



2350 W Marland Blvd Hobbs, NM 88240

### **Closure Report**

October 8, 2019

Re: Geronimo 28 State # 2 SWD  
API# 30-015-40876  
Case # 2RP-4977

To: Robert Hamlet  
Environmental Specialist-New Mexico Oil Conservation Division Energy, Minerals and  
Natural Resources Department 811 S. 1<sup>st</sup> Street Artesia, NM 88210

On 9/10/2018 a release occurred due to a hole developed on a 4 inch transition. An initial C-141 was submitted to NMOCD and approved on 9/20/2018. The release is located east of Artesia New Mexico (GPS Coordinates 32.80423 -104.17411) in unit letter I section 28 township 17S range 28E. A groundwater survey was conducted utilizing USGS and NMOSE well search in the area which indicates an average depth of groundwater below the release at 157 feet. In the remediation plan submitted to NMOCD Apache Corporation stated in error that the release was in an area of high karst. Attached is the release on the BLM Karst map demonstrating the release is in an area of low karst. Apache Corporation request with this new data that the closure requirements be adjusted from table one standards of less than 50 feet to the closure requirements for releases over 100 feet to ground water.

On 6/3/2019 final 5 point bottom composite samples were collected and submitted to a commercial laboratory for analysis of chloride, TPH, and BTEX. All laboratory results are below table one standards for sites over 100 feet to ground water. Apache Corporation respectfully request that 2RP-4977 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**  
**Off# 575-393-7106**

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

State of New Mexico  
Energy Minerals and Natural  
Resources Department

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

Form C-141  
Revised August 24, 2018  
Submit to appropriate OCD District office

Incident ID	NMAP1826375984
District RP	2RP-4977
Facility ID	N/A
Application ID	pMAP1826375677

## Release Notification

### Responsible Party

Responsible Party	Apache Corp.	OGRID	873
Contact Name	Bruce Baker	Contact Telephone	432-631-6982
Contact email	larry.baker@apachecorp.com	Incident # (assigned by OCD)	NMAP1826375984
Contact mailing address	2350 W. Marland BLVD Hobbs, NM 88240		

### Location of Release Source

Latitude 32.80424 Longitude -104.22689  
(\ ID #) in decimal degrees to 3 decimal places)

Site Name	Gerónimo 28 State #2 SWD	Site Type	SWD
Date Release Discovered	9/10/18	API# (if applicable)	30-015-40876

Unit Letter	Section	Township	Range	County
I	28	17S	28E	Eddy

Surface Owner:  State  Federal  Tribal  Private (Name \_\_\_\_\_)

### Nature and Volume of Release

Material(s) Released (Select all that apply and attach calculations or specific justification for the volumes provided below)

<input type="checkbox"/> Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
<input checked="" type="checkbox"/> Produced Water	Volume Released (bbls) <u>24 barrels</u>	Volume Recovered (bbls) <u>10 barrels</u>
	Is the concentration of total dissolved solids (TDS) in the produced water > 10,000 mg/l?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> Condensate	Volume Released (bbls)	Volume Recovered (bbls)
<input type="checkbox"/> Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
<input type="checkbox"/> Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release

A 4" transition developed a hole.

Incident ID	NMAP1826375884
District RP	2RP-4977
Facility ID	
Application ID	pMAP1826375677

Was this a major release as defined by 19.15.29.7(A) NMAC? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, for what reason(s) does the responsible party consider this a major release?
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?	

### Initial Response

*The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury*

<input checked="" type="checkbox"/> The source of the release has been stopped. <input checked="" type="checkbox"/> The impacted area has been secured to protect human health and the environment. <input checked="" type="checkbox"/> Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices. <input checked="" type="checkbox"/> All free liquids and recoverable materials have been removed and managed appropriately.
If all the actions described above have <u>not</u> been undertaken, explain why:  
Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.
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: <u>Bruce Baker</u> Title: <u>Environmental Tech. SR</u>
Signature: <u>Bruce Baker</u> Date: <u>9/18/18</u>
email: <u><del>apachecorp.com</del> larry.baker@apachecorp.com</u> Telephone: <u>432-631-6922</u>
<b>OCD Only</b> Received by: <u></u> Date: <u>09/20/18</u>

### Volume Calculation

$$240 \text{ ft}^3 \times 7.48 = 1,795 \text{ gal} / 42 = 42 \text{ bbls} \times .33 \text{ soil porosity} = 14 \text{ barrels} + 10 \text{ recover}$$

$$= 24 \text{ barrels total}$$

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>157</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 checked="" type="checkbox"/> Yes <input 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 type="checkbox"/> Yes <input checked="" 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 1/2-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 I of 19.15.29.12 NMAC, however, use of the table is modified by site- and release-specific parameters.

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: Bruce BAKER Title: Environmental Tech. SR  
Signature: Bruce Baker Date: 12-6-18  
email: larry.baker@apachecorp.com Telephone: 432-631-6982

OCD Only

Received by: \_\_\_\_\_ Date: \_\_\_\_\_

Incident ID	
District RP	
Facility ID	
Application ID	

## Remediation Plan

**Remediation Plan Checklist:** Each of the following items must be included in the plan.

- Detailed description of proposed remediation technique
- Scaled sitemap with GPS coordinates showing delineation points
- Estimated volume of material to be remediated
- Closure criteria is to Table 1 specifications subject to 19.15.29.12(C)(4) NMAC
- Proposed schedule for remediation (note if remediation plan timeline is more than 90 days OCD approval is required)

**Deferral Requests Only:** Each of the following items must be confirmed as part of any request for deferral of remediation.

- Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.
- Extents of contamination must be fully delineated.
- Contamination does not cause an imminent risk to human health, the environment, or groundwater.

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: Bruce Baker Title: Environmental Tech. SR  
Signature: Bruce Baker Date: 12-5-18  
email: larry.baker@apachecorp.com Telephone: 432-631-6982

**OCD Only**

Received by: \_\_\_\_\_ Date: \_\_\_\_\_

- Approved       Approved with Attached Conditions of Approval       Denied       Deferral Approved

Signature: \_\_\_\_\_ 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: Bruce Baker Title: Environmental Tech SR.  
 Signature: Bruce Baker Date: 10/8/19  
 email: larry.baker@apachecorp.com Telephone: 482-631-6982

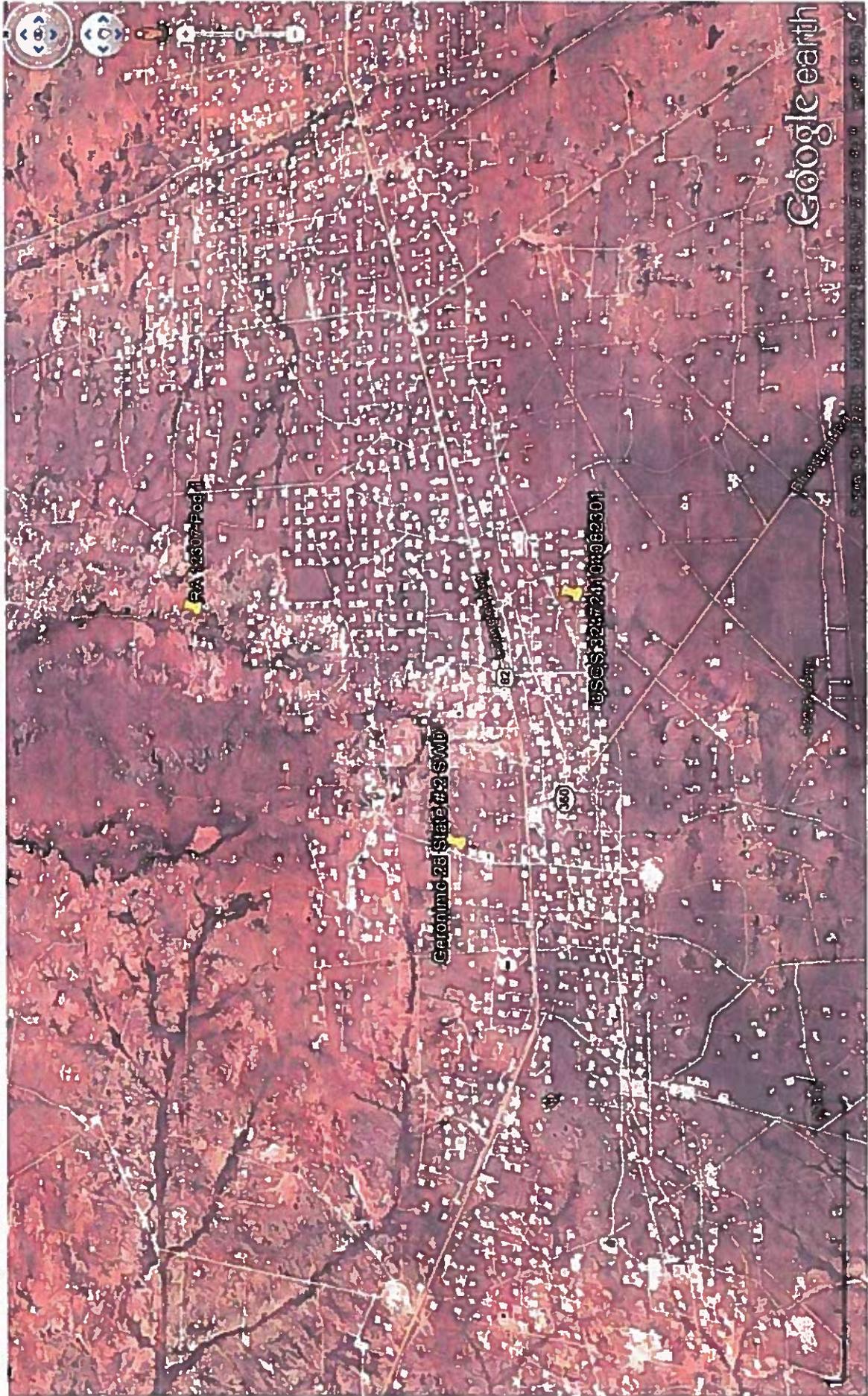
**OCD Only**

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: \_\_\_\_\_ Date: \_\_\_\_\_

Printed Name: \_\_\_\_\_ Title: \_\_\_\_\_



PA 25077Pod

Celomic 25 (State #2 SWB)

PA 25077Pod

PSQS 323720100062301

140

Google earth



USGS Home  
Contact USGS  
Search USGS

### National Water Information System: Web Interface

[USGS Water Resources](#)

Data Category:

Groundwater

Geographic Area:

New Mexico

GO

Click to hide News Bulletins

- [Please see news on new formats](#)
- [Full News](#)

Groundwater levels for New Mexico

Click to hide state-specific text

### Search Results -- 1 sites found

Agency code = usgs

site\_no list =

- 324724104082301

Minimum number of levels = 1

[Save file of selected sites](#) to local disk for future upload

### USGS 324724104082301 17S.28E.35.42233

Available data for this site

Groundwater: Field measurements

GO

Eddy County, New Mexico

Hydrologic Unit Code 13060011

Latitude 32°47'24", Longitude 104°08'23" NAD27

Land-surface elevation 3,659 feet above NGVD29

The depth of the well is 280.00 feet below land surface.

This well is completed in the Rustler Formation (312RSLR) local aquifer.

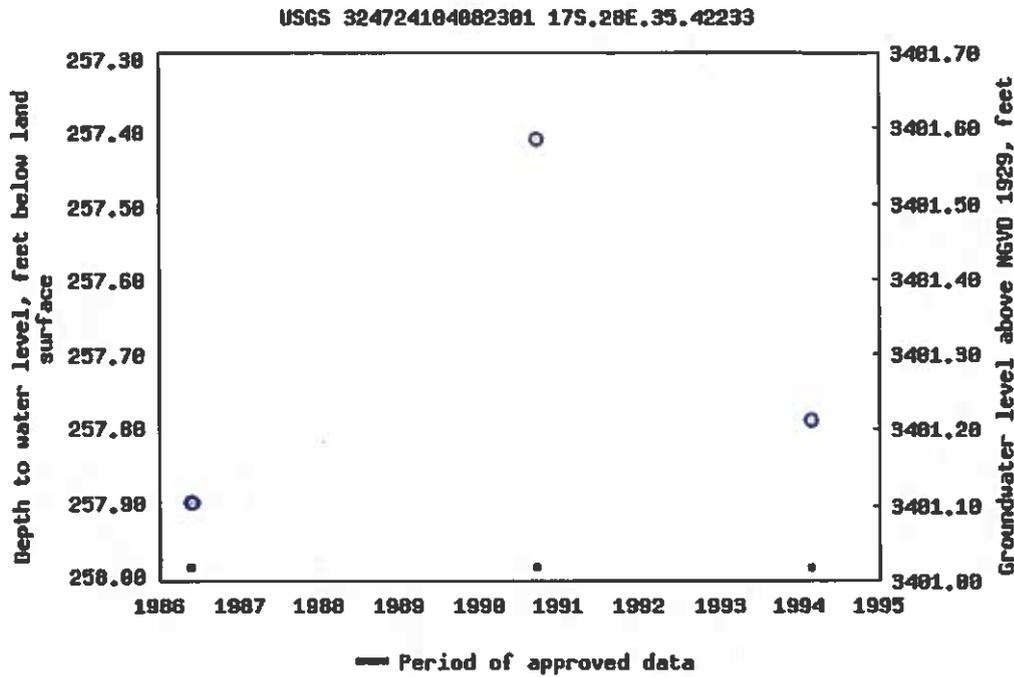
#### Output formats

[Table of data](#)

[Tab-separated data](#)

[Graph of data](#)

[Reselect period](#)



Breaks in the plot represent a gap of at least one year between field measurements.

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**Title: Groundwater for New Mexico: Water Levels**

**URL: <https://nwis.waterdata.usgs.gov/nm/nwis/gwlevels?>**



Page Contact Information: [New Mexico Water Data Maintainer](#)

Page Last Modified: 2018-12-03 16:31:20 EST

1.05 0.92 nadww01



## New Mexico Office of the State Engineer Water Column/Average Depth to Water

(A CLW#### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced,  
O=orphaned,  
C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are smallest to largest) (NAD83 UTM in meters)

(In feet)

POD Number	POD Code	Sub-basin	County	Q 64	Q 15	Q 4	Sec	Twa	Rng	X	Y	Distance	Depth Well	Depth Water Column
<a href="#">RA 12307</a>	POD1		ED	4	2	2	14	17S	28E	580495	3633981	3792	140	58 82

Average Depth to Water: 58 feet

Minimum Depth: 58 feet

Maximum Depth: 58 feet

**Record Count:** 1

**UTM NAD83 Radius Search (in meters):**

**Easting (X):** 577879

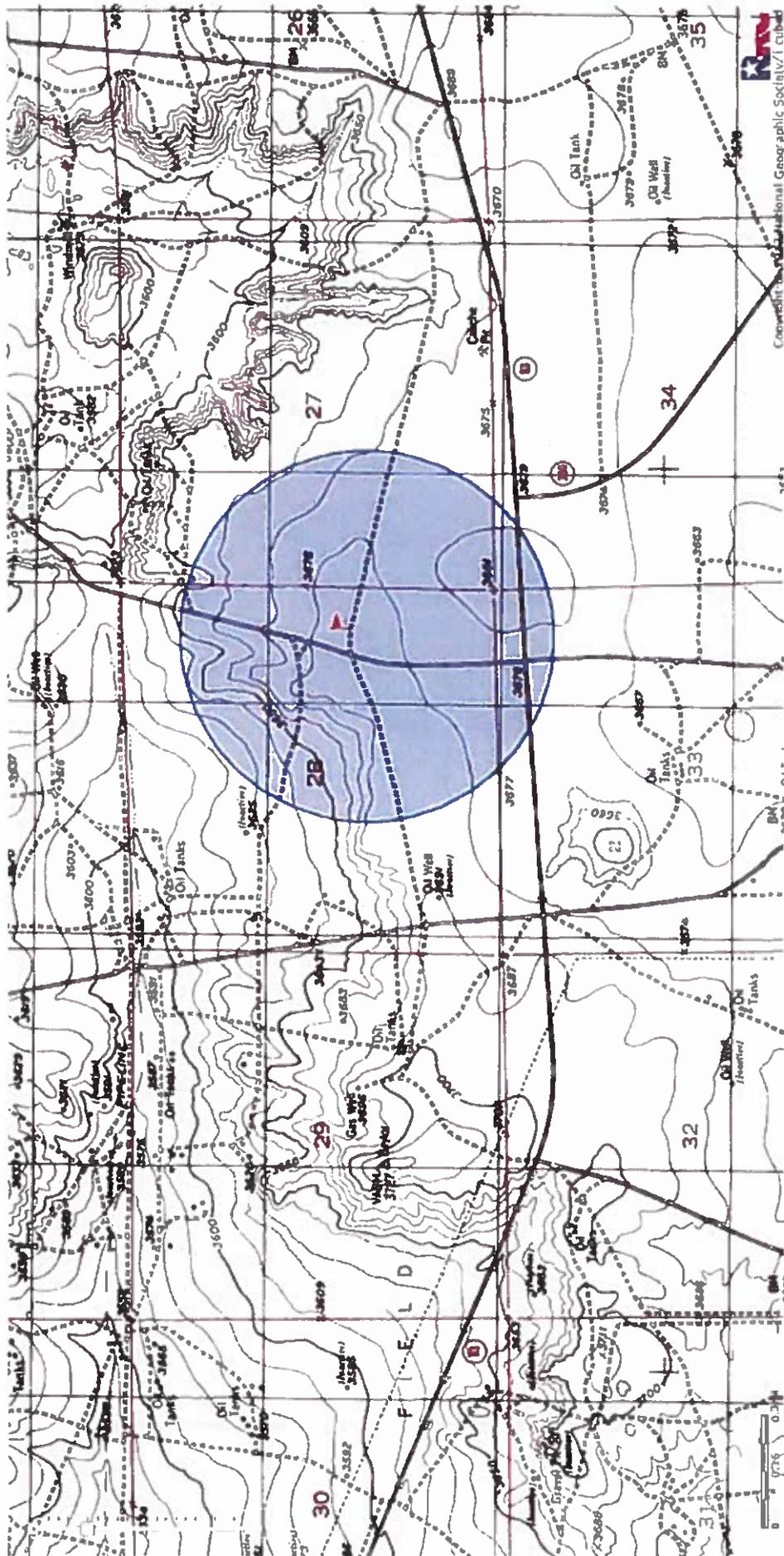
**Northing (Y):** 3631236

**Radius:** 4000

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

6/1/18 9 02 AM

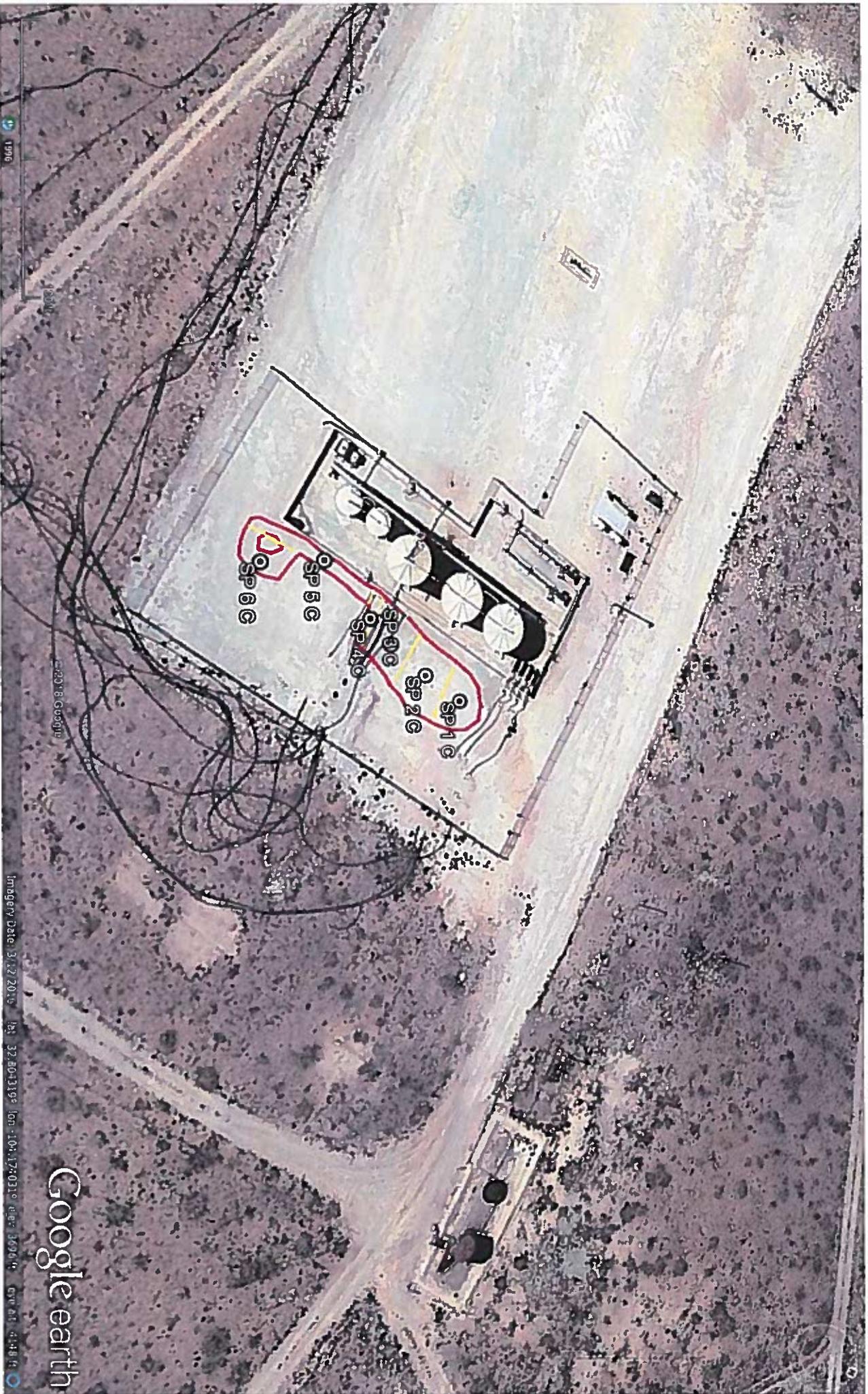
WATER COLUMN/ AVERAGE  
DEPTH TO WATER



Kans+ map



Bottom Samples



Bottom Final Samples

Sample Pt.	Depth	Chloride	Benzene	Toluene	Ethybenzene	Total Xylenes	Total BTEX	GRO	DRO	EXT DRO	GPS
SP 1 C	Surface	96	<0.050	<0.050	<0.050	<0.150	<0.300	<10	<10	<10	32.804352 -104.174046
SP 2 C	Surface	2280	<0.050	<0.050	<0.050	<0.150	<0.300	<10	<10	<10	32.804298 -104.174049
SP 3 C	Surface	928	<0.050	<0.050	<0.050	<0.150	<0.300	<10	<10	<10	32.804238 -104.174062
SP 4 C	Surface	2000	<0.050	<0.050	<0.050	<0.150	<0.300	<10	<10	<10	32.804203 -104.174081
SP 5 C	Surface	3120	<0.050	<0.050	<0.050	<0.150	<0.300	<10	<10	<10	32.804122-104.174118
SP 6 C	Surface	3640	<0.050	<0.050	<0.050	<0.150	<0.300	<10	<10	<10	32.804056 -104.174071



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

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June 07, 2019

BRUCE BAKER

APACHE CORP - HOBBS

2350 W. MARLAND BLVD.

HOBBS, NM 88240

RE: GERONIMO SWD

Enclosed are the results of analyses for samples received by the laboratory on 06/03/19 15:35.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-18-11. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/qa/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

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

Celey D. Keene

Lab Director/Quality Manager

**Analytical Results For:**

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

Received:	06/03/2019	Sampling Date:	06/03/2019
Reported:	06/07/2019	Sampling Type:	Soil
Project Name:	GERONIMO SWD	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	NONE GIVEN		

**Sample ID: SP 1 C @ SURFACE (H901936-01)**

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	06/06/2019	ND	2.18	109	2.00	0.974	
Toluene*	<0.050	0.050	06/06/2019	ND	2.20	110	2.00	1.07	
Ethylbenzene*	<0.050	0.050	06/06/2019	ND	2.07	103	2.00	0.104	
Total Xylenes*	<0.150	0.150	06/06/2019	ND	6.27	104	6.00	0.655	
Total BTEX	<0.300	0.300	06/06/2019	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	96.0	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	06/04/2019	ND	220	110	200	5.65	
DRO >C10-C28*	<10.0	10.0	06/04/2019	ND	199	99.6	200	7.49	
EXT DRO >C28-C36	<10.0	10.0	06/04/2019	ND					

Surrogate: 1-Chlorooctane 89.3% 41-142

Surrogate: 1-Chlorooctadecane 87.2% 37.6-147

Cardinal Laboratories

\* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

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

 Received: 06/03/2019  
 Reported: 06/07/2019  
 Project Name: GERONIMO SWD  
 Project Number: NONE GIVEN  
 Project Location: NONE GIVEN

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

**Sample ID: SP 2 C @ SURFACE (H901936-02)**

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	06/06/2019	ND	2.18	109	2.00	0.974		
Toluene*	<0.050	0.050	06/06/2019	ND	2.20	110	2.00	1.07		
Ethylbenzene*	<0.050	0.050	06/06/2019	ND	2.07	103	2.00	0.104		
Total Xylenes*	<0.150	0.150	06/06/2019	ND	6.27	104	6.00	0.655		
Total BTEX	<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	2280	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	06/04/2019	ND	220	110	200	5.65		
DRO >C10-C28*	<10.0	10.0	06/04/2019	ND	199	99.6	200	7.49		
EXT DRO >C28-C36	<10.0	10.0	06/04/2019	ND						

Surrogate: 1-Chlorooctane 90.8 % 41-142

Surrogate: 1-Chlorooctadecane 89.6 % 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

**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: 06/07/2019  
 Project Name: GERONIMO SWD  
 Project Number: NONE GIVEN  
 Project Location: NONE GIVEN

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

**Sample ID: SP 3 C @ SURFACE (H901936-03)**

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	06/06/2019	ND	2.18	109	2.00	0.974		
Toluene*	<0.050	0.050	06/06/2019	ND	2.20	110	2.00	1.07		
Ethylbenzene*	<0.050	0.050	06/06/2019	ND	2.07	103	2.00	0.104		
Total Xylenes*	<0.150	0.150	06/06/2019	ND	6.27	104	6.00	0.655		
Total BTEX	<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	928	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	06/04/2019	ND	220	110	200	5.65		
DRO >C10-C28*	<10.0	10.0	06/04/2019	ND	199	99.6	200	7.49		
EXT DRO >C28-C36	<10.0	10.0	06/04/2019	ND						

Surrogate 1-Chlorooctane 86.9 % 41-142

Surrogate 1-Chlorooctadecane 84.5 % 37.6-147

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

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

 Received: 06/03/2019  
 Reported: 06/07/2019  
 Project Name: GERONIMO SWD  
 Project Number: NONE GIVEN  
 Project Location: NONE GIVEN

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

**Sample ID: SP 4 C @ SURFACE (H901936-04)**

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	2.18	109	2.00	0.974		
Toluene*	<0.050	0.050	06/06/2019	ND	2.20	110	2.00	1.07		
Ethylbenzene*	<0.050	0.050	06/06/2019	ND	2.07	103	2.00	0.104		
Total Xylenes*	<0.150	0.150	06/06/2019	ND	6.27	104	6.00	0.655		
Total BTEX	<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	2000	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 84.3 % 41-142

Surrogate: 1-Chlorooctadecane 86.0 % 37.6-147

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\* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

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

 Received: 06/03/2019  
 Reported: 06/07/2019  
 Project Name: GERONIMO SWD  
 Project Number: NONE GIVEN  
 Project Location: NONE GIVEN

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

**Sample ID: SP 5 C @ SURFACE (H901936-05)**

BTEX 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	2.18	109	2.00	0.974	
Toluene*	<0.050	0.050	06/06/2019	ND	2.20	110	2.00	1.07	
Ethylbenzene*	<0.050	0.050	06/06/2019	ND	2.07	103	2.00	0.104	
Total Xylenes*	<0.150	0.150	06/06/2019	ND	6.27	104	6.00	0.655	
Total BTEX	<0.300	0.300	06/06/2019	ND					

Surrogate: 4-Bromofluorobenzene (PIC) 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	3120	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 89.7 % 41-142

Surrogate: 1-Chlorooctadecane 92.4 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

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

 Received: 06/03/2019  
 Reported: 06/07/2019  
 Project Name: GERONIMO SWD  
 Project Number: NONE GIVEN  
 Project Location: NONE GIVEN

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

**Sample ID: SP 6 C @ SURFACE (H901936-06)**

BTEX 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 BTEX	<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	3640	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 95.5 % 41-142

Surrogate: 1-Chlorooctadecane 98.1 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

**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



CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name: <b>APACHE GASADATION</b> Project Manager: <b>BRUCE BAKER</b>		P.O. #: Company: Attn: Address: City: State:      Zip: Project Owner: City:      State:      Zip: Phone #: Fax #: Project Location: <b>COLUMBUS SWD</b> Project Name: <b>COLUMBUS SWD</b> Project #:	
Address: City:      State:      Zip: Phone #:      Fax #: Project #:      Project Owner: Project Name: <b>COLUMBUS SWD</b> Project Location: <b>COLUMBUS SWD</b> Sampler Name: <b>Bruce Baker</b>		BILL TO ANALYSIS REQUEST	
Lab I.D.      Sample I.D.		(G)RAB OR (C)OMP.      # CONTAINERS	
440193K 1 SP1C @ SURFACE 2 SP2C @ SURFACE 3 SP3C @ SURFACE 4 SP4C @ SURFACE 5 SP5C @ SURFACE 6 SP6C @ SURFACE		MATRIX      PRESERV      SAMPLING GROUNDWATER WASTEWATER SOIL OIL SLUDGE OTHER: ACID/BASE ICE / COOL OTHER:	
		DATE      TIME	
		6-3-19      11:28 11:30 11:32 11:34 11:36 6-3-19      11:38	
Relinquished By: <i>[Signature]</i> Date: <b>6-3-19</b> Time:		Received By: <i>[Signature]</i> Date: <b>6-3-19</b> Time:	
Delivered By: (Circle One) Sampler - UPS - Bus - Other: <b>575-2497</b>		Sample Condition Cool Intact <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Checked By: <b>YD</b>	
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 #: REMARKS:			

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Geronimo 28 State # 2 SWD Photos



