



April 18, 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
Boulder 42-12
API# 05-123-16046
SENE 12-T3N-R67W**

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 confirmation soil samples from the sump excavation, documentation of field activities, and analytical results review.

The objective of the soil sampling was to determine if there were petroleum hydrocarbon impacts to the subsurface soil following Kerr-McGee's use of a produced water sump. The soil sampling activities, laboratory analytical results, and conclusions are presented below. The general site layout, sump excavation dimensions, and soil sample locations are shown on the attached hand-sketched map.

After removing the produced water sump, one confirmation soil sample (B01@6') was collected from the soil directly beneath the water sump. This 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 report is attached.

The sump excavation measured approximately 15 feet north to south by 15 feet east to west to an approximate depth of 6 feet below ground surface. No indication of petroleum hydrocarbon impacts was observed beneath the water sump. Furthermore, TPH and BTEX concentrations were below the Colorado Oil and Gas Conservation Commission's allowable levels in confirmation soil sample B01@6'. 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 require additional information.

Sincerely,
LT ENVIRONMENTAL, INC.

A handwritten signature in black ink that reads 'Jeremy Espinoza'.

Jeremy Espinoza
Staff Geologist

Reviewed by

A handwritten signature in black ink that reads 'Justin Solomon'.

Justin Solomon
Project Environment Scientist

Attachments



PROJECT Boulter 42-12
PROJECT MANAGER J. Cocroft
JOB No. 014213038
LOCATION SENE 12-T3N-R67W

DATE 04/15/2013

CONT. No.

BY Jeremy Espinoza CHK'D

SHEET No. 1 OF 1

95LT0038 10/1997

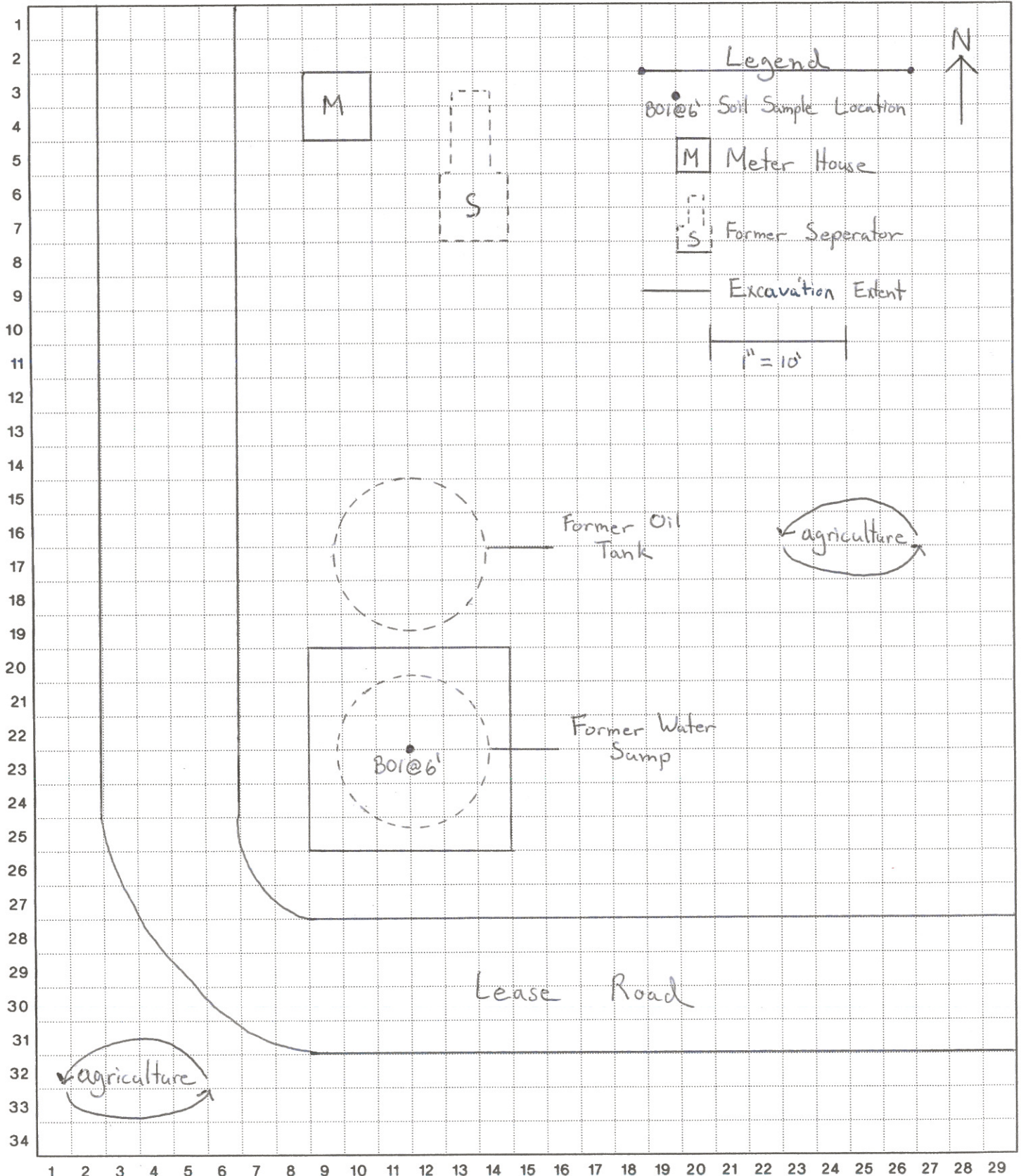


TABLE 1
SOIL SAMPLE ANALYTICAL RESULTS
BOULTER 42-12
WELD COUNTY, COLORADO
KERR-McGEE OIL & GAS ONSHORE LP

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@6'	6'	02/06/2013	<0.0050	<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

February 07, 2013

John Cocroft
LT Environmental, Inc.
4600 West 60th Avenue
Arvada, CO 80003
RE: KMG - Boulter 42-12

Enclosed are the results of analyses for samples received by Summit Scientific on 02/06/13 17:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury For Ben Shrewsbury
President / Laboratory Manager

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

Project: KMG - Boulder 42-12

Project Number: 0142-
Project Manager: John Cocroft

Reported:
02/07/13 07:23

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B01@6'	R302073-01	Soil	02/06/13 14:45	02/06/13 17:00

Summit Scientific 232073

741 Corporate Circle Suite 1 • Golden, Colorado 80401
303-277-9310 • 303-374-5933 Fax

Page 1 of 1

Client: LIE
Address: 4600 West 60th Avenue
City/State/Zip: Arvada CO 80003
Phone: 303-433-9788 Fax: 303-433-1432
Sample Name: Phillip Hamlin
Project Manager: J. Cocroft
E-Mail: jcocroft@liew.com
Project Name: Boulder 42-12
Project Number: 0142-

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative	Matrix	Analyze For:	Special Instructions
B01@6'	2/6/2013	1445	1	HCl	Soil	BTX	Run BTEX Only
N01@3'	2/6/2013	1446	1	None	Groundwater	Cd, Cr, Pb (Total)	Hold
E01@3'	2/6/2013	1447	1	HNO ₃	Other (Specify)	pH / EC / SAR	
S01@3'	2/6/2013	1448	1	None	Other (Specify)	BTX	
N01@3'	2/6/2013	1449	1	HCl	Other (Specify)	DRD/RO	

Relinquished by: <i>[Signature]</i>	Date/Time: 2/6/13	Received by:	Date/Time:	Turn Around Time (Check)	Notes:
Relinquished by:	Date/Time:	Received by:	Date/Time:	Same Day <input checked="" type="checkbox"/> 24 Hours <input type="checkbox"/> 48 Hours <input type="checkbox"/> 72 Hours <input type="checkbox"/> Standard <input type="checkbox"/>	
Relinquished by:	Date/Time:	Received in Lab by:	Date/Time:	Sample Integrity: <input type="checkbox"/> Inactive <input type="checkbox"/> Yes <input type="checkbox"/> No	

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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 - Boulter 42-12

Project Number: 0142-
Project Manager: John Cocroft

Reported:
02/07/13 07:23

B01@6'
R302073-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **02/06/13 14:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (TEPH-DRO)	ND	50	mg/kg	1	3020608	02/06/13	02/06/13	8015 Full Carbon Chain	
C28-C36 (TEPH-ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **02/06/13 14:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		100 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/06/13 14:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0050	mg/kg	1	3020607	02/06/13	02/06/13	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **02/06/13 14:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		111 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		94.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.2 %	21-167		"	"	"	"	

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

Project: KMG - Boulter 42-12

Project Number: 0142-
Project Manager: John Cocroft

Reported:
02/07/13 07:23

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 3020608 - EPA 3550A

Blank (3020608-BLK1)

Prepared: 02/06/13 Analyzed: 02/07/13

C10-C28 (TEPH-DRO)	ND	50	mg/kg
C28-C36 (TEPH-ORO)	ND	50	"

LCS (3020608-BS1)

Prepared: 02/06/13 Analyzed: 02/07/13

C10-C28 (TEPH-DRO)	471	50	mg/kg	501	94.0	73-134
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LCS Dup (3020608-BSD1)

Prepared: 02/06/13 Analyzed: 02/07/13

C10-C28 (TEPH-DRO)	483	50	mg/kg	501	96.5	73-134	2.65	11
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Matrix Spike (3020608-MS1)

Source: R302059-01

Prepared: 02/06/13 Analyzed: 02/07/13

C10-C28 (TEPH-DRO)	439	50	mg/kg	485	ND	90.7	50-148
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Matrix Spike Dup (3020608-MSD1)

Source: R302059-01

Prepared: 02/06/13 Analyzed: 02/07/13

C10-C28 (TEPH-DRO)	472	50	mg/kg	485	ND	97.5	50-148	7.21	13
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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: KMG - Boulter 42-12

Project Number: 0142-
Project Manager: John Cocroft

Reported:
02/07/13 07:23

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 3020607 - EPA 5030 Soil MS

Blank (3020607-BLK1)

Prepared & Analyzed: 02/06/13

Benzene	ND	0.0050	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	0.0444	"	0.0397	112	23-173
Surrogate: Toluene-d8	0.0406	"	0.0400	101	20-170
Surrogate: 4-Bromofluorobenzene	0.0419	"	0.0400	105	21-167

LCS (3020607-BS1)

Prepared & Analyzed: 02/06/13

Benzene	0.149	0.0050	mg/kg	0.150	99.1	58-130
Toluene	0.147	0.0050	"	0.150	98.0	61-134
Ethylbenzene	0.148	0.0050	"	0.150	98.5	74-139
m,p-Xylene	0.288	0.010	"	0.300	96.1	73-137
o-Xylene	0.147	0.0050	"	0.150	98.1	73-141
Surrogate: 1,2-Dichloroethane-d4	0.0409		"	0.0397	103	23-173
Surrogate: Toluene-d8	0.0400		"	0.0400	100	20-170
Surrogate: 4-Bromofluorobenzene	0.0402		"	0.0400	101	21-167

LCS Dup (3020607-BSD1)

Prepared & Analyzed: 02/06/13

Benzene	0.148	0.0050	mg/kg	0.150	98.6	58-130	0.465	13
Toluene	0.148	0.0050	"	0.150	98.5	61-134	0.489	16
Ethylbenzene	0.148	0.0050	"	0.150	98.4	74-139	0.142	12
m,p-Xylene	0.291	0.010	"	0.300	96.9	73-137	0.819	14
o-Xylene	0.148	0.0050	"	0.150	98.3	73-141	0.285	12
<hr/>								
Surrogate: 1,2-Dichloroethane-d4	0.0402		"	0.0397	101	23-173		
Surrogate: Toluene-d8	0.0394		"	0.0400	98.6	20-170		
Surrogate: 4-Bromofluorobenzene	0.0404		"	0.0400	101	21-167		

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

Project: KMG - Boulter 42-12

Project Number: 0142-
Project Manager: John Cocroft

Reported:
02/07/13 07:23

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 3020607 - EPA 5030 Soil MS

Matrix Spike (3020607-MS1)		Source: R302063-02			Prepared & Analyzed: 02/06/13					
Benzene	0.127	0.0050	mg/kg	0.145	ND	87.7	30-131			
Toluene	0.128	0.0050	"	0.145	ND	88.2	30-134			
Ethylbenzene	0.126	0.0050	"	0.145	ND	86.6	22-153			
m,p-Xylene	0.247	0.010	"	0.291	ND	84.9	10-159			
o-Xylene	0.124	0.0050	"	0.145	ND	85.4	31-151			
Surrogate: 1,2-Dichloroethane-d4	0.0438		"	0.0385		114	23-173			
Surrogate: Toluene-d8	0.0399		"	0.0388		103	20-170			
Surrogate: 4-Bromofluorobenzene	0.0397		"	0.0388		102	21-167			

Matrix Spike Dup (3020607-MSD1)		Source: R302063-02			Prepared & Analyzed: 02/06/13					
Benzene	0.123	0.0050	mg/kg	0.144	ND	85.6	30-131	3.51	34	
Toluene	0.122	0.0050	"	0.144	ND	85.2	30-134	4.59	30	
Ethylbenzene	0.118	0.0050	"	0.144	ND	82.1	22-153	6.42	24	
m,p-Xylene	0.230	0.010	"	0.287	ND	80.2	10-159	6.80	68	
o-Xylene	0.116	0.0050	"	0.144	ND	80.8	31-151	6.72	38	
Surrogate: 1,2-Dichloroethane-d4	0.0458		"	0.0380		120	23-173			
Surrogate: Toluene-d8	0.0392		"	0.0383		102	20-170			
Surrogate: 4-Bromofluorobenzene	0.0397		"	0.0383		104	21-167			

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Project: KMG - Boulter 42-12

Project Number: 0142-
Project Manager: John Cocroft

Reported:
02/07/13 07:23

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

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