1R - 2627

WORKPLANS

Date:
10-11-11

Rice Environmental Consulting & Safety
P.O. Box 5630 Hobbs, NM 88241
Phone 575.393.4411 Fax 575.393.0293

CERTIFIED MAIL
RETURN RECIEPT NO. 7007 2560 0003 0323 9209

October 11th, 2011

Mr. Edward Hansen
New Mexico Energy, Minerals, & Natural Resources
Oil Conservation Division, Environmental Bureau
1220 S. St. Francis Drive
Santa Fe, New Mexico 87505

RE: **Corrective Action Plan**
Apache Corporation
NMGSAU 1631 (1R-2627): UL/J sec. 32 T19S R37E

Mr. Hansen:

Apache Corporation (Apache) has retained Rice Environmental Consulting and Safety (RECS) to address potential environmental concerns at the above-referenced site.

Background and Previous Work

The site is located approximately 1 mile southwest of Monument, New Mexico at UL/J, Sec. 32, T19S, R37E as shown on the Site Location Map (Figure 1). A leak was discovered at the site on September 28th, 2010. Produced water was released from the collar of the injection line and an unknown amount of water was released.

Beginning on September 28th, 2010, the site was excavated to 38 ft x 96 ft x 18 ft deep to remove the saturated soils and the soils were taken to Sundance Services for disposal. The saturated soils extended to a depth of 14 ft 8 inches where the capillary fringe of the aquifer was encountered. On October 7th, 2010, three soil bores were drilled to determine the extent of the contamination at the site (Figure 2). RECS personnel field tested the soil for chlorides and field screened each sample for hydrocarbons using a photo-ionization detector (PID). Representative samples from the bores were taken to a commercial laboratory for confirmation of chloride and hydrocarbon field numbers. The site was backfilled to 4.5 ft bgs where a 20-mil, reinforced liner was installed throughout the excavation. A 6 inch pad of blow sand was placed below and above the liner for liner protection.

On October 12th, 2010, Apache submitted the initial C-141 to NMOCD-District 1, which was approved by Larry Johnson the same day (Appendix A). The site was then backfilled on October 15th, 2010 with clean, imported soil. Soil amendments were added to the site and the site was seeded with native vegetation on October 16th, 2010.

On October 25th, 2010, monitor well #1 was installed 45 ft southeast of the line break. Monitor well #2 was installed on December 21st, 2010, 56 ft NNW of the line break, and monitor well #3 was installed on April 13th, 2011, 199 ft southeast of the line break. Depth to groundwater was determined to be approximately 14 ft bgs. Monitor well #1 has been sampled three times since its installation. Monitor well #2 has been sampled twice since its installation and monitor well #3 has been sampled once (Figure 3). Sampling events of monitor well #1 showed chloride and TDS readings well above WQCC standards, although the reading are dropping. In addition, initial well sampling showed slight levels of BTEX in the water that have now dissipated. Monitor well #2's most recent readings showed chlorides of 296 mg/L, a TDS reading of 907 mg/L, and BTEX showed non-detect and monitor well #3 showed a laboratory reading of 300 mg/L, a TDS reading of 903 mg/L, and BTEX showed non-detect (Appendix B).

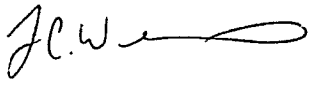
Proposed Work Elements

RECS submits the following as a Corrective Action Plan. The NMGSAU 1631 site has chloride readings above WQCC standards coming onto the site indicating that there is an up gradient groundwater contamination source. Therefore, Apache will conduct a three month groundwater source removal and test pumping program. The purpose of this pumping program is to determine if groundwater may be restored within a short period of time and assist in the evaluation of groundwater restoration methods. Water removed from the existing 4 inch monitoring well (MW-1) will be used for production operations (e.g. pipeline and well maintenance). If a groundwater restoration program through groundwater source removal is not feasible based on the test pumping program, alternative groundwater remediation options will be sought with the approval of NMOCD.

If the groundwater restoration program through groundwater source removal is successful, Apache will submit a written report which will include either a groundwater remedy for the site or a request for site termination.

RECS appreciates the opportunity to work with you on this project. Please call Hack Conder at (575) 393-9174 or Natalie Gladden (575) 390-4186 if you have any questions or wish to discuss the site.

Sincerely,



Lara Weinheimer
Project Scientist
RECS
(575) 441-0431

Attachments:

Figure 1 – Site location map
Figure 2 – Soil bore and Monitor well installation plat
Figure 3 – Monitor well sampling plat

Appendix A – Initial C-141
Appendix B – Groundwater sampling confirmatory labs

Figures

RICE Environmental Consulting and Safety (RECS)
P.O. Box 5630 Hobbs, NM 88241
Phone 575.393.4411 Fax 575.393.0293

Site Map

RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC

Apache NMGSAU 1631

LEGALS:UL/J sec. 32
T19S R37E

Case #: 1R-2627

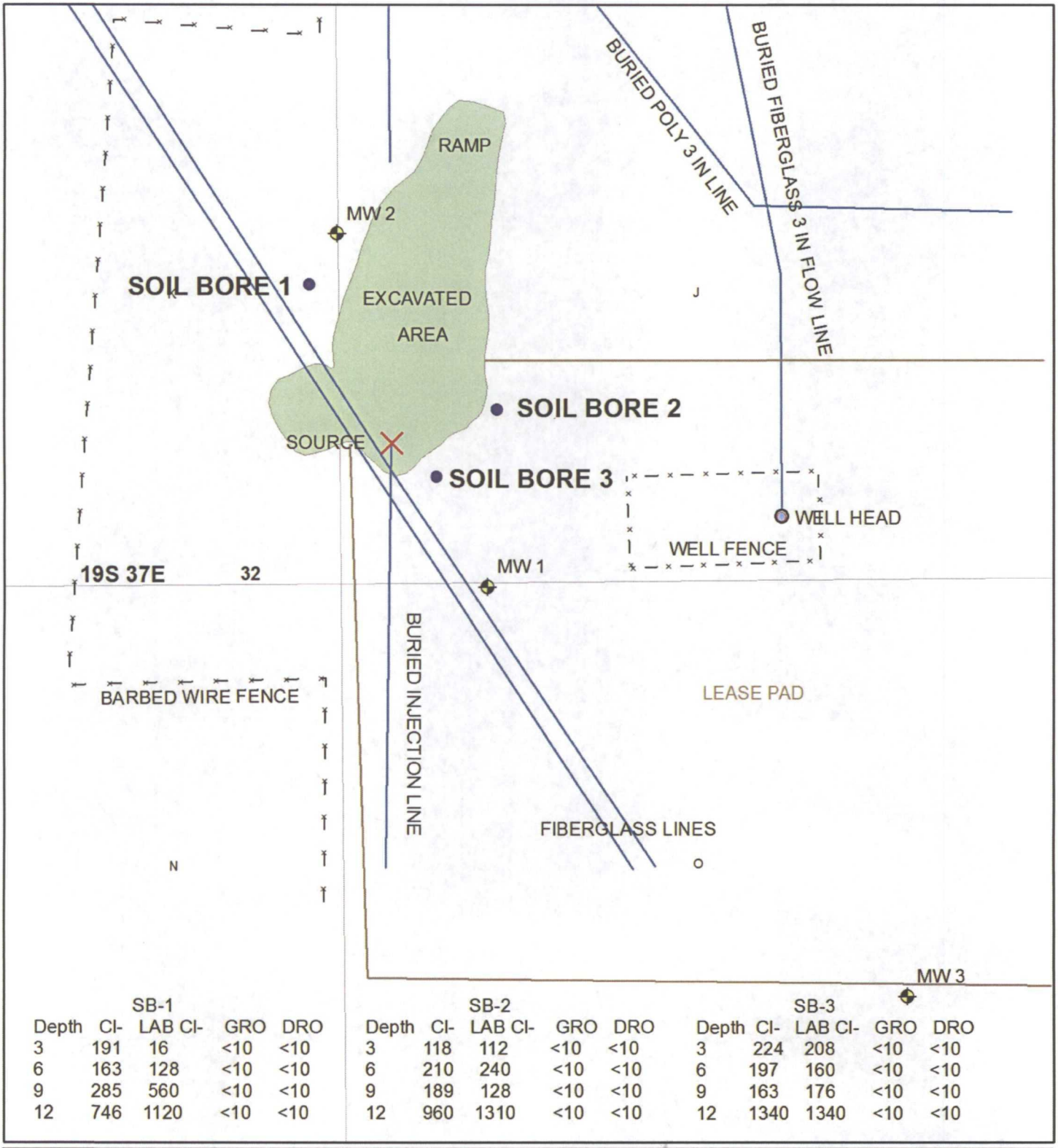
Figure 1

N
W E
S

0 750 1,500 3,000
Feet

Drawing date: 5-10-11
Drafted by: L. Weinheimer

Soil bore and Monitor well installation



SB-1

Depth	Cl-	LAB Cl-	GRO	DRO
3	191	16	<10	<10
6	163	128	<10	<10
9	285	560	<10	<10
12	746	1120	<10	<10

SB-2

Depth	Cl-	LAB Cl-	GRO	DRO
3	118	112	<10	<10
6	210	240	<10	<10
9	189	128	<10	<10
12	960	1310	<10	<10

SB-3

Depth	Cl-	LAB Cl-	GRO	DRO
3	224	208	<10	<10
6	197	160	<10	<10
9	163	176	<10	<10
12	1340	1340	<10	<10

RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC

Apache NMGSAU 1631

Legals: UL/J sec. 32 T19S R37E

Case #: 1R-2627

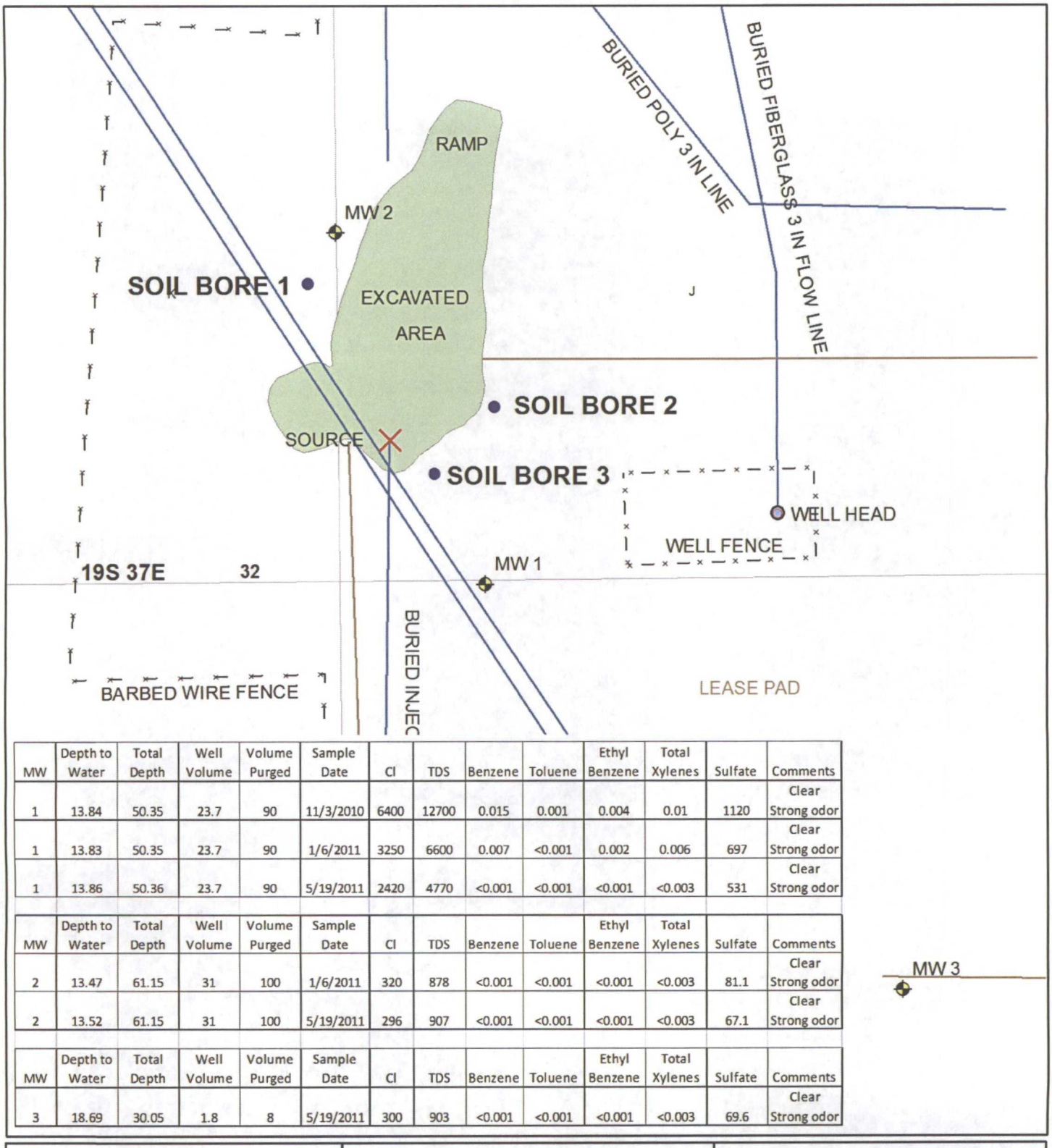
Figure 2

N W E S

0 12.5 25 50 Feet

Projection: NAD 83/STATE PLANE
Drawing date: 8-16-11
Drafted by: L. Weinheimer

Monitor Well Sampling



MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
1	13.84	50.35	23.7	90	11/3/2010	6400	12700	0.015	0.001	0.004	0.01	1120	Clear Strong odor
1	13.83	50.35	23.7	90	1/6/2011	3250	6600	0.007	<0.001	0.002	0.006	697	Clear Strong odor
1	13.86	50.36	23.7	90	5/19/2011	2420	4770	<0.001	<0.001	<0.001	<0.003	531	Clear Strong odor

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
2	13.47	61.15	31	100	1/6/2011	320	878	<0.001	<0.001	<0.001	<0.003	81.1	Clear Strong odor
2	13.52	61.15	31	100	5/19/2011	296	907	<0.001	<0.001	<0.001	<0.003	67.1	Clear Strong odor

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
3	18.69	30.05	1.8	8	5/19/2011	300	903	<0.001	<0.001	<0.001	<0.003	69.6	Clear Strong odor

RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC

Apache NMGSAU 1631

Legals: UL/J sec. 32 T19S R37E

Case #: 1R-2627

Figure 3

N W E S

0 12.5 25 50 Feet

Projection: NAD 83/STATE PLANE
Drawing date: 8-16-11
Drafted by: L. Weinheimer

Appendix A

Initial C-141

RICE Environmental Consulting and Safety (RECS)
P.O. Box 5630 Hobbs, NM 88241
Phone 575.393.4411 Fax 575.393.0293

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S St Francis Dr , Santa Fe, NM 87505

RECEIVED
OCT 12 2010
HOBBSOCD

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 October 10, 2003

Submit 2 Copies to appropriate District Office in accordance with Rule 116 on back side of form

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company Apache Corporation 873	Contact Natalie Gladden
Address P.O. Box 1849 Eunice, NM 8823	Telephone No. 575-390-4186
Facility Name NMGSAU #1631 (329) nearest well	Facility Type

Surface Owner Ed Johnston	Mineral Owner NMOCD	Lease No. 30-025-35608

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
J	32	19S	37E	1330'	FSL	2520'	FEL	Lea

Latitude_____ Longitude_____

NATURE OF RELEASE

Type of Release PW	Volume of Release >5	Volume Recovered 0
Source of Release collar on injection line	Date and Hour of Occurrence 09/28/2010 11:26	Date and Hour of Discovery 09/28/2010 11:26
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Larry Johnson	
By Whom? Natalie Gladden	Date and Hour 09/28/2010 1pm	
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.*
Saturated area was found at the surface, once the line was excavated, it was determined that the leak had just surfaced. Unknown amount released.

Describe Area Affected and Cleanup Action Taken.*
Site has been excavated according to NMOCD guidelines, a liner has been placed to prevent any future leaks only. All of the contaminated soil has been excavated and hauled to Sundance Services. Area has been backfilled after confirmation samples have been taken. Area will be reseeded per the landowners request. The saturated soil extended down 14'8 ft to ground water depth. Due to contamination of ground water, monitoring wells will be drilled in two weeks from today.

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: Natalie Gladden

Printed Name: Natalie Gladden

Title: EHS Environmental Tech

E-mail Address: natalie.gladden@apachecorp.com

Date: 10/12/10 Phone: 575-390-4186

OIL CONSERVATION DIVISION

Approved by District ~~Supervisor~~ ENVIRONMENTAL ENGINEER

Approval Date: 10.12.10 Expiration Date: 12.12.10

Conditions of Approval: SUBMIT FINAL C-141 w/ DOCS BY

~~Attached~~ ☐

IRP# 10.12.2627

* Attach Additional Sheets If Necessary

nLWJ1028751329
pLWJ1028[illegible]
52067

Appendix B

Groundwater sampling confirmatory labs

RICE Environmental Consulting and Safety (RECS)
P.O. Box 5630 Hobbs, NM 88241
Phone 575.393.4411 Fax 575.393.0293

CARDINAL Laboratories

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

May 31, 2011

NATALIE GLADDEN

APACHE - EUNICE

P. O. BOX 1849

EUNICE, NM 88231

RE: APACHE NMGSAU 1631-ACCIDENTAL DISCHARGE

Enclosed are the results of analyses for samples received by the laboratory on 05/23/11 14:16.

Cardinal Laboratories is accredited through Texas NELAP for:

Method SW-846 8021	Benzene, Toluene, Ethyl Benzene, and Total Xylenes
Method SW-846 8260	Benzene, Toluene, Ethyl Benzene, and Total Xylenes
Method TX 1005	Total Petroleum Hydorcarbons

Certificate number T104704398-08-TX. Accreditation applies to solid and chemical materials and non-potable water matrices.

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 (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 - EUNICE
NATALIE GLADDEN
P. O. BOX 1849
EUNICE NM, 88231
Fax To: 394-2425

Received:	05/23/2011	Sampling Date:	05/19/2011
Reported:	05/31/2011	Sampling Type:	Water
Project Name:	APACHE NMGSAU 1631-ACCIDENTAL DI	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	T19S-R37E-SEC32 J-LEA CTY., NM		

Sample ID: MONITOR WELL #1 (H101041-01)

BTEX 8021B mg/L Analyzed By: CMS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	05/26/2011	ND	0.055	109	0.0500	7.04	
Toluene*	<0.001	0.001	05/26/2011	ND	0.054	108	0.0500	6.44	
Ethylbenzene*	<0.001	0.001	05/26/2011	ND	0.056	111	0.0500	6.44	
Total Xylenes*	<0.003	0.003	05/26/2011	ND	0.166	110	0.150	6.08	

Surrogate: 4-Bromofluorobenzene (PIL *89.0 %* *80-120*

Chloride, SM4500Cl-B mg/L Analyzed By: HM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**2420**	4.00	05/31/2011	ND	104	104	100	7.41	

Sulfate 375.4 mg/L Analyzed By: HM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate	**531**	10.0	05/31/2011	ND	39.3	98.2	40.0	2.07	

TDS 160.1 mg/L Analyzed By: CK

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS	**4770**	5.00	05/24/2011	ND				0.154	

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 - EUNICE
NATALIE GLADDEN
P. O. BOX 1849
EUNICE NM, 88231
Fax To: 394-2425

Received:	05/23/2011	Sampling Date:	05/19/2011
Reported:	05/31/2011	Sampling Type:	Water
Project Name:	APACHE NMGSAU 1631-ACCIDENTAL DI	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	T19S-R37E-SEC32 J-LEA CTY., NM		

Sample ID: MONITOR WELL #2 (H101041-02)

BTEX 8021B mg/L Analyzed By: CMS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	05/26/2011	ND	0.055	109	0.0500	7.04	
Toluene*	<0.001	0.001	05/26/2011	ND	0.054	108	0.0500	6.44	
Ethylbenzene*	<0.001	0.001	05/26/2011	ND	0.056	111	0.0500	6.44	
Total Xylenes*	<0.003	0.003	05/26/2011	ND	0.166	110	0.150	6.08	

Surrogate: 4-Bromofluorobenzene (PIL *95.1 %* *80-120*

Chloride, SM4500Cl-B mg/L Analyzed By: HM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**296**	4.00	05/31/2011	ND	104	104	100	7.41	

Sulfate 375.4 mg/L Analyzed By: HM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate	**67.1**	10.0	05/31/2011	ND	39.3	98.2	40.0	2.07	

TDS 160.1 mg/L Analyzed By: CK

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS	**907**	5.00	05/24/2011	ND				0.154	

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 - EUNICE
NATALIE GLADDEN
P. O. BOX 1849
EUNICE NM, 88231
Fax To: 394-2425

Received:	05/23/2011	Sampling Date:	05/19/2011
Reported:	05/31/2011	Sampling Type:	Water
Project Name:	APACHE NMGSAU 1631-ACCIDENTAL DI	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	T19S-R37E-SEC32 J-LEA CTY., NM		

Sample ID: MONITOR WELL #3 (H101041-03)

BTEX 8021B mg/L Analyzed By: CMS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	05/26/2011	ND	0.055	109	0.0500	7.04	
Toluene*	<0.001	0.001	05/26/2011	ND	0.054	108	0.0500	6.44	
Ethylbenzene*	<0.001	0.001	05/26/2011	ND	0.056	111	0.0500	6.44	
Total Xylenes*	<0.003	0.003	05/26/2011	ND	0.166	110	0.150	6.08	

Surrogate: 4-Bromofluorobenzene (PIL *94.4 %* *80-120*

Chloride, SM4500Cl-B mg/L Analyzed By: HM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**300**	4.00	05/31/2011	ND	104	104	100	7.41	

Sulfate 375.4 mg/L Analyzed By: HM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate	**69.6**	10.0	05/31/2011	ND	39.3	98.2	40.0	2.07	

TDS 160.1 mg/L Analyzed By: CK

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS	**903**	5.00	05/24/2011	ND				0.154	

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

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

101 East Marland - Hobbs, New Mexico 88240
Tel (575) 393-2326
Fax (575) 393-2476

Cardinal Laboratories, Inc.

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

LAB Order ID # _____

Company Name: Apache	BILL TO Company: Apache / PO#
Project Manager: Hack Conder	Address: (Street, City, Zip)
Address: (Street, City, Zip) 122 W Taylor Street ~ Hobbs, New Mexico 88240	Phone#: / Fax#:
Phone #: (575) 393-9174	Fax #: (575) 397-1471
Project #:	Project Name: Apache NMGSAU 1631-Accidental Discharge
Project Location: T19S-R37E-Sec32 J ~ Lea County New Mexico	Sampler Signature: Rozanne Johnson (575)631-9310 rozanne@valornet.com

ANALYSIS REQUEST
(Circle or Specify Method No.)

LAB # (LAB USE ONLY) H10141-	FIELD CODE	(G)rab or (C)omp	# CONTAINERS	MATRIX: WATER	SOIL	AIR	SLUDGE	PRESERVATIVE METHOD: HCL (2 40ml VOA)	HNO_3	$NaHSO_4$	H_2SO_4	ICE (1-1Liter HDPE)	NONE	SAMPLING: DATE (2011)	TIME	MTBE 8021B/602	BTEX 8021B/602	TPH 418.1/TX1005 / TX1005 Extended (C35)	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg 6010B/200.7	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	TCLP Pesticides	RCI	GC/MS Vol. 8260B/624	GC/MS Semi. Vol. 8270C/625	PCB's 8082/608	Pesticides 8081A/608	BOD, TSS, pH	Moisture Content	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, CO3, HCO3)	Sulfates	Total Dissolved Solids	Chlorides	Turn Around Time ~ 24 Hours
A-C 1	Monitor Well #1	G	3	X				2				1		5-19	16:05		X																X	X	X	
2	Monitor Well #2	G	3	X				2				1		5-19	14:40		X																X	X	X	
3	Monitor Well #3	G	3	X				2				1		5-19	13:10		X																X	X	X	

Relinquished by: Rozanne Johnson	Date: 5-23-11	Time: 14:15	Received by: Jodi Henson
Relinquished by:	Date:	Time:	Received By: (Laboratory Staff)

Date: 5-23-2011 Time: 14:16

Phone Results		Yes		No
Fax Results		Yes		No Additional Fax Number:

REMARKS:

Email Results to: hconder@riceswd.com
kjones@riceswd.com
lweinheimer@rice-ecs.com
rozanne@valornet.com

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

Sample Condition: Cool: Yes ✓ / No; Intact: Yes ✓ / No

CHECKED BY: (Initials) JH

#26