

# Limited Site Investigation Report

Holbrook Agricultural Property  
3733 West 2600 North  
Lehi, Utah

January 7, 2015  
Terracon Project No. AL147861



**Prepared for:**

Ivory Development  
3340 North Center Street  
Lehi, Utah 84043

**Prepared by:**

Terracon Consultants, Inc.  
640 Wilmington Avenue  
Salt Lake City, Utah 84106

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**Terracon**



January 7, 2015

Ivory Development  
3340 North Center Street  
Lehi, Utah 84043

Attn: Mr. Brad Mackay  
P: (801) 407-6841  
E-mail: [brad@ivorydevelopment.com](mailto:brad@ivorydevelopment.com)

**Re: Limited Site Investigation Report  
Holbrook Agricultural Property  
3733 West 2600 North  
Lehi, Utah 84043  
Terracon Project No. AL147861**

Dear Mr. Mackay:

Terracon is pleased to provide this report regarding the Limited Site Investigation (LSI) activities conducted at the above-referenced site. Terracon has performed the LSI pursuant to Terracon's Proposal PAL140545 dated November 14, 2014 and its Supplement to Agreement for Services.

We appreciate the opportunity to have performed these services for you. Please contact our office at (801) 466-2223 if you have questions regarding this information or if we can provide any other services.

Sincerely,  
**Terracon Consultants, Inc.**

Amy B. Findley  
Project Manager  
Environmental Services

ABF/ARK/ca

Attachments

Copies: Addressee (1 Electronic)

N:\Projects\2014\AL147861\Working Files\DRAFTS (Proposal-Reports-Communications)\AL147861 LSI Rpt.docx

Andy King, P.G.  
Senior Project Manager  
Authorized Project Reviewer



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Geotechnical



Environmental



Construction Materials



Facilities

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**LIMITED SITE INVESTIGATION REPORT**  
**Holbrook Agricultural Property**  
**3733 West 2600 North**  
**Lehi, Utah**

**Terracon Project No. AL147861**  
**January 7, 2015**

## **1.0 INTRODUCTION**

### **1.1 Site Description**

<b>Site Name</b>	Holbrook Agricultural Property
<b>Site Location/Address</b>	3733 West 2600, Lehi, Utah
<b>Land Area</b>	Residential and agricultural land
<b>General Site Description</b>	The site is developed as a personal residence and agricultural land

The Holbrook property is located at 3733 West 2600 North in Lehi, Utah. It encompasses approximately 6.43 acres and contains a single-family residential home and several farm buildings used for agricultural equipment/supply storage. Figure 1 (Appendix A) presents the general boundaries and topography of the site on portions of the Jordan Narrows 1999 USGS topographic quadrangle map. Figure 2 presents a site diagram that depicts the approximate locations of the soil sampling points in relation to the pertinent site features.

### **1.2 Project Background**

Terracon completed a Phase I Environmental Site Assessment (ESA) on the subject property (Terracon Project Number AL147657, dated October 14, 2014). During the Phase I ESA, two Recognized Environmental Conditions (RECs) were identified:

- **Long-term agricultural chemical use and storage (74 years).** Herbicides are regularly used at the site. The products are mixed on bare ground and used containers are stored on bare ground.
- **Petroleum hydrocarbon storage.** Two underground storage tanks (USTs) used to store gasoline and diesel fuel are present on the site. The USTs are approximately 30 years old and are not equipped with spill/overfill prevention devices nor do they have cathodic protection. In addition, waste oil is stored in an aboveground storage tank (AST) without secondary containment.

Terracon recommended that a subsurface investigation be conducted to assess if the soil and/or groundwater of the site have been impacted by the historical agricultural use of the site.

### **1.3 Scope of Work**

Terracon advanced a total of three vertical soil borings on the site adjacent to the features identified in the Phase I ESA. The soil borings were advanced using a direct-push drilling rig, to a target maximum depth of approximately 20 feet bgs. Groundwater was not encountered.

### **1.4 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. Please note that Terracon does not warrant the work of laboratories, regulatory agencies or other third parties supplying information used in the preparation of the report. These LSI services were performed in accordance with the scope of work agreed with you, our client, as reflected in our proposal, and were not restricted by ASTM E1903-97.

### **1.5 Additional Scope Limitations**

Findings, conclusions and recommendations resulting from these services are based upon information derived from the onsite 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 LSI. 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.

### **1.6 Reliance**

This LSI report has been prepared for the exclusive use and reliance of Ivory Development and government entities having jurisdiction over the site. Use or reliance by any other party is prohibited without the written authorization of Ivory Development and Terracon.

Reliance on the LSI report by the client and all authorized parties will be subject to the terms, conditions and limitations stated in the proposal, LSI report, and Terracon's Terms and Conditions. The limitation of liability defined in the Terms and Conditions is the aggregate limit of Terracon's liability to the client and all relying parties.

## 2.0 LIMITED SITE INVESTIGATION

### 2.1 Environmental Soil Borings

Terracon's soil boring field activities were conducted on December 12, 2014 by Amy Findley, a Terracon Environmental Project Manager, a Utah UST Consultant (#CC0238) and a Utah UST Groundwater and Soil Sampler (#GS1465). As part of the approved scope of work, three environmental soil borings (B-1 thru B-3) were advanced.

- One soil boring was advanced within the herbicide mixing / storage area.
- One soil boring was advanced at a location directly down-gradient of the used oil AST.
- One boring was advanced at a location directly down-gradient of the UST area.

Mechanized drilling services were performed by Clement Drilling using a direct push drilling rig under the supervision of a Terracon Environmental Project Manager. Mechanized drilling equipment was cleaned using a high pressure washer prior to beginning the project and before beginning each soil boring. Soil samples were collected continuously from all soil borings using a five-foot macro-core sampler. Drilling equipment was cleaned using a high pressure washer prior to beginning the project and before beginning each soil boring. All non-dedicated sampling equipment was cleaned using an Alconox® wash and potable water rise prior to the beginning of the project and before collecting each soil sample.

Soil samples were observed to document soil types, color, moisture content and sensory evidence of environmental impacts. The soil samples were also field-screened using a portable photoionization detector (PID) – Mini Rae 2000 PID to determine the potential presence of total volatile organic compounds (TVOCs). Field screening conducted with the PID indicated TOVC readings were not detected. PID readings are shown on the soil boring logs included in Appendix B, and on Table 1, Summary of Soil Analytical Results (Appendix C) with the corresponding laboratory data for samples submitted for analytical analysis.

The subsurface soil types encountered during sample collection generally consisted of intervals of silts and a dense silty clay and clayey silt. Groundwater was not encountered and was anticipated to be greater than 30 feet below the ground surface based on a geotechnical boring installed on the site. Detailed lithologic descriptions are presented on the soil boring logs included in Appendix B.

After collection of soil samples, each boring was properly abandoned by backfilling with bentonite clay pellets, adding water to hydrate the bentonite clay, and restoring the surface with native soil to match the surrounding surfaces.

## 2.2 Soil Sampling

Terracon's LSI soil sampling program involved (unless otherwise specified) collecting and submitting one soil sample from each of the soil borings for laboratory analysis. As no elevated PID readings were observed, the sample was collected from the interval of most likely environmental impact as determined in the field by the sampling professional.

All soil samples were collected and placed in laboratory prepared glassware and placed on ice in a cooler. The samples and completed chain-of-custody forms were shipped via overnight courier to Environmental Science Corporation analytical laboratory in Mt. Juliet, Tennessee (a Utah Certified Laboratory).

## 3.0 ANALYTICAL METHODS

The soil samples collected were analyzed on a standard (7-day) turnaround by laboratory test methods as appropriate for the types of contaminants most likely to be encountered. The soil sample collected from the soil borings located in the herbicide mixing/storage area were analyzed for herbicides. The soil sample collected from the UST area was analyzed for methyl tert-butyl ether (MTBE), the petroleum hydrocarbon constituents benzene, toluene, ethylbenzene, total xylenes, and naphthalene (BTEXN), and total petroleum hydrocarbons – diesel and gasoline range organics (TPH-DRO and GRO). The soil sample collected from the used oil AST area was analyzed for volatile organic compounds (VOCs) and total recoverable petroleum hydrocarbons (TRPH). Soil samples were analyzed using the following methods:

Investigation Area	Analysis	Sample Type	No. of Samples	Laboratory Method
Herbicide Mixing and Storage Area	Herbicides	Soil	1	EPA Method 8151
Used Oil AST Area	VOCs	Soil	1	EPA Method 8260
	TRPH	Soil	1	EPA Method 1664
UST Area	MTBE, BTEXN, TPH-GRO	Soil	1	EPA Method 8260
	TPH-DRO	Soil	1	EPA Method 8015

The executed chain-of-custody form and laboratory data sheets are provided in Appendix D.

## 4.0 LSI DATA EVALUATION

### 4.1 Soil Samples

Please refer to Table 1 (Appendix C) for a summary of the laboratory analytical results for all soil samples. Table 1 also includes Utah's Leaking Underground Storage Tank (LUST) Program Initial Screening Levels for unrestricted land use and Tier 1 Risk-based Screening

Levels (Tier 1) for comparative purposes for the petroleum hydrocarbons. Herbicide and VOC screening level are not included as no detections were reported above the laboratory method detection limit. The executed chain-of-custody form and laboratory data sheets are provided in Appendix D.

#### **Herbicide Mixing and Storage Area**

Herbicides were not reported above the laboratory analytical method detection limit in the shallow soil sample collected from this area. It appeared that minor surface spills had occurred during the mixing and transfer of the herbicide.

#### **Used Oil AST Area**

A low concentration of TRPH was reported in the shallow soil sample collected adjacent to the AST. The concentration reported was below the ISL for TRPH. It appeared that minor surface spills had occurred during the transfer of waste oil into the AST.

#### **UST Area**

A low concentration of TPH-DRO was reported in the soil sample collected adjacent to the UST area. TPH-GRO and MBTEXN constituents were not reported above the laboratory analytical method detection limit.

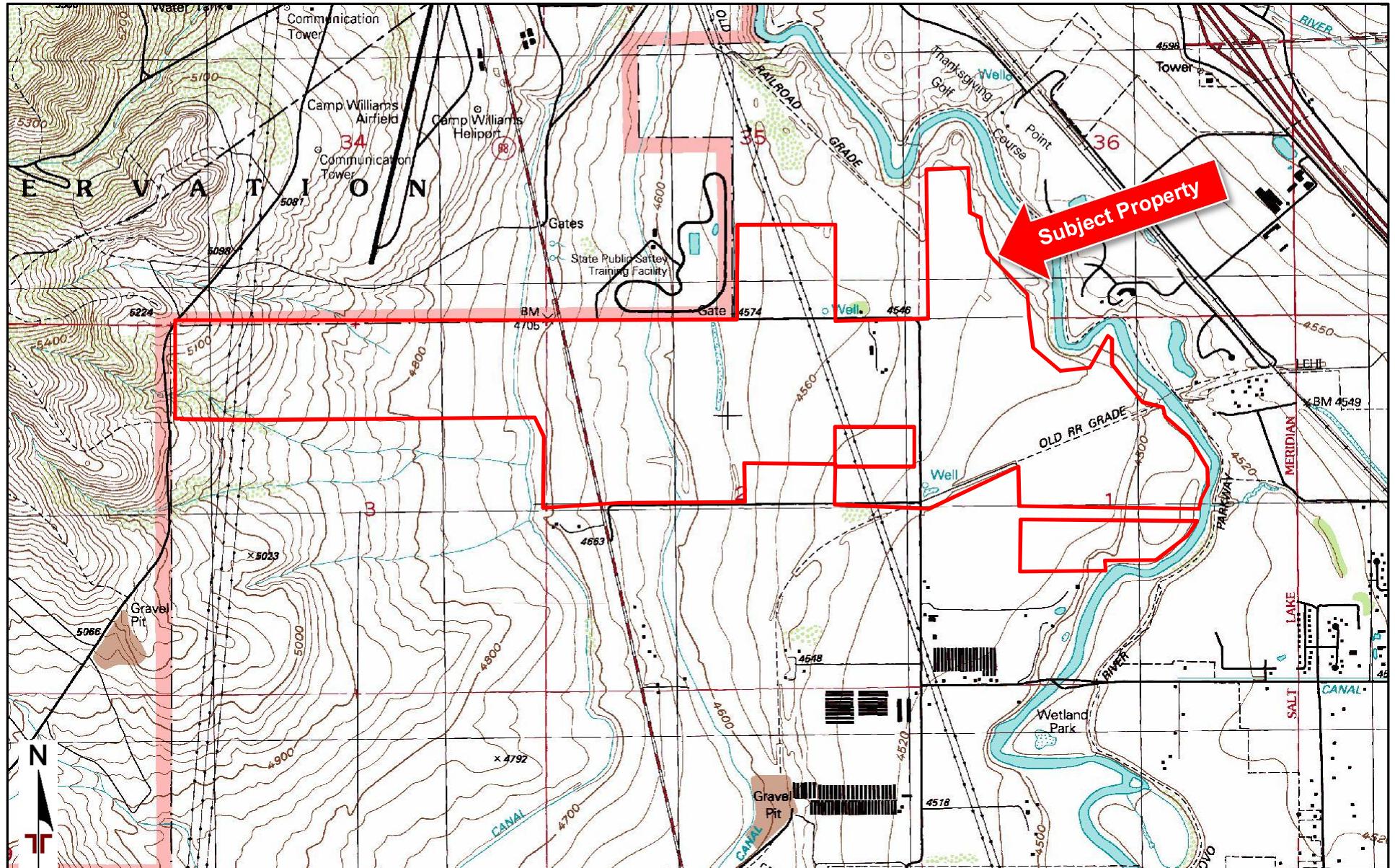
## **5.0 FINDINGS AND CONCLUSIONS**

Based on the analytical results of the soil samples, it does not appear that the use of the property for agricultural purposes has significantly impacted soils on the site. Although low concentrations of TRPH were reported in the sample collected at the used oil AST and low concentrations of TPH-DRO were reported in the sample collected at the UST area, the detected concentrations were well below applicable regulatory screening levels and do not indicate a significant release of petroleum hydrocarbons.

Terracon recommends that if subsurface soils or groundwater that are disturbed during future construction activities exhibit staining, noxious odors, sheens, or any other abnormalities that suggest the potential presence of contaminants, then proper procedures should be followed with respect to worker health and safety, and any impacted soil or groundwater encountered should be properly characterized, treated and/or disposed in accordance with applicable local, state or federal regulations.

## **APPENDIX A**

### **Figures**



TOPOGRAPHIC MAP IMAGE COURTESY OF  
THE U.S. GEOLOGICAL SURVEY  
QUADRANGLES INCLUDE: JORDAN  
NARROWS, UT (1/1/1999).

DIAGRAM IS FOR GENERAL LOCATION ONLY,  
AND IS NOT INTENDED FOR CONSTRUCTION  
PURPOSES

Project Manager:	ABF	Project No.	AL147861
Drawn by:	USGS	Scale:	1:24,000
Checked by:	KW	File Name:	
Approved by:	KW	Date:	12/30/14

**Terracon**

640 E. Wilmington Ave.  
Salt Lake City, UT

### TOPOGRAPHIC MAP

Holbrook Agricultural Lots  
Approximately 2100 North Redwood Road  
Lehi, UT

Figure

1

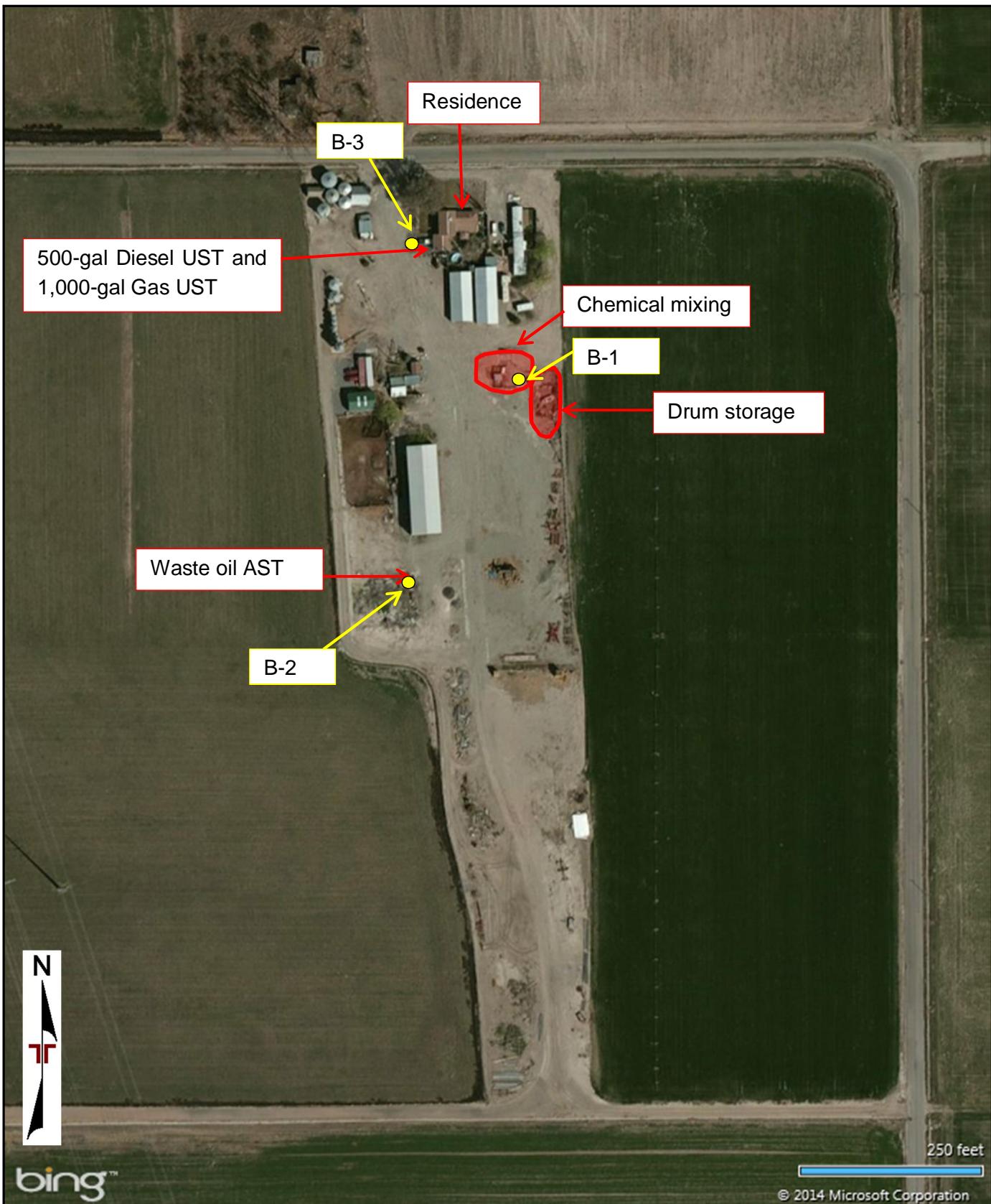


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS  
NOT INTENDED FOR CONSTRUCTION PURPOSES

AERIAL PHOTOGRAPHY PROVIDED  
BY MICROSOFT BING MAPS

Project Manager: ABF	Project No. AL147861
Drawn by: AC	Scale: AS SHOWN
Checked by: KW	File Name: Fig2
Approved by: KW	Date: 12/30/14

**Terracon**  
640 E. Wilmington Ave.  
Salt Lake City, UT

Boring Locations
Holbrook Agricultural Lots Approximately 2100 North Redwood Road Lehi, UT

Figure  
2

**APPENDIX B**

**Soil Boring Logs**

# BORING LOG NO. B-1

Page 1 of 1

PROJECT: Ivory - Holbrook LSI		CLIENT: Ivory Development							
SITE: Lehi, Utah									
GRAPHIC LOG	LOCATION	DEPTH	MATERIAL DESCRIPTION	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	ANALYSES		
	Drum Storage								
		2.0	<u>SILT (ML)</u> , brown, dry, dense						
		6.0	<u>SILTY CLAY (CL-ML)</u> , tan, dense						
		16.0	<u>CLAYEY SILT (CL)</u> , tan, dense						
		16.0	<u>SILT (ML)</u> , tan, dry, loose						
		20.0	<b>Boring Terminated at 20 Feet</b>						
The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.									
Advancement Method: DPT					Notes:				
Abandonment Method:									
<b>WATER LEVEL OBSERVATIONS</b>		 <b>IHI</b> <small>ENVIRONMENTAL</small>		Boring Started: 12/12/2014		Boring Completed: 12/12/2014			
				Drill Rig:		Driller: Clement Drilling			
				Project No.: AL147861		Exhibit: A-1			

# BORING LOG NO. B-2

Page 1 of 1

PROJECT: Ivory - Holbrook LSI		CLIENT: Ivory Development					
SITE: Lehi, Utah							
GRAPHIC LOG	LOCATION	DEPTH	MATERIAL DESCRIPTION	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	ANALYSES
	Waste oil tank	1.0	<u>SILT (ML)</u> , tan, loose				0.0
		4.0	<u>SILTY CLAY (CL-ML)</u> , tan to gray, dense				0.0
		16.0	<u>CLAY (CL)</u> , expansive, tight, tan, dense	5			0.0
				10			0.0
				15			0.0
	<b>Boring Terminated at 16 Feet</b>						
The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.							
Advancement Method: DPT				Notes:			
Abandonment Method:							
<b>WATER LEVEL OBSERVATIONS</b>	 <b>IHI</b> ENVIRONMENTAL A Terracon COMPANY			Boring Started: 12/12/2014	Boring Completed: 12/12/2014		
				Drill Rig:	Driller: Clement Drilling		
				Project No.: AL147861	Exhibit: A-2		

# BORING LOG NO. B-3

Page 1 of 1

PROJECT: Ivory - Holbrook LSI		CLIENT: Ivory Development					
SITE: Lehi, Utah							
GRAPHIC LOG	LOCATION	DEPTH	MATERIAL DESCRIPTION	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	ANALYSES
	West of USTs	1.0	<b>GRAVELLY SILT (ML)</b>				
		1.0	<b>CLAYEY SILT (CL)</b> , tan, dense				
		12.0	<b>Boring Terminated at 12 Feet</b>	5		0.0	
				10		0.0	
The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.							
Advancement Method: DPT				Notes:			
Abandonment Method:							
<b>WATER LEVEL OBSERVATIONS</b>				Boring Started: 12/12/2014	Boring Completed: 12/12/2014		
				Drill Rig:	Driller: Clement Drilling		
				Project No.: AL147861	Exhibit: A-3		

## **APPENDIX C**

### **Table**

**Table 1**  
**Summary of Soil Analytical Results**  
**Holbrook Property**  
**Lehi, Utah**  
**Terracon Project No. AL147861**

Boring Number	Date Collected	Sample Depth (feet)	Laboratory Results (mg/kg)										PID Reading (ppm)	
			Herbicides	VOCs	TRPH	TPH-DRO	TPH-GRO	Benzene	Toluene	Ethylbenzene	Total Xylenes	Naphthalene	MTBE	
BH-1	12/12/2014	0.5-1	NR	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	
BH-2	12/12/2014	0.5-1	NA	NR	140	NA	NA	NA	NA	NA	NA	NA	ND	
BH-3	12/12/2014	5-6	NA	NA	NA	2.2	<3.1	<0.0062	<0.031	<0.0062	<0.018	<0.031	<0.0062	ND
<b>DERR Initial Screening Levels (mg/kg)</b>			<b>ne</b>	<b>ne</b>	<b>1,000</b>	<b>500</b>	<b>150</b>	<b>0.2</b>	<b>9</b>	<b>5</b>	<b>142</b>	<b>51</b>	<b>0.3</b>	
<b>DERR Tier 1 Screening Criteria (mg/kg)</b>			<b>ne</b>	<b>ne</b>	<b>10,000</b>	<b>5,000</b>	<b>1,500</b>	<b>0.9</b>	<b>25</b>	<b>23</b>	<b>142</b>	<b>51</b>	<b>0.3</b>	

NOTES: mg/kg Milligrams per kilogram

TPH Total Petroleum Hydrocarbons

PPM Parts per million

NR none reported above method detection limit

DRO Diesel Range Organic:

GRO Gasoline Range Organics

NE not established

PID Photoionization detector

NA not analyzed

ND Not detected

## **APPENDIX D**

### **Chain of Custody and Laboratory Data Sheets**



YOUR LAB OF CHOICE

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

Amy Findley  
Terracon - Draper  
640 E Wilmington Avenue  
Salt Lake City, UT 84106

## Report Summary

Monday December 22, 2014

Report Number: L738829

Samples Received: 12/13/14

Client Project: AL147861

Description: LSI - Ivory Lehi

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:



Mark W. Beasley, 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.



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Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Amy Findley  
Terracon - Draper  
640 E Wilmington Avenue  
Salt Lake City, UT 84106

December 22, 2014

Date Received : December 13, 2014  
Description : LSI - Ivory Lehi  
Sample ID : B-1 0.5-1 FT  
Collected By : Amy Findley  
Collection Date : 12/12/14 09:30

ESC Sample # : L738829-01

Site ID : IVOM-LEHI LSI

Project # : AL147861

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	85.2	0.0333		%		2540 G-2	12/18/14	1
Herbicides								
2,4-D	U	0.023	0.082	mg/kg		8151	12/17/14	1
Dalapon	U	0.27	0.94	mg/kg		8151	12/17/14	1
2,4-DB	U	0.023	0.082	mg/kg		8151	12/17/14	1
Dicamba	U	0.023	0.082	mg/kg		8151	12/17/14	1
Dichloroprop	U	0.023	0.082	mg/kg		8151	12/17/14	1
Dinoseb	U	0.023	0.082	mg/kg		8151	12/17/14	1
MCPA	U	2.2	7.6	mg/kg		8151	12/17/14	1
MCPP	U	2.2	7.6	mg/kg		8151	12/17/14	1
2,4,5-T	U	0.023	0.082	mg/kg		8151	12/17/14	1
2,4,5-TP (Silvex)	U	0.023	0.082	mg/kg		8151	12/17/14	1
Surrogate Recovery								
2,4-Dichlorophenyl Acetic Acid	83.3			% Rec.		8151	12/17/14	1

Results listed are dry weight basis.

U = ND (Not Detected)

MDL = Minimum Detection Limit = LOD = TRRP SDL

RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL

Note:

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The reported analytical results relate only to the sample submitted

Reported: 12/22/14 09:11 Printed: 12/22/14 09:12



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Mt. Juliet, TN 37122  
(615) 758-5858  
1-800-767-5859  
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Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Amy Findley  
Terracon - Draper  
640 E Wilmington Avenue  
Salt Lake City, UT 84106

December 22, 2014

Date Received : December 13, 2014  
Description : LSI - Ivory Lehi  
Sample ID : B-2 0.5-1 FT  
Collected By : Amy Findley  
Collection Date : 12/12/14 10:23

ESC Sample # : L738829-02

Site ID : IVOM-LEHI LSI

Project # : AL147861

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
TPH - Oil & Grease	140	33.	120	mg/kg		9071B	12/19/14	1
Total Solids	84.9	0.0333		%		2540 G-2	12/18/14	1
Volatile Organics								
Acetone	U	0.050	0.29	mg/kg		8260B	12/20/14	5
Acrylonitrile	U	0.0090	0.059	mg/kg		8260B	12/20/14	5
Benzene	U	0.0014	0.0059	mg/kg		8260B	12/20/14	5
Bromobenzene	U	0.0014	0.0059	mg/kg		8260B	12/20/14	5
Bromodichloromethane	U	0.0013	0.0059	mg/kg		8260B	12/20/14	5
Bromoform	U	0.0021	0.0059	mg/kg		8260B	12/20/14	5
Bromomethane	U	0.0067	0.029	mg/kg		8260B	12/20/14	5
n-Butylbenzene	U	0.0013	0.0059	mg/kg		8260B	12/20/14	5
sec-Butylbenzene	U	0.0010	0.0059	mg/kg		8260B	12/20/14	5
tert-Butylbenzene	U	0.0010	0.0059	mg/kg		8260B	12/20/14	5
Carbon tetrachloride	U	0.0016	0.0059	mg/kg		8260B	12/20/14	5
Chlorobenzene	U	0.0011	0.0059	mg/kg		8260B	12/20/14	5
Chlorodibromomethane	U	0.0019	0.0059	mg/kg		8260B	12/20/14	5
Chloroethane	U	0.0047	0.029	mg/kg		8260B	12/20/14	5
2-Chloroethyl vinyl ether	U	0.012	0.29	mg/kg	J3	8260B	12/20/14	5
Chloroform	U	0.0011	0.029	mg/kg		8260B	12/20/14	5
Chloromethane	U	0.0019	0.015	mg/kg		8260B	12/20/14	5
2-Chlorotoluene	U	0.0015	0.0059	mg/kg		8260B	12/20/14	5
4-Chlorotoluene	U	0.0012	0.0059	mg/kg		8260B	12/20/14	5
1,2-Dibromo-3-Chloropropane	U	0.0052	0.029	mg/kg		8260B	12/20/14	5
1,2-Dibromoethane	U	0.0017	0.0059	mg/kg		8260B	12/20/14	5
Dibromomethane	U	0.0019	0.0059	mg/kg		8260B	12/20/14	5
1,2-Dichlorobenzene	U	0.0015	0.0059	mg/kg		8260B	12/20/14	5
1,3-Dichlorobenzene	U	0.0012	0.0059	mg/kg		8260B	12/20/14	5
1,4-Dichlorobenzene	U	0.0011	0.0059	mg/kg		8260B	12/20/14	5
Dichlorodifluoromethane	U	0.0036	0.029	mg/kg		8260B	12/20/14	5
1,1-Dichloroethane	U	0.0010	0.0059	mg/kg		8260B	12/20/14	5
1,2-Dichloroethane	U	0.0013	0.0059	mg/kg		8260B	12/20/14	5
1,1-Dichloroethene	U	0.0015	0.0059	mg/kg		8260B	12/20/14	5
cis-1,2-Dichloroethene	U	0.0012	0.0059	mg/kg		8260B	12/20/14	5
trans-1,2-Dichloroethene	U	0.0013	0.0059	mg/kg		8260B	12/20/14	5
1,2-Dichloropropane	U	0.0018	0.0059	mg/kg		8260B	12/20/14	5
1,1-Dichloropropene	U	0.0016	0.0059	mg/kg		8260B	12/20/14	5
1,3-Dichloropropane	U	0.0010	0.0059	mg/kg		8260B	12/20/14	5
cis-1,3-Dichloropropene	U	0.0013	0.0059	mg/kg		8260B	12/20/14	5
trans-1,3-Dichloropropene	U	0.0013	0.0059	mg/kg		8260B	12/20/14	5
2,2-Dichloropropane	U	0.0014	0.0059	mg/kg		8260B	12/20/14	5
Di-isopropyl ether	U	0.0012	0.0059	mg/kg		8260B	12/20/14	5

Results listed are dry weight basis.

U = ND (Not Detected)

MDL = Minimum Detection Limit = LOD = TRRP SDL

RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL

Note:

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Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Amy Findley  
Terracon - Draper  
640 E Wilmington Avenue  
Salt Lake City, UT 84106

December 22, 2014

Date Received : December 13, 2014  
Description : LSI - Ivory Lehi  
Sample ID : B-2 0.5-1 FT  
Collected By : Amy Findley  
Collection Date : 12/12/14 10:23

ESC Sample # : L738829-02

Site ID : IVOM-LEHI LSI  
Project # : AL147861

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Ethylbenzene	U	0.0015	0.0059	mg/kg		8260B	12/20/14	5
Hexachloro-1,3-butadiene	U	0.0017	0.0059	mg/kg		8260B	12/20/14	5
Isopropylbenzene	U	0.0012	0.0059	mg/kg		8260B	12/20/14	5
p-Isopropyltoluene	U	0.0010	0.0059	mg/kg		8260B	12/20/14	5
2-Butanone (MEK)	U	0.023	0.059	mg/kg		8260B	12/20/14	5
Methylene Chloride	U	0.0050	0.029	mg/kg		8260B	12/20/14	5
4-Methyl-2-pentanone (MIBK)	U	0.0094	0.059	mg/kg		8260B	12/20/14	5
Methyl tert-butyl ether	U	0.0011	0.0059	mg/kg		8260B	12/20/14	5
Naphthalene	U	0.0050	0.029	mg/kg		8260B	12/20/14	5
n-Propylbenzene	U	0.0010	0.0059	mg/kg		8260B	12/20/14	5
Styrene	U	0.0012	0.0059	mg/kg		8260B	12/20/14	5
1,1,1,2-Tetrachloroethane	U	0.0013	0.0059	mg/kg		8260B	12/20/14	5
1,1,2,2-Tetrachloroethane	U	0.0018	0.0059	mg/kg		8260B	12/20/14	5
1,1,2-Trichlorotrifluoroethane	U	0.0018	0.0059	mg/kg		8260B	12/20/14	5
Tetrachloroethene	U	0.0014	0.0059	mg/kg		8260B	12/20/14	5
Toluene	U	0.0022	0.029	mg/kg		8260B	12/20/14	5
1,2,3-Trichlorobenzene	U	0.0015	0.0059	mg/kg		8260B	12/20/14	5
1,2,4-Trichlorobenzene	U	0.0019	0.0059	mg/kg		8260B	12/20/14	5
1,1,1-Trichloroethane	U	0.0014	0.0059	mg/kg		8260B	12/20/14	5
1,1,2-Trichloroethane	U	0.0014	0.0059	mg/kg		8260B	12/20/14	5
Trichloroethene	U	0.0014	0.0059	mg/kg		8260B	12/20/14	5
Trichlorofluoromethane	U	0.0019	0.029	mg/kg		8260B	12/20/14	5
1,2,3-Trichloropropane	U	0.0037	0.015	mg/kg		8260B	12/20/14	5
1,2,4-Trimethylbenzene	U	0.0010	0.0059	mg/kg		8260B	12/20/14	5
1,2,3-Trimethylbenzene	U	0.0014	0.0059	mg/kg		8260B	12/20/14	5
1,3,5-Trimethylbenzene	U	0.0013	0.0059	mg/kg		8260B	12/20/14	5
Vinyl chloride	U	0.0014	0.0059	mg/kg		8260B	12/20/14	5
Xylenes, Total	U	0.0035	0.018	mg/kg		8260B	12/20/14	5
Surrogate Recovery								
Toluene-d8	110.			% Rec.		8260B	12/20/14	1
Dibromofluoromethane	94.4			% Rec.		8260B	12/20/14	1
4-Bromofluorobenzene	85.7			% Rec.		8260B	12/20/14	1

Results listed are dry weight basis.

U = ND (Not Detected)

MDL = Minimum Detection Limit = LOD = TRRP SDL

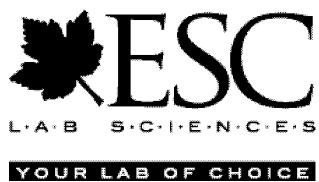
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL

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REPORT OF ANALYSIS

Amy Findley  
Terracon - Draper  
640 E Wilmington Avenue  
Salt Lake City, UT 84106

December 22, 2014

Date Received : December 13, 2014  
Description : LSI - Ivory Lehi  
Sample ID : B-3 5-6 FT  
Collected By : Amy Findley  
Collection Date : 12/12/14 10:57

ESC Sample # : L738829-03

Site ID : IVOM-LEHI LSI

Project # : AL147861

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	81.2	0.0333		%		2540 G-2	12/18/14	1
Volatile Organics								
TPH (GC/MS) Low Fraction	U	0.92	3.1	mg/kg		8260B	12/19/14	5
Benzene	U	0.0014	0.0062	mg/kg		8260B	12/19/14	5
Ethylbenzene	U	0.0015	0.0062	mg/kg		8260B	12/19/14	5
Methyl tert-butyl ether	U	0.0011	0.0062	mg/kg		8260B	12/19/14	5
Naphthalene	U	0.0050	0.031	mg/kg		8260B	12/19/14	5
Toluene	U	0.0022	0.031	mg/kg		8260B	12/19/14	5
Xylenes, Total	U	0.0035	0.018	mg/kg		8260B	12/19/14	5
Surrogate Recovery								
Toluene-d8	102.			% Rec.		8260B	12/19/14	1
Dibromofluoromethane	99.0			% Rec.		8260B	12/19/14	1
a,a,a-Trifluorotoluene	102.			% Rec.		8260B	12/19/14	1
4-Bromofluorobenzene	103.			% Rec.		8260B	12/19/14	1
TPH (GC/FID) High Fraction	2.2	0.77	4.9	mg/kg	J	3546/DRO	12/14/14	1
Surrogate recovery(%)								
o-Terphenyl	77.8			% Rec.		3546/DRO	12/14/14	1

Results listed are dry weight basis.

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**Attachment A**  
**List of Analytes with QC Qualifiers**

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L738829-02	WG761039	SAMP	2-Chloroethyl vinyl ether	R3011155	J3
L738829-03	WG759699	SAMP	TPH (GC/FID) High Fraction	R3009878	J

Attachment B  
Explanation of QC Qualifier Codes

Qualifier	Meaning
J	(EPA) - Estimated value below the lowest calibration point. Confidence correlates with concentration.
J3	The associated batch QC was outside the established quality control range for precision.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods, it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.

Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Difference.

Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromatography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.

TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Summary of Remarks For Samples Printed  
12/22/14 at 09:12:13

TSR Signing Reports: 288  
R5 - Desired TAT

BTEXNGRO by 8260 log as 8260TPHKS Full List\$70!! TPHKSSHORT=BTEXMNGRO TPHKSSHORTMD=BTEXMNGRO,  
MDL/RDL MDL/RDL on ALL mg/l on all TPHOGHEX=TRPH BioRem proj \$32.5, \$25 for ea rerun 100ml  
BioRem 1664

Sample: L738829-01 Account: TERRDUT Received: 12/13/14 09:00 Due Date: 12/19/14 00:00 RPT Date: 12/22/14 09:11

Sample: L738829-02 Account: TERRDUT Received: 12/13/14 09:00 Due Date: 12/19/14 00:00 RPT Date: 12/22/14 09:11

Sample: L738829-03 Account: TERRDUT Received: 12/13/14 09:00 Due Date: 12/19/14 00:00 RPT Date: 12/22/14 09:11



L A B S C I E N C E S

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Terracon - Draper  
Amy Findley  
640 E Wilmington Avenue  
Salt Lake City, UT 84106

## Quality Assurance Report

## Level II

L738829

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Analyte	Result	Laboratory Blank Units	% Rec.	Limit	Batch	Date Analyzed
TPH (GC/FID) High Fraction	< 4	mg/kg			WG759699	12/14/14 04:07
o-Terphenyl		% Rec.	92.40	50-150	WG759699	12/14/14 04:07
2,4,5-T	< .07	mg/kg			WG760132	12/17/14 15:17
2,4,5-TP (Silvex)	< .07	mg/kg			WG760132	12/17/14 15:17
2,4-D	< .07	mg/kg			WG760132	12/17/14 15:17
2,4-DB	< .07	mg/kg			WG760132	12/17/14 15:17
Dalapon	< .8	mg/kg			WG760132	12/17/14 15:17
Dicamba	< .07	mg/kg			WG760132	12/17/14 15:17
Dichloroprop	< .07	mg/kg			WG760132	12/17/14 15:17
Dinoseb	< .07	mg/kg			WG760132	12/17/14 15:17
MCPP	< 6.5	mg/kg			WG760132	12/17/14 15:17
MCPP	< 6.5	mg/kg			WG760132	12/17/14 15:17
2,4-Dichlorophenyl Acetic Acid		% Rec.	91.30	20.1-127	WG760132	12/17/14 15:17
Total Solids	< .1	%			WG760347	12/18/14 08:47
TPH - Oil & Grease	< 100	mg/kg			WG760410	12/19/14 11:50
Benzene	< .001	mg/kg			WG760724	12/19/14 10:16
Ethylbenzene	< .001	mg/kg			WG760724	12/19/14 10:16
Methyl tert-butyl ether	< .001	mg/kg			WG760724	12/19/14 10:16
Naphthalene	< .005	mg/kg			WG760724	12/19/14 10:16
Toluene	< .005	mg/kg			WG760724	12/19/14 10:16
TPH (GC/MS) Low Fraction	< .5	mg/kg			WG760724	12/19/14 10:16
Xylenes, Total	< .003	mg/kg			WG760724	12/19/14 10:16
4-Bromofluorobenzene		% Rec.	102.0	71-126	WG760724	12/19/14 10:16
Dibromofluoromethane		% Rec.	104.0	78.3-121	WG760724	12/19/14 10:16
Toluene-d8		% Rec.	101.0	88.5-111	WG760724	12/19/14 10:16
a,a,a-Trifluorotoluene		% Rec.	98.10	85-114	WG760724	12/19/14 10:16
1,1,1,2-Tetrachloroethane	< .001	mg/kg			WG761039	12/20/14 14:26
1,1,1-Trichloroethane	< .001	mg/kg			WG761039	12/20/14 14:26
1,1,2,2-Tetrachloroethane	< .001	mg/kg			WG761039	12/20/14 14:26
1,1,2-Trichloroethane	< .001	mg/kg			WG761039	12/20/14 14:26
1,1,2-Trichlorotrifluoroethane	< .001	mg/kg			WG761039	12/20/14 14:26
1,1-Dichloroethane	< .001	mg/kg			WG761039	12/20/14 14:26
1,1-Dichloroethene	< .001	mg/kg			WG761039	12/20/14 14:26
1,1-Dichloropropene	< .001	mg/kg			WG761039	12/20/14 14:26
1,2,3-Trichlorobenzene	< .001	mg/kg			WG761039	12/20/14 14:26
1,2,3-Trichloropropane	< .0025	mg/kg			WG761039	12/20/14 14:26
1,2,3-Trimethylbenzene	< .001	mg/kg			WG761039	12/20/14 14:26
1,2,4-Trichlorobenzene	< .001	mg/kg			WG761039	12/20/14 14:26
1,2,4-Trimethylbenzene	< .001	mg/kg			WG761039	12/20/14 14:26
1,2-Dibromo-3-Chloropropane	< .005	mg/kg			WG761039	12/20/14 14:26
1,2-Dibromoethane	< .001	mg/kg			WG761039	12/20/14 14:26
1,2-Dichlorobenzene	< .001	mg/kg			WG761039	12/20/14 14:26
1,2-Dichloroethane	< .001	mg/kg			WG761039	12/20/14 14:26
1,2-Dichloropropane	< .001	mg/kg			WG761039	12/20/14 14:26
1,3,5-Trimethylbenzene	< .001	mg/kg			WG761039	12/20/14 14:26
1,3-Dichlorobenzene	< .001	mg/kg			WG761039	12/20/14 14:26
1,3-Dichloropropane	< .001	mg/kg			WG761039	12/20/14 14:26
1,4-Dichlorobenzene	< .001	mg/kg			WG761039	12/20/14 14:26
2,2-Dichloropropane	< .001	mg/kg			WG761039	12/20/14 14:26

\* Performance of this Analyte is outside of established criteria.

For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



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Level II

L738829

December 22, 2014

Analyte	Result	Laboratory Blank Units	% Rec	Limit	Batch	Date Analyzed
2-Butanone (MEK)	< .01	mg/kg			WG761039	12/20/14 14:26
2-Chloroethyl vinyl ether	< .05	mg/kg			WG761039	12/20/14 14:26
2-Chlorotoluene	< .001	mg/kg			WG761039	12/20/14 14:26
4-Chlorotoluene	< .001	mg/kg			WG761039	12/20/14 14:26
4-Methyl-2-pentanone (MIBK)	< .01	mg/kg			WG761039	12/20/14 14:26
Acetone	< .05	mg/kg			WG761039	12/20/14 14:26
Acrylonitrile	< .01	mg/kg			WG761039	12/20/14 14:26
Benzene	< .001	mg/kg			WG761039	12/20/14 14:26
Bromobenzene	< .001	mg/kg			WG761039	12/20/14 14:26
Bromodichloromethane	< .001	mg/kg			WG761039	12/20/14 14:26
Bromoform	< .001	mg/kg			WG761039	12/20/14 14:26
Bromomethane	< .005	mg/kg			WG761039	12/20/14 14:26
Carbon tetrachloride	< .001	mg/kg			WG761039	12/20/14 14:26
Chlorobenzene	< .001	mg/kg			WG761039	12/20/14 14:26
Chlorodibromomethane	< .001	mg/kg			WG761039	12/20/14 14:26
Chloroethane	< .005	mg/kg			WG761039	12/20/14 14:26
Chloroform	< .005	mg/kg			WG761039	12/20/14 14:26
Chloromethane	< .0025	mg/kg			WG761039	12/20/14 14:26
cis-1,2-Dichloroethene	< .001	mg/kg			WG761039	12/20/14 14:26
cis-1,3-Dichloropropene	< .001	mg/kg			WG761039	12/20/14 14:26
Di-isopropyl ether	< .001	mg/kg			WG761039	12/20/14 14:26
Dibromomethane	< .001	mg/kg			WG761039	12/20/14 14:26
Dichlorodifluoromethane	< .005	mg/kg			WG761039	12/20/14 14:26
Ethylbenzene	< .001	mg/kg			WG761039	12/20/14 14:26
Hexachloro-1,3-butadiene	< .001	mg/kg			WG761039	12/20/14 14:26
Isopropylbenzene	< .001	mg/kg			WG761039	12/20/14 14:26
Methyl tert-butyl ether	< .001	mg/kg			WG761039	12/20/14 14:26
Methylene Chloride	< .005	mg/kg			WG761039	12/20/14 14:26
n-Butylbenzene	< .001	mg/kg			WG761039	12/20/14 14:26
n-Propylbenzene	< .001	mg/kg			WG761039	12/20/14 14:26
Naphthalene	< .005	mg/kg			WG761039	12/20/14 14:26
p-Isopropyltoluene	< .001	mg/kg			WG761039	12/20/14 14:26
sec-Butylbenzene	< .001	mg/kg			WG761039	12/20/14 14:26
Styrene	< .001	mg/kg			WG761039	12/20/14 14:26
tert-Butylbenzene	< .001	mg/kg			WG761039	12/20/14 14:26
Tetrachloroethene	< .001	mg/kg			WG761039	12/20/14 14:26
Toluene	< .005	mg/kg			WG761039	12/20/14 14:26
trans-1,2-Dichloroethene	< .001	mg/kg			WG761039	12/20/14 14:26
trans-1,3-Dichloropropene	< .001	mg/kg			WG761039	12/20/14 14:26
Trichloroethene	< .001	mg/kg			WG761039	12/20/14 14:26
Trichlorofluoromethane	< .005	mg/kg			WG761039	12/20/14 14:26
Vinyl chloride	< .001	mg/kg			WG761039	12/20/14 14:26
Xylenes, Total	< .003	mg/kg			WG761039	12/20/14 14:26
4-Bromofluorobenzene		% Rec.	85.40	71-126	WG761039	12/20/14 14:26
Dibromofluoromethane		% Rec.	94.70	78.3-121	WG761039	12/20/14 14:26
Toluene-d8		% Rec.	109.0	88.5-111	WG761039	12/20/14 14:26
a,a,a-Trifluorotoluene		% Rec.	103.0	85-114	WG761039	12/20/14 14:26

Analyte	Units	Result	Duplicate	RPD	Limit	Ref Samp	Batch
Total Solids	%	85.4	85.2	0.199	5	L738829-01	WG760347
TPH - Oil & Grease	mg/kg	2200	2280	3.57	20	L738357-01	WG760410

\* Performance of this Analyte is outside of established criteria.

For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



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Quality Assurance Report  
Level II

L738829

December 22, 2014

Analyte	Units	Laboratory Control Known Val	Sample Result	% Rec	Limit	Batch
TPH (GC/FID) High Fraction	mg/kg	60	49.8	82.9	50-150	WG759699
o-Terphenyl				77.60	50-150	WG759699
2,4,5-T	mg/kg	.1667	0.165	98.8	39.4-109	WG760132
2,4,5-TP (Silvex)	mg/kg	.1667	0.170	102.	45.7-123	WG760132
2,4-D	mg/kg	.1667	0.166	99.7	39.3-100	WG760132
2,4-DB	mg/kg	.1667	0.172	103.	34.2-120	WG760132
Dalapon	mg/kg	.1667	0.145	86.9	38.6-98	WG760132
Dicamba	mg/kg	.1667	0.178	107.	48.1-111	WG760132
Dichloroprop	mg/kg	.1667	0.142	85.0	27.8-124	WG760132
Dinoseb	mg/kg	.1667	0.153	91.8	32.1-121	WG760132
MCPP	mg/kg	16.666	15.4	92.5	22.1-130	WG760132
MCPP	mg/kg	16.666	17.3	104.	24.5-186	WG760132
2,4-Dichlorophenyl Acetic Acid				99.40	20.1-127	WG760132
Total Solids	%	50	50.0	100.	85-115	WG760347
TPH - Oil & Grease	mg/kg	2000	2210	111.	80-120	WG760410
Benzene	mg/kg	.025	0.0243	97.2	77.1-121	WG760724
Ethylbenzene	mg/kg	.025	0.0231	92.2	79.7-122	WG760724
Methyl tert-butyl ether	mg/kg	.025	0.0245	97.9	73-129	WG760724
Naphthalene	mg/kg	.025	0.0235	94.0	69.8-128	WG760724
Toluene	mg/kg	.025	0.0234	93.7	79.7-118	WG760724
Xylenes, Total	mg/kg	.075	0.0692	92.3	78.8-121	WG760724
4-Bromofluorobenzene				103.0	71-126	WG760724
Dibromofluoromethane				99.50	78.3-121	WG760724
Toluene-d8				104.0	88.5-111	WG760724
a,a,a-Trifluorotoluene				103.0	85-114	WG760724
TPH (GC/MS) Low Fraction	mg/kg	5	5.57	111.	63.4-135	WG760724
4-Bromofluorobenzene				109.0	71-126	WG760724
Dibromofluoromethane				102.0	78.3-121	WG760724
Toluene-d8				99.90	88.5-111	WG760724
a,a,a-Trifluorotoluene				99.20	85-114	WG760724
1,1,1,2-Tetrachloroethane	mg/kg	.025	0.0242	96.7	72.9-124	WG761039
1,1,1-Trichloroethane	mg/kg	.025	0.0237	94.7	73.7-124	WG761039
1,1,2,2-Tetrachloroethane	mg/kg	.025	0.0252	101.	69.4-122	WG761039
1,1,2-Trichloroethane	mg/kg	.025	0.0232	92.7	79.1-118	WG761039
1,1,2-Trichlorotrifluoroethane	mg/kg	.025	0.0227	90.9	70-146	WG761039
1,1-Dichloroethane	mg/kg	.025	0.0231	92.6	75-124	WG761039
1,1-Dichloroethene	mg/kg	.025	0.0205	81.9	70.4-129	WG761039
1,1-Dichloropropene	mg/kg	.025	0.0238	95.2	74.9-124	WG761039
1,2,3-Trichlorobenzene	mg/kg	.025	0.0242	96.9	69.3-131	WG761039
1,2,3-Trichloropropane	mg/kg	.025	0.0234	93.7	71.4-123	WG761039
1,2,3-Trimethylbenzene	mg/kg	.025	0.0223	89.1	73.6-113	WG761039
1,2,4-Trichlorobenzene	mg/kg	.025	0.0258	103.	71.9-137	WG761039
1,2,4-Trimethylbenzene	mg/kg	.025	0.0228	91.3	75.5-122	WG761039
1,2-Dibromo-3-Chloropropane	mg/kg	.025	0.0225	90.2	62.8-133	WG761039
1,2-Dibromoethane	mg/kg	.025	0.0233	93.3	78.6-120	WG761039
1,2-Dichlorobenzene	mg/kg	.025	0.0235	94.0	78.3-118	WG761039
1,2-Dichloroethane	mg/kg	.025	0.0216	86.3	70.1-124	WG761039
1,2-Dichloropropane	mg/kg	.025	0.0257	103.	77.9-119	WG761039
1,3,5-Trimethylbenzene	mg/kg	.025	0.0227	90.9	75.9-124	WG761039
1,3-Dichlorobenzene	mg/kg	.025	0.0225	90.1	72-126	WG761039

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Tax I.D. 62-0814289

Est. 1970

December 22, 2014

L738829

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
1,3-Dichloropropane	mg/kg	.025	0.0226	90.2	79.1-117	WG761039
1,4-Dichlorobenzene	mg/kg	.025	0.0224	89.6	78.3-117	WG761039
2,2-Dichloropropane	mg/kg	.025	0.0211	84.6	61.3-136	WG761039
2-Butanone (MEK)	mg/kg	.125	0.144	115.	53.7-153	WG761039
2-Chloroethyl vinyl ether	mg/kg	.125	0.0848	67.8	37.7-157	WG761039
2-Chlorotoluene	mg/kg	.025	0.0231	92.3	75.6-121	WG761039
4-Chlorotoluene	mg/kg	.025	0.0225	89.8	77.3-120	WG761039
4-Methyl-2-pentanone (MIBK)	mg/kg	.125	0.142	114.	70.4-137	WG761039
Acetone	mg/kg	.125	0.114	91.5	35.1-175	WG761039
Acrylonitrile	mg/kg	.125	0.128	103.	56.4-128	WG761039
Benzene	mg/kg	.025	0.0229	91.7	77.1-121	WG761039
Bromobenzene	mg/kg	.025	0.0226	90.2	78.2-115	WG761039
Bromodichloromethane	mg/kg	.025	0.0264	106.	74.9-115	WG761039
Bromoform	mg/kg	.025	0.0254	102.	65.9-132	WG761039
Bromomethane	mg/kg	.025	0.0249	99.4	48.7-165	WG761039
Carbon tetrachloride	mg/kg	.025	0.0228	91.0	70-124	WG761039
Chlorobenzene	mg/kg	.025	0.0233	93.3	79.1-119	WG761039
Chlorodibromomethane	mg/kg	.025	0.0227	90.7	73.5-121	WG761039
Chloroethane	mg/kg	.025	0.0186	74.2	66.2-132	WG761039
Chloroform	mg/kg	.025	0.0231	92.2	76.7-122	WG761039
Chloromethane	mg/kg	.025	0.0242	96.7	63.4-131	WG761039
cis-1,2-Dichloroethene	mg/kg	.025	0.0227	90.9	78.2-119	WG761039
cis-1,3-Dichloropropene	mg/kg	.025	0.0258	103.	79.6-120	WG761039
Di-isopropyl ether	mg/kg	.025	0.0267	107.	70.4-133	WG761039
Dibromomethane	mg/kg	.025	0.0234	93.5	79.4-120	WG761039
Dichlorodifluoromethane	mg/kg	.025	0.0242	96.9	57.1-137	WG761039
Ethylbenzene	mg/kg	.025	0.0229	91.8	79.7-122	WG761039
Hexachloro-1,3-butadiene	mg/kg	.025	0.0262	105.	68.2-123	WG761039
Isopropylbenzene	mg/kg	.025	0.0227	90.6	80-135	WG761039
Methyl tert-butyl ether	mg/kg	.025	0.0217	86.7	73-129	WG761039
Methylene Chloride	mg/kg	.025	0.0211	84.2	72.6-120	WG761039
n-Butylbenzene	mg/kg	.025	0.0237	94.9	77.5-126	WG761039
n-Propylbenzene	mg/kg	.025	0.0225	90.1	77.9-123	WG761039
Naphthalene	mg/kg	.025	0.0230	91.9	69.8-128	WG761039
p-Isopropyltoluene	mg/kg	.025	0.0229	91.7	75.8-129	WG761039
sec-Butylbenzene	mg/kg	.025	0.0226	90.3	75.8-126	WG761039
Styrene	mg/kg	.025	0.0240	96.1	82.4-126	WG761039
tert-Butylbenzene	mg/kg	.025	0.0225	89.8	76.4-126	WG761039
Tetrachloroethene	mg/kg	.025	0.0240	95.9	73.9-125	WG761039
Toluene	mg/kg	.025	0.0239	95.6	79.7-118	WG761039
trans-1,2-Dichloroethene	mg/kg	.025	0.0233	93.4	73.8-122	WG761039
trans-1,3-Dichloropropene	mg/kg	.025	0.0288	115.	75.9-124	WG761039
Trichloroethene	mg/kg	.025	0.0228	91.0	77.9-118	WG761039
Trichlorofluoromethane	mg/kg	.025	0.0237	94.9	67.7-131	WG761039
Vinyl chloride	mg/kg	.025	0.0218	87.3	66.7-130	WG761039
Xylenes, Total	mg/kg	.075	0.0688	91.8	78.8-121	WG761039
4-Bromofluorobenzene				86.00	71-126	WG761039
Dibromofluoromethane				97.20	78.3-121	WG761039
Toluene-d8				105.0	88.5-111	WG761039
a,a,a-Trifluorotoluene				106.0	85-114	WG761039

Analyte	Units	Laboratory Control Sample Duplicate				RPD	Limit	Batch
		Result	Ref	%Rec	Limit			
TPH (GC/FID) High Fraction	mg/kg	54.2	49.8	90.0	50-150	8.59	20	WG759699
o-Terphenyl				82.60	50-150			WG759699

2,4,5-T mg/kg 0.142 0.165 85.0 39.4-109 15.0 26.8 WG760132

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Quality Assurance Report  
Level II

L738829

December 22, 2014

Analyte	Units	Matrix	Spike	Duplicate							
		Units	MSD	Ref	%Rec	Limit	RPD	Limit	Ref	Samp	Batch
cis-1,2-Dichloroethene	mg/kg	0.116	0.115	92.4	59.2-129	0.680	20	L738912-05	WG761039		
cis-1,3-Dichloropropene	mg/kg	0.131	0.126	105.	66.4-125	4.00	20	L738912-05	WG761039		
Di-isopropyl ether	mg/kg	0.141	0.139	112.	56.9-136	1.29	20	L738912-05	WG761039		
Dibromomethane	mg/kg	0.124	0.116	99.0	68.2-124	6.79	20	L738912-05	WG761039		
Dichlorodifluoromethane	mg/kg	0.129	0.129	103.	40.6-144	0.290	20.2	L738912-05	WG761039		
Ethylbenzene	mg/kg	0.111	0.117	89.0	61.4-133	5.40	20	L738912-05	WG761039		
Hexachloro-1,3-butadiene	mg/kg	0.0898	0.0986	71.8	55.1-136	9.34	23.6	L738912-05	WG761039		
Isopropylbenzene	mg/kg	0.108	0.112	86.8	66.8-141	3.62	20	L738912-05	WG761039		
Methyl tert-butyl ether	mg/kg	0.115	0.102	92.3	57.7-134	12.0	20	L738912-05	WG761039		
Methylene Chloride	mg/kg	0.113	0.111	87.0	58.1-122	1.04	20	L738912-05	WG761039		
n-Butylbenzene	mg/kg	0.106	0.115	85.0	62.7-140	7.69	20	L738912-05	WG761039		
n-Propylbenzene	mg/kg	0.107	0.109	85.4	10-176	2.40	26.6	L738912-05	WG761039		
Naphthalene	mg/kg	0.101	0.0988	80.0	58-135	1.77	25.5	L738912-05	WG761039		
p-Isopropyltoluene	mg/kg	0.105	0.106	84.1	63.2-139	1.07	20.4	L738912-05	WG761039		
sec-Butylbenzene	mg/kg	0.104	0.105	83.5	62.2-136	0.640	20.3	L738912-05	WG761039		
Styrene	mg/kg	0.115	0.114	91.9	66.8-133	0.460	20	L738912-05	WG761039		
tert-Butylbenzene	mg/kg	0.107	0.107	85.2	63.3-134	0.150	20.3	L738912-05	WG761039		
Tetrachloroethene	mg/kg	0.116	0.123	92.8	53-139	5.49	20	L738912-05	WG761039		
Toluene	mg/kg	0.123	0.123	98.4	61.4-130	0.260	20	L738912-05	WG761039		
trans-1,2-Dichloroethene	mg/kg	0.121	0.122	96.6	56.5-129	0.860	20	L738912-05	WG761039		
trans-1,3-Dichloropropene	mg/kg	0.143	0.145	115.	64.1-128	1.41	20	L738912-05	WG761039		
Trichloroethene	mg/kg	0.121	0.119	96.4	44.1-149	1.56	20	L738912-05	WG761039		
Trichlorofluoromethane	mg/kg	0.125	0.127	99.6	49.6-145	2.09	21.2	L738912-05	WG761039		
Vinyl chloride	mg/kg	0.120	0.116	96.0	47.8-137	3.67	20	L738912-05	WG761039		
Xylenes, Total	mg/kg	0.337	0.346	89.9	63.3-131	2.67	20	L738912-05	WG761039		
4-Bromofluorobenzene				84.40	71-126				WG761039		
Dibromofluoromethane				97.30	78.3-121				WG761039		
Toluene-d8				106.0	88.5-111				WG761039		
a,a,a-Trifluorotoluene				106.0	85-114				WG761039		

Batch number / Run number / Sample number cross reference

WG759699: R3009878 R3009883: L738829-03  
WG760132: R3010543: L738829-01  
WG760347: R3010594: L738829-01 02 03  
WG760410: R3010940: L738829-02  
WG760724: R3010987: L738829-03  
WG761039: R3011155: L738829-02

\* \* Calculations are performed prior to rounding of reported values.

\* Performance of this Analyte is outside of established criteria.

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December 22, 2014

The data package includes a summary of the analytic results of the quality control samples required by the SW-846 or CWA methods. The quality control samples include a method blank, a laboratory control sample, and the matrix spike/matrix spike duplicate analysis. If a target parameter is outside the method limits, every sample that is effected is flagged with the appropriate qualifier in Appendix B of the analytic report.

Method Blank - an aliquot of reagent water carried through the entire analytic process. The method blank results indicate if any possible contamination exposure during the sample handling, digestion or extraction process, and analysis. Concentrations of target analytes above the reporting limit in the method blank are qualified with the "B" qualifier.

Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (%RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier.

Company Name/Address:

Terracon

640 E Wilmington Avenue  
Salt Lake City, UT 84106

Report to:

Amy Findley

Project

Description:

LSI - Ivory Lehi

Phone: 801-466-2223

Fax: 801-466-9616

Collected by (print):

Amy Findley

Collected by (signature):

Immediately

Packed on Ice N Y X

Billing Information:

Email To:

findley@ihi-env.com

Client Project #

AL1478le1

City/State Collected:

Lehi, UT

Lab Project #

P.O. #

Date Results Needed

std 5-day

Email? No Yes

FAX? No Yes

No. of

Cntrs

Harbicks 8151

YOLCS 8260

TPRH 1604

MBTEXN / GPO 8260

DPO 8015

Sample ID Comp/Grab Matrix \* Depth Date Time Cntrs

B-1005-10' G SS 12/12/14 0930 1 X

B-2005-10' G SS 12/12/14 1025 X X

B-305-6' G SS 12/12/14 1057 X X

\* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other

pH Temp

Flow Other

Hold #

Condition: (lab use only) JWS

Remarks:

Relinquished by: (Signature)

Relinquished by: (Signature)

Relinquished by: (Signature)

Date

Date

Date

Time

Time

Time

Received by: (Signature)

Received by: (Signature)

Received for lab by: (Signature)

Samples returned via:  UPS FedEx  Courier 

Temp: °C Bottles Received:

3-1 5-4 oz

Date: 12/13/14 Time: 0900

COC Seal Intact: Y N NA

pH Checked: NCF:



L# L738829

H108

Acctnum: TERRDUT

Template:

Prelogin:

TSR:

Cooler:

Shipped Via:

Rem./Contaminant	Sample # (lab only)
	01
	02
	03

C127 6743 3296