Form C-141
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State of New Mexico
Oil Conservation Division

Incident ID	NDHR1922141227
District RP	1RP-5636
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?	47 (ft bgs)
Did this release impact groundwater or surface water?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☐ Yes ☒ 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)?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes ☒ 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?	☒ Yes ☐ No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes ☒ No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ☒ No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ☒ No
Are the lateral extents of the release overlying an unstable area such as karst geology?	☐ Yes ☒ No
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes ☒ No
Did the release impact areas **not** on an exploration, development, production, or storage site?	☐ Yes ☒ No

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

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

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

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

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State of New Mexico
Oil Conservation Division

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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: Sr. Environmental Tech

Signature: Bruce Baker Date: 10/29/2019

email: Larry.Baker@apachecorp.com Telephone: 432-631-6982

OCD Only

Received by: Cristina Eads Date: 01/06/2019

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State of New Mexico
Oil Conservation Division

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Remediation Plan

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

- [x] Detailed description of proposed remediation technique
- [x] Scaled sitemap with GPS coordinates showing delineation points
- [x] Estimated volume of material to be remediated
- [x] Closure criteria is to Table 1 specifications subject to 19.15.29.12(C)(4) NMAC
- [x] 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: Sr. Environmental Tech

Signature: Bruce Baker Date: 10/29/2019

email: Larry.Baker@apachecorp.com Telephone: 432-631-6982

OCD Only

Received by: Cristina Eads Date: 01/06/2019

- [ ] Approved
- [x] Approved with Attached Conditions of Approval
- [ ] Denied
- [ ] Deferral Approved

Signature: Cristina Eads Date: 01/06/2019

1RP-5636
REMEDIATION PLAN
East Blinebry Drinkard Unit #37
Produced Water Spill
Lea County, New Mexico

Latitude: N32.479569°
Longitude: W-103.122061°

LAI Project No. 19-0112-49

October 29, 2019

Prepared for:

Apache Corporation
303 Veterans Airpark Lane
Midland, Texas 79705

Prepared by:
Larson & Associates, Inc.
507 North Marienfeld Street, Suite 205
Midland, Texas 79701

Mark J. Larson, P.G.
Certified Professional Geologist #10490

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1.0 INTRODUCTION

Larson & Associates, Inc. (LAI) has prepared this document on behalf of Apache Corporation (Apache) for remediation of a produced water spill at the East Blinebry Drinkard Unit (EBDU) #37 (Site) located in Unit E (SW/4, SW/4), Section 13, Township 21 South and Range 37 East in Lea County, New Mexico. The geodetic position is North 32.479569° and West -103.122061°. The surface ownership is private. Figure 1 presents a topographic map.

1.1 Background

The spill occurred at a pipeline junction and flowed west about 675 feet. Approximately 350 feet west of the origin the release flowed south about 450 feet before terminating in a low lying area. The volume of the release is unknown. A volume of fluid recovered is unknown. The release is considered major due to the unknown volume of the release. The release covered an area measuring approximately 25,000 square feet or approximately 0.57 acres. Apache submitted form C-141 to OCD on July 26, 2019. The release was assigned a remediation permit (RP) number of 1RP-5636. Appendix A presents the C-141.

On August 1, 2019, Apache personnel collected a groundwater sample from a windmill located about 300 feet south of the point of termination for the release. Cardinal Laboratories (Cardinal) in Hobbs, New Mexico, analyzed the sample for benzene, toluene, ethylbenzene, xylenes (BTEX), chloride and total dissolved solids (TDS) by EPA SW-846 Method 8021B (BTEX) and titration methods for chloride and TDS. BTEX was not reported above the analytical method reporting limits (RL). Chloride and TDS were reported at 232 milligrams per liter (mg/L) and 732 mg/L, respectively, and below the New Mexico Water Quality Control Commission (WQCC) domestic water quality standards of 250 mg/L and 1,000 mg/L, respectively. Table 1 presents the groundwater laboratory analysis. Appendix B presents the Cardinal laboratory report.

1.2 Physical Setting

The physical setting is as follows:

- The surface elevation is approximately 3,420 feet above mean sea level (msl);
- The topography slopes gently towards the southwest;
- The nearest surface water feature is a low lying area about 500 feet southwest of the release origin;
- The soils are designated as “Kimbrough gravelly loam, dry, 0 to 3 percent slopes”, consisting of about 3 inches of gravelly loam, underlain by about 7 inches of loam and cemented material (caliche) to about 80 inches below ground surface (bgs), in descending order;
- The soil is not considered prime farmland;
- According to the Texas Bureau of Economic Geology Geologic Atlas of Texas Hobbs Sheet the surface geology is windblown sand (Holocene to middle Pleistocene) consisting of dark brown to grayish brown sand derived from the Blackwater Draw formation;
- Groundwater occurs in the Ogallala formation between about 55 feet bgs near the point of release to about 47 feet bgs near the point of termination;
- A fresh water well (windmill) is located about 300 feet south of the point of termination for the release and is not shown on the New Mexico Office of the State Engineer (OSE) website.

1.3 Remediation Levels

The following remediation standards are based on closure criteria for soils impacted by a release of unknown volume as presented in Table 1 of 19.15.29 NMAC:

- Benzene 10 mg/Kg
- BTEX 50 mg/Kg
- TPH 100 mg/Kg
- Chloride 600 mg/Kg

Further, 19.15.29.13 NMAC (Restoration, Reclamation and Re-Vegetation) requires the operator to restore the impacted surface area that existed prior to the release or their final land use.

2.0 DELINEATION

2.1 Soil Samples

Between July 17, 2019 and July 25, 2019, Apache collected soil samples at eleven (11) locations (SP1 through SP11) from about 1 foot (SP6) to 16 feet (SP7) feet below ground surface (bgs). Apache personnel analyzed the samples for chloride by field titration method. Cardinal analyzed select soil samples for BTEX, total petroleum hydrocarbons (TPH), including gasoline rage organics (GRO), diesel range organics (DRO) and oil range organics (ORO) by EPA SW-846 Methods 8021B and 8015D, respectively, and chloride by titration method SM4500cl-B.

Benzene and BTEX were reported below the laboratory analytical method reporting limits and New Mexico Oil Conservation Division (OCD) cleanup limits of 10 milligrams per kilogram (mg/Kg) and 50 mg/Kg in Table 1 (19.15.29 NMAC). Chloride exceeded the OCD cleanup limit of 10,000 mg/Kg in samples SP1, 0 feet (16,962.74 mg/kg), SP2, o feet (28,800 mg/Kg) and SP5, 0 and 6 feet (10,100 mg/Kg) where groundwater is greater than 50 feet bgs and less than 100 feet bgs. Chloride exceeded the OCD cleanup limit of 600 mg/Kg where groundwater is less than 50 feet bgs soil samples from SP6, SP7, SP8, SP9 and SP11.

Apache excavated soil to approximately twelve (12) feet bgs from an area measuring approximately 4,431 square feet in the low area located near the termination of the release where groundwater was recorded at about 47 feet bgs. Approximately 2,300 cubic yards of soil was hauled to Sundance Disposal located east of Eunice, New Mexico. On August 7 and 8, 2019, Apache personnel used a track hoe to collect soil samples from the bottom of the excavation to approximately 22 feet bgs. Cardinal analyzed the samples and reported chloride at 544 mg/Kg and below the OCD cleanup limit of 600 mg/Kg at approximately 21 feet bgs. Table 2 presents the Cardinal analytical data summary. Figure 2 presents the spill area, soil sample locations SP1 through SP13 and excavation. Appendix B presents the Cardinal laboratory reports.

On August 14 and 15, 2019, LAI personnel advanced four (4) borings (1, 2, 3 and 4) near the terminal end of the release. The borings were advanced with direct push technology (DPT) between approximately 28 feet bgs (2) and 40 feet bgs (4) to observe groundwater. On August 18, 2019, groundwater was not observed in the borings and the borings were plugged with bentonite chips.

On August 27 and 28, 2019, Scarborough Drilling, Inc. (SDI), under direction from LAI, used an air rotary rig to drill three (3) borings (S-1 through S-3) along the south edge of the excavation. Soil samples were collected each 5 feet (i.e., 0, 5, 10, 15, 20, etc.) to approximately 40 and 50 feet bgs. The samples were delivered under preservation and chain of custody to Permian Basin Environmental Lab (PBEL) in Midland, Texas, which analyzed the samples for chloride by EPA Method 300. PBEL reported chloride below the OCD remediation limit (600 mg/Kg) in all samples. Groundwater was observed at about 46 feet bgs in boring S-1. Table 3 presents the PBEL analytical data summary. Figure 2 presents soil sample locations S-1 through S-3. Appendix C presents the PBEL report. Appendix D presents the boring logs.

On September 19, 2019, SDI advanced a borings (NB) north of the excavation (SP13) to approximately 48 feet bgs. LAI personnel collected soil samples at 45 and 48 feet bgs. Cardinal analyzed the samples for chloride by titration method SM4500cl-B and reported chloride 160 mg/Kg and 128 mg/Kg, in samples from 45 and 48 feet bgs, respectively. Table 2 presents the Cardinal laboratory analytical data summary. Figure 2 presents the boring location. Appendix B presents the Cardinal laboratory reports.

2.2 Groundwater Samples

On September 19, 2019, Scarborough drilled two (2) borings (TMW-1 and TMW2) for collecting groundwater samples. Boring TMW-1 was drilled south of the excavation and about 250 feet north of the windmill. Boring TMW-1 was drilled to approximately 71 feet bgs. Boring TMW-2 was drilled hydraulically up gradient (north) of the release to approximately 80 feet bgs. Temporary 2 inch threaded schedule 40 PVC casing and approximately 20 feet of 0.01 inch factory slotted screen was placed in the borings. The screens were positioned above and below the groundwater level observed during drilling. On September 23, 2019, groundwater was recorded at 46.18 feet bgs in well TMW-1 and 55.8 feet bgs in well TMW-2. The wells were developed by pumping with an electric submersible pump to remove fresh water introduced and sediment disturbed during drilling. Approximately 125 gallons of water were removed from each well and disposed in an OCD permitted Class II disposal well.

On September 24, 2019, LAI personnel collected groundwater samples with dedicated disposable bailers. The samples were delivered under preservation and chain of custody to DHL Analytical in Round Rock, Texas, which analyzed the samples for BTEX, chloride and TDS.

The laboratory reported BTEX less than the analytical method RL and WQCC human health standards in samples TMW-1 and TMW-2. Chloride and TDS were reported at was reported in TMW-1 at 37.4 mg/L and 400 mg/L, respectively, and below the WQCC domestic water quality standards of 250 mg/L and 1,000 mg/L, respectively. Chloride and TDS were reported in TMW-2 (up gradient) at 338 mg/L and 1,220 mg/L, respectively, and above the WQCC domestic water quality standards of 250 mg/L and 1,000 mg/L, respectively. Table 1 presents the groundwater sample analytical data summary. Figure 2 presents the boring locations. Appendix D presents the boring logs and monitoring well records. Appendix E presents the DHL laboratory report.

3.0 REMEDIATION PLAN

Apache proposes the following:

1. Excavate soil (Area 1) to 4 feet bgs between SP1 and SP13 depending on the depth and hardness of the caliche;

2. Collect soil samples for about every 200 square feet of the excavation sidewalls for analysis of BTEX, TPH and chloride;
3. Install 20 mill thickness polyethylene liner in bottom of excavation (Area 1), backfill with caliche to 2 feet bgs and to ground surface with clean soil containing chloride less than 600 mg/Kg;
4. Backfill excavation (Area 2) to approximately 5 feet bgs with caliche, to approximately 2 feet bgs with compacted clay and to surface with clean soil containing chloride less than 600 mg/Kg;
5. Seed excavations to landowner specifications;
6. Monitor groundwater quality in TMW-1 and TMW-2 on a quarterly (4 times per year) schedule for a period of two (2) years, analyze groundwater samples for BTEX, chloride and TDS and submit reports to OCD within 45 following receipt of the laboratory reports.

Figure 3 presents the excavation areas and depths.

Tables

Table 1
Groundwater Sample Analytical Data Summary
Apache Corporation, EBDU 37
Lea County, New Mexico

Sample	Collection Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	Chloride (mg/L)	TDS (mg/L)
/QCC Standard:		*0.01	*0.75	*0.75	*0.62	**250	**1,000
(') Windmill	8/1/2019	<0.001	<0.001	<0.001	<0.003	232	732
(²) TMW-1	9/23/2019	<0.00800	<0.00200	<0.00200	<0.00200	37.4	400
(²) TMW-2	9/23/2019	<0.00800	<0.00200	<0.00200	<0.00200	338	1,220

Notes:
(') analysis performed by Cardinal Laboratories, Hobbs, New Mexico, by EPA SW-846 Method 8021B (BTEX) and titration methods (chloride and TDS)
(²) analysis performed by DHL Analytical, Round Rock, Texas, by EPA SW-846 Method 8021B (BTEX) and Method 300 (chloride)
All values reported in milligrams per liter (mg/L) equivalent to parts per million (ppm)
< values - denotes concentration is less than method reporting limit (RL).
* - Human health standard
** - Domestic water quality standard

Table 2
Apache Laboratory Soil Sample Analytical Data Summary
Apache Corp., EBDU 37
Lea County, New Mexico

Sample	Depth (Feet)	Collection Date	Status	Benzene (mg/Kg	BTEX (mg/Kg)	C6 - C12 (mg/Kg)	C12 - C28 (mg/Kg)	C28 - C35 (mg/Kg)	TPH (mg/Kg)	Chloride (mg/Kg)
Remediation Level:				**10**	**50**				**100**	**600**
BG 1	0	07/19/2019	In-situ	--	--	--	--	--	--	<16.0
	1		In-situ	<0.05	<0.600	<10.0	91.5	43.3	134.8	528
	2		In-situ	--	--	--	--	--	--	32.0
	3		In-situ	--	--	--	--	--	--	16.0
	4		In-situ	--	--	--	--	--	--	80.0
SP1	0	07/25/2019	In-situ	<0.05	<0.600	<10.0	<10.0	<10.0	<10.0	16,962.74
	5		In-situ	<0.05	<0.600	<10.0	<10.0	<10.0	<10.0	400
	10		In-situ	<0.05	<0.600	<10.0	<10.0	<10.0	<10.0	96.0
SP2	0	07/25/2019	In-situ	<0.05	2.713	<10.0	<10.0	<10.0	<10.0	28,800
	5	07/25/2019	In-situ	<0.05	<0.600	<10.0	<10.0	<10.0	<10.0	1,150
	10	07/25/2019	In-situ	<0.05	<0.600	<10.0	<10.0	<10.0	<10.0	272
SP3	0	07/25/2019	In-situ	<0.05	<0.600	<10.0	<10.0	<10.0	<10.0	>10
	5	07/25/2019	In-situ	<0.05	<0.600	<10.0	<10.0	<10.0	<10.0	2,720
	10	07/25/2019	In-situ	<0.05	<0.600	<10.0	<10.0	<10.0	<10.0	192
	15	07/25/2019	In-situ	<0.05	<0.600	<10.0	<10.0	<10.0	<10.0	80
SP4	0	07/17/2019	In-situ	--	--	--	--	--	--	17,322
	1		In-situ	--	--	--	--	--	--	8,757
	2		In-situ	--	--	--	--	--	--	5,143
	3		In-situ	--	--	--	--	--	--	>2.0
	3.5		In-situ	--	--	--	--	--	--	4,876
	4		In-situ	--	--	--	--	--	--	5,128
SP5	0	07/19/2019	In-situ	<0.05	<0.600	<10.0	996	339	1,335	10,100
	2		In-situ	<0.05	<0.600	<10.0	<10.0	<10.0	<10.0	5,200
	4		In-situ	<0.05	<0.600	<10.0	<10.0	<10.0	<10.0	4,240
	6		In-situ	<0.05	<0.600	<10.0	<10.0	<10.0	<10.0	10,100
	8		In-situ	<0.05	<0.600	<10.0	<10.0	<10.0	<10.0	9,330

Table 2
Apache Laboratory Soil Sample Analytical Data Summary
Apache Corp., EBDU 37
Lea County, New Mexico

Sample	Depth (Feet)	Collection Date	Status	Benzene (mg/Kg	BTEX (mg/Kg)	C6 - C12 (mg/Kg)	C12 - C28 (mg/Kg)	C28 - C35 (mg/Kg)	TPH (mg/Kg)	Chloride (mg/Kg)
Remediation Level:				**10**	**50**				**100**	**600**
	10		In-situ	<0.05	<0.600	<10.0	<10.0	<10.0	<10.0	3,840
	12		In-situ	<0.05	<0.600	<10.0	<10.0	<10.0	<10.0	1,420
	14		In-situ	<0.05	<0.600	<10.0	<10.0	<10.0	<10.0	3,532
SP6	0	07/19/2019	In-situ	--	--	--	--	--	--	>2.0
	1		In-situ	--	--	--	--	--	--	>2.0
SP7	0	07/22/2019	In-situ	<0.05	<0.600	<10.0	<10.0	<10.0	<10.0	>2.0
	2		In-situ	<0.05	<0.600	<10.0	<10.0	<10.0	<10.0	3,089
	4		In-situ	<0.05	<0.600	<10.0	<10.0	<10.0	<10.0	5,758
	6		In-situ	<0.05	<0.600	<10.0	<10.0	<10.0	<10.0	6,777
	8		In-situ	<0.05	<0.600	<10.0	<10.0	<10.0	<10.0	5,998
	10		In-situ	<0.05	<0.600	<10.0	<10.0	<10.0	<10.0	3,748
	12		In-situ	<0.05	<0.600	<10.0	<10.0	<10.0	<10.0	4,026
	14		In-situ	<0.05	<0.600	<10.0	<10.0	<10.0	<10.0	3,781
	16		In-situ	<0.05	<0.600	<10.0	<10.0	<10.0	<10.0	4,482
SP8	5	07/25/2019	In-situ	<0.05	<0.600	<10.0	<10.0	<10.0	<10.0	4,240
	10		In-situ	<0.05	<0.600	<10.0	<10.0	<10.0	<10.0	2,240
	15		In-situ	<0.05	<0.600	<10.0	<10.0	<10.0	<10.0	1,090
SP9	5	07/25/2019	In-situ	<0.05	<0.600	<10.0	<10.0	<10.0	<10.0	6,160
	10		In-situ	<0.05	<0.600	<10.0	<10.0	<10.0	<10.0	5,520
	15		In-situ	<0.05	<0.600	<10.0	<10.0	<10.0	<10.0	2,800
SP10	5	07/25/2019	In-situ	--	--	--	--	--	--	6,621
	10		In-situ	--	--	--	--	--	--	7,173
SP11	5	07/25/2019	In-situ	--	--	--	--	--	--	7,745
	10		In-situ	--	--	--	--	--	--	7,053

Table 2
Apache Laboratory Soil Sample Analytical Data Summary
Apache Corp., EBDU 37
Lea County, New Mexico

Sample	Depth (Feet)	Collection Date	Status	Benzene (mg/Kg	BTEX (mg/Kg)	C6 - C12 (mg/Kg)	C12 - C28 (mg/Kg)	C28 - C35 (mg/Kg)	TPH (mg/Kg)	Chloride (mg/Kg)
Remediation Level:				**10**	**50**				**100**	**600**
SP-13	15	08/28/2019	In-Situ	*<0.050	*<0.600	*<10.0	*<10.0	*<10.0	*<10.0	2,880
(S-4/NB)	20	08/28/2019	In-Situ	*<0.050	*<0.600	*<10.0	*<10.0	*<10.0	*<10.0	4,600
	25	08/28/2019	In-Situ	*<0.050	*<0.600	*<10.0	*<10.0	*<10.0	*<10.0	3,120
	30	08/28/2019	In-Situ	*<0.050	*<0.600	*<10.0	*<10.0	*<10.0	*<10.0	4,360
	35	08/28/2019	In-Situ	*<0.050	*<0.600	*<10.0	*<10.0	*<10.0	*<10.0	5,280
	40	08/28/2019	In-Situ	*<0.050	*<0.600	*<10.0	*<10.0	*<10.0	*<10.0	3,040
	45	09/19/2018	In-Situ	--	--	--	--	--	--	160
	48	09/19/2018	In-Situ	--	--	--	--	--	--	128
Excavation Samples										
B0	12	08/07/2019	In-situ	<0.05	<0.600	<10.0	<10.0	<10.0	<10.0	32.0
B1	12	08/07/2019	In-situ	<0.05	<0.600	<10.0	<10.0	<10.0	<10.0	32.0
B2	12	08/07/2019	In-situ	<0.05	<0.600	<10.0	<10.0	<10.0	<10.0	48.0
B10	12	08/07/2019	In-situ	<0.05	<0.600	<10.0	<10.0	<10.0	<10.0	16.0
B11	12	08/07/2019	In-situ	<0.05	<0.600	<10.0	<10.0	<10.0	<10.0	<16.0
B 15	13	08/08/2019	In-situ	<0.05	<0.600	<10.0	<10.0	<10.0	<10.0	720
	15	08/08/2019	In-situ	<0.05	<0.600	<10.0	<10.0	<10.0	<10.0	1,840
	17	08/08/2019	In-situ	<0.05	<0.600	<10.0	<10.0	<10.0	<10.0	1,950
	19	08/08/2019	In-situ	<0.05	<0.600	<10.0	<10.0	<10.0	<10.0	3,800
	21	08/08/2019	In-situ	<0.05	<0.600	<10.0	<10.0	<10.0	<10.0	544
	22	08/08/2019	In-situ	<0.05	<0.600	<10.0	<10.0	<10.0	<10.0	*3,440

Notes: analysis performed by Cardinal Laboratories, Hobbs, New Mexico, by Method by EPA SW-846 Method 8021B (BTEX), 8015D (TPH) and SM4500cl-B (chloride)
Depth in feet below ground surface (bgs)
mg/Kg: milligrams per kilogram equivalent to parts per million (ppm)
<: denotes concentration less than analytical method reporting limit
* Represents possible cross contamination from trackhoe during sample collection
Highlighted denotes concentration above chloride remediation level (600 mg/Kg) in Table 1 (19.15.29 NMAC)

Table 3
LAI Analytical Data Summary
Apache Corp., EBDU 37
Lea County, New Mexico

Sample	Depth (Feet)	Collection Date	Status (mg/Kg)	Chloride (mg/Kg)
Remediation Level:				**600**
S-1	0	08/27/2019	In-situ	67.6
	5		In-situ	58.3
	10		In-situ	16.1
	15		In-situ	9.81
	20		In-situ	14.0
	25		In-situ	11.0
	30		In-situ	12.9
	35		In-situ	5.65
	40		In-situ	8.16
	45		In-situ	21.0
	50		In-situ	3.90
S-2	0	08/27/2019	In-situ	10.1
	5		In-situ	22.3
	10		In-situ	9.43
	15		In-situ	1.28
	20		In-situ	2.46
	25		In-situ	<1.06
	30		In-situ	3.67
	35		In-situ	5.10
	40		In-situ	2.89
S-3	0	08/27/2019	In-Situ	2.62
	5		In-Situ	1.68
	10		In-Situ	1.31
	15		In-Situ	<1.01
	20		In-Situ	1.24
	25		In-Situ	<1.05
	30		In-Situ	<1.08
	35		In-Situ	<1.09
	40		In-Situ	1.23

Notes: analysis performed by Permian Basin Environmental Lab, Midland, Texas, by EPA Method 300
Depth in feet below ground surface (bgs)
mg/Kg: milligrams per kilogram equivalent to parts per million (ppm)
<: denotes concentration less than analytical method reporting limit

Figures

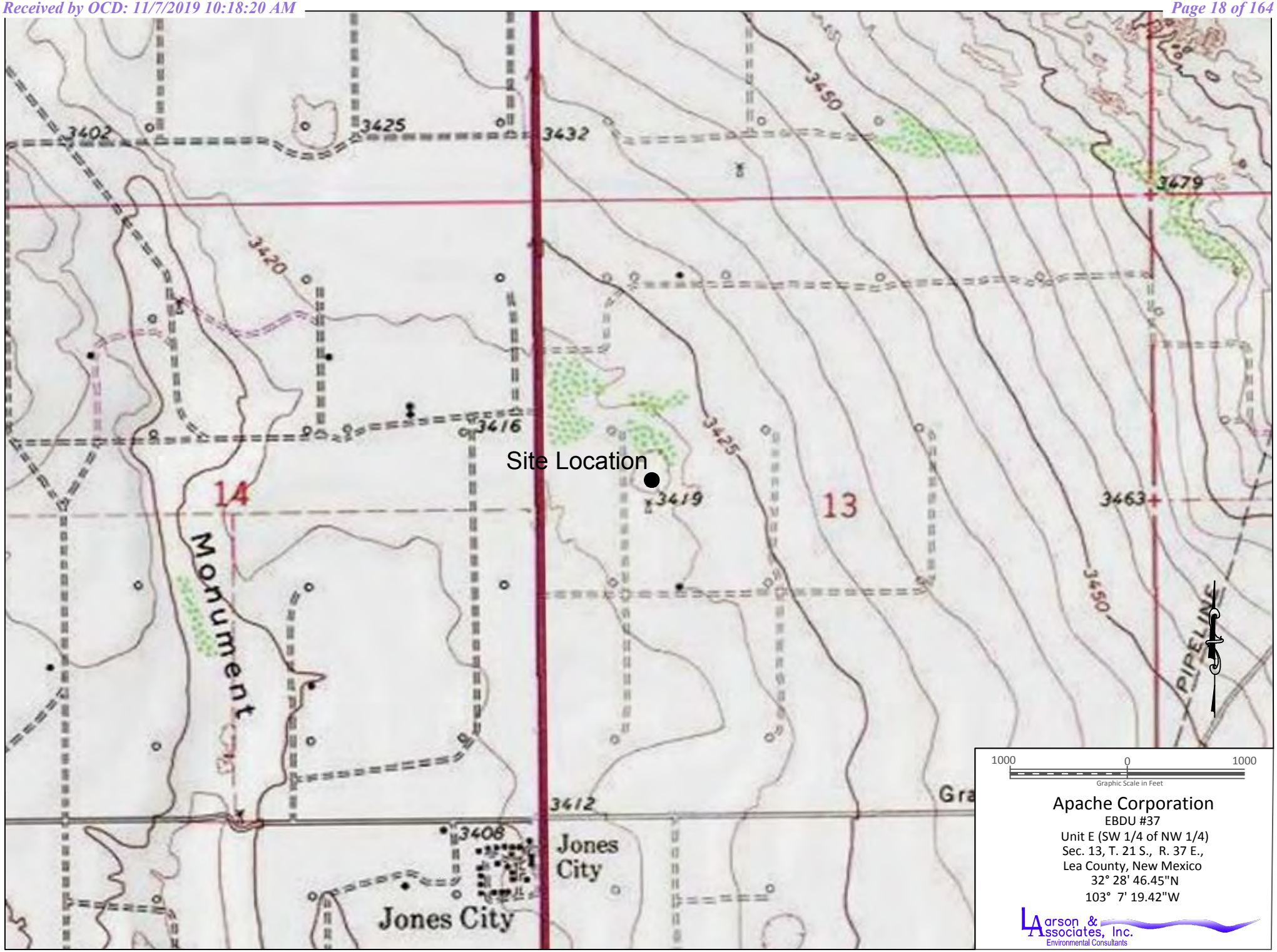

Figure 1 - Topographic Map

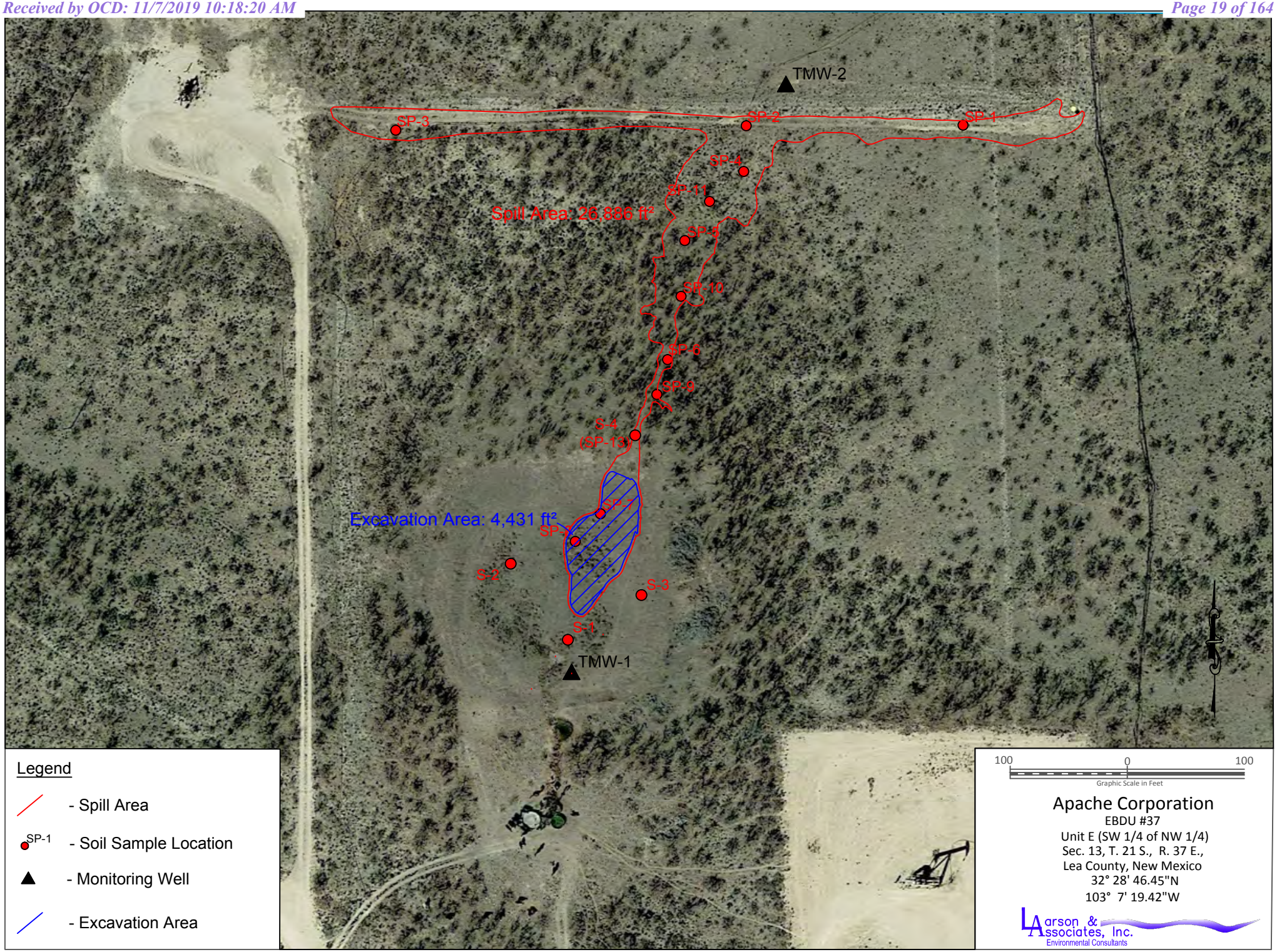

Figure 2 - Aerial Map Showing Soil Sample Locations

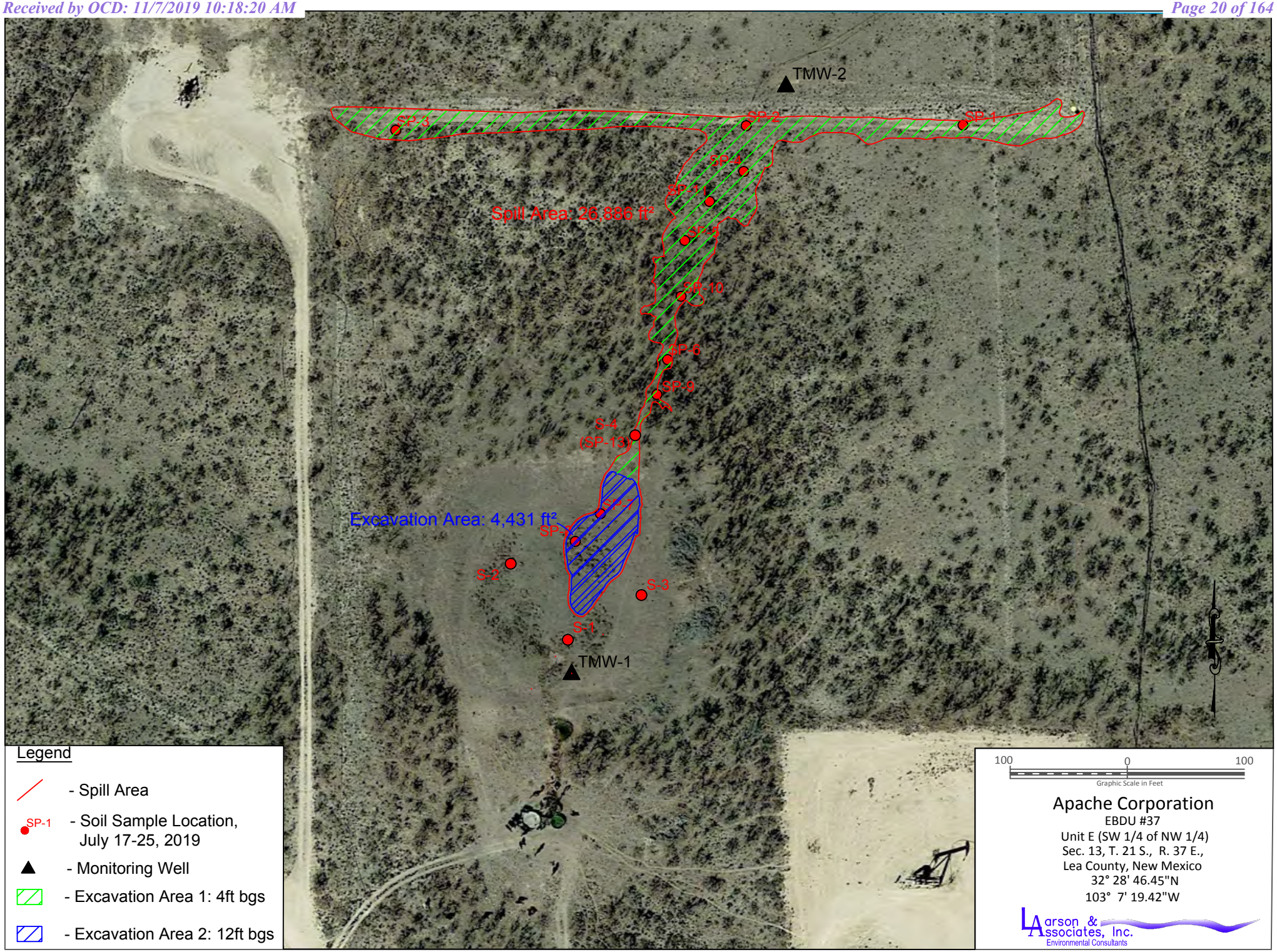

Figure 3 - Aerial Map Showing Excavation Areas

Appendix A

Initial C-141

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	NDHR1922141227
District RP	1RP-5636
Facility ID	
Application ID	pDHR1922140928

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 32.4807053 Longitude: N -103.123085

(NAD 83 in decimal degrees to 5 decimal places)

Site Name: EBDU #37 WIW	Site Type: Water Injection Well
Date Release Discovered: July 14, 2019	API # *3002506556*

Unit Letter	Section	Township	Range	County
E	12	21S	37E	LEA

Surface Owner: ☐ State ☐ Federal ☐ Tribal ☒ Private (*Name: William Stephens*)

Nature and Volume of Release

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

☒ Crude Oil	Volume Released (Unknown bbls)	Volume Recovered (Unknown bbls)
☒ Produced Water	Volume Released (Unknown bbls)	Volume Recovered (Unknown bbls)
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	☐ Yes ☒ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release

Isolation valve failure due to internal corrosion.

Form C-141
Page 2

State of New Mexico
Oil Conservation Division

Incident ID	NDHR1922141227
District RP	1RP-5636
Facility ID	
Application ID	pDHR1922140928

Was this a major release as defined by 19.15.29.7(A) NMAC? ☐ Yes ☒ 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)?
Via email given to NM OCD by Bruce Baker, Senior 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

☒ The source of the release has been stopped.
☒ The impacted area has been secured to protect human health and the environment.
☒ Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.
☒ All free liquids and recoverable materials have been removed and managed appropriately.

If all the actions described above have not 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: Jeff Broom Title: Environmental Technician

Signature: _____ Date: 07/24/2019

Email: Jeffrey.Broom@apachecorp.com Telephone: (432) 664-4677

OCD Only

Received by: Dylan Rose-Coss Date: 08/09/2019

Appendix B

Cardinal Laboratory Reports

CARDINAL Laboratories

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

July 24, 2019

BRUCE BAKER

APACHE CORP - HOBBS

2350 W. MARLAND BLVD.

HOBBS, NM 88240

RE: EBDU 37 WIW

Enclosed are the results of analyses for samples received by the laboratory on 07/19/19 17:14.

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.

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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:	07/19/2019	Sampling Date:	07/17/2019
Reported:	07/24/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Celey D. Keene
Project Location:	NOT GIVEN		

Sample ID: BG 1 @ SURFACE (H902502-01)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	07/23/2019	ND	416	104	400	0.00	

Sample ID: BG 1 @ 2' (H902502-02)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**32.0**	16.0	07/23/2019	ND	416	104	400	0.00	

Sample ID: BG 1 @ 3' (H902502-03)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**16.0**	16.0	07/23/2019	ND	416	104	400	0.00	

Sample ID: BG 1 @ 4' (H902502-04)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**80.0**	16.0	07/23/2019	ND	416	104	400	0.00	

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name: APACHE CORPORATION	**BILL TO**
Project Manager: BRUCE BAKER	P.O. #:
Address:	Company:
City: State: Zip:	Attn:
Phone #: Fax #:	Address:
Project #: Project Owner:	City:
Project Name: EBDU 37 WIW	State: Zip:
Project Location: EBDU 37 WIW	Phone #:
Sampler Name: JEFF BROWN	Fax #:

FOR LAB USE ONLY				MATRIX						PRESERV.			SAMPLING		ANALYSIS REQUEST
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	ACID/BASE:	ICE / COOL	OTHER :	DATE	TIME	CL
H902502-															
01	BG1 @ Surface		1			✓							7-17-19	1452	✓
02	BG1 @ 2'		1			✓							7-17-19	1454	✓
03	BG1 @ 3'		1			✓							7-17-19	1455	✓
04	BG1 @ 4'		1			✓							7-17-19	1500	✓

Relinquished By: Jeff Brown	Date: 7-19-19	Received By: Colby Keene	Phone Result: ☐ Yes ☐ No Add'l Phone #:
	Time: 1714		Fax Result: ☐ Yes ☐ No Add'l Fax #:
Relinquished By:	Date:	Received By:	REMARKS:
	Time:		
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	4.2°C / 5.2°C corrected	Sample Condition Cool ☑ Yes ☐ No Intact ☑ Yes ☐ No	CHECKED BY: (Initials) Cok #97

CARDINAL Laboratories

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

July 26, 2019

BRUCE BAKER

APACHE CORP - HOBBS

2350 W. MARLAND BLVD.

HOBBS, NM 88240

RE: EBDU 37 WIW

Enclosed are the results of analyses for samples received by the laboratory on 07/19/19 17:14.

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.

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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:	07/19/2019	Sampling Date:	07/19/2019
Reported:	07/26/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	NOT GIVEN		

Sample ID: SP 5 @ SURFACE (H902503-01)

BTEX 8021B mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/25/2019	ND	1.70	84.8	2.00	2.64	
Toluene*	<0.050	0.050	07/25/2019	ND	1.68	84.1	2.00	4.45	
Ethylbenzene*	<0.050	0.050	07/25/2019	ND	1.56	78.2	2.00	6.27	
Total Xylenes*	<0.150	0.150	07/25/2019	ND	5.02	83.6	6.00	6.25	
Total BTEX	<0.300	0.300	07/25/2019	ND					

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

Chloride, SM4500Cl-B mg/kg **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**10100**	16.0	07/23/2019	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*	<50.0	50.0	07/23/2019	ND	185	92.3	200	4.28	
DRO >C10-C28*	**996**	50.0	07/23/2019	ND	178	89.0	200	4.70	
EXT DRO >C28-C36	**339**	50.0	07/23/2019	ND					

Surrogate: 1-Chlorooctane *70.5 %* *41-142*

Surrogate: 1-Chlorooctadecane *122 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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:	07/19/2019	Sampling Date:	07/19/2019
Reported:	07/26/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	NOT GIVEN		

Sample ID: SP 5 @ 2' (H902503-02)

BTEX 8021B mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/25/2019	ND	1.70	84.8	2.00	2.64	
Toluene*	<0.050	0.050	07/25/2019	ND	1.68	84.1	2.00	4.45	
Ethylbenzene*	<0.050	0.050	07/25/2019	ND	1.56	78.2	2.00	6.27	
Total Xylenes*	<0.150	0.150	07/25/2019	ND	5.02	83.6	6.00	6.25	
Total BTEX	<0.300	0.300	07/25/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *101 %* *73.3-129*

Chloride, SM4500Cl-B mg/kg Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**5200**	16.0	07/23/2019	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	07/23/2019	ND	185	92.3	200	4.28	
DRO >C10-C28*	<10.0	10.0	07/23/2019	ND	178	89.0	200	4.70	
EXT DRO >C28-C36	<10.0	10.0	07/23/2019	ND					

Surrogate: 1-Chlorooctane *68.2 %* *41-142*

Surrogate: 1-Chlorooctadecane *71.0 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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:	07/19/2019	Sampling Date:	07/19/2019
Reported:	07/26/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	NOT GIVEN		

Sample ID: SP 5 @ 4' (H902503-03)

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	07/25/2019	ND	1.70	84.8	2.00	2.64	
Toluene*	<0.050	0.050	07/25/2019	ND	1.68	84.1	2.00	4.45	
Ethylbenzene*	<0.050	0.050	07/25/2019	ND	1.56	78.2	2.00	6.27	
Total Xylenes*	<0.150	0.150	07/25/2019	ND	5.02	83.6	6.00	6.25	
Total BTEX	<0.300	0.300	07/25/2019	ND					

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

Chloride, SM4500Cl-B mg/kg Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**4240**	16.0	07/23/2019	ND	432	108	400	3.77	QM-07

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	07/23/2019	ND	185	92.3	200	4.28	
DRO >C10-C28*	<10.0	10.0	07/23/2019	ND	178	89.0	200	4.70	
EXT DRO >C28-C36	<10.0	10.0	07/23/2019	ND					

Surrogate: 1-Chlorooctane *68.1 %* *41-142*

Surrogate: 1-Chlorooctadecane *71.8 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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:	07/19/2019	Sampling Date:	07/19/2019
Reported:	07/26/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	NOT GIVEN		

Sample ID: SP 5 @ 6' (H902503-04)

BTEX 8021B mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/25/2019	ND	1.70	84.8	2.00	2.64	
Toluene*	<0.050	0.050	07/25/2019	ND	1.68	84.1	2.00	4.45	
Ethylbenzene*	<0.050	0.050	07/25/2019	ND	1.56	78.2	2.00	6.27	
Total Xylenes*	<0.150	0.150	07/25/2019	ND	5.02	83.6	6.00	6.25	
Total BTEX	<0.300	0.300	07/25/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *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	**10100**	16.0	07/23/2019	ND	432	108	400	3.77	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	07/23/2019	ND	185	92.3	200	4.28	
DRO >C10-C28*	<10.0	10.0	07/23/2019	ND	178	89.0	200	4.70	
EXT DRO >C28-C36	<10.0	10.0	07/23/2019	ND					

Surrogate: 1-Chlorooctane *68.8 %* *41-142*

Surrogate: 1-Chlorooctadecane *72.0 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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:	07/19/2019	Sampling Date:	07/19/2019
Reported:	07/26/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	NOT GIVEN		

Sample ID: SP 5 @ 8' (H902503-05)

BTEX 8021B mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/25/2019	ND	1.70	84.8	2.00	2.64	
Toluene*	<0.050	0.050	07/25/2019	ND	1.68	84.1	2.00	4.45	
Ethylbenzene*	<0.050	0.050	07/25/2019	ND	1.56	78.2	2.00	6.27	
Total Xylenes*	<0.150	0.150	07/25/2019	ND	5.02	83.6	6.00	6.25	
Total BTEX	<0.300	0.300	07/25/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *106 %* *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	**9330**	16.0	07/23/2019	ND	432	108	400	3.77	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	07/23/2019	ND	185	92.3	200	4.28	
DRO >C10-C28*	<10.0	10.0	07/23/2019	ND	178	89.0	200	4.70	
EXT DRO >C28-C36	<10.0	10.0	07/23/2019	ND					

Surrogate: 1-Chlorooctane *69.1 %* *41-142*

Surrogate: 1-Chlorooctadecane *71.4 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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:	07/19/2019	Sampling Date:	07/19/2019
Reported:	07/26/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	NOT GIVEN		

Sample ID: SP 5 @ 10' (H902503-06)

BTEX 8021B mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/25/2019	ND	1.70	84.8	2.00	2.64	
Toluene*	<0.050	0.050	07/25/2019	ND	1.68	84.1	2.00	4.45	
Ethylbenzene*	<0.050	0.050	07/25/2019	ND	1.56	78.2	2.00	6.27	
Total Xylenes*	<0.150	0.150	07/25/2019	ND	5.02	83.6	6.00	6.25	
Total BTEX	<0.300	0.300	07/25/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *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	**3840**	16.0	07/23/2019	ND	432	108	400	3.77	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	07/23/2019	ND	185	92.3	200	4.28	
DRO >C10-C28*	<10.0	10.0	07/23/2019	ND	178	89.0	200	4.70	
EXT DRO >C28-C36	<10.0	10.0	07/23/2019	ND					

Surrogate: 1-Chlorooctane *68.3 %* *41-142*

Surrogate: 1-Chlorooctadecane *71.0 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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:	07/19/2019	Sampling Date:	07/19/2019
Reported:	07/26/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	NOT GIVEN		

Sample ID: SP 5 @ 12' (H902503-07)

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	07/25/2019	ND	1.70	84.8	2.00	2.64	
Toluene*	<0.050	0.050	07/25/2019	ND	1.68	84.1	2.00	4.45	
Ethylbenzene*	<0.050	0.050	07/25/2019	ND	1.56	78.2	2.00	6.27	
Total Xylenes*	<0.150	0.150	07/25/2019	ND	5.02	83.6	6.00	6.25	
Total BTEX	<0.300	0.300	07/25/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *108 %* *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	**1420**	16.0	07/23/2019	ND	432	108	400	3.77	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	07/23/2019	ND	185	92.3	200	4.28	
DRO >C10-C28*	<10.0	10.0	07/23/2019	ND	178	89.0	200	4.70	
EXT DRO >C28-C36	<10.0	10.0	07/23/2019	ND					

Surrogate: 1-Chlorooctane *65.8 %* *41-142*

Surrogate: 1-Chlorooctadecane *69.1 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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:	07/19/2019	Sampling Date:	07/19/2019
Reported:	07/26/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	NOT GIVEN		

Sample ID: BG 1 @ 1' (H902503-08)

BTEX 8021B mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/25/2019	ND	1.70	84.8	2.00	2.64	
Toluene*	<0.050	0.050	07/25/2019	ND	1.68	84.1	2.00	4.45	
Ethylbenzene*	<0.050	0.050	07/25/2019	ND	1.56	78.2	2.00	6.27	
Total Xylenes*	<0.150	0.150	07/25/2019	ND	5.02	83.6	6.00	6.25	
Total BTEX	<0.300	0.300	07/25/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *107 %* *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	**528**	16.0	07/23/2019	ND	432	108	400	3.77	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	07/24/2019	ND	187	93.3	200	2.77	
DRO >C10-C28*	**91.5**	10.0	07/24/2019	ND	188	94.1	200	1.57	
EXT DRO >C28-C36	**43.3**	10.0	07/24/2019	ND					

Surrogate: 1-Chlorooctane *61.6 %* *41-142*

Surrogate: 1-Chlorooctadecane *70.5 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Notes and Definitions

QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name:	APACHE CORPORATION	**BILL TO**	
Project Manager:	BRUCE BAKER	P.O. #:	
Address:		Company:	
City:	State: Zip:	Attn:	
Phone #:	Fax #:	Address:	
Project #:	Project Owner:	City:	
Project Name:	EBDU 37 WIW	State: Zip:	
Project Location:	EBDU 37 WIW	Phone #:	
Sampler Name:	JEFF BROWN	Fax #:	

FOR LAB USE ONLY				MATRIX						PRESERV.			SAMPLING		ANALYSIS REQUEST										
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	ACID/BASE:	ICE / COOL	OTHER :	DATE	TIME	CL	BTEX	EXT. TPH								
H502503-01	SPS @ SURFACE		1			✓							7-17-19	1612	✓	✓	✓								
02	SPS @ 2'													1525											
03	SPS @ 4'													1527											
04	SPS @ 6'													1531											
05	SPS @ 8'													1533											
06	SPS @ 10'													1579											
07	SPS @ 12													1523											
08	BG1 @ 1'												7-19-19	1453											
09																									

Relinquished By: Jeff Brown	Date: 7-19-19	Received By:	Phone Result: ☐ Yes ☐ No	Add'l Phone #:
	Time: 1914		Fax Result: ☐ Yes ☐ No	Add'l Fax #:
Relinquished By:	Date:	Received By:	REMARKS:	
	Time:			
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	4.8°C / Corrected 5.2°C	Sample Condition Cool: ☑ Yes ☐ No Intact: ☑ Yes ☐ No	CHECKED BY: (Initials)	Cash #97

CARDINAL Laboratories

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

July 31, 2019

BRUCE BAKER

APACHE CORP - HOBBS

2350 W. MARLAND BLVD.

HOBBS, NM 88240

RE: EBDU 37 WIW

Enclosed are the results of analyses for samples received by the laboratory on 07/25/19 14:51.

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.

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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:	07/25/2019	Sampling Date:	07/25/2019
Reported:	07/31/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SP 8 @ 5' (H902565-01)

BTEX 8021B mg/kg **Analyzed By: ms**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/29/2019	ND	1.98	99.2	2.00	1.56	
Toluene*	<0.050	0.050	07/29/2019	ND	2.07	104	2.00	0.363	
Ethylbenzene*	<0.050	0.050	07/29/2019	ND	1.98	98.9	2.00	0.632	
Total Xylenes*	<0.150	0.150	07/29/2019	ND	6.18	103	6.00	0.412	
Total BTEX	<0.300	0.300	07/29/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *105 %* *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	**4240**	16.0	07/26/2019	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	07/26/2019	ND	195	97.7	200	3.98	
DRO >C10-C28*	<10.0	10.0	07/26/2019	ND	218	109	200	16.0	
EXT DRO >C28-C36	<10.0	10.0	07/26/2019	ND					

Surrogate: 1-Chlorooctane *95.4 %* *41-142*

Surrogate: 1-Chlorooctadecane *107 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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:	07/25/2019	Sampling Date:	07/25/2019
Reported:	07/31/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SP 8 @ 10' (H902565-02)

BTEX 8021B mg/kg Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/29/2019	ND	1.98	99.2	2.00	1.56	
Toluene*	<0.050	0.050	07/29/2019	ND	2.07	104	2.00	0.363	
Ethylbenzene*	<0.050	0.050	07/29/2019	ND	1.98	98.9	2.00	0.632	
Total Xylenes*	<0.150	0.150	07/29/2019	ND	6.18	103	6.00	0.412	
Total BTEX	<0.300	0.300	07/29/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *105 %* *73.3-129*

Chloride, SM4500Cl-B mg/kg Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**2240**	16.0	07/26/2019	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	07/26/2019	ND	195	97.7	200	3.98	
DRO >C10-C28*	<10.0	10.0	07/26/2019	ND	218	109	200	16.0	
EXT DRO >C28-C36	<10.0	10.0	07/26/2019	ND					

Surrogate: 1-Chlorooctane *97.9 %* *41-142*

Surrogate: 1-Chlorooctadecane *109 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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:	07/25/2019	Sampling Date:	07/24/2019
Reported:	07/31/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SP 8 @ 15' (H902565-03)

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	07/29/2019	ND	1.98	99.2	2.00	1.56	
Toluene*	<0.050	0.050	07/29/2019	ND	2.07	104	2.00	0.363	
Ethylbenzene*	<0.050	0.050	07/29/2019	ND	1.98	98.9	2.00	0.632	
Total Xylenes*	<0.150	0.150	07/29/2019	ND	6.18	103	6.00	0.412	
Total BTEX	<0.300	0.300	07/29/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *105 %* *73.3-129*

Chloride, SM4500Cl-B mg/kg Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1090**	16.0	07/26/2019	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	07/26/2019	ND	195	97.7	200	3.98	
DRO >C10-C28*	<10.0	10.0	07/26/2019	ND	218	109	200	16.0	
EXT DRO >C28-C36	<10.0	10.0	07/26/2019	ND					

Surrogate: 1-Chlorooctane *98.0 %* *41-142*

Surrogate: 1-Chlorooctadecane *110 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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:	07/25/2019	Sampling Date:	07/25/2019
Reported:	07/31/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SP 9 @ 5' (H902565-04)

BTEX 8021B mg/kg Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/29/2019	ND	1.98	99.2	2.00	1.56	
Toluene*	<0.050	0.050	07/29/2019	ND	2.07	104	2.00	0.363	
Ethylbenzene*	<0.050	0.050	07/29/2019	ND	1.98	98.9	2.00	0.632	
Total Xylenes*	<0.150	0.150	07/29/2019	ND	6.18	103	6.00	0.412	
Total BTEX	<0.300	0.300	07/29/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *105 %* *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	**6160**	16.0	07/26/2019	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	07/26/2019	ND	195	97.7	200	3.98	
DRO >C10-C28*	<10.0	10.0	07/26/2019	ND	218	109	200	16.0	
EXT DRO >C28-C36	<10.0	10.0	07/26/2019	ND					

Surrogate: 1-Chlorooctane *86.2 %* *41-142*

Surrogate: 1-Chlorooctadecane *97.0 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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:	07/25/2019	Sampling Date:	07/25/2019
Reported:	07/31/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SP 9 @ 10' (H902565-05)

BTEX 8021B mg/kg Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/29/2019	ND	1.98	99.2	2.00	1.56	
Toluene*	<0.050	0.050	07/29/2019	ND	2.07	104	2.00	0.363	
Ethylbenzene*	<0.050	0.050	07/29/2019	ND	1.98	98.9	2.00	0.632	
Total Xylenes*	<0.150	0.150	07/29/2019	ND	6.18	103	6.00	0.412	
Total BTEX	<0.300	0.300	07/29/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *106 %* *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	**5520**	16.0	07/26/2019	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	07/26/2019	ND	195	97.7	200	3.98	
DRO >C10-C28*	<10.0	10.0	07/26/2019	ND	218	109	200	16.0	
EXT DRO >C28-C36	<10.0	10.0	07/26/2019	ND					

Surrogate: 1-Chlorooctane *93.1 %* *41-142*

Surrogate: 1-Chlorooctadecane *105 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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:	07/25/2019	Sampling Date:	07/25/2019
Reported:	07/31/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SP 9 @ 15' (H902565-06)

BTEX 8021B mg/kg Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/29/2019	ND	1.98	99.2	2.00	1.56	
Toluene*	<0.050	0.050	07/29/2019	ND	2.07	104	2.00	0.363	
Ethylbenzene*	<0.050	0.050	07/29/2019	ND	1.98	98.9	2.00	0.632	
Total Xylenes*	<0.150	0.150	07/29/2019	ND	6.18	103	6.00	0.412	
Total BTEX	<0.300	0.300	07/29/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *106 %* *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	**2800**	16.0	07/26/2019	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	07/26/2019	ND	195	97.7	200	3.98	
DRO >C10-C28*	<10.0	10.0	07/26/2019	ND	218	109	200	16.0	
EXT DRO >C28-C36	<10.0	10.0	07/26/2019	ND					

Surrogate: 1-Chlorooctane *95.2 %* *41-142*

Surrogate: 1-Chlorooctadecane *108 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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:	07/25/2019	Sampling Date:	07/25/2019
Reported:	07/31/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SP 1 @ 5' (H902565-07)

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	07/29/2019	ND	1.98	99.2	2.00	1.56	
Toluene*	<0.050	0.050	07/29/2019	ND	2.07	104	2.00	0.363	
Ethylbenzene*	<0.050	0.050	07/29/2019	ND	1.98	98.9	2.00	0.632	
Total Xylenes*	<0.150	0.150	07/29/2019	ND	6.18	103	6.00	0.412	
Total BTEX	<0.300	0.300	07/29/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *105 %* *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	**400**	16.0	07/26/2019	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	07/26/2019	ND	195	97.7	200	3.98	
DRO >C10-C28*	<10.0	10.0	07/26/2019	ND	218	109	200	16.0	
EXT DRO >C28-C36	<10.0	10.0	07/26/2019	ND					

Surrogate: 1-Chlorooctane *85.2 %* *41-142*

Surrogate: 1-Chlorooctadecane *95.4 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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:	07/25/2019	Sampling Date:	07/25/2019
Reported:	07/31/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SP 1 @ 10' (H902565-08)

BTEX 8021B mg/kg Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/29/2019	ND	1.98	99.2	2.00	1.56	
Toluene*	<0.050	0.050	07/29/2019	ND	2.07	104	2.00	0.363	
Ethylbenzene*	<0.050	0.050	07/29/2019	ND	1.98	98.9	2.00	0.632	
Total Xylenes*	<0.150	0.150	07/29/2019	ND	6.18	103	6.00	0.412	
Total BTEX	<0.300	0.300	07/29/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *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	**96.0**	16.0	07/26/2019	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	07/26/2019	ND	195	97.7	200	3.98	
DRO >C10-C28*	<10.0	10.0	07/26/2019	ND	218	109	200	16.0	
EXT DRO >C28-C36	<10.0	10.0	07/26/2019	ND					

Surrogate: 1-Chlorooctane *92.4 %* *41-142*

Surrogate: 1-Chlorooctadecane *103 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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:	07/25/2019	Sampling Date:	07/25/2019
Reported:	07/31/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SP 2 @ SURFACE (H902565-09)

BTEX 8021B mg/kg Analyzed By: ms S-04

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/29/2019	ND	1.98	99.2	2.00	1.56	
Toluene*	**0.175**	0.050	07/29/2019	ND	2.07	104	2.00	0.363	
Ethylbenzene*	**0.618**	0.050	07/29/2019	ND	1.98	98.9	2.00	0.632	
Total Xylenes*	**1.92**	0.150	07/29/2019	ND	6.18	103	6.00	0.412	
Total BTEX	**2.71**	0.300	07/29/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *133 %* *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	**28800**	16.0	07/26/2019	ND	416	104	400	0.00	

TPH 8015M mg/kg Analyzed By: MS S-04

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	**104**	10.0	07/26/2019	ND	193	96.7	200	9.45	
DRO >C10-C28*	**1380**	10.0	07/26/2019	ND	197	98.5	200	12.1	QM-07
EXT DRO >C28-C36	**349**	10.0	07/26/2019	ND					

Surrogate: 1-Chlorooctane *111 %* *41-142*

Surrogate: 1-Chlorooctadecane *171 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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:	07/25/2019	Sampling Date:	07/25/2019
Reported:	07/31/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SP 2 @ 5' (H902565-10)

BTEX 8021B mg/kg Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/29/2019	ND	1.98	99.2	2.00	1.56	
Toluene*	<0.050	0.050	07/29/2019	ND	2.07	104	2.00	0.363	
Ethylbenzene*	<0.050	0.050	07/29/2019	ND	1.98	98.9	2.00	0.632	
Total Xylenes*	<0.150	0.150	07/29/2019	ND	6.18	103	6.00	0.412	
Total BTEX	<0.300	0.300	07/29/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *106 %* *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	**1150**	16.0	07/26/2019	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	07/26/2019	ND	193	96.7	200	9.45	
DRO >C10-C28*	<10.0	10.0	07/26/2019	ND	197	98.5	200	12.1	
EXT DRO >C28-C36	<10.0	10.0	07/26/2019	ND					

Surrogate: 1-Chlorooctane *93.8 %* *41-142*

Surrogate: 1-Chlorooctadecane *101 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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:	07/25/2019	Sampling Date:	07/25/2019
Reported:	07/31/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SP 2 @ 10' (H902565-11)

BTEX 8021B mg/kg Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/29/2019	ND	1.98	99.2	2.00	1.56	
Toluene*	<0.050	0.050	07/29/2019	ND	2.07	104	2.00	0.363	
Ethylbenzene*	<0.050	0.050	07/29/2019	ND	1.98	98.9	2.00	0.632	
Total Xylenes*	<0.150	0.150	07/29/2019	ND	6.18	103	6.00	0.412	
Total BTEX	<0.300	0.300	07/29/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *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	**272**	16.0	07/26/2019	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	07/26/2019	ND	193	96.7	200	9.45	
DRO >C10-C28*	<10.0	10.0	07/26/2019	ND	197	98.5	200	12.1	
EXT DRO >C28-C36	<10.0	10.0	07/26/2019	ND					

Surrogate: 1-Chlorooctane *80.0 %* *41-142*

Surrogate: 1-Chlorooctadecane *84.6 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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:	07/25/2019	Sampling Date:	07/25/2019
Reported:	07/31/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SP 3 @ 5' (H902565-12)

BTEX 8021B mg/kg Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/29/2019	ND	1.98	99.2	2.00	1.56	
Toluene*	<0.050	0.050	07/29/2019	ND	2.07	104	2.00	0.363	
Ethylbenzene*	<0.050	0.050	07/29/2019	ND	1.98	98.9	2.00	0.632	
Total Xylenes*	<0.150	0.150	07/29/2019	ND	6.18	103	6.00	0.412	
Total BTEX	<0.300	0.300	07/29/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *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	**2720**	16.0	07/26/2019	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	07/26/2019	ND	193	96.7	200	9.45	
DRO >C10-C28*	<10.0	10.0	07/26/2019	ND	197	98.5	200	12.1	
EXT DRO >C28-C36	<10.0	10.0	07/26/2019	ND					

Surrogate: 1-Chlorooctane *98.3 %* *41-142*

Surrogate: 1-Chlorooctadecane *110 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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:	07/25/2019	Sampling Date:	07/25/2019
Reported:	07/31/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SP 3 @ 10' (H902565-13)

BTEX 8021B mg/kg Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/29/2019	ND	1.98	99.2	2.00	1.56	
Toluene*	<0.050	0.050	07/29/2019	ND	2.07	104	2.00	0.363	
Ethylbenzene*	<0.050	0.050	07/29/2019	ND	1.98	98.9	2.00	0.632	
Total Xylenes*	<0.150	0.150	07/29/2019	ND	6.18	103	6.00	0.412	
Total BTEX	<0.300	0.300	07/29/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *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	**192**	16.0	07/26/2019	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	07/26/2019	ND	193	96.7	200	9.45	
DRO >C10-C28*	<10.0	10.0	07/26/2019	ND	197	98.5	200	12.1	
EXT DRO >C28-C36	<10.0	10.0	07/26/2019	ND					

Surrogate: 1-Chlorooctane *99.1 %* *41-142*

Surrogate: 1-Chlorooctadecane *109 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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:	07/25/2019	Sampling Date:	07/25/2019
Reported:	07/31/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SP 3 @ 15' (H902565-14)

BTEX 8021B mg/kg Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/29/2019	ND	1.98	99.2	2.00	1.56	
Toluene*	<0.050	0.050	07/29/2019	ND	2.07	104	2.00	0.363	
Ethylbenzene*	<0.050	0.050	07/29/2019	ND	1.98	98.9	2.00	0.632	
Total Xylenes*	<0.150	0.150	07/29/2019	ND	6.18	103	6.00	0.412	
Total BTEX	<0.300	0.300	07/29/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *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	**80.0**	16.0	07/26/2019	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	07/26/2019	ND	193	96.7	200	9.45	
DRO >C10-C28*	<10.0	10.0	07/26/2019	ND	197	98.5	200	12.1	
EXT DRO >C28-C36	<10.0	10.0	07/26/2019	ND					

Surrogate: 1-Chlorooctane *93.9 %* *41-142*

Surrogate: 1-Chlorooctadecane *107 %* *37.6-147*

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Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Notes and Definitions

S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
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

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

1

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name:	APACHE CORPORATION	**BILL TO**	
Project Manager:	BRUCE BAKER	P.O. #:	
Address:		Company:	
City:	State: Zip:	Attn:	
Phone #:	Fax #:	Address:	
Project #:	Project Owner:	City:	
Project Name:	EBOLL 37 WIW	State: Zip:	
Project Location:	EBOLL 37 WIW	Phone #:	
Sampler Name:	BROOM	Fax #:	

ANALYSIS REQUEST

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	PRESERV.: ACID/BASE:	ICE / COOL	OTHER:	SAMPLING: DATE	TIME	CL (RUSH)	BTEX	EXT. TPH
H902565																	
1	SP8 @ 5'												7-25-15	11:33			
2	SP8 @ 10'													11:37			
3	SP8 @ 15													11:35			
4	SP9 @ 5'													12:04			
5	SP9 @ 10'													12:05			
6	SP9 @ 15												7-25-15	12:26			

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 the client for the 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 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequental damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By:	Date: 7-27-15	Received By:	
	Time: 1451		
Relinquished By:	Date:	Received By:	
	Time:		
Delivered By: (Circle One)	corrected +.4	Sample Condition: Cool ☑ Yes ☐ No / Intact ☑ Yes ☐ No	CHECKED BY: (Initials)
Sampler - UPS - Bus - Other:	5.2° 5.6° / #97		

Phone Result: ☐ Yes ☐ No Add'l Phone #:
Fax Result: ☐ Yes ☐ No Add'l Fax #:
REMARKS:
Rush CL only.
EMAIL TO JEFF AS WELL.

CARDINAL Laboratories

2

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name:	APACHE CORPORATION	**BILL TO**	
Project Manager:	BRUCE BAKER	P.O. #:	
Address:		Company:	
City:	State: Zip:	Attn:	
Phone #:	Fax #:	Address:	
Project #:	Project Owner:	City:	
Project Name:	EBDU 37 WIW	State: Zip:	
Project Location:	EBDU 37 WIW	Phone #:	
Sampler Name:	Brown	Fax #:	

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	PRESERV.: ACID/BASE:	ICE / COOL	OTHER:	SAMPLING: DATE	TIME	CL	BTEX	EXT. TPH
H902565																	
7	SP1 @ 5'												7-25-15	0823			
8	SP1 @ 10'													0827			
9	SP2 @ SURFACE													1345			
10	SP2 @ ~~10'~~ 5' TD.													1350			
11	SP2 @ ~~15'~~ 10'													1347			
12	SP3 @ 5'													1018			
13	SP3 @ 10'													10:17			
14	SP3 @ 15'												7-25-15	10:25			

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Relinquished By: Jeff Brown	Date: 7-25-15	Received By: Jodi Henson	Phone Result: ☐ Yes ☐ No Add'l Phone #:
	Time: 1456		Fax Result: ☐ Yes ☐ No Add'l Fax #:
Relinquished By:	Date:	Received By:	REMARKS:
	Time:		

Delivered By: (Circle One) corrected +.4
Sampler - UPS - Bus - Other: 5.2°c 5.6°c/#47

Sample Condition		CHECKED BY: (Initials)
Cool: ☐ Yes ☐ No	Intact: ☑ Yes ☐ No	

EMAIL TO JEFF AS WELL.

CARDINAL Laboratories

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

August 05, 2019

BRUCE BAKER

APACHE CORP - HOBBS

2350 W. MARLAND BLVD.

HOBBS, NM 88240

RE: EBDU 37 WIW

Enclosed are the results of analyses for samples received by the laboratory on 08/01/19 12:08.

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.

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

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

Cardinal Laboratories is accredited through the State of New Mexico Environment Department for:

Method SM 9223-B	Total Coliform and E. coli (Colilert MMO-MUG)
Method EPA 524.2	Regulated VOCs and Total Trihalomethanes (TTHM)
Method EPA 552.2	Total Haloacetic Acids (HAA-5)

Accreditation applies to public drinking water matrices for State of Colorado and New Mexico.

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

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

APACHE CORP - HOBBS 2350 W. MARLAND BLVD. HOBBS NM, 88240	Project: EBDU 37 WIW Project Number: NONE GIVEN Project Manager: BRUCE BAKER Fax To: (575) 393-2432	Reported: 05-Aug-19 15:00

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
WINDMILL	H902630-01	Water	01-Aug-19 11:45	01-Aug-19 12:08

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

APACHE CORP - HOBBS 2350 W. MARLAND BLVD. HOBBS NM, 88240	Project: EBDU 37 WIW Project Number: NONE GIVEN Project Manager: BRUCE BAKER Fax To: (575) 393-2432	Reported: 05-Aug-19 15:00

WINDMILL

H902630-01 (Water)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories										
Inorganic Compounds										
Chloride*	**232**		4.00	mg/L	1	9080104	AC	01-Aug-19	4500-Cl-B	
TDS*	**732**		5.00	mg/L	1	9072906	AC	02-Aug-19	160.1	
Volatile Organic Compounds by EPA Method 8021										
Benzene*	<0.001		0.001	mg/L	1	9080118	ms	01-Aug-19	8021B	
Toluene*	<0.001		0.001	mg/L	1	9080118	ms	01-Aug-19	8021B	
Ethylbenzene*	<0.001		0.001	mg/L	1	9080118	ms	01-Aug-19	8021B	
Total Xylenes*	<0.003		0.003	mg/L	1	9080118	ms	01-Aug-19	8021B	
Total BTEX	<0.006		0.006	mg/L	1	9080118	ms	01-Aug-19	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			*105 %*	*81.3-128*		*9080118*	ms	*01-Aug-19*	*8021B*	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

APACHE CORP - HOBBS 2350 W. MARLAND BLVD. HOBBS NM, 88240	Project: EBDU 37 WIW Project Number: NONE GIVEN Project Manager: BRUCE BAKER Fax To: (575) 393-2432	Reported: 05-Aug-19 15:00

Inorganic Compounds - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9072906 - Filtration										
Blank (9072906-BLK1)				Prepared: 29-Jul-19 Analyzed: 30-Jul-19						
TDS	ND	5.00	mg/L							
LCS (9072906-BS1)				Prepared: 29-Jul-19 Analyzed: 30-Jul-19						
TDS	533		mg/L	527		101	80-120			
Duplicate (9072906-DUP1)	**Source: H902540-01**			Prepared: 29-Jul-19 Analyzed: 30-Jul-19						
TDS	1470	5.00	mg/L		1510			2.69	20	
Batch 9080104 - General Prep - Wet Chem										
Blank (9080104-BLK1)				Prepared & Analyzed: 01-Aug-19						
Chloride	ND	4.00	mg/L							
LCS (9080104-BS1)				Prepared & Analyzed: 01-Aug-19						
Chloride	100	4.00	mg/L	100		100	80-120			
LCS Dup (9080104-BSD1)				Prepared & Analyzed: 01-Aug-19						
Chloride	104	4.00	mg/L	100		104	80-120	3.92	20	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

APACHE CORP - HOBBS 2350 W. MARLAND BLVD. HOBBS NM, 88240	Project: EBDU 37 WIW Project Number: NONE GIVEN Project Manager: BRUCE BAKER Fax To: (575) 393-2432	Reported: 05-Aug-19 15:00

Volatile Organic Compounds by EPA Method 8021 - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9080118 - Volatiles										
Blank (9080118-BLK1)				Prepared & Analyzed: 01-Aug-19						
Benzene	ND	0.001	mg/L							
Toluene	ND	0.001	mg/L							
Ethylbenzene	ND	0.001	mg/L							
Total Xylenes	ND	0.003	mg/L							
Total BTEX	ND	0.006	mg/L							
Surrogate: 4-Bromofluorobenzene (PID)	*0.104*		mg/L	*0.100*		*104*	*81.3-128*			
LCS (9080118-BS1)				Prepared & Analyzed: 01-Aug-19						
Benzene	0.021	0.001	mg/L	0.0200		106	86.6-118			
Toluene	0.022	0.001	mg/L	0.0200		110	84.5-122			
Ethylbenzene	0.020	0.001	mg/L	0.0200		102	83.9-122			
Total Xylenes	0.062	0.003	mg/L	0.0600		103	81.8-124			
Surrogate: 4-Bromofluorobenzene (PID)	*0.103*		mg/L	*0.100*		*103*	*81.3-128*			
LCS Dup (9080118-BSD1)				Prepared & Analyzed: 01-Aug-19						
Benzene	0.021	0.001	mg/L	0.0200		105	86.6-118	0.152	7.71	
Toluene	0.021	0.001	mg/L	0.0200		107	84.5-122	2.56	8.86	
Ethylbenzene	0.020	0.001	mg/L	0.0200		101	83.9-122	0.952	11.8	
Total Xylenes	0.061	0.003	mg/L	0.0600		102	81.8-124	0.228	11.9	
Surrogate: 4-Bromofluorobenzene (PID)	*0.103*		mg/L	*0.100*		*103*	*81.3-128*			

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name:	Apache Corporation	**BILL TO**	
Project Manager:	Bruce Baker	P.O. #:	
Address:		Company:	Apache
City:	State: Zip:	Attn:	
Phone #:	Fax #:	Address:	
Project #:	Project Owner:	City:	
Project Name:	EBDU 37 WIW	State: Zip:	
Project Location:	Lea Co.	Phone #:	
Sampler Name:	Ben J. Arguijo	Fax #:	

FOR LAB USE ONLY				MATRIX						PRESERV.			SAMPLING		ANALYSIS REQUEST		
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	ACID/BASE:	ICE / COOL	OTHER :	DATE	TIME	BTEX	Chloride	TDS
H902630-1	Windmill	G	4	X							X		8/1/19	1145	X	X	X

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 the client for the 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 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequental damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By:	Date: 8/1/19	Received By:	Phone Result: ☐ Yes ☐ No Add'l Phone #:
	Time: 1208		Fax Result: ☐ Yes ☐ No Add'l Fax #:
Relinquished By:	Date:	Received By:	REMARKS: Email - Bruce, Jeff & Ben Arguijo
	Time:		Rush!!
Delivered By: (Circle One)	22.3° #97	Sample Condition Cool Intact	CHECKED BY: (Initials)
Sampler - UPS - Bus - Other:	Corrected 22.7°	☐ Yes ☐ Yes / ☐ No ☐ No	TO

CARDINAL Laboratories

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

August 08, 2019

BRUCE BAKER

APACHE CORP - HOBBS

2350 W. MARLAND BLVD.

HOBBS, NM 88240

RE: EBDU 37 WIW

Enclosed are the results of analyses for samples received by the laboratory on 08/07/19 16:52.

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.

Cardinal Laboratories is accreditated 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,

Mike Snyder For Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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:	08/07/2019	Sampling Date:	08/07/2019
Reported:	08/08/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	NOT GIVEN		

Sample ID: B 0 (H902718-01)

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	08/08/2019	ND	2.09	105	2.00	6.89	
Toluene*	<0.050	0.050	08/08/2019	ND	2.13	107	2.00	6.44	
Ethylbenzene*	<0.050	0.050	08/08/2019	ND	2.01	101	2.00	4.82	
Total Xylenes*	<0.150	0.150	08/08/2019	ND	6.07	101	6.00	4.98	
Total BTEX	<0.300	0.300	08/08/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *100 %* *73.3-129*

Chloride, SM4500Cl-B mg/kg Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**32.0**	16.0	08/08/2019	ND	400	100	400	3.92	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/08/2019	ND	208	104	200	4.84	
DRO >C10-C28*	<10.0	10.0	08/08/2019	ND	206	103	200	10.2	
EXT DRO >C28-C36	<10.0	10.0	08/08/2019	ND					

Surrogate: 1-Chlorooctane *99.9 %* *41-142*

Surrogate: 1-Chlorooctadecane *107 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

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

CARDINAL Laboratories

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:	08/07/2019	Sampling Date:	08/07/2019
Reported:	08/08/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	NOT GIVEN		

Sample ID: B 1 (H902718-02)

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	08/08/2019	ND	2.09	105	2.00	6.89	
Toluene*	<0.050	0.050	08/08/2019	ND	2.13	107	2.00	6.44	
Ethylbenzene*	<0.050	0.050	08/08/2019	ND	2.01	101	2.00	4.82	
Total Xylenes*	<0.150	0.150	08/08/2019	ND	6.07	101	6.00	4.98	
Total BTEX	<0.300	0.300	08/08/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *101 %* *73.3-129*

Chloride, SM4500Cl-B mg/kg Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**32.0**	16.0	08/08/2019	ND	400	100	400	3.92	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/08/2019	ND	208	104	200	4.84	
DRO >C10-C28*	<10.0	10.0	08/08/2019	ND	206	103	200	10.2	
EXT DRO >C28-C36	<10.0	10.0	08/08/2019	ND					

Surrogate: 1-Chlorooctane *101 %* *41-142*

Surrogate: 1-Chlorooctadecane *111 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

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

CARDINAL Laboratories

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:	08/07/2019	Sampling Date:	08/07/2019
Reported:	08/08/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	NOT GIVEN		

Sample ID: B 2 (H902718-03)

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	08/08/2019	ND	2.09	105	2.00	6.89	
Toluene*	<0.050	0.050	08/08/2019	ND	2.13	107	2.00	6.44	
Ethylbenzene*	<0.050	0.050	08/08/2019	ND	2.01	101	2.00	4.82	
Total Xylenes*	<0.150	0.150	08/08/2019	ND	6.07	101	6.00	4.98	
Total BTEX	<0.300	0.300	08/08/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *101 %* *73.3-129*

Chloride, SM4500Cl-B mg/kg Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**48.0**	16.0	08/08/2019	ND	400	100	400	3.92	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/08/2019	ND	208	104	200	4.84	
DRO >C10-C28*	<10.0	10.0	08/08/2019	ND	206	103	200	10.2	
EXT DRO >C28-C36	<10.0	10.0	08/08/2019	ND					

Surrogate: 1-Chlorooctane *101 %* *41-142*

Surrogate: 1-Chlorooctadecane *109 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

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

CARDINAL Laboratories

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:	08/07/2019	Sampling Date:	08/07/2019
Reported:	08/08/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	NOT GIVEN		

Sample ID: B 10 (H902718-04)

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	08/08/2019	ND	2.09	105	2.00	6.89	
Toluene*	<0.050	0.050	08/08/2019	ND	2.13	107	2.00	6.44	
Ethylbenzene*	<0.050	0.050	08/08/2019	ND	2.01	101	2.00	4.82	
Total Xylenes*	<0.150	0.150	08/08/2019	ND	6.07	101	6.00	4.98	
Total BTEX	<0.300	0.300	08/08/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *100 %* *73.3-129*

Chloride, SM4500Cl-B mg/kg Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**16.0**	16.0	08/08/2019	ND	400	100	400	3.92	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/08/2019	ND	208	104	200	4.84	
DRO >C10-C28*	<10.0	10.0	08/08/2019	ND	206	103	200	10.2	
EXT DRO >C28-C36	<10.0	10.0	08/08/2019	ND					

Surrogate: 1-Chlorooctane *102 %* *41-142*

Surrogate: 1-Chlorooctadecane *110 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

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

CARDINAL Laboratories

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:	08/07/2019	Sampling Date:	08/07/2019
Reported:	08/08/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	NOT GIVEN		

Sample ID: B 11 (H902718-05)

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	08/08/2019	ND	2.09	105	2.00	6.89	
Toluene*	<0.050	0.050	08/08/2019	ND	2.13	107	2.00	6.44	
Ethylbenzene*	<0.050	0.050	08/08/2019	ND	2.01	101	2.00	4.82	
Total Xylenes*	<0.150	0.150	08/08/2019	ND	6.07	101	6.00	4.98	
Total BTEX	<0.300	0.300	08/08/2019	ND					

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

Chloride, SM4500Cl-B mg/kg Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	08/08/2019	ND	400	100	400	3.92	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/08/2019	ND	208	104	200	4.84	
DRO >C10-C28*	<10.0	10.0	08/08/2019	ND	206	103	200	10.2	
EXT DRO >C28-C36	<10.0	10.0	08/08/2019	ND					

Surrogate: 1-Chlorooctane *103 %* *41-142*

Surrogate: 1-Chlorooctadecane *109 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

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

CARDINAL Laboratories

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

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories *=Accredited Analyte

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

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name:	APACHE CORPORATION
Project Manager:	BRUCE BAKER
Address:	
City:	State: Zip:
Phone #:	Fax #:
Project #:	Project Owner:
Project Name:	EBDU 37 WIW
Project Location:	EBDU 37WIW
Sampler Name:	JEFF BROOM

BILL TO

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

ANALYSIS REQUEST

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	PRESERV.: ACID/BASE:	ICE / COOL	OTHER :	SAMPLING: DATE	TIME	CL	BTEX	EXT. TPH
H962718																	
1	B0	G	1			✓							8-7-19	1609	✓	✓	✓
2	B1	↓	↓			↓							↓	1616	↓	↓	↓
3	B2													1617			
4	B10													1620			
5	B11												8-7-19	1615			

Relinquished By: JEFF BROOM	Date: 8-7-19	Received By: TAMARA OLDAKER	
	Time: 1652		
Relinquished By:	Date:	Received By:	
	Time:		

Delivered By: (Circle One)	2.3°	#97	Sample Condition: Cool ☑ Yes ☐ No; Intact ☑ Yes ☐ No
Sampler - UPS - Bus - Other:	Corrected 2.7°		CHECKED BY: (Initials) TO.

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

REMARKS: Rush Please.
Thanks,
Jeff

CARDINAL Laboratories

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

August 09, 2019

BRUCE BAKER

APACHE CORP - HOBBS

2350 W. MARLAND BLVD.

HOBBS, NM 88240

RE: EBDU 37 WIW

Enclosed are the results of analyses for samples received by the laboratory on 08/08/19 16:18.

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.

Cardinal Laboratories is accreditated 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,

Mike Snyder For Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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:	08/08/2019	Sampling Date:	08/08/2019
Reported:	08/09/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: B 15 @ 13' (H902734-01)

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	08/09/2019	ND	1.91	95.5	2.00	3.81	
Toluene*	<0.050	0.050	08/09/2019	ND	1.92	96.2	2.00	1.60	
Ethylbenzene*	<0.050	0.050	08/09/2019	ND	1.92	95.8	2.00	2.17	
Total Xylenes*	<0.150	0.150	08/09/2019	ND	5.82	97.0	6.00	1.74	
Total BTEX	<0.300	0.300	08/09/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *106 %* *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	**720**	16.0	08/09/2019	ND	432	108	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	08/08/2019	ND	203	102	200	2.11	
DRO >C10-C28*	<10.0	10.0	08/08/2019	ND	195	97.5	200	1.28	
EXT DRO >C28-C36	<10.0	10.0	08/08/2019	ND					

Surrogate: 1-Chlorooctane *107 %* *41-142*

Surrogate: 1-Chlorooctadecane *110 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

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

CARDINAL Laboratories

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:	08/08/2019	Sampling Date:	08/08/2019
Reported:	08/09/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: B 15 @ 15' (H902734-02)

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	08/09/2019	ND	1.91	95.5	2.00	3.81	
Toluene*	<0.050	0.050	08/09/2019	ND	1.92	96.2	2.00	1.60	
Ethylbenzene*	<0.050	0.050	08/09/2019	ND	1.92	95.8	2.00	2.17	
Total Xylenes*	<0.150	0.150	08/09/2019	ND	5.82	97.0	6.00	1.74	
Total BTEX	<0.300	0.300	08/09/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *105 %* *73.3-129*

Chloride, SM4500Cl-B mg/kg Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1840**	16.0	08/09/2019	ND	448	112	400	3.64	QM-07

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/08/2019	ND	203	102	200	2.11	
DRO >C10-C28*	<10.0	10.0	08/08/2019	ND	195	97.5	200	1.28	
EXT DRO >C28-C36	<10.0	10.0	08/08/2019	ND					

Surrogate: 1-Chlorooctane *107 %* *41-142*

Surrogate: 1-Chlorooctadecane *107 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

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

CARDINAL Laboratories

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:	08/08/2019	Sampling Date:	08/08/2019
Reported:	08/09/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: B 15 @ 17' (H902734-03)

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	08/09/2019	ND	1.91	95.5	2.00	3.81	
Toluene*	<0.050	0.050	08/09/2019	ND	1.92	96.2	2.00	1.60	
Ethylbenzene*	<0.050	0.050	08/09/2019	ND	1.92	95.8	2.00	2.17	
Total Xylenes*	<0.150	0.150	08/09/2019	ND	5.82	97.0	6.00	1.74	
Total BTEX	<0.300	0.300	08/09/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *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	**1950**	16.0	08/09/2019	ND	448	112	400	3.64	

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	08/08/2019	ND	203	102	200	2.11	
DRO >C10-C28*	<10.0	10.0	08/08/2019	ND	195	97.5	200	1.28	
EXT DRO >C28-C36	<10.0	10.0	08/08/2019	ND					

Surrogate: 1-Chlorooctane *103 %* *41-142*

Surrogate: 1-Chlorooctadecane *103 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

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

CARDINAL Laboratories

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:	08/08/2019	Sampling Date:	08/08/2019
Reported:	08/09/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: B 15 @ 19' (H902734-04)

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	08/09/2019	ND	1.91	95.5	2.00	3.81	
Toluene*	<0.050	0.050	08/09/2019	ND	1.92	96.2	2.00	1.60	
Ethylbenzene*	<0.050	0.050	08/09/2019	ND	1.92	95.8	2.00	2.17	
Total Xylenes*	<0.150	0.150	08/09/2019	ND	5.82	97.0	6.00	1.74	
Total BTEX	<0.300	0.300	08/09/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *105 %* *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	**3800**	16.0	08/09/2019	ND	448	112	400	3.64	

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	08/08/2019	ND	203	102	200	2.11	
DRO >C10-C28*	<10.0	10.0	08/08/2019	ND	195	97.5	200	1.28	
EXT DRO >C28-C36	<10.0	10.0	08/08/2019	ND					

Surrogate: 1-Chlorooctane *103 %* *41-142*

Surrogate: 1-Chlorooctadecane *104 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

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

CARDINAL Laboratories

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:	08/08/2019	Sampling Date:	08/08/2019
Reported:	08/09/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: B 15 @ 21' (H902734-05)

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	08/09/2019	ND	1.91	95.5	2.00	3.81	
Toluene*	<0.050	0.050	08/09/2019	ND	1.92	96.2	2.00	1.60	
Ethylbenzene*	<0.050	0.050	08/09/2019	ND	1.92	95.8	2.00	2.17	
Total Xylenes*	<0.150	0.150	08/09/2019	ND	5.82	97.0	6.00	1.74	
Total BTEX	<0.300	0.300	08/09/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *110 %* *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	**544**	16.0	08/09/2019	ND	448	112	400	3.64	

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	08/08/2019	ND	203	102	200	2.11	
DRO >C10-C28*	<10.0	10.0	08/08/2019	ND	195	97.5	200	1.28	
EXT DRO >C28-C36	<10.0	10.0	08/08/2019	ND					

Surrogate: 1-Chlorooctane *100 %* *41-142*

Surrogate: 1-Chlorooctadecane *101 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

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

CARDINAL Laboratories

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:	08/08/2019	Sampling Date:	08/08/2019
Reported:	08/09/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: B 15 @ 22' (H902734-06)

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	08/09/2019	ND	1.91	95.5	2.00	3.81	
Toluene*	<0.050	0.050	08/09/2019	ND	1.92	96.2	2.00	1.60	
Ethylbenzene*	<0.050	0.050	08/09/2019	ND	1.92	95.8	2.00	2.17	
Total Xylenes*	<0.150	0.150	08/09/2019	ND	5.82	97.0	6.00	1.74	
Total BTEX	<0.300	0.300	08/09/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *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	**3440**	16.0	08/09/2019	ND	448	112	400	3.64	

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	08/08/2019	ND	203	102	200	2.11	
DRO >C10-C28*	<10.0	10.0	08/08/2019	ND	195	97.5	200	1.28	
EXT DRO >C28-C36	<10.0	10.0	08/08/2019	ND					

Surrogate: 1-Chlorooctane *103 %* *41-142*

Surrogate: 1-Chlorooctadecane *104 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

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

CARDINAL Laboratories

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

Notes and Definitions

QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories *=Accredited Analyte

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

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name: Apache Corporation	**BILL TO**
Project Manager: Bruce Baker	P.O. #:
Address:	Company:
City: State: Zip:	Attn:
Phone #: Fax #:	Address:
Project #: Project Owner:	City:
Project Name: EBDU #37 WIW	State: Zip:
Project Location: EBDU #37 WIW	Phone #:
Sampler Name: Jeff Brown	Fax #:

FOR LAB USE ONLY				MATRIX						PRESERV.			SAMPLING		ANALYSIS REQUEST		
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	ACID/BASE:	ICE / COOL	OTHER :	DATE	TIME	CL	BTEX	EXT. TPH
H902734																	
1	B15 @ 13'												8-8-15	3:16			
2	B15 @ 15'													3:18			
3	B15 @ 17'													3:19			
4	B15 @ 19'													3:21			
5	B15 @ 21'													3:23			
6	B15 @ 22'												↓ 8-8-15	3:24			

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 the client for the 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 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequental damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By: Jeff Brown	Date: 8-8-15	Received By: Jodi Henson	Phone Result: ☐ Yes ☐ No Add'l Phone #:
	Time: 1618		Fax Result: ☐ Yes ☐ No Add'l Fax #:
Relinquished By:	Date:	Received By:	REMARKS: Rush Please. Thanks, Jeff
	Time: +.4 corrected		
Delivered By: (Circle One) Sampler - UPS - Bus - Other: 4.1°c / 4.5° #97		Sample Condition Cool: ☑ Yes ☐ No Intact: ☑ Yes ☐ No	CHECKED BY: (Initials)

4.1

CARDINAL Laboratories

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

August 09, 2019

BRUCE BAKER

APACHE CORP - HOBBS

2350 W. MARLAND BLVD.

HOBBS, NM 88240

RE: EBDU 37 WIW

Enclosed are the results of analyses for samples received by the laboratory on 08/08/19 16:18.

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.

Cardinal Laboratories is accreditated 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,

Mike Snyder For Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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:	08/08/2019	Sampling Date:	08/08/2019
Reported:	08/09/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: B 15 @ 13' (H902734-01)

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	08/09/2019	ND	1.91	95.5	2.00	3.81	
Toluene*	<0.050	0.050	08/09/2019	ND	1.92	96.2	2.00	1.60	
Ethylbenzene*	<0.050	0.050	08/09/2019	ND	1.92	95.8	2.00	2.17	
Total Xylenes*	<0.150	0.150	08/09/2019	ND	5.82	97.0	6.00	1.74	
Total BTEX	<0.300	0.300	08/09/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *106 %* *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	**720**	16.0	08/09/2019	ND	432	108	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	08/08/2019	ND	203	102	200	2.11	
DRO >C10-C28*	<10.0	10.0	08/08/2019	ND	195	97.5	200	1.28	
EXT DRO >C28-C36	<10.0	10.0	08/08/2019	ND					

Surrogate: 1-Chlorooctane *107 %* *41-142*

Surrogate: 1-Chlorooctadecane *110 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

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

CARDINAL Laboratories

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:	08/08/2019	Sampling Date:	08/08/2019
Reported:	08/09/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: B 15 @ 15' (H902734-02)

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	08/09/2019	ND	1.91	95.5	2.00	3.81	
Toluene*	<0.050	0.050	08/09/2019	ND	1.92	96.2	2.00	1.60	
Ethylbenzene*	<0.050	0.050	08/09/2019	ND	1.92	95.8	2.00	2.17	
Total Xylenes*	<0.150	0.150	08/09/2019	ND	5.82	97.0	6.00	1.74	
Total BTEX	<0.300	0.300	08/09/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *105 %* *73.3-129*

Chloride, SM4500Cl-B mg/kg Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1840**	16.0	08/09/2019	ND	448	112	400	3.64	QM-07

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/08/2019	ND	203	102	200	2.11	
DRO >C10-C28*	<10.0	10.0	08/08/2019	ND	195	97.5	200	1.28	
EXT DRO >C28-C36	<10.0	10.0	08/08/2019	ND					

Surrogate: 1-Chlorooctane *107 %* *41-142*

Surrogate: 1-Chlorooctadecane *107 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

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

CARDINAL Laboratories

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:	08/08/2019	Sampling Date:	08/08/2019
Reported:	08/09/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: B 15 @ 17' (H902734-03)

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	08/09/2019	ND	1.91	95.5	2.00	3.81	
Toluene*	<0.050	0.050	08/09/2019	ND	1.92	96.2	2.00	1.60	
Ethylbenzene*	<0.050	0.050	08/09/2019	ND	1.92	95.8	2.00	2.17	
Total Xylenes*	<0.150	0.150	08/09/2019	ND	5.82	97.0	6.00	1.74	
Total BTEX	<0.300	0.300	08/09/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *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	**1950**	16.0	08/09/2019	ND	448	112	400	3.64	

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	08/08/2019	ND	203	102	200	2.11	
DRO >C10-C28*	<10.0	10.0	08/08/2019	ND	195	97.5	200	1.28	
EXT DRO >C28-C36	<10.0	10.0	08/08/2019	ND					

Surrogate: 1-Chlorooctane *103 %* *41-142*

Surrogate: 1-Chlorooctadecane *103 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

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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:	08/08/2019	Sampling Date:	08/08/2019
Reported:	08/09/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: B 15 @ 19' (H902734-04)

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	08/09/2019	ND	1.91	95.5	2.00	3.81	
Toluene*	<0.050	0.050	08/09/2019	ND	1.92	96.2	2.00	1.60	
Ethylbenzene*	<0.050	0.050	08/09/2019	ND	1.92	95.8	2.00	2.17	
Total Xylenes*	<0.150	0.150	08/09/2019	ND	5.82	97.0	6.00	1.74	
Total BTEX	<0.300	0.300	08/09/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *105 %* *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	**3800**	16.0	08/09/2019	ND	448	112	400	3.64	

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	08/08/2019	ND	203	102	200	2.11	
DRO >C10-C28*	<10.0	10.0	08/08/2019	ND	195	97.5	200	1.28	
EXT DRO >C28-C36	<10.0	10.0	08/08/2019	ND					

Surrogate: 1-Chlorooctane *103 %* *41-142*

Surrogate: 1-Chlorooctadecane *104 %* *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:	08/08/2019	Sampling Date:	08/08/2019
Reported:	08/09/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: B 15 @ 21' (H902734-05)

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	08/09/2019	ND	1.91	95.5	2.00	3.81	
Toluene*	<0.050	0.050	08/09/2019	ND	1.92	96.2	2.00	1.60	
Ethylbenzene*	<0.050	0.050	08/09/2019	ND	1.92	95.8	2.00	2.17	
Total Xylenes*	<0.150	0.150	08/09/2019	ND	5.82	97.0	6.00	1.74	
Total BTEX	<0.300	0.300	08/09/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *110 %* *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	**544**	16.0	08/09/2019	ND	448	112	400	3.64	

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	08/08/2019	ND	203	102	200	2.11	
DRO >C10-C28*	<10.0	10.0	08/08/2019	ND	195	97.5	200	1.28	
EXT DRO >C28-C36	<10.0	10.0	08/08/2019	ND					

Surrogate: 1-Chlorooctane *100 %* *41-142*

Surrogate: 1-Chlorooctadecane *101 %* *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:	08/08/2019	Sampling Date:	08/08/2019
Reported:	08/09/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: B 15 @ 22' (H902734-06)

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	08/09/2019	ND	1.91	95.5	2.00	3.81	
Toluene*	<0.050	0.050	08/09/2019	ND	1.92	96.2	2.00	1.60	
Ethylbenzene*	<0.050	0.050	08/09/2019	ND	1.92	95.8	2.00	2.17	
Total Xylenes*	<0.150	0.150	08/09/2019	ND	5.82	97.0	6.00	1.74	
Total BTEX	<0.300	0.300	08/09/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *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	**3440**	16.0	08/09/2019	ND	448	112	400	3.64	

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	08/08/2019	ND	203	102	200	2.11	
DRO >C10-C28*	<10.0	10.0	08/08/2019	ND	195	97.5	200	1.28	
EXT DRO >C28-C36	<10.0	10.0	08/08/2019	ND					

Surrogate: 1-Chlorooctane *103 %* *41-142*

Surrogate: 1-Chlorooctadecane *104 %* *37.6-147*

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Notes and Definitions

QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories *=Accredited Analyte

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

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name:	Apache Corporation
Project Manager:	Bruce Baker
Address:	
City:	State: Zip:
Phone #:	Fax #:
Project #:	Project Owner:
Project Name:	EBDU #37 WIW
Project Location:	EBDU #37 WIW
Sampler Name:	Jeff Brown

BILL TO

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

ANALYSIS REQUEST

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	PRESERV.: ACID/BASE:	ICE / COOL	OTHER :	SAMPLING: DATE	TIME	CL	BTEX	EXT. TPH
H902734-1	B15 @ 13'												8-8-15	3:16			
2	B15 @ 15'													3:18			
3	B15 @ 17'													3:19			
4	B15 @ 19'													3:21			
5	B15 @ 21'													3:23			
6	B15 @ 22'												8-8-15	3:24			

Relinquished By: Jeff Brown	Date: 8-8-15	Received By: Jodi Henson	Phone Result: ☐ Yes ☐ No Add'l Phone #:
	Time: 1618		Fax Result: ☐ Yes ☐ No Add'l Fax #:
Relinquished By:	Date:	Received By:	REMARKS: Rush Please. Thanks, Jeff
	Time: +.4 corrected		
Delivered By: (Circle One) Sampler - UPS - Bus - Other: 4.1°c / 4.5° #97		Sample Condition: Cool ☑ Yes ☐ No; Intact ☑ Yes ☐ No	CHECKED BY: (Initials)

4.1

CARDINAL Laboratories

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

August 19, 2019

BRUCE BAKER

APACHE CORP - HOBBS

2350 W. MARLAND BLVD.

HOBBS, NM 88240

RE: EBDU 37 WIW

Enclosed are the results of analyses for samples received by the laboratory on 08/16/19 8:01.

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.

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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:	08/16/2019	Sampling Date:	08/15/2019
Reported:	08/19/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	NOT GIVEN		

Sample ID: SP 13 @ 15' (H902814-01)

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	08/16/2019	ND	1.72	86.0	2.00	8.65	
Toluene*	<0.050	0.050	08/16/2019	ND	1.84	92.0	2.00	10.8	
Ethylbenzene*	<0.050	0.050	08/16/2019	ND	1.91	95.3	2.00	12.3	
Total Xylenes*	<0.150	0.150	08/16/2019	ND	5.92	98.7	6.00	10.8	
Total BTEX	<0.300	0.300	08/16/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *98.3 %* *73.3-129*

Chloride, SM4500Cl-B mg/kg Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**2880**	16.0	08/16/2019	ND	432	108	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	08/16/2019	ND	203	101	200	0.527	
DRO >C10-C28*	<10.0	10.0	08/16/2019	ND	225	113	200	1.48	
EXT DRO >C28-C36	<10.0	10.0	08/16/2019	ND					

Surrogate: 1-Chlorooctane *83.2 %* *41-142*

Surrogate: 1-Chlorooctadecane *85.7 %* *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:	08/16/2019	Sampling Date:	08/15/2019
Reported:	08/19/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	NOT GIVEN		

Sample ID: SP 13 @ 20' (H902814-02)

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	08/16/2019	ND	1.72	86.0	2.00	8.65	
Toluene*	<0.050	0.050	08/16/2019	ND	1.84	92.0	2.00	10.8	
Ethylbenzene*	<0.050	0.050	08/16/2019	ND	1.91	95.3	2.00	12.3	
Total Xylenes*	<0.150	0.150	08/16/2019	ND	5.92	98.7	6.00	10.8	
Total BTEX	<0.300	0.300	08/16/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *99.4 %* *73.3-129*

Chloride, SM4500Cl-B mg/kg Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**4600**	16.0	08/16/2019	ND	432	108	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	08/16/2019	ND	203	101	200	0.527	
DRO >C10-C28*	<10.0	10.0	08/16/2019	ND	225	113	200	1.48	
EXT DRO >C28-C36	<10.0	10.0	08/16/2019	ND					

Surrogate: 1-Chlorooctane *80.8 %* *41-142*

Surrogate: 1-Chlorooctadecane *80.5 %* *37.6-147*

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CARDINAL Laboratories

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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:	08/16/2019	Sampling Date:	08/15/2019
Reported:	08/19/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	NOT GIVEN		

Sample ID: SP 13 @ 25' (H902814-03)

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	08/16/2019	ND	1.72	86.0	2.00	8.65	
Toluene*	<0.050	0.050	08/16/2019	ND	1.84	92.0	2.00	10.8	
Ethylbenzene*	<0.050	0.050	08/16/2019	ND	1.91	95.3	2.00	12.3	
Total Xylenes*	<0.150	0.150	08/16/2019	ND	5.92	98.7	6.00	10.8	
Total BTEX	<0.300	0.300	08/16/2019	ND					

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

Chloride, SM4500Cl-B mg/kg Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**3120**	16.0	08/16/2019	ND	432	108	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	08/16/2019	ND	203	101	200	0.527	
DRO >C10-C28*	<10.0	10.0	08/16/2019	ND	225	113	200	1.48	
EXT DRO >C28-C36	<10.0	10.0	08/16/2019	ND					

Surrogate: 1-Chlorooctane *85.5 %* *41-142*

Surrogate: 1-Chlorooctadecane *87.9 %* *37.6-147*

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CARDINAL Laboratories

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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:	08/16/2019	Sampling Date:	08/15/2019
Reported:	08/19/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	NOT GIVEN		

Sample ID: SP 13 @ 30' (H902814-04)

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	08/16/2019	ND	1.72	86.0	2.00	8.65	
Toluene*	<0.050	0.050	08/16/2019	ND	1.84	92.0	2.00	10.8	
Ethylbenzene*	<0.050	0.050	08/16/2019	ND	1.91	95.3	2.00	12.3	
Total Xylenes*	<0.150	0.150	08/16/2019	ND	5.92	98.7	6.00	10.8	
Total BTEX	<0.300	0.300	08/16/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *100 %* *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	**4360**	16.0	08/16/2019	ND	432	108	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	08/16/2019	ND	203	101	200	0.527	
DRO >C10-C28*	<10.0	10.0	08/16/2019	ND	225	113	200	1.48	
EXT DRO >C28-C36	<10.0	10.0	08/16/2019	ND					

Surrogate: 1-Chlorooctane *82.9 %* *41-142*

Surrogate: 1-Chlorooctadecane *86.2 %* *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:	08/16/2019	Sampling Date:	08/15/2019
Reported:	08/19/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	NOT GIVEN		

Sample ID: SP 13 @ 35' (H902814-05)

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	08/16/2019	ND	1.72	86.0	2.00	8.65	
Toluene*	<0.050	0.050	08/16/2019	ND	1.84	92.0	2.00	10.8	
Ethylbenzene*	<0.050	0.050	08/16/2019	ND	1.91	95.3	2.00	12.3	
Total Xylenes*	<0.150	0.150	08/16/2019	ND	5.92	98.7	6.00	10.8	
Total BTEX	<0.300	0.300	08/16/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *99.4 %* *73.3-129*

Chloride, SM4500Cl-B mg/kg Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**5280**	16.0	08/16/2019	ND	416	104	400	3.77	QM-07

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/16/2019	ND	203	101	200	0.527	
DRO >C10-C28*	<10.0	10.0	08/16/2019	ND	225	113	200	1.48	
EXT DRO >C28-C36	<10.0	10.0	08/16/2019	ND					

Surrogate: 1-Chlorooctane *83.7 %* *41-142*

Surrogate: 1-Chlorooctadecane *87.8 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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:	08/16/2019	Sampling Date:	08/15/2019
Reported:	08/19/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	NOT GIVEN		

Sample ID: SP 13 @ 40' (H902814-06)

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	08/16/2019	ND	1.72	86.0	2.00	8.65	
Toluene*	<0.050	0.050	08/16/2019	ND	1.84	92.0	2.00	10.8	
Ethylbenzene*	<0.050	0.050	08/16/2019	ND	1.91	95.3	2.00	12.3	
Total Xylenes*	<0.150	0.150	08/16/2019	ND	5.92	98.7	6.00	10.8	
Total BTEX	<0.300	0.300	08/16/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *99.0 %* *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	**3040**	16.0	08/16/2019	ND	416	104	400	3.77	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/16/2019	ND	203	101	200	0.527	
DRO >C10-C28*	<10.0	10.0	08/16/2019	ND	225	113	200	1.48	
EXT DRO >C28-C36	<10.0	10.0	08/16/2019	ND					

Surrogate: 1-Chlorooctane *83.9 %* *41-142*

Surrogate: 1-Chlorooctadecane *84.3 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Notes and Definitions

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

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name:	APACHE CORPORATION	**BILL TO**	
Project Manager:	BRUCE BAKER	P.O. #:	
Address:		Company:	
City:	State: Zip:	Attn:	
Phone #:	Fax #:	Address:	
Project #:	Project Owner:	City:	
Project Name:	EBDU 37 WIW	State: Zip:	
Project Location:	EBDU 37 WIW	Phone #:	
Sampler Name:	JEFF BROWN	Fax #:	

FOR LAB USE ONLY				MATRIX						PRESERV.			SAMPLING		ANALYSIS REQUEST										
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	ACID/BASE:	ICE / COOL	OTHER :	DATE	TIME	CL	BTEX	EXT. TPH								
H902814																									
1	SP13 @ 15'												8/15/19	1430	✓	✓	✓								
2	SP13 @ 20'													1425											
3	SP13 @ 25'													1438											
4	SP13 @ 30'													1547											
5	SP13 @ 35'													1638											
6	SP13 @ 40'												8/15/19	1817	✓	✓	✓								

Relinquished By:	Date: 8/16/19	Received By:	Phone Result: ☐ Yes ☐ No Add'l Phone #:
JEFF BROWN	Time: 8:01	Tamara Oldaker	Fax Result: ☐ Yes ☐ No Add'l Fax #:
Relinquished By:	Date:	Received By:	REMARKS: Rush CL only. Thanks, JA
	Time:		
Delivered By: (Circle One)	2.3° #97	Sample Condition Cool ☑ Yes ☐ No Intact ☐ Yes ☐ No	CHECKED BY: (Initials)
Sampler - UPS - Bus - Other:	Corrected 2.7°		TO

CARDINAL Laboratories

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

September 20, 2019

BRUCE BAKER

APACHE CORP - HOBBS

2350 W. MARLAND BLVD.

HOBBS, NM 88240

RE: EBDU 37 WIW

Enclosed are the results of analyses for samples received by the laboratory on 09/19/19 15:48.

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.

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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:	09/19/2019	Sampling Date:	09/19/2019
Reported:	09/20/2019	Sampling Type:	Soil
Project Name:	EBDU 37 WIW	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	NOT GIVEN		

Sample ID: NB @ 45' (H903246-01)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**160**	16.0	09/20/2019	ND	432	108	400	3.64	

Sample ID: NB @ 48' (H903246-02)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**128**	16.0	09/20/2019	ND	432	108	400	3.64	

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name:	Apache Corporation	**BILL TO**	
Project Manager:	Bruce Baker	P.O. #:	
Address:		Company:	
City:	State: Zip:	Attn:	
Phone #:	Fax #:	Address:	
Project #:	Project Owner:	City:	
Project Name:	EBDU 37 WIW	State: Zip:	
Project Location:	EBDU 37 WIW	Phone #:	
Sampler Name:	Josh Brown	Fax #:	

ANALYSIS REQUEST (Rush Please)

CL

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	PRESERV.: ACID/BASE:	ICE / COOL	OTHER :	SAMPLING: DATE	TIME	
H903246															
1	NB @ 45'												9/15/19	3:05	✓
2	NB @ 48'												9/15/19	3:10	✓

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 the client for the 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 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequental damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By: Josh Brown	Date: 9/15/19 Time: 3:48	Received By: Tamara Oldaker	Verbal Result: ☐ Yes ☐ No Add'l Phone #: All Results are emailed. Please provide Email address:
Relinquished By:	Date: Time:	Received By:	REMARKS:
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	Observed Temp. °C 3.8 Corrected Temp. °C 4.2	Sample Condition Cool: ☑ Yes ☐ No Intact: ☑ Yes ☐ No	CHECKED BY: (Initials) TR
Turnaround Time: Standard ☐ Rush ☑ Thermometer ID #97 Correction Factor +0.4 °C	Bacteria (only) Sample Condition Cool: ☐ Yes ☐ No Intact: ☐ Yes ☐ No	Observed Temp. °C Corrected Temp. °C	

FORM-006 R 3.0

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

Appendix C

PBEL Laboratory Report

PERMIAN BASIN
ENVIRONMENTAL LAB, LP
1400 Rankin Hwy
Midland, TX 79701

PBELAB

Analytical Report

Prepared for:

Mark Larson
Larson & Associates, Inc.
P.O. Box 50685
Midland, TX 79710

Project: EBDU #37
Project Number: 19-0112-49
Location:

Lab Order Number: 9H28005

NELAP/TCEQ # T104704516-18-9

Report Date: 09/11/19

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: EBDU #37
Project Number: 19-0112-49
Project Manager: Mark Larson

Fax: (432) 687-0456

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
S-2 (0')	9H28005-01	Soil	08/27/19 12:20	08-28-2019 08:47
S-2 (5')	9H28005-02	Soil	08/27/19 12:23	08-28-2019 08:47
S-2 (10')	9H28005-03	Soil	08/27/19 12:30	08-28-2019 08:47
S-2 (15')	9H28005-04	Soil	08/27/19 12:38	08-28-2019 08:47
S-2 (20')	9H28005-05	Soil	08/27/19 12:40	08-28-2019 08:47
S-2 (25')	9H28005-06	Soil	08/27/19 12:43	08-28-2019 08:47
S-2 (30')	9H28005-07	Soil	08/27/19 12:46	08-28-2019 08:47
S-2 (35')	9H28005-08	Soil	08/27/19 12:50	08-28-2019 08:47
S-2 (40')	9H28005-09	Soil	08/27/19 13:00	08-28-2019 08:47
S-1 (0')	9H28005-10	Soil	08/27/19 13:12	08-28-2019 08:47
S-1 (5')	9H28005-11	Soil	08/27/19 13:13	08-28-2019 08:47
S-1 (10')	9H28005-12	Soil	08/27/19 13:17	08-28-2019 08:47
S-1 (15')	9H28005-13	Soil	08/27/19 13:18	08-28-2019 08:47
S-1 (20')	9H28005-14	Soil	08/27/19 13:20	08-28-2019 08:47
S-1 (25')	9H28005-15	Soil	08/27/19 13:32	08-28-2019 08:47
S-1 (30')	9H28005-16	Soil	08/27/19 13:53	08-28-2019 08:47
S-1 (35')	9H28005-17	Soil	08/27/19 13:59	08-28-2019 08:47
S-1 (40')	9H28005-18	Soil	08/27/19 14:00	08-28-2019 08:47
S-1 (45')	9H28005-19	Soil	08/27/19 14:06	08-28-2019 08:47
S-1 (50')	9H28005-20	Soil	08/27/19 14:16	08-28-2019 08:47
S-3 (0')	9H28005-21	Soil	08/27/19 14:36	08-28-2019 08:47
S-3 (5')	9H28005-22	Soil	08/27/19 14:42	08-28-2019 08:47
S-3 (10')	9H28005-23	Soil	08/27/19 14:43	08-28-2019 08:47
S-3 (15')	9H28005-24	Soil	08/27/19 14:45	08-28-2019 08:47
S-3 (20')	9H28005-25	Soil	08/27/19 14:50	08-28-2019 08:47
S-3 (25')	9H28005-26	Soil	08/27/19 14:52	08-28-2019 08:47
S-3 (30')	9H28005-27	Soil	08/27/19 14:54	08-28-2019 08:47
S-3 (35')	9H28005-28	Soil	08/27/19 14:57	08-28-2019 08:47
S-3 (40')	9H28005-29	Soil	08/27/19 15:00	08-28-2019 08:47

Larson & Associates, Inc.	Project: EBDU #37	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 19-0112-49	
Midland TX, 79710	Project Manager: Mark Larson	

S-2 (0')

9H28005-01 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**10.1**	1.06	mg/kg dry	1	P9I0701	09/07/19	09/07/19	EPA 300.0	
% Moisture	**6.0**	0.1	%	1	P9H2904	08/29/19	08/29/19	ASTM D2216	

Larson & Associates, Inc.	Project: EBDU #37	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 19-0112-49	
Midland TX, 79710	Project Manager: Mark Larson	

S-2 (5')

9H28005-02 (Soil)

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	**22.3**	1.09	mg/kg dry	1	P9I0701	09/07/19	09/07/19	EPA 300.0	
% Moisture	**8.0**	0.1	%	1	P9H2904	08/29/19	08/29/19	ASTM D2216	

Larson & Associates, Inc.	Project: EBDU #37	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 19-0112-49	
Midland TX, 79710	Project Manager: Mark Larson	

S-2 (10')

9H28005-03 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**9.43**	1.04	mg/kg dry	1	P9I0701	09/07/19	09/07/19	EPA 300.0	
% Moisture	**4.0**	0.1	%	1	P9H2904	08/29/19	08/29/19	ASTM D2216	

Larson & Associates, Inc.	Project: EBDU #37	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 19-0112-49	
Midland TX, 79710	Project Manager: Mark Larson	

S-2 (15')

9H28005-04 (Soil)

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	**1.28**	1.06	mg/kg dry	1	P9I0701	09/07/19	09/07/19	EPA 300.0	
% Moisture	**6.0**	0.1	%	1	P9H2904	08/29/19	08/29/19	ASTM D2216	

Larson & Associates, Inc.	Project: EBDU #37	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 19-0112-49	
Midland TX, 79710	Project Manager: Mark Larson	

S-2 (20')

9H28005-05 (Soil)

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	**2.46**	1.09	mg/kg dry	1	P9I0701	09/07/19	09/08/19	EPA 300.0	
% Moisture	**8.0**	0.1	%	1	P9H2904	08/29/19	08/29/19	ASTM D2216	

Larson & Associates, Inc.	Project: EBDU #37	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 19-0112-49	
Midland TX, 79710	Project Manager: Mark Larson	

S-2 (25')

9H28005-06 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	ND	1.06	mg/kg dry	1	P9I0701	09/07/19	09/08/19	EPA 300.0	
% Moisture	**6.0**	0.1	%	1	P9H2904	08/29/19	08/29/19	ASTM D2216	

Larson & Associates, Inc.	Project: EBDU #37	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 19-0112-49	
Midland TX, 79710	Project Manager: Mark Larson	

S-2 (30')

9H28005-07 (Soil)

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	**3.67**	1.09	mg/kg dry	1	P9I0701	09/07/19	09/08/19	EPA 300.0	
% Moisture	**8.0**	0.1	%	1	P9H2904	08/29/19	08/29/19	ASTM D2216	

Larson & Associates, Inc.	Project: EBDU #37	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 19-0112-49	
Midland TX, 79710	Project Manager: Mark Larson	

S-2 (35')

9H28005-08 (Soil)

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	**5.10**	1.06	mg/kg dry	1	P9I0701	09/07/19	09/08/19	EPA 300.0	
% Moisture	**6.0**	0.1	%	1	P9H2904	08/29/19	08/29/19	ASTM D2216	

Larson & Associates, Inc.	Project: EBDU #37	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 19-0112-49	
Midland TX, 79710	Project Manager: Mark Larson	

S-2 (40')

9H28005-09 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**2.89**	1.08	mg/kg dry	1	P9I0701	09/07/19	09/08/19	EPA 300.0	
% Moisture	**7.0**	0.1	%	1	P9H2904	08/29/19	08/29/19	ASTM D2216	

Larson & Associates, Inc.	Project: EBDU #37	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 19-0112-49	
Midland TX, 79710	Project Manager: Mark Larson	

S-1 (0')

9H28005-10 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**67.6**	1.08	mg/kg dry	1	P9I0701	09/07/19	09/08/19	EPA 300.0	
% Moisture	**7.0**	0.1	%	1	P9H2904	08/29/19	08/29/19	ASTM D2216	

Larson & Associates, Inc.	Project: EBDU #37	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 19-0112-49	
Midland TX, 79710	Project Manager: Mark Larson	

S-1 (5')

9H28005-11 (Soil)

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	**58.3**	1.10	mg/kg dry	1	P9I0701	09/07/19	09/08/19	EPA 300.0	
% Moisture	**9.0**	0.1	%	1	P9H2904	08/29/19	08/29/19	ASTM D2216	

Larson & Associates, Inc.	Project: EBDU #37	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 19-0112-49	
Midland TX, 79710	Project Manager: Mark Larson	

S-1 (10')

9H28005-12 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**16.1**	1.02	mg/kg dry	1	P9I0701	09/07/19	09/08/19	EPA 300.0	
% Moisture	**2.0**	0.1	%	1	P9H2904	08/29/19	08/29/19	ASTM D2216	

Larson & Associates, Inc.	Project: EBDU #37	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 19-0112-49	
Midland TX, 79710	Project Manager: Mark Larson	

S-1 (15')

9H28005-13 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**9.81**	1.02	mg/kg dry	1	P9I0701	09/07/19	09/08/19	EPA 300.0	
% Moisture	**2.0**	0.1	%	1	P9H2904	08/29/19	08/29/19	ASTM D2216	

Larson & Associates, Inc.	Project: EBDU #37	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 19-0112-49	
Midland TX, 79710	Project Manager: Mark Larson	

S-1 (20')

9H28005-14 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**14.0**	1.06	mg/kg dry	1	P9I0701	09/07/19	09/08/19	EPA 300.0	
% Moisture	**6.0**	0.1	%	1	P9H2904	08/29/19	08/29/19	ASTM D2216	

Larson & Associates, Inc.	Project: EBDU #37	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 19-0112-49	
Midland TX, 79710	Project Manager: Mark Larson	

S-1 (25')

9H28005-15 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**11.0**	1.04	mg/kg dry	1	P9I0701	09/07/19	09/08/19	EPA 300.0	
% Moisture	**4.0**	0.1	%	1	P9H2904	08/29/19	08/29/19	ASTM D2216	

Larson & Associates, Inc.	Project: EBDU #37	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 19-0112-49	
Midland TX, 79710	Project Manager: Mark Larson	

S-1 (30')

9H28005-16 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**12.9**	1.06	mg/kg dry	1	P9I0701	09/07/19	09/08/19	EPA 300.0	
% Moisture	**6.0**	0.1	%	1	P9H2904	08/29/19	08/29/19	ASTM D2216	

Larson & Associates, Inc.	Project: EBDU #37	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 19-0112-49	
Midland TX, 79710	Project Manager: Mark Larson	

S-1 (35')

9H28005-17 (Soil)

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	**5.65**	1.09	mg/kg dry	1	P9I0701	09/07/19	09/08/19	EPA 300.0	
% Moisture	**8.0**	0.1	%	1	P9H2904	08/29/19	08/29/19	ASTM D2216	

Larson & Associates, Inc.	Project: EBDU #37	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 19-0112-49	
Midland TX, 79710	Project Manager: Mark Larson	

S-1 (40')

9H28005-18 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**8.16**	1.06	mg/kg dry	1	P9I0701	09/07/19	09/08/19	EPA 300.0	
% Moisture	**6.0**	0.1	%	1	P9H2904	08/29/19	08/29/19	ASTM D2216	

Larson & Associates, Inc.	Project: EBDU #37	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 19-0112-49	
Midland TX, 79710	Project Manager: Mark Larson	

S-1 (45')

9H28005-19 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**21.0**	1.10	mg/kg dry	1	P9I0702	09/07/19	09/08/19	EPA 300.0	
% Moisture	**9.0**	0.1	%	1	P9H2904	08/29/19	08/29/19	ASTM D2216	

Larson & Associates, Inc.	Project: EBDU #37	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 19-0112-49	
Midland TX, 79710	Project Manager: Mark Larson	

S-1 (50')

9H28005-20 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**3.90**	1.09	mg/kg dry	1	P9I0702	09/07/19	09/08/19	EPA 300.0	
% Moisture	**8.0**	0.1	%	1	P9H2904	08/29/19	08/29/19	ASTM D2216	

Larson & Associates, Inc.	Project: EBDU #37	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 19-0112-49	
Midland TX, 79710	Project Manager: Mark Larson	

S-3 (0')

9H28005-21 (Soil)

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	**2.62**	1.03	mg/kg dry	1	P9I0702	09/07/19	09/08/19	EPA 300.0	
% Moisture	**3.0**	0.1	%	1	P9H2904	08/29/19	08/29/19	ASTM D2216	

Larson & Associates, Inc.	Project: EBDU #37	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 19-0112-49	
Midland TX, 79710	Project Manager: Mark Larson	

S-3 (5')

9H28005-22 (Soil)

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	**1.68**	1.02	mg/kg dry	1	P9I0702	09/07/19	09/08/19	EPA 300.0	
% Moisture	**2.0**	0.1	%	1	P9H2904	08/29/19	08/29/19	ASTM D2216	

Larson & Associates, Inc.	Project: EBDU #37	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 19-0112-49	
Midland TX, 79710	Project Manager: Mark Larson	

S-3 (10')

9H28005-23 (Soil)

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	**1.31**	1.05	mg/kg dry	1	P9I0702	09/07/19	09/08/19	EPA 300.0	
% Moisture	**5.0**	0.1	%	1	P9H2904	08/29/19	08/29/19	ASTM D2216	

Larson & Associates, Inc.	Project: EBDU #37	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 19-0112-49	
Midland TX, 79710	Project Manager: Mark Larson	

S-3 (15')

9H28005-24 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	ND	1.01	mg/kg dry	1	P9I0702	09/07/19	09/08/19	EPA 300.0	
% Moisture	**1.0**	0.1	%	1	P9H2904	08/29/19	08/29/19	ASTM D2216	

Larson & Associates, Inc.	Project: EBDU #37	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 19-0112-49	
Midland TX, 79710	Project Manager: Mark Larson	

S-3 (20')

9H28005-25 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**1.24**	1.05	mg/kg dry	1	P9I0702	09/07/19	09/08/19	EPA 300.0	
% Moisture	**5.0**	0.1	%	1	P9H2904	08/29/19	08/29/19	ASTM D2216	

Larson & Associates, Inc.	Project: EBDU #37	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 19-0112-49	
Midland TX, 79710	Project Manager: Mark Larson	

S-3 (25')

9H28005-26 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	ND	1.05	mg/kg dry	1	P9I0702	09/07/19	09/08/19	EPA 300.0	
% Moisture	**5.0**	0.1	%	1	P9H2904	08/29/19	08/29/19	ASTM D2216	

Larson & Associates, Inc.	Project: EBDU #37	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 19-0112-49	
Midland TX, 79710	Project Manager: Mark Larson	

S-3 (30')

9H28005-27 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	ND	1.08	mg/kg dry	1	P9I0702	09/07/19	09/08/19	EPA 300.0	
% Moisture	**7.0**	0.1	%	1	P9H2904	08/29/19	08/29/19	ASTM D2216	

Larson & Associates, Inc.	Project: EBDU #37	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 19-0112-49	
Midland TX, 79710	Project Manager: Mark Larson	

S-3 (35')

9H28005-28 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	ND	1.09	mg/kg dry	1	P9I0702	09/07/19	09/09/19	EPA 300.0	
% Moisture	**8.0**	0.1	%	1	P9H2904	08/29/19	08/29/19	ASTM D2216	

Larson & Associates, Inc.	Project: EBDU #37	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 19-0112-49	
Midland TX, 79710	Project Manager: Mark Larson	

S-3 (40')

9H28005-29 (Soil)

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	**1.23**	1.06	mg/kg dry	1	P9I0702	09/07/19	09/09/19	EPA 300.0	
% Moisture	**6.0**	0.1	%	1	P9H2904	08/29/19	08/29/19	ASTM D2216	

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: EBDU #37
Project Number: 19-0112-49
Project Manager: Mark Larson

Fax: (432) 687-0456

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P9H2904 - * DEFAULT PREP *** **										
Blank (P9H2904-BLK1)				Prepared & Analyzed: 08/29/19						
% Moisture	ND	0.1	%							
Duplicate (P9H2904-DUP1)		**Source: 9H28005-16**		Prepared & Analyzed: 08/29/19						
% Moisture	6.0	0.1	%		6.0			0.00	20	
Duplicate (P9H2904-DUP2)		**Source: 9H28005-29**		Prepared & Analyzed: 08/29/19						
% Moisture	6.0	0.1	%		6.0			0.00	20	
Duplicate (P9H2904-DUP3)		**Source: 9H28012-04**		Prepared & Analyzed: 08/29/19						
% Moisture	5.0	0.1	%		5.0			0.00	20	
Duplicate (P9H2904-DUP4)		**Source: 9H28011-20**		Prepared & Analyzed: 08/29/19						
% Moisture	10.0	0.1	%		10.0			0.00	20	
Batch P9I0701 - * DEFAULT PREP *** **										
Blank (P9I0701-BLK1)				Prepared & Analyzed: 09/07/19						
Chloride	ND	1.00	mg/kg wet							
LCS (P9I0701-BS1)				Prepared & Analyzed: 09/07/19						
Chloride	404	1.00	mg/kg wet	400		101	80-120			
LCS Dup (P9I0701-BSD1)				Prepared & Analyzed: 09/07/19						
Chloride	409	1.00	mg/kg wet	400		102	80-120	1.27	20	
Calibration Blank (P9I0701-CCB1)				Prepared & Analyzed: 09/07/19						
Chloride	-0.0460		mg/kg wet							

Larson & Associates, Inc.	Project: EBDU #37	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 19-0112-49	
Midland TX, 79710	Project Manager: Mark Larson	

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P9I0701 - * DEFAULT PREP *** **										
Calibration Blank (P9I0701-CCB2)				Prepared: 09/07/19 Analyzed: 09/08/19						
Chloride	0.00		mg/kg wet							
Calibration Check (P9I0701-CCV1)				Prepared & Analyzed: 09/07/19						
Chloride	19.8		mg/kg	20.0		99.0	0-200			
Calibration Check (P9I0701-CCV2)				Prepared: 09/07/19 Analyzed: 09/08/19						
Chloride	20.2		mg/kg	20.0		101	0-200			
Calibration Check (P9I0701-CCV3)				Prepared: 09/07/19 Analyzed: 09/08/19						
Chloride	20.7		mg/kg	20.0		103	0-200			
Matrix Spike (P9I0701-MS1)		**Source: 9H28010-01**		Prepared & Analyzed: 09/07/19						
Chloride	3260	27.5	mg/kg dry	2750	475	101	80-120			
Matrix Spike (P9I0701-MS2)		**Source: 9H28010-02**		Prepared: 09/07/19 Analyzed: 09/08/19						
Chloride	3050	26.6	mg/kg dry	2660	198	107	80-120			
Matrix Spike Dup (P9I0701-MSD1)		**Source: 9H28010-01**		Prepared & Analyzed: 09/07/19						
Chloride	3710	27.5	mg/kg dry	2750	475	118	80-120	13.0	20	
Matrix Spike Dup (P9I0701-MSD2)		**Source: 9H28010-02**		Prepared: 09/07/19 Analyzed: 09/08/19						
Chloride	3130	26.6	mg/kg dry	2660	198	110	80-120	2.51	20	
Batch P9I0702 - * DEFAULT PREP *** **										
Blank (P9I0702-BLK1)				Prepared: 09/07/19 Analyzed: 09/08/19						
Chloride	ND	1.00	mg/kg wet							

Larson & Associates, Inc.	Project: EBDU #37	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 19-0112-49	
Midland TX, 79710	Project Manager: Mark Larson	

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P9I0702 - * DEFAULT PREP *** **										
LCS (P9I0702-BS1)				Prepared: 09/07/19 Analyzed: 09/08/19						
Chloride	425	1.00	mg/kg wet	400		106	80-120			
LCS Dup (P9I0702-BSD1)				Prepared: 09/07/19 Analyzed: 09/08/19						
Chloride	417	1.00	mg/kg wet	400		104	80-120	1.89	20	
Calibration Blank (P9I0702-CCB1)				Prepared: 09/07/19 Analyzed: 09/08/19						
Chloride	0.00		mg/kg wet							
Calibration Blank (P9I0702-CCB2)				Prepared: 09/07/19 Analyzed: 09/09/19						
Chloride	0.0590		mg/kg wet							
Calibration Check (P9I0702-CCV1)				Prepared: 09/07/19 Analyzed: 09/08/19						
Chloride	20.7		mg/kg	20.0		103	0-200			
Calibration Check (P9I0702-CCV2)				Prepared: 09/07/19 Analyzed: 09/08/19						
Chloride	20.6		mg/kg	20.0		103	0-200			
Calibration Check (P9I0702-CCV3)				Prepared: 09/07/19 Analyzed: 09/09/19						
Chloride	19.8		mg/kg	20.0		99.0	0-200			
Matrix Spike (P9I0702-MS1)		**Source: 9H28010-03**		Prepared: 09/07/19 Analyzed: 09/08/19						
Chloride	3420	28.1	mg/kg dry	2810	394	108	80-120			
Matrix Spike (P9I0702-MS2)		**Source: 9H28010-04**		Prepared: 09/07/19 Analyzed: 09/09/19						
Chloride	3230	27.8	mg/kg dry	2780	200	109	80-120			
Matrix Spike Dup (P9I0702-MSD1)		**Source: 9H28010-03**		Prepared: 09/07/19 Analyzed: 09/08/19						
Chloride	3080	28.1	mg/kg dry	2810	394	95.6	80-120	10.5	20	

Larson & Associates, Inc.	Project: EBDU #37	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 19-0112-49	
Midland TX, 79710	Project Manager: Mark Larson	

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P9I0702 - * DEFAULT PREP *** **										
Matrix Spike Dup (P9I0702-MSD2)		**Source: 9H28010-04**		Prepared: 09/07/19 Analyzed: 09/09/19						
Chloride	3140	27.8	mg/kg dry	2780	200	106	80-120	2.58	20	

Larson & Associates, Inc.	Project: EBDU #37	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 19-0112-49	
Midland TX, 79710	Project Manager: Mark Larson	

Notes and Definitions

BULK	Samples received in Bulk soil containers
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

Report Approved By: Brent Barron Date: 9/11/2019

Brent Barron, Laboratory Director/Technical Director

This material is intended only for the use of the individual (s) or entity to whom it is addressed, and may contain information that is privileged and confidential.

If you have received this material in error, please notify us immediately at 432-686-7235.

CHAIN-OF-CUSTODY

Larson & Associates, Inc.
Environmental Consultants
507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

Data Reported to:

DATE: 8/28/2019 PAGE 1 OF 2

PO#: LAB WORK ORDER#: 9H28005

PROJECT LOCATION OR NAME: EBDU #37

LAI PROJECT #: 19-0112-49 COLLECTOR: RO

TRRP report? ☐ Yes ☒ No

TIME ZONE: Time zone/State: MST

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR OT=OTHER

Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESSERVED	ANALYSES: BTEX ☐ MTBE ☐	TRPH 418.1 ☐	TPH 1005 ☐ TPH 1006 ☐	GASOLINE MOD 8015 ☐	DIESEL - MOD 8015 ☐	OIL - MOD 8015 ☐	VOC 8260 ☐	SVOC 8270 ☐ PAH 8270 ☐ HOLDPAH ☐	8081 PESTICIDES ☐ 8151 HERBICIDES ☐	8082 PCBS ☐	TBLP - METALS (RCRA) ☐ TCLP VOC ☐	TCLP - PEST ☐ HERB ☐ Semi-VOC ☐	TOTAL METALS (RCRA) ☐ OTHER LIST ☐	LEAD - TOTAL ☐ D.W. 200.8 ☐ TCLP ☐	RCI ☐ TOX ☐ FLASHPOINT ☐	TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐	pH ☐ HEXAVALENT CHROMIUM ☐	EXPLOSIVES ☐ PECHLORATE ☐	CHLORIDE ☒ ANIONS ☐ ALKALINITY ☐	m300	FIELD NOTES
S-2 (0')	1	8-27-19	12:20	S	1				X																				X			
S-2 (5')	2		12:23																													
S-2 (10')	3		12:30																													
S-2 (15')	4		12:38																													
S-2 (20')	5		12:40																													
S-2 (25')	6		12:43																													
S-2 (30')	7		12:46																													
S-2 (35')	8		12:50																													
S-2 (40')	9		13:00																													
S-1 (0')	10		13:12																													
S-1 (5')	11		13:13																													
S-1 (10')	12		13:17																													
S-1 (15')	13		13:18																													
S-1 (20')	14		13:20																													
S-1 (25')	15		13:32																													
TOTAL	15																															

RELINQUISHED BY:(Signature) DATE/TIME 8/28 9:07 RECEIVED BY:(Signature)

RELINQUISHED BY:(Signature) DATE/TIME RECEIVED BY: (Signature)

RELINQUISHED BY:(Signature) DATE/TIME RECEIVED BY: (Signature)

LABORATORY: PBEL

TURN AROUND TIME
NORMAL ☒
1 DAY ☐
2 DAY ☐
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: 2.3 3.3 THERM#: CF+1 LZ
CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED
☐ CARRIER BILL #
☐ HAND DELIVERED

№ 0725

CHAIN-OF-CUSTODY

Larson & Associates, Inc.
Environmental Consultants
507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

DATE: 8/28/2019 PAGE 2 OF 2

PO#: LAB WORK ORDER#:

PROJECT LOCATION OR NAME: EBDU #37

LAI PROJECT #: 19-0112-49 COLLECTOR: RO

Data Reported to:

TRRP report? ☐ Yes ☒ No

TIME ZONE: Time zone/State: MST

S=SOIL W=WATER A=AIR P=PAINT SL=SLUDGE OT=OTHER

Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESSERVED	ANALYSES: M300	FIELD NOTES
S-1 (30')	16	8.27.19	13:53	S	1				X			
S-1 (35')	17		13:59								X	
S-1 (40')	18		14:00									
S-1 (45')	19		14:06									
S-1 (50')	20		14:16									
S-3 (0')	21		14:36									
S-3 (5')	22		14:42									
S-3 (10')	23		14:43									
S-3 (15')	24		14:45									
S-3 (20')	25		14:50									
S-3 (25')	26		14:52									
S-3 (30')	27		14:54									
S-3 (35')	28		14:57									
S-3 (40')	29		15:00									
TOTAL	14											

ANALYSES: BTEX ☐ MTBE ☐ TRPH 418.1 ☐ TPH 1005 ☐ TPH 1006 ☐ GASOLINE MOD 8015 ☐ DIESEL - MOD 8015 ☐ OIL - MOD 8015 ☐ VOC 8260 ☐ SVOC 8270 ☐ PAH 8270 ☐ HOLDPAH ☐ 8081 PESTICIDES ☐ 8082 PCBS ☐ 8151 HERBICIDES ☐ TBLP - METALS (RCRA) ☐ TCLP - PEST ☐ HERB ☐ TCLP VOC ☐ TOTAL METALS (RCRA) ☐ Semi-VOC ☐ LEAD - TOTAL ☐ D.W. 200.8 ☐ OTHER LIST ☐ RCI ☐ TOX ☐ FLASHPOINT ☐ TCLP ☐ TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ pH ☐ HEXAVALENT CHROMIUM ☐ EXPLOSIVES ☐ PECHLORATE ☐ CHLORIDE ☒ ANIONS ☐ ALKALINITY ☐

RELINQUISHED BY:(Signature)	DATE/TIME	RECEIVED BY: (Signature)
	8/28 9:17	
RELINQUISHED BY:(Signature)	DATE/TIME	RECEIVED BY: (Signature)
RELINQUISHED BY:(Signature)	DATE/TIME	RECEIVED BY: (Signature)

LABORATORY: PBEL

TURN AROUND TIME
NORMAL ☒
1 DAY ☐
2 DAY ☐
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: 2.3 3.3 THERM#: CF+1 L2
CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED
☐ CARRIER BILL #
☐ HAND DELIVERED

Appendix D

Boring Logs and Monitoring Well Records

BORING RECORD

Start: 9:28
Finish: 11:30 - Tech Issues

GEOLOGIC UNIT	DEPTH	DESCRIPTION LITHOLOGIC	DESCRIPTION USCS	GRAPHIC LOG
	0	Silty Sand, 5YR, 4/2, Dark Reddish Grey, Well Sorted	SM	
	5	2.5YR, 7/2, Light Grey, 1-10mm Subangular Clasts		
	10	10YR, 7/3, Well Sorted, Very Pale Brown		
	15	7.5YR, 7/3, Pink		
	20	5YR, 5/6, Yellowish Red		
	25	Clayey Silt, 5YR, 5/6, Yellowish Red	CL	
	30			
	35			
	40			
	45			
	50	Sand, Medium to Coarse Sand with Subrounded Clast Inclusions, Very Moist, 1-3mm in Diameter	SW	
		TD: 50'		

PID READING: PPM X 1 (2 4 6 8 10 12 14 16 18)

SAMPLE NUMBER	PID READING	RECOVERY	DEPTH
			1
			5
			5
			5
			5
			5
			5
			5
			5

REMARKS: BACKGROUND PID READING
SOIL : _____ PPM
SOIL : _____ PPM

ONE CONTINUOUS AUGER SAMPLER
STANDARD PENETRATION TEST
UNDISTURBED SAMPLE
WATER TABLE (24 HRS)
WATER TABLE (TIME OF BORING)
LABORATORY TEST LOCATION
PENETROMETER (TONS/ SQ. FT)
NR NO RECOVERY

JOB NUMBER : Apache Corp. /19-0112-49
HOLE DIAMETER : 2"
LOCATION : EBDU #37 - Eunice, NM
LAI GEOLOGIST : R. Owen
DRILLING CONTRACTOR : SDC
DRILLING METHOD : Air Rotary

Larson & Associates, Inc. Environmental Consultants

DRILL DATE : 8-27-2019
BORING NUMBER : S-1

BORING RECORD

Start: 12:20
Finish: 13:00

GEOLOGIC UNIT	DEPTH	DESCRIPTION LITHOLOGIC	DESCRIPTION USCS
	0	Silty Sand, 10YR, 5/1, 1-6mm Subangular Clast Inclusions	
	5	2.5YR, 4/2, Dark Greyish Brown	
	10	2.5YR, 7/3, Pale Brown	SM
	15	Subangular inclusions, 1-2mm Diameter 5YR, 5/6, Yellowish Red, Well Sorted	
	20	Silty Clay, 5YR, 5/6, Well Sorted, Yellowish Red	
	25		SM
	30	Subangular Clast Inclusions 0.5-2mm Diameter	
	35		
	40	TD: 40'	

GRAPHIC LOG

PID READING
PPM X 1
2 4 6 8 10 12 14 16 18

SAMPLE
NUMBER | PID READING | RECOVERY | DEPTH

REMARKS
BACKGROUND PID READING
SOIL : _____ PPM
SOIL : _____ PPM

ONE CONTINUOUS AUGER SAMPLER
STANDARD PENETRATION TEST
UNDISTURBED SAMPLE
WATER TABLE (24 HRS)
WATER TABLE (TIME OF BORING)
LABORATORY TEST LOCATION
PENETROMETER (TONS/ SQ. FT)
NR NO RECOVERY

JOB NUMBER : Apache Corp. / 19-0112-49
HOLE DIAMETER : 2"
LOCATION : EBDU #37 - Eunice, NM
LAI GEOLOGIST : R. Owen
DRILLING CONTRACTOR : SDI
DRILLING METHOD : Air Rotary

Larson & Associates, Inc. Environmental Consultants

DRILL DATE : 8-27-19

BORING NUMBER : S-2

BORING RECORD

Start: 14:36
Finish: 15:00

GEOLOGIC UNIT	DEPTH	DESCRIPTION LITHOLOGIC	DESCRIPTION USCS	GRAPHIC LOG
	0	Silty Sand, 5YR, 4/2, Dark Reddish Grey	SM	
	5	Subrounded, Clast Inclusions, 0.5-1mm in Diameter, 2.5YR, 6/3, Light Yellowish Brown		
	10			
	15	Well Sorted		
	20	Yellowish Red, 5YR, 5/6	SM	
	25			
	30			
	35	Silty Clay, 5YR, 4/6, Yellowish Red	CL	
	40	TD: 40'		

PID READING: PPM X 1 (2 4 6 8 10 12 14 16 18)

SAMPLE: NUMBER | PID READING | RECOVERY | DEPTH (1, 5, 10, 15, 20, 25, 30, 35, 40)

REMARKS: BACKGROUND PID READING
SOIL : _____ PPM
SOIL : _____ PPM

ONE CONTINUOUS AUGER SAMPLER
STANDARD PENETRATION TEST
UNDISTURBED SAMPLE
WATER TABLE (24 HRS)
WATER TABLE (TIME OF BORING)
LABORATORY TEST LOCATION
PENETROMETER (TONS/ SQ. FT)
NR NO RECOVERY

JOB NUMBER : Apache Corp. / 19-0112-49
HOLE DIAMETER : 2"
LOCATION : EBDU #37 - Eunice, NM
LAI GEOLOGIST : R. Owen
DRILLING CONTRACTOR : SDI
DRILLING METHOD : Air Rotary

Larson & Associates, Inc. Environmental Consultants

DRILL DATE : 8-27-19

BORING NUMBER : S-3

BORING RECORD

Start: 13:41
Finish: 14:28

GEOLOGIC UNIT	DEPTH	DESCRIPTION LITHOLOGIC	DESCRIPTION USCS	GRAPHIC LOG
	0	Silty Clay, 7.5YR, 5/2, Brown, Very Moist, High Placity, Very Fine Grained Quartz Sand	CL	
	5	Caliche, 7.5YR, 8/2, Pinkish White, Moderate Hard, Very Fine Grained Quartz Sand	Caliche	
	10			
	15	Silty Sand, 10YR, 7/4, Very Pale Brown, Very Fine Grained Quartz Sand, Poorly Sorted, Round, Moist	SM	
	20	Sand, 5YR, 6/6, Reddish Yellow, Very Fine Grained Quartz Sand, Poorly Sorted, Round, Moist	SW	
	25			
	30			
	35			
	40			
	45			
		TD: 48'		

PID READING

PPM X 1

2 4 6 8 10 12 14 16 18

SAMPLE

NUMBER	PID READING	RECOVERY	DEPTH
			1
			5
			10
			15
			20
			25
			30
			35
			40

REMARKS

BACKGROUND PID READING

SOIL : _____ PPM

SOIL : _____ PPM

ONE CONTINUOUS AUGER SAMPLER
STANDARD PENETRATION TEST
UNDISTURBED SAMPLE
WATER TABLE (24 HRS)
WATER TABLE (TIME OF BORING)
LABORATORY TEST LOCATION
PENETROMETER (TONS/ SQ. FT)
NR NO RECOVERY

JOB NUMBER : Apache Corp. / 19-0112-49
HOLE DIAMETER : 5"
LOCATION : EBDU # 37
LAI GEOLOGIST : M. Larson
DRILLING CONTRACTOR : SDC
DRILLING METHOD : Air Rotary

Larson & Associates, Inc. Environmental Consultants

DRILL DATE : 9-19-2019

BORING NUMBER : N. Boring

BORING RECORD

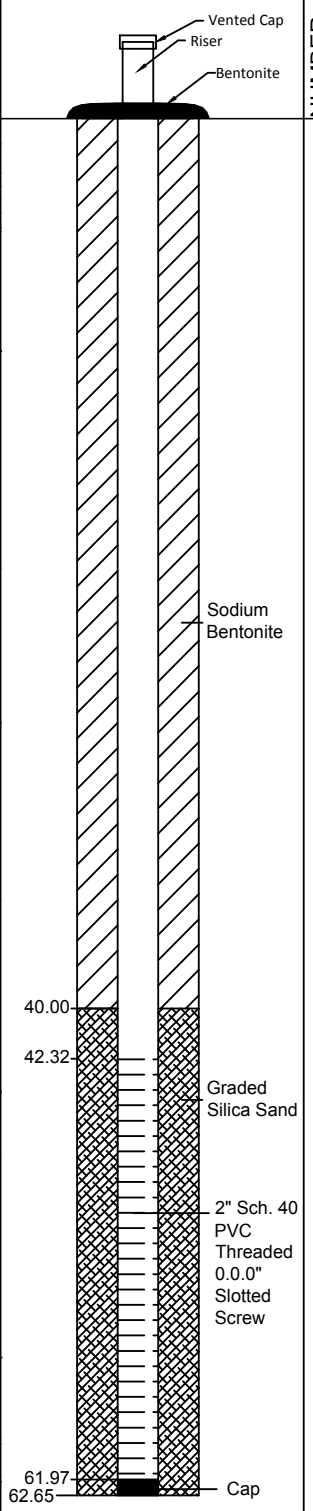
Start: 11:40
Finish: 12:58

GEOLOGIC UNIT	DEPTH	DESCRIPTION LITHOLOGIC	DESCRIPTION USCS	GRAPHIC LOG
	0	Silty Clay, 7.5YR, 5/1, Gray, Very Fine Grained Quartz Sand, Dry	CL	
			Caliche	
	5	Caliche, 7.5YR, 7/1 to 7/2, Pinkish Gray, Sandy, Fine to Very Fine Grained Quartz Sand, Dry		
	10	Silty Sand, 10YR, 6/4, Light Yellowish ..., Very Fine to Fine Grained Quartz Sand, Poorly Sorted, Subrounded, Loose	SM	
	15			
	20	7.5YR, 6/6, Reddish Yellow Below 10', Poorly Sorted, ... Round		
	25	10YR, 7/4, Very Pale Brown Below 15'		
		Sand, 5YR, 5/6 to 6/6, Yellowish Red to Reddish Yellow, Very Fine Grained Quartz Sand, Poorly Sorted, Round, Moist, Very Moist	SW	
	30			
	35	Below 35'		
		Sandstone, 5YR, 6/6, Reddish Yellow, Very Fine Grained Quartz Sand,Poorly Sorted, Moderately Well Cemented to Well Cemented	Sand Stone	
	40			
	45			
46.72				
	50			
	55			
		Gravelly Sand, 7.5YR, 6/6, Reddish Yellow, Fine to Medium Grained Quartz Sand, Round, Cobbles to 40mm	SP	
	60	TD: 62'		

Surface Elevation:
TOC Elecation:

REMARKS
BACKGROUND PID READING
SOIL : _____ PPM
SOIL : _____ PPM

NUMBER | RECOVERY | DEPTH



ONE CONTINUOUS AUGER SAMPLER
STANDARD PENETRATION TEST
UNDISTURBED SAMPLE
WATER TABLE (24 HRS)
WATER TABLE (TIME OF BORING)
LABORATORY TEST LOCATION
PENETROMETER (TONS/ SQ. FT)
NR NO RECOVERY

JOB NUMBER : Apache Corp./ 19-0112-49
HOLE DIAMETER : 5"
LOCATION : EBDU #37
LAI GEOLOGIST : M. Larson
DRILLING CONTRACTOR : _____
DRILLING METHOD : SR/WR

Larson & Associates, Inc. Environmental Consultants

DRILL DATE : 9-19-2019

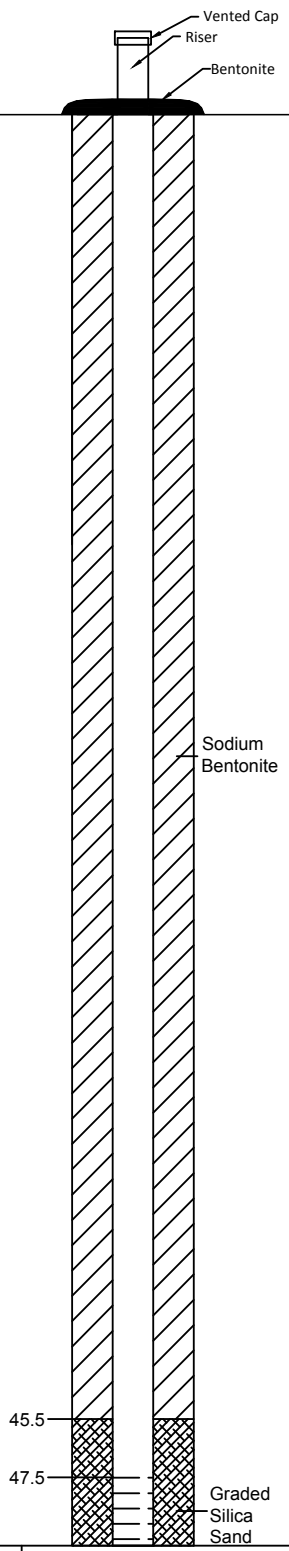
BORING NUMBER : TMW-1

BORING RECORD

Start: 15:02
Finish: 15:55

Surface Elevation: 3,563.50'
TOC Elecation: 3,566.23'

GEOLOGIC UNIT	DEPTH	DESCRIPTION LITHOLOGIC	DESCRIPTION USCS	GRAPHIC LOG	REMARKS BACKGROUND PID READING
	0	Silty Clay, 10YR, 5/6, Ash Brown, Dry	CL		15:02
	5	Caliche, 7.5YR, 8/2, Pinkish White, Sandy to Moderate Very Fine Grained Quartz Sand	Caliche		15:03
	10				15:05
	15	Silty Sand, 7.5YR, 7/2, Pinkish Gray, Very Fine Grained Quartz Sand, Poorly Sorted, Dry	SM		15:10
	20				15:15
	25	Sand, 5YR, 6/0, Reddish Yellow, Very Fine Grained Quartz Sand, Poorly Sorted, Dry	SW		15:17
	30				15:22
	35				15:23
	40				15:28
	45	Sand, 5YR, 6/6, Reddish Yellow, Moderate Well Cemented, Poorly Sorted, Dry	SW		15:30
		Continue			



NUMBER | RECOVERY | DEPTH

SOIL : _____ PPM
SOIL : _____ PPM

ONE CONTINUOUS AUGER SAMPLER
STANDARD PENETRATION TEST
UNDISTURBED SAMPLE
WATER TABLE (24 HRS)
WATER TABLE (TIME OF BORING)
LABORATORY TEST LOCATION
PENETROMETER (TONS/ SQ. FT)
NR NO RECOVERY

JOB NUMBER : Apache Corp. / 19-0112-49
HOLE DIAMETER : 5"
LOCATION : EBDU #37
LAI GEOLOGIST : M. Larson
DRILLING CONTRACTOR : SDC
DRILLING METHOD : Air Rotary

Larson & Associates, Inc. Environmental Consultants

DRILL DATE : 9-20-2019

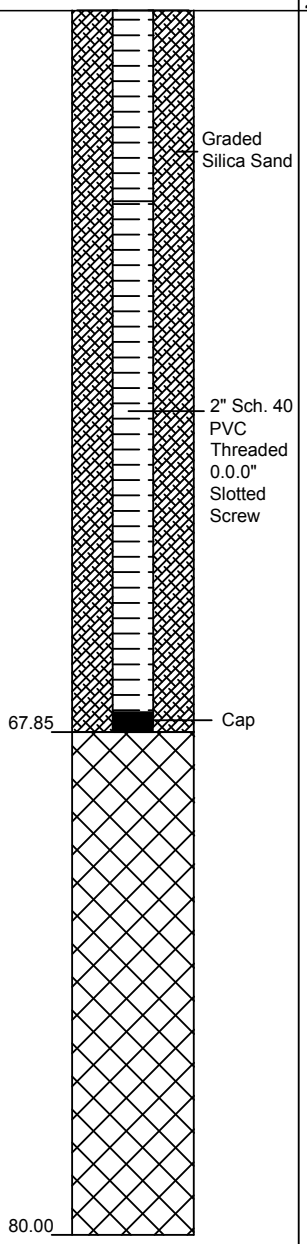
BORING NUMBER : TMW-2

BORING RECORD

Start: 15:02
Finish: 15:55

Surface Elevation: 3,563.50'
TOC Elecation: 3,566.23'

GEOLOGIC UNIT	DEPTH	DESCRIPTION LITHOLOGIC	DESCRIPTION USCS	GRAPHIC LOG	*Continue*	NUMBER	RECOVERY	DEPTH	REMARKS BACKGROUND PID READING SOIL : PPM SOIL : PPM
	50	*Continue*							
	55	Silty and Clayey Below 50', Moist at 55'							
	60		SM-SC						
	65								
	70								
	75	Gravel, 7.5YR, 4/3, Light Brown, Poorly Sorted, Round, Red Bed	GW						
	80	TD: 79'							



ONE CONTINUOUS AUGER SAMPLER
STANDARD PENETRATION TEST
UNDISTURBED SAMPLE
WATER TABLE (24 HRS)
WATER TABLE (TIME OF BORING)
LABORATORY TEST LOCATION
PENETROMETER (TONS/ SQ. FT)
NR NO RECOVERY

Larson & Associates, Inc. Environmental Consultants

DRILL DATE : 9-20-2019
BORING NUMBER : TMW-2

JOB NUMBER : Apache Corp. / 19-0112-49
HOLE DIAMETER : 5"
LOCATION : EBDU #37
LAI GEOLOGIST : M. Larson
DRILLING CONTRACTOR : SDC
DRILLING METHOD : Air Rotary

Appendix E

DHL Laboratory Report

October 04, 2019

Mark Larson
Larson & Associates
507 N. Marienfeld #205
Midland, TX 79701
TEL: (432) 687-0901
FAX (432) 687-0456

Order No.: 1909235

RE: EBDU #37

Dear Mark Larson:

DHL Analytical, Inc. received 2 sample(s) on 9/26/2019 for the analyses presented in the following report.

There were no problems with the analyses and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative and all estimated uncertainties of results are within method specifications.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-19-24

Table of Contents

CHAIN-OF-CUSTODY

Larson & Associates, Inc.
Environmental Consultants
507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

DATE: 9-25-2019 PAGE 1 OF 1

PO#: LAB WORK ORDER#: 1909235

PROJECT LOCATION OR NAME: EBDU #37

LAI PROJECT #: 19-0112-49 COLLECTOR: EC

Data Reported to:

TRRP report? ☐ Yes ☒ No

TIME ZONE: Time zone/State: MST

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR OT=OTHER

Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESSERVED	ANALYSES: BTEX ☒ MTBE ☐	TRPH 418.1 ☐	TPH 1005 ☐ TPH 1006 ☐	GASOLINE MOD 8015 ☐	DIESEL - MOD 8015 ☐	OIL - MOD 8015 ☐	VOC 8260 ☐	SVOC 8270 ☐	PAH 8270 ☐ HOLDPAH ☐	8081 PESTICIDES ☐ 8151 HERBICIDES ☐	8082 PCBS ☐	TBLP - METALS (RCRA) ☐ TCLP VOC ☐	TCLP - PEST ☐ HERB ☐ Semi-VOC ☐	TOTAL METALS (RCRA) ☐ OTHER LIST ☐	LEAD - TOTAL ☐ D.W. 200.8 ☐ TCLP ☐	RCI ☐ TOX ☐ FLASHPOINT ☐	TDS ☒ TSS ☐ % MOISTURE ☐ CYANIDE ☐	pH ☐ HEXAVALENT CHROMIUM ☐	EXPLOSIVES ☐ PECHLORATE ☐	CHLORIDES ☒ ANIONS ☐ ALKALINITY ☐	m300	FIELD NOTES
TMW 1	01	9-23-19	15:00	W	4	3			4		X															X		X				
TMW 2	02	9-23-19	17:10	W	4	3			4		X															X		X				

TOTAL 3

RELINQUISHED BY:(Signature)	DATE/TIME	RECEIVED BY: (Signature)
Rachel Owen	9-25-19/9:00	LSO
LSO	9/26/19 0800	

LABORATORY: DHL

TURN AROUND TIME
NORMAL ☒
1 DAY ☐
2 DAY ☐
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: 3.7°C THERM#: 78
CUSTODY SEALS - ☐ BROKEN ☒ INTACT ☐ NOT USED
☒ CARRIER BILL # LSO
☐ HAND DELIVERED

LSO

WWW.LSO.COM
Questions? Call 800-800-8984

Airbill No. LSO0BYG9

LSO0BYG9

1. To: Print Name (Person) | Phone (Important)

Company Name

Street Address (No P.O. Box or P.O. Box Zip Code Deliveries)

Suite / Floor

City | State | Zip

2. From: Print Name (Person) | Phone (Important)

Company Name

Street Address

Suite / Floor

205

City | State | Zip

3. Service: Visit www.lso.com for availability of services to your destination and enjoy added features by creating your shipping label online.

- LSO Priority Overnight* — 10:30 a.m. to most cities
- LSO Ground
- LSO Saturday*
- Early Overnight* — :30 a.m. select cities
- Other
- Economy Next Day* — .m. to most cities
- d Day*

*Check commitment times and availability at www.lso.com

Assumed LSO Priority Overnight service unless otherwise noted.

Without Delivery Signature (See Limits of Liability below)

Release Signature

x W____ x H____

4. Package: Weight:

Your Company's Billing Reference Information

Ship Date: (mm/dd/yy)

5. Payment:

FOR DRIVER USE ONLY

Driver Number

Check here if LSO Supplies are used with LSO Ground Service.

Pick-up Location

Date:

Time:

City Code:

WRITING ON AIRBILL MAY DELAY TRANSIT TIMES OR RESULT IN NON-DELIVERY. LIMIT OF LIABILITY: We are not responsible for claims in excess of $100 for any reason unless you: 1) declare a greater ceed $25,000); 2) pay an additional fee; 3) and document your actual loss in a timely manner. We will not pay any claim in excess of the actual loss. We are not liable for any special or consequential damages. If deliver a package without obtaining a delivery signature, you release us of all liability for claims resulting from such service. "Signature Required" service is only available when printing a label online at LSO.com. VERY SIGNATURE WILL BE OBTAINED FOR LSO EARLY OVERNIGHT SERVICE. Packaging provided by LSO is for EXPRESS USE ONLY – NEVER TO BE USED FOR LSO GROUND Service. OVERSIZE RATES MAY Y. DELIVERY COMMITMENTS MAY VARY. ADDITIONAL FEES MAY APPLY. See LSO Service Guide for further details.

CUSTODY SEAL
DATE 9/25/19
SIGNATURE Rachel Owen

QEC
Quality Environmental Containers
800-255-3950 • www.qecusa.com

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Larson & Associates Date Received: 9/26/2019

Work Order Number 1909235 Received by EL

Checklist completed by: _____ 9/26/2019 Reviewed by _____ 9/26/2019
Signature Date Initials Date

Carrier name LoneStar

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	3.7 °C
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH<2 acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

Page 1 of 1

DHL Analytical, Inc. **Date:** *04-Oct-19*

CLIENT: Larson & Associates
Project: EBDU #37
Lab Order: 1909235

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition, EPA and Standard Methods.

All method blanks, laboratory spikes, and/or matrix spikes met quality assurance objectives except where noted in the following. For Anions Analysis, for Batches 92959 and 92978, the recovery of Chloride for the Matrix Spike and Matrix Spike Duplicate(s) (various) was below the method control limits. These are flagged accordingly in the QC Summary Report. This anion was within method control limits in the associated LCS(s). No further corrective action was taken.

For Volatile Organics Analysis, the recovery of Benzene for the Matrix Spike Duplicate (1909277-07 MSD) was below the method control limits. This is flagged accordingly in the QC Summary Report. This compound was within method control limits in the associated LCS. No further corrective action was taken.

DHL Analytical, Inc.

Date: *04-Oct-19*

CLIENT:	Larson & Associates	**Client Sample ID:**	TMW1
Project:	EBDU #37	**Lab ID:**	1909235-01
Project No:	19-0112-49	**Collection Date:**	09/23/19 03:00 PM
Lab Order:	1909235	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
VOLATILE AROMATICS BY GC/MS		**SW8260C**					Analyst: **BTJ**
Benzene	<0.000800	0.000800	0.00200		mg/L	1	10/03/19 04:27 PM
Ethylbenzene	<0.00200	0.00200	0.00600		mg/L	1	10/03/19 04:27 PM
Toluene	<0.00200	0.00200	0.00600		mg/L	1	10/03/19 04:27 PM
Total Xylenes	<0.00200	0.00200	0.00600		mg/L	1	10/03/19 04:27 PM
Surr: 1,2-Dichloroethane-d4	93.6	0	72-119		%REC	1	10/03/19 04:27 PM
Surr: 4-Bromofluorobenzene	101	0	76-119		%REC	1	10/03/19 04:27 PM
Surr: Dibromofluoromethane	102	0	85-115		%REC	1	10/03/19 04:27 PM
Surr: Toluene-d8	97.6	0	81-120		%REC	1	10/03/19 04:27 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	37.4	3.00	10.0		mg/L	10	09/27/19 11:38 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	400	10.0	10.0		mg/L	1	09/26/19 05:30 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *04-Oct-19*

CLIENT:	Larson & Associates	**Client Sample ID:**	TMW2
Project:	EBDU #37	**Lab ID:**	1909235-02
Project No:	19-0112-49	**Collection Date:**	09/23/19 05:10 PM
Lab Order:	1909235	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
VOLATILE AROMATICS BY GC/MS		**SW8260C**					Analyst: **BTJ**
Benzene	<0.000800	0.000800	0.00200		mg/L	1	10/03/19 04:53 PM
Ethylbenzene	<0.00200	0.00200	0.00600		mg/L	1	10/03/19 04:53 PM
Toluene	<0.00200	0.00200	0.00600		mg/L	1	10/03/19 04:53 PM
Total Xylenes	<0.00200	0.00200	0.00600		mg/L	1	10/03/19 04:53 PM
Surr: 1,2-Dichloroethane-d4	91.7	0	72-119		%REC	1	10/03/19 04:53 PM
Surr: 4-Bromofluorobenzene	97.7	0	76-119		%REC	1	10/03/19 04:53 PM
Surr: Dibromofluoromethane	99.8	0	85-115		%REC	1	10/03/19 04:53 PM
Surr: Toluene-d8	96.3	0	81-120		%REC	1	10/03/19 04:53 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	338	30.0	100		mg/L	100	09/26/19 07:18 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1220	50.0	50.0		mg/L	1	09/26/19 05:30 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc. **Date:** *04-Oct-19*

CLIENT: Larson & Associates
Work Order: 1909235
Project: EBDU #37

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS3_191003A

The QC data in batch 93066 applies to the following samples: 1909235-01A, 1909235-02A

Sample ID **LCS-93066** Batch ID: **93066** TestNo: **SW8260C** Units: **mg/L**
SampType: **LCS** Run ID: **GCMS3_191003A** Analysis Date: **10/3/2019 9:03:00 AM** Prep Date: **10/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.0467	0.00200	0.0464	0	101	81	122			
Ethylbenzene	0.0486	0.00600	0.0464	0	105	73	127			
Toluene	0.0466	0.00600	0.0464	0	100	77	122			
Total Xylenes	0.151	0.00600	0.139	0	109	80	121			
Surr: 1,2-Dichloroethane-d4	47.8		50.00		95.7	72	119			
Surr: 4-Bromofluorobenzene	50.8		50.00		102	76	119			
Surr: Dibromofluoromethane	51.1		50.00		102	85	115			
Surr: Toluene-d8	49.0		50.00		98.0	81	120			

Sample ID **MB-93066** Batch ID: **93066** TestNo: **SW8260C** Units: **mg/L**
SampType: **MBLK** Run ID: **GCMS3_191003A** Analysis Date: **10/3/2019 9:30:00 AM** Prep Date: **10/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	<0.000800	0.00200								
Ethylbenzene	<0.00200	0.00600								
Toluene	<0.00200	0.00600								
Total Xylenes	<0.00200	0.00600								
Surr: 1,2-Dichloroethane-d4	47.4		50.00		94.9	72	119			
Surr: 4-Bromofluorobenzene	50.4		50.00		101	76	119			
Surr: Dibromofluoromethane	50.5		50.00		101	85	115			
Surr: Toluene-d8	48.6		50.00		97.2	81	120			

Sample ID **1909277-07AMS** Batch ID: **93066** TestNo: **SW8260C** Units: **mg/L**
SampType: **MS** Run ID: **GCMS3_191003A** Analysis Date: **10/3/2019 2:44:00 PM** Prep Date: **10/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	2.52	0.0400	0.928	1.74	84.5	81	122			
Ethylbenzene	0.957	0.120	0.928	0	103	73	127			
Toluene	1.00	0.120	0.928	0.104	96.6	77	122			
Total Xylenes	2.97	0.120	2.78	0	107	80	121			
Surr: 1,2-Dichloroethane-d4	929		1000		92.9	72	119			
Surr: 4-Bromofluorobenzene	1010		1000		101	76	119			
Surr: Dibromofluoromethane	1000		1000		100	85	115			
Surr: Toluene-d8	968		1000		96.8	81	120			

Sample ID **1909277-07AMSD** Batch ID: **93066** TestNo: **SW8260C** Units: **mg/L**
SampType: **MSD** Run ID: **GCMS3_191003A** Analysis Date: **10/3/2019 3:11:00 PM** Prep Date: **10/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Larson & Associates
Work Order: 1909235
Project: EBDU #37

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS3_191003A

Sample ID **1909277-07AMSD** Batch ID: **93066** TestNo: **SW8260C** Units: **mg/L**
SampType: **MSD** Run ID: **GCMS3_191003A** Analysis Date: **10/3/2019 3:11:00 PM** Prep Date: **10/3/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	2.46	0.0400	0.928	1.74	78.4	81	122	2.25	20	S
Ethylbenzene	0.908	0.120	0.928	0	97.9	73	127	5.19	20	
Toluene	0.972	0.120	0.928	0.104	93.6	77	122	2.81	20	
Total Xylenes	2.80	0.120	2.78	0	101	80	121	5.89	20	
Surr: 1,2-Dichloroethane-d4	932		1000		93.2	72	119	0	0	
Surr: 4-Bromofluorobenzene	1000		1000		100	76	119	0	0	
Surr: Dibromofluoromethane	1000		1000		100	85	115	0	0	
Surr: Toluene-d8	975		1000		97.5	81	120	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Larson & Associates
Work Order: 1909235
Project: EBDU #37

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_190926A

The QC data in batch 92959 applies to the following samples: 1909235-01B, 1909235-02B

Sample ID	MB-92959	Batch ID:	92959	TestNo:	E300	Units:	mg/L
SampType:	MBLK	Run ID:	IC4_190926A	Analysis Date:	9/26/2019 1:16:18 PM	Prep Date:	9/26/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								

Sample ID	LCS-92959	Batch ID:	92959	TestNo:	E300	Units:	mg/L
SampType:	LCS	Run ID:	IC4_190926A	Analysis Date:	9/26/2019 1:32:18 PM	Prep Date:	9/26/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.45	1.00	10.00	0	94.5	90	110			

Sample ID	LCSD-92959	Batch ID:	92959	TestNo:	E300	Units:	mg/L
SampType:	LCSD	Run ID:	IC4_190926A	Analysis Date:	9/26/2019 1:48:18 PM	Prep Date:	9/26/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.46	1.00	10.00	0	94.6	90	110	0.153	20	

Sample ID	1909208-09CMS	Batch ID:	92959	TestNo:	E300	Units:	mg/L
SampType:	MS	Run ID:	IC4_190926A	Analysis Date:	9/26/2019 9:10:17 PM	Prep Date:	9/26/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	295	10.0	200.0	116.7	88.9	90	110			S

Sample ID	1909208-09CMSD	Batch ID:	92959	TestNo:	E300	Units:	mg/L
SampType:	MSD	Run ID:	IC4_190926A	Analysis Date:	9/26/2019 9:26:17 PM	Prep Date:	9/26/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	308	10.0	200.0	116.7	95.5	90	110	4.38	20	

Sample ID	1909208-12CMS	Batch ID:	92959	TestNo:	E300	Units:	mg/L
SampType:	MS	Run ID:	IC4_190926A	Analysis Date:	9/26/2019 9:58:17 PM	Prep Date:	9/26/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	238	10.0	200.0	68.71	84.6	90	110			S

Sample ID	1909208-12CMSD	Batch ID:	92959	TestNo:	E300	Units:	mg/L
SampType:	MSD	Run ID:	IC4_190926A	Analysis Date:	9/26/2019 10:14:17 PM	Prep Date:	9/26/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	241	10.0	200.0	68.71	86.3	90	110	1.36	20	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Larson & Associates
Work Order: 1909235
Project: EBDU #37

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_190927A

The QC data in batch 92978 applies to the following samples: 1909235-01B

Sample ID	MB-92978	Batch ID:	92978	TestNo:	E300	Units:	mg/L
SampType:	MBLK	Run ID:	IC4_190927A	Analysis Date:	9/27/2019 11:52:41 AM	Prep Date:	9/27/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								

Sample ID	LCS-92978	Batch ID:	92978	TestNo:	E300	Units:	mg/L
SampType:	LCS	Run ID:	IC4_190927A	Analysis Date:	9/27/2019 12:08:41 PM	Prep Date:	9/27/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.68	1.00	10.00	0	96.8	90	110			

Sample ID	LCSD-92978	Batch ID:	92978	TestNo:	E300	Units:	mg/L
SampType:	LCSD	Run ID:	IC4_190927A	Analysis Date:	9/27/2019 12:24:41 PM	Prep Date:	9/27/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.62	1.00	10.00	0	96.2	90	110	0.580	20	

Sample ID	1909253-01BMS	Batch ID:	92978	TestNo:	E300	Units:	mg/L
SampType:	MS	Run ID:	IC4_190927A	Analysis Date:	9/27/2019 6:50:07 PM	Prep Date:	9/27/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	6080	100	2000	4383	84.6	90	110			S

Sample ID	1909253-01BMSD	Batch ID:	92978	TestNo:	E300	Units:	mg/L
SampType:	MSD	Run ID:	IC4_190927A	Analysis Date:	9/27/2019 7:06:07 PM	Prep Date:	9/27/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	6100	100	2000	4383	86.0	90	110	0.462	20	S

Sample ID	1909255-01EMS	Batch ID:	92978	TestNo:	E300	Units:	mg/L
SampType:	MS	Run ID:	IC4_190927A	Analysis Date:	9/27/2019 11:54:07 PM	Prep Date:	9/27/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	598	10.0	200.0	431.8	82.9	90	110			S

Sample ID	1909255-01EMSD	Batch ID:	92978	TestNo:	E300	Units:	mg/L
SampType:	MSD	Run ID:	IC4_190927A	Analysis Date:	9/28/2019 12:10:07 AM	Prep Date:	9/27/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	626	10.0	200.0	431.8	97.1	90	110	4.65	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Larson & Associates
Work Order: 1909235
Project: EBDU #37

ANALYTICAL QC SUMMARY REPORT

RunID: WC_190926A

The QC data in batch 92957 applies to the following samples: 1909235-01B, 1909235-02B

Sample ID **MB-92957**	Batch ID: **92957**	TestNo: **M2540C**	Units: **mg/L**				
SampType: **MBLK**	Run ID: **WC_190926A**	Analysis Date: **9/26/2019 5:30:00 PM**	Prep Date: **9/26/2019**				

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID **LCS-92957**	Batch ID: **92957**	TestNo: **M2540C**	Units: **mg/L**				
SampType: **LCS**	Run ID: **WC_190926A**	Analysis Date: **9/26/2019 5:30:00 PM**	Prep Date: **9/26/2019**				

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	742	10.0	745.6	0	99.5	90	113			

Sample ID **1909204-01E-DUP**	Batch ID: **92957**	TestNo: **M2540C**	Units: **mg/L**				
SampType: **DUP**	Run ID: **WC_190926A**	Analysis Date: **9/26/2019 5:30:00 PM**	Prep Date: **9/26/2019**				

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	2670	50.0	0	2680				0.374	5	

Sample ID **1909204-02E-DUP**	Batch ID: **92957**	TestNo: **M2540C**	Units: **mg/L**				
SampType: **DUP**	Run ID: **WC_190926A**	Analysis Date: **9/26/2019 5:30:00 PM**	Prep Date: **9/26/2019**				

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	3680	50.0	0	3735				1.48	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified