



September 17, 2013

Mr. Paul Schneider
Senior Staff EHS Representative
Kerr-McGee Oil & Gas Onshore LP
1099 18th Street, Suite 1800
Denver, Colorado 80202

**Re: Sump Excavation Summary Letter Report
Almquist 41-10
API# 05-013-06473
NENE 10-T1N-R69W**

Dear Mr. Schneider:

LT Environmental, Inc. (LTE) was contracted by Kerr-McGee Oil & Gas Onshore LP (Kerr-McGee) to perform environmental oversight activities at the above referenced site. The oversight activities included collection of a confirmation soil sample from the sump excavation, documentation of field activities, and analytical results review.

The objective of the soil sampling was to determine if petroleum hydrocarbon impacts to subsurface soil resulted from Kerr-McGee operating a produced water sump at the site. The soil sampling activities, laboratory analytical results, and conclusions are summarized below. The general site layout, sump excavation dimensions, and soil sample location are shown on the attached hand-sketched map.

After removing the produced water sump, one representative confirmation soil sample (B01@5') was collected from the soil directly beneath the water sump. The soil sample was submitted for laboratory analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX) by Environmental Protection Agency (EPA) Method 8260B and total petroleum hydrocarbons (TPH) by EPA Methods 8015 and 8260B. The laboratory analytical results are summarized on Table 1 and provided in the attached analytical laboratory report.

The sump excavation measured approximately 15 feet north to south by 15 feet east to west to an approximate depth of 5 feet below ground surface. No indication of petroleum hydrocarbon impacts, including soil staining or odor, was observed beneath the water sump. In addition, TPH and BTEX concentrations were below Colorado Oil and Gas Conservation Commission allowable levels in soil sample B01@5'. Based on the field and analytical results, no remedial action is required at this site.



Please call us at (303) 433-9788 if you have any questions regarding this Sump Excavation Summary Letter Report or if you require additional information.

Sincerely,
LT ENVIRONMENTAL, INC.

Reviewed by

A handwritten signature in blue ink that reads "Kelly L. Kenyon". The signature is written in a cursive, flowing style.

Kelly L. Kenyon
Project Environmental Scientist

A handwritten signature in blue ink that reads "Justin Solomon". The signature is written in a cursive, flowing style.

Justin Solomon
Project Environmental Scientist

Attachments



PROJECT Almqvist 41-10
PROJECT MANAGER J. Polcraft
JOB No. 014213234
LOCATION NENE 10 T1N R69W

DATE 8/28/13
CONT. No. _____
BY KCK CHK'D _____
SHEET No. 1 OF 1

93L T0038 10/1997

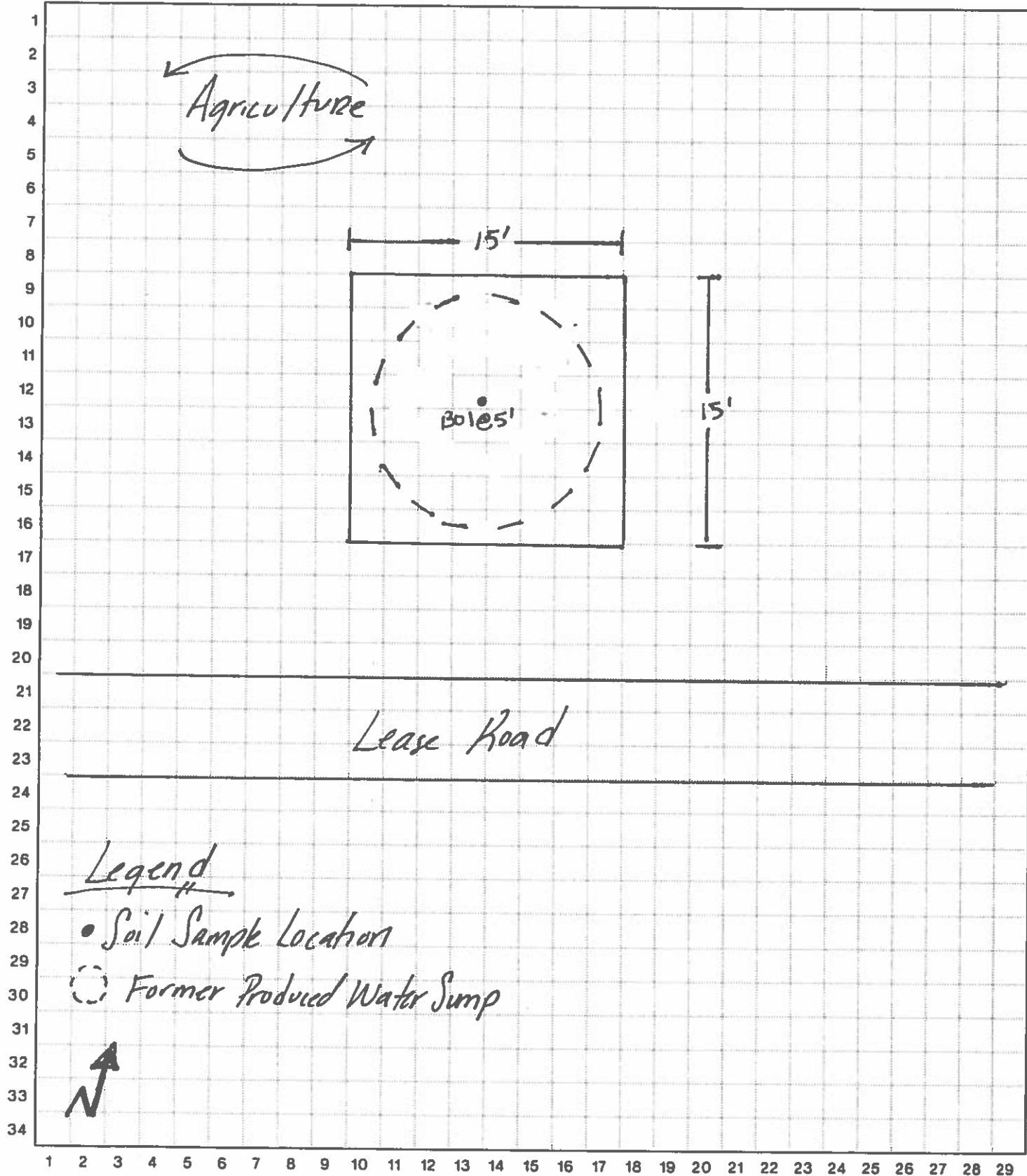


TABLE 1
SOIL SAMPLE ANALYTICAL RESULTS
ALMQUIST 41-10
WELD COUNTY, COLORADO
KERR-MCGEE OIL & GAS ONSHORE LP

Soil Sample ID	Depth (bgs)	Date	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	DRO (mg/kg)	GRO (mg/kg)	ORO (mg/kg)
B01@5'	5'	08/28/2013	<0.0020	<0.0050	<0.0050	<0.0050	<50	<0.50	<50
COGCC Standards			0.17	85	100	175	500*	500*	500*

Notes: bgs - below ground surface

< - less than

DRO - Diesel Range Organics

ORO - Oil Range Organics

GRO - Gasoline Range Organics

* - Standard applies to combined DRO-GRO-ORO

mg/kg - milligrams per kilogram

NA - Not Analyzed/Not Available

Bold numbers indicate result equaled or exceeded standard.

COGCC - Colorado Oil and Gas Conservation Commission



Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

August 30, 2013

John Cocroft
LT Environmental, Inc.
4600 West 60th Avenue
Arvada, CO 80003
RE: KMG - Almquist 41-10

Enclosed are the results of analyses for samples received by Summit Scientific on 08/28/13 17:05. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Joseph J Egry IV
Laboratory Director

This report shall not be reproduced, except in its entirety, without the written approval of Summit Scientific. Test results relate only to samples analyzed.

Summit Scientific is the sole authority for authorizing edits or modifications to this document. Unauthorized modification of this report is strictly prohibited.



LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: KMG - Almquist 41-10

Project Number: 0142-13234
Project Manager: John Cocroft

Reported:
08/30/13 10:44

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B01@5'	R308273-01	Soil	08/28/13 13:40	08/28/13 17:05

R308273
Summit Scientific

S₂

741 Corporate Circle Suite 1 • Golden, Colorado 80401
303-277-9310 • 303-277-9331 Fax

Page 1 of 1

Client: LT Environmental, Inc.
Address: 4600 West 60th Avenue
City/State/Zip: Arvada, CO 80003
Phone: (303) 433-9788 Fax: (303) 433-1432
Project Manager: John Cocroft
E-Mail: jcocroft@ltenv.com
Project Name: *Almquist 41-10*
Project Number: *0142-13234*
Sampler Name: *John Cocroft*

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix	Analyze For:	Special Instructions	Notes
				HCl	HNO ₃	None	Other (Specify)				
B01@5'	8/28	1340	1					Soil	BTEX DRO/RO Other (Specify)	Run	
B01@5'	8/28	1345	1					Soil	BTEX DRO/RO Other (Specify)	Run	
B01@5'	8/28	1350	1					Soil	BTEX DRO/RO Other (Specify)	Run	
B01@5'	8/28	1355	1					Soil	BTEX DRO/RO Other (Specify)	Run	
B01@5'	8/28	1400	1					Soil	BTEX DRO/RO Other (Specify)	Run	

Requisitioned by	Date/Time	Received by	Date/Time	Turn Around Time (Check)	Notes
<i>[Signature]</i>	8/28/13 1705	<i>[Signature]</i>	8/28/13 1705	<input checked="" type="checkbox"/> Same Day <input type="checkbox"/> 24 Hours <input type="checkbox"/> 72 Hours <input type="checkbox"/> Standard	
Requisitioned by	Date/Time	Received by	Date/Time	Turn Around Time (Check)	Notes
<i>[Signature]</i>	8/28/13 1705	<i>[Signature]</i>	8/28/13 1705	<input checked="" type="checkbox"/> Same Day <input type="checkbox"/> 24 Hours <input type="checkbox"/> 72 Hours <input type="checkbox"/> Standard	

Requisitioned by	Date/Time	Received in Lab by	Date/Time	Sample Integrity:
<i>[Signature]</i>	8/28/13 1705	<i>[Signature]</i>	8/28/13 1705	Temperature Upon Receipt: <i>5°C</i> Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

www.s2scientific.com

[Signature]



LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: KMG - Almquist 41-10
Project Number: 0142-13234
Project Manager: John Cocroft

Reported:
08/30/13 10:44

B01@5'
R308273-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **08/28/13 13:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (TEPH-DRO)	ND	50	mg/kg	1	3082809	08/28/13	08/28/13	8015M	
C28-C36 (TEPH-ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **08/28/13 13:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		85.7 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/28/13 13:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	3082810	08/28/13	08/28/13	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **08/28/13 13:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		109 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: KMG - Almquist 41-10
Project Number: 0142-13234
Project Manager: John Cocroft

Reported:
08/30/13 10:44

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch 3082809 - EPA 3550A

Blank (3082809-BLK1)				Prepared: 08/28/13 Analyzed: 08/29/13						
C10-C28 (TEPH-DRO)	ND	50	mg/kg							
C28-C36 (TEPH-ORO)	ND	50	"							
Blank (3082809-BLK2)				Prepared: 08/28/13 Analyzed: 08/29/13						
C10-C28 (TEPH-DRO)	ND	50	mg/kg							
C28-C36 (TEPH-ORO)	ND	50	"							
LCS (3082809-BS1)				Prepared: 08/28/13 Analyzed: 08/29/13						
C10-C28 (TEPH-DRO)	538	50	mg/kg	501		107	73-134			
LCS (3082809-BS2)				Prepared: 08/28/13 Analyzed: 08/29/13						
C10-C28 (TEPH-DRO)	515	50	mg/kg	501		103	73-134			
LCS Dup (3082809-BSD1)				Prepared: 08/28/13 Analyzed: 08/29/13						
C10-C28 (TEPH-DRO)	539	50	mg/kg	501		108	73-134	0.168	11	
LCS Dup (3082809-BSD2)				Prepared: 08/28/13 Analyzed: 08/29/13						
C10-C28 (TEPH-DRO)	550	50	mg/kg	501		110	73-134	6.60	11	
Matrix Spike (3082809-MS1)				Source: R308274-01 Prepared: 08/28/13 Analyzed: 08/29/13						
C10-C28 (TEPH-DRO)	561	50	mg/kg	501	ND	112	50-148			
Matrix Spike (3082809-MS2)				Source: R308274-02 Prepared: 08/28/13 Analyzed: 08/29/13						
C10-C28 (TEPH-DRO)	550	50	mg/kg	501	ND	110	50-148			
Matrix Spike Dup (3082809-MSD2)				Source: R308274-02 Prepared: 08/28/13 Analyzed: 08/29/13						
C10-C28 (TEPH-DRO)	562	50	mg/kg	501	ND	112	50-148	2.16	13	

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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: KMG - Almquist 41-10
Project Number: 0142-13234
Project Manager: John Cocroft

Reported:
08/30/13 10:44

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch 3082810 - EPA 5030 Soil MS

Blank (3082810-BLK1)

Prepared & Analyzed: 08/28/13

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.0050	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0435		"	0.0397	109	23-173				
Surrogate: Toluene-d8	0.0413		"	0.0400	103	20-170				
Surrogate: 4-Bromofluorobenzene	0.0457		"	0.0400	114	21-167				

Blank (3082810-BLK2)

Prepared & Analyzed: 08/28/13

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.0050	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0448		"	0.0397	113	23-173				
Surrogate: Toluene-d8	0.0412		"	0.0400	103	20-170				
Surrogate: 4-Bromofluorobenzene	0.0452		"	0.0400	113	21-167				

LCS (3082810-BS1)

Prepared & Analyzed: 08/28/13

Benzene	0.0997	0.0020	mg/kg	0.100	99.7	58-130				
Toluene	0.118	0.0050	"	0.100	118	61-134				
Ethylbenzene	0.122	0.0050	"	0.100	122	74-139				
m,p-Xylene	0.226	0.010	"	0.200	113	73-137				
o-Xylene	0.116	0.0050	"	0.100	116	73-141				
Surrogate: 1,2-Dichloroethane-d4	0.0443		"	0.0397	112	23-173				
Surrogate: Toluene-d8	0.0420		"	0.0400	105	20-170				
Surrogate: 4-Bromofluorobenzene	0.0442		"	0.0400	111	21-167				

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Project: KMG - Almquist 41-10
Project Number: 0142-13234
Project Manager: John Cocroft

Reported:
08/30/13 10:44

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch 3082810 - EPA 5030 Soil MS

LCS (3082810-BS2)

Prepared: 08/28/13 Analyzed: 08/29/13

Benzene	0.0993	0.0020	mg/kg	0.100		99.3	58-130			
Toluene	0.116	0.0050	"	0.100		116	61-134			
Ethylbenzene	0.123	0.0050	"	0.100		123	74-139			
m,p-Xylene	0.229	0.010	"	0.200		115	73-137			
o-Xylene	0.116	0.0050	"	0.100		116	73-141			
Surrogate: 1,2-Dichloroethane-d4	0.0434		"	0.0397		109	23-173			
Surrogate: Toluene-d8	0.0413		"	0.0400		103	20-170			
Surrogate: 4-Bromofluorobenzene	0.0439		"	0.0400		110	21-167			

LCS Dup (3082810-BSD1)

Prepared: 08/28/13 Analyzed: 08/29/13

Benzene	0.0998	0.0020	mg/kg	0.100		99.8	58-130	0.0601	13	
Toluene	0.118	0.0050	"	0.100		118	61-134	0.00	16	
Ethylbenzene	0.124	0.0050	"	0.100		124	74-139	1.42	12	
m,p-Xylene	0.230	0.010	"	0.200		115	73-137	1.85	14	
o-Xylene	0.118	0.0050	"	0.100		118	73-141	1.31	12	
Surrogate: 1,2-Dichloroethane-d4	0.0456		"	0.0397		115	23-173			
Surrogate: Toluene-d8	0.0414		"	0.0400		104	20-170			
Surrogate: 4-Bromofluorobenzene	0.0444		"	0.0400		111	21-167			

LCS Dup (3082810-BSD2)

Prepared: 08/28/13 Analyzed: 08/29/13

Benzene	0.0984	0.0020	mg/kg	0.100		98.4	58-130	0.910	13	
Toluene	0.117	0.0050	"	0.100		117	61-134	0.335	16	
Ethylbenzene	0.123	0.0050	"	0.100		123	74-139	0.464	12	
m,p-Xylene	0.227	0.010	"	0.200		113	73-137	0.987	14	
o-Xylene	0.116	0.0050	"	0.100		116	73-141	0.284	12	
Surrogate: 1,2-Dichloroethane-d4	0.0440		"	0.0397		111	23-173			
Surrogate: Toluene-d8	0.0420		"	0.0400		105	20-170			
Surrogate: 4-Bromofluorobenzene	0.0434		"	0.0400		109	21-167			

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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: KMG - Almquist 41-10
Project Number: 0142-13234
Project Manager: John Cocroft

Reported:
08/30/13 10:44

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch 3082810 - EPA 5030 Soil MS

Matrix Spike (3082810-MS1)		Source: R308274-01		Prepared: 08/28/13		Analyzed: 08/29/13	
Benzene	0.100	0.0020	mg/kg	0.100	ND	100	30-131
Toluene	0.117	0.0050	"	0.100	ND	117	30-134
Ethylbenzene	0.123	0.0050	"	0.100	ND	123	22-153
m,p-Xylene	0.234	0.010	"	0.200	0.00336	115	10-159
o-Xylene	0.119	0.0050	"	0.100	ND	119	31-151
Surrogate: 1,2-Dichloroethane-d4	0.0461		"	0.0397		116	23-173
Surrogate: Toluene-d8	0.0418		"	0.0400		105	20-170
Surrogate: 4-Bromofluorobenzene	0.0453		"	0.0400		113	21-167

Matrix Spike (3082810-MS2)		Source: R308274-02		Prepared: 08/28/13		Analyzed: 08/29/13	
Benzene	0.0991	0.0020	mg/kg	0.100	ND	99.1	30-131
Toluene	0.117	0.0050	"	0.100	ND	117	30-134
Ethylbenzene	0.125	0.0050	"	0.100	ND	125	22-153
m,p-Xylene	0.232	0.010	"	0.200	ND	116	10-159
o-Xylene	0.118	0.0050	"	0.100	ND	118	31-151
Surrogate: 1,2-Dichloroethane-d4	0.0439		"	0.0397		111	23-173
Surrogate: Toluene-d8	0.0414		"	0.0400		103	20-170
Surrogate: 4-Bromofluorobenzene	0.0437		"	0.0400		109	21-167

Matrix Spike Dup (3082810-MSD1)	Source: R308274-01			Prepared: 08/28/13		Analyzed: 08/29/13			
Benzene	0.0968	0.0020	mg/kg	0.100	ND	96.8	30-131	3.32	34
Toluene	0.113	0.0050	"	0.100	ND	113	30-134	3.73	30
Ethylbenzene	0.121	0.0050	"	0.100	ND	121	22-153	1.80	24
m,p-Xylene	0.228	0.010	"	0.200	0.00336	113	10-159	2.46	68
o-Xylene	0.116	0.0050	"	0.100	ND	116	31-151	2.28	38
Surrogate: 1,2-Dichloroethane-d4	0.0461		"	0.0397		116	23-173		
Surrogate: Toluene-d8	0.0416		"	0.0400		104	20-170		
Surrogate: 4-Bromofluorobenzene	0.0438		"	0.0400		109	21-167		

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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: KMG - Almquist 41-10

Project Number: 0142-13234
Project Manager: John Cocroft

Reported:
08/30/13 10:44

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source	%REC			RPD	Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

Batch 3082810 - EPA 5030 Soil MS

Matrix Spike Dup (3082810-MSD2)	Source: R308274-02			Prepared: 08/28/13		Analyzed: 08/29/13				
Benzene	0.0991	0.0020	mg/kg	0.100	ND	99.1	30-131	0.00	34	
Toluene	0.117	0.0050	"	0.100	ND	117	30-134	0.359	30	
Ethylbenzene	0.122	0.0050	"	0.100	ND	122	22-153	2.68	24	
m,p-Xylene	0.227	0.010	"	0.200	ND	113	10-159	2.20	68	
o-Xylene	0.116	0.0050	"	0.100	ND	116	31-151	1.05	38	
Surrogate: 1,2-Dichloroethane-d4	0.0451		"	0.0397		114	23-173			
Surrogate: Toluene-d8	0.0414		"	0.0400		104	20-170			
Surrogate: 4-Bromofluorobenzene	0.0438		"	0.0400		110	21-167			

Summit Scientific

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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: KMG - Almquist 41-10

Project Number: 0142-13234
Project Manager: John Cocroft

Reported:
08/30/13 10:44

Notes and Definitions

DET Analyte DETECTED
ND Analyte NOT DETECTED at or above the reporting limit
NR Not Reported
dry Sample results reported on a dry weight basis
RPD Relative Percent Difference

A handwritten signature in black ink, appearing to read 'Angel Alvarez IV'.