

APPROVED

By Olivia Yu at 11:29 am, Jan 02, 2018

NMOCD approves of the proposed delineation for 1RP-4390. Permissible chloride levels (600 mg/kg) must be obtained and maintained at least 5 ft. further in depth.

**1RP-4390
DELINEATION PLAN
Inca Federal #007 Line
Produced Water Spill
Lea County, New Mexico**

LAI Project No. 17-0175-31

September 20, 2017

Prepared for:

Legacy Reserves, LP
P.O. Box 10848
Midland, Texas 79702

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 Division (OCD) District 1 for a produced water spill at the Inca Federal #007 Line (Site) located in Unit N (SE/4, SW/4), Section 18, Township 18 South, and Range 32 East in Lea County, New Mexico. The geodetic position is North 32.743771° and West - 103.807676°. Figure 1 presents a topographic map. Figure 2 presents an aerial map.

1.1 Background

The spill was discovered on November 13, 2015, at approximately 5pm (MST). The spill was reported as produced water; however there is visible crude oil on the surface. The release was due to a leak in a flow line, releasing an unknown amount of liquids. No liquids were recovered. The spill covered an area of approximately 3,380 square feet. The release was reported to the OCD District 1 (verbal communication with Kelly Jones) on November 11, 2015. The initial C-141 was submitted to the OCD and assigned remediation permit number 1RP-4390.

1.2 Physical Setting

The physical setting is as follows:

- The surface elevation is approximately 3,739 feet above mean sea level (msl);
- The topography gently slopes towards the southwest;
- There is no surface water within 1,000 feet;
- The soils are designated as “Kermit –Palomas fine sands, 0 to 12 percent slope” consisting of 0 to 8 inches of fine sand underlain by 8 to 60 inches of fine sand;
- Surface geology is of the Ogallala formation from the Lower Pliocene to middle Miocene, the depositional environment is of alluvial and eolian nature with petrocalcic soils of the southern High Plains;
- Groundwater occurs in the Ogallala formation;
- The nearest fresh water well is located in Unit J (NW/4, SE/4), Section 15, Township 18 South Range 32 East about 3.5 miles east of the Site;
- Depth to groundwater is reported at 84.59 feet below ground surface (bgs) (1991).

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, August 13, 1993*”:

Criteria	Result	Score
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).

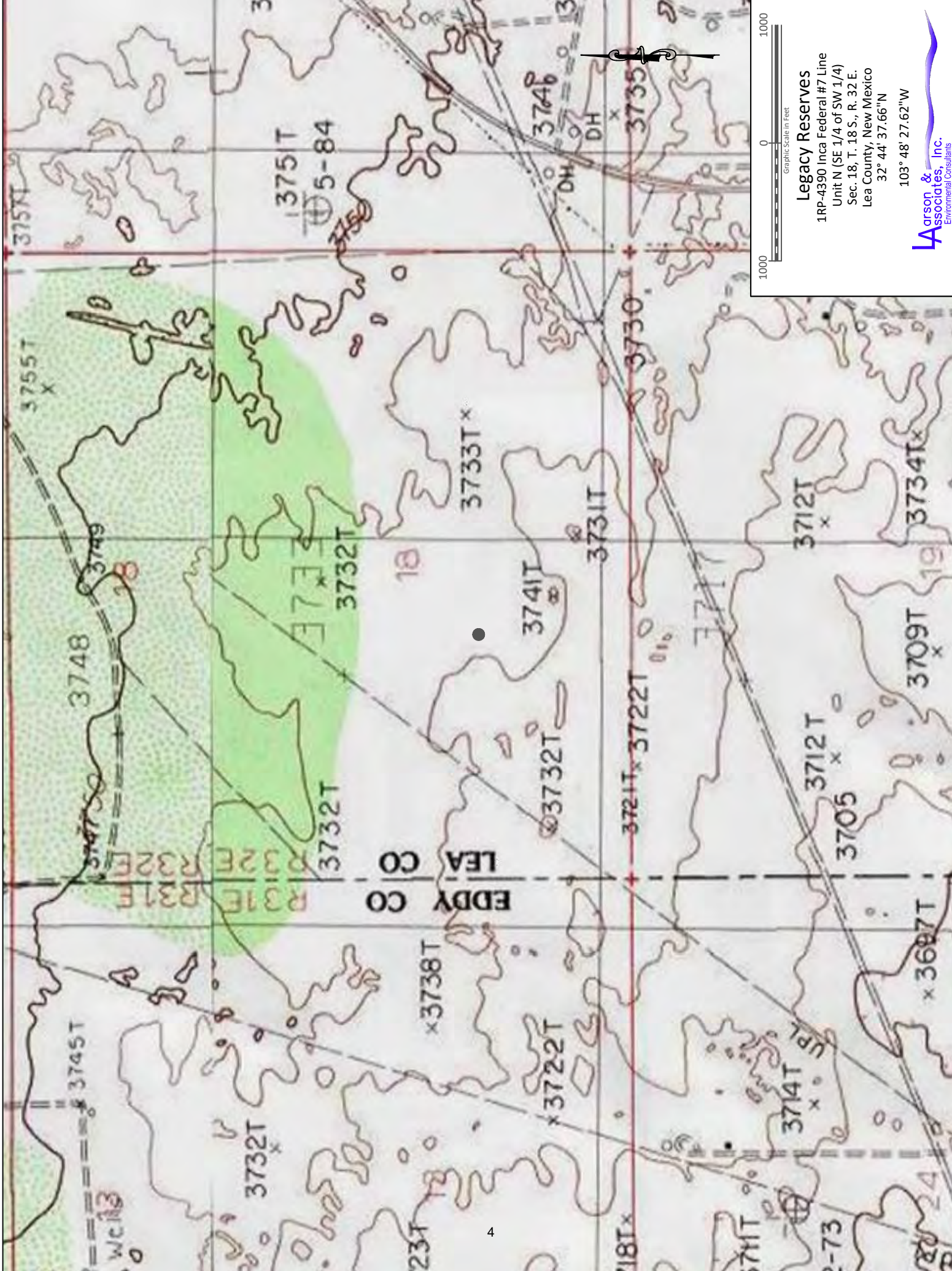
2.0 DELINEATION PLAN

LAI proposes to collect soil samples at three (3) locations within the contaminated area. 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 BTEX, TPH, including gasoline 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 3 presents a site map showing proposed soil sample locations.

3.0 REMEDIATION

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-4390 Inca Federal #7 Line
Unit N (SE 1/4 of SW 1/4)
Sec. 18, T. 18 S., R. 32 E.
Lea County, New Mexico
32° 44' 37.66"N
103° 48' 27.62"W

Larson & Associates, Inc.
Environmental Consultants

Figure 1 - Topographic Map



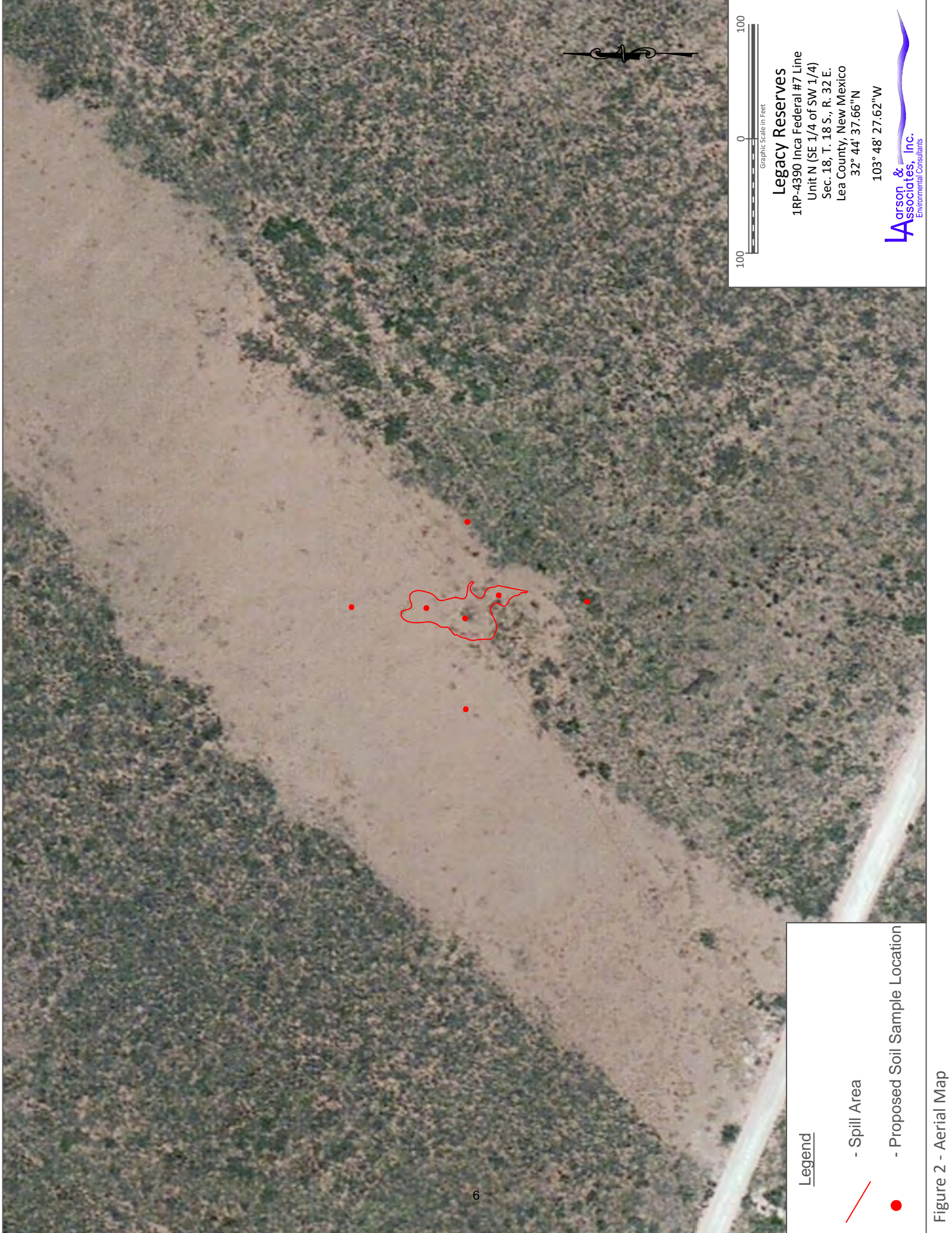
Graphic Scale in Feet

100 0 100

Legacy Reserves
1RP-4390 Inca Federal #7 Line
Unit N (SE 1/4 of SW 1/4)
Sec. 18, T. 18 S., R. 32 E.
Lea County, New Mexico
32° 44' 37.66"N
103° 48' 27.62"W

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Figure 2 - Aerial Map



Graphic Scale in Feet

100 0 100

Legacy Reserves
1RP-4390 Inca Federal #7 Line
Unit N (SE 1/4 of SW 1/4)
Sec. 18, T. 18 S., R. 32 E.
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Legend

- Spill Area

- Proposed Soil Sample Location

Figure 2 - Aerial Map

ATTACHMENT 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

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

Form C-141
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

Name of Company - Legacy Reserves, LP	Contact - Brian Cunningham
Address P.O. Box 10848 Midland, TX 79702	Telephone No. 432-234-9450
Facility Name - Inca Federal #007 Line	Facility Type - Water Line

Surface Owner - Federal	Mineral Owner - Federal	API No. 30-025-30061
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LOCATION OF RELEASE

Unit Letter C	Section 17	Township 18S	Range 32E	Feet from the 660	North/South Line North	Feet from the 1980	East/West Line West	County Lea
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Latitude 32.743771 Longitude -103.807676

NATURE OF RELEASE

Type of Release - Produced Water	Volume of Release - ?	Volume Recovered - 0
Source of Release - Flow line leak	Date and Hour of Occurrence - ?	Date and Hour of Discovery - 11/13/15 5:00 PM
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? Kelly Jones	
By Whom?	Date and Hour	
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.*

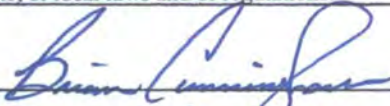
Describe Cause of Problem and Remedial Action Taken.*

A pipeline plane located a leak on Friday afternoon. Leak is contained and work plan is being drafted for approval.

Describe Area Affected and Cleanup Action Taken.*

Affected area is approximately 3,380 sq ft.

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: <u>Brian Cunningham</u>		Approved by Environmental Specialist:	
Title: <u>Production Foreman</u>		Approval Date:	Expiration Date:
E-mail Address: <u>bccunningham@legacyp.com</u>		Conditions of Approval:	
Date: <u>11/16/15</u> Phone: <u>432 234 9450</u>		Attached <input type="checkbox"/>	

* Attach Additional Sheets If Necessary

ATTACHMENT B

Photographs



Site Prior to Remediation Viewing North, September 11, 2017



Site Prior to Remediation Viewing East, September 11, 2017



Flow Line Viewing North, September 11, 2017



Site Prior to Remediation Viewing West, September 11, 2017



Site Prior to Remediation Viewing South, September 11, 2017