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APPROVED
By Olivia Yu at 11:15 am, Jun 29, 2017

NMOCD approves of the corrective actions for 1RP-4355 with one condition: Bottom (1 ft. bgs) and sidewall confirmation samples are required. Permissible chloride levels are <= 600 mg/kg and 100 mg/kg for TPH. Method 8015 extended for TPH (GRO, DRO, and MRO) and Method 300 for chlorides are required for closure.

Apache Corporation

NEDU 175 Remediation Plan Proposal

Lea County, New Mexico

Wednesday, June 07, 2017

NEDU 175

Remediation Plan Proposal

Jennifer Van Curen
Environmental Project Scientist

Prepared for:
Apache
Corporation
Eddy County, New Mexico

Prepared by:
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Our Ref.:
MT001200.0000.0000

Date:
June 7, 2017

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NEDU 175

Remediation Plan Proposal

Apache Corporation
Eddy County, New Mexico

1. INTRODUCTION

The subject site is located north of the well pad at N32.5118179 and W103.1530533 in Section 3, T21S, R37E; 3785' FNL & 1980' FWL in Lea County. The site is operated by Apache Corporation.

Four initial surface samples and one vertical delineation was completed at the request of the landowner to prevent too much surface disturbance. Elevated chloride concentrations and hydrocarbon compounds were detected in soil samples collected from vertical soil delineation.

2. SUMMARY OF SITE INVESTIGATION ACTIVITIES

The New Mexico Oil Conservation Division (NMOCD) was notified of the 20 barrels (bbls.) produced water and 5 bbls. of hydrocarbon released at the site via form C-141, submitted on July 14, 2016 by Bruce Baker with Apache Corporation.

A 3-inch poly line ruptured resulting in a loss of fluid. The well was shut in, and a vacuum truck was dispatched to pick up the standing fluid. The line was repaired. The release was contained in an area of 5,020 square feet just north of the well pad on the closed drilling pit.

Initial release site investigation activities were conducted in July 2016 by completing field and lab sampling to 8 inches below ground surface (bgs) with landowner's permission. In February 2017, Apache received permission from the landowner to complete one vertical for delineation of the site. A backhoe was brought to the site. After evaluating the sample data, sample point 3 was determined to be the best area to represent the site. Soil was removed and samples were taken at each foot for analysis to a depth of 3 feet bgs. After samples were taken, soil was replaced in vertical as the soil was removed.

Soil sampling results are shown in the Table 1 with sample point locations in Figure 1 below. The laboratory results are attached in Appendix A.

Table: 1 Field and Laboratory Sample

Date	Sample #	Depth in feet	Lab Data (ppm)			Field Data (ppm)
			TPH	BTEX	CL's	CL's
7/21/2016	SP1	8"	31830	39.1	1280	1620
	SP2	8"	8011	9.63	1280	1580
	SP3	8"	3090	ND	2400	2120
	SP4	8"	1484	5.06	2480	2200
2/01/2017	SP3	Surface	13600	ND	1720	1880
		1'	ND	ND	320	480
		2'	ND	ND	144	64
		3'	497	ND	176	64

Figure: 1 Sample Point Locations

3. ENVIRONMENTAL ASSESSMENT

3.1 Surface and Mineral Ownership

This release site is located on private surface and state minerals. (ArcMap)

3.2 Hydrology

Depth to groundwater in the area is greater than 75 feet bgs. There is no surface water near this release site, the site is greater than 1,000 feet to a wellhead. (ArcMap)

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

Depth to ground water	>75' = 10
Wellhead Protection Area	>1000' = 0
Distance to surface water body	>1000' = 0

3.3 Karst

The area surrounding this release site has a low karst potential. There are no known karst features in this area. (ArcMap)

3.4 Soils, Geology, and Vegetation

Natural Resources Conservation Service (NRCS) classifies the soils in the area as Simona-Upton association – SR (0-3% slopes). This soil is association is on ridges, foot, slopes, and fans. It is about 50% Simona gravelly fine sandy loam and about 35% Upton gravelly loam. The Simona soil is shallow. Soils in this association are used as range, wildlife habitat, and recreational areas.

The ecological site is very shallow to limy upland. The underlying geology is Piedmont alluvial deposits. The vegetation in the area consists of mesquite, sage, four-wing saltbush, cacti, yucca, and grasses found in shallow soils.

4. REMEDIATION PLAN

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

4.1 Soil Remediation Plan

The selected remedial option will be the excavation of near-surface soils. The anticipated extent and depth of excavation is based on assessment activities (laboratory analysis and visual observation), and the area is shown in Figure 1. Near surface soils (to a depth of 1 feet below ground surface) with chloride concentrations analyzed by lab to be 320 milligrams per kilogram (mg/kg) and a Total Petroleum Hydrocarbons (TPH) concentrations were analyzed to be ND will be excavated and disposed. Excavated soils will be disposed at a state approved disposal facility. The area will be backfilled with clean soil.

Side walls will be screened in the field for chlorides with confirmation samples of each wall submitted for laboratory analysis to satisfy horizontal delineation requirements. Lab analysis of the vertical delineation has been completed prior to excavation activities; therefore, not required after excavation is complete.

4.2 Seeding Plan

All the excavated areas will be re-seeded with native vegetation requested by private land owner.

5. REMEDIATION WORK SCHEDULE

Soil remediation activities are expected to be completed within 5 working days (Monday through Friday) with work commencing after receiving approval and funding of this Remediation Plan.

6. FOLLOW-UP SCHEDULE

A Closure Report with Form C-141 will be completed and mailed within 30 days of remediation work being completed.

7. CITATIONS

NRCS, 2016, Web Soil Survey, http://websoilsurvey.nrcs.usda.gov/app/

USGS, 2016, Geological Surveys, https://www.usgs.gov/

BLM GIS Map Data, 2016, ArcMap, Disc

Waters Map, 2010, GWD, http://nmwrrs.ose.state.nm.us/nmwrrs/waterColumn.html

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 Blvd Hobbs, NM 88240	Telephone No. (432) 631-6982
Facility Name NEDU 175	Facility Type: Oil Well

Surface Owner Private	Mineral Owner	API No. 30-25-40516

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
C	3	21S	37E	3785'	FNL	1980'	FWL	Lea

Latitude 32.5118179 **Longitude** -103.1530533

NATURE OF RELEASE

Type of Release: produced water and oil	Volume of Release 20 Barrels of water and 5 Barrels of oil	Volume Recovered 16 Barrels of water and 4 Barrels of oil
Source of Release: Flow line	Date and Hour of Occurrence 7/14/2016	Date and Hour of Discovery 7/14/2016
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Jamie Keyes (NMOCD) via email	
By Whom? Bruce Baker	Date and Hour 4/15/2016 at 11:42 MST	
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 3 inch poly line ruptured resulting in the loss of fluid. The well was shut in. A vacuum truck was dispatched to pick up standing fluid and the line was repaired.

Describe Area Affected and Cleanup Action Taken.*
The release was on the lease pad and affected approximately 600 square feet of pasture.

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	OIL CONSERVATION DIVISION	
Printed Name: Bruce Baker	Approved by Environmental Specialist:	
Title: Environmental Technician	Approval Date:	Expiration Date:
E-mail Address: larry.baker@apachecorp.com	Conditions of Approval:	Attached ☐
Date: 7/19/2016 Phone: (432) 631-6982		

* Attach Additional Sheets If Necessary

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	Depth Well	Depth Water	Water Column
CP 00197	O		LE	1	4	1	01	21S	37E	676611	3598599*	85		
CP 00197 POD1		CP	LE	1	4	1	01	21S	37E	676611	3598599*	85		
CP 00552			LE		2	4	04	21S	37E	672700	3598022*	90	75	15
CP 00553			LE		2	4	04	21S	37E	672700	3598022*	90	75	15
CP 01221 POD1		CP	LE	4	4	4	11	21S	37E	676254	3588506	75	60	15

Average Depth to Water: **70 feet**

Minimum Depth: **60 feet**

Maximum Depth: **75 feet**

Record Count: 5

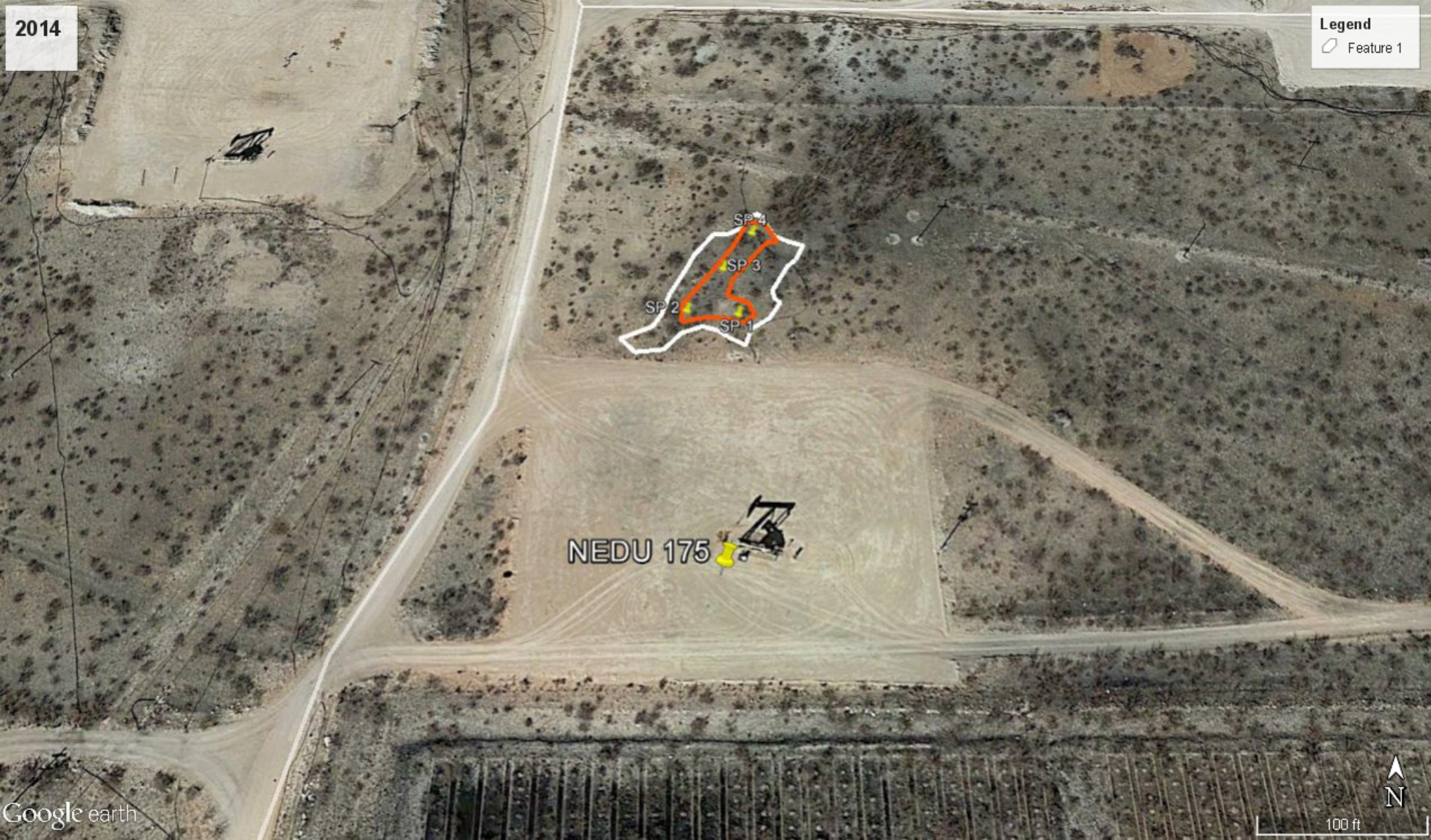
PLSS Search:

Section(s): 1, 2, 3, 4, 9, 10, 11, **Township:** 21S **Range:** 37E

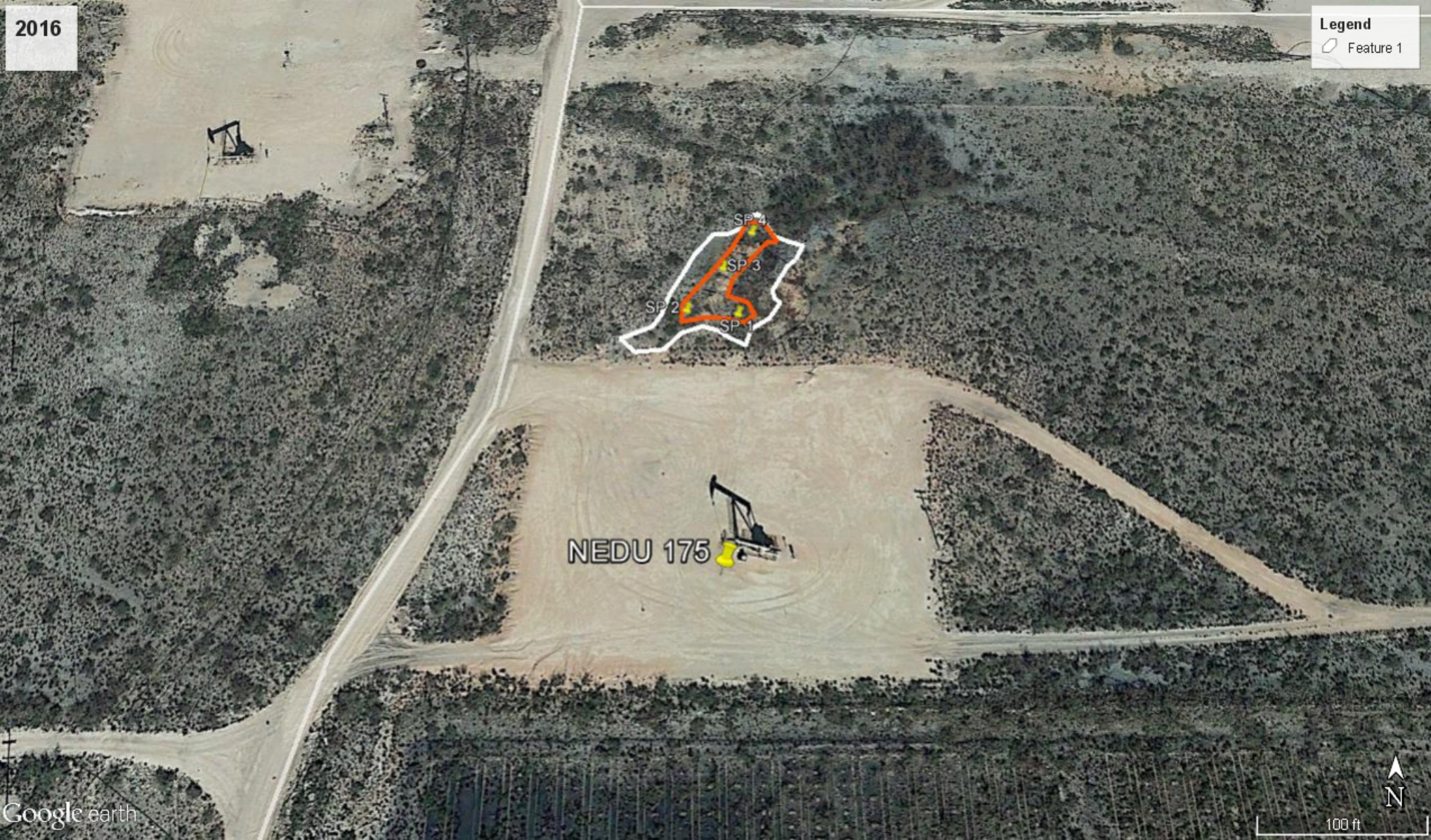
***UTM location was derived from PLSS - see Help**

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.


2013
Legend
Feature 1
SP 4
SP 3
SP 2
SP 1
NEDU 175
N
200 ft
Google earth


2014
Legend
Feature 1
SP 4
SP 3
SP 2
SP 1
NEDU 175
Google earth
N
100 ft


2016
Legend
Feature 1
SP 4
Area of saturation
SP 3
Stained area
SP 2
SP 1
Stained area
N
70 ft
Google earth


2016
Legend
Feature 1
SP 4
SP 3
SP 2
SP 1
NEDU 175
N
100 ft
Google earth

Appendix B

Photos

PHOTOGRAPH LOG

Apache Corp
NEDU 175

Photograph: 1

Description:
Spill Area South and West

Location:
NEDU 175

Photograph taken by:
Jennifer Van Curen

Date: 11/21/2016

Photograph: 2

Description:
Spill Area Edge of East

Location:
NEDU 175

Photograph taken by:
Jennifer Van Curen

Date: 11/21/2016

PHOTOGRAPH LOG

Apache Corp
NEDU 175

Photograph: 3

Description:
Spill Area East and North

Location:
NEDU 175

Photograph taken by:
Jennifer Van Curen

Date: 11/21/2016

Photograph: 4

Description:
Spill Area West

Location:
NEDU 175 South to North

Photograph taken by:
Jennifer Van Curen

Date: 11/21/2016

ARCADIS

Appendix C

Laboratory Sample Results

CARDINAL Laboratories

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

July 26, 2016

BRUCE BAKER

APACHE CORP - HOBBS

2350 W. MARLAND BLVD.

HOBBS, NM 88240

RE: NEDU #175

Enclosed are the results of analyses for samples received by the laboratory on 07/21/16 16:00.

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:	07/21/2016	Sampling Date:	07/21/2016
Reported:	07/26/2016	Sampling Type:	Soil
Project Name:	NEDU #175	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	LEA COUNTY, NM		

Sample ID: NEDU 175 - 1 (H601636-01)

BTEX 8021B mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	**1.15**	0.500	07/25/2016	ND	2.18	109	2.00	2.56	
Toluene*	**3.83**	0.500	07/25/2016	ND	2.23	111	2.00	2.27	
Ethylbenzene*	**11.7**	0.500	07/25/2016	ND	2.14	107	2.00	2.04	
Total Xylenes*	**22.4**	1.50	07/25/2016	ND	6.44	107	6.00	1.96	
Total BTEX	**39.1**	3.00	07/25/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID *114 %* *73.6-140*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1280**	16.0	07/25/2016	ND	400	100	400	0.00	

TPH 8015M mg/kg Analyzed By: MS S-06

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	**1130**	200	07/22/2016	ND	196	97.9	200	2.30	QM-07, QR-03
DRO >C10-C28	**30700**	200	07/22/2016	ND	201	100	200	1.41	QM-07

Surrogate: 1-Chlorooctane *204 %* *35-147*

Surrogate: 1-Chlorooctadecane *851 %* *28-171*

Cardinal Laboratories *=Accredited Analyte

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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:	07/21/2016	Sampling Date:	07/21/2016
Reported:	07/26/2016	Sampling Type:	Soil
Project Name:	NEDU #175	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	LEA COUNTY, NM		

Sample ID: NEDU 175 - 2 (H601636-02)

BTEX 8021B mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.100	0.100	07/25/2016	ND	2.18	109	2.00	2.56	
Toluene*	**0.151**	0.100	07/25/2016	ND	2.23	111	2.00	2.27	
Ethylbenzene*	**2.56**	0.100	07/25/2016	ND	2.14	107	2.00	2.04	
Total Xylenes*	**6.92**	0.300	07/25/2016	ND	6.44	107	6.00	1.96	
Total BTEX	**9.63**	0.600	07/25/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID *124 %* *73.6-140*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1280**	16.0	07/25/2016	ND	400	100	400	0.00	

TPH 8015M mg/kg Analyzed By: MS S-06

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	**261**	100	07/22/2016	ND	196	97.9	200	2.30	
DRO >C10-C28	**7750**	100	07/22/2016	ND	201	100	200	1.41	

Surrogate: 1-Chlorooctane *146 %* *35-147*

Surrogate: 1-Chlorooctadecane *213 %* *28-171*

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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:	07/21/2016	Sampling Date:	07/21/2016
Reported:	07/26/2016	Sampling Type:	Soil
Project Name:	NEDU #175	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	LEA COUNTY, NM		

Sample ID: NEDU 175 - 3 (H601636-03)

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	07/25/2016	ND	2.18	109	2.00	2.56	
Toluene*	<0.050	0.050	07/25/2016	ND	2.23	111	2.00	2.27	
Ethylbenzene*	**0.073**	0.050	07/25/2016	ND	2.14	107	2.00	2.04	
Total Xylenes*	<0.150	0.150	07/25/2016	ND	6.44	107	6.00	1.96	
Total BTEX	<0.300	0.300	07/25/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID *105 %* *73.6-140*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**2400**	16.0	07/25/2016	ND	400	100	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<100	100	07/22/2016	ND	196	97.9	200	2.30	
DRO >C10-C28	**3090**	100	07/22/2016	ND	201	100	200	1.41	

Surrogate: 1-Chlorooctane *91.2 %* *35-147*

Surrogate: 1-Chlorooctadecane *136 %* *28-171*

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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:	07/21/2016	Sampling Date:	07/21/2016
Reported:	07/26/2016	Sampling Type:	Soil
Project Name:	NEDU #175	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	LEA COUNTY, NM		

Sample ID: NEDU 175 - 4 (H601636-04)

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	07/25/2016	ND	2.18	109	2.00	2.56	
Toluene*	**0.075**	0.050	07/25/2016	ND	2.23	111	2.00	2.27	
Ethylbenzene*	**2.53**	0.050	07/25/2016	ND	2.14	107	2.00	2.04	
Total Xylenes*	**2.45**	0.150	07/25/2016	ND	6.44	107	6.00	1.96	
Total BTEX	**5.06**	0.300	07/25/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID *123 %* *73.6-140*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**2480**	16.0	07/25/2016	ND	400	100	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	**134**	100	07/23/2016	ND	196	97.9	200	2.30	
DRO >C10-C28	**1350**	100	07/23/2016	ND	201	100	200	1.41	

Surrogate: 1-Chlorooctane *103 %* *35-147*

Surrogate: 1-Chlorooctadecane *111 %* *28-171*

Cardinal Laboratories *=Accredited Analyte

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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

S-06	The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.
QR-03	The RPD value for the sample duplicate or MS/MSD was outside if QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
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

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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 INC
Project Manager:	Jennifer VanCuren
Address:	1004 N Big Spring St
City:	Midland State: TX Zip: 79701
Phone #:	432 2708753 Fax #: 4376875401
Project #:	Project Owner:
Project Name:	NEDU 175
Project Location:	Lea County New Mexico
Sampler Name:	Jennifer VanCuren

BILL TO

P.O. #:	
Company:	Apache Corp
Attn:	Bruce Baker
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	Chlorides	TPH	BTEX
H601636																	
1	NEDU175 - 1	G	1			X					X		7/21/16	330pm	X	X	X
2	NEDU175 - 2	G	1			X					X		7/21/16	334pm	X	X	X
3	NEDU175 - 3	G	1			X					X		7/21/16	340pm	X	X	X
4	NEDU175 - 4	G	1			X					X		7/21/16	350pm	X	X	X

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Relinquished By: Jennifer VanCuren	Date: 7/21/16 Time: 5:00pm	Received By: Jodi Henson	Phone Result: ☐ Yes ☐ No Add'l Phone #:
Relinquished By:	Date: Time:	Received By:	Fax Result: ☐ Yes ☐ No Add'l Fax #:
			REMARKS:

Delivered By: (Circle One)
Sampler - UPS - Bus - Other: 5.2°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

#75

CARDINAL Laboratories

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

February 08, 2017

BRUCE BAKER

APACHE CORP - HOBBS

2350 W. MARLAND BLVD.

HOBBS, NM 88240

RE: NEDU #175

Enclosed are the results of analyses for samples received by the laboratory on 02/01/17 14:50.

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:	02/01/2017	Sampling Date:	02/01/2017
Reported:	02/08/2017	Sampling Type:	Soil
Project Name:	NEDU #175	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	LEA COUNTY, NM		

Sample ID: SP 3 @ SURFACE (H700242-01)

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	02/02/2017	ND	2.14	107	2.00	0.0867	
Toluene*	<0.050	0.050	02/02/2017	ND	2.10	105	2.00	0.136	
Ethylbenzene*	<0.050	0.050	02/02/2017	ND	2.11	106	2.00	0.0711	
Total Xylenes*	<0.150	0.150	02/02/2017	ND	5.99	99.8	6.00	0.215	
Total BTEX	<0.300	0.300	02/02/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID *101 %* *73.6-140*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1720**	16.0	02/03/2017	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: MS **S-06**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<50.0	50.0	02/02/2017	ND	185	92.7	200	5.75	
DRO >C10-C28	**13600**	50.0	02/02/2017	ND	206	103	200	4.37	

Surrogate: 1-Chlorooctane *92.2 %* *35-147*

Surrogate: 1-Chlorooctadecane *562 %* *28-171*

Cardinal Laboratories *=Accredited Analyte

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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:	02/01/2017	Sampling Date:	02/01/2017
Reported:	02/08/2017	Sampling Type:	Soil
Project Name:	NEDU #175	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	LEA COUNTY, NM		

Sample ID: SP 3 @ 1' (H700242-02)

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	02/02/2017	ND	2.14	107	2.00	0.0867	
Toluene*	<0.050	0.050	02/02/2017	ND	2.10	105	2.00	0.136	
Ethylbenzene*	<0.050	0.050	02/02/2017	ND	2.11	106	2.00	0.0711	
Total Xylenes*	<0.150	0.150	02/02/2017	ND	5.99	99.8	6.00	0.215	
Total BTEX	<0.300	0.300	02/02/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID *101 %* *73.6-140*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**320**	16.0	02/03/2017	ND	432	108	400	0.00	

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	02/02/2017	ND	185	92.7	200	5.75	
DRO >C10-C28	<10.0	10.0	02/02/2017	ND	206	103	200	4.37	

Surrogate: 1-Chlorooctane *91.4 %* *35-147*

Surrogate: 1-Chlorooctadecane *97.9 %* *28-171*

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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:	02/01/2017	Sampling Date:	02/01/2017
Reported:	02/08/2017	Sampling Type:	Soil
Project Name:	NEDU #175	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	LEA COUNTY, NM		

Sample ID: SP 3 @ 2' (H700242-03)

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	02/02/2017	ND	2.14	107	2.00	0.0867	
Toluene*	<0.050	0.050	02/02/2017	ND	2.10	105	2.00	0.136	
Ethylbenzene*	<0.050	0.050	02/02/2017	ND	2.11	106	2.00	0.0711	
Total Xylenes*	<0.150	0.150	02/02/2017	ND	5.99	99.8	6.00	0.215	
Total BTEX	<0.300	0.300	02/02/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID *105 %* *73.6-140*

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	02/03/2017	ND	432	108	400	0.00	

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	02/02/2017	ND	185	92.7	200	5.75	
DRO >C10-C28	<10.0	10.0	02/02/2017	ND	206	103	200	4.37	

Surrogate: 1-Chlorooctane *92.0 %* *35-147*

Surrogate: 1-Chlorooctadecane *104 %* *28-171*

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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:	02/01/2017	Sampling Date:	02/01/2017
Reported:	02/08/2017	Sampling Type:	Soil
Project Name:	NEDU #175	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	LEA COUNTY, NM		

Sample ID: SP 3 @ 3' (H700242-04)

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	02/02/2017	ND	2.14	107	2.00	0.0867	
Toluene*	<0.050	0.050	02/02/2017	ND	2.10	105	2.00	0.136	
Ethylbenzene*	<0.050	0.050	02/02/2017	ND	2.11	106	2.00	0.0711	
Total Xylenes*	<0.150	0.150	02/02/2017	ND	5.99	99.8	6.00	0.215	
Total BTEX	<0.300	0.300	02/02/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID *103 %* *73.6-140*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**176**	16.0	02/03/2017	ND	432	108	400	0.00	

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	02/02/2017	ND	185	92.7	200	5.75	
DRO >C10-C28	**497**	10.0	02/02/2017	ND	206	103	200	4.37	

Surrogate: 1-Chlorooctane *93.3 %* *35-147*

Surrogate: 1-Chlorooctadecane *137 %* *28-171*

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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

S-06	The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.
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

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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 #:	Project Owner:
Project Name:	NEDU 175
Project Location:	Lea County
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	TPH	BTEX	Chlorides
H700247	~~SP 3~~																
1	SP 3	Surface	X	1			X					X	2-1-17	1000	X	X	X
2	SP 3	1'	X				X					X	2-1-17	1001	X	X	X
3	SP 3	2'	X				X					X	2-1-17	1002	X	X	X
4	SP 3	3'	X				X					X	2-1-17	1003	X	X	X

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Relinquished By:	Date: 2-1-17	Received By:	Jodi Henson
	Time: 2:50		
Relinquished By:	Date:	Received By:	
	Time:		

Delivered By: (Circle One)
Sampler - UPS - Bus - Other: #75 5.6°C

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

CHECKED BY: (Initials) JH

Phone Result:	☐ Yes ☐ No	Add'l Phone #:	
Fax Result:	☐ Yes ☐ No	Add'l Fax #:	
REMARKS:			

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