

# Additional Sampling Summary Report

Cheyenne Airport Addition Orphan Site

OSRP #57.002

Cheyenne, Laramie County, Wyoming

April 22, 2015

Terracon Project No. 20149141



**Prepared for:**

Wyoming Department of Environmental Quality  
Solid and Hazardous Waste Division, Orphan Site Remediation Program  
Cheyenne, Wyoming

**Prepared by:**

Terracon Consultants, Inc.  
Fort Collins, Wyoming

[terracon.com](http://terracon.com)

**Terracon**

Environmental



Facilities



Geotechnical



Materials

April 22, 2015

Ms. Sarah Bargsten  
Wyoming Department of Environmental Quality  
Solid and Hazardous Waste Division, Orphan Site Remediation Program  
122 West 25th Street  
Herschler Building, 4-W  
Cheyenne, WY 82002

**Re: Additional Sampling Summary Report  
Cheyenne Airport Addition Orphan Site  
SHWD File #57.002  
Cheyenne, Laramie County, Wyoming  
Project No. 20149141**

Dear Ms. Bargsten:

Terracon Consultants, Inc. (Terracon) is pleased to submit one copy of the Additional Sampling Summary Report (SSR) for the above referenced site. This investigation was performed in general accordance with the following:

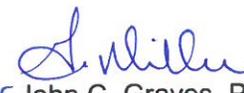
- Terracon's Services Contract between Wyoming Department of Environmental Quality (WDEQ) and Terracon dated May 23, 2014
- DEQ Task Order 005-05SC020570583 between WDEQ and Terracon dated February 23, 2015

We appreciate the opportunity to be of service to you on this project. If there are any questions regarding this report or if we may be of further assistance, please do not hesitate to contact us.

Sincerely,  
**Terracon Consultants, Inc.**



John A. Skogman, P.E.  
Department Manager  
Environmental Services

  
for John C. Graves, P.G.  
Principal  
Office Manager

Terracon Consultants, Inc. 1901 Sharp Point Drive, Suite C Fort Collins, Colorado 80525  
P [970] 484 0359 F [970] 484 0454 terracon.com

## TABLE OF CONTENTS

<b>1.0</b>	<b>INTRODUCTION</b> .....	<b>1</b>
1.1	Site Description.....	1
1.2	Site Operational History .....	1
1.3	Site Investigation History.....	1
1.4	Objectives and Scope of Work.....	2
1.5	Standard of Care.....	2
1.6	Additional Scope Limitations .....	3
<b>2.0</b>	<b>SITE ASSESSMENT METHODS</b> .....	<b>4</b>
2.1	Groundwater Gauging and Sampling .....	4
2.2	Soil Vapor Points .....	4
2.3	Indoor Air Sampling .....	5
2.4	Investigative Derived Waste.....	5
<b>3.0</b>	<b>SITE INVESTIGATION RESULTS</b> .....	<b>6</b>
3.1	Site Soils and Hydrogeology .....	6
3.2	Groundwater Field Parameters .....	6
3.3	Groundwater Analytical Results .....	6
3.4	Soil Vapor Results .....	7
3.5	Indoor Air Results .....	7
3.6	Quality Control .....	8
<b>4.0</b>	<b>INDICATORS OF DEGRADATION</b> .....	<b>9</b>
4.1	Overview of Reductive-Dechlorination Reactions.....	9
4.2	Presence of Reductive-Dechlorination Daughter Products.....	10
<b>5.0</b>	<b>FINDINGS AND RECOMMENDATIONS</b> .....	<b>10</b>

## TABLE OF CONTENTS (cont.)

### APPENDICES

APPENDIX A	Figure 1 – Site Location Diagram Figure 2 – Site Diagram Figure 3 – Soil Vapor Analytical Diagram
APPENDIX B	Table 1 – Summary of Well Construction and Depth to Groundwater Measurements Table 2 – Summary of Groundwater Field Parameter Measurements Table 3 – Summary of Groundwater VOC Analytical Results Table 4 – Summary of Sub Slab Soil Vapor Analytical Results Table 5 – Summary of Indoor Air Analytical Results Table 6 – Summary of Waste Soil and Water Analytical Results
APPENDIX C	Laboratory Data Reports

**ADDITIONAL SAMPLING SUMMARY REPORT  
CHEYENNE AIRPORT ADDITION ORPHAN PROJECT  
CHEYENNE, LARAMIE COUNTY, WYOMING**

**Project No. 20149141  
APRIL 22, 2015**

## **1.0 INTRODUCTION**

### **1.1 Site Description**

The Cheyenne Airport Addition (Site) is located at 112 East 8th Avenue in Cheyenne, Wyoming and is bordered on the south by East 8th Avenue, to the west by Central Avenue, and to the east by Warren Avenue. A site location diagram is shown on Figure 1 and a site layout is shown on Figure 2 included in Appendix A. The Site is regulated and managed by the Wyoming Department of Environmental Quality, Solid and Hazardous Waste Division, Orphan Site Remediation Program (WDEQ-OSRP).

The Site is currently occupied by United Blood Services for use as a blood bank.

### **1.2 Site Operational History**

The site was reportedly used as the original hangar for the Cheyenne airport and was subsequently used by United Airlines for aircraft maintenance until 1947. The site remained vacant from 1994 until the current building was constructed prior to 2005.

### **1.3 Site Investigation History**

A limited site investigation was reportedly conducted in 1994 that included the installation of three groundwater monitoring wells. The investigation reported groundwater impacts by chlorinated solvents and petroleum compounds. Subsurface soils were reported as fill underlain by well sorted sand with gravel to 13 feet below ground surface (bgs) and highly weathered sandstone, claystone, and siltstone bedrock to boring termination at 22 feet bgs. Depth to groundwater at the site was reported at approximately 13 to 16 feet bgs and the estimated flow of shallow groundwater is to the southeast.

WDEQ previously sampled a private irrigation supply well located two blocks down-gradient of the site. The irrigation well sample contained chlorinated solvent impacts. Depth of contamination has been reported to the extent of the depths investigated to date.

A limited site investigation conducted in 2014, summarized in the Site Characterization Report dated October 9, 2014, included the following:

- 19 soil borings
- 10 temporary monitoring wells
- Six new monitoring wells
- Three soil vapor points

The investigation results reported limited impacts to soil, groundwater, and soil vapor in the vicinity of the site. Impacts appeared to originate from either off-site or at the northern

## Additional Sampling Summary Report

Cheyenne Airport Addition Orphan Project ■ Cheyenne, Wyoming

April 22, 2015 ■ Terracon Project No. 20149141



portion of the site. The highest soil vapor PCE concentrations were reported in VP-3 north of the United Blood Services building, which coincides with the only location where PCE was detected in soil. Soils generally consisted of silty sand and sandy clay.

Groundwater was encountered at approximately 10 to 16 ft bgs and was estimated to flow south-southeast at a gradient of approximately 0.015 ft/ft. Groundwater was impacted by PCE and its degradation products with the highest concentrations being observed west of the United Blood Services building (MW-2). The dissolved phase groundwater plume appeared very limited in extent and extended downgradient a distance of less than 200 feet and was less than 50 feet in width.

A sampling event conducted in December 2014, summarized in the Additional Sampling Summary Report dated February 2, 2015, included the following:

- Monitoring and sampling of eight existing groundwater monitoring wells
- Collection of soil vapor samples from two sub slab vapor points
- Collection of up to four indoor air samples

Groundwater was encountered at approximately 12 to 17 ft bgs and was estimated to flow south-southeast at a gradient of approximately 0.016 ft/ft. Groundwater was impacted by PCE west of the United Blood Services building (MW-2). Groundwater was impacted by TCE northeast of the United Blood Services building (MW-9).

### 1.4 Objectives and Scope of Work

Terracon previously conducted site assessment programs during July, August and December 2014 to evaluate soil, groundwater, soil vapor and indoor air impacts in the vicinity of the site that was summarized in the Site Characterization Report dated October 9, 2014 and the Additional Sampling Summary report dated February 2, 2015. The overall purpose of this additional sampling program included the following:

- Monitoring and sampling of eight existing groundwater monitoring wells
- Collection of soil vapor samples from two sub slab vapor points
- Collection of up to four indoor air samples

The investigation was completed in general accordance with DEQ Task Order 005-05SC0205783 dated February 23, 2014.

### 1.5 Standard of Care

Terracon's services were performed in a manner consistent with generally accepted practices of the profession undertaken in similar studies in the same geographical area during the same time period. Terracon makes no warranties, either express or implied, regarding the findings, conclusions or recommendations. Please note that Terracon does not warrant the work of laboratories, regulatory agencies or other third parties supplying

## **Additional Sampling Summary Report**

Cheyenne Airport Addition Orphan Project ■ Cheyenne, Wyoming

April 22, 2015 ■ Terracon Project No. 20149141



information used in the preparation of the report. These services were performed in accordance with the scope of work agreed with you, our client, as reflected in our proposal.

### **1.6 Additional Scope Limitations**

Findings, conclusions and recommendations resulting from these services are based upon information derived from the on-site activities and other services performed under this scope of work; such information is subject to change over time. Certain indicators of the presence of hazardous substances, petroleum products, or other constituents may have been latent, inaccessible, unobservable, non-detectable or not present during these services, and we cannot represent that the site contains no hazardous substances, toxic materials, petroleum products, or other latent conditions beyond those identified during this investigation. Subsurface conditions may vary from those encountered at specific borings or wells or during other surveys, tests, assessments, investigations or exploratory services; the data, interpretations, findings, and our recommendations are based solely upon data obtained at the time and within the scope of these services.

This report has been prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted industry practices. No warranties, either expressed or implied, are intended or made.

The analysis and recommendations presented in this report are based upon the data obtained during our investigation and from other information discussed in this report. This report does not reflect variations that may occur in areas inaccessible to our equipment, across the site, or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after direct exploration.

## **2.0 SITE ASSESSMENT METHODS**

Terracon conducted an additional sampling program in March 2015. A summary of the investigation methods and techniques is provided below. Sample locations are depicted on Figure 2 and concentration data is presented on Figures 2 and 3 in Appendix A.

### **2.1 Groundwater Gauging and Sampling**

One groundwater sample was collected and analyzed from monitoring wells MW-1, MW-2, and MW-4 through MW-9 on March 16, 2015 including one blind duplicate groundwater sample.

A summary of the top of casing elevation measurements and depth to groundwater measurements are shown on Table 1 in Appendix B, and a groundwater piezometric map for groundwater elevation measurements collected in March 2015 is presented on Figure 2 in Appendix A.

A summary of the groundwater field parameter measurements are shown on Table 2 in Appendix B. Monitoring well sampling occurred after the water quality parameters stabilized, when three consecutive readings collected 3-5 minutes apart were within:

- ±3% for temperature (minimum of 0.2° C)
- ±0.1 for pH
- ±3% for specific electrical conductance
- ±10 mv for redox potential (ORP)
- ±10% for dissolved oxygen (DO)
- ±10% for turbidity if >10 nephelometric turbidity units

Monitoring wells MW-4, MW-5, MW-7 and MW-9 were purged dry and sampled following sufficient recovery.

Groundwater samples were collected and placed in laboratory prepared containers and placed on ice in a cooler. Groundwater samples were analyzed for VOCs via EPA method 8260.

The sample coolers and completed chain-of-custody forms were relinquished to ChemSolutions for laboratory analysis.

### **2.2 Soil Vapor Points**

Terracon collected sub slab vapor samples from vapor points SV-1 and SV-2 on March 6, 2015 including one blind duplicate vapor sample.

## **Additional Sampling Summary Report**

Cheyenne Airport Addition Orphan Project ■ Cheyenne, Wyoming

April 22, 2015 ■ Terracon Project No. 20149141



A laboratory supplied, batch certified 1.0-liter Summa® canister was connected to tubing at each sub slab vapor point. Each canister was fitted with laboratory-calibrated flow-controllers to collect samples at a constant flow-rate over a specified period (1-hour). An in-line vacuum gauge was connected to the sample controller to verify initial vacuum levels within the canister and as an indicator that final equalization was reached (i.e. sampling was complete).

The filled Summa® canisters were shipped to Environmental Science Corporation's (ESC) analytical laboratory in Mt. Juliet, Tennessee for analysis.

### **2.3 Indoor Air Sampling**

Terracon collected four indoor air samples from the United Blood Service building on March 6, 2015. The indoor air sample locations were as follows:

- AA-IA-1 - the blood collection room/waiting room on the ground floor, on the eastern portion of the building.
- AA-IA-2 - an equipment room on the ground floor on the western portion of the building
- AA-IA-3 – northern portion of the basement
- AA-IA-4 - southern portion of the basement, approximately adjacent to sub slab soil vapor point AA-SV-1

The approximate indoor air sample locations are shown on Figures 2 and 3 in Appendix A. The sample locations were approximately the same as indoor air samples previously collected on December 19, 2014.

Samples were collected using 6-liter, batch certified Summa® canisters placed within the approximate human breathing zone. The air sampling intake port was placed approximately three to five-feet above floor level. Each canister was fitted with laboratory-calibrated flow-controllers to collect samples at a constant flow-rate over a specified period (24-hours).

The filled Summa® canisters were shipped to Environmental Science Corporation's (ESC) analytical laboratory in Mt. Juliet, Tennessee for analysis.

### **2.4 Investigative Derived Waste**

Monitoring well purge water was containerized in a 55-gallon DOT approved steel drum, closed, and appropriately labeled with project-specific information and initial accumulation date. The drum was placed on the east side of the United Blood Services building for temporary storage until scheduled for disposal off-site. One composite sample was collected from the drum on March 16, 2015 for characterization and disposal. A summary of the sample is included in Table 6 in Appendix B and the laboratory report is included in Appendix C.

## **3.0 SITE INVESTIGATION RESULTS**

### **3.1 Site Soils and Hydrogeology**

Water-level measurements were collected from the on-site and off-site wells on March 16, 2015. The depth-to-water measurements and the converted relative water-level elevations are presented on Table 1 in Appendix B and a piezometric surface is included on Figure 2 in Appendix A.

Based on the information presented on Figure 2, shallow groundwater is estimated to flow south-southeast and generally follows the land surface topography. The horizontal hydraulic gradient in the surficial aquifer was estimated to be 0.017 feet per foot (ft/ft) (between MW-1 and MW-4).

### **3.2 Groundwater Field Parameters**

Field parameters, including temperature, DO, pH, conductivity, ORP, and turbidity were recorded during monitoring well purging. Results are included on Table 3 and summarized below:

- temperature ranged from approximately 9.81 to 15.10 degrees Celsius
- dissolved oxygen ranged from 0.95 to 2.73 milligrams per liter (mg/L)
- pH values ranged from 6.79 to 7.18 standard units
- Conductivity was measured between 1.57 and 3.31 millisiemens per centimeter (mS/cm)
- Oxidation reduction potential was between 147.7 and 200.0 millivolts (mV)
- Turbidity was measured between 16.45 and 189.8 NTUs

Aquifer conditions were generally aerobic and oxidative with average dissolved oxygen concentrations of 1.68 mg/L and ORP average of 172.3 mV.

### **3.3 Groundwater Analytical Results**

Groundwater sample results were compared to the WDEQ-OSRP Cleanup Level Look-up Table dated December 2014. A summary of the groundwater analytical results are presented on Table 3 in Appendix B and the laboratory reports are included in Appendix C.

Groundwater results indicate that groundwater impacts are located on the western edge of the property, MW-2 and eastern portion of the site, MW-9. The absence of VOCs above laboratory reporting limits in MW-4, MW-5, MW-6 and MW-8 defines the southern, downgradient extent of shallow groundwater impacts.

A summary of detected compounds is presented below:

## Additional Sampling Summary Report

Cheyenne Airport Addition Orphan Project ■ Cheyenne, Wyoming

April 22, 2015 ■ Terracon Project No. 20149141



- PCE was detected in a groundwater sample collected from MW-2 at a concentration of 82 µg/L, exceeding the cleanup level of 5 µg/L
- TCE was detected in a groundwater sample collected from well MW-9 at a concentration of 110 µg/L, exceeding the cleanup level of 5 µg/L
- 1,2-DCA was detected in a groundwater sample collected from MW-9 well at a concentration of 40 µg/L, exceeding the cleanup level of 5 µg/L

Isoconcentration lines for PCE and TCE are provided on Figure 2.

PCE concentrations reported in MW-2 in 2015 were slightly lower than those reported in 1994. The decline in concentrations provides limited evidence that the plume may be reducing in concentration via natural attenuation.

### 3.4 Soil Vapor Results

Sub slab soil vapor samples were analysed by EPA Method TO-15 for a dry cleaners suite (PCE TCE, cis-1,2-DCE, trans-1,2-DCE, 1,1-DCE and vinyl chloride) and results were compared to the WDEQ soil vapor action levels. A summary of the soil vapor analytical results are presented on Table 4 in Appendix B and the laboratory reports are included in Appendix C.

A summary of select site specific compounds is presented below:

- Concentrations of PCE, cis-1,2-DCE, trans-1,2-DCE, 1,1-DCE and vinyl chloride were reported less than laboratory reporting limits for samples from AA-SV-1 and AA-SV-2
- Concentrations of TCE were reported at 3.7 µg/L and <2 µg/L for samples from AA-SV-1 and AA-SV-2, respectively, less than the action level of 42 µg/L

### 3.5 Indoor Air Results

Prior to sampling, Terracon personnel conducted a screening of indoor air with a PID capable of measuring to 1 part per billion (ppb). PID readings were conducted through the building interior with a focus on potential vapor entry points (e.g. floor drains, wall penetrations, etc.). The screening did not identify detectable concentrations in the building.

Indoor air sample were analyzed by EPA Method TO-15 SIM for a dry cleaners suite and compared to the WDEQ indoor air action levels. A summary of the indoor air analytical results are presented on Table 5 in Appendix B and the laboratory reports are included in Appendix C.

A summary of select site specific compounds is presented below:

## Additional Sampling Summary Report

Cheyenne Airport Addition Orphan Project ■ Cheyenne, Wyoming

April 22, 2015 ■ Terracon Project No. 20149141



- Concentrations of PCE, cis-1,2-DCE, trans-1,2-DCE, 1,1-DCE and vinyl chloride were reported less than laboratory reporting limit for samples from AA-IA-1, AA-IA-2, AA-IA-3 and AA-IA-4
- Concentrations of TCE were reported from 0.12 µg/L to 0.42 µg/L for samples from AA-IA-1, AA-IA-2, AA-IA-3 and AA-IA-4, respectively, less than the action level of 4.2 µg/L

### 3.6 Quality Control

Quality Control (QC) samples were submitted along with samples to provide supporting laboratory data to validate laboratory results. QC samples were submitted blind, and did not have any unique identifying codes that would enable the laboratory or others to bias these samples.

QC samples collected and tested included indoor air, sub slab soil vapor and groundwater duplicate samples. The results of the chemical analyses are included in Table 3, Table 4 and Table 5 and the laboratory reports are included in Appendix C. Duplicate samples exhibited similar concentrations to their corresponding original samples.

Equipment blank, trip blank, and field blank samples did not contain compounds at concentrations above laboratory method detection limits.

Groundwater and vapor QC samples confirmed that data is usable for its intended purpose.

## **4.0 INDICATORS OF DEGRADATION**

Geochemical parameters were included in the analytical program for groundwater to evaluate if conditions are favorable for reductive-dechlorination reactions and to verify the presence of daughter products from reductive-dechlorination reactions. The following sections briefly discuss reductive-dechlorination reactions and trends in chemical data.

### **4.1 Overview of Reductive-Dechlorination Reactions**

The primary dissolved groundwater constituents at this site are solvents containing chlorinated hydrocarbons (i.e., PCE and its daughter products). Under anaerobic conditions, it is possible to convert chlorinated hydrocarbons to less toxic byproducts through the microbially mediated process of reductive dechlorination. Reductive dechlorination is a biochemical process in which microorganisms biodegrade chlorinated compounds by selectively removing chloride ions. This process occurs as microorganisms metabolize available carbon sources. As the microorganisms metabolize carbon (in the absence of DO), a side reaction is facilitated, whereby a chloride ion is removed from the chlorinated hydrocarbon and replaced with a hydrogen atom. Metabolic processes facilitating this reaction result in the loss of electrons from the carbon source. For the microorganisms to successfully metabolize a carbon source, a separate chemical species must be present to accept the electrons. Either a naturally occurring biogeochemical parameter (e.g., nitrate, ferric iron, sulfate) or the chlorinated hydrocarbon becomes the electron acceptor during reductive dechlorination.

#### Dissolved Oxygen (DO)

DO concentrations were measured in each of the monitor wells in order to determine if anaerobic conditions, which are conducive to reductive dechlorination, were present in the aquifer. Generally, DO concentrations above 1.0 mg/L are considered to be indicative of aerobic conditions, and DO concentrations below 1.0 mg/L are considered to be indicative of anaerobic conditions. Under anaerobic conditions, chlorinated hydrocarbons (i.e., PCE and TCE) can be degraded by the microbial-mediated process of reductive dechlorination. When DO is sufficiently diminished in the aquifer, other electron acceptors (i.e., nitrate, ferrous iron, sulfate) are used by microorganisms to facilitate reductive dechlorination reactions.

The DO concentrations recorded during the sampling event indicate that aerobic conditions generally exist beneath the site.

#### Oxidation-Reduction Potential (ORP)

ORP is an indicator of electron activity in the groundwater and infers the tendency of ions to transfer electrons. ORP reactions in groundwater containing organic compounds are usually catalyzed by microorganisms and may be either naturally or artificially induced. Therefore, the ORP level of the groundwater system indicates the types of biological

## Additional Sampling Summary Report

Cheyenne Airport Addition Orphan Project ■ Cheyenne, Wyoming

April 22, 2015 ■ Terracon Project No. 20149141



reactions that may occur in the system. ORP levels below 50 mV are necessary to allow reductive-dechlorination reactions to occur; however, optimal levels are -100 mV or lower.

Optimal ORP values were not reported at the site.

### 4.2 Presence of Reductive-Dechlorination Daughter Products

The reductive-dechlorination process creates daughter compounds (e.g., TCE, cis 1,2 DCE, and vinyl chloride) for which the samples were analyzed during the groundwater monitoring events. TCE was detected in one monitoring well; however, the well in which TCE was detected did not contain PCE. Concentrations of cis 1,2 DCE and vinyl chloride were not detected in the groundwater samples collected.

In the reductive-dechlorination process, PCE should degrade to daughter and end products by following the reaction sequence of PCE, TCE, cis-1,2-DCE, vinyl chloride, ethene, ethane, and methane.

The presence of daughter products in the wells is evidence that a limited amount of reductive dechlorination is likely occurring at the site, but a limited historical data set and the absence of PCE in groundwater samples that contained degradation compounds makes it difficult to establish a corollary relationship and definitive trends.

## 5.0 FINDINGS AND RECOMMENDATIONS

The findings of this report are as follows:

- PCE concentrations were reported above the DEQ-OSRP action level in groundwater samples collected from one monitoring well during this sampling event
- TCE and 1,2-DCA concentrations were reported above the DEQ-OSRP action level in groundwater samples collected from one monitoring well during this sampling event
- Constituents analyzed from sub slab soil vapor samples were reported below the DEQ-OSRP action levels
- Constituents analyzed from indoor air samples were reported below the DEQ-OSRP action levels

The recommendations of this report are as follows:

- Abandon sub slab soil vapor monitoring wells
- Continue periodic groundwater sampling at monitoring wells MW-2, MW-4, MW-5, MW-6, MW-7 and MW-9
- Discontinue sampling at monitoring wells MW-1 and MW-8
- Prepare a remedial alternatives report to evaluate remedial alternatives for the site

## **APPENDIX A**

### **FIGURES**

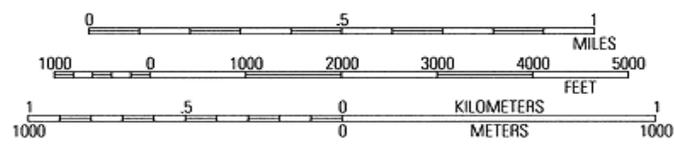
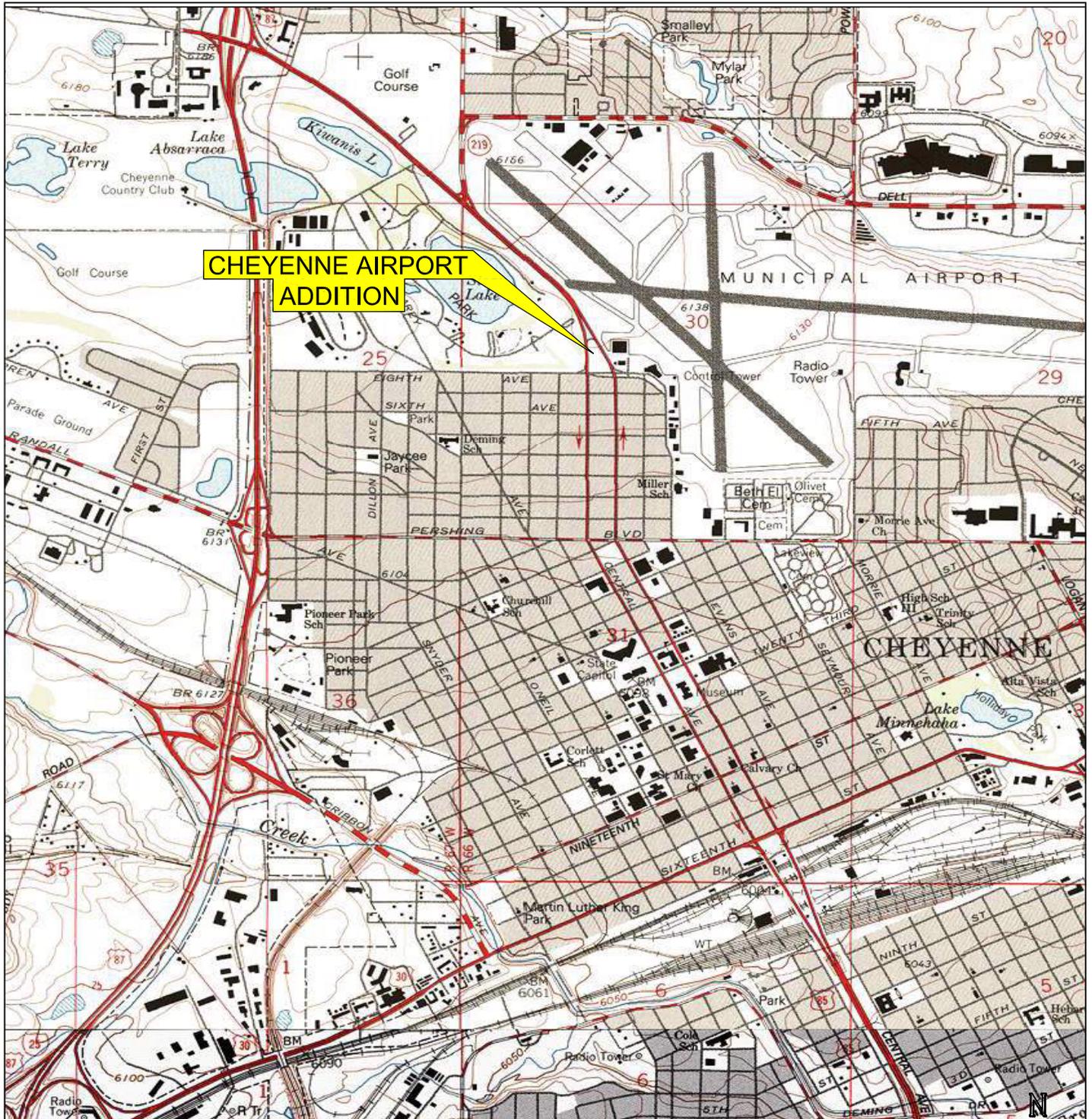


FIGURE 1 - SITE LOCATION DIAGRAM  
**CHEYENNE AIRPORT ADDITION**  
 112 EAST 8TH AVENUE  
 CHEYENNE, WYOMING

FIGURE #1	
DESIGNED BY:	JAS
DRAWN BY:	JAS
APPROV. BY:	JCG
SCALE:	AS SHOWN
DATE:	2/2/15
JOB NO.:	20149141
ACAD NO.:	001
SHEET NO.:	1 OF 3

**Terracon**  
 Consulting Engineers and Scientists

1901 SHARP POINT DRIVE, ST C FORT COLLINS, COLORADO 80525  
 PH. (970) 484-0359 FAX. (970) 484-0454

# CHEYENNE AIRPORT ADDITION

## LEGEND

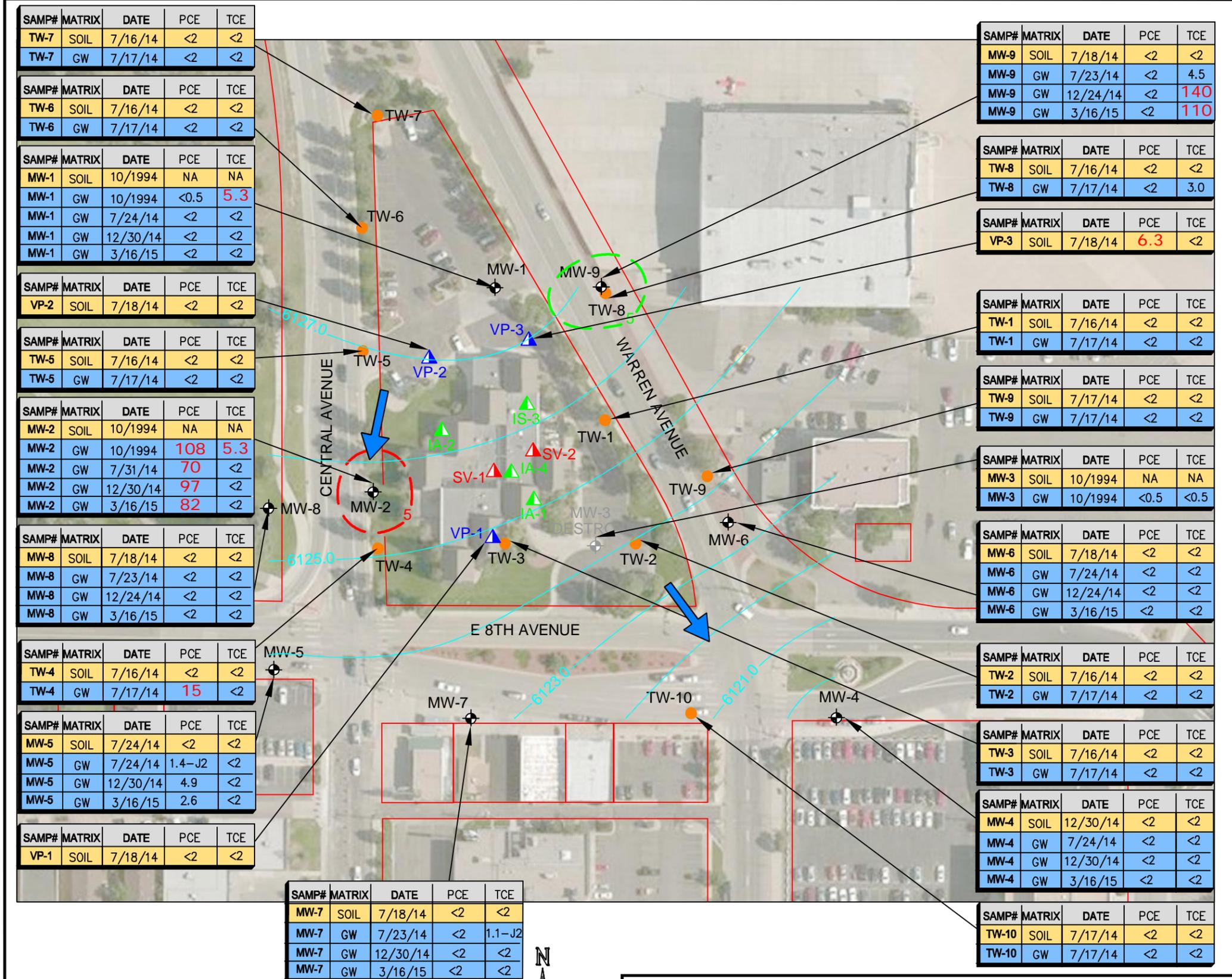
- APPROXIMATE LOCATION OF MONITORING WELL
- APPROXIMATE LOCATION OF SOIL VAPOR POINT
- APPROXIMATE LOCATION OF SUB-SLAB SOIL VAPOR POINT
- APPROXIMATE LOCATION OF INDOOR AIR SAMPLE LOCATIONS
- APPROXIMATE LOCATION OF TEMPORARY MONITORING WELL
- APPROXIMATE LOCATION OF PROPERTY LINES

SAMP#	MATRIX	DATE	PCE	TCE
	SOIL		<b>2.1</b>	<b>2.01</b>
	GW		<b>5</b>	<b>5</b>

WHERE:  
 PCE = TETRACHLOROETHENE  
 TCE = TRICHLOROETHENE  
**BOLD** = ABOVE DEQ-OSRP ACTION LEVELS  
 SOIL = SOIL CONCENTRATIONS IN MICROGRAMS PER KILOGRAM ( $\mu\text{g}/\text{Kg}$ )  
 GW = GROUNDWATER CONCENTRATION IN MICROGRAMS PER LITER ( $\mu\text{g}/\text{L}$ )  
 J2 = COMPOUND DETECTED AT AN ESTIMATED CONCENTRATION LESS THAN THE REPORTING LIMIT

- TETRACHLOROETHENE (PCE) ISOCONCENTRATION IN GROUNDWATER, MARCH 2015 ( $\mu\text{g}/\text{L}$ )
- TRICHLOROETHENE (TCE) ISOCONCENTRATION IN GROUNDWATER, MARCH 2015 ( $\mu\text{g}/\text{L}$ )
- ESTIMATED GROUNDWATER ELEVATION ABOVE MEAN SEA LEVEL (MARCH 2015)
- ESTIMATED GROUNDWATER FLOW DIRECTION

NOTE:  
 GROUNDWATER CONTOURS WERE ESTIMATED USING THE "SURFER" PROGRAM FROM GOLDEN SOFTWARE BASED ON DATA COLLECTED IN MARCH 2015, ACTUAL CONDITIONS MAY VARY.



SAMP#	MATRIX	DATE	PCE	TCE
TW-7	SOIL	7/16/14	<2	<2
TW-7	GW	7/17/14	<2	<2

SAMP#	MATRIX	DATE	PCE	TCE
TW-6	SOIL	7/16/14	<2	<2
TW-6	GW	7/17/14	<2	<2

SAMP#	MATRIX	DATE	PCE	TCE
MW-1	SOIL	10/1994	NA	NA
MW-1	GW	10/1994	<0.5	<b>5.3</b>
MW-1	GW	7/24/14	<2	<2
MW-1	GW	12/30/14	<2	<2
MW-1	GW	3/16/15	<2	<2

SAMP#	MATRIX	DATE	PCE	TCE
VP-2	SOIL	7/18/14	<2	<2

SAMP#	MATRIX	DATE	PCE	TCE
TW-5	SOIL	7/16/14	<2	<2
TW-5	GW	7/17/14	<2	<2

SAMP#	MATRIX	DATE	PCE	TCE
MW-2	SOIL	10/1994	NA	NA
MW-2	GW	10/1994	<b>108</b>	<b>5.3</b>
MW-2	GW	7/31/14	<b>70</b>	<2
MW-2	GW	12/30/14	<b>97</b>	<2
MW-2	GW	3/16/15	<b>82</b>	<2

SAMP#	MATRIX	DATE	PCE	TCE
MW-8	SOIL	7/18/14	<2	<2
MW-8	GW	7/23/14	<2	<2
MW-8	GW	12/24/14	<2	<2
MW-8	GW	3/16/15	<2	<2

SAMP#	MATRIX	DATE	PCE	TCE
TW-4	SOIL	7/16/14	<2	<2
TW-4	GW	7/17/14	<b>15</b>	<2

SAMP#	MATRIX	DATE	PCE	TCE
MW-5	SOIL	7/24/14	<2	<2
MW-5	GW	7/24/14	1.4-J2	<2
MW-5	GW	12/30/14	4.9	<2
MW-5	GW	3/16/15	2.6	<2

SAMP#	MATRIX	DATE	PCE	TCE
VP-1	SOIL	7/18/14	<2	<2

SAMP#	MATRIX	DATE	PCE	TCE
MW-7	SOIL	7/18/14	<2	<2
MW-7	GW	7/23/14	<2	1.1-J2
MW-7	GW	12/30/14	<2	<2
MW-7	GW	3/16/15	<2	<2

SAMP#	MATRIX	DATE	PCE	TCE
MW-9	SOIL	7/18/14	<2	<2
MW-9	GW	7/23/14	<2	4.5
MW-9	GW	12/24/14	<2	<b>140</b>
MW-9	GW	3/16/15	<2	<b>110</b>

SAMP#	MATRIX	DATE	PCE	TCE
TW-8	SOIL	7/16/14	<2	<2
TW-8	GW	7/17/14	<2	3.0

SAMP#	MATRIX	DATE	PCE	TCE
VP-3	SOIL	7/18/14	<b>6.3</b>	<2

SAMP#	MATRIX	DATE	PCE	TCE
TW-1	SOIL	7/16/14	<2	<2
TW-1	GW	7/17/14	<2	<2

SAMP#	MATRIX	DATE	PCE	TCE
TW-9	SOIL	7/17/14	<2	<2
TW-9	GW	7/17/14	<2	<2

SAMP#	MATRIX	DATE	PCE	TCE
MW-3	SOIL	10/1994	NA	NA
MW-3	GW	10/1994	<0.5	<0.5

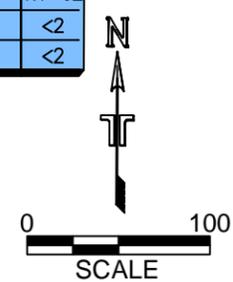
SAMP#	MATRIX	DATE	PCE	TCE
MW-6	SOIL	7/18/14	<2	<2
MW-6	GW	7/24/14	<2	<2
MW-6	GW	12/24/14	<2	<2
MW-6	GW	3/16/15	<2	<2

SAMP#	MATRIX	DATE	PCE	TCE
TW-2	SOIL	7/16/14	<2	<2
TW-2	GW	7/17/14	<2	<2

SAMP#	MATRIX	DATE	PCE	TCE
TW-3	SOIL	7/16/14	<2	<2
TW-3	GW	7/17/14	<2	<2

SAMP#	MATRIX	DATE	PCE	TCE
MW-4	SOIL	12/30/14	<2	<2
MW-4	GW	7/24/14	<2	<2
MW-4	GW	12/30/14	<2	<2
MW-4	GW	3/16/15	<2	<2

SAMP#	MATRIX	DATE	PCE	TCE
TW-10	SOIL	7/17/14	<2	<2
TW-10	GW	7/17/14	<2	<2



**Terracon**  
 Consulting Engineers and Scientists  
 1901 SHARP POINT DRIVE, ST C FORT COLLINS, COLORADO 80525  
 PH. (970) 484-0359 FAX. (970) 484-0454

**FIGURE #2 - SITE DIAGRAM**  
**CHEYENNE AIRPORT ADDITION**  
 112 EAST 8TH AVENUE  
 CHEYENNE, WYOMING

FIGURE #2	
DESIGNED BY:	JAS
DRAWN BY:	KDH
APPVD. BY:	JCG
SCALE:	1" = 100'
DATE:	3/30/15
JOB NO.:	20147141
ACAD NO.:	002
SHEET NO.:	2 OF 3

# CHEYENNE AIRPORT ADDITION

## LEGEND

-  - APPROXIMATE LOCATION OF MONITORING WELL
-  - APPROXIMATE LOCATION OF SOIL VAPOR POINT
-  - APPROXIMATE LOCATION OF SUB-SLAB SOIL VAPOR POINT
-  - APPROXIMATE LOCATION OF INDOOR AIR SAMPLE LOCATIONS
-  - APPROXIMATE LOCATION OF TEMPORARY MONITORING WELL
-  - APPROXIMATE LOCATION OF PROPERTY LINES

SAMP#	DATE	PCE	TCE
		$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$

WHERE:

PCE = TETRACHLOROETHENE ( $\mu\text{g}/\text{m}^3$ )

TCE = TRICHLOROETHENE ( $\mu\text{g}/\text{m}^3$ )

**BOLD** = ABOVE DEQ-ORSP SCREENING LEVEL

( $\mu\text{g}/\text{m}^3$ ) = MICROGRAMS PER CUBIC METER

VP = SOIL VAPOR SAMPLES

IA = INDOOR AIR SAMPLES

SV = SUB SLAB SOIL VAPOR SAMPLES

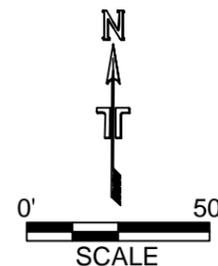
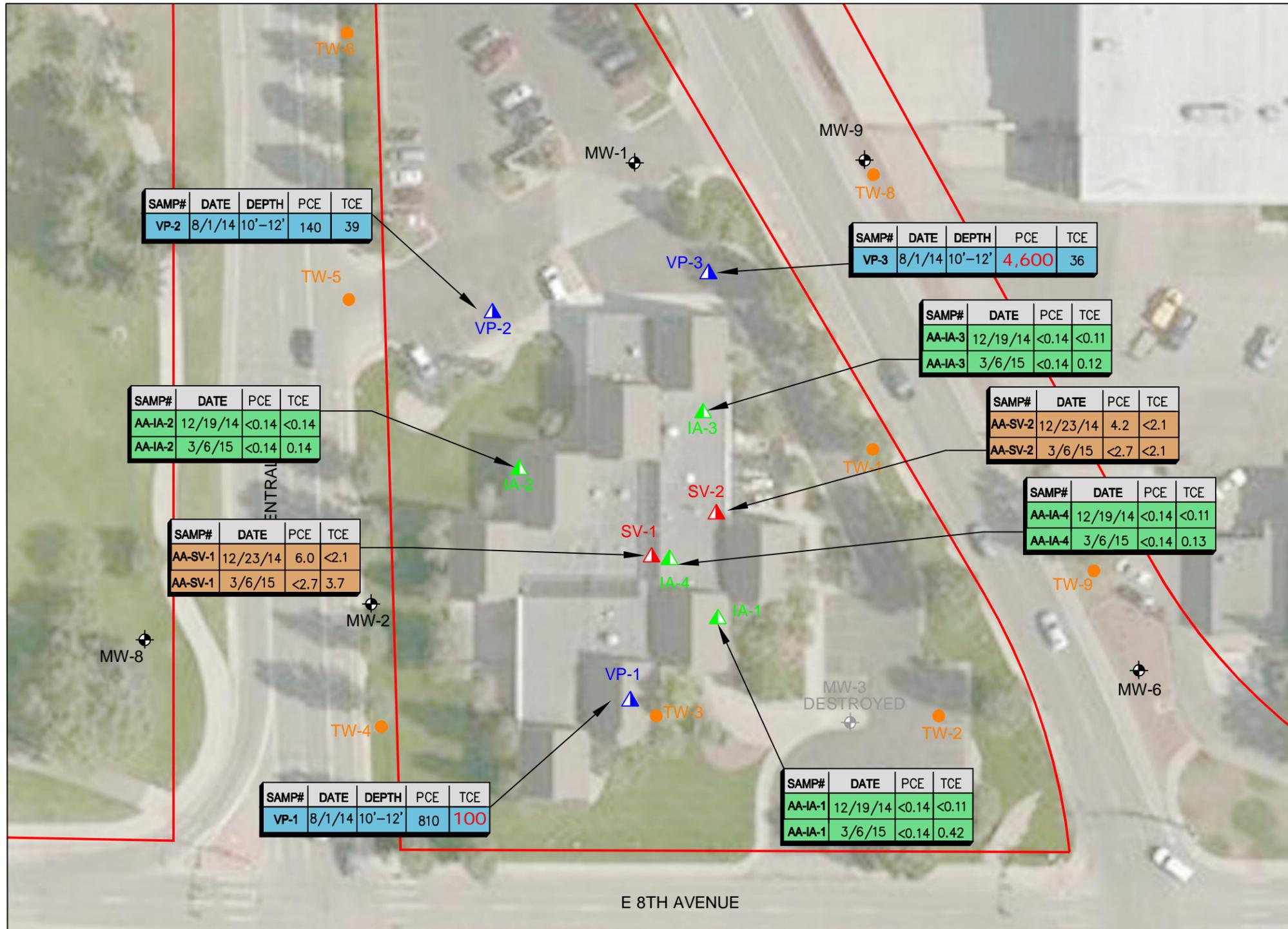
SOIL VAPOR SAMPLE ACTION LEVELS	
PCE	TCE
<b>2,720</b>	<b>42</b>

SUB SLAB SOIL VAPOR SAMPLE ACTION LEVELS	
PCE	TCE
<b>272</b>	<b>42</b>

INDOOR AIR SAMPLE ACTION LEVELS	
PCE	TCE
<b>27</b>	<b>4.2</b>



**Terracon**  
Consulting Engineers and Scientists

1505 Old Happy Jack Road Cheyenne, Wyoming 82001  
PH. (307) 632-9224 FAX. (307) 635-5756

## FIGURE 3 - VAPOR ANALYTICAL DIAGRAM

CHEYENNE AIRPORT ADDITION  
112 EAST 8TH AVENUE  
CHEYENNE, WYOMING

N:\Projects\2014\20149141\Working Files\DRAFTS (Proposal-Reports-Communications)\Airport\Monitoring\20149141-3.dwg

## FIGURE #3

DESIGNED BY:	JAS
DRAWN BY:	KDH
APPVD. BY:	JCG
SCALE:	1" = 50'
DATE:	3/31/15
JOB NO.:	20147141
ACAD NO.:	003
SHEET NO.:	3 OF 3

## **APPENDIX B**

### **TABLES**

**TABLE 1**  
**SUMMARY OF WELL CONSTRUCTION AND DEPTH TO GROUNDWATER MEASUREMENTS**  
**CHEYENNE AIRPORT ADDITION ■ OSRP #57.002**

**PROJECT NAME:** Airport Addition Orphan Site

**PROJECT LOCATION:** Cheyenne, Wyoming

**PROJECT NUMBER:** 20149141

Well Name	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9
Well Depth (feet bgs)	22	22	20	19	19	19	19	19	19
Well Diameter (inches)	2	2	2	2	2	2	2	2	2
Screen Interval (feet bgs)	12.0-21.5	10-20	10-20	9-19	9-19	9-19	9-19	9-19	9-19
Casing Elevation (feet)	6140.71	6141.47	Destroyed	6137.84	6137.83	6140.35	6138.28	6138.35	6141.14

Date Measured: July 14-31, 2014

Depth to Water (feet)	11.38	13.32	NM	16.10	11.30	13.23	11.86	10.48	12.23
Water Elevation (feet)	6129.33	6128.15	NL	6121.74	6126.53	6127.12	6126.42	6127.87	6128.91

Date Measured: December 24-30, 2014

Depth to Water (feet)	12.38	15.28	NM	17.35	12.85	15.23	13.60	12.33	15.92
Water Elevation (feet)	6128.33	6126.19	NL	6120.49	6124.98	6125.12	6124.68	6126.02	6125.22

Date Measured: March 16, 2015

Depth to Water (feet)	12.94	15.76	NM	18.55	14.00	16.79	14.96	12.81	14.34
Water Elevation (feet)	6127.77	6125.71	NL	6119.29	6123.83	6123.56	6123.32	6125.54	6126.80

**NOTES:**

1. ft msl = elevation in feet above mean sea level
2. ft bTOC = feet below top of casing
3. ft bgs = feet below ground surface
4. NM = Not Measured.
5. NL = Not Located, refer to reasons noted below.
6. MW-3 has been destroyed prior to 2014
7. Date measured is same as sample date on Table 2

**TABLE 2**  
**SUMMARY OF GROUNDWATER FIELD PARAMETER MEASUREMENTS**  
**CHEYENNE AIRPORT ADDITION ■ OSRP #57.002**

**PROJECT NAME:** Airport Addition Orphan Site  
**PROJECT LOCATION:** Cheyenne, Wyoming  
**PROJECT NUMBER:** 24149141

Well Name	Sample Date	Temperature °C	Conductivity mS/cm	Dissolved Oxygen mg/L	pH S.U.	ORP mV	Turbidity NTU	
MW-1	7/14/2014	15.58	2.22	1.50	6.99	251.7	NA	
MW-1	12/24/2014	13.26	2.09	1.77	6.67	159.7	424.9	
MW-1	3/16/2015	12.69	2.07	2.73	6.79	200.0	NA	
MW-2	7/31/2014	14.80	1.59	6.24	6.83	165.3	5.79	
MW-2	12/30/2014	13.23	1.54	2.84	6.69	342.1	4.37	
MW-2	3/16/2015	15.10	1.57	1.87	6.79	147.7	16.45	
MW-3	7/31/2014	Well Destroyed						
MW-4	7/24/2014	NA	NA	NA	NA	NA	NA	
MW-4	12/30/2014	Not Enough Water for Reading						
MW-4	3/16/2015	Not Enough Water for Reading						
MW-5	7/24/2014	17.00	3.80	5.78	6.96	189.7	7.58	
MW-5	12/30/2014	13.20	1.63	6.81	6.31	480.4	29.58	
MW-5	3/16/2015	Not Enough Water for Reading						
MW-6	7/23/2014	16.47	4.28	8.32	7.06	206.7	NA	
MW-6	12/24/2014	15.00	2.51	1.71	7.15	197.4	161.9	
MW-6	3/16/2015	14.14	3.31	0.95	7.18	152.7	189.8	
MW-7	7/23/2014	17.01	1.84	8.55	6.92	174.5	12.3	
MW-7	12/30/2014	12.12	1.01	2.35	4.56	134.3	92.9	
MW-7	3/16/2015	Not Enough Water for Reading						
MW-8	7/23/2014	12.61	1.83	8.17	6.83	165.5	179	
MW-8	12/24/2014	12.87	1.89	4.00	6.76	176.0	NA	
MW-8	3/16/2015	9.81	1.77	1.18	6.83	188.8	NA	
MW-9	7/23/2014	17.37	1.65	7.59	7.01	167.8	106	
MW-9	12/24/2014	Not Enough Water for Reading						
MW-9	3/16/2015	Not Enough Water for Reading						

Notes:

1. mS/cm = millisiemens per centimeter
2. mg/L = milligrams per liter
3. ORP = oxidation reduction potential
4. °C = degrees Celcius
5. S.U. = Standard Units
6. mV = millivolts
7. NTU = nephelometric turbidity units
8. NA = well did not produce sufficient water volume to allow for measurement of field parameters

**TABLE 3  
SUMMARY OF GROUNDWATER VOC ANALYTICAL RESULTS  
CHEYENNE AIRPORT ADDITION ■ OSRP #57.002**

**PROJECT NAME:** Airport Addition Orphan Site  
**PROJECT LOCATION:** Cheyenne, Wyoming  
**PROJECT NUMBER:** 24149141

Well Name	Sample Date	PCE µg/L	TCE µg/L	cis-1,2-DCE µg/L	trans-1,2-DCE µg/L	1,1-DCE µg/L	1,2-DCA µg/L	1,1-DCA µg/L	Vinyl Chloride µg/L
MW-1	10/1994	<0.5	<b>5.3</b>	5.8	NR	<b>16.6</b>	NR	NR	NR
MW-1	07/14/14	<2	<2	<2	<2	<5	<2	<2	<2
MW-1	12/24/14	<2	<2	<2	<5	<5	<2	<2	<2
MW-1 (dup)	12/24/14	<2	<2	<2	<2	<5	<2	<2	<2
MW-1	03/16/15	<2	<2	<2	<2	<5	<2	<2	<2
MW-1 (dup)	03/16/15	<2	<2	<2	<2	<5	<2	<2	<2
MW-2	10/1994	<b>108</b>	<b>5.3</b>	5.8	NR	<0.5	NR	NR	NR
MW-2	07/18/14	<b>43</b>	<2	<2	<2	<5	<2	<2	<2
MW-2	07/31/14	<b>70</b>	<2	<2	<2	<5	<2	<2	<2
MW-2	12/30/14	<b>97</b>	<2	<2	<2	<5	<2	<2	<2
MW-2	03/16/15	<b>82</b>	<2	<2	<2	<5	<2	<2	<2
MW-3	10/1994	<0.5	<0.5	<0.5	NR	<0.5	NR	NR	NR
MW-3	07/31/14	Well Destroyed							
MW-4	07/17/14	<2	<2	<2	<2	<5	<2	<2	<2
MW-4	07/24/14	<2	<2	<2	<2	<5	<2	<2	<2
MW-4	12/30/14	<2	<2	<2	<2	<5	<2	<2	<2
MW-4	03/16/15	<2	<2	<2	<2	<5	<2	<2	<2
MW-5	07/17/14	<2	<2	<2	<2	<5	<2	<2	<2
MW-5	07/24/14	1.4 J2	<2	<2	<2	<5	<2	<2	<2
MW-5	12/30/14	4.9	<2	<2	<2	<5	<2	<2	<2
MW-5	03/16/15	2.6	<2	<2	<2	<5	<2	<2	<2
MW-6	07/24/14	<2	<2	<2	<2	<5	<2	<2	<2
MW-6	12/24/14	<2	<2	<2	<2	<5	<2	<2	<2
MW-6	03/16/15	<2	<2	<2	<2	<5	<2	<2	<2
MW-7	07/23/14	<2	1.1 J2	<2	<2	<5	<2	<2	<2
MW-7	12/30/14	<2	<2	<2	<2	<5	<2	<2	<2
MW-7 (DUP-2)	12/30/14	<2	<2	<2	<2	<5	<2	<2	<2
MW-7	03/16/15	<2	<2	<2	<2	<5	<2	<2	<2
MW-8	07/23/14	<2	<2	<2	<2	<5	<2	<2	<2
MW-8	12/24/14	<2	<2	<2	<2	<5	<2	<2	<2
MW-8	03/16/15	<2	<2	<2	<2	<5	<2	<2	<2
MW-9	07/23/14	<2	4.5	<2	<2	<5	<2	<2	<2
MW-9	12/24/14	<2	<b>140</b>	<2	<2	<5	<b>88</b>	2.4	<2
MW-9	03/16/15	<2	<b>110</b>	<2	<2	<5	<b>40</b>	<2	<2
TW-1	07/17/14	<2	<2	<2	<2	<5	<2	<2	<2
TW-2	07/17/14	<2	<2	<2	<2	<5	<2	<2	<2
TW-3	07/17/14	<2	<2	<2	<2	<5	<2	<2	<2
TW-4	07/17/14	<b>15</b>	<2	<2	<2	<5	<2	<2	<2
Water Cleanup Level		5	5	70	100	7	5	NR	2

Notes:

1. Constituents shown in the table include site specific selected COCs (PCE and its degradation products)
2. PCE = tetrachloroethene
3. TCE = trichloroethene
4. DCE = dichloroethene
5. µg/L = micrograms per liter
6. NR = Not reported or not regulated
7. J2 = Compound detected at an estimated concentration between the reporting limit and method detection limit
8. J1 = Not detected at or above the MDL
9. **Bold** indicates an exceedance of the migration-to-groundwater soil cleanup level listed in the WDEQ/SHWD/VRP Fact Sheet 12 Cleanup Level Look-up Table, dated December 2014

**TABLE 3**  
**SUMMARY OF GROUNDWATER VOC ANALYTICAL RESULTS**  
**CHEYENNE AIRPORT ADDITION ■ OSRP #57.002**

**PROJECT NAME:** Airport Addition Orphan Site  
**PROJECT LOCATION:** Cheyenne, Wyoming  
**PROJECT NUMBER:** 24149141

Well Name	Sample Date	PCE µg/L	TCE µg/L	cis-1,2-DCE µg/L	trans-1,2-DCE µg/L	1,1-DCE µg/L	1,2-DCA µg/L	1,1-DCA µg/L	Vinyl Chloride µg/L
TW-5	07/17/14	<2	<2	<2	<2	<5	<2	<2	<2
TW-6	07/17/14	<2	<2	<2	<2	<5	<2	<2	<2
TW-7	07/17/14	<2	<2	<2	<2	<5	<2	<2	<2
TW-8	07/17/14	<2	3.0	<2	<2	<5	<2	<2	<2
TW-9	07/17/14	<2	<2	<2	<2	<5	<2	<2	<2
TW-10	07/17/14	<2	<2	<2	<2	<5	<2	<2	<2
<b>Water Cleanup Level</b>		5	5	70	100	7	5	NR	2

Notes:

1. Constituents shown in the table include site specific selected COCs (PCE and its degradation products)
2. PCE = tetrachloroethene
3. TCE = trichloroethene
4. DCE = dichloroethene
5. µg/L = micrograms per liter
6. NR = Not reported
7. J2 = Compound detected at an estimated concentration between the reporting limit and method detection limit
8. **Bold** indicates an exceedance of the migration-to-groundwater soil cleanup level listed in the WDEQ/SHWD/VRP Fact Sheet 12 Cleanup Level Look-up Table, dated December 2014

**TABLE 4**  
**SUMMARY OF SUB-SLAB SOIL VAPOR ANALYTICAL RESULTS**  
**CHEYENNE AIRPORT ADDITION ■ OSRP #57.002**

**PROJECT NAME:** Airport Addition Orphan Site

**PROJECT LOCATION:** Cheyenne, Wyoming

**PROJECT NUMBER:** 24149141

Well Name	Sample Date	PCE µg/m <sup>3</sup>	TCE µg/m <sup>3</sup>	cis-1,2-DCE µg/m <sup>3</sup>	trans-1,2-DCE µg/m <sup>3</sup>	1,1-DCE µg/m <sup>3</sup>	Vinyl Chloride µg/m <sup>3</sup>
AA-SV-1	12/23/2014	6.0	<2.1	<1.6	<1.6	<1.6	<1.0
AA-SV-1	3/6/2015	<2.7	3.7	<1.6	<1.6	<1.6	<1.0
AA-SV-1 (DUP)	3/6/2015	<2.7	3.4	<1.6	<1.6	<1.6	<1.0
AA-SV-2	12/23/2014	4.2	<2.1	<1.6	<1.6	<1.6	<1.0
AA-SV-2 (DUP)	12/23/2014	4.8	<2.1	<1.6	<1.6	<1.6	<1.0
AA-SV-2	3/6/2015	<2.7	<2.1	<1.6	<1.6	<1.6	<1.0
<b>Soil Vapor Action Level</b>		<b>272</b>	<b>42</b>	<b>2,860</b>	<b>5,720</b>	<b>16,350</b>	<b>9.3</b>

NOTES:

1. µg/m<sup>3</sup> = micrograms per cubic meter
2. **Bold** indicates an exceedance of the WDEQ sub-slab soil vapor action level

**TABLE 5**  
**SUMMARY OF INDOOR AIR ANALYTICAL RESULTS**  
**CHEYENNE AIRPORT ADDITION ■ OSRP #57.002**

**PROJECT NAME:** Airport Addition Orphan Site

**PROJECT LOCATION:** Cheyenne, Wyoming

**PROJECT NUMBER:** 24149141

Well Name	Sample Date	PCE µg/m <sup>3</sup>	TCE µg/m <sup>3</sup>	cis-1,2-DCE µg/m <sup>3</sup>	trans-1,2-DCE µg/m <sup>3</sup>	1,1-DCE µg/m <sup>3</sup>	Vinyl Chloride µg/m <sup>3</sup>
AA-IA-1	12/19/2014	<0.14	<0.11	<0.079	<0.079	<0.079	<0.051
AA-IA-1	3/6/2015	<0.14	0.42	<0.079	<0.079	<0.079	<0.051
AA-IA-2	12/19/2014	<0.14	<0.11	<0.079	<0.079	<0.079	<0.051
AA-IA-2 (DUP)	12/19/2014	<0.14	<0.11	<0.079	<0.079	<0.079	<0.051
AA-IA-2	3/6/2015	<0.14	0.14	<0.079	<0.079	<0.079	<0.051
AA-IA-3	12/19/2014	<0.14	<0.11	<0.079	<0.079	<0.079	<0.051
AA-IA-3	3/6/2015	<0.14	0.12	<0.079	<0.079	<0.079	<0.051
AA-IA-4	12/19/2014	<0.14	<0.24	<0.079	<0.079	<0.079	<0.051
AA-IA-4	3/6/2015	<0.14	0.13	<0.079	<0.079	<0.079	<0.051
AA-IA-4 (DUP)	3/6/2015	<0.14	0.15	<0.079	<0.079	<0.079	<0.051
<b>Indoor Air Action Level</b>		<b>27.2</b>	<b>4.2</b>	<b>286</b>	<b>572</b>	<b>1,635</b>	<b>0.93</b>

NOTES:

1. µg/m<sup>3</sup> = micrograms per cubic meter

4. **Bold** indicates an exceedance of the WDEQ indoor air action level

**TABLE 6**  
**SUMMARY OF WASTE SOIL AND WATER ANALYTICAL RESULTS**  
**CHEYENNE AIRPORT ADDITION ■ OSRP #57.002**

**PROJECT NAME:** Airport Addition Orphan Site  
**PROJECT LOCATION:** Cheyenne, Wyoming  
**PROJECT NUMBER:** 24149141

<b>SOIL</b>		
Drum	Sample	PCE
Identification	Date	mg/kg
AP-S1	8/26/2014	<0.002
AP-S2	8/26/2014	<0.002
AP-S3	8/26/2014	<0.002
AP-S4	8/26/2014	<0.002
AP-S5	8/26/2014	<0.002
AP-S6	8/26/2014	<0.002
AP-S7	8/26/2014	<0.002
WDEQ TCLP Haz.Waste Level (mg/L)		0.7
WDEQ TCLP *20 Haz Waste Level (mg/Kg)		14.0

<b>WASTE WATER</b>			
Drum	Sample	PCE	Methylene Chloride
Identification	Date	mg/L	mg/L
AP-W1	8/26/2014	<0.002	<0.005
IDW-1	1/30/2015	0.0026	<0.005
IDW-1	3/16/2015	<b>0.0072</b>	<.005
VRP Water Cleanup Level		0.005	0.005
EPA MCL in drinking water		0.005	0.005

**Notes for both tables:**

1. Sample ID's correspond to the drum in which the sample was collected (e.g. sample SC-S1 is from Steam Cleaner, Soil Drum 1; sample SC-W1 is from Steam Cleaner, Water Drum 1, etc.)
2. Constituents selected for analysis are based on the laboratory analytical results of the investigation samples that were placed in the drums; only those constituents above WDEQ cleanup levels were analyzed
3. mg/L = milligrams per liter
4. mg/kg = milligrams per kilogram
5. PCE = tetrachloroethene
6. WDEQ TCLP Haz.Waste Level = Wyoming Department of Environmental Quality / Solid and Hazardous Waste Division (WDEQ/SHWD) Guideline #10 Hazardous Waste Limits based on samples analyzed by the Toxicity Characteristic Leaching Procedure (TCLP); units are in mg/L; these limits are provided for reference only as TCLP analysis was not used for the soil samples
7. WDEQ TCLP \*20 Haz Waste Level = WDEQ TCLP hazardous waste limit multiplied by 20; it is an industry "rule of thumb" approximate equivalent of the TCLP limit using the standard total constituent analyses method in lieu of TCLP analysis; units are mg/kg; the samples were analyzed using the total constituent analysis method; therefore, this is the relevant reference limit for evaluating if the constituent concentrations exceed hazardous waste limits.
8. VRP Water Cleanup Level = groundwater cleanup level listed in the WDEQ/SHWD/VRP Fact Sheet 12 and 13, dated December 2013
9. EPA MCL in drinking water = drinking water maximum contaminant level established by the U.S. Environmental Protection Agency

**APPENDIX C**

**LABORATORY DATA REPORTS**



## ChemSolutions

7388 S. Revere Parkway #806  
Centennial, CO 80112  
303.771.5570

March 25, 2015

John A. Skogman, P.E.  
Terracon  
1901 Sharp Point Drive, Suite C  
Fort Collins, CO 80525

RE: TER066

Dear John,

Enclosed please find the analytical results for the Project #24149141 Airport water samples collected on 3/16/15.

Tables 1-13 contain the analytical results for the samples. The quality control samples are summarized in Tables 14-16.

Thank you for the opportunity to work on this project. Please call if you have any questions. The invoice will be sent separately.

Sincerely,

John Graves  
Laboratory Director  
ChemSolutions LLC

## ChemSolutions LLC

TABLE 1

## VOLATILE ORGANIC COMPOUND RESULTS

Project ID: TER066

Client Sample ID: MW-7  
 Client Project ID: 24149141 Airport  
 EPA Method 8260C  
 Units: ug/L

Date Sampled: 3/16/15  
 Date Received: 3/18/15  
 Date Analyzed: 3/23/15  
 Sample Matrix: Water

<u>Analyte</u>	<u>Concentration</u>	<u>Reporting</u>		<u>Analyte</u>	<u>Concentration</u>	<u>Reporting</u>	
		<u>Limit</u>	<u>MDL</u>			<u>Limit</u>	<u>MDL</u>
Dichlorodifluoromethane	ND	5	0.453	1,1,2-Trichloroethane	ND	2	0.257
Chloromethane	ND	5	0.510	Tetrachloroethene	ND	2	0.678
Vinyl Chloride	ND	2	0.798	Dibromochloromethane	ND	5	0.398
Bromomethane	ND	5	0.460	1,2-Dibromoethane	ND	5	0.312
Chloroethane	ND	5	0.557	Chlorobenzene	ND	2	0.156
Trichlorofluoromethane	ND	5	0.674	1,1,1,2-Tetrachloroethane	ND	5	0.413
Acetone	ND	20	0.627	Ethylbenzene	ND	5	0.251
1,1-Dichloroethene	ND	5	0.256	Total Xylene	ND	5	0.523
Carbon Disulfide	ND	5	0.367	Styrene	ND	5	0.344
Methyl-tert-butyl ether	ND	2	1.252	Isopropylbenzene	ND	5	0.315
Methylene Chloride	ND	5	0.511	Bromoform	ND	5	0.628
trans-1,2-Dichloroethene	ND	2	0.601	n-Propylbenzene	ND	5	0.300
1,1-Dichloroethane	ND	2	0.440	1,2,3-Trichloropropane	ND	5	0.501
2-Butanone	ND	10	1.077	2-Chlorotoluene	ND	5	0.572
cis-1,2-Dichloroethene	ND	2	0.404	1,3,5-Trimethylbenzene	ND	5	0.351
Chloroform	ND	5	0.343	4-Chlorotoluene	ND	5	0.195
Tetrahydrofuran	ND	10	0.910	t-Butylbenzene	ND	5	0.242
1,1,1-Trichloroethane	ND	2	0.381	1,2,4-Trimethylbenzene	ND	5	0.263
Carbon Tetrachloride	ND	2	0.598	sec-Butylbenzene	ND	5	0.413
Benzene	ND	2	0.417	p-Isopropyltoluene	ND	5	0.285
1,2-Dichloroethane	ND	2	0.341	1,1,1,2-Tetrachloroethane	ND J1	5	0.477
Trichloroethene	ND	2	0.270	1,3-Dichlorobenzene	ND	5	0.215
1,2-Dichloropropane	ND	5	0.295	1,4-Dichlorobenzene	ND	5	0.213
Dibromomethane	ND	5	0.383	n-Butylbenzene	ND	5	0.305
Bromodichloromethane	ND	5	0.199	1,2 Dichlorobenzene	ND	5	0.345
cis-1,3-Dichloropropene	ND J1	2	0.228	1,2-Dibromo-3-chloropropane	ND	5	0.877
4-Methyl-2-pentanone	ND	10	1.249	1,2,4-Trichlorobenzene	ND	5	0.223
Toluene	ND	5	0.279	Hexachlorobutadiene	ND	5	0.537
2-Hexanone	ND	10	1.413	1,2,3-Trichlorobenzene	ND	5	0.392
trans-1,3-Dichloropropene	ND J1	5	0.212	Naphthalene	ND	5	0.320

<u>Surrogate</u>	<u>% Recovery</u>
Dibromofluoromethane	102
1,2-Dichloroethane-D4	106
Toluene-D8	100
Bromofluorobenzene	94.0

ND= Not detected at or above the reporting limit.

ND J1= Not detected at or above the MDL.

MDL= Method Detection Limit.

## ChemSolutions LLC

TABLE 2

## VOLATILE ORGANIC COMPOUND RESULTS

Project ID: TER066

Client Sample ID: MW-8  
 Client Project ID: 24149141 Airport  
 EPA Method 8260C  
 Units: ug/L

Date Sampled: 3/16/15  
 Date Received: 3/18/15  
 Date Analyzed: 3/23/15  
 Sample Matrix: Water

<u>Analyte</u>	<u>Concentration</u>	<u>Reporting</u>		<u>Analyte</u>	<u>Concentration</u>	<u>Reporting</u>	
		<u>Limit</u>	<u>MDL</u>			<u>Limit</u>	<u>MDL</u>
Dichlorodifluoromethane	ND	5	0.453	1,1,2-Trichloroethane	ND	2	0.257
Chloromethane	ND	5	0.510	Tetrachloroethene	ND	2	0.678
Vinyl Chloride	ND	2	0.798	Dibromochloromethane	ND	5	0.398
Bromomethane	ND	5	0.460	1,2-Dibromoethane	ND	5	0.312
Chloroethane	ND	5	0.557	Chlorobenzene	ND	2	0.156
Trichlorofluoromethane	ND	5	0.674	1,1,1,2-Tetrachloroethane	ND	5	0.413
Acetone	ND	20	0.627	Ethylbenzene	ND	5	0.251
1,1-Dichloroethene	ND	5	0.256	Total Xylene	ND	5	0.523
Carbon Disulfide	ND	5	0.367	Styrene	ND	5	0.344
Methyl-tert-butyl ether	ND	2	1.252	Isopropylbenzene	ND	5	0.315
Methylene Chloride	ND	5	0.511	Bromoform	ND	5	0.628
trans-1,2-Dichloroethene	ND	2	0.601	n-Propylbenzene	ND	5	0.300
1,1-Dichloroethane	ND	2	0.440	1,2,3-Trichloropropane	ND	5	0.501
2-Butanone	ND	10	1.077	2-Chlorotoluene	ND	5	0.572
cis-1,2-Dichloroethene	ND	2	0.404	1,3,5-Trimethylbenzene	ND	5	0.351
Chloroform	ND	5	0.343	4-Chlorotoluene	ND	5	0.195
Tetrahydrofuran	ND	10	0.910	t-Butylbenzene	ND	5	0.242
1,1,1-Trichloroethane	ND	2	0.381	1,2,4-Trimethylbenzene	ND	5	0.263
Carbon Tetrachloride	ND	2	0.598	sec-Butylbenzene	ND	5	0.413
Benzene	ND	2	0.417	p-Isopropyltoluene	ND	5	0.285
1,2-Dichloroethane	ND	2	0.341	1,1,2,2-Tetrachloroethane	ND J1	5	0.477
Trichloroethene	ND	2	0.270	1,3-Dichlorobenzene	ND	5	0.215
1,2-Dichloropropane	ND	5	0.295	1,4-Dichlorobenzene	ND	5	0.213
Dibromomethane	ND	5	0.383	n-Butylbenzene	ND	5	0.305
Bromodichloromethane	ND	5	0.199	1,2 Dichlorobenzene	ND	5	0.345
cis-1,3-Dichloropropene	ND J1	2	0.228	1,2-Dibromo-3-chloropropane	ND	5	0.877
4-Methyl-2-pentanone	ND	10	1.249	1,2,4-Trichlorobenzene	ND	5	0.223
Toluene	ND	5	0.279	Hexachlorobutadiene	ND	5	0.537
2-Hexanone	ND	10	1.413	1,2,3-Trichlorobenzene	ND	5	0.392
trans-1,3-Dichloropropene	ND J1	5	0.212	Naphthalene	ND	5	0.320

<u>Surrogate</u>	<u>% Recovery</u>
Dibromofluoromethane	103
1,2-Dichloroethane-D4	109
Toluene-D8	100
Bromofluorobenzene	97.9

ND= Not detected at or above the reporting limit.

ND J1= Not detected at or above the MDL.

MDL= Method Detection Limit.

## ChemSolutions LLC

TABLE 3

## VOLATILE ORGANIC COMPOUND RESULTS

Project ID: TER066

Client Sample ID: FB-1  
 Client Project ID: 24149141 Airport  
 EPA Method 8260C  
 Units: ug/L

Date Sampled: 3/16/15  
 Date Received: 3/18/15  
 Date Analyzed: 3/23/15  
 Sample Matrix: Water

<u>Analyte</u>	<u>Concentration</u>	<u>Reporting</u>		<u>Analyte</u>	<u>Concentration</u>	<u>Reporting</u>	
		<u>Limit</u>	<u>MDL</u>			<u>Limit</u>	<u>MDL</u>
Dichlorodifluoromethane	ND	5	0.453	1,1,2-Trichloroethane	ND	2	0.257
Chloromethane	ND	5	0.510	Tetrachloroethene	ND	2	0.678
Vinyl Chloride	ND	2	0.798	Dibromochloromethane	ND	5	0.398
Bromomethane	ND	5	0.460	1,2-Dibromoethane	ND	5	0.312
Chloroethane	ND	5	0.557	Chlorobenzene	ND	2	0.156
Trichlorofluoromethane	ND	5	0.674	1,1,1,2-Tetrachloroethane	ND	5	0.413
Acetone	ND	20	0.627	Ethylbenzene	ND	5	0.251
1,1-Dichloroethene	ND	5	0.256	Total Xylene	ND	5	0.523
Carbon Disulfide	ND	5	0.367	Styrene	ND	5	0.344
Methyl-tert-butyl ether	ND	2	1.252	Isopropylbenzene	ND	5	0.315
Methylene Chloride	ND	5	0.511	Bromoform	ND	5	0.628
trans-1,2-Dichloroethene	ND	2	0.601	n-Propylbenzene	ND	5	0.300
1,1-Dichloroethane	ND	2	0.440	1,2,3-Trichloropropane	ND	5	0.501
2-Butanone	ND	10	1.077	2-Chlorotoluene	ND	5	0.572
cis-1,2-Dichloroethene	ND	2	0.404	1,3,5-Trimethylbenzene	ND	5	0.351
Chloroform	ND	5	0.343	4-Chlorotoluene	ND	5	0.195
Tetrahydrofuran	ND	10	0.910	t-Butylbenzene	ND	5	0.242
1,1,1-Trichloroethane	ND	2	0.381	1,2,4-Trimethylbenzene	ND	5	0.263
Carbon Tetrachloride	ND	2	0.598	sec-Butylbenzene	ND	5	0.413
Benzene	ND	2	0.417	p-Isopropyltoluene	ND	5	0.285
1,2-Dichloroethane	ND	2	0.341	1,1,1,2-Tetrachloroethane	ND J1	5	0.477
Trichloroethene	ND	2	0.270	1,3-Dichlorobenzene	ND	5	0.215
1,2-Dichloropropane	ND	5	0.295	1,4-Dichlorobenzene	ND	5	0.213
Dibromomethane	ND	5	0.383	n-Butylbenzene	ND	5	0.305
Bromodichloromethane	ND	5	0.199	1,2 Dichlorobenzene	ND	5	0.345
cis-1,3-Dichloropropene	ND J1	2	0.228	1,2-Dibromo-3-chloropropane	ND	5	0.877
4-Methyl-2-pentanone	ND	10	1.249	1,2,4-Trichlorobenzene	ND	5	0.223
Toluene	ND	5	0.279	Hexachlorobutadiene	ND	5	0.537
2-Hexanone	ND	10	1.413	1,2,3-Trichlorobenzene	ND	5	0.392
trans-1,3-Dichloropropene	ND J1	5	0.212	Naphthalene	ND	5	0.320

<u>Surrogate</u>	<u>% Recovery</u>
Dibromofluoromethane	102
1,2-Dichloroethane-D4	107
Toluene-D8	101
Bromofluorobenzene	97.5

ND= Not detected at or above the reporting limit.

ND J1= Not detected at or above the MDL.

MDL= Method Detection Limit.

## ChemSolutions LLC

TABLE 4

## VOLATILE ORGANIC COMPOUND RESULTS

Project ID: TER066

Client Sample ID: MW-6  
 Client Project ID: 24149141 Airport  
 EPA Method 8260C  
 Units: ug/L

Date Sampled: 3/16/15  
 Date Received: 3/18/15  
 Date Analyzed: 3/23/15  
 Sample Matrix: Water

<u>Analyte</u>	<u>Concentration</u>	<u>Reporting</u>		<u>Analyte</u>	<u>Concentration</u>	<u>Reporting</u>	
		<u>Limit</u>	<u>MDL</u>			<u>Limit</u>	<u>MDL</u>
Dichlorodifluoromethane	ND	5	0.453	1,1,2-Trichloroethane	ND	2	0.257
Chloromethane	ND	5	0.510	Tetrachloroethene	ND	2	0.678
Vinyl Chloride	ND	2	0.798	Dibromochloromethane	ND	5	0.398
Bromomethane	ND	5	0.460	1,2-Dibromoethane	ND	5	0.312
Chloroethane	ND	5	0.557	Chlorobenzene	ND	2	0.156
Trichlorofluoromethane	ND	5	0.674	1,1,1,2-Tetrachloroethane	ND	5	0.413
Acetone	ND	20	0.627	Ethylbenzene	ND	5	0.251
1,1-Dichloroethene	ND	5	0.256	Total Xylene	ND	5	0.523
Carbon Disulfide	ND	5	0.367	Styrene	ND	5	0.344
Methyl-tert-butyl ether	ND	2	1.252	Isopropylbenzene	ND	5	0.315
Methylene Chloride	ND	5	0.511	Bromoform	ND	5	0.628
trans-1,2-Dichloroethene	ND	2	0.601	n-Propylbenzene	ND	5	0.300
1,1-Dichloroethane	ND	2	0.440	1,2,3-Trichloropropane	ND	5	0.501
2-Butanone	ND	10	1.077	2-Chlorotoluene	ND	5	0.572
cis-1,2-Dichloroethene	ND	2	0.404	1,3,5-Trimethylbenzene	ND	5	0.351
Chloroform	ND	5	0.343	4-Chlorotoluene	ND	5	0.195
Tetrahydrofuran	ND	10	0.910	t-Butylbenzene	ND	5	0.242
1,1,1-Trichloroethane	ND	2	0.381	1,2,4-Trimethylbenzene	ND	5	0.263
Carbon Tetrachloride	ND	2	0.598	sec-Butylbenzene	ND	5	0.413
Benzene	ND	2	0.417	p-Isopropyltoluene	ND	5	0.285
1,2-Dichloroethane	ND	2	0.341	1,1,2,2-Tetrachloroethane	ND J1	5	0.477
Trichloroethene	ND	2	0.270	1,3-Dichlorobenzene	ND	5	0.215
1,2-Dichloropropane	ND	5	0.295	1,4-Dichlorobenzene	ND	5	0.213
Dibromomethane	ND	5	0.383	n-Butylbenzene	ND	5	0.305
Bromodichloromethane	ND	5	0.199	1,2 Dichlorobenzene	ND	5	0.345
cis-1,3-Dichloropropene	ND J1	2	0.228	1,2-Dibromo-3-chloropropane	ND	5	0.877
4-Methyl-2-pentanone	ND	10	1.249	1,2,4-Trichlorobenzene	ND	5	0.223
Toluene	ND	5	0.279	Hexachlorobutadiene	ND	5	0.537
2-Hexanone	ND	10	1.413	1,2,3-Trichlorobenzene	ND	5	0.392
trans-1,3-Dichloropropene	ND J1	5	0.212	Naphthalene	ND	5	0.320

<u>Surrogate</u>	<u>% Recovery</u>
Dibromofluoromethane	102
1,2-Dichloroethane-D4	108
Toluene-D8	101
Bromofluorobenzene	97.3

ND= Not detected at or above the reporting limit.

ND J1= Not detected at or above the MDL.

MDL= Method Detection Limit.

## ChemSolutions LLC

TABLE 5

## VOLATILE ORGANIC COMPOUND RESULTS

Project ID: TER066

Client Sample ID: EB-1  
 Client Project ID: 24149141 Airport  
 EPA Method 8260C  
 Units: ug/L

Date Sampled: 3/16/15  
 Date Received: 3/18/15  
 Date Analyzed: 3/23/15  
 Sample Matrix: Water

<u>Analyte</u>	<u>Concentration</u>	<u>Reporting</u>		<u>Analyte</u>	<u>Concentration</u>	<u>Reporting</u>	
		<u>Limit</u>	<u>MDL</u>			<u>Limit</u>	<u>MDL</u>
Dichlorodifluoromethane	ND	5	0.453	1,1,2-Trichloroethane	ND	2	0.257
Chloromethane	ND	5	0.510	Tetrachloroethene	ND	2	0.678
Vinyl Chloride	ND	2	0.798	Dibromochloromethane	ND	5	0.398
Bromomethane	ND	5	0.460	1,2-Dibromoethane	ND	5	0.312
Chloroethane	ND	5	0.557	Chlorobenzene	ND	2	0.156
Trichlorofluoromethane	ND	5	0.674	1,1,1,2-Tetrachloroethane	ND	5	0.413
Acetone	ND	20	0.627	Ethylbenzene	ND	5	0.251
1,1-Dichloroethene	ND	5	0.256	Total Xylene	ND	5	0.523
Carbon Disulfide	ND	5	0.367	Styrene	ND	5	0.344
Methyl-tert-butyl ether	ND	2	1.252	Isopropylbenzene	ND	5	0.315
Methylene Chloride	ND	5	0.511	Bromoform	ND	5	0.628
trans-1,2-Dichloroethene	ND	2	0.601	n-Propylbenzene	ND	5	0.300
1,1-Dichloroethane	ND	2	0.440	1,2,3-Trichloropropane	ND	5	0.501
2-Butanone	ND	10	1.077	2-Chlorotoluene	ND	5	0.572
cis-1,2-Dichloroethene	ND	2	0.404	1,3,5-Trimethylbenzene	ND	5	0.351
Chloroform	ND	5	0.343	4-Chlorotoluene	ND	5	0.195
Tetrahydrofuran	ND	10	0.910	t-Butylbenzene	ND	5	0.242
1,1,1-Trichloroethane	ND	2	0.381	1,2,4-Trimethylbenzene	ND	5	0.263
Carbon Tetrachloride	ND	2	0.598	sec-Butylbenzene	ND	5	0.413
Benzene	ND	2	0.417	p-Isopropyltoluene	ND	5	0.285
1,2-Dichloroethane	ND	2	0.341	1,1,2,2-Tetrachloroethane	ND J1	5	0.477
Trichloroethene	ND	2	0.270	1,3-Dichlorobenzene	ND	5	0.215
1,2-Dichloropropane	ND	5	0.295	1,4-Dichlorobenzene	ND	5	0.213
Dibromomethane	ND	5	0.383	n-Butylbenzene	ND	5	0.305
Bromodichloromethane	ND	5	0.199	1,2 Dichlorobenzene	ND	5	0.345
cis-1,3-Dichloropropene	ND J1	2	0.228	1,2-Dibromo-3-chloropropane	ND	5	0.877
4-Methyl-2-pentanone	ND	10	1.249	1,2,4-Trichlorobenzene	ND	5	0.223
Toluene	ND	5	0.279	Hexachlorobutadiene	ND	5	0.537
2-Hexanone	ND	10	1.413	1,2,3-Trichlorobenzene	ND	5	0.392
trans-1,3-Dichloropropene	ND J1	5	0.212	Naphthalene	ND	5	0.320

<u>Surrogate</u>	<u>% Recovery</u>
Dibromofluoromethane	103
1,2-Dichloroethane-D4	106
Toluene-D8	102
Bromofluorobenzene	97.9

ND= Not detected at or above the reporting limit.

ND J1= Not detected at or above the MDL.

MDL= Method Detection Limit.

## ChemSolutions LLC

TABLE 6

## VOLATILE ORGANIC COMPOUND RESULTS

Project ID: TER066

Client Sample ID: MW-1  
 Client Project ID: 24149141 Airport  
 EPA Method 8260C  
 Units: ug/L

Date Sampled: 3/16/15  
 Date Received: 3/18/15  
 Date Analyzed: 3/23/15  
 Sample Matrix: Water

<u>Analyte</u>	<u>Concentration</u>	<u>Reporting</u>		<u>Analyte</u>	<u>Concentration</u>	<u>Reporting</u>	
		<u>Limit</u>	<u>MDL</u>			<u>Limit</u>	<u>MDL</u>
Dichlorodifluoromethane	ND	5	0.453	1,1,2-Trichloroethane	ND	2	0.257
Chloromethane	ND	5	0.510	Tetrachloroethene	ND	2	0.678
Vinyl Chloride	ND	2	0.798	Dibromochloromethane	ND	5	0.398
Bromomethane	ND	5	0.460	1,2-Dibromoethane	ND	5	0.312
Chloroethane	ND	5	0.557	Chlorobenzene	ND	2	0.156
Trichlorofluoromethane	ND	5	0.674	1,1,1,2-Tetrachloroethane	ND	5	0.413
Acetone	ND	20	0.627	Ethylbenzene	ND	5	0.251
1,1-Dichloroethene	ND	5	0.256	Total Xylene	ND	5	0.523
Carbon Disulfide	ND	5	0.367	Styrene	ND	5	0.344
Methyl-tert-butyl ether	ND	2	1.252	Isopropylbenzene	ND	5	0.315
Methylene Chloride	ND	5	0.511	Bromoform	ND	5	0.628
trans-1,2-Dichloroethene	ND	2	0.601	n-Propylbenzene	ND	5	0.300
1,1-Dichloroethane	ND	2	0.440	1,2,3-Trichloropropane	ND	5	0.501
2-Butanone	ND	10	1.077	2-Chlorotoluene	ND	5	0.572
cis-1,2-Dichloroethene	ND	2	0.404	1,3,5-Trimethylbenzene	ND	5	0.351
Chloroform	ND	5	0.343	4-Chlorotoluene	ND	5	0.195
Tetrahydrofuran	ND	10	0.910	t-Butylbenzene	ND	5	0.242
1,1,1-Trichloroethane	ND	2	0.381	1,2,4-Trimethylbenzene	ND	5	0.263
Carbon Tetrachloride	ND	2	0.598	sec-Butylbenzene	ND	5	0.413
Benzene	ND	2	0.417	p-Isopropyltoluene	ND	5	0.285
1,2-Dichloroethane	ND	2	0.341	1,1,2,2-Tetrachloroethane	ND J1	5	0.477
Trichloroethene	ND	2	0.270	1,3-Dichlorobenzene	ND	5	0.215
1,2-Dichloropropane	ND	5	0.295	1,4-Dichlorobenzene	ND	5	0.213
Dibromomethane	ND	5	0.383	n-Butylbenzene	ND	5	0.305
Bromodichloromethane	ND	5	0.199	1,2 Dichlorobenzene	ND	5	0.345
cis-1,3-Dichloropropene	ND J1	2	0.228	1,2-Dibromo-3-chloropropane	ND	5	0.877
4-Methyl-2-pentanone	ND	10	1.249	1,2,4-Trichlorobenzene	ND	5	0.223
Toluene	ND	5	0.279	Hexachlorobutadiene	ND	5	0.537
2-Hexanone	ND	10	1.413	1,2,3-Trichlorobenzene	ND	5	0.392
trans-1,3-Dichloropropene	ND J1	5	0.212	Naphthalene	ND	5	0.320

<u>Surrogate</u>	<u>% Recovery</u>
Dibromofluoromethane	100
1,2-Dichloroethane-D4	102
Toluene-D8	102
Bromofluorobenzene	98.0

ND= Not detected at or above the reporting limit.

ND J1= Not detected at or above the MDL.

MDL= Method Detection Limit.

## ChemSolutions LLC

TABLE 7

## VOLATILE ORGANIC COMPOUND RESULTS

Project ID: TER066

Client Sample ID: MW-4  
 Client Project ID: 24149141 Airport  
 EPA Method 8260C  
 Units: ug/L

Date Sampled: 3/16/15  
 Date Received: 3/18/15  
 Date Analyzed: 3/23/15  
 Sample Matrix: Water

<u>Analyte</u>	<u>Concentration</u>	<u>Reporting</u>		<u>Analyte</u>	<u>Concentration</u>	<u>Reporting</u>	
		<u>Limit</u>	<u>MDL</u>			<u>Limit</u>	<u>MDL</u>
Dichlorodifluoromethane	ND	5	0.453	1,1,2-Trichloroethane	ND	2	0.257
Chloromethane	ND	5	0.510	Tetrachloroethene	ND	2	0.678
Vinyl Chloride	ND	2	0.798	Dibromochloromethane	ND	5	0.398
Bromomethane	ND	5	0.460	1,2-Dibromoethane	ND	5	0.312
Chloroethane	ND	5	0.557	Chlorobenzene	ND	2	0.156
Trichlorofluoromethane	ND	5	0.674	1,1,1,2-Tetrachloroethane	ND	5	0.413
Acetone	ND	20	0.627	Ethylbenzene	ND	5	0.251
1,1-Dichloroethene	ND	5	0.256	Total Xylene	ND	5	0.523
Carbon Disulfide	ND	5	0.367	Styrene	ND	5	0.344
Methyl-tert-butyl ether	ND	2	1.252	Isopropylbenzene	ND	5	0.315
Methylene Chloride	ND	5	0.511	Bromoform	ND	5	0.628
trans-1,2-Dichloroethene	ND	2	0.601	n-Propylbenzene	ND	5	0.300
1,1-Dichloroethane	ND	2	0.440	1,2,3-Trichloropropane	ND	5	0.501
2-Butanone	ND	10	1.077	2-Chlorotoluene	ND	5	0.572
cis-1,2-Dichloroethene	ND	2	0.404	1,3,5-Trimethylbenzene	ND	5	0.351
Chloroform	ND	5	0.343	4-Chlorotoluene	ND	5	0.195
Tetrahydrofuran	ND	10	0.910	t-Butylbenzene	ND	5	0.242
1,1,1-Trichloroethane	ND	2	0.381	1,2,4-Trimethylbenzene	ND	5	0.263
Carbon Tetrachloride	ND	2	0.598	sec-Butylbenzene	ND	5	0.413
Benzene	ND	2	0.417	p-Isopropyltoluene	ND	5	0.285
1,2-Dichloroethane	ND	2	0.341	1,1,2,2-Tetrachloroethane	ND J1	5	0.477
Trichloroethene	ND	2	0.270	1,3-Dichlorobenzene	ND	5	0.215
1,2-Dichloropropane	ND	5	0.295	1,4-Dichlorobenzene	ND	5	0.213
Dibromomethane	ND	5	0.383	n-Butylbenzene	ND	5	0.305
Bromodichloromethane	ND	5	0.199	1,2 Dichlorobenzene	ND	5	0.345
cis-1,3-Dichloropropene	ND J1	2	0.228	1,2-Dibromo-3-chloropropane	ND	5	0.877
4-Methyl-2-pentanone	ND	10	1.249	1,2,4-Trichlorobenzene	ND	5	0.223
Toluene	ND	5	0.279	Hexachlorobutadiene	ND	5	0.537
2-Hexanone	ND	10	1.413	1,2,3-Trichlorobenzene	ND	5	0.392
trans-1,3-Dichloropropene	ND J1	5	0.212	Naphthalene	ND	5	0.320

<u>Surrogate</u>	<u>% Recovery</u>
Dibromofluoromethane	113
1,2-Dichloroethane-D4	117
Toluene-D8	101
Bromofluorobenzene	97.4

ND= Not detected at or above the reporting limit.

ND J1= Not detected at or above the MDL.

MDL= Method Detection Limit.

## ChemSolutions LLC

TABLE 8

## VOLATILE ORGANIC COMPOUND RESULTS

Project ID: TER066

Client Sample ID: MW-5  
 Client Project ID: 24149141 Airport  
 EPA Method 8260C  
 Units: ug/L

Date Sampled: 3/16/15  
 Date Received: 3/18/15  
 Date Analyzed: 3/23/15  
 Sample Matrix: Water

<u>Analyte</u>	<u>Concentration</u>	<u>Reporting</u>		<u>Analyte</u>	<u>Concentration</u>	<u>Reporting</u>	
		<u>Limit</u>	<u>MDL</u>			<u>Limit</u>	<u>MDL</u>
Dichlorodifluoromethane	ND	5	0.453	1,1,2-Trichloroethane	ND	2	0.257
Chloromethane	ND	5	0.510	Tetrachloroethene	2.6	2	0.678
Vinyl Chloride	ND	2	0.798	Dibromochloromethane	ND	5	0.398
Bromomethane	ND	5	0.460	1,2-Dibromoethane	ND	5	0.312
Chloroethane	ND	5	0.557	Chlorobenzene	ND	2	0.156
Trichlorofluoromethane	ND	5	0.674	1,1,1,2-Tetrachloroethane	ND	5	0.413
Acetone	ND	20	0.627	Ethylbenzene	ND	5	0.251
1,1-Dichloroethene	ND	5	0.256	Total Xylene	ND	5	0.523
Carbon Disulfide	ND	5	0.367	Styrene	ND	5	0.344
Methyl-tert-butyl ether	ND	2	1.252	Isopropylbenzene	ND	5	0.315
Methylene Chloride	ND	5	0.511	Bromoform	ND	5	0.628
trans-1,2-Dichloroethene	ND	2	0.601	n-Propylbenzene	ND	5	0.300
1,1-Dichloroethane	ND	2	0.440	1,2,3-Trichloropropane	ND	5	0.501
2-Butanone	ND	10	1.077	2-Chlorotoluene	ND	5	0.572
cis-1,2-Dichloroethene	ND	2	0.404	1,3,5-Trimethylbenzene	ND	5	0.351
Chloroform	ND	5	0.343	4-Chlorotoluene	ND	5	0.195
Tetrahydrofuran	ND	10	0.910	t-Butylbenzene	ND	5	0.242
1,1,1-Trichloroethane	ND	2	0.381	1,2,4-Trimethylbenzene	ND	5	0.263
Carbon Tetrachloride	ND	2	0.598	sec-Butylbenzene	ND	5	0.413
Benzene	ND	2	0.417	p-Isopropyltoluene	ND	5	0.285
1,2-Dichloroethane	ND	2	0.341	1,1,1,2-Tetrachloroethane	ND J1	5	0.477
Trichloroethene	ND	2	0.270	1,3-Dichlorobenzene	ND	5	0.215
1,2-Dichloropropane	ND	5	0.295	1,4-Dichlorobenzene	ND	5	0.213
Dibromomethane	ND	5	0.383	n-Butylbenzene	ND	5	0.305
Bromodichloromethane	ND	5	0.199	1,2 Dichlorobenzene	ND	5	0.345
cis-1,3-Dichloropropene	ND J1	2	0.228	1,2-Dibromo-3-chloropropane	ND	5	0.877
4-Methyl-2-pentanone	ND	10	1.249	1,2,4-Trichlorobenzene	ND	5	0.223
Toluene	ND	5	0.279	Hexachlorobutadiene	ND	5	0.537
2-Hexanone	ND	10	1.413	1,2,3-Trichlorobenzene	ND	5	0.392
trans-1,3-Dichloropropene	ND J1	5	0.212	Naphthalene	ND	5	0.320

<u>Surrogate</u>	<u>% Recovery</u>
Dibromofluoromethane	105
1,2-Dichloroethane-D4	107
Toluene-D8	103
Bromofluorobenzene	100

ND= Not detected at or above the reporting limit.

ND J1= Not detected at or above the MDL.

MDL= Method Detection Limit.

## ChemSolutions LLC

TABLE 9

## VOLATILE ORGANIC COMPOUND RESULTS

Project ID: TER066

Client Sample ID: DUP-1  
 Client Project ID: 24149141 Airport  
 EPA Method 8260C  
 Units: ug/L

Date Sampled: 3/16/15  
 Date Received: 3/18/15  
 Date Analyzed: 3/23/15  
 Sample Matrix: Water

<u>Analyte</u>	<u>Concentration</u>	<u>Reporting</u>		<u>Analyte</u>	<u>Concentration</u>	<u>Reporting</u>	
		<u>Limit</u>	<u>MDL</u>			<u>Limit</u>	<u>MDL</u>
Dichlorodifluoromethane	ND	5	0.453	1,1,2-Trichloroethane	ND	2	0.257
Chloromethane	ND	5	0.510	Tetrachloroethene	ND	2	0.678
Vinyl Chloride	ND	2	0.798	Dibromochloromethane	ND	5	0.398
Bromomethane	ND	5	0.460	1,2-Dibromoethane	ND	5	0.312
Chloroethane	ND	5	0.557	Chlorobenzene	ND	2	0.156
Trichlorofluoromethane	ND	5	0.674	1,1,1,2-Tetrachloroethane	ND	5	0.413
Acetone	ND	20	0.627	Ethylbenzene	ND	5	0.251
1,1-Dichloroethene	ND	5	0.256	Total Xylene	ND	5	0.523
Carbon Disulfide	ND	5	0.367	Styrene	ND	5	0.344
Methyl-tert-butyl ether	ND	2	1.252	Isopropylbenzene	ND	5	0.315
Methylene Chloride	ND	5	0.511	Bromoform	ND	5	0.628
trans-1,2-Dichloroethene	ND	2	0.601	n-Propylbenzene	ND	5	0.300
1,1-Dichloroethane	ND	2	0.440	1,2,3-Trichloropropane	ND	5	0.501
2-Butanone	ND	10	1.077	2-Chlorotoluene	ND	5	0.572
cis-1,2-Dichloroethene	ND	2	0.404	1,3,5-Trimethylbenzene	ND	5	0.351
Chloroform	ND	5	0.343	4-Chlorotoluene	ND	5	0.195
Tetrahydrofuran	ND	10	0.910	t-Butylbenzene	ND	5	0.242
1,1,1-Trichloroethane	ND	2	0.381	1,2,4-Trimethylbenzene	ND	5	0.263
Carbon Tetrachloride	ND	2	0.598	sec-Butylbenzene	ND	5	0.413
Benzene	ND	2	0.417	p-Isopropyltoluene	ND	5	0.285
1,2-Dichloroethane	ND	2	0.341	1,1,2,2-Tetrachloroethane	ND J1	5	0.477
Trichloroethene	ND	2	0.270	1,3-Dichlorobenzene	ND	5	0.215
1,2-Dichloropropane	ND	5	0.295	1,4-Dichlorobenzene	ND	5	0.213
Dibromomethane	ND	5	0.383	n-Butylbenzene	ND	5	0.305
Bromodichloromethane	ND	5	0.199	1,2 Dichlorobenzene	ND	5	0.345
cis-1,3-Dichloropropene	ND J1	2	0.228	1,2-Dibromo-3-chloropropane	ND	5	0.877
4-Methyl-2-pentanone	ND	10	1.249	1,2,4-Trichlorobenzene	ND	5	0.223
Toluene	ND	5	0.279	Hexachlorobutadiene	ND	5	0.537
2-Hexanone	ND	10	1.413	1,2,3-Trichlorobenzene	ND	5	0.392
trans-1,3-Dichloropropene	ND J1	5	0.212	Naphthalene	ND	5	0.320

<u>Surrogate</u>	<u>% Recovery</u>
Dibromofluoromethane	107
1,2-Dichloroethane-D4	112
Toluene-D8	103
Bromofluorobenzene	95.6

ND= Not detected at or above the reporting limit.

ND J1= Not detected at or above the MDL.

MDL= Method Detection Limit.

## ChemSolutions LLC

TABLE 10

## VOLATILE ORGANIC COMPOUND RESULTS

Project ID: TER066

Client Sample ID: MW-9  
 Client Project ID: 24149141 Airport  
 EPA Method 8260C  
 Units: ug/L

Date Sampled: 3/16/15  
 Date Received: 3/18/15  
 Date Analyzed: 3/24/15  
 Sample Matrix: Water

<u>Analyte</u>	<u>Concentration</u>	<u>Reporting</u>		<u>Analyte</u>	<u>Concentration</u>	<u>Reporting</u>	
		<u>Limit</u>	<u>MDL</u>			<u>Limit</u>	<u>MDL</u>
Dichlorodifluoromethane	ND	5	0.453	1,1,2-Trichloroethane	ND	2	0.257
Chloromethane	ND	5	0.510	Tetrachloroethene	ND	2	0.678
Vinyl Chloride	ND	2	0.798	Dibromochloromethane	ND	5	0.398
Bromomethane	ND	5	0.460	1,2-Dibromoethane	ND	5	0.312
Chloroethane	ND	5	0.557	Chlorobenzene	ND	2	0.156
Trichlorofluoromethane	ND	5	0.674	1,1,1,2-Tetrachloroethane	ND	5	0.413
Acetone	ND	20	0.627	Ethylbenzene	ND	5	0.251
1,1-Dichloroethene	ND	5	0.256	Total Xylene	ND	5	0.523
Carbon Disulfide	ND	5	0.367	Styrene	ND	5	0.344
Methyl-tert-butyl ether	ND	2	1.252	Isopropylbenzene	ND	5	0.315
Methylene Chloride	ND	5	0.511	Bromoform	ND	5	0.628
trans-1,2-Dichloroethene	ND	2	0.601	n-Propylbenzene	ND	5	0.300
1,1-Dichloroethane	ND	2	0.440	1,2,3-Trichloropropane	ND	5	0.501
2-Butanone	ND	10	1.077	2-Chlorotoluene	ND	5	0.572
cis-1,2-Dichloroethene	ND	2	0.404	1,3,5-Trimethylbenzene	ND	5	0.351
Chloroform	ND	5	0.343	4-Chlorotoluene	ND	5	0.195
Tetrahydrofuran	ND	10	0.910	t-Butylbenzene	ND	5	0.242
1,1,1-Trichloroethane	ND	2	0.381	1,2,4-Trimethylbenzene	ND	5	0.263
Carbon Tetrachloride	ND	2	0.598	sec-Butylbenzene	ND	5	0.413
Benzene	ND	2	0.417	p-Isopropyltoluene	ND	5	0.285
1,2-Dichloroethane	40	2	0.341	1,1,1,2-Tetrachloroethane	ND J1	5	0.477
Trichloroethene	110	2	0.270	1,3-Dichlorobenzene	ND	5	0.215
1,2-Dichloropropane	ND	5	0.295	1,4-Dichlorobenzene	ND	5	0.213
Dibromomethane	ND	5	0.383	n-Butylbenzene	ND	5	0.305
Bromodichloromethane	ND	5	0.199	1,2 Dichlorobenzene	ND	5	0.345
cis-1,3-Dichloropropene	ND J1	2	0.228	1,2-Dibromo-3-chloropropane	ND	5	0.877
4-Methyl-2-pentanone	ND	10	1.249	1,2,4-Trichlorobenzene	ND	5	0.223
Toluene	ND	5	0.279	Hexachlorobutadiene	ND	5	0.537
2-Hexanone	ND	10	1.413	1,2,3-Trichlorobenzene	ND	5	0.392
trans-1,3-Dichloropropene	ND J1	5	0.212	Naphthalene	ND	5	0.320

<u>Surrogate</u>	<u>% Recovery</u>
Dibromofluoromethane	106
1,2-Dichloroethane-D4	115
Toluene-D8	101
Bromofluorobenzene	96.9

ND= Not detected at or above the reporting limit.

ND J1= Not detected at or above the MDL.

MDL= Method Detection Limit.

## ChemSolutions LLC

TABLE 11

## VOLATILE ORGANIC COMPOUND RESULTS

Project ID: TER066

Client Sample ID: MW-2  
 Client Project ID: 24149141 Airport  
 EPA Method 8260C  
 Units: ug/L

Date Sampled: 3/16/15  
 Date Received: 3/18/15  
 Date Analyzed: 3/24/15  
 Sample Matrix: Water

<u>Analyte</u>	<u>Concentration</u>	<u>Reporting</u>		<u>Analyte</u>	<u>Concentration</u>	<u>Reporting</u>	
		<u>Limit</u>	<u>MDL</u>			<u>Limit</u>	<u>MDL</u>
Dichlorodifluoromethane	ND	5	0.453	1,1,2-Trichloroethane	ND	2	0.257
Chloromethane	ND	5	0.510	Tetrachloroethene	82	2	0.678
Vinyl Chloride	ND	2	0.798	Dibromochloromethane	ND	5	0.398
Bromomethane	ND	5	0.460	1,2-Dibromoethane	ND	5	0.312
Chloroethane	ND	5	0.557	Chlorobenzene	ND	2	0.156
Trichlorofluoromethane	ND	5	0.674	1,1,1,2-Tetrachloroethane	ND	5	0.413
Acetone	ND	20	0.627	Ethylbenzene	ND	5	0.251
1,1-Dichloroethene	ND	5	0.256	Total Xylene	ND	5	0.523
Carbon Disulfide	ND	5	0.367	Styrene	ND	5	0.344
Methyl-tert-butyl ether	ND	2	1.252	Isopropylbenzene	ND	5	0.315
Methylene Chloride	ND	5	0.511	Bromoform	ND	5	0.628
trans-1,2-Dichloroethene	ND	2	0.601	n-Propylbenzene	ND	5	0.300
1,1-Dichloroethane	ND	2	0.440	1,2,3-Trichloropropane	ND	5	0.501
2-Butanone	ND	10	1.077	2-Chlorotoluene	ND	5	0.572
cis-1,2-Dichloroethene	ND	2	0.404	1,3,5-Trimethylbenzene	ND	5	0.351
Chloroform	ND	5	0.343	4-Chlorotoluene	ND	5	0.195
Tetrahydrofuran	ND	10	0.910	t-Butylbenzene	ND	5	0.242
1,1,1-Trichloroethane	ND	2	0.381	1,2,4-Trimethylbenzene	ND	5	0.263
Carbon Tetrachloride	ND	2	0.598	sec-Butylbenzene	ND	5	0.413
Benzene	ND	2	0.417	p-Isopropyltoluene	ND	5	0.285
1,2-Dichloroethane	ND	2	0.341	1,1,2,2-Tetrachloroethane	ND J1	5	0.477
Trichloroethene	ND	2	0.270	1,3-Dichlorobenzene	ND	5	0.215
1,2-Dichloropropane	ND	5	0.295	1,4-Dichlorobenzene	ND	5	0.213
Dibromomethane	ND	5	0.383	n-Butylbenzene	ND	5	0.305
Bromodichloromethane	ND	5	0.199	1,2 Dichlorobenzene	ND	5	0.345
cis-1,3-Dichloropropene	ND J1	2	0.228	1,2-Dibromo-3-chloropropane	ND	5	0.877
4-Methyl-2-pentanone	ND	10	1.249	1,2,4-Trichlorobenzene	ND	5	0.223
Toluene	ND	5	0.279	Hexachlorobutadiene	ND	5	0.537
2-Hexanone	ND	10	1.413	1,2,3-Trichlorobenzene	ND	5	0.392
trans-1,3-Dichloropropene	ND J1	5	0.212	Naphthalene	ND	5	0.320

<u>Surrogate</u>	<u>% Recovery</u>
Dibromofluoromethane	105
1,2-Dichloroethane-D4	114
Toluene-D8	101
Bromofluorobenzene	95.5

ND= Not detected at or above the reporting limit.

ND J1= Not detected at or above the MDL.

MDL= Method Detection Limit.

## ChemSolutions LLC

TABLE 12

## VOLATILE ORGANIC COMPOUND RESULTS

Project ID: TER066

Client Sample ID: Trip Blank  
 Client Project ID: 24149141 Airport  
 EPA Method 8260C  
 Units: ug/L

Date Sampled: 3/16/15  
 Date Received: 3/18/15  
 Date Analyzed: 3/23/15  
 Sample Matrix: Water

<u>Analyte</u>	<u>Concentration</u>	<u>Reporting</u>		<u>Analyte</u>	<u>Concentration</u>	<u>Reporting</u>	
		<u>Limit</u>	<u>MDL</u>			<u>Limit</u>	<u>MDL</u>
Dichlorodifluoromethane	ND	5	0.453	1,1,2-Trichloroethane	ND	2	0.257
Chloromethane	ND	5	0.510	Tetrachloroethene	ND	2	0.678
Vinyl Chloride	ND	2	0.798	Dibromochloromethane	ND	5	0.398
Bromomethane	ND	5	0.460	1,2-Dibromoethane	ND	5	0.312
Chloroethane	ND	5	0.557	Chlorobenzene	ND	2	0.156
Trichlorofluoromethane	ND	5	0.674	1,1,1,2-Tetrachloroethane	ND	5	0.413
Acetone	ND	20	0.627	Ethylbenzene	ND	5	0.251
1,1-Dichloroethene	ND	5	0.256	Total Xylene	ND	5	0.523
Carbon Disulfide	ND	5	0.367	Styrene	ND	5	0.344
Methyl-tert-butyl ether	ND	2	1.252	Isopropylbenzene	ND	5	0.315
Methylene Chloride	ND	5	0.511	Bromoform	ND	5	0.628
trans-1,2-Dichloroethene	ND	2	0.601	n-Propylbenzene	ND	5	0.300
1,1-Dichloroethane	ND	2	0.440	1,2,3-Trichloropropane	ND	5	0.501
2-Butanone	ND	10	1.077	2-Chlorotoluene	ND	5	0.572
cis-1,2-Dichloroethene	ND	2	0.404	1,3,5-Trimethylbenzene	ND	5	0.351
Chloroform	ND	5	0.343	4-Chlorotoluene	ND	5	0.195
Tetrahydrofuran	ND	10	0.910	t-Butylbenzene	ND	5	0.242
1,1,1-Trichloroethane	ND	2	0.381	1,2,4-Trimethylbenzene	ND	5	0.263
Carbon Tetrachloride	ND	2	0.598	sec-Butylbenzene	ND	5	0.413
Benzene	ND	2	0.417	p-Isopropyltoluene	ND	5	0.285
1,2-Dichloroethane	ND	2	0.341	1,1,1,2-Tetrachloroethane	ND J1	5	0.477
Trichloroethene	ND	2	0.270	1,3-Dichlorobenzene	ND	5	0.215
1,2-Dichloropropane	ND	5	0.295	1,4-Dichlorobenzene	ND	5	0.213
Dibromomethane	ND	5	0.383	n-Butylbenzene	ND	5	0.305
Bromodichloromethane	ND	5	0.199	1,2 Dichlorobenzene	ND	5	0.345
cis-1,3-Dichloropropene	ND J1	2	0.228	1,2-Dibromo-3-chloropropane	ND	5	0.877
4-Methyl-2-pentanone	ND	10	1.249	1,2,4-Trichlorobenzene	ND	5	0.223
Toluene	ND	5	0.279	Hexachlorobutadiene	ND	5	0.537
2-Hexanone	ND	10	1.413	1,2,3-Trichlorobenzene	ND	5	0.392
trans-1,3-Dichloropropene	ND J1	5	0.212	Naphthalene	ND	5	0.320

<u>Surrogate</u>	<u>% Recovery</u>
Dibromofluoromethane	99.2
1,2-Dichloroethane-D4	106
Toluene-D8	103
Bromofluorobenzene	96.1

ND= Not detected at or above the reporting limit.

ND J1= Not detected at or above the MDL.

MDL= Method Detection Limit.

## ChemSolutions LLC

TABLE 13

## VOLATILE ORGANIC COMPOUND RESULTS

Project ID: TER066

Client Sample ID: IDW-1  
 Client Project ID: 24149141 Airport  
 EPA Method 8260C  
 Units: ug/L

Date Sampled: 3/16/15  
 Date Received: 3/18/15  
 Date Analyzed: 3/24/15  
 Sample Matrix: Water

<u>Analyte</u>	<u>Concentration</u>	<u>Reporting</u>		<u>Analyte</u>	<u>Concentration</u>	<u>Reporting</u>	
		<u>Limit</u>	<u>MDL</u>			<u>Limit</u>	<u>MDL</u>
Dichlorodifluoromethane	ND	5	0.453	1,1,2-Trichloroethane	ND	2	0.257
Chloromethane	ND	5	0.510	Tetrachloroethene	7.2	2	0.678
Vinyl Chloride	ND	2	0.798	Dibromochloromethane	ND	5	0.398
Bromomethane	ND	5	0.460	1,2-Dibromoethane	ND	5	0.312
Chloroethane	ND	5	0.557	Chlorobenzene	ND	2	0.156
Trichlorofluoromethane	ND	5	0.674	1,1,1,2-Tetrachloroethane	ND	5	0.413
Acetone	ND	20	0.627	Ethylbenzene	ND	5	0.251
1,1-Dichloroethene	ND	5	0.256	Total Xylene	ND	5	0.523
Carbon Disulfide	ND	5	0.367	Styrene	ND	5	0.344
Methyl-tert-butyl ether	ND	2	1.252	Isopropylbenzene	ND	5	0.315
Methylene Chloride	ND	5	0.511	Bromoform	ND	5	0.628
trans-1,2-Dichloroethene	ND	2	0.601	n-Propylbenzene	ND	5	0.300
1,1-Dichloroethane	ND	2	0.440	1,2,3-Trichloropropane	ND	5	0.501
2-Butanone	ND	10	1.077	2-Chlorotoluene	ND	5	0.572
cis-1,2-Dichloroethene	ND	2	0.404	1,3,5-Trimethylbenzene	ND	5	0.351
Chloroform	ND	5	0.343	4-Chlorotoluene	ND	5	0.195
Tetrahydrofuran	ND	10	0.910	t-Butylbenzene	ND	5	0.242
1,1,1-Trichloroethane	ND	2	0.381	1,2,4-Trimethylbenzene	ND	5	0.263
Carbon Tetrachloride	ND	2	0.598	sec-Butylbenzene	ND	5	0.413
Benzene	ND	2	0.417	p-Isopropyltoluene	ND	5	0.285
1,2-Dichloroethane	ND	2	0.341	1,1,1,2-Tetrachloroethane	ND J1	5	0.477
Trichloroethene	2.3	2	0.270	1,3-Dichlorobenzene	ND	5	0.215
1,2-Dichloropropane	ND	5	0.295	1,4-Dichlorobenzene	ND	5	0.213
Dibromomethane	ND	5	0.383	n-Butylbenzene	ND	5	0.305
Bromodichloromethane	ND	5	0.199	1,2 Dichlorobenzene	ND	5	0.345
cis-1,3-Dichloropropene	ND J1	2	0.228	1,2-Dibromo-3-chloropropane	ND	5	0.877
4-Methyl-2-pentanone	ND	10	1.249	1,2,4-Trichlorobenzene	ND	5	0.223
Toluene	ND	5	0.279	Hexachlorobutadiene	ND	5	0.537
2-Hexanone	ND	10	1.413	1,2,3-Trichlorobenzene	ND	5	0.392
trans-1,3-Dichloropropene	ND J1	5	0.212	Naphthalene	ND	5	0.320

<u>Surrogate</u>	<u>% Recovery</u>
Dibromofluoromethane	121
1,2-Dichloroethane-D4	120
Toluene-D8	98.8
Bromofluorobenzene	83.7

ND= Not detected at or above the reporting limit.

ND J1= Not detected at or above the MDL.

MDL= Method Detection Limit.

**ChemSolutions LLC**  
**TABLE 14**  
**METHOD BLANK RESULTS**  
 Project ID: TER066

Sample ID: Blank  
 Client Project ID: 24149141 Airport  
 EPA Method 8260C  
 Units: ug/L

Date Sampled: NA  
 Date Received: NA  
 Date Analyzed: 3/23/15  
 Sample Matrix: Water

<u>Analyte</u>	<u>Concentration</u>	<u>Reporting</u>		<u>Analyte</u>	<u>Concentration</u>	<u>Reporting</u>	
		<u>Limit</u>	<u>MDL</u>			<u>Limit</u>	<u>MDL</u>
Dichlorodifluoromethane	ND	5	0.453	1,1,2-Trichloroethane	ND	2	0.257
Chloromethane	ND	5	0.510	Tetrachloroethene	ND	2	0.678
Vinyl Chloride	ND	2	0.798	Dibromochloromethane	ND	5	0.398
Bromomethane	ND	5	0.460	1,2-Dibromoethane	ND	5	0.312
Chloroethane	ND	5	0.557	Chlorobenzene	ND	2	0.156
Trichlorofluoromethane	ND	5	0.674	1,1,1,2-Tetrachloroethane	ND	5	0.413
Acetone	ND	20	0.627	Ethylbenzene	ND	5	0.251
1,1-Dichloroethene	ND	5	0.256	Total Xylene	ND	5	0.523
Carbon Disulfide	ND	5	0.367	Styrene	ND	5	0.344
Methyl-tert-butyl ether	ND	2	1.252	Isopropylbenzene	ND	5	0.315
Methylene Chloride	ND	5	0.511	Bromoform	ND	5	0.628
trans-1,2-Dichloroethene	ND	2	0.601	n-Propylbenzene	ND	5	0.300
1,1-Dichloroethane	ND	2	0.440	1,2,3-Trichloropropane	ND	5	0.501
2-Butanone	ND	10	1.077	2-Chlorotoluene	ND	5	0.572
cis-1,2-Dichloroethene	ND	2	0.404	1,3,5-Trimethylbenzene	ND	5	0.351
Chloroform	ND	5	0.343	4-Chlorotoluene	ND	5	0.195
Tetrahydrofuran	ND	10	0.910	t-Butylbenzene	ND	5	0.242
1,1,1-Trichloroethane	ND	2	0.381	1,2,4-Trimethylbenzene	ND	5	0.263
Carbon Tetrachloride	ND	2	0.598	sec-Butylbenzene	ND	5	0.413
Benzene	ND	2	0.417	p-Isopropyltoluene	ND	5	0.285
1,2-Dichloroethane	ND	2	0.341	1,1,1,2-Tetrachloroethane	ND J1	5	0.477
Trichloroethene	ND	2	0.270	1,3-Dichlorobenzene	ND	5	0.215
1,2-Dichloropropane	ND	5	0.295	1,4-Dichlorobenzene	ND	5	0.213
Dibromomethane	ND	5	0.383	n-Butylbenzene	ND	5	0.305
Bromodichloromethane	ND	5	0.199	1,2 Dichlorobenzene	ND	5	0.345
cis-1,3-Dichloropropene	ND J1	2	0.228	1,2-Dibromo-3-chloropropane	ND	5	0.877
4-Methyl-2-pentanone	ND	10	1.249	1,2,4-Trichlorobenzene	ND	5	0.223
Toluene	ND	5	0.279	Hexachlorobutadiene	ND	5	0.537
2-Hexanone	ND	10	1.413	1,2,3-Trichlorobenzene	ND	5	0.392
trans-1,3-Dichloropropene	ND J1	5	0.212	Naphthalene	ND	5	0.320

<u>Surrogate</u>	<u>% Recovery</u>
Dibromofluoromethane	97.4
1,2-Dichloroethane-D4	99.0
Toluene-D8	100
Bromofluorobenzene	102

ND= Not detected at or above the reporting limit.

ND J1= Not detected at or above the MDL.

MDL= Method Detection Limit.

**ChemSolutions LLC**  
 TABLE 15  
 LABORATORY CONTROL SAMPLE RESULTS  
 Project ID: TER066

Sample ID: Water LCS  
 Client Project ID: 24149141 Airport  
 EPA Method 8260C  
 Units: ug/L  
 Spike Amount: 50 ug/L

Date Sampled: NA  
 Date Received: NA  
 Date Analyzed: 3/23/15  
 Sample Matrix: Water

<u>Analyte</u>	<u>Amount Recovered</u>	<u>% Recovery</u>	<u>Analyte</u>	<u>Amount Recovered</u>	<u>% Recovery</u>
Dichlorodifluoromethane	ND	NA	1,1,2-Trichloroethane	50.8	102
Chloromethane	ND	NA	Tetrachloroethene	53.5	107
Vinyl Chloride	ND	NA	Dibromochloromethane	51.0	102
Bromomethane	ND	NA	1,2-Dibromoethane	ND	NA
Chloroethane	ND	NA	Chlorobenzene	51.8	104
Trichlorofluoromethane	ND	NA	1,1,1,2-Tetrachloroethane	ND	NA
Acetone	ND	NA	Ethylbenzene	53.1	106
1,1-Dichloroethene	57.3	115	Total Xylene	ND	NA
Carbon Disulfide	ND	NA	Styrene	ND	NA
Methyl-tert-butyl ether	ND	NA	Isopropylbenzene	ND	NA
Methylene Chloride	52.0	104	Bromoform	49.9	99.8
trans-1,2-Dichloroethene	53.0	106	n-Propylbenzene	ND	NA
1,1-Dichloroethane	53.8	108	1,2,3-Trichloropropane	ND	NA
2-Butanone	ND	NA	2-Chlorotoluene	ND	NA
cis-1,2-Dichloroethene	ND	NA	1,3,5-Trimethylbenzene	ND	NA
Chloroform	52.0	104	4-Chlorotoluene	ND	NA
Tetrahydrofuran	ND	NA	t-Butylbenzene	ND	NA
1,1,1-Trichloroethane	53.0	106	1,2,4-Trimethylbenzene	ND	NA
Carbon Tetrachloride	51.8	104	sec-Butylbenzene	ND	NA
Benzene	52.9	106	p-Isopropyltoluene	ND	NA
1,2-Dichloroethane	52.5	105	1,1,2,2-Tetrachloroethane	51.8	104
Trichloroethene	54.3	109	1,3-Dichlorobenzene	54.9	110
1,2-Dichloropropane	52.4	105	1,4-Dichlorobenzene	53.7	107
Dibromomethane	ND	NA	n-Butylbenzene	ND	NA
Bromodichloromethane	52.7	105	1,2 Dichlorobenzene	53.3	107
cis-1,3-Dichloropropene	51.6	103	1,2-Dibromo-3-chloropropane	ND	NA
4-Methyl-2-pentanone	ND	NA	1,2,4-Trichlorobenzene	ND	NA
Toluene	52.4	105	Hexachlorobutadiene	ND	NA
2-Hexanone	ND	NA	1,2,3-Trichlorobenzene	ND	NA
trans-1,3-Dichloropropene	54.8	110	Naphthalene	ND	NA

<u>Surrogate</u>	<u>% Recovery</u>
Dibromofluoromethane	98.6
1,2-Dichloroethane-D4	102
Toluene-D8	102
Bromofluorobenzene	97.3

ND = Not Detected, NA = Not Applicable

**ChemSolutions LLC**  
 TABLE 16 (Page 1 of 2)  
 MATRIX SPIKE RESULTS  
 Project ID: TER066

Client Sample ID: MW-8  
 Client Project ID: 24149141 Airport  
 EPA Method 8260C  
 Units: ug/L  
 Spike Amount: 50 ug/L

Date Sampled: 3/16/15  
 Date Received: 3/18/15  
 Date Analyzed: 3/24/15  
 Sample Matrix: Water

<u>Analyte</u>	<u>Amount Recovered</u>	<u>% Recovery</u>	<u>Analyte</u>	<u>Amount Recovered</u>	<u>% Recovery</u>
Dichlorodifluoromethane	ND	NA	1,1,2-Trichloroethane	51.1	102
Chloromethane	ND	NA	Tetrachloroethene	52.5	105
Vinyl Chloride	ND	NA	Dibromochloromethane	48.3	96.6
Bromomethane	ND	NA	1,2-Dibromoethane	ND	NA
Chloroethane	ND	NA	Chlorobenzene	53.4	107
Trichlorofluoromethane	ND	NA	1,1,1,2-Tetrachloroethane	ND	NA
Acetone	ND	NA	Ethylbenzene	53.4	107
1,1-Dichloroethene	57.8	116	Total Xylene	ND	NA
Carbon Disulfide	ND	NA	Styrene	ND	NA
Methyl-tert-butyl ether	ND	NA	Isopropylbenzene	ND	NA
Methylene Chloride	53.1	106	Bromoform	40.6	81.2
trans-1,2-Dichloroethene	53.9	108	n-Propylbenzene	ND	NA
1,1-Dichloroethane	55.1	110	1,2,3-Trichloropropane	ND	NA
2-Butanone	ND	NA	2-Chlorotoluene	ND	NA
cis-1,2-Dichloroethene	ND	NA	1,3,5-Trimethylbenzene	ND	NA
Chloroform	55.0	110	4-Chlorotoluene	ND	NA
Tetrahydrofuran	ND	NA	t-Butylbenzene	ND	NA
1,1,1-Trichloroethane	54.8	110	1,2,4-Trimethylbenzene	ND	NA
Carbon Tetrachloride	54.8	110	sec-Butylbenzene	ND	NA
Benzene	53.6	107	p-Isopropyltoluene	ND	NA
1,2-Dichloroethane	54.9	110	1,1,2,2-Tetrachloroethane	54.6	109
Trichloroethene	52.7	105	1,3-Dichlorobenzene	52.9	106
1,2-Dichloropropane	51.1	102	1,4-Dichlorobenzene	52.5	105
Dibromomethane	ND	NA	n-Butylbenzene	ND	NA
Bromodichloromethane	52.5	105	1,2 Dichlorobenzene	52.6	105
cis-1,3-Dichloropropene	47.8	95.6	1,2-Dibromo-3-chloropropane	ND	NA
4-Methyl-2-pentanone	ND	NA	1,2,4-Trichlorobenzene	ND	NA
Toluene	52.4	105	Hexachlorobutadiene	ND	NA
2-Hexanone	ND	NA	1,2,3-Trichlorobenzene	ND	NA
trans-1,3-Dichloropropene	51.5	103	Naphthalene	ND	NA

<u>Surrogate</u>	<u>% Recovery</u>
Dibromofluoromethane	101
1,2-Dichloroethane-D4	104
Toluene-D8	101
Bromofluorobenzene	96.7

ND = Not Detected, NA = Not Applicable

**ChemSolutions LLC**  
 TABLE 16 (Page 2 of 2)  
 MATRIX SPIKE DUPLICATE RESULTS  
 Project ID: TER066

Client Sample ID: MW-8  
 Client Project ID: 24149141 Airport  
 EPA Method 8260C  
 Units: ug/L  
 Spike Amount: 50 ug/L

Date Sampled: 3/16/15  
 Date Received: 3/18/15  
 Date Analyzed: 3/24/15  
 Sample Matrix: Water

<u>Analyte</u>	<u>Amount Recovered</u>	<u>% Recovery</u>	<u>RPD</u>	<u>Analyte</u>	<u>Amount Recovered</u>	<u>% Recovery</u>	<u>RPD</u>
Dichlorodifluoromethane	ND	NA	NA	1,1,2-Trichloroethane	53.4	107	4.4
Chloromethane	ND	NA	NA	Tetrachloroethene	53.5	107	1.9
Vinyl Chloride	ND	NA	NA	Dibromochloromethane	50.8	102	5.0
Bromomethane	ND	NA	NA	1,2-Dibromoethane	ND	NA	NA
Chloroethane	ND	NA	NA	Chlorobenzene	55.0	110	3.0
Trichlorofluoromethane	ND	NA	NA	1,1,1,2-Tetrachloroethane	ND	NA	NA
Acetone	ND	NA	NA	Ethylbenzene	54.8	110	2.6
1,1-Dichloroethene	59.1	118	2.2	Total Xylene	ND	NA	NA
Carbon Disulfide	ND	NA	NA	Styrene	ND	NA	NA
Methyl-tert-butyl ether	ND	NA	NA	Isopropylbenzene	ND	NA	NA
Methylene Chloride	55.5	111	4.4	Bromoform	41.0	82.0	1.0
trans-1,2-Dichloroethene	56.9	114	5.4	n-Propylbenzene	ND	NA	NA
1,1-Dichloroethane	57.3	115	3.9	1,2,3-Trichloropropane	ND	NA	NA
2-Butanone	ND	NA	NA	2-Chlorotoluene	ND	NA	NA
cis-1,2-Dichloroethene	ND	NA	NA	1,3,5-Trimethylbenzene	ND	NA	NA
Chloroform	58.3	117	5.8	4-Chlorotoluene	ND	NA	NA
Tetrahydrofuran	ND	NA	NA	t-Butylbenzene	ND	NA	NA
1,1,1-Trichloroethane	57.5	115	4.8	1,2,4-Trimethylbenzene	ND	NA	NA
Carbon Tetrachloride	57.4	115	4.6	sec-Butylbenzene	ND	NA	NA
Benzene	56.6	113	5.4	p-Isopropyltoluene	ND	NA	NA
1,2-Dichloroethane	58.5	117	6.3	1,1,2,2-Tetrachloroethane	57.0	114	4.3
Trichloroethene	55.3	111	4.8	1,3-Dichlorobenzene	55.5	111	4.8
1,2-Dichloropropane	53.4	107	4.4	1,4-Dichlorobenzene	56.3	113	7.0
Dibromomethane	ND	NA	NA	n-Butylbenzene	ND	NA	NA
Bromodichloromethane	54.6	109	3.9	1,2 Dichlorobenzene	55.8	112	5.9
cis-1,3-Dichloropropene	49.9	100	4.3	1,2-Dibromo-3-chloropropane	ND	NA	NA
4-Methyl-2-pentanone	ND	NA	NA	1,2,4-Trichlorobenzene	ND	NA	NA
Toluene	55.0	110	4.8	Hexachlorobutadiene	ND	NA	NA
2-Hexanone	ND	NA	NA	1,2,3-Trichlorobenzene	ND	NA	NA
trans-1,3-Dichloropropene	52.8	106	2.5	Naphthalene	ND	NA	NA

<u>Surrogate</u>	<u>% Recovery</u>
Dibromofluoromethane	105
1,2-Dichloroethane-D4	111
Toluene-D8	102
Bromofluorobenzene	95.2

ND = Not Detected, NA = Not Applicable

End of Report



ChemSolutions

Chain of Custody

7388 S. Revere Pkwy, #806  
Centennial, CO 80112  
Email: lisa@chemmobile.com

Phone: 303-771-5570  
Fax: 303-771-5574

Client Name & Address: <i>Airport Terracon 1505 Old Happy Jack Rd. Cheyenne, WY, 82001</i>		Client Project Name & Location: <i>Fest Airport</i>		ChemSolutions Project #: <i>TER066</i>	
Contact: <i>Jeff Shipman</i>		Sampler: <i>Jeff Shipman</i>		Location Received: <input checked="" type="radio"/> Base <input type="radio"/> On-site <input type="radio"/> Other _____	
Phone #: <i>307-631-4088</i>		Client Project Number: <i>2419141</i>		Custody Seals: <input checked="" type="radio"/> Yes <input type="radio"/> No	
E-mail: <i>jshipman@</i>		Invoice to: <i>Terracon</i>		Temperature in °C: <i>2°</i>	
				Condition: <input checked="" type="radio"/> Samples Intact <input type="radio"/> or See Remarks	
				Shipping Info: <i>FedEx: 7901 3944 8782</i>	

Sample ID	Date Sampled	Time Sampled	Grab or Comp	Matrix	# of Containers	Requested Analysis/Preservative										Remarks				
						Vials														
MW-7	3/16/15	0850	G	GW	3	X														
MW-8	3/16/15	1001	G	GW	3	X														
EB-1	3/16/15	1010	G	DI	3	X														
MW-6	3/16/15	1100	G	GW	3	X														
EB-1	3/16/15	1115	G	DI	3	X														
MW-1	3/16/15	1305	G	GW	3	X														
MW-4	3/16/15	1245	G	GW	2	X														Vial not completely full
MW-5	3/16/15	1330	G	GW	3	X														
DWP-1	3/16/15	—	G	GW	3	X														
MW-9	3/16/15	1400	G	GW	3	X														

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
<i>Jeff Shipman</i>	<i>3/17/15</i>	<i>1000</i>	<i>Amelby Beiles</i>	<i>3/18/15</i>	<i>1025</i>
Relinquished by:	Date:	Time:	Received by:	Date:	Time:



# Chain of Custody

7388 S. Revere Pkwy, #806  
 Centennial, CO 80112  
 Email: lisa@chemmobile.com

Phone: 303-771-5570  
 Fax: 303-771-5574

Client Name & Address: <i>Terracon</i> <i>1565 Old Happy Jack Rd.</i> <i>Cheyenne, WY 82001</i>	Client Project Name & Location: <i>Air post</i>	ChemSolutions Project #: <i>TER2066</i> Location Received: <u>Base</u> On-site Other _____ Custody Seals: <u>Yes</u> or No Temperature in °C: <i>2°</i> Condition: <u>Samples Intact</u> or See Remarks
Contact: <i>Jeff Shipman</i> Phone #: <i>307-631-4088</i>	Sampler: <i>Jeff Shipman</i> Client Project Number: <i>24147141</i>	Shipping info: <i>FedEx: 7901 3944 8782</i>
E-mail: <i>jshipman@terracon.com</i>	Invoice to: <i>Terracon</i>	

Sample ID	Date Sampled	Time Sampled	Grab or Comp	Matrix	# of Containers	Requested Analysis/Preservative										Remarks				
<i>MW-2</i>	<i>3/16/15</i>	<i>1510</i>	<i>G</i>	<i>GW</i>	<i>3</i>	<i>X</i>														
<i>Tcip Blank</i>					<i>3</i>	<i>X</i>														
<i>IDW-1</i>	<i>3/16/15</i>	<i>1530</i>	<i>G</i>	<i>GW</i>	<i>3</i>	<i>X</i>														

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
<i>Jeff Shipman</i>	<i>3/17/15</i>	<i>1000</i>	<i>Lindsey Bailey</i>	<i>3/18/15</i>	<i>1025</i>
Relinquished by:	Date:	Time:	Received by:	Date:	Time:



12065 Lebanon Rd.  
Mt. Juliet, TN 37122  
(615) 758-5858  
1-800-767-5859  
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

Clay Muirhead and Ayna Kekilova  
Terracon - Cheyenne  
1505 Old Happy Jack Road  
Cheyenne, WY 82001

### Report Summary

Monday April 20, 2015

Report Number: L752218

Samples Received: 03/07/15

Client Project: 24149141

Description: Airport

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

Daphne Richards , ESC Representative

#### Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197,  
FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016,  
NC - ENV375/DW21704/BIO041, ND - R-140. NJ - TN002, NJ NELAP - TN002,  
SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612,  
MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1,  
TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

This report may not be reproduced, except in full, without written approval from ESC Lab Sciences. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



12065 Lebanon Rd.  
 Mt. Juliet, TN 37122  
 (615) 758-5858  
 1-800-767-5859  
 Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Clay Muirhead and Ayna Kekilova  
 Terracon - Cheyenne  
 1505 Old Happy Jack Road  
 Cheyenne, WY 82001

April 20, 2015

Date Received : March 07, 2015  
 Description : Airport

ESC Sample # : L752218-01

Sample ID : IA-1

Site ID :

Collected By : Jeff Shipman  
 Collection Date : 03/06/15 13:25

Project # : 24149141

Parameter	Cas#	Mol Wght	RDL1	RDL2	ppbv	ug/m3	Method	Date	Dil.
Volatile Organics - TO-15 SIM									
1,1-Dichloroethene	75-35-4	96.9	0.020	0.079	< 0.020	< 0.079	TO-15	03/10/15	1
cis-1,2-Dichloroethene	156-59-2	96.9	0.020	0.079	< 0.020	< 0.079	TO-15	03/10/15	1
trans-1,2-Dichloroethene	156-60-5	96.9	0.020	0.079	< 0.020	< 0.079	TO-15	03/10/15	1
Tetrachloroethylene	127-18-4	166	0.020	0.14	< 0.020	< 0.14	TO-15	03/10/15	1
Trichloroethylene	79-01-6	131	0.020	0.11	0.079	0.42	TO-15	03/10/15	1
Vinyl chloride	75-01-4	62.5	0.020	0.051	< 0.020	< 0.051	TO-15	03/10/15	1
1,4-Bromofluorobenzene	460-00-4				102	% Rec.	TO-15	03/10/15	1

RDL1 = ppbv , RDL2 = ug/m3

Note:

Units are based on (STP) - Standard Temperature and Pressure

The reported analytical results relate only to the sample submitted.

This report shall not be reproduced, except in full, without the written approval from ESC.

Reported: 04/20/15 16:38 Printed: 04/20/15 16:38



12065 Lebanon Rd.  
 Mt. Juliet, TN 37122  
 (615) 758-5858  
 1-800-767-5859  
 Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Clay Muirhead and Ayna Kekilova  
 Terracon - Cheyenne  
 1505 Old Happy Jack Road  
 Cheyenne, WY 82001

April 20, 2015

Date Received : March 07, 2015  
 Description : Airport  
 Sample ID : IA-2  
 Collected By : Jeff Shipman  
 Collection Date : 03/06/15 13:27

ESC Sample # : L752218-02  
 Site ID :  
 Project # : 24149141

Parameter	Cas#	Mol Wght	RDL1	RDL2	ppbv	ug/m3	Method	Date	Dil.
Volatile Organics - TO-15 SIM									
1,1-Dichloroethene	75-35-4	96.9	0.020	0.079	< 0.020	< 0.079	TO-15	03/10/15	1
cis-1,2-Dichloroethene	156-59-2	96.9	0.020	0.079	< 0.020	< 0.079	TO-15	03/10/15	1
trans-1,2-Dichloroethene	156-60-5	96.9	0.020	0.079	< 0.020	< 0.079	TO-15	03/10/15	1
Tetrachloroethylene	127-18-4	166	0.020	0.14	< 0.020	< 0.14	TO-15	03/10/15	1
Trichloroethylene	79-01-6	131	0.020	0.11	0.026	0.14	TO-15	03/10/15	1
Vinyl chloride	75-01-4	62.5	0.020	0.051	< 0.020	< 0.051	TO-15	03/10/15	1
1,4-Bromofluorobenzene	460-00-4				99.3	% Rec.	TO-15	03/10/15	1

RDL1 = ppbv , RDL2 = ug/m3

Note:

Units are based on (STP) - Standard Temperature and Pressure

The reported analytical results relate only to the sample submitted.

This report shall not be reproduced, except in full, without the written approval from ESC.

Reported: 04/20/15 16:38 Printed: 04/20/15 16:38



12065 Lebanon Rd.  
 Mt. Juliet, TN 37122  
 (615) 758-5858  
 1-800-767-5859  
 Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Clay Muirhead and Ayna Kekilova  
 Terracon - Cheyenne  
 1505 Old Happy Jack Road  
 Cheyenne, WY 82001

April 20, 2015

Date Received : March 07, 2015  
 Description : Airport  
 Sample ID : IA-3  
 Collected By : Jeff Shipman  
 Collection Date : 03/06/15 13:35

ESC Sample # : L752218-03  
 Site ID :  
 Project # : 24149141

Parameter	Cas#	Mol Wght	RDL1	RDL2	ppbv	ug/m3	Method	Date	Dil.
Volatile Organics - TO-15 SIM									
1,1-Dichloroethene	75-35-4	96.9	0.020	0.079	< 0.020	< 0.079	TO-15	03/10/15	1
cis-1,2-Dichloroethene	156-59-2	96.9	0.020	0.079	< 0.020	< 0.079	TO-15	03/10/15	1
trans-1,2-Dichloroethene	156-60-5	96.9	0.020	0.079	< 0.020	< 0.079	TO-15	03/10/15	1
Tetrachloroethylene	127-18-4	166	0.020	0.14	< 0.020	< 0.14	TO-15	03/10/15	1
Trichloroethylene	79-01-6	131	0.020	0.11	0.023	0.12	TO-15	03/10/15	1
Vinyl chloride	75-01-4	62.5	0.020	0.051	< 0.020	< 0.051	TO-15	03/10/15	1
1,4-Bromofluorobenzene	460-00-4				100	% Rec.	TO-15	03/10/15	1

RDL1 = ppbv , RDL2 = ug/m3

Note:

Units are based on (STP) - Standard Temperature and Pressure

The reported analytical results relate only to the sample submitted.

This report shall not be reproduced, except in full, without the written approval from ESC.

Reported: 04/20/15 16:38 Printed: 04/20/15 16:38



12065 Lebanon Rd.  
 Mt. Juliet, TN 37122  
 (615) 758-5858  
 1-800-767-5859  
 Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Clay Muirhead and Ayna Kekilova  
 Terracon - Cheyenne  
 1505 Old Happy Jack Road  
 Cheyenne, WY 82001

April 20, 2015

Date Received : March 07, 2015  
 Description : Airport  
 Sample ID : IA-4  
 Collected By : Jeff Shipman  
 Collection Date : 03/06/15 13:37

ESC Sample # : L752218-04  
 Site ID :  
 Project # : 24149141

Parameter	Cas#	Mol Wght	RDL1	RDL2	ppbv	ug/m3	Method	Date	Dil.
Volatile Organics - TO-15 SIM									
1,1-Dichloroethene	75-35-4	96.9	0.020	0.079	< 0.020	< 0.079	TO-15	03/10/15	1
cis-1,2-Dichloroethene	156-59-2	96.9	0.020	0.079	< 0.020	< 0.079	TO-15	03/10/15	1
trans-1,2-Dichloroethene	156-60-5	96.9	0.020	0.079	< 0.020	< 0.079	TO-15	03/10/15	1
Tetrachloroethylene	127-18-4	166	0.020	0.14	< 0.020	< 0.14	TO-15	03/10/15	1
Trichloroethylene	79-01-6	131	0.020	0.11	0.024	0.13	TO-15	03/10/15	1
Vinyl chloride	75-01-4	62.5	0.020	0.051	< 0.020	< 0.051	TO-15	03/10/15	1
1,4-Bromofluorobenzene	460-00-4				105	% Rec.	TO-15	03/10/15	1

RDL1 = ppbv , RDL2 = ug/m3

Note:

Units are based on (STP) - Standard Temperature and Pressure

The reported analytical results relate only to the sample submitted.

This report shall not be reproduced, except in full, without the written approval from ESC.

Reported: 04/20/15 16:38 Printed: 04/20/15 16:38



12065 Lebanon Rd.  
 Mt. Juliet, TN 37122  
 (615) 758-5858  
 1-800-767-5859  
 Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Clay Muirhead and Ayna Kekilova  
 Terracon - Cheyenne  
 1505 Old Happy Jack Road  
 Cheyenne, WY 82001

April 20, 2015

Date Received : March 07, 2015  
 Description : Airport  
 Sample ID : DUP-2  
 Collected By : Jeff Shipman  
 Collection Date : 03/06/15 00:00

ESC Sample # : L752218-05  
 Site ID :  
 Project # : 24149141

Parameter	Cas#	Mol Wght	RDL1	RDL2	ppbv	ug/m3	Method	Date	Dil.
Volatile Organics - TO-15 SIM									
1,1-Dichloroethene	75-35-4	96.9	0.020	0.079	< 0.020	< 0.079	TO-15	03/10/15	1
cis-1,2-Dichloroethene	156-59-2	96.9	0.020	0.079	< 0.020	< 0.079	TO-15	03/10/15	1
trans-1,2-Dichloroethene	156-60-5	96.9	0.020	0.079	< 0.020	< 0.079	TO-15	03/10/15	1
Tetrachloroethylene	127-18-4	166	0.020	0.14	< 0.020	< 0.14	TO-15	03/10/15	1
Trichloroethylene	79-01-6	131	0.020	0.11	0.028	0.15	TO-15	03/10/15	1
Vinyl chloride	75-01-4	62.5	0.020	0.051	< 0.020	< 0.051	TO-15	03/10/15	1
1,4-Bromofluorobenzene	460-00-4				104	% Rec.	TO-15	03/10/15	1

RDL1 = ppbv , RDL2 = ug/m3

Note:

Units are based on (STP) - Standard Temperature and Pressure

The reported analytical results relate only to the sample submitted.

This report shall not be reproduced, except in full, without the written approval from ESC.

Reported: 04/20/15 16:38 Printed: 04/20/15 16:38



12065 Lebanon Rd.  
 Mt. Juliet, TN 37122  
 (615) 758-5858  
 1-800-767-5859  
 Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Clay Muirhead and Ayna Kekilova  
 Terracon - Cheyenne  
 1505 Old Happy Jack Road  
 Cheyenne, WY 82001

April 20, 2015

Date Received : March 07, 2015  
 Description : Airport  
 Sample ID : SV-1  
 Collected By : Jeff Shipman  
 Collection Date : 03/06/15 10:15

ESC Sample # : L752218-06  
 Site ID :  
 Project # : 24149141

Parameter	Cas#	Mol Wght	RDL1	RDL2	ppbv	ug/m3	Method	Date	Dil.
Volatile Organics									
1,1-Dichloroethene	75-35-4	96.9	0.400	1.60	< 0.40	< 1.6	TO-15	03/09/15	2
cis-1,2-Dichloroethene	156-59-2	96.9	0.400	1.60	< 0.40	< 1.6	TO-15	03/09/15	2
trans-1,2-Dichloroethene	156-60-5	96.9	0.400	1.60	< 0.40	< 1.6	TO-15	03/09/15	2
Tetrachloroethylene	127-18-4	166	0.400	2.70	< 0.40	< 2.7	TO-15	03/09/15	2
Trichloroethylene	79-01-6	131	0.400	2.10	0.69	3.7	TO-15	03/09/15	2
Vinyl chloride	75-01-4	62.5	0.400	1.00	< 0.40	< 1.0	TO-15	03/09/15	2
1,4-Bromofluorobenzene	460-00-4				92.1	% Rec.	TO-15	03/09/15	1

RDL1 = ppbv , RDL2 = ug/m3

Note:

Units are based on (STP) - Standard Temperature and Pressure

The reported analytical results relate only to the sample submitted.

This report shall not be reproduced, except in full, without the written approval from ESC.

Reported: 04/20/15 16:38 Printed: 04/20/15 16:38



12065 Lebanon Rd.  
 Mt. Juliet, TN 37122  
 (615) 758-5858  
 1-800-767-5859  
 Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Clay Muirhead and Ayna Kekilova  
 Terracon - Cheyenne  
 1505 Old Happy Jack Road  
 Cheyenne, WY 82001

April 20, 2015

Date Received : March 07, 2015  
 Description : Airport

ESC Sample # : L752218-07

Sample ID : SV-2

Site ID :

Collected By : Jeff Shipman  
 Collection Date : 03/06/15 10:50

Project # : 24149141

Parameter	Cas#	Mol Wght	RDL1	RDL2	ppbv	ug/m3	Method	Date	Dil.
Volatile Organics									
1,1-Dichloroethene	75-35-4	96.9	0.400	1.60	< 0.40	< 1.6	TO-15	03/09/15	2
cis-1,2-Dichloroethene	156-59-2	96.9	0.400	1.60	< 0.40	< 1.6	TO-15	03/09/15	2
trans-1,2-Dichloroethene	156-60-5	96.9	0.400	1.60	< 0.40	< 1.6	TO-15	03/09/15	2
Tetrachloroethylene	127-18-4	166	0.400	2.70	< 0.40	< 2.7	TO-15	03/09/15	2
Trichloroethylene	79-01-6	131	0.400	2.10	< 0.40	< 2.1	TO-15	03/09/15	2
Vinyl chloride	75-01-4	62.5	0.400	1.00	< 0.40	< 1.0	TO-15	03/09/15	2
1,4-Bromofluorobenzene	460-00-4				93.2	% Rec.	TO-15	03/09/15	1

RDL1 = ppbv , RDL2 = ug/m3

Note:

Units are based on (STP) - Standard Temperature and Pressure

The reported analytical results relate only to the sample submitted.

This report shall not be reproduced, except in full, without the written approval from ESC.

Reported: 04/20/15 16:38 Printed: 04/20/15 16:38



12065 Lebanon Rd.  
 Mt. Juliet, TN 37122  
 (615) 758-5858  
 1-800-767-5859  
 Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Clay Muirhead and Ayna Kekilova  
 Terracon - Cheyenne  
 1505 Old Happy Jack Road  
 Cheyenne, WY 82001

April 20, 2015

Date Received : March 07, 2015  
 Description : Airport  
 Sample ID : DUP-1  
 Collected By : Jeff Shipman  
 Collection Date : 03/06/15 00:00

ESC Sample # : L752218-08  
 Site ID :  
 Project # : 24149141

Parameter	Cas#	Mol Wght	RDL1	RDL2	ppbv	ug/m3	Method	Date	Dil.
Volatile Organics									
1,1-Dichloroethene	75-35-4	96.9	0.400	1.60	< 0.40	< 1.6	TO-15	03/09/15	2
cis-1,2-Dichloroethene	156-59-2	96.9	0.400	1.60	< 0.40	< 1.6	TO-15	03/09/15	2
trans-1,2-Dichloroethene	156-60-5	96.9	0.400	1.60	< 0.40	< 1.6	TO-15	03/09/15	2
Tetrachloroethylene	127-18-4	166	0.400	2.70	< 0.40	< 2.7	TO-15	03/09/15	2
Trichloroethylene	79-01-6	131	0.400	2.10	0.64	3.4	TO-15	03/09/15	2
Vinyl chloride	75-01-4	62.5	0.400	1.00	< 0.40	< 1.0	TO-15	03/09/15	2
1,4-Bromofluorobenzene	460-00-4				101	% Rec.	TO-15	03/09/15	1

RDL1 = ppbv , RDL2 = ug/m3

Note:

Units are based on (STP) - Standard Temperature and Pressure

The reported analytical results relate only to the sample submitted.

This report shall not be reproduced, except in full, without the written approval from ESC.

Reported: 04/20/15 16:38 Printed: 04/20/15 16:38

