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**Apache Corporation**

# BARNSDALL
# FEDERAL BATTERY
# Remediation Plan
# 2RP-4202

Eddy County, New Mexico

Sunday, August 06, 2017

Jennifer Van Curen
Environmental Project Scientist

# BARNSDALL

# FEDERAL BATTERY

## REMEDIATION PLAN

2RP-4202

Prepared for:
Apache
Corporation
Lea County, New Mexico

Prepared by:
ARCADIS U.S., Inc.
1004 North Big Spring Street
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Our Ref.:
MT001200.0000.0000

Date:
August 6, 2017

Apache
Corporation
Eddy County, New Mexico

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## 1. INTRODUCTION

The subject site is located against the south side of the firewall of the production facility at N32.811419 and W104.059036 in Section 27, T17S, R29E in Eddy County. The site is operated by Apache Corporation.

## 1. SUMMARY OF SITE INVESTIGATION ACTIVITIES

The New Mexico Oil Conservation Division (NMOCD) was notified of the 5 barrels (bbls.) fluid released with 4 bbls fluid recovered at the site via form C-141, submitted on May 5, 2017 by Bruce Baker with Apache Corporation.

The release was reported to have had the header riser pipe failed resulting in the release of fluids. The line was isolated and a vacuum truck was dispatched to pick up any fluid. The riser was repaired. There was an area of 1,440 sq. ft. impacted by the release.

Initial release site investigation activities were conducted in May 2017 by completing field and lab sampling to 7 feet below ground surface (bgs) using a EC meter before reaching a tight clay loam. The samples pulled at the depth above the clay loam was sent to a laboratory for analysis.

Soil sampling results are shown in the Table 1. The laboratory results are attached in Appendix C.

**Table1: Soil Sample Results**

| Date | Sample # | Depth | Lab Data | | | Field Data |
|---|---|---|---|---|---|---|
| | | | BTEX | TPH | CL's | CL's |
| 5/5/2017 | | | | | | |
| | SP 1 | 1' | | | | 4000 |
| | | 2' | | | | 3280 |
| | | 3' | | | | 3200 |
| | | 4' | | | | 1,780 |
| | | 5' | | | | 1100 |
| | | 6' | | | | 550 |
| | | 7' | ND | ND | 144 | 180 |

TPH: Gasoline range (GRO) - >C6-C12; Diesel range (DRO) - >C12-C28

**Figure 1: Sample Point Locations and Release Area**

**Figure 2: Historical Image of area in 2013**


**Figure 3: Historical Image of area in 2011**

## 1. ENVIRONMENTAL ASSESSMENT

### 1.1 Historical Images

The 2013 and 2011 images show the area has not changed appearances up to 2016 as seen in Figures 2 & 3.

### 1.2 Hydrology

Groundwater depths in the area average 76 feet bgs (Waters Map). There is no surface water near this release site.

The site ranking for this site is a 10 based on the following:

| | |
|---|---|
| Depth to ground water | >76' = 10 |
| Wellhead Protection Area | >1000' = 0 |
| Distance to surface water body | >1000' = 0 |

## 2. REMEDIATION PLAN

After review of various remedial options, we propose the following Remediation Plan for this release site as follows:

### 2.1 Soil Remediation Plan

At SP 1, clay was reached at a shallow depth with a small percentage of sand. SP 1 became a tight clay at 7 ft. bgs. An EC meter was used to delineate the site. One bottom sample was taken at SP 1 and sent to a laboratory. The horizontal extent of impacted samples was mapped using a GPS. Side wall samples will be grabbed at time of remediation.

The lab sample was analyzed to be below OCD guidelines for chlorides with groundwater less then 100 ft. but greater than 50 ft. Apache will remove 4 ft. bgs. and lay 20 mil reinforced liner. The area will then be backfilled with caliche in order for maintenance to be completed on header as needed.

### 2.2 Site Remediation Activities

Remedial activities were started in order to use a backhoe for delineation, and 2 ft. bgs has been removed and hauled to a state approved disposal facility. After receiving approval of this plan, the work will be completed.

## 3. NOXIOUS WEED PLAN

Apache will treat noxious weeds if they become established within the areas of the remediation. Weed control will be maintained on the disturbed land where noxious weeds exist both prior to remediation and restoration. Apache will consult with the Authorized Officer for acceptable weed control methods. Apache, in coordination with the OCD and BLM, may develop a noxious weed plan to include recommendations and guidelines for noxious weed and invasive species management throughout the disturbed areas and to minimize the spread of weeds to adjacent areas.

# Appendix A

Attachments

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

NM OIL CONSERVATION
ARTESIA DISTRICT
MAY 08 2017
RECEIVED

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

nAB1713158268

## OPERATOR

☒ Initial Report ☐ Final Report

| | |
|---|---|
| Name of Company Apache Corporation 873 | Contact Bruce Baker |
| Address 2350 W Marland Street, Hobbs, NM 88240 | Telephone No. (432) 631-6982 |
| Facility Name Barnsdall Federal Battery | Facility Type Battery |

| | | |
|---|---|---|
| Surface Owner Federal | Mineral Owner | API No. 30-015-42364 |

## LOCATION OF RELEASE

| Unit Letter | Section | Township | Range | Feet from the | North/South Line | Feet from the | East/West Line | County |
|---|---|---|---|---|---|---|---|---|
| A | 27 | 17S | 29E | | | | | Eddy |

**Latitude** 32.811419 **Longitude** -104.058036

## NATURE OF RELEASE

| | | |
|---|---|---|
| Type of Release Oil and Produced Water | Volume of Release 4 barrels of water and 1 barrel of oil | Volume Recovered 1 barrel of oil and 3 barrels of water |
| Source of Release Header | Date and Hour of Occurrence 4/24/2017 | Date and Hour of Discovery 4/24/2017 at 5:00 a.m. |
| Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required | If YES, To Whom? Shelly Tucker (BLM) | |
| By Whom? Bruce Baker | Date and Hour 4/25/2017 at 12:33 pm via email | |
| Was a Watercourse Reached? ☐ Yes ☒ No | If YES, Volume Impacting the Watercourse. | |

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*
A header riser pipe failed resulting in the release of fluids. The line was isolated and vacuum trucks dispatched to pick-up standing fluid. The riser was repaired.

Describe Area Affected and Cleanup Action Taken.*
The release affected 1400 square feet of pasture south of the battery.

New forms can be found in the New Mexico State Website in forms:
http://www.emnrd.state.nm.us/
**OCD/forms.html**

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: Bruce Baker

Printed Name: Bruce Baker

Title: Environmental Technician

E-mail Address: larry.baker@apachecorp.com

Date: 5/5/2017 Phone: (432) 631-6982

OIL CONSERVATION DIVISION

Approved by Environmental Specialist: Crystal Weaver

Approval Date: 5/10/17 Expiration Date: N/A

Conditions of Approval: see attached

Attached ☒

* Attach Additional Sheets If Necessary

2RP-4202

## Weaver, Crystal, EMNRD

**From:** Baker, Larry <Larry.Baker@apachecorp.com>
**Sent:** Friday, May 5, 2017 7:48 AM
**To:** Bratcher, Mike, EMNRD; Weaver, Crystal, EMNRD; 'stucker@blm.gov'
**Subject:** Initial C-141
**Attachments:** Barnsdall Federal Battery Initial C-141.doc

All,

Attached is the initial C-141 for the release that occurred at the Barnsdall Federal Battery on 4/24/2017. Please let me know if you have any questions or wish to discuss. Thanks and have a good day.

Bruce Baker
Apache Corporation
Environmental Technician
Northwest District
Email: larry.baker@apachecorp.com
Mobile: 432-631-6982


Barnsdall facility
SP 1
Legend
Barnsdall facility
SP 1
Untitled Polygon
Google earth
©2017 Google
N
50 ft

# Appendix B

Photos

# Appendix C

Laboratory Sample Results

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

May 22, 2017

JENNIFER VAN CUREN

ARCADIS U.S., INC.

2999 OAK ROAD, SUITE 300

WALNUT CREEK, CA 94597

RE: BARNSDALL CTB

Enclosed are the results of analyses for samples received by the laboratory on 05/15/17 16:15.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-16-8. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

| | |
|---|---|
| Method EPA 552.2 | Haloacetic Acids (HAA-5) |
| Method EPA 524.2 | Total Trihalomethanes (TTHM) |
| Method EPA 524.4 | Regulated VOCs (V1, V2, V3) |

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

## *Analytical Results For:*

ARCADIS U.S., INC.
JENNIFER VAN CUREN
2999 OAK ROAD, SUITE 300
WALNUT CREEK CA, 94597
Fax To: NOT GIVEN

| | | | |
|---|---|---|---|
| Received: | 05/15/2017 | Sampling Date: | 05/15/2017 |
| Reported: | 05/22/2017 | Sampling Type: | Soil |
| Project Name: | BARNSDALL CTB | Sampling Condition: | ** (See Notes) |
| Project Number: | NONE GIVEN | Sample Received By: | Tamara Oldaker |
| Project Location: | NONE GIVEN | | |

### Sample ID: SP1 - CLAY (H701279-01)

**BTEX 8021B** mg/kg **Analyzed By: MS**

| Analyte | Result | Reporting Limit | Analyzed | Method Blank | BS | % Recovery | True Value QC | RPD | Qualifier |
|---|---|---|---|---|---|---|---|---|---|
| Benzene* | <0.050 | 0.050 | 05/18/2017 | ND | 1.89 | 94.4 | 2.00 | 0.776 | |
| Toluene* | <0.050 | 0.050 | 05/18/2017 | ND | 1.87 | 93.6 | 2.00 | 1.01 | |
| Ethylbenzene* | <0.050 | 0.050 | 05/18/2017 | ND | 1.95 | 97.6 | 2.00 | 1.54 | |
| Total Xylenes* | <0.150 | 0.150 | 05/18/2017 | ND | 5.52 | 92.0 | 6.00 | 1.20 | |
| Total BTEX | <0.300 | 0.300 | 05/18/2017 | ND | | | | | |

*Surrogate: 4-Bromofluorobenzene (PID* *101 %* *72-148*

**Chloride, SM4500Cl-B** mg/kg **Analyzed By: AC**

| Analyte | Result | Reporting Limit | Analyzed | Method Blank | BS | % Recovery | True Value QC | RPD | Qualifier |
|---|---|---|---|---|---|---|---|---|---|
| **Chloride** | **144** | 16.0 | 05/16/2017 | ND | 416 | 104 | 400 | 3.77 | |

**TPH 8015M** mg/kg **Analyzed By: MS**

| Analyte | Result | Reporting Limit | Analyzed | Method Blank | BS | % Recovery | True Value QC | RPD | Qualifier |
|---|---|---|---|---|---|---|---|---|---|
| GRO C6-C10 | <10.0 | 10.0 | 05/16/2017 | ND | 198 | 99.1 | 200 | 0.263 | |
| DRO >C10-C28 | <10.0 | 10.0 | 05/16/2017 | ND | 205 | 103 | 200 | 0.811 | |

*Surrogate: 1-Chlorooctane* *81.9 %* *28.3-164*

*Surrogate: 1-Chlorooctadecane* *89.1 %* *34.7-157*

### Sample ID: SP1 - CLAY (H701279-02)

**Chloride, SM4500Cl-B** mg/kg **Analyzed By: AC**

| Analyte | Result | Reporting Limit | Analyzed | Method Blank | BS | % Recovery | True Value QC | RPD | Qualifier |
|---|---|---|---|---|---|---|---|---|---|
| **Chloride** | **144** | 16.0 | 05/16/2017 | ND | 416 | 104 | 400 | 3.77 | |

Cardinal Laboratories *=Accredited Analyte



Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

## Notes and Definitions

| | |
|---|---|
| QR-02 | The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data. |
| QM-07 | The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery. |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| RPD | Relative Percent Difference |
| ** | Samples not received at proper temperature of 6°C or below. |
| *** | Insufficient time to reach temperature. |
| - | Chloride by SM4500Cl-B does not require samples be received at or below 6°C |
| | Samples reported on an as received basis (wet) unless otherwise noted on report |

Cardinal Laboratories

*=Accredited Analyte



Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

## CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240
(575) 393-2326 FAX (575) 393-2476

| | |
|---|---|
| Company Name: | Arcadis |
| Project Manager: | Jennifer VanCuren |
| Address: | |
| City: | State: Zip: |
| Phone #: | Fax #: |
| Project #: | 0 Project Owner: |
| Project Name: | Barnsdall CTB |
| Project Location: | Barnsdall CTB |
| Sampler Name: | Jennifer VanCuren |

**BILL TO**

| | |
|---|---|
| P.O. #: | |
| Company: | Apache |
| Attn: | Bruce |
| Address: | |
| City: | |
| State: Zip: | |
| Phone #: | |
| Fax #: | |

**ANALYSIS REQUEST**

| FOR LAB USE ONLY Lab I.D. | Sample I.D. | (G)RAB OR (C)OMP. | # CONTAINERS | MATRIX: GROUNDWATER | WASTEWATER | SOIL | OIL | SLUDGE | OTHER : | PRESERV.: ACID/BASE: | ICE / COOL | OTHER : | SAMPLING: DATE | TIME | BTEX | TPH | Chlorides |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H701279 | | | | | | | | | | | | | | | | | |
| 1 | SP1 > Clay | 1 | 1 | | | X | | | | | X | | 5/15/17 | 01:20pm | X | X | X |
| 2 | SP1 > Clay | | | | | | | | | | | | | | | | X |

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequeptal damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

| | | | |
|---|---|---|---|
| Relinquished By: Jennifer VanCuren | Date: 5/15/17 Time: 4:15 | Received By: | Phone Result: ☐ Yes ☐ No Add'l Phone #: |
| Relinquished By: | Date: 5-5-17 Time: 4:15 | Received By: Tamara Oldaker | Fax Result: ☐ Yes ☐ No Add'l Fax #: |
| Delivered By: (Circle One) Sampler - UPS - Bus - Other: 6.5°C | Sample Condition Cool: ☐ Yes ☑ No Intact: ☑ Yes ☐ No | CHECKED BY: (Initials) TO-TTS | REMARKS: Rerun Sample Twice for Chlorides |

† Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326