



LT Environmental, Inc.

3300 North "A" Street
Building 1, Unit 222
Midland, Texas 79705
432.704.5178

May 22, 2020

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

**RE: Closure Request
WPX Energy Permian, LLC.
RDX Federal Com 28 #009H (2RP-5700)
Incident ID NRM1932253587
Eddy County, New Mexico**

Dear Mr. Bratcher:

LT Environmental, Inc. (LTE), on behalf of WPX Energy Permian, LLC (WPX), presents the following Closure Request detailing excavation and soil sampling activities at the RDX Federal Com 28 #009H (Site) in Unit C, Section 28, 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 an event that resulted in the release of crude oil into compromised lined secondary containment. Based on the excavation activities and results of the soil sampling events, WPX requests no further action (NFA).

BACKGROUND

On October 17, 2019, the automation system malfunctioned and allowed production tanks to overflow and release crude oil. A total of 10 barrels (bbls) of crude oil were released into the lined secondary containment. All fluids were contained to the location. Vacuum trucks were dispatched and recovered approximately 10 bbls of crude oil from the impacted area. 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 October 18, 2019, and the release event was subsequently assigned Remediation Permit (RP) Number 2RP-5700 and Incident Number NRM1932253587. An updated NMOCD Form C-141 is included as Attachment 1.



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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 closest permitted groundwater well with depth to water data is United States Geological Survey (USGS) 320125103514701, located approximately 8,368 feet northeast of the Site. USGS well 320125103514701 has a recorded depth to groundwater of 117 feet bgs. The closest significant watercourse to the Site is an unnamed intermittent stream located approximately 1,665 feet northwest of the Site. The Site is greater than 300 feet from any occupied residence, school, hospital, institution, church, or wetland and greater than 1,000 feet to a freshwater well or spring. The Site is not within a 100-year floodplain, overlying a subsurface mine or overlying an unstable area. The Site is located in a medium-potential karst area. Potential receptors identified during site characterization are displayed in Figure 1.

CLOSURE CRITERIA

Based on the results of the site characterization, the following NMOCD Table 1 Closure Criteria (Closure Criteria) apply:

- 10 milligrams per kilogram (mg/kg) benzene;
- 50 mg/kg total benzene, toluene, ethylbenzene, and total xylenes (BTEX);
- 2,500 mg/kg total petroleum hydrocarbons (TPH);
- 1,000 mg/kg TPH-gasoline range organics (GRO) and TPH-diesel range organics (DRO); and
- 20,000 mg/kg chloride.

SITE ASSESSMENT

On January 2, 2020, LTE personnel conducted Site investigative activities. It was observed that the subject secondary containment liner was compromised in multiple locations. Photographic documentation of the Site following preliminary assessment activities is included in Attachment 2.

DELINEATION ACTIVITIES AND SOIL SAMPLING

On January 9, 2020, LTE personnel conducted delineation activities at the Site. In an attempt to define the vertical and horizontal extent of the release, five soil borings (BH01 through BH05) were advanced utilizing a hand auger in the breached areas of the liner. Field screening was conducted, at minimum, every 0.5 foot interval up to a total depth of 6 feet bgs for volatile



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aromatic hydrocarbons using a photoionization detector (PID) and chloride using Hach® chloride QuanTab® test strips. Field screening results and observations for each borehole were logged on lithologic/soil sampling logs, which are included in Attachment 3. Two soil samples were collected from each soil boring: the most impacted depth based on field screening results and the terminus of the borehole. The locations of delineation boreholes are presented on Figure 2. Soil samples were placed directly into pre-cleaned glass jars, 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 BTEX following United States Environmental Protection Agency (USEPA) Method 8021B; TPH-gasoline range organics (GRO), TPH-diesel range organics (DRO), and TPH-motor oil range organics (MRO) following USEPA Method 8015M/D; and chloride following USEPA Method 300.0.

Laboratory analytical results of delineation soil sample BH02 at 0-3 inches bgs indicated TPH concentrations exceeding Closure Criteria, warranting remediation.

EXCAVATION ACTIVITIES AND SOIL SAMPLING

On February 28, 2019, LTE was on site to oversee hand shoveling excavation activities associated with soil sample BH02 at 0 to 3 inches bgs. Generated material was staged onsite awaiting disposal. Excavation efforts 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, one 5-point composite confirmation soil sample representative of the excavation floor and sidewalls was collected. The soil sample represented at most 200 square feet. The soil sample was collected, handled, and analyzed as previously described. Approximately 0.03 cubic yards of impacted soil were removed from the excavation area. The de minimus amount of generated waste was added to an existing contaminated stockpile and transported to R360 Halfway Facility in Hobbs, New Mexico. Disposal summary documentation can be produced upon request. The excavation measured a total of approximately 5.6 square feet in area and ranged in depth from 0 to 1 foot bgs. The excavation extent and confirmation sample location are presented in Figure 3. Photographic documentation of the Site following excavation activities is included in Attachment 2.



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ANALYTICAL RESULTS

Excluding soil sample BH02 at 0 to 3 inches bgs, laboratory analytical results indicated that the confirmation delineation and excavation soil samples were compliant with the Closure Criteria. Remediation in the area associated with soil sample BH02 at 0 to 3 inches bgs was confirmed via laboratory analytical results of soil sample FS01 at 0.5 to 1 foot bgs. Analytical results from all sampling activities are summarized in Table 1 and the complete laboratory analytical reports are included as Attachment 4.

CONCLUSIONS

Remediation of impacted soil was successfully achieved as demonstrated through soil confirmation sampling. The excavation was backfilled with locally sourced material and recontoured to match pre-existing conditions. Additionally, the breached areas within the secondary containment liner have been bonded and repaired in an effort to restore the integrity of the liner. WPX is requesting an NFA determination and closure of Remediation Permit Number 2RP-5700 and Incident ID NRM1932253587.

If you have any questions or comments, please do not hesitate to contact Ms. Ashley Ager at (970) 385-1096 or aager@ltenv.com.

Sincerely,

LT ENVIRONMENTAL, INC.

A handwritten signature in black ink that reads 'Joseph S. Hernandez'.

Joseph S. Hernandez
Project Geologist

A handwritten signature in black ink that reads 'Ashley L. Ager'.

Ashley L. Ager, M.S., P.G.
Senior Geologist



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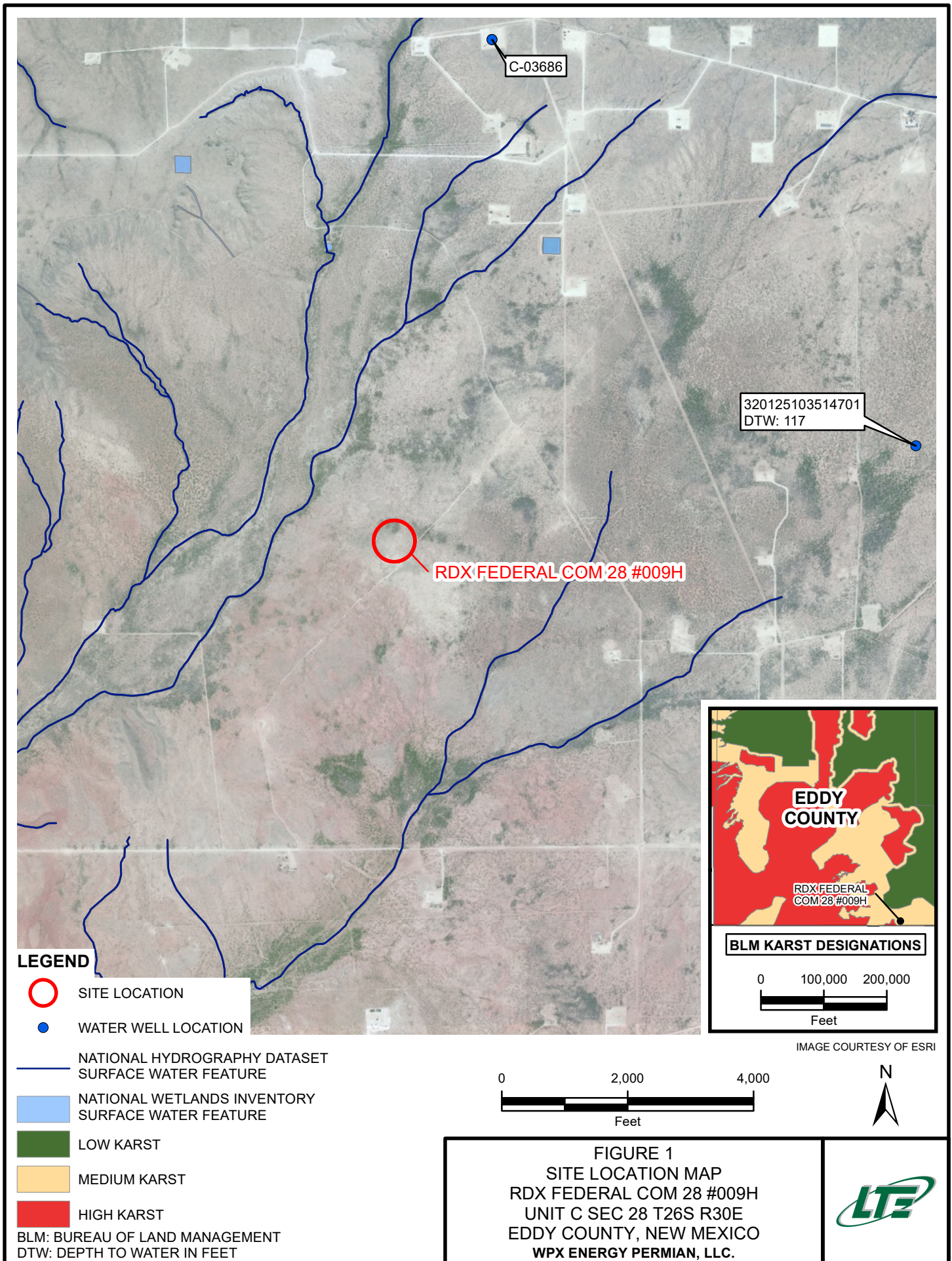
cc: Jim Raley, WPX
Robert Hamlet, NMOCD
Victoria Venegas, NMOCD
Bureau of Land Management

Attachments:

Figure 1 Site Location Map
Figure 2 Delineation Soil Sample Locations
Figure 3 Excavation Soil Sample Locations
Table 1 Soil Analytical Results
Attachment 1 Form C-141
Attachment 2 Photographic Log
Attachment 3 Lithologic/Soil Sampling Logs
Attachment 4 Laboratory Analytical Reports

FIGURES





**LEGEND**

● DELINEATION SOIL SAMPLE

IMAGE COURTESY OF ESRI

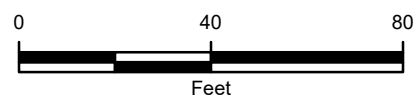


FIGURE 2
DELINEATION SOIL SAMPLE LOCATIONS
RDX FEDERAL COM 28 #009H
UNIT C SEC 28 T26S R30E
EDDY COUNTY, NEW MEXICO
WPX ENERGY PERMIAN, LLC.





IMAGE COURTESY OF ESRI

LEGEND

- EXCAVATION SOIL SAMPLE
- EXCAVATION EXTENT

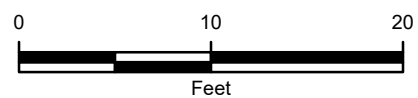


FIGURE 3
EXCAVATION SOIL SAMPLE LOCATIONS
RDX FEDERAL COM 28 #009H
UNIT C SEC 28 T26S R30E
EDDY COUNTY, NEW MEXICO
WPX ENERGY PERMIAN, LLC.



TABLE



**TABLE 1
SOIL ANALYTICAL RESULTS**

**RDX FEDERAL COM 28 #009H
REMEDATION PERMIT NUMBER NOT ASSIGNED
EDDY COUNTY, NEW MEXICO
WPX ENERGY PERMIAN, LLC.**

Sample Name	Sample Depth (feet bgs)	Sample Date	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (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)	Application
NMOCD Table 1 Closure Criteria			10	NE	NE	NE	50	NE	NE	NE	1,000	2,500	20,000	
BH01	0.5	01/09/2020	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<50.0	<50.0	<50.0	<50.0	<50.0	228	In-Situ
BH01A	2.5	01/09/2020	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<50.0	<50.0	<50.0	<50.0	<50.0	108	In-Situ
BH02	0-0.3	01/09/2020	<0.00202	0.00985	0.0285	0.127	0.166	181	2,220	249	2,400	2,650	116	Excavated
BH02A	2	01/09/2020	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<49.9	<49.9	<49.9	<49.9	<49.9	2,780	In-Situ
BH03	1	01/09/2020	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<49.9	54.9	<49.9	54.9	54.9	3,180	In-Situ
BH03A	2	01/09/2020	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	<50.0	<50.0	<50.0	<50.0	<50.0	542	In-Situ
BH04	2	01/09/2020	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	<50.0	<50.0	<50.0	<50.0	<50.0	2,700	In-Situ
BH04A	6	01/09/2020	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<49.8	<49.8	<49.8	<49.8	<49.8	3,050	In-Situ
BH05	5	01/09/2020	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	<50.0	<50.0	<50.0	<50.0	<50.0	3,670	In-Situ
BH05A	5.5	01/09/2020	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201	<49.9	<49.9	<49.9	<49.9	<49.9	4,320	In-Situ
FS01	0.5 - 1	04/16/2020	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<50.2	<50.2	<50.2	<50.2	<50.2	831	In-Situ

Notes:

bgs - below ground surface

BTEX - benzene, toluene, ethylbenzene, and total xylenes

DRO - diesel range organics

GRO - gasoline range organics

mg/kg - milligrams per kilogram

MRO - motor oil range organics

NMAC - New Mexico Administrative Code

NMOCD - New Mexico Oil Conservation Division

NE - not established

Table 1 - Closure Criteria for Soils Impacted by a Release per NMAC 19.15.29 August 2018

TPH - total petroleum hydrocarbons

< - indicates result is below laboratory detection limit

Bold indicates result exceeds the applicable regulatory standard

ATTACHMENT 1: 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	NRM1932253587
District RP	2RP-5700
Facility ID	
Application ID	pRM1932253694

Release Notification KQALD-191018-C-1410

Responsible Party

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

Location of Release Source

Latitude 32.0196704 _____ Longitude -103.8904924 _____
(NAD 83 in decimal degrees to 5 decimal places)

Site Name: RDX FEDERAL COM 28 #009H	Site Type: Production Facility
Date Release Discovered: 10/17/2019	API# (if applicable): 30-015-43294

Unit Letter	Section	Township	Range	County
C	28	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)

<input checked="" type="checkbox"/> Crude Oil	Volume Released (bbls)10	Volume Recovered (bbls)10
<input type="checkbox"/> Produced Water	Volume Released (bbls)	Volume Recovered (bbls)
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> Condensate	Volume Released (bbls)	Volume Recovered (bbls)
<input type="checkbox"/> Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
<input type="checkbox"/> Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release: Failure of automation system allowed tanks to overflow into fully lined secondary containment, fluids were recovered.

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Incident ID	NRM1932253587
District RP	2RP-5700
Facility ID	
Application ID	pRM1932253694

Was this a major release as defined by 19.15.29.7(A) NMAC? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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

<input checked="" type="checkbox"/> The source of the release has been stopped. <input checked="" type="checkbox"/> The impacted area has been secured to protect human health and the environment. <input checked="" type="checkbox"/> Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices. <input checked="" type="checkbox"/> All free liquids and recoverable materials have been removed and managed appropriately.	
If all the actions described above have <u>not</u> 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 Signature:  email: james.raley@wpenergy.com	Title: Environmental Specialist Date: 10/18/2019 Telephone: 575-689-7597
<u>OCD Only</u> Received by: <u>R a m o n a M a r c u s</u> Date: <u>11/18/2019</u>	

Incident ID	NRM1932253587
District RP	2RP-5700
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?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a wetland?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying a subsurface mine?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying an unstable area such as karst geology?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within a 100-year floodplain?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Did the release impact areas not on an exploration, development, production, or storage site?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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.

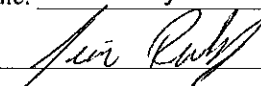
Form C-141

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Oil Conservation Division

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Incident ID	NRM1932253587
District RP	2RP-5700
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 RaleyTitle: Environmental SpecialistSignature: Date: 5-29-2020email: james.raley@wpenergy.comTelephone: 575-689-7597**OCD Only**Received by: Cristina EadsDate: 05/28/2020

Form C-141

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State of New Mexico
Oil Conservation Division

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Application ID	

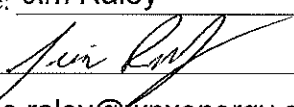
Closure

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: 5-29-2020
 email: james.raley@wpenergy.com Telephone: 575-689-7597

OCD Only

Received by: Cristina Eads Date: 05/28/2020

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: D E N I E D  Date: 08/06/2020

Printed Name: Cristina Eads Title: Environmental Specialist

ATTACHMENT 2: PHOTOGRAPHIC LOG



PHOTOGRAPHIC LOG



Photograph 1: View of western half of the tank battery containment.



Photograph 2: View of liner tears at BH04 and BH05 sample locations.



Photograph 3: View of liner tear at BH02 sample location.



Photograph 4: Close-up view of liner tear at BH02 sample location.



Photograph 5: View of FS01 sample location within lined tank battery containment.



Photograph 6: View of FS01 sample location next to tank.

PHOTOGRAPHIC LOG



Photograph 7: Location of BH01 following liner repair.



Photograph 8: Location of BH04 and BH05 following liner repair.



Photograph 9: Location of BH03 following liner repair.



Photograph 10: Location of BH02 following liner repair.

ATTACHMENT 3: LITHOLOGIC/SOIL SAMPLING LOGS





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BHO 1

 $1/9/20$

Site Name: RDX Federal 28 #009H

RP or Incident Number: 2RP-5700

LTE Job Number: 034819075

Logged By: Anna Byers

Method: Hand Auger

Lat/Long:

Collector GPS

Field Screening:

Chloride. PID

Hole Diameter:	
----------------	--

2.5 "

Total Depth:	
--------------	--

2.5

Comments:

1:4 dilution Cl^- test, no % error included in value recorded

[illegible]



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LT Environmental, Inc.
508 West Stevens Street
Carlsbad, New Mexico 88220

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BH or PH Name:

BHOZ

Date:

1/9/20

Site Name: RDX Federal IB #0094

RP or Incident Number: 2RP-5700

LTE Job Number: 034819075

LITHOLOGIC / SOIL SAMPLING LOG

Lat/Long:

Collector GPS

Field Screening:

Chloride, PID

Logged By: Anna Byers

Method: Hand Auger

Hole Diameter:	2.5"
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Total Depth:	2'
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Comments:

At the base of tank (oil) "T-120185"; 1:4 dilution A-test

Moisture Content	Chloride (ppm) *	Vapor (ppm)	Staining	Sample #	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithology/Remarks
D	124	15.00	No	BH02	0	0	cehe	pink caliche, pad surfacing, no odor
D	184	19.6	No		0.5	1	SP-SM	yellowish brown sand (m.), poorly sorted with silt & gravel
D	2760	26.6	No	BH02A	2	2		
						3		Tot DEPTH / auger refusal
						4		
						5		
						6		
						7		
						8		
						9		
						10		
						11		
						12		



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LT Environmental, Inc.
508 West Stevens Street
Carlsbad, New Mexico 88220

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BH or PH Name:

BHD 3

Date:

1/9/20

Site Name: RDX Federal 28 #009H

RP or Incident Number: 2RP-5700

LTE Job Number: 034819075

LITHOLOGIC / SOIL SAMPLING LOG

Lat/Long:

Collector GPS

Field Screening:	
------------------	--

Chloride, PID

Logged By: Anna Byers

Hole Diameter:	2.5"
----------------	------

Method: Hand Auger

Total Depth:	2'
--------------	----

Comments:

1:4 dilution Cl^- test, no % correction factor included in value recorded

[illegible]



LT Environmental, Inc.
508 West Stevens Street
Carlsbad, New Mexico 88220

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BH or PH Name:

BH04

Date:

1/9/20

Site Name: RDX Federal 28 #009H

RP or Incident Number: 22P-5700

LTE Job Number: 034819075

LITHOLOGIC / SOIL SAMPLING LOG

Lat/Long:

Collector GPS

Field Screening:

Chloride, PID GG

Logged By: Anna Byers

Method: Hand Auger

Hole Diameter:
2.5'

Total Depth:
6'

Comments:

1:4 addition Cl⁻ test, no correction factor included

Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithology/Remarks
M	604	28.7	No		0	0	cche	pad surface caliche, no odor
m	1248	12.2	No		0.5		sp-sm	yellow-brown poorly-graded sand with silt; low plasticity, no odor
m	1943	14.6	No		1	1		
m	3617	Ø	No	BH04	2	2		
M	1349	Ø	No		3	3		
M	890	Ø	No		4	4		
M	1943	Ø	No		5	5		
M	2928	Ø	No	BH04A	6	6		
					6	6		TOT DEPTH / auger refusal
					7			
					8			
					9			
					10			
					11			
					12			



LT Environmental, Inc.
508 West Stevens Street
Carlsbad, New Mexico 88220

A proud member
of WSP

Compliance · Engineering · Remediation

BH or PH Name:

BH05

Date:

1/9/20

Site Name: RDX Federal 28 #009H

RP or Incident Number: 2RP-5700

LTE Job Number: 034819075

LITHOLOGIC / SOIL SAMPLING LOG

Lat/Long:

Collector GPS

Field Screening:

Chloride, PID GG

Logged By:

A Byers

Method:

Hand Auger

Hole Diameter:

2.5"

Total Depth:

5.5'

Comments:

1:4 dilution Cl⁻ test, no correction factor included in value recorded

Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithology/Remarks
m	1148	Ø	No		0'	0	cche	caliche, pad surface
m	1344	Ø	No		0.5			
M	2732	Ø	No		1	1	SP-sm	yellow-brown poorly sorted sand(m.) with silt; no plasticity, no odor
	—		No		2	2		
M	2553	Ø	No		3	3		
					4	4		
M	2732	Ø	No	BH05	5	5		
M	2083	Ø	No	BH05A	5.5	5.5		
					6			TOT DEPTH/auger refusal
					7			
					8			
					9			
					10			
					11			
					12			

ATTACHMENT 4: LABORATORY ANALYTICAL REPORTS





Analytical Report 648841

for

LT Environmental, Inc.

Project Manager: Chris McKisson

RDX Federal Com 28-9

034819075

05.14.2020

Collected By: Client

**1089 N Canal Street
Carlsbad, NM 88220**

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-20-32), Arizona (AZ0765), Florida (E871002-33), Louisiana (03054)
Oklahoma (2019-058), North Carolina (681), Arkansas (19-037-0)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (TX104704295-19-23), Arizona (AZ0809)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-19-16)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-20-22)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-19)
Xenco-Carlsbad (LELAP): Louisiana (05092)
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)



05.14.2020

Project Manager: **Chris McKisson**

LT Environmental, Inc.

4600 W. 60th Avenue

Arvada, CO 80003

Reference: XENCO Report No(s): **648841**

RDX Federal Com 28-9

Project Address: Eddy County Rural

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) 648841. 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. 648841 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,

A handwritten signature in black ink that reads 'Jessica Kramer'. The signature is written in a cursive, flowing style.

Jessica Kramer

Project Manager

A Small Business and Minority Company

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

**Sample Cross Reference 648841****LT Environmental, Inc., Arvada, CO**

RDX Federal Com 28-9

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
BH01	S	01.09.2020 11:15	0.5 ft	648841-001
BH01A	S	01.09.2020 12:45	2.5 ft	648841-002
BH02	S	01.09.2020 11:35	0 - 0.3 ft	648841-003
BH02A	S	01.09.2020 12:20	2 ft	648841-004
BH03	S	01.09.2020 13:00	1 ft	648841-005
BH03A	S	01.09.2020 13:30	2 ft	648841-006
BH04	S	01.09.2020 12:35	2 ft	648841-007
BH04A	S	01.09.2020 13:05	6 ft	648841-008
BH05	S	01.09.2020 13:50	5 ft	648841-009
BH05A	S	01.09.2020 14:00	5.5 ft	648841-010



CASE NARRATIVE

Client Name: LT Environmental, Inc.

Project Name: RDX Federal Com 28-9

Project ID: 034819075
Work Order Number(s): 648841

Report Date: 05.14.2020
Date Received: 01.13.2020

Sample receipt non conformances and comments:

V1.001 Revision (client email) Corrected sample name from BH02 @ 0' to BH02 @ 0-0.3' JK 05/08/20

V1.001 Revision (client email) Corrected typo of sample depthe 0-3' to 0-0.3' JK 05/14/20

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3113255 BTEX by EPA 8021B

Soil samples were not received in Terracore kits and therefore were prepared by method 5030.



Certificate of Analysis Summary 648841

LT Environmental, Inc., Arvada, CO

Project Name: RDX Federal Com 28-9

Project Id: 034819075
Contact: Chris McKisson
Project Location: Eddy County Rural

Date Received in Lab: Mon 01.13.2020 12:40

Report Date: 05.14.2020 08:14

Project Manager: Jessica Kramer

<i>Analysis Requested</i>	<i>Lab Id:</i>	648841-001	648841-002	648841-003	648841-004	648841-005	648841-006
	<i>Field Id:</i>	BH01	BH01A	BH02	BH02A	BH03	BH03A
	<i>Depth:</i>	0.5- ft	2.5- ft	0-0.3 ft	2- ft	1- ft	2- ft
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	01.09.2020 11:15	01.09.2020 12:45	01.09.2020 11:35	01.09.2020 12:20	01.09.2020 13:00	01.09.2020 13:30
BTEX by EPA 8021B	<i>Extracted:</i>	01.14.2020 10:11	01.14.2020 10:11	01.14.2020 10:11	01.14.2020 10:11	01.14.2020 10:11	01.14.2020 10:11
	<i>Analyzed:</i>	01.14.2020 12:44	01.14.2020 13:02	01.14.2020 13:19	01.14.2020 13:36	01.14.2020 13:54	01.14.2020 14:11
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00200 0.00200	<0.00200 0.00200	<0.00202 0.00202	<0.00200 0.00200	<0.00200 0.00200	<0.00199 0.00199
Toluene		<0.00200 0.00200	<0.00200 0.00200	0.00985 0.00202	<0.00200 0.00200	<0.00200 0.00200	<0.00199 0.00199
Ethylbenzene		<0.00200 0.00200	<0.00200 0.00200	0.0285 0.00202	<0.00200 0.00200	<0.00200 0.00200	<0.00199 0.00199
m,p-Xylenes		<0.00399 0.00399	<0.00401 0.00401	0.106 0.00403	<0.00400 0.00400	<0.00399 0.00399	<0.00398 0.00398
o-Xylene		<0.00200 0.00200	<0.00200 0.00200	0.0213 0.00202	<0.00200 0.00200	<0.00200 0.00200	<0.00199 0.00199
Xylenes, Total		<0.00200 0.00200	<0.00200 0.00200	0.127 0.00202	<0.00200 0.00200	<0.00200 0.00200	<0.00199 0.00199
Total BTEX		<0.00200 0.00200	<0.00200 0.00200	0.166 0.00202	<0.00200 0.00200	<0.00200 0.00200	<0.00199 0.00199
Chloride by EPA 300	<i>Extracted:</i>	01.14.2020 10:15	01.14.2020 10:15	01.14.2020 10:15	01.14.2020 10:15	01.14.2020 10:15	01.14.2020 10:15
	<i>Analyzed:</i>	01.14.2020 11:51	01.14.2020 12:08	01.14.2020 12:13	01.14.2020 12:18	01.14.2020 12:24	01.14.2020 12:40
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		228 9.98	108 10.0	116 10.1	2780 50.2	3180 99.4	542 9.98
TPH by SW8015 Mod SUB: T104704400-19-19	<i>Extracted:</i>	01.15.2020 09:00	01.15.2020 09:00	01.15.2020 09:00	01.15.2020 09:00	01.15.2020 09:00	01.15.2020 09:00
	<i>Analyzed:</i>	01.15.2020 13:36	01.15.2020 14:33	01.15.2020 14:51	01.15.2020 15:10	01.15.2020 15:29	01.15.2020 15:48
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons (GRO)		<50.0 50.0	<50.0 50.0	181 49.9	<49.9 49.9	<49.9 49.9	<50.0 50.0
Diesel Range Organics (DRO)		<50.0 50.0	<50.0 50.0	2220 49.9	<49.9 49.9	54.9 49.9	<50.0 50.0
Motor Oil Range Hydrocarbons (MRO)		<50.0 50.0	<50.0 50.0	249 49.9	<49.9 49.9	<49.9 49.9	<50.0 50.0
Total GRO-DRO		<50.0 50.0	<50.0 50.0	2400 49.9	<49.9 49.9	54.9 49.9	<50.0 50.0
Total TPH		<50.0 50.0	<50.0 50.0	2650 49.9	<49.9 49.9	54.9 49.9	<50.0 50.0

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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Jessica Kramer
Project Manager



Certificate of Analysis Summary 648841

LT Environmental, Inc., Arvada, CO

Project Name: RDX Federal Com 28-9

Project Id: 034819075
Contact: Chris McKisson
Project Location: Eddy County Rural

Date Received in Lab: Mon 01.13.2020 12:40
Report Date: 05.14.2020 08:14
Project Manager: Jessica Kramer

<i>Analysis Requested</i>	<i>Lab Id:</i>	648841-007	648841-008	648841-009	648841-010		
	<i>Field Id:</i>	BH04	BH04A	BH05	BH05A		
	<i>Depth:</i>	2- ft	6- ft	5- ft	5.5- ft		
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL		
	<i>Sampled:</i>	01.09.2020 12:35	01.09.2020 13:05	01.09.2020 13:50	01.09.2020 14:00		
BTEX by EPA 8021B	<i>Extracted:</i>	01.14.2020 10:11	01.14.2020 10:11	01.14.2020 10:11	01.14.2020 10:11		
	<i>Analyzed:</i>	01.14.2020 14:29	01.14.2020 14:46	01.14.2020 15:03	01.14.2020 15:21		
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL		
Benzene		<0.00202 0.00202	<0.00200 0.00200	<0.00202 0.00202	<0.00201 0.00201		
Toluene		<0.00202 0.00202	<0.00200 0.00200	<0.00202 0.00202	<0.00201 0.00201		
Ethylbenzene		<0.00202 0.00202	<0.00200 0.00200	<0.00202 0.00202	<0.00201 0.00201		
m,p-Xylenes		<0.00403 0.00403	<0.00399 0.00399	<0.00404 0.00404	<0.00402 0.00402		
o-Xylene		<0.00202 0.00202	<0.00200 0.00200	<0.00202 0.00202	<0.00201 0.00201		
Xylenes, Total		<0.00202 0.00202	<0.00200 0.00200	<0.00202 0.00202	<0.00201 0.00201		
Total BTEX		<0.00202 0.00202	<0.00200 0.00200	<0.00202 0.00202	<0.00201 0.00201		
Chloride by EPA 300	<i>Extracted:</i>	01.14.2020 10:15	01.14.2020 10:15	01.14.2020 10:15	01.14.2020 10:15		
	<i>Analyzed:</i>	01.14.2020 12:48	01.14.2020 12:55	01.14.2020 13:03	01.14.2020 13:11		
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL		
Chloride		2700 9.94	3050 100	3670 10.0	4320 10.0		
TPH by SW8015 Mod SUB: T104704400-19-19	<i>Extracted:</i>	01.15.2020 09:00	01.15.2020 09:00	01.15.2020 09:00	01.15.2020 09:00		
	<i>Analyzed:</i>	01.15.2020 16:06	01.15.2020 16:25	01.15.2020 16:44	01.15.2020 17:03		
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL		
Gasoline Range Hydrocarbons (GRO)		<50.0 50.0	<49.8 49.8	<50.0 50.0	<49.9 49.9		
Diesel Range Organics (DRO)		<50.0 50.0	<49.8 49.8	<50.0 50.0	<49.9 49.9		
Motor Oil Range Hydrocarbons (MRO)		<50.0 50.0	<49.8 49.8	<50.0 50.0	<49.9 49.9		
Total GRO-DRO		<50.0 50.0	<49.8 49.8	<50.0 50.0	<49.9 49.9		
Total TPH		<50.0 50.0	<49.8 49.8	<50.0 50.0	<49.9 49.9		

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use.
 The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories.
 XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented.
 Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Jessica Kramer
Project Manager



Certificate of Analytical Results 648841

LT Environmental, Inc., Arvada, CO

RDX Federal Com 28-9

Sample Id: **BH01**
Lab Sample Id: 648841-001

Matrix: Soil
Date Collected: 01.09.2020 11:15

Date Received: 01.13.2020 12:40
Sample Depth: 0.5 ft

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3113234

Date Prep: 01.14.2020 10:15

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	228	9.98	mg/kg	01.14.2020 11:51		1

Analytical Method: TPH by SW8015 Mod

Tech: DVM

Analyst: ARM

Seq Number: 3113462

Date Prep: 01.15.2020 09:00

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

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	01.15.2020 13:36	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	01.15.2020 13:36	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	01.15.2020 13:36	U	1
Total GRO-DRO	PHC628	<50.0	50.0	mg/kg	01.15.2020 13:36	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	01.15.2020 13:36	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	82	%	70-135	01.15.2020 13:36	
o-Terphenyl	84-15-1	84	%	70-135	01.15.2020 13:36	



Certificate of Analytical Results 648841

LT Environmental, Inc., Arvada, CO

RDX Federal Com 28-9

Sample Id: **BH01**
Lab Sample Id: 648841-001

Matrix: Soil
Date Collected: 01.09.2020 11:15

Date Received: 01.13.2020 12:40
Sample Depth: 0.5 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 01.14.2020 10:11

Basis: Wet Weight

Seq Number: 3113255

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	01.14.2020 12:44	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	01.14.2020 12:44	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	01.14.2020 12:44	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	01.14.2020 12:44	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	01.14.2020 12:44	U	1
Xylenes, Total	1330-20-7	<0.00200	0.00200	mg/kg	01.14.2020 12:44	U	1
Total BTEX		<0.00200	0.00200	mg/kg	01.14.2020 12:44	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	107	%	70-130	01.14.2020 12:44	
1,4-Difluorobenzene	540-36-3	103	%	70-130	01.14.2020 12:44	



Certificate of Analytical Results 648841

LT Environmental, Inc., Arvada, CO

RDX Federal Com 28-9

Sample Id: **BH01A**
Lab Sample Id: 648841-002

Matrix: Soil
Date Collected: 01.09.2020 12:45

Date Received: 01.13.2020 12:40
Sample Depth: 2.5 ft

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3113234

Date Prep: 01.14.2020 10:15

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	108	10.0	mg/kg	01.14.2020 12:08		1

Analytical Method: TPH by SW8015 Mod

Tech: DVM

Analyst: ARM

Seq Number: 3113462

Date Prep: 01.15.2020 09:00

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

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	01.15.2020 14:33	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	01.15.2020 14:33	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	01.15.2020 14:33	U	1
Total GRO-DRO	PHC628	<50.0	50.0	mg/kg	01.15.2020 14:33	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	01.15.2020 14:33	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	81	%	70-135	01.15.2020 14:33	
o-Terphenyl	84-15-1	81	%	70-135	01.15.2020 14:33	



Certificate of Analytical Results 648841

LT Environmental, Inc., Arvada, CO

RDX Federal Com 28-9

Sample Id: **BH01A**
Lab Sample Id: 648841-002

Matrix: Soil
Date Collected: 01.09.2020 12:45

Date Received: 01.13.2020 12:40
Sample Depth: 2.5 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 01.14.2020 10:11

Basis: Wet Weight

Seq Number: 3113255

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	01.14.2020 13:02	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	01.14.2020 13:02	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	01.14.2020 13:02	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	01.14.2020 13:02	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	01.14.2020 13:02	U	1
Xylenes, Total	1330-20-7	<0.00200	0.00200	mg/kg	01.14.2020 13:02	U	1
Total BTEX		<0.00200	0.00200	mg/kg	01.14.2020 13:02	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	100	%	70-130	01.14.2020 13:02		
4-Bromofluorobenzene	460-00-4	103	%	70-130	01.14.2020 13:02		



Certificate of Analytical Results 648841

LT Environmental, Inc., Arvada, CO

RDX Federal Com 28-9

Sample Id: **BH02**
Lab Sample Id: 648841-003

Matrix: Soil
Date Collected: 01.09.2020 11:35

Date Received: 01.13.2020 12:40
Sample Depth: 0 - 0.3 ft

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3113234

Date Prep: 01.14.2020 10:15

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	116	10.1	mg/kg	01.14.2020 12:13		1

Analytical Method: TPH by SW8015 Mod

Tech: DVM

Analyst: ARM

Seq Number: 3113462

Date Prep: 01.15.2020 09:00

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

SUB: T104704400-19-19

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	181	49.9	mg/kg	01.15.2020 14:51		1
Diesel Range Organics (DRO)	C10C28DRO	2220	49.9	mg/kg	01.15.2020 14:51		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	249	49.9	mg/kg	01.15.2020 14:51		1
Total GRO-DRO	PHC628	2400	49.9	mg/kg	01.15.2020 14:51		1
Total TPH	PHC635	2650	49.9	mg/kg	01.15.2020 14:51		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	97	%	70-135	01.15.2020 14:51	
o-Terphenyl	84-15-1	117	%	70-135	01.15.2020 14:51	



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LT Environmental, Inc., Arvada, CO

RDX Federal Com 28-9

Sample Id: **BH02**
Lab Sample Id: 648841-003

Matrix: Soil
Date Collected: 01.09.2020 11:35

Date Received: 01.13.2020 12:40
Sample Depth: 0 - 0.3 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 01.14.2020 10:11

Basis: Wet Weight

Seq Number: 3113255

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	01.14.2020 13:19	U	1
Toluene	108-88-3	0.00985	0.00202	mg/kg	01.14.2020 13:19		1
Ethylbenzene	100-41-4	0.0285	0.00202	mg/kg	01.14.2020 13:19		1
m,p-Xylenes	179601-23-1	0.106	0.00403	mg/kg	01.14.2020 13:19		1
o-Xylene	95-47-6	0.0213	0.00202	mg/kg	01.14.2020 13:19		1
Xylenes, Total	1330-20-7	0.127	0.00202	mg/kg	01.14.2020 13:19		1
Total BTEX		0.166	0.00202	mg/kg	01.14.2020 13:19		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	127	%	70-130	01.14.2020 13:19	
1,4-Difluorobenzene	540-36-3	98	%	70-130	01.14.2020 13:19	



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LT Environmental, Inc., Arvada, CO

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Sample Id: **BH02A**
Lab Sample Id: 648841-004

Matrix: Soil
Date Collected: 01.09.2020 12:20

Date Received: 01.13.2020 12:40
Sample Depth: 2 ft

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3113234

Date Prep: 01.14.2020 10:15

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	2780	50.2	mg/kg	01.14.2020 12:18		5

Analytical Method: TPH by SW8015 Mod

Tech: DVM

Analyst: ARM

Seq Number: 3113462

Date Prep: 01.15.2020 09:00

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

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	01.15.2020 15:10	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	01.15.2020 15:10	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	01.15.2020 15:10	U	1
Total GRO-DRO	PHC628	<49.9	49.9	mg/kg	01.15.2020 15:10	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	01.15.2020 15:10	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	81	%	70-135	01.15.2020 15:10	
o-Terphenyl	84-15-1	84	%	70-135	01.15.2020 15:10	



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LT Environmental, Inc., Arvada, CO

RDX Federal Com 28-9

Sample Id: **BH02A**
Lab Sample Id: 648841-004

Matrix: Soil
Date Collected: 01.09.2020 12:20

Date Received: 01.13.2020 12:40
Sample Depth: 2 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 01.14.2020 10:11

Basis: Wet Weight

Seq Number: 3113255

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	01.14.2020 13:36	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	01.14.2020 13:36	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	01.14.2020 13:36	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/kg	01.14.2020 13:36	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	01.14.2020 13:36	U	1
Xylenes, Total	1330-20-7	<0.00200	0.00200	mg/kg	01.14.2020 13:36	U	1
Total BTEX		<0.00200	0.00200	mg/kg	01.14.2020 13:36	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	98	%	70-130	01.14.2020 13:36		
4-Bromofluorobenzene	460-00-4	125	%	70-130	01.14.2020 13:36		



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LT Environmental, Inc., Arvada, CO

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Sample Id: **BH03**
Lab Sample Id: 648841-005

Matrix: Soil
Date Collected: 01.09.2020 13:00

Date Received: 01.13.2020 12:40
Sample Depth: 1 ft

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3113234

Date Prep: 01.14.2020 10:15

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	3180	99.4	mg/kg	01.14.2020 12:24		10

Analytical Method: TPH by SW8015 Mod

Tech: DVM

Analyst: ARM

Seq Number: 3113462

Date Prep: 01.15.2020 09:00

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

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	01.15.2020 15:29	U	1
Diesel Range Organics (DRO)	C10C28DRO	54.9	49.9	mg/kg	01.15.2020 15:29		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	01.15.2020 15:29	U	1
Total GRO-DRO	PHC628	54.9	49.9	mg/kg	01.15.2020 15:29		1
Total TPH	PHC635	54.9	49.9	mg/kg	01.15.2020 15:29		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	80	%	70-135	01.15.2020 15:29	
o-Terphenyl	84-15-1	83	%	70-135	01.15.2020 15:29	



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LT Environmental, Inc., Arvada, CO

RDX Federal Com 28-9

Sample Id: **BH03**
Lab Sample Id: 648841-005

Matrix: Soil
Date Collected: 01.09.2020 13:00

Date Received: 01.13.2020 12:40
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 01.14.2020 10:11

Basis: Wet Weight

Seq Number: 3113255

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	01.14.2020 13:54	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	01.14.2020 13:54	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	01.14.2020 13:54	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	01.14.2020 13:54	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	01.14.2020 13:54	U	1
Xylenes, Total	1330-20-7	<0.00200	0.00200	mg/kg	01.14.2020 13:54	U	1
Total BTEX		<0.00200	0.00200	mg/kg	01.14.2020 13:54	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	110	%	70-130	01.14.2020 13:54		
1,4-Difluorobenzene	540-36-3	100	%	70-130	01.14.2020 13:54		



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LT Environmental, Inc., Arvada, CO

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Sample Id: **BH03A**
Lab Sample Id: 648841-006

Matrix: Soil
Date Collected: 01.09.2020 13:30

Date Received: 01.13.2020 12:40
Sample Depth: 2 ft

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3113234

Date Prep: 01.14.2020 10:15

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	542	9.98	mg/kg	01.14.2020 12:40		1

Analytical Method: TPH by SW8015 Mod

Tech: DVM

Analyst: ARM

Seq Number: 3113462

Date Prep: 01.15.2020 09:00

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

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	01.15.2020 15:48	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	01.15.2020 15:48	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	01.15.2020 15:48	U	1
Total GRO-DRO	PHC628	<50.0	50.0	mg/kg	01.15.2020 15:48	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	01.15.2020 15:48	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	80	%	70-135	01.15.2020 15:48	
o-Terphenyl	84-15-1	82	%	70-135	01.15.2020 15:48	



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LT Environmental, Inc., Arvada, CO

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Sample Id: **BH03A**
Lab Sample Id: 648841-006

Matrix: Soil
Date Collected: 01.09.2020 13:30

Date Received: 01.13.2020 12:40
Sample Depth: 2 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 01.14.2020 10:11

Basis: Wet Weight

Seq Number: 3113255

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	01.14.2020 14:11	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	01.14.2020 14:11	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	01.14.2020 14:11	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	01.14.2020 14:11	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	01.14.2020 14:11	U	1
Xylenes, Total	1330-20-7	<0.00199	0.00199	mg/kg	01.14.2020 14:11	U	1
Total BTEX		<0.00199	0.00199	mg/kg	01.14.2020 14:11	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	110	%	70-130	01.14.2020 14:11	
1,4-Difluorobenzene	540-36-3	103	%	70-130	01.14.2020 14:11	



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LT Environmental, Inc., Arvada, CO

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Sample Id: **BH04** Matrix: Soil Date Received: 01.13.2020 12:40
 Lab Sample Id: 648841-007 Date Collected: 01.09.2020 12:35 Sample Depth: 2 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 01.14.2020 10:15 Basis: Wet Weight
 Seq Number: 3113234

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	2700	9.94	mg/kg	01.14.2020 12:48		1

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DVM % Moisture:
 Analyst: ARM Date Prep: 01.15.2020 09:00 Basis: Wet Weight
 Seq Number: 3113462 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	01.15.2020 16:06	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	01.15.2020 16:06	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	01.15.2020 16:06	U	1
Total GRO-DRO	PHC628	<50.0	50.0	mg/kg	01.15.2020 16:06	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	01.15.2020 16:06	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	79	%	70-135	01.15.2020 16:06	
o-Terphenyl	84-15-1	81	%	70-135	01.15.2020 16:06	



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LT Environmental, Inc., Arvada, CO

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Sample Id: **BH04**
Lab Sample Id: 648841-007

Matrix: Soil
Date Collected: 01.09.2020 12:35

Date Received: 01.13.2020 12:40
Sample Depth: 2 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 01.14.2020 10:11

Basis: Wet Weight

Seq Number: 3113255

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	01.14.2020 14:29	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	01.14.2020 14:29	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	01.14.2020 14:29	U	1
m,p-Xylenes	179601-23-1	<0.00403	0.00403	mg/kg	01.14.2020 14:29	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	01.14.2020 14:29	U	1
Xylenes, Total	1330-20-7	<0.00202	0.00202	mg/kg	01.14.2020 14:29	U	1
Total BTEX		<0.00202	0.00202	mg/kg	01.14.2020 14:29	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	103	%	70-130	01.14.2020 14:29	
1,4-Difluorobenzene	540-36-3	100	%	70-130	01.14.2020 14:29	



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LT Environmental, Inc., Arvada, CO

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Sample Id: **BH04A**
Lab Sample Id: 648841-008

Matrix: Soil
Date Collected: 01.09.2020 13:05

Date Received: 01.13.2020 12:40
Sample Depth: 6 ft

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3113234

Date Prep: 01.14.2020 10:15

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	3050	100	mg/kg	01.14.2020 12:55		10

Analytical Method: TPH by SW8015 Mod

Tech: DVM

Analyst: ARM

Seq Number: 3113462

Date Prep: 01.15.2020 09:00

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

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	01.15.2020 16:25	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.8	49.8	mg/kg	01.15.2020 16:25	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.8	49.8	mg/kg	01.15.2020 16:25	U	1
Total GRO-DRO	PHC628	<49.8	49.8	mg/kg	01.15.2020 16:25	U	1
Total TPH	PHC635	<49.8	49.8	mg/kg	01.15.2020 16:25	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	81	%	70-135	01.15.2020 16:25	
o-Terphenyl	84-15-1	83	%	70-135	01.15.2020 16:25	



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LT Environmental, Inc., Arvada, CO

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Sample Id: **BH04A**
Lab Sample Id: 648841-008

Matrix: Soil
Date Collected: 01.09.2020 13:05

Date Received: 01.13.2020 12:40
Sample Depth: 6 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 01.14.2020 10:11

Basis: Wet Weight

Seq Number: 3113255

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	01.14.2020 14:46	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	01.14.2020 14:46	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	01.14.2020 14:46	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	01.14.2020 14:46	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	01.14.2020 14:46	U	1
Xylenes, Total	1330-20-7	<0.00200	0.00200	mg/kg	01.14.2020 14:46	U	1
Total BTEX		<0.00200	0.00200	mg/kg	01.14.2020 14:46	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	107	%	70-130	01.14.2020 14:46	
1,4-Difluorobenzene	540-36-3	102	%	70-130	01.14.2020 14:46	



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Sample Id: **BH05**
Lab Sample Id: 648841-009

Matrix: Soil
Date Collected: 01.09.2020 13:50

Date Received: 01.13.2020 12:40
Sample Depth: 5 ft

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3113234

Date Prep: 01.14.2020 10:15

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	3670	10.0	mg/kg	01.14.2020 13:03		1

Analytical Method: TPH by SW8015 Mod

Tech: DVM

Analyst: ARM

Seq Number: 3113462

Date Prep: 01.15.2020 09:00

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

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	01.15.2020 16:44	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	01.15.2020 16:44	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	01.15.2020 16:44	U	1
Total GRO-DRO	PHC628	<50.0	50.0	mg/kg	01.15.2020 16:44	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	01.15.2020 16:44	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	81	%	70-135	01.15.2020 16:44	
o-Terphenyl	84-15-1	84	%	70-135	01.15.2020 16:44	



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Sample Id: **BH05**
Lab Sample Id: 648841-009

Matrix: Soil
Date Collected: 01.09.2020 13:50

Date Received: 01.13.2020 12:40
Sample Depth: 5 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 01.14.2020 10:11

Basis: Wet Weight

Seq Number: 3113255

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	01.14.2020 15:03	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	01.14.2020 15:03	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	01.14.2020 15:03	U	1
m,p-Xylenes	179601-23-1	<0.00404	0.00404	mg/kg	01.14.2020 15:03	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	01.14.2020 15:03	U	1
Xylenes, Total	1330-20-7	<0.00202	0.00202	mg/kg	01.14.2020 15:03	U	1
Total BTEX		<0.00202	0.00202	mg/kg	01.14.2020 15:03	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	100	%	70-130	01.14.2020 15:03	
4-Bromofluorobenzene	460-00-4	101	%	70-130	01.14.2020 15:03	



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Sample Id: **BH05A**
Lab Sample Id: 648841-010

Matrix: Soil
Date Collected: 01.09.2020 14:00

Date Received: 01.13.2020 12:40
Sample Depth: 5.5 ft

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3113234

Date Prep: 01.14.2020 10:15

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	4320	10.0	mg/kg	01.14.2020 13:11		1

Analytical Method: TPH by SW8015 Mod

Tech: DVM

Analyst: ARM

Seq Number: 3113462

Date Prep: 01.15.2020 09:00

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

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	01.15.2020 17:03	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	01.15.2020 17:03	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	01.15.2020 17:03	U	1
Total GRO-DRO	PHC628	<49.9	49.9	mg/kg	01.15.2020 17:03	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	01.15.2020 17:03	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	79	%	70-135	01.15.2020 17:03	
o-Terphenyl	84-15-1	82	%	70-135	01.15.2020 17:03	



Certificate of Analytical Results 648841

LT Environmental, Inc., Arvada, CO

RDX Federal Com 28-9

Sample Id: **BH05A**
Lab Sample Id: 648841-010

Matrix: Soil
Date Collected: 01.09.2020 14:00

Date Received: 01.13.2020 12:40
Sample Depth: 5.5 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 01.14.2020 10:11

Basis: Wet Weight

Seq Number: 3113255

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	01.14.2020 15:21	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	01.14.2020 15:21	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	01.14.2020 15:21	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	01.14.2020 15:21	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	01.14.2020 15:21	U	1
Xylenes, Total	1330-20-7	<0.00201	0.00201	mg/kg	01.14.2020 15:21	U	1
Total BTEX		<0.00201	0.00201	mg/kg	01.14.2020 15:21	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	106	%	70-130	01.14.2020 15:21	
1,4-Difluorobenzene	540-36-3	103	%	70-130	01.14.2020 15:21	



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. **ND** Not Detected.

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



LT Environmental, Inc.

RDX Federal Com 28-9

Analytical Method: Chloride by EPA 300

Seq Number: 3113234

MB Sample Id: 7694305-1-BLK

Matrix: Solid

LCS Sample Id: 7694305-1-BKS

Prep Method: E300P

Date Prep: 01.14.2020

LCSD Sample Id: 7694305-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<10.0	250	246	98	246	98	90-110	0	20	mg/kg	01.14.2020 11:41	

Analytical Method: Chloride by EPA 300

Seq Number: 3113234

Parent Sample Id: 648841-001

Matrix: Soil

MS Sample Id: 648841-001 S

Prep Method: E300P

Date Prep: 01.14.2020

MSD Sample Id: 648841-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	228	200	435	104	435	104	90-110	0	20	mg/kg	01.14.2020 11:57	

Analytical Method: TPH by SW8015 Mod

Seq Number: 3113462

MB Sample Id: 7694462-1-BLK

Matrix: Solid

LCS Sample Id: 7694462-1-BKS

Prep Method: SW8015P

Date Prep: 01.15.2020

LCSD Sample Id: 7694462-1-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	883	88	892	89	70-135	1	20	mg/kg	01.15.2020 12:58	
Diesel Range Organics (DRO)	<15.0	1000	854	85	849	85	70-135	1	20	mg/kg	01.15.2020 12:58	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	86		110		111		70-135	%	01.15.2020 12:58
o-Terphenyl	91		99		99		70-135	%	01.15.2020 12:58

Analytical Method: TPH by SW8015 Mod

Seq Number: 3113462

Matrix: Solid

MB Sample Id: 7694462-1-BLK

Prep Method: SW8015P

Date Prep: 01.15.2020

Parameter	MB Result	Units	Analysis Date	Flag
Motor Oil Range Hydrocarbons (MRO)	<50.0	mg/kg	01.15.2020 12:39	

Analytical Method: TPH by SW8015 Mod

Seq Number: 3113462

Matrix: Soil

Parent Sample Id: 648841-001

MS Sample Id: 648841-001 S

Prep Method: SW8015P

Date Prep: 01.15.2020

MSD Sample Id: 648841-001 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	997	865	87	870	87	70-135	1	20	mg/kg	01.15.2020 13:55	
Diesel Range Organics (DRO)	<15.0	997	837	84	842	85	70-135	1	20	mg/kg	01.15.2020 13:55	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	104		106		70-135	%	01.15.2020 13:55
o-Terphenyl	95		91		70-135	%	01.15.2020 13:55

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * | (C - E) / (C + E) |$
 $[D] = 100 * (C) / [B]$
 Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
 A = Parent Result
 C = MS/LCS Result
 E = MSD/LCSD Result

MS = Matrix Spike
 B = Spike Added
 D = MSD/LCSD % Rec



LT Environmental, Inc.

RDX Federal Com 28-9

Analytical Method: BTEX by EPA 8021B

Seq Number: 3113255

MB Sample Id: 7694304-1-BLK

Matrix: Solid

LCS Sample Id: 7694304-1-BKS

Prep Method: SW5030B

Date Prep: 01.14.2020

LCSD Sample Id: 7694304-1-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	0.0972	97	0.106	106	70-130	9	35	mg/kg	01.14.2020 11:17	
Toluene	<0.00200	0.100	0.0962	96	0.105	105	70-130	9	35	mg/kg	01.14.2020 11:17	
Ethylbenzene	<0.00200	0.100	0.0937	94	0.103	103	71-129	9	35	mg/kg	01.14.2020 11:17	
m,p-Xylenes	<0.00400	0.200	0.193	97	0.214	107	70-135	10	35	mg/kg	01.14.2020 11:17	
o-Xylene	<0.00200	0.100	0.0940	94	0.104	104	71-133	10	35	mg/kg	01.14.2020 11:17	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	102		101		102		70-130	%	01.14.2020 11:17
4-Bromofluorobenzene	107		105		102		70-130	%	01.14.2020 11:17

Analytical Method: BTEX by EPA 8021B

Seq Number: 3113255

Parent Sample Id: 648841-001

Matrix: Soil

MS Sample Id: 648841-001 S

Prep Method: SW5030B

Date Prep: 01.14.2020

MSD Sample Id: 648841-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00201	0.100	0.103	103	0.106	106	70-130	3	35	mg/kg	01.14.2020 11:52	
Toluene	<0.00201	0.100	0.102	102	0.106	106	70-130	4	35	mg/kg	01.14.2020 11:52	
Ethylbenzene	<0.00201	0.100	0.0970	97	0.103	103	71-129	6	35	mg/kg	01.14.2020 11:52	
m,p-Xylenes	<0.000757	0.201	0.200	100	0.213	106	70-135	6	35	mg/kg	01.14.2020 11:52	
o-Xylene	<0.00201	0.100	0.0973	97	0.104	104	71-133	7	35	mg/kg	01.14.2020 11:52	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	102		98		70-130	%	01.14.2020 11:52
4-Bromofluorobenzene	106		98		70-130	%	01.14.2020 11:52

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
 Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
 A = Parent Result
 C = MS/LCS Result
 E = MSD/LCSD Result

MS = Matrix Spike
 B = Spike Added
 D = MSD/LCSD % Rec



Chain of Custody

Work Order No: 248841

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 Crashtad, NM (432) 704-5440
 Phoenix, AZ (480) 365-0900 Atlanta, GA (770) 449-8800 Tampa, FL (813) 620-2000 West Palm Beach, FL (561) 689-6701

www.xenco.com Page 1 of 1

Project Manager:	Chris Melkissen	Bit to (if different)	→
Company Name:	LT Environmental	Company Name:	→
Address:	820 Megan Ave, Unit 8	Address:	
City, State ZIP:	El Paso, TX 81650	City, State ZIP:	
Phone:	970 285 9985	Email:	cmelkissen@ltenv.com dabyes@ltenv.com

Program: UST/PST <input type="checkbox"/> PRP <input type="checkbox"/> Brownfields <input type="checkbox"/> RRC <input type="checkbox"/> Superfund <input type="checkbox"/>
State of Project:
Reporting Level: I <input type="checkbox"/> Level II <input type="checkbox"/> Level III <input type="checkbox"/> PST/UST <input type="checkbox"/> TRRP <input type="checkbox"/> Level IV <input type="checkbox"/>
Deliverables: EDD <input type="checkbox"/> ADAPT <input type="checkbox"/> Other:

Project Name:	RDX Federal Com 28-9	Turn Around	
Project Number:	034819025	Routine	<input type="checkbox"/>
Project Location:	Eddy County Rural	Rush:	3 DAY
Sampler's Name:	Anna Byers	Due Date:	
PO #:	28P-5700	Quote #:	

SAMPLE RECEIPT	Temp Blank:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Wet Ice:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Temperature (°C):	1.0	Thermometer ID	TMM007	
Received Intact:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Correction Factor:	-0.2	
Cooler Custody Seals:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Total Containers:	10	
Sample Custody Seals:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			

Lab ID	Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers	TPH (EPA 8015)	BTEX (EPA 8021)	Chloride (EPA 800.0)	ANALYSIS REQUEST	Preservative Codes	Sample Comments
BTD1		3	1/9/20	11:15	0.5'	1						
BTD1A				12:45	2.5'	1						
BTD2				11:35	surface	1						
BTD2A				12:20	2'	1						
BTD3				13:00	1'	1						
BTD3A				13:30	2'	1						
BTD4				12:35	2'	1						
BTD4A				13:05	6'	1						
BTD5				13:50	5'	1						
BTD5A				14:00	5.5'	1						

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 Ti 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 Ti U 1631 / 245.1 / 7470 / 7471 : Hg

Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Xenco. Its affiliates and subcontractors. It assigns standard terms and conditions of service. Xenco will be liable only for the cost of samples and shall not assume any responsibility for any losses or expenses incurred by the client if such losses are due to circumstances beyond the control of Xenco. A minimum charge of \$75.00 will be applied to each project and a charge of \$5 for each sample submitted to Xenco, but not analyzed. These terms will be enforced unless previously negotiated.

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Chris Byers	Walt Byers	1/3/20 12:00pm	Walt Byers	Walt Byers	1/3/20 12:40



Inter-Office Shipment

Page 1 of 1

IOS Number **55956**

Date/Time: 01/13/20 15:29

Created by: Elizabeth McClellan

Please send report to: Jessica Kramer

Lab# From: **Carlsbad**

Delivery Priority:

Address: 1089 N Canal Street

Lab# To: **Midland**

Air Bill No.: 777466121006

E-Mail: jessica.kramer@xenco.com

Sample Id	Matrix	Client Sample Id	Sample Collection	Method	Method Name	Lab Due	HT Due	PM	Analytes	Sign
648841-001	S	BH01	01/09/20 11:15	SW8015MOD_NM	TPH by SW8015 Mod	01/15/20	01/23/20	JKR	GRO-DRO PHCC10C28 PI	
648841-002	S	BH01A	01/09/20 12:45	SW8015MOD_NM	TPH by SW8015 Mod	01/15/20	01/23/20	JKR	GRO-DRO PHCC10C28 PI	
648841-003	S	BH02	01/09/20 11:35	SW8015MOD_NM	TPH by SW8015 Mod	01/15/20	01/23/20	JKR	GRO-DRO PHCC10C28 PI	
648841-004	S	BH02A	01/09/20 12:20	SW8015MOD_NM	TPH by SW8015 Mod	01/15/20	01/23/20	JKR	GRO-DRO PHCC10C28 PI	
648841-005	S	BH03	01/09/20 13:00	SW8015MOD_NM	TPH by SW8015 Mod	01/15/20	01/23/20	JKR	GRO-DRO PHCC10C28 PI	
648841-006	S	BH03A	01/09/20 13:30	SW8015MOD_NM	TPH by SW8015 Mod	01/15/20	01/23/20	JKR	GRO-DRO PHCC10C28 PI	
648841-007	S	BH04	01/09/20 12:35	SW8015MOD_NM	TPH by SW8015 Mod	01/15/20	01/23/20	JKR	GRO-DRO PHCC10C28 PI	
648841-008	S	BH04A	01/09/20 13:05	SW8015MOD_NM	TPH by SW8015 Mod	01/15/20	01/23/20	JKR	GRO-DRO PHCC10C28 PI	
648841-009	S	BH05	01/09/20 13:50	SW8015MOD_NM	TPH by SW8015 Mod	01/15/20	01/23/20	JKR	GRO-DRO PHCC10C28 PI	
648841-010	S	BH05A	01/09/20 14:00	SW8015MOD_NM	TPH by SW8015 Mod	01/15/20	01/23/20	JKR	GRO-DRO PHCC10C28 PI	

Inter Office Shipment or Sample Comments:

Relinquished By:

Elizabeth McClellan

Date Relinquished: 01/13/2020

Received By:

Brianna Teel

Date Received: 01/14/2020 12:54

Cooler Temperature: 0.7



XENCO Laboratories

Inter Office Report- Sample Receipt Checklist

Sent To: Midland

IOS #: 55956

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used :

Sent By: Elizabeth McClellan

Date Sent: 01/13/2020 03:29 PM

Received By: Brianna Teel

Date Received: 01/14/2020 12:54 PM

Sample Receipt Checklist

Comments

#1 *Temperature of cooler(s)?	.7
#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: 01/14/2020

XENCO Laboratories**Prelogin/Nonconformance Report- Sample Log-In****Client:** LT Environmental, Inc.**Date/ Time Received:** 01.13.2020 12.40.00 PM**Work Order #:** 648841**Acceptable Temperature Range:** 0 - 6 degC**Air and Metal samples Acceptable Range:** Ambient**Temperature Measuring device used :** T-NM-007

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	1
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	Yes
#5 Custody Seals intact on sample bottles?	Yes
#6 *Custody Seals Signed and dated?	Yes
#7 *Chain of Custody present?	Yes
#8 Any missing/extra samples?	No
#9 Chain of Custody signed when relinquished/ received?	Yes
#10 Chain of Custody agrees with sample labels/matrix?	Yes
#11 Container label(s) legible and intact?	Yes
#12 Samples in proper container/ bottle?	Yes
#13 Samples properly preserved?	Yes
#14 Sample container(s) intact?	Yes
#15 Sufficient sample amount for indicated test(s)?	Yes
#16 All samples received within hold time?	Yes
#17 Subcontract of sample(s)?	Yes
#18 Water VOC samples have zero headspace?	N/A

Samples split and TPH sent to Midland.

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

Analyst:

PH Device/Lot#:

Checklist completed by:

Elizabeth McClellan

Date: 01.13.2020

Checklist reviewed by:

Jessica Kramer

Date: 01.13.2020



Analytical Report 659113

for

LT Environmental, Inc.

Project Manager: Chris McKisson

RDX 28-9H

034819075

04.21.2020

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 (2019-058), North Carolina (681), Arkansas (19-037-0)

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-Carlsbad (LELAP): Louisiana (05092)
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)



04.21.2020

Project Manager: **Chris McKisson**

LT Environmental, Inc.

4600 W. 60th Avenue

Arvada, CO 80003

Reference: XENCO Report No(s): **659113**

RDX 28-9H

Project Address: Eddy County

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) 659113. 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. 659113 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,

A handwritten signature in black ink that reads 'Jessica Kramer'.

Jessica Kramer

Project Manager

A Small Business and Minority Company

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico



Sample Cross Reference 659113

LT Environmental, Inc., Arvada, CO

RDX 28-9H

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
FS01	S	04.16.2020 09:43	0.5 - 1 ft	659113-001



CASE NARRATIVE

Client Name: LT Environmental, Inc.

Project Name: RDX 28-9H

Project ID: 034819075
Work Order Number(s): 659113

Report Date: 04.21.2020
Date Received: 04.16.2020

Sample receipt non conformances and comments:

V1.001 Revision (client email) Corrected sample depth and changed from discrete to composite. JK
04/21/20

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3123298 BTEX by EPA 8021B

Soil samples were not received in Terracore kits and therefore were prepared by method 5030.



Certificate of Analysis Summary 659113

LT Environmental, Inc., Arvada, CO

Project Name: RDX 28-9H

Project Id: 034819075
Contact: Chris McKisson
Project Location: Eddy County

Date Received in Lab: Thu 04.16.2020 16:35
Report Date: 04.21.2020 09:29
Project Manager: Jessica Kramer

Analysis Requested	Lab Id: 659113-001 Field Id: FS01 Depth: 0.5-1 ft Matrix: SOIL Sampled: 04.16.2020 09:43					
BTEX by EPA 8021B	Extracted: 04.16.2020 17:44 Analyzed: 04.16.2020 23:36 Units/RL: mg/kg RL					
Benzene	<0.00200 0.00200					
Toluene	<0.00200 0.00200					
Ethylbenzene	<0.00200 0.00200					
m,p-Xylenes	<0.00401 0.00401					
o-Xylene	<0.00200 0.00200					
Xylenes, Total	<0.00200 0.00200					
Total BTEX	<0.00200 0.00200					
Chloride by EPA 300	Extracted: 04.16.2020 17:00 Analyzed: 04.16.2020 18:41 Units/RL: mg/kg RL					
Chloride	831 49.6					
TPH by SW8015 Mod	Extracted: 04.16.2020 17:50 Analyzed: 04.17.2020 14:33 Units/RL: mg/kg RL					
Gasoline Range Hydrocarbons (GRO)	<50.2 50.2					
Diesel Range Organics (DRO)	<50.2 50.2					
Motor Oil Range Hydrocarbons (MRO)	<50.2 50.2					
Total GRO-DRO	<50.2 50.2					
Total TPH	<50.2 50.2					

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Jessica Kramer
Project Manager



Certificate of Analytical Results 659113

LT Environmental, Inc., Arvada, CO

RDX 28-9H

Sample Id: **FS01** Matrix: Soil Date Received: 04.16.2020 16:35
 Lab Sample Id: 659113-001 Date Collected: 04.16.2020 09:43 Sample Depth: 0.5 - 1 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 04.16.2020 17:00 Basis: Wet Weight
 Seq Number: 3123313

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	831	49.6	mg/kg	04.16.2020 18:41		5

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 04.16.2020 17:50 Basis: Wet Weight
 Seq Number: 3123321

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.2	50.2	mg/kg	04.17.2020 14:33	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.2	50.2	mg/kg	04.17.2020 14:33	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.2	50.2	mg/kg	04.17.2020 14:33	U	1
Total GRO-DRO	PHC628	<50.2	50.2	mg/kg	04.17.2020 14:33	U	1
Total TPH	PHC635	<50.2	50.2	mg/kg	04.17.2020 14:33	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	103	%	70-135	04.17.2020 14:33	
o-Terphenyl	84-15-1	110	%	70-135	04.17.2020 14:33	



Certificate of Analytical Results 659113

LT Environmental, Inc., Arvada, CO

RDX 28-9H

Sample Id: **FS01**
Lab Sample Id: 659113-001

Matrix: Soil
Date Collected: 04.16.2020 09:43

Date Received: 04.16.2020 16:35
Sample Depth: 0.5 - 1 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 04.16.2020 17:44

Basis: Wet Weight

Seq Number: 3123298

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	04.16.2020 23:36	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	04.16.2020 23:36	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	04.16.2020 23:36	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	04.16.2020 23:36	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	04.16.2020 23:36	U	1
Xylenes, Total	1330-20-7	<0.00200	0.00200	mg/kg	04.16.2020 23:36	U	1
Total BTEX		<0.00200	0.00200	mg/kg	04.16.2020 23:36	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	97	%	70-130	04.16.2020 23:36	
1,4-Difluorobenzene	540-36-3	105	%	70-130	04.16.2020 23:36	



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. **ND** Not Detected.

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



LT Environmental, Inc.

RDX 28-9H

Analytical Method: Chloride by EPA 300

Seq Number: 3123313

MB Sample Id: 7701473-1-BLK

Matrix: Solid

LCS Sample Id: 7701473-1-BKS

Prep Method: E300P

Date Prep: 04.16.2020

LCSD Sample Id: 7701473-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<10.0	250	261	104	262	105	90-110	0	20	mg/kg	04.16.2020 18:08	

Analytical Method: Chloride by EPA 300

Seq Number: 3123313

Parent Sample Id: 659112-001

Matrix: Soil

MS Sample Id: 659112-001 S

Prep Method: E300P

Date Prep: 04.16.2020

MSD Sample Id: 659112-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	654	200	852	99	856	101	90-110	0	20	mg/kg	04.16.2020 18:24	

Analytical Method: Chloride by EPA 300

Seq Number: 3123313

Parent Sample Id: 659115-008

Matrix: Soil

MS Sample Id: 659115-008 S

Prep Method: E300P

Date Prep: 04.16.2020

MSD Sample Id: 659115-008 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	13600	401	14000	100	14000	100	90-110	0	20	mg/kg	04.16.2020 19:41	

Analytical Method: TPH by SW8015 Mod

Seq Number: 3123321

MB Sample Id: 7701491-1-BLK

Matrix: Solid

LCS Sample Id: 7701491-1-BKS

Prep Method: SW8015P

Date Prep: 04.16.2020

LCSD Sample Id: 7701491-1-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)	<50.0	1000	902	90	881	88	70-135	2	35	mg/kg	04.17.2020 09:31	
Diesel Range Organics (DRO)	<50.0	1000	997	100	974	97	70-135	2	35	mg/kg	04.17.2020 09:31	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	91		115		112		70-135	%	04.17.2020 09:31
o-Terphenyl	99		99		95		70-135	%	04.17.2020 09:31

Analytical Method: TPH by SW8015 Mod

Seq Number: 3123321

Matrix: Solid

MB Sample Id: 7701491-1-BLK

Prep Method: SW8015P

Date Prep: 04.16.2020

Parameter	MB Result	Units	Analysis Date	Flag
Motor Oil Range Hydrocarbons (MRO)	<50.0	mg/kg	04.17.2020 09:11	

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * | (C - E) / (C + E) |$
 $[D] = 100 * (C) / [B]$
 Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
 A = Parent Result
 C = MS/LCS Result
 E = MSD/LCSD Result

MS = Matrix Spike
 B = Spike Added
 D = MSD/LCSD % Rec



LT Environmental, Inc.
RDX 28-9H

Analytical Method: TPH by SW8015 Mod

Seq Number: 3123321

Parent Sample Id: 659105-018

Matrix: Soil

MS Sample Id: 659105-018 S

Prep Method: SW8015P

Date Prep: 04.16.2020

MSD Sample Id: 659105-018 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)	<50.0	999	1040	104	1090	109	70-135	5	35	mg/kg	04.17.2020 10:31	
Diesel Range Organics (DRO)	<50.0	999	1170	117	1120	112	70-135	4	35	mg/kg	04.17.2020 10:31	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	117		120		70-135	%	04.17.2020 10:31
o-Terphenyl	114		123		70-135	%	04.17.2020 10:31

Analytical Method: BTEX by EPA 8021B

Seq Number: 3123298

MB Sample Id: 7701462-1-BLK

Matrix: Solid

LCS Sample Id: 7701462-1-BKS

Prep Method: SW5030B

Date Prep: 04.16.2020

LCSD Sample Id: 7701462-1-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	0.105	105	0.113	113	70-130	7	35	mg/kg	04.16.2020 21:54	
Toluene	<0.00200	0.100	0.0998	100	0.107	107	70-130	7	35	mg/kg	04.16.2020 21:54	
Ethylbenzene	<0.00200	0.100	0.0920	92	0.0997	100	71-129	8	35	mg/kg	04.16.2020 21:54	
m,p-Xylenes	<0.00400	0.200	0.189	95	0.206	103	70-135	9	35	mg/kg	04.16.2020 21:54	
o-Xylene	<0.00200	0.100	0.0971	97	0.107	107	71-133	10	35	mg/kg	04.16.2020 21:54	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	107		104		103		70-130	%	04.16.2020 21:54
4-Bromofluorobenzene	97		93		93		70-130	%	04.16.2020 21:54

Analytical Method: BTEX by EPA 8021B

Seq Number: 3123298

Parent Sample Id: 659113-001

Matrix: Soil

MS Sample Id: 659113-001 S

Prep Method: SW5030B

Date Prep: 04.16.2020

MSD Sample Id: 659113-001 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	0.0781	78	0.0943	94	70-130	19	35	mg/kg	04.16.2020 22:35	
Toluene	<0.00199	0.0996	0.0723	73	0.0884	89	70-130	20	35	mg/kg	04.16.2020 22:35	
Ethylbenzene	<0.00199	0.0996	0.0740	74	0.0814	82	71-129	10	35	mg/kg	04.16.2020 22:35	
m,p-Xylenes	<0.00398	0.199	0.152	76	0.167	84	70-135	9	35	mg/kg	04.16.2020 22:35	
o-Xylene	<0.00199	0.0996	0.0774	78	0.0845	85	71-133	9	35	mg/kg	04.16.2020 22:35	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	104		105		70-130	%	04.16.2020 22:35
4-Bromofluorobenzene	92		93		70-130	%	04.16.2020 22:35

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
 Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
 A = Parent Result
 C = MS/LCS Result
 E = MSD/LCSD Result

MS = Matrix Spike
 B = Spike Added
 D = MSD/LCSD % Rec



Chain of Custody

Work Order No: 1659113

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)

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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 Ave, Unit B	Address:	820 Megan Ave, Unit B
City, State ZIP:	Rifle, CO 81650	City, State ZIP:	Rifle, CO 81650
Phone:	970-285-9985	Email:	jhill@ltenv.com, cmckisson@ltenv.com

Project Name:	RDX 28-94	Turn Around	
Project Number:	034819075	Routine	<input type="checkbox"/>
P.O. Number:	Ecly 605	Rush:	24hr
Sampler's Name:	Jeremy Hill	Due Date:	4/17/20

SAMPLE RECEIPT		Temp Blank:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Wet Ice:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Temperature (°C):	3.0	Thermometer ID	TMM007		
Received intact:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Correction Factor:	-0.2		
Cooler Custody Seals:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Total Containers:	1		
Sample Custody Seals:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number	TPH (E	BTEX (Chloride		Sample Comments
ES01	S	4/16/20	0943	1.0'	1	X	X	X		discrete
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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 Ti 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 Ti U 1631 / 245.1 / 7470 / 7471 : Hg

Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Xenco, its affiliates and subcontractors. It assigns standard terms and conditions of service. Xenco will be liable only for the cost of samples and shall not assume any responsibility for any losses or expenses incurred by the client if such losses are due to circumstances beyond the control of Xenco. A minimum charge of \$75.00 will be applied to each project and a charge of \$5 for each sample submitted to Xenco, but not analyzed. These terms will be enforced unless previously negotiated.

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
<i>[Signature]</i>	<i>[Signature]</i>	4/16/20 16:35			

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In


Client: LT Environmental, Inc.**Date/ Time Received:** 04.16.2020 04.35.00 PM**Work Order #:** 659113**Acceptable Temperature Range:** 0 - 6 degC**Air and Metal samples Acceptable Range:** Ambient**Temperature Measuring device used :** T-NM-007

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	3
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	Yes
#5 Custody Seals intact on sample bottles?	Yes
#6 *Custody Seals Signed and dated?	Yes
#7 *Chain of Custody present?	Yes
#8 Any missing/extra samples?	No
#9 Chain of Custody signed when relinquished/ received?	Yes
#10 Chain of Custody agrees with sample labels/matrix?	Yes
#11 Container label(s) legible and intact?	Yes
#12 Samples in proper container/ bottle?	Yes
#13 Samples properly preserved?	Yes
#14 Sample container(s) intact?	Yes
#15 Sufficient sample amount for indicated test(s)?	Yes
#16 All samples received within hold time?	Yes
#17 Subcontract of sample(s)?	No
#18 Water VOC samples have zero headspace?	N/A

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

Analyst:

PH Device/Lot#:

Checklist completed by:
Elizabeth McClellan

Date: 04.16.2020

Checklist reviewed by:
Jessica Kramer

Date: 04.17.2020