State of New Mexico
Oil Conservation Division

Incident ID	2RP-5540
District RP	
Facility ID	
Application ID	

Site Assessment/Characterization

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

What is the shallowest depth to groundwater beneath the area affected by the release?	173 (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	2RP-5540
District RP	
Facility ID	
Application ID	

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

Printed Name: Rob Kirk Title: General Manager, HSE and Compliance

Signature: Date: 10/10/2019

email: rob.kirk@solarismidstream.com Telephone: 432-203-9020

OCD Only

Received by: Date:

State of New Mexico
Oil Conservation Division

Incident ID	2RP-5540
District RP	
Facility ID	
Application ID	

Remediation Plan

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

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

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

☐ Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.

☐ Extents of contamination must be fully delineated.

☐ Contamination does not cause an imminent risk to human health, the environment, or groundwater.

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

Printed Name: Rob Kirk Title: General Manager, HSE and Compliance

Signature: RPKirk Date: 10/10/2019

email: rob.kirk@solarismidstream.com Telephone: 432-203-9020

OCD Only

Received by: _____ Date: _____

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

Signature: _____ Date: _____

Release Investigation and Remedial Action Plan

General Site Information:
Eddy State 2 SWD
2RP-5540

Site Contact:
Rob Kirk, Solaris Water Midstream
907 Tradewinds Blvd, Ste. B, Midland, Texas 79706
(432) 203-9020

Depth to Ground Water
Greater than 100 feet below grade surface

Distance to Nearest Surface Water
Red Bluff Reservoir (North-western Loving County, TX), approximately 5 miles to the South

Driving Directions
From Hwy 285, and Black River Village Rd go south 12.5 mi, East on unimproved road 2.45 mi., stay left at the fork and continue east for 1.84 mi., then turn northeast onto Pipeline Rd 2.45 mi., North 0.40 mi. to Pipe location.

Legal Description
Unit K, Section 2, T26S, R29E, Eddy County, New Mexico

October 10, 2019
Terracon Project No. AR197208

Prepared for:
Solaris Water Midstream LLC
Midland, Texas

Prepared by:
Terracon Consultants, Inc.
Lubbock, Texas

October 10, 2019

Solaris Water Midstream LLC
907 Tradewinds Blvd., Suite B
Midland, Texas 79706

Attn: Mr. Rob Kirk
P: 432-203-9020
E: rob.kirk@solarismidstream.com

Type text here

RE: **Release Investigation and Remedial Action Plan**
Eddy State 2 SWD
Unit K, Section 2, Township 26 South, Range 29 East
Eddy County, New Mexico
Terracon Project No. AR197243

Dear Mr. Kirk,

Terracon Consultants, Inc. (Terracon) is pleased to submit our Release Investigation and Remedial Action Plan (RAP) for the site referenced above. The Release Investigation and RAP were developed in accordance with the New Mexico Oil Conservation Division (NMOCD) regulations concerning clean-up actions required for releases of crude oil and produced water. Based on the release investigation assessment, Terracon recommends the following actions be taken to achieve protection of fresh water and the environment in accordance with NMOCD regulations. Terracon developed the Release Investigation and RAP in general accordance with our proposal (PAR197208) dated July 10, 2019.

- Based on the magnitude of chloride and hydrocarbon concentrations detected within the release margins to depths subject to NMOCD Reclamation requirements, approximately 2,000 cubic yards (cy) of chloride impacted material will be required to be excavated and disposed of at a permitted disposal facility under manifest.
- Following excavation to restrictive layer depths, vertical and horizontal delineation samples will be collected from the base and walls of the excavation to confirm the remaining levels of soil contaminants are below the desired NMOCD remediation action level (RAL).
- During initial excavation activities, restrictive features were encountered at 24 to 30 in. below grade surface (bgs). Terracon will hydro-vac the remaining residual soil sitting up on the restrictive rock layer and provide confirmation photos along with our closure report.

- Based on the anticipated depth to groundwater and pending the confirmed vertical delineation, it is anticipated that a remedial response will not be warranted within the soils at depths greater than 4 ft. bgs.
- Terracon will backfill and reseed following submittal of the closure report in accordance with *NMOCD Re-vegetation guidlines (19.15.29.13)*

Terracon appreciates this opportunity to provide environmental services to Solaris Water Midstream LLC (Solaris). Should you have any questions or require additional information, please do not hesitate to contact our office.

Sincerely,
Terracon Consultants, Inc.

Joseph Guesnier
Staff Scientist
Lubbock

Erin Loyd, P.G. (TX)
Principal
Office Manager – Lubbock

Terracon

TABLE OF CONTENTS

Release Investigation and Remedial Action Plan
Eddy State #2 SWD
Unit K, Section 2, T26S, R29E
Eddy County, New Mexico
Terracon Project No. AR197208
October 10, 2019

1.0 SITE DESCRIPTION

The site is comprised of a 0.50-acre produced water spill, with half of the spill residing on the pipeline right of way, and the remainder extending to the west into pasture land. The site is within the Unit Letter K, Section 2, Township 26 South, Range 29 East, Eddy County, New Mexico. The Eddy State 2 SWD consists of rights-of-way for pipelines, and a Salt Water Disposal (SWD) production pad, with the origin of the release being a pump check valve failure. A Topographic Map illustrating the site location is included as Figure 1 and a Site Diagram illustrating soil sample locations is included as Figure 2 in Appendix A. A water well record search is also included as New Mexico Office of the State Engineer (NMOSE) Point of Diversion (POD) Location Map as Figure 4 in Appendix A. A map illustrating the site's location in reference to NMOCD Karst mapping database is presented as Figure 5 in Appendix A.

2.0 SCOPE OF SERVICES

Terracon's scope of services is to investigate the magnitude and extent of the documented release and develop a Remedial Action Plan (RAP) in accordance with the NMOCD requirements that detail site closure activities to be completed. This RAP addresses the July 9, 2019 release of approximately 300 barrels (bbls) of produced water which contained an estimated 0.25 bbls of crude originating from a malfunctioning flange on a pipeline connection of a Solaris flowback line.

3.0 INTRODUCTION AND NOTIFICATION

The following table provides detailed information regarding the July 9, 2019 produced water release at the Eddy State #2 SWD Site in Eddy County, New Mexico:

Required Information	Site and Release information	
Responsible party Local contact	The facility is operated by Solaris Water Midstream	
	Contact: Mr. Rob Kirk	P: (469) 978-5620 E: rob.kirk@solarismidstream.com
NMOCD Notification	Notice of the release was provided to the NMOCD District 2 Artesia Office by Rob Kirk (Solaris) on July 9, 2019.	

Required Information	Site and Release information	
Facility description	The Eddy State 2 SWD is in Eddy County, New Mexico. It is an approximate 8-acre area located within Unit K, Section 2, Township 26 South, Range 29 East, approximately 12 miles southeast of Malaga, New Mexico. The site is being developed as an area for a SWD.	
Time of incident	July 9, 2019, discovered at 11:00 a.m.	
Discharge event	Release of produced water containing crude oil originating from a malfunctioning joint on a pipeline connection of a Solaris transfer flowback line. The release origin occurred north of the facility pad, under development at the time of the release. The release area, near the origin of the release, was limited to an approximately 1-acre area; however, a portion of the release meandered along the surface for approximately 800 ft. to the west at a width ranging from approximately 35 ft. at the release point down to 1 ft bgs. The release margins are illustrated on Figure 2 of Appendix A	
Type of discharge	The documented fluids release occurred at the pipeline and affected the surface and appears to be surficial at depth.	
Quantity of spilled material	Total Fluids: 300 bbls	Produced Water: 300 bbls containing approximately 0.25 bbls of crude oil
Site characteristics	Relatively flat with drainage following the native ground surface; very gently sloping to the west.	
Immediate corrective actions	Pipeline was shut in, and the pump along with the malfunctioning joint were replaced and repaired.	

4.0 INITIAL RESPONSE ACTIONS

4.1 Source Elimination

Initial source elimination was accomplished by the Solaris foreman shutting in the leaking line and replacing the malfunctioning pump and repairing the joint in the pipeline that failed. Solaris inlisted the help of Terracon to assess the impacted areas of the release

5.0 GENERAL SITE CHARACTERISTICS

5.1 Depth to Groundwater

A water well record search of the New Mexico Office of the State Engineer (NMOSE) Potable Water Well (POD) Geographic Information System (GIS) data portal identified no registered wells within 0.5 miles of the site. One registered well (C-01360) was identified at 2.8 miles of the site with a stated depth of 173 ft. below grade surface (bgs). NMOSE registered wells within 3.25 miles of the site have a minimum depth to groundwater of 173 feet bgs, with a maximum reported depth of 184 feet bgs. Based on the review of NMOSE available documentation, the depth to groundwater at the site is anticipated to be deeper than 100 feet bgs.

5.2 Distance to Nearest Potable Water Well

Based on review of the NMOSE database, registered potable water wells were not present within 0.5 miles of the site.

5.3 Distance to Nearest Surface Water

The Red Bluff Reservoir is located approximately 5 miles south of the site.

5.4 Soil / Waste Characteristics

Soils at the site are mapped as Upton-Simona complex, 1 to 5 percent slopes, eroded, 0 to 13 inches gravelly loam, 13 to 21 inches cemented, 21 to 60 inches very gravelly loam. This soil has a surface layer of gravelly sand. Restrictive features, are present at 7 to 20 inches bgs resulting in the formation being categorized with a high runoff classification.

5.5 Karst Characteristics

Terracon evaluated data from the NMOCD Public FTP Site, Karst map designations in reference to the site location. The site appears to be within a high level Karst risk area. Based on site observations within the extent of the release margins the potential for Karst formations in this specific area are of low potential. The site has a layer of solid competent rock from 30 to 60 inches bgs. The full extent of release quantities and excavation activities not greater than 24 inches bgs.

5.6 Groundwater Quality

Groundwater quality at the site is prodimently used for commercial oil and gas production and the nearest well (CP-01360) is being utilized for Industrial operations.

6.0 REGULATORY FRAMEWORK AND RESPONSE ACTION LEVELS

Oil and gas exploration and production facilities in New Mexico are generally regulated by the New Mexico Oil Conservation Division (NMOCD). The NMOCD has issued the *Closure Criteria for Soils Impacted by a Release, June 21, 2018* and *Restoration, Reclamation, and Re-vegetation (19.15.29.13) NMAC – D (Reclamation of areas no longer in use)* as guidance documents for the remediation and reclamation of sites impacted by releases from oil and gas exploration and production activities. Sections 6.1 and 6.2 below detail applicability of these guidance documents to the site-specific characteristics associated with the Eddy State #2 SWD.

6.1 Reclamation Levels (Surface to 4 ft. bgs)

The below Reclamation Limits for chlorides, TPH (GRO+DRO+MRO), BTEX (includes benzene, toluene, ethylbenzene and xylenes), and benzene are defined within New Mexico Administration Code (NMAC) *Restoration, Reclamation, and Re-vegetation* (19.15.29.13) *New Mexico Administration Code (NMAC) – D (Reclamation of areas no longer in use)* for soils extending to 4 ft. bgs.:

Constituent	Remediation Limits
Chloride	600 mg/kg
TPH (GRO+DRO+MRO)	100 mg/kg
BTEX	50 mg/kg
Benzene	10 mg/kg

6.2 Remediation Levels (> 4 ft. bgs)

The *Closure Criteria for Soils Impacted by a Release* guidance document provides direction for initial response actions, site assessment, sampling procedures and provides closure criteria based on the depth to groundwater, distance to private and domestic water sources, and the distance to the nearest surface water body as follows:

Table 1			
Closure Criteria for Soils Impacted by a Release			
Minimum depth below any point within the horizontal boundary of the release to ground water less than 10,000 mg/L TDS	**Constituent**	**Method***	**Limit****
≤50 feet	Chloride***	EPA 300.0 or SM4500 Cl B	600 mg/kg
	TPH (GRO+DRO+MRO)	EPA SW-846 Method 8015 M	100 mg/kg
	BTEX	EPA SW-846 Method 8021B or 8260B	50 mg/kg
	Benzene	EPA SW-846 Method 8021B or 8260B	10 mg/kg
51 feet – 100 feet	Chloride***	EPA 300.0 or SM4500 Cl B	10,000 mg/kg
	TPH (GRO+DRO+MRO)	EPA SW-846 Method 8015 M	2,500 mg/kg
	GRO+DRO	EPA SW-846 Method 8015 M	1,000 mg/kg
	BTEX	EPA SW-846 Method 8021B or 8260B	50 mg/kg
	Benzene	EPA SW-846 Method 8021B or 8260B	10 mg/kg
>100 feet	Chloride***	EPA 300.0 or SM4500 Cl B	20,000 mg/kg
	TPH (GRO+DRO+MRO)	EPA SW-846 Method 8015 M	2,500 mg/kg
	TPH (GRO+DRO)	EPA SW-846 Method 8015 M	1,000 mg/kg
	BTEX	EPA SW-846 Method 8021B or 8260B	50 mg/kg
	Benzene	EPA SW-846 Method 8021B or 8260B	10 mg/kg

**Or other methods approved by the division*

***Numerical limits or natural background level, whichever is greater*

****This applies to releases of produced water or other fluids, which may contain chloride*

Based on the site-specific characteristics, the applicable NMOCD remediation levels for Total BTEX, chloride, and TPH within soils, exclusive of the Reclamation Zone (surface to 4 ft. bgs), are as follows:

Constituent	Remediation Limit
Chloride	20,000 mg/kg
TPH (GRO+DRO+MRO)	2,500 mg/kg
TPH (GRO+DRO)	1,000 mg/kg
BTEX	50 mg/kg
Benzene	10 mg/kg

7.0 SOIL SAMPLING PROCEDURES

Soil sampling procedures are detailed as follows:

7.1 Soil Sampling Procedures for Laboratory Analysis

Soil Sampling Procedures

Soil sampling for laboratory analysis was conducted according to NMOCD-approved industry standards or other NMOCD-approved procedures. Accepted NMOCD soil sampling procedures and laboratory analytical methods are as follows:

- Collect samples in clean, air-tight glass jars supplied by the laboratory which will conduct the analysis or from a reliable laboratory equipment supplier.
- Label the samples with a unique code for each sample.
- Cool and store samples with cold packs or on ice.
- Promptly ship sample to the lab for analysis following chain of custody procedures.
- All samples must be analyzed within the holding times for the laboratory analytical method specified by EPA.

Analytical Methods

All soil samples must be analyzed using EPA methods, or by other NMOCD-approved methods and must be analyzed within the holding time specified by the method. Below are laboratory analytical methods the selected laboratory will use for analysis of soil samples analyzed for petroleum related constituents.

- Chloride – EPA Method 300.0
- Total Petroleum Hydrocarbons – TPH (GRO+DRO+MRO) – EPA Method 8015M

- Benzene, toluene, ethylbenzene and total xylenes (BTEX) – EPA Method 8021B
- Benzene – EPA Method 8021B

8.0 RELEASE INVESTIGATION DATA EVALUATION

During Terracon's March 1, 2019 release investigation activities, a total of nine soil samples were collected from the site and analyzed for BTEX, chloride, and/or TPH. All samples were collected from within the release margins.

8.1 Release Margins Data Evaluation

8.1.1 Reclamation Assessment Data Evaluation

Benzene was not detected above applicable laboratory SDLs in the soil samples analyzed within the release margins. The detected benzene concentrations did not exceed the applicable NMOCD RAL for benzene of 10 mg/kg, as summarized in Table 1.

Total BTEX was not detected above applicable laboratory SDLs in the soil samples analyzed within the release margins. The detected Total BTEX concentrations did not exceed the applicable NMOCD RAL for Total BTEX of 50 mg/kg, as summarized in Table 1.

Chloride was detected above applicable laboratory SDLs in each of the nine soil samples analyzed within the release margins. The chloride concentrations ranged from 1,950 mg/kg in soil sample HA-5 (0.5 to 1.0 ft bgs) to 16,300 mg/kg in soil sample HA-1 (Surface to 0.5 ft bgs). The soil samples analyzed within the release margins did exhibit chloride concentrations exceeding the applicable NMOCD RAL for chloride of 600 mg/kg, as summarized in Table 1.

Total TPH was detected above applicable laboratory SDLs in each of the nine soil samples analyzed within the release margins. The Total TPH concentrations ranged from 10.7 mg/kg in soil sample HA-3 (0.5 to 1.0 ft bgs) to 524 mg/kg in soil sample HA-5 (Surface to 0.5 ft bgs). Four of the nine soil samples collected within the release margins exhibited Total TPH concentrations above the NMOCD RAL of 100 mg/kg for Total TPH, as summarized in Table 1.

8.1.2 Remediation Assessment Data Evaluation

At each of the soil boring locations, a soil samples greater than depthos of 2 ft bgs were not obtained due to encountering a restrictive formation at depth.

8.2 Release Investigation Data Summary

Based on the review of the above release investigation analytical results, the areas within the release margins exhibit concentrations of chloride and Total TPH in multiple locations. Based on

these exceedances above NMOCD RALs, Sections 9.0 and subsequent detail recommended remedial response actions to be implemented at the site.

It is anticipated that released produced water associated chlorides consolidated upon the cemented layer of the Petrocalcic features within the release margins. Based on the presence of the compotent rock, further analytical evaluation of deeper horizons appears unwarranted at this time.

9.0 SOIL RECLAMATION AND REMEDIATION

Impacted soil will be remediated, reclamated and managed according to the criteria described below which is intended to protect fresh waters, public health and the environment from exposure to the above constituents of concern.

9.1 Reclamation Response Objectives

Based on the magnitude of chloride concentrations detected within the release margins to depths subject to NMOCD Reclamation requirements, approximately 2,000 cy of chloride impacted material will be required to be excavated and disposed of at a permitted disposal facility under manifest.

9.2 Remediation Response Objectives

Following excavation to recommended Reclamation depths, horizontal delineation samples will be collected from the base and walls of the excavation to confirm the remaining levels of soil contaminants are below the desired NMOCD RALs. Based on the proximity of the analyzed samples to this restrictive layer and the magnitude of the concentrations being elevated above 600 mg/kg but below 20,000 mg/kg, Terracon recommends hydro-vacing the restrictive feature to wash out the residual presence of chlorides at this restrictive zone to ensure that concentrations are not elevated further at this restrictive interphase. Terracon will additionally include photo logs of the hydro-vacing activities with the closure report.

Based on the anticipated depth to groundwater, it is anticipated that a remedial response will not be warranted within the soils at depths greater than 2 ft. bgs.

9.3 Soil Management

The selected method of soil management is removal and disposal at a NMOCD-approved facility. Excavated soils will be transported by truck (20 cubic yard capacity) and disposed of at either the R360 Disposal Facility located in Halfway, New Mexico or the Lea Land Disposal Facility located in Lea County, New Mexico, based on landfill approvals.

10.0 TERMINATION OF REMEDIAL ACTIONS, FINAL CLOSURE AND REPORTING

10.1 Termination of Reclamation and Remedial Actions

Reclamation and remedial actions at the site will be terminated when the confirmation samples indicate that the above objectives have been completed within the reclamation and remedial depth designations. The intent of the reclamation and remedial approaches are to achieve compliance with NMOCD regulatory objectives in ensuring that any remaining contaminants will not pose a threat to present or foreseeable beneficial use of fresh water, the public health and the environment.

10.2 Final Closure

Upon termination of remedial actions (Sections 6 and 9), the area of the release will be closed by backfilling the excavated area, contouring to surrounding area topography and reseeding the area with approved-native vegetative seed.

10.3 Final Report

Upon completion of remedial activities, a final report summarizing actions taken to mitigate environmental damage related to the release will be provided to NMOCD for approval.

APPENDIX A – FIGURES AND TABLES

Figure 1 – Topographic Map

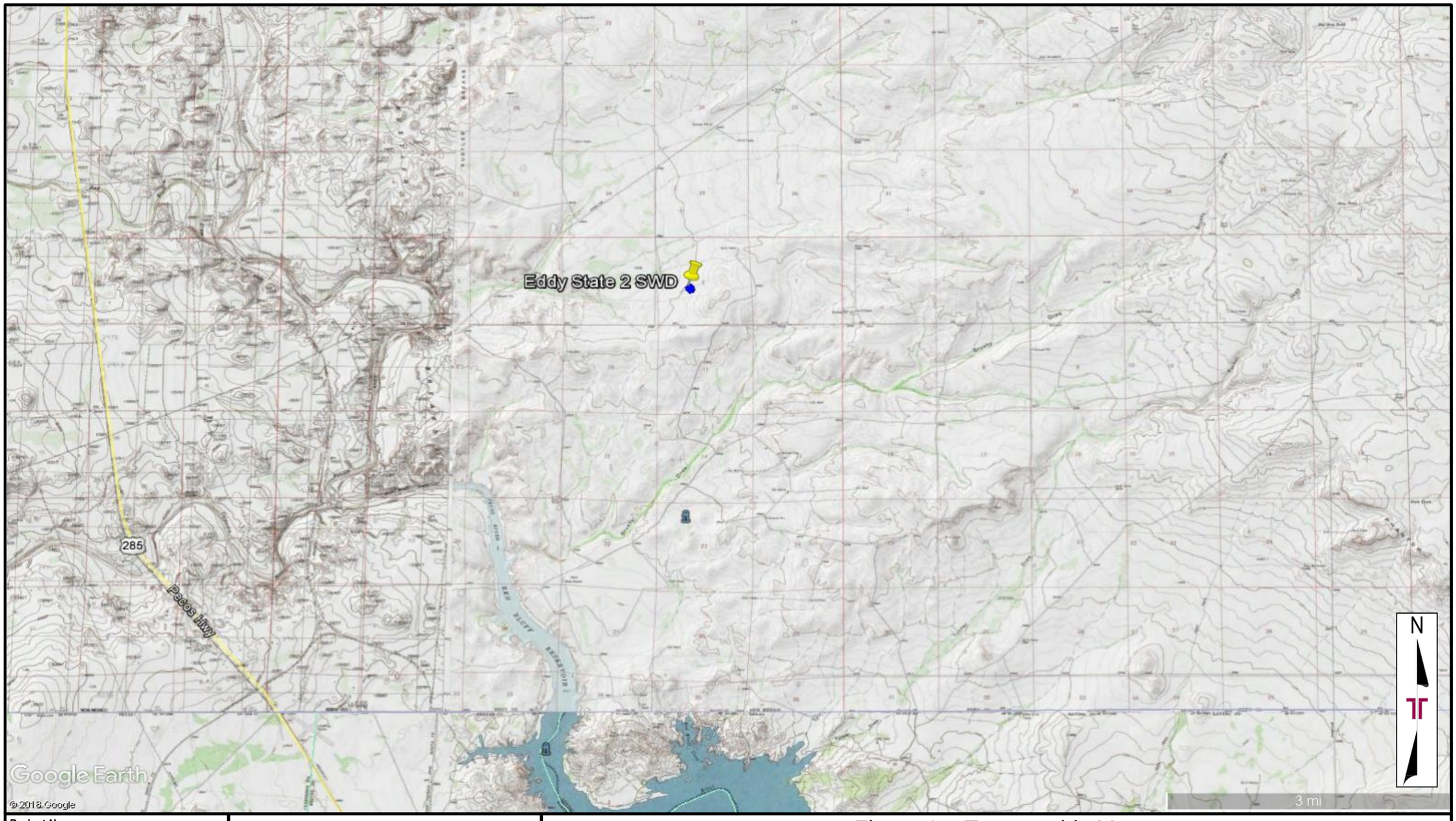
Figure 2 – Site Diagram

Figure 3 – Contamination Concentration Map

Figure 4 – NMOSE POD Location Map

Figure 5 – Cave Karst Public UCP

Table 1 – Soil Sample Analytical Results

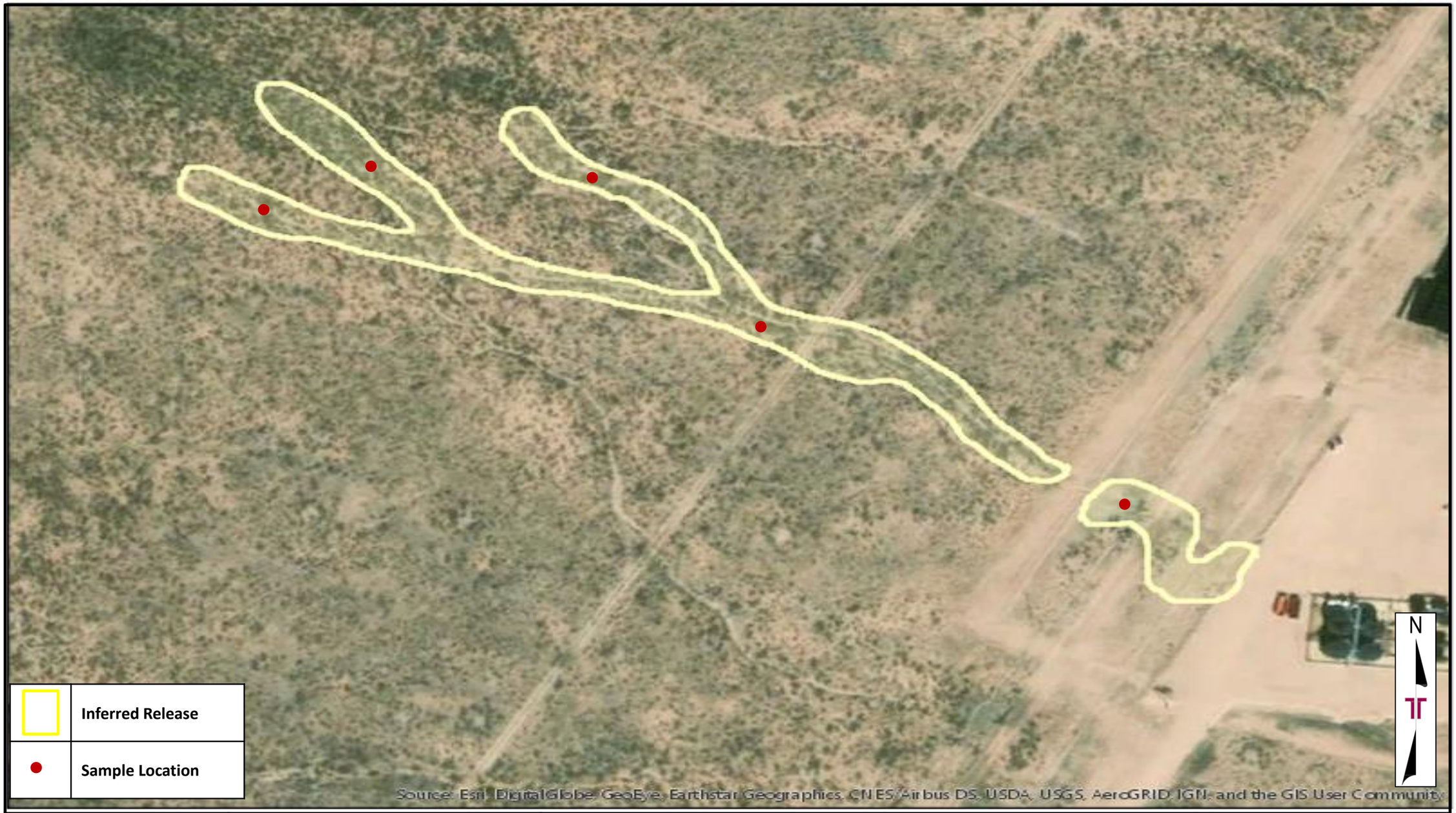


Project No.	AR197208
Scale:	As Shown
Source:	Google Earth
Image Date:	11/02/2017

Terracon
Consulting Engineers & Scientists
5827 50th St. Suite 1 Lubbock, Texas 79424
PH. (806) 300-0104 FAX. (806) 797 0947

Figure 1 – Topographic Map

Eddy State 2 SWD
32.071119°, -103.958405°
Eddy County, New Mexico

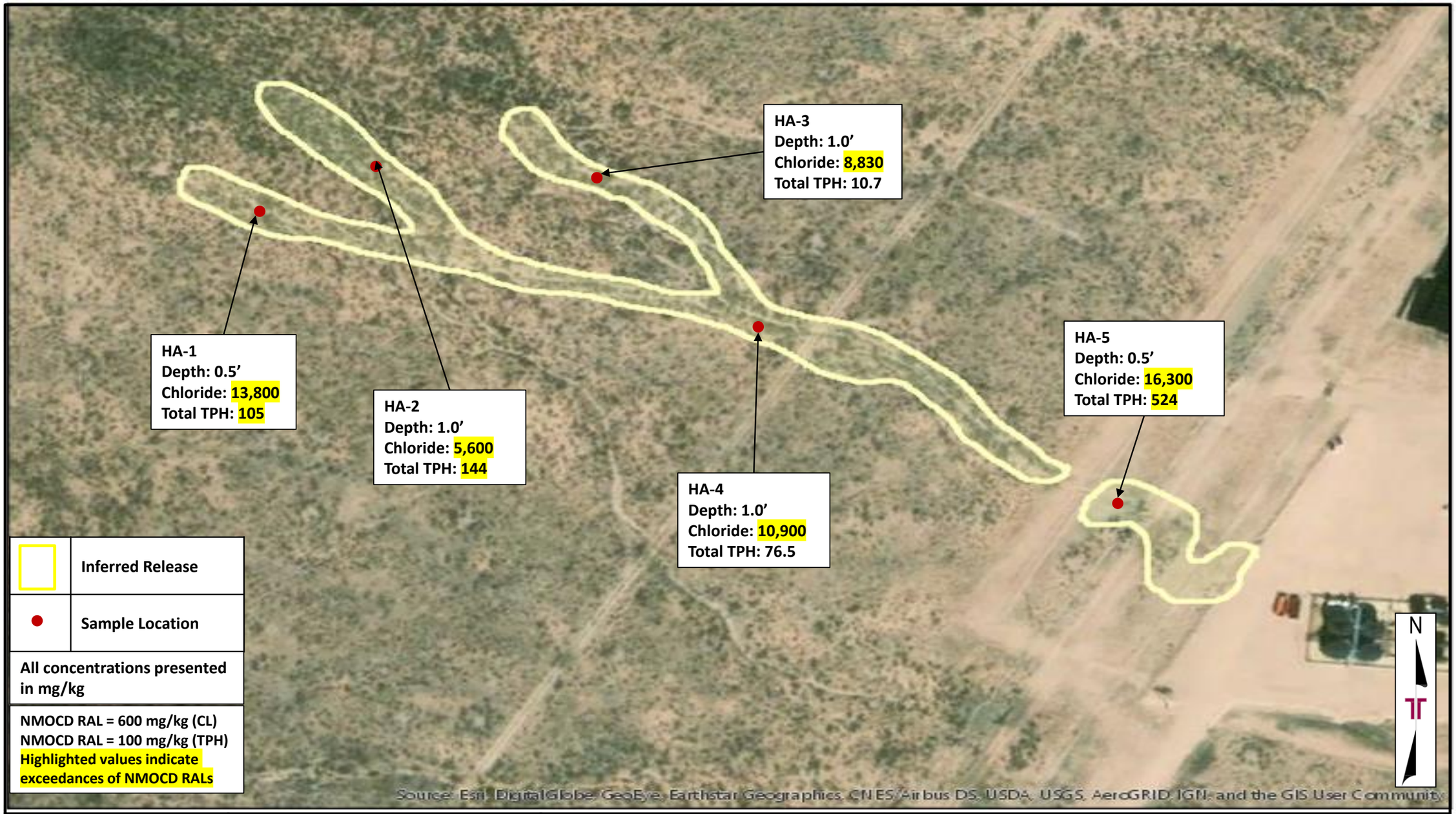


Project No.	AR197208
Scale:	As Shown
Source:	Google Earth
Image Date:	11/02/2017

Terracon
Consulting Engineers & Scientists
5827 50th St. Suite 1 Lubbock, Texas 79424
PH. (806) 300-0104 FAX. (806) 797 0947

Figure 2 – Site Diagram

Eddy State 2 SWD
32.071119°, -103.958405°
Lea County, New Mexico



Project No.	AR197208
Scale:	As Shown
Source:	Google Earth
Image Date:	11/02/2017

Terracon
Consulting Engineers & Scientists
5827 50th St. Suite 1 Lubbock, Texas 79424
PH. (806) 300-0104 FAX. (806) 797 0947

Figure 3 – Contamination Concentration Map

Eddy State Battery Gathering Line PW Release
32.071119°, -103.958405°
Lea County, New Mexico

Figure - 4 NMOSE POD Location MAP

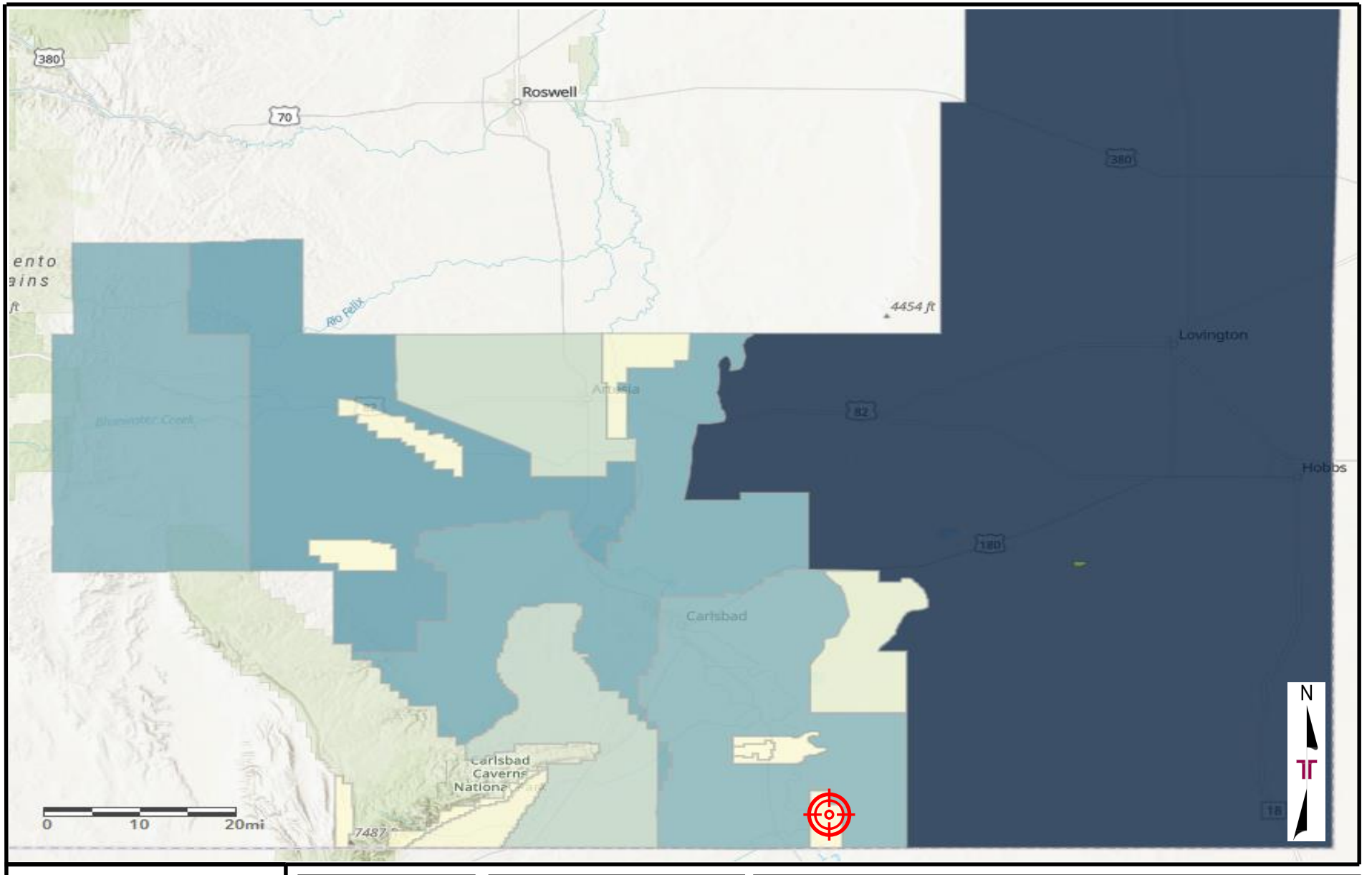
10/10/2019 11:58:10 AM

OSE District Boundary

1:72,224

0 0.5 1 2 mi

0 0.75 1.5 3 km



Project No.	AR197208
Scale:	As Shown
Source:	ESRI
Date:	09/26/2019

Terracon
Consulting Engineers & Scientists
5827 50th Street, Suite 1 Lubbock, Texas 79424
PH. (806) 300 - 0140 FAX. (806) 797 - 0947

Figure 5 - Cave Karst Public UCP

Eddy State 2 SWD

32.071119, -103.958405

Eddy County, New Mexico

APPENDIX B – PHOTOGRAPHIC LOG

PHOTO 1: View of sight and flow path, facing west. 7/15/2019

PHOTO 2: View of sight and staining, facing south. 7/15/2019

PHOTO 3: View of sight and staining, facing west. 7/15/2019

PHOTO 4: View of sight and staining going into drainage, facing west. 7/15/2019

PHOTO 5: View of sight and staining end of spill, facing east. 7/15/2019

PHOTO 6: View of staining and width of flow path. 7/15/2019

PHOTO 7: View of staining and HA-1, facing east. 7/15/2019

PHOTO 8: View of staining and HA-2, facing east. 7/15/2019

PHOTO 9: View of staining and HA-3, facing east. 7/15/2019

PHOTO 10: View of staining and HA-4, facing east. 7/15/2019

PHOTO 11: View of staining and flow path over ranchers road, facing southeast. 7/15/2019

PHOTO 12: View of staining and HA-5, facing east. 7/15/2019

APPENDIX C – ANALYTICAL REPORT AND CHAIN OF CUSTODY

Certificate of Analysis Summary 630985

Terracon-Lubbock, Lubbock, TX

Project Name: Eddy State 2 SWD

Project Id: AR197243
Contact: John Fergerson
Project Location:

Date Received in Lab: Tue Jul-16-19 08:15 am
Report Date: 22-JUL-19
Project Manager: Jessica Kramer

Analysis Requested													
	Lab Id:	630985-001		630985-002		630985-003		630985-005		630985-006		630985-007	
	Field Id:	HA-1 (0-0.5)R		HA-2 (0-0.5)		HA-2 (0.5-1)		HA-3 (0-0.5)		HA-3 (0.5-1)R		HA-4 (0-0.5)	
	Depth:	0-0.5 ft		0-0.5 ft		0.5-1 ft		0-0.5 ft		0.5-1 ft		0-0.5 ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Jul-15-19 14:05		Jul-15-19 14:20		Jul-15-19 14:25		Jul-15-19 14:35		Jul-15-19 14:40		Jul-15-19 14:50	
BTEX by EPA 8021B	***Extracted:***	Jul-16-19 11:20		Jul-16-19 11:20		Jul-16-19 11:20		Jul-16-19 11:20		Jul-16-19 11:20		Jul-16-19 11:20	
	Analyzed:	Jul-17-19 01:37		Jul-17-19 04:26		Jul-17-19 04:51		Jul-17-19 05:15		Jul-17-19 05:39		Jul-17-19 06:03	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Benzene		<0.00895	0.0198	<0.00881	0.0195	<0.00883	0.0195	<0.00878	0.0194	<0.00825	0.0182	<0.00843	0.0187
Toluene		<0.00463	0.0198	<0.00456	0.0195	<0.00457	0.0195	<0.00454	0.0194	<0.00427	0.0182	<0.00437	0.0187
Ethylbenzene		<0.00610	0.0198	<0.00600	0.0195	<0.00602	0.0195	<0.00598	0.0194	<0.00562	0.0182	<0.00575	0.0187
m,p-Xylenes		<0.00675	0.0396	<0.00665	0.0390	<0.00666	0.0391	<0.00662	0.0388	<0.00622	0.0365	<0.00636	0.0373
o-Xylene		<0.00675	0.0198	<0.00665	0.0195	<0.00666	0.0195	<0.00662	0.0194	<0.00622	0.0182	<0.00636	0.0187
Total Xylenes		<0.00675	0.0198	<0.00665	0.0195	<0.00666	0.0195	<0.00662	0.0194	<0.00622	0.0182	<0.00636	0.0187
Total BTEX		<0.00463	0.0198	<0.00456	0.0195	<0.00457	0.0195	<0.00454	0.0194	<0.00427	0.0182	<0.00437	0.0187
Chloride by EPA 300 **SUB: T104704215-19-29**	***Extracted:***	Jul-17-19 11:48		Jul-17-19 11:48		Jul-17-19 11:48		Jul-17-19 11:48		Jul-17-19 11:48		Jul-17-19 11:48	
	Analyzed:	Jul-18-19 03:43		Jul-18-19 03:55		Jul-18-19 04:07		Jul-18-19 04:19		Jul-18-19 04:31		Jul-18-19 04:43	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		13800	99.8	7830	100	5600	101	6980	101	8830	98.4	8570	99.8
TPH By SW8015 Mod **SUB: T104704215-19-29**	***Extracted:***	Jul-19-19 16:47		Jul-19-19 16:56		Jul-19-19 16:59		Jul-19-19 17:05		Jul-19-19 17:08		Jul-19-19 17:11	
	Analyzed:	Jul-22-19 11:55		Jul-19-19 22:35		Jul-19-19 22:54		Jul-19-19 23:32		Jul-19-19 23:51		Jul-20-19 00:10	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Gasoline Range Hydrocarbons (GRO)		<10.0	50.0	<9.95	49.8	<9.95	49.8	<9.98	49.9	<9.94	49.7	<9.97	49.9
Diesel Range Organics (DRO)		80.2	50.0	52.1	49.8	108	49.8	10.8 J	49.9	10.7 J	49.7	11.1 J	49.9
Motor Oil Range Hydrocarbons (MRO)		24.7 J	50.0	19.4 J	49.8	36.0 J	49.8	<9.98	49.9	<9.94	49.7	<9.97	49.9
Total TPH		105	50.0	71.5	49.8	144	49.8	10.8 J	49.9	10.7 J	49.7	11.1 J	49.9

Certificate of Analysis Summary 630985

Terracon-Lubbock, Lubbock, TX

Project Name: Eddy State 2 SWD

Project Id: AR197243
Contact: John Fergerson
Project Location:

Date Received in Lab: Tue Jul-16-19 08:15 am
Report Date: 22-JUL-19
Project Manager: Jessica Kramer

Analysis Requested									
	Lab Id:	630985-008		630985-010		630985-011			
	Field Id:	HA-4 (0.5-1)		HA-5 (0-0.5)		HA-5 (0.5-1)			
	Depth:	0.5-1 ft		0-0.5 ft		0.5-1 ft			
	Matrix:	SOIL		SOIL		SOIL			
	Sampled:	Jul-15-19 14:55		Jul-15-19 15:05		Jul-15-19 15:10			
BTEX by EPA 8021B	***Extracted:***	Jul-16-19 11:20		Jul-16-19 11:20		Jul-16-19 11:20			
	Analyzed:	Jul-17-19 06:27		Jul-17-19 08:03		Jul-17-19 08:27			
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL		
Benzene		<0.00902	0.0200	<0.00868	0.0192	<0.00900	0.0199		
Toluene		<0.00467	0.0200	<0.00449	0.0192	<0.00466	0.0199		
Ethylbenzene		<0.00615	0.0200	<0.00591	0.0192	<0.00614	0.0199		
m,p-Xylenes		<0.00681	0.0399	<0.00655	0.0384	<0.00679	0.0398		
o-Xylene		<0.00681	0.0200	<0.00655	0.0192	<0.00679	0.0199		
Total Xylenes		<0.00681	0.0200	<0.00655	0.0192	<0.00679	0.0199		
Total BTEX		<0.00467	0.0200	<0.00449	0.0192	<0.00466	0.0199		
Chloride by EPA 300 **SUB: T104704215-19-29**	***Extracted:***	Jul-17-19 11:48		Jul-17-19 11:48		Jul-17-19 11:48			
	Analyzed:	Jul-18-19 04:55		Jul-18-19 05:07		Jul-18-19 05:43			
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL		
Chloride		10900	100	16300	99.6	1950	100		
TPH By SW8015 Mod **SUB: T104704215-19-29**	***Extracted:***	Jul-19-19 17:14		Jul-19-19 17:20		Jul-19-19 17:23			
	Analyzed:	Jul-20-19 00:29		Jul-20-19 01:07		Jul-20-19 01:26			
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL		
Gasoline Range Hydrocarbons (GRO)		<9.93	49.7	<9.93	49.7	<9.95	49.8		
Diesel Range Organics (DRO)		55.6	49.7	409	49.7	152	49.8		
Motor Oil Range Hydrocarbons (MRO)		20.9 J	49.7	115	49.7	54.3	49.8		
Total TPH		76.5	49.7	524	49.7	206	49.8		

Jessica Kramer
Project Assistant

Analytical Report 630985

for

Terracon-Lubbock

Project Manager: John Fergerson

Eddy State 2 SWD

AR197243

22-JUL-19

Collected By: Client

6701 Aberdeen, Suite 9 Lubbock, TX 79424

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-19-29), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (T104704295-19-19), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-18-14)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-19-20)
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-Atlanta (LELAP Lab ID #04176)
Xenco-Tampa: Florida (E87429), North Carolina (483)

22-JUL-19

Project Manager: **John Fergerson**
Terracon-Lubbock
5827 50th st, Suite 1
Lubbock, TX 79424

Reference: XENCO Report No(s): **630985**
Eddy State 2 SWD
Project Address:

John Fergerson:

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) 630985. 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. 630985 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 630985

Terracon-Lubbock, Lubbock, TX

Eddy State 2 SWD

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
HA-1 (0-0.5)R	S	07-15-19 14:05	0 - 0.5 ft	630985-001
HA-2 (0-0.5)	S	07-15-19 14:20	0 - 0.5 ft	630985-002
HA-2 (0.5-1)	S	07-15-19 14:25	0.5 - 1 ft	630985-003
HA-3 (0-0.5)	S	07-15-19 14:35	0 - 0.5 ft	630985-005
HA-3 (0.5-1)R	S	07-15-19 14:40	0.5 - 1 ft	630985-006
HA-4 (0-0.5)	S	07-15-19 14:50	0 - 0.5 ft	630985-007
HA-4 (0.5-1)	S	07-15-19 14:55	0.5 - 1 ft	630985-008
HA-5 (0-0.5)	S	07-15-19 15:05	0 - 0.5 ft	630985-010
HA-5 (0.5-1)	S	07-15-19 15:10	0.5 - 1 ft	630985-011
HA-2 (1.5)-2R	S	07-15-19 14:30	1.5 - 2 ft	Not Analyzed
HA-4 (1.5-2)	S	07-15-19 15:00	1.5 - 2 ft	Not Analyzed

This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory.

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3095559 BTEX by EPA 8021B

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

Certificate of Analytical Results 630985

Terracon-Lubbock, Lubbock, TX

Eddy State 2 SWD

Sample Id:	**HA-1 (0-0.5)R**	Matrix:	Soil	Date Received:	07.16.19 08.15
Lab Sample Id:	630985-001	Date Collected:	07.15.19 14.05	Sample Depth:	0 - 0.5 ft

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	JYM			% Moisture:	
Analyst:	JYM	Date Prep:	07.17.19 11.48	Basis:	Wet Weight
Seq Number:	3095680			SUB:	T104704215-19-29

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**13800**	99.8	3.53	mg/kg	07.18.19 03.43		10

Analytical Method:	TPH By SW8015 Mod			Prep Method:	TX1005P
Tech:	ISU			% Moisture:	
Analyst:	ISU	Date Prep:	07.19.19 16.47	Basis:	Wet Weight
Seq Number:	3096069			SUB:	T104704215-19-29

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<10.0	50.0	10.0	mg/kg	07.22.19 11.55	U	1
Diesel Range Organics (DRO)	C10C28DRO	**80.2**	50.0	10.0	mg/kg	07.22.19 11.55		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**24.7**	50.0	10.0	mg/kg	07.22.19 11.55	J	1
Total TPH	PHC635	**105**	50.0	10.0	mg/kg	07.22.19 11.55		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	98	%	70-135	07.22.19 11.55	
o-Terphenyl	84-15-1	112	%	70-135	07.22.19 11.55	

Certificate of Analytical Results 630985

Terracon-Lubbock, Lubbock, TX

Eddy State 2 SWD

Sample Id:	**HA-1 (0-0.5)R**	Matrix:	Soil	Date Received:	07.16.19 08.15
Lab Sample Id:	630985-001	Date Collected:	07.15.19 14.05	Sample Depth:	0 - 0.5 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	MIT			% Moisture:	
Analyst:	MIT	Date Prep:	07.16.19 11.20	Basis:	Wet Weight
Seq Number:	3095559				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00895	0.0198	0.00895	mg/kg	07.17.19 01.37	U	1
Toluene	108-88-3	<0.00463	0.0198	0.00463	mg/kg	07.17.19 01.37	U	1
Ethylbenzene	100-41-4	<0.00610	0.0198	0.00610	mg/kg	07.17.19 01.37	U	1
m,p-Xylenes	179601-23-1	<0.00675	0.0396	0.00675	mg/kg	07.17.19 01.37	U	1
o-Xylene	95-47-6	<0.00675	0.0198	0.00675	mg/kg	07.17.19 01.37	U	1
Total Xylenes	1330-20-7	<0.00675	0.0198	0.00675	mg/kg	07.17.19 01.37	U	1
Total BTEX		<0.00463	0.0198	0.00463	mg/kg	07.17.19 01.37	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	94	%	68-120	07.17.19 01.37	
a,a,a-Trifluorotoluene	98-08-8	107	%	71-121	07.17.19 01.37	

Certificate of Analytical Results 630985

Terracon-Lubbock, Lubbock, TX

Eddy State 2 SWD

Sample Id:	**HA-2 (0-0.5)**	Matrix:	Soil	Date Received:	07.16.19 08.15
Lab Sample Id:	630985-002	Date Collected:	07.15.19 14.20	Sample Depth:	0 - 0.5 ft

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	JYM			% Moisture:	
Analyst:	JYM	Date Prep:	07.17.19 11.48	Basis:	Wet Weight
Seq Number:	3095680			SUB:	T104704215-19-29

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**7830**	100	3.55	mg/kg	07.18.19 03.55		10

Analytical Method:	TPH By SW8015 Mod			Prep Method:	TX1005P
Tech:	ISU			% Moisture:	
Analyst:	ISU	Date Prep:	07.19.19 16.56	Basis:	Wet Weight
Seq Number:	3096069			SUB:	T104704215-19-29

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<9.95	49.8	9.95	mg/kg	07.19.19 22.35	U	1
Diesel Range Organics (DRO)	C10C28DRO	**52.1**	49.8	9.95	mg/kg	07.19.19 22.35		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**19.4**	49.8	9.95	mg/kg	07.19.19 22.35	J	1
Total TPH	PHC635	**71.5**	49.8	9.95	mg/kg	07.19.19 22.35		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	97	%	70-135	07.19.19 22.35	
o-Terphenyl	84-15-1	108	%	70-135	07.19.19 22.35	

Certificate of Analytical Results 630985

Terracon-Lubbock, Lubbock, TX

Eddy State 2 SWD

Sample Id:	**HA-2 (0-0.5)**	Matrix:	Soil	Date Received:	07.16.19 08.15
Lab Sample Id:	630985-002	Date Collected:	07.15.19 14.20	Sample Depth:	0 - 0.5 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	MIT			% Moisture:	
Analyst:	MIT	Date Prep:	07.16.19 11.20	Basis:	Wet Weight
Seq Number:	3095559				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00881	0.0195	0.00881	mg/kg	07.17.19 04.26	U	1
Toluene	108-88-3	<0.00456	0.0195	0.00456	mg/kg	07.17.19 04.26	U	1
Ethylbenzene	100-41-4	<0.00600	0.0195	0.00600	mg/kg	07.17.19 04.26	U	1
m,p-Xylenes	179601-23-1	<0.00665	0.0390	0.00665	mg/kg	07.17.19 04.26	U	1
o-Xylene	95-47-6	<0.00665	0.0195	0.00665	mg/kg	07.17.19 04.26	U	1
Total Xylenes	1330-20-7	<0.00665	0.0195	0.00665	mg/kg	07.17.19 04.26	U	1
Total BTEX		<0.00456	0.0195	0.00456	mg/kg	07.17.19 04.26	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	99	%	68-120	07.17.19 04.26	
a,a,a-Trifluorotoluene	98-08-8	112	%	71-121	07.17.19 04.26	

Certificate of Analytical Results 630985

Terracon-Lubbock, Lubbock, TX

Eddy State 2 SWD

Sample Id:	**HA-2 (0.5-1)**	Matrix:	Soil	Date Received:	07.16.19 08.15
Lab Sample Id:	630985-003	Date Collected:	07.15.19 14.25	Sample Depth:	0.5 - 1 ft

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	JYM			% Moisture:	
Analyst:	JYM	Date Prep:	07.17.19 11.48	Basis:	Wet Weight
Seq Number:	3095680			SUB:	T104704215-19-29

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**5600**	101	3.57	mg/kg	07.18.19 04.07		10

Analytical Method:	TPH By SW8015 Mod			Prep Method:	TX1005P
Tech:	ISU			% Moisture:	
Analyst:	ISU	Date Prep:	07.19.19 16.59	Basis:	Wet Weight
Seq Number:	3096069			SUB:	T104704215-19-29

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<9.95	49.8	9.95	mg/kg	07.19.19 22.54	U	1
Diesel Range Organics (DRO)	C10C28DRO	**108**	49.8	9.95	mg/kg	07.19.19 22.54		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**36.0**	49.8	9.95	mg/kg	07.19.19 22.54	J	1
Total TPH	PHC635	**144**	49.8	9.95	mg/kg	07.19.19 22.54		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	113	%	70-135	07.19.19 22.54	
o-Terphenyl	84-15-1	125	%	70-135	07.19.19 22.54	

Certificate of Analytical Results 630985

Terracon-Lubbock, Lubbock, TX

Eddy State 2 SWD

Sample Id:	**HA-2 (0.5-1)**	Matrix:	Soil	Date Received:	07.16.19 08.15
Lab Sample Id:	630985-003	Date Collected:	07.15.19 14.25	Sample Depth:	0.5 - 1 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	MIT			% Moisture:	
Analyst:	MIT	Date Prep:	07.16.19 11.20	Basis:	Wet Weight
Seq Number:	3095559				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00883	0.0195	0.00883	mg/kg	07.17.19 04.51	U	1
Toluene	108-88-3	<0.00457	0.0195	0.00457	mg/kg	07.17.19 04.51	U	1
Ethylbenzene	100-41-4	<0.00602	0.0195	0.00602	mg/kg	07.17.19 04.51	U	1
m,p-Xylenes	179601-23-1	<0.00666	0.0391	0.00666	mg/kg	07.17.19 04.51	U	1
o-Xylene	95-47-6	<0.00666	0.0195	0.00666	mg/kg	07.17.19 04.51	U	1
Total Xylenes	1330-20-7	<0.00666	0.0195	0.00666	mg/kg	07.17.19 04.51	U	1
Total BTEX		<0.00457	0.0195	0.00457	mg/kg	07.17.19 04.51	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	100	%	68-120	07.17.19 04.51	
a,a,a-Trifluorotoluene	98-08-8	113	%	71-121	07.17.19 04.51	

Certificate of Analytical Results 630985

Terracon-Lubbock, Lubbock, TX

Eddy State 2 SWD

Sample Id:	**HA-3 (0-0.5)**	Matrix:	Soil	Date Received:	07.16.19 08.15
Lab Sample Id:	630985-005	Date Collected:	07.15.19 14.35	Sample Depth:	0 - 0.5 ft

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	JYM			% Moisture:	
Analyst:	JYM	Date Prep:	07.17.19 11.48	Basis:	Wet Weight
Seq Number:	3095680			SUB:	T104704215-19-29

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**6980**	101	3.56	mg/kg	07.18.19 04.19		10

Analytical Method:	TPH By SW8015 Mod			Prep Method:	TX1005P
Tech:	ISU			% Moisture:	
Analyst:	ISU	Date Prep:	07.19.19 17.05	Basis:	Wet Weight
Seq Number:	3096069			SUB:	T104704215-19-29

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<9.98	49.9	9.98	mg/kg	07.19.19 23.32	U	1
Diesel Range Organics (DRO)	C10C28DRO	**10.8**	49.9	9.98	mg/kg	07.19.19 23.32	J	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<9.98	49.9	9.98	mg/kg	07.19.19 23.32	U	1
Total TPH	PHC635	**10.8**	49.9	9.98	mg/kg	07.19.19 23.32	J	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	103	%	70-135	07.19.19 23.32	
o-Terphenyl	84-15-1	112	%	70-135	07.19.19 23.32	

Certificate of Analytical Results 630985

Terracon-Lubbock, Lubbock, TX

Eddy State 2 SWD

Sample Id:	**HA-3 (0-0.5)**	Matrix:	Soil	Date Received:	07.16.19 08.15
Lab Sample Id:	630985-005	Date Collected:	07.15.19 14.35	Sample Depth:	0 - 0.5 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	MIT			% Moisture:	
Analyst:	MIT	Date Prep:	07.16.19 11.20	Basis:	Wet Weight
Seq Number:	3095559				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00878	0.0194	0.00878	mg/kg	07.17.19 05.15	U	1
Toluene	108-88-3	<0.00454	0.0194	0.00454	mg/kg	07.17.19 05.15	U	1
Ethylbenzene	100-41-4	<0.00598	0.0194	0.00598	mg/kg	07.17.19 05.15	U	1
m,p-Xylenes	179601-23-1	<0.00662	0.0388	0.00662	mg/kg	07.17.19 05.15	U	1
o-Xylene	95-47-6	<0.00662	0.0194	0.00662	mg/kg	07.17.19 05.15	U	1
Total Xylenes	1330-20-7	<0.00662	0.0194	0.00662	mg/kg	07.17.19 05.15	U	1
Total BTEX		<0.00454	0.0194	0.00454	mg/kg	07.17.19 05.15	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	99	%	68-120	07.17.19 05.15	
a,a,a-Trifluorotoluene	98-08-8	107	%	71-121	07.17.19 05.15	

Certificate of Analytical Results 630985

Terracon-Lubbock, Lubbock, TX

Eddy State 2 SWD

Sample Id:	**HA-3 (0.5-1)R**	Matrix:	Soil	Date Received:	07.16.19 08.15
Lab Sample Id:	630985-006	Date Collected:	07.15.19 14.40	Sample Depth:	0.5 - 1 ft

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	JYM			% Moisture:	
Analyst:	JYM	Date Prep:	07.17.19 11.48	Basis:	Wet Weight
Seq Number:	3095680			SUB:	T104704215-19-29

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**8830**	98.4	3.48	mg/kg	07.18.19 04.31		10

Analytical Method:	TPH By SW8015 Mod			Prep Method:	TX1005P
Tech:	ISU			% Moisture:	
Analyst:	ISU	Date Prep:	07.19.19 17.08	Basis:	Wet Weight
Seq Number:	3096069			SUB:	T104704215-19-29

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<9.94	49.7	9.94	mg/kg	07.19.19 23.51	U	1
Diesel Range Organics (DRO)	C10C28DRO	**10.7**	49.7	9.94	mg/kg	07.19.19 23.51	J	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<9.94	49.7	9.94	mg/kg	07.19.19 23.51	U	1
Total TPH	PHC635	**10.7**	49.7	9.94	mg/kg	07.19.19 23.51	J	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	105	%	70-135	07.19.19 23.51	
o-Terphenyl	84-15-1	115	%	70-135	07.19.19 23.51	

Certificate of Analytical Results 630985

Terracon-Lubbock, Lubbock, TX

Eddy State 2 SWD

Sample Id:	**HA-3 (0.5-1)R**	Matrix:	Soil	Date Received:	07.16.19 08.15
Lab Sample Id:	630985-006	Date Collected:	07.15.19 14.40	Sample Depth:	0.5 - 1 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	MIT			% Moisture:	
Analyst:	MIT	Date Prep:	07.16.19 11.20	Basis:	Wet Weight
Seq Number:	3095559				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00825	0.0182	0.00825	mg/kg	07.17.19 05.39	U	1
Toluene	108-88-3	<0.00427	0.0182	0.00427	mg/kg	07.17.19 05.39	U	1
Ethylbenzene	100-41-4	<0.00562	0.0182	0.00562	mg/kg	07.17.19 05.39	U	1
m,p-Xylenes	179601-23-1	<0.00622	0.0365	0.00622	mg/kg	07.17.19 05.39	U	1
o-Xylene	95-47-6	<0.00622	0.0182	0.00622	mg/kg	07.17.19 05.39	U	1
Total Xylenes	1330-20-7	<0.00622	0.0182	0.00622	mg/kg	07.17.19 05.39	U	1
Total BTEX		<0.00427	0.0182	0.00427	mg/kg	07.17.19 05.39	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	100	%	68-120	07.17.19 05.39	
a,a,a-Trifluorotoluene	98-08-8	115	%	71-121	07.17.19 05.39	

Certificate of Analytical Results 630985

Terracon-Lubbock, Lubbock, TX

Eddy State 2 SWD

Sample Id:	**HA-4 (0-0.5)**	Matrix:	Soil	Date Received:	07.16.19 08.15
Lab Sample Id:	630985-007	Date Collected:	07.15.19 14.50	Sample Depth:	0 - 0.5 ft

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	JYM			% Moisture:	
Analyst:	JYM	Date Prep:	07.17.19 11.48	Basis:	Wet Weight
Seq Number:	3095680			SUB:	T104704215-19-29

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**8570**	99.8	3.53	mg/kg	07.18.19 04.43		10

Analytical Method:	TPH By SW8015 Mod			Prep Method:	TX1005P
Tech:	ISU			% Moisture:	
Analyst:	ISU	Date Prep:	07.19.19 17.11	Basis:	Wet Weight
Seq Number:	3096069			SUB:	T104704215-19-29

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<9.97	49.9	9.97	mg/kg	07.20.19 00.10	U	1
Diesel Range Organics (DRO)	C10C28DRO	**11.1**	49.9	9.97	mg/kg	07.20.19 00.10	J	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<9.97	49.9	9.97	mg/kg	07.20.19 00.10	U	1
Total TPH	PHC635	**11.1**	49.9	9.97	mg/kg	07.20.19 00.10	J	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	99	%	70-135	07.20.19 00.10	
o-Terphenyl	84-15-1	109	%	70-135	07.20.19 00.10	

Certificate of Analytical Results 630985

Terracon-Lubbock, Lubbock, TX

Eddy State 2 SWD

Sample Id:	**HA-4 (0-0.5)**	Matrix:	Soil	Date Received:	07.16.19 08.15
Lab Sample Id:	630985-007	Date Collected:	07.15.19 14.50	Sample Depth:	0 - 0.5 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	MIT			% Moisture:	
Analyst:	MIT	Date Prep:	07.16.19 11.20	Basis:	Wet Weight
Seq Number:	3095559				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00843	0.0187	0.00843	mg/kg	07.17.19 06.03	U	1
Toluene	108-88-3	<0.00437	0.0187	0.00437	mg/kg	07.17.19 06.03	U	1
Ethylbenzene	100-41-4	<0.00575	0.0187	0.00575	mg/kg	07.17.19 06.03	U	1
m,p-Xylenes	179601-23-1	<0.00636	0.0373	0.00636	mg/kg	07.17.19 06.03	U	1
o-Xylene	95-47-6	<0.00636	0.0187	0.00636	mg/kg	07.17.19 06.03	U	1
Total Xylenes	1330-20-7	<0.00636	0.0187	0.00636	mg/kg	07.17.19 06.03	U	1
Total BTEX		<0.00437	0.0187	0.00437	mg/kg	07.17.19 06.03	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	102	%	68-120	07.17.19 06.03	
a,a,a-Trifluorotoluene	98-08-8	113	%	71-121	07.17.19 06.03	

Certificate of Analytical Results 630985

Terracon-Lubbock, Lubbock, TX

Eddy State 2 SWD

Sample Id:	**HA-4 (0.5-1)**	Matrix:	Soil	Date Received:	07.16.19 08.15
Lab Sample Id:	630985-008	Date Collected:	07.15.19 14.55	Sample Depth:	0.5 - 1 ft

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	JYM			% Moisture:	
Analyst:	JYM	Date Prep:	07.17.19 11.48	Basis:	Wet Weight
Seq Number:	3095680			SUB:	T104704215-19-29

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**10900**	100	3.54	mg/kg	07.18.19 04.55		10

Analytical Method:	TPH By SW8015 Mod			Prep Method:	TX1005P
Tech:	ISU			% Moisture:	
Analyst:	ISU	Date Prep:	07.19.19 17.14	Basis:	Wet Weight
Seq Number:	3096069			SUB:	T104704215-19-29

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<9.93	49.7	9.93	mg/kg	07.20.19 00.29	U	1
Diesel Range Organics (DRO)	C10C28DRO	**55.6**	49.7	9.93	mg/kg	07.20.19 00.29		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**20.9**	49.7	9.93	mg/kg	07.20.19 00.29	J	1
Total TPH	PHC635	**76.5**	49.7	9.93	mg/kg	07.20.19 00.29		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	112	%	70-135	07.20.19 00.29	
o-Terphenyl	84-15-1	125	%	70-135	07.20.19 00.29	

Certificate of Analytical Results 630985

Terracon-Lubbock, Lubbock, TX

Eddy State 2 SWD

Sample Id:	**HA-4 (0.5-1)**	Matrix:	Soil	Date Received:	07.16.19 08.15
Lab Sample Id:	630985-008	Date Collected:	07.15.19 14.55	Sample Depth:	0.5 - 1 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	MIT			% Moisture:	
Analyst:	MIT	Date Prep:	07.16.19 11.20	Basis:	Wet Weight
Seq Number:	3095559				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00902	0.0200	0.00902	mg/kg	07.17.19 06.27	U	1
Toluene	108-88-3	<0.00467	0.0200	0.00467	mg/kg	07.17.19 06.27	U	1
Ethylbenzene	100-41-4	<0.00615	0.0200	0.00615	mg/kg	07.17.19 06.27	U	1
m,p-Xylenes	179601-23-1	<0.00681	0.0399	0.00681	mg/kg	07.17.19 06.27	U	1
o-Xylene	95-47-6	<0.00681	0.0200	0.00681	mg/kg	07.17.19 06.27	U	1
Total Xylenes	1330-20-7	<0.00681	0.0200	0.00681	mg/kg	07.17.19 06.27	U	1
Total BTEX		<0.00467	0.0200	0.00467	mg/kg	07.17.19 06.27	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	101	%	68-120	07.17.19 06.27	
a,a,a-Trifluorotoluene	98-08-8	110	%	71-121	07.17.19 06.27	

Certificate of Analytical Results 630985

Terracon-Lubbock, Lubbock, TX

Eddy State 2 SWD

Sample Id:	**HA-5 (0-0.5)**	Matrix:	Soil	Date Received:	07.16.19 08.15
Lab Sample Id:	630985-010	Date Collected:	07.15.19 15.05	Sample Depth:	0 - 0.5 ft

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	JYM			% Moisture:	
Analyst:	JYM	Date Prep:	07.17.19 11.48	Basis:	Wet Weight
Seq Number:	3095680			SUB:	T104704215-19-29

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**16300**	99.6	3.53	mg/kg	07.18.19 05.07		10

Analytical Method:	TPH By SW8015 Mod			Prep Method:	TX1005P
Tech:	ISU			% Moisture:	
Analyst:	ISU	Date Prep:	07.19.19 17.20	Basis:	Wet Weight
Seq Number:	3096069			SUB:	T104704215-19-29

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<9.93	49.7	9.93	mg/kg	07.20.19 01.07	U	1
Diesel Range Organics (DRO)	C10C28DRO	**409**	49.7	9.93	mg/kg	07.20.19 01.07		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**115**	49.7	9.93	mg/kg	07.20.19 01.07		1
Total TPH	PHC635	**524**	49.7	9.93	mg/kg	07.20.19 01.07		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	97	%	70-135	07.20.19 01.07	
o-Terphenyl	84-15-1	105	%	70-135	07.20.19 01.07	

Certificate of Analytical Results 630985

Terracon-Lubbock, Lubbock, TX

Eddy State 2 SWD

Sample Id:	**HA-5 (0-0.5)**	Matrix:	Soil	Date Received:	07.16.19 08.15
Lab Sample Id:	630985-010	Date Collected:	07.15.19 15.05	Sample Depth:	0 - 0.5 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	MIT			% Moisture:	
Analyst:	MIT	Date Prep:	07.16.19 11.20	Basis:	Wet Weight
Seq Number:	3095559				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00868	0.0192	0.00868	mg/kg	07.17.19 08.03	U	1
Toluene	108-88-3	<0.00449	0.0192	0.00449	mg/kg	07.17.19 08.03	U	1
Ethylbenzene	100-41-4	<0.00591	0.0192	0.00591	mg/kg	07.17.19 08.03	U	1
m,p-Xylenes	179601-23-1	<0.00655	0.0384	0.00655	mg/kg	07.17.19 08.03	U	1
o-Xylene	95-47-6	<0.00655	0.0192	0.00655	mg/kg	07.17.19 08.03	U	1
Total Xylenes	1330-20-7	<0.00655	0.0192	0.00655	mg/kg	07.17.19 08.03	U	1
Total BTEX		<0.00449	0.0192	0.00449	mg/kg	07.17.19 08.03	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	96	%	68-120	07.17.19 08.03	
a,a,a-Trifluorotoluene	98-08-8	105	%	71-121	07.17.19 08.03	

Certificate of Analytical Results 630985

Terracon-Lubbock, Lubbock, TX

Eddy State 2 SWD

Sample Id:	**HA-5 (0.5-1)**	Matrix:	Soil	Date Received:	07.16.19 08.15
Lab Sample Id:	630985-011	Date Collected:	07.15.19 15.10	Sample Depth:	0.5 - 1 ft

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	JYM			% Moisture:	
Analyst:	JYM	Date Prep:	07.17.19 11.48	Basis:	Wet Weight
Seq Number:	3095680			SUB:	T104704215-19-29

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**1950**	100	3.55	mg/kg	07.18.19 05.43		10

Analytical Method:	TPH By SW8015 Mod			Prep Method:	TX1005P
Tech:	ISU			% Moisture:	
Analyst:	ISU	Date Prep:	07.19.19 17.23	Basis:	Wet Weight
Seq Number:	3096069			SUB:	T104704215-19-29

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<9.95	49.8	9.95	mg/kg	07.20.19 01.26	U	1
Diesel Range Organics (DRO)	C10C28DRO	**152**	49.8	9.95	mg/kg	07.20.19 01.26		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**54.3**	49.8	9.95	mg/kg	07.20.19 01.26		1
Total TPH	PHC635	**206**	49.8	9.95	mg/kg	07.20.19 01.26		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	98	%	70-135	07.20.19 01.26	
o-Terphenyl	84-15-1	110	%	70-135	07.20.19 01.26	

Certificate of Analytical Results 630985

Terracon-Lubbock, Lubbock, TX

Eddy State 2 SWD

Sample Id:	**HA-5 (0.5-1)**	Matrix:	Soil	Date Received:	07.16.19 08.15
Lab Sample Id:	630985-011	Date Collected:	07.15.19 15.10	Sample Depth:	0.5 - 1 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	MIT			% Moisture:	
Analyst:	MIT	Date Prep:	07.16.19 11.20	Basis:	Wet Weight
Seq Number:	3095559				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00900	0.0199	0.00900	mg/kg	07.17.19 08.27	U	1
Toluene	108-88-3	<0.00466	0.0199	0.00466	mg/kg	07.17.19 08.27	U	1
Ethylbenzene	100-41-4	<0.00614	0.0199	0.00614	mg/kg	07.17.19 08.27	U	1
m,p-Xylenes	179601-23-1	<0.00679	0.0398	0.00679	mg/kg	07.17.19 08.27	U	1
o-Xylene	95-47-6	<0.00679	0.0199	0.00679	mg/kg	07.17.19 08.27	U	1
Total Xylenes	1330-20-7	<0.00679	0.0199	0.00679	mg/kg	07.17.19 08.27	U	1
Total BTEX		<0.00466	0.0199	0.00466	mg/kg	07.17.19 08.27	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	101	%	68-120	07.17.19 08.27	
a,a,a-Trifluorotoluene	98-08-8	110	%	71-121	07.17.19 08.27	

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 630985

Terracon-Lubbock

Eddy State 2 SWD

Analytical Method: **Chloride by EPA 300** Prep Method: SW9056P
Seq Number: 3095680 Matrix: Solid Date Prep: 07.17.19
MB Sample Id: 7682169-1-BLK LCS Sample Id: 7682169-1-BKS LCSD Sample Id: 7682169-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<0.354	100	106	106	106	106	80-120	0	20	mg/kg	07.18.19 01:06	

Analytical Method: **Chloride by EPA 300** Prep Method: SW9056P
Seq Number: 3095680 Matrix: Soil Date Prep: 07.17.19
Parent Sample Id: 631099-010 MS Sample Id: 631099-010 S MSD Sample Id: 631099-010 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	18.9	99.8	121	102	120	102	80-120	1	20	mg/kg	07.18.19 01:54	

Analytical Method: **Chloride by EPA 300** Prep Method: SW9056P
Seq Number: 3095680 Matrix: Soil Date Prep: 07.17.19
Parent Sample Id: 631099-011 MS Sample Id: 631099-011 S MSD Sample Id: 631099-011 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	23.9	99.6	127	104	127	103	80-120	0	20	mg/kg	07.18.19 03:19	

Analytical Method: **TPH By SW8015 Mod** Prep Method: TX1005P
Seq Number: 3096069 Matrix: Solid Date Prep: 07.19.19
MB Sample Id: 7682400-1-BLK LCS Sample Id: 7682400-1-BKS LCSD Sample Id: 7682400-1-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)	<10.0	1000	1060	106	1050	105	70-135	1	35	mg/kg	07.20.19 01:26	
Diesel Range Organics (DRO)	<10.0	1000	1070	107	1050	105	70-135	2	35	mg/kg	07.20.19 01:26	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	118		129		127		70-135	%	07.20.19 01:26
o-Terphenyl	132		128		125		70-135	%	07.20.19 01:26

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 630985

Terracon-Lubbock

Eddy State 2 SWD

Analytical Method: **TPH By SW8015 Mod** Prep Method: TX1005P
Seq Number: 3096069 Matrix: Soil Date Prep: 07.19.19
Parent Sample Id: 630985-001 MS Sample Id: 630985-001 S MSD Sample Id: 630985-001 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)	<9.96	996	944	95	1040	104	70-135	10	35	mg/kg	07.20.19 02:03	
Diesel Range Organics (DRO)	80.2	996	905	83	995	92	70-135	9	35	mg/kg	07.20.19 02:03	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	105		113		70-135	%	07.20.19 02:03
o-Terphenyl	108		105		70-135	%	07.20.19 02:03

Analytical Method: **BTEX by EPA 8021B** Prep Method: SW5030B
Seq Number: 3095559 Matrix: Solid Date Prep: 07.16.19
MB Sample Id: 7682157-1-BLK LCS Sample Id: 7682157-1-BKS LCSD Sample Id: 7682157-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00904	2.00	2.02	101	1.84	92	55-120	9	20	mg/kg	07.16.19 23:36	
Toluene	<0.00468	2.00	1.95	98	1.81	91	77-120	7	20	mg/kg	07.16.19 23:36	
Ethylbenzene	<0.00616	2.00	2.10	105	1.99	100	77-120	5	20	mg/kg	07.16.19 23:36	
m,p-Xylenes	<0.00682	4.00	4.17	104	3.95	99	78-120	5	20	mg/kg	07.16.19 23:36	
o-Xylene	<0.00682	2.00	2.10	105	2.00	100	78-120	5	20	mg/kg	07.16.19 23:36	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	98		101		95		68-120	%	07.16.19 23:36
a,a,a-Trifluorotoluene	102		107		103		71-121	%	07.16.19 23:36

Analytical Method: **BTEX by EPA 8021B** Prep Method: SW5030B
Seq Number: 3095559 Matrix: Soil Date Prep: 07.16.19
Parent Sample Id: 630985-001 MS Sample Id: 630985-001 S MSD Sample Id: 630985-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00890	1.97	1.78	90	1.82	93	54-120	2	25	mg/kg	07.17.19 02:01	
Toluene	<0.00461	1.97	1.76	89	1.79	91	57-120	2	25	mg/kg	07.17.19 02:01	
Ethylbenzene	<0.00606	1.97	1.85	94	1.88	96	58-131	2	25	mg/kg	07.17.19 02:01	
m,p-Xylenes	<0.00671	3.94	3.65	93	3.70	94	62-124	1	25	mg/kg	07.17.19 02:01	
o-Xylene	<0.00671	1.97	1.80	91	1.84	94	62-124	2	25	mg/kg	07.17.19 02:01	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	101		96		68-120	%	07.17.19 02:01
a,a,a-Trifluorotoluene	112		114		71-121	%	07.17.19 02:01

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

630985

630985

CHAIN OF CUSTODY RECORD

Terracon

Laboratory: Xenco
Address: 6701 Aberdeen
Lubbock, Texas 79424

Office Location: Lubbock
Phone:
Project Manager: John Fergerson
Contact:
Sampler's Name: Joseph Guesnier
SRS #:
Sampler's Signature

ANALYSIS REQUESTED

LAB USE ONLY
DUE DATE:
TEMP OF COOLER WHEN RECEIVED (°C): K3 1.0/1.2

Page ____ of ____

Project Number: AR197243
Project Name: Eddy State 2 SWD

Matrix	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	Start Depth	End Depth	No. Type of Containers: 2 oz Glass	4 oz Glass	5035 kit	40 ml VOA	Chloride (EPA Method 300)	TPH Extended 8015	BTEX (EPA Method 8021B)	Hold				Lab Sample ID
S	7/15/2019	14:05		X	HA-1 (0-0.5)R	0'	0.5'	X				X	X	X					1
S	7/15/2019	14:20		X	HA-2 (0-0.5)	0'	0.5'	X				X	X	X					2
S	7/15/2019	14:25		X	HA-2 (0.5-1)	0.5'	1'	X				X	X	X					3
S	7/15/2019	14:30		X	HA-2 (1.5-2)R	1.5'	2'	X				X			X				4
S	7/15/2019	14:35		X	HA-3 (0-0.5)	0'	0.5'	X				X	X	X					5
S	7/15/2019	14:40		X	HA-3 (0.5-1)R	0.5'	1'	X				X	X	X					6
S	7/15/2019	14:50		X	HA-4 (0-0.5)	0'	0.5'	X				X	X	X					7
S	7/15/2019	14:55		X	HA-4 (0.5-1)	0.5'	1'	X				X	X	X					8
S	7/15/2019	15:00		X	HA-4 (1.5-2)	1.5'	2'	X				X			X				9
S	7/15/2019	15:05		X	HA-5 (0-0.5)	0'	0.5'	X				X	X	X					10
S	7/15/2019	15:10		X	HA-5 (0.5-1)	0.5'	1'	X				X	X	X					11

TURNAROUND TIME ☐ Normal ☐ 48-Hour Rush ☐ 24-Hour Rush

TRRP Laboratory Review Checklist ☐ Yes ☐ No

Relinquished by (Signature)	Date	Time	Received by (Signature)	Date	Time
	7/16/19	8:15		7/16/19	8:15
Relinquished by (Signature)	Date:	Time:	Received by (Signature)	Date:	Time:
Relinquished by (Signature)	Date:	Time:	Received by (Signature)	Date:	Time:
Relinquished by (Signature)	Date:	Time:	Received by (Signature)	Date:	Time:

NOTES: Client: Solaris

e-mail results to:

john.fergerson@terracon.com
kristina.kohl@terracon.com
jrguesnier@terracon.com

Matrix: WW-Wastewater; W - Water; S - Soil; L - Liquid; A - Air Bag; C - Charcoal tube; SL - Sludge
Container: VOA - 40 ml vial; A/G - Amber Glass 1L; 250 ml = Glass wide mouth; P/O - Plastic or other _____

Inter-Office Shipment

IOS Number : 43478

Date/Time:	07.16.2019 10:32	Created by:	Brenda Ward	Please send report to:	Jessica Kramer
Lab# From:	**Lubbock**	Delivery Priority:		Address:	6701 Aberdeen, Suite 9 Lubbock, TX 79424
Lab# To:	**Houston**	Air Bill No.:	775757788128	E-Mail:	jessica.kramer@xenco.com

Sample Id	Matrix	Client Sample Id	Sample Collection	Method	Method Name	Lab Due	HT Due	PM	Analytes	Sign
630985-001	S	HA-1 (0-0.5)R	07.15.2019 14:05	SW8015MOD_NM	TPH By SW8015 Mod	07.22.2019	07.29.2019	JKR	PHCC10C28 PHCC28C3	
630985-001	S	HA-1 (0-0.5)R	07.15.2019 14:05	E300_CL	Chloride by EPA 300	07.22.2019	01.11.2020	JKR	CL	
630985-002	S	HA-2 (0-0.5)	07.15.2019 14:20	E300_CL	Chloride by EPA 300	07.22.2019	01.11.2020	JKR	CL	
630985-002	S	HA-2 (0-0.5)	07.15.2019 14:20	SW8015MOD_NM	TPH By SW8015 Mod	07.22.2019	07.29.2019	JKR	PHCC10C28 PHCC28C3	
630985-003	S	HA-2 (0.5-1)	07.15.2019 14:25	E300_CL	Chloride by EPA 300	07.22.2019	01.11.2020	JKR	CL	
630985-003	S	HA-2 (0.5-1)	07.15.2019 14:25	SW8015MOD_NM	TPH By SW8015 Mod	07.22.2019	07.29.2019	JKR	PHCC10C28 PHCC28C3	
630985-004	S	HA-2 (1.5)-2R	07.15.2019 14:30	E300_CL	Chloride by EPA 300	HOLD	01.11.2020	JKR	CL	
630985-005	S	HA-3 (0-0.5)	07.15.2019 14:35	E300_CL	Chloride by EPA 300	07.22.2019	01.11.2020	JKR	CL	
630985-005	S	HA-3 (0-0.5)	07.15.2019 14:35	SW8015MOD_NM	TPH By SW8015 Mod	07.22.2019	07.29.2019	JKR	PHCC10C28 PHCC28C3	
630985-006	S	HA-3 (0.5-1)R	07.15.2019 14:40	E300_CL	Chloride by EPA 300	07.22.2019	01.11.2020	JKR	CL	
630985-006	S	HA-3 (0.5-1)R	07.15.2019 14:40	SW8015MOD_NM	TPH By SW8015 Mod	07.22.2019	07.29.2019	JKR	PHCC10C28 PHCC28C3	
630985-007	S	HA-4 (0-0.5)	07.15.2019 14:50	SW8015MOD_NM	TPH By SW8015 Mod	07.22.2019	07.29.2019	JKR	PHCC10C28 PHCC28C3	
630985-007	S	HA-4 (0-0.5)	07.15.2019 14:50	E300_CL	Chloride by EPA 300	07.22.2019	01.11.2020	JKR	CL	
630985-008	S	HA-4 (0.5-1)	07.15.2019 14:55	SW8015MOD_NM	TPH By SW8015 Mod	07.22.2019	07.29.2019	JKR	PHCC10C28 PHCC28C3	
630985-008	S	HA-4 (0.5-1)	07.15.2019 14:55	E300_CL	Chloride by EPA 300	07.22.2019	01.11.2020	JKR	CL	
630985-009	S	HA-4 (1.5-2)	07.15.2019 15:00	E300_CL	Chloride by EPA 300	HOLD	01.11.2020	JKR	CL	
630985-010	S	HA-5 (0-0.5)	07.15.2019 15:05	E300_CL	Chloride by EPA 300	07.22.2019	01.11.2020	JKR	CL	
630985-010	S	HA-5 (0-0.5)	07.15.2019 15:05	SW8015MOD_NM	TPH By SW8015 Mod	07.22.2019	07.29.2019	JKR	PHCC10C28 PHCC28C3	
630985-011	S	HA-5 (0.5-1)	07.15.2019 15:10	SW8015MOD_NM	TPH By SW8015 Mod	07.22.2019	07.29.2019	JKR	PHCC10C28 PHCC28C3	
630985-011	S	HA-5 (0.5-1)	07.15.2019 15:10	E300_CL	Chloride by EPA 300	07.22.2019	01.11.2020	JKR	CL	

Inter-Office Shipment

IOS Number : 43478

Date/Time:	07.16.2019 10:32	Created by:	Brenda Ward	Please send report to:	Jessica Kramer
Lab# From:	**Lubbock**	Delivery Priority:		Address:	6701 Aberdeen, Suite 9 Lubbock, TX 79424
Lab# To:	**Houston**	Air Bill No.:	775757788128	E-Mail:	jessica.kramer@xenco.com

Inter Office Shipment or Sample Comments:

Relinquished By: Brenda Ward

Brenda Ward

Date Relinquished: 07.16.2019

Received By:

Ashly Kowalski

Date Received: 07.17.2019 09:45

Cooler Temperature: 1.1

XENCO Laboratories

Inter Office Report- Sample Receipt Checklist

Sent To: Houston

IOS #: 43478

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient
Temperature Measuring device used : HOU-068

Sent By: Brenda Ward **Date Sent:** 07.16.2019 10.32 AM

Received By: Ashly Kowalski **Date Received:** 07.17.2019 09.45 AM

Sample Receipt Checklist		Comments
#1 *Temperature of cooler(s)?	1.1	
#2 *Shipping container in good condition?	**Yes**	
#3 *Samples received with appropriate temperature?	**Yes**	
#4 *Custody Seals intact on shipping container/ cooler?	**N/A**	
#5 *Custody Seals Signed and dated for Containers/coolers	**N/A**	
#6 *IOS present?	**Yes**	
#7 Any missing/extra samples?	**No**	
#8 IOS agrees with sample label(s)/matrix?	**Yes**	
#9 Sample matrix/ properties agree with IOS?	**Yes**	
#10 Samples in proper container/ bottle?	**Yes**	
#11 Samples properly preserved?	**Yes**	
#12 Sample container(s) intact?	**Yes**	
#13 Sufficient sample amount for indicated test(s)?	**Yes**	
#14 All samples received within hold time?	**Yes**	

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

NonConformance:

Corrective Action Taken:

Nonconformance Documentation

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

Checklist reviewed by: _____ Date: 07.17.2019

Ashly Kowalski

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: Terracon-Lubbock

Date/ Time Received: 07/16/2019 08:15:00 AM

Work Order #: 630985

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

Temperature Measuring device used : IR-3

Sample Receipt Checklist		Comments
#1 *Temperature of cooler(s)?	1.2	
#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)?	**Yes**	All test but BTEX sent to Stafford
#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: Brenda Ward Date: 07/16/2019
Brenda Ward

Checklist reviewed by: Kelsey Brooks Date: 07/18/2019
Kelsey Brooks

APPENDIX D – TERRACON STANDARD OF CARE, LIMITATION, AND RELIANCE

Standard of Care

Terracon's services were performed in a manner consistent with generally accepted practices of the profession undertaken in similar studies in the same geographical area during the same time. Terracon makes no warranties, either express or implied, regarding the findings, conclusions, or recommendations. Please note that Terracon does not warrant the work of laboratories, regulatory agencies, or other third parties supplying information used in the preparation of the report. These services were performed in accordance with the scope of work agreed with you, Solaris Water Midstream, as reflected in our proposal (PA4197040).

Additional Scope Limitations

Development of this RAP is based upon information provided by the Client and Terracon's remediation and construction services line. Such information is subject to change over time. Certain indicators of the presence of hazardous substances, petroleum products, or other constituents may have been latent, inaccessible, unobservable, nondetectable, or not present during these services. We cannot represent that the site contains no hazardous substances, toxic materials, petroleum products, or other latent conditions beyond those by information provided by the Client. The data, interpretations, findings, and our recommendations are based solely upon reformation executed within the scope of these services.

Reliance

This report has been prepared for the exclusive use of Solaris Water Midstream, and any authorization for use or reliance by any other party (except a governmental entity having jurisdiction over the site) is prohibited without the express written authorization of Solaris Water Midstream and Terracon. Any unauthorized distribution or reuse is at Solaris Water Midstream sole risk. Notwithstanding the foregoing, reliance by authorized parties will be subject to the terms, conditions, and limitations stated in the proposal and Solaris Water Midstream and Terracon's Master Services Agreement. The limitation of liability defined in the terms and conditions is the aggregate limit of Terracon's liability to Solaris Water Midstream and all relying parties unless otherwise agreed in writing.