Lobo Services Environmental
Address: 214 W. Texas Ave. Suite 1215, Midland, Texas 79701
Phone: 1-800-610-6214

June 25, 2019

Dylan Rose-Coss
Environmental Scientist
Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

RE: Whiting Oil and Gas, Remediation Plan for the Carlson Fed A 2 TB, 1RP-5525, API# 30-025-11764, located in Lea County, New Mexico.

Mr. Rose-Coss,

Lobo Services was contracted to assess and direct remedial activities for soils impacted from a production fluid release at the Carlson Fed A 2 TB. The release was caused by severe weather that created an electrical failure causing the transfer pump to fail. The down hole pump continued to produce causing the tanks to overflow. The GPS coordinates for the release site located in Lea County, New Mexico are N 32.09978 and W -103.11074.

Background

On May 8, 2019, the release was identified by the lease operator and was reported to the New Mexico Oil Conservation Division on May 21, 2019. The Whiting production representatives contracted an excavation company to remove approximately 10'' from the surface of the impacted area and placed the material on pad at the Carlson Fed A 2 TB. The impacted soils were confined inside the earthen berm of the facility near the production tanks. The impacted area measures approximately 2,475 square feet.

Assessment

On May 23, 2019, a representative from Lobo Services met with Whiting representatives onsite to assess the vertical impact. A total of three (3) auger holes were dug inside the impacted area and four (4) composite sample was collected from the stockpiled material. The samples collected from Auger Hole (AH) - 1 ranged from 0 – 0.5', 0.5' – 1.0', 1.0' – 1.5', AH-2 included a 0 – 0.5', 0.5' – 1.0', 1.0', AH-3 ranged from 0 – 0.5', 0.5' – 1.0', 1.0' – 1.5', 1.5' – 2.0'. The sample results are summarized in Table 1.

Remedial Plan & Confirmation Sampling

Upon approval, a third-party excavation company will remove approximately 1.5' – 2.0' of impacted soils from the area of AH – 1, 1.0' of material will be removed from the area of AH – 2, and 1.5' – 2.0' will be removed from the area of AH – 3. The excavated soil will be stockpiled on pad at the Carlson Fed A 2 TB.

Bottom hole sampling, will include grab samples from the area of AH- 1 and AH -3. The cleanup criteria used will be for 51' – 100' depth to groundwater.

Stockpile remediation, will occur onsite, by mechanically working stockpiles that measure approximately 10 to 15 cubic yards apiece. The material will be placed on a plastic liner surrounded by an earthen berm constructed of fresh caliche. The estimated amount of stockpiled material will be approximately 240 cubic yards. The stockpiles will be organized with a North to South orientation near the West edge of the facility pad as shown on the remediation plan site map. The stockpiles will be mechanically formed into a concave shape to create a basin for the solution and minimize runoff from the stockpile. The remediation amendments will be applied by mixing both products with freshwater to approximately a 3% - 5% solution. The solution will be sprayed onto the stockpiled material by using 5 horsepower trash-pump with a 2'' hose. All excess water will be removed from inside the containment area and reapplied until absorbed by the material. The remediation products are sold by the retail names of BioWash produced by SOS Environmental and AMS 101 produced by Advanced Microbial Services (see attached product information sheets). The stockpiles will be worked mechanically to blend the solution to provide a consistent application throughout the material. The interior of the stockpiles will be sampled by an 8-spot composite sampling method. The sampling will occur approximately a 1.0' to 1.5' towards the center of each pile. The cleanup criteria used will be for 51' – 100' depth to groundwater. The remediation process should take no longer than 90 days.

Project closure, will be requested following the collection of bottom hole samples and stockpile samples that are below the cleanup criteria found in Table 1 for depth to groundwater of 51' – 100'. Once the guidelines are met and closure approval received the remediated material will be used to backfill the excavated area.

All samples collected by Lobo Services representatives will be placed into laboratory provided sample containers, preserved for TPH by method SW8015 Modified and BTEX by EPA 8021B. The associated site diagram includes the impacted/excavated area and sample locations. The associated laboratory report and the chain of custody documentation are included as well.

Approval

Based upon the work performed at this site, the depth to groundwater being well established, approval of this remediation plan is being requested by Whiting Oil and Gas. Please feel free to contact me at 432-425-3098, or via email at raymond@loboservicesconsulting.com if you have any questions or require additional information.

Sincerely,

Raymond Taylor, CSP
President

Table 1

WHITING OIL AND GAS – CARLSON FED A 2 TB				
NMOCD Closure Criteria 51' – 100'				
Chloride 10,000 mg/kg	Total TPH 2,500 mg/kg	GRO+DRO 1,000 mg/kg	BTEX 50 mg/kg	Benzene 10 mg/kg

Sample ID	Chloride mg/kg	Total TPH mg/kg	GRO+DRO mg/kg	BTEX mg/kg	Benzene mg/kg
AH – 1 0 – 0.5'	<5.05	17,200	15,910	70.2	<1.99
AH – 1 0.5' – 1.0'		70,200	64,600	80.9	<10.1
AH – 1 1.0' – 1.5'		9,450	9,060	124	<10.0
AH – 2 0 – 0.5'	<4.99	17,100	15,990	73.9	<2.00
AH – 2 0.5' – 1.0'		107,000	99,000	280	<10.0
AH – 2 1.0'		51.7	51.7	7.43	1.10
AH – 3 0 – 0.5'	<4.96	16,400	15,290	63.8	<2.00
AH – 3 0.5' – 1.0'		55,800	51,000	121	<10.1
AH – 3 1.0' – 1.5'		1,480	1,400	4.14	<0.496
STOCKPILE #1	85.2	10,200	9,340	24.1	<0.496
STOCKPILE #2	92.2	10,100	9,220	25.1	<0.503
STOCKPILE #3	87.2	8,030	7,310	22.6	<0.504
STOCKPILE #4	96.9	8,910	8,100	20.1	<0.497

View of Impacted Area to the North

View of Impacted Area to the South East

Product Information

LOBO SERVICES ENVIRONMENTAL

SOS ENVIRONMENTAL ADVANCED MICROBIAL SERVICES, INC.

AMS-101 ™ is a custom blend of 28 naturally occurring aerobic microbes selected from indigenous microbes at actual oil and gas production sites. Each species is tested to ensure desired qualities and their hydrocarbon degrading capabilities have been maintained. **AMS 101™ provides a multi-species cooperative colony for the degradation of petroleum hydrocarbons, oil & grease, gasoline, diesel, fuel oil, volatile organic compounds (benzene, toluene, xylene), PAH, phenols and alcohols.** Fresh batch cultures of our microbes are grown to a viable cell concentration of not less than 2 billion cells per milliliter or 7.5 billion per gallon.

The complete metabolism may take several intermediate steps but the goal is to recycle carbon while generating energy. The energy liberated from these high energy compounds then serves to promote more enzyme production, reproduction of cells, and the maintenance needs of a viable cellular community.

Applying the science of biotechnology properly through processes of nature is the key to a successful project. A single microbe's species is less capable of complete hydrocarbon degradation when compared to a multi species, cooperative community provides by AMS-101 Plus™. The following compounds have been degraded by this field-proven ***AMS 101 Plus ™ - MicroBoost™*** approach:

- Petroleum Hydrocarbons, Oil and Grease
- Gasoline, Diesel, Fuel Oil
- Volatile Organic Compounds (Benzene, Tolnene, Xylene)
- PAHs (Naphthalene, Anthracene, Flourene)
- Phenols and Alcohols

AMS 101 ™ with ***MicroBoost™*** provide the balanced, multi-species cooperative colony for the optimum degradation of petroleum hydrocarbons in the minimum time.

MicroBoost™ is a concentrated and stabilized nutrient package that promotes and accelerates reproduction and growth of microorganisms, shortening the time required for hydrocarbon degradation. **MicroBoost™ is a specially formulated product for bio-remediation of soils contaminated by petroleum hydrocarbons.**

SOS Environmental, Inc / Advanced Microbial Services is a biotechnology team employing the natural abilities of microbes and the advances in ***MicroBoost™*** remediation technology

SOS ENVIRONMENTAL

SOS Environmental
811 6th Street
Suite 130
Wichita, Texas 76301
E-mail for information to info@sosenvironmental.com
www.sosenvironmental.com

LOBO SERVICES ENVIRONMENTAL

SOS ENVIRONMENTAL

BioWash™ is a highly concentrated aqueous based cleaner and breaker for the removal of petroleum and organic based hydrocarbon accumulation on soils and surfaces. ***BioWash***™ is superior for routine cleaning operations in commercial and industrial establishments. Oil and grease residue is broken down into micro-droplets for more complete cleaning and faster biodegradation.

BioWash™ can be used on soil, asphalt, concrete, pilings, plant floors, offshore platforms, well heads, mud pits, rig equipment, tank bottoms, metal parts, rocks and other surfaces. With regular use, BioWash™ removes oil and grease build-up and stains on surfaces. After initial applications, less BioWash™ is needed for maintenance treatment.

BioWash™ is a biodegradable product that can be used in conjunction with soil remediation products such as, ***MicroBoost***™ and ***AMS-100***™ for cleanup and remediation of hydrocarbon contaminated soils. It is recommended for use around industrial, drilling or production facilities. ***BioWash***™ is excellent for cleaning up potential contamination from oil based drilling fluid or crude oil spills or leaks.

For best results, ***BioWash***™ should be diluted with 20 to 50 parts of fresh water. It can be applied directly or with pressure washing equipment.

SOS Environmental
811 6th Street
Suite 130
Wichita, Texas 76301
E-mail for information to info@sosenvironmental.com
www.sosenvironmental.com

State of New Mexico
Oil Conservation Division

Incident ID	NDHR1915636223
District RP	1RP-5525
Facility ID	
Application ID	pDHR1915635369

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

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

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

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

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

State of New Mexico
Oil Conservation Division

Incident ID	NDHR1915636223
District RP	1RP-5525
Facility ID	
Application ID	pDHR1915635369

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: JR Juarez Title: Senior Operations Supervisor

Signature: JR Juarez Date: 06/24/2019

email: jrjuarez@whiting.com Telephone: 432-634-4921

OCD Only

Received by: Date:

State of New Mexico
Oil Conservation Division

Incident ID	NDHR1915636223
District RP	1RP-5525
Facility ID	
Application ID	pDHR1915635369

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: JR Juarez Title: Senior Operations Supervisor

Signature: JR Juarez Date: 06/24/19

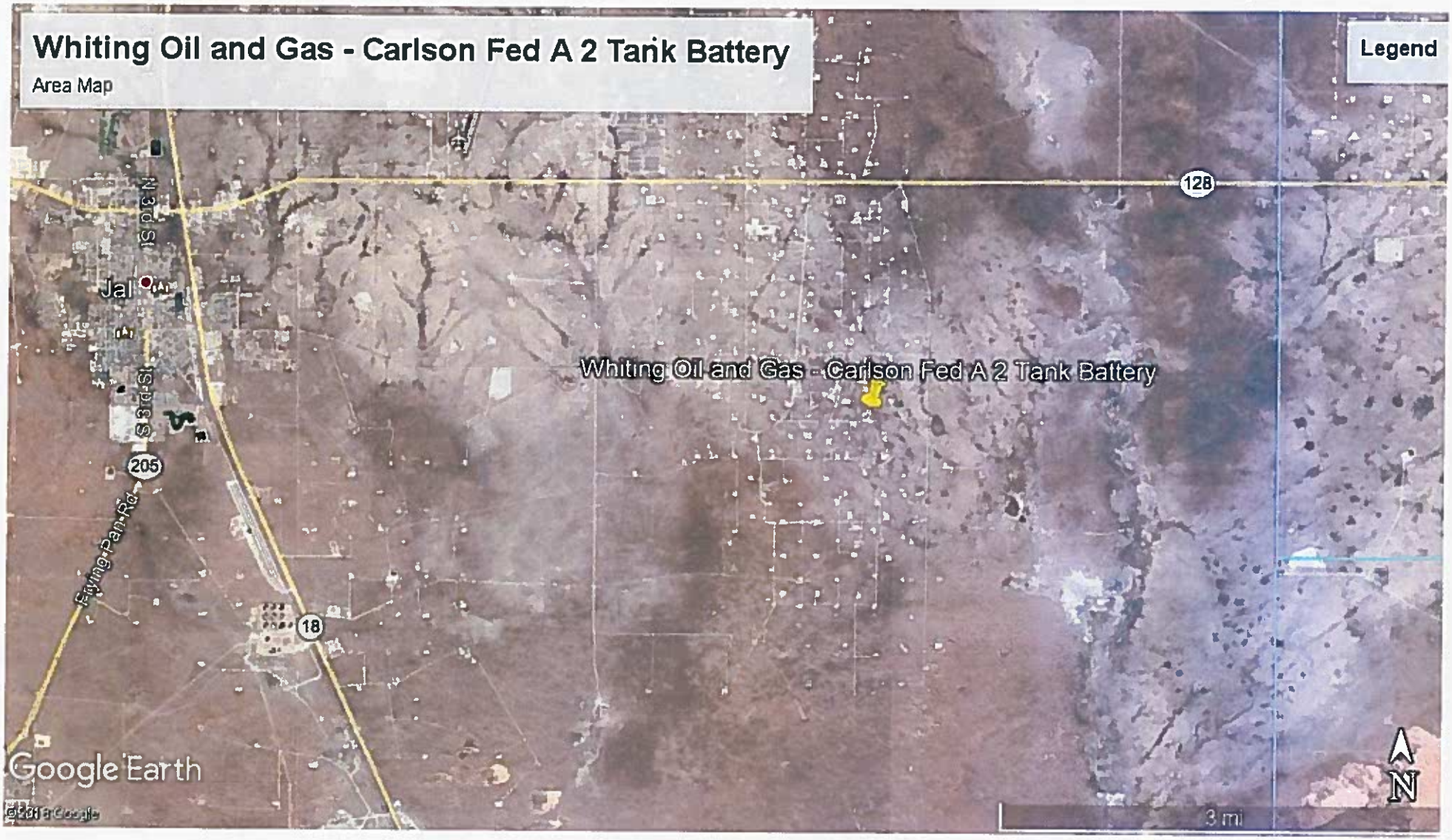
email: jrjuarez@whiting.com Telephone: 432-634-4921

OCD Only

Received by: Date:

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

Signature: Date:


Whiting Oil and Gas - Carlson Fed A 2 Tank Battery
Area Map
Legend
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Flying J Pan Rd
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Whiting Oil and Gas - Carlson Fed A 2 Tank Battery
Google Earth
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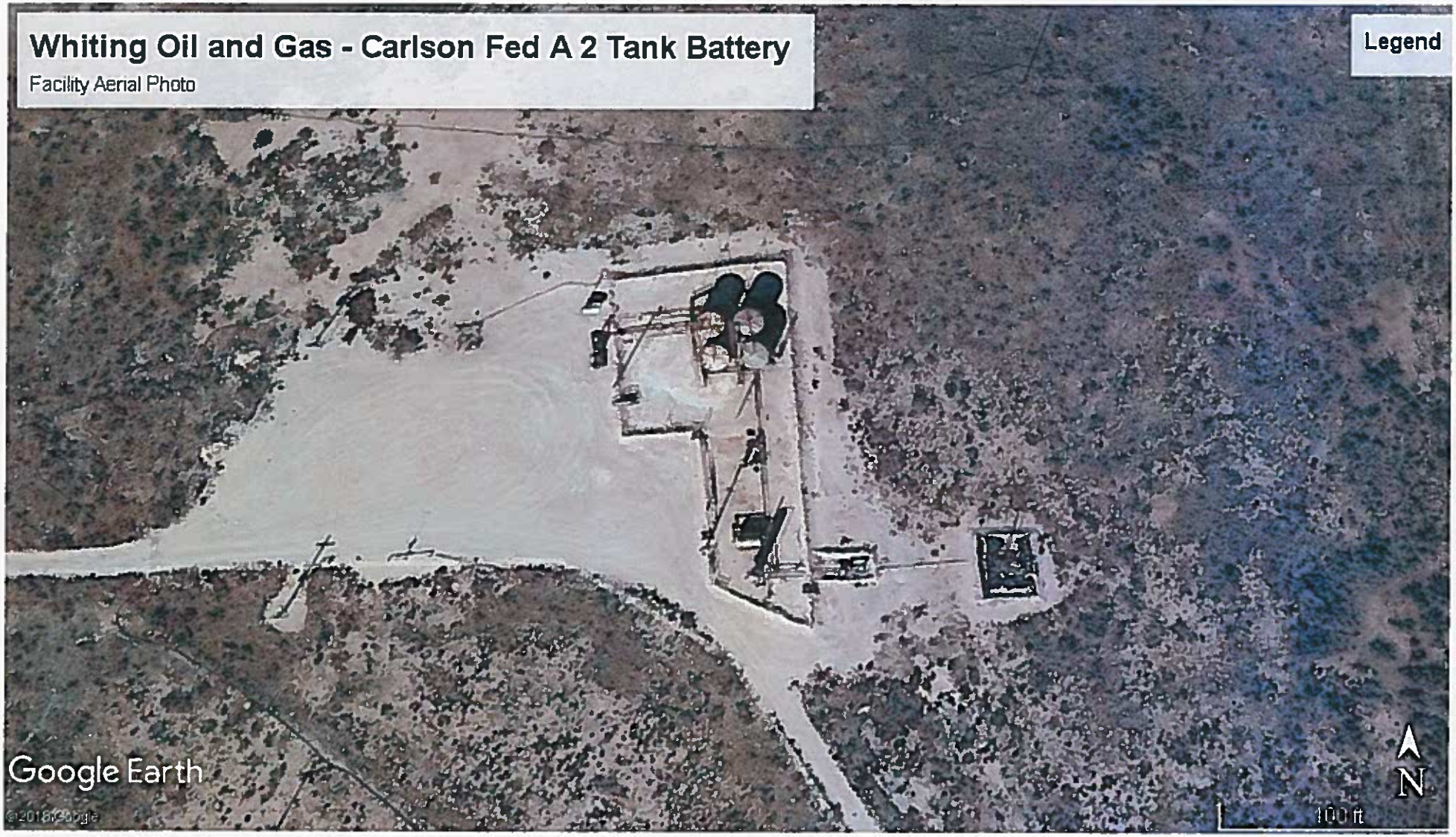
Whiting Oil and Gas - Carlson Fed A 2 Tank Battery
Facility Aerial Photo
Legend
Google Earth
© 2016 Google
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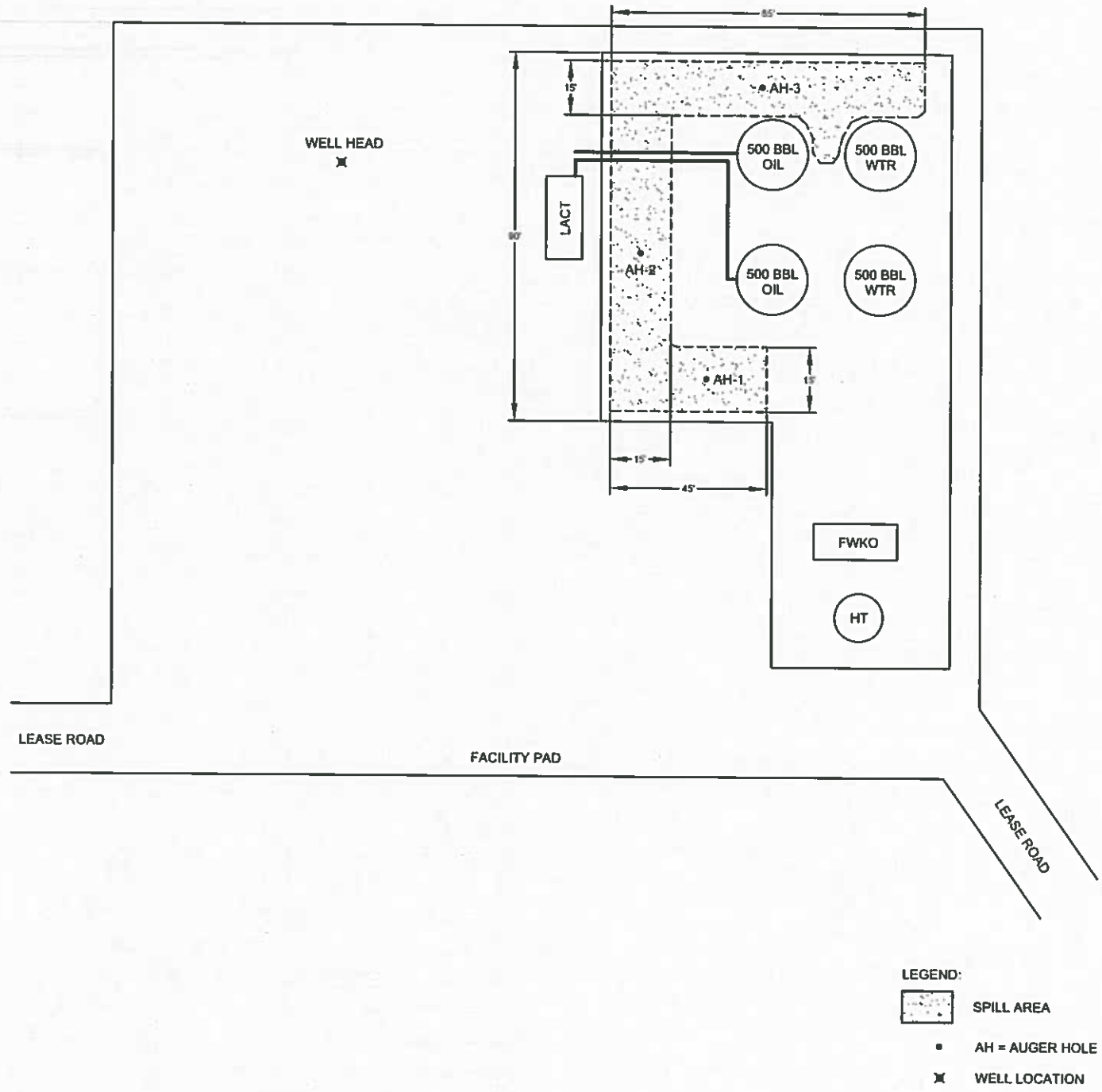
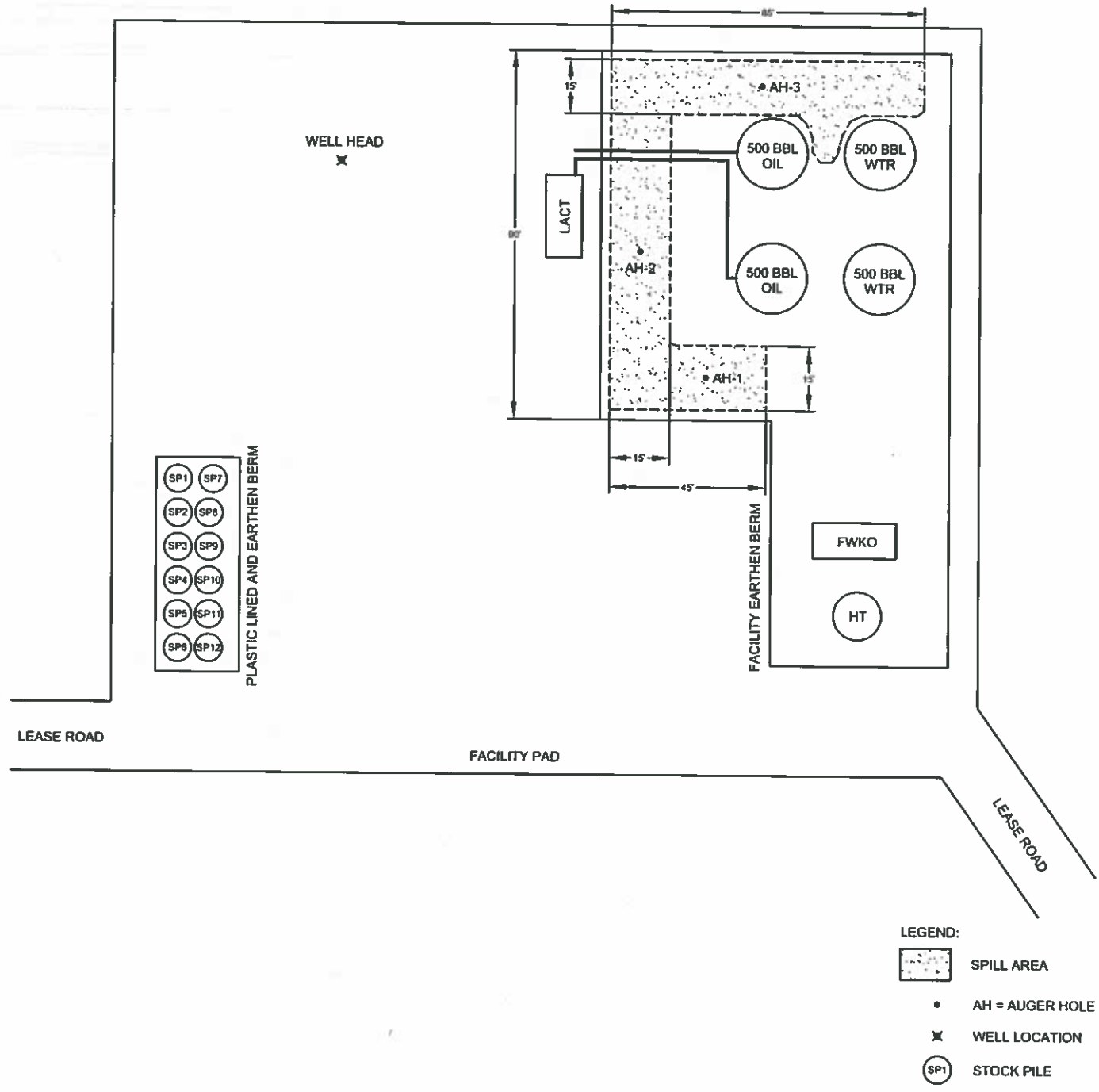


LOBO SERVICES ENVIRONMENTAL

SPILL DATE: 5/7/19
SAMPLE DATE: 5/23/19

WHITING OIL & GAS
CARLSON FED A 2 TANK BATTERY
SEC. 25 T25S R37E
N 32.09978 W -103.11074
LEA COUNTY, NM

DRAWN:	DATE:	SIZE	SCALE
JDG	6/919	A	NONE

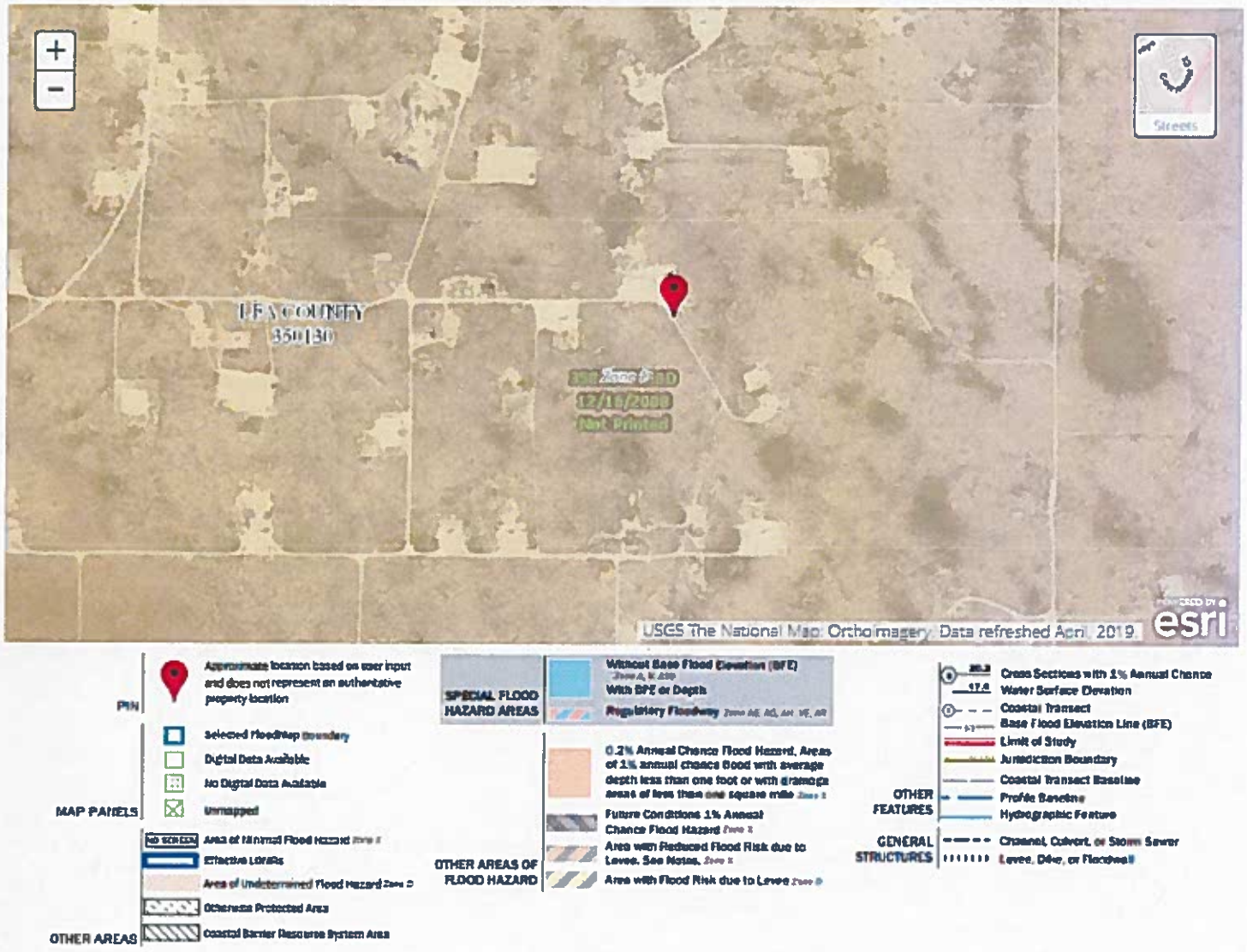


LOBO SERVICES ENVIRONMENTAL

REMEDIATION PLAN
SPILL DATE: 5/7/19
SAMPLE DATE: 5/23/19

WHITING OIL & GAS
CARLSON FED A 2 TANK BATTERY
SEC. 25 T25S R37E
N 32.09978 W -103.11074
LEA COUNTY, NM

DRAWN:	DATE:	SIZE	SCALE
JDG	6/919	A	NONE


LEA COUNTY
350130
12/18/2008
(Not Printed)
Streets
USGS The National Map: Orthoimagery. Data refreshed April, 2019.
esri
PIN
Approximate location based on user input and does not represent an authoritative property location
MAP PANELS
Selected FloodMap Boundary
Digital Data Available
No Digital Data Available
Unmapped
OTHER AREAS
Area of Minimal Flood Hazard
Effective LOMRs
Area of Undetermined Flood Hazard
Otherwise Protected Area
Coastal Barrier Resources System Area
SPECIAL FLOOD HAZARD AREAS
Without Base Flood Elevation (BFE)
With BFE or Depth
Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD
0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile
Future Conditions 1% Annual Chance Flood Hazard
Area with Reduced Flood Risk due to Levee. See Notes.
Area with Flood Risk due to Levee
OTHER FEATURES
Cross Sections with 1% Annual Chance
Water Surface Elevation
Coastal Transect
Base Flood Elevation Line (BFE)
Limit of Study
Jurisdiction Boundary
Coastal Transect Baseline
Profile Baseline
Hydrographic Feature
GENERAL STRUCTURES
Channel, Culvert, or Storm Sewer
Levee, Dike, or Floodwall


Whiting Oil and Gas - Carlson Fed A 2 TB
Monitor Wells - OCD #1RP-2162 are located approximately 2,417' or 0.46 mi from the Carlson TB
Legend
Monitor Wells - OCD #1RP-2162
Whiting Oil and Gas - Carlson Fed A 2 Tank Battery
Google Earth
©2018 Google
1000 ft
N

2017 Annual Groundwater Monitoring Report

14-Inch Vac to Jal Legacy
Plains SRS Number: 2009-092
Lea County, New Mexico

March 27, 2018
Terracon Project No. AR187005
NMOCD Reference No. 1R-2162

Prepared for:
Plains Marketing, LP
Midland, Texas

Prepared by:
Terracon Consultants, Inc.
Lubbock, Texas

Terracon

March 27, 2018

Plains Marketing, L.P.
577 US Highway 385 North
Seminole, Texas 79360
Attn: Ms. Camille Bryant

Telephone: (575) 441-1099

Re: 2017 Annual Groundwater Monitoring Report
14-Inch Vac to Jal Legacy
U/L "F", Sec. 25, T25S, R37E
Lea County, New Mexico
NMOCD Reference No. 1R – 2162
Plains Marketing, L.P. SRS No. 2009-092
Terracon Project No. AR187005

Dear Ms. Bryant:

Terracon is pleased to submit one electronic copy and one CD attached to the cover page of the 2017 Annual Groundwater Monitoring Report for the above-referenced site.

We appreciate the opportunity to perform these services for Plains Marketing, L.P. (Plains). Please contact either of the undersigned at (806) 300-0140 if you have questions regarding the information provided in the report.

Sincerely,
Terracon

Prepared by:

Brett Dennis
Field Scientist
Lubbock

Reviewed by:

Erin Loyd, P.G.
Senior Associate
Office Manager – Lubbock

TABLE OF CONTENTS

LIST OF APPENDICES

Terracon

2017 ANNUAL GROUNDWATER MONITORING REPORT

14-Inch Vac to Jal Legacy
Plains SRS No: 2009-092
Unit Letter "F", Section 25, Township 25 South, Range 37 East
Lea County, New Mexico
NMOCD Reference No. 1R – 2162
Terracon Project No. AR187005

1.0 INTRODUCTION

1.1 Site Description

The legal description of the 14-Inch Vac to Jal Legacy release site is Unit Letter "F" (SE/NW), Section 25, Township 25 South, Range 37 East, in Lea County, New Mexico. The property affected by the release is owned by Concho Resources, Inc. The geographic coordinates of the release site are 32.510302° North latitude and 103.119525° West longitude. A "Site Location Map" is provided as Figure 1 in Appendix A.

Site Name	14-Inch Vac to Jal Legacy
Site Location	Latitude 32.510302° North, Longitude 103.119525° West
General Site Description	The site consists of nine groundwater monitoring wells located in, and adjacent to, a pipeline right-of-way surrounding land used for oil and gas production.
Landowner	Concho Resources, Inc.

1.2 Background Information

Based on information provided by the client, on April 9, 2009, Plains discovered a crude oil release from a 14-inch steel pipeline. The cause of the release was attributed to external corrosion of the pipeline. The release was reported to the New Mexico Oil Conservation Division (NMOCD) on April 9, 2009. During initial response activities, a temporary clamp was installed on the pipeline to mitigate the release. Approximately 250 barrels (bbls) of crude oil was released, with no recovery.

On April 9, 2009, following initial response activities, excavation of hydrocarbon-impacted soil commenced at the site. To facilitate remediation activities, the excavation was divided into two sections: Main Excavation and West Excavation. Excavated soil was stockpiled on-site on a plastic liner to mitigate the potential leaching of contaminants into the vadose zone. Approximately 18,000 cubic yards (cy) of impacted soil was excavated and stockpiled on-site during excavation activities. Final dimensions of the Main Excavation were approximately 400 feet (ft.) in length, approximately 200 ft. in width, and 5 ft. to 14 ft. in depth. Final dimensions of the West Excavation

were approximately 150 ft. in length, approximately 105 ft. in width, and approximately 10 ft. in depth. Due to safety concerns associated with excavating near and supporting two 14-inch diameter pipelines that bisect the release site, Plains requested and received NMOCD approval to leave the soil beneath and adjacent to the pipelines in-situ.

On July 2 and 3, 2009, three soil borings (SB-1, SB-2, and SB-3) were advanced at the release site to evaluate the vertical extent of soil impact. During the advancement of the soil borings, groundwater was encountered at approximately 64 ft. below ground surface (bgs). On July 1, 2009, soil boring SB-1 was converted to monitor well MW-1.

On July 2, 2009, temporary casing was installed in soil borings SB-2 and SB-3 to allow a preliminary groundwater sample to be collected for analysis. Following collection of the preliminary groundwater sample, the temporary casing was removed from soil borings SB-2 and SB-3, and the soil borings were plugged with cement and bentonite, pursuant to NMOCD and New Mexico Office of the State Engineer (NMOSE) standards.

On December 10, 2009, two soil borings (SB-4 and SB-5) were installed up-gradient of the excavation to evaluate the potential groundwater impact from an up-gradient, off-site source. During the advancement of soil borings SB-4 and SB-5, groundwater was encountered at approximately 64 ft. bgs. Temporary casing was installed in soil borings SB-4 and SB-5 to allow a preliminary groundwater sample to be collected for analysis. Following collection of the preliminary groundwater sample, the temporary casing was removed from soil borings SB-4 and SB-5, and the soil borings were plugged with cement and bentonite, pursuant to NMOCD and NMOSE standards.

From May 6 through May 8, 2013, five additional monitor wells (MW-2 through MW-6) were installed to evaluate the status of the groundwater at the site. The monitor wells were installed to total depths of approximately 80 ft. bgs. Monitor well MW-2 is located approximately 380 ft. to the northwest (up-gradient) of monitor well MW-1. Monitor well MW-3 is located approximately 200 ft. to the northeast (cross-gradient) of monitor well MW-1. Monitor well MW-4 is located approximately 100 ft. to the northwest (up-gradient) of monitor well MW-1. Monitor well MW-5 is located approximately 208 ft. to the west-northwest (cross-gradient) of monitor well MW-1. Monitor well MW-6 is located approximately 150 ft. to the southeast (down-gradient) of monitor well MW-1.

PSH was not observed in monitor wells MW-2 through MW-6. Laboratory analytical results of soil samples collected during the installation of the monitor wells indicated benzene, toluene, ethylbenzene, and total xylenes (BTEX), total petroleum hydrocarbons (TPH), and chloride concentrations were less than NMOCD regulatory standards in each of the submitted samples.

From June 25 through June 26, 2014, three additional monitor wells (MW-7, MW-8, and MW-9)

were installed to further monitor the down- and cross-gradient migration of the dissolved-phase plume. The monitor wells were installed to total depths of approximately 80 ft. bgs. Monitor well MW-7 is located approximately 45 ft. to the southeast (down-gradient) of monitor well MW-1. Monitor well MW-8 is located approximately 180 ft. to the east-northeast (cross-gradient) of monitor well MW-1. Monitor well MW-9 is located approximately 150 ft. to the southeast (down-gradient) of monitor well MW-1.

PSH was not observed in monitor wells MW-7 through MW-9. Laboratory analytical results of soil samples collected during the installation of the monitor wells indicated benzene, BTEX, TPH, and chloride concentrations were less than NMOCD regulatory standards in all submitted samples.

The 14-Inch Vac to Jal Legacy release site is located approximately 1,147 ft. to the south-southeast of a documented groundwater remediation site (Arco South Justis Unit F-230). Information regarding this site can be found in the NMOCD imaging system.

Based on laboratory analytical results of groundwater samples collected from monitor well MW-5, which is located approximately 260 ft. to the west-southwest (cross-gradient) of the release point, and the absence of elevated chloride concentrations in the soil columns of monitor wells MW-2 through MW-6, Plains requested permission to cease monitoring of total dissolved solids (TDS) and chloride in the *2013 Annual Monitoring Report*, dated March 2014. The request was subsequently approved by the NMOCD, with the caveat that a chloride sample would be collected from monitor well MW-2 on a quarterly basis. Quarterly chloride monitoring of MW-2 commenced in November 2014.

On October 18, 2016, Terracon assumed oversight of groundwater monitoring activities at the 14-Vac to Jal Legacy release site. There are a total of nine monitor wells located at the site. Monitor wells MW-2 through MW-9 are gauged and sampled on a quarterly schedule; monitor well MW-1 is not sampled due to the presence of PSH.

1.3 Scope of Work

Terracon's scope of work includes oversight of groundwater monitoring activities and preparation of an *Annual Groundwater Monitoring Report* in accordance with the NMOCD letter, dated May 1998, requiring submittal of and *Annual Groundwater Monitoring* Report by April 1st of each year. Groundwater monitoring activities include conducting quarterly groundwater monitoring events at the site. Quarterly groundwater monitoring events include measuring the static water levels in the monitor wells, checking for the presence of PSH, and the collection of groundwater samples from each of the on-site monitor wells not exhibiting a measurable thickness of PSH. In accordance with the approved scope of work, Terracon conducted the quarterly groundwater monitoring events on February 28 , June 29, September 25, and November 16, 2017.

1.4 Standard of Care

Activities conducted prior to Terracon assuming oversight of the project (beginning on October 18, 2016) were performed by previous consultants hired by Plains. As such, Terracon makes no assumptions or warranties regarding the previous consultants services being performed in a manner consistent with generally accepted practices of the profession undertaken in similar studies in the same geographical area during the same time period. Terracon makes no warranties, either express or implied, regarding the findings, conclusions or recommendations. Please note that Terracon does not warrant the work of laboratories, regulatory agencies or other third parties supplying information used in the preparation of the report.

1.5 Additional Scope Limitations

Findings, conclusions and recommendations resulting from these services are based upon information derived from the on-site activities and other services performed under this scope of work; such information is subject to change over time. Certain indicators of the presence of hazardous substances, petroleum products, or other constituents may have been latent, inaccessible, unobservable, non-detectable or not present during these services, and we cannot represent that the site contains no hazardous substances, toxic materials, petroleum products, or other latent conditions beyond those identified during this remediation activities. Subsurface conditions may vary from those encountered at specific borings or wells or during other surveys, tests, assessments, investigations or exploratory services; the data, interpretations, findings, and our recommendations are based solely upon data obtained at the time and within the scope of these services.

1.6 Reliance

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

2.0 FIELD ACTIVITIES

2.1 Product Recovery

A measurable thickness of PSH was detected in monitor well MW-1 during the April 12, 2012, quarterly monitoring event. Monthly gauging and recovery activities of PSH from monitor well MW-1 began in April 2012. In November 2013, the frequency of PSH recovery was increased to twice monthly. The frequency was increased to weekly in June 2014. An estimated 165 gallons (3.9 bbls) of PSH was recovered from monitor well MW-1, by manual recovery, in 2017. The average PSH thickness measuring in monitor well MW-1 during the 2017 reporting period was 0.97 ft. An estimated 1,257 gallons (29.9 bbls) of PSH has been manually recovered from monitor well MW-1 since recovery operations began in April 2012. A Mobile Dual Phase Extraction (MDPE) unit provided by Talon LPE, performed two 12-hour recovery events on monitor well MW-1 on May 4 and September 21, 2017 (see Appendix D). An estimated 9.08 gallons of PSH in the vapor and liquid phase equivalent were recovered in the first event, and an estimated 20.38 gallons of PSH in the vapor and liquid phase equivalent were recovered in the second event.

2.2 Groundwater Recovery

Manual recovery of hydrocarbon-impacted groundwater from monitor wells MW-3 and MW-8 began in November 2014. An estimated 420 gallons (10 bbls) of hydrocarbon impacted groundwater were recovered from monitor well MW-3 during the 2017 reporting period and an estimated 1,217 gallons (28.9 bbls) have been recovered since recovery activities began. An estimated 370 gallons (8.8 bbls) of hydrocarbon impacted groundwater were recovered from monitor well MW-8 during the 2017 reporting period, and an estimated 1,143 gallons (27.2 bbls) have been recovered since recovery activities began.

Manual recovery of hydrocarbon-impacted groundwater from monitor wells MW-4 and MW-7 began in April of 2016. An estimated 542 gallons (12.9 bbls) of hydrocarbon impacted groundwater were recovered from monitor well MW-4 during the 2016 reporting period. An estimated 540 gallons (12.9 bbls) of hydrocarbon impacted groundwater were recovered from monitor well MW-7 during the 2016 reporting period. Manual recovery did not occur on monitor wells MW-4 and MW-7 during the 2017 reporting period.

Recovered fluids are disposed of at an NMOCD-approved disposal facility.

2.3 Groundwater Monitoring

Quarterly groundwater monitoring events were conducted on February 28 (1Q2017), June 29 (2Q2017), September 25 (3Q2017) and November 16, 2017 (4Q2017). Quarterly groundwater monitoring events included measuring the static water level in the on-site monitor wells, checking for the presence of PSH, and the collection of groundwater samples from each of the on-site

monitor wells not exhibiting a measurable thickness of PSH. Groundwater samples were collected utilizing low flow sampling equipment, including a bladder pump and multi-parameter meter. Prior to sample collection, readings on the multi-parameter meter were recorded for four cycles of five minutes each. Each collected sample was placed in laboratory-supplied containers appropriate to the analyses requested and placed on ice in a cooler. The sample coolers and completed chain-of-custody forms were delivered to Xenco Laboratories in Lubbock, Texas for analysis of BTEX using EPA SW-846 Method 8021B. Groundwater samples collected from monitor well MW-2 were also analyzed for chloride concentrations using EPA Method E300. Purged water was placed into a polystyrene aboveground storage tank and disposed of at an NMOCD-approved disposal facility.

Groundwater elevation gauging data collected during the respective quarterly sampling events were used to construct groundwater gradient maps, which are included as Figures 2a through 2d in Appendix A. Groundwater flow direction was relatively consistent during each quarter of 2017 in the southeasterly direction. Groundwater elevation and PSH thickness data is summarized in Table 1 in Appendix B.

3.0 LABORATORY ANALYTICAL METHODS

The groundwater samples collected from the on-site monitor wells were analyzed for BTEX using EPA SW-846 Method 8021B and/or chloride using EPA Method E300. Laboratory results from the analysis of groundwater samples collected from the monitor wells are summarized in Table 2 in Appendix B and presented on Figures 3a through 3d in Appendix A. The executed chain-of-custody forms and laboratory data sheets are provided in Appendix C.

4.0 DATA EVALUATION

4.1 Groundwater Samples

Laboratory analytical results from groundwater samples collected on February 28 (1Q2017), June 29 (2Q2017), September 25 (3Q2017) and November 16, 2017 (4Q2017) were compared to NMOCD regulatory standards based on New Mexico Water Quality Control Commission (NMWQCC) groundwater standards found in Section 20.6.2.3103 of the New Mexico Administrative Code (NMAC).

Monitor Well MW-1

- Monitor Well MW-1 was not sampled during the 2017 reporting period due to the presence of PSH. PSH thicknesses of 0.37 feet, 0.04 feet, 1.48 feet, and 2.00 feet were observed in the monitor well during the 1st, 2nd, 3rd, and 4th quarter of 2017, respectively.

Monitor Well MW-2

- Laboratory analytical results indicated benzene concentrations exceeded the NMOCD regulatory standard during each quarter of 2017. The detected benzene concentrations ranged from 0.0418 milligrams per liter (mg/L) during the 1st Quarter of 2017 to 0.0800 mg/L during the 2nd Quarter of 2017.
- Laboratory analytical results indicated toluene, ethylbenzene and total xylene concentrations were less than the applicable laboratory sample detection limit (SDL) during each quarter of the 2017 reporting period.
- Laboratory analytical results indicated chloride concentrations exceeded the NMOCD regulatory standard during each quarter of 2017. The detected chloride concentrations ranged from 9,100 mg/L during the 2nd Quarter of 2017 to 10,400 mg/L during the 1st and 4th Quarters of 2017.

Monitor Well MW-3

- Laboratory analytical results indicated benzene concentrations exceeded the NMOCD regulatory standard during each quarter of 2017. The detected benzene concentrations ranged from 0.50 mg/L during the 3rd Quarter of 2017 to 6.65 mg/L during the 1st Quarter of 2017.
- Laboratory analytical results indicated toluene, ethylbenzene and total xylene concentrations were less than NMOCD regulatory standards during each quarter of the 2017 reporting period.

Monitor Well MW-4

- Laboratory analytical results indicated BTEX concentrations were less than the applicable laboratory sample detection limit during each quarter of the 2017 reporting period, with one exception. During 2nd Quarter of 2017, laboratory analytical results indicate that benzene concentration was above the sample detection limit, but less than NMOCD regulatory standards.

Monitor Wells MW-5 and MW-6

- Laboratory analytical results indicated BTEX concentrations were less than the applicable laboratory sample detection limit during each quarter of the 2017 reporting period.

Monitor Well MW-7

- Laboratory analytical results indicated BTEX concentrations were less than the applicable laboratory sample detection limit during 1st Quarter and 4th Quarter of the 2017 reporting period.
  Laboratory analytical results indicate benzene and ethylbenzene concentrations were less than NMOCD regulatory standards during 2nd Quarter and 3rd Quarter of the 2017 reporting period. Toluene and total xylenes concentrations were less than the applicable laboratory sample detection limit.

Monitor Well MW-8

- Laboratory analytical results indicated benzene concentrations exceeded the NMOCD regulatory standard during each quarter of 2017. The detected benzene concentrations ranged from 0.0417 mg/L during the 1st Quarter of 2017 to 0.420 mg/L during the 2nd Quarter of 2017.
- Laboratory analytical results indicated toluene, ethylbenzene and total xylene concentrations were less than NMOCD regulatory standards during each quarter of the 2017 reporting period.

Monitor Well MW-9

- Laboratory analytical results indicated BTEX concentrations were less than the applicable laboratory sample detection limit during each quarter of the 2017 reporting period, with the exclusion of benzene concentration in the 2nd Quarter which exceeded the sample detection limit, but was less than the NMOCD regulatory standard.

5.0 SUMMARY

- Currently, there are nine groundwater monitor wells (MW-1 through MW-9) located at the site.
- Monitor well MW-1 was not sampled during the 2017 reporting period due to the presence of PSH.
- Monitor wells MW-2 through MW-9 were sampled during each quarter of 2017.
- The detected chloride concentrations in monitor well MW-2 (up-gradient) exceeded the NMOCD regulatory standard during each quarter of the 2017 reporting period.
- The detected benzene concentrations exceeded the NMOCD regulatory standard in monitor wells MW-2, MW-3 and MW-8 during the each quarter of the 2017 reporting period.
- Toluene, ethylbenzene and total xylene concentrations were less than the NMOCD regulatory standards during each quarter of the 2017 reporting period.
- The average PSH thickness measuring in monitor well MW-1 during the 2017 reporting period was 1.00 ft.

- An estimated 165 gallons (3.9 bbls) of PSH were recovered manually from monitor well MW-1 during the 2017 reporting period.
- An estimated 420 gallons (10 bbls) of hydrocarbon impacted groundwater were recovered manually from monitor well MW-3 during the 2017 reporting period.
- An estimated 370 gallons (8.8 bbls) of hydrocarbon impacted groundwater were recovered manually from monitor well MW-8 during the 2017 reporting period.
- The groundwater flow direction was relatively consistent during the 2016 reporting period, ranging from 0.00004 foot per foot (ft/ft) to 0.0016 ft/ft in the southeasterly direction.

6.0 ANTICIPATED ACTIONS

- Weekly PSH recovery will continue on monitor well MW-1 during the 2018 reporting period.
- Additional MDPE events will be conducted as needed.
- Monitor wells MW-2 through MW-9 will be monitored and sampled quarterly for the presence of BTEX and/or chloride during the 2018 reporting period.
- Monitor wells MW-2 through MW-9 will be sampled for the presence of polynuclear aromatic hydrocarbons.
- Plains installed five (5) additional monitor wells (MW-10 through MW-14) to further evaluate the status of groundwater at the site and to delineate the horizontal extent of the dissolved-phase plume on February 20 and 21, 2018. These monitor wells will be monitored and sampled quarterly. Details of the monitor well installation will be included in the 2018 *Annual Groundwater Monitoring Report*.
- An *Annual Groundwater Monitoring Report* will be prepared detailing field activities and the results of groundwater monitoring activities conducted during the 2017 reporting period.

7.0 DISTRIBUTION

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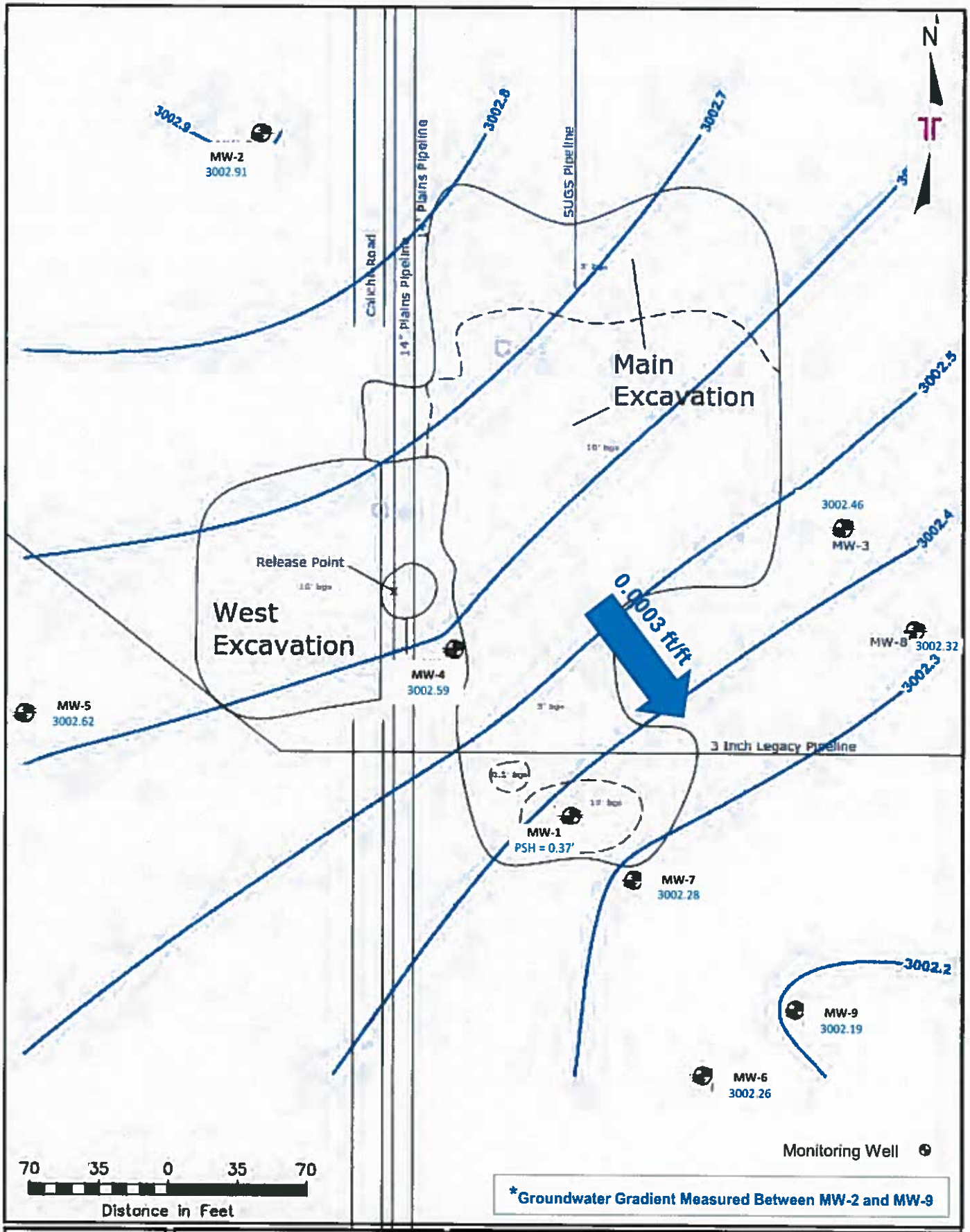
kris.williams@terracon.com

APPENDIX A

Figure 1– Site Location Map
Figure 2a – Groundwater Gradient Map (1Q2017)
Figure 2b – Groundwater Gradient Map (2Q2017)
Figure 2c – Groundwater Gradient Map (3Q2017)
Figure 2d – Groundwater Gradient Map (4Q2017)
Figure 3a – Groundwater Concentration Map (1Q2017)
Figure 3b – Groundwater Concentration Map (2Q2017)
Figure 3c – Groundwater Concentration Map (3Q2017)
Figure 3d – Groundwater Concentration Map (4Q2017)



Project No.	AR187005
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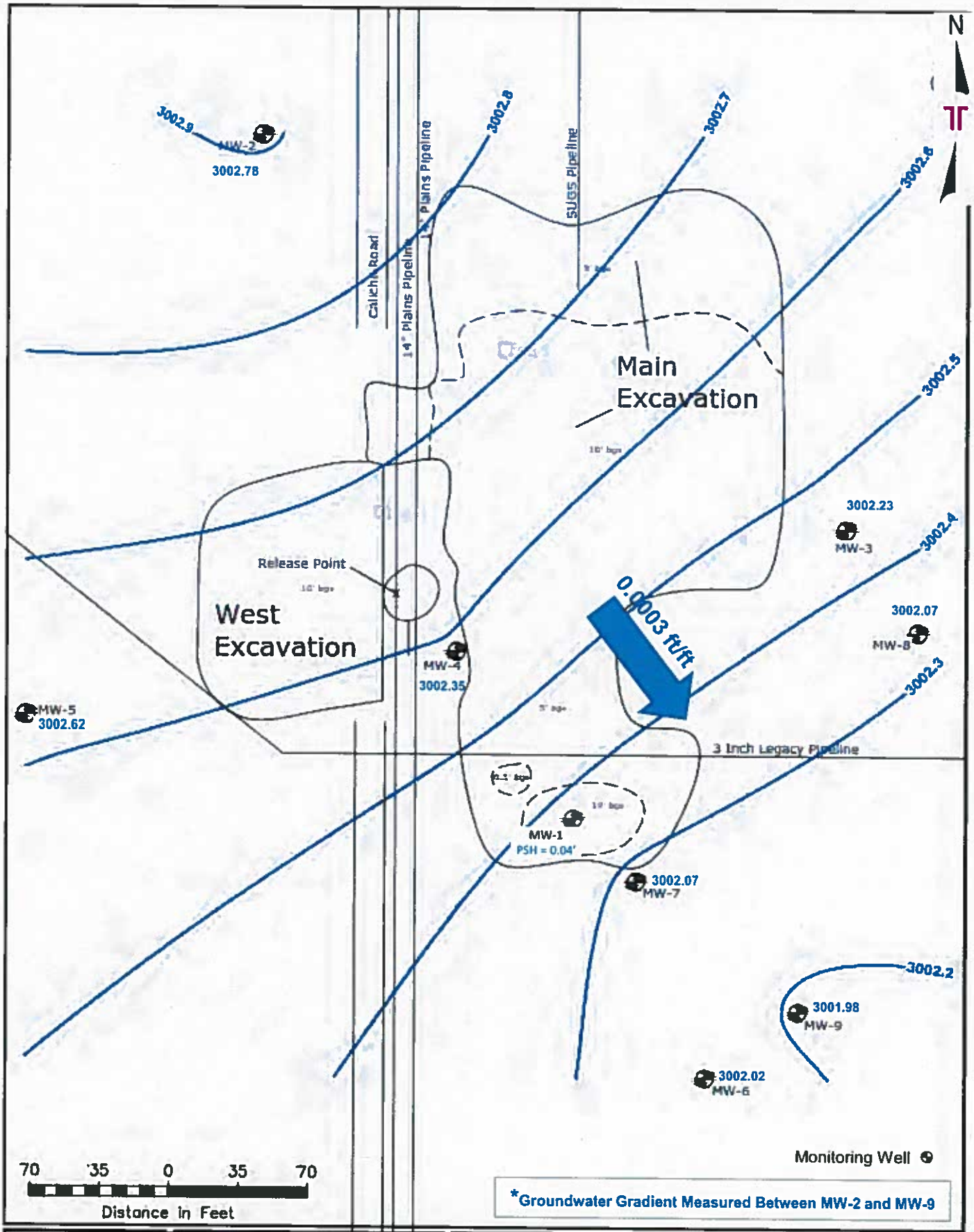
Source:	GoogleEarth
Date:	2014

Terracon
Consulting Engineers & Scientists
5827 50th St. Suite 1 Lubbock, Texas 79424
Phone (806) 300-0140 Fax (806) 797-0947

Figure 2a – Groundwater Gradient Map -1Q2017

14" Vac to Jal Legacy
NMOCD Ref. No. 1R-2162
32.103003° , -103.119540°
Lea County, New Mexico



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Source	GoogleEarth
Date	2014

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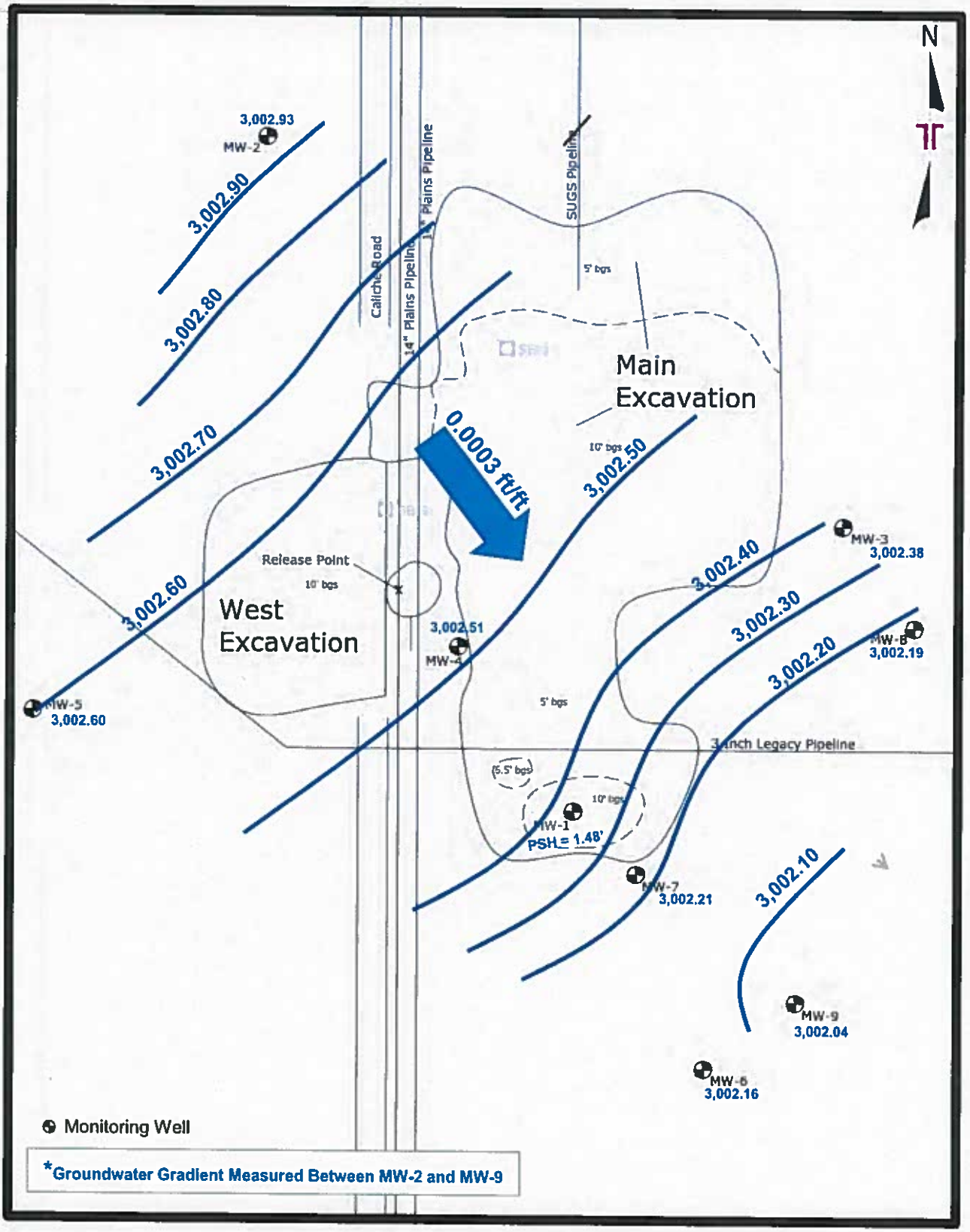
Figure 2b – Groundwater Gradient Map -2Q2017

14" Vac to Jal Legacy
NMOCD Ref. No. 1R-2162
32.103003° , -103.119540°
Lea County, New Mexico



Project Mng: KW	Project No. AR187005	Terracon Consulting Engineers & Scientists	Groundwater Gradient Map – 3Q2017	Figure
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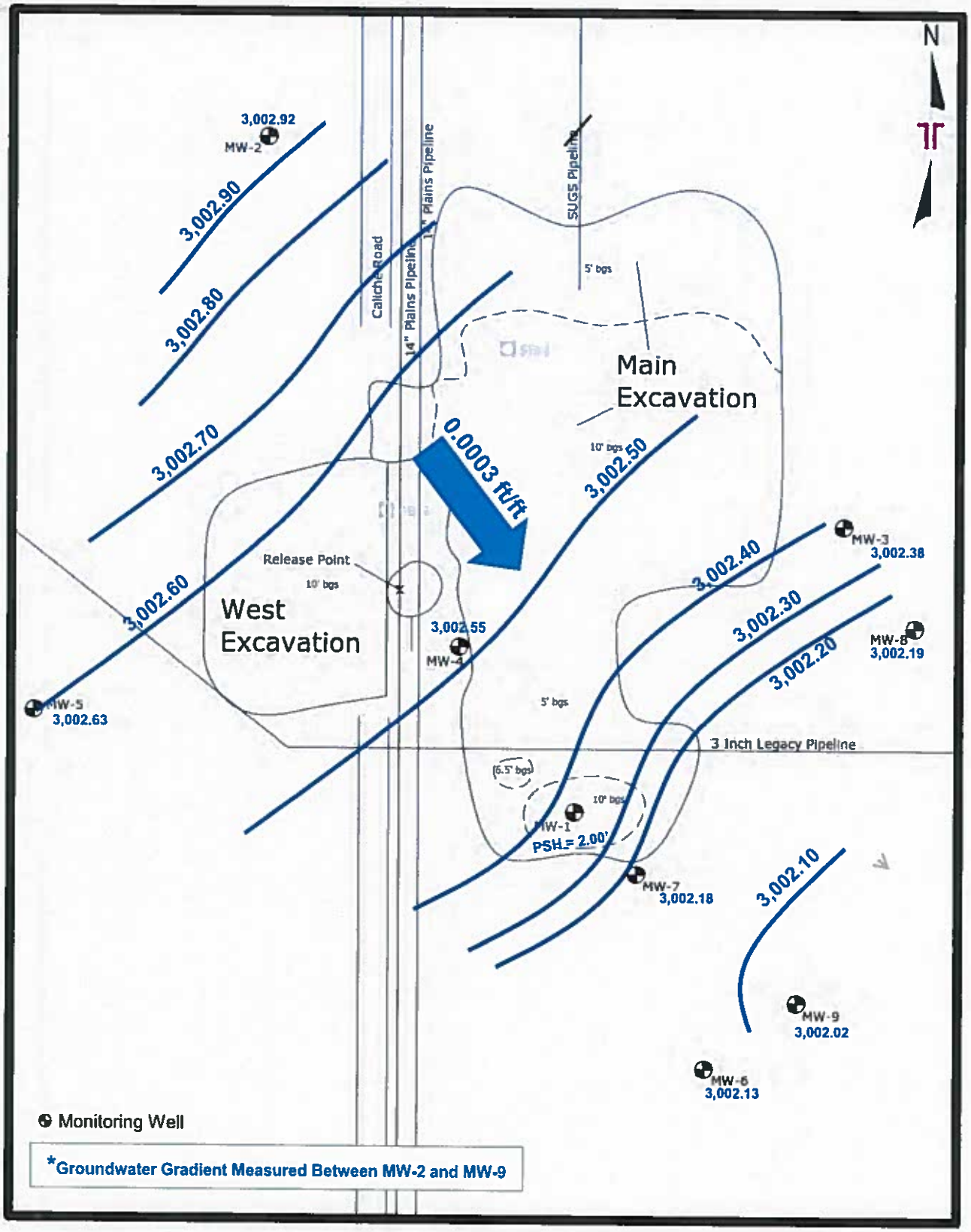
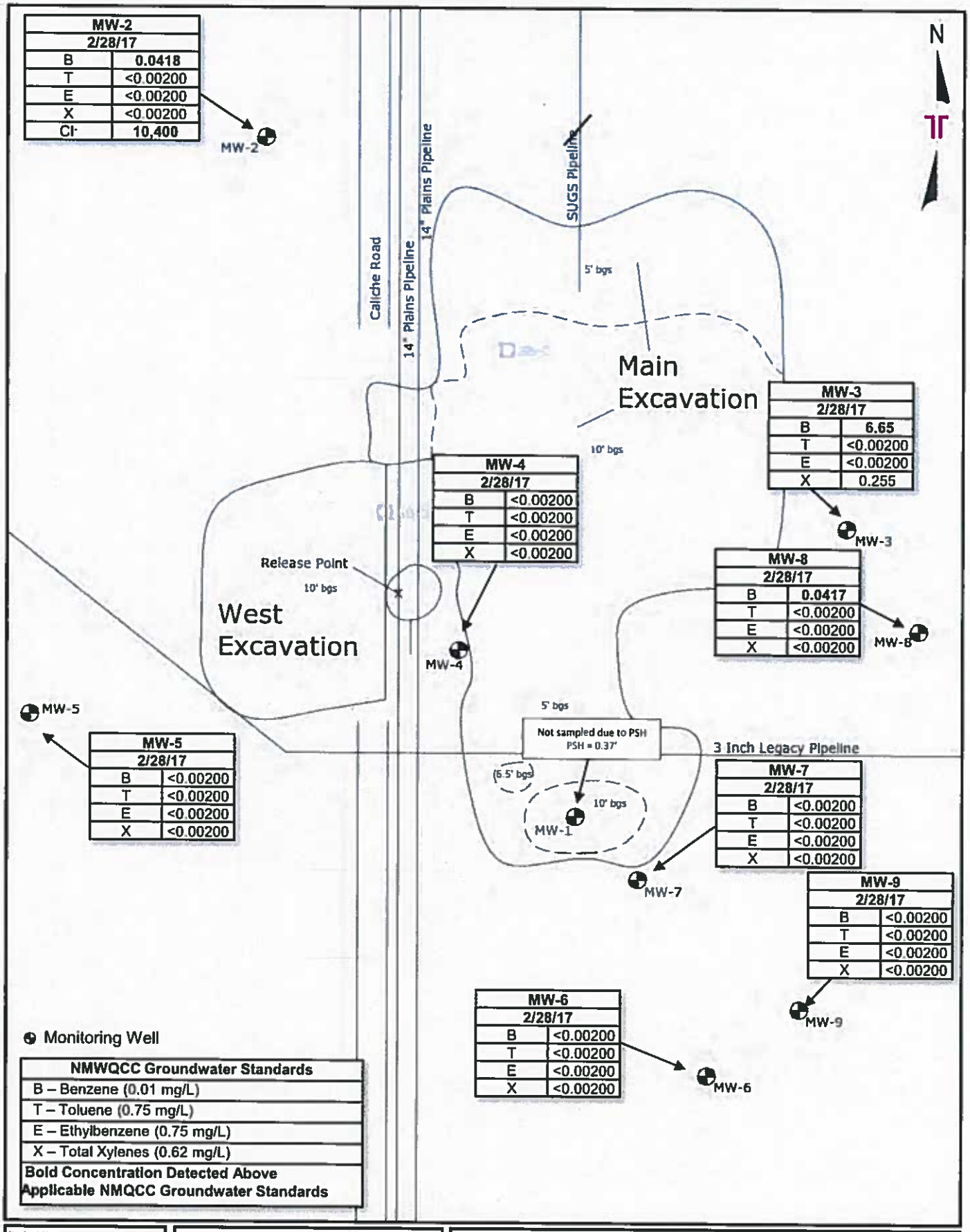
Checked By: KA	File Name: 3Q GWGM			
Approved By: EL	Date: 10/13/2017	5827 50th St. Suite 1 Lubbock, Texas 79424 Ph. (806) 794-9600 FAX. (806) 797-0947		



Project Mng: KW	Project No. AR187005	Terracon Consulting Engineers & Scientists 15827 50th St., Suite 1 Lubbock, Texas 79424 PH. (806) 300-0140 FAX. (806) 797-0947	Groundwater Gradient Map – 4Q2017	Figure
Drawn By: ZC	Scale: 1"=120'		14" Vac to Jal Legacy NMOCD Ref. No. 1R-2162 Lea County, New Mexico Plains SRS No. 2009-092	2d
Checked By: KW	File Name: 3Q GWGM			
Approved By: EL	Date: 10/13/2017			



Project No.	AR187005
Scale	1"=60'
Source	GoogleEarth
Date	2014

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Consulting Engineers & Scientists
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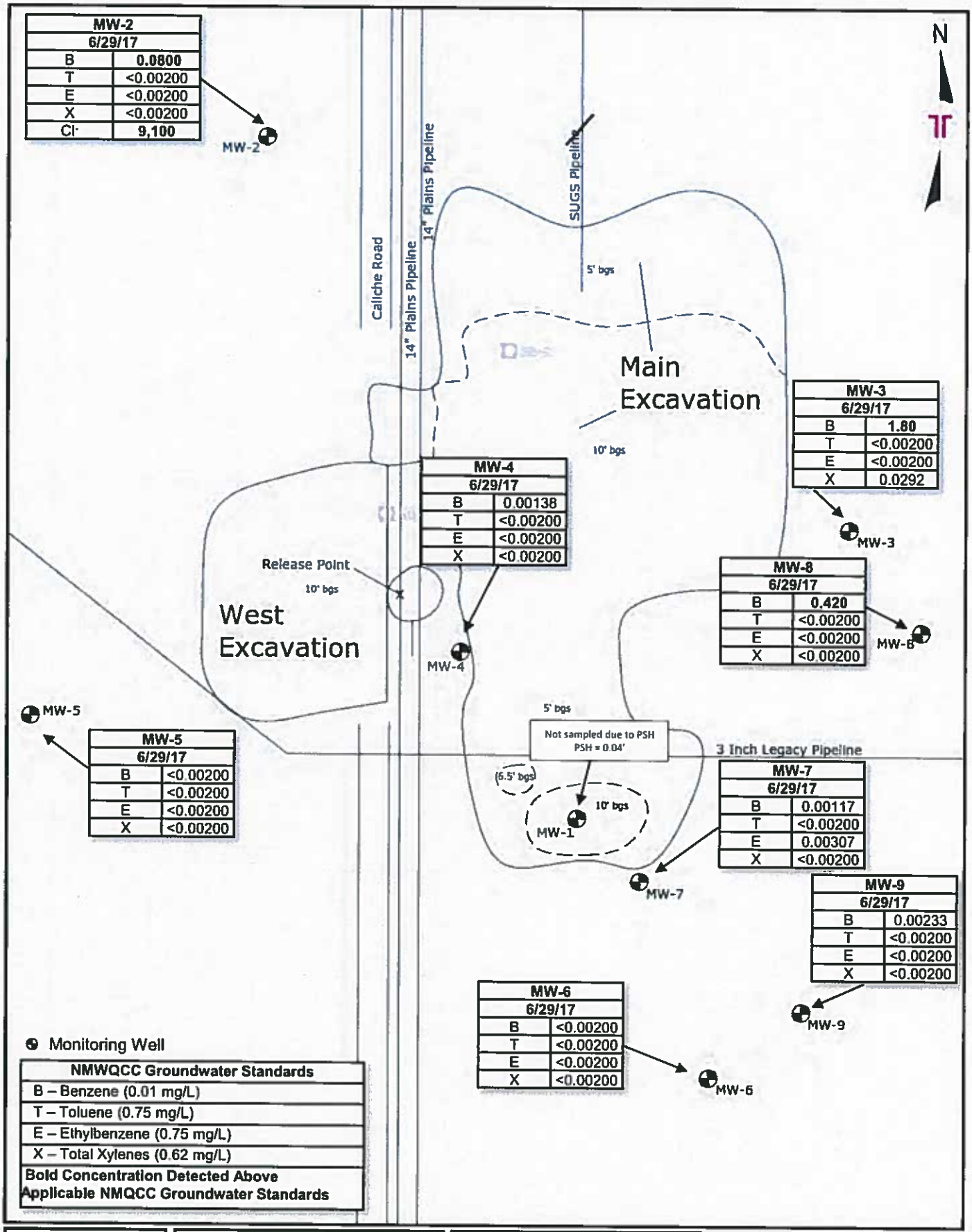
Phone (806) 300-0140 Fax (806) 797-0947

Figure 3a – Groundwater Concentration Map – 2Q2017

14" Vac to Jal Legacy
NMOCD Ref. No. 1R-2162
32.103003° , -103.119540°
Lea County, New Mexico



Project No	AR187005
Scale	1"=60'
Source	GoogleEarth
Date	2014

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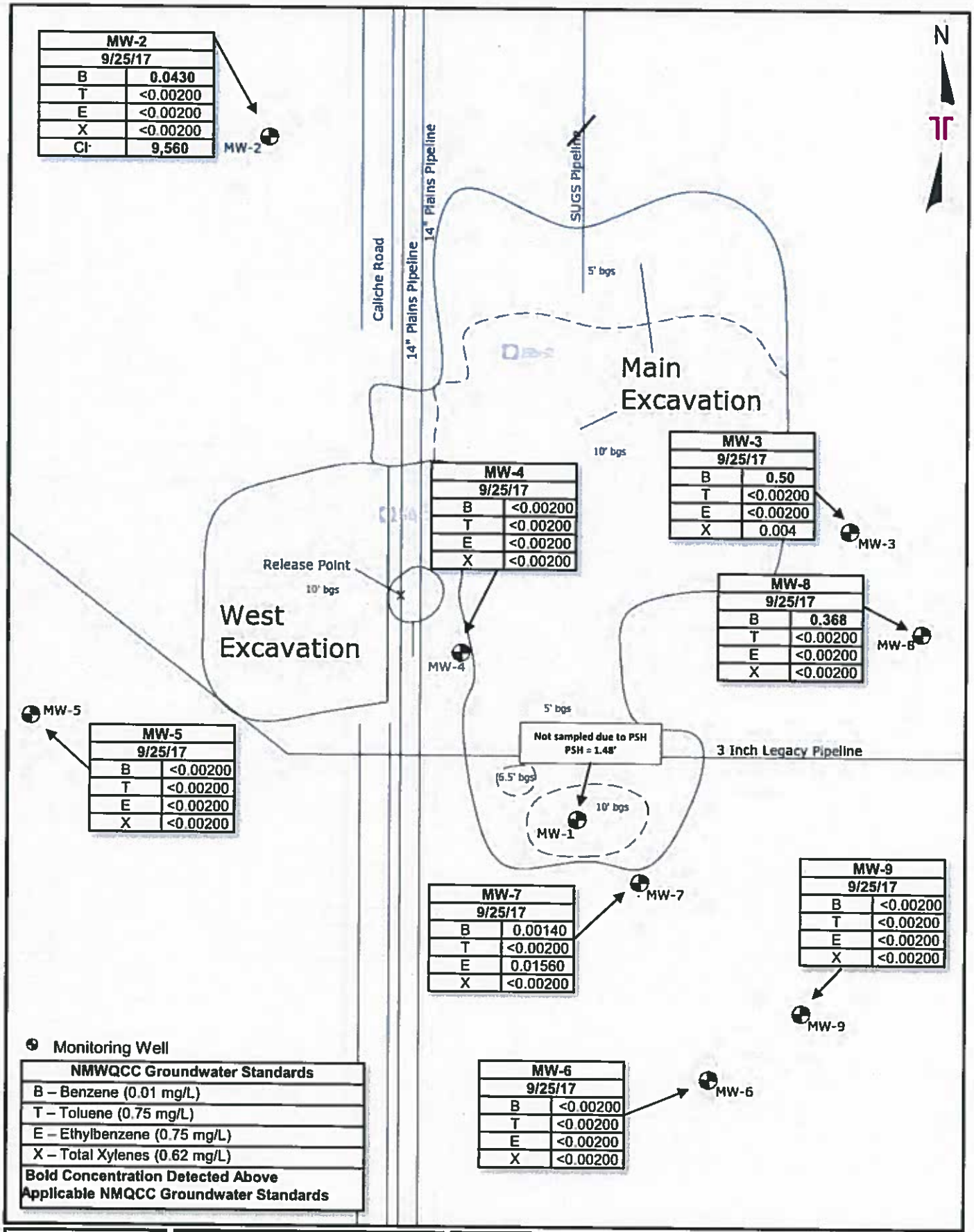
Figure 3b – Groundwater Concentration Map -2Q2017

14" Vac to Jal Legacy
NMOCD Ref. No. 1R-2162
32.103003°, -103.119540°
Lea County, New Mexico



Project No	AR187005
Scale	1"=60'
Source	GoogleEarth
Date	2014

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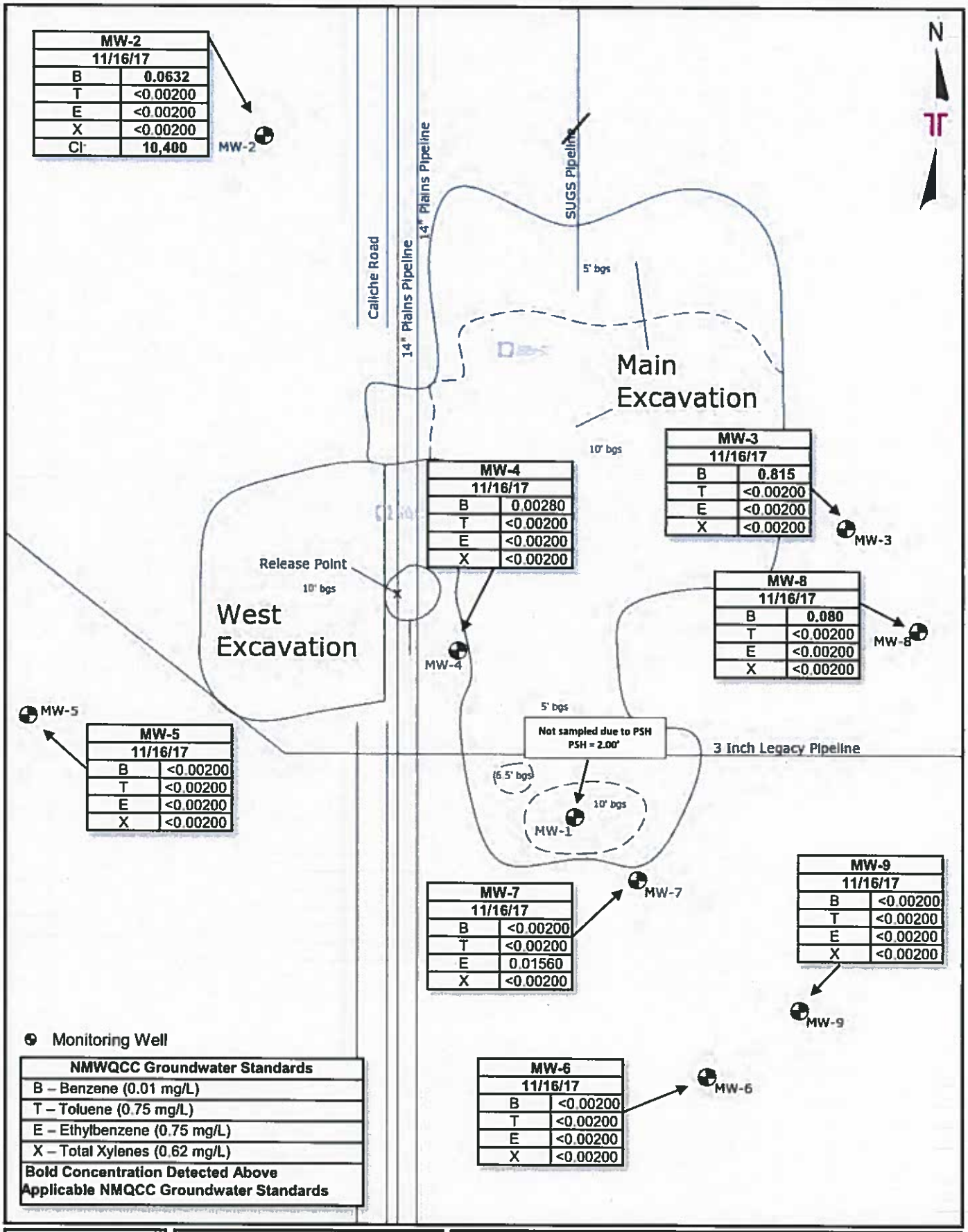
Figure 3c – Groundwater Concentration Map - 3Q2017

14" Vac to Jal Legacy
NMOCD Ref. No. 1R-2162
32.103003° , -103.119540°
Lea County, New Mexico



Project No	AR187005
Scale	1"=60'
Source	GoogleEarth
Date	2014

Terracon
Consulting Engineers & Scientists
5827 50th St. Suite 1 Lubbock, Texas 79424
Phone (806) 300-0140 Fax (806) 797-0947

Figure 3d – Groundwater Concentration Map - 4Q2017

14" Vac to Jal Legacy
NMOCD Ref. No. 1R-2162
32.103003° , -103.119540°
Lea County, New Mexico

APPENDIX B

Table 1 – Groundwater Elevation and PSH Thickness Data
Table 2 – Groundwater Analytical Summary – BTEX

TABLE 1

GROUNDWATER ELEVATION AND PSH THICKNESS DATA
14-INCH VAC TO JAL LEGACY
LEA COUNTY, NEW MEXICO
PLAINS SRS #: 2009-092
NMOCD REFERENCE #: 1RP-2162
TERRACON PROJECT #: AR187005

WELL NUMBER	DATE MEASURED	CASING WELL ELEVATION	DEPTH TO PRODUCT	DEPTH TO WATER	PSH THICKNESS	CORRECTED GROUNDWATER ELEVATION
MW-1	02/02/2016	3,065.33	62.40	63.12	0.72	3,002.82
	05/06/2016	3,065.33	62.50	63.71	1.21	3,002.65
	08/03/2016	3,065.33	62.48	63.70	1.22	3,002.67
	12/22/2016	3,065.33	62.74	63.85	1.11	3,065.16
	02/28/2017	3,065.33	62.90	63.27	0.37	3,065.27
	06/29/2017	3,065.33	63.06	63.10	0.04	3,065.32
	09/28/2017	3,065.33	62.92	64.40	1.48	3,065.11
	12/29/2017	3,065.33	62.69	64.69	2.00	3,065.03
MW-2	02/05/2016	3,065.28	-	62.70	-	3,002.58
	05/06/2016	3,065.28	-	62.20	-	3,003.08
	08/03/2016	3,065.28	-	62.16	-	3,003.12
	12/22/2016	3,065.28	-	62.36	-	3,002.92
	02/28/2017	3,065.28	-	62.37	-	3,002.91
	06/29/2017	3,065.28	-	62.50	-	3,002.78
	09/25/2017	3,065.28	-	62.35	-	3,002.93
	11/16/2017	3,065.28	-	62.36	-	3,002.92
MW-3	02/05/2016	3,065.43	-	62.46	-	3,002.97
	05/06/2016	3,065.43	-	62.39	-	3,003.04
	08/03/2016	3,065.43	-	62.43	-	3,003.00
	12/22/2016	3,065.43	-	63.02	-	3,002.41
	02/28/2017	3,065.43	-	62.97	-	3,002.46
	06/29/2017	3,065.43	-	63.20	-	3,002.23
	09/25/2017	3,065.43	-	63.05	-	3,002.38
	11/16/2017	3,065.43	-	63.05	-	3,002.38
MW-4	02/05/2016	3,065.15	-	62.23	-	3,002.92
	05/06/2016	3,065.15	-	62.40	-	3,002.75
	08/03/2016	3,065.15	-	62.40	-	3,002.75
	12/22/2016	3,065.15	-	62.47	-	3,002.68
	02/28/2017	3,065.15	-	62.56	-	3,002.59
	06/29/2017	3,065.15	-	62.80	-	3,002.35
	09/25/2017	3,065.15	-	62.64	-	3,002.51
	11/16/2017	3,065.15	-	62.60	-	3,002.55
MW-5	02/05/2016	3,065.95	-	63.04	-	3,002.91
	05/06/2016	3,065.95	-	63.10	-	3,002.85
	08/03/2016	3,065.95	-	63.08	-	3,002.87
	12/22/2016	3,065.95	-	63.33	-	3,002.62
	02/28/2017	3,065.95	-	63.33	-	3,002.62
	06/29/2017	3,065.95	-	63.47	-	3,002.48
	09/25/2017	3,065.95	-	63.35	-	3,002.60
	11/16/2017	3,065.95	-	63.32	-	3,002.63
MW-6	02/05/2016	3,065.35	-	62.79	-	3,002.56
	05/06/2016	3,065.35	-	62.90	-	3,002.45
	08/03/2016	3,065.35	-	63.03	-	3,002.32
	12/22/2016	3,065.35	-	63.05	-	3,002.30
	02/28/2017	3,065.35	-	63.09	-	3,002.26
	06/29/2017	3,065.35	-	63.33	-	3,002.02
	09/25/2017	3,065.35	-	63.19	-	3,002.16
	11/16/2017	3,065.35	-	63.22	-	3,002.13
MW-7	02/05/2016	3,065.38	-	62.74	-	3,002.64
	05/06/2016	3,065.38	-	62.88	-	3,002.50
	08/03/2016	3,065.38	-	62.85	-	3,002.53
	12/22/2016	3,065.38	-	62.98	-	3,002.40
	02/28/2017	3,065.38	-	63.10	-	3,002.28
	06/29/2017	3,065.38	-	63.31	-	3,002.07
	09/25/2017	3,065.38	-	63.17	-	3,002.21
	11/16/2017	3,065.38	-	63.20	-	3,002.18
MW-8	02/05/2016	3,065.10	-	62.46	-	3,002.64
	05/06/2016	3,065.10	-	62.41	-	3,002.69
	08/03/2016	3,065.10	-	62.40	-	3,002.70
	12/22/2016	3,065.10	-	62.85	-	3,002.25
	02/28/2017	3,065.10	-	62.78	-	3,002.32
	06/29/2017	3,065.10	-	63.03	-	3,002.07
	09/25/2017	3,065.10	-	62.91	-	3,002.19
	11/16/2017	3,065.10	-	62.91	-	3,002.19
MW-9	02/05/2016	3,065.42	-	62.88	-	3,002.54
	05/06/2016	3,065.42	-	63.05	-	3,002.37
	08/03/2016	3,065.42	-	63.11	-	3,002.31
	12/22/2016	3,065.42	-	63.14	-	3,002.28
	02/28/2017	3,065.42	-	63.23	-	3,002.19
	06/29/2017	3,065.42	-	63.44	-	3,001.98
	09/25/2017	3,065.42	-	63.38	-	3,002.04
	11/16/2017	3,065.42	-	63.40	-	3,002.02

Elevations based on the North American Vertical Datum of 1988

- = Not applicable

WHITING OIL AND GAS – CARLSON FED A 2 TB				
NMOCD Closure Criteria 51' – 100'				
Chloride 10,000 mg/kg	Total TPH 2,500 mg/kg	GRO+DRO 1,000 mg/kg	BTEX 50 mg/kg	Benzene 10 mg/kg

Sample ID	Chloride mg/kg	Total TPH mg/kg	GRO+DRO mg/kg	BTEX mg/kg	Benzene mg/kg
AH – 1 0 – 0.5'	<5.05	17,200	15,910	70.2	<1.99
AH – 1 0.5' – 1.0'		70,200	64,600	80.9	<10.1
AH – 1 1.0' – 1.5'		9,450	9,060	124	<10.0
AH – 2 0 – 0.5'	<4.99	17,100	15,990	73.9	<2.00
AH – 2 0.5' – 1.0'		107,000	99,000	280	<10.0
AH – 2 1.0'		51.7	51.7	7.43	1.10
AH – 3 0 – 0.5'	<4.96	16,400	15,290	63.8	<2.00
AH – 3 0.5' – 1.0'		55,800	51,000	121	<10.1
AH – 3 1.0' – 1.5'		1,480	1,400	4.14	<0.496
STOCKPILE #1	85.2	10,200	9,340	24.1	<0.496
STOCKPILE #2	92.2	10,100	9,220	25.1	<0.503
STOCKPILE #3	87.2	8,030	7,310	22.6	<0.504
STOCKPILE #4	96.9	8,910	8,100	20.1	<0.497

Certificate of Analysis Summary 625449

Lobo Services, Midland, TX

Project Name: Carlson Fed A 2 TB

Project Id:
Contact: Raymond Taylor
Project Location:

Date Received in Lab: Fri May-24-19 09:04 am
Report Date: 10-JUN-19
Project Manager: Holly Taylor

Analysis Requested		625449-001 AH-1 0-0.5' SOIL May-23-19 00:00		625449-002 AH-1 0.5'-1.0' SOIL May-23-19 00:00		625449-003 AH-1 1.0'-1.5' SOIL May-23-19 00:00		625449-004 AH-2 0-0.5' SOIL May-23-19 00:00		625449-005 AH-2 0.5'-1.0' SOIL May-23-19 00:00		625449-006 AH-2 1.0' SOIL May-23-19 00:00	
BTEX by EPA 8021B	*Extracted:*	May-29-19 10:00		Jun-06-19 08:00		Jun-06-19 08:00		May-29-19 10:00		Jun-06-19 08:00		Jun-06-19 08:00	
	Analyzed:	May-29-19 14:37		Jun-06-19 14:08		Jun-06-19 14:27		May-29-19 14:56		Jun-06-19 14:46		Jun-06-19 16:38	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Benzene		<1.99	1.99	<10.1	10.1	<10.0	10.0	<2.00	2.00	<10.0	10.0	1.10	0.998
Toluene		12.7	1.99	10.7	10.1	26.0	10.0	14.7	2.00	47.3	10.0	1.20	0.998
Ethylbenzene		12.3	1.99	14.3	10.1	19.5	10.0	12.6	2.00	43.2	10.0	1.19	0.998
m,p-Xylenes		31.6	3.98	38.0	20.2	53.5	20.0	32.9	4.00	127	20.0	2.59	2.00
o-Xylene		13.6	1.99	17.9	10.1	25.4	10.0	13.7	2.00	62.5	10.0	1.35	0.998
Total Xylenes		45.2	1.99	55.9	10.1	78.9	10.0	46.6	2.00	190	10.0	3.94	0.998
Total BTEX		70.2	1.99	80.9	10.1	124	10.0	73.9	2.00	280	10.0	7.43	0.998
Chloride by EPA 300	*Extracted:*	May-24-19 14:15						May-24-19 14:15					
	Analyzed:	May-24-19 15:28						May-24-19 15:33					
	Units/RL:	mg/kg	RL					mg/kg	RL				
Chloride		<5.05	5.05					<4.99	4.99				
TPH by SW8015 Mod	*Extracted:*	May-24-19 17:00		May-31-19 16:00		Jun-06-19 07:00		May-24-19 17:00		May-31-19 16:00		Jun-06-19 07:00	
	Analyzed:	May-25-19 09:14		Jun-01-19 04:55		Jun-07-19 09:16		May-25-19 09:34		Jun-01-19 05:15		Jun-07-19 08:26	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Gasoline Range Hydrocarbons (GRO)		4110	74.8	15000	374	2250	74.9	4290	74.9	23500	375	16.1	15.0
Diesel Range Organics (DRO)		11800	74.8	49600	374	6810	74.9	11700	74.9	75500	375	35.6	15.0
Motor Oil Range Hydrocarbons (MRO)		1310	74.8	5640	374	389	74.9	1120	74.9	8420	375	<15.0	15.0
Total TPH		17200	74.8	70200	374	9450	74.9	17100	74.9	107000	375	51.7	15.0

Holly Taylor
Project Manager

Final 1.000

Certificate of Analysis Summary 625449

Lobo Services, Midland, TX

Project Name: Carlson Fed A 2 TB

Project Id:
Contact: Raymond Taylor
Project Location:

Date Received in Lab: Fri May-24-19 09:04 am
Report Date: 10-JUN-19
Project Manager: Holly Taylor

Analysis Requested		625449-007 AH-3 0-0.5'		625449-008 AH-3 0.5'-1.0'		625449-009 AH-3 1.0'-1.5'		625449-011 Stpckpile #1		625449-012 Stockpile #2		625449-013 Stpckpile #3	
	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	May-23-19 00:00		May-23-19 00:00		May-23-19 00:00		May-23-19 00:00		May-23-19 00:00		May-23-19 00:00	
BTEX by EPA 8021B	*Extracted:*	May-29-19 10:00		Jun-06-19 08:00		Jun-06-19 08:00		May-29-19 10:00		May-29-19 10:00		May-29-19 10:00	
	Analyzed:	May-29-19 15:15		Jun-06-19 16:00		Jun-06-19 19:15		May-29-19 15:34		May-29-19 15:53		May-29-19 16:12	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Benzene		<2.00	2.00	<10.1	10.1	<0.0496	0.0496	<0.496	0.496	<0.503	0.503	<0.504	0.504
Toluene		9.07	2.00	17.9	10.1	0.112	0.0496	2.01	0.496	2.41	0.503	2.08	0.504
Ethylbenzene		8.88	2.00	21.6	10.1	0.557	0.0496	2.99	0.496	2.91	0.503	2.55	0.504
m,p-Xylenes		31.9	3.99	55.1	20.1	2.19	0.0992	12.8	0.992	13.1	1.01	11.8	1.01
o-Xylene		13.9	2.00	26.8	10.1	1.28	0.0496	6.31	0.496	6.63	0.503	6.18	0.504
Total Xylenes		45.8	2.00	81.9	10.1	3.47	0.0496	19.1	0.496	19.7	0.503	18.0	0.504
Total BTEX		63.8	2.00	121	10.1	4.14	0.0496	24.1	0.496	25.1	0.503	22.6	0.504
Chloride by EPA 300	*Extracted:*	May-24-19 14:15						May-24-19 14:15		May-24-19 14:15		May-24-19 14:15	
	Analyzed:	May-24-19 15:38						May-24-19 15:43		May-24-19 15:49		May-24-19 16:04	
	Units/RL:	mg/kg	RL					mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		<4.96	4.96					85.2	5.02	92.2	5.05	87.2	5.04
TPH by SW8015 Mod	*Extracted:*	May-24-19 17:00		May-31-19 16:00		Jun-06-19 07:00		May-24-19 17:00		May-24-19 17:00		May-24-19 17:00	
	Analyzed:	May-25-19 09:54		Jun-01-19 05:34		Jun-07-19 09:41		May-25-19 10:14		May-25-19 10:34		May-25-19 10:54	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Gasoline Range Hydrocarbons (GRO)		3590	74.7	13200	374	170	15.0	1560	74.7	1350	74.9	1060	74.9
Diesel Range Organics (DRO)		11700	74.7	37800	374	1230	15.0	7780	74.7	7870	74.9	6250	74.9
Motor Oil Range Hydrocarbons (MRO)		1090	74.7	4840	374	81.1	15.0	863	74.7	885	74.9	718	74.9
Total TPH		16400	74.7	55800	374	1480	15.0	10200	74.7	10100	74.9	8030	74.9

Holly Taylor
Project Manager

Certificate of Analysis Summary 625449

Lobo Services, Midland, TX

Project Name: Carlson Fed A 2 TB

Project Id:
Contact: Raymond Taylor
Project Location:

Date Received in Lab: Fri May-24-19 09:04 am
Report Date: 10-JUN-19
Project Manager: Holly Taylor

Analysis Requested								
	Lab Id:	625449-014						
	Field Id:	Stpckpile #4						
	Depth:							
	Matrix:	SOIL						
	Sampled:	May-23-19 00:00						
BTEX by EPA 8021B	***Extracted:***	May-29-19 10:00						
	Analyzed:	May-29-19 16:31						
	Units/RL:	mg/kg	RL					
Benzene		<0.497	0.497					
Toluene		1.47	0.497					
Ethylbenzene		2.23	0.497					
m,p-Xylenes		10.7	0.994					
o-Xylene		5.71	0.497					
Total Xylenes		16.4	0.497					
Total BTEX		20.1	0.497					
Chloride by EPA 300	***Extracted:***	May-24-19 14:15						
	Analyzed:	May-24-19 16:09						
	Units/RL:	mg/kg	RL					
Chloride		96.9	4.96					
TPH by SW8015 Mod	***Extracted:***	May-24-19 17:00						
	Analyzed:	May-25-19 11:13						
	Units/RL:	mg/kg	RL					
Gasoline Range Hydrocarbons (GRO)		1120	74.9					
Diesel Range Organics (DRO)		6980	74.9					
Motor Oil Range Hydrocarbons (MRO)		806	74.9					
Total TPH		8910	74.9					

Holly Taylor
Project Manager

Analytical Report 625449

for

Lobo Services

Project Manager: Raymond Taylor

Carlson Fed A 2 TB

10-JUN-19

Collected By: Client

1211 W. Florida Ave
Midland TX 79701

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

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

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

10-JUN-19

Project Manager: **Raymond Taylor**
Lobo Services
214 W. Texas Ave.
Suite 1215
Midland, TX 79701

Reference: XENCO Report No(s): **625449**
Carlson Fed A 2 TB
Project Address:

Raymond Taylor:

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) 625449. 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. 625449 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,

Holly Taylor

Holly Taylor
Project Manager

Sample Cross Reference 625449

Lobo Services, Midland, TX

Carlson Fed A 2 TB

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
AH-1 0-0.5'	S	05-23-19 00:00		625449-001
AH-1 0.5'-1.0'	S	05-23-19 00:00		625449-002
AH-1 1.0'-1.5'	S	05-23-19 00:00		625449-003
AH-2 0-0.5'	S	05-23-19 00:00		625449-004
AH-2 0.5'-1.0'	S	05-23-19 00:00		625449-005
AH-2 1.0'	S	05-23-19 00:00		625449-006
AH-3 0-0.5'	S	05-23-19 00:00		625449-007
AH-3 0.5'-1.0'	S	05-23-19 00:00		625449-008
AH-3 1.0'-1.5'	S	05-23-19 00:00		625449-009
Stpckpile #1	S	05-23-19 00:00		625449-011
Stockpile #2	S	05-23-19 00:00		625449-012
Stpckpile #3	S	05-23-19 00:00		625449-013
Stpckpile #4	S	05-23-19 00:00		625449-014
AH-3 1.5'-2.0'	S	05-23-19 00:00		Not Analyzed

CASE NARRATIVE

Client Name: Lobo Services
Project Name: Carlson Fed A 2 TB

Project ID:
Work Order Number(s): *625449*

Report Date: *10-JUN-19*
Date Received: *05/24/2019*

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3090212 Chloride by EPA 300
Lab Sample ID 625449-012 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Chloride recovered above QC limits in the Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 625449-001, -004, -007, -011, -012, -013, -014.
The Laboratory Control Sample for Chloride is within laboratory Control Limits, therefore the data was accepted.

Batch: LBA-3090582 BTEX by EPA 8021B
Soil samples were not received in Terracore kits and therefore were prepared by method 5030.
Surrogate 4-Bromofluorobenzene recovered above QC limits. Matrix interferences is suspected.
Samples affected are: 625449-014,625449-013.

Batch: LBA-3090915 TPH by SW8015 Mod
Surrogate 1-Chlorooctane, Surrogate o-Terphenyl recovered above QC limits. Matrix interferences is suspected.
Samples affected are: 625449-002,625449-005,625449-008.

Batch: LBA-3091397 BTEX by EPA 8021B
Surrogate 4-Bromofluorobenzene recovered above QC limits. Matrix interferences is suspected.
Samples affected are: 625449-010,625449-009.
Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Certificate of Analytical Results 625449

Lobo Services, Midland, TX

Carlson Fed A 2 TB

Sample Id:	AH-1 0-0.5'	Matrix:	Soil	Date Received:	05.24.19 09.04
Lab Sample Id:	625449-001	Date Collected:	05.23.19 00.00		

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	SPC			% Moisture:	
Analyst:	SPC	Date Prep:	05.24.19 14.15	Basis:	Wet Weight
Seq Number:	3090212				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<5.05	5.05	mg/kg	05.24.19 15.28	U	1

Analytical Method:	TPH by SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	05.24.19 17.00	Basis:	Wet Weight
Seq Number:	3090325				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	4110	74.8	mg/kg	05.25.19 09.14		5
Diesel Range Organics (DRO)	C10C28DRO	11800	74.8	mg/kg	05.25.19 09.14		5
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	1310	74.8	mg/kg	05.25.19 09.14		5
Total TPH	PHC635	17200	74.8	mg/kg	05.25.19 09.14		5

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	97	%	70-135	05.25.19 09.14	
o-Terphenyl	84-15-1	114	%	70-135	05.25.19 09.14	

Final 1.000

Certificate of Analytical Results 625449

Lobo Services, Midland, TX

Carlson Fed A 2 TB

Sample Id:	AH-1.0-0.5'	Matrix:	Soil	Date Received:	05.24.19 09.04
Lab Sample Id:	625449-001	Date Collected:	05.23.19 00.00		
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	SCM			% Moisture:	
Analyst:	SCM	Date Prep:	05.29.19 10.00	Basis:	Wet Weight
Seq Number:	3090582				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<1.99	1.99	mg/kg	05.29.19 14.37	U	1000
Toluene	108-88-3	12.7	1.99	mg/kg	05.29.19 14.37		1000
Ethylbenzene	100-41-4	12.3	1.99	mg/kg	05.29.19 14.37		1000
m,p-Xylenes	179601-23-1	31.6	3.98	mg/kg	05.29.19 14.37		1000
o-Xylene	95-47-6	13.6	1.99	mg/kg	05.29.19 14.37		1000
Total Xylenes	1330-20-7	45.2	1.99	mg/kg	05.29.19 14.37		1000
Total BTEX		70.2	1.99	mg/kg	05.29.19 14.37		1000

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	113	%	70-130	05.29.19 14.37	
1,4-Difluorobenzene	540-36-3	89	%	70-130	05.29.19 14.37	

Final 1.000

Certificate of Analytical Results 625449

Lobo Services, Midland, TX

Carlson Fed A 2 TB

Sample Id:	AH-1 0.5'-1.0'	Matrix:	Soil	Date Received:	05.24.19 09.04
Lab Sample Id:	625449-002	Date Collected:	05.23.19 00.00		

Analytical Method:	TPH by SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	05.31.19 16.00	Basis:	Wet Weight
Seq Number:	3090915				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	15000	374	mg/kg	06.01.19 04.55		25
Diesel Range Organics (DRO)	C10C28DRO	49600	374	mg/kg	06.01.19 04.55		25
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	5640	374	mg/kg	06.01.19 04.55		25
Total TPH	PHC635	70200	374	mg/kg	06.01.19 04.55		25

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	422	%	70-135	06.01.19 04.55	**
o-Terphenyl	84-15-1	499	%	70-135	06.01.19 04.55	**

Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	SCM			% Moisture:	
Analyst:	SCM	Date Prep:	06.06.19 08.00	Basis:	Wet Weight
Seq Number:	3091397				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<10.1	10.1	mg/kg	06.06.19 14.08	U	5000
Toluene	108-88-3	10.7	10.1	mg/kg	06.06.19 14.08		5000
Ethylbenzene	100-41-4	14.3	10.1	mg/kg	06.06.19 14.08		5000
m,p-Xylenes	179601-23-1	38.0	20.2	mg/kg	06.06.19 14.08		5000
o-Xylene	95-47-6	17.9	10.1	mg/kg	06.06.19 14.08		5000
Total Xylenes	1330-20-7	55.9	10.1	mg/kg	06.06.19 14.08		5000
Total BTEX		80.9	10.1	mg/kg	06.06.19 14.08		5000

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	102	%	70-130	06.06.19 14.08	
4-Bromofluorobenzene	460-00-4	107	%	70-130	06.06.19 14.08	

Lobo Services, Midland, TX

Carlson Fed A 2 TB

Sample Id: AH-1 1.0'-1.5' | Matrix: Soil | Date Received:05.24.19 09.04

Lab Sample Id: 625449-003 | Date Collected: 05.23.19 00.00

Analytical Method: TPH by SW8015 Mod | Prep Method: TX1005P

Tech: ARM | % Moisture:

Analyst: ARM | Date Prep: 06.06.19 07.00 | Basis: Wet Weight

Seq Number: 3091576

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	2250	74.9	mg/kg	06.07.19 09.16		5
Diesel Range Organics (DRO)	C10C28DRO	6810	74.9	mg/kg	06.07.19 09.16		5
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	389	74.9	mg/kg	06.07.19 09.16		5
Total TPH	PHC635	9450	74.9	mg/kg	06.07.19 09.16		5

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	121	%	70-135	06.07.19 09.16	
o-Terphenyl	84-15-1	127	%	70-135	06.07.19 09.16	

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

Tech: SCM | % Moisture:

Analyst: SCM | Date Prep: 06.06.19 08.00 | Basis: Wet Weight

Seq Number: 3091397

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<10.0	10.0	mg/kg	06.06.19 14.27	U	5000
Toluene	108-88-3	26.0	10.0	mg/kg	06.06.19 14.27		5000
Ethylbenzene	100-41-4	19.5	10.0	mg/kg	06.06.19 14.27		5000
m,p-Xylenes	179601-23-1	53.5	20.0	mg/kg	06.06.19 14.27		5000
o-Xylene	95-47-6	25.4	10.0	mg/kg	06.06.19 14.27		5000
Total Xylenes	1330-20-7	78.9	10.0	mg/kg	06.06.19 14.27		5000
Total BTEX		124	10.0	mg/kg	06.06.19 14.27		5000

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	102	%	70-130	06.06.19 14.27	
4-Bromofluorobenzene	460-00-4	105	%	70-130	06.06.19 14.27	

Lobo Services, Midland, TX

Carlson Fed A 2 TB

Sample Id: AH-2 0-0.5'
Lab Sample Id: 625449-004

Matrix: Soil
Date Collected: 05.23.19 00.00

Date Received:05.24.19 09.04

Analytical Method: Chloride by EPA 300
Tech: SPC
Analyst: SPC
Seq Number: 3090212

Date Prep: 05.24.19 14.15

Prep Method: E300P
% Moisture:
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.99	4.99	mg/kg	05.24.19 15.33	U	1

Analytical Method: TPH by SW8015 Mod
Tech: ARM
Analyst: ARM
Seq Number: 3090325

Date Prep: 05.24.19 17.00

Prep Method: TX1005P
% Moisture:
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	4290	74.9	mg/kg	05.25.19 09.34		5
Diesel Range Organics (DRO)	C10C28DRO	11700	74.9	mg/kg	05.25.19 09.34		5
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	1120	74.9	mg/kg	05.25.19 09.34		5
Total TPH	PHC635	17100	74.9	mg/kg	05.25.19 09.34		5

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	99	%	70-135	05.25.19 09.34	
o-Terphenyl	84-15-1	108	%	70-135	05.25.19 09.34	

Certificate of Analytical Results 625449

Lobo Services, Midland, TX

Carlson Fed A 2 TB

Sample Id:	AH-2 0-0.5'	Matrix:	Soil	Date Received:	05.24.19 09.04
Lab Sample Id:	625449-004	Date Collected:	05.23.19 00.00		
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	SCM			% Moisture:	
Analyst:	SCM	Date Prep:	05.29.19 10.00	Basis:	Wet Weight
Seq Number:	3090582				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<2.00	2.00	mg/kg	05.29.19 14.56	U	1000
Toluene	108-88-3	14.7	2.00	mg/kg	05.29.19 14.56		1000
Ethylbenzene	100-41-4	12.6	2.00	mg/kg	05.29.19 14.56		1000
m,p-Xylenes	179601-23-1	32.9	4.00	mg/kg	05.29.19 14.56		1000
o-Xylene	95-47-6	13.7	2.00	mg/kg	05.29.19 14.56		1000
Total Xylenes	1330-20-7	46.6	2.00	mg/kg	05.29.19 14.56		1000
Total BTEX		73.9	2.00	mg/kg	05.29.19 14.56		1000

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	91	%	70-130	05.29.19 14.56	
4-Bromofluorobenzene	460-00-4	113	%	70-130	05.29.19 14.56	

Certificate of Analytical Results 625449

Lobo Services, Midland, TX

Carlson Fed A 2 TB

Sample Id:	AH-2 0.5'-1.0'	Matrix:	Soil	Date Received:	05.24.19 09.04
Lab Sample Id:	625449-005	Date Collected:	05.23.19 00.00		

Analytical Method:	TPH by SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	05.31.19 16.00	Basis:	Wet Weight
Seq Number:	3090915				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	23500	375	mg/kg	06.01.19 05.15		25
Diesel Range Organics (DRO)	C10C28DRO	75500	375	mg/kg	06.01.19 05.15		25
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	8420	375	mg/kg	06.01.19 05.15		25
Total TPH	PHC635	107000	375	mg/kg	06.01.19 05.15		25

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	530	%	70-135	06.01.19 05.15	**
o-Terphenyl	84-15-1	626	%	70-135	06.01.19 05.15	**

Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	SCM			% Moisture:	
Analyst:	SCM	Date Prep:	06.06.19 08.00	Basis:	Wet Weight
Seq Number:	3091397				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<10.0	10.0	mg/kg	06.06.19 14.46	U	5000
Toluene	108-88-3	47.3	10.0	mg/kg	06.06.19 14.46		5000
Ethylbenzene	100-41-4	43.2	10.0	mg/kg	06.06.19 14.46		5000
m,p-Xylenes	179601-23-1	127	20.0	mg/kg	06.06.19 14.46		5000
o-Xylene	95-47-6	62.5	10.0	mg/kg	06.06.19 14.46		5000
Total Xylenes	1330-20-7	190	10.0	mg/kg	06.06.19 14.46		5000
Total BTEX		280	10.0	mg/kg	06.06.19 14.46		5000

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	96	%	70-130	06.06.19 14.46	
4-Bromofluorobenzene	460-00-4	119	%	70-130	06.06.19 14.46	

Certificate of Analytical Results 625449

Lobo Services, Midland, TX

Carlson Fed A 2 TB

Sample Id:	**AH-2 1.0'**	Matrix:	Soil	Date Received:	05.24.19 09.04
Lab Sample Id:	625449-006	Date Collected:	05.23.19 00.00		

Analytical Method:	TPH by SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	06.06.19 07.00	Basis:	Wet Weight
Seq Number:	3091576				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	**16.1**	15.0	mg/kg	06.07.19 08.26		1
Diesel Range Organics (DRO)	C10C28DRO	**35.6**	15.0	mg/kg	06.07.19 08.26		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	06.07.19 08.26	U	1
Total TPH	PHC635	**51.7**	15.0	mg/kg	06.07.19 08.26		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	94	%	70-135	06.07.19 08.26	
o-Terphenyl	84-15-1	74	%	70-135	06.07.19 08.26	

Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	SCM			% Moisture:	
Analyst:	SCM	Date Prep:	06.06.19 08.00	Basis:	Wet Weight
Seq Number:	3091397				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	**1.10**	0.998	mg/kg	06.06.19 16.38		500
Toluene	108-88-3	**1.20**	0.998	mg/kg	06.06.19 16.38		500
Ethylbenzene	100-41-4	**1.19**	0.998	mg/kg	06.06.19 16.38		500
m,p-Xylenes	179601-23-1	**2.59**	2.00	mg/kg	06.06.19 16.38		500
o-Xylene	95-47-6	**1.35**	0.998	mg/kg	06.06.19 16.38		500
Total Xylenes	1330-20-7	**3.94**	0.998	mg/kg	06.06.19 16.38		500
Total BTEX		**7.43**	0.998	mg/kg	06.06.19 16.38		500

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	106	%	70-130	06.06.19 16.38	
4-Bromofluorobenzene	460-00-4	109	%	70-130	06.06.19 16.38	

Lobo Services, Midland, TX

Carlson Fed A 2 TB

Sample Id:	AH-3 0-0.5'	Matrix:	Soil	Date Received:	05.24.19 09.04
Lab Sample Id:	625449-007	Date Collected:	05.23.19 00.00		

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	SPC			% Moisture:	
Analyst:	SPC	Date Prep:	05.24.19 14.15	Basis:	Wet Weight
Seq Number:	3090212				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.96	4.96	mg/kg	05.24.19 15.38	U	1

Analytical Method:	TPH by SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	05.24.19 17.00	Basis:	Wet Weight
Seq Number:	3090325				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	3590	74.7	mg/kg	05.25.19 09.54		5
Diesel Range Organics (DRO)	C10C28DRO	11700	74.7	mg/kg	05.25.19 09.54		5
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	1090	74.7	mg/kg	05.25.19 09.54		5
Total TPH	PHC635	16400	74.7	mg/kg	05.25.19 09.54		5

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	104	%	70-135	05.25.19 09.54	
o-Terphenyl	84-15-1	117	%	70-135	05.25.19 09.54	

Lobo Services, Midland, TX

Carlson Fed A 2 TB

Sample Id: **AH-3 0-0.5'**
Lab Sample Id: 625449-007

Matrix: Soil
Date Collected: 05.23.19 00.00

Date Received:05.24.19 09.04

Analytical Method: BTEX by EPA 8021B
Tech: SCM
Analyst: SCM
Seq Number: 3090582

Date Prep: 05.29.19 10.00

Prep Method: SW5030B
% Moisture:
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<2.00	2.00	mg/kg	05.29.19 15.15	U	1000
Toluene	108-88-3	9.07	2.00	mg/kg	05.29.19 15.15		1000
Ethylbenzene	100-41-4	8.88	2.00	mg/kg	05.29.19 15.15		1000
m,p-Xylenes	179601-23-1	31.9	3.99	mg/kg	05.29.19 15.15		1000
o-Xylene	95-47-6	13.9	2.00	mg/kg	05.29.19 15.15		1000
Total Xylenes	1330-20-7	45.8	2.00	mg/kg	05.29.19 15.15		1000
Total BTEX		63.8	2.00	mg/kg	05.29.19 15.15		1000

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	88	%	70-130	05.29.19 15.15	
4-Bromofluorobenzene	460-00-4	116	%	70-130	05.29.19 15.15	

Lobo Services, Midland, TX

Carlson Fed A 2 TB

Sample Id: AH-3 0.5'-1.0' | Matrix: Soil | Date Received:05.24.19 09.04

Lab Sample Id: 625449-008 | Date Collected: 05.23.19 00.00

Analytical Method: TPH by SW8015 Mod | Prep Method: TX1005P

Tech: ARM | % Moisture:

Analyst: ARM | Date Prep: 05.31.19 16.00 | Basis: Wet Weight

Seq Number: 3090915

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	13200	374	mg/kg	06.01.19 05.34		25
Diesel Range Organics (DRO)	C10C28DRO	37800	374	mg/kg	06.01.19 05.34		25
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	4840	374	mg/kg	06.01.19 05.34		25
Total TPH	PHC635	55800	374	mg/kg	06.01.19 05.34		25

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	643	%	70-135	06.01.19 05.34	**
o-Terphenyl	84-15-1	836	%	70-135	06.01.19 05.34	**

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

Tech: SCM | % Moisture:

Analyst: SCM | Date Prep: 06.06.19 08.00 | Basis: Wet Weight

Seq Number: 3091397

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<10.1	10.1	mg/kg	06.06.19 16.00	U	5000
Toluene	108-88-3	17.9	10.1	mg/kg	06.06.19 16.00		5000
Ethylbenzene	100-41-4	21.6	10.1	mg/kg	06.06.19 16.00		5000
m,p-Xylenes	179601-23-1	55.1	20.1	mg/kg	06.06.19 16.00		5000
o-Xylene	95-47-6	26.8	10.1	mg/kg	06.06.19 16.00		5000
Total Xylenes	1330-20-7	81.9	10.1	mg/kg	06.06.19 16.00		5000
Total BTEX		121	10.1	mg/kg	06.06.19 16.00		5000

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	101	%	70-130	06.06.19 16.00	
4-Bromofluorobenzene	460-00-4	102	%	70-130	06.06.19 16.00	

Lobo Services, Midland, TX

Carlson Fed A 2 TB

Sample Id: AH-3 1.0'-1.5' | Matrix: Soil | Date Received:05.24.19 09.04

Lab Sample Id: 625449-009 | Date Collected: 05.23.19 00.00

Analytical Method: TPH by SW8015 Mod | Prep Method: TX1005P

Tech: ARM | % Moisture:

Analyst: ARM | Date Prep: 06.06.19 07.00 | Basis: Wet Weight

Seq Number: 3091576

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	170	15.0	mg/kg	06.07.19 09.41		1
Diesel Range Organics (DRO)	C10C28DRO	1230	15.0	mg/kg	06.07.19 09.41		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	81.1	15.0	mg/kg	06.07.19 09.41		1
Total TPH	PHC635	1480	15.0	mg/kg	06.07.19 09.41		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	101	%	70-135	06.07.19 09.41	
o-Terphenyl	84-15-1	101	%	70-135	06.07.19 09.41	

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

Tech: SCM | % Moisture:

Analyst: SCM | Date Prep: 06.06.19 08.00 | Basis: Wet Weight

Seq Number: 3091397

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.0496	0.0496	mg/kg	06.06.19 19.15	U	25
Toluene	108-88-3	0.112	0.0496	mg/kg	06.06.19 19.15		25
Ethylbenzene	100-41-4	0.557	0.0496	mg/kg	06.06.19 19.15		25
m,p-Xylenes	179601-23-1	2.19	0.0992	mg/kg	06.06.19 19.15		25
o-Xylene	95-47-6	1.28	0.0496	mg/kg	06.06.19 19.15		25
Total Xylenes	1330-20-7	3.47	0.0496	mg/kg	06.06.19 19.15		25
Total BTEX		4.14	0.0496	mg/kg	06.06.19 19.15		25

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	190	%	70-130	06.06.19 19.15	**
1,4-Difluorobenzene	540-36-3	87	%	70-130	06.06.19 19.15	

Certificate of Analytical Results 625449

Lobo Services, Midland, TX

Carlson Fed A 2 TB

Sample Id:	Stpckpile #1	Matrix:	Soil	Date Received:	05.24.19 09.04
Lab Sample Id:	625449-011	Date Collected:	05.23.19 00.00		

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	SPC			% Moisture:	
Analyst:	SPC	Date Prep:	05.24.19 14.15	Basis:	Wet Weight
Seq Number:	3090212				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	85.2	5.02	mg/kg	05.24.19 15.43		1

Analytical Method:	TPH by SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	05.24.19 17.00	Basis:	Wet Weight
Seq Number:	3090325				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	1560	74.7	mg/kg	05.25.19 10.14		5
Diesel Range Organics (DRO)	C10C28DRO	7780	74.7	mg/kg	05.25.19 10.14		5
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	863	74.7	mg/kg	05.25.19 10.14		5
Total TPH	PHC635	10200	74.7	mg/kg	05.25.19 10.14		5

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	109	%	70-135	05.25.19 10.14	
o-Terphenyl	84-15-1	103	%	70-135	05.25.19 10.14	

Certificate of Analytical Results 625449

Lobo Services, Midland, TX

Carlson Fed A 2 TB

Sample Id:	Stpckpile #1	Matrix:	Soil	Date Received:	05.24.19 09.04
Lab Sample Id:	625449-011	Date Collected:	05.23.19 00.00		
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	SCM			% Moisture:	
Analyst:	SCM	Date Prep:	05.29.19 10.00	Basis:	Wet Weight
Seq Number:	3090582				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.496	0.496	mg/kg	05.29.19 15.34	U	250
Toluene	108-88-3	2.01	0.496	mg/kg	05.29.19 15.34		250
Ethylbenzene	100-41-4	2.99	0.496	mg/kg	05.29.19 15.34		250
m,p-Xylenes	179601-23-1	12.8	0.992	mg/kg	05.29.19 15.34		250
o-Xylene	95-47-6	6.31	0.496	mg/kg	05.29.19 15.34		250
Total Xylenes	1330-20-7	19.1	0.496	mg/kg	05.29.19 15.34		250
Total BTEX		24.1	0.496	mg/kg	05.29.19 15.34		250

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	130	%	70-130	05.29.19 15.34	
1,4-Difluorobenzene	540-36-3	86	%	70-130	05.29.19 15.34	

Final 1.000

Lobo Services, Midland, TX

Carlson Fed A 2 TB

Sample Id: **Stockpile #2**
Lab Sample Id: 625449-012

Matrix: **Soil**
Date Collected: 05.23.19 00.00

Date Received:05.24.19 09.04

Analytical Method: Chloride by EPA 300
Tech: SPC
Analyst: SPC
Seq Number: 3090212

Date Prep: 05.24.19 14.15

Prep Method: E300P
% Moisture:
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**92.2**	5.05	mg/kg	05.24.19 15.49		1

Analytical Method: TPH by SW8015 Mod
Tech: ARM
Analyst: ARM
Seq Number: 3090325

Date Prep: 05.24.19 17.00

Prep Method: TX1005P
% Moisture:
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	**1350**	74.9	mg/kg	05.25.19 10.34		5
Diesel Range Organics (DRO)	C10C28DRO	**7870**	74.9	mg/kg	05.25.19 10.34		5
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**885**	74.9	mg/kg	05.25.19 10.34		5
Total TPH	PHC635	**10100**	74.9	mg/kg	05.25.19 10.34		5

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	122	%	70-135	05.25.19 10.34	
o-Terphenyl	84-15-1	106	%	70-135	05.25.19 10.34	

Certificate of Analytical Results 625449

Lobo Services, Midland, TX

Carlson Fed A 2 TB

Sample Id:	**Stockpile #2**	Matrix: Soil	Date Received:05.24.19 09.04
Lab Sample Id:	625449-012	Date Collected: 05.23.19 00.00	
Analytical Method:	BTEX by EPA 8021B		Prep Method: SW5030B
Tech:	SCM		% Moisture:
Analyst:	SCM	Date Prep: 05.29.19 10.00	Basis: Wet Weight
Seq Number:	3090582		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.503	0.503	mg/kg	05.29.19 15.53	U	250
Toluene	108-88-3	**2.41**	0.503	mg/kg	05.29.19 15.53		250
Ethylbenzene	100-41-4	**2.91**	0.503	mg/kg	05.29.19 15.53		250
m,p-Xylenes	179601-23-1	**13.1**	1.01	mg/kg	05.29.19 15.53		250
o-Xylene	95-47-6	**6.63**	0.503	mg/kg	05.29.19 15.53		250
Total Xylenes	1330-20-7	**19.7**	0.503	mg/kg	05.29.19 15.53		250
Total BTEX		**25.1**	0.503	mg/kg	05.29.19 15.53		250

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	86	%	70-130	05.29.19 15.53	
4-Bromofluorobenzene	460-00-4	130	%	70-130	05.29.19 15.53	

Lobo Services, Midland, TX

Carlson Fed A 2 TB

Sample Id: Stpckpile #3
Lab Sample Id: 625449-013

Matrix: Soil
Date Collected: 05.23.19 00.00

Date Received:05.24.19 09.04

Analytical Method: Chloride by EPA 300
Tech: SPC
Analyst: SPC
Seq Number: 3090212

Date Prep: 05.24.19 14.15

Prep Method: E300P
% Moisture:
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	87.2	5.04	mg/kg	05.24.19 16.04		1

Analytical Method: TPH by SW8015 Mod
Tech: ARM
Analyst: ARM
Seq Number: 3090325

Date Prep: 05.24.19 17.00

Prep Method: TX1005P
% Moisture:
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	1060	74.9	mg/kg	05.25.19 10.54		5
Diesel Range Organics (DRO)	C10C28DRO	6250	74.9	mg/kg	05.25.19 10.54		5
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	718	74.9	mg/kg	05.25.19 10.54		5
Total TPH	PHC635	8030	74.9	mg/kg	05.25.19 10.54		5

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	99	%	70-135	05.25.19 10.54	
o-Terphenyl	84-15-1	95	%	70-135	05.25.19 10.54	

Lobo Services, Midland, TX

Carlson Fed A 2 TB

Sample Id: Stpckpile #3
Lab Sample Id: 625449-013

Matrix: Soil
Date Collected: 05.23.19 00.00

Date Received:05.24.19 09.04

Analytical Method: BTEX by EPA 8021B
Tech: SCM
Analyst: SCM
Seq Number: 3090582

Date Prep: 05.29.19 10.00

Prep Method: SW5030B
% Moisture:
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.504	0.504	mg/kg	05.29.19 16.12	U	250
Toluene	108-88-3	2.08	0.504	mg/kg	05.29.19 16.12		250
Ethylbenzene	100-41-4	2.55	0.504	mg/kg	05.29.19 16.12		250
m,p-Xylenes	179601-23-1	11.8	1.01	mg/kg	05.29.19 16.12		250
o-Xylene	95-47-6	6.18	0.504	mg/kg	05.29.19 16.12		250
Total Xylenes	1330-20-7	18.0	0.504	mg/kg	05.29.19 16.12		250
Total BTEX		22.6	0.504	mg/kg	05.29.19 16.12		250

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	135	%	70-130	05.29.19 16.12	**
1,4-Difluorobenzene	540-36-3	84	%	70-130	05.29.19 16.12	

Lobo Services, Midland, TX

Carlson Fed A 2 TB

Sample Id: Stpckpile #4
Lab Sample Id: 625449-014

Matrix: Soil
Date Collected: 05.23.19 00.00

Date Received:05.24.19 09.04

Analytical Method: Chloride by EPA 300
Tech: SPC
Analyst: SPC
Seq Number: 3090212

Date Prep: 05.24.19 14.15

Prep Method: E300P
% Moisture:
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	96.9	4.96	mg/kg	05.24.19 16.09		1

Analytical Method: TPH by SW8015 Mod
Tech: ARM
Analyst: ARM
Seq Number: 3090325

Date Prep: 05.24.19 17.00

Prep Method: TX1005P
% Moisture:
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	1120	74.9	mg/kg	05.25.19 11.13		5
Diesel Range Organics (DRO)	C10C28DRO	6980	74.9	mg/kg	05.25.19 11.13		5
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	806	74.9	mg/kg	05.25.19 11.13		5
Total TPH	PHC635	8910	74.9	mg/kg	05.25.19 11.13		5

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	113	%	70-135	05.25.19 11.13	
o-Terphenyl	84-15-1	123	%	70-135	05.25.19 11.13	

Lobo Services, Midland, TX

Carlson Fed A 2 TB

Sample Id:	Stpckpile #4	Matrix:	Soil	Date Received:	05.24.19 09.04
Lab Sample Id:	625449-014	Date Collected:	05.23.19 00.00		
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	SCM			% Moisture:	
Analyst:	SCM	Date Prep:	05.29.19 10.00	Basis:	Wet Weight
Seq Number:	3090582				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.497	0.497	mg/kg	05.29.19 16.31	U	250
Toluene	108-88-3	1.47	0.497	mg/kg	05.29.19 16.31		250
Ethylbenzene	100-41-4	2.23	0.497	mg/kg	05.29.19 16.31		250
m,p-Xylenes	179601-23-1	10.7	0.994	mg/kg	05.29.19 16.31		250
o-Xylene	95-47-6	5.71	0.497	mg/kg	05.29.19 16.31		250
Total Xylenes	1330-20-7	16.4	0.497	mg/kg	05.29.19 16.31		250
Total BTEX		20.1	0.497	mg/kg	05.29.19 16.31		250

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	85	%	70-130	05.29.19 16.31	
4-Bromofluorobenzene	460-00-4	131	%	70-130	05.29.19 16.31	**

Flagging Criteria

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

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

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

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

F RPD exceeded lab control limits.

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

U Analyte was not detected.

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

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

K Sample analyzed outside of recommended hold time.

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

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

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

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

DL Method Detection Limit

NC Non-Calculable

SMP Client Sample **BLK** Method Blank

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

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

+ NELAC certification not offered for this compound.

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

QC Summary 625449

Lobo Services
Carlson Fed A 2 TB

Analytical Method: Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3090212 — Matrix: Solid — Date Prep: 05.24.19
MB Sample Id: 7678577-1-BLK — LCS Sample Id: 7678577-1-BKS — LCSD Sample Id: 7678577-1-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	250	100	250	100	90-110	0	20	mg/kg	05.24.19 14:23	

Analytical Method: Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3090212 — Matrix: Soil — Date Prep: 05.24.19
Parent Sample Id: 625429-002 — MS Sample Id: 625429-002 S — MSD Sample Id: 625429-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	319	248	575	103	575	103	90-110	0	20	mg/kg	05.24.19 14:38	

Analytical Method: Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3090212 — Matrix: Soil — Date Prep: 05.24.19
Parent Sample Id: 625449-012 — MS Sample Id: 625449-012 S — MSD Sample Id: 625449-012 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	92.2	253	362	107	372	111	90-110	3	20	mg/kg	05.24.19 15:54	X

Analytical Method: TPH by SW8015 Mod — Prep Method: TX1005P
Seq Number: 3090325 — Matrix: Solid — Date Prep: 05.24.19
MB Sample Id: 7678655-1-BLK — LCS Sample Id: 7678655-1-BKS — LCSD Sample Id: 7678655-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<8.00	1000	1080	108	1060	106	70-135	2	20	mg/kg	05.25.19 03:21	
Diesel Range Organics (DRO)	<8.13	1000	1020	102	998	100	70-135	2	20	mg/kg	05.25.19 03:21	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	95		118		117		70-135	%	05.25.19 03:21
o-Terphenyl	95		96		97		70-135	%	05.25.19 03:21

MS/MSD Percent Recovery [D] = 100*(C-A) / B
Relative Percent Difference RPD = 200* | (C-E) / (C+E) |
LCS/LCSD Recovery [D] = 100 * (C) / [B]
Log Difference Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

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

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

Final 1.000

QC Summary 625449

Lobo Services

Carlson Fed A 2 TB

Analytical Method: TPH by SW8015 Mod
Seq Number: 3090915
MB Sample Id: 7679063-1-BLK

Matrix: Solid
LCS Sample Id: 7679063-1-BKS

Prep Method: TX1005P
Date Prep: 05.31.19
LCSD Sample Id: 7679063-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<8.00	1000	1160	116	1190	119	70-135	3	20	mg/kg	05.31.19 21:42	
Diesel Range Organics (DRO)	9.40	1000	1130	113	1120	112	70-135	1	20	mg/kg	05.31.19 21:42	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	99		130		126		70-135	%	05.31.19 21:42
o-Terphenyl	99		129		117		70-135	%	05.31.19 21:42

Analytical Method: TPH by SW8015 Mod
Seq Number: 3091576
MB Sample Id: 7679449-1-BLK

Matrix: Solid
LCS Sample Id: 7679449-1-BKS

Prep Method: TX1005P
Date Prep: 06.04.19
LCSD Sample Id: 7679449-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<8.00	1000	916	92	899	90	70-135	2	20	mg/kg	06.07.19 01:02	
Diesel Range Organics (DRO)	<8.13	1000	918	92	889	89	70-135	3	20	mg/kg	06.07.19 01:02	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	99		95		91		70-135	%	06.07.19 01:02
o-Terphenyl	93		98		97		70-135	%	06.07.19 01:02

Analytical Method: TPH by SW8015 Mod
Seq Number: 3090325
Parent Sample Id: 624787-002

Matrix: Soil
MS Sample Id: 624787-002 S

Prep Method: TX1005P
Date Prep: 05.24.19
MSD Sample Id: 624787-002 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)	295	997	1330	104	1350	106	70-135	1	20	mg/kg	05.25.19 04:39	
Diesel Range Organics (DRO)	1480	997	1960	48	2000	52	70-135	2	20	mg/kg	05.25.19 04:39	X

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	116		123		70-135	%	05.25.19 04:39
o-Terphenyl	107		113		70-135	%	05.25.19 04:39

MS/MSD Percent Recovery [D] = 100*(C-A) / B
Relative Percent Difference RPD = 200* | (C-E) / (C+E) |
LCS/LCSD Recovery [D] = 100 * (C) / [B]
Log Difference Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

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

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

Final 1.000

QC Summary 625449

Lobo Services
Carlson Fed A 2 TB

Analytical Method: TPH by SW8015 Mod
Seq Number: 3090915
Parent Sample Id: 626056-001
Matrix: Soil
MS Sample Id: 626056-001 S
Prep Method: TX1005P
Date Prep: 05.31.19
MSD Sample Id: 626056-001 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)	<8.00	1000	1080	108	1080	108	70-135	0	20	mg/kg	05.31.19 22:40	
Diesel Range Organics (DRO)	9.91	1000	1010	100	1010	100	70-135	0	20	mg/kg	05.31.19 22:40	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	122		121		70-135	%	05.31.19 22:40
o-Terphenyl	112		116		70-135	%	05.31.19 22:40

Analytical Method: TPH by SW8015 Mod
Seq Number: 3091576
Parent Sample Id: 625896-001
Matrix: Soil
MS Sample Id: 625896-001 S
Prep Method: TX1005P
Date Prep: 06.04.19
MSD Sample Id: 625896-001 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)	13.5	999	816	80	788	78	70-135	3	20	mg/kg	06.07.19 02:16	
Diesel Range Organics (DRO)	<8.12	999	831	83	810	81	70-135	3	20	mg/kg	06.07.19 02:16	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	85		78		70-135	%	06.07.19 02:16
o-Terphenyl	80		79		70-135	%	06.07.19 02:16

Analytical Method: BTEX by EPA 8021B
Seq Number: 3090582
MB Sample Id: 7678771-1-BLK
Matrix: Solid
LCS Sample Id: 7678771-1-BKS
Prep Method: SW5030B
Date Prep: 05.29.19
LCSD Sample Id: 7678771-1-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	0.0977	98	0.101	101	70-130	3	35	mg/kg	05.29.19 11:48	
Toluene	<0.00200	0.100	0.104	104	0.104	104	70-130	0	35	mg/kg	05.29.19 11:48	
Ethylbenzene	<0.00200	0.100	0.117	117	0.118	118	70-130	1	35	mg/kg	05.29.19 11:48	
m,p-Xylenes	<0.00401	0.200	0.248	124	0.246	123	70-130	1	35	mg/kg	05.29.19 11:48	
o-Xylene	<0.00200	0.100	0.118	118	0.117	117	70-130	1	35	mg/kg	05.29.19 11:48	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	103		88		88		70-130	%	05.29.19 11:48
4-Bromofluorobenzene	105		101		102		70-130	%	05.29.19 11:48

MS/MSD Percent Recovery [D] = 100*(C-A) / B
Relative Percent Difference RPD = 200* |(C-E) / (C+E)|
LCS/LCSD Recovery [D] = 100 * (C) / [B]
Log Difference Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

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

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

Final 1.000

QC Summary 625449

Lobo Services
Carlson Fed A 2 TB

Analytical Method: BTEX by EPA 8021B
Seq Number: 3091397
MB Sample Id: 7679357-1-BLK
Matrix: Solid
LCS Sample Id: 7679357-1-BKS
Prep Method: SW5030B
Date Prep: 06.06.19
LCSD Sample Id: 7679357-1-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	0.0998	0.0892	89	0.0913	92	70-130	2	35	mg/kg	06.06.19 09:17	
Toluene	<0.00200	0.0998	0.0938	94	0.0976	98	70-130	4	35	mg/kg	06.06.19 09:17	
Ethylbenzene	<0.00200	0.0998	0.0987	99	0.103	104	70-130	4	35	mg/kg	06.06.19 09:17	
m,p-Xylenes	<0.00399	0.200	0.203	102	0.212	107	70-130	4	35	mg/kg	06.06.19 09:17	
o-Xylene	<0.00200	0.0998	0.101	101	0.105	106	70-130	4	35	mg/kg	06.06.19 09:17	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	114		97		96		70-130	%	06.06.19 09:17
4-Bromofluorobenzene	101		101		102		70-130	%	06.06.19 09:17

Analytical Method: BTEX by EPA 8021B
Seq Number: 3090582
Parent Sample Id: 625516-001
Matrix: Soil
MS Sample Id: 625516-001 S
Prep Method: SW5030B
Date Prep: 05.29.19
MSD Sample Id: 625516-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00201	0.101	0.0900	89	0.0865	87	70-130	4	35	mg/kg	05.29.19 12:26	
Toluene	<0.00201	0.101	0.0883	87	0.0838	84	70-130	5	35	mg/kg	05.29.19 12:26	
Ethylbenzene	<0.00201	0.101	0.0931	92	0.0837	84	70-130	11	35	mg/kg	05.29.19 12:26	
m,p-Xylenes	<0.00402	0.201	0.194	97	0.174	87	70-130	11	35	mg/kg	05.29.19 12:26	
o-Xylene	<0.00201	0.101	0.0937	93	0.0848	85	70-130	10	35	mg/kg	05.29.19 12:26	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	92		91		70-130	%	05.29.19 12:26
4-Bromofluorobenzene	106		107		70-130	%	05.29.19 12:26

Analytical Method: BTEX by EPA 8021B
Seq Number: 3091397
Parent Sample Id: 626509-012
Matrix: Soil
MS Sample Id: 626509-012 S
Prep Method: SW5030B
Date Prep: 06.06.19
MSD Sample Id: 626509-012 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	0.0561	56	0.0620	62	70-130	10	35	mg/kg	06.06.19 09:55	X
Toluene	<0.000454	0.0996	0.0473	47	0.0537	54	70-130	13	35	mg/kg	06.06.19 09:55	X
Ethylbenzene	<0.00199	0.0996	0.0423	42	0.0448	45	70-130	6	35	mg/kg	06.06.19 09:55	X
m,p-Xylenes	0.00412	0.199	0.0874	42	0.0934	44	70-130	7	35	mg/kg	06.06.19 09:55	X
o-Xylene	0.00193	0.0996	0.0442	42	0.0475	46	70-130	7	35	mg/kg	06.06.19 09:55	X

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	99		99		70-130	%	06.06.19 09:55
4-Bromofluorobenzene	104		112		70-130	%	06.06.19 09:55

MS/MSD Percent Recovery [D] = 100*(C-A) / B
Relative Percent Difference RPD = 200* |(C-E) / (C+E)|
LCS/LCSD Recovery [D] = 100 * (C) / [B]
Log Difference Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

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

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

Final 1.000

Chain of Custody

Work Order No: 605449

XENCO LABORATORIES

Houston,TX (281) 240-4200 Dallas,TX (214) 902-0300 San Antonio,TX (210) 509-3334
Midland,TX (432-704-5440) EL Paso,TX (915)585-3443 Lubbock,TX (806)794-1296
Hobbs,NM (575-392-7550) Phoenix,AZ (480-355-0900) Atlanta,GA (770-449-8800) Tampa,FL (813-620-2000) www.xenco.com Page 1 of 2

Project Manager:	Raymond Taylor	Bill to: (if different)	JR Juarez
Company Name:	Lobo Services	Company Name:	Whiting Oil and Gas
Address:	214 W Texas Ave, Suite 1215	Address:	
City, State ZIP:	Midland, Texas 79701	City, State ZIP:	
Phone:	432-425-3098	Email:	raymond@loboservicesconsulting.com

Work Order Comments

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

Project Name:	Carlson Fed A 2 TB	Turn Around	
Project Number:		Routine ☐	
P.O. Number:		Rush: 3 Day	
Sampler's Name:	Raymond Taylor	Due Date:	

SAMPLE RECEIPT			
Temperature (°C):	0.5 | 2.3	Temp Blank: Yes (No)	Wet Ice: (Yes) No
Received Intact:	(Yes) No	Thermometer ID:	T2
Cooler Custody Seals:	Yes (No) N/A	Correction Factor:	-0.2
Sample Custody Seals:	Yes (No) N/A	Total Containers:	

ANALYSIS REQUEST

Work Order Notes

Run deeper horizon if exceeded
2,500 - TPH
50 - BTEX
10 - Benzene
600 - Chloride

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

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers	BTEX	TPH 8015	Chlorides	Sample Comments
AH-1 0-0.5'	Soil	5/23/19			1	X	X	X	
AH-1 0.5'-1.0'					1				
AH-1 1.0'-1.5'					1				
AH-2 0-0.5'					1	X	X	X	
AH-2 0.5'-1.0'					1				
AH-2 1.0'					1				
AH-3 0-0.5'					1	X	X	X	
AH-3 0.5'-1.0'					1				
AH-3 1.0'-1.5'					1				
AH-3 1.5'-2.0'					1				

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

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

	Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1			5/24/19 0904	2		
3				4		
5				6		

Chain of Custody

XENCO LABORATORIES

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

Work Order No: 625449

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Project Manager:	Raymond Taylor	Bill to: (if different)	JR Juarez
Company Name:	Lobo Services	Company Name:	Whiting Oil and Gas
Address:	214 W Texas Ave, Suite 1215	Address:	
City, State ZIP:	Midland, Texas 79701	City, State ZIP:	
Phone:	432-425-3098	Email:	raymond@loboservicesconsulting.com

Work Order Comments

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

Project Name:	Carlson Fed A 2 TB	Turn Around	
Project Number:		Routine ☐	
P.O. Number:		Rush: 3 Day	
Sampler's Name:		Due Date:	

SAMPLE RECEIPT			
Temp Blank:	Yes (No)	Wet Ice:	(Yes) No
Temperature (°C):	0.5/0.3	Thermometer ID	
Received Intact:	(Yes) No		
Cooler Custody Seals:	(Yes) No N/A	Correction Factor:	-0.2
Sample Custody Seals:	Yes (No) N/A	Total Containers:	

ANALYSIS REQUEST

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers	BTEX	TPH 8015	Chlorides
Stockpile #1	Soil	5/23/19			1	X	X	X
Stockpile #2	↓	↓			1	X	X	X
Stockpile #3					1	X	X	X
Stockpile #4					1	X	X	X

Work Order Notes

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

Sample Comments

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

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

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1		5/24/19	2		
3			4		
5			6		

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: Lobo Services

Date/ Time Received: 05/24/2019 09:04:00 AM

Work Order #: 625449

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

Temperature Measuring device used : R8

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

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

Analyst:

PH Device/Lot#:

Checklist completed by: Brianna Teel
Brianna Teel
Date: 05/24/2019

Checklist reviewed by: Holly Taylor
Holly Taylor
Date: 05/28/2019

WHITING
Whiting Petroleum Corporation
and its wholly owned subsidiary
Whiting Oil and Gas Corporation

1700 Broadway, Suite 2300, Denver, CO 80290-2300
Phone: 303.837.1661 | FAX: 303.861.4023

May 22, 2019

Bureau of Land Management
Carlsbad Field Office
620 E. Greene Street
Carlsbad, New Mexico 88220-6292

Attention: James Amos

RE: Crude Oil/Produced Water Release
Carlson Federal A Tank Battery
Lea County, NM

The following information is intended to meet the 15-day written report requirement as a result of an, Other-Than Undesirable Event as required under NTL-3A.

Date and time of occurrence:	05/07/19 estimated time approximately 10:00 a.m. MT
Date and time reported to BLM:	05/22/19 10:15 a.m. MT
Location where the event occurred:	Carlson Federal A Tank Battery Lea Field, Lea County Section 25 T25S R37E Lat 32.09978 Long -103.11074 API No. 3002511764
Specific Nature and Cause of the Incident:	On 5/8/19 severe weather caused an electrical failure that resulted in the facility transfer pump to shut-off. The down-hole pump continued to produce causing the tank to overflow.
Description of Resultant Damage:	The overfilling resulted in a loss of 4 barrels of crude oil and 6 barrels of produced water. No damage resulted from this event. The liquid was contained within the tank battery firewall and 3.5 barrels of crude oil and 5.5 barrels of produced water were recovered.
Actions Taken and Time Required to Control the incident:	The released liquids were contained inside the battery firewall and a vacuum truck was dispatched to recover the liquids. The well was shut-in until power was restored to the

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	site, at which time normal operations were brought back on-line.
Estimated Volumes Lost:	Approximately 4 barrels of crude oil and 6 barrels of produced water.
Cause of Injuries/Deaths:	No injuries or deaths were associated with this event.
Actions Taken to Prevent a Recurrence:	A sensor will be added to the facility that will send a notification to the operator if power is lost at the facility.
Other Agencies Notified:	A Form C-141 was filed with the State of New Mexico Energy Minerals and Natural Resources Department – Oil Conservation Division on 05/21/19.
Other Pertinent Comments Or additional information:	Approximately 40 cubic yards of soil were removed from within the firewall and staged pending disposal. Soil samples will be collected to verify adequate cleanup of the releases.

Please contact me if you have any questions at 303-876-7093.

Respectfully submitted,

Mark Keyes
Environmental Compliance Supervisor
Whiting Oil & Gas Corporation