



**CORRECTIVE ACTION PLAN  
FINAL**

**APACHE CORPORATION  
Loco Hills SWD Booster Station  
Eddy County, New Mexico  
Unit Letter "G", Section 24, Township 17 South, Range 30 East  
Latitude 32.82272, Longitude -103.92335  
2RP-3460**

August 1, 2016

Prepared for:

**Apache Corporation  
2350 W. Marland Blvd.  
Hobbs, NM 88240  
Attn: Mr. Bruce Baker**

Prepared by:

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Thomas Franklin  
Environmental Manager

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Jack Zimmerman, PG, CPG  
Senior Geologist

American Safety Services, Inc. (ASSI) would like to submit for your consideration the following Corrective Action Plan (CAP) for the Loco Hills SWD Booster Station site. The CAP is in response to the C-141 Initial report dated December 18, 2015.

## Background

Due to high winds a 6-inch PVC water boot sheared-off between two 1,000 barrel tanks resulting in a loss of fluid. The power was shut-off to the transfer pump and the two 6-inch valves were closed on the tanks. Subsequently, the original connections to the boot were replaced with metal connections. The majority of the release was contained inside the lined facility. However, the containment was breached on the northwest corner resulting in loss of fluid in the pasture and on the lease pad. A vacuum truck was dispatched to pick-up fluid.

## Groundwater

The Site is subject to regulatory oversight by the NMOCD. To address activities related to releases, the NMOCD utilizes the *Guidelines for Remediation of Leaks, Spills and Releases* as guidance to establish investigation and abatement action requirements for sites subject to reporting and/or corrective action.

In accordance with the aforementioned guidance ASSI utilized available resources to determine the appropriate "ranking" for the Site. The ranking and associated scoring are provided in the table below:

Ranking Criteria			Ranking Score
Depth to Groundwater	<50 feet	20	0
	50 to 99 feet	10	
	>100 feet	0	
Wellhead Protection Area, <1,000 feet from a water source, or; <200 feet from private domestic water source.	Yes	20	0
	No	0	
Distance to Surface Water Body	<200 feet	20	0
	200 to 1,000 feet	10	
	>1,000 feet	0	
Total Ranking Score			0

Based on ASSI's assessment of the Total Ranking Score, the release area would be classified as having a score of **Zero** with depth to groundwater at greater than 100'. This ranking is based on the following:

- The depth to the initial groundwater-bearing zone is >100 feet at the Site.
- There exists no known groundwater.
- The impacted area is greater than 200 feet from a private domestic water source.
- Distance to the nearest surface water body is greater than 1,000 ft.

## Soil Assessment and Analytical Results

For purposes of this CAP the Site will be divided into three areas (i.e., SP-6 through SP-9, SP-8, and SP-10) making evaluation of soil assessment activities and analytical results more straightforward in understanding. Figure 1 is attached showing sample point (s) location.

Sample locations SP-6, SP-7, and SP-9 have no exceedances for TPH and manageable exceedances for Chloride between zero and four (0 to 4') feet below ground surface (bgs). A summary table is below.

Site Ranking: 0	
Depth to GW: >100'	
SP-6	Cl mg/Kg
Surface	544
1'	48
2'	64
3'	128
4'	192
SP-7	Cl mg/Kg
Surface	80
1'	272
2'	512
3'	400
4'	704
SP-9	Cl mg/Kg
Surface	240
1'	112
2'	192
3'	288
4'	416

At location SP-8 Chloride concentrations were confirmed at each sample depth. Exceedances ranging from 656 to 5600 mg/Kg were confirmed between zero and seven (0 to 7') feet bgs. A sample summary table is below.

Site Ranking: 0	
Depth to GW: >100'	
SP-8	Cl mg/Kg
Surface	1800
1'	3760
2'	3200
3'	2640
4'	1330
5'	1330
6'	656
7'	5600

Sample location SP-10 has exceedances for TPH at the surface to one (0 to 1') foot bgs. However, delineation shows a decrease in concentration below 1' bgs to a depth of 6' bgs. Chloride concentration at the surface show an exceedance but decrease with depth to 4' bgs. Summary tables are below.

Site Ranking: 0	
Depth to GW: >100'	
SP-10	TPH mg/Kg
Surface	55,959
1'	7900
2'	30
3'	40.9
4'	<10
5'	63
6'	19.7

Site Ranking: 0	
Depth to GW: >100'	
SP-10	Cl mg/Kg
Surface	1260
1'	144
2'	64
3'	48
4'	144

## **Delineation**

Apache has requested that a variance be granted due to aboveground and underground safety concerns. Specifically, overhead electric cables, with proximity to location SP-8, pose a safety hazard dealing with equipment access to the location in question. Oilfield utility systems are often run underground; some by the very nature of their function, others for convenience or aesthetics. Safety issues exist concerning buried pipelines and electrical cables which pose hazards while doing intrusive work activities with proximity to sample locations SP-6, SP-7, and SP-9; SP-8 and SP-10.

Safety issues limit the techniques that can be considered to further delineate the Site. Specifically, at locations SP-6, SP-7, and SP-9 the use of a drill rig and backhoe tractor are prohibited due to numerous buried oilfield utility systems. At location SP-8, the same safety issues remain resulting in achieving less than what would normally be expected.

Therefore, Apache requests that a variance, due to safety concerns, both above- and underground be issued by the NMOCD. Apache understands its responsibility for the Site and would like to discuss contingencies that would be acceptable to the NMOCD going forward while at the same time evaluating the safety challenges the Site presents.

## **Corrective Action Plan**

### **Project Objective**

The project objectives are to remediate existing Chloride in soil, with proximity to sample location (SP) SP-8, vertically to four (4') foot bgs and to remediate TPH in soil, and any existing Chloride, at sample location SP-10, vertically to two (2') foot bgs. Supporting documentation (written and photographic) of the activities that will be performed per Apache's request during implementation of the CAP activities at the Site will be archived.

ASSI proposes the following excavations for the remediation at the Site:

- Excavate to a depth of approximately 4' bgs at location SP-8
- Excavate to a depth of approximately 2' bgs at location SP-10

No excavation (i.e., intrusive) work will be completed with proximity to locations SP-6, SP-7 or SP-9 due to safety concerns mentioned above.

Apache recognizes managing safety concerns and limited by Apache's Corporate Safety policy, makes options available in terms of equipment that can be utilized during the remediation activities be constrained. Apache recognizes using a CAT Model 262D Skid-steer Loader machine for the required earth work will not achieve what is normally expected. However, with regard to the top four (4') foot of soil, the Chloride exceedances can be remediated.

All areas excavated will be backfilled with like material. Safety during excavation/construction activities will be made priority for the personnel involved, thus all safety procedures will be followed. All areas affected during excavation/construction activities will be returned to their normal state and will be remediated as necessary.



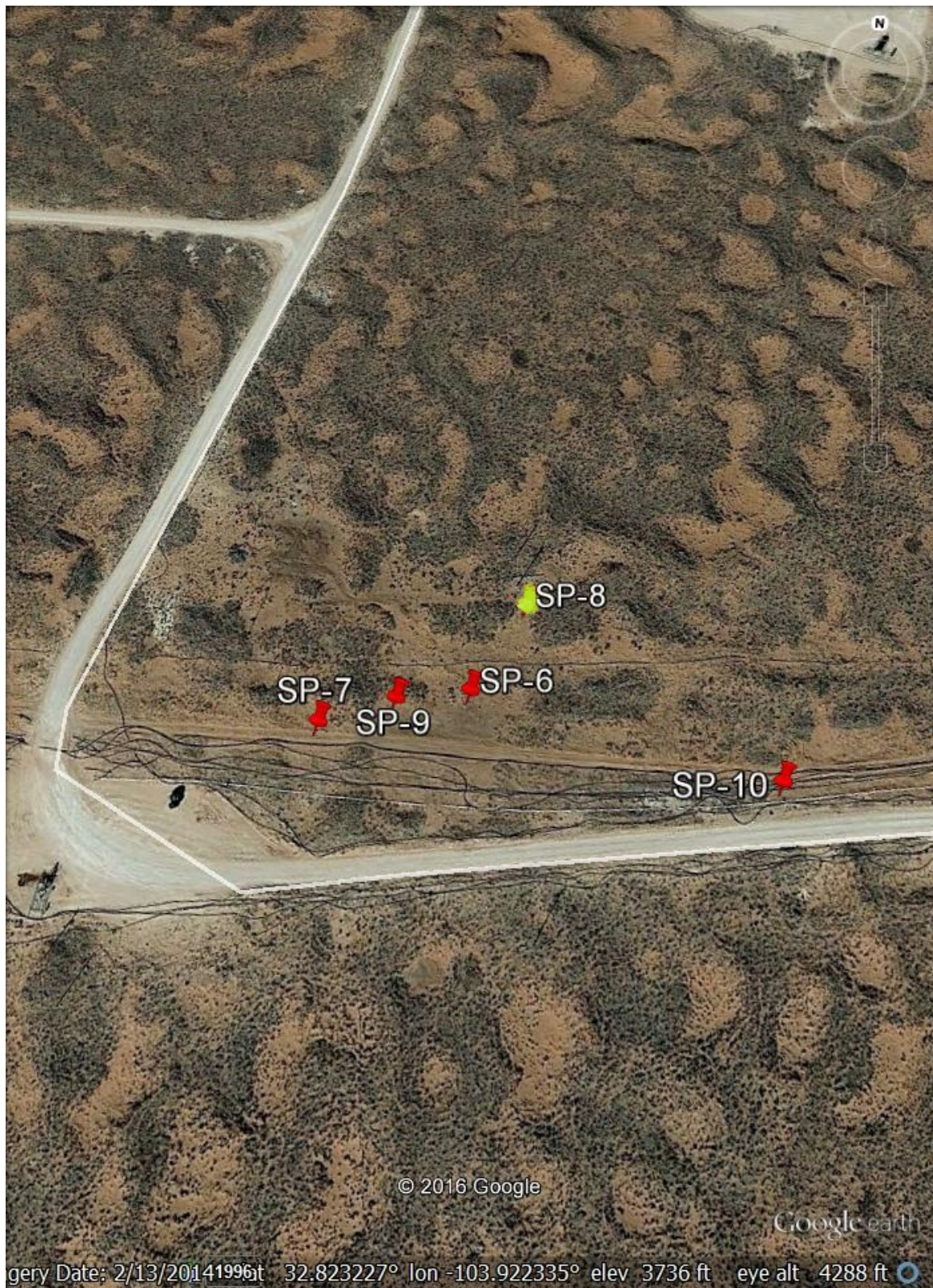


Figure 1 – Sample point locations.

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

Form C-141  
Revised August 8, 2011

Oil Conservation Division  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

Submit 1 Copy to appropriate District Office in  
accordance with 19.15.29 NMAC.

<b>Release Notification and Corrective Action</b>	
<b>FAB1535241846</b>	<b>281788 OPERATOR</b>
<b>NAB1535242436</b>	<input checked="" type="checkbox"/> Initial Report <input type="checkbox"/> 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 Loco Hills SWD Booster Station	Facility Type: Booster Station
Surface Owner BLM	Mineral Owner
API No.	

**LOCATION OF RELEASE**

Unit Letter G	Section 24	Township 17S	Range 30E	Feet from the	North/South Line	Feet from t	East/West Line	County Eddy
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Latitude N32.8227272 Longitude W103.9233551

**NATURE OF RELEASE**

Type of Release: Oil and produced water	Volume of Release: 1895 barrels of produced water and 25 barrels of oil.	Volume Recovered: 1890 barrels of produced water and 25 barrels of oil.
Source of Release: PVC water boot	Date and Hour of Occurrence: 11/21/2015	Date and Hour of Discovery: 11/21/2015
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) Shelly Tucker (BLM)	
By Whom? Bruce Baker	Date and Hour: 11/22/2015 via email at 9:37 a.m.	
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.\*

**NM OIL CONSERVATION**  
ARTESIA DISTRICT  
DEC 17 2015  
**RECEIVED**

Describe Cause of Problem and Remedial Action Taken.\*  
Due to high winds a 6 inch PVC water boot sheared off between two 1,000 barrel tanks resulting in the loss of fluid. The power was shut off to transfer pump and the two 6 inch valves were closed on the tanks. The connections to the boot were replaced with metal connections.

Describe Area Affected and Cleanup Action Taken.\*  
The majority of the release was contained inside the lined facility. However the containment was breached on the Northwest corner resulting in loss of fluid in pasture and on lease pad. A vacuum truck was dispatched to pick-up fluid. The area was mapped.

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>		<b>OIL CONSERVATION DIVISION</b>	
Printed Name: Bruce Baker		Approved by Environmental Specialist: <u>[Signature]</u>	
Title: Environmental Technician		Approval Date: <u>12/18/15</u>	Expiration Date: <u>N/A</u>
E-mail Address: larry.baker@apachecorp.com		Conditions of Approval:	
Date: 12/18/2015		Attached <input type="checkbox"/>	
Phone: (432) 631-6982		Remediation per O.C.D. Rules & Guidelines	

SUBMIT REMEDIATION PROPOSAL NO  
LATER THAN: 1/18/16

2RP-3460

**Patterson, Heather, EMNRD**

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**From:** Baker, Larry <Larry.Baker@apachecorp.com>  
**Sent:** Friday, December 18, 2015 9:16 AM  
**To:** Bratcher, Mike, EMNRD; Patterson, Heather, EMNRD; stucker@blm.gov  
**Subject:** Loco Hills SWD Booster Station  
**Attachments:** Loco Hills SWD Booster Station Initial C-141.pdf

All,

Attached is the initial C-141 for the above referenced site. Please let me know if you have any questions or wish to discuss. Thanks and have a good day.

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



April 18, 2016

BRUCE BAKER

APACHE CORP - HOBBS

2350 W. MARLAND BLVD.

HOBBS, NM 88240

RE: LOCO HILLS SWD BOOSTER

Enclosed are the results of analyses for samples received by the laboratory on 03/24/16 15:10.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-15-7. 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:	03/24/2016	Sampling Date:	03/24/2016
Reported:	04/18/2016	Sampling Type:	Soil
Project Name:	LOCO HILLS SWD BOOSTER	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	EDDY COUNTY, NM		

**Sample ID: SP 6 (SURFACE) (H600643-01)**

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	03/29/2016	ND	2.07	104	2.00	5.25	
<b>Toluene*</b>	<b>0.062</b>	0.050	03/29/2016	ND	1.96	97.8	2.00	7.05	
Ethylbenzene*	<0.050	0.050	03/29/2016	ND	1.72	85.9	2.00	8.63	
Total Xylenes*	<0.150	0.150	03/29/2016	ND	5.28	87.9	6.00	8.62	
Total BTX	<0.300	0.300	03/29/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 98.7 % 73.6-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Chloride</b>	<b>544</b>	16.0	03/28/2016	ND	416	104	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	<50.0	50.0	03/28/2016	ND	179	89.3	200	3.87	
<b>DRO &gt;C10-C28</b>	<b>287</b>	50.0	03/28/2016	ND	160	79.9	200	4.90	

Surrogate: 1-Chlorooctane 76.2 % 35-147

Surrogate: 1-Chlorooctadecane 106 % 28-171

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:	03/24/2016	Sampling Date:	03/24/2016
Reported:	04/18/2016	Sampling Type:	Soil
Project Name:	LOCO HILLS SWD BOOSTER	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	EDDY COUNTY, NM		

**Sample ID: SP 6 1' (H600643-02)**

BTEx 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	03/29/2016	ND	2.07	104	2.00	5.25	
Toluene*	<0.050	0.050	03/29/2016	ND	1.96	97.8	2.00	7.05	
Ethylbenzene*	<0.050	0.050	03/29/2016	ND	1.72	85.9	2.00	8.63	
Total Xylenes*	<0.150	0.150	03/29/2016	ND	5.28	87.9	6.00	8.62	
Total BTEX	<0.300	0.300	03/29/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 99.8 % 73.6-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	48.0	16.0	03/28/2016	ND	416	104	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	<50.0	50.0	03/29/2016	ND	179	89.3	200	3.87	
DRO >C10-C28	58.3	50.0	03/29/2016	ND	160	79.9	200	4.90	

Surrogate: 1-Chlorooctane 78.0 % 35-147

Surrogate: 1-Chlorooctadecane 91.5 % 28-171

**Sample ID: SP 6 2' (H600643-03)**

Chloride, SM4500Cl-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	03/28/2016	ND	416	104	400	3.92	

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:	03/24/2016	Sampling Date:	03/24/2016
Reported:	04/18/2016	Sampling Type:	Soil
Project Name:	LOCO HILLS SWD BOOSTER	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	EDDY COUNTY, NM		

**Sample ID: SP 6 3' (H600643-04)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	128	16.0	03/28/2016	ND	416	104	400	3.92		

**Sample ID: SP 6 4' (H600643-05)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	192	16.0	03/28/2016	ND	416	104	400	3.92	

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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:	03/24/2016	Sampling Date:	03/24/2016
Reported:	04/18/2016	Sampling Type:	Soil
Project Name:	LOCO HILLS SWD BOOSTER	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	EDDY COUNTY, NM		

**Sample ID: SP 7 (SURFACE) (H600643-06)**

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	03/29/2016	ND	2.07	104	2.00	5.25	
Toluene*	<0.050	0.050	03/29/2016	ND	1.96	97.8	2.00	7.05	
Ethylbenzene*	<0.050	0.050	03/29/2016	ND	1.72	85.9	2.00	8.63	
Total Xylenes*	<0.150	0.150	03/29/2016	ND	5.28	87.9	6.00	8.62	
Total BTX	<0.300	0.300	03/29/2016	ND					

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

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	80.0	16.0	03/28/2016	ND	416	104	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	03/28/2016	ND	179	89.3	200	3.87	
DRO >C10-C28	109	10.0	03/28/2016	ND	160	79.9	200	4.90	

Surrogate: 1-Chlorooctane 87.2 % 35-147

Surrogate: 1-Chlorooctadecane 89.3 % 28-171

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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:	03/24/2016	Sampling Date:	03/24/2016
Reported:	04/18/2016	Sampling Type:	Soil
Project Name:	LOCO HILLS SWD BOOSTER	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	EDDY COUNTY, NM		

**Sample ID: SP 7 1' (H600643-07)**

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	03/29/2016	ND	2.07	104	2.00	5.25	
Toluene*	<0.050	0.050	03/29/2016	ND	1.96	97.8	2.00	7.05	
Ethylbenzene*	<0.050	0.050	03/29/2016	ND	1.72	85.9	2.00	8.63	
Total Xylenes*	<0.150	0.150	03/29/2016	ND	5.28	87.9	6.00	8.62	
Total BTX	<0.300	0.300	03/29/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 102 % 73.6-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	272	16.0	03/28/2016	ND	416	104	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	03/28/2016	ND	179	89.3	200	3.87	
DRO >C10-C28	15.6	10.0	03/28/2016	ND	160	79.9	200	4.90	

Surrogate: 1-Chlorooctane 85.9 % 35-147

Surrogate: 1-Chlorooctadecane 88.1 % 28-171

**Sample ID: SP 7 2' (H600643-08)**

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	512	16.0	03/28/2016	ND	416	104	400	3.92	

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:	03/24/2016	Sampling Date:	03/24/2016
Reported:	04/18/2016	Sampling Type:	Soil
Project Name:	LOCO HILLS SWD BOOSTER	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	EDDY COUNTY, NM		

**Sample ID: SP 7 3' (H600643-09)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	400	16.0	03/28/2016	ND	416	104	400	3.92	

**Sample ID: SP 7 4' (H600643-10)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	704	16.0	03/28/2016	ND	416	104	400	3.92	

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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:	03/24/2016	Sampling Date:	03/24/2016
Reported:	04/18/2016	Sampling Type:	Soil
Project Name:	LOCO HILLS SWD BOOSTER	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	EDDY COUNTY, NM		

**Sample ID: SP 9 (SURFACE) (H600643-11)**

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	03/29/2016	ND	2.07	104	2.00	5.25	
Toluene*	0.052	0.050	03/29/2016	ND	1.96	97.8	2.00	7.05	
Ethylbenzene*	<0.050	0.050	03/29/2016	ND	1.72	85.9	2.00	8.63	
Total Xylenes*	<0.150	0.150	03/29/2016	ND	5.28	87.9	6.00	8.62	
Total BTX	<0.300	0.300	03/29/2016	ND					

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

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	03/28/2016	ND	432	108	400	3.77	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<100	100	03/28/2016	ND	179	89.3	200	3.87	
DRO >C10-C28	<100	100	03/28/2016	ND	160	79.9	200	4.90	

Surrogate: 1-Chlorooctane 67.2 % 35-147

Surrogate: 1-Chlorooctadecane 94.7 % 28-171

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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:	03/24/2016	Sampling Date:	03/24/2016
Reported:	04/18/2016	Sampling Type:	Soil
Project Name:	LOCO HILLS SWD BOOSTER	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	EDDY COUNTY, NM		

**Sample ID: SP 9 1' (H600643-12)**

BTEx 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	03/30/2016	ND	2.11	106	2.00	4.65	
Toluene*	0.063	0.050	03/30/2016	ND	2.00	99.8	2.00	6.38	
Ethylbenzene*	<0.050	0.050	03/30/2016	ND	1.75	87.7	2.00	6.84	
Total Xylenes*	<0.150	0.150	03/30/2016	ND	5.39	89.8	6.00	6.36	
Total BTEx	<0.300	0.300	03/30/2016	ND					

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

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	112	16.0	03/28/2016	ND	432	108	400	3.77	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<100	100	03/28/2016	ND	179	89.3	200	3.87	
DRO >C10-C28	831	100	03/28/2016	ND	160	79.9	200	4.90	

Surrogate: 1-Chlorooctane 76.5 % 35-147

Surrogate: 1-Chlorooctadecane 118 % 28-171

**Sample ID: SP 9 2' (H600643-13)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	192	16.0	03/28/2016	ND	432	108	400	3.77	

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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:	03/24/2016	Sampling Date:	03/24/2016
Reported:	04/18/2016	Sampling Type:	Soil
Project Name:	LOCO HILLS SWD BOOSTER	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	EDDY COUNTY, NM		

**Sample ID: SP 9 3' (H600643-14)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	288	16.0	03/28/2016	ND	432	108	400	3.77		

**Sample ID: SP 9 4' (H600643-15)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	416	16.0	03/28/2016	ND	432	108	400	3.77	

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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:	03/24/2016	Sampling Date:	03/24/2016
Reported:	04/18/2016	Sampling Type:	Soil
Project Name:	LOCO HILLS SWD BOOSTER	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	EDDY COUNTY, NM		

**Sample ID: SP 10 (SURFACE) (H600643-16)**

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.200	0.200	03/30/2016	ND	2.11	106	2.00	4.65	
<b>Toluene*</b>	<b>8.66</b>	0.200	03/30/2016	ND	2.00	99.8	2.00	6.38	
<b>Ethylbenzene*</b>	<b>2.74</b>	0.200	03/30/2016	ND	1.75	87.7	2.00	6.84	
<b>Total Xylenes*</b>	<b>9.24</b>	0.600	03/30/2016	ND	5.39	89.8	6.00	6.36	
<b>Total BTX</b>	<b>20.6</b>	1.20	03/30/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 109 % 73.6-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Chloride</b>	<b>1260</b>	16.0	03/28/2016	ND	432	108	400	3.77	
TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>GRO C6-C10</b>	<b>459</b>	200	03/29/2016	ND	176	88.2	200	6.12	
<b>DRO &gt;C10-C28</b>	<b>55500</b>	200	03/29/2016	ND	166	83.1	200	12.3	

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Chloride</b>	<b>144</b>	16.0	03/28/2016	ND	432	108	400	3.77	

Surrogate: 1-Chlorooctane 118 % 35-147

Surrogate: 1-Chlorooctadecane 2060 % 28-171

**Sample ID: SP 10 1' (H600643-17)**

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Chloride</b>	<b>144</b>	16.0	03/28/2016	ND	432	108	400	3.77	

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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:	03/24/2016	Sampling Date:	03/24/2016
Reported:	04/18/2016	Sampling Type:	Soil
Project Name:	LOCO HILLS SWD BOOSTER	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	EDDY COUNTY, NM		

**Sample ID: SP 10 2' (H600643-18)**

Chloride, SM4500Cl-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	03/28/2016	ND	432	108	400	3.77		

**Sample ID: SP 10 3' (H600643-19)**

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	48.0	16.0	03/28/2016	ND	432	108	400	3.77	

**Sample ID: SP 10 4' (H600643-20)**

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	03/28/2016	ND	432	108	400	3.77		

**Sample ID: SP 8 (SURFACE) (H600643-21)**

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1800	16.0	04/18/2016	ND	416	104	400	0.00	

**Sample ID: SP 8 1' (H600643-22)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	3760	16.0	04/18/2016	ND	416	104	400	0.00	

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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:	03/24/2016	Sampling Date:	03/24/2016
Reported:	04/18/2016	Sampling Type:	Soil
Project Name:	LOCO HILLS SWD BOOSTER	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	EDDY COUNTY, NM		

**Sample ID: SP 8 2' (H600643-23)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	3200	16.0	04/18/2016	ND	416	104	400	0.00		

**Sample ID: SP 8 3' (H600643-24)**

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2640	16.0	04/18/2016	ND	416	104	400	0.00	

**Sample ID: SP 8 4' (H600643-25)**

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	1330	16.0	04/18/2016	ND	416	104	400	0.00		

**Sample ID: SP 8 5' (H600643-26)**

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1330	16.0	04/18/2016	ND	416	104	400	0.00	

**Sample ID: SP 8 6' (H600643-27)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	656	16.0	04/18/2016	ND	416	104	400	0.00	

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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:	03/24/2016	Sampling Date:	03/24/2016
Reported:	04/18/2016	Sampling Type:	Soil
Project Name:	LOCO HILLS SWD BOOSTER	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	EDDY COUNTY, NM		

**Sample ID: SP 8 7' (H600643-28)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	5600	16.0	04/18/2016	ND	416	104	400	0.00	

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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.
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

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Celey D. Keene, Lab Director/Quality Manager



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ANALYSIS REQUEST

† Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2626.





### CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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## Page 18 of 18

ANALYSIS REQUEST

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





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

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May 05, 2016

BRUCE BAKER

APACHE CORP - HOBBS

2350 W. MARLAND BLVD.

HOBBS, NM 88240

RE: LOCO HILLS SWD BOOSTER

Enclosed are the results of analyses for samples received by the laboratory on 04/29/16 10:15.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-15-7. 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 style with a large, stylized 'C' and 'K'.

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:	04/29/2016	Sampling Date:	04/29/2016
Reported:	05/05/2016	Sampling Type:	Soil
Project Name:	LOCO HILLS SWD BOOSTER	Sampling Condition:	** (See Notes)
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	EDDY COUNTY, NM		

**Sample ID: SP 8 (0') (H600923-01)**

BTEX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	05/03/2016	ND	1.86	93.1	2.00	0.855	
Toluene*	<0.050	0.050	05/03/2016	ND	1.81	90.4	2.00	0.203	
Ethylbenzene*	<0.050	0.050	05/03/2016	ND	1.65	82.6	2.00	0.769	
Total Xylenes*	<0.150	0.150	05/03/2016	ND	5.09	84.8	6.00	0.424	
Total BTEX	<0.300	0.300	05/03/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 96.0 % 73.6-140

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	05/02/2016	ND	183	91.7	200	14.1		
DRO >C10-C28	22.8	10.0	05/02/2016	ND	194	97.1	200	16.1		

Surrogate: 1-Chlorooctane 106 % 35-147

Surrogate: 1-Chlorooctadecane 114 % 28-171

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:	04/29/2016	Sampling Date:	04/29/2016
Reported:	05/05/2016	Sampling Type:	Soil
Project Name:	LOCO HILLS SWD BOOSTER	Sampling Condition:	** (See Notes)
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	EDDY COUNTY, NM		

**Sample ID: SP 8 (1') (H600923-02)**

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	05/03/2016	ND	1.86	93.1	2.00	0.855	
Toluene*	<0.050	0.050	05/03/2016	ND	1.81	90.4	2.00	0.203	
Ethylbenzene*	<0.050	0.050	05/03/2016	ND	1.65	82.6	2.00	0.769	
Total Xylenes*	<0.150	0.150	05/03/2016	ND	5.09	84.8	6.00	0.424	
Total BTEx	<0.300	0.300	05/03/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 98.2 % 73.6-140

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	05/02/2016	ND	183	91.7	200	14.1	
DRO >C10-C28	20.6	10.0	05/02/2016	ND	194	97.1	200	16.1	

Surrogate: 1-Chlorooctane 99.8 % 35-147

Surrogate: 1-Chlorooctadecane 90.5 % 28-171

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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:	04/29/2016	Sampling Date:	04/29/2016
Reported:	05/05/2016	Sampling Type:	Soil
Project Name:	LOCO HILLS SWD BOOSTER	Sampling Condition:	** (See Notes)
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	EDDY COUNTY, NM		

**Sample ID: SP 10 (0') (H600923-09)**

BTEx 8021B		mg/kg		Analyzed By: MS				S-04	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	05/04/2016	ND	1.86	93.1	2.00	0.855	
<b>Toluene*</b>	<b>0.287</b>	0.050	05/04/2016	ND	1.81	90.4	2.00	0.203	
Ethylbenzene*	<0.050	0.050	05/04/2016	ND	1.65	82.6	2.00	0.769	
<b>Total Xylenes*</b>	<b>5.71</b>	0.150	05/04/2016	ND	5.09	84.8	6.00	0.424	
<b>Total BTEX</b>	<b>6.00</b>	0.300	05/04/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 177 % 73.6-140

TPH 8015M		mg/kg		Analyzed By: MS				S-06	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>GRO C6-C10</b>	<b>602</b>	50.0	05/02/2016	ND	183	91.7	200	14.1	
<b>DRO &gt;C10-C28</b>	<b>12900</b>	50.0	05/02/2016	ND	194	97.1	200	16.1	

Surrogate: 1-Chlorooctane 176 % 35-147

Surrogate: 1-Chlorooctadecane 435 % 28-171

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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:	04/29/2016	Sampling Date:	04/29/2016
Reported:	05/05/2016	Sampling Type:	Soil
Project Name:	LOCO HILLS SWD BOOSTER	Sampling Condition:	** (See Notes)
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	EDDY COUNTY, NM		

**Sample ID: SP 10 (1') (H600923-10)**

BTEx 8021B		mg/kg		Analyzed By: MS				S-04	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	05/04/2016	ND	1.86	93.1	2.00	0.855	
<b>Toluene*</b>	<b>0.322</b>	0.050	05/04/2016	ND	1.81	90.4	2.00	0.203	
Ethylbenzene*	<0.050	0.050	05/04/2016	ND	1.65	82.6	2.00	0.769	
<b>Total Xylenes*</b>	<b>15.2</b>	0.150	05/04/2016	ND	5.09	84.8	6.00	0.424	
<b>Total BTEx</b>	<b>15.5</b>	0.300	05/04/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 251 % 73.6-140

TPH 8015M		mg/kg		Analyzed By: MS				S-06	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>GRO C6-C10</b>	<b>1030</b>	50.0	05/02/2016	ND	183	91.7	200	14.1	
<b>DRO &gt;C10-C28</b>	<b>6870</b>	50.0	05/02/2016	ND	194	97.1	200	16.1	

Surrogate: 1-Chlorooctane 169 % 35-147

Surrogate: 1-Chlorooctadecane 150 % 28-171

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\*=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.
S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
QR-02	The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report



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Celey D. Keene, Lab Director/Quality Manager





CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

PS 1062

BILL TO

ANALYSIS REQUEST

Company Name: <u>Apache</u>	P.O. #:
Project Manager: <u>Larry Baker</u>	Company: <u>Apache</u>
Address:	Attn: <u>Larry Baker</u>
City:	Address:
State:	City:
Zip:	State:
Phone #:	Zip:
Fax #:	Phone #:
Project #:	Fax #:
Project Owner:	
Project Name: <u>Loce Hills SWD Booser</u>	
Project Location: <u>Eddy Co, NM</u>	
Sampler Name: <u>Ken Reick</u>	

Lab I.D.		Sample I.D.																										
#000912	SP 8 (C01)	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	ACID/BASE:	ICE / COOL	OTHER :	DATE	TIME	TPH	BTEX												
	" (11)	<input checked="" type="checkbox"/>	1			<input checked="" type="checkbox"/>							4/29/16	0730	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>												
	" (12)					<input checked="" type="checkbox"/>								07304	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>												
	" (13)					<input checked="" type="checkbox"/>								07306														
	" (14)					<input checked="" type="checkbox"/>								07308														
	" (15)					<input checked="" type="checkbox"/>								07309														
	" (16)					<input checked="" type="checkbox"/>								07310														
	" (17)					<input checked="" type="checkbox"/>								07311														
	SP 10 (C01)					<input checked="" type="checkbox"/>								07312														
	" (11)					<input checked="" type="checkbox"/>								07313														
	" (12)					<input checked="" type="checkbox"/>								07314														

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Relinquished By: <u>[Signature]</u>	Date: <u>4/29/16</u>	Received By: <u>[Signature]</u>	Date: <u>4/29/16</u>
Relinquished By: <u>[Signature]</u>	Time: <u>10:05</u>	Received By: <u>[Signature]</u>	Time: <u>10:05</u>
Delivered By: (Circle One) Sampler - UPS - Bus - Other: <u>15:40</u>	Sample Condition Cool <input checked="" type="checkbox"/> Intact <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	CHECKED BY: <u>[Signature]</u>	REMARKS: <u>Normal TAT Email Results to Larry Baker &amp; [Signature]</u>

Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326  
52mmmm@survivor safety.net



2042

ANALYSIS REQUEST

Lab I.D.	Sample I.D.
H60923	SP 10 (3)
	" (4)
	" (5)
	" (6)
	NFE
(G)RAB OR (C)OMP	5
# CONTAINERS	-
GROUNDWATER	
WASTEWATER	
SOIL	X X X X
OIL	
SLUDGE	
OTHER :	
ACID/BASE:	
ICE / COOL	
OTHER :	
DATE	4/29/86
TIME	0806 0808 0810 0812
TPH	
BTEX	

Tax Result.	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Amount
REMARKS:			

Tax Result.	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Amount
REMARKS:			



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

---

April 01, 2016

BRUCE BAKER

APACHE CORP - HOBBS

2350 W. MARLAND BLVD.

HOBBS, NM 88240

RE: LOCO HILLS SWD BOOSTER

Enclosed are the results of analyses for samples received by the laboratory on 03/24/16 15:10.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-15-7. 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:	03/24/2016	Sampling Date:	03/24/2016
Reported:	04/01/2016	Sampling Type:	Soil
Project Name:	LOCO HILLS SWD BOOSTER	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	EDDY COUNTY, NM		

**Sample ID: SP 6 (SURFACE) (H600643-01)**

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	03/29/2016	ND	2.07	104	2.00	5.25	
<b>Toluene*</b>	<b>0.062</b>	0.050	03/29/2016	ND	1.96	97.8	2.00	7.05	
Ethylbenzene*	<0.050	0.050	03/29/2016	ND	1.72	85.9	2.00	8.63	
Total Xylenes*	<0.150	0.150	03/29/2016	ND	5.28	87.9	6.00	8.62	
Total BTX	<0.300	0.300	03/29/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 98.7 % 73.6-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Chloride</b>	<b>544</b>	16.0	03/28/2016	ND	416	104	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	<50.0	50.0	03/28/2016	ND	179	89.3	200	3.87	
<b>DRO &gt;C10-C28</b>	<b>287</b>	50.0	03/28/2016	ND	160	79.9	200	4.90	

Surrogate: 1-Chlorooctane 76.2 % 35-147

Surrogate: 1-Chlorooctadecane 106 % 28-171

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:	03/24/2016	Sampling Date:	03/24/2016
Reported:	04/01/2016	Sampling Type:	Soil
Project Name:	LOCO HILLS SWD BOOSTER	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	EDDY COUNTY, NM		

**Sample ID: SP 6 1' (H600643-02)**

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	03/29/2016	ND	2.07	104	2.00	5.25	
Toluene*	<0.050	0.050	03/29/2016	ND	1.96	97.8	2.00	7.05	
Ethylbenzene*	<0.050	0.050	03/29/2016	ND	1.72	85.9	2.00	8.63	
Total Xylenes*	<0.150	0.150	03/29/2016	ND	5.28	87.9	6.00	8.62	
Total BTX	<0.300	0.300	03/29/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 99.8 % 73.6-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	48.0	16.0	03/28/2016	ND	416	104	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	<50.0	50.0	03/29/2016	ND	179	89.3	200	3.87	
DRO >C10-C28	58.3	50.0	03/29/2016	ND	160	79.9	200	4.90	

Surrogate: 1-Chlorooctane 78.0 % 35-147

Surrogate: 1-Chlorooctadecane 91.5 % 28-171

**Sample ID: SP 6 2' (H600643-03)**

Chloride, SM4500Cl-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	03/28/2016	ND	416	104	400	3.92	

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:	03/24/2016	Sampling Date:	03/24/2016
Reported:	04/01/2016	Sampling Type:	Soil
Project Name:	LOCO HILLS SWD BOOSTER	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	EDDY COUNTY, NM		

**Sample ID: SP 6 3' (H600643-04)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	128	16.0	03/28/2016	ND	416	104	400	3.92		

**Sample ID: SP 6 4' (H600643-05)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	192	16.0	03/28/2016	ND	416	104	400	3.92	

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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:	03/24/2016	Sampling Date:	03/24/2016
Reported:	04/01/2016	Sampling Type:	Soil
Project Name:	LOCO HILLS SWD BOOSTER	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	EDDY COUNTY, NM		

**Sample ID: SP 7 (SURFACE) (H600643-06)**

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	03/29/2016	ND	2.07	104	2.00	5.25	
Toluene*	<0.050	0.050	03/29/2016	ND	1.96	97.8	2.00	7.05	
Ethylbenzene*	<0.050	0.050	03/29/2016	ND	1.72	85.9	2.00	8.63	
Total Xylenes*	<0.150	0.150	03/29/2016	ND	5.28	87.9	6.00	8.62	
Total BTX	<0.300	0.300	03/29/2016	ND					

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

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	80.0	16.0	03/28/2016	ND	416	104	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	03/28/2016	ND	179	89.3	200	3.87	
DRO >C10-C28	109	10.0	03/28/2016	ND	160	79.9	200	4.90	

Surrogate: 1-Chlorooctane 87.2 % 35-147

Surrogate: 1-Chlorooctadecane 89.3 % 28-171

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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:	03/24/2016	Sampling Date:	03/24/2016
Reported:	04/01/2016	Sampling Type:	Soil
Project Name:	LOCO HILLS SWD BOOSTER	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	EDDY COUNTY, NM		

**Sample ID: SP 7 1' (H600643-07)**

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	03/29/2016	ND	2.07	104	2.00	5.25	
Toluene*	<0.050	0.050	03/29/2016	ND	1.96	97.8	2.00	7.05	
Ethylbenzene*	<0.050	0.050	03/29/2016	ND	1.72	85.9	2.00	8.63	
Total Xylenes*	<0.150	0.150	03/29/2016	ND	5.28	87.9	6.00	8.62	
Total BTX	<0.300	0.300	03/29/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 102 % 73.6-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	272	16.0	03/28/2016	ND	416	104	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	03/28/2016	ND	179	89.3	200	3.87	
DRO >C10-C28	15.6	10.0	03/28/2016	ND	160	79.9	200	4.90	

Surrogate: 1-Chlorooctane 85.9 % 35-147

Surrogate: 1-Chlorooctadecane 88.1 % 28-171

**Sample ID: SP 7 2' (H600643-08)**

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	512	16.0	03/28/2016	ND	416	104	400	3.92	

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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:	03/24/2016	Sampling Date:	03/24/2016
Reported:	04/01/2016	Sampling Type:	Soil
Project Name:	LOCO HILLS SWD BOOSTER	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	EDDY COUNTY, NM		

**Sample ID: SP 7 3' (H600643-09)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	400	16.0	03/28/2016	ND	416	104	400	3.92		

**Sample ID: SP 7 4' (H600643-10)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	704	16.0	03/28/2016	ND	416	104	400	3.92	

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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:	03/24/2016	Sampling Date:	03/24/2016
Reported:	04/01/2016	Sampling Type:	Soil
Project Name:	LOCO HILLS SWD BOOSTER	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	EDDY COUNTY, NM		

**Sample ID: SP 9 (SURFACE) (H600643-11)**

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	03/29/2016	ND	2.07	104	2.00	5.25	
Toluene*	0.052	0.050	03/29/2016	ND	1.96	97.8	2.00	7.05	
Ethylbenzene*	<0.050	0.050	03/29/2016	ND	1.72	85.9	2.00	8.63	
Total Xylenes*	<0.150	0.150	03/29/2016	ND	5.28	87.9	6.00	8.62	
Total BTX	<0.300	0.300	03/29/2016	ND					

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

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	03/28/2016	ND	432	108	400	3.77	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<100	100	03/28/2016	ND	179	89.3	200	3.87	
DRO >C10-C28	<100	100	03/28/2016	ND	160	79.9	200	4.90	

Surrogate: 1-Chlorooctane 67.2 % 35-147

Surrogate: 1-Chlorooctadecane 94.7 % 28-171

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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:	03/24/2016	Sampling Date:	03/24/2016
Reported:	04/01/2016	Sampling Type:	Soil
Project Name:	LOCO HILLS SWD BOOSTER	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	EDDY COUNTY, NM		

**Sample ID: SP 9 1' (H600643-12)**

BTEx 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	03/30/2016	ND	2.11	106	2.00	4.65	
Toluene*	0.063	0.050	03/30/2016	ND	2.00	99.8	2.00	6.38	
Ethylbenzene*	<0.050	0.050	03/30/2016	ND	1.75	87.7	2.00	6.84	
Total Xylenes*	<0.150	0.150	03/30/2016	ND	5.39	89.8	6.00	6.36	
Total BTEx	<0.300	0.300	03/30/2016	ND					

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

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	112	16.0	03/28/2016	ND	432	108	400	3.77	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<100	100	03/28/2016	ND	179	89.3	200	3.87	
DRO >C10-C28	831	100	03/28/2016	ND	160	79.9	200	4.90	

Surrogate: 1-Chlorooctane 76.5 % 35-147

Surrogate: 1-Chlorooctadecane 118 % 28-171

**Sample ID: SP 9 2' (H600643-13)**

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	192	16.0	03/28/2016	ND	432	108	400	3.77	

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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:	03/24/2016	Sampling Date:	03/24/2016
Reported:	04/01/2016	Sampling Type:	Soil
Project Name:	LOCO HILLS SWD BOOSTER	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	EDDY COUNTY, NM		

**Sample ID: SP 9 3' (H600643-14)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	288	16.0	03/28/2016	ND	432	108	400	3.77	

**Sample ID: SP 9 4' (H600643-15)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	416	16.0	03/28/2016	ND	432	108	400	3.77	

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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:	03/24/2016	Sampling Date:	03/24/2016
Reported:	04/01/2016	Sampling Type:	Soil
Project Name:	LOCO HILLS SWD BOOSTER	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	EDDY COUNTY, NM		

**Sample ID: SP 10 (SURFACE) (H600643-16)**

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.200	0.200	03/30/2016	ND	2.11	106	2.00	4.65	
<b>Toluene*</b>	<b>8.66</b>	0.200	03/30/2016	ND	2.00	99.8	2.00	6.38	
<b>Ethylbenzene*</b>	<b>2.74</b>	0.200	03/30/2016	ND	1.75	87.7	2.00	6.84	
<b>Total Xylenes*</b>	<b>9.24</b>	0.600	03/30/2016	ND	5.39	89.8	6.00	6.36	
<b>Total BTX</b>	<b>20.6</b>	1.20	03/30/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 109 % 73.6-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Chloride</b>	<b>1260</b>	16.0	03/28/2016	ND	432	108	400	3.77	
TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>GRO C6-C10</b>	<b>459</b>	200	03/29/2016	ND	176	88.2	200	6.12	
<b>DRO &gt;C10-C28</b>	<b>55500</b>	200	03/29/2016	ND	166	83.1	200	12.3	

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Chloride</b>	<b>144</b>	16.0	03/28/2016	ND	432	108	400	3.77	

Surrogate: 1-Chlorooctane 118 % 35-147

Surrogate: 1-Chlorooctadecane 2060 % 28-171

**Sample ID: SP 10 1' (H600643-17)**

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Chloride</b>	<b>144</b>	16.0	03/28/2016	ND	432	108	400	3.77	

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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:	03/24/2016	Sampling Date:	03/24/2016
Reported:	04/01/2016	Sampling Type:	Soil
Project Name:	LOCO HILLS SWD BOOSTER	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	EDDY COUNTY, NM		

**Sample ID: SP 10 2' (H600643-18)**

Chloride, SM4500Cl-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	03/28/2016	ND	432	108	400	3.77	

**Sample ID: SP 10 3' (H600643-19)**

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	48.0	16.0	03/28/2016	ND	432	108	400	3.77	

**Sample ID: SP 10 4' (H600643-20)**

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	03/28/2016	ND	432	108	400	3.77	

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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.
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

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Celey D. Keene, Lab Director/Quality Manager





1043

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name: <u>Apache</u>		P.O. #:		BILL TO								ANALYSIS REQUEST							
Project Manager: <u>Larry Bala</u>		Company: <u>Apache</u>																	
Address:		Attn:																	
City:		Address:																	
Phone #:		City:																	
Fax #:		State:																	
Project #:		Zip:																	
Project Name: <u>Lee Hills SW Booster</u>		State:																	
Project Location: <u>Eddy Co NM</u>		City:																	
Sample Name: <u>Ryan Reid</u>		Phone #:																	
Fax #:		Zip:																	
FOR LAB USE ONLY		P.O. #:																	
Lab I.D.:		P.O. #:																	
Sample I.D.:		P.O. #:																	
H100043		P.O. #:																	
SP6 (Surface)		P.O. #:																	
1		P.O. #:																	
2		P.O. #:																	
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SP 7 (Surface)		P.O. #:																	
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SP 7 (Surface)		P.O. #:																	
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SP 7 (Surface)		P.O. #:																	
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10		P.O. #:																	
SP 7 (Surface)		P.O. #:																	
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SP 7 (Surface)		P.O. #:																	
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**(575) 393-2326 FAX (575) 393-2476**

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† Cardinal cannot accept verbal changes. Please fax written changes to (575) 365-2326



3 of 3

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

BILL TO

ANALYSIS REQUEST

Company Name: Apelbe  
Project Manager: Leary Baker  
Address:  
City:  
State: Zip:  
Phone #: Fax #:  
Project #:  
Project Name: Loco Hills Sand Boaster  
Project Location: Edley & WA  
Sampler Name: Rita Reta

P.O. #:  
Company: Apelbe  
Attn:  
Address:  
City:  
State: Zip:  
Phone #:  
Fax #:

FOR LAB USE ONLY

MATRIX

PRESERV

SAMPLING

Lab I.D. Sample I.D.

Alcedo

21 SP8 (Surface)

22

23

24

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26

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28

(G)RAB OR (C)OMP.  
# CONTAINERS  
GROUNDWATER  
WASTEWATER  
SOIL  
OIL  
SLUDGE  
OTHER:  
ACID/BASE:  
ICE / COOL  
OTHER:

DATE TIME

3/24/16

11:20

11:22

11:23

11:26

11:29

13:30

13:33

13:38

BTEX 8024  
TBH 8015  
Chloride 300.1

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

Relinquished By:

Date: 3/24/16

Received By:

Phone Result: Yes No

Fax Result: Yes No

REMARKS:

Hold Samples

Relinquished By:

Date: 3/24/16

Received By:

Phone Result: Yes No

Fax Result: Yes No

Delivered By: (Circle One)

Sampler - UPS - Bus - Other:

4.80

Sample Condition  
Cool Intact  
Yes Yes  
No No

CHECKED BY: (Initials)

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