

State of Colorado
Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 (303) 894-2100 Fax 894-2109



#8126

FOR OGCC USE ONLY

Received
12/5/2013

SITE INVESTIGATION AND REMEDIATION WORKPLAN

This form shall be submitted to the Director for approval prior to the initiation of site investigation and remediation activities. Form 27 is intended to be used whenever possible. Additional documentation will be required when large volumes of soil and groundwater have been impacted or involve large facilities with multiple source areas. See Rule 910. Attach as many pages as needed to fully describe the proposed work.

OGCC Employee:

☒ Spill ☐ Complaint
☐ Inspection ☐ NOAV

Tracking No: 2146079

CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED

☒ Spill or Release ☐ Plug & Abandon ☐ Central Facility Closure ☐ Site/Facility Closure ☒ Other (describe): NFA

GENERAL INFORMATION

OGCC Operator Number: 8960 Name of Operator: Bonanza Creek Energy Operating Company LLC Address: 410 17th Street, Suite 1400 City: Denver State: CO Zip: 80202		Contact Name and Telephone Name: Tom Peterson No: 720-440-6113 Fax: 720-279-2331	
API/Facility No: 05-123-37286 Facility Name: Antelope F-31 Pad Well Name: Antelope K-Q-31HNB Location (QtrQtr, Sec, Twp, Rng, Meridian): NWNW 31-T5N-R62W		County: Weld Facility Number: 429990 Well Number: Latitude: 40.36224 Longitude: -104.37071	

TECHNICAL CONDITIONS

Type of Waste Causing Impact (crude oil, condensate, produced water, etc.): Oil

Site Conditions: Is location within a sensitive area (according to Rule 901e)? ☒ Y ☐ N If yes, attach evaluation. Groundwater < 20 ft.

Adjacent land use (cultivated, irrigated, dry land farming, industrial, residential, etc.): Rangeland

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: Fine Sand

Potential receptors (water wells within 1/4 mi, surface waters, etc.): Surface water, wetlands, and buildings are greater than one mile from the site.

A water well is located approximately 1,200 feet southeast of the site.

Description of Impact (if previously provided, refer to that form or document):

Impacted Media (check):	Extent of Impact:	How Determined:
<input checked="" type="checkbox"/> Soils	80' N-S x 60' E-W x 1'-15' bgs	Soil samples were collected for laboratory analysis
<input type="checkbox"/> Vegetation		
<input type="checkbox"/> Groundwater	Not encountered	
<input type="checkbox"/> Surface water		

REMEDIATION WORKPLAN

Describe initial action taken (if previously provided, refer to that form or document):

The tank equalizing valve was shut between tanks 1 and 2 not allowing any oil to run over to the next tank as the first tank filled up. Approximately 100 bbls of oil were released within the lined tank battery containment berm as the well cycled on overnight. Upon discovery of the release, the equalizer valve was opened and a vacuum truck was used to recover approximately 97 bbls of standing oil from inside the lined tank battery containment berm. Approximately 3 bbls of oil may have breached the liner due to a hole discovered in the liner after the gravel was removed. The tank battery was dismantled and the petroleum hydrocarbon impacted soil was excavated to a maximum depths of 1 ft to 15 ft bgs.

Describe how source is to be removed:

On October 4 and 10, 2013, representative confirmation soil samples were collected from the base and sidewalls of the tank battery excavation and submitted for laboratory analysis of TPH and BTEX. Laboratory analytical results confirmed that TPH and BTEX concentrations were below COGCC allowable levels at the extent of the excavation. Approximately 1,150 cubic yards of impacted soil were removed from the excavation. Groundwater was not encountered in the excavation.

Describe how remediation of existing impacts is to be accomplished, including removal and disposal at an injection well or licensed facility, land treatment on site, removal of impacted groundwater, insitu bioremediation, burning of oily vegetation, etc.:

The impacted soil was transported to Waste Management's Buffalo Ridge landfill in Keenesburg, Colorado for disposal.



REMEDIATION WORKPLAN (CONT.)

OGCC Employee: R. Allison

Tracking Number: 2146079
Name of Operator: Bonanza Creek Energy Operating Company LLC
OGCC Operator No: 8960
Received Date: 12/5/2013
Well Name & No: Antelope F-31 Pad
Facility Name & No.: Antelope K-O-31HNB

If groundwater has been impacted, describe proposed monitoring plan (# of wells or sample points, sampling schedule, analytical methods, etc.):
Groundwater was not encountered in the excavation.

Describe reclamation plan. Discuss existing and new grade recontouring; method and testing of compaction alleviation; and reseeding program, including location of new seed, seed mix and noxious weed prevention. Attach diagram or drawing. Use additional sheet for description if required.
The site was restored to its pre-release grade. Bonanza Creek's production facility will be rebuilt at the site.

Attach samples and analytical results taken to verify remediation of impacts. Show locations of samples on an onsite schematic or drawing.
Is further site investigation required? ☐ Y ☒ N If yes, describe:
No further investigation is required at this site. Laboratory results for the excavation soil samples confirmed that TPH and BTEX concentrations were below COGCC allowable levels at the extent of the excavation. Based on the laboratory results, Bonanza Creek is requesting a No Further Action status for this site.

Final disposition of E&P waste (landtreated and disposed onsite, name of licensed disposal facility, recycling, reuse, etc.):
The impacted soil was transported to Waste Management's Buffalo Ridge landfill in Keenesburg, Colorado for disposal.

IMPLEMENTATION SCHEDULE

Date Site Investigation Began: 9/3/13 Date Site Investigation Completed: 10/10/13 Remediation Plan Submitted: 12/5/2013
Remediation Start Date: 9/3/13 Anticipated Completion Date: 12/1/13 Actual Completion Date: 12/1/2013

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct, and complete.

Print Name: Tom Peterson

Signed: Tom Peterson Title: Environmental Specialist Date: 12/5/13

OGCC Approved: _____ Title: Northeast EPS Date: 12/18/2013



LEGEND

- SOIL SAMPLE
- ✕ RELEASE
- - - EXCAVATION EXTENT
- ▭ FORMER TANK

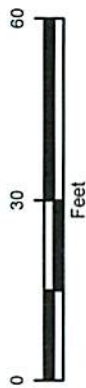


IMAGE COURTESY OF GOOGLE EARTH 2013

FIGURE 1

EXCAVATION SITE MAP
 ANTELOPE K-O-31HNB
 NWNW SEC 31-T5N-R62W
 WELD COUNTY, COLORADO
 BONANZA CREEK ENERGY OPERATING COMPANY LLC





TABLE 1
SOIL SAMPLE ANALYTICAL DATA
ANTELOPE K-O-31HNB
BONANZA CREEK ENERGY OPERATING COMPANY LLC

SAMPLE ID	DATE	DEPTH (feet bgs)	BENZENE (mg/kg)	TOLUENE (mg/kg)	ETHYL-BENZENE (mg/kg)	XYLENES (Total) (mg/kg)	TPH-GRO (mg/kg)	TPH DRO+ORO (mg/kg)
P01@1'	10/4/2013	1	<0.0050	<0.0050	<0.0050	<0.0080	0.74	<50
P02@1'	10/4/2013	1	<0.0050	<0.0050	<0.0050	<0.0050	<0.50	<50
P03@1'	10/4/2013	1	<0.0050	<0.0050	<0.0050	<0.0050	<0.50	<50
P04@1'	10/4/2013	1	<0.0050	<0.0050	<0.0050	<0.0050	<0.50	<50
N01@9'	10/4/2013	9	<0.0050	<0.0050	<0.0050	<0.0050	<0.50	<50
N02@9'	10/4/2013	9	<0.0050	<0.0050	<0.0050	<0.0050	<0.50	<50
N03@6'	10/4/2013	6	<0.0050	<0.0050	<0.0050	<0.0050	<0.50	<50
E01@9'	10/4/2013	9	<0.0050	<0.0050	<0.0050	<0.0050	<0.50	<50
E02@6'	10/4/2013	6	<0.0050	<0.0050	<0.0050	<0.0050	<0.50	<50
S01@9'	10/4/2013	9	<0.0050	<0.0050	<0.0050	<0.0050	<0.50	<50
S02@9'	10/4/2013	9	<0.0050	0.015	0.0077	0.070	1.2	<50
S03@6'	10/4/2013	6	<0.0050	<0.0050	<0.0050	<0.0050	<0.50	<50
W01@9'	10/4/2013	9	<0.0050	<0.0050	<0.0050	<0.0050	<0.50	<50
W02@6'	10/4/2013	6	2.0	21	1.5	59	7,900	9,030
B01@10'	10/4/2013	10	<0.0050	<0.0050	<0.0050	<0.0050	<0.50	<50
B02@10'	10/4/2013	10	0.0036	0.013	0.011	0.22	2.8	<50
B03@10'	10/4/2013	10	<0.0050	<0.0050	<0.0050	<0.0050	<0.50	<50
B04@6'	10/4/2013	6	<0.0050	<0.0050	<0.0050	<0.0050	<0.50	<50
W03@8'	10/10/2013	8	<0.0050	<0.0050	<0.0050	<0.0050	<0.50	<50
B05@15'	10/10/2013	15	<0.0050	<0.0050	<0.0050	<0.0050	<0.50	<50

Notes:

bgs - below ground surface

mg/kg - milligrams per kilogram

TPH - Total Petroleum Hydrocarbons

GRO - Gasoline Range Organics

TEPH - Total Extractable Petroleum Hydrocarbons

DRO - Diesel Range Organics

ORO - Oil Range Organics

< - less than laboratory reporting limit

COGCC - Colorado Oil and Gas Conservation Commission
 Results noted in bold exceed COGCC allowable levels.

Summit Scientific

741 Corporate Circle – Suite J ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.374.5933 - fax

October 14, 2013

Justin Solomon
LT Environmental, Inc.
4600 West 60th Avenue
Arvada, CO 80003
RE: BC - State Antelope K-O-31

Enclosed are the results of analyses for samples received by Summit Scientific on 10/10/13 17:15. 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.

S₂

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

Project: BC - State Antelope K-O-31

Project Number: 0345-13026
Project Manager: Justin Solomon

Reported:
10/14/13 12:25

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B05@15'	R310111-01	Soil	10/10/13 15:20	10/10/13 17:15
W03@8'	R310111-02	Soil	10/10/13 15:30	10/10/13 17:15

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.



Joseph J Egry IV, Laboratory Director

Reported:
10/14/13 12:25

Summit Scientific
R31011

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

Page 1 of 1

Client: Bonanza Creek

Project Manager: Justin Solomon

City State Zip

Phone: Fax:

Project Name: BC- State Antelope K-0-31

Sampler Name: Kristofer Steward

Project Number: 03453026

[illegible]

www.s2scientific.com

Soil samples reported on a wet-weight basis unless otherwise indicated on results page.

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.

Regel IV

Joseph J Egry IV, Laboratory Director



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

Project: BC - State Antelope K-O-31

Project Number: 0345-13026
Project Manager: Justin Solomon

Reported:
10/14/13 12:25

B05@15'
R310111-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 10/10/13 15:20

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (TEPH-DRO)	ND	50	mg/kg	1	3101013	10/10/13	10/10/13 22:04	8015M	
C28-C36 (TEPH-ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: 10/10/13 15:20

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl	94.9 %	30-150			"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 10/10/13 15:20

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	3101012	10/10/13	10/10/13 22:25	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: 10/10/13 15:20

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	95.1 %	23-173			"	"	"	"	
Surrogate: Toluene-d8	99.4 %	20-170			"	"	"	"	
Surrogate: 4-Bromofluorobenzene	104 %	21-167			"	"	"	"	

Summit Scientific

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Joseph J Egry IV, Laboratory Director



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

Project: BC - State Antelope K-O-31
Project Number: 0345-13026
Project Manager: Justin Solomon

Reported:
10/14/13 12:25

W03@8'
R310111-02 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 10/10/13 15:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (TEPH-DRO)	ND	50	mg/kg	1	3101013	10/10/13	10/10/13 22:35	8015M	
C28-C36 (TEPH-ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: 10/10/13 15:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl	87.4 %	30-150			"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 10/10/13 15:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	3101012	10/10/13	10/10/13 22:50	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: 10/10/13 15:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	98.2 %	23-173			"	"	"	"	
Surrogate: Toluene-d8	101 %	20-170			"	"	"	"	
Surrogate: 4-Bromofluorobenzene	103 %	21-167			"	"	"	"	

Summit Scientific

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Joseph J Egry IV, Laboratory Director



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

Project: BC - State Antelope K-O-31
Project Number: 0345-13026
Project Manager: Justin Solomon

Reported:
10/14/13 12:25

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 3101013 - EPA 3550A

Blank (3101013-BLK1)

Prepared: 10/10/13 Analyzed: 10/11/13

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

LCS (3101013-BS1)

Prepared: 10/10/13 Analyzed: 10/11/13

C10-C28 (TEPH-DRO)	479	50	mg/kg	501	95.7	73-134
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LCS Dup (3101013-BSD1)

Prepared: 10/10/13 Analyzed: 10/11/13

C10-C28 (TEPH-DRO)	442	50	mg/kg	501	88.1	73-134	8.22	11
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Matrix Spike (3101013-MS1)

Source: R310106-01

Prepared: 10/10/13 Analyzed: 10/11/13

C10-C28 (TEPH-DRO)	443	50	mg/kg	501	ND	88.4	50-148
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Matrix Spike Dup (3101013-MSD1)

Source: R310106-01

Prepared: 10/10/13 Analyzed: 10/11/13

C10-C28 (TEPH-DRO)	441	50	mg/kg	501	ND	88.1	50-148	0.364	13
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Summit Scientific

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Joseph J Egry IV, Laboratory Director

S₂

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

Project: BC - State Antelope K-O-31
Project Number: 0345-13026
Project Manager: Justin Solomon

Reported:
10/14/13 12:25

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 3101012 - EPA 5030 Soil MS

Blank (3101012-BLK1)

Prepared & Analyzed: 10/10/13

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	0.0418		"	0.0397		105	23-173			
Surrogate: Toluene-d8	0.0394		"	0.0400		98.5	20-170			
Surrogate: 4-Bromofluorobenzene	0.0367		"	0.0400		91.7	21-167			

LCS (3101012-BS1)

Prepared & Analyzed: 10/10/13

Benzene	0.151	0.0020	mg/kg	0.150		100	58-130			
Toluene	0.150	0.0050	"	0.150		99.8	61-134			
Ethylbenzene	0.153	0.0050	"	0.150		102	74-139			
m,p-Xylene	0.301	0.010	"	0.300		100	73-137			
o-Xylene	0.151	0.0050	"	0.150		101	73-141			
Surrogate: 1,2-Dichloroethane-d4	0.0417		"	0.0397		105	23-173			
Surrogate: Toluene-d8	0.0401		"	0.0400		100	20-170			
Surrogate: 4-Bromofluorobenzene	0.0404		"	0.0400		101	21-167			

LCS Dup (3101012-BSD1)

Prepared: 10/10/13 Analyzed: 10/11/13

Benzene	0.144	0.0020	mg/kg	0.150		96.1	58-130	4.28	13	
Toluene	0.146	0.0050	"	0.150		97.5	61-134	2.41	16	
Ethylbenzene	0.154	0.0050	"	0.150		103	74-139	1.04	12	
m,p-Xylene	0.305	0.010	"	0.300		102	73-137	1.10	14	
o-Xylene	0.153	0.0050	"	0.150		102	73-141	1.27	12	
Surrogate: 1,2-Dichloroethane-d4	0.0399		"	0.0397		100	23-173			
Surrogate: Toluene-d8	0.0392		"	0.0400		98.1	20-170			
Surrogate: 4-Bromofluorobenzene	0.0406		"	0.0400		101	21-167			

Summit Scientific

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Joseph J Egry IV, Laboratory Director

S₂

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

Project: BC - State Antelope K-O-31

Project Number: 0345-13026
Project Manager: Justin Solomon

Reported:
10/14/13 12:25

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 3101012 - EPA 5030 Soil MS

Matrix Spike (3101012-MS1)		Source: R310106-01			Prepared: 10/10/13		Analyzed: 10/11/13			
Benzene	0.147	0.0020	mg/kg	0.150	ND	97.8	30-131			
Toluene	0.147	0.0050	"	0.150	ND	98.3	30-134			
Ethylbenzene	0.152	0.0050	"	0.150	ND	101	22-153			
m,p-Xylene	0.298	0.010	"	0.300	ND	99.3	10-159			
o-Xylene	0.152	0.0050	"	0.150	ND	101	31-151			
Surrogate: 1,2-Dichloroethane-d4	0.0409		"	0.0397		103	23-173			
Surrogate: Toluene-d8	0.0401		"	0.0400		100	20-170			
Surrogate: 4-Bromofluorobenzene	0.0397		"	0.0400		99.2	21-167			
Matrix Spike Dup (3101012-MSD1)		Source: R310106-01			Prepared: 10/10/13		Analyzed: 10/11/13			
Benzene	0.147	0.0020	mg/kg	0.150	ND	98.3	30-131	0.428	34	
Toluene	0.147	0.0050	"	0.150	ND	98.3	30-134	0.0204	30	
Ethylbenzene	0.153	0.0050	"	0.150	ND	102	22-153	0.886	24	
m,p-Xylene	0.301	0.010	"	0.300	ND	100	10-159	0.942	68	
o-Xylene	0.153	0.0050	"	0.150	ND	102	31-151	0.828	38	
Surrogate: 1,2-Dichloroethane-d4	0.0404		"	0.0397		102	23-173			
Surrogate: Toluene-d8	0.0394		"	0.0400		98.6	20-170			
Surrogate: 4-Bromofluorobenzene	0.0389		"	0.0400		97.4	21-167			

Summit Scientific

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Joseph J Egry IV, Laboratory Director



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

Project: BC - State Antelope K-O-31

Project Number: 0345-13026
Project Manager: Justin Solomon

Reported:
10/14/13 12:25

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

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.

Joseph J Egry IV, Laboratory Director

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

October 06, 2013

Justin Solomon
LT Environmental, Inc.
4600 West 60th Avenue
Arvada, CO 80003
RE: BC - Antelope K-31 Bonanza Creek

Enclosed are the results of analyses for samples received by Summit Scientific on 10/04/13 15:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to be 'BS' or 'Shrewsbury', with a long, sweeping horizontal line extending to the right.

Ben Shrewsbury
President / Laboratory Manager

S₂

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

Project: BC - Antelope K-31 Bonanza Creek
Project Number: 0345-13
Project Manager: Justin Solomon

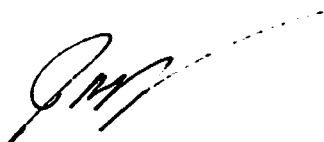
Reported:
10/06/13 16:23

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
P01@1'	R310068-01	Soil	10/04/13 11:40	10/04/13 15:30
P02@1'	R310068-02	Soil	10/04/13 11:45	10/04/13 15:30
P03@1'	R310068-03	Soil	10/04/13 11:50	10/04/13 15:30
P04@1'	R310068-04	Soil	10/04/13 11:55	10/04/13 15:30
N01@9'	R310068-05	Soil	10/04/13 12:00	10/04/13 15:30
N02@9'	R310068-06	Soil	10/04/13 12:05	10/04/13 15:30
N03@6'	R310068-07	Soil	10/04/13 12:10	10/04/13 15:30
E01@9'	R310068-08	Soil	10/04/13 12:15	10/04/13 15:30
E02@6'	R310068-09	Soil	10/04/13 12:20	10/04/13 15:30
S01@9'	R310068-10	Soil	10/04/13 12:25	10/04/13 15:30
S02@9'	R310068-11	Soil	10/04/13 12:30	10/04/13 15:30
S03@6'	R310068-12	Soil	10/04/13 12:35	10/04/13 15:30
W01@9'	R310068-13	Soil	10/04/13 12:40	10/04/13 15:30
W02@6'	R310068-14	Soil	10/04/13 12:45	10/04/13 15:30
B01@10'	R310068-15	Soil	10/04/13 12:50	10/04/13 15:30
B02@10'	R310068-16	Soil	10/04/13 12:55	10/04/13 15:30
B03@10'	R310068-17	Soil	10/04/13 13:00	10/04/13 15:30
B04@6'-7"	R310068-18	Soil	10/04/13 13:05	10/04/13 15:30

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

Project: BC - Antelope K-31 Bonanza Creek
Project Number: 0345-13
Project Manager: Justin Solomon

Reported:
10/06/13 16:23

R310068.1

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5:

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303-277-9510 • 303-274-5933 Fax

Page 1 of 2

Client: LT Environmental
Address: 4600 W. 60th Ave.
City/State/Zip: Arvada, CO, 80003
Phone: 303-277-9788 Fax: 303-274-5933
Sample Name: Antelope K-31 Bonanza Creek
Project Manager: Justin Solomon
E-Mail: jsolomon@summit-sc.com
Project Name: Antelope K-31 Bonanza Creek
Project Number: 0345-13

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix	Analyze For:	Special Instructions
				HCl	Zone	Other (Specify)	Groundwater			
101 C1	10/4/13	1146	1					Soil		
102 C1		1145	1					Soil		
103 C1		1150	1					Soil		
104 C1		1155	1					Soil		
101 C4		1200	1					Soil		
102 C4		1205	1					Soil		
103 C4		1210	1					Soil		
104 C4		1215	1					Soil		
101 C7		1220	1					Soil		
102 C7		1225	1					Soil		
103 C7		1230	1					Soil		
104 C7		1235	1					Soil		
101 C11		1240	1					Soil		
102 C11		1245	1					Soil		
103 C11		1250	1					Soil		
104 C11		1255	1					Soil		
101 C12		1300	1					Soil		
102 C12		1305	1					Soil		
103 C12		1310	1					Soil		
104 C12		1315	1					Soil		
101 C13		1320	1					Soil		
102 C13		1325	1					Soil		
103 C13		1330	1					Soil		
104 C13		1335	1					Soil		
101 C14		1340	1					Soil		
102 C14		1345	1					Soil		
103 C14		1350	1					Soil		
104 C14		1355	1					Soil		
101 C15		1400	1					Soil		
102 C15		1405	1					Soil		
103 C15		1410	1					Soil		
104 C15		1415	1					Soil		
101 C16		1420	1					Soil		
102 C16		1425	1					Soil		
103 C16		1430	1					Soil		
104 C16		1435	1					Soil		
101 C17		1440	1					Soil		
102 C17		1445	1					Soil		
103 C17		1450	1					Soil		
104 C17		1455	1					Soil		
101 C18		1500	1					Soil		
102 C18		1505	1					Soil		
103 C18		1510	1					Soil		
104 C18		1515	1					Soil		
101 C19		1520	1					Soil		
102 C19		1525	1					Soil		
103 C19		1530	1					Soil		
104 C19		1535	1					Soil		
101 C20		1540	1					Soil		
102 C20		1545	1					Soil		
103 C20		1550	1					Soil		
104 C20		1555	1					Soil		
101 C21		1600	1					Soil		
102 C21		1605	1					Soil		
103 C21		1610	1					Soil		
104 C21		1615	1					Soil		
101 C22		1620	1					Soil		
102 C22		1625	1					Soil		
103 C22		1630	1					Soil		
104 C22		1635	1					Soil		
101 C23		1640	1					Soil		
102 C23		1645	1					Soil		
103 C23		1650	1					Soil		
104 C23		1655	1					Soil		
101 C24		1700	1					Soil		
102 C24		1705	1					Soil		
103 C24		1710	1					Soil		
104 C24		1715	1					Soil		
101 C25		1720	1					Soil		
102 C25		1725	1					Soil		
103 C25		1730	1					Soil		
104 C25		1735	1					Soil		
101 C26		1740	1					Soil		
102 C26		1745	1					Soil		
103 C26		1750	1					Soil		
104 C26		1755	1					Soil		
101 C27		1800	1					Soil		
102 C27		1805	1					Soil		
103 C27		1810	1					Soil		
104 C27		1815	1					Soil		
101 C28		1820	1					Soil		
102 C28		1825	1					Soil		
103 C28		1830	1					Soil		
104 C28		1835	1					Soil		
101 C29		1840	1					Soil		
102 C29		1845	1					Soil		
103 C29		1850	1					Soil		
104 C29		1855	1					Soil		
101 C30		1900	1					Soil		
102 C30		1905	1					Soil		
103 C30		1910	1					Soil		
104 C30		1915	1					Soil		
101 C31		1920	1					Soil		
102 C31		1925	1					Soil		
103 C31		1930	1					Soil		
104 C31		1935	1					Soil		
101 C32		1940	1					Soil		
102 C32		1945	1					Soil		
103 C32		1950	1					Soil		
104 C32		1955	1					Soil		
101 C33		2000	1					Soil		
102 C33		2005	1					Soil		
103 C33		2010	1					Soil		
104 C33		2015	1					Soil		
101 C34		2020	1					Soil		
102 C34		2025	1					Soil		
103 C34		2030	1					Soil		
104 C34		2035	1					Soil		
101 C35		2040	1					Soil		
102 C35		2045	1					Soil		
103 C35		2050	1					Soil		
104 C35		2055	1					Soil		
101 C36		2100	1					Soil		
102 C36		2105	1					Soil		
103 C36		2110	1					Soil		
104 C36		2115	1					Soil		
101 C37		2120	1					Soil		
102 C37		2125	1					Soil		
103 C37		2130	1					Soil		
104 C37		2135	1					Soil		
101 C38		2140	1					Soil		
102 C38		2145	1					Soil		
103 C38		2150	1					Soil		
104 C38		2155	1					Soil		
101 C39		2200	1					Soil		
102 C39		2205	1					Soil		
103 C39		2210	1					Soil		
104 C39		2215	1					Soil		
101 C40		2220	1					Soil		
102 C40		2225	1					Soil		
103 C40		2230	1					Soil		
104 C40		2235	1					Soil		
101 C41		2240	1					Soil		
102 C41		2245	1					Soil		
103 C41		2250	1					Soil		
104 C41		2255	1					Soil		
101 C42		2300	1					Soil		
102 C42		2305	1					Soil		
103 C42		2310	1					Soil		
104 C42		2315	1					Soil		
101 C43		2320	1					Soil		
102 C43		2325	1					Soil		
103 C43		2330	1					Soil		
104 C43		2335	1					Soil		
101 C44		2340	1					Soil		
102 C44		2345	1			</				

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

Project: BC - Antelope K-31 Bonanza Creek

Project Number: 0345-13
Project Manager: Justin Solomon

Reported:
10/06/13 16:23

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Page 2 of 2

Client: K Environmental
Address: 4650 W. 16th Ave.
City/State/Zip: Arvada, CO 80003
Phone: 303-433-4788 Fax:
Sample Name: Antelope K-31
Project Manager: Justin Solomon
E-Mail: jsolomon@houston.com
Project Number: 0345

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix				Analyze For	Special Instructions	
				HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)			
S2 C-1	10/4/13	1330	1											
S2 C-2	10/4/13	1345	1											
W2 C-1	10/4/13	1345	1											
W2 C-2	10/4/13	1345	1											
B2 C-1	10/4/13	1345	1											
B2 C-2	10/4/13	1345	1											
B2 C-3	10/4/13	1345	1											
B2 C-4	10/4/13	1345	1											
B2 C-5	10/4/13	1345	1											
B2 C-6	10/4/13	1345	1											
B2 C-7	10/4/13	1345	1											
B2 C-8	10/4/13	1345	1											
B2 C-9	10/4/13	1345	1											
B2 C-10	10/4/13	1345	1											
B2 C-11	10/4/13	1345	1											
B2 C-12	10/4/13	1345	1											
B2 C-13	10/4/13	1345	1											
B2 C-14	10/4/13	1345	1											
B2 C-15	10/4/13	1345	1											
B2 C-16	10/4/13	1345	1											
B2 C-17	10/4/13	1345	1											
B2 C-18	10/4/13	1345	1											
B2 C-19	10/4/13	1345	1											
B2 C-20	10/4/13	1345	1											
B2 C-21	10/4/13	1345	1											
B2 C-22	10/4/13	1345	1											
B2 C-23	10/4/13	1345	1											
B2 C-24	10/4/13	1345	1											
B2 C-25	10/4/13	1345	1											
B2 C-26	10/4/13	1345	1											
B2 C-27	10/4/13	1345	1											
B2 C-28	10/4/13	1345	1											
B2 C-29	10/4/13	1345	1											
B2 C-30	10/4/13	1345	1											
B2 C-31	10/4/13	1345	1											
B2 C-32	10/4/13	1345	1											
B2 C-33	10/4/13	1345	1											
B2 C-34	10/4/13	1345	1											
B2 C-35	10/4/13	1345	1											
B2 C-36	10/4/13	1345	1											
B2 C-37	10/4/13	1345	1											
B2 C-38	10/4/13	1345	1											
B2 C-39	10/4/13	1345	1											
B2 C-40	10/4/13	1345	1											
B2 C-41	10/4/13	1345	1											
B2 C-42	10/4/13	1345	1											
B2 C-43	10/4/13	1345	1											
B2 C-44	10/4/13	1345	1											
B2 C-45	10/4/13	1345	1											
B2 C-46	10/4/13	1345	1											
B2 C-47	10/4/13	1345	1											
B2 C-48	10/4/13	1345	1											
B2 C-49	10/4/13	1345	1											
B2 C-50	10/4/13	1345	1											
B2 C-51	10/4/13	1345	1											
B2 C-52	10/4/13	1345	1											
B2 C-53	10/4/13	1345	1											
B2 C-54	10/4/13	1345	1											
B2 C-55	10/4/13	1345	1											
B2 C-56	10/4/13	1345	1											
B2 C-57	10/4/13	1345	1											
B2 C-58	10/4/13	1345	1											
B2 C-59	10/4/13	1345	1											
B2 C-60	10/4/13	1345	1											
B2 C-61	10/4/13	1345	1											
B2 C-62	10/4/13	1345	1											
B2 C-63	10/4/13	1345	1											
B2 C-64	10/4/13	1345	1											
B2 C-65	10/4/13	1345	1											
B2 C-66	10/4/13	1345	1											
B2 C-67	10/4/13	1345	1											
B2 C-68	10/4/13	1345	1											
B2 C-69	10/4/13	1345	1											
B2 C-70	10/4/13	1345	1											
B2 C-71	10/4/13	1345	1											
B2 C-72	10/4/13	1345	1											
B2 C-73	10/4/13	1345	1											
B2 C-74	10/4/13	1345	1											
B2 C-75	10/4/13	1345	1											
B2 C-76	10/4/13	1345	1											
B2 C-77	10/4/13	1345	1											
B2 C-78	10/4/13	1345	1											
B2 C-79	10/4/13	1345	1											
B2 C-80	10/4/13	1345	1											
B2 C-81	10/4/13	1345	1											
B2 C-82	10/4/13	1345	1											
B2 C-83	10/4/13	1345	1											
B2 C-84	10/4/13	1345	1											
B2 C-85	10/4/13	1345	1											
B2 C-86	10/4/13	1345	1											
B2 C-87	10/4/13	1345	1											
B2 C-88	10/4/13	1345	1											
B2 C-89	10/4/13	1345	1											
B2 C-90	10/4/13	1345	1											
B2 C-91	10/4/13	1345	1											
B2 C-92	10/4/13	1345	1											
B2 C-93	10/4/13	1345	1											
B2 C-94	10/4/13	1345	1											
B2 C-95	10/4/13	1345	1											
B2 C-96	10/4/13	1345	1											
B2 C-97	10/4/13	1345	1											
B2 C-98	10/4/13	1345	1											
B2 C-99	10/4/13	1345	1											
B2 C-100	10/4/13	1345	1											

Notes:

Received by: Justin Solomon Date Time: 10/4/13 1530

Refined by: Justin Solomon Date Time: 10/4/13

Refined by: Justin Solomon Date Time: 10/4/13

Refined by: Justin Solomon Date Time: 10/4/13

Refined by: Justin Solomon Date Time: 10/4/13

Refined by: Justin Solomon Date Time: 10/4/13

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

Project: BC - Antelope K-31 Bonanza Creek
Project Number: 0345-13
Project Manager: Justin Solomon

Reported:
10/06/13 16:23

P01@1'
R310068-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 10/04/13 11:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (TEPH-DRO)	ND	50	mg/kg	1	3100418	10/04/13	10/04/13	8015M	
C28-C36 (TEPH-ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: 10/04/13 11:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		99.8 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 10/04/13 11:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	3100417	10/04/13	10/04/13	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.0080	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	0.74	0.50	"	"	"	"	"	"	

Date Sampled: 10/04/13 11:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		109 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		96.3 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	21-167		"	"	"	"	

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

Project: BC - Antelope K-31 Bonanza Creek
Project Number: 0345-13
Project Manager: Justin Solomon

Reported:
10/06/13 16:23

P02@1'
R310068-02 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 10/04/13 11:45

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (TEPH-DRO)	ND	50	mg/kg	1	3100418	10/04/13	10/04/13	8015M	
C28-C36 (TEPH-ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: 10/04/13 11:45

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		89.3 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 10/04/13 11:45

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	3100417	10/04/13	10/04/13	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: 10/04/13 11:45

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		111 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	21-167		"	"	"	"	

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

Project: BC - Antelope K-31 Bonanza Creek
Project Number: 0345-13
Project Manager: Justin Solomon

Reported:
10/06/13 16:23

P03@1'
R310068-03 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 10/04/13 11:50

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (TEPH-DRO)	ND	50	mg/kg	1	3100418	10/04/13	10/04/13	8015M	
C28-C36 (TEPH-ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: 10/04/13 11:50

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		85.5 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 10/04/13 11:50

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	3100417	10/04/13	10/04/13	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: 10/04/13 11:50

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		112 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		94.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	21-167		"	"	"	"	

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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.

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

Project: BC - Antelope K-31 Bonanza Creek
Project Number: 0345-13
Project Manager: Justin Solomon

Reported:
10/06/13 16:23

P04@1'
R310068-04 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 10/04/13 11:55

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (TEPH-DRO)	ND	50	mg/kg	1	3100418	10/04/13	10/05/13	8015M	
C28-C36 (TEPH-ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: 10/04/13 11:55

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		96.4 %	30-150	"	"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 10/04/13 11:55

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	3100417	10/04/13	10/04/13	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: 10/04/13 11:55

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		112 %	23-173	"	"	"	"	"	
Surrogate: Toluene-d8		96.1 %	20-170	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	21-167	"	"	"	"	"	

Summit Scientific

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S₂

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

Project: BC - Antelope K-31 Bonanza Creek
Project Number: 0345-13
Project Manager: Justin Solomon

Reported:
10/06/13 16:23

N01@9'
R310068-05 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 10/04/13 12:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (TEPH-DRO)	ND	50	mg/kg	1	3100418	10/04/13	10/05/13	8015M	
C28-C36 (TEPH-ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: 10/04/13 12:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		86.2 %	30-150	"	"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 10/04/13 12:00

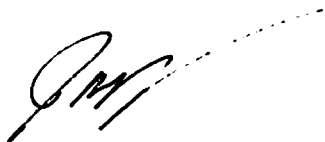
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	3100417	10/04/13	10/04/13	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: 10/04/13 12:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		114 %	23-173	"	"	"	"	"	
Surrogate: Toluene-d8		99.0 %	20-170	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	21-167	"	"	"	"	"	

Summit Scientific

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

Project: BC - Antelope K-31 Bonanza Creek
Project Number: 0345-13
Project Manager: Justin Solomon

Reported:
10/06/13 16:23

N02@9'
R310068-06 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 10/04/13 12:05

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (TEPH-DRO)	ND	50	mg/kg	1	3100418	10/04/13	10/05/13	8015M	
C28-C36 (TEPH-ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: 10/04/13 12:05

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		98.4 %	30-150	"	"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 10/04/13 12:05

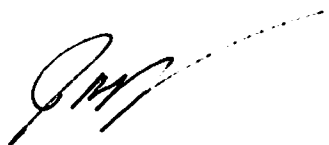
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	3100417	10/04/13	10/04/13	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: 10/04/13 12:05

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		110 %	23-173	"	"	"	"	"	
Surrogate: Toluene-d8		91.1 %	20-170	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	21-167	"	"	"	"	"	

Summit Scientific

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

Project: BC - Antelope K-31 Bonanza Creek
Project Number: 0345-13
Project Manager: Justin Solomon

Reported:
10/06/13 16:23

N03@6'
R310068-07 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 10/04/13 12:10

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (TEPH-DRO)	ND	50	mg/kg	1	3100418	10/04/13	10/05/13	8015M	
C28-C36 (TEPH-ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: 10/04/13 12:10

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		95.4 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 10/04/13 12:10

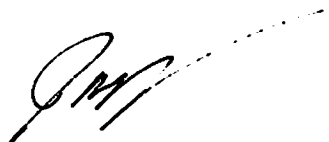
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	3100417	10/04/13	10/04/13	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: 10/04/13 12:10

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		111 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	21-167		"	"	"	"	

Summit Scientific

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

Project: BC - Antelope K-31 Bonanza Creek
Project Number: 0345-13
Project Manager: Justin Solomon

Reported:
10/06/13 16:23

E01@9'
R310068-08 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 10/04/13 12:15

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (TEPH-DRO)	ND	50	mg/kg	1	3100418	10/04/13	10/05/13	8015M	
C28-C36 (TEPH-ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: 10/04/13 12:15

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		97.9 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 10/04/13 12:15

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	3100417	10/04/13	10/04/13	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: 10/04/13 12:15

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		112 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	21-167		"	"	"	"	

Summit Scientific

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

Project: BC - Antelope K-31 Bonanza Creek
Project Number: 0345-13
Project Manager: Justin Solomon

Reported:
10/06/13 16:23

E02@6'
R310068-09 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 10/04/13 12:20

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (TEPH-DRO)	ND	50	mg/kg	1	3100418	10/04/13	10/05/13	8015M	
C28-C36 (TEPH-ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: 10/04/13 12:20

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		87.4 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 10/04/13 12:20

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	3100417	10/04/13	10/04/13	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: 10/04/13 12:20

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		111 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		95.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	21-167		"	"	"	"	

Summit Scientific

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

Project: BC - Antelope K-31 Bonanza Creek
Project Number: 0345-13
Project Manager: Justin Solomon

Reported:
10/06/13 16:23

S01@9'
R310068-10 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 10/04/13 12:25

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (TEPH-DRO)	ND	50	mg/kg	1	3100418	10/04/13	10/05/13	8015M	
C28-C36 (TEPH-ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: 10/04/13 12:25

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		97.1 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 10/04/13 12:25

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	3100417	10/04/13	10/04/13	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: 10/04/13 12:25

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		115 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.5 %	21-167		"	"	"	"	

Summit Scientific

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

Project: BC - Antelope K-31 Bonanza Creek
Project Number: 0345-13
Project Manager: Justin Solomon

Reported:
10/06/13 16:23

S02@9'
R310068-11 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 10/04/13 12:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (TEPH-DRO)	ND	50	mg/kg	1	3100418	10/04/13	10/05/13	8015M	
C28-C36 (TEPH-ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: 10/04/13 12:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		88.6 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 10/04/13 12:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	3100417	10/04/13	10/04/13	EPA 8260B	
Toluene	0.015	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.0077	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.070	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	1.2	0.50	"	"	"	"	"	"	

Date Sampled: 10/04/13 12:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		103 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.8 %	21-167		"	"	"	"	

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

Project: BC - Antelope K-31 Bonanza Creek
Project Number: 0345-13
Project Manager: Justin Solomon

Reported:
10/06/13 16:23

S03@6'
R310068-12 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 10/04/13 12:35

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (TEPH-DRO)	ND	50	mg/kg	1	3100418	10/04/13	10/05/13	8015M	
C28-C36 (TEPH-ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: 10/04/13 12:35

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		86.1 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 10/04/13 12:35

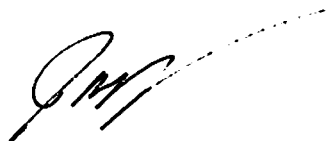
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	3100417	10/04/13	10/04/13	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: 10/04/13 12:35

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		111 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		94.5 %	21-167		"	"	"	"	

Summit Scientific

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

Project: BC - Antelope K-31 Bonanza Creek
Project Number: 0345-13
Project Manager: Justin Solomon

Reported:
10/06/13 16:23

W01@9'
R310068-13 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 10/04/13 12:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (TEPH-DRO)	ND	50	mg/kg	1	3100418	10/04/13	10/05/13	8015M	
C28-C36 (TEPH-ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: 10/04/13 12:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		97.5 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 10/04/13 12:40


Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	3100417	10/04/13	10/04/13	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: 10/04/13 12:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		116 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.5 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.3 %	21-167		"	"	"	"	

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

Project: BC - Antelope K-31 Bonanza Creek
Project Number: 0345-13
Project Manager: Justin Solomon

Reported:
10/06/13 16:23

W02@6'
R310068-14 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 10/04/13 12:45

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (TEPH-DRO)	8500	50	mg/kg	1	3100418	10/04/13	10/05/13	8015M	
C28-C36 (TEPH-ORO)	530	50	"	"	"	"	"	"	

Date Sampled: 10/04/13 12:45

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		257 %	30-150	"	"	"	"	"	S-02

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 10/04/13 12:45

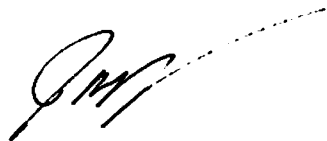
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	2.0	0.020	mg/kg	10	3100417	10/04/13	10/04/13	EPA 8260B	
Toluene	21	0.050	"	"	"	"	"	"	E
Ethylbenzene	1.5	0.050	"	"	"	"	"	"	
Xylenes (total)	59	0.050	"	"	"	"	10/05/13	"	E
Gasoline Range Hydrocarbons	7900	5.0	"	"	"	"	10/04/13	"	E

Date Sampled: 10/04/13 12:45

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		102 %	23-173	"	"	"	10/05/13	"	
Surrogate: Toluene-d8		787 %	20-170	"	"	"	"	"	S-02
Surrogate: 4-Bromofluorobenzene		504 %	21-167	"	"	"	"	"	S-02

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

Project: BC - Antelope K-31 Bonanza Creek
Project Number: 0345-13
Project Manager: Justin Solomon

Reported:
10/06/13 16:23

B01@10'
R310068-15 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 10/04/13 12:50

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (TEPH-DRO)	ND	50	mg/kg	1	3100418	10/04/13	10/05/13	8015M	
C28-C36 (TEPH-ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: 10/04/13 12:50

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: 10/04/13 12:50

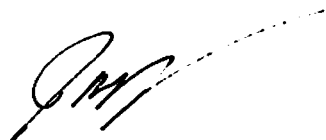
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	3100417	10/04/13	10/04/13	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: 10/04/13 12:50

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		111 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.2 %	21-167		"	"	"	"	

Summit Scientific

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S₂

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

Project: BC - Antelope K-31 Bonanza Creek
Project Number: 0345-13
Project Manager: Justin Solomon

Reported:
10/06/13 16:23

B02@10'
R310068-16 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 10/04/13 12:55

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (TEPH-DRO)	ND	50	mg/kg	1	3100418	10/04/13	10/05/13	8015M	
C28-C36 (TEPH-ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: 10/04/13 12:55

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		89.8 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 10/04/13 12:55

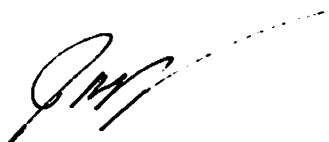
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.0036	0.0020	mg/kg	1	3100417	10/04/13	10/04/13	EPA 8260B	
Toluene	0.013	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.011	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.22	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	2.8	0.50	"	"	"	"	"	"	

Date Sampled: 10/04/13 12:55

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		117 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	21-167		"	"	"	"	

Summit Scientific

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4600 West 60th Avenue
Arvada CO, 80003

Project: BC - Antelope K-31 Bonanza Creek
Project Number: 0345-13
Project Manager: Justin Solomon

Reported:
10/06/13 16:23

B03@10'
R310068-17 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 10/04/13 13:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (TEPH-DRO)	ND	50	mg/kg	1	3100418	10/04/13	10/05/13	8015M	
C28-C36 (TEPH-ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: 10/04/13 13:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		96.0 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 10/04/13 13:00

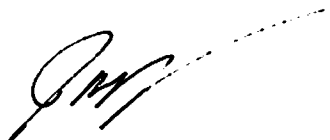
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	3100417	10/04/13	10/04/13	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: 10/04/13 13:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		42.3 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		92.0 %	21-167		"	"	"	"	

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Project: BC - Antelope K-31 Bonanza Creek
Project Number: 0345-13
Project Manager: Justin Solomon

Reported:
10/06/13 16:23

B04@6'-7"
R310068-18 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 10/04/13 13:05

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (TEPH-DRO)	ND	50	mg/kg	1	3100418	10/04/13	10/05/13	8015M	
C28-C36 (TEPH-ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: 10/04/13 13:05

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		93.5 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 10/04/13 13:05

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	3100417	10/04/13	10/04/13	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: 10/04/13 13:05

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		113 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.1 %	21-167		"	"	"	"	

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4600 West 60th Avenue
Arvada CO, 80003

Project: BC - Antelope K-31 Bonanza Creek
Project Number: 0345-13
Project Manager: Justin Solomon

Reported:
10/06/13 16:23

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 3100418 - EPA 3550A

Blank (3100418-BLK1)

Prepared & Analyzed: 10/04/13

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

LCS (3100418-BS1)

Prepared & Analyzed: 10/04/13

C10-C28 (TEPH-DRO)	411	50	mg/kg	501	82.0	73-134
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LCS Dup (3100418-BS1)

Prepared & Analyzed: 10/04/13

C10-C28 (TEPH-DRO)	483	50	mg/kg	501	96.4	73-134	16.2	11
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Matrix Spike (3100418-MS1)

Source: R310067-01

Prepared & Analyzed: 10/04/13

C10-C28 (TEPH-DRO)	444	50	mg/kg	501	16.5	85.4	50-148
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Matrix Spike Dup (3100418-MSD1)

Source: R310067-01

Prepared & Analyzed: 10/04/13

C10-C28 (TEPH-DRO)	443	50	mg/kg	501	16.5	85.1	50-148	0.325	13
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Summit Scientific

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

Project: BC - Antelope K-31 Bonanza Creek
Project Number: 0345-13
Project Manager: Justin Solomon

Reported:
10/06/13 16:23

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 3100417 - EPA 5030 Soil MS

Blank (3100417-BLK1)

Prepared & Analyzed: 10/04/13

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	0.0430		"	0.0397		108		23-173			
Surrogate: Toluene-d8	0.0386		"	0.0400		96.5		20-170			
Surrogate: 4-Bromofluorobenzene	0.0412		"	0.0400		103		21-167			

LCS (3100417-BS1)

Prepared & Analyzed: 10/04/13

Benzene	0.0834	0.0020	mg/kg	0.100		83.4		58-130			
Toluene	0.0978	0.0050	"	0.100		97.8		61-134			
Ethylbenzene	0.115	0.0050	"	0.100		115		74-139			
m,p-Xylene	0.220	0.010	"	0.200		110		73-137			
o-Xylene	0.115	0.0050	"	0.100		115		73-141			
Surrogate: 1,2-Dichloroethane-d4	0.0429		"	0.0397		108		23-173			
Surrogate: Toluene-d8	0.0383		"	0.0400		95.8		20-170			
Surrogate: 4-Bromofluorobenzene	0.0403		"	0.0400		101		21-167			

LCS Dup (3100417-BS1)

Prepared & Analyzed: 10/04/13

Benzene	0.0871	0.0020	mg/kg	0.100		87.1		58-130	4.33	13	
Toluene	0.101	0.0050	"	0.100		101		61-134	3.14	16	
Ethylbenzene	0.117	0.0050	"	0.100		117		74-139	1.81	12	
m,p-Xylene	0.223	0.010	"	0.200		112		73-137	1.52	14	
o-Xylene	0.117	0.0050	"	0.100		117		73-141	1.55	12	
Surrogate: 1,2-Dichloroethane-d4	0.0428		"	0.0397		108		23-173			
Surrogate: Toluene-d8	0.0389		"	0.0400		97.3		20-170			
Surrogate: 4-Bromofluorobenzene	0.0402		"	0.0400		100		21-167			

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Project: BC - Antelope K-31 Bonanza Creek
Project Number: 0345-13
Project Manager: Justin Solomon

Reported:
10/06/13 16:23

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 3100417 - EPA 5030 Soil MS

Matrix Spike (3100417-MS1)		Source: R310067-01			Prepared & Analyzed: 10/04/13					
Benzene	0.0872	0.0020	mg/kg	0.100	ND	87.2	30-131			
Toluene	0.102	0.0050	"	0.100	ND	102	30-134			
Ethylbenzene	0.118	0.0050	"	0.100	ND	118	22-153			
m,p-Xylene	0.224	0.010	"	0.200	ND	112	10-159			
o-Xylene	0.117	0.0050	"	0.100	ND	117	31-151			
Surrogate: 1,2-Dichloroethane-d4	0.0446		"	0.0397		112	23-173			
Surrogate: Toluene-d8	0.0394		"	0.0400		98.4	20-170			
Surrogate: 4-Bromofluorobenzene	0.0403		"	0.0400		101	21-167			
Matrix Spike Dup (3100417-MSD1)		Source: R310067-01			Prepared & Analyzed: 10/04/13					
Benzene	0.0852	0.0020	mg/kg	0.100	ND	85.2	30-131	2.33	34	
Toluene	0.0998	0.0050	"	0.100	ND	99.8	30-134	1.76	30	
Ethylbenzene	0.118	0.0050	"	0.100	ND	118	22-153	0.356	24	
m,p-Xylene	0.225	0.010	"	0.200	ND	113	10-159	0.441	68	
o-Xylene	0.117	0.0050	"	0.100	ND	117	31-151	0.615	38	
Surrogate: 1,2-Dichloroethane-d4	0.0440		"	0.0397		111	23-173			
Surrogate: Toluene-d8	0.0389		"	0.0400		97.2	20-170			
Surrogate: 4-Bromofluorobenzene	0.0405		"	0.0400		101	21-167			

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Project: BC - Antelope K-31 Bonanza Creek
Project Number: 0345-13
Project Manager: Justin Solomon

Reported:
10/06/13 16:23

Notes and Definitions

S-02 The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.

E The concentration indicated for this analyte is an estimated value above the calibration range of the instrument.

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