

**APPROVED**

**1RP-3345**  
**CONFIRMATION SAMPLE REPORT**  
**Vaca 24 Fed Well #1**  
**Produced Water Release**  
**Lea County, New Mexico**

LAI Project No. 16-0128-06

September 6, 2016

Prepared for:

EOG Resources, Inc.  
5509 Champions Drive  
Midland, Texas 797067

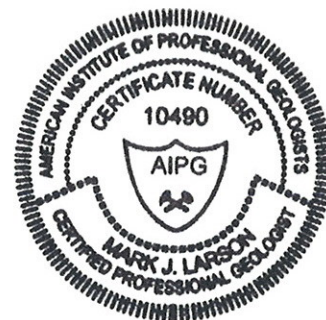
Prepared by:

Larson & Associates, Inc.  
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Midland, Texas 79701



Mark J. Larson, P.G.

Certified Professional Geologist #10490



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## **Introduction**

This report presents laboratory results of soil samples to confirm remediation of a produced water release from a four (4) inch diameter poly flow line at the Vaca 24 Fed Well #1 (Site). The Site is located in Unit H (SE/4, NE/4), Section 24, Township 25 South and Range 33 East in Lea County, New Mexico. The geodetic position is North 32.1179° and West -103.5208°. Figure 1 presents a topographic map. Figure 2 presents an aerial map.

## **Background**

On April 25, 2014, EOG Resources, Inc. (EOG) reported that approximately 20 barrels (bbls) of produced water was released from a four (4) inch poly flow line. Approximately 15 bbl were recovered with a vacuum truck. The initial C-141 was submitted to the New Mexico Oil Conservation Division (OCD) District 1 on April 27, 2014 and was assigned remediation permit number 1RP-3345. The C-141 states that EOG proposed to delineate the impacted area, vertically and horizontally by collecting soil samples and having them analyzed for TPH, BTEX, and chlorides. The impacted area would be excavated, stockpiled on poly-plastic and transported to Sundance disposal facility. Clean material will be brought in to backfill to normal grade. The approved C-141 required remediation to be completed by November 22, 2014. No final report was submitted to OCD to confirm remediation was performed.

## **Setting**

The setting is as follows:

- Elevation is approximately 3,335 feet above mean sea level (AMSL);
- Topography slopes toward the southeast;
- There are no surface water features within 1 mile of the Site;
- Groundwater is greater than 100 feet below ground surface (bgs) according to records from the New Mexico Office of the State Engineer (NMOSE);
- The nearest fresh water well is approximately 2.5 miles southeast of the Site in Unit H (SE/4, NE/4), Section 31, Township 25 South and Range 33 East;
- Depth to groundwater is reported at 240.14 feet below ground surface (bgs).

## **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	>1,000 Horizontal Feet	0

The following RRAL apply to the release for ranking score: 0

- Benzene 10 mg/Kg
- BTEX 50 mg/Kg
- TPH 5,000 mg/Kg

### **Soil Samples and Laboratory Analysis**

During an initial Site visit LAI personnel observed a four (4) inch poly flow line and spill area near the southwest corner of the location. On August 26, 2016, LAI personnel used a Terraprobe® direct push rig to collect soil samples at four (4) locations (DP-1 through DP-4) between about 6 and 8 feet bgs. The upper samples (0 to 2 feet) were analyzed for total petroleum hydrocarbons (TPH) by EPA SW-846 method 8015 including gasoline (GRO) and diesel range (DRO) organic. All samples were analyzed for chloride by method 300. A background soil sample was collected north of the location from about 0 to 2 feet bgs and analyzed for chloride by method 300. Table 1 presents the analytical data summary. Figure 3 presents a Site drawing and sample locations. Appendix A presents the laboratory report. Appendix B presents photographs.

Referring to Table 1, TPH was less than the method reporting limit in samples from 0 to 2 feet at locations DP-1 through DP-4. Chloride was 5.49 milligrams per kilogram (mg/Kg) in sample DP-1, 0 to 2 feet and below the method reporting limit in the remaining samples including the background sample.

### **Conclusions**

The laboratory results confirm TPH is below the recommended remediation action levels (RRAL) and chloride is less the OCD recommended delineation level of 250 mg/Kg. EOG requests no further action for this spill incident. Appendix C presents the initial and final C-141.

## Tables

Table 1  
Investigation Soil Sample Analytical Data Summary  
EOG Resources, Inc., Vaca 24, Fed #1  
Unit L (NW/4, SW/4), Section 24, Township 25 South, Range 33 East  
Lea County, New Mexico  
1RP-3345

Sample	Depth (Feet)	Collection Date	Status	GRO C6-C12	DRO >C12 - C28	ORO >C28 - C36	TPH	Chloride
<b>OCD RRAL:</b>								
DP-1	0 - 2	8/26/2016	In-Situ	<25.8	<25.8	<25.8	<25.8	5.49
	2 - 4	8/26/2016	In-Situ	--	--	--	--	1.51
	4 - 6	8/26/2016	In-Situ	--	--	--	--	<1.03
	6 - 8	8/26/2016	In-Situ	--	--	--	--	<1.08
DP-2	0 - 2	8/26/2016	In-Situ	<25.8	<25.8	<25.8	<25.8	<1.03
	2 - 4	8/26/2016	In-Situ	--	--	--	--	<1.02
	4 - 6	8/26/2016	In-Situ	--	--	--	--	<1.03
DP-3	0 - 2	8/26/2016	In-Situ	<25.8	<25.8	<25.8	<25.8	<1.03
	2 - 4	8/26/2016	In-Situ	--	--	--	--	<1.01
	4 - 6	8/26/2016	In-Situ	--	--	--	--	<1.02
DP-4	0 - 2	8/26/2016	In-Situ	<25.5	<25.5	<25.5	<25.5	<1.02
	2 - 4	8/26/2016	In-Situ	--	--	--	--	<1.01
	4 - 6	8/26/2016	In-Situ	--	--	--	--	<1.04
	6 - 8	8/26/2016	In-Situ	--	--	--	--	<1.04
DP-BG	0 - 2	8/26/2016	In-Situ	--	--	--	--	<1.15

Notes: analysis performed by Permian Basin Environmental Lab, Midland, Texas, by EPA SW-846 method 8015M (TPH) and 300.0 (chloride)

Depth inches below ground surface (bgs)

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

\*: OCD delineation limit

**Bold and highlighted denotes analyte detected at concentration above the OCD Recommended Remediation Action Level (RRAL)**

## Figures



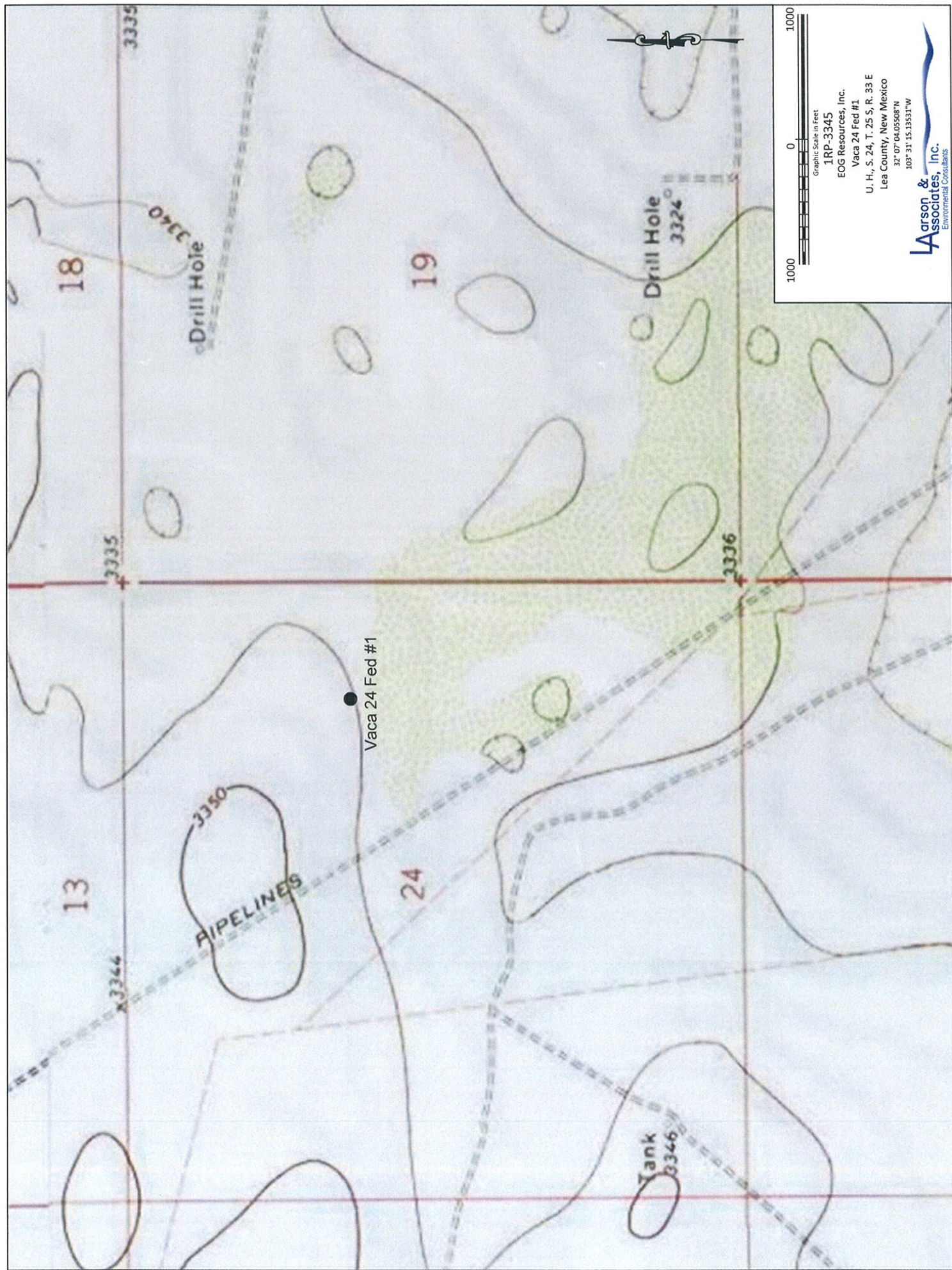


Figure 1 - Topographic Map





150 0 150  
Graphic Scale in Feet

1RP-3345

EOG Resources, Inc.

Vaca 24 Fed #1

U. L., S. 24, T. 25 S, R. 33 E

Lea County, New Mexico

32° 07' 04.05508" N

103° 31' 15.13531" W

**Larson & Associates, Inc.**  
Environmental Consultants

Figure 2 - Aerial Map



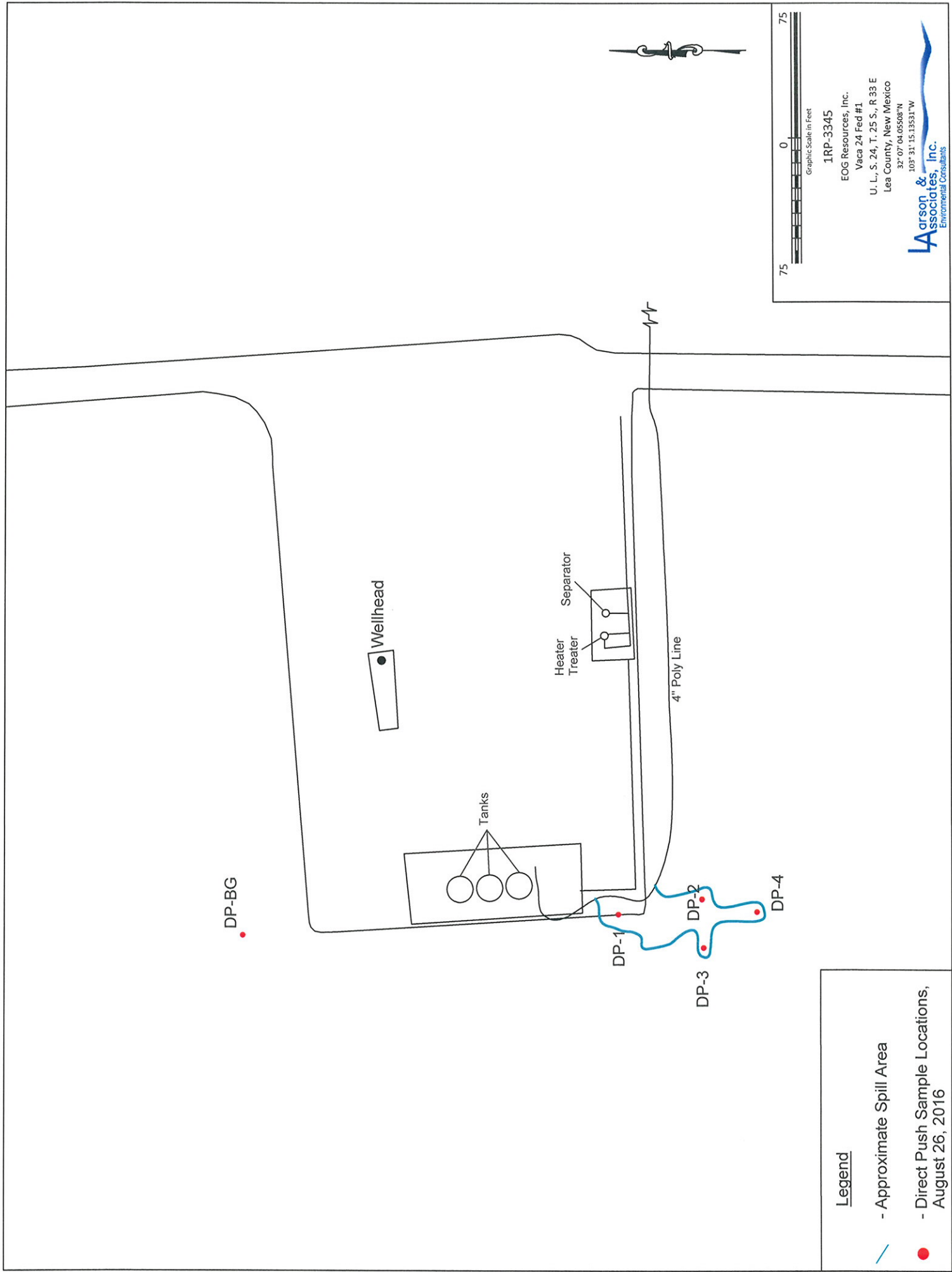


Figure 3 - Site Map showing Direct Push Sample Locations

**Appendix A**  
**Laboratory Report**

**PERMIAN BASIN  
ENVIRONMENTAL LAB, LP  
1400 Rankin Hwy  
Midland, TX 79701**



## Analytical Report

**Prepared for:**

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Midland, TX 79710

Project: Vaca Ridge 24  
Project Number: 16-0128-06  
Location: Vaca Ridge 24  
Lab Order Number: 6H26007



NELAP/TCEQ # T104704156-13-3

Report Date: 08/31/16

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P.O. Box 50685  
Midland TX, 79710

Project: Vaca Ridge 24  
Project Number: 16-0128-06  
Project Manager: Mark Larson

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### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
DP-1 (0-2)	6H26007-01	Soil	08/26/16 01:20	08-26-2016 08:35
DP-1 (2-4)	6H26007-02	Soil	08/26/16 01:20	08-26-2016 08:35
DP-1 (4-6)	6H26007-03	Soil	08/26/16 01:30	08-26-2016 08:35
DP-1 (6-8)	6H26007-04	Soil	08/26/16 01:30	08-26-2016 08:35
DP-2 (0-2)	6H26007-05	Soil	08/26/16 01:40	08-26-2016 08:35
DP-2 (2-4)	6H26007-06	Soil	08/26/16 01:40	08-26-2016 08:35
DP-2 (4-6)	6H26007-07	Soil	08/26/16 01:45	08-26-2016 08:35
DP-3 (0-2)	6H26007-08	Soil	08/26/16 01:50	08-26-2016 08:35
DP-3 (2-4)	6H26007-09	Soil	08/26/16 01:50	08-26-2016 08:35
DP-3 (4-6)	6H26007-10	Soil	08/26/16 01:55	08-26-2016 08:35
DP-4 (0-2)	6H26007-11	Soil	08/26/16 02:00	08-26-2016 08:35
DP-4 (2-4)	6H26007-12	Soil	08/26/16 02:00	08-26-2016 08:35
DP-4 (4-6)	6H26007-13	Soil	08/26/16 02:05	08-26-2016 08:35
DP-4 (6-8)	6H26007-14	Soil	08/26/16 02:05	08-26-2016 08:35
DP-BG (0-2)	6H26007-15	Soil	08/26/16 02:10	08-26-2016 08:35

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**DP-1 (0-2)**  
**6H26007-01 (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	5.49	1.03	mg/kg dry	1	P6H2805	08/28/16	08/29/16	EPA 300.0	
% Moisture	3.0	0.1	%	1	P6H3007	08/30/16	08/30/16	% calculation	

**Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M**

C6-C12	ND	25.8	mg/kg dry	1	P6H3005	08/26/16	08/29/16	TPH 8015M	
>C12-C28	ND	25.8	mg/kg dry	1	P6H3005	08/26/16	08/29/16	TPH 8015M	
>C28-C35	ND	25.8	mg/kg dry	1	P6H3005	08/26/16	08/29/16	TPH 8015M	
Surrogate: 1-Chlorooctane		88.1 %	70-130		P6H3005	08/26/16	08/29/16	TPH 8015M	
Surrogate: o-Terphenyl		87.9 %	70-130		P6H3005	08/26/16	08/29/16	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.8	mg/kg dry	1	[CALC]	08/26/16	08/29/16	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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**DP-1 (2-4)**  
**6H26007-02 (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	1.51	1.02	mg/kg dry	1	P6H2805	08/28/16	08/29/16	EPA 300.0	
% Moisture	2.0	0.1	%	1	P6H3007	08/30/16	08/30/16	% calculation	



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**DP-1 (4-6)**  
**6H26007-03 (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	ND	1.03	mg/kg dry	1	P6H2805	08/28/16	08/29/16	EPA 300.0	
% Moisture	3.0	0.1	%	1	P6H3007	08/30/16	08/30/16	% calculation	

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**DP-1 (6-8)**  
**6H26007-04 (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	ND	1.08	mg/kg dry	1	P6H2805	08/28/16	08/29/16	EPA 300.0	
% Moisture	7.0	0.1	%	1	P6H3007	08/30/16	08/30/16	% calculation	

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**DP-2 (0-2)**  
**6H26007-05 (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	ND	1.03	mg/kg dry	1	P6H2805	08/28/16	08/29/16	EPA 300.0	
% Moisture	3.0	0.1	%	1	P6H3007	08/30/16	08/30/16	% calculation	

**Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M**

C6-C12	ND	25.8	mg/kg dry	1	P6H3005	08/26/16	08/29/16	TPH 8015M	
>C12-C28	ND	25.8	mg/kg dry	1	P6H3005	08/26/16	08/29/16	TPH 8015M	
>C28-C35	ND	25.8	mg/kg dry	1	P6H3005	08/26/16	08/29/16	TPH 8015M	
Surrogate: 1-Chlorooctane		88.6 %	70-130		P6H3005	08/26/16	08/29/16	TPH 8015M	
Surrogate: o-Terphenyl		88.9 %	70-130		P6H3005	08/26/16	08/29/16	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.8	mg/kg dry	1	[CALC]	08/26/16	08/29/16	calc	

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**DP-2 (2-4)**  
**6H26007-06 (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	ND	1.02	mg/kg dry	1	P6H2805	08/28/16	08/29/16	EPA 300.0	
% Moisture	2.0	0.1	%	1	P6H3007	08/30/16	08/30/16	% calculation	

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**DP-2 (4-6)**  
**6H26007-07 (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	ND	1.03	mg/kg dry	1	P6H2805	08/28/16	08/29/16	EPA 300.0	
% Moisture	3.0	0.1	%	1	P6H3007	08/30/16	08/30/16	% calculation	

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**DP-3 (0-2)**  
**6H26007-08 (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	ND	1.03	mg/kg dry	1	P6H2805	08/28/16	08/29/16	EPA 300.0
% Moisture	3.0	0.1	%	1	P6H3007	08/30/16	08/30/16	% calculation

**Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M**

C6-C12	ND	25.8	mg/kg dry	1	P6H3005	08/26/16	08/29/16	TPH 8015M
>C12-C28	ND	25.8	mg/kg dry	1	P6H3005	08/26/16	08/29/16	TPH 8015M
>C28-C35	ND	25.8	mg/kg dry	1	P6H3005	08/26/16	08/29/16	TPH 8015M
Surrogate: 1-Chlorooctane		103 %	70-130		P6H3005	08/26/16	08/29/16	TPH 8015M
Surrogate: o-Terphenyl		104 %	70-130		P6H3005	08/26/16	08/29/16	TPH 8015M
Total Petroleum Hydrocarbon C6-C35	ND	25.8	mg/kg dry	1	[CALC]	08/26/16	08/29/16	calc

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**DP-3 (2-4)**  
**6H26007-09 (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	ND	1.01	mg/kg dry	1	P6H2805	08/28/16	08/29/16	EPA 300.0	
% Moisture	1.0	0.1	%	1	P6H3007	08/30/16	08/30/16	% calculation	

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**DP-3 (4-6)**  
**6H26007-10 (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	ND	1.02	mg/kg dry	1	P6H3004	08/29/16	08/30/16	EPA 300.0	
% Moisture	2.0	0.1	%	1	P6H3007	08/30/16	08/30/16	% calculation	



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**DP-4 (0-2)**  
**6H26007-11 (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	ND	1.02	mg/kg dry	1	P6H3004	08/29/16	08/30/16	EPA 300.0	
% Moisture	2.0	0.1	%	1	P6H3007	08/30/16	08/30/16	% calculation	

**Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M**

C6-C12	ND	25.5	mg/kg dry	1	P6H3005	08/26/16	08/29/16	TPH 8015M	
>C12-C28	ND	25.5	mg/kg dry	1	P6H3005	08/26/16	08/29/16	TPH 8015M	
>C28-C35	ND	25.5	mg/kg dry	1	P6H3005	08/26/16	08/29/16	TPH 8015M	
Surrogate: 1-Chlorooctane		96.4 %	70-130		P6H3005	08/26/16	08/29/16	TPH 8015M	
Surrogate: o-Terphenyl		96.8 %	70-130		P6H3005	08/26/16	08/29/16	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.5	mg/kg dry	1	[CALC]	08/26/16	08/29/16	calc	

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**DP-4 (2-4)**  
**6H26007-12 (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	ND	1.01	mg/kg dry	1	P6H3004	08/29/16	08/30/16	EPA 300.0	
% Moisture	1.0	0.1	%	1	P6H3007	08/30/16	08/30/16	% calculation	

Permian Basin Environmental Lab, L.P.

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**DP-4 (4-6)**  
**6H26007-13 (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	ND	1.04	mg/kg dry	1	P6H3004	08/29/16	08/30/16	EPA 300.0	
% Moisture	4.0	0.1	%	1	P6H3007	08/30/16	08/30/16	% calculation	

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**DP-4 (6-8)**  
**6H26007-14 (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	ND	1.04	mg/kg dry	1	P6H3004	08/29/16	08/30/16	EPA 300.0	
% Moisture	4.0	0.1	%	1	P6H3007	08/30/16	08/30/16	% calculation	

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Project: Vaca Ridge 24  
Project Number: 16-0128-06  
Project Manager: Mark Larson

Fax: (432) 687-0456

**DP-BG (0-2)**  
**6H26007-15 (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	ND	1.15	mg/kg dry	1	P6H3004	08/29/16	08/30/16	EPA 300.0	
% Moisture	13.0	0.1	%	1	P6H3007	08/30/16	08/30/16	% calculation	

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

Project: Vaca Ridge 24  
Project Number: 16-0128-06  
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**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	%REC Limits	RPD	RPD Limit	Notes
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**Batch P6H2805 - \*\*\* DEFAULT PREP \*\*\***

<b>Blank (P6H2805-BLK1)</b>				Prepared & Analyzed: 08/28/16						
Chloride	ND	1.00	mg/kg wet							
<b>LCS (P6H2805-BS1)</b>				Prepared & Analyzed: 08/28/16						
Chloride	837	1.00	mg/kg wet	800		105	80-120			
<b>LCS Dup (P6H2805-BSD1)</b>				Prepared & Analyzed: 08/28/16						
Chloride	831	1.00	mg/kg wet	800		104	80-120	0.705	20	
<b>Duplicate (P6H2805-DUP1)</b>				<b>Source: 6H26003-03</b>		Prepared & Analyzed: 08/28/16				
Chloride	2240	5.62	mg/kg dry		2180			2.82	20	
<b>Duplicate (P6H2805-DUP2)</b>				<b>Source: 6H26007-01</b>		Prepared: 08/28/16 Analyzed: 08/29/16				
Chloride	5.64	1.03	mg/kg dry		5.49			2.59	20	
<b>Matrix Spike (P6H2805-MS1)</b>				<b>Source: 6H26003-03</b>		Prepared: 08/28/16 Analyzed: 08/30/16				
Chloride	4740	5.62	mg/kg dry	2250	2180	114	80-120			

**Batch P6H3004 - \*\*\* DEFAULT PREP \*\*\***

<b>Blank (P6H3004-BLK1)</b>				Prepared: 08/29/16 Analyzed: 08/30/16						
Chloride	ND	1.00	mg/kg wet							
<b>LCS (P6H3004-BS1)</b>				Prepared: 08/29/16 Analyzed: 08/30/16						
Chloride	424	1.00	mg/kg wet	400		106	80-120			
<b>Duplicate (P6H3004-DUP1)</b>				<b>Source: 6H29005-18</b>		Prepared: 08/29/16 Analyzed: 08/30/16				
Chloride	4480	28.4	mg/kg dry		4480			0.114	20	

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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Midland TX, 79710

Project: Vaca Ridge 24  
Project Number: 16-0128-06  
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	%REC Limits	RPD	RPD Limit	Notes
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**Batch P6H3004 - \*\*\* DEFAULT PREP \*\*\***

**Duplicate (P6H3004-DUP2)** Source: 6H26008-02 Prepared: 08/29/16 Analyzed: 08/30/16

Chloride 679 1.14 mg/kg dry 679 0.100 20

**Matrix Spike (P6H3004-MS1)** Source: 6H29005-18 Prepared: 08/29/16 Analyzed: 08/30/16

Chloride 9440 28.4 mg/kg dry 4550 4480 109 80-120

**Batch P6H3007 - \*\*\* DEFAULT PREP \*\*\***

**Blank (P6H3007-BLK1)** Prepared & Analyzed: 08/30/16

% Moisture ND 0.1 %

**Blank (P6H3007-BLK2)** Prepared & Analyzed: 08/30/16

% Moisture ND 0.1 %

**Duplicate (P6H3007-DUP1)** Source: 6H25010-15 Prepared & Analyzed: 08/30/16

% Moisture 2.0 0.1 % 3.0 40.0 20

**Duplicate (P6H3007-DUP2)** Source: 6H26006-01 Prepared & Analyzed: 08/30/16

% Moisture 5.0 0.1 % 4.0 22.2 20

**Duplicate (P6H3007-DUP3)** Source: 6H26008-10 Prepared & Analyzed: 08/30/16

% Moisture 4.0 0.1 % 5.0 22.2 20

**Duplicate (P6H3007-DUP4)** Source: 6H29005-13 Prepared & Analyzed: 08/30/16

% Moisture 11.0 0.1 % 15.0 30.8 20

**Duplicate (P6H3007-DUP5)** Source: 6H29005-20 Prepared & Analyzed: 08/30/16

% Moisture 8.0 0.1 % 7.0 13.3 20

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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 P6H3005 - TX 1005

##### Blank (P6H3005-BLK1)

Prepared: 08/26/16 Analyzed: 08/27/16

C6-C12	ND	25.0	mg/kg wet							
>C12-C28	ND	25.0	"							
>C28-C35	ND	25.0	"							
Surrogate: 1-Chlorooctane	94.1		"	100		94.1	70-130			
Surrogate: o-Terphenyl	49.8		"	50.0		99.6	70-130			

##### LCS (P6H3005-BS1)

Prepared: 08/26/16 Analyzed: 08/27/16

C6-C12	870	25.0	mg/kg wet	1000		87.0	75-125			
>C12-C28	943	25.0	"	1000		94.3	75-125			
Surrogate: 1-Chlorooctane	132		"	100		132	70-130			S-GC
Surrogate: o-Terphenyl	60.4		"	50.0		121	70-130			

##### LCS Dup (P6H3005-BSD1)

Prepared: 08/26/16 Analyzed: 08/27/16

C6-C12	813	25.0	mg/kg wet	1000		81.3	75-125	6.76	20	
>C12-C28	936	25.0	"	1000		93.6	75-125	0.715	20	
Surrogate: 1-Chlorooctane	127		"	100		127	70-130			
Surrogate: o-Terphenyl	59.7		"	50.0		119	70-130			

##### Matrix Spike (P6H3005-MS1)

Source: 6H26007-01

Prepared: 08/26/16 Analyzed: 08/29/16

C6-C12	1080	25.8	mg/kg dry	1030	ND	104	75-125			
>C12-C28	1070	25.8	"	1030	15.7	102	75-125			
Surrogate: 1-Chlorooctane	163		"	134		123	70-130			
Surrogate: o-Terphenyl	74.7		"	67.0		111	70-130			

##### Matrix Spike Dup (P6H3005-MSD1)

Source: 6H26007-01

Prepared: 08/26/16 Analyzed: 08/29/16

C6-C12	1090	25.8	mg/kg dry	1030	ND	105	75-125	0.960	20	
>C12-C28	1100	25.8	"	1030	15.7	105	75-125	3.48	20	
Surrogate: 1-Chlorooctane	168		"	134		125	70-130			
Surrogate: o-Terphenyl	74.6		"	67.0		111	70-130			

Permian Basin Environmental Lab, L.P.

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P.O. Box 50685  
Midland TX, 79710

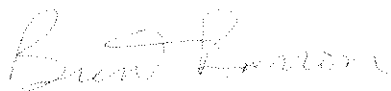
Project: Vaca Ridge 24  
Project Number: 16-0128-06  
Project Manager: Mark Larson

Fax: (432) 687-0456

### Notes and Definitions

S-GC Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate.  
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:

8/31/2016

Brent Barron, Laboratory Director/Technical Director

This material is intended only for the use of the individual (s) or entity to whom it is addressed, and may contain information that is privileged and confidential.

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



## **Appendix B**

### **Photographs**



Well Sign



Spill Area and Location of Soil Samples Viewing Southwest

## **Appendix C**

### **Initial and Final C-141**

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

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

HOBBS OCD

SEP 22 2014

Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

Form C-141  
Revised August 8, 2011

RECEIVED

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company EOG Resources, Inc.	Contact Zane Kurtz
Address 5509 Champions Drive, Midland, TX 79703	Telephone No. 432-425-2023
Facility Name Vaca 24 Fed 1	Facility Type Other - Produced Water Poly Line
Surface Owner	Mineral Owner
API No. 30-025-36676	

LOCATION OF RELEASE

Unit Letter	Section NWSW	Township T23N	Range 33E	Feet from the 1980'	North/South Line N	Feet from the 990'	East/West Line E.	County Lea
-------------	--------------	---------------	-----------	---------------------	--------------------	--------------------	-------------------	------------

Latitude 32.1179 Longitude -103.5208

NATURE OF RELEASE

Type of Release Produced Water	Volume of Release 20 bbls	Volume Recovered 15 bbls
Source of Release 4in HDPE produced water line	Date and Hour of Occurrence 4-25-2014	Date and Hour of Discovery 0900
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? James Amos, BLM plus record states OCD notification 4-27-14 at 1100	
By Whom? Ryan Kainer, EOG Resources	Date and Hour 4-27-2014 1100	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.\*

Describe Cause of Problem and Remedial Action Taken.\*

Approximately 20 bbl of produced water spilled from a 4in poly line that ruptured. Approx. 15 bbls were recovered by vac truck. EOG proposed to delineate the impacted area, vertically and horizontally by collecting soil samples and having them analyzed for tph, btex, and chlorides. The impacted area would be excavated, stockpiled on poly-plastic and transported to Sundance disposal facility. Clean material would be brought in to backfill to normal grade.

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, Inc.

Title: Sr. Safety & Environmental Rep.

E-mail Address: zane.kurtz@eogresources.com

Date: 09-22-2014

Phone: 432-425-2023

Approved by Environmental Specialist:

Approval Date: 9-22-14

Expiration Date: 11-22-14

Conditions of Approval:

Site system repair  
Balance & conductance monitoring  
NMOCD guidance - submit final  
C-141 report

Attached ☐

IRA-9745

dyrix 7377



Distric  
1625 N. French Dr., Hobbs, NM 88240  
Distric  
811 S. First St., Artesia, NM 88210  
Distric  
1000 Rio Bravo Road, Artesia, NM 87410  
Distric  
1220 S. St. Francis Dr., Santa Fe, NM 87505

2RP-2186  
State of New Mexico  
Energy Minerals and Natural Resources  
Oil Conservation Division  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

Form C-14  
Revised August 1, 2011  
Submit 1 Copy to appropriate District Office in  
conformance with 19-1529 NMAC.

### Release Notification and Corrective Action

#### OPERATOR

☐ Initial Report ☒ Final Report

Name of Company: EOG Resources, Inc.	Contact: Zane Kurtz
Address: 5509 Champions Dr., Midland, TX 79705	Telephone No.: 432-425-2023
Facility Name: Vaca 24 Fed #1	Facility Type: Produced Water Poly. Line
Surface Owner: Federal	Mineral Owner: Federal
API No: 30-025-36676	

#### LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
H	24	25S	33E	1980	North	990	East	Lea

Latitude 32.1179° Longitude -103.5208°

#### NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release: 20 bbl	Volume Recovered: 15 bbl
Source of Release: 4 inch HDPE produced water line	Date and Hour of Occurrence: 4-25-2014	Date and Hour of Discovery: 09:00AM
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? James Amos (BLM) plus record state OCD notification 4-27-2014 at 11:00	
By Whom? Ryan Kainer, EOG Resources	Date and Hour: 4-27-2014 11:00	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse:	

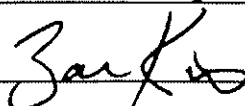
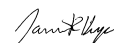
If a Watercourse was Impacted, Describe Fully.\*

Describe Cause of Problem and Remedial Action Taken. \* Approximately 20 bbl of produced water spilled from a 4in poly line. Approx. 15 bbls were recovered by vac truck.

Describe Area Affected and Cleanup Action Taken. \* Initial C-141 states EOG proposed to delineate the impacted area, vertically and horizontally by collecting soil samples and having them analyzed for tph, btx and chlorides. The impacted area would be excavated, stockpiled on poly-plastic and transported to Sundance disposal facility. Clean material would be brought in to backfill to normal grade.

On August 26, 2016, LAI personnel collected soil samples at 4 locations from spill area to confirm area was cleaned up per initial C-141. TPH was less than method reporting limit in samples from 0 to 1 foot and chloride was less than 250 mg/Kg.

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.

Signature: 		OIL CONSERVATION DIVISION	
Printed Name: Zane Kurtz, EOG Resources, Inc.		Approved by Environmental Specialist: 	
Title: Sr. Environmental Representative		Approval Date: 09/12/2016	Expiration Date: ///
E-mail Address: zane_kurtz@egoresources.com		Conditions of Approval: ///	Attached <input type="checkbox"/>
Date: 09-06-2016	Phone: 432-556-8074		

\* Attach Additional Sheets If Necessary

IRP-3345