



October 7, 2016

Mr. Ken Raymond
Senior Environmental Health and Safety Specialist
SandRidge Exploration and Production, LLC
123 Robert S. Kerr Avenue
Oklahoma City, Oklahoma 73102

**RE: Supplemental Environmental Site Investigation
Former EE3 Production Facility – Hebron 3-12H (API #: 05-057-06498)
Jackson County, Colorado**

Dear Mr. Raymond:

LT Environmental, Inc. (LTE), under the direction of SandRidge Exploration and Production, LLC (SandRidge), conducted a supplemental environmental site investigation (ESI) at the Hebron 3-12H location (Site), API #: 05-057-06498. This report includes a summary of previous work conducted at the Site, a discussion of the ESI's field activities, hydrogeological records, laboratory analytical results, and cost estimates for source removal remediation.

The Site is located approximately 1 mile west of State Highway 14 and 0.55 miles north of County Road 24 northeast of Coalmont, Colorado. The legal site description is the northeast quarter of the northeast quarter of Section 12, Township 7 North, Range 81 West, 6th Principal Meridian. The Site Location Map is provided as Figure 1 and the Site Map is provided as Figure 2.

Site History

In May, 2016, Fremont Environmental, Inc. (Fremont) on behalf of the Colorado Oil and Gas Conservation Commission (COGCC), conducted an ESI at the Site. Fremont advanced a total of four soil borings (A through D) as part of the ESI. Soil samples were collected from three of the soil borings (B, C, and D). The laboratory analytical results indicated that total petroleum hydrocarbons (TPH) in soil samples C@7' and B@4', and benzene in soil sample C@7' were in exceedance of the applicable COGCC Table 910-1 allowable concentrations at 4,397 milligrams per kilogram (mg/kg), 2,170 mg/kg, and 0.43 mg/kg, respectively. Additionally, laboratory analytical results indicated that all of the soil samples exceeded the COGCC Table 910-1 allowable concentration of arsenic, ranging from 1.57 mg/kg (D) to 2.86 mg/kg (C). A complete summary of the ESI is discussed in the COGCC report titled *Soil Sampling Report, Former EE3/SandRidge LLC Locations* and dated June 8, 2016.

At the request of SandRidge, LTE reviewed the ESI data and determined that developing an appropriate remediation strategy would require additional subsurface investigation to adequately delineate the vertical and lateral extent of hydrocarbon impact at the Site.



Supplemental Environmental Site Investigation

On September 7 and 8, 2016, LTE, under the direction of SandRidge, conducted a supplemental ESI to further delineate the hydrocarbon impact at the Site. Twelve soil borings were advanced with a truck mounted Geoprobe® using direct push drilling technology by Elite Drilling Services, LLC. (Elite) of Denver, Colorado. LTE observed the continuous soil samples for evidence of environmental impacts and screened the soils for volatile organic compounds (VOCs) with a photo ionizing detector (PID). The soil borings were advanced to a minimum of 5 feet below any evidence of environmental impacts including soil staining, odor, and elevated PID readings, or until refusal. The soil boring depths ranged from 8 feet to 15 feet below ground surface (bgs). LTE collected one soil sample from each of the soil borings for laboratory analysis from the interval with the highest PID reading, or demonstrated evidence of hydrocarbon impacts including staining or odor.

Three soil borings were advanced at the approximate locations where elevated soil TPH and/or benzene concentrations were observed during the initial ESI (SBB-R, SBC2, SBC-R, and SBD-R), to further delineate the vertical extent of hydrocarbon impacts. Soil borings SB01 through SB08 were drilled as step-out borings from the areas where hydrocarbon impacts were observed during the initial ESI to delineate the lateral extent of impact. The soil boring locations are provided on Figure 2. The soil boring lithologic logs are included as Attachment 1.

The soil samples from soil borings were collected in laboratory provided sample containers, placed on ice, and submitted, with a completed chain of custody form, to Summit Scientific (Summit), of Golden, Colorado, for analysis. The soil samples were analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) and TPH – gasoline range organics (GRO) under the United States Environmental Protection Agency (EPA) method 8260 and TPH – diesel range organics (DRO) under EPA method 8015. At the request of the COGCC, soil sample SBC2@10' was analyzed for the full COGCC Table 910-1 analyte list, excluding boron.

Field Summary

Field observations indicated hydrocarbon staining, odor, and elevated PID readings at soil borings SBB-R, SBC-R, SBC2, and SB05. No evidence of hydrocarbon impact was observed at the remaining soil borings. The evidence of hydrocarbon impacts ranged in depth from approximately 3 to 9 feet bgs at SBB-R, SBC-R, SBC2, and SB05 and the maximum VOCs concentrations ranged from 89.0 parts per million (ppm) at 6 feet bgs at SBC-R to 604.0 ppm at 3 feet bgs at SB05. The lithology of the impacted interval observed at soil borings within the limits of the former pit boundary consisted of clayey sand with traces of fibrous woody fragments throughout. Drilling refusal was encountered between 8 and 15 feet bgs and groundwater was not encountered in any of the soil borings.



Soil Analytical Results

The COGCC Table 910-1 allowable concentrations for BTEX and TPH in soil are 0.17 mg/kg, 85 mg/kg, 100 mg/kg, 175 mg/kg, and 500 mg/kg, respectively. Soil samples SBB-R@3' and SB05@3' exceeded the COGCC Table 910-1 allowable concentration of TPH at 3,800 mg/kg and 2,040 mg/kg, respectively. All other soil sample analytical results were below the applicable COGCC Table 910-1 allowable concentrations. The soil sample analytical results are presented on Figure 3 and summarized in Table 1. The laboratory analytical report is attached.

Soil sample SBC2@10' was analyzed for the full COGCC Table 910-1 analyte list, excluding boron. Arsenic exceeded the COGCC Table 910-1 allowable concentration of 0.39 mg/kg at 1.13 mg/kg. All other analytes were below the applicable COGCC Table 910-1 allowable concentrations. The soil sample SBC2@10' full COGCC Table 910-1 analytical results are summarized in Table 2. The laboratory analytical report is attached.

Discussion

The laboratory analytical results of the soil samples collected from soil borings B, C, and D by Freemont during the initial ESI had arsenic concentrations of 1.99 mg/kg, 2.86 mg/kg, and 1.57 mg/kg respectively. The laboratory analytical results of the soil sample collected from soil boring SBC2 during the supplemental ESI had an arsenic concentration of 1.13 mg/kg. SandRidge collected background soil samples from seven sites within the region. The highest background arsenic concentrations observed at each of these sites ranged from 0.677 mg/kg to 6.09 mg/kg, and averaged 3.46 mg/kg. The COGCC has reviewed the background arsenic concentrations, and based on frequently asked question #31 of the COGCC 2008 Rule Making, has determined that the maximum allowable arsenic concentration of the samples collected during the initial ESI is not to exceed 3.80 mg/kg or 10% above of the average of the highest background arsenic concentrations observed at each location. The highest arsenic concentration of the samples collected during the initial ESI was 2.86 mg/kg which is below the COGCC determined maximum allowable concentration of 3.80 mg/kg. Based on these data, LTE recommends that SandRidge request a decision of No Further Action for arsenic impact with the COGCC. A map of the regional arsenic data collected by SandRidge is presented on Figure 4.

The initial ESI identified three locations at the Site with elevated concentrations of benzene and/or TPH (soil borings B and C). The supplemental ESI identified elevated concentrations of TPH which exceeds COGCC Table 910-1 applicable standards in soil borings SBB-R and SB05. No hydrocarbon impact was identified in soil boring SBD-R which was drilled in a location representative of the initial ESI's soil boring D. The vertical extent of hydrocarbon impact was delineated to be approximately between 3 and 9 feet bgs. The approximate lateral extent of hydrocarbon impacts is 100 feet in a general north-south direction and 75 feet in a general east-west direction. Groundwater was not encountered during this investigation. The defined lateral extent of impact is provided on Figure 3.



Based on results of the initial and supplemental ESIs, the estimated volume of hydrocarbon impacted soil existing at the Site is approximately 1,700 cubic yards. TPH concentrations in the impacted area ranged from 431 mg/kg (D@3') to 4,397 mg/kg (C@7') during the initial ESI and 2,040 mg/kg (SB05@3') to 3,800 mg/kg (SBB-R@3') during the supplemental ESI.

Source Removal Excavation

SandRidge will secure an earthworks contractor to excavate the delineated impact and transport it to a properly permitted landfill facility for final disposal. LTE will oversee the source removal excavation to observe for hydrocarbon impacts, including soil staining and/or odor, and screen the excavated soils for VOCs using a PID and a PetroFlag[®] kit (field test for heavy organics). LTE will determine the extent of impacts and direct the earthworks contractor to segregate the impacted soils from the clean soils based on these observations.

Upon completion of the source removal activities, LTE will collect confirmation soil samples from the sidewalls and floor of each excavation. These confirmation soil samples will be representative of the excavation and, in general, spaced at 30 foot centers. The confirmation soil samples will be collected in laboratory provided sample containers, placed on ice, and submitted to Summit, under chain of custody protocol, for BTEX and TPH-GRO analysis using EPA method 8260B, and TPH-DRO analysis using EPA method 8015. The soil samples will be completed under 24-hour turnaround times in order to expedite source removal activities. The source removal excavation will be backfilled with clean fill upon verification that the confirmation soil samples are within the COGCC Table 910-1 allowable concentrations.

LTE, on behalf of SandRidge, will draft a Remediation Summary Report to provide the details of the remediation activities and confirmation sampling analytical results. The report will include a text summary, data tables, figures, and laboratory reports. SandRidge will submit the Remediation Summary Report with a Form 4 Sundry Notice to the COGCC to request closure with LTE support.

LTE anticipates that excavation activities will begin within two weeks upon receiving notice to proceed from SandRidge, and require three 10-hour days to complete the field tasks listed above. The cost for source removal excavation based on a time and materials structure, is estimated to be \$166,602 (Table 3) and includes the following assumptions:

- A lump sum cost of \$5,000 for the excavation subcontractor to conduct source removal was assumed;
- A cost of \$57 per ton for transportation and disposal of the impacted materials was assumed;
- A lump sum cost of \$25,000 for imported backfill materials was assumed;
- Source removal excavation can be completed in three days;
- Eight confirmation soil samples will be required; and
- The source removal area has been completely delineated and no additional impacts will be discovered during excavation.



Soil Shredding

LTE will secure an earthworks contractor to excavate the delineated impact and treat the impacted material utilizing soil shredding and chemical oxidation remediation technology. LTE will oversee the source removal excavation to observe for hydrocarbon impacts, including soil staining and/or odor, and screen the excavated soils for VOCs using a PID and a PetroFlag® kit (field test for heavy organics). LTE will determine the extent of impacts and direct the earthworks contractor to segregate the impacted soils from the clean soils based on these observations.

Upon completion of the source removal activities, LTE will collect confirmation soil samples from the sidewalls and floor of each excavation. These confirmation soil samples will be representative of the excavation and, in general, spaced at 30 foot centers. The confirmation soil samples will be collected in laboratory provided sample containers, placed on ice, and submitted to Summit, under chain of custody protocol, for BTEX and TPH-GRO analysis using EPA method 8260B, and TPH-DRO analysis using EPA method 8015. The soil samples will be completed under 24-hour turnaround times in order to expedite source removal activities.

Soil treatment of the impacted material will be initiated as soon as possible, and conducted to efficiently treat all soil impacts. It is expected that soil treatment will be completed in approximately four working days. Soil will be treated by mechanical agitation, shredding, and ex-situ chemical oxidation. Shortly after impacted soils are mechanically shredded, soils are treated with concentrated hydrogen peroxide (3-7% typically), and windrowed onsite.

Following treatment, the soil will need to be allowed to sit for a minimum of 24 hours prior to confirmation soil sampling to ensure that chemical reactions were complete and equilibrium in soil is established. LTE, under the direction of SandRidge, will collect one 20-point composite confirmation soil sample representative of each approximately 100 cubic yard interval up to 500 cubic yards and one representative sample of each approximately 500 cubic yard interval thereafter. Each composite sample will be field screened using a PID to verify the reduction in VOCs prior to laboratory analysis. Following receipt of confirmation sampling results indicating compliance with cleanup goals, the treated soil will be backfilled in the excavation. Stockpiled topsoil or import topsoil will be utilized in the upper three feet.

LTE, on behalf of SandRidge, will draft a Remediation Summary Report to provide the details of the remediation activities and confirmation sampling analytical results. The report will include a text summary, data tables, figures, and laboratory reports. SandRidge will submit the Remediation Summary Report with a Form 4 Sundry Notice to the COGCC to request closure with LTE support.

LTE anticipates that excavation activities will begin within two weeks upon receiving notice to proceed from SandRidge, and require 4 10-hour days to complete the field tasks listed above. The cost for source removal excavation, soil shredding, and chemical oxidation treatment based on a unit rate price structure, is estimated to be \$58 per cubic yard, totaling \$99,491 and includes the following assumptions:



- 16 confirmation soil samples will be required;
- Soil shredding remediation activities will take four days;
- Soil shredding will be conducted in line with the remediation of the other sites; thereby reducing mobilization costs;
- Unlimited construction services will provide unit rate costs for remediation based on the cumulative amount of impacted materials observed at all four sites; and
- The source removal area has been completely delineated and no additional impacts will be discovered during excavation.

LTE appreciates the opportunity to provide environmental services to SandRidge. Please feel free to contact the undersigned at 303-433-9788 if you have any questions or comments regarding the proposed remediation activities program.

Sincerely,

LT ENVIRONMENTAL, INC.

A handwritten signature in blue ink that reads "Jess Alexander".

Jess Alexander
Project Environmental Scientist

A handwritten signature in black ink that reads "Brett Forkner".

Brett Forkner
Project Environmental Scientist

Attachments

Figure 1	Site Location Map
Figure 2	Site Map
Figure 3	Soil Sample Analytical Results
Figure 4	Regional Background Arsenic Concentration Map
Table 1	Soil Sample Analytical Results
Table 2	Full COGCC Table 910-1 Analytical Results
Table 3	Source Removal Excavation Cost Estimate
Table 4	Soil Shredding Cost Estimate
Attachment 1	Soil Lithologic Boring Logs
Attachment 2	Laboratory Analytical Reports

FIGURES

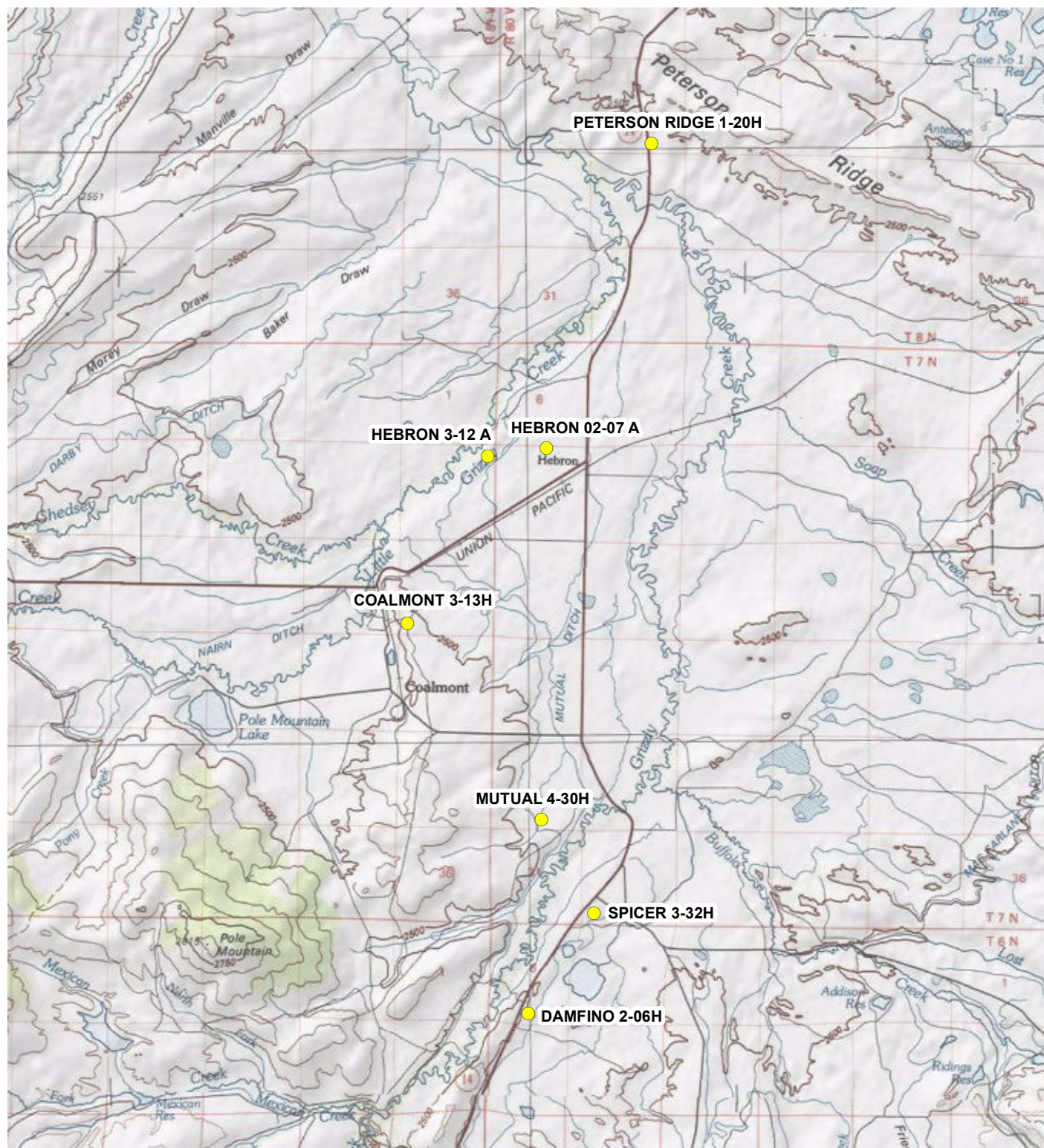
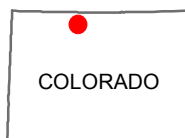


IMAGE COURTESY OF ESRI/USGS

LEGEND

● SITE LOCATION



COLORADO

FIGURE 1
SITE LOCATION MAP
SANDRIDGE WELLSITES
JACKSON COUNTY, COLORADO

SANDRIDGE EXPLORATION AND PRODUCTION, LLC



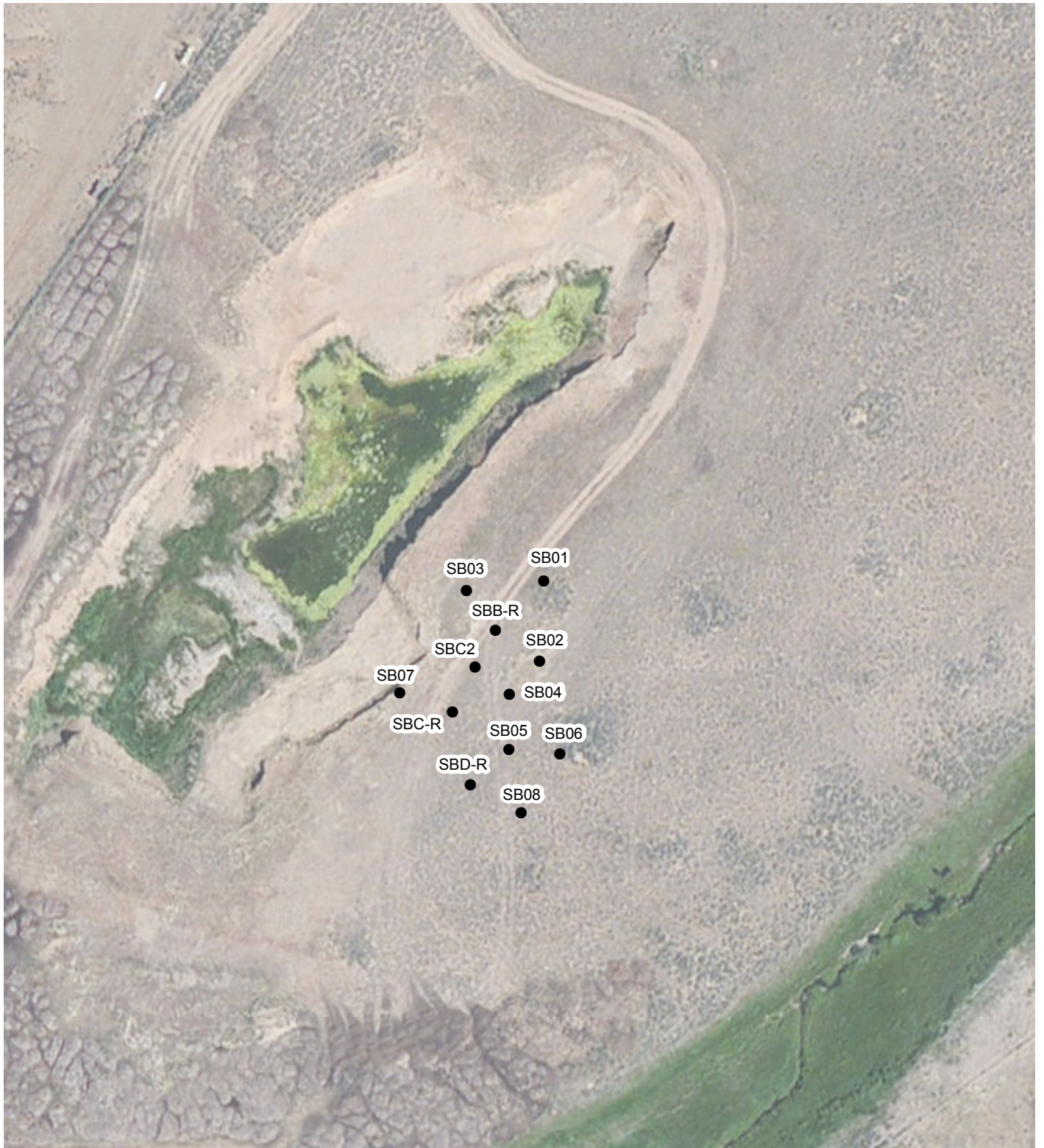


IMAGE COURTESY OF ESRI

LEGEND

- SOIL BORING

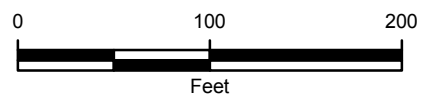
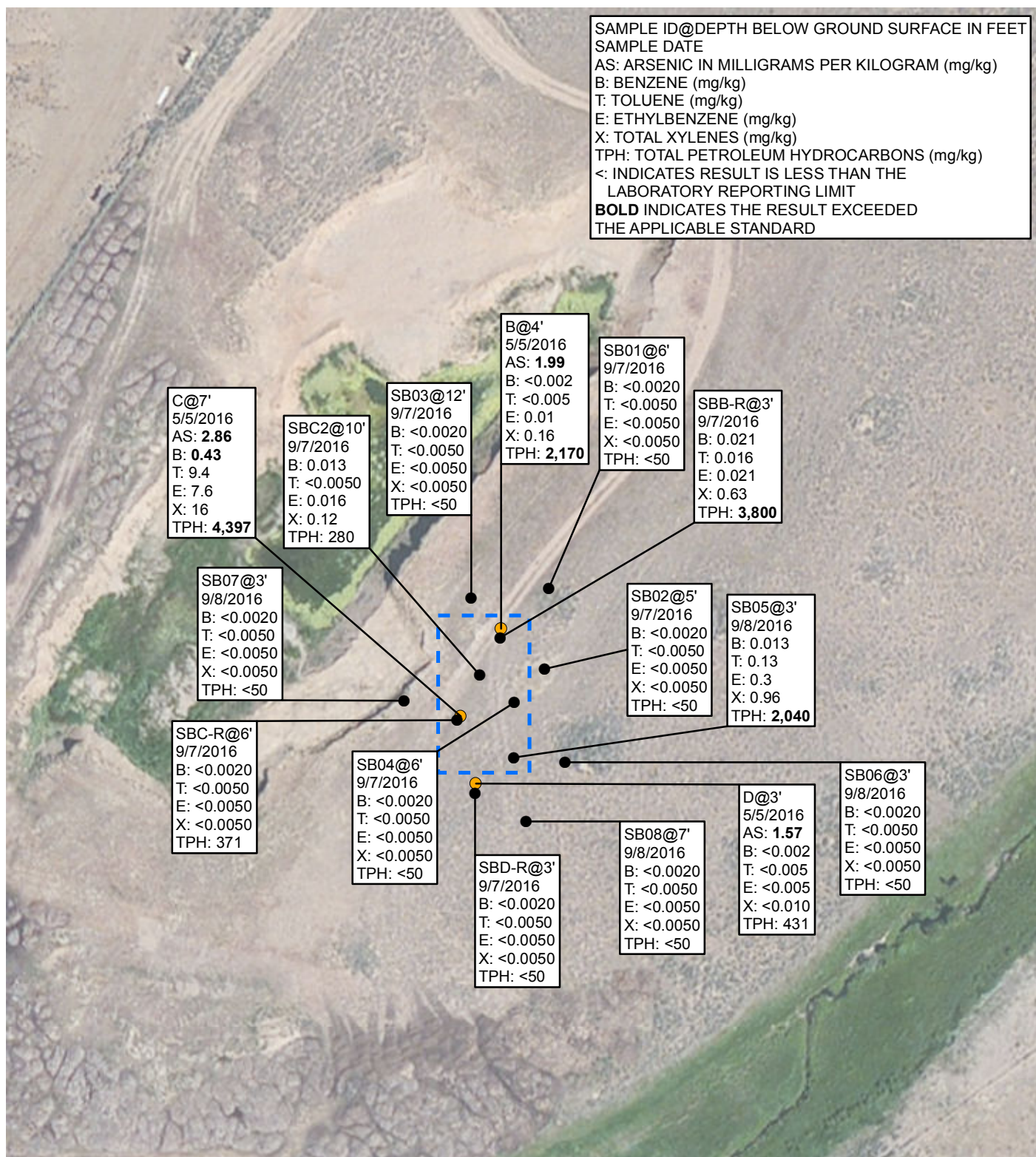


FIGURE 2
SITE MAP
HEBRON 3-12H
JACKSON COUNTY, COLORADO

SANDRIDGE EXPLORATION AND PRODUCTION, LLC



SAMPLE ID@DEPTH BELOW GROUND SURFACE IN FEET
 SAMPLE DATE
 AS: ARSENIC IN MILLIGRAMS PER KILOGRAM (mg/kg)
 B: BENZENE (mg/kg)
 T: TOLUENE (mg/kg)
 E: ETHYLBENZENE (mg/kg)
 X: TOTAL XYLENES (mg/kg)
 TPH: TOTAL PETROLEUM HYDROCARBONS (mg/kg)
 <: INDICATES RESULT IS LESS THAN THE
 LABORATORY REPORTING LIMIT
BOLD INDICATES THE RESULT EXCEEDED
 THE APPLICABLE STANDARD



LEGEND

- SOIL BORING
- PREVIOUS COGCC SOIL SAMPLE
- [-] EXTENT OF IMPACT

IMAGE COURTESY OF ESRI

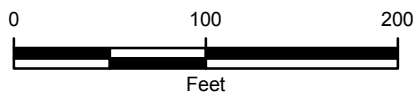
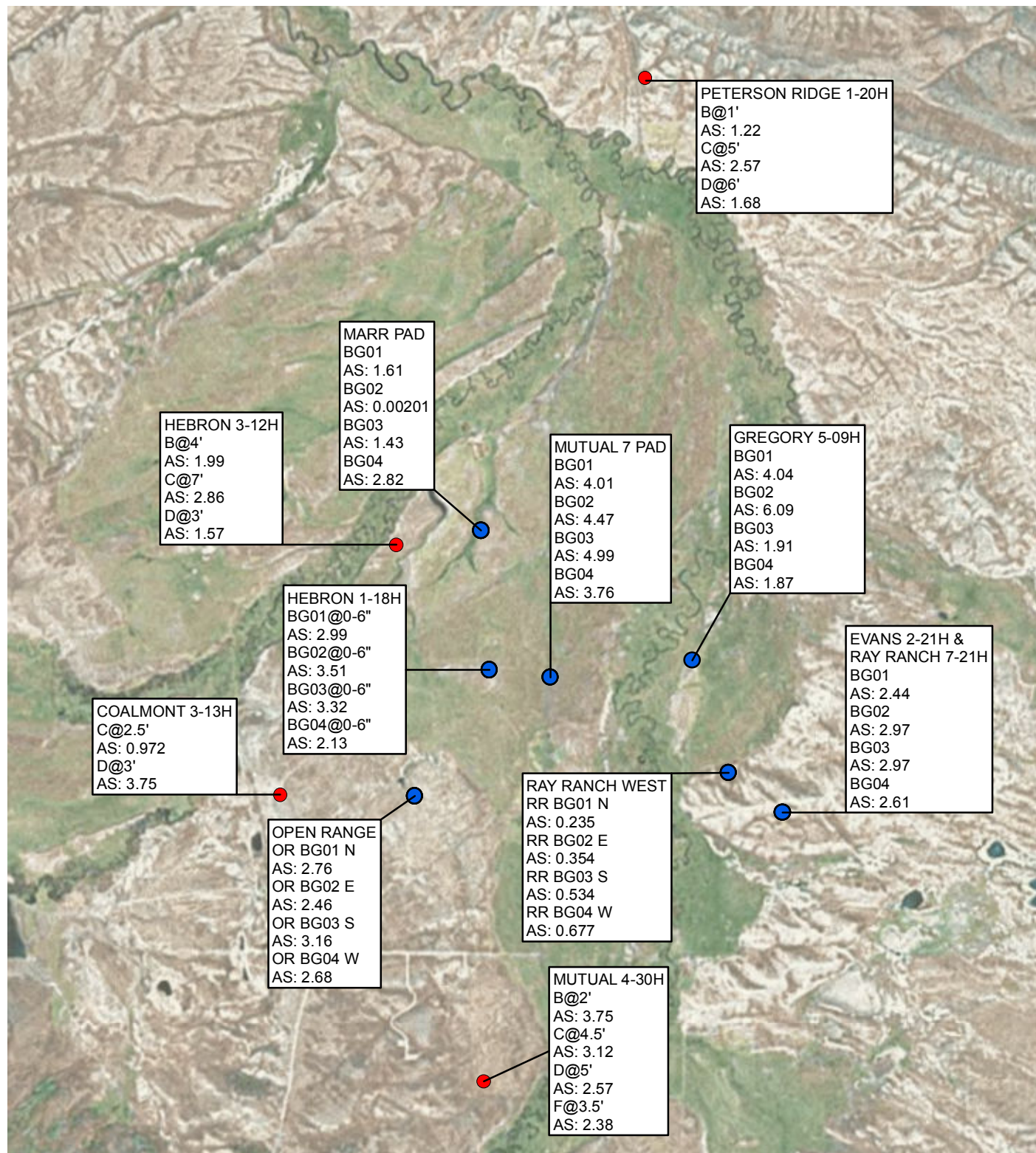


FIGURE 3
 SOIL ANALYTICAL RESULTS
 HEBRON 3-12H
 JACKSON COUNTY, COLORADO

SANDRIDGE EXPLORATION AND PRODUCTION, LLC





LEGEND

- BACKGROUND ARSENIC SAMPLE (mg/kg)
- SANDRIDGE REMEDIATION SITE LOCATION



IMAGE COURTESY OF ESRI



FIGURE 4
 ARSENIC SITE MAP
 JACKSON COUNTY, COLORADO

SANDRIDGE EXPLORATION AND PRODUCTION, LLC



TABLES

TABLE 1
SOIL ANALYTICAL RESULTS

HEBRON 3-12H
JACKSON COUNTY, COLORADO
SANDRIDGE EXPLORATION AND PRODUCTION, LLC

Sample ID	Date Sampled	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	GRO (mg/kg)	DRO (mg/kg)	TPH (mg/kg)
B@4'	5/5/2016	<0.002	<0.005	0.01	0.16	1,600	570	2,170
C@7'	5/5/2016	0.43	9.4	7.6	16	4,300	97	4,397
D@3'	5/5/2016	<0.002	<0.005	<0.005	<0.010	1	430	431
SBB-R@3'	9/7/2016	0.021	0.016	0.021	0.63	2,300	1,500	3,800
SBC-R@6'	9/7/2016	<0.0020	<0.0050	<0.0050	<0.0050	11	360	371
SBC2@10'	9/7/2016	0.013	<0.0050	0.016	0.12	20	260	280
SBD-R@3'	9/7/2016	<0.0020	<0.0050	<0.0050	<0.0050	<0.50	<50	<50
SB01@6'	9/7/2016	<0.0020	<0.0050	<0.0050	<0.0050	<0.50	<50	<50
COGCC Table 910-1 Allowable Concentration		0.17	85	100	175	--	--	500

TABLE 1 (CONTINUED)
SOIL ANALYTICAL RESULTS

HEBRON 3-12H
JACKSON COUNTY, COLORADO
SANDRIDGE EXPLORATION AND PRODUCTION, LLC

Sample ID	Date Sampled	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	GRO (mg/kg)	DRO (mg/kg)	TPH (mg/kg)
SB02@5'	9/7/2016	<0.0020	<0.0050	<0.0050	<0.0050	<0.50	<50	<50
SB03@12'	9/7/2016	<0.0020	<0.0050	<0.0050	<0.0050	<0.50	<50	<50
SB04@6'	9/7/2016	<0.0020	<0.0050	<0.0050	<0.0050	<0.50	<50	<50
SB05@3'	9/8/2016	0.013	0.13	0.30	0.96	40	2,000	2,040
SB06@3'	9/8/2016	<0.0020	<0.0050	<0.0050	<0.0050	<0.50	<50	<50
SB07@3'	9/8/2016	<0.0020	<0.0050	<0.0050	<0.0050	<0.50	<50	<50
SB08@7'	9/8/2016	<0.0020	<0.0050	<0.0050	<0.0050	<0.50	<50	<50
COGCC Table 910-1 Allowable Concentration		0.17	85	100	175	--	--	500

Notes:

COGCC - Colorado Oil and Gas Conservation Commission

DRO - diesel range organics analyzed by EPA Method 8015

GRO - gasoline range organics analyzed by EPA Method 8260

mg/kg - milligrams per kilogram

TPH - total petroleum hydrocarbons is the sum of GRO and DRO

-- - not applicable

< indicates result is less than the stated laboratory method reporting limit

Benzene, toluene, ethylbenzene, and total xylenes analyzed by EPA Method 8260

Bold indicates the result exceeds the applicable standard

TABLE 2
COGCC FULL TABLE 910 SOIL ANALYTICAL RESULTS
HEBRON 3-12H
JACKSON COUNTY, COLORADO
SANDRIDGE EXPLORATION AND PRODUCTION, LLC

Parameter	COGCC Table 910-1 Allowable Levels	Units	SBC2@10'
Sample Date			9/7/2016
Benzene	0.17	mg/kg	0.013
Toluene	85	mg/kg	<0.0050
Ethylbenzene	100	mg/kg	0.016
Total Xylenes	175	mg/kg	0.12
TPH-DRO	--	mg/kg	20
TPH-GRO	--	mg/kg	260
TPH Total	500	mg/kg	280
Arsenic	0.39	mg/kg	1.13
Barium	15,000	mg/kg	2,130
Cadmium	70	mg/kg	0.562
Chromium (III)	120,000	mg/kg	21.6
Chromium (VI)	23	mg/kg	<0.300
Copper	3,100	mg/kg	23.3
Lead	400	mg/kg	11.5
Mercury	23	mg/kg	<0.0605
Nickel	1,600	mg/kg	18.2
Selenium	390	mg/kg	0.652
Silver	390	mg/kg	0.131
Zinc	23,000	mg/kg	58.3
Acenaphthene	1,000	mg/kg	<0.0500
Anthracene	1,000	mg/kg	<0.0500
Benzo (A) anthracene	0.22	mg/kg	0.0737
Benzo (B) fluoranthene	0.22	mg/kg	0.0804
Benzo (K) fluoranthene	2.2	mg/kg	<0.0500
Benzo (A) pyrene	0.022	mg/kg	<0.0500
Chrysene	22	mg/kg	0.177
Dibenzo (A,H) anthracene	0.022	mg/kg	<0.0500
Fluoranthene	1,000	mg/kg	0.182
Fluorene	1,000	mg/kg	0.697
Indeno (1,2,3,C,D) pyrene	0.22	mg/kg	<0.0500
Naphthalene	23	mg/kg	1.49
Pyrene	1,000	mg/kg	0.323

TABLE 2 (continued)
COGCC FULL TABLE 910 ANALYTICAL RESULTS

HEBRON 3-12H
JACKSON COUNTY, COLORADO
SANDRIDGE EXPLORATION AND PRODUCTION, LLC

Parameter	COGCC Table 910-1 Allowable Levels	Units	SBC2@10'
EC	4	mmhos/cm	2.76
pH	6 - 9	SU	8.44
SAR	12	unitless	3.17

NOTES:

BOLD - indicates result exceeds the COGCC Table 910-1 Allowable Level

bgs - below ground surface

COGCC - Colorado Oil and Gas Conservation Commission

DRO - diesel range organics

EC - electrical conductivity

GRO - gasoline range organics

mg/kg - milligrams per kilogram

mmhos/cm - millimhos per centimeter

SAR - sodium adsorption ratio

SU - standard units

TPH - total petroleum hydrocarbons

-- - not analyzed/no standard

< - less than the stated analytical reporting limit

Arsenic concentration exceeded the COGCC Table 910-1 allowable level, but is within 20% of the most elevated background concentration.

TABLE 3
COST ESTIMATE
SOURCE REMOVAL EXCAVATION
HEBRON 3-12H
JACKSON COUNTY, COLORADO
SANDRIDGE EXPLORATION AND PRODUCTION, LLC

LABOR				Principal	Project Scientist I	Staff II Geologist/Eng.	GIS Specialist	Admin/ Clerical
TASK 1: Project Management				2	6		2	0.5
TASK 2: Excavation					3	38		
TASK 3: Reporting				2	10	2	2	0.5
TOTAL HOURS				4	19	40	4	1
RATE (\$)				\$140	\$110	\$83	\$72	\$55
LABOR COST				\$560	\$2,090	\$3,320	\$288	\$55
LABOR SUBTOTAL								\$6,313

SUBCONTRACTOR		QTY.	COST/UNIT		UNIT TOTAL
SandRidge Excavation Contractor					
TASK 2: Excavation					
Transportation and Disposal		2,210 Tons	\$57.00 /ton		\$125,970
Contractor		1 Lump Sum	\$5,000.00 /each		\$5,000
Import Backfill Material		1 Lump Sum	\$25,000.00 /each		\$25,000
Summit Scientific					
TASK 2: Confirmation Soil Samples (Rush Turnaround)		BTEX/GRO	8	\$140.00 /sample	\$1,120
		DRO	8	\$160.00 /sample	\$1,280
SUBCONTRACTOR SUBTOTAL					\$158,610

OTHER DIRECT COSTS (ODCs)		QTY.	COST/UNIT		UNIT TOTAL
TASK 2: Supplemental ESI Soil Borings					
		Truck	4	\$110.00 /day	\$440
		Organic Vapor Meter	3	\$50.00 /day	\$150
		Trimble GPS	3	\$60.00 /day	\$180
		LTE Per Diem	4	\$160.00 /day	\$640
		Misc. Field Supplies	3	\$23.00 /day	\$69
		PetroFlag	10	\$20.00 /each	\$200
ODC SUBTOTAL					\$1,679
PROJECT TOTAL					\$166,602

TABLE 4
COST ESTIMATE
EXCAVATION, SOIL SHREDDING, BACKFILL
HEBRON 3-12H
JACKSON COUNTY, COLORADO
SANDRIDGE EXPLORATION AND PRODUCTION, LLC

LABOR			Principal	Project Scientist I	Staff II Geologist/Eng.	GIS Specialist	Admin/ Clerical
TASK 1: Project Management			2	6			0.5
TASK 2: Excavation, Soil Shredding, Backfill					48		
TASK 3: Reporting			2	10	4	4	0.5
TOTAL HOURS			4	16	52	4	1
RATE (\$)			\$140	\$110	\$83	\$72	\$55
LABOR COST			\$560	\$1,760	\$4,316	\$288	\$55
LABOR SUBTOTAL							\$6,979

SUBCONTRACTOR		QTY.	COST/UNIT	UNIT TOTAL
Unlimited Construction				
TASK 2: Excavation, Soil Shredding, Backfill	Soil Shredding	1,700 Yards	\$45.00 /yard	\$76,500
Summit Scientific				
TASK 2: Confirmation Soil Samples (Rush Turnaround)	BTEX/GRO	8	\$140.00 /sample	\$1,120
	DRO	8	\$160.00 /sample	\$1,280
TASK 2: Soil Shredding Confirmation Soil Samples (Rush Turnaround)	BTEX/GRO	8	\$140.00 /sample	\$1,120
	DRO	8	\$160.00 /sample	\$1,280
SUBCONTRACTOR SUBTOTAL				\$89,430

OTHER DIRECT COSTS (ODCs)		QTY.	COST/UNIT	UNIT TOTAL
TASK 2: Excavation, Soil Shredding, Backfill	Truck	5	\$110.00 /day	\$550
	Organic Vapor Meter	4	\$50.00 /day	\$200
	Trimble GPS	4	\$60.00 /day	\$240
	LTE Per Diem	5	\$160.00 /day	\$800
	Misc. Field Supplies	4	\$23.00 /day	\$92
	PetroFlag	10	\$20.00 /each	\$200
ODC SUBTOTAL				\$2,082
PROJECT TOTAL				\$98,491
PROJECT TOTAL PER YARD				\$58

ATTACHMENT 1
SOIL LITHOLOGIC BORING LOGS





BORING LOG/MONITORING WELL COMPLETION DIAGRAM

[illegible]



Compliance • Engineering • Remediation

LT Environmental, Inc.

4600 W. 60th Avenue

Arvada, Colorado 80003

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

PROJECT NAME:	Hebron 3-12H		
PROJECT NO:	065816007	LOGGED BY:	Jeremy Pike
BORING/WELL ID:	SBC-R	SAMPLE METHOD:	Continuous
COMPLETION DATE:	09/07/2016	DRILL METHOD:	Direct Push
TD (ft bgs):	10'	DRILLED BY:	Elite Drilling
DTW (ft bgs):	Not encountered	DETECTOR:	MineRAE 3000
SCREEN SLOT:	NA	FILTER PACK:	NA
CASING LENGTH:	NA	ANNULUS SEAL:	NA
SCREEN LENGTH:	NA	SURFACE SEAL:	NA

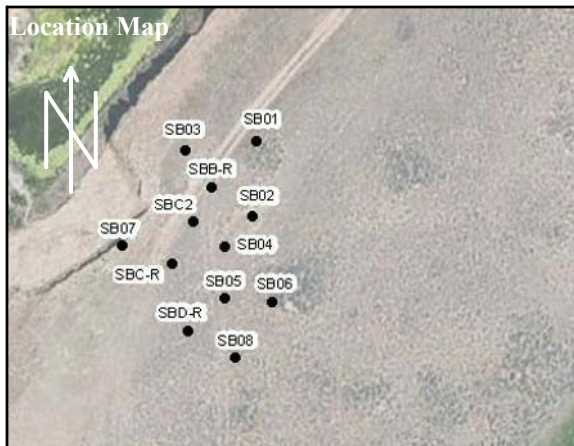
HOLE DIAMETER: 2.25"

WELL DIAMETER: NA

CASING TYPE: NA

SCREEN TYPE: NA

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (ft/ft)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
		Moist			0	SC		CLAYEY SAND - 0.0' - 8.5' - brown, fine grained, moist, minor odor and staining at 6' bgs	
0.50									
0.50				3.5/4					
0.80									
3.20									
89.00									
89.00			SBC-R @6'	3/4					
4.00									
4.60									
		Moist							
0.90				1.5/2		GW		GRAVEL - 8.5' - 10.0' - fine to coarse grained, some medium grained sand, moist, no odor, no staining, refusal at 10' bgs	
3.10					10				



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LT Environmental, Inc.

4600 W. 60th Avenue

Arvada, Colorado 80003

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

HOLE DIAMETER: 2.25"

WELL DIAMETER: NA

CASING TYPE: NA

SCREEN TYPE: NA

PROJECT NAME: Hebron 3-12H

PROJECT NO: 065816007

BORING/WELL ID: SBC2

COMPLETION DATE: 09/07/2016

TD (ft bgs): 15'

DTW (ft bgs): Not encountered

SCREEN SLOT: NA

CASING LENGTH: NA

SCREEN LENGTH: NA

LOGGED BY: Jeremy Pike

SAMPLE METHOD: Continuous

DRILL METHOD: Direct Push

DRILLED BY: Elite Drilling

DETECTOR: MineRAE 3000

FILTER PACK: NA

ANNULUS SEAL: NA

SURFACE SEAL: NA

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (ft/ft)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
1.20		Moist			0	SM		SILTY SAND - 0.0' - 4.0' - light brown, little clay, trace fine gravel, moist, no odor, no staining	
0.60				4/4					
0.70									
1.00		Moist				SC		CLAYEY SAND - 4.0' - 11.0' - brown, fine grained, moist, hydrocarbon odor, gray hydrocarbon staining from 9' to 11' bgs	
37.00				3/4					
40.00									
54.00									
395.00			SBC2 @10'	2.5/4	10	GW		GRAVEL - 11.0' - 14.5' - fine to coarse grained, some medium grained sand, moist, no odor, no staining	
42.20		Moist							
12.00									
37.00				1/3					
30.40		Moist				SC		CLAYEY SAND - 14.5' - 15.0' - light brown, fine grained, moist, no odor, no staining	
					15				



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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

PROJECT NAME: Hebron 3-12H

PROJECT NO: 065816007

LOGGED BY: Jeremy Pike

BORING/WELL ID: SBD-R

SAMPLE METHOD: Continuous

COMPLETION DATE: 09/07/2016

DRILL METHOD: Direct Push

TD (ft bgs): 8'

DRILLED BY: Elite Drilling

DTW (ft bgs): Not encountered

1 DETECTOR: MineRAE 3000

SCREEN SLOT: NA

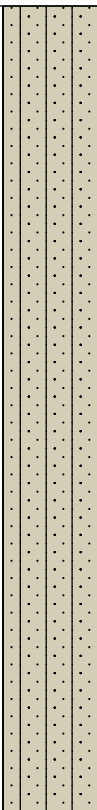

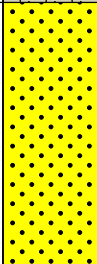
FILTER PACK: NA

CASING LENGTH: NA

ANNULUS SEAL: NA

SCREEN LENGTH: NA

SURFACE SEAL: NA

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (ft/ft)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
		Moist	SBD-R @3'		0	SM		SILTY SAND - 0.0' - 6.0' - light brown, fine grained, little clay, trace fine gravel, moist, no odor, no staining	
0.30									
0.30				3.5/4					
0.20									
0.20									
0.20									
0.20		Moist			5				
0.20						SP		SAND - 6.0' - 8.0' - brown, medium grained, some fine gravel, moist, no odor, no staining	
0.20			3/4						
0.20									
0.80									



BORING LOG/MONITORING WELL COMPLETION DIAGRAM

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (ft/ft)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction			
0.20		Moist	SB02 @5'	3.5/4	0	SM		SILTY SAND - 0.0' - 2.5' - light brown, fine grained, little clay, trace fine gravel, moist, no odor, no staining				
0.20		Moist			5	SP		SAND - 2.5' - 12.0' - brown, medium grained, some gravel, moist, no odor, no staining				
0.30				3/4	1.70							
1.70					5							
2.10					1.00	10						
1.00						5						
0.50						2/4						
1.00							5					
0.50			0.30									
0.30				10								
0.50												
0.20												



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Arvada, Colorado 80003

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

PROJECT NAME: Hebron 3-12H
PROJECT NO: 065816007 **LOGGED BY:** Jeremy Pike
BORING/WELL ID: SB03 **SAMPLE METHOD:** Continuous
COMPLETION DATE: 09/07/2016 **DRILL METHOD:** Direct Push
TD (ft bgs): 12' **DRILLED BY:** Elite Drilling
DTW (ft bgs): Not encountered **DETECTOR:** MineRAE 3000
SCREEN SLOT: NA **FILTER PACK:** NA
CASING LENGTH: NA **ANNULUS SEAL:** NA
SCREEN LENGTH: NA **SURFACE SEAL:** NA

HOLE DIAMETER: 2.25"

WELL DIAMETER: NA

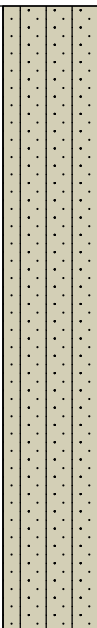

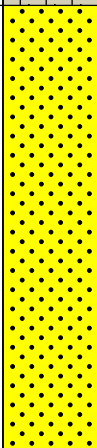
CASING TYPE: NA

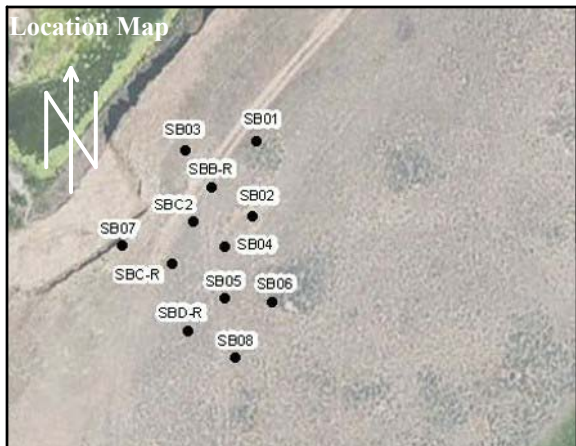
SCREEN TYPE: NA

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (ft/ft)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
		Moist			0	SM		SILTY SAND - 0.0' - 7.0' - light brown, fine grained, little clay, trace fine gravel, moist, no odor, no staining	
0.20									
0.20				4/4					
0.20									
0.20									
0.20					5				
0.20				3/4					
0.20									
0.50		Moist				SP		SAND - 7.0' - 12.0' - brown, medium grained, some fine gravel, moist, no odor, no staining, refusal at 12' bgs	
0.70									
0.50									
0.50				2.5/4	10				
0.50									
1.10			SB03 @12'						



BORING LOG/MONITORING WELL COMPLETION DIAGRAM

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (ft/ft)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction	
0.50		Moist	SB04 @6'		0	SM		SILTY SAND - 0.0' - 7.0' - light brown, fine grained, little clay, trace fine gravel, trace ecosponge at 2' bgs, moist, no odor, no staining		
0.30				4/4						
0.30										
0.30										
1.20		Moist		3/4	5	SP		SAND - 7.0' - 12.0' - brown, medium grained, some fine gravel, moist, no odor, no staining, refusal at 12' bgs		
0.70										
1.20				0.5/4	10					



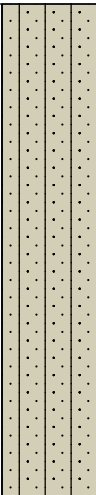

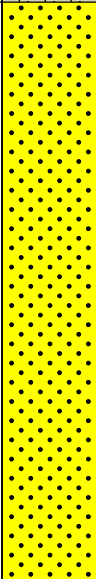
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4600 W. 60th Avenue
Arvada, Colorado 80003

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

HOLE DIAMETER: 2.25"
WELL DIAMETER: NA
CASING TYPE: NA
SCREEN TYPE: NA

PROJECT NAME: Hebron 3-12H
PROJECT NO: 065816007
BORING/WELL ID: SB05
COMPLETION DATE: 09/07/2016
TD (ft bgs): 12'
DTW (ft bgs): Not encountered
SCREEN SLOT: NA
CASING LENGTH: NA
SCREEN LENGTH: NA

LOGGED BY: Jeremy Pike
SAMPLE METHOD: Continuous
DRILL METHOD: Direct Push
DRILLED BY: Elite Drilling
DETECTOR: MineRAE 3000
FILTER PACK: NA
ANNULUS SEAL: NA
SURFACE SEAL: NA

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (ft/ft)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
3.00		Moist	SB05 @3'		0	SM		SILTY SAND - 0.0' - 5.5' - light brown, fine grained, little clay, trace fine gravel, moist, strong hydrocarbon odor at 2' to 4' bgs, no staining	
10.00				4/4					
604.00									
93.00									
21.50		Moist			5	SP		SAND - 5.5' - 12.0' - brown, medium grained, some gravel, moist, no odor, no staining, refusal at 12' bgs	
54.00			3.4/4						
3.70									
1.20									
3.40			2/4	10					
3.20									
1.50									



BORING LOG/MONITORING WELL COMPLETION DIAGRAM

[illegible]

ATTACHMENT 2
LABORATORY ANALYTICAL REPORTS



Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

October 07, 2016

Jess Alexander
LT Environmental, Inc.
4600 West 60th Avenue
Arvada, CO 80003
RE: Hebron 3-12H

Enclosed are the results of analyses for samples received by Summit Scientific on 09/09/16 16:40. 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 3-12H
Project Number: 065816007
Project Manager: Jess Alexander

Reported:
10/07/16 18:05

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SBB-R@3'	1609057-01	Soil	09/07/16 13:20	09/09/16 16:40
SBC-R@6'	1609057-02	Soil	09/07/16 13:40	09/09/16 16:40
SBC2@10'	1609057-03	Soil	09/07/16 14:20	09/09/16 16:40
SB01@6'	1609057-04	Soil	09/07/16 15:00	09/09/16 16:40
SB02@5'	1609057-05	Soil	09/07/16 15:30	09/09/16 16:40
SB03@12'	1609057-06	Soil	09/07/16 16:00	09/09/16 16:40
SB04@6'	1609057-07	Soil	09/07/16 16:30	09/09/16 16:40
SBD@3'	1609057-08	Soil	09/07/16 16:50	09/09/16 16:40
SB05@3'	1609057-09	Soil	09/08/16 10:10	09/09/16 16:40
SB06@3'	1609057-10	Soil	09/08/16 10:50	09/09/16 16:40
SB07@3'	1609057-11	Soil	09/08/16 11:20	09/09/16 16:40
SB08@7'	1609057-12	Soil	09/08/16 11:40	09/09/16 16:40

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

Project: Hebron 3-12H

Project Number: 065816007
Project Manager: Jess Alexander

Reported:
10/07/16 18:05

Summit Scientific 1609057.1

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

Page 1 of 2

Client: LT ENVIRONMENTAL

Address: 6400 W. 60th Ave

City/State/Zip: ARVADA, CO 80003

Phone: 303-433-3788 Fax:


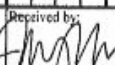
Sampler Name: JEREMY PINK

Project Manager: JESS ALEXANDER / BRETT FORKNER

E-Mail: JALEXANDER@LTENV.COM, BFORKNER@LTENV.COM

Project Name: HEBRON 3-12H

Project Number: 065816007

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix		Analyze For:				Special Instructions
				HCl	HNO ₃	None	Other (Specify)	Groundwater	Air - Canister Serial #	Other (Specify)	6816X 8240	TPH - DRO 8015	FUEL CELL 8103	
SBB-R @ 3'	9/7/16	1320	1			X								
SBC-R @ 6'	9/7/16	1340	1			X								
SBC2 @ 10'	9/7/16	1420	2			X								ONLY RUN FULL 910 ON SBC2 @ 10'
SBO1 @ 6'	9/7/16	1500	1			X								
SBO2 @ 5'	9/7/16	1530	1			X								
SBO3 @ 12'	9/7/16	1600	1			X								
SBO4 @ 6'	9/7/16	1630	1			X								
SBO5 @ 3'	9/7/16	1650	1			X								
SBO5 @ 3'	9/8/16	1010	1			X								
SBO6 @ 3'	9/8/16	1050	1			X								
Relinquished by: 				Date/Time: 9/9/16 1640	Received by: 				Date/Time: 9/12/16 1640	Turn Around Time (Check)				Notes: 53°C on ice.
Relinquished by:				Date/Time:	Received by:				Date/Time:	Same Day <input type="checkbox"/> 72 Hours <input type="checkbox"/> 24 Hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/> 48 Hours <input type="checkbox"/>				
Relinquished by:				Date/Time:	Received in Lab by:				Date/Time:	Sample Integrity: Temperature Upon Receipt: 53°C Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				

www.s2scientific.com

Summit Scientific

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



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

Project: Hebron 3-12H
Project Number: 065816007
Project Manager: Jess Alexander

Reported:
10/07/16 18:05

Sample Receipt Checklist

S2 Work Order: 1609057

Client: LTE

Client Project ID: Hebron 3-12H

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)	<u>5.3°C</u>				

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

Mindy Nlach
Custodian Printed Name

[Signature]
Signature or Initials of Custodian

9/9/16 16:40
Date/Time

[Signature]



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

Project: Hebron 3-12H
Project Number: 065816007
Project Manager: Jess Alexander

Reported:
10/07/16 18:05

SBB-R@3'
1609057-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/07/16 13:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	1500	50	mg/kg	1	1609076	09/12/16	09/12/16	8015M	

Date Sampled: **09/07/16 13:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		236 %	30-150		"	"	"	"	S-02

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/07/16 13:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.021	0.0020	mg/kg	1	1609075	09/12/16	09/13/16	EPA 8260B	
Toluene	0.016	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.021	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.63	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	2300	50	"	100	"	"	09/13/16	"	

Date Sampled: **09/07/16 13:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		127 %	23-173		"	"	09/13/16	"	
<i>Surrogate: Toluene-d8</i>		90.8 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		166 %	21-167		"	"	"	"	

Summit Scientific

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



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

Project: Hebron 3-12H
Project Number: 065816007
Project Manager: Jess Alexander

Reported:
10/07/16 18:05

SBC-R@6'
1609057-02 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/07/16 13:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	360	50	mg/kg	1	1609076	09/12/16	09/12/16	8015M	

Date Sampled: **09/07/16 13:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		99.3 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/07/16 13:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1609075	09/12/16	09/12/16	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	11	0.50	"	"	"	"	"	"	

Date Sampled: **09/07/16 13:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		106 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		107 %	21-167		"	"	"	"	

Summit Scientific

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



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

Project: Hebron 3-12H
Project Number: 065816007
Project Manager: Jess Alexander

Reported:
10/07/16 18:05

SBC2@10'
1609057-03 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/07/16 14:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	260	50	mg/kg	1	1609076	09/12/16	09/12/16	8015M	

Date Sampled: **09/07/16 14:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		103 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/07/16 14:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.013	0.0020	mg/kg	1	1609075	09/12/16	09/13/16	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.016	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.12	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	20	0.50	"	"	"	"	"	"	

Date Sampled: **09/07/16 14:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		117 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		87.2 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		122 %	21-167		"	"	"	"	

Semivolatile Organic Compounds by EPA Method 8270D SIM

Date Sampled: **09/07/16 14:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.0500	mg/kg	10	1609091	09/12/16	09/16/16	EPA 8270D SIM	R-01
Anthracene	ND	0.0500	"	"	"	"	"	"	R-01
Benzo (a) anthracene	0.0737	0.0500	"	"	"	"	"	"	R-01

Summit Scientific

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

Project: Hebron 3-12H
Project Number: 065816007
Project Manager: Jess Alexander

Reported:
10/07/16 18:05

SBC2@10'
1609057-03 (Soil)

Summit Scientific

Semivolatile Organic Compounds by EPA Method 8270D SIM

Benzo (b) fluoranthene	0.0804	0.0500	mg/kg	10	1609091	09/12/16	09/16/16	EPA 8270D SIM	R-01
Benzo (k) fluoranthene	ND	0.0500	"	"	"	"	"	"	R-01
Benzo (a) pyrene	ND	0.0500	"	"	"	"	"	"	R-01
Chrysene	0.177	0.0500	"	"	"	"	"	"	R-01
Dibenz (a,h) anthracene	ND	0.0500	"	"	"	"	"	"	R-01
Fluoranthene	0.182	0.0500	"	"	"	"	"	"	R-01
Fluorene	0.697	0.0500	"	"	"	"	"	"	R-01
Indeno (1,2,3-cd) pyrene	ND	0.0500	"	"	"	"	"	"	R-01
Naphthalene	1.49	0.0500	"	"	"	"	"	"	R-01
Pyrene	0.323	0.0500	"	"	"	"	"	"	R-01

Date Sampled: **09/07/16 14:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		181 %	30-150		"	"	"	"	R-01, S-02
Surrogate: Fluoranthene-d10		164 %	30-150		"	"	"	"	R-01, S-02

Total Metals by EPA Method 6020 - Dry Weight Basis

Date Sampled: **09/07/16 14:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	1.13	0.242	mg/kg dry	1	1609070	09/12/16	09/12/16	EPA 6020A	
Barium	2130	0.484	"	"	"	"	"	"	
Cadmium	0.562	0.121	"	"	"	"	"	"	
Chromium	21.6	0.605	"	"	"	"	"	"	
Copper	23.3	0.605	"	"	"	"	"	"	
Lead	11.5	0.242	"	"	"	"	"	"	
Nickel	18.2	0.121	"	"	"	"	"	"	
Selenium	0.652	0.484	"	"	"	"	"	"	
Silver	0.131	0.121	"	"	"	"	"	"	
Zinc	58.3	12.1	"	"	"	"	"	"	

Summit Scientific

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

Project: Hebron 3-12H
Project Number: 065816007
Project Manager: Jess Alexander

Reported:
10/07/16 18:05

SBC2@10'
1609057-03 (Soil)

Summit Scientific

Total Mercury by EPA Method 7471

Date Sampled: **09/07/16 14:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Mercury	ND	0.0605	mg/kg dry	1	1609087	09/13/16	09/13/16	EPA 7471	

Hexavalent Chromium by EPA 7196

Date Sampled: **09/07/16 14:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.300	mg/kg dry	1	1609094	09/14/16	09/15/16	EPA 7196	

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

Date Sampled: **09/07/16 14:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	5860	9.91	mg/kg dry	1	1609081	09/13/16	09/16/16	EPA 6020/Mod. USDA60 6(2, 3A)	
Magnesium	1020	4.96	"	"	"	"	"	"	
Sodium	1000	4.96	"	"	"	"	"	"	
Sodium Adsorption Ratio	3.17		units	"	1609116	09/16/16	09/16/16	"	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **09/07/16 14:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.44	0.100	pH Units	1	1609092	09/13/16	09/13/16	EPA 9045	
% Solids	82.7		%	"	1609071	09/12/16	09/13/16	% calculation	
Specific Conductance (EC)	2.76	0.0100	mmhos/cm	"	1609093	09/13/16	09/13/16	SM 2510B	

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

Project: Hebron 3-12H
Project Number: 065816007
Project Manager: Jess Alexander

Reported:
10/07/16 18:05

SB01@6'
1609057-04 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/07/16 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1609076	09/12/16	09/12/16	8015M	

Date Sampled: **09/07/16 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		95.6 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/07/16 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1609075	09/12/16	09/12/16	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **09/07/16 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		109 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		93.7 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Hebron 3-12H
Project Number: 065816007
Project Manager: Jess Alexander

Reported:
10/07/16 18:05

SB02@5'
1609057-05 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/07/16 15:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1609076	09/12/16	09/12/16	8015M	

Date Sampled: **09/07/16 15:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		96.6 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/07/16 15:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1609075	09/12/16	09/12/16	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **09/07/16 15:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		107 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.8 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Hebron 3-12H
Project Number: 065816007
Project Manager: Jess Alexander

Reported:
10/07/16 18:05

SB03@12'
1609057-06 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/07/16 16:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1609076	09/12/16	09/12/16	8015M	

Date Sampled: **09/07/16 16:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		95.9 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/07/16 16:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1609075	09/12/16	09/12/16	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **09/07/16 16:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		103 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.6 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Hebron 3-12H
Project Number: 065816007
Project Manager: Jess Alexander

Reported:
10/07/16 18:05

SB04@6'
1609057-07 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/07/16 16:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1609076	09/12/16	09/12/16	8015M	

Date Sampled: **09/07/16 16:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		94.5 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/07/16 16:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1609075	09/12/16	09/12/16	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **09/07/16 16:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		106 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.1 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Hebron 3-12H
Project Number: 065816007
Project Manager: Jess Alexander

Reported:
10/07/16 18:05

SBD@3'
1609057-08 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/07/16 16:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1609076	09/12/16	09/12/16	8015M	

Date Sampled: **09/07/16 16:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		95.9 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/07/16 16:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1609075	09/12/16	09/12/16	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **09/07/16 16:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		110 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.3 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.6 %	21-167		"	"	"	"	

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

Project: Hebron 3-12H
Project Number: 065816007
Project Manager: Jess Alexander

Reported:
10/07/16 18:05

SB05@3'
1609057-09 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/08/16 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	2000	50	mg/kg	1	1609076	09/12/16	09/12/16	8015M	

Date Sampled: **09/08/16 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		214 %	30-150		"	"	"	"	S-02

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/08/16 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.013	0.0020	mg/kg	1	1609075	09/12/16	09/13/16	EPA 8260B	
Toluene	0.13	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.30	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.96	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	40	0.50	"	"	"	"	"	"	

Date Sampled: **09/08/16 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		107 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		95.0 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		142 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Hebron 3-12H
Project Number: 065816007
Project Manager: Jess Alexander

Reported:
10/07/16 18:05

SB06@3'
1609057-10 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/08/16 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1609076	09/12/16	09/12/16	8015M	

Date Sampled: **09/08/16 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		96.5 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/08/16 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1609075	09/12/16	09/12/16	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **09/08/16 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		107 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.5 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		93.7 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Hebron 3-12H
Project Number: 065816007
Project Manager: Jess Alexander

Reported:
10/07/16 18:05

SB07@3'
1609057-11 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/08/16 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1609076	09/12/16	09/13/16	8015M	

Date Sampled: **09/08/16 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		94.7 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/08/16 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1609075	09/12/16	09/12/16	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **09/08/16 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		108 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.7 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.8 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Hebron 3-12H
Project Number: 065816007
Project Manager: Jess Alexander

Reported:
10/07/16 18:05

SB08@7'
1609057-12 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/08/16 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1609076	09/12/16	09/13/16	8015M	

Date Sampled: **09/08/16 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		95.6 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/08/16 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1609075	09/12/16	09/12/16	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **09/08/16 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		106 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.6 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Hebron 3-12H
Project Number: 065816007
Project Manager: Jess Alexander

Reported:
10/07/16 18:05

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 1609076 - EPA 3550A

Blank (1609076-BLK1)

Prepared & Analyzed: 09/12/16

C10-C28 (DRO) ND 50 mg/kg

Surrogate: o-Terphenyl 11.9 " 12.5 94.9 30-150

LCS (1609076-BS1)

Prepared & Analyzed: 09/12/16

C10-C28 (DRO) 459 50 mg/kg 499 91.9 73-134

Surrogate: o-Terphenyl 15.4 " 12.5 123 30-150

Matrix Spike (1609076-MS1)

Source: 1609057-01

Prepared & Analyzed: 09/12/16

C10-C28 (DRO) 2040 50 mg/kg 462 1500 116 50-148

Surrogate: o-Terphenyl 27.9 " 11.6 241 30-150 S-02

Matrix Spike Dup (1609076-MSD1)

Source: 1609057-01

Prepared & Analyzed: 09/12/16

C10-C28 (DRO) 2010 50 mg/kg 462 1500 109 50-148 1.45 20

Surrogate: o-Terphenyl 33.5 " 11.6 289 30-150 S-02

Summit Scientific

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

Project: Hebron 3-12H
Project Number: 065816007
Project Manager: Jess Alexander

Reported:
10/07/16 18:05

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 1609075 - EPA 5030 Soil MS

Blank (1609075-BLK1)

Prepared & Analyzed: 09/12/16

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	0.0399		"	0.0400		99.8	23-173			
Surrogate: Toluene-d8	0.0383		"	0.0400		95.8	20-170			
Surrogate: 4-Bromofluorobenzene	0.0373		"	0.0400		93.2	21-167			

LCS (1609075-BS1)

Prepared & Analyzed: 09/12/16

Benzene	0.0766	0.0020	mg/kg	0.100		76.6	58-130			
Toluene	0.0836	0.0050	"	0.100		83.6	61-134			
Ethylbenzene	0.0958	0.0050	"	0.0992		96.6	74-139			
m,p-Xylene	0.196	0.010	"	0.200		98.2	73-137			
o-Xylene	0.106	0.0050	"	0.0980		108	73-141			
Xylenes (total)	0.302	0.0050	"				30-150			
Gasoline Range Hydrocarbons	1.82	0.50	"				30-150			
Surrogate: 1,2-Dichloroethane-d4	0.0404		"	0.0400		101	23-173			
Surrogate: Toluene-d8	0.0384		"	0.0400		95.9	20-170			
Surrogate: 4-Bromofluorobenzene	0.0384		"	0.0400		95.9	21-167			

Matrix Spike (1609075-MS1)

Source: 1609057-02

Prepared & Analyzed: 09/12/16

Benzene	0.0736	0.0020	mg/kg	0.0943	ND	78.0	30-131			
Toluene	0.0810	0.0050	"	0.0943	ND	85.9	30-134			
Ethylbenzene	0.0888	0.0050	"	0.0936	ND	94.8	22-153			
m,p-Xylene	0.182	0.010	"	0.188	ND	96.6	10-159			
o-Xylene	0.0995	0.0050	"	0.0925	ND	108	31-151			
Xylenes (total)	0.281	0.0050	"		ND		30-150			
Gasoline Range Hydrocarbons	14.9	0.50	"		10.6		30-150			
Surrogate: 1,2-Dichloroethane-d4	0.0427		"	0.0377		113	23-173			
Surrogate: Toluene-d8	0.0354		"	0.0377		93.9	20-170			
Surrogate: 4-Bromofluorobenzene	0.0394		"	0.0377		104	21-167			

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

Project: Hebron 3-12H
Project Number: 065816007
Project Manager: Jess Alexander

Reported:
10/07/16 18:05

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 1609075 - EPA 5030 Soil MS

Matrix Spike Dup (1609075-MSD1)		Source: 1609057-02			Prepared & Analyzed: 09/12/16					
Benzene	0.0777	0.0020	mg/kg	0.0984	ND	78.9	30-131	5.46	34	
Toluene	0.0854	0.0050	"	0.0984	ND	86.7	30-134	5.25	30	
Ethylbenzene	0.0930	0.0050	"	0.0976	ND	95.3	22-153	4.72	24	
m,p-Xylene	0.191	0.010	"	0.196	ND	97.0	10-159	4.66	68	
o-Xylene	0.102	0.0050	"	0.0965	ND	106	31-151	2.40	38	
Xylenes (total)	0.293	0.0050	"		ND		30-150	3.87	20	
Gasoline Range Hydrocarbons	11.5	0.50	"		10.6		30-150	25.5	20	QM-07
Surrogate: 1,2-Dichloroethane-d4	0.0434		"	0.0394		110	23-173			
Surrogate: Toluene-d8	0.0377		"	0.0394		95.8	20-170			
Surrogate: 4-Bromofluorobenzene	0.0419		"	0.0394		106	21-167			

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Project: Hebron 3-12H
Project Number: 065816007
Project Manager: Jess Alexander

Reported:
10/07/16 18:05

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 1609091 - EPA 5030 Soil MS

Blank (1609091-BLK1)

Prepared: 09/12/16 Analyzed: 09/13/16

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

0.0272

"

0.0333

81.5

30-150

Surrogate: Fluoranthene-d10

0.0302

"

0.0333

90.6

30-150

LCS (1609091-BS1)

Prepared: 09/12/16 Analyzed: 09/13/16

Acenaphthene	0.0282	0.00500	mg/kg	0.0333	84.7	48-131
Anthracene	0.0306	0.00500	"	0.0333	91.7	48-135
Benzo (a) anthracene	0.0320	0.00500	"	0.0333	96.0	37-142
Benzo (b) fluoranthene	0.0331	0.00500	"	0.0333	99.2	35-139
Benzo (k) fluoranthene	0.0332	0.00500	"	0.0333	99.6	30-139
Benzo (a) pyrene	0.0303	0.00500	"	0.0333	91.0	41-132
Chrysene	0.0301	0.00500	"	0.0333	90.3	30-136
Dibenz (a,h) anthracene	0.0290	0.00500	"	0.0333	87.1	24-127
Fluoranthene	0.0327	0.00500	"	0.0333	98.0	50-139
Fluorene	0.0306	0.00500	"	0.0333	91.9	50-130
Indeno (1,2,3-cd) pyrene	0.0290	0.00500	"	0.0333	87.0	26-139
Naphthalene	0.0277	0.00500	"	0.0333	83.2	40-135
Pyrene	0.0293	0.00500	"	0.0333	88.0	39-141

Surrogate: 2-Methylnaphthalene-d10

0.0294

"

0.0333

88.2

50-150

Surrogate: Fluoranthene-d10

0.0316

"

0.0333

94.7

50-150

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

Project: Hebron 3-12H
Project Number: 065816007
Project Manager: Jess Alexander

Reported:
10/07/16 18:05

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 1609091 - EPA 5030 Soil MS

Duplicate (1609091-DUP1)				Source: 1608267-01		Prepared: 09/12/16 Analyzed: 09/13/16				
Acenaphthene	ND	0.00500	mg/kg		ND				200	
Anthracene	ND	0.00500	"		ND				200	
Benzo (a) anthracene	ND	0.00500	"		ND				200	
Benzo (b) fluoranthene	ND	0.00500	"		ND				200	
Benzo (k) fluoranthene	0.0120	0.00500	"		0.00734			48.4	200	
Benzo (a) pyrene	ND	0.00500	"		ND				200	
Chrysene	0.0322	0.00500	"		0.0229			33.9	200	
Dibenz (a,h) anthracene	ND	0.00500	"		ND				200	
Fluoranthene	ND	0.00500	"		0.00258				200	
Fluorene	0.0373	0.00500	"		0.0277			29.4	200	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"		ND				200	
Naphthalene	0.0277	0.00500	"		ND				200	
Pyrene	0.0288	0.00500	"		0.0200			35.7	200	
Surrogate: 2-Methylnaphthalene-d10	0.0317		"	0.0333		95.2	30-150			
Surrogate: Fluoranthene-d10	0.0341		"	0.0333		102	30-150			

Matrix Spike (1609091-MS1)				Source: 1608267-02		Prepared: 09/12/16 Analyzed: 09/13/16				
Acenaphthene	ND	0.00500	mg/kg	0.0333	ND		27-140			QM-07
Anthracene	0.0909	0.00500	"	0.0333	ND	273	23-144			QM-07
Benzo (a) anthracene	0.0359	0.00500	"	0.0333	ND	108	12-168			
Benzo (b) fluoranthene	0.0431	0.00500	"	0.0333	0.00506	114	10-170			
Benzo (k) fluoranthene	0.0377	0.00500	"	0.0333	ND	113	11-150			
Benzo (a) pyrene	0.0316	0.00500	"	0.0333	ND	94.7	11-162			
Chrysene	0.0550	0.00500	"	0.0333	0.0215	101	10-167			
Dibenz (a,h) anthracene	0.0194	0.00500	"	0.0333	ND	58.1	10-128			
Fluoranthene	0.0452	0.00500	"	0.0333	ND	136	18-157			
Fluorene	0.0216	0.00500	"	0.0333	0.00172	59.6	37-133			
Indeno (1,2,3-cd) pyrene	0.0190	0.00500	"	0.0333	ND	57.1	10-161			
Naphthalene	ND	0.00500	"	0.0333	ND		10-157			QM-07
Pyrene	0.107	0.00500	"	0.0333	0.130	NR	10-166			QM-07
Surrogate: 2-Methylnaphthalene-d10	0.0298		"	0.0333		89.5	50-150			
Surrogate: Fluoranthene-d10	0.0360		"	0.0333		108	50-150			

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4600 West 60th Avenue
Arvada CO, 80003

Project: Hebron 3-12H
Project Number: 065816007
Project Manager: Jess Alexander

Reported:
10/07/16 18:05

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 1609070 - EPA 3050B

Blank (1609070-BLK1)

Prepared & Analyzed: 09/12/16

Arsenic	ND	0.200	mg/kg wet
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 (1609070-BS1)

Prepared & Analyzed: 09/12/16

Arsenic	44.2	0.200	mg/kg wet	52.8	83.7	82.6-117
Barium	88.0	0.400	"	91.2	96.5	72.8-127
Cadmium	48.1	0.100	"	48.8	98.6	80.3-120
Chromium	23.8	0.500	"	25.3	94.1	74.7-125
Copper	88.0	0.500	"	84.8	104	85.4-115
Lead	43.0	0.200	"	43.2	99.5	81.1-119
Nickel	115	0.100	"	114	101	88-112
Selenium	34.0	0.400	"	32.2	106	73.7-127
Silver	29.7	0.100	"	29.4	101	69.8-130
Zinc	82.8	10.0	"	81.2	102	77.8-122

Summit Scientific

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4600 West 60th Avenue
Arvada CO, 80003

Project: Hebron 3-12H
Project Number: 065816007
Project Manager: Jess Alexander

Reported:
10/07/16 18:05

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 1609087 - EPA 7471A

Blank (1609087-BLK1)				Prepared & Analyzed: 09/13/16						
Mercury	ND	0.0500	mg/kg wet							
LCS (1609087-BS1)				Prepared & Analyzed: 09/13/16						
Mercury	0.502	0.0500	mg/kg wet	0.500		100	80-120			
Duplicate (1609087-DUP1)				Source: 1608267-01		Prepared & Analyzed: 09/13/16				
Mercury	0.0480	0.0627	mg/kg dry		0.0451			6.33	20	
Matrix Spike (1609087-MS1)				Source: 1608267-01		Prepared & Analyzed: 09/13/16				
Mercury	0.572	0.0541	mg/kg dry	0.541	0.0451	97.5	80-120			
Matrix Spike Dup (1609087-MSD1)				Source: 1608267-01		Prepared & Analyzed: 09/13/16				
Mercury	0.533	0.0490	mg/kg dry	0.490	0.0451	99.6	80-120	7.03	20	

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4600 West 60th Avenue
Arvada CO, 80003

Project: Hebron 3-12H
Project Number: 065816007
Project Manager: Jess Alexander

Reported:
10/07/16 18:05

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 1609094 - 3060A_Mod

Blank (1609094-BLK1)

Prepared: 09/14/16 Analyzed: 09/15/16

Chromium, Hexavalent ND 0.300 mg/kg wet

LCS (1609094-BS1)

Prepared: 09/14/16 Analyzed: 09/15/16

Chromium, Hexavalent 19.2 0.300 mg/kg wet 19.9 96.1 85-115

Duplicate (1609094-DUP1)

Source: 1609057-03

Prepared: 09/14/16 Analyzed: 09/15/16

Chromium, Hexavalent ND 0.300 mg/kg dry ND 20

Matrix Spike (1609094-MS1)

Source: 1609057-03

Prepared: 09/14/16 Analyzed: 09/15/16

Chromium, Hexavalent ND 0.300 mg/kg dry 24.1 ND 85-115 QM-07

Post Spike (1609094-PS1)

Source: 1609057-03

Prepared: 09/14/16 Analyzed: 09/15/16

Chromium, Hexavalent 0.199 mg/kg 0.498 0.00 39.9 85-115 QM-07

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4600 West 60th Avenue
Arvada CO, 80003

Project: Hebron 3-12H
Project Number: 065816007
Project Manager: Jess Alexander

Reported:
10/07/16 18:05

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 1609081 - General Preparation

Blank (1609081-BLK1)

Prepared: 09/13/16 Analyzed: 09/15/16

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

LCS (1609081-BS1)

Prepared: 09/13/16 Analyzed: 09/15/16

Calcium	547	10.0	mg/kg wet	82.9-118
Magnesium	588	5.00	"	77.1-123
Sodium	584	5.00	"	71-129

Duplicate (1609081-DUP1)

Source: 1608267-01

Prepared: 09/13/16 Analyzed: 09/15/16

Calcium	4280	10.6	mg/kg dry	4090	4.56	200
Magnesium	748	5.32	"	719	3.91	200
Sodium	2050	5.32	"	1970	4.14	200

Matrix Spike (1609081-MS1)

Source: 1608267-01

Prepared: 09/13/16 Analyzed: 09/15/16

Calcium	4820	10.6	mg/kg dry	4090	75-125
Magnesium	1360	5.32	"	719	75-125
Sodium	2630	5.32	"	1970	75-125

Matrix Spike Dup (1609081-MSD1)

Source: 1608267-01

Prepared: 09/13/16 Analyzed: 09/15/16

Calcium	4570	10.6	mg/kg dry	4090	75-125	5.26	25
Magnesium	1250	5.32	"	719	75-125	8.17	25
Sodium	2480	5.32	"	1970	75-125	5.68	25

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4600 West 60th Avenue
Arvada CO, 80003

Project: Hebron 3-12H
Project Number: 065816007
Project Manager: Jess Alexander

Reported:
10/07/16 18:05

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 1609071 - General Preparation

Duplicate (1609071-DUP1)	Source: 1608267-01			Prepared: 09/12/16 Analyzed: 09/13/16							
% Solids	79.4		%		79.7			0.377		20	
Duplicate (1609071-DUP2)	Source: 1608267-01			Prepared: 09/12/16 Analyzed: 09/13/16							
% Solids	79.4		%		79.7			0.377		20	

Batch 1609092 - General Preparation

LCS (1609092-BS1)	Prepared & Analyzed: 09/13/16										
pH	7.98	0.100	pH Units	8.00		99.8	95-105				
Duplicate (1609092-DUP1)	Source: 1609057-03			Prepared & Analyzed: 09/13/16							
pH	8.31	0.100	pH Units		8.44			1.55		20	

Batch 1609093 - General Preparation

Blank (1609093-BLK1)	Prepared & Analyzed: 09/13/16										
Specific Conductance (EC)	ND	0.0100	mmhos/cm								
LCS (1609093-BS1)	Prepared & Analyzed: 09/13/16										
Specific Conductance (EC)	0.504	0.0100	mmhos/cm	0.500		101	90-110				
Duplicate (1609093-DUP1)	Source: 1609057-03			Prepared & Analyzed: 09/13/16							
Specific Conductance (EC)	2.52	0.0100	mmhos/cm		2.76			9.24		20	

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4600 West 60th Avenue
Arvada CO, 80003

Project: Hebron 3-12H
Project Number: 065816007
Project Manager: Jess Alexander

Reported:
10/07/16 18:05

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.
R-01	The Reporting Limit for this analyte has been raised to account for matrix interference.
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