



EXPLORING WHAT'S POSSIBLE

# **APACHE CORPORATION**

P.O.Box 1849  
Eunice, NM 88231  
Phone 575.394.3159

**Empire Abo C-49 SWD**  
**(2RP-2638)**

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## **Termination Request**

API No. 30-015-03180

Release Date: November 17<sup>th</sup>, 2014

Unit Letter L, Section 29, Township 17S, Range 29E

**March 9<sup>th</sup>, 2015**

**Mike Bratcher**

New Mexico Energy, Minerals, & Natural Resources  
Oil Conservation Division, Environmental Bureau – District 2  
811 S. First St.  
Artesia, NM 88210

**RE: Termination Request  
Apache Empire Abo C-49 SWD (2RP-2638)  
UL/L sec. 29 T17S R29E  
API No. 30-015-03180**

Mr. Bratcher:

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 7.2 miles west of Loco Hills, New Mexico at UL/L sec. 29 T17S R29E. Previous soil bores conducted at this site show that there is no groundwater in this area.

On November 17<sup>th</sup>, 2014, Apache discovered that a ceramic plunger on the east triplex pump failed at the SWD, releasing 750 barrels of produced water over 28,604 square feet of lease pad, lease road and pasture land. All pumps were shut down and vacuum trucks were dispatched to the site. The vacuum trucks recovered a total of 650 barrels of produced water. NMOCD and BLM were notified of the release on November 17<sup>th</sup>, 2014, and an initial C-141 was sent to both agencies for approval. NMOCD approved the initial C-141 on December 2<sup>nd</sup>, 2014 (Appendix A).

RECS personnel were on site beginning on November 17<sup>th</sup>, 2014, to conduct remediation efforts (Figure). Based on an initial assessment of the release, the release area on the pad was scraped down 6 inches. Once the scrape was completed, 5 points were taken from the bottom of the scrape and field tested for chlorides and organic vapors. The samples were then sent to a commercial laboratory for analysis. The laboratory returned chloride readings that ranged from 752 mg/kg to non-detect. GRO, DRO and BTEX readings for the bottom samples returned values of non-detect.

In the pasture to the west of the pad, the release was scraped in two parts: a 1.5 ft excavation and a 6 inch scrape. At the base of the 1.5 ft excavation, two bottom samples and four wall samples were taken and field tested for chlorides and organic vapors. The samples were then sent to a commercial laboratory for analysis. The laboratory returned chloride readings that ranged from

912 mg/kg to non-detect. GRO, DRO and BTEX readings for the bottom and wall samples returned values of non-detect. A bottom sample from the 6 inch scrape was taken and field tested for chlorides and organic vapors. The sample was then sent to a commercial laboratory for analysis. The 6 inch scrape bottom sample returned a chloride value of 240 mg/kg with GRO, DRO and BTEX readings of non-detect.

On December 9<sup>th</sup>, 2014, three auger points were installed in the release area to the east of the lease pad. The auger points were installed to a depth of 1 ft bgs, and the 1 ft bgs samples from each auger point were taken and field tested for chlorides and organic vapors. The samples were then taken to a commercial laboratory for analysis. Hand Auger Point 1 returned a laboratory chloride value of 768 mg/kg, Hand Auger Point 2 returned a laboratory chloride value of 720 mg/kg, and Hand Auger Point 3 returned a laboratory chloride value of 144 mg/kg. The GRO, DRO and BTEX results for all samples returned values of non-detect (Appendix B).

Based on the laboratory sampling data, a Path Forward was submitted to NMOCD and BLM on January 6<sup>th</sup>, 2015. The Path Forward requested permission to backfill the lease pad, the scrape and excavation to the west of the lease pad. In addition, Apache requested permission to scrape the release area on the east side of the pad to 1 ft bgs and then backfill that scrape. NMOCD and BLM approved the Path Forward on January 7<sup>th</sup>, 2015.

The east side of the pad was scraped down by hand shovel to 1 ft bgs. All contaminated soils were taken to a NMOCD approved facility for disposal. Clean caliche was imported to the site to backfill the lease pad and lease road. Clean top soil was imported to site to backfill the pasture. The scrapes were contoured to the surrounding location.

Photo documentation of field activities can be found in Appendix C.

Given that Apache received permission to backfill the site from NMOCD and BLM, and the scrapes were backfilled with clean soil, Apache respectfully requests 'remediation termination' and site closure. A final C-141 can be found in Appendix D.

RECS appreciates the opportunity to work with you on this project. Please call Hack Conder at (575) 393-2967 or me if you have any questions or wish to discuss the site.

Sincerely,

A handwritten signature in dark ink, appearing to read 'Lara Weinheimer', with a stylized flourish at the end.

Lara Weinheimer  
Project Scientist  
RECS  
(575) 441-0431

Attachments:

Figure – Excavation Data

Appendix A – Initial C-141

Appendix B – Laboratory Analyses

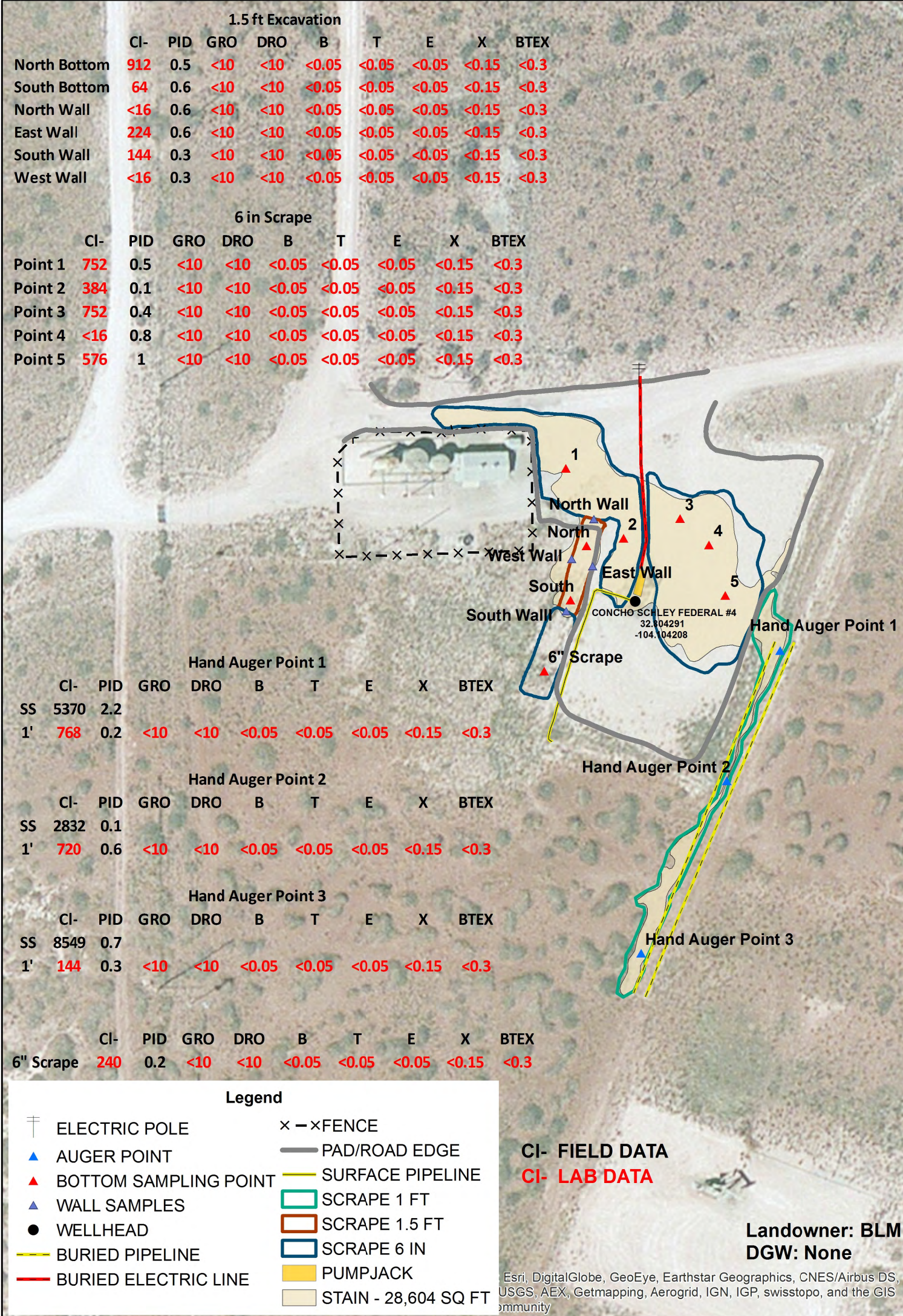
Appendix C – Photo Documentation

Appendix D – Final C-141

# Figures



Excavation Data





# Appendix A

Initial C-141

# NM OIL CONSERVATION

ARTESIA DISTRICT

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

NOV 26 2014

Form C-141  
Revised August 8, 2011

Submitted to appropriate District Office in accordance with 19.15.29 NMAC.

## Release Notification and Corrective Action

NAB1433654072

### OPERATOR

☒ Initial Report ☐ Final Report

Name of Company: Apache Corporation <u>873</u>	Contact Bruce Baker
Address: 2350 W Marland Blvd Hobbs, NM 88240	Telephone No. (432) 631-6982
Facility Name Empire Abo C-49 SWD	Facility Type: Facility

Surface Owner BLM	Mineral Owner	API No. Facility
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### LOCATION OF RELEASE

30-015-03180

Unit Letter L	Section 29	Township 17S	Range 29E	Feet from the	North/South Line	Feet from the	East/West Line	County Eddy
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Latitude \_\_\_\_\_ Longitude \_\_\_\_\_

### NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release 750 barrels of produced water	Volume Recovered 650 barrels of produced water
Source of Release: Triplex pump	Date and Hour of Occurrence 11/17/2014 at 1:00 a.m.	Date and Hour of Discovery 11/17/2014 at 6:00 a.m.
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? Mike Bratcher (NMOCD) and Jeffery Robertson (BLM)	
By Whom? Bruce Baker	Date and Hour 11/17/2014	
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.\*  
Ceramic plunger on east triplex pump failed resulting in the loss of fluid. All pumps were shut down and vacuum trucks were dispatched to pick up standing fluid.

Describe Area Affected and Cleanup Action Taken.\*  
The majority of the release was contained inside the dirt containment wall but fluid did breach the containment on the northwest corner and ran down lease road and onto a well pad and about 3,000 square feet of pasture was affected on the west and east and south-east of well pad east of facility. The area was mapped and field samples were collect.

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: <u>Bruce Baker</u>	OIL CONSERVATION DIVISION	
Printed Name: Bruce Baker	Approved by Environmental Specialist	Signed By: <u>Mike Bratcher</u>
Title: Environmental Technician	Approval Date: <u>12/2/14</u>	Expiration Date: <u>N/A</u>
E-mail Address: larry.baker@apachecorp.com	Conditions of Approval:	
Date: 11/26/2014	Remediation per O.C.D. Rules & Guidelines	
Phone: (432) 631-6982	SUBMIT REMEDIATION PROPOSAL NO	

\* Attach Additional Sheets If Necessary

LATER THAN: 11/2/15

2 RP-2638



# Appendix B

## Laboratory Analyses

**RICE Environmental Consulting and Safety (RECS)**  
P.O. Box 2948 Hobbs, NM 88241  
Phone 575.393.2967



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

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December 10, 2014

BRUCE BAKER

APACHE CORP - HOBBS

2350 W. MARLAND BLVD.

HOBBS, NM 88240

RE: EMPIRE ABO C-49 SWD

Enclosed are the results of analyses for samples received by the laboratory on 12/04/14 16:56.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-13-5. 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](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

Cardinal Laboratories is accredited 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,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is written in a cursive, flowing style.

Celey D. Keene

Lab Director/Quality Manager

**Analytical Results For:**

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

Received:	12/04/2014	Sampling Date:	12/03/2014
Reported:	12/10/2014	Sampling Type:	Soil
Project Name:	EMPIRE ABO C-49 SWD	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Kathy Perez
Project Location:	NOT GIVEN		

**Sample ID: POINT 1 BOTTOM @ 6" (H403711-01)**

BTX 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	12/09/2014	ND	1.87	93.7	2.00	3.16		
Toluene*	<0.050	0.050	12/09/2014	ND	1.72	86.2	2.00	3.97		
Ethylbenzene*	<0.050	0.050	12/09/2014	ND	1.63	81.5	2.00	1.82		
Total Xylenes*	<0.150	0.150	12/09/2014	ND	4.90	81.6	6.00	2.34		
Total BTX	<0.300	0.300	12/09/2014	ND						

Surrogate: 4-Bromofluorobenzene (PID) 93.6 % 61-154

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	752	16.0	12/05/2014	ND	432	108	400	3.77		

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	12/06/2014	ND	195	97.6	200	0.501	
DRO >C10-C28	<10.0	10.0	12/06/2014	ND	202	101	200	1.55	

Surrogate: 1-Chlorooctane 126 % 47.2-157

Surrogate: 1-Chlorooctadecane 145 % 52.1-176

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



**Analytical Results For:**

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

Received:	12/04/2014	Sampling Date:	12/04/2014
Reported:	12/10/2014	Sampling Type:	Soil
Project Name:	EMPIRE ABO C-49 SWD	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Kathy Perez
Project Location:	NOT GIVEN		

**Sample ID: POINT 2 BOTTOM @ 6" (H403711-02)**

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	12/09/2014	ND	1.87	93.7	2.00	3.16		
Toluene*	<0.050	0.050	12/09/2014	ND	1.72	86.2	2.00	3.97		
Ethylbenzene*	<0.050	0.050	12/09/2014	ND	1.63	81.5	2.00	1.82		
Total Xylenes*	<0.150	0.150	12/09/2014	ND	4.90	81.6	6.00	2.34		
Total BTEx	<0.300	0.300	12/09/2014	ND						

Surrogate: 4-Bromofluorobenzene (PID) 93.9 % 61-154

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	384	16.0	12/05/2014	ND	432	108	400	3.77	

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	12/06/2014	ND	195	97.6	200	0.501	
DRO >C10-C28	<10.0	10.0	12/06/2014	ND	202	101	200	1.55	

Surrogate: 1-Chlorooctane 126 % 47.2-157

Surrogate: 1-Chlorooctadecane 141 % 52.1-176

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

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

Received:	12/04/2014	Sampling Date:	12/04/2014
Reported:	12/10/2014	Sampling Type:	Soil
Project Name:	EMPIRE ABO C-49 SWD	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Kathy Perez
Project Location:	NOT GIVEN		

**Sample ID: POINT 3 BOTTOM @ 6" (H403711-03)**

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	12/09/2014	ND	1.87	93.7	2.00	3.16		
Toluene*	<0.050	0.050	12/09/2014	ND	1.72	86.2	2.00	3.97		
Ethylbenzene*	<0.050	0.050	12/09/2014	ND	1.63	81.5	2.00	1.82		
Total Xylenes*	<0.150	0.150	12/09/2014	ND	4.90	81.6	6.00	2.34		
Total BTEx	<0.300	0.300	12/09/2014	ND						

Surrogate: 4-Bromofluorobenzene (PID) 93.2 % 61-154

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	752	16.0	12/05/2014	ND	432	108	400	3.77	

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	12/06/2014	ND	195	97.6	200	0.501	
DRO >C10-C28	<10.0	10.0	12/06/2014	ND	202	101	200	1.55	

Surrogate: 1-Chlorooctane 121 % 47.2-157

Surrogate: 1-Chlorooctadecane 140 % 52.1-176

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

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

Received:	12/04/2014	Sampling Date:	12/03/2014
Reported:	12/10/2014	Sampling Type:	Soil
Project Name:	EMPIRE ABO C-49 SWD	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Kathy Perez
Project Location:	NOT GIVEN		

**Sample ID: POINT 4 BOTTOM @ 6" (H403711-04)**

BTEX 8021B		mg/kg		Analyzed By: CK						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	12/09/2014	ND	1.81	90.5	2.00	7.27		
Toluene*	<0.050	0.050	12/09/2014	ND	1.79	89.5	2.00	7.66		
Ethylbenzene*	<0.050	0.050	12/09/2014	ND	1.71	85.7	2.00	7.88		
Total Xylenes*	<0.150	0.150	12/09/2014	ND	5.27	87.8	6.00	7.94		
Total BTEX	<0.300	0.300	12/09/2014	ND						

Surrogate: 4-Bromofluorobenzene (PID) 101 % 61-154

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	<16.0	16.0	12/05/2014	ND	432	108	400	3.77		

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	12/06/2014	ND	195	97.6	200	0.501	
DRO >C10-C28	<10.0	10.0	12/06/2014	ND	202	101	200	1.55	

Surrogate: 1-Chlorooctane 122 % 47.2-157

Surrogate: 1-Chlorooctadecane 140 % 52.1-176

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Celey D. Keene, Lab Director/Quality Manager



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

Received:	12/04/2014	Sampling Date:	12/03/2014
Reported:	12/10/2014	Sampling Type:	Soil
Project Name:	EMPIRE ABO C-49 SWD	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Kathy Perez
Project Location:	NOT GIVEN		

**Sample ID: POINT 5 BOTTOM @ 6" (H403711-05)**

BTX 8021B		mg/kg		Analyzed By: CK						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	12/09/2014	ND	1.81	90.5	2.00	7.27		
Toluene*	<0.050	0.050	12/09/2014	ND	1.79	89.5	2.00	7.66		
Ethylbenzene*	<0.050	0.050	12/09/2014	ND	1.71	85.7	2.00	7.88		
Total Xylenes*	<0.150	0.150	12/09/2014	ND	5.27	87.8	6.00	7.94		
Total BTX	<0.300	0.300	12/09/2014	ND						

Surrogate: 4-Bromofluorobenzene (PID) 102 % 61-154

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	576	16.0	12/05/2014	ND	432	108	400	3.77	

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	12/06/2014	ND	195	97.6	200	0.501	
DRO >C10-C28	<10.0	10.0	12/06/2014	ND	202	101	200	1.55	

Surrogate: 1-Chlorooctane 121 % 47.2-157

Surrogate: 1-Chlorooctadecane 138 % 52.1-176

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

### 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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Cardinal Laboratories

\*=Accredited Analyte

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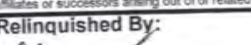




Celey D. Keene, Lab Director/Quality Manager



101 East Marland, Hobbs, NM 88240 2111 Beechwood, Abilene, TX 79603  
(505) 393-2326 FAX (505) 393-2476 (325) 673-7001 FAX (325) 673-7020

### CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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Relinquished By: 		Date: 12-4-2014 Time: 4:56	Received By: 	Phone Result: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Fax Result: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Add'l Phone #: Add'l Fax #: REMARKS:
Relinquished By: 		Date: Time:	Received By: 	email results: hconder@rice-ecs.com; knorman@rice-ecs.com; jkamplain@rice-ecs.com; regans@rice-ecs.com; lflores@rice-ecs.com; lweinheimer@rice-ecs.com; cursanic@rice-ecs.com environmental tech:  lflores @rice-ecs.com Email to Bruce at Apache
Delivered By: (Circle One) Sampler - UPS - Bus - Other:		-1.4°C	Sample Condition Cool Intact <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No	CHECKED BY: (Initials) 

† Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476

\$54



December 15, 2014

BRUCE BAKER

APACHE CORP - HOBBS

2350 W. MARLAND BLVD.

HOBBS, NM 88240

RE: EMPIRE ABO C-49 SWD

Enclosed are the results of analyses for samples received by the laboratory on 12/10/14 16:15.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-13-5. 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](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

Cardinal Laboratories is accredited 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

**Analytical Results For:**

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

Received: 12/10/2014  
Reported: 12/15/2014  
Project Name: EMPIRE ABO C-49 SWD  
Project Number: NONE GIVEN  
Project Location: NOT GIVEN

Sampling Date: 12/10/2014  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Kathy Perez

**Sample ID: SPOIL PILE LOCATION (H403772-01)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	176	16.0	12/11/2014	ND	400	100	400	0.00	
TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	12/11/2014	ND	197	98.4	200	1.87	
DRO >C10-C28	<10.0	10.0	12/11/2014	ND	209	105	200	1.93	
Surrogate: 1-Chlorooctane		93.6 %	47.2-157						
Surrogate: 1-Chlorooctadecane		89.7 %	52.1-176						

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**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

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\*=Accredited Analyte

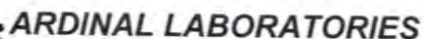
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Celey D. Keene, Lab Director/Quality Manager





101 East Marland, Hobbs, NM 88240 2111 Beechwood, Abilene, TX 79603  
(505) 393-2326 FAX (505) 393-2476 (325) 673-7001 FAX (325) 673-7020

### CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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Relinquished By: <i>ah</i>		Date: <i>12-10-14</i>		Received By: <i>[Signature]</i>		Phone Result: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Add'l Phone #:	
		Time: <i>4:15</i>				Fax Result: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Add'l Fax #:	
Relinquished By:		Date:		Received By:		REMARKS:	
		Time:				email results:	
Delivered By: (Circle One)				Sample Condition		hconder@rice-ecs.com; knorman@rice-ecs.com;	
Sampler - UPS - Bus - Other:		<i>5.6</i>		Cool <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Intact <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		jkamplain@rice-ecs.com; regans@rice-ecs.com; lflores@rice-ecs.com;	
				CHECKED BY: <i>[Signature]</i>		lweinheimer@rice-ecs.com; kjones@riceswd.com;	
						cursanic@rice-ecs.com	
						environmental tech: aredecop@rice-ecs.com	

† Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476

Bruce Baker



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

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December 17, 2014

BRUCE BAKER

APACHE CORP - HOBBS

2350 W. MARLAND BLVD.

HOBBS, NM 88240

RE: EAU C 49 SWD

Enclosed are the results of analyses for samples received by the laboratory on 12/12/14 8:00.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-13-5. 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](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

Cardinal Laboratories is accredited 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

**Analytical Results For:**

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

Received:	12/12/2014	Sampling Date:	12/09/2014
Reported:	12/17/2014	Sampling Type:	Soil
Project Name:	EAU C 49 SWD	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

**Sample ID: NORTH BOTTOM 1.5' (H403792-01)**

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	12/15/2014	ND	1.90	95.1	2.00	3.04	
Toluene*	<0.050	0.050	12/15/2014	ND	1.88	93.8	2.00	0.356	
Ethylbenzene*	<0.050	0.050	12/15/2014	ND	1.79	89.5	2.00	0.736	
Total Xylenes*	<0.150	0.150	12/15/2014	ND	5.39	89.9	6.00	0.413	
Total BTEX	<0.300	0.300	12/15/2014	ND					

Surrogate: 4-Bromofluorobenzene (PID) 103 % 61-154

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	912	16.0	12/12/2014	ND	400	100	400	3.92	

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	12/15/2014	ND	185	92.6	200	2.97	
DRO >C10-C28	<10.0	10.0	12/15/2014	ND	197	98.4	200	1.88	

Surrogate: 1-Chlorooctane 91.2 % 47.2-157

Surrogate: 1-Chlorooctadecane 86.8 % 52.1-176

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

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

Received: 12/12/2014  
Reported: 12/17/2014  
Project Name: EAU C 49 SWD  
Project Number: NONE GIVEN  
Project Location: NOT GIVEN

Sampling Date: 12/09/2014  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: SOUTH BOTTOM 1.5' (H403792-02)**

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	12/15/2014	ND	1.90	95.1	2.00	3.04		
Toluene*	<0.050	0.050	12/15/2014	ND	1.88	93.8	2.00	0.356		
Ethylbenzene*	<0.050	0.050	12/15/2014	ND	1.79	89.5	2.00	0.736		
Total Xylenes*	<0.150	0.150	12/15/2014	ND	5.39	89.9	6.00	0.413		
Total BTEX	<0.300	0.300	12/15/2014	ND						

Surrogate: 4-Bromofluorobenzene (PID) 101 % 61-154

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	64.0	16.0	12/12/2014	ND	400	100	400	3.92	

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	12/15/2014	ND	185	92.6	200	2.97	
DRO >C10-C28	<10.0	10.0	12/15/2014	ND	197	98.4	200	1.88	

Surrogate: 1-Chlorooctane 89.1 % 47.2-157

Surrogate: 1-Chlorooctadecane 84.7 % 52.1-176

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

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

Received: 12/12/2014  
Reported: 12/17/2014  
Project Name: EAU C 49 SWD  
Project Number: NONE GIVEN  
Project Location: NOT GIVEN

Sampling Date: 12/09/2014  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: NORTH WALL (H403792-03)**

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	12/15/2014	ND	1.90	95.1	2.00	3.04	
Toluene*	<0.050	0.050	12/15/2014	ND	1.88	93.8	2.00	0.356	
Ethylbenzene*	<0.050	0.050	12/15/2014	ND	1.79	89.5	2.00	0.736	
Total Xylenes*	<0.150	0.150	12/15/2014	ND	5.39	89.9	6.00	0.413	
Total BTEx	<0.300	0.300	12/15/2014	ND					

Surrogate: 4-Bromofluorobenzene (PID) 104 % 61-154

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	<16.0	16.0	12/12/2014	ND	400	100	400	3.92		

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	12/15/2014	ND	185	92.6	200	2.97	
DRO >C10-C28	<10.0	10.0	12/15/2014	ND	197	98.4	200	1.88	

Surrogate: 1-Chlorooctane 89.6 % 47.2-157

Surrogate: 1-Chlorooctadecane 84.5 % 52.1-176

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



**Analytical Results For:**

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

Received: 12/12/2014  
Reported: 12/17/2014  
Project Name: EAU C 49 SWD  
Project Number: NONE GIVEN  
Project Location: NOT GIVEN

Sampling Date: 12/09/2014  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: EAST WALL (H403792-04)**

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	12/15/2014	ND	1.90	95.1	2.00	3.04	
Toluene*	<0.050	0.050	12/15/2014	ND	1.88	93.8	2.00	0.356	
Ethylbenzene*	<0.050	0.050	12/15/2014	ND	1.79	89.5	2.00	0.736	
Total Xylenes*	<0.150	0.150	12/15/2014	ND	5.39	89.9	6.00	0.413	
Total BTEx	<0.300	0.300	12/15/2014	ND					

Surrogate: 4-Bromofluorobenzene (PID) 104 % 61-154

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	224	16.0	12/12/2014	ND	400	100	400	3.92	

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	12/15/2014	ND	185	92.6	200	2.97	
DRO >C10-C28	<10.0	10.0	12/15/2014	ND	197	98.4	200	1.88	

Surrogate: 1-Chlorooctane 84.4 % 47.2-157

Surrogate: 1-Chlorooctadecane 80.5 % 52.1-176

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

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

Received: 12/12/2014  
Reported: 12/17/2014  
Project Name: EAU C 49 SWD  
Project Number: NONE GIVEN  
Project Location: NOT GIVEN

Sampling Date: 12/09/2014  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: SOUTH WALL (H403792-05)**

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	12/15/2014	ND	1.90	95.1	2.00	3.04	
Toluene*	<0.050	0.050	12/15/2014	ND	1.88	93.8	2.00	0.356	
Ethylbenzene*	<0.050	0.050	12/15/2014	ND	1.79	89.5	2.00	0.736	
Total Xylenes*	<0.150	0.150	12/15/2014	ND	5.39	89.9	6.00	0.413	
Total BTEx	<0.300	0.300	12/15/2014	ND					

Surrogate: 4-Bromofluorobenzene (PID) 102 % 61-154

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	144	16.0	12/12/2014	ND	400	100	400	3.92	

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	12/15/2014	ND	185	92.6	200	2.97	
DRO >C10-C28	<10.0	10.0	12/15/2014	ND	197	98.4	200	1.88	

Surrogate: 1-Chlorooctane 86.3 % 47.2-157

Surrogate: 1-Chlorooctadecane 83.0 % 52.1-176

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

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

 Received: 12/12/2014  
 Reported: 12/17/2014  
 Project Name: EAU C 49 SWD  
 Project Number: NONE GIVEN  
 Project Location: NOT GIVEN

 Sampling Date: 12/09/2014  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: WEST WALL (H403792-06)**

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	12/15/2014	ND	1.90	95.1	2.00	3.04	
Toluene*	<0.050	0.050	12/15/2014	ND	1.88	93.8	2.00	0.356	
Ethylbenzene*	<0.050	0.050	12/15/2014	ND	1.79	89.5	2.00	0.736	
Total Xylenes*	<0.150	0.150	12/15/2014	ND	5.39	89.9	6.00	0.413	
Total BTEx	<0.300	0.300	12/15/2014	ND					

Surrogate: 4-Bromofluorobenzene (PID) 100 % 61-154

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	12/12/2014	ND	400	100	400	3.92	

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	12/15/2014	ND	185	92.6	200	2.97	
DRO >C10-C28	<10.0	10.0	12/15/2014	ND	197	98.4	200	1.88	

Surrogate: 1-Chlorooctane 84.0 % 47.2-157

Surrogate: 1-Chlorooctadecane 81.7 % 52.1-176

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

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

Received: 12/12/2014  
Reported: 12/17/2014  
Project Name: EAU C 49 SWD  
Project Number: NONE GIVEN  
Project Location: NOT GIVEN

Sampling Date: 12/09/2014  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: 6" SCRAPE (H403792-07)**

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	12/15/2014	ND	1.90	95.1	2.00	3.04	
Toluene*	<0.050	0.050	12/15/2014	ND	1.88	93.8	2.00	0.356	
Ethylbenzene*	<0.050	0.050	12/15/2014	ND	1.79	89.5	2.00	0.736	
Total Xylenes*	<0.150	0.150	12/15/2014	ND	5.39	89.9	6.00	0.413	
Total BTEx	<0.300	0.300	12/15/2014	ND					

Surrogate: 4-Bromofluorobenzene (PID) 99.8 % 61-154

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	240	16.0	12/12/2014	ND	400	100	400	3.92	

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	12/15/2014	ND	185	92.6	200	2.97	
DRO >C10-C28	<10.0	10.0	12/15/2014	ND	197	98.4	200	1.88	

Surrogate: 1-Chlorooctane 89.0 % 47.2-157

Surrogate: 1-Chlorooctadecane 84.8 % 52.1-176

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Celey D. Keene, Lab Director/Quality Manager

**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

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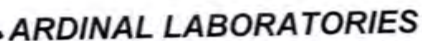
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Celey D. Keene, Lab Director/Quality Manager





### CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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Relinquished By: <i>AR</i>		Date: <i>12-14</i> Time: <i>8:00</i>	Received By: <i>Jodi Benson</i>	Phone Result: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Add'l Phone #:
Relinquished By:		Date:	Received By:	Fax Result: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Add'l Fax #:
		Time:		REMARKS: <i>*Project name change as per Jacob. 12/17/11</i>
Delivered By: (Circle One)		Sample Condition	CHECKED BY: <i>JH</i>	email results:
Sampler - UPS - Bus - Other:		Cool <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Intact <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		hconder@rice-ecs.com; knorman@rice-ecs.com; jkamplain@rice-ecs.com; regans@rice-ecs.com; lflores@rice-ecs.com; lweinheimer@rice-ecs.com; kjones@riceswd.com; cursanic@rice-ecs.com environmental tech: aredecop@rice-ecs.com

† Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476

Bruce Baker



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

---

December 17, 2014

BRUCE BAKER

APACHE CORP - HOBBS

2350 W. MARLAND BLVD.

HOBBS, NM 88240

RE: EAU C 49 SWD

Enclosed are the results of analyses for samples received by the laboratory on 12/12/14 8:00.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-13-5. 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](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

Cardinal Laboratories is accredited 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,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is written in a cursive, flowing style.

Celey D. Keene

Lab Director/Quality Manager

**Analytical Results For:**

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

 Received: 12/12/2014  
 Reported: 12/17/2014  
 Project Name: EAU C 49 SWD  
 Project Number: NONE GIVEN  
 Project Location: NOT GIVEN

 Sampling Date: 12/09/2014  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: HAND AUGER PT 2 @ 1' (H403793-01)**

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	12/15/2014	ND	1.90	95.1	2.00	3.04	
Toluene*	<0.050	0.050	12/15/2014	ND	1.88	93.8	2.00	0.356	
Ethylbenzene*	<0.050	0.050	12/15/2014	ND	1.79	89.5	2.00	0.736	
Total Xylenes*	<0.150	0.150	12/15/2014	ND	5.39	89.9	6.00	0.413	
Total BTEX	<0.300	0.300	12/15/2014	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 61-154

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	720	16.0	12/12/2014	ND	400	100	400	3.92	

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	12/15/2014	ND	185	92.6	200	2.97	
DRO >C10-C28	<10.0	10.0	12/15/2014	ND	197	98.4	200	1.88	

Surrogate: 1-Chlorooctane 88.0 % 47.2-157

Surrogate: 1-Chlorooctadecane 86.6 % 52.1-176

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Celey D. Keene, Lab Director/Quality Manager

**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

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Celey D. Keene, Lab Director/Quality Manager





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Relinquished By:		Date:	Received By:	Phone Result:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Add'l Phone #:
Relinquished By:		Date:	Received By:	Fax Result:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Add'l Fax #:
Delivered By: (Circle One)		Time:		REMARKS:	* Sample project name changed as per Jacob. 12/	
Sampler - UPS - Bus - Other:		Time:		email results:		
				hconder@rice-ecs.com; knorman@rice-ecs.com;		
				jkamplain@rice-ecs.com; regans@rice-ecs.com; lflores@rice-ecs.com;		
				lweinheimer@rice-ecs.com; kjones@riceswd.com;		
				cursanic@rice-ecs.com		
				environmental tech:	aredecop@rice-ecs.com	

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#54

Bruce Baker



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

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December 17, 2014

BRUCE BAKER

APACHE CORP - HOBBS

2350 W. MARLAND BLVD.

HOBBS, NM 88240

RE: EAU C 49 SWD

Enclosed are the results of analyses for samples received by the laboratory on 12/12/14 8:00.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-13-5. 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](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

Cardinal Laboratories is accredited 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,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is written in a cursive, flowing style.

Celey D. Keene

Lab Director/Quality Manager



**Analytical Results For:**

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

Received:	12/12/2014	Sampling Date:	12/09/2014
Reported:	12/17/2014	Sampling Type:	Soil
Project Name:	EAU C 49 SWD	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

**Sample ID: HAND AUGER PT 3 @ 1' (H403794-01)**

BTX 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	12/15/2014	ND	1.90	95.1	2.00	3.04	
Toluene*	<0.050	0.050	12/15/2014	ND	1.88	93.8	2.00	0.356	
Ethylbenzene*	<0.050	0.050	12/15/2014	ND	1.79	89.5	2.00	0.736	
Total Xylenes*	<0.150	0.150	12/15/2014	ND	5.39	89.9	6.00	0.413	
Total BTX	<0.300	0.300	12/15/2014	ND					

Surrogate: 4-Bromofluorobenzene (PID) 98.9 % 61-154

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	144	16.0	12/12/2014	ND	400	100	400	3.92	

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	12/15/2014	ND	185	92.6	200	2.97	
DRO >C10-C28	<10.0	10.0	12/15/2014	ND	197	98.4	200	1.88	

Surrogate: 1-Chlorooctane 87.0 % 47.2-157

Surrogate: 1-Chlorooctadecane 83.1 % 52.1-176

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**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

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Celey D. Keene, Lab Director/Quality Manager



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Relinquished By: <i>ah</i>		Date: <i>12-12-14</i>	Received By: <i>Jodi Benson</i>	Phone Result: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Add'l Phone #:
Time: <i>8:00</i>				Fax Result: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Add'l Fax #:
Relinquished By:		Date:	Received By:	REMARKS: <i>*Project name changed as per Jacobs 12/17/14 eh</i>	
Time:				email results: hconder@rice-ecs.com; knorman@rice-ecs.com; jkamplain@rice-ecs.com; regans@rice-ecs.com; lflores@rice-ecs.com; lweinheimer@rice-ecs.com; kjones@riceswd.com; cursanic@rice-ecs.com environmental tech: aredecop@rice-ecs.com	
Delivered By: (Circle One)		Sample Condition	CHECKED BY: (Initials)		
Sampler - UPS - Bus - Other:		Cool <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Intact <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<i>12</i> <i>JA</i>		

† Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476

Bruce Baker



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

---

December 17, 2014

BRUCE BAKER

APACHE CORP - HOBBS

2350 W. MARLAND BLVD.

HOBBS, NM 88240

RE: EAU C 49 SWD

Enclosed are the results of analyses for samples received by the laboratory on 12/12/14 8:00.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-13-5. 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](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

Cardinal Laboratories is accredited 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

**Analytical Results For:**

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

Received: 12/12/2014  
Reported: 12/17/2014  
Project Name: EAU C 49 SWD  
Project Number: NONE GIVEN  
Project Location: NOT GIVEN

Sampling Date: 12/09/2014  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: HAND AUGER PT 1 @ 1' (H403795-01)**

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	12/16/2014	ND	1.81	90.3	2.00	10.1	
Toluene*	<0.050	0.050	12/16/2014	ND	1.76	87.8	2.00	10.6	
Ethylbenzene*	<0.050	0.050	12/16/2014	ND	1.67	83.4	2.00	11.8	
Total Xylenes*	<0.150	0.150	12/16/2014	ND	5.02	83.6	6.00	12.5	
Total BTEX	<0.300	0.300	12/16/2014	ND					

Surrogate: 4-Bromofluorobenzene (PID) 104 % 61-154

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	768	16.0	12/12/2014	ND	400	100	400	3.92	

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	12/15/2014	ND	185	92.6	200	2.97	
DRO >C10-C28	<10.0	10.0	12/15/2014	ND	197	98.4	200	1.88	

Surrogate: 1-Chlorooctane 89.6 % 47.2-157

Surrogate: 1-Chlorooctadecane 87.2 % 52.1-176

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Notes and Definitions**

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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





# ARDINAL LABORATORIES

101 East Marland, Hobbs, NM 88240 2111 Beechwood, Abilene, TX 79603  
(505) 393-2326 FAX (505) 393-2476 (325) 673-7001 FAX (325) 673-7020

## CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Page 4 of 4

Company Name: <u>Apache</u>				<b>BILL TO</b>				<b>ANALYSIS REQUEST</b>													
Project Manager: <u>Bruce Baker</u>				P.O. #:				<div style="display: flex; flex-direction: column; align-items: center;"> <div>Chlorides</div> <div>TPH 8015 M</div> <div>BTEX</div> <div>Texas TPH</div> <div>Complete Cations/Anions</div> <div>TDS</div> </div>													
Address:				Company:																	
City:		State:		Zip:		Attn:															
Phone #:		Fax #:		Address:																	
Project #:		Project Owner:		City:																	
Project Name: <u>EAN C49 SWD*</u>				State:				Zip:													
Project Location: <u>Burnsdall Federal Tank Battery</u>				Phone #:																	
Sampler Name: <u>Asv Rouben</u>				Fax #:																	
FOR LAB USE ONLY																					
Lab I.D.		Sample I.D.		(GRAB OR C/COMP.)		# CONTAINERS		MATRIX		PRESERV.		SAMPLING									
								GROUNDWATER													
								WASTEWATER													
								SOIL													
								SLUDGE													
								OTHER:													
								ACID/BASE:													
								ICE / COOL													
								OTHER:													
										DATE		TIME									
<u>H403795</u>		<u>Hand Auger Pt 1 @ 1'</u>		<u>4</u>		<u>1</u>		<u>✓</u>		<u>✓</u>		<u>12-9-14</u>		<u>3:42</u>							

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Relinquished By: <u>al</u>		Date: <u>12-12-14</u>		Received By: <u>Jodi Benson</u>		Phone Result: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Add'l Phone #:	
Time: <u>5:00</u>		Time: <u>5:00</u>		Time: <u>5:00</u>		Fax Result: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Add'l Fax #:	
Relinquished By:		Date:		Received By:		REMARKS: <u>*Project name changed as per Jacob. 12/17/14</u>			
Time:		Time:		Time:		email results:			
Delivered By: (Circle One)						hconder@rice-ecs.com; knorman@rice-ecs.com;			
Sampler - UPS - Bus - Other:						jkamplain@rice-ecs.com; regans@rice-ecs.com; lflores@rice-ecs.com;			
						lweinheimer@rice-ecs.com; kjones@riceswd.com;			
						cursanic@rice-ecs.com			
						environmental tech: aredecop@rice-ecs.com			

† Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476

#54

Bruce Baker

# Appendix C

Photo Documentation

**RICE Environmental Consulting and Safety (RECS)**  
P.O. Box 2948 Hobbs, NM 88241  
Phone 575.393.2967



# Apache Empire Abo C-49 SWD

Unit Letter L, Section 29, T17S, R29E



Initial release area, facing east

11/17/14



Initial release area, facing southeast

11/17/14



Initial release area, facing south

11/17/14



Initial release area, facing southeast

11/17/14





Initial release area, facing south

11/17/14



Initial release area, facing north

11/17/14



Initial release area, facing north

11/17/14



Scraping 6 inches, facing north

12/3/14





Site backfill, facing south

1/26/15



Site backfilled, facing south

1/26/15



Site backfilled, facing north

1/26/15



Site backfilled, facing north

1/26/15

# Appendix D

Final 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	Apache Corporation	Contact	Bruce Baker
Address	2350 W. Marland Blvd., Hobbs, NM 88240	Telephone No.	(432) 631-6982
Facility Name	Empire Abo C-49 SWD	Facility Type	Facility

Surface Owner	BLM	Mineral Owner		API No.	30-015-03180
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#### LOCATION OF RELEASE

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

Latitude \_\_\_\_\_ Longitude \_\_\_\_\_

#### NATURE OF RELEASE

Type of Release	Produced Water	Volume of Release	750 barrels of produced water	Volume Recovered	650 barrels of produced water
Source of Release	Triplex pump	Date and Hour of Occurrence	11/17/2014 at 1:00 a.m.	Date and Hour of Discovery	11/17/2014 at 6:00 a.m.
Was Immediate Notice Given?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom?	Mike Bratcher (NMOCD) and Jeffery Robertson (BLM)		
By Whom?	Bruce Baker	Date and Hour	11/17/2014		
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.\* ☐ Ceramic plunger on east triplex pump failed resulting in the loss of fluid. All pumps were shut down, and vacuum trucks were dispatched to pick up standing fluid.

Describe Area Affected and Cleanup Action Taken.\* ☐ A total of 28,604 square feet of lease pad, lease road and pasture land were affected. RECS personnel were on site beginning on November 17<sup>th</sup>, 2014, to conduct remediation efforts. Based on an initial assessment of the release, the release area on the pad was scraped down 6 inches. Once the scrape was completed, 5 points were taken from the bottom of the scrape and sent to a commercial laboratory for analysis. In the pasture to the west of the pad, the release was scraped in two parts: a 1.5 ft excavation and a 6 inch scrape. At the base of the 1.5 ft excavation, two bottom samples and four wall samples were taken and sent to a commercial laboratory for analysis. A bottom sample from the 6 inch scrape was taken and sent to a commercial laboratory for analysis. On December 9<sup>th</sup>, 2014, three auger points were installed in the release area to the east of the lease pad. The auger points were installed to a depth of 1 ft bgs, and the 1 ft bgs samples from each auger point were sent to a commercial laboratory for analysis. Based on the laboratory sampling data, a Path Forward was submitted to NMOCD and BLM on January 6<sup>th</sup>, 2015. The Path Forward requested permission to backfill the lease pad and the scrape and excavation to the west of the lease pad. In addition, Apache requested permission to scrape the release area on the east side of the pad to 1 ft bgs and then backfill that scrape. NMOCD and BLM approved the Path Forward on January 7<sup>th</sup>, 2015. The east side of the pad was scraped down by hand shovel to 1 ft bgs. All excavated soil was taken to a NMOCD approved facility for disposal. Clean caliche was imported to the site to backfill the lease pad and lease road. Clean top soil was imported to site to backfill the pasture. The scrapes were contoured to the surrounding location.

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.

#### OIL CONSERVATION DIVISION

Signature: <i>Bruce Baker</i>	Approved by Environmental Specialist:		
Printed Name: Bruce Baker			
Title: Environmental Technician	Approval Date:	Expiration Date:	
E-mail Address: larry.baker@apachecorp.com	Conditions of Approval:		Attached <input type="checkbox"/>
Date: 3/9/15	Phone: (432) 631-6982		

\* Attach Additional Sheets If Necessary