



2350 W Marland Blvd Hobbs, NM 88240

## **Remediation Plan**

January 23, 2020

Re: EBDU CTB  
API# 30-025-39406  
Case # 1RP-5789

### **Background:**

On October 12, 2019 a release occurred due to a plugged filter on an air compressor resulting in the loss of fluid. The release area is located north of Eunice New Mexico (GPS Coordinates 32.489149, -103.129060) in unit letter P section 11 Township 21S Range 37E. A search of NMOSE and USGS wells of record was conducted to determine the depth of groundwater beneath the release. The nearest well of record indicates that the depth of groundwater beneath the release is 60 feet below ground surface.

On November 25, 2019 Apache Corporation collected samples utilizing a backhoe to a depth of 2 feet below ground surface. Samples were collected and field titrated for chlorides and representative samples were submitted to a commercial laboratory for analysis of chloride, TPH, and BTEX. Laboratory analysis indicated that hydrocarbons were above table one standards for releases 51 to 100 feet to groundwater. On January 21, 2020 Apache Corporation continued delineation with depth utilizing a backhoe and submitted all samples to a commercial laboratory for analysis of TPH and BTEX.

### **Remediation Plan:**

Upon review of the vertical data collected Apache Corporation proposes that the area in the vicinity of SP 1 be excavated to a depth of 4 feet below ground surface. The area in the vicinity of SP 2, 3, and 4 be excavated to a depth of 3 feet below ground surface. Once the excavation is complete 5 point bottom composite samples will be collected not to exceed 500 square feet and 5 point wall composite samples will be collected not to exceed 200 square feet. All excavated material (approximately 1400 cubic yards) will be disposed of at a NMOCD approved facility. Once laboratory analysis meet table one closure criteria the excavation will be backfilled with clean imported topsoil and contoured to the surrounding area. The disturbed area will be seeded in consultation with the private surface landowner. Apache Corporation will complete remediation activities within 90 days of NMOCD approval of the plan.

Enclosed: C-141, Groundwater Data, Maps, Sample Data, Laboratory Analysis, Field Notes

Submitted by;

*Bruce Baker*

**Environmental Technician**

[larry.baker@apachecorp.com](mailto: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	
District RP	
Facility ID	
Application ID	

## Release Notification

### Responsible Party

Responsible Party: Apache Corporation	OGRID 873
Contact Name: Bruce Baker	Contact Telephone: (432) 631-6982
Contact email: Larry.Baker@apachecorp.com	Incident # (assigned by OCD)
Contact Mailing Address: 2350 W. Marland Blvd, Hobbs, NM 88240	

### Location of Release Source

Latitude: W 32.489149 Longitude: N-103.129060

(NAD 83 in decimal degrees to 5 decimal places)

Site Name: East Blinebry Drinkard Unit (EBDU) CTB	Site Type: Well
Date Release Discovered: October 12, 2019	API # 30-025-39406 (Closest Well)

Unit Letter	Section	Township	Range	County
P	11	21S	37E	LEA

Surface Owner: ☐ State ☐ Federal ☐ Tribal ☒ Private (Name: Bryant, James Allan)

### Nature and Volume of Release

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

<input checked="" type="checkbox"/> Crude Oil	Volume Released (3 Barrels)	Volume Recovered (1 Barrel)
<input checked="" type="checkbox"/> Produced Water	Volume Released (73 Barrels)	Volume Recovered (14 Barrels)
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	<input type="checkbox"/> Yes <input checked="" 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

Plugged filter on air compressor leading to the release of fluids.


State of New Mexico  
Oil Conservation Division

Incident ID	
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Was this a major release as defined by 19.15.29.7(A) NMAC?  <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If YES, for what reason(s) does the responsible party consider this a major release?  Release is greater than 25 barrels.
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)? Via email given to NM OCD by Jeff Broom, Environmental Technician, Apache Corporation	

### 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>Jeff Broom</u>	Title: <u>Environmental Technician</u>
Signature: <u></u>	Date: <u>10/24/2019</u>
Email: <u>Jeffrey.Broom@apachecorp.com</u>	Telephone: <u>(432) 664-4677</u>
<b><u>OCD Only</u></b>  Received by: _____ Date: _____	

### **Volume Calculation**

1,292 cubic feet of soil contamination X 7.48 gallons per cubic foot = 9,664 gallons/42 gallons to a barrel=230 barrels X .33 soil porosity= 76 barrels fluid in soil + 15 barrels recovered = 91 barrels total loss.

State of New Mexico  
Oil Conservation Division

Incident ID	
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## 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>60</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 <b>not</b> 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 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 1 of 19.15.29.12 NMAC, however, use of the table is modified by site- and release-specific parameters.

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Oil Conservation Division

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Printed Name: Bruce BAKER Title: Environmental Tech. SR.  
 Signature: Bruce Baker Date: 1-23-20  
 email: larry.baker@apachecorp.com Telephone: 432-631-6982

**OCD Only**

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

State of New Mexico  
Oil Conservation Division

Incident ID	
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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.

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Printed Name: Bruce Baker Title: Environmental Tech SR.  
Signature: Bruce Baker Date: 1-23-20  
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: \_\_\_\_\_









## New Mexico Office of the State Engineer Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)  
(quarters are smallest to largest) (NAD83 UTM in meters)

<b>Well Tag</b>	<b>POD Number</b>	<b>Q64 Q16 Q4</b>	<b>Sec</b>	<b>Tws</b>	<b>Rng</b>	<b>X</b>	<b>Y</b>
CP 01221 POD1		4 4 4	11	21S	37E	676254	3588506

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**Driller License:** 1711      **Driller Company:** STRAUB CORPORATION  
**Driller Name:** MARTIN STRAUB

**Drill Start Date:** 11/07/2013      **Drill Finish Date:** 11/07/2013      **Plug Date:**  
**Log File Date:** 12/09/2013      **PCW Rcv Date:**      **Source:** Shallow  
**Pump Type:**      **Pipe Discharge Size:**      **Estimated Yield:**  
**Casing Size:** 4.00      **Depth Well:** 75 feet      **Depth Water:** 60 feet

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<b>Water Bearing Stratifications:</b>	<b>Top</b>	<b>Bottom</b>	<b>Description</b>
	60	66	Sandstone/Gravel/Conglomerate
	66	75	Sandstone/Gravel/Conglomerate

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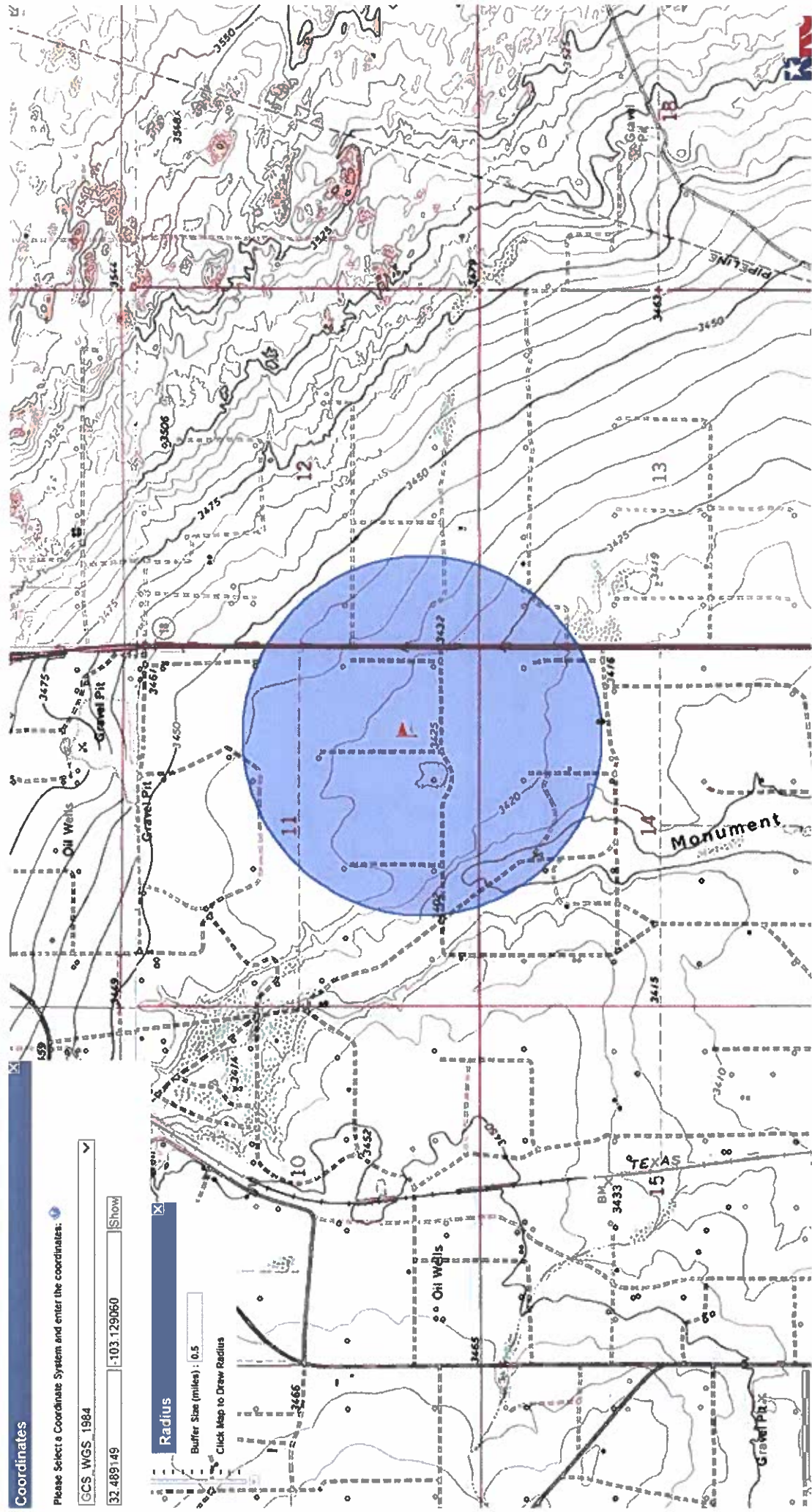
<b>Casing Perforations:</b>	<b>Top</b>	<b>Bottom</b>
	50	75

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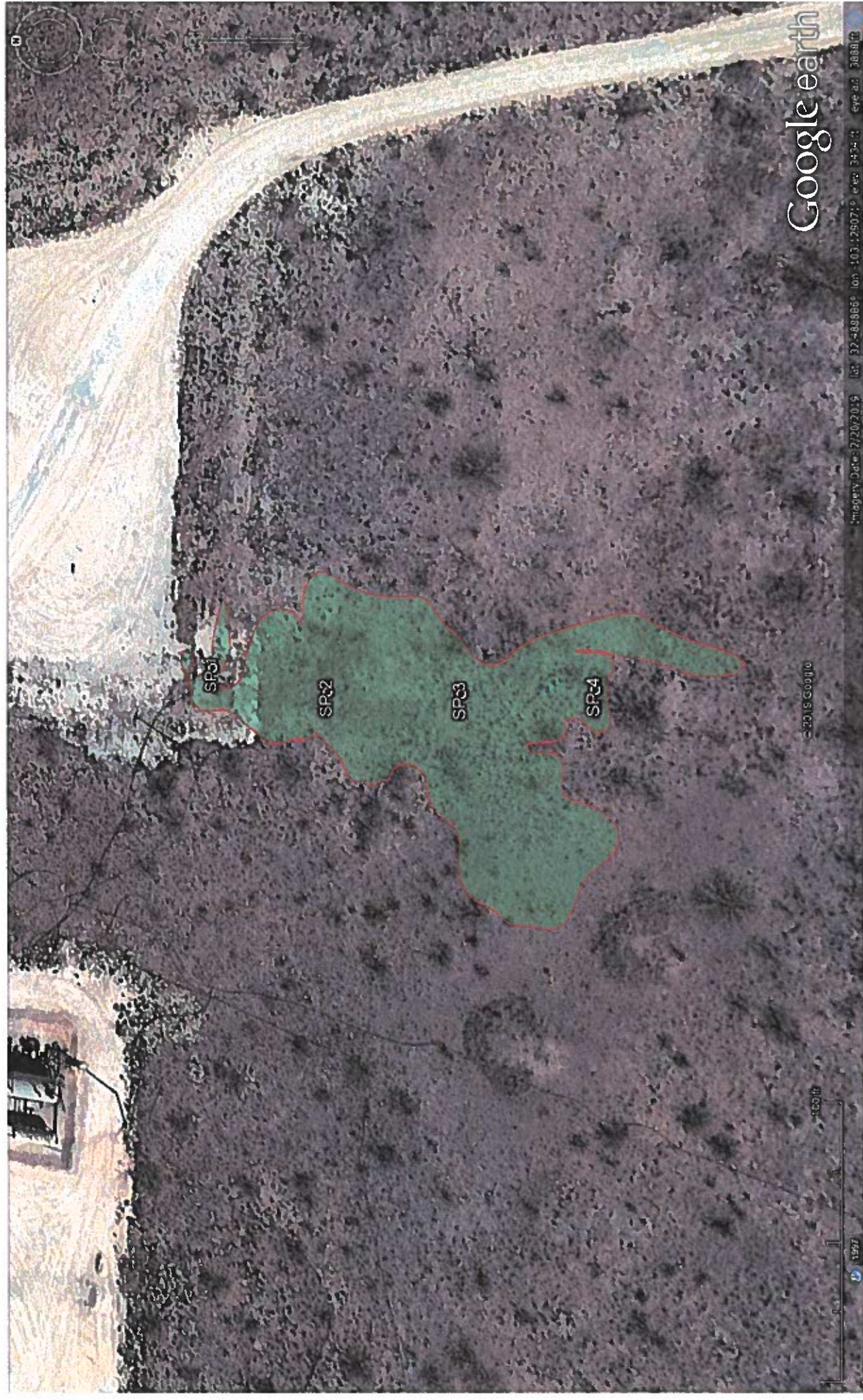
The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

1/23/20 10:00 AM

POINT OF DIVERSION SUMMARY







## EBDU CTB

Sample Pt.	Depth	Field CL	Lab CL	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	GRO	DRO	EXT DRO	Sample Date	GPS
1	Surface	1,811											32.489152 -103.129026
1	1'	861	560	6.48	36.6	17.5	43.9		852	10800	1140	11/25/2019	
1	2'			6.65	39.8	20.9	90.2	158	1890	5090	631	1/21/2020	
1	3'			0.134	1.08	1.36	4.72	7.29	116	741	78.9	1/21/2020	
1	4'			<0.050	<0.050	<0.050	<0.050	<0.300	<10.0	13.9	<10.0	1/21/2020	
2	Surface	3,149	2960	1.21	11.5	10.2	32.4		340	47400	8840	11/25/2019	32.489009 -103.129059
2	2'	511	ND	0.0507	0.0471	0.108	0.468		ND	798	167	11/25/2019	
2	3'	209		<0.050	<0.050	<0.050	<0.050	<0.300	<10.0	<10.0	<10.0	1/21/2020	
2	4'			<0.050	<0.050	<0.050	<0.050	<0.300	<10.0	<10.0	<10.0	1/21/2020	
3	Surface	4,842	4890	1.05	16.2	12	42.6		401	32800	4840	11/25/2019	32.48852 -103.129061
3	1'	742											
3	2'	902	557	ND	10.1	7.47	23.8		233	11200	1560	11/25/2019	
3	3'			<0.050	<0.050	<0.050	<0.050	<0.300	<10.0	<10.0	<10.0	1/21/2020	
3	4'			<0.050	<0.050	<0.050	<0.050	<0.300	<10.0	<10.0	<10.0	1/21/2020	
4	Surface	3,471	3050	0.151	1.47	0.985	7.46		99.7	38600	6900	11/25/2019	32.488707 -103.129057
4	1'	1,046											
4	2'	599	565	ND	0.0925	0.612	1.44		30.8	2530	350	11/25/2019	
4	3'			<0.050	<0.050	<0.050	<0.050	<0.300	<10.0	<10.0	<10.0	1/21/2020	
4	4'			<0.050	<0.050	<0.050	<0.050	<0.300	<10.0	<10.0	<10.0	1/21/2020	





## Analytical Report

### Report Summary

Client: Apache Corp.

Samples Received: 12/1/2019

Job Number: 19054-0003

Work Order: P911125

Project Name/Location: EBDU CTB

Report Reviewed By:

A handwritten signature in black ink, appearing to read 'Walter Hinchman', is written over a horizontal line.

Date: 12/3/19

Walter Hinchman, Laboratory Director



Envirotech Inc. certifies the test results meet all requirements of TNI unless footnoted otherwise.  
Statement of Data Authenticity: Envirotech, Inc. attests the data reported has not been altered in any way.  
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Envirotech, Inc. holds the Utah TNI certification NM009792018-1 for the data reported.  
Envirotech, Inc. holds the Texas TNI certification T104704657-19-2 for the data reported.

5796 Highway 64, Farmington, NM 87401

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24 Hour Emergency Response Phone (800) 362-1879

envirotech-inc.com

Labadmin@envirotech-inc.com

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Apache Corp.  
PO Box 1058  
Hobbs NM, 88240

Project Name: EBDU CTB  
Project Number: 19054-0003  
Project Manager: Jeff Broom

Reported:  
12/03/19 13:43

### Analytical Report for Samples

Client Sample ID	Lab Sample ID	Matrix	Sampled	Received	Container
SP1-Surf	P911125-01A	Soil	11/25/19	12/01/19	Glass Jar, 4 oz.
SP1-1'	P911125-02A	Soil	11/25/19	12/01/19	Glass Jar, 4 oz.
SP2-Surf	P911125-03A	Soil	11/25/19	12/01/19	Glass Jar, 4 oz.
SP2-2'	P911125-04A	Soil	11/25/19	12/01/19	Glass Jar, 4 oz.
SP3-Surf	P911125-05A	Soil	11/25/19	12/01/19	Glass Jar, 4 oz.
SP3-2'	P911125-06A	Soil	11/25/19	12/01/19	Glass Jar, 4 oz.
SP4-Surf	P911125-07A	Soil	11/25/19	12/01/19	Glass Jar, 4 oz.
SP4-2'	P911125-08A	Soil	11/25/19	12/01/19	Glass Jar, 4 oz.

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Apache Corp.  
PO Box 1058  
Hobbs NM, 88240

Project Name: EBDU CTB  
Project Number: 19054-0003  
Project Manager: Jeff Broom

Reported:  
12/03/19 13:43

**SP1-1'**  
**P911125-02 (Solid)**

Reporting									
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

**Volatile Organics by EPA 8021**

Benzene	6.48	0.250	mg/kg	10	1949005	12/01/19	12/02/19	EPA 8021B	
Toluene	36.6	0.250	mg/kg	10	1949005	12/01/19	12/02/19	EPA 8021B	
Ethylbenzene	17.5	0.250	mg/kg	10	1949005	12/01/19	12/02/19	EPA 8021B	
p,m-Xylene	24.7	0.500	mg/kg	10	1949005	12/01/19	12/02/19	EPA 8021B	
o-Xylene	19.2	0.250	mg/kg	10	1949005	12/01/19	12/02/19	EPA 8021B	
Total Xylenes	43.9	0.250	mg/kg	10	1949005	12/01/19	12/02/19	EPA 8021B	
Surrogate: 4-Bromochlorobenzene-PHD		100 %		50-150	1949005	12/01/19	12/02/19	EPA 8021B	

**Nonhalogenated Organics by 8015 - DRO/ORO**

Diesel Range Organics (C10-C28)	10800	250	mg/kg	10	1948020	11/27/19	12/03/19	EPA 8015D	
Oil Range Organics (C28-C40)	1140	500	mg/kg	10	1948020	11/27/19	12/03/19	EPA 8015D	
Surrogate: n-Nonane		706 %		50-200	1948020	11/27/19	12/03/19	EPA 8015D	S3

**Nonhalogenated Organics by 8015 - GRO**

Gasoline Range Organics (C6-C10)	852	200	mg/kg	10	1949005	12/01/19	12/02/19	EPA 8015D	
Surrogate: 1-Chloro-4-fluorobenzene-FID		93.7 %		50-150	1949005	12/01/19	12/02/19	EPA 8015D	

**Anions by 300.0/9056A**

Chloride	560	20.0	mg/kg	1	1949002	12/01/19	12/02/19	EPA 300.0-9056A	
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Apache Corp.  
PO Box 1058  
Hobbs NM, 88240

Project Name: EBDU CTB  
Project Number: 19054-0003  
Project Manager: Jeff Broom

Reported:  
12/03/19 13:43

**SP2-Surf**  
**P911125-03 (Solid)**

Reporting

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Volatile Organics by EPA 8021</b>									
Benzene	1.21	0.250	mg/kg	10	1949005	12/01/19	12/02/19	EPA 8021B	
Toluene	11.5	0.250	mg/kg	10	1949005	12/01/19	12/02/19	EPA 8021B	
Ethylbenzene	10.2	0.250	mg/kg	10	1949005	12/01/19	12/02/19	EPA 8021B	
p,m-Xylene	19.9	0.500	mg/kg	10	1949005	12/01/19	12/02/19	EPA 8021B	
o-Xylene	12.5	0.250	mg/kg	10	1949005	12/01/19	12/02/19	EPA 8021B	
Total Xylenes	32.4	0.250	mg/kg	10	1949005	12/01/19	12/02/19	EPA 8021B	
Surrogate: 4-Bromochlorobenzene-PHD		103 %		50-150	1949005	12/01/19	12/02/19	EPA 8021B	
<b>Nonhalogenated Organics by 8015 - DRO/ORO</b>									
Diesel Range Organics (C10-C28)	47400	2500	mg/kg	100	1948020	11/27/19	12/03/19	EPA 8015D	
Oil Range Organics (C28-C40)	8840	5000	mg/kg	100	1948020	11/27/19	12/03/19	EPA 8015D	
Surrogate: n-Nonane		547 %		50-200	1948020	11/27/19	12/03/19	EPA 8015D	S3
<b>Nonhalogenated Organics by 8015 - GRO</b>									
Gasoline Range Organics (C6-C10)	340	200	mg/kg	10	1949005	12/01/19	12/02/19	EPA 8015D	
Surrogate: 1-Chloro-4-fluorobenzene-FID		91.8 %		50-150	1949005	12/01/19	12/02/19	EPA 8015D	
<b>Anions by 300.0/9056A</b>									
Chloride	2960	40.0	mg/kg	2	1949002	12/01/19	12/02/19	EPA 300.0/9056A	

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Apache Corp.  
PO Box 1058  
Hobbs NM, 88240

Project Name: EBDU CTB  
Project Number: 19054-0003  
Project Manager: Jeff Broom

Reported:  
12/03/19 13:43

**SP2-2'**  
**P911125-04 (Solid)**

Reporting

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
---------	--------	-------	-------	----------	-------	----------	----------	--------	-------

**Volatile Organics by EPA 8021**

Benzene	ND	0.0250	mg/kg	1	1949005	12/01/19	12/02/19	EPA 8021B	
Toluene	0.0507	0.0250	mg/kg	1	1949005	12/01/19	12/02/19	EPA 8021B	
Ethylbenzene	0.0471	0.0250	mg/kg	1	1949005	12/01/19	12/02/19	EPA 8021B	
p,m-Xylene	0.108	0.0500	mg/kg	1	1949005	12/01/19	12/02/19	EPA 8021B	
o-Xylene	0.360	0.0250	mg/kg	1	1949005	12/01/19	12/02/19	EPA 8021B	
Total Xylenes	0.468	0.0250	mg/kg	1	1949005	12/01/19	12/02/19	EPA 8021B	
Surrogate: 4-Bromochlorobenzene-PID		103 %		50-150	1949005	12/01/19	12/02/19	EPA 8021B	

**Nonhalogenated Organics by 8015 - DRO/ORO**

Diesel Range Organics (C10-C28)	798	25.0	mg/kg	1	1948020	11/27/19	12/02/19	EPA 8015D	
Oil Range Organics (C28-C40)	167	50.0	mg/kg	1	1948020	11/27/19	12/02/19	EPA 8015D	
Surrogate: n-Nonane		114 %		50-200	1948020	11/27/19	12/02/19	EPA 8015D	

**Nonhalogenated Organics by 8015 - GRO**

Gasoline Range Organics (C6-C10)	ND	20.0	mg/kg	1	1949005	12/01/19	12/02/19	EPA 8015D	
Surrogate: 1-Chloro-4-fluorobenzene-FID		89.0 %		50-150	1949005	12/01/19	12/02/19	EPA 8015D	

**Anions by 300.0/9056A**

Chloride	ND	20.0	mg/kg	1	1949002	12/01/19	12/02/19	EPA 300.0/9056A	
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Apache Corp.	Project Name:	EBDU CTB	Reported:
PO Box 1058	Project Number:	19054-0003	12/03/19 13:43
Hobbs NM, 88240	Project Manager:	Jeff Broom	

**SP3-Surf**  
**P911125-05 (Solid)**

Reporting									
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

**Volatile Organics by EPA 8021**

Benzene	1.05	0.250	mg/kg	10	1949005	12/01/19	12/02/19	EPA 8021B	
Toluene	16.2	0.250	mg/kg	10	1949005	12/01/19	12/02/19	EPA 8021B	
Ethylbenzene	12.0	0.250	mg/kg	10	1949005	12/01/19	12/02/19	EPA 8021B	
p,m-Xylene	28.9	0.500	mg/kg	10	1949005	12/01/19	12/02/19	EPA 8021B	
o-Xylene	13.6	0.250	mg/kg	10	1949005	12/01/19	12/02/19	EPA 8021B	
Total Xylenes	42.6	0.250	mg/kg	10	1949005	12/01/19	12/02/19	EPA 8021B	
Surrogate: 4-Bromochlorobenzene-PID		102 %		50-150	1949005	12/01/19	12/02/19	EPA 8021B	

**Nonhalogenated Organics by 8015 - DRO/ORO**

Diesel Range Organics (C10-C28)	32800	500	mg/kg	20	1948020	11/27/19	12/03/19	EPA 8015D	
Oil Range Organics (C28-C40)	4840	1000	mg/kg	20	1948020	11/27/19	12/03/19	EPA 8015D	
Surrogate: n-Nonane		748 %		50-200	1948020	11/27/19	12/03/19	EPA 8015D	S3

**Nonhalogenated Organics by 8015 - GRO**

Gasoline Range Organics (C6-C10)	401	200	mg/kg	10	1949005	12/01/19	12/02/19	EPA 8015D	
Surrogate: 1-Chloro-4-fluorobenzene-FID		89.7 %		50-150	1949005	12/01/19	12/02/19	EPA 8015D	

**Anions by 300.0/9056A**

Chloride	4890	100	mg/kg	5	1949002	12/01/19	12/02/19	EPA 300.0/9056A	
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Apache Corp.  
PO Box 1058  
Hobbs NM, 88240

Project Name: EBDU CTB  
Project Number: 19054-0003  
Project Manager: Jeff Broom

Reported:  
12/03/19 13:43

### SP3-2'

### P911125-06 (Solid)

#### Reporting

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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#### Volatile Organics by EPA 8021

Benzene	ND	0.250	mg/kg	10	1949005	12/01/19	12/02/19	EPA 8021B	
Toluene	10.1	0.250	mg/kg	10	1949005	12/01/19	12/02/19	EPA 8021B	
Ethylbenzene	7.47	0.250	mg/kg	10	1949005	12/01/19	12/02/19	EPA 8021B	
p,m-Xylene	14.7	0.500	mg/kg	10	1949005	12/01/19	12/02/19	EPA 8021B	
o-Xylene	9.12	0.250	mg/kg	10	1949005	12/01/19	12/02/19	EPA 8021B	
Total Xylenes	23.8	0.250	mg/kg	10	1949005	12/01/19	12/02/19	EPA 8021B	
Surrogate: 4-Bromochlorobenzene-PHD		101 %		50-150	1949005	12/01/19	12/02/19	EPA 8021B	

#### Nonhalogenated Organics by 8015 - DRO/ORO

Diesel Range Organics (C10-C28)	11200	500	mg/kg	20	1948020	11/27/19	12/03/19	EPA 8015D	
Oil Range Organics (C28-C40)	1560	1000	mg/kg	20	1948020	11/27/19	12/03/19	EPA 8015D	
Surrogate: n-Nonane		345 %		50-200	1948020	11/27/19	12/03/19	EPA 8015D	S3

#### Nonhalogenated Organics by 8015 - GRO

Gasoline Range Organics (C6-C10)	233	200	mg/kg	10	1949005	12/01/19	12/02/19	EPA 8015D	
Surrogate: 1-Chloro-4-fluorobenzene-FID		90.6 %		50-150	1949005	12/01/19	12/02/19	EPA 8015D	

#### Anions by 300.0/9056A

Chloride	557	20.0	mg/kg	1	1949002	12/01/19	12/02/19	EPA 300.0/9056A	
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Apache Corp.	Project Name:	EBDU CTB	Reported:
PO Box 1058	Project Number:	19054-0003	12/03/19 13:43
Hobbs NM, 88240	Project Manager:	Jeff Broom	

**SP4-Surf  
P911125-07 (Solid)**

Reporting									
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

**Volatiles Organics by EPA 8021**

Benzene	0.151	0.0250	mg/kg	1	1949005	12/01/19	12/02/19	EPA 8021B	
Toluene	1.47	0.0250	mg/kg	1	1949005	12/01/19	12/02/19	EPA 8021B	
Ethylbenzene	0.985	0.0250	mg/kg	1	1949005	12/01/19	12/02/19	EPA 8021B	
p,m-Xylene	2.56	0.0500	mg/kg	1	1949005	12/01/19	12/02/19	EPA 8021B	
o-Xylene	4.90	0.0250	mg/kg	1	1949005	12/01/19	12/02/19	EPA 8021B	
Total Xylenes	7.46	0.0250	mg/kg	1	1949005	12/01/19	12/02/19	EPA 8021B	
Surrogate: 4-Bromochlorobenzene-PHD		115 %		50-150	1949005	12/01/19	12/02/19	EPA 8021B	

**Nonhalogenated Organics by 8015 - DRO/ORO**

Diesel Range Organics (C10-C28)	38600	500	mg/kg	20	1948020	11/27/19	12/02/19	EPA 8015D	
Oil Range Organics (C28-C40)	6900	1000	mg/kg	20	1948020	11/27/19	12/02/19	EPA 8015D	
Surrogate: n-Nonane		302 %		50-200	1948020	11/27/19	12/02/19	EPA 8015D	N3

**Nonhalogenated Organics by 8015 - GRO**

Gasoline Range Organics (C6-C10)	99.7	20.0	mg/kg	1	1949005	12/01/19	12/02/19	EPA 8015D	
Surrogate: 1-Chloro-4-fluorobenzene-FHD		96.0 %		50-150	1949005	12/01/19	12/02/19	EPA 8015D	

**Anions by 300.0/9056A**

Chloride	3050	40.0	mg/kg	2	1949002	12/01/19	12/02/19	EPA 300.0/9056A	
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Apache Corp.  
PO Box 1058  
Hobbs NM, 88240

Project Name: EBDU CTB  
Project Number: 19054-0003  
Project Manager: Jeff Broom

Reported:  
12/03/19 13:43

**SP4-2'**  
**P911125-08 (Solid)**

Reporting									
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Volatiles Organics by EPA 8021</b>									
Benzene	ND	0.0250	mg/kg	1	1949005	12/01/19	12/02/19	EPA 8021B	
Toluene	0.0925	0.0250	mg/kg	1	1949005	12/01/19	12/02/19	EPA 8021B	
Ethylbenzene	0.612	0.0250	mg/kg	1	1949005	12/01/19	12/02/19	EPA 8021B	
p,m-Xylene	0.169	0.0500	mg/kg	1	1949005	12/01/19	12/02/19	EPA 8021B	
o-Xylene	1.27	0.0250	mg/kg	1	1949005	12/01/19	12/02/19	EPA 8021B	
Total Xylenes	1.44	0.0250	mg/kg	1	1949005	12/01/19	12/02/19	EPA 8021B	
Surrogate 4-Bromochlorobenzene-PHD		108 %		50-150	1949005	12/01/19	12/02/19	EPA 8021B	
<b>Nonhalogenated Organics by 8015 - DRO/ORO</b>									
Diesel Range Organics (C10-C28)	2530	25.0	mg/kg	1	1948020	11/27/19	12/03/19	EPA 8015D	
Oil Range Organics (C28-C40)	350	50.0	mg/kg	1	1948020	11/27/19	12/03/19	EPA 8015D	
Surrogate n-Nonane		144 %		50-200	1948020	11/27/19	12/03/19	EPA 8015D	
<b>Nonhalogenated Organics by 8015 - GRO</b>									
Gasoline Range Organics (C6-C10)	30.8	20.0	mg/kg	1	1949005	12/01/19	12/02/19	EPA 8015D	
Surrogate 1-Chloro-4-fluorobenzene-PHD		89.4 %		50-150	1949005	12/01/19	12/02/19	EPA 8015D	
<b>Anions by 300.0/9056A</b>									
Chloride	565	20.0	mg/kg	1	1949002	12/01/19	12/02/19	EPA 300.0/9056A	

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Apache Corp.  
PO Box 1058  
Hobbs NM, 88240

Project Name: EBDU CTB  
Project Number: 19054-0003  
Project Manager: Jeff Broom

Reported:  
12/03/19 13:43

### Volatile Organics by EPA 8021 - Quality Control

#### Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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#### Batch 1949005 - Purge and Trap EPA 5030A

##### Blank (1949005-BLK1)

Prepared: 12/02/19 0 Analyzed: 12/02/19 1

Benzene	ND	0.0250	mg/kg							
Toluene	ND	0.0250	"							
Ethylbenzene	ND	0.0250	"							
p,m-Xylene	ND	0.0500	"							
o-Xylene	ND	0.0250	"							
Total Xylenes	ND	0.0250	"							
Surrogate: 4-Bromochlorobenzene-PHD	8.06		"	8.00		101	50-150			

##### LCS (1949005-BS1)

Prepared: 12/02/19 0 Analyzed: 12/02/19 2

Benzene	5.17	0.0250	mg/kg	5.00		103	70-130			
Toluene	5.29	0.0250	"	5.00		106	70-130			
Ethylbenzene	5.22	0.0250	"	5.00		104	70-130			
p,m-Xylene	10.4	0.0500	"	10.0		104	70-130			
o-Xylene	5.20	0.0250	"	5.00		104	70-130			
Total Xylenes	15.6	0.0250	"	15.0		104	70-130			
Surrogate: 4-Bromochlorobenzene-PHD	8.24		"	8.00		103	50-150			

##### Matrix Spike (1949005-MS1)

Source: P911126-01

Prepared: 12/02/19 0 Analyzed: 12/03/19 0

Benzene	5.22	0.0250	mg/kg	5.00	ND	104	54.3-133			
Toluene	5.34	0.0250	"	5.00	ND	107	61.4-130			
Ethylbenzene	5.28	0.0250	"	5.00	ND	106	61.4-133			
p,m-Xylene	10.5	0.0500	"	10.0	ND	105	63.3-131			
o-Xylene	5.23	0.0250	"	5.00	ND	105	63.3-131			
Total Xylenes	15.7	0.0250	"	15.0	ND	105	63.3-131			
Surrogate: 4-Bromochlorobenzene-PHD	8.23		"	8.00		103	50-150			

##### Matrix Spike Dup (1949005-MSD1)

Source: P911126-01

Prepared: 12/02/19 0 Analyzed: 12/03/19 0

Benzene	5.13	0.0250	mg/kg	5.00	ND	103	54.3-133	1.70	20	
Toluene	5.26	0.0250	"	5.00	ND	105	61.4-130	1.48	20	
Ethylbenzene	5.18	0.0250	"	5.00	ND	104	61.4-133	1.74	20	
p,m-Xylene	10.3	0.0500	"	10.0	ND	103	63.3-131	1.74	20	
o-Xylene	5.16	0.0250	"	5.00	ND	103	63.3-131	1.38	20	
Total Xylenes	15.5	0.0250	"	15.0	ND	103	63.3-131	1.62	20	
Surrogate: 4-Bromochlorobenzene-PHD	8.27		"	8.00		103	50-150			

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Apache Corp.  
PO Box 1058  
Hobbs NM, 88240

Project Name: EBDU CTB  
Project Number: 19054-0003  
Project Manager: Jeff Broom

Reported:  
12/03/19 13:43

### Nonhalogenated Organics by 8015 - DRO/ORO - Quality Control

#### Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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#### Batch 1948020 - DRO Extraction EPA 3570

##### Blank (1948020-BLK1)

Prepared: 11/27/19 | Analyzed: 12/02/19 |

Diesel Range Organics (C10-C28)	ND	25.0	mg/kg							
Oil Range Organics (C28-C40)	ND	50.0	"							
Surrogate: n-Nonane	47.1		"	50.0		94.2	50-200			

##### LCS (1948020-BS1)

Prepared: 11/27/19 | Analyzed: 12/02/19 |

Diesel Range Organics (C10-C28)	460	25.0	mg/kg	500		92.0	38-132			
Surrogate: n-Nonane	47.8		"	50.0		95.6	50-200			

##### Matrix Spike (1948020-MS1)

Source: P911123-01

Prepared: 11/27/19 | Analyzed: 12/02/19 |

Diesel Range Organics (C10-C28)	525	25.0	mg/kg	500	ND	105	38-132			
Surrogate: n-Nonane	52.0		"	50.0		104	50-200			

##### Matrix Spike Dup (1948020-MSD1)

Source: P911123-01

Prepared: 11/27/19 | Analyzed: 12/02/19 |

Diesel Range Organics (C10-C28)	596	25.0	mg/kg	500	ND	119	38-132	12.7	20	
Surrogate: n-Nonane	56.7		"	50.0		113	50-200			

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Apache Corp.	Project Name:	EBDU CTB	Reported: 12/03/19 13:43
PO Box 1058	Project Number:	19054-0003	
Hobbs NM, 88240	Project Manager:	Jeff Broom	

**Nonhalogenated Organics by 8015 - GRO - Quality Control**  
**Envirotech Analytical Laboratory**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 1949005 - Purge and Trap EPA 5030A**

<b>Blank (1949005-BLK1)</b>				Prepared: 12/02/19 0 Analyzed: 12/02/19 1						
Gasoline Range Organics (C6-C10)	ND	20.0	mg/kg							
Surrogate: 1-Chloro-4-fluorobenzene-FID	7.05		"	8.00		88.2	50-150			
<b>LCS (1949005-BS2)</b>				Prepared: 12/02/19 0 Analyzed: 12/03/19 0						
Gasoline Range Organics (C6-C10)	48.8	20.0	mg/kg	50.0		97.6	70-130			
Surrogate: 1-Chloro-4-fluorobenzene-FID	7.01		"	8.00		87.7	50-150			
<b>Matrix Spike (1949005-MS2)</b>				Source: P911126-01		Prepared: 12/02/19 0 Analyzed: 12/03/19 0				
Gasoline Range Organics (C6-C10)	50.2	20.0	mg/kg	50.0	ND	100	70-130			
Surrogate: 1-Chloro-4-fluorobenzene-FID	7.07		"	8.00		88.4	50-150			
<b>Matrix Spike Dup (1949005-MSD2)</b>				Source: P911126-01		Prepared: 12/02/19 0 Analyzed: 12/03/19 0				
Gasoline Range Organics (C6-C10)	49.5	20.0	mg/kg	50.0	ND	98.9	70-130	1.50	20	
Surrogate: 1-Chloro-4-fluorobenzene-FID	7.02		"	8.00		87.8	50-150			

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Apache Corp.  
PO Box 1058  
Hobbs NM, 88240

Project Name: EBDU CTB  
Project Number: 19054-0003  
Project Manager: Jeff Broom

Reported:  
12/03/19 13:43

### Anions by 300.0/9056A - Quality Control

#### Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 1949002 - Anion Extraction EPA 300.0/9056A</b>										
<b>Blank (1949002-BLK1)</b>				Prepared: 12/01/19 0 Analyzed: 12/02/19 0						
Chloride	ND	20.0	mg/kg							
<b>LCS (1949002-BS1)</b>				Prepared: 12/01/19 0 Analyzed: 12/02/19 1						
Chloride	247	20.0	mg/kg	250		98.8	90-110			
<b>Matrix Spike (1949002-MS1)</b>				Source: P911124-01 Prepared: 12/01/19 0 Analyzed: 12/02/19 1						
Chloride	2590	20.0	mg/kg	250	2070	208	80-120			M2
<b>Matrix Spike Dup (1949002-MSD1)</b>				Source: P911124-01 Prepared: 12/01/19 0 Analyzed: 12/02/19 1						
Chloride	2310	20.0	mg/kg	250	2070	92.7	80-120	11.8	20	

#### QC Summary Report

##### Comment:

Calculations are based off of the raw (non-rounded) data. However, for reporting purposes all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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Apache Corp.  
PO Box 1058  
Hobbs NM, 88240

Project Name: EBDU CTB  
Project Number: 19054-0003  
Project Manager: Jeff Broom

**Reported:**  
12/03/19 13:43

#### Notes and Definitions

- S3 Surrogate spike recovery exceeded acceptance limits due to interfering target and/or non-target analytes.
- M2 Matrix spike recovery was outside quality control limits. The associated LCS spike recovery was acceptable.
- ND Analyte NOT DETECTED at or above the reporting limit.
- NR Not Reported
- RPD Relative Percent Difference
- \*\* Methods marked with \*\* are non-accredited methods.

Soil data is reported on an "as received" weight basis, unless reported otherwise.

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## Project Information

## Chain of Custody

Page 1 of 1

Client: <u>Apache</u>				Report Attention				Lab Use Only				TAT		EPA Program			
Project: <u>ERDU CTB</u>				Report due by: <u>Hungry Horse</u>				Lab WO# <u>P 911125</u>				Job Number <u>19054-0003</u>		1D 3D		RCRA CWA SDWA	
Project Manager: <u>Jeff Broom</u>				Attention: <u>Traci Jennings</u>													
Address:				Address: <u>4024 Plains Hwy</u>				Analysis and Method						State			
City, State, Zip				City, State, Zip <u>Livingston NM 87400</u>										NM CO UT AZ			
Phone:				Phone: <u>575-390-1761</u>													
Email: <u>Larry Bayer@apachecorp.com</u>				Email: <u>TJennings@hungry-horse.com</u>													
Time Sampled	Date Sampled	Matrix	No Containers	Sample ID	Lab Number	DRO/DRO by 8015	GRU/DRO by 8015	WTEX by 8021	VOC by 8016	Metals by 8017	Chloride 300.0	Remarks					
9:15	11/25/19	S	1	SP1 - surf	1	/	/	/	/	/	/						
9:22	11/25			SP1 - 1'	2	/	/	/	/	/	/						
9:40	11/25			SP2 - Surf	3	/	/	/	/	/	/						
10:07	11/25			SP2 - 2'	4	/	/	/	/	/	/						
9:46	11/25			SP3 - surf	5	/	/	/	/	/	/						
10:48	11/25			SP3 - 2'	6	/	/	/	/	/	/						
9:49	11/25			SP4 - surf	7	/	/	/	/	/	/						
11:12	11/25			SP4 - 2'	8	/	/	/	/	/	/						
Additional Instructions:																	
I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for legal action. Sampled by: <u>[Signature]</u> Date <u>11/25/19</u> Time <u>2:00</u> Received by (Signature) <u>[Signature]</u> Date <u>11-26-19</u> Time <u>11:45</u> Relinquished by (Signature) <u>[Signature]</u> Date <u>11-26-19</u> Time <u>1355</u> Received by (Signature) <u>[Signature]</u> Date <u>11-29-19</u> Time <u>1115</u> Sample Matrix: S - Soil, Sd - Solid, Sg - Sludge, A - Aqueous, O - Other Container Type: g - glass, p - poly/plastic, ag - amber glass, v - VOA Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at the client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for on the report.																	



 5795 US Highway 64, Farmington, NM 87401  
 24 Hour Emergency Response Phone (505) 362-1873

Ph (505) 632-4831 Fax (505) 632-1865

 labadmin@envirotechiro.com  
 12-01-19 8:00



## Project Information

## Chain of Custody

Page 1 of 1

Client: <u>Apache</u>				Report Attention: <u>Hungry Horse</u>				Lab Use Only				TAT		EPA Program				
Project: <u>ERDU CTB</u>				Report due by: <u>Traci Jennings</u>				Lab: WO# <u>P911125</u>				Job Number <u>19054-0003</u>		1D	3D	RCRA	CWA	SDWA
Project Manager: <u>Jeff Broom</u>				Attention: <u>Traci Jennings</u>				Analysis and Method						State				
Address: <u>4024 Plains Hwy</u>				Address: <u>4024 Plains Hwy</u>										NM CO UT AZ				
City, State, Zip: <u>Lawton NM 87400</u>				City, State, Zip: <u>Lawton NM 87400</u>														
Phone: <u>575-390-1761</u>				Phone: <u>575-390-1761</u>														
Email: <u>Larry Broom@apache.com</u>				Email: <u>TJennings@hungry-horse.com</u>														
Time Sampled	Date Sampled	Matrix	No. Containers	Sample ID	Lab Number	DRD/DRD by 8015	GAD/GAD by 8015	STEX by 8021	VOC by 8016	Metals by 8017	Chloride by 8018	Remarks						
4:15	11/25/19	S	1	SP1 - Surf	1	/	/	/	/	/	/	Cancelled per Client RL						
9:22	11/25			SP1 - 1'	2	/	/	/	/	/	/							
9:40	11/25			SP2 - Surf	3	/	/	/	/	/	/							
10:07	11/25			SP2 - 2'	4	/	/	/	/	/	/							
9:46	11/25			SP3 - Surf	5	/	/	/	/	/	/							
10:48	11/25			SP3 - 2'	6	/	/	/	/	/	/							
9:44	11/25			SP4 - Surf	7	/	/	/	/	/	/							
11:12	11/25			SP4 - 2'	8	/	/	/	/	/	/							
Additional Instructions:																		
I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for legal action. Sampled by:																		
Samples requiring thermal preservation must be received on ice the day they are sampled or received and held in ice at an avg temp above 0 but less than 5 °C on subsequent days.																		
Relinquished by: (Signature)		Date		Time		Received by: (Signature)		Date		Time		Lab Use Only						
		11/25/19		2:00				11/26/19		11:45		Received on ice: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N						
Relinquished by: (Signature)		Date		Time		Received by: (Signature)		Date		Time		T1 T2 T3						
		11/26/19		1355				11/29/19		11:15		AVG Temp °C 4.0 Visible ice						
Sample Matrix: S - Soil, Sd - Solid, Sg - Sludge, A - Aqueous, O - Other																		
Container Type: g - glass, p - poly/plastic, ag - amber glass, v - VOA																		
Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at the client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for on the report.																		

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

January 22, 2020

BRUCE BAKER

APACHE CORP - HOBBS

2350 W. MARLAND BLVD.

HOBBS, NM 88240

RE: EBDU CTB

Enclosed are the results of analyses for samples received by the laboratory on 01/21/20 10:42.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-19-12. 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 fluid and cursive, with the first name "Celey" being more prominent.

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: 01/21/2020  
 Reported: 01/22/2020  
 Project Name: EBDU CTB  
 Project Number: NONE GIVEN  
 Project Location: NONE GIVEN

Sampling Date: 01/21/2020  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: SP 1 @ 2' (H000199-01)**

BTX 8021B		mg/kg		Analyzed By: MS				S-04	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	6.65	0.500	01/22/2020	ND	1.92	96.1	2.00	0.934	QM-07
Toluene*	39.8	0.500	01/22/2020	ND	2.01	101	2.00	0.236	QM-07
Ethylbenzene*	20.9	0.500	01/22/2020	ND	1.97	98.4	2.00	0.0633	QM-07
Total Xylenes*	90.2	1.50	01/22/2020	ND	5.82	96.9	6.00	0.00936	QM-07
Total BTX	158	3.00	01/22/2020	ND					QM-07

Surrogate: 4-Bromofluorobenzene (PIL) 142 % 73.3-129

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*	1890	50.0	01/22/2020	ND	206	103	200	1.03	
DRO >C10-C28*	5090	50.0	01/22/2020	ND	218	109	200	1.06	
EXT DRO >C28-C36	631	50.0	01/22/2020	ND					

Surrogate: 1-Chlorooctane 274 % 41-142

Surrogate: 1-Chlorooctadecane 199 % 37.6-147

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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: 01/21/2020  
 Reported: 01/22/2020  
 Project Name: EBDU CTB  
 Project Number: NONE GIVEN  
 Project Location: NONE GIVEN

Sampling Date: 01/21/2020  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: SP 1 @ 3' (H000199-02)**

BTX 8021B		mg/kg		Analyzed By: MS				S-04	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	0.134	0.050	01/22/2020	ND	1.92	96.1	2.00	0.934	
Toluene*	1.08	0.050	01/22/2020	ND	2.01	101	2.00	0.236	
Ethylbenzene*	1.36	0.050	01/22/2020	ND	1.97	98.4	2.00	0.0633	
Total Xylenes*	4.72	0.150	01/22/2020	ND	5.82	96.9	6.00	0.00936	
Total BTX	7.29	0.300	01/22/2020	ND					

Surrogate: 4-Bromofluorobenzene (PIL) 168 % 73.3-129

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	116	10.0	01/22/2020	ND	206	103	200	1.03	
DRO >C10-C28*	741	10.0	01/22/2020	ND	218	109	200	1.06	
EXT DRO >C28-C36	78.9	10.0	01/22/2020	ND					

Surrogate: 1-Chlorooctane 124 % 41-142

Surrogate: 1-Chlorooctadecane 113 % 37.6-147

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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: 01/21/2020  
 Reported: 01/22/2020  
 Project Name: EBDU CTB  
 Project Number: NONE GIVEN  
 Project Location: NONE GIVEN

Sampling Date: 01/21/2020  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: SP 1 @ 4' (H000199-03)**

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	01/22/2020	ND	1.92	96.1	2.00	0.934		
Toluene*	<0.050	0.050	01/22/2020	ND	2.01	101	2.00	0.236		
Ethylbenzene*	<0.050	0.050	01/22/2020	ND	1.97	98.4	2.00	0.0633		
Total Xylenes*	<0.150	0.150	01/22/2020	ND	5.82	96.9	6.00	0.00936		
Total BTX	<0.300	0.300	01/22/2020	ND						

Surrogate: 4-Bromofluorobenzene (PIL) 96.3 % 73.3-129

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	01/22/2020	ND	206	103	200	1.03	
DRO >C10-C28*	13.9	10.0	01/22/2020	ND	218	109	200	1.06	
EXT DRO >C28-C36	<10.0	10.0	01/22/2020	ND					

Surrogate: 1-Chlorooctane 104 % 41-142

Surrogate: 1-Chlorooctadecane 110 % 37.6-147

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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: 01/21/2020  
 Reported: 01/22/2020  
 Project Name: EBDU CTB  
 Project Number: NONE GIVEN  
 Project Location: NONE GIVEN

Sampling Date: 01/21/2020  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: SP 2 @ 3' (H000199-04)**

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	01/21/2020	ND	1.92	96.1	2.00	0.934	
Toluene*	<0.050	0.050	01/21/2020	ND	2.01	101	2.00	0.236	
Ethylbenzene*	<0.050	0.050	01/21/2020	ND	1.97	98.4	2.00	0.0633	
Total Xylenes*	<0.150	0.150	01/21/2020	ND	5.82	96.9	6.00	0.00936	
Total BTEX	<0.300	0.300	01/21/2020	ND					

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

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	01/22/2020	ND	206	103	200	1.03	
DRO >C10-C28*	<10.0	10.0	01/22/2020	ND	218	109	200	1.06	
EXT DRO >C28-C36	<10.0	10.0	01/22/2020	ND					

Surrogate: 1-Chlorooctane 102 % 41-142

Surrogate: 1-Chlorooctadecane 108 % 37.6-147

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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: 01/21/2020  
 Reported: 01/22/2020  
 Project Name: EBDU CTB  
 Project Number: NONE GIVEN  
 Project Location: NONE GIVEN

Sampling Date: 01/21/2020  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: SP 2 @ 4' (H000199-05)**

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	01/21/2020	ND	1.92	96.1	2.00	0.934	
Toluene*	<0.050	0.050	01/21/2020	ND	2.01	101	2.00	0.236	
Ethylbenzene*	<0.050	0.050	01/21/2020	ND	1.97	98.4	2.00	0.0633	
Total Xylenes*	<0.150	0.150	01/21/2020	ND	5.82	96.9	6.00	0.00936	
Total BTEX	<0.300	0.300	01/21/2020	ND					

Surrogate: 4-Bromofluorobenzene (PiC) 95.8 % 73.3-129

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	01/22/2020	ND	206	103	200	1.03	
DRO >C10-C28*	<10.0	10.0	01/22/2020	ND	218	109	200	1.06	
EXT DRO >C28-C36	<10.0	10.0	01/22/2020	ND					

Surrogate: 1-Chlorooctane 101 % 41-142

Surrogate: 1-Chlorooctadecane 105 % 37.6-147

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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: 01/21/2020  
 Reported: 01/22/2020  
 Project Name: EBDU CTB  
 Project Number: NONE GIVEN  
 Project Location: NONE GIVEN

Sampling Date: 01/21/2020  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: SP 3 @ 3' (H000199-06)**

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	01/21/2020	ND	1.92	96.1	2.00	0.934	
Toluene*	<0.050	0.050	01/21/2020	ND	2.01	101	2.00	0.236	
Ethylbenzene*	<0.050	0.050	01/21/2020	ND	1.97	98.4	2.00	0.0633	
Total Xylenes*	<0.150	0.150	01/21/2020	ND	5.82	96.9	6.00	0.00936	
Total BTEX	<0.300	0.300	01/21/2020	ND					

Surrogate: 4-Bromofluorobenzene (PIC) 96.5 % 73.3-129

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	01/22/2020	ND	206	103	200	1.03	
DRO >C10-C28*	<10.0	10.0	01/22/2020	ND	218	109	200	1.06	
EXT DRO >C28-C36	<10.0	10.0	01/22/2020	ND					

Surrogate: 1-Chlorooctane 103 % 41-142

Surrogate: 1-Chlorooctadecane 108 % 37.6-147

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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: 01/21/2020  
 Reported: 01/22/2020  
 Project Name: EBDU CTB  
 Project Number: NONE GIVEN  
 Project Location: NONE GIVEN

Sampling Date: 01/21/2020  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: SP 3 @ 4' (H000199-07)**

BTEX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	01/21/2020	ND	1.92	96.1	2.00	0.934	
Toluene*	<0.050	0.050	01/21/2020	ND	2.01	101	2.00	0.236	
Ethylbenzene*	<0.050	0.050	01/21/2020	ND	1.97	98.4	2.00	0.0633	
Total Xylenes*	<0.150	0.150	01/21/2020	ND	5.82	96.9	6.00	0.00936	
Total BTEX	<0.300	0.300	01/21/2020	ND					

Surrogate: 4-Bromofluorobenzene (PIL) 93.6 % 73.3-129

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	01/22/2020	ND	206	103	200	1.03	
DRO >C10-C28*	<10.0	10.0	01/22/2020	ND	218	109	200	1.06	
EXT DRO >C28-C36	<10.0	10.0	01/22/2020	ND					

Surrogate: 1-Chlorooctane 105 % 41-142

Surrogate: 1-Chlorooctadecane 109 % 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: 01/21/2020  
 Reported: 01/22/2020  
 Project Name: EBDU CTB  
 Project Number: NONE GIVEN  
 Project Location: NONE GIVEN

Sampling Date: 01/21/2020  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: SP 4 @ 3' (H000199-08)**

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	01/22/2020	ND	1.92	96.1	2.00	0.934	
Toluene*	<0.050	0.050	01/22/2020	ND	2.01	101	2.00	0.236	
Ethylbenzene*	<0.050	0.050	01/22/2020	ND	1.97	98.4	2.00	0.0633	
Total Xylenes*	<0.150	0.150	01/22/2020	ND	5.82	96.9	6.00	0.00936	
Total BTEX	<0.300	0.300	01/22/2020	ND					

Surrogate: 4-Bromofluorobenzene (PIL) 95.5 % 73.3-129

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	01/22/2020	ND	206	103	200	1.03	
DRO >C10-C28*	<10.0	10.0	01/22/2020	ND	218	109	200	1.06	
EXT DRO >C28-C36	<10.0	10.0	01/22/2020	ND					

Surrogate: 1-Chlorooctane 102 % 41-142

Surrogate: 1-Chlorooctadecane 107 % 37.6-147

Cardinal Laboratories

\*=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: 01/21/2020  
 Reported: 01/22/2020  
 Project Name: EBDU CTB  
 Project Number: NONE GIVEN  
 Project Location: NONE GIVEN

Sampling Date: 01/21/2020  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: SP 4 @ 4' (H000199-09)**

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	01/22/2020	ND	1.92	96.1	2.00	0.934			
Toluene*	<0.050	0.050	01/22/2020	ND	2.01	101	2.00	0.236			
Ethylbenzene*	<0.050	0.050	01/22/2020	ND	1.97	98.4	2.00	0.0633			
Total Xylenes*	<0.150	0.150	01/22/2020	ND	5.82	96.9	6.00	0.00936			
Total BTEx	<0.300	0.300	01/22/2020	ND							

Surrogate: 4-Bromofluorobenzene (PIL) 96.0 % 73.3-129

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	01/22/2020	ND	206	103	200	1.03	
DRO >C10-C28*	<10.0	10.0	01/22/2020	ND	218	109	200	1.06	
EXT DRO >C28-C36	<10.0	10.0	01/22/2020	ND					

Surrogate: 1-Chlorooctane 102 % 41-142

Surrogate: 1-Chlorooctadecane 108 % 37.6-147

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\* = Accredited Analyte

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### Notes and Definitions

S-06	The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.
S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
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





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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name: <u>Abate Corporation</u>		P.O. #:		BILL TO																									
Project Manager: <u>Walter Baker</u>		Company:		ANALYSIS REQUEST																									
Address:		Attn:																											
City:		Address:																											
Phone #:		State:		Zip:																									
Fax #:		City:		State:		Zip:																							
Project #:		Project Owner:																											
Project Name: <u>EBM CTB</u>		City:																											
Project Location: <u>EBM CTB</u>		State:		Zip:																									
Sample Name: <u>J. Brown</u>		Phone #:		Fax #:																									
FOR LAB USE ONLY		MATRIX		PRESERV.		SAMPLING																							
Lab I.D.		(G)RAB OR (C)OMP.		# CONTAINERS		GROUNDWATER		WASTEWATER		SOIL		OIL		SLUDGE		OTHER:		ACID/BASE:		ICE / COOL		OTHER:		DATE		TIME		ANALYSIS REQUEST	
Sample I.D.																													
<u>AB0019</u>																													
<u>1 SP1 @ 2'</u>																													
<u>2 SP1 @ 3'</u>																													
<u>3 SP1 @ 4'</u>																													
<u>4 SP2 @ 3'</u>																													
<u>5 SP2 @ 4'</u>																													
<u>6 SP3 @ 3'</u>																													
<u>7 SP3 @ 4'</u>																													
<u>8 SP4 @ 3'</u>																													
<u>9 SP4 @ 4'</u>																													

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Relinquished By: <u>Jeff Brown</u>	Date: <u>1/21/24</u>	Received By: <u>Quiana Delaney</u>	Date: <u>1/21/24</u>							
Time: <u>10:42</u>	Time: <u>11:24</u>	Time: <u>11:24</u>	Time: <u>11:24</u>							
Delivered By: (Circle One) Sample - UPS - Bus - Other:	Observed Temp. °C <u>3.0</u>	Corrected Temp. °C	Sample Condition Cool Intact <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	CHECKED BY: (Initials) <u>YB</u>	Turnaround Time: <u>Standard</u> <u>Rush</u>	Bacteria (only) Sample Condition Cool Intact <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Thermometer ID # <u>113</u>	Correction Factor <u>0.0</u>	Observed Temp. °C	Corrected Temp. °C

† Cardinal cannot accept verbal changes. Please email changes to [celey.keene@cardinallabsnm.com](mailto:celey.keene@cardinallabsnm.com)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
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JANUARY • FEBRUARY • MARCH • APRIL • MAY • JUNE • JULY • AUGUST • SEPTEMBER • OCTOBER • NOVEMBER • DECEMBER

MONDAY • TUESDAY • WEDNESDAY • THURSDAY • FRIDAY • SATURDAY • SUNDAY

- EBDu CTB 11/25/19 -

SP1 @ Surface -

$$10.0 / 30.2 = 3.02 = .60 = 1.811$$

SP1 @ 1'

$$10.2 / 30.3 = 2.97 = .29 = 861$$

SP2 @ Surface -

$$10.1 / 30.3 = 3 = 1.05 = 3,149$$

SP2 @ 2'

$$10.6 / 30.2 = 2.84 = .18 = 511 \checkmark$$

SP2 @ 3'

$$10.1 / 30.2 = 2.99 = .07 = 209 \checkmark$$

SP3 @ Surface -

$$10.1 / 30.2 = 2.99 = 1.62 = 4,842$$

SP3 @ 1'

$$10.2 / 30.3 = 2.97 = .25 = 742$$

SP3 @ 2'

$$10.0 / 30.1 = 3.01 = .30 = 902$$

SP4 @ Surface -

$$10.0 / 30.2 = 3.02 = 1.15 = 3,471$$

SP4 @ 1'

$$10.1 / 30.2 = 2.99 = .35 = 1,046$$

SP4 @ 2'

$$10.0 / 30.0 = 3 = .20 = 599 \checkmark$$