

**APPROVED**

*By Olivia Yu at 12:05 pm, Jan 02, 2018*

NMOCD approves of the  
proposed delineation for  
1RP-3540.

**1RP-3540  
DELINEATION PLAN  
Sapphire Federal #002  
Crude Oil Spill  
Lea County, New Mexico**

Latitude: N32.6511248°

Longitude: W-103.6360°

LAI Project No. 17-0175-12

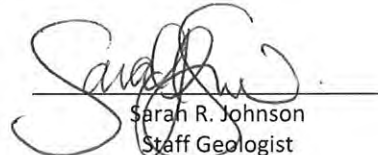
October 27, 2017

Prepared for:  
Legacy Reserves Operating, LP  
303 West Wall Street, Suite 1300  
Midland, Texas 79701

Prepared by:  
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Certified Professional Geologist #10490



Sarah R. Johnson  
Staff Geologist

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## 1.0 INTRODUCTION

Larson & Associates, Inc. (LAI) has prepared this delineation plan on behalf of Legacy Reserves Operating, LP (Legacy) for submittal to the New Mexico Oil Conservation (OCD) District I for a crude oil spill at the Sapphire Federal #002 (Site) located in Unit C (NE/4, NW/4), Section 23, Township 19 South, Range 33 East in Lea County, New Mexico. The geodetic position is North 32.6511° and West -103.6360°. Figure 1 presents a topographic map. Figure 2 presents an aerial map.

### 1.1 Background

The spill occurred on February 18, 2015, due to a ruptured flow line, releasing 15 barrels (bbl) of crude oil. No liquid were recovered. The affected area measures approximately 3,000 square feet. The well was shut in and a clamp was put in place. The initial C-141 was submitted on February 19, 2015 and assigned remediation permit number 1RP-3540. Appendix A presents the initial C-141.

### 1.2 Physical Setting

The physical setting is as follows:

- The surface elevation is approximately 3,660 feet above mean sea level (msl);
- The topography gently slopes towards the southwest;
- There is no surface water within 1,000 feet of the Site;
- The soils are designated as “Kermit-Palomas fine sands, 0 to 12 percent slopes”, consisting of 0 to 60 inches of fine sand;
- The surface geology is Eolian and Piedmont deposits from the Holocene to middle Pleistocene, the deposits consist of interlayered eolian sands and piedmont-slope deposits underlain by the Tertiary-age Blackwater Draw and Ogallala formations in descending order;
- Groundwater occurs in the Ogallala formation at approximately 85 feet below ground surface (bgs) (1996);
- The nearest fresh water well is located in Unit I (NE/4, SE/4), Section 26, Township 19 South, Range 33 East, about 1.5 miles southeast of the Site.

### 1.3 Remediation Action Levels

Remediation action levels (RRAL) were calculated for benzene, BTEX and TPH based on the following criteria established by the OCD in “*Guidelines for Remediation of Leaks, Spills and Releases*, pp. 6-7, August 13, 1993”:

<b>Criteria</b>	<b>Result</b>	<b>Score</b>
Depth-to-Groundwater	50 – 99 Feet	10
Wellhead Protection Area	No	0
Distance to Surface Water Body	>1,000 Horizontal Feet	0

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

- Benzene 10 mg/Kg
- BTEX 50 mg/Kg
- TPH 1000 mg/Kg

Depth to groundwater between 50 and 100 feet bgs requires vertical delineation for chloride to 600 milligrams per kilogram (mg/Kg) and maintained for a minimum of 5 feet further in depth.

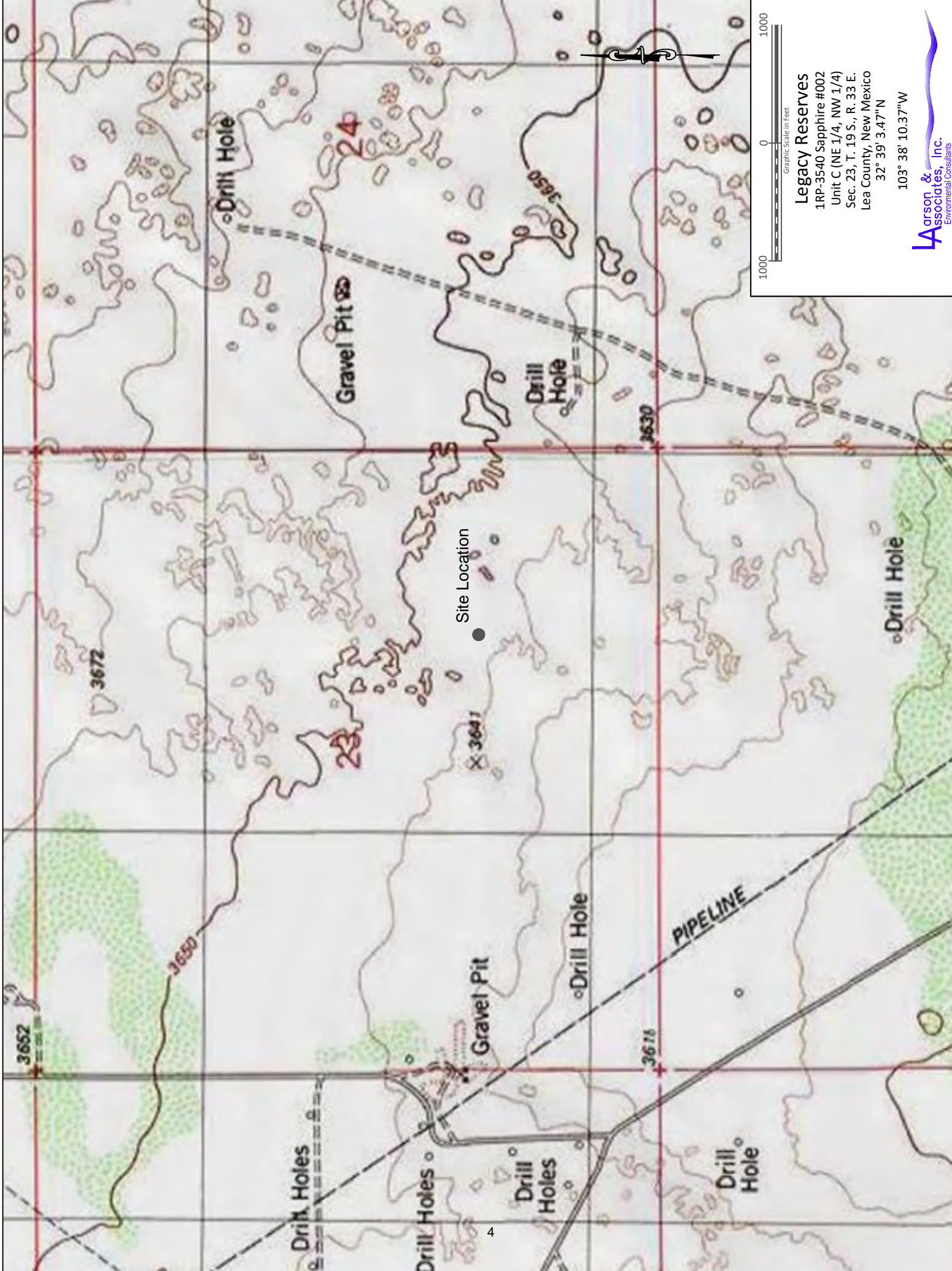
## **2.0 DELINEATION PLAN**

LAI proposes to collect soil samples at three (3) locations within the tank battery containment. The samples will be collected at 1 foot intervals to approximately 4 feet bgs and 2 foot intervals to approximately 12 feet bgs using direct push technology (DPT) depending on subsurface conditions. Additional samples will be collected in each cardinal direction (north, south, east and west) of the spill area at the same depth intervals for horizontal delineation. The soil samples will be delivered under preservation and chain of custody to Permian Basin Environmental Lab (PBEL) in Midland, Texas, and analyzed for benzene, toluene, ethylbenzene and xylenes (BTEX), total petroleum hydrocarbons (TPH), including gasoline range organics (GRO), diesel range organics (DRO) and oil range organics (ORO) and chloride by EPA SW-846 Methods 8021B, 8015M and 300 respectively. Pending laboratory results, further delineation will be determined to reach cleanup level standards. Figure 2 presents an aerial map showing proposed soil sample locations. Appendix B presents photographs.

## **3.0 REMEDIATION PLAN**

Legacy will include a remediation plan in the delineation report to be submitted to the OCD upon receipt of the laboratory report.

## Figures



**Legacy Reserves**  
1RP-3540 Sapphire #002  
Unit C (NE 1/4, NW 1/4)  
Sec. 23, T. 19 S., R. 33 E.  
Lea County, New Mexico  
32° 39' 3.47" N  
103° 38' 10.37" W

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

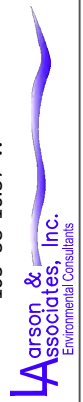
Figure 1 - Topographic Map





**Legacy Reserves**

1RP-3540 Sapphire #002  
Unit C (NE 1/4, NW 1/4)  
Sec. 23, T. 19 S., R. 33 E.  
Lea County, New Mexico  
32° 39' 3.47" N  
103° 38' 10.37" W



Legend

● - Proposed Sample Location

— - Spill Area

Figure 2 - Aerial Map Showing Proposed Sample Points



## **Appendix A**

### **Initial 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

Form C-141  
Revised August 8, 2011

Oil Conservation Division  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

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

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company – Legacy Reserves	Contact – Brian Cunningham
Address – 303 W. Wall St. Suite 1800	Telephone No. – 432-234-9450
Facility Name – Sapphire Federal 002	Facility Type – Flow Line

Surface Owner - Federal	Mineral Owner - Federal	API No. – 30-025-31198
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LOCATION OF RELEASE

Unit Letter C	Section 23	Township 19S	Range 33E	Feet from the 660	North/South Line North	Feet from the 1980	East/West Line West	County Lea
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Latitude 32.6511 Longitude -103.6360

NATURE OF RELEASE

Type of Release - Hydrocarbon	Volume of Release 15 BBL	Volume Recovered 0
Source of Release – Flow Line	Date and Hour of Occurrence 2/18/15 - 3:00 P.M.	Date and Hour of Discovery 2/20/15 - 10:00 A.M.
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? Dr. Tomas Oberding	
By Whom? Todd Roberson	Date and Hour 2/20/15 10:00 A.M.	
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.\*

**RECEIVED**

By OCD; Dr. Oberding at 12:13 pm, Feb 19, 2015

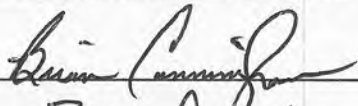
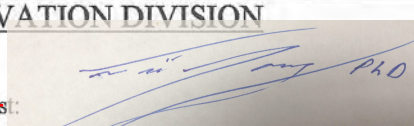
Describe Cause of Problem and Remedial Action Taken.\*

Flow Line cracked and began to leak. Well was immediately shut in and a line clamp was put in place. A new flow line will be installed.

Describe Area Affected and Cleanup Action Taken.\*

The Affected area is approximately 3000 Sq./Ft. on the surface with very little infiltration into to soil. Cleanup will begin immediately with soil being hauled to a licensed disposal and clean soil being replaced.

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: 	<b>OIL CONSERVATION DIVISION</b>	
Printed Name: Brian Cunningham	Hydrologist	
Title: Production Foreman	Approved by Environmental Specialist:	
E-mail Address: bcunningham@legacyp.com	Approval Date: 02/19/2015	Expiration Date: 04/19/2015
Date: 2/19/15 Phone: 432-234-9450	Conditions of Approval: Site samples required. Deliniate and remediate area as per NMOCD guides.	Attached <input type="checkbox"/> 1RP-3540 240974

\* Attach Additional Sheets If Necessary

## **Appendix B**

### **Photographs**



Site Location



Site Prior to Remediation Viewing North, September 28, 2017





Site Prior to Remediation Viewing South, September 28, 2017





Site Prior to Remediation Viewing south, September 28, 2017



Site Prior to Remediation Viewing North, September 28, 2017



Site Prior to Remediation Viewing South, September 28, 2017