

# Summit Scientific

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741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

July 25, 2016

Brett Forkner  
LT Environmental, Inc.  
4600 West 60th Avenue  
Arvada, CO 80003  
RE: Hebron 2-07H Cuttings Pit

Enclosed are the results of analyses for samples received by Summit Scientific on 07/18/16 16:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Shrewsbury', with a stylized, cursive script.

Paul Shrewsbury  
President



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

Project: Hebron 2-07H Cuttings Pit  
Project Number: 065815003.0005  
Project Manager: Brett Forkner

**Reported:**  
07/25/16 15:26

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
H 207-1@3'	1607117-01	Soil	07/15/16 08:30	07/18/16 16:30
H 207-2@6'	1607117-02	Soil	07/15/16 08:35	07/18/16 16:30
H 207-3@4'	1607117-03	Soil	07/15/16 08:40	07/18/16 16:30
H 207-4@6'	1607117-04	Soil	07/15/16 08:50	07/18/16 16:30
H 207-5@6'	1607117-05	Soil	07/15/16 08:55	07/18/16 16:30

Summit Scientific

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

Project: Hebron 2-07H Cuttings Pit

Project Number: 065815003.0005  
Project Manager: Brett Forkner

Reported:  
07/25/16 15:26

Summit Scientific  
S<sub>2</sub>

1607117

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

Client: LT Project Manager: Brett Forkner Page 1 of 1  
Address: 4600 W 60th Ave E-Mail: bforkner@ltenv.com  
City/State/Zip: Arvada, CO 80033  
Phone: \_\_\_\_\_ Fax: \_\_\_\_\_ Project Name: HEBRON 2-07H CUTTINGS PIT  
Sampler Name: MICHAEL JAMES Project Number: 065815003.0005

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix			Analysis Requested								Special Instructions
					HCl	HNO <sub>3</sub>	None	Other (Specify)	Groundwater	Soil	Air-Canister #	Other (Specify)	GBTEX	DRB	DEQ	PAHs (916)	SAA	EC	PH	
1	H 207-1C3'	7/15/16	0830	2			X						X	X	X	X	X	X	ANALYTICAL ONLY	
2	H 207-2C6'		0835				X						X	X	X	X	X	X		
3	H 207-3C4'		0840				X						X	X	X	X	X	X	ANALYTICAL ONLY	
4	H 207-4C6'		0850				X						X	X	X	X	X	X	ANALYTICAL ONLY	
5	H 207-5C6'		0855				X						X	X	X	X	X	X	ANALYTICAL ONLY	
6													X	X	X	X	X	X	ANALYTICAL ONLY	
7																				
8																				
9																				
10																				

Relinquished by: Michael James Date/Time: 7-18-16 14:45 Received by: Joseph Date/Time: 7/18/16 1445 Turn Around Time (Check)  
Same Day      72 hours       
24 hours      Standard X  
48 hours       
Sample Integrity: 6.2°C  
Temperature Upon Receipt: 6.2°C  
Intact: Yes No     

Notes:  
H 207-2C6'  
IS Run 910 METALS  
METALS RUN  
ANALYTICAL ONLY  
910 METALS

www.s2scientific.com 7/18/16



LT Environmental, Inc.  
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Project: Hebron 2-07H Cuttings Pit  
Project Number: 065815003.0005  
Project Manager: Brett Forkner

Reported:  
07/25/16 15:26

#### Sample Receipt Checklist

S2 Work Order: 1607117

Client: LTE

Client Project ID: Hebron 2-07H Cuttings Pit

Shipped Via: HD  
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Airbill #: \_\_\_\_\_

Matrix (check all that apply): ☐ Air ☒ Soil/Solid ☐ Water ☐ Other: \_\_\_\_\_  
(Describe)

Cooler ID					
Temp (°C)	6.2°C				

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature just above 0°C to ≤ 6°C <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
NOTE: If samples are delivered the same day of sampling, this requirement is waived provided that there is evidence that cooling has begun.				
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Record the pH in Comments.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Additional Comments (if any):				
<sup>(1)</sup> If NO, then contact the client before proceeding with analysis and note in case narrative.				

Mindy March  
Custodian Printed Name

[Signature]  
Signature or Initials of Custodian

7/19/16 11:14  
Date/Time

[Signature]



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

Project: Hebron 2-07H Cuttings Pit  
Project Number: 065815003.0005  
Project Manager: Brett Forkner

Reported:  
07/25/16 15:26

**H 207-1@3'**  
**1607117-01 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: 07/15/16 08:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1607170	07/19/16	07/19/16	8015M	

Date Sampled: 07/15/16 08:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		93.4 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: 07/15/16 08:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1607171	07/19/16	07/19/16	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: 07/15/16 08:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		111 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	21-167		"	"	"	"	

**Semivolatile Organic Compounds by EPA Method 8270D SIM**

Date Sampled: 07/15/16 08:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	1607190	07/20/16	07/20/16	EPA 8270D SIM	

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07/25/16 15:26

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**1607117-01 (Soil)**

**Summit Scientific**

**Semivolatile Organic Compounds by EPA Method 8270D SIM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Anthracene	ND	0.00500	mg/kg	1	1607190	07/20/16	07/20/16	EPA 8270D SIM	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Naphthalene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: 07/15/16 08:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		78.8 %	30-150		"	"	"	"	
Surrogate: Fluoranthene-d10		89.9 %	30-150		"	"	"	"	

**Total Metals by EPA Method 6020 - Dry Weight Basis**

Date Sampled: 07/15/16 08:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	1.22	0.211	mg/kg dry	1	1607168	07/19/16	07/19/16	EPA 6020A	

**Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis**

Date Sampled: 07/15/16 08:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	142	8.94	mg/kg dry	1	1607169	07/19/16	07/19/16	EPA 6020/Mod. USDA60 6(2, 3A)	
Magnesium	20.9	4.47	"	"	"	"	"	"	
Sodium	128	4.47	"	"	"	"	"	"	

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**Reported:**  
07/25/16 15:26

**H 207-1@3'**  
**1607117-01 (Soil)**

**Summit Scientific**

**Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis**

Date Sampled: **07/15/16 08:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	2.57		units	1	1607199	07/21/16	07/21/16	EPA 6020/Mod. USDA60 6(2, 3A)	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **07/15/16 08:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.413	0.0100	mmhos/cm	1	1607201	07/21/16	07/21/16	SM 2510B	

Date Sampled: **07/15/16 08:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.56	0.100	pH Units	"	1607200	07/21/16	07/21/16	EPA 9045	

Date Sampled: **07/15/16 08:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	94.8		%	"	1607218	07/22/16	07/25/16	% calculation	

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Reported:  
07/25/16 15:26

**H 207-2@6'**  
**1607117-02 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: 07/15/16 08:35

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	130	50	mg/kg	1	1607170	07/19/16	07/19/16	8015M	
C28-C36 (ORO)	50	50	"	"	"	"	"	"	

Date Sampled: 07/15/16 08:35

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		97.7 %	70-130		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: 07/15/16 08:35

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0018	mg/kg	1	1607171	07/19/16	07/19/16	EPA 8260B	
Toluene	ND	0.0045	"	"	"	"	"	"	
Ethylbenzene	ND	0.0045	"	"	"	"	"	"	
Xylenes (total)	0.019	0.0045	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	17	0.45	"	"	"	"	"	"	

Date Sampled: 07/15/16 08:35

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		107 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.0 %	21-167		"	"	"	"	

**Semivolatile Organic Compounds by EPA Method 8270D SIM**

Date Sampled: 07/15/16 08:35

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	0.00922	0.00500	mg/kg	1	1607190	07/20/16	07/20/16	EPA 8270D SIM	

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Reported:  
07/25/16 15:26

**H 207-2@6'**  
**1607117-02 (Soil)**

### Summit Scientific

#### Semivolatile Organic Compounds by EPA Method 8270D SIM

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Anthracene	ND	0.00500	mg/kg	1	1607190	07/20/16	07/20/16	EPA 8270D SIM	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
<b>Fluorene</b>	<b>0.0179</b>	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
<b>Naphthalene</b>	<b>0.0253</b>	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: 07/15/16 08:35

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		62.7 %	30-150		"	"	"	"	
Surrogate: Fluoranthene-d10		69.1 %	30-150		"	"	"	"	

#### Total Metals by EPA Method 6020 - Dry Weight Basis

Date Sampled: 07/15/16 08:35

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Arsenic</b>	<b>1.04</b>	0.246	mg/kg dry	1	1607168	07/19/16	07/19/16	EPA 6020A	
<b>Barium</b>	<b>109</b>	0.492	"	"	"	"	"	"	
<b>Cadmium</b>	<b>0.137</b>	0.123	"	"	"	"	"	"	
<b>Chromium</b>	<b>4.08</b>	0.615	"	"	"	"	"	"	
<b>Copper</b>	<b>7.56</b>	0.615	"	"	"	"	"	"	
<b>Lead</b>	<b>3.27</b>	0.246	"	"	"	"	"	"	
<b>Nickel</b>	<b>7.13</b>	0.123	"	"	"	"	"	"	
Selenium	ND	0.492	"	"	"	"	"	"	
Silver	ND	0.123	"	"	"	"	"	"	
<b>Zinc</b>	<b>27.4</b>	12.3	"	"	"	"	"	"	

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Project Number: 065815003.0005  
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Reported:  
07/25/16 15:26

**H 207-2@6'**  
**1607117-02 (Soil)**

**Summit Scientific**

**Total Mercury by EPA Method 7471**

Date Sampled: **07/15/16 08:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Mercury	ND	0.0615	mg/kg dry	1	1607189	07/20/16	07/20/16	EPA 7471	

**Hexavalent Chromium by EPA 7196**

Date Sampled: **07/15/16 08:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.300	mg/kg dry	1	1607188	07/20/16	07/22/16	EPA 7196	

**Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis**

Date Sampled: **07/15/16 08:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	774	10.8	mg/kg dry	1	1607169	07/19/16	07/19/16	EPA 6020/Mod. USDA60 6(2, 3A)	
Magnesium	103	5.38	"	"	"	"	"	"	
Sodium	229	5.38	"	"	"	"	"	"	

Date Sampled: **07/15/16 08:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	1.85		units	"	1607199	07/21/16	07/21/16	"	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **07/15/16 08:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.844	0.0100	mmhos/cm	1	1607201	07/21/16	07/21/16	SM 2510B	

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07/25/16 15:26

**H 207-2@6'**  
**1607117-02 (Soil)**

**Summit Scientific**

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **07/15/16 08:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>pH</b>	<b>7.70</b>	0.100	pH Units	1	1607200	07/21/16	07/21/16	EPA 9045	

Date Sampled: **07/15/16 08:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>% Solids</b>	<b>81.3</b>		%	"	1607218	07/22/16	07/25/16	% calculation	

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Project Number: 065815003.0005  
Project Manager: Brett Forkner

**Reported:**  
07/25/16 15:26

**H 207-3@4'**  
**1607117-03 (Soil)**

### Summit Scientific

#### Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 07/15/16 08:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1607170	07/19/16	07/19/16	8015M	

Date Sampled: 07/15/16 08:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		95.8 %	30-150		"	"	"	"	

#### Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 07/15/16 08:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0018	mg/kg	1	1607171	07/19/16	07/19/16	EPA 8260B	
Toluene	ND	0.0045	"	"	"	"	"	"	
Ethylbenzene	ND	0.0045	"	"	"	"	"	"	
Xylenes (total)	ND	0.0045	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.45	"	"	"	"	"	"	

Date Sampled: 07/15/16 08:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		114 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.4 %	21-167		"	"	"	"	

#### Semivolatile Organic Compounds by EPA Method 8270D SIM

Date Sampled: 07/15/16 08:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	1607190	07/20/16	07/20/16	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	

Summit Scientific

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

Project: Hebron 2-07H Cuttings Pit  
Project Number: 065815003.0005  
Project Manager: Brett Forkner

Reported:  
07/25/16 15:26

**H 207-3@4'**  
**1607117-03 (Soil)**

### Summit Scientific

#### Semivolatile Organic Compounds by EPA Method 8270D SIM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzo (a) anthracene	ND	0.00500	mg/kg	1	1607190	07/20/16	07/20/16	EPA 8270D SIM	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Naphthalene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: 07/15/16 08:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		77.6 %	30-150		"	"	"	"	
Surrogate: Fluoranthene-d10		89.0 %	30-150		"	"	"	"	

#### Total Metals by EPA Method 6020 - Dry Weight Basis

Date Sampled: 07/15/16 08:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	1.51	0.210	mg/kg dry	1	1607168	07/19/16	07/19/16	EPA 6020A	

#### Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis

Date Sampled: 07/15/16 08:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	124	9.26	mg/kg dry	1	1607169	07/19/16	07/19/16	EPA 6020/Mod. USDA60 6(2, 3A)	
Magnesium	ND	4.63	"	"	"	"	"	"	
Sodium	89.3	4.63	"	"	"	"	"	"	

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4600 West 60th Avenue  
Arvada CO, 80003

Project: Hebron 2-07H Cuttings Pit  
Project Number: 065815003.0005  
Project Manager: Brett Forkner

Reported:  
07/25/16 15:26

**H 207-3@4'**  
**1607117-03 (Soil)**

**Summit Scientific**

**Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis**

Date Sampled: 07/15/16 08:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	2.16		units	1	1607199	07/21/16	07/21/16	EPA 6020/Mod. USDA60 6(2, 3A)	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: 07/15/16 08:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.596	0.0100	mmhos/cm	1	1607201	07/21/16	07/21/16	SM 2510B	

Date Sampled: 07/15/16 08:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	9.51	0.100	pH Units	"	1607200	07/21/16	07/21/16	EPA 9045	

Date Sampled: 07/15/16 08:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	95.4		%	"	1607218	07/22/16	07/25/16	% calculation	

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

Project: Hebron 2-07H Cuttings Pit  
Project Number: 065815003.0005  
Project Manager: Brett Forkner

**Reported:**  
07/25/16 15:26

**H 207-4@6'**  
**1607117-04 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **07/15/16 08:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1607170	07/19/16	07/19/16	8015M	

Date Sampled: **07/15/16 08:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		92.2 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **07/15/16 08:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0018	mg/kg	1	1607171	07/19/16	07/19/16	EPA 8260B	
Toluene	ND	0.0045	"	"	"	"	"	"	
Ethylbenzene	ND	0.0045	"	"	"	"	"	"	
Xylenes (total)	<b>0.025</b>	0.0045	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	<b>3.1</b>	0.45	"	"	"	"	"	"	

Date Sampled: **07/15/16 08:50**

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		93.7 %	21-167		"	"	"	"	

**Semivolatile Organic Compounds by EPA Method 8270D SIM**

Date Sampled: **07/15/16 08:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	1607190	07/20/16	07/20/16	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	

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Project: Hebron 2-07H Cuttings Pit  
Project Number: 065815003.0005  
Project Manager: Brett Forkner

**Reported:**  
07/25/16 15:26

**H 207-4@6'**  
**1607117-04 (Soil)**

**Summit Scientific**

**Semivolatile Organic Compounds by EPA Method 8270D SIM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzo (a) anthracene	ND	0.00500	mg/kg	1	1607190	07/20/16	07/20/16	EPA 8270D SIM	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Naphthalene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: 07/15/16 08:50

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		79.5 %	30-150		"	"	"	"	
Surrogate: Fluoranthene-d10		90.5 %	30-150		"	"	"	"	

**Total Metals by EPA Method 6020 - Dry Weight Basis**

Date Sampled: 07/15/16 08:50

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	1.31	0.217	mg/kg dry	1	1607168	07/19/16	07/19/16	EPA 6020A	

**Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis**

Date Sampled: 07/15/16 08:50

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	746	8.19	mg/kg dry	1	1607169	07/19/16	07/19/16	EPA 6020/Mod. USDA60 6(2, 3A)	
Magnesium	161	4.09	"	"	"	"	"	"	
Sodium	40.8	4.09	"	"	"	"	"	"	

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4600 West 60th Avenue  
Arvada CO, 80003

Project: Hebron 2-07H Cuttings Pit  
Project Number: 065815003.0005  
Project Manager: Brett Forkner

**Reported:**  
07/25/16 15:26

**H 207-4@6'**  
**1607117-04 (Soil)**

**Summit Scientific**

**Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis**

Date Sampled: 07/15/16 08:50

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.339		units	1	1607199	07/21/16	07/21/16	EPA 6020/Mod. USDA60 6(2, 3A)	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: 07/15/16 08:50

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.428	0.0100	mmhos/cm	1	1607201	07/21/16	07/21/16	SM 2510B	

Date Sampled: 07/15/16 08:50

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.18	0.100	pH Units	"	1607200	07/21/16	07/21/16	EPA 9045	

Date Sampled: 07/15/16 08:50

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	92.1		%	"	1607218	07/22/16	07/25/16	% calculation	

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Project Number: 065815003.0005  
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Reported:  
07/25/16 15:26

**H 207-5@6'**  
**1607117-05 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: 07/15/16 08:55

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1607170	07/19/16	07/19/16	8015M	

Date Sampled: 07/15/16 08:55

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		96.9 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: 07/15/16 08:55

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1607171	07/19/16	07/19/16	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	5.0	"	10	"	"	07/19/16	"	

Date Sampled: 07/15/16 08:55

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		112 %	23-173		"	"	07/19/16	"	
Surrogate: Toluene-d8		98.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.6 %	21-167		"	"	"	"	

**Semivolatile Organic Compounds by EPA Method 8270D SIM**

Date Sampled: 07/15/16 08:55

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	1607190	07/20/16	07/21/16	EPA 8270D SIM	
Anthracene	0.00743	0.00500	"	"	"	"	"	"	

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Project: Hebron 2-07H Cuttings Pit  
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Project Manager: Brett Forkner

Reported:  
07/25/16 15:26

**H 207-5@6'**  
**1607117-05 (Soil)**

### Summit Scientific

#### Semivolatile Organic Compounds by EPA Method 8270D SIM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzo (a) anthracene	ND	0.00500	mg/kg	1	1607190	07/20/16	07/21/16	EPA 8270D SIM	
<b>Benzo (b) fluoranthene</b>	<b>0.0334</b>	0.00500	"	"	"	"	"	"	
<b>Benzo (k) fluoranthene</b>	<b>0.00642</b>	0.00500	"	"	"	"	"	"	
<b>Benzo (a) pyrene</b>	<b>0.00811</b>	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
<b>Indeno (1,2,3-cd) pyrene</b>	<b>0.0196</b>	0.00500	"	"	"	"	"	"	
Naphthalene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: 07/15/16 08:55

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		84.8 %	30-150		"	"	"	"	
Surrogate: Fluoranthene-d10		100 %	30-150		"	"	"	"	

#### Total Metals by EPA Method 6020 - Dry Weight Basis

Date Sampled: 07/15/16 08:55

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Arsenic</b>	<b>0.577</b>	0.210	mg/kg dry	1	1607168	07/19/16	07/19/16	EPA 6020A	

#### Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis

Date Sampled: 07/15/16 08:55

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Calcium</b>	<b>69.3</b>	8.68	mg/kg dry	1	1607169	07/19/16	07/19/16	EPA 6020/Mod. USDA60 6(2, 3A)	
Magnesium	ND	4.34	"	"	"	"	"	"	
<b>Sodium</b>	<b>135</b>	4.34	"	"	"	"	"	"	

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Arvada CO, 80003

Project: Hebron 2-07H Cuttings Pit  
Project Number: 065815003.0005  
Project Manager: Brett Forkner

**Reported:**  
07/25/16 15:26

**H 207-5@6'**  
**1607117-05 (Soil)**

**Summit Scientific**

**Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis**

Date Sampled: 07/15/16 08:55

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	4.37		units	1	1607199	07/21/16	07/21/16	EPA 6020/Mod. USDA60 6(2, 3A)	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: 07/15/16 08:55

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.778	0.0100	mmhos/cm	1	1607201	07/21/16	07/21/16	SM 2510B	

Date Sampled: 07/15/16 08:55

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.43	0.100	pH Units	"	1607200	07/21/16	07/21/16	EPA 9045	

Date Sampled: 07/15/16 08:55

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	95.3		%	"	1607218	07/22/16	07/25/16	% calculation	

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Project Number: 065815003.0005  
Project Manager: Brett Forkner

**Reported:**  
07/25/16 15:26

**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 1607170 - EPA 3550A**

**Blank (1607170-BLK1)**

Prepared & Analyzed: 07/19/16

C10-C28 (DRO)	ND	50	mg/kg							
C10-C28 (DRO)	ND	50	"							
C28-C36 (ORO)	ND	50	"							
Surrogate: o-Terphenyl	12.4		"	12.5		99.0	30-150			
Surrogate: o-Terphenyl	12.4		"	12.5		99.0	70-130			

**LCS (1607170-BS1)**

Prepared & Analyzed: 07/19/16

C10-C28 (DRO)	606	50	mg/kg	499		121	73-134			
C10-C28 (DRO)	606	50	"	499		121	50-150			
C28-C36 (ORO)	47.3	50	"				50-150			
Surrogate: o-Terphenyl	15.5		"	12.5		124	30-150			
Surrogate: o-Terphenyl	15.5		"	12.5		124	70-130			

**Matrix Spike (1607170-MS1)**

Source: 1607117-01

Prepared & Analyzed: 07/19/16

C10-C28 (DRO)	547	50	mg/kg	472	28.9	110	50-148			
C10-C28 (DRO)	547	50	"	472	28.9	110	50-150			
C28-C36 (ORO)	45.2	50	"		50.4		50-150			
Surrogate: o-Terphenyl	12.6		"	11.8		106	30-150			
Surrogate: o-Terphenyl	12.6		"	11.8		106	70-130			

**Matrix Spike Dup (1607170-MSD1)**

Source: 1607117-01

Prepared & Analyzed: 07/19/16

C10-C28 (DRO)	556	50	mg/kg	458	28.9	115	50-150	1.76	20	
C10-C28 (DRO)	556	50	"	458	28.9	115	50-148	1.76	20	
C28-C36 (ORO)	42.4	50	"		50.4		50-150	6.59	20	
Surrogate: o-Terphenyl	13.8		"	11.5		120	30-150			
Surrogate: o-Terphenyl	13.8		"	11.5		120	70-130			

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Project: Hebron 2-07H Cuttings Pit  
Project Number: 065815003.0005  
Project Manager: Brett Forkner

Reported:  
07/25/16 15:26

**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 1607171 - EPA 5030 Soil MS**

**Blank (1607171-BLK1)**

Prepared: 07/19/16 Analyzed: 07/20/16

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	0.0303		"	0.0400		75.8	23-173			
Surrogate: Toluene-d8	0.0394		"	0.0400		98.5	20-170			
Surrogate: 4-Bromofluorobenzene	0.0414		"	0.0400		103	21-167			

**LCS (1607171-BS1)**

Prepared: 07/19/16 Analyzed: 07/20/16

Benzene	0.141	0.0020	mg/kg	0.150		94.3	58-130			
Toluene	0.127	0.0050	"	0.150		84.6	61-134			
Ethylbenzene	0.139	0.0050	"	0.150		92.4	74-139			
m,p-Xylene	0.273	0.010	"	0.300		91.1	73-137			
o-Xylene	0.144	0.0050	"	0.150		95.7	73-141			
Xylenes (total)	0.417	0.0050	"				30-150			
Gasoline Range Hydrocarbons	ND	0.50	"				30-150			
Surrogate: 1,2-Dichloroethane-d4	0.0286		"	0.0400		71.6	23-173			
Surrogate: Toluene-d8	0.0407		"	0.0400		102	20-170			
Surrogate: 4-Bromofluorobenzene	0.0408		"	0.0400		102	21-167			

**Matrix Spike (1607171-MS1)**

Source: 1607095-01

Prepared: 07/19/16 Analyzed: 07/20/16

Benzene	0.117	0.0020	mg/kg	0.145	ND	81.0	30-131			
Toluene	0.106	0.0050	"	0.145	0.000749	72.9	30-134			
Ethylbenzene	0.114	0.0050	"	0.145	ND	79.0	22-153			
m,p-Xylene	0.222	0.010	"	0.290	ND	76.7	10-159			
o-Xylene	0.117	0.0050	"	0.145	ND	80.9	31-151			
Xylenes (total)	0.339	0.0050	"		ND		30-150			
Gasoline Range Hydrocarbons	ND	0.50	"		ND		30-150			
Surrogate: 1,2-Dichloroethane-d4	0.0280		"	0.0386		72.4	23-173			
Surrogate: Toluene-d8	0.0390		"	0.0386		101	20-170			
Surrogate: 4-Bromofluorobenzene	0.0393		"	0.0386		102	21-167			

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

Project: Hebron 2-07H Cuttings Pit  
Project Number: 065815003.0005  
Project Manager: Brett Forkner

Reported:  
07/25/16 15:26

**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 1607171 - EPA 5030 Soil MS**

Matrix Spike Dup (1607171-MSD1)	Source: 1607095-01			Prepared: 07/19/16		Analyzed: 07/20/16				
Benzene	0.124	0.0020	mg/kg	0.145	ND	85.0	30-131	5.28	34	
Toluene	0.111	0.0050	"	0.145	0.000749	75.8	30-134	4.34	30	
Ethylbenzene	0.121	0.0050	"	0.145	ND	83.5	22-153	5.95	24	
m,p-Xylene	0.235	0.010	"	0.291	ND	80.7	10-159	5.50	68	
o-Xylene	0.125	0.0050	"	0.145	ND	86.0	31-151	6.52	38	
Xylenes (total)	0.360	0.0050	"		ND		30-150	5.85	20	
Gasoline Range Hydrocarbons	ND	0.50	"		ND		30-150		20	
Surrogate: 1,2-Dichloroethane-d4	0.0278		"	0.0388		71.8	23-173			
Surrogate: Toluene-d8	0.0393		"	0.0388		101	20-170			
Surrogate: 4-Bromofluorobenzene	0.0388		"	0.0388		100	21-167			

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Arvada CO, 80003

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Project Number: 065815003.0005  
Project Manager: Brett Forkner

Reported:  
07/25/16 15:26

**Semivolatile Organic Compounds by EPA Method 8270D SIM - Quality Control**  
**Summit Scientific**

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

**Batch 1607190 - EPA 5030 Soil MS**

**Blank (1607190-BLK1)**

Prepared & Analyzed: 07/20/16

Acenaphthene	ND	0.00500	mg/kg
Anthracene	ND	0.00500	"
Benzo (a) anthracene	ND	0.00500	"
Benzo (b) fluoranthene	ND	0.00500	"
Benzo (k) fluoranthene	ND	0.00500	"
Benzo (a) pyrene	ND	0.00500	"
Chrysene	ND	0.00500	"
Dibenz (a,h) anthracene	ND	0.00500	"
Fluoranthene	ND	0.00500	"
Fluorene	ND	0.00500	"
Indeno (1,2,3-cd) pyrene	ND	0.00500	"
Naphthalene	ND	0.00500	"
Pyrene	ND	0.00500	"

Surrogate: 2-Methylnaphthalene-d10	0.0308	"	0.0331	93.2	30-150
Surrogate: Fluoranthene-d10	0.0359	"	0.0331	109	30-150

**LCS (1607190-BS1)**

Prepared & Analyzed: 07/20/16

Acenaphthene	0.0321	0.00500	mg/kg	0.0330	97.4	48-131
Anthracene	0.0352	0.00500	"	0.0330	107	48-135
Benzo (a) anthracene	0.0369	0.00500	"	0.0330	112	37-142
Benzo (b) fluoranthene	0.0388	0.00500	"	0.0330	118	35-139
Benzo (k) fluoranthene	0.0357	0.00500	"	0.0330	108	30-139
Benzo (a) pyrene	0.0352	0.00500	"	0.0330	107	41-132
Chrysene	0.0343	0.00500	"	0.0330	104	30-136
Dibenz (a,h) anthracene	0.0372	0.00500	"	0.0330	113	24-127
Fluoranthene	0.0379	0.00500	"	0.0330	115	50-139
Fluorene	0.0346	0.00500	"	0.0330	105	50-130
Indeno (1,2,3-cd) pyrene	0.0286	0.00500	"	0.0330	86.7	26-139
Naphthalene	0.0295	0.00500	"	0.0330	89.5	40-135
Pyrene	0.0327	0.00500	"	0.0330	99.2	39-141

Surrogate: 2-Methylnaphthalene-d10	0.0298	"	0.0330	90.3	50-150
Surrogate: Fluoranthene-d10	0.0354	"	0.0330	107	50-150

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Project: Hebron 2-07H Cuttings Pit  
Project Number: 065815003.0005  
Project Manager: Brett Forkner

Reported:  
07/25/16 15:26

**Semivolatile Organic Compounds by EPA Method 8270D SIM - Quality Control**  
**Summit Scientific**

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

**Batch 1607190 - EPA 5030 Soil MS**

Matrix Spike (1607190-MS1)		Source: 1607117-01			Prepared & Analyzed: 07/20/16					
Acenaphthene	0.0326	0.00500	mg/kg	0.0331	ND	98.4	27-140			
Anthracene	0.0347	0.00500	"	0.0331	ND	105	23-144			
Benzo (a) anthracene	0.0367	0.00500	"	0.0331	ND	111	12-168			
Benzo (b) fluoranthene	0.0382	0.00500	"	0.0331	ND	115	10-170			
Benzo (k) fluoranthene	0.0348	0.00500	"	0.0331	ND	105	11-150			
Benzo (a) pyrene	0.0346	0.00500	"	0.0331	ND	105	11-162			
Chrysene	0.0342	0.00500	"	0.0331	ND	103	10-167			
Dibenz (a,h) anthracene	0.0358	0.00500	"	0.0331	ND	108	10-128			
Fluoranthene	0.0375	0.00500	"	0.0331	ND	113	18-157			
Fluorene	0.0343	0.00500	"	0.0331	ND	104	37-133			
Indeno (1,2,3-cd) pyrene	0.0270	0.00500	"	0.0331	ND	81.4	10-161			
Naphthalene	0.0298	0.00500	"	0.0331	ND	90.0	10-157			
Pyrene	0.0328	0.00500	"	0.0331	ND	99.2	10-166			
Surrogate: 2-Methylnaphthalene-d10	0.0291		"	0.0331		87.8	50-150			
Surrogate: Fluoranthene-d10	0.0351		"	0.0331		106	50-150			

Matrix Spike Dup (1607190-MSD1)		Source: 1607117-01			Prepared & Analyzed: 07/20/16					
Acenaphthene	0.0293	0.00500	mg/kg	0.0329	ND	89.1	27-140	10.5	15	
Anthracene	0.0311	0.00500	"	0.0329	ND	94.6	23-144	11.0	29	
Benzo (a) anthracene	0.0331	0.00500	"	0.0329	ND	101	12-168	10.4	65	
Benzo (b) fluoranthene	0.0343	0.00500	"	0.0329	ND	104	10-170	10.8	18	
Benzo (k) fluoranthene	0.0315	0.00500	"	0.0329	ND	95.9	11-150	9.82	32	
Benzo (a) pyrene	0.0309	0.00500	"	0.0329	ND	94.0	11-162	11.3	27	
Chrysene	0.0307	0.00500	"	0.0329	ND	93.2	10-167	10.8	88	
Dibenz (a,h) anthracene	0.0329	0.00500	"	0.0329	ND	100	10-128	8.56	20	
Fluoranthene	0.0335	0.00500	"	0.0329	ND	102	18-157	11.4	31	
Fluorene	0.0313	0.00500	"	0.0329	ND	95.1	37-133	9.25	16	
Indeno (1,2,3-cd) pyrene	0.0245	0.00500	"	0.0329	ND	74.4	10-161	9.64	22	
Naphthalene	0.0274	0.00500	"	0.0329	ND	83.4	10-157	8.26	24	
Pyrene	0.0293	0.00500	"	0.0329	ND	88.9	10-166	11.5	57	
Surrogate: 2-Methylnaphthalene-d10	0.0284		"	0.0329		86.3	50-150			
Surrogate: Fluoranthene-d10	0.0331		"	0.0329		101	50-150			

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Arvada CO, 80003

Project: Hebron 2-07H Cuttings Pit  
Project Number: 065815003.0005  
Project Manager: Brett Forkner

**Reported:**  
07/25/16 15:26

**Total Metals by EPA Method 6020 - Dry Weight Basis - Quality Control**  
**Summit Scientific**

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

**Batch 1607168 - EPA 3050B**

**Blank (1607168-BLK1)**

Prepared & Analyzed: 07/19/16

Arsenic	ND	0.200	mg/kg wet
Arsenic	ND	0.200	"
Barium	ND	0.400	"
Cadmium	ND	0.100	"
Chromium	ND	0.500	"
Copper	ND	0.500	"
Lead	ND	0.200	"
Nickel	ND	0.100	"
Selenium	ND	0.400	"
Silver	ND	0.100	"
Zinc	ND	10.0	"

**LCS (1607168-BS1)**

Prepared & Analyzed: 07/19/16

Arsenic	55.3	0.200	mg/kg wet	52.8	105	82.6-117
Arsenic	55.3	0.200	"	52.8	105	82.6-117
Barium	98.7	0.400	"	91.2	108	72.8-127
Cadmium	50.8	0.100	"	48.8	104	80.3-120
Chromium	26.4	0.500	"	25.3	105	74.7-125
Copper	91.7	0.500	"	84.8	108	85.4-115
Lead	43.0	0.200	"	43.2	99.5	81.1-119
Nickel	124	0.100	"	114	109	88-112
Selenium	31.1	0.400	"	32.2	96.4	73.7-127
Silver	24.6	0.100	"	29.4	83.6	69.8-130
Zinc	89.1	10.0	"	81.2	110	77.8-122

**Duplicate (1607168-DUP1)**

**Source: 1607117-01**

Prepared & Analyzed: 07/19/16

Arsenic	3.31	0.181	mg/kg dry	1.22	92.5	20	QR-03
Arsenic	3.31	0.181	"	1.22	92.5	20	QR-03
Barium	143	0.362	"	144	0.200	20	
Cadmium	0.0927	0.0906	"	0.123	28.4	20	QR-03
Chromium	2.68	0.453	"	3.67	31.1	20	QR-03
Copper	5.34	0.453	"	7.14	28.9	20	QR-03
Lead	3.38	0.181	"	2.52	29.1	20	QR-03
Nickel	4.95	0.0906	"	7.30	38.3	20	QR-03
Selenium	ND	0.362	"	0.426		20	
Silver	0.330	0.0906	"	0.332	0.598	20	
Zinc	18.1	9.06	"	22.4	21.2	20	QR-03

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Arvada CO, 80003

Project: Hebron 2-07H Cuttings Pit  
Project Number: 065815003.0005  
Project Manager: Brett Forkner

**Reported:**  
07/25/16 15:26

**Total Metals by EPA Method 6020 - Dry Weight Basis - Quality Control**  
**Summit Scientific**

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

**Batch 1607168 - EPA 3050B**

**Matrix Spike (1607168-MS1)**

**Source: 1607117-01**

Prepared & Analyzed: 07/19/16

Arsenic	35.0	0.211	mg/kg dry	39.6	1.22	85.4	75-125
Arsenic	35.0	0.211	"	39.6	1.22	85.4	75-125
Barium	182	0.422	"	39.6	144	97.7	75-125
Cadmium	1.85	0.105	"	1.98	0.123	87.2	75-125
Chromium	41.0	0.527	"	39.6	3.67	94.2	75-125
Copper	42.0	0.527	"	39.6	7.14	88.1	75-125
Lead	18.7	0.211	"	19.8	2.52	81.7	75-125
Nickel	42.2	0.105	"	39.6	7.30	88.2	75-125
Selenium	3.72	0.422	"	3.96	0.426	83.2	75-125
Silver	2.09	0.105	"	1.98	0.332	88.8	75-125
Zinc	57.0	10.5	"	39.6	22.4	87.6	75-125

**Matrix Spike Dup (1607168-MSD1)**

**Source: 1607117-01**

Prepared & Analyzed: 07/19/16

Arsenic	31.2	0.182	mg/kg dry	36.5	1.22	82.3	75-125	11.4	25
Arsenic	31.2	0.182	"	36.5	1.22	82.3	75-125	11.4	25
Barium	177	0.365	"	36.5	144	90.9	75-125	3.08	25
Cadmium	1.71	0.0912	"	1.82	0.123	86.8	75-125	8.07	25
Chromium	36.4	0.456	"	36.5	3.67	89.7	75-125	11.8	25
Copper	37.7	0.456	"	36.5	7.14	83.7	75-125	10.9	25
Lead	17.2	0.182	"	18.2	2.52	80.6	75-125	8.14	25
Nickel	38.0	0.0912	"	36.5	7.30	84.2	75-125	10.5	25
Selenium	3.34	0.365	"	3.65	0.426	79.9	75-125	10.7	25
Silver	1.95	0.0912	"	1.82	0.332	88.7	75-125	6.85	25
Zinc	50.7	9.12	"	36.5	22.4	77.7	75-125	11.7	25

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Project: Hebron 2-07H Cuttings Pit  
Project Number: 065815003.0005  
Project Manager: Brett Forkner

**Reported:**  
07/25/16 15:26

**Total Mercury by EPA Method 7471 - Quality Control**  
**Summit Scientific**

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

**Batch 1607189 - EPA 7471A**

<b>Blank (1607189-BLK1)</b>				Prepared & Analyzed: 07/20/16							
Mercury	ND	0.0500	mg/kg wet								
<b>LCS (1607189-BS1)</b>				Prepared & Analyzed: 07/20/16							
Mercury	0.523	0.0500	mg/kg wet	0.500		105	80-120				
<b>Duplicate (1607189-DUP1)</b>				<b>Source: 1607081-01</b>		Prepared & Analyzed: 07/20/16					
Mercury	0.180	0.0720	mg/kg dry		0.146			20.8	20		QR-03
<b>Matrix Spike (1607189-MS1)</b>				<b>Source: 1607081-01</b>		Prepared & Analyzed: 07/20/16					
Mercury	0.776	0.0720	mg/kg dry	0.664	0.146	95.0	80-120				
<b>Matrix Spike Dup (1607189-MSD1)</b>				<b>Source: 1607081-01</b>		Prepared & Analyzed: 07/20/16					
Mercury	0.659	0.0522	mg/kg dry	0.522	0.146	98.5	80-120	16.3	20		

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Project Manager: Brett Forkner

**Reported:**  
07/25/16 15:26

**Hexavalent Chromium by EPA 7196 - Quality Control**  
**Summit Scientific**

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

**Batch 1607188 - 3060A\_Mod**

**Blank (1607188-BLK1)**

Prepared: 07/20/16 Analyzed: 07/22/16

Chromium, Hexavalent ND 0.300 mg/kg wet

**LCS (1607188-BS1)**

Prepared: 07/20/16 Analyzed: 07/22/16

Chromium, Hexavalent 20.4 0.300 mg/kg wet 19.9 103 85-115

**Duplicate (1607188-DUP1)**

**Source: 1607090-02**

Prepared: 07/20/16 Analyzed: 07/22/16

Chromium, Hexavalent ND 0.300 mg/kg dry ND 20

**Matrix Spike (1607188-MS1)**

**Source: 1607090-02**

Prepared: 07/20/16 Analyzed: 07/22/16

Chromium, Hexavalent ND 0.300 mg/kg dry 20.1 ND 85-115 QM-07

**Post Spike (1607188-PS1)**

**Source: 1607090-02**

Prepared: 07/20/16 Analyzed: 07/22/16

Chromium, Hexavalent 0.0920 mg/kg 0.498 0.00 18.5 85-115 QM-07

Summit Scientific

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Project Manager: Brett Forkner

Reported:  
07/25/16 15:26

**Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis - Quality Control**  
**Summit Scientific**

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

**Batch 1607169 - General Preparation**

**Blank (1607169-BLK1)**

Prepared & Analyzed: 07/19/16

Calcium	ND	10.0	mg/kg wet
Magnesium	ND	5.00	"
Sodium	ND	5.00	"

**LCS (1607169-BS1)**

Prepared & Analyzed: 07/19/16

Calcium	538	10.0	mg/kg wet	500	108	82.9-118
Magnesium	609	5.00	"	500	122	77.1-123
Sodium	643	5.00	"	500	129	71-129

**Duplicate (1607169-DUP1)**

Source: 1607117-01

Prepared & Analyzed: 07/19/16

Calcium	156	8.94	mg/kg dry	142	9.02	200
Magnesium	22.5	4.47	"	20.9	7.53	200
Sodium	82.2	4.47	"	128	43.3	200

**Matrix Spike (1607169-MS1)**

Source: 1607117-01

Prepared & Analyzed: 07/19/16

Calcium	509	8.94	mg/kg dry	447	142	82.1	75-125
Magnesium	514	4.47	"	447	20.9	110	75-125
Sodium	527	4.47	"	447	128	89.4	75-125

**Matrix Spike Dup (1607169-MSD1)**

Source: 1607117-01

Prepared & Analyzed: 07/19/16

Calcium	626	8.94	mg/kg dry	447	142	108	75-125	20.6	25
Magnesium	535	4.47	"	447	20.9	115	75-125	3.89	25
Sodium	636	4.47	"	447	128	114	75-125	18.8	25

Summit Scientific

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Project Number: 065815003.0005  
Project Manager: Brett Forkner

**Reported:**  
07/25/16 15:26

**Physical Parameters by APHA/ASTM/EPA Methods - Quality Control**  
**Summit Scientific**

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

**Batch 1607200 - General Preparation**

<b>LCS (1607200-BS1)</b>					Prepared & Analyzed: 07/21/16						
pH	8.06	0.100	pH Units	8.00	101	95-105					
<b>Duplicate (1607200-DUP1)</b>					Source: 1607078-20 Prepared & Analyzed: 07/21/16						
pH	9.11	0.100	pH Units	9.18	0.765	20					

**Batch 1607201 - General Preparation**

<b>Blank (1607201-BLK1)</b>					Prepared & Analyzed: 07/21/16						
Specific Conductance (EC)	ND	0.0100	mmhos/cm								
<b>LCS (1607201-BS1)</b>					Prepared & Analyzed: 07/21/16						
Specific Conductance (EC)	0.488	0.0100	mmhos/cm	0.500	97.5	90-110					
<b>Duplicate (1607201-DUP1)</b>					Source: 1607078-20 Prepared & Analyzed: 07/21/16						
Specific Conductance (EC)	5.10	0.0100	mmhos/cm	3.90	26.8	20					QR-03

**Batch 1607218 - General Preparation**

<b>Duplicate (1607218-DUP1)</b>					Source: 1607117-01 Prepared: 07/22/16 Analyzed: 07/25/16						
% Solids	94.7		%	94.8	0.128	20					

Summit Scientific

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4600 West 60th Avenue  
Arvada CO, 80003

Project: Hebron 2-07H Cuttings Pit  
Project Number: 065815003.0005  
Project Manager: Brett Forkner

**Reported:**  
07/25/16 15:26

### Notes and Definitions

QR-03 The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS/LCSD recovery.

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