LT Environmental, Inc.
3300 North "A" Street
Building 1, Unit 103
Midland, Texas 79705
432.704.5178

December 13, 2019

Mr. Mike Bratcher
New Mexico Oil Conservation Division
811 South First Street
Artesia, New Mexico 88210

RE: Closure Request
Ross Draw Unit #041
Remediation Permit Number 2RP-5654
Eddy County, New Mexico

Dear Mr. Bratcher,

LT Environmental, Inc. (LTE), on behalf of WPX Energy Permian, Inc. (WPX), presents the following Closure Request detailing soil sampling and excavation activities at the Ross Draw Unit #041 (Site) in Unit L, Section 22, Township 26 South, Range 30 East, in Eddy County, New Mexico (Figure 1). The purpose of the soil sampling and excavation activities was to address impacts to soil following a produced water and crude oil release at the Site. Based on the excavation activities and results of the soil sampling events, WPX is submitting this Closure Request, describing remediation that has occurred and requesting no further action for this release event.

RELEASE BACKGROUND

On September 18, 2019, a flowline developed a leak near the wellhead allowing 7 barrels (bbls) of produced water and 6 bbls of oil to be released to the Site surface. Response efforts at the Site recovered 6 bbls of produced water and 4 bbls of oil. The spill volume was calculated by averaging the saturated soil depth and estimating the percentage of liquids based on soil type and liquid type. Any free liquids standing or recovered, were added to the total volume. The average saturation depth of the soil was observed to be equal to or less than 1 inch and no free liquids were present. The soil type was determined to be sand, which was estimated to have an available space (i.e. porosity) of 28 percent (%) total volume with a mixture of produced water and oil saturating the soils. Based on these assumptions, the following equation was used to calculate total volume:

[saturated soil volume (cubic feet) / 4.21 cubic feet per bbl of liquid] x estimated soil porosity (%)

WPX reported the release to the New Mexico Oil Conservation Division (NMOCD) on a Release Notification and Corrective Action Form C-141 (Form C-141) on September 16, 2019, and was assigned Remediation Permit (RP) Number 2RP-5654 (Attachment 1).

SITE CHARACTERIZATION

LTE characterized the Site according to Table 1, *Closure Criteria for Soils Impacted by a Release*, of Title 19, Chapter 15, Part 29, Section 12 (19.15.29.12) of the New Mexico Administrative Code (NMAC). Depth to groundwater at the Site is estimated to be greater than 100 feet below ground surface (bgs) based on

the nearest water well data. The nearest permitted water well with depth to water data is United States Geological Survey (USGS) well 320125103514701, located approximately 4,126 feet southwest of the Site. The water well has a depth to groundwater of 117 feet bgs. Ground surface elevation at the water well location is 3,044 feet above mean sea level (AMSL), which is approximately 9 feet higher in elevation than the Site. The closest continuously flowing water or significant watercourse to the Site is a tributary to the Pecos River located approximately 1,540 feet southeast of the Site. The Site is greater than 200 feet from a lakebed, sinkhole, or playa lake and greater than 300 feet from an occupied residence, school, hospital, institution, church. The Site is greater than 300 feet from a wetland. The Site is greater than 1,000 feet to a freshwater well or spring and is not within a 100-year floodplain or overlying a subsurface mine. The Site is located in a high potential karst area. Based on these criteria, the following NMOCD Table 1 closure criteria apply: 10 milligrams per kilogram (mg/kg) benzene; 50 mg/kg total benzene, toluene, ethylbenzene, and total xylenes (BTEX); 100 mg/kg total petroleum hydrocarbons (TPH); and 600 mg/kg chloride.

EXCAVATION SOIL SAMPLING ACTIVITIES

On September 25, 2019, LTE personnel inspected the Site to evaluate the release extent. WPX had conducted preliminary excavation activities prior to the visit. The release extent and excavation area were mapped utilizing a handheld Global Positing System (GPS) unit and are depicted on Figure 2. Preliminary field screening and observations within the excavation area indicated impacts to soil and that further excavation was warranted. Photographic documentation was conducted during the Site visit. Photographs are included in Attachment 2.

On October 2, 2019, LTE was on site to oversee excavation activities within the release area. Excavation activities were directed by field screening soil samples for volatile aromatic hydrocarbons using a PID and chloride using Hach® chloride QuanTab® test strips. Following completion of excavation activities, 5-point composite confirmation soil samples were collected from the floor (samples labeled as "FS") and sidewalls (samples labeled as "SW") of the excavation area. Each soil sample represented at most 200 square feet. The soil samples placed directly into a pre-cleaned glass jar, labeled with the location, date, time, sampler name, method of analysis, and immediately placed on ice. The soil samples were shipped at or below 4 degrees Celsius (°C) under strict chain-of-custody (COC) procedures to Xenco Laboratories (Xenco) in Midland, Texas, for analysis of chloride following United States Environmental Protection Agency (USEPA) Method 300.0. Approximately 60 cubic yards of impacted soil were removed from the excavation area and transported to the R360 Red Bluff Facility in Orla, Texas for disposal. The excavation area measured approximately 1,200 square feet in area and 3.5 feet bgs in depth. The excavation area and soil sample locations are depicted on Figure 3.

ANALYTICAL RESULTS

Laboratory analytical results of final excavation conformation soil samples indicated that BTEX, TPH, and chloride concentrations were either below the laboratory detection limit or compliant with the Closure Criteria. Laboratory analytical results are summarized in Table 1 and the complete laboratory analytical reports are included as Attachment 3.

CLOSURE REQUEST

A total of approximately 60 cubic yards of impacted soil were excavated from the Site. Laboratory analytical results of final excavation conformation soil samples indicated that BTEX, TPH, and chloride concentrations were compliant with the Closure Criteria and no further excavation was warranted.

Initial response efforts and excavation of impacted soil have mitigated impacts at this Site. WPX requests no further action for release number 2RP-5654. Upon approval of this closure request, WPX will backfill the excavation with material purchased locally and recontour the Site to match pre-existing site conditions. An updated NMOCD Form C-141 is included as Attachment 1.

If you have any questions or comments, please do not hesitate to contact Mr. Chris McKisson at (970) 285-9985.

Sincerely,

LT ENVIRONMENTAL, INC.

Chris McKisson
Project Environmental Scientist

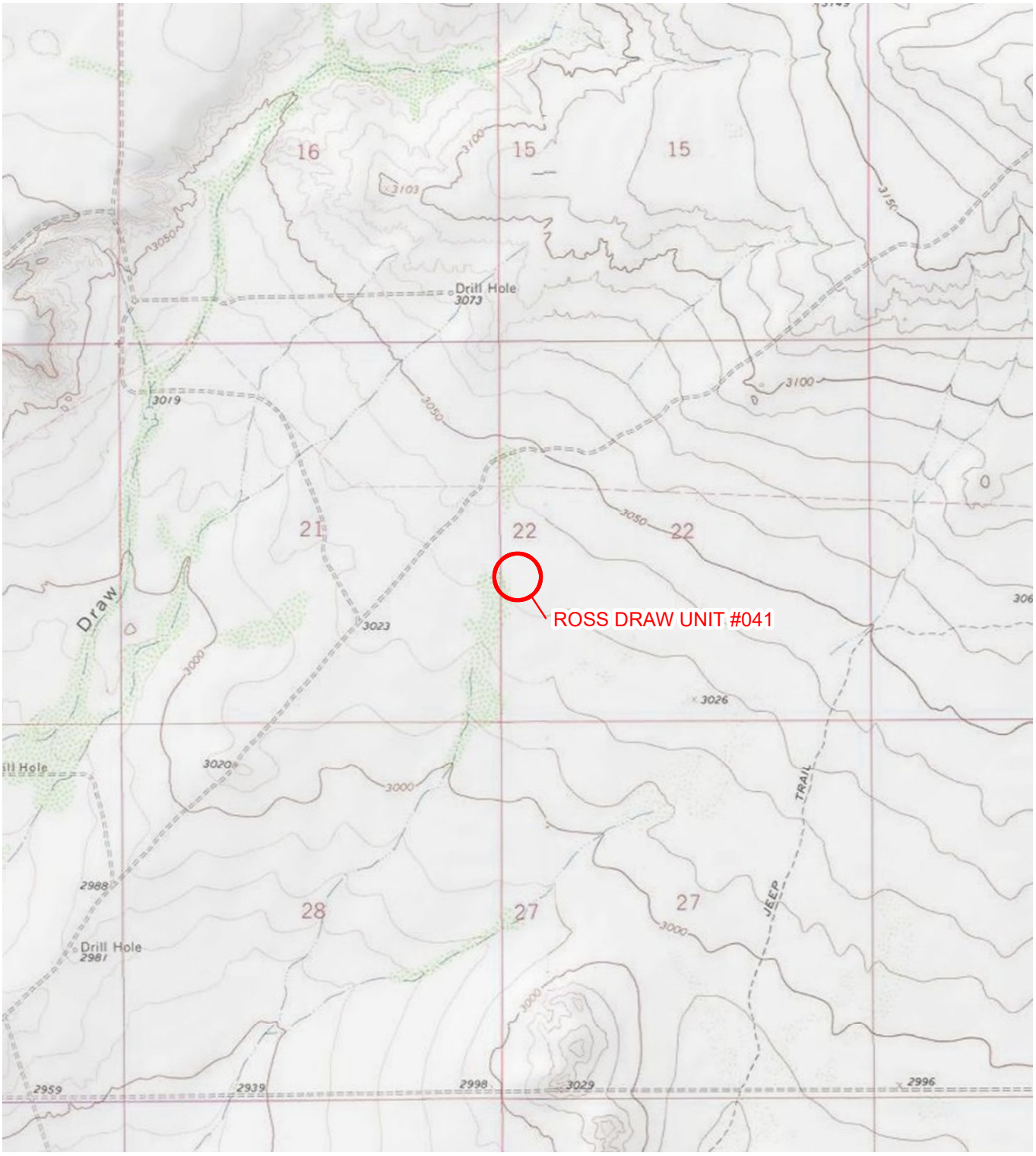
Ashley L. Ager, P.G.
Senior Geologist

cc: Jim Raley, WPX
Robert Hamlet, NMOCD
Victoria Venegas, NMOCD
Bureau of Land Management

Attachments:

Figure 1	Site Location Map
Figure 2	Site Map
Figure 3	Excavation Soil Sample Locations
Table 1	Soil Analytical Reports
Attachment 1	Initial/Final NMOCD Form C-141
Attachment 2	Photographic Log
Attachment 3	Laboratory Analytical Reports

FIGURES



LEGEND

SITE LOCATION

IMAGE COURTESY OF ESRI/USGS

0 2,000 4,000

Feet

N

NEW MEXICO

FIGURE 1
SITE LOCATION MAP
ROSS DRAW UNIT #041
UNIT L SEC 22 T26S R30E
EDDY COUNTY, NEW MEXICO
WPX ENERGY PERMIAN, LLC.

P:\WPX\GIS\MXD\034819058_RDU 41\034819058_FIG01_SL_2019.mxd

IMAGE COURTESY OF ESRI

LEGEND

RELEASE LOCATION

RELEASE EXTENT (490 SQUARE FEET)

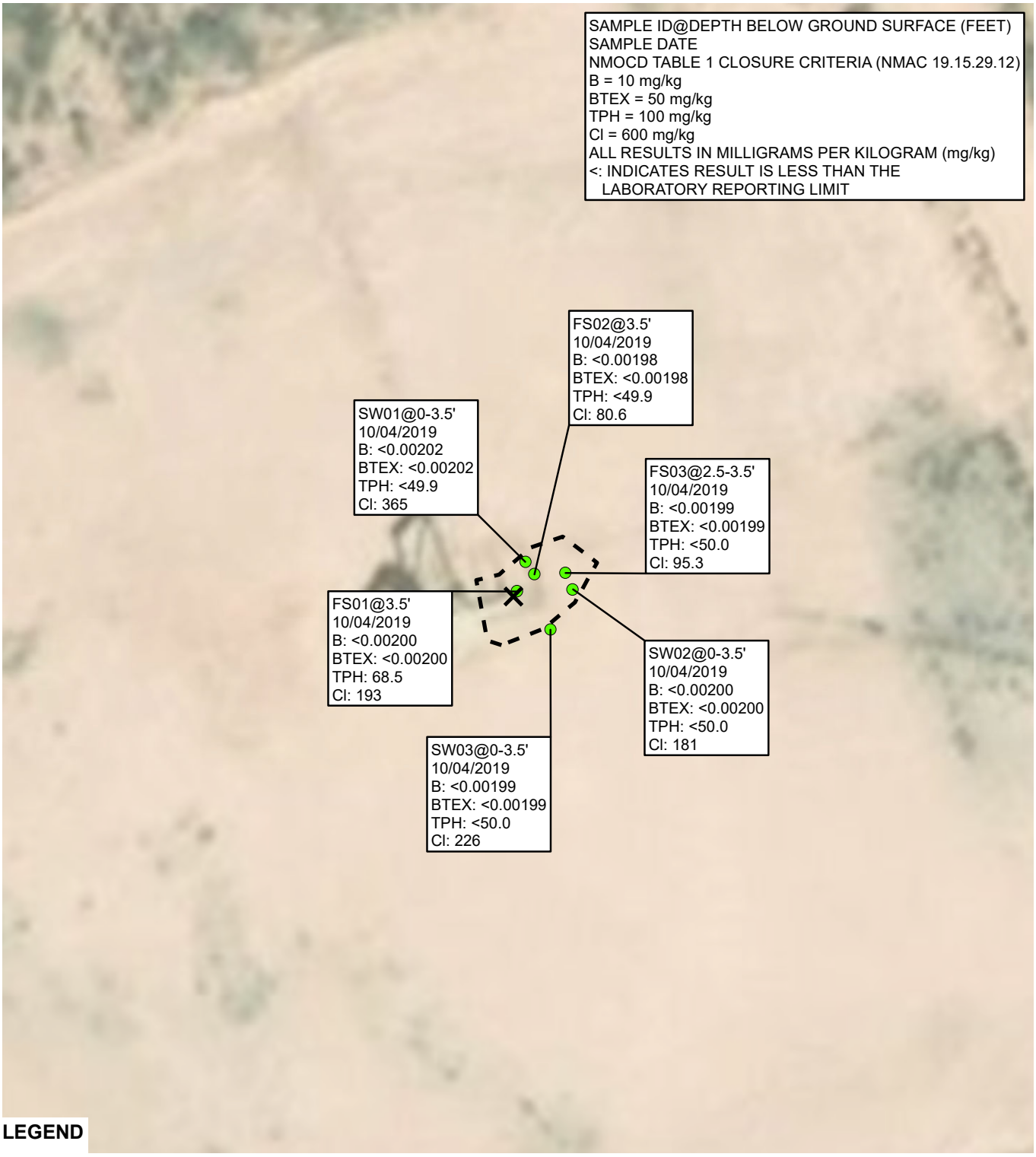
0 40 80

Feet

N

FIGURE 2
SITE MAP
ROSS DRAW UNIT #041
UNIT L SEC 22 T26S R30E
EDDY COUNTY, NEW MEXICO
WPX ENERGY PERMIAN, LLC.

P:\WPX\GIS\MXD\034819058_RDU 41\034819058_FIG02_SITE_2019.mxd



LEGEND

RELEASE LOCATION

EXCAVATION SOIL SAMPLE IN COMPLIANCE WITH APPLICABLE CLOSURE CRITERIA

EXCAVATION EXTENT

IMAGE COURTESY OF ESRI

0 40 80
Feet

N

B: BENZENE
BTEX: TOTAL BENZENE, TOLUENE, ETHYLBENZENE, AND TOTAL XYLENES
TPH: TOTAL PETROLEUM HYDROCARBONS
Cl: CHLORIDE
NMAC: NEW MEXICO ADMINISTRATIVE CODE
NMOCD: NEW MEXICO OIL CONSERVATION DIVISION

FIGURE 3
EXCAVATION SOIL SAMPLE LOCATIONS
ROSS DRAW UNIT #041
UNIT L SEC 22 T26S R30E
EDDY COUNTY, NEW MEXICO
WPX ENERGY PERMIAN, LLC.

P:\WPX\GIS\MXD\034819058_RDU 41\034819058_FIG03_EXCAVATION_2019.mxd

TABLES

TABLE 1
SOIL ANALYTICAL RESULTS

ROSS DRAW UNIT #041
EDDY COUNTY, NEW MEXICO
WPX ENERGY PERMIAN, INC.

Sample Name	Sample Depth (feet bgs)	Sample Date	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)	Total BTEX (mg/kg)	GRO (mg/kg)	DRO (mg/kg)	MRO (mg/kg)	Sum of GRO + DRO (mg/kg)	TPH (mg/kg)	Chloride (mg/kg)
SW01	0-3.5	10/4/2019	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	<49.9	<49.9	<49.9	<49.9	<49.9	365
SW02	0-3.5	10/4/2019	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<50.0	<50.0	<50.0	<50.0	<50.0	181
SW03	0-3.5	10/4/2019	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	<50.0	<50.0	<50.0	<50.0	<50.0	226
FS01	3.5	10/4/2019	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<49.8	68.5	<49.8	68.5	68.5	193
FS02	3.5	10/4/2019	<0.00198	<0.00198	<0.00198	<0.00198	<0.00198	<49.9	<49.9	<49.9	<49.9	<49.9	80.6
FS03	2.5-3.5	10/4/2019	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	<50.0	<50.0	<50.0	<50.0	<50.0	95.3
NMOCD Table 1 Closure Criteria			**10**	NE	NE	NE	**50**	NE	NE	NE	**NE**	**100**	**600**

Notes:

bgs - below ground surface
BTEX - benzene, toluene, ethylbenzene, and total xylenes
mg/kg - milligrams per kilogram
NE - not established
NMOCD - New Mexico Oil Conservation Division
DRO - diesel range organics
GRO - gasoline range organics
ORO - oil range organics
TPH - total petroleum hydrocarbons
< - indicates result is below laboratory reporting limits
Bold- indicates result exceeds the applicable regulatory standard

ATTACHMENT 1: INITIAL/FINAL NMOCD FORM C-141

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources Department

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised August 24, 2018
Submit to appropriate OCD District office

Incident ID	NAB1928159228
District RP	2RP-5654
Facility ID	
Application ID	pAB1928158952

Release Notification KEEBA-190919-C-1410

Responsible Party

Responsible Party: WPX Energy Permian, LLC.	OGRID: 246289
Contact Name: Jim Raley	Contact Telephone: 575-689-7597
Contact email: james.raley@wpxenergy.com	Incident # *(assigned by OCD)* NAB1928159228
Contact mailing address: 5315 Buena Vista Dr., Carlsbad, NM 88220	

Location of Release Source

Latitude 32.02611 Longitude -103.87665
(NAD 83 in decimal degrees to 5 decimal places)

Site Name: ROSS DRAW UNIT #041	Site Type: Production Facility
Date Release Discovered: 9/18/2019	API# *(if applicable): 30-015-42944*

Unit Letter	Section	Township	Range	County
L	22	26S	30E	Eddy

Surface Owner: ☐ State ☒ Federal ☐ Tribal ☐ Private

Nature and Volume of Release

Material(s) Released (Select all that apply and attach calculations or specific justification for the volumes provided below)

☒ Crude Oil	Volume Released (bbls) 6	Volume Recovered (bbls) 4
☒ Produced Water	Volume Released (bbls) 7	Volume Recovered (bbls) 6
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	☒ Yes ☐ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release: Flowline developed leak near wellhead, resulting in 13bbls of fluids impacting soils around wellhead, 10 bbls were recovered. Line to be repaired and investigated for cause and extent. Impacted soils to be removed

Form C-141
Page 2

State of New Mexico
Oil Conservation Division

Incident ID	NAB1928159228
District RP	2RP-5654
Facility ID	
Application ID	pAB1928158952

Was this a major release as defined by 19.15.29.7(A) NMAC? ☐ Yes ☒ No	If YES, for what reason(s) does the responsible party consider this a major release?
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?	

Initial Response

The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury

☒ The source of the release has been stopped.
☒ The impacted area has been secured to protect human health and the environment.
☒ Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.
☒ All free liquids and recoverable materials have been removed and managed appropriately.

If all the actions described above have not been undertaken, explain why:

Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Printed Name: Jim Raley Title: Environmental Specialist

Signature: _____ Date: 9/18/2019

email: james.raley@wpxenergy.com Telephone: 575-689-7597

OCD Only

Received by: *Amalia Bustamante* Date: *10/8/2019*

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	**2RP-5654**
Facility ID	
Application ID	

Site Assessment/Characterization

This information must be provided to the appropriate district office no later than 90 days after the release discovery date.

What is the shallowest depth to groundwater beneath the area affected by the release?	**>100** (ft bgs)
Did this release impact groundwater or surface water?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☐ Yes ☒ No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes ☒ No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	☐ Yes ☒ No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes ☒ No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ☒ No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ☒ No
Are the lateral extents of the release overlying an unstable area such as karst geology?	☒ Yes ☐ No
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes ☒ No
Did the release impact areas **not** on an exploration, development, production, or storage site?	☐ Yes ☒ No

Attach a comprehensive report (electronic submittals in .pdf format are preferred) demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined. Refer to 19.15.29.11 NMAC for specifics.

Characterization Report Checklist: ***Each of the following items must be included in the report.***

☒ Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.
☒ Field data
☒ Data table of soil contaminant concentration data
☒ Depth to water determination
☒ Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release
☒ Boring or excavation logs
☒ Photographs including date and GIS information
☒ Topographic/Aerial maps
☒ Laboratory data including chain of custody

If the site characterization report does not include completed efforts at remediation of the release, the report must include a proposed remediation plan. That plan must include the estimated volume of material to be remediated, the proposed remediation technique, proposed sampling plan and methods, anticipated timelines for beginning and completing the remediation. The closure criteria for a release are contained in Table 1 of 19.15.29.12 NMAC, however, use of the table is modified by site- and release-specific parameters.

Form C-141
Page 4

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	**2RP-5654**
Facility ID	
Application ID	

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Printed Name: **Jim Raley** Title: **Environmental Specialist**

Signature: _____ Date: **12/13/2019**

email: **James.Raley@wpxenergy.com** Telephone: **575-689-7597**

OCD Only

Received by: _____ Date: _____

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Page 5

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	**2RP-5654**
Facility ID	
Application ID	

Closure

The responsible party must attach information demonstrating they have complied with all applicable closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a comprehensive report (electronic submittals in .pdf format are preferred) including a scaled site map, sampling diagrams, relevant field notes, photographs of any excavation prior to backfilling, laboratory data including chain of custody documents of final sampling, and a narrative of the remedial activities. Refer to 19.15.29.12 NMAC.

Closure Report Attachment Checklist: ***Each of the following items must be included in the closure report.***

☒ A scaled site and sampling diagram as described in 19.15.29.11 NMAC

☒ Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)

☒ Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)

☒ Description of remediation activities

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

Printed Name: **Jim Raley** Title: **Environmental Specialist**

Signature: _____ Date: **12/13/2019**

email: **James.Raley@wpxenergy.com** Telephone: **575-689-7597**

OCD Only

Received by: _____ Date: _____

Closure approval by the OCD does not relieve the responsible party of liability should their operations have failed to adequately investigate and remediate contamination that poses a threat to groundwater, surface water, human health, or the environment nor does not relieve the responsible party of compliance with any other federal, state, or local laws and/or regulations.

Closure Approved by: _____ Date: _____

Printed Name: _____ Title: _____

ATTACHMENT 2: PHOTOGRAPHIC LOG

PHOTOGRAPHIC LOG

Photograph 1: View south of excavation.

Photograph 2: View west of excavation.

Photograph 3: View northwest of excavation.

Photograph 4: View north of excavation.

ATTACHMENT 3: LABORATORY ANALYTICAL REPORTS

Analytical Report 639206

for

LT Environmental, Inc.

Project Manager: Chris McKisson

RDU 41

034819058

15-OCT-19

Collected By: Client

1089 N Canal Street
Carlsbad, NM 88220

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-19-30), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142), North Carolina (681)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (TX104704295-19-22), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-19-16)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-19-21)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-19)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-19-5)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Tampa: Florida (E87429), North Carolina (483)

15-OCT-19

Project Manager: **Chris McKisson**
LT Environmental, Inc.
4600 W. 60th Avenue
Arvada, CO 80003

Reference: XENCO Report No(s): **639206**
RDU 41
Project Address: Eddy County, NM

Chris McKisson:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 639206. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 639206 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Jessica Kramer

Jessica Kramer
Project Assistant

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.
Certified and approved by numerous States and Agencies.
A Small Business and Minority Status Company that delivers SERVICE and QUALITY

Houston - Dallas - Midland - San Antonio - Phoenix - Oklahoma - Latin America

Sample Cross Reference 639206

LT Environmental, Inc., Arvada, CO

RDU 41

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
SW01	S	10-04-19 12:15	0 - 3.5 ft	639206-001
SW02	S	10-04-19 12:20	0 - 3.5 ft	639206-002
SW03	S	10-04-19 12:25	0 - 3.5 ft	639206-003
FS01	S	10-04-19 12:30	3.5 ft	639206-004
FS02	S	10-04-19 12:35	3.5 ft	639206-005
FS03	S	10-04-19 12:40	2.5 - 3.5 ft	639206-006

CASE NARRATIVE

Client Name: LT Environmental, Inc.
Project Name: RDU 41

Project ID: *034819058*
Work Order Number(s): *639206*

Report Date: *15-OCT-19*
Date Received: *10/07/2019*

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3104086 BTEX by EPA 8021B
Benzene, Ethylbenzene, Toluene, m,p-Xylenes, o-Xylene Relative Percent Difference (RPD) between matrix spike and duplicate were above quality control limits.
Samples in the analytical batch are: 639206-001, -002, -003, -004, -005, -006

Lab Sample ID 639206-001 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Benzene, Ethylbenzene, Toluene, m,p-Xylenes, o-Xylene recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 639206-001, -002, -003, -004, -005, -006.
The Laboratory Control Sample for Toluene, Benzene, m,p-Xylenes, Ethylbenzene, o-Xylene is within laboratory Control Limits, therefore the data was accepted.
Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Certificate of Analysis Summary 639206

LT Environmental, Inc., Arvada, CO

Project Name: RDU 41

Project Id: 034819058
Contact: Chris McKisson
Project Location: Eddy County, NM

Date Received in Lab: Mon Oct-07-19 12:50 pm
Report Date: 15-OCT-19
Project Manager: Jessica Kramer

Analysis Requested													
	Lab Id:	639206-001		639206-002		639206-003		639206-004		639206-005		639206-006	
	Field Id:	SW01		SW02		SW03		FS01		FS02		FS03	
	Depth:	0-3.5 ft		0-3.5 ft		0-3.5 ft		3.5- ft		3.5- ft		2.5-3.5 ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Oct-04-19 12:15		Oct-04-19 12:20		Oct-04-19 12:25		Oct-04-19 12:30		Oct-04-19 12:35		Oct-04-19 12:40	
BTEX by EPA 8021B SUB: T104704400-19-19	***Extracted:***	Oct-10-19 16:15		Oct-10-19 16:15		Oct-10-19 16:15		Oct-10-19 16:15		Oct-10-19 16:15		Oct-10-19 16:15	
	Analyzed:	Oct-12-19 22:07		Oct-12-19 22:27		Oct-12-19 22:47		Oct-12-19 23:07		Oct-12-19 23:27		Oct-12-19 23:47	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Benzene		<0.00202	0.00202	<0.00200	0.00200	<0.00199	0.00199	<0.00200	0.00200	<0.00198	0.00198	<0.00199	0.00199
Toluene		<0.00202	0.00202	<0.00200	0.00200	<0.00199	0.00199	<0.00200	0.00200	<0.00198	0.00198	<0.00199	0.00199
Ethylbenzene		<0.00202	0.00202	<0.00200	0.00200	<0.00199	0.00199	<0.00200	0.00200	<0.00198	0.00198	<0.00199	0.00199
m,p-Xylenes		<0.00404	0.00404	<0.00399	0.00399	<0.00398	0.00398	<0.00400	0.00400	<0.00396	0.00396	<0.00398	0.00398
o-Xylene		<0.00202	0.00202	<0.00200	0.00200	<0.00199	0.00199	<0.00200	0.00200	<0.00198	0.00198	<0.00199	0.00199
Total Xylenes		<0.00202	0.00202	<0.00200	0.00200	<0.00199	0.00199	<0.00200	0.00200	<0.00198	0.00198	<0.00199	0.00199
Total BTEX		<0.00202	0.00202	<0.00200	0.00200	<0.00199	0.00199	<0.00200	0.00200	<0.00198	0.00198	<0.00199	0.00199
Chloride by EPA 300 SUB: T104704400-19-19	***Extracted:***	Oct-08-19 16:10		Oct-08-19 16:10		Oct-08-19 16:10		Oct-08-19 16:10		Oct-08-19 16:10		Oct-08-19 16:10	
	Analyzed:	Oct-08-19 16:46		Oct-09-19 08:24		Oct-09-19 08:34		Oct-08-19 17:33		Oct-08-19 17:42		Oct-08-19 18:10	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		365	5.02	181	4.98	226	5.00	193	5.04	80.6	4.96	95.3	4.99
TPH by SW8015 Mod SUB: T104704400-19-19	***Extracted:***	Oct-10-19 17:00		Oct-10-19 17:00		Oct-10-19 17:00		Oct-10-19 17:00		Oct-10-19 17:00		Oct-10-19 17:00	
	Analyzed:	Oct-11-19 03:48		Oct-11-19 04:09		Oct-11-19 04:31		Oct-11-19 04:52		Oct-11-19 05:13		Oct-11-19 05:35	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Gasoline Range Hydrocarbons (GRO)		<49.9	49.9	<50.0	50.0	<50.0	50.0	<49.8	49.8	<49.9	49.9	<50.0	50.0
Diesel Range Organics (DRO)		<49.9	49.9	<50.0	50.0	<50.0	50.0	68.5	49.8	<49.9	49.9	<50.0	50.0
Motor Oil Range Hydrocarbons (MRO)		<49.9	49.9	<50.0	50.0	<50.0	50.0	<49.8	49.8	<49.9	49.9	<50.0	50.0
Total GRO-DRO		<49.9	49.9	<50.0	50.0	<50.0	50.0	68.5	49.8	<49.9	49.9	<50.0	50.0
Total TPH		<49.9	49.9	<50.0	50.0	<50.0	50.0	68.5	49.8	<49.9	49.9	<50.0	50.0

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Version: 1.%

Jessica Kramer
Project Assistant

Certificate of Analytical Results 639206

LT Environmental, Inc., Arvada, CO

RDU 41

Sample Id:	**SW01**	Matrix:	Soil	Date Received:	10.07.19 12.50
Lab Sample Id:	639206-001	Date Collected:	10.04.19 12.15	Sample Depth:	0 - 3.5 ft

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	
Analyst:	CHE	Date Prep:	10.08.19 16.10	Basis:	Wet Weight
Seq Number:	3103711			SUB:	T104704400-19-19

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**365**	5.02	mg/kg	10.08.19 16.46		1

Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DVM			% Moisture:	
Analyst:	DVM	Date Prep:	10.10.19 17.00	Basis:	Wet Weight
Seq Number:	3104059			SUB:	T104704400-19-19

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.11.19 03.48	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.11.19 03.48	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.11.19 03.48	U	1
Total GRO-DRO	PHC628	<49.9	49.9	mg/kg	10.11.19 03.48	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.11.19 03.48	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	85	%	70-135	10.11.19 03.48	
o-Terphenyl	84-15-1	93	%	70-135	10.11.19 03.48	

Certificate of Analytical Results 639206

LT Environmental, Inc., Arvada, CO

RDU 41

Sample Id:	**SW01**	Matrix:	Soil	Date Received:	10.07.19 12.50
Lab Sample Id:	639206-001	Date Collected:	10.04.19 12.15	Sample Depth:	0 - 3.5 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	KTL			% Moisture:	
Analyst:	KTL	Date Prep:	10.10.19 16.15	Basis:	Wet Weight
Seq Number:	3104086			SUB:	T104704400-19-19

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	10.12.19 22.07	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	10.12.19 22.07	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	10.12.19 22.07	U	1
m,p-Xylenes	179601-23-1	<0.00404	0.00404	mg/kg	10.12.19 22.07	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	10.12.19 22.07	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	10.12.19 22.07	U	1
Total BTEX		<0.00202	0.00202	mg/kg	10.12.19 22.07	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	88	%	70-130	10.12.19 22.07	
4-Bromofluorobenzene	460-00-4	107	%	70-130	10.12.19 22.07	

Certificate of Analytical Results 639206

LT Environmental, Inc., Arvada, CO

RDU 41

Sample Id:	**SW02**	Matrix:	Soil	Date Received:	10.07.19 12.50
Lab Sample Id:	639206-002	Date Collected:	10.04.19 12.20	Sample Depth:	0 - 3.5 ft

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	
Analyst:	CHE	Date Prep:	10.08.19 16.10	Basis:	Wet Weight
Seq Number:	3103711			SUB:	T104704400-19-19

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**181**	4.98	mg/kg	10.09.19 08.24		1

Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DVM			% Moisture:	
Analyst:	DVM	Date Prep:	10.10.19 17.00	Basis:	Wet Weight
Seq Number:	3104059			SUB:	T104704400-19-19

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.11.19 04.09	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.11.19 04.09	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.11.19 04.09	U	1
Total GRO-DRO	PHC628	<50.0	50.0	mg/kg	10.11.19 04.09	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.11.19 04.09	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	93	%	70-135	10.11.19 04.09	
o-Terphenyl	84-15-1	101	%	70-135	10.11.19 04.09	

Certificate of Analytical Results 639206

LT Environmental, Inc., Arvada, CO

RDU 41

Sample Id:	**SW02**	Matrix:	Soil	Date Received:	10.07.19 12.50
Lab Sample Id:	639206-002	Date Collected:	10.04.19 12.20	Sample Depth:	0 - 3.5 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	KTL			% Moisture:	
Analyst:	KTL	Date Prep:	10.10.19 16.15	Basis:	Wet Weight
Seq Number:	3104086			SUB:	T104704400-19-19

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	10.12.19 22.27	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	10.12.19 22.27	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	10.12.19 22.27	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	10.12.19 22.27	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	10.12.19 22.27	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	10.12.19 22.27	U	1
Total BTEX		<0.00200	0.00200	mg/kg	10.12.19 22.27	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	119	%	70-130	10.12.19 22.27	
1,4-Difluorobenzene	540-36-3	88	%	70-130	10.12.19 22.27	

Certificate of Analytical Results 639206

LT Environmental, Inc., Arvada, CO

RDU 41

Sample Id:	**SW03**	Matrix:	Soil	Date Received:	10.07.19 12.50
Lab Sample Id:	639206-003	Date Collected:	10.04.19 12.25	Sample Depth:	0 - 3.5 ft

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	
Analyst:	CHE	Date Prep:	10.08.19 16.10	Basis:	Wet Weight
Seq Number:	3103711			SUB:	T104704400-19-19

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**226**	5.00	mg/kg	10.09.19 08.34		1

Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DVM			% Moisture:	
Analyst:	DVM	Date Prep:	10.10.19 17.00	Basis:	Wet Weight
Seq Number:	3104059			SUB:	T104704400-19-19

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.11.19 04.31	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.11.19 04.31	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.11.19 04.31	U	1
Total GRO-DRO	PHC628	<50.0	50.0	mg/kg	10.11.19 04.31	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.11.19 04.31	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	86	%	70-135	10.11.19 04.31	
o-Terphenyl	84-15-1	92	%	70-135	10.11.19 04.31	

Certificate of Analytical Results 639206

LT Environmental, Inc., Arvada, CO

RDU 41

Sample Id:	**SW03**	Matrix:	Soil	Date Received:	10.07.19 12.50
Lab Sample Id:	639206-003	Date Collected:	10.04.19 12.25	Sample Depth:	0 - 3.5 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	KTL			% Moisture:	
Analyst:	KTL	Date Prep:	10.10.19 16.15	Basis:	Wet Weight
Seq Number:	3104086			SUB:	T104704400-19-19

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	10.12.19 22.47	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	10.12.19 22.47	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	10.12.19 22.47	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	10.12.19 22.47	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	10.12.19 22.47	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	10.12.19 22.47	U	1
Total BTEX		<0.00199	0.00199	mg/kg	10.12.19 22.47	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	115	%	70-130	10.12.19 22.47	
1,4-Difluorobenzene	540-36-3	85	%	70-130	10.12.19 22.47	

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LT Environmental, Inc., Arvada, CO

RDU 41

Sample Id:	**FS01**	Matrix:	Soil	Date Received:	10.07.19 12.50
Lab Sample Id:	639206-004	Date Collected:	10.04.19 12.30	Sample Depth:	3.5 ft

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	
Analyst:	CHE	Date Prep:	10.08.19 16.10	Basis:	Wet Weight
Seq Number:	3103711			SUB:	T104704400-19-19

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**193**	5.04	mg/kg	10.08.19 17.33		1

Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DVM			% Moisture:	
Analyst:	DVM	Date Prep:	10.10.19 17.00	Basis:	Wet Weight
Seq Number:	3104059			SUB:	T104704400-19-19

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.8	49.8	mg/kg	10.11.19 04.52	U	1
Diesel Range Organics (DRO)	C10C28DRO	**68.5**	49.8	mg/kg	10.11.19 04.52		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.8	49.8	mg/kg	10.11.19 04.52	U	1
Total GRO-DRO	PHC628	**68.5**	49.8	mg/kg	10.11.19 04.52		1
Total TPH	PHC635	**68.5**	49.8	mg/kg	10.11.19 04.52		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	89	%	70-135	10.11.19 04.52	
o-Terphenyl	84-15-1	96	%	70-135	10.11.19 04.52	

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LT Environmental, Inc., Arvada, CO

RDU 41

Sample Id:	**FS01**	Matrix:	Soil	Date Received:	10.07.19 12.50
Lab Sample Id:	639206-004	Date Collected:	10.04.19 12.30	Sample Depth:	3.5 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	KTL			% Moisture:	
Analyst:	KTL	Date Prep:	10.10.19 16.15	Basis:	Wet Weight
Seq Number:	3104086			SUB:	T104704400-19-19

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	10.12.19 23.07	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	10.12.19 23.07	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	10.12.19 23.07	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/kg	10.12.19 23.07	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	10.12.19 23.07	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	10.12.19 23.07	U	1
Total BTEX		<0.00200	0.00200	mg/kg	10.12.19 23.07	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	108	%	70-130	10.12.19 23.07	
1,4-Difluorobenzene	540-36-3	88	%	70-130	10.12.19 23.07	

Certificate of Analytical Results 639206

LT Environmental, Inc., Arvada, CO

RDU 41

Sample Id:	**FS02**	Matrix:	Soil	Date Received:	10.07.19 12.50
Lab Sample Id:	639206-005	Date Collected:	10.04.19 12.35	Sample Depth:	3.5 ft

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	
Analyst:	CHE	Date Prep:	10.08.19 16.10	Basis:	Wet Weight
Seq Number:	3103711			SUB:	T104704400-19-19

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**80.6**	4.96	mg/kg	10.08.19 17.42		1

Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DVM			% Moisture:	
Analyst:	DVM	Date Prep:	10.10.19 17.00	Basis:	Wet Weight
Seq Number:	3104059			SUB:	T104704400-19-19

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.11.19 05.13	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.11.19 05.13	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.11.19 05.13	U	1
Total GRO-DRO	PHC628	<49.9	49.9	mg/kg	10.11.19 05.13	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.11.19 05.13	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	89	%	70-135	10.11.19 05.13	
o-Terphenyl	84-15-1	97	%	70-135	10.11.19 05.13	

Certificate of Analytical Results 639206

LT Environmental, Inc., Arvada, CO

RDU 41

Sample Id:	**FS02**	Matrix:	Soil	Date Received:	10.07.19 12.50
Lab Sample Id:	639206-005	Date Collected:	10.04.19 12.35	Sample Depth:	3.5 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	KTL			% Moisture:	
Analyst:	KTL	Date Prep:	10.10.19 16.15	Basis:	Wet Weight
Seq Number:	3104086			SUB:	T104704400-19-19

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	10.12.19 23.27	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	10.12.19 23.27	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	10.12.19 23.27	U	1
m,p-Xylenes	179601-23-1	<0.00396	0.00396	mg/kg	10.12.19 23.27	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	10.12.19 23.27	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	10.12.19 23.27	U	1
Total BTEX		<0.00198	0.00198	mg/kg	10.12.19 23.27	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	86	%	70-130	10.12.19 23.27	
4-Bromofluorobenzene	460-00-4	110	%	70-130	10.12.19 23.27	

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LT Environmental, Inc., Arvada, CO

RDU 41

Sample Id:	**FS03**	Matrix:	Soil	Date Received:	10.07.19 12.50
Lab Sample Id:	639206-006	Date Collected:	10.04.19 12.40	Sample Depth:	2.5 - 3.5 ft

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	
Analyst:	CHE	Date Prep:	10.08.19 16.10	Basis:	Wet Weight
Seq Number:	3103711			SUB:	T104704400-19-19

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**95.3**	4.99	mg/kg	10.08.19 18.10		1

Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DVM			% Moisture:	
Analyst:	DVM	Date Prep:	10.10.19 17.00	Basis:	Wet Weight
Seq Number:	3104059			SUB:	T104704400-19-19

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.11.19 05.35	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.11.19 05.35	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.11.19 05.35	U	1
Total GRO-DRO	PHC628	<50.0	50.0	mg/kg	10.11.19 05.35	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.11.19 05.35	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	95	%	70-135	10.11.19 05.35	
o-Terphenyl	84-15-1	102	%	70-135	10.11.19 05.35	

Certificate of Analytical Results 639206

LT Environmental, Inc., Arvada, CO

RDU 41

Sample Id:	**FS03**	Matrix:	Soil	Date Received:	10.07.19 12.50
Lab Sample Id:	639206-006	Date Collected:	10.04.19 12.40	Sample Depth:	2.5 - 3.5 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	KTL			% Moisture:	
Analyst:	KTL	Date Prep:	10.10.19 16.15	Basis:	Wet Weight
Seq Number:	3104086			SUB:	T104704400-19-19

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	10.12.19 23.47	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	10.12.19 23.47	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	10.12.19 23.47	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	10.12.19 23.47	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	10.12.19 23.47	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	10.12.19 23.47	U	1
Total BTEX		<0.00199	0.00199	mg/kg	10.12.19 23.47	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	109	%	70-130	10.12.19 23.47	
1,4-Difluorobenzene	540-36-3	88	%	70-130	10.12.19 23.47	

Flagging Criteria

X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.

B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.

D The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.

E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.

F RPD exceeded lab control limits.

J The target analyte was positively identified below the quantitation limit and above the detection limit.

U Analyte was not detected.

L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.

H The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.

K Sample analyzed outside of recommended hold time.

JN A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

MDL Method Detection Limit **SDL** Sample Detection Limit **LOD** Limit of Detection

PQL Practical Quantitation Limit **MQL** Method Quantitation Limit **LOQ** Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

SMP Client Sample **BLK** Method Blank

BKS/LCS Blank Spike/Laboratory Control Sample **BKSD/LCSD** Blank Spike Duplicate/Laboratory Control Sample Duplicate

MD/SD Method Duplicate/Sample Duplicate **MS** Matrix Spike **MSD:** Matrix Spike Duplicate

+ NELAC certification not offered for this compound.

***** (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

QC Summary 639206

LT Environmental, Inc.

RDU 41

Analytical Method: Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3103711 — Matrix: Solid — Date Prep: 10.08.19
MB Sample Id: 7687722-1-BLK — LCS Sample Id: 7687722-1-BKS — LCSD Sample Id: 7687722-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<5.00	250	243	97	244	98	90-110	0	20	mg/kg	10.08.19 16:27	

Analytical Method: Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3103711 — Matrix: Soil — Date Prep: 10.08.19
Parent Sample Id: 639206-001 — MS Sample Id: 639206-001 S — MSD Sample Id: 639206-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	365	251	611	98	603	95	90-110	1	20	mg/kg	10.08.19 16:56	

Analytical Method: Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3103711 — Matrix: Soil — Date Prep: 10.08.19
Parent Sample Id: 639218-005 — MS Sample Id: 639218-005 S — MSD Sample Id: 639218-005 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	100	250	352	101	346	98	90-110	2	20	mg/kg	10.08.19 19:06	

Analytical Method: TPH by SW8015 Mod — Prep Method: SW8015P
Seq Number: 3104059 — Matrix: Solid — Date Prep: 10.10.19
MB Sample Id: 7687890-1-BLK — LCS Sample Id: 7687890-1-BKS — LCSD Sample Id: 7687890-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	1080	108	1100	110	70-135	2	20	mg/kg	10.10.19 21:24	
Diesel Range Organics (DRO)	<15.0	1000	1040	104	1060	106	70-135	2	20	mg/kg	10.10.19 21:24	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	88		99		115		70-135	%	10.10.19 21:24
o-Terphenyl	96		97		101		70-135	%	10.10.19 21:24

Analytical Method: TPH by SW8015 Mod — Prep Method: SW8015P
Seq Number: 3104059 — Matrix: Solid — Date Prep: 10.10.19
MB Sample Id: 7687890-1-BLK

Parameter	MB Result	Units	Analysis Date	Flag
Motor Oil Range Hydrocarbons (MRO)	<50.0	mg/kg	10.10.19 21:03	

MS/MSD Percent Recovery [D] = 100*(C-A) / B — LCS = Laboratory Control Sample — MS = Matrix Spike
Relative Percent Difference RPD = 200* | (C-E) / (C+E) | — A = Parent Result — B = Spike Added
LCS/LCSD Recovery [D] = 100 * (C) / [B] — C = MS/LCS Result — D = MSD/LCSD % Rec
Log Difference Log Diff. = Log(Sample Duplicate) - Log(Original Sample) — E = MSD/LCSD Result

QC Summary 639206

LT Environmental, Inc.

RDU 41

Analytical Method: TPH by SW8015 Mod — Prep Method: SW8015P
Seq Number: 3104059 — Matrix: Soil — Date Prep: 10.10.19
Parent Sample Id: 639118-004 — MS Sample Id: 639118-004 S — MSD Sample Id: 639118-004 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	999	991	99	1000	100	70-135	1	20	mg/kg	10.10.19 22:29	
Diesel Range Organics (DRO)	<15.0	999	947	95	965	97	70-135	2	20	mg/kg	10.10.19 22:29	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	90		92		70-135	%	10.10.19 22:29
o-Terphenyl	87		90		70-135	%	10.10.19 22:29

Analytical Method: BTEX by EPA 8021B — Prep Method: SW5030B
Seq Number: 3104086 — Matrix: Solid — Date Prep: 10.10.19
MB Sample Id: 7687878-1-BLK — LCS Sample Id: 7687878-1-BKS — LCSD Sample Id: 7687878-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.0815	82	0.0775	78	70-130	5	35	mg/kg	10.12.19 18:46	
Toluene	<0.00200	0.100	0.0878	88	0.0835	84	70-130	5	35	mg/kg	10.12.19 18:46	
Ethylbenzene	<0.00200	0.100	0.0955	96	0.0906	91	70-130	5	35	mg/kg	10.12.19 18:46	
m,p-Xylenes	<0.00400	0.200	0.188	94	0.179	90	70-130	5	35	mg/kg	10.12.19 18:46	
o-Xylene	<0.00200	0.100	0.101	101	0.0968	97	70-130	4	35	mg/kg	10.12.19 18:46	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	85		90		91		70-130	%	10.12.19 18:46
4-Bromofluorobenzene	103		113		112		70-130	%	10.12.19 18:46

Analytical Method: BTEX by EPA 8021B — Prep Method: SW5030B
Seq Number: 3104086 — Matrix: Soil — Date Prep: 10.10.19
Parent Sample Id: 639206-001 — MS Sample Id: 639206-001 S — MSD Sample Id: 639206-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00199	0.0996	0.00757	8	0.0222	22	70-130	98	35	mg/kg	10.12.19 19:27	XF
Toluene	<0.00199	0.0996	0.00368	4	0.0176	18	70-130	131	35	mg/kg	10.12.19 19:27	XF
Ethylbenzene	<0.00199	0.0996	0.00426	4	0.0164	16	70-130	118	35	mg/kg	10.12.19 19:27	XF
m,p-Xylenes	<0.00398	0.199	0.00401	2	0.0132	7	70-130	107	35	mg/kg	10.12.19 19:27	XF
o-Xylene	<0.00199	0.0996	0.00985	10	0.0280	28	70-130	96	35	mg/kg	10.12.19 19:27	XF

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	88		87		70-130	%	10.12.19 19:27
4-Bromofluorobenzene	120		122		70-130	%	10.12.19 19:27

MS/MSD Percent Recovery — [D] = 100*(C-A) / B — LCS = Laboratory Control Sample — MS = Matrix Spike
Relative Percent Difference — RPD = 200* | (C-E) / (C+E) | — A = Parent Result — B = Spike Added
LCS/LCSD Recovery — [D] = 100 * (C) / [B] — C = MS/LCS Result — D = MSD/LCSD % Rec
Log Difference — Log Diff. = Log(Sample Duplicate) - Log(Original Sample) — E = MSD/LCSD Result

Chain of Custody

Work Order No: 639206

XENCO LABORATORIES

Houston,TX (281) 240-4200 Dallas,TX (214) 902-0300 San Antonio,TX (210) 509-3334
Midland,TX (432-704-5440) EL Paso,TX (915)585-3443 Lubbock,TX (806)794-1296
Hobbs,NM (575-392-7550) Phoenix,AZ (480-355-0900) Atlanta,GA (770-449-8800) Tampa,FL (813-620-2000)

www.xenco.com Page 1 of 1

Project Manager:	Chris McKisson	Bill to: (if different)	Chris McKisson
Company Name:	LT Environmental, Inc.	Company Name:	LT Environmental
Address:	820 Megan Avenue, Unit B	Address:	
City, State ZIP:	Rifle, CO 81650	City, State ZIP:	
Phone:	(970) 285-9985	Email:	llaumbach@ltenv.com, cmckisson@ltenv.com, asmith@ltenv.com

Work Order Comments

Program: UST/PST PRP Brownfields RRC Superfund
State of Project:
Reporting:Level II Level III PST/UST TRRP Level IV
Deliverables: EDD ADaPT Other:

Project Name:	RDU 41	Turn Around	
Project Number:	34819058	Routine	X
P.O. Number:	Eddy County, NM/ Task #002	Rush:	
Sampler's Name:	Lynda Laumbach	Due Date:	

SAMPLE RECEIPT				
Temp Blank:	Yes No	Wet Ice:	Yes No	
Temperature (°C):	3.2	Thermometer ID		
Received Intact:	Yes No	T-NM-007		
Cooler Custody Seals:	Yes No N/A	Correction Factor:	-0.2	
Sample Custody Seals:	Yes No N/A	Total Containers:	6	

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers	TPH (EPA 8015)	BTEX (EPA 8021)	Chloride (EPA 300.0)
SW01	S	10/04/2019	12:15	0-3.5'	1	X	X	X
SW02	S		12:20	0-3.5'	1	X	X	X
SW03	S		12:25	0-3.5'	1	X	X	X
FS01	S		12:30	3.5'	1	X	X	X
FS02	S		12:35	3.5'	1	X	X	X
FS03	S		12:40	2.5-3.5'	1	X	X	X

ANALYSIS REQUEST

Work Order Notes

TAT starts the day recevied by the lab, if received by 4:30pm

Sample Comments

Total 200.7 / 6010 200.8 / 6020: 8RCRA 13PPM Texas 11 Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO2 Na Sr Tl Sn U V Zn

Circle Method(s) and Metal(s) to be analyzed **TCLP / SPLP 6010**: 8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Tl U **1631 / 245.1 / 7470 / 7471** : Hg

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1		10/07/2019 12:50	2		
3			4		
5			6		

Revised Date 051418 Rev. 2018.1

Inter-Office Shipment

IOS Number **49493**

Date/Time: 10/07/19 15:09
Lab# From: **Carlsbad**
Lab# To: **Midland**

Created by: Elizabeth Mcclellan
Delivery Priority:
Air Bill No.:

Please send report to: Jessica Kramer
Address: 1089 N Canal Street
E-Mail: jessica.kramer@xenco.com

Sample Id	Matrix	Client Sample Id	Sample Collection	Method	Method Name	Lab Due	HT Due	PM	Analytes	Sign
639206-001	S	SW01	10/04/19 12:15	SW8015MOD_NM	TPH by SW8015 Mod	10/11/19	10/18/19	JKR	GRO-DRO PHCC10C28 PH	
639206-001	S	SW01	10/04/19 12:15	SW8021B	BTEX by EPA 8021B	10/11/19	10/18/19	JKR	BR4FBZ BZ BZME EBZ X	
639206-001	S	SW01	10/04/19 12:15	E300_CL	Chloride by EPA 300	10/11/19	04/01/20	JKR	CL	
639206-002	S	SW02	10/04/19 12:20	SW8015MOD_NM	TPH by SW8015 Mod	10/11/19	10/18/19	JKR	GRO-DRO PHCC10C28 PH	
639206-002	S	SW02	10/04/19 12:20	E300_CL	Chloride by EPA 300	10/11/19	04/01/20	JKR	CL	
639206-002	S	SW02	10/04/19 12:20	SW8021B	BTEX by EPA 8021B	10/11/19	10/18/19	JKR	BR4FBZ BZ BZME EBZ X	
639206-003	S	SW03	10/04/19 12:25	SW8021B	BTEX by EPA 8021B	10/11/19	10/18/19	JKR	BR4FBZ BZ BZME EBZ X	
639206-003	S	SW03	10/04/19 12:25	SW8015MOD_NM	TPH by SW8015 Mod	10/11/19	10/18/19	JKR	GRO-DRO PHCC10C28 PH	
639206-003	S	SW03	10/04/19 12:25	E300_CL	Chloride by EPA 300	10/11/19	04/01/20	JKR	CL	
639206-004	S	FS01	10/04/19 12:30	SW8021B	BTEX by EPA 8021B	10/11/19	10/18/19	JKR	BR4FBZ BZ BZME EBZ X	
639206-004	S	FS01	10/04/19 12:30	SW8015MOD_NM	TPH by SW8015 Mod	10/11/19	10/18/19	JKR	GRO-DRO PHCC10C28 PH	
639206-004	S	FS01	10/04/19 12:30	E300_CL	Chloride by EPA 300	10/11/19	04/01/20	JKR	CL	
639206-005	S	FS02	10/04/19 12:35	SW8015MOD_NM	TPH by SW8015 Mod	10/11/19	10/18/19	JKR	GRO-DRO PHCC10C28 PH	
639206-005	S	FS02	10/04/19 12:35	E300_CL	Chloride by EPA 300	10/11/19	04/01/20	JKR	CL	
639206-005	S	FS02	10/04/19 12:35	SW8021B	BTEX by EPA 8021B	10/11/19	10/18/19	JKR	BR4FBZ BZ BZME EBZ X	
639206-006	S	FS03	10/04/19 12:40	SW8015MOD_NM	TPH by SW8015 Mod	10/11/19	10/18/19	JKR	GRO-DRO PHCC10C28 PH	
639206-006	S	FS03	10/04/19 12:40	E300_CL	Chloride by EPA 300	10/11/19	04/01/20	JKR	CL	
639206-006	S	FS03	10/04/19 12:40	SW8021B	BTEX by EPA 8021B	10/11/19	10/18/19	JKR	BR4FBZ BZ BZME EBZ X	

Inter Office Shipment or Sample Comments:

Relinquished By: Elizabeth McClellan

Date Relinquished: 10/07/2019

Received By: Brianna Teel

Date Received: 10/08/2019 13:36

Cooler Temperature: 0.4

XENCO Laboratories

Inter Office Report- Sample Receipt Checklist

Sent To: Midland

IOS #: 49493

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient
Temperature Measuring device used : R8

Sent By: Elizabeth McClellan **Date Sent:** 10/07/2019 03:09 PM

Received By: Brianna Teel **Date Received:** 10/08/2019 01:36 PM

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	.4
#2 *Shipping container in good condition?	**Yes**
#3 *Samples received with appropriate temperature?	**Yes**
#4 *Custody Seals intact on shipping container/ cooler?	**Yes**
#5 *Custody Seals Signed and dated for Containers/coolers	**Yes**
#6 *IOS present?	**Yes**
#7 Any missing/extra samples?	**No**
#8 IOS agrees with sample label(s)/matrix?	**Yes**
#9 Sample matrix/ properties agree with IOS?	**Yes**
#10 Samples in proper container/ bottle?	**Yes**
#11 Samples properly preserved?	**Yes**
#12 Sample container(s) intact?	**Yes**
#13 Sufficient sample amount for indicated test(s)?	**Yes**
#14 All samples received within hold time?	**Yes**

*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

NonConformance:

Corrective Action Taken:

Nonconformance Documentation

Contact: _____ **Contacted by :** _____ **Date:** _____

Checklist reviewed by: Brianna Teel Date: 10/08/2019

Brianna Teel