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State of New Mexico
Oil Conservation Division

Incident ID	NDHR 1918948878
District RP	1RP-5609
Facility ID	fDHR 1918948760
Application ID	pDHR 191894398

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?	64 (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.

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State of New Mexico
Oil Conservation Division

Incident ID	NDHR 1918948878
District RP	1RP-5609
Facility ID	fDHR 1918948760
Application ID	pDHR 191894398

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

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

Signature: RP Kirk Date: 12/05/2019

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

OCD Only

Received by: Date:

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State of New Mexico
Oil Conservation Division

Incident ID	NDHR 1918948878
District RP	1RP-5609
Facility ID	fDHR 1918948760
Application ID	pDHR 191894398

Remediation Plan

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

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

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

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

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

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

Signature: RP Kirk Date: 12/05/2019

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

OCD Only

Received by: _____ Date: _____

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

Signature: _____ Date: _____

Release Investigation and Remedial Action Plan

General Site Information:
Caza Eagle Claw Line (NMOCD Reference #: 1RP-5609)

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

Depth to Ground Water
64 feet below grade surface

Distance to Nearest Surface Water
Laguna Tonto (Central-western Lea County, NM), approximately 10.35 miles to the West

Driving Directions
From Hwy 62, South on Co Rd 27-A 1.95 mi, East on Lease Road 1.46 mi.,
to Pipe location

Legal Description
Unit D, Section 5, T20S, R35E, Lea County, New Mexico

September 20, 2019
Terracon Project No. AR197234

Prepared for:
Solaris Water Midstream LLC
Midland, Texas

Prepared by:
Terracon Consultants, Inc.
Lubbock, Texas

September 20, 2019

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

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

RE: **Release Investigation and Remedial Action Plan**
Caza Eagle Claw SWD Flowback Line Release (1RP-5609)
Unit D, Section 5, Township 20 South, Range 35 East, Lea County, New Mexico
Terracon Project No. AR197234

Dear Mr. Kirk,

Terracon Consultants, Inc. (Terracon) is pleased to submit our Release Investigation and Remedial Action Plan (RAP) for the site referenced above. The Release Investigation and RAP were developed in accordance with the New Mexico Oil Conservation Division (NMOCD) regulations concerning clean-up actions required for releases of crude oil and produced water. Based on the findings of the release investigation assessment, Terracon recommends the following actions be taken to achieve protection of fresh water and the environment in accordance with NMOCD regulations. Terracon developed the Release Investigation and RAP in general accordance with our proposal (PAR197234) dated July 8, 2019.

- Based on the magnitude of chloride and hydrocarbon concentrations detected within the release margins to depths subject to NMOCD Reclamation requirements, approximately 1,500 cubic yards (cy) of chloride impacted material will be required to be excavated and disposed of at a permitted disposal facility under manifest.
- Following excavation to recommended Reclamation depths, vertical and horizontal delineation samples will be collected from the base and walls of the excavation to confirm the remaining levels of soil contaminants are below the desired NMOCD Reclamation objectives.
- Based on the anticipated depth to groundwater and pending the confirmed vertical delineation, it is anticipated that a remedial response will be warranted within the soils at depths greater than 4 ft. bgs in the areas surrounding soil boring HA-3. Confirmation sampling for the presence of chlorides will be executed to confirm the remaining levels within soil are below the desired NMOCD Remediation objectives.

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

Sincerely,
Terracon Consultants, Inc.

Joseph Guesnier
Staff Scientist
Lubbock

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

Terracon

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Release Investigation and Remedial Action Plan
Caza Eagle Claw SWD Flowback Line Release
Unit D Section 5, Township 20 South, Range 35 East,
Lea County, New Mexico
NMOCD Reference No. 1RP-5609
Terracon Project No. AR197234
September 20, 2019

1.0 SITE DESCRIPTION

The Site is comprised of an approximate 0.45-acre tract of land within the Unit D Section 5, Township 20 South, Range 35 East, N.M.P.M., Lea County, New Mexico (hereinafter, the site). The site consists primarily of undeveloped range land except for a caliche lease road that is operated by Solaris Water Midstream (Solaris). A Topographic Map illustrating the site location is included as Figure 1 and a Chloride Concentration Map is included as Figure 2, and a Chloride Concentration Map (Soils >4 ft bgs.) is included as Figure 3 in Appendix A.

2.0 SCOPE OF SERVICES

Terracon's scope of services is to investigate the magnitude and extent of the documented release and develop a Remedial Action Plan (RAP) in accordance with the New Mexico Oil Conservation Division (NMOCD) and Bureau of Land Management (BLM) requirements that detail site closure activities to be completed. This RAP addresses the July 1, 2019 release of approximately 50 barrels (bbls) of produced water which contained an estimated 0.5 bbls of crude oil originating from a malfunctioning joint on a poly pipeline of a Solaris flowback line.

3.0 INTRODUCTION AND NOTIFICATION

The following table provides detailed information regarding the July 1, 2019 produced water release at the Caza Eagle Claw Flowback Line Release Site in Lea County, New Mexico:

Required Information	Site and Release information	
Responsible party Local contact	The facility is operated by Solaris Water Midstream	
	Contact: Mr. Rob Kirk	P: (469) 978-5620 E: rob.kirk@solarismidstream.com
NMOCD Notification	Notice of the release was provided to Dylan Rose-Cross (NMOCD), by Rob Kirk (Solaris), on July 8, 2019.	
Facility description	The Caza Eagle Claw line is in Lea County, New Mexico. It is an approximate 0.45-acre area located within Unit D, Section 5, Township 20 South, Range 35 East, approximately 13.25 miles	

Required Information	Site and Release information	
	west of Monument, New Mexico. The site is being utilized for the above ground pipeline.	
Time of incident	July 1, 2019, discovered at 8:00 a.m.	
Discharge event	A 6-inch polyethylene line became over pressurized and a joint malfunctioned. At the release point, released fluid saturated proximal surface soil before pooling, then flowing east down the ditch on the southside of the lease road, and the pressure of the release shot north over the lease road and finally pooling and terminating in the ditch on the northside of the lease road. The release margins are illustrated on Figure 2 of Appendix A.	
Type of discharge	The documented fluids release occurred at the surface and appears to be extensive to depth south of the lease road.	
Quantity of spilled material	Total Fluids: 50 bbls	Produced Water: 49.5 bbls containing approximately 0.5 bbls of crude oil
	Total Fluids Recovered: 10.25 bbls	Produced Water: 10 bbls Crude Oil: 0.25 bbls
Site characteristics	Relatively undulating topography with the native ground surface very gently sloping to the Southeast.	
Immediate corrective actions	Initial source elimination was accomplished by the Solaris Water Midstream foreman shutting off the line, and repairing it. A vacuum truck removed surface residuals.	

4.0 INITIAL RESPONSE ACTIONS

4.1 Source Elimination

Initial source elimination was accomplished by the Solaris Water Midstream foreman shutting off and repairing the line.

5.0 GENERAL SITE CHARACTERISTICS

5.1 Depth to Groundwater

A water well record search of the New Mexico Office of the State Engineer NMOSE POD Geographic Information System (GIS) data portal identified one registered well (L-04157) within 1.04 miles of the site. The depth to groundwater at the site is anticipated to be 64 feet bgs. NMOSE registered wells within a 5-mile radius of the site have an average depth to groundwater

of 286 feet bgs, with a minimum reported groundwater depth of 18 feet bgs (Exhibit 3 of Appendix A).

5.2 Distance to Nearest Potable Water Well

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

5.3 Distance to Nearest Surface Water

Laguna Tonto (Central-western Lea County, NM), approximately 10.35 miles to the West of the site.

5.4 Soil / Waste Characteristics

Soils at the site are mapped as Pyote soils and dune land, 0 to 3 percent slopes, 0 to 30 inches fine sand, and 30 to 60 inches fine sandy loam. This soil has a surface layer of fine sand; and depth to restrictive features is greater than 80 inches bgs, resulting in the formation being categorized with a negligible runoff classification.

5.5 Groundwater Quality

Groundwater quality is unknown at the site. As stated previously, there are no wells registered with the NMSOE website within 0.5 miles of the site.

6.0 REGULATORY FRAMEWORK AND RESPONSE ACTION LEVELS

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

6.1 Reclamation Levels (Surface to 4 ft. bgs)

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

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

6.2 Remediation Levels (> 4 ft. bgs)

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

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

**Or other methods approved by the division*
***Numerical limits or natural background level, whichever is greater*
****This applies to releases of produced water or other fluids, which may contain chloride*

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

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

7.0 SOIL SAMPLING PROCEDURES

Soil sampling procedures are detailed as follows:

7.1 Soil Sampling Procedures for Laboratory Analysis

Soil Sampling Procedures

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

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

Analytical Methods

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

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

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

8.0 RELEASE INVESTIGATION DATA EVALUATION

During Terracon's July 3, 2019 release investigation activities, a total of 22 soil samples were collected from the site and analyzed for BTEX, chloride, and/or TPH. A total of 18 samples were collected from within the release margins, and four samples were collected outside of the impacted area to evaluate background concentrations.

8.1 Background Data Evaluation

A total of four discrete soil samples were collected from two background locations in up-gradient positions relative to the release extent. Four of the samples were analyzed for the presence of BTEX. The four analyzed samples did not exhibit concentrations of BTEX constituents above applicable laboratory SDLs, as summarized in Table 1.

Total TPH was detected above applicable laboratory SDLs in each of the analyzed background samples. The Total TPH concentrations ranged from 17.7 mg/kg in soil sample HA-6 (0.5 ft bgs 1 ft bgs) to 38.7 mg/kg in soil sample HA-6 (surface to 0.5 ft bgs).

Each of the four background samples collected were analyzed for the presence of chloride. The detected chloride concentrations ranged from 1.81 mg/kg in soil sample HA-5 (surface to 0.5 ft bgs) to 10.8 mg/kg in soil sample HA-6 (surface to 0.5 ft bgs), as summarized in Table 1.

Based on the review of the analytical results of the background soil samples, the detected constituent concentrations did not exceed NMOCD Action Levels based on the criteria ranking parameters and applicability by depth. Based on this comparison, NMOCD Action Levels will continue to be utilized as the applicable RALs for the site.

8.2 Release Margins Data Evaluation

8.2.1 Reclamation Assessment Data Evaluation (On Lease Road)

Samples will be collected on the lease road during time of remediation of the contaminated soils surrounding the lease road. If samples are above the previously stated NMOCD remediation standards, we will remediate to below the NMOCD limits.

8.2.2 Reclamation Assessment Data Evaluation (Off Lease Road)

Benzene was detected above applicable laboratory SDLs in one of the eight soil samples analyzed within the release margins off the lease road. The benzene concentration was 0.0857

mg/kg in soil sample HA-4 (surface to 0.5 ft. bgs); which did not exceed the applicable NMOCD RAL for benzene of 10 mg/kg, as summarized in Table 1.

Total BTEX was detected above applicable laboratory SDLs in one of the eight soil samples analyzed within the release margins off the lease road. The Total BTEX concentration was 17.3 mg/kg in soil sample HA-4 (surface to 0.5 ft. bgs); which did not exceed the applicable NMOCD RAL for Total BTEX of 50 mg/kg, as summarized in Table 1.

Total TPH was detected above applicable laboratory SDLs in the 11 soil samples analyzed within the release margins off the lease road. The Total TPH concentrations ranged from 8.94 mg/kg in soil sample HA-2 (0.5 to 1.0 ft. bgs) to 18,000 mg/kg in soil sample HA-4 (surface to 0.5 ft. bgs). Two of the soil samples analyzed within the release margins did exhibit Total TPH concentrations above the NMOCD RAL of 100 mg/kg for Total TPH as summarized in Table 1.

Chloride was detected above applicable laboratory SDLs in 13 of the 14 soil samples analyzed within the Reclamation Assessment target depths. The chloride concentrations ranged from 35.6 mg/kg in soil sample HA-2 (surface to 0.5 ft bgs) to 12,200 mg/kg in soil sample HA-3 (1.5 to 2 ft bgs). Of the 14 soil samples analyzed, 10 soil samples exhibited chloride concentrations above the applicable NMOCD Reclamation Assessment Limit of 600 mg/kg, as summarized in Table 1.

8.2.3 Remediation Assessment Data Evaluation

At each of the soil boring locations, a soil sample was collected and analyzed a soil sample from the 4.5 to 5 ft. bgs interval for the presence of chlorides. The samples were not analyzed for the presence of BTEX or TPH as the constituents were not present in shallower intervals.

The detected chloride concentrations ranged in concentrations from 24 mg/kg in soil sample HA-2 (4.5 to 5 ft. bgs) to 10,200 mg/kg in soil sample HA-3 (4.5 to 5 ft. bgs). The detected chloride concentrations at depths greater than 4 ft. bgs did exceed the applicable NMOCD Remediation Action Limit of 10,000 mg/kg, in HA-3 (4.5 to 5 ft. bgs). as summarized in Table 1.

It should be noted that soil borings were terminated due to auger refusal upon encountering a cemented caliche layer.

8.3 Release Investigation Data Summary

Based on the review of the above release investigation analytical results, the presence of petroleum hydrocarbon constituents BTEX were not detected at concentrations above applicable NMOCD Reclamation and/or Remediation Action Limits.

Of the 11 soil samples analyzed, two soil samples exhibited TPH concentrations above the applicable NMOCD Reclamation Action Limit of 100 mg/kg. None of the soil samples analyzed

for TPH exceeded the NMOCD Remediation Action Limit for samples collected collected deeper than 4 ft. bgs. The bottom-of-hole samples did not exhibit TPH concentrations above actionable limit.

Of the 17 soil samples analyzed, 10 soil samples exhibited chloride concentrations above the applicable NMOCD Reclamation Action Limit of 600 mg/kg. One of the soil samples analyzed for chlorides exceeded the NMOCD Remediation Action Limit for samples collected deeper than 4 ft. bgs.

It is anticipated that released produced water chlorides consolidated upon the cemented layer of the Pyote Soils at approximately 80 inches bgs. Based on the proximity of the analyzed samples to this restrictive layer and the magnitude of the concentrations being elevated above 10,000 mg/kg in the vicinity of soil boring HA-3, Terracon recommends additional vertical delineation samples be collected and analyzed for the presence of chlorides at this restrictive zone to ensure that concentrations are not elevated further at this restrictive interphase.

9.0 SOIL RECLAMATION AND REMEDIATION

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

9.1 Reclamation Response Objectives

Based on the magnitude of chloride concentrations detected within the release margins to depths subject to NMOCD Reclamation requirements, approximately 1,500 cy of chloride impacted material will be required to be excavated and disposed of at a permitted disposal facility under manifest.

9.2 Remediation Response Objectives

Following excavation to recommended Reclamation depths, vertical and horizontal delineation samples will be collected from the base and walls of the excavation to confirm the remaining levels of soil contaminants are below the desired NMOCD RALs.

Based on the anticipated depth to groundwater and pending the confirmed vertical delineation, it is anticipated that a remedial response will not be warranted within the soils at depths greater than 4 ft. bgs with the exception of areas in the vicinity of soil boring HA-3. Excavation of areas proximate will soil boring HA-3 are recommended based on the apparent extent of impacts to depth. Confirmation sampling of excavation activities will be conducted to ensure the extent of the impacts have been mitigated to below NMOCD Remediation Action Limits.

9.3 Soil Management

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

10.0 TERMINATION OF REMEDIAL ACTIONS, CLOSURE AND REPORTING

10.1 Termination of Reclamation and Remedial Actions

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

10.2 Final Closure

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

10.3 Final Report

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

APPENDIX A – FIGURES AND TABLES

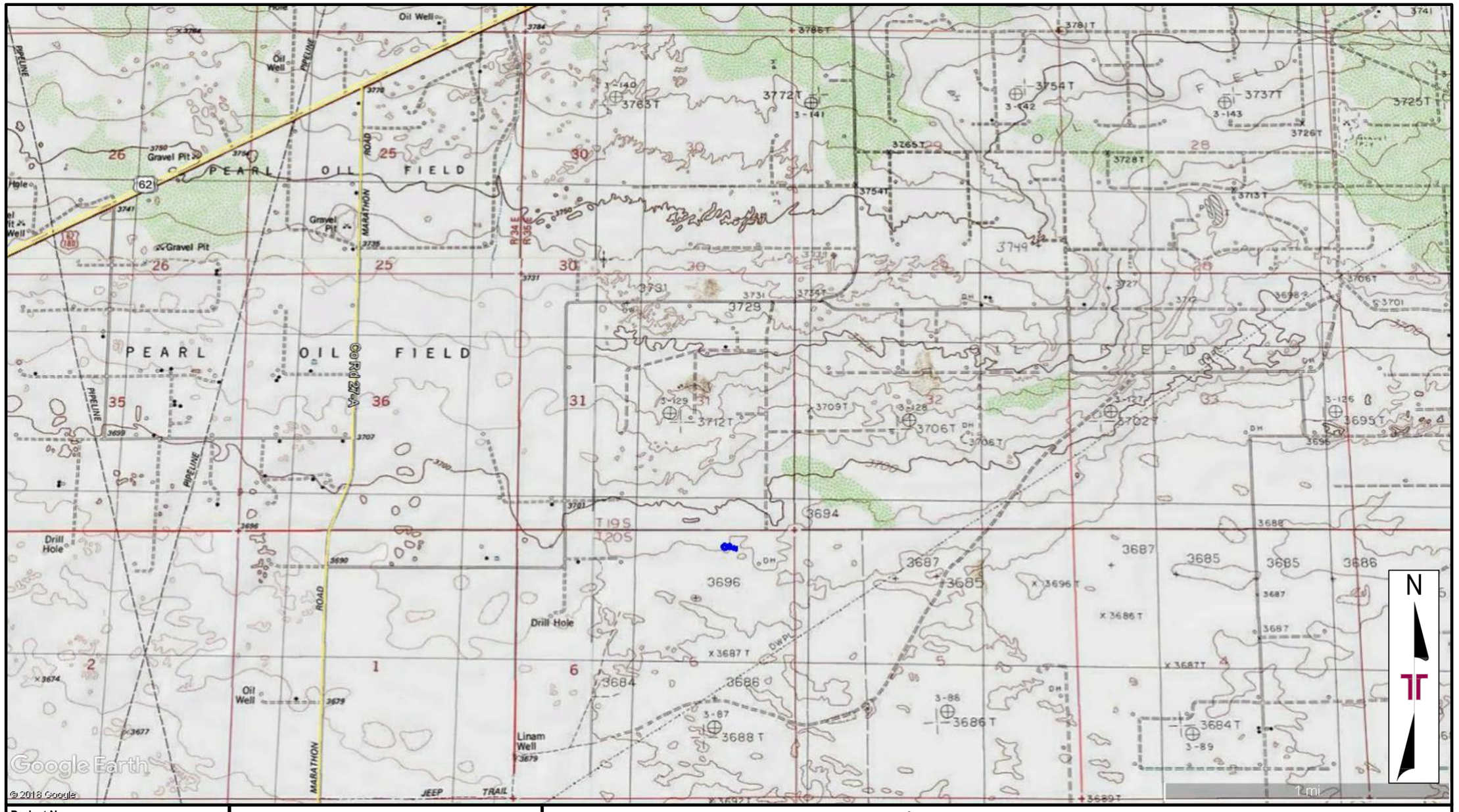
Figure 1 – Topographic Map

Figure 2 – Chloride Concentration Map

Figure 3 – Chloride Concentration Map (Soils >4 ft bgs.)

Figure 4 – NMOSE POD Location Map

Table 1 – Soil Sample Analytical Results

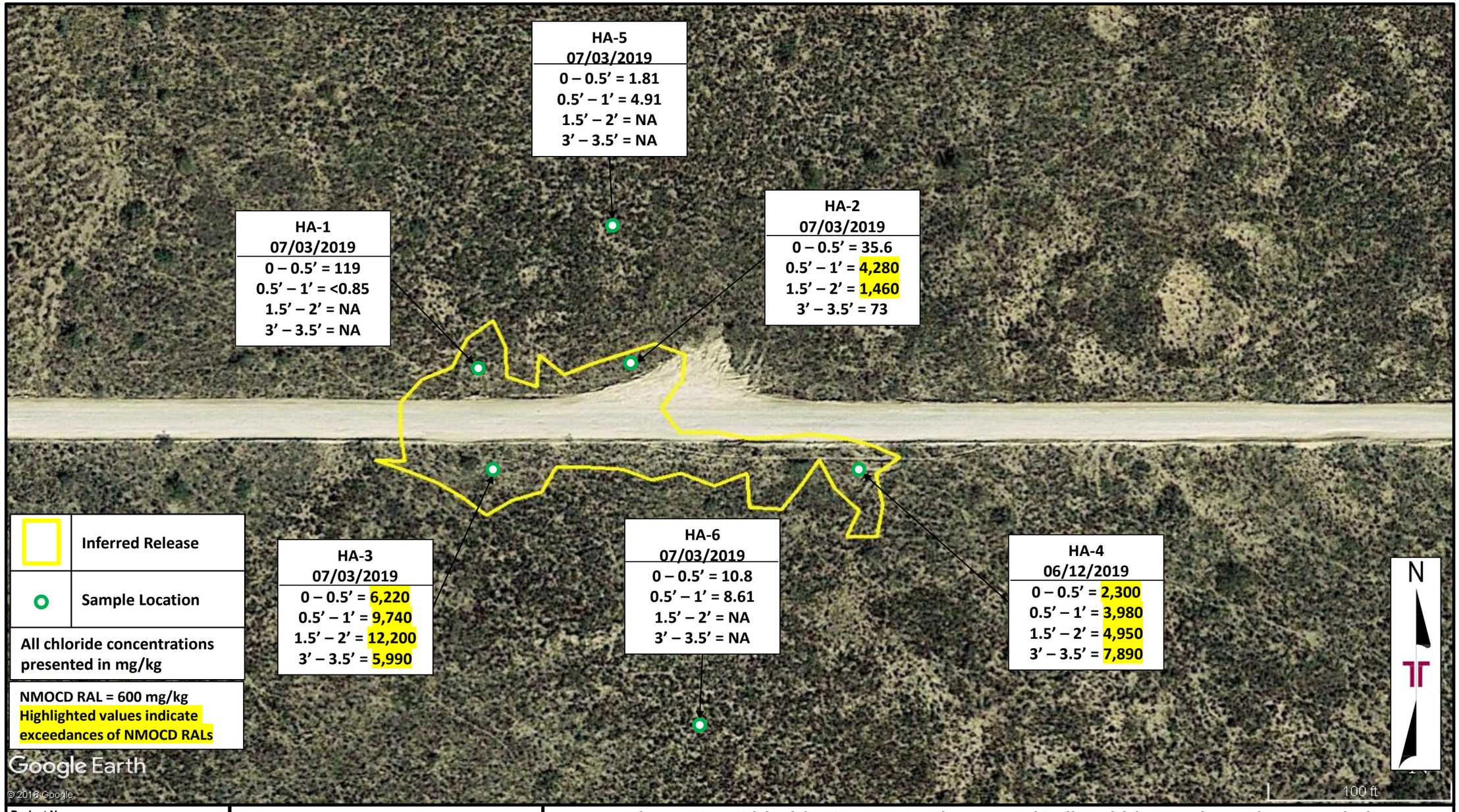


Project No.	AR197234
Scale:	As Shown
Source:	USGS
Date:	2014

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

Figure 1 – Topo Map

Caza Eagle Claw Flowback Line Release
32.608587°, -103.492156°
Lea County, New Mexico

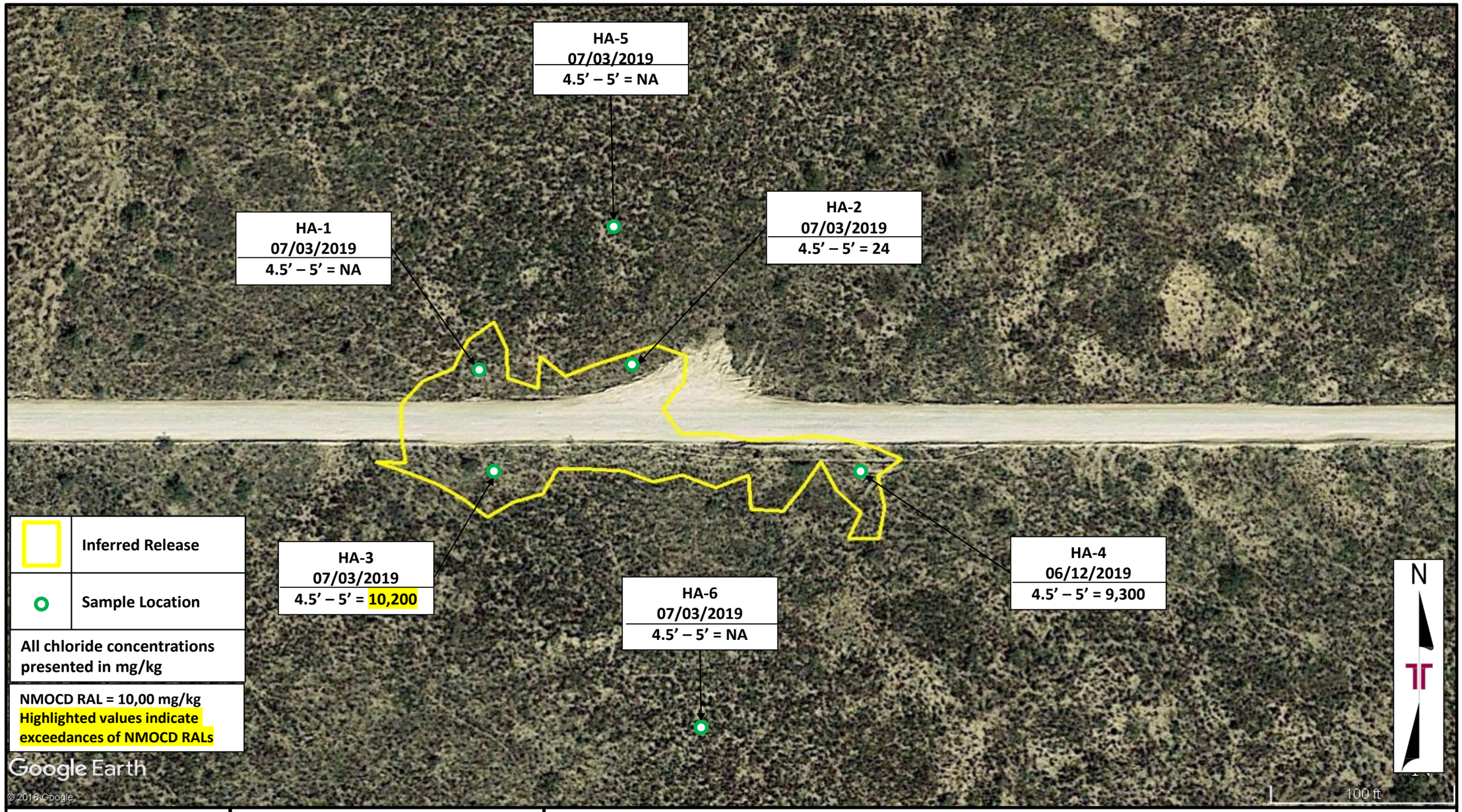


Project No.	AR197234
Scale:	As Shown
Source:	Google Earth
Image Date:	11/02/2017

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

Figure 2 – Chloride Concentration Map (Soils within Reclamation Depths)

Caza Eagle Claw SWD Flowback Line Release
32.608587°, -103.492156°
Lea County, New Mexico

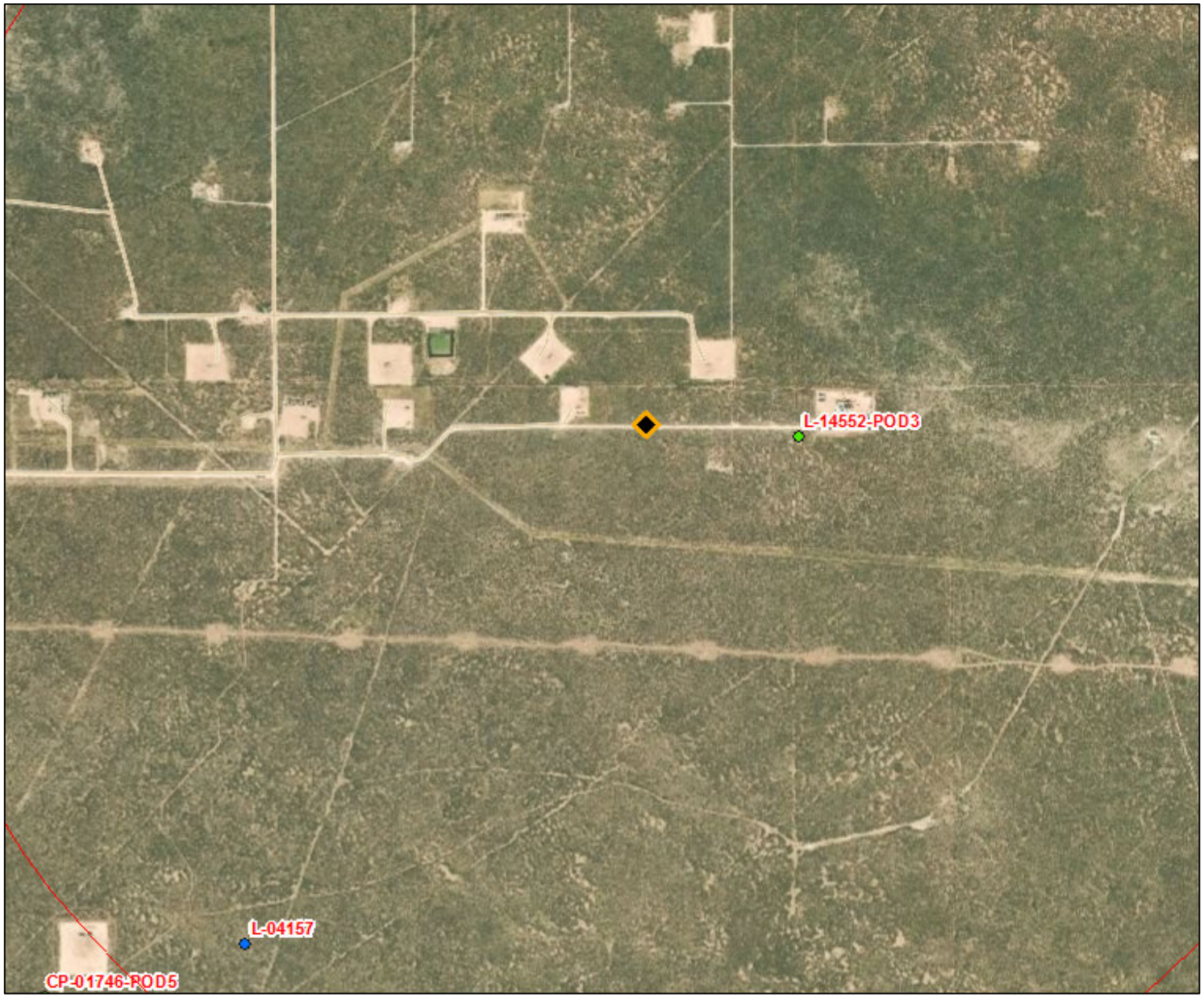


Project No.	AR197234
Scale:	As Shown
Source:	Google Earth
Image Date:	11/02/2017

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

Figure 3 – Chloride Concentration Map (Soils >4 ft bgs.)

Caza Eagle Claw SWD Flowback Line Release
32.608587°, -103.492156°
Lea County, New Mexico



Coordinates

UTM - NAD 83 (m) - Zone 13

Easting 641486.940

Northing 3608906.503

State Plane - NAD 83 (f) - Zone E

Easting 800375.495

Northing 586181.910

Degrees Minutes Seconds

Latitude 32 : 36 : 31.153972

Longitude -103 : 29 : 31.603373

Location pulled from New Map Point

Spatial Information

OSE Administrative Area: District 2
County: Lea
Groundwater Basin: Lea County
Sub-Basin: Upper Pecos-Black
Abstract Area: Lea County
Land Grant: Not in Land Grant
Restrictions:
NA

PLSS Description

NW NW NE NE Qtr of Sec 6 of 20S 35E

Derived from Projected PLSS- Qtr Sec. locations are calculated and are only approximations

File Number:
Owner:
Purpose:
Author:

NEW MEXICO OFFICE OF THE STATE ENGINEER

1:18,056

mi

0 0.05 0.1 0.2

N

8/2/2019

Image Information
Source: DigitalGlobe
Date: 9/6/2017
Resolution (m): 0.5
Accuracy (m): 4

User Defined Point

1.2 Miles Buffer

New Mexico Office of the State Engineer
Water Right Summary

get image list

WR File Number: L 04157 **Subbasin:** L **Cross Reference:** -

Primary Purpose: DOL 72-12-1 DOMESTIC AND LIVESTOCK WATERING

Primary Status: PMT PERMIT

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

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

Owner: VIRGIL LINAM

Documents on File

	Trn #	Doc	File/Act	Status 1	Status 2	Transaction Desc.	From/ To	Acres	Diversion	Consumptive
get images	492205	72121	1959-05-25	PMT	LOG	L 04157	T		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
L 04157		Shallow	3	3		06	20S	35E	640483	3607561*	

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

TABLE 1
SOIL SAMPLE ANALYTICAL RESULTS - BTEX[1], Chloride[2], and TPH[3]
Caza Eagle Claw SWD Floback Line Release
Terracon Project No. AR197234

Sample I.D.	Sample Depth (ft. bgs)	Sample Type	Sample Date	BTEX (mg/kg)	Chloride (mg/kg)	TPH (8015M) (mg/kg)			
						GRO	DRO	MRO	TOTAL
Release Margin Samples (Off Pad)									
HA-1	0 - 0.5	Grab	07/03/19	Benzene - <0.000382 Toluene - <0.000452 Ethylbenzene - <0.000560 Total Xylenes - <0.000342 Total BTEX - <0.000342	119	18.8	8.62	<8.1	27.4
	0.5 - 1	Grab	07/03/19	Benzene - <0.000381 Toluene - <0.000451 Ethylbenzene - <0.000559 Total Xylenes - <0.000341 Total BTEX - <0.000341	<0.850	14.1	14.3	<8.1	28.4
	1.5 - 2	Grab	07/03/19	BTEX - NA	NA	13.7	13.3	<8.11	27
	3 - 3.5	Grab	NA	BTEX - NA	NA	NA			
	4.5 - 5	Grab	NA	BTEX - NA	NA	NA			
HA-2	0 - 0.5	Grab	07/03/19	Benzene - <0.000383 Toluene - <0.000453 Ethylbenzene - <0.000561 Total Xylenes - <0.000342 Total BTEX - <0.000342	35.6	12.9	29.6	<8.13	42.5
	0.5 - 1	Grab	07/03/19	Benzene - <0.000384 Toluene - <0.000455 Ethylbenzene - <0.000564 Total Xylenes - <0.000344 Total BTEX - <0.000344	**4,280**	<9.92	<9.92	<9.92	<9.92
	1.5 - 2	Grab	07/03/19	BTEX - NA	**1,460**	NA			
	3 - 3.5	Grab	07/03/19	BTEX - NA	73	NA			
	4.5 - 5	Grab	07/03/19	BTEX - NA	24	NA			
NMOCD Reclamation Standards[4] **(Applicable for Soils from the Surface to 4 ft. Below Grade Surface)**				**Benzene - 10** **Toluene - N/A** **Ethylbenzene - N/A** **Total Xylenes - N/A** **Total BTEX - 50**	**600**	**N/A**			**100**
NMOCD Remediation and Delineation Standards[5] **(Applicable for Soils at Depths Greater than 4 ft. Below Grade Surface)**				**Benzene - 10** **Toluene - N/A** **Ethylbenzene - N/A** **Total Xylenes - N/A** **Total BTEX - 50**	**10,000**	**1,000**		**N/A**	**2,500**

1. BTEX = Benzene, toluene, ethylbenzene, total xylenes analyzed by EPA Method 8021B
2. Chloride = Chloride analyzed by EPA Method 300.
3. TPH = Total petroleum hydrocarbons analyzed by EPA Method 8015M (GRO/DRO/MRO)
4. New Mexico Administration Code (NMAC) Restoration, Reclamation, and Re-vegetation (19.15.29.13) New Mexico Administration Code (NMAC) – D (Reclamation of areas no longer in use) for soils extending to 4 ft. bgs
5. New Mexico Oil Conservation Division (NMOCD) Remediation and Delineation Standards are proposed in 19.15.29.12 NMAC - N, 8/14/2018

< = Constituent not detected above the indicated laboratory SDL

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Bold and Highlight denotes concentrations that exceed the New Mexico Oil Conservation Division (NMOCD) Reclamation and/or Remediation and Delineation Standards.

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Caza Eagle Claw SWD Floback Line Release
Terracon Project No. AR197234

Sample I.D.	Sample Depth (ft. bgs)	Sample Type	Sample Date	BTEX (mg/kg)	Chloride (mg/kg)	TPH (8015M) (mg/kg)			
						GRO	DRO	MRO	TOTAL
Release Margin Samples (Off Pad)									
HA-3	0 - 0.5	Grab	07/03/19	Benzene - <0.000383 Toluene - <0.000453 Ethylbenzene - <0.000561 Total Xylenes - <0.000342 Total BTEX - <0.000342	**6,220**	<7.98	18.2	<8.1	18.2
	0.5 - 1	Grab	07/03/19	Benzene - <0.000381 Toluene - <0.000451 Ethylbenzene - <0.000559 Total Xylenes - <0.000341 Total BTEX - <0.000341	**9,740**	12.9	12.1	<8.11	25
	1.5 - 2	Grab	07/03/19	BTEX - NA	**12,200**	<7.99	14.3	<8.12	14.3
	3 - 3.5	Grab	07/03/19	BTEX - NA	**5,990**	NA			
	4.5 - 5	Grab	07/03/19	BTEX - NA	**10,200**	NA			
HA-4	0 - 0.5	Grab	07/03/19	Benzene - 0.0857 Toluene - 2.6 Ethylbenzene - 4.23 Total Xylenes - 10.4 Total BTEX - 17.3	**2,300**	1,200	14,600	2,160	**18,000**
	0.5 - 1	Grab	07/03/19	Benzene - <0.00883 Toluene - <0.00457 Ethylbenzene - <0.00602 Total Xylenes - <0.00666 Total BTEX - <0.00457	**3,980**	14.6	425	77.4	**517**
	1.5 - 2	Grab	07/03/19	BTEX - NA	**4,950**	10.8	45.4	8.52	64.7
	3 - 3.5	Grab	07/03/19	BTEX - NA	**7,890**	NA			
	4.5 - 5	Grab	07/03/19	BTEX - NA	9,300	NA			
NMOCD Reclamation Standards[4] **(Applicable for Soils from the Surface to 4 ft. Below Grade Surface)**				**Benzene - 10** **Toluene - N/A** **Ethylbenzene - N/A** **Total Xylenes - N/A** **Total BTEX - 50**	**600**	**N/A**			**100**
NMOCD Remediation and Delineation Standards[5] **(Applicable for Soils at Depths Greater than 4 ft. Below Grade Surface)**				**Benzene - 10** **Toluene - N/A** **Ethylbenzene - N/A** **Total Xylenes - N/A** **Total BTEX - 50**	**10,000**	**1,000**		**N/A**	**2,500**

1. BTEX = Benzene, toluene, ethylbenzene, total xylenes analyzed by EPA Method 8021B
2. Chloride = Chloride analyzed by EPA Method 300.
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4. New Mexico Administration Code (NMAC) Restoration, Reclamation, and Re-vegetation (19.15.29.13) New Mexico Administration Code (NMAC) – D (Reclamation of areas no longer in use) for soils extending to 4 ft. bgs
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Caza Eagle Claw SWD Floback Line Release
Terracon Project No. AR197234

Sample I.D.	Sample Depth (ft. bgs)	Sample Type	Sample Date	BTEX (mg/kg)	Chloride (mg/kg)	TPH (8015M) (mg/kg)			
						GRO	DRO	MRO	TOTAL
Release Margin Samples (On Pad)									
HA-7	0 - 0.5	Grab	NA	Benzene - NA Toluene - NA Ethylbenzene - NA Total Xylenes - NA Total BTEX - NA	**NA**	NA	NA	NA	NA
	0.5 - 1	Grab	NA	Benzene - NA Toluene - NA Ethylbenzene - NA Total Xylenes - NA Total BTEX - NA	**NA**	NA	NA	NA	NA
	1.5 - 2	Grab	NA	BTEX - NA	**NA**	NA			
	3 - 3.5	Grab	NA	BTEX - NA	**NA**	NA			
	4.5 - 5	Grab	NA	BTEX - NA	NA	NA			
HA-8	0 - 0.5	Grab	NA	Benzene - NA Toluene - NA Ethylbenzene - NA Total Xylenes - NA Total BTEX - NA	**NA**	NA	NA	NA	NA
	0.5 - 1	Grab	NA	Benzene - NA Toluene - NA Ethylbenzene - NA Total Xylenes - NA Total BTEX - NA	**NA**	NA	NA	NA	NA
	1.5 - 2	Grab	NA	BTEX - NA	**NA**	NA			
	3 - 3.5	Grab	NA	BTEX - NA	**NA**	NA			
	4.5 - 5	Grab	NA	BTEX - NA	NA	NA			
NMOCD Reclamation Standards[4] **(Applicable for Soils from the Surface to 4 ft. Below Grade Surface)**				**Benzene - 10** **Toluene - N/A** **Ethylbenzene - N/A** **Total Xylenes - N/A** **Total BTEX - 50**	**600**	**N/A**			**100**
NMOCD Remediation and Delineation Standards[5] **(Applicable for Soils at Depths Greater than 4 ft. Below Grade Surface)**				**Benzene - 10** **Toluene - N/A** **Ethylbenzene - N/A** **Total Xylenes - N/A** **Total BTEX - 50**	**10,000**	**1,000**		**N/A**	**2,500**

1. BTEX = Benzene, toluene, ethylbenzene, total xylenes analyzed by EPA Method 8021B
2. Chloride = Chloride analyzed by EPA Method 300.
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Caza Eagle Claw SWD Floback Line Release
Terracon Project No. AR197234

Sample I.D.	Sample Depth (ft. bgs)	Sample Type	Sample Date	BTEX (mg/kg)	Chloride (mg/kg)	TPH (8015M) (mg/kg)			
						GRO	DRO	MRO	TOTAL
Background Samples									
HA-5	0 - 0.5	Grab	07/03/19	Benzene - <0.000386 Toluene - <0.000457 Ethylbenzene - <0.000567 Total Xylenes - <0.000346 Total BTEX - <0.000346	1.81	20.4	<8.12	8.45	28.9
	0.5 - 1	Grab	07/03/19	Benzene - <0.000385 Toluene - <0.000456 Ethylbenzene - <0.000365 Total Xylenes - <0.000344 Total BTEX - <0.000344	4.91	20.1	<8.11	<8.11	20.1
	1.5 - 2	Grab	07/03/19	BTEX - NA	NA	NA			
	3 - 3.5	Grab	07/03/19	BTEX - NA	NA	NA			
	4.5 - 5	Grab	07/03/19	BTEX - NA	NA	NA			
HA-6	0 - 0.5	Grab	07/03/19	Benzene - <0.000385 Toluene - <0.000456 Ethylbenzene - <0.000565 Total Xylenes - <0.00344 Total BTEX - <0.00344	10.8	25.5	13.2	<8.13	38.7
	0.5 - 1	Grab	07/03/19	Benzene - <0.000383 Toluene - <0.00453 Ethylbenzene - <0.00561 Total Xylenes - <0.000342 Total BTEX - <0.000342	8.61	17.7	<8.1	<8.1	17.7
	1.5 - 2	Grab	07/03/19	BTEX - NA	NA	NA			
	3 - 3.5	Grab	07/03/19	BTEX - NA	NA	NA			
	4.5 - 5	Grab	07/03/19	BTEX - NA	NA	NA			
NMOCD Reclamation Standards[4] (Applicable for Soils from the Surface to 4 ft. Below Grade Surface)				**Benzene - 10 Toluene - N/A Ethylbenzene - N/A Total Xylenes - N/A Total BTEX - 50**	**600**	**N/A**			**100**
NMOCD Remediation and Delineation Standards[5] (Applicable for Soils at Depths Greater than 4 ft. Below Grade Surface)				**Benzene - 10 Toluene - N/A Ethylbenzene - N/A Total Xylenes - N/A Total BTEX - 50**	**10,000**	**1,000**		**N/A**	**2,500**

1. BTEX = Benzene, toluene, ethylbenzene, total xylenes analyzed by EPA Method 8021B
2. Chloride = Chloride analyzed by EPA Method 300.
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NA = Not Analyzed

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Bold and Highlight denotes concentrations that exceed the New Mexico Oil Conservation Division (NMOCD) Reclamation and/or Remediation and Delineation Standards.

APPENDIX B – PHOTOGRAPHIC LOG

PHOTO 1: View of site and staining, facing west. 7/03/2019 / **TIME:** 12:05PM / **GPS:** 32.6085 -103.4916

PHOTO 2: View of site and staining, facing west. 7/03/2019 / **TIME:** 12:05PM / **GPS:** 32.6087 -103.4920

PHOTO 3: View of site and staining, facing south. 7/03/2019 / **TIME:** 12:06PM / **GPS:** 32.6088 -103.4925

PHOTO 4: View of site and staining, facing east. 7/03/2019 / **TIME:** 12:07PM / **GPS:** 32.6085 -103.4926

PHOTO 5: View of site staining, point of release and repair, facing south. 7/03/2019 / **TIME:** 12:10PM / **GPS:** 32.6086 -103.4923

PHOTO 6: View of HA-1, facing south. 7/03/2019 / **TIME:** 12:38PM / **GPS:** 32.6087 -103.4923

PHOTO 7: View of HA-2, facing south. 7/03/2019 / **TIME:** 12:53PM / **GPS:** 32.6088 -103.4921

PHOTO 8: View of HA-5, facing south. 7/03/2019 / **TIME:** 1:05PM / **GPS:** 32.6088 -103.4923

PHOTO 9: View of HA-4, facing west. 7/03/2019 / **TIME:** 1:38PM / **GPS:** 32.6085 -103.4917

PHOTO 10: View of HA-3, facing north. 7/03/2019 / **TIME:** 1:53PM / **GPS:** 32.6085 -103.4924

PHOTO 11: View of HA-6, facing north. 7/03/2019 / **TIME:** 2:02PM / **GPS:** 32.6082 -103.4920

APPENDIX C – ANALYTICAL REPORT AND CHAIN OF CUSTODY

Analytical Report 630020

for

Terracon-Lubbock

Project Manager: John Fergerson

Caza Eagle Claw

AR197234

22-JUL-19

Collected By: Client

1211 W. Florida Ave
Midland TX 79701

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

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

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-18-14)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-19-20)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-18-18)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-18-4)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Atlanta (LELAP Lab ID #04176)
Xenco-Tampa: Florida (E87429), North Carolina (483)

Table of Contents

22-JUL-19

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

Reference: XENCO Report No(s): **630020**
Caza Eagle Claw
Project Address:

John Fergerson:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 630020. 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. 630020 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 630020

Terracon-Lubbock, Lubbock, TX

Caza Eagle Claw

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
HA-1 (0-0.5)	S	07-03-19 12:06	0 - 0.5 ft	630020-001
HA-1 (0.5-1)	S	07-03-19 12:12	0.5 - 1 ft	630020-002
HA-1 (1.5-2)	S	07-03-19 12:18	1.5 - 2 ft	630020-003
HA-2 (0-0.5)	S	07-03-19 12:36	0 - 0.5 ft	630020-006
HA-2 (0.5-1)	S	07-03-19 12:42	0.5 - 1 ft	630020-007
HA-2 (1.5-2)	S	07-03-19 12:48	1.5 - 2 ft	630020-008
HA-2 (3-3.5)	S	07-03-19 12:54	3 - 3.5 ft	630020-009
HA-2 (4.5-5)	S	07-03-19 13:00	4.5 - 5 ft	630020-010
HA-3 (0-0.5)	S	07-03-19 13:06	0 - 0.5 ft	630020-011
HA-3 (0.5-1)	S	07-03-19 13:12	0.5 - 1 ft	630020-012
HA-3 (1.5-2)	S	07-03-19 13:18	1.5 - 2 ft	630020-013
HA-3 (3-3.5)	S	07-03-19 13:24	3 - 3.5 ft	630020-014
HA-3 (4.5-5)	S	07-03-19 13:28	4.5 - 5 ft	630020-015
HA-4 (0-0.5)	S	07-03-19 13:30	0 - 0.5 ft	630020-016
HA-4 (0.5-1)	S	07-03-19 13:36	0.5 - 1 ft	630020-017
HA-4 (1.5-2)	S	07-03-19 13:42	1.5 - 2 ft	630020-018
HA-4 (3-3.5)	S	07-03-19 13:48	3 - 3.5 ft	630020-019
HA-4 (4.5-5)	S	07-03-19 13:51	4.5 - 5 ft	630020-020
HA-5 (0-0.5)	S	07-03-19 14:54	0 - 0.5 ft	630020-021
HA-5 (0.5-1)	S	07-03-19 15:00	0.5 - 1 ft	630020-022
HA-6 (0-0.5)	S	07-03-19 15:18	0 - 0.5 ft	630020-026
HA-6 (0.5-1)	S	07-03-19 15:24	0.5 - 1 ft	630020-027
HA-1 (3-3.5)	S	07-03-19 12:24	3 - 3.5 ft	Not Analyzed
HA-1 (4-4.5)	S	07-03-19 12:30	4 - 4.5 ft	Not Analyzed
HA-5 (1.5-2)	S	07-03-19 15:06	1.5 - 2 ft	Not Analyzed
HA-5 (3-3.5)	S	07-03-19 15:12	3 - 3.5 ft	Not Analyzed
HA-5 (4.5-5)	S	07-03-19 15:15	4.5 - 5 ft	Not Analyzed
HA-6 (1.5-2)	S	07-03-19 15:30	1.5 - 2 ft	Not Analyzed
HA-6 (3-3.5)	S	07-03-19 15:36	3 - 3.5 ft	Not Analyzed

CASE NARRATIVE

Client Name: Terracon-Lubbock

Project Name: Caza Eagle Claw

Project ID: *AR197234*
Work Order Number(s): *630020*

Report Date: *22-JUL-19*
Date Received: *07/05/2019*

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-3095246 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; data confirmed by re-analysis.
Samples affected are: 630020-016.

Batch: LBA-3096052 TPH by SW8015 Mod
Surrogate o-Terphenyl recovered below QC limits. Matrix interferences is suspected; data confirmed by re-analysis.
Samples affected are: 630020-003.

Certificate of Analytical Results
630020

Terracon-Lubbock, Lubbock, TX

Caza Eagle Claw

Sample Id: **HA-1 (0-0.5)** Matrix: Soil Sample Depth: 0 - 0.5 ft

Lab Sample Id: 630020-001 Date Collected: 07.03.19 12.06 Date Received: 07.05.19 12.49

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Analyst: CHE % Moist: Tech: CHE

Seq Number: 3094603 Date Prep: 07.05.19 15.45

Prep seq: 7681440

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Chloride	16887-00-6	**119**	5.04	0.865	mg/kg	07.05.19 18:14		1

Analytical Method: TPH by SW8015 Mod Prep Method: 1005

Analyst: ARM % Moist: Tech: DVM

Seq Number: 3095306 Date Prep: 07.14.19 09.00

Prep seq: 7681995

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	**18.8**	15.0	7.98	mg/kg	07.14.19 18:18		1
Diesel Range Organics (DRO)	C10C28DRO	**8.62**	15.0	8.10	mg/kg	07.14.19 18:18	J	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<8.10	15.0	8.10	mg/kg	07.14.19 18:18	U	1
Total TPH	PHC635	**27.4**		7.98	mg/kg	07.14.19 18:18		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	98	70 - 135	%		
o-Terphenyl	91	70 - 135	%		

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

Analyst: AMB % Moist: Tech: ALG

Seq Number: 3095246 Date Prep: 07.12.19 17.18

Prep seq: 7681931

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000382	0.00198	0.000382	mg/kg	07.13.19 09:26	U	1
Toluene	108-88-3	<0.000452	0.00198	0.000452	mg/kg	07.13.19 09:26	U	1
Ethylbenzene	100-41-4	<0.000560	0.00198	0.000560	mg/kg	07.13.19 09:26	U	1
m,p-Xylenes	179601-23-1	<0.00101	0.00397	0.00101	mg/kg	07.13.19 09:26	U	1
o-Xylene	95-47-6	<0.000342	0.00198	0.000342	mg/kg	07.13.19 09:26	U	1
Total Xylenes	1330-20-7	<0.000342		0.000342	mg/kg	07.13.19 09:26	U	
Total BTEX		<0.000342		0.000342	mg/kg	07.13.19 09:26	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	96	70 - 130	%		
4-Bromofluorobenzene	109	70 - 130	%		

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630020
Terracon-Lubbock, Lubbock, TX
Caza Eagle Claw

Sample Id: **HA-1 (0.5-1)** Matrix: Soil Sample Depth: 0.5 - 1 ft

Lab Sample Id: 630020-002 Date Collected: 07.03.19 12.12 Date Received: 07.05.19 12.49

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Analyst: CHE % Moist: Tech: CHE

Seq Number: 3094603 Date Prep: 07.05.19 15.45

Prep seq: 7681440

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Chloride	16887-00-6	<0.850	4.95	0.850	mg/kg	07.05.19 18:19	U	1

Analytical Method: TPH by SW8015 Mod Prep Method: 1005

Analyst: ARM % Moist: Tech: DVM

Seq Number: 3095306 Date Prep: 07.14.19 09.00

Prep seq: 7681995

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	**14.1**	14.9	7.97	mg/kg	07.14.19 19:17	J	1
Diesel Range Organics (DRO)	C10C28DRO	**14.3**	14.9	8.10	mg/kg	07.14.19 19:17	J	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<8.10	14.9	8.10	mg/kg	07.14.19 19:17	U	1
Total TPH	PHC635	**28.4**		7.97	mg/kg	07.14.19 19:17		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	129	70 - 135	%		
o-Terphenyl	124	70 - 135	%		

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

Analyst: AMB % Moist: Tech: ALG

Seq Number: 3095246 Date Prep: 07.12.19 17.18

Prep seq: 7681931

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000381	0.00198	0.000381	mg/kg	07.13.19 09:48	U	1
Toluene	108-88-3	<0.000451	0.00198	0.000451	mg/kg	07.13.19 09:48	U	1
Ethylbenzene	100-41-4	<0.000559	0.00198	0.000559	mg/kg	07.13.19 09:48	U	1
m,p-Xylenes	179601-23-1	<0.00100	0.00396	0.00100	mg/kg	07.13.19 09:48	U	1
o-Xylene	95-47-6	<0.000341	0.00198	0.000341	mg/kg	07.13.19 09:48	U	1
Total Xylenes	1330-20-7	<0.000341		0.000341	mg/kg	07.13.19 09:48	U	
Total BTEX		<0.000341		0.000341	mg/kg	07.13.19 09:48	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	97	70 - 130	%		
4-Bromofluorobenzene	105	70 - 130	%		

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Terracon-Lubbock, Lubbock, TX

Caza Eagle Claw

Sample Id: **HA-1 (1.5-2)** Matrix: Soil Sample Depth: 1.5 - 2 ft

Lab Sample Id: 630020-003 Date Collected: 07.03.19 12.18 Date Received: 07.05.19 12.49

Analytical Method: TPH by SW8015 Mod Prep Method: 1005

Analyst: ARM % Moist: Tech: DVM

Seq Number: 3096052 Date Prep: 07.16.19 15.00

Prep seq: 7682451

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	**13.7**	15.0	7.99	mg/kg	07.21.19 23:47	J	1
Diesel Range Organics (DRO)	C10C28DRO	**13.3**	15.0	8.11	mg/kg	07.21.19 23:47	J	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<8.11	15.0	8.11	mg/kg	07.21.19 23:47	U	1
Total TPH	PHC635	**27.0**		7.99	mg/kg	07.21.19 23:47		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	100	70 - 135	%		
o-Terphenyl	67	70 - 135	%		**

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630020
Terracon-Lubbock, Lubbock, TX
Caza Eagle Claw

Sample Id: **HA-2 (0-0.5)** Matrix: Soil Sample Depth: 0 - 0.5 ft

Lab Sample Id: 630020-006 Date Collected: 07.03.19 12.36 Date Received: 07.05.19 12.49

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Analyst: CHE % Moist: Tech: CHE

Seq Number: 3094637 Date Prep: 07.08.19 10.00

Prep seq: 7681478

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Chloride	16887-00-6	**35.6**	5.03	0.864	mg/kg	07.08.19 13:46		1

Analytical Method: TPH by SW8015 Mod Prep Method: 1005

Analyst: ARM % Moist: Tech: DVM

Seq Number: 3095306 Date Prep: 07.14.19 09.00

Prep seq: 7681995

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	**12.9**	15.0	8.00	mg/kg	07.14.19 19:36	J	1
Diesel Range Organics (DRO)	C10C28DRO	**29.6**	15.0	8.13	mg/kg	07.14.19 19:36		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<8.13	15.0	8.13	mg/kg	07.14.19 19:36	U	1
Total TPH	PHC635	**42.5**		8.00	mg/kg	07.14.19 19:36		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	112	70 - 135	%		
o-Terphenyl	109	70 - 135	%		

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

Analyst: AMB % Moist: Tech: ALG

Seq Number: 3095246 Date Prep: 07.12.19 17.18

Prep seq: 7681931

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000383	0.00199	0.000383	mg/kg	07.13.19 10:10	U	1
Toluene	108-88-3	<0.000453	0.00199	0.000453	mg/kg	07.13.19 10:10	U	1
Ethylbenzene	100-41-4	<0.000561	0.00199	0.000561	mg/kg	07.13.19 10:10	U	1
m,p-Xylenes	179601-23-1	<0.00101	0.00398	0.00101	mg/kg	07.13.19 10:10	U	1
o-Xylene	95-47-6	<0.000342	0.00199	0.000342	mg/kg	07.13.19 10:10	U	1
Total Xylenes	1330-20-7	<0.000342		0.000342	mg/kg	07.13.19 10:10	U	
Total BTEX		<0.000342		0.000342	mg/kg	07.13.19 10:10	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	99	70 - 130	%		
4-Bromofluorobenzene	120	70 - 130	%		

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Terracon-Lubbock, Lubbock, TX
Caza Eagle Claw

Sample Id: **HA-2 (0.5-1)** Matrix: Soil Sample Depth: 0.5 - 1 ft

Lab Sample Id: 630020-007 Date Collected: 07.03.19 12.42 Date Received: 07.05.19 12.49

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Analyst: CHE % Moist: Tech: CHE

Seq Number: 3094637 Date Prep: 07.08.19 10.00

Prep seq: 7681478

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Chloride	16887-00-6	**4280**	25.0	4.29	mg/kg	07.08.19 13:54		5

Analytical Method: TPH by SW8015 Mod Prep Method: 1005

Analyst: ARM % Moist: Tech: DVM

Seq Number: 3095306 Date Prep: 07.14.19 09.00

Prep seq: 7681995

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	**8.94**	15.0	7.99	mg/kg	07.14.19 19:56	J	1
Diesel Range Organics (DRO)	C10C28DRO	<8.12	15.0	8.12	mg/kg	07.14.19 19:56	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<8.12	15.0	8.12	mg/kg	07.14.19 19:56	U	1
Total TPH	PHC635	**8.94**		7.99	mg/kg	07.14.19 19:56	J	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	99	70 - 135	%		
o-Terphenyl	96	70 - 135	%		

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

Analyst: AMB % Moist: Tech: ALG

Seq Number: 3095246 Date Prep: 07.12.19 17.18

Prep seq: 7681931

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000384	0.00200	0.000384	mg/kg	07.13.19 10:32	U	1
Toluene	108-88-3	<0.000455	0.00200	0.000455	mg/kg	07.13.19 10:32	U	1
Ethylbenzene	100-41-4	<0.000564	0.00200	0.000564	mg/kg	07.13.19 10:32	U	1
m,p-Xylenes	179601-23-1	<0.00101	0.00399	0.00101	mg/kg	07.13.19 10:32	U	1
o-Xylene	95-47-6	<0.000344	0.00200	0.000344	mg/kg	07.13.19 10:32	U	1
Total Xylenes	1330-20-7	<0.000344		0.000344	mg/kg	07.13.19 10:32	U	
Total BTEX		<0.000344		0.000344	mg/kg	07.13.19 10:32	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	96	70 - 130	%		
4-Bromofluorobenzene	109	70 - 130	%		

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Terracon-Lubbock, Lubbock, TX
Caza Eagle Claw

Sample Id: **HA-2 (1.5-2)** Matrix: Soil Sample Depth: 1.5 - 2 ft
Lab Sample Id: 630020-008 Date Collected: 07.03.19 12.48 Date Received: 07.05.19 12.49
Analytical Method: Chloride by EPA 300 Prep Method: E300P
Analyst: CHE % Moist: Tech: CHE
Seq Number: 3095583 Date Prep: 07.16.19 16.00
Prep seq: 7682140

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Chloride	16887-00-6	**1460**	5.00	0.858	mg/kg	07.17.19 08:15		1

Sample Id: **HA-2 (3-3.5)** Matrix: Soil Sample Depth: 3 - 3.5 ft
Lab Sample Id: 630020-009 Date Collected: 07.03.19 12.54 Date Received: 07.05.19 12.49
Analytical Method: Chloride by EPA 300 Prep Method: E300P
Analyst: CHE % Moist: Tech: CHE
Seq Number: 3095583 Date Prep: 07.16.19 16.00
Prep seq: 7682140

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Chloride	16887-00-6	**73.0**	5.01	0.860	mg/kg	07.17.19 08:22		1

Sample Id: **HA-2 (4.5-5)** Matrix: Soil Sample Depth: 4.5 - 5 ft
Lab Sample Id: 630020-010 Date Collected: 07.03.19 13.00 Date Received: 07.05.19 12.49
Analytical Method: Chloride by EPA 300 Prep Method: E300P
Analyst: CHE % Moist: Tech: CHE
Seq Number: 3095583 Date Prep: 07.16.19 16.00
Prep seq: 7682140

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Chloride	16887-00-6	**24.0**	4.98	0.855	mg/kg	07.17.19 08:30		1

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Terracon-Lubbock, Lubbock, TX
Caza Eagle Claw

Sample Id: **HA-3 (0-0.5)** Matrix: Soil Sample Depth: 0 - 0.5 ft

Lab Sample Id: 630020-011 Date Collected: 07.03.19 13.06 Date Received: 07.05.19 12.49

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Analyst: CHE % Moist: Tech: CHE

Seq Number: 3094637 Date Prep: 07.08.19 10.00

Prep seq: 7681478

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Chloride	16887-00-6	**6220**	50.0	8.58	mg/kg	07.08.19 14:14		10

Analytical Method: TPH by SW8015 Mod Prep Method: 1005

Analyst: ARM % Moist: Tech: DVM

Seq Number: 3095306 Date Prep: 07.14.19 09.00

Prep seq: 7681995

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	<7.98	15.0	7.98	mg/kg	07.14.19 20:16	U	1
Diesel Range Organics (DRO)	C10C28DRO	**18.2**	15.0	8.10	mg/kg	07.14.19 20:16		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<8.10	15.0	8.10	mg/kg	07.14.19 20:16	U	1
Total TPH	PHC635	**18.2**		7.98	mg/kg	07.14.19 20:16		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	98	70 - 135	%		
o-Terphenyl	95	70 - 135	%		

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

Analyst: AMB % Moist: Tech: ALG

Seq Number: 3095246 Date Prep: 07.12.19 17.18

Prep seq: 7681931

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000383	0.00199	0.000383	mg/kg	07.13.19 10:54	U	1
Toluene	108-88-3	<0.000453	0.00199	0.000453	mg/kg	07.13.19 10:54	U	1
Ethylbenzene	100-41-4	<0.000561	0.00199	0.000561	mg/kg	07.13.19 10:54	U	1
m,p-Xylenes	179601-23-1	<0.00101	0.00398	0.00101	mg/kg	07.13.19 10:54	U	1
o-Xylene	95-47-6	<0.000342	0.00199	0.000342	mg/kg	07.13.19 10:54	U	1
Total Xylenes	1330-20-7	<0.000342		0.000342	mg/kg	07.13.19 10:54	U	
Total BTEX		<0.000342		0.000342	mg/kg	07.13.19 10:54	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	100	70 - 130	%		
4-Bromofluorobenzene	116	70 - 130	%		

Certificate of Analytical Results
630020
Terracon-Lubbock, Lubbock, TX
Caza Eagle Claw

Sample Id: **HA-3 (0.5-1)** Matrix: Soil Sample Depth: 0.5 - 1 ft

Lab Sample Id: 630020-012 Date Collected: 07.03.19 13.12 Date Received: 07.05.19 12.49

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Analyst: CHE % Moist: Tech: CHE

Seq Number: 3094637 Date Prep: 07.08.19 10.00

Prep seq: 7681478

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Chloride	16887-00-6	**9740**	49.6	8.52	mg/kg	07.08.19 14:51		10

Analytical Method: TPH by SW8015 Mod Prep Method: 1005

Analyst: ARM % Moist: Tech: DVM

Seq Number: 3095306 Date Prep: 07.14.19 09.00

Prep seq: 7681995

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	**12.9**	15.0	7.99	mg/kg	07.14.19 20:35	J	1
Diesel Range Organics (DRO)	C10C28DRO	**12.1**	15.0	8.11	mg/kg	07.14.19 20:35	J	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<8.11	15.0	8.11	mg/kg	07.14.19 20:35	U	1
Total TPH	PHC635	**25.0**		7.99	mg/kg	07.14.19 20:35		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	112	70 - 135	%		
o-Terphenyl	110	70 - 135	%		

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

Analyst: AMB % Moist: Tech: ALG

Seq Number: 3095246 Date Prep: 07.12.19 10.12

Prep seq: 7681931

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000381	0.00198	0.000381	mg/kg	07.13.19 11:16	U	1
Toluene	108-88-3	<0.000451	0.00198	0.000451	mg/kg	07.13.19 11:16	U	1
Ethylbenzene	100-41-4	<0.000559	0.00198	0.000559	mg/kg	07.13.19 11:16	U	1
m,p-Xylenes	179601-23-1	<0.00100	0.00396	0.00100	mg/kg	07.13.19 11:16	U	1
o-Xylene	95-47-6	<0.000341	0.00198	0.000341	mg/kg	07.13.19 11:16	U	1
Total Xylenes	1330-20-7	<0.000341		0.000341	mg/kg	07.13.19 11:16	U	
Total BTEX		<0.000341		0.000341	mg/kg	07.13.19 11:16	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	98	70 - 130	%		
4-Bromofluorobenzene	114	70 - 130	%		

Certificate of Analytical Results
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Terracon-Lubbock, Lubbock, TX
Caza Eagle Claw

Sample Id: **HA-3 (1.5-2)** Matrix: Soil Sample Depth: 1.5 - 2 ft

Lab Sample Id: 630020-013 Date Collected: 07.03.19 13.18 Date Received: 07.05.19 12.49

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Analyst: CHE % Moist: Tech: CHE

Seq Number: 3095674 Date Prep: 07.17.19 10.10

Prep seq: 7682180

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Chloride	16887-00-6	**12200**	99.4	17.1	mg/kg	07.17.19 11:28		20

Analytical Method: TPH by SW8015 Mod Prep Method: 1005

Analyst: ARM % Moist: Tech: DVM

Seq Number: 3096052 Date Prep: 07.16.19 15.00

Prep seq: 7682451

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	<7.99	15.0	7.99	mg/kg	07.22.19 00:11	U	1
Diesel Range Organics (DRO)	C10C28DRO	**14.3**	15.0	8.12	mg/kg	07.22.19 00:11	J	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<8.12	15.0	8.12	mg/kg	07.22.19 00:11	U	1
Total TPH	PHC635	**14.3**		7.99	mg/kg	07.22.19 00:11	J	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	113	70 - 135	%		
o-Terphenyl	83	70 - 135	%		

Sample Id: **HA-3 (3-3.5)** Matrix: Soil Sample Depth: 3 - 3.5 ft

Lab Sample Id: 630020-014 Date Collected: 07.03.19 13.24 Date Received: 07.05.19 12.49

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Analyst: CHE % Moist: Tech: CHE

Seq Number: 3095674 Date Prep: 07.17.19 10.10

Prep seq: 7682180

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Chloride	16887-00-6	**5990**	49.9	8.57	mg/kg	07.17.19 11:36		10

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630020

Terracon-Lubbock, Lubbock, TX

Caza Eagle Claw

Sample Id:	**HA-3 (4.5-5)**	Matrix:	Soil	Sample Depth:	4.5 - 5 ft
Lab Sample Id:	630020-015	Date Collected:	07.03.19 13.28	Date Received:	07.05.19 12.49
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Analyst:	CHE	% Moist:		Tech:	CHE
Seq Number:	3095674	Date Prep:	07.17.19 10.10		
		Prep seq:	7682180		

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Chloride	16887-00-6	**10200**	50.4	8.65	mg/kg	07.17.19 11:43		10

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Terracon-Lubbock, Lubbock, TX
Caza Eagle Claw

Sample Id: **HA-4 (0-0.5)** Matrix: Soil Sample Depth: 0 - 0.5 ft

Lab Sample Id: 630020-016 Date Collected: 07.03.19 13.30 Date Received: 07.05.19 12.49

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Analyst: CHE % Moist: Tech: CHE

Seq Number: 3094637 Date Prep: 07.08.19 10.00

Prep seq: 7681478

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Chloride	16887-00-6	**2300**	25.1	4.30	mg/kg	07.08.19 14:58		5

Analytical Method: TPH by SW8015 Mod Prep Method: 1005

Analyst: ARM % Moist: Tech: DVM

Seq Number: 3095306 Date Prep: 07.14.19 09.00

Prep seq: 7681995

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	**1200**	75.0	40.0	mg/kg	07.14.19 20:55		5
Diesel Range Organics (DRO)	C10C28DRO	**14600**	75.0	40.6	mg/kg	07.14.19 20:55		5
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**2160**	75.0	40.6	mg/kg	07.14.19 20:55		5
Total TPH	PHC635	**18000**		40.0	mg/kg	07.14.19 20:55		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	122	70 - 135	%		
o-Terphenyl	115	70 - 135	%		

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

Analyst: AMB % Moist: Tech: ALG

Seq Number: 3095246 Date Prep: 07.12.19 10.12

Prep seq: 7681931

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	**0.0857**	0.0398	0.00765	mg/kg	07.14.19 05:16		20
Toluene	108-88-3	**2.60**	0.0398	0.00906	mg/kg	07.14.19 05:16		20
Ethylbenzene	100-41-4	**4.23**	0.0398	0.0112	mg/kg	07.14.19 05:16		20
m,p-Xylenes	179601-23-1	**7.36**	0.0795	0.0202	mg/kg	07.14.19 05:16		20
o-Xylene	95-47-6	**3.04**	0.0398	0.00685	mg/kg	07.14.19 05:16		20
Total Xylenes	1330-20-7	**10.4**		0.00685	mg/kg	07.14.19 05:16		
Total BTEX		**17.3**		0.00685	mg/kg	07.14.19 05:16		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	88	70 - 130	%		
4-Bromofluorobenzene	203	70 - 130	%		**

Certificate of Analytical Results
630020
Terracon-Lubbock, Lubbock, TX
Caza Eagle Claw

Sample Id: **HA-4 (0.5-1)** Matrix: Soil Sample Depth: 0.5 - 1 ft

Lab Sample Id: 630020-017 Date Collected: 07.03.19 13.36 Date Received: 07.05.19 12.49

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Analyst: CHE % Moist: Tech: CHE

Seq Number: 3094637 Date Prep: 07.08.19 10.00

Prep seq: 7681478

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Chloride	16887-00-6	**3980**	24.9	4.27	mg/kg	07.08.19 15:05		5

Analytical Method: TPH by SW8015 Mod Prep Method: 1005

Analyst: ARM % Moist: Tech: DVM

Seq Number: 3095306 Date Prep: 07.14.19 09.00

Prep seq: 7681995

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	**14.6**	14.9	7.97	mg/kg	07.14.19 21:15	J	1
Diesel Range Organics (DRO)	C10C28DRO	**425**	14.9	8.10	mg/kg	07.14.19 21:15		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**77.4**	14.9	8.10	mg/kg	07.14.19 21:15		1
Total TPH	PHC635	**517**		7.97	mg/kg	07.14.19 21:15		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	116	70 - 135	%		
o-Terphenyl	125	70 - 135	%		

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

Analyst: AMB % Moist: Tech: ALG

Seq Number: 3095246 Date Prep: 07.12.19 17.18

Prep seq: 7681931

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000383	0.00199	0.000383	mg/kg	07.13.19 11:38	U	1
Toluene	108-88-3	<0.000454	0.00199	0.000454	mg/kg	07.13.19 11:38	U	1
Ethylbenzene	100-41-4	<0.000563	0.00199	0.000563	mg/kg	07.13.19 11:38	U	1
m,p-Xylenes	179601-23-1	<0.00101	0.00398	0.00101	mg/kg	07.13.19 11:38	U	1
o-Xylene	95-47-6	<0.000343	0.00199	0.000343	mg/kg	07.13.19 11:38	U	1
Total Xylenes	1330-20-7	<0.000343		0.000343	mg/kg	07.13.19 11:38	U	
Total BTEX		<0.000343		0.000343	mg/kg	07.13.19 11:38	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	91	70 - 130	%		
4-Bromofluorobenzene	111	70 - 130	%		

Certificate of Analytical Results
630020
Terracon-Lubbock, Lubbock, TX
Caza Eagle Claw

Sample Id: **HA-4 (1.5-2)** Matrix: Soil Sample Depth: 1.5 - 2 ft
Lab Sample Id: 630020-018 Date Collected: 07.03.19 13.42 Date Received: 07.05.19 12.49
Analytical Method: Chloride by EPA 300 Prep Method: E300P
Analyst: CHE % Moist: Tech: CHE
Seq Number: 3095674 Date Prep: 07.17.19 10.10
Prep seq: 7682180

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Chloride	16887-00-6	**4950**	49.8	8.55	mg/kg	07.17.19 11:50		10

Analytical Method: TPH by SW8015 Mod Prep Method: 1005
Analyst: ARM % Moist: Tech: DVM
Seq Number: 3096052 Date Prep: 07.16.19 15.00
Prep seq: 7682451

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	**10.8**	15.0	7.98	mg/kg	07.22.19 00:34	J	1
Diesel Range Organics (DRO)	C10C28DRO	**45.4**	15.0	8.10	mg/kg	07.22.19 00:34		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**8.52**	15.0	8.10	mg/kg	07.22.19 00:34	J	1
Total TPH	PHC635	**64.7**		7.98	mg/kg	07.22.19 00:34		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	123	70 - 135	%		
o-Terphenyl	84	70 - 135	%		

Sample Id: **HA-4 (3-3.5)** Matrix: Soil Sample Depth: 3 - 3.5 ft
Lab Sample Id: 630020-019 Date Collected: 07.03.19 13.48 Date Received: 07.05.19 12.49
Analytical Method: Chloride by EPA 300 Prep Method: E300P
Analyst: CHE % Moist: Tech: CHE
Seq Number: 3095674 Date Prep: 07.17.19 10.10
Prep seq: 7682180

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Chloride	16887-00-6	**7890**	49.6	8.52	mg/kg	07.17.19 12:12		10

Certificate of Analytical Results
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Terracon-Lubbock, Lubbock, TX

Caza Eagle Claw

Sample Id:	**HA-4 (4.5-5)**	Matrix:	Soil	Sample Depth:	4.5 - 5 ft
Lab Sample Id:	630020-020	Date Collected:	07.03.19 13.51	Date Received:	07.05.19 12.49
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Analyst:	CHE	% Moist:		Tech:	CHE
Seq Number:	3095674	Date Prep:	07.17.19 10.10		
		Prep seq:	7682180		

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Chloride	16887-00-6	**9300**	49.5	8.50	mg/kg	07.17.19 12:19		10

Certificate of Analytical Results
630020
Terracon-Lubbock, Lubbock, TX
Caza Eagle Claw

Sample Id: **HA-5 (0-0.5)** Matrix: Soil Sample Depth: 0 - 0.5 ft

Lab Sample Id: 630020-021 Date Collected: 07.03.19 14.54 Date Received: 07.05.19 12.49

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Analyst: CHE % Moist: Tech: CHE

Seq Number: 3094637 Date Prep: 07.08.19 10.00

Prep seq: 7681478

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Chloride	16887-00-6	**1.81**	4.98	0.855	mg/kg	07.08.19 15:12	J	1

Analytical Method: TPH by SW8015 Mod Prep Method: 1005

Analyst: ARM % Moist: Tech: DVM

Seq Number: 3095306 Date Prep: 07.14.19 09.00

Prep seq: 7681995

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	**20.4**	15.0	7.99	mg/kg	07.14.19 21:35		1
Diesel Range Organics (DRO)	C10C28DRO	<8.12	15.0	8.12	mg/kg	07.14.19 21:35	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**8.45**	15.0	8.12	mg/kg	07.14.19 21:35	J	1
Total TPH	PHC635	**28.9**		7.99	mg/kg	07.14.19 21:35		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	93	70 - 135	%		
o-Terphenyl	86	70 - 135	%		

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

Analyst: AMB % Moist: Tech: ALG

Seq Number: 3095246 Date Prep: 07.12.19 17.18

Prep seq: 7681931

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000386	0.00201	0.000386	mg/kg	07.14.19 12:00	U	1
Toluene	108-88-3	<0.000457	0.00201	0.000457	mg/kg	07.14.19 12:00	U	1
Ethylbenzene	100-41-4	<0.000567	0.00201	0.000567	mg/kg	07.14.19 12:00	U	1
m,p-Xylenes	179601-23-1	<0.00102	0.00402	0.00102	mg/kg	07.14.19 12:00	U	1
o-Xylene	95-47-6	<0.000346	0.00201	0.000346	mg/kg	07.14.19 12:00	U	1
Total Xylenes	1330-20-7	<0.000346		0.000346	mg/kg	07.14.19 12:00	U	
Total BTEX		<0.000346		0.000346	mg/kg	07.14.19 12:00	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	99	70 - 130	%		
4-Bromofluorobenzene	116	70 - 130	%		

Certificate of Analytical Results
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Terracon-Lubbock, Lubbock, TX
Caza Eagle Claw

Sample Id: **HA-5 (0.5-1)** Matrix: Soil Sample Depth: 0.5 - 1 ft

Lab Sample Id: 630020-022 Date Collected: 07.03.19 15.00 Date Received: 07.05.19 12.49

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Analyst: CHE % Moist: Tech: CHE

Seq Number: 3094637 Date Prep: 07.08.19 10.00

Prep seq: 7681478

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Chloride	16887-00-6	**4.91**	5.05	0.867	mg/kg	07.08.19 15:20	J	1

Analytical Method: TPH by SW8015 Mod Prep Method: 1005

Analyst: ARM % Moist: Tech: DVM

Seq Number: 3095306 Date Prep: 07.14.19 09.00

Prep seq: 7681995

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	**20.1**	15.0	7.99	mg/kg	07.14.19 21:55		1
Diesel Range Organics (DRO)	C10C28DRO	<8.11	15.0	8.11	mg/kg	07.14.19 21:55	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<8.11	15.0	8.11	mg/kg	07.14.19 21:55	U	1
Total TPH	PHC635	**20.1**		7.99	mg/kg	07.14.19 21:55		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	94	70 - 135	%		
o-Terphenyl	86	70 - 135	%		

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

Analyst: AMB % Moist: Tech: ALG

Seq Number: 3095246 Date Prep: 07.12.19 17.18

Prep seq: 7681931

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000385	0.00200	0.000385	mg/kg	07.14.19 12:22	U	1
Toluene	108-88-3	<0.000456	0.00200	0.000456	mg/kg	07.14.19 12:22	U	1
Ethylbenzene	100-41-4	<0.000565	0.00200	0.000565	mg/kg	07.14.19 12:22	U	1
m,p-Xylenes	179601-23-1	<0.00101	0.00400	0.00101	mg/kg	07.14.19 12:22	U	1
o-Xylene	95-47-6	<0.000344	0.00200	0.000344	mg/kg	07.14.19 12:22	U	1
Total Xylenes	1330-20-7	<0.000344		0.000344	mg/kg	07.14.19 12:22	U	
Total BTEX		<0.000344		0.000344	mg/kg	07.14.19 12:22	U	

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

Certificate of Analytical Results
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Terracon-Lubbock, Lubbock, TX
Caza Eagle Claw

Sample Id: **HA-6 (0-0.5)** Matrix: Soil Sample Depth: 0 - 0.5 ft

Lab Sample Id: 630020-026 Date Collected: 07.03.19 15.18 Date Received: 07.05.19 12.49

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Analyst: CHE % Moist: Tech: CHE

Seq Number: 3094637 Date Prep: 07.08.19 10.00

Prep seq: 7681478

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Chloride	16887-00-6	**10.8**	4.99	0.857	mg/kg	07.08.19 15:42		1

Analytical Method: TPH by SW8015 Mod Prep Method: 1005

Analyst: ARM % Moist: Tech: DVM

Seq Number: 3095306 Date Prep: 07.14.19 09.00

Prep seq: 7681995

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	**25.5**	15.0	8.00	mg/kg	07.14.19 22:34		1
Diesel Range Organics (DRO)	C10C28DRO	**13.2**	15.0	8.13	mg/kg	07.14.19 22:34	J	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<8.13	15.0	8.13	mg/kg	07.14.19 22:34	U	1
Total TPH	PHC635	**38.7**		8.00	mg/kg	07.14.19 22:34		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	108	70 - 135	%		
o-Terphenyl	100	70 - 135	%		

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

Analyst: AMB % Moist: Tech: ALG

Seq Number: 3095246 Date Prep: 07.12.19 17.18

Prep seq: 7681931

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000385	0.00200	0.000385	mg/kg	07.14.19 12:44	U	1
Toluene	108-88-3	<0.000456	0.00200	0.000456	mg/kg	07.14.19 12:44	U	1
Ethylbenzene	100-41-4	<0.000565	0.00200	0.000565	mg/kg	07.14.19 12:44	U	1
m,p-Xylenes	179601-23-1	<0.00101	0.00400	0.00101	mg/kg	07.14.19 12:44	U	1
o-Xylene	95-47-6	<0.000344	0.00200	0.000344	mg/kg	07.14.19 12:44	U	1
Total Xylenes	1330-20-7	<0.000344		0.000344	mg/kg	07.14.19 12:44	U	
Total BTEX		<0.000344		0.000344	mg/kg	07.14.19 12:44	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	97	70 - 130	%		
4-Bromofluorobenzene	109	70 - 130	%		

Certificate of Analytical Results
630020
Terracon-Lubbock, Lubbock, TX
Caza Eagle Claw

Sample Id: **HA-6 (0.5-1)** Matrix: Soil Sample Depth: 0.5 - 1 ft

Lab Sample Id: 630020-027 Date Collected: 07.03.19 15.24 Date Received: 07.05.19 12.49

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Analyst: CHE % Moist: Tech: CHE

Seq Number: 3094637 Date Prep: 07.08.19 10.00

Prep seq: 7681478

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Chloride	16887-00-6	**8.61**	4.95	0.850	mg/kg	07.08.19 15:49		1

Analytical Method: TPH by SW8015 Mod Prep Method: 1005

Analyst: ARM % Moist: Tech: DVM

Seq Number: 3095306 Date Prep: 07.14.19 09.00

Prep seq: 7681995

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	**17.7**	15.0	7.98	mg/kg	07.14.19 22:53		1
Diesel Range Organics (DRO)	C10C28DRO	<8.10	15.0	8.10	mg/kg	07.14.19 22:53	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<8.10	15.0	8.10	mg/kg	07.14.19 22:53	U	1
Total TPH	PHC635	**17.7**		7.98	mg/kg	07.14.19 22:53		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	102	70 - 135	%		
o-Terphenyl	94	70 - 135	%		

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

Analyst: AMB % Moist: Tech: ALG

Seq Number: 3095246 Date Prep: 07.12.19 17.18

Prep seq: 7681931

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000383	0.00199	0.000383	mg/kg	07.14.19 02:19	U	1
Toluene	108-88-3	<0.000453	0.00199	0.000453	mg/kg	07.14.19 02:19	U	1
Ethylbenzene	100-41-4	<0.000561	0.00199	0.000561	mg/kg	07.14.19 02:19	U	1
m,p-Xylenes	179601-23-1	<0.00101	0.00398	0.00101	mg/kg	07.14.19 02:19	U	1
o-Xylene	95-47-6	<0.000342	0.00199	0.000342	mg/kg	07.14.19 02:19	U	1
Total Xylenes	1330-20-7	<0.000342		0.000342	mg/kg	07.14.19 02:19	U	
Total BTEX		<0.000342		0.000342	mg/kg	07.14.19 02:19	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	89	70 - 130	%		
4-Bromofluorobenzene	89	70 - 130	%		

Certificate of Analytical Results
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Terracon-Lubbock, Lubbock, TX
Caza Eagle Claw

Sample Id: **7681440-1-BLK** Matrix: Solid Sample Depth:
Lab Sample Id: 7681440-1-BLK Date Collected: Date Received:
Analytical Method: Chloride by EPA 300 Prep Method: E300P
Analyst: CHE % Moist: Tech: CHE
Seq Number: 3094603 Date Prep: 07.05.19 15.45
Prep seq: 7681440

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Chloride	16887-00-6	<0.858	5.00	0.858	mg/kg	07.05.19 15:54	U	1

Sample Id: **7681478-1-BLK** Matrix: Solid Sample Depth:
Lab Sample Id: 7681478-1-BLK Date Collected: Date Received:
Analytical Method: Chloride by EPA 300 Prep Method: E300P
Analyst: CHE % Moist: Tech: CHE
Seq Number: 3094637 Date Prep: 07.08.19 08.15
Prep seq: 7681478

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Chloride	16887-00-6	<0.858	5.00	0.858	mg/kg	07.08.19 09:28	U	1

Sample Id: **7681931-1-BLK** Matrix: Solid Sample Depth:
Lab Sample Id: 7681931-1-BLK Date Collected: Date Received:
Analytical Method: BTEX by EPA 8021B Prep Method: 5030B
Analyst: AMB % Moist: Tech: ALG
Seq Number: 3095246 Date Prep: 07.12.19 17.18
Prep seq: 7681931

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000385	0.00200	0.000385	mg/kg	07.13.19 09:04	U	1
Toluene	108-88-3	<0.000456	0.00200	0.000456	mg/kg	07.13.19 09:04	U	1
Ethylbenzene	100-41-4	<0.000565	0.00200	0.000565	mg/kg	07.13.19 09:04	U	1
m,p-Xylenes	179601-23-1	<0.00101	0.00400	0.00101	mg/kg	07.13.19 09:04	U	1
o-Xylene	95-47-6	<0.000344	0.00200	0.000344	mg/kg	07.13.19 09:04	U	1
Total Xylenes	1330-20-7	<0.000344		0.000344	mg/kg	07.13.19 09:04	U	
Total BTEX		<0.000344		0.000344	mg/kg	07.13.19 09:04	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	93	70 - 130	%		
4-Bromofluorobenzene	98	70 - 130	%		

Certificate of Analytical Results
630020
Terracon-Lubbock, Lubbock, TX
Caza Eagle Claw

Sample Id: **7681995-1-BLK** Matrix: Solid Sample Depth:
Lab Sample Id: 7681995-1-BLK Date Collected: Date Received:
Analytical Method: TPH by SW8015 Mod Prep Method: 1005
Analyst: ARM % Moist: Tech: DVM
Seq Number: 3095306 Date Prep: 07.14.19 09.00
Prep seq: 7681995

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	<8.00	15.0	8.00	mg/kg	07.14.19 17:18	U	1
Diesel Range Organics (DRO)	C10C28DRO	<8.13	15.0	8.13	mg/kg	07.14.19 17:18	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<8.13	15.0	8.13	mg/kg	07.14.19 17:18	U	1
Total TPH	PHC635	<8.00		8.00	mg/kg	07.14.19 17:18	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	100	70 - 135	%		
o-Terphenyl	97	70 - 135	%		

Sample Id: **7682140-1-BLK** Matrix: Solid Sample Depth:
Lab Sample Id: 7682140-1-BLK Date Collected: Date Received:
Analytical Method: Chloride by EPA 300 Prep Method: E300P
Analyst: CHE % Moist: Tech: CHE
Seq Number: 3095583 Date Prep: 07.16.19 16.00
Prep seq: 7682140

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Chloride	16887-00-6	<0.858	5.00	0.858	mg/kg	07.17.19 04:52	U	1

Sample Id: **7682180-1-BLK** Matrix: Solid Sample Depth:
Lab Sample Id: 7682180-1-BLK Date Collected: Date Received:
Analytical Method: Chloride by EPA 300 Prep Method: E300P
Analyst: CHE % Moist: Tech: CHE
Seq Number: 3095674 Date Prep: 07.17.19 10.10
Prep seq: 7682180

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Chloride	16887-00-6	<0.858	5.00	0.858	mg/kg	07.17.19 10:45	U	1

Certificate of Analytical Results
630020

Terracon-Lubbock, Lubbock, TX

Caza Eagle Claw

Sample Id: **7682451-1-BLK** Matrix: Solid Sample Depth:

Lab Sample Id: 7682451-1-BLK Date Collected: Date Received:

Analytical Method: TPH by SW8015 Mod Prep Method: 1005

Analyst: ARM % Moist: Tech: DVM

Seq Number: 3096052 Date Prep: 07.21.19 09.00

Prep seq: 7682451

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	<8.00	15.0	8.00	mg/kg	07.21.19 21:26	U	1
Diesel Range Organics (DRO)	C10C28DRO	<8.13	15.0	8.13	mg/kg	07.21.19 21:26	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<8.13	15.0	8.13	mg/kg	07.21.19 21:26	U	1
Total TPH	PHC635	<8.00		8.00	mg/kg	07.21.19 21:26	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	108	70 - 135	%		
o-Terphenyl	83	70 - 135	%		

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

Form 2 - Surrogate Recoveries

Project Name: Caza Eagle Claw

Work Orders : 630020, **Project ID:** AR197234

Lab Batch #: 3095246 **Sample:** 7681931-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 07/13/19 07:10

BTEX by EPA 8021B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0287	0.0300	96	70-130	
4-Bromofluorobenzene	0.0320	0.0300	107	70-130	

Lab Batch #: 3095246 **Sample:** 7681931-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 07/13/19 07:32

BTEX by EPA 8021B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0300	0.0300	100	70-130	
4-Bromofluorobenzene	0.0346	0.0300	115	70-130	

Lab Batch #: 3095246 **Sample:** 630020-001 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/13/19 07:54

BTEX by EPA 8021B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0288	0.0300	96	70-130	
4-Bromofluorobenzene	0.0345	0.0300	115	70-130	

Lab Batch #: 3095246 **Sample:** 630020-001 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/13/19 08:16

BTEX by EPA 8021B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0289	0.0300	96	70-130	
4-Bromofluorobenzene	0.0356	0.0300	119	70-130	

Lab Batch #: 3095246 **Sample:** 7681931-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 07/13/19 09:04

BTEX by EPA 8021B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0278	0.0300	93	70-130	
4-Bromofluorobenzene	0.0295	0.0300	98	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.

Form 2 - Surrogate Recoveries

Project Name: Caza Eagle Claw

Work Orders : 630020, **Project ID:** AR197234

Lab Batch #: 3095306 **Sample:** 7681995-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 07/14/19 17:18

TPH by SW8015 Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	99.5	100	100	70-135	
o-Terphenyl	48.7	50.0	97	70-135	

Lab Batch #: 3095306 **Sample:** 7681995-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 07/14/19 17:38

TPH by SW8015 Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	122	100	122	70-135	
o-Terphenyl	62.5	50.0	125	70-135	

Lab Batch #: 3095306 **Sample:** 7681995-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 07/14/19 17:58

TPH by SW8015 Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	120	100	120	70-135	
o-Terphenyl	60.0	50.0	120	70-135	

Lab Batch #: 3095306 **Sample:** 630020-001 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/14/19 18:37

TPH by SW8015 Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	124	99.9	124	70-135	
o-Terphenyl	49.1	50.0	98	70-135	

Lab Batch #: 3095306 **Sample:** 630020-001 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/14/19 18:57

TPH by SW8015 Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	127	99.8	127	70-135	
o-Terphenyl	49.7	49.9	100	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.

Form 2 - Surrogate Recoveries

Project Name: Caza Eagle Claw

Work Orders : 630020, **Project ID:** AR197234

Lab Batch #: 3096052 **Sample:** 7682451-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 07/21/19 21:26

TPH by SW8015 Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	108	100	108	70-135	
o-Terphenyl	41.7	50.0	83	70-135	

Lab Batch #: 3096052 **Sample:** 7682451-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 07/21/19 21:49

TPH by SW8015 Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	101	100	101	70-135	
o-Terphenyl	39.3	50.0	79	70-135	

Lab Batch #: 3096052 **Sample:** 7682451-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 07/21/19 22:13

TPH by SW8015 Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	113	100	113	70-135	
o-Terphenyl	46.5	50.0	93	70-135	

Lab Batch #: 3096052 **Sample:** 630699-001 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/21/19 23:00

TPH by SW8015 Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	92.8	99.7	93	70-135	
o-Terphenyl	35.6	49.9	71	70-135	

Lab Batch #: 3096052 **Sample:** 630699-001 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/21/19 23:23

TPH by SW8015 Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	90.1	99.9	90	70-135	
o-Terphenyl	35.4	50.0	71	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.

BS / BSD Recoveries

Project Name: Caza Eagle Claw

Work Order #: 630020 **Project ID:** AR197234

Analyst: AMB **Date Prepared:** 07/12/2019 **Date Analyzed:** 07/13/2019

Lab Batch ID: 3095246 **Sample:** 7681931-1-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	<0.000385	0.100	0.0941	94	0.100	0.0903	90	4	70-130	35	
Toluene	<0.000456	0.100	0.0903	90	0.100	0.0882	88	2	70-130	35	
Ethylbenzene	<0.000565	0.100	0.0992	99	0.100	0.0944	94	5	70-130	35	
m,p-Xylenes	<0.00101	0.200	0.198	99	0.200	0.190	95	4	70-130	35	
o-Xylene	<0.000344	0.100	0.0955	96	0.100	0.0946	95	1	70-130	35	

Analyst: CHE **Date Prepared:** 07/05/2019 **Date Analyzed:** 07/05/2019

Lab Batch ID: 3094603 **Sample:** 7681440-1-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	249	100	250	250	100	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

BS / BSD Recoveries

Project Name: Caza Eagle Claw

Work Order #: 630020 **Project ID:** AR197234

Analyst: CHE **Date Prepared:** 07/08/2019 **Date Analyzed:** 07/08/2019

Lab Batch ID: 3094637 **Sample:** 7681478-1-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	242	97	250	243	97	0	90-110	20	

Analyst: CHE **Date Prepared:** 07/16/2019 **Date Analyzed:** 07/17/2019

Lab Batch ID: 3095583 **Sample:** 7682140-1-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	233	93	250	234	94	0	90-110	20	

Analyst: CHE **Date Prepared:** 07/17/2019 **Date Analyzed:** 07/17/2019

Lab Batch ID: 3095674 **Sample:** 7682180-1-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	236	94	250	235	94	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

BS / BSD Recoveries

Project Name: Caza Eagle Claw

Work Order #: 630020 **Project ID:** AR197234

Analyst: ARM **Date Prepared:** 07/14/2019 **Date Analyzed:** 07/14/2019

Lab Batch ID: 3095306 **Sample:** 7681995-1-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)	<8.00	1000	1150	115	1000	1120	112	3	70-135	20	
Diesel Range Organics (DRO)	<8.13	1000	1140	114	1000	1120	112	2	70-135	20	

Analyst: ARM **Date Prepared:** 07/21/2019 **Date Analyzed:** 07/21/2019

Lab Batch ID: 3096052 **Sample:** 7682451-1-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)	<8.00	1000	1140	114	1000	1140	114	0	70-135	20	
Diesel Range Organics (DRO)	<8.13	1000	1100	110	1000	1160	116	5	70-135	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

Form 3 - MS / MSD Recoveries

Project Name: Caza Eagle Claw

Work Order # : 630020 **Project ID:** AR197234

Lab Batch ID: 3095246 **QC- Sample ID:** 630020-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 07/13/2019 **Date Prepared:** 07/12/2019 **Analyst:** AMB

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	0.0762	77	0.0992	0.0803	81	5	70-130	35	
Toluene	<0.000453	0.0994	0.0721	73	0.0992	0.0767	77	6	70-130	35	
Ethylbenzene	<0.000561	0.0994	0.0776	78	0.0992	0.0832	84	7	70-130	35	
m,p-Xylenes	<0.00101	0.199	0.154	77	0.198	0.166	84	8	70-130	35	
o-Xylene	<0.000342	0.0994	0.0766	77	0.0992	0.0810	82	6	70-130	35	

Lab Batch ID: 3094603 **QC- Sample ID:** 630023-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 07/05/2019 **Date Prepared:** 07/05/2019 **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	<0.858	250	266	106	250	264	106	1	90-110	20	

Lab Batch ID: 3094603 **QC- Sample ID:** 630023-013 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 07/05/2019 **Date Prepared:** 07/05/2019 **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	<0.864	252	262	104	252	261	104	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: Caza Eagle Claw

Work Order # : 630020 **Project ID:** AR197234

Lab Batch ID: 3094637 **QC- Sample ID:** 630020-022 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 07/08/2019 **Date Prepared:** 07/08/2019 **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	4.91	253	269	104	253	269	104	0	90-110	20	

Lab Batch ID: 3094637 **QC- Sample ID:** 630022-016 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 07/08/2019 **Date Prepared:** 07/08/2019 **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	1520	250	1760	96	250	1760	96	0	90-110	20	

Lab Batch ID: 3095583 **QC- Sample ID:** 630920-006 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 07/17/2019 **Date Prepared:** 07/16/2019 **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	437	252	652	85	252	653	86	0	90-110	20	X

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: Caza Eagle Claw

Work Order # : 630020 **Project ID:** AR197234

Lab Batch ID: 3095583 **QC- Sample ID:** 630955-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 07/17/2019 **Date Prepared:** 07/16/2019 **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	947	248	1110	66	248	1110	66	0	90-110	20	X

Lab Batch ID: 3095674 **QC- Sample ID:** 630319-004 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 07/17/2019 **Date Prepared:** 07/17/2019 **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	369	248	591	90	248	592	90	0	90-110	20	

Lab Batch ID: 3095674 **QC- Sample ID:** 630871-011 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 07/17/2019 **Date Prepared:** 07/17/2019 **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	38.0	251	287	99	251	287	99	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: Caza Eagle Claw

Work Order # : 630020 **Project ID:** AR197234

Lab Batch ID: 3095306 **QC- Sample ID:** 630020-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 07/14/2019 **Date Prepared:** 07/14/2019 **Analyst:** ARM

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)	18.8	999	1010	99	998	1040	102	3	70-135	20	
Diesel Range Organics (DRO)	8.62	999	1020	101	998	1040	103	2	70-135	20	

Lab Batch ID: 3096052 **QC- Sample ID:** 630699-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 07/21/2019 **Date Prepared:** 07/21/2019 **Analyst:** ARM

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)	11.0	997	1030	102	999	1010	100	2	70-135	20	
Diesel Range Organics (DRO)	10.1	997	990	98	999	967	96	2	70-135	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.

CHAIN OF CUSTODY RECORD 630070

Terracon

Laboratory: Xenco
Address: 6701 Aberdeen
Lubbock, Texas 79424

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

Project Number: AR197234
Project Name: Caza Eagle Claw

ANALYSIS REQUESTED

LAB USE ONLY
DUE DATE:
TEMP OF COOLER WHEN RECEIVED (°C)
Page 1 of 2

Matrix	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	Start Depth	End Depth	No. Type of Containers: 2 oz Glass	4 oz Glass	5035 kit	40 ml VOA	Chloride (EPA Method 300)	TPH Extended 8015	BTEX (EPA Method 8021B)	Hold				Lab Sample ID
S	7/3/2019	12:06		X	HA-1 (0-0.5)	0'	0.5'		X			X	X	X					
S	7/3/2019	12:12		X	HA-1 (0.5-1)	0.5'	1'		X			X	X	X					
S	7/3/2019	12:18		X	HA-1 (1.5-2)	1.5'	2'		X						X				
S	7/3/2019	12:24		X	HA-1 (3-3.5)	3'	3.5'		X						X				
S	7/3/2019	12:30		X	HA-1 (4.5-5)	4.5'	5'		X						X				
S	7/3/2019	12:36		X	HA-2 (0-0.5)	0'	0.5'		X			X	X	X					
S	7/3/2019	12:42		X	HA-2 (0.5-1)	0.5'	1'		X			X	X	X					
S	7/3/2019	12:48		X	HA-2 (1.5-2)	1.5'	2'		X						X				
S	7/3/2019	12:54		X	HA-2 (3-3.5)	3'	3.5'		X						X				
S	7/3/2019	13:00		X	HA-2 (4.5-5)	4.5'	5'		X						X				
S	7/3/2019	13:06		X	HA-3 (0-0.5)	0'	0.5'		X			X	X	X					
S	7/3/2019	13:12		X	HA-3 (0.5-1)	0.5'	1'		X			X	X	X					
S	7/3/2019	13:18		X	HA-3 (1.5-2)	1.5'	2'		X						X				
S	7/3/2019	13:24		X	HA-3 (3-3.5)	3'	3.5'		X						X				
S	7/3/2019	13:28		X	HA-3 (4.5-5)	4.5'	5'		X						X				
S	7/3/2019	13:30		X	HA-4 (0-0.5)	0'	0.5'		X			X	X	X					
S	7/3/2019	13:36		X	HA-4 (0.5-1)	0.5'	1'		X			X	X	X					

TURNAROUND TIME ☐ Normal ☐ 48-Hour Rush ☐ 24-Hour Rush TRRP Laboratory Review Checklist ☐ Yes ☐ No

Relinquished by (Signature)	Date	Time	Received by (Signature)	Date	Time
	7-5-19	12:45		7/5/19	1249
Relinquished by (Signature)	Date	Time	Received by (Signature)	Date	Time
Relinquished by (Signature)	Date	Time	Received by (Signature)	Date	Time
Relinquished by (Signature)	Date	Time	Received by (Signature)	Date	Time

NOTES: Client: Solaris

e-mail results to:

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

16-5/16-3

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

CHAIN OF CUSTODY RECORD 630020

Terracon

Laboratory: Xenco
Address: 6701 Aberdeen
Lubbock, Texas 79424

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

ANALYSIS REQUESTED

LAB USE ONLY
DUE DATE:
TEMP OF COOLER WHEN RECEIVED (°C)

Page 2 of 2

Project Number: AR197234
Project Name: Caza Eagle Claw

Matrix	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	Start Depth	End Depth	No. Type of Containers: 2 oz Glass	4 oz Glass	5035 kit	40 ml VOA	Chloride (EPA Method 300)	TPH Extended 8015	BTEX (EPA Method 8021B)	Hold				Lab Sample ID
S	7/3/2019	13:42		X	HA-4 (1.5-2)	1.5'	2'		X						X				
S	7/3/2019	13:48		X	HA-4 (3-3.5)	3'	3.5'		X						X				
S	7/3/2019	13:51		X	HA-4 (4.5-5)	4.5'	5'		X						X				
S	7/3/2019	14:54		X	HA-5 (0-0.5)	0'	0.5'		X			X	X	X					
S	7/3/2019	15:00		X	HA-5 (0.5-1)	0.5'	1'		X			X	X	X					
S	7/3/2019	15:06		X	HA-5 (1.5-2)	1.5'	2'		X						X				
S	7/3/2019	15:12		X	HA-5 (3-3.5)	3'	3.5'		X						X				
S	7/3/2019	15:15		X	HA-5 (4.5-5)	4.5'	5'		X						X				
S	7/3/2019	15:18		X	HA-6 (0-0.5)	0'	0.5'		X			X	X	X					
S	7/3/2019	15:24		X	HA-6 (0.5-1)	0.5'	1'		X			X	X	X					
S	7/3/2019	15:30		X	HA-6 (1.5-2)	1.5'	2'		X						X				
S	7/3/2019	15:36		X	HA-6 (3-3.5)	3'	3.5'		X						X				

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

TRRP Laboratory Review Checklist ☐ Yes ☐ No

Relinquished by (Signature)	Date:	Time:	Received by (Signature)	Date:	Time:
	7-5-19	12:49		7/5/19	1249
Relinquished by (Signature)	Date:	Time:	Received by (Signature)	Date:	Time:
Relinquished by (Signature)	Date:	Time:	Received by (Signature)	Date:	Time:
Relinquished by (Signature)	Date:	Time:	Received by (Signature)	Date:	Time:

NOTES: Client: Solaris

e-mail results to:

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

165116.3

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

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: Terracon-Lubbock

Date/ Time Received: 07/05/2019 12:49:00 PM

Work Order #: 630020

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)?	16.3	
#2 *Shipping container in good condition?	**Yes**	
#3 *Samples received on ice?	**No**	RECEIVED OUT OF TEMP
#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: 07/05/2019
Brianna Teel

Checklist reviewed by: Jessica Kramer Date: 07/09/2019
Jessica Kramer

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

Standard of Care

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

Additional Scope Limitations

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

Reliance

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