR  
Prep Date.....: 11/15/2011 Date Received...: 11/16/2011  
Prep Batch #.....: 1320232 Analysis Time....: 11/16/2011  
Dilution Factor.: 1 Analysis Time....: 16:43  
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)
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-Dichloroethene	ND	0.080	0.013	ND	0.32	0.052
trans-1,2-Dichloroethene	ND	0.080	0.020	ND	0.32	0.079
1,1,2-Trichloroethane	ND	0.080	0.021	ND	0.44	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

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

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

Lot-Sample # HIK160000 - 232C Work Order # MN3MDIAC Matrix.....: AIR  
Prep Date.....: 11/15/2011 Date Received..: 11/16/2011  
Prep Date.....: 11/16/2011 Analysis Time....: 11/16/2011  
Prep Batch #.....: 1320232 Analysis Time....: 14:42  
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
Trichloroethene	5.00	4.56	26.9	24.5	91	70 - 130
1,1,1-Trichloroethane	5.00	4.34	27.3	23.7	87	70 - 130
1,1-Dichloroethane	5.00	4.30	20.2	17.4	86	70 - 130
Vinyl chloride	5.00	4.89	12.8	12.5	98	70 - 130
1,1,2-Trichloroethane	5.00	4.52	27.3	24.7	90	70 - 130
trans-1,2-Dichloroethene	5.00	4.83	19.8	19.2	97	70 - 130
1,1-Dichloroethene	5.00	5.04	19.8	20.0	101	70 - 130
Tetrachloroethene	5.00	4.58	33.9	31.1	92	70 - 130
cis-1,2-Dichloroethene	5.00	4.53	19.8	18.0	91	70 - 130

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

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

H1X16D127

## Canister Samples Chain of Custody Record

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

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

Client Contact Information		Project Manager: <b>John Brimeyer</b>		Sampled By: <b>Rob Bergman</b>		1 of 1 COCs													
Company: <b>Terracon</b>		Phone: <b>563-355-0702</b>																	
Address: <b>870 40th Ave.</b>		Site Contact:																	
City/State/Zip: <b>Bethesda, MD 52722</b>		TAL Contact:																	
Phone: <b>563-355-0702</b>																			
FAX: <b>---</b>																			
Project Name: <b>Chamberlain</b>		Analysis Turnaround Time																	
Site/location: <b>(Water) IA</b>		Standard (Specify) <b>5 Day</b>																	
PO # <b>07107020</b>		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 28C	ASTM D-1946	Other (Please specify in notes section)	Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (Please specify in notes section)	
IA-B-48-3	11/14/11 - 11/15/11	1611	1606	-28.5	-3.5	K212	7470	X						X					
IA-1-48-3	11/14/11 - 11/15/11	1627	1612	-29.5	-6.0	K481	93180	X						X					
Sampled by:		Temperature (Fahrenheit)																	
Rob Bergman		Interior		Ambient															
		Start																	
		Stop																	
		Pressure (Inches of Hg)																	
		Interior		Ambient															
		Start																	
		Stop																	
Special Instructions/QC Requirements & Comments:																			
Please e-mail results to John Brimeyer <a href="mailto:jfbrimeyer@terracon.com">jfbrimeyer@terracon.com</a>																			
Canisters Shipped by:				Date/Time:				Canisters Received by:											
Samples Relinquished by: <b>Rob Bergman</b>				Date/Time: <b>11/15/11 1653</b>				Received by: <b>Cheryl Boy</b>											
Relinquished by: <b>Rob Bergman</b>				Date/Time: <b>11/15/11 1700</b>				Received by: <b>Rob Bergman 11/16/11 10:00</b>											

Page 15 of 27

11/30/2011



TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST

Lot Number: 41K110427

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

Sample Receiving Associate: *[Signature]*

Date: 11/16/11

QA026R22.doc, 012811

# Test America - Knoxville ---- Air Canister Dilution Log

Lot Number: H1K160427

Initial Can Pressure							Subsequent Dilutions											
Analyst/Date	Tedlar Bag Time	Pbarr (in)	Sample ID	Can #	Pres. upon receipt (-in or + psig)	Adj. Initial Pres. (-in or + psig)	Analyst/Date	S	Pbarr (in)	Initial Pres. Pf (in)	Final Pres. Pf (psig)	First InCan Final Pres. Pf (psig)	Second In-can Final Pres. Pf (psig)	Third InCan Final Pres. Pf (psig)	Serial Dilution Can #	Vol (mL)	Final Pres. Pf (psig)	Comments
MS 11/16/11	MA	28.69	MN21T	7470 ✓	-3.7	-												9481
J	J	J	MN21V	93180 ✓	-5.0	-												9480

H1K100429 Analytical Report .....	1
Total Number of Pages .....	7



**TestAmerica**

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

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**ANALYTICAL REPORT**

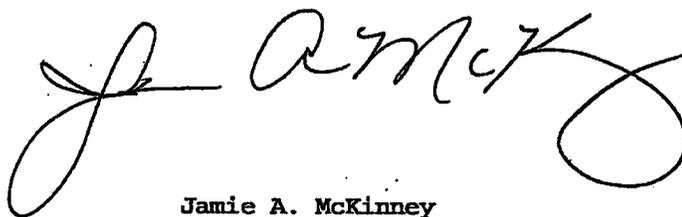
Terracon (special list)

Lot #: HLK100429

Brian Graettinger

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

TESTAMERICA LABORATORIES, INC.



Jamie A. McKinney  
Project Manager

November 29, 2011

# ANALYTICAL METHODS SUMMARY

HLK100429

<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.

US EPA ARCHIVE DOCUMENT

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# SAMPLE SUMMARY

HLK100429

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
MNWMW	001	CAN# 93180 / BATCH# 9480	10/03/11	08:00
MNWM0	002	CAN# 7470 / BATCH# 9481	10/03/11	08:00

**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**  
**H1K100429**

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.

**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.

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## CERTIFICATION SUMMARY

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica Knoxville	ACCLASS	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: CAN# 93180 / BATCH# 9480  
 GC/MS Volatiles

Lot-Sample # H1K100429 - 001      Work Order # MNWMW1AC      Matrix.....: AIR  
 Date Sampled...: 10/03/2011      Date Received...: 11/10/2011  
 Prep Date.....: 10/03/2011      Analysis Date...: 10/04/2011  
 Prep Batch #....: 1314157  
 Dilution Factor.: 1      Method.....: TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	ND	0.080	ND	0.54
1,1,1-Trichloroethane	ND	0.080	ND	0.44
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	ND	0.040	ND	0.21
Vinyl chloride	ND	0.080	ND	0.20
1,1-Dichloroethane	ND	0.080	ND	0.32
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)\*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) \* Dilution Factor) \* (Molecular Weight/24.45)

TO-14\_rev3.rpt Rev 1.0.9 09/01/2011

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TestAmerica Cedar Falls

Client Sample ID: CAN# 7470 / BATCH# 9481

GC/MS Volatiles

Lot-Sample # H1K100429 - 002      Work Order # MNWM01AC      Matrix.....: AIR  
 Date Sampled...: 10/03/2011      Date Received...: 11/10/2011  
 Prep Date.....: 10/03/2011      Analysis Date...: 10/04/2011  
 Prep Batch #....: 1314157  
 Dilution Factor:: 1      Method.....: TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	ND	0.080	ND	0.54
1,1,1-Trichloroethane	ND	0.080	ND	0.44
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	ND	0.040	ND	0.21
Vinyl chloride	ND	0.080	ND	0.20
1,1-Dichloroethane	ND	0.080	ND	0.32
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)\*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) \* Dilution Factor) \* (Molecular Weight/24.45)

TO-14\_rev5.rpt Rev 1.0.9 09/01/2011

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

411160127  
**Canister Samples Chain of Custody Record**

**TestAmerica**

THE LEADER IN ENVIRONMENTAL TESTING

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

Client Contact Information		Project Manager: <b>John Brimeyer</b>		Sampled By: <b>Rob Bergman</b>		1 of 1 COCs												
Company: <b>Terracon</b>		Phone: <b>563-355-0702</b>																
Address: <b>870 40th Ave.</b>		Site Contact:																
City/State/Zip: <b>Bettendorf, IA 52722</b>		TAL Contact:																
Phone: <b>563-355-0702</b>																		
FAX: <b>---</b>																		
Project Name: <b>Chamberlain</b>		Analysis Turnaround Time																
Site/location: <b>Waterloo, IA</b>		Standard (Specify) <b>5 Day</b>																
PO# <b>07107020</b>		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 9C	EPA 25C	ASTM D-1848	Other (Please specify in notes section)	Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (Please specify in notes section)
<b>IA-B-48-3</b>	<b>11/11/11 - 11/15/11</b>	<b>1611</b>	<b>1606</b>	<b>-28.5</b>	<b>-3.5</b>	<b>K212</b>	<b>7470</b>	<input checked="" type="checkbox"/>						<input checked="" type="checkbox"/>				
<b>IA-1-48-3</b>	<b>11/14/11 - 11/15/11</b>	<b>1627</b>	<b>1612</b>	<b>-29.5</b>	<b>-6.0</b>	<b>K481</b>	<b>93180</b>	<input checked="" type="checkbox"/>						<input checked="" type="checkbox"/>				
Sampled by: <b>Rob Bergman</b>		Temperature (Fahrenheit)		Interior		Ambient		1 Box Rec'd @ Ambient Temp with custody seal intact APX 11/16/11										
		Pressure (inches of Hg)		Interior		Ambient		1 Box Fed. # 4208 2708 9098										
				Start				2 cans / 2 Flows										
				Stop														
Special Instructions/QC Requirements & Comments:																		
Please e-mail results to John Brimeyer jfbrimeyer@terracon.com																		
Canisters Shipped by:		Date/Time:		Canisters Received by:														
Samples Relinquished by: <b>Rob Bergman</b>		Date/Time: <b>11/15/11 1653</b>		Received by: <b>Chris Lee</b>														
Relinquished by: <b>[Signature]</b>		Date/Time: <b>11/15/11 1700</b>		Received by: <b>Rob Bergman 11/16/11 10:06</b>														

TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST

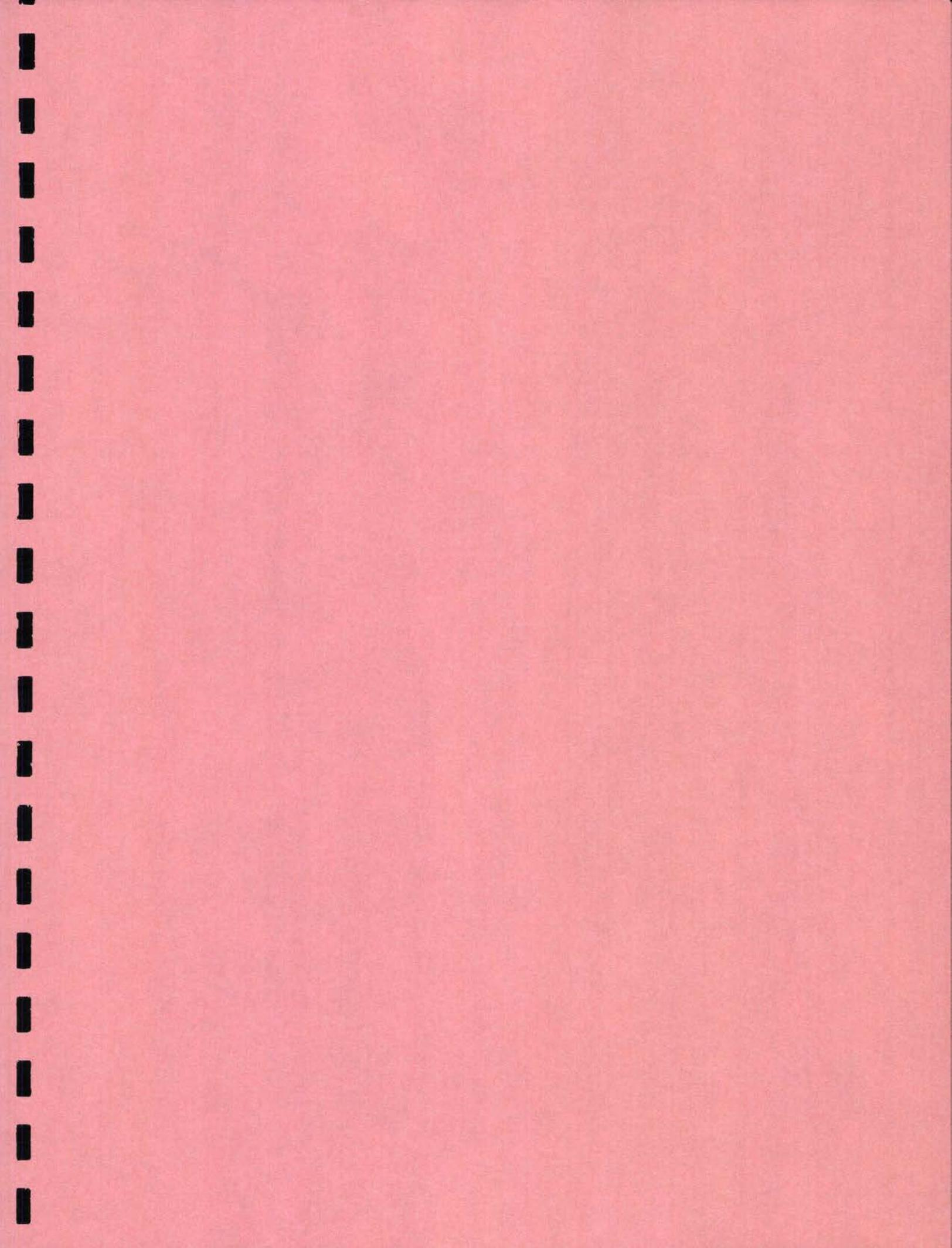
Lot Number: 41K10427

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

Sample Receiving Associate: [Signature]

Date: 11/16/11

QA026R22.doc, 012811



# TestAmerica

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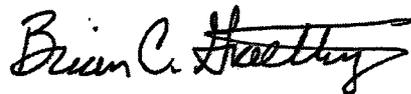
## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Cedar Falls  
704 Enterprise Drive  
Cedar Falls, IA 50613  
Tel: 800-750-2401

TestAmerica Job ID: CUJ1023  
Client Project/Site: Chamberlain Vapor Sampling  
Client Project Description: TO-15 Scans

For:  
TERRACON - BETTENDORF  
870 40th Avenue  
Bettendorf, IA 52722

Attn: John Brimeyer



Authorized for release by:  
10/27/2011 04:27:48 PM

Brian C. Graettinger  
Operations Manager  
brian.graettinger@testamericainc.com

### LINKS

Review your project results through

**Total Access**

Have a Question?

**Ask The Expert**

Visit us at:  
[www.testamericainc.com](http://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.*

# Sample Summary

Client: TERRACON - BETTENDORF  
Project/Site: Chamberlain Vapor Sampling

TestAmerica Job ID: CUJ1023

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
CUJ1023-01	IA-B-37-2	Air	10/13/11 08:40	10/13/11 11:45
CUJ1023-02	IA-1-37-2	Air	10/13/11 08:50	10/13/11 11:45
CUJ1023-03	IA-B-28-2	Air	10/13/11 09:18	10/13/11 11:45
CUJ1023-04	IA-1-22-2	Air	10/13/11 09:47	10/13/11 11:45
CUJ1023-05	IA-B-22-2	Air	10/13/11 09:57	10/13/11 11:45



# Client Sample Results

Client: TERRACON - BETTENDORF  
Project/Site: Chamberlain Vapor Sampling

TestAmerica Job ID: CUJ1023

Client Sample ID: IA-B-37-2

Lab Sample ID: CUJ1023-01

Date Collected: 10/13/11 08:40

Matrix: Air

Date Received: 10/13/11 11:45

Sample Container: Summa Canister

Method: EPA TO-15 - Air Sample Analysis - Subcontract

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyst	Analyzed	Dil Fac
Volatile Organic Compounds	See Attached Report.		0.10		mg		BCG	10/15/11 08:05	1.0

Client Sample ID: IA-1-37-2

Lab Sample ID: CUJ1023-02

Date Collected: 10/13/11 08:50

Matrix: Air

Date Received: 10/13/11 11:45

Sample Container: Summa Canister

Method: EPA TO-15 - Air Sample Analysis - Subcontract

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyst	Analyzed	Dil Fac
Volatile Organic Compounds	See Attached Report.		0.10		mg		BCG	10/15/11 08:59	1.0

Client Sample ID: IA-B-28-2

Lab Sample ID: CUJ1023-03

Date Collected: 10/13/11 09:18

Matrix: Air

Date Received: 10/13/11 11:45

Sample Container: Summa Canister

Method: EPA TO-15 - Air Sample Analysis - Subcontract

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyst	Analyzed	Dil Fac
Volatile Organic Compounds	See Attached Report.		0.10		mg		BCG	10/15/11 09:53	1.0

Client Sample ID: IA-1-22-2

Lab Sample ID: CUJ1023-04

Date Collected: 10/13/11 09:47

Matrix: Air

Date Received: 10/13/11 11:45

Sample Container: Summa Canister

Method: EPA TO-15 - Air Sample Analysis - Subcontract

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyst	Analyzed	Dil Fac
Volatile Organic Compounds	See Attached Report.		0.10		mg		BCG	10/15/11 10:46	1.0

Client Sample ID: IA-B-22-2

Lab Sample ID: CUJ1023-05

Date Collected: 10/13/11 09:57

Matrix: Air

Date Received: 10/13/11 11:45

Sample Container: Summa Canister

Method: EPA TO-15 - Air Sample Analysis - Subcontract

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyst	Analyzed	Dil Fac
Volatile Organic Compounds	See Attached Report.		0.10		mg		BCG	10/15/11 11:39	1.0

US EPA ARCHIVE DOCUMENT

<b>H1J140464 Analytical Report .....</b>	<b>1</b>
<b>Sample Receipt Documentation .....</b>	<b>13</b>
<b>Total Number of Pages .....</b>	<b>15</b>



TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

**ANALYTICAL REPORT**

PROJECT NO. CUJ1023

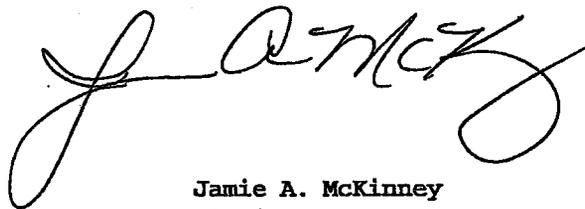
Terracon

Lot #: HLJ140464

Brian Graettinger

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

TESTAMERICA LABORATORIES, INC.



Jamie A. McKinney  
Project Manager

October 21, 2011

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# ANALYTICAL METHODS SUMMARY

HLJ140464

<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**

HLJ140464

<u>WO #</u>	<u>SAMPLE#</u>	<u>CLIENT SAMPLE ID</u>	<u>SAMPLED DATE</u>	<u>SAMP TIME</u>
MM7J9	001	IA-B-37-2	10/13/11	08:40
MM7KA	002	IA-1-37-2	10/13/11	08:50
MM7KC	003	IA-B-28-2	10/13/11	09:18
MM7KD	004	IA-1-22-2	10/13/11	09:47
MM7KE	005	IA-B-22-2	10/13/11	09:57

**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**  
**H1J140464**

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	ACCLASS	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.

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TestAmerica Cedar Falls  
Client Sample ID: IA-B-37-2  
GC/MS Volatiles

Lot-Sample # H1J140464 - 001      Work Order # MM7J91AA      Matrix.....: AIR  
Date Sampled...: 10/13/2011      Date Received..: 10/14/2011  
Prep Date.....: 10/14/2011      Analysis Time....: 10/15/2011  
Prep Batch #.....: 1287192      Analysis Time....: 08:05  
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)
Vinyl chloride	ND	0.080	0.029	ND	0.20	0.074
1,1-Dichloroethene	0.020 J	0.080	0.013	0.079 J	0.32	0.052
cis-1,2-Dichloroethene	0.059 J	0.080	0.024	0.23 J	0.32	0.095
1,1-Dichloroethane	ND	0.080	0.010	ND	0.32	0.040
1,1,1-Trichloroethane	0.35	0.080	0.012	1.9	0.44	0.065
Trichloroethene	0.042	0.040	0.014	0.23	0.21	0.075
trans-1,2-Dichloroethene	ND	0.080	0.020	ND	0.32	0.079
1,1,2-Trichloroethane	ND	0.080	0.021	ND	0.44	0.11
Tetrachloroethene	0.049 J	0.080	0.016	0.33 J	0.54	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-1-37-2  
GC/MS Volatiles

Lot-Sample # HIJ140464 - 002      Work Order # MM7KA1AA      Matrix.....: AIR  
Date Sampled...: 10/13/2011      Date Received..: 10/14/2011  
Prep Date.....: 10/14/2011      Analysis Time...: 10/15/2011  
Prep Batch #....: 1287192      Analysis Time...: 08:59  
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)
Tetrachloroethene	0.11	0.080	0.016	0.72	0.54	0.11
1,1,2-Trichloroethane	ND	0.080	0.021	ND	0.44	0.11
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	0.71	0.080	0.012	3.9	0.44	0.065
1,1-Dichloroethane	ND	0.080	0.010	ND	0.32	0.040
cis-1,2-Dichloroethene	ND	0.080	0.024	ND	0.32	0.095
1,1-Dichloroethene	ND	0.080	0.013	ND	0.32	0.052
Vinyl chloride	ND	0.080	0.029	ND	0.20	0.074

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)



TestAmerica Cedar Falls  
 Client Sample ID: IA-B-28-2  
 GC/MS Volatiles

Lot-Sample # H1J140464 - 003      Work Order # MM7KC1AA      Matrix.....: AIR  
 Date Sampled...: 10/13/2011      Date Received...: 10/14/2011  
 Prep Date.....: 10/14/2011      Analysis Time....: 10/15/2011  
 Prep Batch #....: 1287192      Analysis Time....: 09:53  
 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)
Vinyl chloride	ND	0.080	0.029	ND	0.20	0.074
1,1-Dichloroethene	0.018 J	0.080	0.013	0.073 J	0.32	0.052
cis-1,2-Dichloroethene	ND	0.080	0.024	ND	0.32	0.095
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	0.024 J	0.040	0.014	0.13 J	0.21	0.075
trans-1,2-Dichloroethene	ND	0.080	0.020	ND	0.32	0.079
1,1,2-Trichloroethane	ND	0.080	0.021	ND	0.44	0.11
Tetrachloroethene	0.021 J	0.080	0.016	0.14 J	0.54	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)

TestAmerica Cedar Falls  
 Client Sample ID: IA-1-22-2  
 GC/MS Volatiles

Lot-Sample # H1J140464 - 004      Work Order # MM7KD1AA      Matrix.....: AIR  
 Date Sampled...: 10/13/2011      Date Received..: 10/14/2011  
 Prep Date.....: 10/14/2011      Analysis Time...: 10/15/2011  
 Prep Batch #...: 1287192      Analysis Time...: 10:46  
 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
Tetrachloroethene	ND	0.080	0.016	ND	0.54	0.11
trans-1,2-Dichloroethene	ND	0.080	0.020	ND	0.32	0.079
Trichloroethene	0.018 J	0.040	0.014	0.097 J	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
1,1-Dichloroethene	ND	0.080	0.013	ND	0.32	0.052
cis-1,2-Dichloroethene	ND	0.080	0.024	ND	0.32	0.095

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	100	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-22-2  
GC/MS Volatiles

Lot-Sample # HIJ140464 - 005      Work Order # MM7KE1AA      Matrix.....: AIR  
Date Sampled...: 10/13/2011      Date Received..: 10/14/2011  
Prep Date.....: 10/14/2011      Analysis Time...: 10/15/2011  
Prep Batch #....: 1287192      Analysis Time...: 11:39  
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)
cis-1,2-Dichloroethene	ND	0.080	0.024	ND	0.32	0.095
1,1-Dichloroethene	ND	0.080	0.013	ND	0.32	0.052
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
Tetrachloroethene	0.018 J	0.080	0.016	0.12 J	0.54	0.11
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: CHECK SAMPLE  
GC/MS Volatiles

Lot-Sample # H1J140000 - 192C      Work Order # MM7NM1AC      Matrix.....: AIR  
Prep Date.....: 10/13/2011      Date Received..: 10/14/2011  
Prep Batch #.....: 1287192      Analysis Time....: 10/14/2011  
Dilution Factor.: 1      Analysis Time....: 15:47  
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
Tetrachloroethene	5.00	4.26	33.9	28.9	85	70 - 130
1,1,2-Trichloroethane	5.00	4.18	27.3	22.8	84	70 - 130
trans-1,2-Dichloroethene	5.00	4.80	19.8	19.0	96	70 - 130
Trichloroethene	5.00	4.38	26.9	23.5	88	70 - 130
1,1,1-Trichloroethane	5.00	4.71	27.3	25.7	94	70 - 130
1,1-Dichloroethane	5.00	4.61	20.2	18.7	92	70 - 130
cis-1,2-Dichloroethene	5.00	4.54	19.8	18.0	91	70 - 130
1,1-Dichloroethene	5.00	4.76	19.8	18.9	95	70 - 130
Vinyl chloride	5.00	4.94	12.8	12.6	99	70 - 130

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	104	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)

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

H15140164

## 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: <u>John Brimeyer</u>		Sampled By: <u>Rob Bergman</u>		1 of 1 COCs													
Company: <u>Terracon</u>		Phone: <u>563-355-0702</u>																	
Address: <u>870 40th Ave.</u>		Site Contact:																	
City/State/Zip: <u>Bettendorf, IA 52722</u>		TAL Contact:																	
Phone: <u>563-355-0702</u>																			
FAX:																			
Project Name: <u>Chamberlain</u>		Analysis Turnaround Time																	
Site/location: <u>Chamberlain / Waterloo, IA</u>		(Standard (Specify) <u>5 day</u> )																	
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	TO-16	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)
<u>IA-B-37-2</u>	<u>10-12-11 to 10-13-11</u>	<u>0844</u>	<u>0840</u>	<u>-29.3</u>	<u>-5.90</u>	<u>K438</u>	<u>L4426</u>	X						X					
<u>IA-1-37-2</u>		<u>0851</u>	<u>0850</u>	<u>-29.3</u>	<u>-5.50</u>	<u>K358</u>	<u>02643</u>	X						X					
<u>IA-B-28-2</u>		<u>0918</u>	<u>0918</u>	<u>-30.0</u>	<u>-4.9</u>	<u>K409</u>	<u>S-1495</u>	X						X					
<u>IA-1-22-2</u>		<u>0945</u>	<u>0947</u>	<u>-29.5</u>	<u>-6.5</u>	<u>K255</u>	<u>6527</u>	X						X					
<u>IA-B-22-2</u>		<u>0957</u>	<u>0957</u>	<u>-28.0</u>	<u>-6.2</u>	<u>K457</u>	<u>1014N</u>	X						X					
↓																			
Sampled by: <u>Rob Bergman</u>		Temperature (Fahrenheit)				1 Box Rec'd @ Ambient Temp with custody seal intact 9/14/11 1 Box Fed x # 420's 2706 6073													
		Interior	Ambient																
		Start	Stop																
		Pressure (Inches of Hg)				5 cans / 5 Flows													
		Interior	Ambient																
		Start	Stop																
Special Instructions/QC Requirements & Comments: <u>Please e-mail results to John Brimeyer jfbrimeyer@terracon.com</u>																			
Canisters Shipped by:		Date/Time: <u>10/13/11 1145</u>				Canisters Received by: <u>[Signature]</u>				<u>10/13/11 / 1145</u>									
Samples Relinquished by: <u>Robert Bergman</u>		Date/Time:				Received by: <u>[Signature]</u>				<u>10/14/11 1000</u>									
Relinquished by: <u>[Signature] (TA)</u>		Date/Time: <u>10/13/11 1420</u>				Received by: <u>[Signature]</u>													

Page 18 of 32

10/27/2011

TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST

Lot Number: 41514091/4

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

Quote #: 87209 PM Instructions: NA

Sample Receiving Associate: [Signature]

Date: 10/14/11

QA026R22.doc, 012811

Test America - Knoxville ---- Air Canister Dilution Log  
 Lot Number: H1J140464

Initial Can Pressure							Subsequent Dilutions											
Analyst/Date	Tedlar Bag Time	Pbarr (In)	Sample ID	Can #	Pres. upon receipt (-In or + psig)	Adj. Initial Pres. (-in or + psig)	Analyst/Date	I / S	Pbarr (In)	Initial Pres. Pi (In)	Final Pres. Pf (psig)	First InCan Final Pres. Pf (psig)	Second In-can Final Pres. Pf (psig)	Third InCan Final Pres. Pf (psig)	Serial Dilution Can #	Vol (mL)	Final Pres. Pf (psig)	Comments
AMS 10/17/14	MA	28.67	MM7J9	L4426	-4.0	-												9456
			MM7KA	02643	-4.3	-												9453
			MM7KC	S1495	-3.8	-												9462
			MM7KD	6527	-6.6	-												9453
			MM7KE	1014N	-5.3	-												↓

H1J050466 Analytical Report..... 1  
Total Number of Pages ..... 10



**ANALYTICAL REPORT**

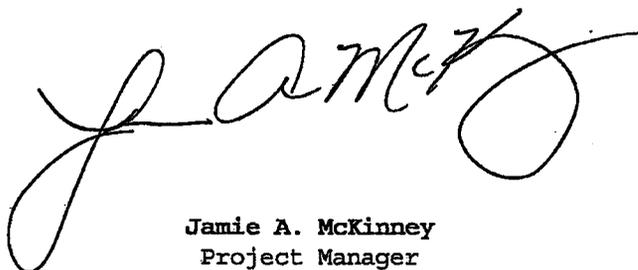
Terracon

Lot #: HLJ050466

Brian Graettinger

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

TESTAMERICA LABORATORIES, INC.



Jamie A. McKinney  
Project Manager

October 20, 2011

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# ANALYTICAL METHODS SUMMARY

HLJ050466

<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.

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# SAMPLE SUMMARY

HLJ050466

<u>WO #</u>	<u>SAMPLE#</u>	<u>CLIENT SAMPLE ID</u>	<u>SAMPLED DATE</u>	<u>SAMP TIME</u>
MM03P	001	CAN ID# 02643 / BATCH# 9453	09/18/11	
MM03R	002	CAN ID# S1495 / BATCH# 9462	09/23/11	
MM03T	003	CAN ID# L4426 / BATCH# 9456	09/20/11	
MM03V	004	CAN ID# 6527 / BATCH# 9453	09/18/11	
MM03X	005	CAN ID# 1014N / BATCH# 9453	09/18/11	

**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.

US EPA ARCHIVE DOCUMENT

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**PROJECT NARRATIVE**  
**H1J050466**

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.

**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.

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## CERTIFICATION SUMMARY

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica Knoxville	ACCLASS	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.

US EPA ARCHIVE DOCUMENT

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TestAmerica Cedar Falls

Client Sample ID: CAN ID# 02643 / BATCH# 9453

GC/MS Volatiles

Lot-Sample # H1J050466 - 001      Work Order # MM03P1AA      Matrix.....: AIR

Date Sampled...: 09/18/2011      Date Received...: 10/05/2011  
 Prep Date.....: 09/18/2011      Analysis Date...: 09/19/2011  
 Prep Batch #....: 1279098  
 Dilution Factor.: 1      Method.....: TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	ND	0.080	ND	0.54
1,1,1-Trichloroethane	ND	0.080	ND	0.44
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	ND	0.040	ND	0.21
Vinyl chloride	ND	0.080	ND	0.20
1,1-Dichloroethane	ND	0.080	ND	0.32
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)\*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) \* Dilution Factor) \* (Molecular Weight/24.45)

7  
1  
2  
3  
4  
5  
6

**TestAmerica Cedar Falls**  
**Client Sample ID: CAN ID# S1495 / BATCH# 9462**  
**GC/MS Volatiles**

Lot-Sample # H1J050466 - 002      Work Order # MM03R1AA      Matrix.....: AIR  
 Date Sampled...: 09/23/2011      Date Received...: 10/05/2011  
 Prep Date.....: 09/23/2011      Analysis Date... 09/24/2011  
 Prep Batch #.....: 1279098  
 Dilution Factor.: 1      Method.....: TO-15

<u>PARAMETER</u>	<u>RESULTS (ppb(v/v))</u>	<u>REPORTING LIMIT (ppb(v/v))</u>	<u>RESULTS (ug/m3)</u>	<u>REPORTING LIMIT (ug/m3)</u>
Tetrachloroethene	ND	0.080	ND	0.54
1,1,1-Trichloroethane	ND	0.080	ND	0.44
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	ND	0.040	ND	0.21
Vinyl chloride	ND	0.080	ND	0.20
1,1-Dichloroethane	ND	0.080	ND	0.32
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)\*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) \* Dilution Factor) \* (Molecular Weight/24.45)

8  
1  
2  
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4  
5  
6

TestAmerica Cedar Falls

Client Sample ID: CAN ID# L4426 / BATCH# 9456

GC/MS Volatiles

Lot-Sample # HIJ050466 - 003      Work Order # MM03T1AA      Matrix.....: AIR

Date Sampled...: 09/20/2011      Date Received...: 10/05/2011  
 Prep Date.....: 09/20/2011      Analysis Date... 09/20/2011  
 Prep Batch #....: 1279098  
 Dilution Factor.: 1      Method.....: TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	ND	0.080	ND	0.54
1,1,1-Trichloroethane	ND	0.080	ND	0.44
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	ND	0.040	ND	0.21
Vinyl chloride	ND	0.080	ND	0.20
1,1-Dichloroethane	ND	0.080	ND	0.32
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)\*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) \* Dilution Factor) \* (Molecular Weight/24.45)

9  
1  
2  
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5  
6

TestAmerica Cedar Falls

Client Sample ID: CAN ID# 6527 / BATCH# 9453

GC/MS Volatiles

Lot-Sample # HIJ050466 - 004      Work Order # MM03V1AA      Matrix.....: AIR

Date Sampled...: 09/18/2011      Date Received...: 10/05/2011  
 Prep Date.....: 09/18/2011      Analysis Date... 09/19/2011  
 Prep Batch #.....: 1279098  
 Dilution Factor.: 1      Method.....: TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	ND	0.080	ND	0.54
1,1,1-Trichloroethane	ND	0.080	ND	0.44
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	ND	0.040	ND	0.21
Vinyl chloride	ND	0.080	ND	0.20
1,1-Dichloroethane	ND	0.080	ND	0.32
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32

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The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)\*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) \* Dilution Factor) \* (Molecular Weight/24.45)

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10 1  
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TestAmerica Cedar Falls

Client Sample ID: CAN ID# 1014N / BATCH# 9453

GC/MS Volatiles

Lot-Sample # H1J050466 - 005      Work Order # MM03X1AA      Matrix.....: AIR

Date Sampled...: 09/18/2011      Date Received...: 10/05/2011  
 Prep Date.....: 09/18/2011      Analysis Date... 09/19/2011  
 Prep Batch #....: 1279098  
 Dilution Factor.: 1                      Method.....: TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	ND	0.080	ND	0.54
1,1,1-Trichloroethane	ND	0.080	ND	0.44
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	ND	0.040	ND	0.21
Vinyl chloride	ND	0.080	ND	0.20
1,1-Dichloroethane	ND	0.080	ND	0.32
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)\*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) \* Dilution Factor) \* (Molecular Weight/24.45)

