

RECEIVED

By JKeyes at 7:11 am, Sep 25, 2015

RECEIVED

By OCD District 1 at 3:29 pm, Aug 28, 2015

APPROVED

By JKeyes at 7:11 am, Sep 25, 2015

District 1
1220 S. St. Francis Dr., Santa Fe, NM 87505State of New Mexico
Energy Minerals and Natural Resources
Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Revised August 8, 2011

Submit 1 Copy to appropriate District Office in
accordance with 19.15.29 NMAC.**Release Notification and Corrective Action****OPERATOR**☒ Initial Report ☐ Final Report

EOG Resources, Inc.	Contact Zane Kurtz
Address 5509 Champions Drive, Midland, TX 79706	Telephone No. 432-425-2023
Facility Name Vaca Ridge 30 Fed Com #1 poly line	Facility Type Salt Water Disposal water line
Surface Owner EOG	Mineral Owner EOG Resources
API No. 30-025-28873	

LOCATION OF RELEASE

Unit Letter G	Section 31	Township 24S	Range 34E	Feet from the 1471	North/South Line N	Feet from the 2184	East/West Line E	County Lea
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Latitude 32.17727 Longitude -103.50748

NATURE OF RELEASE

Type of Release Produced Water	Volume of Release 40 bbls	Volume Recovered 15bbls
Source of Release: weak spot in flow line	Date and Hour of Occurrence 8/26/2015	Date and Hour of Discovery 8/26/2015
Was Immediate Notice Given? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom?	
By Whom?	Date and Hour	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse. N/A	

If a Watercourse was Impacted, Describe Fully.*

APPROVED

By OCD District 1 at 3:29 pm, Aug 28, 2015

Describe Cause of Problem and Remedial Action Taken.*

Weak spot in poly flow line caused release of 40bbls produce water alongside lease road. 15bbls recovered by vac truck upon discovery. 3rd party consultant will travel to site to delineate horizontal and vertical impacts. A work plan will be prepared to remediate impacted area. Work plan will include excavation of impacted material with direction to use poly liner prior to proper disposal at Sundance disposal in Eunice, NM. Clean backfill will be used once final clearance is granted.

Describe Area Affected and Cleanup Action Taken.*

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD 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 NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD 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.

OIL CONSERVATION DIVISION

Signature:

Printed Name: Zane Kurtz, EOG Resources

Approved by Environmental Specialist:

Title: Sr. Environmental Rep.

Approval Date: 08/28/2015

Expiration Date: 10/28/2015

E-mail Address: zane_kurtz@eogresources.com

Conditions of Approval:

Discrete site samples required. Delineate and remediate per NMOCD guidelines.

Attached ☐

1RP 3825

Date: 8-27-2015

Phone: 432-425-2023

Geotagged photos of remediation required.
Ensure BLM concurrence/approval.

pJXK1524055673

nJXK1524055666

* Attach Additional Sheets If Necessary



1RP-3825
Investigation Summary
Vaca Ridge 30 Fed Com #1 Produced Water Spill
September 17, 2015

Page 1 of 2

Introduction

This investigation summary is prepared for EOG Resources, Inc. (EOG) by Larson & Associates, Inc. (LAI) for a produced water release from a poly flow line associated with the Vaca Ridge 30 Fed Com #1 SWD (Site) in Unit G (SW/4, NE/4), Section 31, Township 24 South, Range 34 East, Lea County, New Mexico. The geodetic position is north 32° 10' 36.45" and west 103° 30' 27.31". The release occurred on August 26, 2015, due to failure of the poly flow line. Approximately 40 barrels (bbl) of produced water was released with about 15 bbl recovered by a vacuum truck. The net loss was approximately 25 bbl. The release occurred over a pipeline right of way with 2 lines buried at about 5 feet below ground surface (bgs). The release covers an area measuring about 25 feet in width by about 350 feet in length. The release crossed the lease road and pooled about 500 feet southeast of the point of origin. The release was reported to the New Mexico Oil Conservation Division (OCD) District 1 on August 27, 2015. OCD issued remediation project (RP) number 1RP-3825. Figure 1 presents a topographic map. Figure 2 presents an aerial map.

Setting

The setting is as follows:

- The surface elevation is about 3,475 feet above mean sea level (MSL);
- The topography is slightly undulating and slopes to the southeast;
- The nearest surface water feature is an intermittent drainage that terminates near the Site;
- The soils are designated as "Simona-Upton association", consisting of calcareous eolian deposits derived from reworking the Blackwater Draw (Pleistocene) and Ogallala (Pliocene) formations, in descending order;
- The soil developed over a petrocalcic (caliche) horizon that occurs between about 4 and 8 feet below ground surface (bgs);
- Groundwater is greater than 200 feet bgs according to records from the New Mexico Office of the State Engineer (OSE);
- No fresh water wells are located within 1-mile of the Site according to OSE records;
- The nearest fresh water well is located about 7.4 miles east of the Site, in Unit C (NE/, NW/4), Section 35, Township 24 south, Range 34 East;

Remediation Action Levels

Remediation action levels (RRAL) were calculated for benzene, BTEX and TPH based on the following criteria established by the OCD (*Guidelines for Remediation of Leaks, Spills and Releases, August 13, 1993*):

Criteria	Result	Score
Depth-to-Groundwater	>100 feet	0
Wellhead Protection Area	No	0
Distance to Surface Water Body	200 - 1000 Horizontal Feet	10

The following RRAL apply to the release for ranking score: 10

- Benzene 10 mg/Kg
- BTEX 50 mg/Kg
- TPH 1,000 mg/Kg


Initial Samples and Analysis

Initial samples were collected on September 1, 2015. LAI personnel used a direct push rig to collect soil samples at four (4) locations (DP-1 through DP-4) between approximately 4 and 8 feet bgs. Permian Basin Environmental Lab (PBEL) in Midland, Texas, analyzed the upper sample (0 to 1 foot) for total petroleum hydrocarbons (TPH) by SW-846 method 8015 modified. All samples were analyzed for chloride by method 300. Table 1 presents the analytical data summary. Figure 3 presents the sample locations. Attachment A presents the laboratory report.

TPH was below the analytical method reporting limit. Chloride was delineated vertically to 250 milligrams per kilogram (mg/Kg) at locations SP-3, 4 to 6 feet (13.9 mg/Kg) and SP-4, 2 to 4 feet (6.08 mg/Kg). Chloride exceeded 250 mg/Kg in bottom samples from SP-1, 4 to 6 feet (8,080 mg/Kg) and DP-2 (1,680 mg/Kg).

Remediation Plan

- Collect soil samples from 10, 12 and 14 feet bgs at DP-1 and DP-2 and analyze for chloride by method 300;
- Excavate soil to approximately 4 feet bgs from area shown on Figure 3, between DP-1 and DP-2, and install 20 mil thickness poly liner in bottom of excavation;
- Excavate soil to approximately 1 foot bgs in vicinity of DP-4;
- Backfill excavations with clean topsoil and seed;
- Dispose contaminated soil at OCD approved landfill; and
- Prepare final report for submission to OCD.



Mark J. Larson, CPG

Tables

Table 1
Investigation Soil Sample Analytical Data Summary
EOC Resources, Inc., Vaca Ridge 30 Fed Com #1 Flowline Spill
UL G (SW/4, NE/4), Section 31, Township 24 South, Range 34 East
Lea County, New Mexico
1RP-3825

Sample	Depth (Feet)	Collection Date	C6 - C12 (mg/Kg)	>C12 - C28 (mg/Kg)	>C28 - C35 (mg/Kg)	TPH (mg/Kg)	Chloride (mg/Kg)
OCD RRAL:							
DP-1	0 - 1	09/01/2015	<28.1	<28.1	<28.1	<28.1	7,140
	1 - 2	09/01/2015	--	--	--	--	3,690
	2 - 4	09/01/2015	--	--	--	--	5,450
	4 - 6	09/01/2015	--	--	--	--	8,080
DP-2	0 - 1	09/01/2015	<27.5	<27.5	<27.5	<27.5	7,140
	1 - 2	09/01/2015	--	--	--	--	6,070
	2 - 4	09/01/2015	--	--	--	--	8,190
	4 - 6	09/01/2015	--	--	--	--	2,450
	6 - 8	09/01/2015	--	--	--	--	1,680
DP-3	0 - 1	09/01/2015	<26.6	<26.6	<26.6	<26.6	63.6
	1 - 2	09/01/2015	--	--	--	--	45.3
	2 - 4	09/01/2015	--	--	--	--	7.40
	4 - 6	09/01/2015	--	--	--	--	13.9
DP-4	0 - 1	09/01/2015	<26.9	<26.9	<26.9	<26.9	2,540
	1 - 2	09/01/2015	--	--	--	--	182
	2 - 4	09/01/2015	--	--	--	--	6.08

Notes: Laboratory analysis performed by Permian Basin Environmental Lab, Midland, Texas, by EPA SW-846 method 8015M (TPH) and 300.0 (chloride)
Depth in feet below ground surface (bgs)
mg/kg: milligrams per kilogram equivalent to parts per million (ppm)

Figures

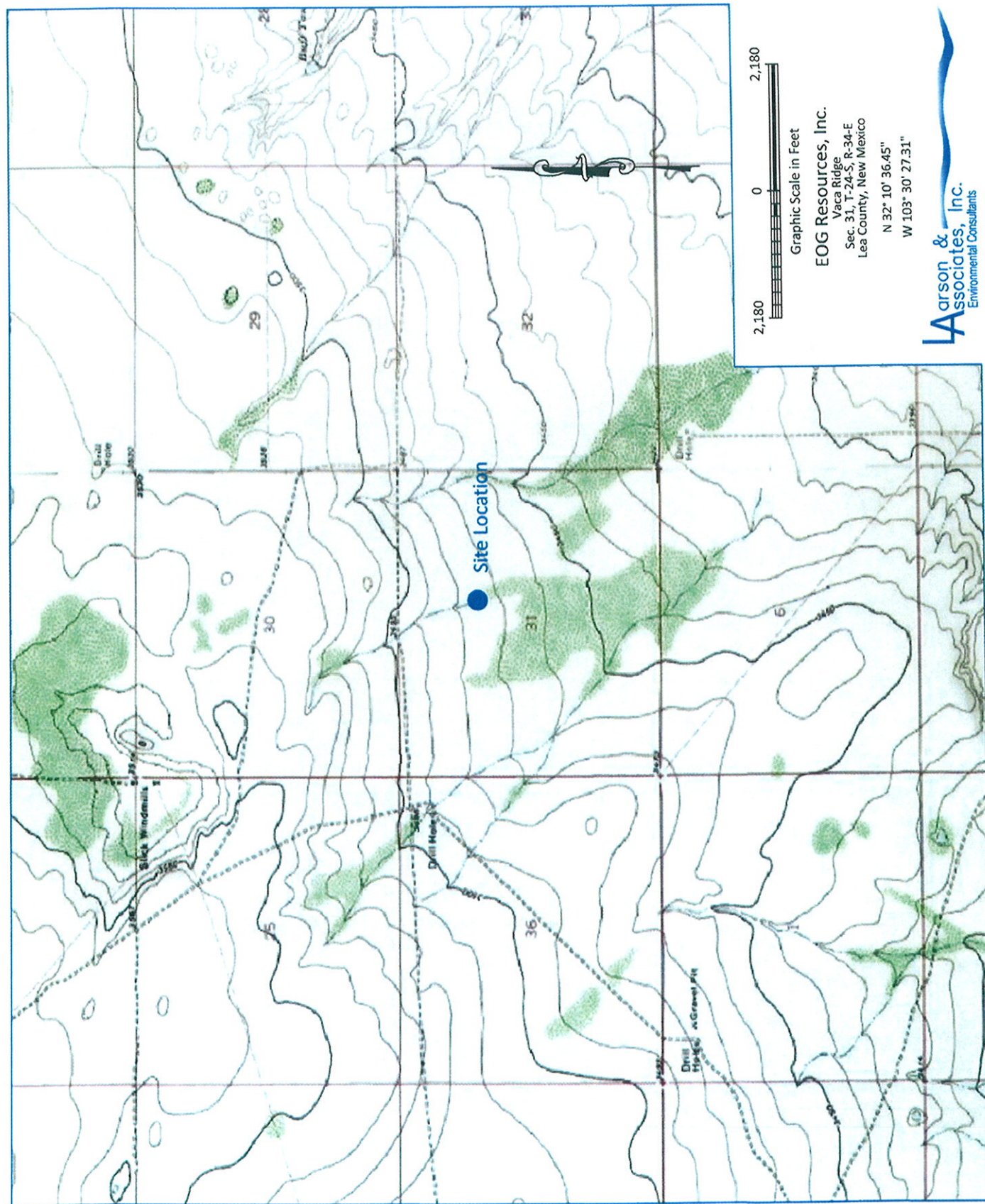


Figure 1 - Topographic Map

Graphic Scale in Feet

EOG Resources, Inc.

Vaca Ridge
Sec. 31, T-24-S, R-34-E
Lea County, New Mexico

N 32° 10' 36.45"
W 103° 30' 27.31"

Larson & Associates, Inc.
Environmental Consultants



Figure 2 - Aerial Map

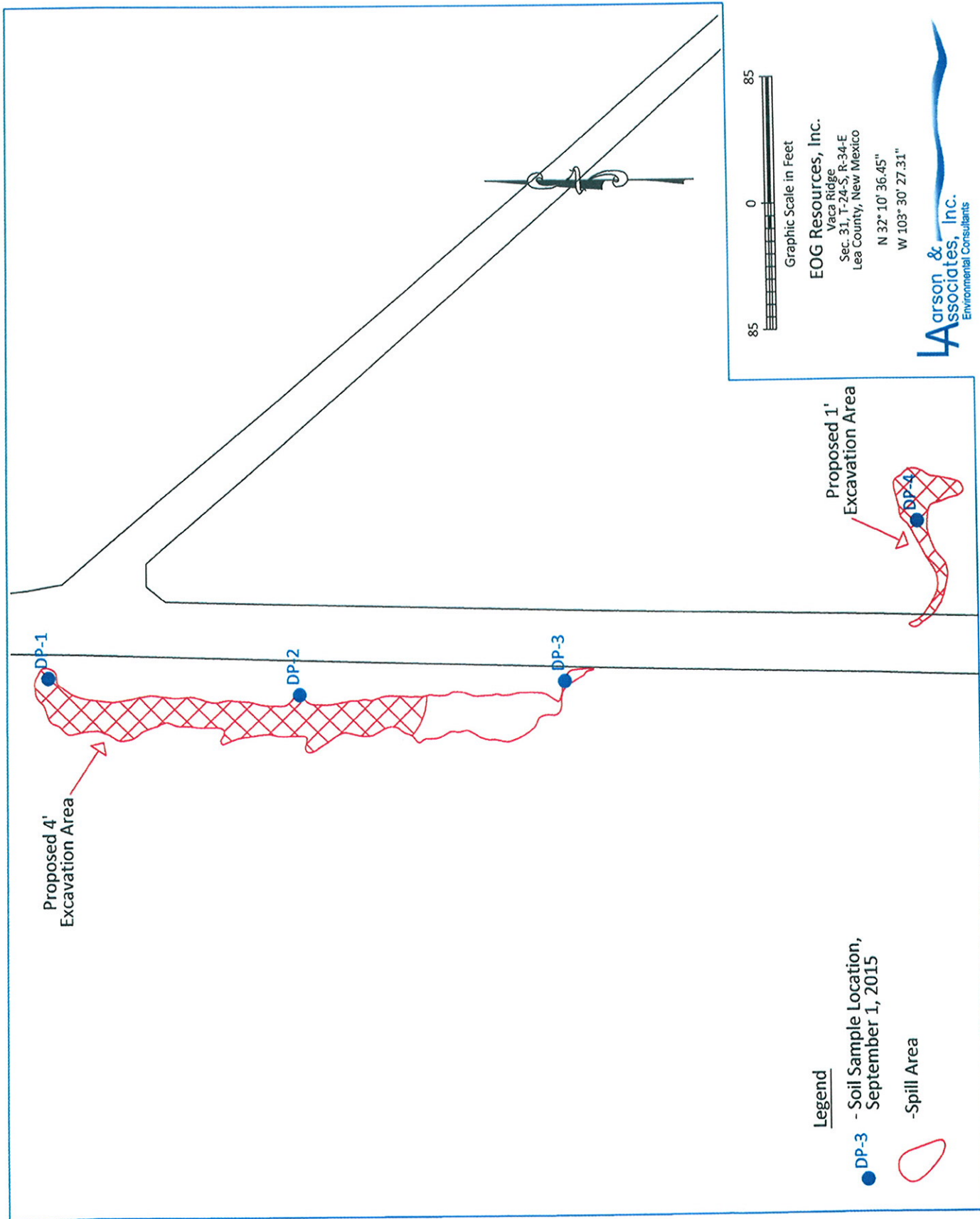


Figure 3 - Site Drawing

Attachment A
Laboratory Report

**PERMIAN BASIN
ENVIRONMENTAL LAB, LP
10014 SCR 1213
Midland, TX 79706**



Analytical Report

Prepared for:

Mark Larson
Larson & Associates, Inc.
P.O. Box 50685
Midland, TX 79710

Project: Vaca Ridge 30
Project Number: 15-0148-01
Location: New Mexico
Lab Order Number: 5102001



NELAP/TCEQ # T104704156-13-3

Report Date: 09/09/15

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Vacu Ridge 30
Project Number: 15-0148-01
Project Manager: Mark Larson

Fax: (432) 687-0456

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
DP-1 (0-1)	5102001-01	Soil	09/01/15 11:00	09-01-2015 17:20
DP-1 (1-2)	5102001-02	Soil	09/01/15 11:00	09-01-2015 17:20
DP-1 (2-4)	5102001-03	Soil	09/01/15 11:00	09-01-2015 17:20
DP-1 (4-6)	5102001-04	Soil	09/01/15 11:30	09-01-2015 17:20
DP-2 (0-1)	5102001-05	Soil	09/01/15 11:45	09-01-2015 17:20
DP-2 (1-2)	5102001-06	Soil	09/01/15 11:45	09-01-2015 17:20
DP-2 (2-4)	5102001-07	Soil	09/01/15 11:45	09-01-2015 17:20
DP-2 (4-6)	5102001-08	Soil	09/01/15 12:00	09-01-2015 17:20
DP-2 (6-8)	5102001-09	Soil	09/01/15 12:00	09-01-2015 17:20
DP-3 (0-1)	5102001-10	Soil	09/01/15 12:15	09-01-2015 17:20
DP-3 (1-2)	5102001-11	Soil	09/01/15 12:15	09-01-2015 17:20
DP-3 (2-4)	5102001-12	Soil	09/01/15 12:15	09-01-2015 17:20
DP-3 (4-6)	5102001-13	Soil	09/01/15 12:30	09-01-2015 17:20
DP-4 (0-1)	5102001-14	Soil	09/01/15 12:45	09-01-2015 17:20
DP-4 (1-2)	5102001-15	Soil	09/01/15 12:45	09-01-2015 17:20
DP-4 (2-4)	5102001-16	Soil	09/01/15 12:45	09-01-2015 17:20

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P.O. Box 50685
Midland TX, 79710

Project: Vaca Ridge 30
Project Number: 15-0148-01
Project Manager: Mark Larson

Fax: (432) 687-0456

DP-1 (0-1)
5102001-01 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	7140	28.1	mg/kg dry	25	P510802	09/03/15	09/08/15	EPA 300.0	
% Moisture	11.0	0.1	%	1	P510301	09/03/15	09/03/15	% calculation	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	28.1	mg/kg dry	1	P510601	09/04/15	09/04/15	TPH 8015M	
>C12-C28	ND	28.1	mg/kg dry	1	P510601	09/04/15	09/04/15	TPH 8015M	
>C28-C35	ND	28.1	mg/kg dry	1	P510601	09/04/15	09/04/15	TPH 8015M	
Surrogate: 1-Chlorooctane		98.3 %	70-130		P510601	09/04/15	09/04/15	TPH 8015M	
Surrogate: o-Terphenyl		122 %	70-130		P510601	09/04/15	09/04/15	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	28.1	mg/kg dry	1	[CALC]	09/04/15	09/04/15	calc	

Permian Basin Environmental Lab, L.P.

The results in this report apply to the samples analyzed in accordance with the samples received in the laboratory. This analytical report must be reproduced in its entirety, with written approval of Permian Basin Environmental Lab.

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Page 3 of 24

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Midland TX, 79710

Project: Vaca Ridge 30
Project Number: 15-0148-01
Project Manager: Mark Larson

Fax: (432) 687-0456

DP-1 (1-2)
5102001-02 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	3690	28.1	mg/kg dry	25	P510802	09/03/15	09/08/15	EPA 300.0	
% Moisture	11.0	0.1	%	1	P510301	09/03/15	09/03/15	% calculation	

Permian Basin Environmental Lab, L.P.

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Project: Vaca Ridge 30
Project Number: 15-0148-01
Project Manager: Mark Larson

Fax: (432) 687-0456

DP-1 (2-4)
5102001-03 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	5450	29.1	mg/kg dry	25	P510802	09/03/15	09/08/15	EPA 300.0	
% Moisture	14.0	0.1	%	1	P510301	09/03/15	09/03/15	% calculation	

Permian Basin Environmental Lab, L.P.

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Midland TX, 79710

Project: Vaca Ridge 30
Project Number: 15-0148-01
Project Manager: Mark Larson

Fax: (432) 687-0456

DP-1 (4-6)

5102001-04 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	8080	28.7	mg/kg dry	25	PS10802	09/03/15	09/08/15	EPA 360.0	
% Moisture	13.0	0.1	%	1	PS10301	09/03/15	09/03/15	% calculation	

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DP-2 (0-1)
5102001-05 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	7140	27.5	mg/kg dry	25	P510802	09/03/15	09/08/15	EPA 300.0	
% Moisture	9.0	0.1	%	1	P510301	09/03/15	09/03/15	% calculation	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	27.5	mg/kg dry	1	P510601	09/04/15	09/04/15	TPH 8015M	
>C12-C28	ND	27.5	mg/kg dry	1	P510601	09/04/15	09/04/15	TPH 8015M	
>C28-C35	ND	27.5	mg/kg dry	1	P510601	09/04/15	09/04/15	TPH 8015M	
Surrogate: 1-Chlorooctane		102 %	70-130		P510601	09/04/15	09/04/15	TPH 8015M	
Surrogate: o-Terphenyl		123 %	70-130		P510601	09/04/15	09/04/15	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	27.5	mg/kg dry	1	[CALC]	09/04/15	09/04/15	calc	

Permian Basin Environmental Lab, L.P.

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Page 7 of 24

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Project: Vaca Ridge 30
Project Number: 15-0148-01
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Fax: (432) 687-0456

DP-2 (1-2)
5102001-06 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	6070	28.1	mg/kg dry	25	PS10802	09/03/15	09/08/15	EPA 300.0	
% Moisture	11.0	0.1	%	1	PS10301	09/03/15	09/03/15	% calculation	

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DP-2 (2-4)
5102001-07 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	8190	29.1	mg/kg dry	25	PSI0802	09/03/15	09/08/15	EPA 300.0	
% Moisture	14.0	0.1	%	1	PSI0301	09/03/15	09/03/15	% calculation	

Permian Basin Environmental Lab, L.P.

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Page 9 of 24

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Project: Vaca Ridge 30
Project Number: 15-0148-01
Project Manager: Mark Larson

Fax: (432) 687-0456

DP-2 (4-6)
5102001-08 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	2450	6.10	mg/kg dry	5	P510802	09/03/15	09/08/15	EPA 300.0	
% Moisture	8.0	0.1	%	1	P510301	09/03/15	09/03/15	% calculation	

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DP-2 (6-8)
5102001-09 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	1680	6.10	mg/kg dry	5	P510802	09/03/15	09/08/15	EPA 300.0	
% Moisture	8.0	0.1	%	1	P510301	09/03/15	09/03/15	% calculation	

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Fax: (432) 687-0456

DP-3 (0-1)
5102001-10 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	63.6	1.06	mg/kg dry	1	PS10802	09/03/15	09/08/15	EPA 500.0	
% Moisture	6.0	0.1	%	1	PS10301	09/03/15	09/03/15	% calculation	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.6	mg/kg dry	1	PS10601	09/04/15	09/04/15	TPH 8015M	
>C12-C28	ND	26.6	mg/kg dry	1	PS10601	09/04/15	09/04/15	TPH 8015M	
>C28-C35	ND	26.6	mg/kg dry	1	PS10601	09/04/15	09/04/15	TPH 8015M	
Surrogate: 1-Chlorooctane		106 %	70-130		PS10601	09/04/15	09/04/15	TPH 8015M	
Surrogate: o-Terphenyl		130 %	70-130		PS10601	09/04/15	09/04/15	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	26.6	mg/kg dry	1	{CALC}	09/04/15	09/04/15	calc	

Permian Basin Environmental Lab, L.P.

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Page 12 of 24

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P.O. Box 50685
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Project: Vaca Ridge 30
Project Number: 15-0148-01
Project Manager: Mark Larson

Fax: (432) 687-0456

DP-3 (1-2)
5102001-11 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	45.3	1.06	mg/kg dry	1	P510802	09/03/15	09/08/15	EPA 300.0	
% Moisture	6.0	0.1	%	1	P510301	09/03/15	09/03/15	% calculation	

Permian Basin Environmental Lab, L.P.

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P.O. Box 50685
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Project: Vaca Ridge 30
Project Number: 15-0148-01
Project Manager: Mark Larson

Fax: (432) 687-0456

DP-3 (2-4)
5I02001-12 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	7.40	1.05	mg/kg dry	1	P510802	09/03/15	09/08/15	EPA 300.0	
% Moisture	5.0	0.1	%	1	P510301	09/03/15	09/03/15	% calculation	

Permian Basin Environmental Lab, L.P.

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10014 SCR 1213 Midland, TX 79706 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Vaca Ridge 30
Project Number: 15-0148-01
Project Manager: Mark Larson

Fax: (432) 687-0456

DP-3 (4-6)
5102001-13 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	13.9	1.04	mg/kg dry	1	P510802	09/03/15	09/08/15	EPA 300.0	
% Moisture	4.0	0.1	%	1	P510301	09/03/15	09/03/15	% calculation	

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DP-4 (0-1)
5102001-14 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	2540	10.8	mg/kg dry	10	PS10802	09/03/15	09/08/15	EPA 300.0	
% Moisture	7.0	0.1	%	1	PS10301	09/03/15	09/03/15	% calculation	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.9	mg/kg dry	1	PS10601	09/04/15	09/04/15	TPH 8015M	
>C12-C28	ND	26.9	mg/kg dry	1	PS10601	09/04/15	09/04/15	TPH 8015M	
>C28-C35	ND	26.9	mg/kg dry	1	PS10601	09/04/15	09/04/15	TPH 8015M	
Surrogate: 1-Chlorooctane		104 %	70-130		PS10601	09/04/15	09/04/15	TPH 8015M	
Surrogate: o-Terphenyl		129 %	70-130		PS10601	09/04/15	09/04/15	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	26.9	mg/kg dry	1	[CALC]	09/04/15	09/04/15	calc	

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Project Number: 15-0148-01
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Fax: (432) 687-0456

DP-4 (1-2)
5102001-15 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	182	1.28	mg/kg dry	1	P510802	09/03/15	09/08/15	EPA 300.0	
% Moisture	22.0	0.1	%	1	P510301	09/03/15	09/03/15	% calculation	

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
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Project: Vaca Ridge 30
Project Number: 15-0148-01
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Fax: (432) 687-0456

DP-4 (2-4)
5102001-16 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	6.08	1.00	mg/kg dry	1	P510802	09/03/15	09/08/15	EPA 300.0	
% Moisture	ND	0.1	%	1	P510301	09/03/15	09/03/15	% calculation	

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
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Project: Vaca Ridge 30
Project Number: 15-0148-01
Project Manager: Mark Larson

Fax: (432) 687-0456

General Chemistry Parameters by EPA / Standard Methods - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
Batch P5I0301 - % Solids									
Blank (P5I0301-BLK1)									Prepared & Analyzed: 09/03/15
% Moisture	ND	0.1	%						
Duplicate (P5I0301-DUP1)									Source: 5I01006-01 Prepared & Analyzed: 09/03/15
% Moisture	4.0	0.1	%		4.0		0.00	20	
Duplicate (P5I0301-DUP2)									Source: 5I01012-01 Prepared & Analyzed: 09/03/15
% Moisture	1.0	0.1	%		1.0		0.00	20	
Duplicate (P5I0301-DUP3)									Source: 5I01015-03 Prepared & Analyzed: 09/03/15
% Moisture	1.0	0.1	%		1.0		0.00	20	
Duplicate (P5I0301-DUP4)									Source: 5I02001-11 Prepared & Analyzed: 09/03/15
% Moisture	6.0	0.1	%		6.0		0.00	20	
Batch P5I0802 - *** DEFAULT PREP ***									
Blank (P5I0802-BLK1)									Prepared: 09/03/15 Analyzed: 09/08/15
Chloride	ND	1.00	mg/kg wet						
LCS (P5I0802-BS1)									Prepared: 09/03/15 Analyzed: 09/08/15
Chloride	108	1.00	mg/kg wet	100		108	80-120		
LCS Dup (P5I0802-BSD1)									Prepared: 09/03/15 Analyzed: 09/08/15
Chloride	103	1.00	mg/kg wet	100		103	80-120	4.27	20
Duplicate (P5I0802-DUP1)									Source: 5I01009-06 Prepared: 09/03/15 Analyzed: 09/08/15
Chloride	6380	30.9	mg/kg dry		6380		0.00484	20	

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Project: Vaca Ridge 30
Project Number: 15-0148-01
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General Chemistry Parameters by EPA / Standard Methods - Quality Control
Permian Basin Environmental Lab, L.P.

Analytic	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P5I0802 - * DEFAULT PREP *****

Duplicate (P5I0802-DUP2)

Source: 5I02001-16

Prepared: 09/03/15 Analyzed: 09/08/15

Chloride

5.94

1.00

mg/kg dry

6.08

2.33

20

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Project Number: 15-0148-01
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Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P510601 - TX 1005

Blank (P510601-BLK1)

Prepared & Analyzed: 09/04/15

C6-C12	ND	25.0	mg/kg wet							
>C12-C28	ND	25.0	"							
>C28-C35	ND	25.0	"							
Surrogate: 1-Chlorooctane	102		"	100		102	70-130			
Surrogate: o-Terphenyl	62.0		"	50.0		124	70-130			

LCS (P510601-BS1)

Prepared & Analyzed: 09/04/15

C6-C12	843	25.0	mg/kg wet	1000		84.3	75-125			
>C12-C28	912	25.0	"	1000		91.2	75-125			
Surrogate: 1-Chlorooctane	94.6		"	100		94.6	70-130			
Surrogate: o-Terphenyl	55.6		"	50.0		111	70-130			

LCS Dup (P510601-BSD1)

Prepared & Analyzed: 09/04/15

C6-C12	842	25.0	mg/kg wet	1000		84.2	75-125	0.170	20	
>C12-C28	940	25.0	"	1000		94.0	75-125	3.04	20	
Surrogate: 1-Chlorooctane	117		"	100		117	70-130			
Surrogate: o-Terphenyl	56.8		"	50.0		114	70-130			

Matrix Spike (P510601-MS1)

Source: 5102001-14

Prepared & Analyzed: 09/04/15

C6-C12	896	26.9	mg/kg dry	1080	ND	83.3	75-125			
>C12-C28	953	26.9	"	1080	ND	88.6	75-125			
Surrogate: 1-Chlorooctane	124		"	108		115	70-130			
Surrogate: o-Terphenyl	63.8		"	53.8		119	70-130			

Matrix Spike Dup (P510601-MSD1)

Source: 5102001-14

Prepared & Analyzed: 09/04/15

C6-C12	905	26.9	mg/kg dry	1080	ND	84.2	75-125	0.983	20	
>C12-C28	978	26.9	"	1080	ND	91.0	75-125	2.60	20	
Surrogate: 1-Chlorooctane	124		"	108		115	70-130			
Surrogate: o-Terphenyl	64.9		"	53.8		121	70-130			

Permian Basin Environmental Lab, L.P.

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Page 21 of 24

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Vaca Ridge 30
Project Number: 15-0148-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Notes and Definitions

DET Analyte DETECTED
ND Analyte NOT DETECTED at or above the reporting limit
NR Not Reported
dry Sample results reported on a dry weight basis
RPD Relative Percent Difference
LCS Laboratory Control Spike
MS Matrix Spike
Dup Duplicate

Report Approved By: _____

Date: _____

9/9/2015

Brent Barron, Laboratory Director/Technical Director

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If you have received this material in error, please notify us immediately at 432-686-7235.

5162001

CHAIN-OF-CUSTODY

Arson & Associates, Inc.
Environmental Consultants507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

Data Reported to:

DATE: 9/11/2015 PAGE 2 OF 2
PO #: _____ LAB WORK ORDER #: 30
PROJECT LOCATION OR NAME: Vaca Ridge
LAI PROJECT #: 15-0148-01 COLLECTOR: DonnaTRRP report?
☐ Yes ☒ NoS=SOIL
W=WATER
A-AIRP=PAINT
SL=SLUDGE
OT=OTHERTIME ZONE:
Time zone/State:

MM

Field
Sample I.D.

Lab #

Date

Time

Matrix

of Containers

HCl

HNO₃H₂SO₄ ☐ NaOH ☐

ICE

UNPRESERVED

ANALYSES

BTEX ☐ MTBE ☐TPH 418.1 ☐ TPH 1005 ☐ TPH 1006 ☐GASOLINE MOD 8015 ☐DIESEL - MOD 8015 ☐VOC 8260 ☐SVOC 8270 ☐8081 PESTICIDES ☐ PAH 8270 ☐ HOLDPAH ☐8082 PCBs ☐TCDF - METALS (RCRA) ☐ TCDF VOC ☐TCDF - PEST ☐ HERB ☐ OTHER LIST ☐TOTAL METALS (RCRA) ☐ Semi-VOC ☐RCI ☐ TOX ☐ FLASHPOINT ☐TDS ☐ TSS ☐ % MOISTURE ☐PH ☐ HEXAVALENT CHROMIUM ☐EXPLOSIVES ☐ PENTACHLORATE ☐CHLORIDE ☐ ANIONS ☐ ALKALINITY ☐

FIELD NOTES

TOTAL

RELINQUISHED BY: (Signature)

DATE/TIME

RECEIVED BY: (Signature)

RELINQUISHED BY: (Signature)

DATE/TIME

RECEIVED BY: (Signature)

RELINQUISHED BY: (Signature)

DATE/TIME

RECEIVED BY: (Signature)

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

LABORATORY USE ONLY:

RECEIVING TEMP: _____

THERM #: 141CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☒ NOT USED

CARRIER BILL # _____

☒ HAND DELIVERED