

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

State of New Mexico
Energy Minerals and Natural
Resources Department

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

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

Incident ID	
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party	OGRID
Contact Name	Contact Telephone
Contact email	Incident # (assigned by OCD)
Contact mailing address	

Location of Release Source

Latitude _____ Longitude _____
(NAD 83 in decimal degrees to 5 decimal places)

Site Name	Site Type
Date Release Discovered	API# (if applicable)

Unit Letter	Section	Township	Range	County

Surface Owner: State Federal Tribal Private (Name: _____)

Nature and Volume of Release

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

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

Cause of Release

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

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

Initial Response

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

<input type="checkbox"/> The source of the release has been stopped. <input type="checkbox"/> The impacted area has been secured to protect human health and the environment. <input type="checkbox"/> Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices. <input type="checkbox"/> All free liquids and recoverable materials have been removed and managed appropriately.
If all the actions described above have <u>not</u> been undertaken, explain why:
Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.
Printed Name: _____ Title: _____ Signature: <u>Kendra Ruiz</u> Date: _____ email: _____ Telephone: _____
<u>OCD Only</u> Received by: <u>Jocelyn Harimon</u> Date: <u>04/03/2023</u>

Inputs in blue, Outputs in red

Contaminated Soil measurement

Area (square feet)	Depth(inches)
2346.75	0.400
Cubic Feet of Soil Impacted	78.225
Barrels of Soil Impacted	13.94
Soil Type	Clay/Sand
Barrels of Oil Assuming 100% Saturation	2.09
Saturation	Fluid present with shovel/backhoe
Estimated Barrels of Oil Released	2.09
Free Standing Fluid Only	
Area (square feet)	Depth(inches)
2346.75	0.400
Standing fluid	13.944
Total fluids spilled	16.035

Spill Volume(Bbls) Calculator

Inputs in blue, Outputs in red

Contaminated Soil measurement

Area (square feet)	Depth(inches)
1035.602	0.250
Cubic Feet of Soil Impacted	21.575
Barrels of Soil Impacted	3.85
Soil Type	Clay/Sand
Barrels of Oil Assuming 100% Saturation	0.58
Saturation	Fluid present with shovel/backhoe
Estimated Barrels of Oil Released	0.58
Free Standing Fluid Only	
Area (square feet)	Depth(inches)
Standing fluid	0.000
Total fluids spilled	0.577



Incident Numer: nAPP2308125349

Release Assessment and Closure

Hackberry 6 Federal #001

Section 06, Township 19 South, Range 31 East

API: 30-015-31020

County: Eddy

Vertex File Number: 23E-01582

Prepared for:

Devon Energy Production Company, LP

Prepared by:

Vertex Resource Services Inc.

Date:

August 2024

Devon Energy Production Company, LP
Hackberry 6 Federal #001

Release Assessment and Closure
August 2024

Release Assessment and Closure
Hackberry 6 Federal #001
Section 06, Township 19 South, Range 31 East
API: 30-015-31020
County: Eddy

Prepared for:
Devon Energy Production Company, LP
6488 Seven Rivers Highway
Artesia, New Mexico 88210

New Mexico Oil Conservation Division
508 West Texas Avenue
Artesia, New Mexico 88210

Prepared by:
Vertex Resource Services Inc.
3101 Boyd Drive
Carlsbad, New Mexico 88220

John Rewis, B.Sc.
ENVIRONMENTAL TECHNICIAN, REPORTING

Date

Chad Hensley, B.Sc. GCNR
SENIOR PROJECT MANAGER, REPORT REVIEW

Date

Devon Energy Production Company, LP
Hackberry 6 Federal #001

Release Assessment and Closure
August 2024

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1.0 Introduction

Devon Energy Production Company, LP (Devon) retained Vertex Resource Services Inc. (Vertex) to conduct a Release Assessment and Closure for a produced water release that occurred on March 31, 2023, at Hackberry 6 Federal #001 API 30-015-31020 (hereafter referred to as the “site”). Devon submitted an initial C-141 Release Notification to New Mexico Oil Conservation Division (NMOCD) District 1 on April 3, 2023. Incident ID number nAPP2308125349, was assigned to this incident.

This report provides a description of the release assessment and remediation activities associated with the site. The information presented demonstrates that closure criteria established in Table I of 19.15.29.12 of the *New Mexico Administrative Code* (NMAC; New Mexico Oil Conservation Division, 2018) related to NMOCD has been met and all applicable regulations are being followed. This document is intended to serve as a final report to obtain approval from NMOCD for closure of this release, with the understanding that restoration of the release site will be completed following remediation activities as per NMAC 19.15.29.13.

2.0 Incident Description

The release occurred on March 31, 2023, due to a fluid release from the seal (“spill”) pot and a break in the aboveground piping that released fluid along the north edge of the pad. The incident was reported on April 03, 2023, and involved the release of approximately 17 barrels (bbl.) of produced water on the pad site. Approximately 15 bbl. of free fluid was removed during the initial clean-up. Additional details relevant to the release are presented in the C-141 Report.

3.0 Site Characteristics

The site is located approximately 9.95 miles southeast of Loco Hills, New Mexico at 32.687637 ° N, 103.906647 ° W (Google Inc., 2024). The legal location for the site is Section 06, Township 19 South and Range 31 East in Eddy County, New Mexico. The release area is located on Bureau of Land Management property. An aerial photograph and site schematic are presented on Figure 1.

The location is typical of oil and gas exploration and production sites in the Permian Basin and is currently used for oil and gas production and storage. The following sections specifically describe the release area at the site or in proximity to the constructed pad (Figure 1).

The surface geology at the site primarily comprises Qp – Piedmont alluvial deposits (Holocene to lower Pleistocene) (New Mexico Bureau of Geology and Mineral Resources, 2024). The soil at the site is characterized as Simona gravelly fine sandy loam (United States Department of Agriculture, Natural Resources Conservation Service, 2024). Additional soil characteristics include well drained soil with very high runoff and very low available moisture levels in the soil profile. The karst geology potential for the site is low (United States Department of the Interior, Bureau of Land Management, 2018).

The surrounding landscape is associated with plains, uplands, fan piedmonts, and alluvial fans at elevations of 2,842 to 4,500 feet above sea level. The climate is semiarid with average annual precipitation ranging between 8 and 13 inches. Using information from the United States Department of Agriculture, the dominant vegetation was determined to be grasses with shrubs. Black grama is dominant with yucca, javalina bush, range ratany, prickly pear and mesquite. Overgrazing and extended drought can reduce grass cover (United States Department of Agriculture, Natural Resources Conservation Service, 2024). Limited to no vegetation is allowed to grow on the compacted production pad, right of way and access road.

4.0 Closure Criteria Determination

The nearest active well to the site is a New Mexico Office of the State Engineer (NMOSE) groundwater determination well located approximately 0.47 miles southeast of the site (United States Geological Survey, 2024). Data from 2022 shows the NMOSE borehole recorded a depth to groundwater greater than 105 feet below ground surface (bgs). Information pertaining to the depth to groundwater determination is included in Appendix A.

There is no surface water present at the site. The nearest significant watercourse, as defined in Subsection P of 19.15.17.7 NMAC, is the Pecos River identified in the National Wetlands Inventory approximately 22.8 miles west of the site (United States Fish and Wildlife Service, 2024).

At the site, there are no continuously flowing watercourses or significant watercourses, lakebeds, sinkholes, playa lakes or other critical water or community features as outlined in Paragraph (4) of Subsection C of 19.15.29.12 NMAC.

Devon Energy Production Company, LP
 Hackberry 6 Federal #001

Release Assessment and Closure
 August 2024

Table 1. Closure Criteria Determination			
Site Name: Hackberry 6 Federal #001H			
Spill Coordinates: 32.6876373, -103.9066467		X: 602497.47	Y: 3617187.41
Site Specific Conditions		Value	Unit
1	Depth to Groundwater (nearest reference)	>100	feet
	Distance between release and nearest DTGW reference	2,459	feet
		0.47	miles
	Date of nearest DTGW reference measurement	December 13, 2022	
2	Within 300 feet of any continuously flowing watercourse or any other significant watercourse	687	feet
3	Within 200 feet of any lakebed, sinkhole or playa lake (measured from the ordinary high-water mark)	14,472	feet
4	Within 300 feet from an occupied residence, school, hospital, institution or church	23,487	feet
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	14,362	feet
	ii) Within 1000 feet of any fresh water well or spring	14,362	feet
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)
7	Within 300 feet of a wetland	4,120	feet
8	Within the area overlying a subsurface mine	No	(Y/N)
	Distance between release and nearest registered mine	20,366	feet
9	Within an unstable area (Karst Map)	Low	Critical High Medium Low
	Distance between release and nearest unstable area	7,400	feet
10	Within a 100-year Floodplain	500	year
	Distance between release and nearest FEMA Zone A (100-year Floodplain)	13,000	feet
11	Soil Type	gravelly fine sandy loam	
12	Ecological Classification	Shallow Sandy	
13	Geology	Qp	
	NMAC 19.15.29.12 E (Table 1) Closure Criteria	>100'	<50' 51-100' >100'

The closure criteria determined for the site are associated with the following constituent concentration limits as presented in Table 2.

Table 2. 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
> 100 feet	Chloride	20,000 mg/kg
	TPH (GRO+DRO+MRO)	2,500 mg/kg
	GRO+DRO	1,000 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

5.0 Remedial Actions Taken

An initial site inspection of the release area was completed on April 4, 2023, which identified the area of the release specified in the initial C-141 Report, estimated the approximate volume of the release and white lined the area required for the One Call request. The impacted area was determined to have a perimeter of approximately 861 feet; the total affected area was 11,885 square feet. The Daily Field Report (DFR) associated with the site inspection is included in Appendix B. Characterization sample locations and approximate release areas are presented on Figure 1. Characterization field screening and laboratory results are summarized in Table 3.

Remediation efforts began on August 10, 2023, and were finalized on August 2, 2024. Vertex personnel supervised the excavation of impacted soils. Field screening was completed on a total of 72 sample points and consisted of analysis using a Photo Ionization Detector (volatile hydrocarbons), Dextsil Petroflag using EPA SW-846 Method 9074 (extractable hydrocarbons) and Quantabs (chlorides). Field screening results were used to identify areas requiring further remediation. Soils were removed to a depth of 2 to 4.1 feet bgs. Impacted soil was transported by a licensed waste hauler and disposed of at an approved waste management facility as stipulated by the Form C-138 Request for Approval to Accept Solid Waste – New Mexico filed with the NMOCD presented in Appendix G. Field screening results and DFRs documenting various phases of the remediation are presented in Appendix B.

Notification that confirmatory samples were being collected was provided to the NMOCD on August 2, 2024, for sampling on August 6, 2024, and is included in Appendix D. On August 2, 2024, a 400 square foot base sample and 200 square foot side wall variance for confirmation samples was approved by the NMOCD, and is included in Appendix C.

A total of 72 confirmation samples were collected for laboratory analysis following NMOCD soil sampling procedures. Samples were submitted to Eurofins in Albuquerque, New Mexico, under chain-of-custody protocols and analyzed for BTEX (EPA Method 8021B), total petroleum hydrocarbons (GRO, DRO, MRO – EPA Method 8015D) and total chlorides (EPA Method 300.0). Confirmatory laboratory results are presented in Table 4, and the laboratory data reports are included in Appendix D. All confirmatory samples collected and analyzed were below closure criteria for the site.

Devon Energy Production Company, LP
Hackberry 6 Federal #001

Release Assessment and Closure
August 2024

6.0 Closure Request

The release area was fully delineated, remediated, and confirmatory samples were analyzed by the laboratory and found to be below allowable concentrations as per the NMAC Closure Criteria for Soils Impacted by a Release locations “greater than 100 feet to groundwater”. Based on these findings Devon Energy Production Company, LP, requests that this release be closed.

Should you have any questions or concerns, please do not hesitate to contact Chad Hensley at 575.200.6167 or Chensley@vertexresource.com

7.0 References

- Google Inc. (2024). *Google Earth Pro (Version 7.3.3)* [Software]. Retrieved from <https://earth.google.com>
- New Mexico Bureau of Geology and Mineral Resources. (2024). *Interactive Geologic Map*. Retrieved from <https://maps.nmt.edu/>
- New Mexico Department of Surface Water Quality Bureau. (2024). *Assessed and Impaired Waters of New Mexico*. Retrieved from <https://gis.web.env.nm.gov/oem/?map=swqb>
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- New Mexico Oil Conservation Division. (2018). *New Mexico Administrative Code – Natural Resources and Wildlife Oil and Gas Releases*. Santa Fe, New Mexico.
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- United States Department of the Interior, Bureau of Land Management. (2018). *New Mexico Cave/Karst*. Retrieved from https://www.nm.blm.gov/shapeFiles/cfo/carlsbad_spatial_data.html
- United States Geological Survey. (2024). *National Water Information System: Web Interface*. Retrieved from <https://waterdata.usgs.gov/nwis>

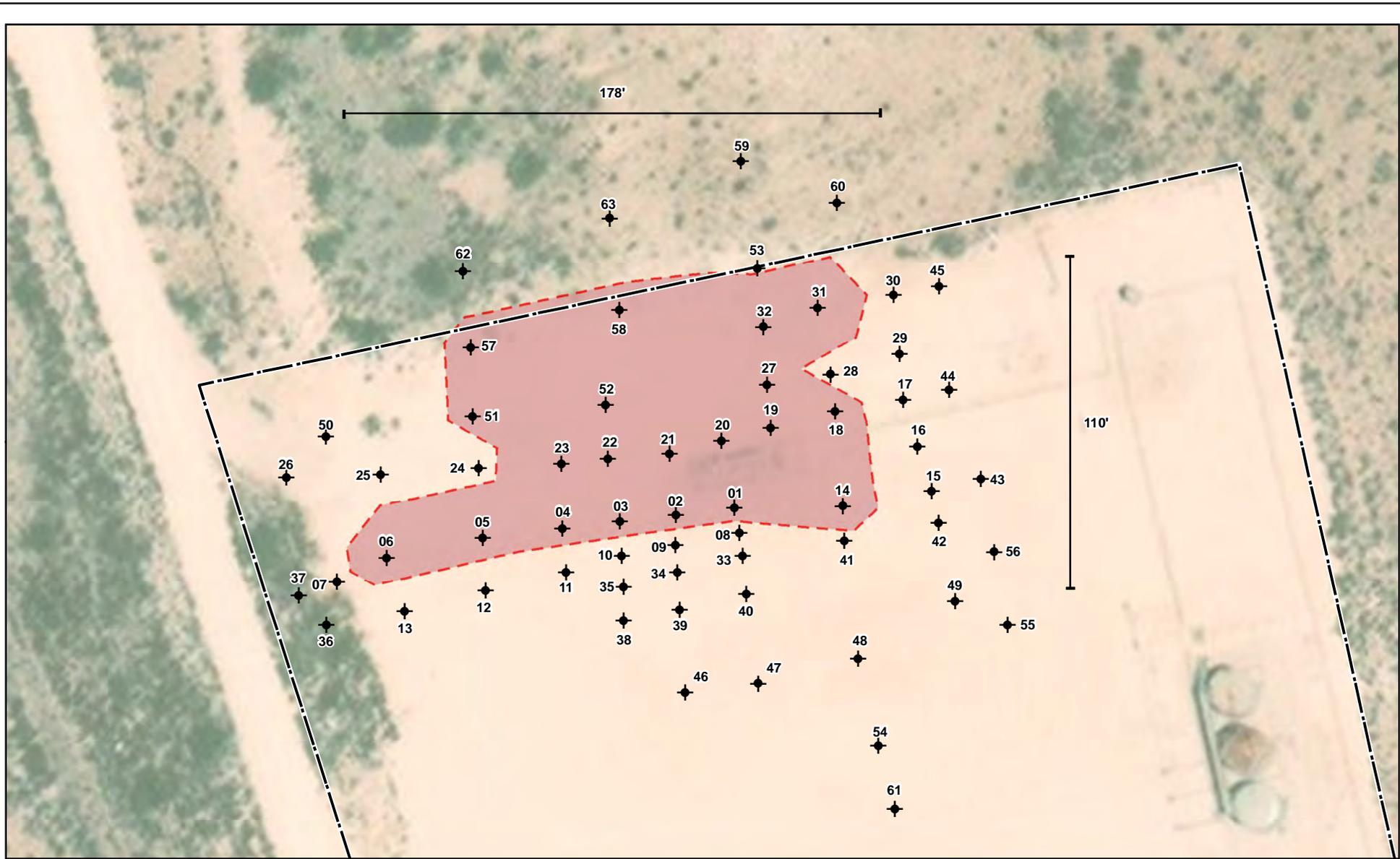
8.0 Limitations

This report has been prepared for the sole benefit of Devon Energy Production Company, LP. This document may not be used by any other person or entity, with the exception of the New Mexico Oil Conservation Division and the Bureau of Land Management, without the express written consent of Vertex Resource Services Inc. (Vertex) and Devon Energy production Company, LP. Any use of this report by a third party, or any reliance on decisions made based on it, or damages suffered as a result of the use of this report are the sole responsibility of the user.

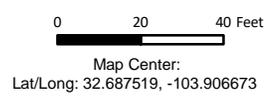
The information and conclusions contained in this report are based upon work undertaken by trained professional and technical staff in accordance with generally accepted scientific practices current at the time the work was performed. The conclusions and recommendations presented represent the best judgement of Vertex based on the data collected during the assessment. Due to the nature of the assessment and the data available, Vertex cannot warrant against undiscovered environmental liabilities. Conclusions and recommendations presented in this report should not be considered legal advice.

FIGURES

Document Path: G:\Projects\US PROJECTS\Devon Energy Corporation\2023\23E-01582 - Hackberry 6 Federal #001\Figure 1 Characterization Sampling Site Schematic (23E-01582).mxd



◆ Borehole (Prefixed by "BH23-")
 --- Approximate Lease Boundary
 ■ Release Area (~11,885 sq.ft.)



NAD 1983 UTM Zone 13N
Date: Jun 16/23



**Characterization Sampling Site Schematic
Hackberry 6 Federal #001**

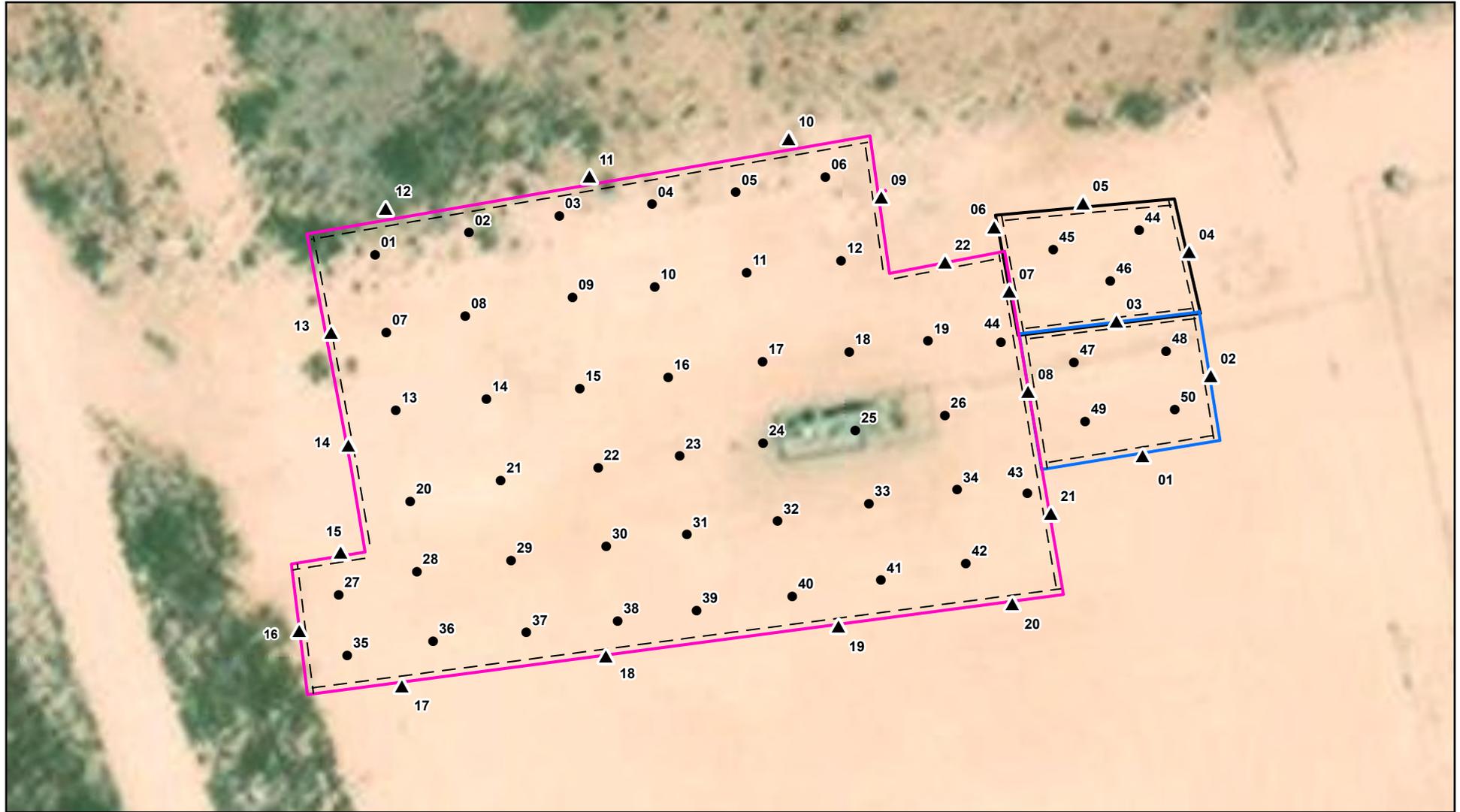
FIGURE:
1



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.

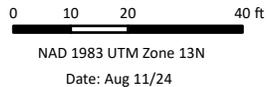
Note: Georeferenced image from Esri, 2022. Boreholes and approximate release area from GPS. Approximate lease boundary from imagery. Vertex Professional Services Ltd., 2023.

VERSATILITY. EXPERTISE.



- Base Sample (Prefixed by "BS24-")
- ▲ Wall Sample (Prefixed by "WS24-")
- Excavation to 2' bgs (~1,169 sq. ft. | 140 ft.)
- Excavation to 3' bgs (~1,308 sq. ft. | 147 ft.)
- Excavation to 4.1' bgs (~17,035 sq. ft. | 574 ft.)

Total Excavation Perimeter = ~ 672 ft.
 Total Excavation Area: ~ 19,512 sq. ft.



Map Center:
 Lat/Long
 32.687504°, -103.906709°



**Confirmation Sampling Site Schematic
 Hackberry 6 Federal #001**

FIGURE:

1



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 Esri, 2020. Site features from GPS, Vertex, 2024.

Document Path: G:\Projects\US PROJECS\Devon Energy Corporation\2023\23E-01582 - Hackberry 6 Federal\001\Project\23E-01582.aprx

TABLES

Client Name:Devon Energy
 Site Name: Hackberry 6 Federal 001
 NMOCD Tracking #: nAPP2308125349
 Project #: 23E-01582
 Lab Reports: 2304490, 2304610, 2304665, 2304C19, 2304C20 and 2308A30

Table 1. Initial Characterization Sample Field Screen and Laboratory Results -

Sample Description			Petroleum Hydrocarbons							Inorganic
Sample ID	Depth (ft)	Sample Date	Volatile		Extractable					Chloride Concentration (mg/kg)
			Benzene (mg/kg)	BTEX (Total) (mg/kg)	Gasoline Range Organics (GRO) (mg/kg)	Diesel Range Organics (DRO) (mg/kg)	Motor Oil Range Organics (MRO) (mg/kg)	(GRO + DRO) (mg/kg)	Total Petroleum Hydrocarbons (TPH) (mg/kg)	
BH23-01	0	Monday, April 10, 2023	ND	ND	ND	ND	ND	ND	ND	17,000
	1	Monday, April 10, 2023	ND	ND	ND	ND	ND	ND	ND	2,300
BH23-02	0	Monday, April 10, 2023	ND	ND	ND	ND	ND	ND	ND	19,000
	1	Monday, April 10, 2023	ND	ND	ND	ND	ND	ND	ND	5,100
	2	Monday, April 24, 2023	ND	ND	ND	ND	ND	ND	ND	1,400
	3	Monday, April 24, 2023	-	-	-	-	-	-	-	-
	4	Monday, April 24, 2023	ND	ND	ND	ND	ND	ND	ND	700
	5	Monday, April 24, 2023	-	-	-	-	-	-	-	-
	6	Monday, April 24, 2023	ND	ND	ND	ND	ND	ND	ND	870
	7	Monday, April 24, 2023	-	-	-	-	-	-	-	-
BH23-03	0	Monday, April 10, 2023	ND	ND	ND	ND	ND	ND	ND	11,000
	1	Monday, April 10, 2023	ND	ND	ND	ND	ND	ND	ND	3,000
	2	Tuesday, April 25, 2023	ND	ND	ND	ND	ND	ND	ND	1,300
	3	Tuesday, April 25, 2023	ND	ND	ND	ND	ND	ND	ND	650
	4	Tuesday, April 25, 2023	ND	ND	ND	ND	ND	ND	ND	820
BH23-04	0	Monday, April 10, 2023	ND	ND	ND	35	ND	35	35	10,000
	1	Monday, April 10, 2023	ND	ND	ND	22	ND	22	22	6,600
	2	Tuesday, April 25, 2023	ND	ND	ND	9	ND	9	9	3,300
	3	Tuesday, April 25, 2023	ND	ND	ND	ND	ND	ND	ND	1,900
	4	Tuesday, April 25, 2023	ND	ND	ND	ND	ND	ND	ND	1,300
	6	Tuesday, April 25, 2023	ND	ND	ND	ND	ND	ND	ND	430
BH23-05	0	Monday, April 10, 2023	ND	ND	ND	ND	ND	ND	ND	9,500
	1	Monday, April 10, 2023	ND	ND	ND	ND	ND	ND	ND	7,300
	2	Tuesday, April 25, 2023	ND	ND	ND	ND	ND	ND	ND	350
BH23-06	0	Monday, April 10, 2023	ND	ND	ND	ND	ND	ND	ND	8,800
	1	Monday, April 10, 2023	ND	ND	ND	ND	ND	ND	ND	4,500
	2	Monday, April 24, 2023	ND	ND	ND	ND	ND	ND	ND	820
	4	Monday, April 24, 2023	ND	ND	ND	ND	ND	ND	ND	580
	6	Monday, April 24, 2023	ND	ND	ND	ND	ND	ND	ND	430
	8	Monday, April 24, 2023	ND	ND	ND	ND	ND	ND	ND	290
BH23-07	0	Monday, April 10, 2023	ND	ND	ND	ND	ND	ND	ND	ND
	1	Monday, April 10, 2023	ND	ND	ND	ND	ND	ND	ND	ND
BH23-08	0	Monday, April 10, 2023	ND	ND	ND	ND	ND	ND	ND	68
	1	Monday, April 10, 2023	ND	ND	ND	ND	ND	ND	ND	ND
BH23-09	0	Monday, April 10, 2023	ND	ND	ND	ND	ND	ND	ND	97
	1	Monday, April 10, 2023	ND	ND	ND	ND	ND	ND	ND	78
BH23-10	0	Monday, April 10, 2023	ND	ND	ND	ND	ND	ND	ND	440
	1	Monday, April 10, 2023	ND	ND	ND	ND	ND	ND	ND	240
BH23-11	0	Monday, April 10, 2023	ND	ND	ND	ND	ND	ND	ND	190
	1	Monday, April 10, 2023	ND	ND	ND	ND	ND	ND	ND	140
BH23-12	0	Monday, April 10, 2023	ND	ND	ND	ND	ND	ND	ND	93



Client Name:Devon Energy
 Site Name: Hackberry 6 Federal 001
 NMOCD Tracking #: nAPP2308125349
 Project #: 23E-01582
 Lab Reports: 2304490, 2304610, 2304665, 2304C19, 2304C20 and 2308A30

Table 1. Initial Characterization Sample Field Screen and Laboratory Results -

Sample Description			Petroleum Hydrocarbons						Inorganic	
Sample ID	Depth (ft)	Sample Date	Volatile		Extractable				Chloride Concentration (mg/kg)	
			Benzene	BTEX (Total)	Gasoline Range Organics (GRO)	Diesel Range Organics (DRO)	Motor Oil Range Organics (MRO)	(GRO + DRO)		Total Petroleum Hydrocarbons (TPH)
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)		(mg/kg)
Depth to Groundwater >100 feet bgs										
BH23-13	0	Monday, April 10, 2023	ND	ND	ND	ND	ND	ND	ND	ND
	1	Monday, April 10, 2023	ND	ND	ND	ND	ND	ND	ND	ND
BH23-14	0	Tuesday, April 11, 2023	ND	ND	ND	230	180	230	410	18,000
	2	Tuesday, April 25, 2023	ND	ND	ND	80	62	80	142	1,100
	3	Tuesday, April 25, 2023	ND	ND	ND	ND	ND	ND	ND	290
	4	Tuesday, April 25, 2023	ND	ND	ND	ND	ND	ND	ND	220
BH23-15	0	Tuesday, April 11, 2023	ND	ND	ND	ND	ND	ND	ND	87
	2	Monday, April 24, 2023	ND	ND	ND	ND	ND	ND	ND	120
BH23-16	0	Tuesday, April 11, 2023	ND	ND	ND	ND	ND	ND	ND	ND
BH23-17	0	Tuesday, April 11, 2023	ND	ND	ND	ND	ND	ND	ND	ND
BH23-18	0	Tuesday, April 11, 2023	ND	ND	ND	340	250	340	590	630
	2	Tuesday, April 25, 2023	ND	ND	ND	ND	ND	ND	ND	400
	3	Tuesday, April 25, 2023	ND	ND	ND	ND	ND	ND	ND	400
	4	Tuesday, April 25, 2023	ND	ND	ND	ND	ND	ND	ND	220
BH23-19	0	Tuesday, April 11, 2023	ND	ND	ND	1,100	1,600	1,100	2,700	67
	2	Tuesday, April 25, 2023	ND	ND	ND	52	60	52	112	330
	3	Tuesday, April 25, 2023	ND	ND	ND	ND	ND	ND	ND	1,400
	4	Tuesday, April 25, 2023	ND	ND	ND	ND	ND	ND	ND	2,300
	6	Tuesday, April 25, 2023	ND	ND	ND	ND	ND	ND	ND	1,900
BH23-20	0	Tuesday, April 11, 2023	ND	ND	ND	ND	ND	ND	ND	3,900
BH23-21	0	Tuesday, April 11, 2023	ND	ND	ND	ND	ND	ND	ND	5,300
BH23-22	0	Tuesday, April 11, 2023	ND	ND	ND	ND	ND	ND	ND	3,900
BH23-23	0	Tuesday, April 11, 2023	ND	ND	ND	ND	ND	ND	ND	3,000
BH23-24	0	Tuesday, April 11, 2023	ND	ND	ND	ND	ND	ND	ND	130
BH23-25	0	Tuesday, April 11, 2023	ND	ND	ND	ND	ND	ND	ND	ND
	2	Wednesday, August 16, 2023	ND	ND	ND	ND	ND	ND	ND	72
BH23-26	0	Tuesday, April 11, 2023	ND	ND	ND	ND	ND	ND	ND	ND
BH23-27	0	Tuesday, April 11, 2023	ND	ND	ND	ND	ND	ND	ND	880
BH23-28	0	Tuesday, April 11, 2023	ND	ND	ND	43	53	43	96	74
BH23-29	0	Tuesday, April 11, 2023	ND	ND	ND	ND	ND	ND	ND	ND
	2	Wednesday, August 16, 2023	ND	ND	ND	ND	ND	ND	ND	ND
BH23-30	0	Tuesday, April 11, 2023	ND	ND	ND	ND	ND	ND	ND	ND
BH23-31	0	Tuesday, April 11, 2023	ND	ND	ND	43	ND	43	43	1,200
	2	Tuesday, April 25, 2023	ND	ND	ND	ND	ND	ND	ND	380
	3	Tuesday, April 25, 2023	ND	ND	ND	ND	ND	ND	ND	390
	4	Tuesday, April 25, 2023	ND	ND	ND	ND	ND	ND	ND	260
BH23-32	0	Tuesday, April 11, 2023	ND	ND	ND	16	ND	16	16	1,000



Client Name: Devon Energy
 Site Name: Hackberry 6 Federal 001
 NMOCD Tracking #: nAPP2308125349
 Project #: 23E-01582
 Lab Reports: 2304490, 2304610, 2304665, 2304C19, 2304C20 and 2308A30

Table 1. Initial Characterization Sample Field Screen and Laboratory Results -

Sample Description			Petroleum Hydrocarbons							Inorganic
Sample ID	Depth (ft)	Sample Date	Volatile		Extractable					Chloride Concentration (mg/kg)
			Benzene (mg/kg)	BTEX (Total) (mg/kg)	Gasoline Range Organics (GRO) (mg/kg)	Diesel Range Organics (DRO) (mg/kg)	Motor Oil Range Organics (MRO) (mg/kg)	(GRO + DRO) (mg/kg)	Total Petroleum Hydrocarbons (TPH) (mg/kg)	
BH23-33	0	Tuesday, April 11, 2023	ND	ND	ND	ND	ND	ND	ND	140
BH23-34	0	Tuesday, April 11, 2023	ND	ND	ND	ND	ND	ND	ND	290
BH23-35	0	Tuesday, April 11, 2023	ND	ND	ND	ND	ND	ND	ND	74
BH23-36	0	Tuesday, April 11, 2023	ND	ND	ND	14	62	14	76	ND
BH23-37	0	Tuesday, April 11, 2023	ND	ND	ND	18	ND	18	18	ND
BH23-38	0	Tuesday, April 11, 2023	ND	ND	ND	ND	ND	ND	ND	ND
BH23-39	0	Tuesday, April 11, 2023	ND	ND	ND	ND	ND	ND	ND	110
BH23-40	0	Tuesday, April 11, 2023	ND	ND	ND	ND	ND	ND	ND	75
BH23-41	0	Tuesday, April 11, 2023	ND	ND	ND	ND	ND	ND	ND	ND
BH23-42	0	Tuesday, April 11, 2023	ND	ND	ND	ND	ND	ND	ND	82
BH23-43	0	Tuesday, April 11, 2023	ND	ND	ND	ND	ND	ND	ND	ND
BH23-44	0	Tuesday, April 11, 2023	ND	ND	ND	ND	ND	ND	ND	ND
BH23-45	0	Tuesday, April 11, 2023	ND	ND	ND	ND	ND	ND	ND	ND
BH23-46	0	Wednesday, April 12, 2023	ND	ND	ND	ND	ND	ND	ND	ND
BH23-47	0	Wednesday, April 12, 2023	ND	ND	ND	ND	ND	ND	ND	ND
BH23-48	0	Wednesday, April 12, 2023	ND	ND	ND	ND	ND	ND	ND	78
BH23-49	0	Wednesday, April 12, 2023	ND	ND	ND	18	74	18	92	96
BH23-50	0	Wednesday, April 12, 2023	ND	ND	ND	ND	ND	ND	ND	ND
BH23-51	0	Wednesday, April 12, 2023	ND	ND	ND	ND	ND	ND	ND	9,400
	2	Tuesday, April 25, 2023	ND	ND	ND	ND	ND	ND	ND	1,900
	3	Tuesday, April 25, 2023	ND	ND	ND	ND	ND	ND	ND	660
	4	Tuesday, April 25, 2023	ND	ND	ND	ND	ND	ND	ND	130
BH23-52	0	Wednesday, April 12, 2023	ND	ND	ND	ND	ND	ND	ND	3,000
BH23-53	0	Wednesday, April 12, 2023	ND	ND	ND	41	ND	41	41	190
	2	Monday, April 24, 2023	-	-	-	-	-	-	-	-
	4	Monday, April 24, 2023	-	-	-	-	-	-	-	-
	6	Monday, April 24, 2023	-	-	-	-	-	-	-	-
	8	Monday, April 24, 2023	-	-	-	-	-	-	-	-
BH23-54	0	Wednesday, April 12, 2023	ND	ND	ND	ND	ND	ND	ND	86
BH23-55	0	Wednesday, April 12, 2023	ND	ND	ND	ND	ND	ND	ND	67
BH23-56	0	Wednesday, April 12, 2023	ND	ND	ND	ND	ND	ND	ND	ND



Client Name: Devon Energy
 Site Name: Hackberry 6 Federal 001
 NMOCD Tracking #: nAPP2308125349
 Project #: 23E-01582
 Lab Reports: 2304490, 2304610, 2304665, 2304C19, 2304C20 and 2308A30

Table 1. Initial Characterization Sample Field Screen and Laboratory Results -

Sample Description			Petroleum Hydrocarbons						Inorganic	
Sample ID	Depth (ft)	Sample Date	Volatile		Extractable				Chloride Concentration (mg/kg)	
			Benzene	BTEX (Total)	Gasoline Range Organics (GRO)	Diesel Range Organics (DRO)	Motor Oil Range Organics (MRO)	(GRO + DRO)		Total Petroleum Hydrocarbons (TPH)
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)		(mg/kg)
Depth to Groundwater >100 feet bgs										
BH23-57	0	Wednesday, April 12, 2023	ND	ND	ND	ND	ND	ND	ND	1,900
	2	Monday, August 14, 2023	ND	ND	ND	ND	ND	ND	ND	190
BH23-58	0	Wednesday, April 12, 2023	ND	ND	ND	ND	ND	ND	ND	860
	2	Tuesday, April 25, 2023	ND	ND	ND	ND	ND	ND	ND	1,500
	3	Tuesday, April 25, 2023	ND	ND	ND	ND	ND	ND	ND	1,700
	4	Tuesday, April 25, 2023	ND	ND	ND	ND	ND	ND	ND	1,600
BH23-59	0	Wednesday, April 12, 2023	ND	ND	ND	ND	ND	ND	ND	600
	2	Wednesday, August 16, 2023	ND	ND	ND	ND	ND	ND	ND	ND
BH23-60	0	Wednesday, April 12, 2023	ND	ND	ND	ND	ND	ND	ND	ND
BH23-61	0	Wednesday, April 12, 2023	ND	ND	ND	ND	ND	ND	ND	ND
BH23-62	0	Wednesday, April 12, 2023	ND	ND	ND	ND	ND	ND	ND	100
	2	Wednesday, August 16, 2023	ND	ND	ND	ND	ND	ND	ND	78
BH23-63	0	Wednesday, April 12, 2023	ND	ND	ND	ND	ND	ND	ND	ND

"ND" Not Detected at the Reporting Limit

"-" indicates not analyzed/assessed

Bold and grey shaded indicates exceedance outside of NMOCD Closure Criteria (on-pad)

Bold and green shaded indicates exceedance outside of NMOCD Reclamation Criteria (off-pad)



Client Name: Devon Energy Production Company, LP
 Site Name: Hackberry 6 Federal #001
 NMOCD Tracking #: nAPP2308125349
 Project #: 23E-01582
 Lab Report: 2308867

Table 4. Confirmatory Sample Field Screen and Laboratory Results

Sample Description			Petroleum Hydrocarbons							Inorganic
Sample ID	Depth (ft)	Sample Date	Volatile		Extractable					Chloride Concentration (mg/kg)
			Benzene (mg/kg)	BTEX (Total) (mg/kg)	Gasoline Range Organics (GRO) (mg/kg)	Diesel Range Organics (DRO) (mg/kg)	Motor Oil Range Organics (MRO) (mg/kg)	(GRO + DRO) (mg/kg)	Total Petroleum Hydrocarbons (TPH) (mg/kg)	
Depth to Groundwater > 100' bgs										
WS24-01	0-3	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	ND
WS24-02	0-3	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	ND
WS24-03	2.-3	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	ND
WS24-04	0-2	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	ND
WS24-05	0-2	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	ND
WS24-06	0-2	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	ND
WS24-07	2-4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	75
WS24-08	3-4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	77
WS24-09	0-4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	ND
WS24-10	0-4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	ND
WS24-11	0-4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	ND
WS24-12	0-4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	60
WS24-13	0-4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	ND
WS24-14	0-4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	100
WS24-15	0-4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	100
WS24-16	0-4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	ND
WS24-17	0-4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	nd
WS24-18	0-4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	ND
WS24-19	0-4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	ND
WS24-20	0-4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	ND
WS24-21	0-4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	ND
WS24-22	0-4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	ND
BS24-01	4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	260
BS24-02	4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	nd
BS24-03	4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	290
BS24-04	4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	870
BS24-05	4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	310
BS24-06	4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	120
BS24-07	4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	3900
BS24-08	4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	4100
BS24-09	4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	2300
BS24-10	4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	370
BS24-11	4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	600
BS24-12	4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	660
BS24-13	4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	280
BS24-14	4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	120
BS24-15	4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	570
BS24-16	4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	1000
BS24-17	4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	1000
BS24-18	4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	700
BS24-19	4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	420



Table 4. Initial Characterization/Confirmatory Sample Field Screen and Laboratory Results										
Sample Description			Petroleum Hydrocarbons							Inorganic
Sample ID	Depth (ft)	Sample Date	Volatile		Extractable					Chloride Concentration (mg/kg)
			Benzene (mg/kg)	BTEX (Total) (mg/kg)	Gasoline Range Organics (GRO) (mg/kg)	Diesel Range Organics (DRO) (mg/kg)	Motor Oil Range Organics (MRO) (mg/kg)	(GRO + DRO) (mg/kg)	Total Petroleum Hydrocarbons (TPH) (mg/kg)	
BS24-20	4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	200
BS24-21	4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	140
BS24-22	4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	350
BS24-23	4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	120
BS24-24	4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	500
BS24-25	4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	500
BS24-26	4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	470
BS24-27	4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	540
BS24-28	4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	670
BS24-29	4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	770
BS24-30	4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	1200
BS24-31	4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	760
BS24-32	4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	610
BS24-33	4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	670
BS24-34	4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	490
BS24-35	4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	880
BS24-36	4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	430
BS24-37	4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	440
BS24-38	4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	480
BS24-39	4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	340
BS24-40	4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	270
BS24-41	4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	330
BS24-42	4.1	Tuesday, August 6, 2024	ND	ND	ND	15	ND	ND	15	580
BS24-43	4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	270
BS24-44	4.1	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	73
BS24-45	2.0	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	73
BS24-46	2.0	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	140
BS24-47	3.0	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	97
BS24-48	3.0	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	140
BS24-49	3.0	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	80
BS24-50	3.0	Tuesday, August 6, 2024	ND	ND	ND	ND	ND	ND	ND	77

"ND" Not Detected at the Reporting Limit

"-" indicates not analyzed/assessed

Bold and grey shaded indicates exceedance outside of NMOCD Closure Criteria (on-pad)

Bold and green shaded indicates exceedance outside of NMOCD Reclamation Criteria (off-pad)



APPENDIX A – Closure Criteria Research Documentation

Closure Criteria Determination			
Site Name: Hackberry 6 Federal #001H			
Spill Coordinates: 32.6876373, -103.9066467		X: 602497.47	Y: 3617187.41
Site Specific Conditions		Value	Unit
1	Depth to Groundwater (nearest reference)	>100	feet
	Distance between release and nearest DTGW reference	2,459	feet
		0.47	miles
Date of nearest DTGW reference measurement		December 13, 2022	
2	Within 300 feet of any continuously flowing watercourse or any other significant watercourse	687	feet
3	Within 200 feet of any lakebed, sinkhole or playa lake (measured from the ordinary high-water mark)	14,472	feet
4	Within 300 feet from an occupied residence, school, hospital, institution or church	23,487	feet
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	14,362	feet
	ii) Within 1000 feet of any fresh water well or spring	14,362	feet
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)
7	Within 300 feet of a wetland	4,120	feet
8	Within the area overlying a subsurface mine	No	(Y/N)
	Distance between release and nearest registered mine	20,366	feet
9	Within an unstable area (Karst Map)	Low	Critical High Medium Low
	Distance between release and nearest unstable area	7,400	feet
10	Within a 100-year Floodplain	500	year
	Distance between release and nearest FEMA Zone A (100-year Floodplain)	13,000	feet
11	Soil Type	gravelly fine sandy loam	
12	Ecological Classification	Shallow Sandy	
13	Geology	Qp	
	NMAC 19.15.29.12 E (Table 1) Closure Criteria	>100'	<50' 51-100' >100'



New Mexico Office of the State Engineer

Water Column/Average Depth to Water

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

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

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

(NAD83 UTM in meters)

(In feet)

POD Number	POD Sub-Code	basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Distance	Depth Well	Depth Water	Water Column
CP 01907 POD1	CP	ED		4	2	2	18	19S	31E	603017	3614737	2504			
CP 00767 POD1	CP	ED			3	2	35	18S	30E	599300	3619158*	3755	500		
CP 00873 POD1	CP	LE			1	1	19	19S	31E	601772	3613147*	4105	340	180	160
CP 00818 POD1	CP	LE			1	4	26	18S	30E	599289	3620364*	4514	240		
CP 00829 POD1	CP	LE			2	4	16	19S	31E	606165	3614009*	4853	120		
CP 00357 POD1	CP	ED		4	4	1	24	19S	30E	600667	3612631*	4910	630		
CP 00647 POD1	O	CP	ED	4	2	2	15	19S	30E	598235	3614621*	4975	200	92	108

Average Depth to Water: **136 feet**
 Minimum Depth: **92 feet**
 Maximum Depth: **180 feet**

Record Count: 7

UTMNAD83 Radius Search (in meters):

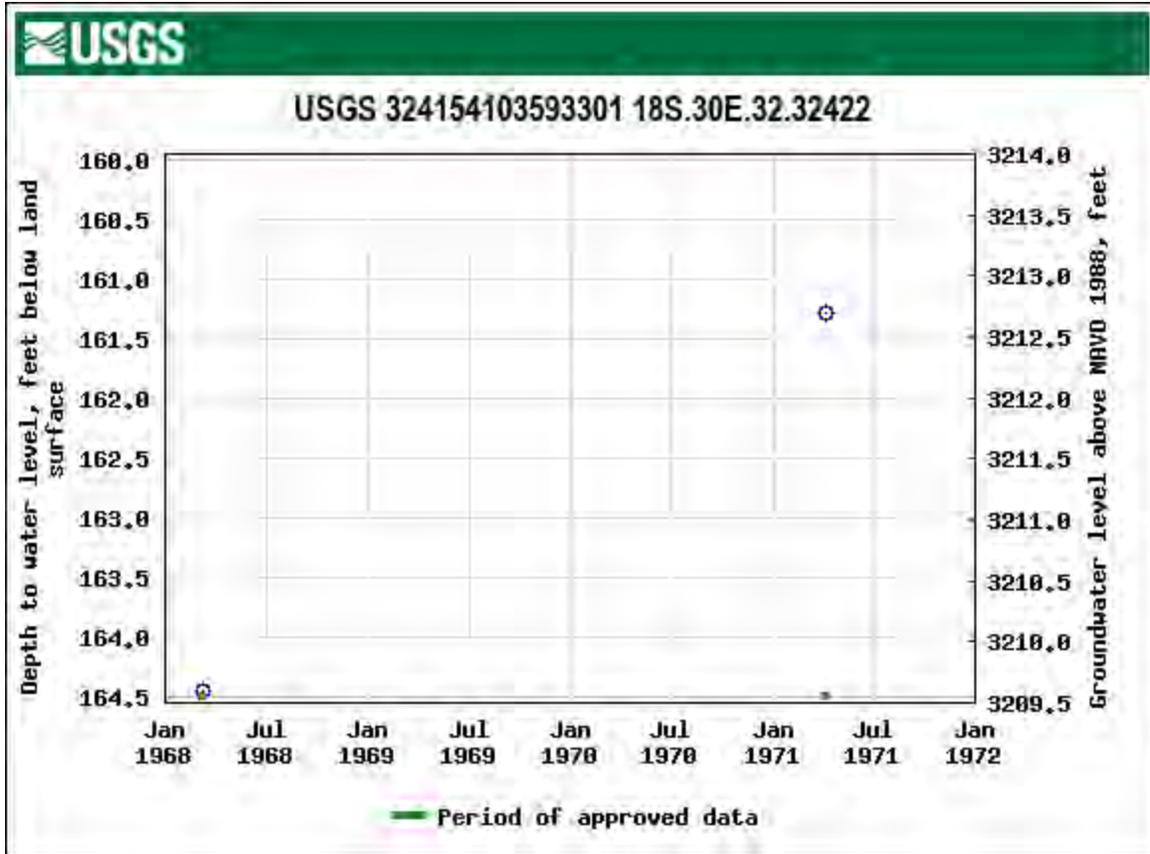
Easting (X): 602497.47

Northing (Y): 3617187.41

Radius: 5000

*UTM location was derived from PLSS - see Help

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





WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

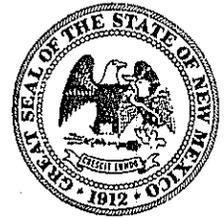
1. GENERAL AND WELL LOCATION	OSE POD NO. (WELL NO.)		WELL TAG ID NO.		OSE FILE NO(S).		
	WELL OWNER NAME(S) Devon Energy				PHONE (OPTIONAL)		
	WELL OWNER MAILING ADDRESS 6488 7 Rivers Hwy				CITY Artesia	STATE NM 88210	ZIP
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE 32	MINUTES 40	SECONDS 56.79	N	* ACCURACY REQUIRED: ONE TENTH OF A SECOND * DATUM REQUIRED: WGS 84	
	LONGITUDE 103	54	4.32	W			
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE							

2. DRILLING & CASING INFORMATION	LICENSE NO. 1833	NAME OF LICENSED DRILLER Jason Maley			NAME OF WELL DRILLING COMPANY Vision Resources, Inc	
	DRILLING STARTED 12/13/22	DRILLING ENDED 12/13/22	DEPTH OF COMPLETED WELL (FT) 105	BORE HOLE DEPTH (FT) 105	DEPTH WATER FIRST ENCOUNTERED (FT) none	
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN *add Centralizer info below <input checked="" type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)				STATIC WATER LEVEL IN COMPLETED WELL (FT)	DATE STATIC MEASURED
	DRILLING FLUID: <input checked="" type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES - SPECIFY:				DRILLING METHOD: <input checked="" type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input type="checkbox"/> OTHER - SPECIFY:	
				CHECK HERE IF PITLESS ADAPTER IS INSTALLED <input type="checkbox"/>		

DEPTH (feet bgl)		BORE HOLE DIAM (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
FROM	TO						
0	80	6	2inch pvc sch 40	thread	2	Sch 40	
80	100	6	2 inch pvc sch 40	thread	2	Sch 40	0.75

DEPTH (feet bgl)		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE- RANGE BY INTERVAL <small>*(if using Centralizers for Artesian wells- indicate the spacing below)</small>	AMOUNT (cubic feet)	METHOD OF PLACEMENT
FROM	TO				

FOR OSE INTERNAL USE		WR-20 WELL RECORD & LOG (Version 09/22/2022)	
FILE NO.	POD NO.	TRN NO.	
LOCATION	WELL TAG ID NO.	PAGE 1 OF 2	



PLUGGING RECORD

NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: _____
 Well owner: Devon Energy Phone No.: _____
 Mailing address: 6488 7 Rivers Hwy
 City: Artesia State: New Mexico Zip code: 88210

II. WELL PLUGGING INFORMATION:

- 1) Name of well drilling company that plugged well: Vision Resources, Inc
- 2) New Mexico Well Driller License No.: WD 1833 Expiration Date: 12-31-23
- 3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Jason Maley
- 4) Date well plugging began: 12-16-22 Date well plugging concluded: 12-16-22
- 5) GPS Well Location: Latitude: 32 deg, 40 min, 56.79 sec
Longitude: 103 deg, 54 min, 4.32 sec, WGS 84
- 6) Depth of well confirmed at initiation of plugging as: 105 ft below ground level (bgl),
by the following manner: tape
- 7) Static water level measured at initiation of plugging: dry ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: yes
- 9) Were all plugging activities consistent with an approved plugging plan? yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- 10) Log of Plugging Activities - Label vertical scale with depths, and indicate separate plugging intervals with horizontal lines as necessary to illustrate material or methodology changes. Attach additional pages if necessary.

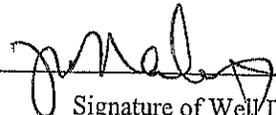
For each interval plugged, describe within the following columns:

Depth (ft bgl)	Plugging Material Used (include any additives used)	Volume of Material Placed (gallons)	Theoretical Volume of Borehole/ Casing (gallons)	Placement Method (tremie pipe, other)	Comments ("casing perforated first", "open annular space also plugged", etc.)
	Baroid Hole Plug	155	159.21	Open Hole	

MULTIPLY		BY		AND OBTAIN
cubic feet	x	7.4805	=	gallons
cubic yards	x	201.97	=	gallons

III. SIGNATURE:

I, Jason Maley, say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.


Signature of Well Driller

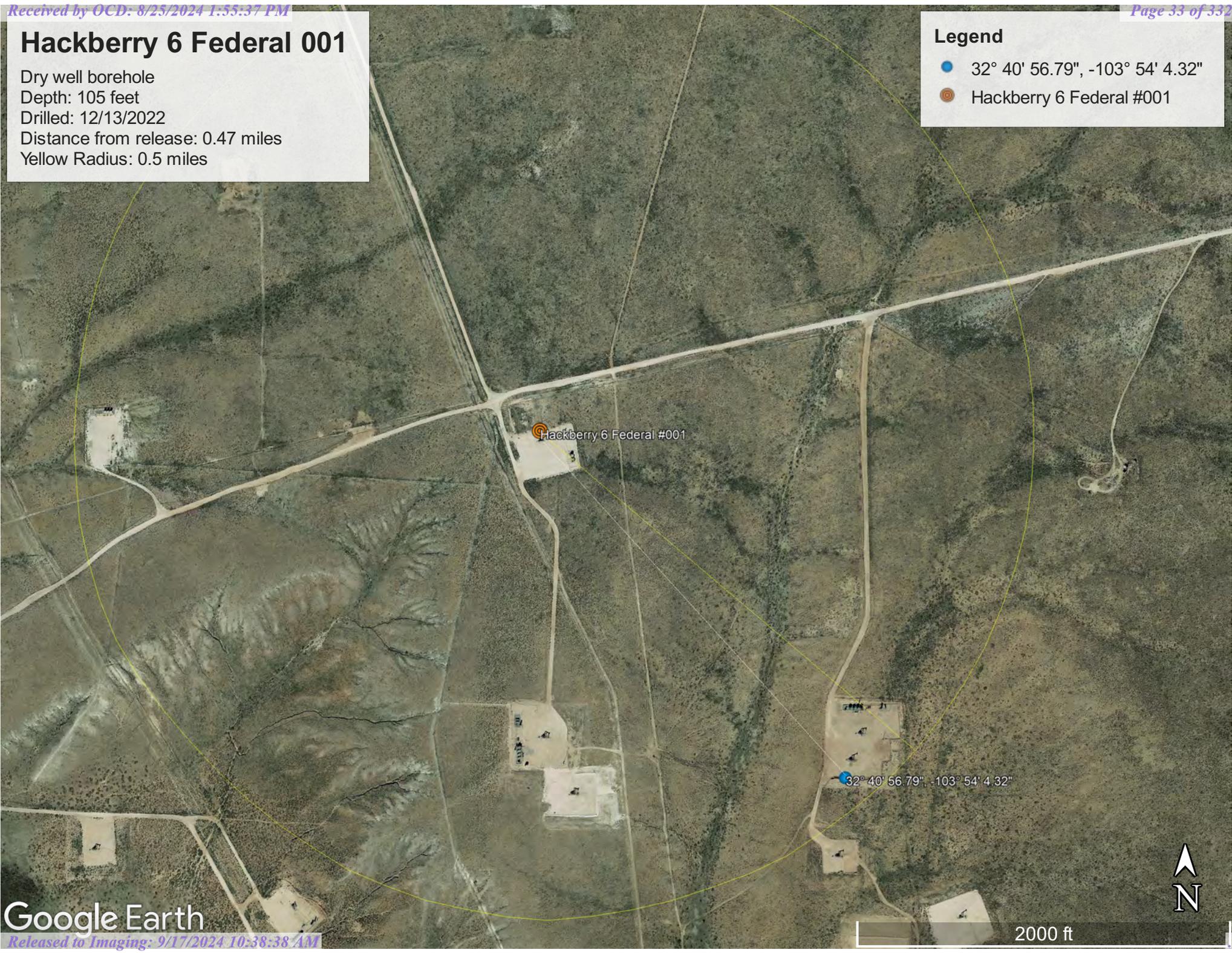
12/19/22
Date

Hackberry 6 Federal 001

Dry well borehole
Depth: 105 feet
Drilled: 12/13/2022
Distance from release: 0.47 miles
Yellow Radius: 0.5 miles

Legend

- 32° 40' 56.79", -103° 54' 4.32"
- Hackberry 6 Federal #001



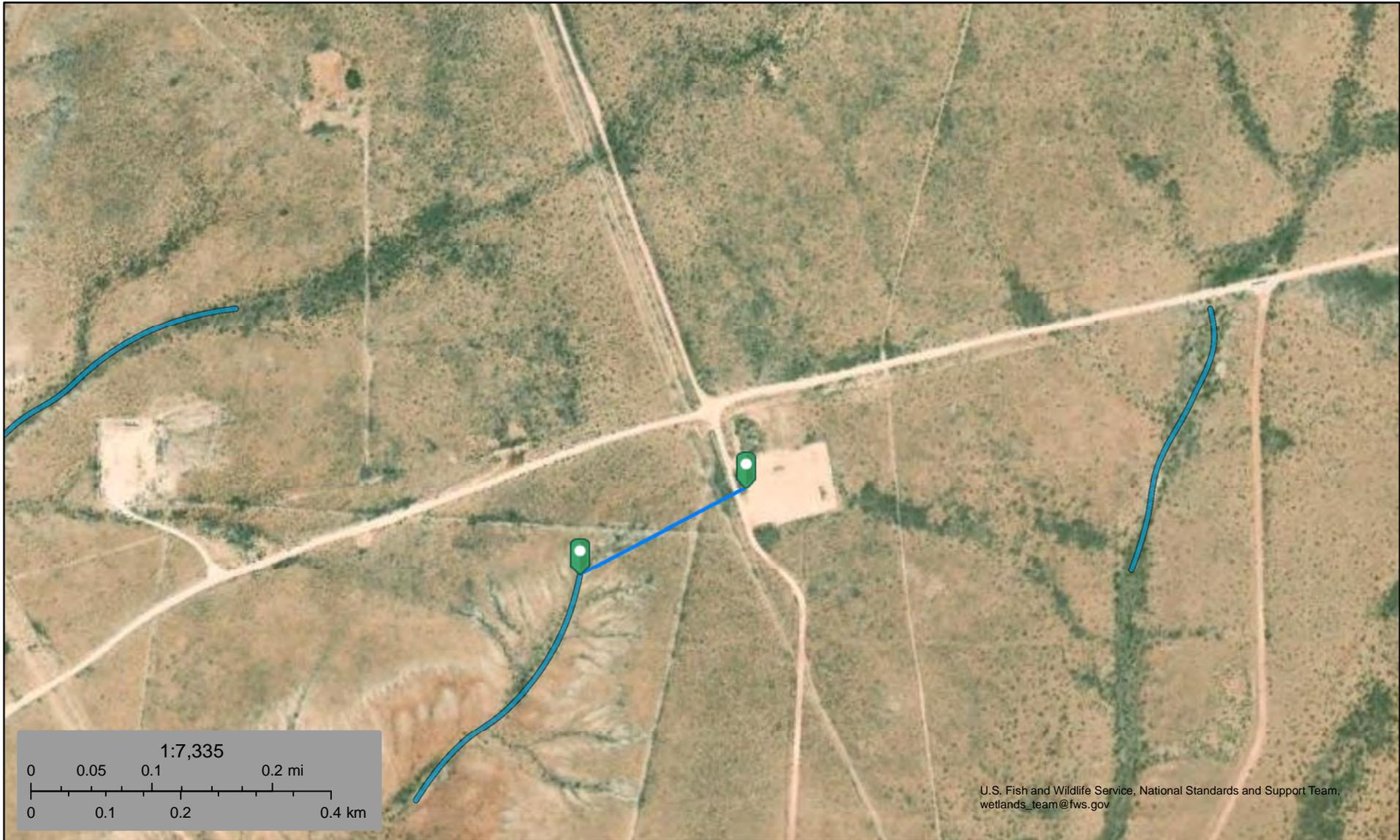
Hackberry 6 Federal #001

32° 40' 56.79", -103° 54' 4.32"





Hackberry 6 Federal #001H Riverine Water



June 25, 2024

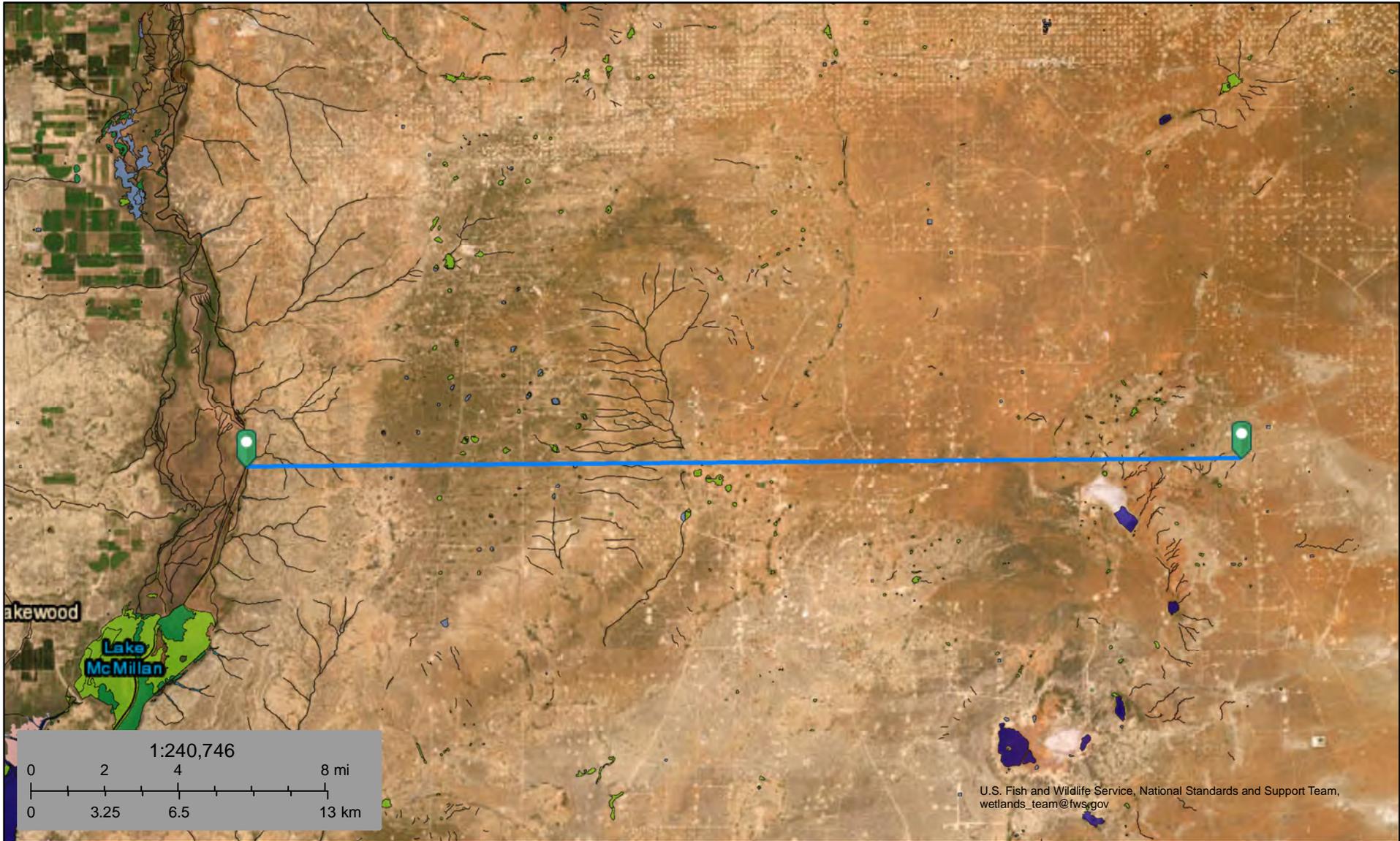
Wetlands

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



Hackberry 6 Fed 1 watercourse 120,439ft.



April 2, 2023

Wetlands

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

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Hackberry 6 Fed 1 Playa lake 14,472ft.



April 2, 2023

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond

- Lake
- Other
- Riverine

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Hackberry 6 Federal 001

Nearest Residence:
23,487 ft.

Legend

-  Bootes 15-1 Battery
-  Feature 1
-  Feature 2

32.6876373, -103.9066467

222

222

248

Bootes 15-1 Battery

Hackberry Lake Dunes Complex

Residence





New Mexico Office of the State Engineer

Water Right Summary



WR File Number: CP 00818 **Subbasin:** CP **Cross Reference:-**
Primary Purpose: PDL NON 72-12-1 DOMESTIC & LIVESTOCK
Primary Status: DCL DECLARATION
Total Acres: 0 **Subfile:** - **Header:** -
Total Diversion: 3 **Cause/Case:** -
Owner: TWIN WELLS RANCH LLC
Contact: STEVE MCCUTCHEON

Documents on File

Trn #	Doc	File/Act	Status		Transaction Desc.	From/	Acres	Diversion	Consumptive
			1	2		To			
get images 548031	DCL	1993-11-12	DCL	PRC	CP 00818	T	0	3	

Current Points of Diversion

POD Number	Well Tag	Source	Q Q Q			X	Y	Other Location Desc
			64	16	4			
CP 00818 POD1		Shallow	1	4	26	18S	30E	599289 3620364*

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

Priority Summary

Priority	Status	Acres	Diversion	Pod Number	Source
12/31/1950	DCL	0	3	CP 00818 POD1	Shallow

Place of Use

Q	Q	Q	Q	Sec	Tws	Rng	Acres	Diversion	CU	Use	Priority	Status	Other Location Desc
256	64	16	4										
							0	3		PDL	12/31/1950	DCL	NO PLACE OF USE GIVEN

Source

Acres	Diversion	CU	Use	Priority	Source Description
0	3		PDL	12/31/1950	GW

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



New Mexico Office of the State Engineer

Active & Inactive Points of Diversion

(with Ownership Information)

WR File Nbr	Sub basin	Use	Diversion	Owner	County	POD Number	Well Tag	Code	Grant	Source	(quarters are smallest to largest)			(NAD83 UTM in meters)		Distance				
											q	q	q	X	Y					
CP 01940	CP	EXP	0	DEVON ENERGY	ED	CP 01940 POD1	NA				4	4	07	19S	31E	603004	3615030		2215	
CP 01907	CP	MON	0	DEVON ENERGY	ED	CP 01907 POD1	NA				4	2	18	19S	31E	603017	3614737		2504	
CP 00767	CP	EXP	0	P.R. PATTON	ED	CP 00767 POD1					3	2	35	18S	30E	599300	3619158*		3755	
CP 00873	CP	PRO	0	SANTA FE ENERGY	LE	CP 00873 POD1			Shallow		1	1	19	19S	31E	601772	3613147*		4105	
CP 01943	CP	EXP	0	DEVON ENERGY	ED	CP 01943 POD1	NA				1	3	1	20	19S	31E	603217	3612883		4363
CP 00818	CP	PDL	3	TWIN WELLS RANCH LLC	LE	CP 00818 POD1			Shallow		1	4	26	18S	30E	599289	3620364*		4514	
CP 01032	CP	STK	3	G & L CATTLE, LLC	ED	CP 01032 POD1					2	1	4	19	19S	31E	602600	3612362		4825
CP 00829	CP	PLS	3	SNYDER RANCHES	LE	CP 00829 POD1			Shallow		2	4	16	19S	31E	606165	3614009*		4853	
CP 00357	CP	SRO	48	GULF OIL CORPORATION	ED	CP 00357 POD3					1	2	4	24	19S	30E	601276	3612437*		4904
					ED	CP 00357 POD1			Shallow		4	4	1	24	19S	30E	600667	3612631*		4910

Record Count: 10

UTMNAD83 Radius Search (in meters):

Easting (X): 602497.47

Northing (Y): 3617187.41

Radius: 5000

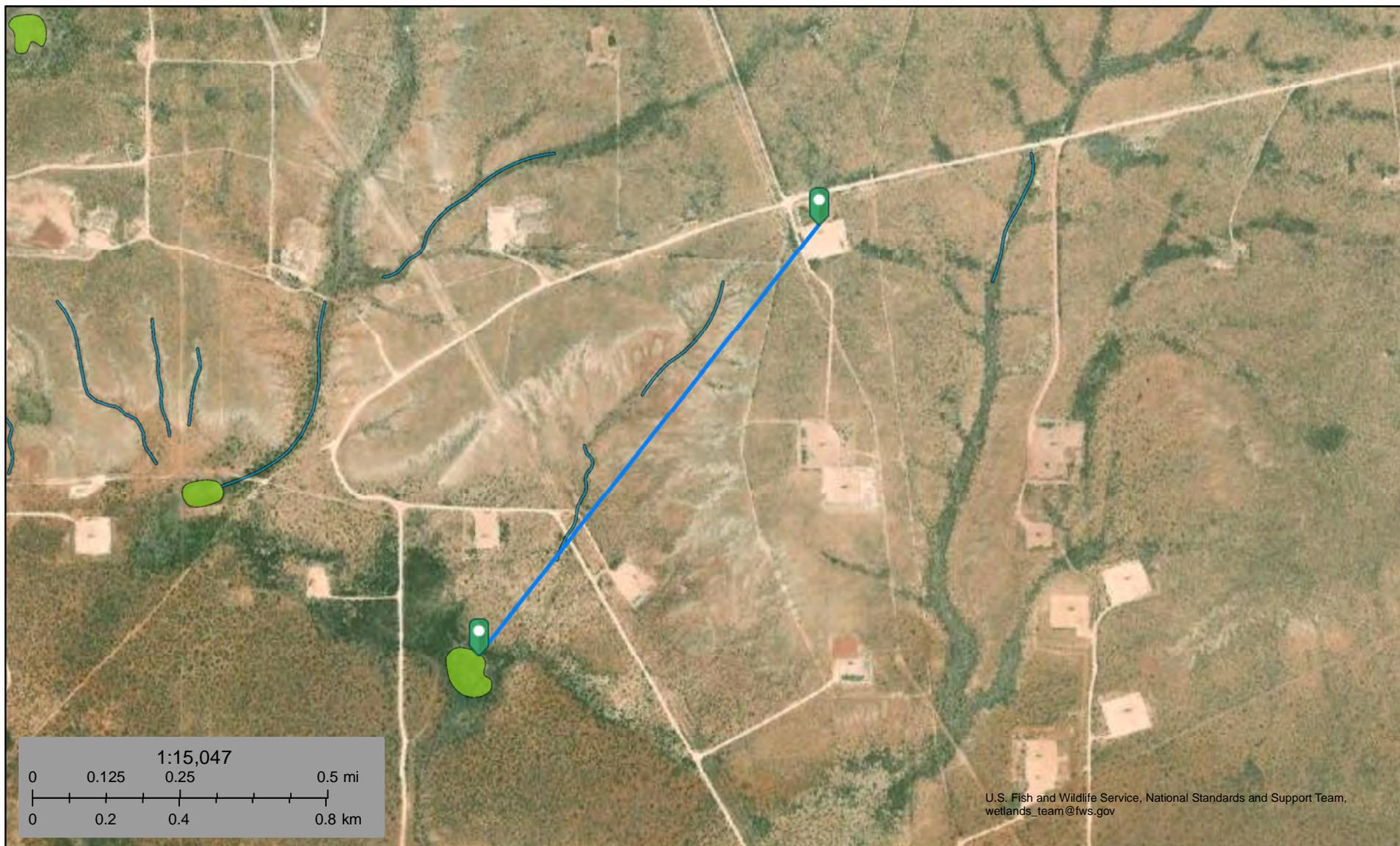
Sorted by: Distance

*UTM location was derived from PLSS - see Help

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



Hackberry 6 Fed 1 Wetland 4,120ft.



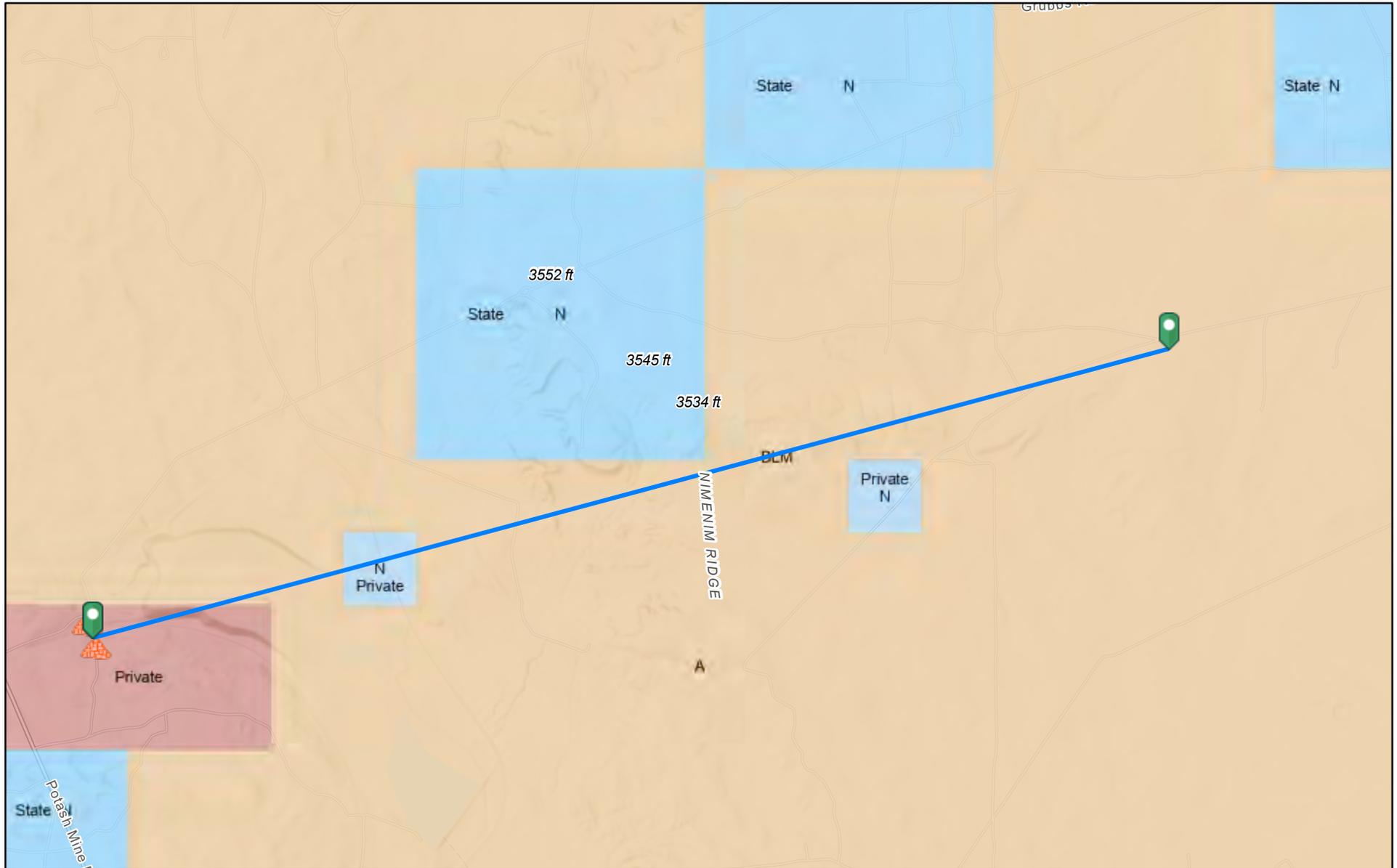
April 2, 2023

Wetlands

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

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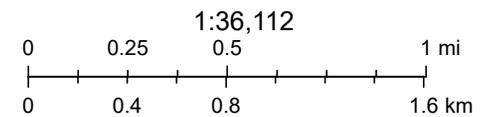
Hackberry 6 Federal #001H 3.86 mi/20,366' East of Subsurface Mine



6/25/2024, 7:00:00 AM

Registered Mines

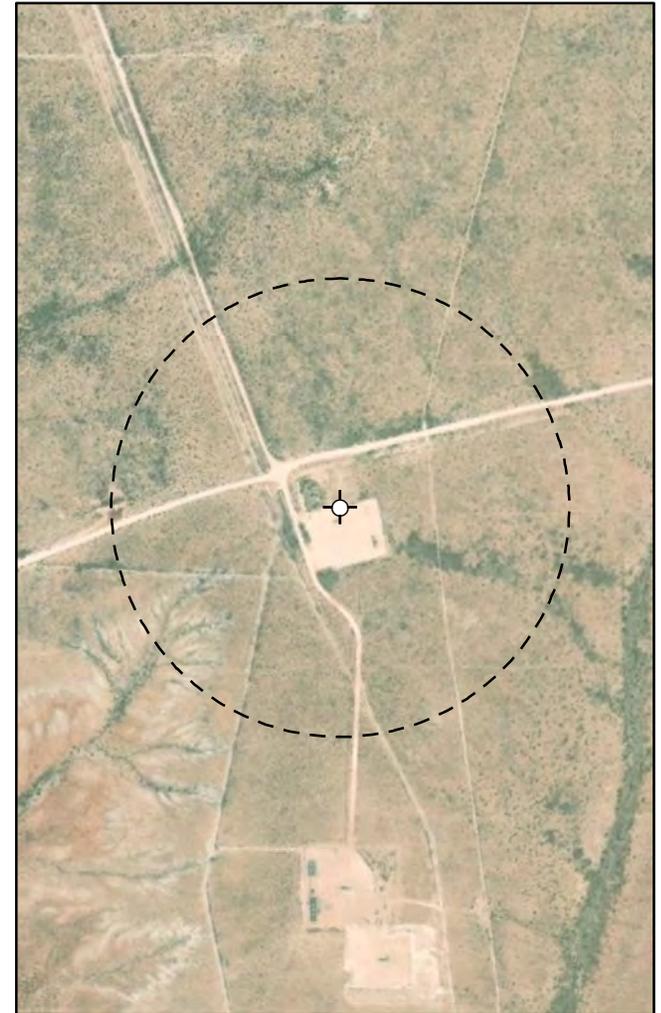
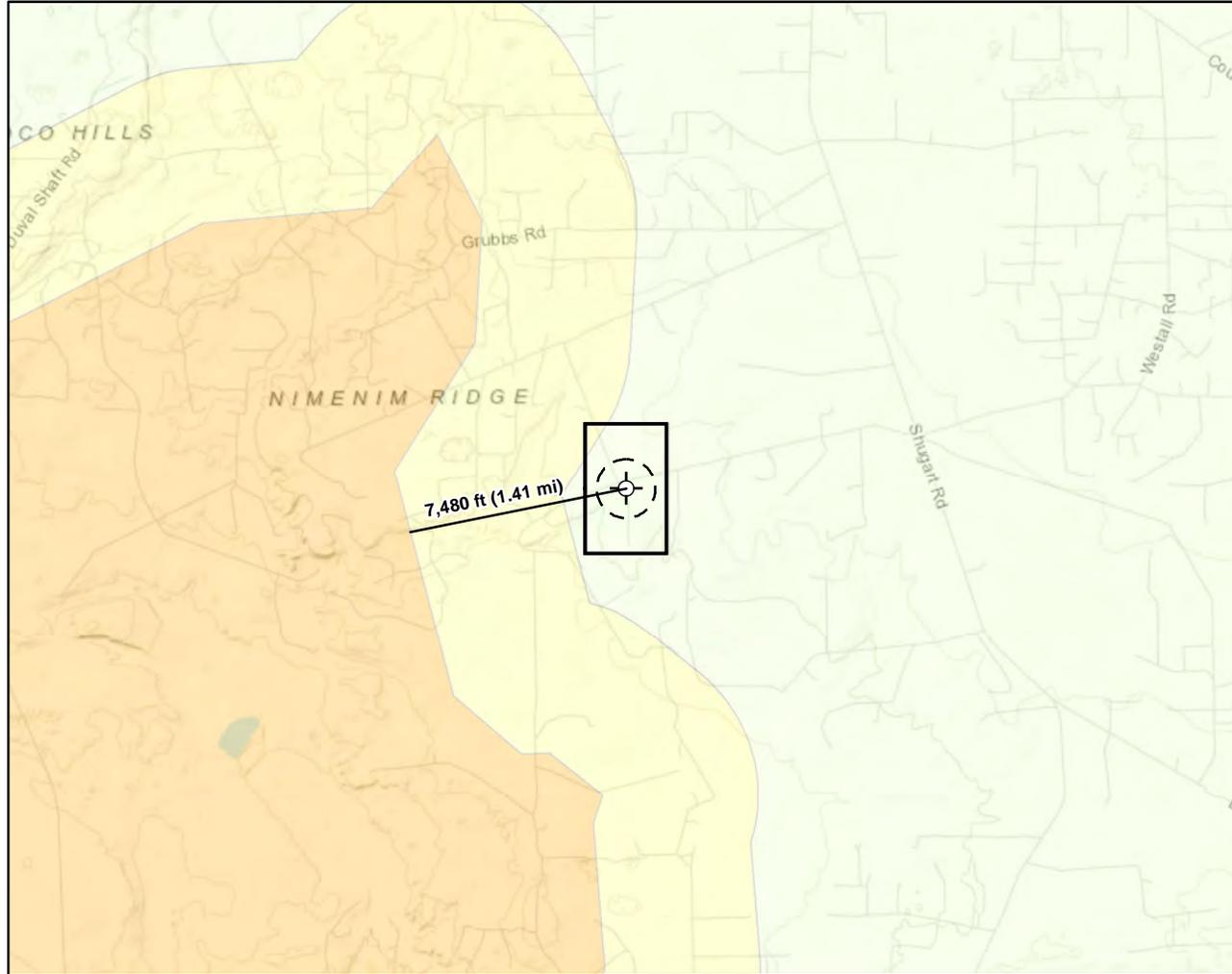
 Potash



Esri, NASA, NGA, USGS, FEMA, Texas Parks & Wildlife, CONANP, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS,

EMNRD MMD GIS Coordinator

Document Path: G:\V-Projects\US PROJECTS\Devon Energy Corporation\2023\23E-01582 - Hackberry 6 Federal #001\Figure X Karst Potential Schematic\23E-01582.mxd



Karst Potential

- Critical
 - High
 - Medium
 - Low
- Site Location
 - Buffer (1,000 ft)

Overview Map

0 0.25 0.5 1 mi

Detail Map

0 150 300 600 ft.



Map Center:
Lat/Long: 32.687637, -103.906647

NAD 1983 UTM Zone 13N
Date: Jun 26/24



**Karst Potential Schematic
Hackberry 6 Federal #001**

FIGURE:

X



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.

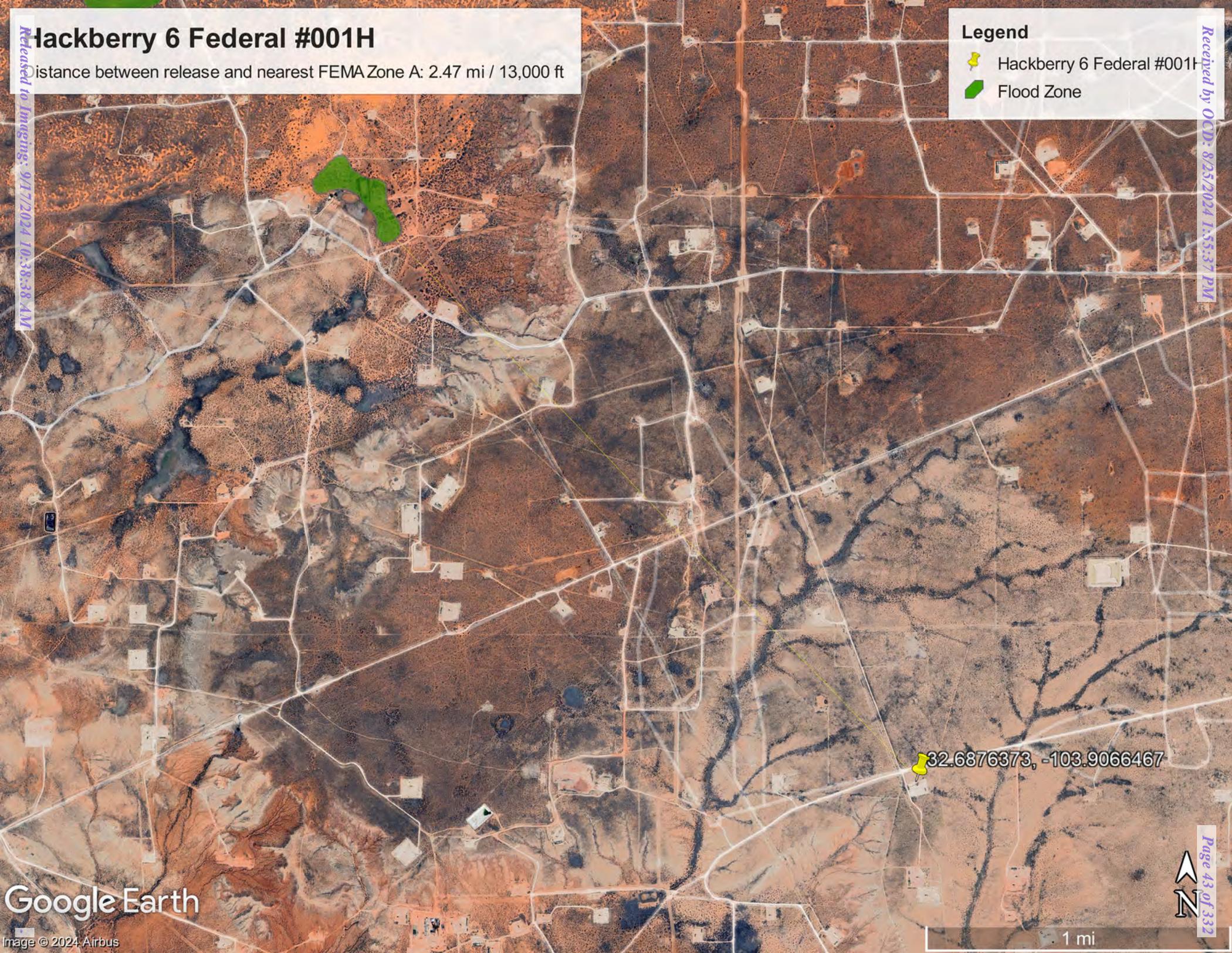
Note: Inset Map, ESRI 2020; Overview Map: ESRI World Topographic. Karst potential data sourced from Rosswell Field Office, Bureau of Land Management, 2020 or United States Department of the Interior, Bureau of Land Management. (2018). Karst Potential.

VERSATILITY. EXPERTISE.

Hackberry 6 Federal #001H
Distance between release and nearest FEMA Zone A: 2.47 mi / 13,000 ft

Legend

-  Hackberry 6 Federal #001H
-  Flood Zone



Released to Imaging: 9/17/2024 10:38:38 AM

Received by OCD: 8/25/2024 1:55:37 PM

32.6876373, -103.9066467

National Flood Hazard Layer FIRMette



103°54'43"W 32°41'31"N



Legend

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

- | | | |
|------------------------------------|--|--|
| SPECIAL FLOOD HAZARD AREAS | | Without Base Flood Elevation (BFE)
<i>Zone A, V, A99</i> |
| | | With BFE or Depth <i>Zone AE, AO, AH, VE, AR</i> |
| | | 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 <i>Zone X</i> |
| | | Future Conditions 1% Annual Chance Flood Hazard <i>Zone X</i> |
| | | Area with Reduced Flood Risk due to Levee. See Notes. <i>Zone X</i> |
| | | Area with Flood Risk due to Levee <i>Zone D</i> |
| OTHER AREAS | | NO SCREEN Area of Minimal Flood Hazard <i>Zone X</i> |
| | | Effective LOMRs |
| GENERAL STRUCTURES | | Area of Undetermined Flood Hazard <i>Zone D</i> |
| | | 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 |
| MAP PANELS | | Jurisdiction Boundary |
| | | Coastal Transect Baseline |
| | | Profile Baseline |
| | | Hydrographic Feature |
| | | Digital Data Available |
| | | No Digital Data Available |
| | | Unmapped |
| | | The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location. |



0 250 500 1,500 2,000 Feet 1:6,000 103°54'5"W 32°41'N

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 4/1/2023 at 11:31 AM 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.



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



April 1, 2023

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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SG—Simona gravelly fine sandy loam, 0 to 3 percent slopes.....	13
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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

Custom Soil Resource Report

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

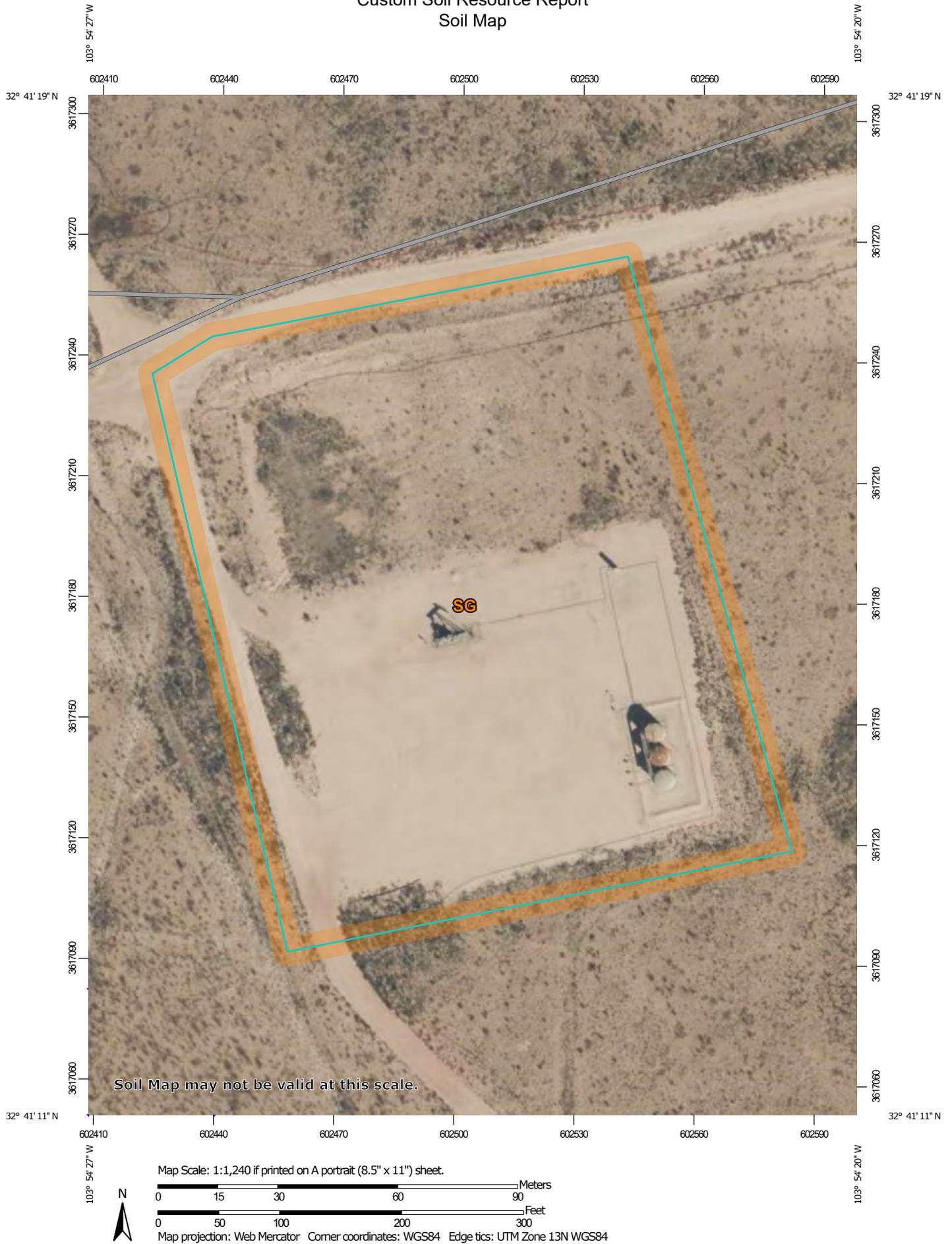
Custom Soil Resource Report

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



Custom Soil Resource Report

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 18, Sep 8, 2022

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.

Custom Soil Resource Report

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
SG	Simona gravelly fine sandy loam, 0 to 3 percent slopes	4.8	100.0%
Totals for Area of Interest		4.8	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.

Custom Soil Resource Report

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.

Custom Soil Resource Report

Eddy Area, New Mexico**SG—Simona gravelly fine sandy loam, 0 to 3 percent slopes****Map Unit Setting**

National map unit symbol: 1w5w
Elevation: 2,750 to 5,000 feet
Mean annual precipitation: 8 to 16 inches
Mean annual air temperature: 57 to 70 degrees F
Frost-free period: 180 to 230 days
Farmland classification: Not prime farmland

Map Unit Composition

Simona and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Simona**Setting**

Landform: Plains, alluvial fans
Landform position (three-dimensional): Rise
Down-slope shape: Convex, linear
Across-slope shape: Linear
Parent material: Mixed alluvium and/or eolian sands

Typical profile

H1 - 0 to 19 inches: gravelly fine sandy loam
H2 - 19 to 23 inches: indurated

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 7 to 20 inches to petrocalcic
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water supply, 0 to 60 inches: Very low (about 2.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: R070BD002NM - Shallow Sandy
Hydric soil rating: No

Minor Components**Simona**

Percent of map unit: 4 percent

Custom Soil Resource Report

Ecological site: R070BD002NM - Shallow Sandy
Hydric soil rating: No

Playa

Percent of map unit: 1 percent
Landform: Playas
Landform position (three-dimensional): Talf
Down-slope shape: Concave, convex
Across-slope shape: Concave, linear
Ecological site: R070BC017NM - Bottomland
Hydric soil rating: Yes

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Custom Soil Resource Report

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Ecological site R070BD002NM Shallow Sandy

Accessed: 04/01/2023

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 sites often occur in association or in a complex with Shallow Sandy Sites.
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Similar sites

R070BD004NM	Sandy Sandy ecological sites are similar to Shallow Sandy sites in species composition and Transition pathways.
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Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site occurs on plains, alluvial fans, uplands, or fan piedmonts. The parent material consists of mixed loamy alluvium or eolian material derived from igneous and sedimentary bedrock. The petrocalcic layer is at a depth of 10 to 25 inches and undulating.

Slopes are nearly level to undulating, usually less than 9 percent. Elevations range from 2,842 to 4,500 feet.

Table 2. Representative physiographic features

Landforms	(1) Plain (2) Fan piedmont (3) Alluvial fan
Elevation	2,842–4,500 ft
Slope	1–9%
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 from 207 to 220 days. The last killing frost is in late March or early April, and the first killing frost is in late 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 the site. The vegetation of this site can take advantage of the moisture and the time it falls. Because of the soil profile, little moisture can be stored in the soil for any length of time. Moisture is readily available to the plants from the time it falls. Strong winds from the southwest blow from January through June which rapidly dries out the soil profile during a critical period for 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 very shallow to shallow, less than 20 inches in depth. Surface and subsurface textures are gravelly loamy sand, gravelly fine sandy loam or fine sandy loam.

An indurated calache layer occurs at depths of 6 to 25 inches and is at an average of 15 inches from the surface. Underlying material textures are very gravelly fine sandy loam, very gravelly sandy loam, gravelly fine sandy loam. Gravels are calcium carbonate concretions, calcium carbonate content ranges from 30 to 65 percent.

The indurated caliche layer typically holds water up in the profile for short periods within the root zone of plants. These soils will blow if left unprotected by vegetation.

Minimum and maximum values listed below represent the characteristic soils for this site.

Characteristic soils are:

- Simona
- Jerag

Table 4. Representative soil features

Surface texture	(1) Fine sandy loam (2) Loamy fine sand (3) Gravelly fine sandy loam
Family particle size	(1) Loamy
Drainage class	Well drained to moderately well drained
Permeability class	Moderately slow to moderate

Soil depth	7–24 in
Surface fragment cover <=3"	5–25%
Surface fragment cover >3"	0%
Available water capacity (0-40in)	1–2 in
Calcium carbonate equivalent (0-40in)	5–15%
Electrical conductivity (0-40in)	0–4 mmhos/cm
Sodium adsorption ratio (0-40in)	0
Soil reaction (1:1 water) (0-40in)	7.4–8
Subsurface fragment volume <=3" (Depth not specified)	5–25%
Subsurface fragment volume >3" (Depth not specified)	0%

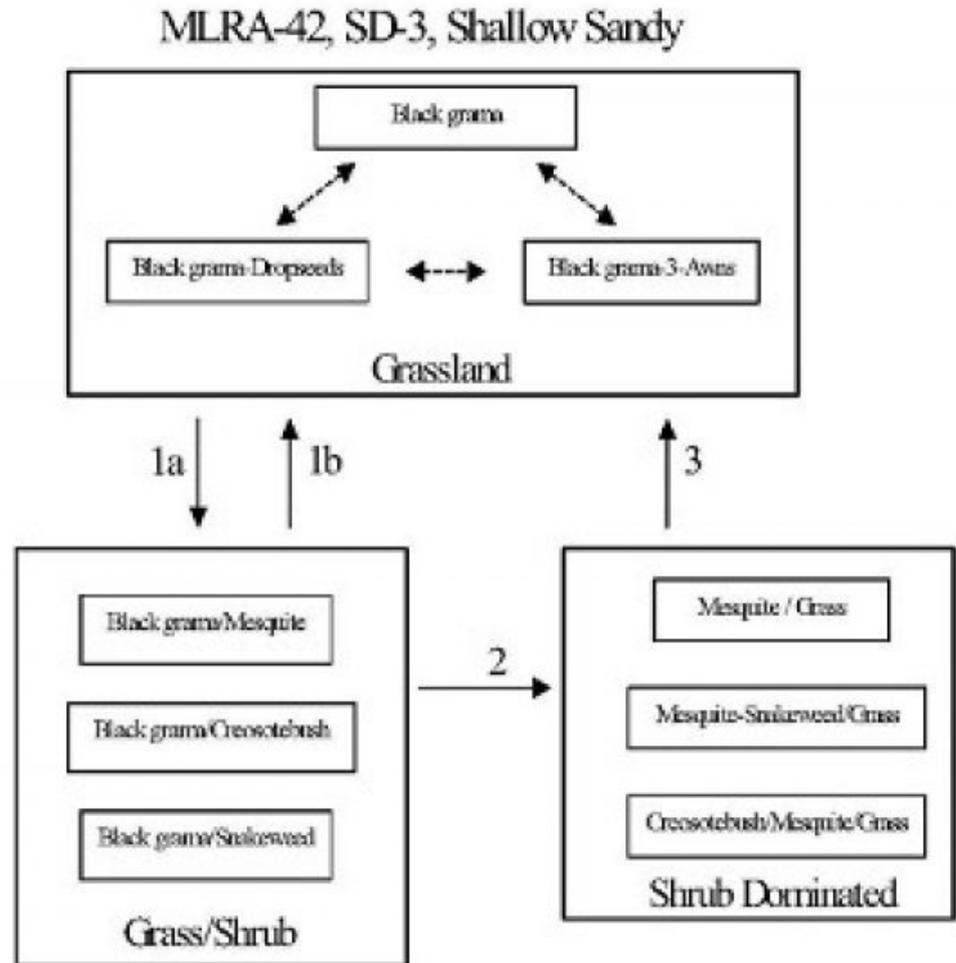
Ecological dynamics

Overview

The Shallow Sandy site occurs on upland plains, and tops of low ridges and mesas, associated with Sandy, Loamy Sand, and Shallow sites. Coarse to moderately coarse soil surface textures, shallow depth (<20 inches) to an indurated caliche layer (petrocalcic horizon), and an overwhelming dominance by black grama help to distinguish this site. The historic plant community of the Shallow Sandy site is a black grama dominated grassland sparsely dotted with shrubs. Shrubs, especially mesquite and creosotebush can increase or colonize due to the dispersal of shrub seeds by livestock or wildlife. This increase in mesquite and colonization of creosotebush may be enhanced by proximity to areas with existing high shrub densities. Fire suppression, and the loss of grass cover due to overgrazing or drought may facilitate the increase and encroachment of shrubs. Persistent loss of grass cover, competition for resources by shrubs, and periods of climate with increased winter precipitation and dry summers, may initiate the transition to a shrub-dominated state.

State and transition model

Plant Communities and Transitional Pathways (diagram)



- 1a. Seed dispersal, drought, overgrazing, fire suppression.
- 1b. Prescribed fire, brush control, prescribed grazing.
- 2. Persistent loss of grass cover, resource competition, increased winter precipitation.
- 3. Brush control, range seeding, prescribed grazing.

**State 1
Historic Climax Plant Community**

**Community 1.1
Historic Climax Plant Community**

Grassland: This site responds well to management and is resistant to state change, due to the shallow depth to petrocalcic horizon and sandy surface textures. The sandy surface textures allow rapid water infiltration and the petrocalcic horizon helps to keep water perched and available to shallow rooted grasses. Black grama is the dominant species in the historic plant community, averaging 50 to 60 percent of the total production for this site. Bush muhly, blue grama, and dropseeds are present as sub-dominants. Typically, yucca, javalinabush, range ratany, prickly pear, and mesquite are sparsely dotted across the landscape. Leatherweed croton, cutleaf

happlopappus, wooly groundsel, and threadleaf groundsel are common forbs. Continuous heavy grazing or extended periods of drought will cause a loss of grass cover characterized by a decrease in black grama, bush muhly, blue and sideoats grama, plains bristlegrass, and Arizona cottontop. Dropseeds and or threeawns may increase and become sub-dominant to black grama. Continued loss of grass cover in conjunction with dispersal of shrub seeds and fire suppression is believed to cause the transition to a state with increased amounts of shrubs (Grass/Shrub state). Diagnosis: Black grama is the dominant grass species. Grass cover uniformly distributed. Shrubs are a minor component averaging only two to five percent canopy cover. Litter cover is high (40-50 percent of area), and litter movement is limited to smaller size class litter and short distances (<. 5m). Other grasses that could appear on this site would include: six-weeks grama, fluffgrass, false-buffalograss, hairy grama, little bluestem, bristle panicum, cane bluestem, Indian ricegrass, tridens spp., and red lovegrass. Other woody plants include: pricklypear, cholla, fourwing saltbush, catclaw mimosa, winterfat, American tarbush and mesquite. Other forbs include: globemallow, verbena, desert holly, senna, plains blackfoot, trailing fleabane, fiddleneck, deerstongue, wooly Indianwheat, and locoweed.

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	474	652	830
Forb	78	107	136
Shrub/Vine	48	66	84
Total	600	825	1050

Table 6. Ground cover

Tree foliar cover	0%
Shrub/vine/liana foliar cover	0%
Grass/grasslike foliar cover	30-35%
Forb foliar cover	0%
Non-vascular plants	0%
Biological crusts	0%
Litter	40-50%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	15-25%

Figure 5. Plant community growth curve (percent production by month). NM2802, R042XC002NM-Shallow Sandy-HCPC. SD-3 Shallow Sandy - 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: This state is characterized by the notable presence of shrubs, especially mesquite, broom snakeweed, and/or creosotebush, however grasses remain as the dominant species. Black grama is the dominant

grass species. Threeawns and or dropseeds are sub-dominant. The susceptibility of the Shallow Sandy site to shrub encroachment may be higher when located adjacent to other sites with high densities of mesquite or creosotebush. Retrogression within this site is characterized by decreases in grass cover and increasing densities of shrubs. Diagnosis: Black grama remains as the dominant grass species. Grass cover varies in response to the amount of shrub increase, ranging from uniform to patchy. Shrubs are found at increased densities relative to the grassland state, especially mesquite, creosotebush, or broom snakeweed. Transition to Grass/Shrub (1a) Historically fire may have kept mesquite and other shrubs in check by completely killing some species and disrupting seed production cycles and suppressing the establishment of shrub seedlings in others. Fire suppression combined with seed dispersal by livestock and wildlife is believed to be the factors responsible for the establishment and increase in shrubs. 1, 3 Loss of grass cover due to overgrazing, prolonged periods of drought, or their combination, reduces fire fuel loads and increases the susceptibility of the site to shrub establishment. Key indicators of approach to transition: Increase in the relative abundance of dropseeds and threeawns Presence of shrub seedlings Loss of organic matter—evidenced by an increase in physical soil crusts 8 Transition back to Grassland (1b) Brush control is necessary to initiate the transition back to the grassland state. If adequate fuel loads remain, possibly the reintroduction of fire as a management tool will assist in the transition back, however, mixed results have been observed concerning the effects of fire on black grama grasslands.6 Prescribed grazing will help ensure adequate rest following brush control and will assist in the establishment and maintenance of grass cover capable of sustaining fire.

**State 3
Shrub Dominated**

**Community 3.1
Shrub Dominated**

Shrub-Dominated: Across the range of soil types included in the Shallow Sandy site, mesquite is typically the dominant shrub, but it does occur as a co-dominant or sub-dominant species with creosotebush or broom snakeweed. Mesquite tends to dominate when the Shallow Sandy site occurs as part of a complex or in association with Sandy or Loamy Sand sites. Creosotebush tends to dominate on Shallow Sandy sites that occur as part of, or adjacent to Shallow Sites. Broom snakeweed increases in response to heavy grazing, but tends to cycle in and out depending on timing of rainfall. However, once the site is dominated by shrubs and snakeweed becomes well established, it tends to remain as a major component in the shrub dominated state. Diagnosis: Mesquite, creosotebush, or snakeweed cover is high, exceeding that of grasses. Grass cover is patchy with large connected bare areas present. Black grama, threeawns, or dropseeds may be the dominant grass. Evidence of accelerated wind erosion in the form of pedestalling of plants, and soil deposition around shrub bases may be common. Transition to Shrub-Dominated (2) Persistent loss of grass cover and the resulting increased competition between shrubs and remaining grasses for dwindling resources (especially soil moisture) may drive this transition.5 Additionally periods of increased winter precipitation may facilitate periodic episodes of shrub expansion and establishment. 4 Key indicators of approach to transition: Increase in size and frequency of bare patches. Loss of grass cover in shrub interspaces. Increased signs of erosion, evidenced by pedestalling of plants, and soil and litter deposition on leeward side of plants. 7 Transition back to Grassland (3) Brush control is necessary to reduce competition from shrubs and reestablish grasses. Range seeding may be necessary if insufficient grasses remain, The benefits, and costs, will vary depending upon the degree of site degradation, and adequate precipitation following seeding.

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			413–495	
	black grama	BOER4	<i>Bouteloua eriopoda</i>	413–495	–
2	Warm Season			41–83	
	bush muhly	MUPO2	<i>Muhlenbergia porteri</i>	41–83	–
3	Warm Season			41–83	

	blue grama	BOGR2	<i>Bouteloua gracilis</i>	41-83	-
4	Warm Season			25-41	
	sideoats grama	BOCU	<i>Bouteloua curtipendula</i>	25-41	-
5	Warm Season			41-83	
	spike dropseed	SPCO4	<i>Sporobolus contractus</i>	41-83	-
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	41-83	-
	mesa dropseed	SPFL2	<i>Sporobolus flexuosus</i>	41-83	-
6	Warm Season			17-41	
	threeawn	ARIST	<i>Aristida</i>	17-41	-
7	Warm Season			41-83	
	Arizona cottontop	DICA8	<i>Digitaria californica</i>	41-83	-
	plains bristlegrass	SEVU2	<i>Setaria vulpiseta</i>	41-83	-
8	Warm Season			41-83	
	mat sandbur	CELO3	<i>Cenchrus longispinus</i>	41-83	-
	hooded windmill grass	CHCU2	<i>Chloris cucullata</i>	41-83	-
9	Other Perennial Grasses			25-41	
	Grass, perennial	2GP	<i>Grass, perennial</i>	25-41	-
Shrub/Vine					
10	Shrub			8-25	
	javelina bush	COER5	<i>Condalia ericoides</i>	8-25	-
11	Shrub			8-25	
	yucca	YUCCA	<i>Yucca</i>	8-25	-
12	Shrub			8-25	
	jointfir	EPHED	<i>Ephedra</i>	8-25	-
	littleleaf ratany	KRER	<i>Krameria erecta</i>	8-25	-
13	Shrub			8-25	
	featherplume	DAFO	<i>Dalea formosa</i>	8-25	-
14	Shrub			8-25	
	broom snakeweed	GUSA2	<i>Gutierrezia sarothrae</i>	8-25	-
15	Other Shrubs			25-41	
	Shrub (>.5m)	2SHRUB	<i>Shrub (>.5m)</i>	25-41	-
Forb					
16	Forb			17-41	
	leatherweed	CRPOP	<i>Croton pottsii var. pottsii</i>	17-41	-
	Goodding's tansyaster	MAPIG2	<i>Machaeranthera pinnatifida ssp. gooddingii var. gooddingii</i>	17-41	-
17	Forb			17-41	
	woolly groundsel	PACA15	<i>Packera cana</i>	17-41	-
	threadleaf ragwort	SEFLF	<i>Senecio flaccidus var. flaccidus</i>	17-41	-
18	Forb			8-25	
	whitest evening primrose	OEAL	<i>Oenothera albicaulis</i>	8-25	-
19	Other Forbs			8-25	
	Forb (herbaceous, not grass nor grass-like)	2FORB	<i>Forb (herbaceous, not grass nor grass-like)</i>	8-25	-

Animal community

This site provides habitats which support a resident animal community that is characterized by pronghorn antelope, swift fox, black-tailed jackrabbit, spotted ground squirrel, Ord's kangaroo rat, northern grasshopper mouse, coyote, horned lark, meadowlark, lark bunting, scaled quail, morning dove, side-blotched lizard, round-tailed horned lizard, marbled whiptail, prairie rattlesnake and ornate box turtle.

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
Jarag D
Simona D

Recreational uses

This site offers recreation for hiking, horseback riding, nature observation and photography, and quail and dove hunting. During years of abundant spring moisture, this site displays a riot of color from wildflowers during May and June. A few summer and fall flowers also occur.

Wood products

The natural potential plant community of this site affords little or no wood products. Where the site has been invaded by mesquite or cholla cactus the roots and stems of these plants provide attractive material for a variety of curiosities, such as lamps and small furniture.

Other products

This site is suitable for grazing by all kinds and classes of livestock during all seasons of the year. Because of the sandy textures and shallow profile, this site will respond rapidly to management. As this site deteriorates, plants such as black grama, bush muhly, blue and sideoats grama, plains bristlegrass and Arizona cottontop, will decrease and be replaced by plants such as threeawns, mesquite, creosote bush, and broom snakeweed. This also causes a decrease in ground cover, leaving the soil to blow. This site responds best 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 2.5 – 3.5
75 – 51 3.2 – 4.6
50 – 26 4.5 – 7.5
25 – 0 7.6 +

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.

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8. U.S. Department of Agriculture, Natural Resources Conservation Service. 2001. Soil Quality Information Sheets. Rangeland Soil Quality—Physical and Biological Soil Crusts. Rangeland Sheet 7 [Online]. Available: <http://www.statlab.iastate.edu/survey/SQI/range.html>

Contributors

David Trujillo
 Don Sylvester

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):**

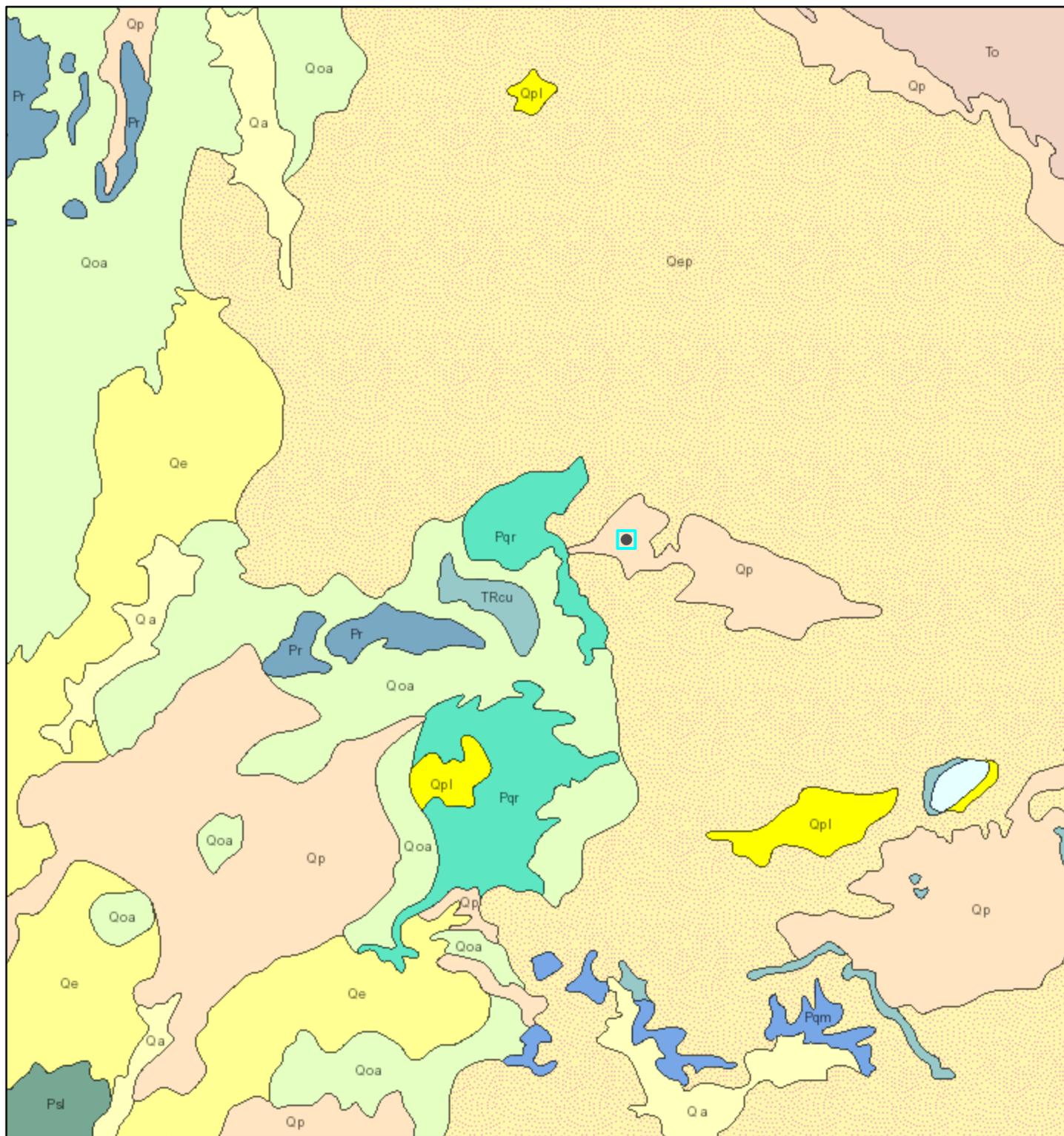
14. **Average percent litter cover (%) and depth (in):**

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:**

Hackberry 6 Federal 001 Geology

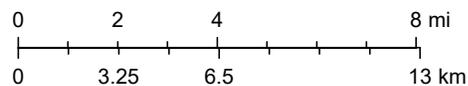


8/29/2023, 3:34:39 PM

1:288,895

Lithologic Units

- Playa—Alluvium and evaporite deposits (Holocene)
- Water—Perennial standing water
- Qa—Alluvium (Holocene to upper Pleistocene)



Esri, NASA, NGA, USGS, 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; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS

ArcGIS Web AppBuilder

APPENDIX B – Daily Field Report(s)



Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	4/10/2023
Site Location Name:	Hackberry 6 Fed 1	Report Run Date:	4/10/2023 9:56 PM
Client Contact Name:	Wes Matthews	API #:	
Client Contact Phone #:	(575) 748-0176	Project Owner:	
Unique Project ID		Project Manager:	
Project Reference #			

Summary of Times

Arrived at Site	4/10/2023 8:35 AM
Departed Site	4/10/2023 3:55 PM

Field Notes

8:59 Arrived on site and filled out and signed safety documents.

12:30 Performed a site walk evaluation for delineation plan and line sweep with magnetic locator.

Collected samples BH23-01 0', 1'; BH23-02 0', 1'; BH23-03 0', 1'; BH23-04 0', 1'; BH23-05 0', 1'; BH23-06 0', 1' and BH23-07 0', 1'.

Field screened samples BH23-01 0', 1'; BH23-02 0', 1'; BH23-03 0', 1'; BH23-04 0', 1'; BH23-05 0', 1'; BH23-06 0', 1' and BH23-07 0', 1' for chlorides with EC meter.

Field screening produced >600 ppm Cl for all samples except BH23-07 0' and 1'.

14:22 Collected samples BH23-08 0', 1'; BH23-09 0', 1'; BH23-10 0', 1'; BH23-11 0', 1'; BH23-12 0', refusal at 0.5'; and BH23-13 0', 1'.

Field screened samples BH23-08 0', 1'; BH23-09 0', 1'; BH23-10 0', 1'; BH23-11 0', 1'; BH23-12 0'; and BH23-13 0', 1'. for chlorides with EC meter.

Field screening produced >600 ppm Cl for all samples except BH23-11 0', 1'; BH23-12 0'; and BH23-13 0', 1'.

Field screened samples BH23-01 0', 1'; BH23-02 0', 1'; BH23-03 0', 1'; BH23-04 0', 1'; BH23-05 0', 1'; BH23-06 0', 1' and BH23-07 0', 1' for chlorides with EC meter.

Field screening produced >600 ppm Cl for all samples except BH23-07 0' and 1'.



Daily Site Visit Report

15:08 Field screened samples BH23-08 0', 1'; BH23-09 0', 1'; BH23-10 0', 1'; BH23-11 0', 1'; BH23-12 0'; and BH23-13 0', 1' for VOCs with PID and TPH with Dexsil Petroflag.

15:53 Prepared samples for lab.

Completed daily summary, daily soil sample report and daily field report. Completed chain of custody document.

Next Steps & Recommendations

- 1 Continue delineation.



Daily Site Visit Report

Site Photos

Viewing Direction: East



Descriptive Photo - 9
Viewing Direction: East
Desc: Release from pump Jack leading west
Created: 4/10/2023 9:00:00 AM
Lat:32.587428, Long:-103.906865

Release from pump Jack leading west

Viewing Direction: North



Descriptive Photo - 10
Viewing Direction: North
Desc: BH23-04 0' - 1'
Created: 4/10/2023 12:54:20 PM
Lat:32.587428, Long:-103.906818

BH23-04 0' - 1'

Viewing Direction: North



Descriptive Photo - 11
Viewing Direction: North
Desc: BH23-05 0' - 1'
Created: 4/10/2023 12:55:02 PM
Lat:32.587428, Long:-103.906865

BH23-05 0' - 1'

Viewing Direction: North

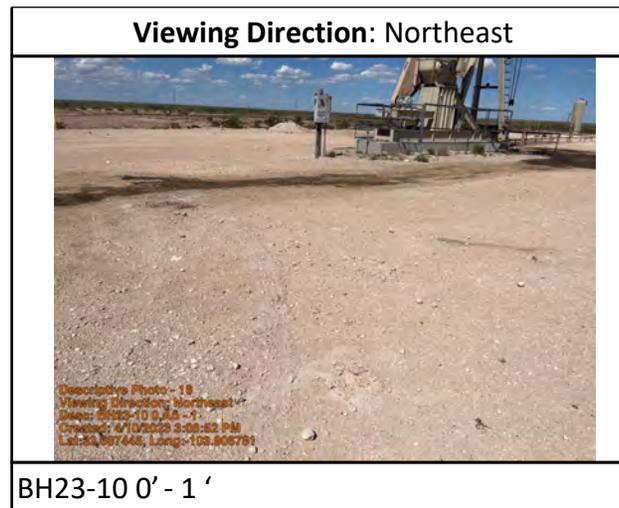


Descriptive Photo - 12
Viewing Direction: North
Desc: BH23-06 0' - 1'
Created: 4/10/2023 12:55:37 PM
Lat:32.587428, Long:-103.906877

BH23-06 0' - 1'



Daily Site Visit Report

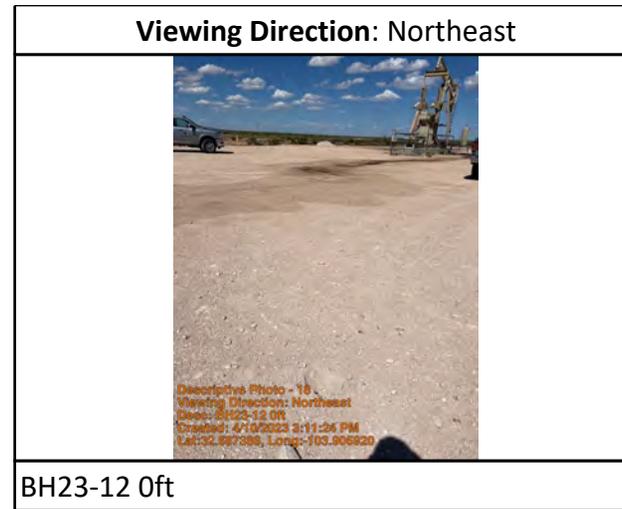




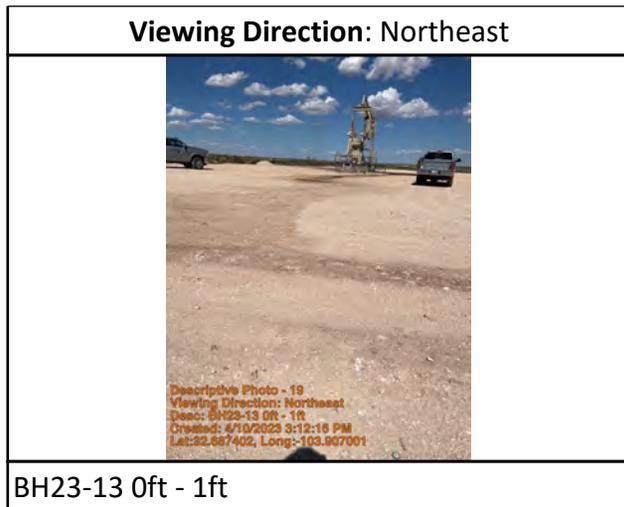
Daily Site Visit Report



BH23-11 0ft - 1 ft



BH23-12 0ft



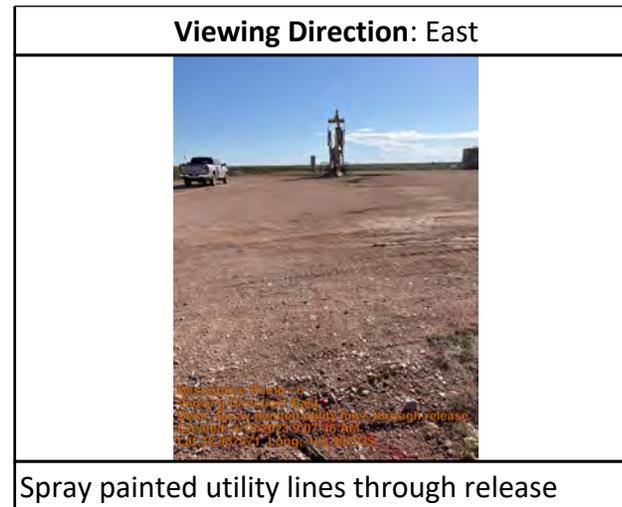
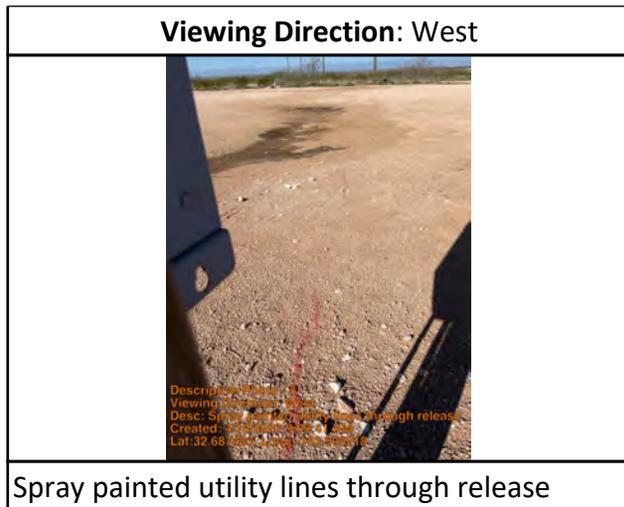
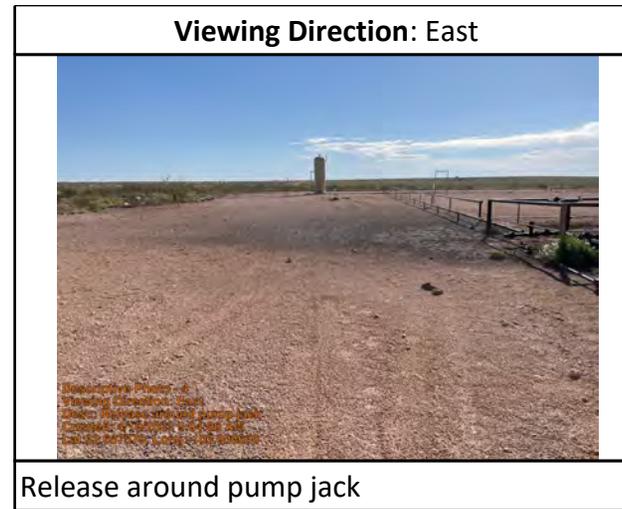
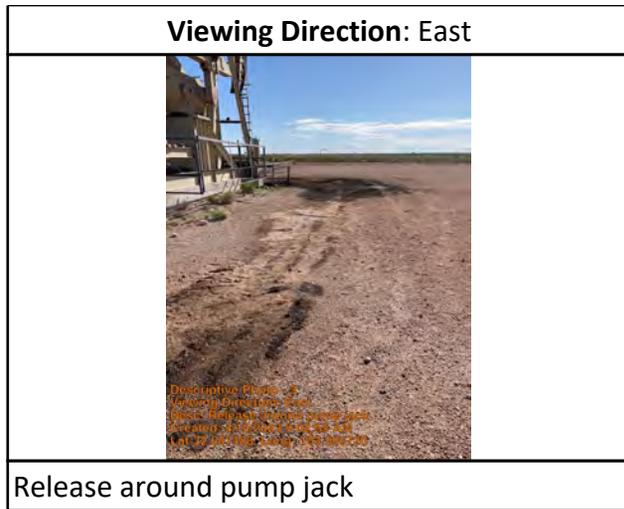
BH23-13 0ft - 1ft



Release from pump jack leading west

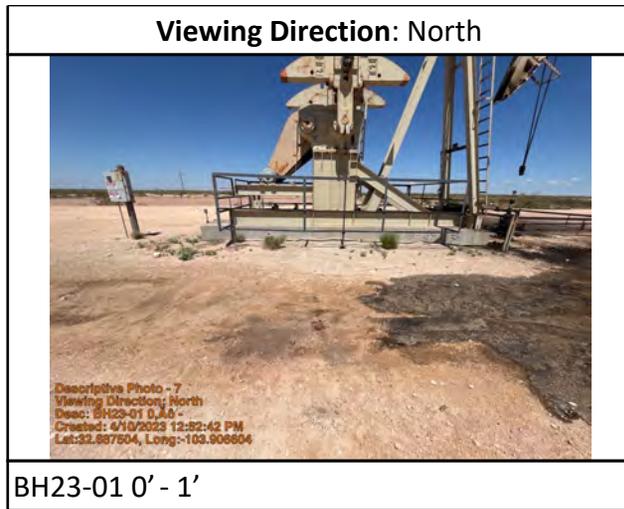


Daily Site Visit Report





Daily Site Visit Report



Daily Site Visit Report



Daily Site Visit Signature

Inspector: Stephanie McCartyM

Signature:

A handwritten signature in black ink, appearing to read 'Steph McCarty', written over a thin horizontal line. The word 'Signature' is printed in small text below the line.



Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	4/11/2023
Site Location Name:	Hackberry 6 Fed 1	Report Run Date:	4/11/2023 9:10 PM
Client Contact Name:	Wes Matthews	API #:	
Client Contact Phone #:	(575) 748-0176		
Unique Project ID		Project Owner:	
Project Reference #		Project Manager:	

Summary of Times

Arrived at Site	4/11/2023 9:20 AM
Departed Site	4/11/2023 3:15 PM

Field Notes

- 11:17** Arrived on site and filled out safety documents. Discussed work plan for the day and safety and signing safety documents.
- 11:31** Collected samples BH23-14 0' through BH23-37 0' (inclusive).
- 11:58** Field screened samples BH23-14 0' through BH23-37 0' for chlorides with EC meter. Field screening produced >600 ppm Cl for all samples except BH23-16, BH23-25, BH23-26, BH23-28, BH23-29, BH23-36, BH23-37.
- 12:31** Collected samples BH23-38 0' through BH23-45 0' (inclusive).
- 13:03** Field screened samples BH23-16 0', BH23-25 0', BH23-26 0', BH23-28 0', BH23-29 0', BH23-36 0', BH23-37 0' for TPH with Dexsil Petroflag.
- 13:48** Field screened samples BH23-38 0' through BH23-45 0' for chlorides with EC meter. Field screening produced >600 ppm Cl for all samples except samples BH23-38 0' and BH23-42 0' through BH23-45 0'.
- 14:25** Field screened samples BH23-38 0' and BH23-42 0' through BH23-45 0' for TPH with Dexsil Petroflag. All screened samples produced below criteria levels for TPH in characterization.
- 15:06** Prepared samples for lab. Completed daily soil sampling report and daily field report.

Next Steps & Recommendations

Daily Site Visit Report

1 Continue delineating.





Daily Site Visit Report

Site Photos

Viewing Direction: East



Descriptive Photo - 1
Viewing Direction: East
Desc: Bore hole groups: BH23-33 - BH23-35 0ft; BH23-36 0ft - BH23-37 0ft
Created: 4/11/2023 2:51:39 PM
Lat:32.687442, Long:-103.906820

Bore hole groups: BH23-33 - BH23-35 0ft; BH23-36 - BH23-43 0ft

Viewing Direction: West



Descriptive Photo - 2
Viewing Direction: West
Desc: BH23-36 0ft - BH23-37 0ft
Created: 4/11/2023 2:54:30 PM
Lat:32.687288, Long:-103.907016

BH23-36 0ft - BH23-37 0ft

Viewing Direction: Southeast



Descriptive Photo - 3
Viewing Direction: Southeast
Desc: Borehole row: BH23-20 - BH23-26 0' to pump jack
Created: 4/11/2023 2:56:48 PM
Lat:32.687543, Long:-103.907160

Borehole row: BH23-20 - BH23-26 0' to pump jack

Viewing Direction: East



Descriptive Photo - 4
Viewing Direction: East
Desc: Borehole groups: BH23-16 - BH23-19 0ft; BH23-20 - BH23-26 0' to pump jack
Created: 4/11/2023 2:46:02 PM
Lat:32.687580, Long:-103.906701

Borehole groups: BH23-16 - BH23-19 0ft; BH23-20 - BH23-26 0' to pump jack; BH23-27 - BH23-32 0ft; BH23-45 0ft



Daily Site Visit Report

Viewing Direction: Northwest
 <p><small>Descriptive Photo - 5 Viewing Direction: Northwest Bore: BH23-38 0ft; BH23-11 - BH23-13 0ft field screen producing clean results Created: 4/17/2023 2:51:58 PM Lat:32.697426, Long:-103.908443</small></p>
BH23-38 0ft; BH23-11 - BH23-13 0ft field screen producing clean results

Viewing Direction: North
 <p><small>Descriptive Photo - 6 Viewing Direction: North Bore: BH23-29 0ft; BH23-42 - BH23-45 0ft producing clean results Created: 4/17/2023 2:54:23 PM Lat:32.697413, Long:-103.908445</small></p>
BH23-29 0ft; BH23-42 - BH23-45 0ft producing clean results

Daily Site Visit Report



Daily Site Visit Signature

Inspector: Stephanie McCartyM

Signature: 
Signature



Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	4/12/2023
Site Location Name:	Hackberry 6 Fed 1	Report Run Date:	4/12/2023 6:51 PM
Client Contact Name:	Wes Matthews	API #:	
Client Contact Phone #:	(575) 748-0176	Project Owner:	
Unique Project ID		Project Manager:	
Project Reference #			

Summary of Times

Arrived at Site	4/12/2023 8:10 AM
Departed Site	4/12/2023 12:50 PM

Field Notes

8:32 Arrived on site and filled out safety documents. Discussed work plan for the day and safety and signed safety documents.

10:31 Collected samples BH23-46 0' through BH23-55 0' (inclusive).

Field screened samples BH23-46 0' through BH23-55 0' for chlorides with EC meter.

Field screening produced >600 ppm Cl for all samples except BH23-46 0', BH23-47 0', BH23-50 0', BH23-53 0', BH23-55 0'.

10:37 Collected samples BH23-56 through BH23-58 0' (inclusive).

Field screened samples BH23-46 0', BH23-47 0', BH23-50 0', BH23-53 0', BH23-55 0' for TPH with Dexsil Petroflag. All samples screened resulted in below criteria levels except BH23-53 0'.

11:20 Collected samples BH23-59 0' through BH23-63 0' (inclusive).

Field screened samples BH23-56 0' through BH23-63 0' for chlorides with EC meter.

Field screening produced <600 ppm Cl for all samples except BH23-57 0' and BH23-58 0'.



Daily Site Visit Report

12:13 Field screened samples BH23-56 0' and BH23-59 0' through BH23-63 0' for TPH with Dexsil Petroflag. All were below criteria for TPH except BH23-59 0' with slightly elevated levels above criteria.

Prepared samples for lab.

12:45 Photo documented sample points and individual sample points on edges with field screened results meeting criteria level standards.

12:46 Completed daily soil sample report and daily field report.

Next Steps & Recommendations

1 Continue delineating, vertical delineation.



Daily Site Visit Report

Site Photos

Viewing Direction: East



Descriptive Photo - 1
Viewing Direction: East
Desc: BH23-48 0ft - BH23-49 0ft
Created: 4/12/2023 12:17:23 PM
Lat:32.887274, Long:-103.906899

BH23-46 0ft - BH23-49 0ft

Viewing Direction: East



Descriptive Photo - 2
Viewing Direction: East
Desc: BH23-54 0ft and BH23-61 0ft
Created: 4/12/2023 12:19:16 PM
Lat:32.887236, Long:-103.906896

BH23-54 0ft and BH23-61 0ft

Viewing Direction: North



Descriptive Photo - 3
Viewing Direction: North
Desc: BH23-55 0ft and BH23-56 0ft
Created: 4/12/2023 12:21:57 PM
Lat:32.887346, Long:-103.906343

BH23-55 0ft and BH23-56 0ft

Viewing Direction: West



Descriptive Photo - 4
Viewing Direction: West
Desc: BH23-59 0ft, BH23-52 0ft, BH23-57 - BH23-60 0ft and BH23-62 - BH23-63 0ft
Created: 4/12/2023 12:32:22 PM
Lat:32.887723, Long:-103.906371

BH23-50 - BH23-53 0ft, BH23-57 - BH23-60 0ft and BH23-62 - BH23-63 0ft



Daily Site Visit Report



Daily Site Visit Report



Daily Site Visit Signature

Inspector: Stephanie McCartyM

Signature: 
Signature



Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	4/24/2023
Site Location Name:	Hackberry 6 Fed 1	Report Run Date:	4/25/2023 12:10 AM
Client Contact Name:	Wes Matthews	API #:	
Client Contact Phone #:	(575) 748-0176	Project Owner:	
Unique Project ID		Project Manager:	
Project Reference #			

Summary of Times

Arrived at Site	4/24/2023 7:55 AM
Departed Site	4/24/2023 5:15 PM

Field Notes

10:52 Arrived on site and filled out safety documents. Met with Devon contractors, discussing work plan for the day and safety and signing safety documents.

Marked sites for excavation investigation and line sweep with magnetic locator.

12:02 Excavated and sampled BH23-02 2'-8' (inclusive).

Field screened samples BH23-02 2' through 8' for chlorides with EC meter.

Field screening produced >600 ppm Cl for all samples.

Marked additional points for additional line sweep.



Daily Site Visit Report

16:09 Excavated and sampled BH23-15 2'.

Field screened sample for chlorides with EC meter. Results produced <600 ppm for Cl.

Field screened BH23-15 for TPH with Dexsil Petroflag. Results were <100 ppm TPH.

Excavated and sampled BH23-06 2', 4', 6', 8'.

Field screened samples BH23-06 2', BH23-06 4', BH23-06 6', BH23-06 8' for chlorides with EC meter. All sample results were > 600 ppm Cl.

Excavated and sampled BH23-53 2', 4', 6', 8'.

Field screened samples BH23-53 2', BH23-53 4', BH23-53 6', BH23-53 8' for chlorides with EC meter. All sample results were > 600 ppm Cl.

16:22 Marked new areas for line sweep. Discussed following day plan with Halo crew.

Prepared samples for lab.

17:02 Completed daily field report and daily soil sample report.

Next Steps & Recommendations

1 Continue delineating.



Daily Site Visit Report

Site Photos

Viewing Direction: West



Descriptive Photo - 1
Viewing Direction: West
Photo: Marked delineation investigation points for
Created: 8/24/2023 8:41:00 AM
Lat:32.687438, Long:-103.906875

Marked delineation investigation points for line sweep

Viewing Direction: South



Descriptive Photo - 2
Viewing Direction: South
Photo: BH23-02 2ft to 8ft
Created: 8/24/2023 11:23:10 AM
Lat:32.687486, Long:-103.906720

BH23-02 2ft to 8ft

Viewing Direction: East



Descriptive Photo - 3
Viewing Direction: East
Photo: BH23-02 2ft to 8ft
Created: 8/24/2023 11:23:10 AM
Lat:32.687486, Long:-103.906720

BH23-02 2ft to 8ft

Viewing Direction: West



Descriptive Photo - 4
Viewing Direction: West
Photo: BH23-15 2ft to 4ft
Created: 8/24/2023 1:59:18 PM
Lat:32.687486, Long:-103.906410

BH23-15 2ft to 4ft



Daily Site Visit Report

Viewing Direction: South



Descriptive Photo - 5
Viewing Direction: South
Desc: BH23-53 2ft to 8 ft
Created: 4/24/2023 2:32:02 PM
Lat: 32.987985, Long: -103.909957

BH23-53 2ft to 8 ft

Viewing Direction: East



Descriptive Photo - 5
Viewing Direction: East
Desc: BH23-06 2ft to 8ft backfilled
Created: 6/24/2023 2:41:40 PM
Lat: 32.987384, Long: -103.907956

BH23-06 2ft to 8ft backfilled

Daily Site Visit Report



Daily Site Visit Signature

Inspector: Stephanie McCartyM

Signature:

A handwritten signature in black ink, appearing to read 'Steph M', written over a thin horizontal line. The word 'Signature' is printed in small text below the line.



Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	4/25/2023
Site Location Name:	Hackberry 6 Fed 1	Report Run Date:	4/26/2023 12:41 AM
Client Contact Name:	Wes Matthews	API #:	
Client Contact Phone #:	(575) 748-0176	Project Owner:	
Unique Project ID		Project Manager:	
Project Reference #			

Summary of Times

Arrived at Site	4/25/2023 7:50 AM
Departed Site	4/25/2023 4:30 PM

Field Notes

14:07 Arrived on site and filled out safety documents. Met with Devon contractors, Halo, discussing work plan for the day and safety and signing safety documents. 07:30

Halo performed line sweep of all potential excavation points. 07:45

14:12 Excavated and sampled BH23-31 at 2', 3' and 4'.
Field screened for chlorides with EC meter. Field screening produced <600 ppm Cl for all samples except 3'.

Excavated and sampled BH23-58 at 2', 3', 4' and 6'.
Field screened for chlorides with EC meter. Field screening produced >600 ppm Cl for all samples.

Excavated and sampled BH23-51 at 2', 3' and 4'.
Field screened for chlorides with EC meter. Field screening produced <600 ppm Cl for all samples except 2'. 12:00



Daily Site Visit Report

14:20 Excavated and sampled BH23-18 at 2', 3' and 4'.

Field screened for chlorides with EC meter. Field screening produced <600 ppm Cl for all samples except 2'.

Excavated and sampled BH23-19 at 2', 3', 4' and 6'.

Field screened for chlorides with EC meter. Field screening produced >600 ppm Cl for all samples.

Excavated and sampled BH23-14 at 2', 3' and 4'.

Field screened for chlorides with EC meter. Field screening produced <600 ppm Cl for all samples except 2'. 14:00

16:16 Excavated and sampled BH23-05 2'.

Field screened for chlorides with EC meter. Field screening produced close to but >600 ppm Cl.

Excavated and sampled BH23-04 2', 3', 4', and 6'.

Field screened for chlorides with EC meter. Field screening produced >600 ppm Cl for all samples.

Excavated and sampled BH23-03 2', 3' and 4'.

Field screened for chlorides with EC meter. Field screening produced >600 ppm Cl for all samples but 4' was close to 600.

16:18 Completed daily field report and daily soil sample report.

Next Steps & Recommendations

- 1 Send samples to lab and review data.



Daily Site Visit Report

Site Photos

Viewing Direction: Southwest



Descriptive Photo - 1
Viewing Direction: Southwest
Date: BH23-31 2ft to 4ft Refusal at 4ft
Created: 4/25/2023 10:38:20 AM
Lat:32.887478, Long:-103.906801

BH23-31 2ft to 4ft Refusal at 4ft

Viewing Direction: East



Descriptive Photo - 10
Viewing Direction: East
Date: BH23-03
Created: 4/25/2023 3:46:23 PM
Lat:32.887478, Long:-103.906801

BH23-03 2 ft to 4ft

Viewing Direction: Southeast



Descriptive Photo - 11
Viewing Direction: Southeast
Date: Backfilled BH23-03, BH23-04, BH23-05
Created: 4/25/2023 4:08:21 PM
Lat:32.887561, Long:-103.906891

Backfilled BH23-03, BH23-04, BH23-05

Viewing Direction: South



Descriptive Photo - 2
Viewing Direction: South
Date: BH23-58 2ft to 6ft
Created: 4/25/2023 4:26:37 AM
Lat:32.887443, Long:-103.907131

BH23-58 2ft to 6ft



Daily Site Visit Report

Viewing Direction: Southeast



Descriptive Photo - 3
Viewing Direction: Southeast
Depth: BH23-51 2ft to 4ft Refusal at 4ft
Created: 8/25/2023 10:49:34 AM
Lat:32.987557, Long: -103.907005

BH23-51 2ft to 4ft Refusal at 4ft

Viewing Direction: East



Descriptive Photo - 4
Viewing Direction: East
Depth: North side delineation, BH23-51; BH23-58; BH23-31
Created: 8/25/2023 10:45:41 AM
Lat:32.987555, Long: -103.907005

North side delineation. BH23-51; BH23-58; BH23-31

Viewing Direction: West



Descriptive Photo - 5
Viewing Direction: West
Depth: BH23-18
Created: 8/25/2023 11:22:16 AM
Lat:32.987716, Long: -103.906328

BH23-18 2ft to 4ft

Viewing Direction: South



Descriptive Photo - 6
Viewing Direction: South
Depth: BH23-19 2ft to 6ft
Created: 8/25/2023 12:04:08 PM
Lat:32.987004, Long: -103.906628

BH23-19 2ft to 6ft



Daily Site Visit Report

Viewing Direction: Southwest



Descriptive Photo - 8
Viewing Direction: Southwest
Date: 8/23-24
Created: 4/25/2023 2:00:19 PM
Lat:32.687382, Long:-103.906958

BH23-14 2ft to 4 ft

Viewing Direction: Northeast



Descriptive Photo - 8
Viewing Direction: Northeast
Date: 8/23-25
Created: 4/25/2023 2:40:02 PM
Lat:32.687382, Long:-103.906958

BH23-05 2ft

Viewing Direction: East



Descriptive Photo - 9
Viewing Direction: East
Date: 8/23-24
Created: 4/25/2023 3:47:47 PM
Lat:32.687488, Long:-103.906808

BH23-04 2ft to 6 ft

Daily Site Visit Report



Daily Site Visit Signature

Inspector: Stephanie McCartyM

Signature:

A handwritten signature in black ink, appearing to read 'Steph McCarty', written over a thin horizontal line. The word 'Signature' is printed in small text below the line.



Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	7/26/2024
Site Location Name:	Hackberry 6 Fed 1	Report Run Date:	7/29/2024 4:11 PM
Client Contact Name:	Dale Woodall	API #:	
Client Contact Phone #:	405-318-4697	Project Owner:	
Unique Project ID		Project Manager:	
Project Reference #			

Summary of Times

Arrived at Site	7/26/2024 8:30 AM
Departed Site	7/26/2024 3:00 PM

Field Notes

14:47 Excavating pad down to 2-4'

Next Steps & Recommendations

1 Go to 4' on area where pump jack used to sit



Daily Site Visit Report

Site Photos

Viewing Direction: North



Descriptive Photo - 1
Viewing Direction: North
Desc: Area east of where pump jack used to be @ 3.
Created: 7/29/2024 2:48:46 PM
Lat:32.887468, Long:-103.906311

Area east of where pump jack used to be @ 3'

Viewing Direction: North



Descriptive Photo - 2
Viewing Direction: North
Desc: Area North of where pump jack used to be
Created: 7/29/2024 2:48:28 PM
Lat:32.887468, Long:-103.906311

Area North of where pump jack used to be @ 4'

Viewing Direction: North



Descriptive Photo - 3
Viewing Direction: North
Desc: Excavated soil
Created: 7/29/2024 2:50:38 PM
Lat:32.887350, Long:-103.906461

Excavated soil

Viewing Direction: North



Descriptive Photo - 4
Viewing Direction: North
Desc: Location placard
Created: 7/29/2024 2:51:38 PM
Lat:32.887318, Long:-103.906411

Location placard

Daily Site Visit Report



Daily Site Visit Signature

Inspector: Riley Plogger

Signature:

A handwritten signature in black ink, appearing to be 'Riley Plogger', written over a horizontal line. Below the line, the word 'Signature' is printed in a small font.



Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	7/29/2024
Site Location Name:	Hackberry 6 Fed 1	Report Run Date:	7/30/2024 1:28 AM
Client Contact Name:	Jim Raley	API #:	
Client Contact Phone #:	575-748-0176	Project Owner:	
Unique Project ID		Project Manager:	
Project Reference #			

Summary of Times

Arrived at Site	7/29/2024 8:44 AM
Departed Site	

Field Notes

- 18:30** Arrived on site, completed safety paperwork and held a safety brief with the excavation crew from Halo. The crew was already on site and working on the excavation upon arrival.
- 18:23** On site to observe the ongoing excavation and conduct field screening as soil is excavated.
- 18:25** Collected samples BES24-01 through BES24-15 and WES24-01 through WES24-10. All samples were screened for chlorides and 20 samples were screened for TPH. All samples met the NMOCD closure criteria.
- 18:26** Twenty-five belly dumps were hauled off site to Lea Land. Approximately 500 cubic yards of soil.
- 18:28** The entire excavation area was roped off with safety wire at the end of the day.

Next Steps & Recommendations

- 1** Continue field screening.



Daily Site Visit Report

Site Photos

Viewing Direction: Northwest



3ft bgs excavation on the southeast portion of the release area.

Viewing Direction: West



3ft bgs excavation on the southeast portion of the release area.

Viewing Direction: West



2ft bgs excavation on the northeast portion of the release area.

Viewing Direction: South



Eastern portion of the excavation.



Daily Site Visit Report

Viewing Direction: East

Date & Time: Mon Jul 29 14:01:16 MDT 2024
Position: +032.48792° / -103.90671°
Altitude: 1080m
Datum: WGS-84
Azimuth/Bearing: 094° S04E 1677mils (True)
Zoom: 1X

Descriptive Photo - 5
Viewing Direction: East
Desc: Northern 4ft bgs excavation.
Created: 7/29/2024 2:18:28 PM
Lat:32.385796, Long:-104.237837

Northern 4ft bgs excavation.

Viewing Direction: West

Date & Time: Mon Jul 29 15:25:29 MDT 2024
Position: +032.48792° / -103.90679°
Altitude: 1080m
Datum: WGS-84
Azimuth/Bearing: 237° S77W 4567mils (True)
Zoom: 1X

Descriptive Photo - 6
Viewing Direction: West
Desc: Southwestern 2ft and 3ft bgs excavation.
Created: 7/29/2024 2:19:46 PM
Lat:32.385806, Long:-104.237837

Southwestern 2ft and 3ft bgs excavation.

Viewing Direction: Southeast

Date & Time: Mon Jul 29 15:25:29 MDT 2024
Position: +032.48792° / -103.90679°
Altitude: 1080m
Datum: WGS-84
Azimuth/Bearing: 094° S04E 1677mils (True)
Zoom: 1X

Descriptive Photo - 7
Viewing Direction: Southeast
Desc: Southwestern 2ft and 3ft bgs excavation looking southeast.
Created: 7/29/2024 2:19:34 PM
Lat:32.385806, Long:-104.237837

Southwestern 2ft and 3ft bgs excavation looking southeast.

Viewing Direction: West

Date & Time: Mon Jul 29 15:25:29 MDT 2024
Position: +032.48792° / -103.90679°
Altitude: 1080m
Datum: WGS-84
Azimuth/Bearing: 307° N03W 5458mils (True)
Zoom: 1X

Descriptive Photo - 8
Viewing Direction: West
Desc: Northwestern 4ft, 3ft, and 2ft bgs excavations.
Created: 7/29/2024 2:21:48 PM
Lat:32.385796, Long:-104.237837

Northwestern 4ft, 3ft, and 2ft bgs excavations.



Daily Site Visit Report

Viewing Direction: Northeast

Date & Time: Mon Jul 29 16:30:25 MDT 2024
Position: +032.66702° / -103.96664°
Altitude: 1062m
Datum: WGS-84
Azimuth/Bearing: 224° 54'46W 4018mils (True)
Zoom: 1X

Descriptive Photo - 9
Viewing Direction: Northeast
Desc: Northwestern 2ft bgs excavation.
Created: 7/29/2024 6:22:05 PM
Lat:33.386793, Long:-104.237967

Northwestern 2ft bgs excavation.

Viewing Direction: West

Date & Time: Mon Jul 29 16:30:25 MDT 2024
Position: +032.66702° / -103.96664°
Altitude: 1062m
Datum: WGS-84
Azimuth/Bearing: 224° 54'46W 4018mils (True)
Zoom: 1X

Descriptive Photo - 10
Viewing Direction: West
Desc: 3ft and 4ft bgs excavations in the central portion of the excavation area.
Created: 7/29/2024 6:28:05 PM
Lat:33.386793, Long:-104.237967

3ft and 4ft bgs excavations in the central portion of the excavation area.

Viewing Direction: North

Date & Time: Mon Jul 29 17:00:14 MDT 2024
Position: +032.66707° / -103.96811°
Altitude: 1062m
Datum: WGS-84
Azimuth/Bearing: 318° N42W 950mils (True)
Zoom: 1X

Descriptive Photo - 11
Viewing Direction: North
Desc: Soil pile at the end of the day. All contaminated soil is on a plastic liner and is located on the south side of the excavation area.
Created: 7/29/2024 6:38:19 PM
Lat:33.386798, Long:-104.237949

Soil pile at the end of the day. All contaminated soil is on a plastic liner and is located on the south side of the excavation area.

Daily Site Visit Report



Daily Site Visit Signature

Inspector: John Rewis

Signature:



Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	8/6/2024
Site Location Name:	Hackberry 6 Fed 1	Report Run Date:	8/10/2024 9:10 PM
Client Contact Name:	Jim Raley	API #:	
Client Contact Phone #:	575-748-0176	Project Owner:	
Unique Project ID		Project Manager:	
Project Reference #			

Summary of Times

Arrived at Site	8/6/2024 7:20 AM
Departed Site	8/6/2024 4:10 PM

Field Notes

- 15:23** Arrived on site at approximately 07:00. Held safety brief with the crew from halo and met with Devon representative, Brice Blaylock.
- 15:40** On site to confirmation sample the excavation. Samples were collected in a 400 square foot quadrants. Obtained BS24-01 through BS24-50, and WS24-01 through WS24-22 . All samples that were collected were field screened for chlorides and a select number were screened for TPH. All samples met NMOCD closure criteria.
- 15:41** 30 truck loads of contaminated soil was hauled off site today for a total of 600 cubic yards. There is no more soil pile left on the site.
- 17:30** Excavation has been mapped in confirmation collector layer.

Next Steps & Recommendations

1



Daily Site Visit Report

Site Photos

Viewing Direction: West



Descriptive Photo - 1
Viewing Direction: West
Desc: Southwest portion of the excavation at 4.1ft bgs. Southern and south west wall.
Created: 8/9/2024 7:55:17 AM
Lat:32.687453, Long:-103.906811

Southwest portion of the excavation at 4.1ft bgs. Southern and south west wall.

Viewing Direction: Northwest



Descriptive Photo - 2
Viewing Direction: Northwest
Desc: Western walls in the 4.1ft bgs portion of the excavation.
Created: 8/9/2024 7:58:20 AM
Lat:32.687337, Long:-103.906874

Western walls in the 4.1ft bgs portion of the excavation.

Viewing Direction: East



Descriptive Photo - 3
Viewing Direction: East
Desc: Southern wall of the 4.1ft bgs excavation from the west.
Created: 8/9/2024 7:57:10 AM
Lat:32.687369, Long:-103.907008

Southern wall of the 4.1ft bgs excavation from the west.

Viewing Direction: East



Descriptive Photo - 4
Viewing Direction: East
Desc: 4.1ft excavation viewed from the western wall.
Created: 8/9/2024 12:55:51 PM
Lat:32.687452, Long:-103.907000

4.1ft excavation viewed from the western wall.



Daily Site Visit Report

Viewing Direction: Southeast



Descriptive Photo - 5
Viewing Direction: Southeast
Desc: 4.1ft bgs excavation viewed from the northwest wall.
Created: 8/25/2024 12:58:43 PM
Lat: 32.867872, Long: -103.809466

4.1ft bgs excavation viewed from the northwest wall.

Viewing Direction: South



Descriptive Photo - 6
Viewing Direction: South
Desc: 4.1ft bgs excavation view from the north wall.
Created: 8/25/2024 1:27:19 PM
Lat: 32.867872, Long: -103.809466

4.1ft bgs excavation view from the north wall.

Viewing Direction: Southwest



Descriptive Photo - 7
Viewing Direction: Southwest
Desc: 4.1ft bgs excavation facing southwest.
Created: 8/25/2024 1:28:52 PM
Lat: 32.867872, Long: -103.809466

4.1ft bgs excavation facing southwest.

Viewing Direction: West



Descriptive Photo - 8
Viewing Direction: West
Desc: 4.1ft bgs excavation facing west.
Created: 8/25/2024 1:28:50 PM
Lat: 32.867872, Long: -103.809466

4.1ft bgs excavation facing west.



Daily Site Visit Report

Viewing Direction: Northeast

Descriptive Photo - 9
Viewing Direction: Northeast
Desc: 3ft and 2ft bgs excavations on the east side of the area.
Created: 8/6/2024 1:30:47 PM
Lat:32.687484, Long:-103.906802

3ft and 2ft bgs excavations on the east side of the area.

Viewing Direction: East

Descriptive Photo - 10
Viewing Direction: East
Desc: 3ft bgs excavation.
Created: 8/6/2024 1:31:12 PM
Lat:32.687485, Long:-103.906816

3ft bgs excavation.

Viewing Direction: Northeast

Descriptive Photo - 11
Viewing Direction: Northeast
Desc: 2ft bgs excavation.
Created: 8/6/2024 1:31:32 PM
Lat:32.687491, Long:-103.906809

2ft bgs excavation.

Viewing Direction: Northeast

Descriptive Photo - 12
Viewing Direction: Northeast
Desc: 4.1ft bgs excavations looking east.
Created: 8/6/2024 1:32:51 PM
Lat:32.687417, Long:-103.906885

4.1ft bgs excavations looking east.



Daily Site Visit Report



Northeast corner of the 4.1ft bgs excavation.



Capped wellhead inside the 4.1ft bgs excavation.



Overview of the excavation.



Overviews of the excavation.



Daily Site Visit Report

Viewing Direction: West
 <p><small>Descriptive Photo - 17 Viewing Direction: West Desc: Soil pile has been completed hauled off site. Created: 8/6/2024 2:01:52 PM Lat:32.687296; Long:-103.906495</small></p>
Soil pile has been completed hauled off site.

Daily Site Visit Report



Daily Site Visit Signature

Inspector: John Rewis

Signature:

Signature 

APPENDIX C – Notification(s) and Variances

FW: NAPP2308125349 Hackberry 6-1 sampling variance

Chad Hensley <CHensley@vertexresource.com>

Mon 8/5/2024 2:58 PM

To: John Rewis <jrewis@vertexresource.com>

From: Hamlet, Robert, EMNRD <Robert.Hamlet@emnrd.nm.gov>

Sent: Friday, August 2, 2024 3:34 PM

To: Chad Hensley <CHensley@vertexresource.com>

Cc: Bratcher, Michael, EMNRD <mike.bratcher@emnrd.nm.gov>; Wells, Shelly, EMNRD <Shelly.Wells@emnrd.nm.gov>; Velez, Nelson, EMNRD <Nelson.Velez@emnrd.nm.gov>

Subject: NAPP2308125349 Hackberry 6-1 sampling variance

Caution: This email is from an external sender. Please take care when clicking links or opening attachments. When in doubt, contact your IT Department

RE: Incident #NAPP2308125349

Chad,

A variance is approved for 400 ft² floor confirmation samples. Sidewall confirmation samples should be collected every 200 ft². Please include this e-mail correspondence in the Remediation Closure Report.

Robert Hamlet • Environmental Specialist - Advanced

Environmental Bureau

EMNRD - Oil Conservation Division

506 W. Texas Ave. | Artesia, NM 88210

575.909.0302 | robert.hamlet@state.nm.us

<http://www.emnrd.state.nm.us/OCD/>



From: Chad Hensley <CHensley@vertexresource.com>

Sent: Friday, August 2, 2024 11:06 AM

To: Hamlet, Robert, EMNRD <Robert.Hamlet@emnrd.nm.gov>

Subject: [EXTERNAL] FW: NAPP2308125349 Hackberry 6-1 sampling variance

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Rob,

I sent in a variance for your review. It's a remediation that is to become a reclamation after the incidents are cleaned up. I am cleaning it all down to 4.1 feet. I am just asking for a variance to reduce the number of samples on the floor to save time and money.

From: Chad Hensley
Sent: Friday, August 2, 2024 6:45 AM
To: OCD.enviro@emnrd.nm.gov
Cc: John Rewis <jrewis@vertexresource.com>
Subject: NAPP2308125349 Hackberry 6-1 sampling variance

To whom it may concern,

I am requesting a 400 sq/ft variance for the hackberry 6-1 on the floor samples only. I will be excavating the floor all the way to 4.1 feet versus what the excavation map states to ready the site for reclamation. Sidewalls will still require samples every 200 sq/ft.

Best regards,

Chad Hensley
Senior Project Manager
Cell: 575-200-6167

Vertex Resources Services Inc.
3101 Boyd Drive
Carlsbad, NM 88220



www.vertex.ca

OCD Permitting

Home Operator Data Action Status Action Search Results Action Status Item Details

[NOTIFY] Notification Of Sampling (C-141N) Application

Submission Information

Submission ID:	369712	Districts:	Artesia
Operator:	[6137] DEVON ENERGY PRODUCTION COMPANY, LP	Counties:	Eddy
Description:	DEVON ENERGY PRODUCTION COMPANY, LP [6137] , HACKBERRY 6 FEDERAL #001 , nAPP2308125349		
Status:	APPROVED		
Status Date:	08/02/2024		
References (3):	30-015-31020, fAPP2202048266, nAPP2308125349		

Forms

This application type does not have attachments.

Questions

Prerequisites

Incident ID (n#)	nAPP2308125349
Incident Name	NAPP2308125349 HACKBERRY 6 FEDERAL #001 @ 30-015-31020
Incident Type	Produced Water Release
Incident Status	Initial C-141 Approved
Incident Well	[30-015-31020] HACKBERRY 6 FEDERAL #001
Incident Facility	[fAPP2202048266] HACKBERRY 6 FED 1 WELLPAD

Location of Release Source

Site Name	HACKBERRY 6 FEDERAL #001
Date Release Discovered	03/21/2023
Surface Owner	Federal

Sampling Event General Information

Please answer all the questions in this group.

What is the sampling surface area in square feet	19,000
What is the estimated number of samples that will be gathered	112
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	08/06/2024
Time sampling will commence	08:00 AM

Warning: Notification can not be less than two business days prior to conducting final sampling.

Please provide any information necessary for observers to contact samplers John Rewis 505-200-8603

This submission type does not have acknowledgments, at this time.

Comments

No comments found for this submission.

Conditions

Summary: *wdale (8/2/2024)*, Failure to notify the OCD of sampling events including any changes in date/time per the requirements of 19.15.29.12.D.(1).(a) NMAC, may result in the remediation closure samples not being accepted.

Reasons

No reasons found for this submission.

[Go Back](#)

APPENDIX D – Laboratory Data Report(s) and Chain of Custody Form(s)



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

May 10, 2023

Kent Stallings

Devon Energy

6488 Seven Rivers Highway

Artesia, NM 88210

TEL: (505) 350-1336

FAX:

RE: Hackberry 6 Federal

OrderNo.: 2304C19

Dear Kent Stallings:

Hall Environmental Analysis Laboratory received 9 sample(s) on 4/28/2023 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,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a light blue horizontal line.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Analytical Report

Lab Order **2304C19**

Date Reported: **5/10/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BH23-02 2'

Project: Hackberry 6 Federal

Collection Date: 4/24/2023 9:28:00 AM

Lab ID: 2304C19-001

Matrix: SOIL

Received Date: 4/28/2023 7:25:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	5/2/2023 4:15:03 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	5/2/2023 4:15:03 PM
Surr: DNOP	87.4	69-147		%Rec	1	5/2/2023 4:15:03 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: KMN
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	5/3/2023 12:49:00 AM
Surr: BFB	85.9	15-244		%Rec	1	5/3/2023 12:49:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: KMN
Benzene	ND	0.024		mg/Kg	1	5/3/2023 12:49:00 AM
Toluene	ND	0.048		mg/Kg	1	5/3/2023 12:49:00 AM
Ethylbenzene	ND	0.048		mg/Kg	1	5/3/2023 12:49:00 AM
Xylenes, Total	ND	0.097		mg/Kg	1	5/3/2023 12:49:00 AM
Surr: 4-Bromofluorobenzene	88.6	39.1-146		%Rec	1	5/3/2023 12:49:00 AM
EPA METHOD 300.0: ANIONS						Analyst: SNS
Chloride	1400	60		mg/Kg	20	5/3/2023 1:59:36 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order **2304C19**

Date Reported: **5/10/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BH23-02 4'

Project: Hackberry 6 Federal

Collection Date: 4/24/2023 9:48:00 AM

Lab ID: 2304C19-002

Matrix: SOIL

Received Date: 4/28/2023 7:25:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	5/2/2023 4:28:56 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	5/2/2023 4:28:56 PM
Surr: DNOP	99.0	69-147		%Rec	1	5/2/2023 4:28:56 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: KMN
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	5/3/2023 1:11:00 AM
Surr: BFB	85.1	15-244		%Rec	1	5/3/2023 1:11:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: KMN
Benzene	ND	0.025		mg/Kg	1	5/3/2023 1:11:00 AM
Toluene	ND	0.050		mg/Kg	1	5/3/2023 1:11:00 AM
Ethylbenzene	ND	0.050		mg/Kg	1	5/3/2023 1:11:00 AM
Xylenes, Total	ND	0.10		mg/Kg	1	5/3/2023 1:11:00 AM
Surr: 4-Bromofluorobenzene	86.0	39.1-146		%Rec	1	5/3/2023 1:11:00 AM
EPA METHOD 300.0: ANIONS						Analyst: SNS
Chloride	700	60		mg/Kg	20	5/3/2023 2:11:56 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order **2304C19**

Date Reported: **5/10/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BH23-02 6'

Project: Hackberry 6 Federal

Collection Date: 4/24/2023 10:14:00 AM

Lab ID: 2304C19-003

Matrix: SOIL

Received Date: 4/28/2023 7:25:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	5/2/2023 4:42:27 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	5/2/2023 4:42:27 PM
Surr: DNOP	82.8	69-147		%Rec	1	5/2/2023 4:42:27 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: KMN
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	5/3/2023 1:32:00 AM
Surr: BFB	87.5	15-244		%Rec	1	5/3/2023 1:32:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: KMN
Benzene	ND	0.025		mg/Kg	1	5/3/2023 1:32:00 AM
Toluene	ND	0.050		mg/Kg	1	5/3/2023 1:32:00 AM
Ethylbenzene	ND	0.050		mg/Kg	1	5/3/2023 1:32:00 AM
Xylenes, Total	ND	0.10		mg/Kg	1	5/3/2023 1:32:00 AM
Surr: 4-Bromofluorobenzene	87.6	39.1-146		%Rec	1	5/3/2023 1:32:00 AM
EPA METHOD 300.0: ANIONS						Analyst: SNS
Chloride	870	60		mg/Kg	20	5/3/2023 2:24:16 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order **2304C19**

Date Reported: **5/10/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BH23-02 8'

Project: Hackberry 6 Federal

Collection Date: 4/24/2023 10:53:00 AM

Lab ID: 2304C19-004

Matrix: SOIL

Received Date: 4/28/2023 7:25:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	5/2/2023 4:56:03 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	5/2/2023 4:56:03 PM
Surr: DNOP	84.1	69-147		%Rec	1	5/2/2023 4:56:03 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: KMN
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	5/3/2023 1:54:00 AM
Surr: BFB	83.2	15-244		%Rec	1	5/3/2023 1:54:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: KMN
Benzene	ND	0.023		mg/Kg	1	5/3/2023 1:54:00 AM
Toluene	ND	0.046		mg/Kg	1	5/3/2023 1:54:00 AM
Ethylbenzene	ND	0.046		mg/Kg	1	5/3/2023 1:54:00 AM
Xylenes, Total	ND	0.092		mg/Kg	1	5/3/2023 1:54:00 AM
Surr: 4-Bromofluorobenzene	86.9	39.1-146		%Rec	1	5/3/2023 1:54:00 AM
EPA METHOD 300.0: ANIONS						Analyst: SNS
Chloride	480	60		mg/Kg	20	5/3/2023 3:01:18 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order **2304C19**

Date Reported: **5/10/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BH23-06 2'

Project: Hackberry 6 Federal

Collection Date: 4/24/2023 1:18:00 PM

Lab ID: 2304C19-005

Matrix: SOIL

Received Date: 4/28/2023 7:25:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	5/2/2023 5:09:58 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	5/2/2023 5:09:58 PM
Surr: DNOP	83.1	69-147		%Rec	1	5/2/2023 5:09:58 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: KMN
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	5/3/2023 2:16:00 AM
Surr: BFB	87.1	15-244		%Rec	1	5/3/2023 2:16:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: KMN
Benzene	ND	0.024		mg/Kg	1	5/3/2023 2:16:00 AM
Toluene	ND	0.049		mg/Kg	1	5/3/2023 2:16:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	5/3/2023 2:16:00 AM
Xylenes, Total	ND	0.098		mg/Kg	1	5/3/2023 2:16:00 AM
Surr: 4-Bromofluorobenzene	88.6	39.1-146		%Rec	1	5/3/2023 2:16:00 AM
EPA METHOD 300.0: ANIONS						Analyst: SNS
Chloride	820	61		mg/Kg	20	5/3/2023 3:13:39 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order **2304C19**

Date Reported: **5/10/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BH23-06 4'

Project: Hackberry 6 Federal

Collection Date: 4/24/2023 1:30:00 PM

Lab ID: 2304C19-006

Matrix: SOIL

Received Date: 4/28/2023 7:25:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	5/2/2023 5:23:40 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	5/2/2023 5:23:40 PM
Surr: DNOP	80.2	69-147		%Rec	1	5/2/2023 5:23:40 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: KMN
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	5/3/2023 2:37:00 AM
Surr: BFB	87.9	15-244		%Rec	1	5/3/2023 2:37:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: KMN
Benzene	ND	0.024		mg/Kg	1	5/3/2023 2:37:00 AM
Toluene	ND	0.048		mg/Kg	1	5/3/2023 2:37:00 AM
Ethylbenzene	ND	0.048		mg/Kg	1	5/3/2023 2:37:00 AM
Xylenes, Total	ND	0.096		mg/Kg	1	5/3/2023 2:37:00 AM
Surr: 4-Bromofluorobenzene	87.7	39.1-146		%Rec	1	5/3/2023 2:37:00 AM
EPA METHOD 300.0: ANIONS						Analyst: SNS
Chloride	580	60		mg/Kg	20	5/3/2023 3:25:59 AM

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order **2304C19**

Date Reported: **5/10/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BH23-06 6'

Project: Hackberry 6 Federal

Collection Date: 4/24/2023 1:44:00 PM

Lab ID: 2304C19-007

Matrix: SOIL

Received Date: 4/28/2023 7:25:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	5/4/2023 1:53:11 AM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	5/4/2023 1:53:11 AM
Surr: DNOP	69.8	69-147		%Rec	1	5/4/2023 1:53:11 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: KMN
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	5/3/2023 2:59:00 AM
Surr: BFB	87.0	15-244		%Rec	1	5/3/2023 2:59:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: KMN
Benzene	ND	0.024		mg/Kg	1	5/3/2023 2:59:00 AM
Toluene	ND	0.049		mg/Kg	1	5/3/2023 2:59:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	5/3/2023 2:59:00 AM
Xylenes, Total	ND	0.097		mg/Kg	1	5/3/2023 2:59:00 AM
Surr: 4-Bromofluorobenzene	89.2	39.1-146		%Rec	1	5/3/2023 2:59:00 AM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	430	60		mg/Kg	20	5/3/2023 2:23:30 PM

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order **2304C19**

Date Reported: **5/10/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BH23-06 8'

Project: Hackberry 6 Federal

Collection Date: 4/24/2023 1:50:00 PM

Lab ID: 2304C19-008

Matrix: SOIL

Received Date: 4/28/2023 7:25:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	5/3/2023 10:51:38 AM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	5/3/2023 10:51:38 AM
Surr: DNOP	80.2	69-147		%Rec	1	5/3/2023 10:51:38 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: KMN
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	5/3/2023 3:21:00 AM
Surr: BFB	89.5	15-244		%Rec	1	5/3/2023 3:21:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: KMN
Benzene	ND	0.023		mg/Kg	1	5/3/2023 3:21:00 AM
Toluene	ND	0.047		mg/Kg	1	5/3/2023 3:21:00 AM
Ethylbenzene	ND	0.047		mg/Kg	1	5/3/2023 3:21:00 AM
Xylenes, Total	ND	0.094		mg/Kg	1	5/3/2023 3:21:00 AM
Surr: 4-Bromofluorobenzene	89.5	39.1-146		%Rec	1	5/3/2023 3:21:00 AM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	290	60		mg/Kg	20	5/3/2023 2:35:55 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order **2304C19**

Date Reported: **5/10/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BH23-15 2'

Project: Hackberry 6 Federal

Collection Date: 4/24/2023 12:43:00 PM

Lab ID: 2304C19-009

Matrix: SOIL

Received Date: 4/28/2023 7:25:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	8.5		mg/Kg	1	5/3/2023 11:05:04 AM
Motor Oil Range Organics (MRO)	ND	43		mg/Kg	1	5/3/2023 11:05:04 AM
Surr: DNOP	106	69-147		%Rec	1	5/3/2023 11:05:04 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: KMN
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	5/3/2023 4:04:00 AM
Surr: BFB	85.2	15-244		%Rec	1	5/3/2023 4:04:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: KMN
Benzene	ND	0.024		mg/Kg	1	5/3/2023 4:04:00 AM
Toluene	ND	0.047		mg/Kg	1	5/3/2023 4:04:00 AM
Ethylbenzene	ND	0.047		mg/Kg	1	5/3/2023 4:04:00 AM
Xylenes, Total	ND	0.095		mg/Kg	1	5/3/2023 4:04:00 AM
Surr: 4-Bromofluorobenzene	87.3	39.1-146		%Rec	1	5/3/2023 4:04:00 AM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	120	60		mg/Kg	20	5/3/2023 3:13:08 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 Quantitative 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#: 2304C19

10-May-23

Client: Devon Energy
Project: Hackberry 6 Federal

Sample ID: MB-74717	SampType: MBLK	TestCode: EPA Method 300.0: Anions								
Client ID: PBS	Batch ID: 74717	RunNo: 96480								
Prep Date: 5/2/2023	Analysis Date: 5/2/2023	SeqNo: 3496016	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: LCS-74717	SampType: LCS	TestCode: EPA Method 300.0: Anions								
Client ID: LCSS	Batch ID: 74717	RunNo: 96480								
Prep Date: 5/2/2023	Analysis Date: 5/2/2023	SeqNo: 3496018	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	93.5	90	110			

Sample ID: MB-74729	SampType: mblk	TestCode: EPA Method 300.0: Anions								
Client ID: PBS	Batch ID: 74729	RunNo: 96505								
Prep Date: 5/3/2023	Analysis Date: 5/3/2023	SeqNo: 3497705	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: LCS-74729	SampType: lcs	TestCode: EPA Method 300.0: Anions								
Client ID: LCSS	Batch ID: 74729	RunNo: 96505								
Prep Date: 5/3/2023	Analysis Date: 5/3/2023	SeqNo: 3497706	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	93.7	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 Quantitative 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#: 2304C19

10-May-23

Client: Devon Energy
Project: Hackberry 6 Federal

Sample ID: LCS-74685	SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: LCSS	Batch ID: 74685		RunNo: 96460							
Prep Date: 5/1/2023	Analysis Date: 5/2/2023		SeqNo: 3494834		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	43	10	50.00	0	86.2	61.9	130			
Surr: DNOP	4.6		5.000		91.6	69	147			

Sample ID: LCS-74700	SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: LCSS	Batch ID: 74700		RunNo: 96460							
Prep Date: 5/2/2023	Analysis Date: 5/2/2023		SeqNo: 3494835		Units: %Rec					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.1		5.000		81.2	69	147			

Sample ID: MB-74685	SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: PBS	Batch ID: 74685		RunNo: 96460							
Prep Date: 5/1/2023	Analysis Date: 5/2/2023		SeqNo: 3494838		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	8.7		10.00		87.1	69	147			

Sample ID: MB-74700	SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: PBS	Batch ID: 74700		RunNo: 96460							
Prep Date: 5/2/2023	Analysis Date: 5/2/2023		SeqNo: 3494839		Units: %Rec					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	7.5		10.00		75.1	69	147			

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 Quantitative 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#: 2304C19

10-May-23

Client: Devon Energy
Project: Hackberry 6 Federal

Sample ID: ics-74681	SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: LCSS	Batch ID: 74681		RunNo: 96481							
Prep Date: 5/1/2023	Analysis Date: 5/2/2023		SeqNo: 3496249		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	19	5.0	25.00	0	77.3	70	130			
Surr: BFB	1900		1000		193	15	244			

Sample ID: mb-74681	SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: PBS	Batch ID: 74681		RunNo: 96481							
Prep Date: 5/1/2023	Analysis Date: 5/2/2023		SeqNo: 3496250		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	860		1000		86.2	15	244			

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 Quantitative 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#: 2304C19

10-May-23

Client: Devon Energy
Project: Hackberry 6 Federal

Sample ID: ics-74681	SampType: LCS		TestCode: EPA Method 8021B: Volatiles							
Client ID: LCSS	Batch ID: 74681		RunNo: 96481							
Prep Date: 5/1/2023	Analysis Date: 5/2/2023		SeqNo: 3496297		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.83	0.025	1.000	0	82.9	70	130			
Toluene	0.82	0.050	1.000	0	82.0	70	130			
Ethylbenzene	0.80	0.050	1.000	0	80.0	70	130			
Xylenes, Total	2.4	0.10	3.000	0	79.0	70	130			
Surr: 4-Bromofluorobenzene	0.88		1.000		87.6	39.1	146			

Sample ID: mb-74681	SampType: MBLK		TestCode: EPA Method 8021B: Volatiles							
Client ID: PBS	Batch ID: 74681		RunNo: 96481							
Prep Date: 5/1/2023	Analysis Date: 5/2/2023		SeqNo: 3496298		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	0.87		1.000		87.1	39.1	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 Quantitative 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



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: Devon Energy Work Order Number: 2304C19 RcptNo: 1

Received By: Juan Rojas 4/28/2023 7:25:00 AM

Completed By: Tracy Casarrubias 4/28/2023 7:50:08 AM

Reviewed By: JA 4-28-23

Handwritten signature

Chain of Custody

- 1. Is Chain of Custody complete? Yes [] No [x] Not Present []
2. How was the sample delivered? Courier

Log In

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

of preserved bottles checked for pH: Adjusted? Checked by: mu/28/23

Special Handling (if applicable)

- 15. Was client notified of all discrepancies with this order? Yes [] No [] NA [x]

Person Notified: Date: By Whom: Via: [] eMail [] Phone [] Fax [] In Person Regarding: Client Instructions: Mailing address, phone number, and Email are missing on COC- TMC 4/28/23

16. Additional remarks:

17. Cooler Information

Table with 7 columns: Cooler No, Temp °C, Condition, Seal Intact, Seal No, Seal Date, Signed By. Row 1: 1, 4.1, Good, Yes, Yogi

Chain-of-Custody Record

Client: Devon/Vertex

Mailing Address: On Ate

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: Hackberg to Federal

Project #: 23E-01582

Project Manager: Kent Stallings

Sampler: SM

On Ice: Yes No

of Coolers: 1

Cooler Temp (including CF): 4.1-0 = 4.1 (°C)

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.
4/24/23	9:28	Su,1	BH23-02 2'	4oz jar	ice	2304C19
	9:48		BH23-02 4'			001
	10:04		BH23-02 6'			002
	10:53		BH23-02 8'			003
	13:18		BH23-06 2'			004
	13:30		BH23-06 4'			005
	13:44		BH23-06 6'			006
	13:56		BH23-06 8'			007
	12:43		BH23-15 2'			008
						009

Date: 4/24/23 Time: 16:45

Date: 4/11/23 Time: 19:00

Relinquished by: Steph Mcelf

Relinquished by: aw

Received by: William Date: 4/11/23 Time: 00:00

Received by: Devon Date: 4/28/23 Time: 7:25



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

Analysis Request

<input checked="" type="checkbox"/> TPH:8015D(GRO / DRO / MRO)	<input checked="" type="checkbox"/> BTEX / MTBE / TMBs (8021)
<input checked="" type="checkbox"/> 8081 Pesticides/8082 PCBs	<input checked="" type="checkbox"/> EDB (Method 504.1)
<input checked="" type="checkbox"/> PAHs by 8310 or 8270SIMS	<input checked="" type="checkbox"/> RCRA 8 Metals
<input checked="" type="checkbox"/> CH ₄ , Br ₂ , NO ₃ , NO ₂ , PO ₄ , SO ₄	<input checked="" type="checkbox"/> 8260 (VOA)
<input checked="" type="checkbox"/> Total Coliform (Present/Absent)	<input checked="" type="checkbox"/> 8270 (Semi-VOA)

Remarks: Direct bill: Devon w/u # 21141984



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

May 09, 2023

Kent Stallings

Devon Energy

6488 Seven Rivers Highway

Artesia, NM 88210

TEL: (505) 350-1336

FAX:

RE: Hackberry 6 Federal

OrderNo.: 2304C20

Dear Kent Stallings:

Hall Environmental Analysis Laboratory received 28 sample(s) on 4/28/2023 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,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a white background.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Analytical Report

Lab Order **2304C20**

Date Reported: **5/9/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BH23-03 2'

Project: Hackberry 6 Federal

Collection Date: 4/25/2023 3:24:00 PM

Lab ID: 2304C20-001

Matrix: SOIL

Received Date: 4/28/2023 7:25:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	5/3/2023 11:18:39 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	5/3/2023 11:18:39 AM
Surr: DNOP	91.6	69-147		%Rec	1	5/3/2023 11:18:39 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: KMN
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	5/3/2023 4:25:00 AM
Surr: BFB	86.7	15-244		%Rec	1	5/3/2023 4:25:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: KMN
Benzene	ND	0.024		mg/Kg	1	5/3/2023 4:25:00 AM
Toluene	ND	0.048		mg/Kg	1	5/3/2023 4:25:00 AM
Ethylbenzene	ND	0.048		mg/Kg	1	5/3/2023 4:25:00 AM
Xylenes, Total	ND	0.096		mg/Kg	1	5/3/2023 4:25:00 AM
Surr: 4-Bromofluorobenzene	88.3	39.1-146		%Rec	1	5/3/2023 4:25:00 AM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	1300	60		mg/Kg	20	5/3/2023 3:50:22 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order 2304C20

Date Reported: 5/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BH23-03 3'

Project: Hackberry 6 Federal

Collection Date: 4/25/2023 3:53:00 PM

Lab ID: 2304C20-002

Matrix: SOIL

Received Date: 4/28/2023 7:25:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	5/3/2023 11:32:08 AM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	5/3/2023 11:32:08 AM
Surr: DNOP	91.4	69-147		%Rec	1	5/3/2023 11:32:08 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: KMN
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	5/3/2023 4:47:00 AM
Surr: BFB	88.0	15-244		%Rec	1	5/3/2023 4:47:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: KMN
Benzene	ND	0.024		mg/Kg	1	5/3/2023 4:47:00 AM
Toluene	ND	0.048		mg/Kg	1	5/3/2023 4:47:00 AM
Ethylbenzene	ND	0.048		mg/Kg	1	5/3/2023 4:47:00 AM
Xylenes, Total	ND	0.097		mg/Kg	1	5/3/2023 4:47:00 AM
Surr: 4-Bromofluorobenzene	87.7	39.1-146		%Rec	1	5/3/2023 4:47:00 AM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	650	60		mg/Kg	20	5/3/2023 4:02:46 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304C20**

Date Reported: **5/9/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BH23-03 4'

Project: Hackberry 6 Federal

Collection Date: 4/25/2023 3:40:00 PM

Lab ID: 2304C20-003

Matrix: SOIL

Received Date: 4/28/2023 7:25:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	5/3/2023 11:45:44 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	5/3/2023 11:45:44 AM
Surr: DNOP	105	69-147		%Rec	1	5/3/2023 11:45:44 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: KMN
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	5/3/2023 5:08:00 AM
Surr: BFB	87.1	15-244		%Rec	1	5/3/2023 5:08:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: KMN
Benzene	ND	0.024		mg/Kg	1	5/3/2023 5:08:00 AM
Toluene	ND	0.048		mg/Kg	1	5/3/2023 5:08:00 AM
Ethylbenzene	ND	0.048		mg/Kg	1	5/3/2023 5:08:00 AM
Xylenes, Total	ND	0.097		mg/Kg	1	5/3/2023 5:08:00 AM
Surr: 4-Bromofluorobenzene	88.1	39.1-146		%Rec	1	5/3/2023 5:08:00 AM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	820	60		mg/Kg	20	5/3/2023 4:15:11 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304C20**

Date Reported: **5/9/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BH23-04 2'

Project: Hackberry 6 Federal

Collection Date: 4/25/2023 2:51:00 PM

Lab ID: 2304C20-004

Matrix: SOIL

Received Date: 4/28/2023 7:25:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	9.4	9.1		mg/Kg	1	5/3/2023 11:59:22 AM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	5/3/2023 11:59:22 AM
Surr: DNOP	83.4	69-147		%Rec	1	5/3/2023 11:59:22 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: KMN
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	5/3/2023 5:30:00 AM
Surr: BFB	86.9	15-244		%Rec	1	5/3/2023 5:30:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: KMN
Benzene	ND	0.023		mg/Kg	1	5/3/2023 5:30:00 AM
Toluene	ND	0.047		mg/Kg	1	5/3/2023 5:30:00 AM
Ethylbenzene	ND	0.047		mg/Kg	1	5/3/2023 5:30:00 AM
Xylenes, Total	ND	0.093		mg/Kg	1	5/3/2023 5:30:00 AM
Surr: 4-Bromofluorobenzene	87.4	39.1-146		%Rec	1	5/3/2023 5:30:00 AM
EPA METHOD 300.0: ANIONS						Analyst: SNS
Chloride	3300	150		mg/Kg	50	5/4/2023 10:08:42 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304C20**

Date Reported: **5/9/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BH23-04 3'

Project: Hackberry 6 Federal

Collection Date: 4/25/2023 3:01:00 PM

Lab ID: 2304C20-005

Matrix: SOIL

Received Date: 4/28/2023 7:25:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	9.1		mg/Kg	1	5/3/2023 12:12:43 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	5/3/2023 12:12:43 PM
Surr: DNOP	86.7	69-147		%Rec	1	5/3/2023 12:12:43 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: KMN
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	5/3/2023 5:51:00 AM
Surr: BFB	88.6	15-244		%Rec	1	5/3/2023 5:51:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: KMN
Benzene	ND	0.024		mg/Kg	1	5/3/2023 5:51:00 AM
Toluene	ND	0.048		mg/Kg	1	5/3/2023 5:51:00 AM
Ethylbenzene	ND	0.048		mg/Kg	1	5/3/2023 5:51:00 AM
Xylenes, Total	ND	0.095		mg/Kg	1	5/3/2023 5:51:00 AM
Surr: 4-Bromofluorobenzene	88.0	39.1-146		%Rec	1	5/3/2023 5:51:00 AM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	1900	60		mg/Kg	20	5/3/2023 4:39:59 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304C20**

Date Reported: **5/9/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BH23-04 4'

Project: Hackberry 6 Federal

Collection Date: 4/25/2023 3:07:00 PM

Lab ID: 2304C20-006

Matrix: SOIL

Received Date: 4/28/2023 7:25:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	8.5		mg/Kg	1	5/3/2023 12:26:12 PM
Motor Oil Range Organics (MRO)	ND	42		mg/Kg	1	5/3/2023 12:26:12 PM
Surr: DNOP	87.5	69-147		%Rec	1	5/3/2023 12:26:12 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: KMN
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	5/3/2023 6:13:00 AM
Surr: BFB	88.5	15-244		%Rec	1	5/3/2023 6:13:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: KMN
Benzene	ND	0.024		mg/Kg	1	5/3/2023 6:13:00 AM
Toluene	ND	0.047		mg/Kg	1	5/3/2023 6:13:00 AM
Ethylbenzene	ND	0.047		mg/Kg	1	5/3/2023 6:13:00 AM
Xylenes, Total	ND	0.095		mg/Kg	1	5/3/2023 6:13:00 AM
Surr: 4-Bromofluorobenzene	87.8	39.1-146		%Rec	1	5/3/2023 6:13:00 AM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	1300	60		mg/Kg	20	5/3/2023 4:52:24 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304C20**

Date Reported: 5/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BH23-04 6'

Project: Hackberry 6 Federal

Collection Date: 4/25/2023 3:15:00 PM

Lab ID: 2304C20-007

Matrix: SOIL

Received Date: 4/28/2023 7:25:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	9.0		mg/Kg	1	5/3/2023 12:39:42 PM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	5/3/2023 12:39:42 PM
Surr: DNOP	83.8	69-147		%Rec	1	5/3/2023 12:39:42 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: KMN
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	5/3/2023 6:35:00 AM
Surr: BFB	86.1	15-244		%Rec	1	5/3/2023 6:35:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: KMN
Benzene	ND	0.025		mg/Kg	1	5/3/2023 6:35:00 AM
Toluene	ND	0.050		mg/Kg	1	5/3/2023 6:35:00 AM
Ethylbenzene	ND	0.050		mg/Kg	1	5/3/2023 6:35:00 AM
Xylenes, Total	ND	0.099		mg/Kg	1	5/3/2023 6:35:00 AM
Surr: 4-Bromofluorobenzene	89.2	39.1-146		%Rec	1	5/3/2023 6:35:00 AM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	430	60		mg/Kg	20	5/3/2023 5:04:49 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304C20**

Date Reported: **5/9/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BH23-05 2'

Project: Hackberry 6 Federal

Collection Date: 4/25/2023 2:24:00 PM

Lab ID: 2304C20-008

Matrix: SOIL

Received Date: 4/28/2023 7:25:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	8.8		mg/Kg	1	5/3/2023 12:53:11 PM
Motor Oil Range Organics (MRO)	ND	44		mg/Kg	1	5/3/2023 12:53:11 PM
Surr: DNOP	109	69-147		%Rec	1	5/3/2023 12:53:11 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: KMN
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	5/3/2023 6:56:00 AM
Surr: BFB	92.8	15-244		%Rec	1	5/3/2023 6:56:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: KMN
Benzene	ND	0.023		mg/Kg	1	5/3/2023 6:56:00 AM
Toluene	ND	0.047		mg/Kg	1	5/3/2023 6:56:00 AM
Ethylbenzene	ND	0.047		mg/Kg	1	5/3/2023 6:56:00 AM
Xylenes, Total	ND	0.093		mg/Kg	1	5/3/2023 6:56:00 AM
Surr: 4-Bromofluorobenzene	89.2	39.1-146		%Rec	1	5/3/2023 6:56:00 AM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	350	60		mg/Kg	20	5/3/2023 5:17:13 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 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304C20**

Date Reported: **5/9/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BH23-14 2'

Project: Hackberry 6 Federal

Collection Date: 4/25/2023 12:32:00 PM

Lab ID: 2304C20-009

Matrix: SOIL

Received Date: 4/28/2023 7:25:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	80	8.6		mg/Kg	1	5/3/2023 12:03:36 AM
Motor Oil Range Organics (MRO)	62	43		mg/Kg	1	5/3/2023 12:03:36 AM
Surr: DNOP	96.7	69-147		%Rec	1	5/3/2023 12:03:36 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: KMN
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	5/3/2023 7:18:00 AM
Surr: BFB	89.1	15-244		%Rec	1	5/3/2023 7:18:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: KMN
Benzene	ND	0.024		mg/Kg	1	5/3/2023 7:18:00 AM
Toluene	ND	0.049		mg/Kg	1	5/3/2023 7:18:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	5/3/2023 7:18:00 AM
Xylenes, Total	ND	0.098		mg/Kg	1	5/3/2023 7:18:00 AM
Surr: 4-Bromofluorobenzene	91.5	39.1-146		%Rec	1	5/3/2023 7:18:00 AM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	1100	60		mg/Kg	20	5/3/2023 5:29:37 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quantitative 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

Analytical Report

Lab Order **2304C20**

Date Reported: **5/9/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BH23-14 3'

Project: Hackberry 6 Federal

Collection Date: 4/25/2023 12:46:00 PM

Lab ID: 2304C20-010

Matrix: SOIL

Received Date: 4/28/2023 7:25:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	5/2/2023 4:38:51 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	5/2/2023 4:38:51 PM
Surr: DNOP	80.5	69-147		%Rec	1	5/2/2023 4:38:51 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	5/3/2023 4:17:34 AM
Surr: BFB	52.9	15-244		%Rec	1	5/3/2023 4:17:34 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	5/3/2023 4:17:34 AM
Toluene	ND	0.048		mg/Kg	1	5/3/2023 4:17:34 AM
Ethylbenzene	ND	0.048		mg/Kg	1	5/3/2023 4:17:34 AM
Xylenes, Total	ND	0.096		mg/Kg	1	5/3/2023 4:17:34 AM
Surr: 4-Bromofluorobenzene	84.0	39.1-146		%Rec	1	5/3/2023 4:17:34 AM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	290	60		mg/Kg	20	5/3/2023 5:42:01 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304C20**

Date Reported: 5/9/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BH23-14 4'

Project: Hackberry 6 Federal

Collection Date: 4/25/2023 12:51:00 PM

Lab ID: 2304C20-011

Matrix: SOIL

Received Date: 4/28/2023 7:25:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	5/2/2023 4:49:31 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	5/2/2023 4:49:31 PM
Surr: DNOP	81.7	69-147		%Rec	1	5/2/2023 4:49:31 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	5/3/2023 4:41:05 AM
Surr: BFB	46.5	15-244		%Rec	1	5/3/2023 4:41:05 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	5/3/2023 4:41:05 AM
Toluene	ND	0.049		mg/Kg	1	5/3/2023 4:41:05 AM
Ethylbenzene	ND	0.049		mg/Kg	1	5/3/2023 4:41:05 AM
Xylenes, Total	ND	0.097		mg/Kg	1	5/3/2023 4:41:05 AM
Surr: 4-Bromofluorobenzene	83.2	39.1-146		%Rec	1	5/3/2023 4:41:05 AM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	220	60		mg/Kg	20	5/3/2023 6:44:04 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304C20**

Date Reported: **5/9/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BH23-18 2'

Project: Hackberry 6 Federal

Collection Date: 4/25/2023 11:13:00 AM

Lab ID: 2304C20-012

Matrix: SOIL

Received Date: 4/28/2023 7:25:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	8.5		mg/Kg	1	5/2/2023 5:00:08 PM
Motor Oil Range Organics (MRO)	ND	42		mg/Kg	1	5/2/2023 5:00:08 PM
Surr: DNOP	81.3	69-147		%Rec	1	5/2/2023 5:00:08 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	5/3/2023 5:04:38 AM
Surr: BFB	64.9	15-244		%Rec	1	5/3/2023 5:04:38 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	5/3/2023 5:04:38 AM
Toluene	ND	0.049		mg/Kg	1	5/3/2023 5:04:38 AM
Ethylbenzene	ND	0.049		mg/Kg	1	5/3/2023 5:04:38 AM
Xylenes, Total	ND	0.097		mg/Kg	1	5/3/2023 5:04:38 AM
Surr: 4-Bromofluorobenzene	87.8	39.1-146		%Rec	1	5/3/2023 5:04:38 AM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	400	60		mg/Kg	20	5/3/2023 6:56:29 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304C20**

Date Reported: **5/9/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BH23-18 3'

Project: Hackberry 6 Federal

Collection Date: 4/25/2023 11:18:00 AM

Lab ID: 2304C20-013

Matrix: SOIL

Received Date: 4/28/2023 7:25:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	5/2/2023 5:10:46 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	5/2/2023 5:10:46 PM
Surr: DNOP	82.8	69-147		%Rec	1	5/2/2023 5:10:46 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	5/3/2023 5:28:11 AM
Surr: BFB	61.6	15-244		%Rec	1	5/3/2023 5:28:11 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	5/3/2023 5:28:11 AM
Toluene	ND	0.049		mg/Kg	1	5/3/2023 5:28:11 AM
Ethylbenzene	ND	0.049		mg/Kg	1	5/3/2023 5:28:11 AM
Xylenes, Total	ND	0.097		mg/Kg	1	5/3/2023 5:28:11 AM
Surr: 4-Bromofluorobenzene	86.6	39.1-146		%Rec	1	5/3/2023 5:28:11 AM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	400	59		mg/Kg	20	5/3/2023 7:08:53 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304C20**

Date Reported: **5/9/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BH23-18 4'

Project: Hackberry 6 Federal

Collection Date: 4/25/2023 11:23:00 AM

Lab ID: 2304C20-014

Matrix: SOIL

Received Date: 4/28/2023 7:25:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	5/2/2023 5:21:27 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	5/2/2023 5:21:27 PM
Surr: DNOP	77.9	69-147		%Rec	1	5/2/2023 5:21:27 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	5/3/2023 5:51:43 AM
Surr: BFB	73.1	15-244		%Rec	1	5/3/2023 5:51:43 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	5/3/2023 5:51:43 AM
Toluene	ND	0.049		mg/Kg	1	5/3/2023 5:51:43 AM
Ethylbenzene	ND	0.049		mg/Kg	1	5/3/2023 5:51:43 AM
Xylenes, Total	ND	0.097		mg/Kg	1	5/3/2023 5:51:43 AM
Surr: 4-Bromofluorobenzene	89.7	39.1-146		%Rec	1	5/3/2023 5:51:43 AM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	220	60		mg/Kg	20	5/3/2023 7:21:17 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304C20**

Date Reported: **5/9/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BH23-19 2'

Project: Hackberry 6 Federal

Collection Date: 4/25/2023 11:46:00 AM

Lab ID: 2304C20-015

Matrix: SOIL

Received Date: 4/28/2023 7:25:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	52	9.9		mg/Kg	1	5/2/2023 5:32:10 PM
Motor Oil Range Organics (MRO)	60	50		mg/Kg	1	5/2/2023 5:32:10 PM
Surr: DNOP	86.6	69-147		%Rec	1	5/2/2023 5:32:10 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	5/3/2023 6:15:16 AM
Surr: BFB	58.9	15-244		%Rec	1	5/3/2023 6:15:16 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.025		mg/Kg	1	5/3/2023 6:15:16 AM
Toluene	ND	0.050		mg/Kg	1	5/3/2023 6:15:16 AM
Ethylbenzene	ND	0.050		mg/Kg	1	5/3/2023 6:15:16 AM
Xylenes, Total	ND	0.099		mg/Kg	1	5/3/2023 6:15:16 AM
Surr: 4-Bromofluorobenzene	86.2	39.1-146		%Rec	1	5/3/2023 6:15:16 AM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	330	60		mg/Kg	20	5/3/2023 7:33:42 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304C20**

Date Reported: **5/9/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BH23-19 3'

Project: Hackberry 6 Federal

Collection Date: 4/25/2023 11:51:00 AM

Lab ID: 2304C20-016

Matrix: SOIL

Received Date: 4/28/2023 7:25:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	5/2/2023 5:42:52 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	5/2/2023 5:42:52 PM
Surr: DNOP	88.1	69-147		%Rec	1	5/2/2023 5:42:52 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	5/3/2023 6:38:46 AM
Surr: BFB	68.4	15-244		%Rec	1	5/3/2023 6:38:46 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	5/3/2023 6:38:46 AM
Toluene	ND	0.049		mg/Kg	1	5/3/2023 6:38:46 AM
Ethylbenzene	ND	0.049		mg/Kg	1	5/3/2023 6:38:46 AM
Xylenes, Total	ND	0.098		mg/Kg	1	5/3/2023 6:38:46 AM
Surr: 4-Bromofluorobenzene	89.2	39.1-146		%Rec	1	5/3/2023 6:38:46 AM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	1400	60		mg/Kg	20	5/3/2023 7:46:07 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304C20**

Date Reported: **5/9/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BH23-19 4'

Project: Hackberry 6 Federal

Collection Date: 4/25/2023 12:10:00 PM

Lab ID: 2304C20-017

Matrix: SOIL

Received Date: 4/28/2023 7:25:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	5/2/2023 6:04:28 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	5/2/2023 6:04:28 PM
Surr: DNOP	81.9	69-147		%Rec	1	5/2/2023 6:04:28 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	5/3/2023 10:35:49 AM
Surr: BFB	58.4	15-244		%Rec	1	5/3/2023 10:35:49 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	5/3/2023 10:35:49 AM
Toluene	ND	0.048		mg/Kg	1	5/3/2023 10:35:49 AM
Ethylbenzene	ND	0.048		mg/Kg	1	5/3/2023 10:35:49 AM
Xylenes, Total	ND	0.096		mg/Kg	1	5/3/2023 10:35:49 AM
Surr: 4-Bromofluorobenzene	86.8	39.1-146		%Rec	1	5/3/2023 10:35:49 AM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	2300	60		mg/Kg	20	5/3/2023 7:58:31 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304C20**

Date Reported: **5/9/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BH23-19 6'

Project: Hackberry 6 Federal

Collection Date: 4/25/2023 12:18:00 PM

Lab ID: 2304C20-018

Matrix: SOIL

Received Date: 4/28/2023 7:25:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	9.1		mg/Kg	1	5/2/2023 6:15:18 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	5/2/2023 6:15:18 PM
Surr: DNOP	84.9	69-147		%Rec	1	5/2/2023 6:15:18 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	5/3/2023 10:59:10 AM
Surr: BFB	73.0	15-244		%Rec	1	5/3/2023 10:59:10 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	5/3/2023 10:59:10 AM
Toluene	ND	0.049		mg/Kg	1	5/3/2023 10:59:10 AM
Ethylbenzene	ND	0.049		mg/Kg	1	5/3/2023 10:59:10 AM
Xylenes, Total	ND	0.097		mg/Kg	1	5/3/2023 10:59:10 AM
Surr: 4-Bromofluorobenzene	88.8	39.1-146		%Rec	1	5/3/2023 10:59:10 AM
EPA METHOD 300.0: ANIONS						Analyst: SNS
Chloride	1900	60		mg/Kg	20	5/3/2023 7:37:14 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304C20**

Date Reported: **5/9/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BH23-31 2'

Project: Hackberry 6 Federal

Collection Date: 4/25/2023 9:05:00 AM

Lab ID: 2304C20-019

Matrix: SOIL

Received Date: 4/28/2023 7:25:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	5/2/2023 6:26:10 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	5/2/2023 6:26:10 PM
Surr: DNOP	88.9	69-147		%Rec	1	5/2/2023 6:26:10 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	5/3/2023 11:22:29 AM
Surr: BFB	70.2	15-244		%Rec	1	5/3/2023 11:22:29 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	5/3/2023 11:22:29 AM
Toluene	ND	0.049		mg/Kg	1	5/3/2023 11:22:29 AM
Ethylbenzene	ND	0.049		mg/Kg	1	5/3/2023 11:22:29 AM
Xylenes, Total	ND	0.098		mg/Kg	1	5/3/2023 11:22:29 AM
Surr: 4-Bromofluorobenzene	91.0	39.1-146		%Rec	1	5/3/2023 11:22:29 AM
EPA METHOD 300.0: ANIONS						Analyst: SNS
Chloride	380	60		mg/Kg	20	5/3/2023 8:39:16 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304C20**

Date Reported: **5/9/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BH23-31 3'

Project: Hackberry 6 Federal

Collection Date: 4/25/2023 9:16:00 AM

Lab ID: 2304C20-020

Matrix: SOIL

Received Date: 4/28/2023 7:25:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	5/2/2023 6:37:03 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	5/2/2023 6:37:03 PM
Surr: DNOP	84.6	69-147		%Rec	1	5/2/2023 6:37:03 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	5/3/2023 11:45:52 AM
Surr: BFB	66.6	15-244		%Rec	1	5/3/2023 11:45:52 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	5/3/2023 11:45:52 AM
Toluene	ND	0.049		mg/Kg	1	5/3/2023 11:45:52 AM
Ethylbenzene	ND	0.049		mg/Kg	1	5/3/2023 11:45:52 AM
Xylenes, Total	ND	0.098		mg/Kg	1	5/3/2023 11:45:52 AM
Surr: 4-Bromofluorobenzene	88.2	39.1-146		%Rec	1	5/3/2023 11:45:52 AM
EPA METHOD 300.0: ANIONS						Analyst: SNS
Chloride	390	60		mg/Kg	20	5/3/2023 8:51:41 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304C20**

Date Reported: **5/9/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BH23-31 4'

Project: Hackberry 6 Federal

Collection Date: 4/25/2023 9:31:00 AM

Lab ID: 2304C20-021

Matrix: SOIL

Received Date: 4/28/2023 7:25:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	9.0		mg/Kg	1	5/2/2023 6:47:59 PM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	5/2/2023 6:47:59 PM
Surr: DNOP	103	69-147		%Rec	1	5/2/2023 6:47:59 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	5/3/2023 12:09:13 PM
Surr: BFB	77.6	15-244		%Rec	1	5/3/2023 12:09:13 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	5/3/2023 12:09:13 PM
Toluene	ND	0.048		mg/Kg	1	5/3/2023 12:09:13 PM
Ethylbenzene	ND	0.048		mg/Kg	1	5/3/2023 12:09:13 PM
Xylenes, Total	ND	0.096		mg/Kg	1	5/3/2023 12:09:13 PM
Surr: 4-Bromofluorobenzene	91.0	39.1-146		%Rec	1	5/3/2023 12:09:13 PM
EPA METHOD 300.0: ANIONS						Analyst: SNS
Chloride	260	60		mg/Kg	20	5/3/2023 9:04:06 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304C20**

Date Reported: **5/9/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BH23-51 2'

Project: Hackberry 6 Federal

Collection Date: 4/25/2023 10:15:00 AM

Lab ID: 2304C20-022

Matrix: SOIL

Received Date: 4/28/2023 7:25:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	5/2/2023 6:58:56 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	5/2/2023 6:58:56 PM
Surr: DNOP	89.5	69-147		%Rec	1	5/2/2023 6:58:56 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	5/3/2023 12:32:37 PM
Surr: BFB	64.8	15-244		%Rec	1	5/3/2023 12:32:37 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.025		mg/Kg	1	5/3/2023 12:32:37 PM
Toluene	ND	0.049		mg/Kg	1	5/3/2023 12:32:37 PM
Ethylbenzene	ND	0.049		mg/Kg	1	5/3/2023 12:32:37 PM
Xylenes, Total	ND	0.099		mg/Kg	1	5/3/2023 12:32:37 PM
Surr: 4-Bromofluorobenzene	87.7	39.1-146		%Rec	1	5/3/2023 12:32:37 PM
EPA METHOD 300.0: ANIONS						Analyst: SNS
Chloride	1900	60		mg/Kg	20	5/3/2023 9:16:31 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304C20**

Date Reported: **5/9/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BH23-51 3'

Project: Hackberry 6 Federal

Collection Date: 4/25/2023 10:41:00 AM

Lab ID: 2304C20-023

Matrix: SOIL

Received Date: 4/28/2023 7:25:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	5/2/2023 7:09:54 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	5/2/2023 7:09:54 PM
Surr: DNOP	76.4	69-147		%Rec	1	5/2/2023 7:09:54 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	5/3/2023 12:55:57 PM
Surr: BFB	69.0	15-244		%Rec	1	5/3/2023 12:55:57 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	5/3/2023 12:55:57 PM
Toluene	ND	0.049		mg/Kg	1	5/3/2023 12:55:57 PM
Ethylbenzene	ND	0.049		mg/Kg	1	5/3/2023 12:55:57 PM
Xylenes, Total	ND	0.098		mg/Kg	1	5/3/2023 12:55:57 PM
Surr: 4-Bromofluorobenzene	89.4	39.1-146		%Rec	1	5/3/2023 12:55:57 PM
EPA METHOD 300.0: ANIONS						Analyst: SNS
Chloride	660	60		mg/Kg	20	5/3/2023 9:28:55 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304C20**

Date Reported: **5/9/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BH23-51 4'

Project: Hackberry 6 Federal

Collection Date: 4/25/2023 10:31:00 AM

Lab ID: 2304C20-024

Matrix: SOIL

Received Date: 4/28/2023 7:25:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	5/2/2023 7:20:47 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	5/2/2023 7:20:47 PM
Surr: DNOP	95.9	69-147		%Rec	1	5/2/2023 7:20:47 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	5/3/2023 1:19:18 PM
Surr: BFB	65.2	15-244		%Rec	1	5/3/2023 1:19:18 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	5/3/2023 1:19:18 PM
Toluene	ND	0.049		mg/Kg	1	5/3/2023 1:19:18 PM
Ethylbenzene	ND	0.049		mg/Kg	1	5/3/2023 1:19:18 PM
Xylenes, Total	ND	0.097		mg/Kg	1	5/3/2023 1:19:18 PM
Surr: 4-Bromofluorobenzene	88.4	39.1-146		%Rec	1	5/3/2023 1:19:18 PM
EPA METHOD 300.0: ANIONS						Analyst: SNS
Chloride	130	60		mg/Kg	20	5/3/2023 9:41:20 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304C20**

Date Reported: **5/9/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BH23-58 2'

Project: Hackberry 6 Federal

Collection Date: 4/25/2023 9:39:00 AM

Lab ID: 2304C20-025

Matrix: SOIL

Received Date: 4/28/2023 7:25:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	5/2/2023 7:31:43 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	5/2/2023 7:31:43 PM
Surr: DNOP	82.2	69-147		%Rec	1	5/2/2023 7:31:43 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	5/3/2023 1:42:42 PM
Surr: BFB	73.7	15-244		%Rec	1	5/3/2023 1:42:42 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	5/3/2023 1:42:42 PM
Toluene	ND	0.048		mg/Kg	1	5/3/2023 1:42:42 PM
Ethylbenzene	ND	0.048		mg/Kg	1	5/3/2023 1:42:42 PM
Xylenes, Total	ND	0.096		mg/Kg	1	5/3/2023 1:42:42 PM
Surr: 4-Bromofluorobenzene	87.7	39.1-146		%Rec	1	5/3/2023 1:42:42 PM
EPA METHOD 300.0: ANIONS						Analyst: SNS
Chloride	1500	180		mg/Kg	20	5/3/2023 9:53:45 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304C20**

Date Reported: **5/9/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BH23-58 3'

Project: Hackberry 6 Federal

Collection Date: 4/25/2023 9:47:00 AM

Lab ID: 2304C20-026

Matrix: SOIL

Received Date: 4/28/2023 7:25:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	5/2/2023 7:42:36 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	5/2/2023 7:42:36 PM
Surr: DNOP	79.8	69-147		%Rec	1	5/2/2023 7:42:36 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	5/3/2023 2:06:07 PM
Surr: BFB	69.6	15-244		%Rec	1	5/3/2023 2:06:07 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.025		mg/Kg	1	5/3/2023 2:06:07 PM
Toluene	ND	0.049		mg/Kg	1	5/3/2023 2:06:07 PM
Ethylbenzene	ND	0.049		mg/Kg	1	5/3/2023 2:06:07 PM
Xylenes, Total	ND	0.099		mg/Kg	1	5/3/2023 2:06:07 PM
Surr: 4-Bromofluorobenzene	88.8	39.1-146		%Rec	1	5/3/2023 2:06:07 PM
EPA METHOD 300.0: ANIONS						Analyst: SNS
Chloride	1700	180		mg/Kg	20	5/3/2023 10:06:10 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304C20**

Date Reported: **5/9/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BH23-58 4'

Project: Hackberry 6 Federal

Collection Date: 4/25/2023 9:55:00 AM

Lab ID: 2304C20-027

Matrix: SOIL

Received Date: 4/28/2023 7:25:00 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	5/3/2023 9:19:04 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	5/3/2023 9:19:04 PM
Surr: DNOP	81.7	69-147		%Rec	1	5/3/2023 9:19:04 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	5/3/2023 8:44:52 PM
Surr: BFB	153	15-244		%Rec	1	5/3/2023 8:44:52 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	5/3/2023 8:44:52 PM
Toluene	ND	0.048		mg/Kg	1	5/3/2023 8:44:52 PM
Ethylbenzene	ND	0.048		mg/Kg	1	5/3/2023 8:44:52 PM
Xylenes, Total	ND	0.095		mg/Kg	1	5/3/2023 8:44:52 PM
Surr: 4-Bromofluorobenzene	89.6	39.1-146		%Rec	1	5/3/2023 8:44:52 PM
EPA METHOD 300.0: ANIONS						Analyst: SNS
Chloride	1600	180		mg/Kg	20	5/3/2023 10:18:35 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304C20**

Date Reported: **5/9/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BH23-58 6'

Project: Hackberry 6 Federal

Collection Date: 4/25/2023 10:06:00 AM

Lab ID: 2304C20-028

Matrix: SOIL

Received Date: 4/28/2023 7:25:00 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	5/3/2023 9:40:44 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	5/3/2023 9:40:44 PM
Surr: DNOP	77.6	69-147		%Rec	1	5/3/2023 9:40:44 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	5/3/2023 9:08:20 PM
Surr: BFB	94.8	15-244		%Rec	1	5/3/2023 9:08:20 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.025		mg/Kg	1	5/3/2023 9:08:20 PM
Toluene	ND	0.050		mg/Kg	1	5/3/2023 9:08:20 PM
Ethylbenzene	ND	0.050		mg/Kg	1	5/3/2023 9:08:20 PM
Xylenes, Total	ND	0.10		mg/Kg	1	5/3/2023 9:08:20 PM
Surr: 4-Bromofluorobenzene	87.9	39.1-146		%Rec	1	5/3/2023 9:08:20 PM
EPA METHOD 300.0: ANIONS						Analyst: SNS
Chloride	600	180		mg/Kg	20	5/3/2023 10:31:00 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 Quantitative 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#: 2304C20

09-May-23

Client: Devon Energy
Project: Hackberry 6 Federal

Sample ID: MB-74729	SampType: mblk	TestCode: EPA Method 300.0: Anions								
Client ID: PBS	Batch ID: 74729	RunNo: 96505								
Prep Date: 5/3/2023	Analysis Date: 5/3/2023	SeqNo: 3497705	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: LCS-74729	SampType: lcs	TestCode: EPA Method 300.0: Anions								
Client ID: LCSS	Batch ID: 74729	RunNo: 96505								
Prep Date: 5/3/2023	Analysis Date: 5/3/2023	SeqNo: 3497706	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	93.7	90	110			

Sample ID: MB-74747	SampType: MBLK	TestCode: EPA Method 300.0: Anions								
Client ID: PBS	Batch ID: 74747	RunNo: 96522								
Prep Date: 5/3/2023	Analysis Date: 5/3/2023	SeqNo: 3498176	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	4.5								

Sample ID: LCS-74747	SampType: LCS	TestCode: EPA Method 300.0: Anions								
Client ID: LCSS	Batch ID: 74747	RunNo: 96522								
Prep Date: 5/3/2023	Analysis Date: 5/3/2023	SeqNo: 3498177	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	4.5	15.00	0	92.8	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 Quantitative 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#: 2304C20

09-May-23

Client: Devon Energy
Project: Hackberry 6 Federal

Sample ID: LCS-74685	SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: LCSS	Batch ID: 74685		RunNo: 96460							
Prep Date: 5/1/2023	Analysis Date: 5/2/2023		SeqNo: 3494834		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	43	10	50.00	0	86.2	61.9	130			
Surr: DNOP	4.6		5.000		91.6	69	147			

Sample ID: LCS-74700	SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: LCSS	Batch ID: 74700		RunNo: 96460							
Prep Date: 5/2/2023	Analysis Date: 5/2/2023		SeqNo: 3494835		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	43	10	50.00	0	85.2	61.9	130			
Surr: DNOP	4.1		5.000		81.2	69	147			

Sample ID: MB-74685	SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: PBS	Batch ID: 74685		RunNo: 96460							
Prep Date: 5/1/2023	Analysis Date: 5/2/2023		SeqNo: 3494838		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	8.7		10.00		87.1	69	147			

Sample ID: MB-74700	SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: PBS	Batch ID: 74700		RunNo: 96460							
Prep Date: 5/2/2023	Analysis Date: 5/2/2023		SeqNo: 3494839		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	7.5		10.00		75.1	69	147			

Sample ID: MB-74728	SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: PBS	Batch ID: 74728		RunNo: 96501							
Prep Date: 5/3/2023	Analysis Date: 5/3/2023		SeqNo: 3496982		Units: %Rec					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	7.5		10.00		75.2	69	147			

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 Quantitative 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#: 2304C20

09-May-23

Client: Devon Energy
Project: Hackberry 6 Federal

Sample ID: LCS-74728	SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: LCSS	Batch ID: 74728		RunNo: 96501							
Prep Date: 5/3/2023	Analysis Date: 5/3/2023		SeqNo: 3496983		Units: %Rec					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	3.6		5.000		72.0	69	147			

Sample ID: 2304C20-027AMS	SampType: MS		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: BH23-58 4'	Batch ID: 74721		RunNo: 96504							
Prep Date: 5/3/2023	Analysis Date: 5/4/2023		SeqNo: 3497601		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	42	10	50.00	0	84.0	54.2	135			
Surr: DNOP	4.5		5.000		89.6	69	147			

Sample ID: 2304C20-027AMSD	SampType: MSD		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: BH23-58 4'	Batch ID: 74721		RunNo: 96504							
Prep Date: 5/3/2023	Analysis Date: 5/4/2023		SeqNo: 3497602		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	42	10	50.00	0	83.5	54.2	135	0.583	29.2	
Surr: DNOP	4.3		5.000		85.5	69	147	0	0	

Sample ID: LCS-74721	SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: LCSS	Batch ID: 74721		RunNo: 96504							
Prep Date: 5/3/2023	Analysis Date: 5/3/2023		SeqNo: 3497670		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	45	10	50.00	0	89.5	61.9	130			
Surr: DNOP	4.6		5.000		92.9	69	147			

Sample ID: MB-74721	SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: PBS	Batch ID: 74721		RunNo: 96504							
Prep Date: 5/3/2023	Analysis Date: 5/3/2023		SeqNo: 3497673		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	8.6		10.00		86.5	69	147			

Sample ID: LCS-74745	SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: LCSS	Batch ID: 74745		RunNo: 96511							
Prep Date: 5/3/2023	Analysis Date: 5/4/2023		SeqNo: 3497819		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 Quantitative 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#: 2304C20

09-May-23

Client: Devon Energy
Project: Hackberry 6 Federal

Sample ID: LCS-74745	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: LCSS	Batch ID: 74745	RunNo: 96511								
Prep Date: 5/3/2023	Analysis Date: 5/4/2023	SeqNo: 3497819	Units: %Rec							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	5.5		5.000		110	69	147			

Sample ID: MB-74745	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 74745	RunNo: 96511								
Prep Date: 5/3/2023	Analysis Date: 5/4/2023	SeqNo: 3497820	Units: %Rec							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	11		10.00		110	69	147			

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 Quantitative 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#: 2304C20

09-May-23

Client: Devon Energy
Project: Hackberry 6 Federal

Sample ID: ics-74688	SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: LCSS	Batch ID: 74688		RunNo: 96456							
Prep Date: 5/1/2023	Analysis Date: 5/3/2023		SeqNo: 3495956		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	20	5.0	25.00	0	79.0	70	130			
Surr: BFB	4500		1000		454	15	244			S

Sample ID: mb-74688	SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: PBS	Batch ID: 74688		RunNo: 96456							
Prep Date: 5/1/2023	Analysis Date: 5/3/2023		SeqNo: 3495957		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	730		1000		73.0	15	244			

Sample ID: ics-74681	SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: LCSS	Batch ID: 74681		RunNo: 96481							
Prep Date: 5/1/2023	Analysis Date: 5/2/2023		SeqNo: 3496249		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	19	5.0	25.00	0	77.3	70	130			
Surr: BFB	1900		1000		193	15	244			

Sample ID: mb-74681	SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: PBS	Batch ID: 74681		RunNo: 96481							
Prep Date: 5/1/2023	Analysis Date: 5/2/2023		SeqNo: 3496250		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	860		1000		86.2	15	244			

Sample ID: ics-74716	SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: LCSS	Batch ID: 74716		RunNo: 96491							
Prep Date: 5/2/2023	Analysis Date: 5/3/2023		SeqNo: 3497531		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	86.0	70	130			
Surr: BFB	4700		1000		474	15	244			S

Sample ID: mb-74716	SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: PBS	Batch ID: 74716		RunNo: 96491							
Prep Date: 5/2/2023	Analysis Date: 5/3/2023		SeqNo: 3497532		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)										
Surr: BFB										

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 Quantitative 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#: 2304C20

09-May-23

Client: Devon Energy
Project: Hackberry 6 Federal

Sample ID: mb-74716	SampType: MBLK	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: PBS	Batch ID: 74716	RunNo: 96491								
Prep Date: 5/2/2023	Analysis Date: 5/3/2023	SeqNo: 3497532	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	740		1000		74.0	15	244			

Sample ID: lcs-74726	SampType: LCS	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: LCSS	Batch ID: 74726	RunNo: 96521								
Prep Date: 5/3/2023	Analysis Date: 5/4/2023	SeqNo: 3498141	Units: %Rec							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	4700		1000		468	15	244			S

Sample ID: mb-74726	SampType: MBLK	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: PBS	Batch ID: 74726	RunNo: 96521								
Prep Date: 5/3/2023	Analysis Date: 5/4/2023	SeqNo: 3498142	Units: %Rec							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	600		1000		60.5	15	244			

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 Quantitative 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#: 2304C20

09-May-23

Client: Devon Energy
Project: Hackberry 6 Federal

Sample ID: LCS-74688	SampType: LCS		TestCode: EPA Method 8021B: Volatiles							
Client ID: LCSS	Batch ID: 74688		RunNo: 96456							
Prep Date: 5/1/2023	Analysis Date: 5/3/2023		SeqNo: 3495962		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	85.5	70	130			
Toluene	0.88	0.050	1.000	0	87.9	70	130			
Ethylbenzene	0.88	0.050	1.000	0	88.5	70	130			
Xylenes, Total	2.7	0.10	3.000	0	89.7	70	130			
Surr: 4-Bromofluorobenzene	0.93		1.000		93.3	39.1	146			

Sample ID: mb-74688	SampType: MBLK		TestCode: EPA Method 8021B: Volatiles							
Client ID: PBS	Batch ID: 74688		RunNo: 96456							
Prep Date: 5/1/2023	Analysis Date: 5/3/2023		SeqNo: 3495963		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	0.90		1.000		89.6	39.1	146			

Sample ID: Ics-74681	SampType: LCS		TestCode: EPA Method 8021B: Volatiles							
Client ID: LCSS	Batch ID: 74681		RunNo: 96481							
Prep Date: 5/1/2023	Analysis Date: 5/2/2023		SeqNo: 3496297		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.83	0.025	1.000	0	82.9	70	130			
Toluene	0.82	0.050	1.000	0	82.0	70	130			
Ethylbenzene	0.80	0.050	1.000	0	80.0	70	130			
Xylenes, Total	2.4	0.10	3.000	0	79.0	70	130			
Surr: 4-Bromofluorobenzene	0.88		1.000		87.6	39.1	146			

Sample ID: mb-74681	SampType: MBLK		TestCode: EPA Method 8021B: Volatiles							
Client ID: PBS	Batch ID: 74681		RunNo: 96481							
Prep Date: 5/1/2023	Analysis Date: 5/2/2023		SeqNo: 3496298		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	0.87		1.000		87.1	39.1	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 Quantitative 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#: 2304C20

09-May-23

Client: Devon Energy
Project: Hackberry 6 Federal

Sample ID: LCS-74716	SampType: LCS		TestCode: EPA Method 8021B: Volatiles							
Client ID: LCSS	Batch ID: 74716		RunNo: 96491							
Prep Date: 5/2/2023	Analysis Date: 5/3/2023		SeqNo: 3497569		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	85.7	70	130			
Toluene	0.88	0.050	1.000	0	88.2	70	130			
Ethylbenzene	0.89	0.050	1.000	0	89.3	70	130			
Xylenes, Total	2.7	0.10	3.000	0	89.2	70	130			
Surr: 4-Bromofluorobenzene	0.93		1.000		93.1	39.1	146			

Sample ID: mb-74716	SampType: MBLK		TestCode: EPA Method 8021B: Volatiles							
Client ID: PBS	Batch ID: 74716		RunNo: 96491							
Prep Date: 5/2/2023	Analysis Date: 5/3/2023		SeqNo: 3497570		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	0.90		1.000		89.6	39.1	146			

Sample ID: LCS-74726	SampType: LCS		TestCode: EPA Method 8021B: Volatiles							
Client ID: LCSS	Batch ID: 74726		RunNo: 96521							
Prep Date: 5/3/2023	Analysis Date: 5/4/2023		SeqNo: 3498152		Units: %Rec					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.88		1.000		87.9	39.1	146			

Sample ID: mb-74726	SampType: MBLK		TestCode: EPA Method 8021B: Volatiles							
Client ID: PBS	Batch ID: 74726		RunNo: 96521							
Prep Date: 5/3/2023	Analysis Date: 5/4/2023		SeqNo: 3498154		Units: %Rec					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.85		1.000		85.5	39.1	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 Quantitative 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



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: **Devon Energy** Work Order Number: **2304C20** RcptNo: **1**

Received By: **Juan Rojas** 4/28/2023 7:25:00 AM *Juan Rojas*

Completed By: **Tracy Casarrubias** 4/28/2023 7:57:48 AM

Reviewed By: *[Signature]* 4-28-23

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? Yes No
(Note discrepancies on chain of custody)
- 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? Yes No
(If no, notify customer for authorization.)

of preserved bottles checked for pH: _____
(<2 or >12 unless noted)
Adjusted? _____
Checked by: *JMC/28/23*

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: Mailing address, phone number, and Email are missing on COC- TMC 4/28/23

16. Additional remarks:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.1	Good	Yes	Yogi		

Chain-of-Custody Record

Client: Devon / Vertex

Mailing Address: on file

Phone #: _____
email or Fax#: _____

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

Accreditation: Az Compliance NELAC Other

EDD (Type) _____

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.
4/25/23	15:24	Soil	BH23-03 2'	402 jar	ice	2304020
	15:33		BH23-03 3'			001
	15:40		BH23-03 4'			002
	14:51		BH23-04 2'			003
	15:01		BH23-04 3'			004
	15:07		BH23-04 4'			005
	15:15		BH23-04 6'			006
	14:24		BH23-05 2'			007
	12:32		BH23-14 2'			008
	12:46		BH23-14 3'			009
	12:51		BH23-14 4'			010
	11:13		BH23-18 2'			011
						012

Date: 4/26/23 Time: 16:45 Relinquished by: Steph Mcelf

Date: 4/26/23 Time: 19:00 Relinquished by: XXXXXXXXXX

Turn-Around Time: Standard Rush 5 DAY

Project Name: Hackberry to Federal

Project #: 23E-01582

Project Manager: Kent Stallings

Sampler: SM

On Ice: Yes No

of Coolers: 1 40g.

Cooler Temp (including cp): 4.0-4.1 (°C)



4901 Hawkins NE - Albuquerque, NM 87109

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

www.hallenvironmental.com

Analysis Request

Analysis Request	Result
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	✓
F, Br, NO ₃ , NO ₂ , PO ₄ , SO ₄	✓
8260 (VOA)	
8270 (Semi-VOA)	
Total Coliform (Present/Absent)	

Remarks: Direct bill: Devon w/o # 21141984

Received by: XXXXXXXXXX Date: 4/26/23 Time: 16:00

Received by: XXXXXXXXXX Date: 4/26/23 Time: 19:00

Chain-of-Custody Record

Client: Devon/Vertex

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:
 Standard Rush 5 PM

Project Name:
Hackberry 6 Federal

Project #:
23E-01582

Project Manager:
Kent Stallings

Sampler: SM
On Ice: Yes No

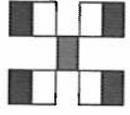
of Coolers: 1
Cooler Temp (including CF): 4.1-0.29.1 (°C)

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.
9/26/23	9:39	Soil	BH23-58 2'	4oz jar	ice	2304C20
	9:47		BH23-58 3'			025
	9:55		BH23-58 4'			026
	10:06		AH23-58 6'			027
						028

Analysis Request	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	F, Br, NO ₃ , NO ₂ , PO ₄ , SO ₄	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
<input checked="" type="checkbox"/> BTEX / MTBE / TMB's (8021)	<input checked="" type="checkbox"/>								

Received by: Stephan McCall Date: 9/26/23 Time: 1645
 Received by: [Signature] Date: 9/28/23 Time: 7:25
 Received by: [Signature] Date: 4/18/23 Time: 800
 Received by: [Signature] Date: 9/28/23 Time: 7:25

Remarks: Direct bill: Devon w/o # 21141904
C.C. Smcarty@vertex.ca pg 3 of 3



HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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



Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
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Website: www.hallenvironmental.com

August 23, 2023

Kent Stallings

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

RE: Hackberry 6 Federal 1

OrderNo.: 2308A30

Dear Kent Stallings:

Hall Environmental Analysis Laboratory received 4 sample(s) on 8/18/2023 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,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a white background.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report

Lab Order **2308A30**

Date Reported: **8/23/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH23-25 2'

Project: Hackberry 6 Federal 1

Collection Date: 8/16/2023 2:05:00 PM

Lab ID: 2308A30-001

Matrix: SOIL

Received Date: 8/18/2023 7:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	8/21/2023 9:37:05 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	8/21/2023 9:37:05 PM
Surr: DNOP	99.3	69-147		%Rec	1	8/21/2023 9:37:05 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: KMN
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	8/21/2023 6:30:00 PM
Surr: BFB	101	15-244		%Rec	1	8/21/2023 6:30:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: KMN
Benzene	ND	0.024		mg/Kg	1	8/21/2023 6:30:00 PM
Toluene	ND	0.048		mg/Kg	1	8/21/2023 6:30:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	8/21/2023 6:30:00 PM
Xylenes, Total	ND	0.096		mg/Kg	1	8/21/2023 6:30:00 PM
Surr: 4-Bromofluorobenzene	94.3	39.1-146		%Rec	1	8/21/2023 6:30:00 PM
EPA METHOD 300.0: ANIONS						Analyst: RBC
Chloride	72	60		mg/Kg	20	8/21/2023 7:47:22 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2308A30**

Date Reported: **8/23/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH23-29 2'

Project: Hackberry 6 Federal 1

Collection Date: 8/16/2023 2:50:00 PM

Lab ID: 2308A30-002

Matrix: SOIL

Received Date: 8/18/2023 7:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	8/21/2023 9:58:08 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	8/21/2023 9:58:08 PM
Surr: DNOP	110	69-147		%Rec	1	8/21/2023 9:58:08 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: KMN
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	8/21/2023 6:52:00 PM
Surr: BFB	101	15-244		%Rec	1	8/21/2023 6:52:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: KMN
Benzene	ND	0.024		mg/Kg	1	8/21/2023 6:52:00 PM
Toluene	ND	0.048		mg/Kg	1	8/21/2023 6:52:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	8/21/2023 6:52:00 PM
Xylenes, Total	ND	0.097		mg/Kg	1	8/21/2023 6:52:00 PM
Surr: 4-Bromofluorobenzene	93.9	39.1-146		%Rec	1	8/21/2023 6:52:00 PM
EPA METHOD 300.0: ANIONS						Analyst: RBC
Chloride	ND	59		mg/Kg	20	8/21/2023 7:59:46 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2308A30**

Date Reported: **8/23/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH23-59 2'

Project: Hackberry 6 Federal 1

Collection Date: 8/16/2023 2:30:00 PM

Lab ID: 2308A30-003

Matrix: SOIL

Received Date: 8/18/2023 7:40:00 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	8/22/2023 7:38:12 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	8/22/2023 7:38:12 PM
Surr: DNOP	115	69-147		%Rec	1	8/22/2023 7:38:12 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: KMN
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	8/21/2023 7:14:00 PM
Surr: BFB	99.4	15-244		%Rec	1	8/21/2023 7:14:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: KMN
Benzene	ND	0.024		mg/Kg	1	8/21/2023 7:14:00 PM
Toluene	ND	0.048		mg/Kg	1	8/21/2023 7:14:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	8/21/2023 7:14:00 PM
Xylenes, Total	ND	0.095		mg/Kg	1	8/21/2023 7:14:00 PM
Surr: 4-Bromofluorobenzene	92.1	39.1-146		%Rec	1	8/21/2023 7:14:00 PM
EPA METHOD 300.0: ANIONS						Analyst: RBC
Chloride	ND	60		mg/Kg	20	8/21/2023 8:12:10 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2308A30**

Date Reported: **8/23/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH23-62 2'

Project: Hackberry 6 Federal 1

Collection Date: 8/16/2023 3:00:00 PM

Lab ID: 2308A30-004

Matrix: SOIL

Received Date: 8/18/2023 7:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	8/21/2023 11:01:39 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	8/21/2023 11:01:39 PM
Surr: DNOP	110	69-147		%Rec	1	8/21/2023 11:01:39 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: KMN
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	8/21/2023 7:36:00 PM
Surr: BFB	97.0	15-244		%Rec	1	8/21/2023 7:36:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: KMN
Benzene	ND	0.023		mg/Kg	1	8/21/2023 7:36:00 PM
Toluene	ND	0.047		mg/Kg	1	8/21/2023 7:36:00 PM
Ethylbenzene	ND	0.047		mg/Kg	1	8/21/2023 7:36:00 PM
Xylenes, Total	ND	0.094		mg/Kg	1	8/21/2023 7:36:00 PM
Surr: 4-Bromofluorobenzene	93.9	39.1-146		%Rec	1	8/21/2023 7:36:00 PM
EPA METHOD 300.0: ANIONS						Analyst: RBC
Chloride	78	60		mg/Kg	20	8/21/2023 8:49:24 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 Quantitative 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#: 2308A30

23-Aug-23

Client: Vertex Resources Services, Inc.

Project: Hackberry 6 Federal 1

Sample ID: MB-76967	SampType: MBLK	TestCode: EPA Method 300.0: Anions								
Client ID: PBS	Batch ID: 76967	RunNo: 99107								
Prep Date: 8/21/2023	Analysis Date: 8/21/2023	SeqNo: 3613354	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: LCS-76967	SampType: LCS	TestCode: EPA Method 300.0: Anions								
Client ID: LCSS	Batch ID: 76967	RunNo: 99107								
Prep Date: 8/21/2023	Analysis Date: 8/21/2023	SeqNo: 3613355	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.7	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 Quantitative 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#: 2308A30

23-Aug-23

Client: Vertex Resources Services, Inc.

Project: Hackberry 6 Federal 1

Sample ID: MB-76961	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 76961	RunNo: 99104								
Prep Date: 8/21/2023	Analysis Date: 8/21/2023	SeqNo: 3612364	Units: %Rec							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	8.3		10.00		82.5	69	147			

Sample ID: LCS-76961	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: LCSS	Batch ID: 76961	RunNo: 99104								
Prep Date: 8/21/2023	Analysis Date: 8/21/2023	SeqNo: 3612365	Units: %Rec							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.0		5.000		80.7	69	147			

Sample ID: MB-76949	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 76949	RunNo: 99104								
Prep Date: 8/18/2023	Analysis Date: 8/21/2023	SeqNo: 3613454	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	8.7		10.00		86.6	69	147			

Sample ID: LCS-76949	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: LCSS	Batch ID: 76949	RunNo: 99104								
Prep Date: 8/18/2023	Analysis Date: 8/21/2023	SeqNo: 3613455	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	43	10	50.00	0	85.2	61.9	130			
Surr: DNOP	3.6		5.000		72.7	69	147			

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 Quantitative 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#: 2308A30

23-Aug-23

Client: Vertex Resources Services, Inc.

Project: Hackberry 6 Federal 1

Sample ID: ics-76946	SampType: LCS	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: LCSS	Batch ID: 76946	RunNo: 99101								
Prep Date: 8/18/2023	Analysis Date: 8/21/2023	SeqNo: 3613217	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	87.8	70	130			
Surr: BFB	2100		1000		214	15	244			

Sample ID: mb-76946	SampType: MBLK	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: PBS	Batch ID: 76946	RunNo: 99101								
Prep Date: 8/18/2023	Analysis Date: 8/21/2023	SeqNo: 3613218	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		97.2	15	244			

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 Quantitative 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#: 2308A30

23-Aug-23

Client: Vertex Resources Services, Inc.

Project: Hackberry 6 Federal 1

Sample ID: ics-76946	SampType: LCS		TestCode: EPA Method 8021B: Volatiles							
Client ID: LCSS	Batch ID: 76946		RunNo: 99101							
Prep Date: 8/18/2023	Analysis Date: 8/21/2023		SeqNo: 3613314		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.80	0.025	1.000	0	79.9	70	130			
Toluene	0.81	0.050	1.000	0	80.7	70	130			
Ethylbenzene	0.83	0.050	1.000	0	82.9	70	130			
Xylenes, Total	2.5	0.10	3.000	0	82.8	70	130			
Surr: 4-Bromofluorobenzene	0.95		1.000		95.3	39.1	146			

Sample ID: mb-76946	SampType: MBLK		TestCode: EPA Method 8021B: Volatiles							
Client ID: PBS	Batch ID: 76946		RunNo: 99101							
Prep Date: 8/18/2023	Analysis Date: 8/21/2023		SeqNo: 3613315		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	0.93		1.000		93.0	39.1	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 Quantitative 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



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: 2308A30

RcptNo: 1

Received By: Tracy Casarrubias 8/18/2023 7:40:00 AM

Completed By: Tracy Casarrubias 8/18/2023 8:32:14 AM

Reviewed By: *JAC 8-18-23*

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? Yes No

(Note discrepancies on chain of custody)

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? Yes No

(If no, notify customer for authorization.)

of preserved bottles checked for pH:

(<2 or >12 unless noted)

Adjusted?

Checked by: *SCM 8/18/23*

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:

Mailing address, phone number, and Email/Fax are missing on COC- TMC 8/18/23

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	5.3	Good	Yes	Yogi		



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

April 25, 2023

Kent Stallings

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

RE: Hackberry 6 Fed 001

OrderNo.: 2304490

Dear Kent Stallings:

Hall Environmental Analysis Laboratory received 25 sample(s) on 4/12/2023 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,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a white background.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report

Lab Order **2304490**

Date Reported: **4/25/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH23-01 0'

Project: Hackberry 6 Fed 001

Collection Date: 4/10/2023 10:45:00 AM

Lab ID: 2304490-001

Matrix: SOIL

Received Date: 4/12/2023 8:42:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: PRD
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	4/14/2023 6:12:01 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	4/14/2023 6:12:01 PM
Surr: DNOP	96.3	69-147		%Rec	1	4/14/2023 6:12:01 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	4/15/2023 4:51:12 AM
Surr: BFB	87.2	37.7-212		%Rec	1	4/15/2023 4:51:12 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.025		mg/Kg	1	4/15/2023 4:51:12 AM
Toluene	ND	0.050		mg/Kg	1	4/15/2023 4:51:12 AM
Ethylbenzene	ND	0.050		mg/Kg	1	4/15/2023 4:51:12 AM
Xylenes, Total	ND	0.099		mg/Kg	1	4/15/2023 4:51:12 AM
Surr: 4-Bromofluorobenzene	95.5	70-130		%Rec	1	4/15/2023 4:51:12 AM
EPA METHOD 300.0: ANIONS						Analyst: SNS
Chloride	17000	600		mg/Kg	200	4/17/2023 9:01:40 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304490**

Date Reported: **4/25/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH23-01 1'

Project: Hackberry 6 Fed 001

Collection Date: 4/10/2023 10:55:00 AM

Lab ID: 2304490-002

Matrix: SOIL

Received Date: 4/12/2023 8:42:00 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	4/14/2023 6:22:52 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	4/14/2023 6:22:52 PM
Surr: DNOP	98.0	69-147		%Rec	1	4/14/2023 6:22:52 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/15/2023 5:14:31 AM
Surr: BFB	86.3	37.7-212		%Rec	1	4/15/2023 5:14:31 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	4/15/2023 5:14:31 AM
Toluene	ND	0.049		mg/Kg	1	4/15/2023 5:14:31 AM
Ethylbenzene	ND	0.049		mg/Kg	1	4/15/2023 5:14:31 AM
Xylenes, Total	ND	0.098		mg/Kg	1	4/15/2023 5:14:31 AM
Surr: 4-Bromofluorobenzene	96.0	70-130		%Rec	1	4/15/2023 5:14:31 AM
EPA METHOD 300.0: ANIONS						Analyst: SNS
Chloride	2300	150		mg/Kg	50	4/17/2023 9:14:04 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304490**

Date Reported: **4/25/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH23-02 0'

Project: Hackberry 6 Fed 001

Collection Date: 4/10/2023 11:00:00 AM

Lab ID: 2304490-003

Matrix: SOIL

Received Date: 4/12/2023 8:42:00 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	4/14/2023 6:33:41 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	4/14/2023 6:33:41 PM
Surr: DNOP	97.6	69-147		%Rec	1	4/14/2023 6:33:41 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/15/2023 5:37:55 AM
Surr: BFB	94.7	37.7-212		%Rec	1	4/15/2023 5:37:55 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	4/15/2023 5:37:55 AM
Toluene	ND	0.048		mg/Kg	1	4/15/2023 5:37:55 AM
Ethylbenzene	ND	0.048		mg/Kg	1	4/15/2023 5:37:55 AM
Xylenes, Total	ND	0.096		mg/Kg	1	4/15/2023 5:37:55 AM
Surr: 4-Bromofluorobenzene	98.0	70-130		%Rec	1	4/15/2023 5:37:55 AM
EPA METHOD 300.0: ANIONS						Analyst: SNS
Chloride	19000	1500		mg/Kg	500	4/17/2023 9:26:29 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304490**

Date Reported: **4/25/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH23-02 1'

Project: Hackberry 6 Fed 001

Collection Date: 4/10/2023 11:05:00 AM

Lab ID: 2304490-004

Matrix: SOIL

Received Date: 4/12/2023 8:42:00 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	4/14/2023 6:44:29 PM
Motor Oil Range Organics (MRO)	ND	44		mg/Kg	1	4/14/2023 6:44:29 PM
Surr: DNOP	98.7	69-147		%Rec	1	4/14/2023 6:44:29 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	4/15/2023 6:24:36 AM
Surr: BFB	82.7	37.7-212		%Rec	1	4/15/2023 6:24:36 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.023		mg/Kg	1	4/15/2023 6:24:36 AM
Toluene	ND	0.047		mg/Kg	1	4/15/2023 6:24:36 AM
Ethylbenzene	ND	0.047		mg/Kg	1	4/15/2023 6:24:36 AM
Xylenes, Total	ND	0.093		mg/Kg	1	4/15/2023 6:24:36 AM
Surr: 4-Bromofluorobenzene	95.6	70-130		%Rec	1	4/15/2023 6:24:36 AM
EPA METHOD 300.0: ANIONS						Analyst: SNS
Chloride	5100	300		mg/Kg	100	4/17/2023 9:38:53 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304490**

Date Reported: **4/25/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH23-03 0'

Project: Hackberry 6 Fed 001

Collection Date: 4/10/2023 11:10:00 AM

Lab ID: 2304490-005

Matrix: SOIL

Received Date: 4/12/2023 8:42:00 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	4/14/2023 7:05:57 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	4/14/2023 7:05:57 PM
Surr: DNOP	100	69-147		%Rec	1	4/14/2023 7:05:57 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/15/2023 6:47:58 AM
Surr: BFB	83.5	37.7-212		%Rec	1	4/15/2023 6:47:58 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	4/15/2023 6:47:58 AM
Toluene	ND	0.048		mg/Kg	1	4/15/2023 6:47:58 AM
Ethylbenzene	ND	0.048		mg/Kg	1	4/15/2023 6:47:58 AM
Xylenes, Total	ND	0.096		mg/Kg	1	4/15/2023 6:47:58 AM
Surr: 4-Bromofluorobenzene	96.2	70-130		%Rec	1	4/15/2023 6:47:58 AM
EPA METHOD 300.0: ANIONS						Analyst: SNS
Chloride	11000	600		mg/Kg	200	4/17/2023 9:51:18 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order **2304490**

Date Reported: **4/25/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH23-03 1'

Project: Hackberry 6 Fed 001

Collection Date: 4/10/2023 11:15:00 AM

Lab ID: 2304490-006

Matrix: SOIL

Received Date: 4/12/2023 8:42:00 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	4/14/2023 7:16:42 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	4/14/2023 7:16:42 PM
Surr: DNOP	106	69-147		%Rec	1	4/14/2023 7:16:42 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/15/2023 7:11:21 AM
Surr: BFB	82.0	37.7-212		%Rec	1	4/15/2023 7:11:21 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	4/15/2023 7:11:21 AM
Toluene	ND	0.048		mg/Kg	1	4/15/2023 7:11:21 AM
Ethylbenzene	ND	0.048		mg/Kg	1	4/15/2023 7:11:21 AM
Xylenes, Total	ND	0.096		mg/Kg	1	4/15/2023 7:11:21 AM
Surr: 4-Bromofluorobenzene	95.5	70-130		%Rec	1	4/15/2023 7:11:21 AM
EPA METHOD 300.0: ANIONS						Analyst: SNS
Chloride	3000	150		mg/Kg	50	4/17/2023 10:03:42 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304490**

Date Reported: **4/25/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH23-04 0'

Project: Hackberry 6 Fed 001

Collection Date: 4/10/2023 11:20:00 AM

Lab ID: 2304490-007

Matrix: SOIL

Received Date: 4/12/2023 8:42:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: PRD
Diesel Range Organics (DRO)	35	9.0		mg/Kg	1	4/14/2023 7:27:26 PM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	4/14/2023 7:27:26 PM
Surr: DNOP	106	69-147		%Rec	1	4/14/2023 7:27:26 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	4/15/2023 7:34:36 AM
Surr: BFB	87.8	37.7-212		%Rec	1	4/15/2023 7:34:36 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.025		mg/Kg	1	4/15/2023 7:34:36 AM
Toluene	ND	0.050		mg/Kg	1	4/15/2023 7:34:36 AM
Ethylbenzene	ND	0.050		mg/Kg	1	4/15/2023 7:34:36 AM
Xylenes, Total	ND	0.10		mg/Kg	1	4/15/2023 7:34:36 AM
Surr: 4-Bromofluorobenzene	96.8	70-130		%Rec	1	4/15/2023 7:34:36 AM
EPA METHOD 300.0: ANIONS						Analyst: SNS
Chloride	10000	600		mg/Kg	200	4/17/2023 10:16:07 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304490**

Date Reported: **4/25/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH23-04 1'

Project: Hackberry 6 Fed 001

Collection Date: 4/10/2023 11:25:00 AM

Lab ID: 2304490-008

Matrix: SOIL

Received Date: 4/12/2023 8:42:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: PRD
Diesel Range Organics (DRO)	22	9.1		mg/Kg	1	4/14/2023 7:38:10 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	4/14/2023 7:38:10 PM
Surr: DNOP	99.6	69-147		%Rec	1	4/14/2023 7:38:10 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	4/15/2023 7:58:05 AM
Surr: BFB	78.7	37.7-212		%Rec	1	4/15/2023 7:58:05 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.023		mg/Kg	1	4/15/2023 7:58:05 AM
Toluene	ND	0.046		mg/Kg	1	4/15/2023 7:58:05 AM
Ethylbenzene	ND	0.046		mg/Kg	1	4/15/2023 7:58:05 AM
Xylenes, Total	ND	0.091		mg/Kg	1	4/15/2023 7:58:05 AM
Surr: 4-Bromofluorobenzene	95.1	70-130		%Rec	1	4/15/2023 7:58:05 AM
EPA METHOD 300.0: ANIONS						Analyst: SNS
Chloride	6600	300		mg/Kg	100	4/17/2023 10:28:32 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304490**

Date Reported: **4/25/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH23-05 0'

Project: Hackberry 6 Fed 001

Collection Date: 4/10/2023 11:30:00 AM

Lab ID: 2304490-009

Matrix: SOIL

Received Date: 4/12/2023 8:42:00 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	4/14/2023 7:48:52 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	4/14/2023 7:48:52 PM
Surr: DNOP	99.4	69-147		%Rec	1	4/14/2023 7:48:52 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	4/15/2023 8:21:33 AM
Surr: BFB	87.7	37.7-212		%Rec	1	4/15/2023 8:21:33 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.025		mg/Kg	1	4/15/2023 8:21:33 AM
Toluene	ND	0.050		mg/Kg	1	4/15/2023 8:21:33 AM
Ethylbenzene	ND	0.050		mg/Kg	1	4/15/2023 8:21:33 AM
Xylenes, Total	ND	0.099		mg/Kg	1	4/15/2023 8:21:33 AM
Surr: 4-Bromofluorobenzene	97.4	70-130		%Rec	1	4/15/2023 8:21:33 AM
EPA METHOD 300.0: ANIONS						Analyst: SNS
Chloride	9500	600		mg/Kg	200	4/17/2023 11:30:34 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 Quantitative Limit | RL | Reporting Limit |
| S | % Recovery outside of standard limits. If undiluted results may be estimated. | | |

Analytical Report

Lab Order **2304490**

Date Reported: **4/25/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH23-05 1'

Project: Hackberry 6 Fed 001

Collection Date: 4/10/2023 11:35:00 AM

Lab ID: 2304490-010

Matrix: SOIL

Received Date: 4/12/2023 8:42:00 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	4/14/2023 7:59:32 PM
Motor Oil Range Organics (MRO)	ND	42		mg/Kg	1	4/14/2023 7:59:32 PM
Surr: DNOP	99.8	69-147		%Rec	1	4/14/2023 7:59:32 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	4/15/2023 8:45:04 AM
Surr: BFB	88.4	37.7-212		%Rec	1	4/15/2023 8:45:04 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.023		mg/Kg	1	4/15/2023 8:45:04 AM
Toluene	ND	0.046		mg/Kg	1	4/15/2023 8:45:04 AM
Ethylbenzene	ND	0.046		mg/Kg	1	4/15/2023 8:45:04 AM
Xylenes, Total	ND	0.092		mg/Kg	1	4/15/2023 8:45:04 AM
Surr: 4-Bromofluorobenzene	97.4	70-130		%Rec	1	4/15/2023 8:45:04 AM
EPA METHOD 300.0: ANIONS						Analyst: SNS
Chloride	7300	300		mg/Kg	100	4/17/2023 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.	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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304490**

Date Reported: **4/25/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH23-06 0'

Project: Hackberry 6 Fed 001

Collection Date: 4/10/2023 11:40:00 AM

Lab ID: 2304490-011

Matrix: SOIL

Received Date: 4/12/2023 8:42:00 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	4/14/2023 8:10:11 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	4/14/2023 8:10:11 PM
Surr: DNOP	94.2	69-147		%Rec	1	4/14/2023 8:10:11 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/15/2023 9:08:31 AM
Surr: BFB	85.8	37.7-212		%Rec	1	4/15/2023 9:08:31 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	4/15/2023 9:08:31 AM
Toluene	ND	0.048		mg/Kg	1	4/15/2023 9:08:31 AM
Ethylbenzene	ND	0.048		mg/Kg	1	4/15/2023 9:08:31 AM
Xylenes, Total	ND	0.097		mg/Kg	1	4/15/2023 9:08:31 AM
Surr: 4-Bromofluorobenzene	97.0	70-130		%Rec	1	4/15/2023 9:08:31 AM
EPA METHOD 300.0: ANIONS						Analyst: SNS
Chloride	8800	610		mg/Kg	200	4/17/2023 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 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304490**

Date Reported: **4/25/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH23-06 1'

Project: Hackberry 6 Fed 001

Collection Date: 4/10/2023 11:45:00 AM

Lab ID: 2304490-012

Matrix: SOIL

Received Date: 4/12/2023 8:42:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: PRD
Diesel Range Organics (DRO)	ND	8.9		mg/Kg	1	4/14/2023 8:20:53 PM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	4/14/2023 8:20:53 PM
Surr: DNOP	97.7	69-147		%Rec	1	4/14/2023 8:20:53 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	4/15/2023 9:31:55 AM
Surr: BFB	84.1	37.7-212		%Rec	1	4/15/2023 9:31:55 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	4/15/2023 9:31:55 AM
Toluene	ND	0.047		mg/Kg	1	4/15/2023 9:31:55 AM
Ethylbenzene	ND	0.047		mg/Kg	1	4/15/2023 9:31:55 AM
Xylenes, Total	ND	0.095		mg/Kg	1	4/15/2023 9:31:55 AM
Surr: 4-Bromofluorobenzene	96.9	70-130		%Rec	1	4/15/2023 9:31:55 AM
EPA METHOD 300.0: ANIONS						Analyst: SNS
Chloride	4500	300		mg/Kg	100	4/17/2023 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.	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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304490**

Date Reported: **4/25/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH23-07 0'

Project: Hackberry 6 Fed 001

Collection Date: 4/10/2023 11:50:00 AM

Lab ID: 2304490-013

Matrix: SOIL

Received Date: 4/12/2023 8:42:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: PRD
Diesel Range Organics (DRO)	ND	8.7		mg/Kg	1	4/14/2023 8:31:33 PM
Motor Oil Range Organics (MRO)	ND	44		mg/Kg	1	4/14/2023 8:31:33 PM
Surr: DNOP	99.8	69-147		%Rec	1	4/14/2023 8:31:33 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/15/2023 9:55:22 AM
Surr: BFB	72.9	37.7-212		%Rec	1	4/15/2023 9:55:22 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	4/15/2023 9:55:22 AM
Toluene	ND	0.048		mg/Kg	1	4/15/2023 9:55:22 AM
Ethylbenzene	ND	0.048		mg/Kg	1	4/15/2023 9:55:22 AM
Xylenes, Total	ND	0.095		mg/Kg	1	4/15/2023 9:55:22 AM
Surr: 4-Bromofluorobenzene	94.8	70-130		%Rec	1	4/15/2023 9:55:22 AM
EPA METHOD 300.0: ANIONS						Analyst: NAI
Chloride	ND	60		mg/Kg	20	4/14/2023 8:36:22 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304490**

Date Reported: **4/25/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH23-07 1'

Project: Hackberry 6 Fed 001

Collection Date: 4/10/2023 11:55:00 AM

Lab ID: 2304490-014

Matrix: SOIL

Received Date: 4/12/2023 8:42:00 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	4/14/2023 11:06:56 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	4/14/2023 11:06:56 AM
Surr: DNOP	94.6	69-147		%Rec	1	4/14/2023 11:06:56 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/14/2023 11:04:00 PM
Surr: BFB	87.7	37.7-212		%Rec	1	4/14/2023 11:04:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	4/14/2023 11:04:00 PM
Toluene	ND	0.048		mg/Kg	1	4/14/2023 11:04:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	4/14/2023 11:04:00 PM
Xylenes, Total	ND	0.096		mg/Kg	1	4/14/2023 11:04:00 PM
Surr: 4-Bromofluorobenzene	86.0	70-130		%Rec	1	4/14/2023 11:04:00 PM
EPA METHOD 300.0: ANIONS						Analyst: NAI
Chloride	ND	60		mg/Kg	20	4/14/2023 8:48:47 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304490**

Date Reported: **4/25/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH23-08 0'

Project: Hackberry 6 Fed 001

Collection Date: 4/10/2023 12:40:00 PM

Lab ID: 2304490-015

Matrix: SOIL

Received Date: 4/12/2023 8:42:00 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	4/14/2023 11:17:26 AM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	4/14/2023 11:17:26 AM
Surr: DNOP	92.3	69-147		%Rec	1	4/14/2023 11:17:26 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/15/2023 12:09:00 AM
Surr: BFB	90.6	37.7-212		%Rec	1	4/15/2023 12:09:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	4/15/2023 12:09:00 AM
Toluene	ND	0.049		mg/Kg	1	4/15/2023 12:09:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	4/15/2023 12:09:00 AM
Xylenes, Total	ND	0.098		mg/Kg	1	4/15/2023 12:09:00 AM
Surr: 4-Bromofluorobenzene	85.7	70-130		%Rec	1	4/15/2023 12:09:00 AM
EPA METHOD 300.0: ANIONS						Analyst: NAI
Chloride	68	60		mg/Kg	20	4/14/2023 9:01:12 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304490**

Date Reported: **4/25/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH23-08 1'

Project: Hackberry 6 Fed 001

Collection Date: 4/10/2023 12:45:00 PM

Lab ID: 2304490-016

Matrix: SOIL

Received Date: 4/12/2023 8:42:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: PRD
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	4/14/2023 11:27:56 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	4/14/2023 11:27:56 AM
Surr: DNOP	90.2	69-147		%Rec	1	4/14/2023 11:27:56 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	4/15/2023 1:14:00 AM
Surr: BFB	88.1	37.7-212		%Rec	1	4/15/2023 1:14:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.025		mg/Kg	1	4/15/2023 1:14:00 AM
Toluene	ND	0.050		mg/Kg	1	4/15/2023 1:14:00 AM
Ethylbenzene	ND	0.050		mg/Kg	1	4/15/2023 1:14:00 AM
Xylenes, Total	ND	0.10		mg/Kg	1	4/15/2023 1:14:00 AM
Surr: 4-Bromofluorobenzene	86.3	70-130		%Rec	1	4/15/2023 1:14:00 AM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	ND	60		mg/Kg	20	4/17/2023 2:52:02 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304490**

Date Reported: **4/25/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH23-09 0'

Project: Hackberry 6 Fed 001

Collection Date: 4/10/2023 12:50:00 PM

Lab ID: 2304490-017

Matrix: SOIL

Received Date: 4/12/2023 8:42:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: PRD
Diesel Range Organics (DRO)	ND	8.9		mg/Kg	1	4/14/2023 11:38:27 AM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	4/14/2023 11:38:27 AM
Surr: DNOP	90.6	69-147		%Rec	1	4/14/2023 11:38:27 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/15/2023 1:35:00 AM
Surr: BFB	89.5	37.7-212		%Rec	1	4/15/2023 1:35:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.025		mg/Kg	1	4/15/2023 1:35:00 AM
Toluene	ND	0.049		mg/Kg	1	4/15/2023 1:35:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	4/15/2023 1:35:00 AM
Xylenes, Total	ND	0.099		mg/Kg	1	4/15/2023 1:35:00 AM
Surr: 4-Bromofluorobenzene	85.6	70-130		%Rec	1	4/15/2023 1:35:00 AM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	97	61		mg/Kg	20	4/17/2023 3:04:26 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304490**

Date Reported: **4/25/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH23-09 1'

Project: Hackberry 6 Fed 001

Collection Date: 4/10/2023 12:55:00 PM

Lab ID: 2304490-018

Matrix: SOIL

Received Date: 4/12/2023 8:42:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: PRD
Diesel Range Organics (DRO)	ND	8.7		mg/Kg	1	4/14/2023 11:59:33 AM
Motor Oil Range Organics (MRO)	ND	43		mg/Kg	1	4/14/2023 11:59:33 AM
Surr: DNOP	91.2	69-147		%Rec	1	4/14/2023 11:59:33 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	4/15/2023 1:57:00 AM
Surr: BFB	87.4	37.7-212		%Rec	1	4/15/2023 1:57:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.023		mg/Kg	1	4/15/2023 1:57:00 AM
Toluene	ND	0.047		mg/Kg	1	4/15/2023 1:57:00 AM
Ethylbenzene	ND	0.047		mg/Kg	1	4/15/2023 1:57:00 AM
Xylenes, Total	ND	0.093		mg/Kg	1	4/15/2023 1:57:00 AM
Surr: 4-Bromofluorobenzene	84.1	70-130		%Rec	1	4/15/2023 1:57:00 AM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	78	60		mg/Kg	20	4/17/2023 3:16:51 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304490**

Date Reported: **4/25/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH23-10 0'

Project: Hackberry 6 Fed 001

Collection Date: 4/10/2023 1:00:00 PM

Lab ID: 2304490-019

Matrix: SOIL

Received Date: 4/12/2023 8:42:00 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	4/14/2023 12:10:06 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	4/14/2023 12:10:06 PM
Surr: DNOP	116	69-147		%Rec	1	4/14/2023 12:10:06 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/15/2023 2:18:00 AM
Surr: BFB	88.7	37.7-212		%Rec	1	4/15/2023 2:18:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	4/15/2023 2:18:00 AM
Toluene	ND	0.048		mg/Kg	1	4/15/2023 2:18:00 AM
Ethylbenzene	ND	0.048		mg/Kg	1	4/15/2023 2:18:00 AM
Xylenes, Total	ND	0.096		mg/Kg	1	4/15/2023 2:18:00 AM
Surr: 4-Bromofluorobenzene	87.4	70-130		%Rec	1	4/15/2023 2:18:00 AM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	440	60		mg/Kg	20	4/17/2023 3:54:04 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304490**

Date Reported: **4/25/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH23-10 1'

Project: Hackberry 6 Fed 001

Collection Date: 4/10/2023 1:05:00 PM

Lab ID: 2304490-020

Matrix: SOIL

Received Date: 4/12/2023 8:42:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: PRD
Diesel Range Organics (DRO)	ND	8.9		mg/Kg	1	4/14/2023 12:20:39 PM
Motor Oil Range Organics (MRO)	ND	44		mg/Kg	1	4/14/2023 12:20:39 PM
Surr: DNOP	88.0	69-147		%Rec	1	4/14/2023 12:20:39 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/15/2023 2:40:00 AM
Surr: BFB	92.6	37.7-212		%Rec	1	4/15/2023 2:40:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	4/15/2023 2:40:00 AM
Toluene	ND	0.048		mg/Kg	1	4/15/2023 2:40:00 AM
Ethylbenzene	ND	0.048		mg/Kg	1	4/15/2023 2:40:00 AM
Xylenes, Total	ND	0.096		mg/Kg	1	4/15/2023 2:40:00 AM
Surr: 4-Bromofluorobenzene	87.7	70-130		%Rec	1	4/15/2023 2:40:00 AM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	240	60		mg/Kg	20	4/17/2023 2:11:22 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304490**

Date Reported: **4/25/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH23-11 0'

Project: Hackberry 6 Fed 001

Collection Date: 4/10/2023 1:07:00 PM

Lab ID: 2304490-021

Matrix: SOIL

Received Date: 4/12/2023 8:42:00 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	4/14/2023 12:31:14 PM
Motor Oil Range Organics (MRO)	ND	44		mg/Kg	1	4/14/2023 12:31:14 PM
Surr: DNOP	93.8	69-147		%Rec	1	4/14/2023 12:31:14 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/15/2023 3:01:00 AM
Surr: BFB	89.9	37.7-212		%Rec	1	4/15/2023 3:01:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	4/15/2023 3:01:00 AM
Toluene	ND	0.048		mg/Kg	1	4/15/2023 3:01:00 AM
Ethylbenzene	ND	0.048		mg/Kg	1	4/15/2023 3:01:00 AM
Xylenes, Total	ND	0.095		mg/Kg	1	4/15/2023 3:01:00 AM
Surr: 4-Bromofluorobenzene	85.9	70-130		%Rec	1	4/15/2023 3:01:00 AM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	190	60		mg/Kg	20	4/17/2023 2:23:42 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304490**

Date Reported: **4/25/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH23-11 1'

Project: Hackberry 6 Fed 001

Collection Date: 4/10/2023 1:10:00 PM

Lab ID: 2304490-022

Matrix: SOIL

Received Date: 4/12/2023 8:42:00 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	4/14/2023 12:41:50 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	4/14/2023 12:41:50 PM
Surr: DNOP	88.0	69-147		%Rec	1	4/14/2023 12:41:50 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/15/2023 3:23:00 AM
Surr: BFB	90.2	37.7-212		%Rec	1	4/15/2023 3:23:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	4/15/2023 3:23:00 AM
Toluene	ND	0.048		mg/Kg	1	4/15/2023 3:23:00 AM
Ethylbenzene	ND	0.048		mg/Kg	1	4/15/2023 3:23:00 AM
Xylenes, Total	ND	0.097		mg/Kg	1	4/15/2023 3:23:00 AM
Surr: 4-Bromofluorobenzene	88.5	70-130		%Rec	1	4/15/2023 3:23:00 AM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	140	60		mg/Kg	20	4/17/2023 2:36:03 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304490**

Date Reported: **4/25/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH23-12 0'

Project: Hackberry 6 Fed 001

Collection Date: 4/10/2023 1:15:00 PM

Lab ID: 2304490-023

Matrix: SOIL

Received Date: 4/12/2023 8:42:00 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	4/14/2023 12:52:28 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	4/14/2023 12:52:28 PM
Surr: DNOP	87.3	69-147		%Rec	1	4/14/2023 12:52:28 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	4/15/2023 3:45:00 AM
Surr: BFB	90.0	37.7-212		%Rec	1	4/15/2023 3:45:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.023		mg/Kg	1	4/15/2023 3:45:00 AM
Toluene	ND	0.047		mg/Kg	1	4/15/2023 3:45:00 AM
Ethylbenzene	ND	0.047		mg/Kg	1	4/15/2023 3:45:00 AM
Xylenes, Total	ND	0.094		mg/Kg	1	4/15/2023 3:45:00 AM
Surr: 4-Bromofluorobenzene	87.6	70-130		%Rec	1	4/15/2023 3:45:00 AM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	93	60		mg/Kg	20	4/17/2023 2:48:23 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304490**

Date Reported: **4/25/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH23-13 0'

Project: Hackberry 6 Fed 001

Collection Date: 4/10/2023 1:40:00 PM

Lab ID: 2304490-024

Matrix: SOIL

Received Date: 4/12/2023 8:42:00 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	4/14/2023 1:03:06 PM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	4/14/2023 1:03:06 PM
Surr: DNOP	89.2	69-147		%Rec	1	4/14/2023 1:03:06 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	4/15/2023 4:28:00 AM
Surr: BFB	92.4	37.7-212		%Rec	1	4/15/2023 4:28:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	4/15/2023 4:28:00 AM
Toluene	ND	0.047		mg/Kg	1	4/15/2023 4:28:00 AM
Ethylbenzene	ND	0.047		mg/Kg	1	4/15/2023 4:28:00 AM
Xylenes, Total	ND	0.094		mg/Kg	1	4/15/2023 4:28:00 AM
Surr: 4-Bromofluorobenzene	83.9	70-130		%Rec	1	4/15/2023 4:28:00 AM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	ND	60		mg/Kg	20	4/17/2023 3:00:44 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304490**

Date Reported: **4/25/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH23-13 1'

Project: Hackberry 6 Fed 001

Collection Date: 4/10/2023 1:45:00 PM

Lab ID: 2304490-025

Matrix: SOIL

Received Date: 4/12/2023 8:42:00 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	4/14/2023 1:13:46 PM
Motor Oil Range Organics (MRO)	ND	42		mg/Kg	1	4/14/2023 1:13:46 PM
Surr: DNOP	85.2	69-147		%Rec	1	4/14/2023 1:13:46 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	4/15/2023 4:49:00 AM
Surr: BFB	90.5	37.7-212		%Rec	1	4/15/2023 4:49:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	4/15/2023 4:49:00 AM
Toluene	ND	0.047		mg/Kg	1	4/15/2023 4:49:00 AM
Ethylbenzene	ND	0.047		mg/Kg	1	4/15/2023 4:49:00 AM
Xylenes, Total	ND	0.094		mg/Kg	1	4/15/2023 4:49:00 AM
Surr: 4-Bromofluorobenzene	85.9	70-130		%Rec	1	4/15/2023 4:49:00 AM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	ND	60		mg/Kg	20	4/17/2023 3:13:04 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 Quantitative 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#: 2304490

25-Apr-23

Client: Vertex Resources Services, Inc.

Project: Hackberry 6 Fed 001

Sample ID: MB-74330	SampType: mblk		TestCode: EPA Method 300.0: Anions							
Client ID: PBS	Batch ID: 74330		RunNo: 96043							
Prep Date: 4/14/2023	Analysis Date: 4/14/2023		SeqNo: 3477686		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: LCS-74330	SampType: ics		TestCode: EPA Method 300.0: Anions							
Client ID: LCSS	Batch ID: 74330		RunNo: 96043							
Prep Date: 4/14/2023	Analysis Date: 4/14/2023		SeqNo: 3477687		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	91.9	90	110			

Sample ID: MB-74353	SampType: mblk		TestCode: EPA Method 300.0: Anions							
Client ID: PBS	Batch ID: 74353		RunNo: 96079							
Prep Date: 4/17/2023	Analysis Date: 4/17/2023		SeqNo: 3479713		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: LCS-74353	SampType: ics		TestCode: EPA Method 300.0: Anions							
Client ID: LCSS	Batch ID: 74353		RunNo: 96079							
Prep Date: 4/17/2023	Analysis Date: 4/17/2023		SeqNo: 3479714		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	93.1	90	110			

Sample ID: MB-74357	SampType: mblk		TestCode: EPA Method 300.0: Anions							
Client ID: PBS	Batch ID: 74357		RunNo: 96091							
Prep Date: 4/17/2023	Analysis Date: 4/17/2023		SeqNo: 3479840		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: LCS-74357	SampType: ics		TestCode: EPA Method 300.0: Anions							
Client ID: LCSS	Batch ID: 74357		RunNo: 96091							
Prep Date: 4/17/2023	Analysis Date: 4/17/2023		SeqNo: 3479841		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	95.2	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 Quantitative 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#: 2304490

25-Apr-23

Client: Vertex Resources Services, Inc.

Project: Hackberry 6 Fed 001

Sample ID: MB-74321	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 74321	RunNo: 96062								
Prep Date: 4/14/2023	Analysis Date: 4/14/2023	SeqNo: 3478496	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	8.9		10.00		88.9	69	147			

Sample ID: MB-74323	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 74323	RunNo: 96062								
Prep Date: 4/14/2023	Analysis Date: 4/14/2023	SeqNo: 3478497	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	8.9		10.00		89.1	69	147			

Sample ID: LCS-74323	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: LCSS	Batch ID: 74323	RunNo: 96062								
Prep Date: 4/14/2023	Analysis Date: 4/14/2023	SeqNo: 3478501	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	40	10	50.00	0	81.0	61.9	130			
Surr: DNOP	4.6		5.000		91.2	69	147			

Sample ID: LCS-74321	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: LCSS	Batch ID: 74321	RunNo: 96078								
Prep Date: 4/14/2023	Analysis Date: 4/17/2023	SeqNo: 3479505	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	41	10	50.00	0	81.8	61.9	130			
Surr: DNOP	4.6		5.000		92.1	69	147			

Sample ID: LCS-74395	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: LCSS	Batch ID: 74395	RunNo: 96131								
Prep Date: 4/18/2023	Analysis Date: 4/19/2023	SeqNo: 3481382	Units: %Rec							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.3		5.000		86.1	69	147			

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 Quantitative 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#: 2304490

25-Apr-23

Client: Vertex Resources Services, Inc.

Project: Hackberry 6 Fed 001

Sample ID: MB-74395	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 74395	RunNo: 96131								
Prep Date: 4/18/2023	Analysis Date: 4/19/2023	SeqNo: 3481386			Units: %Rec					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	8.8		10.00		87.7	69	147			

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 Quantitative 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#: 2304490

25-Apr-23

Client: Vertex Resources Services, Inc.

Project: Hackberry 6 Fed 001

Sample ID: ics-74306	SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: LCSS	Batch ID: 74306		RunNo: 96035							
Prep Date: 4/13/2023	Analysis Date: 4/14/2023		SeqNo: 3477421				Units: %Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	5000		1000		496	37.7	212			S

Sample ID: mb-74306	SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: PBS	Batch ID: 74306		RunNo: 96035							
Prep Date: 4/13/2023	Analysis Date: 4/14/2023		SeqNo: 3477422				Units: %Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	960		1000		95.9	37.7	212			

Sample ID: ics-74316	SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: LCSS	Batch ID: 74316		RunNo: 96058							
Prep Date: 4/13/2023	Analysis Date: 4/14/2023		SeqNo: 3478184				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	87.1	70	130			
Surr: BFB	1900		1000		193	37.7	212			

Sample ID: mb-74316	SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: PBS	Batch ID: 74316		RunNo: 96058							
Prep Date: 4/13/2023	Analysis Date: 4/14/2023		SeqNo: 3478185				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	940		1000		94.0	37.7	212			

Sample ID: 2304490-014ams	SampType: MS		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: BH23-07 1'	Batch ID: 74316		RunNo: 96058							
Prep Date: 4/13/2023	Analysis Date: 4/14/2023		SeqNo: 3478187				Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	4.8	23.99	0	90.3	70	130			
Surr: BFB	1900		959.7		194	37.7	212			

Sample ID: 2304490-014amsd	SampType: MSD		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: BH23-07 1'	Batch ID: 74316		RunNo: 96058							
Prep Date: 4/13/2023	Analysis Date: 4/14/2023		SeqNo: 3478188				Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	21	4.8	23.88	0	88.2	70	130	2.90	20	
Surr: BFB	1900		955.1		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 Quantitative 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#: 2304490

25-Apr-23

Client: Vertex Resources Services, Inc.

Project: Hackberry 6 Fed 001

Sample ID: ics-74309	SampType: LCS	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: LCSS	Batch ID: 74309	RunNo: 96035								
Prep Date: 4/13/2023	Analysis Date: 4/14/2023	SeqNo: 3478210	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	25.00	0	95.4	70	130			
Surr: BFB	5000		1000		504	37.7	212			S

Sample ID: mb-74309	SampType: MBLK	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: PBS	Batch ID: 74309	RunNo: 96035								
Prep Date: 4/13/2023	Analysis Date: 4/15/2023	SeqNo: 3478211	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	850		1000		85.3	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 Quantitative 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#: 2304490

25-Apr-23

Client: Vertex Resources Services, Inc.

Project: Hackberry 6 Fed 001

Sample ID: LCS-74306	SampType: LCS	TestCode: EPA Method 8021B: Volatiles								
Client ID: LCSS	Batch ID: 74306	RunNo: 96035								
Prep Date: 4/13/2023	Analysis Date: 4/14/2023	SeqNo: 3477430	Units: %Rec							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	1.0		1.000		100	70	130			

Sample ID: mb-74306	SampType: MBLK	TestCode: EPA Method 8021B: Volatiles								
Client ID: PBS	Batch ID: 74306	RunNo: 96035								
Prep Date: 4/13/2023	Analysis Date: 4/14/2023	SeqNo: 3477431	Units: %Rec							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.97		1.000		97.0	70	130			

Sample ID: LCS-74309	SampType: LCS	TestCode: EPA Method 8021B: Volatiles								
Client ID: LCSS	Batch ID: 74309	RunNo: 96035								
Prep Date: 4/13/2023	Analysis Date: 4/14/2023	SeqNo: 3478282	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.88	0.025	1.000	0	87.9	80	120			
Toluene	0.88	0.050	1.000	0	88.1	80	120			
Ethylbenzene	0.89	0.050	1.000	0	88.8	80	120			
Xylenes, Total	2.7	0.10	3.000	0	90.2	80	120			
Surr: 4-Bromofluorobenzene	0.99		1.000		99.3	70	130			

Sample ID: mb-74309	SampType: MBLK	TestCode: EPA Method 8021B: Volatiles								
Client ID: PBS	Batch ID: 74309	RunNo: 96035								
Prep Date: 4/13/2023	Analysis Date: 4/15/2023	SeqNo: 3478283	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	0.96		1.000		95.7	70	130			

Sample ID: lcs-74316	SampType: LCS	TestCode: EPA Method 8021B: Volatiles								
Client ID: LCSS	Batch ID: 74316	RunNo: 96058								
Prep Date: 4/13/2023	Analysis Date: 4/14/2023	SeqNo: 3478356	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.90	0.025	1.000	0	89.6	80	120			
Toluene	0.89	0.050	1.000	0	89.2	80	120			
Ethylbenzene	0.87	0.050	1.000	0	86.5	80	120			
Xylenes, Total	2.6	0.10	3.000	0	85.6	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 Quantitative 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#: 2304490

25-Apr-23

Client: Vertex Resources Services, Inc.

Project: Hackberry 6 Fed 001

Sample ID: ics-74316	SampType: LCS	TestCode: EPA Method 8021B: Volatiles								
Client ID: LCSS	Batch ID: 74316	RunNo: 96058								
Prep Date: 4/13/2023	Analysis Date: 4/14/2023	SeqNo: 3478356	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.86		1.000		86.3	70	130			

Sample ID: mb-74316	SampType: MBLK	TestCode: EPA Method 8021B: Volatiles								
Client ID: PBS	Batch ID: 74316	RunNo: 96058								
Prep Date: 4/13/2023	Analysis Date: 4/14/2023	SeqNo: 3478357	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		84.8	70	130			

Sample ID: 2304490-015ams	SampType: MS	TestCode: EPA Method 8021B: Volatiles								
Client ID: BH23-08 0'	Batch ID: 74316	RunNo: 96058								
Prep Date: 4/13/2023	Analysis Date: 4/15/2023	SeqNo: 3478362	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.83	0.024	0.9747	0	85.3	68.8	120			
Toluene	0.83	0.049	0.9747	0	85.3	73.6	124			
Ethylbenzene	0.82	0.049	0.9747	0	84.0	72.7	129			
Xylenes, Total	2.4	0.097	2.924	0	82.7	75.7	126			
Surr: 4-Bromofluorobenzene	0.84		0.9747		85.7	70	130			

Sample ID: 2304490-015amsd	SampType: MSD	TestCode: EPA Method 8021B: Volatiles								
Client ID: BH23-08 0'	Batch ID: 74316	RunNo: 96058								
Prep Date: 4/13/2023	Analysis Date: 4/15/2023	SeqNo: 3478363	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.86	0.024	0.9756	0	88.5	68.8	120	3.74	20	
Toluene	0.87	0.049	0.9756	0	89.0	73.6	124	4.34	20	
Ethylbenzene	0.85	0.049	0.9756	0	87.2	72.7	129	3.90	20	
Xylenes, Total	2.5	0.098	2.927	0	85.8	75.7	126	3.74	20	
Surr: 4-Bromofluorobenzene	0.84		0.9756		86.1	70	130	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 Quantitative 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



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: 2304490 RcptNo: 1

Received By: Tracy Casarrubias 4/12/2023 8:42:00 AM

Completed By: Tracy Casarrubias 4/12/2023 9:26:03 AM

Reviewed By: KPG 4-12-23

Chain of Custody

- 1. Is Chain of Custody complete? Yes [] No [x] Not Present []
2. How was the sample delivered? Courier

Log In

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

of preserved bottles checked for pH: Adjusted? Checked by: jay 4/12/23

Special Handling (if applicable)

- 15. Was client notified of all discrepancies with this order? Yes [] No [] NA [x]

Person Notified: Date: By Whom: Via: [] eMail [] Phone [] Fax [] In Person Regarding: Client Instructions: Mailing address, phone number, and Email are missing on COC- TMC 4/12/23

16. Additional remarks:

17. Cooler Information

Table with 7 columns: Cooler No, Temp °C, Condition, Seal Intact, Seal No, Seal Date, Signed By. Row 1: 1, 5.2, Good, Yes, Yogi

Chain-of-Custody Record

Client: Vertex (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: Standard Rush 5 Days

Project Name: Hackberry 6 Fed 001

Project #: 23E-01582

Project Manager: Kent Stallings

Sampler: Zach Englebert

On Ice: Yes No yes

of Coolers: 1

Cooler Temp (including CF): 5.5-0.3-5.2 (°C)

Container Type and # jar-1

Preservative Type ice

HEAL No. 2304490

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.
4-10-23	10 45	soil	BH23-01 0'	jar-1	ice	001
	10 55		BH23-01 1'			002
	11 00		BH23-02 0'			003
	11 05		BH23-02 1'			004
	11 10		BH23-03 0'			005
	11 15		BH23-03 1'			006
	11 20		BH23-04 0'			007
	11 25		BH23-04 1'			008
	11 30		BH23-05 0'			009
	11 35		BH23-05 1'			010
	11 40		BH23-06 0'			011
	11 45		BH23-06 1'			012

Date: 4-10-23 Time: 16:00
Relinquished by: Zach Englebert

Date: 4/11/23 Time: 12:30
Received by: [Signature]
Date: 4/12/23 Time: 8:42
Received by: [Signature]

Remarks: Bill to Devon
cc KStallings@vertex.ca

Analysis Request

<input checked="" type="checkbox"/> BTEX / MTBE / TMB's (8021)	
<input checked="" type="checkbox"/> TPH8015D(GRO / DRO / MRO)	
8081 Pesticides/8082 PCB's	
EDB (Method 504.1)	
PAHs by 8310 or 8270SIMS	
RCRA 8 Metals	
<input checked="" type="checkbox"/> (C,F, Br, NO ₃ , NO ₂ , PO ₄ , SO ₄)	
8260 (VOA)	
8270 (Semi-VOA)	
Total Coliform (Present/Absent)	



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

Chain-of-Custody Record

Client: Vertex (Devon)

Mailing Address: 01 file

Phone #: _____

email or Fax#: _____

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

Accreditation: Az Compliance NELAC Other

EDD (Type) _____

Turn-Around Time: _____

Standard Rush

Project Name: Hackberry 6 Fed 001

Project #: 23E-01582

Project Manager: _____

Sampler: _____

On Ice: Yes No

of Coolers: 1

Cooler Temp (including CF): 5.5-0.3-5.2 (°C)

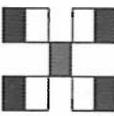
Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.
4-10-23	11:50	soil	BH23-07 0'	jar-1	ice	2304490
	11:55		BH23-07 1'			013
	12:40		BH23-08 0'			014
	12:45		BH23-08 1'			015
	12:50		BH23-09 0'			016
	12:55		BH23-09 1'			017
	13:00		BH23-10 0'			018
	13:05		BH23-10 1'			019
	13:07		BH23-11 0'			020
	13:10		BH23-11 1'			021
	13:15		BH23-12 0'			022
	13:40		BH23-13 0'			024

Date: 4-10-23 Time: 1600 Relinquished by: Zach Englebert

Date: 4/11/23 Time: 1900 Relinquished by: [Signature]

Received by: [Signature] Date: 4/11/23 Time: 1230

Received by: [Signature] Date: 4/12/23 Time: 8:42



HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

Analysis Request	Result
BTEX / MTBE / TMB's (8021)	X
TPH:8015D(GRO / DRO / MRO)	X
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	X
8260 (VOA)	
8270 (Semi-VOA)	
Total Coliform (Present/Absent)	

Remarks: Bill to Devon

Chain-of-Custody Record

Client: Vertex (Devon)
 Mailing Address: on file
 Phone #: 23E-01582
 email or Fax#:

QA/QC Package:
 Standard Level 4 (Full Validation)
 Accreditation: Az Compliance
 NELAC Other
 EDD (Type)

Project Manager:
 Sampler:
 On Ice: Yes No yes
 # of Coolers: 1
 Cooler Temp (including CF): SS-03-52 (°C)
 Container Type and # jar-1 Preservative Type ice HEAL No. 2304490
 Date Time Matrix Sample Name
4-10-23 1345 soil BH23-13 1'

Turn-Around Time:
 Standard Rush 5 Days
 Project Name: Hackberry 6 Fed-001
 Project #: 23E-01582
 Received by: [Signature] Date Time 4/11/23 1830
 Relinquished by: Zach Englebert
 Received by: [Signature] Date Time 4/12/23 8:12
 Relinquished by: [Signature]



HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Analysis Request

<input checked="" type="checkbox"/> BTX / MTBE / TMB's (8021)	<input checked="" type="checkbox"/> TPH8015D(GRO / DRO / MRO)	<input checked="" type="checkbox"/> 8081 Pesticides/8082 PCB's	<input type="checkbox"/> EDB (Method 504.1)	<input type="checkbox"/> PAHs by 8310 or 8270SIMS	<input type="checkbox"/> RCRA 8 Metals	<input checked="" type="checkbox"/> CD, F, Br, NO ₃ , NO ₂ , PO ₄ , SO ₄	<input type="checkbox"/> 8260 (VOA)	<input type="checkbox"/> 8270 (Semi-VOA)	<input type="checkbox"/> Total Coliform (Present/Absent)
---	---	--	---	---	--	--	-------------------------------------	--	--

Remarks: Bill to Devon



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

April 24, 2023

Kent Stallings

Vertex Resources Services, Inc.

3101 Boyd Drive

Carlsbad, NM 88220

TEL: (505) 506-0040

FAX:

RE: Hackberry 6 Federal 1

OrderNo.: 2304610

Dear Kent Stallings:

Hall Environmental Analysis Laboratory received 32 sample(s) on 4/14/2023 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,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a white background.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Analytical Report

Lab Order **2304610**

Date Reported: **4/24/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-14 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/11/2023 9:40:00 AM

Lab ID: 2304610-001

Matrix: SOIL

Received Date: 4/14/2023 7:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	230	9.2		mg/Kg	1	4/18/2023 3:25:17 PM
Motor Oil Range Organics (MRO)	180	46		mg/Kg	1	4/18/2023 3:25:17 PM
Surr: DNOP	93.3	69-147		%Rec	1	4/18/2023 3:25:17 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/17/2023 5:01:17 PM
Surr: BFB	91.8	37.7-212		%Rec	1	4/17/2023 5:01:17 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	4/17/2023 5:01:17 PM
Toluene	ND	0.048		mg/Kg	1	4/17/2023 5:01:17 PM
Ethylbenzene	ND	0.048		mg/Kg	1	4/17/2023 5:01:17 PM
Xylenes, Total	ND	0.095		mg/Kg	1	4/17/2023 5:01:17 PM
Surr: 4-Bromofluorobenzene	93.0	70-130		%Rec	1	4/17/2023 5:01:17 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	18000	1500		mg/Kg	500	4/18/2023 10:03:57 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304610**

Date Reported: **4/24/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-15 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/11/2023 9:45:00 AM

Lab ID: 2304610-002

Matrix: SOIL

Received Date: 4/14/2023 7:05:00 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	4/17/2023 9:43:33 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	4/17/2023 9:43:33 PM
Surr: DNOP	90.8	69-147		%Rec	1	4/17/2023 9:43:33 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/17/2023 5:24:41 PM
Surr: BFB	99.1	37.7-212		%Rec	1	4/17/2023 5:24:41 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.025		mg/Kg	1	4/17/2023 5:24:41 PM
Toluene	ND	0.049		mg/Kg	1	4/17/2023 5:24:41 PM
Ethylbenzene	ND	0.049		mg/Kg	1	4/17/2023 5:24:41 PM
Xylenes, Total	ND	0.099		mg/Kg	1	4/17/2023 5:24:41 PM
Surr: 4-Bromofluorobenzene	94.5	70-130		%Rec	1	4/17/2023 5:24:41 PM
EPA METHOD 300.0: ANIONS						Analyst: SNS
Chloride	87	60		mg/Kg	20	4/17/2023 6:17:18 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304610**

Date Reported: **4/24/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-16 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/11/2023 9:48:00 AM

Lab ID: 2304610-003

Matrix: SOIL

Received Date: 4/14/2023 7:05:00 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	4/17/2023 9:54:23 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	4/17/2023 9:54:23 PM
Surr: DNOP	87.9	69-147		%Rec	1	4/17/2023 9:54:23 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/17/2023 5:48:04 PM
Surr: BFB	96.0	37.7-212		%Rec	1	4/17/2023 5:48:04 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	4/17/2023 5:48:04 PM
Toluene	ND	0.048		mg/Kg	1	4/17/2023 5:48:04 PM
Ethylbenzene	ND	0.048		mg/Kg	1	4/17/2023 5:48:04 PM
Xylenes, Total	ND	0.097		mg/Kg	1	4/17/2023 5:48:04 PM
Surr: 4-Bromofluorobenzene	94.4	70-130		%Rec	1	4/17/2023 5:48:04 PM
EPA METHOD 300.0: ANIONS						Analyst: SNS
Chloride	ND	61		mg/Kg	20	4/17/2023 6:29:42 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304610**

Date Reported: **4/24/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-17 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/11/2023 9:50:00 AM

Lab ID: 2304610-004

Matrix: SOIL

Received Date: 4/14/2023 7:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: PRD
Diesel Range Organics (DRO)	26	9.6		mg/Kg	1	4/17/2023 10:37:16 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	4/17/2023 10:37:16 PM
Surr: DNOP	90.0	69-147		%Rec	1	4/17/2023 10:37:16 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/17/2023 6:11:22 PM
Surr: BFB	94.0	37.7-212		%Rec	1	4/17/2023 6:11:22 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	4/17/2023 6:11:22 PM
Toluene	ND	0.048		mg/Kg	1	4/17/2023 6:11:22 PM
Ethylbenzene	ND	0.048		mg/Kg	1	4/17/2023 6:11:22 PM
Xylenes, Total	ND	0.095		mg/Kg	1	4/17/2023 6:11:22 PM
Surr: 4-Bromofluorobenzene	94.0	70-130		%Rec	1	4/17/2023 6:11:22 PM
EPA METHOD 300.0: ANIONS						Analyst: SNS
Chloride	ND	60		mg/Kg	20	4/17/2023 7:06:56 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304610**

Date Reported: **4/24/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-18 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/11/2023 9:55:00 AM

Lab ID: 2304610-005

Matrix: SOIL

Received Date: 4/14/2023 7:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	340	9.7		mg/Kg	1	4/18/2023 3:48:28 PM
Motor Oil Range Organics (MRO)	250	49		mg/Kg	1	4/18/2023 3:48:28 PM
Surr: DNOP	81.1	69-147		%Rec	1	4/18/2023 3:48:28 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/17/2023 6:58:06 PM
Surr: BFB	84.2	37.7-212		%Rec	1	4/17/2023 6:58:06 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	4/17/2023 6:58:06 PM
Toluene	ND	0.049		mg/Kg	1	4/17/2023 6:58:06 PM
Ethylbenzene	ND	0.049		mg/Kg	1	4/17/2023 6:58:06 PM
Xylenes, Total	ND	0.097		mg/Kg	1	4/17/2023 6:58:06 PM
Surr: 4-Bromofluorobenzene	92.0	70-130		%Rec	1	4/17/2023 6:58:06 PM
EPA METHOD 300.0: ANIONS						Analyst: SNS
Chloride	630	60		mg/Kg	20	4/17/2023 7:19:20 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 Quantitative Limit | RL | Reporting Limit |
| S | % Recovery outside of standard limits. If undiluted results may be estimated. | | |

Analytical Report

Lab Order **2304610**

Date Reported: **4/24/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-19 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/11/2023 9:56:00 AM

Lab ID: 2304610-006

Matrix: SOIL

Received Date: 4/14/2023 7:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: PRD
Diesel Range Organics (DRO)	1100	97		mg/Kg	10	4/17/2023 10:58:49 PM
Motor Oil Range Organics (MRO)	1600	480		mg/Kg	10	4/17/2023 10:58:49 PM
Surr: DNOP	0	69-147	S	%Rec	10	4/17/2023 10:58:49 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/17/2023 7:21:48 PM
Surr: BFB	91.5	37.7-212		%Rec	1	4/17/2023 7:21:48 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	4/17/2023 7:21:48 PM
Toluene	ND	0.049		mg/Kg	1	4/17/2023 7:21:48 PM
Ethylbenzene	ND	0.049		mg/Kg	1	4/17/2023 7:21:48 PM
Xylenes, Total	ND	0.097		mg/Kg	1	4/17/2023 7:21:48 PM
Surr: 4-Bromofluorobenzene	91.6	70-130		%Rec	1	4/17/2023 7:21:48 PM
EPA METHOD 300.0: ANIONS						Analyst: SNS
Chloride	67	60		mg/Kg	20	4/17/2023 7:31:45 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order **2304610**

Date Reported: **4/24/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-20 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/11/2023 9:58:00 AM

Lab ID: 2304610-007

Matrix: SOIL

Received Date: 4/14/2023 7:05:00 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	4/17/2023 11:09:33 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	4/17/2023 11:09:33 PM
Surr: DNOP	89.4	69-147		%Rec	1	4/17/2023 11:09:33 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/17/2023 7:45:29 PM
Surr: BFB	110	37.7-212		%Rec	1	4/17/2023 7:45:29 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	4/17/2023 7:45:29 PM
Toluene	ND	0.048		mg/Kg	1	4/17/2023 7:45:29 PM
Ethylbenzene	ND	0.048		mg/Kg	1	4/17/2023 7:45:29 PM
Xylenes, Total	ND	0.097		mg/Kg	1	4/17/2023 7:45:29 PM
Surr: 4-Bromofluorobenzene	98.6	70-130		%Rec	1	4/17/2023 7:45:29 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	3900	150		mg/Kg	50	4/18/2023 10:16:18 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304610**

Date Reported: **4/24/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-21 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/11/2023 10:00:00 AM

Lab ID: 2304610-008

Matrix: SOIL

Received Date: 4/14/2023 7:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: PRD
Diesel Range Organics (DRO)	ND	8.7		mg/Kg	1	4/17/2023 11:30:55 PM
Motor Oil Range Organics (MRO)	ND	43		mg/Kg	1	4/17/2023 11:30:55 PM
Surr: DNOP	93.0	69-147		%Rec	1	4/17/2023 11:30:55 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/17/2023 8:09:09 PM
Surr: BFB	113	37.7-212		%Rec	1	4/17/2023 8:09:09 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	4/17/2023 8:09:09 PM
Toluene	ND	0.048		mg/Kg	1	4/17/2023 8:09:09 PM
Ethylbenzene	ND	0.048		mg/Kg	1	4/17/2023 8:09:09 PM
Xylenes, Total	ND	0.096		mg/Kg	1	4/17/2023 8:09:09 PM
Surr: 4-Bromofluorobenzene	97.5	70-130		%Rec	1	4/17/2023 8:09:09 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	5300	300		mg/Kg	100	4/18/2023 10:28:38 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304610**

Date Reported: **4/24/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-22 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/11/2023 10:03:00 AM

Lab ID: 2304610-009

Matrix: SOIL

Received Date: 4/14/2023 7:05:00 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	4/17/2023 11:41:35 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	4/17/2023 11:41:35 PM
Surr: DNOP	88.8	69-147		%Rec	1	4/17/2023 11:41:35 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/17/2023 8:32:43 PM
Surr: BFB	101	37.7-212		%Rec	1	4/17/2023 8:32:43 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	4/17/2023 8:32:43 PM
Toluene	ND	0.048		mg/Kg	1	4/17/2023 8:32:43 PM
Ethylbenzene	ND	0.048		mg/Kg	1	4/17/2023 8:32:43 PM
Xylenes, Total	ND	0.097		mg/Kg	1	4/17/2023 8:32:43 PM
Surr: 4-Bromofluorobenzene	95.0	70-130		%Rec	1	4/17/2023 8:32:43 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	3900	150		mg/Kg	50	4/18/2023 10:40:59 AM

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

Qualifiers:	* Value exceeds Maximum Contaminant Level.	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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304610**

Date Reported: **4/24/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-23 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/11/2023 10:05:00 AM

Lab ID: 2304610-010

Matrix: SOIL

Received Date: 4/14/2023 7:05:00 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	4/17/2023 11:52:14 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	4/17/2023 11:52:14 PM
Surr: DNOP	75.3	69-147		%Rec	1	4/17/2023 11:52:14 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/17/2023 8:56:12 PM
Surr: BFB	114	37.7-212		%Rec	1	4/17/2023 8:56:12 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	4/17/2023 8:56:12 PM
Toluene	ND	0.049		mg/Kg	1	4/17/2023 8:56:12 PM
Ethylbenzene	ND	0.049		mg/Kg	1	4/17/2023 8:56:12 PM
Xylenes, Total	ND	0.097		mg/Kg	1	4/17/2023 8:56:12 PM
Surr: 4-Bromofluorobenzene	98.5	70-130		%Rec	1	4/17/2023 8:56:12 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	3000	150		mg/Kg	50	4/18/2023 10:53:19 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304610**

Date Reported: **4/24/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-24 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/11/2023 10:10:00 AM

Lab ID: 2304610-011

Matrix: SOIL

Received Date: 4/14/2023 7:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: PRD
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	4/18/2023 12:02:52 AM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	4/18/2023 12:02:52 AM
Surr: DNOP	85.0	69-147		%Rec	1	4/18/2023 12:02:52 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	4/17/2023 9:19:38 PM
Surr: BFB	114	37.7-212		%Rec	1	4/17/2023 9:19:38 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.025		mg/Kg	1	4/17/2023 9:19:38 PM
Toluene	ND	0.050		mg/Kg	1	4/17/2023 9:19:38 PM
Ethylbenzene	ND	0.050		mg/Kg	1	4/17/2023 9:19:38 PM
Xylenes, Total	ND	0.10		mg/Kg	1	4/17/2023 9:19:38 PM
Surr: 4-Bromofluorobenzene	97.8	70-130		%Rec	1	4/17/2023 9:19:38 PM
EPA METHOD 300.0: ANIONS						Analyst: SNS
Chloride	130	60		mg/Kg	20	4/17/2023 8:33:48 PM

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

Qualifiers:	* Value exceeds Maximum Contaminant Level.	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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304610**

Date Reported: **4/24/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-25 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/11/2023 10:15:00 AM

Lab ID: 2304610-012

Matrix: SOIL

Received Date: 4/14/2023 7:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: PRD
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	4/18/2023 12:13:33 AM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	4/18/2023 12:13:33 AM
Surr: DNOP	89.6	69-147		%Rec	1	4/18/2023 12:13:33 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/17/2023 9:43:01 PM
Surr: BFB	116	37.7-212		%Rec	1	4/17/2023 9:43:01 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	4/17/2023 9:43:01 PM
Toluene	ND	0.049		mg/Kg	1	4/17/2023 9:43:01 PM
Ethylbenzene	ND	0.049		mg/Kg	1	4/17/2023 9:43:01 PM
Xylenes, Total	ND	0.098		mg/Kg	1	4/17/2023 9:43:01 PM
Surr: 4-Bromofluorobenzene	97.9	70-130		%Rec	1	4/17/2023 9:43:01 PM
EPA METHOD 300.0: ANIONS						Analyst: SNS
Chloride	ND	60		mg/Kg	20	4/17/2023 8:46:13 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 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304610**

Date Reported: **4/24/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-26 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/11/2023 10:17:00 AM

Lab ID: 2304610-013

Matrix: SOIL

Received Date: 4/14/2023 7:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: PRD
Diesel Range Organics (DRO)	27	9.6		mg/Kg	1	4/18/2023 12:24:13 AM
Motor Oil Range Organics (MRO)	62	48		mg/Kg	1	4/18/2023 12:24:13 AM
Surr: DNOP	89.6	69-147		%Rec	1	4/18/2023 12:24:13 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/17/2023 10:06:23 PM
Surr: BFB	104	37.7-212		%Rec	1	4/17/2023 10:06:23 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	4/17/2023 10:06:23 PM
Toluene	ND	0.048		mg/Kg	1	4/17/2023 10:06:23 PM
Ethylbenzene	ND	0.048		mg/Kg	1	4/17/2023 10:06:23 PM
Xylenes, Total	ND	0.095		mg/Kg	1	4/17/2023 10:06:23 PM
Surr: 4-Bromofluorobenzene	95.7	70-130		%Rec	1	4/17/2023 10:06:23 PM
EPA METHOD 300.0: ANIONS						Analyst: SNS
Chloride	ND	60		mg/Kg	20	4/17/2023 8:58:37 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304610**

Date Reported: **4/24/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-27 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/11/2023 10:24:00 AM

Lab ID: 2304610-014

Matrix: SOIL

Received Date: 4/14/2023 7:05:00 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	4/18/2023 12:56:02 AM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	4/18/2023 12:56:02 AM
Surr: DNOP	83.5	69-147		%Rec	1	4/18/2023 12:56:02 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	4/17/2023 10:29:58 PM
Surr: BFB	95.4	37.7-212		%Rec	1	4/17/2023 10:29:58 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	4/17/2023 10:29:58 PM
Toluene	ND	0.047		mg/Kg	1	4/17/2023 10:29:58 PM
Ethylbenzene	ND	0.047		mg/Kg	1	4/17/2023 10:29:58 PM
Xylenes, Total	ND	0.095		mg/Kg	1	4/17/2023 10:29:58 PM
Surr: 4-Bromofluorobenzene	94.7	70-130		%Rec	1	4/17/2023 10:29:58 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	880	60		mg/Kg	20	4/18/2023 3:24:54 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304610**

Date Reported: **4/24/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-28 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/11/2023 10:26:00 AM

Lab ID: 2304610-015

Matrix: SOIL

Received Date: 4/14/2023 7:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	43	10		mg/Kg	1	4/18/2023 5:56:26 PM
Motor Oil Range Organics (MRO)	53	50		mg/Kg	1	4/18/2023 5:56:26 PM
Surr: DNOP	87.3	69-147		%Rec	1	4/18/2023 5:56:26 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/18/2023 10:18:00 PM
Surr: BFB	91.3	37.7-212		%Rec	1	4/18/2023 10:18:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.025		mg/Kg	1	4/18/2023 10:18:00 PM
Toluene	ND	0.049		mg/Kg	1	4/18/2023 10:18:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	4/18/2023 10:18:00 PM
Xylenes, Total	ND	0.099		mg/Kg	1	4/18/2023 10:18:00 PM
Surr: 4-Bromofluorobenzene	84.6	70-130		%Rec	1	4/18/2023 10:18:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	74	60		mg/Kg	20	4/18/2023 3:37:15 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order **2304610**

Date Reported: **4/24/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-29 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/11/2023 10:28:00 AM

Lab ID: 2304610-016

Matrix: SOIL

Received Date: 4/14/2023 7:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	4/18/2023 7:01:46 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	4/18/2023 7:01:46 PM
Surr: DNOP	108	69-147		%Rec	1	4/18/2023 7:01:46 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/18/2023 1:19:00 PM
Surr: BFB	92.1	37.7-212		%Rec	1	4/18/2023 1:19:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	4/18/2023 1:19:00 PM
Toluene	ND	0.049		mg/Kg	1	4/18/2023 1:19:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	4/18/2023 1:19:00 PM
Xylenes, Total	ND	0.097		mg/Kg	1	4/18/2023 1:19:00 PM
Surr: 4-Bromofluorobenzene	84.5	70-130		%Rec	1	4/18/2023 1:19:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	ND	60		mg/Kg	20	4/18/2023 3:49:36 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304610**

Date Reported: **4/24/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-30 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/11/2023 10:34:00 AM

Lab ID: 2304610-017

Matrix: SOIL

Received Date: 4/14/2023 7:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	8.4		mg/Kg	1	4/18/2023 7:12:44 PM
Motor Oil Range Organics (MRO)	ND	42		mg/Kg	1	4/18/2023 7:12:44 PM
Surr: DNOP	77.4	69-147		%Rec	1	4/18/2023 7:12:44 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	4/18/2023 2:24:00 PM
Surr: BFB	87.2	37.7-212		%Rec	1	4/18/2023 2:24:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.025		mg/Kg	1	4/18/2023 2:24:00 PM
Toluene	ND	0.050		mg/Kg	1	4/18/2023 2:24:00 PM
Ethylbenzene	ND	0.050		mg/Kg	1	4/18/2023 2:24:00 PM
Xylenes, Total	ND	0.10		mg/Kg	1	4/18/2023 2:24:00 PM
Surr: 4-Bromofluorobenzene	85.5	70-130		%Rec	1	4/18/2023 2:24:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	ND	60		mg/Kg	20	4/18/2023 4:01:57 PM

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

Qualifiers:	* Value exceeds Maximum Contaminant Level.	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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304610**

Date Reported: **4/24/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-31 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/11/2023 10:36:00 AM

Lab ID: 2304610-018

Matrix: SOIL

Received Date: 4/14/2023 7:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	43	9.4		mg/Kg	1	4/19/2023 11:24:18 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	4/19/2023 11:24:18 AM
Surr: DNOP	95.1	69-147		%Rec	1	4/19/2023 11:24:18 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/18/2023 2:45:00 PM
Surr: BFB	89.2	37.7-212		%Rec	1	4/18/2023 2:45:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.025		mg/Kg	1	4/18/2023 2:45:00 PM
Toluene	ND	0.049		mg/Kg	1	4/18/2023 2:45:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	4/18/2023 2:45:00 PM
Xylenes, Total	ND	0.098		mg/Kg	1	4/18/2023 2:45:00 PM
Surr: 4-Bromofluorobenzene	83.8	70-130		%Rec	1	4/18/2023 2:45:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	1200	60		mg/Kg	20	4/18/2023 4:14:18 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304610**

Date Reported: **4/24/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-32 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/11/2023 10:38:00 AM

Lab ID: 2304610-019

Matrix: SOIL

Received Date: 4/14/2023 7:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	16	9.1		mg/Kg	1	4/18/2023 7:34:37 PM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	4/18/2023 7:34:37 PM
Surr: DNOP	92.5	69-147		%Rec	1	4/18/2023 7:34:37 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/18/2023 3:07:00 PM
Surr: BFB	94.5	37.7-212		%Rec	1	4/18/2023 3:07:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	4/18/2023 3:07:00 PM
Toluene	ND	0.048		mg/Kg	1	4/18/2023 3:07:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	4/18/2023 3:07:00 PM
Xylenes, Total	ND	0.096		mg/Kg	1	4/18/2023 3:07:00 PM
Surr: 4-Bromofluorobenzene	86.2	70-130		%Rec	1	4/18/2023 3:07:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	1000	60		mg/Kg	20	4/18/2023 4:26:37 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304610**

Date Reported: **4/24/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-33 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/11/2023 11:00:00 AM

Lab ID: 2304610-020

Matrix: SOIL

Received Date: 4/14/2023 7:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	4/19/2023 2:33:33 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	4/19/2023 2:33:33 PM
Surr: DNOP	79.4	69-147		%Rec	1	4/19/2023 2:33:33 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	4/18/2023 3:28:00 PM
Surr: BFB	89.0	37.7-212		%Rec	1	4/18/2023 3:28:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.025		mg/Kg	1	4/18/2023 3:28:00 PM
Toluene	ND	0.050		mg/Kg	1	4/18/2023 3:28:00 PM
Ethylbenzene	ND	0.050		mg/Kg	1	4/18/2023 3:28:00 PM
Xylenes, Total	ND	0.10		mg/Kg	1	4/18/2023 3:28:00 PM
Surr: 4-Bromofluorobenzene	85.3	70-130		%Rec	1	4/18/2023 3:28:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	140	60		mg/Kg	20	4/18/2023 4:38:58 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304610**

Date Reported: **4/24/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-34 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/11/2023 11:03:00 AM

Lab ID: 2304610-021

Matrix: SOIL

Received Date: 4/14/2023 7:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	4/19/2023 2:57:25 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	4/19/2023 2:57:25 PM
Surr: DNOP	83.1	69-147		%Rec	1	4/19/2023 2:57:25 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/18/2023 3:50:00 PM
Surr: BFB	95.3	37.7-212		%Rec	1	4/18/2023 3:50:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.025		mg/Kg	1	4/18/2023 3:50:00 PM
Toluene	ND	0.049		mg/Kg	1	4/18/2023 3:50:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	4/18/2023 3:50:00 PM
Xylenes, Total	ND	0.099		mg/Kg	1	4/18/2023 3:50:00 PM
Surr: 4-Bromofluorobenzene	87.0	70-130		%Rec	1	4/18/2023 3:50:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	290	60		mg/Kg	20	4/18/2023 5:40:41 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304610**

Date Reported: **4/24/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-35 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/11/2023 11:04:00 AM

Lab ID: 2304610-022

Matrix: SOIL

Received Date: 4/14/2023 7:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	4/18/2023 8:48:40 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	4/18/2023 8:48:40 PM
Surr: DNOP	109	69-147		%Rec	1	4/18/2023 8:48:40 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	4/18/2023 4:12:00 PM
Surr: BFB	95.4	37.7-212		%Rec	1	4/18/2023 4:12:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.025		mg/Kg	1	4/18/2023 4:12:00 PM
Toluene	ND	0.050		mg/Kg	1	4/18/2023 4:12:00 PM
Ethylbenzene	ND	0.050		mg/Kg	1	4/18/2023 4:12:00 PM
Xylenes, Total	ND	0.099		mg/Kg	1	4/18/2023 4:12:00 PM
Surr: 4-Bromofluorobenzene	88.9	70-130		%Rec	1	4/18/2023 4:12:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	74	59		mg/Kg	20	4/18/2023 7:44:10 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304610**

Date Reported: **4/24/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-36 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/11/2023 11:05:00 AM

Lab ID: 2304610-023

Matrix: SOIL

Received Date: 4/14/2023 7:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	14	9.4		mg/Kg	1	4/19/2023 11:02:47 AM
Motor Oil Range Organics (MRO)	62	47		mg/Kg	1	4/19/2023 11:02:47 AM
Surr: DNOP	97.0	69-147		%Rec	1	4/19/2023 11:02:47 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/18/2023 4:55:00 PM
Surr: BFB	87.2	37.7-212		%Rec	1	4/18/2023 4:55:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	4/18/2023 4:55:00 PM
Toluene	ND	0.048		mg/Kg	1	4/18/2023 4:55:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	4/18/2023 4:55:00 PM
Xylenes, Total	ND	0.097		mg/Kg	1	4/18/2023 4:55:00 PM
Surr: 4-Bromofluorobenzene	82.0	70-130		%Rec	1	4/18/2023 4:55:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	ND	60		mg/Kg	20	4/18/2023 7:56:31 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304610**

Date Reported: **4/24/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-37 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/11/2023 11:09:00 AM

Lab ID: 2304610-024

Matrix: SOIL

Received Date: 4/14/2023 7:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	18	9.5		mg/Kg	1	4/19/2023 11:13:31 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	4/19/2023 11:13:31 AM
Surr: DNOP	95.4	69-147		%Rec	1	4/19/2023 11:13:31 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/18/2023 5:16:00 PM
Surr: BFB	87.7	37.7-212		%Rec	1	4/18/2023 5:16:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.025		mg/Kg	1	4/18/2023 5:16:00 PM
Toluene	ND	0.049		mg/Kg	1	4/18/2023 5:16:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	4/18/2023 5:16:00 PM
Xylenes, Total	ND	0.098		mg/Kg	1	4/18/2023 5:16:00 PM
Surr: 4-Bromofluorobenzene	82.5	70-130		%Rec	1	4/18/2023 5:16:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	ND	60		mg/Kg	20	4/18/2023 8:08:52 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304610**

Date Reported: **4/24/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-38 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/11/2023 12:03:00 PM

Lab ID: 2304610-025

Matrix: SOIL

Received Date: 4/14/2023 7:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	8.4		mg/Kg	1	4/18/2023 9:31:48 PM
Motor Oil Range Organics (MRO)	ND	42		mg/Kg	1	4/18/2023 9:31:48 PM
Surr: DNOP	109	69-147		%Rec	1	4/18/2023 9:31:48 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/18/2023 5:38:00 PM
Surr: BFB	90.9	37.7-212		%Rec	1	4/18/2023 5:38:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	4/18/2023 5:38:00 PM
Toluene	ND	0.049		mg/Kg	1	4/18/2023 5:38:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	4/18/2023 5:38:00 PM
Xylenes, Total	ND	0.097		mg/Kg	1	4/18/2023 5:38:00 PM
Surr: 4-Bromofluorobenzene	86.5	70-130		%Rec	1	4/18/2023 5:38:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	ND	60		mg/Kg	20	4/18/2023 8:21:13 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 | 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 Quantitative Limit | RL | Reporting Limit |
| S | % Recovery outside of standard limits. If undiluted results may be estimated. | | |

Analytical Report

Lab Order **2304610**

Date Reported: **4/24/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-39 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/11/2023 12:04:00 PM

Lab ID: 2304610-026

Matrix: SOIL

Received Date: 4/14/2023 7:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	4/19/2023 3:21:17 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	4/19/2023 3:21:17 PM
Surr: DNOP	82.2	69-147		%Rec	1	4/19/2023 3:21:17 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/18/2023 5:59:00 PM
Surr: BFB	88.6	37.7-212		%Rec	1	4/18/2023 5:59:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	4/18/2023 5:59:00 PM
Toluene	ND	0.048		mg/Kg	1	4/18/2023 5:59:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	4/18/2023 5:59:00 PM
Xylenes, Total	ND	0.096		mg/Kg	1	4/18/2023 5:59:00 PM
Surr: 4-Bromofluorobenzene	85.1	70-130		%Rec	1	4/18/2023 5:59:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	110	59		mg/Kg	20	4/18/2023 8:33:34 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304610**

Date Reported: **4/24/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-40 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/11/2023 12:05:00 PM

Lab ID: 2304610-027

Matrix: SOIL

Received Date: 4/14/2023 7:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	8.7		mg/Kg	1	4/18/2023 9:53:19 PM
Motor Oil Range Organics (MRO)	ND	44		mg/Kg	1	4/18/2023 9:53:19 PM
Surr: DNOP	102	69-147		%Rec	1	4/18/2023 9:53:19 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/18/2023 6:21:00 PM
Surr: BFB	88.1	37.7-212		%Rec	1	4/18/2023 6:21:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	4/18/2023 6:21:00 PM
Toluene	ND	0.049		mg/Kg	1	4/18/2023 6:21:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	4/18/2023 6:21:00 PM
Xylenes, Total	ND	0.098		mg/Kg	1	4/18/2023 6:21:00 PM
Surr: 4-Bromofluorobenzene	83.0	70-130		%Rec	1	4/18/2023 6:21:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	75	60		mg/Kg	20	4/18/2023 8:45:55 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304610**

Date Reported: **4/24/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-41 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/11/2023 12:07:00 PM

Lab ID: 2304610-028

Matrix: SOIL

Received Date: 4/14/2023 7:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	4/18/2023 10:04:02 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	4/18/2023 10:04:02 PM
Surr: DNOP	87.6	69-147		%Rec	1	4/18/2023 10:04:02 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/18/2023 6:43:00 PM
Surr: BFB	93.3	37.7-212		%Rec	1	4/18/2023 6:43:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	4/18/2023 6:43:00 PM
Toluene	ND	0.049		mg/Kg	1	4/18/2023 6:43:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	4/18/2023 6:43:00 PM
Xylenes, Total	ND	0.097		mg/Kg	1	4/18/2023 6:43:00 PM
Surr: 4-Bromofluorobenzene	87.9	70-130		%Rec	1	4/18/2023 6:43:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	ND	60		mg/Kg	20	4/18/2023 8:58:16 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304610**

Date Reported: **4/24/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-42 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/11/2023 12:08:00 PM

Lab ID: 2304610-029

Matrix: SOIL

Received Date: 4/14/2023 7:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	4/18/2023 10:14:44 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	4/18/2023 10:14:44 PM
Surr: DNOP	97.9	69-147		%Rec	1	4/18/2023 10:14:44 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/18/2023 7:04:00 PM
Surr: BFB	87.5	37.7-212		%Rec	1	4/18/2023 7:04:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.025		mg/Kg	1	4/18/2023 7:04:00 PM
Toluene	ND	0.049		mg/Kg	1	4/18/2023 7:04:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	4/18/2023 7:04:00 PM
Xylenes, Total	ND	0.098		mg/Kg	1	4/18/2023 7:04:00 PM
Surr: 4-Bromofluorobenzene	84.0	70-130		%Rec	1	4/18/2023 7:04:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	82	59		mg/Kg	20	4/18/2023 9:10:37 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304610**

Date Reported: **4/24/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-43 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/11/2023 12:09:00 PM

Lab ID: 2304610-030

Matrix: SOIL

Received Date: 4/14/2023 7:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	4/18/2023 10:36:11 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	4/18/2023 10:36:11 PM
Surr: DNOP	70.6	69-147		%Rec	1	4/18/2023 10:36:11 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/18/2023 7:26:00 PM
Surr: BFB	89.2	37.7-212		%Rec	1	4/18/2023 7:26:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	4/18/2023 7:26:00 PM
Toluene	ND	0.048		mg/Kg	1	4/18/2023 7:26:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	4/18/2023 7:26:00 PM
Xylenes, Total	ND	0.095		mg/Kg	1	4/18/2023 7:26:00 PM
Surr: 4-Bromofluorobenzene	86.2	70-130		%Rec	1	4/18/2023 7:26:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	ND	60		mg/Kg	20	4/18/2023 9:22:57 PM

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

Qualifiers:	* Value exceeds Maximum Contaminant Level.	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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304610**

Date Reported: **4/24/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-44 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/11/2023 12:11:00 PM

Lab ID: 2304610-031

Matrix: SOIL

Received Date: 4/14/2023 7:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	4/18/2023 10:46:55 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	4/18/2023 10:46:55 PM
Surr: DNOP	85.0	69-147		%Rec	1	4/18/2023 10:46:55 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/18/2023 7:47:00 PM
Surr: BFB	92.0	37.7-212		%Rec	1	4/18/2023 7:47:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	4/18/2023 7:47:00 PM
Toluene	ND	0.049		mg/Kg	1	4/18/2023 7:47:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	4/18/2023 7:47:00 PM
Xylenes, Total	ND	0.097		mg/Kg	1	4/18/2023 7:47:00 PM
Surr: 4-Bromofluorobenzene	86.4	70-130		%Rec	1	4/18/2023 7:47:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	ND	60		mg/Kg	20	4/18/2023 9:35:18 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304610**

Date Reported: **4/24/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-45 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/11/2023 12:12:00 PM

Lab ID: 2304610-032

Matrix: SOIL

Received Date: 4/14/2023 7:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	4/18/2023 10:57:38 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	4/18/2023 10:57:38 PM
Surr: DNOP	80.0	69-147		%Rec	1	4/18/2023 10:57:38 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/18/2023 8:09:00 PM
Surr: BFB	88.9	37.7-212		%Rec	1	4/18/2023 8:09:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	4/18/2023 8:09:00 PM
Toluene	ND	0.049		mg/Kg	1	4/18/2023 8:09:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	4/18/2023 8:09:00 PM
Xylenes, Total	ND	0.098		mg/Kg	1	4/18/2023 8:09:00 PM
Surr: 4-Bromofluorobenzene	84.9	70-130		%Rec	1	4/18/2023 8:09:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	ND	60		mg/Kg	20	4/18/2023 10:12:20 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 Quantitative 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#: 2304610

24-Apr-23

Client: Vertex Resources Services, Inc.

Project: Hackberry 6 Federal 1

Sample ID: MB-74367	SampType: MBLK	TestCode: EPA Method 300.0: Anions								
Client ID: PBS	Batch ID: 74367	RunNo: 96081								
Prep Date: 4/17/2023	Analysis Date: 4/17/2023	SeqNo: 3479906	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: LCS-74367	SampType: LCS	TestCode: EPA Method 300.0: Anions								
Client ID: LCSS	Batch ID: 74367	RunNo: 96081								
Prep Date: 4/17/2023	Analysis Date: 4/17/2023	SeqNo: 3479907	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	92.1	90	110			

Sample ID: MB-74385	SampType: mblk	TestCode: EPA Method 300.0: Anions								
Client ID: PBS	Batch ID: 74385	RunNo: 96129								
Prep Date: 4/18/2023	Analysis Date: 4/18/2023	SeqNo: 3481207	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: LCS-74385	SampType: lcs	TestCode: EPA Method 300.0: Anions								
Client ID: LCSS	Batch ID: 74385	RunNo: 96129								
Prep Date: 4/18/2023	Analysis Date: 4/18/2023	SeqNo: 3481208	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	93.3	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 Quantitative 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#: 2304610

24-Apr-23

Client: Vertex Resources Services, Inc.

Project: Hackberry 6 Federal 1

Sample ID: MB-74347	SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: PBS	Batch ID: 74347		RunNo: 96078							
Prep Date: 4/17/2023	Analysis Date: 4/17/2023		SeqNo: 3479110		Units: %Rec					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	9.4		10.00		93.5	69	147			

Sample ID: LCS-74347	SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: LCSS	Batch ID: 74347		RunNo: 96078							
Prep Date: 4/17/2023	Analysis Date: 4/17/2023		SeqNo: 3479111		Units: %Rec					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.6		5.000		91.6	69	147			

Sample ID: MB-74336	SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: PBS	Batch ID: 74336		RunNo: 96078							
Prep Date: 4/14/2023	Analysis Date: 4/17/2023		SeqNo: 3479504		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		119	69	147			

Sample ID: LCS-74321	SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: LCSS	Batch ID: 74321		RunNo: 96078							
Prep Date: 4/14/2023	Analysis Date: 4/17/2023		SeqNo: 3479505		Units: %Rec					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.6		5.000		92.1	69	147			

Sample ID: LCS-74336	SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: LCSS	Batch ID: 74336		RunNo: 96078							
Prep Date: 4/14/2023	Analysis Date: 4/17/2023		SeqNo: 3479507		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	51	10	50.00	0	101	61.9	130			
Surr: DNOP	6.1		5.000		122	69	147			

Sample ID: 2304610-015AMS	SampType: MS		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: BES23-28 0'	Batch ID: 74366		RunNo: 96131							
Prep Date: 4/17/2023	Analysis Date: 4/18/2023		SeqNo: 3481282		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	59	9.4	46.95	43.41	33.5	54.2	135			S
Surr: DNOP	4.4		4.695		93.2	69	147			

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 Quantitative 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#: 2304610

24-Apr-23

Client: Vertex Resources Services, Inc.

Project: Hackberry 6 Federal 1

Sample ID: 2304610-015AMSD	SampType: MSD	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: BES23-28 0'	Batch ID: 74366	RunNo: 96131								
Prep Date: 4/17/2023	Analysis Date: 4/18/2023	SeqNo: 3481283	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	72	9.3	46.34	43.41	61.4	54.2	135	19.4	29.2	
Surr: DNOP	4.0		4.634		87.0	69	147	0	0	

Sample ID: LCS-74366	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: LCSS	Batch ID: 74366	RunNo: 96131								
Prep Date: 4/17/2023	Analysis Date: 4/18/2023	SeqNo: 3481380	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	43	10	50.00	0	86.7	61.9	130			
Surr: DNOP	5.3		5.000		106	69	147			

Sample ID: LCS-74395	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: LCSS	Batch ID: 74395	RunNo: 96131								
Prep Date: 4/18/2023	Analysis Date: 4/19/2023	SeqNo: 3481382	Units: %Rec							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.3		5.000		86.1	69	147			

Sample ID: MB-74366	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 74366	RunNo: 96131								
Prep Date: 4/17/2023	Analysis Date: 4/18/2023	SeqNo: 3481384	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		108	69	147			

Sample ID: MB-74395	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 74395	RunNo: 96131								
Prep Date: 4/18/2023	Analysis Date: 4/19/2023	SeqNo: 3481386	Units: %Rec							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	8.8		10.00		87.7	69	147			

Sample ID: MB-74404	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 74404	RunNo: 96140								
Prep Date: 4/19/2023	Analysis Date: 4/19/2023	SeqNo: 3481584	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								

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 Quantitative 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#: 2304610

24-Apr-23

Client: Vertex Resources Services, Inc.

Project: Hackberry 6 Federal 1

Sample ID: MB-74404	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 74404	RunNo: 96140								
Prep Date: 4/19/2023	Analysis Date: 4/19/2023	SeqNo: 3481584	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	8.0		10.00		80.2	69	147			

Sample ID: LCS-74404	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: LCSS	Batch ID: 74404	RunNo: 96140								
Prep Date: 4/19/2023	Analysis Date: 4/19/2023	SeqNo: 3481585	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	91.2	61.9	130			
Surr: DNOP	4.3		5.000		85.3	69	147			

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 Quantitative 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#: 2304610

24-Apr-23

Client: Vertex Resources Services, Inc.

Project: Hackberry 6 Federal 1

Sample ID: ics-74331	SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: LCSS	Batch ID: 74331		RunNo: 96073							
Prep Date: 4/14/2023	Analysis Date: 4/17/2023		SeqNo: 3479019		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	25.00	0	94.4	70	130			
Surr: BFB	5200		1000		517	37.7	212			S

Sample ID: mb-74331	SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: PBS	Batch ID: 74331		RunNo: 96073							
Prep Date: 4/14/2023	Analysis Date: 4/17/2023		SeqNo: 3479020		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		97.3	37.7	212			

Sample ID: ics-74356	SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: LCSS	Batch ID: 74356		RunNo: 96093							
Prep Date: 4/17/2023	Analysis Date: 4/18/2023		SeqNo: 3479988		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	5.0	25.00	0	98.5	70	130			
Surr: BFB	2100		1000		205	37.7	212			

Sample ID: mb-74356	SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: PBS	Batch ID: 74356		RunNo: 96093							
Prep Date: 4/17/2023	Analysis Date: 4/18/2023		SeqNo: 3480031		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		90.0	37.7	212			

Sample ID: 2304610-015ams	SampType: MS		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: BES23-28 0'	Batch ID: 74356		RunNo: 96093							
Prep Date: 4/17/2023	Analysis Date: 4/18/2023		SeqNo: 3480032		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	4.9	24.58	0	107	70	130			
Surr: BFB	2200		983.3		223	37.7	212			S

Sample ID: 2304610-015amsd	SampType: MSD		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: BES23-28 0'	Batch ID: 74356		RunNo: 96093							
Prep Date: 4/17/2023	Analysis Date: 4/18/2023		SeqNo: 3480033		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 Quantitative 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#: 2304610

24-Apr-23

Client: Vertex Resources Services, Inc.

Project: Hackberry 6 Federal 1

Sample ID: 2304610-015amsd	SampType: MSD	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: BES23-28 0'	Batch ID: 74356	RunNo: 96093								
Prep Date: 4/17/2023	Analysis Date: 4/18/2023	SeqNo: 3480033			Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	4.9	24.58	0	105	70	130	1.54	20	
Surr: BFB	2100		983.3		213	37.7	212	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 Quantitative 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#: 2304610

24-Apr-23

Client: Vertex Resources Services, Inc.

Project: Hackberry 6 Federal 1

Sample ID: LCS-74331	SampType: LCS		TestCode: EPA Method 8021B: Volatiles							
Client ID: LCSS	Batch ID: 74331		RunNo: 96073							
Prep Date: 4/14/2023	Analysis Date: 4/17/2023		SeqNo: 3479024		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	85.3	80	120			
Toluene	0.86	0.050	1.000	0	85.9	80	120			
Ethylbenzene	0.87	0.050	1.000	0	87.0	80	120			
Xylenes, Total	2.6	0.10	3.000	0	87.7	80	120			
Surr: 4-Bromofluorobenzene	0.96		1.000		96.2	70	130			

Sample ID: mb-74331	SampType: MBLK		TestCode: EPA Method 8021B: Volatiles							
Client ID: PBS	Batch ID: 74331		RunNo: 96073							
Prep Date: 4/14/2023	Analysis Date: 4/17/2023		SeqNo: 3479025		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	0.96		1.000		96.0	70	130			

Sample ID: lcs-74356	SampType: LCS		TestCode: EPA Method 8021B: Volatiles							
Client ID: LCSS	Batch ID: 74356		RunNo: 96093							
Prep Date: 4/17/2023	Analysis Date: 4/18/2023		SeqNo: 3480010		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.90	0.025	1.000	0	90.3	80	120			
Toluene	0.90	0.050	1.000	0	90.2	80	120			
Ethylbenzene	0.88	0.050	1.000	0	88.3	80	120			
Xylenes, Total	2.6	0.10	3.000	0	87.2	80	120			
Surr: 4-Bromofluorobenzene	0.87		1.000		86.8	70	130			

Sample ID: mb-74356	SampType: MBLK		TestCode: EPA Method 8021B: Volatiles							
Client ID: PBS	Batch ID: 74356		RunNo: 96093							
Prep Date: 4/17/2023	Analysis Date: 4/18/2023		SeqNo: 3480011		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		85.6	70	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 Quantitative 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#: 2304610

24-Apr-23

Client: Vertex Resources Services, Inc.

Project: Hackberry 6 Federal 1

Sample ID: 2304610-016ams	SampType: MS	TestCode: EPA Method 8021B: Volatiles								
Client ID: BES23-29 0'	Batch ID: 74356	RunNo: 96093								
Prep Date: 4/17/2023	Analysis Date: 4/18/2023	SeqNo: 3481150	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.96	0.024	0.9785	0	98.5	68.8	120			
Toluene	0.97	0.049	0.9785	0	99.2	73.6	124			
Ethylbenzene	0.96	0.049	0.9785	0	98.5	72.7	129			
Xylenes, Total	2.9	0.098	2.935	0	97.4	75.7	126			
Surr: 4-Bromofluorobenzene	0.84		0.9785		86.1	70	130			

Sample ID: 2304610-016amsd	SampType: MSD	TestCode: EPA Method 8021B: Volatiles								
Client ID: BES23-29 0'	Batch ID: 74356	RunNo: 96093								
Prep Date: 4/17/2023	Analysis Date: 4/18/2023	SeqNo: 3481151	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.97	0.024	0.9766	0	99.0	68.8	120	0.320	20	
Toluene	0.97	0.049	0.9766	0	99.2	73.6	124	0.206	20	
Ethylbenzene	0.95	0.049	0.9766	0	97.8	72.7	129	0.902	20	
Xylenes, Total	2.8	0.098	2.930	0	96.5	75.7	126	1.06	20	
Surr: 4-Bromofluorobenzene	0.83		0.9766		85.3	70	130	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 Quantitative 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



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: **2304610** RcptNo: **1**

Received By: **Tracy Casarrubias** 4/14/2023 7:05:00 AM

Completed By: **Tracy Casarrubias** 4/14/2023 7:26:40 AM

Reviewed By: *[Signature]* 4/14/23

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? Yes No
(Note discrepancies on chain of custody)
- 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? Yes No
(If no, notify customer for authorization.)

of preserved bottles checked for pH: _____
(<2 or >12 unless noted)
Adjusted? _____
Checked by: *Tracy 4/14/23*

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: Missing ailing address, phone number, and Email on COC- TMC 4/14/23

16. Additional remarks:

Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.2	Good	Yes	Yogi		

Chain-of-Custody Record

Client: Devon/Vertex

Mailing Address: On file

Phone #: On file

email or Fax#: On file

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

Accreditation: Az Compliance NELAC Other

EDD (Type)

Turn-Around Time: Standard Rush

Project Name: Hackberry 6 Federal 1

Project #: 23E-01582

Project Manager:

Kent Stallings

Sampler: SM

On Ice: Yes No

of Coolers: 1

Cooler Temp (including cryo): 0.3-0.12-0.2-
yogi

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.
4/11/23	12:03	Soil	BES23-38 0'	4 oz jar	ice	2304610
	12:04		BES23-39 0'			025
	12:05		BES23-40 0'			026
	12:07		BES23-41 0'			027
	12:08		BES23-42 0'			029
	12:09		BES23-43 0'			030
	12:11		BES23-44 0'			031
	12:12		BES23-45 0'			032

Relinquished by: *Steph Marty*

Date: 4/11/23 Time: 17:30

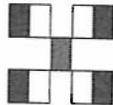
Relinquished by:

Date: Time:

Received by: Via: *Cowner* Date: 4/11/23 Time: 7:05

Received by: Via:

Date: Time:



HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCBs	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	☉ F, Br, NO ₃ , NO ₂ , PO ₄ , SO ₄	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
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Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

April 26, 2023

Kent Stallings

Vertex Resources Services, Inc.

3101 Boyd Drive

Carlsbad, NM 88220

TEL: (505) 506-0040

FAX

RE: Hackberry 6 Federal 1

OrderNo.: 2304665

Dear Kent Stallings:

Hall Environmental Analysis Laboratory received 18 sample(s) on 4/15/2023 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,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a light blue horizontal line.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Analytical Report

Lab Order **2304665**

Date Reported: **4/26/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-46 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/12/2023 8:39:00 AM

Lab ID: 2304665-001

Matrix: SOIL

Received Date: 4/15/2023 8:40:00 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	4/19/2023 7:49:34 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	4/19/2023 7:49:34 PM
Surr: DNOP	79.9	69-147		%Rec	1	4/19/2023 7:49:34 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/19/2023 7:27:07 AM
Surr: BFB	98.8	37.7-212		%Rec	1	4/19/2023 7:27:07 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	4/19/2023 7:27:07 AM
Toluene	ND	0.048		mg/Kg	1	4/19/2023 7:27:07 AM
Ethylbenzene	ND	0.048		mg/Kg	1	4/19/2023 7:27:07 AM
Xylenes, Total	ND	0.096		mg/Kg	1	4/19/2023 7:27:07 AM
Surr: 4-Bromofluorobenzene	94.4	70-130		%Rec	1	4/19/2023 7:27:07 AM
EPA METHOD 300.0: ANIONS						Analyst: SNS
Chloride	ND	60		mg/Kg	20	4/19/2023 7:01:34 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304665**

Date Reported: **4/26/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-47 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/12/2023 8:41:00 AM

Lab ID: 2304665-002

Matrix: SOIL

Received Date: 4/15/2023 8:40:00 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	4/19/2023 8:00:31 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	4/19/2023 8:00:31 PM
Surr: DNOP	83.2	69-147		%Rec	1	4/19/2023 8:00:31 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/19/2023 7:50:44 AM
Surr: BFB	112	37.7-212		%Rec	1	4/19/2023 7:50:44 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	4/19/2023 7:50:44 AM
Toluene	ND	0.048		mg/Kg	1	4/19/2023 7:50:44 AM
Ethylbenzene	ND	0.048		mg/Kg	1	4/19/2023 7:50:44 AM
Xylenes, Total	ND	0.096		mg/Kg	1	4/19/2023 7:50:44 AM
Surr: 4-Bromofluorobenzene	95.8	70-130		%Rec	1	4/19/2023 7:50:44 AM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	ND	60		mg/Kg	20	4/19/2023 4:44:17 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304665**

Date Reported: **4/26/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-48 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/12/2023 8:50:00 AM

Lab ID: 2304665-003

Matrix: SOIL

Received Date: 4/15/2023 8:40:00 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	4/19/2023 8:11:26 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	4/19/2023 8:11:26 PM
Surr: DNOP	75.4	69-147		%Rec	1	4/19/2023 8:11:26 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	4/19/2023 8:14:18 AM
Surr: BFB	96.2	37.7-212		%Rec	1	4/19/2023 8:14:18 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.025		mg/Kg	1	4/19/2023 8:14:18 AM
Toluene	ND	0.050		mg/Kg	1	4/19/2023 8:14:18 AM
Ethylbenzene	ND	0.050		mg/Kg	1	4/19/2023 8:14:18 AM
Xylenes, Total	ND	0.10		mg/Kg	1	4/19/2023 8:14:18 AM
Surr: 4-Bromofluorobenzene	93.7	70-130		%Rec	1	4/19/2023 8:14:18 AM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	78	60		mg/Kg	20	4/19/2023 5:21:31 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304665**

Date Reported: **4/26/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-49 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/12/2023 8:52:00 AM

Lab ID: 2304665-004

Matrix: SOIL

Received Date: 4/15/2023 8:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	18	9.7		mg/Kg	1	4/21/2023 11:01:09 AM
Motor Oil Range Organics (MRO)	74	48		mg/Kg	1	4/21/2023 11:01:09 AM
Surr: DNOP	88.2	69-147		%Rec	1	4/21/2023 11:01:09 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	4/19/2023 8:37:55 AM
Surr: BFB	95.8	37.7-212		%Rec	1	4/19/2023 8:37:55 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.025		mg/Kg	1	4/19/2023 8:37:55 AM
Toluene	ND	0.050		mg/Kg	1	4/19/2023 8:37:55 AM
Ethylbenzene	ND	0.050		mg/Kg	1	4/19/2023 8:37:55 AM
Xylenes, Total	ND	0.10		mg/Kg	1	4/19/2023 8:37:55 AM
Surr: 4-Bromofluorobenzene	91.3	70-130		%Rec	1	4/19/2023 8:37:55 AM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	96	60		mg/Kg	20	4/19/2023 5:33:55 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304665**

Date Reported: **4/26/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-50 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/12/2023 9:05:00 AM

Lab ID: 2304665-005

Matrix: SOIL

Received Date: 4/15/2023 8:40:00 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	4/19/2023 8:33:13 PM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	4/19/2023 8:33:13 PM
Surr: DNOP	69.5	69-147		%Rec	1	4/19/2023 8:33:13 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/19/2023 9:01:37 AM
Surr: BFB	104	37.7-212		%Rec	1	4/19/2023 9:01:37 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.025		mg/Kg	1	4/19/2023 9:01:37 AM
Toluene	ND	0.049		mg/Kg	1	4/19/2023 9:01:37 AM
Ethylbenzene	ND	0.049		mg/Kg	1	4/19/2023 9:01:37 AM
Xylenes, Total	ND	0.098		mg/Kg	1	4/19/2023 9:01:37 AM
Surr: 4-Bromofluorobenzene	96.3	70-130		%Rec	1	4/19/2023 9:01:37 AM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	ND	60		mg/Kg	20	4/19/2023 5:46:20 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304665**

Date Reported: **4/26/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-51 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/12/2023 9:07:00 AM

Lab ID: 2304665-006

Matrix: SOIL

Received Date: 4/15/2023 8:40:00 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	4/19/2023 8:44:03 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	4/19/2023 8:44:03 PM
Surr: DNOP	83.2	69-147		%Rec	1	4/19/2023 8:44:03 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	4/19/2023 9:25:09 AM
Surr: BFB	85.3	37.7-212		%Rec	1	4/19/2023 9:25:09 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	4/19/2023 9:25:09 AM
Toluene	ND	0.047		mg/Kg	1	4/19/2023 9:25:09 AM
Ethylbenzene	ND	0.047		mg/Kg	1	4/19/2023 9:25:09 AM
Xylenes, Total	ND	0.095		mg/Kg	1	4/19/2023 9:25:09 AM
Surr: 4-Bromofluorobenzene	91.0	70-130		%Rec	1	4/19/2023 9:25:09 AM
EPA METHOD 300.0: ANIONS						Analyst: JTT
Chloride	9400	300		mg/Kg	100	4/21/2023 1:37:12 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304665**

Date Reported: **4/26/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-52 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/12/2023 9:08:00 AM

Lab ID: 2304665-007

Matrix: SOIL

Received Date: 4/15/2023 8:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	4/19/2023 5:01:55 AM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	4/19/2023 5:01:55 AM
Surr: DNOP	90.3	69-147		%Rec	1	4/19/2023 5:01:55 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	4/20/2023 3:16:00 AM
Surr: BFB	93.7	37.7-212		%Rec	1	4/20/2023 3:16:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.025		mg/Kg	1	4/20/2023 3:16:00 AM
Toluene	ND	0.050		mg/Kg	1	4/20/2023 3:16:00 AM
Ethylbenzene	ND	0.050		mg/Kg	1	4/20/2023 3:16:00 AM
Xylenes, Total	ND	0.10		mg/Kg	1	4/20/2023 3:16:00 AM
Surr: 4-Bromofluorobenzene	89.0	70-130		%Rec	1	4/20/2023 3:16:00 AM
EPA METHOD 300.0: ANIONS						Analyst: JTT
Chloride	3000	150		mg/Kg	50	4/21/2023 2:39:13 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 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304665**

Date Reported: **4/26/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-53 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/12/2023 9:11:00 AM

Lab ID: 2304665-008

Matrix: SOIL

Received Date: 4/15/2023 8:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	41	9.3		mg/Kg	1	4/19/2023 10:19:52 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	4/19/2023 10:19:52 AM
Surr: DNOP	92.5	69-147		%Rec	1	4/19/2023 10:19:52 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/20/2023 3:38:00 AM
Surr: BFB	94.6	37.7-212		%Rec	1	4/20/2023 3:38:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	4/20/2023 3:38:00 AM
Toluene	ND	0.049		mg/Kg	1	4/20/2023 3:38:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	4/20/2023 3:38:00 AM
Xylenes, Total	ND	0.098		mg/Kg	1	4/20/2023 3:38:00 AM
Surr: 4-Bromofluorobenzene	85.2	70-130		%Rec	1	4/20/2023 3:38:00 AM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	190	60		mg/Kg	20	4/19/2023 6:48:23 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304665**

Date Reported: **4/26/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-54 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/12/2023 9:25:00 AM

Lab ID: 2304665-009

Matrix: SOIL

Received Date: 4/15/2023 8:40:00 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	4/19/2023 8:54:47 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	4/19/2023 8:54:47 PM
Surr: DNOP	76.3	69-147		%Rec	1	4/19/2023 8:54:47 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/19/2023 2:09:52 PM
Surr: BFB	95.8	37.7-212		%Rec	1	4/19/2023 2:09:52 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.025		mg/Kg	1	4/19/2023 2:09:52 PM
Toluene	ND	0.049		mg/Kg	1	4/19/2023 2:09:52 PM
Ethylbenzene	ND	0.049		mg/Kg	1	4/19/2023 2:09:52 PM
Xylenes, Total	ND	0.099		mg/Kg	1	4/19/2023 2:09:52 PM
Surr: 4-Bromofluorobenzene	93.8	70-130		%Rec	1	4/19/2023 2:09:52 PM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	86	60		mg/Kg	20	4/19/2023 7:00:47 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304665**

Date Reported: **4/26/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-55 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/12/2023 9:30:00 AM

Lab ID: 2304665-010

Matrix: SOIL

Received Date: 4/15/2023 8:40:00 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	4/19/2023 9:05:30 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	4/19/2023 9:05:30 PM
Surr: DNOP	78.6	69-147		%Rec	1	4/19/2023 9:05:30 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	4/19/2023 3:20:01 PM
Surr: BFB	111	37.7-212		%Rec	1	4/19/2023 3:20:01 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	4/19/2023 3:20:01 PM
Toluene	ND	0.047		mg/Kg	1	4/19/2023 3:20:01 PM
Ethylbenzene	ND	0.047		mg/Kg	1	4/19/2023 3:20:01 PM
Xylenes, Total	ND	0.094		mg/Kg	1	4/19/2023 3:20:01 PM
Surr: 4-Bromofluorobenzene	97.1	70-130		%Rec	1	4/19/2023 3:20:01 PM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	67	60		mg/Kg	20	4/19/2023 7:13:12 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304665**

Date Reported: **4/26/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-56 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/12/2023 10:00:00 AM

Lab ID: 2304665-011

Matrix: SOIL

Received Date: 4/15/2023 8:40:00 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	4/19/2023 9:26:48 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	4/19/2023 9:26:48 PM
Surr: DNOP	82.2	69-147		%Rec	1	4/19/2023 9:26:48 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	4/19/2023 4:30:12 PM
Surr: BFB	110	37.7-212		%Rec	1	4/19/2023 4:30:12 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	4/19/2023 4:30:12 PM
Toluene	ND	0.047		mg/Kg	1	4/19/2023 4:30:12 PM
Ethylbenzene	ND	0.047		mg/Kg	1	4/19/2023 4:30:12 PM
Xylenes, Total	ND	0.095		mg/Kg	1	4/19/2023 4:30:12 PM
Surr: 4-Bromofluorobenzene	98.0	70-130		%Rec	1	4/19/2023 4:30:12 PM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	ND	59		mg/Kg	20	4/19/2023 7:25:37 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304665**

Date Reported: **4/26/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-57 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/12/2023 10:04:00 AM

Lab ID: 2304665-012

Matrix: SOIL

Received Date: 4/15/2023 8:40:00 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	4/19/2023 9:37:27 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	4/19/2023 9:37:27 PM
Surr: DNOP	84.0	69-147		%Rec	1	4/19/2023 9:37:27 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/19/2023 4:53:30 PM
Surr: BFB	105	37.7-212		%Rec	1	4/19/2023 4:53:30 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	4/19/2023 4:53:30 PM
Toluene	ND	0.049		mg/Kg	1	4/19/2023 4:53:30 PM
Ethylbenzene	ND	0.049		mg/Kg	1	4/19/2023 4:53:30 PM
Xylenes, Total	ND	0.097		mg/Kg	1	4/19/2023 4:53:30 PM
Surr: 4-Bromofluorobenzene	97.6	70-130		%Rec	1	4/19/2023 4:53:30 PM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	1900	60		mg/Kg	20	4/19/2023 7:38:02 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304665**

Date Reported: **4/26/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-58 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/12/2023 10:06:00 AM

Lab ID: 2304665-013

Matrix: SOIL

Received Date: 4/15/2023 8:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: PRD
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	4/19/2023 9:48:06 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	4/19/2023 9:48:06 PM
Surr: DNOP	87.5	69-147		%Rec	1	4/19/2023 9:48:06 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/19/2023 5:16:46 PM
Surr: BFB	99.9	37.7-212		%Rec	1	4/19/2023 5:16:46 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.025		mg/Kg	1	4/19/2023 5:16:46 PM
Toluene	ND	0.049		mg/Kg	1	4/19/2023 5:16:46 PM
Ethylbenzene	ND	0.049		mg/Kg	1	4/19/2023 5:16:46 PM
Xylenes, Total	ND	0.098		mg/Kg	1	4/19/2023 5:16:46 PM
Surr: 4-Bromofluorobenzene	95.8	70-130		%Rec	1	4/19/2023 5:16:46 PM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	860	60		mg/Kg	20	4/19/2023 7:50:26 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304665**

Date Reported: **4/26/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-59 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/12/2023 10:40:00 AM

Lab ID: 2304665-014

Matrix: SOIL

Received Date: 4/15/2023 8:40:00 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	4/19/2023 10:28:49 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	4/19/2023 10:28:49 PM
Surr: DNOP	88.3	69-147		%Rec	1	4/19/2023 10:28:49 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/19/2023 5:40:09 PM
Surr: BFB	115	37.7-212		%Rec	1	4/19/2023 5:40:09 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.025		mg/Kg	1	4/19/2023 5:40:09 PM
Toluene	ND	0.049		mg/Kg	1	4/19/2023 5:40:09 PM
Ethylbenzene	ND	0.049		mg/Kg	1	4/19/2023 5:40:09 PM
Xylenes, Total	ND	0.099		mg/Kg	1	4/19/2023 5:40:09 PM
Surr: 4-Bromofluorobenzene	98.4	70-130		%Rec	1	4/19/2023 5:40:09 PM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	ND	60		mg/Kg	20	4/19/2023 8:02:50 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304665**

Date Reported: **4/26/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-60 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/12/2023 10:44:00 AM

Lab ID: 2304665-015

Matrix: SOIL

Received Date: 4/15/2023 8:40:00 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	4/19/2023 10:39:24 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	4/19/2023 10:39:24 PM
Surr: DNOP	90.7	69-147		%Rec	1	4/19/2023 10:39:24 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	4/19/2023 6:03:27 PM
Surr: BFB	109	37.7-212		%Rec	1	4/19/2023 6:03:27 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.023		mg/Kg	1	4/19/2023 6:03:27 PM
Toluene	ND	0.047		mg/Kg	1	4/19/2023 6:03:27 PM
Ethylbenzene	ND	0.047		mg/Kg	1	4/19/2023 6:03:27 PM
Xylenes, Total	ND	0.094		mg/Kg	1	4/19/2023 6:03:27 PM
Surr: 4-Bromofluorobenzene	98.6	70-130		%Rec	1	4/19/2023 6:03:27 PM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	ND	60		mg/Kg	20	4/19/2023 8:15:15 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304665**

Date Reported: **4/26/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-61 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/12/2023 10:47:00 AM

Lab ID: 2304665-016

Matrix: SOIL

Received Date: 4/15/2023 8:40:00 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	4/19/2023 10:50:02 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	4/19/2023 10:50:02 PM
Surr: DNOP	85.6	69-147		%Rec	1	4/19/2023 10:50:02 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/19/2023 6:27:05 PM
Surr: BFB	97.0	37.7-212		%Rec	1	4/19/2023 6:27:05 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	4/19/2023 6:27:05 PM
Toluene	ND	0.049		mg/Kg	1	4/19/2023 6:27:05 PM
Ethylbenzene	ND	0.049		mg/Kg	1	4/19/2023 6:27:05 PM
Xylenes, Total	ND	0.097		mg/Kg	1	4/19/2023 6:27:05 PM
Surr: 4-Bromofluorobenzene	94.3	70-130		%Rec	1	4/19/2023 6:27:05 PM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	ND	60		mg/Kg	20	4/19/2023 8:27:39 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304665**

Date Reported: **4/26/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-62 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/12/2023 10:57:00 AM

Lab ID: 2304665-017

Matrix: SOIL

Received Date: 4/15/2023 8:40:00 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	4/19/2023 11:00:38 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	4/19/2023 11:00:38 PM
Surr: DNOP	84.6	69-147		%Rec	1	4/19/2023 11:00:38 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/19/2023 6:50:22 PM
Surr: BFB	105	37.7-212		%Rec	1	4/19/2023 6:50:22 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	4/19/2023 6:50:22 PM
Toluene	ND	0.048		mg/Kg	1	4/19/2023 6:50:22 PM
Ethylbenzene	ND	0.048		mg/Kg	1	4/19/2023 6:50:22 PM
Xylenes, Total	ND	0.096		mg/Kg	1	4/19/2023 6:50:22 PM
Surr: 4-Bromofluorobenzene	96.7	70-130		%Rec	1	4/19/2023 6:50:22 PM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	100	60		mg/Kg	20	4/19/2023 8:40:04 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 Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Analytical Report

Lab Order **2304665**

Date Reported: **4/26/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BES23-63 0'

Project: Hackberry 6 Federal 1

Collection Date: 4/12/2023 11:00:00 AM

Lab ID: 2304665-018

Matrix: SOIL

Received Date: 4/15/2023 8:40:00 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	4/19/2023 11:11:13 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	4/19/2023 11:11:13 PM
Surr: DNOP	81.8	69-147		%Rec	1	4/19/2023 11:11:13 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	4/19/2023 7:13:48 PM
Surr: BFB	112	37.7-212		%Rec	1	4/19/2023 7:13:48 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	4/19/2023 7:13:48 PM
Toluene	ND	0.047		mg/Kg	1	4/19/2023 7:13:48 PM
Ethylbenzene	ND	0.047		mg/Kg	1	4/19/2023 7:13:48 PM
Xylenes, Total	ND	0.095		mg/Kg	1	4/19/2023 7:13:48 PM
Surr: 4-Bromofluorobenzene	97.5	70-130		%Rec	1	4/19/2023 7:13:48 PM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	ND	60		mg/Kg	20	4/19/2023 9:17:19 PM

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

Qualifiers:	* Value exceeds Maximum Contaminant Level.	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 Quantitative 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#: 2304665

26-Apr-23

Client: Vertex Resources Services, Inc.

Project: Hackberry 6 Federal 1

Sample ID: MB-74427	SampType: mblk	TestCode: EPA Method 300.0: Anions								
Client ID: PBS	Batch ID: 74427	RunNo: 96135								
Prep Date: 4/19/2023	Analysis Date: 4/19/2023	SeqNo: 3482392	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: LCS-74427	SampType: ics	TestCode: EPA Method 300.0: Anions								
Client ID: LCSS	Batch ID: 74427	RunNo: 96135								
Prep Date: 4/19/2023	Analysis Date: 4/19/2023	SeqNo: 3482393	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.2	90	110			

Sample ID: MB-74420	SampType: MBLK	TestCode: EPA Method 300.0: Anions								
Client ID: PBS	Batch ID: 74420	RunNo: 96171								
Prep Date: 4/19/2023	Analysis Date: 4/19/2023	SeqNo: 3482481	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: LCS-74420	SampType: LCS	TestCode: EPA Method 300.0: Anions								
Client ID: LCSS	Batch ID: 74420	RunNo: 96171								
Prep Date: 4/19/2023	Analysis Date: 4/19/2023	SeqNo: 3482482	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.2	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 Quantitative 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#: 2304665

26-Apr-23

Client: Vertex Resources Services, Inc.

Project: Hackberry 6 Federal 1

Sample ID: 2304665-007AMS	SampType: MS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: BES23-52 0'	Batch ID: 74395	RunNo: 96131								
Prep Date: 4/18/2023	Analysis Date: 4/19/2023	SeqNo: 3481351	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	40	10	49.90	0	80.3	54.2	135			
Surr: DNOP	4.7		4.990		93.4	69	147			

Sample ID: 2304665-007AMSD	SampType: MSD	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: BES23-52 0'	Batch ID: 74395	RunNo: 96131								
Prep Date: 4/18/2023	Analysis Date: 4/19/2023	SeqNo: 3481352	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	40	9.2	45.87	0	86.5	54.2	135	1.01	29.2	
Surr: DNOP	4.4		4.587		95.0	69	147	0	0	

Sample ID: LCS-74375	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: LCSS	Batch ID: 74375	RunNo: 96131								
Prep Date: 4/17/2023	Analysis Date: 4/18/2023	SeqNo: 3481381	Units: %Rec							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.3		5.000		85.4	69	147			

Sample ID: LCS-74395	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: LCSS	Batch ID: 74395	RunNo: 96131								
Prep Date: 4/18/2023	Analysis Date: 4/19/2023	SeqNo: 3481382	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	40	10	50.00	0	79.9	61.9	130			
Surr: DNOP	4.3		5.000		86.1	69	147			

Sample ID: MB-74375	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 74375	RunNo: 96131								
Prep Date: 4/17/2023	Analysis Date: 4/18/2023	SeqNo: 3481385	Units: %Rec							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	8.7		10.00		86.6	69	147			

Sample ID: MB-74395	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 74395	RunNo: 96131								
Prep Date: 4/18/2023	Analysis Date: 4/19/2023	SeqNo: 3481386	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								

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 Quantitative 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#: 2304665

26-Apr-23

Client: Vertex Resources Services, Inc.

Project: Hackberry 6 Federal 1

Sample ID: MB-74395	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 74395	RunNo: 96131								
Prep Date: 4/18/2023	Analysis Date: 4/19/2023	SeqNo: 3481386	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	8.8		10.00		87.7	69	147			

Sample ID: MB-74381	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 74381	RunNo: 96159								
Prep Date: 4/18/2023	Analysis Date: 4/19/2023	SeqNo: 3481897	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	8.8		10.00		87.7	69	147			

Sample ID: MB-74417	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 74417	RunNo: 96159								
Prep Date: 4/19/2023	Analysis Date: 4/19/2023	SeqNo: 3481898	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	7.8		10.00		78.2	69	147			

Sample ID: LCS-74381	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: LCSS	Batch ID: 74381	RunNo: 96159								
Prep Date: 4/18/2023	Analysis Date: 4/19/2023	SeqNo: 3481900	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	37	10	50.00	0	73.3	61.9	130			
Surr: DNOP	4.1		5.000		82.7	69	147			

Sample ID: LCS-74417	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: LCSS	Batch ID: 74417	RunNo: 96159								
Prep Date: 4/19/2023	Analysis Date: 4/19/2023	SeqNo: 3481901	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	38	10	50.00	0	76.7	61.9	130			
Surr: DNOP	3.9		5.000		77.5	69	147			

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 Quantitative 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#: 2304665

26-Apr-23

Client: Vertex Resources Services, Inc.

Project: Hackberry 6 Federal 1

Sample ID: 2304665-009AMS	SampType: MS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: BES23-54 0'	Batch ID: 74417	RunNo: 96159								
Prep Date: 4/19/2023	Analysis Date: 4/20/2023	SeqNo: 3481933	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	40	9.6	47.98	0	82.5	54.2	135			
Surr: DNOP	4.1		4.798		85.9	69	147			

Sample ID: 2304665-009AMSD	SampType: MSD	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: BES23-54 0'	Batch ID: 74417	RunNo: 96159								
Prep Date: 4/19/2023	Analysis Date: 4/20/2023	SeqNo: 3481934	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	38	9.9	49.31	0	76.4	54.2	135	4.95	29.2	
Surr: DNOP	4.0		4.931		81.2	69	147	0	0	

Sample ID: MB-74457	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 74457	RunNo: 96257								
Prep Date: 4/20/2023	Analysis Date: 4/21/2023	SeqNo: 3485921	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	8.7		10.00		86.9	69	147			

Sample ID: LCS-74457	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: LCSS	Batch ID: 74457	RunNo: 96257								
Prep Date: 4/20/2023	Analysis Date: 4/21/2023	SeqNo: 3485922	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	45	10	50.00	0	90.2	61.9	130			
Surr: DNOP	4.2		5.000		83.9	69	147			

Sample ID: 2304665-004AMS	SampType: MS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: BES23-49 0'	Batch ID: 74457	RunNo: 96257								
Prep Date: 4/20/2023	Analysis Date: 4/21/2023	SeqNo: 3485924	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	45	9.3	46.64	17.57	59.8	54.2	135			
Surr: DNOP	4.1		4.664		87.9	69	147			

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 Quantitative 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#: 2304665

26-Apr-23

Client: Vertex Resources Services, Inc.

Project: Hackberry 6 Federal 1

Sample ID: 2304665-004AMSD	SampType: MSD	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: BES23-49 0'	Batch ID: 74457	RunNo: 96257								
Prep Date: 4/20/2023	Analysis Date: 4/21/2023	SeqNo: 3485925 Units: mg/Kg								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	49	9.8	49.02	17.57	64.0	54.2	135	7.33	29.2	
Surr: DNOP	4.2		4.902		85.1	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 Quantitative 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#: 2304665

26-Apr-23

Client: Vertex Resources Services, Inc.

Project: Hackberry 6 Federal 1

Sample ID: ics-74376	SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: LCSS	Batch ID: 74376		RunNo: 96123							
Prep Date: 4/17/2023	Analysis Date: 4/18/2023		SeqNo: 3481407		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	92.0	70	130			
Surr: BFB	5100		1000		509	37.7	212			S

Sample ID: mb-74376	SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: PBS	Batch ID: 74376		RunNo: 96123							
Prep Date: 4/17/2023	Analysis Date: 4/18/2023		SeqNo: 3481408		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	960		1000		96.1	37.7	212			

Sample ID: ics-74399	SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: LCSS	Batch ID: 74399		RunNo: 96164							
Prep Date: 4/18/2023	Analysis Date: 4/19/2023		SeqNo: 3482067		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	5.0	25.00	0	100	70	130			
Surr: BFB	5400		1000		541	37.7	212			S

Sample ID: mb-74399	SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: PBS	Batch ID: 74399		RunNo: 96164							
Prep Date: 4/18/2023	Analysis Date: 4/19/2023		SeqNo: 3482068		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	1100		1000		111	37.7	212			

Sample ID: 2304665-009ams	SampType: MS		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: BES23-54 0'	Batch ID: 74399		RunNo: 96164							
Prep Date: 4/18/2023	Analysis Date: 4/19/2023		SeqNo: 3482072		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	4.9	24.56	0	103	70	130			
Surr: BFB	5500		982.3		563	37.7	212			S

Sample ID: 2304665-009amsd	SampType: MSD		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: BES23-54 0'	Batch ID: 74399		RunNo: 96164							
Prep Date: 4/18/2023	Analysis Date: 4/19/2023		SeqNo: 3482073		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 Quantitative 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#: 2304665

26-Apr-23

Client: Vertex Resources Services, Inc.

Project: Hackberry 6 Federal 1

Sample ID: 2304665-009amsd	SampType: MSD	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: BES23-54 0'	Batch ID: 74399	RunNo: 96164								
Prep Date: 4/18/2023	Analysis Date: 4/19/2023	SeqNo: 3482073	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	4.9	24.63	0	99.8	70	130	3.09	20	
Surr: BFB	5600		985.2		573	37.7	212	0	0	S

Sample ID: ics-74390	SampType: LCS	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: LCSS	Batch ID: 74390	RunNo: 96134								
Prep Date: 4/18/2023	Analysis Date: 4/19/2023	SeqNo: 3482270	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	87.0	70	130			
Surr: BFB	2000		1000		195	37.7	212			

Sample ID: mb-74390	SampType: MBLK	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: PBS	Batch ID: 74390	RunNo: 96134								
Prep Date: 4/18/2023	Analysis Date: 4/19/2023	SeqNo: 3482271	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	920		1000		91.6	37.7	212			

Sample ID: ics-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: %Rec							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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: %Rec							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	900		1000		89.6	37.7	212			

Sample ID: ics-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			

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 Quantitative 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#: 2304665

26-Apr-23

Client: Vertex Resources Services, Inc.

Project: Hackberry 6 Federal 1

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			

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 Quantitative 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#: 2304665

26-Apr-23

Client: Vertex Resources Services, Inc.

Project: Hackberry 6 Federal 1

Sample ID: LCS-74376	SampType: LCS	TestCode: EPA Method 8021B: Volatiles								
Client ID: LCSS	Batch ID: 74376	RunNo: 96123								
Prep Date: 4/17/2023	Analysis Date: 4/18/2023	SeqNo: 3481436	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	85.2	80	120			
Toluene	0.86	0.050	1.000	0	86.0	80	120			
Ethylbenzene	0.87	0.050	1.000	0	86.9	80	120			
Xylenes, Total	2.6	0.10	3.000	0	88.1	80	120			
Surr: 4-Bromofluorobenzene	0.97		1.000		96.8	70	130			

Sample ID: mb-74376	SampType: MBLK	TestCode: EPA Method 8021B: Volatiles								
Client ID: PBS	Batch ID: 74376	RunNo: 96123								
Prep Date: 4/17/2023	Analysis Date: 4/18/2023	SeqNo: 3481437	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	0.94		1.000		94.3	70	130			

Sample ID: LCS-74399	SampType: LCS	TestCode: EPA Method 8021B: Volatiles								
Client ID: LCSS	Batch ID: 74399	RunNo: 96164								
Prep Date: 4/18/2023	Analysis Date: 4/19/2023	SeqNo: 3482097	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.83	0.025	1.000	0	83.5	80	120			
Toluene	0.85	0.050	1.000	0	84.8	80	120			
Ethylbenzene	0.87	0.050	1.000	0	86.7	80	120			
Xylenes, Total	2.6	0.10	3.000	0	87.5	80	120			
Surr: 4-Bromofluorobenzene	0.99		1.000		99.0	70	130			

Sample ID: mb-74399	SampType: MBLK	TestCode: EPA Method 8021B: Volatiles								
Client ID: PBS	Batch ID: 74399	RunNo: 96164								
Prep Date: 4/18/2023	Analysis Date: 4/19/2023	SeqNo: 3482098	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	0.98		1.000		97.9	70	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 Quantitative 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#: 2304665

26-Apr-23

Client: Vertex Resources Services, Inc.

Project: Hackberry 6 Federal 1

Sample ID: 2304665-010ams	SampType: MS		TestCode: EPA Method 8021B: Volatiles							
Client ID: BES23-55 0'	Batch ID: 74399		RunNo: 96164							
Prep Date: 4/18/2023	Analysis Date: 4/19/2023		SeqNo: 3482103		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.86	0.024	0.9524	0	90.0	68.8	120			
Toluene	0.89	0.048	0.9524	0.01709	92.1	73.6	124			
Ethylbenzene	0.92	0.048	0.9524	0	96.5	72.7	129			
Xylenes, Total	2.8	0.095	2.857	0	97.5	75.7	126			
Surr: 4-Bromofluorobenzene	0.96		0.9524		101	70	130			

Sample ID: 2304665-010amsd	SampType: MSD		TestCode: EPA Method 8021B: Volatiles							
Client ID: BES23-55 0'	Batch ID: 74399		RunNo: 96164							
Prep Date: 4/18/2023	Analysis Date: 4/19/2023		SeqNo: 3482104		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.87	0.023	0.9398	0	92.8	68.8	120	1.70	20	
Toluene	0.90	0.047	0.9398	0.01709	93.7	73.6	124	0.386	20	
Ethylbenzene	0.93	0.047	0.9398	0	98.5	72.7	129	0.728	20	
Xylenes, Total	2.8	0.094	2.820	0	99.9	75.7	126	1.12	20	
Surr: 4-Bromofluorobenzene	0.95		0.9398		101	70	130	0	0	

Sample ID: lcs-74390	SampType: LCS		TestCode: EPA Method 8021B: Volatiles							
Client ID: LCSS	Batch ID: 74390		RunNo: 96134							
Prep Date: 4/18/2023	Analysis Date: 4/19/2023		SeqNo: 3482289		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.87	0.025	1.000	0	87.3	80	120			
Toluene	0.87	0.050	1.000	0	87.2	80	120			
Ethylbenzene	0.85	0.050	1.000	0	85.1	80	120			
Xylenes, Total	2.5	0.10	3.000	0	83.9	80	120			
Surr: 4-Bromofluorobenzene	0.85		1.000		85.1	70	130			

Sample ID: mb-74390	SampType: MBLK		TestCode: EPA Method 8021B: Volatiles							
Client ID: PBS	Batch ID: 74390		RunNo: 96134							
Prep Date: 4/18/2023	Analysis Date: 4/19/2023		SeqNo: 3482290		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		85.5	70	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 Quantitative 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#: 2304665

26-Apr-23

Client: Vertex Resources Services, Inc.

Project: Hackberry 6 Federal 1

Sample ID: ics-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: ics-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: %Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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: %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			

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 Quantitative 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



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: 2304665 RcptNo: 1

Received By: Cheyenne Cason 4/15/2023 8:40:00 AM *CC*

Completed By: Cheyenne Cason 4/17/2023 8:36:16 AM *CC*

Reviewed By: *mc4/17/23*

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? Yes No
(Note discrepancies on chain of custody)
- 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? Yes No
(If no, notify customer for authorization.)

of preserved bottles checked for pH: _____
(<2 or >12 unless noted)
Adjusted? _____
Checked by: *mc 4/17/23*

Special Handling (if applicable)

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

Person Notified:	<input type="text"/>	Date:	<input type="text"/>
By Whom:	<input type="text"/>	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	<input type="text"/>		
Client Instructions:	<input type="text"/>		

16. Additional remarks:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Not Present	Morty		



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

August 23, 2023

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

RE: Hackberry 6Fed 001

OrderNo.: 2308867

Dear Kent Stallings:

Hall Environmental Analysis Laboratory received 5 sample(s) on 8/16/2023 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,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written in a cursive style.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report

Lab Order **2308867**

Date Reported: **8/23/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BH23-57 2.0'

Project: Hackberry 6Fed 001

Collection Date: 8/14/2023 9:00:00 AM

Lab ID: 2308867-001

Matrix: SOIL

Received Date: 8/16/2023 7:40:00 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	8/17/2023 6:58:12 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	8/17/2023 6:58:12 PM
Surr: DNOP	103	69-147		%Rec	1	8/17/2023 6:58:12 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	8/18/2023 2:02:05 AM
Surr: BFB	94.4	15-244		%Rec	1	8/18/2023 2:02:05 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.025		mg/Kg	1	8/18/2023 2:02:05 AM
Toluene	ND	0.050		mg/Kg	1	8/18/2023 2:02:05 AM
Ethylbenzene	ND	0.050		mg/Kg	1	8/18/2023 2:02:05 AM
Xylenes, Total	ND	0.099		mg/Kg	1	8/18/2023 2:02:05 AM
Surr: 4-Bromofluorobenzene	107	39.1-146		%Rec	1	8/18/2023 2:02:05 AM
EPA METHOD 300.0: ANIONS						Analyst: RBC
Chloride	190	60		mg/Kg	20	8/17/2023 3:52:02 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order **2308867**

Date Reported: **8/23/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS23-01 1.0'

Project: Hackberry 6Fed 001

Collection Date: 8/14/2023 9:10:00 AM

Lab ID: 2308867-002

Matrix: SOIL

Received Date: 8/16/2023 7:40:00 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	8/17/2023 7:17:42 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	8/17/2023 7:17:42 PM
Surr: DNOP	98.8	69-147		%Rec	1	8/17/2023 7:17:42 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	8/18/2023 2:25:37 AM
Surr: BFB	94.6	15-244		%Rec	1	8/18/2023 2:25:37 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.025		mg/Kg	1	8/18/2023 2:25:37 AM
Toluene	ND	0.050		mg/Kg	1	8/18/2023 2:25:37 AM
Ethylbenzene	ND	0.050		mg/Kg	1	8/18/2023 2:25:37 AM
Xylenes, Total	ND	0.099		mg/Kg	1	8/18/2023 2:25:37 AM
Surr: 4-Bromofluorobenzene	108	39.1-146		%Rec	1	8/18/2023 2:25:37 AM
EPA METHOD 300.0: ANIONS						Analyst: RBC
Chloride	470	60		mg/Kg	20	8/17/2023 4:04:26 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order **2308867**

Date Reported: **8/23/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS23-02 1.0'

Project: Hackberry 6Fed 001

Collection Date: 8/14/2023 9:20:00 AM

Lab ID: 2308867-003

Matrix: SOIL

Received Date: 8/16/2023 7:40:00 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	8/17/2023 7:37:07 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	8/17/2023 7:37:07 PM
Surr: DNOP	101	69-147		%Rec	1	8/17/2023 7:37:07 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	8/18/2023 2:49:06 AM
Surr: BFB	94.4	15-244		%Rec	1	8/18/2023 2:49:06 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.025		mg/Kg	1	8/18/2023 2:49:06 AM
Toluene	ND	0.050		mg/Kg	1	8/18/2023 2:49:06 AM
Ethylbenzene	ND	0.050		mg/Kg	1	8/18/2023 2:49:06 AM
Xylenes, Total	ND	0.10		mg/Kg	1	8/18/2023 2:49:06 AM
Surr: 4-Bromofluorobenzene	106	39.1-146		%Rec	1	8/18/2023 2:49:06 AM
EPA METHOD 300.0: ANIONS						Analyst: RBC
Chloride	690	59		mg/Kg	20	8/17/2023 4:41:40 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order **2308867**

Date Reported: **8/23/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: WS23-01 1.0'

Project: Hackberry 6Fed 001

Collection Date: 8/14/2023 9:30:00 AM

Lab ID: 2308867-004

Matrix: SOIL

Received Date: 8/16/2023 7:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: PRD
Diesel Range Organics (DRO)	27	9.6		mg/Kg	1	8/17/2023 7:56:25 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	8/17/2023 7:56:25 PM
Surr: DNOP	96.2	69-147		%Rec	1	8/17/2023 7:56:25 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	8/18/2023 3:12:34 AM
Surr: BFB	93.6	15-244		%Rec	1	8/18/2023 3:12:34 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	8/18/2023 3:12:34 AM
Toluene	ND	0.047		mg/Kg	1	8/18/2023 3:12:34 AM
Ethylbenzene	ND	0.047		mg/Kg	1	8/18/2023 3:12:34 AM
Xylenes, Total	ND	0.095		mg/Kg	1	8/18/2023 3:12:34 AM
Surr: 4-Bromofluorobenzene	106	39.1-146		%Rec	1	8/18/2023 3:12:34 AM
EPA METHOD 300.0: ANIONS						Analyst: RBC
Chloride	660	60		mg/Kg	20	8/17/2023 4:54:04 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order **2308867**

Date Reported: **8/23/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: WS23-02 1.0'

Project: Hackberry 6Fed 001

Collection Date: 8/14/2023 9:40:00 AM

Lab ID: 2308867-005

Matrix: SOIL

Received Date: 8/16/2023 7:40:00 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	8/17/2023 8:15:41 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	8/17/2023 8:15:41 PM
Surr: DNOP	98.8	69-147		%Rec	1	8/17/2023 8:15:41 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	8/18/2023 3:36:04 AM
Surr: BFB	92.6	15-244		%Rec	1	8/18/2023 3:36:04 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	8/18/2023 3:36:04 AM
Toluene	ND	0.049		mg/Kg	1	8/18/2023 3:36:04 AM
Ethylbenzene	ND	0.049		mg/Kg	1	8/18/2023 3:36:04 AM
Xylenes, Total	ND	0.097		mg/Kg	1	8/18/2023 3:36:04 AM
Surr: 4-Bromofluorobenzene	104	39.1-146		%Rec	1	8/18/2023 3:36:04 AM
EPA METHOD 300.0: ANIONS						Analyst: RBC
Chloride	690	60		mg/Kg	20	8/17/2023 5:06:29 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 Quantitative 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#: 2308867

23-Aug-23

Client: Devon Energy
Project: Hackberry 6Fed 001

Sample ID: MB-76924	SampType: MBLK	TestCode: EPA Method 300.0: Anions								
Client ID: PBS	Batch ID: 76924	RunNo: 99051								
Prep Date: 8/17/2023	Analysis Date: 8/17/2023	SeqNo: 3610531	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: LCS-76924	SampType: LCS	TestCode: EPA Method 300.0: Anions								
Client ID: LCSS	Batch ID: 76924	RunNo: 99051								
Prep Date: 8/17/2023	Analysis Date: 8/17/2023	SeqNo: 3610532	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	95.3	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 Quantitative 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#: 2308867

23-Aug-23

Client: Devon Energy
Project: Hackberry 6Fed 001

Sample ID: LCS-76920	SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: LCSS	Batch ID: 76920		RunNo: 99052							
Prep Date: 8/17/2023	Analysis Date: 8/17/2023		SeqNo: 3611330				Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	56	10	50.00	0	112	61.9	130			
Surr: DNOP	5.0		5.000		101	69	147			

Sample ID: MB-76932	SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: PBS	Batch ID: 76932		RunNo: 99076							
Prep Date: 8/17/2023	Analysis Date: 8/18/2023		SeqNo: 3611404				Units: %Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	8.4		10.00		84.1	69	147			

Sample ID: LCS-76932	SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: LCSS	Batch ID: 76932		RunNo: 99076							
Prep Date: 8/17/2023	Analysis Date: 8/18/2023		SeqNo: 3611405				Units: %Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	3.8		5.000		75.1	69	147			

Sample ID: MB-76920	SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: PBS	Batch ID: 76920		RunNo: 99076							
Prep Date: 8/17/2023	Analysis Date: 8/18/2023		SeqNo: 3611416				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	8.6		10.00		86.1	69	147			

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 Quantitative 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#: 2308867

23-Aug-23

Client: Devon Energy
Project: Hackberry 6Fed 001

Sample ID: ics-76908	SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: LCSS	Batch ID: 76908		RunNo: 99036							
Prep Date: 8/16/2023	Analysis Date: 8/17/2023		SeqNo: 3610780		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	84.6	70	130			
Surr: BFB	2000		1000		196	15	244			

Sample ID: mb-76908	SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: PBS	Batch ID: 76908		RunNo: 99036							
Prep Date: 8/16/2023	Analysis Date: 8/17/2023		SeqNo: 3610781		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	15	244			

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 Quantitative 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#: 2308867

23-Aug-23

Client: Devon Energy
Project: Hackberry 6Fed 001

Sample ID: LCS-76908	SampType: LCS		TestCode: EPA Method 8021B: Volatiles							
Client ID: LCSS	Batch ID: 76908		RunNo: 99036							
Prep Date: 8/16/2023	Analysis Date: 8/17/2023		SeqNo: 3610801		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.95	0.025	1.000	0	94.8	70	130			
Toluene	0.96	0.050	1.000	0	95.7	70	130			
Ethylbenzene	0.97	0.050	1.000	0	96.9	70	130			
Xylenes, Total	2.9	0.10	3.000	0	97.9	70	130			
Surr: 4-Bromofluorobenzene	1.1		1.000		109	39.1	146			

Sample ID: mb-76908	SampType: MBLK		TestCode: EPA Method 8021B: Volatiles							
Client ID: PBS	Batch ID: 76908		RunNo: 99036							
Prep Date: 8/16/2023	Analysis Date: 8/17/2023		SeqNo: 3610802		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		108	39.1	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 Quantitative 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



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: **Devon Energy** Work Order Number: **2308867** RcptNo: **1**

Received By: **Tracy Casarrubias** 8/16/2023 7:40:00 AM

Completed By: **Tracy Casarrubias** 8/16/2023 8:01:43 AM

Reviewed By: **SCM 08/16/23**

Chain of Custody

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

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? Yes No
- (Note discrepancies on chain of custody)
- 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? Yes No
- (If no, notify customer for authorization.)

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

Checked by: **twst/16/23**

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: **Mailing address, phone number and Email/Fax are missing on COC - TMC 8/16/23**

16. Additional remarks:

17. Cooler Information

Chain-of-Custody Record

Client: Devon
 Project Name: Hackberry 6 Fed 001
 Mailing Address: Direct Bill
 Project #: 23E-01582
 Phone #: _____

Turn-Around Time: 2 DAY
 Standard Rush
 Project Name: Hackberry 6 Fed 001
 Project #: 23E-01582

Project Manager: Ken K Stallings
 Sampler: AK
 On Ice: Yes No log
 # of Coolers: 1
 Cooler Temp (including CF): 4.9 - 0.2 = 4.7 (°C)

Project Manager: Ken K Stallings
 Sampler: AK
 On Ice: Yes No log
 # of Coolers: 1
 Cooler Temp (including CF): 4.9 - 0.2 = 4.7 (°C)

Date	Time	Matrix	Sample Name	HEAL No.	Preservative Type	Container Type and #	Container Type and #
8/14/23	0900	Soil	BS23-57	23088/67	ICE	402	001
	0910		BS23-01				002
	0920		BS23-02				003
	0930		WS23-01				004
	0940		WS23-02				005

Analysis Request	8081 Pesticides/8082 PCBs	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)
BTEX / MTBE / TMBs (8021)								
TPH:8015D(GRO / DRO / MRO)								

Received by: Chambers Date: 8/15/23 Time: 11:30
 Relinquished by: Chambers Date: 8/16/23 Time: 7:40

Received by: Chambers Date: 8/15/23 Time: 11:30
 Relinquished by: Chambers Date: 8/16/23 Time: 7:40

Remarks: CC: Kstallings@vertextx.ca
aharris@vertextx.ca

APPENDIX E – Depth to Groundwater Drilling



PLUGGING RECORD



NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: CR01942 POD1

Well owner: Devon Energy Phone No.: _____

Mailing address: 6488 7 Rivers Hwy

City: Artesia State: New Mexico Zip code: 88210

II. WELL PLUGGING INFORMATION:

- 1) Name of well drilling company that plugged well: Vision Resources, Inc
- 2) New Mexico Well Driller License No.: WD 1833 Expiration Date: 12-31-23
- 3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s):
Jason Maley
- 4) Date well plugging began: 12-16-22 Date well plugging concluded: 12-16-22
- 5) GPS Well Location: Latitude: 32 deg, 40 min, 56.79 sec
Longitude: 103 deg, 54 min, 4.32 sec, WGS 84
- 6) Depth of well confirmed at initiation of plugging as: 105 ft below ground level (bgl),
by the following manner: tape
- 7) Static water level measured at initiation of plugging: dry ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: yes
- 9) Were all plugging activities consistent with an approved plugging plan? yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

OSE DTI FEB 13 2023 04:05

- 10) Log of Plugging Activities - Label vertical scale with depths, and indicate separate plugging intervals with horizontal lines as necessary to illustrate material or methodology changes. Attach additional pages if necessary.

For each interval plugged, describe within the following columns:

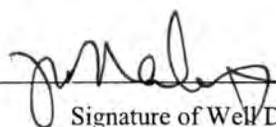
Depth (ft bgl)	Plugging Material Used (include any additives used)	Volume of Material Placed (gallons)	Theoretical Volume of Borehole/ Casing (gallons)	Placement Method (tremie pipe, other)	Comments ("casing perforated first", "open annular space also plugged", etc.)
	Baroid Hole Plug	155	154.21	Open Hole	

USE DIV FEB 13 2023 PML:05

MULTIPLY		BY		AND OBTAIN
cubic feet	x	7.4805	=	gallons
cubic yards	x	201.97	=	gallons

III. SIGNATURE:

I, Jason Maley, say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.


Signature of Well Driller

12/19/22
Date



STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER
ROSWELL

Mike A. Hamman, P.E.
State Engineer

DISTRICT II
1900 West Second St.
Roswell, New Mexico 88201
Phone: (575) 622-6521
Fax: (575) 623-8559

February 13, 2023

Devon Energy
6488 7 Rivers Hwy
Artesia

RE: CP-1942

Greetings:

Please find enclosed Well Plugging Record for OSE Well No. CP-1942-POD1

If you have any questions, or if I can be of further assistance, please contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Andrew Dennis", written over a horizontal line.

Andrew Dennis
Water Resources Professional II
575-291-2395



WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION	OSE POD NO. (WELL NO.) CP-01942 POD 1		WELL TAG ID NO.		OSE FILE NO(S).		
	WELL OWNER NAME(S) Devon Energy				PHONE (OPTIONAL)		
	WELL OWNER MAILING ADDRESS 6488 7 Rivers Hwy				CITY Artesia	STATE NM	ZIP 88210
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE 32	MINUTES 40	SECONDS 56.79	N		* ACCURACY REQUIRED: ONE TENTH OF A SECOND
	LONGITUDE 105	54	4.32	W		* DATUM REQUIRED: WGS 84	
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE							

2. DRILLING & CASING INFORMATION	LICENSE NO. 1833	NAME OF LICENSED DRILLER Jason Maley			NAME OF WELL DRILLING COMPANY Vision Resources, Inc			
	DRILLING STARTED 12/13/22	DRILLING ENDED 12/13/22	DEPTH OF COMPLETED WELL (FT) 105	BORE HOLE DEPTH (FT) 105	DEPTH WATER FIRST ENCOUNTERED (FT) none			
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN *add Centralizer info below <input checked="" type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)				STATIC WATER LEVEL IN COMPLETED WELL (FT)	DATE STATIC MEASURED		
	DRILLING FLUID: <input checked="" type="checkbox"/> AIR <input type="checkbox"/> MUD				ADDITIVES - SPECIFY:			
	DRILLING METHOD: <input checked="" type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input type="checkbox"/> OTHER - SPECIFY:					CHECK HERE IF PITLESS ADAPTER IS INSTALLED <input type="checkbox"/>		
	DEPTH (feet bgl)		BORE HOLE DIAM (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
	FROM	TO						
0	80	6	2inch pvc sch 40	thread	2	Sch 40		
80	100	6	2 inch pvc sch 40	thread	2	Sch 40	0.70	

3. ANNULAR MATERIAL	DEPTH (feet bgl)		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE- RANGE BY INTERVAL <i>*(if using Centralizers for Artesian wells- indicate the spacing below)</i>	AMOUNT (cubic feet)	METHOD OF PLACEMENT
	FROM	TO				

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 09/22/2022)

FILE NO. CP-1942	POD NO. 1	TRN NO. 740390
LOCATION 195.31E. 06 444	WELL TAG ID NO. MA	PAGE 1 OF 2

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720

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811 S. First St., Artesia, NM 88210
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District III
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District IV
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Phone:(505) 476-3470 Fax:(505) 476-3462

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

QUESTIONS

Action 377302

QUESTIONS

Operator: DEVON ENERGY PRODUCTION COMPANY, LP 333 West Sheridan Ave. Oklahoma City, OK 73102	OGRID: 6137
	Action Number: 377302
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Prerequisites	
Incident ID (n#)	nAPP2308125349
Incident Name	NAPP2308125349 HACKBERRY 6 FEDERAL #001 @ 30-015-31020
Incident Type	Produced Water Release
Incident Status	Remediation Closure Report Received
Incident Well	[30-015-31020] HACKBERRY 6 FEDERAL #001
Incident Facility	[fAPP2202048266] HACKBERRY 6 FED 1 WELLPAD

Location of Release Source

Please answer all the questions in this group.

Site Name	HACKBERRY 6 FEDERAL #001
Date Release Discovered	03/21/2023
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	Not answered.
Produced Water Released (bbls) Details	Cause: Equipment Failure Well Produced Water Released: 17 BBL Recovered: 15 BBL Lost: 2 BBL.
Is the concentration of chloride in the produced water >10,000 mg/l	Yes
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)	Fluids were coming from the spill pot. Tubing, casing and rams were shut in. In addition, there was a break in an aboveground piping at the location that released fluid at the edge of the pad. 16.6 bbls released from both locations. 15 bbls recovered.

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QUESTIONS, Page 2

Action 377302

QUESTIONS (continued)

Operator: DEVON ENERGY PRODUCTION COMPANY, LP 333 West Sheridan Ave. Oklahoma City, OK 73102	OGRID: 6137
	Action Number: 377302
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

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	<i>Unavailable.</i>

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	<i>Not answered.</i>

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: Dale Woodall Title: EHS Professional Email: Dale.Woodall@dvn.com Date: 08/25/2024
--	--

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QUESTIONS, Page 3

Action 377302

QUESTIONS (continued)

Operator: DEVON ENERGY PRODUCTION COMPANY, LP 333 West Sheridan Ave. Oklahoma City, OK 73102	OGRID: 6137
	Action Number: 377302
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

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 75 and 100 (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	Between 500 and 1000 (ft.)
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 1 and 5 (mi.)
Any other fresh water well or spring	Between 1 and 5 (mi.)
Incorporated municipal boundaries or a defined municipal fresh water well field	Greater than 5 (mi.)
A wetland	Between 1 and 5 (mi.)
A subsurface mine	Greater than 5 (mi.)
An (non-karst) unstable area	Greater than 5 (mi.)
Categorize the risk of this well / site being in a karst geology	Low
A 100-year floodplain	Greater than 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
<i>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.</i>	
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)	9400
TPH (GRO+DRO+MRO) (EPA SW-846 Method 8015M)	0
GRO+DRO (EPA SW-846 Method 8015M)	0
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	04/10/2023
On what date will (or did) the final sampling or liner inspection occur	08/02/2024
On what date will (or was) the remediation complete(d)	08/02/2024
What is the estimated surface area (in square feet) that will be reclaimed	19512
What is the estimated volume (in cubic yards) that will be reclaimed	3520
What is the estimated surface area (in square feet) that will be remediated	19512
What is the estimated volume (in cubic yards) that will be remediated	3520

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, Page 4

Action 377302

QUESTIONS (continued)

Operator: DEVON ENERGY PRODUCTION COMPANY, LP 333 West Sheridan Ave. Oklahoma City, OK 73102	OGRID: 6137
	Action Number: 377302
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

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	LEA LAND LANDFILL [fEEM0112342028]
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)	Not answered.
(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: Dale Woodall Title: EHS Professional Email: Dale.Woodall@dvn.com Date: 08/25/2024
--	--

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, Page 5

Action 377302

QUESTIONS (continued)

Operator: DEVON ENERGY PRODUCTION COMPANY, LP 333 West Sheridan Ave. Oklahoma City, OK 73102	OGRID: 6137
	Action Number: 377302
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Deferral Requests Only	
<i>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.</i>	
Requesting a deferral of the remediation closure due date with the approval of this submission	No

District I
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QUESTIONS, Page 6

Action 377302

QUESTIONS (continued)

Operator: DEVON ENERGY PRODUCTION COMPANY, LP 333 West Sheridan Ave. Oklahoma City, OK 73102	OGRID: 6137
	Action Number: 377302
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Sampling Event Information	
Last sampling notification (C-141N) recorded	369712
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	08/06/2024
What was the (estimated) number of samples that were to be gathered	112
What was the sampling surface area in square feet	19000

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	Yes
Have the lateral and vertical extents of contamination been fully delineated	Yes
Was this release entirely contained within a lined containment area	No
All areas reasonably needed for production or subsequent drilling operations have been stabilized, returned to the sites existing grade, and have a soil cover that prevents ponding of water, minimizing dust and erosion	Yes
What was the total surface area (in square feet) remediated	19512
What was the total volume (cubic yards) remediated	3520
All areas not reasonably needed for production or subsequent drilling operations have been reclaimed to contain a minimum of four feet of non-waste contain earthen material with concentrations less than 600 mg/kg chlorides, 100 mg/kg TPH, 50 mg/kg BTEX, and 10 mg/kg Benzene	Yes
What was the total surface area (in square feet) reclaimed	19512
What was the total volume (in cubic yards) reclaimed	3520
Summarize any additional remediation activities not included by answers (above)	see report

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

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

I hereby agree and sign off to the above statement	Name: Dale Woodall Title: EHS Professional Email: Dale.Woodall@dmn.com Date: 08/25/2024
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District I
 1625 N. French Dr., Hobbs, NM 88240
 Phone:(575) 393-6161 Fax:(575) 393-0720

District II
 811 S. First St., Artesia, NM 88210
 Phone:(575) 748-1283 Fax:(575) 748-9720

District III
 1000 Rio Brazos Rd., Aztec, NM 87410
 Phone:(505) 334-6178 Fax:(505) 334-6170

District IV
 1220 S. St Francis Dr., Santa Fe, NM 87505
 Phone:(505) 476-3470 Fax:(505) 476-3462

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

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Action 377302

QUESTIONS (continued)

Operator: DEVON ENERGY PRODUCTION COMPANY, LP 333 West Sheridan Ave. Oklahoma City, OK 73102	OGRID: 6137
	Action Number: 377302
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Reclamation Report	
<i>Only answer the questions in this group if all reclamation steps have been completed.</i>	
Requesting a reclamation approval with this submission	No

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Energy, Minerals and Natural Resources
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CONDITIONS

Action 377302

CONDITIONS

Operator: DEVON ENERGY PRODUCTION COMPANY, LP 333 West Sheridan Ave. Oklahoma City, OK 73102	OGRID: 6137
	Action Number: 377302
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

CONDITIONS

Created By	Condition	Condition Date
rhamlet	We have received your Remediation Closure Report for Incident #NAPP2308125349 HACKBERRY 6 FEDERAL #001, thank you. This Remediation Closure Report is approved.	9/17/2024