February 16, 2021 Vertex Project #: 20E-00893-001

Spill Closure Report: South Vacuum #275
Unit H, Section 27, Township 18 South, Range 35 East
County: Lea
API: 30-025-37299
Tracking Number: NRM2010059368

Prepared For: Catena Resources Operating, LLC
18402 Hwy 281, Suite 258
San Antonio, Texas 78259

New Mexico Oil Conservation Division – District 1 – Hobbs
1625 North French Drive
Hobbs, New Mexico 88240

Catena Resources Operating, LLC (Catena) retained Vertex Resource Services Inc. (Vertex) to conduct a spill assessment and remediation for a produced water release that occurred on undisturbed pasture due to an illegal transfer of fluid associated with South Vacuum #275, API 30-025-37299 (hereafter referred to as "South Vacuum"). A New Mexico State Land Office (SLO) representative (Ryan Mann) discovered the release on January 22, 2020. Brandon Boone of the SLO office called Mike Bratcher on March 30, 2020, to report the release and both entities spoke with Catena representatives at that time, followed by submission of an initial C-141 Release Notification (Attachment 1). The New Mexico Oil Conservation District (NMOCD) tracking number assigned to this incident is NRM2010059368.

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 NMOCD for closure of this release.

Incident Description

On January 22, 2020, a release occurred at Catena's South Vacuum site when an unauthorized party equalizing an in-service tank with an out of service water tank on-site that had a manway removed, causing produced water to be released. This incident resulted in the release of approximately 32barrels (bbls) of produced water onto the containment and pasture east of the containment. Upon discovery of the release, the valves leading to the open out of service tank at South Vacuum were closed to prevent any more fluid being transferred to the tank. The release was contained and no produced water was released into sensitive areas or waterways.

Site Characterization

The release at South Vacuum occurred on state-owned land, N 32.72116, W 103.43916, approximately 6.83 miles northwest of Buckeye, New Mexico. The legal description for the site is Unit H, Section 27, Township 18 South, Range 35 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.

South Vacuum 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 surrounding landscape is associated with plains and playa rims at elevations of 2,500 to 4,800 feet above sea level. The climate is semi-arid, with average annual precipitation ranging between 14 and 16 inches. Historically, the plant community has been predominantly creosotebush, perennial grasses with growing point elevated, with sub-dominant midgrasses, cane bluestem, plains bristlegrass, and other shrubs/succulents. Litter and, to a lesser extent, bare ground make up a lesser proportion of the ground cover (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 South Vacuum is comprised primarily of of To – Ogallala Formation (lower Pliocene to middle Miocene) - Alluvial and eolian deposits and petrocalcic soils of the southern High Plains (New Mexico Bureau of Geology and Mineral Resources, 2020). The Natural Resources Conservation Service Web Soil Survey characterizes the soil at the site as Kimbrough-Lea complex, characterized by gravelly loam and loam. It tends to be well-drained with high runoff and very low 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 South Vacuum (United States Department of the Interior, Bureau of Land Management, 2020).

There is no surface water located on-site. The nearest significant watercourse, as defined in Subsection P of 19.15.17.7 NMAC, is a lake located approximately 0.22 miles northeast of South Vacuum (United States Fish and Wildlife Service, 2020). There are no continuously flowing watercourses, lakebeds, sinkholes, playa lakes, or other critical water or community features as outlined in Paragraph (4) of Subsection C of 19.15.29.12 NMAC.

The nearest active well to the site is a New Mexico Office of the State Engineer (NMOSE) identified well from 2014, located approximately 0.50 miles to the southeast. Depth to groundwater at this well is 154 feet below ground surface (bgs). There are two other NMOSE wells located within the 0.5-mile radius, from 1958 and 1983. 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. Remediation for off-pad portions are required to meet the regulations associated with releases into undisturbed areas, as outlined in Paragraph (1) of Subsection D of 19.15.29.13 NMAC. This regulation requires a minimum of four feet of non-waste containing, uncontaminated, earthen material with chloride concentrations of less than 600 mg/kg, and levels of other contaminants that meet the most protective concentrations contained in 19.15.29.12 NMAC.

Based on data included in the closure criteria determination worksheet, the release at South Vacuum 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 is determined

to be associated with the following constituent concentration limits as shown in Table 1.

Table 1. Closure Criteria for Soils Impacted by a Release

Depth to Groundwater	Constituent	Limit
50<100 feet	Chloride	10,000 mg/kg
	TPH[1] (GRO + DRO + MRO)	2500 mg/kg
	(GRO + DRO)	100 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

An initial spill inspection, completed by Vertex, on April 8, 2020, identified and mapped the boundaries of the release area. The release area was determined to be approximately 215 feet long and 170 feet wide; the total affected area was determined to be approximately 17,417 square feet as presented on Figure 1 (Attachment 2). The Daily Field Report (DFR) associated with the initial spill inspection is included in Attachment 4.

On January 10, 2021, Vertex provided 48-hour notification of confirmation sampling to NMOCD and the Bureau of Land Management, as required by Subparagraph (a) of Paragraph (1) of Subsection D 19.15.29.12 NMAC (Attachment 5). A Vertex representative was on-site at South Vacuum on January 12, 2021, to guide remediation activities, including excavation of contaminated soils to a maximum depth of 2 feet bgs. Vertex collected a total of 44 five-point composite confirmatory samples from the excavation area. As the excavation encountered refusal depth at 1-foot bgs, NMOCD recommended drilling into the bedrock to 2 feet bgs within the remediated area to confirm that contamination did not breach into the bedrock layer. A remediation workplan was prepared and submitted for approval to NMOCD (Attachment 6). Each composite sample was representative of an alternate sampling method provided within the workplan with the use of a visual sampling plan. Each composite sample was representative of the alternate sampling method outlined in Subparagraph (c) of Paragraph (2) of Subsection D 19.15.29.12 NMAC, which does require prior NMOCD 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.

A second 48-hour notice was provided on January 27, 2021, to schedule additional sampling of failed confirmatory samples.

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. Characterization sample field screening and analytical data, and final confirmatory sample analytical data are summarized in Tables 2 and 3, respectively (Attachment 7). Laboratory data reports and chain of custody forms are included in Attachment 8.

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).

Closure Request

Vertex recommends no additional remediation action to address the release at South Vacuum. Laboratory analyses of the confirmatory samples showed constituent of concern concentration levels below NMOCD Closure Criteria for areas where depth to groundwater is less than 50 feet bgs as presented in Table 1. There are no anticipated risks to human, ecological or hydrological receptors associated with the release site.

Vertex requests that this incident (NRM2010059368) be closed as all closure requirements set forth in Subsection E of 19.15.29.12 NMAC have been met. Catena 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 January 22, 2020, release at South Vacuum.

Should you have any questions or concerns, please do not hesitate to contact me at 575.361.9880 or mpeppin@vertex.ca.

Sincerely,

Monica Peppin
PROJECT MANAGER

Attachments

Attachment 1. NM OCD C-141 Report
Attachment 2. Site Schematic and Characterization; Confirmatory Sampling Locations
Attachment 3. Closure Criteria for Soils Impacted by a Release Research Determination Documentation
Attachment 4. Daily Field Report(s) with Photographs
Attachment 5. Required 48-hr Notification of Confirmation Sampling to Regulatory Agencies
Attachment 6. Approved Remediation Plan
Attachment 7. Tables
Attachment 8. Laboratory Data Reports/Chain of Custody forms

References

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

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

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

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, Bureau of Land Management. (2020). *New Mexico Cave/Karsts*. Retrieved from https://www.blm.gov/programs/recreation/recreation-programs/caves/new-mexico

United States Department of the Interior, United States Geological Survey. (2020). *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 Catena Resources Operating, LLC (Catena). 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 Catena. 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	NRM2010059368
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party: Catena Resources Operating, LLC	OGRID: 328449
Contact Name: Anthony Riggan, P.E.	Contact Telephone: 210-428-6144
Contact email: ariggan@catenares.com	Incident # *(assigned by OCD)* NRM2010059368
Contact mailing address: 18402 Hwy 281, Suite 258, San Antonio, TX 78259	

Location of Release Source

Latitude 32.72116 Longitude -103.43916
(NAD 83 in decimal degrees to 5 decimal places)

Site Name: South Vacuum #275	Site Type: Oil Well
Date Release Discovered: 01/22/2020	API# *(if applicable)* 30-025-37299

Unit Letter	Section	Township	Range	County
H	27	18S	35E	Lea

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

Nature and Volume of Release

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

☐ Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
☒ Produced Water	Volume Released (bbls) 32.41 bbls	Volume Recovered (bbls) 10 bbls
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	☒ Yes ☐ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release:

Release is believed to be result of outside, unauthorized party equalizing an in-service tank with an out-of-service water tank onsite. The out-of-service tank had previously had all of its manways removed, so when the produced water was illegally transferred to this tank, the produced water was automatically released from an open manway.

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State of New Mexico
Oil Conservation Division

Incident ID	
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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? > 25 bbls

If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?

A New Mexico State Land Office rep (Ryan Mann) discovered the release. Brandon Boone of the SLO called Mike Bratcher on Monday, March 30 to report the release and both entities spoke with Catena Resource reps at that time.

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: Anthony Riggan, P.E. Title: VP of Production Operations

Signature: Date: 4-8-2020

email: ariggan@catenares.com Telephone: 210-428-6144

OCD Only

Received by: Date:

Form C-141
Page 3

State of New Mexico
Oil Conservation Division

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

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

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

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

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

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State of New Mexico
Oil Conservation Division

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

Printed Name: Anthony Riggan Title: VP of Production Operations

Signature: _____ Date: _____

email: ariggan@catenares.com Telephone: 210-428-6144

OCD Only

Received by: _____ Date: _____

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State of New Mexico
Oil Conservation Division

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Remediation Plan

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

- [X] Detailed description of proposed remediation technique
- [X] Scaled sitemap with GPS coordinates showing delineation points
- [X] Estimated volume of material to be remediated
- [X] Closure criteria is to Table 1 specifications subject to 19.15.29.12(C)(4) NMAC
- [X] Proposed schedule for remediation (note if remediation plan timeline is more than 90 days OCD approval is required)

Deferral Requests Only: *Each of the following items must be confirmed as part of any request for deferral of remediation.*

- [ ] Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.
- [ ] Extents of contamination must be fully delineated.
- [ ] Contamination does not cause an imminent risk to human health, the environment, or groundwater.

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

Printed Name: Anthony Riggan, P.E. Title: VP of Production Operations

Signature: Date: 10/8/2020

email: ariggan@catenares.com Telephone: (210) 428-6144

OCD Only

Received by: Date:

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

Signature: Date:

Form C-141
Page 6

State of New Mexico
Oil Conservation Division

Incident ID	NRM2010059368
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: Anthony Riggan Title: VP of Production Operations

Signature: Date: 2-19-21

email: ariggan@catenares.com Telephone: 210-428-6144

OCD Only

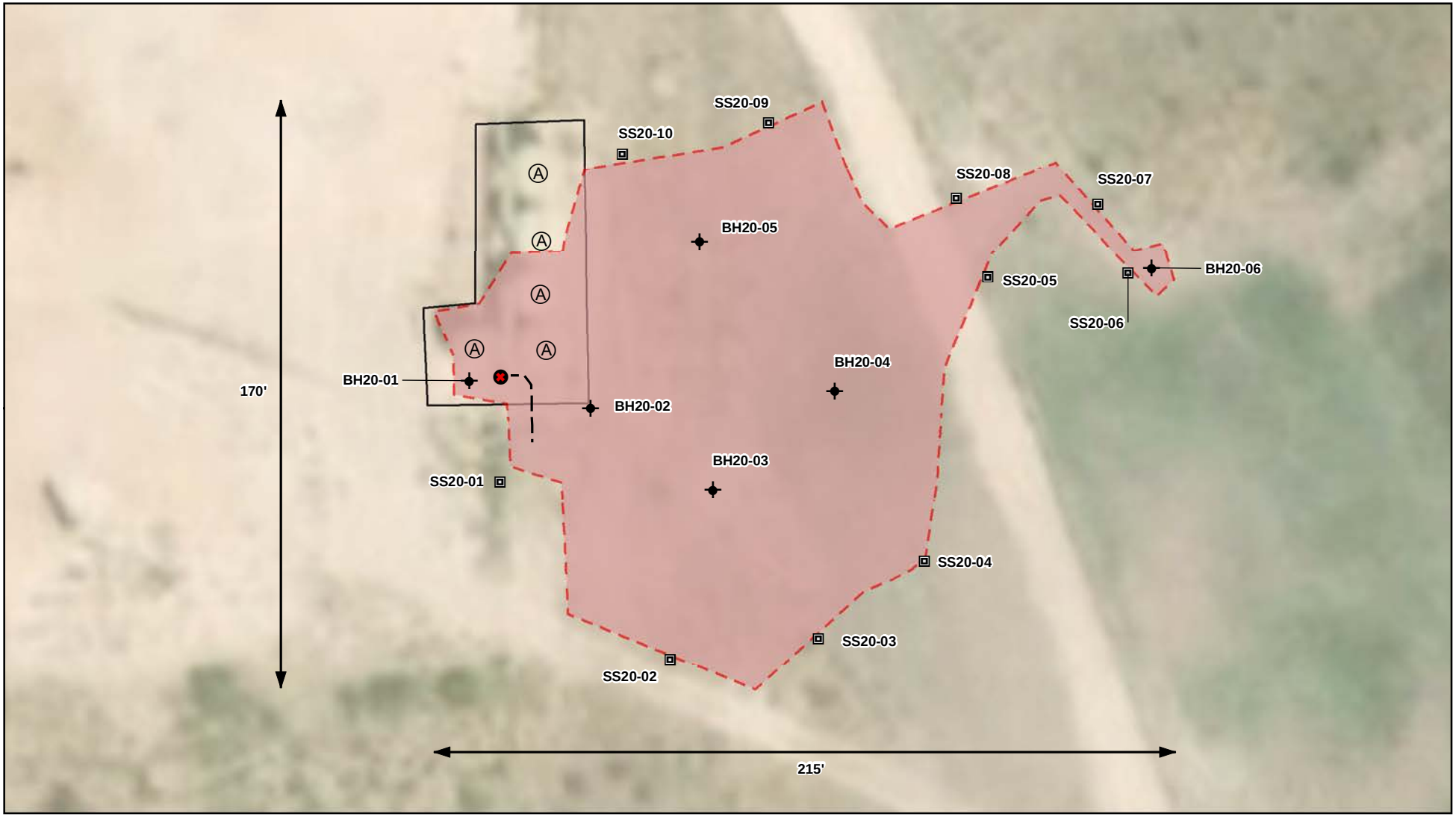
Received by: Chad Hensley Date: 05/28/2021

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: 05/28/2021

Printed Name: Chad Hensley Title: Environmental Specialist Advanced

ATTACHMENT 2



Aboveground Storage Tank
Borehole
Point of Release
Soil Sample
Pipeline (Aboveground)
Infrastructure (Existing)
Approximate Spill Extent (~ 17,417 sq.ft.)

VERTEX

20 10 0 20 ft

Map Center:
Lat/Long: 32.720955, -103.438417

WGS 1984 UTM Zone 13N
Date: Apr 24/20

N

Initial Characterization
South Vacuum #275

FIGURE:
1

CATENA RESOURCES

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 2017.

VERSATILITY. EXPERTISE.

Document Path: G:\1-Projects_US PROJECTS\Catena Resources Management\Figure 1 Initial Characterization South Vacuum #275.mxd

ATTACHMENT 3

Table 1.			
Site Name: South Vacuum #275			
Spill Coordinates:		**X: 32.721162**	**Y: -103.438743**
Site Specific Conditions		**Value**	**Unit**
1	Depth to Groundwater	154	feet
2	Within 300 feet of any continuously flowing watercourse or any other significant watercourse	1,161	feet
3	Within 200 feet of any lakebed, sinkhole or playa lake (measured from the ordinary high-water mark)	1,161	feet
4	Within 300 feet from an occupied residence, school, hospital, institution or church	15,613	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**	15,631	feet
	ii) Within 1000 feet of any fresh water well or spring	15,613	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	20,010	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		51-100'	<50' 51-100' >100'

New Mexico Office of the State Engineer
Point of Diversion Summary

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

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	L 02678 POD3	3	4		22	18S	35E	645890	3622166*

Driller License: 368 **Driller Company:** EXPIRED LAYNE CHRISTENSEN COMPANY

Driller Name: JIM HAUSLADEN

Drill Start Date:	01/12/2013	**Drill Finish Date:**	01/16/2013	**Plug Date:**	
Log File Date:	09/15/2014	**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	
Casing Size:		**Depth Well:**	190 feet	**Depth Water:**	154 feet

Meter Number:	18462	**Meter Make:**	FOXBORO
Meter Serial Number:	217801D422	**Meter Multiplier:**	100.0000
Number of Dials:	8	**Meter Type:**	Diversion
Unit of Measure:	Gallons	**Return Flow Percent:**	
Usage Multiplier:		**Reading Frequency:**	Monthly

Meter Readings (in Acre-Feet)

Read Date	Year	Mtr Reading	Flag	Rdr	Comment	Mtr Amount	Online
10/31/2019	2019	34314444	A	RPT		0	

**YTD Meter Amounts:	Year	Amount
	2019	0

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

National Water Information System: Web Interface

USGS Water Resources

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

Click to hideNews Bulletins

- **Notice** - The USGS Water Resources Mission Area's priority is to maintain the safety and well-being of our communities, including providing critical situational awareness in times of flooding in all 50 U.S. states and additional territories. Our hydrologic monitoring stations continue to send data in near real-time to NWISWeb, and we are continuing critical water monitoring activities to protect life and property on a case-by-case basis. The health and safety of the public and our employees are our highest priorities, and we continue to follow guidance from the White House, the CDC, and state and local authorities.

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

Groundwater levels for the Nation

Search Results -- 1 sites found

site_no list =

- 324320103261301

Minimum number of levels = 1

Save file of selected sites to local disk for future upload

USGS 324320103261301 18S.35E.22.43000

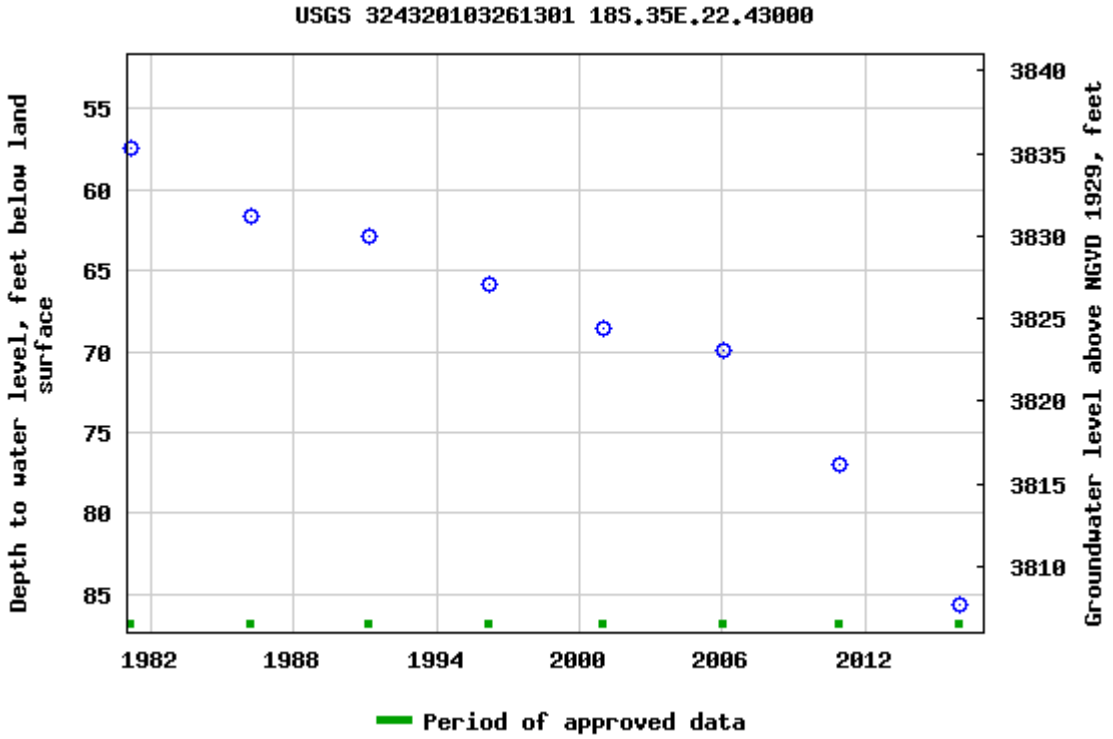
Available data for this site Groundwater: Field measurements ▼ GO

Lea County, New Mexico
Hydrologic Unit Code 13070007
Latitude 32°43'39.2", Longitude 103°26'33.2" NAD83

Land-surface elevation 3,893.00 feet above NGVD29
The depth of the well is 185 feet below land surface.
This well is completed in the Ogallala Formation (121OGLL) local aquifer.

Output formats

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



Breaks in the plot represent a gap of at least one year between field measurements.
Download a presentation-quality graph

Questions about sites/data?
Feedback on this web site
Automated retrievals
Help

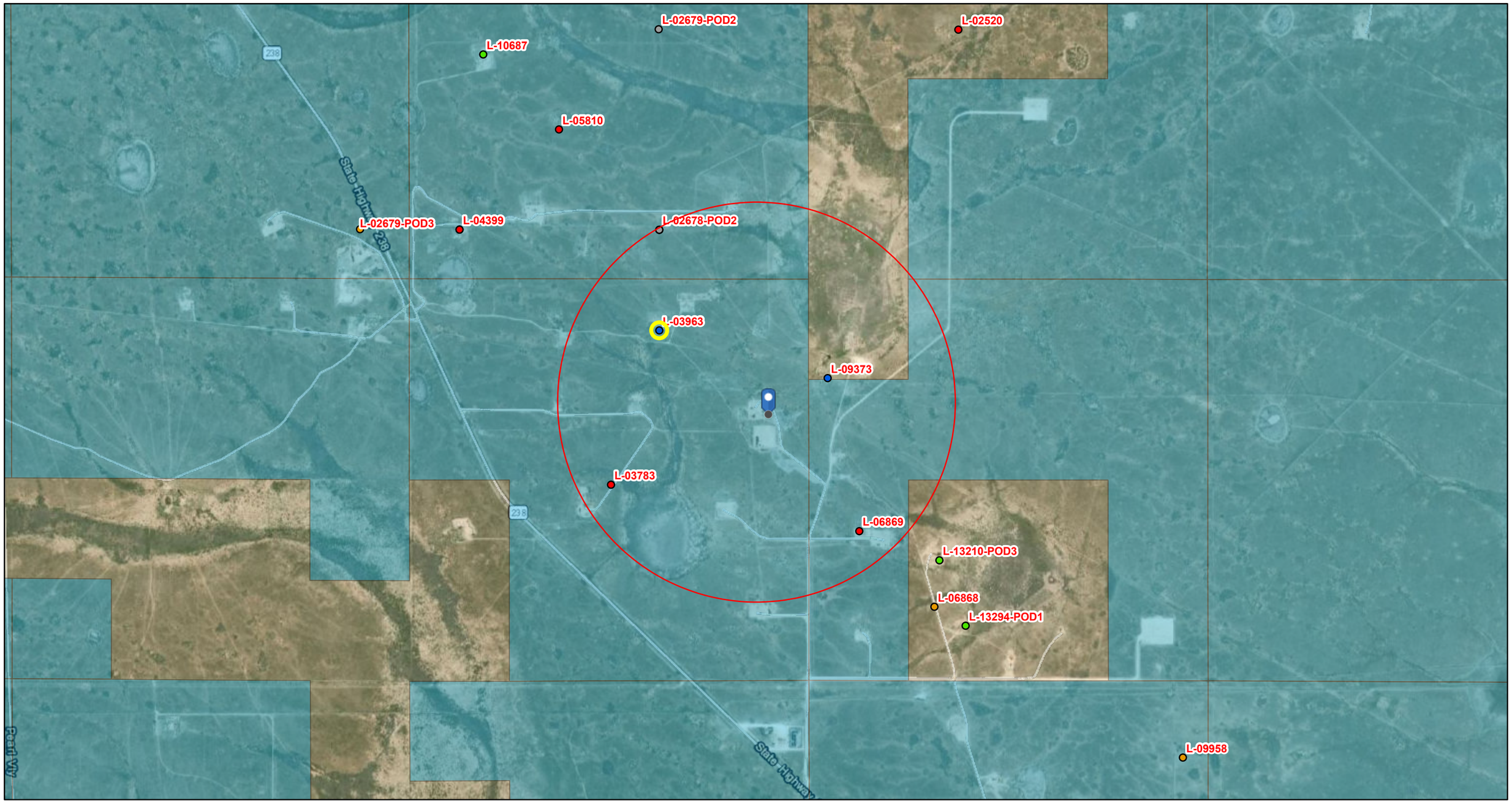
Data Tips
Explanation of terms
Subscribe for system changes
News

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

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

Page Contact Information: USGS Water Data Support Team
Page Last Modified: 2020-05-14 17:48:20 EDT
0.7 0.56 nadww01

South Vacuum #275



2/12/2021, 7:40:37 AM

GIS WATERS PODs
- Active
- Pending
- Capped
- Plugged
- Incomplete
- OSE District Boundary

New Mexico State Trust Lands
- Both Estates
- SiteBoundaries

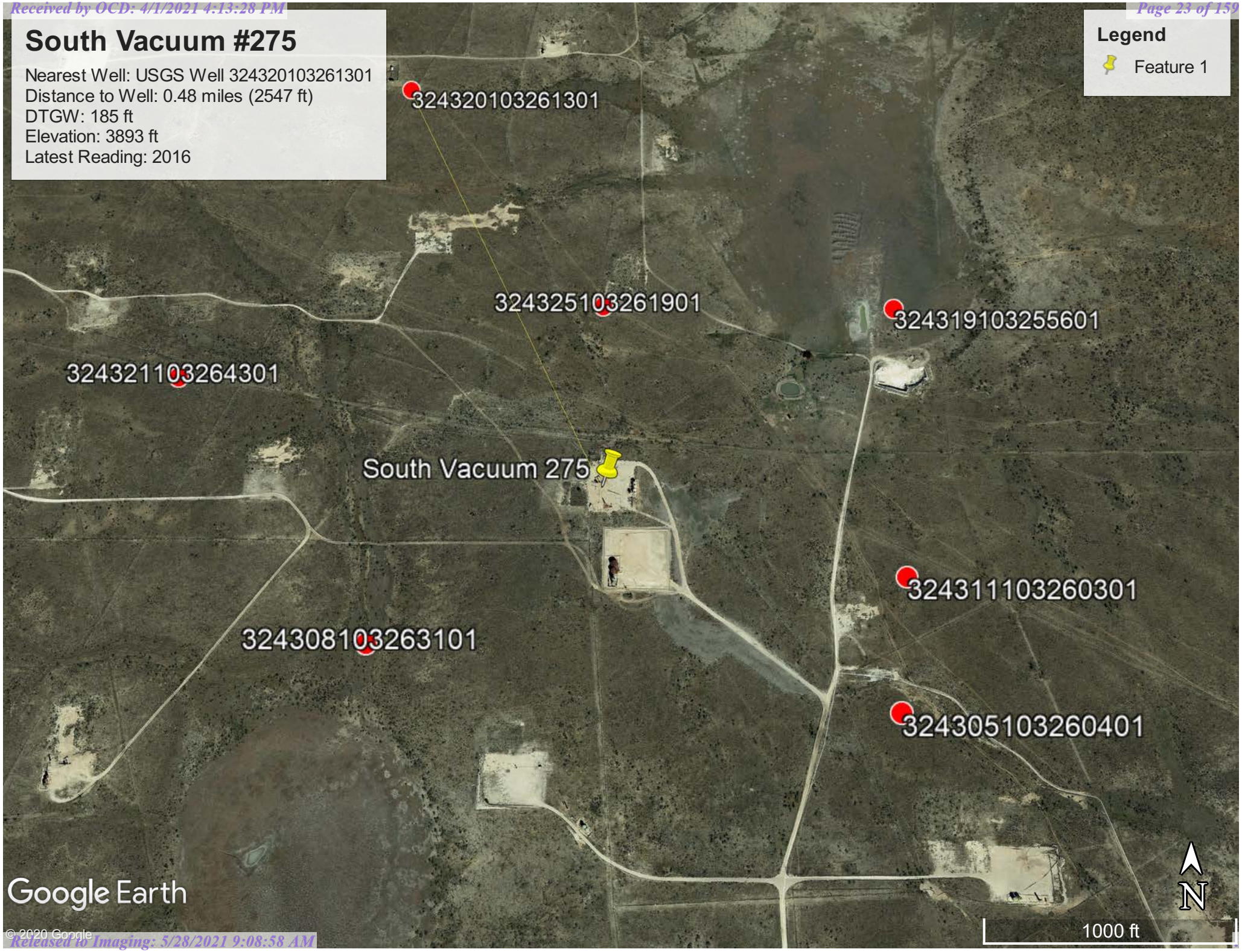
1:18,056

0 0.17 0.35 0.7 mi

0 0.3 0.6 1.2 km

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

OSE POD Locations


South Vacuum #275
Nearest Well: USGS Well 324320103261301
Distance to Well: 0.48 miles (2547 ft)
DTGW: 185 ft
Elevation: 3893 ft
Latest Reading: 2016
Legend
Feature 1
324320103261301
324325103261901
324319103255601
324321103264301
South Vacuum 275
324311103260301
324308103263101
324305103260401
Google Earth
© 2020 Google
N
1000 ft

U.S. Fish and Wildlife Service
National Wetlands Inventory

South Vacuum #275 Significant Watercours

February 11, 2021

Wetlands

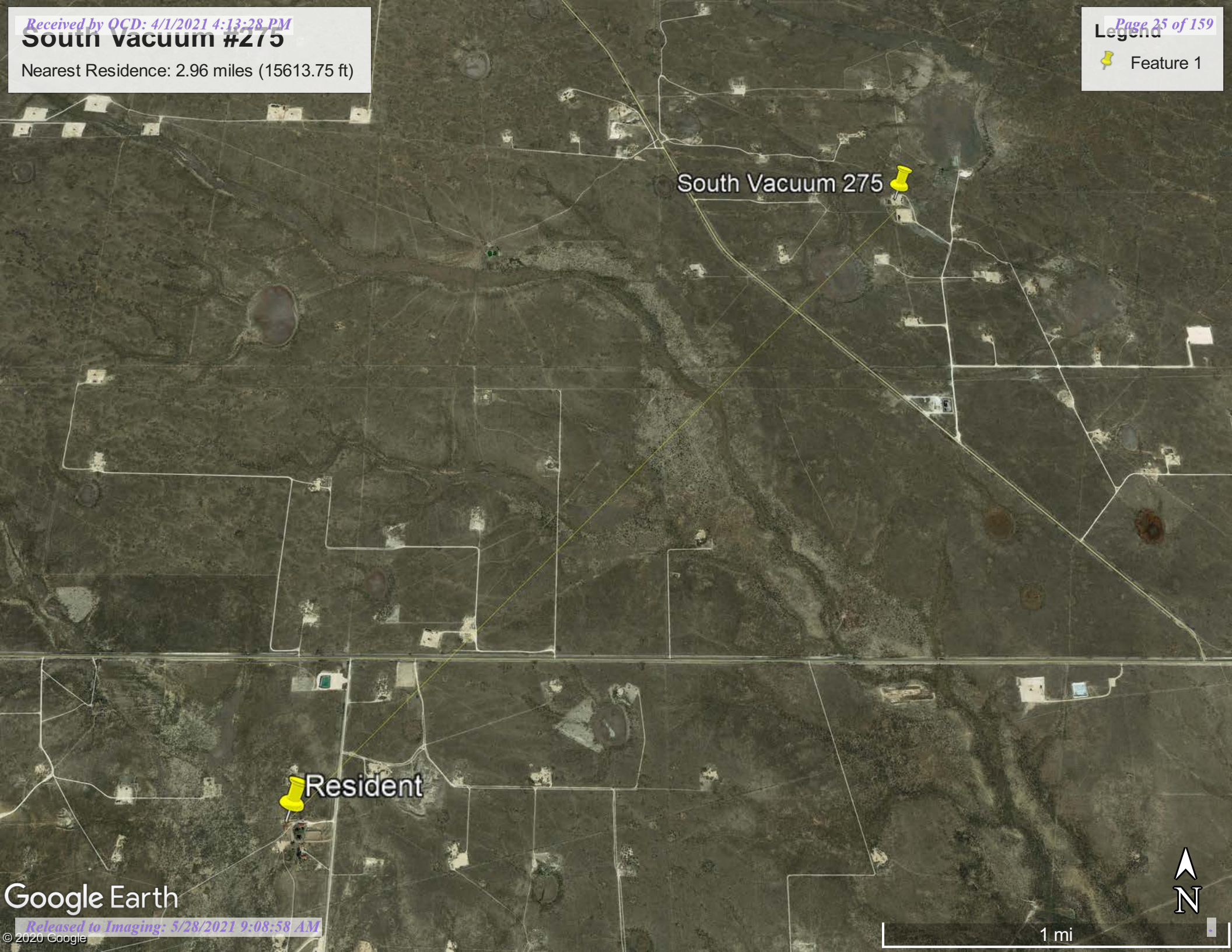
- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

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

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

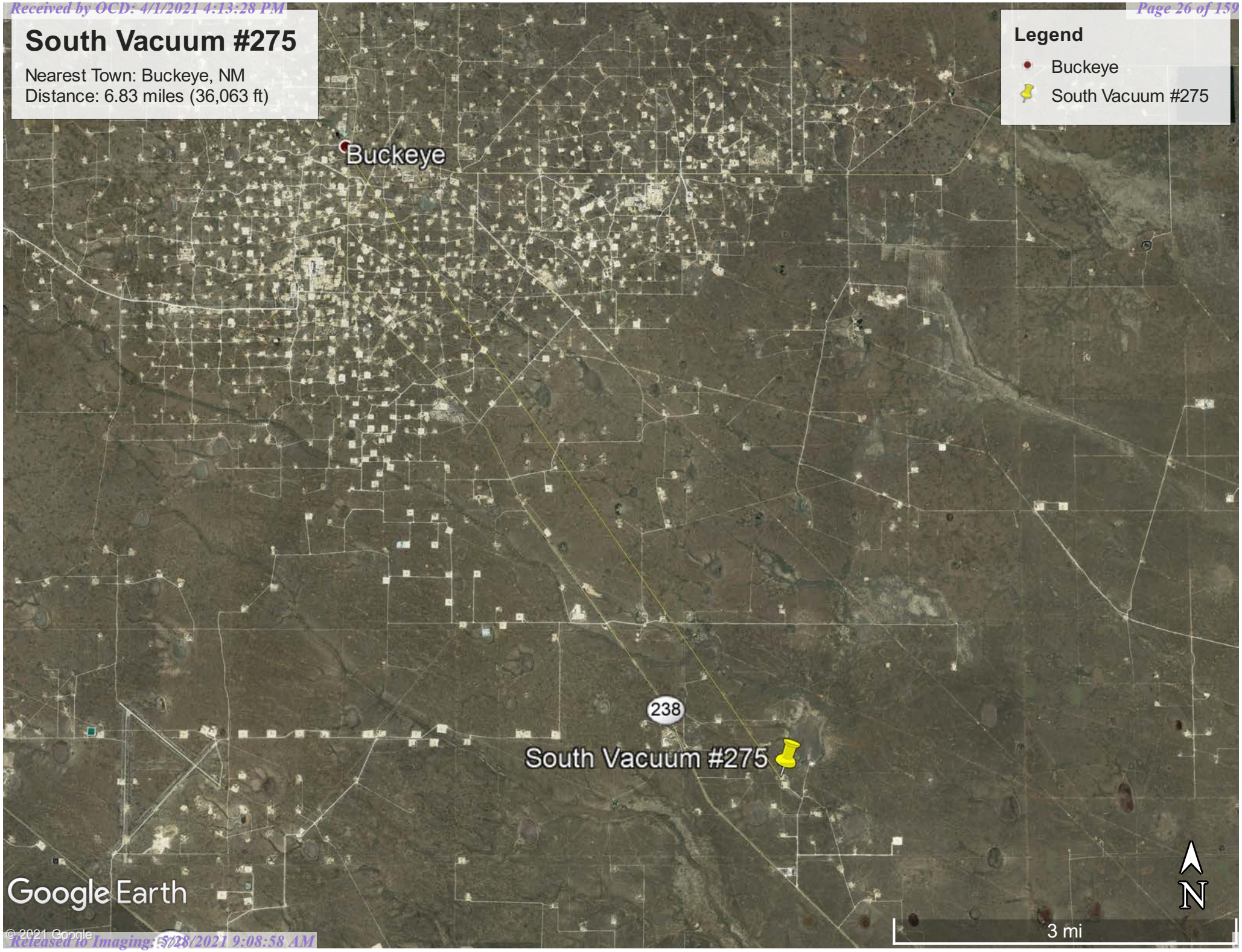
South Vacuum #275

Nearest Residence: 2.96 miles (15613.75 ft)



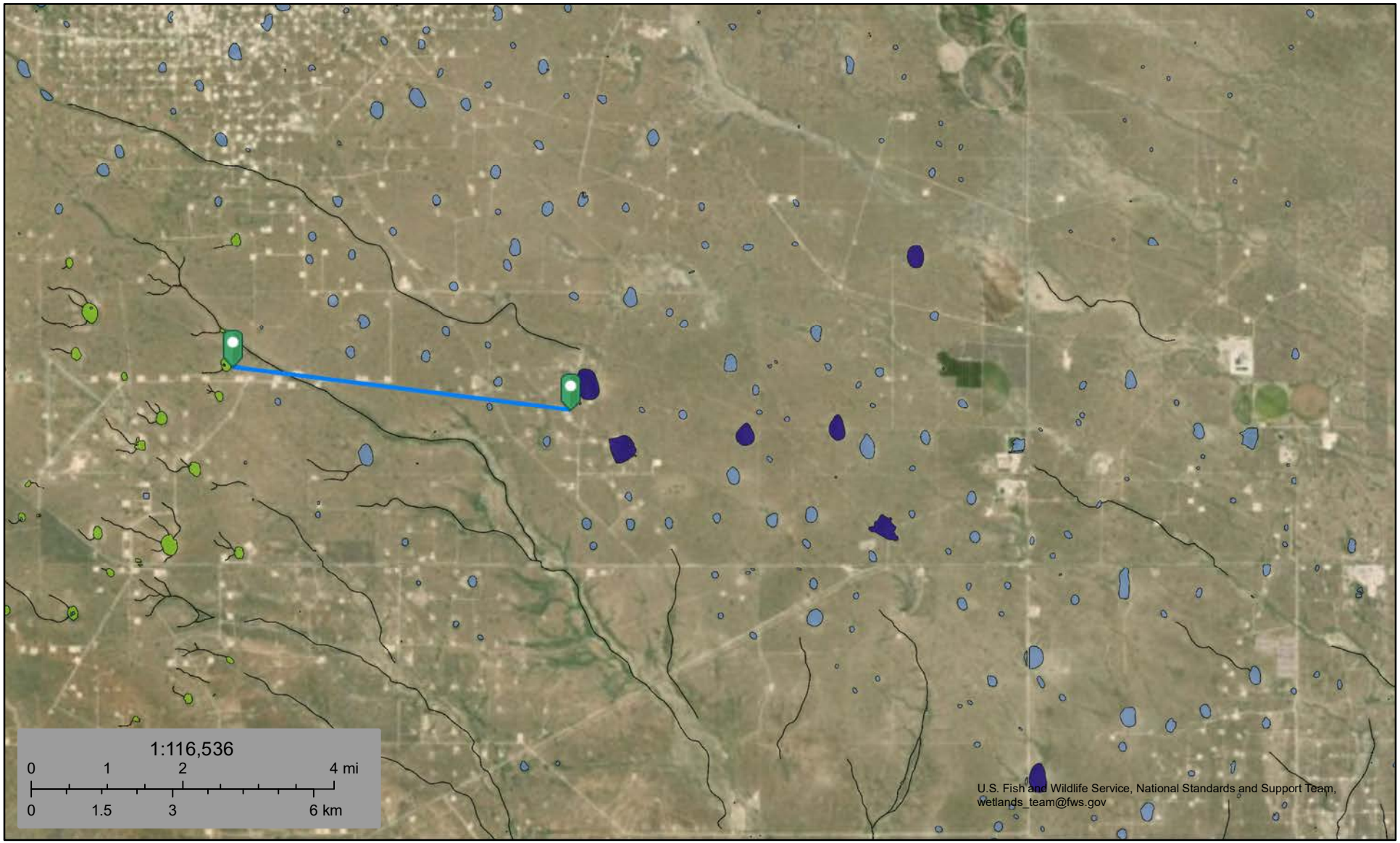
South Vacuum #275

Nearest Town: Buckeye, NM
Distance: 6.83 miles (36,063 ft)



U.S. Fish and Wildlife Service
National Wetlands Inventory

South Vacuum #275 - Distance = 20,010 F



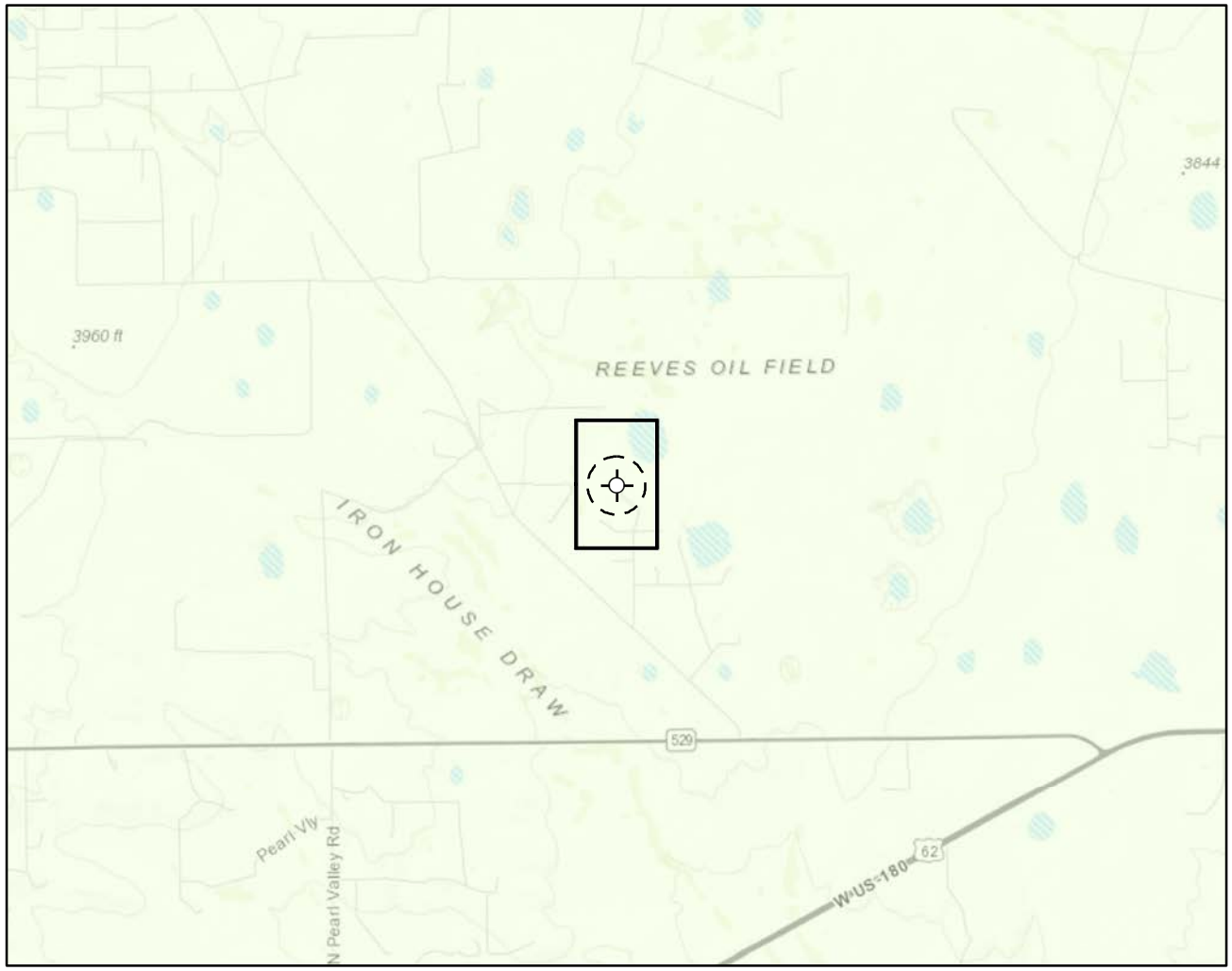
May 18, 2020

Wetlands

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

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

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



Karst Potential

- Critical
- High
- Medium
- Low

- Site
- Site Buffer 1000 ft.

Overview Map

0 0.25 0.5 1 mi

Detail Map

0 150 300 600 ft.

VERTEX

Map Center:
Lat/Long: 32.721001, -103.438444

NAD 1983 UTM Zone 13N
Date: May 19/20

N

Karst Potential
South Vacuum #275

FIGURE:
X

CATENA RESOURCES

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

Note: Inset Map, ESRI 2017; Overview Map: ESRI World Topographic

VERSATILITY. EXPERTISE.

Document Path: G:\1-Projects_US PROJECTS\Catena Resources Management\20E-00893\001 - South Vacuum #275\Fig X Karst Potential South Vacuum #275.mxd

National Flood Hazard Layer FIRMette

FEMA

32°43'30.96"N

103°26'38.86"W

103°26'1.40"W

32°43'0.69"N

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

1:6,000

Legend

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

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

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

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

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

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

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

N

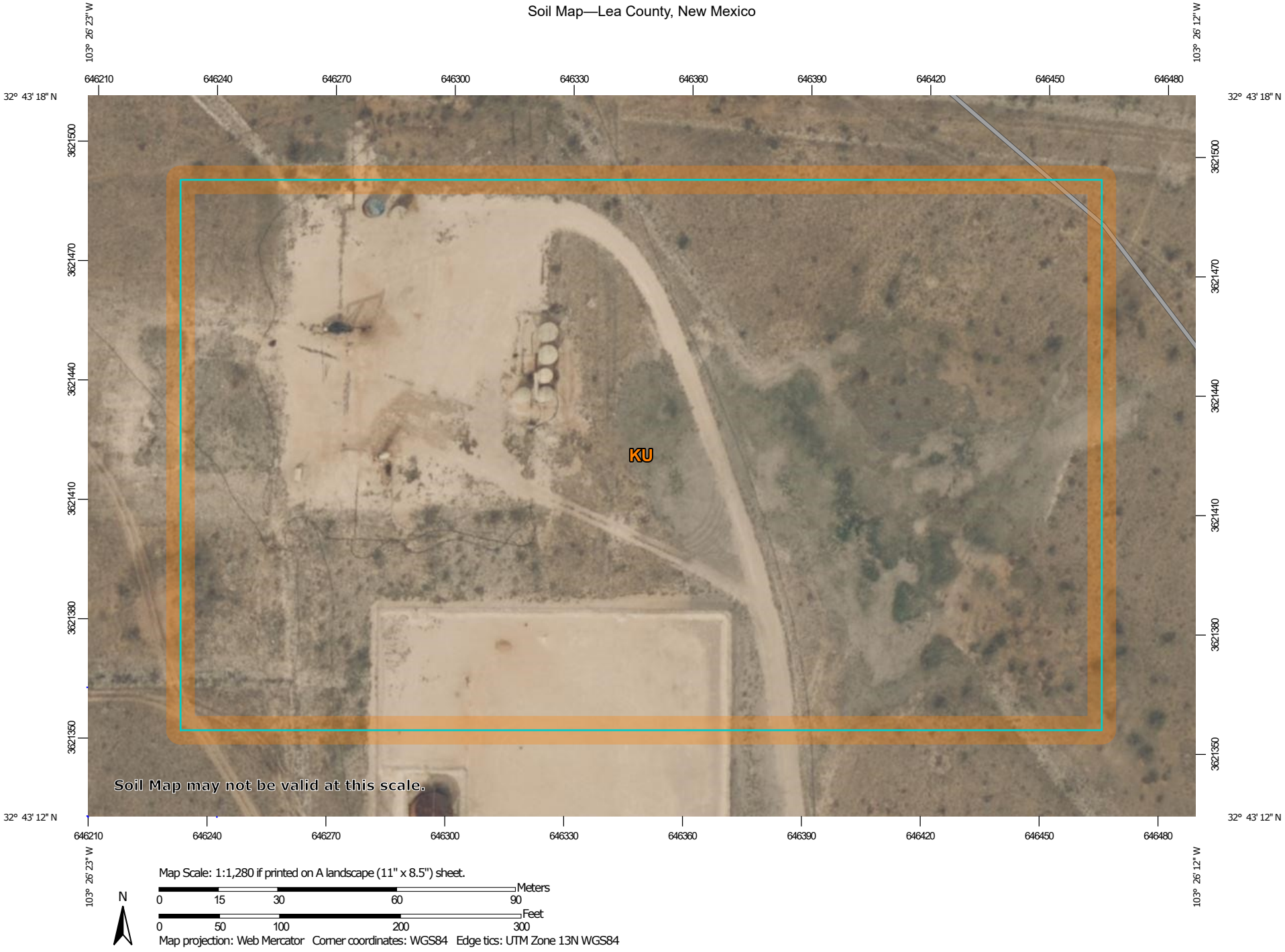
The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

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

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 5/18/2020 at 9:28:11 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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

Soil Map—Lea County, New Mexico



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 17, Jun 8, 2020

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

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

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
KU	Kimbrough-Lea complex, dry, 0 to 3 percent slopes	8.0	100.0%
Totals for Area of Interest		**8.0**	**100.0%**

Lea County, New Mexico

KU—Kimbrough-Lea complex, dry, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2tw46
Elevation: 2,500 to 4,800 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 57 to 63 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Not prime farmland

Map Unit Composition

Kimbrough and similar soils: 45 percent
Lea and similar soils: 25 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kimbrough

Setting

Landform: Plains, playa rims
Down-slope shape: Linear, convex
Across-slope shape: Linear, concave
Parent material: Loamy eolian deposits derived from sedimentary rock

Typical profile

A - 0 to 3 inches: gravelly loam
Bw - 3 to 10 inches: loam
Bkkm1 - 10 to 16 inches: cemented material
Bkkm2 - 16 to 80 inches: cemented material

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 4 to 18 inches to petrocalcic
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.01 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 95 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water capacity: Very low (about 1.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: R077DY049TX - Very Shallow 12-17" PZ
Hydric soil rating: No

Description of Lea

Setting

Landform: Plains
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Calcareous, loamy eolian deposits from the blackwater draw formation of pleistocene age over indurated caliche of pliocene age

Typical profile

A - 0 to 10 inches: loam
Bk - 10 to 18 inches: loam
Bkk - 18 to 26 inches: gravelly fine sandy loam
Bkkm - 26 to 80 inches: cemented material

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 22 to 30 inches to petrocalcic
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 90 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 3.0
Available water capacity: Very low (about 2.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: R077DY047TX - Sandy Loam 12-17" PZ
Hydric soil rating: No

Minor Components

Douro

Percent of map unit: 12 percent
Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R077DY047TX - Sandy Loam 12-17" PZ
Other vegetative classification: Unnamed (G077DH000TX)
Hydric soil rating: No

Kenhill

Percent of map unit: 12 percent
Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R077DY038TX - Clay Loam 12-17" PZ
Hydric soil rating: No

Spraberry

Percent of map unit: 6 percent
Landform: Plains, playa rims
Down-slope shape: Linear, convex
Across-slope shape: Linear
Ecological site: R077DY049TX - Very Shallow 12-17" PZ
Other vegetative classification: Unnamed (G077DH000TX)
Hydric soil rating: No

Data Source Information

Soil Survey Area: Lea County, New Mexico
Survey Area Data: Version 17, Jun 8, 2020

ATTACHMENT 4

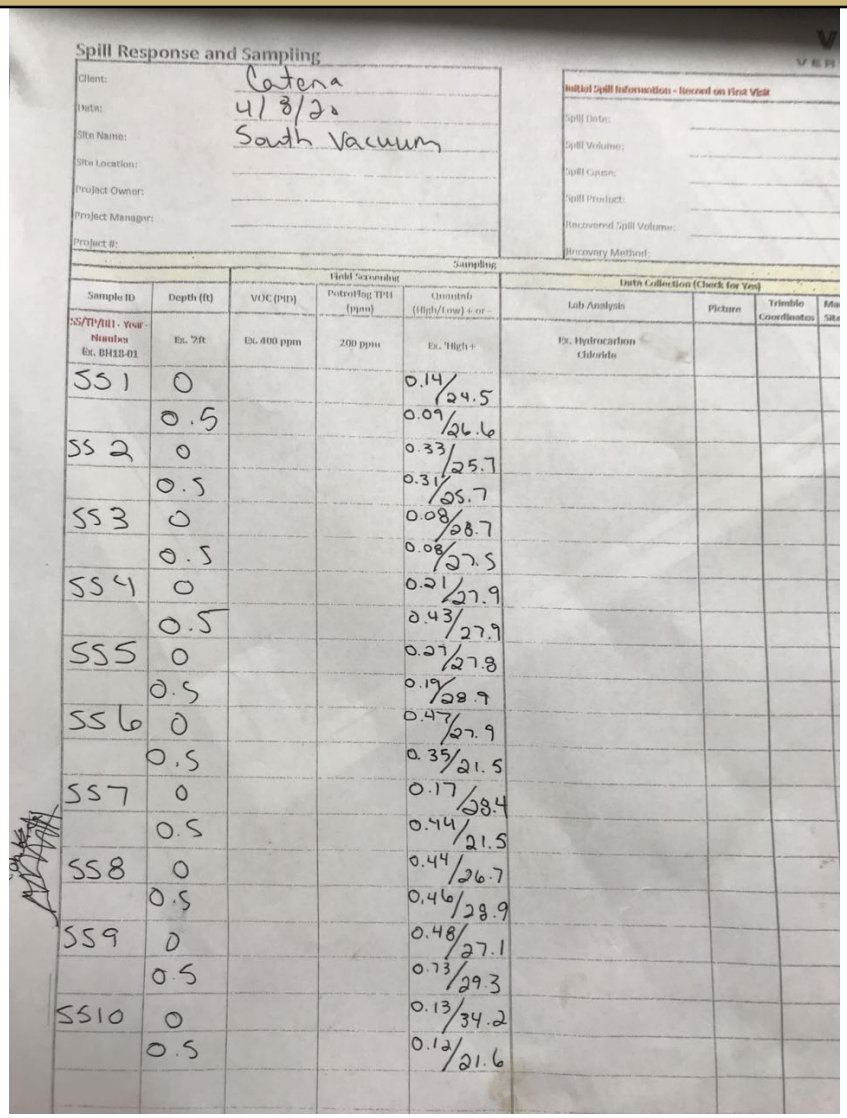
Daily Site Visit Report

Client:	Catena Resources	Inspection Date:	4/8/2020
Site Location Name:	South Vacuum 275	Report Run Date:	5/14/2020 8:59 PM
Project Owner:		File (Project) #:	
Project Manager:		API #:	30-025-37299
Client Contact Name:	Anthony Riggan	Reference	
Client Contact Phone #:	(713) 702-6817		

Summary of Times	
Left Office	4/8/2020 6:30 AM
Arrived at Site	4/8/2020 8:00 AM
Departed Site	4/8/2020 4:26 PM
Returned to Office	

Daily Site Visit Report

Site Sketch



Spill Response and Sampling

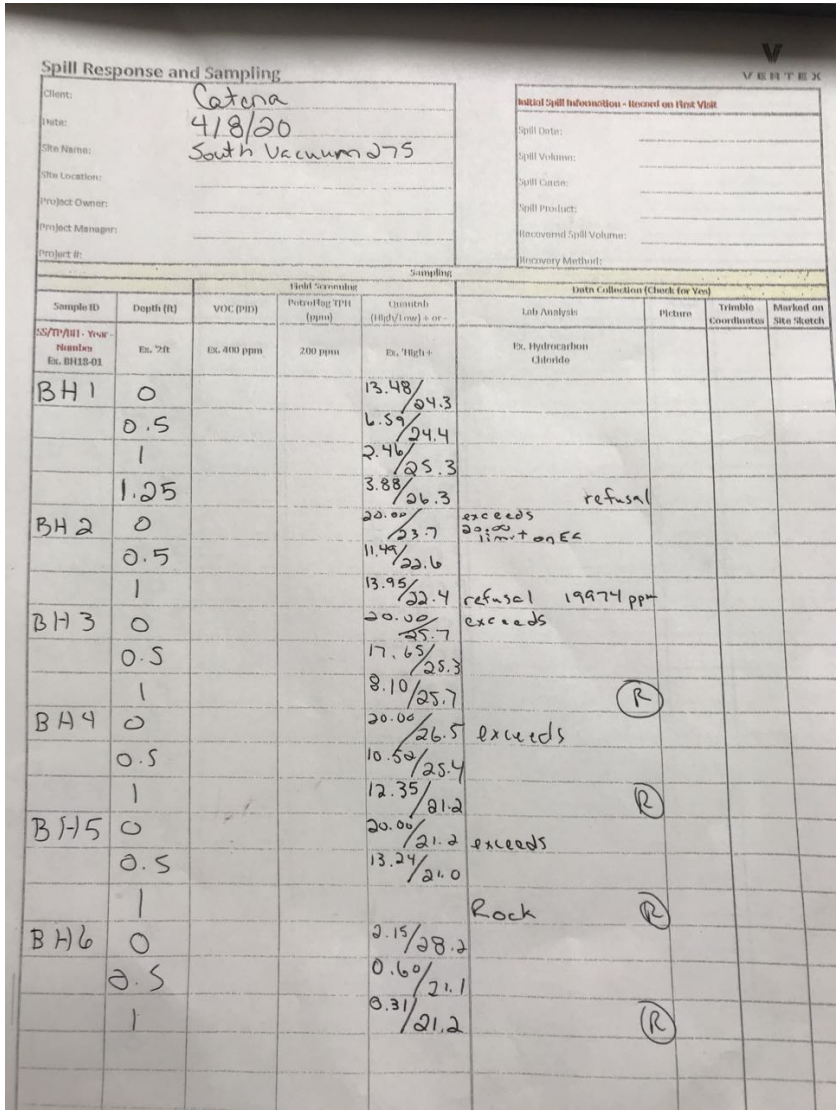
Client: Catena
Date: 4/8/20
Site Name: South Vacuum
Site Location:
Project Owner:
Project Manager:
Project #:

Initial Spill Information - Record on First Visit
Spill Date:
Spill Volume:
Spill Cause:
Spill Product:
Recovered Spill Volume:
Recovery Method:

Sampling

Sample ID (SS/TP/AH - Year - Number Ex. BH18-01)	Depth (ft) Ex. 2ft	Field Screening: VOC (PID) Ex. 400 ppm	Field Screening: PetroFlag TPH (ppm) 200 ppm	Field Screening: Quantab (High/Low) + or - Ex. High+	Data Collection (Check for Yes): Lab Analysis Ex. Hydrocarbon Chloride	Picture	Trimble Coordinates
SS1	0			0.14/24.5			
	0.5			0.09/26.6			
SS2	0			0.33/25.7			
	0.5			0.31/25.7			
SS3	0			0.08/28.7			
	0.5			0.08/27.5			
SS4	0			0.21/27.9			
	0.5			0.43/27.9			
SS5	0			0.27/27.8			
	0.5			0.19/28.9			
SS6	0			0.47/27.9			
	0.5			0.35/21.5			
SS7	0			0.17/28.4			
	0.5			0.44/21.5			
SS8	0			0.44/26.7			
	0.5			0.46/28.9			
SS9	0			0.48/27.1			
	0.5			0.73/29.3			
SS10	0			0.13/34.2			
	0.5			0.12/21.6			

Daily Site Visit Report



Spill Response and Sampling

VERTEX

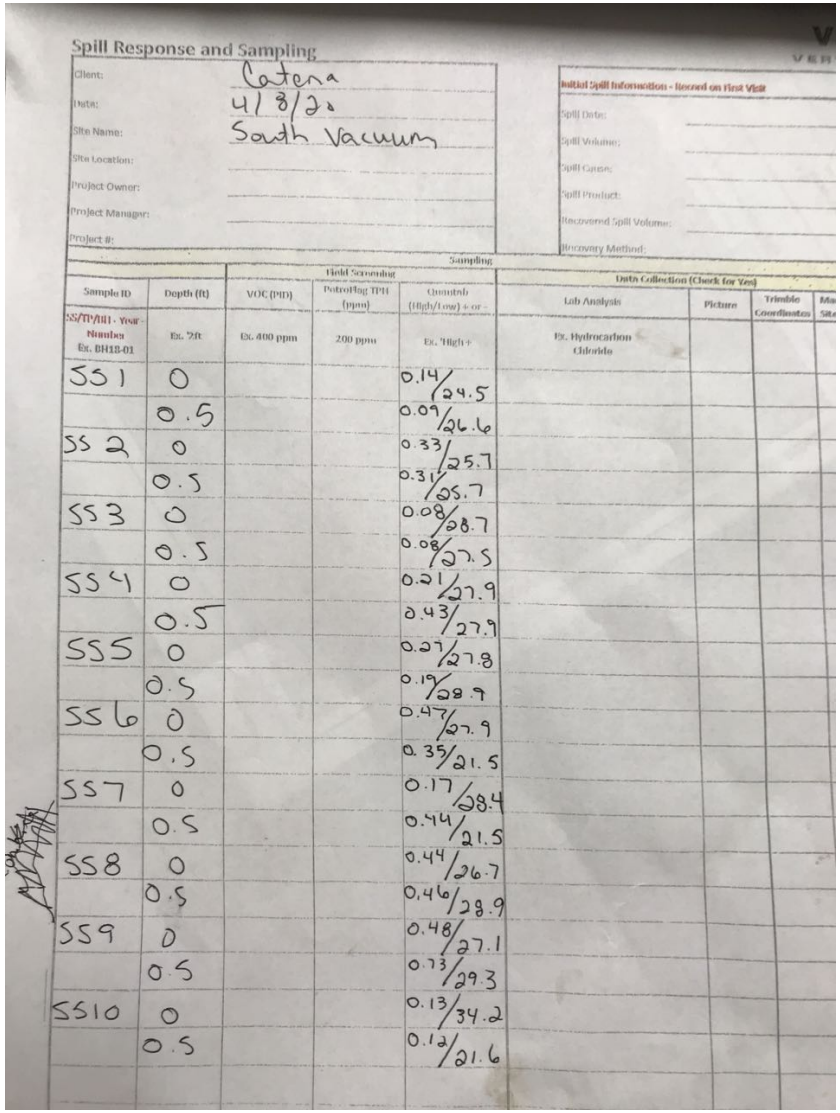
Client: Caterra
Date: 4/8/20
Site Name: South Vacuum 275
Site Location:
Project Owner:
Project Manager:
Project #:

Initial Spill Information - Record on First Visit
Spill Date:
Spill Volume:
Spill Cause:
Spill Product:
Recovered Spill Volume:
Recovery Method:

Sampling

Sample ID	Depth (ft)	Field Screening: VOC (PID)	Field Screening: PetroFlag TPH (ppm)	Field Screening: Quantab (High/Low) + or -	Data Collection (Check for Yes): 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			
BH 1	0			13.48/04.3				
	0.5			6.59/24.4				
	1			2.46/25.3				
	1.25			3.88/26.3	refusal			
BH 2	0			20.00/23.7	exceeds 20,000 limit on EC			
	0.5			11.49/22.6				
	1			13.95/22.4	refusal 19974 ppm			
BH 3	0			20.00/25.7	exceeds			
	0.5			17.65/25.3				
	1			8.10/25.7		R		
BH 4	0			20.00/26.5	exceeds			
	0.5			10.50/25.4				
	1			12.35/81.2		R		
BH 5	0			20.00/21.2	exceeds			
	0.5			13.24/21.0				
	1				Rock	R		
BH 6	0			2.15/28.2				
	0.5			0.60/21.1				
	1			0.31/21.2		R		

Daily Site Visit Report



Spill Response and Sampling

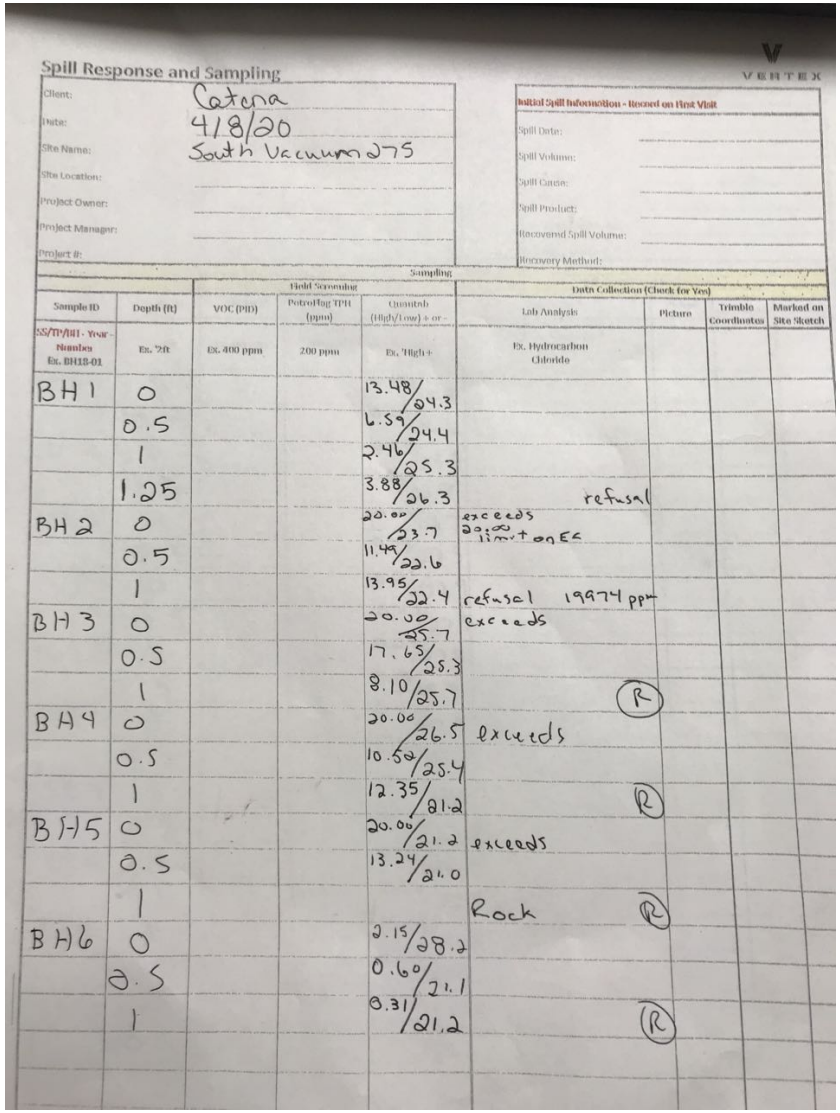
Client: Catena
Date: 4/8/20
Site Name: South Vacuum
Site Location:
Project Owner:
Project Manager:
Project #:

Initial Spill Information - Record on First Visit
Spill Date:
Spill Volume:
Spill Cause:
Spill Product:
Recovered Spill Volume:
Recovery Method:

Sampling

Sample ID	Depth (ft)	Field Screening: VOC (PID)	Field Screening: Petroflag TPH (ppm)	Field Screening: Quantab (High/Low) + or -	Data Collection (Check for Yes): Lab Analysis	Picture	Trimble Coordinates	Mi Sit
SS/TP/MW - Year - Number Ex. BH18-01	Ex. '2ft	Ex. 400 ppm	200 ppm	Ex. 'High +	Ex. Hydrocarbon Chloride			
SS1	0			0.14/24.5				
	0.5			0.09/26.6				
SS2	0			0.33/25.7				
	0.5			0.31/25.7				
SS3	0			0.08/28.7				
	0.5			0.08/27.5				
SS4	0			0.21/27.9				
	0.5			0.43/27.9				
SS5	0			0.27/27.8				
	0.5			0.19/28.9				
SS6	0			0.47/27.9				
	0.5			0.35/21.5				
SS7	0			0.17/28.4				
	0.5			0.44/21.5				
SS8	0			0.44/26.7				
	0.5			0.46/28.9				
SS9	0			0.48/27.1				
	0.5			0.73/29.3				
SS10	0			0.13/34.2				
	0.5			0.12/21.6				

Daily Site Visit Report



Spill Response and Sampling

VERTEX

Client: Caterra
Date: 4/8/20
Site Name: South Vacuum 275
Site Location:
Project Owner:
Project Manager:
Project #:

Initial Spill Information - Record on First Visit
Spill Date:
Spill Volume:
Spill Cause:
Spill Product:
Recovered Spill Volume:
Recovery Method:

Sampling

Sample ID	Depth (ft)	Field Screening: VOC (PID)	Field Screening: PetroFlag TPH (ppm)	Field Screening: Quantab (High/Low) + or -	Data Collection (Check for Yes): 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			
BH1	0			13.48/24.3				
	0.5			6.59/24.4				
	1			2.46/25.3				
	1.25			3.88/26.3	refusal			
BH2	0			20.00/23.7	exceeds 20,000 limit on EC			
	0.5			11.49/22.6				
	1			13.95/22.4	refusal 19974 ppm			
BH3	0			20.00/25.7	exceeds			
	0.5			17.65/25.3				
	1			8.10/25.7		R		
BH4	0			20.00/26.5	exceeds			
	0.5			10.50/25.4				
	1			12.35/81.2		R		
BH5	0			20.00/21.2	exceeds			
	0.5			13.24/21.0				
	1				Rock	R		
BH6	0			2.15/28.2				
	0.5			0.60/21.1				
	1			0.31/21.2		R		

Daily Site Visit Report

Summary of Daily Operations

9:14 Initial characterization of spill area by delineation vertically and horizontally

9:15 Spill area still shows signs of moisture in soil and travel to the east side of the pad onto what looks like should be pasture. Containment shows signs of staining and berms on the south side

9:32 Possible that equipment spread contamination further than where it originally sat, visual mud tracks on lease road where mud was tracked out

10:39 Delineation vertically is hitting refusal between 1 ft and 1.25 ft. A solid rock layer at that footage preventing any further depth. Rock bar is bouncing off of rock layer with no give

Next Steps & Recommendations

1 Recommend possible equipment to fully delineate vertically if approved

Daily Site Visit Report

Site Photos

Viewing Direction: North	**Viewing Direction**: West
	
South side of containment where berm was rebuilt	Area inside containment where possible point of release occurred
Viewing Direction: North	**Viewing Direction**: Northeast
	
East side of containment where excavation was done in attempt to clean up spill	Possible pasture area where spill was attempted to be scraped

Daily Site Visit Report

Viewing Direction: West	**Viewing Direction**: Northwest
	
Scraped area on east side of containment	Area on east side of containment where scrape occurred
Viewing Direction: South	**Viewing Direction**: East
	
Scraped area where spill occurred	Dead vegetation across road

Daily Site Visit Report

Viewing Direction: North

Dead vegetation on east side of lease road

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Monica Peppin

Signature:

Daily Site Visit Report

Client:	Catena Resources	Inspection Date:	10/29/2020
Site Location Name:	South Vacuum 275	Report Run Date:	2/22/2021 2:38 PM
Client Contact Name:	Anthony Riggan	API #:	30-025-37299
Client Contact Phone #:	(713) 702-6817		
Unique Project ID	-South Vacuum 275	Project Owner:	Anthony Riggan
Project Reference #	Produced Water release	Project Manager:	Natalie Gordon

Summary of Times

Arrived at Site	10/29/2020 8:13 AM
Departed Site	10/29/2020 2:30 PM

Field Notes

8:43 Continue excavation down to bedrock and treat soil with chloride remediation product

8:45 Crew to break up ground around tanks in containment to treat area along with pasture area. Depth to bedrock is 1 ft to 1.5 ft across the whole area. Going to the depth that is allowable

Next Steps & Recommendations

1 Let product sit for time to work

2 Get auger or drill out to sample into bedrock and verify it did not penetrate past the rock

Daily Site Visit Report

Site Photos

Viewing Direction: East

Treated area

Viewing Direction: West

Treated area

Viewing Direction: South

Treated area

Viewing Direction: South

Treated area

Daily Site Visit Report

Viewing Direction: North	**Viewing Direction**: East
	
Treated area	Treated area

Viewing Direction: Northeast	**Viewing Direction**: East
	
Treated area	Pasture area east of location

Daily Site Visit Report

Viewing Direction: West	**Viewing Direction**: Northwest
	
Treated area	Treated area
Viewing Direction: South	**Viewing Direction**: Southeast
	
Treated area	Treated area

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Monica Peppin

Signature: 
Signature

Daily Site Visit Report

Client:	Catena Resources	Inspection Date:	1/12/2021
Site Location Name:	South Vacuum 275	Report Run Date:	2/19/2021 5:02 PM
Client Contact Name:	Anthony Riggan	API #:	30-025-37299
Client Contact Phone #:	(713) 702-6817		
Unique Project ID		Project Owner:	
Project Reference #		Project Manager:	

Summary of Times

Arrived at Site	1/12/2021 9:25 AM
Departed Site	1/12/2021 2:40 PM

Field Notes

9:36 Arrived on site and filled out safety paperwork

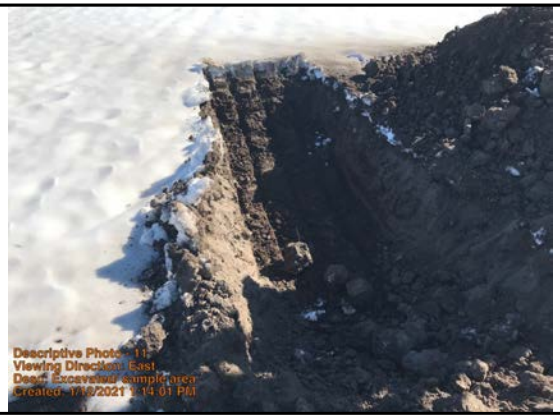
14:37 Excavated areas as per pictures and jack hammered into cap rock to collect samples.

Next Steps & Recommendations

1 Submit samples to lab

Daily Site Visit Report

Site Photos

Viewing Direction: North	**Viewing Direction**: South
	
Sample area	Excavated/sample area
Viewing Direction: East	**Viewing Direction**: Northeast
	
Excavated/ sample area	Sample area

Daily Site Visit Report

Viewing Direction: North	**Viewing Direction**: West
	
Excavated area/jack hammer	Excavated area/jack hammer
Viewing Direction: Northeast	**Viewing Direction**: North
	
Excavated/ bed rock	Excavated/ bed rock

Daily Site Visit Report

Viewing Direction: North

Excavated/ bed rock

Viewing Direction: Northwest

Excavated/ bed rock

Viewing Direction: East

Excavated/bed rock

Daily Site Visit Report

Daily Site Visit Signature

Inspector: John Ramirez

Signature: 

Daily Site Visit Report

Client:	Catena Resources	Inspection Date:	1/30/2021
Site Location Name:	South Vacuum 275	Report Run Date:	2/19/2021 4:12 PM
Client Contact Name:	Anthony Riggan	API #:	30-025-37299
Client Contact Phone #:	(713) 702-6817		
Unique Project ID	-South Vacuum 275	Project Owner:	Anthony Riggan
Project Reference #	Produced Water release	Project Manager:	Natalie Gordon

Summary of Times

Arrived at Site	1/30/2021 8:49 AM
Departed Site	1/30/2021 10:15 AM

Field Notes

8:52 Recollection of confirmation samples BS20-05 , 15 , 17 , 20.

Next Steps & Recommendations

1 Send samples to lab

Daily Site Visit Report

Site Photos

Viewing Direction: North

Field screens for confirmation sampling

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Austin Harris

Signature: 

Signature

ATTACHMENT 5

Natalie Gordon

From: Dhugal Hanton <vertexresourcegroupusa@gmail.com>
Sent: Sunday, January 10, 2021 10:53 PM
To: Natalie Gordon
Subject: Fwd: NRM2010059368: South Vacuum #275 - 48-hr Notification of Confirmatory Sampling

---------- Forwarded message ---------
From: **Dhugal Hanton** <vertexresourcegroupusa@gmail.com>
Date: Sun, Jan 10, 2021 at 10:48 PM
Subject: NRM2010059368: South Vacuum #275 - 48-hr Notification of Confirmatory Sampling
To: Enviro, OCD, EMNRD <OCD.Enviro@state.nm.us>, <spills@slo.state.nm.us>

All,

Please accept this email as 48-hr notification that Vertex Resource Services has scheduled confirmatory sampling to be conducted at South Vacuum #275 for the release that occurred on March 30, 2020, incident tracking # NRM2010059368.

This work will be completed on behalf of Catena Resources Operating, LLC.

On Tuesday, January 12 at approximately 1:00 p.m., Monica Peppin will be onsite to conduct confirmatory sampling. She can be reached at 575-361-9880. If you need directions to the site, please do not hesitate to contact her. If you have any questions or concerns regarding this notification, please give me a call at 505-506-0040.

Thank you,
Natalie

Natalie Gordon
Project Manager

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

P 575.725.5001 ext 709
C 505.506.0040
F

www.vertex.ca

Natalie Gordon

From: Dhugal Hanton <vertexresourcegroupusa@gmail.com>
Sent: Wednesday, January 27, 2021 1:52 PM
To: Natalie Gordon
Subject: Fwd: NRM2010059368: South Vacuum #275 - 48-hr Notification of Confirmatory Sampling

---------- Forwarded message ---------
From: **Dhugal Hanton** <vertexresourcegroupusa@gmail.com>
Date: Wed, Jan 27, 2021 at 1:51 PM
Subject: NRM2010059368: South Vacuum #275 - 48-hr Notification of Confirmatory Sampling
To: Enviro, OCD, EMNRD <OCD.Enviro@state.nm.us>, <spills@slo.state.nm.us>

All,

Please accept this email as 48-hr notification that Vertex Resource Services has scheduled additional confirmatory sampling to be conducted at South Vacuum #275 for the release that occurred on March 30, 2020, incident tracking # NRM2010059368.

This work will be completed on behalf of Catena Resources Operating, LLC.

On Friday, January 29 at approximately 2:00 p.m., Monica Peppin will be onsite to conduct confirmatory sampling. She can be reached at 575-361-9880. If you need directions to the site, please do not hesitate to contact her. If you have any questions or concerns regarding this notification, please give me a call at 505-506-0040.

Thank you,
Natalie

Natalie Gordon
Project Manager

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

P 575.725.5001 ext 709
C 505.506.0040
F

www.vertex.ca

ATTACHMENT 6

Natalie Gordon

From: Anthony Riggan <ariggan@catenares.com>
Sent: Wednesday, September 23, 2020 2:57 PM
To: Natalie Gordon
Subject: FW: Remediation Conditional Approval - Catena Resources - South Vacuum #275 - (Incident #NRM2010059368)
Attachments: Remediation Plan - Catena Resources - South Vacuum #275.pdf

Natalie,
Do you have time to revisit this tomorrow?

Anthony Riggan, P.E.
Direct: (210) 428-6144
Cell: (713) 702-6817

From: Hamlet, Robert, EMNRD <Robert.Hamlet@state.nm.us>
Sent: Tuesday, September 22, 2020 4:12 PM
Cc: Bratcher, Mike, EMNRD <mike.bratcher@state.nm.us>; Venegas, Victoria, EMNRD <Victoria.Venegas@state.nm.us>; Eads, Cristina, EMNRD <Cristina.Eads@state.nm.us>; spills@slo.state.nm.us
Subject: Remediation Conditional Approval - Catena Resources - South Vacuum #275 - (Incident #NRM2010059368)

We have received your Workplan/Remediation Proposal for **Incident #NRM2010059368 South Vacuum #275**, thank you. This Workplan/Remediation proposal is approved with the following conditions:

- The OCD will need a signed/dated C-141 Page 5 "Remediation Plan Page" to mark-up and sign. Your Remediation Plan will not be approved on the OCD website until we receive this.
- The OCD would prefer that the soil be excavated and the following procedure be followed if rock refusal is encountered:
    a) If rock refusal interferes with the remediation process, use a back-hoe/track-hoe to remove the rock
    b) If the rock is immovable and target depth cannot be reached, use a hydrovac to clean the contaminated soil off of the rock surface and outline specific locations and steps taken on the Closure Report
    c) Use a rotary drill to drill a 18"-24" hole into the rock, pull sample to ensure contaminants haven't permeated deep through the rock surface
    d) layer the cleaned rock with Micro-Blaze or liquid with microbial strains, surfactants and nutrients designed to digest organics and hydrocarbons
    e) Back-fill with clean material
- All off pad areas must contain a minimum of 4 feet non-waste containing uncontaminated, earthen material with chloride concentrations less than 600 mg/kg. In the pasture area, 4 feet below the ground surface, soil contamination limits revert back to Table 1 "Closure Criteria for Soils Impacted by a Release" included in the spill rule. Surface to 4' below ground surface sidewall/floor samples need to comply with the strictest closure criteria limits (600 mg/kg, Chlorides, 100 mg/kg TPH, etc.).

- All (floor/sidewall) closure samples on pad will need to meet closure criteria standards for depth to water of 51'-100' in Table 1 of the Spill Rule.
- Please have soil samples analyzed for all components in Table 1 of the spill rule. The current spill rule may be viewed here: http://164.64.110.134/parts/title19/19.015.0029.html

Robert J Hamlet
State of New Mexico
Energy, Minerals, and Natural Resources
Oil Conservation Division
811 S. First St., Artesia NM 88210
(575) 748-1283
Robert.Hamlet@state.nm.us

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

Natalie Gordon

From: Anthony Riggan <ariggan@catenares.com>
Sent: Thursday, September 24, 2020 2:17 PM
To: Natalie Gordon
Subject: FW: Remediation Conditional Approval - Catena Resources - South Vacuum #275 - (Incident #NRM2010059368)
Attachments: shallow sites.docx

FYI

Anthony Riggan, P.E.
Direct: (210) 428-6144
Cell: (713) 702-6817

From: Caitlin Hart <chart@catenares.com>
Sent: Thursday, September 24, 2020 3:12 PM
To: Anthony Riggan <ariggan@catenares.com>
Subject: FW: Remediation Conditional Approval - Catena Resources - South Vacuum #275 - (Incident #NRM2010059368)

CATENA RESOURCES

Caitlin Hart
Lease Analyst
18402 Hwy 281 N, Suite 258
San Antonio, TX 78259
Direct: (210) 907-7181

From: Mann, Ryan <rmann@slo.state.nm.us>
Sent: Thursday, September 24, 2020 3:11 PM
To: 'Hamlet, Robert, EMNRD' <Robert.Hamlet@state.nm.us>; Caitlin Hart <chart@catenares.com>
Cc: 'Bratcher, Mike, EMNRD' <mike.bratcher@state.nm.us>; 'Venegas, Victoria, EMNRD' <Victoria.Venegas@state.nm.us>; 'Eads, Cristina, EMNRD' <Cristina.Eads@state.nm.us>; SLO Spills <spills@slo.state.nm.us>
Subject: RE: Remediation Conditional Approval - Catena Resources - South Vacuum #275 - (Incident #NRM2010059368)

NMSLO agrees with NMOCD. Please inform if there is a variation from this plan. All of the off pad portion of the release will also need to be revegetated. An appropriate seed mixture if attached. Please let me know if you have any questions.

Ryan Mann
Remediation Specialist
Surface Resources
Office: (575)392-3697
Cell: (505)699-1989

New Mexico State Land Office
914 N. Linam Street
Hobbs, NM 88240
rmann@slo.state.nm.us
nmstatelands.org

**Due to the Coronavirus, State Land Office facilities are closed to the public until further notice. Business operations remain open and our staff can be reached at (505) 827–5760 or www.nmstatelands.org/contact.

……

From: Hamlet, Robert, EMNRD [mailto:Robert.Hamlet@state.nm.us]
Sent: Tuesday, September 22, 2020 3:12 PM
To: chart@catenares.com
Cc: Bratcher, Mike, EMNRD <mike.bratcher@state.nm.us>; Venegas, Victoria, EMNRD <Victoria.Venegas@state.nm.us>; Eads, Cristina, EMNRD <Cristina.Eads@state.nm.us>; SLO Spills <spills@slo.state.nm.us>
Subject: [EXTERNAL] Remediation Conditional Approval - Catena Resources - South Vacuum #275 - (Incident #NRM2010059368)

Caitlin,

We have received your Workplan/Remediation Proposal for **Incident #NRM2010059368 South Vacuum #275**, thank you. This Workplan/Remediation proposal is approved with the following conditions:

- The OCD will need a signed/dated C-141 Page 5 "Remediation Plan Page" to mark-up and sign. Your Remediation Plan will not be approved on the OCD website until we receive this.
- The OCD would prefer that the soil be excavated and the following procedure be followed if rock refusal is encountered:
    a) If rock refusal interferes with the remediation process, use a back-hoe/track-hoe to remove the rock
    b) If the rock is immovable and target depth cannot be reached, use a hydrovac to clean the contaminated soil off of the rock surface and outline specific locations and steps taken on the Closure Report
    c) Use a rotary drill to drill a 18"-24" hole into the rock, pull sample to ensure contaminants haven't permeated deep through the rock surface
    d) layer the cleaned rock with Micro-Blaze or liquid with microbial strains, surfactants and nutrients designed to digest organics and hydrocarbons
    e) Back-fill with clean material
- All off pad areas must contain a minimum of 4 feet non-waste containing uncontaminated, earthen material with chloride concentrations less than 600 mg/kg. In the pasture area, 4 feet below the ground surface, soil contamination limits revert back to Table 1 "Closure Criteria for Soils Impacted by a Release" included in the spill rule. Surface to 4' below ground surface sidewall/floor samples need to comply with the strictest closure criteria limits (600 mg/kg, Chlorides, 100 mg/kg TPH, etc.).
- All (floor/sidewall) closure samples on pad will need to meet closure criteria standards for depth to water of 51'-100' in Table 1 of the Spill Rule.

- Please have soil samples analyzed for all components in Table 1 of the spill rule. The current spill rule may be viewed here: http://164.64.110.134/parts/title19/19.015.0029.html

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

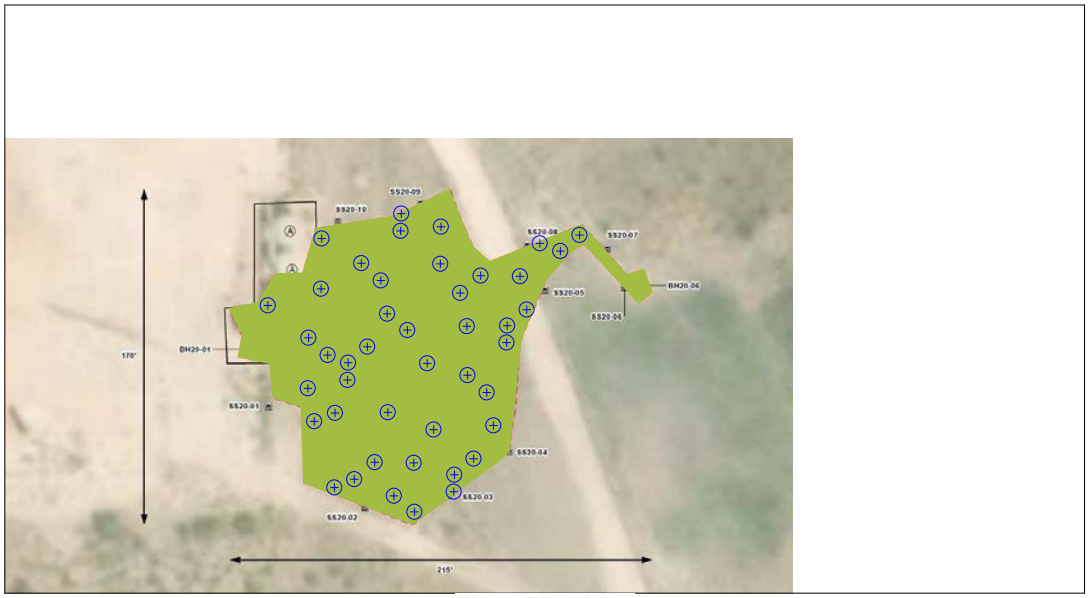
Sampling to Compute a Nonparametric (Distribution-Free) One-Sided Upper Tolerance Limit to Test that a Large Portion of Room Surfaces Does Not Contain Contamination

Summary

This report summarizes the sampling design developed by VSP based on inputs provided by the VSP user. The following table summarizes the sampling design developed by VSP. A figure that shows the sample placement on the map and a table that lists the sample locations are also provided below.

SUMMARY OF SAMPLING DESIGN	
Primary Objective of Design	Use a nonparametric (distribution-free) one-sided upper tolerance limit (UTL) to test if the true P^{th} percentile of a population exceeds the action level
Required fraction of the population to be less than the action level	0.9 (P=90)
Required percent confidence on the decision made using the UTL	99%
Method used to compute the number of samples, *n*	Hahn and Meeker (1991, page 169) (See equations below)
Sample placement method	Simple random point sampling
Calculated total number of samples	44
Number of samples on map [a]	44
Number of selected sample areas that are not rooms	1
Total sampling surface area [b]	17978.86 ft^2
Total cost of sampling [c]	$5,708.00

[a] This number may differ from the calculated number because of 1) grid edge effects, 2) adding judgment samples, or 3) selecting or unselecting sample areas (rooms).
[b] This is the total surface area of all selected rooms and other selected sample areas on the map of the site.
[c] Including measurement analyses and fixed overhead costs. See the Cost of Sampling section for an explanation of the costs presented here.



Floor Plan Map

Area: Area 1

X Coord	Y Coord	Label	Value	Type	Historical	Sample Area
-322.3678	-251.1862			Random		
-281.6677	-232.1210			Random		
-335.9345	-174.9255			Random		
-227.4009	-117.7300			Random		
-363.0680	-213.0558			Random		
-254.5343	-155.8603			Random		
-288.4511	-147.3869			Random		
-342.7179	-242.7127			Random		
-315.5845	-166.4521			Random		
-274.8844	-198.2273			Random		
-329.1512	-141.0318			Random		
-356.2846	-179.1622			Random		
-247.7509	-121.9667			Random		
-302.0178	-217.2925			Random		
-291.8427	-249.0678			Random		
-346.1096	-191.8723			Random		
-264.7093	-172.8071			Random		
-318.9762	-115.6116			Random		
-386.8097	-153.7419			Random		
-359.6763	-145.2685			Random		
-305.4094	-183.3989			Random		
-285.0594	-164.3337			Random		
-366.4596	-196.1090			Random		
-257.9260	-138.9135			Random		
-312.1928	-234.2393			Random		
-271.4927	-215.1742			Random		
-325.7595	-157.9787			Random		
-352.8929	-246.9494			Random		
-298.6261	-132.5584			Random		
-298.3081	-113.4933			Random		
-352.5750	-208.8191			Random		
-325.4415	-208.5053			Random		
-284.7414	-189.4401			Random		
-339.0082	-132.2446			Random		
-366.1417	-170.3749			Random		
-311.8748	-259.3457			Random		
-291.5248	-240.2806			Random		
-345.7916	-183.0850			Random		
-237.2579	-125.8895			Random		
-264.3914	-164.0199			Random		

-318.6582	-106.8244			Random			
-277.9581	-138.5997			Random			
-332.2249	-233.9255			Random			
-359.3583	-119.5345			Random			

Primary Sampling Objective
The primary objective of this sampling effort is to make a decision whether an unacceptably large portion (fraction) of a specified surface area (target population) is contaminated above a specified action level (AL) or is otherwise defective. It is presumed that suitable actions have been identified to be implemented for either way the decision may go.

Population Parameter of Interest
The population parameter of interest is the true P^{th} percentile of the population of contaminant concentrations, where $0 < P < 100$, in this case, the 90^{th} percentile ($P = 90$). The true P^{th} percentile is the value above which (100 - P)% of the population lies and below which P% of the population lies. The objective is to reject the null hypothesis if the true P^{th} percentile exceeds the specified action level (AL). But, the true P^{th} percentile will never be known with 100% confidence because all possible measurements from the population cannot be obtained. Hence the decision whether to reject the null hypothesis is made using the computed upper tolerance limit (UTL) for the P^{th} percentile, that is, by computing the upper 100(1-α)% confidence limit on the P^{th} percentile (see Decision Rule below). For the current design α is 0.01, which means that the decision will be made using the computed UTL for the 99% confidence limit on the 90^{th} percentile.

Hypothesis Being Tested
The null hypothesis (baseline assumption) is as follows:

H_o: The true P^{th} percentile $\leq$ AL
or equivalently,
H_o: Less than P% of the population < AL

The H_o is rejected if UTL < AL, in which case the alternative hypothesis (H_a) is accepted as being true, where:

H_a: More than P% of the population < AL

Sampling Design Options
VSP offers many options to determine the locations at which measurements are made or samples are collected and subsequently measured. For this design, simple random point sampling was chosen. Locating the sample points randomly provides data that are separated by varying distances, providing good information about the spatial structure of the potential contamination. Knowledge of the spatial structure is useful for geostatistical analysis. However, it may not ensure that all portions of the site are equally represented.

Decision Rule and Number of Samples, *n*
The null hypothesis is rejected and the alternative hypothesis is accepted if the nonparametric (distribution-free) UTL for the P^{th} percentile is less than the specified action level (AL). The nonparametric UTL is simply the maximum of the n measurements obtained from the population of interest, where n is computed using the following equation

$$n = \frac{\ln(\alpha)}{\ln(P/100)}$$

(from Hahn and Meeker 1991, page 169). These authors discuss the statistical meaning, use, and computation of nonparametric tolerance limits and the number of samples required (pages 91, 92,169, and 326).

The following table displays the values of the input parameters used for this design:

Parameter	Value
Input	
P	90
α	0.01 (1%)
Confidence (1-α)	99%

Output	
n	44

Statistical Assumptions

1. Representative measurements have been obtained from a defined target population using simple random sampling or a systematic grid pattern that has a randomly selected starting location.
2. The *n* measurements are statistically independent, i.e., there is no spatial correlation (no spatial patterns) of contaminant levels throughout the target population.
3. The maximum of the *n* measurements is not an invalid value, i.e., it is not a mistake or an unacceptably uncertain value due to faulty sample handling, transport, treatment, storage, or measurement.

Sensitivity Analysis

The sensitivity of the calculation of number of samples was explored by varying the required percent of the population to be less than the action level. and confidence level (1-α) (%). The following table shows the results of this analysis.

Number of Samples					
	CL=99	**CL=97**	**CL=95**	**CL=93**	**CL=91**
P=85	29	22	19	17	15
P=90	44	34	29	26	23
P=95	90	69	59	52	47

P = Required Percent of the Population to be Less Than the Action Level.
CL = Confidence Level (1-α) (%)

Cost of Sampling

The total cost of the completed sampling program depends on several cost inputs, some of which are fixed, and others that are based on the number of samples collected and measured. Based on the numbers of samples determined above, the estimated total cost of sampling and analysis at this site is $5,708.00, which averages out to a per sample cost of $129.73. The following table summarizes the inputs and resulting cost estimates.

COST INFORMATION			
Cost Details	**Per Analysis**	**Per Sample**	**44 Samples**
Field collection costs		$7.00	$308.00
Analytical costs (Analyte 1)	$100.00	$100.00	$4,400.00
Sum of Field & Analytical costs		**$107.00**	**$4,708.00**
Fixed planning and validation costs			$1,000.00
Total cost			**$5,708.00**

Recommended Data Analysis Activities

Post data collection activities generally follow those outlined in EPA's Guidance for Data Quality Assessment (EPA, 2000). The data analysts should become familiar with the context of the problem and goals for data collection and assessment. The *n* data should be verified and validated before being used to test the null hypothesis. The VSP user should enter the validated and verified *n* data values into the VSP dialog box and click on appropriate tabs to obtain the following statistical summaries of the data. If there is strong evidence that the *n* data are normally distributed, the VSP user may want to use VSP to determine the number of samples, *n*, required to compute the normal distribution UTL and then use that UTL (rather than the nonparametric UTL) to test the null hypothesis.

Summary statistics: *n*, minimum and maximum of the *n* measurements, range of the *n* data, mean, median, standard deviation, variance, skewness, percentiles, and the interquartile range

Statistical Tests of Normality Assumption: Shapiro-Wilk test (if $n \leq 50$) (Gilbert 1987), Lilliefors test (if $n > 50$) (EPA 2000).

Graphical Displays of the Data: Histogram, box-and-whisker plots and quantile-quantile (probability) plots (EPA 2000).

References

EPA. 2000. *Guidance for Data Quality Assessment, Practical Methods for Data Analysis*, EPA QA/G-9, EPA/600/R-96/084, July 2000, Office of Environmental Information, U.S. Environmental Protection Agency.

Gilbert, R.O. 1987. *Statistical Methods for Environmental Pollution Monitoring*, Wiley & Sons, New York, NY.

Hahn, G.J. and W.Q. Meeker. 1991. *Statistical Intervals*. Wiley & Sons, Inc, New York, NY.

A

ATTACHMENT 7

Client Name: Catena Resources Operating, LLC
Site Name: South Vacuum #275
NM OCD Incident Tracking Number: NRM2010059368
Project #: 20E-00893-001
Lab Report: 2004611

Table 2. Characterization Field Screen and Sampling Laboratory Data - Depth to Groundwater 50<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 (Quantab - High/Low)	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)	(+/-)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
BH20-01	0	April 8, 2020	-	-	**19,214**	-	-	-	-	-	-	-	-
BH20-01	0.5	April 8, 2020	-	-	**9,265**	-	-	-	-	-	-	-	-
BH20-01	1	April 8, 2020	-	-	**3,265**	-	-	-	-	-	-	-	-
BH20-01	1.25	April 8, 2020	-	-	**5,271**	<0.024	<0.216	<4.8	<9.4	<47	<14.2	<61.2	**5,900**
BH20-02	0	April 8, 2020	-	-	**28,650**	<0.012	<1.04	<23	62	<49	62	62	**52,000**
BH20-02	0.5	April 8, 2020	-	-	**16,415**	-	-	-	-	-	-	-	-
BH20-02	1	April 8, 2020	-	-	**19,974**	-	-	-	-	-	-	-	-
BH20-03	0	April 8, 2020	-	-	**28,563**	-	-	-	-	-	-	-	-
BH20-03	0.5	April 8, 2020	-	-	**25,189**	-	-	-	-	-	-	-	-
BH20-03	1	April 8, 2020	-	-	**11,388**	-	-	-	-	-	-	-	-
BH20-04	0	April 8, 2020	-	-	**28,529**	-	-	-	-	-	-	-	-
BH20-04	0.5	April 8, 2020	-	-	**14,894**	-	-	-	-	-	-	-	-
BH20-04	1	April 8, 2020	-	-	**17,717**	-	-	-	-	-	-	-	-
BH20-05	0	April 8, 2020	-	-	**28,758**	-	-	-	-	-	-	-	-
BH20-05	0.5	April 8, 2020	-	-	**19,010**	-	-	-	-	-	-	-	-
BH20-05	1	April 8, 2020	-	-		-	-	-	-	-	-	-	-
BH20-06	0	April 8, 2020	-	-	**2,692**	-	-	-	-	-	-	-	-
BH20-06	0.5	April 8, 2020	-	-	**762**	-	-	-	-	-	-	-	-
BH20-06	1	April 8, 2020	-	-	340	<0.025	<0.222	<4.9	<9.7	<49	<14.6	<63.6	380
SS20-01	0	April 8, 2020	-	-	<0	<0.023	<0.208	<4.6	<9.6	<48	<14.2	<60.2	150
SS20-01	0.5	April 8, 2020	-	-	<0	-	-	-	-	-	-	-	-
SS20-02	0	April 8, 2020	-	-	174	<0.025	<0.221	<4.9	<9.8	<49	<14.7	<63.7	340
SS20-02	0.5	April 8, 2020	-	-	145	-	-	-	-	-	-	-	-
SS20-03	0	April 8, 2020	-	-	<0	-	-	-	-	-	-	-	-
SS20-03	0.5	April 8, 2020	-	-	<0	-	-	-	-	-	-	-	-
SS20-04	0	April 8, 2020	-	-	<0	<0.024	<0.217	<4.8	<9.4	<47	<14.2	<61.2	190
SS20-04	0.5	April 8, 2020	-	-	223	-	-	-	-	-	-	-	-
SS20-05	0	April 8, 2020	-	-	<0	-	-	-	-	-	-	-	-
SS20-05	0.5	April 8, 2020	-	-	<0	-	-	-	-	-	-	-	-
SS20-06	0	April 8, 2020	-	-	280	-	-	-	-	-	-	-	-
SS20-06	0.5	April 8, 2020	-	-	384	-	-	-	-	-	-	-	-
SS20-07	0	April 8, 2020	-	-	<0	-	-	-	-	-	-	-	-
SS20-07	0.5	April 8, 2020	-	-	514	-	-	-	-	-	-	-	-
SS20-08	0	April 8, 2020	-	-	289	-	-	-	-	-	-	-	-
SS20-08	0.5	April 8, 2020	-	-	223	-	-	-	-	-	-	-	-
SS20-09	0	April 8, 2020	-	-	329	-	-	-	-	-	-	-	-
SS20-09	0.5	April 8, 2020	-	-	595	-	-	-	-	-	-	-	-
SS20-10	0	April 8, 2020	-	-	<0	<0.024	<0.216	<4.8	39	70	39	109	130
SS20-10	0.5	April 8, 2020	-	-	48	-	-	-	-	-	-	-	-

"-" indicates not sampled/analyzed

Bold and shaded indicates exceedance outside of applied action level

VERTEX

Client Name: Catena Resources Operating, LLC
Site Name: South Vacuum #275
NM OCD Incident Tracking Number: NMR2010059368
Project #: 20E-00893-001
Lab Report: 2101552

Table 3. Confirmatory Sampling Laboratory Results - Depth to Groundwater 50 < 100 feet

Sample Description			Petroleum Hydrocarbons							Inorganic
			Volatile		Extractable					
Sample ID	Depth (ft)	Sample Date	Benzene	BTEX (Total)	Gasoline Range Organics (GRO)	Diesel Range Organics (DRO)	Motor Oil Range Organics (MRO)	(GRO + DRO)	Total Petroleum Hydrocarbons (TPH)	Chloride
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
WS20-01	0-0.5	January 12, 2021	<0.023	<0.211	<4.7	<9.9	<49	<14.6	<63.6	<60
WS20-02	0-0.5	January 12, 2021	<0.025	<0.221	<4.9	<9.9	<50	<14.8	<64.8	<60
WS20-03	0-0.5	January 12, 2021	<0.023	<0.211	<4.7	<9.4	<47	<14.1	<61.1	<60
WS20-04	0-0.5	January 12, 2021	<0.024	<0.213	<4.7	<9.7	<49	<14.4	<63.4	<61
WS20-05	0-0.5	January 12, 2021	<0.025	<0.221	<4.9	<9.6	<48	<14.5	<62.5	<60
WS20-06	0-0.5	January 12, 2021	<0.024	<0.217	<4.8	<9.6	<48	<14.4	<62.4	<60
WS20-07	0-0.5	January 12, 2021	<0.025	<0.225	<5.0	<9.3	<47	<14.3	<61.3	<60
WS20-08	0-0.5	January 12, 2021	<0.024	<0.213	<4.7	<9.7	<48	<14.4	<62.4	<59
WS20-09	0-0.5	January 12, 2021	<0.025	<0.222	<4.9	<10.0	<50	<14.9	<64.9	<60
WS20-10	0-0.5	January 12, 2021	<0.025	<0.224	<5.0	<9.8	<49	<14.8	<63.8	<60
WS20-11	0-0.5	January 12, 2021	<0.025	<0.222	<4.9	<9.7	<49	<14.6	<63.6	<59
WS20-12	0-0.5	January 12, 2021	<0.024	<0.217	<4.8	<9.7	<49	<14.5	<63.5	<60
WS20-13	0-0.5	January 12, 2021	<0.023	<0.211	<4.7	<9.7	<48	<14.4	<62.4	<60
WS20-14	0-0.5	January 12, 2021	<0.025	<0.221	<4.9	<9.5	<48	<14.4	<62.4	77
WS20-15	0-0.5	January 12, 2021	<0.025	<0.224	<5.0	<9.6	<48	<14.6	<62.6	64
WS20-16	0-0.5	January 12, 2021	<0.023	<0.210	<4.7	<9.7	<49	<14.4	<63.4	<59
WS20-17	0-0.5	January 12, 2021	<0.023	<0.211	<4.7	<9.7	<48	<14.4	<62.4	<60
WS20-18	0-0.5	January 12, 2021	<0.025	<0.224	<5.0	<9.6	<48	<14.6	<62.6	<60
WS20-19	0-0.5	January 12, 2021	<0.025	<0.222	<4.9	<9.4	<47	<14.3	<61.3	<60
WS20-20	0-0.5	January 12, 2021	<0.025	<0.222	<4.9	<9.6	<48	<14.5	<62.5	<60
BS20-01	2	January 12, 2021	<0.024	<0.212	<4.7	<9.7	<48	<14.4	<62.4	450
BS20-02	0-0.5	January 12, 2021	<0.024	<0.216	<4.8	<9.8	<49	<14.6	<63.6	590
BS20-04	2	January 12, 2021	<0.024	<0.217	<4.8	<9.2	<46	<14.0	<60.0	510
BS20-05	0-0.5	January 12, 2021	<0.024	<0.219	<4.9	<10.0	<50	<14.9	<64.9	**630**
BS20-05	0.5'	January 29, 2021	<0.025	<0.221	<4.9	<10.0	<50	<14.9	<64.9	**<60**
BS20-06	0-0.5	January 12, 2021	<0.024	<0.213	<4.7	<9.9	<49	<14.6	<63.6	260
BS20-07	2	January 12, 2021	<0.025	<0.222	<4.9	<9.9	<49	<14.8	<63.8	340
BS20-08	0-0.5	January 12, 2021	<0.024	<0.213	7.1	<10.0	<50	7.1	7.1	310
BS20-09	2	January 12, 2021	<0.024	<0.215	<4.8	<9.9	<50	<14.7	<64.7	360
BS20-10	0-0.5	January 12, 2021	<0.024	<0.217	<4.8	<9.9	<49	<14.7	<63.7	480
BS20-11	2	January 12, 2021	<0.025	<0.224	<5.0	<9.6	<48	<14.6	<62.6	390
BS20-12	0-0.5	January 12, 2021	<0.024	<0.217	<4.8	<10.0	<50	<14.8	<64.8	420
BS20-13	2	January 12, 2021	<0.024	<0.216	<4.8	<9.6	<48	<14.4	<62.4	370
BS20-14	0-0.5	January 12, 2021	<0.024	<0.217	<4.8	<9.7	<48	<14.5	<62.5	380
BS20-15	0-0.5	January 12, 2021	<0.024	<0.212	<4.7	<9.3	<46	<14.0	<60.0	**640**
BS20-15	0.5	January 29, 2021	<0.025	<0.225	<5.0	<9.3	<46	<14.3	<60.3	**<61**
BS20-16	2	January 12, 2021	<0.025	<0.224	<5.0	<9.5	<48	<14.5	<62.5	280
BS20-17	0-0.5	January 12, 2021	<0.024	<0.217	<4.8	<9.5	<48	<14.3	<62.3	**630**
BS20-17	0.5	January 29, 2021	<0.025	<0.221	<4.9	<9.5	<47	<14.4	<61.4	**<61**
BS20-18	2	January 12, 2021	<0.025	<0.221	<4.9	<9.4	<47	<14.3	<61.3	260
BS20-19	0-0.5	January 12, 2021	<0.025	<0.221	<4.9	<9.7	<49	<14.6	<63.6	230
BS20-20	0-0.5	January 12, 2021	<0.024	<0.216	<4.8	<9.5	<47	<14.3	<61.3	**620**
BS20-20	0.5	January 29, 2021	<0.025	<0.224	<5.0	<9.4	<47	<14.4	<61.4	**<60**
BS20-21	2	January 12, 2021	<0.024	<0.213	<4.7	<9.7	<48	<14.4	<62.4	230
BS20-22	0-0.5	January 12, 2021	<0.024	<0.216	<4.8	<10.0	<50	<14.8	<64.8	220
BS20-23	0-0.5	January 12, 2021	<0.024	<0.219	<4.9	<9.8	<49	<14.7	<63.7	220
BS20-24	2	January 12, 2021	<0.025	<0.221	<4.9	<9.4	<47	<14.3	<61.3	340

"-" - Not applicable/assessed

Bold and grey shaded indicates exceedance outside of NM OCD Closure Criteria

Bold and green shaded indicates a re-sample of areas previously exceeding NM OCD closure criteria

VERTEX

ATTACHMENT 8

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 22, 2020

Natalie Gordon

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

RE: South Vacuum 275 OrderNo.: 2004611

Dear Natalie Gordon:

Hall Environmental Analysis Laboratory received 8 sample(s) on 4/14/2020 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 **2004611**
Date Reported: **4/22/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BH20-01 1.25'
Project: South Vacuum 275 **Collection Date:** 4/8/2020 8:45:00 AM
Lab ID: 2004611-001 **Matrix:** SOIL **Received Date:** 4/14/2020 8:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	4/18/2020 8:36:26 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	4/18/2020 8:36:26 AM
Surr: DNOP	94.6	55.1-146		%Rec	1	4/18/2020 8:36:26 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	5900	300		mg/Kg	100	4/18/2020 3:35:47 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**
Benzene	ND	0.024		mg/Kg	1	4/16/2020 9:56:40 PM
Toluene	ND	0.048		mg/Kg	1	4/16/2020 9:56:40 PM
Ethylbenzene	ND	0.048		mg/Kg	1	4/16/2020 9:56:40 PM
Xylenes, Total	ND	0.096		mg/Kg	1	4/16/2020 9:56:40 PM
Surr: 1,2-Dichloroethane-d4	96.4	70-130		%Rec	1	4/16/2020 9:56:40 PM
Surr: 4-Bromofluorobenzene	92.4	70-130		%Rec	1	4/16/2020 9:56:40 PM
Surr: Dibromofluoromethane	104	70-130		%Rec	1	4/16/2020 9:56:40 PM
Surr: Toluene-d8	94.5	70-130		%Rec	1	4/16/2020 9:56:40 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **DJF**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/16/2020 9:56:40 PM
Surr: BFB	98.1	70-130		%Rec	1	4/16/2020 9:56:40 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
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 **2004611**
Date Reported: **4/22/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BH20-02 0'
Project: South Vacuum 275 **Collection Date:** 4/8/2020 8:50:00 AM
Lab ID: 2004611-002 **Matrix:** SOIL **Received Date:** 4/14/2020 8:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**
Diesel Range Organics (DRO)	62	9.7		mg/Kg	1	4/18/2020 9:49:21 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	4/18/2020 9:49:21 AM
Surr: DNOP	95.9	55.1-146		%Rec	1	4/18/2020 9:49:21 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	52000	3000		mg/Kg	1000	4/18/2020 3:48:11 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**
Benzene	ND	0.12		mg/Kg	5	4/17/2020 1:46:51 AM
Toluene	ND	0.23		mg/Kg	5	4/17/2020 1:46:51 AM
Ethylbenzene	ND	0.23		mg/Kg	5	4/17/2020 1:46:51 AM
Xylenes, Total	ND	0.46		mg/Kg	5	4/17/2020 1:46:51 AM
Surr: 1,2-Dichloroethane-d4	100	70-130		%Rec	5	4/17/2020 1:46:51 AM
Surr: 4-Bromofluorobenzene	92.2	70-130		%Rec	5	4/17/2020 1:46:51 AM
Surr: Dibromofluoromethane	109	70-130		%Rec	5	4/17/2020 1:46:51 AM
Surr: Toluene-d8	96.2	70-130		%Rec	5	4/17/2020 1:46:51 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **DJF**
Gasoline Range Organics (GRO)	ND	23		mg/Kg	5	4/17/2020 1:46:51 AM
Surr: BFB	100	70-130		%Rec	5	4/17/2020 1:46:51 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2004611**
Date Reported: **4/22/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BH20-06 1'
Project: South Vacuum 275 **Collection Date:** 4/8/2020 10:00:00 AM
Lab ID: 2004611-003 **Matrix:** SOIL **Received Date:** 4/14/2020 8:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	4/18/2020 10:13:49 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	4/18/2020 10:13:49 AM
Surr: DNOP	91.9	55.1-146		%Rec	1	4/18/2020 10:13:49 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	380	61		mg/Kg	20	4/17/2020 9:14:57 AM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**
Benzene	ND	0.025		mg/Kg	1	4/17/2020 3:13:13 AM
Toluene	ND	0.049		mg/Kg	1	4/17/2020 3:13:13 AM
Ethylbenzene	ND	0.049		mg/Kg	1	4/17/2020 3:13:13 AM
Xylenes, Total	ND	0.099		mg/Kg	1	4/17/2020 3:13:13 AM
Surr: 1,2-Dichloroethane-d4	92.9	70-130		%Rec	1	4/17/2020 3:13:13 AM
Surr: 4-Bromofluorobenzene	91.5	70-130		%Rec	1	4/17/2020 3:13:13 AM
Surr: Dibromofluoromethane	104	70-130		%Rec	1	4/17/2020 3:13:13 AM
Surr: Toluene-d8	96.6	70-130		%Rec	1	4/17/2020 3:13:13 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **DJF**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/17/2020 3:13:13 AM
Surr: BFB	98.7	70-130		%Rec	1	4/17/2020 3:13:13 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2004611**
Date Reported: **4/22/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** SS20-01 0'
Project: South Vacuum 275 **Collection Date:** 4/8/2020 11:00:00 AM
Lab ID: 2004611-004 **Matrix:** SOIL **Received Date:** 4/14/2020 8:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	4/18/2020 10:38:16 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	4/18/2020 10:38:16 AM
Surr: DNOP	85.0	55.1-146		%Rec	1	4/18/2020 10:38:16 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	150	60		mg/Kg	20	4/17/2020 9:27:22 AM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**
Benzene	ND	0.023		mg/Kg	1	4/17/2020 3:41:59 AM
Toluene	ND	0.046		mg/Kg	1	4/17/2020 3:41:59 AM
Ethylbenzene	ND	0.046		mg/Kg	1	4/17/2020 3:41:59 AM
Xylenes, Total	ND	0.093		mg/Kg	1	4/17/2020 3:41:59 AM
Surr: 1,2-Dichloroethane-d4	94.0	70-130		%Rec	1	4/17/2020 3:41:59 AM
Surr: 4-Bromofluorobenzene	92.4	70-130		%Rec	1	4/17/2020 3:41:59 AM
Surr: Dibromofluoromethane	106	70-130		%Rec	1	4/17/2020 3:41:59 AM
Surr: Toluene-d8	96.6	70-130		%Rec	1	4/17/2020 3:41:59 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **DJF**
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	4/17/2020 3:41:59 AM
Surr: BFB	100	70-130		%Rec	1	4/17/2020 3:41:59 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2004611**
Date Reported: **4/22/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** SS20-02 0'
Project: South Vacuum 275 **Collection Date:** 4/8/2020 11:15:00 AM
Lab ID: 2004611-005 **Matrix:** SOIL **Received Date:** 4/14/2020 8:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	4/18/2020 11:02:47 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	4/18/2020 11:02:47 AM
Surr: DNOP	77.5	55.1-146		%Rec	1	4/18/2020 11:02:47 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	340	60		mg/Kg	20	4/17/2020 9:39:46 AM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**
Benzene	ND	0.025		mg/Kg	1	4/17/2020 4:10:44 AM
Toluene	ND	0.049		mg/Kg	1	4/17/2020 4:10:44 AM
Ethylbenzene	ND	0.049		mg/Kg	1	4/17/2020 4:10:44 AM
Xylenes, Total	ND	0.098		mg/Kg	1	4/17/2020 4:10:44 AM
Surr: 1,2-Dichloroethane-d4	91.7	70-130		%Rec	1	4/17/2020 4:10:44 AM
Surr: 4-Bromofluorobenzene	93.4	70-130		%Rec	1	4/17/2020 4:10:44 AM
Surr: Dibromofluoromethane	105	70-130		%Rec	1	4/17/2020 4:10:44 AM
Surr: Toluene-d8	96.4	70-130		%Rec	1	4/17/2020 4:10:44 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **DJF**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/17/2020 4:10:44 AM
Surr: BFB	99.8	70-130		%Rec	1	4/17/2020 4:10:44 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2004611**
Date Reported: **4/22/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** SS20-04 0'
Project: South Vacuum 275 **Collection Date:** 4/8/2020 11:45:00 AM
Lab ID: 2004611-006 **Matrix:** SOIL **Received Date:** 4/14/2020 8:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	4/18/2020 11:27:22 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	4/18/2020 11:27:22 AM
Surr: DNOP	82.0	55.1-146		%Rec	1	4/18/2020 11:27:22 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	190	60		mg/Kg	20	4/17/2020 9:52:10 AM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**
Benzene	ND	0.024		mg/Kg	1	4/17/2020 4:39:14 AM
Toluene	ND	0.048		mg/Kg	1	4/17/2020 4:39:14 AM
Ethylbenzene	ND	0.048		mg/Kg	1	4/17/2020 4:39:14 AM
Xylenes, Total	ND	0.097		mg/Kg	1	4/17/2020 4:39:14 AM
Surr: 1,2-Dichloroethane-d4	96.8	70-130		%Rec	1	4/17/2020 4:39:14 AM
Surr: 4-Bromofluorobenzene	95.0	70-130		%Rec	1	4/17/2020 4:39:14 AM
Surr: Dibromofluoromethane	104	70-130		%Rec	1	4/17/2020 4:39:14 AM
Surr: Toluene-d8	97.6	70-130		%Rec	1	4/17/2020 4:39:14 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **DJF**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/17/2020 4:39:14 AM
Surr: BFB	101	70-130		%Rec	1	4/17/2020 4:39:14 AM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
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 **2004611**
Date Reported: **4/22/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** SS20-07 0'
Project: South Vacuum 275 **Collection Date:** 4/8/2020 12:30:00 PM
Lab ID: 2004611-007 **Matrix:** SOIL **Received Date:** 4/14/2020 8:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**
Diesel Range Organics (DRO)	ND	9.1		mg/Kg	1	4/18/2020 11:51:43 AM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	4/18/2020 11:51:43 AM
Surr: DNOP	67.8	55.1-146		%Rec	1	4/18/2020 11:51:43 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	120	60		mg/Kg	20	4/17/2020 10:29:25 AM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**
Benzene	ND	0.023		mg/Kg	1	4/17/2020 5:07:48 AM
Toluene	ND	0.047		mg/Kg	1	4/17/2020 5:07:48 AM
Ethylbenzene	ND	0.047		mg/Kg	1	4/17/2020 5:07:48 AM
Xylenes, Total	ND	0.093		mg/Kg	1	4/17/2020 5:07:48 AM
Surr: 1,2-Dichloroethane-d4	93.7	70-130		%Rec	1	4/17/2020 5:07:48 AM
Surr: 4-Bromofluorobenzene	91.7	70-130		%Rec	1	4/17/2020 5:07:48 AM
Surr: Dibromofluoromethane	104	70-130		%Rec	1	4/17/2020 5:07:48 AM
Surr: Toluene-d8	95.1	70-130		%Rec	1	4/17/2020 5:07:48 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **DJF**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	4/17/2020 5:07:48 AM
Surr: BFB	98.0	70-130		%Rec	1	4/17/2020 5:07:48 AM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
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 **2004611**
Date Reported: **4/22/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** SS20-10 0'
Project: South Vacuum 275 **Collection Date:** 4/8/2020 1:15:00 PM
Lab ID: 2004611-008 **Matrix:** SOIL **Received Date:** 4/14/2020 8:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**
Diesel Range Organics (DRO)	39	9.4		mg/Kg	1	4/21/2020 5:31:01 AM
Motor Oil Range Organics (MRO)	70	47		mg/Kg	1	4/21/2020 5:31:01 AM
Surr: DNOP	84.4	55.1-146		%Rec	1	4/21/2020 5:31:01 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	130	60		mg/Kg	20	4/17/2020 10:41:50 AM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**
Benzene	ND	0.024		mg/Kg	1	4/17/2020 5:36:19 AM
Toluene	ND	0.048		mg/Kg	1	4/17/2020 5:36:19 AM
Ethylbenzene	ND	0.048		mg/Kg	1	4/17/2020 5:36:19 AM
Xylenes, Total	ND	0.096		mg/Kg	1	4/17/2020 5:36:19 AM
Surr: 1,2-Dichloroethane-d4	93.8	70-130		%Rec	1	4/17/2020 5:36:19 AM
Surr: 4-Bromofluorobenzene	90.0	70-130		%Rec	1	4/17/2020 5:36:19 AM
Surr: Dibromofluoromethane	103	70-130		%Rec	1	4/17/2020 5:36:19 AM
Surr: Toluene-d8	94.0	70-130		%Rec	1	4/17/2020 5:36:19 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **DJF**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/17/2020 5:36:19 AM
Surr: BFB	97.0	70-130		%Rec	1	4/17/2020 5:36:19 AM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	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#: **2004611**
22-Apr-20

Client: Vertex Resource Group Ltd.
Project: South Vacuum 275

Sample ID: **MB-51885**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBS**	Batch ID: **51885**	RunNo: **68218**							
Prep Date: **4/17/2020**	Analysis Date: **4/17/2020**	SeqNo: **2359103**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-51885**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSS**	Batch ID: **51885**	RunNo: **68218**							
Prep Date: **4/17/2020**	Analysis Date: **4/17/2020**	SeqNo: **2359104**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.8	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#: **2004611**

22-Apr-20

Client: Vertex Resource Group Ltd.

Project: South Vacuum 275

Sample ID: **2004611-001AMS** SampType: **MS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **BH20-01 1.25'** Batch ID: **51857** RunNo: **68198**
Prep Date: **4/16/2020** Analysis Date: **4/18/2020** SeqNo: **2358972** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	46	9.4	46.86	0	97.6	47.4	136			
Surr: DNOP	4.4		4.686		93.4	55.1	146			

Sample ID: **2004611-001AMSD** SampType: **MSD** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **BH20-01 1.25'** Batch ID: **51857** RunNo: **68198**
Prep Date: **4/16/2020** Analysis Date: **4/18/2020** SeqNo: **2358973** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	43	9.3	46.30	0	93.9	47.4	136	4.99	43.4	
Surr: DNOP	4.2		4.630		89.7	55.1	146	0	0	

Sample ID: **LCS-51857** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **51857** RunNo: **68198**
Prep Date: **4/16/2020** Analysis Date: **4/18/2020** SeqNo: **2358974** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	44	10	50.00	0	88.4	70	130			
Surr: DNOP	4.0		5.000		79.7	55.1	146			

Sample ID: **MB-51857** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **51857** RunNo: **68198**
Prep Date: **4/16/2020** Analysis Date: **4/18/2020** SeqNo: **2358975** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	8.8		10.00		88.1	55.1	146			

Sample ID: **LCS-51945** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **51945** RunNo: **68265**
Prep Date: **4/19/2020** Analysis Date: **4/20/2020** SeqNo: **2361902** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	3.7		5.000		73.6	55.1	146			

Sample ID: **MB-51945** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **51945** RunNo: **68265**
Prep Date: **4/19/2020** Analysis Date: **4/20/2020** SeqNo: **2361904** Units: **%Rec**

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

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2004611**
22-Apr-20

Client: Vertex Resource Group Ltd.
Project: South Vacuum 275

Sample ID: **MB-51945**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **51945**	RunNo: **68265**
Prep Date: **4/19/2020**	Analysis Date: **4/20/2020**	SeqNo: **2361904** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	7.4		10.00		74.4	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#: **2004611**
22-Apr-20

Client: Vertex Resource Group Ltd.
Project: South Vacuum 275

Sample ID: **mb-51835** SampType: **MBLK** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **PBS** Batch ID: **51835** RunNo: **68208**
Prep Date: **4/15/2020** Analysis Date: **4/16/2020** SeqNo: **2358447** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 1,2-Dichloroethane-d4	0.46		0.5000		92.6	70	130			
Surr: 4-Bromofluorobenzene	0.48		0.5000		96.6	70	130			
Surr: Dibromofluoromethane	0.50		0.5000		101	70	130			
Surr: Toluene-d8	0.48		0.5000		96.7	70	130			

Sample ID: **lcs-51835** SampType: **LCS4** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **BatchQC** Batch ID: **51835** RunNo: **68208**
Prep Date: **4/15/2020** Analysis Date: **4/16/2020** SeqNo: **2358448** 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	86.7	80	120			
Toluene	0.98	0.050	1.000	0	98.5	80	120			
Ethylbenzene	1.0	0.050	1.000	0	100	80	120			
Xylenes, Total	3.1	0.10	3.000	0	102	80	120			
Surr: 1,2-Dichloroethane-d4	0.47		0.5000		93.6	70	130			
Surr: Dibromofluoromethane	0.52		0.5000		103	70	130			
Surr: Toluene-d8	0.48		0.5000		96.8	70	130			

Sample ID: **2004611-002ams** SampType: **MS4** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **BH20-02 0'** Batch ID: **51835** RunNo: **68208**
Prep Date: **4/15/2020** Analysis Date: **4/17/2020** SeqNo: **2358451** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.99	0.12	0.9328	0	106	80	120			
Toluene	1.1	0.23	0.9328	0	120	80	120			
Ethylbenzene	1.1	0.23	0.9328	0	120	80	120			
Xylenes, Total	3.4	0.47	2.799	0	121	80	120			S
Surr: 1,2-Dichloroethane-d4	2.3		2.332		98.6	70	130			
Surr: Dibromofluoromethane	2.6		2.332		111	70	130			
Surr: Toluene-d8	2.2		2.332		94.1	70	130			

Sample ID: **2004611-002amsd** SampType: **MSD4** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **BH20-02 0'** Batch ID: **51835** RunNo: **68208**
Prep Date: **4/15/2020** Analysis Date: **4/17/2020** SeqNo: **2358452** Units: **mg/Kg**

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

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2004611**
22-Apr-20

Client: Vertex Resource Group Ltd.
Project: South Vacuum 275

Sample ID: **2004611-002amsd** SampType: **MSD4** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **BH20-02 0'** Batch ID: **51835** RunNo: **68208**
Prep Date: **4/15/2020** Analysis Date: **4/17/2020** SeqNo: **2358452** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.12	0.9785	0	107	80	120	5.86	20	
Toluene	1.2	0.24	0.9785	0	121	80	120	5.90	20	S
Ethylbenzene	1.2	0.24	0.9785	0	123	80	120	7.09	20	S
Xylenes, Total	3.7	0.49	2.935	0	126	80	120	8.68	20	S
Surr: 1,2-Dichloroethane-d4	2.4		2.446		97.5	70	130	0	0	
Surr: Dibromofluoromethane	2.7		0		0	0.5	70	0	130	
Surr: Toluene-d8	2.3		2.446		95.7	70	130	0	0	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2004611**

22-Apr-20

Client: Vertex Resource Group Ltd.

Project: South Vacuum 275

Sample ID: **mb-51835** SampType: **MBLK** TestCode: **EPA Method 8015D Mod: Gasoline Range**

Client ID: **PBS** Batch ID: **51835** RunNo: **68208**

Prep Date: **4/15/2020** Analysis Date: **4/16/2020** SeqNo: **2358490** 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	500		500.0		101	70	130			

Sample ID: **lcs-51835** SampType: **LCS** TestCode: **EPA Method 8015D Mod: Gasoline Range**

Client ID: **LCSS** Batch ID: **51835** RunNo: **68208**

Prep Date: **4/15/2020** Analysis Date: **4/16/2020** SeqNo: **2358491** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	5.0	25.00	0	86.8	70	130			
Surr: BFB	500		500.0		99.5	70	130			

Sample ID: **2004611-001ams** SampType: **MS** TestCode: **EPA Method 8015D Mod: Gasoline Range**

Client ID: **BH20-01 1.25'** Batch ID: **51835** RunNo: **68208**

Prep Date: **4/15/2020** Analysis Date: **4/16/2020** SeqNo: **2358493** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	4.8	24.20	0	99.4	70	130			
Surr: BFB	490		484.0		101	70	130			

Sample ID: **2004611-001amsd** SampType: **MSD** TestCode: **EPA Method 8015D Mod: Gasoline Range**

Client ID: **BH20-01 1.25'** Batch ID: **51835** RunNo: **68208**

Prep Date: **4/15/2020** Analysis Date: **4/16/2020** SeqNo: **2358494** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	4.8	24.06	0	101	70	130	0.859	20	
Surr: BFB	490		481.2		101	70	130	0	0	

Qualifiers:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: VERTEX CARLSBAD Work Order Number: 2004611 RcptNo: 1

Received By: **Juan Rojas** 4/14/2020 8:20:00 AM

Completed By: **John Caldwell** 4/14/2020 9:19:23 AM

Reviewed By: JR 4/14/20

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: DAD 4/14/20

Special Handling (if applicable)

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

Person Notified: _____ Date _____

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

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.4	Good				

Chain-of-Custody Record

Client: Vertex

Mailing Address: on File

Phone #:

email or Fax#:

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time: 5 Day
☑ Standard ☐ Rush

Project Name: South Vacuum #275

Project #: 20E-00893

Project Manager: Natalie Gordon

Sampler: MJP

On Ice: ☑ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 0.3+0.1=0.4 (°C)

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

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2004611	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)
4/8	8:45	Soil	BH20-01 1.25'	4 oz	Ice	-001	✓	✓					✓			
	8:50		BH20-02 0'			-002	✓	✓					✓			
	10:00		BH20-06 1'			-003	✓	✓					✓			
	11:00		SS20-01 0'			-004	✓	✓					✓			
	11:15		SS20-02 0'			-005	✓	✓					✓			
	11:45		SS20-04 0'			-006	✓	✓					✓			
	12:30		SS20-07 0'			-007	✓	✓					✓			
↓	1:15	↓	SS20-10 0'			-008	✓	✓					✓			

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
4/13/20	1300				4/13/20	1300
4/13/20	1900			courier	4/14/20	8:20

Remarks: CC: Natalie Gordon

Catena

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

January 22, 2021

Natalie Gordon

Vertex Resource Group Ltd.
3101 Boyd Drive
Carlsbad, NM 88220
TEL: (505) 506-0040
FAX

RE: South Vaccum 275 OrderNo.: 2101552

Dear Natalie Gordon:

Hall Environmental Analysis Laboratory received 44 sample(s) on 1/14/2021 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 **2101552**
Date Reported: **1/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** WS20-01 0-0.5
Project: South Vaccum 275 **Collection Date:** 1/12/2021 9:30:00 AM
Lab ID: 2101552-001 **Matrix:** SOIL **Received Date:** 1/14/2021 11:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	1/18/2021 7:41:10 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/18/2021 7:41:10 PM
Surr: DNOP	98.7	30.4-154		%Rec	1	1/18/2021 7:41:10 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	1/16/2021 11:53:57 AM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**
Benzene	ND	0.023		mg/Kg	1	1/15/2021 6:12:59 PM
Toluene	ND	0.047		mg/Kg	1	1/15/2021 6:12:59 PM
Ethylbenzene	ND	0.047		mg/Kg	1	1/15/2021 6:12:59 PM
Xylenes, Total	ND	0.094		mg/Kg	1	1/15/2021 6:12:59 PM
Surr: 1,2-Dichloroethane-d4	91.4	70-130		%Rec	1	1/15/2021 6:12:59 PM
Surr: 4-Bromofluorobenzene	98.3	70-130		%Rec	1	1/15/2021 6:12:59 PM
Surr: Dibromofluoromethane	110	70-130		%Rec	1	1/15/2021 6:12:59 PM
Surr: Toluene-d8	96.9	70-130		%Rec	1	1/15/2021 6:12:59 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **DJF**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	1/15/2021 6:12:59 PM
Surr: BFB	105	70-130		%Rec	1	1/15/2021 6:12:59 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
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 **2101552**
Date Reported: **1/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** WS20-02 0-0.5
Project: South Vaccum 275 **Collection Date:** 1/12/2021 9:35:00 AM
Lab ID: 2101552-002 **Matrix:** SOIL **Received Date:** 1/14/2021 11:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	1/18/2021 8:04:36 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	1/18/2021 8:04:36 PM
Surr: DNOP	100	30.4-154		%Rec	1	1/18/2021 8:04:36 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	1/16/2021 12:06:22 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**
Benzene	ND	0.025		mg/Kg	1	1/15/2021 6:41:50 PM
Toluene	ND	0.049		mg/Kg	1	1/15/2021 6:41:50 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/15/2021 6:41:50 PM
Xylenes, Total	ND	0.098		mg/Kg	1	1/15/2021 6:41:50 PM
Surr: 1,2-Dichloroethane-d4	96.3	70-130		%Rec	1	1/15/2021 6:41:50 PM
Surr: 4-Bromofluorobenzene	100	70-130		%Rec	1	1/15/2021 6:41:50 PM
Surr: Dibromofluoromethane	117	70-130		%Rec	1	1/15/2021 6:41:50 PM
Surr: Toluene-d8	98.1	70-130		%Rec	1	1/15/2021 6:41:50 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **DJF**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/15/2021 6:41:50 PM
Surr: BFB	108	70-130		%Rec	1	1/15/2021 6:41:50 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
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 **2101552**
Date Reported: **1/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** WS20-03 0-0.5
Project: South Vaccum 275 **Collection Date:** 1/12/2021 9:40:00 AM
Lab ID: 2101552-003 **Matrix:** SOIL **Received Date:** 1/14/2021 11:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	1/18/2021 8:28:03 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	1/18/2021 8:28:03 PM
Surr: DNOP	100	30.4-154		%Rec	1	1/18/2021 8:28:03 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	1/16/2021 12:18:46 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**
Benzene	ND	0.023		mg/Kg	1	1/15/2021 7:10:39 PM
Toluene	ND	0.047		mg/Kg	1	1/15/2021 7:10:39 PM
Ethylbenzene	ND	0.047		mg/Kg	1	1/15/2021 7:10:39 PM
Xylenes, Total	ND	0.094		mg/Kg	1	1/15/2021 7:10:39 PM
Surr: 1,2-Dichloroethane-d4	85.2	70-130		%Rec	1	1/15/2021 7:10:39 PM
Surr: 4-Bromofluorobenzene	101	70-130		%Rec	1	1/15/2021 7:10:39 PM
Surr: Dibromofluoromethane	114	70-130		%Rec	1	1/15/2021 7:10:39 PM
Surr: Toluene-d8	101	70-130		%Rec	1	1/15/2021 7:10:39 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **DJF**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	1/15/2021 7:10:39 PM
Surr: BFB	109	70-130		%Rec	1	1/15/2021 7:10:39 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
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 **2101552**
Date Reported: **1/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** WS20-04 0-0.5
Project: South Vaccum 275 **Collection Date:** 1/12/2021 9:45:00 AM
Lab ID: 2101552-004 **Matrix:** SOIL **Received Date:** 1/14/2021 11:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	1/18/2021 8:51:26 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/18/2021 8:51:26 PM
Surr: DNOP	100	30.4-154		%Rec	1	1/18/2021 8:51:26 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	1/16/2021 11:54:29 AM
Surr: BFB	104	75.3-105		%Rec	1	1/16/2021 11:54:29 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	1/16/2021 11:54:29 AM
Toluene	ND	0.047		mg/Kg	1	1/16/2021 11:54:29 AM
Ethylbenzene	ND	0.047		mg/Kg	1	1/16/2021 11:54:29 AM
Xylenes, Total	ND	0.095		mg/Kg	1	1/16/2021 11:54:29 AM
Surr: 4-Bromofluorobenzene	102	80-120		%Rec	1	1/16/2021 11:54:29 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	61		mg/Kg	20	1/16/2021 12:31:11 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	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 **2101552**
Date Reported: **1/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** WS20-05 0-0.5
Project: South Vaccum 275 **Collection Date:** 1/12/2021 9:50:00 AM
Lab ID: 2101552-005 **Matrix:** SOIL **Received Date:** 1/14/2021 11:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	1/18/2021 9:14:49 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/18/2021 9:14:49 PM
Surr: DNOP	98.6	30.4-154		%Rec	1	1/18/2021 9:14:49 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/16/2021 1:06:01 PM
Surr: BFB	110	75.3-105	S	%Rec	1	1/16/2021 1:06:01 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	1/16/2021 1:06:01 PM
Toluene	ND	0.049		mg/Kg	1	1/16/2021 1:06:01 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/16/2021 1:06:01 PM
Xylenes, Total	ND	0.098		mg/Kg	1	1/16/2021 1:06:01 PM
Surr: 4-Bromofluorobenzene	106	80-120		%Rec	1	1/16/2021 1:06:01 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	1/16/2021 1:08:24 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2101552**
Date Reported: **1/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** WS20-06 0-0.5
Project: South Vaccum 275 **Collection Date:** 1/12/2021 9:55:00 AM
Lab ID: 2101552-006 **Matrix:** SOIL **Received Date:** 1/14/2021 11:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	1/18/2021 9:38:11 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/18/2021 9:38:11 PM
Surr: DNOP	99.2	30.4-154		%Rec	1	1/18/2021 9:38:11 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/16/2021 2:18:15 PM
Surr: BFB	110	75.3-105	S	%Rec	1	1/16/2021 2:18:15 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	1/16/2021 2:18:15 PM
Toluene	ND	0.048		mg/Kg	1	1/16/2021 2:18:15 PM
Ethylbenzene	ND	0.048		mg/Kg	1	1/16/2021 2:18:15 PM
Xylenes, Total	ND	0.097		mg/Kg	1	1/16/2021 2:18:15 PM
Surr: 4-Bromofluorobenzene	106	80-120		%Rec	1	1/16/2021 2:18:15 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	1/16/2021 1:20:48 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2101552**
Date Reported: **1/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** WS20-07 0-0.5
Project: South Vaccum 275 **Collection Date:** 1/12/2021 10:00:00 AM
Lab ID: 2101552-007 **Matrix:** SOIL **Received Date:** 1/14/2021 11:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	1/18/2021 10:01:31 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	1/18/2021 10:01:31 PM
Surr: DNOP	101	30.4-154		%Rec	1	1/18/2021 10:01:31 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	1/16/2021 2:41:41 PM
Surr: BFB	104	75.3-105		%Rec	1	1/16/2021 2:41:41 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	1/16/2021 2:41:41 PM
Toluene	ND	0.050		mg/Kg	1	1/16/2021 2:41:41 PM
Ethylbenzene	ND	0.050		mg/Kg	1	1/16/2021 2:41:41 PM
Xylenes, Total	ND	0.10		mg/Kg	1	1/16/2021 2:41:41 PM
Surr: 4-Bromofluorobenzene	101	80-120		%Rec	1	1/16/2021 2:41:41 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	1/16/2021 1:33:12 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	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 **2101552**
Date Reported: **1/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** WS20-08 0-0.5
Project: South Vaccum 275 **Collection Date:** 1/12/2021 10:05:00 AM
Lab ID: 2101552-008 **Matrix:** SOIL **Received Date:** 1/14/2021 11:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	1/18/2021 10:24:55 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/18/2021 10:24:55 PM
Surr: DNOP	99.9	30.4-154		%Rec	1	1/18/2021 10:24:55 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	1/16/2021 3:04:55 PM
Surr: BFB	102	75.3-105		%Rec	1	1/16/2021 3:04:55 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	1/16/2021 3:04:55 PM
Toluene	ND	0.047		mg/Kg	1	1/16/2021 3:04:55 PM
Ethylbenzene	ND	0.047		mg/Kg	1	1/16/2021 3:04:55 PM
Xylenes, Total	ND	0.095		mg/Kg	1	1/16/2021 3:04:55 PM
Surr: 4-Bromofluorobenzene	101	80-120		%Rec	1	1/16/2021 3:04:55 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	59		mg/Kg	20	1/16/2021 1:45:36 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	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 **2101552**
Date Reported: **1/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** WS20-09 0-0.5
Project: South Vaccum 275 **Collection Date:** 1/12/2021 10:10:00 AM
Lab ID: 2101552-009 **Matrix:** SOIL **Received Date:** 1/14/2021 11:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	1/18/2021 10:48:16 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	1/18/2021 10:48:16 PM
Surr: DNOP	99.6	30.4-154		%Rec	1	1/18/2021 10:48:16 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/16/2021 3:28:18 PM
Surr: BFB	97.6	75.3-105		%Rec	1	1/16/2021 3:28:18 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	1/16/2021 3:28:18 PM
Toluene	ND	0.049		mg/Kg	1	1/16/2021 3:28:18 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/16/2021 3:28:18 PM
Xylenes, Total	ND	0.099		mg/Kg	1	1/16/2021 3:28:18 PM
Surr: 4-Bromofluorobenzene	95.9	80-120		%Rec	1	1/16/2021 3:28:18 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	1/16/2021 1:58:01 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	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 **2101552**
Date Reported: **1/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** WS20-10 0-0.5
Project: South Vaccum 275 **Collection Date:** 1/12/2021 10:15:00 AM
Lab ID: 2101552-010 **Matrix:** SOIL **Received Date:** 1/14/2021 11:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	1/18/2021 9:16:53 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/18/2021 9:16:53 PM
Surr: DNOP	109	30.4-154		%Rec	1	1/18/2021 9:16:53 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	1/16/2021 3:51:41 PM
Surr: BFB	102	75.3-105		%Rec	1	1/16/2021 3:51:41 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	1/16/2021 3:51:41 PM
Toluene	ND	0.050		mg/Kg	1	1/16/2021 3:51:41 PM
Ethylbenzene	ND	0.050		mg/Kg	1	1/16/2021 3:51:41 PM
Xylenes, Total	ND	0.099		mg/Kg	1	1/16/2021 3:51:41 PM
Surr: 4-Bromofluorobenzene	101	80-120		%Rec	1	1/16/2021 3:51:41 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	1/16/2021 2:10:26 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 **2101552**
Date Reported: **1/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** WS20-11 0-0.5
Project: South Vaccum 275 **Collection Date:** 1/12/2021 10:20:00 AM
Lab ID: 2101552-011 **Matrix:** SOIL **Received Date:** 1/14/2021 11:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	1/18/2021 10:53:04 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/18/2021 10:53:04 PM
Surr: DNOP	107	30.4-154		%Rec	1	1/18/2021 10:53:04 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/16/2021 4:15:07 PM
Surr: BFB	101	75.3-105		%Rec	1	1/16/2021 4:15:07 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	1/16/2021 4:15:07 PM
Toluene	ND	0.049		mg/Kg	1	1/16/2021 4:15:07 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/16/2021 4:15:07 PM
Xylenes, Total	ND	0.099		mg/Kg	1	1/16/2021 4:15:07 PM
Surr: 4-Bromofluorobenzene	99.9	80-120		%Rec	1	1/16/2021 4:15:07 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	59		mg/Kg	20	1/16/2021 2:22:50 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2101552**
Date Reported: **1/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** WS20-12 0-0.5
Project: South Vaccum 275 **Collection Date:** 1/12/2021 10:25:00 AM
Lab ID: 2101552-012 **Matrix:** SOIL **Received Date:** 1/14/2021 11:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	1/18/2021 11:16:55 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/18/2021 11:16:55 PM
Surr: DNOP	107	30.4-154		%Rec	1	1/18/2021 11:16:55 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/16/2021 5:25:34 PM
Surr: BFB	102	75.3-105		%Rec	1	1/16/2021 5:25:34 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	1/16/2021 5:25:34 PM
Toluene	ND	0.048		mg/Kg	1	1/16/2021 5:25:34 PM
Ethylbenzene	ND	0.048		mg/Kg	1	1/16/2021 5:25:34 PM
Xylenes, Total	ND	0.097		mg/Kg	1	1/16/2021 5:25:34 PM
Surr: 4-Bromofluorobenzene	99.5	80-120		%Rec	1	1/16/2021 5:25:34 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	1/18/2021 11:18:08 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2101552**
Date Reported: **1/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** WS20-13 0-0.5
Project: South Vaccum 275 **Collection Date:** 1/12/2021 10:30:00 AM
Lab ID: 2101552-013 **Matrix:** SOIL **Received Date:** 1/14/2021 11:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	1/18/2021 11:40:57 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/18/2021 11:40:57 PM
Surr: DNOP	107	30.4-154		%Rec	1	1/18/2021 11:40:57 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	1/16/2021 5:49:01 PM
Surr: BFB	104	75.3-105		%Rec	1	1/16/2021 5:49:01 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.023		mg/Kg	1	1/16/2021 5:49:01 PM
Toluene	ND	0.047		mg/Kg	1	1/16/2021 5:49:01 PM
Ethylbenzene	ND	0.047		mg/Kg	1	1/16/2021 5:49:01 PM
Xylenes, Total	ND	0.094		mg/Kg	1	1/16/2021 5:49:01 PM
Surr: 4-Bromofluorobenzene	102	80-120		%Rec	1	1/16/2021 5:49:01 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	1/18/2021 12:20:12 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	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 **2101552**
Date Reported: **1/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** WS20-14 0-0.5
Project: South Vaccum 275 **Collection Date:** 1/12/2021 10:35:00 AM
Lab ID: 2101552-014 **Matrix:** SOIL **Received Date:** 1/14/2021 11:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	1/19/2021 12:04:58 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/19/2021 12:04:58 AM
Surr: DNOP	107	30.4-154		%Rec	1	1/19/2021 12:04:58 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/16/2021 6:12:26 PM
Surr: BFB	104	75.3-105		%Rec	1	1/16/2021 6:12:26 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	1/16/2021 6:12:26 PM
Toluene	ND	0.049		mg/Kg	1	1/16/2021 6:12:26 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/16/2021 6:12:26 PM
Xylenes, Total	ND	0.098		mg/Kg	1	1/16/2021 6:12:26 PM
Surr: 4-Bromofluorobenzene	101	80-120		%Rec	1	1/16/2021 6:12:26 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	77	60		mg/Kg	20	1/18/2021 12:32:36 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	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 **2101552**
Date Reported: **1/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** WS20-15 0-0.5
Project: South Vaccum 275 **Collection Date:** 1/12/2021 10:40:00 AM
Lab ID: 2101552-015 **Matrix:** SOIL **Received Date:** 1/14/2021 11:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	1/19/2021 12:29:00 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/19/2021 12:29:00 AM
Surr: DNOP	109	30.4-154		%Rec	1	1/19/2021 12:29:00 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	1/16/2021 6:35:54 PM
Surr: BFB	102	75.3-105		%Rec	1	1/16/2021 6:35:54 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	1/16/2021 6:35:54 PM
Toluene	ND	0.050		mg/Kg	1	1/16/2021 6:35:54 PM
Ethylbenzene	ND	0.050		mg/Kg	1	1/16/2021 6:35:54 PM
Xylenes, Total	ND	0.099		mg/Kg	1	1/16/2021 6:35:54 PM
Surr: 4-Bromofluorobenzene	100	80-120		%Rec	1	1/16/2021 6:35:54 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	64	60		mg/Kg	20	1/18/2021 12:45:01 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	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 **2101552**
Date Reported: **1/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** WS20-16 0-0.5
Project: South Vaccum 275 **Collection Date:** 1/12/2021 10:45:00 AM
Lab ID: 2101552-016 **Matrix:** SOIL **Received Date:** 1/14/2021 11:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	1/19/2021 12:52:49 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/19/2021 12:52:49 AM
Surr: DNOP	108	30.4-154		%Rec	1	1/19/2021 12:52:49 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	1/16/2021 6:59:22 PM
Surr: BFB	101	75.3-105		%Rec	1	1/16/2021 6:59:22 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.023		mg/Kg	1	1/16/2021 6:59:22 PM
Toluene	ND	0.047		mg/Kg	1	1/16/2021 6:59:22 PM
Ethylbenzene	ND	0.047		mg/Kg	1	1/16/2021 6:59:22 PM
Xylenes, Total	ND	0.093		mg/Kg	1	1/16/2021 6:59:22 PM
Surr: 4-Bromofluorobenzene	102	80-120		%Rec	1	1/16/2021 6:59:22 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	59		mg/Kg	20	1/18/2021 12:57:25 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2101552**
Date Reported: **1/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** WS20-17 0-0.5
Project: South Vaccum 275 **Collection Date:** 1/12/2021 10:50:00 AM
Lab ID: 2101552-017 **Matrix:** SOIL **Received Date:** 1/14/2021 11:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	1/19/2021 1:16:53 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/19/2021 1:16:53 AM
Surr: DNOP	108	30.4-154		%Rec	1	1/19/2021 1:16:53 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	1/16/2021 7:22:31 PM
Surr: BFB	105	75.3-105		%Rec	1	1/16/2021 7:22:31 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.023		mg/Kg	1	1/16/2021 7:22:31 PM
Toluene	ND	0.047		mg/Kg	1	1/16/2021 7:22:31 PM
Ethylbenzene	ND	0.047		mg/Kg	1	1/16/2021 7:22:31 PM
Xylenes, Total	ND	0.094		mg/Kg	1	1/16/2021 7:22:31 PM
Surr: 4-Bromofluorobenzene	103	80-120		%Rec	1	1/16/2021 7:22:31 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	1/18/2021 1:09:50 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2101552**
Date Reported: **1/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** WS20-18 0-0.5
Project: South Vaccum 275 **Collection Date:** 1/12/2021 10:55:00 AM
Lab ID: 2101552-018 **Matrix:** SOIL **Received Date:** 1/14/2021 11:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	1/19/2021 1:40:51 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/19/2021 1:40:51 AM
Surr: DNOP	108	30.4-154		%Rec	1	1/19/2021 1:40:51 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	1/16/2021 7:45:57 PM
Surr: BFB	103	75.3-105		%Rec	1	1/16/2021 7:45:57 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	1/16/2021 7:45:57 PM
Toluene	ND	0.050		mg/Kg	1	1/16/2021 7:45:57 PM
Ethylbenzene	ND	0.050		mg/Kg	1	1/16/2021 7:45:57 PM
Xylenes, Total	ND	0.099		mg/Kg	1	1/16/2021 7:45:57 PM
Surr: 4-Bromofluorobenzene	101	80-120		%Rec	1	1/16/2021 7:45:57 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	1/18/2021 1:22:15 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	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 **2101552**
Date Reported: **1/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** WS20-19 0-0.5
Project: South Vaccum 275 **Collection Date:** 1/12/2021 11:00:00 AM
Lab ID: 2101552-019 **Matrix:** SOIL **Received Date:** 1/14/2021 11:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	1/19/2021 1:16:37 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	1/19/2021 1:16:37 PM
Surr: DNOP	96.1	30.4-154		%Rec	1	1/19/2021 1:16:37 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/16/2021 8:09:23 PM
Surr: BFB	102	75.3-105		%Rec	1	1/16/2021 8:09:23 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	1/16/2021 8:09:23 PM
Toluene	ND	0.049		mg/Kg	1	1/16/2021 8:09:23 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/16/2021 8:09:23 PM
Xylenes, Total	ND	0.099		mg/Kg	1	1/16/2021 8:09:23 PM
Surr: 4-Bromofluorobenzene	99.3	80-120		%Rec	1	1/16/2021 8:09:23 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	1/18/2021 1:34:40 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	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 **2101552**
Date Reported: **1/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** WS20-20 0-0.5
Project: South Vaccum 275 **Collection Date:** 1/12/2021 11:05:00 AM
Lab ID: 2101552-020 **Matrix:** SOIL **Received Date:** 1/14/2021 11:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	1/19/2021 2:28:47 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/19/2021 2:28:47 AM
Surr: DNOP	111	30.4-154		%Rec	1	1/19/2021 2:28:47 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/16/2021 8:32:37 PM
Surr: BFB	105	75.3-105		%Rec	1	1/16/2021 8:32:37 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	1/16/2021 8:32:37 PM
Toluene	ND	0.049		mg/Kg	1	1/16/2021 8:32:37 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/16/2021 8:32:37 PM
Xylenes, Total	ND	0.099		mg/Kg	1	1/16/2021 8:32:37 PM
Surr: 4-Bromofluorobenzene	102	80-120		%Rec	1	1/16/2021 8:32:37 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	1/18/2021 1:47:04 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2101552**
Date Reported: **1/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS20-01 2'
Project: South Vaccum 275 **Collection Date:** 1/12/2021 11:30:00 AM
Lab ID: 2101552-021 **Matrix:** SOIL **Received Date:** 1/14/2021 11:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	1/19/2021 2:52:45 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/19/2021 2:52:45 AM
Surr: DNOP	112	30.4-154		%Rec	1	1/19/2021 2:52:45 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	1/16/2021 8:56:06 PM
Surr: BFB	101	75.3-105		%Rec	1	1/16/2021 8:56:06 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	1/16/2021 8:56:06 PM
Toluene	ND	0.047		mg/Kg	1	1/16/2021 8:56:06 PM
Ethylbenzene	ND	0.047		mg/Kg	1	1/16/2021 8:56:06 PM
Xylenes, Total	ND	0.094		mg/Kg	1	1/16/2021 8:56:06 PM
Surr: 4-Bromofluorobenzene	101	80-120		%Rec	1	1/16/2021 8:56:06 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	450	60		mg/Kg	20	1/18/2021 1:59:28 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2101552**
Date Reported: **1/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS20-02 0-0.5
Project: South Vaccum 275 **Collection Date:** 1/12/2021 11:35:00 AM
Lab ID: 2101552-022 **Matrix:** SOIL **Received Date:** 1/14/2021 11:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	1/19/2021 3:16:40 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/19/2021 3:16:40 AM
Surr: DNOP	113	30.4-154		%Rec	1	1/19/2021 3:16:40 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/16/2021 11:16:42 PM
Surr: BFB	104	75.3-105		%Rec	1	1/16/2021 11:16:42 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	1/16/2021 11:16:42 PM
Toluene	ND	0.048		mg/Kg	1	1/16/2021 11:16:42 PM
Ethylbenzene	ND	0.048		mg/Kg	1	1/16/2021 11:16:42 PM
Xylenes, Total	ND	0.096		mg/Kg	1	1/16/2021 11:16:42 PM
Surr: 4-Bromofluorobenzene	102	80-120		%Rec	1	1/16/2021 11:16:42 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	590	60		mg/Kg	20	1/18/2021 2:11:53 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
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 **2101552**
Date Reported: **1/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS20-04 2'
Project: South Vaccum 275 **Collection Date:** 1/12/2021 11:45:00 AM
Lab ID: 2101552-024 **Matrix:** SOIL **Received Date:** 1/14/2021 11:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	1/19/2021 3:40:44 AM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	1/19/2021 3:40:44 AM
Surr: DNOP	132	30.4-154		%Rec	1	1/19/2021 3:40:44 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/16/2021 11:40:06 PM
Surr: BFB	102	75.3-105		%Rec	1	1/16/2021 11:40:06 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	1/16/2021 11:40:06 PM
Toluene	ND	0.048		mg/Kg	1	1/16/2021 11:40:06 PM
Ethylbenzene	ND	0.048		mg/Kg	1	1/16/2021 11:40:06 PM
Xylenes, Total	ND	0.097		mg/Kg	1	1/16/2021 11:40:06 PM
Surr: 4-Bromofluorobenzene	100	80-120		%Rec	1	1/16/2021 11:40:06 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	510	60		mg/Kg	20	1/18/2021 2:49:07 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2101552**
Date Reported: **1/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS20-05 0-0.5
Project: South Vaccum 275 **Collection Date:** 1/12/2021 11:50:00 AM
Lab ID: 2101552-025 **Matrix:** SOIL **Received Date:** 1/14/2021 11:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	1/19/2021 4:04:43 AM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	1/19/2021 4:04:43 AM
Surr: DNOP	111	30.4-154		%Rec	1	1/19/2021 4:04:43 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/17/2021 12:03:30 AM
Surr: BFB	101	75.3-105		%Rec	1	1/17/2021 12:03:30 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	1/17/2021 12:03:30 AM
Toluene	ND	0.049		mg/Kg	1	1/17/2021 12:03:30 AM
Ethylbenzene	ND	0.049		mg/Kg	1	1/17/2021 12:03:30 AM
Xylenes, Total	ND	0.097		mg/Kg	1	1/17/2021 12:03:30 AM
Surr: 4-Bromofluorobenzene	100	80-120		%Rec	1	1/17/2021 12:03:30 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	630	60		mg/Kg	20	1/18/2021 3:01:31 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	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 **2101552**
Date Reported: **1/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS20-06 0-0.5
Project: South Vaccum 275 **Collection Date:** 1/12/2021 11:55:00 AM
Lab ID: 2101552-026 **Matrix:** SOIL **Received Date:** 1/14/2021 11:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	1/19/2021 4:28:47 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/19/2021 4:28:47 AM
Surr: DNOP	115	30.4-154		%Rec	1	1/19/2021 4:28:47 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	1/17/2021 1:13:40 AM
Surr: BFB	103	75.3-105		%Rec	1	1/17/2021 1:13:40 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	1/17/2021 1:13:40 AM
Toluene	ND	0.047		mg/Kg	1	1/17/2021 1:13:40 AM
Ethylbenzene	ND	0.047		mg/Kg	1	1/17/2021 1:13:40 AM
Xylenes, Total	ND	0.095		mg/Kg	1	1/17/2021 1:13:40 AM
Surr: 4-Bromofluorobenzene	101	80-120		%Rec	1	1/17/2021 1:13:40 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	260	60		mg/Kg	20	1/18/2021 3:13:56 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
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 **2101552**
Date Reported: **1/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS20-07 2'
Project: South Vaccum 275 **Collection Date:** 1/12/2021 12:00:00 PM
Lab ID: 2101552-027 **Matrix:** SOIL **Received Date:** 1/14/2021 11:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	1/19/2021 4:52:44 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/19/2021 4:52:44 AM
Surr: DNOP	111	30.4-154		%Rec	1	1/19/2021 4:52:44 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/17/2021 2:23:44 AM
Surr: BFB	101	75.3-105		%Rec	1	1/17/2021 2:23:44 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	1/17/2021 2:23:44 AM
Toluene	ND	0.049		mg/Kg	1	1/17/2021 2:23:44 AM
Ethylbenzene	ND	0.049		mg/Kg	1	1/17/2021 2:23:44 AM
Xylenes, Total	ND	0.099		mg/Kg	1	1/17/2021 2:23:44 AM
Surr: 4-Bromofluorobenzene	101	80-120		%Rec	1	1/17/2021 2:23:44 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	340	59		mg/Kg	20	1/18/2021 3:26:20 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2101552**
Date Reported: **1/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS20-08 0-0.5
Project: South Vaccum 275 **Collection Date:** 1/12/2021 12:05:00 PM
Lab ID: 2101552-028 **Matrix:** SOIL **Received Date:** 1/14/2021 11:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	1/19/2021 5:16:42 AM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	1/19/2021 5:16:42 AM
Surr: DNOP	113	30.4-154		%Rec	1	1/19/2021 5:16:42 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	7.1	4.7		mg/Kg	1	1/17/2021 2:47:04 AM
Surr: BFB	106	75.3-105	S	%Rec	1	1/17/2021 2:47:04 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	1/17/2021 2:47:04 AM
Toluene	ND	0.047		mg/Kg	1	1/17/2021 2:47:04 AM
Ethylbenzene	ND	0.047		mg/Kg	1	1/17/2021 2:47:04 AM
Xylenes, Total	ND	0.095		mg/Kg	1	1/17/2021 2:47:04 AM
Surr: 4-Bromofluorobenzene	101	80-120		%Rec	1	1/17/2021 2:47:04 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	310	60		mg/Kg	20	1/18/2021 3:38:44 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2101552**
Date Reported: **1/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS20-09 2'
Project: South Vaccum 275 **Collection Date:** 1/12/2021 12:10:00 PM
Lab ID: 2101552-029 **Matrix:** SOIL **Received Date:** 1/14/2021 11:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	1/19/2021 5:40:42 AM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	1/19/2021 5:40:42 AM
Surr: DNOP	108	30.4-154		%Rec	1	1/19/2021 5:40:42 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/17/2021 3:10:26 AM
Surr: BFB	102	75.3-105		%Rec	1	1/17/2021 3:10:26 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	1/17/2021 3:10:26 AM
Toluene	ND	0.048		mg/Kg	1	1/17/2021 3:10:26 AM
Ethylbenzene	ND	0.048		mg/Kg	1	1/17/2021 3:10:26 AM
Xylenes, Total	ND	0.095		mg/Kg	1	1/17/2021 3:10:26 AM
Surr: 4-Bromofluorobenzene	100	80-120		%Rec	1	1/17/2021 3:10:26 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	360	61		mg/Kg	20	1/18/2021 3:51:08 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	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 **2101552**
Date Reported: **1/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS20-10 0-0.5
Project: South Vaccum 275 **Collection Date:** 1/12/2021 12:15:00 PM
Lab ID: 2101552-030 **Matrix:** SOIL **Received Date:** 1/14/2021 11:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	1/19/2021 6:04:48 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/19/2021 6:04:48 AM
Surr: DNOP	104	30.4-154		%Rec	1	1/19/2021 6:04:48 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/17/2021 3:33:48 AM
Surr: BFB	101	75.3-105		%Rec	1	1/17/2021 3:33:48 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	1/17/2021 3:33:48 AM
Toluene	ND	0.048		mg/Kg	1	1/17/2021 3:33:48 AM
Ethylbenzene	ND	0.048		mg/Kg	1	1/17/2021 3:33:48 AM
Xylenes, Total	ND	0.097		mg/Kg	1	1/17/2021 3:33:48 AM
Surr: 4-Bromofluorobenzene	99.5	80-120		%Rec	1	1/17/2021 3:33:48 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	480	60		mg/Kg	20	1/18/2021 4:03:33 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 **2101552**
Date Reported: **1/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS20-11 2'
Project: South Vaccum 275 **Collection Date:** 1/12/2021 12:20:00 PM
Lab ID: 2101552-031 **Matrix:** SOIL **Received Date:** 1/14/2021 11:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	1/19/2021 5:02:14 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/19/2021 5:02:14 PM
Surr: DNOP	110	30.4-154		%Rec	1	1/19/2021 5:02:14 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	1/17/2021 3:57:07 AM
Surr: BFB	102	75.3-105		%Rec	1	1/17/2021 3:57:07 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	1/17/2021 3:57:07 AM
Toluene	ND	0.050		mg/Kg	1	1/17/2021 3:57:07 AM
Ethylbenzene	ND	0.050		mg/Kg	1	1/17/2021 3:57:07 AM
Xylenes, Total	ND	0.099		mg/Kg	1	1/17/2021 3:57:07 AM
Surr: 4-Bromofluorobenzene	101	80-120		%Rec	1	1/17/2021 3:57:07 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	390	60		mg/Kg	20	1/18/2021 4:15:58 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	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 **2101552**
Date Reported: **1/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS20-12 0-0.5
Project: South Vaccum 275 **Collection Date:** 1/12/2021 12:25:00 PM
Lab ID: 2101552-032 **Matrix:** SOIL **Received Date:** 1/14/2021 11:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	1/20/2021 4:35:34 AM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	1/20/2021 4:35:34 AM
Surr: DNOP	128	30.4-154		%Rec	1	1/20/2021 4:35:34 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/17/2021 4:20:23 AM
Surr: BFB	101	75.3-105		%Rec	1	1/17/2021 4:20:23 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	1/17/2021 4:20:23 AM
Toluene	ND	0.048		mg/Kg	1	1/17/2021 4:20:23 AM
Ethylbenzene	ND	0.048		mg/Kg	1	1/17/2021 4:20:23 AM
Xylenes, Total	ND	0.097		mg/Kg	1	1/17/2021 4:20:23 AM
Surr: 4-Bromofluorobenzene	99.4	80-120		%Rec	1	1/17/2021 4:20:23 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	420	60		mg/Kg	20	1/18/2021 5:18:01 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	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 **2101552**
Date Reported: **1/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS20-13 2'
Project: South Vaccum 275 **Collection Date:** 1/12/2021 12:30:00 PM
Lab ID: 2101552-033 **Matrix:** SOIL **Received Date:** 1/14/2021 11:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	1/20/2021 5:47:24 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/20/2021 5:47:24 AM
Surr: DNOP	91.2	30.4-154		%Rec	1	1/20/2021 5:47:24 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/17/2021 5:30:18 AM
Surr: BFB	100	75.3-105		%Rec	1	1/17/2021 5:30:18 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	1/17/2021 5:30:18 AM
Toluene	ND	0.048		mg/Kg	1	1/17/2021 5:30:18 AM
Ethylbenzene	ND	0.048		mg/Kg	1	1/17/2021 5:30:18 AM
Xylenes, Total	ND	0.096		mg/Kg	1	1/17/2021 5:30:18 AM
Surr: 4-Bromofluorobenzene	100	80-120		%Rec	1	1/17/2021 5:30:18 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	370	60		mg/Kg	20	1/18/2021 5:30:25 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2101552**
Date Reported: **1/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS20-14 0-0.5
Project: South Vaccum 275 **Collection Date:** 1/12/2021 12:35:00 PM
Lab ID: 2101552-034 **Matrix:** SOIL **Received Date:** 1/14/2021 11:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	1/20/2021 6:11:28 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/20/2021 6:11:28 AM
Surr: DNOP	127	30.4-154		%Rec	1	1/20/2021 6:11:28 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/17/2021 5:53:37 AM
Surr: BFB	99.7	75.3-105		%Rec	1	1/17/2021 5:53:37 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	1/17/2021 5:53:37 AM
Toluene	ND	0.048		mg/Kg	1	1/17/2021 5:53:37 AM
Ethylbenzene	ND	0.048		mg/Kg	1	1/17/2021 5:53:37 AM
Xylenes, Total	ND	0.097		mg/Kg	1	1/17/2021 5:53:37 AM
Surr: 4-Bromofluorobenzene	100	80-120		%Rec	1	1/17/2021 5:53:37 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	380	60		mg/Kg	20	1/18/2021 5:42:50 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2101552**
Date Reported: **1/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS20-15 0-0.5
Project: South Vaccum 275 **Collection Date:** 1/12/2021 12:40:00 PM
Lab ID: 2101552-035 **Matrix:** SOIL **Received Date:** 1/14/2021 11:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	1/20/2021 6:35:25 AM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	1/20/2021 6:35:25 AM
Surr: DNOP	137	30.4-154		%Rec	1	1/20/2021 6:35:25 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	1/17/2021 6:16:51 AM
Surr: BFB	102	75.3-105		%Rec	1	1/17/2021 6:16:51 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	1/17/2021 6:16:51 AM
Toluene	ND	0.047		mg/Kg	1	1/17/2021 6:16:51 AM
Ethylbenzene	ND	0.047		mg/Kg	1	1/17/2021 6:16:51 AM
Xylenes, Total	ND	0.094		mg/Kg	1	1/17/2021 6:16:51 AM
Surr: 4-Bromofluorobenzene	100	80-120		%Rec	1	1/17/2021 6:16:51 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	640	59		mg/Kg	20	1/18/2021 5:55:14 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2101552**
Date Reported: **1/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS20-16 2'
Project: South Vaccum 275 **Collection Date:** 1/12/2021 12:45:00 PM
Lab ID: 2101552-036 **Matrix:** SOIL **Received Date:** 1/14/2021 11:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	1/20/2021 6:59:38 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/20/2021 6:59:38 AM
Surr: DNOP	129	30.4-154		%Rec	1	1/20/2021 6:59:38 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	1/17/2021 6:40:06 AM
Surr: BFB	100	75.3-105		%Rec	1	1/17/2021 6:40:06 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	1/17/2021 6:40:06 AM
Toluene	ND	0.050		mg/Kg	1	1/17/2021 6:40:06 AM
Ethylbenzene	ND	0.050		mg/Kg	1	1/17/2021 6:40:06 AM
Xylenes, Total	ND	0.099		mg/Kg	1	1/17/2021 6:40:06 AM
Surr: 4-Bromofluorobenzene	100	80-120		%Rec	1	1/17/2021 6:40:06 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	280	60		mg/Kg	20	1/18/2021 6:07:38 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	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 **2101552**
Date Reported: **1/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS20-17 0-0.5
Project: South Vaccum 275 **Collection Date:** 1/12/2021 12:50:00 PM
Lab ID: 2101552-037 **Matrix:** SOIL **Received Date:** 1/14/2021 11:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	1/20/2021 7:23:31 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/20/2021 7:23:31 AM
Surr: DNOP	149	30.4-154		%Rec	1	1/20/2021 7:23:31 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/17/2021 7:03:19 AM
Surr: BFB	101	75.3-105		%Rec	1	1/17/2021 7:03:19 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	1/17/2021 7:03:19 AM
Toluene	ND	0.048		mg/Kg	1	1/17/2021 7:03:19 AM
Ethylbenzene	ND	0.048		mg/Kg	1	1/17/2021 7:03:19 AM
Xylenes, Total	ND	0.097		mg/Kg	1	1/17/2021 7:03:19 AM
Surr: 4-Bromofluorobenzene	99.0	80-120		%Rec	1	1/17/2021 7:03:19 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	630	60		mg/Kg	20	1/18/2021 6:20:03 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2101552**
Date Reported: **1/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS20-18 2'
Project: South Vaccum 275 **Collection Date:** 1/12/2021 12:55:00 PM
Lab ID: 2101552-038 **Matrix:** SOIL **Received Date:** 1/14/2021 11:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	1/20/2021 7:47:35 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	1/20/2021 7:47:35 AM
Surr: DNOP	120	30.4-154		%Rec	1	1/20/2021 7:47:35 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/17/2021 7:26:29 AM
Surr: BFB	99.5	75.3-105		%Rec	1	1/17/2021 7:26:29 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	1/17/2021 7:26:29 AM
Toluene	ND	0.049		mg/Kg	1	1/17/2021 7:26:29 AM
Ethylbenzene	ND	0.049		mg/Kg	1	1/17/2021 7:26:29 AM
Xylenes, Total	ND	0.098		mg/Kg	1	1/17/2021 7:26:29 AM
Surr: 4-Bromofluorobenzene	99.7	80-120		%Rec	1	1/17/2021 7:26:29 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	260	60		mg/Kg	20	1/18/2021 6:32:28 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2101552**
Date Reported: **1/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS20-19 0-0.5
Project: South Vaccum 275 **Collection Date:** 1/12/2021 1:00:00 PM
Lab ID: 2101552-039 **Matrix:** SOIL **Received Date:** 1/14/2021 11:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	1/20/2021 8:11:31 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/20/2021 8:11:31 AM
Surr: DNOP	138	30.4-154		%Rec	1	1/20/2021 8:11:31 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/17/2021 7:49:40 AM
Surr: BFB	97.8	75.3-105		%Rec	1	1/17/2021 7:49:40 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	1/17/2021 7:49:40 AM
Toluene	ND	0.049		mg/Kg	1	1/17/2021 7:49:40 AM
Ethylbenzene	ND	0.049		mg/Kg	1	1/17/2021 7:49:40 AM
Xylenes, Total	ND	0.098		mg/Kg	1	1/17/2021 7:49:40 AM
Surr: 4-Bromofluorobenzene	97.8	80-120		%Rec	1	1/17/2021 7:49:40 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	230	60		mg/Kg	20	1/18/2021 6:44:53 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	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 **2101552**
Date Reported: **1/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS20-20 0-0.5
Project: South Vaccum 275 **Collection Date:** 1/12/2021 1:05:00 PM
Lab ID: 2101552-040 **Matrix:** SOIL **Received Date:** 1/14/2021 11:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	1/20/2021 8:35:34 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	1/20/2021 8:35:34 AM
Surr: DNOP	144	30.4-154		%Rec	1	1/20/2021 8:35:34 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/17/2021 8:12:55 AM
Surr: BFB	99.7	75.3-105		%Rec	1	1/17/2021 8:12:55 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	1/17/2021 8:12:55 AM
Toluene	ND	0.048		mg/Kg	1	1/17/2021 8:12:55 AM
Ethylbenzene	ND	0.048		mg/Kg	1	1/17/2021 8:12:55 AM
Xylenes, Total	ND	0.096		mg/Kg	1	1/17/2021 8:12:55 AM
Surr: 4-Bromofluorobenzene	98.9	80-120		%Rec	1	1/17/2021 8:12:55 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	620	60		mg/Kg	20	1/18/2021 6:57:18 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2101552**
Date Reported: **1/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS20-21 2'
Project: South Vaccum 275 **Collection Date:** 1/12/2021 1:10:00 PM
Lab ID: 2101552-041 **Matrix:** SOIL **Received Date:** 1/14/2021 11:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	1/20/2021 8:59:31 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/20/2021 8:59:31 AM
Surr: DNOP	145	30.4-154		%Rec	1	1/20/2021 8:59:31 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	1/17/2021 8:36:13 AM
Surr: BFB	98.9	75.3-105		%Rec	1	1/17/2021 8:36:13 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	1/17/2021 8:36:13 AM
Toluene	ND	0.047		mg/Kg	1	1/17/2021 8:36:13 AM
Ethylbenzene	ND	0.047		mg/Kg	1	1/17/2021 8:36:13 AM
Xylenes, Total	ND	0.095		mg/Kg	1	1/17/2021 8:36:13 AM
Surr: 4-Bromofluorobenzene	99.0	80-120		%Rec	1	1/17/2021 8:36:13 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	230	60		mg/Kg	20	1/18/2021 7:09:42 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	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 **2101552**
Date Reported: **1/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS20-22 0-0.5
Project: South Vaccum 275 **Collection Date:** 1/12/2021 1:15:00 PM
Lab ID: 2101552-042 **Matrix:** SOIL **Received Date:** 1/14/2021 11:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	1/20/2021 9:23:40 AM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	1/20/2021 9:23:40 AM
Surr: DNOP	113	30.4-154		%Rec	1	1/20/2021 9:23:40 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/17/2021 8:59:31 AM
Surr: BFB	99.4	75.3-105		%Rec	1	1/17/2021 8:59:31 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	1/17/2021 8:59:31 AM
Toluene	ND	0.048		mg/Kg	1	1/17/2021 8:59:31 AM
Ethylbenzene	ND	0.048		mg/Kg	1	1/17/2021 8:59:31 AM
Xylenes, Total	ND	0.096		mg/Kg	1	1/17/2021 8:59:31 AM
Surr: 4-Bromofluorobenzene	99.6	80-120		%Rec	1	1/17/2021 8:59:31 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	220	60		mg/Kg	20	1/18/2021 7:46:56 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	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 **2101552**
Date Reported: **1/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS20-23 0-0.5
Project: South Vaccum 275 **Collection Date:** 1/12/2021 1:20:00 PM
Lab ID: 2101552-043 **Matrix:** SOIL **Received Date:** 1/14/2021 11:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	1/20/2021 9:47:32 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/20/2021 9:47:32 AM
Surr: DNOP	134	30.4-154		%Rec	1	1/20/2021 9:47:32 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/17/2021 9:46:15 AM
Surr: BFB	104	75.3-105		%Rec	1	1/17/2021 9:46:15 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	1/17/2021 9:46:15 AM
Toluene	ND	0.049		mg/Kg	1	1/17/2021 9:46:15 AM
Ethylbenzene	ND	0.049		mg/Kg	1	1/17/2021 9:46:15 AM
Xylenes, Total	ND	0.097		mg/Kg	1	1/17/2021 9:46:15 AM
Surr: 4-Bromofluorobenzene	101	80-120		%Rec	1	1/17/2021 9:46:15 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	220	60		mg/Kg	20	1/18/2021 7:59:21 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2101552**
Date Reported: **1/22/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS20-24 2'
Project: South Vaccum 275 **Collection Date:** 1/12/2021 1:25:00 PM
Lab ID: 2101552-044 **Matrix:** SOIL **Received Date:** 1/14/2021 11:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	1/20/2021 10:11:39 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	1/20/2021 10:11:39 AM
Surr: DNOP	125	30.4-154		%Rec	1	1/20/2021 10:11:39 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/17/2021 10:09:40 AM
Surr: BFB	102	75.3-105		%Rec	1	1/17/2021 10:09:40 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	1/17/2021 10:09:40 AM
Toluene	ND	0.049		mg/Kg	1	1/17/2021 10:09:40 AM
Ethylbenzene	ND	0.049		mg/Kg	1	1/17/2021 10:09:40 AM
Xylenes, Total	ND	0.098		mg/Kg	1	1/17/2021 10:09:40 AM
Surr: 4-Bromofluorobenzene	101	80-120		%Rec	1	1/17/2021 10:09:40 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	340	60		mg/Kg	20	1/18/2021 8:11:46 PM

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2101552**

22-Jan-21

Client: Vertex Resource Group Ltd.

Project: South Vaccum 275

Sample ID: **MB-57571**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBS**	Batch ID: **57571**	RunNo: **74671**							
Prep Date: **1/15/2021**	Analysis Date: **1/16/2021**	SeqNo: **2635376**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-57571**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSS**	Batch ID: **57571**	RunNo: **74671**							
Prep Date: **1/15/2021**	Analysis Date: **1/16/2021**	SeqNo: **2635377**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.1	90	110			

Sample ID: **MB-57581**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBS**	Batch ID: **57581**	RunNo: **74690**							
Prep Date: **1/18/2021**	Analysis Date: **1/18/2021**	SeqNo: **2635996**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-57581**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSS**	Batch ID: **57581**	RunNo: **74690**							
Prep Date: **1/18/2021**	Analysis Date: **1/18/2021**	SeqNo: **2635997**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	96.0	90	110			

Sample ID: **MB-57587**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBS**	Batch ID: **57587**	RunNo: **74690**							
Prep Date: **1/18/2021**	Analysis Date: **1/18/2021**	SeqNo: **2636028**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-57587**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSS**	Batch ID: **57587**	RunNo: **74690**							
Prep Date: **1/18/2021**	Analysis Date: **1/18/2021**	SeqNo: **2636029**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.1	90	110			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2101552**

22-Jan-21

Client: Vertex Resource Group Ltd.

Project: South Vaccum 275

Sample ID: **MB-57580**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **57580**	RunNo: **74681**
Prep Date: **1/18/2021**	Analysis Date: **1/18/2021**	SeqNo: **2635829** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	9.4		10.00		94.0	30.4	154			

Sample ID: **LCS-57580**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **57580**	RunNo: **74681**
Prep Date: **1/18/2021**	Analysis Date: **1/18/2021**	SeqNo: **2635830** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.3		5.000		87.0	30.4	154			

Sample ID: **MB-57557**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **57557**	RunNo: **74681**
Prep Date: **1/15/2021**	Analysis Date: **1/18/2021**	SeqNo: **2636240** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.7		10.00		97.5	30.4	154			

Sample ID: **LCS-57557**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **57557**	RunNo: **74681**
Prep Date: **1/15/2021**	Analysis Date: **1/18/2021**	SeqNo: **2636241** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	45	10	50.00	0	89.9	68.9	141			
Surr: DNOP	4.4		5.000		88.6	30.4	154			

Sample ID: **2101552-010AMS**	SampType: **MS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **WS20-10 0-0.5**	Batch ID: **57562**	RunNo: **74682**
Prep Date: **1/15/2021**	Analysis Date: **1/18/2021**	SeqNo: **2636435** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	50	9.7	48.59	0	103	15	184			
Surr: DNOP	5.0		4.859		103	30.4	154			

Sample ID: **2101552-010AMSD**	SampType: **MSD**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **WS20-10 0-0.5**	Batch ID: **57562**	RunNo: **74682**
Prep Date: **1/15/2021**	Analysis Date: **1/18/2021**	SeqNo: **2636436** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	48	9.5	47.48	0	102	15	184	4.09	23.9	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2101552**

22-Jan-21

Client: Vertex Resource Group Ltd.

Project: South Vaccum 275

Sample ID: **2101552-010AMSD** SampType: **MSD** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **WS20-10 0-0.5** Batch ID: **57562** RunNo: **74682**
Prep Date: **1/15/2021** Analysis Date: **1/18/2021** SeqNo: **2636436** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	5.0		4.748		105	30.4	154	0	0	

Sample ID: **LCS-57562** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **57562** RunNo: **74682**
Prep Date: **1/15/2021** Analysis Date: **1/18/2021** SeqNo: **2636462** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	52	10	50.00	0	103	68.9	141			
Surr: DNOP	5.1		5.000		101	30.4	154			

Sample ID: **MB-57562** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **57562** RunNo: **74682**
Prep Date: **1/15/2021** Analysis Date: **1/18/2021** SeqNo: **2636463** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	11		10.00		112	30.4	154			

Sample ID: **MB-57593** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **57593** RunNo: **74697**
Prep Date: **1/18/2021** Analysis Date: **1/19/2021** SeqNo: **2637248** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	10		10.00		105	30.4	154			

Sample ID: **LCS-57593** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **57593** RunNo: **74697**
Prep Date: **1/18/2021** Analysis Date: **1/19/2021** SeqNo: **2637249** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	5.2		5.000		104	30.4	154			

Sample ID: **MB-57585** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **57585** RunNo: **74697**
Prep Date: **1/18/2021** Analysis Date: **1/19/2021** SeqNo: **2637290** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	12		10.00		116	30.4	154			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2101552**

22-Jan-21

Client: Vertex Resource Group Ltd.

Project: South Vaccum 275

Sample ID: **LCS-57585** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **57585** RunNo: **74697**
Prep Date: **1/18/2021** Analysis Date: **1/20/2021** SeqNo: **2637291** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	5.6		5.000		112	30.4	154			

Sample ID: **2101552-032AMS** SampType: **MS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **BS20-12 0-0.5** Batch ID: **57595** RunNo: **74729**
Prep Date: **1/18/2021** Analysis Date: **1/20/2021** SeqNo: **2637373** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	60	9.7	48.73	0	122	15	184			
Surr: DNOP	6.2		4.873		128	30.4	154			

Sample ID: **2101552-032AMSD** SampType: **MSD** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **BS20-12 0-0.5** Batch ID: **57595** RunNo: **74729**
Prep Date: **1/18/2021** Analysis Date: **1/20/2021** SeqNo: **2637374** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	55	9.8	48.83	0	114	15	184	7.23	23.9	
Surr: DNOP	5.7		4.883		118	30.4	154	0	0	

Sample ID: **LCS-57586** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **57586** RunNo: **74729**
Prep Date: **1/18/2021** Analysis Date: **1/19/2021** SeqNo: **2637434** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	57	10	50.00	0	114	68.9	141			
Surr: DNOP	5.7		5.000		114	30.4	154			

Sample ID: **LCS-57592** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **57592** RunNo: **74729**
Prep Date: **1/18/2021** Analysis Date: **1/19/2021** SeqNo: **2637435** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	6.3		5.000		125	30.4	154			

Sample ID: **LCS-57595** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **57595** RunNo: **74729**
Prep Date: **1/18/2021** Analysis Date: **1/20/2021** SeqNo: **2637436** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	68	10	50.00	0	136	68.9	141			
Surr: DNOP	6.6		5.000		133	30.4	154			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2101552**
22-Jan-21

Client: Vertex Resource Group Ltd.
Project: South Vaccum 275

Sample ID: **MB-57586**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **57586**	RunNo: **74729**
Prep Date: **1/18/2021**	Analysis Date: **1/19/2021**	SeqNo: **2637437** 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	13		10.00		134	30.4	154			

Sample ID: **MB-57592**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **57592**	RunNo: **74729**
Prep Date: **1/18/2021**	Analysis Date: **1/19/2021**	SeqNo: **2637438** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	14		10.00		144	30.4	154			

Sample ID: **MB-57595**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **57595**	RunNo: **74729**
Prep Date: **1/18/2021**	Analysis Date: **1/20/2021**	SeqNo: **2637439** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	11		10.00		109	30.4	154			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2101552**
22-Jan-21

Client: Vertex Resource Group Ltd.
Project: South Vaccum 275

Sample ID: **mb-57548** SampType: **MBLK** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS** Batch ID: **57548** RunNo: **74674**
Prep Date: **1/14/2021** Analysis Date: **1/16/2021** SeqNo: **2635498** 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		104	75.3	105			

Sample ID: **lcs-57548** SampType: **LCS** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS** Batch ID: **57548** RunNo: **74674**
Prep Date: **1/14/2021** Analysis Date: **1/16/2021** SeqNo: **2635499** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	5.0	25.00	0	104	80	120			
Surr: BFB	1200		1000		118	75.3	105			S

Sample ID: **2101552-004ams** SampType: **MS** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **WS20-04 0-0.5** Batch ID: **57548** RunNo: **74674**
Prep Date: **1/14/2021** Analysis Date: **1/16/2021** SeqNo: **2635501** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	28	5.0	24.95	0	111	61.3	114			
Surr: BFB	1200		998.0		117	75.3	105			S

Sample ID: **2101552-004amsd** SampType: **MSD** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **WS20-04 0-0.5** Batch ID: **57548** RunNo: **74674**
Prep Date: **1/14/2021** Analysis Date: **1/16/2021** SeqNo: **2635502** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	4.8	24.02	0	101	61.3	114	13.1	20	
Surr: BFB	1200		960.6		120	75.3	105	0	0	S

Sample ID: **mb-57551** SampType: **MBLK** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS** Batch ID: **57551** RunNo: **74674**
Prep Date: **1/14/2021** Analysis Date: **1/16/2021** SeqNo: **2635522** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	1000		1000		102	75.3	105			

Sample ID: **lcs-57551** SampType: **LCS** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS** Batch ID: **57551** RunNo: **74674**
Prep Date: **1/14/2021** Analysis Date: **1/16/2021** SeqNo: **2635523** Units: **mg/Kg**

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

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2101552**
22-Jan-21

Client: Vertex Resource Group Ltd.
Project: South Vaccum 275

Sample ID: **lcs-57551**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **57551**	RunNo: **74674**
Prep Date: **1/14/2021**	Analysis Date: **1/16/2021**	SeqNo: **2635523** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	25.00	0	95.0	80	120			
Surr: BFB	1100		1000		114	75.3	105			S

Sample ID: **2101552-025ams**	SampType: **MS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **BS20-05 0-0.5**	Batch ID: **57551**	RunNo: **74674**
Prep Date: **1/14/2021**	Analysis Date: **1/17/2021**	SeqNo: **2635525** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	4.9	24.46	0	97.2	61.3	114			
Surr: BFB	1100		978.5		115	75.3	105			S

Sample ID: **2101552-025amsd**	SampType: **MSD**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **BS20-05 0-0.5**	Batch ID: **57551**	RunNo: **74674**
Prep Date: **1/14/2021**	Analysis Date: **1/17/2021**	SeqNo: **2635526** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	4.8	24.22	0	95.4	61.3	114	2.84	20	
Surr: BFB	1100		969.0		115	75.3	105	0	0	S

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2101552**
22-Jan-21

Client: Vertex Resource Group Ltd.
Project: South Vaccum 275

Sample ID: **mb-57548** SampType: **MBLK** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS** Batch ID: **57548** RunNo: **74674**
Prep Date: **1/14/2021** Analysis Date: **1/16/2021** SeqNo: **2635554** 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-57548** SampType: **LCS** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS** Batch ID: **57548** RunNo: **74674**
Prep Date: **1/14/2021** Analysis Date: **1/16/2021** SeqNo: **2635555** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.96	0.025	1.000	0	96.0	80	120			
Toluene	0.99	0.050	1.000	0	98.6	80	120			
Ethylbenzene	0.99	0.050	1.000	0	98.7	80	120			
Xylenes, Total	3.0	0.10	3.000	0	99.2	80	120			
Surr: 4-Bromofluorobenzene	1.0		1.000		104	80	120			

Sample ID: **2101552-005ams** SampType: **MS** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **WS20-05 0-0.5** Batch ID: **57548** RunNo: **74674**
Prep Date: **1/14/2021** Analysis Date: **1/16/2021** SeqNo: **2635558** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.94	0.024	0.9461	0	98.9	76.3	120			
Toluene	0.98	0.047	0.9461	0	104	78.5	120			
Ethylbenzene	0.99	0.047	0.9461	0	105	78.1	124			
Xylenes, Total	3.0	0.095	2.838	0	105	79.3	125			
Surr: 4-Bromofluorobenzene	1.0		0.9461		109	80	120			

Sample ID: **2101552-005amsd** SampType: **MSD** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **WS20-05 0-0.5** Batch ID: **57548** RunNo: **74674**
Prep Date: **1/14/2021** Analysis Date: **1/16/2021** SeqNo: **2635559** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.95	0.024	0.9533	0	100	76.3	120	1.98	20	
Toluene	0.99	0.048	0.9533	0	104	78.5	120	0.789	20	
Ethylbenzene	0.99	0.048	0.9533	0	104	78.1	124	0.165	20	
Xylenes, Total	3.0	0.095	2.860	0	105	79.3	125	0.626	20	
Surr: 4-Bromofluorobenzene	1.0		0.9533		109	80	120	0	0	

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2101552**
22-Jan-21

Client: Vertex Resource Group Ltd.
Project: South Vaccum 275

Sample ID: **mb-57551**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **57551**	RunNo: **74674**
Prep Date: **1/14/2021**	Analysis Date: **1/16/2021**	SeqNo: **2635578** 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		101	80	120			

Sample ID: **LCS-57551**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **57551**	RunNo: **74674**
Prep Date: **1/14/2021**	Analysis Date: **1/16/2021**	SeqNo: **2635579** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.92	0.025	1.000	0	91.7	80	120			
Toluene	0.95	0.050	1.000	0	94.6	80	120			
Ethylbenzene	0.94	0.050	1.000	0	94.0	80	120			
Xylenes, Total	2.8	0.10	3.000	0	94.2	80	120			
Surr: 4-Bromofluorobenzene	1.0		1.000		104	80	120			

Sample ID: **2101552-026ams**	SampType: **MS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **BS20-06 0-0.5**	Batch ID: **57551**	RunNo: **74674**
Prep Date: **1/14/2021**	Analysis Date: **1/17/2021**	SeqNo: **2635582** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.91	0.024	0.9718	0	93.6	76.3	120			
Toluene	0.95	0.049	0.9718	0.009668	96.4	78.5	120			
Ethylbenzene	0.96	0.049	0.9718	0	98.7	78.1	124			
Xylenes, Total	2.9	0.097	2.915	0.01621	97.7	79.3	125			
Surr: 4-Bromofluorobenzene	0.98		0.9718		101	80	120			

Sample ID: **2101552-026amsd**	SampType: **MSD**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **BS20-06 0-0.5**	Batch ID: **57551**	RunNo: **74674**
Prep Date: **1/14/2021**	Analysis Date: **1/17/2021**	SeqNo: **2635583** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.87	0.024	0.9434	0	92.5	76.3	120	4.23	20	
Toluene	0.91	0.047	0.9434	0.009668	94.9	78.5	120	4.45	20	
Ethylbenzene	0.91	0.047	0.9434	0	96.9	78.1	124	4.76	20	
Xylenes, Total	2.7	0.094	2.830	0.01621	96.1	79.3	125	4.54	20	
Surr: 4-Bromofluorobenzene	0.98		0.9434		104	80	120	0	0	

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2101552**
22-Jan-21

Client: Vertex Resource Group Ltd.
Project: South Vaccum 275

Sample ID: **mb-57547** SampType: **MBLK** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **PBS** Batch ID: **57547** RunNo: **74667**
Prep Date: **1/14/2021** Analysis Date: **1/15/2021** SeqNo: **2635205** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 1,2-Dichloroethane-d4	0.48		0.5000		96.7	70	130			
Surr: 4-Bromofluorobenzene	0.49		0.5000		98.7	70	130			
Surr: Dibromofluoromethane	0.54		0.5000		109	70	130			
Surr: Toluene-d8	0.51		0.5000		102	70	130			

Sample ID: **lcs-57547** SampType: **LCS4** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **BatchQC** Batch ID: **57547** RunNo: **74667**
Prep Date: **1/14/2021** Analysis Date: **1/15/2021** SeqNo: **2635206** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.025	1.000	0	106	80	120			
Toluene	1.1	0.050	1.000	0	110	80	120			
Ethylbenzene	1.1	0.050	1.000	0	110	80	120			
Xylenes, Total	3.5	0.10	3.000	0	116	80	120			
Surr: 1,2-Dichloroethane-d4	0.46		0.5000		91.1	70	130			
Surr: 4-Bromofluorobenzene	0.50		0.5000		99.5	70	130			
Surr: Dibromofluoromethane	0.54		0.5000		109	70	130			
Surr: Toluene-d8	0.51		0.5000		101	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2101552**

22-Jan-21

Client: Vertex Resource Group Ltd.

Project: South Vaccum 275

Sample ID: **mb-57547**	SampType: **MBLK**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **PBS**	Batch ID: **57547**	RunNo: **74667**
Prep Date: **1/14/2021**	Analysis Date: **1/15/2021**	SeqNo: **2635228** 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	550		500.0		109	70	130			

Sample ID: **lcs-57547**	SampType: **LCS**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **LCSS**	Batch ID: **57547**	RunNo: **74667**
Prep Date: **1/14/2021**	Analysis Date: **1/15/2021**	SeqNo: **2635229** 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	91.0	70	130			
Surr: BFB	530		500.0		107	70	130			

Qualifiers:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: **Vertex Resource Group Ltd.** Work Order Number: **2101552** RcptNo: 1

Received By: **Juan Rojas** **1/14/2021 11:15:00 AM**

Completed By: **Sean Livingston** **1/14/2021 11:38:31 AM**

Reviewed By: ENM 1/14/21

Chain of Custody

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

Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA? Yes ☐ No ☐ NA ☑
10. Were any sample containers received broken? Yes ☐ No ☑ — IO
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: 1 (4) (<2 or >12 unless noted)
Adjusted?
Checked by:

Special Handling (if applicable)

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

Person Notified: Date:
By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:
Client Instructions:

16. Additional remarks: -023 soil jar was provided to the lab empty. -ENM 1/14/21

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.2	Good	Not Present			

Chain-of-Custody Record

Client: Vertex

Mailing Address:

Phone #:

email or Fax#:

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time: 5-day
☒ Standard ☐ Rush

Project Name: South Vacuum #275

Project #: 20E-00893

Project Manager: Natalie Gordon

Sampler: MJP / JR

On Ice: ☐ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 3.5-0.3=3.2 (°C)

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

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2101552	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
1-12	9:30		WS20-01 0-0.5	4oz	Ice	001										
	9:35		WS20-02 0-0.5			002										
	9:40		WS20-03 0-0.5			003										
	9:45		WS20-04 0-0.5			004										
	9:50		WS20-05 0-0.5			005										
	9:55		WS20-06 0-0.5			006										
	10:00		WS20-07 0-0.5			007										
	10:05		WS20-08 0-0.5			008										
	10:10		WS20-09 0-0.5			009										
	10:15		WS20-10 0-0.5			010										
	10:20		WS20-11 0-0.5			011										
	10:29		WS20-12 0-0.5			012										

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
			Acummings		1/13/21	1100
1/13/21	1900	Acummings		courier	1/14/21	11:15

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.

Chain-of-Custody Record

Client: Vertex

Mailing Address:

Phone #:

email or Fax#:

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time: 5-day
☒ Standard ☐ Rush

Project Name: South Vacuum #75

Project #: 20E-00893

Project Manager: Natalie Gordon

Sampler:

On Ice: ☒ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 3.5-0.3=3.2 (°C)

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

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.	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)
1-12	10:30		WS20-13 0-0.5	4oz	ice	013										
	10:35		WS20-14 0-0.5			014										
	10:40		WS20-15 0-0.5			015										
	10:45		WS20-16 0-0.5			016										
	10:50		WS20-17 0-0.5			017										
	10:55		WS20-18 0-0.5			018										
	11:00		WS20-19 0-0.5			019										
	11:05		WS20-20 0-0.5			020										
	11:30		BS20-01 2'			021										
	11:35		BS20-02 0-0.5			022										
	11:40		BS20-03 0-0.5			023										
	11:45		BS20-04 2'			024										

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
			A Cummings		1/13/21	1100
Date: 1/13/21	Time: 1900	Relinquished by: A Cummings	Received by:	Via: courier	Date 1/14/21	Time 11:15

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.

Chain-of-Custody Record

Client: Vertex

Mailing Address:

Phone #:

email or Fax#:

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time: 5-day
☒ Standard ☐ Rush

Project Name: South Vacuum #275

Project #: 20E-00893

Project Manager: Natalie Gordon

Sampler: MJP / JR

On Ice: ☒ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 3.5-0.3=3.2 (°C)

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

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.	BTEX / MTBE / TMB's (8021)	TPH 8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
1-12	11:50		BS20-05 0-0.5	4oz	Ice	025										
	11:55		BS20-06 0-0.5			026										
	12:00		BS20-07 2'			027										
	12:09		BS20-08 0-0.5			028										
	12:10		BS20-09 2'			029										
	12:15		BS20-10 0-0.5			030										
	12:20		BS20-11 2'			031										
	12:25		BS20-12 0-0.5			032										
	12:30		BS20-13 2'			033										
	12:35		BS20-14 0-0.5			034										
	12:40		BS20-15 0-0.5			035										
	12:45		BS20-16 2'			036										

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
			Alumnus		1/13/21	1100
1/13/21	1900	Alumnus		courier	1/14/21	11:15

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.

Chain-of-Custody Record

Client: Vertex

Mailing Address:

Phone #:

email or Fax#:

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

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

Project Name: South Vaccuum #275

Project #: 205-00893

Project Manager: Natalie Gordon

Sampler: MP/JP

On Ice: ☑ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 3.5-0.3=3.2 (°C)

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Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.	BTEX / MTBE / TMB's (8021)	TPH 8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
1-12	12:50		BS20-17 0-0.5	4oz	ice	037										
	12:55		BS20-18 2'			038										
	1:00		BS20-19 0-0.5			039										
	1:05		BS20-20 0-0.5			040										
	1:10		BS20-21 2'			041										
	1:15		BS20-22 0-0.5			042										
	1:20		BS20-23 0-0.5			043										
	1:25		BS20-24 2'			044										

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
					1/13/21	1100
Date: 1/13/21	Time: 1700	Relinquished by:	Received by:	Via:	Date	Time
				courier	1/14/21	11:15

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.

Analytical Report
Lab Order **2102069**
Date Reported:

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS20-05 0.5'
Project: South Vaccum 275 **Collection Date:** 1/29/2021 10:00:00 AM
Lab ID: 2102069-001 **Matrix:** SOIL **Received Date:** 2/2/2021 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	2/4/2021 3:18:50 AM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	2/4/2021 3:18:50 AM
Surr: DNOP	85.8	70-130		%Rec	1	2/4/2021 3:18:50 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	2/4/2021 11:35:11 PM
Surr: BFB	99.2	75.3-105		%Rec	1	2/4/2021 11:35:11 PM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	2/4/2021 11:35:11 PM
Toluene	ND	0.049		mg/Kg	1	2/4/2021 11:35:11 PM
Ethylbenzene	ND	0.049		mg/Kg	1	2/4/2021 11:35:11 PM
Xylenes, Total	ND	0.098		mg/Kg	1	2/4/2021 11:35:11 PM
Surr: 4-Bromofluorobenzene	99.6	80-120		%Rec	1	2/4/2021 11:35:11 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	2/5/2021 12:50:23 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	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 **2102069**
Date Reported:

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS20-15 0.5'
Project: South Vaccum 275 **Collection Date:** 1/29/2021 10:10:00 AM
Lab ID: 2102069-002 **Matrix:** SOIL **Received Date:** 2/2/2021 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **mb**
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	2/6/2021 1:44:44 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	2/6/2021 1:44:44 PM
Surr: DNOP	106	70-130		%Rec	1	2/6/2021 1:44:44 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	2/5/2021 12:45:04 AM
Surr: BFB	101	75.3-105		%Rec	1	2/5/2021 12:45:04 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	2/5/2021 12:45:04 AM
Toluene	ND	0.050		mg/Kg	1	2/5/2021 12:45:04 AM
Ethylbenzene	ND	0.050		mg/Kg	1	2/5/2021 12:45:04 AM
Xylenes, Total	ND	0.10		mg/Kg	1	2/5/2021 12:45:04 AM
Surr: 4-Bromofluorobenzene	102	80-120		%Rec	1	2/5/2021 12:45:04 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	61		mg/Kg	20	2/5/2021 1:02:48 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2102069**
Date Reported:

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS20-17 0.5'
Project: South Vaccum 275 **Collection Date:** 1/29/2021 10:20:00 AM
Lab ID: 2102069-003 **Matrix:** SOIL **Received Date:** 2/2/2021 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	2/4/2021 4:05:57 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	2/4/2021 4:05:57 AM
Surr: DNOP	79.4	70-130		%Rec	1	2/4/2021 4:05:57 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	2/5/2021 1:08:19 AM
Surr: BFB	99.9	75.3-105		%Rec	1	2/5/2021 1:08:19 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	2/5/2021 1:08:19 AM
Toluene	ND	0.049		mg/Kg	1	2/5/2021 1:08:19 AM
Ethylbenzene	ND	0.049		mg/Kg	1	2/5/2021 1:08:19 AM
Xylenes, Total	ND	0.098		mg/Kg	1	2/5/2021 1:08:19 AM
Surr: 4-Bromofluorobenzene	99.8	80-120		%Rec	1	2/5/2021 1:08:19 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	61		mg/Kg	20	2/5/2021 1:15:12 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix
E	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 **2102069**
Date Reported:

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS20-20 0.5'
Project: South Vaccum 275 **Collection Date:** 1/29/2021 10:30:00 AM
Lab ID: 2102069-004 **Matrix:** SOIL **Received Date:** 2/2/2021 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	2/4/2021 4:29:43 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	2/4/2021 4:29:43 AM
Surr: DNOP	88.2	70-130		%Rec	1	2/4/2021 4:29:43 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	2/5/2021 1:31:32 AM
Surr: BFB	99.2	75.3-105		%Rec	1	2/5/2021 1:31:32 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	2/5/2021 1:31:32 AM
Toluene	ND	0.050		mg/Kg	1	2/5/2021 1:31:32 AM
Ethylbenzene	ND	0.050		mg/Kg	1	2/5/2021 1:31:32 AM
Xylenes, Total	ND	0.099		mg/Kg	1	2/5/2021 1:31:32 AM
Surr: 4-Bromofluorobenzene	99.2	80-120		%Rec	1	2/5/2021 1:31:32 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	2/5/2021 1:27:37 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	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		

District I
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1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

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

CONDITIONS

Operator: Catena Resources Operating, LLC 919 Milam Houston, TX 77002	OGRID: 328449
	Action Number: 19123
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
chensley	None	5/28/2021