Incident Number: nRM2003158355

Amended Remediation Closure

Tomcat 16 State 2 Battery

Section 16, Township 23 South, Range 32 East

Facility: fAPP2204663314

County: Lea

Vertex File Number: 25A-03122

Prepared for:

Devon Energy Production Company, LP

Prepared by:

Vertex Resource Services Inc.

Date:

October 2025

Amended Remediation Closure
Tomcat 16 State 2 Battery
Section 16, Township 23 South, Range 32 East
Facility: fAPP2204663314
County: Lea

Prepared for:
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October 31, 2025
Date

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PROJECT MANAGER, REPORT REVIEW

October 31, 2025
Date

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1.0 Introduction

Devon Energy Production Company, LP (Devon) retained Vertex Resource Services Inc. (Vertex) to conduct an Amended Remediation Closure for a produced water release that occurred on October 1, 2019, at Tomcat 16 State 2 Battery, Facility fAPP2204663314 (hereafter referred to as the "site"). Devon submitted an initial C-141 Release Notification (Appendix A) to New Mexico Oil Conservation Division (NMOCD) District 2 on November 12, 2019. Incident ID number nRM2003158355 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 deferred until such time as all oil and gas activities are terminated and the site is reclaimed as per NMAC 19.15.29.13.

2.0 Incident Description

The release occurred on October 1, 2019, when a layflat line crossing the lease access road was punctured. The incident was reported on November 12, 2019, and involved the release of approximately 66.82 barrels (bbl) of produced water north and south along the lease road north of the site and onto the pad site. Approximately 20 bbl of free fluid was removed during 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 22 miles east of Loving, New Mexico. The legal location for the site is Section 16, Township 23 South, Range 32 East, Lea County, New Mexico. The release area is located on State 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 on or in proximity to the constructed pad and lease road (Figure 1).

The Geological Map of New Mexico (New Mexico Bureau of Geology and Mineral Resources, 2025) indicates the site's surface geology primarily comprises Qep - Eolian and piedmont deposits (New Mexico Bureau of Geology and Mineral Resources, 2025). 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 with elevations ranging between 3,000 and 3,900 feet. The climate is semiarid with average annual precipitation ranging between 10 and 12 inches. Predominant soil textures around the site are well-drained fine sands with low runoff potential (United States Department of Agriculture, Natural Resources Conservation Service, 2025). Using information from the United States Department of Agriculture, the dominant vegetation was determined to be grasses interspersed with shrubs and half-shrubs (United States Department of Agriculture, Natural Resources Conservation Service, 2025). Limited to no vegetation is allowed to grow on the compacted facility pad and access road.

4.0 Closure Criteria Determination

The nearest active well to the site is a livestock water well 1.07 miles to the southeast. There is no surface water present at the site. The nearest significant watercourse, as defined in Subsection P of NMAC 19.15.17.7, is an intermittent stream located approximately 2.27 miles east of the site (United States Fish and Wildlife Service, 2025). 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 NMAC 19.15.29.12.

The nearest depth to groundwater reference to the site is an exploratory borehole advanced 0.25 miles to the west on March 9, 2023. The borehole was terminated at 55 feet below ground surface (bgs) without encountering the water surface (New Mexico Office of the State Engineer, 2025). Information pertaining to the depth to ground water determination is included in Appendix B.

Table 1. Closure Criteria Determination			
Site Name: Tomcat 16 State 2 Battery			
Spill Coordinates: 32.298878,-103.686394		**X: 623737**	**Y: 3574336**
Site Specific Conditions		**Value**	**Unit**
1	Depth to Groundwater (nearest reference)	**>55**	feet
	Distance between release and nearest DTGW reference	**1,329**	feet
		0.25	miles
	Date of nearest DTGW reference measurement	**March 9, 2023**	
2	Within 300 feet of any continuously flowing watercourse or any other significant watercourse	30,446	feet
3	Within 200 feet of any lakebed, sinkhole or playa lake (measured from the ordinary high-water mark)	12,008	feet
4	Within 300 feet from an occupied residence, school, hospital, institution or church	33,684	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**	5,650	feet
	ii) Within 1000 feet of any fresh water well or spring	5,650	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	18,603	feet
8	Within the area overlying a subsurface mine	No	(Y/N)
	Distance between release and nearest registered mine	64,028	feet
9	Within an unstable area (Karst Map)	Low	Critical High Medium Low
	Distance between release and nearest High Karst	44,177	feet
10	Within a 100-year Floodplain	Undetermined	year
	Distance between release and nearest FEMA Zone A (100-year Floodplain)	71,018	feet
11	Soil Type	Fine sand, sandy clay loam	
12	Ecological Classification	Loamy Sand	
13	Geology	Eolian and piedmont deposits	
	NMAC 19.15.29.12 E (Table 1) Closure Criteria	51-100'	<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 to Remediation & Reclamation Standards

Minimum depth below any point within the horizontal boundary of the release to groundwater less than 10,000 mg/l TDS	Constituent	Limit
0-4 feet bgs (19.15.29.13)	Chloride	600 mg/kg
	TPH (GRO+DRO+MRO)	100 mg/kg
DTGW 51-100 feet (19.15.29.12)	Chloride	10,000 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
bgs – below ground surface
DTGW – depth to groundwater
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

5.1 Characterization and Initial Confirmation Sampling

Initial release inspection and characterization was conducted by Vertex personnel between October 4 and 15, 2019. Field screening results were utilized to complete release characterization in preparation for potential remedial activities. The release area was initially determined to be 8,711 square feet and is presented on Figure 1. The Daily Field Reports (DFRs) associated with the site visits are included in Appendix C.

In the process of initial characterization, the decision was made to proceed directly with confirmation sampling. Notification that confirmatory samples were being collected was provided to the NMOCD and is included in Appendix D. Confirmation composite samples were collected from the base of the release area in increments no larger than 200 square feet. On October 15, 2019, Vertex personnel collected 37 confirmation samples and one composite background sample for laboratory analysis following NMOCD soil sampling procedures. Samples were submitted to Hall Environmental Analysis Laboratory 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 chloride (EPA Method 300.0). Laboratory results are presented in Table 3 and the laboratory data report is included in Appendix E.

The release was assigned to multiple locations (Big Cat 16 9 Federal 215H or Big Cat 16-9 CTB), before the incident was assigned to Tomcat 16 State 2 Battery. The original names were used in multiple laboratory reports included in Appendix E, and are all in reference to the nRM2003158355 release. The release area and confirmation sample locations are shown on Figure 1.

At the time of the original data analysis and closure report preparation in 2020, Vertex assumed that all portions of the release on the pad and active lease access road would be under remediation closure criteria. Laboratory results for confirmation base samples BS19-11, BS19-16, BS19-17, and BS19-20 through BS19-37 collected along the lease access road in October 2019 met remediation closure criteria but exceeded reclamation standards as shown in Table 3.

5.2 Closure Denial and Additional Sampling

Devon submitted the initial closure and report which was received by the NMOCD on May 7, 2020. The initial request was denied on June 30, 2020, (Appendix D) with the following notations:

> *"The depth to groundwater has not been adequately determined. When nearby wells are used to determine depth to groundwater, the wells should be no further than ½ mile away from the site, and data should be no more than 25 years old, and well construction information should be provided. The responsible party may choose to remediate to the most stringent levels listed in Table 1 in lieu of drilling to determine the depth to groundwater."*
>
> *"Horizontal delineation has not been completed. The values for determination of horizontal impact are derived by either "background" value as determined appropriate to Rule 29, or, for chloride, 600 mg/Kg in soils. This is especially important for "on-pad" releases to ensure the release did not extend to the "off-pad"/pasture area. A visual footprint on the surface is not sufficient to assess the horizontal extent of the release. Lab data must be provided as evidence of delineation efforts.*
>
> *"The lease road is considered "off-pad" and must meet the 4 foot reclamation standard."*

On March 9, 2023, exploratory borehole C-04712 POD2 was drilled 0.25 miles west of the site to 55 feet bgs. The exploratory borehole was dry and provided a current and local reference supporting depth to groundwater between 51 and 100 feet bgs. The borehole log for C-04712 POD2 is included in Appendix B.

On November 2, 2020, Vertex personnel collected nine surface samples around the edges of the release area and advanced four boreholes within to complete characterization. Five surface samples and five borehole samples were submitted to the laboratory to complete horizontal and vertical delineation. Characterization sample locations with respect to release area are presented on Figure 2. Characterization field screening and laboratory results are summarized in Table 4.

Vertex provided 48-hour notification of additional remediation and confirmation sampling to the NMOCD (Appendix D). On December 17, 2020, an excavator was used to remove surface material as needed in "localized remediation areas" over the release extent to collect or re-collect confirmation samples. As little soil as was necessary was scraped from the surface to procure 5-point composites samples that met strictest closure criteria from the designated 200 square foot areas. Excavation depths were no greater than 0.5 feet bgs from the release area and were less than 0.5 feet over the majority of the release area. There were several areas that did not require removal of material to provide a composite confirmation sample with field screening results that met closure criteria. Limited supporting material was saved in 2020 to clearly define the exact excavation extent. The Presumed Excavation Extent based on sampling results

is shown on Figures 3 and 4.

Confirmation re-samples were collected from 24 of the original 37 confirmation base sample locations after the aforementioned "spot-scraping" of the surface soil. An additional two confirmation base samples were collected on the pad (BS20-01 and BS20-02) to improve confirmation sample area coverage. The edges of the confirmation sampling area were expanded horizontally in a few areas as needed to meet closure criteria. Along the edges of the final base sampling area an additional 16 confirmation wall samples were collected, regardless of whether excavation occurred at those areas. The high density of confirmation wall samples further supports horizontal delineation of the release. The excavation and confirmation sampling event was not well documented at the time of execution and the corresponding DFR is included in Appendix C. Confirmation base and wall sample locations are shown on Figures 3 and 4, respectively.

The total area covered by the release and localized remediation was 8,891 square feet. A total of 26 confirmation base samples and 16 confirmation wall samples were collected from the final extent of the release and localized remediation area shown on Figures 3 and 4. Sample locations noted with an "(R)" on Figure 3 were re-collected samples from locations that exceeded the criteria during the initial confirmation sampling event. Samples were submitted to Eurofins or Hall Environmental Analysis Laboratory 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 chloride (EPA Method 300.0). Confirmation sample locations and corresponding laboratory results are presented on Figure 3 and Table 5, respectively. Laboratory data reports are included in Appendix E.

The presumed excavation area was estimated to be 4,309 square feet (Figures 3 and 4). Approximately 42 cubic yards of impacted soil was removed from the release area surface and transported by a licensed waste hauler for disposal at an approved waste management facility. All final confirmation samples were below remediation closure criteria for the pad surface and below reclamation closure criteria for the lease road.

6.0 Closure Request

Vertex recommends no additional remediation action to address the release at Tomcat 16 State 2 Battery. The concerns noted in the previous closure denial have been addressed: an exploratory borehole was advanced to determine depth to groundwater between 51 and 100 feet bgs, horizontal and vertical delineation of the release have been completed, and laboratory results for all samples collected on the lease road meet NMOCD reclamation closure criteria for areas where depth to groundwater is between 51 and 100 feet bgs as shown in Table 2. There are no anticipated risks to human, ecological or hydrological receptors associated with the release site. The excavation was backfilled with non-waste-containing, uncontaminated, earthen material, sourced locally, and placed to meet the site's existing grade to prevent ponding of water and erosion.

Vertex requests that the incident (nRM2003158355) be closed as all closure requirements set forth in Subsection E of 19.15.29.12 NMAC have been met. Devon certifies that all information in this report and the attachments is correct, and that they have complied with all applicable closure requirements and conditions specified in Division rules and directives to meet NMOCD requirements to obtain closure on the October 1, 2019, release at Tomcat 16 State 2 Battery.

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

7.0 References

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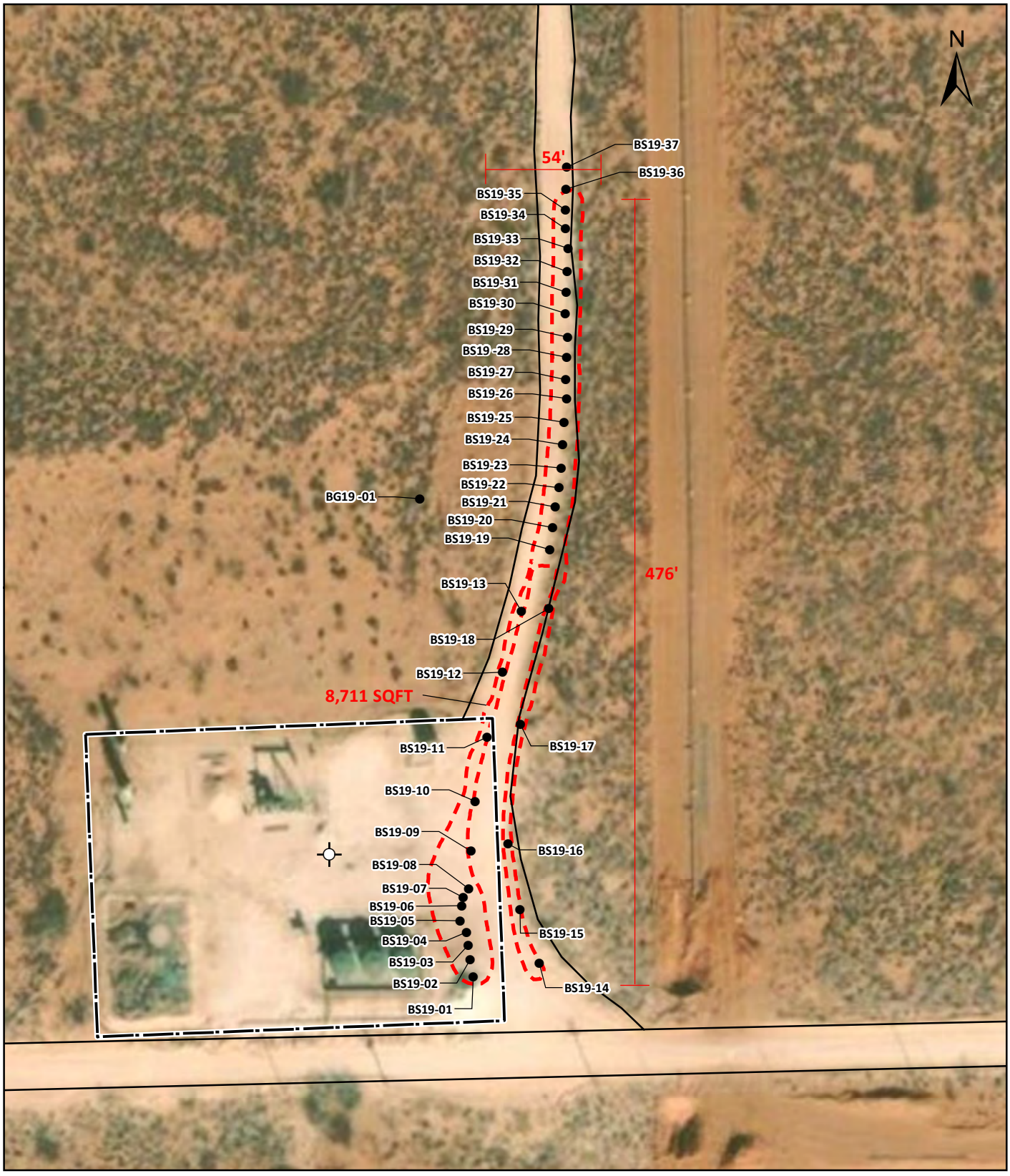
8.0 Limitations

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 New Mexico State Land Office, 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



LEGEND

- SOIL SAMPLE
- WELLHEAD
- ROAD
- WELL PAD
- RELEASE AREA (~8,711 sq.ft.)

BG BACKGROUND SAMPLE
BS BASE SAMPLE

0 20 40 80 Ft
SCALE 1:1,000

Notes: Aerial Image from ESRI Digital Globe 2017

devon

Release Area and Initial Confirmation Sample Locations
Tomcat 16 State 2 Battery

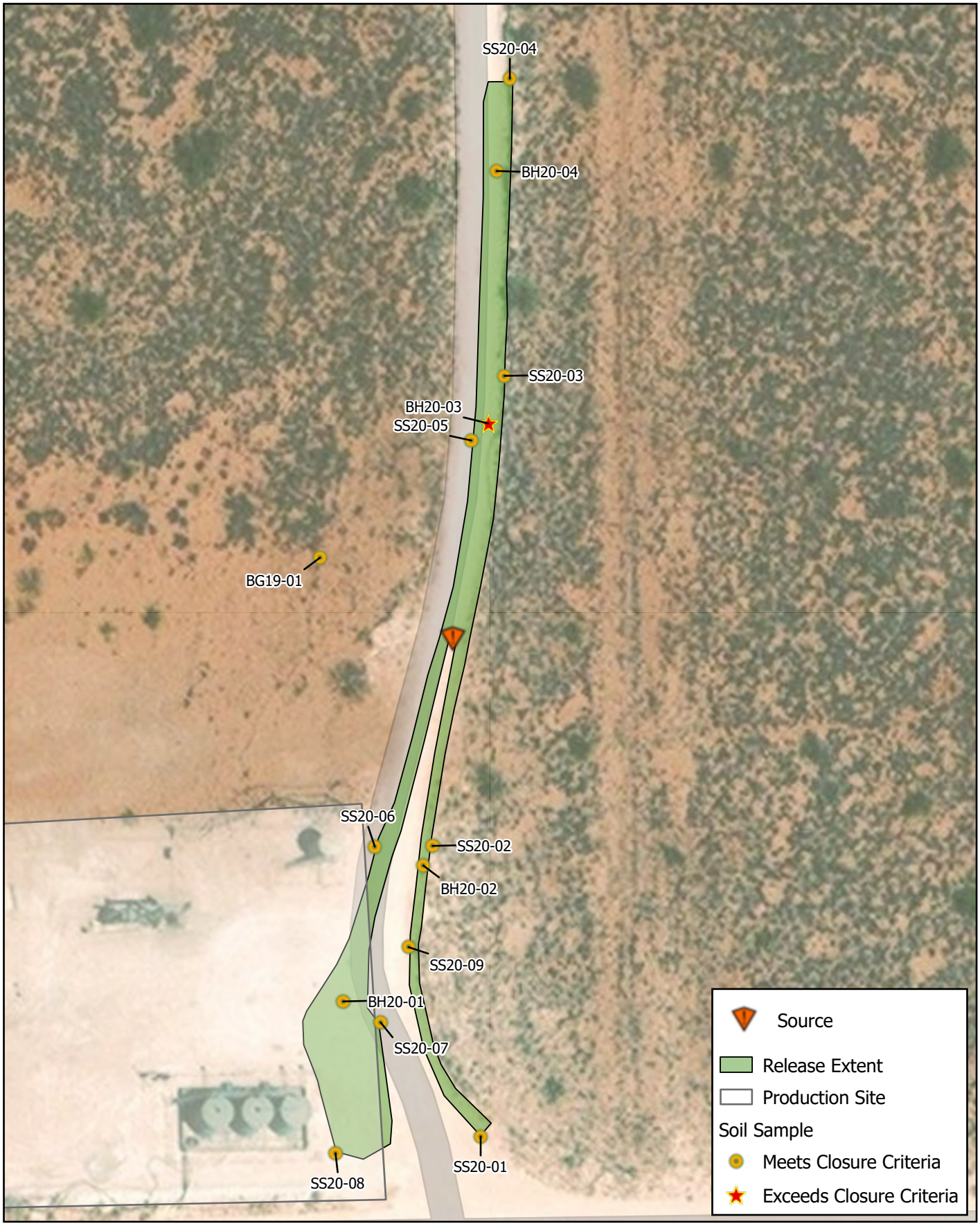
VERTEX

DRAWN:	NM
APPROVED:	SH
DATE:	OCT 18/19

FIGURE: 1

VERSATILITY. EXPERTISE.

Document Path: C:\Users\nmocny\Documents\Natasha Mocny\Projects\Deven Energy\Big Cat 16-9 State Fed Com 1H\Big Cat 16-9 Remediation Confirmatory.mxd



VERTEX

N

NAD 1983 StatePlane New Mexico East FIPS 3001 Feet

0 12.5 25 50 ft.

Map Center:
Lat: 32.299546°N,
Long:103.685531°W

Date: Jun 13/25

Characterization Sample Locations (2020)
nRM2003158355
Tomcat 16 State 2 Battery

FIGURE: 2

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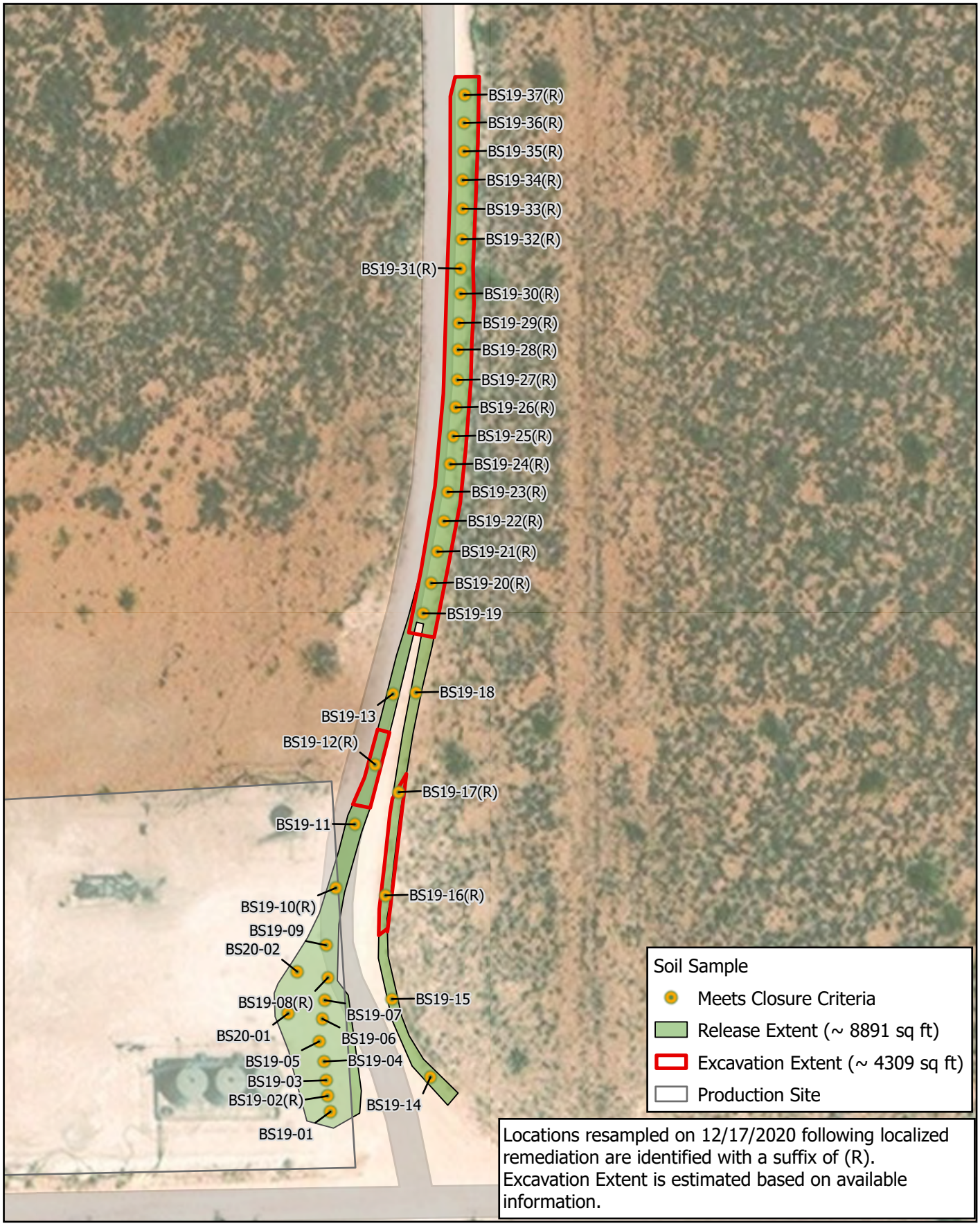
Geospatial data presented in this figure may be derived from external sources and Vertex does not assume any liability for inaccuracies. This figure is intended for reference use only and is not certified for legal, survey, or engineering purposes.

Note: Georeferenced image from Esri, 2025. Features from GPS. Vertex Professional Services Ltd., 2025.

VERSATILITY. EXPERTISE.



VERTEX

N

NAD 1983 StatePlane New Mexico East FIPS 3001 Feet

0 12.5 25 50 ft.

Map Center:
Lat: 32.299521°N,
Long:103.685478°W

Date: Jun 16/25

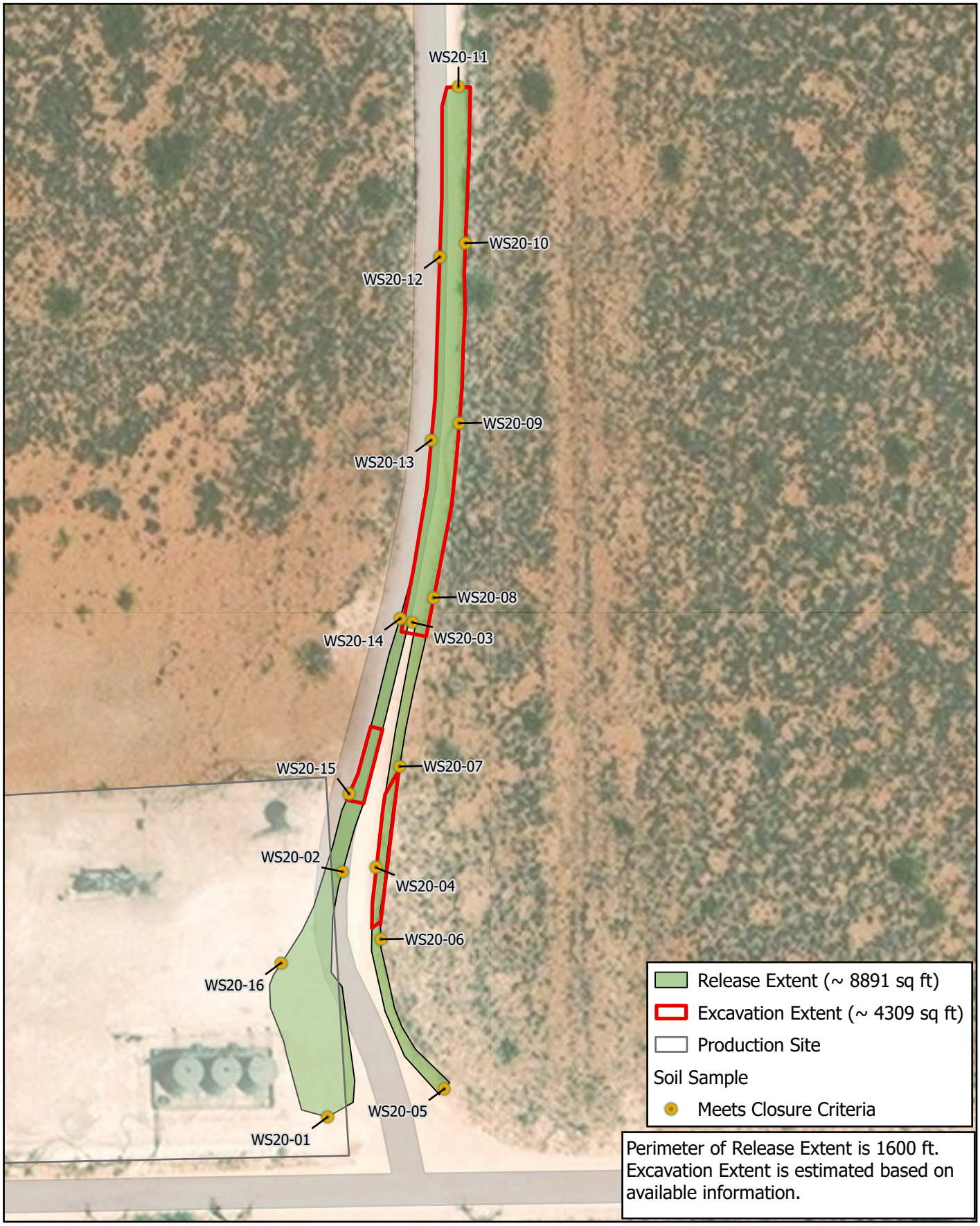
Confirmation Base Sample Locations
nRM2003158355
Tomcat 16 State 2 Battery

FIGURE: 3

devon

Note: Georeferenced image from Esri, 2025. Features from GPS. Vertex Professional Services Ltd., 2025.

VERSATILITY. EXPERTISE.



VERTEX

N

Map Center:
Lat: 32.29952°N,
Long:103.685463°W

NAD 1983 StatePlane New Mexico East FIPS 3001 Feet

0 12.5 25 50 ft.

Date: Jun 16/25

Confirmation Wall Sample Locations
nRM2003158355
Tomcat 16 State 2 Battery

FIGURE: 4

devon

Note: Georeferenced image from Esri, 2025. Features from GPS. Vertex Professional Services Ltd., 2025.

VERSATILITY. EXPERTISE.

TABLES

Client Name: Devon Energy Production Company, LP
Site Name: Tomcat 16 State 2 Battery
NMOCD Tracking #: nRM2003158355
Project #: 25A-03122
Lab Report: 1910977

Table 3. Initial Confirmation Sample Laboratory Results

Sample Description			Petroleum Hydrocarbons							Inorganic
			Volatile		Extractable					
Sample ID	Depth (ft)	Sample Date	Benzene	BTEX (Total)	Gasoline Range Organics (GRO)	Diesel Range Organics (DRO)	Motor Oil Range Organics (MRO)	(GRO + DRO)	Total Petroleum Hydrocarbons (TPH)	Chloride Concentration
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
			Depth to Groundwater Between 51 and 100 feet bgs							
BS19-01	0	October 15, 2019	ND	ND	ND	12	ND	12	12	180
BS19-02	0	October 15, 2019	ND	ND	ND	86	210	86	296	170
BS19-03	0	October 15, 2019	ND	ND	ND	14	66	14	80	230
BS19-04	0	October 15, 2019	ND	ND	ND	13	71	13	84	350
BS19-05	0	October 15, 2019	ND	ND	ND	ND	52	ND	52	310
BS19-06	0	October 15, 2019	ND	ND	ND	ND	ND	ND	ND	120
BS19-07	0	October 15, 2019	ND	ND	ND	ND	ND	ND	ND	130
BS19-08	0	October 15, 2019	ND	ND	ND	ND	ND	ND	ND	1,000
BS19-09	0	October 15, 2019	ND	ND	ND	ND	ND	ND	ND	340
BS19-10	0	October 15, 2019	ND	ND	ND	21	56	21	77	**1,500**
BS19-11	0	October 15, 2019	ND	ND	ND	ND	ND	ND	ND	230
BS19-12	0	October 15, 2019	ND	ND	ND	ND	ND	ND	ND	**870**
BS19-13	0	October 15, 2019	ND	ND	ND	ND	ND	ND	ND	550
BS19-14	0	October 15, 2019	ND	ND	ND	ND	ND	ND	ND	130
BS19-15	0	October 15, 2019	ND	ND	ND	ND	ND	ND	ND	220
BS19-16	0	October 15, 2019	ND	ND	ND	ND	ND	ND	ND	**770**
BS19-17	0	October 15, 2019	ND	ND	ND	ND	ND	ND	ND	**810**
BS19-18	0	October 15, 2019	ND	ND	ND	ND	ND	ND	ND	330
BS19-19	0	October 15, 2019	ND	ND	ND	ND	ND	ND	ND	370
BS19-20	0	October 15, 2019	ND	ND	ND	ND	ND	ND	ND	**1,200**
BS19-21	0	October 15, 2019	ND	ND	ND	ND	ND	ND	ND	**3,000**
BS19-22	0	October 15, 2019	ND	ND	ND	ND	ND	ND	ND	**1,700**
BS19-23	0	October 15, 2019	ND	ND	ND	ND	ND	ND	ND	**1,800**
BS19-24	0	October 15, 2019	ND	ND	ND	ND	ND	ND	ND	**2,600**
BS19-25	0	October 15, 2019	ND	ND	ND	ND	ND	ND	ND	**2,100**
BS19-26	0	October 15, 2019	ND	ND	ND	15	60	15	75	**4,000**
BS19-27	0	October 15, 2019	ND	ND	ND	ND	ND	ND	ND	**3,400**

Client Name: Devon Energy Production Company, LP
Site Name: Tomcat 16 State 2 Battery
NMOCD Tracking #: nRM2003158355
Project #: 25A-03122
Lab Report: 1910977

Table 3. Initial Confirmation Sample Laboratory Results

Sample Description			Petroleum Hydrocarbons							Inorganic
			Volatile		Extractable					
Sample ID	Depth (ft)	Sample Date	Benzene	BTEX (Total)	Gasoline Range Organics (GRO)	Diesel Range Organics (DRO)	Motor Oil Range Organics (MRO)	(GRO + DRO)	Total Petroleum Hydrocarbons (TPH)	Chloride Concentration
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
			Depth to Groundwater Between 51 and 100 feet bgs							
BS19-28	0	October 15, 2019	ND	ND	ND	ND	ND	ND	ND	**2,300**
BS19-29	0	October 15, 2019	ND	ND	ND	12	ND	12	12	**3,200**
BS19-30	0	October 15, 2019	ND	ND	ND	22	54	22	76	**3,600**
BS19-31	0	October 15, 2019	ND	ND	ND	12	ND	12	12	**2,400**
BS19-32	0	October 15, 2019	ND	ND	ND	13	ND	13	13	**2,300**
BS19-33	0	October 15, 2019	ND	ND	ND	11	ND	11	11	**3,600**
BS19-34	0	October 15, 2019	ND	ND	ND	ND	ND	ND	ND	**2,300**
BS19-35	0	October 15, 2019	ND	ND	ND	ND	ND	ND	ND	**1,600**
BS19-36	0	October 15, 2019	ND	ND	ND	ND	ND	ND	ND	**1,400**
BS19-37	0	October 15, 2019	ND	ND	ND	ND	ND	ND	ND	**990**
BG19-01	0	October 15, 2019	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 Remediation Closure Criteria
Bold and green shaded indicates exceedance outside of NMOCD Reclamation Closure Criteria

VERTEX

Client Name: Devon Energy Production Company, LP
Site Name: Tomcat 16 State 2 Battery
NMOCD Tracking #: nRM2003158355
Project #: 25A-03122
Lab Report: 2011156

Table 4. Additional Characterization Sample Field Screen and Laboratory Results

Sample Description			Field Screening		Petroleum Hydrocarbons							Inorganic
					Volatile		Extractable					
Sample ID	Depth (ft)	Sample Date	Extractable Organic Compounds (PetroFlag)	Chloride Concentration	Benzene	BTEX (Total)	Gasoline Range Organics (GRO)	Diesel Range Organics (DRO)	Motor Oil Range Organics (MRO)	(GRO + DRO)	Total Petroleum Hydrocarbons (TPH)	Chloride Concentration
			(ppm)	(ppm)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
			Depth to Groundwater Between 51 and 100 feet bgs									
SS20-01	0-0.5	November 2, 2020	39	93	ND	ND	ND	ND	ND	ND	ND	150
SS20-02	0-0.5	November 2, 2020	-	ND	-	-	-	-	-	-	-	-
SS20-03	0-0.5	November 2, 2020	3	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS20-04	0-0.5	November 2, 2020	69	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS20-05	0-0.5	November 2, 2020	-	ND	-	-	-	-	-	-	-	-
SS20-06	0-0.5	November 2, 2020	23	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS20-07	0-0.5	November 2, 2020	-	ND	-	-	-	-	-	-	-	-
SS20-08	0-0.5	November 2, 2020	37	2	ND	ND	ND	ND	ND	ND	ND	94
SS20-09	0-0.5	November 2, 2020	-	ND	-	-	-	-	-	-	-	-
BH20-01	0	November 2, 2020	-	ND	-	-	-	-	-	-	-	-
	0.5	November 2, 2020	-	ND	-	-	-	-	-	-	-	-
BH20-02	0	November 2, 2020	24	ND	ND	ND	ND	ND	ND	ND	ND	ND
	0.5	November 2, 2020	-	ND	-	-	-	-	-	-	-	-
BH20-03	0	November 2, 2020	55	1,159	ND	ND	ND	ND	ND	ND	ND	**1,500**
	0.5	November 2, 2020	31	256	ND	ND	ND	ND	ND	ND	ND	200
BH20-04	0	November 2, 2020	132	ND	ND	ND	ND	ND	ND	ND	ND	ND
	0.5	November 2, 2020	74	ND	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 Remediation Closure Criteria
Bold and green shaded indicates exceedance outside of NMOCD Reclamation Closure Criteria

Client Name: Devon Energy Production Company, LP
Site Name: Tomcat 16 State 2 Battery
NMOCD Tracking #: nRM2003158355
Project #: 25A-03122
Lab Reports: 2012A07 and 2012A10

Table 5. Confirmation Sample Re-Collection Laboratory Results

Sample Description			Petroleum Hydrocarbons							Inorganic
			Volatile		Extractable					
Sample ID	Depth (ft)	Sample Date	Benzene	BTEX (Total)	Gasoline Range Organics (GRO)	Diesel Range Organics (DRO)	Motor Oil Range Organics (MRO)	(GRO + DRO)	Total Petroleum Hydrocarbons (TPH)	Chloride Concentration
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
			Depth to Groundwater Between 51 and 100 feet bgs							
BS19-02	0-0.5	December 17, 2020	ND	ND	ND	ND	ND	ND	ND	ND
BS19-08	0-0.5	December 17, 2020	ND	ND	ND	ND	ND	ND	ND	ND
BS19-10	0-0.5	December 17, 2020	ND	ND	ND	ND	ND	ND	ND	ND
BS19-12	0-0.5	December 17, 2020	ND	ND	ND	ND	ND	ND	ND	ND
BS19-16	0-0.5	December 17, 2020	ND	ND	ND	ND	ND	ND	ND	ND
BS19-17	0-0.5	December 17, 2020	ND	ND	ND	ND	ND	ND	ND	ND
BS19-20	0-0.5	December 17, 2020	ND	ND	ND	ND	ND	ND	ND	ND
BS19-21	0-0.5	December 17, 2020	ND	ND	ND	ND	ND	ND	ND	ND
BS19-22	0-0.5	December 17, 2020	ND	ND	ND	ND	ND	ND	ND	ND
BS19-23	0-0.5	December 17, 2020	ND	ND	ND	ND	ND	ND	ND	ND
BS19-24	0-0.5	December 17, 2020	ND	ND	ND	ND	ND	ND	ND	ND
BS19-25	0-0.5	December 17, 2020	ND	ND	ND	ND	ND	ND	ND	ND
BS19-26	0-0.5	December 17, 2020	ND	ND	ND	ND	ND	ND	ND	ND
BS19-27	0-0.5	December 17, 2020	ND	ND	ND	ND	ND	ND	ND	ND
BS19-28	0-0.5	December 17, 2020	ND	ND	ND	ND	ND	ND	ND	ND
BS19-29	0-0.5	December 17, 2020	ND	ND	ND	ND	ND	ND	ND	ND
BS19-30	0.5	December 17, 2020	ND	ND	ND	ND	ND	ND	ND	ND
BS19-31	0-0.5	December 17, 2020	ND	ND	ND	ND	ND	ND	ND	ND
BS19-32	0-0.5	December 17, 2020	ND	ND	ND	ND	ND	ND	ND	ND
BS19-33	0-0.5	December 17, 2020	ND	ND	ND	ND	ND	ND	ND	ND
BS19-34	0-0.5	December 17, 2020	ND	ND	ND	ND	ND	ND	ND	ND
BS19-35	0-0.5	December 17, 2020	ND	ND	ND	ND	ND	ND	ND	ND
BS19-36	0-0.5	December 17, 2020	ND	ND	ND	ND	ND	ND	ND	ND
BS19-37	0-0.5	December 17, 2020	ND	ND	ND	ND	ND	ND	ND	ND
BS20-01	0-0.5	December 17, 2020	ND	ND	ND	ND	ND	ND	ND	ND
BS20-02	0-0.5	December 17, 2020	ND	ND	ND	ND	ND	ND	ND	ND

Client Name: Devon Energy Production Company, LP
Site Name: Tomcat 16 State 2 Battery
NMOCD Tracking #: nRM2003158355
Project #: 25A-03122
Lab Reports: 2012A07 and 2012A10

Table 5. Confirmation Sample Re-Collection Laboratory Results

Sample Description			Petroleum Hydrocarbons							Inorganic
			Volatile		Extractable					
Sample ID	Depth (ft)	Sample Date	Benzene	BTEX (Total)	Gasoline Range Organics (GRO)	Diesel Range Organics (DRO)	Motor Oil Range Organics (MRO)	(GRO + DRO)	Total Petroleum Hydrocarbons (TPH)	Chloride Concentration
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
			Depth to Groundwater Between 51 and 100 feet bgs							
WS20-01	0-0.5	December 17, 2020	ND	ND	ND	ND	ND	ND	ND	ND
WS20-02	0-0.5	December 17, 2020	ND	ND	ND	ND	ND	ND	ND	ND
WS20-03	0-0.5	December 17, 2020	ND	ND	ND	ND	ND	ND	ND	ND
WS20-04	0-0.5	December 17, 2020	ND	ND	ND	ND	ND	ND	ND	ND
WS20-05	0-0.5	December 17, 2020	ND	ND	ND	ND	ND	ND	ND	ND
WS20-06	0-0.5	December 17, 2020	ND	ND	ND	ND	ND	ND	ND	ND
WS20-07	0-0.5	December 17, 2020	ND	ND	ND	ND	ND	ND	ND	ND
WS20-08	0-0.5	December 17, 2020	ND	ND	ND	ND	ND	ND	ND	ND
WS20-09	0-0.5	December 17, 2020	ND	ND	ND	ND	ND	ND	ND	ND
WS20-10	0-0.5	December 17, 2020	ND	ND	ND	ND	ND	ND	ND	ND
WS20-11	0-0.5	December 17, 2020	ND	ND	ND	ND	ND	ND	ND	ND
WS20-12	0-0.5	December 17, 2020	ND	ND	ND	ND	ND	ND	ND	ND
WS20-13	0-0.5	December 17, 2020	ND	ND	ND	ND	ND	ND	ND	ND
WS20-14	0-0.5	December 17, 2020	ND	ND	ND	ND	ND	ND	ND	ND
WS20-15	0-0.5	December 17, 2020	ND	ND	ND	ND	ND	ND	ND	ND
WS20-16	0-0.5	December 17, 2020	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 Remediation Closure Criteria
Bold and green shaded indicates exceedance outside of NMOCD Reclamation Closure Criteria
Bold and blue shaded indicates re-collected sample results inside NMOCD Reclamation Closure Criteria

APPENDIX A - NMOCD C-141 Report

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

State of New Mexico
Energy Minerals and Natural Resources Department

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

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

Incident ID	NRM2003158355
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

18FNP-191206-C-1410

Responsible Party Devon Energy Production Company	OGRID 6137
Contact Name Amanda T. Davis	Contact Telephone 575-748-0176
Contact email amanda.davis@dvn.com	Incident # *(assigned by OCD)*
Contact mailing address 6488 Seven Rivers HWY	

Location of Release Source

Latitude 32.299052 Longitude -103.686197

(NAD 83 in decimal degrees to 5 decimal places)

Site Name Tomcat 16 State 2 Battery	Site Type Oil
Date Release Discovered 10/1/2019	API# *(if applicable)*

Unit Letter	Section	Township	Range	County
M	16	23S	32E	Lea

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)

☐ Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
☒ Produced Water	Volume Released (bbls) 66.82	Volume Recovered (bbls) 20
	Is the concentration of total dissolved solids (TDS) in the produced water >10,000 mg/l?	☐ Yes ☐ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release Layflat was punctured causing fluid release.

State of New Mexico
Oil Conservation Division

Incident ID	NRM2003158355
District RP	
Facility ID	
Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC? ☐ Yes ■ No	If YES, for what reason(s) does the responsible party consider this a major release? This is considered a major release because it is over 25 BBLS.

If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?
Immediate notice was not given.

Initial Response

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

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

If all the actions described above have not been undertaken, explain why:
Spill was not in containment.

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: Kendra DeHoyos Title: EHS Associate

Signature: Kendra DeHoyos Date: 11/12/2019

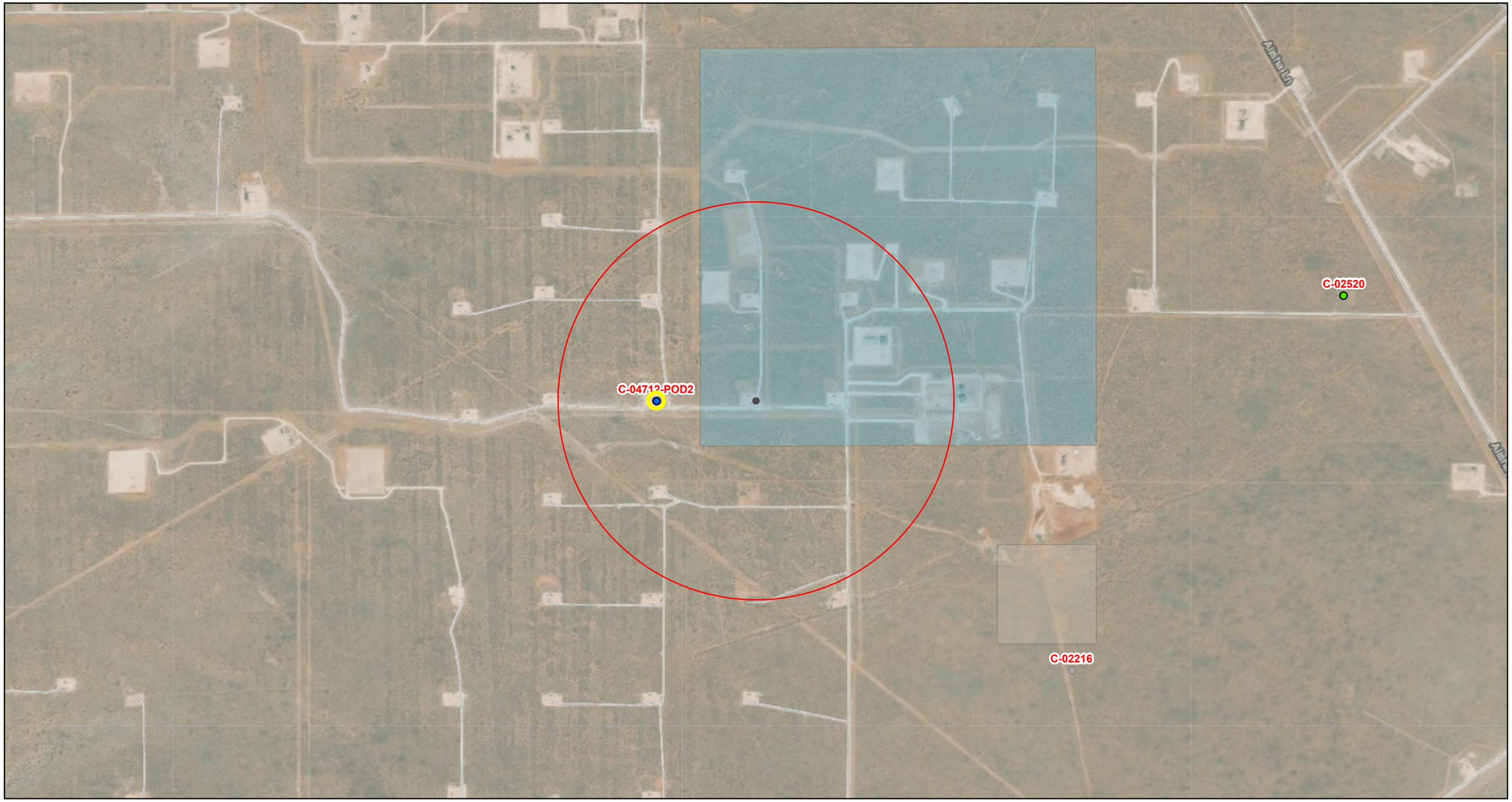
email: kendra.dehoyos@dvn.com Telephone: 575-748-3371

OCD Only

Received by: Ramona Marcus Date: 01/31/2020

APPENDIX B – Closure Criteria Research Documentation

OSE POD 0.5 mile



8/11/2023, 10:56:38 AM

GIS WATERS PODs
- Active
- Pending

OSE District Boundary

Water Right Regulations
- Closure Area

New Mexico State Trust Lands
- Subsurface Estate
- Both Estates
- SiteBoundaries

1:18,056

0 0.17 0.35 0.7 mi

0 0.3 0.6 1.2 km

Esri, HERE, iPC, U.S. Department of Energy Office of Legacy Management, Esri, HERE, Garmin, iPC, Maxar

Web Generated Map
Map is generated by web users.

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

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

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

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

POD Number	Code	POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Twn	Rng	X	Y	Distance	Depth Well	Depth Water	Water Column
C 04712 POD2		CUB	LE	4	4	4	17	23S	32E	623332	3574331	405	55		
C 02216		CUB	LE	2	2	4	21	23S	32E	625035	3573261*	1685	585	400	185
C 03851 POD1		CUB	LE	3	3	4	20	23S	32E	622880	3572660	1882	1392	713	679

Average Depth to Water: **556 feet**
Minimum Depth: **400 feet**
Maximum Depth: **713 feet**

Record Count: 3

UTMNAD83 Radius Search (in meters):

Easting (X): 623737 **Northing (Y):** 3574336 **Radius:** 2000

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

8/11/23 11:05 AM

WATER COLUMN/ AVERAGE DEPTH TO WATER

New Mexico Office of the State Engineer
Point of Diversion Summary

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

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
NA	C 04712 POD2	4	4	4	17	23S	32E	623332	3574331

Driller License:	1833	**Driller Company:**	VISION RESOURCES, INC		
Driller Name:	JASON MALEY				
Drill Start Date:	03/09/2023	**Drill Finish Date:**	03/09/2023	**Plug Date:**	03/14/2023
Log File Date:	04/04/2023	**PCW Rcv Date:**		**Source:**	
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	
Casing Size:		**Depth Well:**	55 feet	**Depth Water:**	

New Mexico Office of the State Engineer
Water Right Summary

get image list

WR File Number: C 04712 **Subbasin:** CUB **Cross Reference:** -

Primary Purpose: MON MONITORING WELL

Primary Status: PMT PERMIT

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

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

Owner: VERTEX RESOURCES

User: HARVARD PETROLEUM COMPANY LLC

Contact: JUSTIN WARREN

Documents on File

	Trn #	Doc	File/Act	Status 1	Status 2	Transaction Desc.	From/ To	Acres	Diversion	Consumptive
get images	743189	EXPL	2023-02-21	PMT	APR	C 04712 POD1-6	T	0	0	

Current Points of Diversion

(NAD83 UTM in meters)

POD Number	Well Tag	Source	Q 64	Q16	Q4	Sec	Tws	Rng	X	Y	Other Location Desc
C 04712 POD1	NA		1	4	1	31	23S	32E	620917	3570289	SDE
C 04712 POD2	NA		4	4	4	17	23S	32E	623332	3574331	TOMCAT17
C 04712 POD3	NA		4	1	2	24	23S	31E	619651	3573877	TODD24
C 04712 POD4	NA		1	4	3	14	23S	31E	617535	3574316	TODD14
C 04712 POD5	NA		4	4	3	09	23S	31E	614393	3575754	NPG9
C 04712 POD6	NA		3	3	4	08	23S	31E	613147	3575740	NPG8

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).
~~C-4712~~ POD2		C-4712

WELL OWNER NAME(S)	PHONE (OPTIONAL)
Harvard Petroleum Company	

WELL OWNER MAILING ADDRESS	CITY	STATE	ZIP
P.O. Box 936	Roswell	NM	88202

WELL LOCATION (FROM GPS)		DEGREES	MINUTES	SECONDS	
	LATITUDE	32	17	56.4	N
	LONGITUDE	-103	41	24.2	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND
* 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.	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
1833	Jason Maley	Vision Resources

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
3-9-2023	3-9-2023	55	55	Dry

COMPLETED WELL IS: ☐ ARTESIAN *add Centralizer info below ☑ DRY HOLE ☐ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): Dry

DATE STATIC MEASURED: Dry

DRILLING FLUID: ☑ AIR ☐ MUD ADDITIVES – SPECIFY:

DRILLING METHOD: ☑ ROTARY ☐ HAMMER ☐ CABLE TOOL ☐ OTHER – SPECIFY:

CHECK HERE IF PITLESS ADAPTER IS INSTALLED ☐

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	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)
			None				

OSE DII APR 4 2023 PM 1:27

3. ANNULAR MATERIAL

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

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 09/22/2022)

FILE NO. C-4712-POD2	POD NO. 2	TRN NO. 743189	
LOCATION Mon 23.32.17.444		WELL TAG ID NO. —	PAGE 1 OF 2

4. HYDROGEOLOGIC LOG OF WELL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER-BEARING ZONES (gpm)
0	35	35	White Caliche	Y (N)	
35	55	55	Red Fine Sand Dry	Y (N)	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:

☐ PUMP ☐ AIR LIFT ☐ BAILER ☐ OTHER – SPECIFY:

TOTAL ESTIMATED WELL YIELD (gpm): Dry

5. TEST; RIG SUPERVISION

WELL TEST — TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

MISCELLANEOUS INFORMATION:

hole would not stay Open Past 35'
Plugged No water

PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE:

OSE DIT APR 4 2023 PM1:23

6. SIGNATURE

THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 30 DAYS AFTER COMPLETION OF WELL DRILLING:

Jason Maley — 3/24/23

SIGNATURE OF DRILLER / PRINT SIGNEE NAME — DATE

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 09/22/2022)

FILE NO. C-4712-POD 2	POD NO. 2	TRN NO. 743189	
LOCATION Mon 23.32.17.444		WELL TAG ID NO.	PAGE 2 OF 2

Mike A. Hamman, P.E.
State Engineer

Roswell Office
1900 WEST SECOND STREET
ROSWELL, NM 88201

STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER

Trn Nbr: 743189
File Nbr: C 04712
Well File Nbr: C 04712 POD2

Apr. 04, 2023

VERTEX RESOURCES
P.O. BOX 936
ROSWELL, NM 88202

Greetings:

The above numbered permit was issued in your name on 02/21/2023.

The Well Record was received in this office on 04/04/2023, stating that it had been completed on 03/09/2023, and was a dry well. The well is to be plugged according to 19.27.4.30 NMAC.

Please note that another well can be drilled under this permit if the well is completed and the well log filed on or before 02/21/2024.

If you have any questions, please feel free to contact us.

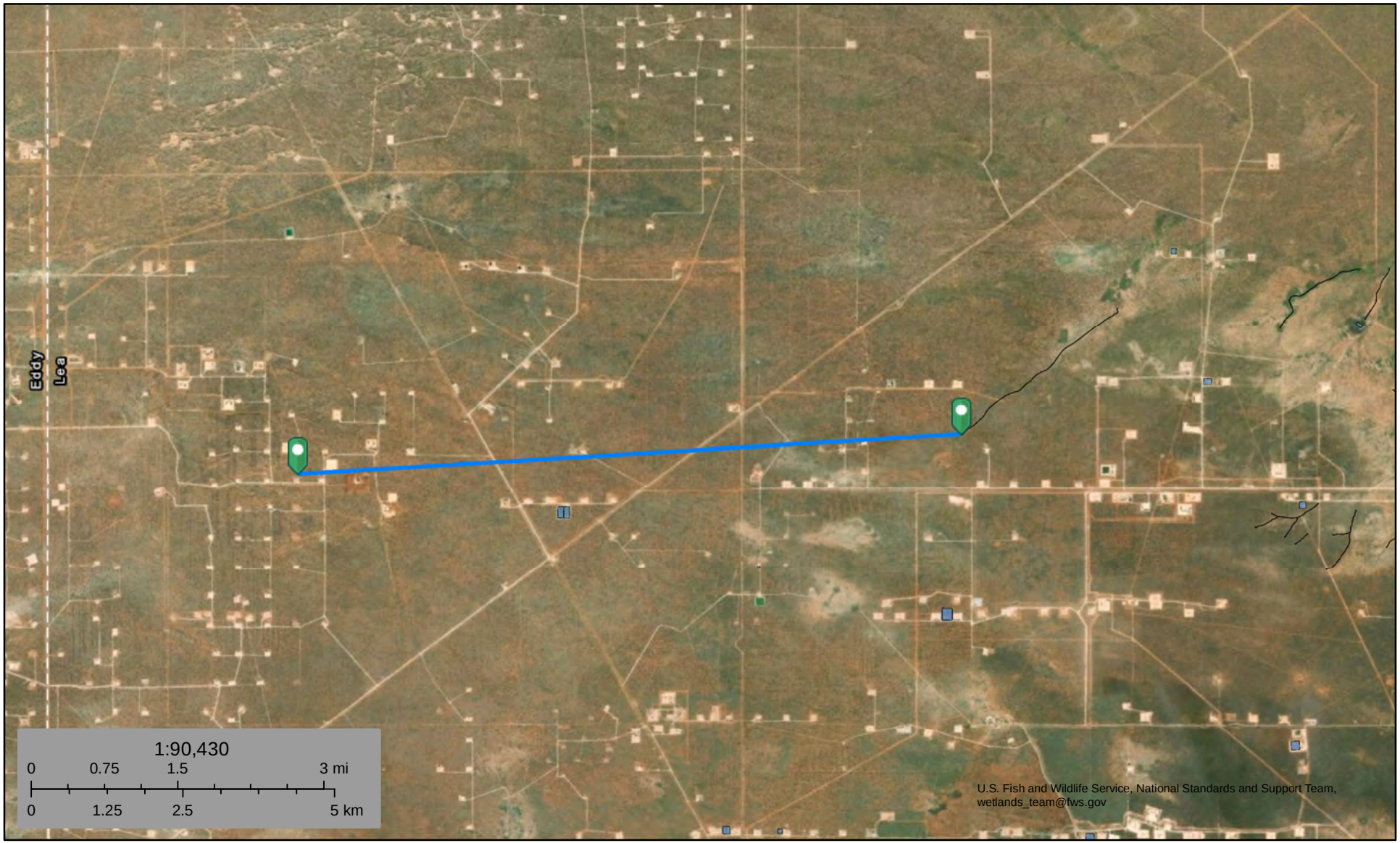
Sincerely,

Maret Thompson
(575)622-6521

drywell

U.S. Fish and Wildlife Service
National Wetlands Inventory

Tomcat 16 State 2: Watercourse 30,446 ft



March 8, 2020

Wetlands

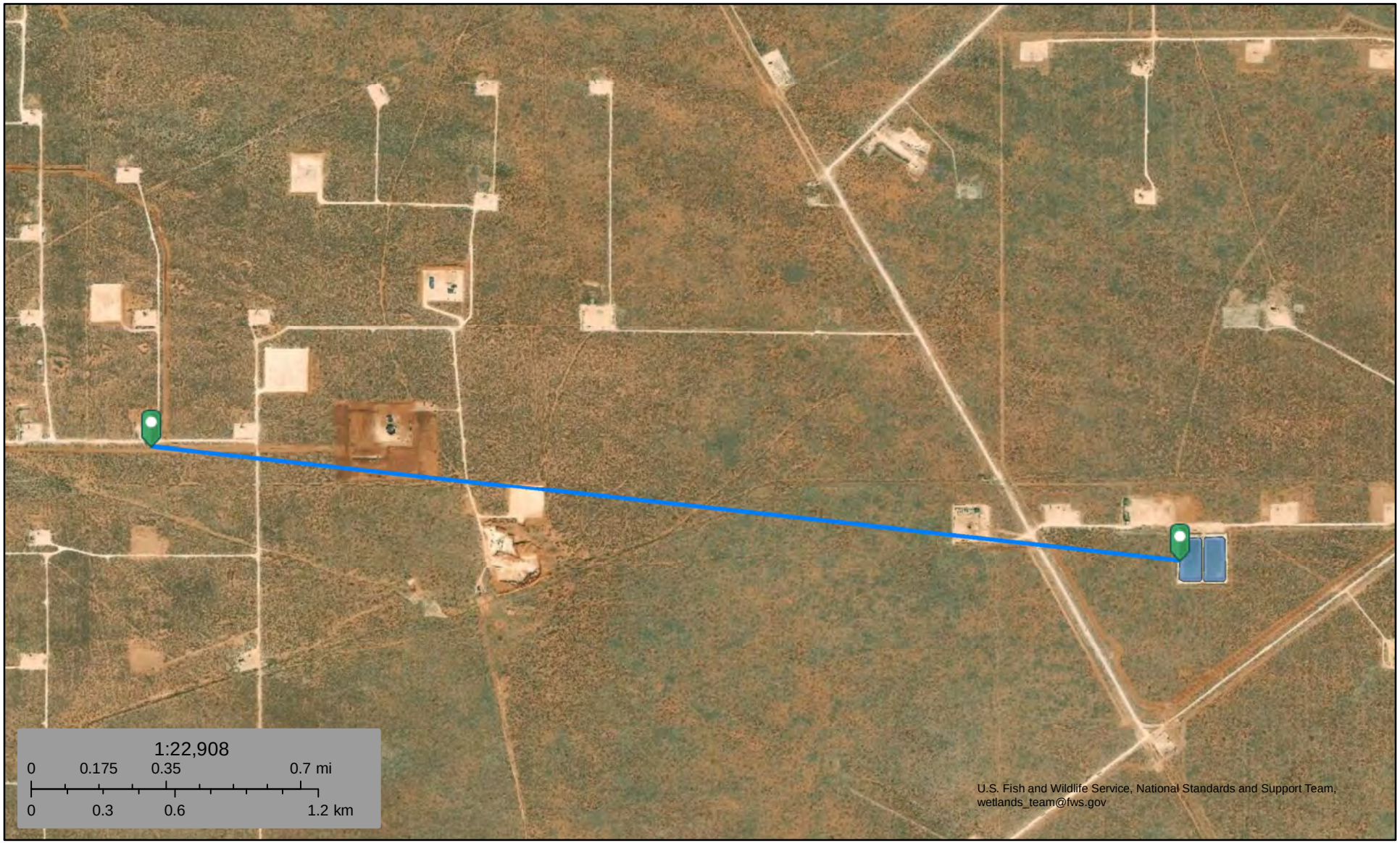
- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

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

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

U.S. Fish and Wildlife Service
National Wetlands Inventory

Tomcat 16 State 2: Pond 12,008 ft



March 8, 2020

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
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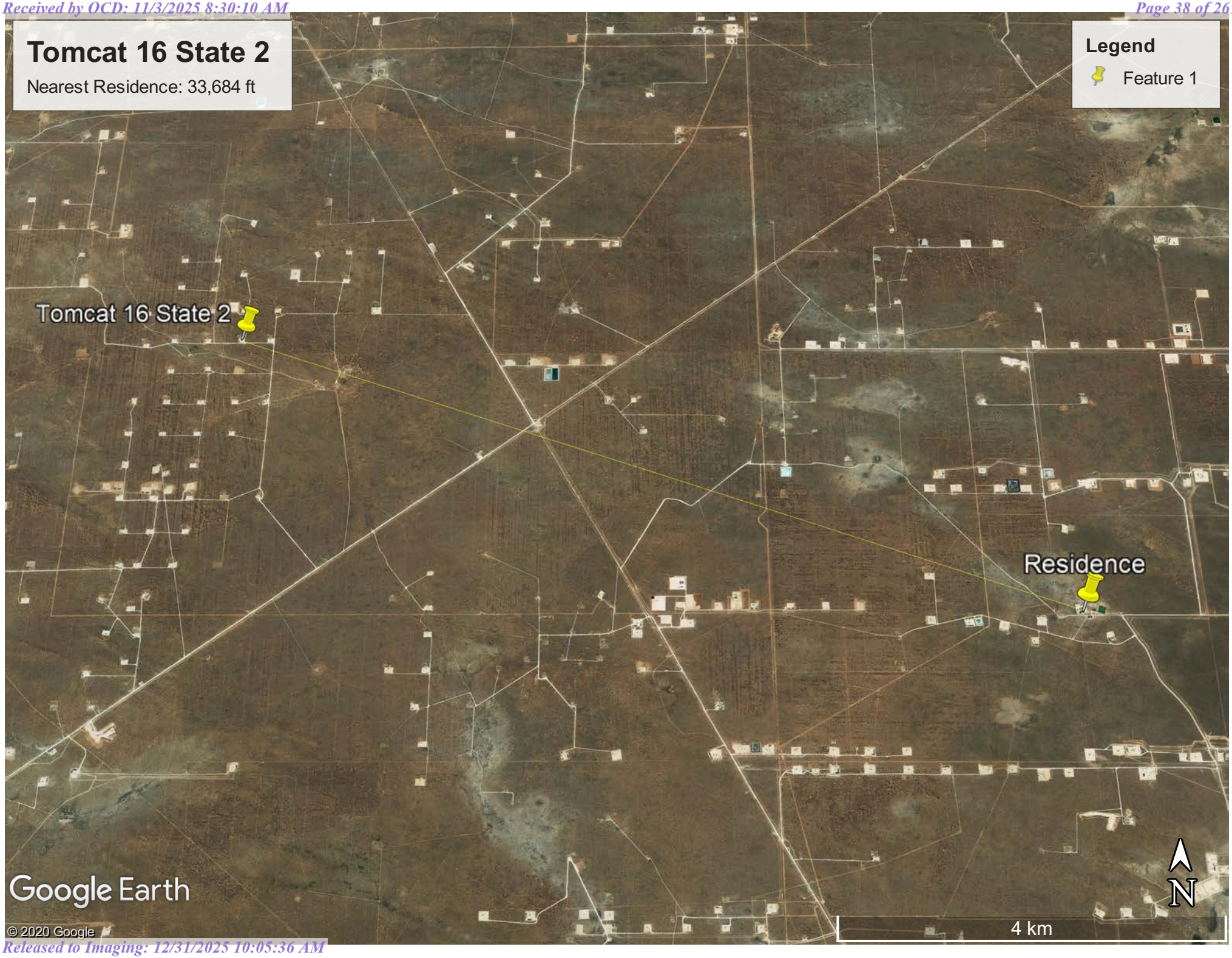
National Wetlands Inventory (NWI)
This page was produced by the NWI mapper


Tomcat 16 State 2
Nearest Residence: 33,684 ft
Legend
Feature 1
Tomcat 16 State 2
Residence
Google Earth
© 2020 Google
N
4 km

Tomcat 16 State 2

Nearest Active Well: C 02216, 1.07 miles
C 03851 POD1, 1.15 miles DTGW: 713 feet

New Mexico Office of the State Engineer

Active & Inactive Points of Diversion

(with Ownership Information)

(acre ft per annum)

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

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

(quarters are smallest to largest)

(NAD83 UTM in meters)

WR File Nbr	Sub basin	Use	Diversion	Owner	County	POD Number	Well Tag	Code	Grant	Source	q 64	q 16	q 4	Sec	Twn	Rng	X	Y	Distance
C 04712	CUB	MON	0	VERTEX RESOURCES	LE	C 04712 POD2	NA				4	4	4	17	23S	32E	623331	3574331	405
C 02216	CUB	PLS	11.3	BRININSTOOL XL RANCH LLC	LE	C 02216					2	2	4	21	23S	32E	625035	3573261*	1685
C 04703	CUB	MON	0	DEVON ENERGY PRODUCTION CO.	LE	C 04703 POD1	NA				1	4	4	08	26S	32E	623195	3576072	1818
C 03851	CUB	MON	0	US DEPARTMENT OF ENERGY	LE	C 03851 POD1				Artesian	3	3	4	20	23S	32E	622879	3572660	1882

Record Count: 4

UTMNAD83 Radius Search (in meters):

Easting (X): 623737 **Northing (Y):** 3574336 **Radius:** 2000

Sorted by: Distance

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

New Mexico Office of the State Engineer

Point of Diversion Summary

Well Tag	POD Number	(quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest) Q64	Q16	Q4	Sec	Tws	Rng	(NAD83 UTM in meters) X	Y
	C 02216	2	2	4	21	23S	32E	625035	3573261*

Driller License:		**Driller Company:**			
Driller Name:	UNKNOWN				
Drill Start Date:		**Drill Finish Date:**	12/31/1912	**Plug Date:**	
Log File Date:		**PCW Rcv Date:**		**Source:**	
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	7 GPM
Casing Size:	6.50	**Depth Well:**	585 feet	**Depth Water:**	400 feet

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

New Mexico Office of the State Engineer
Water Right Summary

get image list

WR File Number: C 02216 **Subbasin:** CUB **Cross Reference:** -

Primary Purpose: PLS NON 72-12-1 LIVESTOCK WATERING

Primary Status: DCL DECLARATION

Total Acres: 0 **Subfile:** - **Header:** -

Total Diversion: 11.3 **Cause/Case:** -

Owner: BRININSTOOL XL RANCH LLC

Contact: CHRISTINE BRININSTOOL

Documents on File

	Trn #	Doc	File/Act	Status 1	Status 2	Transaction Desc.	From/ To	Acres	Diversion	Consumptive
get images	439858	COWNF	2009-07-29	CHG	PRC	C-02216	T	0	0	
get images	234004	COWNF	2002-06-07	CHG	PRC	C-02216	T	0	0	
get images	198936	DCL	1991-05-21	DCL	PRC	C-02216	T	0	11.3	

Current Points of Diversion

(NAD83 UTM in meters)

POD Number	Well Tag	Source	Q 64	Q16	Q4	Sec	Tws	Rng	X	Y	Other Location Desc
C 02216			2	2	4	21	23S	32E	625035	3573261*	

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

Priority Summary

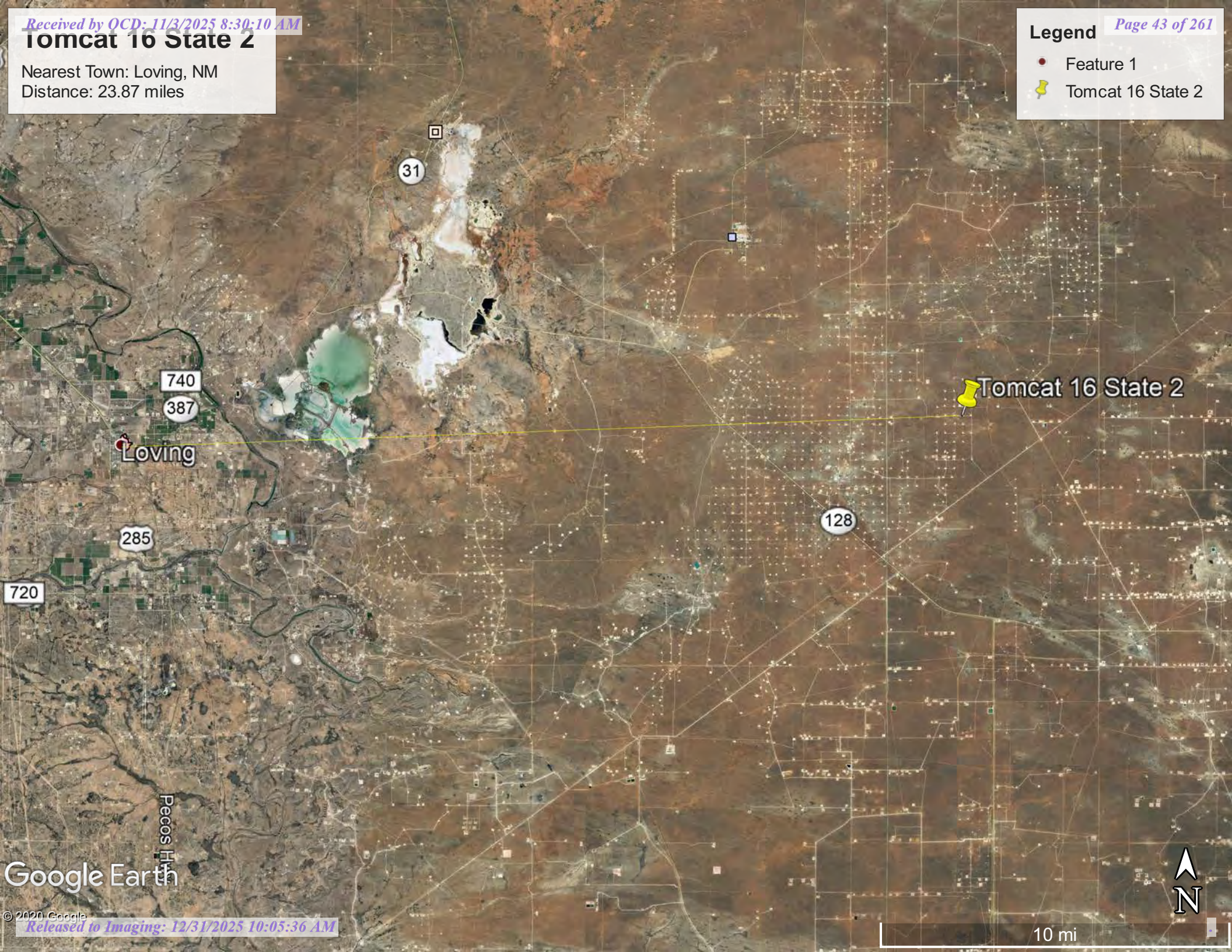
Priority	Status	Acres	Diversion	Pod Number
12/31/1912	DCL	0	11.3	C 02216

Place of Use

Q 256	Q 64	Q16	Q4	Sec	Tws	Rng	Acres	Diversion	CU	Use	Priority	Status	Other Location Desc
							0	11.3		PLS	12/31/1912	DCL	NO PLACE OF USE GIVEN

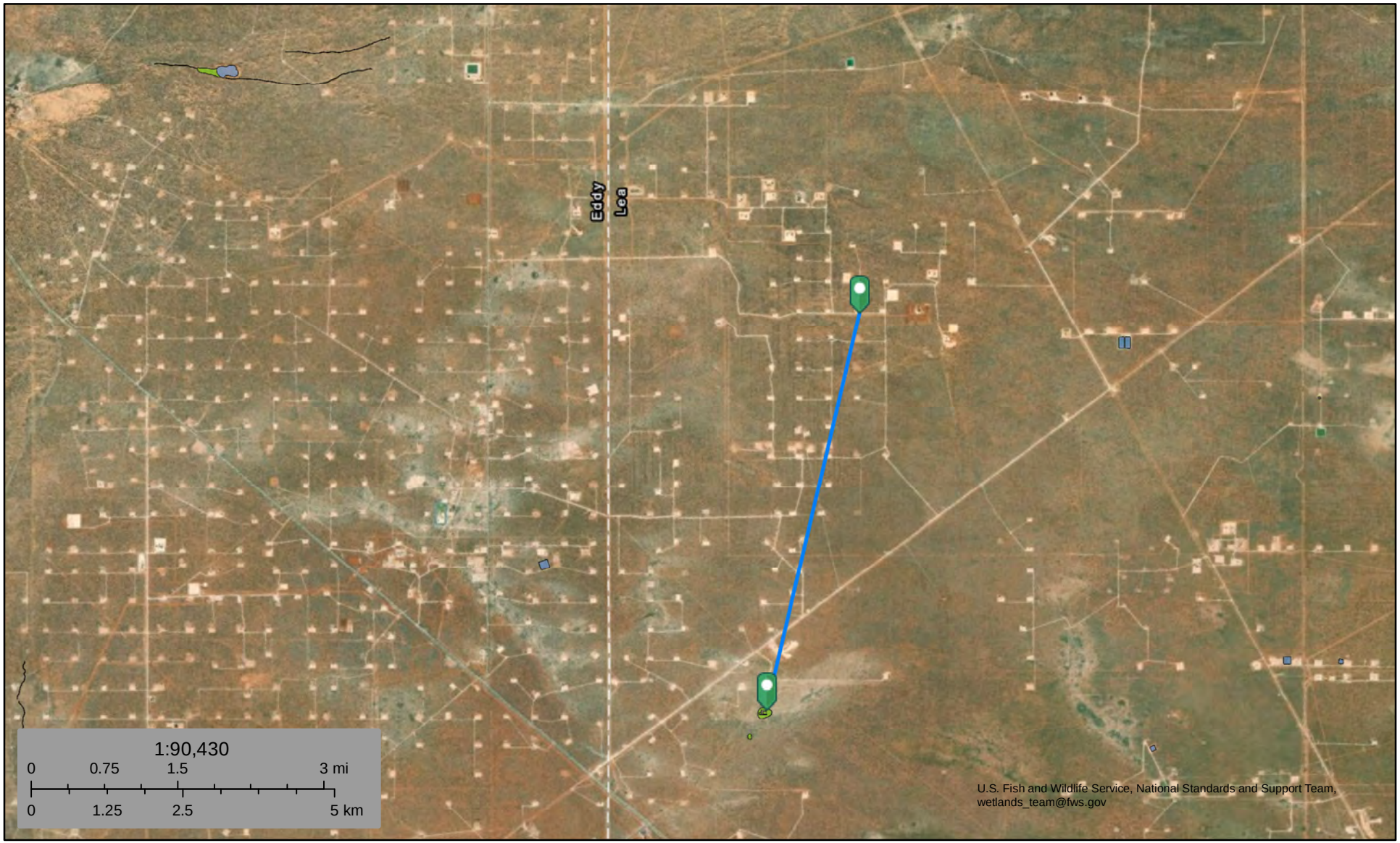
Tomcat 16 State 2

Nearest Town: Loving, NM
Distance: 23.87 miles



U.S. Fish and Wildlife Service
National Wetlands Inventory

Tomcat 16 State 2: Wetland 18,603 ft



March 8, 2020

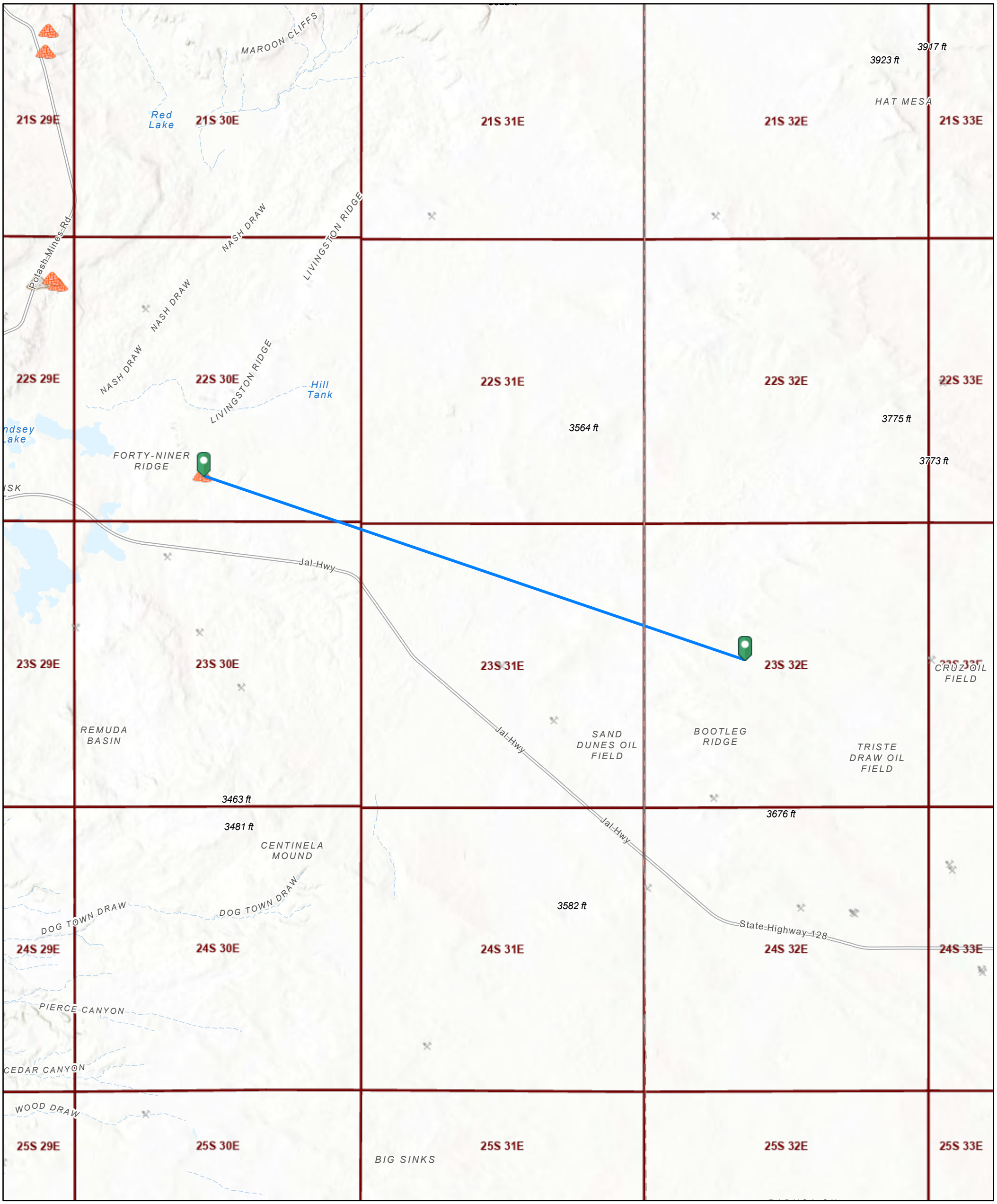
Wetlands

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

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

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

Potash 64,028 feet



5/24/2025, 6:50:36 PM

Registered Mines

- Aggregate, Stone etc.
- Aggregate, Stone etc.
- Aggregate, Stone etc.
- Potash
- Salt
- PLSS Townships

1:144,448

0 1.25 2.5 5 mi

0 2.25 4.5 9 km

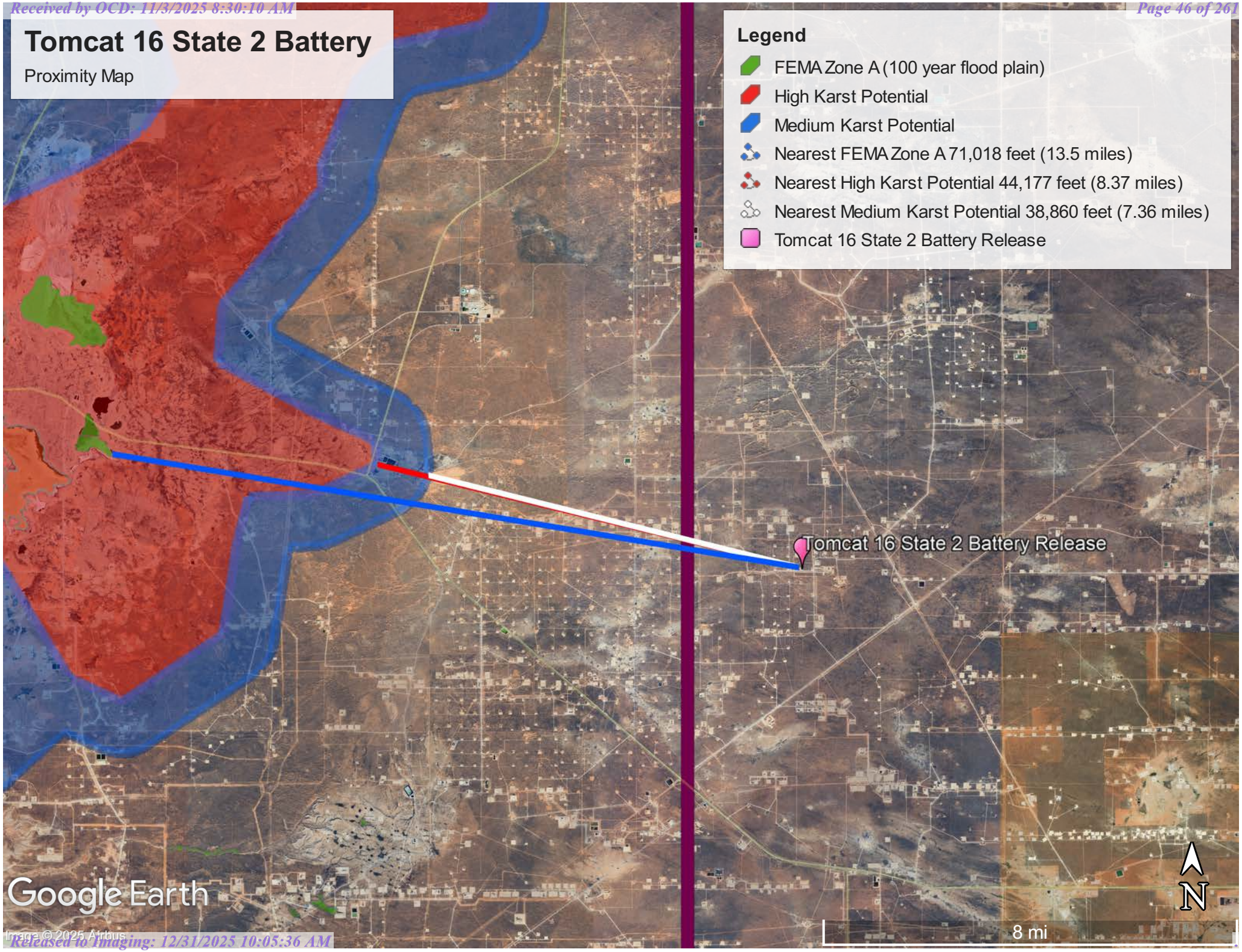
Esri, NASA, NGA, USGS, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, BLM

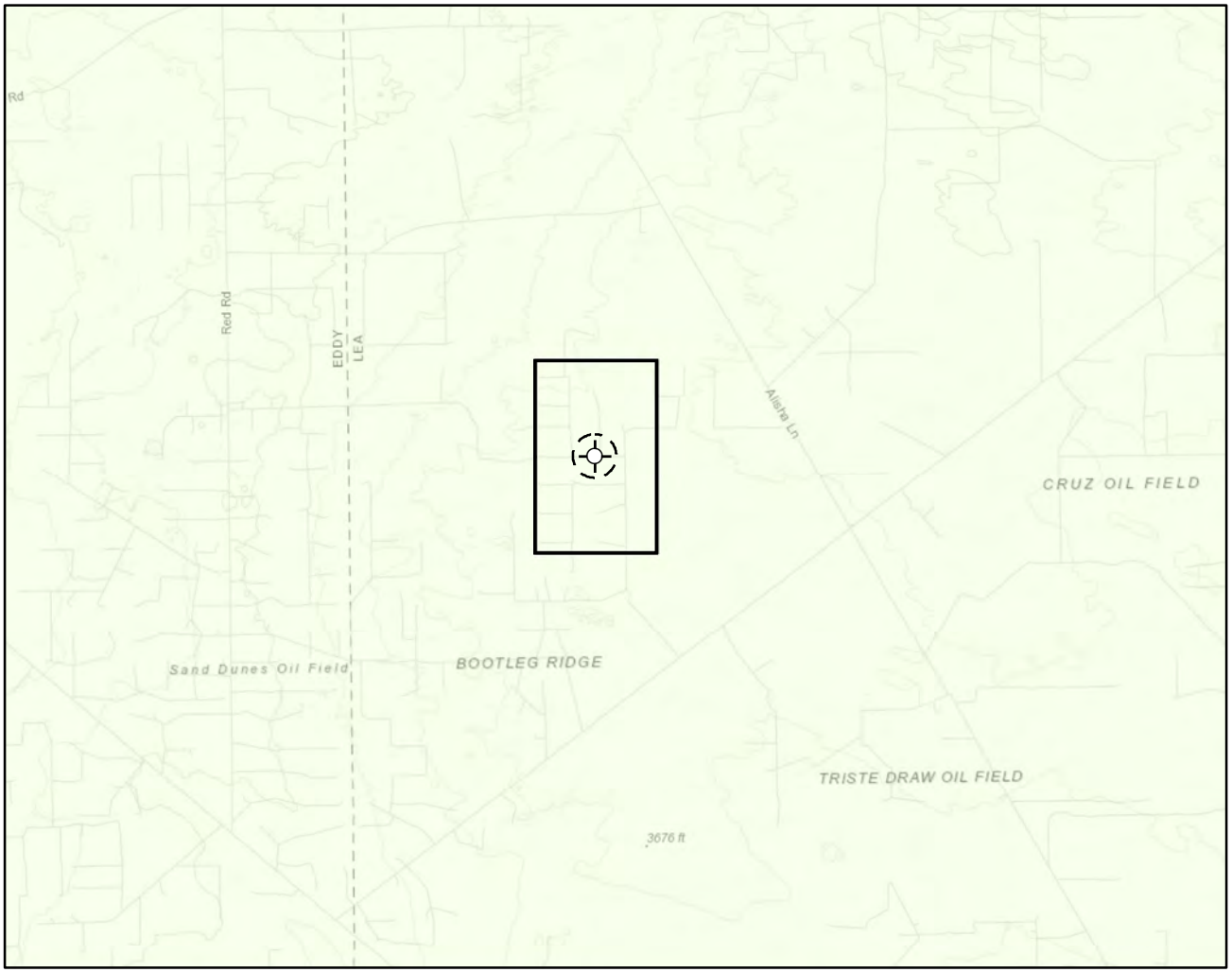
EMNRD MMD GIS Coordinator

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

Tomcat 16 State 2 Battery

Proximity Map





Karst Potential

- Critical
- High
- Medium
- Low

Site

Site Buffer

Overview Map

0 0.25 0.5 1 mi

Detail Map

0 600 1,200 ft.

VERTEX

Map Center:
Lat/Long: 32.295007, -103.683217

NAD 1983 UTM Zone 13N
Date: Jun 09/20

N

Karst Potential Map
Tomcat 16 State 2

FIGURE:
X

devon

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

Note: Inset Map - ESRI 2018; Overview Map - ESRI World Topographic

VERSATILITY. EXPERTISE.

Document Path: G:\1-Projects_US PROJECTS\Devon Energy Corporation\20E-00141\041 - Tomcat 16 State 2\Figure Tomcat 16 State 2 Karst.mxd

National Flood Hazard Layer FIRMette

FEMA

32°18'11.97"N

103°41'28.33"W

103°40'50.87"W

32°17'41.55"N

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

1:6,000

Legend

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

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

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

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

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

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

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

N

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

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

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/8/2020 at 1:38:33 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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

Soil Map—Lea County, New Mexico
(Tomcat 16 State 2)

Soil Map—Lea County, New Mexico
(Tomcat 16 State 2)

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: Lea County, New Mexico
Survey Area Data: Version 16, Sep 15, 2019

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

Date(s) aerial images were photographed: Dec 31, 2009—Sep 17, 2017

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
PU	Pyote and maljamar fine sands	1.6	100.0%
Totals for Area of Interest		**1.6**	**100.0%**

Lea County, New Mexico

PU—Pyote and maljamar fine sands

Map Unit Setting

National map unit symbol: dmqq
Elevation: 3,000 to 3,900 feet
Mean annual precipitation: 10 to 12 inches
Mean annual air temperature: 60 to 62 degrees F
Frost-free period: 190 to 205 days
Farmland classification: Not prime farmland

Map Unit Composition

Maljamar and similar soils: 45 percent
Pyote and similar soils: 45 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Maljamar

Setting

Landform: Plains
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy eolian deposits derived from sedimentary rock

Typical profile

A - 0 to 24 inches: fine sand
Bt - 24 to 50 inches: sandy clay loam
Bkm - 50 to 60 inches: cemented material

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 40 to 60 inches to petrocalcic
Natural drainage class: Well drained
Runoff class: Very low
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 in profile: 5 percent
Gypsum, maximum in profile: 1 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 2.0
Available water storage in profile: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: Loamy Sand (R042XC003NM)
Hydric soil rating: No

Description of Pyote

Setting

Landform: Plains
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy eolian deposits derived from sedimentary rock

Typical profile

A - 0 to 30 inches: fine sand
Bt - 30 to 60 inches: fine sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Gypsum, maximum in profile: 1 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 2.0
Available water storage in profile: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Ecological site: Loamy Sand (R042XC003NM)
Hydric soil rating: No

Minor Components

Kermit

Percent of map unit: 10 percent
Ecological site: Sandhills (R042XC022NM)

Hydric soil rating: No

Data Source Information

Soil Survey Area: Lea County, New Mexico
Survey Area Data: Version 16, Sep 15, 2019

USDA Natural Resources Conservation Service

Ecological site R042XC003NM
Loamy Sand

Accessed: 04/19/2021

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

R042XC004NM	**Sandy** Sandy
R042XC005NM	**Deep Sand** Deep Sand

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site is on uplands, plains, dunes, fan piedmonts and in inter dunal areas. The parent material consists of mixed alluvium and or eolian sands derived from sedimentary rock. Slope range on this site range from 0 to 9 percent with the average of 5 percent.

Low stabilized dunes may occur occasionally on this site. Elevations range from 2,800 to 5,000 feet.

Table 2. Representative physiographic features

Landforms	(1) Fan piedmont (2) Alluvial fan (3) Dune
Elevation	2,800–5,000 ft
Slope	0–9%
Aspect	Aspect is not a significant factor

Climatic features

The average annual precipitation ranges from 8 to 13 inches. Variations of 5 inches, more or less, are common. Over 80 percent of the precipitation falls from April through October. Most of the summer precipitation comes in the form of high intensity-short duration thunderstorms.
Temperatures are characterized by distinct seasonal changes and large annual and diurnal temperature changes. The average annual temperature is 61 degrees with extremes of 25 degrees below zero in the winter to 112 degrees in the summer.
The average frost-free season is 207 to 220 days. The last killing frost being late March or early April and the first killing frost being in later October or early November.
Temperature and rainfall both favor warm season perennial plant growth. In years of abundant spring moisture, annual forbs and cool season grasses can make up an important component of this site. Strong winds blow from the southwest from January through June, which accelerates soil drying during a critical period for cool season plant growth.

Climate data was obtained from http://www.wrcc.sage.dri.edu/summary/climsmnm.html web site using 50% probability for freeze-free and frost-free seasons using 28.5 degrees F and 32.5 degrees F respectively.

Table 3. Representative climatic features

Frost-free period (average)	221 days
Freeze-free period (average)	240 days
Precipitation total (average)	13 in

Influencing water features

This site is not influenced from water from wetlands or streams.

Soil features

Soils are moderately deep or very deep. Surface textures are loamy fine sand, fine sandy loam, loamy very fine sand or gravelly sandy loam.

Subsurface is a loamy fine sand, coarse sandy loam, fine sandy loam or loam that averages less than 18 percent clay and less than 15 percent carbonates.

Substratum is a fine sandy loam or gravelly fine sandy loam with less than 15 percent gravel and with less than 40 percent calcium carbonate. Some layers high in lime or with caliche fragments may occur at depths of 20 to 30 inches.

These soils, if unprotected by plant cover and organic residue, become wind blown and low hummocks are formed.

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

Characteristic soils are:

Maljamar
Berino
Parjarito
Palomas
Wink
Pyote

Table 4. Representative soil features

Surface texture	(1) Fine sand (2) Fine sandy loam (3) Loamy fine sand
Family particle size	(1) Sandy
Drainage class	Well drained to somewhat excessively drained
Permeability class	Moderate to moderately rapid
Soil depth	40–72 in
Surface fragment cover <=3"	0–10%
Surface fragment cover >3"	0%
Available water capacity (0-40in)	5–7 in
Calcium carbonate equivalent (0-40in)	3–40%
Electrical conductivity (0-40in)	2–4 mmhos/cm
Sodium adsorption ratio (0-40in)	0–2
Soil reaction (1:1 water) (0-40in)	6.6–8.4
Subsurface fragment volume <=3" (Depth not specified)	4–12%
Subsurface fragment volume >3" (Depth not specified)	0%

Ecological dynamics

Overview

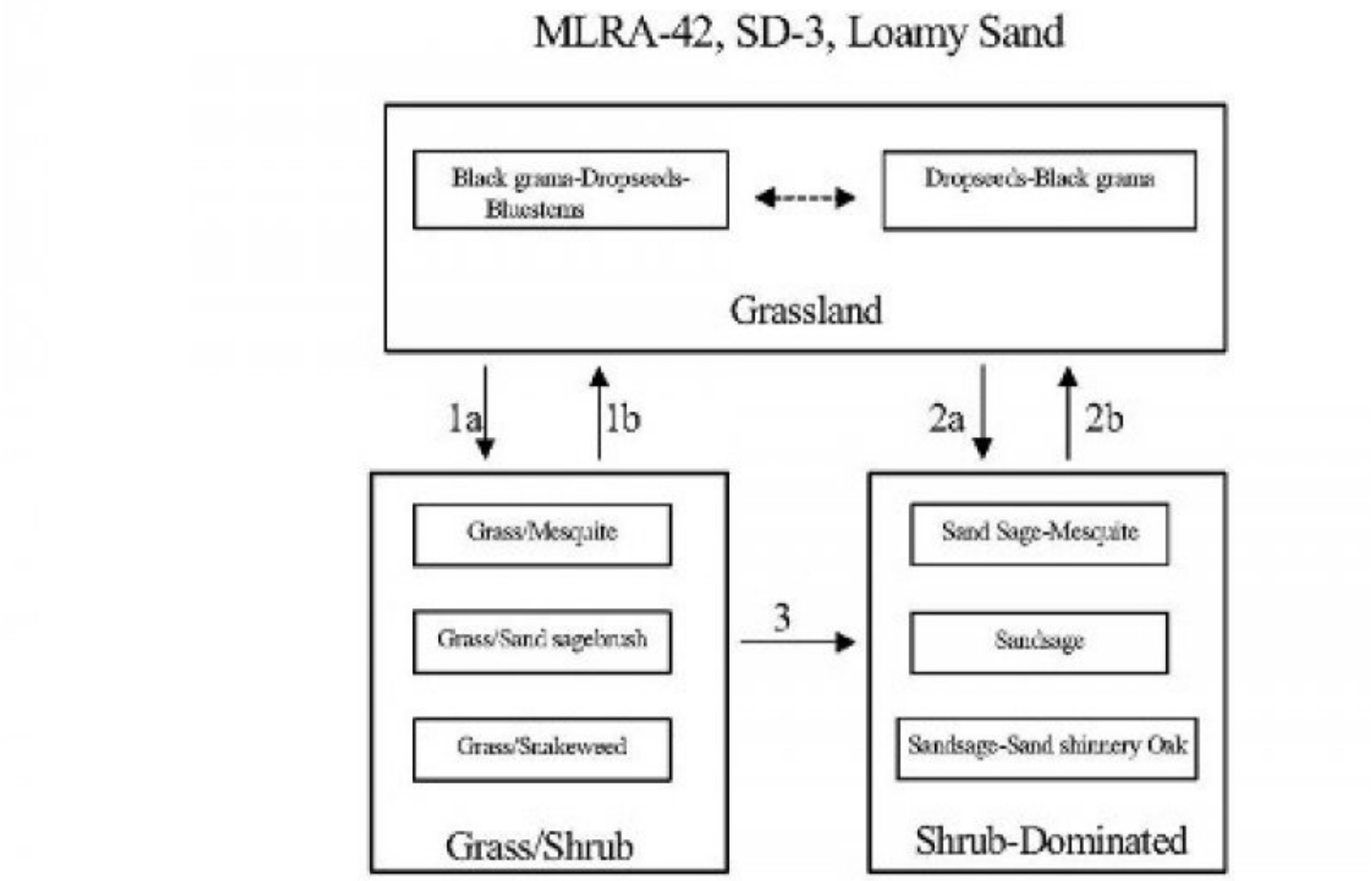
The Loamy Sand site intergrades with the Deep Sand and Sandy sites (SD-3). These sites can be differentiated by surface soil texture and depth to a textural change. Loamy Sand and Deep Sand sites have coarse textured (sands and loamy sand) surface soils while Sandy sites have moderately coarse textured (sandy loam and fine sandy loam) surfaces. Although Loamy Sand and Deep Sand sites have similar surface textures, the depth to a textural change is different—Loamy Sand sub-surface textures typically increase in clay at approximately 20 to 30 inches, and Deep Sand sites not until around 40 inches.

The historic plant community of Loamy Sand sites is dominated by black grama (*Bouteloua eriopoda*), dropseeds (*Sporobolus flexuosus*, *S. contractus*, *S. cryptandrus*), and bluestems (*Schizachyrium scoparium* and *Andropogon hallii*), with scattered shinnery oak (*Quercus havardii*) and sand sage (*Artemisia filifolia*). Perennial and annual forb abundance and distribution are dependent on precipitation. Litter and to a lesser extent, bare ground, are a significant proportion of ground cover while grasses compose the remainder. Decreases in black grama indicate a transition to either a grass/shrub or shrub-dominated state. The grass/shrub state is composed of grasses/honey mesquite (*Prosopis glandulosa*), grasses/broom snakeweed (*Gutierrezia sarothrae*), or grasses/sand sage. The shrub-dominated state occurs after a severe loss of grass cover and a prevalence of sand sage with secondary shinnery oak and mesquite. Heavy grazing intensity and/or drought are influential drivers in decreasing black grama and bluestems and subsequently increasing shrub cover, erosion, and bare patches. Historical fire suppression also

encourages shrub pervasiveness and a competitive advantage over grass species (McPherson 1995). Brush and grazing management, however, may reverse grass/shrub and shrub-dominated states toward the grassland-dominated historic plant community.

State and transition model

Plant Communities and Transitional Pathways (diagram):



1a. Drought, over grazing, fire suppression.
1b. Brush control, prescribed grazing

2.a Severe loss of grass cover, fire suppression, erosion.
2b. Brush control, seeding, prescribed grazing.

3. Continued loss of grass cover, erosion.

Figure 4.

State 1

Historic Climax Plant Community

Community 1.1
Historic Climax Plant Community

Grassland: The historic plant community is a uniformly distributed grassland dominated by black grama, dropseeds, and bluestems. Sand sage and shinnery oak are evenly dispersed throughout the grassland due to the coarse soil surface texture. Perennial and annual forbs are common but their abundance and distribution are reflective of precipitation. Bluestems initially, followed by black grama, decrease with drought and heavy grazing intensity. Historical fire frequency is unknown but likely occurred enough to remove small shrubs to the competitive advantage of grass species. Fire suppression, drought conditions, and excessive grazing drive most grass species out of competition with shrub species.

Diagnosis: Grassland dominated by black grama, dropseeds, and bluestems. Shrubs, such as sand sage, shinnery oak, and mesquite are dispersed throughout the grassland. Forbs are present and populations fluctuate with precipitation variability.

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	442	833	1224
Forb	110	208	306
Shrub/Vine	98	184	270
Total	**650**	**1225**	**1800**

Table 6. Ground cover

Tree foliar cover	0%
Shrub/vine/liana foliar cover	0%
Grass/grasslike foliar cover	28%
Forb foliar cover	0%
Non-vascular plants	0%
Biological crusts	0%
Litter	50%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	22%

Figure 6. Plant community growth curve (percent production by month). NM2803, R042XC003NM-Loamy Sand-HCPC. SD-3 Loamy Sand - Warm season plant community .

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	3	5	10	10	25	30	12	5	0	0

State 2
Grass/Shrub

Community 2.1
Grass/Shrub

Grass/Shrub State: The grass/shrub state is dominated by communities of grasses/mesquite, grasses/snakeweed, or grasses/sand sage. Decreases in black grama and bluestem species lead to an increase in bare patches and mesquite which further competes with grass species. An increase of dropseeds and threeawns occurs. Grass distribution becomes more patchy with an absence or severe decrease in black grama and bluestems. Mesquite provides nitrogen and soil organic matter to co-dominant grasses (Ansley and Jacoby 1998, Ansley et al. 1998). Mesquite mortality when exposed to fire is low due to aggressive resprouting abilities. Herbicide application combined with subsequent prescribed fire may be more effective in mesquite reduction (Britton and Wright 1971).

Diagnosis: This state is dominated by an increased abundance of communities including grass/mesquite, grass/snakeweed, or grass/sand sage. Dropseeds and threeawns have a patchy distribution.

Transition to Grass/Shrub State (1a): The historic plant community begins to shift toward the grass/shrub state as drivers such as drought, fire suppression, interspecific competition, and excessive grazing contribute to alterations in soil properties and herbaceous cover. Cover loss and surface soil erosion are initial indicators of transition followed by a decrease in black grama with a subsequent increase of dropseeds, threeawns, mesquite, and snakeweed. Snakeweed has been documented to outcompete black grama especially under conditions of fire suppression and drought (McDaniel et al. 1984).
Key indicators of approach to transition:
• Loss of black grama cover
• Surface soil erosion
• Bare patch expansion
• Increased dropseed/threeawn and mesquite, snakeweed, or sand sage abundances

Transition to Historic Plant Community (1b): Brush and grazing management may restore the grassland component and reverse shrub or grass/shrub dominated states back toward the historic plant community.

State 3
Shrub Dominated

Community 3.1
Shrub Dominated

Shrub-Dominated State: The shrub-dominated state results from a severe loss of grass cover. This state's primary species is sand sage. Shinnery oak and mesquite also occur; however, grass cover is limited to intershrub distribution. Sand sage stabilizes light sandy soils from wind erosion, which enhances protected grass/forb cover (Davis and Bonham 1979). However, shinnery oak also responds to the sandy soils with dense stands due to an aggressive rhizome system. Shinnery oak's extensive root system promotes competitive exclusion of grasses and forbs. Sand sage, shinnery oak, and mesquite can be controlled with herbicide (Herbel et al. 1979, Pettit 1986).

Transition to Shrub-Dominated (2a): Severe loss of grass species with increased erosion and fire suppression will result in a transition to a shrub-dominated state with sand sage, Shin oak, and honey mesquite directly from the grassland-dominated state.

Key indicators of approach to transition:

• Severe loss of grass species cover
• Surface soil erosion
• Bare patch expansion
• Increased sand sage, shinnery oak, and mesquite abundance

Transition to Historic Plant Community (2b): Brush and grazing management may restore the grassland component and reverse shrub or grass/shrub dominated states back toward the historic plant community. In addition, seeding with native grass species will augment the transition to a grassland-dominated state.

Transition to Shrub-Dominated (3): If the grass/shrub site continues to lose grass cover with soil erosion, the site will transition to a shrub-dominated state with sand sage, shinnery oak, and honey mesquite.

Key indicators of approach to transition:

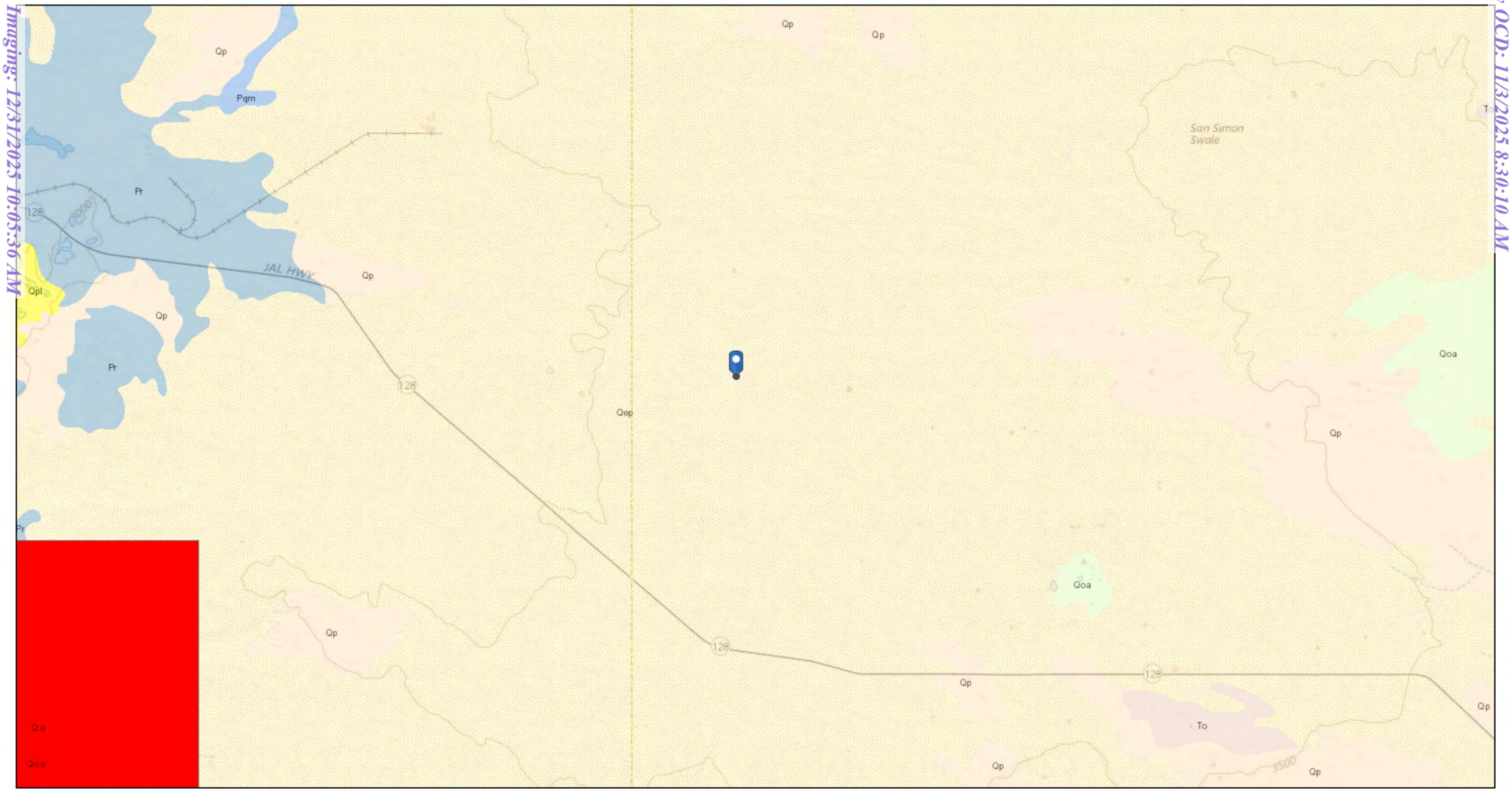
• Continual loss of dropseeds/threeawns cover
• Surface soil erosion
• Bare patch expansion
• Increased sand sage, shinnery oak, and mesquite/dropseed/threeawn and mesquite/snakeweed abundance

Additional community tables

Table 7. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
Grass/Grasslike					
1	**Warm Season**			61–123	
	little bluestem	SCSC	*Schizachyrium scoparium*	61–123	–
2	**Warm Season**			37–61	
	sand bluestem	ANHA	*Andropogon hallii*	37–61	–
3	**Warm Season**			37–61	
	cane bluestem	BOBA3	*Bothriochloa barbinodis*	37–61	–
	silver bluestem	BOSA	*Bothriochloa saccharoides*	37–61	–
4	**Warm Season**			123–184	
	black grama	BOER4	*Bouteloua eriopoda*	123–184	–
	bush muhly	MUPO2	*Muhlenbergia porteri*	123–184	–
5	**Warm Season**			123–184	
	thin paspalum	PASE5	*Paspalum setaceum*	123–184	–
	plains bristlegrass	SEVU2	*Setaria vulpiseta*	123–184	

Tomcat 16 State 2 Qep



5/28/2020, 7:03:33 PM

1:144,448

0 1.5 3 6 mi

0 2.5 5 10 km

Faults

- Fault, Exposed
- Fault, Intermittent
- Fault, Concealed
- Shere Zone

Dikes

- <all other values>
- Dike
- Dike intruding fault
- Volcanic Vents

STATEMAP (1993 to Present) [Publications]

- Mapping in Complete
- Mapping in Progress

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

Web AppBuilder for ArcGIS

USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line

APPENDIX C – Daily Field Reports

Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	10/4/2019
Site Location Name:	Tomcat 16 State 006	Report Run Date:	10/4/2019 10:38 PM
Project Owner:	Amanda Davis	File (Project) #:	19E-00575
Project Manager:	Dennis Williams	API #:	30-025-34949
Client Contact Name:	Amanda Davis	Reference	Layflat line puncture
Client Contact Phone #:	(575) 748-0176		

Summary of Times

Left Office	10/4/2019 9:44 AM
Arrived at Site	10/4/2019 11:15 AM
Departed Site	10/4/2019 2:30 PM
Returned to Office	10/4/2019 3:20 PM

Summary of Daily Operations

12:45 Initial site visit to layflat puncture spill area.

Next Steps & Recommendations

1 Call one call.

2 Schedule remediation work.

Daily Site Visit Report

Site Photos

Viewing Direction: North

Puncture location from NE corner of Tomcat 16 Fed #2.

Viewing Direction: North

Spill Area, southern extent.

Viewing Direction: North

Aerial photo of spill area.

Viewing Direction: North

Aerial with general outline of spill area.

Daily Site Visit Report

Viewing Direction: South	**Viewing Direction**: South
	
Northern most apparent edge of possible spill area.	Northern extent of possible spill area with sketch of extent.

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Sharlene Harvester

Signature:

Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	10/14/2019
Site Location Name:	Big Cat 16 9 State Federal Com #217H	Report Run Date:	10/15/2019 12:39 AM
Project Owner:	Amanda Davis	File (Project) #:	19E-00575
Project Manager:	Dennis Williams	API #:	30-025-45201
Client Contact Name:	Amanda Davis	Reference	Layflat line puncture
Client Contact Phone #:	(575) 748-0176		

Summary of Times

Left Office	10/14/2019 10:58 AM
Arrived at Site	10/14/2019 12:02 PM
Departed Site	10/14/2019 5:10 PM
Returned to Office	10/14/2019 6:34 PM

Summary of Daily Operations

12:03 Delineate extent of chloride exceedances.

12:36 Delineate spill using field screening.

Next Steps & Recommendations

1 Conduct base samples in spill area.

Sampling

Daily Site Visit Report

Background19-01

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.						✓	32.29968689, -103.68584067	Yes

SS19-01

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.						✓	,	Yes

SS19-02

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.						✓	,	Yes

SS19-03

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.						✓	,	Yes

Daily Site Visit Report

SS19-04

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.						✓	,	Yes

SS19-05

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.						✓	,	Yes

SS19-06

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.						✓	32.29940587, -103.68567355	Yes

SS19-07

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.						✓	32.29956833, -103.68564597	Yes

Daily Site Visit Report

SS19-09

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.						✓	32.29932821, -103.68572827	Yes

SS19-10

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.						✓	32.29889430, -103.685597	Yes

SS19-11

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.						✓	32.29904192, -103.68563618	Yes

SS19-12

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.						✓	32.29932692, -103.68563539	Yes

Daily Site Visit Report

SS19-13

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.						✓	32.29948230, -103.68556290	Yes

SS19-14

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.						✓	32.29961540, -103.68554878	Yes

Daily Site Visit Report

Depth Sample Photos

Sample Point ID: SS19-01

Depth: 0 ft.

Sample Point ID: SS19-02

Depth: 0 ft.

Sample Point ID: SS19-03

Depth: 0 ft.

Sample Point ID: SS19-04

Depth: 0 ft.

Daily Site Visit Report

Sample Point ID: SS19-05	**Sample Point ID**: SS19-06
	
Depth: 0 ft.	**Depth:** 0 ft.

Sample Point ID: SS19-07	**Sample Point ID**: SS19-09
	
Depth: 0 ft.	**Depth:** 0 ft.

Daily Site Visit Report

Sample Point ID: SS19-14

Depth: 0 ft.

Sample Point ID: SS19-10

Depth: 0 ft.

Sample Point ID: SS19-11

Depth: 0 ft.

Sample Point ID: SS19-12

Depth: 0 ft.

Daily Site Visit Report

Sample Point ID: SS19-13	**Sample Point ID**: Background19-01
	
Depth: 0 ft.	**Depth:** 0 ft.

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Sharlene Harvester

Signature: 

Daily Site Visit Report

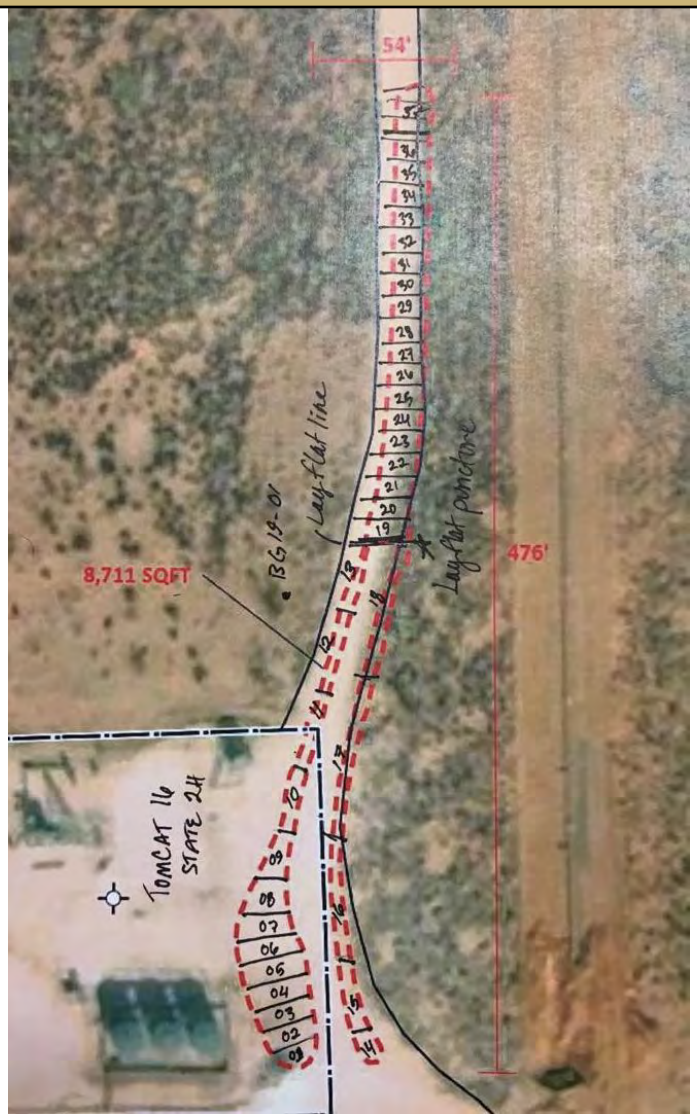
Client:	Devon Energy Corporation	Inspection Date:	10/15/2019
Site Location Name:	Big Cat 16 9 State Federal Com #217H	Report Run Date:	10/17/2019 7:00 PM
Project Owner:	Amanda Davis	File (Project) #:	19E-00575
Project Manager:	Dennis Williams	API #:	30-025-45201
Client Contact Name:	Amanda Davis	Reference	Layflat line puncture
Client Contact Phone #:	(575) 748-0176		

Summary of Times	
Left Office	10/15/2019 8:00 AM
Arrived at Site	10/15/2019 9:15 AM
Departed Site	10/15/2019 7:06 PM
Returned to Office	10/15/2019 8:06 PM

Daily Site Visit Report

VERTEX

Site Sketch



Daily Site Visit Report

Summary of Daily Operations

10:42 Conduct confirmatory samples.

Next Steps & Recommendations

1 Submit samples to lab.

2 Provided results are below closure criteria, submit closure Report.

Sampling

ES-Base19-01

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.					BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	32.29888819, -103.68574743	Yes

ES-Base19-02

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.					BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	32.29891708, -103.68575303	Yes

ES-Base19-03

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.	1.3 ppm	146 ppm	High (300-6000ppm)	675 ppm	BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	32.29894097, -103.68575672	Yes

Daily Site Visit Report

ES-Base19-04

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.					BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	32.29896273, -103.68576013	Yes

ES-Base19-05

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.					BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	32.29898204, -103.68577209	Yes

ES-Base19-06

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.					BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	32.29900667, -103.68576818	Yes

ES-Base19-07

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.					BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	32.29902094, -103.68576544	Yes

Daily Site Visit Report

ES-Base19-08

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.					BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	32.29903484, -103.68575379	Yes

ES-Base19-09

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.					BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	32.29909800, -103.68574924	Yes

ES-Base19-10

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.					BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	32.29918084, -103.68573978	Yes

ES-Base19-11

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.	1.2 ppm	78 ppm	High (300-6000ppm)	675 ppm	BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	32.29928738, -103.68571499	Yes

Daily Site Visit Report

ES-Base19-11

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.			High (300-6000ppm)	675 ppm	BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	,	Yes

ES-Base19-12

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.					BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	32.29939569, -103.68568231	Yes

ES-Base19-13

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.					BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	32.29949701, -103.68564424	Yes

ES-Base19-14

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.			High (300-6000ppm)	975 ppm	BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	,	Yes

Daily Site Visit Report

ES-Base19-14

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.	1.3 ppm	46 ppm	High (300-6000ppm)	975 ppm	BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	32.29891016, -103.68561785	Yes

ES-Base19-15

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.					BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	32.29899939, -103.68565402	Yes

ES-Base19-16

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.					BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	32.29910936, -103.68567611	Yes

ES-Base19-17

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.					BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	32.29930841, -103.68564815	Yes

Daily Site Visit Report

ES-Base19-18

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.					BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	32.29950089, -103.68559027	Yes

ES-Base19-19

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.					BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	32.29959946, -103.68558704	Yes

ES-Base19-20

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.					BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	32.29963609, -103.68558071	Yes

ES-Base19-21

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.	1.2 ppm	88 ppm	High (300-6000ppm)	3450 ppm	BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	32.29967029, -103.68557551	Yes

Daily Site Visit Report

ES-Base19-22

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.					BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	32.29970244, -103.68556735	Yes

ES-Base19-23

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.					BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	32.29973488, -103.68556203	Yes

ES-Base19-24

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.					BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	32.29977427, -103.68555921	Yes

ES-Base19-25

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.					BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	32.29981143, -103.68555624	Yes

Daily Site Visit Report

ES-Base19-26

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.					BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	32.29985083, -103.68554948	Yes

ES-Base19-27

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.	2 ppm	65 ppm	High (300-6000ppm)	3450 ppm	BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	32.29988212, -103.68555116	Yes

ES-Base19-28

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.					BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	32.29992016, -103.68554916	Yes

ES-Base19-29

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.					BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	32.29995368, -103.68554695	Yes

Daily Site Visit Report

ES-Base19-30

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.					BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	32.29999323, -103.68555018	Yes

ES-Base19-31

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.					BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	32.30002845, -103.68554803	Yes

ES-Base19-32

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.					BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	32.30006239, -103.68554638	Yes

ES-Base19-33

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.					BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	32.30010122, -103.68554367	Yes

Daily Site Visit Report

ES-Base19-34

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.					BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	32.30013430, -103.68554873	Yes

ES-Base19-35

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.					BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	32.30016591, -103.68554854	Yes

ES-Base19-36

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.					BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	32.30019997, -103.68554627	Yes

ES-Base19-37

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.					BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	32.30023702, -103.68554404	Yes

Daily Site Visit Report

Site Photos

Viewing Direction: North

Spill site.

Viewing Direction: Southeast

Sample area 1-4

Viewing Direction: East

Sample areas 5 & 6.

Viewing Direction: North

Sample areas 7-10

Daily Site Visit Report

Viewing Direction: North

Sample areas 11-13.

Viewing Direction: North

Sample areas 14 & 15

Viewing Direction: North

Sample area 16

Viewing Direction: North

Sample area 17 & 18

Daily Site Visit Report

Viewing Direction: South	**Viewing Direction**: North
	
Sample areas 37-19. Blue bucket at sample area 32.	Sample areas 19- 37. Areas marked by white flag with blue marking; new area starts every 10 feet. Blue bucket at sample area 32.

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Sharlene Harvester

Signature: 

Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	11/2/2020
Site Location Name:	Big Cat 16 9 State Federal Com #001H	Report Run Date:	11/2/2020 11:10 PM
Client Contact Name:	Amanda Davis	API #:	30-025-43196
Client Contact Phone #:	(575) 748-0176		
Unique Project ID	-Big Cat 16 9 State Federal Com #001H	Project Owner:	Amanda Davis
Project Reference #	05/15/2019 - 219bbl PW Release	Project Manager:	Natalie Gordon

Summary of Times

Arrived at Site	11/2/2020 10:47 AM
Departed Site	11/2/2020 3:00 PM

Field Notes

10:48 Delineation of site between tomcat 16-2 and big cat 19 9 fed 1 along road way.

12:35 Started off on pad and collected ss samples to get around edges. Followed along both sides of road and stepped in or out accordingly to what field screens were coming back as.

13:49 Small area around borehole 3 seems to be a bit higher in chlorides on surface but cleans up at 0.5

13:51 Possible that road has been graded for maintenance. All vegetation is growing good along caliche packed road. No signs of staining or odor

Next Steps & Recommendations

1 Possibly excavate small portion around BH3 and bh4 area down to 0.5”

Daily Site Visit Report

Site Photos

Viewing Direction: North

Northern end of release area on top of hill

Viewing Direction: South

Area where release may have traveled along road

Viewing Direction: North

Area along road side where samples were collected

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Monica Peppin

Signature: 

Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	12/17/2020
Site Location Name:	Tomcat 16 State 2	Report Run Date:	12/17/2020 7:37 PM
Client Contact Name:	Amanda Davis	API #:	30-025-34306
Client Contact Phone #:	(575) 748-0176		
Unique Project ID	-Tomcat 16 State 2	Project Owner:	Amanda Davis
Project Reference #	BS&W Line	Project Manager:	Natalie Gordon

Summary of Times

Arrived at Site	12/17/2020 7:42 AM
Departed Site	12/17/2020 12:35 PM

Field Notes

7:43 Fill out safety paperwork

10:04 A new delineation had been done to find the edges of the old release. Areas of failed samples are being recollected to meet strictest criteria and field screened.

Next Steps & Recommendations

1 Submit samples to lab.

Daily Site Visit Report

Site Photos

Viewing Direction: North

Before excavation

Viewing Direction: North

Before excavation

Viewing Direction: South

Before excavation

Viewing Direction: North

Before excavation

Daily Site Visit Report

Viewing Direction: Northeast	**Viewing Direction**: North
	
Excavation	Excavation
Viewing Direction: South	**Viewing Direction**: North
	
Excavation of failed sample point.	Area of previous failed samples being recollected

Daily Site Visit Report

Daily Site Visit Signature

Inspector: John Ramirez

Signature: 

APPENDIX D – Denial and Notifications

From: Eads, Cristina, EMNRD
To: Mathews, Wesley
Cc: Mike EMNRD Bratcher (mike.bratcher@state.nm.us); Victoria EMNRD Venegas (Victoria.Venegas@state.nm.us); Robert EMNRD Hamlet (Robert.Hamlet@state.nm.us)
Subject: NRM2003158355 TOMCAT 16 STATE 2 BATTERY @ M-16-23S-32E 0N 0E
Date: Tuesday, June 30, 2020 4:46:00 PM
Attachments: (C-141 Closure) NRM2003158355 .pdf
image002.png

Mr. Mathews,

The OCD has denied the submitted Closure C-141 for incident # NRM2003158355 for the following reason:

- The depth to groundwater has not been adequately determined. When nearby wells are used to determine depth to groundwater, the wells should be no further than ½ mile away from the site, and data should be no more than 25 years old, and well construction information should be provided. The responsible party may choose to remediate to the most stringent levels listed in Table 1 in lieu of drilling to determine the depth to groundwater.
- Horizontal delineation has not been completed. The values for determination of horizontal impact are derived by either "background" value as determined appropriate to Rule 29, or, for chloride, 600 mg/Kg in soils. This is especially important for "on-pad" releases to ensure the release did not extend to the "off-pad"/pasture area. A visual footprint on the surface is not sufficient to assess the horizontal extent of the release. Lab data must be provided as evidence of delineation efforts.
- The lease road is considered "off-pad" and must meet the 4 foot reclamation standard.

The Denied C-141 can be found in the online image file. Please review and make the required correction prior to resubmitting though the fee portal. If you have any questions or believe this denial is in error, please contact me prior to submitting an additional C-141.

Thank you,
Cristina Eads
Environmental Bureau
EMNRD – Oil Conservation Division
5200 Oakland Avenue NE, Suite 100
Albuquerque, New Mexico 87113
505.670-5601
email: Cristina.Eads@state.nm.us

OCD approval does not relieve the operator of liability should their operations fail to adequately investigate and remediate contamination that may pose a threat to groundwater, surface water, human health or the environment. In addition, OCD approval does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Sante Fe Main Office
Phone: (505) 476-3441

General Information
Phone: (505) 629-6116

Online Phone Directory
https://www.emnrd.nm.gov/ocd/contact-us

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

QUESTIONS

Action 478069

QUESTIONS

Operator: HARVARD PETROLEUM COMPANY, LLC P.O. Box 936 Roswell, NM 88202	OGRID: 10155
	Action Number: 478069
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

QUESTIONS

Prerequisites	
Incident ID (n#)	**nRM2003158355**
Incident Name	**NRM2003158355 TOMCAT 16 STATE 2 BATTERY @ 0**
Incident Type	**Produced Water Release**
Incident Status	**Remediation Closure Report Received**

Location of Release Source	
Site Name	**TOMCAT 16 STATE 2 BATTERY**
Date Release Discovered	**10/01/2019**
Surface Owner	**State**

Sampling Event General Information *Please answer all the questions in this group.*	
What is the sampling surface area in square feet	8,711
What is the estimated number of samples that will be gathered	37
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	10/15/2019
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	Sally Carttar 575.361.3561
Please provide any information necessary for navigation to sampling site	32.299264,-103.685662 From the intersection of NM 128 and Red Rd, travel north on Red Rd for 3.68 miles. Turn right and travel east for 3.6 miles. Turn left to the location.

Sante Fe Main Office
Phone: (505) 476-3441

General Information
Phone: (505) 629-6116

Online Phone Directory
https://www.emnrd.nm.gov/ocd/contact-us

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Operator: HARVARD PETROLEUM COMPANY, LLC P.O. Box 936 Roswell, NM 88202	OGRID: 10155
	Action Number: 478069
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

CONDITIONS

Created By	Condition	Condition Date
rkidd	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.	6/23/2025
rkidd	If confirmation sampling is going to take place over multiple days, individual C-141N applications must be submitted for each sampling date. Date ranges are not currently accepted on the C-141N application.	6/23/2025

From: Dhugal Hanton
To: Enviro, OCD, EMNRD; spills@slo.state.nm.us; rmann@slo.state.nm.us
Cc: Lupe.Carrasco@dvn.com; tom.bynum@dvn.com; amanda.davis@dvn.com; wesley.mathews@dvn.com
Subject: [EXT] NRM2003158355: Tomcat 16 State 2 Battery - 48-hr Notification of Confirmatory Sampling
Date: Monday, December 14, 2020 5:14:59 PM

All,

Please accept this email as 48-hr notification that Vertex Resource Services has scheduled some additional remediation fieldwork to be completed at Tomcat 16 State 2 Battery, followed by re-collection of several failed confirmatory samples. This work is to address the NM OCD closure denial associated with Incident # NRM2003158355, DOR: October 1, 2019.

This work will be completed on behalf of Devon Energy Production Company.

On Thursday, December 17, 2020 at approximately 8:00 a.m., Monica Peppin will be onsite to guide the additional excavation and re-collect the confirmatory samples. She can be reached at 575-361-9880. If you need directions to the site, please do not hesitate to contact her. If you have any questions or concerns regarding this notification, please give me a call at 505-506-0040.

Thank you,
Natalie

Natalie Gordon
Project Manager

Vertex Resource Group Ltd.
213 S. Mesa Street
Carlsbad, NM 88220

P 575.725.5001 ext 709
C 505.506.0040
F

www.vertex.ca

APPENDIX E – Laboratory Data Reports and Chain of Custody Forms

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

October 25, 2019

Dennis Williams

Vertex Resource Group Ltd.
213 S. Mesa St
Carlsbad, NM 88220
TEL:
FAX

RE: BIGCAT 215H OrderNo.: 1910977

Dear Dennis Williams:

Hall Environmental Analysis Laboratory received 38 sample(s) on 10/17/2019 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1910977**
Date Reported: **10/25/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS19-01 0'
Project: BIGCAT 215H **Collection Date:** 10/15/2019 10:00:00 AM
Lab ID: 1910977-001 **Matrix:** SOIL **Received Date:** 10/17/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	12	9.6		mg/Kg	1	10/22/2019 1:13:16 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	10/22/2019 1:13:16 PM
Surr: DNOP	63.3	70-130	S	%Rec	1	10/22/2019 1:13:16 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	10/19/2019 12:58:35 AM
Surr: BFB	92.8	77.4-118		%Rec	1	10/19/2019 12:58:35 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	10/19/2019 12:58:35 AM
Toluene	ND	0.050		mg/Kg	1	10/19/2019 12:58:35 AM
Ethylbenzene	ND	0.050		mg/Kg	1	10/19/2019 12:58:35 AM
Xylenes, Total	ND	0.099		mg/Kg	1	10/19/2019 12:58:35 AM
Surr: 4-Bromofluorobenzene	95.0	80-120		%Rec	1	10/19/2019 12:58:35 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	180	61		mg/Kg	20	10/21/2019 8:19:57 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **1910977**
Date Reported: **10/25/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS19-02 0'
Project: BIGCAT 215H **Collection Date:** 10/15/2019 10:10:00 AM
Lab ID: 1910977-002 **Matrix:** SOIL **Received Date:** 10/17/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	86	9.7		mg/Kg	1	10/21/2019 8:50:48 PM
Motor Oil Range Organics (MRO)	210	49		mg/Kg	1	10/21/2019 8:50:48 PM
Surr: DNOP	95.3	70-130		%Rec	1	10/21/2019 8:50:48 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	10/19/2019 2:09:30 AM
Surr: BFB	96.5	77.4-118		%Rec	1	10/19/2019 2:09:30 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	10/19/2019 2:09:30 AM
Toluene	ND	0.050		mg/Kg	1	10/19/2019 2:09:30 AM
Ethylbenzene	ND	0.050		mg/Kg	1	10/19/2019 2:09:30 AM
Xylenes, Total	ND	0.10		mg/Kg	1	10/19/2019 2:09:30 AM
Surr: 4-Bromofluorobenzene	98.9	80-120		%Rec	1	10/19/2019 2:09:30 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	170	59		mg/Kg	20	10/21/2019 8:32:18 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **1910977**
Date Reported: **10/25/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS19-03 0'
Project: BIGCAT 215H **Collection Date:** 10/15/2019 10:20:00 AM
Lab ID: 1910977-003 **Matrix:** SOIL **Received Date:** 10/17/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	14	9.6		mg/Kg	1	10/21/2019 9:56:37 PM
Motor Oil Range Organics (MRO)	66	48		mg/Kg	1	10/21/2019 9:56:37 PM
Surr: DNOP	68.7	70-130	S	%Rec	1	10/21/2019 9:56:37 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	10/19/2019 3:20:35 AM
Surr: BFB	88.6	77.4-118		%Rec	1	10/19/2019 3:20:35 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	10/19/2019 3:20:35 AM
Toluene	ND	0.049		mg/Kg	1	10/19/2019 3:20:35 AM
Ethylbenzene	ND	0.049		mg/Kg	1	10/19/2019 3:20:35 AM
Xylenes, Total	ND	0.098		mg/Kg	1	10/19/2019 3:20:35 AM
Surr: 4-Bromofluorobenzene	92.0	80-120		%Rec	1	10/19/2019 3:20:35 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	230	60		mg/Kg	20	10/21/2019 8:44:39 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **1910977**
Date Reported: **10/25/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS19-04 0'
Project: BIGCAT 215H **Collection Date:** 10/15/2019 10:30:00 AM
Lab ID: 1910977-004 **Matrix:** SOIL **Received Date:** 10/17/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	13	9.7		mg/Kg	1	10/21/2019 10:18:37 PM
Motor Oil Range Organics (MRO)	71	49		mg/Kg	1	10/21/2019 10:18:37 PM
Surr: DNOP	72.5	70-130		%Rec	1	10/21/2019 10:18:37 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	10/19/2019 3:44:13 AM
Surr: BFB	97.2	77.4-118		%Rec	1	10/19/2019 3:44:13 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	10/19/2019 3:44:13 AM
Toluene	ND	0.050		mg/Kg	1	10/19/2019 3:44:13 AM
Ethylbenzene	ND	0.050		mg/Kg	1	10/19/2019 3:44:13 AM
Xylenes, Total	ND	0.099		mg/Kg	1	10/19/2019 3:44:13 AM
Surr: 4-Bromofluorobenzene	101	80-120		%Rec	1	10/19/2019 3:44:13 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	350	60		mg/Kg	20	10/21/2019 8:56:59 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **1910977**
Date Reported: **10/25/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS19-05 0'
Project: BIGCAT 215H **Collection Date:** 10/15/2019 10:40:00 AM
Lab ID: 1910977-005 **Matrix:** SOIL **Received Date:** 10/17/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	10/21/2019 10:40:29 PM
Motor Oil Range Organics (MRO)	52	48		mg/Kg	1	10/21/2019 10:40:29 PM
Surr: DNOP	74.4	70-130		%Rec	1	10/21/2019 10:40:29 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	10/19/2019 4:07:50 AM
Surr: BFB	93.0	77.4-118		%Rec	1	10/19/2019 4:07:50 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	10/19/2019 4:07:50 AM
Toluene	ND	0.049		mg/Kg	1	10/19/2019 4:07:50 AM
Ethylbenzene	ND	0.049		mg/Kg	1	10/19/2019 4:07:50 AM
Xylenes, Total	ND	0.099		mg/Kg	1	10/19/2019 4:07:50 AM
Surr: 4-Bromofluorobenzene	96.3	80-120		%Rec	1	10/19/2019 4:07:50 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	310	60		mg/Kg	20	10/21/2019 11:49:45 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **1910977**
Date Reported: **10/25/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS19-06 0'
Project: BIGCAT 215H **Collection Date:** 10/15/2019 10:50:00 AM
Lab ID: 1910977-006 **Matrix:** SOIL **Received Date:** 10/17/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	10/21/2019 11:02:29 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	10/21/2019 11:02:29 PM
Surr: DNOP	72.8	70-130		%Rec	1	10/21/2019 11:02:29 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	10/19/2019 4:31:25 AM
Surr: BFB	94.3	77.4-118		%Rec	1	10/19/2019 4:31:25 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	10/19/2019 4:31:25 AM
Toluene	ND	0.050		mg/Kg	1	10/19/2019 4:31:25 AM
Ethylbenzene	ND	0.050		mg/Kg	1	10/19/2019 4:31:25 AM
Xylenes, Total	ND	0.10		mg/Kg	1	10/19/2019 4:31:25 AM
Surr: 4-Bromofluorobenzene	98.1	80-120		%Rec	1	10/19/2019 4:31:25 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	120	60		mg/Kg	20	10/22/2019 12:26:47 AM

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

Qualifiers:

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

Analytical Report
Lab Order **1910977**
Date Reported: **10/25/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS19-07 0'
Project: BIGCAT 215H **Collection Date:** 10/15/2019 11:00:00 AM
Lab ID: 1910977-007 **Matrix:** SOIL **Received Date:** 10/17/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	10/21/2019 11:24:19 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	10/21/2019 11:24:19 PM
Surr: DNOP	78.3	70-130		%Rec	1	10/21/2019 11:24:19 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	10/19/2019 4:54:55 AM
Surr: BFB	89.4	77.4-118		%Rec	1	10/19/2019 4:54:55 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	10/19/2019 4:54:55 AM
Toluene	ND	0.050		mg/Kg	1	10/19/2019 4:54:55 AM
Ethylbenzene	ND	0.050		mg/Kg	1	10/19/2019 4:54:55 AM
Xylenes, Total	ND	0.10		mg/Kg	1	10/19/2019 4:54:55 AM
Surr: 4-Bromofluorobenzene	91.8	80-120		%Rec	1	10/19/2019 4:54:55 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	130	60		mg/Kg	20	10/22/2019 1:28:28 AM

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

Qualifiers:

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

Analytical Report
Lab Order **1910977**
Date Reported: **10/25/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS19-08 0'
Project: BIGCAT 215H **Collection Date:** 10/15/2019 11:10:00 AM
Lab ID: 1910977-008 **Matrix:** SOIL **Received Date:** 10/17/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	10/21/2019 11:46:15 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	10/21/2019 11:46:15 PM
Surr: DNOP	80.3	70-130		%Rec	1	10/21/2019 11:46:15 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	10/19/2019 5:18:27 AM
Surr: BFB	94.4	77.4-118		%Rec	1	10/19/2019 5:18:27 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	10/19/2019 5:18:27 AM
Toluene	ND	0.050		mg/Kg	1	10/19/2019 5:18:27 AM
Ethylbenzene	ND	0.050		mg/Kg	1	10/19/2019 5:18:27 AM
Xylenes, Total	ND	0.099		mg/Kg	1	10/19/2019 5:18:27 AM
Surr: 4-Bromofluorobenzene	98.7	80-120		%Rec	1	10/19/2019 5:18:27 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	1000	60		mg/Kg	20	10/22/2019 1:40:48 AM

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

Qualifiers:

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

Analytical Report
Lab Order **1910977**
Date Reported: **10/25/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd.
Client Sample ID: BS19-09 0'
Project: BIGCAT 215H
Collection Date: 10/15/2019 11:20:00 AM
Lab ID: 1910977-009 **Matrix:** SOIL **Received Date:** 10/17/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	10/22/2019 12:08:04 AM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	10/22/2019 12:08:04 AM
Surr: DNOP	77.3	70-130		%Rec	1	10/22/2019 12:08:04 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	10/19/2019 5:42:00 AM
Surr: BFB	89.3	77.4-118		%Rec	1	10/19/2019 5:42:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	10/19/2019 5:42:00 AM
Toluene	ND	0.050		mg/Kg	1	10/19/2019 5:42:00 AM
Ethylbenzene	ND	0.050		mg/Kg	1	10/19/2019 5:42:00 AM
Xylenes, Total	ND	0.099		mg/Kg	1	10/19/2019 5:42:00 AM
Surr: 4-Bromofluorobenzene	92.5	80-120		%Rec	1	10/19/2019 5:42:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	340	60		mg/Kg	20	10/22/2019 1:53:09 AM

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

Qualifiers:

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

Analytical Report
Lab Order **1910977**
Date Reported: **10/25/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS19-10 0'
Project: BIGCAT 215H **Collection Date:** 10/15/2019 11:30:00 AM
Lab ID: 1910977-010 **Matrix:** SOIL **Received Date:** 10/17/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	21	9.1		mg/Kg	1	10/22/2019 12:30:01 AM
Motor Oil Range Organics (MRO)	56	45		mg/Kg	1	10/22/2019 12:30:01 AM
Surr: DNOP	74.9	70-130		%Rec	1	10/22/2019 12:30:01 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	10/19/2019 6:05:28 AM
Surr: BFB	88.3	77.4-118		%Rec	1	10/19/2019 6:05:28 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	10/19/2019 6:05:28 AM
Toluene	ND	0.050		mg/Kg	1	10/19/2019 6:05:28 AM
Ethylbenzene	ND	0.050		mg/Kg	1	10/19/2019 6:05:28 AM
Xylenes, Total	ND	0.10		mg/Kg	1	10/19/2019 6:05:28 AM
Surr: 4-Bromofluorobenzene	91.3	80-120		%Rec	1	10/19/2019 6:05:28 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	1500	60		mg/Kg	20	10/22/2019 2:05:29 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **1910977**
Date Reported: **10/25/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS19-11 0'
Project: BIGCAT 215H **Collection Date:** 10/15/2019 11:40:00 AM
Lab ID: 1910977-011 **Matrix:** SOIL **Received Date:** 10/17/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	10/22/2019 12:51:47 AM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	10/22/2019 12:51:47 AM
Surr: DNOP	77.2	70-130		%Rec	1	10/22/2019 12:51:47 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	10/19/2019 8:02:40 AM
Surr: BFB	90.6	77.4-118		%Rec	1	10/19/2019 8:02:40 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	10/19/2019 8:02:40 AM
Toluene	ND	0.049		mg/Kg	1	10/19/2019 8:02:40 AM
Ethylbenzene	ND	0.049		mg/Kg	1	10/19/2019 8:02:40 AM
Xylenes, Total	ND	0.099		mg/Kg	1	10/19/2019 8:02:40 AM
Surr: 4-Bromofluorobenzene	93.6	80-120		%Rec	1	10/19/2019 8:02:40 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	230	60		mg/Kg	20	10/22/2019 2:17:50 AM

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

Qualifiers:

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

Analytical Report
Lab Order **1910977**
Date Reported: **10/25/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS19-12 0'
Project: BIGCAT 215H **Collection Date:** 10/15/2019 11:50:00 AM
Lab ID: 1910977-012 **Matrix:** SOIL **Received Date:** 10/17/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	8.8		mg/Kg	1	10/22/2019 1:13:52 AM
Motor Oil Range Organics (MRO)	ND	44		mg/Kg	1	10/22/2019 1:13:52 AM
Surr: DNOP	77.0	70-130		%Rec	1	10/22/2019 1:13:52 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	10/19/2019 8:26:06 AM
Surr: BFB	89.3	77.4-118		%Rec	1	10/19/2019 8:26:06 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	10/19/2019 8:26:06 AM
Toluene	ND	0.050		mg/Kg	1	10/19/2019 8:26:06 AM
Ethylbenzene	ND	0.050		mg/Kg	1	10/19/2019 8:26:06 AM
Xylenes, Total	ND	0.099		mg/Kg	1	10/19/2019 8:26:06 AM
Surr: 4-Bromofluorobenzene	93.7	80-120		%Rec	1	10/19/2019 8:26:06 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	870	60		mg/Kg	20	10/22/2019 2:30:10 AM

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

Qualifiers:

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

Analytical Report
Lab Order **1910977**
Date Reported: **10/25/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS19-13 0'
Project: BIGCAT 215H **Collection Date:** 10/15/2019 12:00:00 PM
Lab ID: 1910977-013 **Matrix:** SOIL **Received Date:** 10/17/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	10/22/2019 1:35:48 AM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	10/22/2019 1:35:48 AM
Surr: DNOP	82.4	70-130		%Rec	1	10/22/2019 1:35:48 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	10/19/2019 8:49:36 AM
Surr: BFB	87.4	77.4-118		%Rec	1	10/19/2019 8:49:36 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	10/19/2019 8:49:36 AM
Toluene	ND	0.049		mg/Kg	1	10/19/2019 8:49:36 AM
Ethylbenzene	ND	0.049		mg/Kg	1	10/19/2019 8:49:36 AM
Xylenes, Total	ND	0.099		mg/Kg	1	10/19/2019 8:49:36 AM
Surr: 4-Bromofluorobenzene	90.6	80-120		%Rec	1	10/19/2019 8:49:36 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	550	60		mg/Kg	20	10/22/2019 2:42:31 AM

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

Qualifiers:

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

Analytical Report
Lab Order **1910977**
Date Reported: **10/25/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS19-14 0'
Project: BIGCAT 215H **Collection Date:** 10/15/2019 12:10:00 PM
Lab ID: 1910977-014 **Matrix:** SOIL **Received Date:** 10/17/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	10/22/2019 1:57:34 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	10/22/2019 1:57:34 AM
Surr: DNOP	82.5	70-130		%Rec	1	10/22/2019 1:57:34 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	10/19/2019 9:13:06 AM
Surr: BFB	92.1	77.4-118		%Rec	1	10/19/2019 9:13:06 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	10/19/2019 9:13:06 AM
Toluene	ND	0.049		mg/Kg	1	10/19/2019 9:13:06 AM
Ethylbenzene	ND	0.049		mg/Kg	1	10/19/2019 9:13:06 AM
Xylenes, Total	ND	0.099		mg/Kg	1	10/19/2019 9:13:06 AM
Surr: 4-Bromofluorobenzene	95.2	80-120		%Rec	1	10/19/2019 9:13:06 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	130	60		mg/Kg	20	10/22/2019 2:54:51 AM

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

Qualifiers:

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

Analytical Report
Lab Order **1910977**
Date Reported: **10/25/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd.
Client Sample ID: BS19-15 0'
Project: BIGCAT 215H
Collection Date: 10/15/2019 12:20:00 PM
Lab ID: 1910977-015 **Matrix:** SOIL **Received Date:** 10/17/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	10/22/2019 2:19:21 AM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	10/22/2019 2:19:21 AM
Surr: DNOP	87.9	70-130		%Rec	1	10/22/2019 2:19:21 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	10/19/2019 9:36:40 AM
Surr: BFB	92.7	77.4-118		%Rec	1	10/19/2019 9:36:40 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	10/19/2019 9:36:40 AM
Toluene	ND	0.049		mg/Kg	1	10/19/2019 9:36:40 AM
Ethylbenzene	ND	0.049		mg/Kg	1	10/19/2019 9:36:40 AM
Xylenes, Total	ND	0.099		mg/Kg	1	10/19/2019 9:36:40 AM
Surr: 4-Bromofluorobenzene	96.6	80-120		%Rec	1	10/19/2019 9:36:40 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	220	60		mg/Kg	20	10/22/2019 3:31:52 AM

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

Qualifiers:

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

Analytical Report
Lab Order **1910977**
Date Reported: **10/25/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS19-16 0'
Project: BIGCAT 215H **Collection Date:** 10/15/2019 12:30:00 PM
Lab ID: 1910977-016 **Matrix:** SOIL **Received Date:** 10/17/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	10/22/2019 3:03:02 AM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	10/22/2019 3:03:02 AM
Surr: DNOP	84.2	70-130		%Rec	1	10/22/2019 3:03:02 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	10/19/2019 10:00:05 AM
Surr: BFB	90.4	77.4-118		%Rec	1	10/19/2019 10:00:05 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	10/19/2019 10:00:05 AM
Toluene	ND	0.049		mg/Kg	1	10/19/2019 10:00:05 AM
Ethylbenzene	ND	0.049		mg/Kg	1	10/19/2019 10:00:05 AM
Xylenes, Total	ND	0.098		mg/Kg	1	10/19/2019 10:00:05 AM
Surr: 4-Bromofluorobenzene	94.0	80-120		%Rec	1	10/19/2019 10:00:05 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	770	60		mg/Kg	20	10/22/2019 3:44:13 AM

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

Qualifiers:

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

Analytical Report
Lab Order **1910977**
Date Reported: **10/25/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS19-17 0'
Project: BIGCAT 215H **Collection Date:** 10/15/2019 12:40:00 PM
Lab ID: 1910977-017 **Matrix:** SOIL **Received Date:** 10/17/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	8.5		mg/Kg	1	10/22/2019 3:24:56 AM
Motor Oil Range Organics (MRO)	ND	43		mg/Kg	1	10/22/2019 3:24:56 AM
Surr: DNOP	85.8	70-130		%Rec	1	10/22/2019 3:24:56 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	10/19/2019 10:23:40 AM
Surr: BFB	93.7	77.4-118		%Rec	1	10/19/2019 10:23:40 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	10/19/2019 10:23:40 AM
Toluene	ND	0.049		mg/Kg	1	10/19/2019 10:23:40 AM
Ethylbenzene	ND	0.049		mg/Kg	1	10/19/2019 10:23:40 AM
Xylenes, Total	ND	0.099		mg/Kg	1	10/19/2019 10:23:40 AM
Surr: 4-Bromofluorobenzene	97.7	80-120		%Rec	1	10/19/2019 10:23:40 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	810	60		mg/Kg	20	10/22/2019 3:56:33 AM

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

Qualifiers:

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

Analytical Report
Lab Order **1910977**
Date Reported: **10/25/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS19-18 0'
Project: BIGCAT 215H **Collection Date:** 10/15/2019 12:50:00 PM
Lab ID: 1910977-018 **Matrix:** SOIL **Received Date:** 10/17/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	10/22/2019 3:46:42 AM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	10/22/2019 3:46:42 AM
Surr: DNOP	84.2	70-130		%Rec	1	10/22/2019 3:46:42 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	10/19/2019 10:47:10 AM
Surr: BFB	89.1	77.4-118		%Rec	1	10/19/2019 10:47:10 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	10/19/2019 10:47:10 AM
Toluene	ND	0.050		mg/Kg	1	10/19/2019 10:47:10 AM
Ethylbenzene	ND	0.050		mg/Kg	1	10/19/2019 10:47:10 AM
Xylenes, Total	ND	0.099		mg/Kg	1	10/19/2019 10:47:10 AM
Surr: 4-Bromofluorobenzene	93.8	80-120		%Rec	1	10/19/2019 10:47:10 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	330	60		mg/Kg	20	10/22/2019 4:08:53 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **1910977**
Date Reported: **10/25/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS19-19 0'
Project: BIGCAT 215H **Collection Date:** 10/15/2019 2:30:00 PM
Lab ID: 1910977-019 **Matrix:** SOIL **Received Date:** 10/17/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	10/22/2019 4:08:39 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	10/22/2019 4:08:39 AM
Surr: DNOP	83.0	70-130		%Rec	1	10/22/2019 4:08:39 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	10/19/2019 11:10:39 AM
Surr: BFB	89.6	77.4-118		%Rec	1	10/19/2019 11:10:39 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	10/19/2019 11:10:39 AM
Toluene	ND	0.050		mg/Kg	1	10/19/2019 11:10:39 AM
Ethylbenzene	ND	0.050		mg/Kg	1	10/19/2019 11:10:39 AM
Xylenes, Total	ND	0.099		mg/Kg	1	10/19/2019 11:10:39 AM
Surr: 4-Bromofluorobenzene	93.3	80-120		%Rec	1	10/19/2019 11:10:39 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	370	60		mg/Kg	20	10/22/2019 4:21:13 AM

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

Qualifiers:

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

Analytical Report
Lab Order **1910977**
Date Reported: **10/25/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS19-20 0'
Project: BIGCAT 215H **Collection Date:** 10/15/2019 2:40:00 PM
Lab ID: 1910977-020 **Matrix:** SOIL **Received Date:** 10/17/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	10/22/2019 4:30:24 AM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	10/22/2019 4:30:24 AM
Surr: DNOP	82.0	70-130		%Rec	1	10/22/2019 4:30:24 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	10/19/2019 11:34:00 AM
Surr: BFB	88.2	77.4-118		%Rec	1	10/19/2019 11:34:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	10/19/2019 11:34:00 AM
Toluene	ND	0.050		mg/Kg	1	10/19/2019 11:34:00 AM
Ethylbenzene	ND	0.050		mg/Kg	1	10/19/2019 11:34:00 AM
Xylenes, Total	ND	0.099		mg/Kg	1	10/19/2019 11:34:00 AM
Surr: 4-Bromofluorobenzene	92.0	80-120		%Rec	1	10/19/2019 11:34:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	1200	59		mg/Kg	20	10/22/2019 4:33:33 AM

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

Qualifiers:

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

Analytical Report
Lab Order **1910977**
Date Reported: **10/25/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS19-21 0'
Project: BIGCAT 215H **Collection Date:** 10/15/2019 2:50:00 PM
Lab ID: 1910977-021 **Matrix:** SOIL **Received Date:** 10/17/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	10/22/2019 4:52:28 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	10/22/2019 4:52:28 AM
Surr: DNOP	71.0	70-130		%Rec	1	10/22/2019 4:52:28 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	3000	150		mg/Kg	50	10/22/2019 10:56:30 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**
Benzene	ND	0.025		mg/Kg	1	10/18/2019 3:36:42 PM
Toluene	ND	0.050		mg/Kg	1	10/18/2019 3:36:42 PM
Ethylbenzene	ND	0.050		mg/Kg	1	10/18/2019 3:36:42 PM
Xylenes, Total	ND	0.10		mg/Kg	1	10/18/2019 3:36:42 PM
Surr: 1,2-Dichloroethane-d4	99.9	70-130		%Rec	1	10/18/2019 3:36:42 PM
Surr: 4-Bromofluorobenzene	86.1	70-130		%Rec	1	10/18/2019 3:36:42 PM
Surr: Dibromofluoromethane	99.5	70-130		%Rec	1	10/18/2019 3:36:42 PM
Surr: Toluene-d8	98.6	70-130		%Rec	1	10/18/2019 3:36:42 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **DJF**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	10/18/2019 3:36:42 PM
Surr: BFB	88.3	70-130		%Rec	1	10/18/2019 3:36:42 PM

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

Qualifiers:

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

Analytical Report
Lab Order **1910977**
Date Reported: **10/25/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS19-22 0'
Project: BIGCAT 215H **Collection Date:** 10/15/2019 3:00:00 PM
Lab ID: 1910977-022 **Matrix:** SOIL **Received Date:** 10/17/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.0		mg/Kg	1	10/22/2019 5:58:34 AM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	10/22/2019 5:58:34 AM
Surr: DNOP	62.9	70-130	S	%Rec	1	10/22/2019 5:58:34 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	1700	60		mg/Kg	20	10/22/2019 4:58:14 AM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**
Benzene	ND	0.025		mg/Kg	1	10/18/2019 5:04:32 PM
Toluene	ND	0.049		mg/Kg	1	10/18/2019 5:04:32 PM
Ethylbenzene	ND	0.049		mg/Kg	1	10/18/2019 5:04:32 PM
Xylenes, Total	ND	0.099		mg/Kg	1	10/18/2019 5:04:32 PM
Surr: 1,2-Dichloroethane-d4	103	70-130		%Rec	1	10/18/2019 5:04:32 PM
Surr: 4-Bromofluorobenzene	83.9	70-130		%Rec	1	10/18/2019 5:04:32 PM
Surr: Dibromofluoromethane	103	70-130		%Rec	1	10/18/2019 5:04:32 PM
Surr: Toluene-d8	97.0	70-130		%Rec	1	10/18/2019 5:04:32 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **DJF**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	10/18/2019 5:04:32 PM
Surr: BFB	85.0	70-130		%Rec	1	10/18/2019 5:04:32 PM

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

Qualifiers:

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

Analytical Report
Lab Order **1910977**
Date Reported: **10/25/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS19-23 0'
Project: BIGCAT 215H **Collection Date:** 10/15/2019 3:10:00 PM
Lab ID: 1910977-023 **Matrix:** SOIL **Received Date:** 10/17/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	10/22/2019 6:20:38 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	10/22/2019 6:20:38 AM
Surr: DNOP	64.0	70-130	S	%Rec	1	10/22/2019 6:20:38 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	1800	60		mg/Kg	20	10/22/2019 5:10:34 AM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**
Benzene	ND	0.025		mg/Kg	1	10/18/2019 6:31:02 PM
Toluene	ND	0.050		mg/Kg	1	10/18/2019 6:31:02 PM
Ethylbenzene	ND	0.050		mg/Kg	1	10/18/2019 6:31:02 PM
Xylenes, Total	ND	0.099		mg/Kg	1	10/18/2019 6:31:02 PM
Surr: 1,2-Dichloroethane-d4	102	70-130		%Rec	1	10/18/2019 6:31:02 PM
Surr: 4-Bromofluorobenzene	84.1	70-130		%Rec	1	10/18/2019 6:31:02 PM
Surr: Dibromofluoromethane	102	70-130		%Rec	1	10/18/2019 6:31:02 PM
Surr: Toluene-d8	97.6	70-130		%Rec	1	10/18/2019 6:31:02 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **DJF**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	10/18/2019 6:31:02 PM
Surr: BFB	83.8	70-130		%Rec	1	10/18/2019 6:31:02 PM

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

Qualifiers:

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

Analytical Report
Lab Order **1910977**
Date Reported: **10/25/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS19-24 0'
Project: BIGCAT 215H **Collection Date:** 10/15/2019 3:20:00 PM
Lab ID: 1910977-024 **Matrix:** SOIL **Received Date:** 10/17/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	10/22/2019 6:42:37 AM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	10/22/2019 6:42:37 AM
Surr: DNOP	67.5	70-130	S	%Rec	1	10/22/2019 6:42:37 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	2600	150		mg/Kg	50	10/22/2019 11:08:54 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**
Benzene	ND	0.025		mg/Kg	1	10/18/2019 7:00:26 PM
Toluene	ND	0.049		mg/Kg	1	10/18/2019 7:00:26 PM
Ethylbenzene	ND	0.049		mg/Kg	1	10/18/2019 7:00:26 PM
Xylenes, Total	ND	0.098		mg/Kg	1	10/18/2019 7:00:26 PM
Surr: 1,2-Dichloroethane-d4	102	70-130		%Rec	1	10/18/2019 7:00:26 PM
Surr: 4-Bromofluorobenzene	83.9	70-130		%Rec	1	10/18/2019 7:00:26 PM
Surr: Dibromofluoromethane	104	70-130		%Rec	1	10/18/2019 7:00:26 PM
Surr: Toluene-d8	97.3	70-130		%Rec	1	10/18/2019 7:00:26 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **DJF**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	10/18/2019 7:00:26 PM
Surr: BFB	87.2	70-130		%Rec	1	10/18/2019 7:00:26 PM

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

Qualifiers:

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

Analytical Report
Lab Order **1910977**
Date Reported: **10/25/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS19-25 0'
Project: BIGCAT 215H **Collection Date:** 10/15/2019 3:20:00 PM
Lab ID: 1910977-025 **Matrix:** SOIL **Received Date:** 10/17/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	10/22/2019 7:26:45 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	10/22/2019 7:26:45 AM
Surr: DNOP	68.1	70-130	S	%Rec	1	10/22/2019 7:26:45 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	2100	60		mg/Kg	20	10/22/2019 4:56:39 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**
Benzene	ND	0.025		mg/Kg	1	10/18/2019 7:29:17 PM
Toluene	ND	0.050		mg/Kg	1	10/18/2019 7:29:17 PM
Ethylbenzene	ND	0.050		mg/Kg	1	10/18/2019 7:29:17 PM
Xylenes, Total	ND	0.099		mg/Kg	1	10/18/2019 7:29:17 PM
Surr: 1,2-Dichloroethane-d4	98.8	70-130		%Rec	1	10/18/2019 7:29:17 PM
Surr: 4-Bromofluorobenzene	85.2	70-130		%Rec	1	10/18/2019 7:29:17 PM
Surr: Dibromofluoromethane	100	70-130		%Rec	1	10/18/2019 7:29:17 PM
Surr: Toluene-d8	96.9	70-130		%Rec	1	10/18/2019 7:29:17 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **DJF**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	10/18/2019 7:29:17 PM
Surr: BFB	87.7	70-130		%Rec	1	10/18/2019 7:29:17 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **1910977**
Date Reported: **10/25/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS19-26 0'
Project: BIGCAT 215H **Collection Date:** 10/15/2019 3:30:00 PM
Lab ID: 1910977-026 **Matrix:** SOIL **Received Date:** 10/17/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	15	9.8		mg/Kg	1	10/22/2019 7:48:56 AM
Motor Oil Range Organics (MRO)	60	49		mg/Kg	1	10/22/2019 7:48:56 AM
Surr: DNOP	76.1	70-130		%Rec	1	10/22/2019 7:48:56 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	4000	150		mg/Kg	50	10/23/2019 11:52:25 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**
Benzene	ND	0.025		mg/Kg	1	10/18/2019 7:58:05 PM
Toluene	ND	0.050		mg/Kg	1	10/18/2019 7:58:05 PM
Ethylbenzene	ND	0.050		mg/Kg	1	10/18/2019 7:58:05 PM
Xylenes, Total	ND	0.10		mg/Kg	1	10/18/2019 7:58:05 PM
Surr: 1,2-Dichloroethane-d4	102	70-130		%Rec	1	10/18/2019 7:58:05 PM
Surr: 4-Bromofluorobenzene	84.2	70-130		%Rec	1	10/18/2019 7:58:05 PM
Surr: Dibromofluoromethane	105	70-130		%Rec	1	10/18/2019 7:58:05 PM
Surr: Toluene-d8	99.6	70-130		%Rec	1	10/18/2019 7:58:05 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **DJF**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	10/18/2019 7:58:05 PM
Surr: BFB	89.1	70-130		%Rec	1	10/18/2019 7:58:05 PM

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

Qualifiers:

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

Analytical Report
Lab Order **1910977**
Date Reported: **10/25/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS19-27 0'
Project: BIGCAT 215H **Collection Date:** 10/15/2019 3:40:00 PM
Lab ID: 1910977-027 **Matrix:** SOIL **Received Date:** 10/17/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	10/22/2019 8:10:59 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	10/22/2019 8:10:59 AM
Surr: DNOP	67.4	70-130	S	%Rec	1	10/22/2019 8:10:59 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	3400	150		mg/Kg	50	10/24/2019 12:04:50 AM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**
Benzene	ND	0.025		mg/Kg	1	10/18/2019 8:27:22 PM
Toluene	ND	0.050		mg/Kg	1	10/18/2019 8:27:22 PM
Ethylbenzene	ND	0.050		mg/Kg	1	10/18/2019 8:27:22 PM
Xylenes, Total	ND	0.099		mg/Kg	1	10/18/2019 8:27:22 PM
Surr: 1,2-Dichloroethane-d4	103	70-130		%Rec	1	10/18/2019 8:27:22 PM
Surr: 4-Bromofluorobenzene	84.2	70-130		%Rec	1	10/18/2019 8:27:22 PM
Surr: Dibromofluoromethane	105	70-130		%Rec	1	10/18/2019 8:27:22 PM
Surr: Toluene-d8	95.4	70-130		%Rec	1	10/18/2019 8:27:22 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **DJF**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	10/18/2019 8:27:22 PM
Surr: BFB	88.1	70-130		%Rec	1	10/18/2019 8:27:22 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **1910977**
Date Reported: **10/25/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS19-28 0'
Project: BIGCAT 215H **Collection Date:** 10/15/2019 3:50:00 PM
Lab ID: 1910977-028 **Matrix:** SOIL **Received Date:** 10/17/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.1		mg/Kg	1	10/22/2019 8:33:03 AM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	10/22/2019 8:33:03 AM
Surr: DNOP	65.6	70-130	S	%Rec	1	10/22/2019 8:33:03 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	2300	60		mg/Kg	20	10/22/2019 5:58:42 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**
Benzene	ND	0.025		mg/Kg	1	10/18/2019 8:56:03 PM
Toluene	ND	0.050		mg/Kg	1	10/18/2019 8:56:03 PM
Ethylbenzene	ND	0.050		mg/Kg	1	10/18/2019 8:56:03 PM
Xylenes, Total	ND	0.10		mg/Kg	1	10/18/2019 8:56:03 PM
Surr: 1,2-Dichloroethane-d4	95.1	70-130		%Rec	1	10/18/2019 8:56:03 PM
Surr: 4-Bromofluorobenzene	86.3	70-130		%Rec	1	10/18/2019 8:56:03 PM
Surr: Dibromofluoromethane	99.4	70-130		%Rec	1	10/18/2019 8:56:03 PM
Surr: Toluene-d8	97.7	70-130		%Rec	1	10/18/2019 8:56:03 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **DJF**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	10/18/2019 8:56:03 PM
Surr: BFB	85.4	70-130		%Rec	1	10/18/2019 8:56:03 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **1910977**
Date Reported: **10/25/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS19-29 0'
Project: BIGCAT 215H **Collection Date:** 10/15/2019 4:00:00 PM
Lab ID: 1910977-029 **Matrix:** SOIL **Received Date:** 10/17/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	12	9.8		mg/Kg	1	10/22/2019 8:54:56 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	10/22/2019 8:54:56 AM
Surr: DNOP	65.5	70-130	S	%Rec	1	10/22/2019 8:54:56 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	3200	150		mg/Kg	50	10/24/2019 12:17:14 AM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**
Benzene	ND	0.024		mg/Kg	1	10/18/2019 11:22:44 PM
Toluene	ND	0.049		mg/Kg	1	10/18/2019 11:22:44 PM
Ethylbenzene	ND	0.049		mg/Kg	1	10/18/2019 11:22:44 PM
Xylenes, Total	ND	0.098		mg/Kg	1	10/18/2019 11:22:44 PM
Surr: 1,2-Dichloroethane-d4	100	70-130		%Rec	1	10/18/2019 11:22:44 PM
Surr: 4-Bromofluorobenzene	85.0	70-130		%Rec	1	10/18/2019 11:22:44 PM
Surr: Dibromofluoromethane	105	70-130		%Rec	1	10/18/2019 11:22:44 PM
Surr: Toluene-d8	100	70-130		%Rec	1	10/18/2019 11:22:44 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **DJF**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	10/18/2019 11:22:44 PM
Surr: BFB	89.5	70-130		%Rec	1	10/18/2019 11:22:44 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **1910977**
Date Reported: **10/25/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS19-30 0'
Project: BIGCAT 215H **Collection Date:** 10/15/2019 4:10:00 PM
Lab ID: 1910977-030 **Matrix:** SOIL **Received Date:** 10/17/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	22	9.7		mg/Kg	1	10/22/2019 9:17:01 AM
Motor Oil Range Organics (MRO)	54	49		mg/Kg	1	10/22/2019 9:17:01 AM
Surr: DNOP	70.3	70-130		%Rec	1	10/22/2019 9:17:01 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	3600	150		mg/Kg	50	10/24/2019 12:29:38 AM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**
Benzene	ND	0.025		mg/Kg	1	10/18/2019 11:52:13 PM
Toluene	ND	0.050		mg/Kg	1	10/18/2019 11:52:13 PM
Ethylbenzene	ND	0.050		mg/Kg	1	10/18/2019 11:52:13 PM
Xylenes, Total	ND	0.10		mg/Kg	1	10/18/2019 11:52:13 PM
Surr: 1,2-Dichloroethane-d4	102	70-130		%Rec	1	10/18/2019 11:52:13 PM
Surr: 4-Bromofluorobenzene	80.9	70-130		%Rec	1	10/18/2019 11:52:13 PM
Surr: Dibromofluoromethane	103	70-130		%Rec	1	10/18/2019 11:52:13 PM
Surr: Toluene-d8	102	70-130		%Rec	1	10/18/2019 11:52:13 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **DJF**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	10/18/2019 11:52:13 PM
Surr: BFB	84.6	70-130		%Rec	1	10/18/2019 11:52:13 PM

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

Qualifiers:

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

Analytical Report
Lab Order **1910977**
Date Reported: **10/25/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS19-31 0'
Project: BIGCAT 215H **Collection Date:** 10/15/2019 4:15:00 PM
Lab ID: 1910977-031 **Matrix:** SOIL **Received Date:** 10/17/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	12	9.5		mg/Kg	1	10/22/2019 9:39:04 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	10/22/2019 9:39:04 AM
Surr: DNOP	70.5	70-130		%Rec	1	10/22/2019 9:39:04 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	2400	150		mg/Kg	50	10/24/2019 12:42:03 AM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**
Benzene	ND	0.025		mg/Kg	1	10/19/2019 12:21:26 AM
Toluene	ND	0.049		mg/Kg	1	10/19/2019 12:21:26 AM
Ethylbenzene	ND	0.049		mg/Kg	1	10/19/2019 12:21:26 AM
Xylenes, Total	ND	0.098		mg/Kg	1	10/19/2019 12:21:26 AM
Surr: 1,2-Dichloroethane-d4	104	70-130		%Rec	1	10/19/2019 12:21:26 AM
Surr: 4-Bromofluorobenzene	84.6	70-130		%Rec	1	10/19/2019 12:21:26 AM
Surr: Dibromofluoromethane	105	70-130		%Rec	1	10/19/2019 12:21:26 AM
Surr: Toluene-d8	101	70-130		%Rec	1	10/19/2019 12:21:26 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **DJF**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	10/19/2019 12:21:26 AM
Surr: BFB	88.7	70-130		%Rec	1	10/19/2019 12:21:26 AM

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

Qualifiers:

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

Analytical Report
Lab Order **1910977**
Date Reported: **10/25/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS19-32 0'
Project: BIGCAT 215H **Collection Date:** 10/15/2019 4:20:00 PM
Lab ID: 1910977-032 **Matrix:** SOIL **Received Date:** 10/17/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	13	9.6		mg/Kg	1	10/22/2019 10:00:54 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	10/22/2019 10:00:54 AM
Surr: DNOP	77.2	70-130		%Rec	1	10/22/2019 10:00:54 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	2300	60		mg/Kg	20	10/22/2019 6:48:20 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**
Benzene	ND	0.025		mg/Kg	1	10/19/2019 12:50:51 AM
Toluene	ND	0.050		mg/Kg	1	10/19/2019 12:50:51 AM
Ethylbenzene	ND	0.050		mg/Kg	1	10/19/2019 12:50:51 AM
Xylenes, Total	ND	0.10		mg/Kg	1	10/19/2019 12:50:51 AM
Surr: 1,2-Dichloroethane-d4	107	70-130		%Rec	1	10/19/2019 12:50:51 AM
Surr: 4-Bromofluorobenzene	84.0	70-130		%Rec	1	10/19/2019 12:50:51 AM
Surr: Dibromofluoromethane	107	70-130		%Rec	1	10/19/2019 12:50:51 AM
Surr: Toluene-d8	100	70-130		%Rec	1	10/19/2019 12:50:51 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **DJF**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	10/19/2019 12:50:51 AM
Surr: BFB	87.4	70-130		%Rec	1	10/19/2019 12:50:51 AM

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

Qualifiers:

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

Analytical Report
Lab Order **1910977**
Date Reported: **10/25/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS19-33 0'
Project: BIGCAT 215H **Collection Date:** 10/15/2019 4:25:00 PM
Lab ID: 1910977-033 **Matrix:** SOIL **Received Date:** 10/17/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	11	9.7		mg/Kg	1	10/22/2019 10:22:52 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	10/22/2019 10:22:52 AM
Surr: DNOP	74.7	70-130		%Rec	1	10/22/2019 10:22:52 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	3600	150		mg/Kg	50	10/24/2019 12:54:28 AM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**
Benzene	ND	0.025		mg/Kg	1	10/19/2019 1:19:47 AM
Toluene	ND	0.050		mg/Kg	1	10/19/2019 1:19:47 AM
Ethylbenzene	ND	0.050		mg/Kg	1	10/19/2019 1:19:47 AM
Xylenes, Total	ND	0.10		mg/Kg	1	10/19/2019 1:19:47 AM
Surr: 1,2-Dichloroethane-d4	103	70-130		%Rec	1	10/19/2019 1:19:47 AM
Surr: 4-Bromofluorobenzene	88.4	70-130		%Rec	1	10/19/2019 1:19:47 AM
Surr: Dibromofluoromethane	106	70-130		%Rec	1	10/19/2019 1:19:47 AM
Surr: Toluene-d8	103	70-130		%Rec	1	10/19/2019 1:19:47 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **DJF**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	10/19/2019 1:19:47 AM
Surr: BFB	91.0	70-130		%Rec	1	10/19/2019 1:19:47 AM

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

Qualifiers:

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

Analytical Report
Lab Order **1910977**
Date Reported: **10/25/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS19-34 0'
Project: BIGCAT 215H **Collection Date:** 10/15/2019 4:30:00 PM
Lab ID: 1910977-034 **Matrix:** SOIL **Received Date:** 10/17/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	10/22/2019 10:44:53 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	10/22/2019 10:44:53 AM
Surr: DNOP	67.3	70-130	S	%Rec	1	10/22/2019 10:44:53 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	2300	60		mg/Kg	20	10/22/2019 7:13:09 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**
Benzene	ND	0.025		mg/Kg	1	10/19/2019 1:49:08 AM
Toluene	ND	0.050		mg/Kg	1	10/19/2019 1:49:08 AM
Ethylbenzene	ND	0.050		mg/Kg	1	10/19/2019 1:49:08 AM
Xylenes, Total	ND	0.099		mg/Kg	1	10/19/2019 1:49:08 AM
Surr: 1,2-Dichloroethane-d4	104	70-130		%Rec	1	10/19/2019 1:49:08 AM
Surr: 4-Bromofluorobenzene	87.6	70-130		%Rec	1	10/19/2019 1:49:08 AM
Surr: Dibromofluoromethane	109	70-130		%Rec	1	10/19/2019 1:49:08 AM
Surr: Toluene-d8	103	70-130		%Rec	1	10/19/2019 1:49:08 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **DJF**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	10/19/2019 1:49:08 AM
Surr: BFB	91.8	70-130		%Rec	1	10/19/2019 1:49:08 AM

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

Qualifiers:

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

Analytical Report
Lab Order **1910977**
Date Reported: **10/25/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS19-35 0'
Project: BIGCAT 215H **Collection Date:** 10/15/2019 4:40:00 PM
Lab ID: 1910977-035 **Matrix:** SOIL **Received Date:** 10/17/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	10/22/2019 11:06:43 AM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	10/22/2019 11:06:43 AM
Surr: DNOP	72.7	70-130		%Rec	1	10/22/2019 11:06:43 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	1600	60		mg/Kg	20	10/22/2019 7:25:34 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**
Benzene	ND	0.025		mg/Kg	1	10/19/2019 2:18:28 AM
Toluene	ND	0.049		mg/Kg	1	10/19/2019 2:18:28 AM
Ethylbenzene	ND	0.049		mg/Kg	1	10/19/2019 2:18:28 AM
Xylenes, Total	ND	0.098		mg/Kg	1	10/19/2019 2:18:28 AM
Surr: 1,2-Dichloroethane-d4	107	70-130		%Rec	1	10/19/2019 2:18:28 AM
Surr: 4-Bromofluorobenzene	85.7	70-130		%Rec	1	10/19/2019 2:18:28 AM
Surr: Dibromofluoromethane	105	70-130		%Rec	1	10/19/2019 2:18:28 AM
Surr: Toluene-d8	102	70-130		%Rec	1	10/19/2019 2:18:28 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **DJF**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	10/19/2019 2:18:28 AM
Surr: BFB	90.8	70-130		%Rec	1	10/19/2019 2:18:28 AM

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

Qualifiers:

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

Analytical Report
Lab Order **1910977**
Date Reported: **10/25/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS19-36 0'
Project: BIGCAT 215H **Collection Date:** 10/15/2019 4:50:00 PM
Lab ID: 1910977-036 **Matrix:** SOIL **Received Date:** 10/17/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	10/22/2019 11:28:48 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	10/22/2019 11:28:48 AM
Surr: DNOP	60.7	70-130	S	%Rec	1	10/22/2019 11:28:48 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	1400	60		mg/Kg	20	10/22/2019 8:02:48 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**
Benzene	ND	0.024		mg/Kg	1	10/19/2019 2:47:45 AM
Toluene	ND	0.049		mg/Kg	1	10/19/2019 2:47:45 AM
Ethylbenzene	ND	0.049		mg/Kg	1	10/19/2019 2:47:45 AM
Xylenes, Total	ND	0.098		mg/Kg	1	10/19/2019 2:47:45 AM
Surr: 1,2-Dichloroethane-d4	101	70-130		%Rec	1	10/19/2019 2:47:45 AM
Surr: 4-Bromofluorobenzene	87.1	70-130		%Rec	1	10/19/2019 2:47:45 AM
Surr: Dibromofluoromethane	103	70-130		%Rec	1	10/19/2019 2:47:45 AM
Surr: Toluene-d8	100	70-130		%Rec	1	10/19/2019 2:47:45 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **DJF**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	10/19/2019 2:47:45 AM
Surr: BFB	89.4	70-130		%Rec	1	10/19/2019 2:47:45 AM

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

Qualifiers:

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

Analytical Report
Lab Order **1910977**
Date Reported: **10/25/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS19-37 0'
Project: BIGCAT 215H **Collection Date:** 10/15/2019 5:00:00 PM
Lab ID: 1910977-037 **Matrix:** SOIL **Received Date:** 10/17/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	10/22/2019 11:50:49 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	10/22/2019 11:50:49 AM
Surr: DNOP	64.1	70-130	S	%Rec	1	10/22/2019 11:50:49 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	990	60		mg/Kg	20	10/22/2019 8:15:12 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**
Benzene	ND	0.024		mg/Kg	1	10/19/2019 3:17:03 AM
Toluene	ND	0.049		mg/Kg	1	10/19/2019 3:17:03 AM
Ethylbenzene	ND	0.049		mg/Kg	1	10/19/2019 3:17:03 AM
Xylenes, Total	ND	0.098		mg/Kg	1	10/19/2019 3:17:03 AM
Surr: 1,2-Dichloroethane-d4	99.2	70-130		%Rec	1	10/19/2019 3:17:03 AM
Surr: 4-Bromofluorobenzene	86.8	70-130		%Rec	1	10/19/2019 3:17:03 AM
Surr: Dibromofluoromethane	104	70-130		%Rec	1	10/19/2019 3:17:03 AM
Surr: Toluene-d8	102	70-130		%Rec	1	10/19/2019 3:17:03 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **DJF**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	10/19/2019 3:17:03 AM
Surr: BFB	90.8	70-130		%Rec	1	10/19/2019 3:17:03 AM

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

Qualifiers:

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

Analytical Report
Lab Order **1910977**
Date Reported: **10/25/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BG19-01 0'
Project: BIGCAT 215H **Collection Date:** 10/14/2019 5:10:00 PM
Lab ID: 1910977-038 **Matrix:** SOIL **Received Date:** 10/17/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	8.6		mg/Kg	1	10/22/2019 12:12:44 PM
Motor Oil Range Organics (MRO)	ND	43		mg/Kg	1	10/22/2019 12:12:44 PM
Surr: DNOP	62.9	70-130	S	%Rec	1	10/22/2019 12:12:44 PM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	ND	60		mg/Kg	20	10/22/2019 8:27:37 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**
Benzene	ND	0.025		mg/Kg	1	10/19/2019 3:46:15 AM
Toluene	ND	0.050		mg/Kg	1	10/19/2019 3:46:15 AM
Ethylbenzene	ND	0.050		mg/Kg	1	10/19/2019 3:46:15 AM
Xylenes, Total	ND	0.10		mg/Kg	1	10/19/2019 3:46:15 AM
Surr: 1,2-Dichloroethane-d4	103	70-130		%Rec	1	10/19/2019 3:46:15 AM
Surr: 4-Bromofluorobenzene	82.7	70-130		%Rec	1	10/19/2019 3:46:15 AM
Surr: Dibromofluoromethane	104	70-130		%Rec	1	10/19/2019 3:46:15 AM
Surr: Toluene-d8	97.3	70-130		%Rec	1	10/19/2019 3:46:15 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **DJF**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	10/19/2019 3:46:15 AM
Surr: BFB	84.6	70-130		%Rec	1	10/19/2019 3:46:15 AM

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

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910977**
25-Oct-19

Client: Vertex Resource Group Ltd.
Project: BIGCAT 215H

Sample ID: **MB-48289**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBS**	Batch ID: **48289**	RunNo: **63862**							
Prep Date: **10/21/2019**	Analysis Date: **10/21/2019**	SeqNo: **2183303**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-48289**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSS**	Batch ID: **48289**	RunNo: **63862**							
Prep Date: **10/21/2019**	Analysis Date: **10/21/2019**	SeqNo: **2183304**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	92.8	90	110			

Sample ID: **MB-48294**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBS**	Batch ID: **48294**	RunNo: **63862**							
Prep Date: **10/21/2019**	Analysis Date: **10/21/2019**	SeqNo: **2183340**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-48294**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSS**	Batch ID: **48294**	RunNo: **63862**							
Prep Date: **10/21/2019**	Analysis Date: **10/21/2019**	SeqNo: **2183341**	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-48313**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBS**	Batch ID: **48313**	RunNo: **63879**							
Prep Date: **10/22/2019**	Analysis Date: **10/22/2019**	SeqNo: **2184309**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-48313**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSS**	Batch ID: **48313**	RunNo: **63879**							
Prep Date: **10/22/2019**	Analysis Date: **10/22/2019**	SeqNo: **2184310**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	16	1.5	15.00	0	105	90	110			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910977**
25-Oct-19

Client: Vertex Resource Group Ltd.
Project: BIGCAT 215H

Sample ID: **LCS-48245** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **48245** RunNo: **63833**
Prep Date: **10/18/2019** Analysis Date: **10/21/2019** SeqNo: **2182427** 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	63.9	124			

Sample ID: **MB-48245** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **48245** RunNo: **63833**
Prep Date: **10/18/2019** Analysis Date: **10/21/2019** SeqNo: **2182428** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.1		10.00		91.1	70	130			

Sample ID: **1910977-001AMS** SampType: **MS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **BS19-01 0'** Batch ID: **48245** RunNo: **63841**
Prep Date: **10/18/2019** Analysis Date: **10/21/2019** SeqNo: **2183484** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	46	9.9	49.46	10.59	71.2	57	142			
Surr: DNOP	4.6		4.946		92.7	70	130			

Sample ID: **1910977-001AMSD** SampType: **MSD** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **BS19-01 0'** Batch ID: **48245** RunNo: **63841**
Prep Date: **10/18/2019** Analysis Date: **10/21/2019** SeqNo: **2183485** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	50	9.7	48.54	10.59	80.7	57	142	8.29	20	
Surr: DNOP	3.4		4.854		69.6	70	130	0	0	S

Sample ID: **1910977-021AMS** SampType: **MS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **BS19-21 0'** Batch ID: **48247** RunNo: **63841**
Prep Date: **10/18/2019** Analysis Date: **10/22/2019** SeqNo: **2183506** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	49	9.0	45.09	3.988	100	57	142			
Surr: DNOP	3.1		4.509		69.0	70	130			S

Sample ID: **1910977-021AMSD** SampType: **MSD** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **BS19-21 0'** Batch ID: **48247** RunNo: **63841**
Prep Date: **10/18/2019** Analysis Date: **10/22/2019** SeqNo: **2183507** Units: **mg/Kg**

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

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910977**
25-Oct-19

Client: Vertex Resource Group Ltd.
Project: BIGCAT 215H

Sample ID: **1910977-021AMSD** SampType: **MSD** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **BS19-21 0'** Batch ID: **48247** RunNo: **63841**
Prep Date: **10/18/2019** Analysis Date: **10/22/2019** SeqNo: **2183507** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	51	9.9	49.26	3.988	96.3	57	142	4.32	20	
Surr: DNOP	3.1		4.926		62.9	70	130	0	0	S

Sample ID: **LCS-48247** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **48247** RunNo: **63841**
Prep Date: **10/18/2019** Analysis Date: **10/21/2019** SeqNo: **2183635** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	52	10	50.00	0	104	63.9	124			
Surr: DNOP	4.7		5.000		94.4	70	130			

Sample ID: **MB-48247** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **48247** RunNo: **63841**
Prep Date: **10/18/2019** Analysis Date: **10/21/2019** SeqNo: **2183636** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.1		10.00		91.1	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 Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910977**

25-Oct-19

Client: Vertex Resource Group Ltd.

Project: BIGCAT 215H

Sample ID: **1910977-001AMS**	SampType: **MS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **BS19-01 0'**	Batch ID: **48234**	RunNo: **63829**
Prep Date: **10/17/2019**	Analysis Date: **10/19/2019**	SeqNo: **2181727** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	4.9	24.73	0	96.6	69.1	142			
Surr: BFB	1100		989.1		107	77.4	118			

Sample ID: **1910977-001AMSD**	SampType: **MSD**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **BS19-01 0'**	Batch ID: **48234**	RunNo: **63829**
Prep Date: **10/17/2019**	Analysis Date: **10/19/2019**	SeqNo: **2181728** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	24.98	0	90.7	69.1	142	5.37	20	
Surr: BFB	1000		999.0		101	77.4	118	0	0	

Sample ID: **LCS-48234**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **48234**	RunNo: **63829**
Prep Date: **10/17/2019**	Analysis Date: **10/18/2019**	SeqNo: **2181749** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	5.0	25.00	0	88.3	80	120			
Surr: BFB	1100		1000		106	77.4	118			

Sample ID: **MB-48234**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **48234**	RunNo: **63829**
Prep Date: **10/17/2019**	Analysis Date: **10/19/2019**	SeqNo: **2181751** 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		94.5	77.4	118			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910977**
25-Oct-19

Client: Vertex Resource Group Ltd.
Project: BIGCAT 215H

Sample ID: **1910977-002AMS** SampType: **MS** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **BS19-02 0'** Batch ID: **48234** RunNo: **63829**
Prep Date: **10/17/2019** Analysis Date: **10/19/2019** SeqNo: **2181878** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.024	0.9747	0.009690	108	76	123			
Toluene	1.1	0.049	0.9747	0.02198	111	80.3	127			
Ethylbenzene	1.1	0.049	0.9747	0.01189	113	80.2	131			
Xylenes, Total	3.4	0.097	2.924	0.06094	113	78	133			
Surr: 4-Bromofluorobenzene	1.0		0.9747		104	80	120			

Sample ID: **1910977-002AMSD** SampType: **MSD** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **BS19-02 0'** Batch ID: **48234** RunNo: **63829**
Prep Date: **10/17/2019** Analysis Date: **10/19/2019** SeqNo: **2181879** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.98	0.025	0.9921	0.009690	97.5	76	123	8.32	20	
Toluene	1.0	0.050	0.9921	0.02198	100	80.3	127	8.49	20	
Ethylbenzene	1.0	0.050	0.9921	0.01189	101	80.2	131	9.90	20	
Xylenes, Total	3.1	0.099	2.976	0.06094	103	78	133	7.06	20	
Surr: 4-Bromofluorobenzene	0.94		0.9921		94.6	80	120	0	0	

Sample ID: **LCS-48234** SampType: **LCS** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS** Batch ID: **48234** RunNo: **63829**
Prep Date: **10/17/2019** Analysis Date: **10/19/2019** SeqNo: **2181899** 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	94.6	80	120			
Toluene	0.96	0.050	1.000	0	96.0	80	120			
Ethylbenzene	0.97	0.050	1.000	0	97.0	80	120			
Xylenes, Total	2.9	0.10	3.000	0	97.7	80	120			
Surr: 4-Bromofluorobenzene	1.0		1.000		99.9	80	120			

Sample ID: **MB-48234** SampType: **MBLK** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS** Batch ID: **48234** RunNo: **63829**
Prep Date: **10/17/2019** Analysis Date: **10/19/2019** SeqNo: **2181901** 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	0.97		1.000		96.9	80	120			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910977**
25-Oct-19

Client: Vertex Resource Group Ltd.
Project: BIGCAT 215H

Sample ID: **mb-48237** SampType: **MBLK** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **PBS** Batch ID: **48237** RunNo: **63824**
Prep Date: **10/17/2019** Analysis Date: **10/18/2019** SeqNo: **2181331** 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: 1,2-Dichloroethane-d4	0.50		0.5000		101	70	130			
Surr: 4-Bromofluorobenzene	0.43		0.5000		86.9	70	130			
Surr: Dibromofluoromethane	0.50		0.5000		100	70	130			
Surr: Toluene-d8	0.50		0.5000		100	70	130			

Sample ID: **lcs-48237** SampType: **LCS** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **LCSS** Batch ID: **48237** RunNo: **63824**
Prep Date: **10/17/2019** Analysis Date: **10/18/2019** SeqNo: **2181332** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.025	1.000	0	104	68	135			
Toluene	0.95	0.050	1.000	0	94.7	70	130			
Ethylbenzene	0.94	0.050	1.000	0	94.4	70	130			
Xylenes, Total	3.0	0.10	3.000	0	99.2	70	130			
Surr: 1,2-Dichloroethane-d4	0.52		0.5000		103	70	130			
Surr: 4-Bromofluorobenzene	0.43		0.5000		86.0	70	130			
Surr: Dibromofluoromethane	0.51		0.5000		102	70	130			
Surr: Toluene-d8	0.50		0.5000		99.4	70	130			

Sample ID: **1910977-022ams** SampType: **MS** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **BS19-22 0'** Batch ID: **48237** RunNo: **63824**
Prep Date: **10/17/2019** Analysis Date: **10/18/2019** SeqNo: **2181335** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.025	0.9911	0	111	57.1	141			
Toluene	0.97	0.050	0.9911	0	98.4	70	130			
Ethylbenzene	1.0	0.050	0.9911	0	101	70	130			
Xylenes, Total	3.2	0.099	2.973	0	108	70	130			
Surr: 1,2-Dichloroethane-d4	0.48		0.4955		97.7	70	130			
Surr: 4-Bromofluorobenzene	0.41		0.4955		83.4	70	130			
Surr: Dibromofluoromethane	0.50		0.4955		99.9	70	130			
Surr: Toluene-d8	0.48		0.4955		96.4	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 Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910977**
25-Oct-19

Client: Vertex Resource Group Ltd.
Project: BIGCAT 215H

Sample ID: **1910977-022amsd** SampType: **MSD** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **BS19-22 0'** Batch ID: **48237** RunNo: **63824**
Prep Date: **10/17/2019** Analysis Date: **10/18/2019** SeqNo: **2181336** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.025	0.9960	0	107	57.1	141	3.20	20	
Toluene	1.0	0.050	0.9960	0	101	70	130	2.89	20	
Ethylbenzene	1.0	0.050	0.9960	0	103	70	130	2.85	0	
Xylenes, Total	3.3	0.10	2.988	0	110	70	130	1.90	0	
Surr: 1,2-Dichloroethane-d4	0.50		0.4980		100	70	130	0	0	
Surr: 4-Bromofluorobenzene	0.42		0.4980		85.2	70	130	0	0	
Surr: Dibromofluoromethane	0.51		0.4980		102	70	130	0	0	
Surr: Toluene-d8	0.50		0.4980		99.8	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 Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910977**
25-Oct-19

Client: Vertex Resource Group Ltd.
Project: BIGCAT 215H

Sample ID: **mb-48237**	SampType: **MBLK**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **PBS**	Batch ID: **48237**	RunNo: **63824**
Prep Date: **10/17/2019**	Analysis Date: **10/18/2019**	SeqNo: **2181355** 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	450		500.0		90.6	70	130			

Sample ID: **lcs-48237**	SampType: **LCS**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **LCSS**	Batch ID: **48237**	RunNo: **63824**
Prep Date: **10/17/2019**	Analysis Date: **10/18/2019**	SeqNo: **2181356** 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	82.6	70	130			
Surr: BFB	440		500.0		87.4	70	130			

Sample ID: **1910977-021ams**	SampType: **MS**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **BS19-21 0'**	Batch ID: **48237**	RunNo: **63824**
Prep Date: **10/17/2019**	Analysis Date: **10/18/2019**	SeqNo: **2181358** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	24.80	0	91.0	70	130			
Surr: BFB	450		496.0		91.1	70	130			

Sample ID: **1910977-021amsd**	SampType: **MSD**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **BS19-21 0'**	Batch ID: **48237**	RunNo: **63824**
Prep Date: **10/17/2019**	Analysis Date: **10/18/2019**	SeqNo: **2181359** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	5.0	24.88	0	90.2	70	130	0.541	20	
Surr: BFB	450		497.5		90.7	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 Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: **VERTEX CARLSBAD** Work Order Number: **1910977** RcptNo: **1**

Received By: Juan Rojas **10/17/2019 8:50:00 AM**

Completed By: **Erin Melendrez** **10/17/2019 10:01:31 AM**

Reviewed By: ~~DM 10/17/19~~ DM 10/17/19 DAD 10/17/19

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

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

Adjusted?

Checked by: DM 10/17/19

Special Handling (if applicable)

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

Person Notified: Date:

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

Regarding:

Client Instructions:

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.2	Good	Yes			
2	2.7	Good	Yes			

Chain-of-Custody Record

Client: VERTEX RESOURCE GROUP

Mailing Address: ON FILE

Phone #: ON FILE

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: BIGCAT 216H

Project #: 19E-00575-022

Project Manager: DENNIS WILLIAM

Sampler: SHAR HARVESTER

On Ice: ☑ Yes ☐ No

# of Coolers:

Cooler Temp(including CF): ~~2.4-0.2=2.2~~ SD 10/17/19 See Remarks (°C)

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 1910977	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
10/15	10:00	S	BS19-01 0'	Jar	ICE	-001	X	X					X			
	10:10		BS19-02			-002	X	X					X			
	10:20		BS19-03			-003	X	X					X			
	10:30		BS19-04			-004	X	X					X			
	10:40		BS19-05			-005	X	X					X			
	10:50		BS19-06			-006	X	X					X			
	11:00		BS19-07			-007	X	X					X			
	11:10		BS19-08			-008	X	X					X			
	11:20		BS19-09			-009	X	X					X			
	11:30		BS19-10			-010	X	X					X			
	11:40		BS19-11			-011	X	X					X			
	11:50		BS19-12			-012	X	X					X			

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
10/16/19	0930				10/16/19	0930
10/16/19	1900			courier	10/17/19	8:50

Remarks: Temp = 2.4 - 0.2 = 2.2
2.9 - 0.2 = 2.7

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

Chain-of-Custody Record

Client: VERTEX RESOURCE GROUP

Mailing Address: ON FILE

Phone #: ON FILE

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: BIG CAT 215H / TOMCAT 116 State 2H

Project #: 19E-00675-022

Project Manager: DAWN WILLIAMS

Sampler:

On Ice: ☑ Yes ☐ No

# of Coolers: 1 @ 10/17/19 see Remarks

Cooler Temp(including CF): ~~2.4 0.2 = 2.2~~ (°C)

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

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 1910977	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
10/15	12:00	S	BS19-13 0'	1 4oz	Ice	-00113	X	X					X			
	12:10		14			-00214	X	X					X			
	12:20		15			-00315	X	X					X			
	12:30		16			-00416	X	X					X			
	12:40		17			-00517	X	X					X			
	12:50		18			-00618	X	X					X			
	14:30		19			-00719	X	X					X			
	14:40		20			-00820	X	X					X			
	14:50		21			-00921	X	X					X			
	15:00		22			-01022	X	X					X			
	15:10		23			-01123	X	X					X			
	15:20		24			-01224	X	X					X			

EDW 10/17/19

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
10/16/19	0930				10/16/19	0930
10/16/19	1900			carrier	10/17/19	8:00

Remarks:
Temp = 2.4 - 0.2 = 2.2
2.9 - 0.2 = 2.7

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

Chain-of-Custody Record

Client: VERTEX RESOURCE GROUP

Mailing Address: ON FILE

Phone #: ON FILE

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: BIGCAT 215H / TOMCAT 16 STATE 2H

Project #: 19E-00575-022

Project Manager: DENNIS WILLIAMS

Sampler:

On Ice: ☑ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): ~~3.2-0.2=3.0~~ ~~2.4-0.2=2.2~~ (°C) See Remarks

HALL ENVIRONMENTAL ANALYSIS LABORATORY
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Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 1910977	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
10/15	1520	S	BS19-25 0'	Jar	ICE	-025	X	X					X			
	1530		26			-026	X	X					X			
	1540		27			-027	X	X					X			
	1550		28			-028	X	X					X			
	1600		29			-029	X	X					X			
	1610		30			-030	X	X					X			
	1615		31			-031	X	X					X			
	1620		32			-032	X	X					X			
	1625		33			-033	X	X					X			
	1630		34			-034	X	X					X			
	1640		35			-035	X	X					X			
	1650		36			-036	X	X					X			

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
10/16/19	0930				10/16/19	0930
10/16/19	1200			Carrier	10/17/19	8:50

Remarks:
Temp= 2.4-0.2=2.2
2.9-0.2=2.7

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

Chain-of-Custody Record

Client: VERTEX RESOURCE GROUP

Mailing Address: ON FILE

Phone #: ON FILE

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: BIGCAT 2H5H / TOMCAT 16 STATE 2H

Project #: 19E-00575-022

Project Manager: DENNIS WILLIAMS

Sampler:

On Ice: ☒ Yes ☐ No

# of Coolers: 1 (2) 10/17/19 See Remarks

Cooler Temp(including CF): ~~2.4-0.2=2.2~~ (°C)

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

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 1910972	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
10/15	1700	S	BS19-27 (BGW per sample for 0')	JAR	ICE	-37	X	X					X			
10/14	1710	S	BG19-01 0'	JAR	ICE	-38	X	X					X			

Remarks:
Temp = 2.4 - 0.2 = 2.2
2.9 - 0.2 = 2.7

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
10/16/19	0930				10/16/19	0930
10/16/19	1940			carrier	10/17/19	8:50

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

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

November 11, 2020

Natalie Gordon

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

RE: Big Cat 16 9 Fed 215H Tomcat 16 State 2 OrderNo.: 2011156

Dear Natalie Gordon:

Hall Environmental Analysis Laboratory received 10 sample(s) on 11/4/2020 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **2011156**
Date Reported: **11/11/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Big Cat 16 9 Fed 215H Tomcat 16 State
Lab ID: 2011156-001 **Matrix:** SOIL

Client Sample ID: SS20-01 0-0.5'
Collection Date: 11/2/2020 12:00:00 PM
Received Date: 11/4/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **VP**	
Chloride	150	60		mg/Kg	20	11/10/2020 1:54:27 PM	56326
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **DJF**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	11/7/2020 3:04:06 PM	56204
Surr: BFB	103	70-130		%Rec	1	11/7/2020 3:04:06 PM	56204
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	8.8		mg/Kg	1	11/6/2020 12:30:59 PM	56211
Motor Oil Range Organics (MRO)	ND	44		mg/Kg	1	11/6/2020 12:30:59 PM	56211
Surr: DNOP	53.0	30.4-154		%Rec	1	11/6/2020 12:30:59 PM	56211
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**	
Benzene	ND	0.024		mg/Kg	1	11/7/2020 3:04:06 PM	56204
Toluene	ND	0.048		mg/Kg	1	11/7/2020 3:04:06 PM	56204
Ethylbenzene	ND	0.048		mg/Kg	1	11/7/2020 3:04:06 PM	56204
Xylenes, Total	ND	0.095		mg/Kg	1	11/7/2020 3:04:06 PM	56204
Surr: 1,2-Dichloroethane-d4	93.4	70-130		%Rec	1	11/7/2020 3:04:06 PM	56204
Surr: 4-Bromofluorobenzene	103	70-130		%Rec	1	11/7/2020 3:04:06 PM	56204
Surr: Dibromofluoromethane	96.8	70-130		%Rec	1	11/7/2020 3:04:06 PM	56204
Surr: Toluene-d8	95.5	70-130		%Rec	1	11/7/2020 3:04:06 PM	56204

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

Qualifiers:

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

Analytical Report
Lab Order **2011156**
Date Reported: **11/11/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Big Cat 16 9 Fed 215H Tomcat 16 State
Lab ID: 2011156-002 **Matrix:** SOIL

Client Sample ID: SS20-03 0-0.5
Collection Date: 11/2/2020 12:10:00 PM
Received Date: 11/4/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **VP**	
Chloride	ND	60		mg/Kg	20	11/10/2020 2:06:51 PM	56326
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **DJF**	
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	11/7/2020 3:31:23 PM	56204
Surr: BFB	101	70-130		%Rec	1	11/7/2020 3:31:23 PM	56204
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	11/6/2020 12:55:02 PM	56211
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	11/6/2020 12:55:02 PM	56211
Surr: DNOP	69.8	30.4-154		%Rec	1	11/6/2020 12:55:02 PM	56211
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**	
Benzene	ND	0.024		mg/Kg	1	11/7/2020 3:31:23 PM	56204
Toluene	ND	0.047		mg/Kg	1	11/7/2020 3:31:23 PM	56204
Ethylbenzene	ND	0.047		mg/Kg	1	11/7/2020 3:31:23 PM	56204
Xylenes, Total	ND	0.094		mg/Kg	1	11/7/2020 3:31:23 PM	56204
Surr: 1,2-Dichloroethane-d4	96.2	70-130		%Rec	1	11/7/2020 3:31:23 PM	56204
Surr: 4-Bromofluorobenzene	100	70-130		%Rec	1	11/7/2020 3:31:23 PM	56204
Surr: Dibromofluoromethane	97.5	70-130		%Rec	1	11/7/2020 3:31:23 PM	56204
Surr: Toluene-d8	96.2	70-130		%Rec	1	11/7/2020 3:31:23 PM	56204

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

Qualifiers:

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

Analytical Report
Lab Order **2011156**
Date Reported: **11/11/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Big Cat 16 9 Fed 215H Tomcat 16 State
Lab ID: 2011156-003 **Matrix:** SOIL

Client Sample ID: SS20-04 0-0.5
Collection Date: 11/2/2020 12:15:00 PM
Received Date: 11/4/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **VP**	
Chloride	ND	59		mg/Kg	20	11/10/2020 2:19:15 PM	56326
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **DJF**	
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	11/6/2020 3:44:49 PM	56212
Surr: BFB	102	70-130		%Rec	1	11/6/2020 3:44:49 PM	56212
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	8.7		mg/Kg	1	11/6/2020 11:02:28 PM	56227
Motor Oil Range Organics (MRO)	ND	44		mg/Kg	1	11/6/2020 11:02:28 PM	56227
Surr: DNOP	97.4	30.4-154		%Rec	1	11/6/2020 11:02:28 PM	56227
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**	
Benzene	ND	0.024		mg/Kg	1	11/6/2020 3:44:49 PM	56212
Toluene	ND	0.047		mg/Kg	1	11/6/2020 3:44:49 PM	56212
Ethylbenzene	ND	0.047		mg/Kg	1	11/6/2020 3:44:49 PM	56212
Xylenes, Total	ND	0.095		mg/Kg	1	11/6/2020 3:44:49 PM	56212
Surr: 1,2-Dichloroethane-d4	91.8	70-130		%Rec	1	11/6/2020 3:44:49 PM	56212
Surr: 4-Bromofluorobenzene	109	70-130		%Rec	1	11/6/2020 3:44:49 PM	56212
Surr: Dibromofluoromethane	96.0	70-130		%Rec	1	11/6/2020 3:44:49 PM	56212
Surr: Toluene-d8	95.7	70-130		%Rec	1	11/6/2020 3:44:49 PM	56212

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

Qualifiers:

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

Analytical Report
Lab Order **2011156**
Date Reported: **11/11/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Big Cat 16 9 Fed 215H Tomcat 16 State
Lab ID: 2011156-004 **Matrix:** SOIL

Client Sample ID: SS20-06 0-0.5
Collection Date: 11/2/2020 1:05:00 PM
Received Date: 11/4/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **VP**	
Chloride	ND	60		mg/Kg	20	11/10/2020 2:31:40 PM	56326
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **DJF**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	11/6/2020 5:06:30 PM	56212
Surr: BFB	103	70-130		%Rec	1	11/6/2020 5:06:30 PM	56212
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	11/7/2020 12:14:11 AM	56227
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	11/7/2020 12:14:11 AM	56227
Surr: DNOP	83.3	30.4-154		%Rec	1	11/7/2020 12:14:11 AM	56227
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**	
Benzene	ND	0.025		mg/Kg	1	11/6/2020 5:06:30 PM	56212
Toluene	ND	0.049		mg/Kg	1	11/6/2020 5:06:30 PM	56212
Ethylbenzene	ND	0.049		mg/Kg	1	11/6/2020 5:06:30 PM	56212
Xylenes, Total	ND	0.098		mg/Kg	1	11/6/2020 5:06:30 PM	56212
Surr: 1,2-Dichloroethane-d4	90.1	70-130		%Rec	1	11/6/2020 5:06:30 PM	56212
Surr: 4-Bromofluorobenzene	106	70-130		%Rec	1	11/6/2020 5:06:30 PM	56212
Surr: Dibromofluoromethane	95.9	70-130		%Rec	1	11/6/2020 5:06:30 PM	56212
Surr: Toluene-d8	93.8	70-130		%Rec	1	11/6/2020 5:06:30 PM	56212

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

Qualifiers:

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

Analytical Report
Lab Order **2011156**
Date Reported: **11/11/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Big Cat 16 9 Fed 215H Tomcat 16 State
Lab ID: 2011156-005 **Matrix:** SOIL

Client Sample ID: SS20-08 0-0.5
Collection Date: 11/2/2020 1:15:00 PM
Received Date: 11/4/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **VP**	
Chloride	94	60		mg/Kg	20	11/10/2020 2:44:04 PM	56326
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **DJF**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	11/6/2020 6:28:18 PM	56212
Surr: BFB	99.3	70-130		%Rec	1	11/6/2020 6:28:18 PM	56212
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	9.0		mg/Kg	1	11/7/2020 12:38:11 AM	56227
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	11/7/2020 12:38:11 AM	56227
Surr: DNOP	81.1	30.4-154		%Rec	1	11/7/2020 12:38:11 AM	56227
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**	
Benzene	ND	0.025		mg/Kg	1	11/6/2020 6:28:18 PM	56212
Toluene	ND	0.049		mg/Kg	1	11/6/2020 6:28:18 PM	56212
Ethylbenzene	ND	0.049		mg/Kg	1	11/6/2020 6:28:18 PM	56212
Xylenes, Total	ND	0.099		mg/Kg	1	11/6/2020 6:28:18 PM	56212
Surr: 1,2-Dichloroethane-d4	94.4	70-130		%Rec	1	11/6/2020 6:28:18 PM	56212
Surr: 4-Bromofluorobenzene	103	70-130		%Rec	1	11/6/2020 6:28:18 PM	56212
Surr: Dibromofluoromethane	97.5	70-130		%Rec	1	11/6/2020 6:28:18 PM	56212
Surr: Toluene-d8	95.4	70-130		%Rec	1	11/6/2020 6:28:18 PM	56212

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

Qualifiers:

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

Analytical Report
Lab Order **2011156**
Date Reported: **11/11/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Big Cat 16 9 Fed 215H Tomcat 16 State
Lab ID: 2011156-006 **Matrix:** SOIL

Client Sample ID: BH20-02 0
Collection Date: 11/2/2020 1:50:00 PM
Received Date: 11/4/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **VP**	
Chloride	ND	60		mg/Kg	20	11/10/2020 2:56:28 PM	56326
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **DJF**	
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	11/6/2020 6:55:25 PM	56212
Surr: BFB	101	70-130		%Rec	1	11/6/2020 6:55:25 PM	56212
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	9.0		mg/Kg	1	11/7/2020 1:02:06 AM	56227
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	11/7/2020 1:02:06 AM	56227
Surr: DNOP	76.0	30.4-154		%Rec	1	11/7/2020 1:02:06 AM	56227
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**	
Benzene	ND	0.023		mg/Kg	1	11/6/2020 6:55:25 PM	56212
Toluene	ND	0.047		mg/Kg	1	11/6/2020 6:55:25 PM	56212
Ethylbenzene	ND	0.047		mg/Kg	1	11/6/2020 6:55:25 PM	56212
Xylenes, Total	ND	0.093		mg/Kg	1	11/6/2020 6:55:25 PM	56212
Surr: 1,2-Dichloroethane-d4	97.2	70-130		%Rec	1	11/6/2020 6:55:25 PM	56212
Surr: 4-Bromofluorobenzene	106	70-130		%Rec	1	11/6/2020 6:55:25 PM	56212
Surr: Dibromofluoromethane	100	70-130		%Rec	1	11/6/2020 6:55:25 PM	56212
Surr: Toluene-d8	94.2	70-130		%Rec	1	11/6/2020 6:55:25 PM	56212

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

Qualifiers:

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

Analytical Report
Lab Order **2011156**
Date Reported: **11/11/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Big Cat 16 9 Fed 215H Tomcat 16 State
Lab ID: 2011156-007 **Matrix:** SOIL

Client Sample ID: BH20-03 0
Collection Date: 11/2/2020 2:00:00 PM
Received Date: 11/4/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **VP**	
Chloride	1500	59		mg/Kg	20	11/10/2020 3:08:53 PM	56326
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **DJF**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	11/6/2020 7:22:46 PM	56212
Surr: BFB	100	70-130		%Rec	1	11/6/2020 7:22:46 PM	56212
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	11/7/2020 1:26:01 AM	56227
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	11/7/2020 1:26:01 AM	56227
Surr: DNOP	84.0	30.4-154		%Rec	1	11/7/2020 1:26:01 AM	56227
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**	
Benzene	ND	0.024		mg/Kg	1	11/6/2020 7:22:46 PM	56212
Toluene	ND	0.048		mg/Kg	1	11/6/2020 7:22:46 PM	56212
Ethylbenzene	ND	0.048		mg/Kg	1	11/6/2020 7:22:46 PM	56212
Xylenes, Total	ND	0.096		mg/Kg	1	11/6/2020 7:22:46 PM	56212
Surr: 1,2-Dichloroethane-d4	93.5	70-130		%Rec	1	11/6/2020 7:22:46 PM	56212
Surr: 4-Bromofluorobenzene	104	70-130		%Rec	1	11/6/2020 7:22:46 PM	56212
Surr: Dibromofluoromethane	97.4	70-130		%Rec	1	11/6/2020 7:22:46 PM	56212
Surr: Toluene-d8	94.9	70-130		%Rec	1	11/6/2020 7:22:46 PM	56212

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

Qualifiers:

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

Analytical Report
Lab Order **2011156**
Date Reported: **11/11/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Big Cat 16 9 Fed 215H Tomcat 16 State
Lab ID: 2011156-008 **Matrix:** SOIL

Client Sample ID: BH20-03 0.5
Collection Date: 11/2/2020 2:05:00 PM
Received Date: 11/4/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **VP**	
Chloride	200	60		mg/Kg	20	11/10/2020 4:10:57 PM	56326
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **DJF**	
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	11/6/2020 7:49:53 PM	56212
Surr: BFB	99.2	70-130		%Rec	1	11/6/2020 7:49:53 PM	56212
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	11/7/2020 1:49:50 AM	56227
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	11/7/2020 1:49:50 AM	56227
Surr: DNOP	85.2	30.4-154		%Rec	1	11/7/2020 1:49:50 AM	56227
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**	
Benzene	ND	0.024		mg/Kg	1	11/6/2020 7:49:53 PM	56212
Toluene	ND	0.047		mg/Kg	1	11/6/2020 7:49:53 PM	56212
Ethylbenzene	ND	0.047		mg/Kg	1	11/6/2020 7:49:53 PM	56212
Xylenes, Total	ND	0.095		mg/Kg	1	11/6/2020 7:49:53 PM	56212
Surr: 1,2-Dichloroethane-d4	95.3	70-130		%Rec	1	11/6/2020 7:49:53 PM	56212
Surr: 4-Bromofluorobenzene	104	70-130		%Rec	1	11/6/2020 7:49:53 PM	56212
Surr: Dibromofluoromethane	98.0	70-130		%Rec	1	11/6/2020 7:49:53 PM	56212
Surr: Toluene-d8	94.6	70-130		%Rec	1	11/6/2020 7:49:53 PM	56212

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

Qualifiers:

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

Analytical Report
Lab Order **2011156**
Date Reported: **11/11/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Big Cat 16 9 Fed 215H Tomcat 16 State
Lab ID: 2011156-009 **Matrix:** SOIL

Client Sample ID: BH20-04 0
Collection Date: 11/2/2020 2:10:00 PM
Received Date: 11/4/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **CAS**	
Chloride	ND	59		mg/Kg	20	11/10/2020 4:19:50 PM	56328
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **DJF**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	11/6/2020 8:17:00 PM	56212
Surr: BFB	99.1	70-130		%Rec	1	11/6/2020 8:17:00 PM	56212
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	11/9/2020 6:39:38 PM	56227
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	11/9/2020 6:39:38 PM	56227
Surr: DNOP	90.4	30.4-154		%Rec	1	11/9/2020 6:39:38 PM	56227
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**	
Benzene	ND	0.024		mg/Kg	1	11/6/2020 8:17:00 PM	56212
Toluene	ND	0.048		mg/Kg	1	11/6/2020 8:17:00 PM	56212
Ethylbenzene	ND	0.048		mg/Kg	1	11/6/2020 8:17:00 PM	56212
Xylenes, Total	ND	0.096		mg/Kg	1	11/6/2020 8:17:00 PM	56212
Surr: 1,2-Dichloroethane-d4	92.0	70-130		%Rec	1	11/6/2020 8:17:00 PM	56212
Surr: 4-Bromofluorobenzene	105	70-130		%Rec	1	11/6/2020 8:17:00 PM	56212
Surr: Dibromofluoromethane	95.1	70-130		%Rec	1	11/6/2020 8:17:00 PM	56212
Surr: Toluene-d8	95.2	70-130		%Rec	1	11/6/2020 8:17:00 PM	56212

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

Qualifiers:

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

Analytical Report
Lab Order **2011156**
Date Reported: **11/11/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Big Cat 16 9 Fed 215H Tomcat 16 State
Lab ID: 2011156-010 **Matrix:** SOIL

Client Sample ID: BH20-04 0.5
Collection Date: 11/2/2020 2:15:00 PM
Received Date: 11/4/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **CAS**	
Chloride	ND	59		mg/Kg	20	11/10/2020 4:57:05 PM	56328
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **DJF**	
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	11/6/2020 8:44:21 PM	56212
Surr: BFB	101	70-130		%Rec	1	11/6/2020 8:44:21 PM	56212
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	9.1		mg/Kg	1	11/7/2020 2:37:37 AM	56227
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	11/7/2020 2:37:37 AM	56227
Surr: DNOP	84.7	30.4-154		%Rec	1	11/7/2020 2:37:37 AM	56227
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**	
Benzene	ND	0.023		mg/Kg	1	11/6/2020 8:44:21 PM	56212
Toluene	ND	0.047		mg/Kg	1	11/6/2020 8:44:21 PM	56212
Ethylbenzene	ND	0.047		mg/Kg	1	11/6/2020 8:44:21 PM	56212
Xylenes, Total	ND	0.093		mg/Kg	1	11/6/2020 8:44:21 PM	56212
Surr: 1,2-Dichloroethane-d4	93.5	70-130		%Rec	1	11/6/2020 8:44:21 PM	56212
Surr: 4-Bromofluorobenzene	104	70-130		%Rec	1	11/6/2020 8:44:21 PM	56212
Surr: Dibromofluoromethane	98.3	70-130		%Rec	1	11/6/2020 8:44:21 PM	56212
Surr: Toluene-d8	95.0	70-130		%Rec	1	11/6/2020 8:44:21 PM	56212

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2011156**

11-Nov-20

Client: Devon Energy

Project: Big Cat 16 9 Fed 215H Tomcat 16 State 2

Sample ID: **MB-56328**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS**	Batch ID: **56328**	RunNo: **73261**
Prep Date: **11/10/2020**	Analysis Date: **11/10/2020**	SeqNo: **2577782** Units: **mg/Kg**

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

Sample ID: **LCS-56328**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS**	Batch ID: **56328**	RunNo: **73261**
Prep Date: **11/10/2020**	Analysis Date: **11/10/2020**	SeqNo: **2577783** 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-56326**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS**	Batch ID: **56326**	RunNo: **73263**
Prep Date: **11/10/2020**	Analysis Date: **11/10/2020**	SeqNo: **2577890** Units: **mg/Kg**

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

Sample ID: **LCS-56326**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS**	Batch ID: **56326**	RunNo: **73263**
Prep Date: **11/10/2020**	Analysis Date: **11/10/2020**	SeqNo: **2577891** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.4	90	110			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2011156**

11-Nov-20

Client: Devon Energy

Project: Big Cat 16 9 Fed 215H Tomcat 16 State 2

Sample ID: **LCS-56211**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **LCSS**	Batch ID: **56211**	RunNo: **73123**							
Prep Date: **11/4/2020**	Analysis Date: **11/6/2020**	SeqNo: **2573679**	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	102	70	130			
Surr: DNOP	3.6		5.000		72.9	30.4	154			

Sample ID: **MB-56211**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **PBS**	Batch ID: **56211**	RunNo: **73123**							
Prep Date: **11/4/2020**	Analysis Date: **11/6/2020**	SeqNo: **2573681**	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	30.4	154			

Sample ID: **MB-56273**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **PBS**	Batch ID: **56273**	RunNo: **73202**							
Prep Date: **11/7/2020**	Analysis Date: **11/8/2020**	SeqNo: **2574762**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	11		10.00		109	30.4	154			

Sample ID: **LCS-56273**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **LCSS**	Batch ID: **56273**	RunNo: **73202**							
Prep Date: **11/7/2020**	Analysis Date: **11/8/2020**	SeqNo: **2574763**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.7		5.000		94.5	30.4	154			

Sample ID: **2011156-003AMS**	SampType: **MS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **SS20-04 0-0.5**	Batch ID: **56227**	RunNo: **73123**							
Prep Date: **11/5/2020**	Analysis Date: **11/6/2020**	SeqNo: **2575286**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	44	9.7	48.64	0	89.8	15	184			
Surr: DNOP	4.1		4.864		84.9	30.4	154			

Sample ID: **2011156-003AMSD**	SampType: **MSD**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **SS20-04 0-0.5**	Batch ID: **56227**	RunNo: **73123**							
Prep Date: **11/5/2020**	Analysis Date: **11/6/2020**	SeqNo: **2575287**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	42	9.5	47.26	0	87.9	15	184	5.07	23.9	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2011156**

11-Nov-20

Client: Devon Energy

Project: Big Cat 16 9 Fed 215H Tomcat 16 State 2

Sample ID: **2011156-003AMSD**	SampType: **MSD**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **SS20-04 0-0.5**	Batch ID: **56227**	RunNo: **73123**
Prep Date: **11/5/2020**	Analysis Date: **11/6/2020**	SeqNo: **2575287** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	3.7		4.726		77.4	30.4	154	0	0	

Sample ID: **LCS-56227**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **56227**	RunNo: **73123**
Prep Date: **11/5/2020**	Analysis Date: **11/6/2020**	SeqNo: **2575306** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	44	10	50.00	0	87.4	70	130			
Surr: DNOP	3.6		5.000		72.7	30.4	154			

Sample ID: **MB-56227**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **56227**	RunNo: **73123**
Prep Date: **11/5/2020**	Analysis Date: **11/6/2020**	SeqNo: **2575307** 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		87.5	30.4	154			

Sample ID: **MB-56251**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **56251**	RunNo: **73202**
Prep Date: **11/6/2020**	Analysis Date: **11/7/2020**	SeqNo: **2575597** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	8.4		10.00		83.6	30.4	154			

Sample ID: **LCS-56251**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **56251**	RunNo: **73202**
Prep Date: **11/6/2020**	Analysis Date: **11/7/2020**	SeqNo: **2575598** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	3.8		5.000		76.0	30.4	154			

Sample ID: **MB-56253**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **56253**	RunNo: **73202**
Prep Date: **11/6/2020**	Analysis Date: **11/7/2020**	SeqNo: **2575612** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	9.0		10.00		89.7	30.4	154			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2011156**

11-Nov-20

Client: Devon Energy

Project: Big Cat 16 9 Fed 215H Tomcat 16 State 2

Sample ID: **LCS-56253**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **LCSS**	Batch ID: **56253**	RunNo: **73202**							
Prep Date: **11/6/2020**	Analysis Date: **11/7/2020**	SeqNo: **2575613**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.3		5.000		86.1	30.4	154			

Sample ID: **MB-56256**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **PBS**	Batch ID: **56256**	RunNo: **73202**							
Prep Date: **11/6/2020**	Analysis Date: **11/8/2020**	SeqNo: **2575636**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	9.1		10.00		90.6	30.4	154			

Sample ID: **LCS-56256**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **LCSS**	Batch ID: **56256**	RunNo: **73202**							
Prep Date: **11/6/2020**	Analysis Date: **11/8/2020**	SeqNo: **2575637**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.6		5.000		91.9	30.4	154			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2011156**
11-Nov-20

Client: Devon Energy
Project: Big Cat 16 9 Fed 215H Tomcat 16 State 2

Sample ID: **mb-56212**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **PBS**	Batch ID: **56212**	RunNo: **73190**
Prep Date: **11/4/2020**	Analysis Date: **11/6/2020**	SeqNo: **2574203** 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: 1,2-Dichloroethane-d4	0.46		0.5000		92.4	70	130			
Surr: 4-Bromofluorobenzene	0.54		0.5000		107	70	130			
Surr: Dibromofluoromethane	0.50		0.5000		99.6	70	130			
Surr: Toluene-d8	0.48		0.5000		96.5	70	130			

Sample ID: **lcs-56212**	SampType: **LCS4**	TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **BatchQC**	Batch ID: **56212**	RunNo: **73190**
Prep Date: **11/4/2020**	Analysis Date: **11/6/2020**	SeqNo: **2574204** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.025	1.000	0	101	80	120			
Toluene	1.0	0.050	1.000	0	103	80	120			
Ethylbenzene	1.0	0.050	1.000	0	104	80	120			
Xylenes, Total	3.1	0.10	3.000	0	104	80	120			
Surr: 1,2-Dichloroethane-d4	0.47		0.5000		93.7	70	130			
Surr: 4-Bromofluorobenzene	0.53		0.5000		106	70	130			
Surr: Dibromofluoromethane	0.50		0.5000		99.8	70	130			
Surr: Toluene-d8	0.48		0.5000		96.9	70	130			

Sample ID: **2011156-004ams**	SampType: **MS4**	TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **SS20-06 0-0.5**	Batch ID: **56212**	RunNo: **73190**
Prep Date: **11/4/2020**	Analysis Date: **11/6/2020**	SeqNo: **2574207** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.025	0.9970	0	102	71.1	115			
Toluene	1.1	0.050	0.9970	0	108	79.6	132			
Ethylbenzene	1.1	0.050	0.9970	0	106	83.8	134			
Xylenes, Total	3.2	0.10	2.991	0	109	82.4	132			
Surr: 1,2-Dichloroethane-d4	0.45		0.4985		90.2	70	130			
Surr: 4-Bromofluorobenzene	0.54		0.4985		108	70	130			
Surr: Dibromofluoromethane	0.48		0.4985		95.4	70	130			
Surr: Toluene-d8	0.49		0.4985		98.1	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 Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2011156**

11-Nov-20

Client: Devon Energy

Project: Big Cat 16 9 Fed 215H Tomcat 16 State 2

Sample ID: **2011156-004amsd** SampType: **MSD4** TestCode: **EPA Method 8260B: Volatiles Short List**

Client ID: **SS20-06 0-0.5** Batch ID: **56212** RunNo: **73190**

Prep Date: **11/4/2020** Analysis Date: **11/6/2020** SeqNo: **2574208** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.98	0.025	0.9804	0	100	71.1	115	3.44	20	
Toluene	1.0	0.049	0.9804	0	102	79.6	132	7.18	20	
Ethylbenzene	1.0	0.049	0.9804	0	106	83.8	134	2.04	20	
Xylenes, Total	3.1	0.098	2.941	0	107	82.4	132	3.22	20	
Surr: 1,2-Dichloroethane-d4	0.44		0.4902		89.6	70	130	0	0	
Surr: 4-Bromofluorobenzene	0.52		0.4902		106	70	130	0	0	
Surr: Dibromofluoromethane	0.47		0.4902		94.9	70	130	0	0	
Surr: Toluene-d8	0.47		0.4902		95.0	70	130	0	0	

Sample ID: **mb-56204** SampType: **MBLK** TestCode: **EPA Method 8260B: Volatiles Short List**

Client ID: **PBS** Batch ID: **56204** RunNo: **73190**

Prep Date: **11/4/2020** Analysis Date: **11/7/2020** SeqNo: **2574217** 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: 1,2-Dichloroethane-d4	0.47		0.5000		94.8	70	130			
Surr: 4-Bromofluorobenzene	0.51		0.5000		102	70	130			
Surr: Dibromofluoromethane	0.48		0.5000		96.2	70	130			
Surr: Toluene-d8	0.47		0.5000		93.5	70	130			

Sample ID: **lcs-56204** SampType: **LCS4** TestCode: **EPA Method 8260B: Volatiles Short List**

Client ID: **BatchQC** Batch ID: **56204** RunNo: **73190**

Prep Date: **11/4/2020** Analysis Date: **11/6/2020** SeqNo: **2574219** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.025	1.000	0	105	80	120			
Toluene	1.0	0.050	1.000	0	101	80	120			
Ethylbenzene	1.0	0.050	1.000	0	101	80	120			
Xylenes, Total	3.1	0.10	3.000	0	102	80	120			
Surr: 1,2-Dichloroethane-d4	0.48		0.5000		96.1	70	130			
Surr: 4-Bromofluorobenzene	0.52		0.5000		105	70	130			
Surr: Dibromofluoromethane	0.49		0.5000		98.8	70	130			
Surr: Toluene-d8	0.47		0.5000		94.0	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 Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2011156**

11-Nov-20

Client: Devon Energy

Project: Big Cat 16 9 Fed 215H Tomcat 16 State 2

Sample ID: **mb-56243**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **PBS**	Batch ID: **56243**	RunNo: **73196**
Prep Date: **11/5/2020**	Analysis Date: **11/7/2020**	SeqNo: **2574658** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	0.46		0.5000		92.3	70	130			
Surr: 4-Bromofluorobenzene	0.52		0.5000		104	70	130			
Surr: Dibromofluoromethane	0.49		0.5000		97.0	70	130			
Surr: Toluene-d8	0.48		0.5000		95.6	70	130			

Sample ID: **lcs-56243**	SampType: **LCS4**	TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **BatchQC**	Batch ID: **56243**	RunNo: **73196**
Prep Date: **11/5/2020**	Analysis Date: **11/7/2020**	SeqNo: **2574659** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	0.48		0.5000		96.0	70	130			
Surr: 4-Bromofluorobenzene	0.55		0.5000		109	70	130			
Surr: Dibromofluoromethane	0.49		0.5000		98.8	70	130			
Surr: Toluene-d8	0.48		0.5000		96.2	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2011156**

11-Nov-20

Client: Devon Energy

Project: Big Cat 16 9 Fed 215H Tomcat 16 State 2

Sample ID: **mb-56212**	SampType: **MBLK**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **PBS**	Batch ID: **56212**	RunNo: **73190**
Prep Date: **11/4/2020**	Analysis Date: **11/6/2020**	SeqNo: **2574237** 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	520		500.0		103	70	130			

Sample ID: **lcs-56212**	SampType: **LCS**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **LCSS**	Batch ID: **56212**	RunNo: **73190**
Prep Date: **11/4/2020**	Analysis Date: **11/6/2020**	SeqNo: **2574238** 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	87.7	70	130			
Surr: BFB	530		500.0		105	70	130			

Sample ID: **2011156-003ams**	SampType: **MS**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **SS20-04 0-0.5**	Batch ID: **56212**	RunNo: **73190**
Prep Date: **11/4/2020**	Analysis Date: **11/6/2020**	SeqNo: **2574240** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	20	4.7	23.43	0	87.2	49.2	122			
Surr: BFB	490		468.6		104	70	130			

Sample ID: **2011156-003amsd**	SampType: **MSD**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **SS20-04 0-0.5**	Batch ID: **56212**	RunNo: **73190**
Prep Date: **11/4/2020**	Analysis Date: **11/6/2020**	SeqNo: **2574241** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	19	4.8	23.97	0	81.1	49.2	122	4.95	20	
Surr: BFB	490		479.4		101	70	130	0	0	

Sample ID: **mb-56204**	SampType: **MBLK**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **PBS**	Batch ID: **56204**	RunNo: **73190**
Prep Date: **11/4/2020**	Analysis Date: **11/7/2020**	SeqNo: **2574251** 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	490		500.0		97.2	70	130			

Sample ID: **lcs-56204**	SampType: **LCS**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **LCSS**	Batch ID: **56204**	RunNo: **73190**
Prep Date: **11/4/2020**	Analysis Date: **11/6/2020**	SeqNo: **2574252** Units: **mg/Kg**

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2011156**

11-Nov-20

Client: Devon Energy

Project: Big Cat 16 9 Fed 215H Tomcat 16 State 2

Sample ID: **lcs-56204**	SampType: **LCS**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **LCSS**	Batch ID: **56204**	RunNo: **73190**
Prep Date: **11/4/2020**	Analysis Date: **11/6/2020**	SeqNo: **2574252** 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	82.4	70	130			
Surr: BFB	490		500.0		97.8	70	130			

Sample ID: **mb-56243**	SampType: **MBLK**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **PBS**	Batch ID: **56243**	RunNo: **73196**
Prep Date: **11/5/2020**	Analysis Date: **11/7/2020**	SeqNo: **2574698** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	500		500.0		99.8	70	130			

Sample ID: **lcs-56243**	SampType: **LCS**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **LCSS**	Batch ID: **56243**	RunNo: **73196**
Prep Date: **11/5/2020**	Analysis Date: **11/7/2020**	SeqNo: **2574699** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	510		500.0		102	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 Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: **Devon Energy** Work Order Number: **2011156** RcptNo: 1

Received By: **Emily Mocho** **11/4/2020 8:00:00 AM**

Completed By: **Emily Mocho** **11/4/2020 9:06:24 AM**

Reviewed By: CM 11/4/20

Chain of Custody

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

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA?	Yes ☐	No ☐	NA ☑
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	# of preserved bottles checked for pH: (<2 or >12 unless noted)
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	Adjusted?
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	Checked by: JR 11/4/20

Special Handling (if applicable)

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

Person Notified: _____ Date: _____

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

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.6	Good	Yes			

Chain-of-Custody Record

Client: Devon Energy

Mailing Address:

Phone #:

email or Fax#:

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

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

Project Name: Big Cat 16 9 Fed 215H / Tomcat 16 State 2

Project #: 19E-00575

Project Manager: Natalie Gordon

Sampler: MJP

On Ice: ☑ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 2.6±0=2.6 (°C)

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

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2011156	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
11/2	12:00	Soil	SS20-01 0-0.5	4oz	Ice	001	✓	✓					✓			
	12:10		SS20-03 0-0.5			002	✓	✓					✓			
	12:15		SS20-04 0-0.5			003	✓	✓					✓			
	1:05		SS20-06 0-0.5			004	✓	✓					✓			
	1:15		SS20-08 0-0.5			005	✓	✓					✓			
	1:50		BH20-02 0'			006	✓	✓					✓			
	2:00		BH20-03 0			007	✓	✓					✓			
	2:05		BH20-03 0.5			008	✓	✓					✓			
	2:10		BH20-04 0			009	✓	✓					✓			
	2:15		BH20-04 0.5			010	✓	✓					✓			

Analysis Request

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
11/3/20	1115				11/3/20	1215
11/3/20	1900		EM	courier	11/4/20	800

Remarks: Direct bill CC: Natalie Gordon
Devon w/o #: 20797140

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

December 29, 2020

Amanda Davis

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

RE: Big Cat 16-9 CTB OrderNo.: 2012A10

Dear Amanda Davis:

Hall Environmental Analysis Laboratory received 6 sample(s) on 12/19/2020 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **2012A10**
Date Reported: **12/29/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Big Cat 16-9 CTB
Lab ID: 2012A10-001 **Matrix:** SOIL

Client Sample ID: BS20-01 0-0.5
Collection Date: 12/17/2020 1:15:00 PM
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	8.7		mg/Kg	1	12/23/2020 1:43:29 AM
Motor Oil Range Organics (MRO)	ND	44		mg/Kg	1	12/23/2020 1:43:29 AM
Surr: DNOP	70.5	30.4-154		%Rec	1	12/23/2020 1:43:29 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	12/24/2020 3:23:11 AM
Surr: BFB	85.0	75.3-105		%Rec	1	12/24/2020 3:23:11 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	12/24/2020 3:23:11 AM
Toluene	ND	0.050		mg/Kg	1	12/24/2020 3:23:11 AM
Ethylbenzene	ND	0.050		mg/Kg	1	12/24/2020 3:23:11 AM
Xylenes, Total	ND	0.10		mg/Kg	1	12/24/2020 3:23:11 AM
Surr: 4-Bromofluorobenzene	102	80-120		%Rec	1	12/24/2020 3:23:11 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	12/28/2020 10:40:11 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2012A10**
Date Reported: **12/29/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Big Cat 16-9 CTB
Lab ID: 2012A10-002 **Matrix:** SOIL

Client Sample ID: BS20-02 0-0.5
Collection Date: 12/17/2020 1:20:00 PM
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	12/23/2020 1:52:58 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	12/23/2020 1:52:58 AM
Surr: DNOP	71.5	30.4-154		%Rec	1	12/23/2020 1:52:58 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	12/24/2020 3:46:35 AM
Surr: BFB	87.1	75.3-105		%Rec	1	12/24/2020 3:46:35 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	12/24/2020 3:46:35 AM
Toluene	ND	0.050		mg/Kg	1	12/24/2020 3:46:35 AM
Ethylbenzene	ND	0.050		mg/Kg	1	12/24/2020 3:46:35 AM
Xylenes, Total	ND	0.10		mg/Kg	1	12/24/2020 3:46:35 AM
Surr: 4-Bromofluorobenzene	105	80-120		%Rec	1	12/24/2020 3:46:35 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	12/28/2020 11:17:25 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2012A10**
Date Reported: **12/29/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Big Cat 16-9 CTB
Lab ID: 2012A10-003 **Matrix:** SOIL

Client Sample ID: WS20-01 0-0.5
Collection Date: 12/17/2020 1:25:00 PM
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	8.4		mg/Kg	1	12/23/2020 2:02:25 AM
Motor Oil Range Organics (MRO)	ND	42		mg/Kg	1	12/23/2020 2:02:25 AM
Surr: DNOP	64.8	30.4-154		%Rec	1	12/23/2020 2:02:25 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/24/2020 4:09:57 AM
Surr: BFB	89.3	75.3-105		%Rec	1	12/24/2020 4:09:57 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	12/24/2020 4:09:57 AM
Toluene	ND	0.049		mg/Kg	1	12/24/2020 4:09:57 AM
Ethylbenzene	ND	0.049		mg/Kg	1	12/24/2020 4:09:57 AM
Xylenes, Total	ND	0.098		mg/Kg	1	12/24/2020 4:09:57 AM
Surr: 4-Bromofluorobenzene	106	80-120		%Rec	1	12/24/2020 4:09:57 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	12/28/2020 11:54:38 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2012A10**
Date Reported: **12/29/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Big Cat 16-9 CTB
Lab ID: 2012A10-004 **Matrix:** SOIL

Client Sample ID: WS20-02 0-0.5
Collection Date: 12/17/2020 1:30:00 PM
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	8.5		mg/Kg	1	12/23/2020 2:11:52 AM
Motor Oil Range Organics (MRO)	ND	42		mg/Kg	1	12/23/2020 2:11:52 AM
Surr: DNOP	81.0	30.4-154		%Rec	1	12/23/2020 2:11:52 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/24/2020 4:33:19 AM
Surr: BFB	87.8	75.3-105		%Rec	1	12/24/2020 4:33:19 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	12/24/2020 4:33:19 AM
Toluene	ND	0.049		mg/Kg	1	12/24/2020 4:33:19 AM
Ethylbenzene	ND	0.049		mg/Kg	1	12/24/2020 4:33:19 AM
Xylenes, Total	ND	0.098		mg/Kg	1	12/24/2020 4:33:19 AM
Surr: 4-Bromofluorobenzene	106	80-120		%Rec	1	12/24/2020 4:33:19 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	12/29/2020 12:56:40 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2012A10**
Date Reported: **12/29/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Big Cat 16-9 CTB
Lab ID: 2012A10-005 **Matrix:** SOIL

Client Sample ID: WS20-03 0-0.5
Collection Date: 12/17/2020 1:35:00 PM
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.1		mg/Kg	1	12/23/2020 7:45:11 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	12/23/2020 7:45:11 PM
Surr: DNOP	78.8	30.4-154		%Rec	1	12/23/2020 7:45:11 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	12/24/2020 10:47:28 AM
Surr: BFB	89.5	75.3-105		%Rec	1	12/24/2020 10:47:28 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	12/24/2020 10:47:28 AM
Toluene	ND	0.050		mg/Kg	1	12/24/2020 10:47:28 AM
Ethylbenzene	ND	0.050		mg/Kg	1	12/24/2020 10:47:28 AM
Xylenes, Total	ND	0.10		mg/Kg	1	12/24/2020 10:47:28 AM
Surr: 4-Bromofluorobenzene	108	80-120		%Rec	1	12/24/2020 10:47:28 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	12/29/2020 1:09:05 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2012A10**
Date Reported: **12/29/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Big Cat 16-9 CTB
Lab ID: 2012A10-006 **Matrix:** SOIL

Client Sample ID: WS20-04 0-0.5
Collection Date: 12/17/2020 1:40:00 PM
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	12/22/2020 10:02:07 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	12/22/2020 10:02:07 AM
Surr: DNOP	70.8	30.4-154		%Rec	1	12/22/2020 10:02:07 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	12/24/2020 11:58:18 AM
Surr: BFB	88.1	75.3-105		%Rec	1	12/24/2020 11:58:18 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	12/24/2020 11:58:18 AM
Toluene	ND	0.050		mg/Kg	1	12/24/2020 11:58:18 AM
Ethylbenzene	ND	0.050		mg/Kg	1	12/24/2020 11:58:18 AM
Xylenes, Total	ND	0.10		mg/Kg	1	12/24/2020 11:58:18 AM
Surr: 4-Bromofluorobenzene	107	80-120		%Rec	1	12/24/2020 11:58:18 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	12/29/2020 1:21:29 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit
P	Sample pH Not In Range
PQL	Practical Quanitative Limit
RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2012A10**
29-Dec-20

Client: Devon Energy
Project: Big Cat 16-9 CTB

Sample ID: **MB-57223** SampType: **MBLK** TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS** Batch ID: **57223** RunNo: **74266**
Prep Date: **12/28/2020** Analysis Date: **12/28/2020** SeqNo: **2621615** Units: **mg/Kg**

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

Sample ID: **LCS-57223** SampType: **LCS** TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS** Batch ID: **57223** RunNo: **74266**
Prep Date: **12/28/2020** Analysis Date: **12/28/2020** SeqNo: **2621616** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.4	90	110			

Sample ID: **MB-57240** SampType: **MBLK** TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS** Batch ID: **57240** RunNo: **74266**
Prep Date: **12/28/2020** Analysis Date: **12/28/2020** SeqNo: **2621651** Units: **mg/Kg**

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

Sample ID: **LCS-57240** SampType: **LCS** TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS** Batch ID: **57240** RunNo: **74266**
Prep Date: **12/28/2020** Analysis Date: **12/28/2020** SeqNo: **2621652** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	93.8	90	110			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2012A10**
29-Dec-20

Client: Devon Energy
Project: Big Cat 16-9 CTB

Sample ID: **LCS-57127**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **LCSS**	Batch ID: **57127**	RunNo: **74191**							
Prep Date: **12/21/2020**	Analysis Date: **12/22/2020**	SeqNo: **2618631**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.6		5.000		92.5	30.4	154			

Sample ID: **LCS-57129**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **LCSS**	Batch ID: **57129**	RunNo: **74191**							
Prep Date: **12/21/2020**	Analysis Date: **12/22/2020**	SeqNo: **2618633**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	48	10	50.00	0	96.9	68.9	141			
Surr: DNOP	5.4		5.000		107	30.4	154			

Sample ID: **MB-57127**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **PBS**	Batch ID: **57127**	RunNo: **74191**							
Prep Date: **12/21/2020**	Analysis Date: **12/22/2020**	SeqNo: **2618635**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	9.9		10.00		99.0	30.4	154			

Sample ID: **MB-57129**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **PBS**	Batch ID: **57129**	RunNo: **74191**							
Prep Date: **12/21/2020**	Analysis Date: **12/22/2020**	SeqNo: **2618637**	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		122	30.4	154			

Sample ID: **MB-57134**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **PBS**	Batch ID: **57134**	RunNo: **74198**							
Prep Date: **12/21/2020**	Analysis Date: **12/22/2020**	SeqNo: **2619030**	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	8.4		10.00		84.4	30.4	154			

Sample ID: **LCS-57134**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **LCSS**	Batch ID: **57134**	RunNo: **74198**							
Prep Date: **12/21/2020**	Analysis Date: **12/22/2020**	SeqNo: **2619042**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2012A10**
29-Dec-20

Client: Devon Energy
Project: Big Cat 16-9 CTB

Sample ID: **LCS-57134** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **57134** RunNo: **74198**
Prep Date: **12/21/2020** Analysis Date: **12/22/2020** SeqNo: **2619042** 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	90.7	68.9	141			
Surr: DNOP	4.3		5.000		86.5	30.4	154			

Sample ID: **2012A10-005AMS** SampType: **MS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **WS20-03 0-0.5** Batch ID: **57134** RunNo: **74229**
Prep Date: **12/21/2020** Analysis Date: **12/23/2020** SeqNo: **2620322** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	36	8.5	42.48	0	85.2	15	184			
Surr: DNOP	3.0		4.248		70.9	30.4	154			

Sample ID: **2012A10-005AMSD** SampType: **MSD** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **WS20-03 0-0.5** Batch ID: **57134** RunNo: **74229**
Prep Date: **12/21/2020** Analysis Date: **12/23/2020** SeqNo: **2620326** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	37	9.7	48.40	0	76.5	15	184	2.31	23.9	
Surr: DNOP	3.1		4.840		63.7	30.4	154	0	0	

Sample ID: **LCS-57133** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **57133** RunNo: **74229**
Prep Date: **12/21/2020** Analysis Date: **12/23/2020** SeqNo: **2620340** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.9		5.000		98.7	30.4	154			

Sample ID: **MB-57133** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **57133** RunNo: **74229**
Prep Date: **12/21/2020** Analysis Date: **12/23/2020** SeqNo: **2620341** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	11		10.00		110	30.4	154			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2012A10**
29-Dec-20

Client: Devon Energy
Project: Big Cat 16-9 CTB

Sample ID: **mb-57115** SampType: **MBLK** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS** Batch ID: **57115** RunNo: **74223**
Prep Date: **12/19/2020** Analysis Date: **12/23/2020** SeqNo: **2619872** 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	880		1000		87.6	75.3	105			

Sample ID: **lcs-57115** SampType: **LCS** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS** Batch ID: **57115** RunNo: **74223**
Prep Date: **12/19/2020** Analysis Date: **12/23/2020** SeqNo: **2619873** 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	93.8	72.5	106			
Surr: BFB	1000		1000		99.7	75.3	105			

Sample ID: **2012a10-006ams** SampType: **MS** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **WS20-04 0-0.5** Batch ID: **57116** RunNo: **74246**
Prep Date: **12/20/2020** Analysis Date: **12/24/2020** SeqNo: **2620869** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	21	4.9	24.63	0	86.0	61.3	114			
Surr: BFB	960		985.2		97.1	75.3	105			

Sample ID: **2012a10-006amsd** SampType: **MSD** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **WS20-04 0-0.5** Batch ID: **57116** RunNo: **74246**
Prep Date: **12/20/2020** Analysis Date: **12/24/2020** SeqNo: **2620870** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	5.0	24.78	0	88.2	61.3	114	3.12	20	
Surr: BFB	950		991.1		96.1	75.3	105	0	0	

Sample ID: **lcs-57116** SampType: **LCS** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS** Batch ID: **57116** RunNo: **74246**
Prep Date: **12/20/2020** Analysis Date: **12/24/2020** SeqNo: **2620921** 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	93.0	72.5	106			
Surr: BFB	980		1000		98.3	75.3	105			

Sample ID: **lcs-57159** SampType: **LCS** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS** Batch ID: **57159** RunNo: **74246**
Prep Date: **12/22/2020** Analysis Date: **12/24/2020** SeqNo: **2620922** Units: **%Rec**

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2012A10**

29-Dec-20

Client: Devon Energy

Project: Big Cat 16-9 CTB

Sample ID: **lcs-57159**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **LCSS**	Batch ID: **57159**	RunNo: **74246**							
Prep Date: **12/22/2020**	Analysis Date: **12/24/2020**	SeqNo: **2620922**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	1000		1000		99.6	75.3	105			

Sample ID: **lcs-57178**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **LCSS**	Batch ID: **57178**	RunNo: **74246**							
Prep Date: **12/23/2020**	Analysis Date: **12/25/2020**	SeqNo: **2620923**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	980		1000		97.9	75.3	105			

Sample ID: **mb-57116**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **PBS**	Batch ID: **57116**	RunNo: **74246**							
Prep Date: **12/20/2020**	Analysis Date: **12/24/2020**	SeqNo: **2620924**	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		90.3	75.3	105			

Sample ID: **mb-57159**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **PBS**	Batch ID: **57159**	RunNo: **74246**							
Prep Date: **12/22/2020**	Analysis Date: **12/25/2020**	SeqNo: **2620925**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	900		1000		90.1	75.3	105			

Sample ID: **mb-57178**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **PBS**	Batch ID: **57178**	RunNo: **74246**							
Prep Date: **12/23/2020**	Analysis Date: **12/25/2020**	SeqNo: **2620926**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	880		1000		87.8	75.3	105			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2012A10**
29-Dec-20

Client: Devon Energy
Project: Big Cat 16-9 CTB

Sample ID: **mb-57115** SampType: **MBLK** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS** Batch ID: **57115** RunNo: **74223**
Prep Date: **12/19/2020** Analysis Date: **12/23/2020** SeqNo: **2619921** Units: **mg/Kg**

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

Sample ID: **LCS-57115** SampType: **LCS** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS** Batch ID: **57115** RunNo: **74223**
Prep Date: **12/19/2020** Analysis Date: **12/23/2020** SeqNo: **2619922** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.94	0.025	1.000	0	94.5	80	120			
Toluene	0.96	0.050	1.000	0	96.0	80	120			
Ethylbenzene	0.96	0.050	1.000	0	95.8	80	120			
Xylenes, Total	2.9	0.10	3.000	0	97.3	80	120			
Surr: 4-Bromofluorobenzene	1.1		1.000		108	80	120			

Sample ID: **2012a10-005ams** SampType: **MS** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **WS20-03 0-0.5** Batch ID: **57116** RunNo: **74246**
Prep Date: **12/20/2020** Analysis Date: **12/24/2020** SeqNo: **2620934** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.89	0.025	0.9950	0	89.2	76.3	120			
Toluene	0.91	0.050	0.9950	0	91.2	78.5	120			
Ethylbenzene	0.91	0.050	0.9950	0	91.5	78.1	124			
Xylenes, Total	2.8	0.10	2.985	0.01434	93.4	79.3	125			
Surr: 4-Bromofluorobenzene	1.1		0.9950		110	80	120			

Sample ID: **2012a10-005amsd** SampType: **MSD** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **WS20-03 0-0.5** Batch ID: **57116** RunNo: **74246**
Prep Date: **12/20/2020** Analysis Date: **12/24/2020** SeqNo: **2620935** 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	89.5	76.3	120	0.823	20	
Toluene	0.93	0.050	1.000	0	93.1	78.5	120	2.54	20	
Ethylbenzene	0.93	0.050	1.000	0	93.4	78.1	124	2.52	20	
Xylenes, Total	2.9	0.10	3.000	0.01434	95.3	79.3	125	2.53	20	
Surr: 4-Bromofluorobenzene	1.1		1.000		109	80	120	0	0	

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2012A10**
29-Dec-20

Client: Devon Energy
Project: Big Cat 16-9 CTB

Sample ID: **LCS-57116** SampType: **LCS** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS** Batch ID: **57116** RunNo: **74246**
Prep Date: **12/20/2020** Analysis Date: **12/24/2020** SeqNo: **2620984** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.92	0.025	1.000	0	91.5	80	120			
Toluene	0.95	0.050	1.000	0	95.5	80	120			
Ethylbenzene	0.96	0.050	1.000	0	95.8	80	120			
Xylenes, Total	2.9	0.10	3.000	0	97.3	80	120			
Surr: 4-Bromofluorobenzene	1.1		1.000		110	80	120			

Sample ID: **LCS-57159** SampType: **LCS** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS** Batch ID: **57159** RunNo: **74246**
Prep Date: **12/22/2020** Analysis Date: **12/24/2020** SeqNo: **2620985** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	1.1		1.000		111	80	120			

Sample ID: **LCS-57178** SampType: **LCS** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS** Batch ID: **57178** RunNo: **74246**
Prep Date: **12/23/2020** Analysis Date: **12/25/2020** SeqNo: **2620986** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	1.1		1.000		108	80	120			

Sample ID: **mb-57116** SampType: **MBLK** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS** Batch ID: **57116** RunNo: **74246**
Prep Date: **12/20/2020** Analysis Date: **12/24/2020** SeqNo: **2620987** 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	80	120			

Sample ID: **mb-57159** SampType: **MBLK** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS** Batch ID: **57159** RunNo: **74246**
Prep Date: **12/22/2020** Analysis Date: **12/25/2020** SeqNo: **2620988** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	1.1		1.000		107	80	120			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2012A10**
29-Dec-20

Client: Devon Energy
Project: Big Cat 16-9 CTB

Sample ID: **mb-57178** SampType: **MBLK** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS** Batch ID: **57178** RunNo: **74246**
Prep Date: **12/23/2020** Analysis Date: **12/25/2020** SeqNo: **2620989** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	1.1		1.000		106	80	120			

Qualifiers:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: **Devon Energy** Work Order Number: **2012A10** RcptNo: **1**

Received By: **Cheyenne Cason** **12/19/2020 9:50:00 AM**

Completed By: **Cheyenne Cason** **12/19/2020 10:22:24 AM**

Reviewed By: CC 12/19/20

Chain of Custody

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

Log In

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

# of preserved bottles checked for pH: (<2 or >12 unless noted)
Adjusted?
Checked by: JR 12/19/20

Special Handling (if applicable)

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

Person Notified: Date:
By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:
Client Instructions:

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.5					
2	0.6					
3	1.1					
4	0.9					

Chain-of-Custody Record

Client: Devon Energy

Mailing Address: On File

Phone #:

email or Fax#:

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time: 5 Day
☑ Standard ☐ Rush

Project Name: ~~DCP~~ Big Cat 16-9 CTB

Project #: 20E-00141

Project Manager: Natalie Gordon

Sampler: MJP

On Ice: ☐ Yes ☐ No

# of Coolers:

Cooler Temp(including CF): (°C)

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

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2012A10	(BTEX) MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
12/17	1:15	Soil	BS20-01 0-0.5	4 oz	ice	001	✓	✓					✓			
	1:20		BS20-02 0-0.5			002										
	1:25		WS20-01 0-0.5			003										
	1:30		WS20-02 0-0.5			004										
	1:35		WS20-03 0-0.5			005										
↓	1:40	↓	WS20-04 0-0.5	↓	↓	006	✓	✓					✓			

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
					12/18/20	1210
Date: 12/18/20	Time: 1900	Relinquished by:	Received by:	Via:	Date	Time
			cc Carr		12/19/20	0950

Remarks: CC: Natalie
Direct bill Devon

W/O # 20835945

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

Chain-of-Custody Record

Client: Devon Energy

Mailing Address: On file

Phone #:

email or Fax#:

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time: 5 Day
☑ Standard ☐ Rush

Project Name: ~~Devil~~ Big Cat 16-9 CTB

Project #: 20E-00141

Project Manager: Natalie Gordon

Sampler: MJP

On Ice: ☐ Yes ☐ No

# of Coolers:

Cooler Temp(including CF): (°C)

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

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.	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)
12/17	1:15	Soil	BS20-01 0-0.5	4 oz	Ice		✓	✓					✓			
	1:20		BS20-02 0-0.5													
	1:25		WS20-01 0-0.5													
	1:30		WS20-02 0-0.5													
	1:35		WS20-03 0-0.5													
↓	1:40	↓	WS20-04 0-0.5	↓	↓		✓	✓					✓			

Analysis Request

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
					12/18/20	1210
Date: 12/18/20	Time: 1900	Relinquished by:	Received by:	Via:	Date	Time

Remarks: CC: Natalie
Direct bill Devon
W/O # 208359145

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

December 30, 2020

Amanda Davis

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

RE: Big Cat 16-9 Fed 215H/Tomcat 16 ST2 OrderNo.: 2012A07

Dear Amanda Davis:

Hall Environmental Analysis Laboratory received 40 sample(s) on 12/19/2020 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **2012A07**
Date Reported: **12/30/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2
Lab ID: 2012A07-001 **Matrix:** SOIL

Client Sample ID: BS19-02 0-0.5'
Collection Date: 12/17/2020 8:10:00 AM
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	12/22/2020 9:04:34 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	12/22/2020 9:04:34 AM
Surr: DNOP	98.4	30.4-154		%Rec	1	12/22/2020 9:04:34 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/21/2020 8:12:51 PM
Surr: BFB	87.0	75.3-105		%Rec	1	12/21/2020 8:12:51 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	12/21/2020 8:12:51 PM
Toluene	ND	0.049		mg/Kg	1	12/21/2020 8:12:51 PM
Ethylbenzene	ND	0.049		mg/Kg	1	12/21/2020 8:12:51 PM
Xylenes, Total	ND	0.099		mg/Kg	1	12/21/2020 8:12:51 PM
Surr: 4-Bromofluorobenzene	103	80-120		%Rec	1	12/21/2020 8:12:51 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	12/24/2020 10:59:00 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2012A07**
Date Reported: **12/30/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2
Lab ID: 2012A07-002 **Matrix:** SOIL

Client Sample ID: BS19-08 0-0.5'
Collection Date: 12/17/2020 8:20:00 AM
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	8.9		mg/Kg	1	12/22/2020 9:32:58 AM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	12/22/2020 9:32:58 AM
Surr: DNOP	99.8	30.4-154		%Rec	1	12/22/2020 9:32:58 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	12/21/2020 9:22:58 PM
Surr: BFB	85.1	75.3-105		%Rec	1	12/21/2020 9:22:58 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	12/21/2020 9:22:58 PM
Toluene	ND	0.050		mg/Kg	1	12/21/2020 9:22:58 PM
Ethylbenzene	ND	0.050		mg/Kg	1	12/21/2020 9:22:58 PM
Xylenes, Total	ND	0.099		mg/Kg	1	12/21/2020 9:22:58 PM
Surr: 4-Bromofluorobenzene	102	80-120		%Rec	1	12/21/2020 9:22:58 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	12/28/2020 10:28:05 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2012A07**
Date Reported: **12/30/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2
Lab ID: 2012A07-003 **Matrix:** SOIL

Client Sample ID: BS19-10 0-0.5'
Collection Date: 12/17/2020 8:30:00 AM
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	12/22/2020 9:42:29 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	12/22/2020 9:42:29 AM
Surr: DNOP	87.8	30.4-154		%Rec	1	12/22/2020 9:42:29 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/21/2020 9:46:20 PM
Surr: BFB	84.6	75.3-105		%Rec	1	12/21/2020 9:46:20 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	12/21/2020 9:46:20 PM
Toluene	ND	0.049		mg/Kg	1	12/21/2020 9:46:20 PM
Ethylbenzene	ND	0.049		mg/Kg	1	12/21/2020 9:46:20 PM
Xylenes, Total	ND	0.099		mg/Kg	1	12/21/2020 9:46:20 PM
Surr: 4-Bromofluorobenzene	102	80-120		%Rec	1	12/21/2020 9:46:20 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	61		mg/Kg	20	12/28/2020 11:05:19 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2012A07**
Date Reported: **12/30/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2
Lab ID: 2012A07-004 **Matrix:** SOIL

Client Sample ID: BS19-12 0-0.5'
Collection Date: 12/17/2020 8:40:00 AM
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.0		mg/Kg	1	12/22/2020 9:52:03 AM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	12/22/2020 9:52:03 AM
Surr: DNOP	101	30.4-154		%Rec	1	12/22/2020 9:52:03 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	12/21/2020 10:09:39 PM
Surr: BFB	84.4	75.3-105		%Rec	1	12/21/2020 10:09:39 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	12/21/2020 10:09:39 PM
Toluene	ND	0.050		mg/Kg	1	12/21/2020 10:09:39 PM
Ethylbenzene	ND	0.050		mg/Kg	1	12/21/2020 10:09:39 PM
Xylenes, Total	ND	0.10		mg/Kg	1	12/21/2020 10:09:39 PM
Surr: 4-Bromofluorobenzene	101	80-120		%Rec	1	12/21/2020 10:09:39 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	12/28/2020 11:42:32 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2012A07**
Date Reported: **12/30/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2
Lab ID: 2012A07-005 **Matrix:** SOIL

Client Sample ID: BS19-16 0-0.5'
Collection Date: 12/17/2020 8:50:00 AM
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	12/22/2020 10:01:39 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	12/22/2020 10:01:39 AM
Surr: DNOP	99.7	30.4-154		%Rec	1	12/22/2020 10:01:39 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/21/2020 10:32:54 PM
Surr: BFB	84.6	75.3-105		%Rec	1	12/21/2020 10:32:54 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	12/21/2020 10:32:54 PM
Toluene	ND	0.049		mg/Kg	1	12/21/2020 10:32:54 PM
Ethylbenzene	ND	0.049		mg/Kg	1	12/21/2020 10:32:54 PM
Xylenes, Total	ND	0.098		mg/Kg	1	12/21/2020 10:32:54 PM
Surr: 4-Bromofluorobenzene	101	80-120		%Rec	1	12/21/2020 10:32:54 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	12/28/2020 11:54:57 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2012A07**
Date Reported: **12/30/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2
Lab ID: 2012A07-006 **Matrix:** SOIL

Client Sample ID: BS19-17 0-0.5'
Collection Date: 12/17/2020 9:00:00 AM
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	12/21/2020 12:53:38 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	12/21/2020 12:53:38 PM
Surr: DNOP	105	30.4-154		%Rec	1	12/21/2020 12:53:38 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/21/2020 11:42:47 PM
Surr: BFB	84.3	75.3-105		%Rec	1	12/21/2020 11:42:47 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	12/21/2020 11:42:47 PM
Toluene	ND	0.049		mg/Kg	1	12/21/2020 11:42:47 PM
Ethylbenzene	ND	0.049		mg/Kg	1	12/21/2020 11:42:47 PM
Xylenes, Total	ND	0.097		mg/Kg	1	12/21/2020 11:42:47 PM
Surr: 4-Bromofluorobenzene	102	80-120		%Rec	1	12/21/2020 11:42:47 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	12/28/2020 12:32:10 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2012A07**
Date Reported: **12/30/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2
Lab ID: 2012A07-007 **Matrix:** SOIL

Client Sample ID: BS19-20 0-0.5'
Collection Date: 12/17/2020 9:10:00 AM
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	8.9		mg/Kg	1	12/21/2020 1:22:03 PM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	12/21/2020 1:22:03 PM
Surr: DNOP	93.2	30.4-154		%Rec	1	12/21/2020 1:22:03 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/22/2020 12:52:25 AM
Surr: BFB	82.3	75.3-105		%Rec	1	12/22/2020 12:52:25 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	12/22/2020 12:52:25 AM
Toluene	ND	0.049		mg/Kg	1	12/22/2020 12:52:25 AM
Ethylbenzene	ND	0.049		mg/Kg	1	12/22/2020 12:52:25 AM
Xylenes, Total	ND	0.098		mg/Kg	1	12/22/2020 12:52:25 AM
Surr: 4-Bromofluorobenzene	99.4	80-120		%Rec	1	12/22/2020 12:52:25 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	12/28/2020 12:44:34 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2012A07**
Date Reported: **12/30/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2
Lab ID: 2012A07-008 **Matrix:** SOIL

Client Sample ID: BS19-21 0-0.5'
Collection Date: 12/17/2020 9:20:00 AM
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	8.9		mg/Kg	1	12/21/2020 1:31:34 PM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	12/21/2020 1:31:34 PM
Surr: DNOP	94.9	30.4-154		%Rec	1	12/21/2020 1:31:34 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/22/2020 2:01:55 AM
Surr: BFB	82.5	75.3-105		%Rec	1	12/22/2020 2:01:55 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	12/22/2020 2:01:55 AM
Toluene	ND	0.049		mg/Kg	1	12/22/2020 2:01:55 AM
Ethylbenzene	ND	0.049		mg/Kg	1	12/22/2020 2:01:55 AM
Xylenes, Total	ND	0.099		mg/Kg	1	12/22/2020 2:01:55 AM
Surr: 4-Bromofluorobenzene	100	80-120		%Rec	1	12/22/2020 2:01:55 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	12/28/2020 12:56:59 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2012A07**
Date Reported: **12/30/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2
Lab ID: 2012A07-009 **Matrix:** SOIL

Client Sample ID: BS19-22 0-0.5'
Collection Date: 12/17/2020 9:30:00 AM
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	12/21/2020 1:41:05 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	12/21/2020 1:41:05 PM
Surr: DNOP	92.2	30.4-154		%Rec	1	12/21/2020 1:41:05 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	12/22/2020 2:25:04 AM
Surr: BFB	83.2	75.3-105		%Rec	1	12/22/2020 2:25:04 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	12/22/2020 2:25:04 AM
Toluene	ND	0.050		mg/Kg	1	12/22/2020 2:25:04 AM
Ethylbenzene	ND	0.050		mg/Kg	1	12/22/2020 2:25:04 AM
Xylenes, Total	ND	0.099		mg/Kg	1	12/22/2020 2:25:04 AM
Surr: 4-Bromofluorobenzene	100	80-120		%Rec	1	12/22/2020 2:25:04 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	59		mg/Kg	20	12/28/2020 1:09:24 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2012A07**
Date Reported: **12/30/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2
Lab ID: 2012A07-010 **Matrix:** SOIL

Client Sample ID: BS19-23 0-0.5'
Collection Date: 12/17/2020 9:40:00 AM
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	12/21/2020 1:50:38 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	12/21/2020 1:50:38 PM
Surr: DNOP	108	30.4-154		%Rec	1	12/21/2020 1:50:38 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	12/22/2020 2:48:12 AM
Surr: BFB	81.9	75.3-105		%Rec	1	12/22/2020 2:48:12 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	12/22/2020 2:48:12 AM
Toluene	ND	0.050		mg/Kg	1	12/22/2020 2:48:12 AM
Ethylbenzene	ND	0.050		mg/Kg	1	12/22/2020 2:48:12 AM
Xylenes, Total	ND	0.10		mg/Kg	1	12/22/2020 2:48:12 AM
Surr: 4-Bromofluorobenzene	98.6	80-120		%Rec	1	12/22/2020 2:48:12 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	12/28/2020 1:21:49 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2012A07**
Date Reported: **12/30/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2
Lab ID: 2012A07-011 **Matrix:** SOIL

Client Sample ID: BS19-24 0-0.5'
Collection Date: 12/17/2020 9:50:00 AM
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	12/21/2020 2:00:12 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	12/21/2020 2:00:12 PM
Surr: DNOP	101	30.4-154		%Rec	1	12/21/2020 2:00:12 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/22/2020 3:11:19 AM
Surr: BFB	81.4	75.3-105		%Rec	1	12/22/2020 3:11:19 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	12/22/2020 3:11:19 AM
Toluene	ND	0.049		mg/Kg	1	12/22/2020 3:11:19 AM
Ethylbenzene	ND	0.049		mg/Kg	1	12/22/2020 3:11:19 AM
Xylenes, Total	ND	0.098		mg/Kg	1	12/22/2020 3:11:19 AM
Surr: 4-Bromofluorobenzene	99.0	80-120		%Rec	1	12/22/2020 3:11:19 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	12/28/2020 1:34:13 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2012A07**
Date Reported: **12/30/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Client Sample ID: BS19-25 0-0.5'
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2
Collection Date: 12/17/2020 10:00:00 AM
Lab ID: 2012A07-012 **Matrix:** SOIL
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	8.9		mg/Kg	1	12/21/2020 2:09:47 PM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	12/21/2020 2:09:47 PM
Surr: DNOP	100	30.4-154		%Rec	1	12/21/2020 2:09:47 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	12/22/2020 4:20:33 AM
Surr: BFB	80.7	75.3-105		%Rec	1	12/22/2020 4:20:33 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	12/22/2020 4:20:33 AM
Toluene	ND	0.048		mg/Kg	1	12/22/2020 4:20:33 AM
Ethylbenzene	ND	0.048		mg/Kg	1	12/22/2020 4:20:33 AM
Xylenes, Total	ND	0.097		mg/Kg	1	12/22/2020 4:20:33 AM
Surr: 4-Bromofluorobenzene	97.6	80-120		%Rec	1	12/22/2020 4:20:33 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	12/28/2020 1:46:38 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2012A07**
Date Reported: **12/30/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2
Lab ID: 2012A07-013 **Matrix:** SOIL

Client Sample ID: BS19-26 0-0.5'
Collection Date: 12/17/2020 10:10:00 AM
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	12/21/2020 2:19:23 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	12/21/2020 2:19:23 PM
Surr: DNOP	98.1	30.4-154		%Rec	1	12/21/2020 2:19:23 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	12/22/2020 4:43:37 AM
Surr: BFB	82.8	75.3-105		%Rec	1	12/22/2020 4:43:37 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	12/22/2020 4:43:37 AM
Toluene	ND	0.048		mg/Kg	1	12/22/2020 4:43:37 AM
Ethylbenzene	ND	0.048		mg/Kg	1	12/22/2020 4:43:37 AM
Xylenes, Total	ND	0.097		mg/Kg	1	12/22/2020 4:43:37 AM
Surr: 4-Bromofluorobenzene	100	80-120		%Rec	1	12/22/2020 4:43:37 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	12/28/2020 1:59:02 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2012A07**
Date Reported: **12/30/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Client Sample ID: BS19-27 0-0.5'
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2
Collection Date: 12/17/2020 10:20:00 AM
Lab ID: 2012A07-014 **Matrix:** SOIL
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	12/21/2020 2:28:59 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	12/21/2020 2:28:59 PM
Surr: DNOP	96.3	30.4-154		%Rec	1	12/21/2020 2:28:59 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/22/2020 9:03:26 AM
Surr: BFB	87.0	75.3-105		%Rec	1	12/22/2020 9:03:26 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	12/22/2020 9:03:26 AM
Toluene	ND	0.049		mg/Kg	1	12/22/2020 9:03:26 AM
Ethylbenzene	ND	0.049		mg/Kg	1	12/22/2020 9:03:26 AM
Xylenes, Total	ND	0.097		mg/Kg	1	12/22/2020 9:03:26 AM
Surr: 4-Bromofluorobenzene	103	80-120		%Rec	1	12/22/2020 9:03:26 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	12/28/2020 2:11:26 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2012A07**
Date Reported: **12/30/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2
Lab ID: 2012A07-015 **Matrix:** SOIL

Client Sample ID: BS19-28 0-0.5'
Collection Date: 12/17/2020 10:30:00 AM
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	12/21/2020 2:38:36 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	12/21/2020 2:38:36 PM
Surr: DNOP	100	30.4-154		%Rec	1	12/21/2020 2:38:36 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/22/2020 9:26:55 AM
Surr: BFB	87.5	75.3-105		%Rec	1	12/22/2020 9:26:55 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	12/22/2020 9:26:55 AM
Toluene	ND	0.049		mg/Kg	1	12/22/2020 9:26:55 AM
Ethylbenzene	ND	0.049		mg/Kg	1	12/22/2020 9:26:55 AM
Xylenes, Total	ND	0.098		mg/Kg	1	12/22/2020 9:26:55 AM
Surr: 4-Bromofluorobenzene	104	80-120		%Rec	1	12/22/2020 9:26:55 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	12/28/2020 2:23:50 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2012A07**
Date Reported: **12/30/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2
Lab ID: 2012A07-016 **Matrix:** SOIL

Client Sample ID: BS19-29 0-0.5'
Collection Date: 12/17/2020 10:40:00 AM
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	8.9		mg/Kg	1	12/21/2020 2:48:15 PM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	12/21/2020 2:48:15 PM
Surr: DNOP	84.0	30.4-154		%Rec	1	12/21/2020 2:48:15 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	12/22/2020 9:50:30 AM
Surr: BFB	89.1	75.3-105		%Rec	1	12/22/2020 9:50:30 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	12/22/2020 9:50:30 AM
Toluene	ND	0.050		mg/Kg	1	12/22/2020 9:50:30 AM
Ethylbenzene	ND	0.050		mg/Kg	1	12/22/2020 9:50:30 AM
Xylenes, Total	ND	0.10		mg/Kg	1	12/22/2020 9:50:30 AM
Surr: 4-Bromofluorobenzene	104	80-120		%Rec	1	12/22/2020 9:50:30 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	12/28/2020 3:01:04 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2012A07**
Date Reported: **12/30/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Client Sample ID: BS19-30 0.5'
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2
Collection Date: 12/17/2020 10:50:00 AM
Lab ID: 2012A07-017 **Matrix:** SOIL
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	12/21/2020 2:57:54 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	12/21/2020 2:57:54 PM
Surr: DNOP	90.3	30.4-154		%Rec	1	12/21/2020 2:57:54 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	12/22/2020 10:14:07 AM
Surr: BFB	88.1	75.3-105		%Rec	1	12/22/2020 10:14:07 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	12/22/2020 10:14:07 AM
Toluene	ND	0.050		mg/Kg	1	12/22/2020 10:14:07 AM
Ethylbenzene	ND	0.050		mg/Kg	1	12/22/2020 10:14:07 AM
Xylenes, Total	ND	0.10		mg/Kg	1	12/22/2020 10:14:07 AM
Surr: 4-Bromofluorobenzene	103	80-120		%Rec	1	12/22/2020 10:14:07 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	59		mg/Kg	20	12/28/2020 3:13:29 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2012A07**
Date Reported: **12/30/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2
Lab ID: 2012A07-018 **Matrix:** SOIL

Client Sample ID: BS19-31 0-0.5'
Collection Date: 12/17/2020 11:00:00 AM
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	12/21/2020 3:07:35 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	12/21/2020 3:07:35 PM
Surr: DNOP	132	30.4-154		%Rec	1	12/21/2020 3:07:35 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	12/22/2020 10:37:34 AM
Surr: BFB	88.5	75.3-105		%Rec	1	12/22/2020 10:37:34 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	12/22/2020 10:37:34 AM
Toluene	ND	0.050		mg/Kg	1	12/22/2020 10:37:34 AM
Ethylbenzene	ND	0.050		mg/Kg	1	12/22/2020 10:37:34 AM
Xylenes, Total	ND	0.099		mg/Kg	1	12/22/2020 10:37:34 AM
Surr: 4-Bromofluorobenzene	104	80-120		%Rec	1	12/22/2020 10:37:34 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	12/28/2020 3:25:54 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2012A07**
Date Reported: **12/30/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Client Sample ID: BS19-32 0-0.5'
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2
Collection Date: 12/17/2020 11:10:00 AM
Lab ID: 2012A07-019 **Matrix:** SOIL
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	12/21/2020 3:17:15 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	12/21/2020 3:17:15 PM
Surr: DNOP	127	30.4-154		%Rec	1	12/21/2020 3:17:15 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/22/2020 11:01:04 AM
Surr: BFB	89.6	75.3-105		%Rec	1	12/22/2020 11:01:04 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	12/22/2020 11:01:04 AM
Toluene	ND	0.049		mg/Kg	1	12/22/2020 11:01:04 AM
Ethylbenzene	ND	0.049		mg/Kg	1	12/22/2020 11:01:04 AM
Xylenes, Total	ND	0.098		mg/Kg	1	12/22/2020 11:01:04 AM
Surr: 4-Bromofluorobenzene	106	80-120		%Rec	1	12/22/2020 11:01:04 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	12/28/2020 3:38:19 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2012A07**
Date Reported: **12/30/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2
Lab ID: 2012A07-020 **Matrix:** SOIL

Client Sample ID: BS19-33 0-0.5'
Collection Date: 12/17/2020 11:20:00 AM
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	8.9		mg/Kg	1	12/21/2020 3:26:57 PM
Motor Oil Range Organics (MRO)	ND	44		mg/Kg	1	12/21/2020 3:26:57 PM
Surr: DNOP	89.2	30.4-154		%Rec	1	12/21/2020 3:26:57 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/22/2020 11:24:39 AM
Surr: BFB	90.5	75.3-105		%Rec	1	12/22/2020 11:24:39 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	12/22/2020 11:24:39 AM
Toluene	ND	0.049		mg/Kg	1	12/22/2020 11:24:39 AM
Ethylbenzene	ND	0.049		mg/Kg	1	12/22/2020 11:24:39 AM
Xylenes, Total	ND	0.099		mg/Kg	1	12/22/2020 11:24:39 AM
Surr: 4-Bromofluorobenzene	107	80-120		%Rec	1	12/22/2020 11:24:39 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	12/28/2020 3:50:43 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2012A07**
Date Reported: **12/30/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2
Lab ID: 2012A07-021 **Matrix:** SOIL

Client Sample ID: BS19-34 0-0.5'
Collection Date: 12/17/2020 11:30:00 AM
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.0		mg/Kg	1	12/21/2020 3:36:40 PM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	12/21/2020 3:36:40 PM
Surr: DNOP	98.5	30.4-154		%Rec	1	12/21/2020 3:36:40 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/22/2020 11:48:21 AM
Surr: BFB	93.1	75.3-105		%Rec	1	12/22/2020 11:48:21 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	12/22/2020 11:48:21 AM
Toluene	ND	0.049		mg/Kg	1	12/22/2020 11:48:21 AM
Ethylbenzene	ND	0.049		mg/Kg	1	12/22/2020 11:48:21 AM
Xylenes, Total	ND	0.099		mg/Kg	1	12/22/2020 11:48:21 AM
Surr: 4-Bromofluorobenzene	107	80-120		%Rec	1	12/22/2020 11:48:21 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	12/28/2020 4:03:07 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2012A07**
Date Reported: **12/30/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2
Lab ID: 2012A07-022 **Matrix:** SOIL

Client Sample ID: BS19-35 0-0.5'
Collection Date: 12/17/2020 11:40:00 AM
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	12/21/2020 3:46:32 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	12/21/2020 3:46:32 PM
Surr: DNOP	99.4	30.4-154		%Rec	1	12/21/2020 3:46:32 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	12/22/2020 12:11:59 PM
Surr: BFB	89.3	75.3-105		%Rec	1	12/22/2020 12:11:59 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	12/22/2020 12:11:59 PM
Toluene	ND	0.048		mg/Kg	1	12/22/2020 12:11:59 PM
Ethylbenzene	ND	0.048		mg/Kg	1	12/22/2020 12:11:59 PM
Xylenes, Total	ND	0.096		mg/Kg	1	12/22/2020 12:11:59 PM
Surr: 4-Bromofluorobenzene	105	80-120		%Rec	1	12/22/2020 12:11:59 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	12/28/2020 4:40:20 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2012A07**
Date Reported: **12/30/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2
Lab ID: 2012A07-023 **Matrix:** SOIL

Client Sample ID: BS19-36 0-0.5'
Collection Date: 12/17/2020 11:50:00 AM
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	12/21/2020 3:56:23 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	12/21/2020 3:56:23 PM
Surr: DNOP	96.8	30.4-154		%Rec	1	12/21/2020 3:56:23 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	12/22/2020 12:35:38 PM
Surr: BFB	90.6	75.3-105		%Rec	1	12/22/2020 12:35:38 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	12/22/2020 12:35:38 PM
Toluene	ND	0.050		mg/Kg	1	12/22/2020 12:35:38 PM
Ethylbenzene	ND	0.050		mg/Kg	1	12/22/2020 12:35:38 PM
Xylenes, Total	ND	0.10		mg/Kg	1	12/22/2020 12:35:38 PM
Surr: 4-Bromofluorobenzene	105	80-120		%Rec	1	12/22/2020 12:35:38 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	12/28/2020 5:42:22 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2012A07**
Date Reported: **12/30/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2
Lab ID: 2012A07-024 **Matrix:** SOIL

Client Sample ID: BS19-37 0-0.5'
Collection Date: 12/17/2020 12:00:00 PM
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	12/21/2020 4:06:13 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	12/21/2020 4:06:13 PM
Surr: DNOP	85.9	30.4-154		%Rec	1	12/21/2020 4:06:13 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	12/22/2020 1:22:49 PM
Surr: BFB	88.7	75.3-105		%Rec	1	12/22/2020 1:22:49 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	12/22/2020 1:22:49 PM
Toluene	ND	0.050		mg/Kg	1	12/22/2020 1:22:49 PM
Ethylbenzene	ND	0.050		mg/Kg	1	12/22/2020 1:22:49 PM
Xylenes, Total	ND	0.10		mg/Kg	1	12/22/2020 1:22:49 PM
Surr: 4-Bromofluorobenzene	103	80-120		%Rec	1	12/22/2020 1:22:49 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	12/28/2020 6:19:36 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2012A07**
Date Reported: **12/30/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Client Sample ID: WS20-01 0-0.5'
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2
Collection Date: 12/17/2020 12:05:00 PM
Lab ID: 2012A07-025 **Matrix:** SOIL
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	8.5		mg/Kg	1	12/21/2020 4:16:03 PM
Motor Oil Range Organics (MRO)	ND	43		mg/Kg	1	12/21/2020 4:16:03 PM
Surr: DNOP	119	30.4-154		%Rec	1	12/21/2020 4:16:03 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/22/2020 1:46:20 PM
Surr: BFB	89.5	75.3-105		%Rec	1	12/22/2020 1:46:20 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	12/22/2020 1:46:20 PM
Toluene	ND	0.049		mg/Kg	1	12/22/2020 1:46:20 PM
Ethylbenzene	ND	0.049		mg/Kg	1	12/22/2020 1:46:20 PM
Xylenes, Total	ND	0.097		mg/Kg	1	12/22/2020 1:46:20 PM
Surr: 4-Bromofluorobenzene	104	80-120		%Rec	1	12/22/2020 1:46:20 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	12/28/2020 6:32:00 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2012A07**
Date Reported: **12/30/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Client Sample ID: WS20-02 0-0.5'
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2
Collection Date: 12/17/2020 12:10:00 PM
Lab ID: 2012A07-026 **Matrix:** SOIL
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	12/22/2020 10:11:31 AM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	12/22/2020 10:11:31 AM
Surr: DNOP	90.7	30.4-154		%Rec	1	12/22/2020 10:11:31 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/22/2020 2:09:51 PM
Surr: BFB	89.8	75.3-105		%Rec	1	12/22/2020 2:09:51 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	12/22/2020 2:09:51 PM
Toluene	ND	0.049		mg/Kg	1	12/22/2020 2:09:51 PM
Ethylbenzene	ND	0.049		mg/Kg	1	12/22/2020 2:09:51 PM
Xylenes, Total	ND	0.098		mg/Kg	1	12/22/2020 2:09:51 PM
Surr: 4-Bromofluorobenzene	105	80-120		%Rec	1	12/22/2020 2:09:51 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	61		mg/Kg	20	12/28/2020 6:44:24 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2012A07**
Date Reported: **12/30/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Client Sample ID: WS20-03 0-0.5'
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2
Collection Date: 12/17/2020 12:15:00 PM
Lab ID: 2012A07-027 **Matrix:** SOIL
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	12/22/2020 10:21:10 AM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	12/22/2020 10:21:10 AM
Surr: DNOP	92.6	30.4-154		%Rec	1	12/22/2020 10:21:10 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/22/2020 3:20:12 PM
Surr: BFB	92.4	75.3-105		%Rec	1	12/22/2020 3:20:12 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	12/22/2020 3:20:12 PM
Toluene	ND	0.049		mg/Kg	1	12/22/2020 3:20:12 PM
Ethylbenzene	ND	0.049		mg/Kg	1	12/22/2020 3:20:12 PM
Xylenes, Total	ND	0.098		mg/Kg	1	12/22/2020 3:20:12 PM
Surr: 4-Bromofluorobenzene	107	80-120		%Rec	1	12/22/2020 3:20:12 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	12/28/2020 6:56:48 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2012A07**
Date Reported: **12/30/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Client Sample ID: WS20-04 0-0.5'
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2
Collection Date: 12/17/2020 12:20:00 PM
Lab ID: 2012A07-028 **Matrix:** SOIL
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	12/22/2020 10:30:50 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	12/22/2020 10:30:50 AM
Surr: DNOP	112	30.4-154		%Rec	1	12/22/2020 10:30:50 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	12/22/2020 4:31:13 PM
Surr: BFB	90.0	75.3-105		%Rec	1	12/22/2020 4:31:13 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	12/22/2020 4:31:13 PM
Toluene	ND	0.050		mg/Kg	1	12/22/2020 4:31:13 PM
Ethylbenzene	ND	0.050		mg/Kg	1	12/22/2020 4:31:13 PM
Xylenes, Total	ND	0.099		mg/Kg	1	12/22/2020 4:31:13 PM
Surr: 4-Bromofluorobenzene	104	80-120		%Rec	1	12/22/2020 4:31:13 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	12/28/2020 7:09:14 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2012A07**
Date Reported: **12/30/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Client Sample ID: WS20-05 0-0.5'
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2
Collection Date: 12/17/2020 12:25:00 PM
Lab ID: 2012A07-029 **Matrix:** SOIL
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	12/22/2020 10:40:31 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	12/22/2020 10:40:31 AM
Surr: DNOP	91.8	30.4-154		%Rec	1	12/22/2020 10:40:31 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/22/2020 4:54:46 PM
Surr: BFB	88.9	75.3-105		%Rec	1	12/22/2020 4:54:46 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	12/22/2020 4:54:46 PM
Toluene	ND	0.049		mg/Kg	1	12/22/2020 4:54:46 PM
Ethylbenzene	ND	0.049		mg/Kg	1	12/22/2020 4:54:46 PM
Xylenes, Total	ND	0.099		mg/Kg	1	12/22/2020 4:54:46 PM
Surr: 4-Bromofluorobenzene	103	80-120		%Rec	1	12/22/2020 4:54:46 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	12/28/2020 7:46:28 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2012A07**
Date Reported: **12/30/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Client Sample ID: WS20-06 0-0.5'
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2
Collection Date: 12/17/2020 12:30:00 PM
Lab ID: 2012A07-030 **Matrix:** SOIL
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	12/22/2020 10:50:14 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	12/22/2020 10:50:14 AM
Surr: DNOP	94.2	30.4-154		%Rec	1	12/22/2020 10:50:14 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/22/2020 5:18:06 PM
Surr: BFB	90.6	75.3-105		%Rec	1	12/22/2020 5:18:06 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	12/22/2020 5:18:06 PM
Toluene	ND	0.049		mg/Kg	1	12/22/2020 5:18:06 PM
Ethylbenzene	ND	0.049		mg/Kg	1	12/22/2020 5:18:06 PM
Xylenes, Total	ND	0.099		mg/Kg	1	12/22/2020 5:18:06 PM
Surr: 4-Bromofluorobenzene	106	80-120		%Rec	1	12/22/2020 5:18:06 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	61		mg/Kg	20	12/28/2020 7:58:52 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2012A07**
Date Reported: **12/30/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Client Sample ID: WS20-07 0-0.5'
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2
Collection Date: 12/17/2020 12:35:00 PM
Lab ID: 2012A07-031 **Matrix:** SOIL
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	12/22/2020 11:00:07 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	12/22/2020 11:00:07 AM
Surr: DNOP	91.7	30.4-154		%Rec	1	12/22/2020 11:00:07 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/22/2020 5:41:38 PM
Surr: BFB	90.6	75.3-105		%Rec	1	12/22/2020 5:41:38 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	12/22/2020 5:41:38 PM
Toluene	ND	0.049		mg/Kg	1	12/22/2020 5:41:38 PM
Ethylbenzene	ND	0.049		mg/Kg	1	12/22/2020 5:41:38 PM
Xylenes, Total	ND	0.098		mg/Kg	1	12/22/2020 5:41:38 PM
Surr: 4-Bromofluorobenzene	105	80-120		%Rec	1	12/22/2020 5:41:38 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	12/28/2020 8:11:16 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2012A07**
Date Reported: **12/30/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Client Sample ID: WS20-08 0-0.5'
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2
Collection Date: 12/17/2020 12:40:00 PM
Lab ID: 2012A07-032 **Matrix:** SOIL
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	12/22/2020 11:10:01 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	12/22/2020 11:10:01 AM
Surr: DNOP	97.5	30.4-154		%Rec	1	12/22/2020 11:10:01 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	12/22/2020 6:05:11 PM
Surr: BFB	88.1	75.3-105		%Rec	1	12/22/2020 6:05:11 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	12/22/2020 6:05:11 PM
Toluene	ND	0.050		mg/Kg	1	12/22/2020 6:05:11 PM
Ethylbenzene	ND	0.050		mg/Kg	1	12/22/2020 6:05:11 PM
Xylenes, Total	ND	0.10		mg/Kg	1	12/22/2020 6:05:11 PM
Surr: 4-Bromofluorobenzene	103	80-120		%Rec	1	12/22/2020 6:05:11 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	12/28/2020 8:23:41 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2012A07**
Date Reported: **12/30/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Client Sample ID: WS20-09 0-0.5'
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2
Collection Date: 12/17/2020 12:45:00 PM
Lab ID: 2012A07-033 **Matrix:** SOIL
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.0		mg/Kg	1	12/22/2020 11:19:52 AM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	12/22/2020 11:19:52 AM
Surr: DNOP	92.2	30.4-154		%Rec	1	12/22/2020 11:19:52 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/22/2020 6:28:43 PM
Surr: BFB	91.0	75.3-105		%Rec	1	12/22/2020 6:28:43 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	12/22/2020 6:28:43 PM
Toluene	ND	0.049		mg/Kg	1	12/22/2020 6:28:43 PM
Ethylbenzene	ND	0.049		mg/Kg	1	12/22/2020 6:28:43 PM
Xylenes, Total	ND	0.098		mg/Kg	1	12/22/2020 6:28:43 PM
Surr: 4-Bromofluorobenzene	107	80-120		%Rec	1	12/22/2020 6:28:43 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	59		mg/Kg	20	12/28/2020 8:36:06 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2012A07**
Date Reported: **12/30/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Client Sample ID: WS20-10 0-0.5'
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2
Collection Date: 12/17/2020 12:50:00 PM
Lab ID: 2012A07-034 **Matrix:** SOIL
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	12/29/2020 10:42:55 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	12/29/2020 10:42:55 AM
Surr: DNOP	110	30.4-154		%Rec	1	12/29/2020 10:42:55 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/22/2020 7:39:33 PM
Surr: BFB	88.6	75.3-105		%Rec	1	12/22/2020 7:39:33 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	12/22/2020 7:39:33 PM
Toluene	ND	0.049		mg/Kg	1	12/22/2020 7:39:33 PM
Ethylbenzene	ND	0.049		mg/Kg	1	12/22/2020 7:39:33 PM
Xylenes, Total	ND	0.098		mg/Kg	1	12/22/2020 7:39:33 PM
Surr: 4-Bromofluorobenzene	104	80-120		%Rec	1	12/22/2020 7:39:33 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	12/28/2020 8:48:30 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2012A07**
Date Reported: **12/30/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Client Sample ID: WS20-11 0-0.5'
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2
Collection Date: 12/17/2020 12:55:00 PM
Lab ID: 2012A07-035 **Matrix:** SOIL
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	12/22/2020 11:39:37 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	12/22/2020 11:39:37 AM
Surr: DNOP	90.2	30.4-154		%Rec	1	12/22/2020 11:39:37 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	12/22/2020 8:03:09 PM
Surr: BFB	90.9	75.3-105		%Rec	1	12/22/2020 8:03:09 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	12/22/2020 8:03:09 PM
Toluene	ND	0.050		mg/Kg	1	12/22/2020 8:03:09 PM
Ethylbenzene	ND	0.050		mg/Kg	1	12/22/2020 8:03:09 PM
Xylenes, Total	ND	0.10		mg/Kg	1	12/22/2020 8:03:09 PM
Surr: 4-Bromofluorobenzene	106	80-120		%Rec	1	12/22/2020 8:03:09 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	12/28/2020 9:00:55 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2012A07**
Date Reported: **12/30/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Client Sample ID: WS20-12 0-0.5'
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2
Collection Date: 12/17/2020 1:00:00 PM
Lab ID: 2012A07-036 **Matrix:** SOIL
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	12/22/2020 11:49:26 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	12/22/2020 11:49:26 AM
Surr: DNOP	93.7	30.4-154		%Rec	1	12/22/2020 11:49:26 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	12/22/2020 8:26:47 PM
Surr: BFB	89.9	75.3-105		%Rec	1	12/22/2020 8:26:47 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	12/22/2020 8:26:47 PM
Toluene	ND	0.050		mg/Kg	1	12/22/2020 8:26:47 PM
Ethylbenzene	ND	0.050		mg/Kg	1	12/22/2020 8:26:47 PM
Xylenes, Total	ND	0.10		mg/Kg	1	12/22/2020 8:26:47 PM
Surr: 4-Bromofluorobenzene	104	80-120		%Rec	1	12/22/2020 8:26:47 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	12/28/2020 9:13:20 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2012A07**
Date Reported: **12/30/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Client Sample ID: WS20-13 0-0.5'
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2
Collection Date: 12/17/2020 1:10:00 PM
Lab ID: 2012A07-037 **Matrix:** SOIL
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.0		mg/Kg	1	12/22/2020 11:59:13 AM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	12/22/2020 11:59:13 AM
Surr: DNOP	89.3	30.4-154		%Rec	1	12/22/2020 11:59:13 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	12/22/2020 8:50:04 PM
Surr: BFB	89.3	75.3-105		%Rec	1	12/22/2020 8:50:04 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	12/22/2020 8:50:04 PM
Toluene	ND	0.050		mg/Kg	1	12/22/2020 8:50:04 PM
Ethylbenzene	ND	0.050		mg/Kg	1	12/22/2020 8:50:04 PM
Xylenes, Total	ND	0.10		mg/Kg	1	12/22/2020 8:50:04 PM
Surr: 4-Bromofluorobenzene	106	80-120		%Rec	1	12/22/2020 8:50:04 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	12/28/2020 9:25:44 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2012A07**
Date Reported: **12/30/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2
Lab ID: 2012A07-038 **Matrix:** SOIL

Client Sample ID: WS20-14 0-0.5'
Collection Date: 12/17/2020 1:20:00 PM
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	12/22/2020 12:09:01 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	12/22/2020 12:09:01 PM
Surr: DNOP	98.1	30.4-154		%Rec	1	12/22/2020 12:09:01 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/22/2020 9:13:34 PM
Surr: BFB	88.9	75.3-105		%Rec	1	12/22/2020 9:13:34 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	12/22/2020 9:13:34 PM
Toluene	ND	0.049		mg/Kg	1	12/22/2020 9:13:34 PM
Ethylbenzene	ND	0.049		mg/Kg	1	12/22/2020 9:13:34 PM
Xylenes, Total	ND	0.098		mg/Kg	1	12/22/2020 9:13:34 PM
Surr: 4-Bromofluorobenzene	103	80-120		%Rec	1	12/22/2020 9:13:34 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	12/28/2020 9:38:09 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2012A07**
Date Reported: **12/30/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Client Sample ID: WS20-15 0-0.5'
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2
Collection Date: 12/17/2020 1:30:00 PM
Lab ID: 2012A07-039 **Matrix:** SOIL
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	12/22/2020 12:18:49 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	12/22/2020 12:18:49 PM
Surr: DNOP	100	30.4-154		%Rec	1	12/22/2020 12:18:49 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/22/2020 9:37:06 PM
Surr: BFB	88.1	75.3-105		%Rec	1	12/22/2020 9:37:06 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	12/22/2020 9:37:06 PM
Toluene	ND	0.049		mg/Kg	1	12/22/2020 9:37:06 PM
Ethylbenzene	ND	0.049		mg/Kg	1	12/22/2020 9:37:06 PM
Xylenes, Total	ND	0.098		mg/Kg	1	12/22/2020 9:37:06 PM
Surr: 4-Bromofluorobenzene	102	80-120		%Rec	1	12/22/2020 9:37:06 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	12/28/2020 10:15:21 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2012A07**
Date Reported: **12/30/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Client Sample ID: WS20-16 0-0.5'
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2
Collection Date: 12/17/2020 1:35:00 PM
Lab ID: 2012A07-040 **Matrix:** SOIL
Received Date: 12/19/2020 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	12/22/2020 12:28:34 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	12/22/2020 12:28:34 PM
Surr: DNOP	99.0	30.4-154		%Rec	1	12/22/2020 12:28:34 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/22/2020 10:00:37 PM
Surr: BFB	87.9	75.3-105		%Rec	1	12/22/2020 10:00:37 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	12/22/2020 10:00:37 PM
Toluene	ND	0.049		mg/Kg	1	12/22/2020 10:00:37 PM
Ethylbenzene	ND	0.049		mg/Kg	1	12/22/2020 10:00:37 PM
Xylenes, Total	ND	0.098		mg/Kg	1	12/22/2020 10:00:37 PM
Surr: 4-Bromofluorobenzene	102	80-120		%Rec	1	12/22/2020 10:00:37 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	12/28/2020 10:27:46 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2012A07**
30-Dec-20

Client: Devon Energy
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2

Sample ID: **MB-57208**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBS**	Batch ID: **57208**	RunNo: **74249**							
Prep Date: **12/24/2020**	Analysis Date: **12/24/2020**	SeqNo: **2621057**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-57208**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSS**	Batch ID: **57208**	RunNo: **74249**							
Prep Date: **12/24/2020**	Analysis Date: **12/24/2020**	SeqNo: **2621058**	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-57216**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBS**	Batch ID: **57216**	RunNo: **74266**							
Prep Date: **12/28/2020**	Analysis Date: **12/28/2020**	SeqNo: **2621585**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-57216**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSS**	Batch ID: **57216**	RunNo: **74266**							
Prep Date: **12/28/2020**	Analysis Date: **12/28/2020**	SeqNo: **2621586**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	92.6	90	110			

Sample ID: **MB-57223**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBS**	Batch ID: **57223**	RunNo: **74266**							
Prep Date: **12/28/2020**	Analysis Date: **12/28/2020**	SeqNo: **2621615**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-57223**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSS**	Batch ID: **57223**	RunNo: **74266**							
Prep Date: **12/28/2020**	Analysis Date: **12/28/2020**	SeqNo: **2621616**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.4	90	110			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2012A07**
30-Dec-20

Client: Devon Energy
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2

Sample ID: **2012A07-023AMS** SampType: **MS** TestCode: **EPA Method 300.0: Anions**
Client ID: **BS19-36 0-0.5'** Batch ID: **57223** RunNo: **74266**
Prep Date: **12/28/2020** Analysis Date: **12/28/2020** SeqNo: **2621623** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	59	30.00	0	0	36.7	168			S

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2012A07**
30-Dec-20

Client: Devon Energy
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2

Sample ID: **2012A07-006AMS** SampType: **MS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **BS19-17 0-0.5'** Batch ID: **57121** RunNo: **74169**
Prep Date: **12/21/2020** Analysis Date: **12/21/2020** SeqNo: **2617521** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	48	9.7	48.64	0	99.2	15	184			
Surr: DNOP	5.6		4.864		116	30.4	154			

Sample ID: **2012A07-006AMSD** SampType: **MSD** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **BS19-17 0-0.5'** Batch ID: **57121** RunNo: **74169**
Prep Date: **12/21/2020** Analysis Date: **12/21/2020** SeqNo: **2617522** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	45	9.2	46.17	0	97.5	15	184	6.95	23.9	
Surr: DNOP	5.1		4.617		110	30.4	154	0	0	

Sample ID: **LCS-57121** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **57121** RunNo: **74169**
Prep Date: **12/21/2020** Analysis Date: **12/21/2020** SeqNo: **2617543** 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	89.7	70	130			
Surr: DNOP	4.8		5.000		96.7	30.4	154			

Sample ID: **MB-57121** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **57121** RunNo: **74169**
Prep Date: **12/21/2020** Analysis Date: **12/21/2020** SeqNo: **2617546** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.5		10.00		95.5	30.4	154			

Sample ID: **2012A07-001AMS** SampType: **MS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **BS19-02 0-0.5'** Batch ID: **57125** RunNo: **74191**
Prep Date: **12/21/2020** Analysis Date: **12/22/2020** SeqNo: **2618566** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	47	9.8	49.02	0	95.6	15	184			
Surr: DNOP	5.3		4.902		109	30.4	154			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2012A07**
30-Dec-20

Client: Devon Energy
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2

Sample ID: **2012A07-001AMSD** SampType: **MSD** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **BS19-02 0-0.5'** Batch ID: **57125** RunNo: **74191**
Prep Date: **12/21/2020** Analysis Date: **12/22/2020** SeqNo: **2618567** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	45	9.7	48.45	0	93.5	15	184	3.40	23.9	
Surr: DNOP	4.9		4.845		100	30.4	154	0	0	

Sample ID: **LCS-57125** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **57125** RunNo: **74191**
Prep Date: **12/21/2020** Analysis Date: **12/22/2020** SeqNo: **2618630** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	48	10	50.00	0	96.3	68.9	141			
Surr: DNOP	5.7		5.000		113	30.4	154			

Sample ID: **MB-57125** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **57125** RunNo: **74191**
Prep Date: **12/21/2020** Analysis Date: **12/22/2020** SeqNo: **2618634** 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		106	30.4	154			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2012A07**
30-Dec-20

Client: Devon Energy
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2

Sample ID: **mb-57111**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **PBS**	Batch ID: **57111**	RunNo: **74163**							
Prep Date: **12/19/2020**	Analysis Date: **12/21/2020**	SeqNo: **2617096**	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	880		1000		87.8	75.3	105			

Sample ID: **lcs-57111**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **LCSS**	Batch ID: **57111**	RunNo: **74163**							
Prep Date: **12/19/2020**	Analysis Date: **12/21/2020**	SeqNo: **2617097**	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	97.2	72.5	106			
Surr: BFB	970		1000		97.1	75.3	105			

Sample ID: **mb-57112**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **PBS**	Batch ID: **57112**	RunNo: **74163**							
Prep Date: **12/19/2020**	Analysis Date: **12/22/2020**	SeqNo: **2617120**	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	810		1000		81.0	75.3	105			

Sample ID: **lcs-57112**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **LCSS**	Batch ID: **57112**	RunNo: **74163**							
Prep Date: **12/19/2020**	Analysis Date: **12/21/2020**	SeqNo: **2617121**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	5.0	25.00	0	88.6	72.5	106			
Surr: BFB	980		1000		97.8	75.3	105			

Sample ID: **2012a07-007ams**	SampType: **MS**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **BS19-20 0-0.5'**	Batch ID: **57112**	RunNo: **74163**							
Prep Date: **12/19/2020**	Analysis Date: **12/22/2020**	SeqNo: **2617124**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	21	5.0	24.88	0	84.3	61.3	114			
Surr: BFB	920		995.0		92.1	75.3	105			

Sample ID: **2012a07-007amsd**	SampType: **MSD**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **BS19-20 0-0.5'**	Batch ID: **57112**	RunNo: **74163**							
Prep Date: **12/19/2020**	Analysis Date: **12/22/2020**	SeqNo: **2617125**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2012A07**
30-Dec-20

Client: Devon Energy
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2

Sample ID: **2012a07-007amsd** SampType: **MSD** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **BS19-20 0-0.5'** Batch ID: **57112** RunNo: **74163**
Prep Date: **12/19/2020** Analysis Date: **12/22/2020** SeqNo: **2617125** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	19	4.8	24.20	0	79.7	61.3	114	8.31	20	
Surr: BFB	900		968.1		93.2	75.3	105	0	0	

Sample ID: **mb-57113** SampType: **MBLK** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS** Batch ID: **57113** RunNo: **74189**
Prep Date: **12/19/2020** Analysis Date: **12/22/2020** SeqNo: **2618447** 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	880		1000		88.0	75.3	105			

Sample ID: **lcs-57113** SampType: **LCS** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS** Batch ID: **57113** RunNo: **74189**
Prep Date: **12/19/2020** Analysis Date: **12/22/2020** SeqNo: **2618448** 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	94.8	72.5	106			
Surr: BFB	1000		1000		102	75.3	105			

Sample ID: **2012a07-027ams** SampType: **MS** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **WS20-03 0-0.5'** Batch ID: **57113** RunNo: **74189**
Prep Date: **12/19/2020** Analysis Date: **12/22/2020** SeqNo: **2618451** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	4.9	24.65	0	91.4	61.3	114			
Surr: BFB	970		986.2		98.9	75.3	105			

Sample ID: **2012a07-027amsd** SampType: **MSD** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **WS20-03 0-0.5'** Batch ID: **57113** RunNo: **74189**
Prep Date: **12/19/2020** Analysis Date: **12/22/2020** SeqNo: **2618452** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	21	5.0	24.93	0	86.0	61.3	114	4.91	20	
Surr: BFB	980		997.0		98.7	75.3	105	0	0	

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2012A07**
30-Dec-20

Client: Devon Energy
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2

Sample ID: **mb-57111** SampType: **MBLK** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS** Batch ID: **57111** RunNo: **74163**
Prep Date: **12/19/2020** Analysis Date: **12/21/2020** SeqNo: **2617143** Units: **mg/Kg**

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

Sample ID: **LCS-57111** SampType: **LCS** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS** Batch ID: **57111** RunNo: **74163**
Prep Date: **12/19/2020** Analysis Date: **12/21/2020** SeqNo: **2617144** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.91	0.025	1.000	0	91.1	80	120			
Toluene	0.94	0.050	1.000	0	94.4	80	120			
Ethylbenzene	0.94	0.050	1.000	0	94.2	80	120			
Xylenes, Total	2.9	0.10	3.000	0	95.3	80	120			
Surr: 4-Bromofluorobenzene	1.1		1.000		105	80	120			

Sample ID: **mb-57112** SampType: **MBLK** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS** Batch ID: **57112** RunNo: **74163**
Prep Date: **12/19/2020** Analysis Date: **12/22/2020** SeqNo: **2617167** 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		98.0	80	120			

Sample ID: **LCS-57112** SampType: **LCS** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS** Batch ID: **57112** RunNo: **74163**
Prep Date: **12/19/2020** Analysis Date: **12/21/2020** SeqNo: **2617168** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.89	0.025	1.000	0	89.2	80	120			
Toluene	0.91	0.050	1.000	0	91.0	80	120			
Ethylbenzene	0.91	0.050	1.000	0	90.8	80	120			
Xylenes, Total	2.8	0.10	3.000	0	92.7	80	120			
Surr: 4-Bromofluorobenzene	1.0		1.000		105	80	120			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2012A07**
30-Dec-20

Client: Devon Energy
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2

Sample ID: **2012a07-006ams** SampType: **MS** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **BS19-17 0-0.5'** Batch ID: **57112** RunNo: **74163**
Prep Date: **12/19/2020** Analysis Date: **12/22/2020** SeqNo: **2617170** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.88	0.025	0.9940	0	88.2	76.3	120			
Toluene	0.92	0.050	0.9940	0.008861	91.9	78.5	120			
Ethylbenzene	0.93	0.050	0.9940	0	93.6	78.1	124			
Xylenes, Total	2.8	0.099	2.982	0.01470	94.8	79.3	125			
Surr: 4-Bromofluorobenzene	1.0		0.9940		105	80	120			

Sample ID: **2012a07-006amsd** SampType: **MSD** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **BS19-17 0-0.5'** Batch ID: **57112** RunNo: **74163**
Prep Date: **12/19/2020** Analysis Date: **12/22/2020** SeqNo: **2617171** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.86	0.024	0.9718	0	88.5	76.3	120	1.99	20	
Toluene	0.90	0.049	0.9718	0.008861	91.5	78.5	120	2.68	20	
Ethylbenzene	0.89	0.049	0.9718	0	91.8	78.1	124	4.15	20	
Xylenes, Total	2.7	0.097	2.915	0.01470	92.8	79.3	125	4.40	20	
Surr: 4-Bromofluorobenzene	1.0		0.9718		104	80	120	0	0	

Sample ID: **mb-57113** SampType: **MBLK** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS** Batch ID: **57113** RunNo: **74189**
Prep Date: **12/19/2020** Analysis Date: **12/22/2020** SeqNo: **2618497** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	1.0		1.000		105	80	120			

Sample ID: **LCS-57113** SampType: **LCS** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS** Batch ID: **57113** RunNo: **74189**
Prep Date: **12/19/2020** Analysis Date: **12/22/2020** SeqNo: **2618498** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.92	0.025	1.000	0	92.1	80	120			
Toluene	0.95	0.050	1.000	0	94.6	80	120			
Ethylbenzene	0.94	0.050	1.000	0	94.3	80	120			
Xylenes, Total	2.9	0.10	3.000	0	96.3	80	120			
Surr: 4-Bromofluorobenzene	1.1		1.000		111	80	120			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2012A07**
30-Dec-20

Client: Devon Energy
Project: Big Cat 16-9 Fed 215H/Tomcat 16 ST2

Sample ID: **2012a07-026ams** SampType: **MS** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **WS20-02 0-0.5'** Batch ID: **57113** RunNo: **74189**
Prep Date: **12/19/2020** Analysis Date: **12/22/2020** SeqNo: **2618500** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.88	0.024	0.9709	0	90.4	76.3	120			
Toluene	0.91	0.049	0.9709	0.008039	92.9	78.5	120			
Ethylbenzene	0.91	0.049	0.9709	0	93.8	78.1	124			
Xylenes, Total	2.8	0.097	2.913	0	95.1	79.3	125			
Surr: 4-Bromofluorobenzene	1.1		0.9709		109	80	120			

Sample ID: **2012a07-026amsd** SampType: **MSD** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **WS20-02 0-0.5'** Batch ID: **57113** RunNo: **74189**
Prep Date: **12/19/2020** Analysis Date: **12/22/2020** SeqNo: **2618501** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.88	0.025	0.9980	0	87.8	76.3	120	0.162	20	
Toluene	0.91	0.050	0.9980	0.008039	90.4	78.5	120	0.00788	20	
Ethylbenzene	0.91	0.050	0.9980	0	90.8	78.1	124	0.528	20	
Xylenes, Total	2.8	0.10	2.994	0	92.5	79.3	125	0.0441	20	
Surr: 4-Bromofluorobenzene	1.1		0.9980		107	80	120	0	0	

Qualifiers:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: **Devon Energy** Work Order Number: **2012A07** RcptNo: **1**

Received By: **Cheyenne Cason** **12/19/2020 9:50:00 AM**

Completed By: **Cheyenne Cason** **12/19/2020 10:02:28 AM**

Reviewed By: CK 12/19/20

Chain of Custody

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

Log In

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

# of preserved bottles checked for pH: (<2 or >12 unless noted)
Adjusted?
Checked by: JR 12/19/20

Special Handling (if applicable)

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

Person Notified: Date:
By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:
Client Instructions:

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.5					
2	0.6					
3	1.1					
4	0.9					

Chain-of-Custody Record

Client: Devon

Mailing Address: On File

Phone #:

email or Fax#:

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time: 5-day
☒ Standard ☐ Rush

Project Name: Big Cat 16-9 Fed 215H / Tomcat 16 ST 2

Project #: 1GE-00575

Project Manager: Natalie Gordon

Sampler: MJP / JR

On Ice: ☒ Yes ☐ No

# of Coolers: 4

Cooler Temp(including CF): Sea Chill (°C)

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

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2012A07	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
12-17	8:10	0-0.5'	BS19-02	4oz	ice	001										
	8:20		BS19-08			002										
	8:30		BS19-10			003										
	8:40		BS19-12			004										
	8:50		BS19-16			005										
	9:00		BS19-17			006										
	9:10		BS19-20			007										
	9:20		BS19-21			008										
	9:30		BS19-22			009										
	9:40		BS19-23			010										
	9:50		BS19-24			011										
	10:00		BS19 25			012										

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
					12/18/20	1210
Date: 12/18/20	Time: 1803	Relinquished by:	Received by: CCC	Via: COU	Date: 12/19/20	Time: 0950

Remarks: CC: Natalie Gordon

WO# 207140 20797140

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

Chain-of-Custody Record

Client: 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: 5day
☒ Standard ☐ Rush

Project Name: BigCat 16-9 Fed 2H 5H / Tomcat 16 STB

Project #: 19E-00575

Project Manager: Natalie Gordon

Sampler: MJP / JR

On Ice: ☒ Yes ☐ No

# of Coolers: 4

Cooler Temp(including CF): See Check (°C)

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Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2012A07	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
12-17	10:10	0-0.5	BS19-26	4oz	ice	013										
	10:20		BS19-27			014										
	10:30		BS19-28			015										
	10:40		BS19-29			016										
	10:50	0.5'	BS19-30			017										
	11:00	0-0.5'	BS19-31			018										
	11:10		BS19-32			019										
	11:20		BS19-33			020										
	11:30		BS19-34			021										
	11:40		BS19-35			~~023~~ 022 on 12/19/20										
	11:50		BS19-36			023										
	12:00		BS19-37			024										

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
					12/18/20	1210
Date: 12/18/20	Time: 1900	Relinquished by:	Received by:	Via:	Date	Time
				Courier	12/19/20	0950

Remarks: CC: Natalie Gordon

WO# 207977140

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

Chain-of-Custody Record

Client: Devon

Mailing Address: On File

Phone #:

email or Fax#:

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time: 5-day
☒ Standard ☐ Rush

Project Name: BigCat 16-9 Fed 215H/Tomcat 16 St 2

Project #: 1RE-00575

Project Manager: Natalie Gordon

Sampler: MJP/JR

On Ice: ☒ Yes ☐ No

# of Coolers: 4

Cooler Temp(including CF): See check (°C)

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

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
12-17	12:05	0-0.5	WS19-01	4oz	ice	025										
	12:10		WS19-02			026										
	12:15		WS19-03			027										
	12:20		WS19-04			028										
	12:25		WS19-05			029										
	12:30		WS19-06			030										
	12:35		WS19-07			031										
	12:40		WS19-08			032										
	12:45		WS19-09			033										
	12:50		WS19-10			034										
	12:55		WS19-11			035										
	1:00		WS19-12			036										

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
					12/18/20	1210
12/18/20	1500			COC	12/19/20	0950

Remarks: CC: Natalie Gordon

WO# ~~207440~~ 20797140

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

Chain-of-Custody Record

Client: Devon

Mailing Address: On file

Phone #:

email or Fax#:

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time: 5-day
☒ Standard ☐ Rush

Project Name: BigCat 16·9 Fed 215H / Tomcat 16 ST 2

Project #: 1RE-00575

Project Manager: Natalie Gordon

Sampler: MP / JR

On Ice: ☒ Yes ☐ No

# of Coolers: 4

Cooler Temp(including CF): Stacked (°C)

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

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2012407	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
12-17	1:10	0-0.5	WS19-13	4oz	ice	037	✓	✓					✓			
↓	1:20	↓	WS19-14	↓	↓	038										
	1:30		WS19-15			039										
	1:35		WS19-16			040										

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
			Alma		12/18/20	1210
Date: 12/18/20	Time: 1300	Relinquished by:	Received by: Cee Cee	Via: COU	Date 12/19/20	Time 0950

Remarks: CC: Natalie Gordon

wo# 207971140

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

Sante Fe Main Office
Phone: (505) 476-3441

General Information
Phone: (505) 629-6116

Online Phone Directory
https://www.emnrd.nm.gov/ocd/contact-us

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

QUESTIONS

Operator: HARVARD PETROLEUM COMPANY, LLC P.O. Box 936 Roswell, NM 88202	OGRID: 10155
	Action Number: 441350
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Prerequisites	
Incident ID (n#)	**nRM2003158355**
Incident Name	**NRM2003158355 TOMCAT 16 STATE 2 BATTERY @ M-16-23S-32E**
Incident Type	**Produced Water Release**
Incident Status	**Remediation Closure Report Received**

Location of Release Source	
Please answer all the questions in this group.	
Site Name	TOMCAT 16 STATE 2 BATTERY
Date Release Discovered	10/01/2019
Surface Owner	State

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: Other | Other (Specify) | Produced Water | Released: 67 BBL | Recovered: 20 BBL | Lost: 47 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)	*Not answered.*

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QUESTIONS (continued)

Operator: HARVARD PETROLEUM COMPANY, LLC P.O. Box 936 Roswell, NM 88202	OGRID: 10155
	Action Number: 441350
	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	**Yes**
Reasons why this would be considered a submission for a notification of a major release	**From paragraph A. "Major release" determine using:** **(1) an unauthorized release of a volume, excluding gases, of 25 barrels or more.**

With the implementation of the 19.15.27 NMAC (05/25/2021), venting and/or flaring of natural gas (i.e. gas only) are to be submitted on the C-129 form.

Initial Response	
The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury.	
The source of the release has been stopped	True
The impacted area has been secured to protect human health and the environment	True
Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices	True
All free liquids and recoverable materials have been removed and managed appropriately	True
If all the actions described above have not been undertaken, explain why	*Not answered.*

Per Paragraph (4) of Subsection B of 19.15.29.8 NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please prepare and attach a narrative of actions to date in the follow-up C-141 submission. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see Subparagraph (a) of Paragraph (5) of Subsection A of 19.15.29.11 NMAC), please prepare and attach all information needed for closure evaluation in the follow-up C-141 submission.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

I hereby agree and sign off to the above statement	Name: Roni Kidd Title: Business Manager Email: rkidd@buckhornproduction.com Date: 10/31/2025

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QUESTIONS (continued)

Operator: HARVARD PETROLEUM COMPANY, LLC P.O. Box 936 Roswell, NM 88202	OGRID: 10155
	Action Number: 441350
	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 100 and 500 (ft.)
What method was used to determine the depth to ground water	NM OSE iWaters Database Search
Did this release impact groundwater or surface water	No
What is the minimum distance, between the closest lateral extents of the release and the following surface areas:	
A continuously flowing watercourse or any other significant watercourse	Greater than 5 (mi.)
Any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)	Between 1 and 5 (mi.)
An occupied permanent residence, school, hospital, institution, or church	Greater than 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	Yes

Remediation Plan	
Please answer all the questions that apply or are indicated. This information must be provided to the appropriate district office no later than 90 days after the release discovery date.	
Requesting a remediation plan approval with this submission	Yes
Attach a comprehensive report demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined, pursuant to 19.15.29.11 NMAC and 19.15.29.13 NMAC.	
Have the lateral and vertical extents of contamination been fully delineated	Yes
Was this release entirely contained within a lined containment area	No
Soil Contamination Sampling: (Provide the highest observable value for each, in milligrams per kilograms.)	
Chloride (EPA 300.0 or SM4500 Cl B)	3600
TPH (GRO+DRO+MRO) (EPA SW-846 Method 8015M)	296
GRO+DRO (EPA SW-846 Method 8015M)	86
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	10/15/2019
On what date will (or did) the final sampling or liner inspection occur	12/17/2020
On what date will (or was) the remediation complete(d)	10/15/2019
What is the estimated surface area (in square feet) that will be reclaimed	8709
What is the estimated volume (in cubic yards) that will be reclaimed	42
What is the estimated surface area (in square feet) that will be remediated	4309
What is the estimated volume (in cubic yards) that will be remediated	42
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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Santa Fe, NM 87505

QUESTIONS (continued)

Operator: HARVARD PETROLEUM COMPANY, LLC P.O. Box 936 Roswell, NM 88202	OGRID: 10155
	Action Number: 441350
	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	fEEM0112334510 HALFWAY DISPOSAL AND LANDFILL
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: Roni Kidd Title: Business Manager Email: rkidd@buckhornproduction.com Date: 10/31/2025
The OCD recognizes that proposed remediation measures may have to be minimally adjusted in accordance with the physical realities encountered during remediation. If the responsible party has any need to significantly deviate from the remediation plan proposed, then it should consult with the division to determine if another remediation plan submission is required.	

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State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

QUESTIONS (continued)

Operator: HARVARD PETROLEUM COMPANY, LLC P.O. Box 936 Roswell, NM 88202	OGRID: 10155
	Action Number: 441350
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Deferral Requests Only *Only answer the questions in this group if seeking a deferral upon approval this submission. Each of the following items must be confirmed as part of any request for deferral of remediation.*	
Requesting a deferral of the remediation closure due date with the approval of this submission	No

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QUESTIONS (continued)

Operator: HARVARD PETROLEUM COMPANY, LLC P.O. Box 936 Roswell, NM 88202	OGRID: 10155
	Action Number: 441350
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Sampling Event Information	
Last sampling notification (C-141N) recorded	**441304**
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	**12/17/2020**
What was the (estimated) number of samples that were to be gathered	**40**
What was the sampling surface area in square feet	**8000**

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	4309
What was the total volume (cubic yards) remediated	42
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	4309
What was the total volume (in cubic yards) reclaimed	42
Summarize any additional remediation activities not included by answers (above)	As detailed in attached 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: Roni Kidd Title: Business Manager Email: rkidd@buckhornproduction.com Date: 10/31/2025

Sante Fe Main Office
Phone: (505) 476-3441

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State of New Mexico
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Oil Conservation Division
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QUESTIONS (continued)

Operator: HARVARD PETROLEUM COMPANY, LLC P.O. Box 936 Roswell, NM 88202	OGRID: 10155
	Action Number: 441350
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Reclamation Report	
Only answer the questions in this group if all reclamation steps have been completed.	
Requesting a reclamation approval with this submission	No

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CONDITIONS

Operator: HARVARD PETROLEUM COMPANY, LLC P.O. Box 936 Roswell, NM 88202	OGRID: 10155
	Action Number: 441350
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

CONDITIONS

Created By	Condition	Condition Date
nvelez	None	12/31/2025