

Incident ID	nRM2011949780
District RP	
Facility ID	
Application ID	

Site Assessment/Characterization

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

What is the shallowest depth to groundwater beneath the area affected by the release?	126 (ft bgs)
Did this release impact groundwater or surface water?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☐ Yes ☒ No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes ☒ No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	☐ Yes ☒ No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes ☒ No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ☒ No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ☒ No
Are the lateral extents of the release overlying an unstable area such as karst geology?	☐ Yes ☒ No
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes ☒ No
Did the release impact areas not on an exploration, development, production, or storage site?	☐ Yes ☒ No

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

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

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

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

State of New Mexico
Oil Conservation Division

Page 4

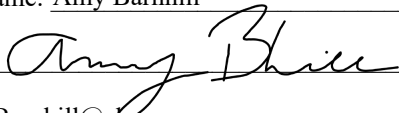
Incident ID	nRM2011949780
District RP	
Facility ID	
Application ID	

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

Printed Name: Amy Barnhill

Title: Waste and Water Specialist

Signature:



Date: 1-11-21

email: ABarnhill@chevron.com

Telephone: 432-687-7108

OCD Only

Received by: Cristina Eads

Date: 01/11/2021

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District RP	
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Remediation Plan

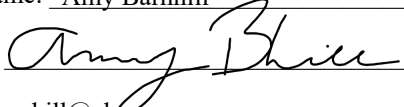
Remediation Plan Checklist: Each of the following items must be included in the plan.

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

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

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

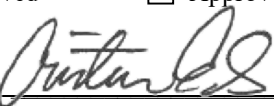
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public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

Printed Name: Amy Barnhill Title: Waste and Water Specialist
Signature:  Date: 1-11-21
email: ABarnhill@chevron.com Telephone: 432-687-7108

OCD Only

Received by: Cristina Eads Date: 01/11/2021

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

Signature:  Date: 04/09/2021

Tracking Number: nRM2011949780
Delineation Report and Remediation Plan
Vacuum Glorieta West Unit #041
Produced Water Release
Lea County, New Mexico

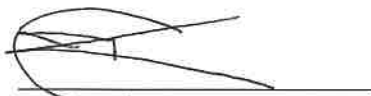
Latitude: N 32.802536°
Longitude: W -103.5108736°

LAI Project No. 20-0107-12

December 22, 2020

Prepared for:
Chevron USA Inc.
6301 Deauville Blvd.
Midland, Texas 79706

Prepared by:
Larson & Associates, Inc.
507 North Marienfeld Street, Suite 202
Midland, Texas 79701



Mark J. Larson, P.G.
Certified Professional Geologist #10490



Robert Nelson
Sr. Geoscientist

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Appendix B	Karst Risk Potential
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nRM2011949780

Delineation Report and Remediation Plan
Vacuum Glorieta West Unit #041, Lea County, New Mexico
December 22, 2020

1.0 INTRODUCTION

Larson & Associates, Inc. (LAI), has prepared this delineation report and remediation plan on behalf of Chevron USA Inc. (Chevron) for submittal to the New Mexico Oil Conservation Division (OCD) District I for a crude oil and produced water release at the Vacuum Glorieta West Unit #041 (Site) located in Unit J (NW/4, SE/4), Section 25, Township 17 South, Range 34 East, in Lea County, New Mexico. The geodetic position is North 32.802536° and West -103.510736°. Figure 1 presents a topographic map. Figure 2 presents an aerial map.

1.1 Background

The release was discovered on March 1, 2020, due to equipment failure. Chevron reported that approximately 73.32 barrels (bbls) of produced water was released. Approximately 60 bbls of produced water were recovered. The affected area measures approximately 6,131 square feet. The initial C-141 was assigned an incident number of nRM2011949780. Appendix A presents Chevron spill calculation.

1.2 Physical Setting

The physical setting is as follows:

- The surface elevation is approximately feet above mean sea level (msl).
- The surface topography gradually slopes to the southwest.
- There are no surface water features within 1,000 feet of the Site.
- Karst data provided by the USGS describes this site as “Low Risk” potential.
- The soils are designated as “Kimbrough gravelly loam”, dry, 0 to 3 percent slopes, consisting of 3 inches of gravelly loam, underlain by 7 inches of loam, and 70 inches of cemented material, in descending order.
- The surface geology consists of the Pliocene-age sand, silt, clay, gravel, and caliche (USGS).
- Groundwater was reported at approximately 126 feet below ground surface (bgs) in 2016.
- The New Mexico Office of the State Engineer (OSE) reports the nearest fresh water well is located in Section 36, Township 17 South, Range 34 East, approximately 0.46 miles or 2,430 feet southeast of the Site.

Appendix B the presents Karst risk potential map

1.3 Remediation Levels

The following remediation standards are based on closure criteria for soils impacted by a release as presented in Table 1 of 19.15.29 NMAC:

- Benzene 10 mg/Kg
- BTEX 50 mg/Kg
- TPH 2,500 mg/Kg
- Chloride 20,000 mg/Kg

Further, 19.15.29.13 NMAC (Restoration, Reclamation and Re-Vegetation) requires the operator to restore the impacted surface area that existed prior to the release or their final land use.

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Delineation Report and Remediation Plan
Vacuum Glorieta West Unit #041, Lea County, New Mexico
December 22, 2020

2.0 DELINEATION

On May 8, June 22, and July 23, 2020, LAI personnel used a stainless-steel hand auger to collect soil samples from six (6) locations inside of the spill (SP-1 through SP-4, SP-6, and SP-9) and in each cardinal direction (North, South, East, and West) of the spill. The samples were collected between approximately 0.5 and 1-foot bgs depending on subsurface conditions. The soil samples were delivered under chain of custody and preservation to Xenco Laboratories (Xenco) in Midland, Texas, which analyzed the samples for benzene, toluene, ethylbenzene, and xylenes (BTEX) and total petroleum hydrocarbons (TPH), including gasoline range organics (C6-C12), diesel range organics (>C12-C28) and oil range organics (>C28-C35), and chloride by EPA SW-846 Methods 8021B and 8015M, and M300, respectively. Figure 2 presents an aerial map showing the sample locations.

Benzene, BTEX, and TPH were reported below the analytical method reporting limit (RL) or OCD remediation standards of 10 milligrams per kilogram (mg/Kg), 50 mg/Kg, and 100 mg/Kg, respectively (19.15.29 NMAC Table 1). Chloride exceeded the OCD surface restoration limit of 600 mg/Kg (19.15.29.13 NMAC) in the following samples:

Sample ID	Depth (Feet)	Chloride (mg/Kg)
S-4	0.5	645
S-4	1	1,300
S-6	0.5	6,310
S-6	1	6,690
S-9	0.5	1,630
S-9	1	1,920

On June 22, 2020, LAI personnel used a Geoprobe® 7822DT direct push rig to further delineate chloride at sample locations S-4, S-6, and S-9. Soil samples were collected at depths of approximately one (1) and three (3) feet bgs due to subsurface conditions. The laboratory confirmed chloride in soil samples from two (2) sample locations (S-6 and S-9) remained above the NMOC remediation standard of 600 mg/Kg.

On July 22, 2020, Scarborough Drilling, Inc. (SDI) under LAI supervision used an air rotary rig to delineate chloride at sample locations S-6 and S-9. Soil Samples were collected every five (5) feet to a maximum depth of twenty-five (25) feet bgs. Subsequent laboratory analysis reported the release to be fully delineated to the surface restoration limit of 600 mg/Kg (19.15.29.13 NMAC).

3.0 REMEDIATION Plan

Chevron proposes the following remedial actions:

- Excavate soil from an area measuring approximately 2,055 square feet encompassing sample location S-4 to approximately 1 foot bgs.
- Excavate soil from an area measuring approximately 1,311 square feet encompassing sample locations S-6 and S-9 to approximately 4.1 feet bgs.
- Collect five (5) point composite bottom and sidewall confirmation soil samples every 200 square feet of excavation and analyze for BTEX, TPH and chloride.
- Backfill excavations with clean caliche assuming achievement of OCD remediation levels; and
- Prepare closure report with photographs for submittal to OCD District I.

nRM2011949780

Delineation Report and Remediation Plan
Vacuum Glorieta West Unit #041, Lea County, New Mexico
December 22, 2020

Figure 3 presents the proposed excavation areas.

Tables

Table 1
Soil Sample Analytical Data Summary
Vacuum Glorieta West Unit #041
Lea County, New Mexico
North 32° 48' 09.13", West 103° 30' 38.65"

Page 1 of 2

Sample	Depth (Feet)	Collection Date	Status	Benzene (mg/Kg)	BTEX (mg/Kg)	C6 - C12 (mg/Kg)	C12 - C28 (mg/Kg)	C28 - C35 (mg/Kg)	TPH (mg/Kg)	Chloride (mg/Kg)	
Remediation Level:						10	50	100 / 2,500			600 / 10,000
S-1	0.5	5/8/2020	In-Situ	<0.00202	<0.00202	<50.0	<50.0	<50.0	<50.0	136.0	
S-2	0.5	5/8/2020	In-Situ	<0.00201	<0.00201	<49.9	<49.9	<49.9	<49.9	93.1	
	1	5/8/2020	In-Situ	<0.00199	<0.00199	<49.8	<49.8	<49.8	<49.8	91.9	
S-3	0.5	5/8/2020	In-Situ	<0.00198	<0.00198	<50.0	<50.0	<50.0	<50.0	16.6	
	1	5/8/2020	In-Situ	<0.00198	<0.00198	<49.9	<49.9	<49.9	<49.9	16.3	
S-4	0.5	5/8/2020	In-Situ	<0.00199	<0.00199	<49.8	<49.8	<49.8	<49.8	645	
	1	5/8/2020	In-Situ	<0.00200	<0.00200	<50.0	<50.0	<50.0	<50.0	1,300	
	1	6/22/2020	In-Situ	<0.00199	<0.00199	<50.0	<50.0	<50.0	<50.0	38.7	
	3	6/22/2020	In-Situ	<0.00199	<0.00199	<49.9	<49.9	<49.9	<49.9	14.0	
S-5	0.5	5/8/2020	In-Situ	<0.00198	<0.00198	<49.9	76.6	<49.9	76.6	11.6	
	1	5/8/2020	In-Situ	<0.00200	<0.00200	<49.9	<49.9	<49.9	<49.9	13.3	
S-6 BH-1 (S-6)	0.5	5/8/2020	In-Situ	<0.00199	<0.00199	<50.0	57.1	<50.0	57.1	6,310	
	1	5/8/2020	In-Situ	<0.00202	<0.00202	<50.0	74.7	<50.0	74.7	6,690	
	1	6/22/2020	In-Situ	<0.00200	<0.00200	<50.0	<50.0	<50.0	<50.0	9,140	
	3	6/22/2020	In-Situ	<0.00199	<0.00199	<49.9	<49.9	<49.9	<49.9	3,520	
	5	7/22/2020	In-Situ	<0.00198	0.00198	<50.0	<50.0	<50.0	<50.0	3,230	
	10	7/22/2020	In-Situ	--	--	--	--	--	--	3,640	
	15	7/22/2020	In-Situ	--	--	--	--	--	--	740	
	20	7/22/2020	In-Situ	--	--	--	--	--	--	910	
	25	7/22/2020	In-Situ	--	--	--	--	--	--	97.3	

Table 1
Soil Sample Analytical Data Summary
Vacuum Glorieta West Unit #041
Lea County, New Mexico
North 32° 48' 09.13", West 103° 30' 38.65"

Page 2 of 2

Sample	Depth (Feet)	Collection Date	Status	Benzene (mg/Kg)	BTEX (mg/Kg)	C6 - C12 (mg/Kg)	C12 - C28 (mg/Kg)	C28 - C35 (mg/Kg)	TPH (mg/Kg)	Chloride (mg/Kg)
Remediation Level:						10	50	100 / 2,500		600 / 10,000
S-7	0.5	5/8/2020	In-Situ	<0.00200	0.00397	<49.9	<49.9	<49.9	<49.9	70.2
S-8	0.5	5/8/2020	In-Situ	<0.00199	<0.00199	<49.8	<49.8	<49.8	<49.8	22.7
	1	5/8/2020	In-Situ	<0.00200	<0.00200	<50.0	<50.0	<50.0	<50.0	34.5
S-9 BH-2 (S-9)	0.5	6/22/2020	In-Situ	<0.00198	<0.00198	<49.9	<49.9	<49.9	<49.9	1,630
	1	6/22/2020	In-Situ	<0.00200	<0.00200	<50.0	<50.0	<50.0	<50.0	1,920
	3	6/22/2020	In-Situ	<0.00199	<0.00199	<50.0	<50.0	<50.0	<50.0	1,610
	5	7/22/2020	In-Situ	<0.00201	<0.00201	<49.8	<49.8	<49.8	<49.8	386
	10	7/22/2020	In-Situ	--	--	--	--	--	--	332
	15	7/22/2020	In-Situ	--	--	--	--	--	--	154
	20	7/22/2020	In-Situ	--	--	--	--	--	--	49.0
S-10	0.5	7/23/2020	In-Situ	<0.00200	<0.00200	<49.9	<49.9	<49.9	<49.9	25.0
	1	7/23/2020	In-Situ	<0.00199	<0.00199	<50.0	<50.0	<50.0	<50.0	12.9

Notes: Analysis performed by Xenco Laboratories (Xenco) Midland, Texas, by EPA SW-846 8021B (BTEX), 8015M (TPH), and 300E (chloride)

Depth in feet below ground surface (bgs)

mg/Kg: milligrams per kilogram equivalent to parts per million (ppm)

<: denotes concentration less than analytical method reporting limit

Bold and Highlighted exceeds OCD remediation action limits

Figures

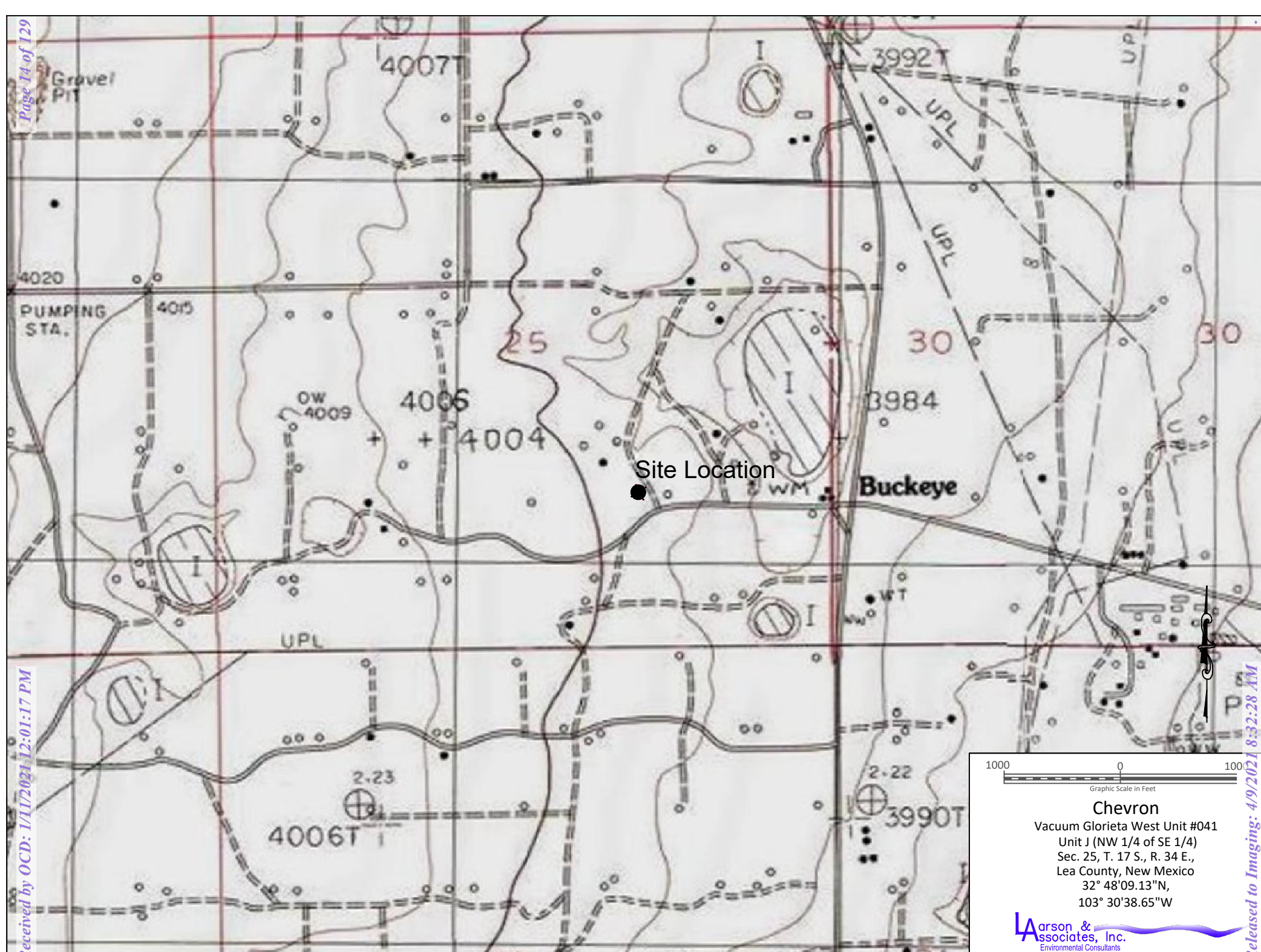
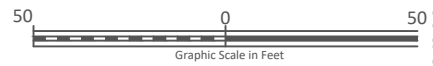


Figure 1 - Topographic Map



Legend

- - Soil Sample Location
- - Spill Location



Chevron
Vacuum Glorieta West Unit #041
Unit J (NW 1/4 of SE 1/4)
Sec. 25, T. 17 S., R. 34 E.,
Lea County, New Mexico
32° 48'09.13"N,
103° 30'38.65"W



Figure 2 - Aerial Map

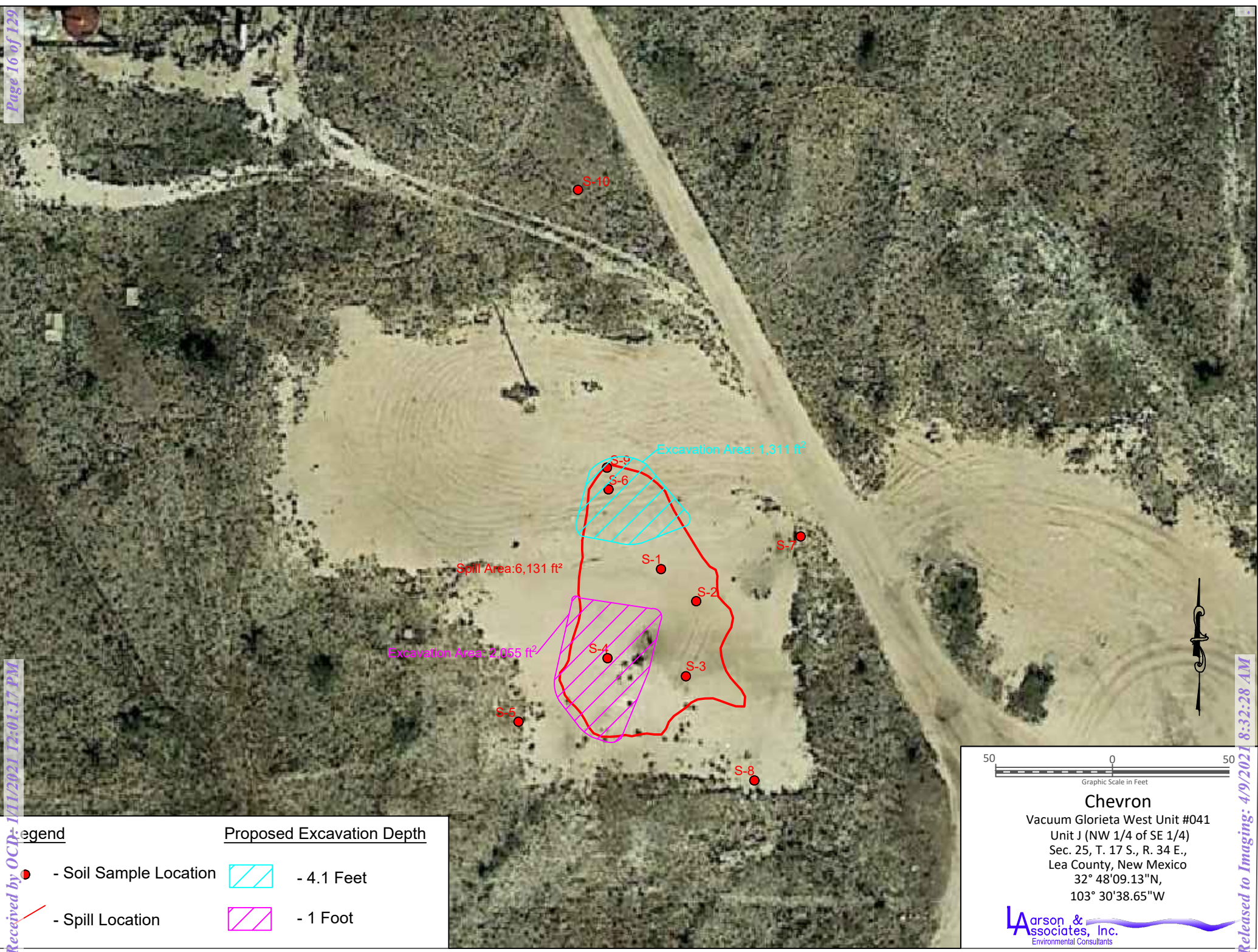


Figure 3 - Proposed Excavation

Appendix A
Chevron Spill Calculation

State of New Mexico
Oil Conservation Division

Page 3

Incident ID	
District RP	
Facility ID	
Application ID	

Incident Date		4/14/2020			
Incident Time		Start Time	End Time		
		6:00 AM	12:30 PM		
Location		VGWU 41			
All volumes in following table in barrels					
Area	Standing Liquid	In Soil	dimensions / shape	Oil Volume	Water Volume
1	35	5.29	132X36	0	40.29
2	15	2.26	45X45	0	17.26
3	12	1.8	90X18	0	13.8
4		1.97	42X42	0	1.97
5					
6					
7					
8					
Total Fluid				0	73.32
Fluid Recovered in barrels					
Oil Volume			Water Volume		
0			60		

Appendix B
Karst Risk Potential



Browser

- ★ Favorites
- ▶ Spatial Bookmarks
- ▶ Project Home
- ▶ Home
- ▶ C:\
- ▶ D:\
- ▶ L:\
- ▶ Z:\
- ▶ GeoPackage
- ▶ SpatiaLite
- ▶ PostGIS
- ▶ MSSQL
- ▶ Oracle
- ▶ DB2
- ▶ WMS/WMTS
- ▶ XYZ Tiles
- ▶ WCS
- ▶ WFS / OGC API - Features
- ▶ OWS
- ▶ ArcGisMapServer
- ▶ ArcGisFeatureServer
- ▶ GeoNode

Layers

- ✓ Added geom info
- ✓ carlsbad_west
- ▼ Karst_or_No_Karst
 - ✓ High
 - ✓ Low
 - ✓ Medium
- ▼ Bing Satellite



Appendix C
Laboratory Reports



Certificate of Analysis Summary 661118

Larson and Associates, Inc., Midland, TX

Project Name: Chevron-Vacuum Glonietha #041

Project Id: 20-0107-12

Contact: Mark Larson

Project Location:

Date Received in Lab: Mon 05.11.2020 11:21

Report Date: 05.18.2020 12:46

Project Manager: Holly Taylor

<i>Analysis Requested</i>	<i>Lab Id:</i>	661118-001	661118-002	661118-003	661118-004	661118-005	661118-006
	<i>Field Id:</i>	S-1 (0.5')	S-2 (0.5')	S-2 (1')	S-3 (0.5')	S-3 (1')	S-4 (0.5')
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	05.08.2020 12:26	05.08.2020 12:28	05.08.2020 12:29	05.08.2020 12:30	05.08.2020 12:31	05.08.2020 12:08
BTEX by EPA 8021B	<i>Extracted:</i>	05.12.2020 08:00	05.12.2020 08:00	05.12.2020 08:00	05.12.2020 08:00	05.12.2020 08:00	05.12.2020 08:00
	<i>Analyzed:</i>	05.13.2020 10:08	05.13.2020 10:28	05.13.2020 10:48	05.13.2020 11:08	05.13.2020 11:28	05.13.2020 11:49
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00202 0.00202	<0.00201 0.00201	<0.00199 0.00199	<0.00198 0.00198	<0.00198 0.00198	<0.00199 0.00199
Toluene		<0.00202 0.00202	<0.00201 0.00201	<0.00199 0.00199	<0.00198 0.00198	<0.00198 0.00198	<0.00199 0.00199
Ethylbenzene		<0.00202 0.00202	<0.00201 0.00201	<0.00199 0.00199	<0.00198 0.00198	<0.00198 0.00198	<0.00199 0.00199
m,p-Xylenes		<0.00403 0.00403	<0.00402 0.00402	<0.00398 0.00398	<0.00397 0.00397	<0.00396 0.00396	<0.00398 0.00398
o-Xylene		<0.00202 0.00202	<0.00201 0.00201	<0.00199 0.00199	<0.00198 0.00198	<0.00198 0.00198	<0.00199 0.00199
Total Xylenes		<0.00202 0.00202	<0.00201 0.00201	<0.00199 0.00199	<0.00198 0.00198	<0.00198 0.00198	<0.00199 0.00199
Total BTEX		<0.00202 0.00202	<0.00201 0.00201	<0.00199 0.00199	<0.00198 0.00198	<0.00198 0.00198	<0.00199 0.00199
Chloride by EPA 300	<i>Extracted:</i>	05.11.2020 14:30	05.11.2020 14:30	05.11.2020 14:30	05.11.2020 14:30	05.11.2020 14:30	05.11.2020 14:30
	<i>Analyzed:</i>	05.12.2020 09:23	05.12.2020 10:10	05.12.2020 10:15	05.12.2020 10:21	05.12.2020 10:26	05.12.2020 10:31
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		136 5.04	93.1 5.00	91.9 5.00	16.6 5.05	16.3 4.96	645 4.98
TPH by SW8015 Mod	<i>Extracted:</i>	05.11.2020 16:00	05.11.2020 16:00	05.11.2020 16:00	05.11.2020 16:00	05.11.2020 16:00	05.11.2020 16:00
	<i>Analyzed:</i>	05.11.2020 19:08	05.11.2020 20:13	05.11.2020 20:34	05.11.2020 20:55	05.11.2020 21:17	05.11.2020 21:38
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons (GRO)		<50.0 50.0	<49.9 49.9	<49.8 49.8	<50.0 50.0	<49.9 49.9	<49.8 49.8
Diesel Range Organics (DRO)		<50.0 50.0	<49.9 49.9	<49.8 49.8	<50.0 50.0	<49.9 49.9	<49.8 49.8
Motor Oil Range Hydrocarbons (MRO)		<50.0 50.0	<49.9 49.9	<49.8 49.8	<50.0 50.0	<49.9 49.9	<49.8 49.8
Total TPH		<50.0 50.0	<49.9 49.9	<49.8 49.8	<50.0 50.0	<49.9 49.9	<49.8 49.8

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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Holly Taylor
Project Manager



Certificate of Analysis Summary 661118

Larson and Associates, Inc., Midland, TX

Project Name: Chevron-Vacuum Glonietha #041

Project Id: 20-0107-12

Contact: Mark Larson

Project Location:

Date Received in Lab: Mon 05.11.2020 11:21

Report Date: 05.18.2020 12:46

Project Manager: Holly Taylor

<i>Analysis Requested</i>	<i>Lab Id:</i>	661118-007	661118-008	661118-009	661118-010	661118-011	661118-012
	<i>Field Id:</i>	S-4 (1')	S-5 (0.5')	S-5 (1')	S-6 (0.5')	S-6 (1')	S-7 (0.5')
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	05.08.2020 12:11	05.08.2020 12:15	05.08.2020 12:20	05.08.2020 12:22	05.08.2020 12:23	05.08.2020 12:25
BTEX by EPA 8021B	<i>Extracted:</i>	05.12.2020 08:00	05.12.2020 08:00	05.12.2020 08:00	05.12.2020 08:00	05.12.2020 08:00	05.12.2020 08:00
	<i>Analyzed:</i>	05.13.2020 12:09	05.13.2020 12:29	05.13.2020 13:49	05.13.2020 14:10	05.13.2020 14:30	05.13.2020 14:50
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00200 0.00200	<0.00198 0.00198	<0.00200 0.00200	<0.00199 0.00199	<0.00202 0.00202	<0.00200 0.00200
Toluene		<0.00200 0.00200	<0.00198 0.00198	<0.00200 0.00200	<0.00199 0.00199	<0.00202 0.00202	0.00397 0.00200
Ethylbenzene		<0.00200 0.00200	<0.00198 0.00198	<0.00200 0.00200	<0.00199 0.00199	<0.00202 0.00202	<0.00200 0.00200
m,p-Xylenes		<0.00399 0.00399	<0.00397 0.00397	<0.00399 0.00399	<0.00398 0.00398	<0.00403 0.00403	<0.00401 0.00401
o-Xylene		<0.00200 0.00200	<0.00198 0.00198	<0.00200 0.00200	<0.00199 0.00199	<0.00202 0.00202	<0.00200 0.00200
Total Xylenes		<0.00200 0.00200	<0.00198 0.00198	<0.00200 0.00200	<0.00199 0.00199	<0.00202 0.00202	<0.00200 0.00200
Total BTEX		<0.00200 0.00200	<0.00198 0.00198	<0.00200 0.00200	<0.00199 0.00199	<0.00202 0.00202	0.00397 0.00200
Chloride by EPA 300	<i>Extracted:</i>	05.11.2020 14:30	05.11.2020 14:30	05.11.2020 14:30	05.11.2020 14:30	05.11.2020 14:30	05.11.2020 14:30
	<i>Analyzed:</i>	05.12.2020 10:52	05.12.2020 10:36	05.12.2020 10:57	05.12.2020 11:19	05.12.2020 11:24	05.12.2020 11:29
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		1300 25.2	11.6 5.00	13.3 4.95	6310 248	6690 99.6	70.2 5.00
TPH by SW8015 Mod	<i>Extracted:</i>	05.11.2020 16:00	05.11.2020 16:00	05.11.2020 16:00	05.11.2020 16:00	05.11.2020 16:00	05.11.2020 16:00
	<i>Analyzed:</i>	05.11.2020 21:59	05.12.2020 07:00	05.12.2020 07:21	05.12.2020 07:49	05.12.2020 08:30	05.12.2020 08:51
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons (GRO)		<50.0 50.0	<49.9 49.9	<49.9 49.9	<50.0 50.0	<50.0 50.0	<49.9 49.9
Diesel Range Organics (DRO)		<50.0 50.0	76.6 49.9	<49.9 49.9	57.1 50.0	74.7 50.0	<49.9 49.9
Motor Oil Range Hydrocarbons (MRO)		<50.0 50.0	<49.9 49.9	<49.9 49.9	<50.0 50.0	<50.0 50.0	<49.9 49.9
Total TPH		<50.0 50.0	76.6 49.9	<49.9 49.9	57.1 50.0	74.7 50.0	<49.9 49.9

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Holly Taylor
Project Manager



Certificate of Analysis Summary 661118

Larson and Associates, Inc., Midland, TX

Project Name: Chevron-Vacuum Glonietha #041

Project Id: 20-0107-12

Contact: Mark Larson

Project Location:

Date Received in Lab: Mon 05.11.2020 11:21

Report Date: 05.18.2020 12:46

Project Manager: Holly Taylor

Analysis Requested	Lab Id:	661118-013	661118-014				
	Field Id:	S-8 (0.5')	S-8 (1')				
	Depth:						
	Matrix:	SOIL	SOIL				
	Sampled:	05.08.2020 12:25	05.08.2020 12:28				
BTEX by EPA 8021B	Extracted:	05.13.2020 14:00	05.13.2020 14:00				
	Analyzed:	05.13.2020 18:12	05.13.2020 18:32				
	Units/RL:	mg/kg RL	mg/kg RL				
Benzene		<0.00199 0.00199	<0.00200 0.00200				
Toluene		<0.00199 0.00199	<0.00200 0.00200				
Ethylbenzene		<0.00199 0.00199	<0.00200 0.00200				
m,p-Xylenes		<0.00398 0.00398	<0.00399 0.00399				
o-Xylene		<0.00199 0.00199	<0.00200 0.00200				
Total Xylenes		<0.00199 0.00199	<0.00200 0.00200				
Total BTEX		<0.00199 0.00199	<0.00200 0.00200				
Chloride by EPA 300	Extracted:	05.11.2020 14:30	05.11.2020 14:30				
	Analyzed:	05.12.2020 11:34	05.12.2020 11:40				
	Units/RL:	mg/kg RL	mg/kg RL				
Chloride		22.7 4.99	34.5 5.02				
TPH by SW8015 Mod	Extracted:	05.11.2020 16:00	05.11.2020 16:00				
	Analyzed:	05.12.2020 09:12	05.12.2020 09:33				
	Units/RL:	mg/kg RL	mg/kg RL				
Gasoline Range Hydrocarbons (GRO)		<49.8 49.8	<50.0 50.0				
Diesel Range Organics (DRO)		<49.8 49.8	<50.0 50.0				
Motor Oil Range Hydrocarbons (MRO)		<49.8 49.8	<50.0 50.0				
Total TPH		<49.8 49.8	<50.0 50.0				

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Holly Taylor
Project Manager



Analytical Report 661118

for

Larson and Associates, Inc.

Project Manager: Mark Larson

Chevron-Vacuum Glonietha #041

20-0107-12

05.18.2020

Collected By: Client



**1211 W. Florida Ave
Midland TX 79701**

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-20-32), Arizona (AZ0765), Florida (E871002-33), Louisiana (03054)
Oklahoma (2019-058), North Carolina (681), Arkansas (19-037-0)

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

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-19-16)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-20-22)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-19)
Xenco-Carlsbad (LELAP): Louisiana (05092)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-19-5)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Tampa: Florida (E87429), North Carolina (483)



05.18.2020

Project Manager: **Mark Larson**

Larson and Associates, Inc.

P. O. Box 50685

Midland, TX 79710

Reference: XENCO Report No(s): **661118**

Chevron-Vacuum Glonietha #041

Project Address:

Mark Larson :

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) 661118. 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. 661118 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,

A handwritten signature in black ink that reads 'Holly Taylor'. The signature is fluid and cursive, with the first name 'Holly' and last name 'Taylor' clearly distinguishable.

Holly Taylor
Project Manager

A Small Business and Minority Company

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

**Sample Cross Reference 661118****Larson and Associates, Inc., Midland, TX**

Chevron-Vacuum Glonietha #041

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
S-1 (0.5')	S	05.08.2020 12:26		661118-001
S-2 (0.5')	S	05.08.2020 12:28		661118-002
S-2 (1')	S	05.08.2020 12:29		661118-003
S-3 (0.5')	S	05.08.2020 12:30		661118-004
S-3 (1')	S	05.08.2020 12:31		661118-005
S-4 (0.5')	S	05.08.2020 12:08		661118-006
S-4 (1')	S	05.08.2020 12:11		661118-007
S-5 (0.5')	S	05.08.2020 12:15		661118-008
S-5 (1')	S	05.08.2020 12:20		661118-009
S-6 (0.5')	S	05.08.2020 12:22		661118-010
S-6 (1')	S	05.08.2020 12:23		661118-011
S-7 (0.5')	S	05.08.2020 12:25		661118-012
S-8 (0.5')	S	05.08.2020 12:25		661118-013
S-8 (1')	S	05.08.2020 12:28		661118-014



CASE NARRATIVE

Client Name: *Larson and Associates, Inc.*

Project Name: *Chevron-Vacuum Glonietha #041*

Project ID: 20-0107-12
Work Order Number(s): 661118

Report Date: 05.18.2020
Date Received: 05.11.2020

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3125822 BTEX by EPA 8021B

Surrogate 4-Bromofluorobenzene recovered below QC limits. Samples affected are: 7703250-1-BLK.



Certificate of Analytical Results 661118

Larson and Associates, Inc., Midland, TX

Chevron-Vacuum Glonietha #041

Sample Id: S-1 (0.5')

Matrix: Soil

Date Received: 05.11.2020 11:21

Lab Sample Id: 661118-001

Date Collected: 05.08.2020 12:26

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 05.11.2020 14:30

Basis: Wet Weight

Seq Number: 3125642

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	136	5.04	mg/kg	05.12.2020 09:23		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 05.11.2020 16:00

Basis: Wet Weight

Seq Number: 3125662

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	05.11.2020 19:08	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	05.11.2020 19:08	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	05.11.2020 19:08	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	05.11.2020 19:08	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	79	%	70-130	05.11.2020 19:08	
o-Terphenyl	84-15-1	98	%	70-130	05.11.2020 19:08	



Certificate of Analytical Results 661118

Larson and Associates, Inc., Midland, TX

Chevron-Vacuum Glonietha #041

Sample Id: S-1 (0.5')

Matrix: Soil

Date Received: 05.11.2020 11:21

Lab Sample Id: 661118-001

Date Collected: 05.08.2020 12:26

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 05.12.2020 08:00

Basis: Wet Weight

Seq Number: 3125822

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	05.13.2020 10:08	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	05.13.2020 10:08	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	05.13.2020 10:08	U	1
m,p-Xylenes	179601-23-1	<0.00403	0.00403	mg/kg	05.13.2020 10:08	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	05.13.2020 10:08	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	05.13.2020 10:08	U	1
Total BTEX		<0.00202	0.00202	mg/kg	05.13.2020 10:08	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	107	%	70-130	05.13.2020 10:08		
1,4-Difluorobenzene	540-36-3	111	%	70-130	05.13.2020 10:08		



Certificate of Analytical Results 661118

Larson and Associates, Inc., Midland, TX

Chevron-Vacuum Glonietha #041

Sample Id: S-2 (0.5')

Matrix: Soil

Date Received: 05.11.2020 11:21

Lab Sample Id: 661118-002

Date Collected: 05.08.2020 12:28

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 05.11.2020 14:30

Basis: Wet Weight

Seq Number: 3125642

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	93.1	5.00	mg/kg	05.12.2020 10:10		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 05.11.2020 16:00

Basis: Wet Weight

Seq Number: 3125662

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	05.11.2020 20:13	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	05.11.2020 20:13	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	05.11.2020 20:13	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	05.11.2020 20:13	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	78	%	70-130	05.11.2020 20:13	
o-Terphenyl	84-15-1	95	%	70-130	05.11.2020 20:13	



Certificate of Analytical Results 661118

Larson and Associates, Inc., Midland, TX

Chevron-Vacuum Glonietha #041

Sample Id: S-2 (0.5')

Matrix: Soil

Date Received: 05.11.2020 11:21

Lab Sample Id: 661118-002

Date Collected: 05.08.2020 12:28

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 05.12.2020 08:00

Basis: Wet Weight

Seq Number: 3125822

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	05.13.2020 10:28	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	05.13.2020 10:28	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	05.13.2020 10:28	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	05.13.2020 10:28	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	05.13.2020 10:28	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	05.13.2020 10:28	U	1
Total BTEX		<0.00201	0.00201	mg/kg	05.13.2020 10:28	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	110	%	70-130	05.13.2020 10:28		
4-Bromofluorobenzene	460-00-4	102	%	70-130	05.13.2020 10:28		



Certificate of Analytical Results 661118

Larson and Associates, Inc., Midland, TX

Chevron-Vacuum Glonietha #041

Sample Id: S-2 (1')
Lab Sample Id: 661118-003

Matrix: Soil
Date Collected: 05.08.2020 12:29

Date Received: 05.11.2020 11:21

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 05.11.2020 14:30

Basis: Wet Weight

Seq Number: 3125642

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	91.9	5.00	mg/kg	05.12.2020 10:15		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 05.11.2020 16:00

Basis: Wet Weight

Seq Number: 3125662

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.8	49.8	mg/kg	05.11.2020 20:34	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.8	49.8	mg/kg	05.11.2020 20:34	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.8	49.8	mg/kg	05.11.2020 20:34	U	1
Total TPH	PHC635	<49.8	49.8	mg/kg	05.11.2020 20:34	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	77	%	70-130	05.11.2020 20:34	
o-Terphenyl	84-15-1	94	%	70-130	05.11.2020 20:34	



Certificate of Analytical Results 661118

Larson and Associates, Inc., Midland, TX

Chevron-Vacuum Glonietha #041

Sample Id: S-2 (1')
Lab Sample Id: 661118-003

Matrix: Soil
Date Collected: 05.08.2020 12:29

Date Received: 05.11.2020 11:21

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 05.12.2020 08:00

Basis: Wet Weight

Seq Number: 3125822

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	05.13.2020 10:48	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	05.13.2020 10:48	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	05.13.2020 10:48	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	05.13.2020 10:48	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	05.13.2020 10:48	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	05.13.2020 10:48	U	1
Total BTEX		<0.00199	0.00199	mg/kg	05.13.2020 10:48	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	104	%	70-130	05.13.2020 10:48		
4-Bromofluorobenzene	460-00-4	96	%	70-130	05.13.2020 10:48		



Certificate of Analytical Results 661118

Larson and Associates, Inc., Midland, TX

Chevron-Vacuum Glonietha #041

Sample Id: S-3 (0.5')

Matrix: Soil

Date Received: 05.11.2020 11:21

Lab Sample Id: 661118-004

Date Collected: 05.08.2020 12:30

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 05.11.2020 14:30

Basis: Wet Weight

Seq Number: 3125642

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	16.6	5.05	mg/kg	05.12.2020 10:21		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 05.11.2020 16:00

Basis: Wet Weight

Seq Number: 3125662

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	05.11.2020 20:55	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	05.11.2020 20:55	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	05.11.2020 20:55	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	05.11.2020 20:55	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	79	%	70-130	05.11.2020 20:55	
o-Terphenyl	84-15-1	100	%	70-130	05.11.2020 20:55	



Certificate of Analytical Results 661118

Larson and Associates, Inc., Midland, TX

Chevron-Vacuum Glonietha #041

Sample Id: S-3 (0.5')
Lab Sample Id: 661118-004

Matrix: Soil
Date Collected: 05.08.2020 12:30

Date Received: 05.11.2020 11:21

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 05.12.2020 08:00

Basis: Wet Weight

Seq Number: 3125822

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	05.13.2020 11:08	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	05.13.2020 11:08	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	05.13.2020 11:08	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	05.13.2020 11:08	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	05.13.2020 11:08	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	05.13.2020 11:08	U	1
Total BTEX		<0.00198	0.00198	mg/kg	05.13.2020 11:08	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	93	%	70-130	05.13.2020 11:08		
1,4-Difluorobenzene	540-36-3	106	%	70-130	05.13.2020 11:08		



Certificate of Analytical Results 661118

Larson and Associates, Inc., Midland, TX

Chevron-Vacuum Glonietha #041

Sample Id: S-3 (1')
Lab Sample Id: 661118-005

Matrix: Soil
Date Collected: 05.08.2020 12:31

Date Received: 05.11.2020 11:21

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 05.11.2020 14:30

Basis: Wet Weight

Seq Number: 3125642

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	16.3	4.96	mg/kg	05.12.2020 10:26		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 05.11.2020 16:00

Basis: Wet Weight

Seq Number: 3125662

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	05.11.2020 21:17	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	05.11.2020 21:17	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	05.11.2020 21:17	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	05.11.2020 21:17	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	77	%	70-130	05.11.2020 21:17	
o-Terphenyl	84-15-1	96	%	70-130	05.11.2020 21:17	



Certificate of Analytical Results 661118

Larson and Associates, Inc., Midland, TX

Chevron-Vacuum Glonietha #041

Sample Id: S-3 (1')
Lab Sample Id: 661118-005

Matrix: Soil
Date Collected: 05.08.2020 12:31

Date Received: 05.11.2020 11:21

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 05.12.2020 08:00

Basis: Wet Weight

Seq Number: 3125822

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	05.13.2020 11:28	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	05.13.2020 11:28	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	05.13.2020 11:28	U	1
m,p-Xylenes	179601-23-1	<0.00396	0.00396	mg/kg	05.13.2020 11:28	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	05.13.2020 11:28	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	05.13.2020 11:28	U	1
Total BTEX		<0.00198	0.00198	mg/kg	05.13.2020 11:28	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	108	%	70-130	05.13.2020 11:28		
4-Bromofluorobenzene	460-00-4	94	%	70-130	05.13.2020 11:28		



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Larson and Associates, Inc., Midland, TX

Chevron-Vacuum Glonietha #041

Sample Id: S-4 (0.5')

Matrix: Soil

Date Received: 05.11.2020 11:21

Lab Sample Id: 661118-006

Date Collected: 05.08.2020 12:08

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 05.11.2020 14:30

Basis: Wet Weight

Seq Number: 3125642

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	645	4.98	mg/kg	05.12.2020 10:31		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 05.11.2020 16:00

Basis: Wet Weight

Seq Number: 3125662

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.8	49.8	mg/kg	05.11.2020 21:38	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.8	49.8	mg/kg	05.11.2020 21:38	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.8	49.8	mg/kg	05.11.2020 21:38	U	1
Total TPH	PHC635	<49.8	49.8	mg/kg	05.11.2020 21:38	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	77	%	70-130	05.11.2020 21:38	
o-Terphenyl	84-15-1	92	%	70-130	05.11.2020 21:38	



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Larson and Associates, Inc., Midland, TX

Chevron-Vacuum Glonietha #041

Sample Id: S-4 (0.5')

Matrix: Soil

Date Received: 05.11.2020 11:21

Lab Sample Id: 661118-006

Date Collected: 05.08.2020 12:08

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 05.12.2020 08:00

Basis: Wet Weight

Seq Number: 3125822

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	05.13.2020 11:49	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	05.13.2020 11:49	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	05.13.2020 11:49	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	05.13.2020 11:49	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	05.13.2020 11:49	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	05.13.2020 11:49	U	1
Total BTEX		<0.00199	0.00199	mg/kg	05.13.2020 11:49	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	99	%	70-130	05.13.2020 11:49		
1,4-Difluorobenzene	540-36-3	111	%	70-130	05.13.2020 11:49		



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Larson and Associates, Inc., Midland, TX

Chevron-Vacuum Glonietha #041

Sample Id: S-4 (1')
Lab Sample Id: 661118-007

Matrix: Soil
Date Collected: 05.08.2020 12:11

Date Received: 05.11.2020 11:21

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 05.11.2020 14:30

Basis: Wet Weight

Seq Number: 3125642

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1300	25.2	mg/kg	05.12.2020 10:52		5

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 05.11.2020 16:00

Basis: Wet Weight

Seq Number: 3125662

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	05.11.2020 21:59	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	05.11.2020 21:59	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	05.11.2020 21:59	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	05.11.2020 21:59	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	78	%	70-130	05.11.2020 21:59	
o-Terphenyl	84-15-1	95	%	70-130	05.11.2020 21:59	



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Larson and Associates, Inc., Midland, TX

Chevron-Vacuum Glonietha #041

Sample Id: S-4 (1')
Lab Sample Id: 661118-007

Matrix: Soil
Date Collected: 05.08.2020 12:11

Date Received: 05.11.2020 11:21

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 05.12.2020 08:00

Basis: Wet Weight

Seq Number: 3125822

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	05.13.2020 12:09	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	05.13.2020 12:09	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	05.13.2020 12:09	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	05.13.2020 12:09	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	05.13.2020 12:09	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	05.13.2020 12:09	U	1
Total BTEX		<0.00200	0.00200	mg/kg	05.13.2020 12:09	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	111	%	70-130	05.13.2020 12:09		
4-Bromofluorobenzene	460-00-4	91	%	70-130	05.13.2020 12:09		



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Larson and Associates, Inc., Midland, TX

Chevron-Vacuum Glonietha #041

Sample Id: S-5 (0.5')

Matrix: Soil

Date Received: 05.11.2020 11:21

Lab Sample Id: 661118-008

Date Collected: 05.08.2020 12:15

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 05.11.2020 14:30

Basis: Wet Weight

Seq Number: 3125642

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	11.6	5.00	mg/kg	05.12.2020 10:36		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 05.11.2020 16:00

Basis: Wet Weight

Seq Number: 3125662

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	05.12.2020 07:00	U	1
Diesel Range Organics (DRO)	C10C28DRO	76.6	49.9	mg/kg	05.12.2020 07:00		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	05.12.2020 07:00	U	1
Total TPH	PHC635	76.6	49.9	mg/kg	05.12.2020 07:00		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	75	%	70-130	05.12.2020 07:00	
o-Terphenyl	84-15-1	90	%	70-130	05.12.2020 07:00	



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Larson and Associates, Inc., Midland, TX

Chevron-Vacuum Glonietha #041

Sample Id: S-5 (0.5')

Matrix: Soil

Date Received: 05.11.2020 11:21

Lab Sample Id: 661118-008

Date Collected: 05.08.2020 12:15

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 05.12.2020 08:00

Basis: Wet Weight

Seq Number: 3125822

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	05.13.2020 12:29	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	05.13.2020 12:29	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	05.13.2020 12:29	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	05.13.2020 12:29	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	05.13.2020 12:29	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	05.13.2020 12:29	U	1
Total BTEX		<0.00198	0.00198	mg/kg	05.13.2020 12:29	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	111	%	70-130	05.13.2020 12:29		
4-Bromofluorobenzene	460-00-4	107	%	70-130	05.13.2020 12:29		



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Larson and Associates, Inc., Midland, TX

Chevron-Vacuum Glonietha #041

Sample Id: S-5 (1')
Lab Sample Id: 661118-009

Matrix: Soil
Date Collected: 05.08.2020 12:20

Date Received: 05.11.2020 11:21

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 05.11.2020 14:30

Basis: Wet Weight

Seq Number: 3125642

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	13.3	4.95	mg/kg	05.12.2020 10:57		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 05.11.2020 16:00

Basis: Wet Weight

Seq Number: 3125662

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	05.12.2020 07:21	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	05.12.2020 07:21	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	05.12.2020 07:21	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	05.12.2020 07:21	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	74	%	70-130	05.12.2020 07:21	
o-Terphenyl	84-15-1	93	%	70-130	05.12.2020 07:21	



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Larson and Associates, Inc., Midland, TX

Chevron-Vacuum Glonietha #041

Sample Id: S-5 (1')
Lab Sample Id: 661118-009

Matrix: Soil
Date Collected: 05.08.2020 12:20

Date Received: 05.11.2020 11:21

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 05.12.2020 08:00

Basis: Wet Weight

Seq Number: 3125822

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	05.13.2020 13:49	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	05.13.2020 13:49	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	05.13.2020 13:49	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	05.13.2020 13:49	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	05.13.2020 13:49	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	05.13.2020 13:49	U	1
Total BTEX		<0.00200	0.00200	mg/kg	05.13.2020 13:49	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	106	%	70-130	05.13.2020 13:49		
4-Bromofluorobenzene	460-00-4	93	%	70-130	05.13.2020 13:49		



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Larson and Associates, Inc., Midland, TX

Chevron-Vacuum Glonietha #041

Sample Id: S-6 (0.5')

Matrix: Soil

Date Received: 05.11.2020 11:21

Lab Sample Id: 661118-010

Date Collected: 05.08.2020 12:22

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 05.11.2020 14:30

Basis: Wet Weight

Seq Number: 3125642

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	6310	248	mg/kg	05.12.2020 11:19		50

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 05.11.2020 16:00

Basis: Wet Weight

Seq Number: 3125662

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	05.12.2020 07:49	U	1
Diesel Range Organics (DRO)	C10C28DRO	57.1	50.0	mg/kg	05.12.2020 07:49		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	05.12.2020 07:49	U	1
Total TPH	PHC635	57.1	50.0	mg/kg	05.12.2020 07:49		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	77	%	70-130	05.12.2020 07:49	
o-Terphenyl	84-15-1	91	%	70-130	05.12.2020 07:49	



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Larson and Associates, Inc., Midland, TX

Chevron-Vacuum Glonietha #041

Sample Id: S-6 (0.5')

Matrix: Soil

Date Received: 05.11.2020 11:21

Lab Sample Id: 661118-010

Date Collected: 05.08.2020 12:22

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 05.12.2020 08:00

Basis: Wet Weight

Seq Number: 3125822

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	05.13.2020 14:10	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	05.13.2020 14:10	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	05.13.2020 14:10	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	05.13.2020 14:10	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	05.13.2020 14:10	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	05.13.2020 14:10	U	1
Total BTEX		<0.00199	0.00199	mg/kg	05.13.2020 14:10	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	102	%	70-130	05.13.2020 14:10		
1,4-Difluorobenzene	540-36-3	107	%	70-130	05.13.2020 14:10		



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Larson and Associates, Inc., Midland, TX

Chevron-Vacuum Glonietha #041

Sample Id: S-6 (1')
Lab Sample Id: 661118-011

Matrix: Soil
Date Collected: 05.08.2020 12:23

Date Received: 05.11.2020 11:21

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 05.11.2020 14:30

Basis: Wet Weight

Seq Number: 3125642

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	6690	99.6	mg/kg	05.12.2020 11:24		20

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 05.11.2020 16:00

Basis: Wet Weight

Seq Number: 3125662

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	05.12.2020 08:30	U	1
Diesel Range Organics (DRO)	C10C28DRO	74.7	50.0	mg/kg	05.12.2020 08:30		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	05.12.2020 08:30	U	1
Total TPH	PHC635	74.7	50.0	mg/kg	05.12.2020 08:30		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	77	%	70-130	05.12.2020 08:30	
o-Terphenyl	84-15-1	95	%	70-130	05.12.2020 08:30	



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Larson and Associates, Inc., Midland, TX

Chevron-Vacuum Glonietha #041

Sample Id: S-6 (1')
Lab Sample Id: 661118-011

Matrix: Soil
Date Collected: 05.08.2020 12:23

Date Received: 05.11.2020 11:21

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 05.12.2020 08:00

Basis: Wet Weight

Seq Number: 3125822

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	05.13.2020 14:30	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	05.13.2020 14:30	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	05.13.2020 14:30	U	1
m,p-Xylenes	179601-23-1	<0.00403	0.00403	mg/kg	05.13.2020 14:30	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	05.13.2020 14:30	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	05.13.2020 14:30	U	1
Total BTEX		<0.00202	0.00202	mg/kg	05.13.2020 14:30	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	96	%	70-130	05.13.2020 14:30		
4-Bromofluorobenzene	460-00-4	73	%	70-130	05.13.2020 14:30		



Certificate of Analytical Results 661118

Larson and Associates, Inc., Midland, TX

Chevron-Vacuum Glonietha #041

Sample Id: S-7 (0.5')

Matrix: Soil

Date Received: 05.11.2020 11:21

Lab Sample Id: 661118-012

Date Collected: 05.08.2020 12:25

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 05.11.2020 14:30

Basis: Wet Weight

Seq Number: 3125642

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	70.2	5.00	mg/kg	05.12.2020 11:29		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 05.11.2020 16:00

Basis: Wet Weight

Seq Number: 3125662

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	05.12.2020 08:51	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	05.12.2020 08:51	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	05.12.2020 08:51	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	05.12.2020 08:51	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	70	%	70-130	05.12.2020 08:51	
o-Terphenyl	84-15-1	85	%	70-130	05.12.2020 08:51	



Certificate of Analytical Results 661118

Larson and Associates, Inc., Midland, TX

Chevron-Vacuum Glonietha #041

Sample Id: S-7 (0.5')
Lab Sample Id: 661118-012

Matrix: Soil
Date Collected: 05.08.2020 12:25

Date Received: 05.11.2020 11:21

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 05.12.2020 08:00

Basis: Wet Weight

Seq Number: 3125822

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	05.13.2020 14:50	U	1
Toluene	108-88-3	0.00397	0.00200	mg/kg	05.13.2020 14:50		1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	05.13.2020 14:50	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	05.13.2020 14:50	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	05.13.2020 14:50	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	05.13.2020 14:50	U	1
Total BTEX		0.00397	0.00200	mg/kg	05.13.2020 14:50		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	112	%	70-130	05.13.2020 14:50		
4-Bromofluorobenzene	460-00-4	108	%	70-130	05.13.2020 14:50		



Certificate of Analytical Results 661118

Larson and Associates, Inc., Midland, TX

Chevron-Vacuum Glonietha #041

Sample Id: S-8 (0.5')

Matrix: Soil

Date Received: 05.11.2020 11:21

Lab Sample Id: 661118-013

Date Collected: 05.08.2020 12:25

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 05.11.2020 14:30

Basis: Wet Weight

Seq Number: 3125642

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	22.7	4.99	mg/kg	05.12.2020 11:34		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 05.11.2020 16:00

Basis: Wet Weight

Seq Number: 3125662

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.8	49.8	mg/kg	05.12.2020 09:12	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.8	49.8	mg/kg	05.12.2020 09:12	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.8	49.8	mg/kg	05.12.2020 09:12	U	1
Total TPH	PHC635	<49.8	49.8	mg/kg	05.12.2020 09:12	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	78	%	70-130	05.12.2020 09:12	
o-Terphenyl	84-15-1	95	%	70-130	05.12.2020 09:12	



Certificate of Analytical Results 661118

Larson and Associates, Inc., Midland, TX

Chevron-Vacuum Glonietha #041

Sample Id: S-8 (0.5')

Matrix: Soil

Date Received: 05.11.2020 11:21

Lab Sample Id: 661118-013

Date Collected: 05.08.2020 12:25

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 05.13.2020 14:00

Basis: Wet Weight

Seq Number: 3125815

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	05.13.2020 18:12	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	05.13.2020 18:12	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	05.13.2020 18:12	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	05.13.2020 18:12	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	05.13.2020 18:12	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	05.13.2020 18:12	U	1
Total BTEX		<0.00199	0.00199	mg/kg	05.13.2020 18:12	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	116	%	70-130	05.13.2020 18:12		
4-Bromofluorobenzene	460-00-4	121	%	70-130	05.13.2020 18:12		



Certificate of Analytical Results 661118

Larson and Associates, Inc., Midland, TX

Chevron-Vacuum Glonietha #041

Sample Id: S-8 (1')
Lab Sample Id: 661118-014

Matrix: Soil
Date Collected: 05.08.2020 12:28

Date Received: 05.11.2020 11:21

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 05.11.2020 14:30

Basis: Wet Weight

Seq Number: 3125642

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	34.5	5.02	mg/kg	05.12.2020 11:40		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 05.11.2020 16:00

Basis: Wet Weight

Seq Number: 3125662

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	05.12.2020 09:33	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	05.12.2020 09:33	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	05.12.2020 09:33	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	05.12.2020 09:33	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	80	%	70-130	05.12.2020 09:33	
o-Terphenyl	84-15-1	96	%	70-130	05.12.2020 09:33	



Certificate of Analytical Results 661118

Larson and Associates, Inc., Midland, TX

Chevron-Vacuum Glonietha #041

Sample Id: S-8 (1')
Lab Sample Id: 661118-014

Matrix: Soil
Date Collected: 05.08.2020 12:28

Date Received: 05.11.2020 11:21

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 05.13.2020 14:00

Basis: Wet Weight

Seq Number: 3125815

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	05.13.2020 18:32	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	05.13.2020 18:32	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	05.13.2020 18:32	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	05.13.2020 18:32	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	05.13.2020 18:32	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	05.13.2020 18:32	U	1
Total BTEX		<0.00200	0.00200	mg/kg	05.13.2020 18:32	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	120	%	70-130	05.13.2020 18:32		
1,4-Difluorobenzene	540-36-3	120	%	70-130	05.13.2020 18:32		



Flagging Criteria

- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the quantitation limit and above the detection limit.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

****** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit. **ND** Not Detected.

RL Reporting Limit

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

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

DL Method Detection Limit

NC Non-Calculable

SMP Client Sample **BLK** Method Blank

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

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

+ NELAC certification not offered for this compound.

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



Larson and Associates, Inc.
Chevron-Vacuum Glonietha #041

Analytical Method: Chloride by EPA 300

Seq Number: 3125642

MB Sample Id: 7703097-1-BLK

Matrix: Solid

LCS Sample Id: 7703097-1-BKS

Prep Method: E300P

Date Prep: 05.11.2020

LCSD Sample Id: 7703097-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<5.00	250	255	102	243	97	90-110	5	20	mg/kg	05.12.2020 09:10	

Analytical Method: Chloride by EPA 300

Seq Number: 3125642

Parent Sample Id: 661118-001

Matrix: Soil

MS Sample Id: 661118-001 S

Prep Method: E300P

Date Prep: 05.11.2020

MSD Sample Id: 661118-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	136	252	372	94	394	102	90-110	6	20	mg/kg	05.12.2020 09:28	

Analytical Method: Chloride by EPA 300

Seq Number: 3125642

Parent Sample Id: 661118-008

Matrix: Soil

MS Sample Id: 661118-008 S

Prep Method: E300P

Date Prep: 05.11.2020

MSD Sample Id: 661118-008 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	11.6	250	271	104	261	100	90-110	4	20	mg/kg	05.12.2020 10:47	

Analytical Method: TPH by SW8015 Mod

Seq Number: 3125662

MB Sample Id: 7703102-1-BLK

Matrix: Solid

LCS Sample Id: 7703102-1-BKS

Prep Method: SW8015P

Date Prep: 05.11.2020

LCSD Sample Id: 7703102-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<50.0	1000	825	83	847	85	70-130	3	20	mg/kg	05.11.2020 18:26	
Diesel Range Organics (DRO)	<50.0	1000	864	86	879	88	70-130	2	20	mg/kg	05.11.2020 18:26	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	80		87		86		70-130	%	05.11.2020 18:26
o-Terphenyl	100		89		88		70-130	%	05.11.2020 18:26

Analytical Method: TPH by SW8015 Mod

Seq Number: 3125662

Matrix: Solid

MB Sample Id: 7703102-1-BLK

Prep Method: SW8015P

Date Prep: 05.11.2020

Parameter	MB Result	Units	Analysis Date	Flag
Motor Oil Range Hydrocarbons (MRO)	<50.0	mg/kg	05.11.2020 18:05	

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
 Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
 A = Parent Result
 C = MS/LCS Result
 E = MSD/LCSD Result

MS = Matrix Spike
 B = Spike Added
 D = MSD/LCSD % Rec



Larson and Associates, Inc.
Chevron-Vacuum Glonietha #041

Analytical Method: TPH by SW8015 Mod

Seq Number: 3125662

Parent Sample Id: 661118-001

Matrix: Soil

MS Sample Id: 661118-001 S

Prep Method: SW8015P

Date Prep: 05.11.2020

MSD Sample Id: 661118-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<49.9	997	801	80	809	81	70-130	1	20	mg/kg	05.11.2020 19:30	
Diesel Range Organics (DRO)	<49.9	997	834	84	824	83	70-130	1	20	mg/kg	05.11.2020 19:30	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	81		80		70-130	%	05.11.2020 19:30
o-Terphenyl	82		81		70-130	%	05.11.2020 19:30

Analytical Method: BTEX by EPA 8021B

Seq Number: 3125822

MB Sample Id: 7703250-1-BLK

Matrix: Solid

LCS Sample Id: 7703250-1-BKS

Prep Method: SW5035A

Date Prep: 05.12.2020

LCSD Sample Id: 7703250-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.107	107	0.0944	94	70-130	13	35	mg/kg	05.12.2020 22:06	
Toluene	<0.00200	0.100	0.0890	89	0.0944	94	70-130	6	35	mg/kg	05.12.2020 22:06	
Ethylbenzene	<0.00200	0.100	0.0851	85	0.0960	96	70-130	12	35	mg/kg	05.12.2020 22:06	
m,p-Xylenes	<0.00400	0.200	0.158	79	0.182	91	70-130	14	35	mg/kg	05.12.2020 22:06	
o-Xylene	<0.00200	0.100	0.0789	79	0.0918	92	70-130	15	35	mg/kg	05.12.2020 22:06	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	87		103		103		70-130	%	05.12.2020 22:06
4-Bromofluorobenzene	64	**	98		110		70-130	%	05.12.2020 22:06

Analytical Method: BTEX by EPA 8021B

Seq Number: 3125815

MB Sample Id: 7703255-1-BLK

Matrix: Solid

LCS Sample Id: 7703255-1-BKS

Prep Method: SW5035A

Date Prep: 05.13.2020

LCSD Sample Id: 7703255-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.105	105	0.118	119	70-130	12	35	mg/kg	05.13.2020 10:16	
Toluene	<0.00200	0.100	0.115	115	0.121	122	70-130	5	35	mg/kg	05.13.2020 10:16	
Ethylbenzene	<0.00200	0.100	0.108	108	0.108	109	70-130	0	35	mg/kg	05.13.2020 10:16	
m,p-Xylenes	<0.00400	0.200	0.219	110	0.216	109	70-130	1	35	mg/kg	05.13.2020 10:16	
o-Xylene	<0.00200	0.100	0.104	104	0.105	106	70-130	1	35	mg/kg	05.13.2020 10:16	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	109		105		109		70-130	%	05.13.2020 10:16
4-Bromofluorobenzene	101		106		104		70-130	%	05.13.2020 10:16

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
 Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
 A = Parent Result
 C = MS/LCS Result
 E = MSD/LCSD Result

MS = Matrix Spike
 B = Spike Added
 D = MSD/LCSD % Rec



Larson and Associates, Inc.
Chevron-Vacuum Glonietha #041

Analytical Method: BTEX by EPA 8021B

Seq Number: 3125822

Parent Sample Id: 661008-004

Matrix: Soil

MS Sample Id: 661008-004 S

Prep Method: SW5035A

Date Prep: 05.12.2020

MSD Sample Id: 661008-004 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00198	0.0990	0.0952	96	0.0885	89	70-130	7	35	mg/kg	05.12.2020 22:46	
Toluene	<0.00198	0.0990	0.0931	94	0.0867	87	70-130	7	35	mg/kg	05.12.2020 22:46	
Ethylbenzene	<0.00198	0.0990	0.0934	94	0.0872	88	70-130	7	35	mg/kg	05.12.2020 22:46	
m,p-Xylenes	<0.00396	0.198	0.176	89	0.165	83	70-130	6	35	mg/kg	05.12.2020 22:46	
o-Xylene	<0.00198	0.0990	0.0897	91	0.0849	85	70-130	5	35	mg/kg	05.12.2020 22:46	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	109		106		70-130	%	05.12.2020 22:46
4-Bromofluorobenzene	118		112		70-130	%	05.12.2020 22:46

Analytical Method: BTEX by EPA 8021B

Seq Number: 3125815

Parent Sample Id: 660570-013

Matrix: Soil

MS Sample Id: 660570-013 S

Prep Method: SW5035A

Date Prep: 05.13.2020

MSD Sample Id: 660570-013 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	0.00410	0.0992	0.0930	90	0.0960	92	70-130	3	35	mg/kg	05.13.2020 10:57	
Toluene	0.0175	0.0992	0.131	114	0.135	118	70-130	3	35	mg/kg	05.13.2020 10:57	
Ethylbenzene	0.00281	0.0992	0.0493	47	0.103	100	70-130	71	35	mg/kg	05.13.2020 10:57	XF
m,p-Xylenes	0.00566	0.198	0.0900	43	0.113	54	70-130	23	35	mg/kg	05.13.2020 10:57	X
o-Xylene	0.00266	0.0992	0.0425	40	0.0554	53	70-130	26	35	mg/kg	05.13.2020 10:57	X

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	123		123		70-130	%	05.13.2020 10:57
4-Bromofluorobenzene	90		104		70-130	%	05.13.2020 10:57

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
 Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
 A = Parent Result
 C = MS/LCS Result
 E = MSD/LCSD Result

MS = Matrix Spike
 B = Spike Added
 D = MSD/LCSD % Rec

Marson & Associates, Inc.
Environmental Consultants

507 N. Marientfeld, Ste. 200
Midland, TX 79701
432-687-0901

DATE: 05/08/2020 PAGE 1 OF 1
PO#: _____ LAB WORK ORDER#: _____
PROJECT LOCATION OR NAME: Chemtron - Vacuum Cloneth #041
LAI PROJECT #: 20-0107-12 COLLECTOR: Ed/Ds

Data Reported to:

TRRP report? ☐ Yes ☒ No
TIME ZONE: _____
Time zone/State: _____

S=SOIL
W=WATER
A=AIR
P=PAINT
SL=SLUDGE
OT=OTHER

MOR/LUM

Field
Sample I.D.

Lab #

Date

Time

Matrix

of Containers

HCl

HNO₃

H₂SO₄ ☐ NaOH ☐

ICE

UNPRESERVED

ANALYSES

BTEX MTBE ☐

TRPH 418.1 ☐ TRPH 1005 ☐ TRPH 1006 ☐

GASOLINE MOD 8015 ☐

DIESEL - MOD 8015 ☐

OIL - MOD 8015 ☐

VOC 8260 ☐

SVOC 8270 ☐ PAH 8270 ☐ HOLDPAH ☐

8081 PESTICIDES ☐ 8151 HERBICIDES ☐

8082 PCBs ☐

TBLP - METALS (RCRA) ☐ TOLP VOC ☐

TCLP - PEST ☐ HERB ☐ Semi-VOC ☐

TOTAL METALS (RCRA) ☐ OTHER LIST ☐

LEAD - TOTAL ☐ D.W. 200.8 ☐ TCLP ☐

RCI ☐ TOX ☐ FLASHPOINT ☐

TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐

pH ☐ HEXAVALENT CHROMIUM ☐

EXPLOSIVES ☐ PETCHLORATE ☐

CHLORIDES ☐ ANIONS ☐ ALKALINITY ☐

FIELD NOTES

S-1 (0.5')
S-2 (0.5')
S-2 (1')
S-3 (0.5')
S-3 (1')
S-4 (0.5')
S-4 (1')
S-5 (0.5')
S-5 (1')
S-6 (0.5')
S-6 (1')
S-7 (0.5')
S-8 (0.5')
S-8 (1')

5/8/20 1226 S 1

1228 1229 1230 1231 1208 1211 1215 1220 1222 1225 1228

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XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: Larson and Associates, Inc.**Date/ Time Received:** 05.11.2020 11.21.00 AM**Work Order #:** 661118**Acceptable Temperature Range:** 0 - 6 degC**Air and Metal samples Acceptable Range:** Ambient**Temperature Measuring device used :** R9

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	4.6
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	N/A
#5 Custody Seals intact on sample bottles?	N/A
#6 *Custody Seals Signed and dated?	N/A
#7 *Chain of Custody present?	Yes
#8 Any missing/extra samples?	No
#9 Chain of Custody signed when relinquished/ received?	Yes
#10 Chain of Custody agrees with sample labels/matrix?	Yes
#11 Container label(s) legible and intact?	Yes
#12 Samples in proper container/ bottle?	Yes BTEX was in bulk container
#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: 05.11.2020

Checklist reviewed by:

Holly Taylor

Date: 05.11.2020



Xenco

Certificate of Analysis Summary 665085

Larson and Associates, Inc., Midland, TX

Project Name: Vacuum Glorieta

Project Id: 20-0107-12

Contact: Mark Larson

Project Location:

Date Received in Lab: Tue 06.23.2020 08:39

Report Date: 07.07.2020 14:15

Project Manager: Holly Taylor

<i>Analysis Requested</i>	<i>Lab Id:</i>	665085-001	665085-002	665085-003	665085-004	665085-005	665085-006
	<i>Field Id:</i>	S-4 1'	S-4 3'	S-6 1'	S-6 3'	S-9 0.5'	S-9 1'
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	06.22.2020 11:15	06.22.2020 11:16	06.22.2020 11:31	06.22.2020 11:32	06.22.2020 11:47	06.22.2020 11:48
BTEX by EPA 8021B	<i>Extracted:</i>	06.26.2020 17:00	06.26.2020 17:00	06.26.2020 17:00	06.26.2020 17:00	06.26.2020 17:00	06.26.2020 17:00
	<i>Analyzed:</i>	06.27.2020 21:01	06.27.2020 21:22	06.27.2020 21:42	06.27.2020 22:03	06.27.2020 22:23	06.27.2020 22:44
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00199 0.00199	<0.00199 0.00199	<0.00200 0.00200	<0.00199 0.00199	<0.00198 0.00198	<0.00200 0.00200
Toluene		<0.00199 0.00199	<0.00199 0.00199	<0.00200 0.00200	<0.00199 0.00199	<0.00198 0.00198	<0.00200 0.00200
Ethylbenzene		<0.00199 0.00199	<0.00199 0.00199	<0.00200 0.00200	<0.00199 0.00199	<0.00198 0.00198	<0.00200 0.00200
m,p-Xylenes		<0.00398 0.00398	<0.00398 0.00398	<0.00400 0.00400	<0.00398 0.00398	<0.00397 0.00397	<0.00399 0.00399
o-Xylene		<0.00199 0.00199	<0.00199 0.00199	<0.00200 0.00200	<0.00199 0.00199	<0.00198 0.00198	<0.00200 0.00200
Total Xylenes		<0.00199 0.00199	<0.00199 0.00199	<0.00200 0.00200	<0.00199 0.00199	<0.00198 0.00198	<0.00200 0.00200
Total BTEX		<0.00199 0.00199	<0.00199 0.00199	<0.00200 0.00200	<0.00199 0.00199	<0.00198 0.00198	<0.00200 0.00200
Chloride by EPA 300	<i>Extracted:</i>	06.23.2020 16:10	06.23.2020 16:10	06.23.2020 16:10	06.23.2020 16:20	06.23.2020 16:20	06.23.2020 16:20
	<i>Analyzed:</i>	06.23.2020 21:54	06.23.2020 22:00	06.23.2020 22:06	06.23.2020 19:23	06.23.2020 19:28	06.23.2020 19:33
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		38.7 5.00	14.0 5.00	9140 250	3520 49.8	1630 24.8	1920 25.1
TPH by SW8015 Mod	<i>Extracted:</i>	06.23.2020 11:00	06.23.2020 11:00	06.23.2020 11:00	06.23.2020 11:00	06.23.2020 11:00	06.23.2020 11:00
	<i>Analyzed:</i>	06.23.2020 12:47	06.23.2020 13:52	06.23.2020 14:14	06.23.2020 14:35	06.23.2020 14:57	06.23.2020 15:19
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons (GRO)		<50.0 50.0	<49.9 49.9	<50.0 50.0	<50.0 50.0	<49.9 49.9	<50.0 50.0
Diesel Range Organics (DRO)		<50.0 50.0	<49.9 49.9	83.1 50.0	<50.0 50.0	<49.9 49.9	<50.0 50.0
Motor Oil Range Hydrocarbons (MRO)		<50.0 50.0	<49.9 49.9	<50.0 50.0	<50.0 50.0	<49.9 49.9	<50.0 50.0
Total TPH		<50.0 50.0	<49.9 49.9	83.1 50.0	<50.0 50.0	<49.9 49.9	<50.0 50.0

BRL - Below Reporting Limit

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



Xenco

Certificate of Analysis Summary 665085

Larson and Associates, Inc., Midland, TX

Project Name: Vacuum Glorieta

Project Id: 20-0107-12

Date Received in Lab: Tue 06.23.2020 08:39

Contact: Mark Larson

Report Date: 07.07.2020 14:15

Project Location:

Project Manager: Holly Taylor

Analysis Requested	Lab Id:	665085-007					
	Field Id:	S-9 3'					
	Depth:						
	Matrix:	SOIL					
	Sampled:	06.22.2020 11:49					
BTEX by EPA 8021B	Extracted:	07.06.2020 09:00					
	Analyzed:	07.06.2020 14:41					
	Units/RL:	mg/kg RL					
Benzene		<0.00199 0.00199					
Toluene		<0.00199 0.00199					
Ethylbenzene		<0.00199 0.00199					
m,p-Xylenes		<0.00398 0.00398					
o-Xylene		<0.00199 0.00199					
Total Xylenes		<0.00199 0.00199					
Total BTEX		<0.00199 0.00199					
Chloride by EPA 300	Extracted:	06.23.2020 16:20					
	Analyzed:	06.23.2020 19:38					
	Units/RL:	mg/kg RL					
Chloride		1610 25.0					
TPH by SW8015 Mod	Extracted:	06.23.2020 11:00					
	Analyzed:	06.23.2020 15:41					
	Units/RL:	mg/kg RL					
Gasoline Range Hydrocarbons (GRO)		<50.0 50.0					
Diesel Range Organics (DRO)		<50.0 50.0					
Motor Oil Range Hydrocarbons (MRO)		<50.0 50.0					
Total TPH		<50.0 50.0					

BRL - Below Reporting Limit

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



Xenco

Analytical Report 665085

for

Larson and Associates, Inc.

Project Manager: Mark Larson

Vacuum Glorieta

20-0107-12

07.07.2020

Collected By: Client



**1211 W. Florida Ave
Midland TX 79701**

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-20-36), Arizona (AZ0765), Florida (E871002-33), Louisiana (03054)
Oklahoma (2019-058), North Carolina (681), Arkansas (20-035-0)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (T104704295-20-25), Arizona (AZ0809)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-20-17)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-20-22)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-19)
Xenco-Carlsbad (LELAP): Louisiana (05092)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-20-7)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Tampa: Florida (E87429), North Carolina (483)



07.07.2020

Project Manager: **Mark Larson**
Larson and Associates, Inc.
P. O. Box 50685
Midland, TX 79710

Reference: Eurofins Xenco, LLC Report No(s): **665085**
Vacuum Glorieta
Project Address:

Mark Larson :

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the Eurofins Xenco, LLC Report Number(s) 665085. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by Eurofins Xenco, LLC. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 665085 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,

A handwritten signature in black ink that reads "Holly Taylor".

Holly Taylor
Project Manager

A Small Business and Minority Company

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

**Sample Cross Reference 665085****Larson and Associates, Inc., Midland, TX**

Vacuum Glorieta

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
S-4 1'	S	06.22.2020 11:15		665085-001
S-4 3'	S	06.22.2020 11:16		665085-002
S-6 1'	S	06.22.2020 11:31		665085-003
S-6 3'	S	06.22.2020 11:32		665085-004
S-9 0.5'	S	06.22.2020 11:47		665085-005
S-9 1'	S	06.22.2020 11:48		665085-006
S-9 3'	S	06.22.2020 11:49		665085-007



Xenco

CASE NARRATIVE

Client Name: *Larson and Associates, Inc.*

Project Name: *Vacuum Glorieta*

Project ID: 20-0107-12
Work Order Number(s): 665085

Report Date: 07.07.2020
Date Received: 06.23.2020

Sample receipt non conformances and comments:

6/24/2020 Do not report BTEX on sample 007 per Robert Nelson (email). HT

7/2/2020 1.001 Revised to report BTEX on sample 007 per Robert Nelson (email). HT

Sample receipt non conformances and comments per sample:

None



Certificate of Analytical Results 665085

Larson and Associates, Inc., Midland, TX

Vacuum Glorieta

Sample Id: S-4 1'
Lab Sample Id: 665085-001

Matrix: Soil
Date Collected: 06.22.2020 11:15

Date Received: 06.23.2020 08:39

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.23.2020 16:10

Basis: Wet Weight

Seq Number: 3129776

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	38.7	5.00	mg/kg	06.23.2020 21:54		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 06.23.2020 11:00

Basis: Wet Weight

Seq Number: 3129788

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	06.23.2020 12:47	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	06.23.2020 12:47	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	06.23.2020 12:47	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	06.23.2020 12:47	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	101	%	70-130	06.23.2020 12:47	
o-Terphenyl	84-15-1	100	%	70-130	06.23.2020 12:47	



Certificate of Analytical Results 665085

Larson and Associates, Inc., Midland, TX

Vacuum Glorieta

Sample Id: S-4 1'
Lab Sample Id: 665085-001

Matrix: Soil
Date Collected: 06.22.2020 11:15

Date Received: 06.23.2020 08:39

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 06.26.2020 17:00

Basis: Wet Weight

Seq Number: 3130222

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	06.27.2020 21:01	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	06.27.2020 21:01	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	06.27.2020 21:01	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	06.27.2020 21:01	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	06.27.2020 21:01	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	06.27.2020 21:01	U	1
Total BTEX		<0.00199	0.00199	mg/kg	06.27.2020 21:01	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	106	%	70-130	06.27.2020 21:01	
4-Bromofluorobenzene	460-00-4	115	%	70-130	06.27.2020 21:01	



Certificate of Analytical Results 665085

Larson and Associates, Inc., Midland, TX

Vacuum Glorieta

Sample Id: S-4 3'
Lab Sample Id: 665085-002

Matrix: Soil
Date Collected: 06.22.2020 11:16

Date Received: 06.23.2020 08:39

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.23.2020 16:10

Basis: Wet Weight

Seq Number: 3129776

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	14.0	5.00	mg/kg	06.23.2020 22:00		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 06.23.2020 11:00

Basis: Wet Weight

Seq Number: 3129788

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	06.23.2020 13:52	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	06.23.2020 13:52	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	06.23.2020 13:52	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	06.23.2020 13:52	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	106	%	70-130	06.23.2020 13:52	
o-Terphenyl	84-15-1	101	%	70-130	06.23.2020 13:52	



Certificate of Analytical Results 665085

Larson and Associates, Inc., Midland, TX

Vacuum Glorieta

Sample Id: **S-4 3'**
Lab Sample Id: 665085-002

Matrix: Soil
Date Collected: 06.22.2020 11:16

Date Received: 06.23.2020 08:39

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 06.26.2020 17:00

Basis: Wet Weight

Seq Number: 3130222

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	06.27.2020 21:22	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	06.27.2020 21:22	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	06.27.2020 21:22	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	06.27.2020 21:22	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	06.27.2020 21:22	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	06.27.2020 21:22	U	1
Total BTEX		<0.00199	0.00199	mg/kg	06.27.2020 21:22	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	105	%	70-130	06.27.2020 21:22		
4-Bromofluorobenzene	460-00-4	113	%	70-130	06.27.2020 21:22		



Certificate of Analytical Results 665085

Larson and Associates, Inc., Midland, TX

Vacuum Glorieta

Sample Id: **S-6 1'**
Lab Sample Id: 665085-003

Matrix: Soil
Date Collected: 06.22.2020 11:31

Date Received: 06.23.2020 08:39

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.23.2020 16:10

Basis: Wet Weight

Seq Number: 3129776

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	9140	250	mg/kg	06.23.2020 22:06		50

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 06.23.2020 11:00

Basis: Wet Weight

Seq Number: 3129788

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	06.23.2020 14:14	U	1
Diesel Range Organics (DRO)	C10C28DRO	83.1	50.0	mg/kg	06.23.2020 14:14		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	06.23.2020 14:14	U	1
Total TPH	PHC635	83.1	50.0	mg/kg	06.23.2020 14:14		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	110	%	70-130	06.23.2020 14:14	
o-Terphenyl	84-15-1	104	%	70-130	06.23.2020 14:14	



Certificate of Analytical Results 665085

Larson and Associates, Inc., Midland, TX

Vacuum Glorieta

Sample Id: **S-6 1'**
Lab Sample Id: 665085-003

Matrix: Soil
Date Collected: 06.22.2020 11:31

Date Received: 06.23.2020 08:39

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 06.26.2020 17:00

Basis: Wet Weight

Seq Number: 3130222

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	06.27.2020 21:42	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	06.27.2020 21:42	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	06.27.2020 21:42	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/kg	06.27.2020 21:42	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	06.27.2020 21:42	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	06.27.2020 21:42	U	1
Total BTEX		<0.00200	0.00200	mg/kg	06.27.2020 21:42	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	105	%	70-130	06.27.2020 21:42		
4-Bromofluorobenzene	460-00-4	114	%	70-130	06.27.2020 21:42		



Certificate of Analytical Results 665085

Larson and Associates, Inc., Midland, TX

Vacuum Glorieta

Sample Id: **S-6 3'** Matrix: Soil Date Received: 06.23.2020 08:39
 Lab Sample Id: 665085-004 Date Collected: 06.22.2020 11:32
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: CHE % Moisture:
 Analyst: CHE Date Prep: 06.23.2020 16:20 Basis: Wet Weight
 Seq Number: 3129779

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	3520	49.8	mg/kg	06.23.2020 19:23		10

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DVM % Moisture:
 Analyst: ARM Date Prep: 06.23.2020 11:00 Basis: Wet Weight
 Seq Number: 3129788

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	06.23.2020 14:35	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	06.23.2020 14:35	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	06.23.2020 14:35	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	06.23.2020 14:35	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	106	%	70-130	06.23.2020 14:35	
o-Terphenyl	84-15-1	103	%	70-130	06.23.2020 14:35	



Certificate of Analytical Results 665085

Larson and Associates, Inc., Midland, TX

Vacuum Glorieta

Sample Id: **S-6 3'**
Lab Sample Id: 665085-004

Matrix: Soil
Date Collected: 06.22.2020 11:32

Date Received: 06.23.2020 08:39

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 06.26.2020 17:00

Basis: Wet Weight

Seq Number: 3130222

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	06.27.2020 22:03	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	06.27.2020 22:03	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	06.27.2020 22:03	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	06.27.2020 22:03	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	06.27.2020 22:03	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	06.27.2020 22:03	U	1
Total BTEX		<0.00199	0.00199	mg/kg	06.27.2020 22:03	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	97	%	70-130	06.27.2020 22:03	
1,4-Difluorobenzene	540-36-3	107	%	70-130	06.27.2020 22:03	



Certificate of Analytical Results 665085

Larson and Associates, Inc., Midland, TX

Vacuum Glorieta

Sample Id: **S-9 0.5'**
Lab Sample Id: 665085-005

Matrix: Soil
Date Collected: 06.22.2020 11:47

Date Received: 06.23.2020 08:39

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.23.2020 16:20

Basis: Wet Weight

Seq Number: 3129779

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1630	24.8	mg/kg	06.23.2020 19:28		5

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 06.23.2020 11:00

Basis: Wet Weight

Seq Number: 3129788

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	06.23.2020 14:57	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	06.23.2020 14:57	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	06.23.2020 14:57	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	06.23.2020 14:57	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	103	%	70-130	06.23.2020 14:57	
o-Terphenyl	84-15-1	100	%	70-130	06.23.2020 14:57	



Certificate of Analytical Results 665085

Larson and Associates, Inc., Midland, TX

Vacuum Glorieta

Sample Id: S-9 0.5'
Lab Sample Id: 665085-005

Matrix: Soil
Date Collected: 06.22.2020 11:47

Date Received: 06.23.2020 08:39

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 06.26.2020 17:00

Basis: Wet Weight

Seq Number: 3130222

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	06.27.2020 22:23	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	06.27.2020 22:23	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	06.27.2020 22:23	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	06.27.2020 22:23	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	06.27.2020 22:23	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	06.27.2020 22:23	U	1
Total BTEX		<0.00198	0.00198	mg/kg	06.27.2020 22:23	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	105	%	70-130	06.27.2020 22:23		
4-Bromofluorobenzene	460-00-4	118	%	70-130	06.27.2020 22:23		



Certificate of Analytical Results 665085

Larson and Associates, Inc., Midland, TX

Vacuum Glorieta

Sample Id: **S-9 1'**
Lab Sample Id: 665085-006

Matrix: Soil
Date Collected: 06.22.2020 11:48

Date Received: 06.23.2020 08:39

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.23.2020 16:20

Basis: Wet Weight

Seq Number: 3129779

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1920	25.1	mg/kg	06.23.2020 19:33		5

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 06.23.2020 11:00

Basis: Wet Weight

Seq Number: 3129788

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	06.23.2020 15:19	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	06.23.2020 15:19	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	06.23.2020 15:19	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	06.23.2020 15:19	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	107	%	70-130	06.23.2020 15:19	
o-Terphenyl	84-15-1	105	%	70-130	06.23.2020 15:19	



Certificate of Analytical Results 665085

Larson and Associates, Inc., Midland, TX

Vacuum Glorieta

Sample Id: **S-9 1'**
Lab Sample Id: 665085-006

Matrix: Soil
Date Collected: 06.22.2020 11:48

Date Received: 06.23.2020 08:39

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 06.26.2020 17:00

Basis: Wet Weight

Seq Number: 3130222

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	06.27.2020 22:44	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	06.27.2020 22:44	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	06.27.2020 22:44	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	06.27.2020 22:44	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	06.27.2020 22:44	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	06.27.2020 22:44	U	1
Total BTEX		<0.00200	0.00200	mg/kg	06.27.2020 22:44	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	101	%	70-130	06.27.2020 22:44		
4-Bromofluorobenzene	460-00-4	113	%	70-130	06.27.2020 22:44		



Certificate of Analytical Results 665085

Larson and Associates, Inc., Midland, TX

Vacuum Glorieta

Sample Id: **S-9 3'**
Lab Sample Id: 665085-007

Matrix: Soil
Date Collected: 06.22.2020 11:49

Date Received: 06.23.2020 08:39

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.23.2020 16:20

Basis: Wet Weight

Seq Number: 3129779

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1610	25.0	mg/kg	06.23.2020 19:38		5

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 06.23.2020 11:00

Basis: Wet Weight

Seq Number: 3129788

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	06.23.2020 15:41	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	06.23.2020 15:41	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	06.23.2020 15:41	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	06.23.2020 15:41	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	105	%	70-130	06.23.2020 15:41	
o-Terphenyl	84-15-1	104	%	70-130	06.23.2020 15:41	



Certificate of Analytical Results 665085

Larson and Associates, Inc., Midland, TX

Vacuum Glorieta

Sample Id: **S-9 3'**
Lab Sample Id: 665085-007

Matrix: Soil
Date Collected: 06.22.2020 11:49

Date Received: 06.23.2020 08:39

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 07.06.2020 09:00

Basis: Wet Weight

Seq Number: 3130810

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	07.06.2020 14:41	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	07.06.2020 14:41	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	07.06.2020 14:41	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	07.06.2020 14:41	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	07.06.2020 14:41	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	07.06.2020 14:41	U	1
Total BTEX		<0.00199	0.00199	mg/kg	07.06.2020 14:41	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	105	%	70-130	07.06.2020 14:41		
1,4-Difluorobenzene	540-36-3	115	%	70-130	07.06.2020 14:41		



Xenco

Flagging Criteria

- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the quantitation limit and above the detection limit.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit. **ND** Not Detected.

RL Reporting Limit

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

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

DL Method Detection Limit

NC Non-Calculable

SMP Client Sample **BLK** Method Blank

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

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

+ NELAC certification not offered for this compound.

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

Larson and Associates, Inc.
Vacuum Glorieta

Analytical Method: Chloride by EPA 300

Seq Number: 3129776

MB Sample Id: 7706029-1-BLK

Matrix: Solid

LCS Sample Id: 7706029-1-BKS

Prep Method: E300P

Date Prep: 06.23.2020

LCSD Sample Id: 7706029-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<5.00	250	253	101	253	101	90-110	0	20	mg/kg	06.23.2020 19:02	

Analytical Method: Chloride by EPA 300

Seq Number: 3129779

MB Sample Id: 7706030-1-BLK

Matrix: Solid

LCS Sample Id: 7706030-1-BKS

Prep Method: E300P

Date Prep: 06.23.2020

LCSD Sample Id: 7706030-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<5.00	250	245	98	247	99	90-110	1	20	mg/kg	06.23.2020 18:50	

Analytical Method: Chloride by EPA 300

Seq Number: 3129776

Parent Sample Id: 665093-001

Matrix: Solid

MS Sample Id: 665093-001 S

Prep Method: E300P

Date Prep: 06.23.2020

MSD Sample Id: 665093-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	6.51	248	269	106	267	105	90-110	1	20	mg/kg	06.23.2020 19:21	

Analytical Method: Chloride by EPA 300

Seq Number: 3129776

Parent Sample Id: 665093-007

Matrix: Solid

MS Sample Id: 665093-007 S

Prep Method: E300P

Date Prep: 06.23.2020

MSD Sample Id: 665093-007 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<4.96	248	258	104	257	104	90-110	0	20	mg/kg	06.23.2020 20:50	

Analytical Method: Chloride by EPA 300

Seq Number: 3129779

Parent Sample Id: 665098-001

Matrix: Soil

MS Sample Id: 665098-001 S

Prep Method: E300P

Date Prep: 06.23.2020

MSD Sample Id: 665098-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	351	248	612	105	612	105	90-110	0	20	mg/kg	06.23.2020 19:12	

Analytical Method: Chloride by EPA 300

Seq Number: 3129779

Parent Sample Id: 665099-004

Matrix: Soil

MS Sample Id: 665099-004 S

Prep Method: E300P

Date Prep: 06.23.2020

MSD Sample Id: 665099-004 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	202	253	482	111	456	100	90-110	6	20	mg/kg	06.23.2020 20:23	X

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
 Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
 A = Parent Result
 C = MS/LCS Result
 E = MSD/LCSD Result

MS = Matrix Spike
 B = Spike Added
 D = MSD/LCSD % Rec

Larson and Associates, Inc.
Vacuum Glorieta

Analytical Method: TPH by SW8015 Mod

Seq Number: 3129788

MB Sample Id: 7706004-1-BLK

Matrix: Solid

LCS Sample Id: 7706004-1-BKS

Prep Method: SW8015P

Date Prep: 06.23.2020

LCSD Sample Id: 7706004-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<50.0	1000	883	88	851	85	70-130	4	20	mg/kg	06.23.2020 12:04	
Diesel Range Organics (DRO)	<50.0	1000	870	87	867	87	70-130	0	20	mg/kg	06.23.2020 12:04	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	104		110		106		70-130	%	06.23.2020 12:04
o-Terphenyl	103		105		99		70-130	%	06.23.2020 12:04

Analytical Method: TPH by SW8015 Mod

Seq Number: 3129788

Matrix: Solid

MB Sample Id: 7706004-1-BLK

Prep Method: SW8015P

Date Prep: 06.23.2020

Parameter	MB Result	Units	Analysis Date	Flag
Motor Oil Range Hydrocarbons (MRO)	<50.0	mg/kg	06.23.2020 11:43	

Analytical Method: TPH by SW8015 Mod

Seq Number: 3129788

Matrix: Soil

Parent Sample Id: 665085-001

MS Sample Id: 665085-001 S

Prep Method: SW8015P

Date Prep: 06.23.2020

MSD Sample Id: 665085-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<49.9	997	840	84	844	84	70-130	0	20	mg/kg	06.23.2020 13:09	
Diesel Range Organics (DRO)	<49.9	997	872	87	881	88	70-130	1	20	mg/kg	06.23.2020 13:09	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	111		111		70-130	%	06.23.2020 13:09
o-Terphenyl	103		102		70-130	%	06.23.2020 13:09

Analytical Method: BTEX by EPA 8021B

Seq Number: 3130222

Matrix: Solid

MB Sample Id: 7706352-1-BLK

LCS Sample Id: 7706352-1-BKS

Prep Method: SW5035A

Date Prep: 06.26.2020

LCSD Sample Id: 7706352-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.0949	95	0.0866	87	70-130	9	35	mg/kg	06.27.2020 13:50	
Toluene	<0.00200	0.100	0.0911	91	0.0870	87	70-130	5	35	mg/kg	06.27.2020 13:50	
Ethylbenzene	<0.00200	0.100	0.0917	92	0.0894	89	70-130	3	35	mg/kg	06.27.2020 13:50	
m,p-Xylenes	<0.00400	0.200	0.173	87	0.170	85	70-130	2	35	mg/kg	06.27.2020 13:50	
o-Xylene	<0.00200	0.100	0.0902	90	0.0886	89	70-130	2	35	mg/kg	06.27.2020 13:50	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	103		99		96		70-130	%	06.27.2020 13:50
4-Bromofluorobenzene	98		93		95		70-130	%	06.27.2020 13:50

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

[D] = 100*(C-A) / B
RPD = 200* | (C-E) / (C+E) |
[D] = 100 * (C) / [B]
Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec

Larson and Associates, Inc.
Vacuum Glorieta

Analytical Method: BTEX by EPA 8021B

Seq Number: 3130810

MB Sample Id: 7706751-1-BLK

Matrix: Solid

LCS Sample Id: 7706751-1-BKS

Prep Method: SW5035A

Date Prep: 07.06.2020

LCSD Sample Id: 7706751-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.104	104	0.104	104	70-130	0	35	mg/kg	07.06.2020 11:35	
Toluene	<0.00200	0.100	0.0944	94	0.0965	97	70-130	2	35	mg/kg	07.06.2020 11:35	
Ethylbenzene	<0.00200	0.100	0.0930	93	0.0944	94	70-130	1	35	mg/kg	07.06.2020 11:35	
m,p-Xylenes	<0.00400	0.200	0.175	88	0.178	89	70-130	2	35	mg/kg	07.06.2020 11:35	
o-Xylene	<0.00200	0.100	0.0878	88	0.0905	91	70-130	3	35	mg/kg	07.06.2020 11:35	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	111		99		100		70-130	%	07.06.2020 11:35
4-Bromofluorobenzene	85		86		91		70-130	%	07.06.2020 11:35

Analytical Method: BTEX by EPA 8021B

Seq Number: 3130222

Parent Sample Id: 664989-016

Matrix: Soil

MS Sample Id: 664989-016 S

Prep Method: SW5035A

Date Prep: 06.26.2020

MSD Sample Id: 664989-016 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00202	0.101	0.0492	49	0.0253	25	70-130	64	35	mg/kg	06.27.2020 14:31	XF
Toluene	<0.00202	0.101	0.0519	51	0.0306	30	70-130	52	35	mg/kg	06.27.2020 14:31	XF
Ethylbenzene	<0.00202	0.101	0.0535	53	0.0322	32	70-130	50	35	mg/kg	06.27.2020 14:31	XF
m,p-Xylenes	<0.00403	0.202	0.103	51	0.0654	32	70-130	45	35	mg/kg	06.27.2020 14:31	XF
o-Xylene	<0.00202	0.101	0.0549	54	0.0366	36	70-130	40	35	mg/kg	06.27.2020 14:31	XF

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	100		99		70-130	%	06.27.2020 14:31
4-Bromofluorobenzene	96		104		70-130	%	06.27.2020 14:31

Analytical Method: BTEX by EPA 8021B

Seq Number: 3130810

Parent Sample Id: 666230-006

Matrix: Soil

MS Sample Id: 666230-006 S

Prep Method: SW5035A

Date Prep: 07.06.2020

MSD Sample Id: 666230-006 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.0998	0.0954	96	0.0888	90	70-130	7	35	mg/kg	07.06.2020 12:17	
Toluene	<0.00200	0.0998	0.0743	74	0.0657	66	70-130	12	35	mg/kg	07.06.2020 12:17	X
Ethylbenzene	<0.00200	0.0998	0.0594	60	0.0513	52	70-130	15	35	mg/kg	07.06.2020 12:17	X
m,p-Xylenes	<0.00399	0.200	0.0846	42	0.0668	34	70-130	24	35	mg/kg	07.06.2020 12:17	X
o-Xylene	<0.00200	0.0998	0.0631	63	0.0575	58	70-130	9	35	mg/kg	07.06.2020 12:17	X

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	105		103		70-130	%	07.06.2020 12:17
4-Bromofluorobenzene	88		89		70-130	%	07.06.2020 12:17

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
 Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
 A = Parent Result
 C = MS/LCS Result
 E = MSD/LCSD Result

MS = Matrix Spike
 B = Spike Added
 D = MSD/LCSD % Rec

Varson & Associates, Inc.
Environmental Consultants

507 N. Marlenfeld, Ste. 200
Midland, TX 79701
432-687-0901

DATE: 6/22/20 PAGE 1 OF 1
PO#: _____ LAB WORK ORDER#: _____

Data Reported to:

PROJECT LOCATION OR NAME: Valuum 610Cietu
LAI PROJECT #: 20-0107-12 COLLECTOR: TTDS

TRRP report? ☐ Yes ☒ No
TIME ZONE: MST
Time zone/State:

S=SOIL
W=WATER
A=AIR
P=PAINT
SL=SLUDGE
OT=OTHER

Field Sample I.D.

Lab #

Date

Time

Matrix

of Containers

HCl

HNO₃

H₂SO₄ ☐ NaOH ☐

ICE

UNPRESERVED

ANALYSES

BTEX ☒ MTBE ☐

TRPH 418.1 ☐ TPH 1005 ☒ TPH 1006 ☐

GASOLINE MOD 8015 ☒

DIESEL - MOD 8015 ☒

OIL - MOD 8015 ☒

VOC 8260 ☒

SVOC 8270 ☒

8081 PESTICIDES ☒

8082 PCBS ☒

TBLP - METALS (RCRA) ☒

TCLP - PEST ☒

HERB ☒

8151 HERBICIDES ☒

TCPL VOC ☒

Semi-VOC ☒

OTHER LIST ☒

TCPL ☒

LEAD - TOTAL ☒

DW 200.8 ☒

FLASHPOINT ☒

% MOISTURE ☒

CHROMIUM ☒

PECHLORATE ☒

EXPLOSIVES ☒

ANIONS ☒

ALKALINITY ☒

FIELD NOTES

TOTAL

7

RELINQUISHED BY: (Signature)

Grant Am

DATE/TIME

6/25/20 13:12

RECEIVED BY: (Signature)

[Signature]

TURN AROUND TIME

NORMAL ☒

1 DAY ☐

2 DAY ☐

OTHER ☐

LABORATORY USE ONLY:

RECEIVING TEMP: 20.3

TERM#: 123

CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☒ NOT USED

CARRIER BILL # _____

☒ HAND DELIVERED

LABORATORY: Xenlo

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: Larson and Associates, Inc.

Date/ Time Received: 06.23.2020 08.39.00 AM

Work Order #: 665085

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : IR-8

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	2.2
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	N/A
#5 Custody Seals intact on sample bottles?	N/A
#6 *Custody Seals Signed and dated?	N/A
#7 *Chain of Custody present?	Yes
#8 Any missing/extra samples?	No
#9 Chain of Custody signed when relinquished/ received?	Yes
#10 Chain of Custody agrees with sample labels/matrix?	Yes
#11 Container label(s) legible and intact?	Yes
#12 Samples in proper container/ bottle?	Yes BTEX was in bulk container
#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: 06.23.2020

Checklist reviewed by:



Holly Taylor

Date: 06.24.2020

Certificate of Analysis Summary 667963



Larson and Associates, Inc., Midland, TX

Project Name: Vaccum Glorieta

Project Id: 20-0107-12

Date Received in Lab: Thu 07.23.2020 08:21

Contact: Mark Larson

Report Date: 07.29.2020 13:39

Project Location:

Project Manager: Holly Taylor

<i>Analysis Requested</i>	<i>Lab Id:</i>	667963-001	667963-002	667963-003	667963-004	667963-005	667963-006
	<i>Field Id:</i>	BH-1 5'	BH-1 10'	BH-1 15'	BH-1 20'	BH-1 25'	BH-2 5'
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	07.22.2020 11:05	07.22.2020 11:10	07.22.2020 11:12	07.22.2020 11:14	07.22.2020 12:30	07.22.2020 12:58
BTEX by EPA 8021B	<i>Extracted:</i>	07.27.2020 09:00					07.27.2020 09:00
	<i>Analyzed:</i>	07.27.2020 12:19					07.27.2020 12:39
	<i>Units/RL:</i>	mg/kg RL					mg/kg RL
Benzene		<0.00198 0.00198					<0.00201 0.00201
Toluene		<0.00198 0.00198					<0.00201 0.00201
Ethylbenzene		<0.00198 0.00198					<0.00201 0.00201
m,p-Xylenes		<0.00397 0.00397					<0.00402 0.00402
o-Xylene		<0.00198 0.00198					<0.00201 0.00201
Total Xylenes		<0.00198 0.00198					<0.00201 0.00201
Total BTEX		<0.00198 0.00198					<0.00201 0.00201
Chloride by EPA 300	<i>Extracted:</i>	07.23.2020 13:45	07.23.2020 13:45	07.23.2020 13:45	07.24.2020 09:30	07.24.2020 09:30	07.24.2020 09:30
	<i>Analyzed:</i>	07.23.2020 16:46	07.23.2020 16:52	07.23.2020 16:59	07.24.2020 10:02	07.24.2020 10:21	07.24.2020 10:27
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		3230 25.0	3640 25.0	740 5.02	910 X 4.97	97.3 4.96	386 4.96
TPH by SW8015 Mod	<i>Extracted:</i>	07.24.2020 12:00					07.24.2020 12:00
	<i>Analyzed:</i>	07.24.2020 12:50					07.24.2020 13:54
	<i>Units/RL:</i>	mg/kg RL					mg/kg RL
Gasoline Range Hydrocarbons (GRO)		<50.0 50.0					<49.8 49.8
Diesel Range Organics (DRO)		<50.0 50.0					<49.8 49.8
Motor Oil Range Hydrocarbons (MRO)		<50.0 50.0					<49.8 49.8
Total TPH		<50.0 50.0					<49.8 49.8

BRL - Below Reporting Limit

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

Certificate of Analysis Summary 667963

Larson and Associates, Inc., Midland, TX

Project Name: Vaccum Glorieta

Project Id: 20-0107-12

Date Received in Lab: Thu 07.23.2020 08:21

Contact: Mark Larson

Report Date: 07.29.2020 13:39

Project Location:

Project Manager: Holly Taylor

Analysis Requested	Lab Id:	667963-007	667963-008	667963-009			
	Field Id:	BH-2 10'	BH-2 15'	BH-2 20'			
	Depth:						
	Matrix:	SOIL	SOIL	SOIL			
	Sampled:	07.22.2020 13:04	07.22.2020 13:06	07.22.2020 13:08			
Chloride by EPA 300	Extracted:	07.24.2020 09:30	07.24.2020 09:30	07.24.2020 09:30			
	Analyzed:	07.24.2020 10:34	07.24.2020 10:40	07.24.2020 10:59			
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL			
Chloride		332 4.94	154 5.01	49.0 4.99			

BRL - Below Reporting Limit

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



Analytical Report 667963

for

Larson and Associates, Inc.

Project Manager: Mark Larson

Vaccum Glorieta

20-0107-12

07.29.2020

Collected By: Client



**1211 W. Florida Ave
Midland TX 79701**

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-20-36), Arizona (AZ0765), Florida (E871002-33), Louisiana (03054)
Oklahoma (2019-058), North Carolina (681), Arkansas (20-035-0)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (T104704295-20-25), Arizona (AZ0809)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-20-17)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-20-22)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-19)
Xenco-Carlsbad (LELAP): Louisiana (05092)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-20-7)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Tampa: Florida (E87429), North Carolina (483)



07.29.2020

Project Manager: **Mark Larson**
Larson and Associates, Inc.
P. O. Box 50685
Midland, TX 79710

Reference: Eurofins Xenco, LLC Report No(s): **667963**
Vaccum Glorieta
Project Address:

Mark Larson :

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the Eurofins Xenco, LLC Report Number(s) 667963. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by Eurofins Xenco, LLC. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 667963 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,

A handwritten signature in black ink, appearing to read "JB", written over a light blue rectangular background.

John Builes
Project Manager

A Small Business and Minority Company

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

**Sample Cross Reference 667963****Larson and Associates, Inc., Midland, TX**

Vaccum Glorieta

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
BH-1 5'	S	07.22.2020 11:05		667963-001
BH-1 10'	S	07.22.2020 11:10		667963-002
BH-1 15'	S	07.22.2020 11:12		667963-003
BH-1 20'	S	07.22.2020 11:14		667963-004
BH-1 25'	S	07.22.2020 12:30		667963-005
BH-2 5'	S	07.22.2020 12:58		667963-006
BH-2 10'	S	07.22.2020 13:04		667963-007
BH-2 15'	S	07.22.2020 13:06		667963-008
BH-2 20'	S	07.22.2020 13:08		667963-009



CASE NARRATIVE

Client Name: *Larson and Associates, Inc.*

Project Name: *Vaccum Glorieta*

Project ID: 20-0107-12
Work Order Number(s): 667963

Report Date: 07.29.2020
Date Received: 07.23.2020

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3132579 Chloride by EPA 300

Lab Sample ID 668135-001 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Chloride recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 667963-004, -005, -006, -007, -008, -009.

The Laboratory Control Sample for Chloride is within laboratory Control Limits, therefore the data was accepted.



Certificate of Analytical Results 667963

Larson and Associates, Inc., Midland, TX

Vaccum Glorieta

Sample Id: **BH-1 5'** Matrix: Soil Date Received: 07.23.2020 08:21
 Lab Sample Id: 667963-001 Date Collected: 07.22.2020 11:05
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: SPC % Moisture:
 Analyst: SPC Date Prep: 07.23.2020 13:45 Basis: Wet Weight
 Seq Number: 3132491

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	3230	25.0	mg/kg	07.23.2020 16:46		5

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DVM % Moisture:
 Analyst: ARM Date Prep: 07.24.2020 12:00 Basis: Wet Weight
 Seq Number: 3132651

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	07.24.2020 12:50	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	07.24.2020 12:50	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	07.24.2020 12:50	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	07.24.2020 12:50	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	90	%	70-130	07.24.2020 12:50	
o-Terphenyl	84-15-1	106	%	70-130	07.24.2020 12:50	



Certificate of Analytical Results 667963

Larson and Associates, Inc., Midland, TX

Vaccum Glorieta

Sample Id: **BH-1 5'**
Lab Sample Id: 667963-001

Matrix: Soil
Date Collected: 07.22.2020 11:05

Date Received: 07.23.2020 08:21

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: AMF

% Moisture:

Analyst: AMF

Date Prep: 07.27.2020 09:00

Basis: Wet Weight

Seq Number: 3132772

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	07.27.2020 12:19	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	07.27.2020 12:19	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	07.27.2020 12:19	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	07.27.2020 12:19	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	07.27.2020 12:19	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	07.27.2020 12:19	U	1
Total BTEX		<0.00198	0.00198	mg/kg	07.27.2020 12:19	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	102	%	70-130	07.27.2020 12:19	
4-Bromofluorobenzene	460-00-4	104	%	70-130	07.27.2020 12:19	

**Certificate of Analytical Results 667963****Larson and Associates, Inc., Midland, TX**

Vaccum Glorieta

Sample Id: **BH-1 10'**
Lab Sample Id: 667963-002

Matrix: Soil
Date Collected: 07.22.2020 11:10

Date Received: 07.23.2020 08:21

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 07.23.2020 13:45

Basis: Wet Weight

Seq Number: 3132491

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	3640	25.0	mg/kg	07.23.2020 16:52		5



Certificate of Analytical Results 667963

Larson and Associates, Inc., Midland, TX

Vaccum Glorieta

Sample Id: **BH-1 15'**
Lab Sample Id: 667963-003

Matrix: Soil
Date Collected: 07.22.2020 11:12

Date Received: 07.23.2020 08:21

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 07.23.2020 13:45

Basis: Wet Weight

Seq Number: 3132491

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	740	5.02	mg/kg	07.23.2020 16:59		1



Certificate of Analytical Results 667963

Larson and Associates, Inc., Midland, TX

Vaccum Glorieta

Sample Id: **BH-1 20'**
Lab Sample Id: 667963-004

Matrix: Soil
Date Collected: 07.22.2020 11:14

Date Received: 07.23.2020 08:21

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 07.24.2020 09:30

Basis: Wet Weight

Seq Number: 3132579

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	910	4.97	mg/kg	07.24.2020 10:02	X	1

**Certificate of Analytical Results 667963****Larson and Associates, Inc., Midland, TX**

Vaccum Glorieta

Sample Id: **BH-1 25'**
Lab Sample Id: 667963-005

Matrix: Soil
Date Collected: 07.22.2020 12:30

Date Received: 07.23.2020 08:21

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 07.24.2020 09:30

Basis: Wet Weight

Seq Number: 3132579

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	97.3	4.96	mg/kg	07.24.2020 10:21		1



Certificate of Analytical Results 667963

Larson and Associates, Inc., Midland, TX

Vaccum Glorieta

Sample Id: **BH-2 5'** Matrix: Soil Date Received: 07.23.2020 08:21
 Lab Sample Id: 667963-006 Date Collected: 07.22.2020 12:58
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: SPC % Moisture:
 Analyst: SPC Date Prep: 07.24.2020 09:30 Basis: Wet Weight
 Seq Number: 3132579

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	386	4.96	mg/kg	07.24.2020 10:27		1

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DVM % Moisture:
 Analyst: ARM Date Prep: 07.24.2020 12:00 Basis: Wet Weight
 Seq Number: 3132651

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.8	49.8	mg/kg	07.24.2020 13:54	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.8	49.8	mg/kg	07.24.2020 13:54	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.8	49.8	mg/kg	07.24.2020 13:54	U	1
Total TPH	PHC635	<49.8	49.8	mg/kg	07.24.2020 13:54	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	92	%	70-130	07.24.2020 13:54	
o-Terphenyl	84-15-1	108	%	70-130	07.24.2020 13:54	



Certificate of Analytical Results 667963

Larson and Associates, Inc., Midland, TX

Vaccum Glorieta

Sample Id: **BH-2 5'**
Lab Sample Id: 667963-006

Matrix: Soil
Date Collected: 07.22.2020 12:58

Date Received: 07.23.2020 08:21

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: AMF

% Moisture:

Analyst: AMF

Date Prep: 07.27.2020 09:00

Basis: Wet Weight

Seq Number: 3132772

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	07.27.2020 12:39	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	07.27.2020 12:39	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	07.27.2020 12:39	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	07.27.2020 12:39	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	07.27.2020 12:39	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	07.27.2020 12:39	U	1
Total BTEX		<0.00201	0.00201	mg/kg	07.27.2020 12:39	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	104	%	70-130	07.27.2020 12:39	
4-Bromofluorobenzene	460-00-4	103	%	70-130	07.27.2020 12:39	

**Certificate of Analytical Results 667963****Larson and Associates, Inc., Midland, TX**

Vaccum Glorieta

Sample Id: **BH-2 10'**
Lab Sample Id: 667963-007

Matrix: Soil
Date Collected: 07.22.2020 13:04

Date Received: 07.23.2020 08:21

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 07.24.2020 09:30

Basis: Wet Weight

Seq Number: 3132579

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	332	4.94	mg/kg	07.24.2020 10:34		1

**Certificate of Analytical Results 667963****Larson and Associates, Inc., Midland, TX**

Vaccum Glorieta

Sample Id: **BH-2 15'**
Lab Sample Id: 667963-008

Matrix: Soil
Date Collected: 07.22.2020 13:06

Date Received: 07.23.2020 08:21

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 07.24.2020 09:30

Basis: Wet Weight

Seq Number: 3132579

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	154	5.01	mg/kg	07.24.2020 10:40		1

**Certificate of Analytical Results 667963****Larson and Associates, Inc., Midland, TX**

Vaccum Glorieta

Sample Id: **BH-2 20'**
Lab Sample Id: 667963-009

Matrix: Soil
Date Collected: 07.22.2020 13:08

Date Received: 07.23.2020 08:21

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 07.24.2020 09:30

Basis: Wet Weight

Seq Number: 3132579

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	49.0	4.99	mg/kg	07.24.2020 10:59		1

Flagging Criteria

- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the quantitation limit and above the detection limit.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit. **ND** Not Detected.

RL Reporting Limit

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

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

DL Method Detection Limit

NC Non-Calculable

SMP Client Sample **BLK** Method Blank

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

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

+ NELAC certification not offered for this compound.

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



Larson and Associates, Inc.
Vaccum Glorieta

Analytical Method: Chloride by EPA 300

Seq Number: 3132491

MB Sample Id: 7707929-1-BLK

Matrix: Solid

LCS Sample Id: 7707929-1-BKS

Prep Method: E300P

Date Prep: 07.23.2020

LCSD Sample Id: 7707929-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<5.00	250	260	104	261	104	90-110	0	20	mg/kg	07.23.2020 13:55	

Analytical Method: Chloride by EPA 300

Seq Number: 3132579

MB Sample Id: 7707992-1-BLK

Matrix: Solid

LCS Sample Id: 7707992-1-BKS

Prep Method: E300P

Date Prep: 07.24.2020

LCSD Sample Id: 7707992-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<5.00	250	258	103	260	104	90-110	1	20	mg/kg	07.24.2020 09:49	

Analytical Method: Chloride by EPA 300

Seq Number: 3132491

Parent Sample Id: 667947-009

Matrix: Soil

MS Sample Id: 667947-009 S

Prep Method: E300P

Date Prep: 07.23.2020

MSD Sample Id: 667947-009 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	99.1	253	363	104	363	104	90-110	0	20	mg/kg	07.23.2020 15:43	

Analytical Method: Chloride by EPA 300

Seq Number: 3132491

Parent Sample Id: 667991-003

Matrix: Soil

MS Sample Id: 667991-003 S

Prep Method: E300P

Date Prep: 07.23.2020

MSD Sample Id: 667991-003 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	32.3	249	313	113	313	113	90-110	0	20	mg/kg	07.23.2020 14:14	X

Analytical Method: Chloride by EPA 300

Seq Number: 3132579

Parent Sample Id: 667963-004

Matrix: Soil

MS Sample Id: 667963-004 S

Prep Method: E300P

Date Prep: 07.24.2020

MSD Sample Id: 667963-004 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	910	249	1130	88	1130	88	90-110	0	20	mg/kg	07.24.2020 10:08	X

Analytical Method: Chloride by EPA 300

Seq Number: 3132579

Parent Sample Id: 668135-001

Matrix: Solid

MS Sample Id: 668135-001 S

Prep Method: E300P

Date Prep: 07.24.2020

MSD Sample Id: 668135-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	903	250	1130	91	1130	91	90-110	0	20	mg/kg	07.24.2020 12:02	

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
 Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
 A = Parent Result
 C = MS/LCS Result
 E = MSD/LCSD Result

MS = Matrix Spike
 B = Spike Added
 D = MSD/LCSD % Rec



Larson and Associates, Inc.
Vaccum Glorieta

Analytical Method: TPH by SW8015 Mod

Seq Number: 3132651

MB Sample Id: 7708088-1-BLK

Matrix: Solid

LCS Sample Id: 7708088-1-BKS

Prep Method: SW8015P

Date Prep: 07.24.2020

LCSD Sample Id: 7708088-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<50.0	1000	861	86	822	82	70-130	5	20	mg/kg	07.24.2020 12:07	
Diesel Range Organics (DRO)	<50.0	1000	891	89	880	88	70-130	1	20	mg/kg	07.24.2020 12:07	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	88		89		92		70-130	%	07.24.2020 12:07
o-Terphenyl	104		101		98		70-130	%	07.24.2020 12:07

Analytical Method: TPH by SW8015 Mod

Seq Number: 3132651

Matrix: Solid

MB Sample Id: 7708088-1-BLK

Prep Method: SW8015P

Date Prep: 07.24.2020

Parameter	MB Result	Units	Analysis Date	Flag
Motor Oil Range Hydrocarbons (MRO)	<50.0	mg/kg	07.24.2020 11:45	

Analytical Method: TPH by SW8015 Mod

Seq Number: 3132651

Matrix: Soil

Parent Sample Id: 667963-001

MS Sample Id: 667963-001 S

Prep Method: SW8015P

Date Prep: 07.24.2020

MSD Sample Id: 667963-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<49.9	998	809	81	822	82	70-130	2	20	mg/kg	07.24.2020 13:11	
Diesel Range Organics (DRO)	<49.9	998	838	84	853	86	70-130	2	20	mg/kg	07.24.2020 13:11	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	90		91		70-130	%	07.24.2020 13:11
o-Terphenyl	96		97		70-130	%	07.24.2020 13:11

Analytical Method: BTEX by EPA 8021B

Seq Number: 3132772

Matrix: Solid

MB Sample Id: 7708187-1-BLK

LCS Sample Id: 7708187-1-BKS

Prep Method: SW5035A

Date Prep: 07.27.2020

LCSD Sample Id: 7708187-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.0957	96	0.0995	100	70-130	4	35	mg/kg	07.27.2020 10:15	
Toluene	<0.00200	0.100	0.0850	85	0.0881	88	70-130	4	35	mg/kg	07.27.2020 10:15	
Ethylbenzene	<0.00200	0.100	0.0955	96	0.0987	99	70-130	3	35	mg/kg	07.27.2020 10:15	
m,p-Xylenes	<0.00400	0.200	0.194	97	0.202	101	70-130	4	35	mg/kg	07.27.2020 10:15	
o-Xylene	<0.00200	0.100	0.0952	95	0.0989	99	70-130	4	35	mg/kg	07.27.2020 10:15	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	102		96		99		70-130	%	07.27.2020 10:15
4-Bromofluorobenzene	100		97		100		70-130	%	07.27.2020 10:15

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

[D] = 100*(C-A) / B
RPD = 200* | (C-E) / (C+E) |
[D] = 100 * (C) / [B]
Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec

Larson and Associates, Inc.
 Vaccum Glorieta
Analytical Method: BTEX by EPA 8021B

Seq Number: 3132772

Parent Sample Id: 667963-001

Matrix: Soil

MS Sample Id: 667963-001 S

Prep Method: SW5035A

Date Prep: 07.27.2020

MSD Sample Id: 667963-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00199	0.0996	0.0818	82	0.0901	90	70-130	10	35	mg/kg	07.27.2020 10:56	
Toluene	<0.00199	0.0996	0.0815	82	0.0886	89	70-130	8	35	mg/kg	07.27.2020 10:56	
Ethylbenzene	<0.00199	0.0996	0.0809	81	0.0899	90	70-130	11	35	mg/kg	07.27.2020 10:56	
m,p-Xylenes	<0.00398	0.199	0.166	83	0.183	92	70-130	10	35	mg/kg	07.27.2020 10:56	
o-Xylene	<0.00199	0.0996	0.0808	81	0.0895	90	70-130	10	35	mg/kg	07.27.2020 10:56	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	97		98		70-130	%	07.27.2020 10:56
4-Bromofluorobenzene	101		101		70-130	%	07.27.2020 10:56

MS/MSD Percent Recovery
 Relative Percent Difference
 LCS/LCSD Recovery
 Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
 Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
 A = Parent Result
 C = MS/LCS Result
 E = MSD/LCSD Result

MS = Matrix Spike
 B = Spike Added
 D = MSD/LCSD % Rec

Eurofins Xenco, LLC

Prelogin/Nonconformance Report- Sample Log-In

Client: Larson and Associates, Inc.**Date/ Time Received:** 07.23.2020 08.21.59 AM**Work Order #:** 667963**Acceptable Temperature Range:** 0 - 6 degC**Air and Metal samples Acceptable Range:** Ambient**Temperature Measuring device used :** IR-8

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	2.9
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	N/A
#5 Custody Seals intact on sample bottles?	N/A
#6 *Custody Seals Signed and dated?	N/A
#7 *Chain of Custody present?	Yes
#8 Any missing/extra samples?	No
#9 Chain of Custody signed when relinquished/ received?	Yes
#10 Chain of Custody agrees with sample labels/matrix?	Yes
#11 Container label(s) legible and intact?	Yes
#12 Samples in proper container/ bottle?	Yes BTEX was in bulk container
#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: 07.23.2020

Checklist reviewed by:

Holly Taylor

Date: 07.27.2020

Certificate of Analysis Summary 668113

Larson and Associates, Inc., Midland, TX

Project Name: Vacuum Glorieta

Project Id:

Date Received in Lab: Fri 07.24.2020 08:13

Contact: Mark Larson

Report Date: 07.29.2020 13:38

Project Location:

Project Manager: Holly Taylor

Analysis Requested	Lab Id:	668113-001	668113-002				
	Field Id:	S-10 .5'	S-10 .5'-1'				
	Depth:						
	Matrix:	SOIL	SOIL				
	Sampled:	07.23.2020 10:10	07.23.2020 10:12				
BTEX by EPA 8021B	Extracted:	07.27.2020 09:00	07.27.2020 09:00				
	Analyzed:	07.27.2020 13:00	07.27.2020 13:20				
	Units/RL:	mg/kg RL	mg/kg RL				
Benzene		<0.00200 0.00200	<0.00199 0.00199				
Toluene		<0.00200 0.00200	<0.00199 0.00199				
Ethylbenzene		<0.00200 0.00200	<0.00199 0.00199				
m,p-Xylenes		<0.00401 0.00401	<0.00398 0.00398				
o-Xylene		<0.00200 0.00200	<0.00199 0.00199				
Total Xylenes		<0.00200 0.00200	<0.00199 0.00199				
Total BTEX		<0.00200 0.00200	<0.00199 0.00199				
Chloride by EPA 300	Extracted:	07.24.2020 14:30	07.24.2020 14:30				
	Analyzed:	07.24.2020 15:28	07.24.2020 15:43				
	Units/RL:	mg/kg RL	mg/kg RL				
Chloride		25.0 5.02	12.9 4.97				
TPH by SW8015 Mod	Extracted:	07.24.2020 12:00	07.24.2020 12:00				
	Analyzed:	07.24.2020 14:16	07.24.2020 14:38				
	Units/RL:	mg/kg RL	mg/kg RL				
Gasoline Range Hydrocarbons (GRO)		<49.9 49.9	<50.0 50.0				
Diesel Range Organics (DRO)		<49.9 49.9	<50.0 50.0				
Motor Oil Range Hydrocarbons (MRO)		<49.9 49.9	<50.0 50.0				
Total TPH		<49.9 49.9	<50.0 50.0				

BRL - Below Reporting Limit

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



Analytical Report 668113

for

Larson and Associates, Inc.

Project Manager: Mark Larson

Vacuum Glorieta

07.29.2020

Collected By: Client



**1211 W. Florida Ave
Midland TX 79701**

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-20-36), Arizona (AZ0765), Florida (E871002-33), Louisiana (03054)
Oklahoma (2019-058), North Carolina (681), Arkansas (20-035-0)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (T104704295-20-25), Arizona (AZ0809)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-20-17)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-20-22)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-19)
Xenco-Carlsbad (LELAP): Louisiana (05092)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-20-7)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Tampa: Florida (E87429), North Carolina (483)



07.29.2020

Project Manager: **Mark Larson**
Larson and Associates, Inc.
P. O. Box 50685
Midland, TX 79710

Reference: Eurofins Xenco, LLC Report No(s): **668113**
Vacuum Glorieta
Project Address:

Mark Larson :

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the Eurofins Xenco, LLC Report Number(s) 668113. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by Eurofins Xenco, LLC. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 668113 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,

A handwritten signature in black ink, appearing to read "JB", written over a light blue rectangular background.

John Builes
Project Manager

A Small Business and Minority Company

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



Sample Cross Reference 668113

Larson and Associates, Inc., Midland, TX

Vacuum Glorieta

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
S-10 .5'	S	07.23.2020 10:10		668113-001
S-10 .5'-1'	S	07.23.2020 10:12		668113-002



CASE NARRATIVE

Client Name: *Larson and Associates, Inc.*

Project Name: *Vacuum Glorieta*

Project ID:
Work Order Number(s): 668113

Report Date: 07.29.2020
Date Received: 07.24.2020

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None



Certificate of Analytical Results 668113

Larson and Associates, Inc., Midland, TX

Vacuum Glorieta

Sample Id: S-10 .5' Matrix: Soil Date Received: 07.24.2020 08:13
 Lab Sample Id: 668113-001 Date Collected: 07.23.2020 10:10
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: CHE % Moisture:
 Analyst: CHE Date Prep: 07.24.2020 14:30 Basis: Wet Weight
 Seq Number: 3132617

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	25.0	5.02	mg/kg	07.24.2020 15:28		1

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DVM % Moisture:
 Analyst: ARM Date Prep: 07.24.2020 12:00 Basis: Wet Weight
 Seq Number: 3132651

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	07.24.2020 14:16	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	07.24.2020 14:16	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	07.24.2020 14:16	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	07.24.2020 14:16	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	88	%	70-130	07.24.2020 14:16	
o-Terphenyl	84-15-1	96	%	70-130	07.24.2020 14:16	



Certificate of Analytical Results 668113

Larson and Associates, Inc., Midland, TX

Vacuum Glorieta

Sample Id: S-10.5'
Lab Sample Id: 668113-001

Matrix: Soil
Date Collected: 07.23.2020 10:10

Date Received: 07.24.2020 08:13

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: AMF

% Moisture:

Analyst: AMF

Date Prep: 07.27.2020 09:00

Basis: Wet Weight

Seq Number: 3132772

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	07.27.2020 13:00	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	07.27.2020 13:00	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	07.27.2020 13:00	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	07.27.2020 13:00	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	07.27.2020 13:00	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	07.27.2020 13:00	U	1
Total BTEX		<0.00200	0.00200	mg/kg	07.27.2020 13:00	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	104	%	70-130	07.27.2020 13:00	
1,4-Difluorobenzene	540-36-3	104	%	70-130	07.27.2020 13:00	



Certificate of Analytical Results 668113

Larson and Associates, Inc., Midland, TX

Vacuum Glorieta

Sample Id: S-10.5'-1'

Matrix: Soil

Date Received: 07.24.2020 08:13

Lab Sample Id: 668113-002

Date Collected: 07.23.2020 10:12

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 07.24.2020 14:30

Basis: Wet Weight

Seq Number: 3132617

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	12.9	4.97	mg/kg	07.24.2020 15:43		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 07.24.2020 12:00

Basis: Wet Weight

Seq Number: 3132651

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	07.24.2020 14:38	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	07.24.2020 14:38	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	07.24.2020 14:38	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	07.24.2020 14:38	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	85	%	70-130	07.24.2020 14:38	
o-Terphenyl	84-15-1	98	%	70-130	07.24.2020 14:38	



Certificate of Analytical Results 668113

Larson and Associates, Inc., Midland, TX

Vacuum Glorieta

Sample Id: S-10.5'-1'

Matrix: Soil

Date Received: 07.24.2020 08:13

Lab Sample Id: 668113-002

Date Collected: 07.23.2020 10:12

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: AMF

% Moisture:

Analyst: AMF

Date Prep: 07.27.2020 09:00

Basis: Wet Weight

Seq Number: 3132772

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	07.27.2020 13:20	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	07.27.2020 13:20	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	07.27.2020 13:20	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	07.27.2020 13:20	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	07.27.2020 13:20	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	07.27.2020 13:20	U	1
Total BTEX		<0.00199	0.00199	mg/kg	07.27.2020 13:20	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	102	%	70-130	07.27.2020 13:20	
1,4-Difluorobenzene	540-36-3	102	%	70-130	07.27.2020 13:20	

Flagging Criteria

- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the quantitation limit and above the detection limit.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit. **ND** Not Detected.

RL Reporting Limit

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

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

DL Method Detection Limit

NC Non-Calculable

SMP Client Sample **BLK** Method Blank

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

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

+ NELAC certification not offered for this compound.

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

Larson and Associates, Inc.
Vacuum Glorieta
Analytical Method: Chloride by EPA 300

Seq Number: 3132617

MB Sample Id: 7708035-1-BLK

Matrix: Solid

LCS Sample Id: 7708035-1-BKS

Prep Method: E300P

Date Prep: 07.24.2020

LCSD Sample Id: 7708035-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<5.00	250	266	106	275	110	90-110	3	20	mg/kg	07.24.2020 15:17	

Analytical Method: Chloride by EPA 300

Seq Number: 3132617

Parent Sample Id: 668113-001

Matrix: Soil

MS Sample Id: 668113-001 S

Prep Method: E300P

Date Prep: 07.24.2020

MSD Sample Id: 668113-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	25.0	251	294	107	295	108	90-110	0	20	mg/kg	07.24.2020 15:33	

Analytical Method: Chloride by EPA 300

Seq Number: 3132617

Parent Sample Id: 668114-009

Matrix: Soil

MS Sample Id: 668114-009 S

Prep Method: E300P

Date Prep: 07.24.2020

MSD Sample Id: 668114-009 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	189	250	439	100	433	98	90-110	1	20	mg/kg	07.24.2020 16:46	

Analytical Method: TPH by SW8015 Mod

Seq Number: 3132651

MB Sample Id: 7708088-1-BLK

Matrix: Solid

LCS Sample Id: 7708088-1-BKS

Prep Method: SW8015P

Date Prep: 07.24.2020

LCSD Sample Id: 7708088-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<50.0	1000	861	86	822	82	70-130	5	20	mg/kg	07.24.2020 12:07	
Diesel Range Organics (DRO)	<50.0	1000	891	89	880	88	70-130	1	20	mg/kg	07.24.2020 12:07	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	88		89		92		70-130	%	07.24.2020 12:07
o-Terphenyl	104		101		98		70-130	%	07.24.2020 12:07

Analytical Method: TPH by SW8015 Mod

Seq Number: 3132651

Matrix: Solid

MB Sample Id: 7708088-1-BLK

Prep Method: SW8015P

Date Prep: 07.24.2020

Parameter	MB Result	Units	Analysis Date	Flag
Motor Oil Range Hydrocarbons (MRO)	<50.0	mg/kg	07.24.2020 11:45	

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
 Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
 A = Parent Result
 C = MS/LCS Result
 E = MSD/LCSD Result

MS = Matrix Spike
 B = Spike Added
 D = MSD/LCSD % Rec

Larson and Associates, Inc.
Vacuum Glorieta

Analytical Method: TPH by SW8015 Mod

Seq Number: 3132651

Parent Sample Id: 667963-001

Matrix: Soil

MS Sample Id: 667963-001 S

Prep Method: SW8015P

Date Prep: 07.24.2020

MSD Sample Id: 667963-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<49.9	998	809	81	822	82	70-130	2	20	mg/kg	07.24.2020 13:11	
Diesel Range Organics (DRO)	<49.9	998	838	84	853	86	70-130	2	20	mg/kg	07.24.2020 13:11	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	90		91		70-130	%	07.24.2020 13:11
o-Terphenyl	96		97		70-130	%	07.24.2020 13:11

Analytical Method: BTEX by EPA 8021B

Seq Number: 3132772

MB Sample Id: 7708187-1-BLK

Matrix: Solid

LCS Sample Id: 7708187-1-BKS

Prep Method: SW5035A

Date Prep: 07.27.2020

LCSD Sample Id: 7708187-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.0957	96	0.0995	100	70-130	4	35	mg/kg	07.27.2020 10:15	
Toluene	<0.00200	0.100	0.0850	85	0.0881	88	70-130	4	35	mg/kg	07.27.2020 10:15	
Ethylbenzene	<0.00200	0.100	0.0955	96	0.0987	99	70-130	3	35	mg/kg	07.27.2020 10:15	
m,p-Xylenes	<0.00400	0.200	0.194	97	0.202	101	70-130	4	35	mg/kg	07.27.2020 10:15	
o-Xylene	<0.00200	0.100	0.0952	95	0.0989	99	70-130	4	35	mg/kg	07.27.2020 10:15	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	102		96		99		70-130	%	07.27.2020 10:15
4-Bromofluorobenzene	100		97		100		70-130	%	07.27.2020 10:15

Analytical Method: BTEX by EPA 8021B

Seq Number: 3132772

Parent Sample Id: 667963-001

Matrix: Soil

MS Sample Id: 667963-001 S

Prep Method: SW5035A

Date Prep: 07.27.2020

MSD Sample Id: 667963-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00199	0.0996	0.0818	82	0.0901	90	70-130	10	35	mg/kg	07.27.2020 10:56	
Toluene	<0.00199	0.0996	0.0815	82	0.0886	89	70-130	8	35	mg/kg	07.27.2020 10:56	
Ethylbenzene	<0.00199	0.0996	0.0809	81	0.0899	90	70-130	11	35	mg/kg	07.27.2020 10:56	
m,p-Xylenes	<0.00398	0.199	0.166	83	0.183	92	70-130	10	35	mg/kg	07.27.2020 10:56	
o-Xylene	<0.00199	0.0996	0.0808	81	0.0895	90	70-130	10	35	mg/kg	07.27.2020 10:56	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	97		98		70-130	%	07.27.2020 10:56
4-Bromofluorobenzene	101		101		70-130	%	07.27.2020 10:56

 MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

 $[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
 Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

 LCS = Laboratory Control Sample
 A = Parent Result
 C = MS/LCS Result
 E = MSD/LCSD Result

 MS = Matrix Spike
 B = Spike Added
 D = MSD/LCSD % Rec

Marson & Associates, Inc.

Environmental Consultants

507 N. Marlenfeld, Ste. 200
Midland, TX 79701
432-687-0901

Data Reported to:

DATE: 7/23/20 PAGE 1 OF 1
PO#: _____ LAB WORK ORDER#: _____
PROJECT LOCATION OR NAME: Vacuum Cleaner
LAI PROJECT #: 20-0107-12 COLLECTOR: TJ

TRRP report?
☐ Yes ☒ No

S=SOIL
W=WATER
A=AIR
P=PAINT
SL=SLUDGE
OT=OTHER

TIME ZONE:
Time zone/State:
MST

Field
Sample I.D.

Lab #

Date

Time

Matrix

of Containers

HCl

HNO₃H₂SO₄ ☐ NaOH ☐

ICE

UNPRESERVED

PRESERVATION

ANALYSES

BTEX ☐ MTBE ☐TRPH 418.1 ☐ TPH 1005 ☐ TPH 1006 ☐GASOLINE MOD 8015 ☒DIESEL - MOD 8015 ☒OIL - MOD 8015 ☒VOC 8260 ☐SVOC 8270 ☐8081 PESTICIDES ☐8082 PCBS ☐TCLP - METALS (RCRA) ☐TCLP - PEST ☐TOTAL METALS (RCRA) ☐LEAD - TOTAL ☐RCI ☐TDS ☐TOX ☐FLASHPOINT ☐DW 200.8 ☐TCLP ☐CYANIDE ☐OTHER LIST ☐% MOISTURE ☐HEXAVALENT CHROMIUM ☐PECHLORATE ☐EXPLOSIVES ☐CHLORIDE ANIONS ☐ALKALINITY ☐

FIELD NOTES

5-10 .5'
5-10 .5'-1'

7/23/20
10/12

5
5

1
1

X
X

X
X

X
X

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X

X
X

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X
X

X
X

TOTAL 2

RELINQUISHED BY: (Signature)
SMC

DATE/TIME

RECEIVED BY: (Signature)
SMC

TURN AROUND TIME
NORMAL ☒
1 DAY ☐
2 DAY ☐
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: 20°C
THERM#: 205

CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED
CARRIER BILL # _____
☐ HAND DELIVERED

RELINQUISHED BY: (Signature)
SMC

DATE/TIME

RECEIVED BY: (Signature)
SMC

TURN AROUND TIME
NORMAL ☒
1 DAY ☐
2 DAY ☐
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: 20°C
THERM#: 205

CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED
CARRIER BILL # _____
☐ HAND DELIVERED

RELINQUISHED BY: (Signature)
SMC

DATE/TIME

RECEIVED BY: (Signature)
SMC

TURN AROUND TIME
NORMAL ☒
1 DAY ☐
2 DAY ☐
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: 20°C
THERM#: 205

CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED
CARRIER BILL # _____
☐ HAND DELIVERED

LABORATORY: Sealed

008113

CHAIN-OF-CUSTODY

No 1207

Eurofins Xenco, LLC

Prelogin/Nonconformance Report- Sample Log-In

Client: Larson and Associates, Inc.

Date/ Time Received: 07.24.2020 08.13.00 AM

Work Order #: 668113

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : IR-8

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	.4
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	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 BTEX was in bulk container
#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: 07.24.2020

Checklist reviewed by:



Holly Taylor

Date: 07.27.2020

Appendix B
Photographs

nRM2011949780
Delineation Report and Remediation Plan
Vacuum Glorieta West Unit #041, Lea County, New Mexico
December 22, 2020



Impacted area viewing north, May 8, 2020



Impacted area viewing southeast, May 8, 2020

nRM2011949780
Delineation Report and Remediation Plan
Vacuum Glorieta West Unit #041, Lea County, New Mexico
December 22, 2020



Impacted area viewing southwest, May 8, 2020



Impacted area viewing east, May 8, 2020

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

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

CONDITIONS

Action 14357

CONDITIONS OF APPROVAL

Operator:	CHEVRON U S A INC	6301 Deauville Blvd	Midland, TX79706	OGRID:	4323	Action Number:	14357	Action Type:	C-141
OCD Reviewer	Condition								
ceads	None								