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	
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party: Enterprise Crude Pipeline, LLC	OGRID
Contact Name: Christopher A. Spore, P.G.	Contact Telephone: 432-214-3264
Contact email: caspore@eprod.com	Incident # **1RP-5737**
Contact mailing address: 4500 E. Highway 80, Midland, TX 79706	

Location of Release Source

Latitude 32.252646 Longitude -103.577376
(NAD 83 in decimal degrees to 5 decimal places)

Site Name: Thistle 44 Station	Site Type: Oil and Gas Storage/Transport Facility
Date Release Discovered: 9/23/19	API# *(if applicable)*

Unit Letter	Section	Township	Range	County
	4	24S	33E	Lea

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): 23	Volume Recovered (bbls): 3
☐ Produced Water	Volume Released (bbls)	Volume Recovered (bbls)
	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: Suspected corrosion at a welded 90 on a 4-inch gathering line.		

Incident ID	
District RP	
Facility ID	
Application ID	

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

Initial Response

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

☒ The source of the release has been stopped.

☒ The impacted area has been secured to protect human health and the environment.

☒ Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.

☒ All free liquids and recoverable materials have been removed and managed appropriately.

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

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

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

Printed Name: Jon E. Fields Title: Director, Field Environmental

Signature: Jon E. Fields Date: 1/23/2020

email: jefields@eprod.com Telephone: 713-381-6684

OCD Only

Received by: _____ Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	
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?	20 (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.

Page 4

State of New Mexico
Oil Conservation Division

Incident ID	
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: Jon E. Fields

Title: Director, Field Environmental

Signature: Jon E. Fields

Date: 1/23/2020

email: jefields@eprod.com

Telephone: 713-381-6684

Incident ID	
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: _____ Title: _____

Signature: _____ Date: _____

email: _____ Telephone: _____

OCD Only

Received by: _____ Date: _____

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

Signature: _____ Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Closure

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

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

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

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

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

☒ Description of remediation activities

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

Printed Name: Jon E. Fields Title: Director, Field Environmental

Signature: Jon E. Fields Date: 1/23/2020

email: jefields@eprod.com Telephone: 713-381-6684

OCD Only

Received by: _____ Date: _____

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

Closure Approved by: _____ Date: _____

Printed Name: _____ Title: _____

ENSOLUM

CLOSURE REPORT

Property:

Thistle 44 Station
S4, T24S, R33E
32.252646 N, -103.577376 W
Lea County, New Mexico
Enterprise Spill # W19-067
1 RP-5737

January 21, 2020
Ensolum Project No. 03B1226014

Prepared for:

Enterprise Crude Pipeline, LLC
4600 E. Highway 80
Midland, TX 79706

Attn: Mr. Christopher Spore, P.G.

Prepared by:

Beaux Jennings
Senior Project Manager

Liz Scaggs, PG
Principal

ENSOLUM

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ENSOLUM

CLOSURE REPORT

Thistle 44 Station
S4, T24S, R33E
32.252646 N, -103.577376 W
Lea County, New Mexico
Enterprise Spill # W19-067

Ensolum Project No. 03B1226014

1.0 INTRODUCTION

1.1 Site Description & Background

Operator:	Enterprise Crude Pipeline, LLC / Enterprise Products Operating LLC (Enterprise)
Site Name:	Thistle 44 Station
Location:	32.252646 N, -103.588376 W Section 4, Township 24 South, Range 33 East Lea County, New Mexico
Property:	Enterprise Crude Pipeline, LLC
Regulatory:	New Mexico Energy, Minerals and Natural Resources Department (EMNRD) Oil Conservation Division (OCD)

On September 23, 2019 a crude oil release occurred from a 4" gathering line at the Enterprise Thistle 44 Station. Crude surfaced and flowed approximately 460' south towards the facility fence. A hydrovac truck was dispatched to recover free liquid and to expose the pipeline for repair. On October 4, 2019 an additional release occurred on the 4" gathering line, approximately 40 feet west of the initial release. The second release area was excavated utilizing a hydrovac truck and a clamp was installed on the pipeline.

The **Topographic Map** depicting the location of the Site is included as **Figure 1**, and the **Site Vicinity Map** is included as **Figure 2** in **Appendix A**.

1.2 Project Objective

The primary objective of the closure activities was to reduce constituent of concern (COC) concentrations in the on-Site soils to below the applicable New Mexico EMNRD OCD closure criteria concentrations.

2.0 CLOSURE CRITERIA

The Site is subject to regulatory oversight by the New Mexico EMNRD OCD. In order to address activities related to exempt oil and gas releases, the New Mexico EMNRD OCD references New Mexico Administrative Code (NMAC) 19.15.29 *Releases,* which establishes investigation and abatement action requirements for sites subject to reporting and/or corrective action. Ensolum, LLC (Ensolum) utilized information provided by Enterprise, the general site characteristics, and information available from the New Mexico Office of the State Engineer (OSE) and the New Mexico EMNRD OCD Imaging database to determine the appropriate closure criteria for the Site.

Supporting documentation and figures associated with the following bullets are provided in **Appendix B**. No water wells were identified within a half-mile of the Site. However, one (1) water well was identified approximately 1.3 miles of the Site on the OSE Water Rights Reporting System (WRRS) database with a depth to water of 20 feet below ground surface (bgs).

- The Site is not located within 300 feet of a New Mexico ENMRD OCD-defined continuously flowing watercourse or significant watercourse.
- The Site is not located within 200 feet of a lakebed, sinkhole or playa lake.
- The Site is not located within 300 feet from a permanent residence, school, hospital, institution or church.
- According to the OSE WRSS database there are no private, domestic freshwater wells used by less than five (5) households for domestic or stock water purposes identified within 500 feet of the Site.
- According to the OSE WRSS database there are no freshwater wells identified within 1,000 feet of the Site as declared in the previous bullet.
- The Site is not located within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3.
- The Site is not located within 300 feet of a wetland.
- Based on information identified on the New Mexico Mining and Minerals Division's GIS, Maps and Mine Data database, the Site is not located within an area overlying a subsurface mine.
- The Site is not located within an unstable area.
- The Site is not located within a 100-year floodplain.

Based on the identified siting criteria, cleanup goals for soils remaining in place at the Site include:

Closure Criteria for Soils Impacted by a Release			
Minimum depth below any point within horizontal boundary of the release to groundwater 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 8015M	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

3.0 SOIL REMEDIATION ACTIVITIES

On September 23, 2019 a crude oil release occurred from a 4" gathering line at the Enterprise Thistle 44 Station. Crude surfaced and flowed approximately 460' south towards the facility fence. A hydrovac truck was dispatched to recover free liquid and to expose the pipeline for repair.

From September 25 through 27, 2019, Lighthouse Environmental Services, Inc. (Lighthouse) and Ensolum were on-Site to scrape areas with visible staining along the flow path and to stockpile impacted material for bioremediation and potential reuse. Confirmation soil samples (CS-1 Through CS-8) and stockpile soil samples (STP-1 through STP-3) were collected and analyzed for benzene, toluene, ethylbenzene, and xylene (BTEX) as well as total petroleum hydrocarbons (TPH) and chlorides in accordance with New Mexico Oil Conservation Division (NMOCD) Closure Criteria for Soils Impacted by a Release (NMOCD Closure Criteria). Soil samples CS-2, CS-3, CS-6 through CS-8 all exhibited results below NMOCD Closure Criteria. Samples CS-1, CS-4, and CS-5 and STP-1 through STP-3 were below NMOCD Closure Criteria for BTEX and chloride, however TPH in these samples exceed the NMOCD Closure Criteria.

On October 4, 2019 an additional release occurred on the 4" gathering line, approximately 40 feet west of the initial release. The second release area was excavated utilizing a hydrovac truck and a clamp was installed on the pipeline.

On October 7, 2019 Lighthouse and Ensolum conduced additional scraping in areas of CS-1, CS-4 and CS-5. Samples were collected (RE-CS-1, RE-CS-4 and RE-CS-5) and analyzed for TPH. Confirmation soil samples were also taken from the second release point area (CS-9 through CS-14).

From October 11 through 15, 2019 Badger Daylighting, Lighthouse, and Ensolum conducted excavating activities utilizing a hydro excavator and mini excavator. Excavated soil stockpiles were blended and sprayed with Remedy Emergency Spill Solution to enhance bioremediation. During excavation activities, a confining layer of limestone was encountered at approximately two (2) feet below ground surface (bgs). Confirmation soil samples (Re2-CS-4, RE-CS-10, RE-CS-14, CS-15 through CS-18) were collected in accordance with NMOCD Guidelines. The confirmation soil samples collected were below the laboratory sample detection limits (SDLs) and/or NMOCD Closure Criteria. Stockpile soil samples (RE-STP-1 through RE-STP-3) were also taken on October 15, 2019 and analyzed for TPH. The stockpile soil sample results exceed the NMOCD Closure Criteria for TPH.

On October 30, 2019, confirmation soil sample CS-4 and stockpile soil sample STP-1 through STP-3 were resampled. Confirmation soil sample Re3-CS-4 was below the NMOCD Closure Criteria for TPH. However, the stockpile soil sample results exceed the NMOCD Closure Criteria for TPH.

Final stockpile soil samples (RE5-STP-1, RE5-STP-2 and RE5-STP-3) results were below the NMOCD Closure Criteria for TPH.

The final impacted area measured approximately 460 feet long and 160 feet wide at the maximum extents. The maximum depth of COC impacts measured approximately two (2) feet bgs.

The lithology encountered during the completion of closure activities consisted primarily of unconsolidated silty sand and cobbles and caliche, underlain by limestone.

Figure 3 and Figure 4 are maps that identifies approximate soil sample locations and depicts the approximate dimensions of the excavation with respect to the pipeline (**Appendix A**). Photographic documentation of the field activities is included in **Appendix C**.

4.0 SOIL SAMPLING PROGRAM

Ensolum's soil sampling program included the collection of 25 confirmation soil samples (CS-1, Re-CS-1, CS-2 through CS-4, Re-CS-4, Re2-CS-4, Re3-CS-4, CS-5, Re-CS-5, CS-6 through CS-10, Re-CS-10, CS-11 through CS-14, Re-CS-14, and CS-15 through CS-18) from the impacted area and 18 stockpile soil samples (STP-1, Re-STP-1, Re2-STP-1, RE3-STP-1, RE4-STP-1, RE5-STP-1, STP-2, Re-STP-2, Re2-STP-2, RE3-STP-2, RE4-STP-2, RE5-STP-2, STP-3, Re-STP-3, Re2-STP-3, RE3-STP-3, RE4-STP-3 and RE5-STP-3) from the remediated stockpiles.

The samples were collected and placed in laboratory prepared glassware, labeled/sealed using laboratory supplied labels and custody seals, and stored on ice in a cooler. The samples were relinquished to Xenco Laboratories in Midland, Texas, under proper chain-of-custody procedures.

5.0 SOIL LABORATORY ANALYTICAL METHODS

The confirmation soil samples were analyzed for BTEX using Environmental Protection Agency (EPA) SW-846 Method 8021B, TPH gasoline range organics (GRO), diesel range organics (DRO), and motor oil/lube oil range organics (MRO) using EPA SW-846 Method 8015, and chlorides using EPA Method 300.0.

Laboratory analytical results are summarized in **Table 1** in **Appendix D**. The executed chain-of-custody forms and laboratory data sheets are provided in **Appendix E**.

6.0 DATA EVALUATION

Ensolum compared the BTEX, TPH GRO/DRO/MRO, and chloride concentrations or laboratory SDLs associated with the final confirmation soil samples (CS-1 through CS-18) and final stockpile soil samples (STP-1 through STP-3) to the NMOCD Closure Criteria.

- Laboratory analytical results indicate benzene concentrations for the final confirmation soil samples and final stockpile soil samples do not exceed the laboratory SDLs and/or the NMOCD Closure Criteria of 10 milligrams per kilogram (mg/kg).

- Laboratory analytical results indicate that total BTEX concentrations for the final confirmation soil samples and final stockpile soil samples do not exceed the laboratory SDLs and/or the NMOCD Closure Criteria of 50 mg/kg.

- Laboratory analytical results indicate combined TPH GRO/DRO/MRO concentrations for the final confirmation soil samples and final stockpile soil samples do not exceed the laboratory SDLs and/or the NMOCD Closure Criteria of 100 mg/kg.

- Laboratory analytical results indicate chloride concentrations for the final confirmation soil samples and final stockpile soil samples do not exceed the laboratory SDLs and/or the NMOCD Closure Criteria of 600 mg/kg.

Laboratory analytical results are summarized in **Table 1** in **Appendix E.**

7.0 RECLAMATION AND RE-VEGETATION

During the completion of response action activities, approximately 100 cubic yards (cy) of impacted soil was excavated and stockpiled on-Site. The soil stockpiles were blended and sprayed with Remedy Emergency Spill Solution to promote bioremediation and, subsequent to confirmation sample results, used as backfill, and then contoured to the original surrounding grade. The release area is located inside an active station; therefore, Lighthouse compacted the backfilled excavation in order to minimize dust and erosion.

8.0 FINDINGS AND RECOMMENDATION

- On September 23, 2019 a crude oil release occurred from a 4" gathering line at the Enterprise Thistle 44 Station. Crude surfaced and flowed approximately 460' south towards the facility fence. A hydrovac truck was dispatched to recover free liquid and to expose the pipeline for repair.

- On October 4, 2019 an additional release occurred on the 4" gathering line, approximately 40 feet west of the initial release. The second release area was excavated utilizing a hydrovac truck and a clamp was installed on the pipeline.

- The primary objective of the closure activities was to reduce COC concentrations in the on-Site soils to below the applicable New Mexico EMNRD OCD Closure Criteria for Soils Impacted by a Release using the New Mexico EMNRD OCD's NMAC 19.15.29 Releases as guidance.

- A total of 25 confirmation soil samples were collected from the excavation area and 18 stockpile soil samples collected from the on-site remediated stockpiles. Based on the final soil sample analytical results, the soil does not exhibit COC concentrations above the NMOCD Closure Criteria.

Based on field observations and laboratory analytical results, no additional investigation or corrective action appears warranted at this time.

9.0 STANDARDS OF CARE, LIMITATIONS, AND RELIANCE

9.1 Standard of Care

Ensolum's services were performed in accordance with standards customarily provided by a firm rendering the same or similar services in the area during the same time period. Ensolum makes no warranties, express or implied, as to the services performed hereunder. Additionally, Ensolum does not warrant the work of third parties supplying information used in the report (e.g. laboratories, regulatory agencies, or other third parties). This scope of services was performed in accordance with the scope of work agreed with the client, as detailed in our proposal.

9.2 Limitations

Findings, conclusions, and recommendations resulting from these services are based upon information derived from the on-site activities and other services performed under this scope of work and it should be noted that this 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, or not present during these services, and Ensolum cannot represent that the Site contains no hazardous substances, toxic materials, petroleum products, or other latent conditions beyond those identified during the investigation. Environmental conditions at other areas or portions of the Site may vary from those encountered at actual sample locations. Ensolum's findings, and recommendations are based solely upon data available to Ensolum at the time of these services.

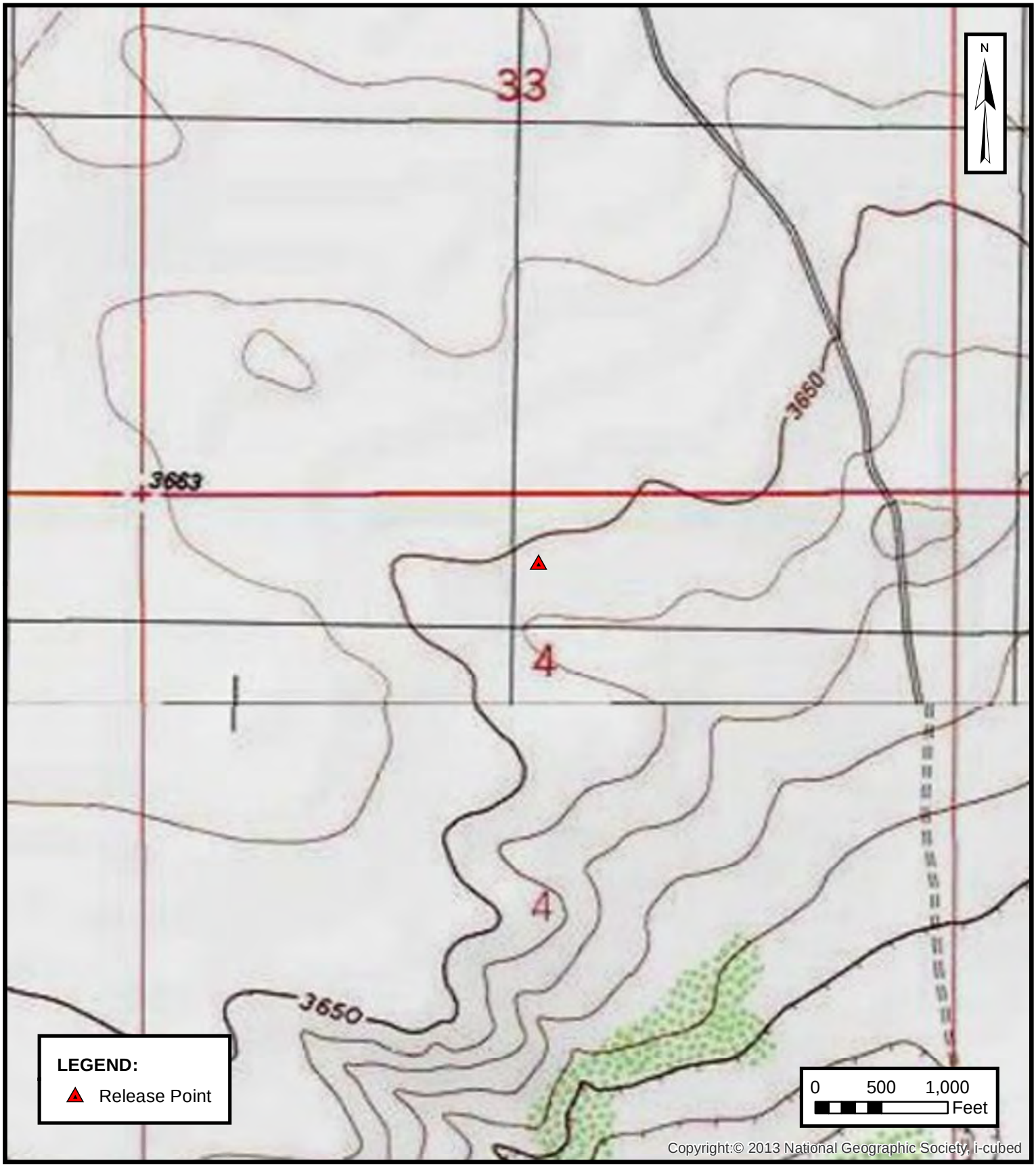
9.3 Reliance

This report has been prepared for the exclusive use of Enterprise Crude Pipeline, LLC, 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 Enterprise Crude Pipeline, LLC and Ensolum. Any unauthorized distribution or reuse is at the client's sole risk. Notwithstanding the foregoing, reliance by authorized parties will be subject to the terms, conditions and limitations stated in the Closure Report, and Ensolum's Master Services Agreement. The limitation of liability defined in the agreement is the aggregate limit of Ensolum's liability to the client.

ENSOLUM

APPENDIX A

Figures



ENSOLUM
Environmental & Hydrogeologic Consultants

TOPOGRAPHIC MAP

ENTERPRISE CRUDE PIPELINE LLC
THISTLE 44 STATION
Section 4, Township 24S, Range 33E Lea County, New Mexico
32.252646° N,103.577376° W

PROJECT NUMBER: 03B1226014

FIGURE
1

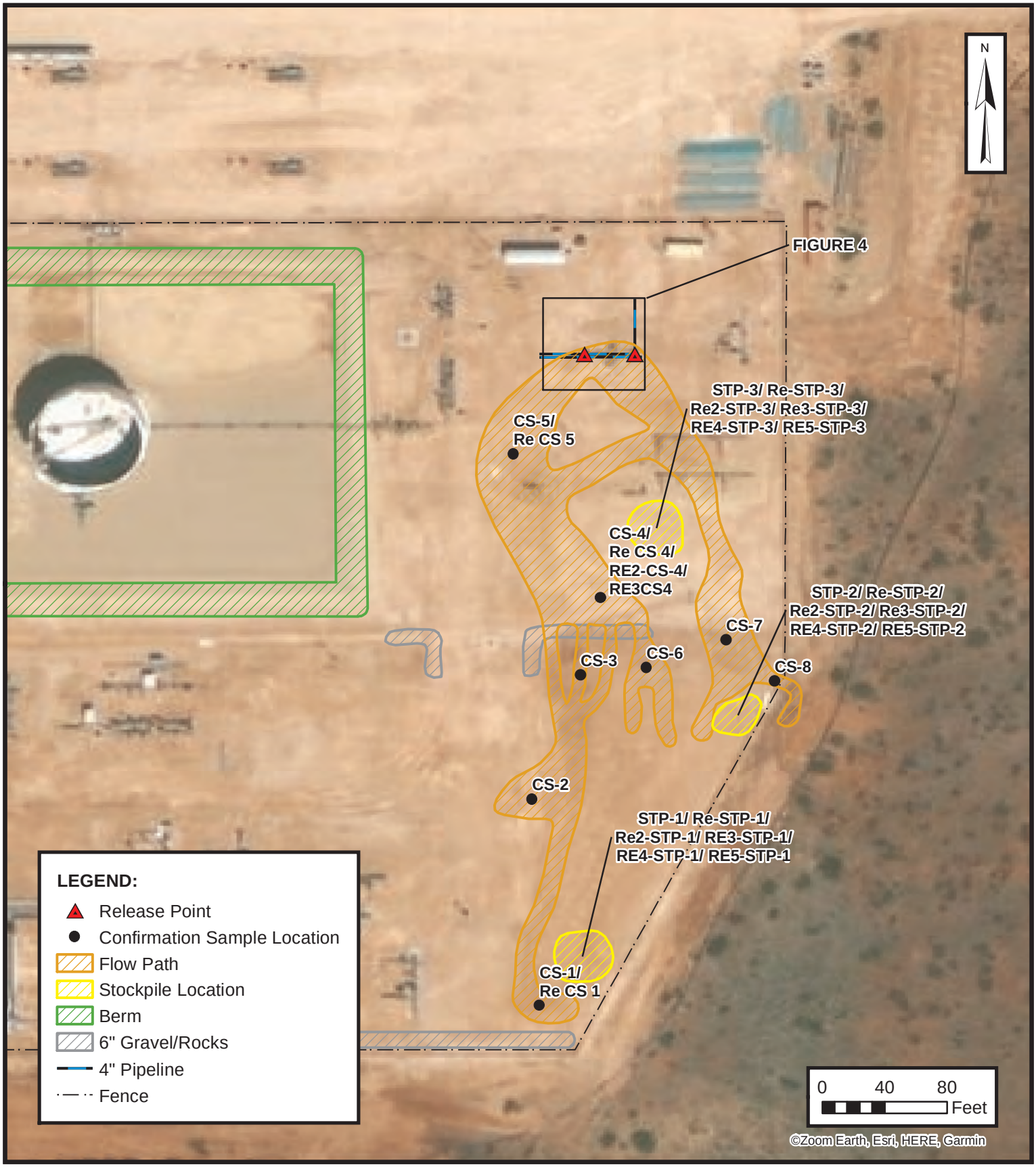
ENSOLUM
Environmental & Hydrogeologic Consultants

SITE VICINITY MAP

ENTERPRISE CRUDE PIPELINE LLC
THISTLE 44 STATION
Section 4, Township 24S, Range 33E Lea County, New Mexico
32.252646° N,103.577376° W

PROJECT NUMBER: 03B1226014

FIGURE
2



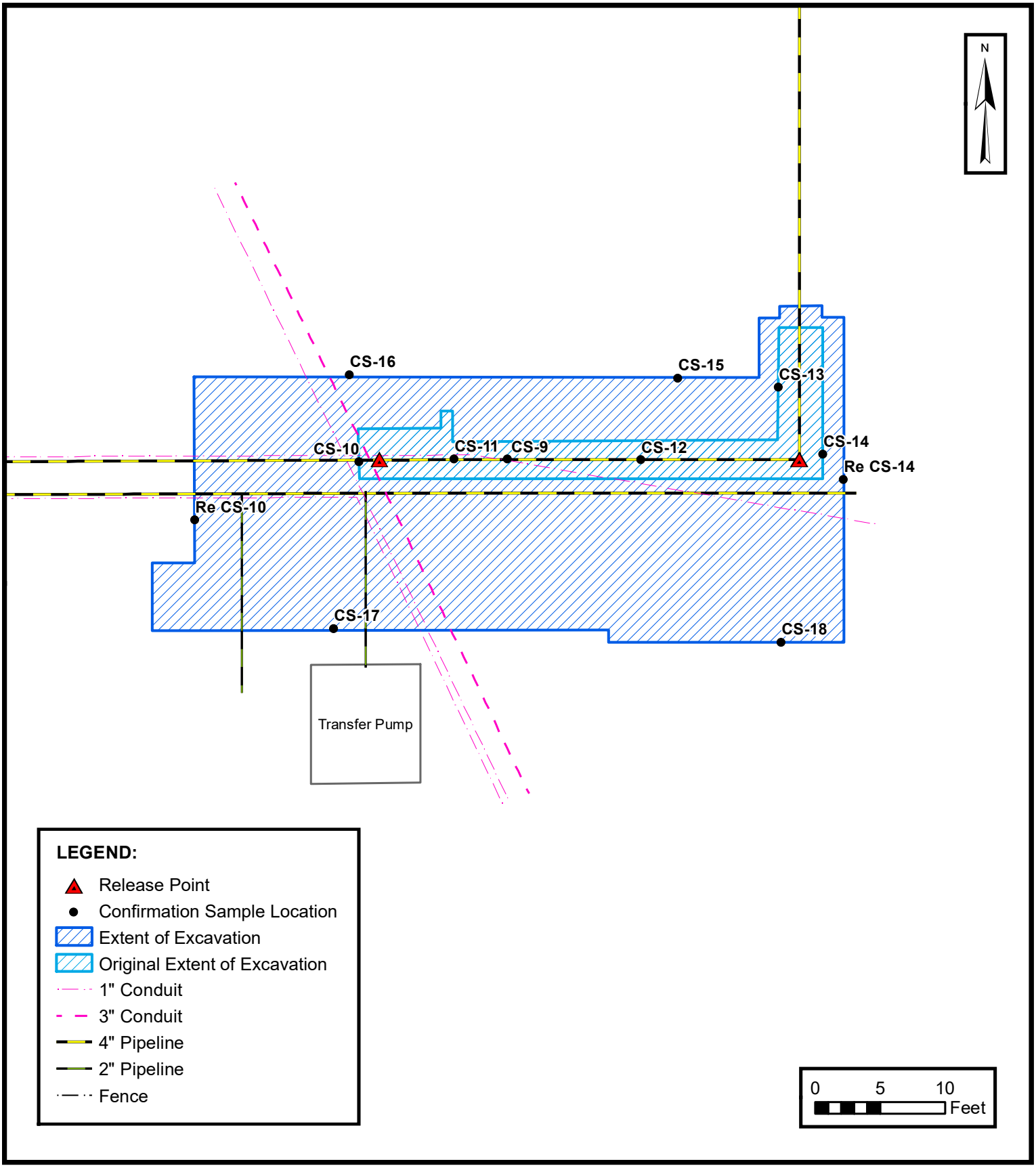
ENSOLUM
Environmental & Hydrogeologic Consultants

SITE MAP A

ENTERPRISE CRUDE PIPELINE LLC
THISTLE 44 STATION
Section 4, Township 24S, Range 33E Lea County, New Mexico
32.252646° N,103.577376° W

PROJECT NUMBER: 03B1226014

FIGURE
3



ENSOLUM
Environmental & Hydrogeologic Consultants

SITE MAP B

ENTERPRISE CRUDE PIPELINE LLC
THISTLE 44 STATION
Section 4, Township 24S, Range 33E Lea County, New Mexico
32.252646° N,103.577376° W

PROJECT NUMBER: 03B1226014

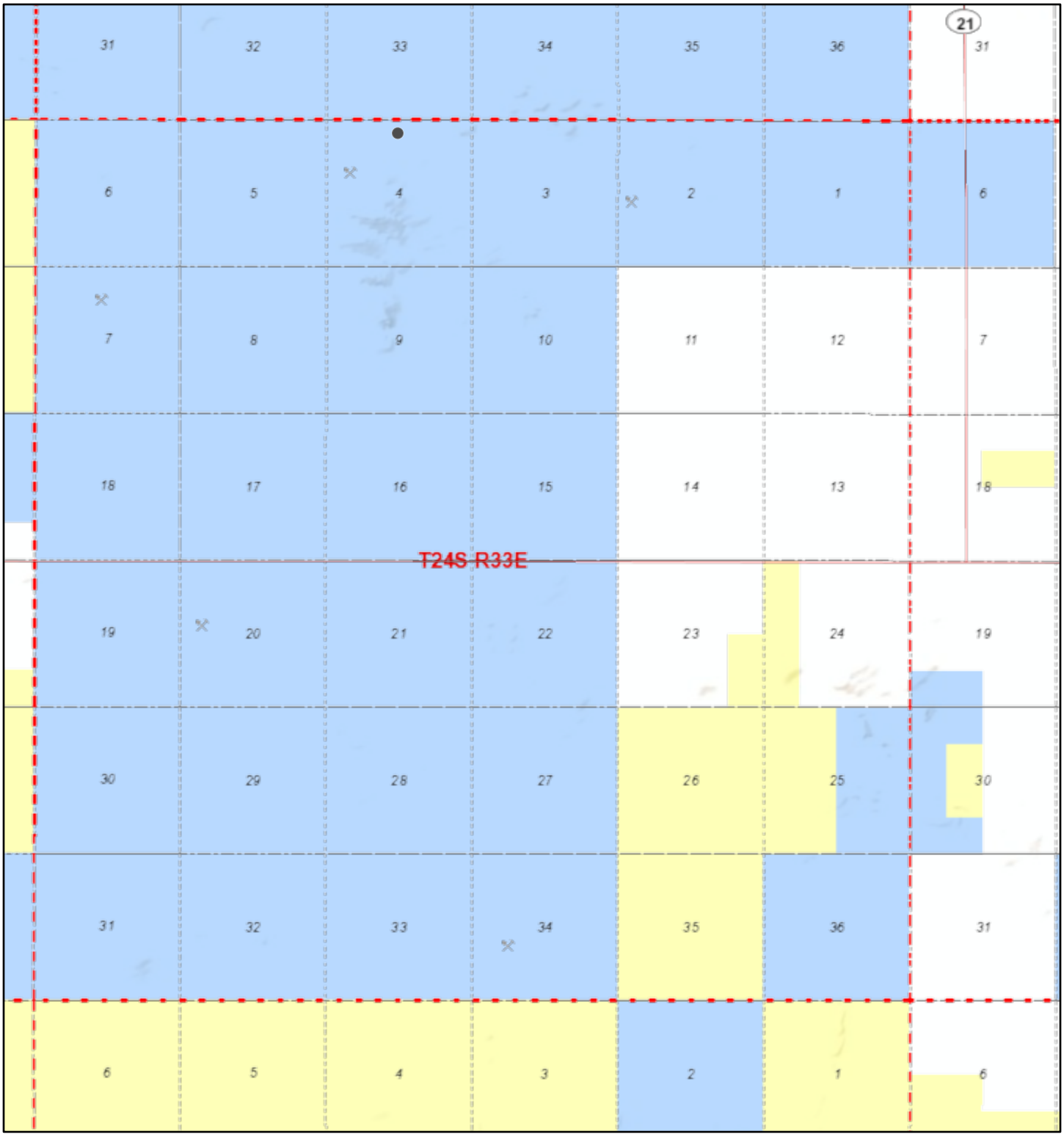
FIGURE
4

ENSOLUM

APPENDIX B

Supporting Figures & Documentation

Active Mines in New Mexico



10/22/2019, 2:15:18 PM

1:72,224

0 0.5 1 2 mi

0 0.75 1.5 3 km

Registered Mines

Aggregate, Stone etc.

U.S. Bureau of Land Management - New Mexico State Office, Sources: Esri, USGS, NOAA, Sources: Esri, Garmin, USGS, NPS

U.S. Fish and Wildlife Service
National Wetlands Inventory

Thistle 44

October 22, 2019

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

OSE PUBLIC PRINT

10/22/2019, 2:28:34 PM

OSE District Boundary

GIS WATERS PODs

- Active
- Pending

1:18,056

0 0.17 0.35 0.7 mi

0 0.28 0.55 1.1 km

New Mexico Office of the State Engineer
Water Right Summary

get image list

WR File Number: C 02308 **Subbasin:** CUB **Cross Reference:** -

Primary Purpose: STK 72-12-1 LIVESTOCK WATERING

Primary Status: DCL DECLARATION

Total Acres: 0 **Subfile:** - **Header:** -

Total Diversion: 3 **Cause/Case:** -

Owner: NGL WATER SOLUTIONS PERMIAN

Contact: R CHARLES WILKIN

Documents on File

	Trn #	Doc	File/Act	Status 1	Status 2	Transaction Desc.	From/ To	Acres	Diversion	Consumptive
get images	633154	COWNF	2018-09-17	CHG	PRC	C 02308	T	0	0	
	207095	COWNF	2001-01-03	CHG	PRC	C 02308	T	0	0	
	144622	DCL	1998-02-09	DCL	PRC	C 02308 AMENDMENT	T	0	3	
	198285	DCL	1993-04-20	DCL	PRC	C 02308	T	0	3	

Current Points of Diversion

(NAD83 UTM in meters)

POD Number	Well Tag	Source	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Other Location Desc
C 02308			1	3	1	10	24S	33E	634953	3567364*	

***An (*) after northing value indicates UTM location was derived from PLSS - see Help**

Priority Summary

Priority	Status	Acres	Diversion	Pod Number	Source
12/31/1920	DCL	0	3	C 02308	

Place of Use

Q 256	Q 64	Q 16	Q 4	Sec	Tws	Rng	Acres	Diversion	CU	Use	Priority	Status	Other Location Desc
							0	3		STK		DCL	NO PLACE OF USE GIVEN
							0	3		STK	06/30/1920	DCL	NO PLACE OF USE GIVEN

Source

Acres	Diversion	CU	Use	Priority	Source	Description
0	3		STK		GW	
0	3		STK	06/30/1920	GW	

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	C 02308	1	3	1	10	24S	33E	634953	3567364*

Driller License: **Driller Company:**

Driller Name: UNKNOWN

Drill Start Date: 01/01/1920 **Drill Finish Date:** 06/30/1920 **Plug Date:**

Log File Date: **PCW Rcv Date:** **Source:**

Pump Type: **Pipe Discharge Size:** **Estimated Yield:** 15 GPM

Casing Size: 6.63 **Depth Well:** 40 feet **Depth Water:** 20 feet

***UTM location was derived from PLSS - see Help**

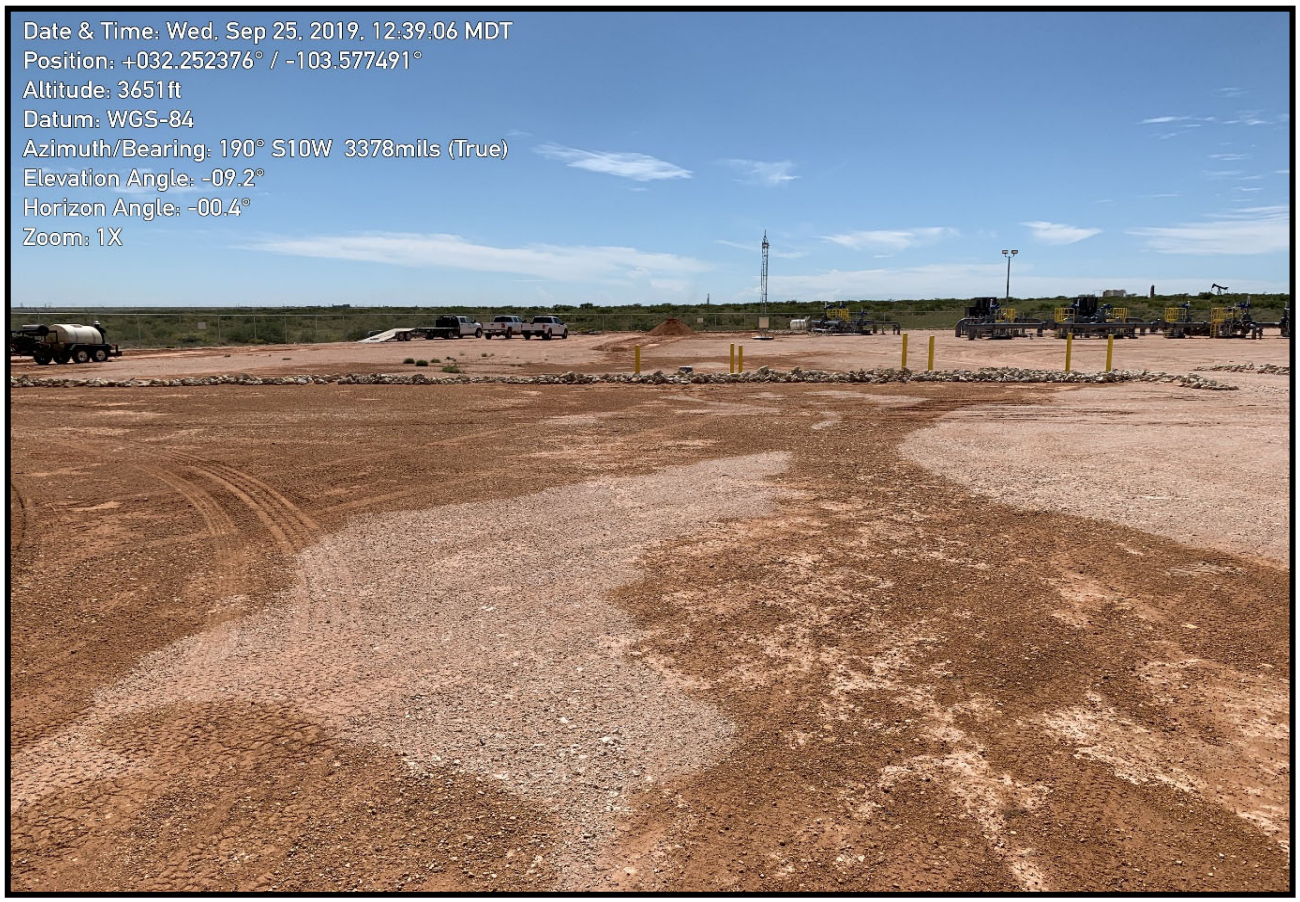
ENSOLUM

APPENDIX C

Photographic Documentation

View of release point prior to response action activities, facing west.

View of release area prior to response action activities, facing east.



View of release area prior to response action activities, facing south.

View of excavation area during response action activities, facing north.

View of excavation area during response action activities, facing northeast.

View of excavation area during response action activities, facing northeast.

ENSOLUM

APPENDIX D

Table 1 – Soil Analytical Summary

ENSOLUM

TABLE 1
SOIL SAMPLE ANALYTICAL RESULTS
Enterprise Crude Pipeline, LLC - Thistle 44 Release
Lea County, New Mexico

Ensolum Project No. 03B1226014

Sample I.D.	Sample Date	Sample Depth (feet bgs)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	Total BTEX (mg/kg)	TPH GRO (mg/kg)	TPH DRO (mg/kg)	TPH MRO (mg/kg)	Total TPH (GRO+DRO+MRO) (mg/kg)	Chloride (mg/kg)
New Mexico Oil Conservation Division Closure Criteria for Soils Impacted by a Release (≤ 50 feet)			10	NE	NE	NE	50	NE	NE	NE	100	600
Confirmation Soil Sample Analytical Results												
CS-1	9/27/2019	0.25	<0.000383	<0.000453	<0.000561	<0.000342	<0.000342	<15.0	255	20.8 J	276	34.6
Re-CS-1	10/7/2019	0.5	NS					<50.0	<50.0	<50.0	<50.0	NS
CS-2	9/27/2019	0.25	<0.000382	<0.000452	<0.000560	<0.000342	<0.000342	<14.9	48.4 J	<14.9	48.8 J	12.5
CS-3	9/27/2019	0.25	<0.000381	<0.000451	<0.000559	<0.000341	<0.000341	<15.0	58.5	<15.0	58.5	23.3
CS-4	9/27/2019	0.25	<0.000386	<0.000457	<0.000566	<0.000345	<0.000345	<15.0	132	17.4 J	149	31.7
Re-CS-4	10/7/2019	0.5	NS					<50.0	314	<50.0	314	NS
Re2-CS-4	10/15/2019	0.75	NS					34.3 J	604	62.7	701	NS
Re3-CS-4	10/30/2019	0.75	NS					23.7 J	28.9 J	<15.0	52.6	NS
CS-5	9/27/2019	0.25	<0.000383	<0.000454	<0.000563	<0.000343	<0.000343	<15.0	118	21.4 J	139	36.9
Re-CS-5	10/7/2019	0.5	NS					<49.9	60.7	<49.9	60.7	NS
CS-6	9/27/2019	0.25	<0.000383	<0.000454	<0.000563	<0.000343	<0.000343	<15.0	<15.0	<15.0	<15.0	7.53
CS-7	9/27/2019	0.25	<0.000384	<0.000455	<0.000564	<0.000344	<0.000344	<15.0	<15.0	<15.0	<15.0	7.38
CS-8	9/27/2019	0.25	<0.000385	<0.000456	<0.000565	<0.000344	<0.000344	<14.9	<14.9	<14.9	<14.9	6.65
CS-9	10/7/2019	2	8.31	112	48.0	164	332	4,910	12,000	1,350	18,300	<5.00
CS-10	10/7/2019	2	17.7	108	39.7	139	304	4,950	12,500	1,250	18,700	NS
Re-CS-10	10/15/2019	2	<0.000384	<0.000455	<0.000564	0.00184 J	0.00184 J	<15.0	<15.0	<15.0	<15.0	6.31
CS-11	10/7/2019	2	67.5	310	90.5	287	755	13,600	26,200	2,380	42,200	NS
CS-12	10/7/2019	2	6.73	46.4	22.6	73.0	149	3,500	13,400	1,310	18,200	NS
CS-13	10/7/2019	2	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201	<49.9	388	157	545	NS
CS-14	10/7/2019	2	15.1	139	59.1	187	400	6,830	13,300	1,230	21,400	28.6
Re-CS-14	10/15/2019	2	<0.000386	<0.000457	<0.000567	<0.000346	<0.000346	<15.0	<15.0	<15.0	<15.0	5.16
CS-15	10/15/2019	2	<0.000387	<0.000458	<0.000568	<0.000346	<0.000346	<14.9	<14.9	<14.9	<14.9	9.56
CS-16	10/15/2019	2	<0.000382	<0.000452	<0.000560	<0.000342	<0.000342	<15.0	<15.0	<15.0	<15.0	70.2
CS-17	10/15/2019	2	<0.000383	<0.000453	<0.000561	0.00180 J	0.00180 J	<15.0	<15.0	<15.0	<15.0	11.3
CS-18	10/15/2019	2	0.00177 J	0.00186 J	0.000696 J	0.00435	0.00868	<15.0	<15.0	<15.0	<15.0	4.52 J
Stockpile Soil Sample Analytical Results												
STP-1	9/27/2019	NA	<0.000388	0.0356	0.0131	0.150	0.199	253	2,140	303	2,700	21.7
Re-STP-1	10/15/2019	NA	NS					35.2 J	825	88.8	949	NS
Re2-STP-1	10/30/2019	NA	NS					39.2 J	1,970	182	2,190	NS
RE3-STP-1	12/13/2019	NA	NS					<49.9	453	72.8	526	NS
RE4-STP-1	1/10/2020	NA	NS					<50.0	146	<50.0	146	NS
RE5-STP-1	1/15/2020	NA	NS					<49.9	<49.9	<49.9	<49.9	NS
STP-2	9/27/2019	NA	<0.000386	0.141	0.00561	0.429	0.576	286	1,900	286	2,470	7.96
Re-STP-2	10/15/2019	NA	NS					115	1,760	192	2,070	NS
Re2-STP-2	10/30/2019	NA	NS					52.6	2,530	237	2,820	NS
RE3-STP-2	11/26/2019	NA	NS					20.6 J	2,000	306	2,330	NS
RE4-STP-2	12/13/2019	NA	NS					<49.9	210	<49.9	210	NS
RE5-STP-2	1/10/2020	NA	NS					<50.0	63.9	<50.0	63.9	NS
STP-3	9/27/2019	NA	0.0138	0.259	0.0916	0.556	0.920	780	4,820	612	6,210	42.1
Re-STP-3	10/15/2019	NA	NS					233	1,940	202	2,380	NS
Re2-STP-3	10/30/2019	NA	NS					163	4,220	464	4,850	NS
RE3-STP-3	11/26/2019	NA	NS					59.0	3,840	536	4,440	NS
RE4-STP-3	12/13/2019	NA	NS					<50.0	569	96.8	666	NS
RE5-STP-3	1/10/2020	NA	NS					<49.9	62.2	<49.9	62.2	NS

*Concentrations in **bold** and yellow exceed the New Mexico Oil Conservation Division Closure Criteria for Soils Impacted by a Release (≤ 50 feet)*

Over Ecavated and/or Re-Sampled

bgs: below ground surface

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

mg/kg: milligrams per kilogram

NA: Not Applicable

NE: Not Established

NS: Not Sampled

BTEX: Benzene, Toluene, Ethylbenzene, and Xylenes

GRO: Gasoline Range Organics

DRO: Diesel Range Organics

MRO: Motor Oil/Lube Oil Range Organics

TPH: Total PetroleumHydrocarbon

ENSOLUM

APPENDIX E

Laboratory Analytical Reports & Chain-of-Custody Documentation

Analytical Report 638410

for

Ensolum

Project Manager: Beaux Jennings

Thisrle 44

03B1226014

03-OCT-19

Collected By: Client

1211 W. Florida Ave
Midland TX 79701

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

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

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

Table of Contents

03-OCT-19

Project Manager: **Beaux Jennings**
Ensolum
2351 W Northwest Highway
Suite 1203
Dallas, TX 75220

Reference: XENCO Report No(s): **638410**
Thisrle 44
Project Address:

Beaux Jennings:

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) 638410. 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. 638410 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,

Jessica Kramer

Jessica Kramer
Project Assistant

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

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

Sample Cross Reference 638410

Ensolum, Dallas, TX

Thisrle 44

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
CS-1	S	09-27-19 12:50	.25	638410-001
CS-2	S	09-27-19 12:55	.25	638410-002
CS-3	S	09-27-19 13:10	.25	638410-003
CS-4	S	09-27-19 13:15	.25	638410-004
CS-5	S	09-27-19 13:20	.25	638410-005
CS-6	S	09-27-19 13:25	.25	638410-006
CS-7	S	09-27-19 13:30	.25	638410-007
CS-8	S	09-27-19 13:35	.25	638410-008
STP-1	S	09-27-19 14:10		638410-009
STP-2	S	09-27-19 14:15		638410-010
STP-3	S	09-27-19 14:20		638410-011

CASE NARRATIVE SUMMARY

Client Name: ***Ensolum***

Project Name: ***Thisrle 44***

Project ID: *03B1226014*
Work Order Number: *638410*

Report Date: *03-OCT-19*
Date Received: *30-SEP-19*

Jessica Kramer

Jessica Kramer
Project Assistant

Certificate of Analytical Results

638410

Ensolum, Dallas, TX

Thisrle 44

Sample Id: **CS-1** Matrix: Soil Sample Depth: .25

Lab Sample Id: 638410-001 Date Collected: 09.27.19 12.50 Date Received: 09.30.19 08.10

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Analyst: CHE % Moist: Tech: CHE

Seq Number: 3102995 Date Prep: 10.01.19 08.30

Prep seq: 7687201

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Chloride	16887-00-6	**34.6**	4.97	0.853	mg/kg	10.01.19 12:34		1

Analytical Method: TPH by SW8015 Mod Prep Method: 8015

Analyst: DVM % Moist: Tech: DVM

Seq Number: 3102970 Date Prep: 09.30.19 15.00

Prep seq: 7687153

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	50.0	15.0	mg/kg	10.01.19 10:29	UH	1
Diesel Range Organics (DRO)	C10C28DRO	**255**	50.0	15.0	mg/kg	10.01.19 10:29	H	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**20.8**	50.0	15.0	mg/kg	10.01.19 10:29	J	1
Total TPH	PHC635	**276**		15.0	mg/kg	10.01.19 10:29		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	110	70 - 135	%		
o-Terphenyl	0	70 - 135	%		**

Analytical Method: BTEX by EPA 8021B Prep Method: 5030B

Analyst: KTL % Moist: Tech: KTL

Seq Number: 3103209 Date Prep: 09.30.19 11.30

Prep seq: 7687122

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000383	0.00199	0.000383	mg/kg	10.03.19 05:49	U	1
Toluene	108-88-3	<0.000453	0.00199	0.000453	mg/kg	10.03.19 05:49	U	1
Ethylbenzene	100-41-4	<0.000561	0.00199	0.000561	mg/kg	10.03.19 05:49	UXXF	1
m,p-Xylenes	179601-23-1	<0.00101	0.00398	0.00101	mg/kg	10.03.19 05:49	U	1
o-Xylene	95-47-6	<0.000342	0.00199	0.000342	mg/kg	10.03.19 05:49	U	1
Total Xylenes	1330-20-7	<0.000342		0.000342	mg/kg	10.03.19 05:49	U	
Total BTEX		<0.000342		0.000342	mg/kg	10.03.19 05:49	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	106	70 - 130	%		
4-Bromofluorobenzene	102	70 - 130	%		

Certificate of Analytical Results

638410

Ensolum, Dallas, TX

Thisrle 44

Sample Id: **CS-2** Matrix: Soil Sample Depth: .25

Lab Sample Id: 638410-002 Date Collected: 09.27.19 12.55 Date Received: 09.30.19 08.10

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Analyst: CHE % Moist: Tech: CHE

Seq Number: 3102995 Date Prep: 10.01.19 08.30

Prep seq: 7687201

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Chloride	16887-00-6	**12.5**	5.02	0.862	mg/kg	10.01.19 12:40		1

Analytical Method: TPH by SW8015 Mod Prep Method: 8015

Analyst: DVM % Moist: Tech: DVM

Seq Number: 3102970 Date Prep: 09.30.19 15.00

Prep seq: 7687153

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	<14.9	49.8	14.9	mg/kg	10.01.19 11:27	UH	1
Diesel Range Organics (DRO)	C10C28DRO	**48.4**	49.8	14.9	mg/kg	10.01.19 11:27	JH	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<14.9	49.8	14.9	mg/kg	10.01.19 11:27	U	1
Total TPH	PHC635	**48.4**		14.9	mg/kg	10.01.19 11:27	J	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	120	70 - 135	%		
o-Terphenyl	121	70 - 135	%		

Analytical Method: BTEX by EPA 8021B Prep Method: 5030B

Analyst: KTL % Moist: Tech: KTL

Seq Number: 3103209 Date Prep: 09.30.19 11.30

Prep seq: 7687122

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000382	0.00198	0.000382	mg/kg	10.03.19 06:09	U	1
Toluene	108-88-3	<0.000452	0.00198	0.000452	mg/kg	10.03.19 06:09	U	1
Ethylbenzene	100-41-4	<0.000560	0.00198	0.000560	mg/kg	10.03.19 06:09	U	1
m,p-Xylenes	179601-23-1	<0.00101	0.00397	0.00101	mg/kg	10.03.19 06:09	U	1
o-Xylene	95-47-6	<0.000342	0.00198	0.000342	mg/kg	10.03.19 06:09	U	1
Total Xylenes	1330-20-7	<0.000342		0.000342	mg/kg	10.03.19 06:09	U	
Total BTEX		<0.000342		0.000342	mg/kg	10.03.19 06:09	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	105	70 - 130	%		
4-Bromofluorobenzene	96	70 - 130	%		

Certificate of Analytical Results

638410

Ensolum, Dallas, TX

Thisrle 44

Sample Id: **CS-3** Matrix: Soil Sample Depth: .25

Lab Sample Id: 638410-003 Date Collected: 09.27.19 13.10 Date Received: 09.30.19 08.10

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Analyst: CHE % Moist: Tech: CHE

Seq Number: 3102995 Date Prep: 10.01.19 08.30

Prep seq: 7687201

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Chloride	16887-00-6	**23.3**	4.99	0.857	mg/kg	10.01.19 12:47		1

Analytical Method: TPH by SW8015 Mod Prep Method: 8015

Analyst: DVM % Moist: Tech: DVM

Seq Number: 3102970 Date Prep: 09.30.19 15.00

Prep seq: 7687153

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	50.0	15.0	mg/kg	10.01.19 11:47	UH	1
Diesel Range Organics (DRO)	C10C28DRO	**58.5**	50.0	15.0	mg/kg	10.01.19 11:47	H	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	50.0	15.0	mg/kg	10.01.19 11:47	U	1
Total TPH	PHC635	**58.5**		15.0	mg/kg	10.01.19 11:47		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	114	70 - 135	%		
o-Terphenyl	114	70 - 135	%		

Analytical Method: BTEX by EPA 8021B Prep Method: 5030B

Analyst: KTL % Moist: Tech: KTL

Seq Number: 3103209 Date Prep: 09.30.19 11.30

Prep seq: 7687122

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000381	0.00198	0.000381	mg/kg	10.03.19 06:29	U	1
Toluene	108-88-3	<0.000451	0.00198	0.000451	mg/kg	10.03.19 06:29	U	1
Ethylbenzene	100-41-4	<0.000559	0.00198	0.000559	mg/kg	10.03.19 06:29	U	1
m,p-Xylenes	179601-23-1	<0.00100	0.00396	0.00100	mg/kg	10.03.19 06:29	U	1
o-Xylene	95-47-6	<0.000341	0.00198	0.000341	mg/kg	10.03.19 06:29	U	1
Total Xylenes	1330-20-7	<0.000341		0.000341	mg/kg	10.03.19 06:29	U	
Total BTEX		<0.000341		0.000341	mg/kg	10.03.19 06:29	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	107	70 - 130	%		
4-Bromofluorobenzene	101	70 - 130	%		

Certificate of Analytical Results

638410

Ensolum, Dallas, TX

Thisrle 44

Sample Id: **CS-4** Matrix: Soil Sample Depth: .25

Lab Sample Id: 638410-004 Date Collected: 09.27.19 13.15 Date Received: 09.30.19 08.10

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Analyst: CHE % Moist: Tech: CHE

Seq Number: 3102995 Date Prep: 10.01.19 08.30

Prep seq: 7687201

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Chloride	16887-00-6	**31.7**	5.05	0.867	mg/kg	10.01.19 12:53		1

Analytical Method: TPH by SW8015 Mod Prep Method: 8015

Analyst: DVM % Moist: Tech: DVM

Seq Number: 3102970 Date Prep: 09.30.19 15.00

Prep seq: 7687153

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	50.0	15.0	mg/kg	10.01.19 12:06	UH	1
Diesel Range Organics (DRO)	C10C28DRO	**132**	50.0	15.0	mg/kg	10.01.19 12:06	H	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**17.4**	50.0	15.0	mg/kg	10.01.19 12:06	J	1
Total TPH	PHC635	**149**		15.0	mg/kg	10.01.19 12:06		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	131	70 - 135	%		
o-Terphenyl	131	70 - 135	%		

Analytical Method: BTEX by EPA 8021B Prep Method: 5030B

Analyst: KTL % Moist: Tech: KTL

Seq Number: 3103209 Date Prep: 09.30.19 11.30

Prep seq: 7687122

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000386	0.00200	0.000386	mg/kg	10.03.19 06:49	U	1
Toluene	108-88-3	<0.000457	0.00200	0.000457	mg/kg	10.03.19 06:49	U	1
Ethylbenzene	100-41-4	<0.000566	0.00200	0.000566	mg/kg	10.03.19 06:49	U	1
m,p-Xylenes	179601-23-1	<0.00102	0.00401	0.00102	mg/kg	10.03.19 06:49	U	1
o-Xylene	95-47-6	<0.000345	0.00200	0.000345	mg/kg	10.03.19 06:49	U	1
Total Xylenes	1330-20-7	<0.000345		0.000345	mg/kg	10.03.19 06:49	U	
Total BTEX		<0.000345		0.000345	mg/kg	10.03.19 06:49	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	106	70 - 130	%		
4-Bromofluorobenzene	97	70 - 130	%		

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Ensolum, Dallas, TX

Thisrle 44

Sample Id: **CS-5** Matrix: Soil Sample Depth: .25

Lab Sample Id: 638410-005 Date Collected: 09.27.19 13.20 Date Received: 09.30.19 08.10

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Analyst: CHE % Moist: Tech: CHE

Seq Number: 3102995 Date Prep: 10.01.19 08.30

Prep seq: 7687201

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Chloride	16887-00-6	**36.9**	5.00	0.858	mg/kg	10.01.19 13:00		1

Analytical Method: TPH by SW8015 Mod Prep Method: 8015

Analyst: DVM % Moist: Tech: DVM

Seq Number: 3102970 Date Prep: 09.30.19 15.00

Prep seq: 7687153

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	49.9	15.0	mg/kg	10.01.19 12:26	UH	1
Diesel Range Organics (DRO)	C10C28DRO	**118**	49.9	15.0	mg/kg	10.01.19 12:26	H	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**21.4**	49.9	15.0	mg/kg	10.01.19 12:26	J	1
Total TPH	PHC635	**139**		15.0	mg/kg	10.01.19 12:26		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	115	70 - 135	%		
o-Terphenyl	114	70 - 135	%		

Analytical Method: BTEX by EPA 8021B Prep Method: 5030B

Analyst: KTL % Moist: Tech: KTL

Seq Number: 3103209 Date Prep: 09.30.19 11.30

Prep seq: 7687122

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000383	0.00199	0.000383	mg/kg	10.03.19 07:09	U	1
Toluene	108-88-3	<0.000454	0.00199	0.000454	mg/kg	10.03.19 07:09	U	1
Ethylbenzene	100-41-4	<0.000563	0.00199	0.000563	mg/kg	10.03.19 07:09	U	1
m,p-Xylenes	179601-23-1	<0.00101	0.00398	0.00101	mg/kg	10.03.19 07:09	U	1
o-Xylene	95-47-6	<0.000343	0.00199	0.000343	mg/kg	10.03.19 07:09	U	1
Total Xylenes	1330-20-7	<0.000343		0.000343	mg/kg	10.03.19 07:09	U	
Total BTEX		<0.000343		0.000343	mg/kg	10.03.19 07:09	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	106	70 - 130	%		
4-Bromofluorobenzene	102	70 - 130	%		

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Ensolum, Dallas, TX

Thisrle 44

Sample Id: **CS-6** Matrix: Soil Sample Depth: .25

Lab Sample Id: 638410-006 Date Collected: 09.27.19 13.25 Date Received: 09.30.19 08.10

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Analyst: CHE % Moist: Tech: CHE

Seq Number: 3102995 Date Prep: 10.01.19 08.30

Prep seq: 7687201

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Chloride	16887-00-6	**7.53**	5.04	0.865	mg/kg	10.01.19 13:19		1

Analytical Method: TPH by SW8015 Mod Prep Method: 8015

Analyst: DVM % Moist: Tech: DVM

Seq Number: 3102970 Date Prep: 09.30.19 15.00

Prep seq: 7687153

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	49.9	15.0	mg/kg	10.01.19 12:45	UH	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	49.9	15.0	mg/kg	10.01.19 12:45	UH	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	49.9	15.0	mg/kg	10.01.19 12:45	U	1
Total TPH	PHC635	<15.0		15.0	mg/kg	10.01.19 12:45	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	124	70 - 135	%		
o-Terphenyl	123	70 - 135	%		

Analytical Method: BTEX by EPA 8021B Prep Method: 5030B

Analyst: KTL % Moist: Tech: KTL

Seq Number: 3103209 Date Prep: 09.30.19 11.30

Prep seq: 7687122

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000383	0.00199	0.000383	mg/kg	10.03.19 07:30	U	1
Toluene	108-88-3	<0.000454	0.00199	0.000454	mg/kg	10.03.19 07:30	U	1
Ethylbenzene	100-41-4	<0.000563	0.00199	0.000563	mg/kg	10.03.19 07:30	U	1
m,p-Xylenes	179601-23-1	<0.00101	0.00398	0.00101	mg/kg	10.03.19 07:30	U	1
o-Xylene	95-47-6	<0.000343	0.00199	0.000343	mg/kg	10.03.19 07:30	U	1
Total Xylenes	1330-20-7	<0.000343		0.000343	mg/kg	10.03.19 07:30	U	
Total BTEX		<0.000343		0.000343	mg/kg	10.03.19 07:30	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	87	70 - 130	%		
4-Bromofluorobenzene	44	70 - 130	%		**

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Thisrle 44

Sample Id: **CS-7** Matrix: Soil Sample Depth: .25

Lab Sample Id: 638410-007 Date Collected: 09.27.19 13.30 Date Received: 09.30.19 08.10

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Analyst: CHE % Moist: Tech: CHE

Seq Number: 3102995 Date Prep: 10.01.19 08.30

Prep seq: 7687201

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Chloride	16887-00-6	**7.38**	4.97	0.853	mg/kg	10.01.19 13:26		1

Analytical Method: TPH by SW8015 Mod Prep Method: 8015

Analyst: DVM % Moist: Tech: DVM

Seq Number: 3102970 Date Prep: 09.30.19 15.00

Prep seq: 7687153

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	50.0	15.0	mg/kg	10.01.19 13:05	UH	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	50.0	15.0	mg/kg	10.01.19 13:05	UH	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	50.0	15.0	mg/kg	10.01.19 13:05	U	1
Total TPH	PHC635	<15.0		15.0	mg/kg	10.01.19 13:05	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	115	70 - 135	%		
o-Terphenyl	117	70 - 135	%		

Analytical Method: BTEX by EPA 8021B Prep Method: 5030B

Analyst: KTL % Moist: Tech: KTL

Seq Number: 3103209 Date Prep: 09.30.19 11.30

Prep seq: 7687122

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000384	0.00200	0.000384	mg/kg	10.03.19 07:50	U	1
Toluene	108-88-3	<0.000455	0.00200	0.000455	mg/kg	10.03.19 07:50	U	1
Ethylbenzene	100-41-4	<0.000564	0.00200	0.000564	mg/kg	10.03.19 07:50	U	1
m,p-Xylenes	179601-23-1	<0.00101	0.00399	0.00101	mg/kg	10.03.19 07:50	U	1
o-Xylene	95-47-6	<0.000344	0.00200	0.000344	mg/kg	10.03.19 07:50	U	1
Total Xylenes	1330-20-7	<0.000344		0.000344	mg/kg	10.03.19 07:50	U	
Total BTEX		<0.000344		0.000344	mg/kg	10.03.19 07:50	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	103	70 - 130	%		
4-Bromofluorobenzene	100	70 - 130	%		

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Thisrle 44

Sample Id: **CS-8** Matrix: Soil Sample Depth: .25

Lab Sample Id: 638410-008 Date Collected: 09.27.19 13.35 Date Received: 09.30.19 08.10

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Analyst: CHE % Moist: Tech: CHE

Seq Number: 3102995 Date Prep: 10.01.19 08.30

Prep seq: 7687201

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Chloride	16887-00-6	**6.65**	5.00	0.858	mg/kg	10.01.19 13:45		1

Analytical Method: TPH by SW8015 Mod Prep Method: 8015

Analyst: DVM % Moist: Tech: DVM

Seq Number: 3102970 Date Prep: 09.30.19 15.00

Prep seq: 7687153

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	<14.9	49.8	14.9	mg/kg	10.01.19 13:25	UH	1
Diesel Range Organics (DRO)	C10C28DRO	<14.9	49.8	14.9	mg/kg	10.01.19 13:25	UH	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<14.9	49.8	14.9	mg/kg	10.01.19 13:25	U	1
Total TPH	PHC635	<14.9		14.9	mg/kg	10.01.19 13:25	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	112	70 - 135	%		
o-Terphenyl	112	70 - 135	%		

Analytical Method: BTEX by EPA 8021B Prep Method: 5030B

Analyst: KTL % Moist: Tech: KTL

Seq Number: 3103209 Date Prep: 09.30.19 11.30

Prep seq: 7687122

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000385	0.00200	0.000385	mg/kg	10.03.19 08:10	U	1
Toluene	108-88-3	<0.000456	0.00200	0.000456	mg/kg	10.03.19 08:10	U	1
Ethylbenzene	100-41-4	<0.000565	0.00200	0.000565	mg/kg	10.03.19 08:10	U	1
m,p-Xylenes	179601-23-1	<0.00101	0.00400	0.00101	mg/kg	10.03.19 08:10	U	1
o-Xylene	95-47-6	<0.000344	0.00200	0.000344	mg/kg	10.03.19 08:10	U	1
Total Xylenes	1330-20-7	<0.000344		0.000344	mg/kg	10.03.19 08:10	U	
Total BTEX		<0.000344		0.000344	mg/kg	10.03.19 08:10	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	105	70 - 130	%		
4-Bromofluorobenzene	93	70 - 130	%		

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Ensolum, Dallas, TX

Thisrle 44

Sample Id: **STP-1** Matrix: Soil Sample Depth:

Lab Sample Id: 638410-009 Date Collected: 09.27.19 14.10 Date Received: 09.30.19 08.10

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Analyst: CHE % Moist: Tech: CHE

Seq Number: 3102995 Date Prep: 10.01.19 08.30

Prep seq: 7687201

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Chloride	16887-00-6	**21.7**	4.96	0.852	mg/kg	10.01.19 13:51		1

Analytical Method: TPH by SW8015 Mod Prep Method: 8015

Analyst: DVM % Moist: Tech: DVM

Seq Number: 3102970 Date Prep: 09.30.19 15.00

Prep seq: 7687153

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	**253**	49.9	15.0	mg/kg	10.01.19 13:45	H	1
Diesel Range Organics (DRO)	C10C28DRO	**2140**	49.9	15.0	mg/kg	10.01.19 13:45	H	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**303**	49.9	15.0	mg/kg	10.01.19 13:45		1
Total TPH	PHC635	**2700**		15.0	mg/kg	10.01.19 13:45		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	158	70 - 135	%		**
o-Terphenyl	171	70 - 135	%		**

Analytical Method: BTEX by EPA 8021B Prep Method: 5030B

Analyst: KTL % Moist: Tech: KTL

Seq Number: 3103209 Date Prep: 09.30.19 11.30

Prep seq: 7687122

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000388	0.00201	0.000388	mg/kg	10.03.19 08:30	U	1
Toluene	108-88-3	**0.0356**	0.00201	0.000459	mg/kg	10.03.19 08:30		1
Ethylbenzene	100-41-4	**0.0131**	0.00201	0.000569	mg/kg	10.03.19 08:30		1
m,p-Xylenes	179601-23-1	**0.0957**	0.00403	0.00102	mg/kg	10.03.19 08:30		1
o-Xylene	95-47-6	**0.0547**	0.00201	0.000347	mg/kg	10.03.19 08:30		1
Total Xylenes	1330-20-7	**0.150**		0.000347	mg/kg	10.03.19 08:30		
Total BTEX		**0.199**		0.000347	mg/kg	10.03.19 08:30		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	94	70 - 130	%		
4-Bromofluorobenzene	117	70 - 130	%		

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Ensolum, Dallas, TX

Thisrle 44

Sample Id: **STP-2** Matrix: Soil Sample Depth:

Lab Sample Id: 638410-010 Date Collected: 09.27.19 14.15 Date Received: 09.30.19 08.10

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Analyst: CHE % Moist: Tech: CHE

Seq Number: 3102995 Date Prep: 10.01.19 08.30

Prep seq: 7687201

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Chloride	16887-00-6	**7.96**	4.97	0.853	mg/kg	10.01.19 13:58		1

Analytical Method: TPH by SW8015 Mod Prep Method: 8015

Analyst: DVM % Moist: Tech: DVM

Seq Number: 3102970 Date Prep: 09.30.19 15.00

Prep seq: 7687153

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	**286**	50.0	15.0	mg/kg	10.01.19 14:05	H	1
Diesel Range Organics (DRO)	C10C28DRO	**1900**	50.0	15.0	mg/kg	10.01.19 14:05	H	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**286**	50.0	15.0	mg/kg	10.01.19 14:05		1
Total TPH	PHC635	**2470**		15.0	mg/kg	10.01.19 14:05		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	143	70 - 135	%		**
o-Terphenyl	151	70 - 135	%		**

Analytical Method: BTEX by EPA 8021B Prep Method: 5030B

Analyst: KTL % Moist: Tech: KTL

Seq Number: 3103209 Date Prep: 09.30.19 11.30

Prep seq: 7687122

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000386	0.00200	0.000386	mg/kg	10.03.19 08:50	U	1
Toluene	108-88-3	**0.141**	0.00200	0.000457	mg/kg	10.03.19 08:50		1
Ethylbenzene	100-41-4	**0.00561**	0.00200	0.000566	mg/kg	10.03.19 08:50		1
m,p-Xylenes	179601-23-1	**0.290**	0.00401	0.00102	mg/kg	10.03.19 08:50		1
o-Xylene	95-47-6	**0.139**	0.00200	0.000345	mg/kg	10.03.19 08:50		1
Total Xylenes	1330-20-7	**0.429**		0.000345	mg/kg	10.03.19 08:50		
Total BTEX		**0.576**		0.000345	mg/kg	10.03.19 08:50		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	94	70 - 130	%		
4-Bromofluorobenzene	123	70 - 130	%		

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Thisrle 44

Sample Id: **STP-3** Matrix: Soil Sample Depth:

Lab Sample Id: 638410-011 Date Collected: 09.27.19 14.20 Date Received: 09.30.19 08.10

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Analyst: CHE % Moist: Tech: CHE

Seq Number: 3102995 Date Prep: 10.01.19 08.30

Prep seq: 7687201

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Chloride	16887-00-6	**42.1**	5.00	0.858	mg/kg	10.01.19 14:04		1

Analytical Method: TPH by SW8015 Mod Prep Method: 8015

Analyst: DVM % Moist: Tech: DVM

Seq Number: 3102970 Date Prep: 09.30.19 15.00

Prep seq: 7687153

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	**780**	49.9	15.0	mg/kg	10.01.19 14:45	H	1
Diesel Range Organics (DRO)	C10C28DRO	**4820**	49.9	15.0	mg/kg	10.01.19 14:45	H	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**612**	49.9	15.0	mg/kg	10.01.19 14:45		1
Total TPH	PHC635	**6210**		15.0	mg/kg	10.01.19 14:45		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	191	70 - 135	%		**
o-Terphenyl	206	70 - 135	%		**

Analytical Method: BTEX by EPA 8021B Prep Method: 5030B

Analyst: KTL % Moist: Tech: KTL

Seq Number: 3103209 Date Prep: 09.30.19 11.30

Prep seq: 7687122

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	**0.0138**	0.00200	0.000384	mg/kg	10.03.19 10:09		1
Toluene	108-88-3	**0.259**	0.00200	0.000455	mg/kg	10.03.19 10:09		1
Ethylbenzene	100-41-4	**0.0916**	0.00200	0.000564	mg/kg	10.03.19 10:09		1
m,p-Xylenes	179601-23-1	**0.381**	0.00399	0.00101	mg/kg	10.03.19 10:09		1
o-Xylene	95-47-6	**0.175**	0.00200	0.000344	mg/kg	10.03.19 10:09		1
Total Xylenes	1330-20-7	**0.556**		0.000344	mg/kg	10.03.19 10:09		
Total BTEX		**0.920**		0.000344	mg/kg	10.03.19 10:09		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	94	70 - 130	%		
4-Bromofluorobenzene	148	70 - 130	%		**

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Thisrle 44

Sample Id: **7687122-1-BLK** Matrix: Solid Sample Depth:

Lab Sample Id: 7687122-1-BLK Date Collected: Date Received:

Analytical Method: BTEX by EPA 8021B Prep Method: 5030B

Analyst: KTL % Moist: Tech: KTL

Seq Number: 3103209 Date Prep: 09.30.19 11.30

Prep seq: 7687122

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000383	0.00199	0.000383	mg/kg	10.03.19 05:29	U	1
Toluene	108-88-3	<0.000453	0.00199	0.000453	mg/kg	10.03.19 05:29	U	1
Ethylbenzene	100-41-4	<0.000561	0.00199	0.000561	mg/kg	10.03.19 05:29	U	1
m,p-Xylenes	179601-23-1	<0.00101	0.00398	0.00101	mg/kg	10.03.19 05:29	U	1
o-Xylene	95-47-6	<0.000342	0.00199	0.000342	mg/kg	10.03.19 05:29	U	1
Total Xylenes	1330-20-7	<0.000342		0.000342	mg/kg	10.03.19 05:29	U	
Total BTEX		<0.000342		0.000342	mg/kg	10.03.19 05:29	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	102	70 - 130	%		
4-Bromofluorobenzene	100	70 - 130	%		

Sample Id: **7687153-1-BLK** Matrix: Solid Sample Depth:

Lab Sample Id: 7687153-1-BLK Date Collected: Date Received:

Analytical Method: TPH by SW8015 Mod Prep Method: 8015

Analyst: DVM % Moist: Tech: DVM

Seq Number: 3102970 Date Prep: 09.30.19 15.00

Prep seq: 7687153

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	50.0	15.0	mg/kg	10.01.19 09:30	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	50.0	15.0	mg/kg	10.01.19 09:30	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	50.0	15.0	mg/kg	10.01.19 09:30	U	1
Total TPH	PHC635	<15.0		15.0	mg/kg	10.01.19 09:30	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	147	70 - 135	%		**
o-Terphenyl	150	70 - 135	%		**

Certificate of Analytical Results

638410

Ensolum, Dallas, TX

Thisrle 44

Sample Id: **7687201-1-BLK** Matrix: Solid Sample Depth:

Lab Sample Id: 7687201-1-BLK Date Collected: Date Received:

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Analyst: CHE % Moist: Tech: CHE

Seq Number: 3102995 Date Prep: 10.01.19 08.30

Prep seq: 7687201

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Chloride	16887-00-6	<0.858	5.00	0.858	mg/kg	10.01.19 11:10	U	1

CHRONOLOGY OF HOLDING TIMES

Analytical Method : Chloride by EPA 300
Work Order #: **638410**
Date Received: 09/30/19

Client : Ensolum
Project ID: 03B1226014

Field Sample ID	Lab Sample ID	Date Collected	Date Extracted	Max Holding Time Extracted (Days)	Time Held Extracted (Days)	Date Analyzed	Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
CS-1	638410-001	09/27/19				10/01/19	180	4	
CS-2	638410-002	09/27/19				10/01/19	180	4	
CS-3	638410-003	09/27/19				10/01/19	180	4	
CS-4	638410-004	09/27/19				10/01/19	180	4	
CS-5	638410-005	09/27/19				10/01/19	180	4	
CS-6	638410-006	09/27/19				10/01/19	180	4	
CS-7	638410-007	09/27/19				10/01/19	180	4	
CS-8	638410-008	09/27/19				10/01/19	180	4	
STP-1	638410-009	09/27/19				10/01/19	180	4	
STP-2	638410-010	09/27/19				10/01/19	180	4	
STP-3	638410-011	09/27/19				10/01/19	180	4	

CHRONOLOGY OF HOLDING TIMES

Analytical Method : TPH by SW8015 Mod
Work Order #: **638410**
Date Received: 09/30/19

Client : Ensolum
Project ID: 03B1226014

Field Sample ID	Lab Sample ID	Date Collected	Date Extracted	Max Holding Time Extracted (Days)	Time Held Extracted (Days)	Date Analyzed	Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
CS-1	638410-001	09/27/19	09/30/19	14	3	10/01/19	14	1	
CS-2	638410-002	09/27/19	09/30/19	14	3	10/01/19	14	1	
CS-3	638410-003	09/27/19	09/30/19	14	3	10/01/19	14	1	
CS-4	638410-004	09/27/19	09/30/19	14	3	10/01/19	14	1	
CS-5	638410-005	09/27/19	09/30/19	14	3	10/01/19	14	1	
CS-6	638410-006	09/27/19	09/30/19	14	3	10/01/19	14	1	
CS-7	638410-007	09/27/19	09/30/19	14	3	10/01/19	14	1	
CS-8	638410-008	09/27/19	09/30/19	14	3	10/01/19	14	1	
STP-1	638410-009	09/27/19	09/30/19	14	3	10/01/19	14	1	
STP-2	638410-010	09/27/19	09/30/19	14	3	10/01/19	14	1	
STP-3	638410-011	09/27/19	09/30/19	14	3	10/01/19	14	1	

CHRONOLOGY OF HOLDING TIMES

Analytical Method : BTEX by EPA 8021B
Work Order #: **638410**
Date Received: 09/30/19

Client : Ensolum
Project ID: 03B1226014

Field Sample ID	Lab Sample ID	Date Collected	Date Extracted	Max Holding Time Extracted (Days)	Time Held Extracted (Days)	Date Analyzed	Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
CS-1	638410-001	09/27/19				10/03/19	14	6	
CS-2	638410-002	09/27/19				10/03/19	14	6	
CS-3	638410-003	09/27/19				10/03/19	14	6	
CS-4	638410-004	09/27/19				10/03/19	14	6	
CS-5	638410-005	09/27/19				10/03/19	14	6	
CS-6	638410-006	09/27/19				10/03/19	14	6	
CS-7	638410-007	09/27/19				10/03/19	14	6	
CS-8	638410-008	09/27/19				10/03/19	14	6	
STP-1	638410-009	09/27/19				10/03/19	14	6	
STP-2	638410-010	09/27/19				10/03/19	14	6	
STP-3	638410-011	09/27/19				10/03/19	14	6	

F = These samples were analyzed outside the recommended holding time.

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

Analytical Log

Analytical Method:	TPH by SW8015 Mod	Batch #:	3102970
Project Name:	Thisrle 44	Project ID:	03B1226014
Client Name:	Ensolum	WO Number:	638410

Client Sample Id	Lab Sample Id	QC Types
CS-1	638410-001	SMP
CS-2	638410-002	SMP
CS-3	638410-003	SMP
CS-4	638410-004	SMP
CS-5	638410-005	SMP
CS-6	638410-006	SMP
CS-7	638410-007	SMP
CS-8	638410-008	SMP
STP-1	638410-009	SMP
STP-2	638410-010	SMP
STP-3	638410-011	SMP
	638410-001 S	MS
	638410-001 SD	MSD
	7687153-1-BKS	BKS
	7687153-1-BLK	BLK
	7687153-1-BSD	BSD

Version: 1.002

Analytical Log

Analytical Method:	Chloride by EPA 300	Batch #:	3102995
Project Name:	Thisrle 44	Project ID:	03B1226014
Client Name:	Ensolum	WO Number:	638410

Client Sample Id	Lab Sample Id	QC Types
CS-1	638410-001	SMP
CS-2	638410-002	SMP
CS-3	638410-003	SMP
CS-4	638410-004	SMP
CS-5	638410-005	SMP
CS-6	638410-006	SMP
CS-7	638410-007	SMP
CS-8	638410-008	SMP
STP-1	638410-009	SMP
STP-2	638410-010	SMP
STP-3	638410-011	SMP
	638410-005 S	MS
	638410-005 SD	MSD
	638510-005 S	MS
	638510-005 SD	MSD
	7687201-1-BKS	BKS
	7687201-1-BLK	BLK
	7687201-1-BSD	BSD

Version: 1.002

Analytical Log

Analytical Method:	BTEX by EPA 8021B	Batch #:	3103209
Project Name:	Thisrle 44	Project ID:	03B1226014
Client Name:	Ensolum	WO Number:	638410

Client Sample Id	Lab Sample Id	QC Types
CS-1	638410-001	SMP
CS-2	638410-002	SMP
CS-3	638410-003	SMP
CS-4	638410-004	SMP
CS-5	638410-005	SMP
CS-6	638410-006	SMP
CS-7	638410-007	SMP
CS-8	638410-008	SMP
STP-1	638410-009	SMP
STP-2	638410-010	SMP
STP-3	638410-011	SMP
	638410-001 S	MS
	638410-001 SD	MSD
	7687122-1-BKS	BKS
	7687122-1-BLK	BLK
	7687122-1-BSD	BSD

Version: 1.002

Form 2 - Surrogate Recoveries

Project Name: Thisrle 44

Work Orders : 638410,

Project ID: 03B1226014

Lab Batch #: 3103209 **Sample:** 7687122-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 10/03/19 03:49

BTEX by EPA 8021B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0280	0.0300	93	70-130	
4-Bromofluorobenzene	0.0295	0.0300	98	70-130	

Lab Batch #: 3103209 **Sample:** 7687122-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 10/03/19 04:09

BTEX by EPA 8021B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0279	0.0300	93	70-130	
4-Bromofluorobenzene	0.0339	0.0300	113	70-130	

Lab Batch #: 3103209 **Sample:** 638410-001 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 10/03/19 04:29

BTEX by EPA 8021B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0325	0.0300	108	70-130	
4-Bromofluorobenzene	0.0352	0.0300	117	70-130	

Lab Batch #: 3103209 **Sample:** 638410-001 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 10/03/19 04:49

BTEX by EPA 8021B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0297	0.0300	99	70-130	
4-Bromofluorobenzene	0.0381	0.0300	127	70-130	

Lab Batch #: 3103209 **Sample:** 7687122-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 10/03/19 05:29

BTEX by EPA 8021B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0307	0.0300	102	70-130	
4-Bromofluorobenzene	0.0300	0.0300	100	70-130	

* Surrogate outside of Laboratory QC limits
** Surrogates outside limits; data and surrogates confirmed by reanalysis
*** Poor recoveries due to dilution
Surrogate Recovery [D] = 100 * A / B
All results are based on MDL and validated for QC purposes.

Version: 1.%

Form 2 - Surrogate Recoveries

Project Name: Thisrle 44

Work Orders : 638410,

Project ID: 03B1226014

Lab Batch #: 3102970 **Sample:** 7687153-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 10/01/19 09:30

TPH by SW8015 Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	147	100	147	70-135	**
o-Terphenyl	75.2	50.0	150	70-135	**

Lab Batch #: 3102970 **Sample:** 7687153-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 10/01/19 09:50

TPH by SW8015 Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	209	100	209	70-135	**
o-Terphenyl	97.6	50.0	195	70-135	**

Lab Batch #: 3102970 **Sample:** 7687153-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 10/01/19 10:09

TPH by SW8015 Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	189	100	189	70-135	**
o-Terphenyl	14.3	50.0	29	70-135	**

Lab Batch #: 3102970 **Sample:** 638410-001 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 10/01/19 10:48

TPH by SW8015 Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	147	99.8	147	70-135	**
o-Terphenyl	59.6	49.9	119	70-135	

Lab Batch #: 3102970 **Sample:** 638410-001 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 10/01/19 11:08

TPH by SW8015 Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	163	99.7	163	70-135	**
o-Terphenyl	65.7	49.9	132	70-135	

* Surrogate outside of Laboratory QC limits
** Surrogates outside limits; data and surrogates confirmed by reanalysis
*** Poor recoveries due to dilution
Surrogate Recovery [D] = 100 * A / B
All results are based on MDL and validated for QC purposes.

Version: 1.%

BS / BSD Recoveries

Project Name: Thisrle 44

Work Order #: 638410 **Project ID:** 03B1226014

Analyst: KTL **Date Prepared:** 09/30/2019 **Date Analyzed:** 10/03/2019

Lab Batch ID: 3103209 **Sample:** 7687122-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.000383	0.0994	0.102	103	0.0994	0.101	102	1	70-130	35	
Toluene	<0.000453	0.0994	0.106	107	0.0994	0.103	104	3	70-130	35	
Ethylbenzene	<0.000561	0.0994	0.0945	95	0.0994	0.0904	91	4	70-130	35	
m,p-Xylenes	<0.00101	0.199	0.199	100	0.199	0.199	100	0	70-130	35	
o-Xylene	<0.000342	0.0994	0.0972	98	0.0994	0.105	106	8	70-130	35	

Analyst: CHE **Date Prepared:** 10/01/2019 **Date Analyzed:** 10/01/2019

Lab Batch ID: 3102995 **Sample:** 7687201-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<0.858	250	263	105	250	264	106	0	90-110	20	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

Version: 1.%

BS / BSD Recoveries

Project Name: Thisrle 44

Work Order #: 638410 **Project ID:** 03B1226014

Analyst: DVM **Date Prepared:** 09/30/2019 **Date Analyzed:** 10/01/2019

Lab Batch ID: 3102970 **Sample:** 7687153-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	1400	140	1000	1470	147	5	70-135	20	H
Diesel Range Organics (DRO)	<15.0	1000	1220	122	1000	1440	144	17	70-135	20	H

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

Version: 1.%

Form 3 - MS / MSD Recoveries

Project Name: Thisrle 44

Work Order # : 638410 **Project ID:** 03B1226014

Lab Batch ID: 3103209 **QC- Sample ID:** 638410-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 10/03/2019 **Date Prepared:** 09/30/2019 **Analyst:** KTL

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.000383	0.0994	0.0992	100	0.0994	0.0898	90	10	70-130	35	
Toluene	<0.000453	0.0994	0.102	103	0.0994	0.0881	89	15	70-130	35	
Ethylbenzene	<0.000561	0.0994	0.0576	58	0.0994	0.0387	39	39	70-130	35	XF
m,p-Xylenes	<0.00101	0.199	0.191	96	0.199	0.174	87	9	70-130	35	
o-Xylene	<0.000342	0.0994	0.0956	96	0.0994	0.0874	88	9	70-130	35	

Lab Batch ID: 3102995 **QC- Sample ID:** 638410-005 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 10/01/2019 **Date Prepared:** 10/01/2019 **Analyst:** CHE

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	36.9	250	309	109	250	310	109	0	90-110	20	

Lab Batch ID: 3102995 **QC- Sample ID:** 638510-005 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 10/01/2019 **Date Prepared:** 10/01/2019 **Analyst:** CHE

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	580	253	821	95	253	817	94	0	90-110	20	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B
Relative Percent Difference RPD = 200*|(C-F)/(C+F)|

Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable
N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.

Form 3 - MS / MSD Recoveries

Project Name: Thisrle 44

Work Order # : 638410 **Project ID:** 03B1226014

Lab Batch ID: 3102970 **QC- Sample ID:** 638410-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 10/01/2019 **Date Prepared:** 09/30/2019 **Analyst:** DVM

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	998	1210	121	997	1300	130	7	70-135	20	
Diesel Range Organics (DRO)	255	998	1160	91	997	1280	103	10	70-135	20	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B

Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable

N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.

Attachment A Laboratory Data Package Cover Page

Project Name: **Thisrle 44** Laboratory Number: **638410**

This Data package consists of : Laboratory Batch No(s) **7687153, 7687122, 7687201**

This signature page, the laboratory review checklist, and the following reportable data:

[X] R1 Field chain-of-custody documentation;

[X] R2 Sample identification cross-reference;

[X] R3 Test reports (analytical data sheets) for each environmental sample that includes:
- a) Items consistent with NELAC 5
- b) dilution factors,
- c) preparation methods,
- d) cleanup methods, and
- e) if required for the project, tentatively identified compounds (TICs).

[X] R4 Surrogate Recovery data including:
- a) Calculated recovery (%R), and
- b) The laboratory's surrogate QC limits.

[X] R5 Test reports/summary forms for blank samples;

[X] R6 Test reports/summary forms for laboratory control samples (LCSs) including:
- a) LCS spiking amounts,
- b) Calculated %R for each analyte, and
- c) The laboratory's LCS QC limits.

[X] R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
- a) Samples associated with the MS/MSD clearly identified,
- b) MS/MSD spiking amounts,
- c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
- d) Calculated %Rs and relative percent differences (RPDs) and
- e) The laboratory's MS/MSD QC limits

[X] R8 Laboratory anaytical duplicate (if applicable) recovery and precision:
- a) the amount of analyte measured in the duplicate,
- b) the calculated RPD, and
- c) the laboratory's QC limits for analytical duplicates.

[X] R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;

[X] R10 Other problems or anomalies.

[X] Exception Report for every "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. 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 in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception reports. By my signature below, I affirm to the best of my knowledge all problems/anomalies, observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [ ] This laboratory meets an exception under 30 TAC 25.6 and was last inspection by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The offical signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Jessica Kramer	Jessica Kramer	**Project Assistant**	**03-OCT-19**
Name (Printed)	Signature	Official Title (printed)	Date

A1

Attachment A (cont'd) : Laboratory Review Checklist: Reportable Data

Laboratory Name:	XENCO LABORATORIES	LRC Date :	03-OCT-19
Project Name:	Thisrle 44	Laboratory Job Number :	638410
Reviewer Name:	JKR	Batch Number(s) :	7687153, 7687122, 7687201

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-Custody (COC)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and Quality Control (QC) Identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test Reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results <MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?	X				
		Were % moisture (or solids) reported for all soil and sediment samples?	X				
		Were bulk soil/solid samples for volatile analysis extracted with methanol per SW846 Method 5035?		X			2
		If required for the project, were TICs reported?	X				
R4	O	**Surrogate Recovery Data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?		X			1
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency ?	X				
		Were method blanks taken through the entire analytical procedure, including preparation and, if applicable, cleanup procedures ?	X				
		Were Blank Concentrations <MQL?	X				
R6	OI	**Laboratory Control Samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?		X			4
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within the QC limits?	X				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			5
		Were MS/MSD RPDs within the laboratory QC limits?		X			3
R8	OI	**Analytical Duplicate Data**					
		Were appropriate analytical duplicates analyzed for each matrix?	X				
		Were analytical duplicates analyzed at the appropriate frequency?	X				
		Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method Quantitation Limits (MQLs)**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other Problems/Anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	X				

Attachment A (cont'd) : Laboratory Review Checklist: Reportable Data

Laboratory Name:	XENCO LABORATORIES	LRC Date :	03-OCT-19
Project Name:	Thisrle 44	Laboratory Job Number :	638410
Reviewer Name:	JKR	Batch Number(s) :	7687153, 7687122, 7687201

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and the highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and Continuing Calibration Verification (ICCV and CCV) and continuing calibration blank (**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB <MDL?	X				
S3	O	**Mass Spectral Tuning**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal Standard (IS)**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw Data (NELAC 5.5.10)**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual Column Confirmation**					
		Did dual column confirmation results meet the method-required QC?	X				
S7	O	**Tentatively Identified Compounds (TICs)**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	X				
S8	I	**Interference Check Sample (ICS) Results**					
		Were percent recoveries within method QC limits?	X				
S9	I	**Serial Dilutions, Post Digestions Spikes, and Method of Standard Additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X				
S10	OI	**Method Detection Limit (MDL) Studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency Test Reports**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards Documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/Analyte Identification Procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/Validation Documentation for Methods (NELAC Chapter 5)**					
		Are all methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory Standard Operating Procedures (SOPs)**					
		Are laboratory SOPs current and on file for each method performed?	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted to the TCEQ-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report Identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Attachment A (cont'd): Laboratory Review Checklist: Exception Reports

Laboratory Name: XENCO LABORATORIES	LRC Date: 03-OCT-19
Project Name: Thisrle 44	Laboratory Job Number: 638410
Reviewer Name: JKR	Batch Number(s) : 7687153, 7687122, 7687201

ER# [1]	DESCRIPTION
1	SW8015MOD_NM Batch 3102970, Surrogate o-Terphenyl recovered below QC limits Data confirmed by re-analysis. Samples affected are: 7687153-1-BSD,638410-001. Surrogate 1-Chlorooctane recovered above QC limits Data confirmed by re-analysis. Samples affected are: 7687153-1-BKS,7687153-1-BLK,7687153-1-BSD,638410-001 S,638410-001 SD,638410-010,638410-009,638410-011. SW8021BM Batch 3103209, Surrogate 4-Bromofluorobenzene recovered below QC limits. Matrix interferences is suspected; data confirmed by re-analysis. Samples affected are: 638410-006.
2	Soil samples were not received in Terracore kits and therefore were prepared by method 5030.
3	SW8021BM Batch 3103209, Ethylbenzene Relative Percent Difference (RPD) between matrix spike and duplicate was above quality control limits. Samples in the analytical batch are: 638410-001, -002, -003, -004, -005, -006, -007, -008, -009, -010, -011
4	SW8015MOD_NM Batch 3102970, Gasoline Range Hydrocarbons (GRO) recovered above QC limits in the Blank Spike Duplicate indicating a potential high bias.Diesel Range Organics (DRO) recovered above QC limits in the Blank Spike Duplicate indicating a potential high bias. Samples in the analytical batch are: 638410-001, -002, -003, -004, -005, -006, -007, -008, -009, -010, -011.
5	SW8021BM Batch 3103209, Lab Sample ID 638410-001 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Ethylbenzene recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 638410-001, -002, -003, -004, -005, -006, -007, -008, -009, -010, -011. The Laboratory Control Sample for Ethylbenzene is within laboratory Control Limits, therefore the data was accepted.

1 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No is checked on the LRC).

A4

DCS Summary 638410

Ensolum, Dallas, TX

Thisrle 44

Analytical Method: **BTEX by EPA 8021B** Matrix: **Soil**

Prep Method: **SW5030B** Laboratory: **Xenco - Midland**

Parameter	SDL	MQL	Spike Amount	Actual Amount	Units
Benzene	0.000385	0.00200	0.00100	0.000891	mg/kg
Toluene	0.000456	0.00200	0.00100	0.00121	mg/kg
Ethylbenzene	0.000565	0.00200	0.00100	0.00104	mg/kg
m,p-Xylenes	0.00101	0.00400	0.00200	0.00214	mg/kg
o-Xylene	0.000344	0.00200	0.00100	0.000883	mg/kg

Analytical Method: **Chloride by EPA 300** Matrix: **Soil**

Prep Method: **E300P** Laboratory: **Xenco - Midland**

Parameter	SDL	MQL	Spike Amount	Actual Amount	Units
Chloride	0.858	5.00	5.00	1.59	mg/kg

Chain of Custody

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)

Work Order No: 638410

www.xenco.com Page 1 of 2

Project Manager:	Beaux Jennings	Bill to: (if different)	
Company Name:	Ensolum LLC	Company Name:	
Address:	705 W. Wadley 210	Address:	
City, State ZIP:	MIDLAND, TEX 79705	City, State ZIP:	
Phone:	432.230.3344 Email:	bjennings@ensolum.com	

Work Order Comments

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

Project Name:	Thistle 44	Turn Around	
Project Number:	03B1226014	Routine ☐	
P.O. Number:	03B1226014	Rush: 48HR	
Sampler's Name:	Slone Dillard	Due Date:	

SAMPLE RECEIPT			
Temp Blank:	Yes No	Wet Ice:	Yes No
Temperature (°C):	0.8/0.4	Thermometer ID:	
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	BTEX 8021B	TPH 8015
CS-1	S	9-27-19	1250	.25	1	X	X
CS-2	S	9-27-19	1255	.25	1	X	X
CS-3	S	9-27-19	1310	.25	1	X	X
CS-4	S	9-27-19	1315	.25	1	X	X
CS-5	S	9-27-19	1320	.25	1	X	X
CS-6	S	9-27-19	1325	.25	1	X	X
CS-7	S	9-27-19	1330	.25	1	X	X
CS-8	S	9-27-19	1335	.25	1	X	X
STP-1	S	9-27-19	1410	~~.25~~	1	X	X
STP-2	S	9-27-19	1415	~~.25~~	1	X	X

ANALYSIS REQUEST

Work Order Notes

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

Sample Comments

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

	Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1			9/30/19 910	2		
3				4		
5				6		

Revised Date 051418 Rev. 2018.1

Chain of Custody

Work Order No: 638410

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 2 of 2

Project Manager:	Blake Jennings	Bill to: (if different)	
Company Name:	Ensolum	Company Name:	
Address:	705 W. Wadley 210	Address:	
City, State ZIP:	MIDLAND TX 79705	City, State ZIP:	
Phone:	432 230 3344	Email:	bjennings@ensolum

Work Order Comments

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

Project Name:	Thistle 44	Turn Around	
Project Number:	03B1226014	Routine ☐	
P.O. Number:	03B1226014	Rush: 4 WKD	
Sampler's Name:	SHANE DILLER	Due Date:	

SAMPLE RECEIPT				
Temp Blank:	Yes (No)	Wet Ice:	(Yes) No	
Temperature (°C):	0.6	Thermometer ID:	VE	
Received Intact:	(Yes) No			
Cooler Custody Seals:	Yes (No) N/A	Correction Factor:	+0.2	
Sample Custody Seals:	Yes (No) N/A	Total Containers:		

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers	BTEX 8021B	TPH 8015
STP-3	S	9-27-19	1420		1	X	X

MFE 9-27-19

Work Order Notes

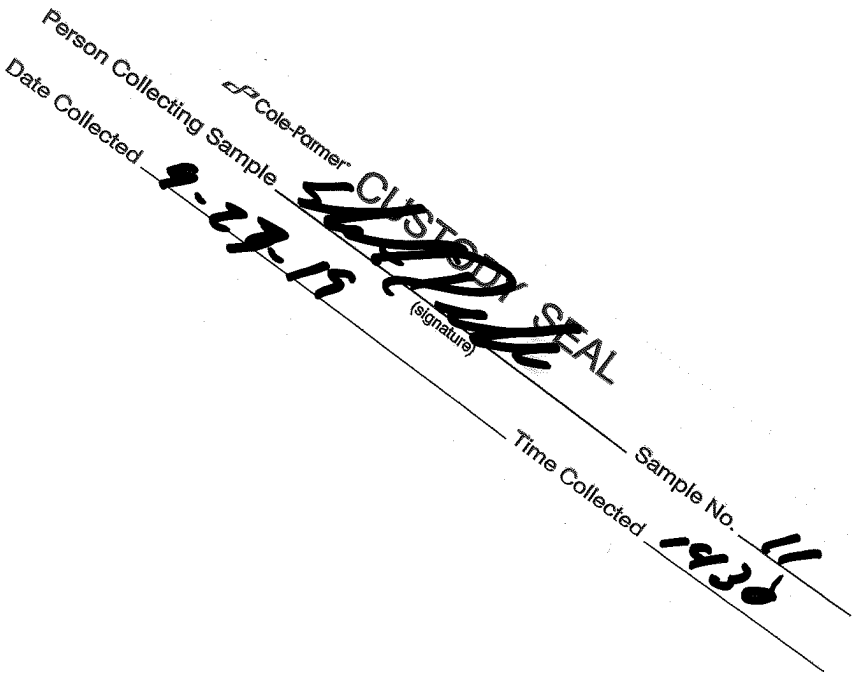
TAT starts the day recevied by the lab, if received by 4:30pm

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		9/30/19 1110	2		
3			4		
5			6		

Revised Date 051418 Rev. 2018.1


Cole-Parmer
CUSTODY SEAL
Person Collecting Sample
(signature)
Date Collected 9-27-19
Time Collected 1230
Sample No. 11

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: Ensolum

Date/ Time Received: 09/30/2019 08:10:00 AM

Work Order #: 638410

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)?	.4
#2 *Shipping container in good condition?	**Yes**
#3 *Samples received on ice?	**Yes**
#4 *Custody Seals intact on shipping container/ cooler?	**Yes**
#5 Custody Seals intact on sample bottles?	**N/A**
#6*Custody Seals Signed and dated?	**Yes**
#7 *Chain of Custody present?	**Yes**
#8 Any missing/extra samples?	**No**
#9 Chain of Custody signed when relinquished/ received?	**Yes**
#10 Chain of Custody agrees with sample labels/matrix?	**Yes**
#11 Container label(s) legible and intact?	**Yes**
#12 Samples in proper container/ bottle?	**Yes**
#13 Samples properly preserved?	**Yes**
#14 Sample container(s) intact?	**Yes**
#15 Sufficient sample amount for indicated test(s)?	**Yes**
#16 All samples received within hold time?	**Yes**
#17 Subcontract of sample(s)?	**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: 09/30/2019

Brianna Teel

Checklist reviewed by: Jessica Kramer Date: 09/30/2019

Jessica Kramer

Certificate of Analysis Summary 639269

Ensolum, Dallas, TX

Project Name: Thistle 44

Project Id:
Contact: Beaux Jennings
Project Location:

Date Received in Lab: Tue Oct-08-19 08:12 am
Report Date: 14-OCT-19
Project Manager: Jessica Kramer

Analysis Requested													
	Lab Id:	639269-001		639269-002		639269-003		639269-004		639269-005		639269-006	
	Field Id:	Re CS-1		Re CS-4		Re CS-5		CS-9		CS-10		CS-11	
	Depth:	.5'-		.5'-		.5'-		.75'-		2'-		2'-	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Oct-07-19 15:10		Oct-07-19 15:00		Oct-07-19 15:05		Oct-07-19 15:15		Oct-07-19 15:20		Oct-07-19 15:25	
BTEX by EPA 8021B	***Extracted:***							Oct-08-19 13:00		Oct-08-19 13:00		Oct-08-19 13:00	
	Analyzed:							Oct-09-19 11:00		Oct-09-19 11:20		Oct-09-19 11:41	
	Units/RL:							mg/kg	RL	mg/kg	RL	mg/kg	RL
Benzene								8.31 D	1.00	17.7 D	0.497	67.5 D	2.00
Toluene								112 D	1.00	108 D	0.994	310 D	2.00
Ethylbenzene								48.0 D	1.00	39.7 D	0.497	90.5 D	2.00
m,p-Xylenes								118 D	2.00	99.2 D	0.994	206 D	4.01
o-Xylene								46.1 D	1.00	39.6 D	0.497	80.8 D	2.00
Total Xylenes								164	1.00	139	0.497	287	2.00
Total BTEX								332	1.00	304	0.497	755	2.00
Chloride by EPA 300	***Extracted:***							Oct-10-19 10:00					
	Analyzed:							Oct-10-19 12:52					
	Units/RL:							mg/kg	RL				
Chloride								<5.00	5.00				
TPH by SW8015 Mod	***Extracted:***	Oct-08-19 16:00		Oct-08-19 16:00		Oct-08-19 16:00		Oct-08-19 16:00		Oct-08-19 16:00		Oct-08-19 16:00	
	Analyzed:	Oct-08-19 20:32		Oct-08-19 21:34		Oct-08-19 21:55		Oct-10-19 07:51		Oct-10-19 08:12		Oct-10-19 08:33	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Gasoline Range Hydrocarbons (GRO)		<50.0	50.0	<50.0	50.0	<49.9	49.9	4910	250	4950	249	13600	250
Diesel Range Organics (DRO)		<50.0	50.0	314	50.0	60.7	49.9	12000	250	12500	249	26200	250
Motor Oil Range Hydrocarbons (MRO)		<50.0	50.0	<50.0	50.0	<49.9	49.9	1350	250	1250	249	2380	250
Total TPH		<50.0	50.0	314	50.0	60.7	49.9	18300	250	18700	249	42200	250

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

Version: 1.%

Jessica Kramer
Project Assistant

Final 1.000

Certificate of Analysis Summary 639269

Ensolum, Dallas, TX

Project Name: Thistle 44

Project Id:
Contact: Beaux Jennings
Project Location:

Date Received in Lab: Tue Oct-08-19 08:12 am
Report Date: 14-OCT-19
Project Manager: Jessica Kramer

Analysis Requested									
	Lab Id:	639269-007		639269-008		639269-009			
	Field Id:	CS-12		CS-13		CS-14			
	Depth:	2'-		2'-		2'-			
	Matrix:	SOIL		SOIL		SOIL			
	Sampled:	Oct-07-19 15:30		Oct-07-19 15:35		Oct-07-19 15:35			
BTEX by EPA 8021B	***Extracted:***	Oct-08-19 13:00		Oct-11-19 17:00		Oct-08-19 13:00			
	Analyzed:	Oct-10-19 12:01		Oct-13-19 20:06		Oct-10-19 12:41			
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL		
Benzene		6.73 D	0.496	<0.00201	0.00201	15.1 D	0.994		
Toluene		46.4 D	0.496	<0.00201	0.00201	139 D	0.994		
Ethylbenzene		22.6 D	0.496	<0.00201	0.00201	59.1 D	0.994		
m,p-Xylenes		49.4 D	0.992	<0.00402	0.00402	128 D	1.99		
o-Xylene		23.6 D	0.496	<0.00201	0.00201	59.2 D	0.994		
Total Xylenes		73.0	0.496	<0.00201	0.00201	187	0.994		
Total BTEX		149	0.496	<0.00201	0.00201	400	0.994		
Chloride by EPA 300	***Extracted:***					Oct-10-19 10:00			
	Analyzed:					Oct-10-19 12:42			
	Units/RL:					mg/kg	RL		
Chloride						28.6	5.00		
TPH by SW8015 Mod	***Extracted:***	Oct-08-19 16:00		Oct-08-19 16:00		Oct-08-19 16:00			
	Analyzed:	Oct-10-19 08:54		Oct-08-19 23:39		Oct-10-19 09:15			
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL		
Gasoline Range Hydrocarbons (GRO)		3500	249	<49.9	49.9	6830	249		
Diesel Range Organics (DRO)		13400	249	388	49.9	13300	249		
Motor Oil Range Hydrocarbons (MRO)		1310	249	157	49.9	1230	249		
Total TPH		18200	249	545	49.9	21400	249		

Version: 1.%

Jessica Kramer
Project Assistant

Analytical Report 639269

for

Ensolum

Project Manager: Beaux Jennings

Thistle 44

14-OCT-19

Collected By: Client

1211 W. Florida Ave
Midland TX 79701

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

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

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

14-OCT-19

Project Manager: **Beaux Jennings**
Ensolum
2351 W Northwest Highway
Suite 1203
Dallas, TX 75220

Reference: XENCO Report No(s): **639269**
Thistle 44
Project Address:

Beaux Jennings:

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) 639269. 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. 639269 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,

Jessica Kramer

Jessica Kramer
Project Assistant

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.
Certified and approved by numerous States and Agencies.
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Houston - Dallas - Midland - San Antonio - Phoenix - Oklahoma - Latin America

Sample Cross Reference 639269

Ensolum, Dallas, TX

Thistle 44

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
Re CS-1	S	10-07-19 15:10	.5'	639269-001
Re CS-4	S	10-07-19 15:00	.5'	639269-002
Re CS-5	S	10-07-19 15:05	.5'	639269-003
CS-9	S	10-07-19 15:15	.75'	639269-004
CS-10	S	10-07-19 15:20	2'	639269-005
CS-11	S	10-07-19 15:25	2'	639269-006
CS-12	S	10-07-19 15:30	2'	639269-007
CS-13	S	10-07-19 15:35	2'	639269-008
CS-14	S	10-07-19 15:35	2'	639269-009

CASE NARRATIVE

Client Name: Ensolum
Project Name: Thistle 44

Project ID:
Work Order Number(s): *639269*

Report Date: *14-OCT-19*
Date Received: *10/08/2019*

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3103856 BTEX by EPA 8021B
Ethylbenzene Relative Percent Difference (RPD) between matrix spike and duplicate was above quality control limits.
Samples in the analytical batch are: 639269-004, -005, -006, -007, -009
Soil samples were not received in Terracore kits and therefore were prepared by method 5030.
Lab Sample ID 639269-004 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD).
Benzene, Ethylbenzene, Toluene, m,p-Xylenes, o-Xylene 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: 639269-004, -005, -006, -007, -009.
The Laboratory Control Sample for Toluene, Benzene, m,p-Xylenes, Ethylbenzene, o-Xylene is within laboratory Control Limits, therefore the data was accepted.

Surrogate 4-Bromofluorobenzene recovered above QC limits. Matrix interferences is suspected
Samples affected are: 639269-004 S,639269-004 SD,639269-005,639269-006,639269-007,639269-009,639269-004.
Surrogate 1,4-Difluorobenzene recovered above QC limits. Matrix interferences is suspected
Samples affected are: 639269-009.

Batch: LBA-3104134 BTEX by EPA 8021B
Soil samples were not received in Terracore kits and therefore were prepared by method 5030.
Surrogate 4-Bromofluorobenzene recovered above QC limits. Matrix interferences is suspected.
Samples affected are: 639570-001 SD.

Certificate of Analytical Results 639269

Ensolum, Dallas, TX

Thistle 44

Sample Id:	**Re CS-1**	Matrix:	Soil	Date Received:	10.08.19 08.12
Lab Sample Id:	639269-001	Date Collected:	10.07.19 15.10	Sample Depth:	.5'
Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DVM			% Moisture:	
Analyst:	ARM	Date Prep:	10.08.19 16.00	Basis:	Wet Weight
Seq Number:	3103770				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.08.19 20.32	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.08.19 20.32	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.08.19 20.32	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.08.19 20.32	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	77	%	70-135	10.08.19 20.32	
o-Terphenyl	84-15-1	84	%	70-135	10.08.19 20.32	

Certificate of Analytical Results 639269

Ensolum, Dallas, TX

Thistle 44

Sample Id:	**Re CS-4**	Matrix:	Soil	Date Received:	10.08.19 08.12
Lab Sample Id:	639269-002	Date Collected:	10.07.19 15.00	Sample Depth:	.5'
Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DVM			% Moisture:	
Analyst:	ARM	Date Prep:	10.08.19 16.00	Basis:	Wet Weight
Seq Number:	3103770				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.08.19 21.34	U	1
Diesel Range Organics (DRO)	C10C28DRO	**314**	50.0	mg/kg	10.08.19 21.34		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.08.19 21.34	U	1
Total TPH	PHC635	**314**	50.0	mg/kg	10.08.19 21.34		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	79	%	70-135	10.08.19 21.34	
o-Terphenyl	84-15-1	90	%	70-135	10.08.19 21.34	

Certificate of Analytical Results 639269

Ensolum, Dallas, TX

Thistle 44

Sample Id:	**Re CS-5**	Matrix:	Soil	Date Received:	10.08.19 08.12
Lab Sample Id:	639269-003	Date Collected:	10.07.19 15.05	Sample Depth:	.5'
Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DVM			% Moisture:	
Analyst:	ARM	Date Prep:	10.08.19 16.00	Basis:	Wet Weight
Seq Number:	3103770				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.08.19 21.55	U	1
Diesel Range Organics (DRO)	C10C28DRO	**60.7**	49.9	mg/kg	10.08.19 21.55		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.08.19 21.55	U	1
Total TPH	PHC635	**60.7**	49.9	mg/kg	10.08.19 21.55		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	80	%	70-135	10.08.19 21.55	
o-Terphenyl	84-15-1	87	%	70-135	10.08.19 21.55	

Certificate of Analytical Results 639269

Ensolum, Dallas, TX

Thistle 44

Sample Id:	**CS-9**	Matrix:	Soil	Date Received:	10.08.19 08.12
Lab Sample Id:	639269-004	Date Collected:	10.07.19 15.15	Sample Depth:	.75'

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	
Analyst:	CHE	Date Prep:	10.10.19 10.00	Basis:	Wet Weight
Seq Number:	3103872				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<5.00	5.00	mg/kg	10.10.19 12.52	U	1

Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DVM			% Moisture:	
Analyst:	ARM	Date Prep:	10.08.19 16.00	Basis:	Wet Weight
Seq Number:	3103770				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	**4910**	250	mg/kg	10.10.19 07.51		5
Diesel Range Organics (DRO)	C10C28DRO	**12000**	250	mg/kg	10.10.19 07.51		5
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**1350**	250	mg/kg	10.10.19 07.51		5
Total TPH	PHC635	**18300**	250	mg/kg	10.10.19 07.51		5

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	101	%	70-135	10.10.19 07.51	
o-Terphenyl	84-15-1	85	%	70-135	10.10.19 07.51	

Certificate of Analytical Results 639269

Ensolum, Dallas, TX

Thistle 44

Sample Id:	**CS-9**	Matrix:	Soil	Date Received:	10.08.19 08.12
Lab Sample Id:	639269-004	Date Collected:	10.07.19 15.15	Sample Depth:	.75'
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	KTL			% Moisture:	
Analyst:	KTL	Date Prep:	10.08.19 13.00	Basis:	Wet Weight
Seq Number:	3103856				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	**8.31**	1.00	mg/kg	10.12.19 03.15	D	500
Toluene	108-88-3	**112**	1.00	mg/kg	10.12.19 03.15	D	500
Ethylbenzene	100-41-4	**48.0**	1.00	mg/kg	10.12.19 03.15	D	500
m,p-Xylenes	179601-23-1	**118**	2.00	mg/kg	10.12.19 03.15	D	500
o-Xylene	95-47-6	**46.1**	1.00	mg/kg	10.12.19 03.15	D	500
Total Xylenes	1330-20-7	**164**	1.00	mg/kg	10.12.19 03.15		500
Total BTEX		**332**	1.00	mg/kg	10.12.19 03.15		500

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	96	%	70-130	10.09.19 11.00	
4-Bromofluorobenzene	460-00-4	11367	%	70-130	10.09.19 11.00	**

Certificate of Analytical Results 639269

Ensolum, Dallas, TX

Thistle 44

Sample Id:	**CS-10**	Matrix:	Soil	Date Received:	10.08.19 08.12
Lab Sample Id:	639269-005	Date Collected:	10.07.19 15.20	Sample Depth:	2'

Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DVM			% Moisture:	
Analyst:	ARM	Date Prep:	10.08.19 16.00	Basis:	Wet Weight
Seq Number:	3103770				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	**4950**	249	mg/kg	10.10.19 08.12		5
Diesel Range Organics (DRO)	C10C28DRO	**12500**	249	mg/kg	10.10.19 08.12		5
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**1250**	249	mg/kg	10.10.19 08.12		5
Total TPH	PHC635	**18700**	249	mg/kg	10.10.19 08.12		5

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	107	%	70-135	10.10.19 08.12	
o-Terphenyl	84-15-1	104	%	70-135	10.10.19 08.12	

Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	KTL			% Moisture:	
Analyst:	KTL	Date Prep:	10.08.19 13.00	Basis:	Wet Weight
Seq Number:	3103856				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	**17.7**	0.497	mg/kg	10.12.19 03.35	D	250
Toluene	108-88-3	**108**	0.994	mg/kg	10.13.19 10.26	D	500
Ethylbenzene	100-41-4	**39.7**	0.497	mg/kg	10.12.19 03.35	D	250
m,p-Xylenes	179601-23-1	**99.2**	0.994	mg/kg	10.12.19 03.35	D	250
o-Xylene	95-47-6	**39.6**	0.497	mg/kg	10.12.19 03.35	D	250
Total Xylenes	1330-20-7	**139**	0.497	mg/kg	10.12.19 03.35		250
Total BTEX		**304**	0.497	mg/kg	10.13.19 10.26		500

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	4000	%	70-130	10.09.19 11.20	**
1,4-Difluorobenzene	540-36-3	76	%	70-130	10.09.19 11.20	

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Ensolum, Dallas, TX

Thistle 44

Sample Id:	**CS-11**	Matrix:	Soil	Date Received:	10.08.19 08.12
Lab Sample Id:	639269-006	Date Collected:	10.07.19 15.25	Sample Depth:	2'

Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DVM			% Moisture:	
Analyst:	ARM	Date Prep:	10.08.19 16.00	Basis:	Wet Weight
Seq Number:	3103770				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	**13600**	250	mg/kg	10.10.19 08.33		5
Diesel Range Organics (DRO)	C10C28DRO	**26200**	250	mg/kg	10.10.19 08.33		5
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**2380**	250	mg/kg	10.10.19 08.33		5
Total TPH	PHC635	**42200**	250	mg/kg	10.10.19 08.33		5

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	110	%	70-135	10.10.19 08.33	
o-Terphenyl	84-15-1	115	%	70-135	10.10.19 08.33	

Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	KTL			% Moisture:	
Analyst:	KTL	Date Prep:	10.08.19 13.00	Basis:	Wet Weight
Seq Number:	3103856				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	**67.5**	2.00	mg/kg	10.12.19 03.55	D	1000
Toluene	108-88-3	**310**	2.00	mg/kg	10.12.19 03.55	D	1000
Ethylbenzene	100-41-4	**90.5**	2.00	mg/kg	10.12.19 03.55	D	1000
m,p-Xylenes	179601-23-1	**206**	4.01	mg/kg	10.12.19 03.55	D	1000
o-Xylene	95-47-6	**80.8**	2.00	mg/kg	10.12.19 03.55	D	1000
Total Xylenes	1330-20-7	**287**	2.00	mg/kg	10.12.19 03.55		1000
Total BTEX		**755**	2.00	mg/kg	10.12.19 03.55		1000

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	9533	%	70-130	10.09.19 11.41	**
1,4-Difluorobenzene	540-36-3	117	%	70-130	10.09.19 11.41	

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Ensolum, Dallas, TX

Thistle 44

Sample Id:	**CS-12**	Matrix:	Soil	Date Received:	10.08.19 08.12
Lab Sample Id:	639269-007	Date Collected:	10.07.19 15.30	Sample Depth:	2'

Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DVM			% Moisture:	
Analyst:	ARM	Date Prep:	10.08.19 16.00	Basis:	Wet Weight
Seq Number:	3103770				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	**3500**	249	mg/kg	10.10.19 08.54		5
Diesel Range Organics (DRO)	C10C28DRO	**13400**	249	mg/kg	10.10.19 08.54		5
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**1310**	249	mg/kg	10.10.19 08.54		5
Total TPH	PHC635	**18200**	249	mg/kg	10.10.19 08.54		5

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	112	%	70-135	10.10.19 08.54	
o-Terphenyl	84-15-1	110	%	70-135	10.10.19 08.54	

Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	KTL			% Moisture:	
Analyst:	KTL	Date Prep:	10.08.19 13.00	Basis:	Wet Weight
Seq Number:	3103856				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	**6.73**	0.496	mg/kg	10.12.19 04.15	D	250
Toluene	108-88-3	**46.4**	0.496	mg/kg	10.12.19 04.15	D	250
Ethylbenzene	100-41-4	**22.6**	0.496	mg/kg	10.12.19 04.15	D	250
m,p-Xylenes	179601-23-1	**49.4**	0.992	mg/kg	10.12.19 04.15	D	250
o-Xylene	95-47-6	**23.6**	0.496	mg/kg	10.12.19 04.15	D	250
Total Xylenes	1330-20-7	**73.0**	0.496	mg/kg	10.12.19 04.15		250
Total BTEX		**149**	0.496	mg/kg	10.12.19 04.15		250

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	1890	%	70-130	10.10.19 12.01	**
1,4-Difluorobenzene	540-36-3	78	%	70-130	10.10.19 12.01	

Certificate of Analytical Results 639269

Ensolum, Dallas, TX

Thistle 44

Sample Id:	**CS-13**	Matrix:	Soil	Date Received:	10.08.19 08.12
Lab Sample Id:	639269-008	Date Collected:	10.07.19 15.35	Sample Depth:	2'

Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DVM			% Moisture:	
Analyst:	ARM	Date Prep:	10.08.19 16.00	Basis:	Wet Weight
Seq Number:	3103770				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.08.19 23.39	U	1
Diesel Range Organics (DRO)	C10C28DRO	**388**	49.9	mg/kg	10.08.19 23.39		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**157**	49.9	mg/kg	10.08.19 23.39		1
Total TPH	PHC635	**545**	49.9	mg/kg	10.08.19 23.39		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	90	%	70-135	10.08.19 23.39	
o-Terphenyl	84-15-1	100	%	70-135	10.08.19 23.39	

Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	KTL			% Moisture:	
Analyst:	KTL	Date Prep:	10.11.19 17.00	Basis:	Wet Weight
Seq Number:	3104134				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	10.13.19 20.06	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	10.13.19 20.06	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	10.13.19 20.06	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	10.13.19 20.06	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	10.13.19 20.06	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	10.13.19 20.06	U	1
Total BTEX		<0.00201	0.00201	mg/kg	10.13.19 20.06	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	115	%	70-130	10.13.19 20.06	
1,4-Difluorobenzene	540-36-3	88	%	70-130	10.13.19 20.06	

Certificate of Analytical Results 639269

Ensolum, Dallas, TX

Thistle 44

Sample Id:	**CS-14**	Matrix:	Soil	Date Received:	10.08.19 08.12
Lab Sample Id:	639269-009	Date Collected:	10.07.19 15.35	Sample Depth:	2'

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	
Analyst:	CHE	Date Prep:	10.10.19 10.00	Basis:	Wet Weight
Seq Number:	3103872				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**28.6**	5.00	mg/kg	10.10.19 12.42		1

Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DVM			% Moisture:	
Analyst:	ARM	Date Prep:	10.08.19 16.00	Basis:	Wet Weight
Seq Number:	3103770				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	**6830**	249	mg/kg	10.10.19 09.15		5
Diesel Range Organics (DRO)	C10C28DRO	**13300**	249	mg/kg	10.10.19 09.15		5
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**1230**	249	mg/kg	10.10.19 09.15		5
Total TPH	PHC635	**21400**	249	mg/kg	10.10.19 09.15		5

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	117	%	70-135	10.10.19 09.15	
o-Terphenyl	84-15-1	115	%	70-135	10.10.19 09.15	

Certificate of Analytical Results 639269

Ensolum, Dallas, TX

Thistle 44

Sample Id:	**CS-14**	Matrix:	Soil	Date Received:	10.08.19 08.12
Lab Sample Id:	639269-009	Date Collected:	10.07.19 15.35	Sample Depth:	2'
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	KTL			% Moisture:	
Analyst:	KTL	Date Prep:	10.08.19 13.00	Basis:	Wet Weight
Seq Number:	3103856				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	**15.1**	0.994	mg/kg	10.12.19 04.35	D	500
Toluene	108-88-3	**139**	0.994	mg/kg	10.12.19 04.35	D	500
Ethylbenzene	100-41-4	**59.1**	0.994	mg/kg	10.12.19 04.35	D	500
m,p-Xylenes	179601-23-1	**128**	1.99	mg/kg	10.12.19 04.35	D	500
o-Xylene	95-47-6	**59.2**	0.994	mg/kg	10.12.19 04.35	D	500
Total Xylenes	1330-20-7	**187**	0.994	mg/kg	10.12.19 04.35		500
Total BTEX		**400**	0.994	mg/kg	10.12.19 04.35		500

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	5567	%	70-130	10.10.19 12.41	**
1,4-Difluorobenzene	540-36-3	183	%	70-130	10.10.19 12.41	**

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 639269

Ensolum

Thistle 44

Analytical Method: Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3103872 — Matrix: Solid — Date Prep: 10.10.19
MB Sample Id: 7687843-1-BLK — LCS Sample Id: 7687843-1-BKS — LCSD Sample Id: 7687843-1-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	232	93	234	94	90-110	1	20	mg/kg	10.10.19 10:35	

Analytical Method: Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3103872 — Matrix: Soil — Date Prep: 10.10.19
Parent Sample Id: 639470-001 — MS Sample Id: 639470-001 S — MSD Sample Id: 639470-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	347	248	570	90	569	90	90-110	0	20	mg/kg	10.10.19 10:51	

Analytical Method: Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3103872 — Matrix: Soil — Date Prep: 10.10.19
Parent Sample Id: 639470-002 — MS Sample Id: 639470-002 S — MSD Sample Id: 639470-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	41.3	250	288	99	287	98	90-110	0	20	mg/kg	10.10.19 12:05	

Analytical Method: TPH by SW8015 Mod — Prep Method: SW8015P
Seq Number: 3103770 — Matrix: Solid — Date Prep: 10.08.19
MB Sample Id: 7687733-1-BLK — LCS Sample Id: 7687733-1-BKS — LCSD Sample Id: 7687733-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<50.0	1000	997	100	1030	103	70-135	3	20	mg/kg	10.08.19 19:50	
Diesel Range Organics (DRO)	<15.0	1000	962	96	977	98	70-135	2	20	mg/kg	10.08.19 19:50	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	84		89		102		70-135	%	10.08.19 19:50
o-Terphenyl	93		88		88		70-135	%	10.08.19 19:50

Analytical Method: TPH by SW8015 Mod — Prep Method: SW8015P
Seq Number: 3103770 — Matrix: Solid — Date Prep: 10.08.19
MB Sample Id: 7687733-1-BLK

Parameter	MB Result	Units	Analysis Date	Flag
Motor Oil Range Hydrocarbons (MRO)	<50.0	mg/kg	10.08.19 19:29	

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 639269

Ensolum

Thistle 44

Analytical Method: TPH by SW8015 Mod | Prep Method: SW8015P
Seq Number: 3103770 | Matrix: Soil | Date Prep: 10.08.19
Parent Sample Id: 639269-001 | MS Sample Id: 639269-001 S | MSD Sample Id: 639269-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	997	955	96	961	96	70-135	1	20	mg/kg	10.08.19 20:52	
Diesel Range Organics (DRO)	40.0	997	953	92	942	91	70-135	1	20	mg/kg	10.08.19 20:52	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	88		100		70-135	%	10.08.19 20:52
o-Terphenyl	86		88		70-135	%	10.08.19 20:52

Analytical Method: BTEX by EPA 8021B | Prep Method: SW5030B
Seq Number: 3103856 | Matrix: Solid | Date Prep: 10.08.19
MB Sample Id: 7687706-1-BLK | LCS Sample Id: 7687706-1-BKS | LCSD Sample Id: 7687706-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.111	111	0.0957	96	70-130	15	35	mg/kg	10.09.19 09:00	
Toluene	<0.00200	0.100	0.115	115	0.104	104	70-130	10	35	mg/kg	10.09.19 09:00	
Ethylbenzene	<0.00200	0.100	0.125	125	0.111	111	70-130	12	35	mg/kg	10.09.19 09:00	
m,p-Xylenes	<0.00400	0.200	0.260	130	0.237	119	70-130	9	35	mg/kg	10.09.19 09:00	
o-Xylene	<0.00200	0.100	0.130	130	0.124	124	70-130	5	35	mg/kg	10.09.19 09:00	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	97		106		104		70-130	%	10.09.19 09:00
4-Bromofluorobenzene	129		115		116		70-130	%	10.09.19 09:00

Analytical Method: BTEX by EPA 8021B | Prep Method: SW5030B
Seq Number: 3104134 | Matrix: Solid | Date Prep: 10.11.19
MB Sample Id: 7687868-1-BLK | LCS Sample Id: 7687868-1-BKS | LCSD Sample Id: 7687868-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.104	104	0.0895	90	70-130	15	35	mg/kg	10.13.19 17:07	
Toluene	<0.00200	0.100	0.0987	99	0.0881	88	70-130	11	35	mg/kg	10.13.19 17:07	
Ethylbenzene	<0.00200	0.100	0.106	106	0.0958	96	70-130	10	35	mg/kg	10.13.19 17:07	
m,p-Xylenes	<0.00400	0.200	0.208	104	0.189	95	70-130	10	35	mg/kg	10.13.19 17:07	
o-Xylene	<0.00200	0.100	0.106	106	0.0971	97	70-130	9	35	mg/kg	10.13.19 17:07	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	87		90		90		70-130	%	10.13.19 17:07
4-Bromofluorobenzene	99		102		106		70-130	%	10.13.19 17:07

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

Final 1.000

QC Summary 639269

Ensolum

Thistle 44

Analytical Method: **BTEX by EPA 8021B** Prep Method: SW5030B

Seq Number: 3103856 Matrix: Soil Date Prep: 10.08.19

Parent Sample Id: 639269-004 MS Sample Id: 639269-004 S MSD Sample Id: 639269-004 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	2.30	0.101	2.86	554	3.16	860	70-130	10	35	mg/kg	10.09.19 09:41	X
Toluene	40.7	0.101	60.8	19901	68.5	27800	70-130	12	35	mg/kg	10.09.19 09:41	X
Ethylbenzene	19.1	0.101	21.2	2079	32.0	12900	70-130	41	35	mg/kg	10.09.19 09:41	XF
m,p-Xylenes	39.5	0.202	58.8	9554	63.4	11891	70-130	8	35	mg/kg	10.09.19 09:41	X
o-Xylene	15.7	0.101	23.6	7822	25.4	9700	70-130	7	35	mg/kg	10.09.19 09:41	X

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	97		116		70-130	%	10.09.19 09:41
4-Bromofluorobenzene	16333	**	22633	**	70-130	%	10.09.19 09:41

Analytical Method: **BTEX by EPA 8021B** Prep Method: SW5030B

Seq Number: 3104134 Matrix: Soil Date Prep: 10.11.19

Parent Sample Id: 639570-001 MS Sample Id: 639570-001 S MSD Sample Id: 639570-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00201	0.101	0.0417	41	0.0514	52	70-130	21	35	mg/kg	10.13.19 17:48	X
Toluene	<0.00201	0.101	0.0323	32	0.0376	38	70-130	15	35	mg/kg	10.13.19 17:48	X
Ethylbenzene	0.0152	0.101	0.0259	11	0.0326	17	70-130	23	35	mg/kg	10.13.19 17:48	X
m,p-Xylenes	0.0266	0.201	0.0548	14	0.0634	18	70-130	15	35	mg/kg	10.13.19 17:48	X
o-Xylene	0.0803	0.101	0.0228	0	0.0329	0	70-130	36	35	mg/kg	10.13.19 17:48	XF

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	90		90		70-130	%	10.13.19 17:48
4-Bromofluorobenzene	126		145	**	70-130	%	10.13.19 17:48

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

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)

Work Order No: 392609

www.xenco.com Page 1 of 1

Project Manager:	Beaux Jennings	Bill to: (if different)	
Company Name:	Ensolum LLC	Company Name:	
Address:	705 W. Wadley 210	Address:	
City, State ZIP:	MIDLAND TX 79705	City, State ZIP:	
Phone:	432 230 3344	Email:	bjennings@ensolum.com

Work Order Comments

Program: UST/PST ☐ PRP ☐ Brownfields ☐ RRC ☒ Superfund ☐

State of Project:

Reporting:Level II ☐ Level III ☐ PST/UST ☐ TRRP ☐ Level IV ☐

Deliverables: EDD ☐ ADaPT ☐ Other:

Project Name:	Thistle 44	Turn Around	
Project Number:	03B1226014	Routine ☐	
P.O. Number:	03B1226014	Rush: 24hr	
Sampler's Name:	SHANE DILLER	Due Date:	

SAMPLE RECEIPT				
Temp Blank:	Yes (No)	Wet Ice:	(Yes) No	
Temperature (°C):	-.01 -.4	Thermometer ID	28	
Received Intact:	(Yes) No			
Cooler Custody Seals:	Yes No N/A	Correction Factor:	-0.2	
Sample Custody Seals:	Yes (No) N/A	Total Containers:		

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers	BTEX 8021B	TPH 8015	Sample Comments
Rx CS-1	S	10-7-19	1500	.5'	1		X	24hr
Rx CS-4	S	10-7-19	1505	.5'	1		X	24hr
Rx CS-5	S	10-7-19	1510	.5'	1		X	24hr
CS-9	S	10-7-19	1515	.75'	1	X	X	24hr
CS-10	S	10-7-19	1520	2'	1	X	X	24hr
CS-11	S	10-7-19	1525	2'	1	X	X	24hr
CS-12	S	10-7-19	1530	2'	1	X	X	24hr
CS-13	S	10-7-19	1535	2'	1	X	X	24hr
CS-14	S	10-7-19	1540	2'	1	X	X	24hr
	NPK	10-7-19	4hr					

Work Order Notes

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

ANALYSIS REQUEST

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

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

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1		10/8 8:12	2		
3			4		
5			6		

Revised Date 051418 Rev. 2018.1

Cole-Parmer CUSTODY SEAL

Person Collecting Sample _____ (signature) Sample No. 9

Date Collected 10-7-19 Time Collected 1600

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: Ensolum

Date/ Time Received: 10/08/2019 08:12:00 AM

Work Order #: 639269

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)?	.4
#2 *Shipping container in good condition?	**Yes**
#3 *Samples received on ice?	**Yes**
#4 *Custody Seals intact on shipping container/ cooler?	**Yes**
#5 Custody Seals intact on sample bottles?	**N/A**
#6*Custody Seals Signed and dated?	**Yes**
#7 *Chain of Custody present?	**Yes**
#8 Any missing/extra samples?	**No**
#9 Chain of Custody signed when relinquished/ received?	**Yes**
#10 Chain of Custody agrees with sample labels/matrix?	**Yes**
#11 Container label(s) legible and intact?	**Yes**
#12 Samples in proper container/ bottle?	**Yes**
#13 Samples properly preserved?	**Yes**
#14 Sample container(s) intact?	**Yes**
#15 Sufficient sample amount for indicated test(s)?	**Yes**
#16 All samples received within hold time?	**Yes**
#17 Subcontract of sample(s)?	**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: Amanda Levario Date: 10/08/2019

Checklist reviewed by: Jessica Kramer Date: 10/08/2019

Jessica Kramer

Certificate of Analysis Summary 640051

Ensolum, Dallas, TX

Project Name: Thistle 44

Project Id:

Contact: Beaux Jennings

Project Location:

Date Received in Lab: Tue Oct-15-19 04:09 pm

Report Date: 17-OCT-19

Project Manager: Jessica Kramer

Analysis Requested													
	Lab Id:	640051-001		640051-002		640051-003		640051-004		640051-005		640051-006	
	Field Id:	Re-CS-14		CS-15		CS-16		Re-CS-10		CS-17		CS-18	
	Depth:	2- ft		2- ft		2- ft		2- ft		2- ft		2- ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Oct-15-19 11:00		Oct-15-19 11:05		Oct-15-19 11:10		Oct-15-19 11:15		Oct-15-19 11:20		Oct-15-19 11:25	
BTEX by EPA 8021B	***Extracted:***	Oct-16-19 08:00		Oct-16-19 08:00		Oct-16-19 08:00		Oct-16-19 08:00		Oct-16-19 08:00		Oct-16-19 08:00	
	Analyzed:	Oct-16-19 09:51		Oct-16-19 10:11		Oct-16-19 10:32		Oct-16-19 10:52		Oct-16-19 11:12		Oct-16-19 11:32	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Benzene		<0.000386	0.00201	<0.000387	0.00201	<0.000382	0.00198	<0.000384	0.00200	<0.000383	0.00199	0.00177 J	0.00199
Toluene		<0.000457	0.00201	<0.000458	0.00201	<0.000452	0.00198	<0.000455	0.00200	<0.000453	0.00199	0.00186 J	0.00199
Ethylbenzene		<0.000567	0.00201	<0.000568	0.00201	<0.000560	0.00198	<0.000564	0.00200	<0.000561	0.00199	0.000696 J	0.00199
m,p-Xylenes		<0.00102	0.00402	<0.00102	0.00402	<0.00101	0.00397	0.00184 J	0.00399	0.00180 J	0.00398	0.00435	0.00398
o-Xylene		<0.000346	0.00201	<0.000346	0.00201	<0.000342	0.00198	<0.000344	0.00200	<0.000342	0.00199	<0.000342	0.00199
Total Xylenes		<0.000346	0.00201	<0.000346	0.00201	<0.000342	0.00198	0.00184 J	0.00200	0.00180 J	0.00199	0.00435	0.00199
Total BTEX		<0.000346	0.00201	<0.000346	0.00201	<0.000342	0.00198	0.00184 J	0.00200	0.00180 J	0.00199	0.00868	0.00199
Chloride by EPA 300	***Extracted:***	Oct-16-19 08:30		Oct-16-19 08:30		Oct-16-19 08:30		Oct-16-19 08:30		Oct-16-19 08:30		Oct-16-19 08:30	
	Analyzed:	Oct-16-19 11:06		Oct-16-19 10:34		Oct-16-19 10:39		Oct-16-19 10:45		Oct-16-19 10:50		Oct-16-19 11:11	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		5.16	5.00	9.56	5.02	70.2	4.96	6.31	5.05	11.3	5.05	4.52 J	5.00
TPH by SW8015 Mod	***Extracted:***	Oct-15-19 17:00		Oct-15-19 17:00		Oct-15-19 17:00		Oct-15-19 17:00		Oct-15-19 17:00		Oct-15-19 17:00	
	Analyzed:	Oct-15-19 18:19		Oct-15-19 18:39		Oct-15-19 19:00		Oct-15-19 19:21		Oct-15-19 19:42		Oct-15-19 20:02	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Gasoline Range Hydrocarbons (GRO)		<15.0	49.9	<14.9	49.8	<15.0	50.0	<15.0	49.9	<15.0	49.9	<15.0	50.0
Diesel Range Organics (DRO)		<15.0	49.9	<14.9	49.8	<15.0	50.0	<15.0	49.9	<15.0	49.9	<15.0	50.0
Motor Oil Range Hydrocarbons (MRO)		<15.0	49.9	<14.9	49.8	<15.0	50.0	<15.0	49.9	<15.0	49.9	<15.0	50.0
Total TPH		<15.0	49.9	<14.9	49.8	<15.0	50.0	<15.0	49.9	<15.0	49.9	<15.0	50.0

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

Version: 1.%

Allison Johnson
Midland Laboratory Director

Certificate of Analysis Summary 640051

Ensolum, Dallas, TX

Project Name: Thistle 44

Project Id:
Contact: Beaux Jennings
Project Location:

Date Received in Lab: Tue Oct-15-19 04:09 pm
Report Date: 17-OCT-19
Project Manager: Jessica Kramer

Analysis Requested											
	Lab Id:	640051-007		640051-008		640051-009		640051-010			
	Field Id:	Re2-CS-4		Re-STP-1		Re-STP-2		Re-STP-3			
	Depth:	.75- ft									
	Matrix:	SOIL		SOIL		SOIL		SOIL			
	Sampled:	Oct-15-19 11:45		Oct-15-19 12:40		Oct-15-19 12:45		Oct-15-19 12:50			
TPH by SW8015 Mod	***Extracted:***	Oct-15-19 17:00		Oct-15-19 17:00		Oct-15-19 17:00		Oct-15-19 17:00			
	Analyzed:	Oct-15-19 20:23		Oct-15-19 20:44		Oct-15-19 21:05		Oct-15-19 21:26			
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL		
Gasoline Range Hydrocarbons (GRO)		34.3 J	49.8	35.2 J	50.0	115	49.8	233	50.0		
Diesel Range Organics (DRO)		604	49.8	825	50.0	1760	49.8	1940	50.0		
Motor Oil Range Hydrocarbons (MRO)		62.7	49.8	88.8	50.0	192	49.8	202	50.0		
Total TPH		701	49.8	949	50.0	2070	49.8	2380	50.0		

Allison Johnson
Midland Laboratory Director

Analytical Report 640051

for

Ensolum

Project Manager: Beaux Jennings

Thistle 44

17-OCT-19

Collected By: Client

1211 W. Florida Ave
Midland TX 79701

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

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

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

17-OCT-19

Project Manager: **Beaux Jennings**
Ensolum
2351 W Northwest Highway
Suite 1203
Dallas, TX 75220

Reference: XENCO Report No(s): **640051**
Thistle 44
Project Address:

Beaux Jennings:

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) 640051. 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. 640051 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,

Allison Johnson
Midland Laboratory Director

Sample Cross Reference 640051

Ensolum, Dallas, TX

Thistle 44

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
Re-CS-14	S	10-15-19 11:00	2 ft	640051-001
CS-15	S	10-15-19 11:05	2 ft	640051-002
CS-16	S	10-15-19 11:10	2 ft	640051-003
Re-CS-10	S	10-15-19 11:15	2 ft	640051-004
CS-17	S	10-15-19 11:20	2 ft	640051-005
CS-18	S	10-15-19 11:25	2 ft	640051-006
Re2-CS-4	S	10-15-19 11:45	.75 ft	640051-007
Re-STP-1	S	10-15-19 12:40	ft	640051-008
Re-STP-2	S	10-15-19 12:45	ft	640051-009
Re-STP-3	S	10-15-19 12:50	ft	640051-010

CASE NARRATIVE

Client Name: Ensolum
Project Name: Thistle 44

Project ID:
Work Order Number(s): *640051*

Report Date: *17-OCT-19*
Date Received: *10/15/2019*

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-3104413 TPH by SW8015 Mod
Surrogate 1-Chlorooctane recovered below QC limits. Matrix interferences is suspected; data confirmed by re-analysis.
Samples affected are: 640051-004,640051-002.

Batch: LBA-3104568 BTEX by EPA 8021B
Benzene, Ethylbenzene, m,p-Xylenes, o-Xylene Relative Percent Difference (RPD) between matrix spike and duplicate were above quality control limits.
Samples in the analytical batch are: 640051-001, -002, -003, -004, -005, -006
Soil samples were not received in Terracore kits and therefore were prepared by method 5030.
Lab Sample ID 640051-001 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD).
Benzene, Ethylbenzene, Toluene, m,p-Xylenes, o-Xylene recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 640051-001, -002, -003, -004, -005, -006.
The Laboratory Control Sample for Toluene, Benzene, m,p-Xylenes, Ethylbenzene, o-Xylene is within laboratory Control Limits, therefore the data was accepted.

Analyst did not spike MSD in prep error.

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Thistle 44

Sample Id:	**Re-CS-14**	Matrix:	Soil	Date Received:	10.15.19 16.09
Lab Sample Id:	640051-001	Date Collected:	10.15.19 11.00	Sample Depth:	2 ft

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	
Analyst:	CHE	Date Prep:	10.16.19 08.30	Basis:	Wet Weight
Seq Number:	3104467				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**5.16**	5.00	0.858	mg/kg	10.16.19 11.06		1

Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DVM			% Moisture:	
Analyst:	ARM	Date Prep:	10.15.19 17.00	Basis:	Wet Weight
Seq Number:	3104413				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	49.9	15.0	mg/kg	10.15.19 18.19	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	49.9	15.0	mg/kg	10.15.19 18.19	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	49.9	15.0	mg/kg	10.15.19 18.19	U	1
Total TPH	PHC635	<15.0	49.9	15.0	mg/kg	10.15.19 18.19	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	70	%	70-135	10.15.19 18.19	
o-Terphenyl	84-15-1	78	%	70-135	10.15.19 18.19	

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Ensolum, Dallas, TX

Thistle 44

Sample Id:	**Re-CS-14**	Matrix:	Soil	Date Received:	10.15.19 16.09
Lab Sample Id:	640051-001	Date Collected:	10.15.19 11.00	Sample Depth:	2 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	KTL			% Moisture:	
Analyst:	KTL	Date Prep:	10.16.19 08.00	Basis:	Wet Weight
Seq Number:	3104568				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.000386	0.00201	0.000386	mg/kg	10.16.19 09.51	UX	1
Toluene	108-88-3	<0.000457	0.00201	0.000457	mg/kg	10.16.19 09.51	UX	1
Ethylbenzene	100-41-4	<0.000567	0.00201	0.000567	mg/kg	10.16.19 09.51	UX	1
m,p-Xylenes	179601-23-1	<0.00102	0.00402	0.00102	mg/kg	10.16.19 09.51	UX	1
o-Xylene	95-47-6	<0.000346	0.00201	0.000346	mg/kg	10.16.19 09.51	UX	1
Total Xylenes	1330-20-7	<0.000346	0.00201	0.000346	mg/kg	10.16.19 09.51	U	1
Total BTEX		<0.000346	0.00201	0.000346	mg/kg	10.16.19 09.51	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	93	%	70-130	10.16.19 09.51	
1,4-Difluorobenzene	540-36-3	82	%	70-130	10.16.19 09.51	

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Thistle 44

Sample Id:	**CS-15**	Matrix:	Soil	Date Received:	10.15.19 16.09
Lab Sample Id:	640051-002	Date Collected:	10.15.19 11.05	Sample Depth:	2 ft

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	
Analyst:	CHE	Date Prep:	10.16.19 08.30	Basis:	Wet Weight
Seq Number:	3104467				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**9.56**	5.02	0.862	mg/kg	10.16.19 10.34		1

Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DVM			% Moisture:	
Analyst:	ARM	Date Prep:	10.15.19 17.00	Basis:	Wet Weight
Seq Number:	3104413				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<14.9	49.8	14.9	mg/kg	10.15.19 18.39	U	1
Diesel Range Organics (DRO)	C10C28DRO	<14.9	49.8	14.9	mg/kg	10.15.19 18.39	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<14.9	49.8	14.9	mg/kg	10.15.19 18.39	U	1
Total TPH	PHC635	<14.9	49.8	14.9	mg/kg	10.15.19 18.39	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	69	%	70-135	10.15.19 18.39	**
o-Terphenyl	84-15-1	75	%	70-135	10.15.19 18.39	

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Thistle 44

Sample Id:	**CS-15**	Matrix:	Soil	Date Received:	10.15.19 16.09
Lab Sample Id:	640051-002	Date Collected:	10.15.19 11.05	Sample Depth:	2 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	KTL			% Moisture:	
Analyst:	KTL	Date Prep:	10.16.19 08.00	Basis:	Wet Weight
Seq Number:	3104568				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.000387	0.00201	0.000387	mg/kg	10.16.19 10.11	U	1
Toluene	108-88-3	<0.000458	0.00201	0.000458	mg/kg	10.16.19 10.11	U	1
Ethylbenzene	100-41-4	<0.000568	0.00201	0.000568	mg/kg	10.16.19 10.11	U	1
m,p-Xylenes	179601-23-1	<0.00102	0.00402	0.00102	mg/kg	10.16.19 10.11	U	1
o-Xylene	95-47-6	<0.000346	0.00201	0.000346	mg/kg	10.16.19 10.11	U	1
Total Xylenes	1330-20-7	<0.000346	0.00201	0.000346	mg/kg	10.16.19 10.11	U	1
Total BTEX		<0.000346	0.00201	0.000346	mg/kg	10.16.19 10.11	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	87	%	70-130	10.16.19 10.11	
4-Bromofluorobenzene	460-00-4	93	%	70-130	10.16.19 10.11	

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Thistle 44

Sample Id:	**CS-16**	Matrix:	Soil	Date Received:	10.15.19 16.09
Lab Sample Id:	640051-003	Date Collected:	10.15.19 11.10	Sample Depth:	2 ft

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	
Analyst:	CHE	Date Prep:	10.16.19 08.30	Basis:	Wet Weight
Seq Number:	3104467				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**70.2**	4.96	0.852	mg/kg	10.16.19 10.39		1

Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DVM			% Moisture:	
Analyst:	ARM	Date Prep:	10.15.19 17.00	Basis:	Wet Weight
Seq Number:	3104413				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	50.0	15.0	mg/kg	10.15.19 19.00	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	50.0	15.0	mg/kg	10.15.19 19.00	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	50.0	15.0	mg/kg	10.15.19 19.00	U	1
Total TPH	PHC635	<15.0	50.0	15.0	mg/kg	10.15.19 19.00	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	71	%	70-135	10.15.19 19.00	
o-Terphenyl	84-15-1	77	%	70-135	10.15.19 19.00	

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Ensolum, Dallas, TX

Thistle 44

Sample Id:	**CS-16**	Matrix:	Soil	Date Received:	10.15.19 16.09
Lab Sample Id:	640051-003	Date Collected:	10.15.19 11.10	Sample Depth:	2 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	KTL			% Moisture:	
Analyst:	KTL	Date Prep:	10.16.19 08.00	Basis:	Wet Weight
Seq Number:	3104568				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.000382	0.00198	0.000382	mg/kg	10.16.19 10.32	U	1
Toluene	108-88-3	<0.000452	0.00198	0.000452	mg/kg	10.16.19 10.32	U	1
Ethylbenzene	100-41-4	<0.000560	0.00198	0.000560	mg/kg	10.16.19 10.32	U	1
m,p-Xylenes	179601-23-1	<0.00101	0.00397	0.00101	mg/kg	10.16.19 10.32	U	1
o-Xylene	95-47-6	<0.000342	0.00198	0.000342	mg/kg	10.16.19 10.32	U	1
Total Xylenes	1330-20-7	<0.000342	0.00198	0.000342	mg/kg	10.16.19 10.32	U	1
Total BTEX		<0.000342	0.00198	0.000342	mg/kg	10.16.19 10.32	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	86	%	70-130	10.16.19 10.32	
1,4-Difluorobenzene	540-36-3	84	%	70-130	10.16.19 10.32	

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Ensolum, Dallas, TX

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Sample Id:	**Re-CS-10**	Matrix:	Soil	Date Received:	10.15.19 16.09
Lab Sample Id:	640051-004	Date Collected:	10.15.19 11.15	Sample Depth:	2 ft

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	
Analyst:	CHE	Date Prep:	10.16.19 08.30	Basis:	Wet Weight
Seq Number:	3104467				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**6.31**	5.05	0.867	mg/kg	10.16.19 10.45		1

Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DVM			% Moisture:	
Analyst:	ARM	Date Prep:	10.15.19 17.00	Basis:	Wet Weight
Seq Number:	3104413				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	49.9	15.0	mg/kg	10.15.19 19.21	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	49.9	15.0	mg/kg	10.15.19 19.21	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	49.9	15.0	mg/kg	10.15.19 19.21	U	1
Total TPH	PHC635	<15.0	49.9	15.0	mg/kg	10.15.19 19.21	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	68	%	70-135	10.15.19 19.21	**
o-Terphenyl	84-15-1	75	%	70-135	10.15.19 19.21	

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Ensolum, Dallas, TX

Thistle 44

Sample Id:	**Re-CS-10**	Matrix:	Soil	Date Received:	10.15.19 16.09
Lab Sample Id:	640051-004	Date Collected:	10.15.19 11.15	Sample Depth:	2 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	KTL			% Moisture:	
Analyst:	KTL	Date Prep:	10.16.19 08.00	Basis:	Wet Weight
Seq Number:	3104568				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.000384	0.00200	0.000384	mg/kg	10.16.19 10.52	U	1
Toluene	108-88-3	<0.000455	0.00200	0.000455	mg/kg	10.16.19 10.52	U	1
Ethylbenzene	100-41-4	<0.000564	0.00200	0.000564	mg/kg	10.16.19 10.52	U	1
m,p-Xylenes	179601-23-1	**0.00184**	0.00399	0.00101	mg/kg	10.16.19 10.52	J	1
o-Xylene	95-47-6	<0.000344	0.00200	0.000344	mg/kg	10.16.19 10.52	U	1
Total Xylenes	1330-20-7	**0.00184**	0.00200	0.000344	mg/kg	10.16.19 10.52	J	1
Total BTEX		**0.00184**	0.00200	0.000344	mg/kg	10.16.19 10.52	J	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	96	%	70-130	10.16.19 10.52	
4-Bromofluorobenzene	460-00-4	95	%	70-130	10.16.19 10.52	

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Thistle 44

Sample Id:	**CS-17**	Matrix:	Soil	Date Received:	10.15.19 16.09
Lab Sample Id:	640051-005	Date Collected:	10.15.19 11.20	Sample Depth:	2 ft

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	
Analyst:	CHE	Date Prep:	10.16.19 08.30	Basis:	Wet Weight
Seq Number:	3104467				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**11.3**	5.05	0.867	mg/kg	10.16.19 10.50		1

Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DVM			% Moisture:	
Analyst:	ARM	Date Prep:	10.15.19 17.00	Basis:	Wet Weight
Seq Number:	3104413				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	49.9	15.0	mg/kg	10.15.19 19.42	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	49.9	15.0	mg/kg	10.15.19 19.42	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	49.9	15.0	mg/kg	10.15.19 19.42	U	1
Total TPH	PHC635	<15.0	49.9	15.0	mg/kg	10.15.19 19.42	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	71	%	70-135	10.15.19 19.42	
o-Terphenyl	84-15-1	76	%	70-135	10.15.19 19.42	

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Sample Id:	**CS-17**	Matrix:	Soil	Date Received:	10.15.19 16.09
Lab Sample Id:	640051-005	Date Collected:	10.15.19 11.20	Sample Depth:	2 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	KTL			% Moisture:	
Analyst:	KTL	Date Prep:	10.16.19 08.00	Basis:	Wet Weight
Seq Number:	3104568				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.000383	0.00199	0.000383	mg/kg	10.16.19 11.12	U	1
Toluene	108-88-3	<0.000453	0.00199	0.000453	mg/kg	10.16.19 11.12	U	1
Ethylbenzene	100-41-4	<0.000561	0.00199	0.000561	mg/kg	10.16.19 11.12	U	1
m,p-Xylenes	179601-23-1	**0.00180**	0.00398	0.00101	mg/kg	10.16.19 11.12	J	1
o-Xylene	95-47-6	<0.000342	0.00199	0.000342	mg/kg	10.16.19 11.12	U	1
Total Xylenes	1330-20-7	**0.00180**	0.00199	0.000342	mg/kg	10.16.19 11.12	J	1
Total BTEX		**0.00180**	0.00199	0.000342	mg/kg	10.16.19 11.12	J	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	95	%	70-130	10.16.19 11.12	
1,4-Difluorobenzene	540-36-3	88	%	70-130	10.16.19 11.12	

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Ensolum, Dallas, TX

Thistle 44

Sample Id:	**CS-18**	Matrix:	Soil	Date Received:	10.15.19 16.09
Lab Sample Id:	640051-006	Date Collected:	10.15.19 11.25	Sample Depth:	2 ft

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	
Analyst:	CHE	Date Prep:	10.16.19 08.30	Basis:	Wet Weight
Seq Number:	3104467				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**4.52**	5.00	0.858	mg/kg	10.16.19 11.11	J	1

Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DVM			% Moisture:	
Analyst:	ARM	Date Prep:	10.15.19 17.00	Basis:	Wet Weight
Seq Number:	3104413				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	50.0	15.0	mg/kg	10.15.19 20.02	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	50.0	15.0	mg/kg	10.15.19 20.02	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	50.0	15.0	mg/kg	10.15.19 20.02	U	1
Total TPH	PHC635	<15.0	50.0	15.0	mg/kg	10.15.19 20.02	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	71	%	70-135	10.15.19 20.02	
o-Terphenyl	84-15-1	77	%	70-135	10.15.19 20.02	

Certificate of Analytical Results 640051

Ensolum, Dallas, TX

Thistle 44

Sample Id:	**CS-18**	Matrix:	Soil	Date Received:	10.15.19 16.09
Lab Sample Id:	640051-006	Date Collected:	10.15.19 11.25	Sample Depth:	2 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	KTL			% Moisture:	
Analyst:	KTL	Date Prep:	10.16.19 08.00	Basis:	Wet Weight
Seq Number:	3104568				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	**0.00177**	0.00199	0.000383	mg/kg	10.16.19 11.32	J	1
Toluene	108-88-3	**0.00186**	0.00199	0.000453	mg/kg	10.16.19 11.32	J	1
Ethylbenzene	100-41-4	**0.000696**	0.00199	0.000561	mg/kg	10.16.19 11.32	J	1
m,p-Xylenes	179601-23-1	**0.00435**	0.00398	0.00101	mg/kg	10.16.19 11.32		1
o-Xylene	95-47-6	<0.000342	0.00199	0.000342	mg/kg	10.16.19 11.32	U	1
Total Xylenes	1330-20-7	**0.00435**	0.00199	0.000342	mg/kg	10.16.19 11.32		1
Total BTEX		**0.00868**	0.00199	0.000342	mg/kg	10.16.19 11.32		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	90	%	70-130	10.16.19 11.32	
4-Bromofluorobenzene	460-00-4	97	%	70-130	10.16.19 11.32	

Certificate of Analytical Results 640051

Ensolum, Dallas, TX

Thistle 44

Sample Id:	**Re2-CS-4**	Matrix:	Soil	Date Received:	10.15.19 16.09
Lab Sample Id:	640051-007	Date Collected:	10.15.19 11.45	Sample Depth:	.75 ft
Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DVM			% Moisture:	
Analyst:	ARM	Date Prep:	10.15.19 17.00	Basis:	Wet Weight
Seq Number:	3104413				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	**34.3**	49.8	14.9	mg/kg	10.15.19 20.23	J	1
Diesel Range Organics (DRO)	C10C28DRO	**604**	49.8	14.9	mg/kg	10.15.19 20.23		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**62.7**	49.8	14.9	mg/kg	10.15.19 20.23		1
Total TPH	PHC635	**701**	49.8	14.9	mg/kg	10.15.19 20.23		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	72	%	70-135	10.15.19 20.23	
o-Terphenyl	84-15-1	82	%	70-135	10.15.19 20.23	

Certificate of Analytical Results 640051

Ensolum, Dallas, TX

Thistle 44

Sample Id:	**Re-STP-1**	Matrix:	Soil	Date Received:	10.15.19 16.09
Lab Sample Id:	640051-008	Date Collected:	10.15.19 12.40		
Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DVM			% Moisture:	
Analyst:	ARM	Date Prep:	10.15.19 17.00	Basis:	Wet Weight
Seq Number:	3104413				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	**35.2**	50.0	15.0	mg/kg	10.15.19 20.44	J	1
Diesel Range Organics (DRO)	C10C28DRO	**825**	50.0	15.0	mg/kg	10.15.19 20.44		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**88.8**	50.0	15.0	mg/kg	10.15.19 20.44		1
Total TPH	PHC635	**949**	50.0	15.0	mg/kg	10.15.19 20.44		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	75	%	70-135	10.15.19 20.44	
o-Terphenyl	84-15-1	84	%	70-135	10.15.19 20.44	

Certificate of Analytical Results 640051

Ensolum, Dallas, TX

Thistle 44

Sample Id:	**Re-STP-2**	Matrix:	Soil	Date Received:	10.15.19 16.09
Lab Sample Id:	640051-009	Date Collected:	10.15.19 12.45		
Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DVM			% Moisture:	
Analyst:	ARM	Date Prep:	10.15.19 17.00	Basis:	Wet Weight
Seq Number:	3104413				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	**115**	49.8	14.9	mg/kg	10.15.19 21.05		1
Diesel Range Organics (DRO)	C10C28DRO	**1760**	49.8	14.9	mg/kg	10.15.19 21.05		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**192**	49.8	14.9	mg/kg	10.15.19 21.05		1
Total TPH	PHC635	**2070**	49.8	14.9	mg/kg	10.15.19 21.05		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	95	%	70-135	10.15.19 21.05	
o-Terphenyl	84-15-1	116	%	70-135	10.15.19 21.05	

Certificate of Analytical Results 640051

Ensolum, Dallas, TX

Thistle 44

Sample Id:	**Re-STP-3**	Matrix:	Soil	Date Received:	10.15.19 16.09
Lab Sample Id:	640051-010	Date Collected:	10.15.19 12.50		
Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DVM			% Moisture:	
Analyst:	ARM	Date Prep:	10.15.19 17.00	Basis:	Wet Weight
Seq Number:	3104413				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	**233**	50.0	15.0	mg/kg	10.15.19 21.26		1
Diesel Range Organics (DRO)	C10C28DRO	**1940**	50.0	15.0	mg/kg	10.15.19 21.26		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**202**	50.0	15.0	mg/kg	10.15.19 21.26		1
Total TPH	PHC635	**2380**	50.0	15.0	mg/kg	10.15.19 21.26		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	85	%	70-135	10.15.19 21.26	
o-Terphenyl	84-15-1	102	%	70-135	10.15.19 21.26	

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 640051

Ensolum

Thistle 44

Analytical Method: Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3104467 — Matrix: Solid — Date Prep: 10.16.19
MB Sample Id: 7688220-1-BLK — LCS Sample Id: 7688220-1-BKS — LCSD Sample Id: 7688220-1-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	233	93	232	93	90-110	0	20	mg/kg	10.16.19 08:56	

Analytical Method: Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3104467 — Matrix: Soil — Date Prep: 10.16.19
Parent Sample Id: 639989-001 — MS Sample Id: 639989-001 S — MSD Sample Id: 639989-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	17.3	252	310	116	311	117	90-110	0	20	mg/kg	10.16.19 12:09	X

Analytical Method: Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3104467 — Matrix: Soil — Date Prep: 10.16.19
Parent Sample Id: 640051-001 — MS Sample Id: 640051-001 S — MSD Sample Id: 640051-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	5.16	250	265	104	266	104	90-110	0	20	mg/kg	10.16.19 11:32	

Analytical Method: TPH by SW8015 Mod — Prep Method: SW8015P
Seq Number: 3104413 — Matrix: Solid — Date Prep: 10.15.19
MB Sample Id: 7688175-1-BLK — LCS Sample Id: 7688175-1-BKS — LCSD Sample Id: 7688175-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	853	85	878	88	70-135	3	20	mg/kg	10.15.19 13:05	
Diesel Range Organics (DRO)	<15.0	1000	847	85	865	87	70-135	2	20	mg/kg	10.15.19 13:05	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	71		73		87		70-135	%	10.15.19 13:05
o-Terphenyl	77		76		88		70-135	%	10.15.19 13:05

Analytical Method: TPH by SW8015 Mod — Prep Method: SW8015P
Seq Number: 3104413 — Matrix: Solid — Date Prep: 10.15.19
MB Sample Id: 7688175-1-BLK

Parameter	MB Result	Units	Analysis Date	Flag
Motor Oil Range Hydrocarbons (MRO)	<15.0	mg/kg	10.15.19 12:44	

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 640051

Ensolum

Thistle 44

Analytical Method: TPH by SW8015 Mod | Prep Method: SW8015P
Seq Number: 3104413 | Matrix: Soil | Date Prep: 10.15.19
Parent Sample Id: 639853-021 | MS Sample Id: 639853-021 S | MSD Sample Id: 639853-021 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	997	839	84	837	84	70-135	0	20	mg/kg	10.15.19 14:08	
Diesel Range Organics (DRO)	<15.0	997	853	86	862	86	70-135	1	20	mg/kg	10.15.19 14:08	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	77		76		70-135	%	10.15.19 14:08
o-Terphenyl	74		75		70-135	%	10.15.19 14:08

Analytical Method: BTEX by EPA 8021B | Prep Method: SW5030B
Seq Number: 3104568 | Matrix: Solid | Date Prep: 10.16.19
MB Sample Id: 7688218-1-BLK | LCS Sample Id: 7688218-1-BKS | LCSD Sample Id: 7688218-1-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	0.0796	80	0.0873	87	70-130	9	35	mg/kg	10.16.19 07:51	
Toluene	<0.000456	0.100	0.0871	87	0.0926	93	70-130	6	35	mg/kg	10.16.19 07:51	
Ethylbenzene	<0.000565	0.100	0.0907	91	0.0932	93	70-130	3	35	mg/kg	10.16.19 07:51	
m,p-Xylenes	<0.00101	0.200	0.181	91	0.186	93	70-130	3	35	mg/kg	10.16.19 07:51	
o-Xylene	<0.000344	0.100	0.0949	95	0.0994	99	70-130	5	35	mg/kg	10.16.19 07:51	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	86		90		94		70-130	%	10.16.19 07:51
4-Bromofluorobenzene	94		94		99		70-130	%	10.16.19 07:51

Analytical Method: BTEX by EPA 8021B | Prep Method: SW5030B
Seq Number: 3104568 | Matrix: Soil | Date Prep: 10.16.19
Parent Sample Id: 640051-001 | MS Sample Id: 640051-001 S

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	Limits	Units	Analysis Date	Flag
Benzene	<0.000384	0.0998	0.00169	2	70-130	mg/kg	10.16.19 08:52	X
Toluene	<0.000455	0.0998	<0.000455	0	70-130	mg/kg	10.16.19 08:52	X
Ethylbenzene	<0.000564	0.0998	0.0466	47	70-130	mg/kg	10.16.19 08:52	X
m,p-Xylenes	<0.00101	0.200	0.0782	39	70-130	mg/kg	10.16.19 08:52	X
o-Xylene	<0.000344	0.0998	0.0104	10	70-130	mg/kg	10.16.19 08:52	X

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

Final 1.000

XENCO LABORATORIES

Chain of Custody

Work Order No: 640051

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:	Beaux Jennings	Bill to: (if different)	
Company Name:	Ensolum LLC	Company Name:	
Address:	705 W. Wadley 210	Address:	
City, State ZIP:	Midland TX 79705	City, State ZIP:	
Phone:	432 230 5344	Email:	bjennings@ensolum.com

Work Order Comments

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

Project Name:	Thistle 44	Turn Around	
Project Number:	03B1226014	Routine ☐	
P.O. Number:	03B1226014	Rush: 24	
Sampler's Name:	SHANE DILLER	Due Date:	

SAMPLE RECEIPT				
Temp Blank:	Yes (No)	Wet Ice:	(Yes) No	
Temperature (°C):	3.1	Thermometer ID	28	
Received Intact:	(Yes) No			
Cooler Custody Seals:	Yes No N/A	Correction Factor:	-0.2	
Sample Custody Seals:	Yes (No) N/A	Total Containers:		

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers	TPH 8015	BTEX 8021B	Chlorides	Work Order Notes / Sample Comments
Re-CS-14	S	10-15	1100	2'	1	X	X	X	24hr
CS-15	S	10-15	1105	2'	1	X	X	X	24hr
CS-16	S	10-15	1110	2'	1	X	X	X	24hr
Re-CS-10	S	10-15	1115	2'	1	X	X	X	24hr
CS-17	S	10-15	1120	2'	1	X	X	X	24hr
CS-18	S	10-15	1125	2'	1	X	X	X	24hr
Re2-CS-4	S	10-15	1145	.75	1	X			24hr
Re-STP-1	S	10-15	1240	—	1	X			24hr
Re-STP-2	S	10-15	1245	—	1	X			24hr
Re-STP-3	S	10-15	1250	—	1	X			24hr

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

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

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1		10/15 14:09	2		
3			4		
5			6		

Revised Date 051418 Rev. 2018.1

Cole-Parmer® CUSTODY SEAL

Person Collecting Sample _____ (signature) Sample No. 10

Date Collected 10-15-19 Time Collected 1300

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: Ensolum

Date/ Time Received: 10/15/2019 04:09:00 PM

Work Order #: 640051

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?	**Yes**	
#5 Custody Seals intact on sample bottles?	**N/A**	
#6*Custody Seals Signed and dated?	**Yes**	
#7 *Chain of Custody present?	**Yes**	
#8 Any missing/extra samples?	**No**	
#9 Chain of Custody signed when relinquished/ received?	**Yes**	
#10 Chain of Custody agrees with sample labels/matrix?	**Yes**	
#11 Container label(s) legible and intact?	**Yes**	
#12 Samples in proper container/ bottle?	**Yes**	TPH in bulk
#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: Amanda Levario Date: 10/15/2019

Checklist reviewed by: Jessica Kramer Date: 10/16/2019

Jessica Kramer

Certificate of Analysis Summary 641601

Ensolum, Dallas, TX

Project Name: Thistle 44

Project Id: 03B1226014
Contact: Beaux Jennings
Project Location:

Date Received in Lab: Wed Oct-30-19 04:30 pm
Report Date: 04-NOV-19
Project Manager: Jessica Kramer

Analysis Requested											
	Lab Id:	641601-001		641601-002		641601-003		641601-004			
	Field Id:	Re 3 CS-4		Re 2 STP-1		Re 2 STP-2		Re 2 STP-3			
	Depth:	.75-									
	Matrix:	SOIL		SOIL		SOIL		SOIL			
	Sampled:	Oct-30-19 12:25		Oct-30-19 12:10		Oct-30-19 12:15		Oct-30-19 12:20			
TPH by SW8015 Mod	***Extracted:***	Nov-01-19 10:00		Nov-01-19 10:00		Nov-01-19 10:00		Nov-01-19 10:00			
	Analyzed:	Nov-01-19 19:31		Nov-01-19 19:52		Nov-01-19 20:13		Nov-01-19 18:49			
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL		
Gasoline Range Hydrocarbons (GRO)		23.7 J	49.9	39.2 J	50.0	52.6	50.0	163	50.0		
Diesel Range Organics (DRO)		28.9 J	49.9	1970	50.0	2530	50.0	4220	50.0		
Motor Oil Range Hydrocarbons (MRO)		<15.0	49.9	182	50.0	237	50.0	464	50.0		
Total TPH		52.6	49.9	2190	50.0	2820	50.0	4850	50.0		

Jessica Kramer
Project Assistant

Analytical Report 641601

for

Ensolum

Project Manager: Beaux Jennings

Thistle 44

03B1226014

04-NOV-19

Collected By: Client

1211 W. Florida Ave
Midland TX 79701

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

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

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

Table of Contents

04-NOV-19

Project Manager: **Beaux Jennings**
Ensolum
2351 W Northwest Highway
Suite 1203
Dallas, TX 75220

Reference: XENCO Report No(s): **641601**
Thistle 44
Project Address:

Beaux Jennings:

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) 641601. 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. 641601 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,

Jessica Kramer

Jessica Kramer
Project Assistant

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

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

Sample Cross Reference 641601

Ensolum, Dallas, TX

Thistle 44

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
Re 3 CS-4	S	10-30-19 12:25	.75	641601-001
Re 2 STP-1	S	10-30-19 12:10		641601-002
Re 2 STP-2	S	10-30-19 12:15		641601-003
Re 2 STP-3	S	10-30-19 12:20		641601-004

CASE NARRATIVE

Client Name: Ensolum

Project Name: Thistle 44

Project ID: *03B1226014*
Work Order Number(s): *641601*

Report Date: *04-NOV-19*
Date Received: *10/30/2019*

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

Certificate of Analytical Results 641601

Ensolum, Dallas, TX

Thistle 44

Sample Id:	**Re 3 CS-4**	Matrix:	Soil	Date Received:	10.30.19 16.30
Lab Sample Id:	641601-001	Date Collected:	10.30.19 12.25	Sample Depth:	.75
Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DVM			% Moisture:	
Analyst:	ARM	Date Prep:	11.01.19 10.00	Basis:	Wet Weight
Seq Number:	3106224				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	**23.7**	49.9	15.0	mg/kg	11.01.19 19.31	J	1
Diesel Range Organics (DRO)	C10C28DRO	**28.9**	49.9	15.0	mg/kg	11.01.19 19.31	J	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	49.9	15.0	mg/kg	11.01.19 19.31	U	1
Total TPH	PHC635	**52.6**	49.9	15.0	mg/kg	11.01.19 19.31		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	97	%	70-135	11.01.19 19.31	
o-Terphenyl	84-15-1	96	%	70-135	11.01.19 19.31	

Certificate of Analytical Results 641601

Ensolum, Dallas, TX

Thistle 44

Sample Id:	**Re 2 STP-1**	Matrix:	Soil	Date Received:	10.30.19 16.30
Lab Sample Id:	641601-002	Date Collected:	10.30.19 12.10		
Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DVM			% Moisture:	
Analyst:	ARM	Date Prep:	11.01.19 10.00	Basis:	Wet Weight
Seq Number:	3106224				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	**39.2**	50.0	15.0	mg/kg	11.01.19 19.52	J	1
Diesel Range Organics (DRO)	C10C28DRO	**1970**	50.0	15.0	mg/kg	11.01.19 19.52		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**182**	50.0	15.0	mg/kg	11.01.19 19.52		1
Total TPH	PHC635	**2190**	50.0	15.0	mg/kg	11.01.19 19.52		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	100	%	70-135	11.01.19 19.52	
o-Terphenyl	84-15-1	93	%	70-135	11.01.19 19.52	

Certificate of Analytical Results 641601

Ensolum, Dallas, TX

Thistle 44

Sample Id:	**Re 2 STP-2**	Matrix:	Soil	Date Received:	10.30.19 16.30
Lab Sample Id:	641601-003	Date Collected:	10.30.19 12.15		
Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DVM			% Moisture:	
Analyst:	ARM	Date Prep:	11.01.19 10.00	Basis:	Wet Weight
Seq Number:	3106224				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	**52.6**	50.0	15.0	mg/kg	11.01.19 20.13		1
Diesel Range Organics (DRO)	C10C28DRO	**2530**	50.0	15.0	mg/kg	11.01.19 20.13		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**237**	50.0	15.0	mg/kg	11.01.19 20.13		1
Total TPH	PHC635	**2820**	50.0	15.0	mg/kg	11.01.19 20.13		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	101	%	70-135	11.01.19 20.13	
o-Terphenyl	84-15-1	91	%	70-135	11.01.19 20.13	

Certificate of Analytical Results 641601

Ensolum, Dallas, TX

Thistle 44

Sample Id:	**Re 2 STP-3**	Matrix:	Soil	Date Received:	10.30.19 16.30
Lab Sample Id:	641601-004	Date Collected:	10.30.19 12.20		
Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DVM			% Moisture:	
Analyst:	ARM	Date Prep:	11.01.19 10.00	Basis:	Wet Weight
Seq Number:	3106227				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	**163**	50.0	15.0	mg/kg	11.01.19 18.49		1
Diesel Range Organics (DRO)	C10C28DRO	**4220**	50.0	15.0	mg/kg	11.01.19 18.49		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**464**	50.0	15.0	mg/kg	11.01.19 18.49		1
Total TPH	PHC635	**4850**	50.0	15.0	mg/kg	11.01.19 18.49		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	97	%	70-135	11.01.19 18.49	
o-Terphenyl	84-15-1	91	%	70-135	11.01.19 18.49	

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 641601

Ensolum

Thistle 44

Analytical Method: TPH by SW8015 Mod — Prep Method: SW8015P
Seq Number: 3106224 — Matrix: Solid — Date Prep: 11.01.19
MB Sample Id: 7689385-1-BLK — LCS Sample Id: 7689385-1-BKS — LCSD Sample Id: 7689385-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	1000	100	1010	101	70-135	1	20	mg/kg	11.01.19 11:49	
Diesel Range Organics (DRO)	<15.0	1000	1070	107	1070	107	70-135	0	20	mg/kg	11.01.19 11:49	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	98		109		106		70-135	%	11.01.19 11:49
o-Terphenyl	101		107		101		70-135	%	11.01.19 11:49

Analytical Method: TPH by SW8015 Mod — Prep Method: SW8015P
Seq Number: 3106227 — Matrix: Solid — Date Prep: 11.01.19
MB Sample Id: 7689388-1-BLK — LCS Sample Id: 7689388-1-BKS — LCSD Sample Id: 7689388-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	870	87	950	95	70-135	9	20	mg/kg	11.01.19 11:49	
Diesel Range Organics (DRO)	<15.0	1000	845	85	960	96	70-135	13	20	mg/kg	11.01.19 11:49	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	88		88		117		70-135	%	11.01.19 11:49
o-Terphenyl	94		90		100		70-135	%	11.01.19 11:49

Analytical Method: TPH by SW8015 Mod — Prep Method: SW8015P
Seq Number: 3106224 — Matrix: Solid — Date Prep: 11.01.19
MB Sample Id: 7689385-1-BLK

Parameter	MB Result	Units	Analysis Date	Flag
Motor Oil Range Hydrocarbons (MRO)	<15.0	mg/kg	11.01.19 11:28	

Analytical Method: TPH by SW8015 Mod — Prep Method: SW8015P
Seq Number: 3106227 — Matrix: Solid — Date Prep: 11.01.19
MB Sample Id: 7689388-1-BLK

Parameter	MB Result	Units	Analysis Date	Flag
Motor Oil Range Hydrocarbons (MRO)	<15.0	mg/kg	11.01.19 11:28	

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 641601

Ensolum

Thistle 44

Analytical Method: **TPH by SW8015 Mod** Prep Method: SW8015P
Seq Number: 3106224 Matrix: Soil Date Prep: 11.01.19
Parent Sample Id: 641715-001 MS Sample Id: 641715-001 S MSD Sample Id: 641715-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	997	1030	103	1030	103	70-135	0	20	mg/kg	11.01.19 12:52	
Diesel Range Organics (DRO)	24.1	997	1110	109	1120	110	70-135	1	20	mg/kg	11.01.19 12:52	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	105		105		70-135	%	11.01.19 12:52
o-Terphenyl	103		101		70-135	%	11.01.19 12:52

Analytical Method: **TPH by SW8015 Mod** Prep Method: SW8015P
Seq Number: 3106227 Matrix: Soil Date Prep: 11.01.19
Parent Sample Id: 641763-001 MS Sample Id: 641763-001 S MSD Sample Id: 641763-001 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)	<14.9	996	848	85	921	92	70-135	8	20	mg/kg	11.01.19 12:52	
Diesel Range Organics (DRO)	16.7	996	910	90	960	94	70-135	5	20	mg/kg	11.01.19 12:52	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	95		97		70-135	%	11.01.19 12:52
o-Terphenyl	85		96		70-135	%	11.01.19 12:52

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

XENCO LABORATORIES

Chain of Custody

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

Work Order No: 641601

www.xenco.com Page 1 of 1

Project Manager:	Beaux Jennings	Bill to: (if different)	
Company Name:	Ensolum LLC	Company Name:	
Address:	705 W. Wadley 210	Address:	
City, State ZIP:	MIDLAND TX 79705	City, State ZIP:	
Phone:	432 230 3344	Email:	bjennings@ensolum.com

Work Order Comments

Program: UST/PST ☐ PRP ☐ Brownfields ☐ RRC ☒ Superfund ☐

State of Project:

Reporting: Level II ☐ Level III ☐ PST/UST ☐ TRRP ☐ Level IV ☐

Deliverables: EDD ☐ ADaPT ☐ Other:

Project Name:	Thistle 44	Turn Around	
Project Number:	03B1226014	Routine ☐	
P.O. Number:	03B1226014	Rush: 24hr	
Sampler's Name:	Shane Diller	Due Date:	

SAMPLE RECEIPT	Temp Blank: Yes (No)	Wet Ice: (Yes) No
Temperature (°C):	4.4/4.3	Thermometer ID:
Received Intact:	(Yes) No	
Cooler Custody Seals:	Yes (No) N/A	Correction Factor:
Sample Custody Seals:	Yes (No) N/A	Total Containers:

ANALYSIS REQUEST

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers	TPH 8015	Sample Comments
Re3 CS-4	S	10-30	1225	.75	1	X	24
Re2 STP-1	S	10-30	1210	—	1	X	24
Re2 STP-2	S	10-30	1215	—	1	X	24
Re2 STP-3	S	10-30	1220	—	1	X	24

NFR 10-30-19 SD

Work Order Notes

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

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

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

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1 [signature]	[signature]	1423 10/30	2		
3			4		
5			6		

Revised Date 051418 Rev. 2018.1

CUSTODY SEAL

Date 10-30-19

Signature

Thermo SCIENTIFIC

90009

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: Ensolum

Date/ Time Received: 10/30/2019 04:30:00 PM

Work Order #: 641601

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)?	4.3
#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: 10/30/2019

Brianna Teel

Checklist reviewed by: Jessica Kramer Date: 10/31/2019

Jessica Kramer

Certificate of Analysis Summary 644547

Ensolum, Dallas, TX

Project Name: Thistle 44

Project Id: 03B1226014
Contact: Beaux Jennings
Project Location: New Mexico

Date Received in Lab: Tue Nov-26-19 03:25 pm
Report Date: 02-DEC-19
Project Manager: Jessica Kramer

Analysis Requested									
	Lab Id:	644547-001		644547-002					
	Field Id:	RE3-STP-3		RE3-STP-2					
	Depth:								
	Matrix:	SOIL		SOIL					
	Sampled:	Nov-26-19 12:40		Nov-26-19 12:45					
TPH by SW8015 Mod	***Extracted:***	Nov-27-19 14:00		Nov-27-19 14:00					
	Analyzed:	Nov-27-19 23:43		Nov-28-19 00:02					
	Units/RL:	mg/kg	RL	mg/kg	RL				
Gasoline Range Hydrocarbons (GRO)		59.0	49.9	20.6 J	49.9				
Diesel Range Organics (DRO)		3840	49.9	2000	49.9				
Motor Oil Range Hydrocarbons (MRO)		536	49.9	306	49.9				
Total TPH		4440	49.9	2330	49.9				

Jessica Kramer
Project Assistant

Final 1.000

Analytical Report 644547

for

Ensolum

Project Manager: Beaux Jennings

Thistle 44

03B1226014

02-DEC-19

Collected By: Client

1211 W. Florida Ave
Midland TX 79701

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-19-30), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2019-058), North Carolina (681), Arkansas (19-037-0)

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

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-19-16)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-19-21)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-19)
Xenco-Carlsbad (LELAP): Louisiana (05092)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-19-5)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Tampa: Florida (E87429), North Carolina (483)

02-DEC-19

Project Manager: **Beaux Jennings**
Ensolum
2351 W Northwest Highway
Suite 1203
Dallas, TX 75220

Reference: XENCO Report No(s): **644547**
Thistle 44
Project Address: New Mexico

Beaux Jennings:

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) 644547. 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.

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

Respectfully,

Jessica Kramer

Jessica Kramer
Project Assistant

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

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

Sample Cross Reference 644547

Ensolum, Dallas, TX

Thistle 44

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
RE3-STP-3	S	11-26-19 12:40		644547-001
RE3-STP-2	S	11-26-19 12:45		644547-002

CASE NARRATIVE

Client Name: Ensolum

Project Name: Thistle 44

Project ID: *03B1226014*
Work Order Number(s): *644547*

Report Date: *02-DEC-19*
Date Received: *11/26/2019*

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

Certificate of Analytical Results 644547

Ensolum, Dallas, TX

Thistle 44

Sample Id:	**RE3-STP-3**	Matrix:	Soil	Date Received:	11.26.19 15.25
Lab Sample Id:	644547-001	Date Collected:	11.26.19 12.40		
Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DVM			% Moisture:	
Analyst:	ARM	Date Prep:	11.27.19 14.00	Basis:	Wet Weight
Seq Number:	3108996				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	**59.0**	49.9	15.0	mg/kg	11.27.19 23.43		1
Diesel Range Organics (DRO)	C10C28DRO	**3840**	49.9	15.0	mg/kg	11.27.19 23.43		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**536**	49.9	15.0	mg/kg	11.27.19 23.43		1
Total TPH	PHC635	**4440**	49.9	15.0	mg/kg	11.27.19 23.43		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	118	%	70-135	11.27.19 23.43	
o-Terphenyl	84-15-1	116	%	70-135	11.27.19 23.43	

Certificate of Analytical Results 644547

Ensolum, Dallas, TX

Thistle 44

Sample Id:	**RE3-STP-2**	Matrix:	Soil	Date Received:	11.26.19 15.25
Lab Sample Id:	644547-002	Date Collected:	11.26.19 12.45		
Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DVM			% Moisture:	
Analyst:	ARM	Date Prep:	11.27.19 14.00	Basis:	Wet Weight
Seq Number:	3108996				

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	**20.6**	49.9	15.0	mg/kg	11.28.19 00.02	J	1
Diesel Range Organics (DRO)	C10C28DRO	**2000**	49.9	15.0	mg/kg	11.28.19 00.02		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**306**	49.9	15.0	mg/kg	11.28.19 00.02		1
Total TPH	PHC635	**2330**	49.9	15.0	mg/kg	11.28.19 00.02		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	106	%	70-135	11.28.19 00.02	
o-Terphenyl	84-15-1	129	%	70-135	11.28.19 00.02	

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 644547

Ensolum

Thistle 44

Analytical Method: TPH by SW8015 Mod — Prep Method: SW8015P
Seq Number: 3108996 — Matrix: Solid — Date Prep: 11.27.19
MB Sample Id: 7691346-1-BLK — LCS Sample Id: 7691346-1-BKS — LCSD Sample Id: 7691346-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	1150	115	1170	117	70-135	2	20	mg/kg	11.27.19 17:09	
Diesel Range Organics (DRO)	<15.0	1000	1060	106	1190	119	70-135	12	20	mg/kg	11.27.19 17:09	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	125		127		117		70-135	%	11.27.19 17:09
o-Terphenyl	124		113		122		70-135	%	11.27.19 17:09

Analytical Method: TPH by SW8015 Mod — Prep Method: SW8015P
Seq Number: 3108996 — Matrix: Solid — Date Prep: 11.27.19
MB Sample Id: 7691346-1-BLK

Parameter	MB Result	Units	Analysis Date	Flag
Motor Oil Range Hydrocarbons (MRO)	<15.0	mg/kg	11.27.19 16:50	

Analytical Method: TPH by SW8015 Mod — Prep Method: SW8015P
Seq Number: 3108996 — Matrix: Soil — Date Prep: 11.27.19
Parent Sample Id: 644625-001 — MS Sample Id: 644625-001 S — MSD Sample Id: 644625-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	998	1180	118	1150	115	70-135	3	20	mg/kg	11.27.19 18:05	
Diesel Range Organics (DRO)	<15.0	998	1110	111	1120	112	70-135	1	20	mg/kg	11.27.19 18:05	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	127		130		70-135	%	11.27.19 18:05
o-Terphenyl	120		121		70-135	%	11.27.19 18:05

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

XENCO LABORATORIES

Chain of Custody

Work Order No: 044517

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 Craslbad, NM (432) 704-5440
Phoenix,AZ (480) 355-0900 Atlanta,GA (770) 449-8800 Tampa,FL (813) 620-2000 West Palm Beach, FL (561) 689-6701

www.xenco.com Page 1 of 1

Project Manager:	Bryan Jennings	Bill to: (if different)	
Company Name:	Ensolum	Company Name:	
Address:	705 W. Wadley Ste 210	Address:	
City, State ZIP:	Midland TX 79705	City, State ZIP:	
Phone:	432 230 3344	Email:	bjennings@ensolum.com

Work Order Comments

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

Project Name:	Triple 44	Turn Around	
Project Number:	03B1226014	Routine ☒	
Project Location	New Mexico	Rush:	
Sampler's Name:	Shane Dellin	Due Date:	
PO #:	03B1226014	Quote #:	

SAMPLE RECEIPT			
Temperature (°C):	1.4	Temp Blank:	Yes (No)
Received Intact:	(Yes) No	Wet Ice:	(Yes) No
Cooler Custody Seals:	(Yes) No N/A	Thermometer ID	VE
Sample Custody Seals:	(Yes) No N/A	Correction Factor:	0
		Total Containers:	

Preservative Codes

MeOH: Me
None: NO
HNO3: HN
H2S04: H2
HCL: HL
NaOH: Na
Zn Acetate+ NaOH: Zn

TAT starts the day recevied by the lab, if received by 4:00pm

Lab ID	Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers	Pres. Code	TPH 8015	Sample Comments
	Rc3-5TP-1	S	11-26-19	1240	—	1		X	
	Rc3-5TP-2	S	11-26-19	1245	—	1		X	

NFE 11-26-19

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

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

	Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1			11/26 1515	2		
3				4		
5				6		

Revised Date 022619 Rev. 2019.1

CUSTODY SEAL

Date 11-26-19

Signature

Thermo SCIENTIFIC

90009

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: Ensolum

Date/ Time Received: 11/26/2019 03:25:00 PM

Work Order #: 644547

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)?	1.6
#2 *Shipping container in good condition?	**Yes**
#3 *Samples received on ice?	**Yes**
#4 *Custody Seals intact on shipping container/ cooler?	**Yes**
#5 Custody Seals intact on sample bottles?	**N/A**
#6*Custody Seals Signed and dated?	**Yes**
#7 *Chain of Custody present?	**Yes**
#8 Any missing/extra samples?	**No**
#9 Chain of Custody signed when relinquished/ received?	**Yes**
#10 Chain of Custody agrees with sample labels/matrix?	**Yes**
#11 Container label(s) legible and intact?	**Yes**
#12 Samples in proper container/ bottle?	**Yes**
#13 Samples properly preserved?	**Yes**
#14 Sample container(s) intact?	**Yes**
#15 Sufficient sample amount for indicated test(s)?	**Yes**
#16 All samples received within hold time?	**Yes**
#17 Subcontract of sample(s)?	**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: 11/26/2019
Brianna Teel

Checklist reviewed by: Jessica Kramer Date: 11/27/2019
Jessica Kramer

Certificate of Analysis Summary 646690

Lighthouse Environmental Service, Inc., Houston, TX

Project Name: EPROD Thistle 44 Station

Project Id: 2004-5210
Contact: Simon Hudgens
Project Location:

Date Received in Lab: Tue Dec-17-19 04:34 pm
Report Date: 18-DEC-19
Project Manager: Holly Taylor

Analysis Requested									
	Lab Id:	646690-001		646690-002		646690-003				
	Field Id:	RE3-STP-1		RE4-STP-2		RE4-STP-3				
	Depth:									
	Matrix:	SOIL		SOIL		SOIL				
	Sampled:	Dec-13-19 12:40		Dec-13-19 13:00		Dec-13-19 13:15				
TPH by SW8015 Mod	***Extracted:***	Dec-17-19 17:00		Dec-17-19 17:00		Dec-17-19 17:00				
	Analyzed:	Dec-18-19 05:30		Dec-18-19 05:52		Dec-18-19 06:13				
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL			
Gasoline Range Hydrocarbons (GRO)		<49.9	49.9	<49.9	49.9	<50.0	50.0			
Diesel Range Organics (DRO)		453	49.9	210	49.9	569	50.0			
Motor Oil Range Hydrocarbons (MRO)		72.8	49.9	<49.9	49.9	96.8	50.0			
Total TPH		526	49.9	210	49.9	666	50.0			

Version: 1.%

Jessica Kramer
Project Assistant

Analytical Report 646690

for

Lighthouse Environmental Service, Inc.

Project Manager: Simon Hudgens

EPROD Thistle 44 Station

2004-5210

18-DEC-19

Collected By: Client

1211 W. Florida Ave
Midland TX 79701

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-19-30), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2019-058), North Carolina (681), Arkansas (19-037-0)

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

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-19-16)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-19-21)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-19)
Xenco-Carlsbad (LELAP): Louisiana (05092)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-19-5)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Tampa: Florida (E87429), North Carolina (483)

18-DEC-19

Project Manager: **Simon Hudgens**
Lighthouse Environmental Service, Inc.
P.O. Box 84152
Houston, TX 77584

Reference: XENCO Report No(s): **646690**
EPROD Thistle 44 Station
Project Address:

Simon Hudgens:

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) 646690. 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. 646690 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,

Jessica Kramer

Jessica Kramer
Project Assistant

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

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

Sample Cross Reference 646690

Lighthouse Environmental Service, Inc., Houston, TX

EPROD Thistle 44 Station

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
RE3-STP-1	S	12-13-19 12:40		646690-001
RE4-STP-2	S	12-13-19 13:00		646690-002
RE4-STP-3	S	12-13-19 13:15		646690-003

Version: 1.%

CASE NARRATIVE

Client Name: Lighthouse Environmental Service, Inc.

Project Name: EPROD Thistle 44 Station

Project ID: *2004-5210*
Work Order Number(s): *646690*

Report Date: *18-DEC-19*
Date Received: *12/17/2019*

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Certificate of Analytical Results 646690

Lighthouse Environmental Service, Inc., Houston, TX

EPROD Thistle 44 Station

Sample Id:	**RE3-STP-1**	Matrix:	Soil	Date Received:	12.17.19 16.34
Lab Sample Id:	646690-001	Date Collected:	12.13.19 12.40		
Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DVM			% Moisture:	
Analyst:	ARM	Date Prep:	12.17.19 17.00	Basis:	Wet Weight
Seq Number:	3110899				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	12.18.19 05.30	U	1
Diesel Range Organics (DRO)	C10C28DRO	**453**	49.9	mg/kg	12.18.19 05.30		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**72.8**	49.9	mg/kg	12.18.19 05.30		1
Total TPH	PHC635	**526**	49.9	mg/kg	12.18.19 05.30		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	95	%	70-135	12.18.19 05.30	
o-Terphenyl	84-15-1	97	%	70-135	12.18.19 05.30	

Certificate of Analytical Results 646690

Lighthouse Environmental Service, Inc., Houston, TX

EPROD Thistle 44 Station

Sample Id:	**RE4-STP-2**	Matrix:	Soil	Date Received:	12.17.19 16.34
Lab Sample Id:	646690-002	Date Collected:	12.13.19 13.00		
Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DVM			% Moisture:	
Analyst:	ARM	Date Prep:	12.17.19 17.00	Basis:	Wet Weight
Seq Number:	3110899				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	12.18.19 05.52	U	1
Diesel Range Organics (DRO)	C10C28DRO	**210**	49.9	mg/kg	12.18.19 05.52		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	12.18.19 05.52	U	1
Total TPH	PHC635	**210**	49.9	mg/kg	12.18.19 05.52		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	88	%	70-135	12.18.19 05.52	
o-Terphenyl	84-15-1	90	%	70-135	12.18.19 05.52	

Certificate of Analytical Results 646690

Lighthouse Environmental Service, Inc., Houston, TX

EPROD Thistle 44 Station

Sample Id:	**RE4-STP-3**	Matrix:	Soil	Date Received:	12.17.19 16.34
Lab Sample Id:	646690-003	Date Collected:	12.13.19 13.15		
Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DVM			% Moisture:	
Analyst:	ARM	Date Prep:	12.17.19 17.00	Basis:	Wet Weight
Seq Number:	3110899				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	12.18.19 06.13	U	1
Diesel Range Organics (DRO)	C10C28DRO	**569**	50.0	mg/kg	12.18.19 06.13		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**96.8**	50.0	mg/kg	12.18.19 06.13		1
Total TPH	PHC635	**666**	50.0	mg/kg	12.18.19 06.13		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	91	%	70-135	12.18.19 06.13	
o-Terphenyl	84-15-1	98	%	70-135	12.18.19 06.13	

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 646690

Lighthouse Environmental Service, Inc.

EPROD Thistle 44 Station

Analytical Method: TPH by SW8015 Mod — Prep Method: SW8015P
Seq Number: 3110899 — Matrix: Solid — Date Prep: 12.17.19
MB Sample Id: 7692683-1-BLK — LCS Sample Id: 7692683-1-BKS — LCSD Sample Id: 7692683-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<50.0	1000	896	90	895	90	70-135	0	20	mg/kg	12.17.19 21:49	
Diesel Range Organics (DRO)	<15.0	1000	916	92	914	91	70-135	0	20	mg/kg	12.17.19 21:49	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	89		99		93		70-135	%	12.17.19 21:49
o-Terphenyl	89		90		90		70-135	%	12.17.19 21:49

Analytical Method: TPH by SW8015 Mod — Prep Method: SW8015P
Seq Number: 3110899 — Matrix: Solid — Date Prep: 12.17.19
MB Sample Id: 7692683-1-BLK

Parameter	MB Result	Units	Analysis Date	Flag
Motor Oil Range Hydrocarbons (MRO)	<50.0	mg/kg	12.17.19 21:28	

Analytical Method: TPH by SW8015 Mod — Prep Method: SW8015P
Seq Number: 3110899 — Matrix: Soil — Date Prep: 12.17.19
Parent Sample Id: 646532-021 — MS Sample Id: 646532-021 S — MSD Sample Id: 646532-021 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	998	826	83	836	84	70-135	1	20	mg/kg	12.17.19 22:51	
Diesel Range Organics (DRO)	<15.0	998	865	87	872	87	70-135	1	20	mg/kg	12.17.19 22:51	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	91		91		70-135	%	12.17.19 22:51
o-Terphenyl	85		85		70-135	%	12.17.19 22:51

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

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)

Work Order No: 646690

www.xenco.com Page 1 of 1

Project Manager:	Simon Hudgens	Bill to: (if different)	
Company Name:	Lighthouse Environmental	Company Name:	
Address:	4904 Fuqua Street	Address:	
City, State ZIP:	Houston, TX 77048	City, State ZIP:	
Phone:	469.243.9571	Email:	shudgens@lighthouseenv.com; mmedina@lighthouseenv

Work Order Comments

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

		Turn Around
Project Name:	EPROD Thistle 44 Station	
Project Number:	2004-5210	Routine
P.O. Number:	2004-5210	Rush: 24 hr
Sampler's Name:	Simon Hudgens	Due Date:

SAMPLE RECEIPT

Temp Blank:	Yes (No)	Wet Ice:	(Yes) No
Temperature (°C):	5.6	Thermometer ID	R8
Received Intact:	(Yes) No		
Cooler Custody Seals:	Yes No (N/A)	Correction Factor:	
Sample Custody Seals:	Yes No (N/A)	Total Containers:	3

ANALYSIS REQUEST

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers	TPH 8015 GRO/DRO/MRO	BTEX 8021B	TCLP RCRA 8 Metals	Total Sulfur	TCLP BTEX	RCI	Reactive Sulfur	Chlorides	TCLP RCRA 11 Metals	VOC	SVOC				Sample Comments
RE3-STP-1	Solid	12/13/2019	1240	NA	1	X														Composite
RE4-STP-2	Solid	12/13/2019	1300	NA	1	X														Composite
RE4-STP-3	Solid	12/13/2019	1315	NA	1	X														Composite

Work Order Notes

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

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

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

	Relinquished by: (Signature)	Received by: (Signature)	Date/Time		Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1	[signature]	[signature]	12/17/19; 1634	2			
3				4			
5				6			

Revised Date 051418 Rev. 2018.1

Certificate of Analysis Summary 648814

Lighthouse Environmental Service, Inc., Houston, TX

Project Name: EPROD Thistle 44 Station

Project Id: 2004-5210
Contact: Simon Hudgens
Project Location:

Date Received in Lab: Mon Jan-13-20 12:38 pm
Report Date: 15-JAN-20
Project Manager: Holly Taylor

Analysis Requested									
	Lab Id:	648814-001		648814-002		648814-003				
	Field Id:	RE4-STP-1		RE5-STP-2		RE5-STP-3				
	Depth:									
	Matrix:	SOIL		SOIL		SOIL				
	Sampled:	Jan-10-20 15:30		Jan-10-20 15:40		Jan-10-20 15:55				
TPH by SW8015 Mod	***Extracted:***	Jan-13-20 15:00		Jan-13-20 15:00		Jan-13-20 15:00				
	Analyzed:	Jan-14-20 04:54		Jan-14-20 05:50		Jan-14-20 06:10				
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL			
Gasoline Range Hydrocarbons (GRO)		<50.0	50.0	<50.0	50.0	<49.9	49.9			
Diesel Range Organics (DRO)		146	50.0	63.9	50.0	62.2	49.9			
Motor Oil Range Hydrocarbons (MRO)		<50.0	50.0	<50.0	50.0	<49.9	49.9			
Total TPH		146	50.0	63.9	50.0	62.2	49.9			

Holly Taylor
Project Manager

Analytical Report 648814

for

Lighthouse Environmental Service, Inc.

Project Manager: Simon Hudgens

EPROD Thistle 44 Station

2004-5210

15-JAN-20

Collected By: Client

1211 W. Florida Ave
Midland TX 79701

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-19-30), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2019-058), North Carolina (681), Arkansas (19-037-0)

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

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-19-16)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-19-21)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-19)
Xenco-Carlsbad (LELAP): Louisiana (05092)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-19-5)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Tampa: Florida (E87429), North Carolina (483)

15-JAN-20

Project Manager: **Simon Hudgens**
Lighthouse Environmental Service, Inc.
P.O. Box 84152
Houston, TX 77584

Reference: XENCO Report No(s): **648814**
EPROD Thistle 44 Station
Project Address:

Simon Hudgens:

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) 648814. 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. 648814 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,

Holly Taylor

Holly Taylor
Project Manager

Sample Cross Reference 648814

Lighthouse Environmental Service, Inc., Houston, TX

EPROD Thistle 44 Station

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
RE4-STP-1	S	01-10-20 15:30		648814-001
RE5-STP-2	S	01-10-20 15:40		648814-002
RE5-STP-3	S	01-10-20 15:55		648814-003

CASE NARRATIVE

Client Name: Lighthouse Environmental Service, Inc.

Project Name: EPROD Thistle 44 Station

Project ID: *2004-5210*
Work Order Number(s): *648814*

Report Date: *15-JAN-20*
Date Received: *01/13/2020*

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Certificate of Analytical Results 648814

Lighthouse Environmental Service, Inc., Houston, TX

EPROD Thistle 44 Station

Sample Id:	**RE4-STP-1**	Matrix:	Soil	Date Received:	01.13.20 12.38
Lab Sample Id:	648814-001	Date Collected:	01.10.20 15.30		
Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DVM			% Moisture:	
Analyst:	ARM	Date Prep:	01.13.20 15.00	Basis:	Wet Weight
Seq Number:	3113134				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	01.14.20 04.54	U	1
Diesel Range Organics (DRO)	C10C28DRO	**146**	50.0	mg/kg	01.14.20 04.54		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	01.14.20 04.54	U	1
Total TPH	PHC635	**146**	50.0	mg/kg	01.14.20 04.54		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	87	%	70-135	01.14.20 04.54	
o-Terphenyl	84-15-1	95	%	70-135	01.14.20 04.54	

Certificate of Analytical Results 648814

Lighthouse Environmental Service, Inc., Houston, TX

EPROD Thistle 44 Station

Sample Id:	**RE5-STP-2**	Matrix:	Soil	Date Received:	01.13.20 12.38
Lab Sample Id:	648814-002	Date Collected:	01.10.20 15.40		
Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DVM			% Moisture:	
Analyst:	ARM	Date Prep:	01.13.20 15.00	Basis:	Wet Weight
Seq Number:	3113134				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	01.14.20 05.50	U	1
Diesel Range Organics (DRO)	C10C28DRO	**63.9**	50.0	mg/kg	01.14.20 05.50		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	01.14.20 05.50	U	1
Total TPH	PHC635	**63.9**	50.0	mg/kg	01.14.20 05.50		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	89	%	70-135	01.14.20 05.50	
o-Terphenyl	84-15-1	92	%	70-135	01.14.20 05.50	

Certificate of Analytical Results 648814

Lighthouse Environmental Service, Inc., Houston, TX

EPROD Thistle 44 Station

Sample Id:	**RE5-STP-3**	Matrix:	Soil	Date Received:	01.13.20 12.38
Lab Sample Id:	648814-003	Date Collected:	01.10.20 15.55		
Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DVM			% Moisture:	
Analyst:	ARM	Date Prep:	01.13.20 15.00	Basis:	Wet Weight
Seq Number:	3113134				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	01.14.20 06.10	U	1
Diesel Range Organics (DRO)	C10C28DRO	**62.2**	49.9	mg/kg	01.14.20 06.10		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	01.14.20 06.10	U	1
Total TPH	PHC635	**62.2**	49.9	mg/kg	01.14.20 06.10		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	101	%	70-135	01.14.20 06.10	
o-Terphenyl	84-15-1	104	%	70-135	01.14.20 06.10	

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 648814

Lighthouse Environmental Service, Inc.

EPROD Thistle 44 Station

Analytical Method: TPH by SW8015 Mod — Prep Method: SW8015P
Seq Number: 3113134 — Matrix: Solid — Date Prep: 01.13.20
MB Sample Id: 7694236-1-BLK — LCS Sample Id: 7694236-1-BKS — LCSD Sample Id: 7694236-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	829	83	856	86	70-135	3	20	mg/kg	01.14.20 04:17	
Diesel Range Organics (DRO)	<15.0	1000	860	86	839	84	70-135	2	20	mg/kg	01.14.20 04:17	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	95		116		119		70-135	%	01.14.20 04:17
o-Terphenyl	99		106		102		70-135	%	01.14.20 04:17

Analytical Method: TPH by SW8015 Mod — Prep Method: SW8015P
Seq Number: 3113134 — Matrix: Solid — Date Prep: 01.13.20
MB Sample Id: 7694236-1-BLK

Parameter	MB Result	Units	Analysis Date	Flag
Motor Oil Range Hydrocarbons (MRO)	<50.0	mg/kg	01.14.20 03:58	

Analytical Method: TPH by SW8015 Mod — Prep Method: SW8015P
Seq Number: 3113134 — Matrix: Soil — Date Prep: 01.13.20
Parent Sample Id: 648814-001 — MS Sample Id: 648814-001 S — MSD Sample Id: 648814-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	997	780	78	770	77	70-135	1	20	mg/kg	01.14.20 05:13	
Diesel Range Organics (DRO)	146	997	927	78	911	77	70-135	2	20	mg/kg	01.14.20 05:13	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	109		109		70-135	%	01.14.20 05:13
o-Terphenyl	95		96		70-135	%	01.14.20 05:13

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: 6488914

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

Project Manager:	Simon Hudgens	Bill to: (if different)	
Company Name:	Lighthouse Environmental	Company Name:	
Address:	4904 Fuqua Street	Address:	
City, State ZIP:	Houston, TX 77048	City, State ZIP:	
Phone:	469.243.9571	Email:	shudgens@lighthouseenv.com; mmedina@lighthouseenv

Work Order Comments

Program: UST/PST ☐ PR ☐ Brownfiel ☐ RP ☐ Superfu ☐
State of Project: Texas
Reporting:Level II ☐ Level III ☐ PST/US ☐ TRR ☐ Level ☐
Deliverables: EDD ☐ ADaPT ☐ Other:

Project Name:	EPROD Thistle 44 Station	Turn Around	
Project Number:	2004-5210	Routine	
P.O. Number:	2004-5210	Rush: 2 Day	
Sampler's Name:	Michael Medina	Due Date:	

SAMPLE RECEIPT				
Temp Blank:	Yes (No)	Wet Ice:	(Yes) No	
Temperature (°C):	5.9	Thermometer ID	R8	
Received Intact:	(Yes) No			
Cooler Custody Seals:	Yes No (N/A)	Correction Factor:	0	
Sample Custody Seals:	Yes No (N/A)	Total Containers:	3	

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers	TPH 8015 GRO/DRO/MRO	BTEX 8021B	TCLP RCRA 8 Metals	Total Sulfur	TCLP BTEX	RCI	Reactive Sulfur	Chlorides	Sample Comments
RE4-STP-1	Soil	1/10/2020	1530	NA	1	X								Composite
RE5-STP-2	Soil	1/10/2020	1540	NA	1	X								Composite
RE5-STP-3	Soil	1/10/2020	1555	NA	1	X								Composite

Work Order Notes

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

ANALYSIS REQUEST

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	Kramer	1/13/20; 1238			
3			4		
5			6		

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: Lighthouse Environmental Service, Inc.

Date/ Time Received: 01/13/2020 12:38:00 PM

Work Order #: 648814

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)?	5.9
#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: Jessica Kramer Date: 01/13/2020
Jessica Kramer

Checklist reviewed by: Holly Taylor Date: 01/13/2020
Holly Taylor

Certificate of Analysis Summary 649378

Lighthouse Environmental Service, Inc., Houston, TX

Project Name: EPROD Thistle 44 Station

Project Id: 2004-5210
Contact: Michael Medina
Project Location:

Date Received in Lab: Fri Jan-17-20 08:15 am
Report Date: 17-JAN-20
Project Manager: Holly Taylor

Analysis Requested								
	Lab Id:	649378-001						
	Field Id:	RE5-STP-1						
	Depth:							
	Matrix:	SOIL						
	Sampled:	Jan-15-20 17:00						
TPH by SW8015 Mod	***Extracted:***	Jan-17-20 08:30						
	Analyzed:	Jan-17-20 12:20						
	Units/RL:	mg/kg	RL					
Gasoline Range Hydrocarbons (GRO)		<49.9	49.9					
Diesel Range Organics (DRO)		<49.9	49.9					
Motor Oil Range Hydrocarbons (MRO)		<49.9	49.9					
Total TPH		<49.9	49.9					

Holly Taylor
Project Manager

Analytical Report 649378

for

Lighthouse Environmental Service, Inc.

Project Manager: Michael Medina

EPROD Thistle 44 Station

2004-5210

17-JAN-20

Collected By: Client

1211 W. Florida Ave
Midland TX 79701

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-19-30), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2019-058), North Carolina (681), Arkansas (19-037-0)

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

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-19-16)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-19-21)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-19)
Xenco-Carlsbad (LELAP): Louisiana (05092)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-19-5)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Tampa: Florida (E87429), North Carolina (483)

17-JAN-20

Project Manager: **Michael Medina**
Lighthouse Environmental Service, Inc.
P.O. Box 84152
Houston, TX 77584

Reference: XENCO Report No(s): **649378**
EPROD Thistle 44 Station
Project Address:

Michael Medina:

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) 649378. 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. 649378 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,

Holly Taylor

Holly Taylor
Project Manager

Sample Cross Reference 649378

Lighthouse Environmental Service, Inc., Houston, TX

EPROD Thistle 44 Station

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
RE5-STP-1	S	01-15-20 17:00		649378-001

CASE NARRATIVE

Client Name: Lighthouse Environmental Service, Inc.

Project Name: EPROD Thistle 44 Station

Project ID: *2004-5210*
Work Order Number(s): *649378*

Report Date: *17-JAN-20*
Date Received: *01/17/2020*

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Certificate of Analytical Results 649378

Lighthouse Environmental Service, Inc., Houston, TX

EPROD Thistle 44 Station

Sample Id:	**RE5-STP-1**	Matrix:	Soil	Date Received:	01.17.20 08.15
Lab Sample Id:	649378-001	Date Collected:	01.15.20 17.00		
Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	01.17.20 08.30	Basis:	Wet Weight
Seq Number:	3113637				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	01.17.20 12.20	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	01.17.20 12.20	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	01.17.20 12.20	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	01.17.20 12.20	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	92	%	70-135	01.17.20 12.20	
o-Terphenyl	84-15-1	92	%	70-135	01.17.20 12.20	

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 649378

Lighthouse Environmental Service, Inc.

EPROD Thistle 44 Station

Analytical Method: **TPH by SW8015 Mod** Prep Method: SW8015P
Seq Number: 3113637 Matrix: Solid Date Prep: 01.17.20
MB Sample Id: 7694612-1-BLK LCS Sample Id: 7694612-1-BKS LCSD Sample Id: 7694612-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	1100	110	1160	116	70-135	5	20	mg/kg	01.17.20 11:38	
Diesel Range Organics (DRO)	<15.0	1000	1020	102	926	93	70-135	10	20	mg/kg	01.17.20 11:38	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	94		103		109		70-135	%	01.17.20 11:38
o-Terphenyl	96		99		96		70-135	%	01.17.20 11:38

Analytical Method: **TPH by SW8015 Mod** Prep Method: SW8015P
Seq Number: 3113637 Matrix: Solid Date Prep: 01.17.20
MB Sample Id: 7694612-1-BLK

Parameter	MB Result	Units	Analysis Date	Flag
Motor Oil Range Hydrocarbons (MRO)	<50.0	mg/kg	01.17.20 11:17	

Analytical Method: **TPH by SW8015 Mod** Prep Method: SW8015P
Seq Number: 3113637 Matrix: Soil Date Prep: 01.17.20
Parent Sample Id: 649378-001 MS Sample Id: 649378-001 S MSD Sample Id: 649378-001 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)	20.9	999	1120	110	1090	107	70-135	3	20	mg/kg	01.17.20 12:41	
Diesel Range Organics (DRO)	<15.0	999	913	91	956	96	70-135	5	20	mg/kg	01.17.20 12:41	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	100		98		70-135	%	01.17.20 12:41
o-Terphenyl	96		87		70-135	%	01.17.20 12:41

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: 649378

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:	Michael Medina	Bill to: (if different)	
Company Name:	Lighthouse Environmental	Company Name:	
Address:	4904 Fuqua Street	Address:	
City, State ZIP:	Houston, TX 77048	City, State ZIP:	
Phone:	4323081388	Email:	shudgens@lighthouseenv.com; mmedina@lighthouseenv.c

Work Order Comments

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

Project Name:	EPROD Thistle 44 Station	Turn Around	
Project Number:	2004-5210	Routine	
P.O. Number:	2004-5210	Rush: 24 hr	
Sampler's Name:	Michael Medina	Due Date:	

SAMPLE RECEIPT				
Temp Blank:	Yes (No)	Wet Ice:	Yes No	
Temperature (°C):	3.6	Thermometer ID		
Received Intact:	(Yes) No			
Cooler Custody Seals:	Yes No (N/A)	Correction Factor:		
Sample Custody Seals:	Yes No (N/A)	Total Containers:		

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers	TPH 8015 GRO/DRO/MRO	Sample Comments
RE5-STP-1	soil	1/15/20	1700	NA	1	X	COMPOSITE

ANALYSIS REQUEST

Work Order Notes

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

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		1/17/20 915	2		
3			4		
5			6		

Revised Date 051418 Rev. 2018.1

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: Lighthouse Environmental Service, Inc.

Date/ Time Received: 01/17/2020 08:15:00 AM

Work Order #: 649378

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)?	3.6
#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: Alexis Jaime Date: 01/17/2020

Checklist reviewed by: Holly Taylor Date: 01/17/2020

ENSOLUM

APPENDIX F

C-141

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

State of New Mexico
Energy Minerals and Natural Resources Department

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

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

Incident ID	
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party: Enterprise Crude Pipeline, LLC	OGRID 174238
Contact Name: Christopher A. Spore, P.G.	Contact Telephone: 432-214-3264
Contact email: caspore@eprod.com	Incident # *(assigned by OCD)*
Contact mailing address: 4500 E. Highway 80, Midland, TX 79706	

Location of Release Source

Latitude 32.252646 Longitude -103.577376
(NAD 83 in decimal degrees to 5 decimal places)

Site Name: Thistle 44 Station	Site Type: Oil and Gas Storage/Transport Facility
Date Release Discovered: 9/23/19	API# *(if applicable)*

Unit Letter	Section	Township	Range	County
	4	24S	33E	Lea

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): 23	Volume Recovered (bbls): 3
☐ Produced Water	Volume Released (bbls)	Volume Recovered (bbls)
	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: Suspected corrosion at a welded 90° fitting on a 4-inch gathering line.

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

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

Initial Response

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

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

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

Excavation and remediation of impacted caliche is complete. Response action completion report, including site characterization to be submitted upon receipt of laboratory analytical data.

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: Jon E. Fields
Title: Director, Field Environmental

Signature: Jon E. Fields
Date: 10/8/19

email: jefields@eprod.com
Telephone: 713-381-6684

OCD Only

Received by: _____ Date: _____

Mendez, Brenda

From: OCDOnline@state.nm.us
Sent: Wednesday, October 9, 2019 7:48 AM
To: Mendez, Brenda
Subject: OCD Receipt of Fee Application Payment
Attachments: OCDReceiptOfFeePayment.pdf

Thank you for your fee application payment! Your receipt is attached.

PO Number: JPBON-191009-C-1410
Payment Date: 10/9/2019
Payment Amount: $150.00
Payment Type: Credit Card

Application Type: Application for administrative approval of a release notification and corrective action.
Fee Amount: $150.00
Application Status: Under OCD Review

OGRID: 241602
First Name: Brenda
Last Name: Mendez
Email: bjmendez@eprod.com

IMPORTANT: If you are mailing or delivering your application, you must print and include your receipt of payment as the first page on your application. All mailed and delivered applications must be sent to the following address: 1220 S. St. Francis Dr., Santa Fe, NM 87505. For inquiries, reference the PO Number listed above.

Oil Conservation Division * 1220 South St. Francis Drive * Santa Fe, New Mexico 87505
(505) 476-3441 * ocd.fees@state.nm.us * www.emnrd.state.nm.us/OCD

This is an automated email please do not reply.

10/9/2019

State of New Mexico
Energy, Minerals and Natural Resources Department
Oil Conservation Division

Receipt of Fee Application Payment

PO Number: JPBON-191009-C-1410

Payment Date:	10/9/2019 6:48:23 AM
Payment Amount:	$150.00
Payment Type:	Credit Card

Application Type:	Application for administrative approval of a release notification and corrective action.
Fee Amount:	$150.00
Application Status:	Under OCD Review

OGRID:	241602
First Name:	Brenda
Last Name:	Mendez
Email:	bjmendez@eprod.com

IMPORTANT: If you are mailing or delivering your application, you must print and include your receipt of payment as the first page on your application. All mailed and delivered applications must be sent to the following address: 1220 S. St. Francis Dr., Santa Fe, NM 87505. For inquiries, reference the PO Number listed above.

Mendez, Brenda

From: Mendez, Brenda
Sent: Tuesday, October 8, 2019 2:39 PM
To: 'EMNRD-OCD-District1spills@state.nm.us'
Cc: Spore, Christopher; Lee, Stephen; Fields, Jon
Subject: Thistle 44 - C141
Attachments: Thistle 44 C-141 Initial Release Report (9-23-19) October 2019.pdf

Good Afternoon

Attached is the C-141 Initial Release Report for Thistle 44 Station.

If you have questions or require additional information, please contact Chris Spore at 432-214-3264.

Thank you

Brenda J. Mendez
Analyst, Planning and Reports
Enterprise Products Operating, LLC
New Phone Number: Tel (713) 381-6595 – Fax (281) 887-8086
bjmendez@eprod.com