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	NAB1901038306
District RP	2RP-5169
Facility ID	fAB1901038066
Application ID	pAB1901037748

Release Notification

Responsible Party

Responsible Party XTO Energy, Inc.	OGRID 5380
Contact Name Kyle Littrell	Contact Telephone 432-221-7331
Contact email kyle_littrell@xtoenergy.com	Incident # *(assigned by OCD)* NAB1901038306
Contact mailing address 522 W. Mermod, Suite 704, Carlsbad, NM	

Location of Release Source

Latitude 32.287 Longitude -103.959
(NAD 83 in decimal degrees to 5 decimal places)

Site Name PCA 53	Site Type
Date Release Discovered 11/27/18	API# *(if applicable)*

Unit Letter	Section	Township	Range	County
K	23	23S	29E	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) 2,022	Volume Recovered (bbls) 0
☒ Produced Water	Volume Released (bbls) 6,066	Volume Recovered (bbls) 0
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	☐ Yes ☐ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release
On November 27th, the BLM notified XTO that fluids had been discovered on surface through an existing corehole associated with a nearby potash mine. In October, XTO experienced a pressure loss while drilling the Remuda South 25 State 101H and an unknown volume of flowback fluids were released into the subsurface. BLM has associated the loss of flowback fluids into the subsurface to the November 27th event. Inspection of the site was performed by an environmental contractor and review of the data is in progress.

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? The release exceeded 25 bbls of produced water and oil.

If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?
Release was reported by a member of the public to the BLM on 11/27/18. BLM notified XTO and XTO provided notice to Mike Bratcher, Maria Pruett, Jim Griswold at NMOCD and Jim Amos and Shelly Tucker at BLM on 11/29/18. Notification was provided by email by Bryan Foust.

Initial Response

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

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

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

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

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

Printed Name: Kyle Littrell Title: SH&E Coordinator

Signature: Date: 12/11/18

email: kyle_littrell@xtoenergy.com Telephone: 432-221-7331

OCD Only

Received by: Date: 1/10/2019

State of New Mexico
Oil Conservation Division

Incident ID	NAB1901038306
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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?	< 50 (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 Littrell Title: SH&E Coordinator

Signature: Date: 12/11/18

email: kyle_littrell@xtoenergy.com Telephone: 432-221-7331

OCD Only

Received by: Date: 1/10/2019

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Remediation Plan

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

- [X] Detailed description of proposed remediation technique
- [X] Scaled sitemap with GPS coordinates showing delineation points
- [X] Estimated volume of material to be remediated
- [X] Closure criteria is to Table 1 specifications subject to 19.15.29.12(C)(4) NMAC
- [X] 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 Manager Supervisor

Signature:  Date: 8/30/19

email: kyle_littrell@xtoenergy.com Telephone: 432-221-7331

OCD Only

Received by: _____ Date: _____

- [ ] Approved
- [ ] Approved with Attached Conditions of Approval
- [ ] Denied
- [ ] Deferral Approved

Signature: _____ Date: _____

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

August 28, 2019

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

RE: DRAFT Remediation Work Plan
PCA 53
Remediation Permit Number 2RP-5169
Eddy County, New Mexico

Dear Mr. Bratcher:

LT Environmental, Inc. (LTE), on behalf of XTO Energy, Inc. (XTO), is pleased to present the New Mexico Oil Conservation Division (NMOCD) with this Remediation Work Plan (Work Plan) for the PCA 53 (Site). The Site is located in Unit K, Section 23, Township 23 South, Range 29 East, in Eddy County, New Mexico (Figure 1). This Work Plan summarizes the release history, assessment and remediation activities completed to date, and the proposed remedial actions to address residual subsurface impacts at the Site to comply with applicable New Mexico Administrative Codes (NMACs).

BACKGROUND

On November 27, 2018, the Bureau of Land Management (BLM) observed fluids in a pasture, which appeared to originate from an existing core hole associated with a neighboring potash mine. The BLM attributed the observed surface fluids in the pasture to a pressure loss associated with drilling operations at the Remuda South 25 State 101H well. XTO submitted a Release Notification Form C-141 (Form C-141) to the NMOCD and the Site was subsequently assigned Release Permit (RP) Number 2RP-5169. The original Form C-141 is included in Attachment 1. Photographs of the initial views of the release are included in Attachment 2.

SITE CHARACTERIZATION

Utilizing site-specific and regional data collected for the Site, the following section describes the site characterization as it relates to potential sensitive receptors in the vicinity of the release and Closure Criteria assigned to the release based on the sensitive receptors.

Geology and Hydrology

LTE advanced 21 boreholes at the Site as part of delineation activities. Based on observations recorded during the advancement of the boreholes, soil beneath the Site is highly variable, but

generally consisted of clayey sand, silty sand, clay, and silt underlain by poorly- to moderately-consolidated caliche and weathered to competent dolomite bedrock. Clay and gypsum were generally observed beneath the caliche and dolomite strata. Although shallow caliche and dolomite were observed, boreholes installed at the Site did not indicate conditions indicative of karst geology, such as sinkholes, voids, caves, and/or springs. Figure 2 depicts cross-section layouts produced for the Site. Figures 3 and 4 illustrates the lithology of the Site as viewed from the south to the north. Figures 5 and 6 depict the Site's lithology from west to east. Borehole lithologic/soil sampling logs are included in Attachment 3.

After the boreholes were installed, fluid was encountered in two of the 21 boreholes at depths of approximately 49 feet (BH14) and 51 feet below ground surface (bgs) (BH16). Saturated sediments were not observed in any boreholes during drilling. It is unknown at this time whether water encountered represents temporary storage of meteoric infiltration, small lenses of disconnected groundwater occurring beneath the Site, groundwater trapped in fractures within the dolomite, groundwater trapped along the bedding plane between the dolomite and a clay layer, or fluid forced into pore spaces through preferential pathways from the core hole. The lithologic/soil sampling logs for borehole BH14 and BH16 is are included in Attachment 3.

Site Receptors

LTE assessed nearby sensitive receptors according to the NMOCD Table 1, *Closure Criteria for Soils Impacted by a Release*, of 19.15.29.12 NMAC. Assessment of potential nearby receptors was conducted through desktop reviews of topographic maps, Federal Emergency Management Administration (FEMA) Geographic Information System (GIS) maps, United States Geological Survey (USGS) GIS maps, and aerial photographs as well as conducting site-specific observations. Applicable receptors for the Site include the following:

- **Groundwater:** If fluid observed during the advancement of boreholes BH14 and BH16 is groundwater, depth to groundwater beneath the Site may be between 49 feet and 51 feet bgs. The nearest well is a stock well approximately 6,820 feet to the east. The shallowest depth to water measured in the well is documented as 50.26 feet bgs;
- **Lakebed, Sinkhole, and/or Playa:** There does not appear to be any lakebeds, sinkholes, or playas within 200 feet of the Site;
- **Significant Watercourse:** The nearest continuously-flowing water or significant watercourse is an unnamed dry wash located approximately 154 feet east of the Site;
- **Occupied Structures:** Occupied residences, schools, hospitals, institutions, and/or churches appear to be located at distance greater than 300 feet from the Site;
- **Wetlands:** Potential wetlands appear to be located at a distance less than 300 feet from the Site;
- **Domestic/Stock Springs and Private Water Wells:** There does not appear to be any springs or private water wells within 500 feet of the Site;

- **Other Freshwater Springs or Water Wells:** There does not appear to be any other freshwater springs or water wells with 1,000 feet of the Site;
- **100-Year Floodplain:** The Site does not appear to be located within a 100-year floodplain;
- **Subsurface Mine:** The Site surrounds a core hole associated with a nearby potash mine; and
- **Unstable Geology:** Based on lithology observed in boreholes advanced at the Site, unstable geological conditions, specifically karsts, do not appear present beneath the Site.

Closure Criteria

Based on the sensitive receptors survey described above, the following NMOCD Table 1 Closure Criteria apply for the Site:

- Benzene: 10 milligrams per kilogram (mg/kg);
- Total Benzene, Toluene, Ethylbenzene, and Total Xylenes (BTEX): 50 mg/kg;
- Total Petroleum Hydrocarbons (TPH): 100 mg/kg; and
- Chloride: 600 mg/kg.

INITIAL RESPONSE ACTIVITIES

Field activities completed to-date for RP Number 2RP-5169 are described below. The procedures utilized during fieldwork are documented first and apply to all subsequent sampling described.

Field Screening and Observations Procedures

LTE staff screened soil for volatile organic compounds (VOCs) and chloride utilizing a calibrated photoionization detector (PID) and Hach® chloride QuanTab® test strips, respectively. The PID was calibrated with a 100-parts per million (ppm) by volume isobutylene. Calibration was conducted daily with bump tests conducted throughout the day. In situations where elevated PID readings were recorded consistently, the PID was re-calibrated with 100 ppm isobutylene.

Chloride screening with Hach® chloride QuanTab® test strips was conducted by weighing out 25 grams of soil and placing in a jar with a screw top cap. A total of 100 milliliters of distilled water was added to the jar, preparing a 1 to 4 dilution. The mixture was agitated for approximately one minute and allowed to settle. The solution was drawn into a poly-syringe and injected through a 0.45-micron filter to remove any additional sediments in the solution and placed into a decontaminated glass jar for measurement. Based on anticipated concentrations, a low range (30 ppm to 600 ppm) or high range (300 ppm to 6,000 ppm) titrator strip was placed into the jar and allowed to wick the solution per manufacturer directions. Results of the strip readings were multiplied by four due to the dilution and then multiplied by a 60 percent (%) correction factor. The correction factor has been determined by statistical analysis of historical field screening and laboratory analytical results.

Observations of petroleum hydrocarbon and/or salt staining and petroleum hydrocarbon odors were recorded for each screened soil sample and documented in field notes and lithologic/soil boring logs. Copies of the lithologic-/-soil sampling logs are included in Attachment 3.

Soil Sampling and Analysis Procedures

Discrete soil samples were collected at a single depth or range of depths within one vertical location. Each sample was placed in two resealable 1-gallon plastic bags; one for field screening and the other for potential laboratory analysis.

Composite soil samples were collected by depositing five aliquots of soil into a 1-gallon, resealable plastic bag and homogenizing the samples by thoroughly mixing them. The mixture was divided into two bags; one for field screening and the other for potential laboratory analysis.

Soil samples were placed into pre-cleaned glass jars, labeled with the location, date, time, sampler name, method of analysis, and immediately placed on ice. The soil samples were shipped at or below 4 degrees Celsius (°C) under strict chain-of-custody (COC) procedures to Xenco Laboratories (Xenco) in Midland, Texas, for analysis of BTEX following United States Environmental Protection Agency (EPA) Method 8021B; total petroleum hydrocarbons – gasoline range organics (TPH-GRO), total petroleum hydrocarbons – diesel range organics (TPH-DRO), and total petroelum hydrocarbons - oil range organics (ORO) following EPA Method 8015M/D; and chloride following EPA Method 300.0.

Initial Assessment Activities

On November 28 and 29, 2018, LTE staff inspected the Site to evaluate the release extent. Based on visual staining, the release extent encompassed approximately 189,230 square feet. The release extent was mapped using a handheld Global Positing System (GPS) unit and is depicted in Figure 7. LTE personnel oversaw the advancement of eight potholes (PH01 through PH08) utilizing a track-mounted backhoe to depths ranging from approximately 4 feet to 18 feet bgs to assess the lateral and vertical extent of soil impacts.

In general, black petroleum hydrocarbon staining and odors were observed within the release extent. PID results ranged from 5.5 ppm in pothole soil sample PH03A at approximately 4 feet bgs to greater than 15,000 ppm in multiple pothole soil samples throughout the release extent at varying depths. Field screening of soil from the pothole soil samples indicated concentrations of chloride ranged from less than 112 ppm in multiple pothole soil samples throughout the release extent at varying depths to 18,297 ppm in pothole soil sample PH07A at approximately 4 feet bgs.

Field screening and observations during the preliminary soil sampling activities indicated the likelihood of BTEX, TPH, and/or chloride concentrations exceeding the NMOCD Table 1 Closure

Criteria. As a result, excavation appeared warranted to remediate soil impacts. Preliminary soil sample locations are depicted in Figure 7. A summary of PID and chloride field screening for the eight potholes is included Table 1.

Initial Excavation Activities

Excavation activities within the release extent began on February 11, 2019. With the exception of some minor areas that were excavated to 2 feet bgs, the top 4 feet of soil was removed from the entire release extent as depicted on Figure 8. Initial excavation activities were completed on March 28, 2019. To date, the excavation measures approximately 172,187 square feet in aerial extent and approximately 25,495 cubic yards of soil have been excavated.

A total of 44 composite floor soil samples (FS01 through FS44) and three composite sidewall soil samples (SW1 through SW3) were collected within the initial excavation on March 28 and 29, 2019. The 44 composite floor soil samples were collected every 5,000 square feet for field screening purposes. In general, PID and chloride screening values were recorded at concentrations that would likely still exceed NMOCD Table 1 Closure Criteria. The location of the 44 composite floor soil samples are depicted on Figure 8. A summary of PID and chloride field screening for the 44 composite floor soil samples is included Table 1. Three of the soil samples, FS02, FS08, and FS09, were submitted for laboratory analysis to compare field screening results to laboratory results. Soil analytical results are presented in Table 2.

Initial Delineation Activities

Based on field screening composite soil sample results on March 28 and March 29, 2019, delineation activities appeared warranted to determine the vertical and lateral extents of soil impacts and to aid in the development of this Work Plan for the Site. LTE contracted Cascade Drilling, Inc. to install 21 boreholes utilizing a track-mounted sonic drill rig. Sonic cores of 4 inches and 6.15 inches in diameter were utilized for continuous collection of soil samples. Advancement of the 21 boreholes was conducted from May 9, 2019 through June 6, 2019. Figure 9 illustrates the location of the boreholes. Below is a summary of the 21 boreholes completed at the Site as part of vertical and lateral delineation activities.

BOREHOLE SUMMARY

Borehole ID	Total Depth Drilled (feet bgs)	Rationale
BH01	28	Inside northern portion of release extent, Vertical delineation
BH02	28	Outside release extent, Lateral delineation
BH03	47	Outside release extent, Lateral delineation
BH04	34	Inside northern portion of release extent, Vertical delineation

BH05	21	Inside northern portion of release extent, Vertical delineation
BH06	40	Outside release extent, Lateral delineation
BH07	31	Inside southern portion of release extent, Vertical delineation
BH08	42	Outside release extent, Lateral delineation
BH09	41	Inside central portion of release extent, Vertical delineation
BH10	24	Outside release extent, Lateral delineation
BH11	58	Inside central portion of release extent, Vertical delineation
BH12	65	Outside release extent, Lateral delineation
BH13	58	Outside release extent, Lateral delineation
BH14	58	Inside southern portion of release extent, Vertical delineation
BH15	59	Inside southern portion of release extent, Vertical delineation
BH16	64	Inside southern portion of release extent, Vertical delineation
BH17	54	Inside southern portion of release extent, Vertical delineation
BH18	57	Inside central portion of release extent, Vertical delineation
BH19	77	Outside release extent, Vertical and lateral delineation
BH20	70	Outside release extent, Lateral delineation
BH21	51	Outside release extent, Lateral delineation

Note:
Bgs – below ground surface

During the advancement of each borehole, continuous soil sampling was conducted, which included describing the lithology based on the Unified Soil Classification System (USCS) as specified in American Society for Testing and Materials (ASTM) D2488, observations of staining and odors, and field screening of volatile aromatic hydrocarbons and chloride. Lithology-/-soil sampling logs for the 21 boreholes are included in Attachment 3.

Soil samples for laboratory analysis were generally submitted from the boreholes based on the following criteria:

<u>Inside Excavation Extent</u>

- Shallow soil (approximately 4 feet to 6 feet bgs);
- Where field screening indicated soil would be compliant with applicable NMOCD Table 1 Closure Criteria beneath soil impacts;
- Any elevated field screening results; and
- Bottom of borehole.

<u>Outside Excavation Extent</u>

- Shallow soil (ground surface to approximately 6 feet bgs);
- Where field screening indicated soil would be compliant with applicable NMOCD Table 1 Closure Criteria beneath soil impacts, if any;

- Any elevated field screening results; and
- Bottom of borehole.

All boreholes were left open for 48 to 72 hours to assess the presence or absence of groundwater at depth. The absence of groundwater in all boreholes, with the potential exception of boreholes BH14 and BH16, led to following proper abandonment protocols, that included utilizing hydrated bentonite chips from the borehole terminus to ground surface to prevent the boreholes from acting as conduits of potential surficial impacts to the subsurface.

Fluid was measured on May 14, 2019 in boreholes BH14 and BH16. Depth to the fluid was approximately 50 feet and 55 feet bgs, respectively. As a result, the two boreholes were converted into monitoring wells. Monitoring well construction followed standard industry practice as detailed in both the ASTM Standard D 5092 – *Standard Practice for Design and Installation of Groundwater Monitoring Wells in Aquifers* and the New Mexico Environmental Department (NMED) Groundwater Quality Bureau (GWQB) *Monitoring Well Construction and Abandonment Guidelines*, dated July 2008. The monitoring wells were constructed with 2-inch inside diameter (ID) Schedule 40 polyvinyl chloride (PVC) casing and screen. The screen was factory-slotted with a slot size of 0.010 inches. The screened interval for each monitoring well was 20 feet in length. A 10-20 size silica sand pack was used to fill the annular space from the bottom of the screen to approximately 2 feet above the top of screen. The sand pack was overlain by hydrated bentonite chips to the ground surface. The monitoring wells were completed as stick-ups with approximately 3 feet of PVC riser extending above the excavation floor.

Monitoring well casings for boreholes BH14 and BH16 will be extended to the newly backfilled ground surface following additional excavation activities. The casings will extend approximately 3 feet above ground surface and be completed with a metal well monument with a locked lid to prevent use or abuse by unpermitted individuals. Top-of-casing and top-of-ground surface elevations related to boreholes BH14 and BH16 will be surveyed by a licensed surveyor.

Laboratory analytical results for soil samples from boreholes located inside the excavation extent indicated:

- Benzene was in compliance with the NMOCD Table 1 Closure Criteria in all soil samples submitted for laboratory analysis;
- Total BTEX only exceeded the NMOCD Table 1 Closure Criteria in the soil sample from borehole BH11 at approximately 11 feet bgs (BH11);
- TPH generally exceeded the NMOCD Table 1 Closure Criteria in soil samples submitted from approximately 5 feet to 6 feet bgs;
- TPH exceeded the NMOCD Table 1 Closure Criteria in soil from borehole BH14 at depths of approximately 5 feet bgs (BH14), 45 feet bgs (BH14B), and 58 feet bgs (BH14D); and

- Chloride exceeded the NMOCD Table 1 Closure Criteria in soil at varying depths in boreholes BH14 through BH18. The elevated chloride at depth was generally observed in a discontinuous dolomite layer.

Laboratory analytical results for soil samples from boreholes located outside the excavation extent indicated:

- Benzene, BTEX, TPH, and chloride were in compliance with applicable NMOCD Table 1 Closure Criteria, with the exception of soil samples from boreholes BH13, BH19, and BH20;
- TPH exceeded the NMOCD Table 1 Closure Criteria in soil in borehole BH13 at a depth of approximately 48 feet bgs (BH13A);
- Chloride exceeded the NMOCD Table 1 Closure Criteria in soil in borehole BH19 at depths of approximately 34 feet bgs (BH19C), 40 feet bgs (BH19D), 46 feet bgs (BH19F), 56 feet bgs (BH19G), and 62 feet bgs (BH19H);
- TPH exceeded the NMOCD Table I Closure Criteria in soil in borehole BH19 at a depth of approximately 46 feet bgs (BH19F) and borehole BH13 at a depth of approximately 48 feet bgs (BH13A); and
- Chloride was detected in soil in borehole BH20 exceeding the NMOCD Table 1 Closure Criteria at a depth of approximately 17 feet bgs (BH20).

Table 2 summarizes laboratory analytical results and complete laboratory reports are included in Attachment 4.

Initial Water Well Sampling Activities

As part of the subsurface assessment to 2RP-5169, LTE identified nearby water wells to assess the presence or absence of groundwater impacts associated with the release. A stock well was identified approximately 6,820 feet east of the release location (Latitude 32°17'17", Longitude 103°56'10" NAD27). According to the USGS database, the stock well is listed as USGS water well 321717103561001. Depth to water has been measured between 1982 and 2003 with depths ranging from 50.26 feet bgs on January 29, 2003 to 54.14 feet bgs on November 16, 1992. Details of well construction and depth of the source water are unknown.

LTE collected water samples from a valve associated with the stock well on December 5, 2018, March 27, 2019, and June 27, 2019 for laboratory analysis of BTEX, TPH-GRO, TPH-DRO, TPH-ORO and chloride. Laboratory analytical results indicated BTEX and chloride were in compliance with applicable New Mexico Water Quality Control Commission (NMWQCC) Standards for all three sampling events. There are no NMWQCC Standards for TPH in groundwater; however, TPH-GRO, TPH-DRO, and TPH-ORO were not detected at concentrations above the laboratory reporting

limits for all three sampling events. Water analytical results are summarized on Table 3. Laboratory analytical reports are included in Attachment 4.

Initial Fluid Assessment Activities

On July 15, 2019, LTE personnel was onsite to assess fluid within boreholes BH14 and BH16. Depth to water/fluid and total well depths were measured utilizing a properly decontaminated oil-water interface probe. Below is a summary of fluid field measurements:

FIELD MEASUREMENTS

Borehole ID	Depth to Crude Oil* (feet bgs)	Depth to Water* (feet bgs)	Total Depth* (feet bgs)
BH14	44.02 / 48.02	44.93 / 48.93	53.48 / 57.48
BH16	N/A	47.37 / 51.37	55.57 / 59.57

Notes:
bgs – below ground surface
N/A – not applicable
* depth measured from excavation floor / 4 feet added to measurement to account for excavation difference to actual ground surface

LTE utilized a down-hole submersible purge pump to evacuate the boreholes to assess the fluid recharge characteristics. The pump can be used to evacuate the boreholes at approximately 1 gallon per minute. Approximately 50 gallons of fluid were pumped from borehole BH16. It appears the borehole recharged to approximately the same depth to fluid as prior to pumping activities within 24 hours. No crude oil was observed.

The down-hole pump and cable assembly were properly decontaminated and transferred to borehole BH14 after depth to fluid measurements were completed. Crude oil thickness in borehole BH16 prior to pumping was 0.91 feet. The viscosity of the crude oil and depth to fluid limited the pump's ability to effectively evacuate the borehole. Approximately 10 gallons of fluid were removed from the borehole. The fluid removed from the borehole was yellowish-brown in color and had a strong petroleum hydrocarbon odor. Crude oil thickness remeasured after pumping was 0.44 feet. Of the 10 gallons of fluid removed from borehole BH14, approximately 3 gallons were crude oil.

PRELIMINARY INTERPRETATION OF CONTAMINANT DISTRIBUTION

Based on field screening data, field observations, and laboratory analytical results, impact to soil has been identified and can be differentiated based on depth in the subsurface. Shallow soil within the release footprint was impacted by infiltration of liquids that pooled on the ground surface. The impact to shallow soils is characterized by BTEX, TPH, and chloride concentrations exceeding NMOCD Table 1 Closure Criteria from ground surface to approximately 7 feet bgs for a total impacted volume of approximately 41,773 cubic yards.

A very limited area of elevated chloride was observed in boreholes BH14, BH16, and BH20 at interim depths ranging from approximately 13 feet to 24 feet bgs. Lithology of these samples is described as silts and clays, and the presence of elevated chloride would normally be representative of areas where infiltration of liquids from the surface extended deeper in those specific areas; however, BH20 is outside of the release footprint and surficial impacts.

An interval of soil impact is observed at depth on the southern end of the release footprint. Between approximately 40 feet to 62 feet bgs in boreholes BH13 through BH20, elevated TPH and chloride concentrations are observed in soil, potentially attributable to fluid migration through preferential pathways associated with a discontinuous dolomite layer. A shallower dolomite present in BH15 and BH19 exhibits similar properties. It appears fluid has traveled through fractures within the dolomite bedrock or along bedding planes at the top and bottom of the dolomite. The clay and gypsum layers beneath the dolomite are in compliance with NMOCD Table 1 Closure Criteria, indicating impacts are trapped within the dolomite. Similarly, samples collected from the overlying caliche and clays are generally in compliance with closure standards, differentiating the deeper soil impacts from the shallow soil impacts and emphasizing the potential for fluid migration and/or temporary storage in and around the dolomite.

Fluids have been observed in borehole BH14 and borehole BH16 at a similar depth interval. It is unknown at this time whether fluid in the two boreholes is temporary storage of groundwater or water/fluid that has traveled from the core hole through the preferential pathways associated with the dolomite and filled in the boreholes. Elevated TPH concentrations observed at the terminus of borehole BH14 (approximately 58 feet bgs) appear to be related to crude oil observed at depth and likely settled to the bottom of the borehole prior to sampling.

Groundwater in a nearby stock well (USGS water well 321717103561001) indicates groundwater impacts to the shallowest usable meteoric aquifer in the closest known water well to the release are not present outside of the release extent.

CONCLUSIONS

Surficial soil was impacted in a pasture on BLM land that encompassed approximately 189,230 square feet, and the BLM attributed the impact to a loss of fluid pressure during flowback operations at a nearby well approximately 5,560 feet southeast. XTO excavated approximately 25,495 cubic yards of impacted soil from the release extent to approximately 4 feet bgs, then conducted a subsurface soil investigation.

The subsurface investigation indicated the surficial impact extended to an average depth of 7 feet bgs. XTO is currently removing impacted soil from the pasture to that depth. Surficial soil impacts were characterized by elevated BTEX, TPH, and chloride concentrations in exceedance of NMOCD Table 1 Closure Criteria and are generally limited in vertical extent, except for an area in the

south-central portion of the release footprint where impacts may extend to 13 feet to 20 feet bgs.

A separate interval of subsurface soil impact occurs at depths associated with the presence of a dolomite stratum. The dolomite is discontinuous laterally and variable with depth, ranging from as shallow as 30 feet bgs to a deeper layer at 40 feet to 55 feet bgs. The association of impact to the dolomite could potentially be attributed to fluid migration through preferential pathways. Fluids were identified at a similar depth interval in two boreholes but were absent from all other boreholes. The limited and discontinuous presence of the fluid, as well as a composition containing free product, suggests the fluids are not groundwater and not representative of an aquifer containing sufficient volume and quality for beneficial use. The nearest existing water well has been sampled three times and does not contain evidence of impact by hydrocarbons or produced water.

The majority of the soil impact is delineated both vertically and laterally; however, several unknowns remain: lateral extent of soil impact in the southern portion of the release footprint outside of boreholes BH14 through BH20 and actual depth of and potential impact to groundwater.

PROPOSED REMEDIAL ACTIONS

Based on the site characterization and field activities completed to date, XTO proposes the following actions to address residual subsurface soil related to RP Number 2RP-5169.

Gross Source Removal

Surficial soil impacts have been remediated to 4 feet bgs. The current excavation measures approximately 172,187 square feet in aerial extent and approximately 25,495 cubic yards of soil have been excavated and disposed of between February and March 2019. Based on field screening and laboratory analytical results within the current excavation extent, additional excavation activities appear warranted in order to be compliant with applicable NMOCD Table 1 Closure Criteria and be protective of human health and the environment. As such, an area approximately 146,495 square feet in size would likely need to be excavate to a depth of approximately 7 feet bgs, or approximately 3 feet more than the current excavation floor depth. Based on the aerial extent and an average 3-foot cut, approximately 16,278 cubic yards of impacted soil would be excavated from the subsurface at the Site. Excavation activities for this remedial approach were initiated on August 5, 2019, and are currently ongoing.

Excavation confirmation soil samples collected as composite samples will be submitted for laboratory analysis of BTEX, TPH, and chloride. Due to the aerial extent of the overall excavation (approximately 172,187 square feet), LTE respectfully requests a variance on the confirmation sampling frequency of every 200 square feet for the excavation floor, which would require

approximately 861 soil samples. LTE is requesting confirmation floor samples be collected on a frequency of every 5,000 square feet, which would require approximately 35 soil samples from the excavation floor. This is equivalent to the field screening sampling program depicted in Figure 8, which illustrates the requested soil sampling frequency. Based on results from confirmation soil sampling of the floor of the excavation, XTO will determine if the deeper impacts identified in boreholes BH14, BH16, and BH20 will be addressed by soil removal.

The approximate area of sidewalls, assuming an average depth of approximately 7 feet bgs, is calculated at 27,517 square feet. Based on this area, and following NMOCD confirmation frequency, 138 confirmation sidewall samples would be required for collection and analysis. LTE respectfully requests a variance for the confirmation sidewall sampling frequency to be adjusted to a 500 square foot frequency, which would require approximately 55 soil samples from the sidewalls.

Soil samples will be handled as previously described and analyzed for BTEX by EPA Method 8021, TPH – GRO, DRO, and ORO by EPA Method 8015, and chloride by EPA Method 300.0.

Delineation

LTE proposes to install four additional boreholes (BH22 through BH25) outside of the release extent to finalize lateral delineation of impact to soil. In addition to the installation of four boreholes outside of the release extent, LTE proposes installing a borehole (BH26) between boreholes BH14 and BH16 to assess potential communication between the two boreholes. Borehole BH26 would be installed halfway between boreholes BH14 and BH16 and completed to a depth of approximately 64 feet bgs, matching the total depth of borehole BH16.

LTE will utilize a track-mounted sonic drilling rig for continuous sampling. A trained geologist will describe lithology based on USCS and ASTM D2488. The soil will be characterized by field screening the soil headspace using a PID and Hach® chloride QuanTab® test strips. LTE will submit at least two samples from each borehole to Xenco for analysis of BTEX, TPH, and chloride. Proposed soil boring locations are depicted in Figure 11. Soil borings will be left open for at least 72 hours and abandoned with hydrated bentonite chips. If fluids are detected, the boreholes will be converted to monitoring wells.

Fluid Recovery

LTE proposes weekly pumping of crude oil and fluid from boreholes BH14 and BH16 to remove measurable crude oil from the subsurface and determine if fluid observed in the two boreholes is the actual groundwater table or temporary fluid entrapment. Determination of groundwater conditions or fluid entrapment will be based on whether the fluid recharges to initial levels (groundwater conditions), suppresses, or is removed completely (fluid entrapment). LTE will assess fluid level data after two months of pumping to determine steps forward. Additionally, if

any of the boreholes installed during delineation contain fluids (including BH26), LTE will convert those to monitoring wells and include those in the pumping tests and drawdown observations. NMOCD will be notified of pumping results and proposed next steps, if any.

Groundwater

Because most of the boreholes advanced during this subsurface investigation were dry, LTE proposes installation of three groundwater monitoring wells (MW01 through MW03) to determine the presence or absence of a shallow aquifer in contrast to temporary and discontinuous storage of low volumes of fluid in the shallow subsurface. LTE will assess the potential for impact to groundwater by collecting groundwater samples if shallow groundwater is identified. The proposed locations for the monitoring wells are depicted on Figure 11.

Monitoring wells will be installed by advancing soil borings until groundwater is observed or to 150 feet bgs, whichever comes first. The soil borings will be logged by an LTE geologist who will inspect the soil for the presence or absence of petroleum hydrocarbon odor and/or staining. The soil will be characterized by lithologic descriptions and field screening for hydrocarbons and chloride. LTE will submit at least two samples from each borehole to Xenco for analysis of BTEX, TPH, and chloride. LTE proposes to use a sonic drilling rig, but if groundwater is not encountered in the top 150 feet of the subsurface, LTE will abandon the borehole.

If is encountered in the top 150 feet of the subsurface, groundwater monitoring wells will be constructed in each borehole by installing screened casing across the groundwater interface and solid casing to surface. Potential monitoring wells will be constructed out of 2-inch diameter Schedule 40 PVC casing and 2-inch Schedule 40 PVC 0.010-inch slotted screen. The groundwater monitoring wells will be completed with 10-20 silica sand pack to two feet above the screened interval, then two feet of hydrated bentonite seal, and completed with a bentonite-cement slurry grout to ground surface. The monitoring wells will be completed aboveground with a locking, steel monument cemented into the ground.

After construction, LTE will survey the new groundwater monitoring wells and the original monitoring wells with a GPS to determine the latitude and longitude. Top-of-casing elevations will be professionally surveyed to an accuracy of no less than plus or minus (±) 0.01 feet so that groundwater flow direction and gradient can be determined relative to mean sea level. At least 48 hours after installation, the depth to groundwater or phase separated hydrocarbon (PSH) below top of casing will be measured with an oil-water interface probe. The wells will be developed by purging a minimum of 10-casing volumes, or until the wells purge dry.

At least 24 hours after well development, LTE will collect groundwater samples from all monitoring wells containing water (including existing monitoring wells). LTE will use low-flow sampling techniques with a YSI 556 handheld multi-probe water quality field meter, or equivalent, to record pH, electrical conductivity (EC), and temperature of the groundwater.

Groundwater samples will be submitted under strict COC protocol to Xenco for analysis of BTEX and chloride.

SCHEDULE

By submitting this Remediation Work Plan on August 30, 2019, XTO anticipates approval of the outlined scope of work above within 30 days. In order to be proactive and avoid delays due to inclement weather in the fall/winter, XTO has either begun additional remedial activities or are scheduling work to be completed as soon as possible. Please notify XTO as soon as possible with any clarifications needed to the plan as proposed.

XTO continues to excavate soil from the Site and will do so until surficial and shallow subsurface soil impacts extending to approximately 7 feet bgs are removed. Excavation is anticipated to be completed by mid-September 2019. Upon completion of excavation, XTO will conduct confirmation sampling as described. A report documenting excavation and confirmation soil sampling will be submitted to NMOCD and BLM by December 1, 2019.

XTO will conduct pump testing of the fluids in boreholes BH14 and BH16 through September and October of 2019. XTO will install the proposed monitoring wells and additional boreholes and complete soil and groundwater sampling by December 15, 2019. In the interim, XTO will continue to sample the nearby stock well quarterly. The next stock well sampling event is tentatively scheduled for September 27, 2019.

XTO will use all existing and new subsurface geologic and hydrologic data to evaluate site conditions to develop a complete site conceptual model. Based on the presence or absence of impacted groundwater, XTO will either submit a report detailing full soil delineation or, in the case groundwater is impacted, a Stage 1 Abatement Plan according to 19.15.30 NMAC by January 15, 2020. LTE will notify NMOCD at least 48 hours prior to any subsurface soil sampling events.

Should NMOCD require more than 30 days to review and respond to this report, XTO reserves the right to modify the proposed schedule.

LTE, on behalf of XTO, requests approval of this Work Plan for RP Number 2RP-5169. If you have any questions or comments, please do not hesitate to contact Mr. Daniel R. Moir at (432) 236-3849 or Ms. Ashley Ager at (970) 946-1093.

Sincerely,

LT ENVIRONMENTAL, INC.

Ashley L. Ager

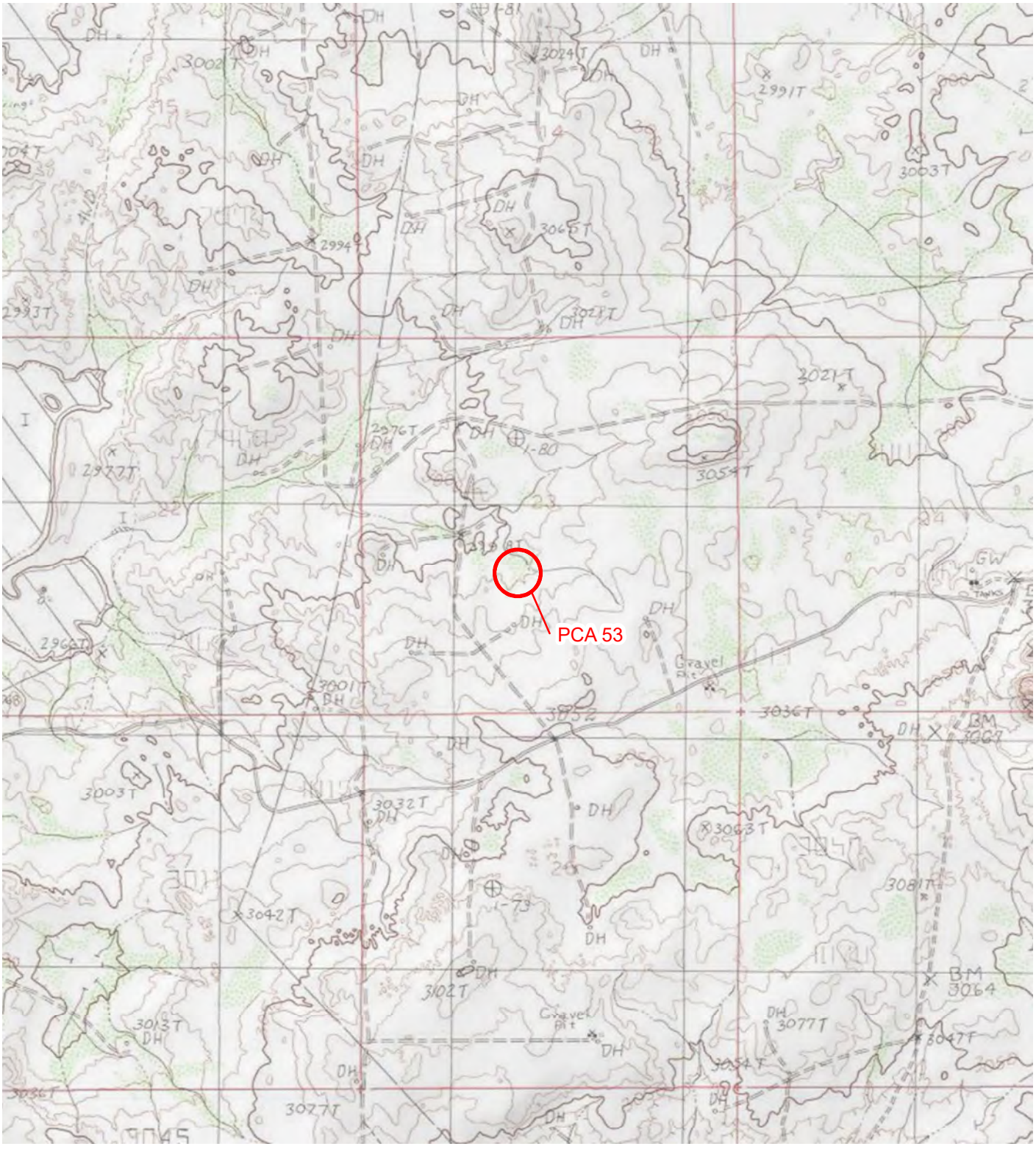
Daniel R. Moir, P.G.
Senior Geologist

Ashley L. Ager, P.G.
Senior Geologist

cc: Kyle Littrell, XTO
Bradford Billings, NMOCD
Robert Hamlet, NMOCD
Jim Amos, BLM

Attachments:

Figure 1	Site Location Map
Figure 2	Cross Section Locations
Figure 3	Cross Section A-A’
Figure 4	Cross Section B-B’
Figure 5	Cross Sections C-C’ & D-D’
Figure 6	Cross Sections E-E’ & F-F’
Figure 7	Preliminary Soil Sample Locations
Figure 8	Excavation Soil Sample Locations
Figure 9	Borehole Soil Sample Locations
Figure 10	Proposed Additional Excavation Locations
Figure 11	Proposed Borehole and Monitoring Well Locations
Table 1	Preliminary and Excavation Soil Screening Summary
Table 1	Soil Analytical Results
Attachment 1	Initial/Final NMOCD Form C-141 (2RP-3179, 2RP-3464, and 2RP-5243)
Attachment 2	Photographic Log
Attachment 3	Lithologic/Soil Sampling Logs
Attachment 4	Laboratory Analytical Reports



LEGEND

SITE LOCATION

IMAGE COURTESY OF ESRI/USGS

0 2,000 4,000

Feet

N

NEW MEXICO

NOTE: REMEDIATION PERMIT NUMBER 2RP-5169

FIGURE 1
SITE LOCATION MAP
PCA 53
UNIT K SEC 23 T23S R29E
EDDY COUNTY, NEW MEXICO
XTO ENERGY, INC.

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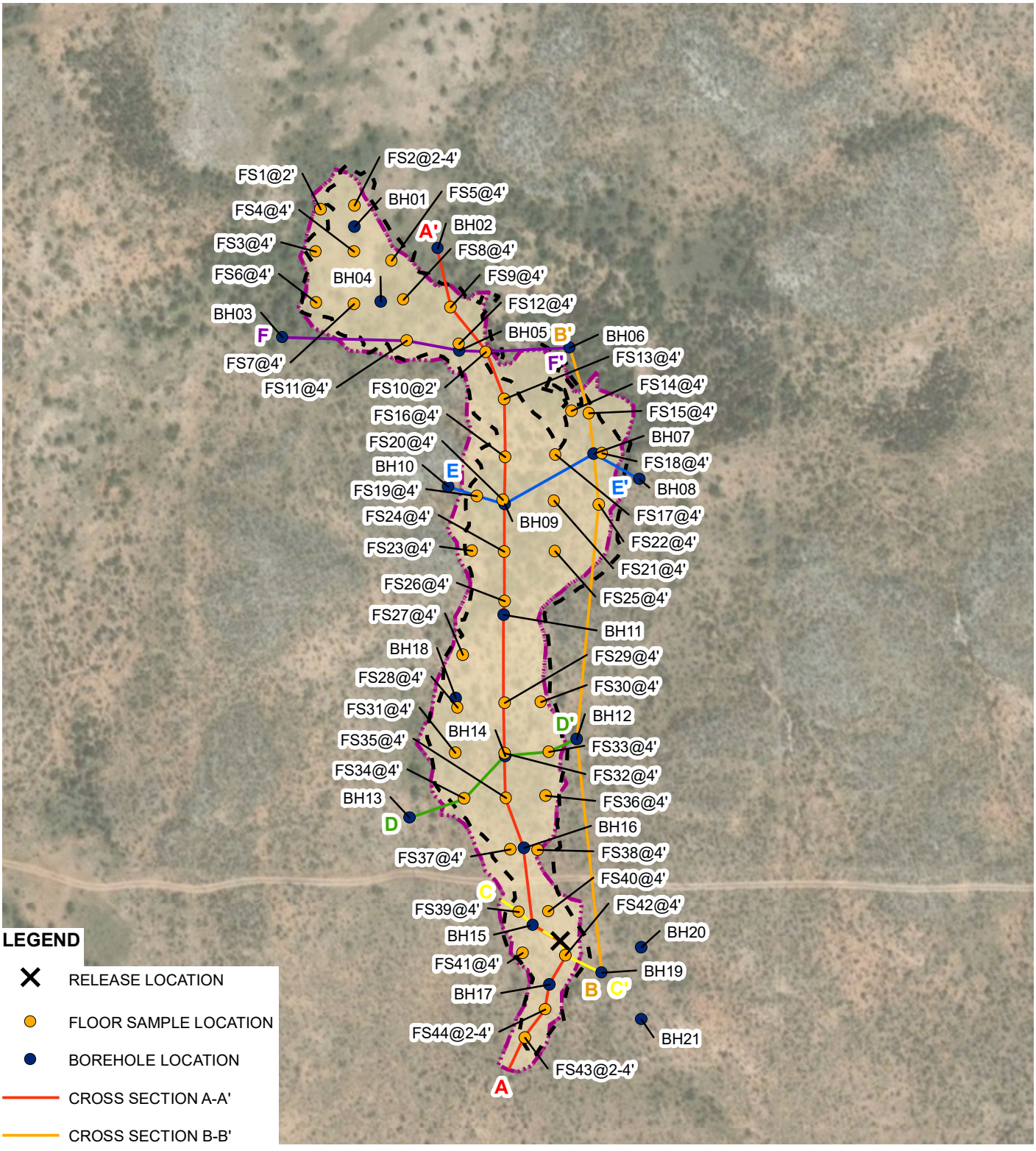

FIGURE 2
CROSS SECTION LAYOUT
PCA 53
UNIT K SEC 23 T23S R29E
EDDY COUNTY, NEW MEXICO
XTO ENERGY, INC.

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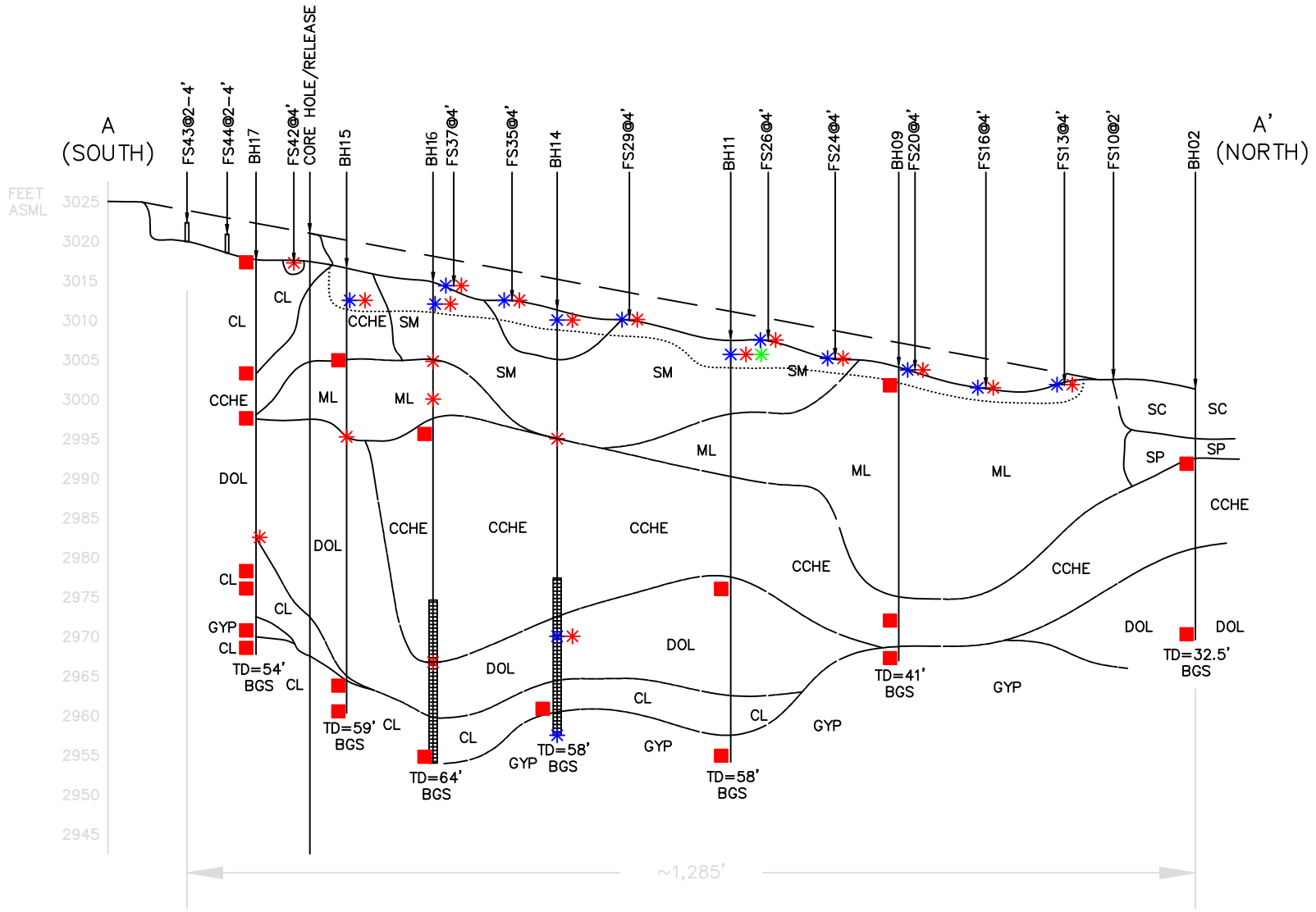


NOTE: REMEDIATION PERMIT NUMBER 2RP-5169

LEGEND

- COMPLIANT WITH NMOCD TABLE 1 CLOSURE CRITERIA
- TPH > 100 MG/KG
- CHLORIDE > 600 MG/KG
- BTEX > 50 MG/KG

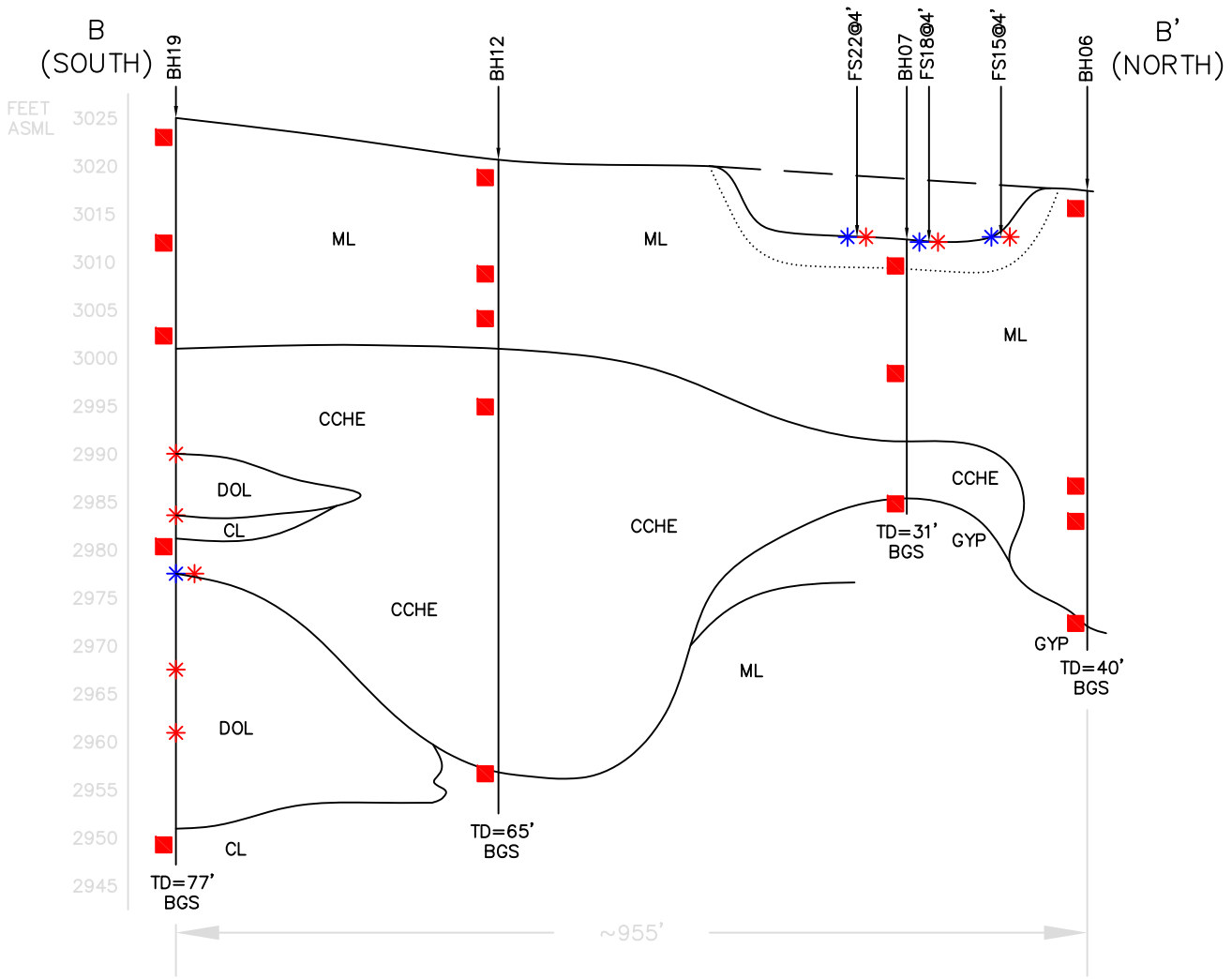
CL	CLAY
CCHE	CALICHE
DOL	DOLOMITE
GYP	GYPSUM
ML	SILT
SW	WELL GRADED SAND
SP	POORLY GRADED SAND
SC	CLAYEY SAND
SM	SILTY SAND

TPH – TOTAL PETROLEUM HYDROCARBONS
BTEX – BENZENE, TOLUENE, ETHLYBENZENE, TOTAL XYLENES
MG/KG – MILLIGRAMS PER KILOGRAM
TD – TOTAL DEPTH
BGS – BELOW GROUND SURFACE
> – GREATER THAN
' – FEET
ASML – ABOVE MEAN SEA LEVEL
NMOCD – NEW MEXICO OIL CONSERVATION DIVISION

- CONTACT LINE (DASHED WHEN INFERRED)
- EXCAVATED SURFACE
- PROPOSED EXCAVATED DEPTH

FIGURE 3
CROSS SECTION A–A' PCA 53
UNIT K SEC 23 T23S R29E
EDDY COUNTY, NEW MEXICO
XTO ENERGY, INC.

012918187 6/19



LEGEND

- COMPLIANT WITH NMOCD TABLE 1 CLOSURE CRITERIA
- TPH > 100 MG/KG
- CHLORIDE > 600 MG/KG
- BTEX > 50 MG/KG

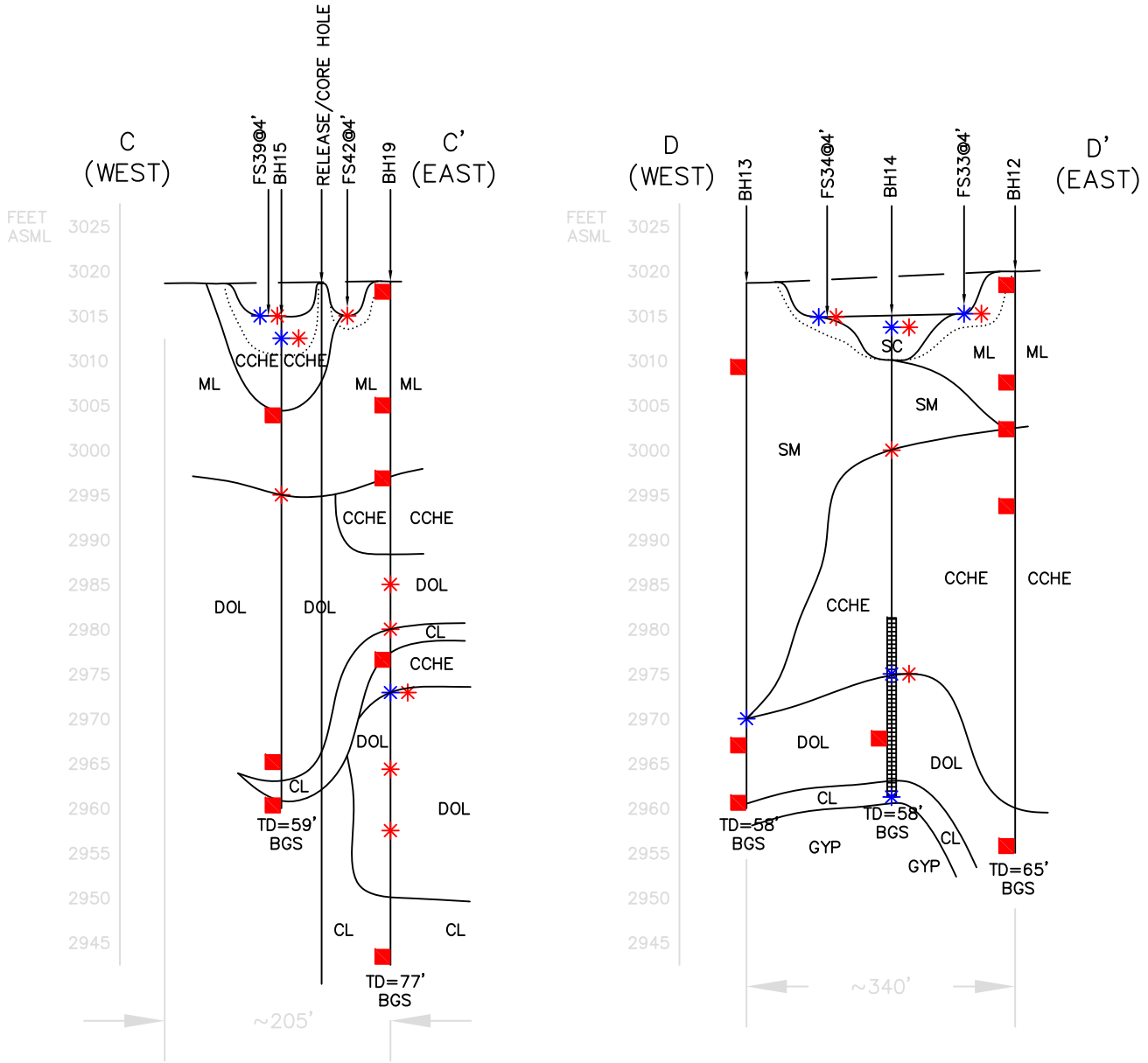
CL	CLAY
CCHE	CALICHE
DOL	DOLOMITE
GYP	GYPSUM
ML	SILT
SW	WELL GRADED SAND
SP	POORLY GRADED SAND
SC	CLAYEY SAND
SM	SILTY SAND

TPH – TOTAL PETROLEUM HYDROCARBONS
BTEX – BENZENE, TOLUENE, ETHLYBENZENE, TOTAL XYLENES
MG/KG – MILLIGRAMS PER KILOGRAM
TD – TOTAL DEPTH
BGS – BELOW GROUND SURFACE
> – GREATER THAN
' – FEET
ASML – ABOVE MEAN SEA LEVEL
NMOCD – NEW MEXICO OIL CONSERVATION DIVISION

- CONTACT LINE (DASHED WHEN INFERRED)
- EXCAVATED SURFACE
- PROPOSED EXCAVATED DEPTH

FIGURE 4
CROSS SECTION B–B' PCA 53
UNIT K SEC 23 T23S R29E
EDDY COUNTY, NEW MEXICO
XTO ENERGY, INC.

012918187 6/19



LEGEND

- COMPLIANT WITH NMOCD TABLE 1 CLOSURE CRITERIA
- TPH > 100 MG/KG
- CHLORIDE > 600 MG/KG
- BTEX > 50 MG/KG

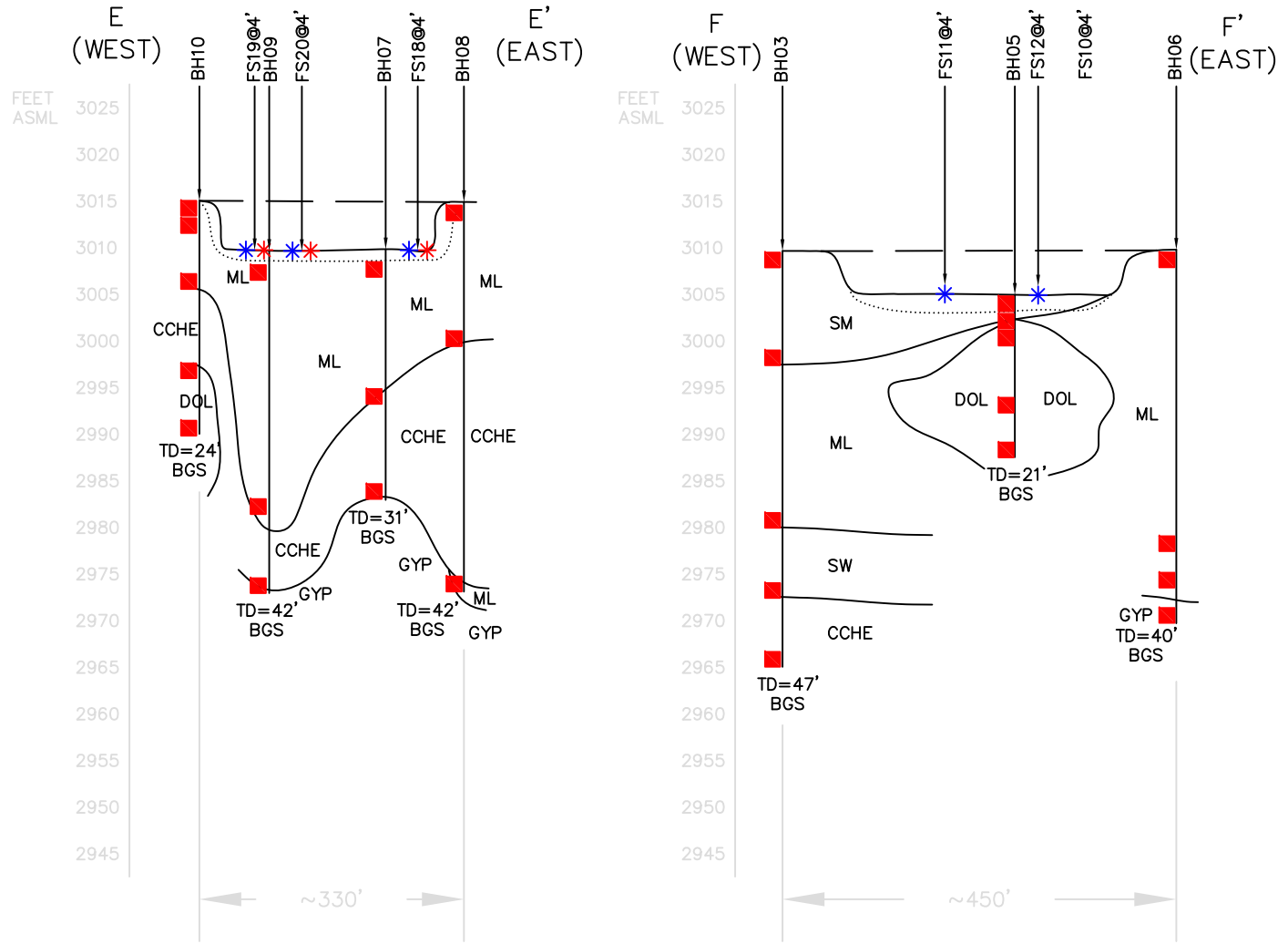
CL	CLAY
CCHE	CALICHE
DOL	DOLOMITE
GYP	GYPSUM
ML	SILT
SW	WELL GRADED SAND
SP	POORLY GRADED SAND
SC	CLAYEY SAND
SM	SILTY SAND

TPH – TOTAL PETROLEUM HYDROCARBONS
BTEX – BENZENE, TOLUENE, ETHLYBENZENE, TOTAL XYLENES
MG/KG – MILLIGRAMS PER KILOGRAM
TD – TOTAL DEPTH
BGS – BELOW GROUND SURFACE
> – GREATER THAN
' – FEET
ASML – ABOVE MEAN SEA LEVEL
NMOCD – NEW MEXICO OIL CONSERVATION DIVISION

- CONTACT LINE (DASHED WHEN INFERRED)
- EXCAVATED SURFACE
- PROPOSED EXCAVATED DEPTH

FIGURE 5
CROSS SECTIONS C–C' & D–D' PCA 53
UNIT K SEC 23 T23S R29E
EDDY COUNTY, NEW MEXICO
XTO ENERGY, INC.

012918187 6/19



LEGEND

- COMPLIANT WITH NMOCD TABLE 1 CLOSURE CRITERIA
- TPH > 100 MG/KG
- CHLORIDE > 600 MG/KG
- BTEX > 50 MG/KG

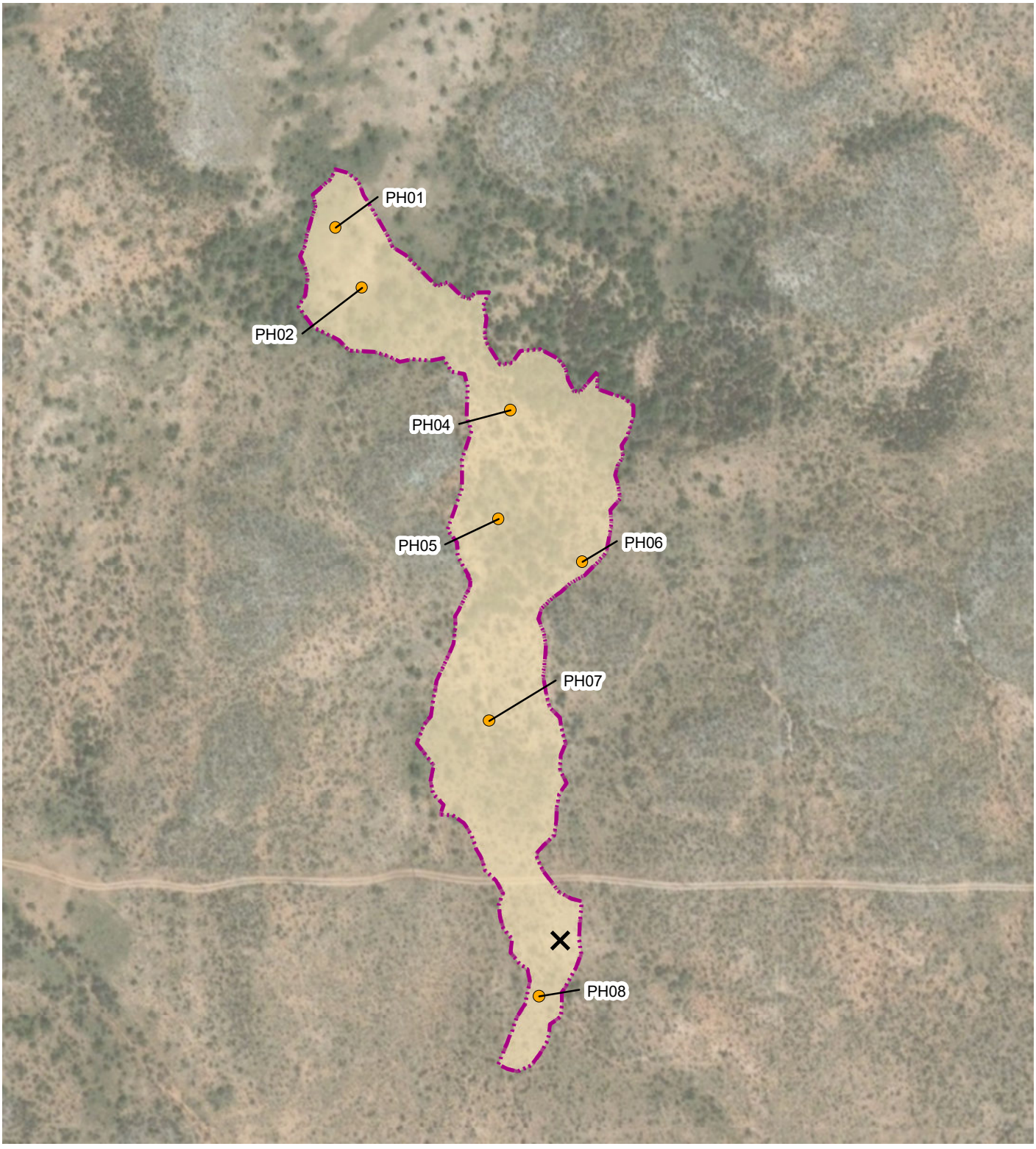
CL	CLAY
CCHE	CALICHE
DOL	DOLOMITE
GYP	GYPSUM
ML	SILT
SW	WELL GRADED SAND
SP	POORLY GRADED SAND
SC	CLAYEY SAND
SM	SILTY SAND

TPH – TOTAL PETROLEUM HYDROCARBONS
BTEX – BENZENE, TOLUENE, ETHLYBENZENE, TOTAL XYLENES
MG/KG – MILLIGRAMS PER KILOGRAM
TD – TOTAL DEPTH
BGS – BELOW GROUND SURFACE
> – GREATER THAN
' – FEET
ASML – ABOVE MEAN SEA LEVEL
NMOCD – NEW MEXICO OIL CONSERVATION DIVISION

- CONTACT LINE (DASHED WHEN INFERRED)
- EXCAVATED SURFACE
- PROPOSED EXCAVATED DEPTH

FIGURE 6
CROSS SECTIONS E–E' & F–F' PCA 53
UNIT K SEC 23 T23S R29E
EDDY COUNTY, NEW MEXICO
XTO ENERGY, INC.

012918187 6/19



LEGEND

- RELEASE LOCATION
- POTHOLE SAMPLE LOCATION
- RELEASE EXTENT

IMAGE COURTESY OF ESRI

0 200 400
Feet

N

NOTE: REMEDIATION PERMIT NUMBER 2RP-5169

FIGURE 7
PRELIMINARY SOIL SAMPLE LOCATIONS
PCA 53
UNIT K SEC 23 T23S R29E
EDDY COUNTY, NEW MEXICO
XTO ENERGY, INC.

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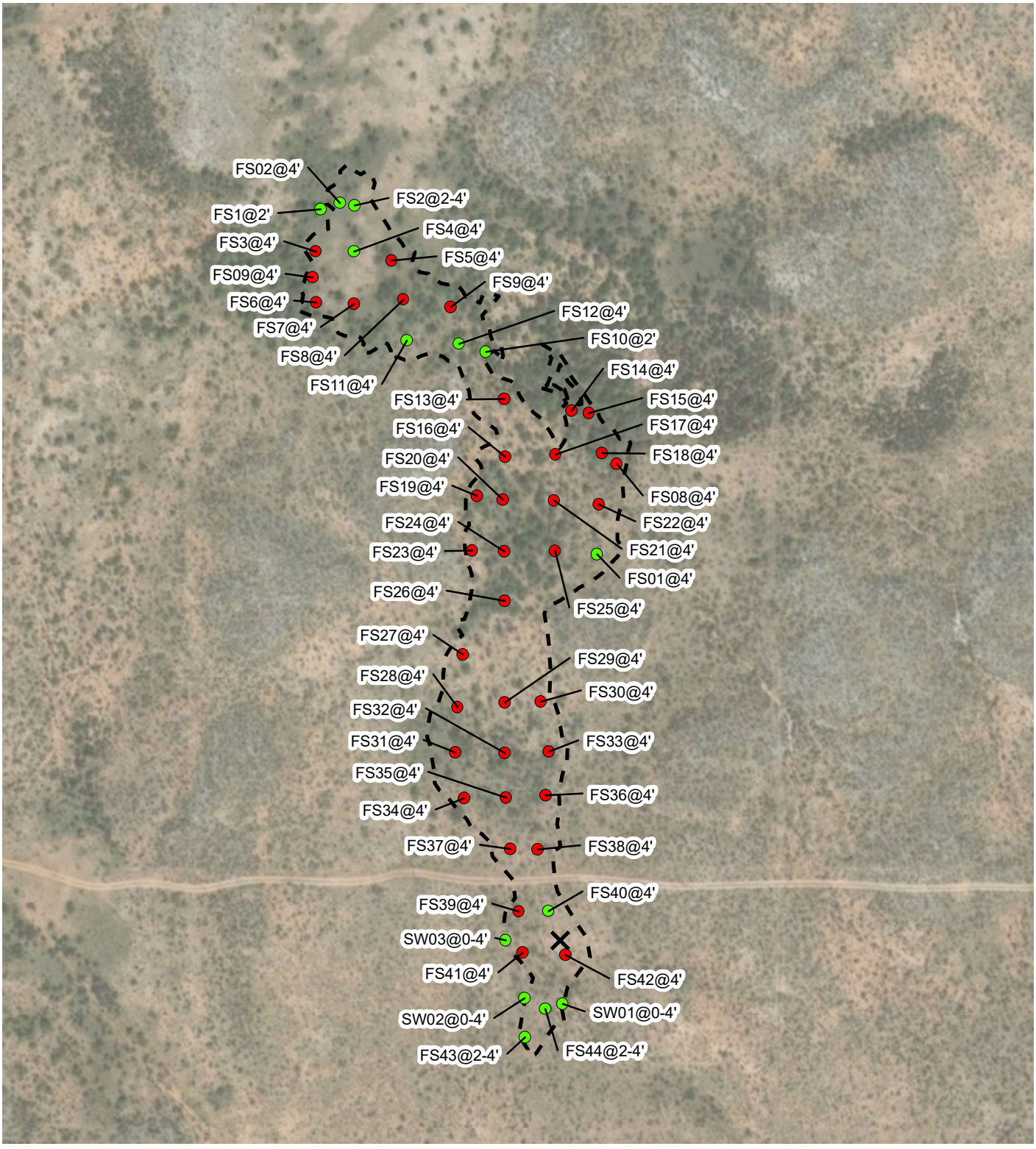

LEGEND

IMAGE COURTESY OF ESRI

- RELEASE LOCATION
- SOIL SAMPLE WITH FIELD SCREENING CONCENTRATIONS EXCEEDING APPLICABLE CLOSURE CRITERIA
- SOIL SAMPLE IN COMPLIANCE WITH FIELD SCREENING APPLICABLE CLOSURE CRITERIA

0 200 400
Feet

N

NOTE: REMEDIATION PERMIT NUMBER 2RP-5169

FIGURE 8
EXCAVATION SOIL SAMPLE LOCATIONS
PCA 53
UNIT K SEC 23 T23S R29E
EDDY COUNTY, NEW MEXICO
XTO ENERGY, INC.

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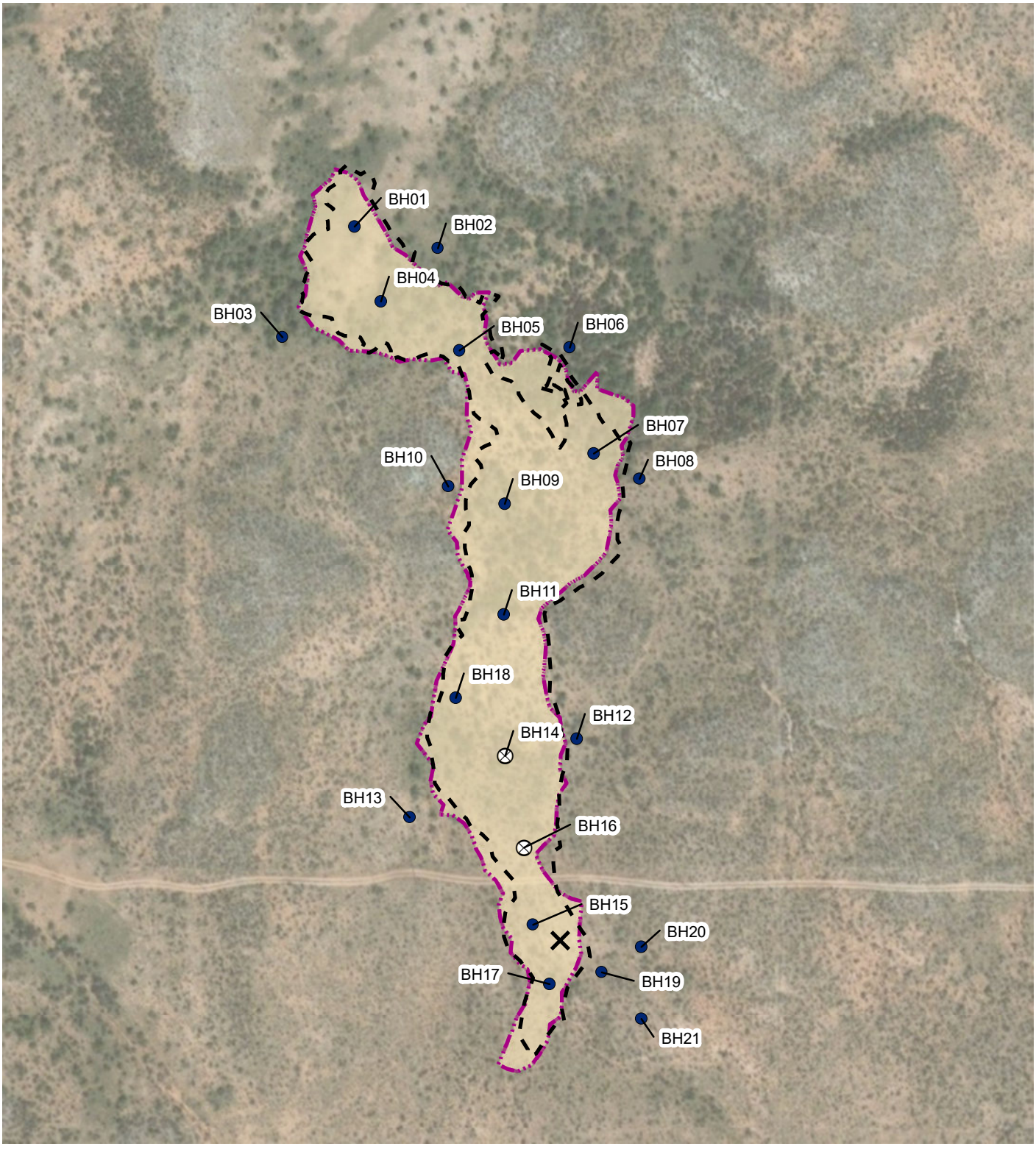

LEGEND

- RELEASE LOCATION
- BOREHOLE LOCATION
- MONITORING WELL
- RELEASE EXTENT (189,230 SQUARE FEET)
- EXCAVATION EXTENT (172,187 SQUARE FEET)

NOTE: REMEDIATION PERMIT NUMBER 2RP-5169

IMAGE COURTESY OF ESRI

0 200 400
Feet

N

FIGURE 9
BOREHOLE LOCATIONS
PCA 53
UNIT K SEC 23 T23S R29E
EDDY COUNTY, NEW MEXICO
XTO ENERGY, INC.

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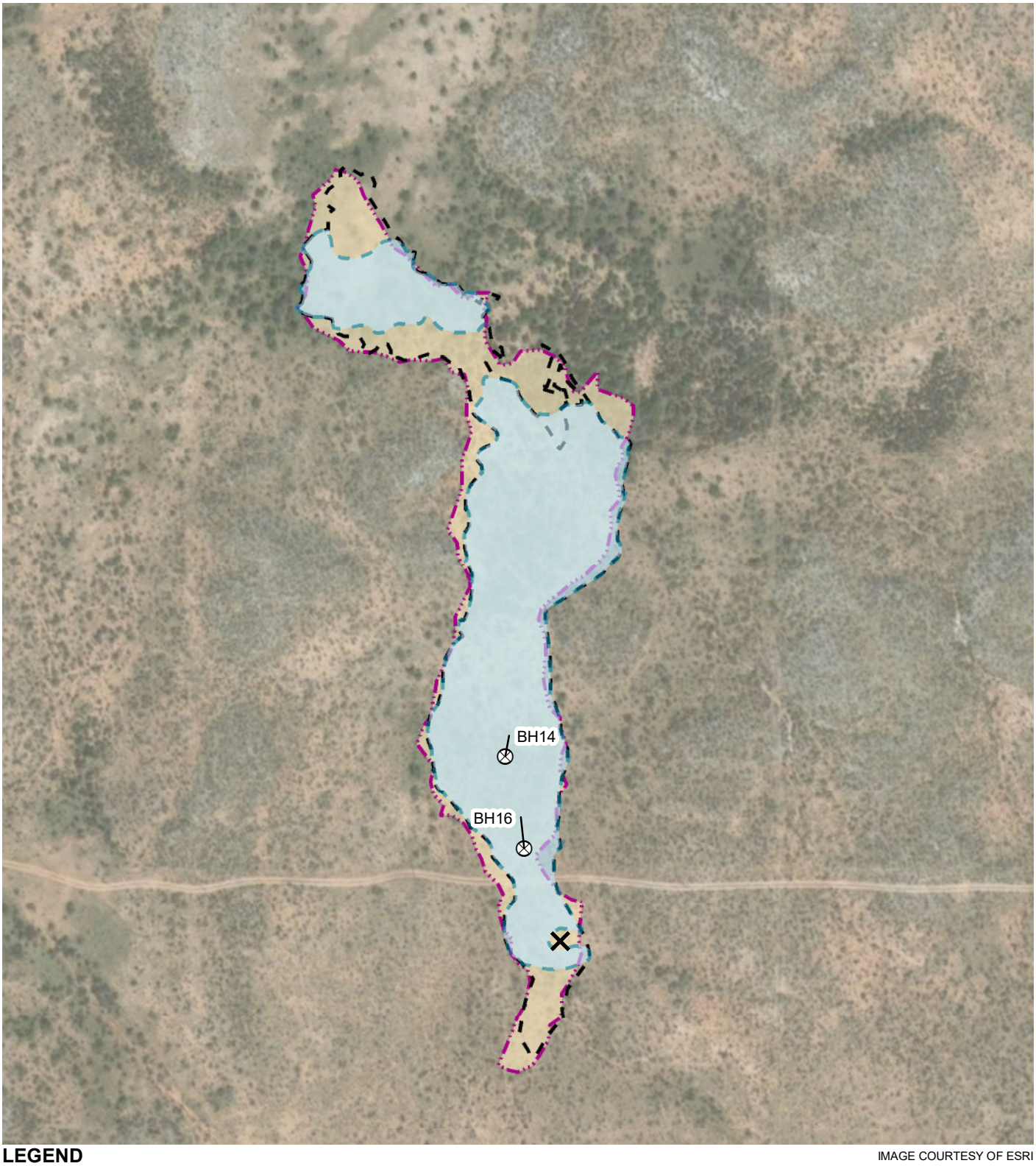

LEGEND

IMAGE COURTESY OF ESRI

- RELEASE LOCATION
- MONITORING WELL
- RELEASE EXTENT (189,230 SQUARE FEET)
- EXCAVATION EXTENT (172,187 SQUARE FEET)
- ADDITIONAL EXCAVATION EXTENT(146,495 SQUARE FEET)

NOTE: REMEDIATION PERMIT NUMBER 2RP-5169

0 200 400
Feet

N

FIGURE 10
PROPOSED EXCAVATION EXTENTS
PCA 53
UNIT K SEC 23 T23S R29E
EDDY COUNTY, NEW MEXICO
XTO ENERGY, INC.

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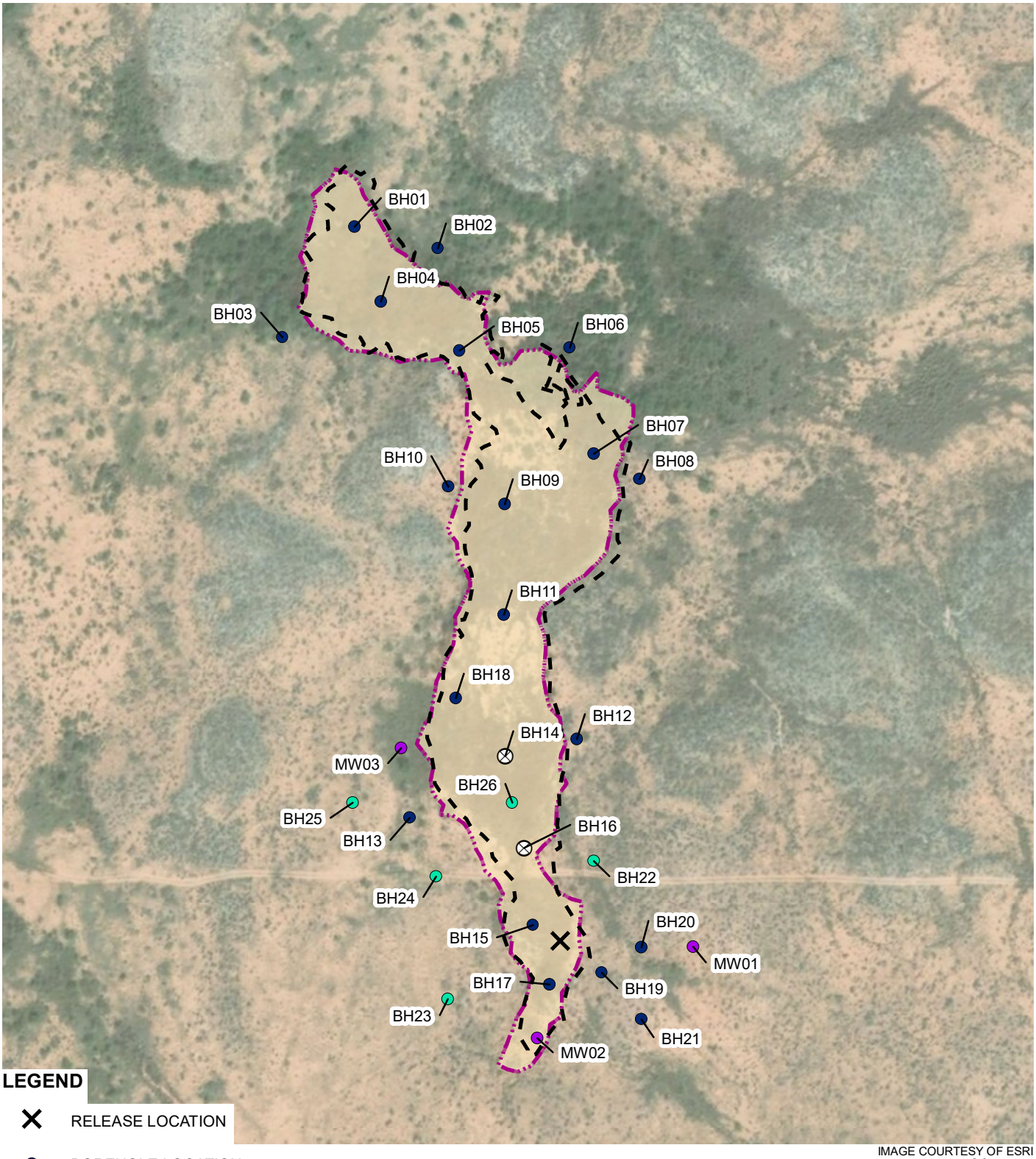

LEGEND

- RELEASE LOCATION
- BOREHOLE LOCATION
- MONITORING WELL
- PROPOSED BOREHOLE LOCATION
- PROPOSED MONITORING WELL
- RELEASE EXTENT (189,230 SQUARE FEET)
- EXCAVATION EXTENT (172,187 SQUARE FEET)

NOTE: REMEDIATION PERMIT NUMBER 2RP-5169

IMAGE COURTESY OF ESRI

0 200 400
Feet

N

FIGURE 11
PROPOSED BOREHOLE AND MONTORING WELL LOCATIONS
PCA 53
UNIT K SEC 23 T23S R29E
EDDY COUNTY, NEW MEXICO
XTO ENERGY, INC.

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TABLE 1
SOIL FIELD SCREENING SUMMARY
PCA 53
REMEDIATION PERMIT NUMBER 2RP-5169
EDDY COUNTY, NEW MEXICO
XTO ENERGY, INC.

Sample Name	Sample Depth (feet bgs)	Sample Date	PID (ppm)	Chloride (ppm)
PH01	2	2/11/2019	**1,500**	NM
PH01A	4	2/11/2019	**735**	<112
PH01B	6	2/11/2019	**350**	<112
PH01C	7	2/11/2019	**286**	<112
PH01D	9.5	2/11/2019	**1,250**	<112
PH01E	10	2/11/2019	**1,205**	<112
PH02	2	2/11/2019	**6,400**	<112
PH02A	5	2/11/2019	**355**	<112
PH02B	7	2/11/2019	**1,200**	<112
PH02C	9	2/11/2019	**259**	<112
PH02D	11	2/11/2019	**4,650**	<112
PH02E	12	2/11/2019	**517**	<112
PH03	2	2/11/2019	6.5	<112
PHO3A	4	2/11/2019	5.5	<112
PH04	2	2/11/2019	**>15,000**	NM
PH04A	5	2/11/2019	**346**	524
PH04B	7	2/11/2019	**536**	<112
PH04C	12	2/11/2019	**419**	<112
PH05	2	2/12/2019	**>15,000**	**3,884**
PH05A	4	2/12/2019	**>15,000**	**3,884**
PH05B	6	2/12/2019	**>15,000**	**7,027**
PH05C	8	2/12/2019	**>15,000**	524
PH05D	10	2/12/2019	**>15,000**	<112
PH05E	12	2/12/2019	**370**	<112
PH05F	14	2/12/2019	**>15,000**	<112
PH05G	15	2/12/2019	**880**	<112
PH05H	18	2/12/2019	**>15,000**	<112
PH06	2.5	2/12/2019	**>15,000**	**15,468**
PH06A	5	2/12/2019	**>15,000**	**8,230**
PH06B	7	2/12/2019	**>15,000**	**8,230**
PH06C	8	2/12/2019	**>15,000**	**3,212**
PH06D	10	2/12/2019	**2,570**	**1,367**
PH06E	12	2/12/2019	**4,140**	**1,484**
PH07	2	2/12/2019	**1,390**	**15,468**

TABLE 1
SOIL FIELD SCREENING SUMMARY
PCA 53
REMEDIATION PERMIT NUMBER 2RP-5169
EDDY COUNTY, NEW MEXICO
XTO ENERGY, INC.

Sample Name	Sample Depth (feet bgs)	Sample Date	PID (ppm)	Chloride (ppm)
PH07A	4	2/12/2019	**>15,000**	**18,297**
PH07B	6	2/12/2019	**>15,000**	**18,168**
PH07C	8	2/12/2019	**>15,000**	**15,468**
PH07D	10	2/12/2019	**>15,000**	**16,806**
PH07E	12	2/12/2019	**>15,000**	**6,483**
PHO7F	14	2/12/2019	**>15,000**	**5,497**
PH07G	16	2/12/2019	**>15,000**	**9,619**
PH08	2	2/12/2019	47.8	416
PH08A	4	2/12/2019	55.9	416
PH08B	6	2/12/2019	**364**	<112
PH08C	8	2/12/2019	41.6	<112
PH08D	10	2/12/2019	12.1	<112
SW1	0-4	3/28/2019	60.1	358
SW2	0-4	3/28/2019	**196.3**	358.0
SW3	0-4	3/28/2019	**155.6**	556
FS1	2	3/28/2019	7.7	403.2
FS2	2-4	3/28/2019	2.1	<112
FS3	4	3/28/2019	**196**	**928**
FS4	4	3/28/2019	**496**	320
FS5	4	3/28/2019	**855**	**1,824**
FS6	4	3/28/2019	**829**	**1,842**
FS7	4	3/28/2019	**726**	**2,060**
FS8	4	3/28/2019	**1,041**	**2,296**
FS9	4	3/28/2019	**952**	**1,640**
FS10	2	3/28/2019	1.2	<112
FS11	4	3/28/2019	**567**	396
FS12	4	3/28/2019	**211**	<112
FS13	4	3/28/2019	**715**	**1,842**
FS14	4	3/29/2019	**398**	**1,640**
FS15	4	3/29/2019	**623**	**4,424**
FS16	4	3/29/2019	**1,223**	**1,562**
FS17	4	3/29/2019	**440**	**2,436**
FS18	4	3/29/2019	**355**	**7,789**
FS19	4	3/29/2019	**422**	**7,789**

TABLE 1
SOIL FIELD SCREENING SUMMARY
PCA 53
REMEDIATION PERMIT NUMBER 2RP-5169
EDDY COUNTY, NEW MEXICO
XTO ENERGY, INC.

Sample Name	Sample Depth (feet bgs)	Sample Date	PID (ppm)	Chloride (ppm)
FS20	4	3/29/2019	**654**	**5,056**
FS21	4	3/29/2019	**431**	**3,091**
FS22	4	3/29/2019	**245**	**5,224**
FS23	4	3/29/2019	**185**	**5,460**
FS24	4	3/29/2019	**722**	**3,152**
FS25	4	3/29/2019	**127**	**5,012**
FS26	4	3/29/2019	**751**	**6,445**
FS27	4	3/29/2019	16.8	**6,994**
FS28	4	3/29/2019	**1,102**	**5,936**
FS29	4	3/29/2019	**1,151**	**5,460**
FS30	4	3/29/2019	**618**	**2,027**
FS31	4	3/29/2019	**1,235**	**4,597**
FS32	4	3/29/2019	**720**	**10,393**
FS33	4	3/29/2019	**561**	**5,012**
FS34	4	3/29/2019	**1,360**	**5,936**
FS35	4	3/29/2019	**897**	**11,244**
FS36	4	3/29/2019	**562**	**9,604**
FS37	4	3/29/2019	**1,144**	**7,993**
FS38	4	3/29/2019	**634**	**1,792**
FS39	4	3/29/2019	**1,104**	**5,012**
FS40	4	3/29/2019	67.8	<112
FS41	4	3/29/2019	**1,386**	**4,597**
FS42	4	3/29/2019	97.7	**2,844**
FS43	2-4	3/29/2019	3.3	<112
FS44	2-4	3/29/2019	1.8	<112
NMOCD - Closure Criteria			**100**	**600**

Notes:

ppm - parts per million

BOLD - indicates results exceed the applicable regulatory standard

bgs - below ground surface

NMOCD - New Mexico Oil Conservation Division

< -value less than the field screening detection limit

> - value greater than field screening detection limit

NM - not measured

TABLE 2
SOIL ANALYTICAL RESULTS
PCA 53
REMEDIATION PERMIT NUMBER 2RP-5169
EDDY COUNTY, NEW MEXICO
XTO ENERGY, INC.

Sample Name	Sample Depth (feet bgs)	USCS / Lithology Description	Sample Date	Benzene (mg/kg)	Total BTEX (mg/kg)	GRO (mg/kg)	DRO (mg/kg)	ORO (mg/kg)	TPH (mg/kg)	PID Result (ppm)	Chloride Screening (ppm)	Chloride (mg/kg)
BH01	5	SM	05/15/2019	<0.00199	<0.00199	<15.0	26.3	<15.0	26.3	2.4	<112	95.6
BH01A	8	CCHE	05/15/2019	<0.00200	<0.00200	<15.0	<15.0	<15.0	<15.0	3.4	211	93.1
BH01B	21	DOL	05/15/2019	<0.00202	<0.00202	<14.9	<14.9	<14.9	<14.9	2.8	211	188
BH01C	28	DOL	05/15/2019	<0.00199	<0.00199	<15.0	<15.0	<15.0	<15.0	0.7	<112	73.9
BH02	10	CCHE	05/09/2019	<0.00198	0.00945	<15.0	<15.0	<15.0	<15.0	1.4	217	28.5
BH02A	30	DOL	05/09/2019	<0.00201	<0.00201	<15.0	<15.0	<15.0	<15.0	0.6	<124	102
BH03	2	SM	05/15/2019	<0.00200	<0.00200	<15.0	<15.0	<15.0	<15.0	1.0	<112	<5.00
BH03A	12	ML	05/15/2019	<0.00200	<0.00200	<15.0	<15.0	<15.0	<15.0	2.5	<112	<5.00
BH03B	30	SW	05/15/2019	<0.00201	<0.00201	<15.0	<15.0	<15.0	<15.0	3.6	<112	<5.00
BH03C	38	CCHE	05/15/2019	<0.00199	<0.00199	<15.0	<15.0	<15.0	<15.0	1.3	729	429
BH03D	47	CL	05/15/2019	<0.00198	<0.00198	<15.0	<15.0	<15.0	<15.0	1.8	<112	149
BH04	6	ML	05/15/2019	0.137	4.95	1,010	4,220	418	**5,650**	1,017	2,284	**2,020**
BH04A	11	ML	05/15/2019	<0.00199	<0.00199	<15.0	<15.0	<15.0	<15.0	17.3	<112	16.4
BH04B	21	CCHE	05/15/2019	<0.00201	<0.00201	<15.0	<15.0	<15.0	<15.0	4.8	<112	49.3
BH04C	34	DOL	05/15/2019	<0.00200	<0.00200	<15.0	<15.0	<15.0	<15.0	6.4	211	162
BH05	5	SM	05/15/2019	<0.00202	<0.00202	<15.0	<15.0	<15.0	<15.0	2.9	<112	5.79
BH05A	7	DOL	05/15/2019	<0.00199	<0.00199	<15.0	<15.0	<15.0	<15.0	5.0	172	117
BH05B	17	DOL	05/15/2019	<0.00198	<0.00198	<15.0	<15.0	<15.0	<15.0	5.2	556	269
BH05C	21	DOL	05/15/2019	<0.00201	<0.00201	<15.0	<15.0	<15.0	<15.0	1.1	<112	132
BH06	2	ML	05/16/2019	<0.00202	<0.00202	<15.0	23.3	39.8	63.1	2.3	<112	<4.99
BH06A	32	ML	05/16/2019	<0.00198	<0.00198	<15.0	<15.0	<15.0	<15.0	0.7	497	432
BH06B	37	ML	05/16/2019	<0.00200	<0.00200	<15.0	<15.0	<15.0	<15.0	0.7	<112	155
BH06C	40	GYP	05/16/2019	<0.00200	<0.00200	<15.0	<15.0	<15.0	<15.0	0.4	<112	51.0
BH07	6	ML	05/15/2019	<0.00201	<0.00201	<15.0	<15.0	<15.0	<15.0	2.0	<112	9.32
BH07A	21	CCHE	05/15/2019	<0.00199	<0.00199	<15.0	<15.0	<15.0	<15.0	2.3	<112	11.1
BH07B	31	GYP	05/15/2019	<0.00200	<0.00200	<15.0	<15.0	<15.0	<15.0	3.8	<112	123
BH08	2	ML	05/16/2019	<0.00201	<0.00201	<15.0	<15.0	<15.0	<15.0	2.3	<112	<5.03
BH08A	15	CCHE	05/16/2019	<0.00199	<0.00199	<14.9	<14.9	<14.9	<14.9	0.6	<112	43.0

TABLE 2
SOIL ANALYTICAL RESULTS
PCA 53
REMEDIATION PERMIT NUMBER 2RP-5169
EDDY COUNTY, NEW MEXICO
XTO ENERGY, INC.

Sample Name	Sample Depth (feet bgs)	USCS / Lithology Description	Sample Date	Benzene (mg/kg)	Total BTEX (mg/kg)	GRO (mg/kg)	DRO (mg/kg)	ORO (mg/kg)	TPH (mg/kg)	PID Result (ppm)	Chloride Screening (ppm)	Chloride (mg/kg)
BH08B	42	ML	05/16/2019	<0.00200	<0.00200	<15.0	<15.0	<15.0	<15.0	0.4	<112	30.1
BH09	6	ML	05/14/2019	<0.00200	<0.00200	<15.0	<15.0	<15.0	<15.0	8.9	<112	55.9
BH09A	34	CCHE	05/14/2019	<0.00201	<0.00201	<15.0	<15.0	<15.0	<15.0	0.6	<112	16.5
BH09B	41	GYP	05/14/2019	<0.00199	<0.00199	<15.0	<15.0	<15.0	<15.0	1.3	<112	<50.2
BH10	0.5	GYP	05/16/2019	<0.00198	<0.00198	<15.0	<15.0	<15.0	<15.0	1.5	512	107
BH10A	1	ML	05/16/2019	<0.00200	<0.00200	<15.0	<15.0	<15.0	<15.0	1.9	<112	440
BH10B	9	CCHE	05/16/2019	<0.00201	<0.00201	<15.0	<15.0	<15.0	<15.0	0.6	240	85.1
BH10C	18	DOL	05/16/2019	<0.00199	<0.00199	<15.0	<15.0	<15.0	<15.0	0.4	512	239
BH10D	24	DOL	05/16/2019	<0.00199	<0.00199	<15.0	<15.0	<15.0	<15.0	0.7	384	219
BH11	6	SM	05/13/2019	0.403	**61.0**	2,990	4,960	495	**8,450**	1,252	1,286	**964**
BH11A	35	DOL	05/13/2019	<0.00202	0.00879	<15.0	<15.0	<15.0	<15.0	1.0	262	319
BH11B	58	GYP	05/13/2019	<0.00198	<0.00198	<15.0	<15.0	<15.0	<15.0	0.7	<112	59.1
BH12	2	ML	05/16/2019	<0.00202	<0.00202	<15.0	<15.0	<15.0	<15.0	0.0	<112	74.6
BH12A	12	ML	05/16/2019	<0.00201	<0.00201	<14.9	<14.9	<14.9	<14.9	0.3	556	538
BH12B	17	CCHE	05/16/2019	<0.00199	<0.00199	<15.0	<15.0	<15.0	<15.0	0.7	<112	110
BH12C	27	CCHE	05/16/2019	<0.00200	<0.00200	<15.0	<15.0	<15.0	<15.0	1.0	697	336
BH12D	65	ML	05/17/2019	<0.00202	<0.00202	<15.0	<15.0	<15.0	<15.0	5.3	<112	23.9
BH13	10	SM	05/10/2019	<0.00201	<0.00201	<15.0	<15.0	<15.0	<15.0	1.1	384	5.40
BH13A	48	DOL	05/10/2019	<0.00199	0.0117	15.4	107	<15.0	**122**	337.2	884.8	516
BH13B	52	DOL	05/10/2019	<0.00200	<0.00200	<15.0	<15.0	<15.0	<15.0	337	845	178
BH13C	58	DOL	05/10/2019	<0.00199	<0.00199	<15.0	<15.0	<15.0	<15.0	1.1	<172	142
BH14	5	SC	05/11/2019	0.00426	0.511	160	280	33.8	**474**	480	11,120	**19,700**
BH14A	20	SM	05/11/2019	<0.00200	0.00413	<14.9	<14.9	<14.9	<14.9	20.4	8,700	**15,000**
BH14B	45	CCHE	05/11/2019	0.00267	0.458	362	1,630	227	**2,220**	1,400	1,116	**1,300**
BH14C	54	DOL	05/11/2019	<0.00201	0.00442	<14.9	44.2	<14.9	44.2	10.4	<124	556
BH14D	58	CL	05/11/2019	<0.00200	0.0158	20.9	322	45	**388**	550	200	232
BH15	6	CCHE	05/09/2019	0.130	26.2	1,980	5,590	641	**8,210**	1,123	16,692	**19,200**
BH15A	15	ML	05/09/2019	<0.00199	0.00404	<15.0	<15.0	<15.0	<15.0	5.4	217	190

TABLE 2
SOIL ANALYTICAL RESULTS
PCA 53
REMEDIATION PERMIT NUMBER 2RP-5169
EDDY COUNTY, NEW MEXICO
XTO ENERGY, INC.

Sample Name	Sample Depth (feet bgs)	USCS / Lithology Description	Sample Date	Benzene (mg/kg)	Total BTEX (mg/kg)	GRO (mg/kg)	DRO (mg/kg)	ORO (mg/kg)	TPH (mg/kg)	PID Result (ppm)	Chloride Screening (ppm)	Chloride (mg/kg)
BH15B	24	DOL	05/09/2019	<0.00202	<0.00202	<15.0	<15.0	<15.0	<15.0	2.4	9,576	**1,450**
BH15C	55	CL	05/10/2019	<0.00199	<0.00199	<15.0	<15.0	<15.0	<15.0	0.6	<124	24.8
BH15D	59	CL	05/10/2019	<0.00201	<0.00201	<15.0	<15.0	<15.0	<15.0	0.2	<124	31.2
BH16	6	SM	05/14/2019	0.0526	1.07	186	1,930	458	**2,570**	1,530	13,479	**18,700**
BH16A	13	CL	05/14/2019	<0.00200	<0.00200	<15.0	<15.0	<15.0	<15.0	29.1	211	**750**
BH16B	18	CL	05/14/2019	<0.00200	<0.00200	<14.9	<14.9	<14.9	<14.9	11.7	1,286	**1,250**
BH16C	21	CCHE	05/14/2019	<0.00202	<0.00202	<14.9	<14.9	<14.9	<14.9	14.9	<112	75.3
BH16D	52	DOL	05/14/2019	<0.00198	<0.00198	<15.0	<15.0	<15.0	<15.0	3.4	4,944	**5,190**
BH16E	64	CL	05/14/2019	<0.00199	<0.00199	<15.0	<15.0	<15.0	<15.0	0.9	<112	33.0
BH17	5	CL	05/11/2019	<0.00201	<0.00201	<15.0	<15.0	<15.0	<15.0	4.9	211	22.3
BH17A	19	CCHE	05/11/2019	<0.00199	<0.00199	<15.0	<15.0	<15.0	<15.0	13.9	698	390
BH17B	24	DOL	05/11/2019	<0.00202	<0.00202	<14.9	<14.9	<14.9	<14.9	11.6	698	436
BH17C	40	DOL	05/11/2019	<0.00199	<0.00199	<15.0	28.3	<15.0	28.3	108	9,376	**5,980**
BH17D	44	CL	05/11/2019	<0.00200	<0.00200	<15.0	<15.0	<15.0	<15.0	11.8	<172	96.6
BH17E	46	CL	05/12/2019	<0.00198	<0.00198	<15.0	<15.0	<15.0	<15.0	4.1	<172	20.1
BH17F	52	GYP	05/12/2019	<0.00200	<0.00200	<15.0	<15.0	<15.0	<15.0	1.7	<172	<5.05
BH17G	54	CL	05/12/2019	<0.00200	<0.00200	<15.0	<15.0	<15.0	<15.0	2.2	<172	27.3
BH18	6	ML	05/17/2019	<0.00201	<0.00201	<15.0	<15.0	<15.0	<15.0	4.8	<112	<5.01
BH18A	13	CCHE	05/17/2019	<0.00202	<0.00202	<15.0	<15.0	<15.0	<15.0	3.9	<112	22.3
BH18B	43	DOL	05/17/2019	<0.00198	<0.00198	<15.0	<15.0	<15.0	<15.0	5.7	2,227	**1,350**
BH18C	57	ML	05/17/2019	<0.00201	<0.00201	<15.0	<15.0	<15.0	<15.0	4.2	2,105	**2,340**
BH19	2	ML	05/17/2019	<0.00202	<0.00202	<14.9	<14.9	<14.9	<14.9	2.8	<112	20.9
BH19A	14	ML	05/17/2019	<0.00199	<0.00199	<15.0	<15.0	<15.0	<15.0	3.2	672	556
BH19B	22	CCHE	05/17/2019	<0.00201	<0.00201	<15.0	<15.0	<15.0	<15.0	2.8	<112	96.8
BH19C	34	DOL	05/17/2019	<0.00198	<0.00198	<15.0	<15.0	<15.0	<15.0	0.6	942	**647**
BH19D	40	CL	05/17/2019	<0.00202	<0.00202	<15.0	<15.0	<15.0	<15.0	32.1	1,177	**3,520**
BH19E	42	CCHE	05/17/2019	<0.00200	<0.00200	<15.0	31.7	<15.0	31.7	153	992	476
BH19F	46	DOL	05/17/2019	<0.00201	0.0457	53.9	586	147	**787**	652	7,366	**7,420**

TABLE 2
SOIL ANALYTICAL RESULTS
PCA 53
REMEDIATION PERMIT NUMBER 2RP-5169
EDDY COUNTY, NEW MEXICO
XTO ENERGY, INC.

Sample Name	Sample Depth (feet bgs)	USCS / Lithology Description	Sample Date	Benzene (mg/kg)	Total BTEX (mg/kg)	GRO (mg/kg)	DRO (mg/kg)	ORO (mg/kg)	TPH (mg/kg)	PID Result (ppm)	Chloride Screening (ppm)	Chloride (mg/kg)
BH19G	56	DOL	05/17/2019	<0.00199	<0.00199	<15.0	<15.0	<15.0	<15.0	15.2	14,324	**6,930**
BH19H	62	DOL	05/17/2019	<0.00200	<0.00200	<15.0	<15.0	<15.0	<15.0	2.4	7,993	**4,110**
BH19I	77	CL	05/18/2019	<0.00200	<0.00200	<15.0	<15.0	<15.0	<15.0	1.0	<112	89.0
BH20	17	ML	06/05/2019	<0.00200	<0.00200	<15.0	<15.0	<15.0	<15.0	4.7	672	**1,170**
BH20A	25	CCHE	06/05/2019	<0.00200	<0.00200	<15.0	<15.0	<15.0	<15.0	22.8	<112	71.8
BH20B	37	DOL	06/05/2019	<0.00199	<0.00199	<15.0	<15.0	<15.0	<15.0	9.8	294	258
BH20C	47	DOL	06/05/2019	<0.00201	<0.00201	<15.0	<15.0	<15.0	<15.0	9.5	825	743
BH20D	57	CH	06/05/2019	<0.00200	<0.00200	<15.0	<15.0	<15.0	<15.0	23.3	345	338
BH20E	70	GYP	06/05/2019	<0.00199	<0.00199	<15.0	<15.0	<15.0	<15.0	5.3	<112	18.4
BH21	29	DOL	06/05/2019	<0.00200	<0.00200	<15.0	<15.0	<15.0	<15.0	9.8	<112	153
BH21A	35	CH	06/06/2019	<0.00201	<0.00201	<15.0	<15.0	<15.0	<15.0	1.9	403	275
BH21B	51	CH	06/06/2019	<0.00200	<0.00200	<15.0	<15.0	<15.0	<15.0	2.8	<112	45.0
FS02	4	SM	02/21/2019	<0.00202	<0.00202	<15.0	40.8	27.3	68.1	330	313	166
FS08	4	SM	02/25/2019	<0.00201	0.0134	36.0	702	103	**841**	2,411	2,131	**1,490**
FS09	4	SM	02/21/2019	<0.00200	<0.00200	<15.0	108	<15.0	**108**	1,033	<112	60.5
NMOCD Table 1 Closure Criteria				**10**	**50**	NE	NE	NE	**100**	**NE**	**NE**	**600**

Notes:

bgs - below ground surface
BTEX - benzene, toluene, ethylbenzene, and total xylenes
CCHE - caliche
CL - clay
DOL - dolomite
DRO - diesel range organics
GRO - gasoline range organics
GYP - gypsum
mg/kg - milligrams per kilogram
ML - silt
NMOCD - New Mexico Oil Conservation Division
NE - not established
ORO - motor oil range organics
PID - Photoionization Detector
ppm - parts per million
SC - clayey sand
SP/SM - poorly graded sand / silty sand
SW - well graded sand
TPH - total petroleum hydrocarbons
Bold - indicates result exceeds the applicable Closure Critiera.
< - indicates result is below laboratory reporting limits

TABLE 3
WATER ANALYTICAL RESULTS
PCA 53
REMEDIATION PERMIT NUMBER 2RP-5169
EDDY COUNTY, NEW MEXICO
XTO ENERGY, INC.

Sample Name	Sample Date	Benzene (mg/L)	Toluene (mg/L)	Ethyl-benzene (mg/L)	Total Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	ORO (mg/L)	Chloride (mg/L)
Stock Tank	12/05/2018	<0.00200	<0.00200	<0.00200	<0.00200	<1.50	<1.50	<1.50	143
Stock Tank	03/27/2019	<0.00200	<0.00200	<0.00200	<0.00200	<1.50	<1.50	<1.50	172
Stock Tank	06/27/2019	<0.00200	<0.00200	<0.00200	<0.00200	<1.50	<1.50	<1.50	126
NMWQCC Standard		**10**	**750**	**750**	**620**	**NE**	**NE**	**NE**	**250**

Notes:

DRO - diesel range organics

GRO - gasoline range organics

mg/L - milligrams per liter

ORO - motor oil range organics

NMWQCC - New Mexico Water Quality Control Commission

NE - not established

Bold - indicates result exceeds the applicable regulatory standard

< - indicates result is below laboratory reporting limits

ATTACHMENT 1: INITIAL/FINAL NMOCD FORM C-141 (2RP-5169)

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	NAB1901038306
District RP	2RP-5169
Facility ID	fAB1901038066
Application ID	pAB1901037748

Release Notification

Responsible Party

Responsible Party XTO Energy, Inc.	OGRID 5380
Contact Name Kyle Littrell	Contact Telephone 432-221-7331
Contact email kyle_littrell@xtoenergy.com	Incident # *(assigned by OCD)* NAB1901038306
Contact mailing address 522 W. Mermod, Suite 704, Carlsbad, NM	

Location of Release Source

Latitude 32.287 Longitude -103.959
(NAD 83 in decimal degrees to 5 decimal places)

Site Name PCA 53	Site Type
Date Release Discovered 11/27/18	API# *(if applicable)*

Unit Letter	Section	Township	Range	County
K	23	23S	29E	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) 2,022	Volume Recovered (bbls) 0
☒ Produced Water	Volume Released (bbls) 6,066	Volume Recovered (bbls) 0
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	☐ Yes ☐ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release
On November 27th, the BLM notified XTO that fluids had been discovered on surface through an existing corehole associated with a nearby potash mine. In October, XTO experienced a pressure loss while drilling the Remuda South 25 State 101H and an unknown volume of flowback fluids were released into the subsurface. BLM has associated the loss of flowback fluids into the subsurface to the November 27th event. Inspection of the site was performed by an environmental contractor and review of the data is in progress.

State of New Mexico
Oil Conservation Division

Incident ID	NAB1901038306
District RP	2RP-5169
Facility ID	fAB1901038066
Application ID	pAB1901037748

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? The release exceeded 25 bbls of produced water and oil.

If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?
Release was reported by a member of the public to the BLM on 11/27/18. BLM notified XTO and XTO provided notice to Mike Bratcher, Maria Pruett, Jim Griswold at NMOCD and Jim Amos and Shelly Tucker at BLM on 11/29/18. Notification was provided by email by Bryan Foust.

Initial Response

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

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

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

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

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

Printed Name: Kyle Littrell Title: SH&E Coordinator

Signature: Date: 12/11/18

email: kyle_littrell@xtoenergy.com Telephone: 432-221-7331

OCD Only

Received by: Date: 1/10/2019

State of New Mexico
Oil Conservation Division

Incident ID	NAB1901038306
District RP	2RP-5169
Facility ID	fAB1901038066
Application ID	pAB1901037748

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?	< 50 (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

Incident ID	NAB1901038306
District RP	2RP-5169
Facility ID	fAB1901038066
Application ID	pAB1901037748

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: 12/11/18

email: kyle_littrell@xtoenergy.com Telephone: 432-221-7331

OCD Only

Received by: Date: 1/10/2019

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Remediation Plan

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

- [X] Detailed description of proposed remediation technique
- [X] Scaled sitemap with GPS coordinates showing delineation points
- [X] Estimated volume of material to be remediated
- [X] Closure criteria is to Table 1 specifications subject to 19.15.29.12(C)(4) NMAC
- [X] 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 Manager Supervisor

Signature:  Date: 8/30/19

email: kyle_littrell@xtoenergy.com Telephone: 432-221-7331

OCD Only

Received by: _____ Date: _____

- [ ] Approved
- [ ] Approved with Attached Conditions of Approval
- [ ] Denied
- [ ] Deferral Approved

Signature: _____ Date: _____

Core hole location, view south

Project: 012918187	XTO Energy, Inc. Remediation Work Plan PCA 53 2RP-5169	LTE Advancing Opportunity
November 28, 2018	Photographic Log	

Release extent to the south of the core hole, view south

Project: 012918187	XTO Energy, Inc. Remediation Work Plan PCA 53 2RP-5169	LTE Advancing Opportunity
November 28, 2018	Photographic Log	

Release extent north of the core hole, view north

Project: 012918187	XTO Energy, Inc. Remediation Work Plan PCA 53 2RP-5169	LTE Advancing Opportunity
November 28, 2018	Photographic Log	

Chloride staining within release extent

Project: 012918187	XTO Energy, Inc. Remediation Work Plan PCA 53 2RP-5169	LTE Advancing Opportunity
November 28, 2018	Photographic Log	

Crude Oil accumulation on vegetation within release extent

Project: 012918187	XTO Energy, Inc. Remediation Work Plan PCA 53 2RP-5169	LTE Advancing Opportunity
November 28, 2018	Photographic Log	

Crude oil accumulation on vegetation within release extent

Project: 012918187	XTO Energy, Inc. Remediation Work Plan PCA 53 2RP-5169	Advancing Opportunity
November 28, 2018	Photographic Log	

Initial excavation activities, view east

Project: 012918187	XTO Energy, Inc. Remediation Work Plan PCA 53 2RP-5169	LTE Advancing Opportunity
February 11, 2019	Photographic Log	

Initial excavation activities, view west

Project: 012918187	XTO Energy, Inc. Remediation Work Plan PCA 53 2RP-5169	LTE Advancing Opportunity
February 13, 2019	Photographic Log	

Initial excavation activities, view southwest

Project: 012918187	XTO Energy, Inc. Remediation Work Plan PCA 53 2RP-5169	LTE Advancing Opportunity
February 28, 2019	Photographic Log	

Initial excavation, view north

Project: 012918187	XTO Energy, Inc. Remediation Work Plan PCA 53 2RP-5169	LTE Advancing Opportunity
February 28, 2019	Photographic Log	

Excavation Activities, view southeast

Project: 012918187	XTO Energy, Inc. Remediation Work Plan PCA 53 2RP-5169	LTE Advancing Opportunity
March 6, 2019	Photographic Log	

Track-mounted sonic drill rig utilized for the advancement of boreholes

Project: 012918187	XTO Energy, Inc. Remediation Work Plan PCA 53 2RP-5169	LTE Advancing Opportunity
May 8, 2019	Photographic Log	

Crude oil recovered from borehole BH14

Project: 012918187	XTO Energy, Inc. Remediation Work Plan PCA 53 2RP-5169	LTE Advancing Opportunity
May 13, 2019	Photographic Log	

Fluid **recovery in bailer from borehole BH14 (approximately 10 inches of crude oil)**

Project: 012918187	XTO Energy, Inc. Remediation Work Plan PCA 53 2RP-5169	Advancing Opportunity
May 13, 2019	Photographic Log	

ATTACHMENT 3: LABORATORY ANALYTICAL REPORTS

Analytical Report 614451

for

LT Environmental, Inc.

Project Manager: Adrian Baker

PCA 53

14-FEB-19

Collected By: Client

1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-18-28), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (T104704295-18-17), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-18-14)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-18-18)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-18-18)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-18-4)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Phoenix Mobile (EPA Lab Code: AZ00901): Arizona (AZM757)
Xenco-Atlanta (LELAP Lab ID #04176)
Xenco-Tampa: Florida (E87429), North Carolina (483)
Xenco-Lakeland: Florida (E84098)

14-FEB-19

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

Reference: XENCO Report No(s): **614451**
PCA 53
Project Address: Delaware Basin

Adrian Baker:

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) 614451. 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. 614451 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,

Jessica Kramer

Jessica Kramer
Project Assistant

Sample Cross Reference 614451

LT Environmental, Inc., Arvada, CO

PCA 53

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
PH02	S	02-11-19 14:00	2 ft	614451-001
PH02C	S	02-11-19 14:12	9 ft	614451-002

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3079125 BTEX by EPA 8021B
Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Certificate of Analysis Summary 614451

LT Environmental, Inc., Arvada, CO

Project Name: PCA 53

Project Id:
Contact: Adrian Baker
Project Location: Delaware Basin

Date Received in Lab: Wed Feb-13-19 01:15 pm
Report Date: 14-FEB-19
Project Manager: Jessica Kramer

Analysis Requested									
	Lab Id:	614451-001		614451-002					
	Field Id:	PH02		PH02C					
	Depth:	2- ft		9- ft					
	Matrix:	SOIL		SOIL					
	Sampled:	Feb-11-19 14:00		Feb-11-19 14:12					
BTEX by EPA 8021B	***Extracted:***	Feb-13-19 15:00		Feb-13-19 15:00					
	Analyzed:	Feb-14-19 10:35		Feb-14-19 10:54					
	Units/RL:	mg/kg	RL	mg/kg	RL				
Benzene		<0.00202	0.00202	<0.00201	0.00201				
Toluene		<0.00202	0.00202	<0.00201	0.00201				
Ethylbenzene		<0.00202	0.00202	<0.00201	0.00201				
m,p-Xylenes		<0.00403	0.00403	<0.00402	0.00402				
o-Xylene		<0.00202	0.00202	<0.00201	0.00201				
Total Xylenes		<0.00202	0.00202	<0.00201	0.00201				
Total BTEX		<0.00202	0.00202	<0.00201	0.00201				
Inorganic Anions by EPA 300	***Extracted:***	Feb-13-19 13:30		Feb-13-19 13:30					
	Analyzed:	Feb-13-19 22:28		Feb-13-19 22:22					
	Units/RL:	mg/kg	RL	mg/kg	RL				
Chloride		25.7	4.96	<4.96	4.96				
TPH by SW8015 Mod	***Extracted:***	Feb-13-19 14:00		Feb-13-19 14:00					
	Analyzed:	Feb-13-19 17:51		Feb-13-19 18:11					
	Units/RL:	mg/kg	RL	mg/kg	RL				
Gasoline Range Hydrocarbons (GRO)		<15.0	15.0	<15.0	15.0				
Diesel Range Organics (DRO)		<15.0	15.0	<15.0	15.0				
Motor Oil Range Hydrocarbons (MRO)		<15.0	15.0	<15.0	15.0				
Total TPH		<15.0	15.0	<15.0	15.0				

Jessica Kramer
Project Assistant

Certificate of Analytical Results 614451

LT Environmental, Inc., Arvada, CO

PCA 53

Sample Id:	**PH02**	Matrix:	Soil	Date Received:	02.13.19 13.15
Lab Sample Id:	614451-001	Date Collected:	02.11.19 14.00	Sample Depth:	2 ft

Analytical Method:	Inorganic Anions by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	
Analyst:	CHE	Date Prep:	02.13.19 13.30	Basis:	Wet Weight
Seq Number:	3079118				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**25.7**	4.96	mg/kg	02.13.19 22.28		1

Analytical Method:	TPH by SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	02.13.19 14.00	Basis:	Wet Weight
Seq Number:	3079094				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	02.13.19 17.51	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	02.13.19 17.51	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	02.13.19 17.51	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	02.13.19 17.51	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	101	%	70-135	02.13.19 17.51	
o-Terphenyl	84-15-1	98	%	70-135	02.13.19 17.51	

Certificate of Analytical Results 614451

LT Environmental, Inc., Arvada, CO

PCA 53

Sample Id:	**PH02**	Matrix:	Soil	Date Received:	02.13.19 13.15
Lab Sample Id:	614451-001	Date Collected:	02.11.19 14.00	Sample Depth:	2 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	SCM			% Moisture:	
Analyst:	SCM	Date Prep:	02.13.19 15.00	Basis:	Wet Weight
Seq Number:	3079125				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	02.14.19 10.35	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	02.14.19 10.35	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	02.14.19 10.35	U	1
m,p-Xylenes	179601-23-1	<0.00403	0.00403	mg/kg	02.14.19 10.35	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	02.14.19 10.35	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	02.14.19 10.35	U	1
Total BTEX		<0.00202	0.00202	mg/kg	02.14.19 10.35	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	107	%	70-130	02.14.19 10.35	
4-Bromofluorobenzene	460-00-4	93	%	70-130	02.14.19 10.35	

Certificate of Analytical Results 614451

LT Environmental, Inc., Arvada, CO

PCA 53

Sample Id:	**PH02C**	Matrix:	Soil	Date Received:	02.13.19 13.15
Lab Sample Id:	614451-002	Date Collected:	02.11.19 14.12	Sample Depth:	9 ft

Analytical Method:	Inorganic Anions by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	
Analyst:	CHE	Date Prep:	02.13.19 13.30	Basis:	Wet Weight
Seq Number:	3079118				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.96	4.96	mg/kg	02.13.19 22.22	U	1

Analytical Method:	TPH by SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	02.13.19 14.00	Basis:	Wet Weight
Seq Number:	3079094				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	02.13.19 18.11	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	02.13.19 18.11	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	02.13.19 18.11	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	02.13.19 18.11	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	102	%	70-135	02.13.19 18.11	
o-Terphenyl	84-15-1	100	%	70-135	02.13.19 18.11	

Certificate of Analytical Results 614451

LT Environmental, Inc., Arvada, CO

PCA 53

Sample Id:	**PH02C**	Matrix:	Soil	Date Received:	02.13.19 13.15
Lab Sample Id:	614451-002	Date Collected:	02.11.19 14.12	Sample Depth:	9 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	SCM			% Moisture:	
Analyst:	SCM	Date Prep:	02.13.19 15.00	Basis:	Wet Weight
Seq Number:	3079125				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	02.14.19 10.54	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	02.14.19 10.54	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	02.14.19 10.54	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	02.14.19 10.54	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	02.14.19 10.54	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	02.14.19 10.54	U	1
Total BTEX		<0.00201	0.00201	mg/kg	02.14.19 10.54	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	108	%	70-130	02.14.19 10.54	
1,4-Difluorobenzene	540-36-3	111	%	70-130	02.14.19 10.54	

Flagging Criteria

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

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

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

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

F RPD exceeded lab control limits.

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

U Analyte was not detected.

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

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

K Sample analyzed outside of recommended hold time.

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

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

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

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

DL Method Detection Limit

NC Non-Calculable

SMP Client Sample **BLK** Method Blank

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

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

+ NELAC certification not offered for this compound.

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

QC Summary 614451

LT Environmental, Inc.

PCA 53

Analytical Method: **Inorganic Anions by EPA 300** Prep Method: E300P
Seq Number: 3079118 Matrix: Solid Date Prep: 02.13.19
MB Sample Id: 7671708-1-BLK LCS Sample Id: 7671708-1-BKS LCSD Sample Id: 7671708-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<0.858	250	241	96	237	95	90-110	2	20	mg/kg	02.13.19 19:21	

Analytical Method: **Inorganic Anions by EPA 300** Prep Method: E300P
Seq Number: 3079118 Matrix: Soil Date Prep: 02.13.19
Parent Sample Id: 614283-006 MS Sample Id: 614283-006 S MSD Sample Id: 614283-006 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	1020	250	1280	104	1210	76	90-110	6	20	mg/kg	02.13.19 21:10	X

Analytical Method: **Inorganic Anions by EPA 300** Prep Method: E300P
Seq Number: 3079118 Matrix: Soil Date Prep: 02.13.19
Parent Sample Id: 614385-005 MS Sample Id: 614385-005 S MSD Sample Id: 614385-005 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<0.858	250	240	96	244	98	90-110	2	20	mg/kg	02.13.19 19:40	

Analytical Method: **TPH by SW8015 Mod** Prep Method: TX1005P
Seq Number: 3079094 Matrix: Solid Date Prep: 02.13.19
MB Sample Id: 7671746-1-BLK LCS Sample Id: 7671746-1-BKS LCSD Sample Id: 7671746-1-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)	<8.00	1000	907	91	927	93	70-135	2	20	mg/kg	02.13.19 12:33	
Diesel Range Organics (DRO)	<8.13	1000	943	94	937	94	70-135	1	20	mg/kg	02.13.19 12:33	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	98		128		125		70-135	%	02.13.19 12:33
o-Terphenyl	99		126		125		70-135	%	02.13.19 12:33

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

QC Summary 614451

LT Environmental, Inc.

PCA 53

Analytical Method: **TPH by SW8015 Mod** Prep Method: TX1005P
Seq Number: 3079094 Matrix: Soil Date Prep: 02.13.19
Parent Sample Id: 614287-001 MS Sample Id: 614287-001 S MSD Sample Id: 614287-001 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)	<7.98	997	960	96	969	97	70-135	1	20	mg/kg	02.13.19 13:33	
Diesel Range Organics (DRO)	<8.10	997	995	100	1010	101	70-135	1	20	mg/kg	02.13.19 13:33	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	128		126		70-135	%	02.13.19 13:33
o-Terphenyl	120		114		70-135	%	02.13.19 13:33

Analytical Method: **BTEX by EPA 8021B** Prep Method: SW5030B
Seq Number: 3079125 Matrix: Solid Date Prep: 02.13.19
MB Sample Id: 7671747-1-BLK LCS Sample Id: 7671747-1-BKS LCSD Sample Id: 7671747-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.000386	0.100	0.116	116	0.109	109	70-130	6	35	mg/kg	02.14.19 09:20	
Toluene	<0.000457	0.100	0.0986	99	0.0923	92	70-130	7	35	mg/kg	02.14.19 09:20	
Ethylbenzene	<0.000566	0.100	0.0927	93	0.0834	83	70-130	11	35	mg/kg	02.14.19 09:20	
m,p-Xylenes	<0.00102	0.200	0.184	92	0.166	83	70-130	10	35	mg/kg	02.14.19 09:20	
o-Xylene	<0.000345	0.100	0.0919	92	0.0835	84	70-130	10	35	mg/kg	02.14.19 09:20	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	107		107		110		70-130	%	02.14.19 09:20
4-Bromofluorobenzene	95		95		102		70-130	%	02.14.19 09:20

Analytical Method: **BTEX by EPA 8021B** Prep Method: SW5030B
Seq Number: 3079125 Matrix: Soil Date Prep: 02.13.19
Parent Sample Id: 614451-001 MS Sample Id: 614451-001 S MSD Sample Id: 614451-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.000383	0.0996	0.0870	87	0.0980	98	70-130	12	35	mg/kg	02.14.19 09:58	
Toluene	<0.000454	0.0996	0.0785	79	0.0847	85	70-130	8	35	mg/kg	02.14.19 09:58	
Ethylbenzene	<0.000563	0.0996	0.0727	73	0.0787	79	70-130	8	35	mg/kg	02.14.19 09:58	
m,p-Xylenes	<0.00101	0.199	0.149	75	0.161	81	70-130	8	35	mg/kg	02.14.19 09:58	
o-Xylene	<0.000343	0.0996	0.0760	76	0.0795	80	70-130	5	35	mg/kg	02.14.19 09:58	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	108		111		70-130	%	02.14.19 09:58
4-Bromofluorobenzene	107		107		70-130	%	02.14.19 09:58

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

Chain of Custody

Work Order No: 614451

XENCO LABORATORIES

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

www.xenco.com Page 1 of 1

Project Manager:	Adrian Baker	Bill to: (if different)	Kyle Littrell
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:	432.704.5178 Email:	bbelill@ltenv.com	

Work Order Comments

Program: UST/PST ☐ PRP ☐ Brownfields ☐ RC ☐ Superfund ☐
State of Project:
Reporting:Level II ☐ Level III ☐ TST/UST ☐ RRP ☐ Level IV ☐
Deliverables: EDD ☐ ADaPT ☐ Other:

Project Name:	PCA 53	Turn Around	
Project Number:	BP #Not Assigned	Routine ☐	
P.O. Number:		Rush: 24hr	
Sampler's Name:	Benjamin Belill	Due Date: 2/13/19	

SAMPLE RECEIPT			
Temp Blank:	Yes (No)	Wet Ice:	(Yes) No
Temperature (°C):	0.2 | 0.1	Thermometer ID	BE
Received Intact:	(Yes) No		
Cooler Custody Seals:	Yes No (N/A)	Correction Factor:	-0.4
Sample Custody Seals:	Yes No (N/A)	Total Containers:	

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers	TPH (EPA 8015)	BTEX (EPA 0=8021)	Chloride (EPA 300.0)
PH02	S	2/11/19	1400	2'	1	x	x	x
PH02C	S	2/11/19	1412	9'	1	x	x	x
				BTB	2/14/19			

Work Order Notes

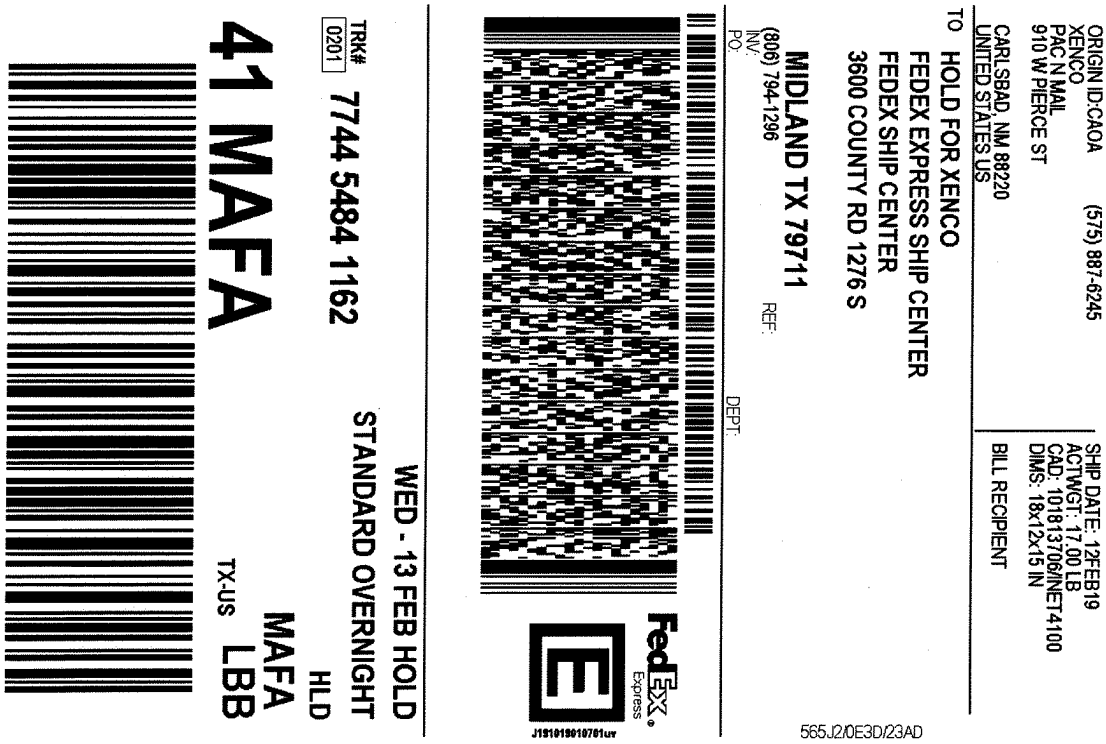
TAT starts the day recevied by the lab, if received by 4:30pm

Sample Comments

Total 200.7 / 6010 200.8 / 6020: 8RCRA 13PPM Texas 11 Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO2 Na Sr Tl Sn U V Zn
Circle Method(s) and Metal(s) to be analyzed **TCLP / SPLP 6010**: 8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Tl U **1631 / 245.1 / 7470 / 7471** : Hg

	Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1			2/11/19 @ 1729	2		2/13/19 1315
3				4		
5				6		

Revised Date 051418 Rev. 2018.1



After printing this label:
1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.
Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com.FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery,misdelivery,or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim.Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental,consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss.Maximum for items of extraordinary value is $1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: LT Environmental, Inc.

Date/ Time Received: 02/13/2019 01:15:00 PM

Work Order #: 614451

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : R8

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?	**N/A**
#5 Custody Seals intact on sample bottles?	**N/A**
#6*Custody Seals Signed and dated?	**N/A**
#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)?	**N/A**
#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: Brianna Teel Date: 02/13/2019
Brianna Teel

Checklist reviewed by: Jessica Kramer Date: 02/13/2019
Jessica Kramer

Analytical Report 614578

for

LT Environmental, Inc.

Project Manager: Adrian Baker

PCA 53

15-FEB-19

Collected By: Client

1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-18-28), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (T104704295-18-17), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-18-14)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-18-18)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-18-18)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-18-4)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Phoenix Mobile (EPA Lab Code: AZ00901): Arizona (AZM757)
Xenco-Atlanta (LELAP Lab ID #04176)
Xenco-Tampa: Florida (E87429), North Carolina (483)
Xenco-Lakeland: Florida (E84098)

15-FEB-19

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

Reference: XENCO Report No(s): **614578**
PCA 53
Project Address: Delaware Basin

Adrian Baker:

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) 614578. 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. 614578 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,

Jessica Kramer

Jessica Kramer
Project Assistant

Sample Cross Reference 614578

LT Environmental, Inc., Arvada, CO

PCA 53

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
PH06D	S	02-12-19 13:55	10 ft	614578-001

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3079312 BTEX by EPA 8021B
Surrogate 4-Bromofluorobenzene recovered above QC limits. Matrix interferences is suspected.
Samples affected are: 614578-001.
Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Certificate of Analysis Summary 614578

LT Environmental, Inc., Arvada, CO

Project Name: PCA 53

Project Id:
Contact: Adrian Baker
Project Location: Delaware Basin

Date Received in Lab: Thu Feb-14-19 11:52 am
Report Date: 15-FEB-19
Project Manager: Jessica Kramer

Analysis Requested								
	Lab Id:	614578-001						
	Field Id:	PH06D						
	Depth:	10- ft						
	Matrix:	SOIL						
	Sampled:	Feb-12-19 13:55						
BTEX by EPA 8021B	***Extracted:***	Feb-14-19 15:00						
	Analyzed:	Feb-15-19 14:17						
	Units/RL:	mg/kg	RL					
Benzene		0.00229	0.00200					
Toluene		0.0389	0.00200					
Ethylbenzene		0.00580	0.00200					
m,p-Xylenes		0.140	0.00400					
o-Xylene		0.0774	0.00200					
Total Xylenes		0.217	0.00200					
Total BTEX		0.264	0.00200					
Inorganic Anions by EPA 300	***Extracted:***	Feb-14-19 12:20						
	Analyzed:	Feb-14-19 21:58						
	Units/RL:	mg/kg	RL					
Chloride		1430	24.9					
TPH by SW8015 Mod	***Extracted:***	Feb-14-19 17:00						
	Analyzed:	Feb-15-19 03:26						
	Units/RL:	mg/kg	RL					
Gasoline Range Hydrocarbons (GRO)		41.4	15.0					
Diesel Range Organics (DRO)		367	15.0					
Motor Oil Range Hydrocarbons (MRO)		44.1	15.0					
Total TPH		453	15.0					

Jessica Kramer
Project Assistant

Certificate of Analytical Results 614578

LT Environmental, Inc., Arvada, CO

PCA 53

Sample Id:	**PH06D**	Matrix:	Soil	Date Received:	02.14.19 11.52
Lab Sample Id:	614578-001	Date Collected:	02.12.19 13.55	Sample Depth:	10 ft

Analytical Method:	Inorganic Anions by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	
Analyst:	CHE	Date Prep:	02.14.19 12.20	Basis:	Wet Weight
Seq Number:	3079263				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**1430**	24.9	mg/kg	02.14.19 21.58		5

Analytical Method:	TPH by SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	02.14.19 17.00	Basis:	Wet Weight
Seq Number:	3079290				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	**41.4**	15.0	mg/kg	02.15.19 03.26		1
Diesel Range Organics (DRO)	C10C28DRO	**367**	15.0	mg/kg	02.15.19 03.26		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**44.1**	15.0	mg/kg	02.15.19 03.26		1
Total TPH	PHC635	**453**	15.0	mg/kg	02.15.19 03.26		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	100	%	70-135	02.15.19 03.26	
o-Terphenyl	84-15-1	103	%	70-135	02.15.19 03.26	

Certificate of Analytical Results 614578

LT Environmental, Inc., Arvada, CO

PCA 53

Sample Id:	**PH06D**	Matrix:	Soil	Date Received:	02.14.19 11.52
Lab Sample Id:	614578-001	Date Collected:	02.12.19 13.55	Sample Depth:	10 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	SCM			% Moisture:	
Analyst:	SCM	Date Prep:	02.14.19 15.00	Basis:	Wet Weight
Seq Number:	3079312				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	**0.00229**	0.00200	mg/kg	02.15.19 14.17		1
Toluene	108-88-3	**0.0389**	0.00200	mg/kg	02.15.19 14.17		1
Ethylbenzene	100-41-4	**0.00580**	0.00200	mg/kg	02.15.19 14.17		1
m,p-Xylenes	179601-23-1	**0.140**	0.00400	mg/kg	02.15.19 14.17		1
o-Xylene	95-47-6	**0.0774**	0.00200	mg/kg	02.15.19 14.17		1
Total Xylenes	1330-20-7	**0.217**	0.00200	mg/kg	02.15.19 14.17		1
Total BTEX		**0.264**	0.00200	mg/kg	02.15.19 14.17		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	85	%	70-130	02.15.19 14.17	
4-Bromofluorobenzene	460-00-4	233	%	70-130	02.15.19 14.17	**

Flagging Criteria

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

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

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

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

F RPD exceeded lab control limits.

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

U Analyte was not detected.

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

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

K Sample analyzed outside of recommended hold time.

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

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

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

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

DL Method Detection Limit

NC Non-Calculable

SMP Client Sample **BLK** Method Blank

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

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

+ NELAC certification not offered for this compound.

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

QC Summary 614578

LT Environmental, Inc.

PCA 53

Analytical Method: **Inorganic Anions by EPA 300** Prep Method: E300P
Seq Number: 3079263 Matrix: Solid Date Prep: 02.14.19
MB Sample Id: 7671800-1-BLK LCS Sample Id: 7671800-1-BKS LCSD Sample Id: 7671800-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<5.00	250	266	106	266	106	90-110	0	20	mg/kg	02.14.19 16:59	

Analytical Method: **Inorganic Anions by EPA 300** Prep Method: E300P
Seq Number: 3079263 Matrix: Soil Date Prep: 02.14.19
Parent Sample Id: 614401-084 MS Sample Id: 614401-084 S MSD Sample Id: 614401-084 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	453	250	711	103	709	102	90-110	0	20	mg/kg	02.14.19 17:48	

Analytical Method: **Inorganic Anions by EPA 300** Prep Method: E300P
Seq Number: 3079263 Matrix: Soil Date Prep: 02.14.19
Parent Sample Id: 614401-091 MS Sample Id: 614401-091 S MSD Sample Id: 614401-091 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	988	249	3790	1125	3780	1121	90-110	0	20	mg/kg	02.14.19 20:03	X

Analytical Method: **TPH by SW8015 Mod** Prep Method: TX1005P
Seq Number: 3079290 Matrix: Solid Date Prep: 02.14.19
MB Sample Id: 7671840-1-BLK LCS Sample Id: 7671840-1-BKS LCSD Sample Id: 7671840-1-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)	<8.00	1000	910	91	881	88	70-135	3	20	mg/kg	02.14.19 22:27	
Diesel Range Organics (DRO)	<8.13	1000	1000	100	976	98	70-135	2	20	mg/kg	02.14.19 22:27	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	98		123		124		70-135	%	02.14.19 22:27
o-Terphenyl	98		109		108		70-135	%	02.14.19 22:27

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

QC Summary 614578

LT Environmental, Inc.

PCA 53

Analytical Method: **TPH by SW8015 Mod** Prep Method: TX1005P
Seq Number: 3079290 Matrix: Soil Date Prep: 02.14.19
Parent Sample Id: 614452-001 MS Sample Id: 614452-001 S MSD Sample Id: 614452-001 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)	<7.98	997	887	89	894	89	70-135	1	20	mg/kg	02.14.19 23:27	
Diesel Range Organics (DRO)	11.8	997	907	90	906	90	70-135	0	20	mg/kg	02.14.19 23:27	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	117		110		70-135	%	02.14.19 23:27
o-Terphenyl	94		91		70-135	%	02.14.19 23:27

Analytical Method: **BTEX by EPA 8021B** Prep Method: SW5030B
Seq Number: 3079312 Matrix: Solid Date Prep: 02.14.19
MB Sample Id: 7671852-1-BLK LCS Sample Id: 7671852-1-BKS LCSD Sample Id: 7671852-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.000385	0.100	0.115	115	0.122	122	70-130	6	35	mg/kg	02.15.19 11:47	
Toluene	<0.000456	0.100	0.0986	99	0.102	102	70-130	3	35	mg/kg	02.15.19 11:47	
Ethylbenzene	<0.000565	0.100	0.0925	93	0.0945	95	70-130	2	35	mg/kg	02.15.19 11:47	
m,p-Xylenes	<0.00101	0.200	0.183	92	0.185	93	70-130	1	35	mg/kg	02.15.19 11:47	
o-Xylene	<0.000344	0.100	0.0918	92	0.0936	94	70-130	2	35	mg/kg	02.15.19 11:47	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	109		108		110		70-130	%	02.15.19 11:47
4-Bromofluorobenzene	97		101		100		70-130	%	02.15.19 11:47

Analytical Method: **BTEX by EPA 8021B** Prep Method: SW5030B
Seq Number: 3079312 Matrix: Soil Date Prep: 02.14.19
Parent Sample Id: 614266-006 MS Sample Id: 614266-006 S MSD Sample Id: 614266-006 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	0.00109	0.100	0.0536	53	0.0596	59	70-130	11	35	mg/kg	02.15.19 12:25	X
Toluene	0.0134	0.100	0.0407	27	0.0516	38	70-130	24	35	mg/kg	02.15.19 12:25	X
Ethylbenzene	<0.000566	0.100	0.0318	32	0.0435	44	70-130	31	35	mg/kg	02.15.19 12:25	X
m,p-Xylenes	0.00132	0.200	0.0696	34	0.0887	44	70-130	24	35	mg/kg	02.15.19 12:25	X
o-Xylene	0.00673	0.100	0.0431	36	0.0531	47	70-130	21	35	mg/kg	02.15.19 12:25	X

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	106		114		70-130	%	02.15.19 12:25
4-Bromofluorobenzene	118		109		70-130	%	02.15.19 12:25

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: 614578

XENCO LABORATORIES

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

www.xenco.com Page 1 of 1

Project Manager:	Adrian Baker	Bill to: (if different)	Kyle Littrell
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:	432.704.5178	Email:	bbelill@ltenv.com

Work Order Comments

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

Project Name:	PCA 53	Turn Around	
Project Number:	RP# Not Assigned	Routine	☐
P.O. Number:		Rush:	24hr
Sampler's Name:	Benjamin Belill	Due Date:	2/14/19

SAMPLE RECEIPT				
Temp Blank:	Yes (No)	Wet Ice:	(Yes) No	
Temperature (°C):	0.3/0.2	Thermometer ID	IR	
Received Intact:	(Yes) No			
Cooler Custody Seals:	Yes No (N/A)	Correction Factor:	-0.1	
Sample Custody Seals:	Yes No (N/A)	Total Containers:		

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers	TPH (EPA 8015)	BTEX (EPA 0=8021)	Chloride (EPA 300.0)
PH06D	S	2/12/19	1355	1'	1	X	X	X

ANALYSIS REQUEST

Work Order Notes

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

Sample Comments

2/12/19

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

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

	Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1			2/13/19 1230			2/14/19 1152
2						
3						
4						
5						
6						

Revised Date 051418 Rev. 2018.1

Final 1.000

ORIGIN ID:CAOA (575) 887-6245
XENCO
PAC N MAIL
910 W PIERCE ST
CARLSBAD, NM 88220
UNITED STATES US

SHIP DATE: 13FEB19
ACTWGT: 21.00 LB
CAD: 101813706/INET4100
DIMS: 18x12x16 IN

BILL RECIPIENT

TO HOLD FOR XENCO
FEDEX EXPRESS SHIP CENTER
FEDEX SHIP CENTER
3600 COUNTY RD 1276 S
MIDLAND TX 79711
(806) 794-1296

REF:
INV:
PO:
DEPT:

565J2/0E3D/23AD

J19181901670 1ure

FedEx Express

THU - 14 FEB HOLD
STANDARD OVERNIGHT
HLD

TRK# 0201 7744 6580 1236

41 MAFA

MAFA
LBB
TX-US

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XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: LT Environmental, Inc.

Date/ Time Received: 02/14/2019 11:52:00 AM

Work Order #: 614578

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : R8

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	.2
#2 *Shipping container in good condition?	**Yes**
#3 *Samples received on ice?	**Yes**
#4 *Custody Seals intact on shipping container/ cooler?	**N/A**
#5 Custody Seals intact on sample bottles?	**N/A**
#6*Custody Seals Signed and dated?	**N/A**
#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)?	**N/A**
#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: Brianna Teel Date: 02/14/2019
Brianna Teel

Checklist reviewed by: Jessica Kramer Date: 02/14/2019
Jessica Kramer

Analytical Report 614843

for

LT Environmental, Inc.

Project Manager: Adrian Baker

PCA 53

19-FEB-19

Collected By: Client

1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-18-28), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (T104704295-18-17), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-18-14)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-18-18)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-18-18)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-18-4)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Phoenix Mobile (EPA Lab Code: AZ00901): Arizona (AZM757)
Xenco-Atlanta (LELAP Lab ID #04176)
Xenco-Tampa: Florida (E87429), North Carolina (483)
Xenco-Lakeland: Florida (E84098)

19-FEB-19

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

Reference: XENCO Report No(s): **614843**
PCA 53
Project Address: Delaware Basin

Adrian Baker:

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) 614843. 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. 614843 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,

Jessica Kramer

Jessica Kramer
Project Assistant

Sample Cross Reference 614843

LT Environmental, Inc., Arvada, CO

PCA 53

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
FS01	S	02-14-19 14:20	4 ft	614843-001

CASE NARRATIVE

Client Name: LT Environmental, Inc.
Project Name: PCA 53

Project ID:
Work Order Number(s): *614843*

Report Date: *19-FEB-19*
Date Received: *02/18/2019*

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3079574 BTEX by EPA 8021B
Surrogate 4-Bromofluorobenzene recovered above QC limits. Matrix interferences is suspected; data confirmed by re-analysis.
Samples affected are: 614843-001.
Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Batch: LBA-3079634 Inorganic Anions by EPA 300
Lab Sample ID 614864-003 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Chloride recovered above QC limits in the Matrix Spike and Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 614843-001.
The Laboratory Control Sample for Chloride is within laboratory Control Limits, therefore the data was accepted.

Certificate of Analysis Summary 614843

LT Environmental, Inc., Arvada, CO

Project Name: PCA 53

Project Id:
Contact: Adrian Baker
Project Location: Delaware Basin

Date Received in Lab: Mon Feb-18-19 07:33 am
Report Date: 19-FEB-19
Project Manager: Jessica Kramer

Analysis Requested							
	Lab Id:	614843-001					
	Field Id:	FS01					
	Depth:	4- ft					
	Matrix:	SOIL					
	Sampled:	Feb-14-19 14:20					
BTEX by EPA 8021B	***Extracted:***	Feb-18-19 10:00					
	Analyzed:	Feb-18-19 17:47					
	Units/RL:	mg/kg	RL				
Benzene		<0.00199	0.00199				
Toluene		0.0187	0.00199				
Ethylbenzene		0.00361	0.00199				
m,p-Xylenes		0.113	0.00398				
o-Xylene		0.0428	0.00199				
Total Xylenes		0.156	0.00199				
Total BTEX		0.178	0.00199				
Inorganic Anions by EPA 300	***Extracted:***	Feb-18-19 15:00					
	Analyzed:	** ** ** **					
	Units/RL:	mg/kg	RL				
Chloride		554	24.8				
TPH by SW8015 Mod	***Extracted:***	Feb-18-19 10:00					
	Analyzed:	Feb-18-19 15:44					
	Units/RL:	mg/kg	RL				
Gasoline Range Hydrocarbons (GRO)		51.4	14.9				
Diesel Range Organics (DRO)		397	14.9				
Motor Oil Range Hydrocarbons (MRO)		51.5	14.9				
Total TPH		500	14.9				

Jessica Kramer
Project Assistant

Certificate of Analytical Results 614843

LT Environmental, Inc., Arvada, CO

PCA 53

Sample Id:	**FS01**	Matrix:	Soil	Date Received:	02.18.19 07.33
Lab Sample Id:	614843-001	Date Collected:	02.14.19 14.20	Sample Depth:	4 ft

Analytical Method:	Inorganic Anions by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	
Analyst:	CHE	Date Prep:	02.18.19 15.00	Basis:	Wet Weight
Seq Number:	3079634				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**554**	24.8	mg/kg	02.18.19 14.48		5

Analytical Method:	TPH by SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	02.18.19 10.00	Basis:	Wet Weight
Seq Number:	3079620				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	**51.4**	14.9	mg/kg	02.18.19 15.44		1
Diesel Range Organics (DRO)	C10C28DRO	**397**	14.9	mg/kg	02.18.19 15.44		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**51.5**	14.9	mg/kg	02.18.19 15.44		1
Total TPH	PHC635	**500**	14.9	mg/kg	02.18.19 15.44		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	99	%	70-135	02.18.19 15.44	
o-Terphenyl	84-15-1	105	%	70-135	02.18.19 15.44	

Certificate of Analytical Results 614843

LT Environmental, Inc., Arvada, CO

PCA 53

Sample Id:	**FS01**	Matrix:	Soil	Date Received:	02.18.19 07.33
Lab Sample Id:	614843-001	Date Collected:	02.14.19 14.20	Sample Depth:	4 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	SCM			% Moisture:	
Analyst:	SCM	Date Prep:	02.18.19 10.00	Basis:	Wet Weight
Seq Number:	3079574				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	02.18.19 17.47	U	1
Toluene	108-88-3	**0.0187**	0.00199	mg/kg	02.18.19 17.47		1
Ethylbenzene	100-41-4	**0.00361**	0.00199	mg/kg	02.18.19 17.47		1
m,p-Xylenes	179601-23-1	**0.113**	0.00398	mg/kg	02.18.19 17.47		1
o-Xylene	95-47-6	**0.0428**	0.00199	mg/kg	02.18.19 17.47		1
Total Xylenes	1330-20-7	**0.156**	0.00199	mg/kg	02.18.19 17.47		1
Total BTEX		**0.178**	0.00199	mg/kg	02.18.19 17.47		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	101	%	70-130	02.18.19 17.47	
4-Bromofluorobenzene	460-00-4	182	%	70-130	02.18.19 17.47	**

Flagging Criteria

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

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

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

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

F RPD exceeded lab control limits.

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

U Analyte was not detected.

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

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

K Sample analyzed outside of recommended hold time.

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

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

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

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

DL Method Detection Limit

NC Non-Calculable

SMP Client Sample **BLK** Method Blank

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

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

+ NELAC certification not offered for this compound.

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

QC Summary 614843

LT Environmental, Inc.

PCA 53

Analytical Method: **Inorganic Anions by EPA 300** Prep Method: E300P
Seq Number: 3079634 Matrix: Solid Date Prep: 02.18.19
MB Sample Id: 7672050-1-BLK LCS Sample Id: 7672050-1-BKS LCSD Sample Id: 7672050-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<0.858	250	259	104	249	100	90-110	4	20	mg/kg	02.18.19 14:35	

Analytical Method: **Inorganic Anions by EPA 300** Prep Method: E300P
Seq Number: 3079634 Matrix: Soil Date Prep: 02.18.19
Parent Sample Id: 614843-001 MS Sample Id: 614843-001 S MSD Sample Id: 614843-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	554	248	1900	543	1810	506	90-110	5	20	mg/kg	02.18.19 14:54	X

Analytical Method: **Inorganic Anions by EPA 300** Prep Method: E300P
Seq Number: 3079634 Matrix: Soil Date Prep: 02.18.19
Parent Sample Id: 614864-003 MS Sample Id: 614864-003 S MSD Sample Id: 614864-003 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	29800	250	28700	0	30200	160	90-110	5	20	mg/kg	02.19.19 15:29	X

Analytical Method: **TPH by SW8015 Mod** Prep Method: TX1005P
Seq Number: 3079620 Matrix: Solid Date Prep: 02.18.19
MB Sample Id: 7672046-1-BLK LCS Sample Id: 7672046-1-BKS LCSD Sample Id: 7672046-1-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)	<8.00	1000	832	83	969	97	70-135	15	20	mg/kg	02.18.19 12:26	
Diesel Range Organics (DRO)	<8.13	1000	922	92	1080	108	70-135	16	20	mg/kg	02.18.19 12:26	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	78		118		127		70-135	%	02.18.19 12:26
o-Terphenyl	79		111		111		70-135	%	02.18.19 12:26

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

QC Summary 614843

LT Environmental, Inc.

PCA 53

Analytical Method: **TPH by SW8015 Mod** Prep Method: TX1005P
Seq Number: 3079620 Matrix: Soil Date Prep: 02.18.19
Parent Sample Id: 614846-001 MS Sample Id: 614846-001 S MSD Sample Id: 614846-001 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)	<7.99	998	976	98	887	89	70-135	10	20	mg/kg	02.18.19 13:25	
Diesel Range Organics (DRO)	120	998	1150	103	1050	93	70-135	9	20	mg/kg	02.18.19 13:25	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	127		129		70-135	%	02.18.19 13:25
o-Terphenyl	111		107		70-135	%	02.18.19 13:25

Analytical Method: **BTEX by EPA 8021B** Prep Method: SW5030B
Seq Number: 3079574 Matrix: Solid Date Prep: 02.18.19
MB Sample Id: 7671983-1-BLK LCS Sample Id: 7671983-1-BKS LCSD Sample Id: 7671983-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.000385	0.100	0.127	127	0.126	126	70-130	1	35	mg/kg	02.18.19 12:58	
Toluene	<0.000456	0.100	0.110	110	0.109	109	70-130	1	35	mg/kg	02.18.19 12:58	
Ethylbenzene	<0.000565	0.100	0.105	105	0.104	104	70-130	1	35	mg/kg	02.18.19 12:58	
m,p-Xylenes	<0.00101	0.200	0.210	105	0.208	103	70-130	1	35	mg/kg	02.18.19 12:58	
o-Xylene	<0.000344	0.100	0.103	103	0.103	103	70-130	0	35	mg/kg	02.18.19 12:58	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	108		109		109		70-130	%	02.18.19 12:58
4-Bromofluorobenzene	95		100		99		70-130	%	02.18.19 12:58

Analytical Method: **BTEX by EPA 8021B** Prep Method: SW5030B
Seq Number: 3079574 Matrix: Soil Date Prep: 02.18.19
Parent Sample Id: 614404-001 MS Sample Id: 614404-001 S MSD Sample Id: 614404-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.000388	0.101	0.108	107	0.103	104	70-130	5	35	mg/kg	02.18.19 13:36	
Toluene	<0.00202	0.101	0.0954	94	0.0977	98	70-130	2	35	mg/kg	02.18.19 13:36	
Ethylbenzene	<0.000569	0.101	0.0907	90	0.0942	95	70-130	4	35	mg/kg	02.18.19 13:36	
m,p-Xylenes	<0.00102	0.202	0.185	92	0.196	98	70-130	6	35	mg/kg	02.18.19 13:36	
o-Xylene	<0.000347	0.101	0.0912	90	0.0970	98	70-130	6	35	mg/kg	02.18.19 13:36	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	108		106		70-130	%	02.18.19 13:36
4-Bromofluorobenzene	105		112		70-130	%	02.18.19 13:36

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

Chain of Custody

Work Order No: 614843

XENCO LABORATORIES

Houston,TX (281) 240-4200 Dallas,TX (214) 902-0300 San Antonio,TX (210) 509-3334
Midland,TX (432-704-5440) EL Paso,TX (915)585-3443 Lubbock,TX (806)794-1296
Hobbs,NM (575-392-7550) Phoenix,AZ (480-355-0900) Atlanta,GA (770-449-8800) Tampa,FL (813-620-2000) www.xenco.com Page 1 of 1

Project Manager:	Adrian Baker	Bill to: (if different)	Kyle Littrell
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:	432.704.5178 Email:	bbelill@ltenv.com	

Work Order Comments

Program: UST/PST ☐ PRP ☐ Brownfields ☐ RC ☐ Superfund ☐
State of Project:
Reporting:Level II ☐ Level III ☐ ST/UST ☐ RRP ☐ Level IV ☐
Deliverables: EDD ☐ ADaPT ☐ Other:

Project Name:	PCA 53	Turn Around	
Project Number:	RRP Not Assigned	Routine ☐	
P.O. Number:		Rush: 24hr	
Sampler's Name:	Benjamin Belill	Due Date: 2/15/19	

SAMPLE RECEIPT			
Temp Blank:	Yes (No)	Wet Ice:	(Yes) No
Temperature (°C):	0.2/0.3	Thermometer ID	
Received Intact:	(Yes) No		RE
Cooler Custody Seals:	Yes (No) N/A	Correction Factor:	-0.1
Sample Custody Seals:	Yes (No) N/A	Total Containers:	

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers	TPH (EPA 8015)	BTEX (EPA 0=8021)	Chloride (EPA 300.0)	Work Order Notes / Sample Comments
FS01	S	2/14/19	1420	4'	1	x	x	x	Composite

ANALYSIS REQUEST

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

Sample Comments: Composite

BTEX 2/14/19

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

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

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1		2/14/19 17:20	2		2/18/19 0733
3			4		
5			6		

Revised Date 051418 Rev. 2018.1

Final 1.000

Page 11 of 13

After printing this label:
1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.
Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com.FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery,misdelivery,or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim.Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental,consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss.Maximum for items of extraordinary value is $1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: LT Environmental, Inc.

Date/ Time Received: 02/18/2019 07:33:26 AM

Work Order #: 614843

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : R8

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?	**N/A**
#5 Custody Seals intact on sample bottles?	**N/A**
#6*Custody Seals Signed and dated?	**N/A**
#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)?	**N/A**
#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: Brianna Teel Date: 02/18/2019
Brianna Teel

Checklist reviewed by: Jessica Kramer Date: 02/18/2019
Jessica Kramer

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

Compliance · Engineering · Remediation

Identifier:	Date:
BH01	5/15/2019
Project Name:	RP Number:
PCA 53	2RP-5169

LITHOLOGIC / SOIL SAMPLING LOG

Logged By:	Method:
BB	Sonic Drill

Lat/Long:	Field Screening:	Hole Diameter:	Total Depth:
	Chloride, PID	6.15"	28'

Comments:

Moisture Content	Chloride (ppm)	Organic Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Depth	Soil/Rock Type	Lithology/Remarks
					0			open excavation
dry	<112	2.4	no	BH01	5	5'	SM	SILTY SAND, dry, brown/red, poorly graded, fine average grain size, no odor
dry	211	3.4	no	BH01A		8'	cche	CALICHE, dry, off white/tan, well consolidated, no odor, effervescent
					10			
dry	<112	2.5	no					
					15			
dry	<112	2.8	no					
					20			
dry	211	2.8	no	BH01B		21'	dol	DOLOMITE, dry, light grey, no odor, low reaction to HCl
dry	<112	0.9	no		25			
dry	<112	0.7	no	BH01C		28'	dol	DOLOMITE, dry, light grey, no odor, low reaction to HCl
								Total Depth 28 feet bgs
					30			

LT Environmental, Inc. *508 West Stevens Street* *Carlsbad, New Mexico 88220* *Compliance · Engineering · Remediation*	Identifier: BH02	Date: 5/9/2019
	Project Name: PCA 53	RP Number: 2RP-5169
LITHOLOGIC / SOIL SAMPLING LOG	Logged By: BB	Method: Sonic Drill
Lat/Long:	Field Screening: Chloride, PID	Hole Diameter: 6.15"	Total Depth: 32.5'
Comments:			

Moisture Content	Chloride (ppm)	Organic Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Depth	Soil/Rock Type	Lithology/Remarks
					0			
dry	<124	4.9	no			2'	SC	CLAYEY SAND, dry, brown/light brown, poorly graded, med.-fine average grain size, some vegetation, no odor
dry	<124	3.2	no		6	6'	SP	SAND, dry, brown/light brown, poorly graded, med.-fine average grain size, trace light brown silt, no odor
dry	217	0.8	no			8'	cche	CALICHE, dry, off white/tan, well consolidated, trace brown/light brown fine sand, no odor
dry	217	1.4	no	BH02		10'	cche	
					12			
dry	<124	1.4	no			15'	cche	CALICHE, dry, off white/tan, well consolidated, no odor, light reaction to HCl, some calcite embedded between small vesicles
					18			
moist	<124	0.6	no			20'	dol	DOLOMITE, moist, dark gray/ light brown, very well consolidated, no odor, light reaction to HCl, some calcite embedded between small vesicles
					24			
moist	<124	2.2	no			25'	dol	DOLOMITE, moist, dark gray/ light brown, very well consolidated, no odor, light reaction to HCl, some calcite embedded between small vesicles
moist	<124	0.6	no	BH02A	30	30'	dol	DOLOMITE, moist, dark gray/ light brown, very well consolidated, no odor, light reaction to HCl, some calcite embedded between small vesicles
								Total Depth 32.5 feet bgs
					36			

LT Environmental, Inc.	Identifier: BH03	Date: 5/15/2019
LT Environmental, Inc. *508 West Stevens Street* *Carlsbad, New Mexico 88220* *Compliance · Engineering · Remediation*	Project Name: PCA 53	RP Number: 2RP-5169
LITHOLOGIC / SOIL SAMPLING LOG	Logged By: BB	Method: Sonic Drill
Lat/Long:	Field Screening: Chloride, PID	Hole Diameter: 6.15" / Total Depth: 47'
Comments:		

Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Depth	Soil/Rock Type	Lithology/Remarks
					0			
dry	<112	1.0	no	BH03		2'	SM	SILTY SAND, dry, brown/red, poorly graded, fine average grain size, no odor
					4			
dry	<112	1.8	no					
					8			
dry	<112	2.5	no	BH03A	12	12'	ML	SANDY SILT, dry, brown/red, non plastic, no odor, trace red clay
					16			
dry	112	3.1	no					
					20			
dry	<112	3.6	no					
					24			
dry	<112	3.1	no					
					28			
dry	<112	3.6	no	BH03B		30'	SW	SAND, dry, light brown/tan, well graded, some tan poorly consolidated caliche, trace red clay, no odor
					32			
dry	NA	2.4	no					
					36			
dry	<112	1.5	no					
wet	729	1.3	no	BH03C		38'	cche	CALICHE, wet, light brown/tan, poorly consolidated, no odor
					40			
wet	448	2.0	no					
					44			
dry	<112	1.8	no	BH03D		47'	CL	CLAY, dry, brown/red, med. placisticity, some red silt, no odor
					48			Total Depth 47 feet bgs

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

Compliance · Engineering · Remediation

Identifier:	Date:
BH04	5/15/2019
Project Name:	RP Number:
PCA 53	2RP-5169

LITHOLOGIC / SOIL SAMPLING LOG

Logged By:	Method:
BB	Sonic Drill

Lat/Long:	Field Screening:	Hole Diameter:	Total Depth:
	Chloride, PID	6.15"	34'

Comments:

Moisture Content	Chloride (ppm)	Organic Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Depth	Soil/Rock Type	Lithology/Remarks
					0			open excavation
					3			
moist	2,284	1,017	yes	BH04	6	6'	ML	SANDY SILT, moist, brown/red, non plastic, strong petroleum odor
					9			
dry	<112	17.3	no	BH04A	12	11'	ML	SANDY SILT, dry, light brown/tan, non plastic, some poorly consolidated caliche, no odor
					15			
dry	<112	2.8	no		18			
dry	<112	4.8	no	BH04B	21	21'	cche	CALICHE, dry, off white/light grey, well consolidated, no odor
					24			
dry	<112	23.1	no		27			
dry	<112	12.3	no					
					30			
dry	<112	5.3	no					
					33			
dry	211	6.4	no	BH04C		34	dol	DOLOMITE, dry, light grey/green, well consolidated, no odor
								Total Depth 34 feet bgs
					36			

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

Compliance · Engineering · Remediation

Identifier:	Date:
BH05	5/15/2019
Project Name:	RP Number:
PCA 53	2RP-5169

LITHOLOGIC / SOIL SAMPLING LOG

Logged By:	Method:
BB	Sonic Drill

Lat/Long:	Field Screening:	Hole Diameter:	Total Depth:
	Chloride, PID	6.15"	21'

Comments:

Moisture Content	Chloride (ppm)	Organic Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Depth	Soil/Rock Type	Lithology/Remarks
					0			
					2			open excavation
					4			
dry	<112	2.9	no	BH05		5'	SM	SILTY SAND, dry, brown/red, poorly graded, fine-med. average grain size, no odor
					6			
dry	172	5	no	BH05A		7'	dol	DOLOMITE, dry, off white/light grey, well consolidated, no odor
					8			
					10			
dry	<112	3.4	no		12			
					14			
					16			
dry	556	5.2	no	BH05B		17'	dol	DOLOMITE, dry, light grey/green, well consolidated, no odor, low reaction with HCl
					18			
					20			
dry	<112	1.1	no	BH05C		21	dol	DOLOMITE, dry, light grey/green, well consolidated, no odor, low reaction with HCl
					22			Total Depth 21 feet bgs
					24			

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

Compliance · Engineering · Remediation

Identifier:	Date:
BH06	5/16/2019
Project Name:	RP Number:
PCA 53	2RP-5169

LITHOLOGIC / SOIL SAMPLING LOG

Logged By:	Method:
BB	Sonic Drill

Lat/Long:	Field Screening:	Hole Diameter:	Total Depth:
	Chloride, PID	6.15"	40'

Comments:

Moisture Content	Chloride (ppm)	Organic Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Depth	Soil/Rock Type	Lithology/Remarks
dry	<112	2.3	no	BH06		2'	ML	CLAYEY SILT, dry, brown/red, non plastic, some fine sand, no odor
dry	<112	3.8	no					
dry	<112	3.9	no					
dry	<112	2.5	no					
dry	<112	4.2	no					
dry	384	0.3	no					
dry	497	0.7	no	BH06A		32'	ML	CLAYEY SILT, dry, brown/red, non plastic, some fine sand, no odor
wet	<112	0.7	no	BH06B		37'	ML	CLAYEY SILT, wet, light grey, low plasticity, no odor
dry	<112	0.4	no	BH06C		40'	gyp	GYPSUM, dry, off white, well consolidated, no odor
								Total Depth 40 feet bgs

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

Compliance · Engineering · Remediation

Identifier:	Date:
BH07	5/15/2019
PCA 53	RP Number: 2RP-5169

LITHOLOGIC / SOIL SAMPLING LOG

Logged By:	Method:
BB	Sonic Drill

Lat/Long:	Field Screening:	Hole Diameter:	Total Depth:
	Chloride, PID	6.15"	31'

Comments:

Moisture Content	Chloride (ppm)	Organic Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Depth	Soil/Rock Type	Lithology/Remarks
					0			
								open excavation
					3			
dry	<112	2.0	no	BH07	6	6'	ML	SANDY SILT, dry, brown/red, non plastic, no odor
					9			
dry	<112	12.5	no					
					12			
					15			
dry	<112	10.5	no					
					18			
dry	<112	2.3	no	BH07A	21	21'	cche	CALICHE, dry, off white/tan, med.-well consolidated, no odor, high reaction to HCl
dry	<112	3.5	no		24			
					27			
dry	<112	3.5	no					
					30			
wet	<112	3.8	no	BH07B		31'	gyp	GYPSUM, dry, off whiote, med.-well consolidated, no odor
					33			Total Depth 31 feet bgs
					36			

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

Compliance · Engineering · Remediation

Identifier:	Date:
BH08	5/16/2019
PCA 53	RP Number: 2RP-5169

LITHOLOGIC / SOIL SAMPLING LOG

Logged By: BB	Method: Sonic Drill

Lat/Long:	Field Screening: Chloride, PID	Hole Diameter: 6.15"	Total Depth: 42'

Comments:

Moisture Content	Chloride (ppm)	Organic Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Depth	Soil/Rock Type	Lithology/Remarks
dry	<112	2.3	no	BH08	0	2'	ML	SANDY SILT, dry, brown/light brown, non plastic, trace brown clay, trace vegetation, no odor
dry	<112	0.6	no		4			
dry	<112	1.8	no		8			
dry	<112	0.6	no	BH08A	12	15'	cche	CALICHE, dry, off white/tan, well consolidated, no odor
dry	211	0.8	no		16			
dry	313	3.2	no		20	23'	ML	CLAYEY SILT, dry, reddish brown, non plastic, trace caliche gravel, no odor
dry	211	1.3	no		24			
dry	211	0.3	no		28	33'	SP/ SM	SILTY SAND, dry, reddish brown, poorly graded, fine grained, no odor, gypsum present
dry	211	0.3	no		32			
dry	<112	0.4	no	BH08B	36	42'	ML	SANDY SILT, dry, brown/red, low plasticity, some gypsum gravel, no odor
					40			Total Depth 42 feet bgs
					44			
					48			

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

Compliance · Engineering · Remediation

Identifier:	Date:
BH09	5/14/2019
PCA 53	2RP-5169

LITHOLOGIC / SOIL SAMPLING LOG

Logged By:	Method:
BB	Sonic Drill

Lat/Long:	Field Screening:	Hole Diameter:	Total Depth:
	Chloride, PID	6.15"	41'

Comments:

Moisture Content	Chloride (ppm)	Organic Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Depth	Soil/Rock Type	Lithology/Remarks
					0			open excavation
					4			
dry	<112	8.9	no	BH09		6'	ML	CLAYEY SILT, dry, dark brown/red, non plastic, no odor
					8			
dry	<112	7.1	no					
					12			
dry	<112	17.2	no					
					16			
dry	<112	5.2	no					
					20			
dry	<112	4.7	no					
					24			
dry	<112	0.5	no					
					28			
					32			
dry	<112	0.6	no	BH09A		34'	cche	CALICHE, dry, light brown/tan, med. consolidated, no odor
dry	<112	3.5	no			35'	ML	SANDY SILT, dry, reddish brown, non-plastic, no odor
dry	<112	2.2	no		36	36'	gyp	GYPSUM, dry, off-white, moderate-well consolidated, no odor
					40			
dry	<112	1.3	no	BH09B		41'	gyp	GYPSUM, dry, off white, med.-well consolidated, no odor
								Total Depth 41 feet bgs
					44			
					48			

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

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Identifier:	Date:
BH10	5/16/2019
PCA 53	2RP-5169

LITHOLOGIC / SOIL SAMPLING LOG

Logged By:	Method:
BB	Sonic Drill

Lat/Long:	Field Screening:	Hole Diameter:	Total Depth:
	Chloride, PID	6.15"	24'

Comments:

Moisture Content	Chloride (ppm)	Organic Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Depth	Soil/Rock Type	Lithology/Remarks
dry	512	1.5	no	BH10	0	0.5'	gyp	GYPSUM, dry, light brown/tan, poorly consolidated, some silt, no odor
dry	<112	1.9	no	BH10A	2	1'	ML	CLAYEY SILT, dry, brown/red, low plasticity, some gypsum, no odor
dry	<112	0.6	no		4			
					6			
					8			
dry	240	0.6	no	BH10B	10	9'	cche	CALICHE, dry, off white/tan, well consolidated, high reaction to HCl, no odor
					12			
dry	<112	3.6	no		14			
					16			
dry	512	0.4	no	BH10C	18	18'	dol	DOLOMITE, dry, light grey/green, well consolidated, low reaction to HCl, no odor
					20			
dry	512	6.5	no		22			
dry	384	0.7	no	BH10D	24	24'	dol	DOLOMITE, dry, light grey/green, well consolidated, low reaction to HCl, no odor
								Total Depth 24 feet bgs

LT Environmental, Inc. *508 West Stevens Street* *Carlsbad, New Mexico 88220* *Compliance · Engineering · Remediation*		Identifier: BH11	Date: 5/13/2019
		PCA 53	2RP-5169
LITHOLOGIC / SOIL SAMPLING LOG		Logged By: BB	Method: Sonic Drill
Lat/Long:	Field Screening: Chloride, PID	Hole Diameter: 6.15"	Total Depth: 58'
Comments:			

Moisture Content	Chloride (ppm)	Organic Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Depth	Soil/Rock Type	Lithology/Remarks
					0			open excavation
moist	1,286	1,252	yes	BH11	10	6'	SM	SILTY SAND, moist, light brown/tan, well graded, strong petro odor, some poorly consolidated caliche
moist	<112	56.5	no			14'	CL	SILTY CLAY, moist, dark brown/red, non plastic, no odor
moist	<112	56.5	no		20			
dry	<112	8.9	no			21'	cche	CALICHE, dry, off-white to tan, well consolidated, no odor, high reaction to HCL
dry	<112	49.6	no		30			
dry	<112	2.4	no					
dry	262	1.0	no	BH11A		35'	dol	DOLOMITE, dry, light grey/yellow, well consolidated, low reaction to HCl, no odor
dry	<112	1.4	no		40			
dry	<112	1.2	no					
						44'	dol	DOLOMITE, dry, light grey/yellow, well consolidated, low reaction to HCl, no odor
					50			
dry	<112	0.8	no			51'	CL	CLAY, dry, dark grey, mod plasticity, no odor
moist	<112	1.4	no					dark brown to reddish -brown
dry	<112	0.7	no	BH11B		58'	gyp	GYPSUM, dry, off white/tan, some embedded dark brown/red clay, med. consolidated, no odor
					60			Total Depth 58 feet bgs

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

Compliance · Engineering · Remediation

Identifier:	Date:
BH12	5/16/2019
PCA 53	2RP-5169

LITHOLOGIC / SOIL SAMPLING LOG

Logged By:	Method:
BB	Sonic Drill

Lat/Long:	Field Screening:	Hole Diameter:	Total Depth:
	Chloride, PID	6.15"	65'

Comments:

Moisture Content	Chloride (ppm)	Organic Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Depth	Soil/Rock Type	Lithology/Remarks
					0			
dry	<112	0	no	BH12		2'	ML	SANDY SILT, dry, brown/light brown, non plastic, trace vegetation, no odor, trace caliche gravel
dry	313	0.3	no		10			
dry	556	0.3	no	BH12A		12'	ML	SANDY SILT, dry, brown/red, low plasticity, trace gypsum, no odor
dry	<112	0.7	no	BH12B		17'	cche	CALICHE, dry, light brown/off white, well consolidated
dry	313	1.1	no		20			
dry	697	1.0	no	BH12C		27'	cche	CALICHE, dry, off white/tan, well consolidated, some dolomite, no odor, high reaction to HCl
dry	313	0.1	no		30			
dry	262	0.5	no			32'	dol	DOLOMITE, dry, light grey to light green, well consolidated, no odor, low reaction to HCL
dry	313	0.6	no					
dry	<112	0.3	no		40	40'	ML	CLAYEY SILT, dry, brown to dark brown, low plasticity, no odor
dry	<112	0.9	no			43'	CL	SILTY CLAY, dry, light green to light grey, med plasticity, no odor
moist	<112	0.2	no		50			
dry	<112	0.3	no					
dry	<112	5.8	no			51'	gyp	GYPSUM, dry, off-white, well consolidated, trace caliche, no odor, low to med reaction to HCL
dry	<112	3.9	no					
dry	<112	4.5	no		60			
dry	<112	5.3	no	BH12D		65'	ML	CLAYEY SILT, dry, brown/red, non plastic, some gympsum embedded, no odor
								Total Depth 65 feet bgs
					70			

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508 West Stevens Street
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Identifier:	Date:
BH13	5/10/2019
PCA 53	2RP-5169

LITHOLOGIC / SOIL SAMPLING LOG

Logged By: BB	Method: Sonic Drill

Lat/Long:	Field Screening: Chloride, PID	Hole Diameter: 6.15"	Total Depth: 58'

Comments:

Moisture Content	Chloride (ppm)	Organic Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Depth	Soil/Rock Type	Lithology/Remarks
					0		SM	SILTY SAND, well graded, no odor, no plasticity, efforvescent
dry	<172.8	5.5	no					
dry	384	1.1	no	BH13	10	10'	SM	SILTY SAND, dry, pinkish tan, poorly sorted, well graded, no odor, non plastic, fine to gravel average grain size, effervescent
dry	<172.8	2.3	no					
moist	<172.8	4.6	no		20	19'	CL	SILTY CLAY, moist, reddish-brown, mod plasticity, calcareous, no odor
moist	NA	1.5	no					
moist	<172.8	1.7	no		30			
moist	<172.8	0.6	no					
moist	<172.8	0.6	no					
dry	384	11.4	no		40	40'	dol	DOLOMITE, dry, light grey, fine grained, no odor
dry	320	NA	no					
dry	384	4.7	no					
dry	845	337	yes	BH13A		48'	dol	DOLOMITE/LIMESTONE, yellow-grey, fine average grain size
					50			
dry	211.1	1.1	no	BH13B		52'		
dry	<172	1.1	no	BH13C		58'	dol	DOLOMITE, dry, light grey/yellow, fine average grain size, well consolidated, light reaction to HCl, no odor
					60			Total Depth 58 feet bgs

LT Environmental, Inc.	Identifier: BH14	Date: 5/11/2019
LT Environmental, Inc. 508 West Stevens Street Carlsbad, New Mexico 88220 *Compliance · Engineering · Remediation*	PCA 53	2RP-5169
LITHOLOGIC / SOIL SAMPLING LOG	Logged By: BB	Method: Sonic Drill
Lat/Long:	Field Screening: Chloride, PID	Hole Diameter: 6.15" / Total Depth: 58'
Comments:		

Moisture Content	Chloride (ppm)	Organic Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Depth	Soil/Rock Type	Lithology/Remarks
					0			open excavation
dry	11,120	480	no	BH14		5'	SC	CLAYEY SAND, dry, brown/tan, poorly graded
dry	8,700	48.2						
dry	384	1.1	no	BH14A	10	10'	SM	SILTY SAND, dry, pinkish tan, poorly sorted, well graded, no odor, non plastic, fine to gravel average grain size, effervescent
dry	800	255	no			12'	gyp	GYPSUM, dry, yellow-brown, mod-well consolidated, low reaction to HCL
moist	7,424	200	no			15'	cche	CALICHE, moist, green-whitish brown, mod consolidation, trace calcite, high reaction to HCL, odor present
dry	8,700	20.4	no	BH14B	20	20'	cche	CALICHE, dry, poorly consolidated, white/tan, light reaction to HCl, no odor, trace sand, some corral present
dry	2,252	30	no					
dry	2,252	438	no					
	2,736	6.0	no		30			
dry	1,828	90.1	no			35'	dol	DOLOMITE, dry, grey-light green, well consolidated, odor detected
	1,116	6.4	no		40			
moist	1,116	1,400	no	BH14C		45'	dol	DOLOMITE, moist, grey/light green, low-mod. consolidation, strong petro odor, low-med. reaction to HCl
dry	680	58.4	no		50			
moist	<124	10	no	BH14D		54'	CL	CLAY, moist, dark-light grey, low plasticity, trace silt strong petro odor, low-med. reaction to HCl
	<124	450	no					
dry	200	550	no	BH14E		58'	gyp	GYPSUM, dry, yellow-dark green/grey, mod.-well consolidated, strong odor, no reaction to HCl
					60			Total Depth 58 feet bgs

LT Environmental, Inc.
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Identifier:	Date:
BH15	5/9/2019
PCA 53	2RP-5169

LITHOLOGIC / SOIL SAMPLING LOG

Logged By:	Method:
BB	Sonic Drill

Lat/Long:	Field Screening:	Hole Diameter:	Total Depth:
	Chloride, PID	6.15"	59'

Comments:

Moisture Content	Chloride (ppm)	Organic Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Depth	Soil/Rock Type	Lithology/Remarks
					0			open excavation
moist	16,692	1,123	yes	BH15		6'	cche	CALICHE, moist, light brown/tan, low consolidation, trace light brown sand, strong petro odor
moist	9,604	1,300	yes		10			
moist	1,830	14.5	slight			11'	CL	SILTY CLAY, moist, red-dark brown, med plasticity, trace petroleum odor
moist	217	5.4	no	BH15A		15'	ML	CLAYEY SILT, moist, red/dark brown, non plastic, trace petro odor
dry	<124	2.3			20	20'	cche	CALICHE, dry, white to tan, mod-well consolidated, trace dark brown f.g. to m.g. sand, no odor
dry	9,576	2.4	yes	BH15B		24'	dol	DOLOMITE, dry, light brown/grey, low-med. consolidation, no odor, low reaction to HCl, light green-yellow staining
dry	4,240	14.8	yes		30			
dry	5,936	1,496	yes					
dry	3,148	3.8	no		40			
dry	3,580	380	no					
dry	2,003	2.4	no		50			
moist	<124	0.6	no	BH15C		55'	CL	CLAY, moist, grey/dark green, non plastic, no odor
moist	<124	0.2	no	BH15D		59'	CL	CLAY, moist, dark brown/red, mod.-high plasticity, no odor
					60			Total Depth 59 feet bgs

LT Environmental, Inc.	Identifier:	Date:
LT Environmental, Inc. 508 West Stevens Street Carlsbad, New Mexico 88220 *Compliance · Engineering · Remediation*	BH16	5/14/2019
	PCA 53	2RP-5169
LITHOLOGIC / SOIL SAMPLING LOG	Logged By: BB	Method: Sonic Drill
Lat/Long:	Field Screening: Chloride, PID	Hole Diameter: 4" / Total Depth: 64'
Comments:		

Moisture Content	Chloride (ppm)	Organic Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Depth	Soil/Rock Type	Lithology/Remarks
					0			open excavation
moist	13,479	1,530	yes	BH16		6'	SM	SILTY SAND, moist, light brown/tan, well graded, strong petro odor, some poorly consolidated caliche
moist	4,183	332.5	no		10	8'	CL	SILTY CLAY, moist, red-dark brown, low plasticity, strong petroleum odor
moist	211	29.1	no	BH16A		13'	CL	CLAY, moist, red/dark brown, mod. plasticity, low petro odor, trace red silt
moist,	1,286	11.7	no	BH16B		18'	CL	SILTY CLAY, moist, red/dark brown, non-plastic, no odor
dry	<112	14.9	no	BH16C	20	21'	cche	CALICHE, dry, off white/tan, mod.-well consolidated, no odor, high reaction to HCl
dry	620	12.0	no					
dry	211.2	2.8	no		30			
dry	1,100	9.7	no			37'	dol	DOLOMITE, dry, light gray to light green, well consolidated, no odor
dry	1,100	5.2	no		40			
dry	1,830	3.9	no					
dry	4,944	3.4	no	BH16D	50	52'	dol	DOLOMITE, dry, light grey/green, well consolidated, no odor, low reaction to HCl
dry	<112	4.9	no					
dry	<112	0.9	no	BH16E	60	64'	CL	CLAY, dry, dark brown/red, high-med. plasticity, no odor, trace poorly consolidated caliche
								Total Depth 64 feet bgs
					70			

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Identifier:	Date:
BH17	5/11/2019
PCA 53	2RP-5169

LITHOLOGIC / SOIL SAMPLING LOG

Logged By: BB	Method: Sonic Drill

Lat/Long:	Field Screening: Chloride, PID	Hole Diameter: 4"	Total Depth: 54'

Comments:

Moisture Content	Chloride (ppm)	Organic Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Depth	Soil/Rock Type	Lithology/Remarks
					0			open excavation
moist	211	4.9	no	BH17		5'	CL	CLAY, moist dark brown, calcareous matrix clay, moderate plasticity, compact
	<172.8	7.7			10			
						11.5'	cche	CALICHE, dry, light grey, sandy
dry	262.4	5.6	no					
dry	698	13.9	no	BH17A	20	19'	cche	CALICHE, light grey, sandy
dry	698	11.6	no	BH17B		24'	dol	DOLOMITE, porous, microcrystalline matrix, cavities (mm scale), with secondary mineral growth, translucent crystals, jagged irregular shapes and sizing, effervescent
dry	621	17.8	no		30			
dry	1,191	31.9	yes					
dry	2,925	342.9	yes					
dry	5,255	453.1	yes					
dry	9,376	108	yes	BH17C	40	40'	dol	DOLOMITE, odor, yellow-grey dolomite, crystalline matrix, staining visible
dry	1,111	35.2	no					
dry	<172	11.8	no	BH17D		44'	CL	CLAY, grey/dark green, non plastic, trace silt
moist	<172	4.1	no	BH17E		46'	CL	CLAY, moist, grey/dark green, non plastic, trace silt
					50			
dry	<172	1.7	no	BH17F		52'	gyp	GYPSUM, white/tan-yellow, low-med. consolidation, no odor
moist	<172	2.2	no	BH17G		54'	CL	CLAY, moist, dark red/brown
								Total Depth 54 feet bgs
					60			

LT Environmental, Inc.
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Carlsbad, New Mexico 88220

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Identifier:	Date:
BH18	5/17/2019
PCA 53	2RP-5169

LITHOLOGIC / SOIL SAMPLING LOG

Logged By:	Method:
BB	Sonic Drill

Lat/Long:	Field Screening:	Hole Diameter:	Total Depth:
	Chloride, PID	6.15"	57'

Comments:

Moisture Content	Chloride (ppm)	Organic Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Depth	Soil/Rock Type	Lithology/Remarks
					0			open excavation
dry	<112	4.8	no	BH18		6'	ML	SANDY SILT, dry, light brown, non plastic, trace clay, no odor
					10			
dry	<112	3.5	no					
dry	<112	3.9	no	BH18A		13'	cche	CALICHE, dry, off white/tan, well consolidated, no odor, high reaction to HCl
dry	<112	2.1	no					
					20			
dry	<112	2.0	no			23'	dol	DOLOMITE, dry, light grey , well consolidated, no odor, low reaction to HCL
dry	<211	0.9	no					
					30			
dry	202	2.6	no					
moist	211	4.3	no					
					40			
moist	2,227	5.7	no	BH18B		43'	dol	DOLOMITE, dry, light grey/green, well consolidated, no odor, low reaction to HCl
dry	371	2.3	no			46'	CL	CLAY, dry, dark grey to dark green, high plasticity, no odor
dry	<112	3.7	no		50			
wet	1,376	3.0	no			51'	ML	SILT, with gypsum, wet, light brown to tan, mod plasticity, no odor
wet	1,600	5.9	no					
wet	2,105	4.2	no	BH18C		57'	ML	SILT, gypsum present, wet, light brown/tan, moderate plasticity, no odor
					60			Total Depth 57 feet bgs

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Identifier:	Date:
BH19	5/17/2019
PCA 53	2RP-5169

LITHOLOGIC / SOIL SAMPLING LOG

Logged By: BB	Method: Sonic Drill

Lat/Long:	Field Screening: Chloride, PID	Hole Diameter: 6.15"	Total Depth: 77'

Comments:

Moisture Content	Chloride (ppm)	Organic Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Depth	Soil/Rock Type	Lithology/Remarks
dry	<112	2.8	no	BH19	0	2'	ML	CLAYEY SILT, dry, light brown, non plastic, no odor
dry	672	0.6	no					
dry	672	0.4	no		10			
dry	672	3.2	no	BH19A		14'	ML	SILT, dry, light brown, non plastic, some caliche gravel, no odor
dry	531	3.5	no		20			
dry	<112	2.8	no	BH19B		22'	cche	CALICHE, dry, off white/tan, well consolidated, trace silt, no odor, high reaction to HCl
dry	<112	3.7	no		30	29'	ML	SANDY SILT, dry, brown to light brown, non-plastic, no odor
dry	672	3.7	no			32'	CL	CLAY, dry, brown to dark brown, high plasticity, no odor
dry	942	0.6	no	BH19C		34'	dol	DOLOMITE, dry, light grey/green, med. consolidation, med. reaction to HCl, no odor
dry	294	3.4	no			36'	CL	CLAY, with dolomite, brown/red, med to high plasticity, trace petroleum odor
moist	1,177	32.1	no	BH19D	40	40'	CL	CLAY with dolomite, brown/red, med.-high plasticity, trace petro odor
dry	992	153	no	BH19E		42'	cche	CALICHE, dry, off white/tan, well consolidated, med. petro odor
moist	7,366	652	no	BH19F		46'	dol	DOLOMITE, moist, light grey/green, poorly consolidated, strong petro odor
moist	10,144	315.1	no		50			
moist	14,324	15.2	no	BH19G		56'	dol	DOLOMITE, moist, light grey/green, poorly consolidated, no odor
moist	7,993	2.4	no	BH19H	60	62'	dol	DOLOMITE, moist, light grey/green, mod. consolidation, no odor
moist	3,251	2.4	no		70			
moist	992	1.1	no					
moist	531	0.3	no					
moist	<112	1.0	no	BH19I		77'	CL	CLAY with dolomite, red/brown, high plasticity, light green dolomite throughout, no odor
					80			Total Depth 77 feet bgs

LT Environmental, Inc.
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Identifier:	Date:
BH20	6/5/2019
Project Name:	RP Number:
PCA 53	2RP-5169

LITHOLOGIC / SOIL SAMPLING LOG

Logged By:	Method:
BB	sonic drilling

Lat/Long:	Field Screening:	Hole Diameter:	Total Depth:
	PID/HACH	4"	70'

Comments:

Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Depth	Soil/Rock Type	Lithology/Remarks
dry	<112	1.7	no		0			
dry	239	1.2	no			5'	ML	SILT with caliche, gravel, dry, light brown-tan, low plasticity, no odor
dry	<112	2.6	no		10			
dry	294	5.8	no					
moist	672	4.7	no	BH20		17'	ML	clayey SILT, moist, brown-dark brown, low plasticity, no odor
moist	531	2.9	no		20			
dry	<112	22.8	no	BH20A		25'	cche	CALICHE, dry, off white, mod. consolidated, no odor, high reaction to HCl
dry	<112	1.8	no		30			
dry	<112	9.1	no					
dry	294	9.8	no	BH20B		37'	dolo	DOLOMITE, dry, light grey/green, well consolidated, no odor
dry	405	4.2	no		40			
dry	825	9.5	no					
dry	294	6.5	no	BH20C	50	47'	dolo	DOLOMITE, dry, light grey/green, well consolidated, no odor
dry	345	23.3	no	BH20D		57'	CH	CLAY, dry, dark gray/green, high plasticity, no odor
moist	243	8.3	no		60			
dry	<112	5.2	no					
dry	<112	3.9	no					
dry	<112	5.3	no	BH20E	70	70'	gyp	GYPSUM, dry, off white/tan, poorly consolidated, no odor
								Total Depth 70 foot bgs

LT Environmental, Inc.
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Identifier:	Date:
BH21	6/5/2019 - 6/6/2019
Project Name:	RP Number:
PCA 53	2RP-5169

LITHOLOGIC / SOIL SAMPLING LOG

Logged By:	Method:
BB	sonic drilling

Lat/Long:	Field Screening:	Hole Diameter:	Total Depth:
	PID/HACH	4"	51'

Comments:

Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Depth	Soil/Rock Type	Lithology/Remarks
dry	<112	0.8	no		0	1'	ML	sandy SILT with caliche gravel, dry, light brown-brown, non-plastic, no odor
dry	<112	0.7	no					
dry	<112	1.1	no			9'	cche	CALICHE, dry, tan-off white, well consolidated, trace light brown sand, no odor
					10			
dry	<112	2.0	no			14'	CH	silty CLAY, dry, dark brown-red, moderate plasticity, no odor
dry	<112	4.2	no			19'	cche	CALICHE, dry, off white, mod. consolidated, no odor, high reaction to HCl
					20			
dry	<112	5.4	no					
dry	<112	9.8	no					
dry	294	3.8	no	BH21	30	29'	dolo	DOLOMITE, dry, light grey/green, well consolidated, no odor
dry	403	1.9	no	BH21A		35'	CH	CLAY, moist, light gray/green, high-moderate plasticity, trace silt, no odor
					40			
dry	294	6.9	no					
moist	<112	1.9	no					
moist	<112	5.3	no					
moist	<112	2.8	no	BH21A	50	51'	CH	CLAY, moist, dark brown, high - moderate plasticity, trace light green dolomite, no odor Total Depth 51 foot bgs