ARCADIS Design & Consultancy for natural and built assets

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INFORMATION ONLY

Remediation deferral request for 1RP-4637 denied until delineation is completed.

Apache Corporation

NEDU CTB Remediation Deferment 1RP-4637

Lea County, New Mexico

January 18, 2018

Korey Kennedy
Staff Scientist

NEDU CTB
1RP4637
Remediation
Deferment

Prepared for:
Apache
Corporation
Lea County, New Mexico

Prepared by:
ARCADIS U.S., Inc.
1004 North Big Spring Street
Suite 300
Midland
Texas 79701
Tel 432 687 5400
Fax 432 687 5401

Our Ref.:
MT001200.0000.0000

Date:
January 18, 2018

1. INTRODUCTION

The subject site is located on the facility pad at 32.487146 and -103.14672 in Unit O, Section 10, T21S, R37E in Lea County. The site is operated by Apache Corporation.

2. SUMMARY OF SITE INVESTIGATION ACTIVITIES

The New Mexico Oil Conservation Division (NMOCD), Olivia Yu, and the State Land Office (SLO), Amber Groves, were notified of a release that occurred on March 2, 2017 where 170 barrels (bbls.) of produced water were released, and 150 barrels (bbl.) of produced water were recovered at the site via form C-141, submitted on March 10, 2016 by Bruce Baker with Apache Corporation. The surface is managed by the state for this area.

The release was reported to have had a small hole develop in the flanged ball valve on the bottom side of the storage tank. A vacuum truck was dispatched to pick-up the standing fluid and the valve was replaced. All standing fluid was contained on the well pad area (482 square yards) inside of a solid bermed containment to prevent fluid from leaving the site.

Initial sampling and mapping of site took place on March 9, 2017 with the surface analyzed at 13,200 mg/kg and 4240 mg/kg at 6-inches bgs. where a solid calcified soil type was encountered. The soil sampling point is shown on Figure 1. The laboratory results are attached in Appendix C.

Figure 1: Sample Point Locations

3. ENVIRONMENTAL ASSESSMENT

3.1 Hydrology

Groundwater depths are not found within the direct area (Waters Map), but can be found in neighboring sections using a 2,000-meter area and averaging depth at 50 feet bgs. There is no surface water near this release site or water wells within 1,000 ft.

The site ranking for this site is a 20 based on the following:

Depth to ground water	~50' = 20
Wellhead Protection Area	>1000' = 0
Distance to surface water body	>1000' = 0

4. REMEDIATION PLAN

After review of various remedial options, the following Remediation Plan was completed for this release site:

4.1 Soil Remediation Plan

The site where the release occurred is setting upon a very solid hardpan of calcium carbonate. Samples were taken at surface and some scrapings of the calcium carbonate located at 6-inches bgs. were taken to Cardinal Laboratories to be analyzed. The release occurred inside a large facility. The fluid from the release ran to the southeast corner of the facility area where the fluid was recovered due to the hard calcium carbonate subsurface. There was 20 bbl. that was not picked up, which covered an area of 482 square yards. This area has a 4 ft. bermed area and no fluids, even during terrestrial rains, could leave the facility area. The surface area of contamination has been scraped to remove any contaminated surface soils.

5. FOLLOW-UP SCHEDULE

It is requested that this site will be re-evaluated at time of decommissioning. Apache requests deferment of the site until abandonment.

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

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 Apache Corporation	Contact Bruce Baker
Address 2350 W Marland Street, Hobbs, NM 88240	Telephone No. (432) 631-6982
Facility Name NEDU Central Tank Battery	Facility Type Battery

Surface Owner State	Mineral Owner	API No. 30-025-34602 (nearest well)

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
O	10	21S	37E					Lea

Latitude 32.487146 **Longitude** -103.14672

NATURE OF RELEASE

Type of Release Produced water	Volume of Release 170 barrels of produced water	Volume Recovered 150 barrels of produced water
Source of Release valve on water tank	Date and Hour of Occurrence 3/1/2017	Date and Hour of Discovery 3/1/2017
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Olivia Yu (NMOCD)	
By Whom? Bruce Baker	Date and Hour 3/2/2016 at 3:30 p.m. via phone	
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 small hole developed on the four inch flanged ball valve on the bottom of the tank. Vacuum trucks were dispatched to pick-up standing fluid and the valve was replaced.

Describe Area Affected and Cleanup Action Taken.*
The entire release was contained to the facility.

RECEIVED
By Olivia Yu at 8:49 am, Mar 10, 2017

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: 3/10/2017 Phone: (432) 631-6982

OIL CONSERVATION DIVISION

Approved by Environmental Specialist:

Approval Date: 3/10/2017 Expiration Date:

Conditions of Approval:
see attached directive

Attached ☑

* Attach Additional Sheets If Necessary

1RP-4637 nOY1706931789 pOY1706933252

Operator/Responsible Party,

The OCD has received the form C-141 you provided on _3/10/2017__ regarding an unauthorized release. The information contained on that form has been entered into our incident database and remediation case number __1R-_4637_ has been assigned. **Please refer to this case number in all future correspondence.**

It is the Division's obligation under both the Oil & Gas Act and Water Quality Act to provide for the protection of public health and the environment. Our regulations (19.15.29.11 NMAC) state the following,

> *The responsible person shall complete division-approved corrective action for releases that endanger public health or the environment. The responsible person shall address releases in accordance with a remediation plan submitted to and approved by the division or with an abatement plan submitted in accordance with 19.15.30 NMAC.* [emphasis added]

Release characterization is the first phase of corrective action unless the release is ongoing or is of limited volume and all impacts can be immediately addressed. Proper and cost-effective remediation typically cannot occur without adequate characterization of the impacts of any release. Furthermore, the Division has the ability to impose reasonable conditions upon the efforts it oversees. **As such, the Division is requiring a workplan for the characterization of impacts associated with this release be submitted to the OCD District _1_ office in __Hobbs____ on or before _4/10/2017_. If and when the release characterization workplan is approved, there will be an associated deadline for submittal of the resultant investigation report. Modest extensions of time to these deadlines may be granted, but only with acceptable justification.**

The goals of a characterization effort are: 1) determination of the lateral and vertical extents along with the magnitude of soil contamination. 2) determine if groundwater or surface waters have been impacted. 3) If groundwater or surface waters have been impacted, what are the extents and magnitude of that impact. 4) The characterization of any other adverse impacts that may have occurred (examples: impacts on vegetation, impacts on wildlife, air quality, loss of use of property, etc.). To meet these goals as quickly as possible, the following items must, at a minimum, be addressed in the release characterization workplan and subsequent reporting:

● Horizontal delineation of soil impacts in each of the four cardinal compass directions. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C_6 thru C_{36}), and for chloride by Method 300. This is not an exclusive list of potential contaminants. Analyzed parameters should be modified based on the nature of the released substance(s). Soil sampling must be both within the impacted area and beyond.

● Vertical delineation of soil impacts. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C_6 thru C_{36}), and for chloride by Method 300. As above, this is not an exclusive list of potential contaminants and can be modified. Vertical characterization samples should be taken at depth intervals no greater than five feet apart. Lithologic description of encountered soils must also be provided. At least ten vertical feet of soils with contaminant concentrations at or below these values must be demonstrated as existing above the water table.

● Nominal detection limits for field and laboratory analyses must be provided.

● Composite sampling is not generally allowed.

● Field screening and assessment techniques are acceptable (headspace, titration, EC [include algorithm for validation purposes], EM, etc.), but the sampling and assay procedures must be clearly defined. Copies of field notes are highly desirable. A statistically significant set of split samples must be submitted for confirmatory laboratory analysis, including the laterally farthest and vertically deepest sets of soil samples. Make sure there are at least two soil samples submitted

for laboratory analysis from each borehole or test pit (highest observed contamination and deepest depth investigated). Copies of the actual laboratory results must be provided including chain of custody documentation.

●Probable depth to shallowest protectable groundwater and lateral distance to nearest surface water. If there is an estimate of groundwater depth, the information used to arrive at that estimate must be provided. If there is a reasonable assumption that the depth to protectable water is 50 feet or less, the responsible party should anticipate the need for at least one groundwater monitoring well to be installed in the area of likely maximum contamination.

● If groundwater contamination is encountered, an additional investigation workplan may be required to determine the extents of that contamination. Groundwater and/or surface water samples, if any, must be analyzed by a competent laboratory for volatile organic hydrocarbons (typically Method 8260 full list), total dissolved solids, pH, major anions and cations including chloride and sulfate, dissolved iron, and dissolved manganese. The investigation workplan must provide the groundwater sampling method(s) and sample handling protocols. To the fullest extent possible, aqueous analyses must be undertaken using nominal method detection limits. As with the soil analyses, copies of the actual laboratory results must be provided including chain of custody documentation.

● Accurately scaled and well-drafted site maps must be provided providing the location of borings, test pits, monitoring wells, potentially impacted areas, and significant surface features including roads and site infrastructure that might limit either the release characterization or remedial efforts. Field sketches may be included in subsequent reporting, but should not be considered stand-alone documentation of the site's layout. Digital photographic documentation of the location and fieldwork is recommended, especially if unusual circumstances are encountered.

Nothing herein should be interpreted to preclude emergency response actions or to imply immediate remediation by removal cannot proceed as warranted. Nonetheless, characterization of impacts and confirmation of the effectiveness of remedial efforts must still be provided to the OCD before any release incident will be closed.

Jim Griswold
OCD Environmental Bureau Chief
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
505-476-3465
jim.griswold@state.nm.us

New Mexico Office of the State Engineer

Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced, O=orphaned, C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters) (In feet)

POD Number	Code	POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Distance	Depth Well	Depth Water	Water Column
CP 00554		CP	LE		2	2	16	21S	37E	672744	3595610*	1270	80	70	10
CP 00286 POD1		CP	LE	2	1	2	10	21S	37E	674019	3597338*	1307	70		
CP 00729 POD1		CP	LE	4	1	3	15	21S	37E	673259	3594711*	1488	8015		
CP 01185 POD1		CP	LE		1	3	14	21S	37E	674598	3594689	1495	70		
CP 01185 POD2		CP	LE		1	3	14	21S	37E	674623	3594674	1519	70		
CP 01110 POD1		CP	LE		1	3	14	21S	37E	674586	3594648	1526	70		
CP 01110 POD2		CP	LE		1	3	14	21S	37E	674586	3594648	1526	70		
CP 01110 POD3		CP	LE		1	3	14	21S	37E	674586	3594648	1526	70		
CP 01110 POD4		CP	LE		1	3	14	21S	37E	674586	3594648	1526	20		
CP 01110 POD5		CP	LE		1	3	14	21S	37E	674586	3594648	1526	20		
CP 01185 POD3		CP	LE		1	3	14	21S	37E	674592	3594620	1555	70		
CP 01574 POD1		CP	LE	2	4	4	15	21S	37E	674559	3594598	1561	68	57	11
CP 01185 POD4		CP	LE		1	3	14	21S	37E	674633	3594610	1581	70		
CP 01574 POD2		CP	LE	1	3	3	14	21S	37E	674666	3594578	1624	68	57	11
CP 01141 POD3		CP	LE				15	21S	37E	673520	3594272	1810	40		
CP 01141 POD2		CP	LE				15	21S	37E	673543	3594250	1826	40		
CP 01141 POD4		CP	LE				15	21S	37E	673556	3594239	1834	45		
CP 01575 POD1		CP	LE	1	2	1	22	21S	37E	673544	3594204	1870	40	35	5
CP 01575 POD2		CP	LE	2	2	1	22	21S	37E	673615	3594181	1880	35	35	0

Average Depth to Water: **50 feet**
Minimum Depth: **35 feet**
Maximum Depth: **70 feet**

Record Count: 19

UTMNAD83 Radius Search (in meters):

Easting (X): 673942 **Northing (Y):** 3596033 **Radius:** 2000

***UTM location was derived from PLSS - see Help**

ARCADIS

Appendix B

Laboratory Analyticals

CARDINAL Laboratories

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

March 16, 2017

BRUCE BAKER

APACHE CORP - HOBBS

2350 W. MARLAND BLVD.

HOBBS, NM 88240

RE: NEDU CENTRAL TANK BATTERY

Enclosed are the results of analyses for samples received by the laboratory on 03/09/17 14:10.

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

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

APACHE CORP - HOBBS
BRUCE BAKER
2350 W. MARLAND BLVD.
HOBBS NM, 88240
Fax To: (575) 393-2432

Received:	03/09/2017	Sampling Date:	03/09/2017
Reported:	03/16/2017	Sampling Type:	Soil
Project Name:	NEDU CENTRAL TANK BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SP 1 0' (H700616-01)

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	03/14/2017	ND	2.16	108	2.00	0.812	
Toluene*	<0.050	0.050	03/14/2017	ND	2.01	101	2.00	1.18	
Ethylbenzene*	<0.050	0.050	03/14/2017	ND	2.00	100	2.00	1.33	
Total Xylenes*	<0.150	0.150	03/14/2017	ND	5.72	95.4	6.00	1.43	
Total BTEX	<0.300	0.300	03/14/2017	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	**13200**	16.0	03/10/2017	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	03/10/2017	ND	186	93.0	200	0.653	
DRO >C10-C28	<10.0	10.0	03/10/2017	ND	196	97.9	200	1.20	

Surrogate: 1-Chlorooctane *88.9 %* *25.1-158*

Surrogate: 1-Chlorooctadecane *78.9 %* *26.8-170*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

APACHE CORP - HOBBS
BRUCE BAKER
2350 W. MARLAND BLVD.
HOBBS NM, 88240
Fax To: (575) 393-2432

Received:	03/09/2017	Sampling Date:	03/09/2017
Reported:	03/16/2017	Sampling Type:	Soil
Project Name:	NEDU CENTRAL TANK BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SP 1 6" (H700616-02)

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	03/14/2017	ND	2.16	108	2.00	0.812	
Toluene*	<0.050	0.050	03/14/2017	ND	2.01	101	2.00	1.18	
Ethylbenzene*	<0.050	0.050	03/14/2017	ND	2.00	100	2.00	1.33	
Total Xylenes*	<0.150	0.150	03/14/2017	ND	5.72	95.4	6.00	1.43	
Total BTEX	<0.300	0.300	03/14/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID *102 %* *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	**4240**	16.0	03/10/2017	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	03/10/2017	ND	186	93.0	200	0.653	
DRO >C10-C28	<10.0	10.0	03/10/2017	ND	196	97.9	200	1.20	

Surrogate: 1-Chlorooctane *91.6 %* *25.1-158*

Surrogate: 1-Chlorooctadecane *78.5 %* *26.8-170*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Notes and Definitions

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:	Jennifer VanCuren
Project Manager:	
Address:	
City:	State: Zip:
Phone #:	Fax #:
Project #:	Project Owner:
Project Name:	NEOH CTB
Project Location:	
Sampler Name:	Jennifer VanCuren

BILL TO

P.O. #:	
Company:	Apache
Attn:	
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	TPH	BTEX	Chloride
H700616-1	SP1 0'	X	1			X					X		3/9/17	1110	X	X	X
-2	SP1 6"	X	1			X					X		3/9/17	1105	X	X	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 consequental 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: 3/9/17	Received By: Jodi Henson	Phone Result: ☐ Yes ☐ No Add'l Phone #:
Relinquished By:	Time: 2:10pm	Received By:	Fax Result: ☐ Yes ☐ No Add'l Fax #:
	Date:		REMARKS:
	Time:		

Delivered By: (Circle One)
Sampler - UPS - Bus - Other: #75 5.4°C

Sample Condition: Cool ☑ Yes ☐ No; Intact ☑ Yes ☐ No

CHECKED BY: (Initials)

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

Appendix C

Photos

PHOTOGRAPH LOG

Apache Corporation
NEDU CTB 1RP4637

Photograph: 1

Description:
Spill path

Location:
NEDU CTB; Lea County, NM

Photograph taken by:
Jennifer Van Curen

Date: 6/22/2017

Photograph: 2

Description:
Spill path

Location:
NEDU CTB; Lea County, NM

Photograph taken by:
Jennifer Van Curen

Date: 6/22/2017

Photograph: 3

Description:
Spill path

Location:
NEDU CTB; Lea County, NM

Photograph taken by:
Jennifer Van Curen

Date: 6/22/2017

Photograph: 4

Description:
Spill path

Location:
NEDU CTB; Lea County, NM

Photograph taken by:
Jennifer Van Curen

Date: 6/22/2017

Photograph: 5

Description:
Spill path

Location:
NEDU CTB; Lea County, NM

Photograph taken by:
Jennifer Van Curen

Date: 6/22/2017

Photograph: 6

Description:
Spill path

Location:
NEDU CTB; Lea County, NM

Photograph taken by:
Jennifer Van Curen

Date: 6/22/2017