

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	NRM2016460654
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party XTO Energy	OGRID 5380
Contact Name Kyle Littrell	Contact Telephone 432-221-7331
Contact email Kyle_Littrell@xtoenergy.com	Incident # (assigned by OCD)
Contact mailing address 522 W. Mermod, Carlsbad, NM 88220	

Location of Release Source

Latitude 32.139843 Longitude -103.926390
(NAD 83 in decimal degrees to 5 decimal places)

Site Name Row 4 Wolverine SWD Riser	Site Type Flow Line
Date Release Discovered 06/01/2020	API# (if applicable)

Unit Letter	Section	Township	Range	County
M	7	25S	30E	Eddy

Surface Owner: ☒ State ☐ Federal ☐ Tribal ☐ Private (Name: _____)

Nature and Volume of Release

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

☐ Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
☒ Produced Water	Volume Released (bbls) 672.72	Volume Recovered (bbls) 15
	Is the concentration of total dissolved solids (TDS) in the produced water >10,000 mg/l?	☐ Yes ☐ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release A 2" welded olet on the bottom of a riser malfunctioned. Leak was isolated immediately and vacuum trucks dispatched for fluid recovery. A third-party contractor has been retained for remediation activities.

Form C-141

State of New Mexico
Oil Conservation Division

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Was this a major release as defined by 19.15.29.7(A) NMAC? ☒ Yes ☐ No	If YES, for what reason(s) does the responsible party consider this a major release? An unauthorized release of a volume, excluding gases, of 25 or more barrels.
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)? Yes, by Adrian Baker via email to Bratcher, Mike, EMNRD; 'Griswold, Jim, EMNRD'; 'Hamlet, Robert, EMNRD'; Mann, Ryan; Venegas, Victoria, EMNRD on Monday, June 1, 2020 3:03 PM.	

Initial Response

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

☒ The source of the release has been stopped. ☒ The impacted area has been secured to protect human health and the environment. ☒ Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices. ☒ All free liquids and recoverable materials have been removed and managed appropriately.	
If all the actions described above have <u>not</u> been undertaken, explain why: N/A	
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: <u>Kyle Littrell</u> Signature:  email: <u>Kyle.Littrell@xtbenergy.com</u>	Title: <u>SH&E Supervisor</u> Date: <u>6-12-20</u> Telephone: <u>432-221-7331</u>
OCD Only Received by: <u>Ramona Marcus</u> Date: <u>6/12/2020</u>	

NRM2016460654

Location:	Row 4 Wolverine SWD Riser	
Spill Date:	6/1/2020	
Area 1		
Approximate Area =	56803.50	sq. ft.
Average Saturation (or depth) of spill =	4.00	inches
Average Porosity Factor =	0.15	
VOLUME OF LEAK		
Total Produced Water =	520.84	bbls
Area 2		
Approximate Area =	441.00	sq. ft.
Average Saturation (or depth) of spill =	12.00	inches
Average Porosity Factor =	0.15	
VOLUME OF LEAK		
Total Produced Water =	11.78	bbls
Area 3		
Approximate Area =	140.00	sq. ft.
Average Saturation (or depth) of spill =	12.00	inches
Average Porosity Factor =	0.15	
VOLUME OF LEAK		
Total Produced Water =	3.74	bbls
Area 4		
Approximate Area =	6138.00	sq. ft.
Average Saturation (or depth) of spill =	8.00	inches
Average Porosity Factor =	0.15	
VOLUME OF LEAK		
Total Produced Water =	109.32	bbls
Area 5		
Approximate Area =	506.00	sq. ft.
Average Saturation (or depth) of spill =	24.00	inches
Average Porosity Factor =	0.15	
VOLUME OF LEAK		
Total Produced Water =	27.04	bbls
TOTAL VOLUME OF LEAK		
Total Produced Water =	672.72	bbls
TOTAL VOLUME RECOVERED		
Total Produced Water =	15.00	bbls

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Site Assessment/Characterization

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

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

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

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

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

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

State of New Mexico
Oil Conservation Division

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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: Kyle Littell Title: SH&E Supervisor
Signature:  Date: 11/16/20
email: Kyle_Littrell@xtoenergy.com Telephone: 432-221-7331

OCD Only

Received by: _____ Date: _____

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Remediation Plan

Remediation Plan Checklist: *Each of the following items must be included in the plan.*

- ☒ Detailed description of proposed remediation technique
- ☒ Scaled sitemap with GPS coordinates showing delineation points
- ☒ Estimated volume of material to be remediated
- ☒ Closure criteria is to Table 1 specifications subject to 19.15.29.12(C)(4) NMAC
- ☒ Proposed schedule for remediation (note if remediation plan timeline is more than 90 days OCD approval is required)

Deferral Requests Only: *Each of the following items must be confirmed as part of any request for deferral of remediation.*

- ☐ Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.
- ☐ Extents of contamination must be fully delineated.
- ☐ Contamination does not cause an imminent risk to human health, the environment, or groundwater.

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: Kyle Littrell Title: SH&E Coordinator
Signature:  Date: 11/16/20
email: Kyle_Littrell@xtoenergy.com Telephone: (432)-221-7331

OCD Only

Received by: Chad Hensley Date: 02/24/2021

☐ Approved ☒ Approved with Attached Conditions of Approval ☐ Denied ☐ Deferral Approved

Signature:  Date: 02/24/2021



WSP USA

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

November 16, 2020

District II
New Mexico Oil Conservation Division
811 South First Street
Artesia, New Mexico 88210

**Re: Remediation Work Plan
Row 4 Wolverine SWD Riser
Incident Number NRM2016460654
Eddy County, New Mexico**

To Whom it May Concern:

WSP USA Inc. (WSP) (formerly LT Environmental, Inc.), on behalf of XTO Energy, Inc. (XTO), presents the following Remediation Work Plan detailing remediation activities completed to date and proposed actions to address residual impacted soil resulting from a release of produced water at the Row 4 Wolverine Saltwater Disposal (SWD) Riser (Site). The Site is located in Unit M, Section 7, Township 25 South, Range 30 East, in Eddy County, New Mexico (Figure 1).

RELEASE BACKGROUND

On June 1, 2020, a malfunction of a 2-inch welded olet on the bottom of a pipeline riser resulted in the release of approximately 672.72 barrels (bbls) of produced water. The release occurred on the riser pad and right-of-way (ROW) located on state land operated by the New Mexico State Land Office (SLO) and flowed west into the adjacent pasture, covering approximately 73,769 square feet. The riser pad and ROW consists of numerous risers to subsurface natural gas and produced water lines. The risers and 12 subsurface pipelines are located within the release extent. The release extent also includes a subsurface gas line operated by Lucid Energy Group (Lucid) and a utility pole and aboveground electrical lines operated by Xcel Energy (Xcel).

A hydro-vacuum truck was dispatched to the Site to recover free liquids; approximately 15 bbls of produced water were recovered. XTO reported the release to the New Mexico Oil Conservation Division (NMOCD) immediately on June 1, 2020 via email and subsequently submitted a Release Notification and Corrective Action Form C-141 (Form C-141) on June 12, 2020. The release was assigned Incident Number NRM2016460654.

SITE CHARACTERIZATION

WSP 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 groundwater well data. The nearest permitted groundwater well with depth to water data is United States Geological Survey (USGS) well 320857103553301, located approximately 0.65 miles north of the Site. The well has a depth to groundwater of approximately 264 feet bgs and a total depth of approximately 385 feet bgs. The groundwater



well is approximately 12 feet lower in elevation than the Site. In addition, there are five USGS and New Mexico Office of the State Engineer (NMOSE) wells located within a 4-mile radius of the Site. All of these wells have a recorded depth to groundwater of greater than 100 feet bgs indicating regional depth to water is greater than 100 feet bgs. The referenced well records are included in Attachment 2.

The closest continuously flowing water or significant watercourse to the Site is a dry wash located approximately 1,318 feet north of the Site. The Site is greater than 200 feet from a lakebed, sinkhole, or playa lake and greater than 300 feet from an occupied residence, school, hospital, institution, church, or wetland. The Site is greater than 1,000 feet to a freshwater well or spring and is not within a 100-year floodplain or overlying a subsurface mine. The Site is not located within an area underlain by unstable geology (low potential karst designation area by the Bureau of Land Management (BLM)). The Site receptors are identified on Figure 1.

CLOSURE CRITERIA

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

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

Additionally, the top four feet of reclaimed surface in the affected pasture must be comprised of non-waste containing, uncontaminated earthen material exhibiting chloride concentrations below 600 mg/kg, which was applied per NMAC 19.15.29.13.D (1). In Procedures for Implementation of the Spill Rule (Guidelines), NMOCD further interprets uncontaminated to include TPH concentrations below 100 mg/kg.

SITE ASSESSMENT ACTIVITIES AND ANALYTICAL RESULTS

On June 5, 2020, WSP inspected the Site to evaluate the release extent and collect preliminary soil samples utilizing visual observations and information from the Form C-141. WSP personnel collected nine preliminary soil samples (SS01 through SS09) within the release extent from a depth of approximately 0.5 feet bgs to assess surficial soil. The release extent and preliminary soil sample locations were mapped using a handheld Global Positioning System (GPS) unit and are depicted on Figure 2. In addition, the riser equipment, numerous subsurface XTO gas and water pipelines, the Lucid pipeline, and aboveground Xcel electrical line with associated utility



pole were mapped using a GPS unit and are depicted on Figure 2. Photo documentation of the release and equipment is included as Attachment 1.

Soil samples were screened for volatile aromatic hydrocarbons and chloride using a calibrated photo-ionization detector (PID) and Hach® chloride QuanTab® test strips, respectively. Each soil sample was placed directly into pre-cleaned glass jars, labeled with location, date, time, sampler, and method of analysis, and immediately placed on ice. The samples were transported to Xenco Laboratories (Xenco) in Carlsbad, New Mexico, at or below 4 degrees Celsius (°C) under strict chain-of-custody (COC) procedures for analysis of BTEX by United States Environmental Protection Agency (EPA) Method 8021B, TPH-GRO, TPH-DRO, and TPH-ORO by EPA Method 8015M/D, and chloride by EPA Method 300.0.

Laboratory analytical results indicated benzene, BTEX, and TPH were compliant with the Closure Criteria in preliminary soil samples SS01 through SS09. Chloride concentrations for preliminary soil samples SS01 and SS04 through SS09 exceeded the reclamation requirement applied in the top 4 feet of pasture. Visible staining was also observed within the release extent. Based on the approximate unrecovered volume of produced water (657.72 bbls), visible staining, and field screening results, further site assessment activities appeared warranted. The laboratory analytical report is included in Attachment 4.

EXCAVATION AND DELINEATION SOIL SAMPLING ACTIVITIES

WSP personnel returned to the Site on August 17, 2020, to conduct further site assessment via delineation soil sample collection. WSP personnel advanced eight boreholes (BH01 through BH08) via a stainless-steel hand auger within the release extent to confirm the presence or absence of impact to soil at depth. Soil samples for boreholes BH01 through BH08 were collected at depths ranging from approximately 1 foot to 3 feet bgs. Two discrete soil samples, the highest field screening result and the terminus, were collected from boreholes BH01, BH03, and BH05 based on field screening results for volatile aromatic hydrocarbons and chloride. Only one discrete soil sample was collected from boreholes BH02, BH04, and BH06 through BH08 due to auger refusal at 1-foot bgs. The delineation borehole soil samples were collected, handled, and analyzed as described above and submitted to Xenco in Carlsbad, New Mexico. Soil sample locations are depicted on Figure 3. The lithologic/soil sampling logs for the boreholes are included in Attachment 3.

Further delineation and remediation efforts were postponed following submission of a Right of Entry (ROE) Permit requesting access from SLO. Per 19.15.29.12.B.(1) NMAC, an extension for submission of a Remediation Plan or Closure Request was approved on September 15, 2020. The ROE was approved, and the executed permit was received from SLO on September 17, 2020.

After XTO received the executed permit from SLO, WSP personnel returned to the Site on September 28, 2020 and on October 6, 2020 to complete delineation via track hoe. WSP



personnel advanced nine potholes (PH01 through PH09) via track hoe within the release extent to confirm the presence or absence of impact to soil at depth. Soil samples for potholes PH01 through PH09 were collected at depths ranging from approximately 1 foot to 12 feet bgs. Two discrete soil samples were collected from each pothole: one from the interval with the highest field screening results for volatile aromatic hydrocarbons and chloride and one from the terminus of the pothole. The delineation pothole soil samples were collected, handled, and analyzed as described above and submitted to Xenco in Carlsbad, New Mexico. The delineation soil sample locations were placed in positions that provided vertical and lateral delineation where applicable. The presence of surface equipment and numerous subsurface pipelines restricted additional sampling near the point of release. Soil sample locations are depicted on Figure 3. The lithologic/soil sampling logs for the potholes are included in Attachment 3.

SOIL ANALYTICAL RESULTS

No delineation soil samples contained detectable concentrations of BTEX or TPH. All delineation soil samples were compliant with the Table 1 Closure Criteria for chloride. However, samples from boreholes BH01, BH02, BH03, BH07, and BH08 and all shallow pothole samples exceeded the reclamation standard for chloride. The terminal sample in each pothole were below 600 mg/kg. It appears the top 3 feet to 4 feet of the subsurface within the release extent, except near BH05, contains chloride concentrations exceeding the reclamation standard. Below four feet bgs, chloride concentrations are compliant with the assigned Table 1 Closure Criteria and delineated to the most stringent Table 1 Closure Criteria. Analytical results are summarized on Table 1 and laboratory analytical reports are included in Attachment 4.

PROPOSED REMEDIATION WORK PLAN

An estimated 10,930 cubic yards of impacted soil exists at the Site within the top 4 feet of the subsurface. Due to the nature of the release (produced water containing chloride) and extent of impact in the subsurface (chloride impacts to approximately 4 feet bgs), WSP proposes excavation of the top 4 feet of the subsurface. WSP will oversee excavation activities to remediate impacted soil as indicated by visual observations and field screening results. An estimated 10,930 cubic yards of soil will be removed and disposed of at a licensed disposal facility. The proposed excavation extent is depicted on Figure 4.

Following removal of impacted soil, WSP will collect composite confirmation samples in any areas of the floor of the excavation that do not reach 4 feet bgs in depth. In addition, confirmation samples will be collected from all sidewalls to confirm that all waste-containing soil has been removed from the top four feet. The 5-point composite samples will be collected by placing five equivalent aliquots of soil into a 1-gallon, resealable plastic bag and homogenizing the samples by thoroughly mixing. The composite samples will not represent any area greater than 200 square feet. The excavation soil samples will be collected and handled following the same procedures as described above at Xenco in Carlsbad, New Mexico. LTE will direct Xenco to analyze the soil



samples for chloride only since no BTEX or TPH were detected in any of the samples collected at the Site. The source of the release was produced water and no hydrocarbon constituents have been observed in source samples; therefore, chloride is the established contaminant of concern.

VARIANCE REQUEST

XTO plans to remove all soil exceeding 600 mg/kg of chloride in the top 4 feet in the pasture where it is safe to do so. However, existing active utilities in the following areas make soil removal unsafe:

- XTO riser equipment and multiple subsurface gas and water pipelines near the point of release;
- Lucid subsurface pipeline; and
- Aboveground electrical line and associated utility poles operated by Xcel.

XTO requests to leave soil in place at these locations in order to preserve the structural integrity of the above-mentioned equipment. XTO safety policy prohibits excavation within 2 feet of any subsurface line or aboveground production equipment and within 10 feet of the Xcel utility pole. A hydro-vacuum will be utilized to ensure any chloride impacted soil in the top 4 feet is removed to the maximum extent possible (MEP) without risking destabilization of the riser equipment or pipelines. XTO will delineate any chloride impacted soil to 600 mg/kg chloride that is left in place in the top 4 feet by collecting additional discrete subsurface samples as needed. XTO anticipates leaving a maximum of 520 cubic yards of soil surrounding the equipment, assuming a maximum depth of impacts to 4 feet bgs (Figure 4).

WSP and XTO believe leaving the soil in place is equally protective of public health and environment. XTO plans to remove 10,930 cubic yards of waste-containing soil, which will remove the bulk of the source contaminate. All remaining soil will meet the Table 1 Closure Criteria applied to the Site. In addition, the total depth of impact has been defined as 4 feet bgs and the groundwater table is greater than 100 feet deep, suggesting the likelihood of chloride migrating a sufficient depth to impact groundwater is low. There are no other sensitive receptors near the release. There is no existing vegetation in the pipeline ROW near the risers or in the Lucid pipeline ROW. Vegetation near the electrical utility appears healthy and will remain in place. Photo documentation of healthy vegetation is included in Attachment 1. The risk to worker safety associated with soil removal immediately adjacent to or under the pipelines and utility line is more significant than risk to vegetation following remediation. Based on these factors, XTO and WSP believe leaving the soil in place is protective of human health, the environment, and groundwater. As such, XTO respectfully requests a variance to leave the minimal amount of soil in place near the aforementioned equipment.

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



District II
Page 6

Sincerely,

WSP USA Inc.

A handwritten signature in black ink, appearing to read 'Jeremy Hill'.

Jeremy Hill
Environmental Scientist

A handwritten signature in black ink, appearing to read 'Ashley L. Ager'.

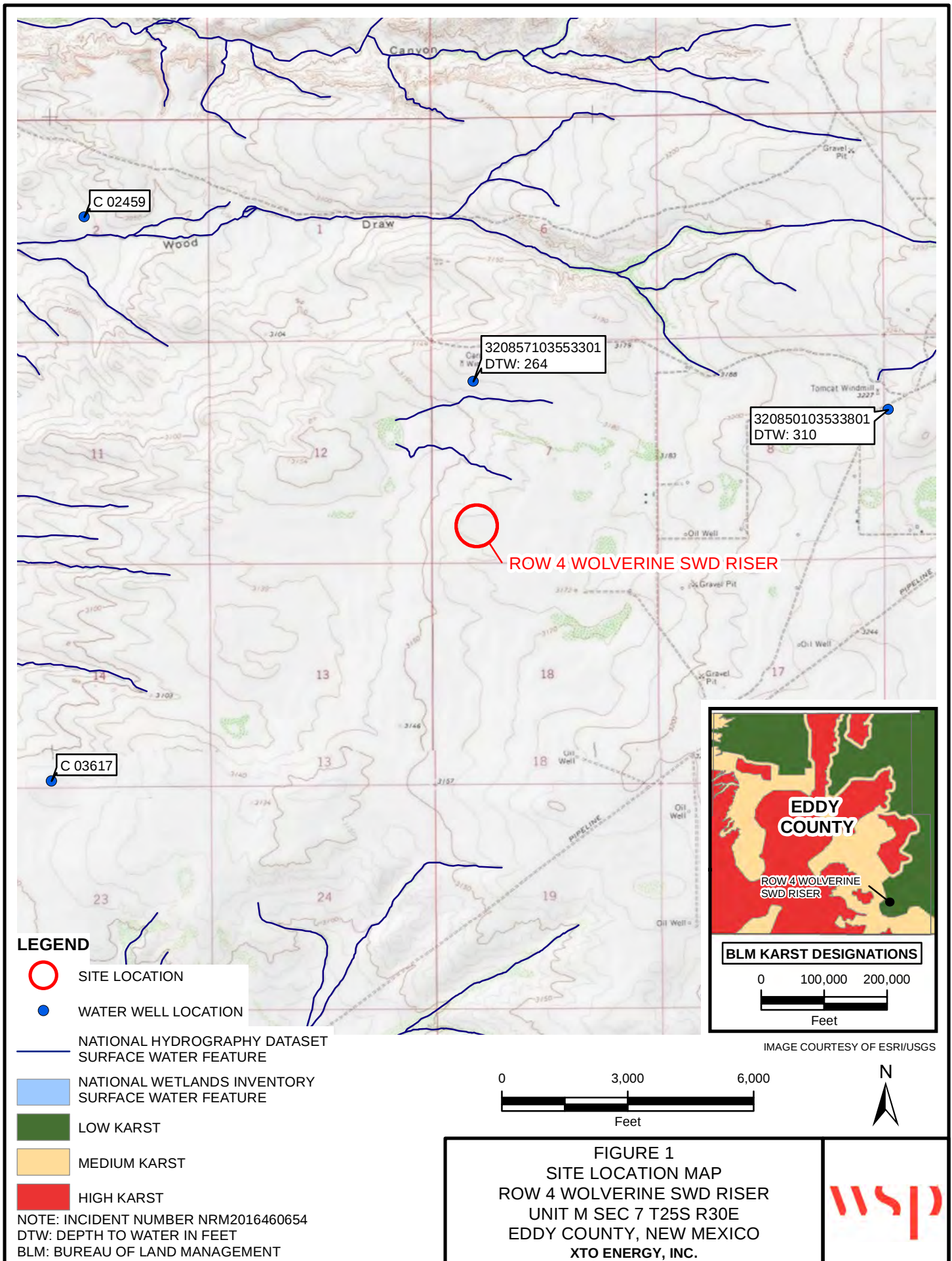
Ashley L. Ager, P.G.
Managing Director, Geologist

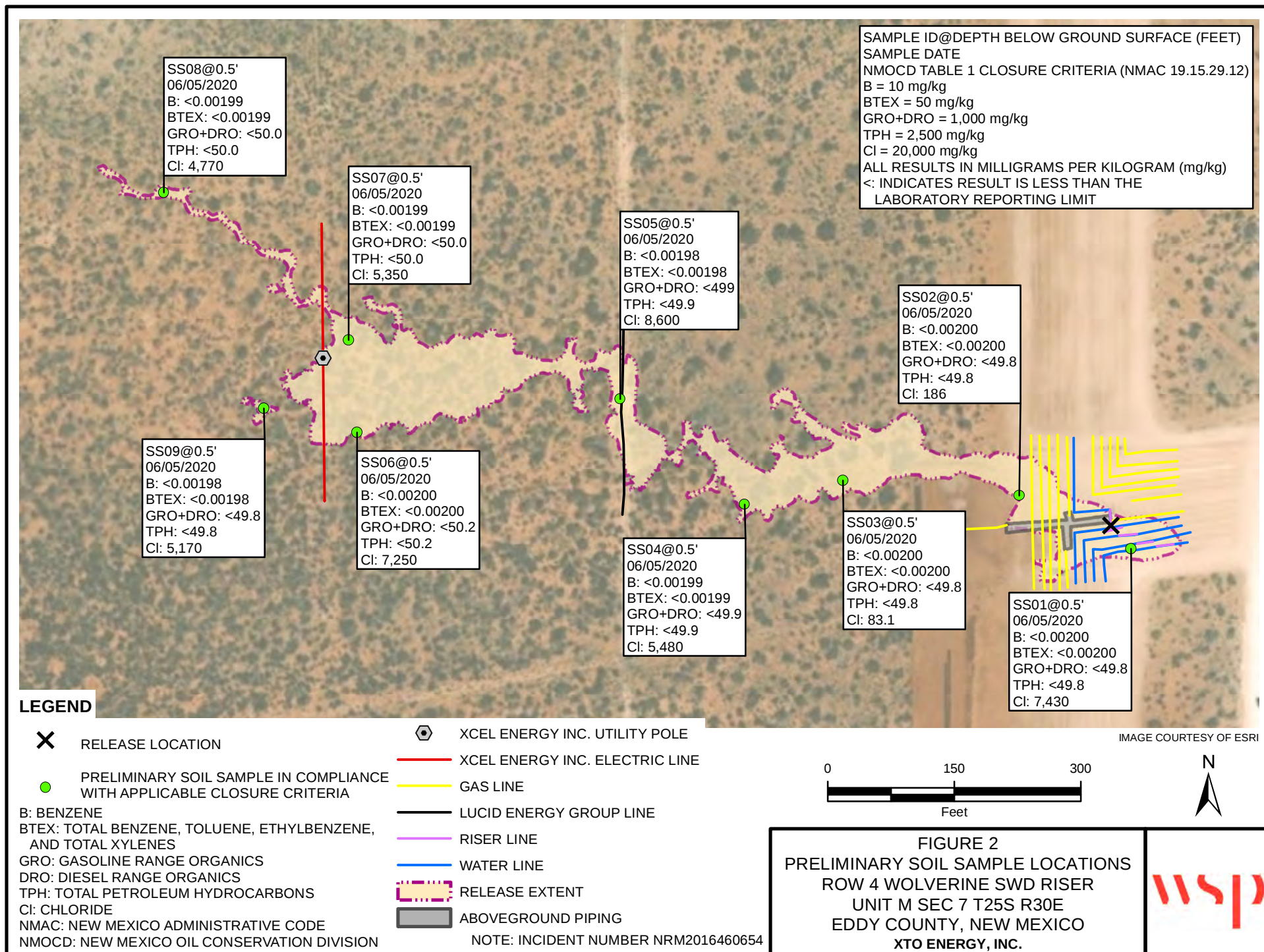
cc: Kyle Littrell, XTO
Robert Hamlet, NMOCD
Victoria Venegas, NMOCD
Jim Amos, Bureau of Land Management

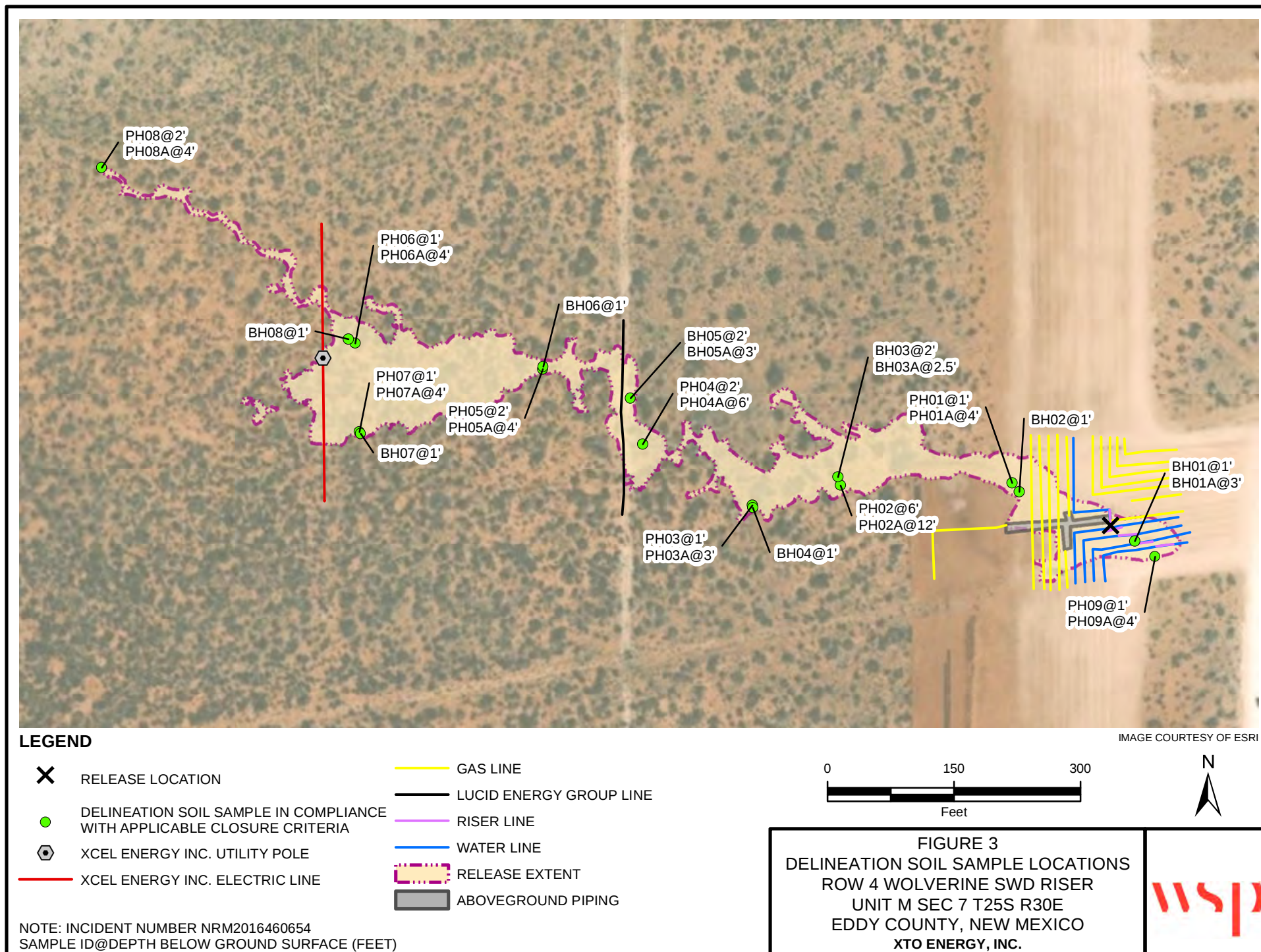
Attachments:

Figure 1 Site Location Map
Figure 2 Preliminary Soil Sample Locations
Figure 3 Delineation Soil Sample Locations
Figure 4 Excavation Soil Sample Locations
Table 1 Soil Analytical Results
Attachment 1 Photographic Log
Attachment 2 Referenced Well Records
Attachment 3 Lithologic/Sampling Log
Attachment 4 Laboratory Analytical Reports

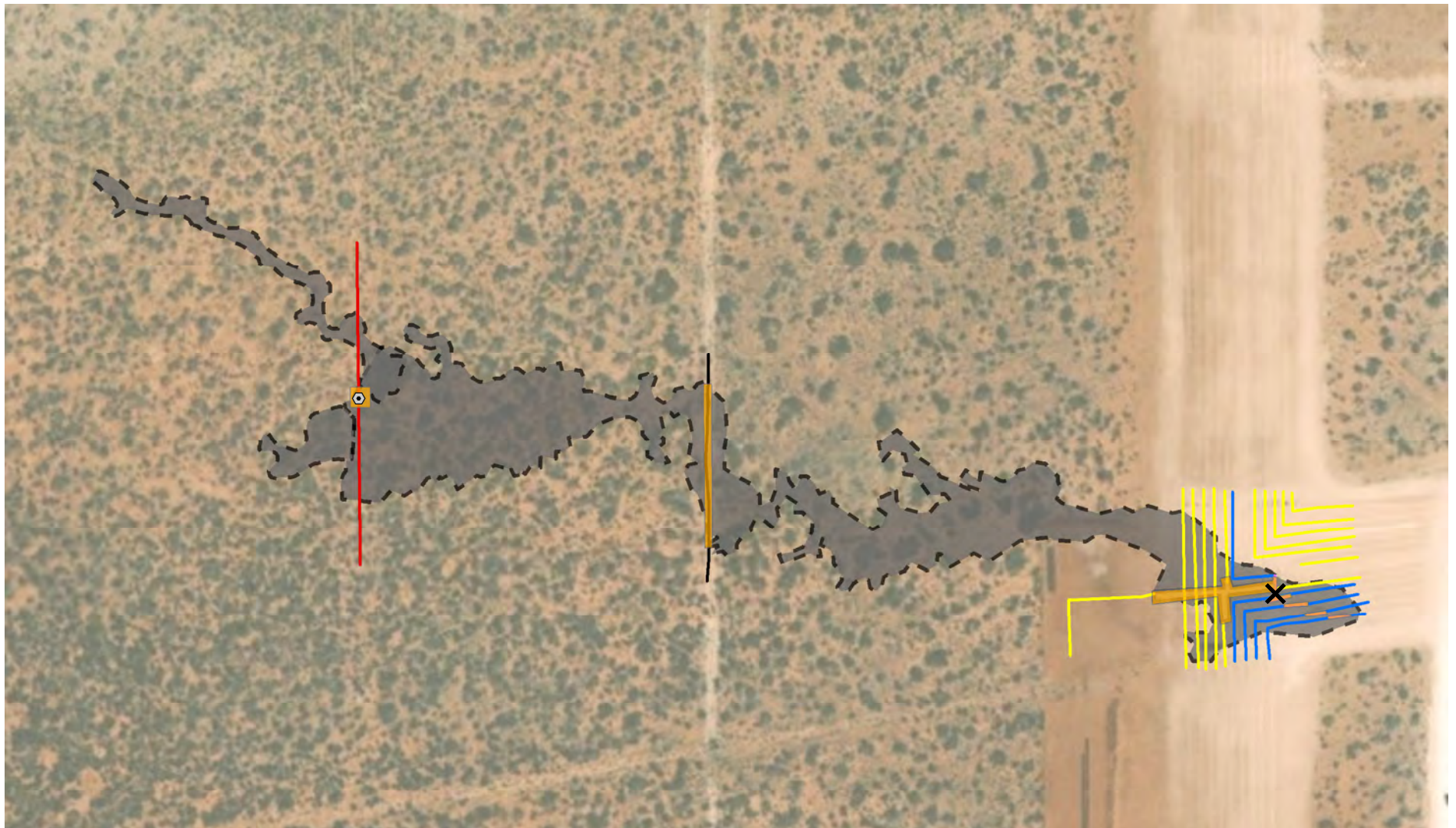
FIGURES







P:\XTO Energy\GIS\MXD\012920091_WOLVERINE SWD RISER\012920091_FIG03_DELINEATION_2020_ND.mxd

**LEGEND**

- | | | | |
|------------------------------------|--------------------------------|--|-------------------------|
| X | RELEASE LOCATION | — | GAS LINE |
| | XCEL ENERGY INC. UTILITY POLE | --- | LUCID ENERGY GROUP LINE |
| — | XCEL ENERGY INC. ELECTRIC LINE | — | RISER LINE |
| | | — | WATER LINE |
| | | | ABOVEGROUND PIPING |
| | | | DEFERRAL AREA |

NOTE: INCIDENT NUMBER NRM2016460654
 SAMPLE ID@DEPTH BELOW GROUND SURFACE (FEET)

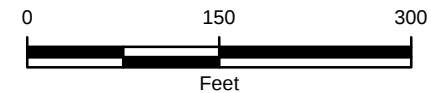


IMAGE COURTESY OF ESRI



FIGURE 4
 DEFERRAL AREA
 ROW 4 WOLVERINE SWD RISER
 UNIT M SEC 7 T25S R30E
 EDDY COUNTY, NEW MEXICO
 XTO ENERGY, INC.



TABLES

Table 1

**Soil Analytical Results
ROW 4 WOLVERINE SWD RISER
INCIDENT NUMBER NRM2016460654
Eddy County, New Mexico**

Sample ID	Sample Date	Sample Depth (ft bgs)	Benzene (mg/kg)	BTEX (mg/kg)	TPH-DRO (mg/kg)	TPH-GRO (mg/kg)	TPH-ORO (mg/kg)	Total GRO+DRO (mg/kg)	TPH (mg/kg)	Chloride (mg/kg)
NMOCD Table 1 Closure Criteria (NMAC 19.15.29)			10	50	NE	NE	NE	1,000	2,500	20,000
Surface Samples										
SS01	06/05/2020	0.5	<0.00200	<0.00200	<49.8	<49.8	<49.8	<49.8	<49.8	7,430
SS02	06/05/2020	0.5	<0.00200	<0.00200	<49.8	<49.8	<49.8	<49.8	<49.8	186
SS03	06/05/2020	0.5	<0.00200	<0.00200	<49.8	<49.8	<49.8	<49.8	<49.8	83.1
SS04	06/05/2020	0.5	<0.00199	<0.00199	<49.9	<49.9	<49.9	<49.9	<49.9	5,480
SS05	06/05/2020	0.5	<0.00198	<0.00198	<49.9	<49.9	<49.9	<49.9	<49.9	8,600
SS06	06/05/2020	0.5	<0.00200	<0.00200	<50.2	<50.2	<50.2	<50.2	<50.2	7,250
SS07	06/05/2020	0.5	<0.00199	<0.00199	<50.0	<50.0	<50.0	<50.0	<50.0	5,350
SS08	06/05/2020	0.5	<0.00199	<0.00199	<50.0	<50.0	<50.0	<50.0	<50.0	4,770
SS09	06/05/2020	0.5	<0.00198	<0.00198	<49.8	<49.8	<49.8	<49.8	<49.8	5,170
Delineation Samples										
BH01	08/17/2020	1	<0.00199	<0.00199	<50.0	<50.0	<50.0	<50.0	<50.0	4,490
BH01A	08/17/2020	3	<0.00200	<0.00200	<50.0	<50.0	<50.0	<50.0	<50.0	4,500
BH02	08/17/2020	1	<0.00200	<0.00200	<49.8	<49.8	<49.8	<49.8	<49.8	2,820
BH03	08/17/2020	2	<0.00200	<0.00200	<49.9	<49.9	<49.9	<49.9	<49.9	2,120
BH03A	08/17/2020	2.5	<0.00201	<0.00201	<49.9	<49.9	<49.9	<49.9	<49.9	1,420
BH04	08/17/2020	1	<0.00201	<0.00201	<50.1	<50.1	<50.1	<50.1	<50.1	3,160
BH05	08/17/2020	2	<0.00199	<0.00199	<50.2	<50.2	<50.2	<50.2	<50.2	206
BH05A	08/17/2020	3	<0.00198	<0.00198	<49.9	<49.9	<49.9	<49.9	<49.9	374
BH06	08/17/2020	1	<0.00199	<0.00199	<50.1	<50.1	<50.1	<50.1	<50.1	578

Table 1

Soil Analytical Results
ROW 4 WOLVERINE SWD RISER
INCIDENT NUMBER NRM2016460654
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft bgs)	Benzene (mg/kg)	BTEX (mg/kg)	TPH-DRO (mg/kg)	TPH-GRO (mg/kg)	TPH-ORO (mg/kg)	Total GRO+DRO (mg/kg)	TPH (mg/kg)	Chloride (mg/kg)
NMOCD Table 1 Closure Criteria (NMAC 19.15.29)			10	50	NE	NE	NE	1,000	2,500	20,000
BH07	08/17/2020	1	<0.00200	<0.00200	<50.2	<50.2	<50.2	<50.2	<50.2	5,790
BH08	08/17/2020	1	<0.00199	<0.00199	<50.1	<50.1	<50.1	<50.1	<50.1	4,130
PH01	09/28/2020	1	<0.00200	<0.00200	<50.0	<50.0	<50.0	<50.0	<61.4	3,210
PH01A	09/28/2020	4	<0.00200	<0.00200	<50.1	<50.1	<50.1	<50.1	<61.4	34.2
PH02	09/28/2020	6	<0.00201	<0.00201	<50.1	<50.1	<50.1	<50.1	<60.5	7,400
PH02A	09/28/2020	12	<0.00201	<0.00201	<50.1	<50.1	<50.1	<50.1	<61.7	160
PH03	09/28/2020	1	<0.00201	<0.00201	<50.0	<50.0	<50.0	<50.0	<60.2	3,020
PH03A	09/28/2020	3	<0.00202	<0.00202	<50.1	<50.1	<50.1	<50.1	<63.8	<10.0
PH04	09/28/2020	2	<0.00198	<0.00198	<50.1	<50.1	<50.1	<50.1	<63.8	5,890
PH04A	09/28/2020	6	<0.00202	<0.00202	<50.0	<50.0	<50.0	<50.0	<62.6	300
PH05	09/28/2020	2	<0.00200	<0.00200	<49.9	<49.9	<49.9	<49.9	<61.4	4,080
PH05A	09/28/2020	4	<0.00201	<0.00201	<50.1	<50.1	<50.1	<50.1	<61.4	45.2
PH06	09/28/2020	1	<0.00200	<0.00200	<50.2	<50.2	<50.2	<50.2	<61.4	3,610
PH06A	09/28/2020	4	<0.00202	<0.00202	<50.2	<50.2	<50.2	<50.2	<60.5	<9.94
PH07	09/28/2020	1	<0.00199	<0.00199	<49.9	<49.9	<49.9	<49.9	<61.7	4,600
PH07A	09/28/2020	4	<0.00200	<0.00200	<50.0	<50.0	<50.0	<50.0	<60.2	47.7
PH08	10/06/2020	2	<0.00198	<0.00198	<50.3	<50.3	<50.3	<50.3	<63.8	955
PH08A	10/06/2020	4	<0.00199	<0.00199	<49.8	<49.8	<49.8	<49.8	<63.8	112

Table 1

Soil Analytical Results
ROW 4 WOLVERINE SWD RISER
INCIDENT NUMBER NRM2016460654
 Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft bgs)	Benzene (mg/kg)	BTEX (mg/kg)	TPH-DRO (mg/kg)	TPH-GRO (mg/kg)	TPH-ORO (mg/kg)	Total GRO+DRO (mg/kg)	TPH (mg/kg)	Chloride (mg/kg)
NMOCD Table 1 Closure Criteria (NMAC 19.15.29)			10	50	NE	NE	NE	1,000	2,500	20,000
PH09	10/06/2020	1	<0.00201	<0.00201	<50.2	<50.2	<50.2	<50.2	<62.6	2,890
PH09A	10/06/2020	4	<0.00200	<0.00200	<50.0	<50.0	<50.0	<50.0	<61.4	199

ft - feet/foot

mg/kg - milligrams per kilograms

BTEX - benzene, toluene, ethylbenzene, and total xylenes

TPH - total petroleum hydrocarbons

DRO - diesel range organics

GRO - gasoline range organics

ORO - motor oil range organics

NMOCD - New Mexico Oil Conservation Division

NMAC - New Mexico Administrative Code

< - indicates result is less than the stated laboratory method practical quantitation limit

NE - Not Established

BOLD - indicates results exceed the higher of the background sample result or applicable regulatory standard

Greyed data represents samples that were excavated

ATTACHMENT 1: PHOTOGRAPHIC LOG



PHOTOGRAPHIC LOG

XTO Energy, Inc.	Row 4 Wolverine SWD Riser Eddy County, New Mexico	NRM2016460654
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Photo No.	Date	
1	June 1, 2020	
View of release extent, risers and staining facing west		 A photograph showing a row of industrial risers in a dry, desert-like environment. The ground is covered in reddish-brown soil and sparse vegetation. The sky is clear and blue. The risers are metallic and appear to be part of a larger industrial facility.

Photo No.	Date	
2	June 1, 2020	
View of SS09 facing east.		 A photograph showing a landscape with sparse green and brown vegetation. The ground is reddish-brown soil. In the distance, there is a small, dark structure, possibly a building or a wellhead. The sky is clear and blue.

**PHOTOGRAPHIC LOG**

XTO Energy, Inc.	Row 4 Wolverine SWD Riser Eddy County, New Mexico	NRM2016460654
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Photo No.	Date	
3	June 1, 2020	
View of utility pole facing southwest.		 A photograph showing a wooden utility pole in the foreground, slightly to the right. The ground is dry, sandy, and covered with sparse, low-lying desert vegetation. In the background, another utility pole is visible on the horizon under a clear blue sky.

Photo No.	Date	
4	June 1, 2020	
View of release footprint west of the utility pole facing north.		 A photograph showing a wide view of a desert landscape. The ground is sandy and covered with sparse, low-lying vegetation. In the distance, a utility pole is visible on the horizon under a clear blue sky.



PHOTOGRAPHIC LOG

XTO Energy, Inc.	Row 4 Wolverine SWD Riser Eddy County, New Mexico	NRM2016460654
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Photo No.	Date	
5	June 1, 2020	
View of pooling area facing east.		 A photograph showing a dry, arid landscape with reddish-brown soil and sparse green shrubs. In the distance, a line of utility poles and a small building are visible against a clear blue sky.

Photo No.	Date	
6	June 1, 2020	
View of westernmost area of release, facing east.		 A photograph showing a wide, flat landscape with reddish-brown soil and sparse green shrubs. A single utility pole is visible in the distance on the right side, and a small building is visible on the left. The sky is clear and blue.



PHOTOGRAPHIC LOG

XTO Energy, Inc.	Row 4 Wolverine SWD Riser Eddy County, New Mexico	NRM2016460654
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Photo No.	Date	
7	September 28, 2020	
View of PH02 facing east.		 A yellow excavator is positioned in a desert environment, facing a large pile of reddish-brown soil. The excavator's arm is raised, and its bucket is near the soil. In the background, there are some utility poles and a white vehicle parked on a dirt road. The sky is blue with some clouds.

Photo No.	Date	
8	September 28, 2020	
View of PH06 facing southeast		 A close-up view of a deep excavation in the ground. The soil is reddish-brown and appears to be a mix of sand and clay. There are some dark, possibly organic, materials visible in the excavation. The edges of the excavation are uneven and show signs of being dug out.

**PHOTOGRAPHIC LOG**

XTO Energy, Inc.	Row 4 Wolverine SWD Riser Eddy County, New Mexico	NRM2016460654
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Photo No.	Date	
9	October 6, 2020	
View of PH08 at western release extent facing east		

Photo No.	Date	
10	October 6, 2020	
View PH09 and hydrovac spotting viewing north		

**PHOTOGRAPHIC LOG**

XTO Energy, Inc.	Row 4 Wolverine SWD Riser Eddy County, New Mexico	NRM2016460654
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Photo No.	Date	
11	October 6, 2020	
View of ROW riser and initial hydrovac area facing west.		 A wide-angle photograph of a construction site in a desert environment. In the foreground, there is a large area of disturbed earth with visible tire tracks. In the middle ground, several pieces of industrial equipment, including what appears to be a riser and hydrovac units, are positioned. A white pickup truck is parked on the left side. The background shows a flat landscape under a clear blue sky.

Photo No.	Date	
12	October 6, 2020	
View of ROW riser equipment facing northwest		 A photograph showing a close-up view of industrial equipment, specifically a riser, in a desert setting. The equipment consists of large pipes and valves. The ground is sandy and shows tire tracks. The background is a clear blue sky.



PHOTOGRAPHIC LOG

XTO Energy, Inc.	Row 4 Wolverine SWD Riser Eddy County, New Mexico	NRM2016460654
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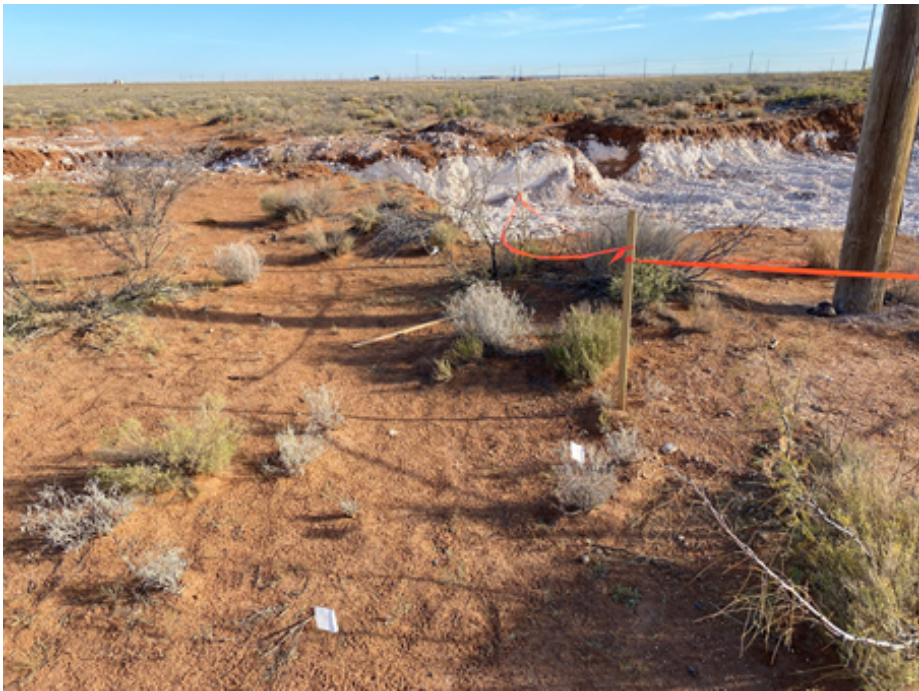
Photo No.	Date	
13	November 9, 2020	
View north-northeast of utility pole and healthy vegetation west of utility pole.		

Photo No.	Date	
14	November 9, 2020	
View east-northeast of utility pole and healthy vegetation west of utility pole.		

ATTACHMENT 2: REFERENCED WELL RECORDS

USGS 320857103553301 25S.30E.07.112331

Available data for this site

Well Site

DESCRIPTION:

Latitude 32°08'57", Longitude 103°55'33" NAD27

Eddy County, New Mexico , Hydrologic Unit 13060011

Well depth: 385 feet

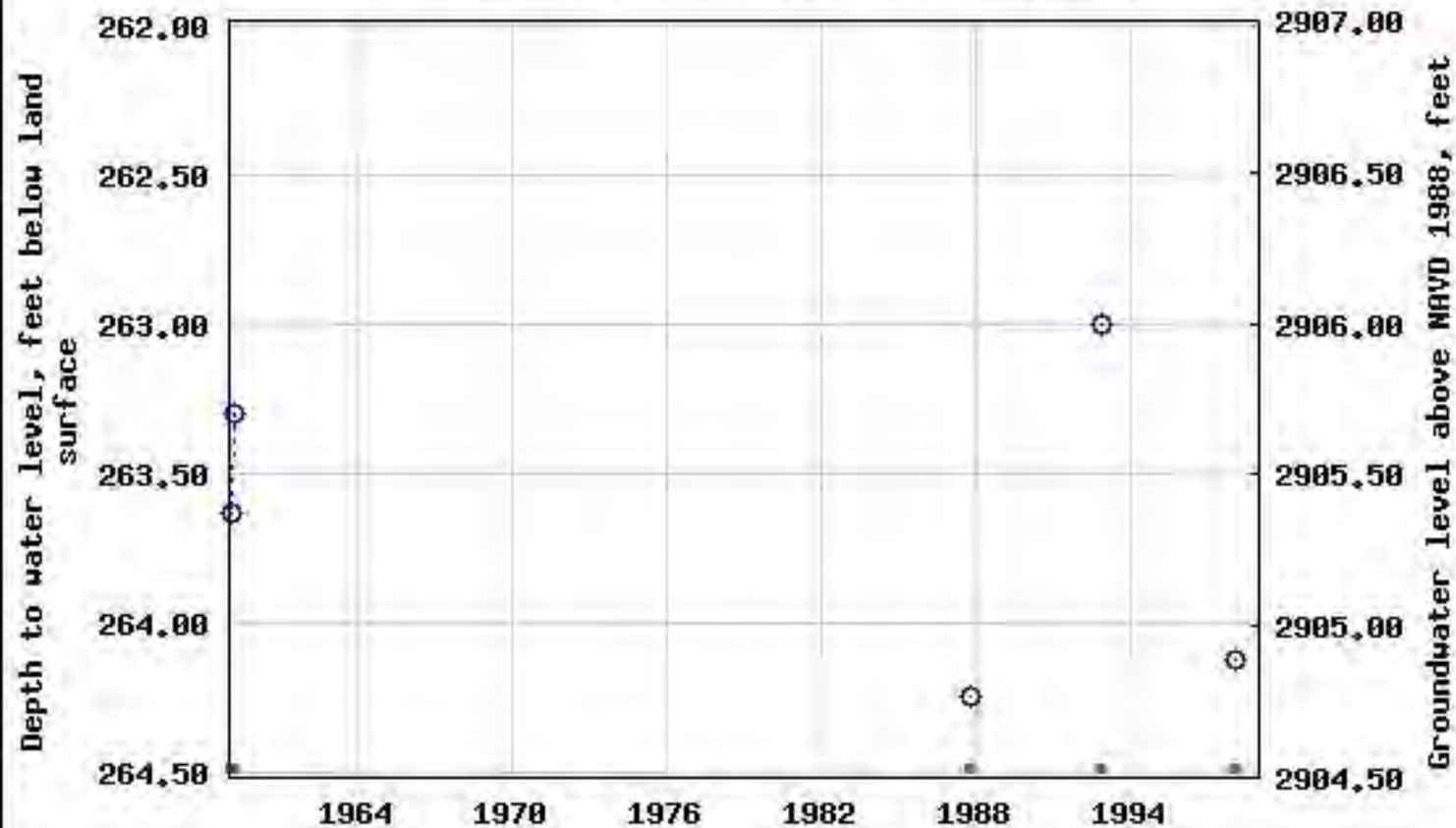
Land surface altitude: 3,169 feet above NAVD88.

Well completed in "Alluvium, Bolson Deposits and Other Surface Deposits"
(110AVMB) local aquifer

AVAILABLE DATA:

Data Type	Begin Date	End Date	Count
Field groundwater-level measurements	1959-02-05	1998-01-28	5
Revisions	Unavailable (site:0) (timeseries:0)		

USGS 320857103553301 25S.30E.07.112331



USGS 320628103533001 25S.30E.21.333424

Available data for this site

Well Site

DESCRIPTION:

Latitude 32°06'28", Longitude 103°53'30" NAD27

Eddy County, New Mexico , Hydrologic Unit 13060011

Well depth: 288 feet

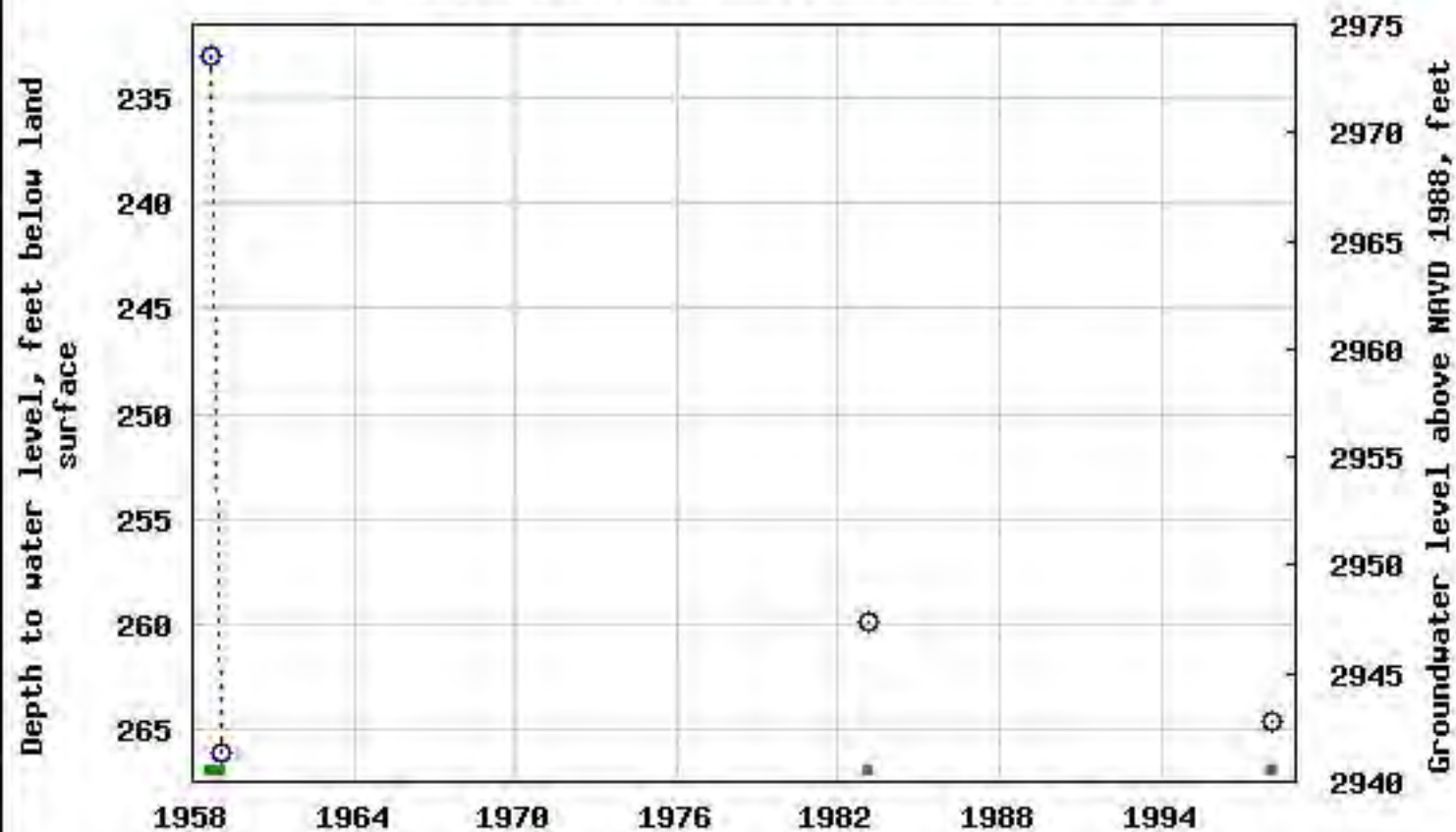
Land surface altitude: 3,207 feet above NAVD88.

Well completed in "Alluvium, Bolson Deposits and Other Surface Deposits"
(110AVMB) local aquifer

AVAILABLE DATA:

Data Type	Begin Date	End Date	Count
Field groundwater-level measurements	1958-08-21	1998-01-28	4
Revisions	Unavailable (site:0) (timeseries:0)		

USGS 320628103533001 25S.30E.21.333424



USGS 320739103584201 25S.29E.15.31134

Available data for this site

Well Site

DESCRIPTION:

Latitude 32°07'39", Longitude 103°58'42" NAD27

Eddy County, New Mexico , Hydrologic Unit 13060011

Well depth: 192 feet

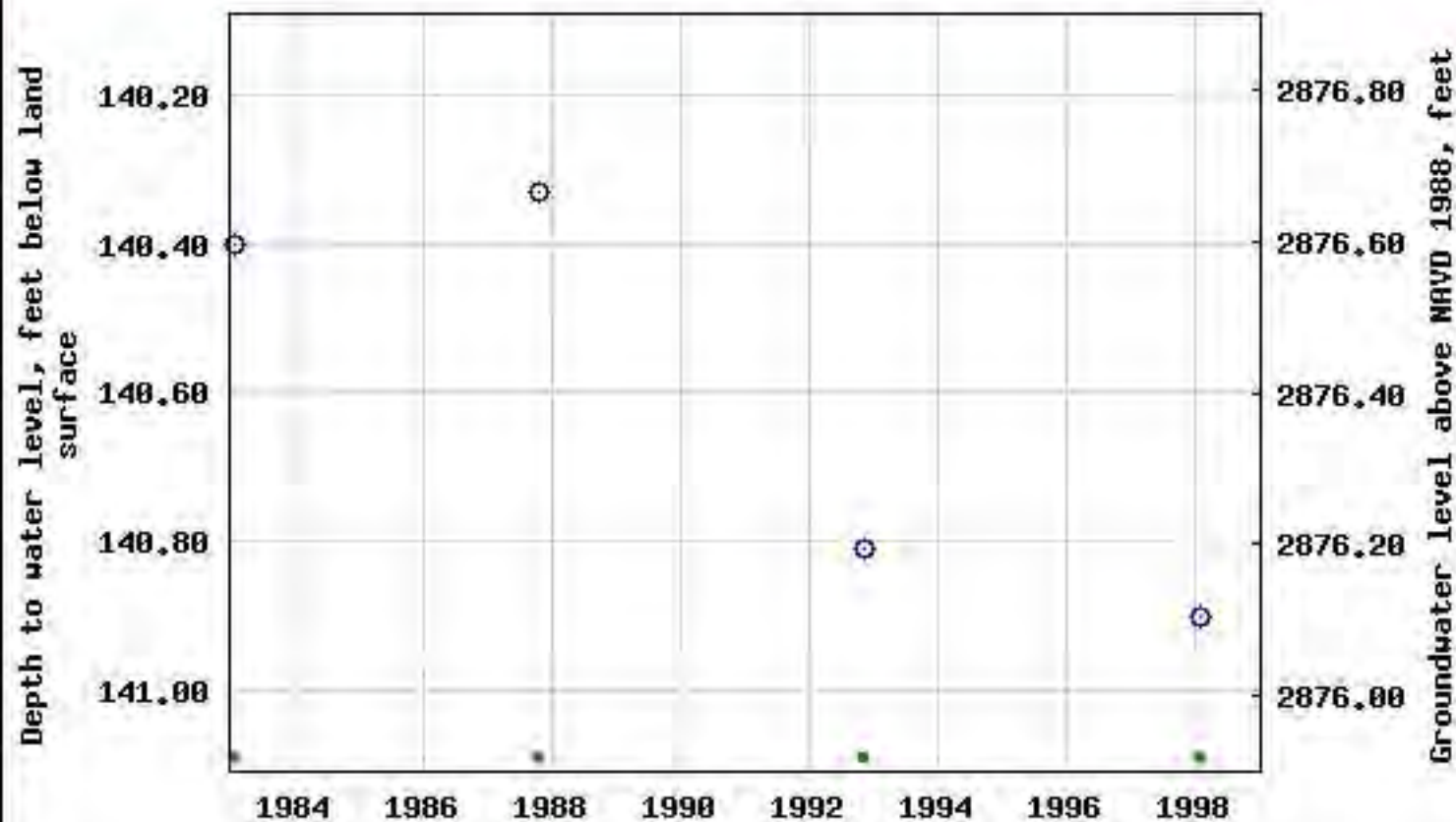
Land surface altitude: 3,017 feet above NAVD88.

Well completed in "Rustler Formation" (312RSLR) local aquifer

AVAILABLE DATA:

Data Type	Begin Date	End Date	Count
Field groundwater-level measurements	1983-02-01	1998-01-29	4
Revisions	Unavailable (site:0) (timeseries:0)		

USGS 320739103584201 25S.29E.15.31134





Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are smallest to largest)

(NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
C 03782	POD1	4	3	3	28	25S	30E	604526	3551444 

Driller License: 331**Driller Company:** SBQ2, LLC DBA STEWART BROTHERS DRILLING CO.**Driller Name:****Drill Start Date:** 01/16/2015**Drill Finish Date:** 01/17/2015**Plug Date:****Log File Date:** 02/19/2015**PCW Rcv Date:****Source:** Artesian**Pump Type:****Pipe Discharge Size:****Estimated Yield:****Casing Size:** 8.63**Depth Well:** 805 feet**Depth Water:** 277 feet**Water Bearing Stratifications:**

Top	Bottom	Description
260	320	Sandstone/Gravel/Conglomerate
320	380	Sandstone/Gravel/Conglomerate
380	410	Sandstone/Gravel/Conglomerate
410	530	Shale/Mudstone/Siltstone
530	590	Shale/Mudstone/Siltstone
590	600	Shale/Mudstone/Siltstone
600	630	Shale/Mudstone/Siltstone
630	650	Shale/Mudstone/Siltstone
650	700	Shale/Mudstone/Siltstone
700	710	Shale/Mudstone/Siltstone
710	760	Shale/Mudstone/Siltstone
760	770	Shale/Mudstone/Siltstone
770	780	Shale/Mudstone/Siltstone
780	790	Shale/Mudstone/Siltstone
790	805	Shale/Mudstone/Siltstone

Casing Perforations:

Top	Bottom
270	805



Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are smallest to largest)

(NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
C 03781	POD1	3	3	3	13	25S	30E	609306	3554761

Driller License: 331 **Driller Company:** SBQ2, LLC DBA STEWART BROTHERS DRILLING CO.

Driller Name:

Drill Start Date: 01/08/2015	Drill Finish Date: 01/10/2015	Plug Date:
Log File Date: 02/19/2015	PCW Rcv Date:	Source: Artesian
Pump Type:	Pipe Discharge Size:	Estimated Yield:
Casing Size: 8.63	Depth Well: 720 feet	Depth Water: 325 feet

Water Bearing Stratifications:

Top	Bottom	Description
200	370	Sandstone/Gravel/Conglomerate
370	390	Sandstone/Gravel/Conglomerate
390	410	Sandstone/Gravel/Conglomerate
410	440	Sandstone/Gravel/Conglomerate
440	460	Shale/Mudstone/Siltstone
460	470	Shale/Mudstone/Siltstone
470	490	Shale/Mudstone/Siltstone
490	500	Shale/Mudstone/Siltstone
500	510	Sandstone/Gravel/Conglomerate
510	530	Shale/Mudstone/Siltstone
530	660	Shale/Mudstone/Siltstone
660	690	Shale/Mudstone/Siltstone
690	700	Shale/Mudstone/Siltstone
700	720	Shale/Mudstone/Siltstone

Casing Perforations:

Top	Bottom
340	720



Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are smallest to largest)

(NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
C 03716	POD1	4	2	2	02	25S	30E	609069	3559211

Driller License: 1229 **Driller Company:** CARTER'S WELL DRILLING

Driller Name: RICHARD CARTER

Drill Start Date: 02/05/2014	Drill Finish Date: 03/03/2014	Plug Date:
Log File Date: 03/12/2014	PCW Rcv Date:	Source: Shallow
Pump Type:	Pipe Discharge Size:	Estimated Yield: 50 GPM
Casing Size:	Depth Well: 600 feet	Depth Water: 425 feet

Water Bearing Stratifications:	Top	Bottom	Description
	442	600	Sandstone/Gravel/Conglomerate

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

6/5/20 8:04 AM

POINT OF DIVERSION SUMMARY



WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION	OSE POD NO. (WELL NO.) POD 1		WELL TAG ID NO. NA		OSE FILE NO(S). C-04394			
	WELL OWNER NAME(S) XTO Energy, Inc.				PHONE (OPTIONAL) 432-221-7331			
	WELL OWNER MAILING ADDRESS 6401 Holiday Hill Road				CITY Midland	STATE TX	ZIP 79707	
	WELL LOCATION (FROM GPS)	DEGREES 32	MINUTES 06	SECONDS 46.68	N	* ACCURACY REQUIRED: ONE TENTH OF A SECOND		
		LONGITUDE 103	54	45.59	W	* DATUM REQUIRED: WGS 84		
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE Unit I Section 19, Township 25 South, Range 30 East, Eddy County, New Mexico								
2. DRILLING & CASING INFORMATION	LICENSE NO. 1664		NAME OF LICENSED DRILLER			NAME OF WELL DRILLING COMPANY Cascade Drilling		
	DRILLING STARTED 2/4/2020		DRILLING ENDED 2/5/2020		DEPTH OF COMPLETED WELL (FT) NA	BORE HOLE DEPTH (FT) 110	DEPTH WATER FIRST ENCOUNTERED (FT) NA	
	COMPLETED WELL IS: ☐ ARTESIAN ☒ DRY HOLE ☐ SHALLOW (UNCONFINED)					STATIC WATER LEVEL IN COMPLETED WELL (FT) NA		
	DRILLING FLUID: ☒ AIR ☐ MUD ADDITIVES - SPECIFY:							
	DRILLING METHOD: ☐ ROTARY ☐ HAMMER ☐ CABLE TOOL ☒ OTHER - SPECIFY: Sonic							
	DEPTH (feet bgl)		BORE HOLE DIAM (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
	FROM	TO						
	0	110	6.5	Soil Boring	NA	NA	NA	NA
3. ANNULAR MATERIAL	DEPTH (feet bgl)		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT		
	FROM	TO						

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

FILE NO.	POD NO.	TRN NO.
LOCATION	WELL TAG ID NO.	PAGE 1 OF 2

4. HYDROGEOLOGIC LOG OF WELL	DEPTH (feet bgl)		THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER- BEARING ZONES (gpm)
	FROM	TO				
	0	2.5	2.5	SAND, dry, well graded, coarse-fine grain, light brown-tan	Y ✓ N	
	2.5	6	3.5	SAND, dry, poorly graded, light brown-brown, fine-very fine grain	Y ✓ N	
	6	9	3	SAND, dry, poorly graded, light brown-brown, fine-very fine grain	Y ✓ N	
	9	12	3	SAND, dry, poorly graded, light brown-brown, fine-very fine grain, some moder	Y ✓ N	
	12	16	4	SAND, dry, poorly graded, light brown-brown, fine-very fine grain, sandstone gr	Y ✓ N	
	16	27.5	11.5	SAND, dry, poorly graded, light brown-brown, fine-very fine grain	Y ✓ N	
	27.5	36	8.5	SAND, dry, light brown-tan, poorly graded, fine-very fine	Y ✓ N	
	36	44.5	8.5	SAND, light brown-tan, poorly graded, fine-very fine, some red-brown clay pock	Y ✓ N	
	44.5	59.5	15	SILTY sand, light brown-tan, no plasticity, non cohesive, trace high plasticity rec	Y ✓ N	
	59.5	71	11.5	SILTY sand, light brown-brown, moist, no plasticity, non cohesive	Y ✓ N	
	71	82	11	SILTY sand, dry, no plasticity, non cohesive, light brown-tan	Y ✓ N	
	82	85	3	CLAYSTONE, moist, brown-green gray, low plasticity, cohesive	Y ✓ N	
	85	87	2	SILTY sand, dry, light brown-brown, no plasticity, non cohesive	Y ✓ N	
	87	95	8	SILTSTONE, dry, light brown-brown, clay pockets, low plasticity	Y ✓ N	
	95	101	6	CLAY, moist, brown-dark brown, high plasticity, cohesive, some tan clay lamina	Y ✓ N	
	101	105	4	SANDSTONE, tan-light brown, dry, moderately consolidated, calcareous cemen	Y ✓ N	
	105	110	5	CLAY, moist, dark brown-brown, high plasticity, cohesive, trace tan sand, lamin	Y ✓ N	
					Y N	
					Y N	
					Y N	
					Y N	
METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:					TOTAL ESTIMATED WELL YIELD (gpm):	
☐ PUMP ☐ AIR LIFT ☐ BAILER ☒ OTHER – SPECIFY: NA					0.00	

5. TEST; RIG SUPERVISION	WELL TEST	TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.
	MISCELLANEOUS INFORMATION: Soil boring backfilled with cuttings and hydrated bentonite chips. Log adapted from LTE on-site geologist.	
	PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE:	

6. SIGNATURE	BY SIGNING BELOW, I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED WELL. I ALSO CERTIFY THAT THE WELL TAG, IF REQUIRED, HAS BEEN INSTALLED AND THAT THIS WELL RECORD WILL ALSO BE FILED WITH THE PERMIT HOLDER WITHIN 30 DAYS AFTER THE COMPLETION OF WELL DRILLING.	
	SIGNATURE OF DRILLER / PRINT SIGNEE NAME	DATE

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/2019)

FILE NO.	POD NO.	TRN NO.
LOCATION	WELL TAG ID NO.	PAGE 2 OF 2

ATTACHMENT 3: LITHOLOGIC/SAMPLING LOG

 WSP USA 508 West Stevens Street Carlsbad, New Mexico 88220					BH or PH Name:		Date:	
					BH01		8/17/2020	
					Site Name: Row 4 Wolverine SWD Riser			
					RP or Incident Number: NRM2016460654			
					LTE Job Number:		12920091	
LITHOLOGIC / SOIL SAMPLING LOG					Logged By: Robert M.		Method: Hand Auger	
Lat/Long:			Field Screening:		Hole Diameter:		Total Depth:	
			Chloride, PID		3 inches		3 feet	
Comments:								
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithology/Remarks
						0		
D	6,137	2.6	N	BH01	1'	1	CCHE	Light Brown-tan. Trace brown sand, small grain, poorly sorted. No odor
D	9,206	2.1	N		2'	2	CHCE	Light Brown-tan. Trace brown sand, small grain, poorly sorted. No odor
D	7229	2.3	N	BH01A	3'	3	CCHE	Light Brown-tan. Trace brown sand, small grain, poorly sorted. No odor
					3.5'			Auger Refusal

 WSP USA 508 West Stevens Street Carlsbad, New Mexico 88220					BH or PH Name:		Date:	
					BH02		8/17/2020	
					Site Name: Row 4 Wolverine SWD Riser			
					RP or Incident Number: NRM2016460654			
					LTE Job Number:		12920091	
LITHOLOGIC / SOIL SAMPLING LOG					Logged By: Robert M.		Method: Hand Auger	
Lat/Long:			Field Screening:		Hole Diameter:		Total Depth:	
			Chloride, PID		3 inches		1 foot	
Comments:								
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithology/Remarks
M	3,450	0.6	N	BH02	1' 1.5'	0 1	SP-SM	Small, round grain. Brown. No odor Auger Refusal

 WSP USA 508 West Stevens Street Carlsbad, New Mexico 88220				BH or PH Name:		Date:			
				BH03		8/17/2020			
				Site Name: Row 4 Wolverine SWD Riser					
				RP or Incident Number: NRM2016460654					
LTE Job Number: 12920091									
LITHOLOGIC / SOIL SAMPLING LOG						Logged By: Robert M.		Method: Hand Auger	
Lat/Long:			Field Screening:			Hole Diameter:		Total Depth:	
			Chloride, PID			3 inches		2.5 feet	
Comments:									
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithology/Remarks	
M	2,980	0.6	N		1'	1	SP-SM	Small, round grain. Brown. No odor	
M	2,778	1.2	N	BH03	2'	2	SP-SM	Small, round grain. Brown. No odor	
M	2,425	1	N	BH03A	2.5'	2.5	SP-SM	Small, round grain. Brown. No odor	
						3		Auger Refusal	

 WSP USA 508 West Stevens Street Carlsbad, New Mexico 88220				BH or PH Name:		Date:			
				BH04		8/17/2020			
				Site Name: Row 4 Wolverine SWD Riser					
				RP or Incident Number: NRM2016460654					
LTE Job Number: 12920091									
LITHOLOGIC / SOIL SAMPLING LOG						Logged By: Robert M.		Method: Hand Auger	
Lat/Long:			Field Screening:			Hole Diameter:		Total Depth:	
			Chloride, PID			3 inches		1 foot	
Comments:									
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithology/Remarks	
M	1,993	0.4	N	BH04	1' 1.5'	0 1	SP-SM	Small, round grain. Brown. No odor Auger Refusal	

 WSP USA 508 West Stevens Street Carlsbad, New Mexico 88220					BH or PH Name:		Date:	
					BH05		8/17/2020	
					Site Name: Row 4 Wolverine SWD Riser			
					RP or Incident Number: NRM2016460654			
					LTE Job Number:		12920091	
LITHOLOGIC / SOIL SAMPLING LOG					Logged By: Robert M.		Method: Hand Auger	
Lat/Long:			Field Screening:		Hole Diameter:		Total Depth:	
			Chloride, PID		3 inches		3 feet	
Comments:								
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithology/Remarks
M	480	0.4	N		1'	0	SP-SM	Small, round grain. Brown. No odor
M	828	0.6	N	BH05	2'	2	SP-SM	Small, round grain. Brown. No odor. Trace caliche
M	520	0.8	N	BH05A	3'	3	SP-SM	Small, round grain. Brown. No odor. Trace caliche
						3.5		Auger Refusal

 WSP USA 508 West Stevens Street Carlsbad, New Mexico 88220					BH or PH Name:		Date:	
					BH06		8/17/2020	
					Site Name: Row 4 Wolverine SWD Riser			
					RP or Incident Number NRM2016460654			
					LTE Job Number:		12920091	
LITHOLOGIC / SOIL SAMPLING LOG					Logged By: Robert M.		Method: Hand Auger	
Lat/Long:			Field Screening:		Hole Diameter:		Total Depth:	
			Chloride, PID		3 inches		1 foot	
Comments:								
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithology/Remarks
M	1,238	1.2	N	BH06	1'	0 1 1.5	SP-SM	Small, round grain. Brown. No odor Auger Refusal

 WSP USA 508 West Stevens Street Carlsbad, New Mexico 88220					BH or PH Name:		Date:	
					BH07		8/17/2020	
					Site Name: Row 4 Wolverine SWD Riser			
					RP or Incident Number: NRM2016460654			
					LTE Job Number:		12920091	
LITHOLOGIC / SOIL SAMPLING LOG					Logged By: Robert M.		Method: Hand Auger	
Lat/Long:			Field Screening:		Hole Diameter:		Total Depth:	
			Chloride, PID		3 inches		1 foot	
Comments:								
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithology/Remarks
M	3,450	0.6	N	BH07	1'	0 1 1.5	SP-SM	Small, round grain. Brown. No odor Auger Refusal

 WSP USA 508 West Stevens Street Carlsbad, New Mexico 88220					BH or PH Name:		Date:	
					BH08		8/17/2020	
					Site Name: Row 4 Wolverine SWD Riser			
					RP or Incident Number: NRM2016460654			
					LTE Job Number:		12920091	
LITHOLOGIC / SOIL SAMPLING LOG					Logged By: Robert M.		Method: Hand Auger	
Lat/Long:			Field Screening:		Hole Diameter:		Total Depth:	
			Chloride, PID		3 inches		1 foot	
Comments:								
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithology/Remarks
M	3,450	0.8	N	BH08	1'	0 1 1.5	SP-SM	Small, round grain. Brown. No odor Auger Refusal

 WSP USA 508 West Stevens Street Carlsbad, New Mexico 88220					BH or PH Name:		Date:	
					PH01		9/28/2020	
					Site Name: Row 4 Wolverine SWD Riser			
					RP or Incident Number: NRM2016460654			
					LTE Job Number:		12920091	
LITHOLOGIC / SOIL SAMPLING LOG					Logged By: Robert M.		Method: Trackhoe	
Lat/Long:			Field Screening:		Hole Diameter:		Total Depth:	
			Chloride, PID		2 feet		4 feet	
Comments:								
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithology/Remarks
M	4,088	0.9	N	PH01	1'	1	SP-SM	Dark Brown, fine-very fine grain, poorly graded
D	2,218	0.1	N		2'	2	CHCE	Very well cemented, highly consolidated, trace fine grain brown sand, white/tan
D	180	0.1	N	PH01A	4'	4	CHCE	Moderately cemented, low-moderate consolidation, white/tan

 WSP USA 508 West Stevens Street Carlsbad, New Mexico 88220								BH or PH Name:		Date:	
								PH02		9/28/2020	
								Site Name: Row 4 Wolverine SWD Riser			
								RP or Incident Number: NRM2016460654			
LITHOLOGIC / SOIL SAMPLING LOG								LTE Job Number: 12920091			
Lat/Long:				Field Screening:		Hole Diameter:		Total Depth:			
				Chloride, PID		2 feet		12 feet			
Comments:											
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithology/Remarks			
						0					
M	2,279	0.3	N		1'	1	SP-SM	Dark brown, very fine-fine grain, poorly graded			
M	2,218	0.2	N		2'	2	SP-SM	SAA			
D	5,756	0.2	N		3'	3	CHCE	Well cemented, well consolidated, white/tan, fines - pebbles - cobbles			
						4					
D	7,330		N		5'	5	CHCE	low- moderate consolidation, white/tan, fine - cobble			
D	10,013		N	PH02	6'	6	CHCE	SAA			
D	7,330		N		7'	7	CHCE	SAA			
						8					
D	5,759		N		9'	9	CHCE	SAA			
D	4,088		N		10'	10	CHCE	SAA with more fine grain brown sand content			
						11					
D	347		N	PH02A	12'	12	CHCE	SSA			

 WSP USA 508 West Stevens Street Carlsbad, New Mexico 88220					BH or PH Name:		Date:	
					PH03		9/28/2020	
					Site Name: Row 4 Wolverine SWD Riser			
					RP or Incident Number: NRM2016460654			
					LTE Job Number:		12920091	
LITHOLOGIC / SOIL SAMPLING LOG					Logged By: Robert M.		Method: Trackhoe	
Lat/Long:			Field Screening:		Hole Diameter:		Total Depth:	
			Chloride, PID		2 feet		4 feet	
Comments:								
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithology/Remarks
M	3,735	0.4	N	PH03	1'	1	SP-SM	Brown, fine grain, poor grade
D	3,735	0.1	N	PH03A	2'	2	CHCE	Well cemented, well consolidated, white/tan, fines - pebbles - cobbles
D	347	0.2	N		3'	3	CHCE	low- moderate consolidation, white/tan, fine - cobble
D	128	0.1	N		4'	4	CHCE	SAA

 WSP USA 508 West Stevens Street Carlsbad, New Mexico 88220								BH or PH Name:		Date:	
								PH04		9/28/2020	
								Site Name: Row 4 Wolverine SWD Riser			
								RP or Incident Number: NRM2016460654			
LITHOLOGIC / SOIL SAMPLING LOG								LTE Job Number: 12920091			
Lat/Long:				Field Screening:		Hole Diameter:		Total Depth:			
				Chloride, PID		2 feet		6 feet			
Comments:											
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithology/Remarks			
M	2,044	1.2	N	PH04	1'	1'	SP-SM	Brown, fine grain, poor grade			
D	7,330	1.6	N		2'	2'	CHCE	Well cemented, well consolidated, white/tan, fines - pebbles - cobbles			
D	5757	0.4	N		3'	3'	CHCE	low- moderate consolidation, white/tan, fine - cobble			
D	7,330	0.1	N		4'	4'	CHCE	SAA			
D	580	0.1	N	PH04A	6'	6'	CHCE	SAA			

 WSP USA 508 West Stevens Street Carlsbad, New Mexico 88220					BH or PH Name:		Date:	
					PH05		9/28/2020	
					Site Name: Row 4 Wolverine SWD Riser			
					RP or Incident Number: NRM2016460654			
					LTE Job Number:		12920091	
LITHOLOGIC / SOIL SAMPLING LOG					Logged By: Robert M.		Method: Trackhoe	
Lat/Long:			Field Screening:		Hole Diameter:		Total Depth:	
			Chloride, PID		2 feet		4 feet	
Comments:								
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithology/Remarks
M	2,044	1.0	N	PH05	1'	1'	SP-SM	Brown, fine grain, poor grade
D	4,866	1.2	N		2'	2'	CHCE	Well cemented, well consolidated, white/tan, fines - pebbles - cobbles
D	1702	0.4	N		3'	3'	CHCE	low- moderate consolidation, white/tan, fine - cobble
D	212	0.1	N	PH05A	4'	4'	CHCE	SAA

 WSP USA 508 West Stevens Street Carlsbad, New Mexico 88220								BH or PH Name:		Date:	
								PH06		9/28/2020	
								Site Name: Row 4 Wolverine SWD Riser			
								RP or Incident Number: NRM2016460654			
LTE Job Number: 12920091											
LITHOLOGIC / SOIL SAMPLING LOG											
Lat/Long:				Field Screening:		Hole Diameter:		Total Depth:			
				Chloride, PID		2 feet		4 feet			
Comments:											
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithology/Remarks			
M	3,365	1.9	N	PH06	1'	1'	SP-SM	Brown, fine grain, poor grade			
D	3,365	0.4	N		2'	2'	CHCE	Well cemented, well consolidated, white/tan, fines - pebbles - cobbles			
D	350	0.2	N		3'	3'	CHCE	low- moderate consolidation, white/tan, fine - cobble			
D	128	0.3	N	PH06A	4'	4'	CHCE	SAA			

 WSP USA 508 West Stevens Street Carlsbad, New Mexico 88220					BH or PH Name:		Date:	
					PH07		9/28/2020	
					Site Name: Row 4 Wolverine SWD Riser			
					RP or Incident Number: NRM2016460654			
					LTE Job Number:		12920091	
LITHOLOGIC / SOIL SAMPLING LOG					Logged By: Robert M.		Method: Trackhoe	
Lat/Long:			Field Screening:		Hole Diameter:		Total Depth:	
			Chloride, PID		2 feet		4 feet	
Comments:								
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithology/Remarks
M	7,330	1.8	N	PH07	1'	1'	SP-SM	Brown, fine grain, poor grade
D	4,463	0.8	N		2'	2'	CHCE	Well cemented, well consolidated, white/tan, fines - pebbles - cobbles
D	1209	0.1	N		3'	3'	CHCE	low- moderate consolidation, white/tan, fine - cobble
D	212	0.2	N	PH07A	4'	4'	CHCE	SAA

 WSP USA 508 West Stevens Street Carlsbad, New Mexico 88220					BH or PH Name:		Date:	
					PH08		10/6/2020	
					Site Name: Row 4 Wolverine SWD Riser			
					RP or Incident Number: NRM2016460654			
					LTE Job Number:		12920091	
LITHOLOGIC / SOIL SAMPLING LOG					Logged By: Jeremy Hill		Method: Trackhoe	
Lat/Long:			Field Screening:		Hole Diameter:		Total Depth:	
			Chloride, PID		2 feet		4 feet	
Comments:								
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithology/Remarks
M	244	1.3	N	PH08	1'	1	SP-SM	Dark Brown, fine-very fine grain, poorly graded No odor, No plasticity, Organics. Red/Brown
D	928	1	N		2'	2	SP-SM	Dark Brown, fine-very fine grain, poorly graded No odor, No plasticity, Organics. Red/Brown
D	348	0.7	N		3'	3	CHCE	Very well cemented, highly consolidated, trace fine grain brown sand, white/tan
D	212	0.3	N	PH08A	4'	4	CHCE	Moderately cemented, low-moderate consolidation, white/tan

 WSP USA 508 West Stevens Street Carlsbad, New Mexico 88220					BH or PH Name:		Date:	
					PH09		10/6/2020	
					Site Name: Row 4 Wolverine SWD Riser			
					RP or Incident Number: NRM2016460654			
					LTE Job Number:		12920091	
LITHOLOGIC / SOIL SAMPLING LOG					Logged By: Jeremy Hill		Method: Trackhoe	
Lat/Long:			Field Screening:		Hole Diameter:		Total Depth:	
			Chloride, PID		2 feet		4 feet	
Comments:								
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithology/Remarks
M	2,584	0.4	N	PH09	1'	1	SP-SM	Dark Brown, fine-very fine grain, poorly graded
M	2,212	0.2	N		2'	2	SP-SM	No odor, No plasticity, Organics. Red/Brown
D	160	0.1	N		3'	3	CHCE	Dark Brown, fine-very fine grain, poorly graded
D	240	0.0	N	PH09A	4'	4	CHCE	No odor, No plasticity, Organics. Red/Brown
								Very well cemented, highly consolidated, trace fine grain brown sand, white/tan
								Moderately cemented, low-moderate consolidation, white/tan

ATTACHMENT 4: LABORATORY ANALYTICAL RESULTS



Certificate of Analysis Summary 663699

LT Environmental, Inc., Arvada, CO

Project Name: Wolverine SWD River

Project Id: 012920091

Contact: Kyle Littrell

Project Location:

Date Received in Lab: Mon 06.08.2020 11:00

Report Date: 06.09.2020 13:28

Project Manager: Jessica Kramer

Analysis Requested	Lab Id:	663699-001	663699-002	663699-003	663699-004	663699-005	663699-006
	Field Id:	SS01	SS02	SS03	SS04	SS05	SS06
	Depth:	6.5- ft	6.5- ft	6.5- ft	6.5- ft	6.5- ft	6.5- ft
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Sampled:	06.05.2020 13:20	06.05.2020 13:33	06.05.2020 13:42	06.05.2020 13:58	06.05.2020 14:22	06.05.2020 14:30
BTEX by EPA 8021B	Extracted:	06.08.2020 13:14	06.08.2020 13:14	06.08.2020 13:14	06.08.2020 13:14	06.08.2020 13:14	06.08.2020 13:14
	Analyzed:	06.08.2020 16:45	06.08.2020 17:05	06.08.2020 17:26	06.08.2020 17:46	06.08.2020 18:06	06.08.2020 18:27
	Units/RL:	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	<0.00200 0.00200	<0.00199 0.00199	<0.00198 0.00198	<0.00200 0.00200
Toluene		<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00199 0.00199	<0.00198 0.00198	<0.00200 0.00200
Ethylbenzene		<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00199 0.00199	<0.00198 0.00198	<0.00200 0.00200
m,p-Xylenes		<0.00399 0.00399	<0.00399 0.00399	<0.00401 0.00401	<0.00398 0.00398	<0.00396 0.00396	<0.00400 0.00400
o-Xylene		<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00199 0.00199	<0.00198 0.00198	<0.00200 0.00200
Total Xylenes		<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00199 0.00199	<0.00198 0.00198	<0.00200 0.00200
Total BTEX		<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00199 0.00199	<0.00198 0.00198	<0.00200 0.00200
Chloride by EPA 300	Extracted:	06.08.2020 17:00	06.08.2020 17:00	06.08.2020 17:00	06.08.2020 17:00	06.08.2020 17:00	06.08.2020 17:00
	Analyzed:	06.08.2020 18:22	06.08.2020 18:39	06.08.2020 18:45	06.08.2020 18:51	06.08.2020 18:56	06.08.2020 19:14
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		7430 99.0	186 9.92	83.1 9.92	5480 100	8600 100	7250 100
TPH by SW8015 Mod	Extracted:	06.08.2020 13:30	06.08.2020 13:30	06.08.2020 13:30	06.08.2020 13:30	06.08.2020 13:30	06.08.2020 13:30
	Analyzed:	06.08.2020 15:21	06.08.2020 14:19	06.08.2020 15:41	06.08.2020 16:02	06.08.2020 16:22	06.08.2020 16:43
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons (GRO)		<49.8 49.8	<49.8 49.8	<49.8 49.8	<49.9 49.9	<49.9 49.9	<50.2 50.2
Diesel Range Organics (DRO)		<49.8 49.8	<49.8 49.8	<49.8 49.8	<49.9 49.9	<49.9 49.9	<50.2 50.2
Motor Oil Range Hydrocarbons (MRO)		<49.8 49.8	<49.8 49.8	<49.8 49.8	<49.9 49.9	<49.9 49.9	<50.2 50.2
Total GRO-DRO		<49.8 49.8	<49.8 49.8	<49.8 49.8	<49.9 49.9	<49.9 49.9	<50.2 50.2
Total TPH		<49.8 49.8	<49.8 49.8	<49.8 49.8	<49.9 49.9	<49.9 49.9	<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 Analysis Summary 663699

LT Environmental, Inc., Arvada, CO

Project Name: Wolverine SWD River

Project Id: 012920091
Contact: Kyle Littrell
Project Location:

Date Received in Lab: Mon 06.08.2020 11:00
Report Date: 06.09.2020 13:28
Project Manager: Jessica Kramer

Analysis Requested	Lab Id:	663699-007	663699-008	663699-009			
	Field Id:	SS07	SS08	SS09			
	Depth:	6.5- ft	6.5- ft	6.5- ft			
	Matrix:	SOIL	SOIL	SOIL			
	Sampled:	06.05.2020 14:36	06.05.2020 14:42	06.05.2020 14:52			
BTEX by EPA 8021B	Extracted:	06.08.2020 13:14	06.08.2020 13:14	06.08.2020 13:14			
	Analyzed:	06.08.2020 18:47	06.08.2020 19:07	06.08.2020 19:28			
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL			
Benzene		<0.00199 0.00199	<0.00199 0.00199	<0.00198 0.00198			
Toluene		<0.00199 0.00199	<0.00199 0.00199	<0.00198 0.00198			
Ethylbenzene		<0.00199 0.00199	<0.00199 0.00199	<0.00198 0.00198			
m,p-Xylenes		<0.00398 0.00398	<0.00398 0.00398	<0.00396 0.00396			
o-Xylene		<0.00199 0.00199	<0.00199 0.00199	<0.00198 0.00198			
Total Xylenes		<0.00199 0.00199	<0.00199 0.00199	<0.00198 0.00198			
Total BTEX		<0.00199 0.00199	<0.00199 0.00199	<0.00198 0.00198			
Chloride by EPA 300	Extracted:	06.08.2020 17:00	06.08.2020 17:00	06.08.2020 17:00			
	Analyzed:	06.08.2020 19:20	06.08.2020 19:25	06.08.2020 19:31			
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL			
Chloride		5350 99.8	4770 99.8	5170 99.8			
TPH by SW8015 Mod	Extracted:	06.08.2020 13:30	06.08.2020 13:30	06.08.2020 13:30			
	Analyzed:	06.08.2020 17:03	06.08.2020 17:24	06.08.2020 17:45			
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL			
Gasoline Range Hydrocarbons (GRO)		<50.0 50.0	<50.0 50.0	<49.8 49.8			
Diesel Range Organics (DRO)		<50.0 50.0	<50.0 50.0	<49.8 49.8			
Motor Oil Range Hydrocarbons (MRO)		<50.0 50.0	<50.0 50.0	<49.8 49.8			
Total GRO-DRO		<50.0 50.0	<50.0 50.0	<49.8 49.8			
Total TPH		<50.0 50.0	<50.0 50.0	<49.8 49.8			

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



Analytical Report 663699

for

LT Environmental, Inc.

Project Manager: Kyle Littrell

Wolverine SWD River

012920091

06.09.2020

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 (20-035-0)

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

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-20-17)
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: TN102385): Texas (T104704534-20-7)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Tampa: Florida (E87429), North Carolina (483)



06.09.2020

Project Manager: **Kyle Littrell**

LT Environmental, Inc.

4600 W. 60th Avenue

Arvada, CO 80003

Reference: XENCO Report No(s): **663699**

Wolverine SWD River

Project Address:

Kyle Littrell:

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) 663699. 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. 663699 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 663699****LT Environmental, Inc., Arvada, CO**

Wolverine SWD River

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
SS01	S	06.05.2020 13:20	6.5 ft	663699-001
SS02	S	06.05.2020 13:33	6.5 ft	663699-002
SS03	S	06.05.2020 13:42	6.5 ft	663699-003
SS04	S	06.05.2020 13:58	6.5 ft	663699-004
SS05	S	06.05.2020 14:22	6.5 ft	663699-005
SS06	S	06.05.2020 14:30	6.5 ft	663699-006
SS07	S	06.05.2020 14:36	6.5 ft	663699-007
SS08	S	06.05.2020 14:42	6.5 ft	663699-008
SS09	S	06.05.2020 14:52	6.5 ft	663699-009



CASE NARRATIVE

Client Name: *LT Environmental, Inc.*

Project Name: *Wolverine SWD River*

Project ID: 012920091
Work Order Number(s): 663699

Report Date: 06.09.2020
Date Received: 06.08.2020

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None



Certificate of Analytical Results 663699

LT Environmental, Inc., Arvada, CO

Wolverine SWD River

Sample Id: **SS01** Matrix: Soil Date Received: 06.08.2020 11:00
 Lab Sample Id: 663699-001 Date Collected: 06.05.2020 13:20 Sample Depth: 6.5 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 06.08.2020 17:00 Basis: Wet Weight
 Seq Number: 3128315

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	7430	99.0	mg/kg	06.08.2020 18:22		10

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 06.08.2020 13:30 Basis: Wet Weight
 Seq Number: 3128299

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.8	49.8	mg/kg	06.08.2020 15:21	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.8	49.8	mg/kg	06.08.2020 15:21	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.8	49.8	mg/kg	06.08.2020 15:21	U	1
Total GRO-DRO	PHC628	<49.8	49.8	mg/kg	06.08.2020 15:21	U	1
Total TPH	PHC635	<49.8	49.8	mg/kg	06.08.2020 15:21	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	92	%	70-135	06.08.2020 15:21	
o-Terphenyl	84-15-1	87	%	70-135	06.08.2020 15:21	



Certificate of Analytical Results 663699

LT Environmental, Inc., Arvada, CO

Wolverine SWD River

Sample Id: **SS01**
Lab Sample Id: 663699-001

Matrix: Soil
Date Collected: 06.05.2020 13:20

Date Received: 06.08.2020 11:00
Sample Depth: 6.5 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 06.08.2020 13:14

Basis: Wet Weight

Seq Number: 3128312

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	06.08.2020 16:45	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	06.08.2020 16:45	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	06.08.2020 16:45	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	06.08.2020 16:45	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	06.08.2020 16:45	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	06.08.2020 16:45	U	1
Total BTEX		<0.00200	0.00200	mg/kg	06.08.2020 16:45	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	97	%	70-130	06.08.2020 16:45	
1,4-Difluorobenzene	540-36-3	110	%	70-130	06.08.2020 16:45	



Certificate of Analytical Results 663699

LT Environmental, Inc., Arvada, CO

Wolverine SWD River

Sample Id: **SS02** Matrix: **Soil** Date Received: 06.08.2020 11:00
 Lab Sample Id: 663699-002 Date Collected: 06.05.2020 13:33 Sample Depth: 6.5 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: **MAB** % Moisture:
 Analyst: **MAB** Date Prep: 06.08.2020 17:00 Basis: **Wet Weight**
 Seq Number: 3128315

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	186	9.92	mg/kg	06.08.2020 18:39		1

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: **DTH** % Moisture:
 Analyst: **DTH** Date Prep: 06.08.2020 13:30 Basis: **Wet Weight**
 Seq Number: 3128299

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.8	49.8	mg/kg	06.08.2020 14:19	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.8	49.8	mg/kg	06.08.2020 14:19	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.8	49.8	mg/kg	06.08.2020 14:19	U	1
Total GRO-DRO	PHC628	<49.8	49.8	mg/kg	06.08.2020 14:19	U	1
Total TPH	PHC635	<49.8	49.8	mg/kg	06.08.2020 14:19	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	88	%	70-135	06.08.2020 14:19	
o-Terphenyl	84-15-1	85	%	70-135	06.08.2020 14:19	



Certificate of Analytical Results 663699

LT Environmental, Inc., Arvada, CO

Wolverine SWD River

Sample Id: SS02
Lab Sample Id: 663699-002

Matrix: Soil
Date Collected: 06.05.2020 13:33

Date Received: 06.08.2020 11:00
Sample Depth: 6.5 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 06.08.2020 13:14

Basis: Wet Weight

Seq Number: 3128312

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	06.08.2020 17:05	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	06.08.2020 17:05	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	06.08.2020 17:05	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	06.08.2020 17:05	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	06.08.2020 17:05	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	06.08.2020 17:05	U	1
Total BTEX		<0.00200	0.00200	mg/kg	06.08.2020 17:05	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	106	%	70-130	06.08.2020 17:05	
4-Bromofluorobenzene	460-00-4	96	%	70-130	06.08.2020 17:05	



Certificate of Analytical Results 663699

LT Environmental, Inc., Arvada, CO

Wolverine SWD River

Sample Id: **SS03** Matrix: Soil Date Received: 06.08.2020 11:00
 Lab Sample Id: 663699-003 Date Collected: 06.05.2020 13:42 Sample Depth: 6.5 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 06.08.2020 17:00 Basis: Wet Weight
 Seq Number: 3128315

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	83.1	9.92	mg/kg	06.08.2020 18:45		1

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 06.08.2020 13:30 Basis: Wet Weight
 Seq Number: 3128299

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.8	49.8	mg/kg	06.08.2020 15:41	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.8	49.8	mg/kg	06.08.2020 15:41	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.8	49.8	mg/kg	06.08.2020 15:41	U	1
Total GRO-DRO	PHC628	<49.8	49.8	mg/kg	06.08.2020 15:41	U	1
Total TPH	PHC635	<49.8	49.8	mg/kg	06.08.2020 15:41	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	89	%	70-135	06.08.2020 15:41	
o-Terphenyl	84-15-1	89	%	70-135	06.08.2020 15:41	



Certificate of Analytical Results 663699

LT Environmental, Inc., Arvada, CO

Wolverine SWD River

Sample Id: **SS03**
 Lab Sample Id: 663699-003

Matrix: Soil
 Date Collected: 06.05.2020 13:42

Date Received: 06.08.2020 11:00
 Sample Depth: 6.5 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 06.08.2020 13:14

Basis: Wet Weight

Seq Number: 3128312

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	06.08.2020 17:26	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	06.08.2020 17:26	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	06.08.2020 17:26	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	06.08.2020 17:26	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	06.08.2020 17:26	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	06.08.2020 17:26	U	1
Total BTEX		<0.00200	0.00200	mg/kg	06.08.2020 17:26	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	109	%	70-130	06.08.2020 17:26	
4-Bromofluorobenzene	460-00-4	98	%	70-130	06.08.2020 17:26	



Certificate of Analytical Results 663699

LT Environmental, Inc., Arvada, CO

Wolverine SWD River

Sample Id: **SS04** Matrix: Soil Date Received: 06.08.2020 11:00
 Lab Sample Id: 663699-004 Date Collected: 06.05.2020 13:58 Sample Depth: 6.5 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 06.08.2020 17:00 Basis: Wet Weight
 Seq Number: 3128315

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	5480	100	mg/kg	06.08.2020 18:51		10

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 06.08.2020 13:30 Basis: Wet Weight
 Seq Number: 3128299

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	06.08.2020 16:02	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	06.08.2020 16:02	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	06.08.2020 16:02	U	1
Total GRO-DRO	PHC628	<49.9	49.9	mg/kg	06.08.2020 16:02	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	06.08.2020 16:02	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	92	%	70-135	06.08.2020 16:02	
o-Terphenyl	84-15-1	88	%	70-135	06.08.2020 16:02	



Certificate of Analytical Results 663699

LT Environmental, Inc., Arvada, CO

Wolverine SWD River

Sample Id: **SS04**
Lab Sample Id: 663699-004

Matrix: Soil
Date Collected: 06.05.2020 13:58

Date Received: 06.08.2020 11:00
Sample Depth: 6.5 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 06.08.2020 13:14

Basis: Wet Weight

Seq Number: 3128312

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	06.08.2020 17:46	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	06.08.2020 17:46	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	06.08.2020 17:46	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	06.08.2020 17:46	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	06.08.2020 17:46	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	06.08.2020 17:46	U	1
Total BTEX		<0.00199	0.00199	mg/kg	06.08.2020 17:46	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	111	%	70-130	06.08.2020 17:46		
4-Bromofluorobenzene	460-00-4	101	%	70-130	06.08.2020 17:46		



Certificate of Analytical Results 663699

LT Environmental, Inc., Arvada, CO

Wolverine SWD River

Sample Id: SS05 Matrix: Soil Date Received: 06.08.2020 11:00
 Lab Sample Id: 663699-005 Date Collected: 06.05.2020 14:22 Sample Depth: 6.5 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 06.08.2020 17:00 Basis: Wet Weight
 Seq Number: 3128315

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	8600	100	mg/kg	06.08.2020 18:56		10

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 06.08.2020 13:30 Basis: Wet Weight
 Seq Number: 3128299

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	06.08.2020 16:22	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	06.08.2020 16:22	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	06.08.2020 16:22	U	1
Total GRO-DRO	PHC628	<49.9	49.9	mg/kg	06.08.2020 16:22	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	06.08.2020 16:22	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	89	%	70-135	06.08.2020 16:22	
o-Terphenyl	84-15-1	87	%	70-135	06.08.2020 16:22	



Certificate of Analytical Results 663699

LT Environmental, Inc., Arvada, CO

Wolverine SWD River

Sample Id: SS05
Lab Sample Id: 663699-005

Matrix: Soil
Date Collected: 06.05.2020 14:22

Date Received: 06.08.2020 11:00
Sample Depth: 6.5 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 06.08.2020 13:14

Basis: Wet Weight

Seq Number: 3128312

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	06.08.2020 18:06	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	06.08.2020 18:06	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	06.08.2020 18:06	U	1
m,p-Xylenes	179601-23-1	<0.00396	0.00396	mg/kg	06.08.2020 18:06	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	06.08.2020 18:06	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	06.08.2020 18:06	U	1
Total BTEX		<0.00198	0.00198	mg/kg	06.08.2020 18:06	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	105	%	70-130	06.08.2020 18:06	
4-Bromofluorobenzene	460-00-4	93	%	70-130	06.08.2020 18:06	



Certificate of Analytical Results 663699

LT Environmental, Inc., Arvada, CO

Wolverine SWD River

Sample Id: **SS06** Matrix: Soil Date Received: 06.08.2020 11:00
 Lab Sample Id: 663699-006 Date Collected: 06.05.2020 14:30 Sample Depth: 6.5 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 06.08.2020 17:00 Basis: Wet Weight
 Seq Number: 3128315

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	7250	100	mg/kg	06.08.2020 19:14		10

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 06.08.2020 13:30 Basis: Wet Weight
 Seq Number: 3128299

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.2	50.2	mg/kg	06.08.2020 16:43	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.2	50.2	mg/kg	06.08.2020 16:43	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.2	50.2	mg/kg	06.08.2020 16:43	U	1
Total GRO-DRO	PHC628	<50.2	50.2	mg/kg	06.08.2020 16:43	U	1
Total TPH	PHC635	<50.2	50.2	mg/kg	06.08.2020 16:43	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	90	%	70-135	06.08.2020 16:43	
o-Terphenyl	84-15-1	86	%	70-135	06.08.2020 16:43	



Certificate of Analytical Results 663699

LT Environmental, Inc., Arvada, CO

Wolverine SWD River

Sample Id: **SS06**
Lab Sample Id: 663699-006

Matrix: Soil
Date Collected: 06.05.2020 14:30

Date Received: 06.08.2020 11:00
Sample Depth: 6.5 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 06.08.2020 13:14

Basis: Wet Weight

Seq Number: 3128312

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	06.08.2020 18:27	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	06.08.2020 18:27	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	06.08.2020 18:27	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/kg	06.08.2020 18:27	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	06.08.2020 18:27	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	06.08.2020 18:27	U	1
Total BTEX		<0.00200	0.00200	mg/kg	06.08.2020 18:27	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	95	%	70-130	06.08.2020 18:27	
1,4-Difluorobenzene	540-36-3	109	%	70-130	06.08.2020 18:27	



Certificate of Analytical Results 663699

LT Environmental, Inc., Arvada, CO

Wolverine SWD River

Sample Id: SS07 Matrix: Soil Date Received: 06.08.2020 11:00
 Lab Sample Id: 663699-007 Date Collected: 06.05.2020 14:36 Sample Depth: 6.5 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 06.08.2020 17:00 Basis: Wet Weight
 Seq Number: 3128315

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	5350	99.8	mg/kg	06.08.2020 19:20		10

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 06.08.2020 13:30 Basis: Wet Weight
 Seq Number: 3128299

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	06.08.2020 17:03	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	06.08.2020 17:03	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	06.08.2020 17:03	U	1
Total GRO-DRO	PHC628	<50.0	50.0	mg/kg	06.08.2020 17:03	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	06.08.2020 17:03	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	93	%	70-135	06.08.2020 17:03	
o-Terphenyl	84-15-1	87	%	70-135	06.08.2020 17:03	



Certificate of Analytical Results 663699

LT Environmental, Inc., Arvada, CO

Wolverine SWD River

Sample Id: SS07
Lab Sample Id: 663699-007

Matrix: Soil
Date Collected: 06.05.2020 14:36

Date Received: 06.08.2020 11:00
Sample Depth: 6.5 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 06.08.2020 13:14

Basis: Wet Weight

Seq Number: 3128312

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	06.08.2020 18:47	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	06.08.2020 18:47	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	06.08.2020 18:47	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	06.08.2020 18:47	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	06.08.2020 18:47	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	06.08.2020 18:47	U	1
Total BTEX		<0.00199	0.00199	mg/kg	06.08.2020 18:47	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	98	%	70-130	06.08.2020 18:47	
1,4-Difluorobenzene	540-36-3	112	%	70-130	06.08.2020 18:47	



Certificate of Analytical Results 663699

LT Environmental, Inc., Arvada, CO

Wolverine SWD River

Sample Id: **SS08** Matrix: Soil Date Received: 06.08.2020 11:00
 Lab Sample Id: 663699-008 Date Collected: 06.05.2020 14:42 Sample Depth: 6.5 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 06.08.2020 17:00 Basis: Wet Weight
 Seq Number: 3128315

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	4770	99.8	mg/kg	06.08.2020 19:25		10

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 06.08.2020 13:30 Basis: Wet Weight
 Seq Number: 3128299

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	06.08.2020 17:24	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	06.08.2020 17:24	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	06.08.2020 17:24	U	1
Total GRO-DRO	PHC628	<50.0	50.0	mg/kg	06.08.2020 17:24	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	06.08.2020 17:24	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	91	%	70-135	06.08.2020 17:24	
o-Terphenyl	84-15-1	86	%	70-135	06.08.2020 17:24	



Certificate of Analytical Results 663699

LT Environmental, Inc., Arvada, CO

Wolverine SWD River

Sample Id: **SS08**
 Lab Sample Id: 663699-008

Matrix: Soil
 Date Collected: 06.05.2020 14:42

Date Received: 06.08.2020 11:00
 Sample Depth: 6.5 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 06.08.2020 13:14

Basis: Wet Weight

Seq Number: 3128312

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	06.08.2020 19:07	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	06.08.2020 19:07	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	06.08.2020 19:07	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	06.08.2020 19:07	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	06.08.2020 19:07	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	06.08.2020 19:07	U	1
Total BTEX		<0.00199	0.00199	mg/kg	06.08.2020 19:07	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	96	%	70-130	06.08.2020 19:07		
1,4-Difluorobenzene	540-36-3	110	%	70-130	06.08.2020 19:07		



Certificate of Analytical Results 663699

LT Environmental, Inc., Arvada, CO

Wolverine SWD River

Sample Id: **SS09** Matrix: Soil Date Received: 06.08.2020 11:00
 Lab Sample Id: 663699-009 Date Collected: 06.05.2020 14:52 Sample Depth: 6.5 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 06.08.2020 17:00 Basis: Wet Weight
 Seq Number: 3128315

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	5170	99.8	mg/kg	06.08.2020 19:31		10

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 06.08.2020 13:30 Basis: Wet Weight
 Seq Number: 3128299

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.8	49.8	mg/kg	06.08.2020 17:45	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.8	49.8	mg/kg	06.08.2020 17:45	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.8	49.8	mg/kg	06.08.2020 17:45	U	1
Total GRO-DRO	PHC628	<49.8	49.8	mg/kg	06.08.2020 17:45	U	1
Total TPH	PHC635	<49.8	49.8	mg/kg	06.08.2020 17:45	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	91	%	70-135	06.08.2020 17:45	
o-Terphenyl	84-15-1	87	%	70-135	06.08.2020 17:45	



Certificate of Analytical Results 663699

LT Environmental, Inc., Arvada, CO

Wolverine SWD River

Sample Id: **SS09**
Lab Sample Id: 663699-009

Matrix: Soil
Date Collected: 06.05.2020 14:52

Date Received: 06.08.2020 11:00
Sample Depth: 6.5 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 06.08.2020 13:14

Basis: Wet Weight

Seq Number: 3128312

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	06.08.2020 19:28	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	06.08.2020 19:28	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	06.08.2020 19:28	U	1
m,p-Xylenes	179601-23-1	<0.00396	0.00396	mg/kg	06.08.2020 19:28	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	06.08.2020 19:28	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	06.08.2020 19:28	U	1
Total BTEX		<0.00198	0.00198	mg/kg	06.08.2020 19:28	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	98	%	70-130	06.08.2020 19:28		
1,4-Difluorobenzene	540-36-3	110	%	70-130	06.08.2020 19:28		



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.
Wolverine SWD River

Analytical Method: Chloride by EPA 300

Seq Number: 3128315

MB Sample Id: 7705029-1-BLK

Matrix: Solid

LCS Sample Id: 7705029-1-BKS

Prep Method: E300P

Date Prep: 06.08.2020

LCSD Sample Id: 7705029-1-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	252	101	253	101	90-110	0	20	mg/kg	06.08.2020 18:10	

Analytical Method: Chloride by EPA 300

Seq Number: 3128315

Parent Sample Id: 663699-001

Matrix: Soil

MS Sample Id: 663699-001 S

Prep Method: E300P

Date Prep: 06.08.2020

MSD Sample Id: 663699-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	7430	202	7620	94	7630	99	90-110	0	20	mg/kg	06.08.2020 18:27	

Analytical Method: Chloride by EPA 300

Seq Number: 3128315

Parent Sample Id: 663704-002

Matrix: Soil

MS Sample Id: 663704-002 S

Prep Method: E300P

Date Prep: 06.08.2020

MSD Sample Id: 663704-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	13.1	200	201	94	200	94	90-110	0	20	mg/kg	06.08.2020 19:48	

Analytical Method: TPH by SW8015 Mod

Seq Number: 3128299

MB Sample Id: 7704998-1-BLK

Matrix: Solid

LCS Sample Id: 7704998-1-BKS

Prep Method: SW8015P

Date Prep: 06.08.2020

LCSD Sample Id: 7704998-1-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	1000	100	1010	101	70-135	1	35	mg/kg	06.08.2020 13:38	
Diesel Range Organics (DRO)	<50.0	1000	1010	101	1010	101	70-135	0	35	mg/kg	06.08.2020 13:38	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	93		109		107		70-135	%	06.08.2020 13:38
o-Terphenyl	90		95		93		70-135	%	06.08.2020 13:38

Analytical Method: TPH by SW8015 Mod

Seq Number: 3128299

Matrix: Solid

MB Sample Id: 7704998-1-BLK

Prep Method: SW8015P

Date Prep: 06.08.2020

Parameter	MB Result	Units	Analysis Date	Flag
Motor Oil Range Hydrocarbons (MRO)	<50.0	mg/kg	06.08.2020 13:17	

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.
Wolverine SWD River

Analytical Method: TPH by SW8015 Mod

Seq Number: 3128299

Parent Sample Id: 663699-002

Matrix: Soil

MS Sample Id: 663699-002 S

Prep Method: SW8015P

Date Prep: 06.08.2020

MSD Sample Id: 663699-002 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	1000	1090	109	997	100	70-135	9	35	mg/kg	06.08.2020 14:39	
Diesel Range Organics (DRO)	<50.0	1000	1090	109	1010	101	70-135	8	35	mg/kg	06.08.2020 14:39	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	119		107		70-135	%	06.08.2020 14:39
o-Terphenyl	102		95		70-135	%	06.08.2020 14:39

Analytical Method: BTEX by EPA 8021B

Seq Number: 3128312

MB Sample Id: 7705033-1-BLK

Matrix: Solid

LCS Sample Id: 7705033-1-BKS

Prep Method: SW5035A

Date Prep: 06.08.2020

LCSD Sample Id: 7705033-1-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	0.111	111	0.110	110	70-130	1	35	mg/kg	06.08.2020 15:03	
Toluene	<0.00200	0.100	0.107	107	0.105	105	70-130	2	35	mg/kg	06.08.2020 15:03	
Ethylbenzene	<0.00200	0.100	0.100	100	0.0982	98	71-129	2	35	mg/kg	06.08.2020 15:03	
m,p-Xylenes	<0.00400	0.200	0.208	104	0.203	102	70-135	2	35	mg/kg	06.08.2020 15:03	
o-Xylene	<0.00200	0.100	0.105	105	0.103	103	71-133	2	35	mg/kg	06.08.2020 15:03	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	108		110		107		70-130	%	06.08.2020 15:03
4-Bromofluorobenzene	94		97		93		70-130	%	06.08.2020 15:03

Analytical Method: BTEX by EPA 8021B

Seq Number: 3128312

Parent Sample Id: 663699-001

Matrix: Soil

MS Sample Id: 663699-001 S

Prep Method: SW5035A

Date Prep: 06.08.2020

MSD Sample Id: 663699-001 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	0.116	116	0.121	122	70-130	4	35	mg/kg	06.08.2020 15:44	
Toluene	<0.00199	0.0996	0.112	112	0.117	118	70-130	4	35	mg/kg	06.08.2020 15:44	
Ethylbenzene	<0.00199	0.0996	0.105	105	0.108	109	71-129	3	35	mg/kg	06.08.2020 15:44	
m,p-Xylenes	<0.00398	0.199	0.218	110	0.225	114	70-135	3	35	mg/kg	06.08.2020 15:44	
o-Xylene	<0.00199	0.0996	0.109	109	0.112	113	71-133	3	35	mg/kg	06.08.2020 15:44	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	108		109		70-130	%	06.08.2020 15:44
4-Bromofluorobenzene	97		98		70-130	%	06.08.2020 15:44

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: 663699

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:	Dan Moir	Bill to: (if different)	Kyle Littlell
Company Name:	LT Environmental, Inc., Permian office	Company Name:	XTO Energy
Address:	3300 North A Street	Address:	3104 E Green Street
City, State ZIP:	Midland, TX 79705	City, State ZIP:	Carlsbad, NM 88220
Phone:	432.236.3849	Email:	lidelval@ltenv.com

Project Name:	Wolverine SMD Riser	Turn Around	Routine ☐
Project Number:	618920042	Rush:	48 hr
P.O. Number:		Due Date:	
Sampler's Name:	Benjamin Beilitt Luns Del Val		

SAMPLE RECEIPT		Temp Blank:	Yes ☐ No ☒	Wet Ice:	Yes ☐ No ☒
Temperature (°C):	3.2	Thermometer ID	TMM007		
Received Intact:	Yes ☒ No ☐	Correction Factor:	-0.2		
Cooler Custody Seals:	Yes ☒ No ☐	Total Containers:	9		
Sample Custody Seals:	Yes ☐ No ☒				

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers	TPH (EPA 8015)	BTEX (EPA 0=8021)	Chloride (EPA 300.0)	ANALYSIS REQUEST	Work Order Notes
SS01	S	6/15/20	1320	6.5'	1	X	X	X		
SS02			1333							
SS03			1342							
SS04			1352							
SS05			1422							
SS06			1430							
SS07			1436							
SS08			1442							
SS09			1452							

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 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 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
del Val	Witt 4/4	6/18/20 4:00 PM	Witt 4/4	Witt 4/4	6/18/20 11:00

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: LT Environmental, Inc.

Date/ Time Received: 06.08.2020 11.00.00 AM

Work Order #: 663699

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
#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

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

Analyst:

PH Device/Lot#:

Checklist completed by:



Martha Castro

Date: 06.08.2020

Checklist reviewed by:



Jessica Kramer

Date: 06.08.2020

Certificate of Analysis Summary 670249



LT Environmental, Inc., Arvada, CO

Project Name: ROW 4 Wolverine SWD Riser

Project Id: 012920091

Date Received in Lab: Tue 08.18.2020 09:14

Contact: Dan Moir

Report Date: 08.21.2020 17:44

Project Location:

Project Manager: Jessica Kramer

<i>Analysis Requested</i>	<i>Lab Id:</i>	670249-001	670249-002	670249-003	670249-004	670249-005	670249-006
	<i>Field Id:</i>	BH01	BH01A	BH02	BH03	BH03A	BH04
	<i>Depth:</i>	1-	3-	1-	2-	2.5-	1-
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	08.17.2020 09:54	08.17.2020 10:04	08.17.2020 11:35	08.17.2020 11:47	08.17.2020 11:49	08.17.2020 12:40
BTEX by EPA 8021B	<i>Extracted:</i>	08.18.2020 11:51	08.18.2020 11:51	08.18.2020 11:51	08.18.2020 11:51	08.18.2020 11:51	08.18.2020 11:51
	<i>Analyzed:</i>	08.18.2020 16:10	08.18.2020 16:33	08.18.2020 16:55	08.18.2020 17:18	08.18.2020 17:40	08.18.2020 18:03
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00199 0.00199	<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00201 0.00201	<0.00201 0.00201
Toluene		<0.00199 0.00199	<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00201 0.00201	<0.00201 0.00201
Ethylbenzene		<0.00199 0.00199	<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00201 0.00201	<0.00201 0.00201
m,p-Xylenes		<0.00398 0.00398	<0.00400 0.00400	<0.00399 0.00399	<0.00401 0.00401	<0.00402 0.00402	<0.00402 0.00402
o-Xylene		<0.00199 0.00199	<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00201 0.00201	<0.00201 0.00201
Total Xylenes		<0.00199 0.00199	<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00201 0.00201	<0.00201 0.00201
Total BTEX		<0.00199 0.00199	<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00201 0.00201	<0.00201 0.00201
Chloride by EPA 300	<i>Extracted:</i>	08.18.2020 12:39	08.18.2020 12:39	08.18.2020 12:39	08.18.2020 12:39	08.18.2020 12:48	08.18.2020 12:48
	<i>Analyzed:</i>	08.18.2020 14:37	08.18.2020 14:43	08.18.2020 14:48	08.18.2020 14:54	08.18.2020 15:27	08.18.2020 15:44
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		4490 49.9	4500 50.0	2820 50.2	2120 49.9	1420 50.0	3160 50.0
TPH by SW8015 Mod	<i>Extracted:</i>	08.18.2020 09:50	08.18.2020 09:50	08.18.2020 09:50	08.18.2020 09:50	08.18.2020 09:50	08.18.2020 09:50
	<i>Analyzed:</i>	08.18.2020 11:16	08.18.2020 12:37	08.18.2020 12:57	08.18.2020 13:17	08.18.2020 13:38	08.18.2020 13:58
	<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	<49.8 49.8	<49.9 49.9	<49.9 49.9	<50.1 50.1
Diesel Range Organics (DRO)		<50.0 50.0	<50.0 50.0	<49.8 49.8	<49.9 49.9	<49.9 49.9	<50.1 50.1
Motor Oil Range Hydrocarbons (MRO)		<50.0 50.0	<50.0 50.0	<49.8 49.8	<49.9 49.9	<49.9 49.9	<50.1 50.1
Total GRO-DRO		<50.0 50.0	<50.0 50.0	<49.8 49.8	<49.9 49.9	<49.9 49.9	<50.1 50.1
Total TPH		<50.0 50.0	<50.0 50.0	<49.8 49.8	<49.9 49.9	<49.9 49.9	<50.1 50.1

BRL - Below Reporting Limit

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

Certificate of Analysis Summary 670249



LT Environmental, Inc., Arvada, CO

Project Name: ROW 4 Wolverine SWD Riser

Project Id: 012920091

Date Received in Lab: Tue 08.18.2020 09:14

Contact: Dan Moir

Report Date: 08.21.2020 17:44

Project Location:

Project Manager: Jessica Kramer

Analysis Requested	Lab Id:	670249-007	670249-008	670249-009	670249-010	670249-011	
	Field Id:	BH05	BH05A	BH06	BH07	BH08	
	Depth:	2-	3-	1-	1-	1-	
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	
	Sampled:	08.17.2020 13:05	08.17.2020 13:10	08.17.2020 13:26	08.17.2020 14:10	08.17.2020 14:40	
BTEX by EPA 8021B	Extracted:	08.18.2020 11:51	08.18.2020 11:51	08.18.2020 11:51	08.18.2020 11:51	08.18.2020 11:51	
	Analyzed:	08.18.2020 18:25	08.18.2020 18:48	08.18.2020 19:10	08.18.2020 20:40	08.18.2020 21:08	
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	
Benzene		<0.00199 0.00199	<0.00198 0.00198	<0.00199 0.00199	<0.00200 0.00200	<0.00199 0.00199	
Toluene		<0.00199 0.00199	<0.00198 0.00198	<0.00199 0.00199	<0.00200 0.00200	<0.00199 0.00199	
Ethylbenzene		<0.00199 0.00199	<0.00198 0.00198	<0.00199 0.00199	<0.00200 0.00200	<0.00199 0.00199	
m,p-Xylenes		<0.00398 0.00398	<0.00396 0.00396	<0.00398 0.00398	<0.00399 0.00399	<0.00398 0.00398	
o-Xylene		<0.00199 0.00199	<0.00198 0.00198	<0.00199 0.00199	<0.00200 0.00200	<0.00199 0.00199	
Total Xylenes		<0.00199 0.00199	<0.00198 0.00198	<0.00199 0.00199	<0.00200 0.00200	<0.00199 0.00199	
Total BTEX		<0.00199 0.00199	<0.00198 0.00198	<0.00199 0.00199	<0.00200 0.00200	<0.00199 0.00199	
Chloride by EPA 300	Extracted:	08.18.2020 12:48	08.18.2020 12:48	08.18.2020 12:48	08.18.2020 12:48	08.18.2020 12:48	
	Analyzed:	08.18.2020 15:50	08.18.2020 15:55	08.18.2020 16:01	08.18.2020 16:06	08.18.2020 16:23	
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	
Chloride		206 9.92	374 9.96	578 9.98	5790 49.8	4130 49.9	
TPH by SW8015 Mod	Extracted:	08.18.2020 09:50	08.18.2020 09:50	08.18.2020 09:50	08.18.2020 09:50	08.18.2020 09:50	
	Analyzed:	08.18.2020 14:18	08.18.2020 14:38	08.18.2020 14:58	08.18.2020 15:18	08.18.2020 15:59	
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	
Gasoline Range Hydrocarbons (GRO)		<50.2 50.2	<49.9 49.9	<50.1 50.1	<50.2 50.2	<50.1 50.1	
Diesel Range Organics (DRO)		<50.2 50.2	<49.9 49.9	<50.1 50.1	<50.2 50.2	<50.1 50.1	
Motor Oil Range Hydrocarbons (MRO)		<50.2 50.2	<49.9 49.9	<50.1 50.1	<50.2 50.2	<50.1 50.1	
Total GRO-DRO		<50.2 50.2	<49.9 49.9	<50.1 50.1	<50.2 50.2	<50.1 50.1	
Total TPH		<50.2 50.2	<49.9 49.9	<50.1 50.1	<50.2 50.2	<50.1 50.1	

BRL - Below Reporting Limit

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



Analytical Report 670249

for

LT Environmental, Inc.

Project Manager: Dan Moir

ROW 4 Wolverine SWD Riser

012920091

08.21.2020

Collected By: Client

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

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-20-37), Arizona (AZ0765), Florida (E871002-33), Louisiana (03054)
Oklahoma (2019-058), North Carolina (681), Arkansas (20-035-0)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (T104704295-20-26), Arizona (AZ0809)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-20-18)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-20-23)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-21)
Xenco-Carlsbad (LELAP): Louisiana (05092)
Xenco-San Antonio (EPA Lab Code: TN102385): Texas (T104704534-20-8)
Xenco-Tampa: Florida (E87429), North Carolina (483)



08.21.2020

Project Manager: **Dan Moir**

LT Environmental, Inc.

4600 W. 60th Avenue

Arvada, CO 80003

Reference: Eurofins Xenco, LLC Report No(s): **670249**

ROW 4 Wolverine SWD Riser

Project Address:

Dan Moir:

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 Eurofins Xenco, LLC Report Number(s) 670249. 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 Eurofins Xenco, LLC. 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. 670249 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 Eurofins Xenco, LLC 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 670249****LT Environmental, Inc., Arvada, CO**

ROW 4 Wolverine SWD Riser

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
BH01	S	08.17.2020 09:54	1	670249-001
BH01A	S	08.17.2020 10:04	3	670249-002
BH02	S	08.17.2020 11:35	1	670249-003
BH03	S	08.17.2020 11:47	2	670249-004
BH03A	S	08.17.2020 11:49	2.5	670249-005
BH04	S	08.17.2020 12:40	1	670249-006
BH05	S	08.17.2020 13:05	2	670249-007
BH05A	S	08.17.2020 13:10	3	670249-008
BH06	S	08.17.2020 13:26	1	670249-009
BH07	S	08.17.2020 14:10	1	670249-010
BH08	S	08.17.2020 14:40	1	670249-011



CASE NARRATIVE

Client Name: LT Environmental, Inc.

Project Name: ROW 4 Wolverine SWD Riser

Project ID: 012920091
Work Order Number(s): 670249

Report Date: 08.21.2020
Date Received: 08.18.2020

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None



Certificate of Analytical Results 670249

LT Environmental, Inc., Arvada, CO

ROW 4 Wolverine SWD Riser

Sample Id: **BH01** Matrix: Soil Date Received: 08.18.2020 09:14
 Lab Sample Id: 670249-001 Date Collected: 08.17.2020 09:54 Sample Depth: 1
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 08.18.2020 12:39 Basis: Wet Weight
 Seq Number: 3134917

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	4490	49.9	mg/kg	08.18.2020 14:37		5

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 08.18.2020 09:50 Basis: Wet Weight
 Seq Number: 3134923

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	08.18.2020 11:16	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	08.18.2020 11:16	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	08.18.2020 11:16	U	1
Total GRO-DRO	PHC628	<50.0	50.0	mg/kg	08.18.2020 11:16	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	08.18.2020 11:16	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	97	%	70-135	08.18.2020 11:16	
o-Terphenyl	84-15-1	92	%	70-135	08.18.2020 11:16	



Certificate of Analytical Results 670249

LT Environmental, Inc., Arvada, CO

ROW 4 Wolverine SWD Riser

Sample Id: **BH01**
 Lab Sample Id: 670249-001

Matrix: Soil
 Date Collected: 08.17.2020 09:54

Date Received: 08.18.2020 09:14
 Sample Depth: 1

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 08.18.2020 11:51

Basis: Wet Weight

Seq Number: 3134914

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	08.18.2020 16:10	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	08.18.2020 16:10	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	08.18.2020 16:10	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	08.18.2020 16:10	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	08.18.2020 16:10	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	08.18.2020 16:10	U	1
Total BTEX		<0.00199	0.00199	mg/kg	08.18.2020 16:10	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	94	%	70-130	08.18.2020 16:10	
1,4-Difluorobenzene	540-36-3	94	%	70-130	08.18.2020 16:10	



Certificate of Analytical Results 670249

LT Environmental, Inc., Arvada, CO

ROW 4 Wolverine SWD Riser

Sample Id: **BH01A**
Lab Sample Id: 670249-002

Matrix: Soil
Date Collected: 08.17.2020 10:04

Date Received: 08.18.2020 09:14
Sample Depth: 3

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3134917

Date Prep: 08.18.2020 12:39

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	4500	50.0	mg/kg	08.18.2020 14:43		5

Analytical Method: TPH by SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3134923

Date Prep: 08.18.2020 09:50

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	08.18.2020 12:37	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	08.18.2020 12:37	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	08.18.2020 12:37	U	1
Total GRO-DRO	PHC628	<50.0	50.0	mg/kg	08.18.2020 12:37	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	08.18.2020 12:37	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	97	%	70-135	08.18.2020 12:37	
o-Terphenyl	84-15-1	92	%	70-135	08.18.2020 12:37	



Certificate of Analytical Results 670249

LT Environmental, Inc., Arvada, CO

ROW 4 Wolverine SWD Riser

Sample Id: **BH01A**
 Lab Sample Id: 670249-002

Matrix: Soil
 Date Collected: 08.17.2020 10:04

Date Received: 08.18.2020 09:14
 Sample Depth: 3

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 08.18.2020 11:51

Basis: Wet Weight

Seq Number: 3134914

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	08.18.2020 16:33	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	08.18.2020 16:33	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	08.18.2020 16:33	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/kg	08.18.2020 16:33	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	08.18.2020 16:33	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	08.18.2020 16:33	U	1
Total BTEX		<0.00200	0.00200	mg/kg	08.18.2020 16:33	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	88	%	70-130	08.18.2020 16:33		
1,4-Difluorobenzene	540-36-3	101	%	70-130	08.18.2020 16:33		



Certificate of Analytical Results 670249

LT Environmental, Inc., Arvada, CO

ROW 4 Wolverine SWD Riser

Sample Id: **BH02** Matrix: Soil Date Received: 08.18.2020 09:14
 Lab Sample Id: 670249-003 Date Collected: 08.17.2020 11:35 Sample Depth: 1
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 08.18.2020 12:39 Basis: Wet Weight
 Seq Number: 3134917

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	2820	50.2	mg/kg	08.18.2020 14:48		5

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 08.18.2020 09:50 Basis: Wet Weight
 Seq Number: 3134923

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.8	49.8	mg/kg	08.18.2020 12:57	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.8	49.8	mg/kg	08.18.2020 12:57	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.8	49.8	mg/kg	08.18.2020 12:57	U	1
Total GRO-DRO	PHC628	<49.8	49.8	mg/kg	08.18.2020 12:57	U	1
Total TPH	PHC635	<49.8	49.8	mg/kg	08.18.2020 12:57	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	90	%	70-135	08.18.2020 12:57	
o-Terphenyl	84-15-1	86	%	70-135	08.18.2020 12:57	



Certificate of Analytical Results 670249

LT Environmental, Inc., Arvada, CO

ROW 4 Wolverine SWD Riser

Sample Id: **BH02**
 Lab Sample Id: 670249-003

Matrix: Soil
 Date Collected: 08.17.2020 11:35

Date Received: 08.18.2020 09:14
 Sample Depth: 1

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 08.18.2020 11:51

Basis: Wet Weight

Seq Number: 3134914

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	08.18.2020 16:55	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	08.18.2020 16:55	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	08.18.2020 16:55	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	08.18.2020 16:55	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	08.18.2020 16:55	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	08.18.2020 16:55	U	1
Total BTEX		<0.00200	0.00200	mg/kg	08.18.2020 16:55	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	101	%	70-130	08.18.2020 16:55	
4-Bromofluorobenzene	460-00-4	91	%	70-130	08.18.2020 16:55	



Certificate of Analytical Results 670249

LT Environmental, Inc., Arvada, CO

ROW 4 Wolverine SWD Riser

Sample Id: **BH03** Matrix: Soil Date Received: 08.18.2020 09:14
 Lab Sample Id: 670249-004 Date Collected: 08.17.2020 11:47 Sample Depth: 2
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 08.18.2020 12:39 Basis: Wet Weight
 Seq Number: 3134917

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	2120	49.9	mg/kg	08.18.2020 14:54		5

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 08.18.2020 09:50 Basis: Wet Weight
 Seq Number: 3134923

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	08.18.2020 13:17	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	08.18.2020 13:17	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	08.18.2020 13:17	U	1
Total GRO-DRO	PHC628	<49.9	49.9	mg/kg	08.18.2020 13:17	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	08.18.2020 13:17	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	91	%	70-135	08.18.2020 13:17	
o-Terphenyl	84-15-1	86	%	70-135	08.18.2020 13:17	



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LT Environmental, Inc., Arvada, CO

ROW 4 Wolverine SWD Riser

Sample Id: **BH03**
 Lab Sample Id: 670249-004

Matrix: Soil
 Date Collected: 08.17.2020 11:47

Date Received: 08.18.2020 09:14
 Sample Depth: 2

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 08.18.2020 11:51

Basis: Wet Weight

Seq Number: 3134914

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	08.18.2020 17:18	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	08.18.2020 17:18	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	08.18.2020 17:18	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	08.18.2020 17:18	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	08.18.2020 17:18	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	08.18.2020 17:18	U	1
Total BTEX		<0.00200	0.00200	mg/kg	08.18.2020 17:18	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	95	%	70-130	08.18.2020 17:18	
1,4-Difluorobenzene	540-36-3	103	%	70-130	08.18.2020 17:18	



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LT Environmental, Inc., Arvada, CO

ROW 4 Wolverine SWD Riser

Sample Id: **BH03A** Matrix: Soil Date Received: 08.18.2020 09:14
 Lab Sample Id: 670249-005 Date Collected: 08.17.2020 11:49 Sample Depth: 2.5
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 08.18.2020 12:48 Basis: Wet Weight
 Seq Number: 3134919

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1420	50.0	mg/kg	08.18.2020 15:27		5

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 08.18.2020 09:50 Basis: Wet Weight
 Seq Number: 3134923

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	08.18.2020 13:38	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	08.18.2020 13:38	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	08.18.2020 13:38	U	1
Total GRO-DRO	PHC628	<49.9	49.9	mg/kg	08.18.2020 13:38	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	08.18.2020 13:38	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	89	%	70-135	08.18.2020 13:38	
o-Terphenyl	84-15-1	85	%	70-135	08.18.2020 13:38	



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LT Environmental, Inc., Arvada, CO

ROW 4 Wolverine SWD Riser

Sample Id: **BH03A**
 Lab Sample Id: 670249-005

Matrix: Soil
 Date Collected: 08.17.2020 11:49

Date Received: 08.18.2020 09:14
 Sample Depth: 2.5

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 08.18.2020 11:51

Basis: Wet Weight

Seq Number: 3134914

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	08.18.2020 17:40	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	08.18.2020 17:40	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	08.18.2020 17:40	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	08.18.2020 17:40	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	08.18.2020 17:40	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	08.18.2020 17:40	U	1
Total BTEX		<0.00201	0.00201	mg/kg	08.18.2020 17:40	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	97	%	70-130	08.18.2020 17:40		
1,4-Difluorobenzene	540-36-3	103	%	70-130	08.18.2020 17:40		



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LT Environmental, Inc., Arvada, CO

ROW 4 Wolverine SWD Riser

Sample Id: **BH04** Matrix: Soil Date Received: 08.18.2020 09:14
 Lab Sample Id: 670249-006 Date Collected: 08.17.2020 12:40 Sample Depth: 1
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 08.18.2020 12:48 Basis: Wet Weight
 Seq Number: 3134919

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	3160	50.0	mg/kg	08.18.2020 15:44		5

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 08.18.2020 09:50 Basis: Wet Weight
 Seq Number: 3134923

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.1	50.1	mg/kg	08.18.2020 13:58	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.1	50.1	mg/kg	08.18.2020 13:58	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.1	50.1	mg/kg	08.18.2020 13:58	U	1
Total GRO-DRO	PHC628	<50.1	50.1	mg/kg	08.18.2020 13:58	U	1
Total TPH	PHC635	<50.1	50.1	mg/kg	08.18.2020 13:58	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	88	%	70-135	08.18.2020 13:58	
o-Terphenyl	84-15-1	84	%	70-135	08.18.2020 13:58	



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LT Environmental, Inc., Arvada, CO

ROW 4 Wolverine SWD Riser

Sample Id: **BH04**
 Lab Sample Id: 670249-006

Matrix: Soil
 Date Collected: 08.17.2020 12:40

Date Received: 08.18.2020 09:14
 Sample Depth: 1

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 08.18.2020 11:51

Basis: Wet Weight

Seq Number: 3134914

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	08.18.2020 18:03	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	08.18.2020 18:03	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	08.18.2020 18:03	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	08.18.2020 18:03	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	08.18.2020 18:03	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	08.18.2020 18:03	U	1
Total BTEX		<0.00201	0.00201	mg/kg	08.18.2020 18:03	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	91	%	70-130	08.18.2020 18:03	
1,4-Difluorobenzene	540-36-3	101	%	70-130	08.18.2020 18:03	



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LT Environmental, Inc., Arvada, CO

ROW 4 Wolverine SWD Riser

Sample Id: **BH05** Matrix: Soil Date Received: 08.18.2020 09:14
 Lab Sample Id: 670249-007 Date Collected: 08.17.2020 13:05 Sample Depth: 2
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 08.18.2020 12:48 Basis: Wet Weight
 Seq Number: 3134919

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	206	9.92	mg/kg	08.18.2020 15:50		1

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 08.18.2020 09:50 Basis: Wet Weight
 Seq Number: 3134923

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.2	50.2	mg/kg	08.18.2020 14:18	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.2	50.2	mg/kg	08.18.2020 14:18	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.2	50.2	mg/kg	08.18.2020 14:18	U	1
Total GRO-DRO	PHC628	<50.2	50.2	mg/kg	08.18.2020 14:18	U	1
Total TPH	PHC635	<50.2	50.2	mg/kg	08.18.2020 14:18	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	87	%	70-135	08.18.2020 14:18	
o-Terphenyl	84-15-1	82	%	70-135	08.18.2020 14:18	



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ROW 4 Wolverine SWD Riser

Sample Id: **BH05**
Lab Sample Id: 670249-007

Matrix: Soil
Date Collected: 08.17.2020 13:05

Date Received: 08.18.2020 09:14
Sample Depth: 2

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 08.18.2020 11:51

Basis: Wet Weight

Seq Number: 3134914

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	08.18.2020 18:25	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	08.18.2020 18:25	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	08.18.2020 18:25	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	08.18.2020 18:25	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	08.18.2020 18:25	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	08.18.2020 18:25	U	1
Total BTEX		<0.00199	0.00199	mg/kg	08.18.2020 18:25	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	94	%	70-130	08.18.2020 18:25		
1,4-Difluorobenzene	540-36-3	102	%	70-130	08.18.2020 18:25		



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LT Environmental, Inc., Arvada, CO

ROW 4 Wolverine SWD Riser

Sample Id: **BH05A** Matrix: Soil Date Received: 08.18.2020 09:14
 Lab Sample Id: 670249-008 Date Collected: 08.17.2020 13:10 Sample Depth: 3
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 08.18.2020 12:48 Basis: Wet Weight
 Seq Number: 3134919

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	374	9.96	mg/kg	08.18.2020 15:55		1

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 08.18.2020 09:50 Basis: Wet Weight
 Seq Number: 3134923

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	08.18.2020 14:38	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	08.18.2020 14:38	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	08.18.2020 14:38	U	1
Total GRO-DRO	PHC628	<49.9	49.9	mg/kg	08.18.2020 14:38	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	08.18.2020 14:38	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	90	%	70-135	08.18.2020 14:38	
o-Terphenyl	84-15-1	85	%	70-135	08.18.2020 14:38	



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LT Environmental, Inc., Arvada, CO

ROW 4 Wolverine SWD Riser

Sample Id: **BH05A**
 Lab Sample Id: 670249-008

Matrix: Soil
 Date Collected: 08.17.2020 13:10

Date Received: 08.18.2020 09:14
 Sample Depth: 3

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 08.18.2020 11:51

Basis: Wet Weight

Seq Number: 3134914

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	08.18.2020 18:48	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	08.18.2020 18:48	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	08.18.2020 18:48	U	1
m,p-Xylenes	179601-23-1	<0.00396	0.00396	mg/kg	08.18.2020 18:48	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	08.18.2020 18:48	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	08.18.2020 18:48	U	1
Total BTEX		<0.00198	0.00198	mg/kg	08.18.2020 18:48	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	93	%	70-130	08.18.2020 18:48		
1,4-Difluorobenzene	540-36-3	103	%	70-130	08.18.2020 18:48		



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ROW 4 Wolverine SWD Riser

Sample Id: **BH06** Matrix: Soil Date Received: 08.18.2020 09:14
 Lab Sample Id: 670249-009 Date Collected: 08.17.2020 13:26 Sample Depth: 1
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 08.18.2020 12:48 Basis: Wet Weight
 Seq Number: 3134919

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	578	9.98	mg/kg	08.18.2020 16:01		1

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 08.18.2020 09:50 Basis: Wet Weight
 Seq Number: 3134923

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.1	50.1	mg/kg	08.18.2020 14:58	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.1	50.1	mg/kg	08.18.2020 14:58	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.1	50.1	mg/kg	08.18.2020 14:58	U	1
Total GRO-DRO	PHC628	<50.1	50.1	mg/kg	08.18.2020 14:58	U	1
Total TPH	PHC635	<50.1	50.1	mg/kg	08.18.2020 14:58	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	90	%	70-135	08.18.2020 14:58	
o-Terphenyl	84-15-1	85	%	70-135	08.18.2020 14:58	



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LT Environmental, Inc., Arvada, CO

ROW 4 Wolverine SWD Riser

Sample Id: **BH06**
 Lab Sample Id: 670249-009

Matrix: Soil
 Date Collected: 08.17.2020 13:26

Date Received: 08.18.2020 09:14
 Sample Depth: 1

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 08.18.2020 11:51

Basis: Wet Weight

Seq Number: 3134914

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	08.18.2020 19:10	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	08.18.2020 19:10	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	08.18.2020 19:10	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	08.18.2020 19:10	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	08.18.2020 19:10	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	08.18.2020 19:10	U	1
Total BTEX		<0.00199	0.00199	mg/kg	08.18.2020 19:10	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	102	%	70-130	08.18.2020 19:10	
4-Bromofluorobenzene	460-00-4	95	%	70-130	08.18.2020 19:10	



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ROW 4 Wolverine SWD Riser

Sample Id: **BH07** Matrix: Soil Date Received: 08.18.2020 09:14
 Lab Sample Id: 670249-010 Date Collected: 08.17.2020 14:10 Sample Depth: 1
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 08.18.2020 12:48 Basis: Wet Weight
 Seq Number: 3134919

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	5790	49.8	mg/kg	08.18.2020 16:06		5

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 08.18.2020 09:50 Basis: Wet Weight
 Seq Number: 3134923

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.2	50.2	mg/kg	08.18.2020 15:18	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.2	50.2	mg/kg	08.18.2020 15:18	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.2	50.2	mg/kg	08.18.2020 15:18	U	1
Total GRO-DRO	PHC628	<50.2	50.2	mg/kg	08.18.2020 15:18	U	1
Total TPH	PHC635	<50.2	50.2	mg/kg	08.18.2020 15:18	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	91	%	70-135	08.18.2020 15:18	
o-Terphenyl	84-15-1	87	%	70-135	08.18.2020 15:18	



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ROW 4 Wolverine SWD Riser

Sample Id: **BH07**
 Lab Sample Id: 670249-010

Matrix: Soil
 Date Collected: 08.17.2020 14:10

Date Received: 08.18.2020 09:14
 Sample Depth: 1

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 08.18.2020 11:51

Basis: Wet Weight

Seq Number: 3134914

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	08.18.2020 20:40	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	08.18.2020 20:40	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	08.18.2020 20:40	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	08.18.2020 20:40	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	08.18.2020 20:40	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	08.18.2020 20:40	U	1
Total BTEX		<0.00200	0.00200	mg/kg	08.18.2020 20:40	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	91	%	70-130	08.18.2020 20:40	
1,4-Difluorobenzene	540-36-3	103	%	70-130	08.18.2020 20:40	



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ROW 4 Wolverine SWD Riser

Sample Id: **BH08** Matrix: Soil Date Received: 08.18.2020 09:14
 Lab Sample Id: 670249-011 Date Collected: 08.17.2020 14:40 Sample Depth: 1
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 08.18.2020 12:48 Basis: Wet Weight
 Seq Number: 3134919

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	4130	49.9	mg/kg	08.18.2020 16:23		5

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 08.18.2020 09:50 Basis: Wet Weight
 Seq Number: 3134923

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.1	50.1	mg/kg	08.18.2020 15:59	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.1	50.1	mg/kg	08.18.2020 15:59	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.1	50.1	mg/kg	08.18.2020 15:59	U	1
Total GRO-DRO	PHC628	<50.1	50.1	mg/kg	08.18.2020 15:59	U	1
Total TPH	PHC635	<50.1	50.1	mg/kg	08.18.2020 15:59	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	88	%	70-135	08.18.2020 15:59	
o-Terphenyl	84-15-1	84	%	70-135	08.18.2020 15:59	



Certificate of Analytical Results 670249

LT Environmental, Inc., Arvada, CO

ROW 4 Wolverine SWD Riser

Sample Id: **BH08**
Lab Sample Id: 670249-011

Matrix: Soil
Date Collected: 08.17.2020 14:40

Date Received: 08.18.2020 09:14
Sample Depth: 1

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 08.18.2020 11:51

Basis: Wet Weight

Seq Number: 3134914

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	08.18.2020 21:08	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	08.18.2020 21:08	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	08.18.2020 21:08	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	08.18.2020 21:08	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	08.18.2020 21:08	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	08.18.2020 21:08	U	1
Total BTEX		<0.00199	0.00199	mg/kg	08.18.2020 21:08	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	83	%	70-130	08.18.2020 21:08		
1,4-Difluorobenzene	540-36-3	98	%	70-130	08.18.2020 21:08		



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.
ROW 4 Wolverine SWD Riser

Analytical Method: Chloride by EPA 300

Seq Number: 3134917

MB Sample Id: 7709666-1-BLK

Matrix: Solid

LCS Sample Id: 7709666-1-BKS

Prep Method: E300P

Date Prep: 08.18.2020

LCSD Sample Id: 7709666-1-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	259	104	261	104	90-110	1	20	mg/kg	08.18.2020 12:12	

Analytical Method: Chloride by EPA 300

Seq Number: 3134919

MB Sample Id: 7709667-1-BLK

Matrix: Solid

LCS Sample Id: 7709667-1-BKS

Prep Method: E300P

Date Prep: 08.18.2020

LCSD Sample Id: 7709667-1-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	263	105	90-110	1	20	mg/kg	08.18.2020 15:16	

Analytical Method: Chloride by EPA 300

Seq Number: 3134917

Parent Sample Id: 670227-001

Matrix: Soil

MS Sample Id: 670227-001 S

Prep Method: E300P

Date Prep: 08.18.2020

MSD Sample Id: 670227-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	2680	199	2870	95	2870	95	90-110	0	20	mg/kg	08.18.2020 12:29	

Analytical Method: Chloride by EPA 300

Seq Number: 3134917

Parent Sample Id: 670227-011

Matrix: Soil

MS Sample Id: 670227-011 S

Prep Method: E300P

Date Prep: 08.18.2020

MSD Sample Id: 670227-011 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	1370	200	1560	95	1560	95	90-110	0	20	mg/kg	08.18.2020 13:47	

Analytical Method: Chloride by EPA 300

Seq Number: 3134919

Parent Sample Id: 670249-005

Matrix: Soil

MS Sample Id: 670249-005 S

Prep Method: E300P

Date Prep: 08.18.2020

MSD Sample Id: 670249-005 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	1420	198	1630	106	1600	90	90-110	2	20	mg/kg	08.18.2020 15:33	

Analytical Method: Chloride by EPA 300

Seq Number: 3134919

Parent Sample Id: 670314-004

Matrix: Soil

MS Sample Id: 670314-004 S

Prep Method: E300P

Date Prep: 08.18.2020

MSD Sample Id: 670314-004 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	2140	247	2370	93	2380	97	90-110	0	20	mg/kg	08.18.2020 16:51	

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.
ROW 4 Wolverine SWD Riser

Analytical Method: TPH by SW8015 Mod

Seq Number: 3134923

MB Sample Id: 7709645-1-BLK

Matrix: Solid

LCS Sample Id: 7709645-1-BKS

Prep Method: SW8015P

Date Prep: 08.18.2020

LCSD Sample Id: 7709645-1-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	979	98	956	96	70-135	2	35	mg/kg	08.18.2020 10:35	
Diesel Range Organics (DRO)	<50.0	1000	1010	101	971	97	70-135	4	35	mg/kg	08.18.2020 10:35	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	87		116		112		70-135	%	08.18.2020 10:35
o-Terphenyl	83		101		98		70-135	%	08.18.2020 10:35

Analytical Method: TPH by SW8015 Mod

Seq Number: 3134923

Matrix: Solid

MB Sample Id: 7709645-1-BLK

Prep Method: SW8015P

Date Prep: 08.18.2020

Parameter	MB Result	Units	Analysis Date	Flag
Motor Oil Range Hydrocarbons (MRO)	<50.0	mg/kg	08.18.2020 10:15	

Analytical Method: TPH by SW8015 Mod

Seq Number: 3134923

Matrix: Soil

Parent Sample Id: 670249-001

MS Sample Id: 670249-001 S

Prep Method: SW8015P

Date Prep: 08.18.2020

MSD Sample Id: 670249-001 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)	<49.9	998	859	86	879	88	70-135	2	35	mg/kg	08.18.2020 11:36	
Diesel Range Organics (DRO)	<49.9	998	882	88	889	89	70-135	1	35	mg/kg	08.18.2020 11:36	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	104		106		70-135	%	08.18.2020 11:36
o-Terphenyl	92		93		70-135	%	08.18.2020 11:36

Analytical Method: BTEX by EPA 8021B

Seq Number: 3134914

Matrix: Solid

MB Sample Id: 7709668-1-BLK

LCS Sample Id: 7709668-1-BKS

Prep Method: SW5035A

Date Prep: 08.18.2020

LCSD Sample Id: 7709668-1-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	0.100	100	0.108	108	70-130	8	35	mg/kg	08.18.2020 13:38	
Toluene	<0.00200	0.100	0.0965	97	0.104	104	70-130	7	35	mg/kg	08.18.2020 13:38	
Ethylbenzene	<0.00200	0.100	0.0901	90	0.0969	97	71-129	7	35	mg/kg	08.18.2020 13:38	
m,p-Xylenes	<0.00400	0.200	0.182	91	0.197	99	70-135	8	35	mg/kg	08.18.2020 13:38	
o-Xylene	<0.00200	0.100	0.0894	89	0.0956	96	71-133	7	35	mg/kg	08.18.2020 13:38	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	97		99		98		70-130	%	08.18.2020 13:38
4-Bromofluorobenzene	87		94		94		70-130	%	08.18.2020 13:38

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.
ROW 4 Wolverine SWD Riser

Analytical Method: BTEX by EPA 8021B

Seq Number: 3134914

Parent Sample Id: 670249-001

Matrix: Soil

MS Sample Id: 670249-001 S

Prep Method: SW5035A

Date Prep: 08.18.2020

MSD Sample Id: 670249-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.0998	0.112	112	0.108	108	70-130	4	35	mg/kg	08.18.2020 19:55	
Toluene	<0.00200	0.0998	0.109	109	0.103	103	70-130	6	35	mg/kg	08.18.2020 19:55	
Ethylbenzene	<0.00200	0.0998	0.101	101	0.0957	96	71-129	5	35	mg/kg	08.18.2020 19:55	
m,p-Xylenes	<0.00399	0.200	0.206	103	0.194	97	70-135	6	35	mg/kg	08.18.2020 19:55	
o-Xylene	<0.00200	0.0998	0.102	102	0.0962	96	71-133	6	35	mg/kg	08.18.2020 19:55	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	99		99		70-130	%	08.18.2020 19:55
4-Bromofluorobenzene	93		88		70-130	%	08.18.2020 19:55

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



Chain of Custody

Work Order No: 670249

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
Phoenix, AZ (480-355-0900) Atlanta, GA (770-449-8800) Tampa, FL (813) 251-3922
Hobbs, NM (575-392-7550)

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Page 1 of 1

Project Manager:	Dan Moir	Bill to: (if different)	Kyle Litrell
Company Name:	LT Environmental, Inc., Permian office	Company Name:	XTO Energy
Address:	3300 North A St. Bldg 1, Unit 222	Address:	3104 E Greene St.
City, State ZIP:	Midland, TX 79705	City, State ZIP:	Carlsbad, NM
Phone:	(432) 701-2610	Email:	dmoir@ltenv.com mmcabee@ltenv.com

Work Order Comments									
Program: UST/PST ☐ RRP ☐ brownfields ☐ RC ☐ Superfund ☐									
State of Project: NM									
Reporting Level: I ☐ Level III ☐ ST/UST ☐ RRP ☐ Level IV ☐									
Deliverables: EDD ☐ ADAPT ☐ Other:									

Project Name:	ROW 4 Waterline SMD Riser		Turn Around
Project Number:	0129220091		Routine ☒
P.O. Number:			Rush:
Sampler's Name:	Robert McAffee		Due Date:

SAMPLE RECEIPT		Temp Blank:	Yes	No	Wet Ice:	Yes	No
Temperature (°C):		1.6/1.4			Thermometer ID		
Received Intact:		Yes No			T-NH-007		
Cooler Custody Seals:		Yes No			Correction Factor: -0.2		
Sample Custody Seals:		Yes No			Total Containers: 11		

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth
BH01	S	08/17/20	0954	1'
BH01A			1004	3'
BH02			1135	1'
BH03			1147	2'
BH03A			1149	2.5'
BH04			1240	1'
BH05			1305	2'
BH05A			1310	3'
BH06			1326	1'
BH07			1410	1'

[illegible]

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 Zr
TCLP / SPLP 6010: 8RCRA			Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Ti U
1631 / 245.1 / 7470 / 7			

service. Xencio 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 Xencio. A minimum charge of \$75.00 will be applied to each project and a charge of \$5 for each sample submitted to Xencio, 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
		8-15-20 07:14			



Chain of Custody

Work Order No: 670249

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) 94-1296
Hobbs, NM (575-392-7550) Phoenix, AZ (480-355-0900) Atlanta, GA (770-449-8800) Tampa, FL (813) 281-1111

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Page 2 of 2

Project Manager:	Dan Moir	Bill to: (if different)	Kyle Littrell
Company Name:	LT Environmental, Inc., Permian office	Company Name:	XTO Energy
Address:	3300 North A St. Bldg 1, Unit 222	Address:	3104 E Greene St.
City, State ZIP:	Midland, TX 79705	City, State ZIP:	Carlsbad, NM
Phone:	(432) 701-2610	Email:	dmoir@ltenv.com kmlcafee@ltenv.com

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Work Order Comments							
Program: UST/PST ☐ PRP ☐ Brownfields ☐ RC ☐ Superfund State of Project: NM							
Reporting Level II ☐ Level III ☐ PST/UST ☐ RRP ☐ Level IV ☐							
Deliverables: EDD ☐ ADAPT ☐ Other:							

[illegible]

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.

[illegible]

Revised Date 051418 Rev. 2018.1

Eurofins Xenco, LLC

Prelogin/Nonconformance Report- Sample Log-In

Client: LT Environmental, Inc.

Date/ Time Received: 08.18.2020 09.14.00 AM

Work Order #: 670249

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)?	1.4
#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

Samples received in bulk containers

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

Analyst:

PH Device/Lot#:

Checklist completed by:



Cloe Clifton

Date: 08.18.2020

Checklist reviewed by:



Jessica Kramer

Date: 08.18.2020



Certificate of Analysis Summary 673861

LT Environmental, Inc., Arvada, CO

Project Name: Row 4 Wolverine SWD Riser

Project Id: 012920091

Date Received in Lab: Tue 09.29.2020 16:45

Contact: Dan Moir

Report Date: 09.30.2020 16:13

Project Location:

Project Manager: Jessica Kramer

<i>Analysis Requested</i>	<i>Lab Id:</i>	673861-001	673861-002	673861-003	673861-004	673861-005	673861-006
	<i>Field Id:</i>	PH01	PH01 A	PH02	PH02 A	PH03	PH03 A
	<i>Depth:</i>	1- ft	4- ft	6- ft	12- ft	1- ft	3- ft
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	09.28.2020 09:50	09.28.2020 10:10	09.28.2020 10:55	09.28.2020 12:45	09.28.2020 13:05	09.28.2020 13:14
BTEX by EPA 8021B	<i>Extracted:</i>	09.29.2020 17:53	09.29.2020 17:53	09.29.2020 17:53	09.29.2020 17:53	09.29.2020 17:53	09.29.2020 17:53
	<i>Analyzed:</i>	09.29.2020 23:15	09.29.2020 23:37	09.29.2020 23:59	09.30.2020 00:22	09.30.2020 00:44	09.30.2020 01:07
	<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	<0.00201 0.00201	<0.00201 0.00201	<0.00201 0.00201	<0.00202 0.00202
Toluene		<0.00200 0.00200	<0.00200 0.00200	<0.00201 0.00201	<0.00201 0.00201	<0.00201 0.00201	<0.00202 0.00202
Ethylbenzene		<0.00200 0.00200	<0.00200 0.00200	<0.00201 0.00201	<0.00201 0.00201	<0.00201 0.00201	<0.00202 0.00202
m,p-Xylenes		<0.00399 0.00399	<0.00401 0.00401	<0.00402 0.00402	<0.00402 0.00402	<0.00402 0.00402	<0.00403 0.00403
o-Xylene		<0.00200 0.00200	<0.00200 0.00200	<0.00201 0.00201	<0.00201 0.00201	<0.00201 0.00201	<0.00202 0.00202
Total Xylenes		<0.00200 0.00200	<0.00200 0.00200	<0.00201 0.00201	<0.00201 0.00201	<0.00201 0.00201	<0.00202 0.00202
Total BTEX		<0.00200 0.00200	<0.00200 0.00200	<0.00201 0.00201	<0.00201 0.00201	<0.00201 0.00201	<0.00202 0.00202
Chloride by EPA 300	<i>Extracted:</i>	09.29.2020 17:26	09.29.2020 17:26	09.29.2020 17:26	09.29.2020 17:26	09.29.2020 17:26	09.29.2020 17:26
	<i>Analyzed:</i>	09.30.2020 00:09	09.30.2020 00:14	09.30.2020 00:20	09.30.2020 00:25	09.30.2020 00:31	09.30.2020 00:36
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		3210 49.5	34.2 9.88	7400 49.9	160 10.0	3020 50.1	<10.0 10.0
TPH by SW8015 Mod	<i>Extracted:</i>	09.29.2020 17:30	09.29.2020 17:30	09.29.2020 17:30	09.29.2020 18:00	09.29.2020 18:00	09.29.2020 18:00
	<i>Analyzed:</i>	09.30.2020 04:44	09.30.2020 05:04	09.30.2020 05:25	09.30.2020 08:08	09.30.2020 07:07	09.30.2020 08:29
	<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	<50.1 50.1	<50.1 50.1	<50.1 50.1	<50.0 50.0	<50.1 50.1
Diesel Range Organics (DRO)		<50.0 50.0	<50.1 50.1	<50.1 50.1	<50.1 50.1	<50.0 50.0	<50.1 50.1
Motor Oil Range Hydrocarbons (MRO)		<50.0 50.0	<50.1 50.1	<50.1 50.1	<50.1 50.1	<50.0 50.0	<50.1 50.1
Total GRO-DRO		<50.0 50.0	<50.1 50.1	<50.1 50.1	<50.1 50.1	<50.0 50.0	<50.1 50.1
Total TPH		<50.0 50.0	<50.1 50.1	<50.1 50.1	<50.1 50.1	<50.0 50.0	<50.1 50.1

BRL - Below Reporting Limit

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

Jessica Kramer

Certificate of Analysis Summary 673861



LT Environmental, Inc., Arvada, CO

Project Name: Row 4 Wolverine SWD Riser

Project Id: 012920091

Date Received in Lab: Tue 09.29.2020 16:45

Contact: Dan Moir

Report Date: 09.30.2020 16:13

Project Location:

Project Manager: Jessica Kramer

<i>Analysis Requested</i>	<i>Lab Id:</i>	673861-007	673861-008	673861-009	673861-010	673861-011	673861-012
	<i>Field Id:</i>	PH04	PH04 A	PH05	PH05 A	PH06	PH06 A
	<i>Depth:</i>	2- ft	6- ft	2- ft	4- ft	1- ft	4- ft
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	09.28.2020 13:40	09.28.2020 14:02	09.28.2020 14:20	09.28.2020 14:28	09.28.2020 14:46	09.28.2020 14:55
BTEX by EPA 8021B	<i>Extracted:</i>	09.29.2020 17:53	09.29.2020 17:53	09.29.2020 17:53	09.29.2020 17:53	09.29.2020 17:53	09.29.2020 17:53
	<i>Analyzed:</i>	09.30.2020 01:29	09.30.2020 01:51	09.30.2020 02:14	09.30.2020 02:36	09.30.2020 03:56	09.30.2020 04:19
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00198 0.00198	<0.00202 0.00202	<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200	<0.00202 0.00202
Toluene		<0.00198 0.00198	<0.00202 0.00202	<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200	<0.00202 0.00202
Ethylbenzene		<0.00198 0.00198	<0.00202 0.00202	<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200	<0.00202 0.00202
m,p-Xylenes		<0.00397 0.00397	<0.00403 0.00403	<0.00399 0.00399	<0.00402 0.00402	<0.00400 0.00400	<0.00404 0.00404
o-Xylene		<0.00198 0.00198	<0.00202 0.00202	<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200	<0.00202 0.00202
Total Xylenes		<0.00198 0.00198	<0.00202 0.00202	<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200	<0.00202 0.00202
Total BTEX		<0.00198 0.00198	<0.00202 0.00202	<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200	<0.00202 0.00202
Chloride by EPA 300	<i>Extracted:</i>	09.29.2020 17:26	09.29.2020 17:26	09.29.2020 17:26	09.29.2020 17:26	09.29.2020 17:26	09.29.2020 17:26
	<i>Analyzed:</i>	09.30.2020 00:52	09.30.2020 00:58	09.30.2020 01:14	09.30.2020 01:20	09.30.2020 01:25	09.30.2020 01:31
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		5890 49.6	300 49.9	4080 49.8	45.2 9.98	3610 49.6	<9.94 9.94
TPH by SW8015 Mod	<i>Extracted:</i>	09.29.2020 18:00	09.29.2020 18:00	09.29.2020 18:00	09.29.2020 18:00	09.29.2020 18:00	09.29.2020 18:00
	<i>Analyzed:</i>	09.30.2020 08:48	09.30.2020 09:09	09.30.2020 09:29	09.30.2020 09:49	09.30.2020 10:10	09.30.2020 10:30
	<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)		<50.1 50.1	<50.0 50.0	<49.9 49.9	<50.1 50.1	<50.2 50.2	<50.2 50.2
Diesel Range Organics (DRO)		<50.1 50.1	<50.0 50.0	<49.9 49.9	<50.1 50.1	<50.2 50.2	<50.2 50.2
Motor Oil Range Hydrocarbons (MRO)		<50.1 50.1	<50.0 50.0	<49.9 49.9	<50.1 50.1	<50.2 50.2	<50.2 50.2
Total GRO-DRO		<50.1 50.1	<50.0 50.0	<49.9 49.9	<50.1 50.1	<50.2 50.2	<50.2 50.2
Total TPH		<50.1 50.1	<50.0 50.0	<49.9 49.9	<50.1 50.1	<50.2 50.2	<50.2 50.2

BRL - Below Reporting Limit

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

Certificate of Analysis Summary 673861



LT Environmental, Inc., Arvada, CO

Project Name: Row 4 Wolverine SWD Riser

Project Id: 012920091

Date Received in Lab: Tue 09.29.2020 16:45

Contact: Dan Moir

Report Date: 09.30.2020 16:13

Project Location:

Project Manager: Jessica Kramer

Analysis Requested	Lab Id:	673861-013	673861-014				
	Field Id:	PH07	PH07 A				
	Depth:	1- ft	4- ft				
	Matrix:	SOIL	SOIL				
	Sampled:	09.28.2020 15:15	09.28.2020 15:24				
BTEX by EPA 8021B	Extracted:	09.29.2020 17:53	09.29.2020 17:53				
	Analyzed:	09.30.2020 04:41	09.30.2020 05:03				
	Units/RL:	mg/kg RL	mg/kg RL				
Benzene		<0.00199 0.00199	<0.00200 0.00200				
Toluene		<0.00199 0.00199	<0.00200 0.00200				
Ethylbenzene		<0.00199 0.00199	<0.00200 0.00200				
m,p-Xylenes		<0.00398 0.00398	<0.00400 0.00400				
o-Xylene		<0.00199 0.00199	<0.00200 0.00200				
Total Xylenes		<0.00199 0.00199	<0.00200 0.00200				
Total BTEX		<0.00199 0.00199	<0.00200 0.00200				
Chloride by EPA 300	Extracted:	09.29.2020 17:26	09.29.2020 17:26				
	Analyzed:	09.30.2020 01:36	09.30.2020 01:42				
	Units/RL:	mg/kg RL	mg/kg RL				
Chloride		4600 50.1	47.7 10.0				
TPH by SW8015 Mod	Extracted:	09.29.2020 18:00	09.29.2020 18:00				
	Analyzed:	09.30.2020 10:50	09.30.2020 11:30				
	Units/RL:	mg/kg RL	mg/kg RL				
Gasoline Range Hydrocarbons (GRO)		<49.9 49.9	<50.0 50.0				
Diesel Range Organics (DRO)		<49.9 49.9	<50.0 50.0				
Motor Oil Range Hydrocarbons (MRO)		<49.9 49.9	<50.0 50.0				
Total GRO-DRO		<49.9 49.9	<50.0 50.0				
Total TPH		<49.9 49.9	<50.0 50.0				

BRL - Below Reporting Limit

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



Analytical Report 673861

for

LT Environmental, Inc.

Project Manager: Dan Moir

Row 4 Wolverine SWD Riser

012920091

09.30.2020

Collected By: Client

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

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-20-38), Arizona (AZ0765), Florida (E871002-33), Louisiana (03054)
Oklahoma (2020-014), North Carolina (681), Arkansas (20-035-0)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (T104704295-20-26), Arizona (AZ0809)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-20-18)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-20-23)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-21)
Xenco-Carlsbad (LELAP): Louisiana (05092)
Xenco-San Antonio (EPA Lab Code: TN102385): Texas (T104704534-20-8)
Xenco-Tampa: Florida (E87429), North Carolina (483)



09.30.2020

Project Manager: **Dan Moir**

LT Environmental, Inc.

4600 W. 60th Avenue

Arvada, CO 80003

Reference: Eurofins Xenco, LLC Report No(s): **673861**

Row 4 Wolverine SWD Riser

Project Address:

Dan Moir:

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 Eurofins Xenco, LLC Report Number(s) 673861. 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 Eurofins Xenco, LLC. 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. 673861 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 Eurofins Xenco, LLC 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 673861****LT Environmental, Inc., Arvada, CO**

Row 4 Wolverine SWD Riser

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
PH01	S	09.28.2020 09:50	1 ft	673861-001
PH01 A	S	09.28.2020 10:10	4 ft	673861-002
PH02	S	09.28.2020 10:55	6 ft	673861-003
PH02 A	S	09.28.2020 12:45	12 ft	673861-004
PH03	S	09.28.2020 13:05	1 ft	673861-005
PH03 A	S	09.28.2020 13:14	3 ft	673861-006
PH04	S	09.28.2020 13:40	2 ft	673861-007
PH04 A	S	09.28.2020 14:02	6 ft	673861-008
PH05	S	09.28.2020 14:20	2 ft	673861-009
PH05 A	S	09.28.2020 14:28	4 ft	673861-010
PH06	S	09.28.2020 14:46	1 ft	673861-011
PH06 A	S	09.28.2020 14:55	4 ft	673861-012
PH07	S	09.28.2020 15:15	1 ft	673861-013
PH07 A	S	09.28.2020 15:24	4 ft	673861-014



CASE NARRATIVE

Client Name: LT Environmental, Inc.

Project Name: Row 4 Wolverine SWD Riser

Project ID: 012920091
Work Order Number(s): 673861

Report Date: 09.30.2020
Date Received: 09.29.2020

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None



Certificate of Analytical Results 673861

LT Environmental, Inc., Arvada, CO

Row 4 Wolverine SWD Riser

Sample Id: **PH01** Matrix: Soil Date Received: 09.29.2020 16:45
 Lab Sample Id: 673861-001 Date Collected: 09.28.2020 09:50 Sample Depth: 1 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 09.29.2020 17:26 Basis: Wet Weight
 Seq Number: 3138471

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	3210	49.5	mg/kg	09.30.2020 00:09		5

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 09.29.2020 17:30 Basis: Wet Weight
 Seq Number: 3138454

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	09.30.2020 04:44	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	09.30.2020 04:44	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	09.30.2020 04:44	U	1
Total GRO-DRO	PHC628	<50.0	50.0	mg/kg	09.30.2020 04:44	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	09.30.2020 04:44	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	108	%	70-135	09.30.2020 04:44	
o-Terphenyl	84-15-1	102	%	70-135	09.30.2020 04:44	



Certificate of Analytical Results 673861

LT Environmental, Inc., Arvada, CO

Row 4 Wolverine SWD Riser

Sample Id: **PH01**
Lab Sample Id: 673861-001

Matrix: Soil
Date Collected: 09.28.2020 09:50

Date Received: 09.29.2020 16:45
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 09.29.2020 17:53

Basis: Wet Weight

Seq Number: 3138453

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	09.29.2020 23:15	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	09.29.2020 23:15	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	09.29.2020 23:15	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	09.29.2020 23:15	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	09.29.2020 23:15	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	09.29.2020 23:15	U	1
Total BTEX		<0.00200	0.00200	mg/kg	09.29.2020 23:15	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	114	%	70-130	09.29.2020 23:15	
1,4-Difluorobenzene	540-36-3	103	%	70-130	09.29.2020 23:15	



Certificate of Analytical Results 673861

LT Environmental, Inc., Arvada, CO

Row 4 Wolverine SWD Riser

Sample Id: **PH01 A** Matrix: Soil Date Received: 09.29.2020 16:45
 Lab Sample Id: 673861-002 Date Collected: 09.28.2020 10:10 Sample Depth: 4 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 09.29.2020 17:26 Basis: Wet Weight
 Seq Number: 3138471

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	34.2	9.88	mg/kg	09.30.2020 00:14		1

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 09.29.2020 17:30 Basis: Wet Weight
 Seq Number: 3138454

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.1	50.1	mg/kg	09.30.2020 05:04	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.1	50.1	mg/kg	09.30.2020 05:04	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.1	50.1	mg/kg	09.30.2020 05:04	U	1
Total GRO-DRO	PHC628	<50.1	50.1	mg/kg	09.30.2020 05:04	U	1
Total TPH	PHC635	<50.1	50.1	mg/kg	09.30.2020 05:04	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	116	%	70-135	09.30.2020 05:04	
o-Terphenyl	84-15-1	105	%	70-135	09.30.2020 05:04	



Certificate of Analytical Results 673861

LT Environmental, Inc., Arvada, CO

Row 4 Wolverine SWD Riser

Sample Id: **PH01 A**
Lab Sample Id: 673861-002

Matrix: Soil
Date Collected: 09.28.2020 10:10

Date Received: 09.29.2020 16:45
Sample Depth: 4 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 09.29.2020 17:53

Basis: Wet Weight

Seq Number: 3138453

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	09.29.2020 23:37	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	09.29.2020 23:37	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	09.29.2020 23:37	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	09.29.2020 23:37	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	09.29.2020 23:37	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	09.29.2020 23:37	U	1
Total BTEX		<0.00200	0.00200	mg/kg	09.29.2020 23:37	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	98	%	70-130	09.29.2020 23:37		
4-Bromofluorobenzene	460-00-4	108	%	70-130	09.29.2020 23:37		



Certificate of Analytical Results 673861

LT Environmental, Inc., Arvada, CO

Row 4 Wolverine SWD Riser

Sample Id: **PH02** Matrix: Soil Date Received: 09.29.2020 16:45
 Lab Sample Id: 673861-003 Date Collected: 09.28.2020 10:55 Sample Depth: 6 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 09.29.2020 17:26 Basis: Wet Weight
 Seq Number: 3138471

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	7400	49.9	mg/kg	09.30.2020 00:20		5

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 09.29.2020 17:30 Basis: Wet Weight
 Seq Number: 3138454

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.1	50.1	mg/kg	09.30.2020 05:25	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.1	50.1	mg/kg	09.30.2020 05:25	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.1	50.1	mg/kg	09.30.2020 05:25	U	1
Total GRO-DRO	PHC628	<50.1	50.1	mg/kg	09.30.2020 05:25	U	1
Total TPH	PHC635	<50.1	50.1	mg/kg	09.30.2020 05:25	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	121	%	70-135	09.30.2020 05:25	
o-Terphenyl	84-15-1	129	%	70-135	09.30.2020 05:25	



Certificate of Analytical Results 673861

LT Environmental, Inc., Arvada, CO

Row 4 Wolverine SWD Riser

Sample Id: **PH02**
Lab Sample Id: 673861-003

Matrix: Soil
Date Collected: 09.28.2020 10:55

Date Received: 09.29.2020 16:45
Sample Depth: 6 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 09.29.2020 17:53

Basis: Wet Weight

Seq Number: 3138453

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	09.29.2020 23:59	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	09.29.2020 23:59	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	09.29.2020 23:59	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	09.29.2020 23:59	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	09.29.2020 23:59	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	09.29.2020 23:59	U	1
Total BTEX		<0.00201	0.00201	mg/kg	09.29.2020 23:59	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	120	%	70-130	09.29.2020 23:59	
1,4-Difluorobenzene	540-36-3	106	%	70-130	09.29.2020 23:59	



Certificate of Analytical Results 673861

LT Environmental, Inc., Arvada, CO

Row 4 Wolverine SWD Riser

Sample Id: **PH02 A** Matrix: Soil Date Received: 09.29.2020 16:45
 Lab Sample Id: 673861-004 Date Collected: 09.28.2020 12:45 Sample Depth: 12 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 09.29.2020 17:26 Basis: Wet Weight
 Seq Number: 3138471

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	160	10.0	mg/kg	09.30.2020 00:25		1

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 09.29.2020 18:00 Basis: Wet Weight
 Seq Number: 3138480

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.1	50.1	mg/kg	09.30.2020 08:08	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.1	50.1	mg/kg	09.30.2020 08:08	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.1	50.1	mg/kg	09.30.2020 08:08	U	1
Total GRO-DRO	PHC628	<50.1	50.1	mg/kg	09.30.2020 08:08	U	1
Total TPH	PHC635	<50.1	50.1	mg/kg	09.30.2020 08:08	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	104	%	70-135	09.30.2020 08:08	
o-Terphenyl	84-15-1	103	%	70-135	09.30.2020 08:08	



Certificate of Analytical Results 673861

LT Environmental, Inc., Arvada, CO

Row 4 Wolverine SWD Riser

Sample Id: **PH02 A**
Lab Sample Id: 673861-004

Matrix: Soil
Date Collected: 09.28.2020 12:45

Date Received: 09.29.2020 16:45
Sample Depth: 12 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 09.29.2020 17:53

Basis: Wet Weight

Seq Number: 3138453

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	09.30.2020 00:22	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	09.30.2020 00:22	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	09.30.2020 00:22	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	09.30.2020 00:22	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	09.30.2020 00:22	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	09.30.2020 00:22	U	1
Total BTEX		<0.00201	0.00201	mg/kg	09.30.2020 00:22	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	107	%	70-130	09.30.2020 00:22	
4-Bromofluorobenzene	460-00-4	121	%	70-130	09.30.2020 00:22	



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LT Environmental, Inc., Arvada, CO

Row 4 Wolverine SWD Riser

Sample Id: **PH03** Matrix: Soil Date Received: 09.29.2020 16:45
 Lab Sample Id: 673861-005 Date Collected: 09.28.2020 13:05 Sample Depth: 1 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 09.29.2020 17:26 Basis: Wet Weight
 Seq Number: 3138471

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	3020	50.1	mg/kg	09.30.2020 00:31		5

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 09.29.2020 18:00 Basis: Wet Weight
 Seq Number: 3138480

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	09.30.2020 07:07	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	09.30.2020 07:07	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	09.30.2020 07:07	U	1
Total GRO-DRO	PHC628	<50.0	50.0	mg/kg	09.30.2020 07:07	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	09.30.2020 07:07	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	104	%	70-135	09.30.2020 07:07	
o-Terphenyl	84-15-1	99	%	70-135	09.30.2020 07:07	



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LT Environmental, Inc., Arvada, CO

Row 4 Wolverine SWD Riser

Sample Id: **PH03**
Lab Sample Id: 673861-005

Matrix: Soil
Date Collected: 09.28.2020 13:05

Date Received: 09.29.2020 16:45
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 09.29.2020 17:53

Basis: Wet Weight

Seq Number: 3138453

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	09.30.2020 00:44	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	09.30.2020 00:44	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	09.30.2020 00:44	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	09.30.2020 00:44	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	09.30.2020 00:44	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	09.30.2020 00:44	U	1
Total BTEX		<0.00201	0.00201	mg/kg	09.30.2020 00:44	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	115	%	70-130	09.30.2020 00:44		
1,4-Difluorobenzene	540-36-3	107	%	70-130	09.30.2020 00:44		



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LT Environmental, Inc., Arvada, CO

Row 4 Wolverine SWD Riser

Sample Id: **PH03 A** Matrix: Soil Date Received: 09.29.2020 16:45
 Lab Sample Id: 673861-006 Date Collected: 09.28.2020 13:14 Sample Depth: 3 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 09.29.2020 17:26 Basis: Wet Weight
 Seq Number: 3138471

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<10.0	10.0	mg/kg	09.30.2020 00:36	U	1

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 09.29.2020 18:00 Basis: Wet Weight
 Seq Number: 3138480

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.1	50.1	mg/kg	09.30.2020 08:29	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.1	50.1	mg/kg	09.30.2020 08:29	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.1	50.1	mg/kg	09.30.2020 08:29	U	1
Total GRO-DRO	PHC628	<50.1	50.1	mg/kg	09.30.2020 08:29	U	1
Total TPH	PHC635	<50.1	50.1	mg/kg	09.30.2020 08:29	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	118	%	70-135	09.30.2020 08:29	
o-Terphenyl	84-15-1	118	%	70-135	09.30.2020 08:29	



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LT Environmental, Inc., Arvada, CO

Row 4 Wolverine SWD Riser

Sample Id: **PH03 A**
Lab Sample Id: 673861-006

Matrix: Soil
Date Collected: 09.28.2020 13:14

Date Received: 09.29.2020 16:45
Sample Depth: 3 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 09.29.2020 17:53

Basis: Wet Weight

Seq Number: 3138453

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	09.30.2020 01:07	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	09.30.2020 01:07	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	09.30.2020 01:07	U	1
m,p-Xylenes	179601-23-1	<0.00403	0.00403	mg/kg	09.30.2020 01:07	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	09.30.2020 01:07	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	09.30.2020 01:07	U	1
Total BTEX		<0.00202	0.00202	mg/kg	09.30.2020 01:07	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	94	%	70-130	09.30.2020 01:07		
4-Bromofluorobenzene	460-00-4	108	%	70-130	09.30.2020 01:07		



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LT Environmental, Inc., Arvada, CO

Row 4 Wolverine SWD Riser

Sample Id: **PH04** Matrix: Soil Date Received: 09.29.2020 16:45
 Lab Sample Id: 673861-007 Date Collected: 09.28.2020 13:40 Sample Depth: 2 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 09.29.2020 17:26 Basis: Wet Weight
 Seq Number: 3138471

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	5890	49.6	mg/kg	09.30.2020 00:52		5

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 09.29.2020 18:00 Basis: Wet Weight
 Seq Number: 3138480

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.1	50.1	mg/kg	09.30.2020 08:48	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.1	50.1	mg/kg	09.30.2020 08:48	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.1	50.1	mg/kg	09.30.2020 08:48	U	1
Total GRO-DRO	PHC628	<50.1	50.1	mg/kg	09.30.2020 08:48	U	1
Total TPH	PHC635	<50.1	50.1	mg/kg	09.30.2020 08:48	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	107	%	70-135	09.30.2020 08:48	
o-Terphenyl	84-15-1	100	%	70-135	09.30.2020 08:48	



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LT Environmental, Inc., Arvada, CO

Row 4 Wolverine SWD Riser

Sample Id: **PH04**
Lab Sample Id: 673861-007

Matrix: Soil
Date Collected: 09.28.2020 13:40

Date Received: 09.29.2020 16:45
Sample Depth: 2 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 09.29.2020 17:53

Basis: Wet Weight

Seq Number: 3138453

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	09.30.2020 01:29	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	09.30.2020 01:29	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	09.30.2020 01:29	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	09.30.2020 01:29	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	09.30.2020 01:29	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	09.30.2020 01:29	U	1
Total BTEX		<0.00198	0.00198	mg/kg	09.30.2020 01:29	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	104	%	70-130	09.30.2020 01:29	
4-Bromofluorobenzene	460-00-4	118	%	70-130	09.30.2020 01:29	



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Row 4 Wolverine SWD Riser

Sample Id: **PH04 A** Matrix: Soil Date Received: 09.29.2020 16:45
 Lab Sample Id: 673861-008 Date Collected: 09.28.2020 14:02 Sample Depth: 6 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 09.29.2020 17:26 Basis: Wet Weight
 Seq Number: 3138471

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	300	49.9	mg/kg	09.30.2020 00:58		5

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 09.29.2020 18:00 Basis: Wet Weight
 Seq Number: 3138480

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	09.30.2020 09:09	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	09.30.2020 09:09	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	09.30.2020 09:09	U	1
Total GRO-DRO	PHC628	<50.0	50.0	mg/kg	09.30.2020 09:09	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	09.30.2020 09:09	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	105	%	70-135	09.30.2020 09:09	
o-Terphenyl	84-15-1	102	%	70-135	09.30.2020 09:09	



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LT Environmental, Inc., Arvada, CO

Row 4 Wolverine SWD Riser

Sample Id: **PH04 A**
Lab Sample Id: 673861-008

Matrix: Soil
Date Collected: 09.28.2020 14:02

Date Received: 09.29.2020 16:45
Sample Depth: 6 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 09.29.2020 17:53

Basis: Wet Weight

Seq Number: 3138453

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	09.30.2020 01:51	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	09.30.2020 01:51	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	09.30.2020 01:51	U	1
m,p-Xylenes	179601-23-1	<0.00403	0.00403	mg/kg	09.30.2020 01:51	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	09.30.2020 01:51	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	09.30.2020 01:51	U	1
Total BTEX		<0.00202	0.00202	mg/kg	09.30.2020 01:51	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	118	%	70-130	09.30.2020 01:51	
1,4-Difluorobenzene	540-36-3	102	%	70-130	09.30.2020 01:51	



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LT Environmental, Inc., Arvada, CO

Row 4 Wolverine SWD Riser

Sample Id: **PH05** Matrix: Soil Date Received: 09.29.2020 16:45
 Lab Sample Id: 673861-009 Date Collected: 09.28.2020 14:20 Sample Depth: 2 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 09.29.2020 17:26 Basis: Wet Weight
 Seq Number: 3138471

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	4080	49.8	mg/kg	09.30.2020 01:14		5

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 09.29.2020 18:00 Basis: Wet Weight
 Seq Number: 3138480

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	09.30.2020 09:29	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	09.30.2020 09:29	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	09.30.2020 09:29	U	1
Total GRO-DRO	PHC628	<49.9	49.9	mg/kg	09.30.2020 09:29	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	09.30.2020 09:29	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	109	%	70-135	09.30.2020 09:29	
o-Terphenyl	84-15-1	100	%	70-135	09.30.2020 09:29	



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LT Environmental, Inc., Arvada, CO

Row 4 Wolverine SWD Riser

Sample Id: **PH05**
Lab Sample Id: 673861-009

Matrix: Soil
Date Collected: 09.28.2020 14:20

Date Received: 09.29.2020 16:45
Sample Depth: 2 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 09.29.2020 17:53

Basis: Wet Weight

Seq Number: 3138453

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	09.30.2020 02:14	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	09.30.2020 02:14	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	09.30.2020 02:14	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	09.30.2020 02:14	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	09.30.2020 02:14	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	09.30.2020 02:14	U	1
Total BTEX		<0.00200	0.00200	mg/kg	09.30.2020 02:14	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	100	%	70-130	09.30.2020 02:14	
4-Bromofluorobenzene	460-00-4	113	%	70-130	09.30.2020 02:14	



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LT Environmental, Inc., Arvada, CO

Row 4 Wolverine SWD Riser

Sample Id: **PH05 A** Matrix: Soil Date Received: 09.29.2020 16:45
 Lab Sample Id: 673861-010 Date Collected: 09.28.2020 14:28 Sample Depth: 4 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 09.29.2020 17:26 Basis: Wet Weight
 Seq Number: 3138471

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	45.2	9.98	mg/kg	09.30.2020 01:20		1

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 09.29.2020 18:00 Basis: Wet Weight
 Seq Number: 3138480

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.1	50.1	mg/kg	09.30.2020 09:49	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.1	50.1	mg/kg	09.30.2020 09:49	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.1	50.1	mg/kg	09.30.2020 09:49	U	1
Total GRO-DRO	PHC628	<50.1	50.1	mg/kg	09.30.2020 09:49	U	1
Total TPH	PHC635	<50.1	50.1	mg/kg	09.30.2020 09:49	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	104	%	70-135	09.30.2020 09:49	
o-Terphenyl	84-15-1	100	%	70-135	09.30.2020 09:49	



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LT Environmental, Inc., Arvada, CO

Row 4 Wolverine SWD Riser

Sample Id: **PH05 A**
Lab Sample Id: 673861-010

Matrix: Soil
Date Collected: 09.28.2020 14:28

Date Received: 09.29.2020 16:45
Sample Depth: 4 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 09.29.2020 17:53

Basis: Wet Weight

Seq Number: 3138453

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	09.30.2020 02:36	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	09.30.2020 02:36	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	09.30.2020 02:36	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	09.30.2020 02:36	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	09.30.2020 02:36	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	09.30.2020 02:36	U	1
Total BTEX		<0.00201	0.00201	mg/kg	09.30.2020 02:36	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	104	%	70-130	09.30.2020 02:36		
4-Bromofluorobenzene	460-00-4	115	%	70-130	09.30.2020 02:36		



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Row 4 Wolverine SWD Riser

Sample Id: **PH06** Matrix: Soil Date Received: 09.29.2020 16:45
 Lab Sample Id: 673861-011 Date Collected: 09.28.2020 14:46 Sample Depth: 1 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 09.29.2020 17:26 Basis: Wet Weight
 Seq Number: 3138471

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	3610	49.6	mg/kg	09.30.2020 01:25		5

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 09.29.2020 18:00 Basis: Wet Weight
 Seq Number: 3138480

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.2	50.2	mg/kg	09.30.2020 10:10	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.2	50.2	mg/kg	09.30.2020 10:10	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.2	50.2	mg/kg	09.30.2020 10:10	U	1
Total GRO-DRO	PHC628	<50.2	50.2	mg/kg	09.30.2020 10:10	U	1
Total TPH	PHC635	<50.2	50.2	mg/kg	09.30.2020 10:10	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	107	%	70-135	09.30.2020 10:10	
o-Terphenyl	84-15-1	105	%	70-135	09.30.2020 10:10	



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LT Environmental, Inc., Arvada, CO

Row 4 Wolverine SWD Riser

Sample Id: **PH06**
Lab Sample Id: 673861-011

Matrix: Soil
Date Collected: 09.28.2020 14:46

Date Received: 09.29.2020 16:45
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 09.29.2020 17:53

Basis: Wet Weight

Seq Number: 3138453

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	09.30.2020 03:56	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	09.30.2020 03:56	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	09.30.2020 03:56	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/kg	09.30.2020 03:56	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	09.30.2020 03:56	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	09.30.2020 03:56	U	1
Total BTEX		<0.00200	0.00200	mg/kg	09.30.2020 03:56	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	118	%	70-130	09.30.2020 03:56		
1,4-Difluorobenzene	540-36-3	102	%	70-130	09.30.2020 03:56		



Certificate of Analytical Results 673861

LT Environmental, Inc., Arvada, CO

Row 4 Wolverine SWD Riser

Sample Id: **PH06 A**
 Lab Sample Id: 673861-012

Matrix: Soil
 Date Collected: 09.28.2020 14:55

Date Received: 09.29.2020 16:45
 Sample Depth: 4 ft

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 09.29.2020 17:26

Basis: Wet Weight

Seq Number: 3138471

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<9.94	9.94	mg/kg	09.30.2020 01:31	U	1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DTH

% Moisture:

Analyst: DTH

Date Prep: 09.29.2020 18:00

Basis: Wet Weight

Seq Number: 3138480

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.2	50.2	mg/kg	09.30.2020 10:30	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.2	50.2	mg/kg	09.30.2020 10:30	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.2	50.2	mg/kg	09.30.2020 10:30	U	1
Total GRO-DRO	PHC628	<50.2	50.2	mg/kg	09.30.2020 10:30	U	1
Total TPH	PHC635	<50.2	50.2	mg/kg	09.30.2020 10:30	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	106	%	70-135	09.30.2020 10:30	
o-Terphenyl	84-15-1	103	%	70-135	09.30.2020 10:30	



Certificate of Analytical Results 673861

LT Environmental, Inc., Arvada, CO

Row 4 Wolverine SWD Riser

Sample Id: **PH06 A**
Lab Sample Id: 673861-012

Matrix: Soil
Date Collected: 09.28.2020 14:55

Date Received: 09.29.2020 16:45
Sample Depth: 4 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 09.29.2020 17:53

Basis: Wet Weight

Seq Number: 3138453

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	09.30.2020 04:19	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	09.30.2020 04:19	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	09.30.2020 04:19	U	1
m,p-Xylenes	179601-23-1	<0.00404	0.00404	mg/kg	09.30.2020 04:19	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	09.30.2020 04:19	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	09.30.2020 04:19	U	1
Total BTEX		<0.00202	0.00202	mg/kg	09.30.2020 04:19	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	115	%	70-130	09.30.2020 04:19	
1,4-Difluorobenzene	540-36-3	105	%	70-130	09.30.2020 04:19	



Certificate of Analytical Results 673861

LT Environmental, Inc., Arvada, CO

Row 4 Wolverine SWD Riser

Sample Id: **PH07** Matrix: Soil Date Received: 09.29.2020 16:45
 Lab Sample Id: 673861-013 Date Collected: 09.28.2020 15:15 Sample Depth: 1 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 09.29.2020 17:26 Basis: Wet Weight
 Seq Number: 3138471

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	4600	50.1	mg/kg	09.30.2020 01:36		5

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 09.29.2020 18:00 Basis: Wet Weight
 Seq Number: 3138480

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	09.30.2020 10:50	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	09.30.2020 10:50	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	09.30.2020 10:50	U	1
Total GRO-DRO	PHC628	<49.9	49.9	mg/kg	09.30.2020 10:50	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	09.30.2020 10:50	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	104	%	70-135	09.30.2020 10:50	
o-Terphenyl	84-15-1	102	%	70-135	09.30.2020 10:50	



Certificate of Analytical Results 673861

LT Environmental, Inc., Arvada, CO

Row 4 Wolverine SWD Riser

Sample Id: **PH07**
Lab Sample Id: 673861-013

Matrix: Soil
Date Collected: 09.28.2020 15:15

Date Received: 09.29.2020 16:45
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 09.29.2020 17:53

Basis: Wet Weight

Seq Number: 3138453

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	09.30.2020 04:41	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	09.30.2020 04:41	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	09.30.2020 04:41	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	09.30.2020 04:41	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	09.30.2020 04:41	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	09.30.2020 04:41	U	1
Total BTEX		<0.00199	0.00199	mg/kg	09.30.2020 04:41	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	113	%	70-130	09.30.2020 04:41	
1,4-Difluorobenzene	540-36-3	104	%	70-130	09.30.2020 04:41	



Certificate of Analytical Results 673861

LT Environmental, Inc., Arvada, CO

Row 4 Wolverine SWD Riser

Sample Id: **PH07 A** Matrix: Soil Date Received: 09.29.2020 16:45
 Lab Sample Id: 673861-014 Date Collected: 09.28.2020 15:24 Sample Depth: 4 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 09.29.2020 17:26 Basis: Wet Weight
 Seq Number: 3138471

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	47.7	10.0	mg/kg	09.30.2020 01:42		1

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 09.29.2020 18:00 Basis: Wet Weight
 Seq Number: 3138480

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	09.30.2020 11:30	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	09.30.2020 11:30	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	09.30.2020 11:30	U	1
Total GRO-DRO	PHC628	<50.0	50.0	mg/kg	09.30.2020 11:30	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	09.30.2020 11:30	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	102	%	70-135	09.30.2020 11:30	
o-Terphenyl	84-15-1	106	%	70-135	09.30.2020 11:30	



Certificate of Analytical Results 673861

LT Environmental, Inc., Arvada, CO

Row 4 Wolverine SWD Riser

Sample Id: **PH07 A**
Lab Sample Id: 673861-014

Matrix: Soil
Date Collected: 09.28.2020 15:24

Date Received: 09.29.2020 16:45
Sample Depth: 4 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 09.29.2020 17:53

Basis: Wet Weight

Seq Number: 3138453

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	09.30.2020 05:03	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	09.30.2020 05:03	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	09.30.2020 05:03	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/kg	09.30.2020 05:03	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	09.30.2020 05:03	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	09.30.2020 05:03	U	1
Total BTEX		<0.00200	0.00200	mg/kg	09.30.2020 05:03	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	119	%	70-130	09.30.2020 05:03	
1,4-Difluorobenzene	540-36-3	108	%	70-130	09.30.2020 05:03	



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.

Row 4 Wolverine SWD Riser

Analytical Method: Chloride by EPA 300

Seq Number: 3138471

MB Sample Id: 7712349-1-BLK

Matrix: Solid

LCS Sample Id: 7712349-1-BKS

Prep Method: E300P

Date Prep: 09.29.2020

LCSD Sample Id: 7712349-1-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	250	100	251	100	90-110	0	20	mg/kg	09.29.2020 23:08	

Analytical Method: Chloride by EPA 300

Seq Number: 3138471

Parent Sample Id: 673855-001

Matrix: Soil

MS Sample Id: 673855-001 S

Prep Method: E300P

Date Prep: 09.29.2020

MSD Sample Id: 673855-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	209	199	407	99	408	100	90-110	0	20	mg/kg	09.29.2020 23:25	

Analytical Method: Chloride by EPA 300

Seq Number: 3138471

Parent Sample Id: 673861-006

Matrix: Soil

MS Sample Id: 673861-006 S

Prep Method: E300P

Date Prep: 09.29.2020

MSD Sample Id: 673861-006 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<10.0	201	213	106	213	106	90-110	0	20	mg/kg	09.30.2020 00:41	

Analytical Method: TPH by SW8015 Mod

Seq Number: 3138454

MB Sample Id: 7712307-1-BLK

Matrix: Solid

LCS Sample Id: 7712307-1-BKS

Prep Method: SW8015P

Date Prep: 09.29.2020

LCSD Sample Id: 7712307-1-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	1080	108	1030	103	70-135	5	35	mg/kg	09.29.2020 20:58	
Diesel Range Organics (DRO)	<50.0	1000	1130	113	1090	109	70-135	4	35	mg/kg	09.29.2020 20:58	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	92		122		117		70-135	%	09.29.2020 20:58
o-Terphenyl	90		105		104		70-135	%	09.29.2020 20:58

Analytical Method: TPH by SW8015 Mod

Seq Number: 3138480

MB Sample Id: 7712357-1-BLK

Matrix: Solid

LCS Sample Id: 7712357-1-BKS

Prep Method: SW8015P

Date Prep: 09.29.2020

LCSD Sample Id: 7712357-1-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	948	95	864	86	70-135	9	35	mg/kg	09.30.2020 06:06	
Diesel Range Organics (DRO)	<50.0	1000	986	99	890	89	70-135	10	35	mg/kg	09.30.2020 06:06	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	97		122		112		70-135	%	09.30.2020 06:06
o-Terphenyl	90		91		85		70-135	%	09.30.2020 06:06

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.
Row 4 Wolverine SWD Riser

Analytical Method: TPH by SW8015 Mod

Seq Number: 3138454

Matrix: Solid

Prep Method: SW8015P

Date Prep: 09.29.2020

MB Sample Id: 7712307-1-BLK

Parameter

Parameter	MB Result	Units	Analysis Date	Flag
Motor Oil Range Hydrocarbons (MRO)	<50.0	mg/kg	09.29.2020 21:39	

Analytical Method: TPH by SW8015 Mod

Seq Number: 3138480

Matrix: Solid

Prep Method: SW8015P

Date Prep: 09.29.2020

MB Sample Id: 7712357-1-BLK

Parameter

Parameter	MB Result	Units	Analysis Date	Flag
Motor Oil Range Hydrocarbons (MRO)	<50.0	mg/kg	09.30.2020 06:47	

Analytical Method: TPH by SW8015 Mod

Seq Number: 3138454

Matrix: Soil

Prep Method: SW8015P

Date Prep: 09.29.2020

Parent Sample Id: 673797-026

MS Sample Id: 673797-026 S

MSD Sample Id: 673797-026 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)	<50.3	1010	1080	107	1080	108	70-135	0	35	mg/kg	09.29.2020 22:20	
Diesel Range Organics (DRO)	<50.3	1010	1160	115	1140	114	70-135	2	35	mg/kg	09.29.2020 22:20	

Surrogate

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	125		125		70-135	%	09.29.2020 22:20
o-Terphenyl	113		112		70-135	%	09.29.2020 22:20

Analytical Method: TPH by SW8015 Mod

Seq Number: 3138480

Matrix: Soil

Prep Method: SW8015P

Date Prep: 09.29.2020

Parent Sample Id: 673861-005

MS Sample Id: 673861-005 S

MSD Sample Id: 673861-005 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)	<49.8	996	1040	104	1010	101	70-135	3	35	mg/kg	09.30.2020 07:28	
Diesel Range Organics (DRO)	<49.8	996	1080	108	1050	105	70-135	3	35	mg/kg	09.30.2020 07:28	

Surrogate

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	123		118		70-135	%	09.30.2020 07:28
o-Terphenyl	107		103		70-135	%	09.30.2020 07:28

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.

Row 4 Wolverine SWD Riser

Analytical Method: BTEX by EPA 8021B

Seq Number: 3138453

MB Sample Id: 7712342-1-BLK

Matrix: Solid

Prep Method: SW5035A

Date Prep: 09.29.2020

LCS Sample Id: 7712342-1-BKS

LCSD Sample Id: 7712342-1-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	0.0896	90	0.0974	97	70-130	8	35	mg/kg	09.29.2020 21:10	
Toluene	<0.00200	0.100	0.0840	84	0.0902	90	70-130	7	35	mg/kg	09.29.2020 21:10	
Ethylbenzene	<0.00200	0.100	0.0916	92	0.0958	96	71-129	4	35	mg/kg	09.29.2020 21:10	
m,p-Xylenes	<0.00400	0.200	0.185	93	0.196	98	70-135	6	35	mg/kg	09.29.2020 21:10	
o-Xylene	<0.00200	0.100	0.0929	93	0.0991	99	71-133	6	35	mg/kg	09.29.2020 21:10	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	104		100		101		70-130	%	09.29.2020 21:10
4-Bromofluorobenzene	115		105		114		70-130	%	09.29.2020 21:10

Analytical Method: BTEX by EPA 8021B

Seq Number: 3138453

Parent Sample Id: 673861-001

Matrix: Soil

Prep Method: SW5035A

Date Prep: 09.29.2020

MS Sample Id: 673861-001 S

MSD Sample Id: 673861-001 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	0.125	125	0.0998	100	70-130	22	35	mg/kg	09.29.2020 21:55	
Toluene	<0.00201	0.100	0.120	120	0.0953	95	70-130	23	35	mg/kg	09.29.2020 21:55	
Ethylbenzene	<0.00201	0.100	0.123	123	0.0975	98	71-129	23	35	mg/kg	09.29.2020 21:55	
m,p-Xylenes	<0.00402	0.201	0.248	123	0.195	97	70-135	24	35	mg/kg	09.29.2020 21:55	
o-Xylene	<0.00201	0.100	0.122	122	0.0957	96	71-133	24	35	mg/kg	09.29.2020 21:55	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	99		101		70-130	%	09.29.2020 21:55
4-Bromofluorobenzene	112		114		70-130	%	09.29.2020 21:55

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



Chain of Custody

Work Order No: 1673861

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

www.xenco.com

Page 1 of 2

Project Manager:	Dan Moir	Bill to: (if different)	Kyle Littlell
Company Name:	LT Environmental, Inc., Permian office	Company Name:	XTO Energy
Address:	3300 North A St. Bldg 1, Unit 222	Address:	3104 E Greene St.
City, State ZIP:	Midland, TX 79705	City, State ZIP:	Carlsbad, NM
Phone:	(432) 701-2610	Email:	dmoir@ltenv.com rmcalfree@ltenv.com

Program: ☒ UST/PT ☐ PRP ☐ Brownfields ☐ RC ☐ Superfund State of Project: NM Reporting Level: ☐ I ☐ II ☐ III ☐ IV ☐ V Deliverables: EDD ☐ ADAPT ☐ Other:		Work Order Comments
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Project Name:	Row 4 Wellbore SMD Riser	Turn Around	☐ Routine ☒ Rush: 24H
Project Number:	012920091		
P.O. Number:			
Sampler's Name:	Robert McAlfee	Due Date:	

SAMPLE RECEIPT		Temp Blank:	Yes	No	Wet Ice:	Yes	No
Temperature (°C):	3.2/3.0						
Received Intact:	Yes	No			Thermometer ID	TNMD07	
Cooler Custody Seals:	Yes	No	N/A		Correction Factor:	-0.2	
Sample Custody Seals:	Yes	No	N/A		Total Containers:	14	

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	ANALYSIS REQUEST																Work Order Notes	
PH01	S	09/29/20	0950	1'	1	X	X	X														
PH01A			1010	4'		X	X	X														
PH02			1055	6'		X	X	X														
PH02A			1245	12'		X	X	X														
PH03			1305	1'		X	X	X														
PH03A			1314	3'		X	X	X														
PH04			1340	2'		X	X	X														
PH04A			1402	6'		X	X	X														
PH05			1420	2'		X	X	X														
PH05A			1428	4'		X	X	X														

Total 200.7 / 6010 200.8 / 6020:

Circle Method(s) and Metal(s) to be analyzed

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
 TCLP / SPLP 6010: 8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Ti U

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
		9/29/20 16:45			



Chain of Custody

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)

Work Order No: 673861

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Page 2 of 2

Project Manager:	Dan Moir	Bill to: (if different)	Kyle Littell
Company Name:	LT Environmental, Inc., Permian office	Company Name:	XTO Energy
Address:	3300 North A St. Bldg 1, Unit 222	Address:	3104 E Greene St.
City, State ZIP:	Midland, TX 79705	City, State ZIP:	Carlsbad, NM
Phone:	(432) 701-2610	Email:	dmoir@ltenv.com kmlittell@ltenv.com

Program: ☒ UST/PST ☐ PRP ☐ Brownfields ☐ RC ☐ Superfund State of Project: NM Reporting Level: ☐ Level II ☐ Level III ☐ UST/UST ☐ RRP ☐ Level IV ☐ Deliverables: EDD ☐ ADAPT ☐ Other:		Work Order Comments Work Order Notes
---	--	---

Project Name:	ROW 4 Midline SWD Riser	Turn Around	☐ Routine ☒ Rush: 24H
Project Number:	019A20091	Due Date:	
P.O. Number:			
Sampler's Name:	Robert McAfee		

SAMPLE RECEIPT	Temp Blank:	Yes	No	Wet Ice:	Yes	No
Temperature (°C):						
Received Intact:	Yes	No	Thermometer ID			
Cooler Custody Seals:	Yes	No	Correction Factor:			
Sample Custody Seals:	Yes	No	Total Containers:			

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number	TPH (EPA 8015)	BTEX (EPA 8021)	Chloride (EPA 300.0)	ANALYSIS REQUEST										Work Order Notes																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
PH06	S	09/09/20	1446	1'	1	X	X	X																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													

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	
Note: 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)
9/29/20 16:45	9/29/20 16:45	2	4
6			

Eurofins Xenco, LLC

Prelogin/Nonconformance Report- Sample Log-In

Client: LT Environmental, Inc.

Date/ Time Received: 09.29.2020 04.45.00 PM

Work Order #: 673861

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

Samples received in bulk containers.

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

Analyst:

PH Device/Lot#:

Checklist completed by:



Cloe Clifton

Date: 09.29.2020

Checklist reviewed by:



Jessica Kramer

Date: 09.30.2020

Certificate of Analysis Summary 674465



LT Environmental, Inc., Arvada, CO

Project Name: Row 4 Wolveene SWD Riser

Project Id: 012920091

Date Received in Lab: Tue 10.06.2020 16:43

Contact: Dan Moir

Report Date: 11.06.2020 10:40

Project Location:

Project Manager: Jessica Kramer

<i>Analysis Requested</i>	<i>Lab Id:</i>	674465-001	674465-002	674465-003	674465-004		
	<i>Field Id:</i>	PH08	PH08A	PH09	PH09A		
	<i>Depth:</i>	2- ft	4- ft	1- ft	4- ft		
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL		
	<i>Sampled:</i>	10.06.2020 11:53	10.06.2020 11:56	10.06.2020 12:50	10.06.2020 12:59		
BTEX by EPA 8021B	<i>Extracted:</i>	10.06.2020 17:37	10.06.2020 17:37	10.06.2020 17:37	10.06.2020 17:37		
	<i>Analyzed:</i>	10.07.2020 10:24	10.07.2020 10:46	10.07.2020 11:08	10.07.2020 11:31		
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL		
Benzene		<0.00198 0.00198	<0.00199 0.00199	<0.00201 0.00201	<0.00200 0.00200		
Toluene		<0.00198 0.00198	<0.00199 0.00199	<0.00201 0.00201	<0.00200 0.00200		
Ethylbenzene		<0.00198 0.00198	<0.00199 0.00199	<0.00201 0.00201	<0.00200 0.00200		
m,p-Xylenes		<0.00397 0.00397	<0.00398 0.00398	<0.00402 0.00402	<0.00401 0.00401		
o-Xylene		<0.00198 0.00198	<0.00199 0.00199	<0.00201 0.00201	<0.00200 0.00200		
Total Xylenes		<0.00198 0.00198	<0.00199 0.00199	<0.00201 0.00201	<0.00200 0.00200		
Total BTEX		<0.00198 0.00198	<0.00199 0.00199	<0.00201 0.00201	<0.00200 0.00200		
Chloride by EPA 300	<i>Extracted:</i>	10.06.2020 18:39	10.06.2020 18:39	10.06.2020 18:39	10.06.2020 18:39		
	<i>Analyzed:</i>	10.06.2020 19:44	10.06.2020 20:02	10.06.2020 20:08	10.06.2020 20:14		
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL		
Chloride		955 9.90	112 49.8	2890 50.1	199 50.2		
TPH by SW8015 Mod	<i>Extracted:</i>	10.06.2020 17:30	10.06.2020 17:30	10.06.2020 17:30	10.07.2020 10:30		
	<i>Analyzed:</i>	10.07.2020 00:30	10.07.2020 00:50	10.07.2020 01:11	10.07.2020 11:37		
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL		
Gasoline Range Hydrocarbons (GRO)		<50.3 50.3	<49.8 49.8	<50.2 50.2	<50.0 50.0		
Diesel Range Organics (DRO)		<50.3 50.3	<49.8 49.8	<50.2 50.2	<50.0 50.0		
Motor Oil Range Hydrocarbons (MRO)		<50.3 50.3	<49.8 49.8	<50.2 50.2	<50.0 50.0		
Total GRO-DRO		<50.3 50.3	<49.8 49.8	<50.2 50.2	<50.0 50.0		
Total TPH		<50.3 50.3	<49.8 49.8	<50.2 50.2	<50.0 50.0		

BRL - Below Reporting Limit

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



Analytical Report 674465

for

LT Environmental, Inc.

Project Manager: Dan Moir

Row 4 Wolvene SWD Riser

012920091

11.06.2020

Collected By: Client

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

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-20-38), Arizona (AZ0765), Florida (E871002-33), Louisiana (03054)
Oklahoma (2020-014), North Carolina (681), Arkansas (20-035-0)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (T104704295-20-26), Arizona (AZ0809)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-20-18)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-20-23)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-21)
Xenco-Carlsbad (LELAP): Louisiana (05092)
Xenco-San Antonio (EPA Lab Code: TN102385): Texas (T104704534-20-8)
Xenco-Tampa: Florida (E87429), North Carolina (483)



11.06.2020

Project Manager: **Dan Moir**

LT Environmental, Inc.

4600 W. 60th Avenue

Arvada, CO 80003

Reference: Eurofins Xenco, LLC Report No(s): **674465**

Row 4 Wolvene SWD Riser

Project Address:

Dan Moir:

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 Eurofins Xenco, LLC Report Number(s) 674465. 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 Eurofins Xenco, LLC. 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. 674465 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 Eurofins Xenco, LLC 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 674465

LT Environmental, Inc., Arvada, CO

Row 4 Wolvene SWD Riser

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
PH08	S	10.06.2020 11:53	2 ft	674465-001
PH08A	S	10.06.2020 11:56	4 ft	674465-002
PH09	S	10.06.2020 12:50	1 ft	674465-003
PH09A	S	10.06.2020 12:59	4 ft	674465-004



CASE NARRATIVE

Client Name: *LT Environmental, Inc.*

Project Name: *Row 4 Wolvene SWD Riser*

Project ID: 012920091
Work Order Number(s): 674465

Report Date: 11.06.2020
Date Received: 10.06.2020

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None



Certificate of Analytical Results 674465

LT Environmental, Inc., Arvada, CO

Row 4 Wolveve SWD Riser

Sample Id: **PH08**
Lab Sample Id: 674465-001

Matrix: Soil
Date Collected: 10.06.2020 11:53

Date Received: 10.06.2020 16:43
Sample Depth: 2 ft

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: MAB

Analyst: MAB

Date Prep: 10.06.2020 18:39

% Moisture:
Basis: Wet Weight

Seq Number: 3139047

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	955	9.90	mg/kg	10.06.2020 19:44		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DTH

Analyst: DTH

Date Prep: 10.06.2020 17:30

% Moisture:
Basis: Wet Weight

Seq Number: 3139030

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.3	50.3	mg/kg	10.07.2020 00:30	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.3	50.3	mg/kg	10.07.2020 00:30	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.3	50.3	mg/kg	10.07.2020 00:30	U	1
Total GRO-DRO	PHC628	<50.3	50.3	mg/kg	10.07.2020 00:30	U	1
Total TPH	PHC635	<50.3	50.3	mg/kg	10.07.2020 00:30	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	102	%	70-135	10.07.2020 00:30	
o-Terphenyl	84-15-1	86	%	70-135	10.07.2020 00:30	



Certificate of Analytical Results 674465

LT Environmental, Inc., Arvada, CO

Row 4 Wolvene SWD Riser

Sample Id: **PH08**
Lab Sample Id: 674465-001

Matrix: Soil
Date Collected: 10.06.2020 11:53

Date Received: 10.06.2020 16:43
Sample Depth: 2 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MAB

Analyst: MAB

Date Prep: 10.06.2020 17:37

% Moisture:
Basis: Wet Weight

Seq Number: 3139044

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	10.07.2020 10:24	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	10.07.2020 10:24	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	10.07.2020 10:24	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	10.07.2020 10:24	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	10.07.2020 10:24	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	10.07.2020 10:24	U	1
Total BTEX		<0.00198	0.00198	mg/kg	10.07.2020 10:24	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	110	%	70-130	10.07.2020 10:24		
1,4-Difluorobenzene	540-36-3	100	%	70-130	10.07.2020 10:24		



Certificate of Analytical Results 674465

LT Environmental, Inc., Arvada, CO

Row 4 Wolveene SWD Riser

Sample Id: **PH08A**
Lab Sample Id: 674465-002

Matrix: Soil
Date Collected: 10.06.2020 11:56

Date Received: 10.06.2020 16:43
Sample Depth: 4 ft

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: MAB

Analyst: MAB

Date Prep: 10.06.2020 18:39

% Moisture:
Basis: Wet Weight

Seq Number: 3139047

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	112	49.8	mg/kg	10.06.2020 20:02		5

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DTH

Analyst: DTH

Date Prep: 10.06.2020 17:30

% Moisture:
Basis: Wet Weight

Seq Number: 3139030

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.8	49.8	mg/kg	10.07.2020 00:50	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.8	49.8	mg/kg	10.07.2020 00:50	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.8	49.8	mg/kg	10.07.2020 00:50	U	1
Total GRO-DRO	PHC628	<49.8	49.8	mg/kg	10.07.2020 00:50	U	1
Total TPH	PHC635	<49.8	49.8	mg/kg	10.07.2020 00:50	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	106	%	70-135	10.07.2020 00:50	
o-Terphenyl	84-15-1	102	%	70-135	10.07.2020 00:50	



Certificate of Analytical Results 674465

LT Environmental, Inc., Arvada, CO

Row 4 Wolvene SWD Riser

Sample Id: **PH08A**
Lab Sample Id: 674465-002

Matrix: Soil
Date Collected: 10.06.2020 11:56

Date Received: 10.06.2020 16:43
Sample Depth: 4 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MAB

Analyst: MAB

Date Prep: 10.06.2020 17:37

% Moisture:
Basis: Wet Weight

Seq Number: 3139044

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	10.07.2020 10:46	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	10.07.2020 10:46	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	10.07.2020 10:46	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	10.07.2020 10:46	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	10.07.2020 10:46	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	10.07.2020 10:46	U	1
Total BTEX		<0.00199	0.00199	mg/kg	10.07.2020 10:46	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	112	%	70-130	10.07.2020 10:46		
1,4-Difluorobenzene	540-36-3	103	%	70-130	10.07.2020 10:46		



Certificate of Analytical Results 674465

LT Environmental, Inc., Arvada, CO

Row 4 Wolveve SWD Riser

Sample Id: **PH09** Matrix: Soil Date Received: 10.06.2020 16:43
 Lab Sample Id: 674465-003 Date Collected: 10.06.2020 12:50 Sample Depth: 1 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB
 Analyst: MAB Date Prep: 10.06.2020 18:39 % Moisture:
 Seq Number: 3139047 Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	2890	50.1	mg/kg	10.06.2020 20:08		5

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH
 Analyst: DTH Date Prep: 10.06.2020 17:30 % Moisture:
 Seq Number: 3139030 Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.2	50.2	mg/kg	10.07.2020 01:11	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.2	50.2	mg/kg	10.07.2020 01:11	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.2	50.2	mg/kg	10.07.2020 01:11	U	1
Total GRO-DRO	PHC628	<50.2	50.2	mg/kg	10.07.2020 01:11	U	1
Total TPH	PHC635	<50.2	50.2	mg/kg	10.07.2020 01:11	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	93	%	70-135	10.07.2020 01:11	
o-Terphenyl	84-15-1	100	%	70-135	10.07.2020 01:11	



Certificate of Analytical Results 674465

LT Environmental, Inc., Arvada, CO

Row 4 Wolvene SWD Riser

Sample Id: **PH09**
Lab Sample Id: 674465-003

Matrix: Soil
Date Collected: 10.06.2020 12:50

Date Received: 10.06.2020 16:43
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MAB

Analyst: MAB

Date Prep: 10.06.2020 17:37

% Moisture:
Basis: Wet Weight

Seq Number: 3139044

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	10.07.2020 11:08	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	10.07.2020 11:08	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	10.07.2020 11:08	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	10.07.2020 11:08	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	10.07.2020 11:08	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	10.07.2020 11:08	U	1
Total BTEX		<0.00201	0.00201	mg/kg	10.07.2020 11:08	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	114	%	70-130	10.07.2020 11:08		
1,4-Difluorobenzene	540-36-3	104	%	70-130	10.07.2020 11:08		



Certificate of Analytical Results 674465

LT Environmental, Inc., Arvada, CO

Row 4 Wolveene SWD Riser

Sample Id: **PH09A**
Lab Sample Id: 674465-004

Matrix: Soil
Date Collected: 10.06.2020 12:59

Date Received: 10.06.2020 16:43
Sample Depth: 4 ft

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: MAB

Analyst: MAB

Date Prep: 10.06.2020 18:39

% Moisture:
Basis: Wet Weight

Seq Number: 3139047

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	199	50.2	mg/kg	10.06.2020 20:14		5

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DTH

Analyst: DTH

Date Prep: 10.07.2020 10:30

% Moisture:
Basis: Wet Weight

Seq Number: 3139072

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.07.2020 11:37	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.07.2020 11:37	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.07.2020 11:37	U	1
Total GRO-DRO	PHC628	<50.0	50.0	mg/kg	10.07.2020 11:37	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.07.2020 11:37	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	124	%	70-135	10.07.2020 11:37	
o-Terphenyl	84-15-1	117	%	70-135	10.07.2020 11:37	



Certificate of Analytical Results 674465

LT Environmental, Inc., Arvada, CO

Row 4 Wolvene SWD Riser

Sample Id: **PH09A**
Lab Sample Id: 674465-004

Matrix: Soil
Date Collected: 10.06.2020 12:59

Date Received: 10.06.2020 16:43
Sample Depth: 4 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MAB

Analyst: MAB

Date Prep: 10.06.2020 17:37

% Moisture:
Basis: Wet Weight

Seq Number: 3139044

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	10.07.2020 11:31	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	10.07.2020 11:31	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	10.07.2020 11:31	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	10.07.2020 11:31	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	10.07.2020 11:31	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	10.07.2020 11:31	U	1
Total BTEX		<0.00200	0.00200	mg/kg	10.07.2020 11:31	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	114	%	70-130	10.07.2020 11:31		
1,4-Difluorobenzene	540-36-3	101	%	70-130	10.07.2020 11:31		



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.
Row 4 Wolvene SWD Riser

Analytical Method: Chloride by EPA 300

Seq Number: 3139047

MB Sample Id: 7712757-1-BLK

Matrix: Solid

LCS Sample Id: 7712757-1-BKS

Prep Method: E300P

Date Prep: 10.06.2020

LCSD Sample Id: 7712757-1-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	10.06.2020 19:32	

Analytical Method: Chloride by EPA 300

Seq Number: 3139047

Parent Sample Id: 674465-001

Matrix: Soil

MS Sample Id: 674465-001 S

Prep Method: E300P

Date Prep: 10.06.2020

MSD Sample Id: 674465-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	955	198	1140	93	1150	98	90-110	1	20	mg/kg	10.06.2020 19:50	

Analytical Method: TPH by SW8015 Mod

Seq Number: 3139030

MB Sample Id: 7712740-1-BLK

Matrix: Solid

LCS Sample Id: 7712740-1-BKS

Prep Method: SW8015P

Date Prep: 10.06.2020

LCSD Sample Id: 7712740-1-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	1140	114	1150	115	70-135	1	35	mg/kg	10.06.2020 11:04	
Diesel Range Organics (DRO)	<50.0	1000	1060	106	1090	109	70-135	3	35	mg/kg	10.06.2020 11:04	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	95		117		115		70-135	%	10.06.2020 11:04
o-Terphenyl	86		83		85		70-135	%	10.06.2020 11:04

Analytical Method: TPH by SW8015 Mod

Seq Number: 3139072

MB Sample Id: 7712800-1-BLK

Matrix: Solid

LCS Sample Id: 7712800-1-BKS

Prep Method: SW8015P

Date Prep: 10.07.2020

LCSD Sample Id: 7712800-1-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	1210	121	1170	117	70-135	3	35	mg/kg	10.07.2020 10:37	
Diesel Range Organics (DRO)	<50.0	1000	1340	134	1310	131	70-135	2	35	mg/kg	10.07.2020 10:37	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	108		129		124		70-135	%	10.07.2020 10:37
o-Terphenyl	104		113		111		70-135	%	10.07.2020 10:37

Analytical Method: TPH by SW8015 Mod

Seq Number: 3139030

Matrix: Solid
MB Sample Id: 7712740-1-BLK

Prep Method: SW8015P

Date Prep: 10.06.2020

Parameter	MB Result	Units	Analysis Date	Flag
Motor Oil Range Hydrocarbons (MRO)	<50.0	mg/kg	10.06.2020 11:44	

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.
Row 4 Wolvene SWD Riser

Analytical Method: TPH by SW8015 Mod

Seq Number: 3139072

Matrix: Solid

Prep Method: SW8015P

Date Prep: 10.07.2020

MB Sample Id: 7712800-1-BLK

Parameter

Motor Oil Range Hydrocarbons (MRO)

**MB
Result**

<50.0

Units

mg/kg

**Analysis
Date**

10.07.2020 10:17

Flag

Analytical Method: TPH by SW8015 Mod

Seq Number: 3139030

Matrix: Soil

Prep Method: SW8015P

Date Prep: 10.06.2020

Parent Sample Id: 674445-003

MS Sample Id: 674445-003 S

MSD Sample Id: 674445-003 SD

Parameter

Gasoline Range Hydrocarbons (GRO)

**Parent
Result**

<50.1

**Spike
Amount**

1000

**MS
Result**

1340

**MS
%Rec**

134

**MSD
Result**

1320

**MSD
%Rec**

133

Limits

70-135

%RPD

2

**RPD
Limit**

35

Units

mg/kg

**Analysis
Date**

10.06.2020 19:27

Flag

Diesel Range Organics (DRO)

<50.1

1000

1210

121

1240

125

70-135

2

35

mg/kg

10.06.2020 19:27

Surrogate

1-Chlorooctane

**MS
%Rec**

129

**MS
Flag**

**MSD
%Rec**

131

**MSD
Flag**

Limits

70-135

Units

%

**Analysis
Date**

10.06.2020 19:27

o-Terphenyl

123

116

70-135

%

10.06.2020 19:27

Analytical Method: TPH by SW8015 Mod

Seq Number: 3139072

Matrix: Soil

Prep Method: SW8015P

Date Prep: 10.07.2020

Parent Sample Id: 674465-004

MS Sample Id: 674465-004 S

MSD Sample Id: 674465-004 SD

Parameter

Gasoline Range Hydrocarbons (GRO)

**Parent
Result**

<50.2

**Spike
Amount**

1000

**MS
Result**

968

**MS
%Rec**

97

**MSD
Result**

1110

**MSD
%Rec**

110

Limits

70-135

%RPD

14

**RPD
Limit**

35

Units

mg/kg

**Analysis
Date**

10.07.2020 12:18

Flag

Diesel Range Organics (DRO)

<50.2

1000

1150

115

1290

128

70-135

11

35

mg/kg

10.07.2020 12:18

Surrogate

1-Chlorooctane

**MS
%Rec**

127

**MS
Flag**

**MSD
%Rec**

131

**MSD
Flag**

Limits

70-135

Units

%

**Analysis
Date**

10.07.2020 12:18

o-Terphenyl

120

129

70-135

%

10.07.2020 12:18

Analytical Method: BTEX by EPA 8021B

Seq Number: 3139044

Matrix: Solid

Prep Method: SW5035A

Date Prep: 10.06.2020

MB Sample Id: 7712749-1-BLK

LCS Sample Id: 7712749-1-BKS

LCSD Sample Id: 7712749-1-BSD

Parameter

Benzene

**MB
Result**

<0.00200

**Spike
Amount**

0.100

**LCS
Result**

0.0891

**LCS
%Rec**

89

**LCSD
Result**

0.0928

**LCSD
%Rec**

93

Limits

70-130

%RPD

4

**RPD
Limit**

35

Units

mg/kg

**Analysis
Date**

10.07.2020 02:31

Flag

Toluene

<0.00200

0.100

0.0853

85

0.0887

89

70-130

4

35

mg/kg

10.07.2020 02:31

Ethylbenzene

<0.00200

0.100

0.0885

89

0.0912

91

71-129

3

35

mg/kg

10.07.2020 02:31

m,p-Xylenes

<0.00400

0.200

0.178

89

0.186

93

70-135

4

35

mg/kg

10.07.2020 02:31

o-Xylene

<0.00200

0.100

0.0868

87

0.0949

95

71-133

9

35

mg/kg

10.07.2020 02:31

Surrogate

1,4-Difluorobenzene

**MB
%Rec**

107

**MB
Flag**

**LCS
%Rec**

102

**LCS
Flag**

**LCSD
%Rec**

98

**LCSD
Flag**

Limits

70-130

Units

%

**Analysis
Date**

10.07.2020 02:31

4-Bromofluorobenzene

114

107

105

70-130

%

10.07.2020 02:31

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.
Row 4 Wolveene SWD Riser

Analytical Method: BTEX by EPA 8021B

Seq Number: 3139044

Parent Sample Id: 674445-007

Matrix: Soil

MS Sample Id: 674445-007 S

Prep Method: SW5035A

Date Prep: 10.06.2020

MSD Sample Id: 674445-007 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.113	113	0.109	109	70-130	4	35	mg/kg	10.07.2020 03:15	
Toluene	<0.00200	0.100	0.107	107	0.0994	99	70-130	7	35	mg/kg	10.07.2020 03:15	
Ethylbenzene	<0.00200	0.100	0.110	110	0.108	108	71-129	2	35	mg/kg	10.07.2020 03:15	
m,p-Xylenes	<0.00401	0.200	0.219	110	0.212	106	70-135	3	35	mg/kg	10.07.2020 03:15	
o-Xylene	<0.00200	0.100	0.109	109	0.105	105	71-133	4	35	mg/kg	10.07.2020 03:15	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	102		99		70-130	%	10.07.2020 03:15
4-Bromofluorobenzene	109		106		70-130	%	10.07.2020 03:15

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:

674465

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:	Dan Moir	Bill to: (if different)	Kyle Littlell
Company Name:	LT Environmental, Inc., Permian office	Company Name:	XTO Energy
Address:	3300 North A Street	Address:	522 W. Mermod St.
City, State ZIP:	Midland, TX 79705	City, State ZIP:	Carlsbad, NM 88220
Phone:	(432) 236-3849	Email:	jhill@ltenv.com, dmoir@ltenv.com

Project Name:	Row 4 Johnson SWD River	Turn Around	
Project Number:	01920091	Routine	☒
P.O. Number:	SP14 det 6/1/20	Rush:	
Sampler's Name:	Jeremy Hill	Due Date:	

SAMPLE RECEIPT		Temp Blank:	☒ Yes ☐ No	Wet Ice:	☒ Yes ☐ No
Temperature (°C):	1.2/1.0	Thermometer ID	T-NM-009		
Received Intact:	☒ Yes ☐ No	Correction Factor:	-0.2		
Cooler Custody Seals:	☒ Yes ☐ No	Total Containers:	4		

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers	TPH (EPA 8015)	BTEX (EPA 0-8021)	Chloride (EPA 300.0)	ANALYSIS REQUEST	Work Order Notes
P108	S	6/6/20	1153	2'	1	1	1	1		
P108A	S		1156	4'	1	1	1	1		
P109	S		1250	1'	1	1	1	1		
P109A	S		1259	4'	1	1	1	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
 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 \$4 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>	6/6/20 1643			

Eurofins Xenco, LLC

Prelogin/Nonconformance Report- Sample Log-In

Client: LT Environmental, Inc.

Date/ Time Received: 10.06.2020 04.43.00 PM

Work Order #: 674465

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)?	No
#18 Water VOC samples have zero headspace?	N/A

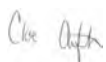
Samples received in bulk containers.

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

Analyst:

PH Device/Lot#:

Checklist completed by:



Cloe Clifton

Date: 10.06.2020

Checklist reviewed by:



Jessica Kramer

Date: 10.07.2020

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 11354

CONDITIONS OF APPROVAL

Operator: XTO ENERGY, INC 6401 Holiday Hill Road Building #5 Midland, TX79707		OGRID: 5380	Action Number: 11354	Action Type: C-141
OCD Reviewer	Condition			
chensley	Water wells should be no further than ½ mile away from the site due to the high loss of production water. Please provide further proof of DTW or use Table 1 Closure Criteria for ground water at a depth of 50 feet or less.			
chensley	Deferral is denied at this time. The OCD requests that samples be taken to a depth that contamination amounts are under the limit near the area requesting for deferment.			