



**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:

Thomas Franklin
Environmental Manager

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.

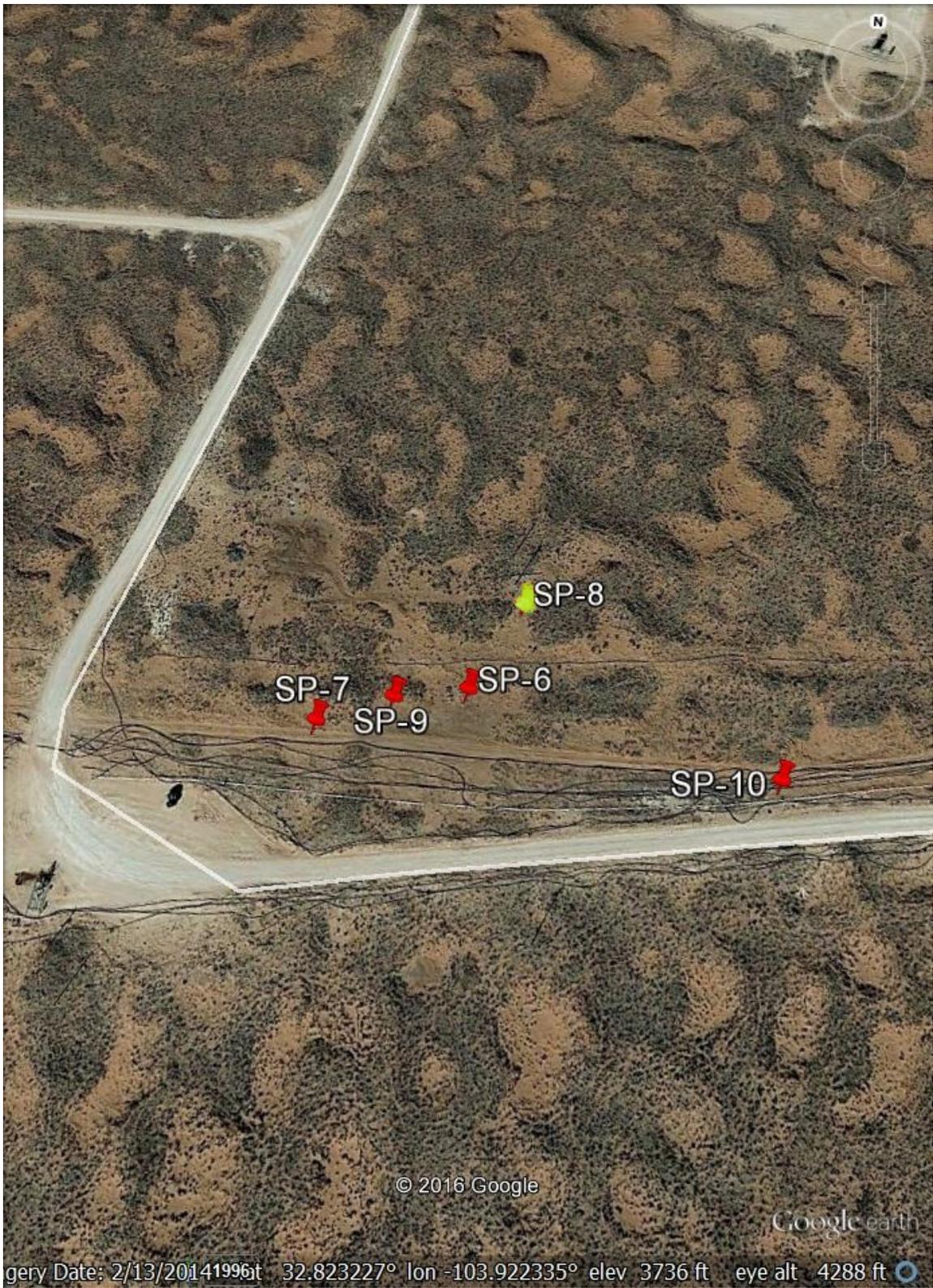


Figure 1 – Sample point locations.

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
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.

FAB1535241846 **Release Notification and Corrective Action**
NAB1535242436 **281788 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 Loco Hills SWD Booster Station	Facility Type: Booster Station
Surface Owner BLM	Mineral Owner
API No.	

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from t	East/West Line	County
G	24	17S	30E					Eddy

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.	

NM OIL CONSERVATION
ARTESIA DISTRICT
DEC 17 2015
RECEIVED

If a Watercourse was Impacted, Describe Fully.*

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: <i>Bruce Baker</i>	OIL CONSERVATION DIVISION	
Printed Name: Bruce Baker	Approved by Environmental Specialist: <i>[Signature]</i>	
Title: Environmental Technician	Approval Date: 12/18/15	Expiration Date: N/A
E-mail Address: larry.baker@apachecorp.com	Conditions of Approval:	Attached <input type="checkbox"/>
Date: 12/18/2015 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

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
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.

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.

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)

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*	0.062	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) 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
Chloride	544	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	
DRO >C10-C28	287	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, 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	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 6 3' (H600643-04)

Chloride, SM4500CI-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, 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	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 7 (SURFACE) (H600643-06)

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	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) 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	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)

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) 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, SM4500CI-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, SM4500CI-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	

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 9 (SURFACE) (H600643-11)

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*	0.052	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 BTEX	<0.300	0.300	03/29/2016	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	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

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 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:	04/18/2016	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, SM4500CI-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, SM4500CI-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)

BTEX 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	
Toluene*	8.66	0.200	03/30/2016	ND	2.00	99.8	2.00	6.38	
Ethylbenzene*	2.74	0.200	03/30/2016	ND	1.75	87.7	2.00	6.84	
Total Xylenes*	9.24	0.600	03/30/2016	ND	5.39	89.8	6.00	6.36	
Total BTEX	20.6	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
Chloride	1260	16.0	03/28/2016	ND	432	108	400	3.77	

TPH 8015M		mg/kg		Analyzed By: MS						QM-07, S-06
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	459	200	03/29/2016	ND	176	88.2	200	6.12		
DRO >C10-C28	55500	200	03/29/2016	ND	166	83.1	200	12.3		

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
Chloride	144	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, 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	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, SM4500CI-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, SM4500CI-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, SM4500CI-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



Celey D. Keene, Lab Director/Quality Manager



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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

2 of 3

BILL TO

ANALYSIS REQUEST

Company Name: Apache
 Project Manager: Larry Baker
 Address: _____
 City: _____ State: _____ Zip: _____
 Phone #: _____ Fax #: _____
 Project #: _____ Project Owner: _____
 Project Name: Low Hills Sand Booster
 Project Location: Eddy Co NM
 Sampler Name: Ryan Pord
 FOR LAB USE ONLY

P.O. #: 1
 Company: Apache
 Attn: _____
 Address: _____
 City: _____ State: _____ Zip: _____
 Phone #: _____
 Matrix: _____
 Preserv: _____
 Sampling: _____

Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX	PRESERV	SAMPLING	DATE	TIME	ANALYSIS
11	SP 9 (Surface)	9	1	GROUNDWATER			3/24/15	1300	BTEX 8021
12	1'			WASTEWATER				1305	TPH 805
13	2'			SOIL				1307	Chloride 300.1
14	3'			OIL				1309	
15	4'			SLUDGE				1312	
16	SP 10 (Surface)			OTHER:				1410	
17	1'			ACID/BASE:				1412	
18	2'			ICEY COOL				1426	
19	3'			OTHER:				1430	
20	4'							1432	

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Relinquished By: _____
 Date: 3/24/15
 Time: 5:10
 Received By: Spide Jensen
 Date: _____
 Time: _____

Delivered By: (Circle One)
 Sampler - UPS - Bus - Other: _____
 Sample Condition: Cool Intact
 Pres No Pres
 Checked By: _____
 Phone Result: Yes No Add'l Phone #: _____
 Fax Result: Yes No Add'l Fax #: _____
 REMARKS: _____

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

CARDINAL Laboratories

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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

BILL TO

ANALYSIS REQUEST

Company Name: Apolline
 Project Manager: Larry Barber
 Address: _____
 City: _____ State: _____ Zip: _____
 Phone #: _____ Fax #: _____
 Project #: _____ Project Owner: _____
 Project Name: Levo Hills Sud Brooks
 Project Location: Eddy Co NM
 Sampler Name: Ryan Pell
 P.O. #: _____
 Company: Apolline
 Attn: _____
 Address: _____
 City: _____ State: _____ Zip: _____
 Phone #: _____
 Fax #: _____

Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX						DATE	TIME	ANALYSIS
				GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :			
Alc00043	21 SP8 (Surface)	G	1			X				3/24/16	1:20	BTEX 8024
	22										1:22	
	23										1:23	
	24										1:26	
	25										1:29	
	26										1:30	
	27										1:32	
	28										1:38	

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Relinquished By: [Signature] Date: 3/24/16
 Relinquished By: [Signature] Date: 3/24/16
 Received By: [Signature] Date: 3/24/16
 Received By: [Signature] Date: 3/24/16

Delivered By: (Circle One) UPS
 Sampler - UPS - Bus - Other: _____
 Sample Condition: Intact Damaged
 Checked By: [Signature]
 4.80

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

REMARKS: Hold Samples
 *Cl analysis added as per Jackson/American Safety
 4/15/16. de

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

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.

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:	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	
Toluene*	0.287	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	
Total Xylenes*	5.71	0.150	05/04/2016	ND	5.09	84.8	6.00	0.424	
Total BTEX	6.00	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
GRO C6-C10	602	50.0	05/02/2016	ND	183	91.7	200	14.1	
DRO >C10-C28	12900	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	
Toluene*	0.322	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	
Total Xylenes*	15.2	0.150	05/04/2016	ND	5.09	84.8	6.00	0.424	
Total BTEX	15.5	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
GRO C6-C10	1030	50.0	05/02/2016	ND	183	91.7	200	14.1	
DRO >C10-C28	6870	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



Celey D. Keene, Lab Director/Quality Manager

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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

PS 1062

Company Name: Apache Project Manager: Larry Baker City: _____ State: _____ Zip: _____ Phone #: _____ Fax #: _____ Project #: _____ Project Owner: _____ Project Name: Love Hills SUD Booker Project Location: Eddy Co, NM Sampler Name: Ron Port		BILL TO P.O. #: _____ Company: Apache Attn: Larry Baker Address: _____ City: _____ State: _____ Zip: _____ Phone #: _____ Fax #: _____	
FOR LAB USE ONLY Lab I.D.: H000912 Sample I.D.: SP 8 (0') 1 SP 8 (0') 2 " (1') 3 " (2') 4 " (3') 5 " (4') 6 " (5') 7 " (6') 8 " (7') 9 SP 10 (0') 10 " (1') 11 " (2')		MATRIX <input checked="" type="checkbox"/> (G)RAB OR (C)OMP. <input type="checkbox"/> # CONTAINERS <input type="checkbox"/> GROUNDWATER <input type="checkbox"/> WASTEWATER <input checked="" type="checkbox"/> SOIL <input type="checkbox"/> OIL <input type="checkbox"/> SLUDGE <input type="checkbox"/> OTHER : _____ <input type="checkbox"/> ACID/BASE: <input type="checkbox"/> ICE / COOL <input type="checkbox"/> OTHER : _____	
DATE 4/29/16 DATE TIME 0730 0732 0734 0736 0738 0740 0742 0744 0746 0748 0800 0804		SAMPLING <input checked="" type="checkbox"/> TPH <input checked="" type="checkbox"/> BTEX	
Relinquished By: [Signature] Received By: Scott Shuster Date: 4/29/16 Time: 10:05		CHECKED BY: [Signature] Phone Result: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Add'l Phone #: _____ Fax Result: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Add'l Fax #: _____ REMARKS: Samples Skipped from 2' to 10' in stack for Normal TAT Email Results to Larry Baker & [Signature]	

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



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.

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".

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)

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*	0.062	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) 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
Chloride	544	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	
DRO >C10-C28	287	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)

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, 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	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 6 3' (H600643-04)

Chloride, SM4500CI-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, 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	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)

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) 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	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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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)

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) 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, SM4500CI-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, SM4500CI-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)

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*	0.052	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 BTEX	<0.300	0.300	03/29/2016	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	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, SM4500CI-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, SM4500CI-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)

BTEX 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	
Toluene*	8.66	0.200	03/30/2016	ND	2.00	99.8	2.00	6.38	
Ethylbenzene*	2.74	0.200	03/30/2016	ND	1.75	87.7	2.00	6.84	
Total Xylenes*	9.24	0.600	03/30/2016	ND	5.39	89.8	6.00	6.36	
Total BTEX	20.6	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
Chloride	1260	16.0	03/28/2016	ND	432	108	400	3.77	

TPH 8015M		mg/kg		Analyzed By: MS						S-06, QM-07
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	459	200	03/29/2016	ND	176	88.2	200	6.12		
DRO >C10-C28	55500	200	03/29/2016	ND	166	83.1	200	12.3		

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
Chloride	144	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, 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	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



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

3 of 3

Company Name: Apelbe
Project Manager: Leary Baker
Address: _____
City: _____ **State:** _____ **Zip:** _____
Phone #: _____ **Fax #:** _____
Project #: _____ **Project Owner:** _____
Project Name: Loce Hills Sand Booster
Project Location: Eddy Co NM
Sampler Name: Rena Ren

BILL TO

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

ANALYSIS REQUEST

Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX							DATE	TIME	REMARKS
				GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	ACID/BASE:			
<u>Alcedo 013</u>	<u>21 SP8 (Surface)</u>	<u>G</u>	<u>1</u>							<u>3/24/16</u>	<u>1120</u>	<u>BTEX 8024</u>	
	<u>22</u>	<u>1</u>	<u>1</u>								<u>1122</u>	<u>TBH 8015</u>	
	<u>23</u>	<u>2'</u>	<u>1</u>								<u>1123</u>	<u>Chloride 300.1</u>	
	<u>24</u>	<u>7'</u>	<u>1</u>								<u>1126</u>		
	<u>25</u>	<u>7'</u>	<u>1</u>								<u>1129</u>		
	<u>26</u>	<u>5'</u>	<u>1</u>								<u>1330</u>		
	<u>27</u>	<u>6'</u>	<u>1</u>								<u>1333</u>		
	<u>28</u>	<u>7'</u>	<u>1</u>								<u>1338</u>		

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Relinquished By: [Signature] **Date:** 3/24/16
Relinquished By: [Signature] **Date:** 5/10
Received By: Heidi Jensen
Time: _____

Delivered By: (Circle One)
 Sampler - UPS - Bus - Other: 4.80
Sample Condition: Cool Intact
 Yes No
Checked By: [Signature]
Phone Result: Yes No **Add'l Phone #:** _____
Fax Result: Yes No **Add'l Fax #:** _____
REMARKS: Hold Samples

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