June18, 2020 Vertex Project #: 20E-00141-005

Spill Closure Report: SDE 31 Federal CTB
Unit C, Section 31, Township 23 South, Range 32 East
County: Lea
API: N/A
Tracking Number: NRM2014559127

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

New Mexico Oil Conservation Division – District 2 – Artesia
811 South First Street
Artesia, New Mexico 88210

Devon Energy Production Company (Devon) retained Vertex Resource Services Inc. (Vertex) to conduct a spill assessment and remediation for a crude oil release that occurred at SDE 31 Federal CTB (hereafter referred to as "SDE 31"). Devon provided immediate notification of the spill to New Mexico Oil Conservation Division (NM OCD) District 2 and the Bureau of Land Management (BLM), who own the property, on December 30, 2019, via email. The initial C-141 Release Notification was submitted on January 8, 2020 and again on May 20, 2020 (Attachment 1). The NM OCD tracking number assigned to this incident is NRM2014559127.

This letter provides a description of the spill assessment and remediation activities, and demonstrates that closure criteria established in 19.15.29.12 *New Mexico Administrative Code* (NMAC; New Mexico Oil Conservation Division, 2018) have been met and all applicable regulations are being followed. This document is intended to serve as a final report to obtain approval from NM OCD for closure of this release.

Incident Description

On December 30, 2019, a release occurred at Devon's SDE 31 site when a water transfer pump failed causing a tank to overflow. The incident resulted in the release of approximately 27 barrels (bbls) of crude oil into an unlined, earthen containment. A vacuum truck arrived on-site to recover free fluids; approximately 25 bbls of oil were recovered. The spill was contained within the bermed, earthen containment on the wellpad. No oil was released into undisturbed areas or waterways.

Site Characterization

The release at SDE 31 occurred on federally-owned land, N 32.26464683, W 103.716411, approximately 22 miles east of Loving, New Mexico. The legal description for the site is Unit C, Section 31, Township 23 South, Range 32 East, Lea County, New Mexico. This location is within the Permian Basin in southeast New Mexico and has historically been used for oil and gas exploration and production, and rangeland. An aerial photograph and site schematic are included in Attachment 2.

SDE 31 is typical of oil and gas exploration and production sites in the western portion of the Permian Basin and is currently used for oil and gas production and storage. The following sections specifically describe the area in which the SDE 31 wellpad is located.

The surrounding landscape is associated with sandy plains typical of elevations of 3,000 to 3,900 feet above sea level. The climate is semi-arid, with average annual precipitation ranging between 10 and 12 inches. Historically, the plant community was dominated by grasses, which stabilized the potentially erosive sandy soils; however, more recent conditions, resulting from fire suppression and extensive grazing, show increased woody plant abundance. The dominant grass species are black grama, dropseeds and bluestems, with scattered shinnery oak and sand sage. Litter and, to a lesser extent, bare ground are a significant proportion of ground cover while grasses compose the remainder (United States Department of Agriculture, Natural Resources Conservation Service, 2020). Limited to no vegetation is allowed to grow on the compacted wellpad.

The *Geological Map of New Mexico* indicates the surface geology at SDE 31 is comprised of Qep – eolian and piedmont deposits, that include eolian sands interlaid with piedmont-slope deposits (New Mexico Bureau of Geology and Mineral Resources, 2020). The Natural Resources Conservation Service *Web Soil Survey* characterizes the soil at the site as Pyote and maljamar fine sands, characterized by deep, fine sandy and loamy fine sandy soil. It tends to be well-drained with very low to negligible runoff and low to moderate available moisture levels in the soil profile (United States Department of Agriculture, Natural Resources Conservation Service, 2020). There is low potential for karst geology to be present near SDE 31, though some erosional karst is possible (United States Department of the Interior, United States Geological Survey, 2020a).

There is no surface water located on-site. The nearest significant watercourse, as defined in Subsection P of 19.15.17.7 NMAC, is an intermittent stream located approximately 5.50 miles west-southwest of the site (United States Fish and Wildlife Service, 2020). A freshwater stock pond is located approximately 0.9 miles west of the release site (United States Fish and Wildlife Service, 2020). At SDE 31, there are no continuously flowing watercourses, lakebeds, sinkholes, playa lakes, or other critical water or community features nearby as outlined in Paragraph (4) of Subsection C of 19.15.29.12 NMAC.

The nearest active wells to SDE 31 include a New Mexico Office of the State Engineer (NM OSE)-identified well, located approximately 1.4 miles southeast of the site, with a depth to groundwater of 380 feet below ground surface (bgs), and a NM OSE well located approximately 2.1 miles west-northwest of the site, with a depth to groundwater of 430 feet bgs (New Mexico Office of the State Engineer, New Mexico Water Rights Reporting System, 2020). A United States Geologic Survey-identified well from 2013, located approximately 2 miles west of the site, shows a depth to groundwater of approximately 365 feet bgs (United States Department of the Interior, United States Geological Survey, 2020b). The Chevron Texaco Depth to Ground Water Map for Lea County confirms that depth to groundwater in the vicinity of SDE 31 is approximately 350 feet bgs (Chevron Texaco, 2005). Documentation pertaining to site characterization and depth to groundwater determination is included in Attachment 3.

Closure Criteria Determination

Using site characterization information, a closure criteria determination worksheet (Attachment 3) was completed to determine if the release was subject to any of the special case scenarios outlined in Paragraph (4) of Subsection C of

19.15.29.12 NMAC.

Based on data included in the closure criteria determination worksheet, the release at SDE 31 is not subject to the requirements of Paragraph (4) of Subsection C of 19.15.29.12 NMAC and the closure criteria for the site are determined to be associated with the following constituent concentration limits based on depth to groundwater.

Table 1. Closure Criteria for Soils Impacted by a Release

Depth to Groundwater	Constituent	Limit
>100 feet	Chloride	20,000 mg/kg
	TPH[1] (GRO + DRO + MRO)	2,500 mg/kg
	GRO + DRO	1,000 mg/kg
	BTEX[2]	50 mg/kg
	Benzene	10 mg/kg

[1]Total petroleum hydrocarbons (TPH) = gasoline range organics (GRO) + diesel range organics (DRO) + motor oil range organics (MRO)
[2]Benzene, toluene, ethylbenzene and xylenes (BTEX)

Remedial Actions

Initial spill inspection and site characterization activities at SDE 31 were completed by Vertex on January 20, 2020. The Daily Field Report and field screening data associated with the site visit are included in Attachment 4. Using initial field screening and soil sample laboratory data as presented in Table 2 (Attachment 5), the release was delineated horizontally as presented on Figure 1 (Attachment 2), and a remediation work plan was developed. On February 14, 2020, Vertex provided 48-hour notification of confirmation sampling to NM OCD (Attachment 6), as required by Subparagraph (a) of Paragraph (1) of Subsection D 19.15.29.12 NMAC.

Hand excavation of the contaminated soil was conducted between February 19 and 20, 2020, with a Vertex representative on-site to conduct field screening to guide the excavation and determine final horizontal and vertical extents of the excavation area as presented on Figure 2 (Attachment 2). As remediation activities were completed, Vertex collected a total of four five-point composite confirmatory samples from the base of the excavation, at a depth of approximately 2 feet bgs. Each composite sample was representative of no more than 200 square feet per the alternate sampling method outlined in Subparagraph (c) of Paragraph (1) of Subsection D 19.15.29.12 NMAC, which does not require prior NM OCD approval. The composite samples were placed into laboratory-provided containers, preserved on ice, and submitted to a National Environmental Laboratory Accreditation Program-approved laboratory for chemical analysis.

Laboratory analyses included Method 300.0 for chlorides, Method 8021B for volatile organics, including BTEX, and EPA Method 8015 for TPH, including MRO, DRO and GRO. Confirmatory sample analytical data are summarized in Table 3 (Attachment 5). Laboratory data reports and chain of custody forms are included in Attachment 7.

A GeoExplorer 7000 Series Trimble global positioning system (GPS) unit, or equivalent, was used to map the approximate center of each of the five-point composite samples. The confirmatory sample locations are presented on Figure 2 (Attachment 2). Relevant equipment and prominent features/reference points at the site are mapped as well.

Of the four confirmatory samples, one sample (BS20-03) failed to meet NM OCD closure criteria. Additional excavation was completed in the area of that sample location on April 13, 2020, and the confirmatory sample was re-collected. A wall sample was collected at the same time to bring the total number of confirmatory samples to five. The final laboratory results for this site are shown in Table 3.

Closure Request

Vertex recommends no additional remediation action to address the release at SDE 31. Laboratory analyses of the final confirmatory samples showed constituent of concern concentration levels below NM OCD closure criteria for areas where depth to groundwater is greater than 100 feet bgs as shown in Table 1. 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 this incident (NRM2014559127) 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 NM OCD requirements to obtain closure on the December 30, 2019, release at SDE 31.

Should you have any questions or concerns, please do not hesitate to contact the undersigned at 505.506.0040 or ngordon@vertex.ca.

Sincerely,

Natalie Gordon
PROJECT MANAGER

Attachments

Attachment 1. NM OCD C-141 Report
Attachment 2. Figures
Attachment 3. Closure Criteria for Soils Impacted by a Release Research Determination Documentation
Attachment 4. Daily Field Report(s) with Photographs
Attachment 5. Tables
Attachment 6. Required 48-hr Notification of Confirmatory Sampling to Regulatory Agencies
Attachment 7. Laboratory Data Reports/Chain of Custody Forms

References

Chevron Texaco. (2005). *Lea County Depth to Ground Water, Water Wells, Facilities*.

New Mexico Bureau of Geology and Mineral Resources. (2020). *Interactive Geologic Map.* Retrieved from http://geoinfo.nmt.edu.

New Mexico Office of the State Engineer, New Mexico Water Rights Reporting System. (2020). *Water Column/Average Depth to Water Report.* Retrieved from http://nmwrrs.ose.state.nm.us/nmwrrs/waterColumn.html.

New Mexico Oil Conservation Division. (2018). *New Mexico Administrative Code – Natural Resources and Wildlife Oil and Gas Releases*. Santa Fe, New Mexico.

United States Department of Agriculture, Natural Resources Conservation Service. (2020). *Web Soil Survey*. Retrieved from https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx.

United States Department of the Interior, United States Geological Survey. (2020a). *Caves and Karst in the U.S. National Park Service*. Retrieved from https://www.arcgis.com/home/webmap/viewer.html?webmap=14675403c37948129acb758138f2dd1e

United States Department of the Interior, United States Geological Survey. (2020b). *Groundwater for New Mexico: Water Levels*. Retrieved from https://nwis.waterdata.usgs.gov/nm/nwis/gwlevels?.

United States Fish and Wildlife Service. (2020). *National Wetlands Inventory*. Retrieved from https://www.fws.gov/wetlands/data/Mapper.html.

Limitations

This report has been prepared for the sole benefit of Devon Energy Production Company (Devon). This document may not be used by any other person or entity, with the exception of the New Mexico Oil Conservation Division, without the express written consent of Vertex Resource Services Inc. (Vertex) and Devon. 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.

ATTACHMENT 1

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	NRM2014559127
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

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

Location of Release Source

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

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

Unit Letter	Section	Township	Range	County

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

Nature and Volume of Release

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

☐ Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
☐ Produced Water	Volume Released (bbls)	Volume Recovered (bbls)
	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		

State of New Mexico
Oil Conservation Division

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

Initial Response

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

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

If all the actions described above have not been undertaken, explain why:

Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Printed Name: _____ Title: _____

Signature: Kendra DeHoyos Date: _____

email: _____ Telephone: _____

OCD Only

Received by: Ramona Marcus Date: 5/24/2020

NRM2014559127

Spill Volume(Bbls) Calculator

Inputs in blue, Outputs in red

Contaminated Soil measurement

Length(Ft)	Width(Ft)	Depth(Ft)
87	4.000	0.016
Cubic Feet of Soil Impacted		5.568
Barrels of Soil Impacted		0.99
Soil Type		Clay
Barrels of Oil Assuming 100% Saturation		0.10
Saturation	Fluid present with shovel/backhoe	
Estimated Barrels of Oil Released		0.10
Free Standing Fluid Only		
Length(Ft)	Width(Ft)	Depth(Ft)
87	4.000	0.208
Standing fluid		12.874
Total fluids spilled		12.973

Contaminated Soil measurement

Length(Ft)	Width(Ft)	Depth(Ft)
42	5.000	0.016
Cubic Feet of Soil Impacted		3.360
Barrels of Soil Impacted		0.60
Soil Type		Clay
Barrels of Oil Assuming 100% Saturation		0.06
Saturation	Fluid present with shovel/backhoe	
Estimated Barrels of Oil Released		0.06
Free Standing Fluid Only		
Length(Ft)	Width(Ft)	Depth(Ft)
42	5.000	0.250
Standing fluid		9.338
Total fluids spilled		9.397

Spill Volume(Bbls) Calculator

Inputs in blue, Outputs in red

Contaminated Soil measurement

Length(Ft)	Width(Ft)	Depth(Ft)
27	4.000	0.016
Cubic Feet of Soil Impacted		1.728
Barrels of Soil Impacted		0.31
Soil Type		Clay
Barrels of Oil Assuming 100% Saturation		0.03
Saturation	Fluid present with shovel/backhoe	
Estimated Barrels of Oil Released		0.03
Free Standing Fluid Only		
Length(Ft)	Width(Ft)	Depth(Ft)
27	4.000	0.250
Standing fluid		4.802
Total fluids spilled		4.833

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Oil Conservation Division

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Site Assessment/Characterization

This information must be provided to the appropriate district office no later than 90 days after the release discovery date.

What is the shallowest depth to groundwater beneath the area affected by the release?	380 (ft bgs)
Did this release impact groundwater or surface water?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☐ Yes ☒ No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes ☒ No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	☐ Yes ☒ No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes ☒ No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ☒ No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ☒ No
Are the lateral extents of the release overlying an unstable area such as karst geology?	☐ Yes ☒ No
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes ☒ No
Did the release impact areas **not** on an exploration, development, production, or storage site?	☐ Yes ☒ No

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

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

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

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

Form C-141
Page 4

State of New Mexico
Oil Conservation Division

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I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Printed Name: Amanda Davis . Title: EHS Professional .

Signature: Amanda Davis Date: 6/19/2020

email: amanda.davis@dvn.com Telephone: 575-748-0176

OCD Only

Received by: _____ Date: _____

State of New Mexico
Oil Conservation Division

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District RP	
Facility ID	
Application ID	

Closure

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 (electronic submittals in .pdf format are preferred) 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.

Closure Report Attachment Checklist: ***Each of the following items must be included in the closure report.***

[X] A scaled site and sampling diagram as described in 19.15.29.11 NMAC

[X] Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)

[X] Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)

[X] Description of remediation activities

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.

Printed Name: Amanda Davis Title: EHS Professional

Signature: Amanda Davis Date: 6/19/2020

email: amanda.davis@dvn.com Telephone: 575-748-0176

OCD Only

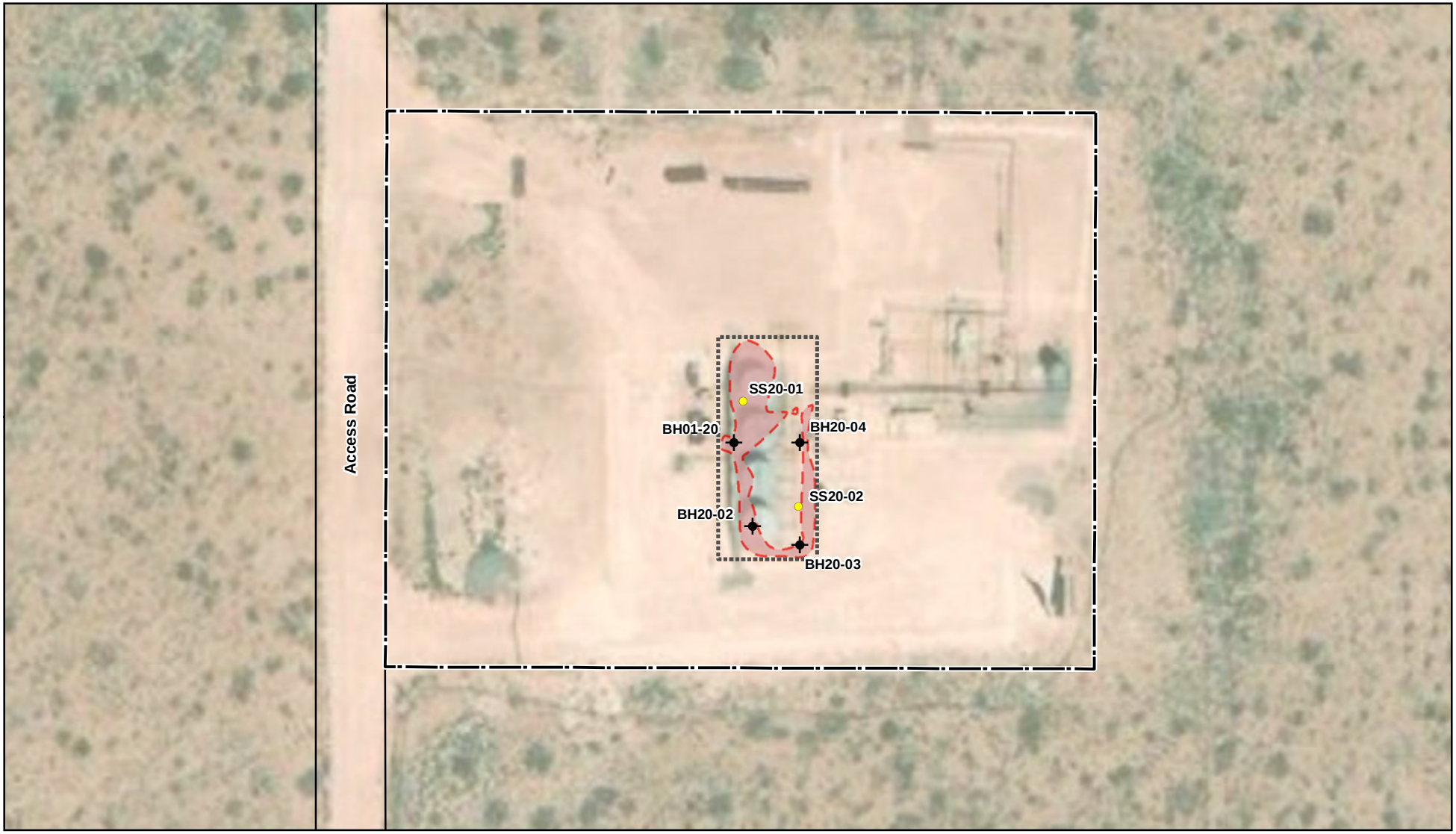
Received by: _____ Date: _____

Closure approval by the OCD does not relieve the responsible party of liability should their operations have failed to adequately investigate and remediate contamination that poses a threat to groundwater, surface water, human health, or the environment nor does not relieve the responsible party of compliance with any other federal, state, or local laws and/or regulations.

Closure Approved by: _____ Date: _____

Printed Name: _____ Title: _____

ATTACHMENT 2



Borehole
Surface Sample
Access Road
Berm
Approximate Lease Boundary
Spill (approximately 1,462 sq. ft.)

VERTEX

0 25 50 Feet

Map Center:
Lat/Long: 32.264648, -103.716592

NAD 1983 UTM Zone 13N
Date: Feb 04/20

N

Site Schematic with Characterization Sample Locations
SDE 31 Federal CTB

FIGURE:
1

devon

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

Note: Background image from ESRI, 2018.

VERSATILITY. EXPERTISE.

Document Path: G:\1-Projects_US PROJECTS\Devon Energy Corporation\SDE 31 Fed Battery (20E-00141-005)\Fig 1 SS and Characterization Sample Locations (20E-00141-005).mxd

● Base Sample
▲ Wall Sample
Berm
Spill (approximately 1,462 sq. ft.)

VERTEX

0 15 30 Feet

Map Center:
Lat/Long: 32.264599, -103.716512

NAD 1983 UTM Zone 13N
Date: Apr 07/20

N

Confirmatory Sampling Locations
SDE 31 Federal CTB

FIGURE:
2

devon

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

Note: Background image from ESRI, 2018.

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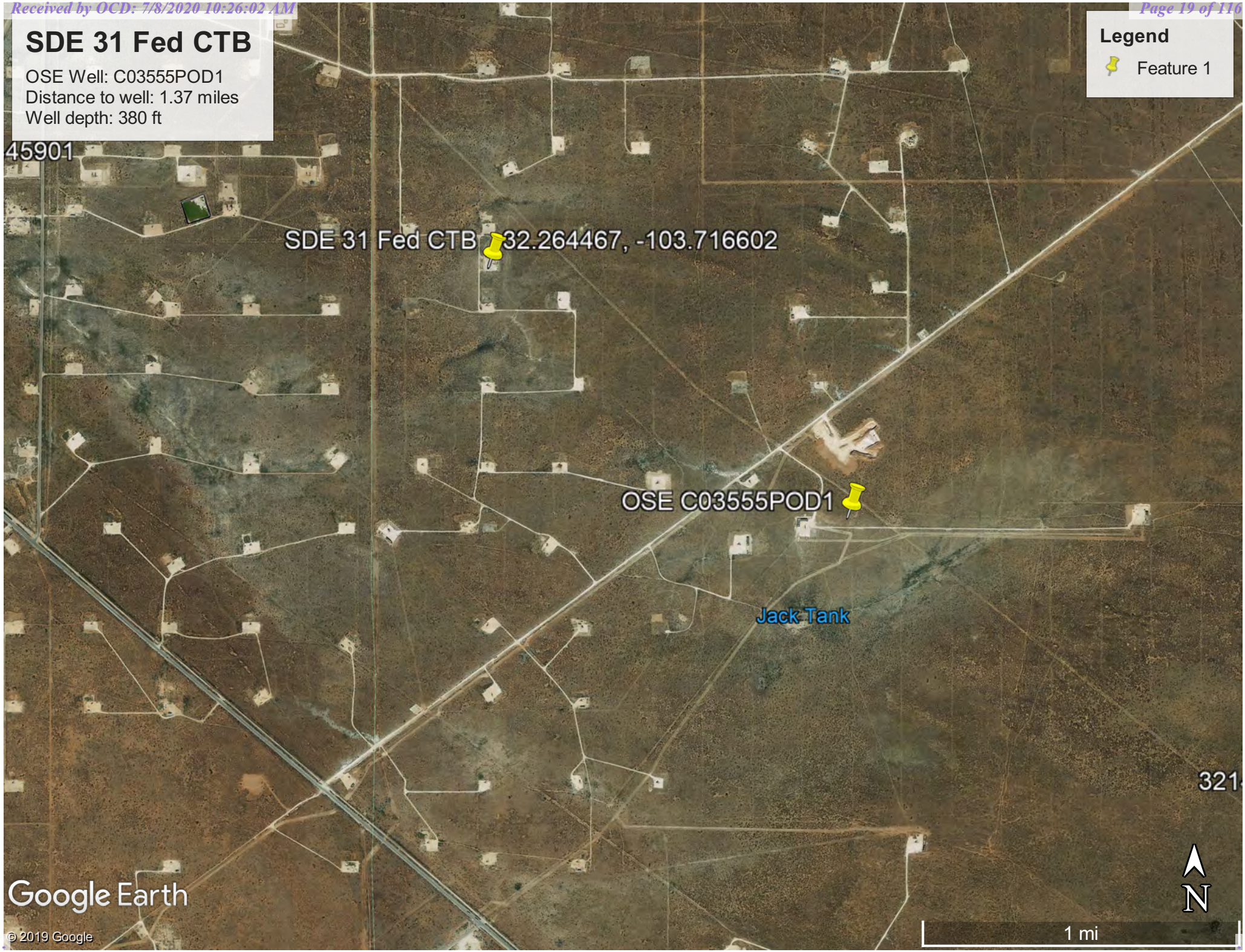
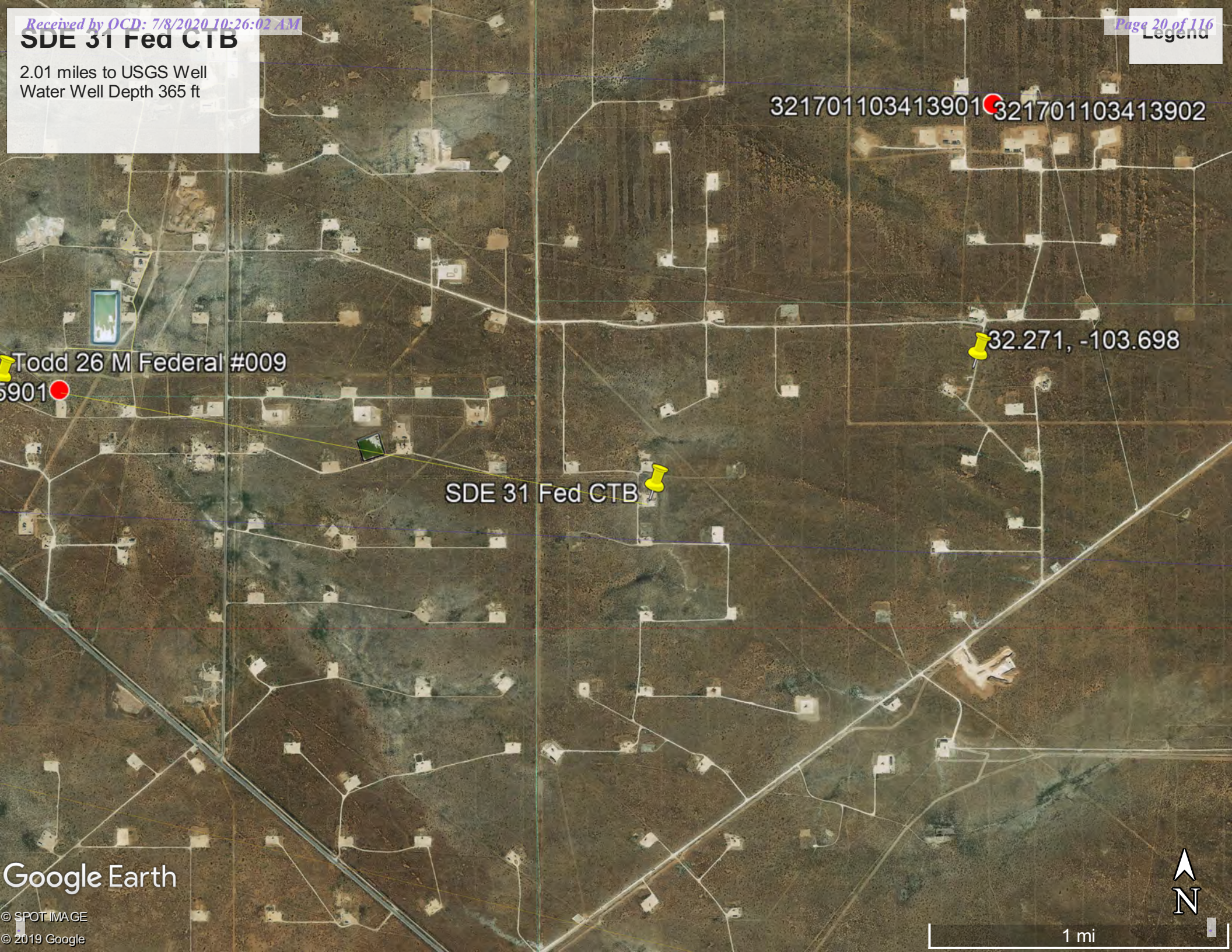
Document Path: G:\1-Projects_US PROJECT S\Devon Energy Corporation\20E-00141\005 - SDE 31 Fed Battery\Fig 2 Confirmation Sampling Schematic (20E-00141-005).mxd

ATTACHMENT 3

Closure Criteria Determination Worksheet			
SDE 31 Federal CTB			
Spill Coordinates:		X: 32.264467	Y: -103.716602
Site Specific Conditions		Value	Unit
1	Depth to Groundwater	**380**	feet
2	Within 300 feet of any continuously flowing watercourse or any other significant watercourse	84,480	feet
3	Within 200 feet of any lakebed, sinkhole or playa lake (measured from the ordinary high-water mark)	7,761	feet
4	Within 300 feet from an occupied residence, school, hospital, institution or church	110,880	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**	31,680	feet
	ii) Within 1000 feet of any fresh water well or spring	31,680	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	7,761	feet
8	Within the area overlying a subsurface mine	No	(Y/N)
9	Within an unstable area (Karst Map)	Low	Critical High Medium Low
10	Within a 100-year Floodplain	undetermined	year
NMAC 19.15.29.12 E (Table 1) Closure Criteria		>100'	<50' 51-100' >100'


SDE 31 Fed CTB
OSE Well: C03555POD1
Distance to well: 1.37 miles
Well depth: 380 ft
Legend
Feature 1
45901
SDE 31 Fed CTB 32.264467, -103.716602
OSE C03555POD1
Jack Tank
321
Google Earth
© 2019 Google
N
1 mi


SDE 31 Fed CTB
2.01 miles to USGS Well
Water Well Depth 365 ft
Legend
3217011034139O1
3217011034139O2
32.271, -103.698
Todd 26 M Federal #009
5901
SDE 31 Fed CTB
Google Earth
© SPOT IMAGE
© 2019 Google
N
1 mi

OSE Well map

1/28/2020, 3:06:00 PM

1:18,056

0 0.17 0.35 0.7 mi

0 0.28 0.55 1.1 km

OSE District Boundary

GIS WATERS PODs

Active

Pending

Declared Groundwater Basins

Surface Water Sub Basins

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	Twn	Rng	X	Y
	C 03555 POD1	2	2	1	05	24S	32E	622709	3569231

Driller License: 1654 **Driller Company:** NOT WORKING FOR HIRE--SIRMAN DRILLING AND CONSTRUC
Driller Name: JOHN SIRMAN

Drill Start Date: 10/20/2013 **Drill Finish Date:** 10/21/2013 **Plug Date:**
Log File Date: 11/07/2013 **PCW Rcv Date:** **Source:** Shallow
Pump Type: **Pipe Discharge Size:** **Estimated Yield:** 5 GPM
Casing Size: 6.00 **Depth Well:** 600 feet **Depth Water:** 380 feet

Water Bearing Stratifications:	Top	Bottom	Description
	475	550	Sandstone/Gravel/Conglomerate

Casing Perforations:	Top	Bottom
	460	520

National Water Information System: Web Interface

USGS Water Resources

Data Category: Site Information ▼ Geographic Area: United States ▼ GO

Click to hideNews Bulletins

- Introducing The Next Generation of USGS Water Data for the Nation
- Full News

USGS 321609103445901 23S.31E.26.34411

Available data for this site SUMMARY OF ALL AVAILABLE DATA ▼ GO

Well Site

DESCRIPTION:

Latitude 32°16'11.9", Longitude 103°45'01.2" NAD83
Eddy County, New Mexico , Hydrologic Unit 13060011
Well depth: 365 feet
Land surface altitude: 3,451.00 feet above NGVD29.
Well completed in "Dewey Lake Redbeds" (312DYLK) local aquifer

AVAILABLE DATA:

Data Type	Begin Date	End Date	Count
Field groundwater-level measurements	1959-02-04	2013-02-14	5
Field/Lab water-quality samples	1972-09-20	1972-09-20	1
Revisions	Unavailable (site:0) (timeseries:0)		

OPERATION:

Record for this site is maintained by the USGS New Mexico Water Science Center
Email questions about this site to New Mexico Water Science Center Water-Data Inquiries

---

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

Title: NWIS Site Information for USA: Site Inventory
URL: https://waterdata.usgs.gov/nwis/inventory?agency_code=USGS&site_no=321609103445901

Page Contact Information: New Mexico Water Data Support Team
Page Last Modified: 2020-01-21 15:23:01 EST
0.42 0.4 caww02

National Water Information System: Web Interface

USGS Water Resources

Data Category: Site Information ▼ Geographic Area: United States ▼ GO

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- Full News

USGS 321701103413901 23S.32E.20.3442 H-10A

Available data for this site SUMMARY OF ALL AVAILABLE DATA ▼ GO

Well Site

DESCRIPTION:

Latitude 32°17'01", Longitude 103°41'47" NAD27
Lea County, New Mexico , Hydrologic Unit 13060011
Well depth: not determined.
Land surface altitude: 3,694 feet above NGVD29.

AVAILABLE DATA:

Data Type	Begin Date	End Date	Count
Field/Lab water-quality samples	1980-03-21	1980-03-21	1
Revisions	Unavailable (site:0) (timeseries:0)		

OPERATION:

Record for this site is maintained by the USGS New Mexico Water Science Center
Email questions about this site to New Mexico Water Science Center Water-Data Inquiries

---

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

U.S. Department of the Interior | U.S. Geological Survey
Title: NWIS Site Information for USA: Site Inventory
URL: https://waterdata.usgs.gov/nwis/inventory?agency_code=USGS&site_no=321701103413901

Page Contact Information: New Mexico Water Data Support Team
Page Last Modified: 2020-01-21 15:18:59 EST
0.4 0.39 caww02

National Water Information System: Web Interface

USGS Water Resources

Data Category: Site Information ▼ Geographic Area: United States ▼ GO

Click to hideNews Bulletins

- Introducing The Next Generation of USGS Water Data for the Nation
- Full News

USGS 321701103413902 23S.32E.20.3442 H-10B

Available data for this site SUMMARY OF ALL AVAILABLE DATA ▼ GO

Well Site

DESCRIPTION:

Latitude 32°17'01", Longitude 103°41'47" NAD27
Lea County, New Mexico , Hydrologic Unit 13060011
Well depth: not determined.
Land surface altitude: 3,694 feet above NGVD29.

AVAILABLE DATA:

Data Type	Begin Date	End Date	Count
Field/Lab water-quality samples	1980-03-21	1980-03-21	1
Revisions	Unavailable (site:0) (timeseries:0)		

OPERATION:

Record for this site is maintained by the USGS New Mexico Water Science Center
Email questions about this site to New Mexico Water Science Center Water-Data Inquiries

---

U.S. Department of the Interior | U.S. Geological Survey
Title: NWIS Site Information for USA: Site Inventory
URL: https://waterdata.usgs.gov/nwis/inventory?agency_code=USGS&site_no=321701103413902

Page Contact Information: New Mexico Water Data Support Team
Page Last Modified: 2020-01-21 15:20:50 EST
0.45 0.41 caww02

National Water Information System: Web Interface

USGS Water Resources

Data Category: Site Information ▼ Geographic Area: United States ▼ GO

Click to hideNews Bulletins

- Introducing The Next Generation of USGS Water Data for the Nation
- Full News

USGS 321701103413903 23S.32E.20.3442 H-10C

Available data for this site SUMMARY OF ALL AVAILABLE DATA ▼ GO

Well Site

DESCRIPTION:

Latitude 32°17'01", Longitude 103°41'47" NAD27
Lea County, New Mexico , Hydrologic Unit 13060011
Well depth: not determined.
Land surface altitude: 3,694 feet above NGVD29.
Well completed in "Rustler Formation, Unnamed Lower Member" (312RSLRL) local aquifer

AVAILABLE DATA:

Data Type	Begin Date	End Date	Count
Field/Lab water-quality samples	1980-05-19	1980-05-19	1
Revisions	Unavailable (site:0) (timeseries:0)		

OPERATION:

Record for this site is maintained by the USGS New Mexico Water Science Center
Email questions about this site to New Mexico Water Science Center Water-Data Inquiries

---

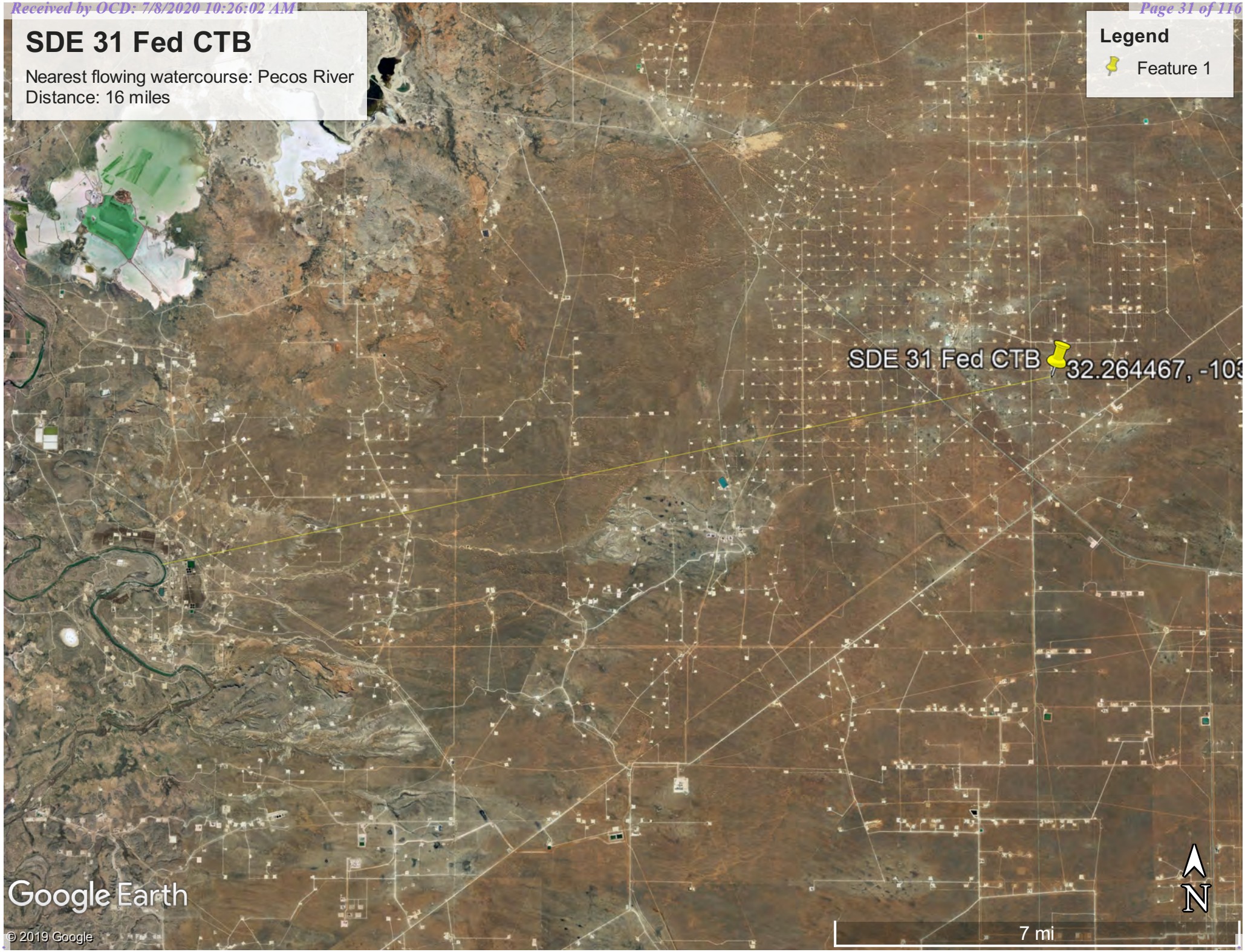
Questions about sites/data?
Feedback on this web site
Automated retrievals
Help
Data Tips
Explanation of terms
Subscribe for system changes
News

Title: NWIS Site Information for USA: Site Inventory
URL: https://waterdata.usgs.gov/nwis/inventory?agency_code=USGS&site_no=321701103413903

Page Contact Information: New Mexico Water Data Support Team
Page Last Modified: 2020-01-21 15:21:55 EST
0.4 0.39 caww02

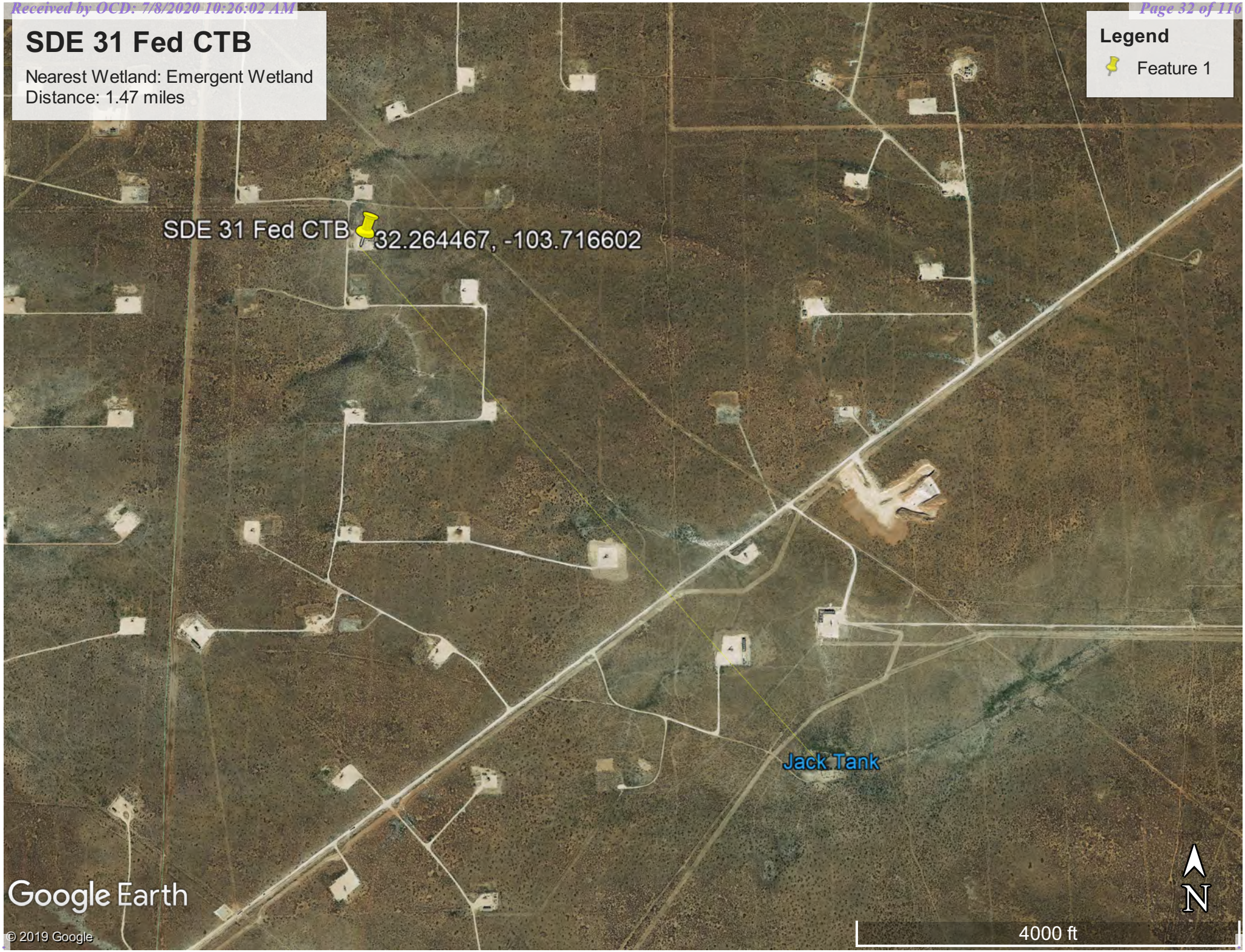
SDE 31 Fed CTB

Nearest flowing watercourse: Pecos River
Distance: 16 miles

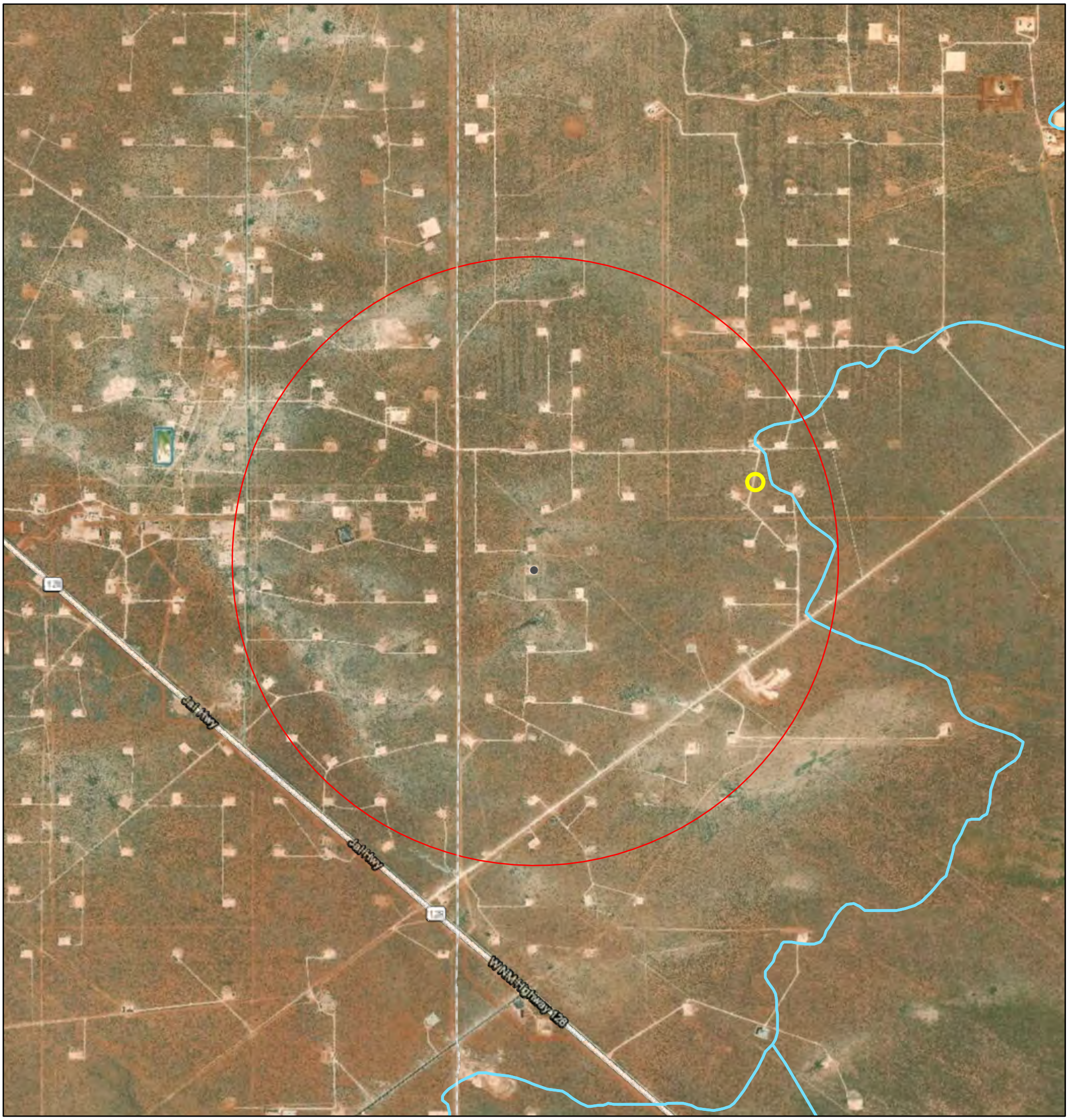


SDE 31 Fed CTB

Nearest Wetland: Emergent Wetland
Distance: 1.47 miles



OSE PUBLIC PRINT



1/21/2020, 2:03:02 PM

1:36,112

0 0.35 0.7 1.4 mi

0 0.5 1 2 km

OSE District Boundary

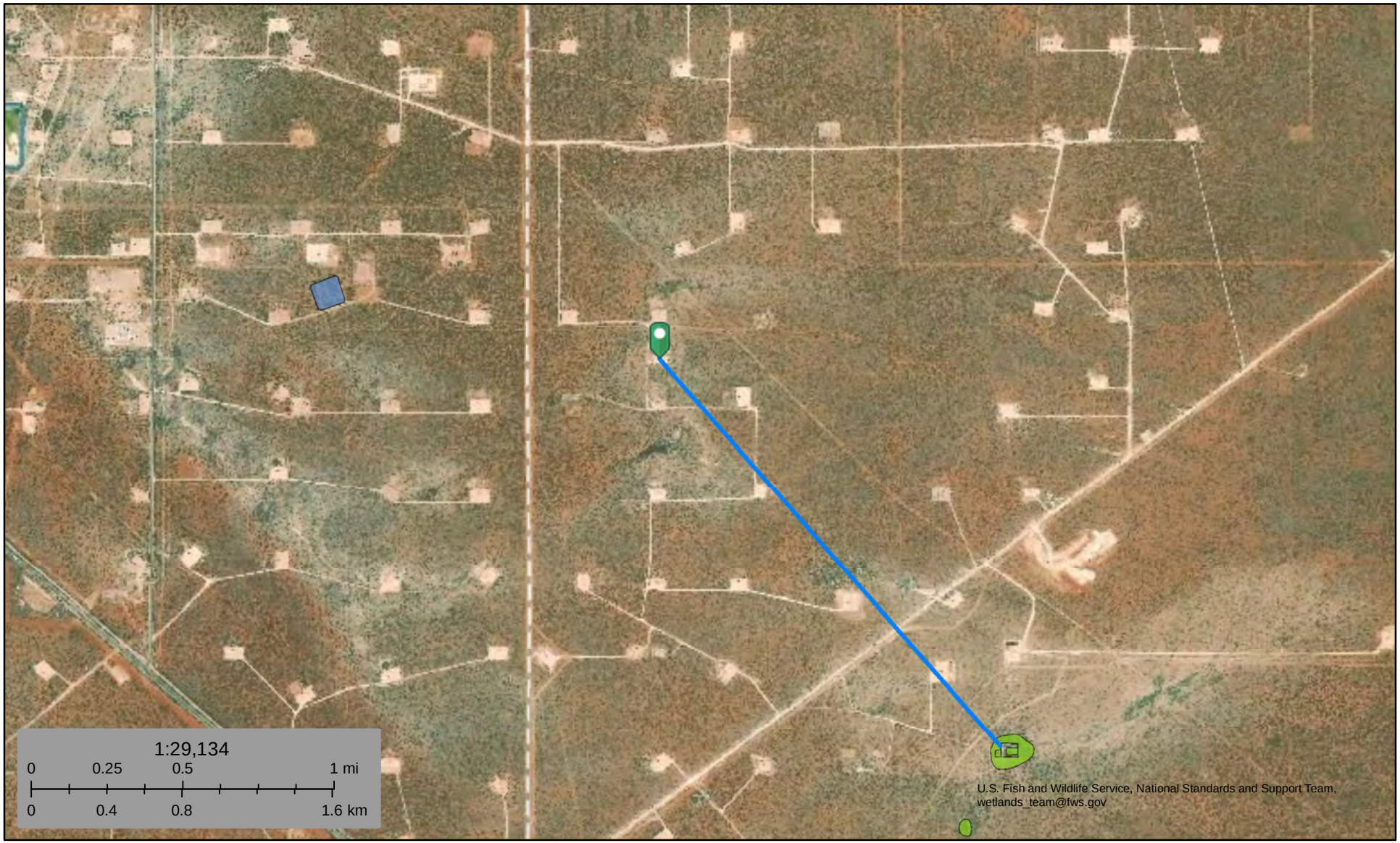
Declared Groundwater Basins

Declared Groundwater Basins with Extensions

Surface Water Sub Basins

U.S. Fish and Wildlife Service
National Wetlands Inventory

FWS Wetland SDE 31 Fed CTB

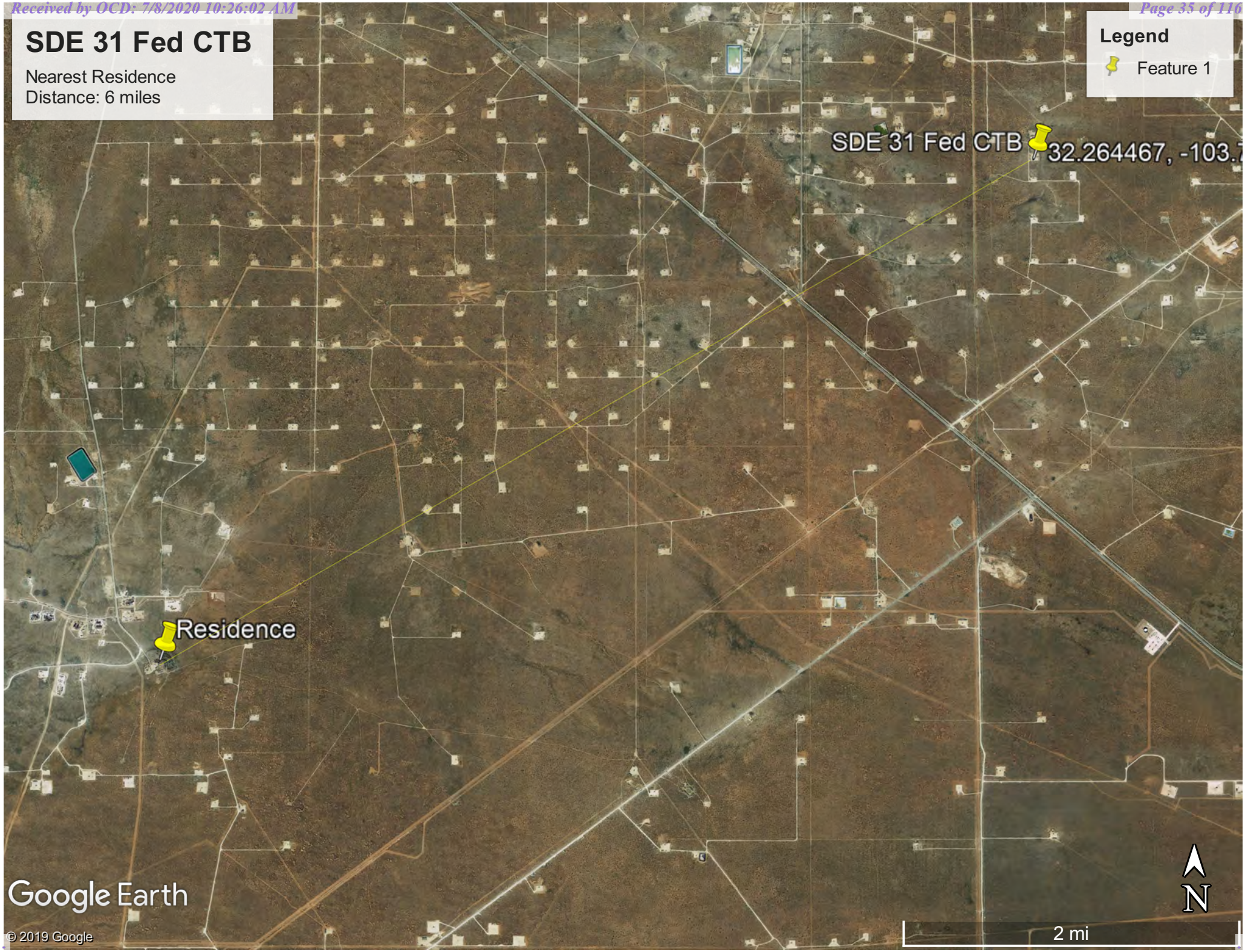


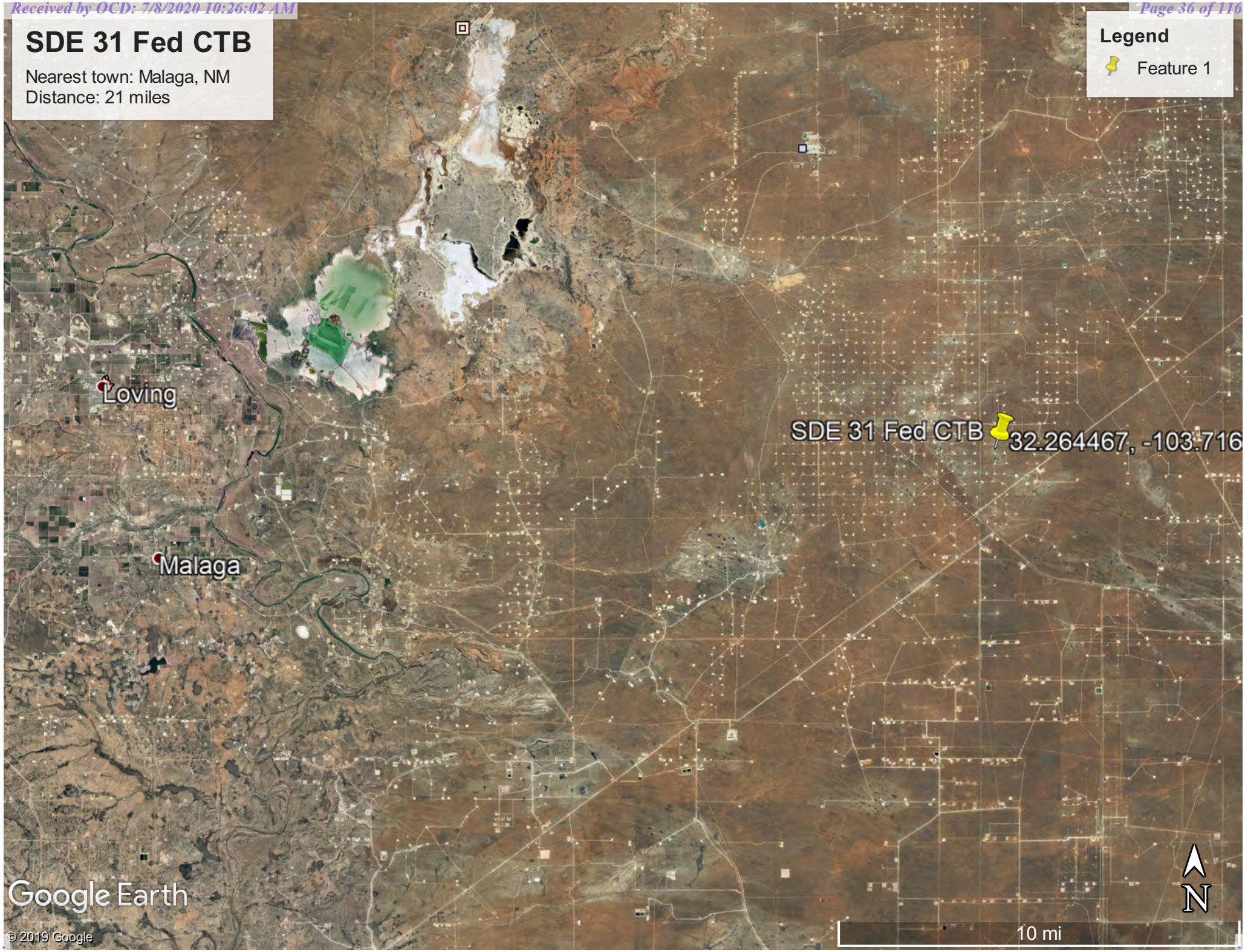
January 21, 2020

Wetlands

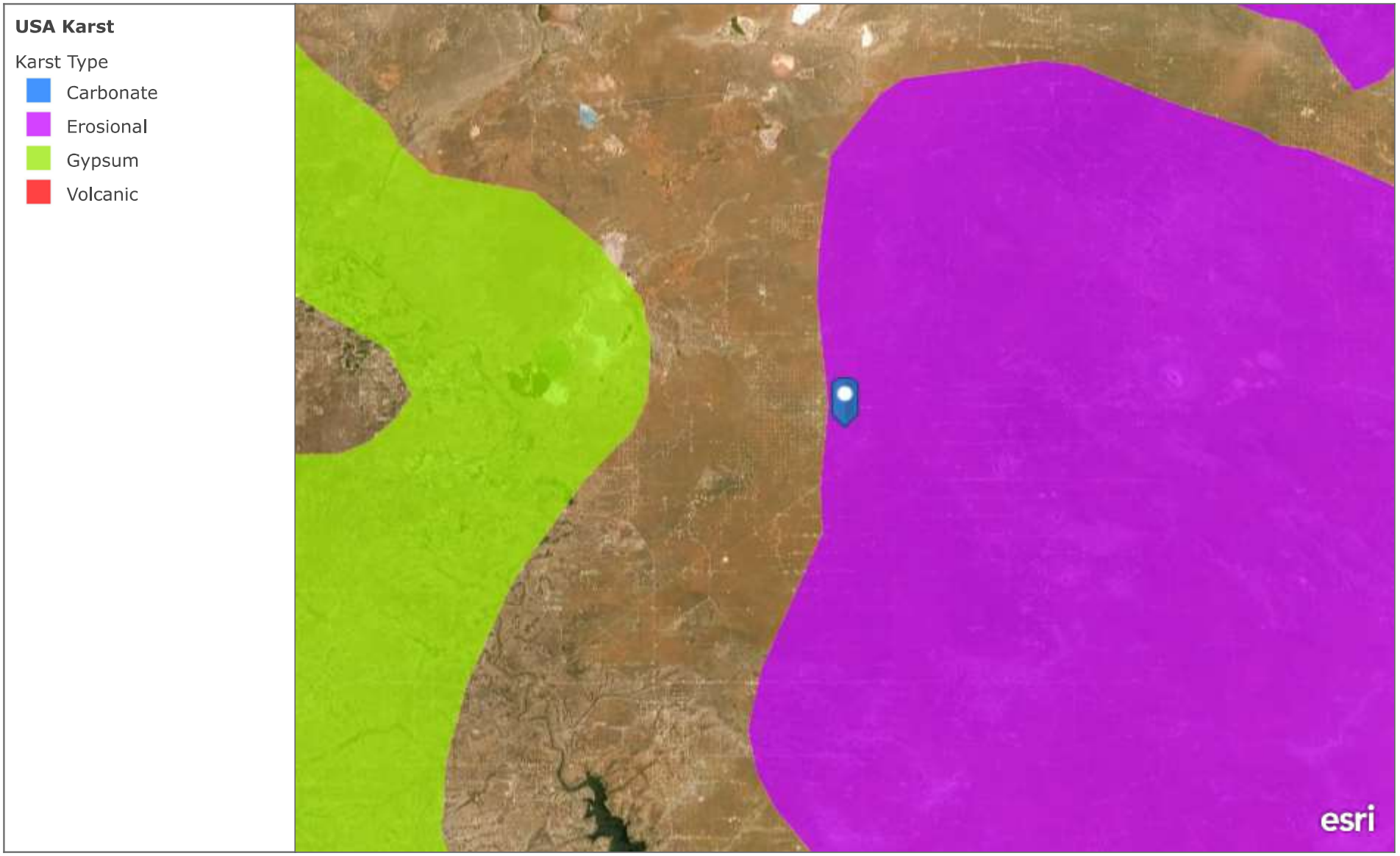
- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

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.


SDE 31 Fed CTB
Nearest Residence
Distance: 6 miles
Legend
Feature 1
SDE 31 Fed CTB
32.264467, -103.7
Residence
Google Earth
© 2019 Google
N
2 mi


SDE 31 Fed CTB
Nearest town: Malaga, NM
Distance: 21 miles
Legend
Feature 1
Loving
Malaga
SDE 31 Fed CTB
32.264467, -103.716
Google Earth
© 2019 Google
N
10 mi

USA Karst



A map showing karst areas in the United States based on the U.S. Geological Survey Open-File Report 2004-1352

U.S. Geological Survey Open-File Report 2004-1352, Caves and Karst in the U.S. National Park Service, AGI Karst Map of the US. | U.S. Geological Survey Open-File Report 2004-1352 | Earthstar Geographics

Soil Map—Lea County, New Mexico

Map Scale: 1:1,270 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 15 30 60 90

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

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	6.7	100.0%
Totals for Area of Interest		**6.7**	**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

ATTACHMENT 4

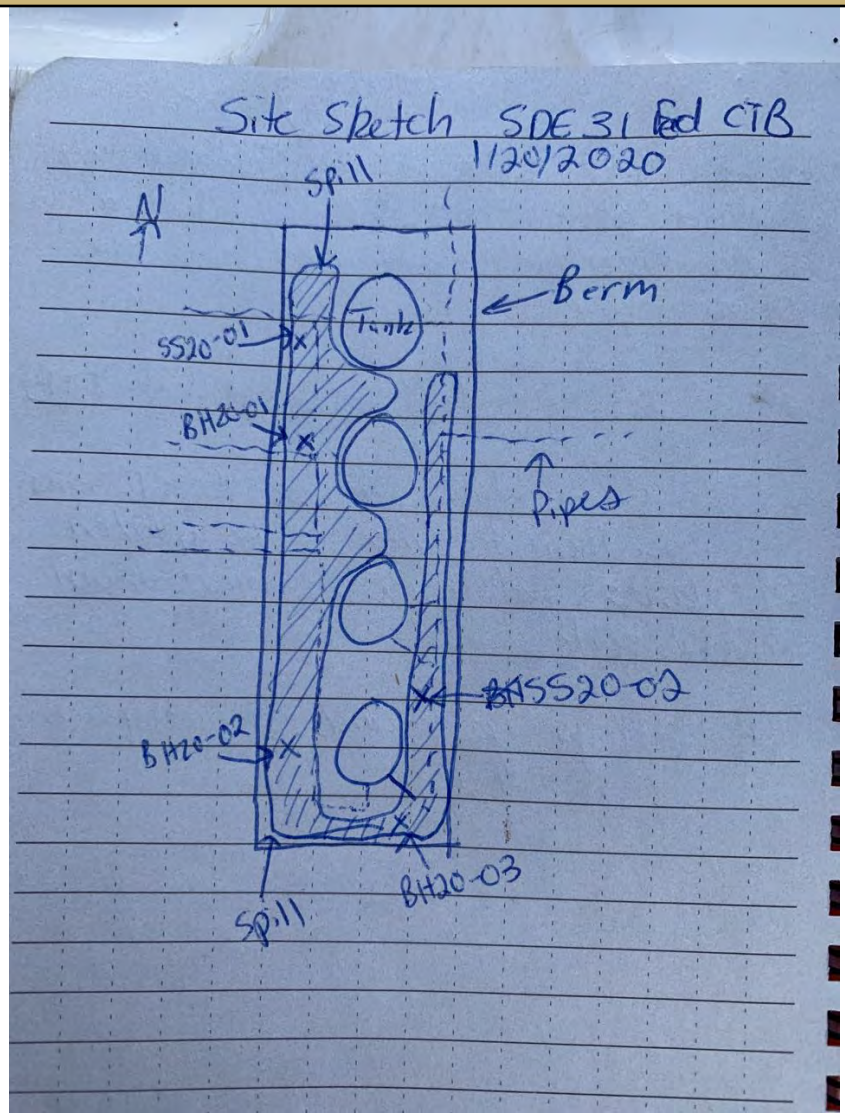
Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	1/20/2020
Site Location Name:	SDE 31 Federal CTB	Report Run Date:	1/21/2020 12:55 AM
Project Owner:	Amanda Davis	File (Project) #:	20E-00141
Project Manager:	Natalie Gordon	API #:	
Client Contact Name:	Amanda Davis	Reference	Spill 12-30-2019
Client Contact Phone #:	(575) 748-0176		

Summary of Times	
Left Office	1/20/2020 9:05 AM
Arrived at Site	1/20/2020 10:50 AM
Departed Site	1/20/2020 3:20 PM
Returned to Office	1/20/2020 4:32 PM

Daily Site Visit Report

Site Sketch



Daily Site Visit Report

Summary of Daily Operations

Next Steps & Recommendations

1 Send samples to lab and await results

Sampling

BH20-01

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
1 ft.						✓	32.26461656, -103.71658313	Yes
2 ft.					Benzene (EPA SW-846 Method 8021B/8260B), BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	See bh20-01 1', See bh20-01 1'	Yes

BH20-02

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
1 ft.						✓	32.26451615, -103.71655917	Yes
2 ft.						✓	32.26451615, -103.71655917	Yes

Daily Site Visit Report

BH20-03

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
1 ft.					Benzene (EPA SW-846 Method 8021B/8260B), BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	32.26449284, -103.71649270	Yes
2 ft.					Benzene (EPA SW-846 Method 8021B/8260B), BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	32.26449284, -103.71649270	Yes

BH20-04

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
1 ft.						✓	32.26461642, -103.71649062	Yes
2 ft.						✓	32.26461642, -103.71649062	Yes

SS20-01

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
						✓	,	No

Daily Site Visit Report

	0 ft.						✓	32.26466632, -103.71657033	Yes

SS20-02

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.					Benzene (EPA SW-846 Method 8021B/8260B), BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	32.26453883, -103.71649400	Yes

Daily Site Visit Report

Site Photos

Viewing Direction: North	**Viewing Direction**: Southeast
	
West end of tank battery spill	Likely spill origin
Viewing Direction: South	**Viewing Direction**: South
	
West end of tanks/spill area	View of east side of tanks

Daily Site Visit Report

Viewing Direction: Northeast	**Viewing Direction**: South
	
Trace staining on outside of berm	BH20-01 Staining only at surface level

Daily Site Visit Report

Depth Sample Photos

Sample Point ID: BH20-01	**Sample Point ID**: SS20-01
	
Depth: 1 ft.	**Depth:** 0 ft.
Sample Point ID: BH20-02	**Sample Point ID**: BH20-02
	
Depth: 1 ft.	**Depth:** 2 ft.

Daily Site Visit Report

Sample Point ID: SS20-02	**Sample Point ID**: BH20-03
	
Depth: 0 ft.	**Depth:** 1 ft.
Sample Point ID: BH20-03	**Sample Point ID**: BH20-04
	
Depth: 2 ft.	**Depth:** 1 ft.

Daily Site Visit Report

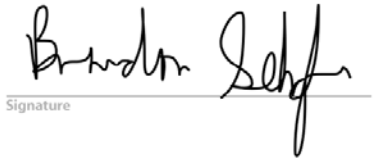
Sample Point ID: BH20-04

Depth: 2 ft.

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Brandon Schafer

Signature: 
Signature

VERTEX

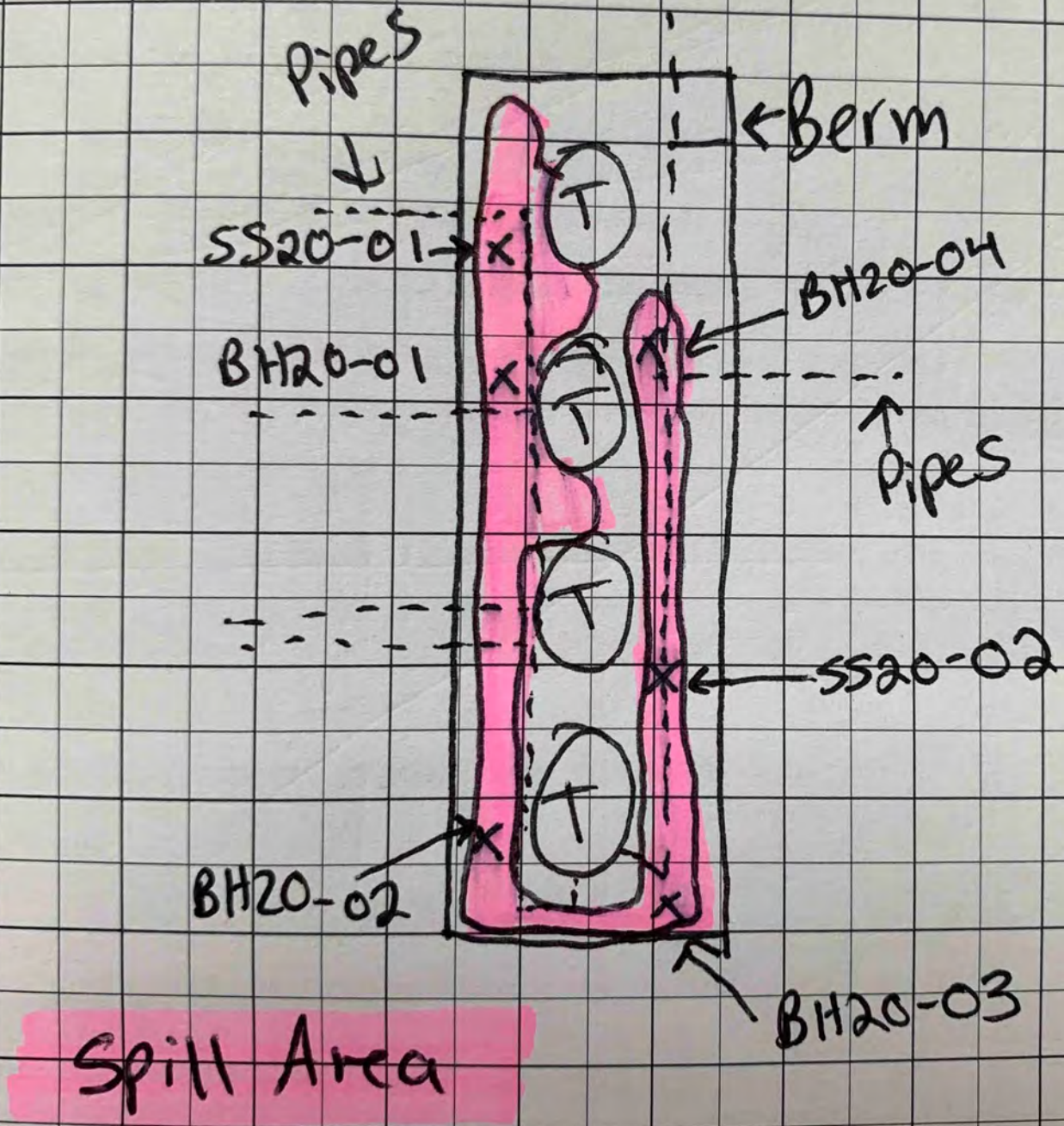
Spill Response and Sampling

Client:	Devon Energy
Date:	1/20/2020
Site Name:	SDE 31 Federal CTB
Site Location:	32.2646483 / -103.716411
Project Owner:	~~Natalie Gordon~~ Amanda Davis
Project Manager:	Natalie Gordon
Project #:	20E-00141 005

Initial Spill Information - Record on First Visit	
Spill Date:	12/30/2019
Spill Volume:	27.203 bbls
Spill Cause:	Water Transfer Pump failure
Spill Product:	Crude Oil
Recovered Spill Volume:	25 bbls
Recovery Method:	

Sampling

		Field Screening			Data Collection (Check for Yes)			
Sample ID	Depth (ft)	VOC (PID)	PetroFlag TPH (ppm)	Quantab (High/Low) + or -	Lab Analysis	Picture	Trimble Coordinates	Marked on Site Sketch
SS/TP/BH - Year - Number Ex. BH18-01	Ex. '2ft	Ex. 400 ppm	200 ppm	Ex. 'High +	Ex. Hydrocarbon Chloride	Yes		Yes for all
✓ BH20-01	1'	111.8	E				32.264616	56
	2'	19.0	125		BTEX, TPH, Cl		-103.716583	13
BH20-02	1'	87.0	E				32.264516	15
	2'	11.1	223				-103.716559	17
BH20-03	1'	172.2	E		" "		32.264492	84
	2'	68.3	739		" "		-103.716492	70
✓ BH20-04	1'	103.3	E				32.264616	42
	2'	39.9	356				-103.716490	62
✓ SS20-01	1"	380.4	1087				32.264666	32
							-103.716570	33
SS20-02	1"	272.2	E		" "		32.264538	83
							-103.716494	00


Pipes
Berm
SS20-01
BH20-04
BH20-01
Pipes
SS20-02
BH20-02
BH20-03
Spill Area

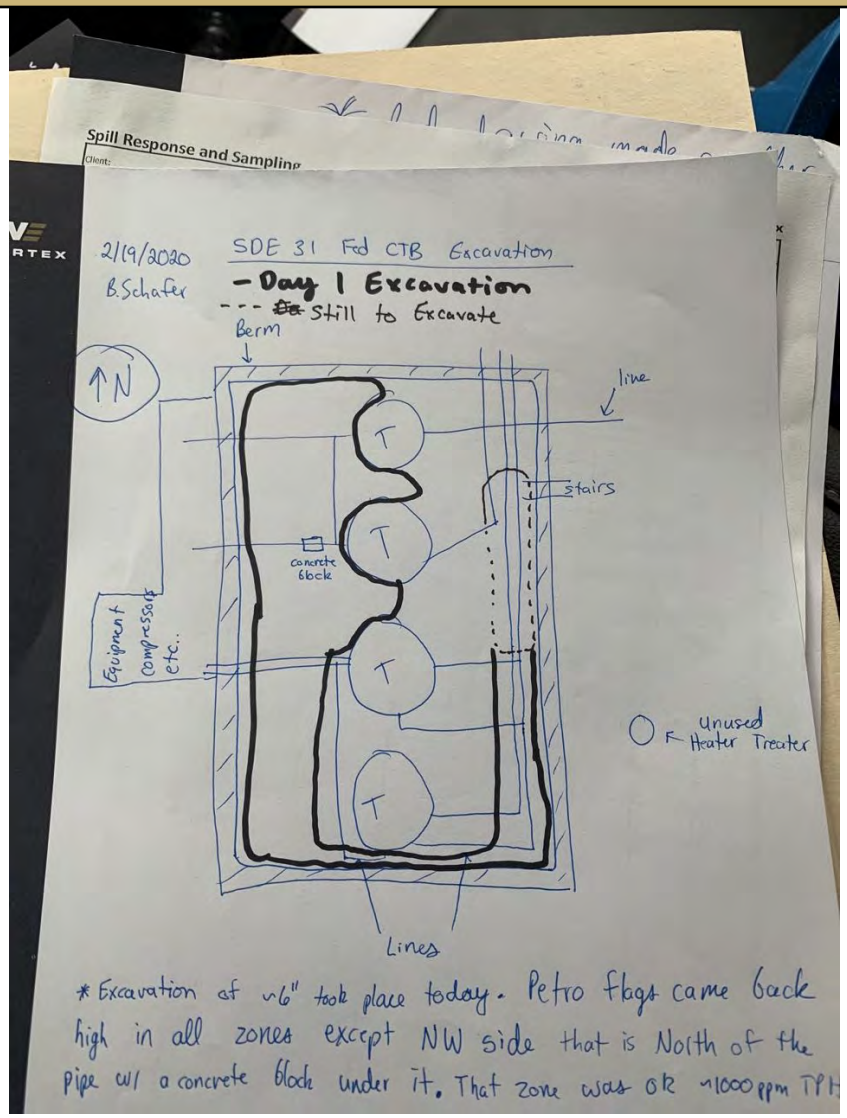
Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	2/19/2020
Site Location Name:	SDE 31 Federal CTB	Report Run Date:	2/20/2020 1:00 AM
Project Owner:	Amanda Davis	File (Project) #:	20E-00141
Project Manager:	Natalie Gordon	API #:	
Client Contact Name:	Amanda Davis	Reference	Spill 12-30-2019
Client Contact Phone #:	(575) 748-0176		

Summary of Times	
Left Office	2/19/2020 7:15 AM
Arrived at Site	2/19/2020 8:34 AM
Departed Site	2/19/2020 4:23 PM
Returned to Office	2/19/2020 5:45 PM

Daily Site Visit Report

Site Sketch



Daily Site Visit Report

Summary of Daily Operations

Next Steps & Recommendations

1 Excavate area further until confirmation samples are acceptable levels

Sampling

ES-Base20-01

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

Daily Site Visit Report

Site Photos

Viewing Direction: North

View of spill area

Viewing Direction: North

EOD excavation on West side

Viewing Direction: Northwest

EOD excavation on East side

Daily Site Visit Report

Depth Sample Photos

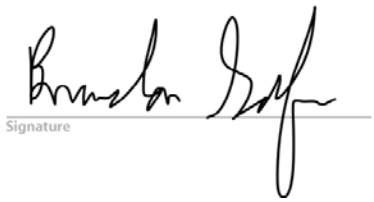
Sample Point ID: ES-Base20-01

Depth:

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Brandon Schafer

Signature: 

Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	2/20/2020
Site Location Name:	SDE 31 Federal CTB	Report Run Date:	2/20/2020 11:59 PM
Project Owner:	Amanda Davis	File (Project) #:	20E-00141
Project Manager:	Natalie Gordon	API #:	
Client Contact Name:	Amanda Davis	Reference	Spill 12-30-2019
Client Contact Phone #:	(575) 748-0176		

Summary of Times

Left Office	2/20/2020 6:15 AM
Arrived at Site	2/20/2020 7:12 AM
Departed Site	2/20/2020 3:36 PM
Returned to Office	2/20/2020 4:45 PM

Summary of Daily Operations

7:12 Hand excavating spill near tank battery

Next Steps & Recommendations

1 Send confirmatory samples into the lab

2 Await results

Sampling

ES-Base20-01

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.	2.2 ppm	262 ppm		529 ppm	BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	32.26466291, -103.71653544	Yes

Daily Site Visit Report

ES-Base20-02

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.	9.8 ppm	170 ppm		4468 ppm	BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	32.26458816, -103.71654484	Yes

ES-Base20-03

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.	128.9 ppm	943 ppm			BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	32.26455663, -103.71646371	Yes

ES-Base20-04

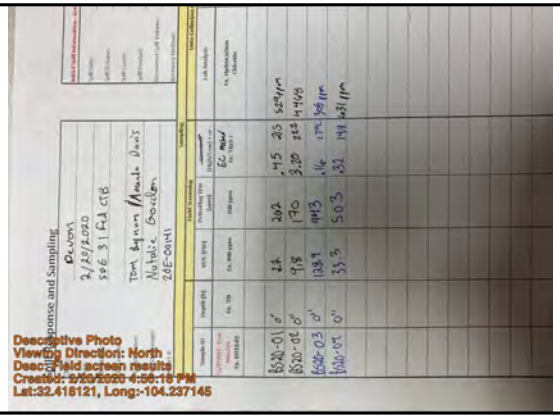
Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.	33.3 ppm	503 ppm			BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)	✓	32.26449510, -103.71652792	Yes

Daily Site Visit Report

Site Photos

Viewing Direction: North	**Viewing Direction**: North
	
West side	East side
Viewing Direction: East	**Viewing Direction**: West
	
South side of excavation	South side of excavation

Daily Site Visit Report

Viewing Direction: South	**Viewing Direction**: North
	
East side of excavation	Field screen results

Daily Site Visit Report

Depth Sample Photos

Sample Point ID: ES-Base20-01

Depth: 0 ft.

Sample Point ID: ES-Base20-02

Depth: 0 ft.

Sample Point ID: ES-Base20-03

Depth: 0 ft.

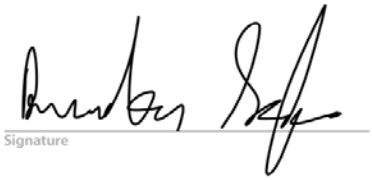
Sample Point ID: ES-Base20-04

Depth: 0 ft.

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Brandon Schafer

Signature: 
Signature

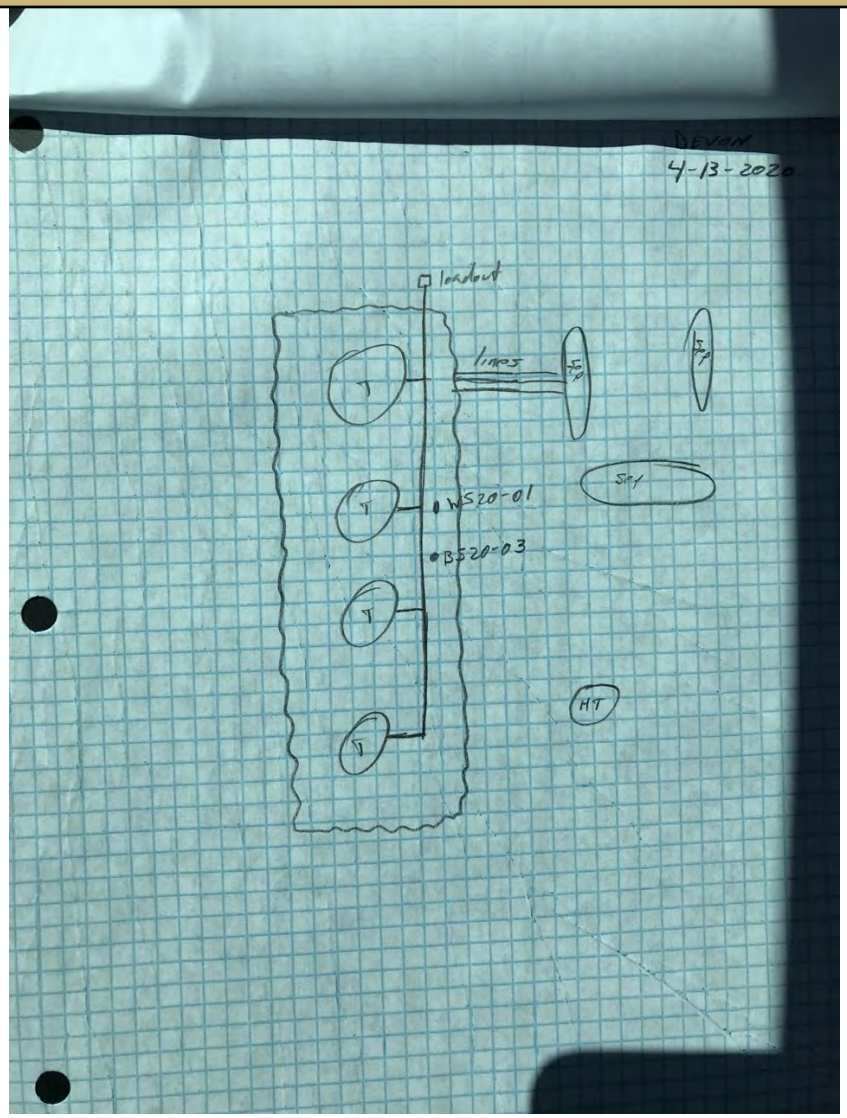
Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	4/13/2020
Site Location Name:	SDE 31 Federal CTB	Report Run Date:	4/13/2020 8:08 PM
Project Owner:	Amanda Davis	File (Project) #:	20E-00141
Project Manager:	Natalie Gordon	API #:	
Client Contact Name:	Amanda Davis	Reference	Spill 12-30-2019
Client Contact Phone #:	(575) 748-0176		

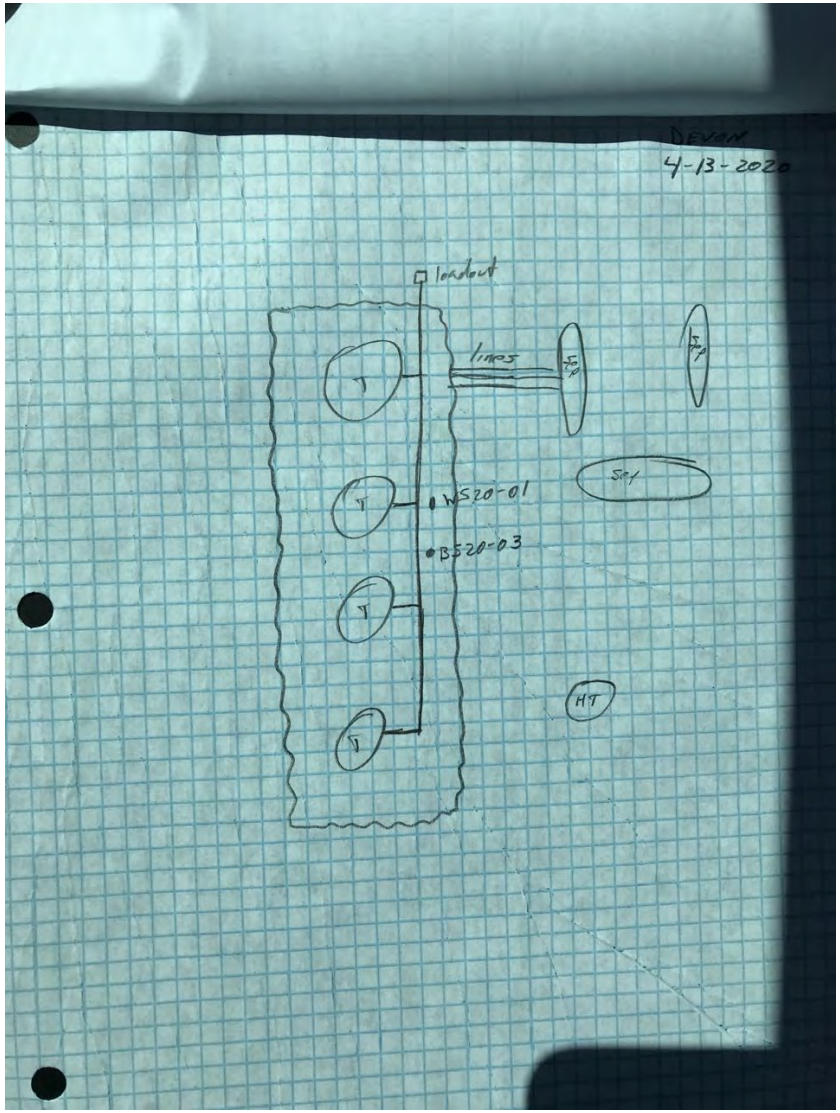
Summary of Times	
Left Office	4/13/2020 9:51 AM
Arrived at Site	4/13/2020 9:51 AM
Departed Site	4/13/2020 12:33 PM
Returned to Office	4/13/2020 1:26 PM

Daily Site Visit Report

Site Sketch



Daily Site Visit Report



Daily Site Visit Report

Summary of Daily Operations

10:07 Arrive on site.
Complete safety paperwork.
Obtain confirmatory samples.
Complete DFR.
Return to office.

Next Steps & Recommendations

1 Confirm lab analysis and close job

Sampling

ES-Base20-03

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
1 ft.	0.9 ppm	19 ppm	Low (30-600 ppm)	142 ppm	BTEX (EPA SW-846 Method 8021B/8260B), Chloride (SW-4500 Cl), TPH (EPA SW-846 Method 8015M)	✓	,	Yes

ES-Wall20-01

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
1 ft.	1.2 ppm	202 ppm	Low (30-600 ppm)	379 ppm	BTEX (EPA SW-846 Method 8021B/8260B), Chloride (SW-4500 Cl), TPH (EPA SW-846 Method 8015M)	✓	,	Yes

Daily Site Visit Report

Site Photos

Viewing Direction: South	**Viewing Direction**: South
	
Tank battery near bs20-03	

Daily Site Visit Report

Depth Sample Photos

Sample Point ID: ES-Base20-03	Sample Point ID: ES-Wall20-01
	
Depth: 1 ft.	**Depth:** 1 ft.

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Austin Harris

Signature: 

Signature

ATTACHMENT 5

Client Name: Devon Energy Production Company
Site Name: SDE 31 Federal CTB
NM OCD Incident Tracking Number: NRM2014559127
Project #: 20E-00141-005
Lab Report: 2001883

Table 2. Characterization Field Screening and Laboratory Data Results - Depth to Groundwater >100 ft

Sample Description			Field Screening			Petroleum Hydrocarbons							Inorganic
						Volatile		Extractable					
Sample ID	Depth (ft)	Sample Date	Volatile Organic Compounds (PID)	Extractable Organic Compounds (Petro Flag)	Inorganics (Electroconductivity)	Benzene	BTEX (Total)	Gasoline Range Organics (GRO)	Diesel Range Organics (DRO)	Motor Oil Range Organics (MRO)	(GRO + DRO)	Total Petroleum Hydrocarbons (TPH)	Chloride
			(ppm)	(ppm)	(ppm)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
BH 20-01	1	January 20, 2020	112	>1,500	-	-	-	-	-	-	-	-	-
BH 20-01	2	January 20, 2020	19	125	-	<0.023	<0.210	<4.7	59	<45	59	59	920
BH 20-02	1	January 20, 2020	87	>1,500	-	-	-	-	-	-	-	-	-
BH 20-02	2	January 20, 2020	11	223	-	-	-	-	-	-	-	-	-
BH 20-03	1	January 20, 2020	172	>1,500	-	1	71	1,000	6,400	2,500	**7,400**	**9,900**	120
BH 20-03	2	January 20, 2020	68	739	-	<0.024	2	54	650	300	704	1,004	94
BH 20-04	1	January 20, 2020	103	>1,500	-	-	-	-	-	-	-	-	-
BH 20-04	2	January 20, 2020	40	356	-	-	-	-	-	-	-	-	-
SS 20-01	0	January 20, 2020	380	1,087	-	-	-	-	-	-	-	-	-
SS 20-02	0	January 20, 2020	272	>1,500	-	1	91	980	20,000	9,900	**20,980**	**30,880**	120

"-" - Not applicable/assessed

Bold and shaded indicates exceedance outside of applied action level

VERTEX

Client Name: Devon Energy Production Company
Site Name: SDE 31 Federal CTB
NM OCD Incident Tracking Number: NRM2014559127
Project #: 20E-00141-005
Lab Reports: 2002980 and 2004693

Table 3. Confirmatory Lab Data Results - Depth to Groundwater > 100 ft bgs

Sample Description			Field Screening			Petroleum Hydrocarbons							Inorganic
						Volatile		Extractable					
Sample ID	Depth (ft)	Sample Date	Volatile Organic Compounds (PID)	Extractable Organic Compounds (Petro Flag)	Inorganics (Electroconductivity)	Benzene	BTEX (Total)	Gasoline Range Organics (GRO)	Diesel Range Organics (DRO)	Motor Oil Range Organics (MRO)	(GRO + DRO)	Total Petroleum Hydrocarbons (TPH)	Chloride
			(ppm)	(ppm)	(ppm)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
BS 20-01	2	February 20, 2020	2.2	262	529	<0.025	<0.222	<4.9	250	130	250	380	450
BS 20-02	2	February 20, 2020	9.8	170	4,468	<0.024	<0.217	<4.8	120	75	120	195	4,500
BS 20-03	2	February 20, 2020	128.9	943	-	<0.120	9.530	210	1,300	640	**1,300**	1,940	110
BS 20-03	1	April 13, 2020	-	-	-	<0.024	<0.217	<4.8	<9.9	<50	<14.7	<64.7	<3.0
BS 20-04	2	February 20, 2020	33.3	503	-	<0.024	0.180	37	580	350	617	967	300
WS 20-01	1	April 13, 2020	-	-	-	<0.024	<0.217	<4.8	190	120	190	310	83

"-" - Not applicable/assessed

Bold and shaded indicates exceedance outside of applied closure criteria

VERTEX

ATTACHMENT 6

Natalie Gordon

From: Natalie Gordon
Sent: Friday, February 14, 2020 7:00 PM
To: Mike Bratcher (mike.bratcher@state.nm.us); Victoria Venegas (Victoria.Venegas@state.nm.us); Robert Hamlet (Robert.Hamlet@state.nm.us); blm_nm_cfo_spill@blm.gov; Wade , Kelsey
Cc: Bynum, Tom (Contract); Wesley. Mathews@dvn. com (Wesley.Mathews@dvn.com)
Subject: SDE 31 Federal CTB, DOR: 12-30-2019, Devon Energy - Incident #TBD - 48-hr notice of confirmation sampling

All,

Please accept this email as 48-hr notification that Vertex Resource Services Inc. has scheduled confirmation sampling to be conducted at SDE 31 Federal CTB for the incident that occurred on 12/30/2019, when a water transfer pump failure caused a 27 barrel release into the earthen containment. No incident number has yet been assigned to this release.

On Wednesday, February 19, 2020 at approximately 3:30 p.m., Brandon Schafer of Vertex will be onsite to guide remediation activities and conduct final confirmatory sampling. He can be reached at 701-301-1564. If you need directions to the site, please do not hesitate to contact him. If you have any questions or concerns regarding this notification, please give me a call at 505-506-0040.

Thank you,
Natalie

ATTACHMENT 7

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

January 28, 2020

Natalie Gordon

Vertex Resource Group Ltd.
213 S. Mesa St
Carlsbad, NM 88220
TEL: (505) 506-0040
FAX

RE: SDE 31 Fed CTB OrderNo.: 2001883

Dear Natalie Gordon:

Hall Environmental Analysis Laboratory received 4 sample(s) on 1/22/2020 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 **2001883**
Date Reported: **1/28/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd.
Client Sample ID: BH20-01 1'-2'
Project: SDE 31 Fed CTB
Collection Date: 1/20/2020 12:05:00 PM
Lab ID: 2001883-001 **Matrix:** SOIL **Received Date:** 1/22/2020 3:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	59	9.0		mg/Kg	1	1/23/2020 12:01:36 PM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	1/23/2020 12:01:36 PM
Surr: DNOP	117	55.1-146		%Rec	1	1/23/2020 12:01:36 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	1/24/2020 3:57:07 AM
Surr: BFB	84.6	66.6-105		%Rec	1	1/24/2020 3:57:07 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.023		mg/Kg	1	1/24/2020 3:57:07 AM
Toluene	ND	0.047		mg/Kg	1	1/24/2020 3:57:07 AM
Ethylbenzene	ND	0.047		mg/Kg	1	1/24/2020 3:57:07 AM
Xylenes, Total	ND	0.093		mg/Kg	1	1/24/2020 3:57:07 AM
Surr: 4-Bromofluorobenzene	92.8	80-120		%Rec	1	1/24/2020 3:57:07 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	920	60		mg/Kg	20	1/24/2020 1:47:45 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 **2001883**
Date Reported: **1/28/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** SS20-02 0"
Project: SDE 31 Fed CTB **Collection Date:** 1/20/2020 12:45:00 PM
Lab ID: 2001883-002 **Matrix:** SOIL **Received Date:** 1/22/2020 3:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	20000	890		mg/Kg	100	1/23/2020 12:10:45 PM
Motor Oil Range Organics (MRO)	9900	4500		mg/Kg	100	1/23/2020 12:10:45 PM
Surr: DNOP	0	55.1-146	S	%Rec	100	1/23/2020 12:10:45 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	980	24		mg/Kg	5	1/24/2020 4:20:23 AM
Surr: BFB	713	66.6-105	S	%Rec	5	1/24/2020 4:20:23 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	0.81	0.12		mg/Kg	5	1/24/2020 4:20:23 AM
Toluene	24	0.24		mg/Kg	5	1/24/2020 4:20:23 AM
Ethylbenzene	13	0.24		mg/Kg	5	1/24/2020 4:20:23 AM
Xylenes, Total	53	0.48		mg/Kg	5	1/24/2020 4:20:23 AM
Surr: 4-Bromofluorobenzene	173	80-120	S	%Rec	5	1/24/2020 4:20:23 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	120	60		mg/Kg	20	1/24/2020 2:00:05 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 **2001883**
Date Reported: **1/28/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BH20-03 0-1'
Project: SDE 31 Fed CTB **Collection Date:** 1/20/2020 1:15:00 PM
Lab ID: 2001883-003 **Matrix:** SOIL **Received Date:** 1/22/2020 3:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	6400	470		mg/Kg	50	1/23/2020 12:19:54 PM
Motor Oil Range Organics (MRO)	2500	2300		mg/Kg	50	1/23/2020 12:19:54 PM
Surr: DNOP	0	55.1-146	S	%Rec	50	1/23/2020 12:19:54 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	1000	92		mg/Kg	20	1/26/2020 11:34:20 AM
Surr: BFB	272	66.6-105	S	%Rec	20	1/26/2020 11:34:20 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	0.65	0.023		mg/Kg	1	1/24/2020 2:58:54 PM
Toluene	19	0.92		mg/Kg	20	1/26/2020 11:34:20 AM
Ethylbenzene	10	0.92		mg/Kg	20	1/26/2020 11:34:20 AM
Xylenes, Total	41	1.8		mg/Kg	20	1/26/2020 11:34:20 AM
Surr: 4-Bromofluorobenzene	120	80-120		%Rec	20	1/26/2020 11:34:20 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	120	60		mg/Kg	20	1/24/2020 2:12:26 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	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 **2001883**
Date Reported: **1/28/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BH20-03 1-2'
Project: SDE 31 Fed CTB **Collection Date:** 1/20/2020 1:25:00 PM
Lab ID: 2001883-004 **Matrix:** SOIL **Received Date:** 1/22/2020 3:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	650	19		mg/Kg	2	1/23/2020 4:40:26 PM
Motor Oil Range Organics (MRO)	300	96		mg/Kg	2	1/23/2020 4:40:26 PM
Surr: DNOP	116	55.1-146		%Rec	2	1/23/2020 4:40:26 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	54	4.8		mg/Kg	1	1/24/2020 3:45:51 PM
Surr: BFB	400	66.6-105	S	%Rec	1	1/24/2020 3:45:51 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	1/24/2020 3:45:51 PM
Toluene	0.25	0.048		mg/Kg	1	1/24/2020 3:45:51 PM
Ethylbenzene	0.37	0.048		mg/Kg	1	1/24/2020 3:45:51 PM
Xylenes, Total	1.6	0.096		mg/Kg	1	1/24/2020 3:45:51 PM
Surr: 4-Bromofluorobenzene	123	80-120	S	%Rec	1	1/24/2020 3:45:51 PM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	94	60		mg/Kg	20	1/24/2020 2:24:48 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		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2001883**

28-Jan-20

Client: Vertex Resource Group Ltd.

Project: SDE 31 Fed CTB

Sample ID: **MB-50025**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBS**	Batch ID: **50025**	RunNo: **66053**							
Prep Date: **1/24/2020**	Analysis Date: **1/24/2020**	SeqNo: **2269609**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-50025**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSS**	Batch ID: **50025**	RunNo: **66053**							
Prep Date: **1/24/2020**	Analysis Date: **1/24/2020**	SeqNo: **2269611**	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			

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#: **2001883**

28-Jan-20

Client: Vertex Resource Group Ltd.

Project: SDE 31 Fed CTB

Sample ID: **LCS-49989** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**

Client ID: **LCSS** Batch ID: **49989** RunNo: **66004**

Prep Date: **1/23/2020** Analysis Date: **1/23/2020** SeqNo: **2266978** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	50	10	50.00	0	100	63.9	124			
Surr: DNOP	4.5		5.000		89.5	55.1	146			

Sample ID: **MB-49989** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**

Client ID: **PBS** Batch ID: **49989** RunNo: **66004**

Prep Date: **1/23/2020** Analysis Date: **1/23/2020** SeqNo: **2266979** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.3		10.00		93.0	55.1	146			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2001883**

28-Jan-20

Client: Vertex Resource Group Ltd.

Project: SDE 31 Fed CTB

Sample ID: **mb-49978**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **49978**	RunNo: **66017**
Prep Date: **1/22/2020**	Analysis Date: **1/23/2020**	SeqNo: **2267664** 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	890		1000		88.5	66.6	105			

Sample ID: **lcs-49978**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **49978**	RunNo: **66017**
Prep Date: **1/22/2020**	Analysis Date: **1/23/2020**	SeqNo: **2267665** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	92.7	80	120			
Surr: BFB	990		1000		99.4	66.6	105			

Sample ID: **mb-49997**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **49997**	RunNo: **66055**
Prep Date: **1/23/2020**	Analysis Date: **1/24/2020**	SeqNo: **2268909** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	920		1000		92.4	66.6	105			

Sample ID: **lcs-49997**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **49997**	RunNo: **66055**
Prep Date: **1/23/2020**	Analysis Date: **1/24/2020**	SeqNo: **2268910** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	940		1000		94.3	66.6	105			

Sample ID: **mb-50005**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **50005**	RunNo: **66055**
Prep Date: **1/23/2020**	Analysis Date: **1/25/2020**	SeqNo: **2268933** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	810		1000		81.2	66.6	105			

Sample ID: **lcs-50005**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **50005**	RunNo: **66055**
Prep Date: **1/23/2020**	Analysis Date: **1/25/2020**	SeqNo: **2268934** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	860		1000		86.2	66.6	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#: **2001883**

28-Jan-20

Client: Vertex Resource Group Ltd.

Project: SDE 31 Fed CTB

Sample ID: **MB-50043**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **50043**	RunNo: **66068**
Prep Date: **1/24/2020**	Analysis Date: **1/27/2020**	SeqNo: **2269049** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	770		1000		77.0	66.6	105			

Sample ID: **LCS-50043**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **50043**	RunNo: **66068**
Prep Date: **1/24/2020**	Analysis Date: **1/27/2020**	SeqNo: **2269050** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	890		1000		89.0	66.6	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#: **2001883**

28-Jan-20

Client: Vertex Resource Group Ltd.

Project: SDE 31 Fed CTB

Sample ID: **mb-49978**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **49978**	RunNo: **66017**
Prep Date: **1/22/2020**	Analysis Date: **1/23/2020**	SeqNo: **2267696** 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		99.9	80	120			

Sample ID: **LCS-49978**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **49978**	RunNo: **66017**
Prep Date: **1/22/2020**	Analysis Date: **1/23/2020**	SeqNo: **2267697** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.98	0.025	1.000	0	97.8	80	120			
Toluene	0.96	0.050	1.000	0	96.3	80	120			
Ethylbenzene	0.96	0.050	1.000	0	96.3	80	120			
Xylenes, Total	2.9	0.10	3.000	0	97.0	80	120			
Surr: 4-Bromofluorobenzene	1.0		1.000		103	80	120			

Sample ID: **mb-50005**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **50005**	RunNo: **66055**
Prep Date: **1/23/2020**	Analysis Date: **1/25/2020**	SeqNo: **2268950** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.92		1.000		91.8	80	120			

Sample ID: **LCS-50005**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **50005**	RunNo: **66055**
Prep Date: **1/23/2020**	Analysis Date: **1/25/2020**	SeqNo: **2268951** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.91		1.000		90.6	80	120			

Sample ID: **MB-50043**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **50043**	RunNo: **66068**
Prep Date: **1/24/2020**	Analysis Date: **1/27/2020**	SeqNo: **2269077** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.87		1.000		86.6	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical 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#: **2001883**
28-Jan-20

Client: Vertex Resource Group Ltd.
Project: SDE 31 Fed CTB

Sample ID: **LCS-50043** SampType: **LCS** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS** Batch ID: **50043** RunNo: **66068**
Prep Date: **1/24/2020** Analysis Date: **1/27/2020** SeqNo: **2269078** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.88		1.000		87.7	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		

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: **2001883** RcptNo: **1**

Received By: **Desiree Dominguez** **1/22/2020 3:30:00 PM** DD

Completed By: **Erin Melendrez** **1/22/2020 4:13:35 PM** EM

Reviewed By: EO 1/22/20

Chain of Custody

1. Is Chain of Custody sufficiently 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: DM 1/22/20

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	2.4	Good				

Chain-of-Custody Record

Client: Vertex

Mailing Address: on file

Phone #: on file

email or Fax#: Natalie Gordon

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time: 5 day
☑ Standard ☐ Rush

Project Name: SDE 31 FedCTB

Project #: 20E-00141-005

Project Manager: Natalie Gordon

Sampler: Brandon Schaefer

On Ice: ☑ Yes ☐ No

# of Coolers: 1

Cooler Temp (including CF): 2.4 - 0.0 = 2.4 (°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. 2001883	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)
1/20	12:05	Soil	BH20-01 1'-2'	4 oz	ice	-001	X	X					X			
1/20	12:45		SS20-02 0''			-002										
1/20	13:15		BH20-03 0-1'			-003										
1/20	13:25		BH20-03 1-2'			-004										

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
1/20	1400	Brandon Schaefer			1/21/20	1400
1/21/20	1900			Courier	1/22/20	15:30

Remarks: cc: Natalie Gordon

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: www.hallenvironmental.com

March 03, 2020

Amanda Davis

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

RE: SDE 31 Fed CTB OrderNo.: 2002980

Dear Amanda Davis:

Hall Environmental Analysis Laboratory received 4 sample(s) on 2/22/2020 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 **2002980**
Date Reported: **3/3/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: SDE 31 Fed CTB
Lab ID: 2002980-001 **Matrix:** SOIL

Client Sample ID: BS20-01
Collection Date: 2/20/2020 8:45:00 AM
Received Date: 2/22/2020 9:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Chloride	450	60		mg/Kg	20	2/26/2020 10:12:31 PM	50702
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **JME**	
Diesel Range Organics (DRO)	250	9.6		mg/Kg	1	3/2/2020 12:29:31 PM	50643
Motor Oil Range Organics (MRO)	130	48		mg/Kg	1	3/2/2020 12:29:31 PM	50643
Surr: DNOP	121	55.1-146		%Rec	1	3/2/2020 12:29:31 PM	50643
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	2/28/2020 4:12:15 PM	50631
Surr: BFB	82.9	66.6-105		%Rec	1	2/28/2020 4:12:15 PM	50631
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.025		mg/Kg	1	2/28/2020 4:12:15 PM	50631
Toluene	ND	0.049		mg/Kg	1	2/28/2020 4:12:15 PM	50631
Ethylbenzene	ND	0.049		mg/Kg	1	2/28/2020 4:12:15 PM	50631
Xylenes, Total	ND	0.099		mg/Kg	1	2/28/2020 4:12:15 PM	50631
Surr: 4-Bromofluorobenzene	87.7	80-120		%Rec	1	2/28/2020 4:12:15 PM	50631

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 **2002980**
Date Reported: **3/3/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: SDE 31 Fed CTB
Lab ID: 2002980-002 **Matrix:** SOIL

Client Sample ID: BS20-02
Collection Date: 2/20/2020 9:30:00 AM
Received Date: 2/22/2020 9:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Chloride	4500	150		mg/Kg	50	2/27/2020 2:28:47 PM	50702
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	120	9.5		mg/Kg	1	2/26/2020 4:44:27 PM	50643
Motor Oil Range Organics (MRO)	75	47		mg/Kg	1	2/26/2020 4:44:27 PM	50643
Surr: DNOP	123	55.1-146		%Rec	1	2/26/2020 4:44:27 PM	50643
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	2/28/2020 4:59:25 PM	50631
Surr: BFB	95.6	66.6-105		%Rec	1	2/28/2020 4:59:25 PM	50631
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	2/28/2020 4:59:25 PM	50631
Toluene	ND	0.048		mg/Kg	1	2/28/2020 4:59:25 PM	50631
Ethylbenzene	ND	0.048		mg/Kg	1	2/28/2020 4:59:25 PM	50631
Xylenes, Total	ND	0.097		mg/Kg	1	2/28/2020 4:59:25 PM	50631
Surr: 4-Bromofluorobenzene	89.9	80-120		%Rec	1	2/28/2020 4:59:25 PM	50631

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 **2002980**
Date Reported: **3/3/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: SDE 31 Fed CTB
Lab ID: 2002980-003 **Matrix:** SOIL

Client Sample ID: BS20-03
Collection Date: 2/20/2020 12:20:00 PM
Received Date: 2/22/2020 9:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Chloride	110	60		mg/Kg	20	2/26/2020 11:26:36 PM	50702
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	1300	92		mg/Kg	10	2/26/2020 5:06:28 PM	50643
Motor Oil Range Organics (MRO)	640	460		mg/Kg	10	2/26/2020 5:06:28 PM	50643
Surr: DNOP	0	55.1-146	S	%Rec	10	2/26/2020 5:06:28 PM	50643
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	210	25		mg/Kg	5	2/28/2020 5:45:58 PM	50631
Surr: BFB	308	66.6-105	S	%Rec	5	2/28/2020 5:45:58 PM	50631
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.12		mg/Kg	5	2/28/2020 5:45:58 PM	50631
Toluene	0.83	0.25		mg/Kg	5	2/28/2020 5:45:58 PM	50631
Ethylbenzene	1.9	0.25		mg/Kg	5	2/28/2020 5:45:58 PM	50631
Xylenes, Total	6.8	0.49		mg/Kg	5	2/28/2020 5:45:58 PM	50631
Surr: 4-Bromofluorobenzene	108	80-120		%Rec	5	2/28/2020 5:45:58 PM	50631

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 **2002980**
Date Reported: **3/3/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: SDE 31 Fed CTB
Lab ID: 2002980-004 **Matrix:** SOIL

Client Sample ID: BS20-04
Collection Date: 2/20/2020 2:45:00 PM
Received Date: 2/22/2020 9:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Chloride	300	60		mg/Kg	20	2/28/2020 2:19:24 PM	50753
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **JME**	
Diesel Range Organics (DRO)	580	19		mg/Kg	2	3/2/2020 3:51:06 PM	50643
Motor Oil Range Organics (MRO)	350	95		mg/Kg	2	3/2/2020 3:51:06 PM	50643
Surr: DNOP	119	55.1-146		%Rec	2	3/2/2020 3:51:06 PM	50643
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	37	4.9		mg/Kg	1	2/28/2020 6:32:36 PM	50631
Surr: BFB	317	66.6-105	S	%Rec	1	2/28/2020 6:32:36 PM	50631
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	2/28/2020 6:32:36 PM	50631
Toluene	ND	0.049		mg/Kg	1	2/28/2020 6:32:36 PM	50631
Ethylbenzene	ND	0.049		mg/Kg	1	2/28/2020 6:32:36 PM	50631
Xylenes, Total	0.18	0.097		mg/Kg	1	2/28/2020 6:32:36 PM	50631
Surr: 4-Bromofluorobenzene	102	80-120		%Rec	1	2/28/2020 6:32:36 PM	50631

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#: **2002980**

03-Mar-20

Client: Devon Energy

Project: SDE 31 Fed CTB

Sample ID: **MB-50702** SampType: **mblk** TestCode: **EPA Method 300.0: Anions**

Client ID: **PBS** Batch ID: **50702** RunNo: **66815**

Prep Date: **2/26/2020** Analysis Date: **2/26/2020** SeqNo: **2298468** Units: **mg/Kg**

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

Sample ID: **LCS-50702** SampType: **lcs** TestCode: **EPA Method 300.0: Anions**

Client ID: **LCSS** Batch ID: **50702** RunNo: **66815**

Prep Date: **2/26/2020** Analysis Date: **2/26/2020** SeqNo: **2298469** 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-50753** SampType: **mblk** TestCode: **EPA Method 300.0: Anions**

Client ID: **PBS** Batch ID: **50753** RunNo: **66896**

Prep Date: **2/28/2020** Analysis Date: **2/28/2020** SeqNo: **2301962** Units: **mg/Kg**

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

Sample ID: **LCS-50753** SampType: **lcs** TestCode: **EPA Method 300.0: Anions**

Client ID: **LCSS** Batch ID: **50753** RunNo: **66896**

Prep Date: **2/28/2020** Analysis Date: **2/28/2020** SeqNo: **2301963** 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#: **2002980**

03-Mar-20

Client: Devon Energy

Project: SDE 31 Fed CTB

Sample ID: **LCS-50681**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **LCSS**	Batch ID: **50681**	RunNo: **66803**							
Prep Date: **2/26/2020**	Analysis Date: **2/26/2020**	SeqNo: **2297105**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.5		5.000		90.3	55.1	146			

Sample ID: **MB-50681**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **PBS**	Batch ID: **50681**	RunNo: **66803**							
Prep Date: **2/26/2020**	Analysis Date: **2/26/2020**	SeqNo: **2297106**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	9.9		10.00		99.1	55.1	146			

Sample ID: **LCS-50643**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **LCSS**	Batch ID: **50643**	RunNo: **66803**							
Prep Date: **2/25/2020**	Analysis Date: **2/26/2020**	SeqNo: **2297433**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	55	10	50.00	0	110	70	130			
Surr: DNOP	5.3		5.000		106	55.1	146			

Sample ID: **MB-50643**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **PBS**	Batch ID: **50643**	RunNo: **66803**							
Prep Date: **2/25/2020**	Analysis Date: **2/26/2020**	SeqNo: **2297434**	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		120	55.1	146			

Sample ID: **LCS-50746**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **LCSS**	Batch ID: **50746**	RunNo: **66890**							
Prep Date: **2/28/2020**	Analysis Date: **2/28/2020**	SeqNo: **2300615**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.3		5.000		86.8	55.1	146			

Sample ID: **MB-50746**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **PBS**	Batch ID: **50746**	RunNo: **66890**							
Prep Date: **2/28/2020**	Analysis Date: **2/28/2020**	SeqNo: **2300616**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	9.5		10.00		94.9	55.1	146			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2002980**

03-Mar-20

Client: Devon Energy

Project: SDE 31 Fed CTB

Sample ID: **LCS-50705**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **50705**	RunNo: **66890**
Prep Date: **2/26/2020**	Analysis Date: **2/28/2020**	SeqNo: **2302114** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.2		5.000		83.9	55.1	146			

Sample ID: **MB-50705**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **50705**	RunNo: **66890**
Prep Date: **2/26/2020**	Analysis Date: **2/28/2020**	SeqNo: **2302115** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	9.1		10.00		91.3	55.1	146			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2002980**

03-Mar-20

Client: Devon Energy

Project: SDE 31 Fed CTB

Sample ID: **mb-50631**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **50631**	RunNo: **66878**
Prep Date: **2/24/2020**	Analysis Date: **2/27/2020**	SeqNo: **2299731** 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	820		1000		82.5	66.6	105			

Sample ID: **lcs-50631**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **50631**	RunNo: **66878**
Prep Date: **2/24/2020**	Analysis Date: **2/27/2020**	SeqNo: **2299732** 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	87.6	80	120			
Surr: BFB	940		1000		93.9	66.6	105			

Sample ID: **mb-50692**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **50692**	RunNo: **66892**
Prep Date: **2/26/2020**	Analysis Date: **2/29/2020**	SeqNo: **2301181** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	800		1000		80.1	66.6	105			

Sample ID: **lcs-50692**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **50692**	RunNo: **66892**
Prep Date: **2/26/2020**	Analysis Date: **2/29/2020**	SeqNo: **2301182** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	890		1000		88.7	66.6	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#: **2002980**
03-Mar-20

Client: Devon Energy
Project: SDE 31 Fed CTB

Sample ID: **mb-50631**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**							
Client ID: **PBS**	Batch ID: **50631**	RunNo: **66878**							
Prep Date: **2/24/2020**	Analysis Date: **2/27/2020**	SeqNo: **2299780**	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	0.89		1.000		89.2	80	120			

Sample ID: **LCS-50631**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**							
Client ID: **LCSS**	Batch ID: **50631**	RunNo: **66878**							
Prep Date: **2/24/2020**	Analysis Date: **2/27/2020**	SeqNo: **2299781**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.89	0.025	1.000	0	88.6	80	120			
Toluene	0.93	0.050	1.000	0	93.0	80	120			
Ethylbenzene	0.95	0.050	1.000	0	94.8	80	120			
Xylenes, Total	2.9	0.10	3.000	0	95.5	80	120			
Surr: 4-Bromofluorobenzene	0.93		1.000		93.1	80	120			

Sample ID: **mb-50692**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**							
Client ID: **PBS**	Batch ID: **50692**	RunNo: **66892**							
Prep Date: **2/26/2020**	Analysis Date: **2/29/2020**	SeqNo: **2301229**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.89		1.000		88.8	80	120			

Sample ID: **LCS-50692**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**							
Client ID: **LCSS**	Batch ID: **50692**	RunNo: **66892**							
Prep Date: **2/26/2020**	Analysis Date: **2/29/2020**	SeqNo: **2301230**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.92		1.000		91.6	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical 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: **DEVON ENERGY** Work Order Number: **2002980** RcptNo: **1**

Received By: **Yazmine Garduno** **2/22/2020 9:05:00 AM**

Completed By: **Yazmine Garduno** **2/22/2020 11:00:49 AM**

Reviewed By: JR 2/24/20

Chain of Custody

1. Is Chain of Custody sufficiently 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: YG 2/24/20

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	2.8	Good				
2	4.2	Good				

Chain-of-Custody Record

Client: Devon Energy
Amanda Davis & Wes Mathews
Mailing Address: on file

Phone #: on file
email or Fax#: on file
QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)
Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other
☐ EDD (Type)

Turn-Around Time: 5-day
☒ Standard ☐ Rush
Project Name: SDE 31 Fed. CTB
Project #: 20E-00141
Project Manager: Natalie Gordon
Sampler: Brandon Schafer
On Ice: ☑ Yes ☐ No
# of Coolers: 2
Cooler Temp (including CF): 4.2 (0) = 4.2 (4.2)

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. 2002960	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)
2/20/20	8:45	soil	BS20-01	4oz jar	ice	-001	X	X					X			
2/20/20	9:30		BS20-02			-002	X	X					X			
2/20/20	12:20		BS20-03			-003	X	X					X			
2/20/20	14:45		BS20-04			-004	X	X					X			

Date	Time	Relinquished by	Received by	Via	Date	Time
2/21/20	1330	Brandon Schafer	Chelsea Sax		2/21/20	1400
2/21/20	1900	Chelsea Sax		Courier	2/22/20	0905

Remarks: C.C. Natalie Gordon
Bill: Devon WO#: 20824864

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: www.hallenvironmental.com

April 21, 2020

Amanda Davis

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

RE: SDE 31 Fed CTB OrderNo.: 2004693

Dear Amanda Davis:

Hall Environmental Analysis Laboratory received 2 sample(s) on 4/15/2020 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 **2004693**
Date Reported: **4/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: SDE 31 Fed CTB
Lab ID: 2004693-001 **Matrix:** SOIL

Client Sample ID: BS20-03 1.0'
Collection Date: 4/13/2020 11:00:00 AM
Received Date: 4/15/2020 9:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	4/17/2020 5:55:08 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	4/17/2020 5:55:08 PM
Surr: DNOP	83.6	55.1-146		%Rec	1	4/17/2020 5:55:08 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/19/2020 12:20:02 PM
Surr: BFB	100	66.6-105		%Rec	1	4/19/2020 12:20:02 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	4/19/2020 12:20:02 PM
Toluene	ND	0.048		mg/Kg	1	4/19/2020 12:20:02 PM
Ethylbenzene	ND	0.048		mg/Kg	1	4/19/2020 12:20:02 PM
Xylenes, Total	ND	0.097		mg/Kg	1	4/19/2020 12:20:02 PM
Surr: 4-Bromofluorobenzene	98.6	80-120		%Rec	1	4/19/2020 12:20:02 PM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	ND	3.0		mg/Kg	1	4/18/2020 12:42:02 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 **2004693**
Date Reported: **4/21/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: SDE 31 Fed CTB
Lab ID: 2004693-002 **Matrix:** SOIL

Client Sample ID: WS20-01 1.0'
Collection Date: 4/13/2020 11:05:00 AM
Received Date: 4/15/2020 9:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**
Diesel Range Organics (DRO)	190	9.3		mg/Kg	1	4/19/2020 1:30:49 PM
Motor Oil Range Organics (MRO)	120	46		mg/Kg	1	4/19/2020 1:30:49 PM
Surr: DNOP	119	55.1-146		%Rec	1	4/19/2020 1:30:49 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/19/2020 12:43:44 PM
Surr: BFB	99.0	66.6-105		%Rec	1	4/19/2020 12:43:44 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	4/19/2020 12:43:44 PM
Toluene	ND	0.048		mg/Kg	1	4/19/2020 12:43:44 PM
Ethylbenzene	ND	0.048		mg/Kg	1	4/19/2020 12:43:44 PM
Xylenes, Total	ND	0.097		mg/Kg	1	4/19/2020 12:43:44 PM
Surr: 4-Bromofluorobenzene	97.4	80-120		%Rec	1	4/19/2020 12:43:44 PM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	83	60		mg/Kg	20	4/18/2020 12:54:27 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
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#: **2004693**
21-Apr-20

Client: Devon Energy
Project: SDE 31 Fed CTB

Sample ID: **MB-51921**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBS**	Batch ID: **51921**	RunNo: **68254**							
Prep Date: **4/18/2020**	Analysis Date: **4/18/2020**	SeqNo: **2360899**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-51921**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSS**	Batch ID: **51921**	RunNo: **68254**							
Prep Date: **4/18/2020**	Analysis Date: **4/18/2020**	SeqNo: **2360900**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.7	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical 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#: **2004693**

21-Apr-20

Client: Devon Energy

Project: SDE 31 Fed CTB

Sample ID: **LCS-51877** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**

Client ID: **LCSS** Batch ID: **51877** RunNo: **68198**

Prep Date: **4/16/2020** Analysis Date: **4/17/2020** SeqNo: **2358178** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	55	10	50.00	0	111	70	130			
Surr: DNOP	4.6		5.000		92.9	55.1	146			

Sample ID: **MB-51877** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**

Client ID: **PBS** Batch ID: **51877** RunNo: **68198**

Prep Date: **4/16/2020** Analysis Date: **4/17/2020** SeqNo: **2358180** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	12		10.00		119	55.1	146			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2004693**

21-Apr-20

Client: Devon Energy

Project: SDE 31 Fed CTB

Sample ID: **mb-51869**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **51869**	RunNo: **68242**
Prep Date: **4/16/2020**	Analysis Date: **4/19/2020**	SeqNo: **2360334** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	1000		1000		103	66.6	105			

Sample ID: **lcs-51869**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **51869**	RunNo: **68242**
Prep Date: **4/16/2020**	Analysis Date: **4/19/2020**	SeqNo: **2360335** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	92.3	80	120			
Surr: BFB	1200		1000		115	66.6	105			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#: **2004693**

21-Apr-20

Client: Devon Energy

Project: SDE 31 Fed CTB

Sample ID: **mb-51869** SampType: **MBLK** TestCode: **EPA Method 8021B: Volatiles**

Client ID: **PBS** Batch ID: **51869** RunNo: **68242**

Prep Date: **4/16/2020** Analysis Date: **4/19/2020** SeqNo: **2360413** 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		100	80	120			

Sample ID: **LCS-51869** SampType: **LCS** TestCode: **EPA Method 8021B: Volatiles**

Client ID: **LCSS** Batch ID: **51869** RunNo: **68242**

Prep Date: **4/16/2020** Analysis Date: **4/19/2020** SeqNo: **2360414** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.87	0.025	1.000	0	86.9	80	120			
Toluene	0.91	0.050	1.000	0	91.0	80	120			
Ethylbenzene	0.94	0.050	1.000	0	93.8	80	120			
Xylenes, Total	2.8	0.10	3.000	0	94.4	80	120			
Surr: 4-Bromofluorobenzene	1.0		1.000		104	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: www.hallenvironmental.com

Sample Log-In Check List

Client Name: **DEVON ENERGY** Work Order Number: **2004693** RcptNo: **1**

Received By: **Isaiah Ortiz** **4/15/2020 9:15:00 AM** IO

Completed By: **Desiree Dominguez** **4/15/2020 10:53:22 AM** DD

Reviewed By: IO 4/15/20

Chain of Custody

1. Is Chain of Custody sufficiently 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 4/15/20

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	1.5	Good	Not Present			
2	0.4	Good	Not Present			
3	0.0	Good	Not Present			

Chain-of-Custody Record

Client: ~~Vertex~~ DEVON

Mailing Address:

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: SDE 31 Fed CTB

Project #: 20E-001141
WO# 20824864

Project Manager: Natalie Gordon

Sampler: AUSTIN HARRIS

On Ice: ☒ Yes ☐ No

# of Coolers: 3 1.7-0.2|CF|1.5°C

Cooler Temp(including CF): 0.6-0.2|CF|0.4 (°C)
0.2-0.2|CF|0.0°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. 2004693	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)
4-13-20	1100	Soil	BS20-03 1.0'	Glass Jar	Ice	-001	X	X					X			
4-13-20	1105	Soil	WS20-01 1.0'	Glass Jar	Ice	-002	X	X					X			

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
4/14/20	1330				4/14/20	1330
4/14/20	1900			FedEx courier	4/15/20	0915

Remarks:
CC: Natalie Gordon

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.