



October 26, 2020

Mr. Bradford Billings
State of New Mexico Oil Conservation Division
1220 South St Francis Drive
Santa Fe, NM 87505

RE: 2RP-4316 Cedar Lake Federal CA 901

Mr. Billings,

In compliance with 19.15.29.15(B) NMAC and the agreement submitted by Apache Corporation on November 8, 2018, Apache Corporation is submitting information related to closure for the release occurring July 17, 2017. Apache is respectfully submitting the closure report based on remediation and studies occurring in 2020 that demonstrate the site meeting the requirements of the agency. Unless further information is requested by NMOCD, Apache Corporation considers this release closed.

If there are any questions, please feel free to contact me by telephone at 432-631-6982 or by e-mail at larry.baker@apachecorp.com.

Sincerely,

A handwritten signature in black ink that reads "Larry Baker". The signature is written in a cursive style.

Larry Baker
Environmental Technician SR.
Apache Corporation

Attachment: Closure Report Dated October 26, 2020



303 Veterans Airpark Lane Midland, TX 79705

Closure Report

October 26, 2020

Re: Cedar Lake Federal CA 901
Case # 2RP-4316

On 7/16/2017 a release occurred due to a stuffing box failure. The release (GPS: 32.8533897, -103.8692093) is located east of Loco Hills, New Mexico in unit letter A section 9 township 17S range 31E. It is common knowledge that there is no groundwater in township 17S range 31E.

On 7/21/2017 the release was mapped and samples were collected to a depth of 1 foot. All samples collected were submitted to commercial laboratory for analysis of chloride, TPH, and BTEX. The majority of the pad area of the release was remediated under event 2RP-4990. The samples representing the area of this release in the 2RP-4990 sample map are BFC 10, 11, and 12. Wall samples WC 3, 4, and 5.

On 10/8/2020 final 5 point bottom composite surface samples were collected not to exceed 200 square feet in the remaining pad release flow path not represented in the remediation of 2RP-4990. All samples collected were submitted to a commercial laboratory for analysis of chloride, TPH, and BTEX. On 10/15/2020 the pasture area of the release was excavated to a depth of 4 feet. Final 5 point bottom and wall composite samples were collected not to exceed 200 square feet. All samples collected were submitted to a commercial laboratory for analysis of chloride, TPH, and BTEX. All excavated soil was hauled to an OCD approved disposal facility. The pasture area was backfilled with clean imported top soil to ground surface and contoured to the surrounding area. The pasture disturbed area was re-seeded with BLM # 2

Apache Corporation has complete remediation to below table one standards for releases greater than 100 feet to groundwater and respectfully request event 2RP-4316 be closed.

Enclosed: C-141, Groundwater Data, Maps, Sample Data, Laboratory Results, and Photos.

Submitted by;

Bruce Baker

Environmental Technician
larry.baker@apachecorp.com
Cell# 432-631-6982

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 **NM OIL CONSERVATION**
Energy Minerals and Natural Resources
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

ARTESIA DISTRICT

Form C-141
Revised August 8, 2011

JUL 28 2017
Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

RECEIVED

Release Notification and Corrective Action

NAB17211034426

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company	Apache Corporation 873	Contact	Bruce Baker
Address	2350 W Marland Street, Hobbs, NM 88240	Telephone No.	(432) 631-6982
Facility Name	Cedar Lake Federal CA 901	Facility Type	Well

Surface Owner	Federal	Mineral Owner		API No.	30-015-12364
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LOCATION OF RELEASE

30-015-34126

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
A	9	17S	31E	1063	FNL	920'	FEL	Eddy

Latitude 32.8533897 Longitude -103.8692093

NATURE OF RELEASE

Type of Release	Oil and Produced Water	Volume of Release	5 barrels of water and 1 barrel of oil	Volume Recovered	1 barrel of oil and 2 barrels of water
Source of Release	Stuffing Box	Date and Hour of Occurrence	7/16/2017	Date and Hour of Discovery	7/16/2017 at 10:00 a.m.
Was Immediate Notice Given?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom?	Shelly Tucker (BLM)		
By Whom?	Bruce Baker	Date and Hour	7/17/2017 at 10:21 a.m. via email		
Was a Watercourse Reached?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse.			

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*

Stuffing box packing failed resulting in the loss of fluid. The well was shut in and a vacuum truck was dispatched to pick-up standing fluid.

Describe Area Affected and Cleanup Action Taken.*

The majority of the release was contained to the lease pad except for a small area of pasture south of the lease pad. The release was mapped and initial samples collected and set to laboratory for analysis.

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>Cynthia W.</i>	
Title: Environmental Technician	Approval Date: <i>8/4/17</i>	Expiration Date: <i>N/A</i>
E-mail Address: larry.baker@apachecorp.com	Conditions of Approval: <i>see attached</i>	Attached <input checked="" type="checkbox"/>
Date: 7/28/2017	Phone: (432) 631-6982	

* Attach Additional Sheets If Necessary

2RP-4316

Incident ID	
District RP	
Facility ID	
Application ID	

Site Assessment/Characterization

This information must be provided to the appropriate district office no later than 90 days after the release discovery date.

What is the shallowest depth to groundwater beneath the area affected by the release?	<u>None</u> (ft bgs)
Did this release impact groundwater or surface water?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a wetland?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying a subsurface mine?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying an unstable area such as karst geology?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within a 100-year floodplain?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Did the release impact areas not on an exploration, development, production, or storage site?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Attach a comprehensive report (electronic submittals in .pdf format are preferred) demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined. Refer to 19.15.29.11 NMAC for specifics.

Characterization Report Checklist: *Each of the following items must be included in the report.*

- ☒ Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.
- ☒ Field data
- ☒ Data table of soil contaminant concentration data
- ☒ Depth to water determination
- ☒ Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release
- ☒ Boring or excavation logs
- ☒ Photographs including date and GIS information
- ☒ Topographic/Aerial maps
- ☒ Laboratory data including chain of custody

If the site characterization report does not include completed efforts at remediation of the release, the report must include a proposed remediation plan. That plan must include the estimated volume of material to be remediated, the proposed remediation technique, proposed sampling plan and methods, anticipated timelines for beginning and completing the remediation. The closure criteria for a release are contained in Table 1 of 19.15.29.12 NMAC, however, use of the table is modified by site- and release-specific parameters.

State of New Mexico
Oil Conservation Division

Page 4

Incident ID	
District RP	
Facility ID	
Application ID	

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD 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 OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD 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.

Printed Name: Larry Baker Title: Environmental Tech SR.
Signature: Larry Baker Date: 10/26/2020
email: larry.baker@apachecorp.com Telephone: 432-631-6982

OCD Only

Received by: _____ Date: _____

Incident ID	
District RP	
Facility ID	
Application ID	

Closure

The responsible party must attach information demonstrating they have complied with all applicable closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a comprehensive report (electronic submittals in .pdf format are preferred) including a scaled site map, sampling diagrams, relevant field notes, photographs of any excavation prior to backfilling, laboratory data including chain of custody documents of final sampling, and a narrative of the remedial activities. Refer to 19.15.29.12 NMAC.

Closure Report Attachment Checklist: *Each of the following items must be included in the closure report.*

- ☒ A scaled site and sampling diagram as described in 19.15.29.11 NMAC
- ☒ Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)
- ☒ Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)
- ☒ Description of remediation activities

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD 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 OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD 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. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

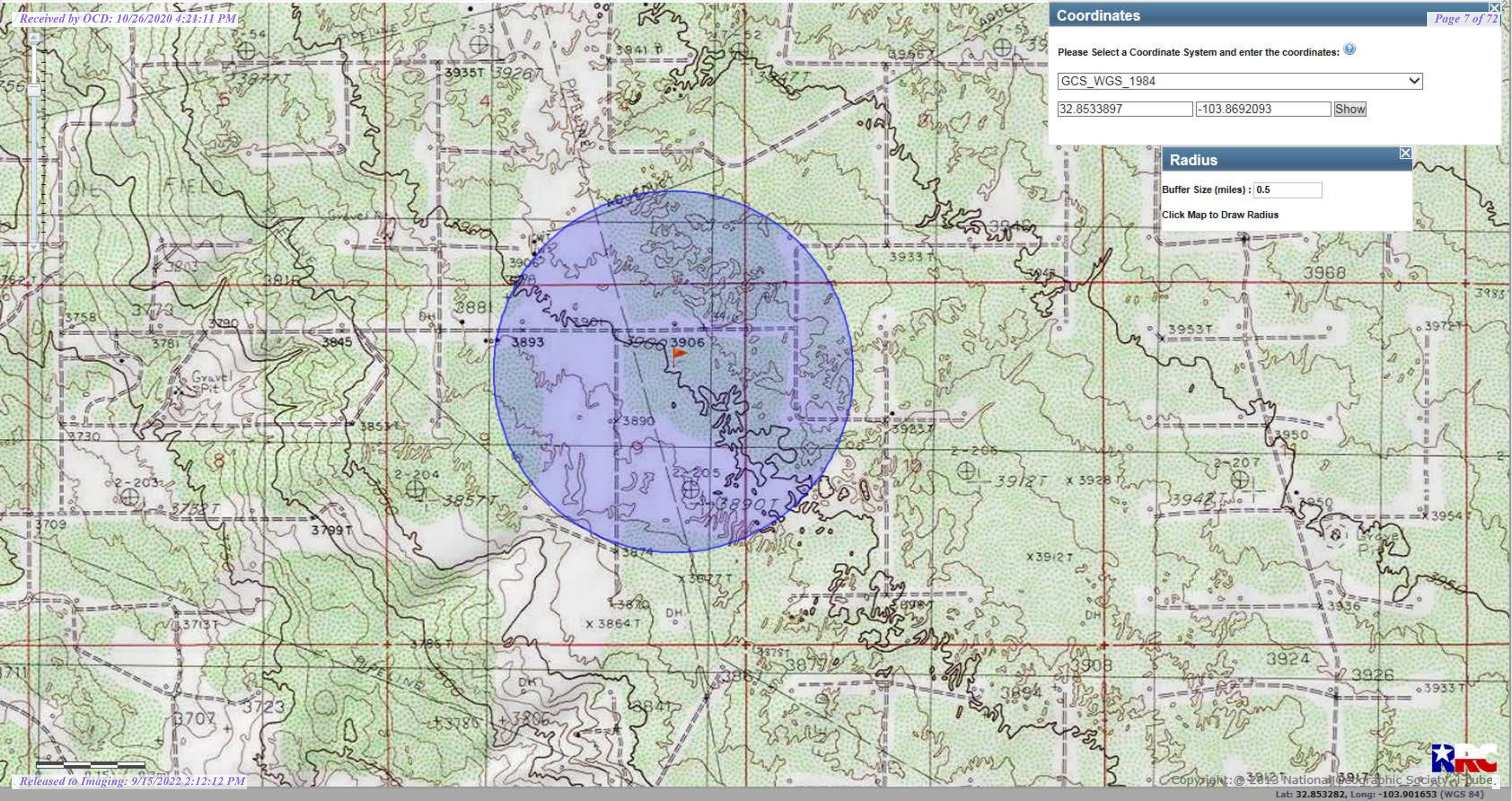
Printed Name: Larry Baker Title: Environmental Tech SR.
Signature: Larry Baker Date: 10/26/2020
email: larry.baker@apachecorp.com Telephone: 432-631-6982

OCD Only

Received by: _____ Date: _____

Closure approval by the OCD does not relieve the responsible party of liability should their operations have failed to adequately investigate and remediate contamination that poses a threat to groundwater, surface water, human health, or the environment nor does not relieve the responsible party of compliance with any other federal, state, or local laws and/or regulations.

Closure Approved by: Brittany Hall Date: 9/15/2022
Printed Name: Brittany Hall Title: Environmental Specialist



Coordinates

Please Select a Coordinate System and enter the coordinates:

GCS_WGS_1984

32.8533897 -103.8692093 Show

Radius

Buffer Size (miles) : 0.5

Click Map to Draw Radius

Cedar Lake Fed CA 901 Remediation Plan Proposal

Apache
Corporation
Eddy County, New Mexico

Table1: Soil Sample Results

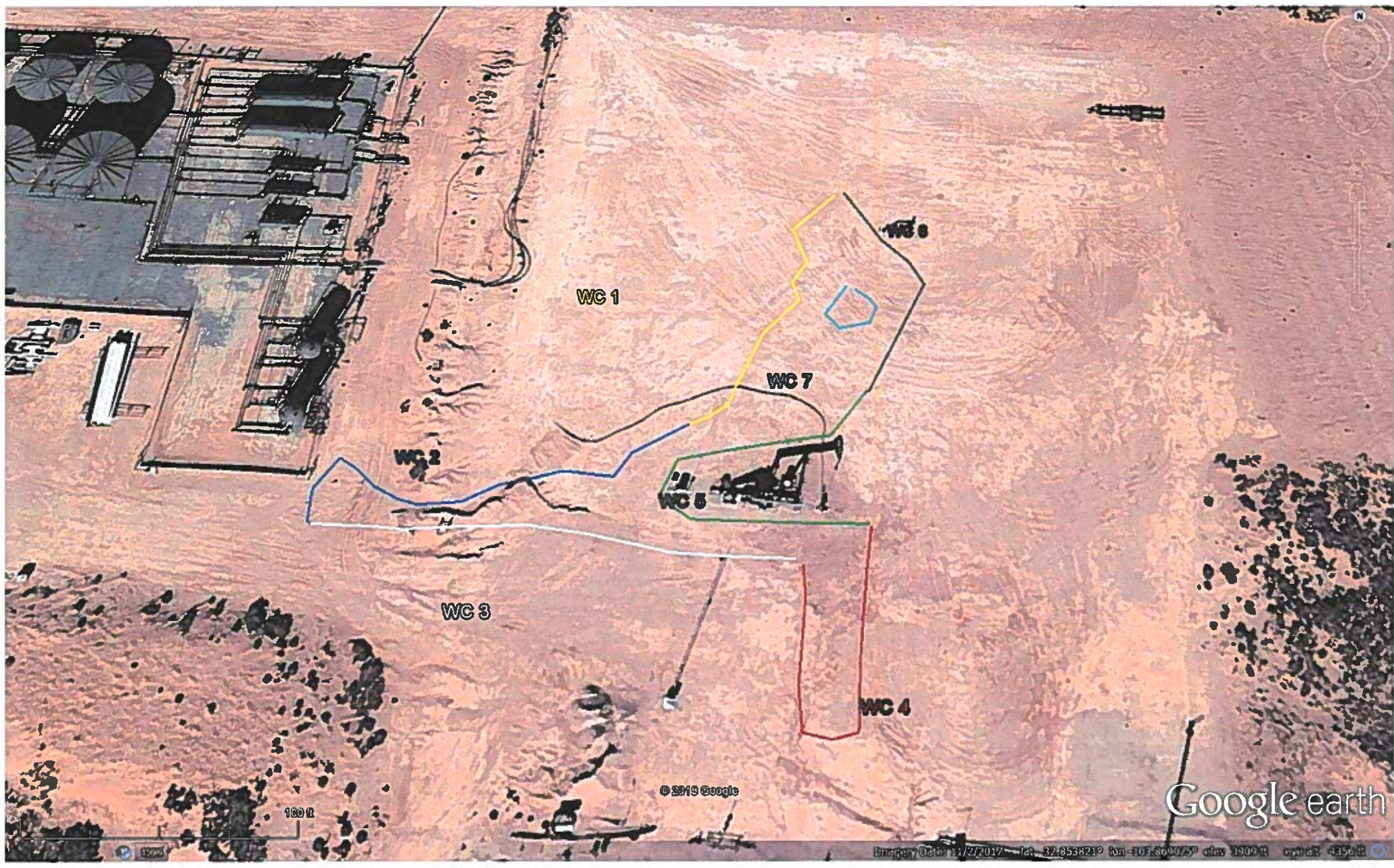
Date	Sample #	Depth	Lab Data		
			BTEX	TPH	CL's
7/21/2017					
Caliche	SP 1	0"	<0.300	94.1	16400
Sand	SP 1	1'	0.764	<10.0	624
Caliche	SP 2	0"	3.56	370	10000
Sand	SP 2	1'	<0.300	63.4	1120
Sand	SP 3	0"	583	19900	9200
Sand	SP 3	1'	<0.300	16	4560

TPH: Gasoline range (GRO) - >C6-C12; Diesel range (DRO) - >C12-C28

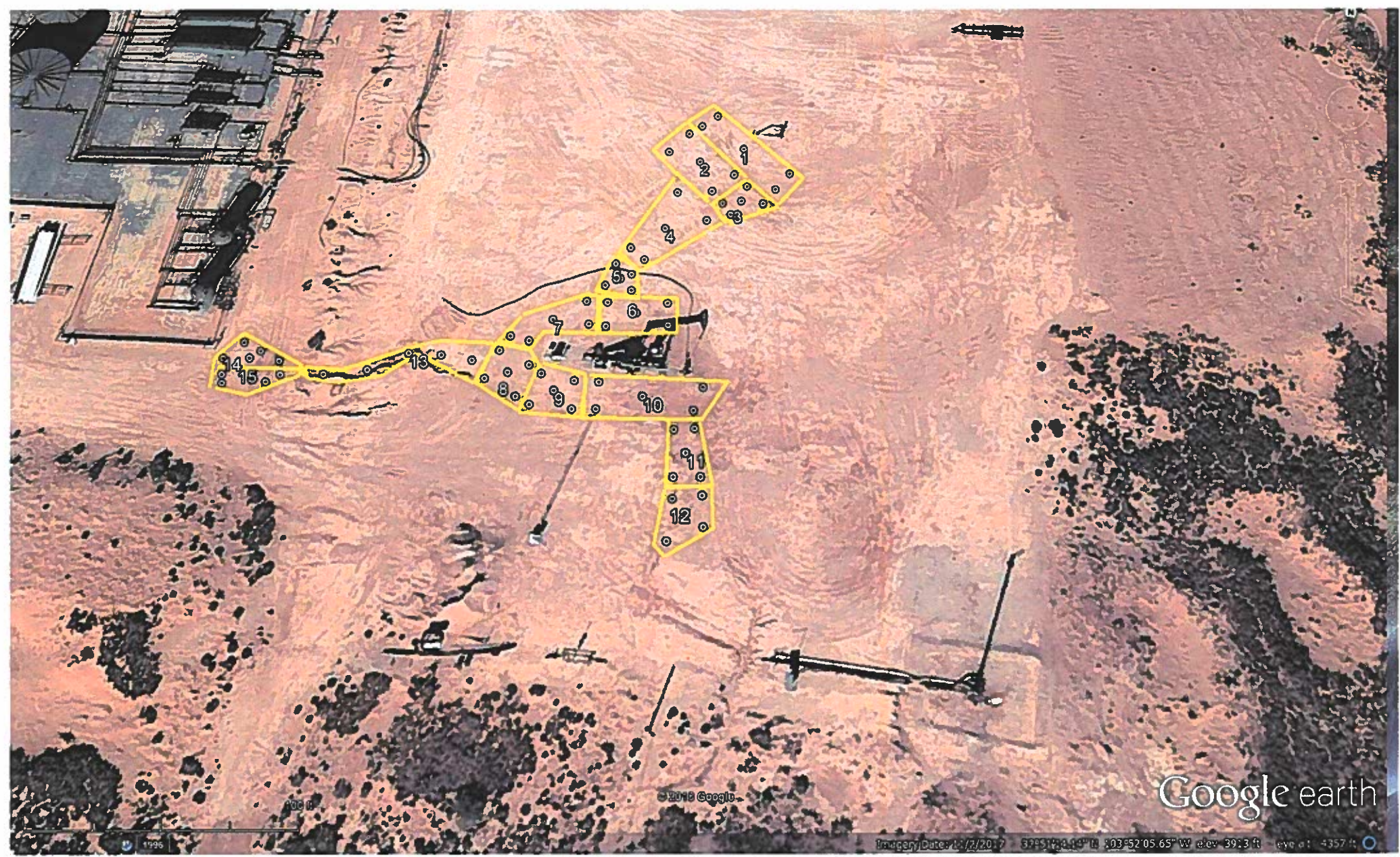
Figure 1: Sample Point Locations and Release Area



Wall Samples



Bottom Samples



Wall Samples

Sample Pt.	Depth	Chloride	Benzene	Toluene	Ethybenzene	Total Xylenes	Total BTEX	GRO	DRO	EXT DRO	GPS
WC 1	1'	4560	<0.050	<0.050	<0.050	<0.150	<0.300	<10	<10	<10	32.8538156 -103.8684553
WC 2	1'	368	<0.050	<0.050	<0.050	<0.150	<0.300	<10	<10	<10	32.8535230 -103.8685736
WC 2	1'	2240	<0.050	<0.050	<0.050	<0.150	<0.300	<10	<10	<10	32.8534664 -103.8684475
WC 4	1'	1840	<0.050	<0.050	<0.050	<0.150	<0.300	<10	<10	<10	32.8532957 -103.8682216
WC 5	1'	3160	<0.050	<0.050	<0.050	<0.150	<0.300	<10	<10	<10	32.8536169 -103.8683688
WC 6	6"	816	<0.050	<0.050	<0.050	<0.150	<0.300	<10	<10	<10	32.8540038 -103.8683175
WC 7	n/a	2640	<0.050	<0.050	<0.050	<0.150	<0.300	<10	<10	<10	32.8536939 -103.8683138

Bottom Samples

Sample Pt.	Depth	Chloride	Benzene	Toluene	Ethybenzene	Total Xylenes	Total BTEX	GRO	DRO	EXT DRO	GPS
BFC 1	6"-1'	2400	<0.050	<0.050	<0.050	<0.150	<0.300	<10	<10	<10	32.85381 -103.86821
BFC 2	6"-1'	4880	<0.050	<0.050	<0.050	<0.150	<0.300	<10	<10	<10	32.85377 -103.86831
BFC 3	6"-1'	48	<0.050	<0.050	<0.050	<0.150	<0.300	<10	<10	<10	32.85375 -103.86824
BFC 4	6"-1'	2240	<0.050	<0.050	<0.050	<0.150	<0.300	<10	<10	<10	32.85371 -103.86834
BFC 5	6"-1'	1090	<0.050	<0.050	<0.050	<0.150	<0.300	<10	<10	<10	32.85362 -103.86841
BFC 6	6"-1'	2880	<0.050	<0.050	<0.050	<0.150	<0.300	<10	219	52.4	32.85355 -103.86847
BFC 7	6"-1'	7440	<0.050	<0.050	<0.050	<0.150	<0.300	<10	<10	<10	32.83537 -103.86847
BFC 8	6"-1'	240	<0.050	<0.050	<0.050	<0.150	<0.300	<10	<10	<10	32.85348 -103.86857
BFC 9	6"-1'	7120	<0.050	<0.050	<0.050	<0.150	<0.300	<10	<10	<10	32.8535075 -103.8684745
BFC 10	6"-1'	5120	<0.050	<0.050	<0.050	<0.150	<0.300	<10	156	29.9	32.8534880 -103.8683111
BFC 11	6"-1'	112	<0.050	<0.050	<0.050	<0.150	<0.300	<10	125	39.2	32.8533509 -103.8682823
BFC 12	6"-1'	32	<0.050	<0.050	<0.050	<0.150	<0.300	<10	12.1	<10.0	32.8533537 -103.8682755
BFC 13	6"-1'	48	<0.050	<0.050	<0.050	<0.150	<0.300	<10	<10	<10	32.8535044 -103.8687164
BFC 14	6"-1'	48	<0.050	<0.050	<0.050	<0.150	<0.300	<10	<10	<10	32.8534940 -103.8689049
BFC 15	6"-1'	2000	<0.050	<0.050	<0.050	<0.150	<0.300	<10	<10	<10	32.8535275 -103.8688720



© 2020 Google

Google earth

2020 Final Samples

Sample Date	Sample ID	Depth	Chloride	Benzene	Toulene	Ethybenzene	Total Xylenes	Total BTEX	GRO	DRO	EXT DRO	GPS Coordinates
10/8/2020	B1	Surface	80	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	549	128	32.853219, -103.868262
10/8/2020	B2	Surface	592	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	15	<10.0	32.853177, -103.868173
10/8/2020	B3	Surface	224	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	<10.0	32.853148, -103.868148
10/15/2020	B4	4'	32.0	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	21.2	<10.0	32.85307, -103.86819
10/15/2020	W1		16.0	0.126	0.339	0.066	<0.150	0.661	<10.0	<10.0	<10.0	32.85306, -103.86819
10/15/2020	W2		32.0	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	11.4	<10.0	32.85303, -103.86824
10/15/2020	W3		16.0	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	<10.0	32.85306, -103.86819
10/15/2020	W4		<16.0	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	<10.0	32.85310, -103.86816



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

Analytical Results For:

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

Received: 06/03/2019
 Reported: 06/10/2019
 Project Name: CROW FED SWD #1
 Project Number: NONE GIVEN
 Project Location: NOT GIVEN

Sampling Date: 06/03/2019
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: WC # 1 @ 1' (H901937-01)

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	06/06/2019	ND	2.28	114	2.00	3.69	
Toluene*	<0.050	0.050	06/06/2019	ND	2.29	114	2.00	4.21	
Ethylbenzene*	<0.050	0.050	06/06/2019	ND	2.13	106	2.00	2.62	
Total Xylenes*	<0.150	0.150	06/06/2019	ND	6.39	106	6.00	2.04	
Total BTX	<0.300	0.300	06/06/2019	ND					

Surrogate: 4-Bromofluorobenzene (PIE) 103 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	4560	16.0	06/06/2019	ND	416	104	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	06/05/2019	ND	220	110	200	5.65	
DRO >C10-C28*	<10.0	10.0	06/05/2019	ND	199	99.6	200	7.49	
EXT DRO >C28-C36	<10.0	10.0	06/05/2019	ND					

Surrogate: 1-Chlorooctane 90.0 % 41-142

Surrogate: 1-Chlorooctadecane 90.0 % 37.6-147

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (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 the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

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

Received: 06/03/2019
 Reported: 06/10/2019
 Project Name: CROW FED SWD #1
 Project Number: NONE GIVEN
 Project Location: NOT GIVEN

Sampling Date: 06/03/2019
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: WC # 2 @ 1' (H901937-02)

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	06/06/2019	ND	2.28	114	2.00	3.69	
Toluene*	<0.050	0.050	06/06/2019	ND	2.29	114	2.00	4.21	
Ethylbenzene*	<0.050	0.050	06/06/2019	ND	2.13	106	2.00	2.62	
Total Xylenes*	<0.150	0.150	06/06/2019	ND	6.39	106	6.00	2.04	
Total BTX	<0.300	0.300	06/06/2019	ND					

Surrogate: 4-Bromofluorobenzene (PIE) 103 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	368	16.0	06/06/2019	ND	432	108	400	7.69	QM-07

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	06/05/2019	ND	220	110	200	5.65	
DRO >C10-C28*	<10.0	10.0	06/05/2019	ND	199	99.6	200	7.49	
EXT DRO >C28-C36	<10.0	10.0	06/05/2019	ND					

Surrogate: 1-Chlorooctane 92.5 % 41-142

Surrogate: 1-Chlorooctadecane 99.7 % 37.6-147

Cardinal Laboratories

* = Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (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 the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

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

Received: 06/03/2019
 Reported: 06/10/2019
 Project Name: CROW FED SWD #1
 Project Number: NONE GIVEN
 Project Location: NOT GIVEN

Sampling Date: 06/03/2019
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: WC # 3 @ 1' (H901937-03)

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	06/06/2019	ND	2.28	114	2.00	3.69	
Toluene*	<0.050	0.050	06/06/2019	ND	2.29	114	2.00	4.21	
Ethylbenzene*	<0.050	0.050	06/06/2019	ND	2.13	106	2.00	2.62	
Total Xylenes*	<0.150	0.150	06/06/2019	ND	6.39	106	6.00	2.04	
Total BTX	<0.300	0.300	06/06/2019	ND					

Surrogate: 4-Bromofluorobenzene (PIE) 102 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2240	16.0	06/06/2019	ND	432	108	400	7.69	

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	06/05/2019	ND	220	110	200	5.65	
DRO >C10-C28*	<10.0	10.0	06/05/2019	ND	199	99.6	200	7.49	
EXT DRO >C28-C36	<10.0	10.0	06/05/2019	ND					

Surrogate: 1-Chlorooctane 90.8 % 41-142

Surrogate: 1-Chlorooctadecane 96.5 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

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

Received: 06/03/2019
 Reported: 06/10/2019
 Project Name: CROW FED SWD #1
 Project Number: NONE GIVEN
 Project Location: NOT GIVEN

Sampling Date: 06/03/2019
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: WC # 4 @ 1' (H901937-04)

BTEX 8021B		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/06/2019	ND	2.28	114	2.00	3.69	
Toluene*	<0.050	0.050	06/06/2019	ND	2.29	114	2.00	4.21	
Ethylbenzene*	<0.050	0.050	06/06/2019	ND	2.13	106	2.00	2.62	
Total Xylenes*	<0.150	0.150	06/06/2019	ND	6.39	106	6.00	2.04	
Total BTEX	<0.300	0.300	06/06/2019	ND					

Surrogate: 4-Bromofluorobenzene (PIE) 102 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1840	16.0	06/06/2019	ND	432	108	400	7.69	

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	06/05/2019	ND	220	110	200	5.65	
DRO >C10-C28*	<10.0	10.0	06/05/2019	ND	199	99.6	200	7.49	
EXT DRO >C28-C36	<10.0	10.0	06/05/2019	ND					

Surrogate: 1-Chlorooctane 87.3 % 41-142

Surrogate: 1-Chlorooctadecane 85.8 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

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

Received: 06/03/2019
 Reported: 06/10/2019
 Project Name: CROW FED SWD #1
 Project Number: NONE GIVEN
 Project Location: NOT GIVEN

Sampling Date: 06/03/2019
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: WC # 5 @ 1' (H901937-05)

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	06/06/2019	ND	2.28	114	2.00	3.69	
Toluene*	<0.050	0.050	06/06/2019	ND	2.29	114	2.00	4.21	
Ethylbenzene*	<0.050	0.050	06/06/2019	ND	2.13	106	2.00	2.62	
Total Xylenes*	<0.150	0.150	06/06/2019	ND	6.39	106	6.00	2.04	
Total BTX	<0.300	0.300	06/06/2019	ND					

Surrogate 4-Bromofluorobenzene (PIE) 101 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	3160	16.0	06/06/2019	ND	432	108	400	7.69	

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	06/05/2019	ND	220	110	200	5.65	
DRO >C10-C28*	<10.0	10.0	06/05/2019	ND	199	99.6	200	7.49	
EXT DRO >C28-C36	<10.0	10.0	06/05/2019	ND					

Surrogate: 1-Chlorooctane 90.3 % 41-142

Surrogate: 1-Chlorooctadecane 85.7 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

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

Received: 06/03/2019
 Reported: 06/10/2019
 Project Name: CROW FED SWD #1
 Project Number: NONE GIVEN
 Project Location: NOT GIVEN

Sampling Date: 06/03/2019
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: WC # 6 @ 6" (H901937-06)

BTX 80218		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/06/2019	ND	2.28	114	2.00	3.69	
Toluene*	<0.050	0.050	06/06/2019	ND	2.29	114	2.00	4.21	
Ethylbenzene*	<0.050	0.050	06/06/2019	ND	2.13	106	2.00	2.62	
Total Xylenes*	<0.150	0.150	06/06/2019	ND	6.39	106	6.00	2.04	
Total BTX	<0.300	0.300	06/06/2019	ND					

Surrogate: 4-Bromofluorobenzene (PIC) 101 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	816	16.0	06/06/2019	ND	432	108	400	7.69	

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	06/05/2019	ND	220	110	200	5.65	
DRO >C10-C28*	<10.0	10.0	06/05/2019	ND	199	99.6	200	7.49	
EXT DRO >C28-C36	<10.0	10.0	06/05/2019	ND					

Surrogate: 1-Chlorooctane 84.2 % 41-142

Surrogate: 1-Chlorooctadecane 80.6 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

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

Received: 06/03/2019
 Reported: 06/10/2019
 Project Name: CROW FED SWD #1
 Project Number: NONE GIVEN
 Project Location: NOT GIVEN

Sampling Date: 06/03/2019
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: WC # 7 ISLAND (H901937-07)

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	06/06/2019	ND	2.28	114	2.00	3.69	
Toluene*	<0.050	0.050	06/06/2019	ND	2.29	114	2.00	4.21	
Ethylbenzene*	<0.050	0.050	06/06/2019	ND	2.13	106	2.00	2.62	
Total Xylenes*	<0.150	0.150	06/06/2019	ND	6.39	106	6.00	2.04	
Total BTX	<0.300	0.300	06/06/2019	ND					

Surrogate: 4-Bromofluorobenzene (PIE) 101 % 73.3-129

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2640	16.0	06/06/2019	ND	432	108	400	7.69	

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	06/05/2019	ND	220	110	200	5.65	
DRO >C10-C28*	<10.0	10.0	06/05/2019	ND	199	99.6	200	7.49	
EXT DRO >C28-C36	<10.0	10.0	06/05/2019	ND					

Surrogate: 1-Chlorooctane 88.5 % 41-142

Surrogate: 1-Chlorooctadecane 85.4 % 37.6-147

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Coley D. Keene, Lab Director/Quality Manager



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Analytical Results For:

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

Received: 06/03/2019
 Reported: 06/10/2019
 Project Name: CROW FED SWD #1
 Project Number: NONE GIVEN
 Project Location: NOT GIVEN

Sampling Date: 06/03/2019
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: BFC # 1 (H901937-08)

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	06/06/2019	ND	2.28	114	2.00	3.69	
Toluene*	<0.050	0.050	06/06/2019	ND	2.29	114	2.00	4.21	
Ethylbenzene*	<0.050	0.050	06/06/2019	ND	2.13	106	2.00	2.62	
Total Xylenes*	<0.150	0.150	06/06/2019	ND	6.39	106	6.00	2.04	
Total BTEX	<0.300	0.300	06/06/2019	ND					

Surrogate: 4-Bromofluorobenzene (PIL) 99.7 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2400	16.0	06/06/2019	ND	432	108	400	7.69	

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	06/05/2019	ND	220	110	200	5.65	
DRO >C10-C28*	<10.0	10.0	06/05/2019	ND	199	99.6	200	7.49	
EXT DRO >C28-C36	<10.0	10.0	06/05/2019	ND					

Surrogate: 1-Chlorooctane 66.6 % 41-142

Surrogate: 1-Chlorooctadecane 63.3 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

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

Received: 06/03/2019
 Reported: 06/10/2019
 Project Name: CROW FED SWD #1
 Project Number: NONE GIVEN
 Project Location: NOT GIVEN

Sampling Date: 06/03/2019
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: BFC # 2 (H901937-09)

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	06/06/2019	ND	2.28	114	2.00	3.69	
Toluene*	<0.050	0.050	06/06/2019	ND	2.29	114	2.00	4.21	
Ethylbenzene*	<0.050	0.050	06/06/2019	ND	2.13	106	2.00	2.62	
Total Xylenes*	<0.150	0.150	06/06/2019	ND	6.39	106	6.00	2.04	
Total BTEX	<0.300	0.300	06/06/2019	ND					

Surrogate: 4-Bromofluorobenzene (PIL) 101 % 73.3-129

Chloride, SM4500CI-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	4880	16.0	06/06/2019	ND	432	108	400	7.69	

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	06/05/2019	ND	220	110	200	5.65	
DRO >C10-C28*	<10.0	10.0	06/05/2019	ND	199	99.6	200	7.49	
EXT DRO >C28-C36	<10.0	10.0	06/05/2019	ND					

Surrogate: 1-Chlorooctane 99.7 % 41-142

Surrogate: 1-Chlorooctadecane 97.0 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

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

Received: 06/03/2019
 Reported: 06/10/2019
 Project Name: CROW FED SWD #1
 Project Number: NONE GIVEN
 Project Location: NOT GIVEN

Sampling Date: 06/03/2019
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: BFC # 3 (H901937-10)

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	06/06/2019	ND	2.28	114	2.00	3.69	
Toluene*	<0.050	0.050	06/06/2019	ND	2.29	114	2.00	4.21	
Ethylbenzene*	<0.050	0.050	06/06/2019	ND	2.13	106	2.00	2.62	
Total Xylenes*	<0.150	0.150	06/06/2019	ND	6.39	106	6.00	2.04	
Total BTEX	<0.300	0.300	06/06/2019	ND					

Surrogate: 4-Bromofluorobenzene (PIC) 99.7 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	48.0	16.0	06/06/2019	ND	432	108	400	7.69	

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	06/05/2019	ND	220	110	200	5.65	
DRO >C10-C28*	<10.0	10.0	06/05/2019	ND	199	99.6	200	7.49	
EXT DRO >C28-C36	<10.0	10.0	06/05/2019	ND					

Surrogate: 1-Chlorooctane 95.1 % 41-142

Surrogate: 1-Chlorooctadecane 93.1 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

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

Received: 06/03/2019
 Reported: 06/10/2019
 Project Name: CROW FED SWD #1
 Project Number: NONE GIVEN
 Project Location: NOT GIVEN

Sampling Date: 06/03/2019
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: BFC # 4 (H901937-11)

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	06/06/2019	ND	2.28	114	2.00	3.69	
Toluene*	<0.050	0.050	06/06/2019	ND	2.29	114	2.00	4.21	
Ethylbenzene*	<0.050	0.050	06/06/2019	ND	2.13	106	2.00	2.62	
Total Xylenes*	<0.150	0.150	06/06/2019	ND	6.39	106	6.00	2.04	
Total BTX	<0.300	0.300	06/06/2019	ND					

Surrogate: 4-Bromofluorobenzene (PIC) 101 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2240	16.0	06/06/2019	ND	432	108	400	7.69	

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	06/05/2019	ND	196	98.0	200	1.36	
DRO >C10-C28*	<10.0	10.0	06/05/2019	ND	194	97.1	200	2.48	
EXT DRO >C28-C36	<10.0	10.0	06/05/2019	ND					

Surrogate: 1-Chlorooctane 90.8 % 41-142

Surrogate: 1-Chlorooctadecane 95.6 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

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

Received: 06/03/2019
 Reported: 06/10/2019
 Project Name: CROW FED SWD #1
 Project Number: NONE GIVEN
 Project Location: NOT GIVEN

Sampling Date: 06/03/2019
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: BFC # 5 (H901937-12)

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	06/06/2019	ND	2.28	114	2.00	3.69	
Toluene*	<0.050	0.050	06/06/2019	ND	2.29	114	2.00	4.21	
Ethylbenzene*	<0.050	0.050	06/06/2019	ND	2.13	106	2.00	2.62	
Total Xylenes*	<0.150	0.150	06/06/2019	ND	6.39	106	6.00	2.04	
Total BTX	<0.300	0.300	06/06/2019	ND					

Surrogate: 4-Bromofluorobenzene (PIE) 101 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1090	16.0	06/06/2019	ND	432	108	400	7.69	

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	06/05/2019	ND	196	98.0	200	1.36	
DRO >C10-C28*	<10.0	10.0	06/05/2019	ND	194	97.1	200	2.48	
EXT DRO >C28-C36	<10.0	10.0	06/05/2019	ND					

Surrogate: 1-Chlorooctane 95.3 % 41-142

Surrogate: 1-Chlorooctadecane 99.0 % 37.6-147

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Coley D. Keene, Lab Director/Quality Manager



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Analytical Results For:

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

Received: 06/03/2019
 Reported: 06/10/2019
 Project Name: CROW FED SWD #1
 Project Number: NONE GIVEN
 Project Location: NOT GIVEN

Sampling Date: 06/03/2019
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: BFC # 6 (H901937-13)

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	06/06/2019	ND	2.28	114	2.00	3.69	
Toluene*	<0.050	0.050	06/06/2019	ND	2.29	114	2.00	4.21	
Ethylbenzene*	<0.050	0.050	06/06/2019	ND	2.13	106	2.00	2.62	
Total Xylenes*	<0.150	0.150	06/06/2019	ND	6.39	106	6.00	2.04	
Total BTEX	<0.300	0.300	06/06/2019	ND					

Surrogate: 4-Bromofluorobenzene (PIE) 101 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2880	16.0	06/06/2019	ND	432	108	400	7.69	

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	06/05/2019	ND	196	98.0	200	1.36	
DRO >C10-C28*	219	10.0	06/05/2019	ND	194	97.1	200	2.48	
EXT DRO >C28-C36	52.4	10.0	06/05/2019	ND					

Surrogate: 1-Chlorooctane 103 % 41-142

Surrogate: 1-Chlorooctadecane 118 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

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

Received: 06/03/2019
 Reported: 06/10/2019
 Project Name: CROW FED SWD #1
 Project Number: NONE GIVEN
 Project Location: NOT GIVEN

Sampling Date: 06/03/2019
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: BFC # 7 (H901937-14)

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	06/06/2019	ND	2.28	114	2.00	3.69	
Toluene*	<0.050	0.050	06/06/2019	ND	2.29	114	2.00	4.21	
Ethylbenzene*	<0.050	0.050	06/06/2019	ND	2.13	106	2.00	2.62	
Total Xylenes*	<0.150	0.150	06/06/2019	ND	6.39	106	6.00	2.04	
Total BTX	<0.300	0.300	06/06/2019	ND					

Surrogate: 4-Bromofluorobenzene (PIL) 101 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	7440	16.0	06/06/2019	ND	432	108	400	7.69	

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	06/05/2019	ND	196	98.0	200	1.36	
DRO >C10-C28*	<10.0	10.0	06/05/2019	ND	194	97.1	200	2.48	
EXT DRO >C28-C36	<10.0	10.0	06/05/2019	ND					

Surrogate: 1-Chlorooctane 93.1 % 41-142

Surrogate: 1-Chlorooctadecane 96.5 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

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

Received: 06/03/2019
 Reported: 06/10/2019
 Project Name: CROW FED SWD #1
 Project Number: NONE GIVEN
 Project Location: NOT GIVEN

Sampling Date: 06/03/2019
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: BFC # 8 (H901937-15)

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	06/06/2019	ND	2.28	114	2.00	3.69	
Toluene*	<0.050	0.050	06/06/2019	ND	2.29	114	2.00	4.21	
Ethylbenzene*	<0.050	0.050	06/06/2019	ND	2.13	106	2.00	2.62	
Total Xylenes*	<0.150	0.150	06/06/2019	ND	6.39	106	6.00	2.04	
Total BTX	<0.300	0.300	06/06/2019	ND					

Surrogate: 4-Bromofluorobenzene (PIC) 103 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	240	16.0	06/06/2019	ND	432	108	400	7.69	

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	06/05/2019	ND	196	98.0	200	1.36	
DRO >C10-C28*	<10.0	10.0	06/05/2019	ND	194	97.1	200	2.48	
EXT DRO >C28-C36	<10.0	10.0	06/05/2019	ND					

Surrogate: 1-Chlorooctane 101 % 41-142

Surrogate: 1-Chlorooctadecane 103 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

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

Received: 06/03/2019
 Reported: 06/10/2019
 Project Name: CROW FED SWD #1
 Project Number: NONE GIVEN
 Project Location: NOT GIVEN

Sampling Date: 06/03/2019
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: BFC # 9 (H901937-16)

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	06/06/2019	ND	2.28	114	2.00	3.69	
Toluene*	<0.050	0.050	06/06/2019	ND	2.29	114	2.00	4.21	
Ethylbenzene*	<0.050	0.050	06/06/2019	ND	2.13	106	2.00	2.62	
Total Xylenes*	<0.150	0.150	06/06/2019	ND	6.39	106	6.00	2.04	
Total BTX	<0.300	0.300	06/06/2019	ND					

Surrogate: 4-Bromofluorobenzene (PIC) 101 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	7120	16.0	06/06/2019	ND	432	108	400	7.69	

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	06/05/2019	ND	196	98.0	200	1.36	
DRO >C10-C28*	<10.0	10.0	06/05/2019	ND	194	97.1	200	2.48	
EXT DRO >C28-C36	<10.0	10.0	06/05/2019	ND					

Surrogate: 1-Chlorooctane 101 % 41-142

Surrogate: 1-Chlorooctadecane 103 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

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

Received: 06/03/2019
 Reported: 06/10/2019
 Project Name: CROW FED SWD #1
 Project Number: NONE GIVEN
 Project Location: NOT GIVEN

Sampling Date: 06/03/2019
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: BFC # 10 (H901937-17)

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	06/06/2019	ND	2.28	114	2.00	3.69	
Toluene*	<0.050	0.050	06/06/2019	ND	2.29	114	2.00	4.21	
Ethylbenzene*	<0.050	0.050	06/06/2019	ND	2.13	106	2.00	2.62	
Total Xylenes*	<0.150	0.150	06/06/2019	ND	6.39	106	6.00	2.04	
Total BTX	<0.300	0.300	06/06/2019	ND					

Surrogate: 4-Bromofluorobenzene (PIE) 101 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	5120	16.0	06/06/2019	ND	432	108	400	7.69	

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	06/05/2019	ND	196	98.0	200	1.36	
DRO >C10-C28*	156	10.0	06/05/2019	ND	194	97.1	200	2.48	
EXT DRO >C28-C36	29.9	10.0	06/05/2019	ND					

Surrogate: 1-Chlorooctane 96.5 % 41-142

Surrogate: 1-Chlorooctadecane 111 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

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

Received: 06/03/2019
 Reported: 06/10/2019
 Project Name: CROW FED SWD #1
 Project Number: NONE GIVEN
 Project Location: NOT GIVEN

Sampling Date: 06/03/2019
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: BFC # 11 (H901937-18)

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	06/06/2019	ND	2.28	114	2.00	3.69	
Toluene*	<0.050	0.050	06/06/2019	ND	2.29	114	2.00	4.21	
Ethylbenzene*	<0.050	0.050	06/06/2019	ND	2.13	106	2.00	2.62	
Total Xylenes*	<0.150	0.150	06/06/2019	ND	6.39	106	6.00	2.04	
Total BTX	<0.300	0.300	06/06/2019	ND					

Surrogate: 4-Bromofluorobenzene (PIE) 101 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	112	16.0	06/06/2019	ND	432	108	400	7.69	

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	06/05/2019	ND	196	98.0	200	1.36	
DRO >C10-C28*	125	10.0	06/05/2019	ND	194	97.1	200	2.48	
EXT DRO >C28-C36	39.2	10.0	06/05/2019	ND					

Surrogate: 1-Chlorooctane 94.8 % 41-142

Surrogate: 1-Chlorooctadecane 108 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

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

Received: 06/03/2019
 Reported: 06/10/2019
 Project Name: CROW FED SWD #1
 Project Number: NONE GIVEN
 Project Location: NOT GIVEN

Sampling Date: 06/03/2019
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: BFC # 12 (H901937-19)

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	06/06/2019	ND	2.28	114	2.00	3.69	
Toluene*	<0.050	0.050	06/06/2019	ND	2.29	114	2.00	4.21	
Ethylbenzene*	<0.050	0.050	06/06/2019	ND	2.13	106	2.00	2.62	
Total Xylenes*	<0.150	0.150	06/06/2019	ND	6.39	106	6.00	2.04	
Total BTX	<0.300	0.300	06/06/2019	ND					

Surrogate: 4-Bromofluorobenzene (PIL) 101 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	06/06/2019	ND	432	108	400	7.69	

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	06/05/2019	ND	196	98.0	200	1.36	
DRO >C10-C28*	12.1	10.0	06/05/2019	ND	194	97.1	200	2.48	
EXT DRO >C28-C36	<10.0	10.0	06/05/2019	ND					

Surrogate: 1-Chlorooctane 94.6 % 41-142

Surrogate: 1-Chlorooctadecane 97.4 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

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

Received: 06/03/2019
 Reported: 06/10/2019
 Project Name: CROW FED SWD #1
 Project Number: NONE GIVEN
 Project Location: NOT GIVEN

Sampling Date: 06/03/2019
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: BFC # 13 (H901937-20)

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	06/07/2019	ND	1.89	94.5	2.00	4.34	
Toluene*	<0.050	0.050	06/07/2019	ND	1.89	94.5	2.00	4.16	
Ethylbenzene*	<0.050	0.050	06/07/2019	ND	1.78	88.8	2.00	5.01	
Total Xylenes*	<0.150	0.150	06/07/2019	ND	5.40	90.0	6.00	5.66	
Total BTX	<0.300	0.300	06/07/2019	ND					

Surrogate: 4-Bromofluorobenzene (PIE) 103 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	48.0	16.0	06/06/2019	ND	432	108	400	7.69	

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	06/05/2019	ND	196	98.0	200	1.36	
DRO >C10-C28*	<10.0	10.0	06/05/2019	ND	194	97.1	200	2.48	
EXT DRO >C28-C36	<10.0	10.0	06/05/2019	ND					

Surrogate: 1-Chlorooctane 109 % 41-142

Surrogate: 1-Chlorooctadecane 114 % 37.6-147

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

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

Received: 06/03/2019
 Reported: 06/10/2019
 Project Name: CROW FED SWD #1
 Project Number: NONE GIVEN
 Project Location: NOT GIVEN

Sampling Date: 06/03/2019
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: BFC # 14 (H901937-21)

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	06/07/2019	ND	1.89	94.5	2.00	4.34	
Toluene*	<0.050	0.050	06/07/2019	ND	1.89	94.5	2.00	4.16	
Ethylbenzene*	<0.050	0.050	06/07/2019	ND	1.78	88.8	2.00	5.01	
Total Xylenes*	<0.150	0.150	06/07/2019	ND	5.40	90.0	6.00	5.66	
Total BTEX	<0.300	0.300	06/07/2019	ND					

Surrogate: 4-Bromofluorobenzene (PIL) 102 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	48.0	16.0	06/06/2019	ND	432	108	400	7.69	

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	06/05/2019	ND	196	98.0	200	1.36	
DRO >C10-C28*	<10.0	10.0	06/05/2019	ND	194	97.1	200	2.48	
EXT DRO >C28-C36	<10.0	10.0	06/05/2019	ND					

Surrogate: 1-Chlorooctane 103 % 41-142

Surrogate: 1-Chlorooctadecane 110 % 37.6-147

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* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

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

Received: 06/03/2019
 Reported: 06/10/2019
 Project Name: CROW FED SWD #1
 Project Number: NONE GIVEN
 Project Location: NOT GIVEN

Sampling Date: 06/03/2019
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: BFC # 15 (H901937-22)

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	06/07/2019	ND	1.89	94.5	2.00	4.34	
Toluene*	<0.050	0.050	06/07/2019	ND	1.89	94.5	2.00	4.16	
Ethylbenzene*	<0.050	0.050	06/07/2019	ND	1.78	88.8	2.00	5.01	
Total Xylenes*	<0.150	0.150	06/07/2019	ND	5.40	90.0	6.00	5.66	
Total BTEX	<0.300	0.300	06/07/2019	ND					

Surrogate: 4-Bromofluorobenzene (PIE) 104 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2000	16.0	06/06/2019	ND	384	96.0	400	0.00	QM-07

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	06/05/2019	ND	196	98.0	200	1.36	
DRO >C10-C28*	<10.0	10.0	06/05/2019	ND	194	97.1	200	2.48	
EXT DRO >C28-C36	<10.0	10.0	06/05/2019	ND					

Surrogate: 1-Chlorooctane 104 % 41-142

Surrogate: 1-Chlorooctadecane 107 % 37.6-147

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*=Accredited Analyte

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Notes and Definitions

- 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

ANALYSIS REQUEST

E-mail Results

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

[illegible]



CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name: <u>Blue Rock</u>				BILL TO				ANALYSIS REQUEST			
Project Manager: <u>Blue Rock</u>				P.O. #:							
Address:				Company:							
City: <u>Hobbs</u>				Attn:							
State: <u>NM</u>				Address:							
Phone #:				City:							
Fax #:				State:							
Project #:				Zip:							
Project Location: <u>Live Red SUD #1</u>				Phone #:							
Sample Name: <u>See Attached</u>				Fax #:							

Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX						DATE	TIME	CL	EXT	TPH	BTEX							
				GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER													ACID/BASE
H901937	BEC #14	G	1							6-3-19	3:00 PM	1	1	1								
22	BEC #15	G	1																			

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Relinquished By: <u>See Attached</u>		Received By: <u>Maura Blauvelt</u>	
Date: <u>6-3-19</u>		Time: <u>10:00</u>	
Relinquished By:		Received By:	
Date:		Time:	

Delivered By: (Circle One) Sample - UPS - Bus - Other: <u>Other</u>	Sample Condition Cool <input checked="" type="checkbox"/> Intact <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	CHECKED BY: (Initials) <u>TS</u>
---	---	--

REMARKS: Email Results



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

July 25, 2017

JENNIFER VAN CUREN

ARCADIS U.S., INC.

2999 OAK ROAD, SUITE 300

WALNUT CREEK, CA 94597

RE: CEDAR LAKE CA 901

Enclosed are the results of analyses for samples received by the laboratory on 07/21/17 12:30.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-16-8. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is 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' at the beginning.

Celey D. Keene

Lab Director/Quality Manager



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

Analytical Results For:

ARCADIS U.S., INC.
 JENNIFER VAN CUREN
 2999 OAK ROAD, SUITE 300
 WALNUT CREEK CA, 94597
 Fax To: NOT GIVEN

Received: 07/21/2017
 Reported: 07/25/2017
 Project Name: CEDAR LAKE CA 901
 Project Number: NONE GIVEN
 Project Location: APACHE - EDDY CO

Sampling Date: 07/21/2017
 Sampling Type: Soil
 Sampling Condition: ** (See Notes)
 Sample Received By: Tamara Oldaker

Sample ID: SP1 0' CALICHE (H701904-01)

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	07/21/2017	ND	1.70	84.9	2.00	0.501	
Toluene*	0.050	0.050	07/21/2017	ND	1.78	89.1	2.00	0.229	
Ethylbenzene*	0.116	0.050	07/21/2017	ND	1.97	98.6	2.00	0.535	
Total Xylenes*	<0.150	0.150	07/21/2017	ND	5.90	98.4	6.00	0.304	
Total BTEX	<0.300	0.300	07/21/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 107 % 72-148

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	16400	16.0	07/24/2017	ND	448	112	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/24/2017	ND	183	91.6	200	1.25	
DRO >C10-C28	94.1	10.0	07/24/2017	ND	189	94.3	200	0.539	

Surrogate: 1-Chlorooctane 87.2 % 28.3-164

Surrogate: 1-Chlorooctadecane 88.5 % 34.7-157

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

ARCADIS U.S., INC.
 JENNIFER VAN CUREN
 2999 OAK ROAD, SUITE 300
 WALNUT CREEK CA, 94597
 Fax To: NOT GIVEN

Received: 07/21/2017
 Reported: 07/25/2017
 Project Name: CEDAR LAKE CA 901
 Project Number: NONE GIVEN
 Project Location: APACHE - EDDY CO

Sampling Date: 07/21/2017
 Sampling Type: Soil
 Sampling Condition: ** (See Notes)
 Sample Received By: Tamara Oldaker

Sample ID: SP1 1' SAND (H701904-02)

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	07/21/2017	ND	1.70	84.9	2.00	0.501	
Toluene*	0.247	0.050	07/21/2017	ND	1.78	89.1	2.00	0.229	
Ethylbenzene*	0.254	0.050	07/21/2017	ND	1.97	98.6	2.00	0.535	
Total Xylenes*	0.263	0.150	07/21/2017	ND	5.90	98.4	6.00	0.304	
Total BTEx	0.764	0.300	07/21/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 106 % 72-148

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	624	16.0	07/24/2017	ND	448	112	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/24/2017	ND	183	91.6	200	1.25	
DRO >C10-C28	<10.0	10.0	07/24/2017	ND	189	94.3	200	0.539	

Surrogate: 1-Chlorooctane 76.6 % 28.3-164

Surrogate: 1-Chlorooctadecane 76.7 % 34.7-157

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

ARCADIS U.S., INC.
 JENNIFER VAN CUREN
 2999 OAK ROAD, SUITE 300
 WALNUT CREEK CA, 94597
 Fax To: NOT GIVEN

Received: 07/21/2017
 Reported: 07/25/2017
 Project Name: CEDAR LAKE CA 901
 Project Number: NONE GIVEN
 Project Location: APACHE - EDDY CO

Sampling Date: 07/21/2017
 Sampling Type: Soil
 Sampling Condition: ** (See Notes)
 Sample Received By: Tamara Oldaker

Sample ID: SP2 0' CALICHE (H701904-03)

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	07/21/2017	ND	1.70	84.9	2.00	0.501	
Toluene*	0.579	0.050	07/21/2017	ND	1.78	89.1	2.00	0.229	
Ethylbenzene*	1.33	0.050	07/21/2017	ND	1.97	98.6	2.00	0.535	
Total Xylenes*	1.65	0.150	07/21/2017	ND	5.90	98.4	6.00	0.304	
Total BTX	3.56	0.300	07/21/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 110 % 72-148

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	10000	16.0	07/24/2017	ND	448	112	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	40.1	10.0	07/24/2017	ND	183	91.6	200	1.25	
DRO >C10-C28	333	10.0	07/24/2017	ND	189	94.3	200	0.539	

Surrogate: 1-Chlorooctane 89.2 % 28.3-164

Surrogate: 1-Chlorooctadecane 95.7 % 34.7-157

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

ARCADIS U.S., INC.
 JENNIFER VAN CUREN
 2999 OAK ROAD, SUITE 300
 WALNUT CREEK CA, 94597
 Fax To: NOT GIVEN

Received: 07/21/2017
 Reported: 07/25/2017
 Project Name: CEDAR LAKE CA 901
 Project Number: NONE GIVEN
 Project Location: APACHE - EDDY CO

Sampling Date: 07/21/2017
 Sampling Type: Soil
 Sampling Condition: ** (See Notes)
 Sample Received By: Tamara Oldaker

Sample ID: SP2 1' SAND (H701904-04)

BTEx 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	07/21/2017	ND	1.70	84.9	2.00	0.501		
Toluene*	<0.050	0.050	07/21/2017	ND	1.78	89.1	2.00	0.229		
Ethylbenzene*	<0.050	0.050	07/21/2017	ND	1.97	98.6	2.00	0.535		
Total Xylenes*	<0.150	0.150	07/21/2017	ND	5.90	98.4	6.00	0.304		
Total BTEx	<0.300	0.300	07/21/2017	ND						

Surrogate: 4-Bromofluorobenzene (PID) 106 % 72-148

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	1120	16.0	07/24/2017	ND	448	112	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/24/2017	ND	190	95.0	200	0.548	
DRO >C10-C28	63.4	10.0	07/24/2017	ND	199	99.5	200	1.17	

Surrogate: 1-Chlorooctane 93.5 % 28.3-164

Surrogate: 1-Chlorooctadecane 94.8 % 34.7-157

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

ARCADIS U.S., INC.
 JENNIFER VAN CUREN
 2999 OAK ROAD, SUITE 300
 WALNUT CREEK CA, 94597
 Fax To: NOT GIVEN

Received: 07/21/2017
 Reported: 07/25/2017
 Project Name: CEDAR LAKE CA 901
 Project Number: NONE GIVEN
 Project Location: APACHE - EDDY CO

Sampling Date: 07/21/2017
 Sampling Type: Soil
 Sampling Condition: ** (See Notes)
 Sample Received By: Tamara Oldaker

Sample ID: SP3 0' SAND (H701904-05)

BTEx 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	6.45	5.00	07/21/2017	ND	1.70	84.9	2.00	0.501	
Toluene*	140	5.00	07/21/2017	ND	1.78	89.1	2.00	0.229	
Ethylbenzene*	213	5.00	07/21/2017	ND	1.97	98.6	2.00	0.535	
Total Xylenes*	224	15.0	07/21/2017	ND	5.90	98.4	6.00	0.304	
Total BTEX	583	30.0	07/21/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 108 % 72-148

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	9200	16.0	07/24/2017	ND	448	112	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					S-06	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	2690	50.0	07/24/2017	ND	190	95.0	200	0.548		
DRO >C10-C28	10700	50.0	07/24/2017	ND	199	99.5	200	1.17		

Surrogate: 1-Chlorooctane 165 % 28.3-164

Surrogate: 1-Chlorooctadecane 247 % 34.7-157

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

ARCADIS U.S., INC.
 JENNIFER VAN CUREN
 2999 OAK ROAD, SUITE 300
 WALNUT CREEK CA, 94597
 Fax To: NOT GIVEN

Received: 07/21/2017
 Reported: 07/25/2017
 Project Name: CEDAR LAKE CA 901
 Project Number: NONE GIVEN
 Project Location: APACHE - EDDY CO

Sampling Date: 07/21/2017
 Sampling Type: Soil
 Sampling Condition: ** (See Notes)
 Sample Received By: Tamara Oldaker

Sample ID: SP3 1' SAND (H701904-06)

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	07/21/2017	ND	1.70	84.9	2.00	0.501	
Toluene*	0.079	0.050	07/21/2017	ND	1.78	89.1	2.00	0.229	
Ethylbenzene*	0.088	0.050	07/21/2017	ND	1.97	98.6	2.00	0.535	
Total Xylenes*	<0.150	0.150	07/21/2017	ND	5.90	98.4	6.00	0.304	
Total BTEX	<0.300	0.300	07/21/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 105 % 72-148

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	4560	16.0	07/24/2017	ND	448	112	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/24/2017	ND	190	95.0	200	0.548	
DRO >C10-C28	16.0	10.0	07/24/2017	ND	199	99.5	200	1.17	

Surrogate: 1-Chlorooctane 93.1 % 28.3-164

Surrogate: 1-Chlorooctadecane 93.5 % 34.7-157

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

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

Notes and Definitions

S-06	The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

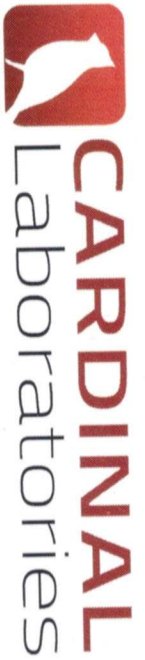
Cardinal Laboratories

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A handwritten signature in black ink, appearing to read "Celey D. Keene".

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

Company Name: <u>Cardinal</u>		P.O. #:		BILL TO		ANALYSIS REQUEST																			
Project Manager: <u>Joseph K. Lueven</u>		Company: <u>Apacety</u>																							
Address:		Attn: <u>Bruce</u>																							
City:		Address:																							
Phone #:		City:																							
Project #:		State:		Zip:																					
Project Name: <u>Ledger Lake C&A 901</u>		State:		Zip:																					
Project Location: <u>Ledger County</u>		Phone #:																							
Sample Name: <u>Sample 1</u>		Fax #:																							
FOR LAB USE ONLY																									
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.		# CONTAINERS		MATRIX		PRESERV.		SAMPLING															
						GROUNDWATER WASTEWATER SOIL OIL SLUDGE OTHER :		ACID/BASE: ICE / COOL OTHER :		DATE		TIME													
<u>#101904</u>	<u>SQ10' Paleio</u>	<u>1</u>		<u>1</u>		<u>XXXX</u>		<u>XXXX</u>		<u>12/1/17</u>		<u>11:20</u>		<u>TPH</u>											
<u>2</u>	<u>SQ11' Sand</u>	<u>1</u>		<u>1</u>		<u>XXXX</u>		<u>XXXX</u>		<u>11:20</u>		<u>11:20</u>		<u>BTEX</u>											
<u>3</u>	<u>SQ2 0' Paleio</u>	<u>1</u>		<u>1</u>		<u>XXXX</u>		<u>XXXX</u>		<u>11:22</u>		<u>11:22</u>		<u>Chloride</u>											
<u>4</u>	<u>SQ2 1' Sand</u>	<u>1</u>		<u>1</u>		<u>XXXX</u>		<u>XXXX</u>		<u>11:24</u>		<u>11:24</u>													
<u>5</u>	<u>SQ3 0' Sand</u>	<u>1</u>		<u>1</u>		<u>XXXX</u>		<u>XXXX</u>		<u>11:24</u>		<u>11:24</u>													
<u>6</u>	<u>SQ3 1' Sand</u>	<u>1</u>		<u>1</u>		<u>XXXX</u>		<u>XXXX</u>		<u>11:24</u>		<u>11:24</u>													
Relinquished By: <u>Churche</u>		Date: <u>12/1/17</u>		Time: <u>12:20</u>		Received By: <u>Joseph K. Lueven</u>		Date: <u>12-1-17</u>		Time: <u>12:30</u>		Sample Condition: <u>Cool</u>		CHECKED BY: <u>12-1-17</u>											
Delivered By: (Circle One) <u>UPS</u>		Date: <u>12-1-17</u>		Time: <u>12:30</u>		Sample Condition: <u>Cool</u>		CHECKED BY: <u>12-1-17</u>		Time: <u>12:30</u>		Sample Condition: <u>Cool</u>		CHECKED BY: <u>12-1-17</u>											
Sampler - UPS - Bus - Other: <u>UPS</u>		Date: <u>12-1-17</u>		Time: <u>12:30</u>		Sample Condition: <u>Cool</u>		CHECKED BY: <u>12-1-17</u>		Time: <u>12:30</u>		Sample Condition: <u>Cool</u>		CHECKED BY: <u>12-1-17</u>											
REMARKS: <u>Brought straight to lab from field</u>		Phone Result: <input type="checkbox"/> Yes <input type="checkbox"/> No		Add'l Phone #:		Fax Result: <input type="checkbox"/> Yes <input type="checkbox"/> No		Add'l Fax #:																	

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



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

October 09, 2020

BRUCE BAKER

APACHE CORP - HOBBS

2350 W. MARLAND BLVD.

HOBBS, NM 88240

RE: CEDAR LAKE FED COM #901

Enclosed are the results of analyses for samples received by the laboratory on 10/08/20 15:15.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-20-13. 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



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

Analytical Results For:

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

Received:	10/08/2020	Sampling Date:	10/08/2020
Reported:	10/09/2020	Sampling Type:	Soil
Project Name:	CEDAR LAKE FED COM #901	Sampling Condition:	Cool & Intact
Project Number:	CEDAR LAKE 901H	Sample Received By:	Tamara Oldaker
Project Location:	NOT GIVEN		

Sample ID: B 1 @ SURFACE (H002686-01)

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	10/08/2020	ND	1.97	98.5	2.00	0.824	
Toluene*	<0.050	0.050	10/08/2020	ND	2.00	100	2.00	2.09	
Ethylbenzene*	<0.050	0.050	10/08/2020	ND	1.92	95.9	2.00	1.83	
Total Xylenes*	<0.150	0.150	10/08/2020	ND	5.58	93.0	6.00	0.485	
Total BTX	<0.300	0.300	10/08/2020	ND					

Surrogate: 4-Bromofluorobenzene (PID) 95.9 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	80.0	16.0	10/09/2020	ND	416	104	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS				S-04	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	10/09/2020	ND	203	101	200	5.93	
DRO >C10-C28*	549	10.0	10/09/2020	ND	202	101	200	11.0	
EXT DRO >C28-C36	128	10.0	10/09/2020	ND					

Surrogate: 1-Chlorooctane 124 % 44.3-144

Surrogate: 1-Chlorooctadecane 158 % 42.2-156

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

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

Received:	10/08/2020	Sampling Date:	10/08/2020
Reported:	10/09/2020	Sampling Type:	Soil
Project Name:	CEDAR LAKE FED COM #901	Sampling Condition:	Cool & Intact
Project Number:	CEDAR LAKE 901H	Sample Received By:	Tamara Oldaker
Project Location:	NOT GIVEN		

Sample ID: B 2 @ SURFACE (H002686-02)

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	10/08/2020	ND	1.97	98.5	2.00	0.824		
Toluene*	<0.050	0.050	10/08/2020	ND	2.00	100	2.00	2.09		
Ethylbenzene*	<0.050	0.050	10/08/2020	ND	1.92	95.9	2.00	1.83		
Total Xylenes*	<0.150	0.150	10/08/2020	ND	5.58	93.0	6.00	0.485		
Total BTEx	<0.300	0.300	10/08/2020	ND						

Surrogate: 4-Bromofluorobenzene (PID) 96.4 % 73.3-129

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	592	16.0	10/09/2020	ND	416	104	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	10/09/2020	ND	203	101	200	5.93	
DRO >C10-C28*	15.0	10.0	10/09/2020	ND	202	101	200	11.0	
EXT DRO >C28-C36	<10.0	10.0	10/09/2020	ND					

Surrogate: 1-Chlorooctane 112 % 44.3-144

Surrogate: 1-Chlorooctadecane 122 % 42.2-156

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

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

Received:	10/08/2020	Sampling Date:	10/08/2020
Reported:	10/09/2020	Sampling Type:	Soil
Project Name:	CEDAR LAKE FED COM #901	Sampling Condition:	Cool & Intact
Project Number:	CEDAR LAKE 901H	Sample Received By:	Tamara Oldaker
Project Location:	NOT GIVEN		

Sample ID: B 3 @ SURFACE (H002686-03)

BTEx 8021B		mg/kg		Analyzed By: ms						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	10/08/2020	ND	1.97	98.5	2.00	0.824		
Toluene*	<0.050	0.050	10/08/2020	ND	2.00	100	2.00	2.09		
Ethylbenzene*	<0.050	0.050	10/08/2020	ND	1.92	95.9	2.00	1.83		
Total Xylenes*	<0.150	0.150	10/08/2020	ND	5.58	93.0	6.00	0.485		
Total BTEx	<0.300	0.300	10/08/2020	ND						

Surrogate: 4-Bromofluorobenzene (PID) 99.6 % 73.3-129

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	224	16.0	10/09/2020	ND	416	104	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	10/09/2020	ND	203	101	200	5.93	
DRO >C10-C28*	<10.0	10.0	10/09/2020	ND	202	101	200	11.0	
EXT DRO >C28-C36	<10.0	10.0	10/09/2020	ND					

Surrogate: 1-Chlorooctane 118 % 44.3-144

Surrogate: 1-Chlorooctadecane 126 % 42.2-156

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

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

Notes and Definitions

S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
QR-03	The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories

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A handwritten signature in black ink, appearing to read "Celey D. Keene".

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

[illegible]



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

October 16, 2020

BRUCE BAKER

APACHE CORP - HOBBS

2350 W. MARLAND BLVD.

HOBBS, NM 88240

RE: CEDAR LAKE 901H

Enclosed are the results of analyses for samples received by the laboratory on 10/15/20 16:21.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-20-13. 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 "Mike Snyder". The signature is fluid and cursive, with the first name "Mike" and last name "Snyder" clearly distinguishable.

Mike Snyder For Celey D. Keene

Lab Director/Quality Manager



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

Analytical Results For:

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

Received: 10/15/2020
 Reported: 10/16/2020
 Project Name: CEDAR LAKE 901H
 Project Number: NONE GIVEN
 Project Location: NOT GIVEN

Sampling Date: 10/15/2020
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: W 1 (H002751-01)

BTEX 8021B		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	0.126	0.050	10/16/2020	ND	1.92	96.2	2.00	2.84	
Toluene*	0.339	0.050	10/16/2020	ND	1.97	98.4	2.00	1.51	
Ethylbenzene*	0.066	0.050	10/16/2020	ND	1.89	94.5	2.00	1.49	
Total Xylenes*	<0.150	0.150	10/16/2020	ND	5.40	90.0	6.00	3.33	
Total BTEX	0.661	0.300	10/16/2020	ND					

Surrogate: 4-Bromofluorobenzene (PID) 97.4 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	16.0	16.0	10/16/2020	ND	416	104	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	10/16/2020	ND	227	113	200	3.72	
DRO >C10-C28*	<10.0	10.0	10/16/2020	ND	219	110	200	1.25	
EXT DRO >C28-C36	<10.0	10.0	10/16/2020	ND					

Surrogate: 1-Chlorooctane 87.5 % 44.3-144

Surrogate: 1-Chlorooctadecane 85.7 % 42.2-156

Cardinal Laboratories

*=Accredited Analyte

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

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

Received: 10/15/2020
 Reported: 10/16/2020
 Project Name: CEDAR LAKE 901H
 Project Number: NONE GIVEN
 Project Location: NOT GIVEN

Sampling Date: 10/15/2020
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: W 2 (H002751-02)

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	10/16/2020	ND	1.92	96.2	2.00	2.84	
Toluene*	<0.050	0.050	10/16/2020	ND	1.97	98.4	2.00	1.51	
Ethylbenzene*	<0.050	0.050	10/16/2020	ND	1.89	94.5	2.00	1.49	
Total Xylenes*	<0.150	0.150	10/16/2020	ND	5.40	90.0	6.00	3.33	
Total BTX	<0.300	0.300	10/16/2020	ND					

Surrogate: 4-Bromofluorobenzene (PID) 98.4 % 73.3-129

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	32.0	16.0	10/16/2020	ND	416	104	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	10/16/2020	ND	227	113	200	3.72	
DRO >C10-C28*	11.4	10.0	10/16/2020	ND	219	110	200	1.25	
EXT DRO >C28-C36	<10.0	10.0	10/16/2020	ND					

Surrogate: 1-Chlorooctane 83.3 % 44.3-144

Surrogate: 1-Chlorooctadecane 81.0 % 42.2-156

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

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

Received: 10/15/2020
 Reported: 10/16/2020
 Project Name: CEDAR LAKE 901H
 Project Number: NONE GIVEN
 Project Location: NOT GIVEN

Sampling Date: 10/15/2020
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: W 3 (H002751-03)

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	10/16/2020	ND	1.92	96.2	2.00	2.84	
Toluene*	<0.050	0.050	10/16/2020	ND	1.97	98.4	2.00	1.51	
Ethylbenzene*	<0.050	0.050	10/16/2020	ND	1.89	94.5	2.00	1.49	
Total Xylenes*	<0.150	0.150	10/16/2020	ND	5.40	90.0	6.00	3.33	
Total BTX	<0.300	0.300	10/16/2020	ND					

Surrogate: 4-Bromofluorobenzene (PID) 102 % 73.3-129

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	16.0	16.0	10/16/2020	ND	416	104	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	10/16/2020	ND	212	106	200	0.436	
DRO >C10-C28*	<10.0	10.0	10/16/2020	ND	217	109	200	1.07	
EXT DRO >C28-C36	<10.0	10.0	10/16/2020	ND					

Surrogate: 1-Chlorooctane 91.6 % 44.3-144

Surrogate: 1-Chlorooctadecane 101 % 42.2-156

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

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

Received: 10/15/2020
 Reported: 10/16/2020
 Project Name: CEDAR LAKE 901H
 Project Number: NONE GIVEN
 Project Location: NOT GIVEN

Sampling Date: 10/15/2020
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: W 4 (H002751-04)

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	10/16/2020	ND	1.92	96.2	2.00	2.84	
Toluene*	<0.050	0.050	10/16/2020	ND	1.97	98.4	2.00	1.51	
Ethylbenzene*	<0.050	0.050	10/16/2020	ND	1.89	94.5	2.00	1.49	
Total Xylenes*	<0.150	0.150	10/16/2020	ND	5.40	90.0	6.00	3.33	
Total BTX	<0.300	0.300	10/16/2020	ND					

Surrogate: 4-Bromofluorobenzene (PID) 99.1 % 73.3-129

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	<16.0	16.0	10/16/2020	ND	416	104	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	10/16/2020	ND	212	106	200	0.436	
DRO >C10-C28*	<10.0	10.0	10/16/2020	ND	217	109	200	1.07	
EXT DRO >C28-C36	<10.0	10.0	10/16/2020	ND					

Surrogate: 1-Chlorooctane 91.7 % 44.3-144

Surrogate: 1-Chlorooctadecane 102 % 42.2-156

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

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

Received: 10/15/2020
 Reported: 10/16/2020
 Project Name: CEDAR LAKE 901H
 Project Number: NONE GIVEN
 Project Location: NOT GIVEN

Sampling Date: 10/15/2020
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: B 1 @ 4' (H002751-05)

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	10/16/2020	ND	1.92	96.2	2.00	2.84		
Toluene*	<0.050	0.050	10/16/2020	ND	1.97	98.4	2.00	1.51		
Ethylbenzene*	<0.050	0.050	10/16/2020	ND	1.89	94.5	2.00	1.49		
Total Xylenes*	<0.150	0.150	10/16/2020	ND	5.40	90.0	6.00	3.33		
Total BTX	<0.300	0.300	10/16/2020	ND						

Surrogate: 4-Bromofluorobenzene (PID) 97.1 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	32.0	16.0	10/16/2020	ND	416	104	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	10/16/2020	ND	212	106	200	0.436	
DRO >C10-C28*	21.2	10.0	10/16/2020	ND	217	109	200	1.07	
EXT DRO >C28-C36	<10.0	10.0	10/16/2020	ND					

Surrogate: 1-Chlorooctane 93.8 % 44.3-144

Surrogate: 1-Chlorooctadecane 108 % 42.2-156

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager



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

Notes and Definitions

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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A handwritten signature in black ink, appearing to read "Mike Snyder".

Mike Snyder For 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

Company Name: APACHE Coalbedded

Project Manager: Grace Baker

Address:

City: State: Zip:

Phone #: Fax #: Project Owner:

Project #: Project Name: CEDAK LAKE 901H

Project Location: CEDAK LAKE 901H

Sampler Name: Jeff Brown

FOR LAB USE ONLY

Lab I.D. Sample I.D.

H002751
1 W1
2 W2
3 W3
4 W4
5 BL04'

(G)RAB OR (C)OMP.

CONTAINERS

GROUNDWATER

WASTEWATER

SOIL

OIL

SLUDGE

OTHER :

ACID/BASE:

ICE / COOL

OTHER :

DATE

TIME

10/15/20 1030

1032

1034

1036

1040

CL-

3TEX

EXT.TPH

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Relinquished By:

Date: 10/15/20 Received By: Shawana Williams

Verbal Result: ☐ Yes ☐ No Add'l Phone #:

Relinquished By: Jeff Brown

Date: 10/15/20 Received By: Shawana Williams

Verbal Result: ☐ Yes ☐ No Add'l Phone #:

Time:

Time:

Turnaround Time:

Standard ☐ Rush ☒

Bacteria (only) ☐

Sample Condition

Observed Temp. °C

Corrected Temp. °C

Delivered By: (Circle One)

Observed Temp. °C 30

Sample Condition

CHECKED BY: (Initials)

Thermometer ID # 997

Correction Factor 10/15/20

Corrected Temp. °C

Observed Temp. °C

Corrected Temp. °C

Corrected Temp. °C

FORM 008-R-20

† Cardinal cannot accept verbal changes. Please email changes to celey.keene@cardinallabsnm.com

Crow Federal SWD # 001 (GPS 32.85386 -103.86825) Photos



Photo of excavation facing southwest 11/15/2018



Photo of excavation facing south 11/15/2018



Photo of excavation facing east 11/15/2018



Photo of excavation facing south west 11/15/2018



Photo of the excavation facing south 11/15/2018

Crow Federal Photo Page







June 3 2019 Crow Fed SWD #1 well sample lamps 17

WC #1 @ 1' 32.8538156 - 103.8684553

11.2/30.2 1.30 2.69 = 3495 x

WC #2 @ 1' 32.8535280 - 103.8685734

11.3/30.2 0.23 2.67 = 613 x

WC #3 @ 1' 32.8934464 - 103.8684475

11.0/30.1 0.55 2.73 = 1501 x

WC #4 @ 1' 32.8532957 - 103.8682216

11.0/30.0 1.70 2.72 = 4622 x

WC #5 @ 1' 32.8536164 - 103.8683688

11.1/30.1 greater 2.0 2.71 = x

WC #6 @ 6" 32.8540038 - 103.8683175

11.2/30.1 1.74 2.68 = 4461 x

WC #4 Island 32.8536959 - 103.8683138

11.0/30.2 0.75 2.74 = 2054 x

Flow

BFC #9 32.8535075 - 103.8684745

BFC #10 32.8534880 - 103.8683111

BFC #11 32.8533509 - 103.8682223

BFC #12 32.8533537 - 103.8682755

BFC #13 32.8535044 - 103.8687164

BFC #14 32.8534940 - 103.8689049

BFC #15 32.8535275 - 103.8688720

BFC #8 32.85348, -103.86857

BFC #7 ~~32.85337~~ 32.83537, -103.86847

BFC #6 32.85355, -103.86836

BFC #5 32.85362, -103.86841

~~BFC 5 32.85368, -103.86841~~

BFC 4 32.85371, -103.86834

BFC 3 32.85375, -103.86824

BFC 2 32.85377, -103.86831

BFC 1 32.85381, -103.86821

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 10851

CONDITIONS

Operator: APACHE CORPORATION 303 Veterans Airpark Ln Midland, TX 79705	OGRID: 873
	Action Number: 10851
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
bhall	None	9/15/2022