General Information

NMOCD District:	District 2	Incident ID:	nAB1803838673
Landowner:	Federal	RP Reference:	2RP-4606
Client:	Devon Energy Production Company, LP	Site Location:	Apache 25 Federal #009
Date:	June 06, 2023	Project #:	21E-02816-29
Client Contact:	Jim Raley	Phone #:	575.689.7597
Vertex PM:	Kent Stallings	Phone #:	346.814.1413

Objective

The objective of the environmental remediation work plan is to identify exceedances found during the site assessment/characterization activity and propose an appropriate remediation technique to address the open release at Apache 25 Federal #009 (hereafter referred to as "Apache"). The incident occurred on January 23, 2018, due to a broken flow line at the wellhead. Approximately 4.56 barrels (bbl) of produced water and 1.52 bbl of crude oil were released onto the pad around the wellhead. Approximately 2 bbl produced water and 1.5 bbl crude oil were recovered from the release and removed for disposal off-site. Areas of environmental concern identified and delineated include: the area immediately around the wellhead, east of the wellhead, and south of the wellhead. An aerial photograph of the site with characterization locations is presented on Figure 1 (Attachment 1). Closure criteria has been selected as per New Mexico Administrative Code 19.15.29. The closure criteria for the site are presented below.

Table 1. Closure Criteria for Soils Impacted by a Release

Minimum depth below any point within the horizontal boundary of the release to groundwater less than 10,000 mg/l TDS	Constituent	Limit
< 50 feet	Chloride	600 mg/kg
	TPH (GRO+DRO+MRO)	100 mg/kg
	BTEX	50 mg/kg
	Benzene	10 mg/kg

TDS – total dissolved solids
TPH – total petroleum hydrocarbons, GRO – gas range organics, DRO – diesel range organics, MRO – motor oil range organics
BTEX – benzene, toluene, ethylbenzene and xylenes

Site Assessment/Characterization

Preliminary site characterization was completed on August 17, 2020, with 10 sample points established and samples collected for field screening. Excavation and removal of impacted soil was performed east and south of the release point on December 8 and 9, 2020, based on initial characterization. Confirmation samples were collected from the excavation on December 9, 2020, and January 6, 2021, followed by backfill with clean soil on January 6, 2021. Horizontal and vertical delineation of the release was completed on April 15, 2023, which completed characterization of the remaining release and previously excavated areas. Samples at the deepest vertical distance below closure criteria were submitted to the laboratory for analysis. In total, 49 samples were submitted to Hall Environmental analysis laboratory in Albuquerque, New Mexico, for analysis. The sample locations are presented on Figure 1 (Attachment 1). The completed excavation areas are presented on Figure 2 (Attachment 1). Laboratory analysis results have been compared to the above noted closure criteria and the results from the characterization activity are presented in Table 2 (Attachment 2). The daily field reports and laboratory data report are included in Attachments 3 and 4, respectively. Exceedances are identified in the table as bold with a grey background. All applicable research as it pertains to closure criteria selection is presented in Attachment 5.

Remedial Activities

General

The areas east and south of the wellhead underwent remediation via excavation in December 2020 as presented on Figure 2 (Attachment 1). Laboratory analysis results for the confirmatory samples collected after excavation are presented in Table 3 (Attachment 2).

Remaining areas identified with contaminant concentrations above closure criteria will be remediated through excavation. Laboratory results from the site assessment/characterization have been referenced to estimate both the vertical and horizontal limits of the impacts and the volume of soil to be removed. Soil will be excavated to the extents of the known contamination or in 2 feet increments, whichever is less. Field screening will be utilized to confirm removal of contaminated soil below the applicable closure criteria. Contaminated soils will be stored on a 30mil liner prior to disposal at an approved facility. Once excavation is complete, confirmatory samples will be collected and laboratory analysis completed to confirm closure criteria guidelines are met. Excavations will be backfilled with clean soil sourced locally.

nAB1803838673, 2RP-4606 -Release Area Immediately Around Wellhead

A total of 49 samples were collected for analysis adjacent to, east, and north of the wellhead. Twenty-six sample points were established over and beyond the release area between July 8, 2020, and April 15, 2023. Exceedances to closure criteria found east and south of the wellhead were addressed in December 2020 and January 2021. Unaddressed exceedances to closure criteria were found at sample point BH23-02. Soil around the wellhead will be excavated at a planned depth of 2 feet below ground surface around sample point BH23-02. A hydrovac truck or a hand crew will be utilized to remove contaminated soil in close proximity to the wellhead and corresponding infrastructure. The remaining excavation around the wellhead will be completed by a hand crew and heavy equipment as possible. The additional excavation area forms a “triangle” around the wellhead and is presented on Figure 2 (Attachment 1). Field screening will be utilized to find the horizontal and vertical extents of the spill area. Confirmatory samples will be collected as per New Mexico Oil Conservation Division guidance and submitted for laboratory analysis of all applicable parameters. The estimated volume to be excavated is 23 cubic yards. Excavation is planned to be completed within 90 days of approval of this Environmental Site Remediation Work Plan.

Sample Point	Excavation Depth	Remediation Method
BH23-02	2'	Backhoe/Handcrew

Should you have any questions or concerns, please do not hesitate to contact Project Manager Kent Stallings at 346.814.1413 or kstallings@vertex.ca.

Lakin Pullman

Lakin Pullman, B.Sc.
ENVIRONMENTAL SPECIALIST, REPORTING

June 06, 2023
Date

Kent Stallings P.G.

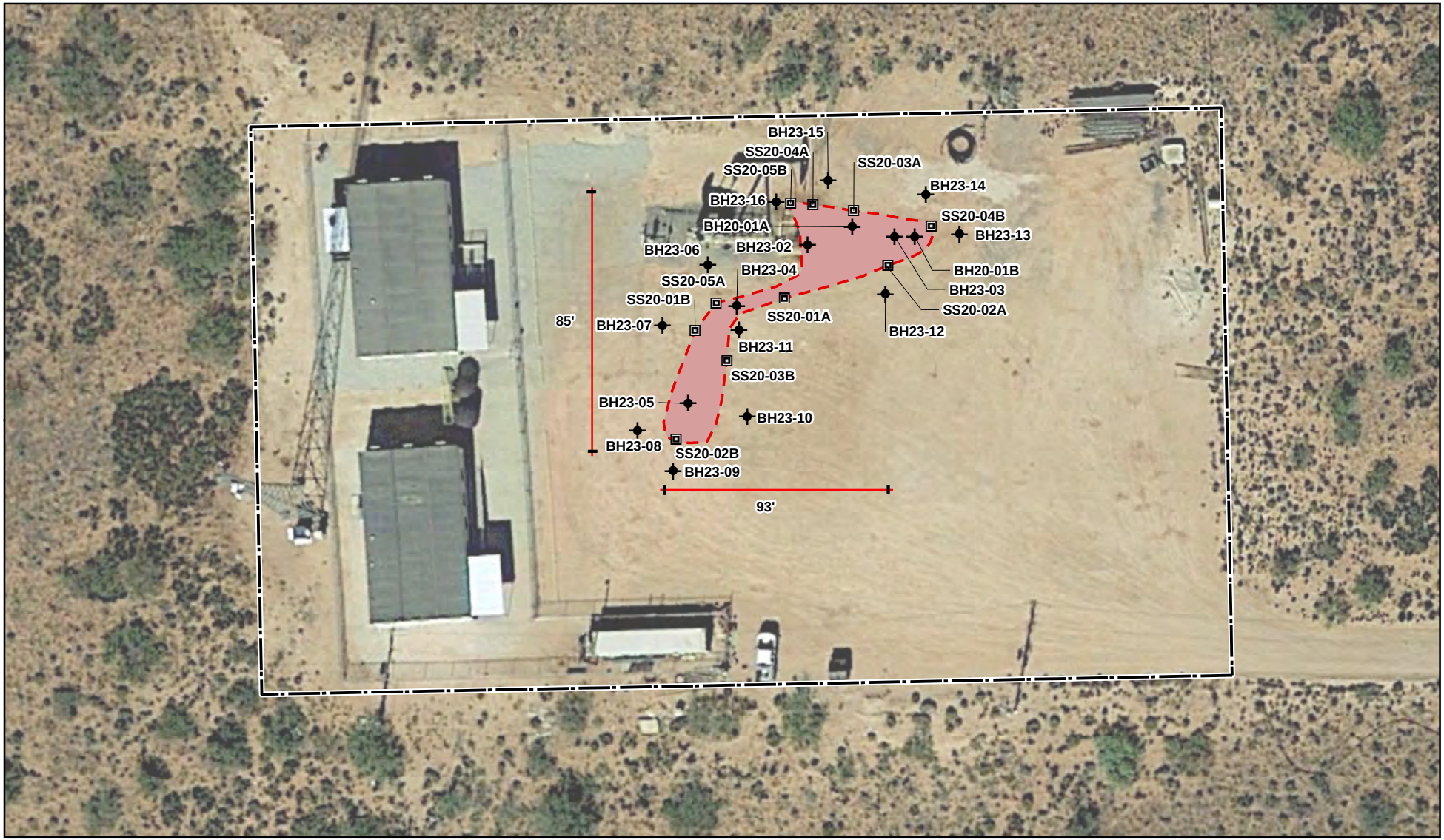
Kent Stallings, P.G.
PROJECT MANAGER, REPORT REVIEW

June 12, 2023
Date

Attachments

Attachment 1. Characterization and Excavation Figures
Attachment 2. Field Screening and Laboratory Results Tables
Attachment 3. Daily Field Reports with Photographs
Attachment 4. Laboratory Data Reports with Chain of Custody Forms
Attachment 5. Closure Criteria Research

ATTACHMENT 1



Borehole | Surface Sample | Approximate Relase Area (~1,875 sq.ft.) | Approximate Lease Boundary

VERTEX

0 25 50 ft.

Map Center:
Lat/Long: 32.361099, -103.831035

NAD 1983 UTM Zone 13N
Date: May 24/23

N

Characterization Sample Locations
Apache 25 Federal #009

FIGURE:
1

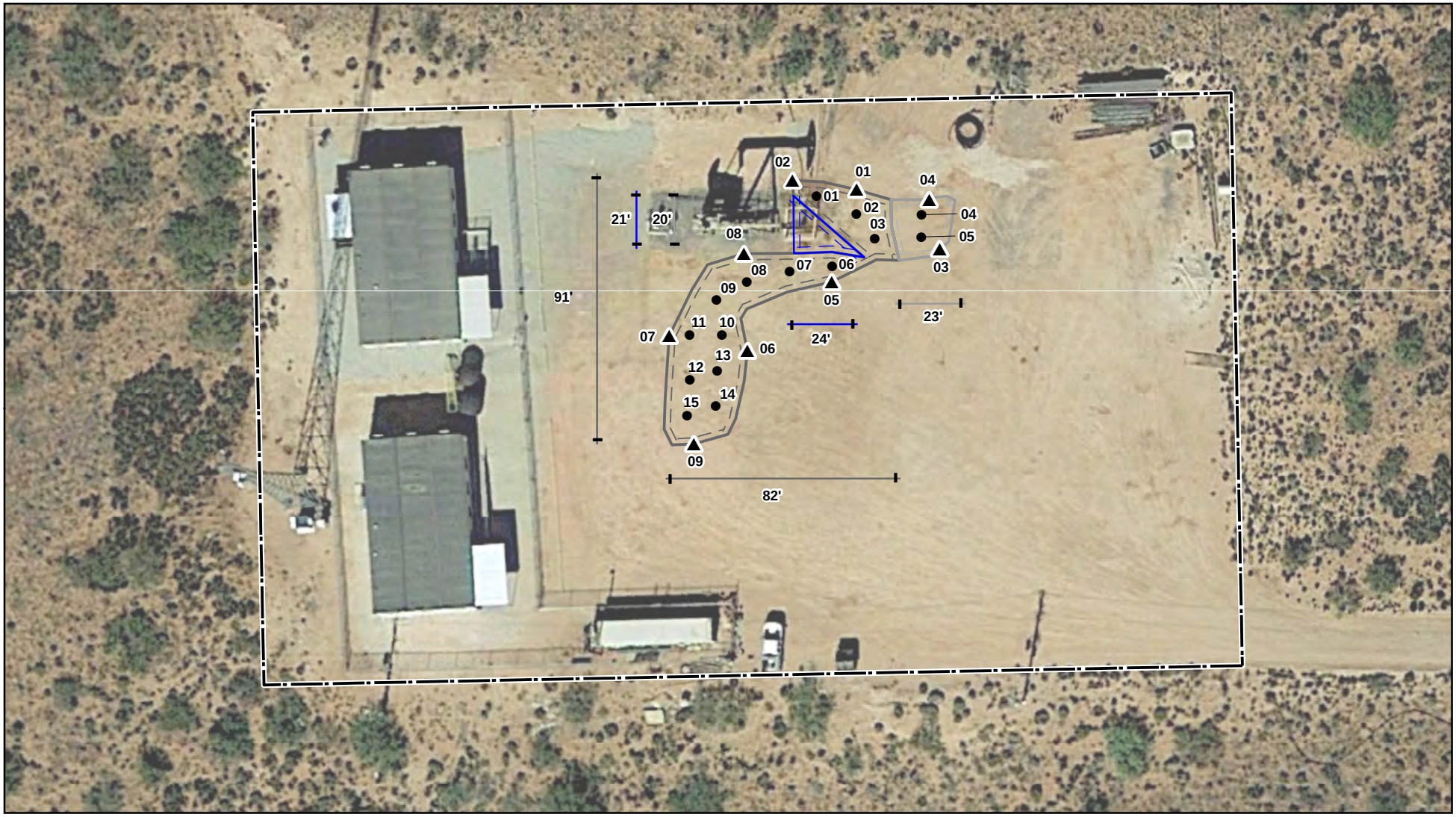
devon

Geospatial data presented in this figure may be derived from external sources and Vertex does not assume any liability for inaccuracies. This figure is intended for reference use only and is not certified for legal, survey, or engineering purposes.

Note: Georeferenced image from Google Earth Pro, 2017. Site features from GPS, Vertex Professional Services Ltd., 2023. Lease boundary approximated.

VERSATILITY. EXPERTISE.

Document Path: G:\1-Projects_US PROJECTS\Devon Energy Corporation\2021\21E-02816\029 - Apache 25 Federal #009\Figure 1 Characterization Sample Locations (21E-02816) - Copy.mxd



● Base Sample (Prefixed by "BS20-")

▲ Wall Sample (Prefixed by "WS20-")

Historical Excavation to 1 Foot bgs (~2,568 sq.ft.)

Historical Excavation to 2 Feet bgs (~399 sq.ft.)

Planned Additional Excavation to 2 Feet bgs (~230 sq.ft.)

Approximate Lease Boundary

VERTEX

0 25 50 ft.

Map Center:
Lat/Long: 32.361099, -103.831035

NAD 1983 UTM Zone 13N
Date: May 23/23

N

Historical and Planned Excavations
Apache 25 Federal #009

FIGURE:
2

devon

Geospatial data presented in this figure may be derived from external sources and Vertex does not assume any liability for inaccuracies. This figure is intended for reference use only and is not certified for legal, survey, or engineering purposes.

Note: Georeferenced image from Google Earth Pro, 2017. Site features from GPS, Vertex Professional Services Ltd., 2023. Lease boundary approximated.

VERSATILITY. EXPERTISE.

Document Path: G:\1-Projects_US PROJECTS\Devon Energy Corporation\2021\21E-02816\029 - Apache 25 Federal #009\Figure 2 Historical and Planned Excavations (21E-02816).mxd

ATTACHMENT 2

Client Name: Devon Energy Production Company, LP
Site Name: Apache 25 Federal #009
NM OCD Tracking #: nAB1803838673
Project #: 21E-02816-29
Lab Reports: 2007552, 2008A76, and 2304732

Table 2. Initial Characterization/Confirmatory Sample Field Screen and Laboratory Results - Depth to Groundwater <50 feet bgs

Sample Description			Field Screening			Petroleum Hydrocarbons							Inorganic
						Volatile		Extractable					
Sample ID	Depth (ft)	Sample Date	Volatile Organic Compounds (PID)	Extractable Organic Compounds (PetroFlag)	Chloride Concentration	Benzene	BTEX (Total)	Gasoline Range Organics (GRO)	Diesel Range Organics (DRO)	Motor Oil Range Organics (MRO)	(GRO + DRO)	Total Petroleum Hydrocarbons (TPH)	Chloride Concentration
			(ppm)	(ppm)	(ppm)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
SS20-01A	0	July 8, 2020	4	12	40	ND	ND	ND	ND	ND	ND	ND	ND
SS20-02A	0	July 8, 2020	8	10	170	ND	ND	ND	ND	ND	ND	ND	140
SS20-03A	0	July 8, 2020	3	9	20	ND	ND	ND	ND	ND	ND	ND	ND
SS20-04A	0	July 8, 2020	4	20	115	ND	ND	ND	ND	ND	ND	ND	95
SS20-05A	0	July 8, 2020	2	14	380	ND	ND	ND	ND	ND	ND	ND	340
BH20-01A	0-0.5	July 8, 2020	44	3,100	1,700	ND	ND	ND	4,000	3,400	**4,000**	**7,400**	**1,400**
	1	July 8, 2020	3	13	80	ND	ND	ND	ND	ND	ND	ND	61
SS20-01B	0	August 17, 2020	21	79	436	ND	ND	ND	ND	ND	ND	ND	380
SS20-02B	0	August 17, 2020	14	30	291	ND	ND	ND	ND	ND	ND	ND	**880**
SS20-03B	0	August 17, 2020	10	80	277	ND	ND	ND	ND	ND	ND	ND	570
SS20-04B	0	August 17, 2020	11	36	320	ND	ND	ND	ND	ND	ND	ND	**790**
SS20-05B	0	August 17, 2020	20	97	523	ND	ND	ND	ND	ND	ND	ND	**660**
BH20-01B	0-0.5	August 17, 2020	33	800	2,167	ND	ND	ND	ND	ND	ND	ND	300
	1	August 17, 2020	9	72	335	ND	ND	ND	1,900	2,400	**1,900**	**4,300**	**810**
BH23-02	0	April 14, 2023	2	-	692	ND	ND	ND	180	190	**180**	**370**	430
	2	April 14, 2023	1	-	142	ND	ND	ND	ND	ND	ND	ND	120
	4	April 14, 2023	1	43	295	ND	ND	ND	ND	ND	ND	ND	160
	6	April 14, 2023	2	36	17	ND	ND	ND	ND	ND	ND	ND	73
BH23-03	0	April 14, 2023	0	27	ND	ND	ND	ND	ND	ND	ND	ND	ND
	2	April 14, 2023	0	53	64	ND	ND	ND	ND	ND	ND	ND	ND
	4	April 14, 2023	0	28	54	ND	ND	ND	ND	ND	ND	ND	ND
BH23-04	0	April 15, 2023	2	42	ND	ND	ND	ND	ND	ND	ND	ND	ND
	2	April 15, 2023	1	27	ND	ND	ND	ND	ND	ND	ND	ND	ND
	4	April 15, 2023	1	29	ND	ND	ND	ND	ND	ND	ND	ND	61
BH23-05	0	April 15, 2023	2	35	ND	ND	ND	ND	ND	ND	ND	ND	ND
	2	April 15, 2023	1	33	ND	ND	ND	ND	ND	ND	ND	ND	ND
	4	April 15, 2023	1	31	ND	ND	ND	ND	ND	ND	ND	ND	ND
BH23-06	0	April 15, 2023	2	73	ND	ND	ND	ND	ND	ND	ND	ND	ND
	2	April 15, 2023	1	63	ND	ND	ND	ND	ND	ND	ND	ND	ND
BH23-07	0	April 15, 2023	1	26	ND	ND	ND	ND	ND	ND	ND	ND	ND
	2	April 15, 2023	1	33	ND	ND	ND	ND	ND	ND	ND	ND	ND
BH23-08	0	April 15, 2023	1	41	69	ND	ND	ND	ND	ND	ND	ND	ND
	2	April 15, 2023	1	51	41	ND	ND	ND	ND	ND	ND	ND	ND
BH23-09	0	April 15, 2023	1	34	ND	ND	ND	ND	ND	ND	ND	ND	ND
	2	April 15, 2023	1	25	ND	ND	ND	ND	ND	ND	ND	ND	ND
BH23-10	0	April 15, 2023	1	41	ND	ND	ND	ND	ND	ND	ND	ND	ND
	2	April 15, 2023	1	27	ND	ND	ND	ND	ND	ND	ND	ND	ND

Client Name: Devon Energy Production Company, LP
Site Name: Apache 25 Federal #009
NM OCD Tracking #: nAB1803838673
Project #: 21E-02816-29
Lab Reports: 2007552, 2008A76, and 2304732

Table 2. Initial Characterization/Confirmatory Sample Field Screen and Laboratory Results - Depth to Groundwater <50 feet bgs

Sample Description			Field Screening			Petroleum Hydrocarbons							Inorganic
						Volatile		Extractable					
Sample ID	Depth (ft)	Sample Date	Volatile Organic Compounds (PID)	Extractable Organic Compounds (PetroFlag)	Chloride Concentration	Benzene	BTEX (Total)	Gasoline Range Organics (GRO)	Diesel Range Organics (DRO)	Motor Oil Range Organics (MRO)	(GRO + DRO)	Total Petroleum Hydrocarbons (TPH)	Chloride Concentration
			(ppm)	(ppm)	(ppm)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
BH23-11	0	April 15, 2023	1	30	ND	ND	ND	ND	ND	ND	ND	ND	ND
	2	April 15, 2023	1	36	ND	ND	ND	ND	ND	ND	ND	ND	ND
BH23-12	0	April 15, 2023	1	46	128	ND	ND	ND	ND	ND	ND	ND	86
	2	April 15, 2023	1	47	336	ND	ND	ND	ND	ND	ND	ND	190
BH23-13	0	April 15, 2023	1	68	ND	ND	ND	ND	ND	ND	ND	ND	ND
	2	April 15, 2023	1	48	ND	ND	ND	ND	ND	ND	ND	ND	ND
BH23-14	0	April 15, 2023	1	62	132	ND	ND	ND	ND	ND	ND	ND	ND
	2	April 15, 2023	1	50	165	ND	ND	ND	ND	ND	ND	ND	92
BH23-15	0	April 15, 2023	1	35	ND	ND	ND	ND	ND	ND	ND	ND	ND
	2	April 15, 2023	1	29	168	ND	ND	ND	ND	ND	ND	ND	120
BH23-16	0	April 15, 2023	1	31	ND	ND	ND	ND	ND	ND	ND	ND	ND
	2	April 15, 2023	1	30	161	ND	ND	ND	ND	ND	ND	ND	93

"ND" Not Detected at the Reporting Limit
"-" indicates not analyzed/assessed
Bold and grey shaded indicates exceedance outside of NMOCD Closure Criteria

Client Name: Devon Energy Production Company, LP
Site Name: Apache 25 Federal #009
NM OCD Tracking #: nAB1803838673
Project #: 21E-02816-29
Lab Reports: 2012615 and 2101344

Table 3. Confirmatory Sample Field Screen and Laboratory Results - Depth to Groundwater <50 feet bgs

Sample Description			Field Screening			Petroleum Hydrocarbons							Inorganic
						Volatile		Extractable					
Sample ID	Depth (ft)	Sample Date	Volatile Organic Compounds (PID)	Extractable Organic Compounds (PetroFlag)	Chloride Concentration	Benzene	BTEX (Total)	Gasoline Range Organics (GRO)	Diesel Range Organics (DRO)	Motor Oil Range Organics (MRO)	(GRO + DRO)	Total Petroleum Hydrocarbons (TPH)	Chloride Concentration
			(ppm)	(ppm)	(ppm)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
BS20-01	1	December 9, 2020	-	88	383	ND	ND	ND	96	67	96	**163**	150
	1.25	January 6, 2021	-	53	108	ND	ND	ND	23	ND	23	23	ND
BS20-02	1	December 9, 2020	-	-	571	ND	ND	ND	ND	ND	ND	ND	120
BS20-03	1	December 9, 2020	-	-	255	ND	ND	ND	ND	ND	ND	ND	ND
BS20-04	2	December 9, 2020	-	-	557	ND	ND	ND	17	ND	17	17	300
BS20-05	2	December 9, 2020	-	-	552	ND	ND	ND	ND	ND	ND	ND	130
BS20-06	1	December 9, 2020	-	1	298	ND	ND	ND	ND	ND	ND	ND	140
BS20-07	1	December 9, 2020	-	90	199	ND	ND	ND	15	ND	15	15	180
BS20-08	1	December 9, 2020	-	-	356	ND	ND	ND	ND	ND	ND	ND	69
BS20-09	1	December 9, 2020	-	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
BS20-10	1	December 9, 2020	-	0	77	ND	ND	ND	ND	ND	ND	ND	ND
BS20-11	1	December 9, 2020	-	-	252	ND	ND	ND	ND	ND	ND	ND	92
BS20-12	1	December 9, 2020	-	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
BS20-13	1	December 9, 2020	-	-	69	ND	ND	ND	ND	ND	ND	ND	ND
BS20-14	1	December 9, 2020	-	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
BS20-15	1	December 9, 2020	-	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
WS20-01	0-1	December 9, 2020	-	-	473	ND	ND	ND	ND	ND	ND	ND	80
WS20-02	0-1	December 9, 2020	-	-	342	ND	ND	ND	140	98	**140**	**238**	100
	0-1	January 6, 2021	-	9	271	ND	ND	ND	ND	ND	ND	ND	ND
WS20-03	0-2	December 9, 2020	-	-	655	ND	ND	ND	24	ND	24	24	390
WS20-04	0-2	December 9, 2020	-	-	434	ND	ND	ND	ND	ND	ND	ND	160
WS20-05	0-1	December 9, 2020	-	29	272	ND	ND	ND	11	ND	11	11	270
WS20-06	0-1	December 9, 2020	-	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
WS20-07	0-1	December 9, 2020	-	-	303	ND	ND	ND	ND	ND	ND	ND	150
WS20-08	0-1	December 9, 2020	-	-	23	ND	ND	ND	ND	ND	ND	ND	70
WS20-09	0-1	December 9, 2020	-	-	207	ND	ND	ND	ND	ND	ND	ND	76

"ND" Not Detected at the Reporting Limit
"-" indicates not analyzed/assessed
Bold and grey shaded indicates exceedance outside of NMOCD Closure Criteria
Bold and green shaded indicates re-collection of sample previously in exceedance outside of NMOCD Closure Criteria

VERTEX

ATTACHMENT 3

Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	1/6/2021
Site Location Name:	Apache 25 Federal 9	Report Run Date:	1/6/2021 8:40 PM
Client Contact Name:	Amanda Davis	API #:	30-015-32797
Client Contact Phone #:	(575) 748-0176		
Unique Project ID	-Apache 25 Federal 9	Project Owner:	Tom Bynum
Project Reference #	NAB1803838673	Project Manager:	Natalie Gordon

Summary of Times

Arrived at Site	1/6/2021 8:05 AM
Departed Site	1/6/2021 1:06 PM

Field Notes

8:10 Arrived on site, filled out safety paperwork

8:47 Begin backfill of excavation

Next Steps & Recommendations

1

Daily Site Visit Report

Site Photos

Viewing Direction: East

Before excavation

Viewing Direction: South

Before excavation

Viewing Direction: East

Before excavation

Viewing Direction: North

Start of backfill

Daily Site Visit Report

Daily Site Visit Signature

Inspector: John Ramirez

Signature: 

Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	7/8/2020
Site Location Name:	Apache 25 Federal 9	Report Run Date:	7/17/2020 11:43 PM
Client Contact Name:	Amanda Davis	API #:	30-015-32797
Client Contact Phone #:	(575) 748-0176		
Unique Project ID	-Apache 25 Federal 9	Project Owner:	Tom Bynum
Project Reference #	NAB1803838673	Project Manager:	Natalie Gordon

Summary of Times

Arrived at Site	7/8/2020 10:02 AM
Departed Site	7/8/2020 3:22 PM

Field Notes

16:56 Delineate 2018 historical release per NMOCD criteria (600/100 ppm).

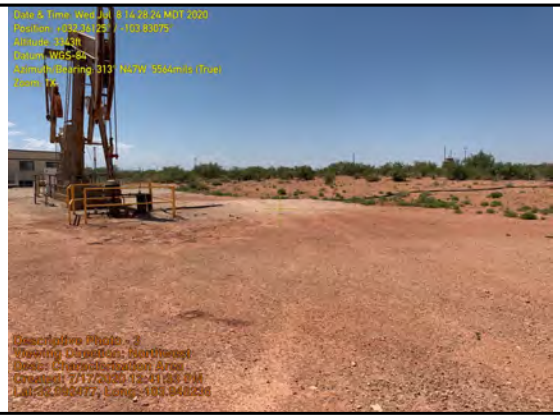
Next Steps & Recommendations

1 Submit characterization samples for lab analysis.

2 Develop work remediation work plan and schedule remediation activity.

Daily Site Visit Report

Site Photos

Viewing Direction: North	**Viewing Direction**: Northwest
	
Characterization Area	Characterization Area
Viewing Direction: Northwest	**Viewing Direction**: North
	
Characterization Area	Characterization Area

Daily Site Visit Report

Viewing Direction: West

Characterization Area

Viewing Direction: Southwest

Characterization Area

Viewing Direction: Southwest

Characterization Area

Viewing Direction: East

Characterization Area

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Kevin Smith

Signature: 

Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	8/17/2020
Site Location Name:	Apache 25 Federal 9	Report Run Date:	8/19/2020 7:45 PM
Client Contact Name:	Amanda Davis	API #:	30-015-32797
Client Contact Phone #:	(575) 748-0176		
Unique Project ID	-Apache 25 Federal 9	Project Owner:	Tom Bynum
Project Reference #	NAB1803838673	Project Manager:	Natalie Gordon

Summary of Times

Arrived at Site	8/17/2020 9:44 AM
Departed Site	8/17/2020 12:49 PM

Field Notes

13:07 Delineate historical spill horizontally and vertically. The release will be delineated so that TPH is below 100 ppm and chlorides below 600 ppm.

Next Steps & Recommendations

1. Submit characterization samples for lab analysis.
2. A total of five surface samples and two borehole samples were submitted for characterization,
3. Develop remediation work plan.

Daily Site Visit Report

Site Photos

Viewing Direction: East	**Viewing Direction**: West
	
Delineation Area	Delineation area
Viewing Direction: Southwest	**Viewing Direction**: North
	
Delineation area	Delineation area

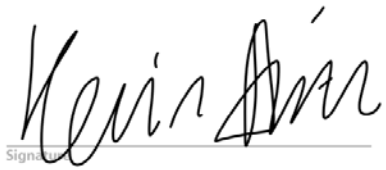
Daily Site Visit Report

Viewing Direction: West	**Viewing Direction**: South
	
Delineation area	Delineation area

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Kevin Smith

Signature: 

Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	12/8/2020
Site Location Name:	Apache 25 Federal 9	Report Run Date:	12/8/2020 11:15 PM
Client Contact Name:	Amanda Davis	API #:	30-015-32797
Client Contact Phone #:	(575) 748-0176		
Unique Project ID	-Apache 25 Federal 9	Project Owner:	Tom Bynum
Project Reference #	NAB1803838673	Project Manager:	Natalie Gordon

Summary of Times

Arrived at Site	12/8/2020 8:05 AM
Departed Site	12/8/2020 3:35 PM

Field Notes

8:05 Arrived on site and filled out safety paperwork.

Next Steps & Recommendations

1 Finish up remediation tomorrow.

Daily Site Visit Report

Site Photos

Viewing Direction: East

Looking at smaller area of excavation.

Viewing Direction: West

Start of bigger area.

Viewing Direction: East

Looking East at bigger area.

Viewing Direction: Southeast

Looking southeast at bigger area.

Daily Site Visit Report

Daily Site Visit Signature

Inspector: John Ramirez

Signature: 

Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	12/9/2020
Site Location Name:	Apache 25 Federal 9	Report Run Date:	12/9/2020 9:21 PM
Client Contact Name:	Amanda Davis	API #:	30-015-32797
Client Contact Phone #:	(575) 748-0176		
Unique Project ID	-Apache 25 Federal 9	Project Owner:	Tom Bynum
Project Reference #	NAB1803838673	Project Manager:	Natalie Gordon

Summary of Times

Arrived at Site	12/9/2020 7:45 AM
Departed Site	12/9/2020 1:30 PM

Field Notes

7:47 Arrived on site and filled out safety paperwork.

Next Steps & Recommendations

1 Submit samples to lab.

Daily Site Visit Report

Site Photos

Viewing Direction: South	**Viewing Direction**: North
	
Looking at larger area of remediation.	Looking north at excavation.
Viewing Direction: Northeast	**Viewing Direction**: East
	
Looking North east at excavation.	Looking East at excavation.

Daily Site Visit Report

Viewing Direction: East	**Viewing Direction**: Northeast
	
Looking East at excavation.	Looking at stock pile.

Daily Site Visit Report

Daily Site Visit Signature

Inspector: John Ramirez

Signature: 

Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	4/14/2023
Site Location Name:	Apache 25 Federal 9	Report Run Date:	4/15/2023 2:02 AM
Client Contact Name:	Wes Matthews	API #:	30-015-32797
Client Contact Phone #:	(575) 748-0176		
Unique Project ID		Project Owner:	
Project Reference #		Project Manager:	

Summary of Times

Arrived at Site	4/14/2023 12:24 PM
Departed Site	4/14/2023 5:33 PM

Field Notes

12:39 Completed JSA on arrival. On site for horizontal and vertical delineation.

13:18 Mapped borehole locations for delineation and swept borehole areas with magnetic locator prior to ground disturbance.

15:01 One Call for work area was clear but electrical lines was not flagged. Proceeded with caution.

17:19 Advanced BH23-02 and BH23-03 for vertical delineation east of wellhead.

17:21 BH23-02 field screening results were below NMOCD strictest criteria for chloride and TPH at and below 4 feet bgs.

17:22 BH23-02 field screening results were below NMOCD strictest criteria for chloride and TPH for all samples.

17:23 Partial remediation has taken place on site since release. Need to complete horizontal delineation around historical excavation and vertical delineation through it.

Next Steps & Recommendations

1 Continue delineation.

Daily Site Visit Report

Site Photos

Viewing Direction: North

South of pump jack facing north.

Viewing Direction: South

Northeast of wellhead facing south. Advanced BH23-02 east-southeast of wellhead.

Viewing Direction: West

East of wellhead facing west. Advanced BH23-03 east of wellhead.

Viewing Direction: West

East of historical excavation facing west.

Daily Site Visit Report

Viewing Direction: Southwest	**Viewing Direction**: Northeast
	
North of historical excavation facing southwest.	South of historical excavation facing northeast.

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Lakin Pullman

Signature: 

Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	4/15/2023
Site Location Name:	Apache 25 Federal 9	Report Run Date:	4/16/2023 1:19 AM
Client Contact Name:	Wes Matthews	API #:	30-015-32797
Client Contact Phone #:	(575) 748-0176		
Unique Project ID		Project Owner:	
Project Reference #		Project Manager:	

Summary of Times

Arrived at Site	4/15/2023 7:20 AM
Departed Site	4/15/2023 5:53 PM

Field Notes

7:56 Completed JSA on arrival. On site to continue delineation of historical excavation.

7:59 Remediation has taken place on site but delineation was not completed. Horizontal and vertical delineation of original release area subsequent excavation determine if more work is required.

8:22 Swept borehole locations with magnetic locator prior to ground disturbance.

10:08 Advanced BH23-04 and BH23-05 with historical 1 foot bgs excavation for vertical delineation.

17:53 Advanced BH23-06 through BH23-16 around previous work area for retroactive horizontal delineation.

Next Steps & Recommendations

1

Daily Site Visit Report

Site Photos

Viewing Direction: North

South of pump jack facing north.

Viewing Direction: Northwest

Southeast of wellhead facing northwest. Advanced BH23-12 for horizontal delineation.

Viewing Direction: West

East of wellhead facing west. Advanced BH23-13 for horizontal delineation.

Viewing Direction: Southwest

East-northeast of wellhead facing southwest. Advanced BH23-14 for horizontal delineation.

Daily Site Visit Report

Viewing Direction: South	**Viewing Direction**: East
	
Northeast of wellhead facing south. Advanced BH23-15 for horizontal delineation.	North of pump jack facing east. Advanced BH23-16 for horizontal delineation.
Viewing Direction: North	**Viewing Direction**: North
	
South of pump jack facing north. Advanced BH23-04 for vertical delineation.	South of pump jack facing north. Advanced BH23-05 for vertical delineation.

Daily Site Visit Report

Viewing Direction: East	**Viewing Direction**: Northeast
	
South of pump jack facing east. Advanced BH23-06 for horizontal delineation.	Southwest of pump jack facing northeast. Advanced BH23-07 for horizontal delineation.
Viewing Direction: Northeast	**Viewing Direction**: North
	
South-southwest of pump jack facing northeast. Advanced BH23-08 for horizontal delineation.	South of pump jack facing north. Advanced BH23-09 for horizontal delineation.

Daily Site Visit Report

Viewing Direction: North	**Viewing Direction**: Northeast
	
South of pump jack facing north. Advanced BH23-10 for horizontal delineation.	South of pump jack facing northeast. Advanced BH23-11 for horizontal delineation.

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Lakin Pullman

Signature: 

ATTACHMENT 4

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: clients.hallenvironmental.com

July 20, 2020

Amanda Davis

Devon Energy
6488 Seven Rivers Highway
Artesia, NM 88210
TEL: (505) 350-1336
FAX:

RE: Apace 25 Fed 9 OrderNo.: 2007552

Dear Amanda Davis:

Hall Environmental Analysis Laboratory received 7 sample(s) on 7/11/2020 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **2007552**
Date Reported: **7/20/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Apace 25 Fed 9
Lab ID: 2007552-001 **Matrix:** SOIL

Client Sample ID: SS20-01 0'
Collection Date: 7/8/2020 12:51:00 PM
Received Date: 7/11/2020 7:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **JME**
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	7/14/2020 3:22:35 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	7/14/2020 3:22:35 PM
Surr: DNOP	64.9	55.1-146		%Rec	1	7/14/2020 3:22:35 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	7/14/2020 1:57:53 AM
Surr: BFB	86.6	66.6-105		%Rec	1	7/14/2020 1:57:53 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	7/14/2020 5:16:15 PM
Toluene	ND	0.050		mg/Kg	1	7/14/2020 5:16:15 PM
Ethylbenzene	ND	0.050		mg/Kg	1	7/14/2020 5:16:15 PM
Xylenes, Total	ND	0.099		mg/Kg	1	7/14/2020 5:16:15 PM
Surr: 4-Bromofluorobenzene	106	80-120		%Rec	1	7/14/2020 5:16:15 PM
EPA METHOD 300.0: ANIONS						Analyst: **CJS**
Chloride	ND	60		mg/Kg	20	7/16/2020 1:09:27 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix
E	Value above quantitation range
H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit
P	Sample pH Not In Range
PQL	Practical Quanitative Limit
RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix

Analytical Report
Lab Order **2007552**
Date Reported: **7/20/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Apace 25 Fed 9
Lab ID: 2007552-002 **Matrix:** SOIL

Client Sample ID: SS20-02 0'
Collection Date: 7/8/2020 12:58:00 PM
Received Date: 7/11/2020 7:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **JME**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	7/14/2020 3:46:50 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	7/14/2020 3:46:50 PM
Surr: DNOP	63.0	55.1-146		%Rec	1	7/14/2020 3:46:50 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	7/14/2020 2:21:27 AM
Surr: BFB	87.4	66.6-105		%Rec	1	7/14/2020 2:21:27 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	7/14/2020 5:39:56 PM
Toluene	ND	0.049		mg/Kg	1	7/14/2020 5:39:56 PM
Ethylbenzene	ND	0.049		mg/Kg	1	7/14/2020 5:39:56 PM
Xylenes, Total	ND	0.098		mg/Kg	1	7/14/2020 5:39:56 PM
Surr: 4-Bromofluorobenzene	104	80-120		%Rec	1	7/14/2020 5:39:56 PM
EPA METHOD 300.0: ANIONS						Analyst: **CJS**
Chloride	140	60		mg/Kg	20	7/16/2020 1:21:52 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix
E	Value above quantitation range
H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit
P	Sample pH Not In Range
PQL	Practical Quanitative Limit
RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix

Analytical Report
Lab Order **2007552**
Date Reported: **7/20/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Apace 25 Fed 9
Lab ID: 2007552-003 **Matrix:** SOIL

Client Sample ID: SS20-03 0'
Collection Date: 7/8/2020 1:33:00 PM
Received Date: 7/11/2020 7:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **JME**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	7/14/2020 4:11:13 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	7/14/2020 4:11:13 PM
Surr: DNOP	79.9	55.1-146		%Rec	1	7/14/2020 4:11:13 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	7/14/2020 2:45:03 AM
Surr: BFB	86.9	66.6-105		%Rec	1	7/14/2020 2:45:03 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	7/14/2020 6:03:38 PM
Toluene	ND	0.050		mg/Kg	1	7/14/2020 6:03:38 PM
Ethylbenzene	ND	0.050		mg/Kg	1	7/14/2020 6:03:38 PM
Xylenes, Total	ND	0.099		mg/Kg	1	7/14/2020 6:03:38 PM
Surr: 4-Bromofluorobenzene	107	80-120		%Rec	1	7/14/2020 6:03:38 PM
EPA METHOD 300.0: ANIONS						Analyst: **CJS**
Chloride	ND	59		mg/Kg	20	7/16/2020 2:11:30 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2007552**
Date Reported: **7/20/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Apace 25 Fed 9
Lab ID: 2007552-004 **Matrix:** SOIL

Client Sample ID: SS20-04 0'
Collection Date: 7/8/2020 1:51:00 PM
Received Date: 7/11/2020 7:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **JME**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	7/14/2020 4:35:34 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	7/14/2020 4:35:34 PM
Surr: DNOP	58.1	55.1-146		%Rec	1	7/14/2020 4:35:34 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	7/14/2020 6:27:14 PM
Surr: BFB	90.4	66.6-105		%Rec	1	7/14/2020 6:27:14 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	7/14/2020 6:27:14 PM
Toluene	ND	0.049		mg/Kg	1	7/14/2020 6:27:14 PM
Ethylbenzene	ND	0.049		mg/Kg	1	7/14/2020 6:27:14 PM
Xylenes, Total	ND	0.098		mg/Kg	1	7/14/2020 6:27:14 PM
Surr: 4-Bromofluorobenzene	105	80-120		%Rec	1	7/14/2020 6:27:14 PM
EPA METHOD 300.0: ANIONS						Analyst: **CJS**
Chloride	95	60		mg/Kg	20	7/16/2020 2:23:55 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2007552**
Date Reported: **7/20/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Apace 25 Fed 9
Lab ID: 2007552-005 **Matrix:** SOIL

Client Sample ID: SS20-05 0'
Collection Date: 7/8/2020 2:18:00 PM
Received Date: 7/11/2020 7:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **JME**
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	7/14/2020 4:59:57 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	7/14/2020 4:59:57 PM
Surr: DNOP	45.1	55.1-146	S	%Rec	1	7/14/2020 4:59:57 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	7/14/2020 7:37:54 PM
Surr: BFB	90.0	66.6-105		%Rec	1	7/14/2020 7:37:54 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	7/14/2020 7:37:54 PM
Toluene	ND	0.049		mg/Kg	1	7/14/2020 7:37:54 PM
Ethylbenzene	ND	0.049		mg/Kg	1	7/14/2020 7:37:54 PM
Xylenes, Total	ND	0.099		mg/Kg	1	7/14/2020 7:37:54 PM
Surr: 4-Bromofluorobenzene	105	80-120		%Rec	1	7/14/2020 7:37:54 PM
EPA METHOD 300.0: ANIONS						Analyst: **CJS**
Chloride	340	60		mg/Kg	20	7/16/2020 2:36:19 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2007552**
Date Reported: **7/20/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Apace 25 Fed 9
Lab ID: 2007552-006 **Matrix:** SOIL

Client Sample ID: BH20-01 0-6"
Collection Date: 7/8/2020 2:35:00 PM
Received Date: 7/11/2020 7:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **JME**
Diesel Range Organics (DRO)	4000	96		mg/Kg	10	7/14/2020 11:06:03 AM
Motor Oil Range Organics (MRO)	3400	480		mg/Kg	10	7/14/2020 11:06:03 AM
Surr: DNOP	0	55.1-146	S	%Rec	10	7/14/2020 11:06:03 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	25	D	mg/Kg	5	7/14/2020 8:48:21 PM
Surr: BFB	86.5	66.6-105	D	%Rec	5	7/14/2020 8:48:21 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.12	D	mg/Kg	5	7/14/2020 8:48:21 PM
Toluene	ND	0.25	D	mg/Kg	5	7/14/2020 8:48:21 PM
Ethylbenzene	ND	0.25	D	mg/Kg	5	7/14/2020 8:48:21 PM
Xylenes, Total	ND	0.50	D	mg/Kg	5	7/14/2020 8:48:21 PM
Surr: 4-Bromofluorobenzene	102	80-120	D	%Rec	5	7/14/2020 8:48:21 PM
EPA METHOD 300.0: ANIONS						Analyst: **CJS**
Chloride	1400	60		mg/Kg	20	7/16/2020 3:13:32 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2007552**
Date Reported: **7/20/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Apace 25 Fed 9
Lab ID: 2007552-007 **Matrix:** SOIL

Client Sample ID: BH20-01 1'
Collection Date: 7/8/2020 3:03:00 PM
Received Date: 7/11/2020 7:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **JME**
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	7/14/2020 5:24:18 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	7/14/2020 5:24:18 PM
Surr: DNOP	37.8	55.1-146	S	%Rec	1	7/14/2020 5:24:18 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	7/14/2020 10:22:25 PM
Surr: BFB	90.1	66.6-105		%Rec	1	7/14/2020 10:22:25 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	7/14/2020 10:22:25 PM
Toluene	ND	0.050		mg/Kg	1	7/14/2020 10:22:25 PM
Ethylbenzene	ND	0.050		mg/Kg	1	7/14/2020 10:22:25 PM
Xylenes, Total	ND	0.10		mg/Kg	1	7/14/2020 10:22:25 PM
Surr: 4-Bromofluorobenzene	103	80-120		%Rec	1	7/14/2020 10:22:25 PM
EPA METHOD 300.0: ANIONS						Analyst: **CJS**
Chloride	61	60		mg/Kg	20	7/16/2020 3:25:57 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2007552**

20-Jul-20

Client: Devon Energy

Project: Apace 25 Fed 9

Sample ID: **MB-53754**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS**	Batch ID: **53754**	RunNo: **70388**
Prep Date: **7/16/2020**	Analysis Date: **7/16/2020**	SeqNo: **2447699** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-53754**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS**	Batch ID: **53754**	RunNo: **70388**
Prep Date: **7/16/2020**	Analysis Date: **7/16/2020**	SeqNo: **2447700** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	91.1	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2007552**

20-Jul-20

Client: Devon Energy

Project: Apace 25 Fed 9

Sample ID: **MB-53669**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **53669**	RunNo: **70308**
Prep Date: **7/13/2020**	Analysis Date: **7/14/2020**	SeqNo: **2443932** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	12		10.00		124	55.1	146			

Sample ID: **LCS-53669**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **53669**	RunNo: **70308**
Prep Date: **7/13/2020**	Analysis Date: **7/14/2020**	SeqNo: **2443934** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	59	10	50.00	0	119	70	130			
Surr: DNOP	5.5		5.000		110	55.1	146			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2007552**

20-Jul-20

Client: Devon Energy

Project: Apace 25 Fed 9

Sample ID: **mb-53656**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **53656**	RunNo: **70301**
Prep Date: **7/12/2020**	Analysis Date: **7/13/2020**	SeqNo: **2443693** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	970		1000		97.4	66.6	105			

Sample ID: **lcs-53656**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **53656**	RunNo: **70301**
Prep Date: **7/12/2020**	Analysis Date: **7/13/2020**	SeqNo: **2443694** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	5.0	25.00	0	88.6	80	120			
Surr: BFB	1100		1000		105	66.6	105			S

Sample ID: **mb-53657**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **53657**	RunNo: **70338**
Prep Date: **7/12/2020**	Analysis Date: **7/14/2020**	SeqNo: **2444548** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	910		1000		91.2	66.6	105			

Sample ID: **lcs-53657**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **53657**	RunNo: **70338**
Prep Date: **7/12/2020**	Analysis Date: **7/14/2020**	SeqNo: **2444549** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	5.0	25.00	0	104	80	120			
Surr: BFB	1000		1000		102	66.6	105			

Sample ID: **2007552-005ams**	SampType: **MS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **SS20-05 0'**	Batch ID: **53657**	RunNo: **70338**
Prep Date: **7/12/2020**	Analysis Date: **7/14/2020**	SeqNo: **2444552** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	21	4.9	24.70	0	84.3	80	120			
Surr: BFB	1000		988.1		103	66.6	105			

Sample ID: **2007552-005amsd**	SampType: **MSD**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **SS20-05 0'**	Batch ID: **53657**	RunNo: **70338**
Prep Date: **7/12/2020**	Analysis Date: **7/14/2020**	SeqNo: **2444553** Units: **mg/Kg**

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2007552**

20-Jul-20

Client: Devon Energy

Project: Apace 25 Fed 9

Sample ID: **2007552-005amsd** SampType: **MSD** TestCode: **EPA Method 8015D: Gasoline Range**

Client ID: **SS20-05 0'** Batch ID: **53657** RunNo: **70338**

Prep Date: **7/12/2020** Analysis Date: **7/14/2020** SeqNo: **2444553** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	21	4.9	24.39	0	84.6	80	120	0.898	20	
Surr: BFB	980		975.6		101	66.6	105	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2007552**

20-Jul-20

Client: Devon Energy

Project: Apace 25 Fed 9

Sample ID: **mb-53656** SampType: **MBLK** TestCode: **EPA Method 8021B: Volatiles**

Client ID: **PBS** Batch ID: **53656** RunNo: **70301**

Prep Date: **7/12/2020** Analysis Date: **7/13/2020** SeqNo: **2443719** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	1.1		1.000		106	80	120			

Sample ID: **LCS-53656** SampType: **LCS** TestCode: **EPA Method 8021B: Volatiles**

Client ID: **LCSS** Batch ID: **53656** RunNo: **70301**

Prep Date: **7/12/2020** Analysis Date: **7/13/2020** SeqNo: **2443720** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.99	0.025	1.000	0	98.8	80	120			
Toluene	0.99	0.050	1.000	0	99.1	80	120			
Ethylbenzene	0.99	0.050	1.000	0	98.9	80	120			
Xylenes, Total	3.0	0.10	3.000	0	100	80	120			
Surr: 4-Bromofluorobenzene	1.0		1.000		105	80	120			

Sample ID: **mb-53657** SampType: **MBLK** TestCode: **EPA Method 8021B: Volatiles**

Client ID: **PBS** Batch ID: **53657** RunNo: **70338**

Prep Date: **7/12/2020** Analysis Date: **7/14/2020** SeqNo: **2444596** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	1.1		1.000		105	80	120			

Sample ID: **LCS-53657** SampType: **LCS** TestCode: **EPA Method 8021B: Volatiles**

Client ID: **LCSS** Batch ID: **53657** RunNo: **70338**

Prep Date: **7/12/2020** Analysis Date: **7/14/2020** SeqNo: **2444597** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.96	0.025	1.000	0	95.9	80	120			
Toluene	0.96	0.050	1.000	0	96.0	80	120			
Ethylbenzene	0.97	0.050	1.000	0	96.6	80	120			
Xylenes, Total	2.9	0.10	3.000	0	98.1	80	120			
Surr: 4-Bromofluorobenzene	1.1		1.000		109	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2007552**
20-Jul-20

Client: Devon Energy
Project: Apace 25 Fed 9

Sample ID: **2007552-004ams** SampType: **MS** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **SS20-04 0'** Batch ID: **53657** RunNo: **70338**
Prep Date: **7/12/2020** Analysis Date: **7/14/2020** SeqNo: **2444599** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.91	0.025	0.9872	0	91.7	78.5	119			
Toluene	0.93	0.049	0.9872	0.01150	93.5	75.7	123			
Ethylbenzene	0.95	0.049	0.9872	0	95.9	74.3	126			
Xylenes, Total	2.9	0.099	2.962	0	96.9	72.9	130			
Surr: 4-Bromofluorobenzene	1.1		0.9872		108	80	120			

Sample ID: **2007552-004amsd** SampType: **MSD** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **SS20-04 0'** Batch ID: **53657** RunNo: **70338**
Prep Date: **7/12/2020** Analysis Date: **7/14/2020** SeqNo: **2444600** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.94	0.024	0.9747	0	96.3	78.5	119	3.62	20	
Toluene	0.96	0.049	0.9747	0.01150	97.1	75.7	123	2.53	20	
Ethylbenzene	0.97	0.049	0.9747	0	99.8	74.3	126	2.67	20	
Xylenes, Total	2.9	0.097	2.924	0	100	72.9	130	2.20	20	
Surr: 4-Bromofluorobenzene	1.0		0.9747		108	80	120	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: clients.hallenvironmental.com

Sample Log-In Check List

Client Name: Devon Energy Work Order Number: 2007552 RcptNo: 1

Received By: Isaiah Ortiz 7/11/2020 7:10:00 AM

Completed By: Isaiah Ortiz 7/11/2020 8:04:02 AM

Reviewed By: TOM 7/11/2020

Chain of Custody

1. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
2. How was the sample delivered? Courier

Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA? Yes ☐ No ☐ NA ☑
10. Were any sample containers received broken? Yes ☐ No ☑

JO 7/11/20

11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
13. Is it clear what analyses were requested? Yes ☑ No ☐
14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

# of preserved bottles checked for pH: (<2 or >12 unless noted)

Adjusted?

Checked by:

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

16. Additional remarks:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.4	Good	Not Present			

Chain-of-Custody Record

Client: Devon

Mailing Address: ON FILE

Phone #:

email or Fax#:

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other
☐ EDD (Type)

Turn-Around Time: 5 Day Turn
☑ Standard ☐ Rush

Project Name: Apache 25 Fed 9

Project #: 20779806

Project Manager: Natalie Gordon

Sampler: Kevin Smith

On Ice: ☑ Yes ☐ No

# of Coolers:

Cooler Temp (including cf): 0.1 (0.1) 2.9 °C)

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2007552	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
7/8/20	12:51	Soil	SS20-01 0'	4oz jar	ICE	001	X	X					X			
	12:58		SS20-02 0'			002										
	1:53		SS20-03 0'			003										
	1:51		SS20-04 0'			004										
	2:14		SS20-05 0'			005										
	2:35		BH20-01 0.6"			006										
	3:05		BH20-01 1'			007										

Date	Time	Relinquished by	Received by	Via	Date	Time
			Cummings		7/10/20	1200
7/10/20	1900	Cummings				

Remarks: Send to Natalie Gordon
Bill Devon Energy

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: clients.hallenvironmental.com

August 27, 2020

Amanda Davis

Devon Energy
6488 Seven Rivers Highway
Artesia, NM 88210
TEL: (575) 748-0176
FAX:

RE: Apache 25 Fed 9 OrderNo.: 2008A76

Dear Amanda Davis:

Hall Environmental Analysis Laboratory received 7 sample(s) on 8/20/2020 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **2008A76**
Date Reported: **8/27/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Apache 25 Fed 9
Lab ID: 2008A76-001 **Matrix:** SOIL

Client Sample ID: SS20-01 0'
Collection Date: 8/17/2020 11:02:00 AM
Received Date: 8/20/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	8/24/2020 10:18:06 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	8/24/2020 10:18:06 AM
Surr: DNOP	81.8	30.4-154		%Rec	1	8/24/2020 10:18:06 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	8/23/2020 1:46:37 AM
Surr: BFB	99.4	75.3-105		%Rec	1	8/23/2020 1:46:37 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	8/23/2020 1:46:37 AM
Toluene	ND	0.048		mg/Kg	1	8/23/2020 1:46:37 AM
Ethylbenzene	ND	0.048		mg/Kg	1	8/23/2020 1:46:37 AM
Xylenes, Total	ND	0.096		mg/Kg	1	8/23/2020 1:46:37 AM
Surr: 4-Bromofluorobenzene	103	80-120		%Rec	1	8/23/2020 1:46:37 AM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	380	61		mg/Kg	20	8/26/2020 10:03:40 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2008A76**
Date Reported: **8/27/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Apache 25 Fed 9
Lab ID: 2008A76-002 **Matrix:** SOIL

Client Sample ID: SS20-02 0'
Collection Date: 8/17/2020 11:17:00 AM
Received Date: 8/20/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	8/24/2020 11:30:48 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	8/24/2020 11:30:48 AM
Surr: DNOP	80.0	30.4-154		%Rec	1	8/24/2020 11:30:48 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	8/23/2020 2:56:52 AM
Surr: BFB	97.6	75.3-105		%Rec	1	8/23/2020 2:56:52 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.023		mg/Kg	1	8/23/2020 2:56:52 AM
Toluene	ND	0.047		mg/Kg	1	8/23/2020 2:56:52 AM
Ethylbenzene	ND	0.047		mg/Kg	1	8/23/2020 2:56:52 AM
Xylenes, Total	ND	0.093		mg/Kg	1	8/23/2020 2:56:52 AM
Surr: 4-Bromofluorobenzene	101	80-120		%Rec	1	8/23/2020 2:56:52 AM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	880	60		mg/Kg	20	8/26/2020 10:40:55 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2008A76**
Date Reported: **8/27/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Apache 25 Fed 9
Lab ID: 2008A76-003 **Matrix:** SOIL

Client Sample ID: SS20-03 0'
Collection Date: 8/17/2020 11:42:00 AM
Received Date: 8/20/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	8/24/2020 11:54:55 AM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	8/24/2020 11:54:55 AM
Surr: DNOP	80.3	30.4-154		%Rec	1	8/24/2020 11:54:55 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	8/23/2020 4:07:23 AM
Surr: BFB	95.3	75.3-105		%Rec	1	8/23/2020 4:07:23 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	8/23/2020 4:07:23 AM
Toluene	ND	0.049		mg/Kg	1	8/23/2020 4:07:23 AM
Ethylbenzene	ND	0.049		mg/Kg	1	8/23/2020 4:07:23 AM
Xylenes, Total	ND	0.097		mg/Kg	1	8/23/2020 4:07:23 AM
Surr: 4-Bromofluorobenzene	99.2	80-120		%Rec	1	8/23/2020 4:07:23 AM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	570	61		mg/Kg	20	8/26/2020 11:42:59 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2008A76**
Date Reported: **8/27/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Apache 25 Fed 9
Lab ID: 2008A76-004 **Matrix:** SOIL

Client Sample ID: SS20-04 0'
Collection Date: 8/17/2020 12:01:00 PM
Received Date: 8/20/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	8/24/2020 12:19:15 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	8/24/2020 12:19:15 PM
Surr: DNOP	81.0	30.4-154		%Rec	1	8/24/2020 12:19:15 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	8/23/2020 4:30:53 AM
Surr: BFB	96.1	75.3-105		%Rec	1	8/23/2020 4:30:53 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	8/23/2020 4:30:53 AM
Toluene	ND	0.049		mg/Kg	1	8/23/2020 4:30:53 AM
Ethylbenzene	ND	0.049		mg/Kg	1	8/23/2020 4:30:53 AM
Xylenes, Total	ND	0.097		mg/Kg	1	8/23/2020 4:30:53 AM
Surr: 4-Bromofluorobenzene	102	80-120		%Rec	1	8/23/2020 4:30:53 AM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	790	60		mg/Kg	20	8/26/2020 11:55:24 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2008A76**
Date Reported: **8/27/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Apache 25 Fed 9
Lab ID: 2008A76-005 **Matrix:** SOIL

Client Sample ID: SS20-05 0'
Collection Date: 8/17/2020 12:09:00 PM
Received Date: 8/20/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.1		mg/Kg	1	8/24/2020 12:43:26 PM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	8/24/2020 12:43:26 PM
Surr: DNOP	85.5	30.4-154		%Rec	1	8/24/2020 12:43:26 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	8/23/2020 4:54:15 AM
Surr: BFB	95.6	75.3-105		%Rec	1	8/23/2020 4:54:15 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	8/23/2020 4:54:15 AM
Toluene	ND	0.048		mg/Kg	1	8/23/2020 4:54:15 AM
Ethylbenzene	ND	0.048		mg/Kg	1	8/23/2020 4:54:15 AM
Xylenes, Total	ND	0.096		mg/Kg	1	8/23/2020 4:54:15 AM
Surr: 4-Bromofluorobenzene	101	80-120		%Rec	1	8/23/2020 4:54:15 AM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	660	60		mg/Kg	20	8/26/2020 12:07:48 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2008A76**
Date Reported: **8/27/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Apache 25 Fed 9
Lab ID: 2008A76-006 **Matrix:** SOIL

Client Sample ID: BH20-01 0'
Collection Date: 8/17/2020 12:30:00 PM
Received Date: 8/20/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	8/24/2020 1:07:46 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	8/24/2020 1:07:46 PM
Surr: DNOP	87.1	30.4-154		%Rec	1	8/24/2020 1:07:46 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	8/23/2020 5:18:10 AM
Surr: BFB	98.8	75.3-105		%Rec	1	8/23/2020 5:18:10 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	8/23/2020 5:18:10 AM
Toluene	ND	0.050		mg/Kg	1	8/23/2020 5:18:10 AM
Ethylbenzene	ND	0.050		mg/Kg	1	8/23/2020 5:18:10 AM
Xylenes, Total	ND	0.099		mg/Kg	1	8/23/2020 5:18:10 AM
Surr: 4-Bromofluorobenzene	105	80-120		%Rec	1	8/23/2020 5:18:10 AM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	300	60		mg/Kg	20	8/26/2020 12:20:13 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix
E	Value above quantitation range
H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit
P	Sample pH Not In Range
PQL	Practical Quanitative Limit
RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix

Analytical Report
Lab Order **2008A76**
Date Reported: **8/27/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Apache 25 Fed 9
Lab ID: 2008A76-007 **Matrix:** SOIL

Client Sample ID: BH20-01 1'
Collection Date: 8/17/2020 12:51:00 PM
Received Date: 8/20/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	1900	93		mg/Kg	10	8/24/2020 1:32:02 PM
Motor Oil Range Organics (MRO)	2400	470		mg/Kg	10	8/24/2020 1:32:02 PM
Surr: DNOP	0	30.4-154	S	%Rec	10	8/24/2020 1:32:02 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	8/23/2020 5:42:08 AM
Surr: BFB	96.6	75.3-105		%Rec	1	8/23/2020 5:42:08 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	8/23/2020 5:42:08 AM
Toluene	ND	0.049		mg/Kg	1	8/23/2020 5:42:08 AM
Ethylbenzene	ND	0.049		mg/Kg	1	8/23/2020 5:42:08 AM
Xylenes, Total	ND	0.099		mg/Kg	1	8/23/2020 5:42:08 AM
Surr: 4-Bromofluorobenzene	102	80-120		%Rec	1	8/23/2020 5:42:08 AM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	810	60		mg/Kg	20	8/26/2020 12:32:38 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2008A76**

27-Aug-20

Client: Devon Energy

Project: Apache 25 Fed 9

Sample ID: **MB-54693**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBS**	Batch ID: **54693**	RunNo: **71402**							
Prep Date: **8/26/2020**	Analysis Date: **8/26/2020**	SeqNo: **2492791**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-54693**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSS**	Batch ID: **54693**	RunNo: **71402**							
Prep Date: **8/26/2020**	Analysis Date: **8/26/2020**	SeqNo: **2492792**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	95.8	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2008A76**

27-Aug-20

Client: Devon Energy

Project: Apache 25 Fed 9

Sample ID: **MB-54601**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **54601**	RunNo: **71331**
Prep Date: **8/21/2020**	Analysis Date: **8/24/2020**	SeqNo: **2489710** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.7		10.00		96.7	30.4	154			

Sample ID: **LCS-54601**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **54601**	RunNo: **71331**
Prep Date: **8/21/2020**	Analysis Date: **8/24/2020**	SeqNo: **2489711** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	50	10	50.00	0	99.3	70	130			
Surr: DNOP	4.8		5.000		97.0	30.4	154			

Sample ID: **2008A76-001AMS**	SampType: **MS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **SS20-01 0'**	Batch ID: **54601**	RunNo: **71331**
Prep Date: **8/21/2020**	Analysis Date: **8/24/2020**	SeqNo: **2489713** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	42	9.6	47.80	0	87.3	47.4	136			
Surr: DNOP	3.4		4.780		71.7	30.4	154			

Sample ID: **2008A76-001AMSD**	SampType: **MSD**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **SS20-01 0'**	Batch ID: **54601**	RunNo: **71331**
Prep Date: **8/21/2020**	Analysis Date: **8/24/2020**	SeqNo: **2489714** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	45	9.6	47.98	0	93.1	47.4	136	6.78	43.4	
Surr: DNOP	4.1		4.798		84.5	30.4	154	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2008A76**
27-Aug-20

Client: Devon Energy
Project: Apache 25 Fed 9

Sample ID: **mb-54588** SampType: **MBLK** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS** Batch ID: **54588** RunNo: **71272**
Prep Date: **8/20/2020** Analysis Date: **8/23/2020** SeqNo: **2486966** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	950		1000		95.1	75.3	105			

Sample ID: **lcs-54588** SampType: **LCS** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS** Batch ID: **54588** RunNo: **71272**
Prep Date: **8/20/2020** Analysis Date: **8/22/2020** SeqNo: **2486967** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	21	5.0	25.00	0	83.2	72.5	106			
Surr: BFB	1000		1000		104	75.3	105			

Sample ID: **2008a76-002ams** SampType: **MS** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **SS20-02 0'** Batch ID: **54588** RunNo: **71272**
Prep Date: **8/20/2020** Analysis Date: **8/23/2020** SeqNo: **2486970** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	20	4.7	23.41	0	83.8	61.3	114			
Surr: BFB	1000		936.3		108	75.3	105			S

Sample ID: **2008a76-002amsd** SampType: **MSD** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **SS20-02 0'** Batch ID: **54588** RunNo: **71272**
Prep Date: **8/20/2020** Analysis Date: **8/23/2020** SeqNo: **2486971** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	19	4.7	23.74	0	82.0	61.3	114	0.708	20	
Surr: BFB	1000		949.7		107	75.3	105	0	0	S

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2008A76**

27-Aug-20

Client: Devon Energy

Project: Apache 25 Fed 9

Sample ID: **mb-54588** SampType: **MBLK** TestCode: **EPA Method 8021B: Volatiles**

Client ID: **PBS** Batch ID: **54588** RunNo: **71272**

Prep Date: **8/20/2020** Analysis Date: **8/23/2020** SeqNo: **2487063** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	1.0		1.000		103	80	120			

Sample ID: **LCS-54588** SampType: **LCS** TestCode: **EPA Method 8021B: Volatiles**

Client ID: **LCSS** Batch ID: **54588** RunNo: **71272**

Prep Date: **8/20/2020** Analysis Date: **8/23/2020** SeqNo: **2487064** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.96	0.025	1.000	0	95.7	80	120			
Toluene	0.96	0.050	1.000	0	96.4	80	120			
Ethylbenzene	0.96	0.050	1.000	0	96.4	80	120			
Xylenes, Total	2.9	0.10	3.000	0	96.2	80	120			
Surr: 4-Bromofluorobenzene	1.0		1.000		104	80	120			

Sample ID: **2008a76-001ams** SampType: **MS** TestCode: **EPA Method 8021B: Volatiles**

Client ID: **SS20-01 0'** Batch ID: **54588** RunNo: **71272**

Prep Date: **8/20/2020** Analysis Date: **8/23/2020** SeqNo: **2487066** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.92	0.025	0.9872	0	93.6	76.3	120			
Toluene	0.93	0.049	0.9872	0	94.4	78.5	120			
Ethylbenzene	0.94	0.049	0.9872	0	94.9	78.1	124			
Xylenes, Total	2.8	0.099	2.962	0	95.5	79.3	125			
Surr: 4-Bromofluorobenzene	1.0		0.9872		105	80	120			

Sample ID: **2008a76-001amsd** SampType: **MSD** TestCode: **EPA Method 8021B: Volatiles**

Client ID: **SS20-01 0'** Batch ID: **54588** RunNo: **71272**

Prep Date: **8/20/2020** Analysis Date: **8/23/2020** SeqNo: **2487067** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.91	0.025	0.9911	0	91.8	76.3	120	1.45	20	
Toluene	0.93	0.050	0.9911	0	94.1	78.5	120	0.120	20	
Ethylbenzene	0.94	0.050	0.9911	0	95.0	78.1	124	0.564	20	
Xylenes, Total	2.8	0.099	2.973	0	95.4	79.3	125	0.231	20	
Surr: 4-Bromofluorobenzene	1.0		0.9911		104	80	120	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: clients.hallenvironmental.com

Sample Log-In Check List

Client Name: Devon Energy Work Order Number: 2008A76 RcptNo: 1

Received By: **Juan Rojas** 8/20/2020 8:00:00 AM

Completed By: **Juan Rojas** 8/20/2020 8:57:46 AM

Reviewed By: MJ 08/20/20

Chain of Custody

1. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2. How was the sample delivered?	Courier		

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA?	Yes ☐	No ☐	NA ☑
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: CMC 8/20/20

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified:	Natalie	Date	8/24
By Whom:	Desiree	Via:	☒ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:	DATES on COC 3 Bottle		
Client Instructions:	see attached email - go with COC		

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.6	Good				

Chain-of-Custody Record

Client: Devon Energy

Mailing Address: on file

Phone #:

email or Fax#:

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time: 5 Day Turnaround
☑ Standard ☐ Rush

Project Name: Apache 25 Fed 9

Project #: 20874723

Project Manager: Natalie Gordon

Sampler: Kevin Smith

On Ice: ☑ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 0.6-0=0.6 (°C)

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2008A76	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
8/19/20	11:02	Soil	SS20-01 0'	4 oz jar	ICE	-001	X	X					X			
	11:17		SS20-02 0'			-002										
	11:42		SS20-03 0'			-003										
	12:01		SS20-04 0'			-004										
	12:04		SS20-05 0'			-005										
	12:30		BH20-01 0'			-006										
	12:51		BH20-01 1'			-007										

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
					8/19/20	1200
8/19/20	1900			courier	8/20/20	8:00

Remarks: Send to Natalie Gordon
Bill Devon

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Desiree Dominguez

From: Natalie Gordon <ngordon@vertex.ca>
Sent: Monday, August 24, 2020 2:28 PM
To: Desiree Dominguez
Subject: RE: Apache 25 Fed 9 and Lava Tube 27 State 001H

Hi Desiree,

My apologies for the wonky dates. Please use 8/17 for the samples (the date that is on the COC).

You can just make a note on the COC that SS20-05 for Lava Tube was not received and I will be sure to address it in my final report.

Thank you for the heads up.
Natalie

From: Desiree Dominguez <dad@hallenvironmental.com>
Sent: Monday, August 24, 2020 10:50 AM
To: Natalie Gordon <ngordon@vertex.ca>
Subject: Apache 25 Fed 9 and Lava Tube 27 State 001H

Good morning Natalie,
So we received your samples for Apache 25 Fed 9 on Thursday 8/20 and the COC has a date of 8/17 and the jars have a date of 8/19. Let me know which we should stick with.

Also the project Lava Tube 27 State 001H was received Saturday; and we were missing sample 005 Which is SS20-05 0'

Look forward to hearing back when you have time.
Thank you,
Desiree Dominguez
Hall Environmental Analysis Lab

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

April 28, 2023

Kent Stallings

Vertex Resources Services, Inc.
3101 Boyd Drive
Carlsbad, NM 88220
TEL: (505) 506-0040
FAX:

RE: Apache 25 Federal 009 OrderNo.: 2304732

Dear Kent Stallings:

Hall Environmental Analysis Laboratory received 35 sample(s) on 4/18/2023 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **2304732**
Date Reported: **4/28/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-02 0'
Project: Apache 25 Federal 009 **Collection Date:** 4/14/2023 1:35:00 PM
Lab ID: 2304732-001 **Matrix:** SOIL **Received Date:** 4/18/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	180	9.7		mg/Kg	1	4/20/2023 1:34:18 PM
Motor Oil Range Organics (MRO)	190	48		mg/Kg	1	4/20/2023 1:34:18 PM
Surr: DNOP	101	69-147		%Rec	1	4/20/2023 1:34:18 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/21/2023 4:09:00 AM
Surr: BFB	90.2	37.7-212		%Rec	1	4/21/2023 4:09:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **CCM**
Benzene	ND	0.025		mg/Kg	1	4/21/2023 4:09:00 AM
Toluene	ND	0.049		mg/Kg	1	4/21/2023 4:09:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	4/21/2023 4:09:00 AM
Xylenes, Total	ND	0.099		mg/Kg	1	4/21/2023 4:09:00 AM
Surr: 4-Bromofluorobenzene	85.9	70-130		%Rec	1	4/21/2023 4:09:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **SNS**
Chloride	430	60		mg/Kg	20	4/20/2023 11:49:16 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2304732**
Date Reported: **4/28/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-02 2'
Project: Apache 25 Federal 009 **Collection Date:** 4/14/2023 1:40:00 PM
Lab ID: 2304732-002 **Matrix:** SOIL **Received Date:** 4/18/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	4/20/2023 1:55:45 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	4/20/2023 1:55:45 PM
Surr: DNOP	86.3	69-147		%Rec	1	4/20/2023 1:55:45 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	4/21/2023 4:31:00 AM
Surr: BFB	96.1	37.7-212		%Rec	1	4/21/2023 4:31:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **CCM**
Benzene	ND	0.023		mg/Kg	1	4/21/2023 4:31:00 AM
Toluene	ND	0.047		mg/Kg	1	4/21/2023 4:31:00 AM
Ethylbenzene	ND	0.047		mg/Kg	1	4/21/2023 4:31:00 AM
Xylenes, Total	ND	0.093		mg/Kg	1	4/21/2023 4:31:00 AM
Surr: 4-Bromofluorobenzene	88.3	70-130		%Rec	1	4/21/2023 4:31:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **SNS**
Chloride	120	60		mg/Kg	20	4/21/2023 12:01:40 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2304732**
Date Reported: **4/28/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-02 4'
Project: Apache 25 Federal 009 **Collection Date:** 4/14/2023 1:45:00 PM
Lab ID: 2304732-003 **Matrix:** SOIL **Received Date:** 4/18/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	4/20/2023 2:06:34 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	4/20/2023 2:06:34 PM
Surr: DNOP	81.8	69-147		%Rec	1	4/20/2023 2:06:34 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/21/2023 4:52:00 AM
Surr: BFB	92.1	37.7-212		%Rec	1	4/21/2023 4:52:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **CCM**
Benzene	ND	0.024		mg/Kg	1	4/21/2023 4:52:00 AM
Toluene	ND	0.048		mg/Kg	1	4/21/2023 4:52:00 AM
Ethylbenzene	ND	0.048		mg/Kg	1	4/21/2023 4:52:00 AM
Xylenes, Total	ND	0.096		mg/Kg	1	4/21/2023 4:52:00 AM
Surr: 4-Bromofluorobenzene	89.0	70-130		%Rec	1	4/21/2023 4:52:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **SNS**
Chloride	160	60		mg/Kg	20	4/21/2023 12:14:04 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2304732**
Date Reported: **4/28/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-02 6'
Project: Apache 25 Federal 009 **Collection Date:** 4/14/2023 1:50:00 PM
Lab ID: 2304732-004 **Matrix:** SOIL **Received Date:** 4/18/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.1		mg/Kg	1	4/20/2023 2:17:25 PM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	4/20/2023 2:17:25 PM
Surr: DNOP	88.0	69-147		%Rec	1	4/20/2023 2:17:25 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/21/2023 5:14:00 AM
Surr: BFB	93.0	37.7-212		%Rec	1	4/21/2023 5:14:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **CCM**
Benzene	ND	0.024		mg/Kg	1	4/21/2023 5:14:00 AM
Toluene	ND	0.048		mg/Kg	1	4/21/2023 5:14:00 AM
Ethylbenzene	ND	0.048		mg/Kg	1	4/21/2023 5:14:00 AM
Xylenes, Total	ND	0.097		mg/Kg	1	4/21/2023 5:14:00 AM
Surr: 4-Bromofluorobenzene	87.8	70-130		%Rec	1	4/21/2023 5:14:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **SNS**
Chloride	73	60		mg/Kg	20	4/21/2023 12:26:29 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2304732**
Date Reported: **4/28/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-03 0'
Project: Apache 25 Federal 009 **Collection Date:** 4/14/2023 4:00:00 PM
Lab ID: 2304732-005 **Matrix:** SOIL **Received Date:** 4/18/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	4/20/2023 2:28:16 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	4/20/2023 2:28:16 PM
Surr: DNOP	115	69-147		%Rec	1	4/20/2023 2:28:16 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	4/21/2023 5:36:00 AM
Surr: BFB	90.1	37.7-212		%Rec	1	4/21/2023 5:36:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **CCM**
Benzene	ND	0.025		mg/Kg	1	4/21/2023 5:36:00 AM
Toluene	ND	0.050		mg/Kg	1	4/21/2023 5:36:00 AM
Ethylbenzene	ND	0.050		mg/Kg	1	4/21/2023 5:36:00 AM
Xylenes, Total	ND	0.099		mg/Kg	1	4/21/2023 5:36:00 AM
Surr: 4-Bromofluorobenzene	87.6	70-130		%Rec	1	4/21/2023 5:36:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **SNS**
Chloride	ND	60		mg/Kg	20	4/21/2023 12:38:54 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2304732**
Date Reported: **4/28/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-03 2'
Project: Apache 25 Federal 009 **Collection Date:** 4/14/2023 4:10:00 PM
Lab ID: 2304732-006 **Matrix:** SOIL **Received Date:** 4/18/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	4/20/2023 2:39:04 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	4/20/2023 2:39:04 PM
Surr: DNOP	79.6	69-147		%Rec	1	4/20/2023 2:39:04 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	4/21/2023 5:57:00 AM
Surr: BFB	94.3	37.7-212		%Rec	1	4/21/2023 5:57:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **CCM**
Benzene	ND	0.023		mg/Kg	1	4/21/2023 5:57:00 AM
Toluene	ND	0.046		mg/Kg	1	4/21/2023 5:57:00 AM
Ethylbenzene	ND	0.046		mg/Kg	1	4/21/2023 5:57:00 AM
Xylenes, Total	ND	0.093		mg/Kg	1	4/21/2023 5:57:00 AM
Surr: 4-Bromofluorobenzene	89.0	70-130		%Rec	1	4/21/2023 5:57:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JTT**
Chloride	ND	60		mg/Kg	20	4/21/2023 9:41:25 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2304732**
Date Reported: **4/28/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-03 4'
Project: Apache 25 Federal 009 **Collection Date:** 4/14/2023 4:20:00 PM
Lab ID: 2304732-007 **Matrix:** SOIL **Received Date:** 4/18/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	4/20/2023 2:49:53 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	4/20/2023 2:49:53 PM
Surr: DNOP	84.6	69-147		%Rec	1	4/20/2023 2:49:53 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/21/2023 6:19:00 AM
Surr: BFB	89.7	37.7-212		%Rec	1	4/21/2023 6:19:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **CCM**
Benzene	ND	0.025		mg/Kg	1	4/21/2023 6:19:00 AM
Toluene	ND	0.049		mg/Kg	1	4/21/2023 6:19:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	4/21/2023 6:19:00 AM
Xylenes, Total	ND	0.099		mg/Kg	1	4/21/2023 6:19:00 AM
Surr: 4-Bromofluorobenzene	89.1	70-130		%Rec	1	4/21/2023 6:19:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JTT**
Chloride	ND	60		mg/Kg	20	4/21/2023 9:53:50 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2304732**
Date Reported: **4/28/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-04 0'
Project: Apache 25 Federal 009 **Collection Date:** 4/15/2023 8:30:00 AM
Lab ID: 2304732-008 **Matrix:** SOIL **Received Date:** 4/18/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	4/20/2023 3:00:41 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	4/20/2023 3:00:41 PM
Surr: DNOP	106	69-147		%Rec	1	4/20/2023 3:00:41 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/21/2023 6:40:00 AM
Surr: BFB	91.8	37.7-212		%Rec	1	4/21/2023 6:40:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **CCM**
Benzene	ND	0.025		mg/Kg	1	4/21/2023 6:40:00 AM
Toluene	ND	0.049		mg/Kg	1	4/21/2023 6:40:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	4/21/2023 6:40:00 AM
Xylenes, Total	ND	0.099		mg/Kg	1	4/21/2023 6:40:00 AM
Surr: 4-Bromofluorobenzene	88.2	70-130		%Rec	1	4/21/2023 6:40:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JTT**
Chloride	ND	60		mg/Kg	20	4/21/2023 10:06:14 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2304732**
Date Reported: **4/28/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH23-04 2'
Project: Apache 25 Federal 009
Collection Date: 4/15/2023 8:35:00 AM
Lab ID: 2304732-009 **Matrix:** SOIL **Received Date:** 4/18/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	4/21/2023 4:31:50 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	4/21/2023 4:31:50 PM
Surr: DNOP	144	69-147		%Rec	1	4/21/2023 4:31:50 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/22/2023 12:58:00 AM
Surr: BFB	91.7	37.7-212		%Rec	1	4/22/2023 12:58:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **CCM**
Benzene	ND	0.024		mg/Kg	1	4/22/2023 12:58:00 AM
Toluene	ND	0.049		mg/Kg	1	4/22/2023 12:58:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	4/22/2023 12:58:00 AM
Xylenes, Total	ND	0.098		mg/Kg	1	4/22/2023 12:58:00 AM
Surr: 4-Bromofluorobenzene	87.6	70-130		%Rec	1	4/22/2023 12:58:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JTT**
Chloride	ND	60		mg/Kg	20	4/21/2023 10:18:39 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2304732**
Date Reported: **4/28/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-04 4'
Project: Apache 25 Federal 009 **Collection Date:** 4/15/2023 8:40:00 AM
Lab ID: 2304732-010 **Matrix:** SOIL **Received Date:** 4/18/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	4/21/2023 5:04:13 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	4/21/2023 5:04:13 PM
Surr: DNOP	100	69-147		%Rec	1	4/21/2023 5:04:13 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/22/2023 2:03:00 AM
Surr: BFB	92.3	37.7-212		%Rec	1	4/22/2023 2:03:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **CCM**
Benzene	ND	0.024		mg/Kg	1	4/22/2023 2:03:00 AM
Toluene	ND	0.048		mg/Kg	1	4/22/2023 2:03:00 AM
Ethylbenzene	ND	0.048		mg/Kg	1	4/22/2023 2:03:00 AM
Xylenes, Total	ND	0.096		mg/Kg	1	4/22/2023 2:03:00 AM
Surr: 4-Bromofluorobenzene	86.8	70-130		%Rec	1	4/22/2023 2:03:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JTT**
Chloride	61	60		mg/Kg	20	4/21/2023 10:31:04 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2304732**
Date Reported: **4/28/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-05 0'
Project: Apache 25 Federal 009 **Collection Date:** 4/15/2023 8:55:00 AM
Lab ID: 2304732-011 **Matrix:** SOIL **Received Date:** 4/18/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.1		mg/Kg	1	4/21/2023 5:14:55 PM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	4/21/2023 5:14:55 PM
Surr: DNOP	99.0	69-147		%Rec	1	4/21/2023 5:14:55 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	4/22/2023 3:08:00 AM
Surr: BFB	92.4	37.7-212		%Rec	1	4/22/2023 3:08:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **CCM**
Benzene	ND	0.023		mg/Kg	1	4/22/2023 3:08:00 AM
Toluene	ND	0.047		mg/Kg	1	4/22/2023 3:08:00 AM
Ethylbenzene	ND	0.047		mg/Kg	1	4/22/2023 3:08:00 AM
Xylenes, Total	ND	0.094		mg/Kg	1	4/22/2023 3:08:00 AM
Surr: 4-Bromofluorobenzene	84.2	70-130		%Rec	1	4/22/2023 3:08:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JTT**
Chloride	ND	60		mg/Kg	20	4/21/2023 10:43:28 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2304732**
Date Reported: **4/28/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-05 2'
Project: Apache 25 Federal 009 **Collection Date:** 4/15/2023 9:00:00 AM
Lab ID: 2304732-012 **Matrix:** SOIL **Received Date:** 4/18/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	4/21/2023 5:25:36 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	4/21/2023 5:25:36 PM
Surr: DNOP	103	69-147		%Rec	1	4/21/2023 5:25:36 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	4/22/2023 3:29:00 AM
Surr: BFB	89.3	37.7-212		%Rec	1	4/22/2023 3:29:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **CCM**
Benzene	ND	0.024		mg/Kg	1	4/22/2023 3:29:00 AM
Toluene	ND	0.047		mg/Kg	1	4/22/2023 3:29:00 AM
Ethylbenzene	ND	0.047		mg/Kg	1	4/22/2023 3:29:00 AM
Xylenes, Total	ND	0.095		mg/Kg	1	4/22/2023 3:29:00 AM
Surr: 4-Bromofluorobenzene	86.6	70-130		%Rec	1	4/22/2023 3:29:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JTT**
Chloride	ND	60		mg/Kg	20	4/21/2023 10:55:37 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2304732**
Date Reported: **4/28/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-05 4'
Project: Apache 25 Federal 009 **Collection Date:** 4/15/2023 9:05:00 AM
Lab ID: 2304732-013 **Matrix:** SOIL **Received Date:** 4/18/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	4/21/2023 5:36:18 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	4/21/2023 5:36:18 PM
Surr: DNOP	102	69-147		%Rec	1	4/21/2023 5:36:18 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/22/2023 3:51:00 AM
Surr: BFB	94.9	37.7-212		%Rec	1	4/22/2023 3:51:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **CCM**
Benzene	ND	0.024		mg/Kg	1	4/22/2023 3:51:00 AM
Toluene	ND	0.048		mg/Kg	1	4/22/2023 3:51:00 AM
Ethylbenzene	ND	0.048		mg/Kg	1	4/22/2023 3:51:00 AM
Xylenes, Total	ND	0.096		mg/Kg	1	4/22/2023 3:51:00 AM
Surr: 4-Bromofluorobenzene	87.0	70-130		%Rec	1	4/22/2023 3:51:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JTT**
Chloride	ND	60		mg/Kg	20	4/21/2023 11:32:52 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2304732**
Date Reported: **4/28/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-06 0'
Project: Apache 25 Federal 009 **Collection Date:** 4/15/2023 9:20:00 AM
Lab ID: 2304732-014 **Matrix:** SOIL **Received Date:** 4/18/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	4/21/2023 5:47:03 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	4/21/2023 5:47:03 PM
Surr: DNOP	114	69-147		%Rec	1	4/21/2023 5:47:03 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	4/22/2023 4:12:00 AM
Surr: BFB	89.9	37.7-212		%Rec	1	4/22/2023 4:12:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **CCM**
Benzene	ND	0.023		mg/Kg	1	4/22/2023 4:12:00 AM
Toluene	ND	0.047		mg/Kg	1	4/22/2023 4:12:00 AM
Ethylbenzene	ND	0.047		mg/Kg	1	4/22/2023 4:12:00 AM
Xylenes, Total	ND	0.093		mg/Kg	1	4/22/2023 4:12:00 AM
Surr: 4-Bromofluorobenzene	86.4	70-130		%Rec	1	4/22/2023 4:12:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JTT**
Chloride	ND	60		mg/Kg	20	4/22/2023 12:34:55 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2304732**
Date Reported: **4/28/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-06 2'
Project: Apache 25 Federal 009 **Collection Date:** 4/15/2023 9:25:00 AM
Lab ID: 2304732-015 **Matrix:** SOIL **Received Date:** 4/18/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	4/21/2023 5:57:52 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	4/21/2023 5:57:52 PM
Surr: DNOP	95.4	69-147		%Rec	1	4/21/2023 5:57:52 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	4/22/2023 4:34:00 AM
Surr: BFB	89.1	37.7-212		%Rec	1	4/22/2023 4:34:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **CCM**
Benzene	ND	0.025		mg/Kg	1	4/22/2023 4:34:00 AM
Toluene	ND	0.050		mg/Kg	1	4/22/2023 4:34:00 AM
Ethylbenzene	ND	0.050		mg/Kg	1	4/22/2023 4:34:00 AM
Xylenes, Total	ND	0.10		mg/Kg	1	4/22/2023 4:34:00 AM
Surr: 4-Bromofluorobenzene	84.7	70-130		%Rec	1	4/22/2023 4:34:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JTT**
Chloride	ND	60		mg/Kg	20	4/22/2023 12:47:21 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2304732**
Date Reported: **4/28/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-07 0'
Project: Apache 25 Federal 009 **Collection Date:** 4/15/2023 9:40:00 AM
Lab ID: 2304732-016 **Matrix:** SOIL **Received Date:** 4/18/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	4/21/2023 6:08:43 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	4/21/2023 6:08:43 PM
Surr: DNOP	132	69-147		%Rec	1	4/21/2023 6:08:43 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/22/2023 4:55:00 AM
Surr: BFB	88.5	37.7-212		%Rec	1	4/22/2023 4:55:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **CCM**
Benzene	ND	0.024		mg/Kg	1	4/22/2023 4:55:00 AM
Toluene	ND	0.049		mg/Kg	1	4/22/2023 4:55:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	4/22/2023 4:55:00 AM
Xylenes, Total	ND	0.097		mg/Kg	1	4/22/2023 4:55:00 AM
Surr: 4-Bromofluorobenzene	85.4	70-130		%Rec	1	4/22/2023 4:55:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JTT**
Chloride	ND	60		mg/Kg	20	4/22/2023 12:59:45 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2304732**
Date Reported: **4/28/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-07 2'
Project: Apache 25 Federal 009 **Collection Date:** 4/15/2023 9:45:00 AM
Lab ID: 2304732-017 **Matrix:** SOIL **Received Date:** 4/18/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	4/21/2023 6:19:45 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	4/21/2023 6:19:45 PM
Surr: DNOP	103	69-147		%Rec	1	4/21/2023 6:19:45 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/22/2023 5:17:00 AM
Surr: BFB	91.1	37.7-212		%Rec	1	4/22/2023 5:17:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **CCM**
Benzene	ND	0.024		mg/Kg	1	4/22/2023 5:17:00 AM
Toluene	ND	0.048		mg/Kg	1	4/22/2023 5:17:00 AM
Ethylbenzene	ND	0.048		mg/Kg	1	4/22/2023 5:17:00 AM
Xylenes, Total	ND	0.095		mg/Kg	1	4/22/2023 5:17:00 AM
Surr: 4-Bromofluorobenzene	87.9	70-130		%Rec	1	4/22/2023 5:17:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JTT**
Chloride	ND	59		mg/Kg	20	4/22/2023 1:12:10 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2304732**
Date Reported: **4/28/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH23-08 0'
Project: Apache 25 Federal 009
Collection Date: 4/15/2023 10:00:00 AM
Lab ID: 2304732-018 **Matrix:** SOIL **Received Date:** 4/18/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	8.8		mg/Kg	1	4/21/2023 6:30:47 PM
Motor Oil Range Organics (MRO)	ND	44		mg/Kg	1	4/21/2023 6:30:47 PM
Surr: DNOP	94.5	69-147		%Rec	1	4/21/2023 6:30:47 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/22/2023 5:38:00 AM
Surr: BFB	90.5	37.7-212		%Rec	1	4/22/2023 5:38:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **CCM**
Benzene	ND	0.025		mg/Kg	1	4/22/2023 5:38:00 AM
Toluene	ND	0.049		mg/Kg	1	4/22/2023 5:38:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	4/22/2023 5:38:00 AM
Xylenes, Total	ND	0.099		mg/Kg	1	4/22/2023 5:38:00 AM
Surr: 4-Bromofluorobenzene	87.3	70-130		%Rec	1	4/22/2023 5:38:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JTT**
Chloride	ND	59		mg/Kg	20	4/22/2023 1:24:35 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix
E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit
P	Sample pH Not In Range
PQL	Practical Quanitative Limit
RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.

Analytical Report
Lab Order **2304732**
Date Reported: **4/28/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH23-08 2'
Project: Apache 25 Federal 009
Collection Date: 4/15/2023 10:05:00 AM
Lab ID: 2304732-019 **Matrix:** SOIL **Received Date:** 4/18/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	4/21/2023 6:52:33 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	4/21/2023 6:52:33 PM
Surr: DNOP	137	69-147		%Rec	1	4/21/2023 6:52:33 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	4/22/2023 6:22:00 AM
Surr: BFB	89.8	37.7-212		%Rec	1	4/22/2023 6:22:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **CCM**
Benzene	ND	0.025		mg/Kg	1	4/22/2023 6:22:00 AM
Toluene	ND	0.050		mg/Kg	1	4/22/2023 6:22:00 AM
Ethylbenzene	ND	0.050		mg/Kg	1	4/22/2023 6:22:00 AM
Xylenes, Total	ND	0.099		mg/Kg	1	4/22/2023 6:22:00 AM
Surr: 4-Bromofluorobenzene	85.7	70-130		%Rec	1	4/22/2023 6:22:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JTT**
Chloride	ND	60		mg/Kg	20	4/22/2023 1:37:00 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2304732**
Date Reported: **4/28/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-09 0'
Project: Apache 25 Federal 009 **Collection Date:** 4/15/2023 10:10:00 AM
Lab ID: 2304732-020 **Matrix:** SOIL **Received Date:** 4/18/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	4/21/2023 7:03:34 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	4/21/2023 7:03:34 PM
Surr: DNOP	97.9	69-147		%Rec	1	4/21/2023 7:03:34 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/22/2023 6:43:00 AM
Surr: BFB	92.9	37.7-212		%Rec	1	4/22/2023 6:43:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **CCM**
Benzene	ND	0.025		mg/Kg	1	4/22/2023 6:43:00 AM
Toluene	ND	0.049		mg/Kg	1	4/22/2023 6:43:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	4/22/2023 6:43:00 AM
Xylenes, Total	ND	0.098		mg/Kg	1	4/22/2023 6:43:00 AM
Surr: 4-Bromofluorobenzene	88.0	70-130		%Rec	1	4/22/2023 6:43:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JTT**
Chloride	ND	60		mg/Kg	20	4/22/2023 1:49:24 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2304732**
Date Reported: **4/28/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-09 2'
Project: Apache 25 Federal 009 **Collection Date:** 4/15/2023 10:15:00 AM
Lab ID: 2304732-021 **Matrix:** SOIL **Received Date:** 4/18/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	4/21/2023 7:14:34 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	4/21/2023 7:14:34 PM
Surr: DNOP	118	69-147		%Rec	1	4/21/2023 7:14:34 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/22/2023 7:05:00 AM
Surr: BFB	91.0	37.7-212		%Rec	1	4/22/2023 7:05:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **CCM**
Benzene	ND	0.025		mg/Kg	1	4/22/2023 7:05:00 AM
Toluene	ND	0.049		mg/Kg	1	4/22/2023 7:05:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	4/22/2023 7:05:00 AM
Xylenes, Total	ND	0.098		mg/Kg	1	4/22/2023 7:05:00 AM
Surr: 4-Bromofluorobenzene	85.6	70-130		%Rec	1	4/22/2023 7:05:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JTT**
Chloride	ND	60		mg/Kg	20	4/22/2023 2:01:48 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2304732**
Date Reported: **4/28/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-10 0'
Project: Apache 25 Federal 009 **Collection Date:** 4/15/2023 10:35:00 AM
Lab ID: 2304732-022 **Matrix:** SOIL **Received Date:** 4/18/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.0		mg/Kg	1	4/21/2023 7:25:33 PM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	4/21/2023 7:25:33 PM
Surr: DNOP	101	69-147		%Rec	1	4/21/2023 7:25:33 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/22/2023 7:26:00 AM
Surr: BFB	91.7	37.7-212		%Rec	1	4/22/2023 7:26:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **CCM**
Benzene	ND	0.025		mg/Kg	1	4/22/2023 7:26:00 AM
Toluene	ND	0.049		mg/Kg	1	4/22/2023 7:26:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	4/22/2023 7:26:00 AM
Xylenes, Total	ND	0.098		mg/Kg	1	4/22/2023 7:26:00 AM
Surr: 4-Bromofluorobenzene	88.2	70-130		%Rec	1	4/22/2023 7:26:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JTT**
Chloride	ND	60		mg/Kg	20	4/22/2023 2:14:12 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2304732**
Date Reported: **4/28/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-10 2'
Project: Apache 25 Federal 009 **Collection Date:** 4/15/2023 10:40:00 AM
Lab ID: 2304732-023 **Matrix:** SOIL **Received Date:** 4/18/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	4/21/2023 7:36:31 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	4/21/2023 7:36:31 PM
Surr: DNOP	115	69-147		%Rec	1	4/21/2023 7:36:31 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/22/2023 7:48:00 AM
Surr: BFB	93.1	37.7-212		%Rec	1	4/22/2023 7:48:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **CCM**
Benzene	ND	0.024		mg/Kg	1	4/22/2023 7:48:00 AM
Toluene	ND	0.048		mg/Kg	1	4/22/2023 7:48:00 AM
Ethylbenzene	ND	0.048		mg/Kg	1	4/22/2023 7:48:00 AM
Xylenes, Total	ND	0.095		mg/Kg	1	4/22/2023 7:48:00 AM
Surr: 4-Bromofluorobenzene	86.3	70-130		%Rec	1	4/22/2023 7:48:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JTT**
Chloride	ND	60		mg/Kg	20	4/22/2023 2:26:36 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2304732**
Date Reported: **4/28/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-11 0'
Project: Apache 25 Federal 009 **Collection Date:** 4/15/2023 10:55:00 AM
Lab ID: 2304732-024 **Matrix:** SOIL **Received Date:** 4/18/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	4/21/2023 7:58:13 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	4/21/2023 7:58:13 PM
Surr: DNOP	94.0	69-147		%Rec	1	4/21/2023 7:58:13 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/22/2023 8:09:00 AM
Surr: BFB	92.2	37.7-212		%Rec	1	4/22/2023 8:09:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **CCM**
Benzene	ND	0.024		mg/Kg	1	4/22/2023 8:09:00 AM
Toluene	ND	0.049		mg/Kg	1	4/22/2023 8:09:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	4/22/2023 8:09:00 AM
Xylenes, Total	ND	0.097		mg/Kg	1	4/22/2023 8:09:00 AM
Surr: 4-Bromofluorobenzene	85.9	70-130		%Rec	1	4/22/2023 8:09:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	ND	60		mg/Kg	20	4/24/2023 12:03:02 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2304732**
Date Reported: **4/28/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-11 2'
Project: Apache 25 Federal 009 **Collection Date:** 4/15/2023 11:00:00 AM
Lab ID: 2304732-025 **Matrix:** SOIL **Received Date:** 4/18/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	8.8		mg/Kg	1	4/21/2023 8:09:08 PM
Motor Oil Range Organics (MRO)	ND	44		mg/Kg	1	4/21/2023 8:09:08 PM
Surr: DNOP	125	69-147		%Rec	1	4/21/2023 8:09:08 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/22/2023 8:31:00 AM
Surr: BFB	87.8	37.7-212		%Rec	1	4/22/2023 8:31:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **CCM**
Benzene	ND	0.025		mg/Kg	1	4/22/2023 8:31:00 AM
Toluene	ND	0.049		mg/Kg	1	4/22/2023 8:31:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	4/22/2023 8:31:00 AM
Xylenes, Total	ND	0.099		mg/Kg	1	4/22/2023 8:31:00 AM
Surr: 4-Bromofluorobenzene	86.1	70-130		%Rec	1	4/22/2023 8:31:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	ND	60		mg/Kg	20	4/24/2023 12:15:27 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2304732**
Date Reported: **4/28/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH23-12 0'
Project: Apache 25 Federal 009
Collection Date: 4/15/2023 11:10:00 AM
Lab ID: 2304732-026 **Matrix:** SOIL **Received Date:** 4/18/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	4/21/2023 8:20:03 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	4/21/2023 8:20:03 PM
Surr: DNOP	93.1	69-147		%Rec	1	4/21/2023 8:20:03 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	4/22/2023 8:52:00 AM
Surr: BFB	90.4	37.7-212		%Rec	1	4/22/2023 8:52:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **CCM**
Benzene	ND	0.025		mg/Kg	1	4/22/2023 8:52:00 AM
Toluene	ND	0.050		mg/Kg	1	4/22/2023 8:52:00 AM
Ethylbenzene	ND	0.050		mg/Kg	1	4/22/2023 8:52:00 AM
Xylenes, Total	ND	0.10		mg/Kg	1	4/22/2023 8:52:00 AM
Surr: 4-Bromofluorobenzene	87.6	70-130		%Rec	1	4/22/2023 8:52:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	86	60		mg/Kg	20	4/24/2023 12:27:52 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2304732**
Date Reported: **4/28/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-12 2'
Project: Apache 25 Federal 009 **Collection Date:** 4/15/2023 11:15:00 AM
Lab ID: 2304732-027 **Matrix:** SOIL **Received Date:** 4/18/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	4/21/2023 8:30:56 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	4/21/2023 8:30:56 PM
Surr: DNOP	91.9	69-147		%Rec	1	4/21/2023 8:30:56 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/22/2023 9:14:00 AM
Surr: BFB	89.7	37.7-212		%Rec	1	4/22/2023 9:14:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **CCM**
Benzene	ND	0.024		mg/Kg	1	4/22/2023 9:14:00 AM
Toluene	ND	0.048		mg/Kg	1	4/22/2023 9:14:00 AM
Ethylbenzene	ND	0.048		mg/Kg	1	4/22/2023 9:14:00 AM
Xylenes, Total	ND	0.096		mg/Kg	1	4/22/2023 9:14:00 AM
Surr: 4-Bromofluorobenzene	86.7	70-130		%Rec	1	4/22/2023 9:14:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	190	60		mg/Kg	20	4/24/2023 12:40:17 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2304732**
Date Reported: **4/28/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-13 0'
Project: Apache 25 Federal 009 **Collection Date:** 4/15/2023 11:35:00 AM
Lab ID: 2304732-028 **Matrix:** SOIL **Received Date:** 4/18/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	8.4		mg/Kg	1	4/21/2023 8:41:48 PM
Motor Oil Range Organics (MRO)	ND	42		mg/Kg	1	4/21/2023 8:41:48 PM
Surr: DNOP	117	69-147		%Rec	1	4/21/2023 8:41:48 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	4/22/2023 9:36:00 AM
Surr: BFB	92.4	37.7-212		%Rec	1	4/22/2023 9:36:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **CCM**
Benzene	ND	0.023		mg/Kg	1	4/22/2023 9:36:00 AM
Toluene	ND	0.046		mg/Kg	1	4/22/2023 9:36:00 AM
Ethylbenzene	ND	0.046		mg/Kg	1	4/22/2023 9:36:00 AM
Xylenes, Total	ND	0.093		mg/Kg	1	4/22/2023 9:36:00 AM
Surr: 4-Bromofluorobenzene	85.2	70-130		%Rec	1	4/22/2023 9:36:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	ND	60		mg/Kg	20	4/24/2023 12:52:41 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2304732**
Date Reported: **4/28/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-13 2'
Project: Apache 25 Federal 009 **Collection Date:** 4/15/2023 11:40:00 AM
Lab ID: 2304732-029 **Matrix:** SOIL **Received Date:** 4/18/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	4/21/2023 9:14:02 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	4/21/2023 9:14:02 PM
Surr: DNOP	89.6	69-147		%Rec	1	4/21/2023 9:14:02 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/21/2023 5:37:11 AM
Surr: BFB	97.6	37.7-212		%Rec	1	4/21/2023 5:37:11 AM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.025		mg/Kg	1	4/21/2023 5:37:11 AM
Toluene	ND	0.049		mg/Kg	1	4/21/2023 5:37:11 AM
Ethylbenzene	ND	0.049		mg/Kg	1	4/21/2023 5:37:11 AM
Xylenes, Total	ND	0.098		mg/Kg	1	4/21/2023 5:37:11 AM
Surr: 4-Bromofluorobenzene	96.3	70-130		%Rec	1	4/21/2023 5:37:11 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	ND	60		mg/Kg	20	4/24/2023 1:05:06 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2304732**
Date Reported: **4/28/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-14 0'
Project: Apache 25 Federal 009 **Collection Date:** 4/15/2023 11:55:00 AM
Lab ID: 2304732-030 **Matrix:** SOIL **Received Date:** 4/18/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	4/21/2023 9:46:12 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	4/21/2023 9:46:12 PM
Surr: DNOP	85.7	69-147		%Rec	1	4/21/2023 9:46:12 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/21/2023 6:00:32 AM
Surr: BFB	104	37.7-212		%Rec	1	4/21/2023 6:00:32 AM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.024		mg/Kg	1	4/21/2023 6:00:32 AM
Toluene	ND	0.048		mg/Kg	1	4/21/2023 6:00:32 AM
Ethylbenzene	ND	0.048		mg/Kg	1	4/21/2023 6:00:32 AM
Xylenes, Total	ND	0.095		mg/Kg	1	4/21/2023 6:00:32 AM
Surr: 4-Bromofluorobenzene	98.6	70-130		%Rec	1	4/21/2023 6:00:32 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	ND	60		mg/Kg	20	4/24/2023 1:17:31 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2304732**
Date Reported: **4/28/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-14 2'
Project: Apache 25 Federal 009 **Collection Date:** 4/15/2023 12:00:00 PM
Lab ID: 2304732-031 **Matrix:** SOIL **Received Date:** 4/18/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	4/21/2023 9:56:54 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	4/21/2023 9:56:54 PM
Surr: DNOP	88.1	69-147		%Rec	1	4/21/2023 9:56:54 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	4/21/2023 6:23:57 AM
Surr: BFB	108	37.7-212		%Rec	1	4/21/2023 6:23:57 AM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.025		mg/Kg	1	4/21/2023 6:23:57 AM
Toluene	ND	0.050		mg/Kg	1	4/21/2023 6:23:57 AM
Ethylbenzene	ND	0.050		mg/Kg	1	4/21/2023 6:23:57 AM
Xylenes, Total	ND	0.099		mg/Kg	1	4/21/2023 6:23:57 AM
Surr: 4-Bromofluorobenzene	99.3	70-130		%Rec	1	4/21/2023 6:23:57 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	92	60		mg/Kg	20	4/24/2023 1:29:55 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2304732**
Date Reported: **4/28/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-15 0'
Project: Apache 25 Federal 009 **Collection Date:** 4/15/2023 12:10:00 PM
Lab ID: 2304732-032 **Matrix:** SOIL **Received Date:** 4/18/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	4/21/2023 10:07:34 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	4/21/2023 10:07:34 PM
Surr: DNOP	93.7	69-147		%Rec	1	4/21/2023 10:07:34 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	4/21/2023 6:47:22 AM
Surr: BFB	103	37.7-212		%Rec	1	4/21/2023 6:47:22 AM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.024		mg/Kg	1	4/21/2023 6:47:22 AM
Toluene	ND	0.047		mg/Kg	1	4/21/2023 6:47:22 AM
Ethylbenzene	ND	0.047		mg/Kg	1	4/21/2023 6:47:22 AM
Xylenes, Total	ND	0.095		mg/Kg	1	4/21/2023 6:47:22 AM
Surr: 4-Bromofluorobenzene	97.9	70-130		%Rec	1	4/21/2023 6:47:22 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	ND	60		mg/Kg	20	4/24/2023 11:00:58 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2304732**
Date Reported: **4/28/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH23-15 2'
Project: Apache 25 Federal 009
Collection Date: 4/15/2023 12:15:00 PM
Lab ID: 2304732-033 **Matrix:** SOIL **Received Date:** 4/18/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	4/21/2023 10:18:12 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	4/21/2023 10:18:12 PM
Surr: DNOP	96.7	69-147		%Rec	1	4/21/2023 10:18:12 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/21/2023 7:10:43 AM
Surr: BFB	95.2	37.7-212		%Rec	1	4/21/2023 7:10:43 AM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.024		mg/Kg	1	4/21/2023 7:10:43 AM
Toluene	ND	0.049		mg/Kg	1	4/21/2023 7:10:43 AM
Ethylbenzene	ND	0.049		mg/Kg	1	4/21/2023 7:10:43 AM
Xylenes, Total	ND	0.098		mg/Kg	1	4/21/2023 7:10:43 AM
Surr: 4-Bromofluorobenzene	96.0	70-130		%Rec	1	4/21/2023 7:10:43 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	120	60		mg/Kg	20	4/24/2023 2:07:09 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix
E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit
P	Sample pH Not In Range
PQL	Practical Quanitative Limit
RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.

Analytical Report
Lab Order **2304732**
Date Reported: **4/28/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-16 0'
Project: Apache 25 Federal 009 **Collection Date:** 4/15/2023 12:25:00 PM
Lab ID: 2304732-034 **Matrix:** SOIL **Received Date:** 4/18/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	4/21/2023 10:28:54 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	4/21/2023 10:28:54 PM
Surr: DNOP	87.9	69-147		%Rec	1	4/21/2023 10:28:54 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/21/2023 7:34:07 AM
Surr: BFB	92.2	37.7-212		%Rec	1	4/21/2023 7:34:07 AM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.024		mg/Kg	1	4/21/2023 7:34:07 AM
Toluene	ND	0.048		mg/Kg	1	4/21/2023 7:34:07 AM
Ethylbenzene	ND	0.048		mg/Kg	1	4/21/2023 7:34:07 AM
Xylenes, Total	ND	0.095		mg/Kg	1	4/21/2023 7:34:07 AM
Surr: 4-Bromofluorobenzene	96.6	70-130		%Rec	1	4/21/2023 7:34:07 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	ND	60		mg/Kg	20	4/24/2023 2:44:24 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2304732**
Date Reported: **4/28/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-16 2'
Project: Apache 25 Federal 009 **Collection Date:** 4/15/2023 12:30:00 PM
Lab ID: 2304732-035 **Matrix:** SOIL **Received Date:** 4/18/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	4/21/2023 10:39:34 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	4/21/2023 10:39:34 PM
Surr: DNOP	92.9	69-147		%Rec	1	4/21/2023 10:39:34 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/21/2023 7:57:35 AM
Surr: BFB	99.1	37.7-212		%Rec	1	4/21/2023 7:57:35 AM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.024		mg/Kg	1	4/21/2023 7:57:35 AM
Toluene	ND	0.048		mg/Kg	1	4/21/2023 7:57:35 AM
Ethylbenzene	ND	0.048		mg/Kg	1	4/21/2023 7:57:35 AM
Xylenes, Total	ND	0.096		mg/Kg	1	4/21/2023 7:57:35 AM
Surr: 4-Bromofluorobenzene	97.4	70-130		%Rec	1	4/21/2023 7:57:35 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	93	60		mg/Kg	20	4/24/2023 2:56:49 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2304732**

28-Apr-23

Client: Vertex Resources Services, Inc.

Project: Apache 25 Federal 009

Sample ID: **MB-74453** SampType: **MBLK** TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS** Batch ID: **74453** RunNo: **96218**
Prep Date: **4/20/2023** Analysis Date: **4/20/2023** SeqNo: **3484071** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-74453** SampType: **LCS** TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS** Batch ID: **74453** RunNo: **96218**
Prep Date: **4/20/2023** Analysis Date: **4/20/2023** SeqNo: **3484072** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	15	1.5	15.00	0	97.5	90	110			

Sample ID: **MB-74472** SampType: **MBLK** TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS** Batch ID: **74472** RunNo: **96218**
Prep Date: **4/20/2023** Analysis Date: **4/21/2023** SeqNo: **3484101** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-74472** SampType: **LCS** TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS** Batch ID: **74472** RunNo: **96218**
Prep Date: **4/20/2023** Analysis Date: **4/21/2023** SeqNo: **3484102** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	95.6	90	110			

Sample ID: **MB-74501** SampType: **MBLK** TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS** Batch ID: **74501** RunNo: **96239**
Prep Date: **4/21/2023** Analysis Date: **4/21/2023** SeqNo: **3484759** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-74501** SampType: **LCS** TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS** Batch ID: **74501** RunNo: **96239**
Prep Date: **4/21/2023** Analysis Date: **4/21/2023** SeqNo: **3484760** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	15	1.5	15.00	0	98.2	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2304732**

28-Apr-23

Client: Vertex Resources Services, Inc.

Project: Apache 25 Federal 009

Sample ID: **MB-74509**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS**	Batch ID: **74509**	RunNo: **96264**
Prep Date: **4/24/2023**	Analysis Date: **4/24/2023**	SeqNo: **3486650** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-74509**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS**	Batch ID: **74509**	RunNo: **96264**
Prep Date: **4/24/2023**	Analysis Date: **4/24/2023**	SeqNo: **3486651** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	92.7	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2304732**

28-Apr-23

Client: Vertex Resources Services, Inc.

Project: Apache 25 Federal 009

Sample ID: **MB-74430** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **74430** RunNo: **96162**
Prep Date: **4/19/2023** Analysis Date: **4/20/2023** SeqNo: **3482718** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	7.9		10.00		79.3	69	147			

Sample ID: **LCS-74430** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **74430** RunNo: **96162**
Prep Date: **4/19/2023** Analysis Date: **4/20/2023** SeqNo: **3482719** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	46	10	50.00	0	92.9	61.9	130			
Surr: DNOP	4.8		5.000		96.6	69	147			

Sample ID: **MB-74418** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **74418** RunNo: **96162**
Prep Date: **4/19/2023** Analysis Date: **4/20/2023** SeqNo: **3482949** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	10		10.00		104	69	147			

Sample ID: **LCS-74418** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **74418** RunNo: **96162**
Prep Date: **4/19/2023** Analysis Date: **4/20/2023** SeqNo: **3483127** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.0		5.000		79.1	69	147			

Sample ID: **LCS-74445** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **74445** RunNo: **96222**
Prep Date: **4/20/2023** Analysis Date: **4/21/2023** SeqNo: **3484229** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	44	10	50.00	0	87.0	61.9	130			
Surr: DNOP	4.8		5.000		96.9	69	147			

Sample ID: **LCS-74452** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **74452** RunNo: **96222**
Prep Date: **4/20/2023** Analysis Date: **4/21/2023** SeqNo: **3484230** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	39	10	50.00	0	78.3	61.9	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2304732**

28-Apr-23

Client: Vertex Resources Services, Inc.

Project: Apache 25 Federal 009

Sample ID: **LCS-74452**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **LCSS**	Batch ID: **74452**	RunNo: **96222**							
Prep Date: **4/20/2023**	Analysis Date: **4/21/2023**	SeqNo: **3484230**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.6		5.000		92.3	69	147			

Sample ID: **LCS-74475**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **LCSS**	Batch ID: **74475**	RunNo: **96222**							
Prep Date: **4/21/2023**	Analysis Date: **4/21/2023**	SeqNo: **3484233**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.8		5.000		96.6	69	147			

Sample ID: **MB-74445**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **PBS**	Batch ID: **74445**	RunNo: **96222**							
Prep Date: **4/20/2023**	Analysis Date: **4/21/2023**	SeqNo: **3484234**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	11		10.00		107	69	147			

Sample ID: **MB-74452**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **PBS**	Batch ID: **74452**	RunNo: **96222**							
Prep Date: **4/20/2023**	Analysis Date: **4/21/2023**	SeqNo: **3484235**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.3		10.00		93.2	69	147			

Sample ID: **MB-74475**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **PBS**	Batch ID: **74475**	RunNo: **96222**							
Prep Date: **4/21/2023**	Analysis Date: **4/21/2023**	SeqNo: **3484238**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	8.8		10.00		88.3	69	147			

Sample ID: **2304732-009AMS**	SampType: **MS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **BH23-04 2'**	Batch ID: **74445**	RunNo: **96222**							
Prep Date: **4/20/2023**	Analysis Date: **4/21/2023**	SeqNo: **3485122**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	66	9.3	46.30	0	143	54.2	135			S

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2304732**

28-Apr-23

Client: Vertex Resources Services, Inc.

Project: Apache 25 Federal 009

Sample ID: **2304732-009AMS**	SampType: **MS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **BH23-04 2'**	Batch ID: **74445**	RunNo: **96222**
Prep Date: **4/20/2023**	Analysis Date: **4/21/2023**	SeqNo: **3485122** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	8.2		4.630		178	69	147			S

Sample ID: **2304732-009AMSD**	SampType: **MSD**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **BH23-04 2'**	Batch ID: **74445**	RunNo: **96222**
Prep Date: **4/20/2023**	Analysis Date: **4/21/2023**	SeqNo: **3485123** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	45	9.9	49.50	0	90.8	54.2	135	38.3	29.2	R
Surr: DNOP	4.6		4.950		92.5	69	147	0	0	

Sample ID: **2304732-029AMS**	SampType: **MS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **BH23-13 2'**	Batch ID: **74452**	RunNo: **96222**
Prep Date: **4/20/2023**	Analysis Date: **4/21/2023**	SeqNo: **3485144** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	45	9.7	48.36	0	93.0	54.2	135			
Surr: DNOP	6.1		4.836		126	69	147			

Sample ID: **2304732-029AMSD**	SampType: **MSD**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **BH23-13 2'**	Batch ID: **74452**	RunNo: **96222**
Prep Date: **4/20/2023**	Analysis Date: **4/21/2023**	SeqNo: **3485145** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	45	9.6	47.89	0	93.4	54.2	135	0.529	29.2	
Surr: DNOP	6.6		4.789		137	69	147	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2304732**

28-Apr-23

Client: Vertex Resources Services, Inc.

Project: Apache 25 Federal 009

Sample ID: **lcs-74410**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **74410**	RunNo: **96201**
Prep Date: **4/19/2023**	Analysis Date: **4/20/2023**	SeqNo: **3483284** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	5.0	25.00	0	86.6	70	130			
Surr: BFB	2000		1000		195	37.7	212			

Sample ID: **mb-74410**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **74410**	RunNo: **96201**
Prep Date: **4/19/2023**	Analysis Date: **4/20/2023**	SeqNo: **3483285** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	900		1000		89.6	37.7	212			

Sample ID: **lcs-74401**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **74401**	RunNo: **96201**
Prep Date: **4/18/2023**	Analysis Date: **4/20/2023**	SeqNo: **3483312** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	2000		1000		201	37.7	212			

Sample ID: **mb-74401**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **74401**	RunNo: **96201**
Prep Date: **4/18/2023**	Analysis Date: **4/20/2023**	SeqNo: **3483313** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	900		1000		90.4	37.7	212			

Sample ID: **lcs-74436**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **74436**	RunNo: **96214**
Prep Date: **4/19/2023**	Analysis Date: **4/20/2023**	SeqNo: **3483918** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	5.0	25.00	0	86.7	70	130			
Surr: BFB	4800		1000		480	37.7	212			S

Sample ID: **mb-74436**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **74436**	RunNo: **96214**
Prep Date: **4/19/2023**	Analysis Date: **4/20/2023**	SeqNo: **3483920** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	1000		1000		102	37.7	212			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2304732**

28-Apr-23

Client: Vertex Resources Services, Inc.

Project: Apache 25 Federal 009

Sample ID: **2304732-029ams** SampType: **MS** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **BH23-13 2'** Batch ID: **74436** RunNo: **96214**
Prep Date: **4/19/2023** Analysis Date: **4/21/2023** SeqNo: **3483954** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	21	4.9	24.49	0	85.2	70	130			
Surr: BFB	4900		979.4		498	37.7	212			S

Sample ID: **2304732-029amsd** SampType: **MSD** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **BH23-13 2'** Batch ID: **74436** RunNo: **96214**
Prep Date: **4/19/2023** Analysis Date: **4/21/2023** SeqNo: **3483955** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	21	4.9	24.56	0	84.3	70	130	0.744	20	
Surr: BFB	5200		982.3		525	37.7	212	0	0	S

Sample ID: **2.5ug gro lcs** SampType: **LCS** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS** Batch ID: **GS96225** RunNo: **96225**
Prep Date: Analysis Date: **4/21/2023** SeqNo: **3484284** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	2200		1000		222	37.7	212			S

Sample ID: **mb** SampType: **MBLK** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS** Batch ID: **GS96225** RunNo: **96225**
Prep Date: Analysis Date: **4/21/2023** SeqNo: **3484285** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	1000		1000		101	37.7	212			

Sample ID: **lcs-74431** SampType: **LCS** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS** Batch ID: **74431** RunNo: **96225**
Prep Date: **4/19/2023** Analysis Date: **4/21/2023** SeqNo: **3485466** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	5.0	25.00	0	88.4	70	130			
Surr: BFB	2000		1000		197	37.7	212			

Sample ID: **mb-74431** SampType: **MBLK** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS** Batch ID: **74431** RunNo: **96225**
Prep Date: **4/19/2023** Analysis Date: **4/22/2023** SeqNo: **3485467** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	900		1000		90.1	37.7	212			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2304732**

28-Apr-23

Client: Vertex Resources Services, Inc.

Project: Apache 25 Federal 009

Sample ID: **2304732-009ams**	SampType: **MS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **BH23-04 2'**	Batch ID: **74431**	RunNo: **96225**
Prep Date: **4/19/2023**	Analysis Date: **4/22/2023**	SeqNo: **3485469** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	21	4.9	24.27	0	86.4	70	130			
Surr: BFB	1900		970.9		199	37.7	212			

Sample ID: **2304732-009amsd**	SampType: **MSD**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **BH23-04 2'**	Batch ID: **74431**	RunNo: **96225**
Prep Date: **4/19/2023**	Analysis Date: **4/22/2023**	SeqNo: **3485470** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	20	4.9	24.30	0	84.2	70	130	2.44	20	
Surr: BFB	1900		971.8		199	37.7	212	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2304732**

28-Apr-23

Client: Vertex Resources Services, Inc.

Project: Apache 25 Federal 009

Sample ID: **lcs-74401**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**							
Client ID: **LCSS**	Batch ID: **74401**	RunNo: **96201**							
Prep Date: **4/18/2023**	Analysis Date: **4/20/2023**	SeqNo: **3483335**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.88		1.000		88.2	70	130			

Sample ID: **mb-74401**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**							
Client ID: **PBS**	Batch ID: **74401**	RunNo: **96201**							
Prep Date: **4/18/2023**	Analysis Date: **4/20/2023**	SeqNo: **3483336**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.85		1.000		85.1	70	130			

Sample ID: **lcs-74410**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**							
Client ID: **LCSS**	Batch ID: **74410**	RunNo: **96201**							
Prep Date: **4/19/2023**	Analysis Date: **4/20/2023**	SeqNo: **3483359**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.85	0.025	1.000	0	84.7	80	120			
Toluene	0.85	0.050	1.000	0	84.7	80	120			
Ethylbenzene	0.83	0.050	1.000	0	83.0	80	120			
Xylenes, Total	2.5	0.10	3.000	0	82.2	80	120			
Surr: 4-Bromofluorobenzene	0.87		1.000		86.9	70	130			

Sample ID: **mb-74410**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**							
Client ID: **PBS**	Batch ID: **74410**	RunNo: **96201**							
Prep Date: **4/19/2023**	Analysis Date: **4/20/2023**	SeqNo: **3483360**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.85		1.000		85.1	70	130			

Sample ID: **LCS-74436**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**							
Client ID: **LCSS**	Batch ID: **74436**	RunNo: **96214**							
Prep Date: **4/19/2023**	Analysis Date: **4/20/2023**	SeqNo: **3484000**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.89	0.025	1.000	0	88.8	80	120			
Toluene	0.89	0.050	1.000	0	89.5	80	120			
Ethylbenzene	0.91	0.050	1.000	0	90.7	80	120			
Xylenes, Total	2.7	0.10	3.000	0	91.5	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2304732**

28-Apr-23

Client: Vertex Resources Services, Inc.

Project: Apache 25 Federal 009

Sample ID: **LCS-74436**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **74436**	RunNo: **96214**
Prep Date: **4/19/2023**	Analysis Date: **4/20/2023**	SeqNo: **3484000** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.99		1.000		99.0	70	130			

Sample ID: **mb-74436**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **74436**	RunNo: **96214**
Prep Date: **4/19/2023**	Analysis Date: **4/20/2023**	SeqNo: **3484002** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.99		1.000		98.8	70	130			

Sample ID: **2304732-030ams**	SampType: **MS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **BH23-14 0'**	Batch ID: **74436**	RunNo: **96214**
Prep Date: **4/19/2023**	Analysis Date: **4/21/2023**	SeqNo: **3484009** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.84	0.024	0.9597	0	87.8	68.8	120			
Toluene	0.87	0.048	0.9597	0.01689	89.0	73.6	124			
Ethylbenzene	0.88	0.048	0.9597	0	92.2	72.7	129			
Xylenes, Total	2.7	0.096	2.879	0	93.3	75.7	126			
Surr: 4-Bromofluorobenzene	0.95		0.9597		98.9	70	130			

Sample ID: **2304732-030amsd**	SampType: **MSD**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **BH23-14 0'**	Batch ID: **74436**	RunNo: **96214**
Prep Date: **4/19/2023**	Analysis Date: **4/21/2023**	SeqNo: **3484010** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.86	0.024	0.9506	0	90.1	68.8	120	1.69	20	
Toluene	0.89	0.048	0.9506	0.01689	91.3	73.6	124	1.57	20	
Ethylbenzene	0.90	0.048	0.9506	0	95.0	72.7	129	2.12	20	
Xylenes, Total	2.7	0.095	2.852	0	95.9	75.7	126	1.75	20	
Surr: 4-Bromofluorobenzene	0.95		0.9506		99.8	70	130	0	0	

Sample ID: **100ng btex lcs**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **BS96225**	RunNo: **96225**
Prep Date:	Analysis Date: **4/21/2023**	SeqNo: **3484287** Units: **%Rec**

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2304732**

28-Apr-23

Client: Vertex Resources Services, Inc.

Project: Apache 25 Federal 009

Sample ID: **100ng btex lcs**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **BS96225**	RunNo: **96225**
Prep Date:	Analysis Date: **4/21/2023**	SeqNo: **3484287** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.98		1.000		97.9	70	130			

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **BS96225**	RunNo: **96225**
Prep Date:	Analysis Date: **4/21/2023**	SeqNo: **3484288** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.95		1.000		95.2	70	130			

Sample ID: **lcs-74431**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **74431**	RunNo: **96225**
Prep Date: **4/19/2023**	Analysis Date: **4/22/2023**	SeqNo: **3485487** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.86	0.025	1.000	0	85.9	80	120			
Toluene	0.86	0.050	1.000	0	85.5	80	120			
Ethylbenzene	0.84	0.050	1.000	0	83.8	80	120			
Xylenes, Total	2.5	0.10	3.000	0	82.7	80	120			
Surr: 4-Bromofluorobenzene	0.90		1.000		89.8	70	130			

Sample ID: **mb-74431**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **74431**	RunNo: **96225**
Prep Date: **4/19/2023**	Analysis Date: **4/22/2023**	SeqNo: **3485488** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.86		1.000		85.7	70	130			

Sample ID: **2304732-010ams**	SampType: **MS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **BH23-04 4'**	Batch ID: **74431**	RunNo: **96225**
Prep Date: **4/19/2023**	Analysis Date: **4/22/2023**	SeqNo: **3485491** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.82	0.024	0.9560	0	85.6	68.8	120			
Toluene	0.83	0.048	0.9560	0	86.4	73.6	124			
Ethylbenzene	0.81	0.048	0.9560	0	85.2	72.7	129			
Xylenes, Total	2.4	0.096	2.868	0	84.3	75.7	126			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2304732**

28-Apr-23

Client: Vertex Resources Services, Inc.

Project: Apache 25 Federal 009

Sample ID: **2304732-010ams**	SampType: **MS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **BH23-04 4'**	Batch ID: **74431**	RunNo: **96225**
Prep Date: **4/19/2023**	Analysis Date: **4/22/2023**	SeqNo: **3485491** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.85		0.9560		88.5	70	130			

Sample ID: **2304732-010amsd**	SampType: **MSD**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **BH23-04 4'**	Batch ID: **74431**	RunNo: **96225**
Prep Date: **4/19/2023**	Analysis Date: **4/22/2023**	SeqNo: **3485492** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.82	0.024	0.9524	0	85.7	68.8	120	0.321	20	
Toluene	0.83	0.048	0.9524	0	87.2	73.6	124	0.549	20	
Ethylbenzene	0.83	0.048	0.9524	0	87.0	72.7	129	1.69	20	
Xylenes, Total	2.5	0.095	2.857	0	86.3	75.7	126	1.98	20	
Surr: 4-Bromofluorobenzene	0.84		0.9524		88.2	70	130	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: **Vertex Resources Services, Inc.** Work Order Number: **2304732** RcptNo: **1**

Received By: **Juan Rojas** **4/18/2023 7:30:00 AM**

Completed By: **Desiree Dominguez** **4/18/2023 10:40:32 AM**

Reviewed By: 4-18-23

Chain of Custody

1. Is Chain of Custody complete?	Yes ☐	No ☑	Not Present ☐
2. How was the sample delivered?	Courier		

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA?	Yes ☐	No ☐	NA ☑
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: JM 4/18/23

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

16. Additional remarks:

Client information incomplete/not provided on COC. -DAD 4/18/23

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.3	Good	Not Present	Morty		

Chain-of-Custody Record

Client: **Vertex**

(direct bill to Devon)

Mailing Address:

Phone #:

email or Fax#:

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance

☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:

☒ Standard ☒ Rush 5 Day

Project Name: **Apache 25 Federal #009**

Project #: **22E-02816-29**

Project Manager: Kent Stallings

kstallings@vertex.ca

Sampler: L. Pullman

On Ice: ~~☐ Yes~~ ☐ No

# of Coolers: 1 Marty

Cooler Temp(including CF): 1.3-0=1.3

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2304732	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
04/14/23	13:35	Soil	BH23-02 0'	1, 4oz jar		-001	X	X					X			
04/14/23	13:40	Soil	BH23-02 2'	1, 4oz jar		-002	X	X					X			
04/14/23	13:45	Soil	BH23-02 4'	1, 4oz jar		-003	X	X					X			
04/14/23	13:50	Soil	BH23-02 6'	1, 4oz jar		-004	X	X					X			
04/14/23	16:00	Soil	BH23-03 0'	1, 4oz jar		-005	X	X					X			
04/14/23	16:10	Soil	BH23-03 2'	1, 4oz jar		-006	X	X					X			
04/14/23	16:20	Soil	BH23-03 4'	1, 4oz jar		-007	X	X					X			
04/15/23	8:30	Soil	BH23-04 0'	1, 4oz jar		-008	X	X					X			
04/15/23	8:35	Soil	BH23-04 2'	1, 4oz jar		-009	X	X					X			
04/15/23	8:40	Soil	BH23-04 4'	1, 4oz jar		-010	X	X					X			
04/15/23	8:55	Soil	BH23-05 0'	1, 4oz jar		-011	X	X					X			
04/15/23	9:00	Soil	BH23-05 2'	1, 4oz jar		-012	X	X					X			

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
4-17-23	0700	[signature]	[signature]		4/17/23	0700
4/17/23	1900	[signature]	[signature]	courier	4/18/23	7:30

Remarks:

Direct bill to Devon, Dale Woodall

cc. kstallings@vertex.ca for Final Report

1/3

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Client: **Vertex**

(direct bill to Devon)

Mailing Address:

Phone #:

email or Fax#:

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance

☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:

☒ Standard ☒ Rush 5 Day

Project Name: **Apache 25 Federal #009**

Project #: **22E-02816-29**

Project Manager: Kent Stallings

kstallings@vertex.ca

Sampler: L. Pullman

On Ice: ~~☐ Yes~~ ☐ No

# of Coolers: 1 Marty

Cooler Temp(including CF): 1.3-0=1.3

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2304732	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
04/15/23	9:05	Soil	BH23-05 4'	1, 4oz jar		-013	X	X					X			
04/15/23	9:20	Soil	BH23-06 0'	1, 4oz jar		-014	X	X					X			
04/15/23	9:25	Soil	BH23-06 2'	1, 4oz jar		-015	X	X					X			
04/15/23	9:40	Soil	BH23-07 0'	1, 4oz jar		-016	X	X					X			
04/15/23	9:45	Soil	BH23-07 2'	1, 4oz jar		-017	X	X					X			
04/15/23	10:00	Soil	BH23-08 0'	1, 4oz jar		-018	X	X					X			
04/15/23	10:05	Soil	BH23-08 2'	1, 4oz jar		-019	X	X					X			
04/15/23	10:10	Soil	BH23-09 0'	1, 4oz jar		-020	X	X					X			
04/15/23	10:15	Soil	BH23-09 2'	1, 4oz jar		-021	X	X					X			
04/15/23	10:35	Soil	BH23-10 0'	1, 4oz jar		-022	X	X					X			
04/15/23	10:40	Soil	BH23-10 2'	1, 4oz jar		-023	X	X					X			
04/15/23	10:55	Soil	BH23-11 0'	1, 4oz jar		-024	X	X					X			

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
4-17-23	0700				4/17/23	0700
4/17/23	1900		Courier		4/18/23	7:30

Remarks:
Direct bill to Devon, Dale Woodall
cc. kstallings@vertex.ca for Final Report

2/2

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Client: **Vertex**

(direct bill to Devon)

Mailing Address:

Phone #:

email or Fax#:

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance

☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:

☒ Standard ☒ Rush 5 Day

Project Name:

Apache 25 Federal #009

Project #:

22E-02816-29

Project Manager:

Kent Stallings

kstallings@vertex.ca

Sampler: L. Pullman

On Ice: ☐ Yes ☐ No

# of Coolers: Monty

Cooler Temp(including CF): 1+3-0=1.3

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2304732	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
04/15/23	11:00	Soil	BH23-11 2'	1, 4oz jar		-025	X	X					X			
04/15/23	11:10	Soil	BH23-12 0'	1, 4oz jar		-026	X	X					X			
04/15/23	11:15	Soil	BH23-12 2'	1, 4oz jar		-027	X	X					X			
04/15/23	11:35	Soil	BH23-13 0'	1, 4oz jar		-028	X	X					X			
04/15/23	11:40	Soil	BH23-13 2'	1, 4oz jar		-029	X	X					X			
04/15/23	11:55	Soil	BH23-14 0'	1, 4oz jar		-030	X	X					X			
04/15/23	12:00	Soil	BH23-14 2'	1, 4oz jar		-031	X	X					X			
04/15/23	12:10	Soil	BH23-15 0'	1, 4oz jar		-032	X	X					X			
04/15/23	12:15	Soil	BH23-15 2'	1, 4oz jar		-033	X	X					X			
04/15/23	12:25	Soil	BH23-16 0'	1, 4oz jar		-034	X	X					X			
04/15/23	12:30	Soil	BH23-16 2'	1, 4oz jar		-035	X	X					X			

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
4-17-23	0730	Jake Pullman			4/17/23	0700
4/17/23	1940		Courier		4/18/23	7:30

Remarks:

Direct bill to Devon, Dale Woodall

cc. kstallings@vertex.ca for Final Report

3/3

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

ATTACHMENT 5

Closure Criteria Worksheet				
Site Name: Apache 25 Federal #009				
Spill Coordinates:		X: 32.361248	Y: -103.8309479	
Site Specific Conditions		**Value**	**Unit**	**Reference**
1	Depth to Groundwater	**Unknown, default to <50 feet bgs**	feet	1
2	Within 300 feet of any continuously flowing watercourse or any other significant watercourse	5,484	feet	2
3	Within 200 feet of any lakebed, sinkhole or playa lake (measured from the ordinary high-water mark)	7,496	feet	3
4	Within 300 feet from an occupied residence, school, hospital, institution or church	14,073	feet	4
5	i) Within 500 feet of a spring or a private, domestic fresh water well used by less than five households for domestic or stock watering purposes, **or**	4,327	feet	5
	ii) Within 1000 feet of any fresh water well or spring	4,327	feet	5
6	Within incorporated municipal boundaries or within a defined municipal fresh water field covered under a municipal ordinance adopted pursuant to Section 3-27-3 NMSA 1978 as amended, unless the municipality specifically approves	No	(Y/N)	6
7	Within 300 feet of a wetland	10,937	feet	7
8	Within the area overlying a subsurface mine	No	(Y/N)	8
9	Within an unstable area (Karst Map)	Low	Critical High Medium Low	9
10	Within a 100-year Floodplain	>500	year	10
11	Soil Type	Fine sand, sandy clay loam		11
12	Ecological Classification	Loamy sand		12
13	Geology	Eolian and piedmont deposits		13
	NMAC 19.15.29.12 E (Table 1) Closure Criteria	<50'	<50' 51-100' >100'	

National Water Information System: Web Interface

USGS Water Resources

Data Category: Groundwater | Geographic Area: United States | GO

Click to hideNews Bulletins

- Explore the *NEW* USGS National Water Dashboard interactive map to access real-time water data from over 13,500 stations nationwide.
- Full News

Groundwater levels for the Nation

Important: Next Generation Monitoring Location Page

Search Results -- 1 sites found

Agency code = usgs
site_no list =
- 322215103502701

Minimum number of levels = 1
Save file of selected sites to local disk for future upload

USGS 322215103502701 22S.30E.24.3334 P-14

Eddy County, New Mexico
Latitude 32°22'15", Longitude 103°50'27" NAD27
Land-surface elevation 3,360 feet above NGVD29
This well is completed in the Other aquifers (N9999OTHER) national aquifer.

Output formats

Table of data
Tab-separated data
Graph of data
Reselect period

Date	Time	? Water-level date-time accuracy	? Parameter code	Water level, feet below land surface	Water level, feet above specific vertical datum	Referenced vertical datum	? Status	? Method of measurement	? Measuring agency	? Source of measurement	? Wat leve appr stat
1977-02-24		D	62610		2941.00	NGVD29	1	O	USGS	S	
1977-02-24		D	62611		2942.63	NAVD88	1	O	USGS	S	
1977-02-24		D	72019	419.00			1	O	USGS	S	

Explanation

Section	Code	Description
Water-level date-time accuracy	D	Date is accurate to the Day
Parameter code	62610	Groundwater level above NGVD 1929, feet
Parameter code	62611	Groundwater level above NAVD 1988, feet
Parameter code	72019	Depth to water level, feet below land surface
Referenced vertical datum	NAVD88	North American Vertical Datum of 1988
Referenced vertical datum	NGVD29	National Geodetic Vertical Datum of 1929
Status	1	Static
Method of measurement	O	Observed.
Measuring agency	USGS	U.S. Geological Survey
Source of measurement	S	Measured by personnel of reporting agency.
Water-level approval status	A	Approved for publication -- Processing and review completed.

Questions about sites/data?
Feedback on this web site
Automated retrievals
Help
Data Tips
Explanation of terms
Subscribe for system changes
News

Accessibility FOIA Privacy Policies and Notices

U.S. Department of the Interior | U.S. Geological Survey

Title: Groundwater for USA: Water Levels
URL: https://nwis.waterdata.usgs.gov/nwis/gwlevels?

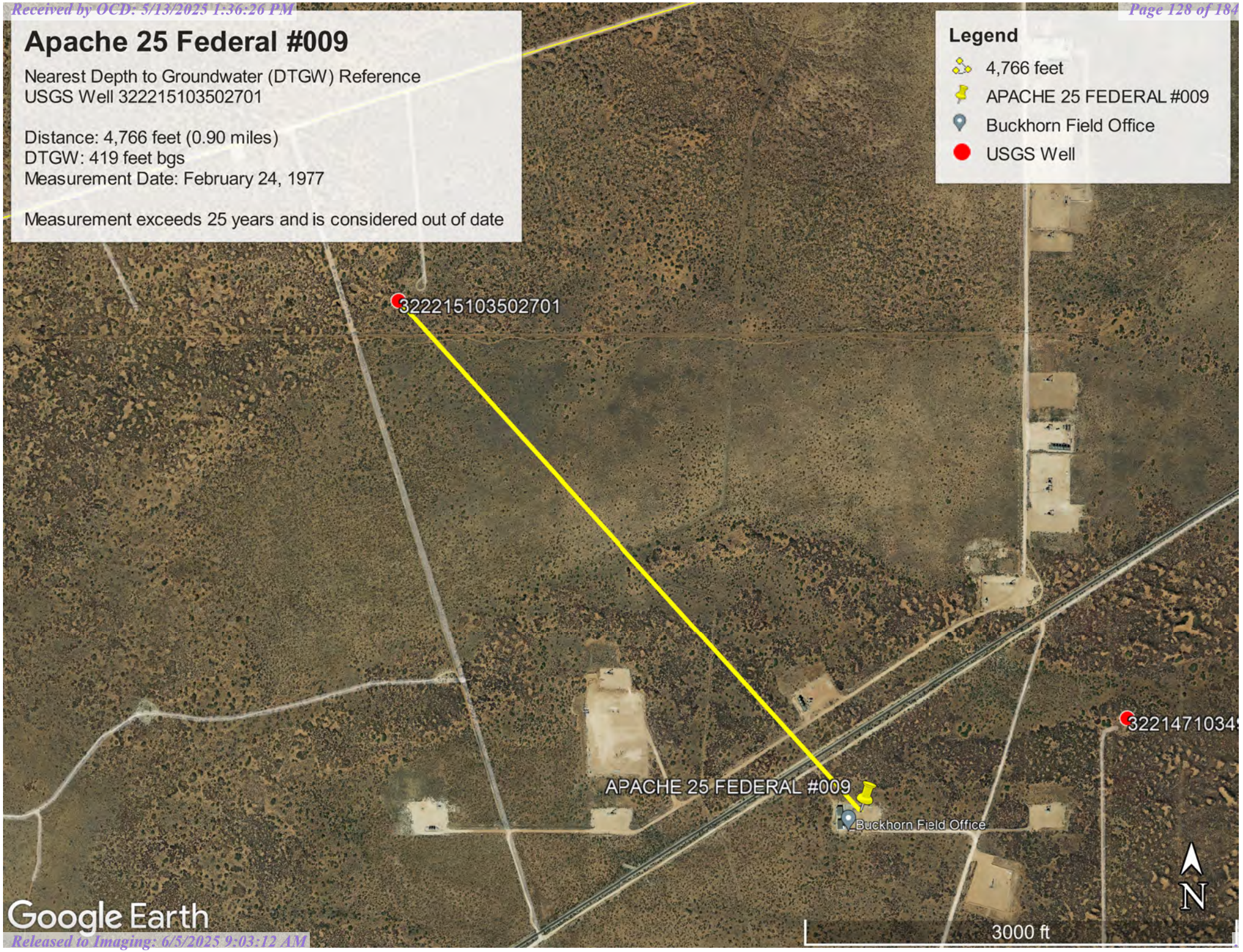
Page Contact Information: USGS Water Data Support Team
Page Last Modified: 2023-05-14 19:35:47 EDT
0.27 0.24 nadww02

Apache 25 Federal #009

Nearest Depth to Groundwater (DTGW) Reference
USGS Well 322215103502701

Distance: 4,766 feet (0.90 miles)
DTGW: 419 feet bgs
Measurement Date: February 24, 1977

Measurement exceeds 25 years and is considered out of date



OSE POD 0.5 mile

5/14/2023, 5:10:45 PM

GIS WATERS PODs

- Active
- Pending
- Plugged

OSE District Boundary

New Mexico State Trust Lands

Both Estates

NHD Flowlines

Stream River

SiteBoundaries

1:18,056

0 0.17 0.35 0.7 mi

0 0.3 0.6 1.2 km

U.S. Department of Energy Office of Legacy Management, Maxar

Web Generated Map

Map is generated by web users.

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

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

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

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

POD Number	Code	POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Twn	Rng	X	Y	Distance	Depth Well	Depth Water	Water Column
C 03221 EXPLORE		CUB	ED	1	2	1	30	22S	31E	610995	3581935*	1319	651		
C 02637		CUB	ED	1	3	3	24	22S	30E	608950	3582377*	1663	759		
C 03561 POD4		CUB	ED	3	2	3	36	22S	30E	609419	3579425	1749	25	0	25
C 03561 POD5		CUB	ED	3	2	3	36	22S	30E	609419	3579425	1749	20	0	20
C 03561 POD3		CUB	ED	3	2	3	36	22S	30E	609393	3579425	1758	25	0	25
C 03561 POD2		CUB	ED	3	2	3	36	22S	30E	609314	3579424	1787	25	0	25
C 03561 POD1		CUB	ED	3	2	3	36	22S	30E	609288	3579393	1826	30	0	30
C 02950 EXPL		CUB	ED	4	2	4	23	22S	30E	608740	3582576*	1950	845		

Average Depth to Water: **0 feet**
Minimum Depth: **0 feet**
Maximum Depth: **0 feet**

Record Count: 8

UTMNAD83 Radius Search (in meters):

Easting (X): 609991 **Northing (Y):** 3581079 **Radius:** 2000

***UTM location was derived from PLSS - see Help**

5/14/23 5:07 PM

WATER COLUMN/ AVERAGE DEPTH TO WATER

New Mexico Office of the State Engineer

Active & Inactive Points of Diversion

(with Ownership Information)

(acre ft per annum)

(R=POD has been replaced and no longer serves this file, C=the file is closed)

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

(quarters are smallest to largest)

(NAD83 UTM in meters)

WR File Nbr	Sub basin	Use	Diversion	Owner	County	POD Number	Well Tag	Code	Grant	Source	q 64	q 16	q 4	Sec	Tws	Rng	X	Y	Distance
C 04731	CUB	MON	0	ENSOLUM	ED	C 04731 POD1	NA				1	2	3	25	22S	30E	609329	3581147	665
C 03221	CUB	MON	0	U.S. DEPART OF ENERGY	ED	C 03221 EXPLORE				Artesian	1	2	1	30	22S	31E	610995	3581935*	1319
C 02637	CUB	MON	0	U.S. DEPARTMENT OF ENERGY	ED	C 02637					1	3	3	24	22S	30E	608950	3582377*	1663
C 04387	CUB	MON	0	LT ENVIRONMENTAL INC	ED	C 04387 POD1	NA				4	2	3	36	22S	30E	609542	3579414	1723
C 03561	CUB	EXP	0	BOPCO, LP	ED	C 03561 POD4					3	2	3	36	22S	30E	609418	3579425	1749
					ED	C 03561 POD5					3	2	3	36	22S	30E	609418	3579425	1749
					ED	C 03561 POD3					3	2	3	36	22S	30E	609392	3579425	1758
					ED	C 03561 POD2					3	2	3	36	22S	30E	609314	3579424	1787
					ED	C 03561 POD1					3	2	3	36	22S	30E	609288	3579393	1826
C 02950	CUB	EXP	0	US DEPT OF ENERGY CARLSBAD FIELD OFFICE, WIPP	ED	C 02950 EXPL				Shallow	4	2	4	23	22S	30E	608740	3582576*	1950

Record Count: 10

UTMNAD83 Radius Search (in meters):

Easting (X): 609991 **Northing (Y):** 3581079 **Radius:** 2000

Sorted by: Distance

***UTM location was derived from PLSS - see Help**

U.S. Fish and Wildlife Service
National Wetlands Inventory

Intermittent 5,484 feet

May 15, 2023

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

U.S. Fish and Wildlife Service
National Wetlands Inventory

Pond 7,496 feet

May 15, 2023

Wetlands

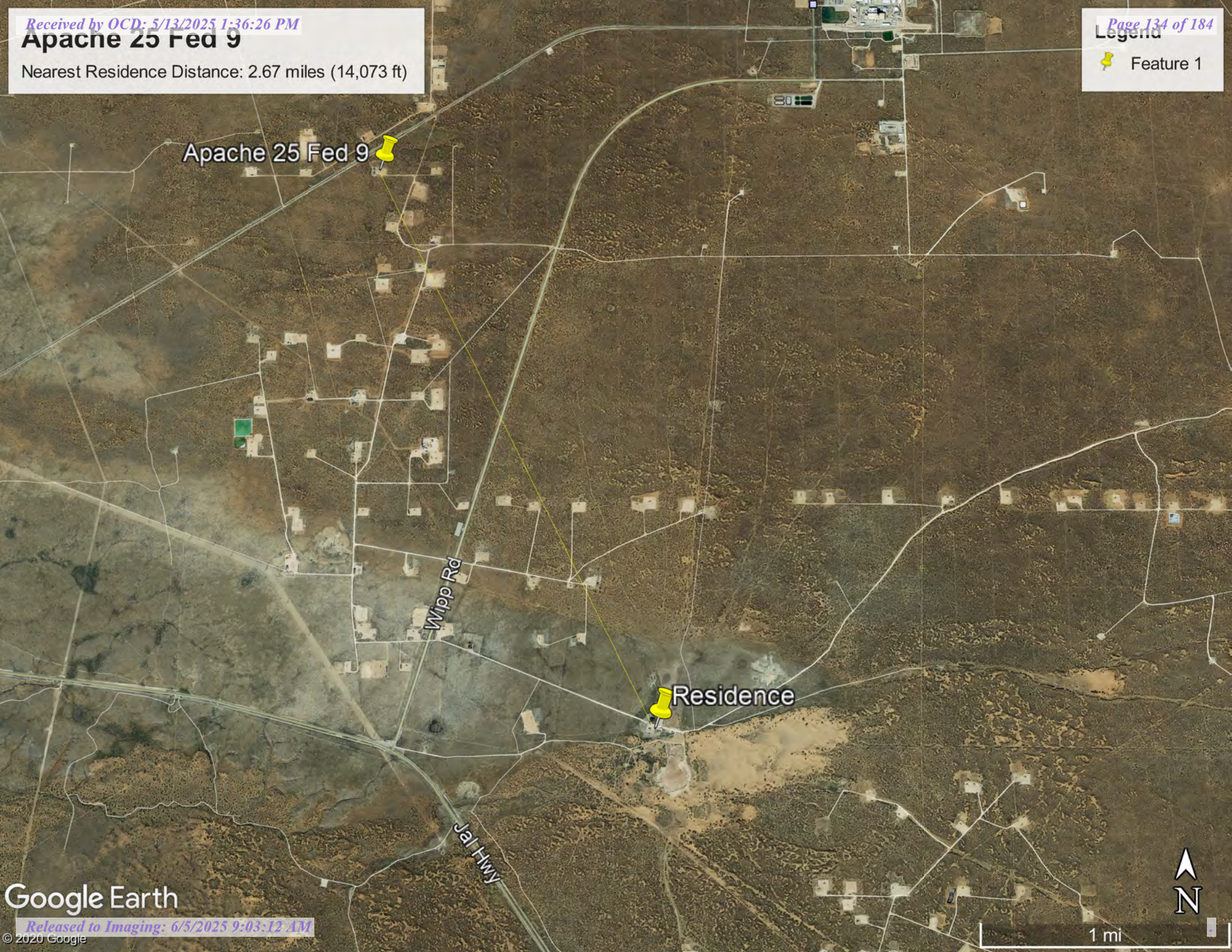
- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

Apache 25 Fed 9

Nearest Residence Distance: 2.67 miles (14,073 ft)



New Mexico Office of the State Engineer
Point of Diversion Summary

Well Tag	POD Number	(quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest) Q64	Q16	Q4	Sec	Twn	Rng	(NAD83 UTM in meters) X	Y
	C 03221 EXPLORE	1	2	1	30	22S	31E	610995	3581935*

Driller License: 1184 **Driller Company:** WEST TEXAS WATER WELL SERVICE

Driller Name: KEITH, LARRY

Drill Start Date:	05/30/2006	**Drill Finish Date:**	06/16/2006	**Plug Date:**	
Log File Date:	06/30/2006	**PCW Rcv Date:**		**Source:**	Artesian
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	
Casing Size:	12.75	**Depth Well:**	651 feet	**Depth Water:**	

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Water Right Summary

WR File Number: C 03221 **Subbasin:** CUB **Cross Reference:** -

Primary Purpose: MON MONITORING WELL

Primary Status: PMT PERMIT

Total Acres: **Subfile:** - **Header:** -

Total Diversion: 0 **Cause/Case:** -

Owner: U.S. DEPART OF ENERGY

Contact: HAROLD JOHNSON

Documents on File

Trn #	Doc	File/Act	Status 1	Status 2	Transaction Desc.	From/ To	Acres	Diversion	Consumptive
337501	EXPL	2005-07-26	PMT	LOG	C 03221 MONITORING WELL	T	0	0	

Current Points of Diversion

(NAD83 UTM in meters)

POD Number	Well Tag	Source	Q 64	Q16	Q4	Sec	Tws	Rng	X	Y	Other Location Desc
C 03221 EXPLORE		Artesian	1	2	1	30	22S	31E	610995	3581935*	

***An (*) after northing value indicates UTM location was derived from PLSS - see Help**

Source

Acres	Diversion	CU	Use	Priority	Source	Description
0	0		MON		GW	

New Mexico Office of the State Engineer
Transaction Summary

EXPL Permit To Explore

Transaction Number: 337501 **Transaction Desc:** C 03221 MONITORING WELL **File Date:** 07/25/2005

Primary Status: PMT Permit
Secondary Status: LOG Well Log Received
Person Assigned: *******
Applicant: U.S. DEPART OF ENERGY
Contact: HAROLD JOHNSON

Events

Date	Type	Description	Comment	Processed By
07/25/2005	APP	Application Received	*	*******
07/26/2005	FTN	Finalize non-published Trans.		*******
08/08/2005	QAT	Quality Assurance Completed	QA EXPL	*******
08/12/2005	QAT	Quality Assurance Completed	QC EXPL	*******
06/30/2006	LOG	Well Log Received		*******

Water Right Information

WR File Nbr	Acres	Diversion	Consumptive	Purpose of Use
C 03221	0	0		MON MONITORING WELL

****Point of Diversion**

C 03221 EXPLORE		610995	3581935*

***An (*) after northing value indicates UTM location was derived from PLSS - see Help**

Remarks

THE INTENT OF THIS APPLICATION IS TO PROVIDE AUTHORIZATION TO CONFIGURE A WELL TO ACCESS THE CULEBRA DOLOMITE MEMBER OF THE RUSTLER FORMATION (~650'BGS) FOR MONITORING PURPOSES ONLY. THIS WELL WILL BE CONFIGURED WITH 5.5" FIBERGLASS CASING AND

A WELL SCREEN (@ ~600'FT BGS). SEE ATTACHED JUSTIFICATION (WELL BORE ENTITLED SNL 10).

Conditions

2	The well shall be constructed to artesian well specifications and the State Engineer shall be notified before casing is landed or cemented
4	No water shall be appropriated and beneficially used under this permit.
B	The well shall be drilled by a driller licensed in the State of New Mexico in accordance with Section 72-12-12 New Mexico Statutes Annotated.
C	Driller's well record must be filed with the State Engineer within 10 days after the well is drilled or driven. Well record forms will be provided by the State Engineer upon request.

CT A complete and properly executed Well Record on the form provided by the State Engineer shall be filed not later than ten (10) days after completion of the well. Test data shall be filed not later than ten (10) days after completion of the test(s).

x

Action of the State Engineer

**** See Image For Any Additional Conditions of Approval ****

Approval Code: A - Approved

Action Date: 07/26/2005

PCW Due Date: 07/31/2006

State Engineer: John R. D Antonio,

5/14/23 5:22 PM

TRANSACTION SUMMARY

New Mexico Office of the State Engineer

Point of Diversion Summary

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

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
NA	C 04731 POD1	1	2	3	25	22S	30E	609329	3581147

Driller License: **Driller Company:**

Driller Name:

Drill Start Date: **Drill Finish Date:** **Plug Date:**

Log File Date: **PCW Rcv Date:** **Source:**

Pump Type: **Pipe Discharge Size:** **Estimated Yield:**

Casing Size: **Depth Well:** **Depth Water:**

New Mexico Office of the State Engineer
Water Right Summary

WR File Number: C 04731 **Subbasin:** CUB **Cross Reference:** -

Primary Purpose: MON MONITORING WELL

Primary Status: PMT PERMIT

Total Acres: **Subfile:** - **Header:** -

Total Diversion: 0 **Cause/Case:** -

Owner: XTO ENERGY, INC

Contact: GARRETT GREEN

Owner: ENSOLUM

Contact: TACOMA MORRISSEY

Documents on File

Trn #	Doc	File/Act	Status 1	Status 2	Transaction Desc.	From/ To	Acres	Diversion	Consumptive
745536	EXPL	2023-04-10	PMT	APR	C 04731 POD1	T	0	0	

Current Points of Diversion

(NAD83 UTM in meters)

POD Number	Well Tag	Source	Q 64	Q16	Q4	Sec	Tws	Rng	X	Y	Other Location Desc
C 04731 POD1	NA		1	2	3	25	22S	30E	609329	3581147	

New Mexico Office of the State Engineer
Transaction Summary

EXPL Permit To Explore

Transaction Number: 745536 **Transaction Desc:** C 04731 POD1 **File Date:** 04/05/2023

Primary Status: PMT Permit
Secondary Status: APR Approved
Person Assigned: *******
Applicant: XTO ENERGY, INC
Contact: GARRETT GREEN
Applicant: ENSOLUM
Contact: TACOMA MORRISSEY

Events

Date	Type	Description	Comment	Processed By
04/05/2023	APP	Application Received	*	*******
04/05/2023	TEC	Technical Report	*PLG PLN OPS C-	*******
04/10/2023	FTN	Finalize non-published Trans.		*******

Water Right Information

WR File Nbr	Acres	Diversion	Consumptive	Purpose of Use
C 04731	0	0		MON MONITORING WELL
**Point of Diversion				
C 04731 POD1		609329	3581147	

Conditions

1A Depth of the well shall not exceed the thickness of the valley fill.

4 No water shall be appropriated and beneficially used under this permit.

B The well shall be drilled by a driller licensed in the State of New Mexico in accordance with 72-12-12 NMSA 1978. A licensed driller shall not be required for the construction of a well driven without the use of a drill rig, provided that the casing shall not exceed two and three-eighths (2 3/8) inches outside diameter.

C The well driller must file the well record with the State Engineer and the applicant within 30 days after the well is drilled or driven. It is the well owner's responsibility to ensure that the well driller files the well record. The well driller may obtain the well record form from any District Office or the Office of the State Engineer website.

6 The well authorized by this permit shall be plugged completely using the following method per Rules and Regulations Governing Well Driller Licensing, Construction, Repair and Plugging of Wells; Subsection C of 19.27.4.30 NMAC unless an alternative plugging method is proposed by the well owner and approved by the State Engineer upon completion of the permitted use. All pumping appurtenance shall be removed from the well prior to plugging. To plug a well, the entire well shall be filled from the bottom upwards to ground surface using a tremie pipe. The bottom of the tremie shall remain submerged in the

sealant throughout the entire sealing process; other placement methods may be acceptable

7 The Permittee shall utilize the highest and best technology available to ensure conservation of water to the maximum extent practical.

16 Construction of a water well by anyone without a valid New Mexico Well Driller License is illegal, and the landowner shall bear the cost of plugging the well by a licensed New Mexico well driller. This does not apply to driven wells, the casing of which does not exceed two and three-eighths inches outside diameter.

P The well shall be constructed, maintained, and operated to prevent inter-aquifer exchange of water and to prevent loss of hydraulic head between hydrogeologic zones.

Q The State Engineer retains jurisdiction over this permit.

R Pursuant to section 72-8-1 NMSA 1978, the permittee shall allow the State Engineer and OSE representatives entry upon private property for the performance of their respective duties, including access to the ditch or acequia to measure flow and also to the well for meter reading and water level measurement.

---

x

Action of the State Engineer

IT IS THE PERMITEE'S RESPONSIBILITY TO OBTAIN ALL AUTHORIZATIONS AND PERMISSIONS TO DRILL ON PROPERTY OF OTHER OWNERSHIP BEFORE COMMENCING ACTIVITIES UNDER THIS PERMIT.

**** See Image For Any Additional Conditions of Approval ****

Approval Code: A - Approved

Action Date: 04/10/2023

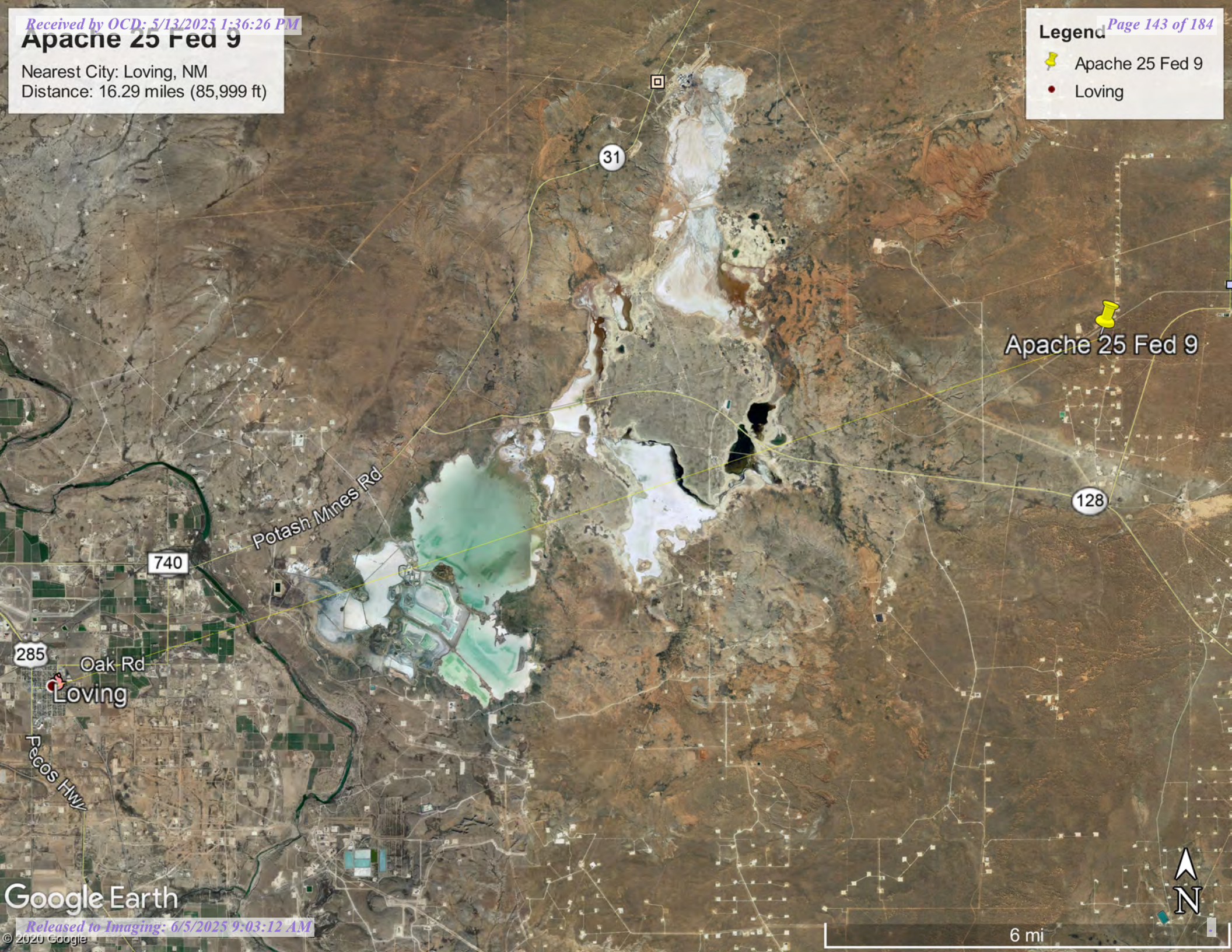
Log Due Date: 04/09/2024

State Engineer: Mike A. Hamman, P.

5/14/23 5:16 PM TRANSACTION SUMMARY

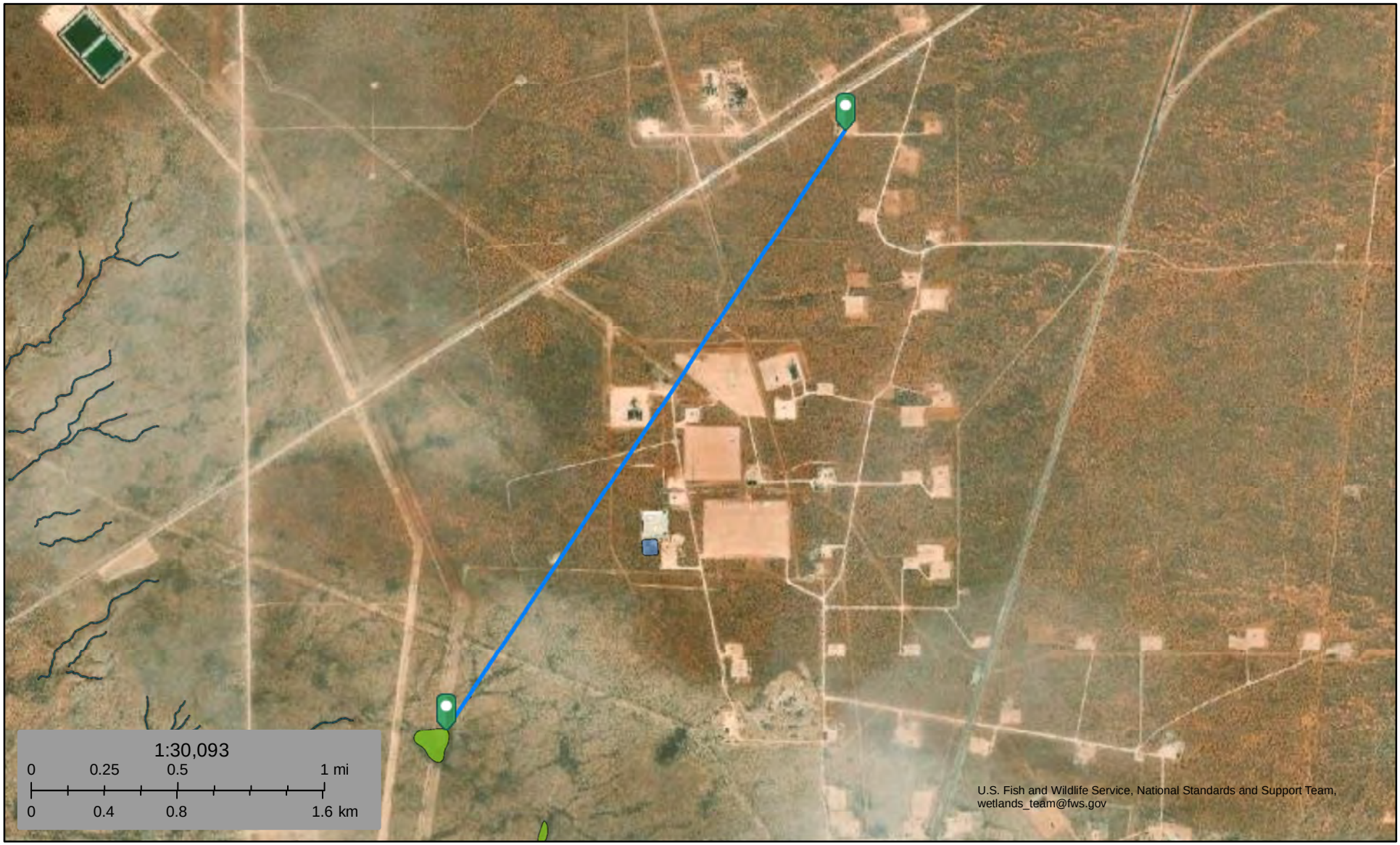
Apache 25 Fed 9

Nearest City: Loving, NM
Distance: 16.29 miles (85,999 ft)



U.S. Fish and Wildlife Service
National Wetlands Inventory

Wetland 10,937 feet



May 15, 2023

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

Apache 25 to Closest Mine - 3.07 Miles

4/19/2021, 9:37:03 PM

1:72,224

0 0.5 1 2 mi

0 0.75 1.5 3 km

U.S. Bureau of Land Management - New Mexico State Office, Bureau of Land Management, Texas Parks & Wildlife, Esri, HERE, Garmin, INCREMENT P, USGS, METI/NASA, NGA, EPA, USDA

Township / Range

Sections

Land Ownership

Bureau of Land Management

Bureau of Reclamation

Department of Agriculture

Department of Defense

Department of Energy

National Park Service

Private Land

State Game and Fish

State Land

State Parks

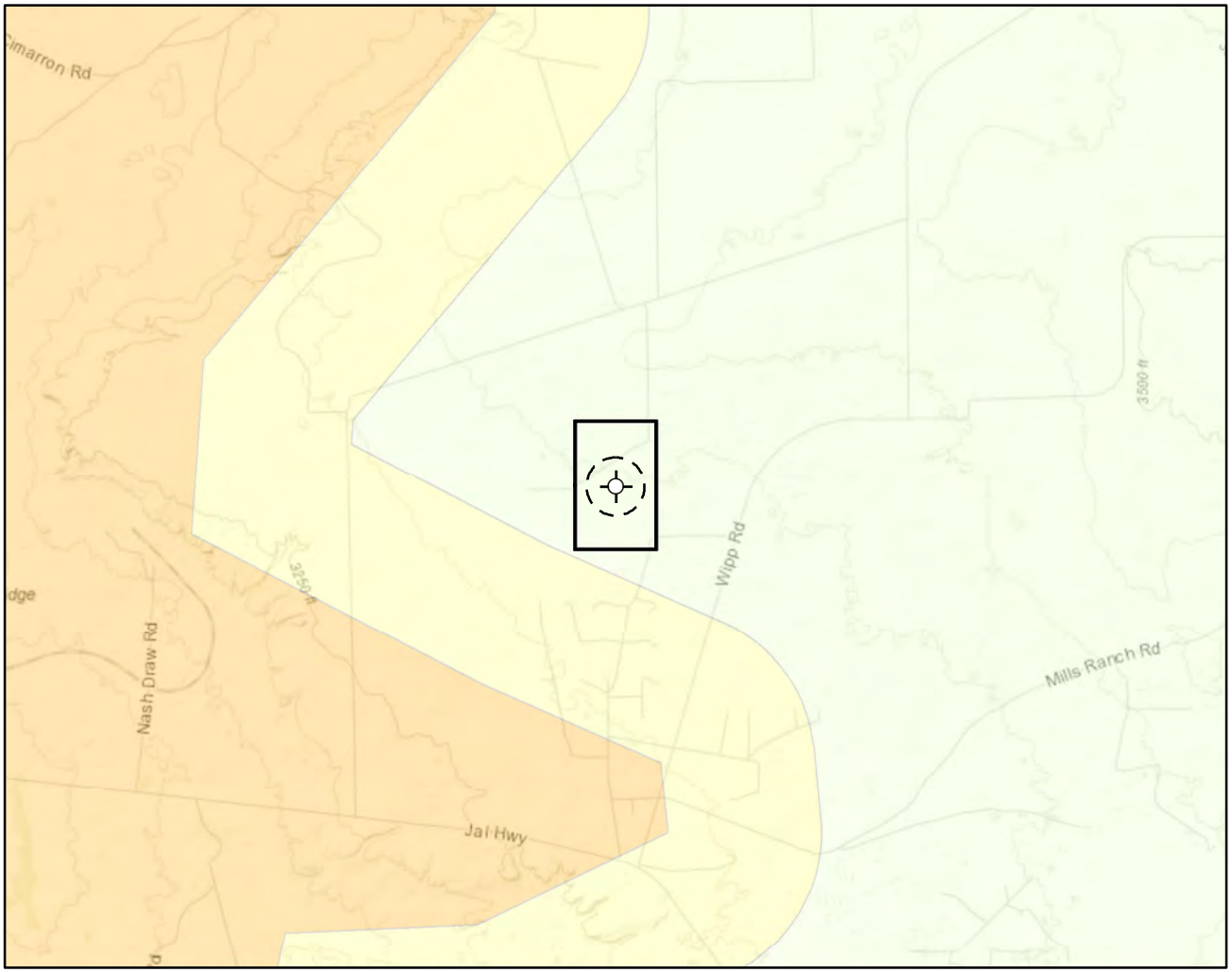
Tribal

US Fish and Wildlife Service

US Forest Service

EMNRD MMD GIS Coordinator

NM Energy, Minerals and Natural Resources Department (http://nm-emnrd.maps.arcgis.com/apps/webappviewer/index.html?id=1b5e577974664d689b47790897ca2795)



Karst Potential

- Critical
- High
- Medium
- Low

- Site
- Site Buffer (1000 ft.)

Overview Map

0 0.25 0.5 1 mi

Detail Map

0 150 300 600 ft.

VERTEX

Map Center:
Lat/Long: 32.361248, -103.830948

NAD 1983 UTM Zone 13N
Date: Jul 03/20

N

Karst Potential
Apache 25 Fed 9

FIGURE:
X

devon

Geospatial data presented in this figure may be derived from external sources and Vertex does not assume any liability for inaccuracies. This figure is intended for reference use only and is not certified for legal, survey, or engineering purposes.

Note: Inset Map, ESRI 20XX; Overview Map: ESRI World Topographic

VERSATILITY. EXPERTISE.

Document Path: G:\1-Projects_US PROJECTS\Devon Energy Corporation\20E-00141\053 -Apache 25 Fed 9\Fig X Karst Potential Apache 25 Fed 9.mxd

National Flood Hazard Layer FIRMette

FEMA

103°50'10"W 32°21'56"N

103°49'33"W 32°21'26"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/19/2021 at 5:21 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Eddy Area, New Mexico

Apache 25 Federal 9

April 19, 2021

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

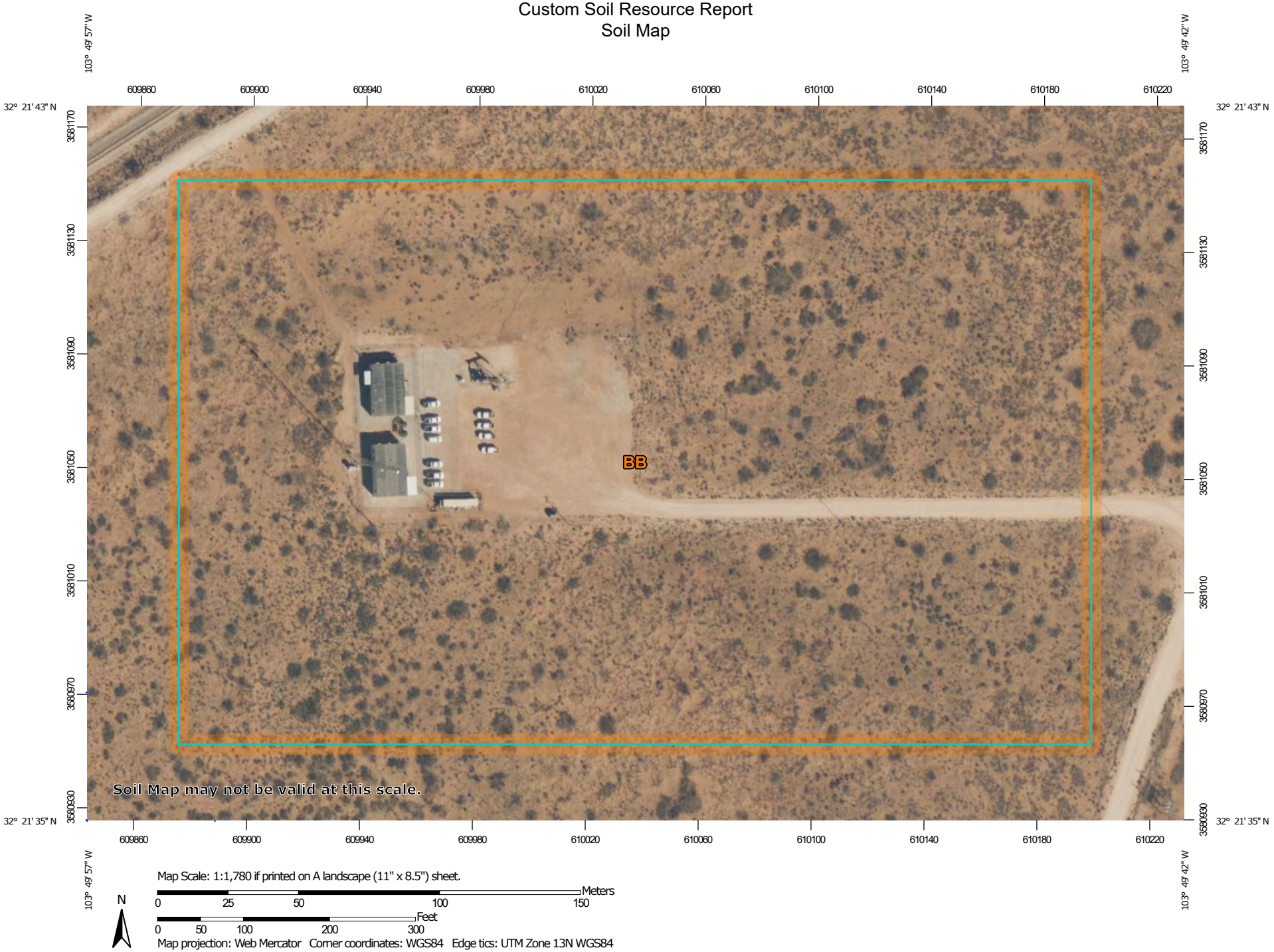
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Eddy Area, New Mexico
Survey Area Data: Version 16, Jun 8, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Feb 7, 2020—May 12, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BB	Berino complex, 0 to 3 percent slopes, eroded	16.0	100.0%
Totals for Area of Interest		**16.0**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Eddy Area, New Mexico

BB—Berino complex, 0 to 3 percent slopes, eroded

Map Unit Setting

National map unit symbol: 1w43
Elevation: 2,000 to 5,700 feet
Mean annual precipitation: 5 to 15 inches
Mean annual air temperature: 57 to 70 degrees F
Frost-free period: 180 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Berino and similar soils: 60 percent
Pajarito and similar soils: 25 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Berino

Setting

Landform: Fan piedmonts, plains
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Mixed alluvium and/or eolian sands

Typical profile

H1 - 0 to 17 inches: fine sand
H2 - 17 to 58 inches: sandy clay loam
H3 - 58 to 60 inches: loamy sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Maximum salinity: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water capacity: Moderate (about 8.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: R042XC003NM - Loamy Sand
Hydric soil rating: No

Description of Pajarito

Setting

Landform: Interdunes, plains, dunes
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Parent material: Mixed alluvium and/or eolian sands

Typical profile

H1 - 0 to 9 inches: loamy fine sand
H2 - 9 to 72 inches: fine sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Maximum salinity: Nonsaline (0.0 to 1.0 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water capacity: Moderate (about 8.0 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Ecological site: R042XC003NM - Loamy Sand
Hydric soil rating: No

Minor Components

Cacique

Percent of map unit: 4 percent
Ecological site: R042XC004NM - Sandy
Hydric soil rating: No

Pajarito

Percent of map unit: 4 percent
Ecological site: R042XC003NM - Loamy Sand
Hydric soil rating: No

Wink

Percent of map unit: 4 percent
Ecological site: R042XC003NM - Loamy Sand
Hydric soil rating: No

Kermit

Percent of map unit: 3 percent
Ecological site: R042XC005NM - Deep Sand
Hydric soil rating: No

Custom Soil Resource Report

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

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USDA Natural Resources Conservation Service

Ecological site R070BD003NM
Loamy Sand

Accessed: 05/15/2023

General information

Provisional. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

Figure 1. Mapped extent

Areas shown in blue indicate the maximum mapped extent of this ecological site. Other ecological sites likely occur within the highlighted areas. It is also possible for this ecological site to occur outside of highlighted areas if detailed soil survey has not been completed or recently updated.

Associated sites

R070BD004NM	**Sandy** Sandy
R070BD005NM	**Deep Sand** Deep Sand

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site is on uplands, plains, dunes, fan piedmonts and in inter dunal areas. The parent material consists of mixed alluvium and or eolian sands derived from sedimentary rock. Slope range on this site range from 0 to 9 percent with the average of 5 percent.

Low stabilized dunes may occur occasionally on this site. Elevations range from 2,800 to 5,000 feet.

Table 2. Representative physiographic features

Landforms	(1) Fan piedmont (2) Alluvial fan (3) Dune
Elevation	2,800–5,000 ft
Slope	0–9%
Aspect	Aspect is not a significant factor

Climatic features

The average annual precipitation ranges from 8 to 13 inches. Variations of 5 inches, more or less, are common. Over 80 percent of the precipitation falls from April through October. Most of the summer precipitation comes in the form of high intensity-short duration thunderstorms.
Temperatures are characterized by distinct seasonal changes and large annual and diurnal temperature changes.

The average annual temperature is 61 degrees with extremes of 25 degrees below zero in the winter to 112 degrees in the summer.
The average frost-free season is 207 to 220 days. The last killing frost being late March or early April and the first killing frost being in later October or early November.
Temperature and rainfall both favor warm season perennial plant growth. In years of abundant spring moisture, annual forbs and cool season grasses can make up an important component of this site. Strong winds blow from the southwest from January through June, which accelerates soil drying during a critical period for cool season plant growth.

Climate data was obtained from http://www.wrcc.sage.dri.edu/summary/climsmnm.html web site using 50% probability for freeze-free and frost-free seasons using 28.5 degrees F and 32.5 degrees F respectively.

Table 3. Representative climatic features

Frost-free period (average)	221 days
Freeze-free period (average)	240 days
Precipitation total (average)	13 in

Influencing water features

This site is not influenced from water from wetlands or streams.

Soil features

Soils are moderately deep or very deep. Surface textures are loamy fine sand, fine sandy loam, loamy very fine sand or gravelly sandy loam.

Subsurface is a loamy fine sand, coarse sandy loam, fine sandy loam or loam that averages less than 18 percent clay and less than 15 percent carbonates.

Substratum is a fine sandy loam or gravelly fine sandy loam with less than 15 percent gravel and with less than 40 percent calcium carbonate. Some layers high in lime or with caliche fragments may occur at depths of 20 to 30 inches.

These soils, if unprotected by plant cover and organic residue, become wind blown and low hummocks are formed.

Minimum and maximum values listed below represent the characteristic soils for this site.

Characteristic soils are:
Maljamar
Berino
Parjarito
Palomas
Wink
Pyote

Table 4. Representative soil features

Surface texture	(1) Fine sand (2) Fine sandy loam (3) Loamy fine sand
Family particle size	(1) Sandy
Drainage class	Well drained to somewhat excessively drained
Permeability class	Moderate to moderately rapid

Soil depth	40–72 in
Surface fragment cover <=3"	0–10%
Surface fragment cover >3"	0%
Available water capacity (0-40in)	5–7 in
Calcium carbonate equivalent (0-40in)	3–40%
Electrical conductivity (0-40in)	2–4 mmhos/cm
Sodium adsorption ratio (0-40in)	0–2
Soil reaction (1:1 water) (0-40in)	6.6–8.4
Subsurface fragment volume <=3" (Depth not specified)	4–12%
Subsurface fragment volume >3" (Depth not specified)	0%

Ecological dynamics

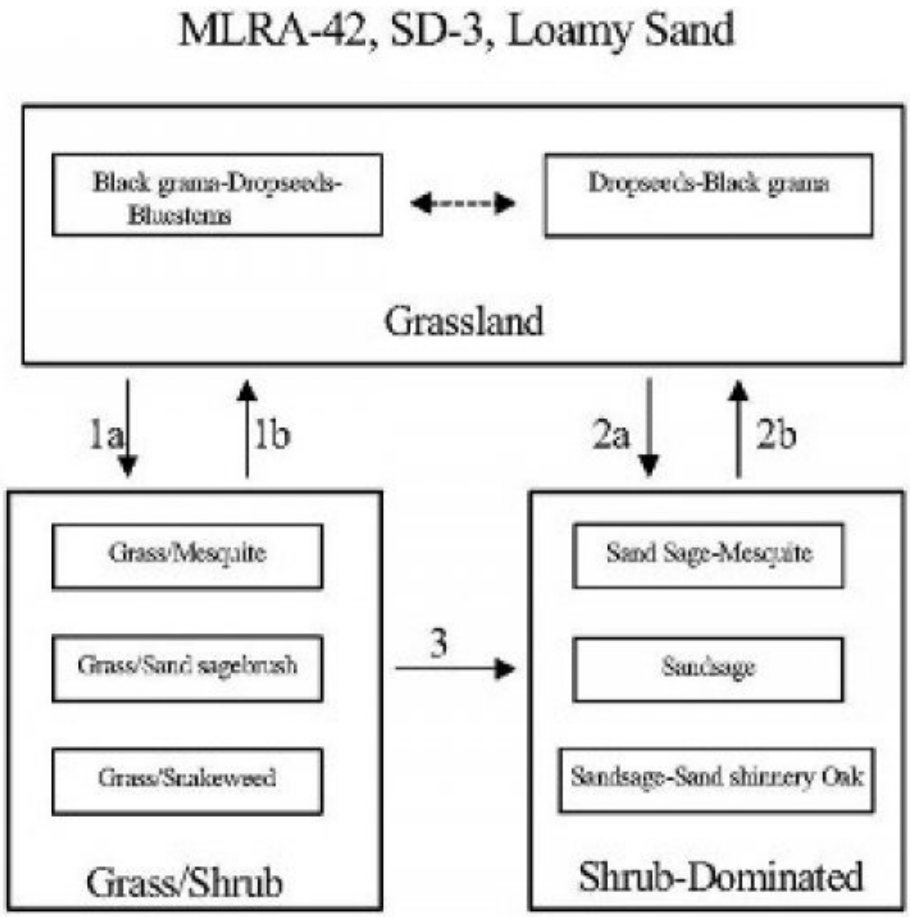
Overview

The Loamy Sand site intergrades with the Deep Sand and Sandy sites (SD-3). These sites can be differentiated by surface soil texture and depth to a textural change. Loamy Sand and Deep Sand sites have coarse textured (sands and loamy sand) surface soils while Sandy sites have moderately coarse textured (sandy loam and fine sandy loam) surfaces. Although Loamy Sand and Deep Sand sites have similar surface textures, the depth to a textural change is different—Loamy Sand sub-surface textures typically increase in clay at approximately 20 to 30 inches, and Deep Sand sites not until around 40 inches.

The historic plant community of Loamy Sand sites is dominated by black grama (*Bouteloua eriopoda*), dropseeds (*Sporobolus flexuosus*, *S. contractus*, *S. cryptandrus*), and bluestems (*Schizachyrium scoparium* and *Andropogon hallii*), with scattered shinnery oak (*Quercus havardii*) and sand sage (*Artemisia filifolia*). Perennial and annual forb abundance and distribution are dependent on precipitation. Litter and to a lesser extent, bare ground, are a significant proportion of ground cover while grasses compose the remainder. Decreases in black grama indicate a transition to either a grass/shrub or shrub-dominated state. The grass/shrub state is composed of grasses/honey mesquite (*Prosopis glandulosa*), grasses/broom snakeweed (*Gutierrezia sarothrae*), or grasses/sand sage. The shrub-dominated state occurs after a severe loss of grass cover and a prevalence of sand sage with secondary shinnery oak and mesquite. Heavy grazing intensity and/or drought are influential drivers in decreasing black grama and bluestems and subsequently increasing shrub cover, erosion, and bare patches. Historical fire suppression also encourages shrub pervasiveness and a competitive advantage over grass species (McPherson 1995). Brush and grazing management, however, may reverse grass/shrub and shrub-dominated states toward the grassland-dominated historic plant community.

State and transition model

Plant Communities and Transitional Pathways (diagram):



1a. Drought, over grazing, fire suppression.
1b. Brush control, prescribed grazing

2.a Severe loss of grass cover, fire suppression, erosion.
2b. Brush control, seeding, prescribed grazing.

3. Continued loss of grass cover, erosion.

State 1
Historic Climax Plant Community

Community 1.1
Historic Climax Plant Community

Grassland: The historic plant community is a uniformly distributed grassland dominated by black grama, dropseeds, and bluestems. Sand sage and shinnery oak are evenly dispersed throughout the grassland due to the coarse soil

surface texture. Perennial and annual forbs are common but their abundance and distribution are reflective of precipitation. Bluestems initially, followed by black grama, decrease with drought and heavy grazing intensity. Historical fire frequency is unknown but likely occurred enough to remove small shrubs to the competitive advantage of grass species. Fire suppression, drought conditions, and excessive grazing drive most grass species out of competition with shrub species. Diagnosis: Grassland dominated by black grama, dropseeds, and bluestems. Shrubs, such as sand sage, shinnery oak, and mesquite are dispersed throughout the grassland. Forbs are present and populations fluctuate with precipitation variability.

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	442	833	1224
Forb	110	208	306
Shrub/Vine	98	184	270
Total	**650**	**1225**	**1800**

Table 6. Ground cover

Tree foliar cover	0%
Shrub/vine/liana foliar cover	0%
Grass/grasslike foliar cover	28%
Forb foliar cover	0%
Non-vascular plants	0%
Biological crusts	0%
Litter	50%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	22%

Figure 5. Plant community growth curve (percent production by month). NM2803, R042XC003NM-Loamy Sand-HCPC. SD-3 Loamy Sand - Warm season plant community .

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	3	5	10	10	25	30	12	5	0	0

State 2
Grass/Shrub

Community 2.1
Grass/Shrub

Grass/Shrub State: The grass/shrub state is dominated by communities of grasses/mesquite, grasses/snakeweed, or grasses/sand sage. Decreases in black grama and bluestem species lead to an increase in bare patches and mesquite which further competes with grass species. An increase of dropseeds and threeawns occurs. Grass distribution becomes more patchy with an absence or severe decrease in black grama and bluestems. Mesquite provides nitrogen and soil organic matter to co-dominant grasses (Ansley and Jacoby 1998, Ansley et al. 1998). Mesquite mortality when exposed to fire is low due to aggressive resprouting abilities. Herbicide application combined with subsequent prescribed fire may be more effective in mesquite reduction (Britton and Wright 1971). Diagnosis: This state is dominated by an increased abundance of communities including grass/mesquite, grass/snakeweed, or grass/sand sage. Dropseeds and threeawns have a patchy distribution. Transition to Grass/Shrub State (1a): The historic plant community begins to shift toward the grass/shrub state as drivers such as drought, fire suppression, interspecific competition, and excessive grazing contribute to alterations in soil properties and herbaceous cover. Cover loss and surface soil erosion are initial indicators of transition followed by a decrease in black grama with a subsequent increase of dropseeds, threeawns, mesquite, and snakeweed. Snakeweed has been documented to outcompete black grama especially under conditions of fire suppression and drought (McDaniel et al. 1984). Key indicators of approach to transition: • Loss of black grama cover • Surface soil erosion • Bare patch expansion • Increased dropseed/threeawn and mesquite, snakeweed, or sand sage abundances Transition to Historic Plant Community (1b): Brush and grazing management may restore the grassland component and reverse shrub or grass/shrub dominated states back toward the historic plant community.

State 3
Shrub Dominated

Community 3.1
Shrub Dominated

Shrub-Dominated State: The shrub-dominated state results from a severe loss of grass cover. This state's primary species is sand sage. Shinnery oak and mesquite also occur; however, grass cover is limited to intershrub distribution. Sand sage stabilizes light sandy soils from wind erosion, which enhances protected grass/forb cover (Davis and Bonham 1979). However, shinnery oak also responds to the sandy soils with dense stands due to an

aggressive rhizome system. Shinnery oak's extensive root system promotes competitive exclusion of grasses and forbs. Sand sage, shinnery oak, and mesquite can be controlled with herbicide (Herbel et al. 1979, Pettit 1986). Transition to Shrub-Dominated (2a): Severe loss of grass species with increased erosion and fire suppression will result in a transition to a shrub-dominated state with sand sage, Shin oak, and honey mesquite directly from the grassland-dominated state. Key indicators of approach to transition: • Severe loss of grass species cover • Surface soil erosion • Bare patch expansion • Increased sand sage, shinnery oak, and mesquite abundance Transition to Historic Plant Community (2b): Brush and grazing management may restore the grassland component and reverse shrub or grass/shrub dominated states back toward the historic plant community. In addition, seeding with native grass species will augment the transition to a grassland-dominated state. Transition to Shrub-Dominated (3): If the grass/shrub site continues to lose grass cover with soil erosion, the site will transition to a shrub-dominated state with sand sage, shinnery oak, and honey mesquite. Key indicators of approach to transition: • Continual loss of dropseeds/threeawns cover • Surface soil erosion • Bare patch expansion • Increased sand sage, shinnery oak, and mesquite/dropseed/threeawn and mesquite/snakeweed abundance

Additional community tables

Table 7. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
Grass/Grasslike					
1	**Warm Season**			61–123	
	little bluestem	SCSC	*Schizachyrium scoparium*	61–123	–
2	**Warm Season**			37–61	
	sand bluestem	ANHA	*Andropogon hallii*	37–61	–
3	**Warm Season**			37–61	
	cane bluestem	BOBA3	*Bothriochloa barbinodis*	37–61	–
	silver bluestem	BOSA	*Bothriochloa saccharoides*	37–61	–
4	**Warm Season**			123–184	
	black grama	BOER4	*Bouteloua eriopoda*	123–184	–
	bush muhly	MUPO2	*Muhlenbergia porteri*	123–184	–
5	**Warm Season**			123–184	
	thin paspalum	PASE5	*Paspalum setaceum*	123–184	–
	plains bristlegrass	SEVU2	*Setaria vulpiseta*	123–184	–
	fringed signalgrass	URCI	*Urochloa ciliatissima*	123–184	–
6	**Warm Season**			123–184	
	spike dropseed	SPCO4	*Sporobolus contractus*	123–184	–
	sand dropseed	SPCR	*Sporobolus cryptandrus*	123–184	–
	mesa dropseed	SPFL2	*Sporobolus flexuosus*	123–184	–
7	**Warm Season**			61–123	
	hooded windmill grass	CHCU2	*Chloris cucullata*	61–123	–
	Arizona cottontop	DICA8	*Digitaria californica*	61–123	–
9	**Other Perennial Grasses**			37–61	
	Grass, perennial	2GP	*Grass, perennial*	37–61	–
Shrub/Vine					
8	**Warm Season**			37–61	
	New Mexico feathergrass	HENE5	*Hesperostipa neomexicana*	37–61	–
	giant dropseed	SPGI	*Sporobolus giganteus*	37–61	–
10	**Shrub**			61–123	

	sand sagebrush	ARFI2	*Artemisia filifolia*	61–123	–
	Havard oak	QUHA3	*Quercus havardii*	61–123	–
11	**Shrub**			34–61	
	fourwing saltbush	ATCA2	*Atriplex canescens*	37–61	–
	featherplume	DAFO	*Dalea formosa*	37–61	–
12	**Shrub**			37–61	
	jointfir	EPHED	*Ephedra*	37–61	–
	littleleaf ratany	KRER	*Krameria erecta*	37–61	–
13	**Other Shrubs**			37–61	
	Shrub (>.5m)	2SHRUB	*Shrub (>.5m)*	37–61	–
Forb					
14	**Forb**			61–123	
	leatherweed	CRPOP	*Croton pottsii var. pottsii*	61–123	–
	Indian blanket	GAPU	*Gaillardia pulchella*	61–123	–
	globemallow	SPHAE	*Sphaeralcea*	61–123	–
15	**Forb**			12–37	
	woolly groundsel	PACA15	*Packera cana*	12–37	–
16	**Forb**			61–123	
	touristplant	DIWI2	*Dimorphocarpa wislizeni*	61–123	–
	woolly plantain	PLPA2	*Plantago patagonica*	61–123	–
17	**Other Forbs**			37–61	
	Forb (herbaceous, not grass nor grass-like)	2FORB	*Forb (herbaceous, not grass nor grass-like)*	37–61	–

Animal community

This Ecological Site provides habitat which supports a resident animal community that is characterized by pronghorn antelope, desert cottontail, spotted ground squirrel, black-tailed prairie dog, yellow faced pocket gopher, Ord’s kangaroo rat, northern grasshopper mouse, southern plains woodrat, badger, roadrunner, meadowlark, burrowing owl, white necked raven, lesser prairie chicken, morning dove, scaled quail, Harris hawk, side blotched lizard, marbled whiptail, Texas horned lizard, western diamondback rattlesnake, dusty hognose snake and ornate box turtle.
Where mesquite has invaded, most resident birds and scissor-tailed flycatcher, morning dove and Swainson’s hawk, nest. Vesper and grasshopper sparrows utilize the site during migration.

Hydrological functions

The runoff curve numbers are determined by field investigations using hydraulic cover conditions and hydrologic soil groups.
Hydrologic Interpretations
Soil Series Hydrologic Group
Berino B
Kinco A
Maljamar B
Pajarito B
Palomas B
Wink B
Pyote A

Recreational uses

This site offers recreation potential for hiking, borseback riding, nature observation, photography and hunting. During years of abundant spring moisture, this site displays a colorful array of wildflowers during May and June.

Wood products

This site has no potential for wood products.

Other products

This site is suitable for grazing by all kinds and classes of livestock at any time of year. In cases where this site has been invaded by brush species it is especially suited for goats. Mismanagement of this site will cause a decrease in species such as the bluestems, blsck grama, bush muhly, plains bristlegrass, New Mexico feathergrass, Arizona cottontop and fourwing saltbush. A corresponding increase in the dropseeds, windmill grass, fall witchgrass, silver bluestem, sand sagebrush, shinery oak and ephedra will occur. This will also cause an increase in bare ground which will increase soil erodibility. This site will respond well to a system of management that rotates the season of use.

Other information

Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month
Similarity Index Ac/AUM
100 - 76 2.3 – 3.5
75 – 51 3.0 – 4.5
50 – 26 4.6 – 9.0
25 – 0 9.1 +

Inventory data references

Data collection for this site was done in conjunction with the progressive soil surveys within the Southern Desertic Basins, Plains and Mountains, Major Land Resource Areas of New Mexico. This site has been mapped and correlated with soils in the following soil surveys. Eddy County, Lea County, and Chaves County.

Other references

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Contributors

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Quinn Hodgson

Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

Author(s)/participant(s)	
Contact for lead author	
Date	
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:**

2. **Presence of water flow patterns:**

3. **Number and height of erosional pedestals or terracettes:**

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):**

5. **Number of gullies and erosion associated with gullies:**

6. **Extent of wind scoured, blowouts and/or depositional areas:**

7. **Amount of litter movement (describe size and distance expected to travel):**

---

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):**

---

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**

---

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:**

---

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):**

---

12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**

    Dominant:

    Sub-dominant:

    Other:

    Additional:

---

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):**

---

14. **Average percent litter cover (%) and depth (in):**

---

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):**

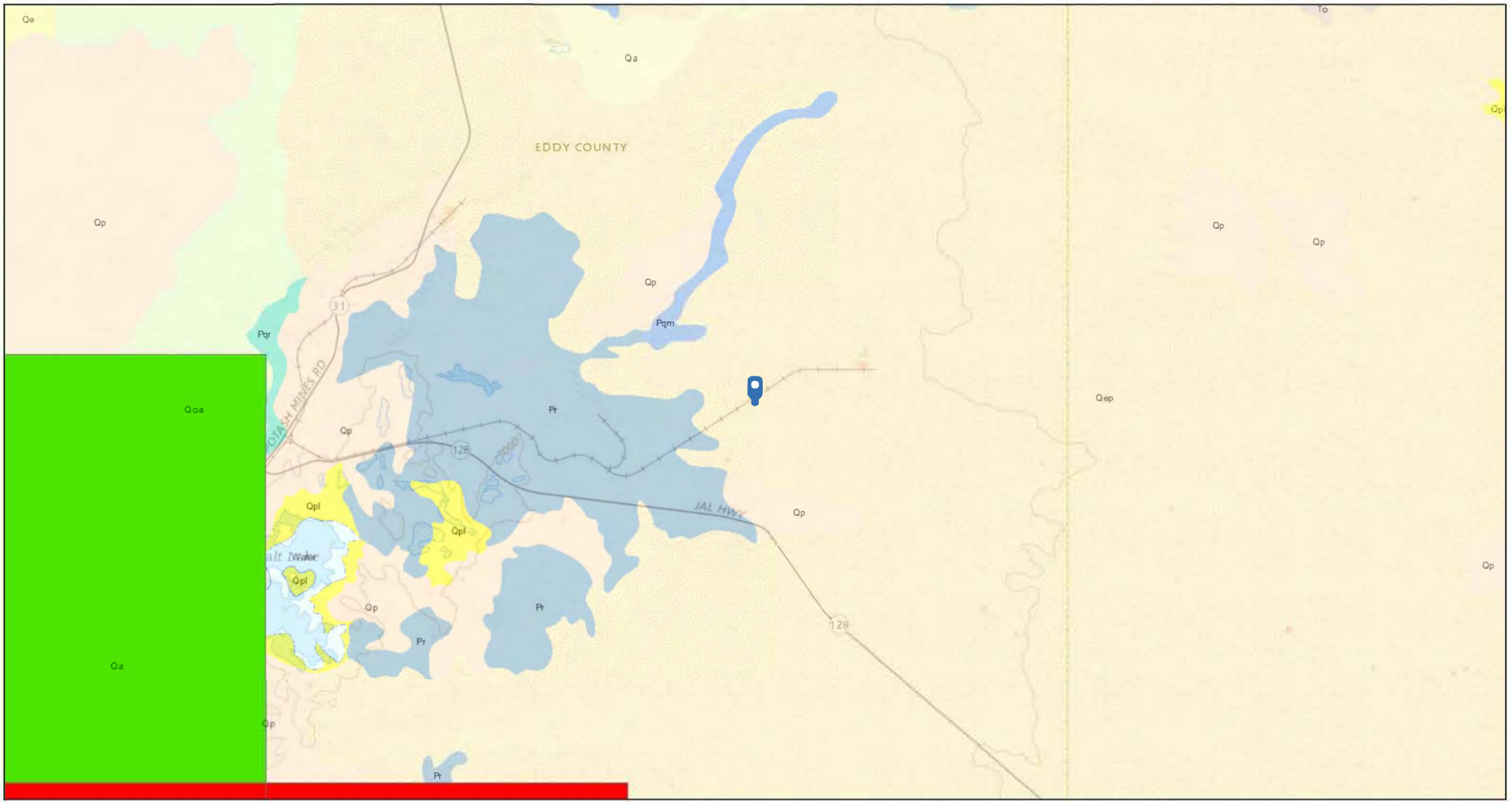
---

16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:**

---

17. **Perennial plant reproductive capability:**

Apache 25 Fed 9 Qep



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0 1.5 3 6 mi

0 2.5 5 10 km

Faults

- Fault, Exposed
- Fault, Intermittent
- Fault, Concealed
- Shere Zone

Dikes

- <all other values>
- Dike
- Dike intruding fault
- Volcanic Vents

STATEMAP (1993 to Present) [Publications]

- Mapping in Complete
- Mapping in Progress

NMBGMR, USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset;

Web AppBuilder for ArcGIS

USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line

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Online Phone Directory
https://www.emnrd.nm.gov/ocd/contact-us

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

QUESTIONS

Action 460164

QUESTIONS

Operator: HARVARD PETROLEUM COMPANY, LLC P.O. Box 936 Roswell, NM 88202	OGRID: 10155
	Action Number: 460164
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

QUESTIONS

Prerequisites	
Incident ID (n#)	**nAB1803838673**
Incident Name	**NAB1803838673 APACHE 25 FEDERAL #009 @ 30-015-32797**
Incident Type	**Produced Water Release**
Incident Status	**Remediation Plan Received**
Incident Well	**[30-015-32797] APACHE 25 FEDERAL #009**

Location of Release Source	
Please answer all the questions in this group.	
Site Name	APACHE 25 FEDERAL #009
Date Release Discovered	01/23/2018
Surface Owner	Federal

Incident Details	
Please answer all the questions in this group.	
Incident Type	Produced Water Release
Did this release result in a fire or is the result of a fire	No
Did this release result in any injuries	No
Has this release reached or does it have a reasonable probability of reaching a watercourse	No
Has this release endangered or does it have a reasonable probability of endangering public health	No
Has this release substantially damaged or will it substantially damage property or the environment	No
Is this release of a volume that is or may with reasonable probability be detrimental to fresh water	No

Nature and Volume of Release	
Material(s) released, please answer all that apply below. Any calculations or specific justifications for the volumes provided should be attached to the follow-up C-141 submission.	
Crude Oil Released (bbls) Details	Cause: Equipment Failure | Flow Line - Production | Crude Oil | Released: 2 BBL | Recovered: 2 BBL | Lost: 0 BBL.
Produced Water Released (bbls) Details	Cause: Equipment Failure | Flow Line - Production | Produced Water | Released: 5 BBL | Recovered: 2 BBL | Lost: 3 BBL.
Is the concentration of chloride in the produced water >10,000 mg/l	No
Condensate Released (bbls) Details	*Not answered.*
Natural Gas Vented (Mcf) Details	*Not answered.*
Natural Gas Flared (Mcf) Details	*Not answered.*
Other Released Details	*Not answered.*
Are there additional details for the questions above (i.e. any answer containing Other, Specify, Unknown, and/or Fire, or any negative lost amounts)	*Not answered.*

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

QUESTIONS (continued)

Operator: HARVARD PETROLEUM COMPANY, LLC P.O. Box 936 Roswell, NM 88202	OGRID: 10155
	Action Number: 460164
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

QUESTIONS

Nature and Volume of Release (continued)	
Is this a gas only submission (i.e. only significant Mcf values reported)	**No, according to supplied volumes this does not appear to be a "gas only" report.**
Was this a major release as defined by Subsection A of 19.15.29.7 NMAC	**No**
Reasons why this would be considered a submission for a notification of a major release	*Unavailable.*
With the implementation of the 19.15.27 NMAC (05/25/2021), venting and/or flaring of natural gas (i.e. gas only) are to be submitted on the C-129 form.	

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	True
The impacted area has been secured to protect human health and the environment	True
Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices	True
All free liquids and recoverable materials have been removed and managed appropriately	True
If all the actions described above have not been undertaken, explain why	*Not answered.*
Per Paragraph (4) of Subsection B of 19.15.29.8 NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please prepare and attach a narrative of actions to date in the follow-up C-141 submission. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see Subparagraph (a) of Paragraph (5) of Subsection A of 19.15.29.11 NMAC), please prepare and attach all information needed for closure evaluation in the follow-up C-141 submission.	

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.

I hereby agree and sign off to the above statement	Name: Roni Kidd Title: Business Manager Email: rkidd@buckhornproduction.com Date: 05/08/2025

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QUESTIONS (continued)

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	Action Number: 460164
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

QUESTIONS

Site Characterization	
Please answer all the questions in this group (only required when seeking remediation plan approval and beyond). 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 in feet below ground surface (ft bgs)	Between 26 and 50 (ft.)
What method was used to determine the depth to ground water	NM OSE iWaters Database Search
Did this release impact groundwater or surface water	No
What is the minimum distance, between the closest lateral extents of the release and the following surface areas:	
A continuously flowing watercourse or any other significant watercourse	Greater than 5 (mi.)
Any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)	Between 1 and 5 (mi.)
An occupied permanent residence, school, hospital, institution, or church	Between 1 and 5 (mi.)
A spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes	Between ½ and 1 (mi.)
Any other fresh water well or spring	Between ½ and 1 (mi.)
Incorporated municipal boundaries or a defined municipal fresh water well field	Greater than 5 (mi.)
A wetland	Between ½ and 1 (mi.)
A subsurface mine	Greater than 5 (mi.)
An (non-karst) unstable area	Between ½ and 1 (mi.)
Categorize the risk of this well / site being in a karst geology	Low
A 100-year floodplain	Between 1 and 5 (mi.)
Did the release impact areas not on an exploration, development, production, or storage site	No

Remediation Plan	
Please answer all the questions that apply or are indicated. This information must be provided to the appropriate district office no later than 90 days after the release discovery date.	
Requesting a remediation plan approval with this submission	Yes
Attach a comprehensive report demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined, pursuant to 19.15.29.11 NMAC and 19.15.29.13 NMAC.	
Have the lateral and vertical extents of contamination been fully delineated	Yes
Was this release entirely contained within a lined containment area	No
Soil Contamination Sampling: (Provide the highest observable value for each, in milligrams per kilograms.)	
Chloride (EPA 300.0 or SM4500 Cl B)	1400
TPH (GRO+DRO+MRO) (EPA SW-846 Method 8015M)	7400
GRO+DRO (EPA SW-846 Method 8015M)	4000
BTEX (EPA SW-846 Method 8021B or 8260B)	0
Benzene (EPA SW-846 Method 8021B or 8260B)	0
Per Subsection B of 19.15.29.11 NMAC unless the site characterization report includes completed efforts at remediation, the report must include a proposed remediation plan in accordance with 19.15.29.12 NMAC, which includes the anticipated timelines for beginning and completing the remediation.	
On what estimated date will the remediation commence	05/09/2025
On what date will (or did) the final sampling or liner inspection occur	07/15/2025
On what date will (or was) the remediation complete(d)	07/15/2025
What is the estimated surface area (in square feet) that will be reclaimed	3197
What is the estimated volume (in cubic yards) that will be reclaimed	142
What is the estimated surface area (in square feet) that will be remediated	3197
What is the estimated volume (in cubic yards) that will be remediated	142
These estimated dates and measurements are recognized to be the best guess or calculation at the time of submission and may (be) change(d) over time as more remediation efforts are completed.	
The OCD recognizes that proposed remediation measures may have to be minimally adjusted in accordance with the physical realities encountered during remediation. If the responsible party has any need to significantly deviate from the remediation plan proposed, then it should consult with the division to determine if another remediation plan submission is required.	

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QUESTIONS (continued)

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QUESTIONS

Remediation Plan (continued)	
Please answer all the questions that apply or are indicated. This information must be provided to the appropriate district office no later than 90 days after the release discovery date.	
This remediation will (or is expected to) utilize the following processes to remediate / reduce contaminants:	
(Select all answers below that apply.)	
(Ex Situ) Excavation and **off-site** disposal (i.e. dig and haul, hydrovac, etc.)	Yes
Which OCD approved facility will be used for **off-site** disposal	HALFWAY DISPOSAL AND LANDFILL [fEEM0112334510]
OR which OCD approved well (API) will be used for **off-site** disposal	*Not answered.*
OR is the **off-site** disposal site, to be used, out-of-state	*Not answered.*
OR is the **off-site** disposal site, to be used, an NMED facility	*Not answered.*
(Ex Situ) Excavation and **on-site** remediation (i.e. On-Site Land Farms)	No
(In Situ) Soil Vapor Extraction	*Not answered.*
(In Situ) Chemical processing (i.e. Soil Shredding, Potassium Permanganate, etc.)	*Not answered.*
(In Situ) Biological processing (i.e. Microbes / Fertilizer, etc.)	*Not answered.*
(In Situ) Physical processing (i.e. Soil Washing, Gypsum, Disking, etc.)	*Not answered.*
Ground Water Abatement pursuant to 19.15.30 NMAC	*Not answered.*
OTHER (Non-listed remedial process)	*Not answered.*
Per Subsection B of 19.15.29.11 NMAC unless the site characterization report includes completed efforts at remediation, the report must include a proposed remediation plan in accordance with 19.15.29.12 NMAC, which includes the anticipated timelines for beginning and completing the remediation.	
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.	
I hereby agree and sign off to the above statement	Name: Roni Kidd Title: Business Manager Email: rkidd@buckhornproduction.com Date: 05/08/2025
The OCD recognizes that proposed remediation measures may have to be minimally adjusted in accordance with the physical realities encountered during remediation. If the responsible party has any need to significantly deviate from the remediation plan proposed, then it should consult with the division to determine if another remediation plan submission is required.	

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QUESTIONS (continued)

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QUESTIONS

Deferral Requests Only *Only answer the questions in this group if seeking a deferral upon approval this submission. Each of the following items must be confirmed as part of any request for deferral of remediation.*	
Requesting a deferral of the remediation closure due date with the approval of this submission	No

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QUESTIONS (continued)

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QUESTIONS

Sampling Event Information	
Last sampling notification (C-141N) recorded	*{Unavailable.}*

Remediation Closure Request	
Only answer the questions in this group if seeking remediation closure for this release because all remediation steps have been completed.	
Requesting a remediation closure approval with this submission	No

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CONDITIONS

Action 460164

CONDITIONS

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CONDITIONS

Created By	Condition	Condition Date
rhamlet	The Remediation Plan is Conditionally Approved. This is an old legacy release that occurred in early 2018. Sampling to a depth of 4 feet is not sufficient to verify chlorides. Chlorides most likely moved down the soil column over the years. The OCD requests a deeper soil investigation to ensure chlorides are not present. All samples must be analyzed for all constituents listed in Table I of 19.15.29.12 NMAC. Floor confirmation samples should be delineated/excavated to meet closure criteria standards from Table 1 of the OCD Spill Rule for site assessment/characterization/proven depth to water determination. Sidewall/edge samples should be delineated/excavated to 600 mg/kg for chlorides and 100 mg/kg for TPH to define the edge of the release. Please make sure that the edge of the release extent is accurately defined. Please collect confirmation samples, representing no more than 200 ft2. The work will need to be completed in 90 days after the report has been reviewed.	6/5/2025