Incident Number: nAB1530148267

Release Assessment and Deferral

Shakespeare 20 Federal Com #001H

Unit P, Section 20, Township 16 South, Range 28 East

API: 30-015-36376

County: Eddy

Vertex File Number: 24E-02953

Prepared for:

Mack Energy Corporation

Prepared by:

Vertex Resource Services Inc.

Date:

November 2024

Release Assessment and Deferral
Shakespeare 20 Federal Com #001H
Unit P, Section 20, Township 16 South, Range 28 East
API: 30-015-36376
County: Eddy

Prepared for:
Mack Energy Corporation
P.O. Box 960
11344 Lovington Hwy
Artesia, New Mexico 88211-0960

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

Prepared by:
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Andrew Ludvik

Andrew Ludvik, B.Sc.
ENVIRONMENTAL TECHNICIAN, REPORTING

November 13, 2024
Date

Sally Carttar

Sally Carttar, B.A.
PROJECT MANAGER, REPORT REVIEW

November 13, 2024
Date

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1.0 Introduction

Mack Energy Corporation (Mack) retained Vertex Resource Services Inc. (Vertex) to conduct a Release Assessment and Closure for a produced water and crude oil release that occurred on October 18, 2015, at Shakespeare 20 Federal Com #001H API 30-015-36376 (hereafter referred to as the "site"). The original operator submitted an initial C-141 Release Notification (Appendix A) to New Mexico Oil Conservation Division (NMOCD) District 2 on October 27, 2015. Incident ID number nAB1530148267 was assigned to this incident.

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

2.0 Incident Description

The release occurred on October 18, 2015, due to a ruptured stuffing box seal. The incident was reported on October 27, 2015, and involved the release of approximately 4 barrels (bbl) of produced water and 1 bbl of crude oil on the pad site. Approximately 4 bbl of free fluid was removed during initial clean-up. Additional details relevant to the release are presented in the C-141 Report.

3.0 Site Characteristics

The site is located approximately 7.3 miles northeast of Riverside, New Mexico. The legal location for the site is Unit P, Section 20, Township 16 South and Range 28 East in Eddy County, New Mexico. The release area is located on Bureau of Land Management (BLM) property. An aerial photograph and site schematic are presented on Figure 1.

The location is typical of oil and gas exploration and production sites in the Permian Basin and is currently used for oil and gas production and storage. The following sections specifically describe the release area on the constructed pad around the wellhead and pumpjack (Figure 1).

The *Geological Map of New Mexico* (New Mexico Bureau of Geology and Mineral Resources, 2024) indicates the site's surface geology primarily comprises Qoa - Older alluvial deposits of upland plains and piedmont areas, and calcic soils and eolian cover sediments (New Mexico Bureau of Geology and Mineral Resources, 2024). The karst geology potential for the site is medium (United States Department of the Interior, Bureau of Land Management, 2018). The surrounding landscape is associated with plains and alluvial fans with elevations ranging between 3,000 and 4,200 feet. The climate is semiarid with average annual precipitation ranging between 10 and 16 inches. Predominant soil textures around the site are sandy loam and fine sandy loam underlaid by an indurated layer, resulting in well drained soils with high runoff class. Using information from the United States Department of Agriculture, the dominant vegetation was determined to be grasses interspersed with shrubs (United States Department of Agriculture, Natural Resources Conservation Service, 2024). Limited to no vegetation is allowed to grow on the compacted well and facility pad.

4.0 Closure Criteria Determination

The nearest active well to the site is a livestock water well 1,640 feet to the north (New Mexico Office of the State Engineer, 2024). There is no surface water present at the site. The nearest significant watercourse, as defined in Subsection P of 19.15.17.7 NMAC, is an intermittent stream located approximately 2,474 feet west of the site (United States Fish and Wildlife Service, 2024). At the site, there are no continuously flowing watercourses or significant watercourses, lakebeds, sinkholes, playa lakes or other critical water or community features as outlined in Paragraph (4) of Subsection C of 19.15.29.12 NMAC.

The nearest depth to groundwater (DTGW) reference to the site is a livestock water well drilled 13,638 feet (2.58 miles) west on September 13, 2016. The measured DTGW at the well was 55 feet below ground surface (bgs; New Mexico Office of the State Engineer, 2024). Information pertaining to the depth to groundwater determination is summarized in Table 1 and references are included in Appendix B. The DTGW reference was not within 0.5 miles of the release, therefore, the strictest criteria were used to determine constituent concentration thresholds.

Table 1. Closure Criteria Determination			
Site Name: Shakespeare 20 Federal Com #001H			
Spill Coordinates: 32.901477,-104.190534			
Site Specific Conditions		**Value**	**Unit**
1	Depth to Groundwater (nearest reference)	**55**	feet
	Distance between release and nearest DTGW reference	**13,638**	feet
		2.58	miles
	Date of nearest DTGW reference measurement	**September 13, 2016**	
2	Within 300 feet of any continuously flowing watercourse or any other significant watercourse	2,474	feet
3	Within 200 feet of any lakebed, sinkhole or playa lake (measured from the ordinary high-water mark)	11,256	feet
4	Within 300 feet from an occupied residence, school, hospital, institution or church	26,106	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**	1,640	feet
	ii) Within 1000 feet of any fresh water well or spring	1,640	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	1,362	feet
8	Within the area overlying a subsurface mine	No	(Y/N)
	Distance between release and nearest registered mine	**105,450**	feet
9	Within an unstable area (Karst Map)	Medium	Critical High Medium Low
	Distance between release and nearest High Karst	**1,463**	feet
10	Within a 100-year Floodplain	>500	year
	Distance between release and nearest FEMA Zone A (100-year Floodplain)	**3,687**	feet
11	Soil Type	Sandy loam and fine sandy loam	
12	Ecological Classification	Shallow Sandy	
13	Geology	Alluvial deposits, calcic soils, and eolian cover sediments	
	NMAC 19.15.29.12 E (Table 1) Closure Criteria	<50'	<50' 51-100' >100'

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

Table 2. Closure Criteria for Soils Impacted by a Release

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

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

5.0 Remedial Actions Taken

An initial characterization of the release area was completed by Talon/LPE on February 16, 2017, which identified the area of the release specified in the initial C-141 Report. On February 21, 2017, Talon/LPE submitted a Soil Assessment and Remediation Work Plan on behalf of the site operator at that time (Devon Energy Production Company, LP). The Soil Assessment and Remediation Work Plan submitted by Talon/LPE is included in Appendix F and associated correspondence with NMOCD is included in Appendix G. The remediation work plan was approved by NMOCD on March 29, 2017 with the requests cited below.

> *Your proposal for remediation of the above referenced release is approved. OCD requests the excavation extend to the area immediately around the well head, as practicable. Also, attempt to perform a more complete delineation for chloride impact in the excavated area. Field screens may be used for this purpose, with lab confirmation on the deepest sample obtained. Federal sites will require like approval from BLM. Please advise once remedial activities have been scheduled.*

Supplementary characterization was completed by Vertex personnel between June 6 and 8, 2024, including additional horizontal and vertical delineation. The revised area of impact was determined to cover approximately 855 square feet. The Daily Field Reports (DFRs) associated with the site visits are included in Appendix C. Characterization sample locations and approximate release areas are presented on Figure 1. Characterization field screening and laboratory results are summarized in Table 3.

Remediation efforts began on August 13, 2024, and were finalized on September 24, 2024. Vertex personnel supervised the excavation of impacted soils. Field screening was conducted and consisted of analysis using a Dexsil Petroflag using EPA SW-846 Method 9074 (extractable hydrocarbons) and silver nitrate titration (chloride). Field screening results were used to identify areas requiring further remediation.

Soils were removed to depths of 2 to 12 feet bgs. Impacted soil was transported by a licensed waste hauler and disposed of at an approved waste management facility. DFRs documenting various phases of the remediation are presented in Appendix C.

Notification that confirmation samples were being collected was provided to the NMOCD before each sampling event and are included in Appendix D. Confirmatory composite samples were collected from the base and walls of the excavation in increments no greater than 200 square feet. A total of 31 base and wall samples were collected for laboratory analysis following NMOCD soil sampling procedures. Samples were submitted to Eurofins Environment Testing in Albuquerque, New Mexico, under chain-of-custody protocols and analyzed for BTEX (EPA Method 8021B), total petroleum hydrocarbons (GRO, DRO, MRO – EPA Method 8015D) and total chlorides (EPA Method 300.0). Laboratory results are presented in Table 4, and the laboratory data reports are included in Appendix E. All confirmatory samples collected and analyzed outside the deferral area were below closure criteria for the site. Laboratory results for confirmation base sample BES24-12 exceeded NMOCD strictest criterion for Total Petroleum Hydrocarbons (TPH). Confirmation sample BES24-12 and the area it covers will be deferred until the reclamation of the pad.

6.0 Deferral Request

Vertex recommends no additional remediation action at this time to address the release at Shakespeare 20 Fedderal Com #001H until the equipment on-site is decommissioned and removed. Laboratory analyses of the final confirmatory samples collected outside the deferral area showed constituent of concern concentration levels below NMOCD closure criteria for areas where depth to groundwater is less than 50 feet bgs as shown in Table 2. Areas of release were remediated and backfilled with local soils. There are no anticipated or imminent risks to human, ecological, or hydrological receptors associated with the release site including the deferral area.

On behalf of Mack Energy Corporation, Vertex requests deferral of the portions of the release that are designated in proximity to equipment, specifically confirmation sample area BES24-12. The release and deferral area have been fully delineated with the understanding that should the deferral request be accepted, restoration of this portion of the release will be deferred until such time as all oil and gas activities are terminated and the site is reclaimed following remediation and reclamation activities as per NMAC 19.15.29.12 and 19.15.29.13. The proposed deferral area consists of approximately 89 square feet immediately surrounding the wellhead and associated equipment, as presented on Figure 2. Based on the results of delineation sampling, this area will be excavated to a depth of 4 feet bgs, and require the removal of approximately 16 cubic yards of soil following equipment and infrastructure. Well shutdown and partial deconstruction will be required to complete remediation of the release.

Vertex respectfully requests that the incident (nAB1530148267) be deferred until the production equipment is retired and removed prior to reclamation. Mack certifies that all information in this report and the attachments is correct, and that they have complied with all applicable closure requirements and conditions specified in Division rules and directives to meet NMOCD requirements to obtain deferral on the historical releases at the site.

Should you have any questions or concerns, please do not hesitate to contact Sally Carttar at 575.361.3561 or scarttar@vertexresource.com.

7.0 References

New Mexico Bureau of Geology and Mineral Resources. (2024). *Interactive Geologic Map*. Retrieved from https://maps.nmt.edu/

New Mexico Office of the State Engineer. (2024). *New Mexico Water Rights Reporting System*. Retrieved from http://nmwrrs.ose.state.nm.us/nmwrrs/

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

United States Department of Agriculture, Natural Resources Conservation Service. (2024). *Web Soil Survey*. Retrieved from https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

United States Department of Homeland Security, Federal Emergency Management Agency. (2024). *FEMA Flood Map Service: Search by Address*. Retrieved from https://msc.fema.gov/portal/search?AddressQuery=malaga%20new%20mexico#searchresultsanchor

United States Department of the Interior, Bureau of Land Management. (2018). *New Mexico Cave/Karst*. Retrieved from https://www.nm.blm.gov/shapeFiles/cfo/carlsbad_spatial_data.html

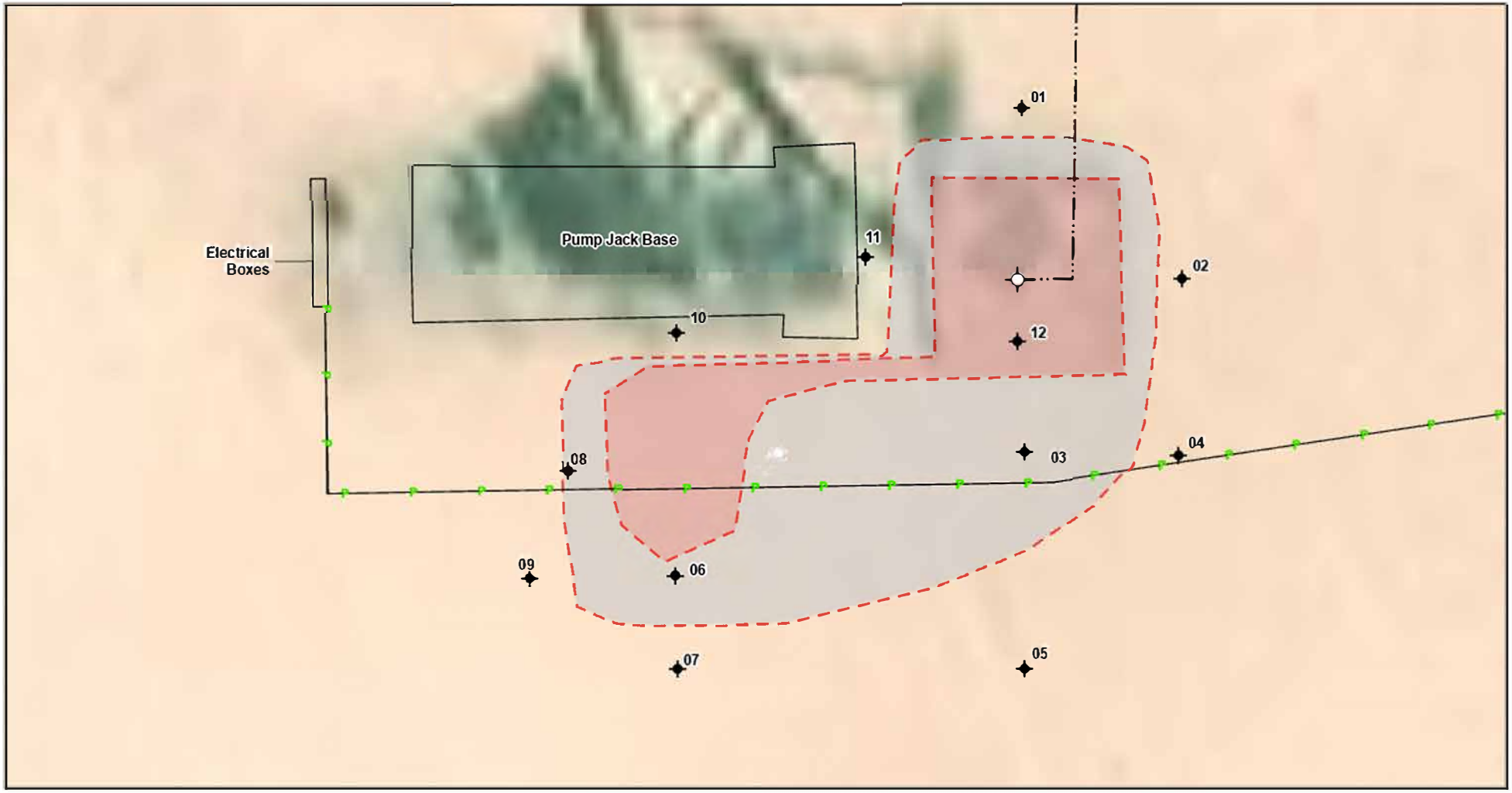
United States Fish and Wildlife Service. (2024). *National Wetland Inventory - Surface Waters and Wetlands*. Retrieved from https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/

8.0 Limitations

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

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

FIGURES



Borehole (Prefixed by "BH24-")

Well Centre

Flow Line (Underground)

Electrical Line (Underground)

Area of Impact (~855 sq ft)

Release Footprint from Talon/LPE Workplan (~299 sq.ft)

VERTEX

0 5 10 ft

NAD 1983 UTM Zone 13N

Date: Oct 31/24

Map Center:
Lat/Long
32.901469°,-104.190588°

N

Characterization Sampling Site Schematic
Shakespeare 20 Federa1 Com #001H

FIGURE:
1

MACK Energy Corporation

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

Note: Georeferenced image from Esri, 2023. Site features from GPS, Vertex Professional Services Ltd., 2024.

VERSATILITY. EXPERTISE.

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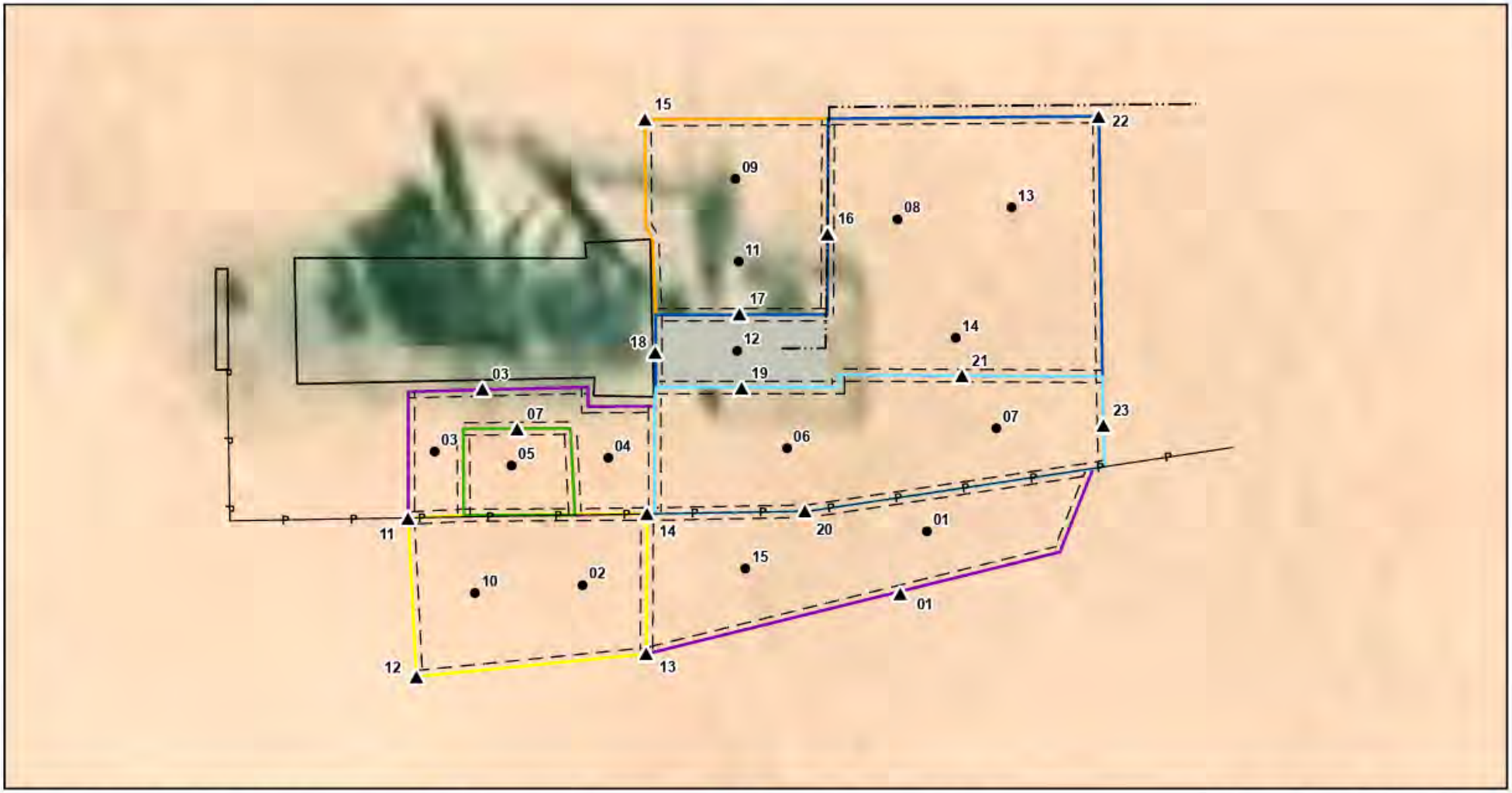

- Base Sample (Excavated) (Prefixed by "BES24-")
- Wall Sample (Excavated) (Prefixed by "WES24-")
- Electrical Line (underground)
- Flow Line (underground)
- Deferral Area (~89 sq.ft.)
- Excavation to 2' bgs (~452 sq.ft.)
- Excavation to 3' bgs (~587 sq.ft.)
- Excavation to 4' bgs (~67 sq.ft.)
- Excavation to 4.5' bgs (~370 sq.ft.)
- Excavation to 6' bgs (~247 sq.ft.)
- Excavation to 12' bgs (~249 sq.ft.)
- Infrastructure (Existing)

Area of Excavation Walls to 2' bgs (~154 sq.ft.)
Area of Excavation Walls to 3' bgs (~243 sq.ft.)
Area of Excavation Walls to 4' bgs (~48 sq.ft.)
Area of Excavation Walls to 4.5' bgs (~215 sq.ft.)
Area of Excavation Walls to 6' bgs (~288 sq.ft.)
Area of Excavation Walls to 12' bgs (~702 sq.ft.)

VERTEX

0 8 16 ft

NAD 1983 UTM Zone 13N

Date: Oct 31/24

Map Center:
Lat/Long
32.901479°,-104.190537°

N

Confirmation Sampling Location Schematic
Shakespeare 20 Fed Com #001H

FIGURE:
2

MACK Energy Corporation

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

Note: Georeferenced image from Esri, 2023. Site features from GPS, Vertex Professional Services Ltd., 2024.

VERSATILITY. EXPERTISE.

TABLES

Client Name: Mack Energy Corporation
Site Name: Shakespeare 20 Federal Com #001H
NMOCD Tracking #: nAB1530148267
Project #: 24E-02953
Lab Report: 885-5973-1

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

Sample Description			Field Screening			Petroleum Hydrocarbons							Inorganic
						Volatile		Extractable					
Sample ID	Depth (ft)	Sample Date	Volatile Organic Compounds (PID)	Extractable Organic Compounds (PetroFlag)	Chloride Concentration	Benzene	BTEX (Total)	Gasoline Range Organics (GRO)	Diesel Range Organics (DRO)	Motor Oil Range Organics (MRO)	(GRO + DRO)	Total Petroleum Hydrocarbons (TPH)	Chloride Concentration
			(ppm)	(ppm)	(ppm)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
BH24-01	0	June 6, 2024	0	50	380	ND	ND	ND	ND	ND	ND	ND	ND
	2	June 6, 2024	0	36	540	ND	ND	ND	ND	ND	ND	ND	210
BH24-02	0	June 6, 2024	0	67	510	ND	ND	ND	ND	ND	ND	ND	240
	2	June 6, 2024	0	42	483	ND	ND	ND	ND	ND	ND	ND	140
BH24-03	0	June 6, 2024	0	-	3,320	ND	ND	ND	21	ND	21	21	**2,400**
	2	June 6, 2024	0	40	598	ND	ND	ND	ND	ND	ND	ND	220
BH24-04	0	June 6, 2024	0	59	508	ND	ND	ND	ND	ND	ND	ND	210
	2	June 6, 2024	0	59	525	ND	ND	ND	ND	ND	ND	ND	180
BH24-05	0	June 6, 2024	0	82	500	ND	ND	ND	ND	ND	ND	ND	220
	2	June 6, 2024	0	76	533	ND	ND	ND	ND	ND	ND	ND	290
BH24-06	0	June 6, 2024	0	48	723	-	-	-	-	-	-	-	-
	2	June 6, 2024	0	45	1,075	-	-	-	-	-	-	-	-
BH24-07	0	June 7, 2024	0	51	553	ND	ND	ND	ND	ND	ND	ND	190
	2	June 7, 2024	0	50	538	ND	ND	ND	ND	ND	ND	ND	290
BH24-08	0	June 7, 2024	0	58	748	ND	ND	ND	ND	ND	ND	ND	360
	2	June 7, 2024	0	50	598	ND	ND	ND	ND	ND	ND	ND	230
BH24-09	0	June 7, 2024	0	55	598	ND	ND	ND	ND	ND	ND	ND	220
	2	June 7, 2024	0	47	590	ND	ND	ND	ND	ND	ND	ND	340
BH24-10	0	June 7, 2024	0	48	405	ND	ND	ND	ND	ND	ND	ND	ND
	2	June 7, 2024	0	30	243	ND	ND	ND	ND	ND	ND	ND	ND
BH24-11	0	June 7, 2024	0	99	250	ND	ND	ND	ND	ND	ND	ND	ND
	2	June 7, 2024	0	76	200	ND	ND	ND	ND	ND	ND	ND	ND
BH24-12	0	June 8, 2024	0	298	1,888	ND	ND	ND	63	ND	63	63	**1,100**
	2	June 8, 2024	1	931	598	ND	ND	ND	610	1,700	610	**2,310**	190
	4	June 8, 2024	0	72	450	ND	ND	ND	28	ND	28	28	77

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

Client Name: Mack Energy Corporation
Site Name: Shakespeare 20 Federal Com #001H
NMOCD Tracking #: nAB1530148267
Project #: 24E-02953
Lab Reports: 885-10039-1, 885-5973-1, 885-11432-1, and 885-12592-1

Table 4. Confirmation Sample Field Screen and Laboratory Results - Depth to Groundwater <50 feet bgs

Sample Description			Petroleum Hydrocarbons							Inorganic
			Volatile		Extractable					
Sample ID	Depth (ft)	Sample Date	Benzene	BTEX (Total)	Gasoline Range Organics (GRO)	Diesel Range Organics (DRO)	Motor Oil Range Organics (MRO)	(GRO + DRO)	Total Petroleum Hydrocarbons (TPH)	Chloride Concentration
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
BES24-01	2	August 14, 2024	ND	ND	ND	ND	ND	ND	ND	560
BES24-02	12	September 23, 2024	ND	ND	ND	ND	ND	ND	ND	73
BES24-03	2	August 13, 2024	ND	ND	ND	ND	ND	ND	ND	360
BES24-04	2	September 24, 2024	ND	ND	ND	ND	ND	ND	ND	200
BES24-05	4	August 13, 2024	ND	ND	ND	ND	ND	ND	ND	410
BES24-06	4.5	September 6, 2024	ND	ND	ND	ND	ND	ND	ND	110
BES24-07	4.5	September 24, 2024	ND	ND	ND	ND	ND	ND	ND	120
BES24-08	3	August 14, 2024	ND	ND	ND	ND	ND	ND	ND	280
BES24-09	6	September 23, 2024	ND	ND	ND	ND	ND	ND	ND	140
BES24-10	12	September 23, 2024	ND	ND	ND	ND	ND	ND	ND	ND
BES24-11	6	September 23, 2024	ND	ND	ND	18	ND	18	18	170
BES24-12	3	September 24, 2024	ND	ND	ND	160	200	160	**360**	130
BH24-12*	0	June 8, 2024	ND	ND	ND	63	ND	63	63	**1,100**
	2	June 8, 2024	ND	ND	ND	610	1,700	610	**2,310**	190
	4	June 8, 2024	ND	ND	ND	28	ND	28	28	77
BES24-13	3	September 24, 2024	ND	ND	ND	ND	ND	ND	ND	110
BES24-14	3	September 24, 2024	ND	ND	ND	ND	ND	ND	ND	270
BES24-15	2	September 24, 2024	ND	ND	ND	ND	ND	ND	ND	ND
WES24-01	0-2	August 14, 2024	ND	ND	ND	ND	ND	ND	ND	410
WES24-03	0-2	August 13, 2024	ND	ND	ND	ND	ND	ND	ND	ND
WES24-07	2-4	August 13, 2024	ND	ND	ND	ND	ND	ND	ND	310
WES24-11	0-12	September 23, 2024	ND	ND	ND	ND	ND	ND	ND	ND
WES24-12	0-12	September 23, 2024	ND	ND	ND	ND	ND	ND	ND	82
WES24-13	0-12	September 23, 2024	ND	ND	ND	ND	ND	ND	ND	ND
WES24-14	2-12	September 23, 2024	ND	ND	ND	ND	ND	ND	ND	69
WES24-15	0-6	September 23, 2024	ND	ND	ND	ND	ND	ND	ND	130
WES24-16	3-6	September 23, 2024	ND	ND	ND	ND	ND	ND	ND	110
WES24-17	3-6	September 23, 2024	ND	ND	ND	29	48	29	77	260
WES24-18	0-3	September 24, 2024	ND	ND	ND	ND	ND	ND	ND	240
WES24-19	3-4.5	September 24, 2024	ND	ND	ND	9.9	ND	9.9	9.9	220
WES24-20	2-4.5	September 24, 2024	ND	ND	ND	ND	ND	ND	ND	110
WES24-21	3-4.5	September 24, 2024	ND	ND	ND	ND	ND	ND	ND	220
WES24-22	0-3	September 24, 2024	ND	ND	ND	ND	ND	ND	ND	180
WES24-23	0-4.5	September 24, 2024	ND	ND	ND	ND	ND	ND	ND	92

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

APPENDIX A - NMOCD C-141 Report

NM OIL CONSERVATION
ARTESIA DISTRICT

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

OCT 27 2015

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

Form C-141
Revised August 8, 2011

Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

RECEIVED

Release Notification and Corrective Action

nAB1530148267 0137

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company Devon Energy Production	**Contact** Mike McMahan Production Assistant Foreman
Address 6488 Seven Rivers Hwy Artesia, NM 88220	**Telephone No.** 575.706.4165
Facility Name Shakespeare 20 Fed Com 1H	**Facility Type** Oil

Surface Owner Federal	**Mineral Owner** Federal	**API No.** 30-015-36376

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
P	20	16S	28E	400	FSL	330	FEL	EDDY

Latitude: **Longitude:**

NATURE OF RELEASE

Type of Release Spill Oil & Produced water	**Volume of Release** **1 BBL oil & 4 BBL produced water**	**Volume Recovered** **1 BBL oil & 3 BBL produced water**
Source of Release Stuffing box blow out on pump jack	**Date and Hour of Occurrence** **10.18.15 at 1:00 pm**	**Date and Hour of Discovery** **10.18.15 at 1:00 pm**
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	**If YES, To Whom?** Mike Bratcher BLM Jim Amos OCD	
By Whom? Mike McMahan	**Date and Hour** **10.19.15 at 9:45 am**	
Was a Watercourse Reached? ☐ Yes ☒ No	**If YES, Volume Impacting the Watercourse**	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*
Stuffing box blew out on pump jack. Lease operator shut down valve.

Describe Area Affected and Cleanup Action Taken.*
1 BBL of oil and 4 BBL of produced water released. A vacuum truck recovered 1 BBL oil and 3 BBL produced water. All this occurred on location on an 8 x10 area near the wellhead and a 3x10 area near the pump jack. An environmental agency will be contacted for remediation.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD 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 NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD 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.

Signature: Jeanette Barron

Printed Name: **Jeanette Barron**

Title: **Field Admin Support**

E-mail Address: **Jeanette.barron@dvn.com**

Date: 10.27.15 Phone: **575.748.1813**

OIL CONSERVATION DIVISION

Signed By

Approved by Environmental Specialist:

Approval Date: 10/28/15 Expiration Date: N/A

Conditions of Approval: Attached ☐

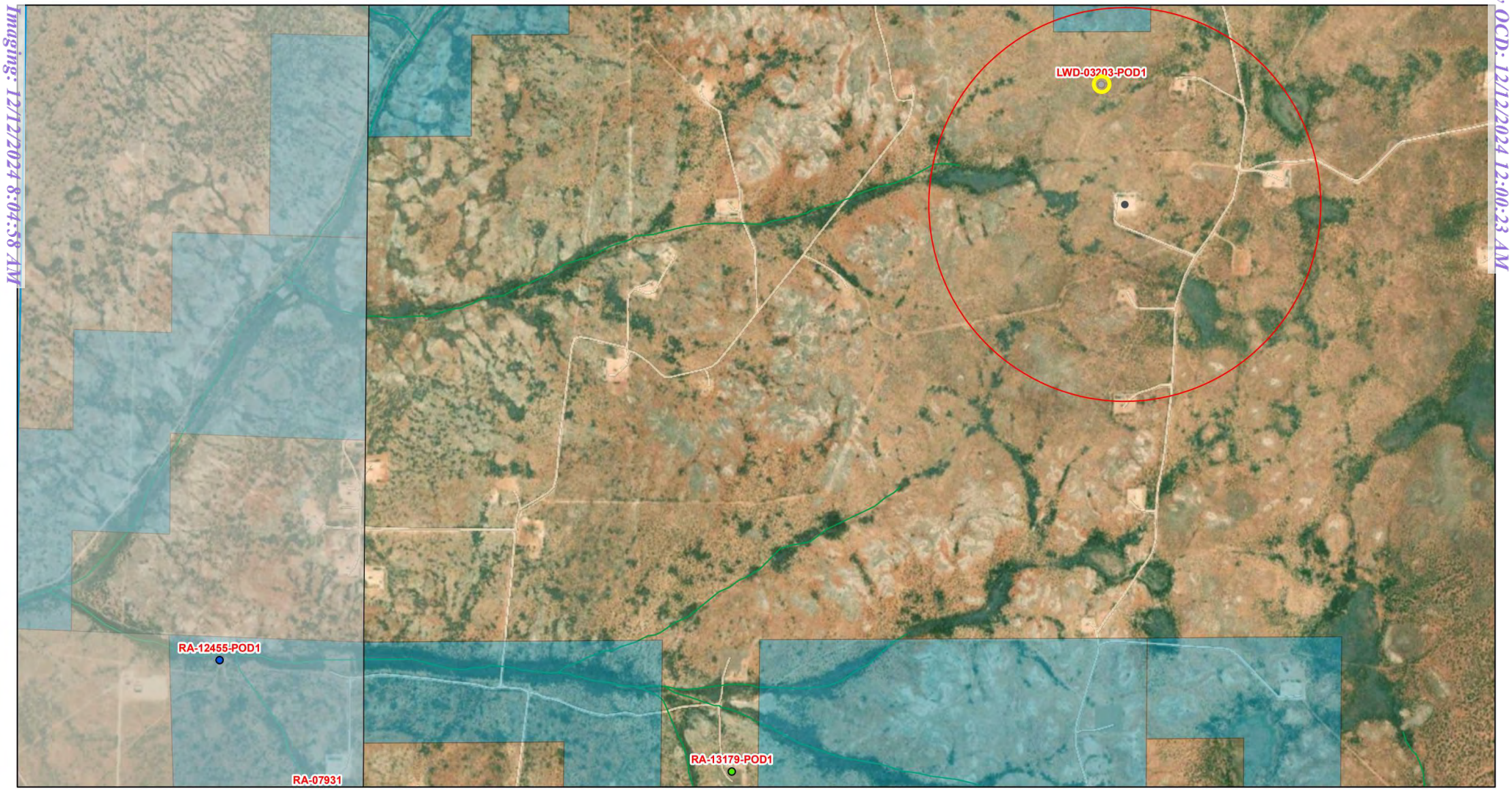
Remediation per O.C.D. Rules & Guidelines
SUBMIT REMEDIATION PROPOSAL NO LATER THAN: 11/28/15

2RP-3360

* Attach Additional Sheets If Necessary

APPENDIX B – Closure Criteria Research Documentation

OSE POD Proximity Map



6/5/2024, 8:38:43 AM

1:18,056

0 0.17 0.35 0.7 mi

0 0.3 0.6 1.2 km

Esri, HERE, iPC, Esri, HERE, Garmin, iPC, Maxar

GIS WATERS PODs
- Active
- Pending

OSE District Boundary

Water Right Regulations
- Closure Area
- Artesian Planning Area

New Mexico State Trust Lands
- Subsurface Estate
- Both Estates

NHD Flowlines
- Artificial Path
- Stream River

Online web user
This is an unofficial map from the OSE's online application.

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

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

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

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

POD Number	Code	POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Distance	Depth Well	Depth Water	Water Column
RA 12455 POD1		RA	ED	2	1	2	36	16S	27E	571998	3638766	4157	200	55	145

Average Depth to Water: **55 feet**
Minimum Depth: **55 feet**
Maximum Depth: **55 feet**

Record Count: 1

UTMNAD83 Radius Search (in meters):

Easting (X): 575702 **Northing (Y):** 3640655 **Radius:** 5000

6/5/24 7:58 AM

WATER COLUMN/ AVERAGE DEPTH TO WATER

New Mexico Office of the State Engineer
Point of Diversion Summary

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

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	RA 12455 POD1	2	1	2	36	16S	27E	571998	3638766

Driller License:	1058	**Driller Company:**	KEY'S DRILLING & PUMP SERVICE		
Driller Name:	KUEHN III, DONALD				
Drill Start Date:	09/12/2016	**Drill Finish Date:**	09/13/2016	**Plug Date:**	
Log File Date:	09/29/2016	**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	17 GPM
Casing Size:	4.50	**Depth Well:**	200 feet	**Depth Water:**	55 feet

Water Bearing Stratifications:	Top	Bottom	Description
	55	65	Sandstone/Gravel/Conglomerate
	80	90	Other/Unknown
	160	200	Other/Unknown

Casing Perforations:	Top	Bottom
	160	200

New Mexico Office of the State Engineer
Water Right Summary

get image list

WR File Number: RA 12455 **Subbasin:** RA **Cross Reference:** -

Primary Purpose: STK 72-12-1 LIVESTOCK WATERING

Primary Status: PMT PERMIT

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

Total Diversion: 3 **Cause/Case:** -

Owner: KEY LIVESTOCK LLC

Contact: GARY KEY

Documents on File

	Trn #	Doc	File/Act	Status 1	Status 2	Transaction Desc.	From/ To	Acres	Diversion	Consumptive
get images	592288	72121	2016-09-06	PMT	LOG	RA 12455 POD1	T		3	

Current Points of Diversion

(NAD83 UTM in meters)

POD Number	Well Tag	Source	Q 64	Q16	Q4	Sec	Tws	Rng	X	Y	Other Location Desc
RA 12455 POD1		Shallow	2	1	2	36	16S	27E	571998	3638766	

New Mexico Office of the State Engineer
Transaction Summary

72121 All Applications Under Statute 72-12-1

Transaction Number: 592288 **Transaction Desc:** RA 12455 POD1 **File Date:** 08/31/2016

Primary Status: PMT Permit
Secondary Status: LOG Well Log Received
Person Assigned: *******
Applicant: KEY LIVESTOCK LLC
Contact: GARY KEY

Events

	Date	Type	Description	Comment	Processed By
get images	08/31/2016	APP	Application Received	*	*******
	09/06/2016	FIN	Final Action on application		*******
	09/06/2016	WAP	General Approval Letter		*******
	09/15/2016	INW	Incomplete Well Log Filed		*******
get images	09/29/2016	LOG	Well Log Received	*	*******
	09/29/2016	CWL	Corrected Well Log Received		*******
	10/24/2016	QAT	Quality Assurance Completed	DATA	*******
	10/24/2016	QAT	Quality Assurance Completed	DATA	*******
	11/02/2016	QAT	Quality Assurance Completed	IMAGE	*******

Change To:

WR File Nbr	Acres	Diversion	Consumptive	Purpose of Use
RA 12455		3		STK 72-12-1 LIVESTOCK WATERING
**Point of Diversion				
RA 12455 POD1		571998	3638766	

Conditions

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

10 Total diversion from all wells under this permit number shall not exceed 3 acre-feet per annum.

14 This permit authorizes the diversion of water for watering livestock. The total diversion of water under this permit shall not exceed 3 acre-feet per year.

Q The State Engineer retains jurisdiction over this permit.

Action of the State Engineer

SEE ALL GENERAL CONDITIONS OF APPROVAL.

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

Approval Code: A - Approved
Action Date: 09/06/2016
Log Due Date: 09/06/2017
State Engineer: Tom Blaine, P.E.

6/5/24 8:04 AM TRANSACTION SUMMARY

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

	OSE FILE NUMBER(S): RA 12455
WELL OWNER NAME(S): KEY LIVESTOCK, LLC	PHONE (OPTIONAL):
WELL OWNER MAILING ADDRESS: 1012 E 2ND ST	CITY: ROSWELL STATE: NM ZIP: 88201

WELL LOCATION (FROM GPS)	DEGREES	MINUTES	SECONDS	
LATITUDE	32	53	04.88	N
LONGITUDE	104	13	49.001	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND
* DATUM REQUIRED: WGS 84

2016 SEP 29 AM 11:1 STATE ENGINEER OFFICE ROSWELL, NEW MEXICO

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS – PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE

2. DRILLING & CASING INFORMATION

LICENSE NUMBER	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
WD-1058	DON KUEHN III	KEYS DRILLING & PUMP SERVICE INC.

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
09-12-16	09-13-16	200	200	55

COMPLETED WELL IS: ☐ ARTESIAN ☐ DRY HOLE ☑ SHALLOW (UNCONFINED) — STATIC WATER LEVEL IN COMPLETED WELL (FT): 55

DRILLING FLUID: ☐ AIR ☑ MUD ☐ ADDITIVES – SPECIFY:

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

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
-2	20	12-3/4	STEEL		8"	1/4"	
-2	160	7-7/8"	PVC	SPLINE	4-1/2"	SCH40	
160	200	7-7/8"	PVC	SPLINE	4-1/2"	SCH40	.030

3. ANNULAR MATERIAL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT
0	20	12-3/4"	CEMENT		HAND
20	200	7-7/8"	VEALMORE PEA GRAVEL		HAND

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 06/08/2012)

FILE NUMBER	RA-12455	POD NUMBER	1	TRN NUMBER	592288
LOCATION	16S-27E-36	2.1.2		Dom	PAGE 1 OF 2

4. HYDROGEOLOGIC LOG OF WELL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER-BEARING ZONES (gpm)
0	20	20	SURFACE	☐ Y ■ N	
20	40	20	BROWN CLAY	☐ Y ■ N	
40	50	10	GYPSON	☐ Y ■ N	
50	55	5	SAND ZONE	☐ Y ■ N	
55	65	10	GREY SANDSTONE	■ Y ☐ N	
65	70	5	SAND & GREY CLAY	☐ Y ■ N	
70	80	10	SANDY BROWN CLAY	☐ Y ■ N	
80	90	10	GYPSON	■ Y ☐ N	
90	130	40	RED SANDY CLAY	☐ Y ■ N	
130	150	20	GYPSON	☐ Y ■ N	
150	160	10	BROWN SANDY CLAY	☐ Y ■ N	
160	200	40	GYPSON	■ Y ☐ N	
				☐ Y ☐ N	
				☐ Y ☐ N	
				☐ Y ☐ N	
				☐ Y ☐ N	
				☐ Y ☐ N	
				☐ Y ☐ N	
				☐ Y ☐ N	
				☐ Y ☐ N	
				☐ Y ☐ N	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA: ■ PUMP ☐ AIR LIFT ☐ BAILER ☐ OTHER – SPECIFY:

TOTAL ESTIMATED WELL YIELD (gpm): 17

5. TEST; RIG SUPERVISION

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

MISCELLANEOUS INFORMATION:

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

DON KUEHN III

6. SIGNATURE

THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING:

GARY KEY — SIGNATURE OF DRILLER / PRINT SIGNEE NAME

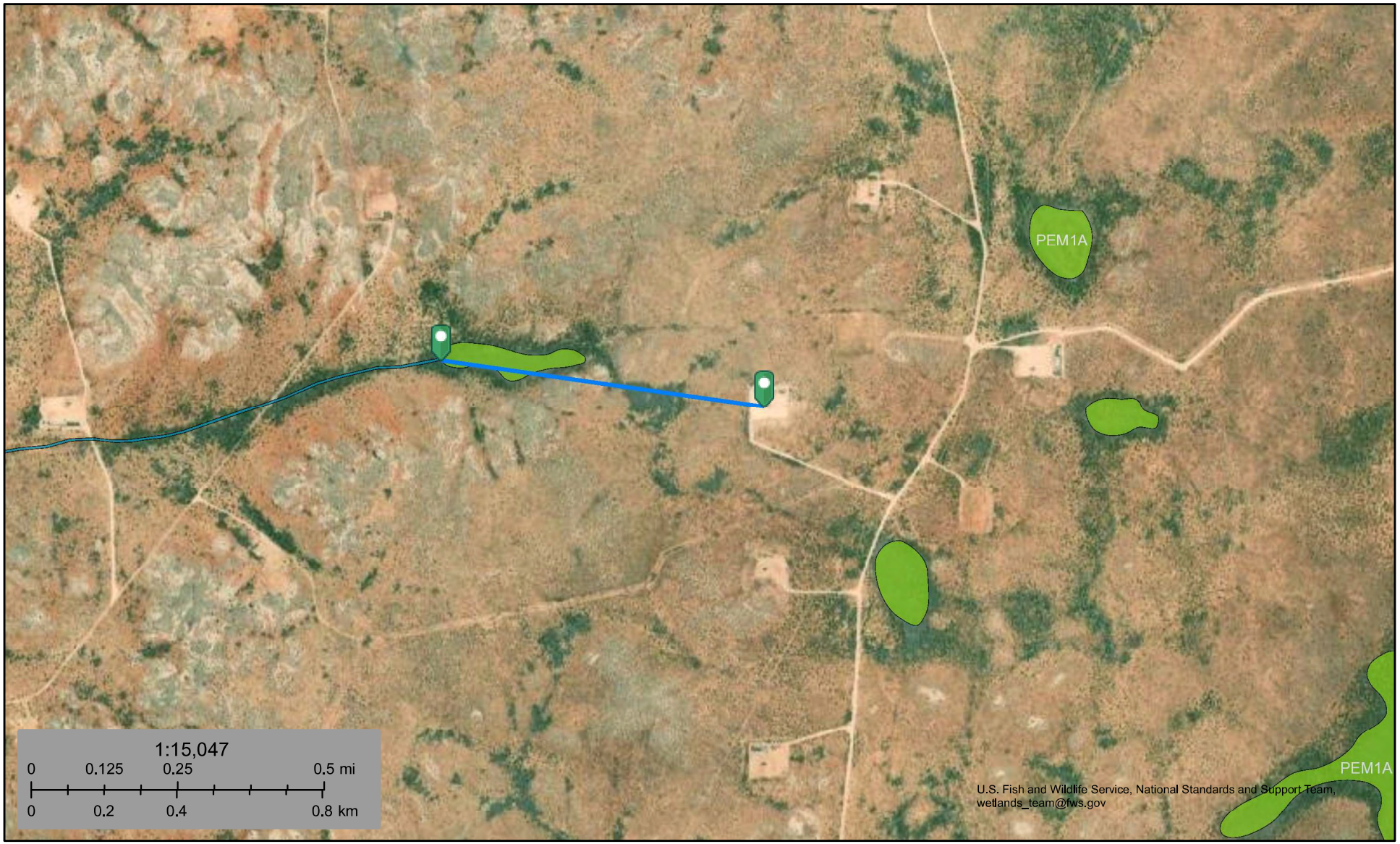
09-27-16 — DATE

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 06/08/2012)

FILE NUMBER RA-12455	POD NUMBER	TRN NUMBER 592288
LOCATION 16S.27E.36	2-1-2	DOM — PAGE 2 OF 2

U.S. Fish and Wildlife Service
National Wetlands Inventory

Intermittent 2,474 feet



June 5, 2024

Wetlands

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

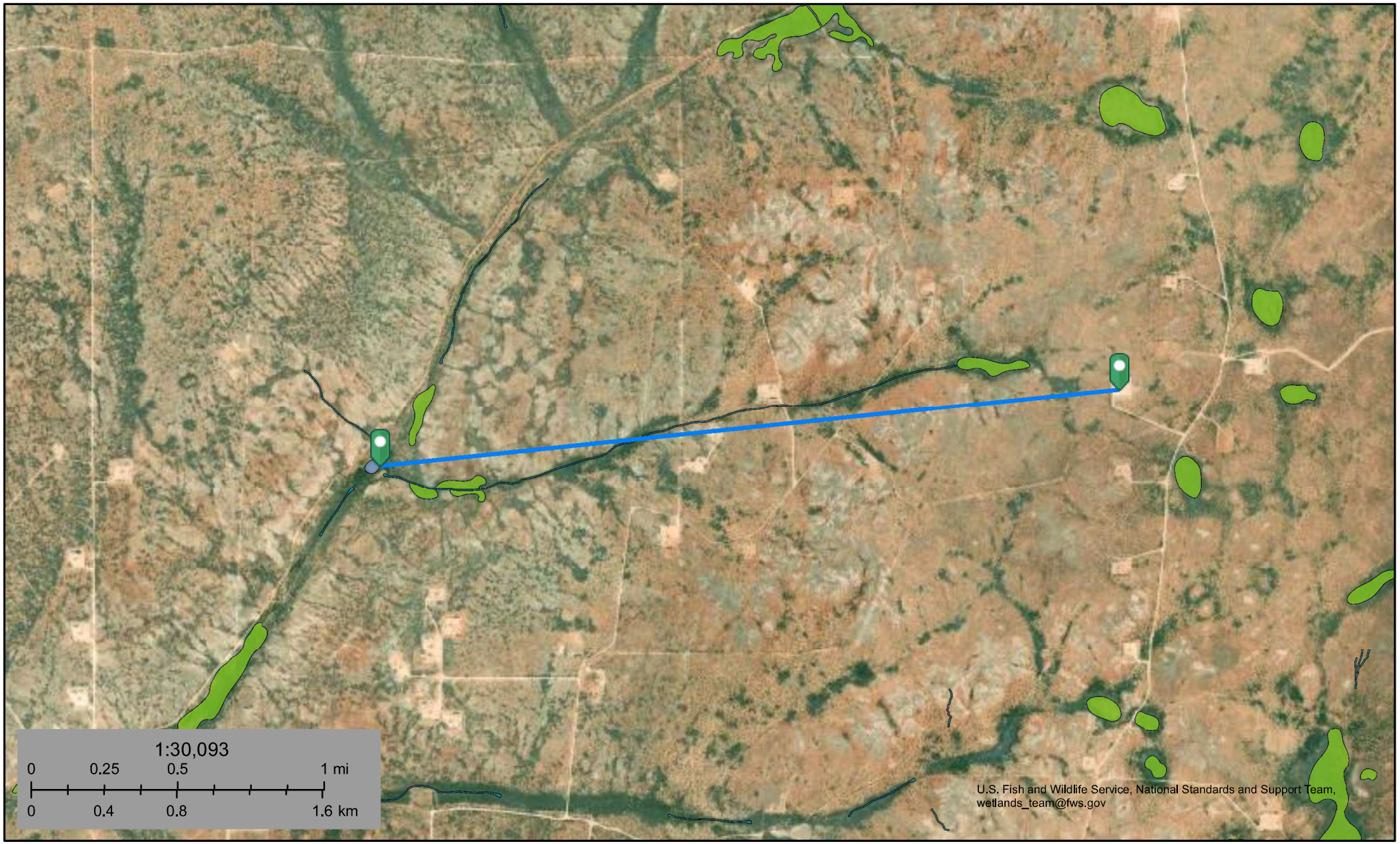
This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

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

U.S. Fish and Wildlife Service

National Wetlands Inventory

Pond 11,256 feet



June 5, 2024

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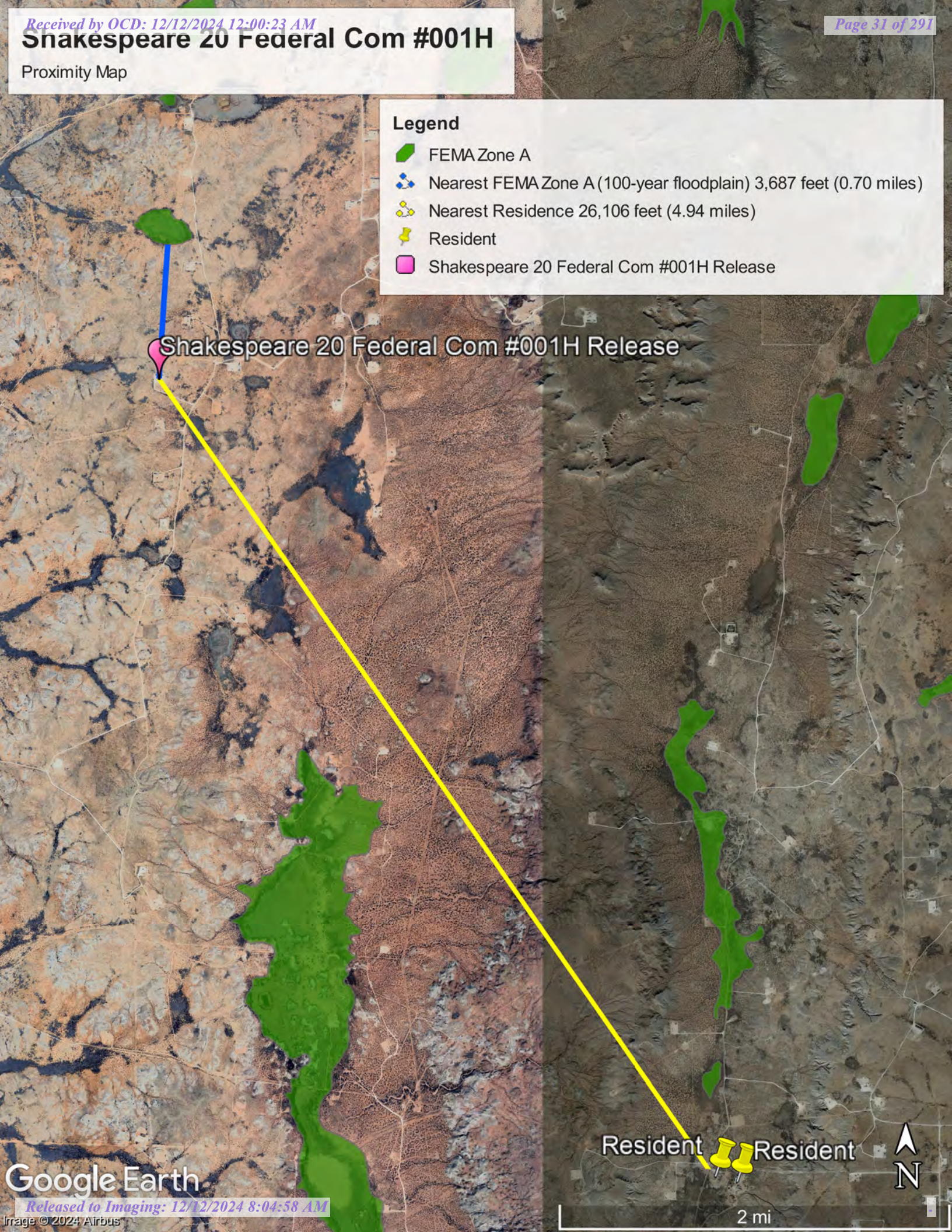
National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

Shakespeare 20 Federal Com #001H

Proximity Map

Legend

- FEMA Zone A
- Nearest FEMA Zone A (100-year floodplain) 3,687 feet (0.70 miles)
- Nearest Residence 26,106 feet (4.94 miles)
- Resident
- Shakespeare 20 Federal Com #001H Release



New Mexico Office of the State Engineer

Active & Inactive Points of Diversion

(with Ownership Information)

(acre ft per annum)

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

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

(quarters are smallest to largest)

(NAD83 UTM in meters)

WR File Nbr	Sub basin	Use	Diversion	Owner	County	POD Number	Well Tag	Code	Grant	Source	q 64	q 16	q 4	Sec	Twn	Rng	X	Y	Distance
LWD 03203	RA	PLS	2.06	BOGLE FARMS	CH	LWD 03203 POD1						2	4	20	16S	28E	575604	3641146*	500
LWD 03202	RA	PLS	6.88	BOGLE FARMS	CH	LWD 03202 POD1						4	2	17	16S	28E	575597	3643211*	2558
RA 13179	RA	MON	0	ENVIROTECH INC	ED	RA 13179 POD1	NA				2	4	2	31	16S	28E	574107	3638326	2822
LWD 03201	RA	PLS	2.75	BOGLE FARMS	CH	LWD 03201 POD1								15	16S	28E	578192	3643014*	3430
RA 07931	RA	STK	1.88	BOGLE FARMS	ED	RA 07931						4	2	36	16S	27E	572405	3638231*	4092
RA 12455	RA	STK	3	KEY LIVESTOCK LLC	ED	RA 12455 POD1				Shallow	2	1	2	36	16S	27E	571998	3638766	4157

Record Count: 6

UTMNAD83 Radius Search (in meters):

Easting (X): 575702 **Northing (Y):** 3640655 **Radius:** 5000

Sorted by: Distance

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

New Mexico Office of the State Engineer
Water Right Summary

get image list

WR File Number: LWD 03203 **Subbasin:** RA **Cross Reference:** LWD-RA-259
Primary Purpose: PLS NON 72-12-1 LIVESTOCK WATERING
Primary Status: DCL DECLARATION
Total Acres: 0.516 **Subfile:** - **Header:** -
Total Diversion: 2.06 **Cause/Case:** -
Owner: BOGLE FARMS
Contact: SCOTT BOGLE

Documents on File

Trn #	Doc	File/Act	Status 1	Status 2	Transaction Desc.	From/ To	Acres	Diversion	Consumptive
get images	694199	DCL 1991-07-10	DCL	PRC	LWD-RA-259	T	0.516	2.06	

Current Points of Diversion

(NAD83 UTM in meters)

POD Number	Well Tag	Source	Q 64	Q16	Q4	Sec	Tws	Rng	X	Y	Other Location Desc
LWD 03203 POD1			2	4		20	16S	28E	575604	3641146*	

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

Priority Summary

Priority	Status	Acres	Diversion	Pod Number
12/31/1947	DCL	0.516	2.06	LWD 03203 POD1

Place of Use

Q 256	Q 64	Q16	Q4	Sec	Tws	Rng	Acres	Diversion	CU	Use	Priority	Status	Other Location Desc
	2	4		20	16S	28E	0.516	2.06		PLS	12/31/1947	DCL	

Source

Acres	Diversion	CU	Use	Priority	Source	Description
0.516	2.06		PLS	12/31/1947	SW	

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
	LWD 03203 POD1		2	4	20	16S	28E	575604	3641146*

Driller License: **Driller Company:**

Driller Name:

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

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

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

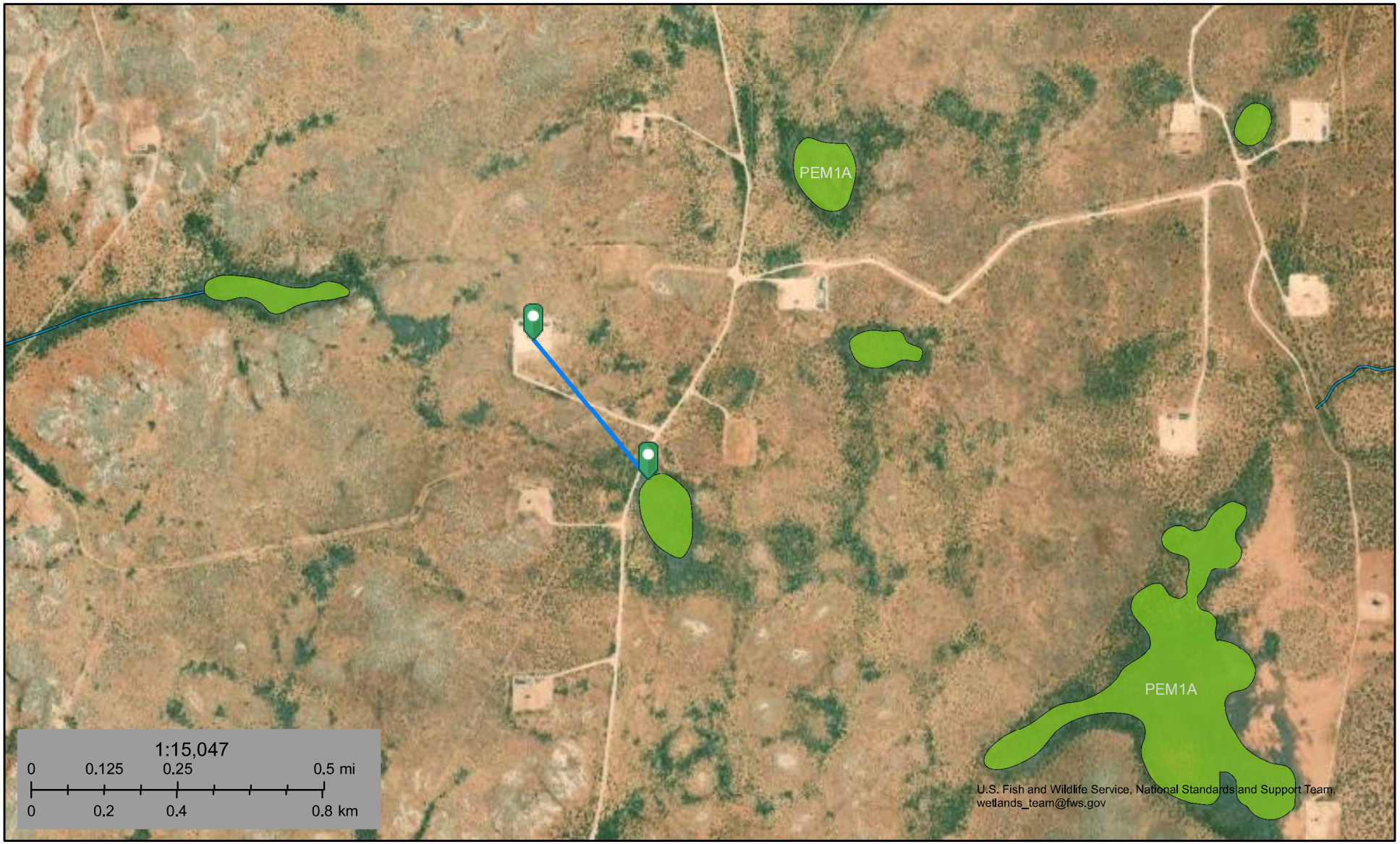
Casing Size: **Depth Well:** **Depth Water:**

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

U.S. Fish and Wildlife Service

National Wetlands Inventory

Wetland 1,362 feet



June 5, 2024

Wetlands

- Estuarine and Marine Deepwater
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- Lake
- Other
- Riverine

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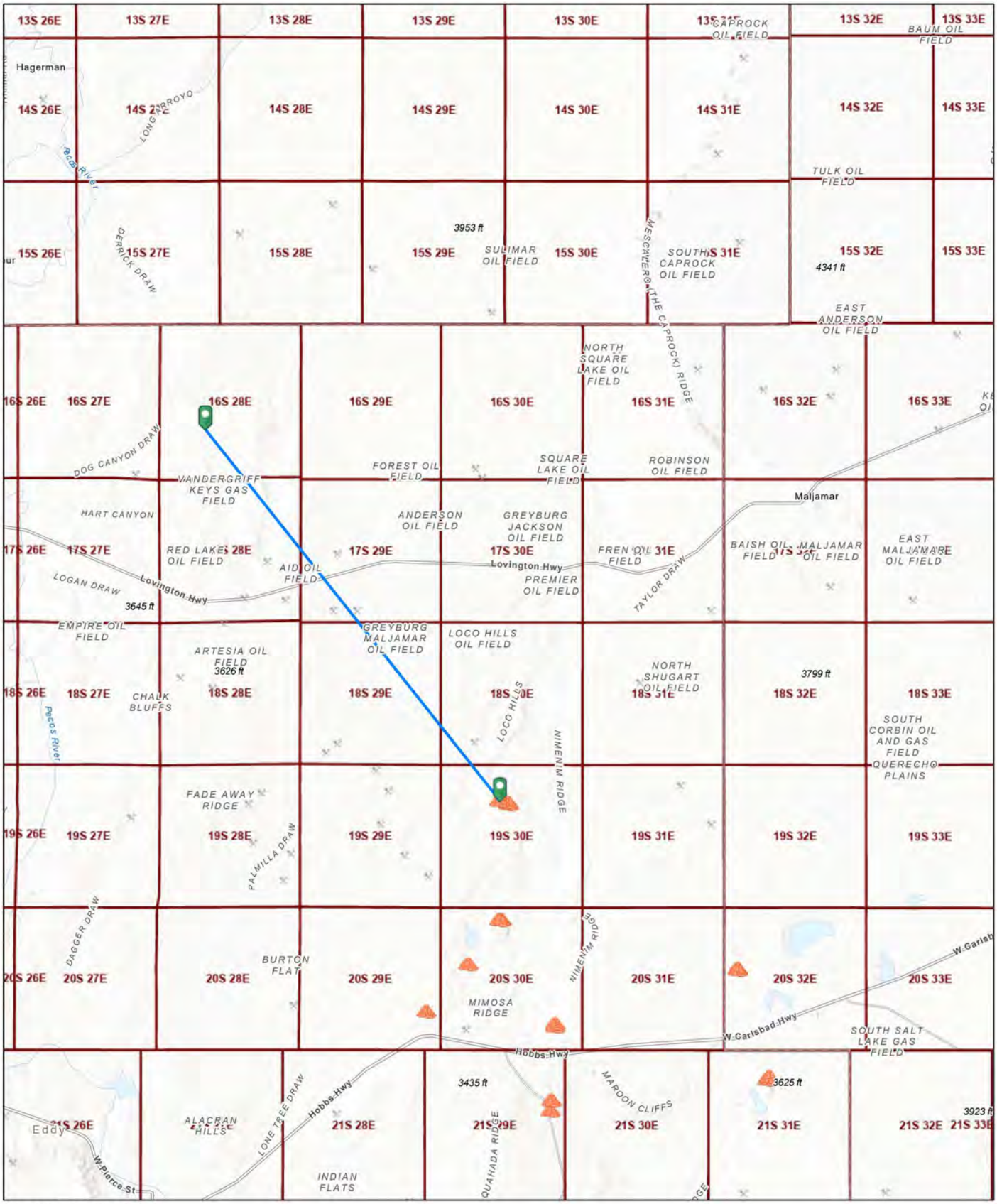
National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

Active Mines in New Mexico



6/5/2024, 10:02:52 AM

Registered Mines

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

1:288,895

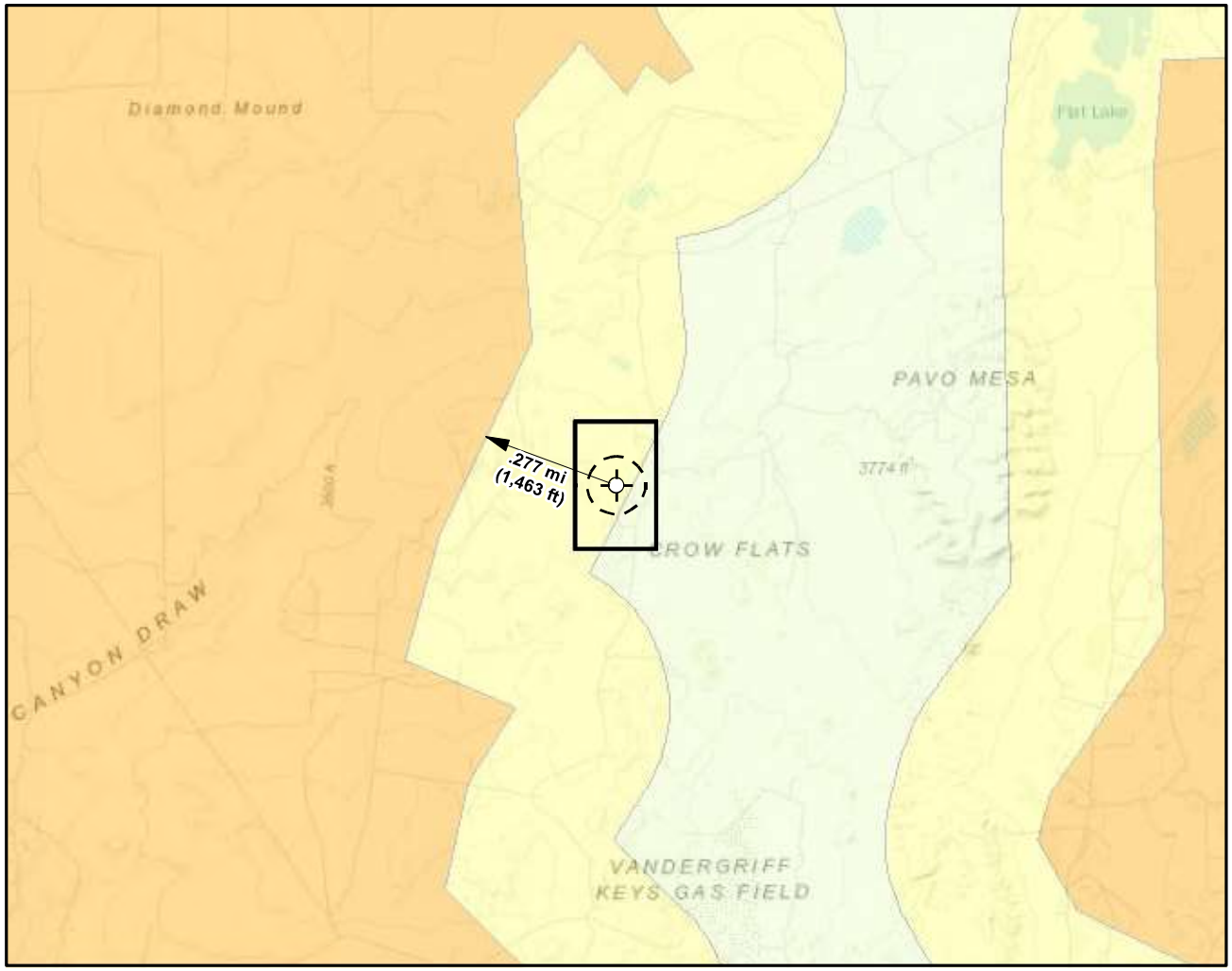
0 2.75 5.5 11 mi

0 4.5 9 18 km

U.S. BLM, Esri, NASA, NGA, USGS, Texas Parks & Wildlife, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, USFWS, BLM

EMNRD MMD GIS Coordinator

NM Energy, Minerals and Natural Resources Department (http://nm-emnrd.maps.arcgis.com/apps/webappviewer/index.html?id=1b5e57974664d689b47790897ca2795)



Karst Potential

- Critical
- High
- Medium
- Low

- Site Location
- Site Buffer (~1,000 ft)

Overview Map

0 0.25 0.5 1 mi

Detail Map

0 150 300 600 ft

VERTEX

Map Center:
Lat/Long: 32.901447, -104.190517

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

N

Karst Potential Map
Shakespeare 20 Federal Com #001H

FIGURE:
X

MACK Energy Corporation

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 2023; Overview Map: Esri World Topographic. Karst potential data sourced from Roswell Field Office, Bureau of Land Management, 2020 or United States Department of the Interior, Bureau of Land Management. (2018). Karst Potential.

VERSATILITY. EXPERTISE.

Document Path: S:\04 - Geomatics\1-Projects_US PROJECTS\Mack Energy\2024\24E-02953\Figure X Karst Potential Map (24E-02953).mxd

National Flood Hazard Layer FIRMette

FEMA

104°11'45"W 32°54'20"N

104°11'7"W 32°53'50"N

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

1:6,000

Basemap Imagery Source: USGS National Map 2023

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*

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 6/5/2024 at 1:13 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

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

Custom Soil Resource Report for Eddy Area, New Mexico

June 5, 2024

Soil Map

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

Custom Soil Resource Report
Soil Map

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Eddy Area, New Mexico
Survey Area Data: Version 19, Sep 7, 2023

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

Date(s) aerial images were photographed: Nov 12, 2022—Dec 2, 2022

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
SA	Simona sandy loam, 0 to 3 percent slopes	2.9	100.0%
Totals for Area of Interest		**2.9**	**100.0%**

Map Unit Descriptions

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

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

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

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

Eddy Area, New Mexico

SA—Simona sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 1w5v
Elevation: 3,000 to 4,200 feet
Mean annual precipitation: 10 to 16 inches
Mean annual air temperature: 60 to 64 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Simona

Setting

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

Typical profile

H1 - 0 to 6 inches: sandy loam
H2 - 6 to 20 inches: fine sandy loam
H3 - 20 to 24 inches: indurated

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 7 to 24 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: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water supply, 0 to 60 inches: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): 4s
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: R070BD002NM - Shallow Sandy
Hydric soil rating: No

Minor Components

Unnamed soils

Percent of map unit: 4 percent
Hydric soil rating: No

Playa

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

USDA Natural Resources Conservation Service

Ecological site R070BD002NM
Shallow Sandy

Accessed: 06/05/2024

General information

Provisional. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

Figure 1. Mapped extent

Areas shown in blue indicate the maximum mapped extent of this ecological site. Other ecological sites likely occur within the highlighted areas. It is also possible for this ecological site to occur outside of highlighted areas if detailed soil survey has not been completed or recently updated.

Associated sites

R070BD004NM	**Sandy** Sandy sites often occur in association or in a complex with Shallow Sandy Sites.

Similar sites

R070BD004NM	**Sandy** Sandy ecological sites are similar to Shallow Sandy sites in species composition and Transition pathways.

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

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

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

Table 2. Representative physiographic features

Landforms	(1) Plain (2) Fan piedmont (3) Alluvial fan
Elevation	2,842–4,500 ft
Slope	1–9%
Aspect	Aspect is not a significant factor

Climatic features

The average annual precipitation ranges from 8 to 13 inches. Variations of 5 inches, more or less, are common.

Over 80 percent of the precipitation falls from April through October. Most of the summer precipitation comes in the form of high intensity – short duration thunderstorms.
Temperatures are characterized by distinct seasonal changes and large annual and diurnal temperature changes. The average annual temperature is 61 degrees with extremes of 25 degrees below zero in the winter to 112 degrees in the summer.
The average frost-free season is from 207 to 220 days. The last killing frost is in late March or early April, and the first killing frost is in late October or early November.
Temperature and rainfall both favor warm season perennial plant growth. In years of abundant spring moisture, annual forbs and cool season grasses can make up an important component of the site. The vegetation of this site can take advantage of the moisture and the time it falls. Because of the soil profile, little moisture can be stored in the soil for any length of time. Moisture is readily available to the plants from the time it falls. Strong winds from the southwest blow from January through June which rapidly dries out the soil profile during a critical period for plant growth.

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

Table 3. Representative climatic features

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

Influencing water features

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

Soil features

Soils are very shallow to shallow, less than 20 inches in depth. Surface and subsurface textures are gravelly loamy sand, gravelly fine sandy loam or fine sandy loam.

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

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

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

Characteristic soils are:
Simona
Jerag

Table 4. Representative soil features

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

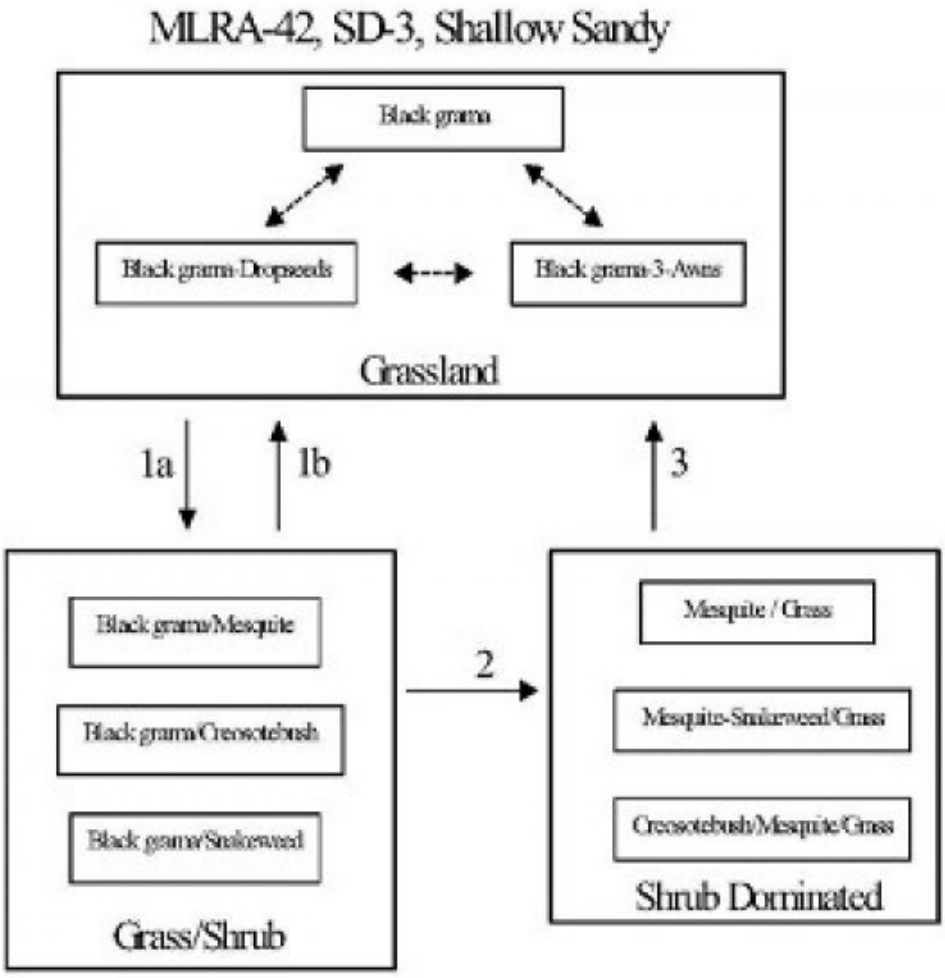
Soil depth	7–24 in
Surface fragment cover <=3"	5–25%
Surface fragment cover >3"	0%
Available water capacity (0-40in)	1–2 in
Calcium carbonate equivalent (0-40in)	5–15%
Electrical conductivity (0-40in)	0–4 mmhos/cm
Sodium adsorption ratio (0-40in)	0
Soil reaction (1:1 water) (0-40in)	7.4–8
Subsurface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

Ecological dynamics

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

State and transition model

Plant Communities and Transitional Pathways (diagram)



1a. Seed dispersal, drought, overgrazing, fire suppression.
1b. Prescribed fire, brush control, prescribed grazing.

2. Persistent loss of grass cover, resource competition, increased winter precipitation.

3. Brush control, range seeding, prescribed grazing.

State 1
Historic Climax Plant Community

Community 1.1
Historic Climax Plant Community

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

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

Table 5. Annual production by plant type

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

Table 6. Ground cover

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

Figure 5. Plant community growth curve (percent production by month). NM2802, R042XC002NM-Shallow Sandy-HCPC. SD-3 Shallow Sandy - Warm season plant community.

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

State 2
Grass/Shrub

Community 2.1
Grass/Shrub

Grass/Shrub: This state is characterized by the notable presence of shrubs, especially mesquite, broom snakeweed, and/or creosotebush, however grasses remain as the dominant species. Black grama is the dominant

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

State 3
Shrub Dominated

Community 3.1
Shrub Dominated

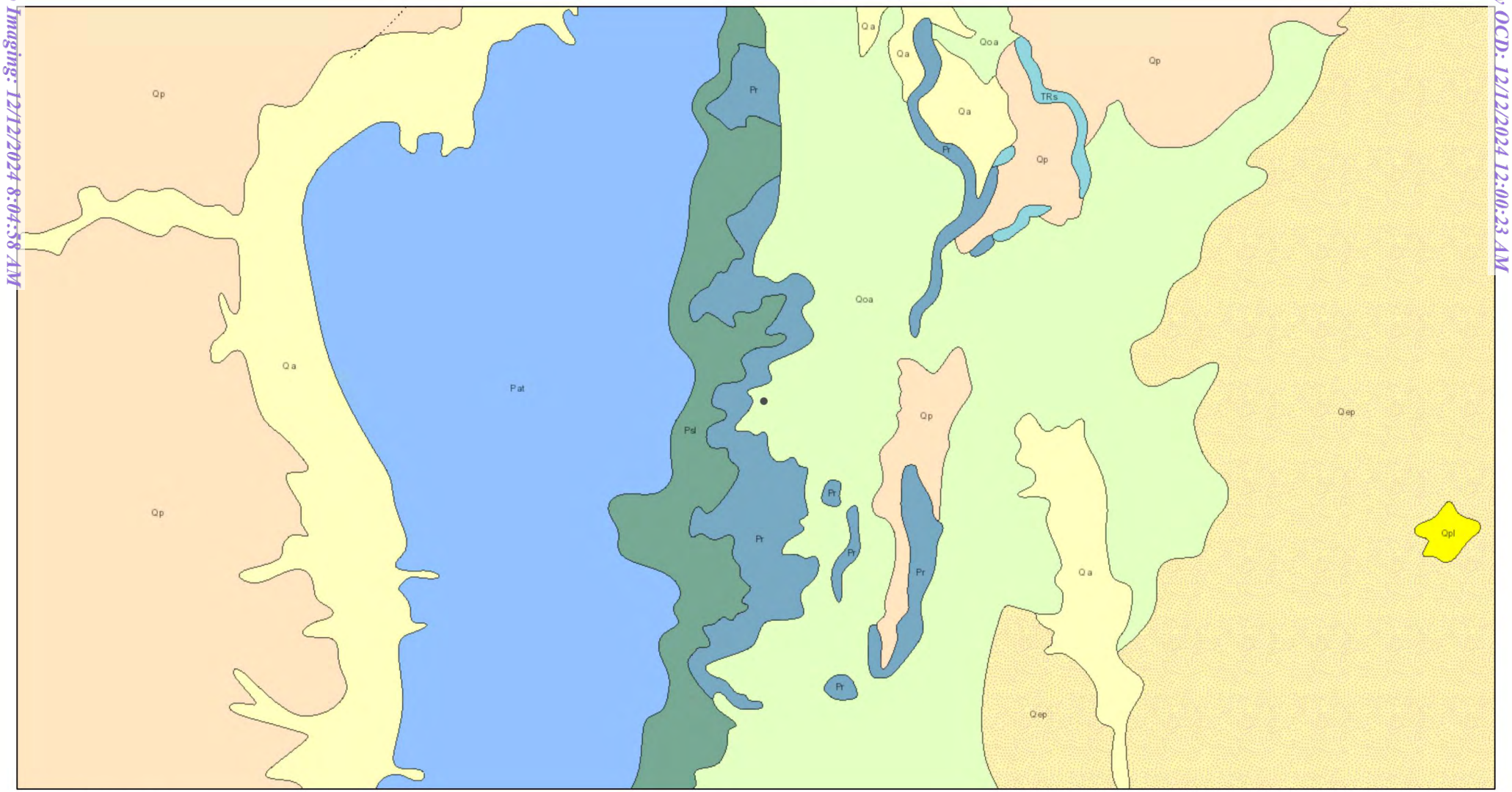
Shrub-Dominated: Across the range of soil types included in the Shallow Sandy site, mesquite is typically the dominant shrub, but it does occur as a co-dominant or sub-dominant species with creosotebush or broom snakeweed. Mesquite tends to dominate when the Shallow Sandy site occurs as part of a complex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

Additional community tables

Table 7. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
Grass/Grasslike					
1	**Warm Season**			413–495	
	black grama	BOER4	*Bouteloua eriopoda*	413–495	–
2	**Warm Season**			41–83	
	bush muhly	MUPO2	*Muhlenbergia porteri*	41–83	–
3	**Warm Season**			41–83	

Geology



6/5/2024, 11:59:58 AM

1:144,448

Lithologic Units

- Playa—Alluvium and evaporite deposits (Holocene)
- Water—Perenial standing water
- Qa—Alluvium (Holocene to upper Pleistocene)
- Ql—Landslide deposits and colluvium (Holocene to Pleistocene) — Landslide deposits on western flanks of Socorro Mountains not shown for clarity
- Qpl—Lacustrine and playa deposits (Holocene) — Includes associated alluvial and eolian deposits of major lake basins
- Qp—Piedmont alluvial deposits (Holocene to lower Pleistocene)
- Qe—Eolian deposits (Holocene to middle Pleistocene)
- Qeg—Gypsiferous eolian deposits (Holocene to middle Pleistocene)

0 1.5 3 6 mi

0 2.25 4.5 9 km

Esri, NASA, NGA, USGS, NMBGMR, USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census

ArcGIS Web AppBuilder

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

APPENDIX C – Daily Field Reports

Daily Site Visit Report

Client:	Mack Energy Corporation	Inspection Date:	6/6/2024
Site Location Name:	Shakespeare 20 Fed Com #001H	Report Run Date:	6/7/2024 1:24 AM
Client Contact Name:	Matt Buckles	API #:	30-015-36376
Client Contact Phone #:	575-748-1288		
Unique Project ID		Project Owner:	
Project Reference #		Project Manager:	

Summary of Times

Arrived at Site	6/6/2024 7:02 AM
Departed Site	6/6/2024 5:14 PM

Field Notes

8:07 Completed JSA on arrival. On site to continue historical delineation around wellhead started by previous consultant.

8:09 Identified and mapped existing infrastructure in Arc Collector including electrical lines wes, south, and east of wellhead and flow line connecting wellhead to infrastructure on east edge of pad.

8:14 Identified borehole locations and swept with magnetic locator prior to ground disturbance. Proximity of wellhead introduced significant interference.

17:06 Advanced boreholes BH24-01, BH24-02, and BH24-03, north, east, and south of the wellhead. Samples were collected at 0 and 2 feet bgs. Field screening results for samples from BH24-01 and BH24-02 were below NMOCD strictest criteria for chloride and TPH.

17:07 Field screening result for the 0 feet sample at BH24-03 exceeded threshold for chloride.

17:09 Advanced BH24-04 and BH24-05 east and south of BH24-03. Field screening results for BH24-04 and BH24-05 were below NMOCD strictest criteria for chloride and TPH.

Next Steps & Recommendations

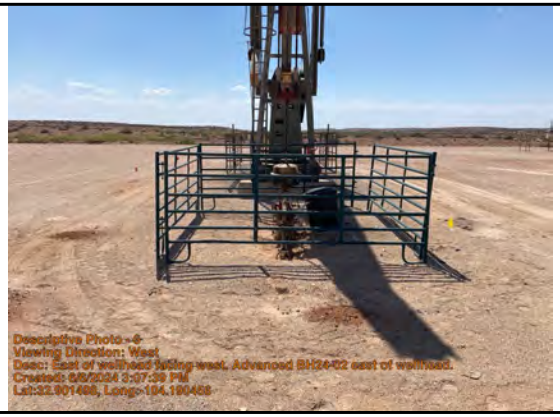
1 Continue west with delineation of historical release area.

Daily Site Visit Report

Site Photos

Viewing Direction: North	**Viewing Direction**: Northwest
	
South of tank battery facing north.	East-southeast of wellhead facing northwest. Buried electrical lines south and east of well equipment.

Daily Site Visit Report

Viewing Direction: East	**Viewing Direction**: East
	
West-southwest of pump jack facing east. Buried electrical line south and immediately west of well equipment.	Northwest of wellhead facing east. Buried flow line from pump jack runs north and east to east edge of pad.
Viewing Direction: South	**Viewing Direction**: West
	
North of wellhead facing south. Advanced BH24-01 north of wellhead.	East of wellhead facing west. Advanced BH24-02 east of wellhead.

Daily Site Visit Report

Viewing Direction: North

South of wellhead facing north. Advanced BH24-03 south of wellhead.

Viewing Direction: West

Southeast of wellhead facing west. Advanced BH24-04 east of BH24-03.

Viewing Direction: North

South of wellhead facing north. Advanced BH24-05 south of BH24-03.

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Lakin Pullman

Signature: 

Signature

Daily Site Visit Report

Client:	Mack Energy Corporation	Inspection Date:	8/14/2024
Site Location Name:	Shakespeare 20 Fed Com #001H	Report Run Date:	8/15/2024 12:02 AM
Client Contact Name:	Matt Buckles	API #:	30-015-36376
Client Contact Phone #:	575-748-1288		
Unique Project ID		Project Owner:	
Project Reference #		Project Manager:	

Summary of Times

Arrived at Site	8/14/2024 7:57 AM
Departed Site	8/14/2024 3:47 PM

Field Notes

17:52 On site at ~7:55 am. Assessed site, filled out JSA and held safety briefing with Bullseye.

On site to continue collecting confirmation samples from excavation.

Informed Bullseye they will need to extend out the south and east excavation walls along with the eastern half of the north excavation wall for an approximate 1’ and to scrape the top of the 2’ excavation base.

13:05 Collected BES24-06 to -09 at northeast portion of base around the well head.

All samples were field screened for chlorides using silver nitrate titration and all samples passed field screening criteria.

All samples were screened for TPH using a Dexsil Petroflag. All samples tested out of spec.

10:37 Bullseye began to further excavate the site as we discussed prior this morning.

17:54 Collected WES24-01, -04, and -05 at 0-3’ and BES24-01 and -02 at 2’. All samples were field screened for chlorides using silver nitrate titration. All samples tested out of spec for field screening criteria.

17:53 Instructed Bullseye to extend the east and south excavation walls another 1 ft.

Daily Site Visit Report

17:54 Collected WES24-01 and -05 at 0-3’ bgs. Both samples were field screened for chlorides using silver nitrate titration. All samples tested out of spec for field screening criteria.

18:01 I selected four samples that were close to passing criteria for chlorides (BES24-01 and 08; WES24-01 and -06) and screened them for TPH using Dexsil Petroflag. All four samples passed field screening criteria.

17:58 Jarred BES24-01, BES24-08, WES24-01 and WES24-06 and will send them to the laboratory for further analysis.

Next Steps & Recommendations
1

Daily Site Visit Report

Site Photos

Viewing Direction: Northeast

Southwest corner of excavation facing northeast.

Viewing Direction: East

West side of excavation facing east.

Viewing Direction: Northwest

Southeast corner of excavation facing northwest.

Viewing Direction: Northwest

Southeast corner of excavation facing northwest.

Daily Site Visit Report

Viewing Direction: Southwest	**Viewing Direction**: Southeast
	
Northeast corner of excavation facing southwest.	Northwest corner of excavation facing southeast.
Viewing Direction: West	**Viewing Direction**: East
	
Area where BES24-06 was collected.	Area where BES24-07 was collected.

Daily Site Visit Report

Viewing Direction: North	**Viewing Direction**: Southwest
	
Area where BES24-07 was collected.	Area where BES24-08 was collected.
Viewing Direction: West	**Viewing Direction**: West
	
South excavation wall bumped out an additional approximate 2 ft where WES24-01 was collected at approximately 2 ft bgs.	West and north excavation wall bumped out an additional approximate 2 ft where WES24-04 was collected at approximately 3 ft bgs.

Daily Site Visit Report

Viewing Direction: South	**Viewing Direction**: West
	
East and south excavation wall of 3 ft excavation bumped out an additional approximate 2 ft where WES24-05 was collected.	Area where BES24-01 and BES24-02 were collected at approximately 2’

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Andrew Ludvik

Signature: 

Daily Site Visit Report

Client:	Mack Energy Corporation	Inspection Date:	9/23/2024
Site Location Name:	Shakespeare 20 Fed Com #001H	Report Run Date:	9/24/2024 1:53 AM
Client Contact Name:	Matt Buckles	API #:	30-015-36376
Client Contact Phone #:	575-748-1288		
Unique Project ID		Project Owner:	
Project Reference #		Project Manager:	

Summary of Times

Arrived at Site	9/23/2024 7:30 AM
Departed Site	9/23/2024 5:31 PM

Field Notes

9:00 Completed JSA and conducted safety meeting with Bullseye on arrival. On site to continue excavation and confirmation sampling.

9:02 Walked excavation and swept work areas with magnetic locator prior to ground disturbance.

19:26 Bullseye work crew increased depth of southwest corner of excavation and cleaned up sidewalls. Excavator assisted in collecting confirmation base and wall samples BES24-02, BES24-10, and WES24-11 through WES24-14 from excavation to 12 feet bgs.

19:33 Work crew increased depth of excavation north of wellhead to 6 feet bgs. Confirmation base and wall samples BES24-09, BES24-11, and WES24-15 through WES24-17 were collected from excavation to 6 feet bgs.

19:36 Work crew stepped out north and east walls of excavation to 3 feet bgs as well as east wall of excavation to 4.5 feet bgs.

19:40 Field screening results for collected confirmation base samples were below NMOCD strictest criteria for chloride and TPH. Field screening results for confirmation wall samples WES24-11 through WES24-16 were below NMOCD strictest criteria for chloride and TPH. Field screening result for TPH at WES24-17 adjacent to wellhead deferral area exceeded threshold.

Next Steps & Recommendations

1 Continue confirmation sampling.

Daily Site Visit Report

VERTEX

Site Photos

Viewing Direction: East	**Viewing Direction**: North
	
West edge of excavation facing east. Increased depth of southwest corner of excavation to 12 feet bgs and collected BES24-02, BES24-10, and WES24-11 through WES24-14.	South edge of excavation facing north. Increased depth of southwest corner of excavation to 12 feet bgs and collected BES24-02, BES24-10, and WES24-11 through WES24-14.

Daily Site Visit Report

Viewing Direction: West	**Viewing Direction**: West
	
South of wellhead facing west. Increased depth of southwest corner of excavation to 12 feet bgs and collected BES24-02, BES24-10, and WES24-11 through WES24-14.	Southwest of wellhead facing west. Increased depth of southwest corner of excavation to 12 feet bgs and collected BES24-02, BES24-10, and WES24-11 through WES24-14.

Daily Site Visit Report

Viewing Direction: West	**Viewing Direction**: South
	
Northeast of wellhead facing west. Increased depth of excavation north of wellhead to 12 feet bgs and collected BES24-09, BES24-11, WES24-15, WES24-16 and WES24-17.	North of wellhead facing south. Increased depth of excavation north of wellhead to 12 feet bgs and collected BES24-09, BES24-11, WES24-15, WES24-16, and WES24-17.

Daily Site Visit Report

Viewing Direction: East

Northwest of wellhead facing east. Increased depth of excavation north of wellhead to 12 feet bgs and collected BES24-09, BES24-11, WES24-15, WES24-16, and WES24-17.

Viewing Direction: East

Northeast of wellhead facing east. North wall of excavation to 3 feet bgs was shaved back.

Viewing Direction: South

Northeast corner of excavation facing south. East wall of excavations to 3 and 4.5 feet bgs were shaved back.

Daily Site Visit Report

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Lakin Pullman

Signature:

Daily Site Visit Report

Client:	Mack Energy Corporation	Inspection Date:	9/24/2024
Site Location Name:	Shakespeare 20 Fed Com #001H	Report Run Date:	9/25/2024 1:28 AM
Client Contact Name:	Matt Buckles	API #:	30-015-36376
Client Contact Phone #:	575-748-1288		
Unique Project ID		Project Owner:	
Project Reference #		Project Manager:	

Summary of Times

Arrived at Site	9/24/2024 7:25 AM
Departed Site	9/24/2024 5:12 PM

Field Notes

8:17 Completed JSA on arrival. On site to collect remaining confirmation base and wall excavation samples.

8:18 Mapped remaining sampling points in Collector and swept excavation surfaces with magnetic locator prior to sample collection.

16:30 Confirmation samples of excavation base and wall surfaces were 5-point composites representing areas no greater than 200 square feet.

16:33 Collected confirmation sample BES24-12 within deferral area around wellhead and WES24-19 adjacent to deferral area. TPH field screening results were elevated for both samples.

16:36 Collected confirmation base samples BES24-04, BES24-07, and BES24-13 through BES24-15 from excavation surfaces. Field screening results for all samples were below NMOCD strictest criteria for chloride and TPH.

16:37 Collected confirmation wall samples WES24-18 through WES24-23 from excavation surfaces. Field screening results for all samples were below NMOCD strictest criteria for chloride and TPH.

16:37 Confirmation sampling completed pending laboratory results.

Next Steps & Recommendations

1

Daily Site Visit Report

Daily Site Visit Report

Site Photos

Viewing Direction: North	**Viewing Direction**: North
	
South of tank battery facing north.	South of wellhead facing north. Collected confirmation base and wall samples BES24-12, WES24-18, and WES24-19 in and adjacent to wellhead deferral area.

Daily Site Visit Report

Viewing Direction: Northwest	**Viewing Direction**: South
	
Southeast of wellhead facing northwest. Collected confirmation base samples BES24-04 and BES24-15 from excavation to 2 feet bgs.	Southwest of wellhead facing east. Collected confirmation base and wall samples BES24-07, WES24-20, WES24-21, and WES24-23 from excavation to 4.5 feet bgs.

Daily Site Visit Report

Viewing Direction: North

Southeast of wellhead facing north. Collected confirmation base and wall samples BES24-13, BES24-14, and WES24-22 from excavation to 3 feet bgs.

Viewing Direction: Southeast

Northwest of wellhead facing southeast over excavations to 3, 4.5, and 6 feet bgs.

Viewing Direction: East

Northwest of wellhead facing east over excavations to 3 and 6 feet bgs.

Viewing Direction: South

North of wellhead facing south over excavations to 3, 4.5, and 6 feet bgs.

Daily Site Visit Report

Viewing Direction: West

Northeast corner of excavation facing west over excavations to 3 and 6 feet bgs.

Viewing Direction: Southwest

Northeast corner of excavation facing southwest over excavations to 3, 4.5, and 6 feet bgs.

Viewing Direction: South

Northeast corner of excavation facing south over excavations to 3, 4.5, and 6 feet bgs.

Viewing Direction: West

East edge of excavation facing west over excavations to 2, 4.5, and 12 feet bgs.

Daily Site Visit Report

Viewing Direction: North	**Viewing Direction**: Northwest
	
Southeast corner of excavation facing north over excavations to 2, 3, and 4.5 feet bgs.	Southeast corner of excavation facing northwest over excavations to 2, 3, and 4.5 feet bgs.
Viewing Direction: West	**Viewing Direction**: East
	
Southwest of wellhead facing west into excavation to 12 feet bgs.	West edge of excavation facing east over excavations to 2, 4, and 12 feet bgs.

Daily Site Visit Report

Viewing Direction: Northeast	**Viewing Direction**: North
	
Southwest corner of excavation facing northwest over excavations to 2, 4, and 12 feet bgs.	Southwest corner of excavation facing north over excavations to 2, 4, and 12 feet bgs.

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Lakin Pullman

Signature: 
Signature

Daily Site Visit Report

Client:	Mack Energy Corporation	Inspection Date:	11/13/2024
Site Location Name:	Shakespeare 20 Fed Com #001H	Report Run Date:	11/13/2024 9:48 PM
Client Contact Name:	Matt Buckles	API #:	30-015-36376
Client Contact Phone #:	575-748-1288		
Unique Project ID		Project Owner:	
Project Reference #		Project Manager:	

Summary of Times

Arrived at Site	11/13/2024 11:00 AM
Departed Site	11/13/2024 1:10 PM

Field Notes

11:07 Arrived at approximately 11:00 am. On site to conduct site inspection and document backfill.

Next Steps & Recommendations

1

Daily Site Visit Report

Site Photos

Viewing Direction: Southwest

Placard

Viewing Direction: Northeast

Southwest of pad facing northeast.

Viewing Direction: Northwest

Southeast of pad facing northwest.

Viewing Direction: Southwest

Northeast of pad facing southwest.

Daily Site Visit Report

Viewing Direction: Southeast

Northwest of pad facing southeast.

Viewing Direction: Southeast

Photo of backfill - northwest corner of excavation area.

Viewing Direction: Southwest

Photo of backfill - northeast corner of excavation area.

Viewing Direction: Northwest

Photo of backfill - southeast corner of excavation area.

Daily Site Visit Report

Viewing Direction: Northeast

Photo of backfill - southwest corner of excavation area.

Viewing Direction: East

Photo of backfill - west side of excavation.

Viewing Direction: West

Photo of backfill - east side of excavation.

Viewing Direction: West

Photo of backfill - east side of excavation.

Daily Site Visit Report

Viewing Direction: West	**Viewing Direction**: North
	
Photo of backfill - east of well head.	Photo of backfill - south of wellhead.
Viewing Direction: North	**Viewing Direction**: South
	
Photo of backfill - south of pumpjack.	Photo of backfill - north of pumpjack.

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Andrew Ludvik

Signature: 
Signature

APPENDIX D – Notifications

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

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

QUESTIONS

Action 372168

QUESTIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 372168
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

QUESTIONS

Prerequisites	
Incident ID (n#)	**nAB1530148267**
Incident Name	**NAB1530148267 SHAKESPEARE 20 FEDERAL COM #001H @ 30-015-36376**
Incident Type	**Produced Water Release**
Incident Status	**Remediation Plan Approved**
Incident Well	**[30-015-36376] SHAKESPEARE 20 FEDERAL COM #001H**

Location of Release Source	
Site Name	**SHAKESPEARE 20 FEDERAL COM #001H**
Date Release Discovered	**10/18/2015**
Surface Owner	**Federal**

Sampling Event General Information *Please answer all the questions in this group.*	
What is the sampling surface area in square feet	2,000
What is the estimated number of samples that will be gathered	10
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	08/13/2024
Time sampling will commence	08:30 AM
Please provide any information necessary for observers to contact samplers	Andrew Ludvik (575) 263-3124
Please provide any information necessary for navigation to sampling site	From Artesia head east on US 82 E for ~9.9 miles. Turn left on Crane Rd/Southern Un Rd and head north for ~2.98 miles. Turn right at the fork and head northeast for ~1.26 miles. Turn left and continue for ~0.15 miles. Turn right at placard that reads Mark Twain 5 Fed Com #02H. Head northeast for ~1.03 miles. Turn right and head east for ~1.04 miles. Turn left at the fork and head northeast for ~0.6 miles. Turn left and head north for ~1.67 miles. Turn left and head west for ~0.25 miles

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

CONDITIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 372168
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

CONDITIONS

Created By	Condition	Condition Date
scarttar	Failure to notify the OCD of sampling events including any changes in date/time per the requirements of 19.15.29.12.D.(1).(a) NMAC, may result in the remediation closure samples not being accepted.	8/9/2024

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

QUESTIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 372178
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

QUESTIONS

Prerequisites	
Incident ID (n#)	**nAB1530148267**
Incident Name	**NAB1530148267 SHAKESPEARE 20 FEDERAL COM #001H @ 30-015-36376**
Incident Type	**Produced Water Release**
Incident Status	**Remediation Plan Approved**
Incident Well	**[30-015-36376] SHAKESPEARE 20 FEDERAL COM #001H**

Location of Release Source	
Site Name	**SHAKESPEARE 20 FEDERAL COM #001H**
Date Release Discovered	**10/18/2015**
Surface Owner	**Federal**

Sampling Event General Information *Please answer all the questions in this group.*	
What is the sampling surface area in square feet	2,000
What is the estimated number of samples that will be gathered	10
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	08/14/2024
Time sampling will commence	08:00 AM
Please provide any information necessary for observers to contact samplers	Andrew Ludvik (575) 263-3124
Please provide any information necessary for navigation to sampling site	From Artesia head east on US 82 E for ~9.9 miles. Turn left on Crane Rd/Southern Un Rd and head north for ~2.98 miles. Turn right at the fork and head northeast for ~1.26 miles. Turn left and continue for ~0.15 miles. Turn right at placard that reads Mark Twain 5 Fed Com #02H. Head northeast for ~1.03 miles. Turn right and head east for ~1.04 miles. Turn left at the fork and head northeast for ~0.6 miles. Turn left and head north for ~1.67 miles. Turn left and head west for ~0.25 miles

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

CONDITIONS

Operator:	OGRID:
MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	13837
	Action Number: 372178
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

CONDITIONS

Created By	Condition	Condition Date
scarttar	Failure to notify the OCD of sampling events including any changes in date/time per the requirements of 19.15.29.12.D.(1).(a) NMAC, may result in the remediation closure samples not being accepted.	8/9/2024

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QUESTIONS

Action 379267

QUESTIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 379267
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

QUESTIONS

Prerequisites	
Incident ID (n#)	**nAB1530148267**
Incident Name	**NAB1530148267 SHAKESPEARE 20 FEDERAL COM #001H @ 30-015-36376**
Incident Type	**Produced Water Release**
Incident Status	**Remediation Plan Approved**
Incident Well	**[30-015-36376] SHAKESPEARE 20 FEDERAL COM #001H**

Location of Release Source	
Site Name	**SHAKESPEARE 20 FEDERAL COM #001H**
Date Release Discovered	**10/18/2015**
Surface Owner	**Federal**

Sampling Event General Information *Please answer all the questions in this group.*	
What is the sampling surface area in square feet	1,200
What is the estimated number of samples that will be gathered	10
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	09/04/2024
Time sampling will commence	08:00 AM
Please provide any information necessary for observers to contact samplers	Sally Carttar 575.361.3561
Please provide any information necessary for navigation to sampling site	From Artesia head east on US 82 E for ~9.9 miles. Turn left on Crane Rd/Southern Un Rd and head north for ~2.98 miles. Turn right at the fork and head northeast for ~1.26 miles. Turn left and continue for ~0.15 miles. Turn right at placard that reads Mark Twain 5 Fed Com #02H. Head northeast for ~1.03 miles. Turn right and head east for ~1.04 miles. Turn left at the fork and head northeast for ~0.6 miles. Turn left and head north for ~1.67 miles. Turn left and head west for ~0.25 miles

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

CONDITIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 379267
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

CONDITIONS

Created By	Condition	Condition Date
scarttar	Failure to notify the OCD of sampling events including any changes in date/time per the requirements of 19.15.29.12.D.(1).(a) NMAC, may result in the remediation closure samples not being accepted.	8/29/2024

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Santa Fe, NM 87505

QUESTIONS

Action 379270

QUESTIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 379270
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

QUESTIONS

Prerequisites	
Incident ID (n#)	**nAB1530148267**
Incident Name	**NAB1530148267 SHAKESPEARE 20 FEDERAL COM #001H @ 30-015-36376**
Incident Type	**Produced Water Release**
Incident Status	**Remediation Plan Approved**
Incident Well	**[30-015-36376] SHAKESPEARE 20 FEDERAL COM #001H**

Location of Release Source	
Site Name	**SHAKESPEARE 20 FEDERAL COM #001H**
Date Release Discovered	**10/18/2015**
Surface Owner	**Federal**

Sampling Event General Information *Please answer all the questions in this group.*	
What is the sampling surface area in square feet	1,200
What is the estimated number of samples that will be gathered	10
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	09/05/2024
Time sampling will commence	08:00 AM
Please provide any information necessary for observers to contact samplers	Sally Carttar 575.361.3561
Please provide any information necessary for navigation to sampling site	From Artesia head east on US 82 E for ~9.9 miles. Turn left on Crane Rd/Southern Un Rd and head north for ~2.98 miles. Turn right at the fork and head northeast for ~1.26 miles. Turn left and continue for ~0.15 miles. Turn right at placard that reads Mark Twain 5 Fed Com #02H. Head northeast for ~1.03 miles. Turn right and head east for ~1.04 miles. Turn left at the fork and head northeast for ~0.6 miles. Turn left and head north for ~1.67 miles. Turn left and head west for ~0.25 miles

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

CONDITIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 379270
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

CONDITIONS

Created By	Condition	Condition Date
scarttar	Failure to notify the OCD of sampling events including any changes in date/time per the requirements of 19.15.29.12.D.(1).(a) NMAC, may result in the remediation closure samples not being accepted.	8/29/2024

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

QUESTIONS

Action 379272

QUESTIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 379272
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

QUESTIONS

Prerequisites	
Incident ID (n#)	**nAB1530148267**
Incident Name	**NAB1530148267 SHAKESPEARE 20 FEDERAL COM #001H @ 30-015-36376**
Incident Type	**Produced Water Release**
Incident Status	**Remediation Plan Approved**
Incident Well	**[30-015-36376] SHAKESPEARE 20 FEDERAL COM #001H**

Location of Release Source	
Site Name	**SHAKESPEARE 20 FEDERAL COM #001H**
Date Release Discovered	**10/18/2015**
Surface Owner	**Federal**

Sampling Event General Information *Please answer all the questions in this group.*	
What is the sampling surface area in square feet	1,200
What is the estimated number of samples that will be gathered	10
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	09/06/2024
Time sampling will commence	08:00 AM
Please provide any information necessary for observers to contact samplers	Sally Carttar 575.361.3561
Please provide any information necessary for navigation to sampling site	From Artesia head east on US 82 E for ~9.9 miles. Turn left on Crane Rd/Southern Un Rd and head north for ~2.98 miles. Turn right at the fork and head northeast for ~1.26 miles. Turn left and continue for ~0.15 miles. Turn right at placard that reads Mark Twain 5 Fed Com #02H. Head northeast for ~1.03 miles. Turn right and head east for ~1.04 miles. Turn left at the fork and head northeast for ~0.6 miles. Turn left and head north for ~1.67 miles. Turn left and head west for ~0.25 miles

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

CONDITIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 379272
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

CONDITIONS

Created By	Condition	Condition Date
scarttar	Failure to notify the OCD of sampling events including any changes in date/time per the requirements of 19.15.29.12.D.(1).(a) NMAC, may result in the remediation closure samples not being accepted.	8/29/2024

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State of New Mexico
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Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

QUESTIONS

Action 384643

QUESTIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 384643
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

QUESTIONS

Prerequisites	
Incident ID (n#)	**nAB1530148267**
Incident Name	**NAB1530148267 SHAKESPEARE 20 FEDERAL COM #001H @ 30-015-36376**
Incident Type	**Produced Water Release**
Incident Status	**Remediation Plan Approved**
Incident Well	**[30-015-36376] SHAKESPEARE 20 FEDERAL COM #001H**

Location of Release Source	
Site Name	**SHAKESPEARE 20 FEDERAL COM #001H**
Date Release Discovered	**10/18/2015**
Surface Owner	**Federal**

Sampling Event General Information *Please answer all the questions in this group.*	
What is the sampling surface area in square feet	1,200
What is the estimated number of samples that will be gathered	10
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	09/23/2024
Time sampling will commence	08:00 AM
Please provide any information necessary for observers to contact samplers	Sally Carttar 575.361.3561
Please provide any information necessary for navigation to sampling site	From Artesia head east on US 82 E for ~9.9 miles. Turn left on Crane Rd/Southern Un Rd and head north for ~2.98 miles. Turn right at the fork and head northeast for ~1.26 miles. Turn left and continue for ~0.15 miles. Turn right at placard that reads Mark Twain 5 Fed Com #02H. Head northeast for ~1.03 miles. Turn right and head east for ~1.04 miles. Turn left at the fork and head northeast for ~0.6 miles. Turn left and head north for ~1.67 miles. Turn left and head west for ~0.25 miles

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

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

CONDITIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 384643
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

CONDITIONS

Created By	Condition	Condition Date
scarttar	Failure to notify the OCD of sampling events including any changes in date/time per the requirements of 19.15.29.12.D.(1).(a) NMAC, may result in the remediation closure samples not being accepted.	9/18/2024

District I
1625 N. French Dr., Hobbs, NM 88240
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District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

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

QUESTIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 384608
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

QUESTIONS

Prerequisites	
Incident ID (n#)	**nAB1530148267**
Incident Name	**NAB1530148267 SHAKESPEARE 20 FEDERAL COM #001H @ 30-015-36376**
Incident Type	**Produced Water Release**
Incident Status	**Remediation Plan Approved**
Incident Well	**[30-015-36376] SHAKESPEARE 20 FEDERAL COM #001H**

Location of Release Source	
Site Name	**SHAKESPEARE 20 FEDERAL COM #001H**
Date Release Discovered	**10/18/2015**
Surface Owner	**Federal**

Sampling Event General Information *Please answer all the questions in this group.*	
What is the sampling surface area in square feet	1,200
What is the estimated number of samples that will be gathered	10
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	09/24/2024
Time sampling will commence	08:00 AM
Please provide any information necessary for observers to contact samplers	Sally Carttar 575.361.3561
Please provide any information necessary for navigation to sampling site	From Artesia head east on US 82 E for ~9.9 miles. Turn left on Crane Rd/Southern Un Rd and head north for ~2.98 miles. Turn right at the fork and head northeast for ~1.26 miles. Turn left and continue for ~0.15 miles. Turn right at placard that reads Mark Twain 5 Fed Com #02H. Head northeast for ~1.03 miles. Turn right and head east for ~1.04 miles. Turn left at the fork and head northeast for ~0.6 miles. Turn left and head north for ~1.67 miles. Turn left and head west for ~0.25 miles

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

CONDITIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 384608
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

CONDITIONS

Created By	Condition	Condition Date
scarttar	Failure to notify the OCD of sampling events including any changes in date/time per the requirements of 19.15.29.12.D.(1).(a) NMAC, may result in the remediation closure samples not being accepted.	9/18/2024

APPENDIX E – Laboratory Data Reports and Chain of Custody Forms

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Ms. Sally Carttar
Vertex
3101 Boyd Dr
Carlsbad, New Mexico 88220

Generated 6/19/2024 8:44:08 AM

JOB DESCRIPTION

Shakespeare 20 Fed Com #001H

JOB NUMBER

885-5973-1

Eurofins Albuquerque
4901 Hawkins NE
Albuquerque NM 87109

See page two for job notes and contact information.

Eurofins Albuquerque

Job Notes

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing South Central, LLC Project Manager.

Authorization

Generated
6/19/2024 8:44:08 AM

Authorized for release by
Andy Freeman, Business Unit Manager
andy.freeman@et.eurofinsus.com
(505)345-3975

Client: Vertex
Project/Site: Shakespeare 20 Fed Com #001H

Laboratory Job ID: 885-5973-1

Table of Contents

Definitions/Glossary

Client: Vertex Job ID: 885-5973-1
Project/Site: Shakespeare 20 Fed Com #001H

Qualifiers

GC VOA

Qualifier	Qualifier Description
S1+	Surrogate recovery exceeds control limits, high biased.

GC Semi VOA

Qualifier	Qualifier Description
D	Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis; also compounds analyzed at a dilution may be flagged with a D.
S1-	Surrogate recovery exceeds control limits, low biased.

HPLC/IC

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Vertex Job ID: 885-5973-1
Project: Shakespeare 20 Fed Com #001H

Job ID: 885-5973-1 Eurofins Albuquerque

Job Narrative
885-5973-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 6/11/2024 8:10 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.5°C.

Gasoline Range Organics
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

GC VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Diesel Range Organics
Method 8015D_DRO: The following sample was diluted due to the nature of the sample matrix: BH24-12 2' (885-5973-22). As such, surrogate recoveries are below the calibration range or are not reported, and elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

HPLC/IC
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Client Sample Results

Client: Vertex
Job ID: 885-5973-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BH24-01 0'
Lab Sample ID: 885-5973-1
Date Collected: 06/06/24 08:20
Matrix: Solid
Date Received: 06/11/24 08:10

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.8		mg/Kg		06/11/24 14:27	06/14/24 20:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*35 - 166*	*06/11/24 14:27*	*06/14/24 20:43*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		06/11/24 14:27	06/14/24 20:43	1
Ethylbenzene	ND		0.048		mg/Kg		06/11/24 14:27	06/14/24 20:43	1
Toluene	ND		0.048		mg/Kg		06/11/24 14:27	06/14/24 20:43	1
Xylenes, Total	ND		0.095		mg/Kg		06/11/24 14:27	06/14/24 20:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*92*		*48 - 145*	*06/11/24 14:27*	*06/14/24 20:43*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.3		mg/Kg		06/13/24 10:28	06/13/24 13:43	1
Motor Oil Range Organics [C28-C40]	ND		46		mg/Kg		06/13/24 10:28	06/13/24 13:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*105*		*62 - 134*	*06/13/24 10:28*	*06/13/24 13:43*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		06/13/24 09:22	06/13/24 11:52	20

Client Sample Results

Client: Vertex
Job ID: 885-5973-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BH24-01 2'
Lab Sample ID: 885-5973-2
Date Collected: 06/06/24 11:15
Matrix: Solid
Date Received: 06/11/24 08:10

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.7		mg/Kg		06/11/24 14:27	06/14/24 21:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*35 - 166*	*06/11/24 14:27*	*06/14/24 21:53*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.023		mg/Kg		06/11/24 14:27	06/14/24 21:53	1
Ethylbenzene	ND		0.047		mg/Kg		06/11/24 14:27	06/14/24 21:53	1
Toluene	ND		0.047		mg/Kg		06/11/24 14:27	06/14/24 21:53	1
Xylenes, Total	ND		0.094		mg/Kg		06/11/24 14:27	06/14/24 21:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*91*		*48 - 145*	*06/11/24 14:27*	*06/14/24 21:53*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.7		mg/Kg		06/13/24 10:28	06/13/24 14:17	1
Motor Oil Range Organics [C28-C40]	ND		49		mg/Kg		06/13/24 10:28	06/13/24 14:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*97*		*62 - 134*	*06/13/24 10:28*	*06/13/24 14:17*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**210**		60		mg/Kg		06/13/24 09:22	06/13/24 12:29	20

Client Sample Results

Client: Vertex
Job ID: 885-5973-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BH24-02 0'
Lab Sample ID: 885-5973-3
Date Collected: 06/06/24 08:30
Matrix: Solid
Date Received: 06/11/24 08:10

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.9		mg/Kg		06/11/24 14:27	06/14/24 22:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*35 - 166*	*06/11/24 14:27*	*06/14/24 22:17*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		06/11/24 14:27	06/14/24 22:17	1
Ethylbenzene	ND		0.049		mg/Kg		06/11/24 14:27	06/14/24 22:17	1
Toluene	ND		0.049		mg/Kg		06/11/24 14:27	06/14/24 22:17	1
Xylenes, Total	ND		0.099		mg/Kg		06/11/24 14:27	06/14/24 22:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*88*		*48 - 145*	*06/11/24 14:27*	*06/14/24 22:17*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		8.7		mg/Kg		06/13/24 10:28	06/13/24 14:28	1
Motor Oil Range Organics [C28-C40]	ND		43		mg/Kg		06/13/24 10:28	06/13/24 14:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*100*		*62 - 134*	*06/13/24 10:28*	*06/13/24 14:28*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**240**		60		mg/Kg		06/13/24 09:22	06/13/24 13:31	20

Client Sample Results

Client: Vertex
Job ID: 885-5973-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BH24-02 2'
Lab Sample ID: 885-5973-4
Date Collected: 06/06/24 11:30
Matrix: Solid
Date Received: 06/11/24 08:10

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		06/11/24 14:27	06/14/24 22:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*35 - 166*	*06/11/24 14:27*	*06/14/24 22:40*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		06/11/24 14:27	06/14/24 22:40	1
Ethylbenzene	ND		0.050		mg/Kg		06/11/24 14:27	06/14/24 22:40	1
Toluene	ND		0.050		mg/Kg		06/11/24 14:27	06/14/24 22:40	1
Xylenes, Total	ND		0.10		mg/Kg		06/11/24 14:27	06/14/24 22:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*89*		*48 - 145*	*06/11/24 14:27*	*06/14/24 22:40*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.7		mg/Kg		06/13/24 10:28	06/13/24 14:40	1
Motor Oil Range Organics [C28-C40]	ND		48		mg/Kg		06/13/24 10:28	06/13/24 14:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*99*		*62 - 134*	*06/13/24 10:28*	*06/13/24 14:40*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**140**		59		mg/Kg		06/13/24 09:22	06/13/24 13:43	20

Client Sample Results

Client: Vertex
Job ID: 885-5973-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BH24-03 0'
Lab Sample ID: 885-5973-5
Date Collected: 06/06/24 08:40
Matrix: Solid
Date Received: 06/11/24 08:10

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.8		mg/Kg		06/11/24 14:27	06/14/24 23:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*35 - 166*	*06/11/24 14:27*	*06/14/24 23:03*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		06/11/24 14:27	06/14/24 23:03	1
Ethylbenzene	ND		0.048		mg/Kg		06/11/24 14:27	06/14/24 23:03	1
Toluene	ND		0.048		mg/Kg		06/11/24 14:27	06/14/24 23:03	1
Xylenes, Total	ND		0.096		mg/Kg		06/11/24 14:27	06/14/24 23:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*88*		*48 - 145*	*06/11/24 14:27*	*06/14/24 23:03*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**21**		8.9		mg/Kg		06/13/24 10:28	06/14/24 15:01	1
Motor Oil Range Organics [C28-C40]	ND		44		mg/Kg		06/13/24 10:28	06/14/24 15:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*100*		*62 - 134*	*06/13/24 10:28*	*06/14/24 15:01*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**2400**		150		mg/Kg		06/13/24 09:22	06/14/24 13:03	50

Client Sample Results

Client: Vertex
Job ID: 885-5973-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BH24-03 2'
Lab Sample ID: 885-5973-6
Date Collected: 06/06/24 11:45
Matrix: Solid
Date Received: 06/11/24 08:10

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.7		mg/Kg		06/11/24 14:27	06/14/24 23:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*35 - 166*	*06/11/24 14:27*	*06/14/24 23:27*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		06/11/24 14:27	06/14/24 23:27	1
Ethylbenzene	ND		0.047		mg/Kg		06/11/24 14:27	06/14/24 23:27	1
Toluene	ND		0.047		mg/Kg		06/11/24 14:27	06/14/24 23:27	1
Xylenes, Total	ND		0.095		mg/Kg		06/11/24 14:27	06/14/24 23:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*90*		*48 - 145*	*06/11/24 14:27*	*06/14/24 23:27*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.4		mg/Kg		06/13/24 10:28	06/13/24 15:03	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		06/13/24 10:28	06/13/24 15:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*104*		*62 - 134*	*06/13/24 10:28*	*06/13/24 15:03*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**220**		60		mg/Kg		06/13/24 09:22	06/13/24 14:08	20

Client Sample Results

Client: Vertex
Job ID: 885-5973-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BH24-04 0'
Lab Sample ID: 885-5973-7
Date Collected: 06/06/24 13:20
Matrix: Solid
Date Received: 06/11/24 08:10

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.9		mg/Kg		06/11/24 14:27	06/14/24 23:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*35 - 166*	*06/11/24 14:27*	*06/14/24 23:50*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		06/11/24 14:27	06/14/24 23:50	1
Ethylbenzene	ND		0.049		mg/Kg		06/11/24 14:27	06/14/24 23:50	1
Toluene	ND		0.049		mg/Kg		06/11/24 14:27	06/14/24 23:50	1
Xylenes, Total	ND		0.099		mg/Kg		06/11/24 14:27	06/14/24 23:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*91*		*48 - 145*	*06/11/24 14:27*	*06/14/24 23:50*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.5		mg/Kg		06/13/24 10:28	06/13/24 15:14	1
Motor Oil Range Organics [C28-C40]	ND		48		mg/Kg		06/13/24 10:28	06/13/24 15:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*102*		*62 - 134*	*06/13/24 10:28*	*06/13/24 15:14*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**210**		60		mg/Kg		06/13/24 09:22	06/13/24 14:20	20

Client Sample Results

Client: Vertex
Job ID: 885-5973-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BH24-04 2'
Lab Sample ID: 885-5973-8
Date Collected: 06/06/24 13:30
Matrix: Solid
Date Received: 06/11/24 08:10

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.9		mg/Kg		06/11/24 14:27	06/15/24 00:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*35 - 166*	*06/11/24 14:27*	*06/15/24 00:14*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		06/11/24 14:27	06/15/24 00:14	1
Ethylbenzene	ND		0.049		mg/Kg		06/11/24 14:27	06/15/24 00:14	1
Toluene	ND		0.049		mg/Kg		06/11/24 14:27	06/15/24 00:14	1
Xylenes, Total	ND		0.097		mg/Kg		06/11/24 14:27	06/15/24 00:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*90*		*48 - 145*	*06/11/24 14:27*	*06/15/24 00:14*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		8.6		mg/Kg		06/13/24 10:28	06/13/24 15:26	1
Motor Oil Range Organics [C28-C40]	ND		43		mg/Kg		06/13/24 10:28	06/13/24 15:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*93*		*62 - 134*	*06/13/24 10:28*	*06/13/24 15:26*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**180**		60		mg/Kg		06/13/24 09:22	06/13/24 14:32	20

Client Sample Results

Client: Vertex
Job ID: 885-5973-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BH24-05 0'
Lab Sample ID: 885-5973-9
Date Collected: 06/06/24 13:00
Matrix: Solid
Date Received: 06/11/24 08:10

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.9		mg/Kg		06/11/24 14:27	06/15/24 00:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*35 - 166*	*06/11/24 14:27*	*06/15/24 00:37*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		06/11/24 14:27	06/15/24 00:37	1
Ethylbenzene	ND		0.049		mg/Kg		06/11/24 14:27	06/15/24 00:37	1
Toluene	ND		0.049		mg/Kg		06/11/24 14:27	06/15/24 00:37	1
Xylenes, Total	ND		0.097		mg/Kg		06/11/24 14:27	06/15/24 00:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*89*		*48 - 145*	*06/11/24 14:27*	*06/15/24 00:37*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.8		mg/Kg		06/13/24 10:28	06/13/24 15:38	1
Motor Oil Range Organics [C28-C40]	ND		49		mg/Kg		06/13/24 10:28	06/13/24 15:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*93*		*62 - 134*	*06/13/24 10:28*	*06/13/24 15:38*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**220**		61		mg/Kg		06/13/24 09:22	06/13/24 14:45	20

Client Sample Results

Client: Vertex
Job ID: 885-5973-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BH24-05 2'
Lab Sample ID: 885-5973-10
Date Collected: 06/06/24 13:10
Matrix: Solid
Date Received: 06/11/24 08:10

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		06/11/24 14:27	06/15/24 01:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*35 - 166*	*06/11/24 14:27*	*06/15/24 01:00*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		06/11/24 14:27	06/15/24 01:00	1
Ethylbenzene	ND		0.050		mg/Kg		06/11/24 14:27	06/15/24 01:00	1
Toluene	ND		0.050		mg/Kg		06/11/24 14:27	06/15/24 01:00	1
Xylenes, Total	ND		0.10		mg/Kg		06/11/24 14:27	06/15/24 01:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*90*		*48 - 145*	*06/11/24 14:27*	*06/15/24 01:00*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		8.4		mg/Kg		06/13/24 10:28	06/13/24 15:50	1
Motor Oil Range Organics [C28-C40]	ND		42		mg/Kg		06/13/24 10:28	06/13/24 15:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*98*		*62 - 134*	*06/13/24 10:28*	*06/13/24 15:50*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**290**		60		mg/Kg		06/13/24 09:22	06/13/24 14:57	20

Client Sample Results

Client: Vertex
Job ID: 885-5973-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BH24-07 0'
Lab Sample ID: 885-5973-11
Date Collected: 06/07/24 09:00
Matrix: Solid
Date Received: 06/11/24 08:10

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		06/11/24 14:27	06/15/24 01:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*35 - 166*	*06/11/24 14:27*	*06/15/24 01:24*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		06/11/24 14:27	06/15/24 01:24	1
Ethylbenzene	ND		0.050		mg/Kg		06/11/24 14:27	06/15/24 01:24	1
Toluene	ND		0.050		mg/Kg		06/11/24 14:27	06/15/24 01:24	1
Xylenes, Total	ND		0.099		mg/Kg		06/11/24 14:27	06/15/24 01:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*48 - 145*	*06/11/24 14:27*	*06/15/24 01:24*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		8.7		mg/Kg		06/13/24 10:28	06/13/24 16:01	1
Motor Oil Range Organics [C28-C40]	ND		44		mg/Kg		06/13/24 10:28	06/13/24 16:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*94*		*62 - 134*	*06/13/24 10:28*	*06/13/24 16:01*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**190**		60		mg/Kg		06/13/24 09:22	06/13/24 15:34	20

Client Sample Results

Client: Vertex
Job ID: 885-5973-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BH24-07 2'
Lab Sample ID: 885-5973-12
Date Collected: 06/07/24 09:10
Matrix: Solid
Date Received: 06/11/24 08:10

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.9		mg/Kg		06/11/24 14:27	06/15/24 02:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*35 - 166*	*06/11/24 14:27*	*06/15/24 02:11*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		06/11/24 14:27	06/15/24 02:11	1
Ethylbenzene	ND		0.049		mg/Kg		06/11/24 14:27	06/15/24 02:11	1
Toluene	ND		0.049		mg/Kg		06/11/24 14:27	06/15/24 02:11	1
Xylenes, Total	ND		0.099		mg/Kg		06/11/24 14:27	06/15/24 02:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*91*		*48 - 145*	*06/11/24 14:27*	*06/15/24 02:11*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.1		mg/Kg		06/13/24 10:28	06/13/24 16:13	1
Motor Oil Range Organics [C28-C40]	ND		45		mg/Kg		06/13/24 10:28	06/13/24 16:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*95*		*62 - 134*	*06/13/24 10:28*	*06/13/24 16:13*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**290**		61		mg/Kg		06/13/24 09:22	06/13/24 15:47	20

Client Sample Results

Client: Vertex
Job ID: 885-5973-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BH24-08 0'
Lab Sample ID: 885-5973-13
Date Collected: 06/07/24 09:15
Matrix: Solid
Date Received: 06/11/24 08:10

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.7		mg/Kg		06/11/24 14:27	06/15/24 02:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*35 - 166*	*06/11/24 14:27*	*06/15/24 02:34*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.023		mg/Kg		06/11/24 14:27	06/15/24 02:34	1
Ethylbenzene	ND		0.047		mg/Kg		06/11/24 14:27	06/15/24 02:34	1
Toluene	ND		0.047		mg/Kg		06/11/24 14:27	06/15/24 02:34	1
Xylenes, Total	ND		0.094		mg/Kg		06/11/24 14:27	06/15/24 02:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*91*		*48 - 145*	*06/11/24 14:27*	*06/15/24 02:34*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.4		mg/Kg		06/13/24 10:28	06/13/24 16:25	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		06/13/24 10:28	06/13/24 16:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*120*		*62 - 134*	*06/13/24 10:28*	*06/13/24 16:25*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**360**		60		mg/Kg		06/13/24 09:22	06/13/24 15:59	20

Client Sample Results

Client: Vertex
Job ID: 885-5973-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BH24-08 2'
Lab Sample ID: 885-5973-14
Date Collected: 06/07/24 09:25
Matrix: Solid
Date Received: 06/11/24 08:10

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.9		mg/Kg		06/11/24 14:27	06/15/24 02:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*35 - 166*	*06/11/24 14:27*	*06/15/24 02:57*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		06/11/24 14:27	06/15/24 02:57	1
Ethylbenzene	ND		0.049		mg/Kg		06/11/24 14:27	06/15/24 02:57	1
Toluene	ND		0.049		mg/Kg		06/11/24 14:27	06/15/24 02:57	1
Xylenes, Total	ND		0.099		mg/Kg		06/11/24 14:27	06/15/24 02:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*48 - 145*	*06/11/24 14:27*	*06/15/24 02:57*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.1		mg/Kg		06/13/24 10:28	06/13/24 16:37	1
Motor Oil Range Organics [C28-C40]	ND		46		mg/Kg		06/13/24 10:28	06/13/24 16:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*97*		*62 - 134*	*06/13/24 10:28*	*06/13/24 16:37*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**230**		60		mg/Kg		06/13/24 09:22	06/13/24 16:11	20

Client Sample Results

Client: Vertex
Job ID: 885-5973-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BH24-09 0'
Lab Sample ID: 885-5973-15
Date Collected: 06/07/24 10:45
Matrix: Solid
Date Received: 06/11/24 08:10

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.8		mg/Kg		06/11/24 14:27	06/15/24 03:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*35 - 166*	*06/11/24 14:27*	*06/15/24 03:21*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		06/11/24 14:27	06/15/24 03:21	1
Ethylbenzene	ND		0.048		mg/Kg		06/11/24 14:27	06/15/24 03:21	1
Toluene	ND		0.048		mg/Kg		06/11/24 14:27	06/15/24 03:21	1
Xylenes, Total	ND		0.097		mg/Kg		06/11/24 14:27	06/15/24 03:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*92*		*48 - 145*	*06/11/24 14:27*	*06/15/24 03:21*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		8.9		mg/Kg		06/13/24 10:28	06/13/24 16:48	1
Motor Oil Range Organics [C28-C40]	ND		44		mg/Kg		06/13/24 10:28	06/13/24 16:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*96*		*62 - 134*	*06/13/24 10:28*	*06/13/24 16:48*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**220**		60		mg/Kg		06/13/24 09:39	06/13/24 16:24	20

Client Sample Results

Client: Vertex
Job ID: 885-5973-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BH24-09 2'
Lab Sample ID: 885-5973-16
Date Collected: 06/07/24 10:55
Matrix: Solid
Date Received: 06/11/24 08:10

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.6		mg/Kg		06/11/24 14:27	06/15/24 03:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*35 - 166*	*06/11/24 14:27*	*06/15/24 03:44*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.023		mg/Kg		06/11/24 14:27	06/15/24 03:44	1
Ethylbenzene	ND		0.046		mg/Kg		06/11/24 14:27	06/15/24 03:44	1
Toluene	ND		0.046		mg/Kg		06/11/24 14:27	06/15/24 03:44	1
Xylenes, Total	ND		0.093		mg/Kg		06/11/24 14:27	06/15/24 03:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*92*		*48 - 145*	*06/11/24 14:27*	*06/15/24 03:44*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.3		mg/Kg		06/13/24 10:28	06/13/24 17:00	1
Motor Oil Range Organics [C28-C40]	ND		46		mg/Kg		06/13/24 10:28	06/13/24 17:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*98*		*62 - 134*	*06/13/24 10:28*	*06/13/24 17:00*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**340**		60		mg/Kg		06/13/24 09:39	06/13/24 17:01	20

Client Sample Results

Client: Vertex
Job ID: 885-5973-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BH24-10 0'
Lab Sample ID: 885-5973-17
Date Collected: 06/07/24 12:45
Matrix: Solid
Date Received: 06/11/24 08:10

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		06/11/24 14:27	06/15/24 04:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*35 - 166*	*06/11/24 14:27*	*06/15/24 04:08*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		06/11/24 14:27	06/15/24 04:08	1
Ethylbenzene	ND		0.050		mg/Kg		06/11/24 14:27	06/15/24 04:08	1
Toluene	ND		0.050		mg/Kg		06/11/24 14:27	06/15/24 04:08	1
Xylenes, Total	ND		0.099		mg/Kg		06/11/24 14:27	06/15/24 04:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*90*		*48 - 145*	*06/11/24 14:27*	*06/15/24 04:08*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.3		mg/Kg		06/13/24 10:28	06/13/24 17:13	1
Motor Oil Range Organics [C28-C40]	ND		46		mg/Kg		06/13/24 10:28	06/13/24 17:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*128*		*62 - 134*	*06/13/24 10:28*	*06/13/24 17:13*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		06/13/24 09:39	06/13/24 18:02	20

Client Sample Results

Client: Vertex
Job ID: 885-5973-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BH24-10 2'
Lab Sample ID: 885-5973-18
Date Collected: 06/07/24 12:55
Matrix: Solid
Date Received: 06/11/24 08:10

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.7		mg/Kg		06/12/24 10:24	06/14/24 06:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*35 - 166*	*06/12/24 10:24*	*06/14/24 06:18*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.023		mg/Kg		06/12/24 10:24	06/14/24 06:18	1
Ethylbenzene	ND		0.047		mg/Kg		06/12/24 10:24	06/14/24 06:18	1
Toluene	ND		0.047		mg/Kg		06/12/24 10:24	06/14/24 06:18	1
Xylenes, Total	ND		0.094		mg/Kg		06/12/24 10:24	06/14/24 06:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*90*		*48 - 145*	*06/12/24 10:24*	*06/14/24 06:18*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.0		mg/Kg		06/13/24 10:28	06/13/24 17:25	1
Motor Oil Range Organics [C28-C40]	ND		45		mg/Kg		06/13/24 10:28	06/13/24 17:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*97*		*62 - 134*	*06/13/24 10:28*	*06/13/24 17:25*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		06/13/24 09:39	06/13/24 18:27	20

Client Sample Results

Client: Vertex
Job ID: 885-5973-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BH24-11 0'
Lab Sample ID: 885-5973-19
Date Collected: 06/07/24 13:05
Matrix: Solid
Date Received: 06/11/24 08:10

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.9		mg/Kg		06/12/24 10:24	06/14/24 06:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*35 - 166*	*06/12/24 10:24*	*06/14/24 06:42*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		06/12/24 10:24	06/14/24 06:42	1
Ethylbenzene	ND		0.049		mg/Kg		06/12/24 10:24	06/14/24 06:42	1
Toluene	ND		0.049		mg/Kg		06/12/24 10:24	06/14/24 06:42	1
Xylenes, Total	ND		0.097		mg/Kg		06/12/24 10:24	06/14/24 06:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*89*		*48 - 145*	*06/12/24 10:24*	*06/14/24 06:42*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.1		mg/Kg		06/13/24 10:28	06/13/24 17:37	1
Motor Oil Range Organics [C28-C40]	ND		46		mg/Kg		06/13/24 10:28	06/13/24 17:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*128*		*62 - 134*	*06/13/24 10:28*	*06/13/24 17:37*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		06/13/24 09:39	06/13/24 18:39	20

Client Sample Results

Client: Vertex
Job ID: 885-5973-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BH24-11 2'
Lab Sample ID: 885-5973-20
Date Collected: 06/07/24 13:15
Matrix: Solid
Date Received: 06/11/24 08:10

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		06/12/24 10:24	06/14/24 07:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*92*		*35 - 166*	*06/12/24 10:24*	*06/14/24 07:05*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		06/12/24 10:24	06/14/24 07:05	1
Ethylbenzene	ND		0.050		mg/Kg		06/12/24 10:24	06/14/24 07:05	1
Toluene	ND		0.050		mg/Kg		06/12/24 10:24	06/14/24 07:05	1
Xylenes, Total	ND		0.10		mg/Kg		06/12/24 10:24	06/14/24 07:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*88*		*48 - 145*	*06/12/24 10:24*	*06/14/24 07:05*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		8.6		mg/Kg		06/13/24 10:28	06/13/24 17:49	1
Motor Oil Range Organics [C28-C40]	ND		43		mg/Kg		06/13/24 10:28	06/13/24 17:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*117*		*62 - 134*	*06/13/24 10:28*	*06/13/24 17:49*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		61		mg/Kg		06/13/24 09:39	06/13/24 18:52	20

Client Sample Results

Client: Vertex
Job ID: 885-5973-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BH24-12 0'
Lab Sample ID: 885-5973-21
Date Collected: 06/08/24 08:15
Matrix: Solid
Date Received: 06/11/24 08:10

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.9		mg/Kg		06/12/24 10:24	06/14/24 19:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*35 - 166*	*06/12/24 10:24*	*06/14/24 19:33*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		06/12/24 10:24	06/14/24 19:33	1
Ethylbenzene	ND		0.049		mg/Kg		06/12/24 10:24	06/14/24 19:33	1
Toluene	ND		0.049		mg/Kg		06/12/24 10:24	06/14/24 19:33	1
Xylenes, Total	ND		0.097		mg/Kg		06/12/24 10:24	06/14/24 19:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*90*		*48 - 145*	*06/12/24 10:24*	*06/14/24 19:33*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**63**		7.1		mg/Kg		06/13/24 10:38	06/13/24 16:00	1
Motor Oil Range Organics [C28-C40]	ND		35		mg/Kg		06/13/24 10:38	06/13/24 16:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*102*		*62 - 134*	*06/13/24 10:38*	*06/13/24 16:00*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**1100**		60		mg/Kg		06/13/24 09:39	06/13/24 19:04	20

Client Sample Results

Client: Vertex
Job ID: 885-5973-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BH24-12 2'
Lab Sample ID: 885-5973-22
Date Collected: 06/08/24 08:25
Matrix: Solid
Date Received: 06/11/24 08:10

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.8		mg/Kg		06/12/24 10:24	06/14/24 19:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*35 - 166*	*06/12/24 10:24*	*06/14/24 19:56*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		06/12/24 10:24	06/14/24 19:56	1
Ethylbenzene	ND		0.048		mg/Kg		06/12/24 10:24	06/14/24 19:56	1
Toluene	ND		0.048		mg/Kg		06/12/24 10:24	06/14/24 19:56	1
Xylenes, Total	ND		0.096		mg/Kg		06/12/24 10:24	06/14/24 19:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*87*		*48 - 145*	*06/12/24 10:24*	*06/14/24 19:56*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**610**		97		mg/Kg		06/13/24 10:38	06/17/24 15:23	10
Motor Oil Range Organics [C28-C40]	**1700**		490		mg/Kg		06/13/24 10:38	06/17/24 15:23	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*0*	*S1- D*	*62 - 134*	*06/13/24 10:38*	*06/17/24 15:23*	*10*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**190**		60		mg/Kg		06/13/24 09:39	06/13/24 19:16	20

Client Sample Results

Client: Vertex
Job ID: 885-5973-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BH24-12 4'
Lab Sample ID: 885-5973-23
Date Collected: 06/08/24 08:40
Matrix: Solid
Date Received: 06/11/24 08:10

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		06/12/24 10:24	06/14/24 20:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*35 - 166*	*06/12/24 10:24*	*06/14/24 20:20*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		06/12/24 10:24	06/14/24 20:20	1
Ethylbenzene	ND		0.050		mg/Kg		06/12/24 10:24	06/14/24 20:20	1
Toluene	ND		0.050		mg/Kg		06/12/24 10:24	06/14/24 20:20	1
Xylenes, Total	ND		0.10		mg/Kg		06/12/24 10:24	06/14/24 20:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*90*		*48 - 145*	*06/12/24 10:24*	*06/14/24 20:20*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**28**		9.1		mg/Kg		06/13/24 10:38	06/17/24 15:12	1
Motor Oil Range Organics [C28-C40]	ND	D	45		mg/Kg		06/13/24 10:38	06/17/24 15:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*102*		*62 - 134*	*06/13/24 10:38*	*06/17/24 15:12*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**77**		60		mg/Kg		06/13/24 09:39	06/13/24 19:29	20

QC Sample Results

Client: Vertex
Project/Site: Shakespeare 20 Fed Com #001H

Job ID: 885-5973-1

Method: 8015M/D - Gasoline Range Organics (GRO) (GC)

Lab Sample ID: MB 885-6501/1-A
Matrix: Solid
Analysis Batch: 6669

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 6501

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		06/11/24 14:27	06/13/24 12:15	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*90*		*35 - 166*	*06/11/24 14:27*	*06/13/24 12:15*	*1*

Lab Sample ID: LCS 885-6501/2-A
Matrix: Solid
Analysis Batch: 6669

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 6501

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics [C6 - C10]			25.0	23.2		mg/Kg		93	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*201*	*S1+*	*35 - 166*

Lab Sample ID: MB 885-6560/1-A
Matrix: Solid
Analysis Batch: 6669

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 6560

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		06/12/24 10:24	06/13/24 22:31	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*35 - 166*	*06/12/24 10:24*	*06/13/24 22:31*	*1*

Lab Sample ID: LCS 885-6560/2-A
Matrix: Solid
Analysis Batch: 6669

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 6560

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics [C6 - C10]			25.0	22.7		mg/Kg		91	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*204*	*S1+*	*35 - 166*

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 885-6501/1-A
Matrix: Solid
Analysis Batch: 6670

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 6501

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		06/11/24 14:27	06/13/24 12:15	1
Ethylbenzene	ND		0.050		mg/Kg		06/11/24 14:27	06/13/24 12:15	1
Toluene	ND		0.050		mg/Kg		06/11/24 14:27	06/13/24 12:15	1
Xylenes, Total	ND		0.10		mg/Kg		06/11/24 14:27	06/13/24 12:15	1

QC Sample Results

Client: Vertex
Job ID: 885-5973-1
Project/Site: Shakespeare 20 Fed Com #001H

Method: 8021B - Volatile Organic Compounds (GC) (Continued)

Lab Sample ID: MB 885-6501/1-A
Matrix: Solid
Analysis Batch: 6670

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 6501

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	88		48 - 145	06/11/24 14:27	06/13/24 12:15	1

Lab Sample ID: LCS 885-6501/3-A
Matrix: Solid
Analysis Batch: 6670

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 6501

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	1.00	0.878		mg/Kg		88	70 - 130
Ethylbenzene	1.00	0.855		mg/Kg		86	70 - 130
m,p-Xylene	2.00	1.73		mg/Kg		86	70 - 130
o-Xylene	1.00	0.839		mg/Kg		84	70 - 130
Toluene	1.00	0.838		mg/Kg		84	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	95		48 - 145

Lab Sample ID: MB 885-6560/1-A
Matrix: Solid
Analysis Batch: 6670

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 6560

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025	mg/Kg		06/12/24 10:24	06/13/24 22:31	1
Ethylbenzene	ND		0.050	mg/Kg		06/12/24 10:24	06/13/24 22:31	1
Toluene	ND		0.050	mg/Kg		06/12/24 10:24	06/13/24 22:31	1
Xylenes, Total	ND		0.10	mg/Kg		06/12/24 10:24	06/13/24 22:31	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	89		48 - 145	06/12/24 10:24	06/13/24 22:31	1

Lab Sample ID: LCS 885-6560/3-A
Matrix: Solid
Analysis Batch: 6670

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 6560

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	1.00	0.864		mg/Kg		86	70 - 130
Ethylbenzene	1.00	0.839		mg/Kg		84	70 - 130
m,p-Xylene	2.00	1.70		mg/Kg		85	70 - 130
o-Xylene	1.00	0.833		mg/Kg		83	70 - 130
Toluene	1.00	0.825		mg/Kg		82	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	91		48 - 145

QC Sample Results

Client: Vertex
Job ID: 885-5973-1
Project/Site: Shakespeare 20 Fed Com #001H

Method: 8015M/D - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 885-6644/1-A
Matrix: Solid
Analysis Batch: 6622

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 6644

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		10		mg/Kg		06/13/24 10:28	06/13/24 13:21	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		06/13/24 10:28	06/13/24 13:21	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*95*		*62 - 134*	*06/13/24 10:28*	*06/13/24 13:21*	*1*

Lab Sample ID: LCS 885-6644/2-A
Matrix: Solid
Analysis Batch: 6622

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 6644

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Diesel Range Organics [C10-C28]			50.0	48.1		mg/Kg		96	60 - 135		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Di-n-octyl phthalate (Surr)	*90*		*62 - 134*

Lab Sample ID: 885-5973-1 MS
Matrix: Solid
Analysis Batch: 6622

Client Sample ID: BH24-01 0'
Prep Type: Total/NA
Prep Batch: 6644

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Diesel Range Organics [C10-C28]	ND		44.8	41.4		mg/Kg		92	44 - 136		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Di-n-octyl phthalate (Surr)	*114*		*62 - 134*

Lab Sample ID: 885-5973-1 MSD
Matrix: Solid
Analysis Batch: 6622

Client Sample ID: BH24-01 0'
Prep Type: Total/NA
Prep Batch: 6644

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Diesel Range Organics [C10-C28]	ND		42.0	39.2		mg/Kg		93	44 - 136	6	32

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Di-n-octyl phthalate (Surr)	*110*		*62 - 134*

Lab Sample ID: MB 885-6646/1-A
Matrix: Solid
Analysis Batch: 6748

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 6646

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		10		mg/Kg		06/13/24 10:38	06/13/24 12:26	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		06/13/24 10:38	06/13/24 12:26	1

QC Sample Results

Client: Vertex
Project/Site: Shakespeare 20 Fed Com #001H

Job ID: 885-5973-1

Method: 8015M/D - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: MB 885-6646/1-A
Matrix: Solid
Analysis Batch: 6748

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 6646

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Di-n-octyl phthalate (Surr)	*102*		*62 - 134*	*06/13/24 10:38*	*06/13/24 12:26*	*1*

Lab Sample ID: LCS 885-6646/2-A
Matrix: Solid
Analysis Batch: 6748

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 6646

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Diesel Range Organics [C10-C28]	50.0	43.4		mg/Kg		87	60 - 135

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Di-n-octyl phthalate (Surr)	*102*		*62 - 134*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 885-6636/1-A
Matrix: Solid
Analysis Batch: 6716

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 6636

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	mg/Kg		06/13/24 09:22	06/13/24 11:03	1

Lab Sample ID: LCS 885-6636/2-A
Matrix: Solid
Analysis Batch: 6716

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 6636

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	30.0	28.8		mg/Kg		96	90 - 110

Lab Sample ID: 885-5973-2 MS
Matrix: Solid
Analysis Batch: 6716

Client Sample ID: BH24-01 2'
Prep Type: Total/NA
Prep Batch: 6636

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	210		30.2	216	4	mg/Kg		27	50 - 150

Lab Sample ID: 885-5973-2 MSD
Matrix: Solid
Analysis Batch: 6716

Client Sample ID: BH24-01 2'
Prep Type: Total/NA
Prep Batch: 6636

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	210		30.1	223	4	mg/Kg		53	50 - 150	NC	20

Lab Sample ID: MB 885-6637/1-A
Matrix: Solid
Analysis Batch: 6716

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 6637

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	mg/Kg		06/13/24 09:39	06/13/24 11:27	1

QC Sample Results

Client: Vertex
Project/Site: Shakespeare 20 Fed Com #001H

Job ID: 885-5973-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 885-6637/2-A
Matrix: Solid
Analysis Batch: 6716

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 6637

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			30.0	28.7		mg/Kg		96	90 - 110		

Lab Sample ID: 885-5973-15 MS
Matrix: Solid
Analysis Batch: 6716

Client Sample ID: BH24-09 0'
Prep Type: Total/NA
Prep Batch: 6637

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	220		29.8	254	4	mg/Kg		104	50 - 150		

Lab Sample ID: 885-5973-15 MSD
Matrix: Solid
Analysis Batch: 6716

Client Sample ID: BH24-09 0'
Prep Type: Total/NA
Prep Batch: 6637

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	220		29.8	229	4	mg/Kg		21	50 - 150	NC	20

Lab Sample ID: 885-5973-16 MS
Matrix: Solid
Analysis Batch: 6716

Client Sample ID: BH24-09 2'
Prep Type: Total/NA
Prep Batch: 6637

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	340		30.2	354	4	mg/Kg		31	50 - 150		

Lab Sample ID: 885-5973-16 MSD
Matrix: Solid
Analysis Batch: 6716

Client Sample ID: BH24-09 2'
Prep Type: Total/NA
Prep Batch: 6637

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	340		30.2	368	4	mg/Kg		76	50 - 150	NC	20

QC Association Summary

Client: Vertex
Job ID: 885-5973-1
Project/Site: Shakespeare 20 Fed Com #001H

GC VOA

Prep Batch: 6501

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-5973-1	BH24-01 0'	Total/NA	Solid	5030C	
885-5973-2	BH24-01 2'	Total/NA	Solid	5030C	
885-5973-3	BH24-02 0'	Total/NA	Solid	5030C	
885-5973-4	BH24-02 2'	Total/NA	Solid	5030C	
885-5973-5	BH24-03 0'	Total/NA	Solid	5030C	
885-5973-6	BH24-03 2'	Total/NA	Solid	5030C	
885-5973-7	BH24-04 0'	Total/NA	Solid	5030C	
885-5973-8	BH24-04 2'	Total/NA	Solid	5030C	
885-5973-9	BH24-05 0'	Total/NA	Solid	5030C	
885-5973-10	BH24-05 2'	Total/NA	Solid	5030C	
885-5973-11	BH24-07 0'	Total/NA	Solid	5030C	
885-5973-12	BH24-07 2'	Total/NA	Solid	5030C	
885-5973-13	BH24-08 0'	Total/NA	Solid	5030C	
885-5973-14	BH24-08 2'	Total/NA	Solid	5030C	
885-5973-15	BH24-09 0'	Total/NA	Solid	5030C	
885-5973-16	BH24-09 2'	Total/NA	Solid	5030C	
885-5973-17	BH24-10 0'	Total/NA	Solid	5030C	
MB 885-6501/1-A	Method Blank	Total/NA	Solid	5030C	
LCS 885-6501/2-A	Lab Control Sample	Total/NA	Solid	5030C	
LCS 885-6501/3-A	Lab Control Sample	Total/NA	Solid	5030C	

Prep Batch: 6560

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-5973-18	BH24-10 2'	Total/NA	Solid	5030C	
885-5973-19	BH24-11 0'	Total/NA	Solid	5030C	
885-5973-20	BH24-11 2'	Total/NA	Solid	5030C	
885-5973-21	BH24-12 0'	Total/NA	Solid	5030C	
885-5973-22	BH24-12 2'	Total/NA	Solid	5030C	
885-5973-23	BH24-12 4'	Total/NA	Solid	5030C	
MB 885-6560/1-A	Method Blank	Total/NA	Solid	5030C	
LCS 885-6560/2-A	Lab Control Sample	Total/NA	Solid	5030C	
LCS 885-6560/3-A	Lab Control Sample	Total/NA	Solid	5030C	

Analysis Batch: 6669

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-5973-18	BH24-10 2'	Total/NA	Solid	8015M/D	6560
885-5973-19	BH24-11 0'	Total/NA	Solid	8015M/D	6560
885-5973-20	BH24-11 2'	Total/NA	Solid	8015M/D	6560
MB 885-6501/1-A	Method Blank	Total/NA	Solid	8015M/D	6501
MB 885-6560/1-A	Method Blank	Total/NA	Solid	8015M/D	6560
LCS 885-6501/2-A	Lab Control Sample	Total/NA	Solid	8015M/D	6501
LCS 885-6560/2-A	Lab Control Sample	Total/NA	Solid	8015M/D	6560

Analysis Batch: 6670

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-5973-18	BH24-10 2'	Total/NA	Solid	8021B	6560
885-5973-19	BH24-11 0'	Total/NA	Solid	8021B	6560
885-5973-20	BH24-11 2'	Total/NA	Solid	8021B	6560
MB 885-6501/1-A	Method Blank	Total/NA	Solid	8021B	6501
MB 885-6560/1-A	Method Blank	Total/NA	Solid	8021B	6560
LCS 885-6501/3-A	Lab Control Sample	Total/NA	Solid	8021B	6501

QC Association Summary

Client: Vertex
Job ID: 885-5973-1
Project/Site: Shakespeare 20 Fed Com #001H

GC VOA (Continued)

Analysis Batch: 6670 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 885-6560/3-A	Lab Control Sample	Total/NA	Solid	8021B	6560

Analysis Batch: 6817

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-5973-1	BH24-01 0'	Total/NA	Solid	8015M/D	6501
885-5973-2	BH24-01 2'	Total/NA	Solid	8015M/D	6501
885-5973-3	BH24-02 0'	Total/NA	Solid	8015M/D	6501
885-5973-4	BH24-02 2'	Total/NA	Solid	8015M/D	6501
885-5973-5	BH24-03 0'	Total/NA	Solid	8015M/D	6501
885-5973-6	BH24-03 2'	Total/NA	Solid	8015M/D	6501
885-5973-7	BH24-04 0'	Total/NA	Solid	8015M/D	6501
885-5973-8	BH24-04 2'	Total/NA	Solid	8015M/D	6501
885-5973-9	BH24-05 0'	Total/NA	Solid	8015M/D	6501
885-5973-10	BH24-05 2'	Total/NA	Solid	8015M/D	6501
885-5973-11	BH24-07 0'	Total/NA	Solid	8015M/D	6501
885-5973-12	BH24-07 2'	Total/NA	Solid	8015M/D	6501
885-5973-13	BH24-08 0'	Total/NA	Solid	8015M/D	6501
885-5973-14	BH24-08 2'	Total/NA	Solid	8015M/D	6501
885-5973-15	BH24-09 0'	Total/NA	Solid	8015M/D	6501
885-5973-16	BH24-09 2'	Total/NA	Solid	8015M/D	6501
885-5973-17	BH24-10 0'	Total/NA	Solid	8015M/D	6501
885-5973-21	BH24-12 0'	Total/NA	Solid	8015M/D	6560
885-5973-22	BH24-12 2'	Total/NA	Solid	8015M/D	6560
885-5973-23	BH24-12 4'	Total/NA	Solid	8015M/D	6560

Analysis Batch: 6818

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-5973-1	BH24-01 0'	Total/NA	Solid	8021B	6501
885-5973-2	BH24-01 2'	Total/NA	Solid	8021B	6501
885-5973-3	BH24-02 0'	Total/NA	Solid	8021B	6501
885-5973-4	BH24-02 2'	Total/NA	Solid	8021B	6501
885-5973-5	BH24-03 0'	Total/NA	Solid	8021B	6501
885-5973-6	BH24-03 2'	Total/NA	Solid	8021B	6501
885-5973-7	BH24-04 0'	Total/NA	Solid	8021B	6501
885-5973-8	BH24-04 2'	Total/NA	Solid	8021B	6501
885-5973-9	BH24-05 0'	Total/NA	Solid	8021B	6501
885-5973-10	BH24-05 2'	Total/NA	Solid	8021B	6501
885-5973-11	BH24-07 0'	Total/NA	Solid	8021B	6501
885-5973-12	BH24-07 2'	Total/NA	Solid	8021B	6501
885-5973-13	BH24-08 0'	Total/NA	Solid	8021B	6501
885-5973-14	BH24-08 2'	Total/NA	Solid	8021B	6501
885-5973-15	BH24-09 0'	Total/NA	Solid	8021B	6501
885-5973-16	BH24-09 2'	Total/NA	Solid	8021B	6501
885-5973-17	BH24-10 0'	Total/NA	Solid	8021B	6501
885-5973-21	BH24-12 0'	Total/NA	Solid	8021B	6560
885-5973-22	BH24-12 2'	Total/NA	Solid	8021B	6560
885-5973-23	BH24-12 4'	Total/NA	Solid	8021B	6560

QC Association Summary

Client: Vertex
Project/Site: Shakespeare 20 Fed Com #001H

Job ID: 885-5973-1

GC Semi VOA

Analysis Batch: 6622

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-5973-1	BH24-01 0'	Total/NA	Solid	8015M/D	6644
885-5973-2	BH24-01 2'	Total/NA	Solid	8015M/D	6644
885-5973-3	BH24-02 0'	Total/NA	Solid	8015M/D	6644
885-5973-4	BH24-02 2'	Total/NA	Solid	8015M/D	6644
885-5973-6	BH24-03 2'	Total/NA	Solid	8015M/D	6644
885-5973-7	BH24-04 0'	Total/NA	Solid	8015M/D	6644
885-5973-8	BH24-04 2'	Total/NA	Solid	8015M/D	6644
885-5973-9	BH24-05 0'	Total/NA	Solid	8015M/D	6644
885-5973-10	BH24-05 2'	Total/NA	Solid	8015M/D	6644
885-5973-11	BH24-07 0'	Total/NA	Solid	8015M/D	6644
885-5973-12	BH24-07 2'	Total/NA	Solid	8015M/D	6644
885-5973-13	BH24-08 0'	Total/NA	Solid	8015M/D	6644
885-5973-14	BH24-08 2'	Total/NA	Solid	8015M/D	6644
885-5973-15	BH24-09 0'	Total/NA	Solid	8015M/D	6644
885-5973-16	BH24-09 2'	Total/NA	Solid	8015M/D	6644
885-5973-17	BH24-10 0'	Total/NA	Solid	8015M/D	6644
885-5973-18	BH24-10 2'	Total/NA	Solid	8015M/D	6644
885-5973-19	BH24-11 0'	Total/NA	Solid	8015M/D	6644
885-5973-20	BH24-11 2'	Total/NA	Solid	8015M/D	6644
MB 885-6644/1-A	Method Blank	Total/NA	Solid	8015M/D	6644
LCS 885-6644/2-A	Lab Control Sample	Total/NA	Solid	8015M/D	6644
885-5973-1 MS	BH24-01 0'	Total/NA	Solid	8015M/D	6644
885-5973-1 MSD	BH24-01 0'	Total/NA	Solid	8015M/D	6644

Prep Batch: 6644

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-5973-1	BH24-01 0'	Total/NA	Solid	SHAKE	
885-5973-2	BH24-01 2'	Total/NA	Solid	SHAKE	
885-5973-3	BH24-02 0'	Total/NA	Solid	SHAKE	
885-5973-4	BH24-02 2'	Total/NA	Solid	SHAKE	
885-5973-5	BH24-03 0'	Total/NA	Solid	SHAKE	
885-5973-6	BH24-03 2'	Total/NA	Solid	SHAKE	
885-5973-7	BH24-04 0'	Total/NA	Solid	SHAKE	
885-5973-8	BH24-04 2'	Total/NA	Solid	SHAKE	
885-5973-9	BH24-05 0'	Total/NA	Solid	SHAKE	
885-5973-10	BH24-05 2'	Total/NA	Solid	SHAKE	
885-5973-11	BH24-07 0'	Total/NA	Solid	SHAKE	
885-5973-12	BH24-07 2'	Total/NA	Solid	SHAKE	
885-5973-13	BH24-08 0'	Total/NA	Solid	SHAKE	
885-5973-14	BH24-08 2'	Total/NA	Solid	SHAKE	
885-5973-15	BH24-09 0'	Total/NA	Solid	SHAKE	
885-5973-16	BH24-09 2'	Total/NA	Solid	SHAKE	
885-5973-17	BH24-10 0'	Total/NA	Solid	SHAKE	
885-5973-18	BH24-10 2'	Total/NA	Solid	SHAKE	
885-5973-19	BH24-11 0'	Total/NA	Solid	SHAKE	
885-5973-20	BH24-11 2'	Total/NA	Solid	SHAKE	
MB 885-6644/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 885-6644/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	
885-5973-1 MS	BH24-01 0'	Total/NA	Solid	SHAKE	
885-5973-1 MSD	BH24-01 0'	Total/NA	Solid	SHAKE	

QC Association Summary

Client: Vertex Job ID: 885-5973-1
Project/Site: Shakespeare 20 Fed Com #001H

GC Semi VOA

Prep Batch: 6646

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-5973-21	BH24-12 0'	Total/NA	Solid	SHAKE	
885-5973-22	BH24-12 2'	Total/NA	Solid	SHAKE	
885-5973-23	BH24-12 4'	Total/NA	Solid	SHAKE	
MB 885-6646/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 885-6646/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	

Analysis Batch: 6727

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-5973-5	BH24-03 0'	Total/NA	Solid	8015M/D	6644

Analysis Batch: 6748

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-5973-21	BH24-12 0'	Total/NA	Solid	8015M/D	6646
MB 885-6646/1-A	Method Blank	Total/NA	Solid	8015M/D	6646
LCS 885-6646/2-A	Lab Control Sample	Total/NA	Solid	8015M/D	6646

Analysis Batch: 6806

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-5973-22	BH24-12 2'	Total/NA	Solid	8015M/D	6646
885-5973-23	BH24-12 4'	Total/NA	Solid	8015M/D	6646

HPLC/IC

Prep Batch: 6636

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-5973-1	BH24-01 0'	Total/NA	Solid	300_Prep	
885-5973-2	BH24-01 2'	Total/NA	Solid	300_Prep	
885-5973-3	BH24-02 0'	Total/NA	Solid	300_Prep	
885-5973-4	BH24-02 2'	Total/NA	Solid	300_Prep	
885-5973-5	BH24-03 0'	Total/NA	Solid	300_Prep	
885-5973-6	BH24-03 2'	Total/NA	Solid	300_Prep	
885-5973-7	BH24-04 0'	Total/NA	Solid	300_Prep	
885-5973-8	BH24-04 2'	Total/NA	Solid	300_Prep	
885-5973-9	BH24-05 0'	Total/NA	Solid	300_Prep	
885-5973-10	BH24-05 2'	Total/NA	Solid	300_Prep	
885-5973-11	BH24-07 0'	Total/NA	Solid	300_Prep	
885-5973-12	BH24-07 2'	Total/NA	Solid	300_Prep	
885-5973-13	BH24-08 0'	Total/NA	Solid	300_Prep	
885-5973-14	BH24-08 2'	Total/NA	Solid	300_Prep	
MB 885-6636/1-A	Method Blank	Total/NA	Solid	300_Prep	
LCS 885-6636/2-A	Lab Control Sample	Total/NA	Solid	300_Prep	
885-5973-2 MS	BH24-01 2'	Total/NA	Solid	300_Prep	
885-5973-2 MSD	BH24-01 2'	Total/NA	Solid	300_Prep	

Prep Batch: 6637

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-5973-15	BH24-09 0'	Total/NA	Solid	300_Prep	
885-5973-16	BH24-09 2'	Total/NA	Solid	300_Prep	
885-5973-17	BH24-10 0'	Total/NA	Solid	300_Prep	
885-5973-18	BH24-10 2'	Total/NA	Solid	300_Prep	
885-5973-19	BH24-11 0'	Total/NA	Solid	300_Prep	

QC Association Summary

Client: Vertex
Project/Site: Shakespeare 20 Fed Com #001H

Job ID: 885-5973-1

HPLC/IC (Continued)

Prep Batch: 6637 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-5973-20	BH24-11 2'	Total/NA	Solid	300_Prep	
885-5973-21	BH24-12 0'	Total/NA	Solid	300_Prep	
885-5973-22	BH24-12 2'	Total/NA	Solid	300_Prep	
885-5973-23	BH24-12 4'	Total/NA	Solid	300_Prep	
MB 885-6637/1-A	Method Blank	Total/NA	Solid	300_Prep	
LCS 885-6637/2-A	Lab Control Sample	Total/NA	Solid	300_Prep	
885-5973-15 MS	BH24-09 0'	Total/NA	Solid	300_Prep	
885-5973-15 MSD	BH24-09 0'	Total/NA	Solid	300_Prep	
885-5973-16 MS	BH24-09 2'	Total/NA	Solid	300_Prep	
885-5973-16 MSD	BH24-09 2'	Total/NA	Solid	300_Prep	

Analysis Batch: 6716

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-5973-1	BH24-01 0'	Total/NA	Solid	300.0	6636
885-5973-2	BH24-01 2'	Total/NA	Solid	300.0	6636
885-5973-3	BH24-02 0'	Total/NA	Solid	300.0	6636
885-5973-4	BH24-02 2'	Total/NA	Solid	300.0	6636
885-5973-6	BH24-03 2'	Total/NA	Solid	300.0	6636
885-5973-7	BH24-04 0'	Total/NA	Solid	300.0	6636
885-5973-8	BH24-04 2'	Total/NA	Solid	300.0	6636
885-5973-9	BH24-05 0'	Total/NA	Solid	300.0	6636
885-5973-10	BH24-05 2'	Total/NA	Solid	300.0	6636
885-5973-11	BH24-07 0'	Total/NA	Solid	300.0	6636
885-5973-12	BH24-07 2'	Total/NA	Solid	300.0	6636
885-5973-13	BH24-08 0'	Total/NA	Solid	300.0	6636
885-5973-14	BH24-08 2'	Total/NA	Solid	300.0	6636
885-5973-15	BH24-09 0'	Total/NA	Solid	300.0	6637
885-5973-16	BH24-09 2'	Total/NA	Solid	300.0	6637
885-5973-17	BH24-10 0'	Total/NA	Solid	300.0	6637
885-5973-18	BH24-10 2'	Total/NA	Solid	300.0	6637
885-5973-19	BH24-11 0'	Total/NA	Solid	300.0	6637
885-5973-20	BH24-11 2'	Total/NA	Solid	300.0	6637
885-5973-21	BH24-12 0'	Total/NA	Solid	300.0	6637
885-5973-22	BH24-12 2'	Total/NA	Solid	300.0	6637
885-5973-23	BH24-12 4'	Total/NA	Solid	300.0	6637
MB 885-6636/1-A	Method Blank	Total/NA	Solid	300.0	6636
MB 885-6637/1-A	Method Blank	Total/NA	Solid	300.0	6637
LCS 885-6636/2-A	Lab Control Sample	Total/NA	Solid	300.0	6636
LCS 885-6637/2-A	Lab Control Sample	Total/NA	Solid	300.0	6637
885-5973-2 MS	BH24-01 2'	Total/NA	Solid	300.0	6636
885-5973-2 MSD	BH24-01 2'	Total/NA	Solid	300.0	6636
885-5973-15 MS	BH24-09 0'	Total/NA	Solid	300.0	6637
885-5973-15 MSD	BH24-09 0'	Total/NA	Solid	300.0	6637
885-5973-16 MS	BH24-09 2'	Total/NA	Solid	300.0	6637
885-5973-16 MSD	BH24-09 2'	Total/NA	Solid	300.0	6637

Analysis Batch: 6784

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-5973-5	BH24-03 0'	Total/NA	Solid	300.0	6636

Lab Chronicle

Client: Vertex
Job ID: 885-5973-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BH24-01 0'
Lab Sample ID: 885-5973-1
Date Collected: 06/06/24 08:20
Matrix: Solid
Date Received: 06/11/24 08:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			6501	AT	EET ALB	06/11/24 14:27
Total/NA	Analysis	8015M/D		1	6817	JP	EET ALB	06/14/24 20:43
Total/NA	Prep	5030C			6501	AT	EET ALB	06/11/24 14:27
Total/NA	Analysis	8021B		1	6818	JP	EET ALB	06/14/24 20:43
Total/NA	Prep	SHAKE			6644	SB	EET ALB	06/13/24 10:28
Total/NA	Analysis	8015M/D		1	6622	PD	EET ALB	06/13/24 13:43
Total/NA	Prep	300_Prep			6636	JT	EET ALB	06/13/24 09:22
Total/NA	Analysis	300.0		20	6716	RC	EET ALB	06/13/24 11:52

Client Sample ID: BH24-01 2'
Lab Sample ID: 885-5973-2
Date Collected: 06/06/24 11:15
Matrix: Solid
Date Received: 06/11/24 08:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			6501	AT	EET ALB	06/11/24 14:27
Total/NA	Analysis	8015M/D		1	6817	JP	EET ALB	06/14/24 21:53
Total/NA	Prep	5030C			6501	AT	EET ALB	06/11/24 14:27
Total/NA	Analysis	8021B		1	6818	JP	EET ALB	06/14/24 21:53
Total/NA	Prep	SHAKE			6644	SB	EET ALB	06/13/24 10:28
Total/NA	Analysis	8015M/D		1	6622	PD	EET ALB	06/13/24 14:17
Total/NA	Prep	300_Prep			6636	JT	EET ALB	06/13/24 09:22
Total/NA	Analysis	300.0		20	6716	RC	EET ALB	06/13/24 12:29

Client Sample ID: BH24-02 0'
Lab Sample ID: 885-5973-3
Date Collected: 06/06/24 08:30
Matrix: Solid
Date Received: 06/11/24 08:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			6501	AT	EET ALB	06/11/24 14:27
Total/NA	Analysis	8015M/D		1	6817	JP	EET ALB	06/14/24 22:17
Total/NA	Prep	5030C			6501	AT	EET ALB	06/11/24 14:27
Total/NA	Analysis	8021B		1	6818	JP	EET ALB	06/14/24 22:17
Total/NA	Prep	SHAKE			6644	SB	EET ALB	06/13/24 10:28
Total/NA	Analysis	8015M/D		1	6622	PD	EET ALB	06/13/24 14:28
Total/NA	Prep	300_Prep			6636	JT	EET ALB	06/13/24 09:22
Total/NA	Analysis	300.0		20	6716	RC	EET ALB	06/13/24 13:31

Client Sample ID: BH24-02 2'
Lab Sample ID: 885-5973-4
Date Collected: 06/06/24 11:30
Matrix: Solid
Date Received: 06/11/24 08:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			6501	AT	EET ALB	06/11/24 14:27
Total/NA	Analysis	8015M/D		1	6817	JP	EET ALB	06/14/24 22:40

Lab Chronicle

Client: Vertex
Job ID: 885-5973-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BH24-02 2'
Lab Sample ID: 885-5973-4
Date Collected: 06/06/24 11:30
Matrix: Solid
Date Received: 06/11/24 08:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			6501	AT	EET ALB	06/11/24 14:27
Total/NA	Analysis	8021B		1	6818	JP	EET ALB	06/14/24 22:40
Total/NA	Prep	SHAKE			6644	SB	EET ALB	06/13/24 10:28
Total/NA	Analysis	8015M/D		1	6622	PD	EET ALB	06/13/24 14:40
Total/NA	Prep	300_Prep			6636	JT	EET ALB	06/13/24 09:22
Total/NA	Analysis	300.0		20	6716	RC	EET ALB	06/13/24 13:43

Client Sample ID: BH24-03 0'
Lab Sample ID: 885-5973-5
Date Collected: 06/06/24 08:40
Matrix: Solid
Date Received: 06/11/24 08:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			6501	AT	EET ALB	06/11/24 14:27
Total/NA	Analysis	8015M/D		1	6817	JP	EET ALB	06/14/24 23:03
Total/NA	Prep	5030C			6501	AT	EET ALB	06/11/24 14:27
Total/NA	Analysis	8021B		1	6818	JP	EET ALB	06/14/24 23:03
Total/NA	Prep	SHAKE			6644	SB	EET ALB	06/13/24 10:28
Total/NA	Analysis	8015M/D		1	6727	PD	EET ALB	06/14/24 15:01
Total/NA	Prep	300_Prep			6636	JT	EET ALB	06/13/24 09:22
Total/NA	Analysis	300.0		50	6784	RC	EET ALB	06/14/24 13:03

Client Sample ID: BH24-03 2'
Lab Sample ID: 885-5973-6
Date Collected: 06/06/24 11:45
Matrix: Solid
Date Received: 06/11/24 08:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			6501	AT	EET ALB	06/11/24 14:27
Total/NA	Analysis	8015M/D		1	6817	JP	EET ALB	06/14/24 23:27
Total/NA	Prep	5030C			6501	AT	EET ALB	06/11/24 14:27
Total/NA	Analysis	8021B		1	6818	JP	EET ALB	06/14/24 23:27
Total/NA	Prep	SHAKE			6644	SB	EET ALB	06/13/24 10:28
Total/NA	Analysis	8015M/D		1	6622	PD	EET ALB	06/13/24 15:03
Total/NA	Prep	300_Prep			6636	JT	EET ALB	06/13/24 09:22
Total/NA	Analysis	300.0		20	6716	RC	EET ALB	06/13/24 14:08

Client Sample ID: BH24-04 0'
Lab Sample ID: 885-5973-7
Date Collected: 06/06/24 13:20
Matrix: Solid
Date Received: 06/11/24 08:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			6501	AT	EET ALB	06/11/24 14:27
Total/NA	Analysis	8015M/D		1	6817	JP	EET ALB	06/14/24 23:50
Total/NA	Prep	5030C			6501	AT	EET ALB	06/11/24 14:27
Total/NA	Analysis	8021B		1	6818	JP	EET ALB	06/14/24 23:50

Lab Chronicle

Client: Vertex
Job ID: 885-5973-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BH24-04 0'
Lab Sample ID: 885-5973-7
Date Collected: 06/06/24 13:20
Matrix: Solid
Date Received: 06/11/24 08:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	SHAKE			6644	SB	EET ALB	06/13/24 10:28
Total/NA	Analysis	8015M/D		1	6622	PD	EET ALB	06/13/24 15:14
Total/NA	Prep	300_Prep			6636	JT	EET ALB	06/13/24 09:22
Total/NA	Analysis	300.0		20	6716	RC	EET ALB	06/13/24 14:20

Client Sample ID: BH24-04 2'
Lab Sample ID: 885-5973-8
Date Collected: 06/06/24 13:30
Matrix: Solid
Date Received: 06/11/24 08:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			6501	AT	EET ALB	06/11/24 14:27
Total/NA	Analysis	8015M/D		1	6817	JP	EET ALB	06/15/24 00:14
Total/NA	Prep	5030C			6501	AT	EET ALB	06/11/24 14:27
Total/NA	Analysis	8021B		1	6818	JP	EET ALB	06/15/24 00:14
Total/NA	Prep	SHAKE			6644	SB	EET ALB	06/13/24 10:28
Total/NA	Analysis	8015M/D		1	6622	PD	EET ALB	06/13/24 15:26
Total/NA	Prep	300_Prep			6636	JT	EET ALB	06/13/24 09:22
Total/NA	Analysis	300.0		20	6716	RC	EET ALB	06/13/24 14:32

Client Sample ID: BH24-05 0'
Lab Sample ID: 885-5973-9
Date Collected: 06/06/24 13:00
Matrix: Solid
Date Received: 06/11/24 08:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			6501	AT	EET ALB	06/11/24 14:27
Total/NA	Analysis	8015M/D		1	6817	JP	EET ALB	06/15/24 00:37
Total/NA	Prep	5030C			6501	AT	EET ALB	06/11/24 14:27
Total/NA	Analysis	8021B		1	6818	JP	EET ALB	06/15/24 00:37
Total/NA	Prep	SHAKE			6644	SB	EET ALB	06/13/24 10:28
Total/NA	Analysis	8015M/D		1	6622	PD	EET ALB	06/13/24 15:38
Total/NA	Prep	300_Prep			6636	JT	EET ALB	06/13/24 09:22
Total/NA	Analysis	300.0		20	6716	RC	EET ALB	06/13/24 14:45

Client Sample ID: BH24-05 2'
Lab Sample ID: 885-5973-10
Date Collected: 06/06/24 13:10
Matrix: Solid
Date Received: 06/11/24 08:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			6501	AT	EET ALB	06/11/24 14:27
Total/NA	Analysis	8015M/D		1	6817	JP	EET ALB	06/15/24 01:00
Total/NA	Prep	5030C			6501	AT	EET ALB	06/11/24 14:27
Total/NA	Analysis	8021B		1	6818	JP	EET ALB	06/15/24 01:00
Total/NA	Prep	SHAKE			6644	SB	EET ALB	06/13/24 10:28
Total/NA	Analysis	8015M/D		1	6622	PD	EET ALB	06/13/24 15:50

Lab Chronicle

Client: Vertex
Job ID: 885-5973-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BH24-05 2'
Lab Sample ID: 885-5973-10
Date Collected: 06/06/24 13:10
Matrix: Solid
Date Received: 06/11/24 08:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	300_Prep			6636	JT	EET ALB	06/13/24 09:22
Total/NA	Analysis	300.0		20	6716	RC	EET ALB	06/13/24 14:57

Client Sample ID: BH24-07 0'
Lab Sample ID: 885-5973-11
Date Collected: 06/07/24 09:00
Matrix: Solid
Date Received: 06/11/24 08:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			6501	AT	EET ALB	06/11/24 14:27
Total/NA	Analysis	8015M/D		1	6817	JP	EET ALB	06/15/24 01:24
Total/NA	Prep	5030C			6501	AT	EET ALB	06/11/24 14:27
Total/NA	Analysis	8021B		1	6818	JP	EET ALB	06/15/24 01:24
Total/NA	Prep	SHAKE			6644	SB	EET ALB	06/13/24 10:28
Total/NA	Analysis	8015M/D		1	6622	PD	EET ALB	06/13/24 16:01
Total/NA	Prep	300_Prep			6636	JT	EET ALB	06/13/24 09:22
Total/NA	Analysis	300.0		20	6716	RC	EET ALB	06/13/24 15:34

Client Sample ID: BH24-07 2'
Lab Sample ID: 885-5973-12
Date Collected: 06/07/24 09:10
Matrix: Solid
Date Received: 06/11/24 08:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			6501	AT	EET ALB	06/11/24 14:27
Total/NA	Analysis	8015M/D		1	6817	JP	EET ALB	06/15/24 02:11
Total/NA	Prep	5030C			6501	AT	EET ALB	06/11/24 14:27
Total/NA	Analysis	8021B		1	6818	JP	EET ALB	06/15/24 02:11
Total/NA	Prep	SHAKE			6644	SB	EET ALB	06/13/24 10:28
Total/NA	Analysis	8015M/D		1	6622	PD	EET ALB	06/13/24 16:13
Total/NA	Prep	300_Prep			6636	JT	EET ALB	06/13/24 09:22
Total/NA	Analysis	300.0		20	6716	RC	EET ALB	06/13/24 15:47

Client Sample ID: BH24-08 0'
Lab Sample ID: 885-5973-13
Date Collected: 06/07/24 09:15
Matrix: Solid
Date Received: 06/11/24 08:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			6501	AT	EET ALB	06/11/24 14:27
Total/NA	Analysis	8015M/D		1	6817	JP	EET ALB	06/15/24 02:34
Total/NA	Prep	5030C			6501	AT	EET ALB	06/11/24 14:27
Total/NA	Analysis	8021B		1	6818	JP	EET ALB	06/15/24 02:34
Total/NA	Prep	SHAKE			6644	SB	EET ALB	06/13/24 10:28
Total/NA	Analysis	8015M/D		1	6622	PD	EET ALB	06/13/24 16:25
Total/NA	Prep	300_Prep			6636	JT	EET ALB	06/13/24 09:22
Total/NA	Analysis	300.0		20	6716	RC	EET ALB	06/13/24 15:59

Lab Chronicle

Client: Vertex
Job ID: 885-5973-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BH24-08 2'
Lab Sample ID: 885-5973-14
Date Collected: 06/07/24 09:25
Matrix: Solid
Date Received: 06/11/24 08:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			6501	AT	EET ALB	06/11/24 14:27
Total/NA	Analysis	8015M/D		1	6817	JP	EET ALB	06/15/24 02:57
Total/NA	Prep	5030C			6501	AT	EET ALB	06/11/24 14:27
Total/NA	Analysis	8021B		1	6818	JP	EET ALB	06/15/24 02:57
Total/NA	Prep	SHAKE			6644	SB	EET ALB	06/13/24 10:28
Total/NA	Analysis	8015M/D		1	6622	PD	EET ALB	06/13/24 16:37
Total/NA	Prep	300_Prep			6636	JT	EET ALB	06/13/24 09:22
Total/NA	Analysis	300.0		20	6716	RC	EET ALB	06/13/24 16:11

Client Sample ID: BH24-09 0'
Lab Sample ID: 885-5973-15
Date Collected: 06/07/24 10:45
Matrix: Solid
Date Received: 06/11/24 08:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			6501	AT	EET ALB	06/11/24 14:27
Total/NA	Analysis	8015M/D		1	6817	JP	EET ALB	06/15/24 03:21
Total/NA	Prep	5030C			6501	AT	EET ALB	06/11/24 14:27
Total/NA	Analysis	8021B		1	6818	JP	EET ALB	06/15/24 03:21
Total/NA	Prep	SHAKE			6644	SB	EET ALB	06/13/24 10:28
Total/NA	Analysis	8015M/D		1	6622	PD	EET ALB	06/13/24 16:48
Total/NA	Prep	300_Prep			6637	JT	EET ALB	06/13/24 09:39
Total/NA	Analysis	300.0		20	6716	RC	EET ALB	06/13/24 16:24

Client Sample ID: BH24-09 2'
Lab Sample ID: 885-5973-16
Date Collected: 06/07/24 10:55
Matrix: Solid
Date Received: 06/11/24 08:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			6501	AT	EET ALB	06/11/24 14:27
Total/NA	Analysis	8015M/D		1	6817	JP	EET ALB	06/15/24 03:44
Total/NA	Prep	5030C			6501	AT	EET ALB	06/11/24 14:27
Total/NA	Analysis	8021B		1	6818	JP	EET ALB	06/15/24 03:44
Total/NA	Prep	SHAKE			6644	SB	EET ALB	06/13/24 10:28
Total/NA	Analysis	8015M/D		1	6622	PD	EET ALB	06/13/24 17:00
Total/NA	Prep	300_Prep			6637	JT	EET ALB	06/13/24 09:39
Total/NA	Analysis	300.0		20	6716	RC	EET ALB	06/13/24 17:01

Client Sample ID: BH24-10 0'
Lab Sample ID: 885-5973-17
Date Collected: 06/07/24 12:45
Matrix: Solid
Date Received: 06/11/24 08:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			6501	AT	EET ALB	06/11/24 14:27
Total/NA	Analysis	8015M/D		1	6817	JP	EET ALB	06/15/24 04:08

Lab Chronicle

Client: Vertex
Job ID: 885-5973-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BH24-10 0'
Lab Sample ID: 885-5973-17
Date Collected: 06/07/24 12:45
Matrix: Solid
Date Received: 06/11/24 08:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			6501	AT	EET ALB	06/11/24 14:27
Total/NA	Analysis	8021B		1	6818	JP	EET ALB	06/15/24 04:08
Total/NA	Prep	SHAKE			6644	SB	EET ALB	06/13/24 10:28
Total/NA	Analysis	8015M/D		1	6622	PD	EET ALB	06/13/24 17:13
Total/NA	Prep	300_Prep			6637	JT	EET ALB	06/13/24 09:39
Total/NA	Analysis	300.0		20	6716	RC	EET ALB	06/13/24 18:02

Client Sample ID: BH24-10 2'
Lab Sample ID: 885-5973-18
Date Collected: 06/07/24 12:55
Matrix: Solid
Date Received: 06/11/24 08:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			6560	AT	EET ALB	06/12/24 10:24
Total/NA	Analysis	8015M/D		1	6669	JP	EET ALB	06/14/24 06:18
Total/NA	Prep	5030C			6560	AT	EET ALB	06/12/24 10:24
Total/NA	Analysis	8021B		1	6670	JP	EET ALB	06/14/24 06:18
Total/NA	Prep	SHAKE			6644	SB	EET ALB	06/13/24 10:28
Total/NA	Analysis	8015M/D		1	6622	PD	EET ALB	06/13/24 17:25
Total/NA	Prep	300_Prep			6637	JT	EET ALB	06/13/24 09:39
Total/NA	Analysis	300.0		20	6716	RC	EET ALB	06/13/24 18:27

Client Sample ID: BH24-11 0'
Lab Sample ID: 885-5973-19
Date Collected: 06/07/24 13:05
Matrix: Solid
Date Received: 06/11/24 08:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			6560	AT	EET ALB	06/12/24 10:24
Total/NA	Analysis	8015M/D		1	6669	JP	EET ALB	06/14/24 06:42
Total/NA	Prep	5030C			6560	AT	EET ALB	06/12/24 10:24
Total/NA	Analysis	8021B		1	6670	JP	EET ALB	06/14/24 06:42
Total/NA	Prep	SHAKE			6644	SB	EET ALB	06/13/24 10:28
Total/NA	Analysis	8015M/D		1	6622	PD	EET ALB	06/13/24 17:37
Total/NA	Prep	300_Prep			6637	JT	EET ALB	06/13/24 09:39
Total/NA	Analysis	300.0		20	6716	RC	EET ALB	06/13/24 18:39

Client Sample ID: BH24-11 2'
Lab Sample ID: 885-5973-20
Date Collected: 06/07/24 13:15
Matrix: Solid
Date Received: 06/11/24 08:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			6560	AT	EET ALB	06/12/24 10:24
Total/NA	Analysis	8015M/D		1	6669	JP	EET ALB	06/14/24 07:05
Total/NA	Prep	5030C			6560	AT	EET ALB	06/12/24 10:24
Total/NA	Analysis	8021B		1	6670	JP	EET ALB	06/14/24 07:05

Lab Chronicle

Client: Vertex Job ID: 885-5973-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BH24-11 2' Lab Sample ID: 885-5973-20

Date Collected: 06/07/24 13:15 **Matrix: Solid**
Date Received: 06/11/24 08:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	SHAKE			6644	SB	EET ALB	06/13/24 10:28
Total/NA	Analysis	8015M/D		1	6622	PD	EET ALB	06/13/24 17:49
Total/NA	Prep	300_Prep			6637	JT	EET ALB	06/13/24 09:39
Total/NA	Analysis	300.0		20	6716	RC	EET ALB	06/13/24 18:52

Client Sample ID: BH24-12 0' Lab Sample ID: 885-5973-21

Date Collected: 06/08/24 08:15 **Matrix: Solid**
Date Received: 06/11/24 08:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			6560	AT	EET ALB	06/12/24 10:24
Total/NA	Analysis	8015M/D		1	6817	JP	EET ALB	06/14/24 19:33
Total/NA	Prep	5030C			6560	AT	EET ALB	06/12/24 10:24
Total/NA	Analysis	8021B		1	6818	JP	EET ALB	06/14/24 19:33
Total/NA	Prep	SHAKE			6646	SB	EET ALB	06/13/24 10:38
Total/NA	Analysis	8015M/D		1	6748	JU	EET ALB	06/13/24 16:00
Total/NA	Prep	300_Prep			6637	JT	EET ALB	06/13/24 09:39
Total/NA	Analysis	300.0		20	6716	RC	EET ALB	06/13/24 19:04

Client Sample ID: BH24-12 2' Lab Sample ID: 885-5973-22

Date Collected: 06/08/24 08:25 **Matrix: Solid**
Date Received: 06/11/24 08:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			6560	AT	EET ALB	06/12/24 10:24
Total/NA	Analysis	8015M/D		1	6817	JP	EET ALB	06/14/24 19:56
Total/NA	Prep	5030C			6560	AT	EET ALB	06/12/24 10:24
Total/NA	Analysis	8021B		1	6818	JP	EET ALB	06/14/24 19:56
Total/NA	Prep	SHAKE			6646	SB	EET ALB	06/13/24 10:38
Total/NA	Analysis	8015M/D		10	6806	DH	EET ALB	06/17/24 15:23
Total/NA	Prep	300_Prep			6637	JT	EET ALB	06/13/24 09:39
Total/NA	Analysis	300.0		20	6716	RC	EET ALB	06/13/24 19:16

Client Sample ID: BH24-12 4' Lab Sample ID: 885-5973-23

Date Collected: 06/08/24 08:40 **Matrix: Solid**
Date Received: 06/11/24 08:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			6560	AT	EET ALB	06/12/24 10:24
Total/NA	Analysis	8015M/D		1	6817	JP	EET ALB	06/14/24 20:20
Total/NA	Prep	5030C			6560	AT	EET ALB	06/12/24 10:24
Total/NA	Analysis	8021B		1	6818	JP	EET ALB	06/14/24 20:20
Total/NA	Prep	SHAKE			6646	SB	EET ALB	06/13/24 10:38
Total/NA	Analysis	8015M/D		1	6806	DH	EET ALB	06/17/24 15:12

Lab Chronicle

Client: Vertex
Job ID: 885-5973-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BH24-12 4'
Lab Sample ID: 885-5973-23
Date Collected: 06/08/24 08:40
Matrix: Solid
Date Received: 06/11/24 08:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	300_Prep			6637	JT	EET ALB	06/13/24 09:39
Total/NA	Analysis	300.0		20	6716	RC	EET ALB	06/13/24 19:29

Laboratory References:

EET ALB = Eurofins Albuquerque, 4901 Hawkins NE, Albuquerque, NM 87109, TEL (505)345-3975

Accreditation/Certification Summary

Client: Vertex Job ID: 885-5973-1
Project/Site: Shakespeare 20 Fed Com #001H

Laboratory: Eurofins Albuquerque

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
New Mexico	State	NM9425, NM0901	02-26-25

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
300.0	300_Prep	Solid	Chloride
8015M/D	5030C	Solid	Gasoline Range Organics [C6 - C10]
8015M/D	SHAKE	Solid	Diesel Range Organics [C10-C28]
8015M/D	SHAKE	Solid	Motor Oil Range Organics [C28-C40]
8021B	5030C	Solid	Benzene
8021B	5030C	Solid	Ethylbenzene
8021B	5030C	Solid	Toluene
8021B	5030C	Solid	Xylenes, Total

Oregon	NELAP	NM100001	02-26-25

Chain-of-Custody Record

Client: **Vertex (bill to Mack Energy, Matt Buckles)**

Mailing Address (On File)

Phone #

email or Fax#

QA/QC Package

☐ Standard ☐ Level 4 (Full Validation)

Accreditation ☐ Az Compliance

☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time

☐ Standard X Rush_5-day-rush

Project Name

Shakespeare 20 Fed Com #001H

Project #

24E-02953

Project Manager

Sally Carttar

SCarttar@vertex ca

Sampler L Pullman

On Ice: ☒ Yes ☐ No

# of Coolers: 1 yog:

Cooler Temp(including CF): 0.5-0=0.5

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www hallenvironmental com

4901 Hawkins NE - Albuquerque, NM 87 885-5973 COC

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)						
6 6 24	8.20	Soil	BH24-01 0'	1, 4oz jar		1	X	X					X									
6 6 24	11 15	Soil	BH24-01 2'	1, 4oz jar		2	X	X					X									
6 6 24	8 30	Soil	BH24-02 0'	1, 4oz jar		3	X	X					X									
6 6 24	11 30	Soil	BH24-02 2'	1, 4oz jar		4	X	X					X									
6 6 24	8 40	Soil	BH24-03 0'	1, 4oz jar		5	X	X					X									
6 6 24	11 45	Soil	BH24-03 2'	1, 4oz jar		6	X	X					X									
6 6 24	13.20	Soil	BH24-04 0'	1, 4oz jar		7	X	X					X									
6 6 24	13 30	Soil	BH24-04 2'	1, 4oz jar		8	X	X					X									
6 6 24	13 00	Soil	BH24-05 0'	1, 4oz jar		9	X	X					X									
6 6 24	13 10	Soil	BH24-05 2'	1, 4oz jar		10	X	X					X									

Date	Time	Relinquished by	Received by	Via	Date	Time
6-10-24	09:00	[signature]	[signature]		6/10/24	0900
6/10/24	1900	[signature]	[signature]	courier	6/11/24	840

Remarks
Direct Bill to Mack Energy ATTN Matt Buckles

CC Sally Carttar (SCarttar@vertexresource com) for Final Report

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 (bill to Mack Energy, Matt Buckles)**

Mailing Address: (On File)

Phone #

email or Fax#

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

Accreditation: ☐ Az Compliance ☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time: ☐ Standard X Rush_5-day-rush

Project Name: **Shakespeare 20 Fed Com #001H**

Project #: **24E-02953**

Project Manager: **Sally Carttar**

SCarttar@vertex ca

Sampler: L Pullman

On Ice: ☑ Yes ☐ No

# of Coolers: 1 Yoai

Cooler Temp(including CF): 0.5-0=0.5

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)						
6 7 24	9 00	Soil	BH24-07 0'	1, 4oz jar		11	X	X					X									
6 7 24	9 10	Soil	BH24-07 2'	1, 4oz jar		12	X	X					X									
6 7 24	9 15	Soil	BH24-08 0'	1, 4oz jar		13	X	X					X									
6 7 24	9 25	Soil	BH24-08 2'	1, 4oz jar		14	X	X					X									
6 7 24	10 45	Soil	BH24-09 0'	1, 4oz jar		15	X	X					X									
6 7 24	10 55	Soil	BH24-09 2'	1, 4oz jar		16	X	X					X									
6 7 24	12 45	Soil	BH24-10 0'	1, 4oz jar		17	X	X					X									
6 7 24	12 55	Soil	BH24-10 2'	1, 4oz jar		18	X	X					X									
6 7 24	13 05	Soil	BH24-11 0'	1, 4oz jar		19	X	X					X									
6 7 24	13 15	Soil	BH24-11 2'	1, 4oz jar		20	X	X					X									

Date	Time	Relinquished by	Received by	Via	Date	Time
6-10-24	09:00	[signature]	[signature]		6/10/24	0900
6/10/24	1900	[signature]	[signature]	Courier	6/11/24	8:10

Remarks
Direct Bill to Mack Energy ATTN Matt Buckles

CC Sally Carttar (SCarttar@vertexresource com) for Final Report

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 (bill to Mack Energy, Matt Buckles)**

Mailing Address (On File)

Phone #

email or Fax#

QA/QC Package

☐ Standard ☐ Level 4 (Full Validation)

Accreditation ☐ Az Compliance

☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time

☐ Standard X **Rush_5-day-rush**

Project Name

Shakespeare 20 Fed Com #001H

Project #

24E-02953

Project Manager

Sally Carttar

SCarttar@vertex ca

Sampler L Pullman

On Ice: ~~☐~~ Yes ☐ No

# of Coolers: 1 Yes

Cooler Temp(including CF): 0.5-0=0.5

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)
6 8 24	8 15	Soil	BH24-12 0'	1, 4oz jar		21	X	X					X			
6 8 24	8 25	Soil	BH24-12 2'	1, 4oz jar		22	X	X					X			
6 8 24	8 40	Soil	BH24-12 4'	1, 4oz jar		23	X	X					X			

Date	Time	Relinquished by	Received by	Via	Date	Time
6-10-24	09:00				6/10/24	0900
6/10/24	1900			courier	6/11/24	8:10

Remarks

Direct Bill to Mack Energy ATTN Matt Buckles

CC Sally Carttar (SCarttar@vertexresource com) for Final Report

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.

Login Sample Receipt Checklist

Client: Vertex Job Number: 885-5973-1

Login Number: 5973 **List Source: Eurofins Albuquerque**
List Number: 1
Creator: Casarrubias, Tracy

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
TCEQ Mtd 1005 soil sample was frozen/delivered for prep within 48H of sampling.	N/A	

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Ms. Sally Carttar
Vertex
3101 Boyd Dr
Carlsbad, New Mexico 88220

Generated 8/28/2024 12:59:27 PM

JOB DESCRIPTION

Shakespeare 20 Fed Com #001H

JOB NUMBER

885-10039-1

Eurofins Albuquerque
4901 Hawkins NE
Albuquerque NM 87109

See page two for job notes and contact information.

Eurofins Albuquerque

Job Notes

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing South Central, LLC Project Manager.

Authorization

Generated
8/28/2024 12:59:27 PM

Authorized for release by
Cheyenne Cason, Project Manager
cheyenne.cason@et.eurofinsus.com
(505)345-3975

Client: Vertex
Project/Site: Shakespeare 20 Fed Com #001H

Laboratory Job ID: 885-10039-1

Table of Contents

Definitions/Glossary

Client: Vertex Job ID: 885-10039-1
Project/Site: Shakespeare 20 Fed Com #001H

Qualifiers

HPLC/IC

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Vertex Job ID: 885-10039-1
Project: Shakespeare 20 Fed Com #001H

Job ID: 885-10039-1 Eurofins Albuquerque

Job Narrative
885-10039-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

- Matrix QC may not be reported if insufficient sample is provided or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 8/16/2024 8:20 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 5.0°C.

Receipt Exceptions
The Field Sampler was not listed on the Chain of Custody.

Gasoline Range Organics
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

GC VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Diesel Range Organics
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

HPLC/IC
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Client Sample Results

Client: Vertex
Job ID: 885-10039-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: WES24-02 0-2'
Lab Sample ID: 885-10039-1
Date Collected: 08/13/24 09:50
Matrix: Solid
Date Received: 08/16/24 08:20

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		08/16/24 12:01	08/20/24 03:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*35 - 166*	*08/16/24 12:01*	*08/20/24 03:59*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		08/16/24 12:01	08/20/24 03:59	1
Ethylbenzene	ND		0.050		mg/Kg		08/16/24 12:01	08/20/24 03:59	1
Toluene	ND		0.050		mg/Kg		08/16/24 12:01	08/20/24 03:59	1
Xylenes, Total	ND		0.10		mg/Kg		08/16/24 12:01	08/20/24 03:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*85*		*48 - 145*	*08/16/24 12:01*	*08/20/24 03:59*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		10		mg/Kg		08/20/24 11:05	08/21/24 01:53	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		08/20/24 11:05	08/21/24 01:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*82*		*62 - 134*	*08/20/24 11:05*	*08/21/24 01:53*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**230**		60		mg/Kg		08/20/24 14:02	08/20/24 22:55	20

Client Sample Results

Client: Vertex
Job ID: 885-10039-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: WES24-03 0-2'
Lab Sample ID: 885-10039-2
Date Collected: 08/13/24 09:55
Matrix: Solid
Date Received: 08/16/24 08:20

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		08/16/24 12:01	08/20/24 04:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*35 - 166*	*08/16/24 12:01*	*08/20/24 04:22*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		08/16/24 12:01	08/20/24 04:22	1
Ethylbenzene	ND		0.050		mg/Kg		08/16/24 12:01	08/20/24 04:22	1
Toluene	ND		0.050		mg/Kg		08/16/24 12:01	08/20/24 04:22	1
Xylenes, Total	ND		0.099		mg/Kg		08/16/24 12:01	08/20/24 04:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*85*		*48 - 145*	*08/16/24 12:01*	*08/20/24 04:22*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.9		mg/Kg		08/20/24 11:05	08/21/24 02:07	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		08/20/24 11:05	08/21/24 02:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*84*		*62 - 134*	*08/20/24 11:05*	*08/21/24 02:07*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		08/20/24 14:02	08/20/24 23:32	20

Client Sample Results

Client: Vertex
Job ID: 885-10039-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: WES24-06 0-4'
Lab Sample ID: 885-10039-3
Date Collected: 08/13/24 10:10
Matrix: Solid
Date Received: 08/16/24 08:20

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.8		mg/Kg		08/16/24 12:01	08/20/24 04:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*35 - 166*	*08/16/24 12:01*	*08/20/24 04:46*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		08/16/24 12:01	08/20/24 04:46	1
Ethylbenzene	ND		0.048		mg/Kg		08/16/24 12:01	08/20/24 04:46	1
Toluene	ND		0.048		mg/Kg		08/16/24 12:01	08/20/24 04:46	1
Xylenes, Total	ND		0.095		mg/Kg		08/16/24 12:01	08/20/24 04:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*85*		*48 - 145*	*08/16/24 12:01*	*08/20/24 04:46*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.6		mg/Kg		08/20/24 11:05	08/21/24 02:20	1
Motor Oil Range Organics [C28-C40]	ND		48		mg/Kg		08/20/24 11:05	08/21/24 02:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*79*		*62 - 134*	*08/20/24 11:05*	*08/21/24 02:20*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**510**		60		mg/Kg		08/20/24 15:09	08/20/24 22:03	20

Client Sample Results

Client: Vertex
Job ID: 885-10039-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: WES24-07 0-4'
Lab Sample ID: 885-10039-4
Date Collected: 08/13/24 10:15
Matrix: Solid
Date Received: 08/16/24 08:20

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		08/16/24 12:01	08/20/24 05:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*35 - 166*	*08/16/24 12:01*	*08/20/24 05:09*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		08/16/24 12:01	08/20/24 05:09	1
Ethylbenzene	ND		0.050		mg/Kg		08/16/24 12:01	08/20/24 05:09	1
Toluene	ND		0.050		mg/Kg		08/16/24 12:01	08/20/24 05:09	1
Xylenes, Total	ND		0.10		mg/Kg		08/16/24 12:01	08/20/24 05:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*87*		*48 - 145*	*08/16/24 12:01*	*08/20/24 05:09*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		10		mg/Kg		08/20/24 11:05	08/21/24 02:34	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		08/20/24 11:05	08/21/24 02:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*77*		*62 - 134*	*08/20/24 11:05*	*08/21/24 02:34*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**310**		60		mg/Kg		08/20/24 15:09	08/20/24 22:16	20

Client Sample Results

Client: Vertex
Job ID: 885-10039-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BES24-03 2.0'
Lab Sample ID: 885-10039-5
Date Collected: 08/13/24 10:30
Matrix: Solid
Date Received: 08/16/24 08:20

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.8		mg/Kg		08/16/24 12:01	08/20/24 05:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*92*		*35 - 166*	*08/16/24 12:01*	*08/20/24 05:33*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		08/16/24 12:01	08/20/24 05:33	1
Ethylbenzene	ND		0.048		mg/Kg		08/16/24 12:01	08/20/24 05:33	1
Toluene	ND		0.048		mg/Kg		08/16/24 12:01	08/20/24 05:33	1
Xylenes, Total	ND		0.097		mg/Kg		08/16/24 12:01	08/20/24 05:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*83*		*48 - 145*	*08/16/24 12:01*	*08/20/24 05:33*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.6		mg/Kg		08/20/24 11:05	08/21/24 02:48	1
Motor Oil Range Organics [C28-C40]	ND		48		mg/Kg		08/20/24 11:05	08/21/24 02:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*73*		*62 - 134*	*08/20/24 11:05*	*08/21/24 02:48*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**360**		60		mg/Kg		08/20/24 15:09	08/20/24 22:29	20

Client Sample Results

Client: Vertex
Job ID: 885-10039-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BES24-04 2.0'
Lab Sample ID: 885-10039-6
Date Collected: 08/13/24 10:35
Matrix: Solid
Date Received: 08/16/24 08:20

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.7		mg/Kg		08/16/24 12:01	08/20/24 05:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*91*		*35 - 166*	*08/16/24 12:01*	*08/20/24 05:56*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		08/16/24 12:01	08/20/24 05:56	1
Ethylbenzene	ND		0.047		mg/Kg		08/16/24 12:01	08/20/24 05:56	1
Toluene	ND		0.047		mg/Kg		08/16/24 12:01	08/20/24 05:56	1
Xylenes, Total	ND		0.094		mg/Kg		08/16/24 12:01	08/20/24 05:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*82*		*48 - 145*	*08/16/24 12:01*	*08/20/24 05:56*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**71**		9.3		mg/Kg		08/20/24 11:05	08/20/24 19:42	1
Motor Oil Range Organics [C28-C40]	**100**		47		mg/Kg		08/20/24 11:05	08/20/24 19:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*90*		*62 - 134*	*08/20/24 11:05*	*08/20/24 19:42*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**260**		60		mg/Kg		08/20/24 15:09	08/20/24 22:42	20

Client Sample Results

Client: Vertex
Job ID: 885-10039-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BES24-05 4.0'
Lab Sample ID: 885-10039-7
Date Collected: 08/13/24 10:40
Matrix: Solid
Date Received: 08/16/24 08:20

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.8		mg/Kg		08/16/24 12:01	08/20/24 06:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*92*		*35 - 166*	*08/16/24 12:01*	*08/20/24 06:20*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		08/16/24 12:01	08/20/24 06:20	1
Ethylbenzene	ND		0.048		mg/Kg		08/16/24 12:01	08/20/24 06:20	1
Toluene	ND		0.048		mg/Kg		08/16/24 12:01	08/20/24 06:20	1
Xylenes, Total	ND		0.096		mg/Kg		08/16/24 12:01	08/20/24 06:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*83*		*48 - 145*	*08/16/24 12:01*	*08/20/24 06:20*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.8		mg/Kg		08/20/24 11:05	08/21/24 03:16	1
Motor Oil Range Organics [C28-C40]	ND		49		mg/Kg		08/20/24 11:05	08/21/24 03:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*74*		*62 - 134*	*08/20/24 11:05*	*08/21/24 03:16*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**410**		60		mg/Kg		08/20/24 15:09	08/20/24 22:54	20

Client Sample Results

Client: Vertex
Job ID: 885-10039-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BES24-08 3.0'
Lab Sample ID: 885-10039-8
Date Collected: 08/14/24 08:40
Matrix: Solid
Date Received: 08/16/24 08:20

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.9		mg/Kg		08/16/24 12:01	08/20/24 06:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*92*		*35 - 166*	*08/16/24 12:01*	*08/20/24 06:43*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		08/16/24 12:01	08/20/24 06:43	1
Ethylbenzene	ND		0.049		mg/Kg		08/16/24 12:01	08/20/24 06:43	1
Toluene	ND		0.049		mg/Kg		08/16/24 12:01	08/20/24 06:43	1
Xylenes, Total	ND		0.097		mg/Kg		08/16/24 12:01	08/20/24 06:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*84*		*48 - 145*	*08/16/24 12:01*	*08/20/24 06:43*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.2		mg/Kg		08/20/24 11:05	08/21/24 03:30	1
Motor Oil Range Organics [C28-C40]	ND		46		mg/Kg		08/20/24 11:05	08/21/24 03:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*86*		*62 - 134*	*08/20/24 11:05*	*08/21/24 03:30*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**280**		60		mg/Kg		08/21/24 16:07	08/22/24 08:04	20

Client Sample Results

Client: Vertex
Job ID: 885-10039-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BES24-01 2.0'
Lab Sample ID: 885-10039-9
Date Collected: 08/14/24 12:30
Matrix: Solid
Date Received: 08/16/24 08:20

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.9		mg/Kg		08/16/24 18:36	08/20/24 22:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*114*		*35 - 166*	*08/16/24 18:36*	*08/20/24 22:17*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		08/16/24 18:36	08/20/24 22:17	1
Ethylbenzene	ND		0.049		mg/Kg		08/16/24 18:36	08/20/24 22:17	1
Toluene	ND		0.049		mg/Kg		08/16/24 18:36	08/20/24 22:17	1
Xylenes, Total	ND		0.098		mg/Kg		08/16/24 18:36	08/20/24 22:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*120*		*48 - 145*	*08/16/24 18:36*	*08/20/24 22:17*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.5		mg/Kg		08/20/24 11:05	08/21/24 03:43	1
Motor Oil Range Organics [C28-C40]	ND		48		mg/Kg		08/20/24 11:05	08/21/24 03:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*81*		*62 - 134*	*08/20/24 11:05*	*08/21/24 03:43*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**560**		60		mg/Kg		08/21/24 16:07	08/22/24 08:42	20

Client Sample Results

Client: Vertex
Job ID: 885-10039-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: WES24-01 0-2'
Lab Sample ID: 885-10039-10
Date Collected: 08/14/24 14:00
Matrix: Solid
Date Received: 08/16/24 08:20

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.9		mg/Kg		08/16/24 18:36	08/20/24 22:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*125*		*35 - 166*	*08/16/24 18:36*	*08/20/24 22:39*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		08/16/24 18:36	08/20/24 22:39	1
Ethylbenzene	ND		0.049		mg/Kg		08/16/24 18:36	08/20/24 22:39	1
Toluene	ND		0.049		mg/Kg		08/16/24 18:36	08/20/24 22:39	1
Xylenes, Total	ND		0.097		mg/Kg		08/16/24 18:36	08/20/24 22:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*118*		*48 - 145*	*08/16/24 18:36*	*08/20/24 22:39*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.9		mg/Kg		08/20/24 11:05	08/21/24 03:57	1
Motor Oil Range Organics [C28-C40]	ND		49		mg/Kg		08/20/24 11:05	08/21/24 03:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*88*		*62 - 134*	*08/20/24 11:05*	*08/21/24 03:57*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**410**		60		mg/Kg		08/21/24 16:07	08/22/24 08:55	20

Client Sample Results

Client: Vertex
Job ID: 885-10039-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: WES24-05 0-3'
Lab Sample ID: 885-10039-11
Date Collected: 08/14/24 14:10
Matrix: Solid
Date Received: 08/16/24 08:20

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		08/19/24 11:42	08/21/24 03:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*91*		*35 - 166*	*08/19/24 11:42*	*08/21/24 03:13*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		08/19/24 11:42	08/21/24 03:13	1
Ethylbenzene	ND		0.050		mg/Kg		08/19/24 11:42	08/21/24 03:13	1
Toluene	ND		0.050		mg/Kg		08/19/24 11:42	08/21/24 03:13	1
Xylenes, Total	ND		0.10		mg/Kg		08/19/24 11:42	08/21/24 03:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*83*		*48 - 145*	*08/19/24 11:42*	*08/21/24 03:13*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.4		mg/Kg		08/20/24 11:05	08/21/24 04:10	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		08/20/24 11:05	08/21/24 04:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*84*		*62 - 134*	*08/20/24 11:05*	*08/21/24 04:10*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**540**		60		mg/Kg		08/21/24 16:07	08/22/24 09:08	20

QC Sample Results

Client: Vertex
Job ID: 885-10039-1
Project/Site: Shakespeare 20 Fed Com #001H

Method: 8015M/D - Gasoline Range Organics (GRO) (GC)

Lab Sample ID: MB 885-10423/1-A
Matrix: Solid
Analysis Batch: 10627

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 10423

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		08/16/24 12:01	08/19/24 20:58	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*35 - 166*	*08/16/24 12:01*	*08/19/24 20:58*	*1*

Lab Sample ID: LCS 885-10423/2-A
Matrix: Solid
Analysis Batch: 10627

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 10423

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics [C6 - C10]			25.0	29.3		mg/Kg		117	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*221*		*35 - 166*

Lab Sample ID: MB 885-10460/1-A
Matrix: Solid
Analysis Batch: 10658

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 10460

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		08/16/24 18:36	08/20/24 13:31	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*111*		*35 - 166*	*08/16/24 18:36*	*08/20/24 13:31*	*1*

Lab Sample ID: LCS 885-10460/2-A
Matrix: Solid
Analysis Batch: 10658

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 10460

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics [C6 - C10]			25.0	27.3		mg/Kg		109	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*219*		*35 - 166*

Lab Sample ID: MB 885-10510/1-A
Matrix: Solid
Analysis Batch: 10663

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 10510

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		08/19/24 11:42	08/20/24 23:19	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*35 - 166*	*08/19/24 11:42*	*08/20/24 23:19*	*1*

QC Sample Results

Client: Vertex
Job ID: 885-10039-1
Project/Site: Shakespeare 20 Fed Com #001H

Method: 8015M/D - Gasoline Range Organics (GRO) (GC) (Continued)

Lab Sample ID: LCS 885-10510/2-A
Matrix: Solid
Analysis Batch: 10663

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 10510

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics [C6 - C10]			25.0	30.2		mg/Kg		121	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*224*		*35 - 166*

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 885-10387/1-A
Matrix: Solid
Analysis Batch: 10628

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 10387

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		08/16/24 08:34	08/19/24 11:54	1
Ethylbenzene	ND		0.050		mg/Kg		08/16/24 08:34	08/19/24 11:54	1
Toluene	ND		0.050		mg/Kg		08/16/24 08:34	08/19/24 11:54	1
Xylenes, Total	ND		0.10		mg/Kg		08/16/24 08:34	08/19/24 11:54	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*84*		*48 - 145*	*08/16/24 08:34*	*08/19/24 11:54*	*1*

Lab Sample ID: MB 885-10423/1-A
Matrix: Solid
Analysis Batch: 10628

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 10423

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		08/16/24 12:01	08/19/24 20:58	1
Ethylbenzene	ND		0.050		mg/Kg		08/16/24 12:01	08/19/24 20:58	1
Toluene	ND		0.050		mg/Kg		08/16/24 12:01	08/19/24 20:58	1
Xylenes, Total	ND		0.10		mg/Kg		08/16/24 12:01	08/19/24 20:58	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*86*		*48 - 145*	*08/16/24 12:01*	*08/19/24 20:58*	*1*

Lab Sample ID: LCS 885-10423/3-A
Matrix: Solid
Analysis Batch: 10628

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 10423

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			1.00	0.981		mg/Kg		98	70 - 130		
Ethylbenzene			1.00	0.917		mg/Kg		92	70 - 130		
m,p-Xylene			2.00	1.85		mg/Kg		92	70 - 130		
o-Xylene			1.00	0.887		mg/Kg		89	70 - 130		
Toluene			1.00	0.930		mg/Kg		93	70 - 130		
Xylenes, Total			3.00	2.73		mg/Kg		91	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*89*		*48 - 145*

QC Sample Results

Client: Vertex
Project/Site: Shakespeare 20 Fed Com #001H

Job ID: 885-10039-1

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 885-10460/1-A
Matrix: Solid
Analysis Batch: 10659

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 10460

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		08/16/24 18:36	08/20/24 13:31	1
Ethylbenzene	ND		0.050		mg/Kg		08/16/24 18:36	08/20/24 13:31	1
Toluene	ND		0.050		mg/Kg		08/16/24 18:36	08/20/24 13:31	1
Xylenes, Total	ND		0.10		mg/Kg		08/16/24 18:36	08/20/24 13:31	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*109*		*48 - 145*	*08/16/24 18:36*	*08/20/24 13:31*	*1*

Lab Sample ID: LCS 885-10460/3-A
Matrix: Solid
Analysis Batch: 10659

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 10460

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			1.00	1.09		mg/Kg		109	70 - 130		
Ethylbenzene			1.00	1.10		mg/Kg		110	70 - 130		
m,p-Xylene			2.00	2.17		mg/Kg		109	70 - 130		
o-Xylene			1.00	1.08		mg/Kg		108	70 - 130		
Toluene			1.00	1.09		mg/Kg		109	70 - 130		
Xylenes, Total			3.00	3.25		mg/Kg		108	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*109*		*48 - 145*

Lab Sample ID: MB 885-10510/1-A
Matrix: Solid
Analysis Batch: 10664

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 10510

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		08/19/24 11:42	08/20/24 23:19	1
Ethylbenzene	ND		0.050		mg/Kg		08/19/24 11:42	08/20/24 23:19	1
Toluene	ND		0.050		mg/Kg		08/19/24 11:42	08/20/24 23:19	1
Xylenes, Total	ND		0.10		mg/Kg		08/19/24 11:42	08/20/24 23:19	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*88*		*48 - 145*	*08/19/24 11:42*	*08/20/24 23:19*	*1*

Lab Sample ID: LCS 885-10510/3-A
Matrix: Solid
Analysis Batch: 10664

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 10510

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			1.00	0.946		mg/Kg		95	70 - 130		
Ethylbenzene			1.00	0.863		mg/Kg		86	70 - 130		
m,p-Xylene			2.00	1.73		mg/Kg		87	70 - 130		
o-Xylene			1.00	0.836		mg/Kg		84	70 - 130		
Toluene			1.00	0.890		mg/Kg		89	70 - 130		
Xylenes, Total			3.00	2.57		mg/Kg		86	70 - 130		

QC Sample Results

Client: Vertex
Project/Site: Shakespeare 20 Fed Com #001H

Job ID: 885-10039-1

Method: 8021B - Volatile Organic Compounds (GC) (Continued)

Lab Sample ID: LCS 885-10510/3-A
Matrix: Solid
Analysis Batch: 10664

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 10510

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	*90*		*48 - 145*

Method: 8015M/D - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 885-10601/1-A
Matrix: Solid
Analysis Batch: 10594

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 10601

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		10		mg/Kg		08/20/24 11:05	08/21/24 01:26	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		08/20/24 11:05	08/21/24 01:26	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Di-n-octyl phthalate (Surr)	*80*		*62 - 134*	*08/20/24 11:05*	*08/21/24 01:26*	*1*

Lab Sample ID: LCS 885-10601/2-A
Matrix: Solid
Analysis Batch: 10594

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 10601

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Diesel Range Organics [C10-C28]			50.0	43.5		mg/Kg		87	60 - 135		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Di-n-octyl phthalate (Surr)	*67*		*62 - 134*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 885-10630/1-A
Matrix: Solid
Analysis Batch: 10676

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 10630

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0		mg/Kg		08/20/24 14:02	08/20/24 18:24	1

Lab Sample ID: LCS 885-10630/2-A
Matrix: Solid
Analysis Batch: 10676

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 10630

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			30.0	28.2		mg/Kg		94	90 - 110		

Lab Sample ID: 885-10039-1 MS
Matrix: Solid
Analysis Batch: 10676

Client Sample ID: WES24-02 0-2'
Prep Type: Total/NA
Prep Batch: 10630

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	230		29.9	265	4	mg/Kg		104	50 - 150		

QC Sample Results

Client: Vertex
Job ID: 885-10039-1
Project/Site: Shakespeare 20 Fed Com #001H

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 885-10039-1 MSD
Client Sample ID: WES24-02 0-2'
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 10676
Prep Batch: 10630

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	230		30.1	260	4	mg/Kg		87	50 - 150	2	20

Lab Sample ID: MB 885-10638/1-A
Client Sample ID: Method Blank
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 10718
Prep Batch: 10638

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0		mg/Kg		08/20/24 15:09	08/20/24 16:41	1

Lab Sample ID: LCS 885-10638/2-A
Client Sample ID: Lab Control Sample
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 10718
Prep Batch: 10638

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			30.0	28.7		mg/Kg		96	90 - 110		

Lab Sample ID: MB 885-10642/1-A
Client Sample ID: Method Blank
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 10841
Prep Batch: 10642

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0		mg/Kg		08/21/24 16:07	08/22/24 07:38	1

Lab Sample ID: LCS 885-10642/2-A
Client Sample ID: Lab Control Sample
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 10841
Prep Batch: 10642

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			30.0	28.4		mg/Kg		95	90 - 110		

Lab Sample ID: 885-10039-8 MS
Client Sample ID: BES24-08 3.0'
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 10841
Prep Batch: 10642

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	280		30.1	316	4	mg/Kg		113	50 - 150		

Lab Sample ID: 885-10039-8 MSD
Client Sample ID: BES24-08 3.0'
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 10841
Prep Batch: 10642

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	280		29.9	317	4	mg/Kg		116	50 - 150	0	20

Lab Sample ID: MB 885-10676/4
Client Sample ID: Method Blank
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 10676

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/Kg			08/20/24 10:59	1

QC Sample Results

Client: Vertex
Project/Site: Shakespeare 20 Fed Com #001H

Job ID: 885-10039-1

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MRL 885-10676/3
Matrix: Solid
Analysis Batch: 10676

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			0.500	0.515		mg/L		103	50 - 150		

QC Association Summary

Client: Vertex Job ID: 885-10039-1
Project/Site: Shakespeare 20 Fed Com #001H

GC VOA

Prep Batch: 10387

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 885-10387/1-A	Method Blank	Total/NA	Solid	5035	

Prep Batch: 10423

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-10039-1	WES24-02 0-2'	Total/NA	Solid	5030C	
885-10039-2	WES24-03 0-2'	Total/NA	Solid	5030C	
885-10039-3	WES24-06 0-4'	Total/NA	Solid	5030C	
885-10039-4	WES24-07 0-4'	Total/NA	Solid	5030C	
885-10039-5	BES24-03 2.0'	Total/NA	Solid	5030C	
885-10039-6	BES24-04 2.0'	Total/NA	Solid	5030C	
885-10039-7	BES24-05 4.0'	Total/NA	Solid	5030C	
885-10039-8	BES24-08 3.0'	Total/NA	Solid	5030C	
MB 885-10423/1-A	Method Blank	Total/NA	Solid	5030C	
LCS 885-10423/2-A	Lab Control Sample	Total/NA	Solid	5030C	
LCS 885-10423/3-A	Lab Control Sample	Total/NA	Solid	5030C	

Prep Batch: 10460

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-10039-9	BES24-01 2.0'	Total/NA	Solid	5030C	
885-10039-10	WES24-01 0-2'	Total/NA	Solid	5030C	
MB 885-10460/1-A	Method Blank	Total/NA	Solid	5030C	
LCS 885-10460/2-A	Lab Control Sample	Total/NA	Solid	5030C	
LCS 885-10460/3-A	Lab Control Sample	Total/NA	Solid	5030C	

Prep Batch: 10510

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-10039-11	WES24-05 0-3'	Total/NA	Solid	5030C	
MB 885-10510/1-A	Method Blank	Total/NA	Solid	5030C	
LCS 885-10510/2-A	Lab Control Sample	Total/NA	Solid	5030C	
LCS 885-10510/3-A	Lab Control Sample	Total/NA	Solid	5030C	

Analysis Batch: 10627

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-10039-1	WES24-02 0-2'	Total/NA	Solid	8015M/D	10423
885-10039-2	WES24-03 0-2'	Total/NA	Solid	8015M/D	10423
885-10039-3	WES24-06 0-4'	Total/NA	Solid	8015M/D	10423
885-10039-4	WES24-07 0-4'	Total/NA	Solid	8015M/D	10423
885-10039-5	BES24-03 2.0'	Total/NA	Solid	8015M/D	10423
885-10039-6	BES24-04 2.0'	Total/NA	Solid	8015M/D	10423
885-10039-7	BES24-05 4.0'	Total/NA	Solid	8015M/D	10423
885-10039-8	BES24-08 3.0'	Total/NA	Solid	8015M/D	10423
MB 885-10423/1-A	Method Blank	Total/NA	Solid	8015M/D	10423
LCS 885-10423/2-A	Lab Control Sample	Total/NA	Solid	8015M/D	10423

Analysis Batch: 10628

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-10039-1	WES24-02 0-2'	Total/NA	Solid	8021B	10423
885-10039-2	WES24-03 0-2'	Total/NA	Solid	8021B	10423
885-10039-3	WES24-06 0-4'	Total/NA	Solid	8021B	10423
885-10039-4	WES24-07 0-4'	Total/NA	Solid	8021B	10423
885-10039-5	BES24-03 2.0'	Total/NA	Solid	8021B	10423

QC Association Summary

Client: Vertex
Job ID: 885-10039-1
Project/Site: Shakespeare 20 Fed Com #001H

GC VOA (Continued)

Analysis Batch: 10628 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-10039-6	BES24-04 2.0'	Total/NA	Solid	8021B	10423
885-10039-7	BES24-05 4.0'	Total/NA	Solid	8021B	10423
885-10039-8	BES24-08 3.0'	Total/NA	Solid	8021B	10423
MB 885-10387/1-A	Method Blank	Total/NA	Solid	8021B	10387
MB 885-10423/1-A	Method Blank	Total/NA	Solid	8021B	10423
LCS 885-10423/3-A	Lab Control Sample	Total/NA	Solid	8021B	10423

Analysis Batch: 10658

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-10039-9	BES24-01 2.0'	Total/NA	Solid	8015M/D	10460
885-10039-10	WES24-01 0-2'	Total/NA	Solid	8015M/D	10460
MB 885-10460/1-A	Method Blank	Total/NA	Solid	8015M/D	10460
LCS 885-10460/2-A	Lab Control Sample	Total/NA	Solid	8015M/D	10460

Analysis Batch: 10659

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-10039-9	BES24-01 2.0'	Total/NA	Solid	8021B	10460
885-10039-10	WES24-01 0-2'	Total/NA	Solid	8021B	10460
MB 885-10460/1-A	Method Blank	Total/NA	Solid	8021B	10460
LCS 885-10460/3-A	Lab Control Sample	Total/NA	Solid	8021B	10460

Analysis Batch: 10663

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-10039-11	WES24-05 0-3'	Total/NA	Solid	8015M/D	10510
MB 885-10510/1-A	Method Blank	Total/NA	Solid	8015M/D	10510
LCS 885-10510/2-A	Lab Control Sample	Total/NA	Solid	8015M/D	10510

Analysis Batch: 10664

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-10039-11	WES24-05 0-3'	Total/NA	Solid	8021B	10510
MB 885-10510/1-A	Method Blank	Total/NA	Solid	8021B	10510
LCS 885-10510/3-A	Lab Control Sample	Total/NA	Solid	8021B	10510

GC Semi VOA

Analysis Batch: 10594

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-10039-1	WES24-02 0-2'	Total/NA	Solid	8015M/D	10601
885-10039-2	WES24-03 0-2'	Total/NA	Solid	8015M/D	10601
885-10039-3	WES24-06 0-4'	Total/NA	Solid	8015M/D	10601
885-10039-4	WES24-07 0-4'	Total/NA	Solid	8015M/D	10601
885-10039-5	BES24-03 2.0'	Total/NA	Solid	8015M/D	10601
885-10039-7	BES24-05 4.0'	Total/NA	Solid	8015M/D	10601
885-10039-8	BES24-08 3.0'	Total/NA	Solid	8015M/D	10601
885-10039-9	BES24-01 2.0'	Total/NA	Solid	8015M/D	10601
885-10039-10	WES24-01 0-2'	Total/NA	Solid	8015M/D	10601
885-10039-11	WES24-05 0-3'	Total/NA	Solid	8015M/D	10601
MB 885-10601/1-A	Method Blank	Total/NA	Solid	8015M/D	10601
LCS 885-10601/2-A	Lab Control Sample	Total/NA	Solid	8015M/D	10601

QC Association Summary

Client: Vertex
Job ID: 885-10039-1
Project/Site: Shakespeare 20 Fed Com #001H

GC Semi VOA

Analysis Batch: 10596

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-10039-6	BES24-04 2.0'	Total/NA	Solid	8015M/D	10601

Prep Batch: 10601

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-10039-1	WES24-02 0-2'	Total/NA	Solid	SHAKE	
885-10039-2	WES24-03 0-2'	Total/NA	Solid	SHAKE	
885-10039-3	WES24-06 0-4'	Total/NA	Solid	SHAKE	
885-10039-4	WES24-07 0-4'	Total/NA	Solid	SHAKE	
885-10039-5	BES24-03 2.0'	Total/NA	Solid	SHAKE	
885-10039-6	BES24-04 2.0'	Total/NA	Solid	SHAKE	
885-10039-7	BES24-05 4.0'	Total/NA	Solid	SHAKE	
885-10039-8	BES24-08 3.0'	Total/NA	Solid	SHAKE	
885-10039-9	BES24-01 2.0'	Total/NA	Solid	SHAKE	
885-10039-10	WES24-01 0-2'	Total/NA	Solid	SHAKE	
885-10039-11	WES24-05 0-3'	Total/NA	Solid	SHAKE	
MB 885-10601/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 885-10601/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	

HPLC/IC

Prep Batch: 10630

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-10039-1	WES24-02 0-2'	Total/NA	Solid	300_Prep	
885-10039-2	WES24-03 0-2'	Total/NA	Solid	300_Prep	
MB 885-10630/1-A	Method Blank	Total/NA	Solid	300_Prep	
LCS 885-10630/2-A	Lab Control Sample	Total/NA	Solid	300_Prep	
885-10039-1 MS	WES24-02 0-2'	Total/NA	Solid	300_Prep	
885-10039-1 MSD	WES24-02 0-2'	Total/NA	Solid	300_Prep	

Prep Batch: 10638

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-10039-3	WES24-06 0-4'	Total/NA	Solid	300_Prep	
885-10039-4	WES24-07 0-4'	Total/NA	Solid	300_Prep	
885-10039-5	BES24-03 2.0'	Total/NA	Solid	300_Prep	
885-10039-6	BES24-04 2.0'	Total/NA	Solid	300_Prep	
885-10039-7	BES24-05 4.0'	Total/NA	Solid	300_Prep	
MB 885-10638/1-A	Method Blank	Total/NA	Solid	300_Prep	
LCS 885-10638/2-A	Lab Control Sample	Total/NA	Solid	300_Prep	

Prep Batch: 10642

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-10039-8	BES24-08 3.0'	Total/NA	Solid	300_Prep	
885-10039-9	BES24-01 2.0'	Total/NA	Solid	300_Prep	
885-10039-10	WES24-01 0-2'	Total/NA	Solid	300_Prep	
885-10039-11	WES24-05 0-3'	Total/NA	Solid	300_Prep	
MB 885-10642/1-A	Method Blank	Total/NA	Solid	300_Prep	
LCS 885-10642/2-A	Lab Control Sample	Total/NA	Solid	300_Prep	
885-10039-8 MS	BES24-08 3.0'	Total/NA	Solid	300_Prep	
885-10039-8 MSD	BES24-08 3.0'	Total/NA	Solid	300_Prep	

QC Association Summary

Client: Vertex Job ID: 885-10039-1
Project/Site: Shakespeare 20 Fed Com #001H

HPLC/IC

Analysis Batch: 10676

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-10039-1	WES24-02 0-2'	Total/NA	Solid	300.0	10630
885-10039-2	WES24-03 0-2'	Total/NA	Solid	300.0	10630
MB 885-10630/1-A	Method Blank	Total/NA	Solid	300.0	10630
MB 885-10676/4	Method Blank	Total/NA	Solid	300.0	
LCS 885-10630/2-A	Lab Control Sample	Total/NA	Solid	300.0	10630
MRL 885-10676/3	Lab Control Sample	Total/NA	Solid	300.0	
885-10039-1 MS	WES24-02 0-2'	Total/NA	Solid	300.0	10630
885-10039-1 MSD	WES24-02 0-2'	Total/NA	Solid	300.0	10630

Analysis Batch: 10718

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-10039-3	WES24-06 0-4'	Total/NA	Solid	300.0	10638
885-10039-4	WES24-07 0-4'	Total/NA	Solid	300.0	10638
885-10039-5	BES24-03 2.0'	Total/NA	Solid	300.0	10638
885-10039-6	BES24-04 2.0'	Total/NA	Solid	300.0	10638
885-10039-7	BES24-05 4.0'	Total/NA	Solid	300.0	10638
MB 885-10638/1-A	Method Blank	Total/NA	Solid	300.0	10638
LCS 885-10638/2-A	Lab Control Sample	Total/NA	Solid	300.0	10638

Analysis Batch: 10841

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-10039-8	BES24-08 3.0'	Total/NA	Solid	300.0	10642
885-10039-9	BES24-01 2.0'	Total/NA	Solid	300.0	10642
885-10039-10	WES24-01 0-2'	Total/NA	Solid	300.0	10642
885-10039-11	WES24-05 0-3'	Total/NA	Solid	300.0	10642
MB 885-10642/1-A	Method Blank	Total/NA	Solid	300.0	10642
LCS 885-10642/2-A	Lab Control Sample	Total/NA	Solid	300.0	10642
885-10039-8 MS	BES24-08 3.0'	Total/NA	Solid	300.0	10642
885-10039-8 MSD	BES24-08 3.0'	Total/NA	Solid	300.0	10642

Lab Chronicle

Client: Vertex
Job ID: 885-10039-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: WES24-02 0-2'
Lab Sample ID: 885-10039-1
Date Collected: 08/13/24 09:50
Matrix: Solid
Date Received: 08/16/24 08:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			10423	AT	EET ALB	08/16/24 12:01
Total/NA	Analysis	8015M/D		1	10627	RA	EET ALB	08/20/24 03:59
Total/NA	Prep	5030C			10423	AT	EET ALB	08/16/24 12:01
Total/NA	Analysis	8021B		1	10628	RA	EET ALB	08/20/24 03:59
Total/NA	Prep	SHAKE			10601	KR	EET ALB	08/20/24 11:05
Total/NA	Analysis	8015M/D		1	10594	KR	EET ALB	08/21/24 01:53
Total/NA	Prep	300_Prep			10630	KB	EET ALB	08/20/24 14:02
Total/NA	Analysis	300.0		20	10676	EH	EET ALB	08/20/24 22:55

Client Sample ID: WES24-03 0-2'
Lab Sample ID: 885-10039-2
Date Collected: 08/13/24 09:55
Matrix: Solid
Date Received: 08/16/24 08:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			10423	AT	EET ALB	08/16/24 12:01
Total/NA	Analysis	8015M/D		1	10627	RA	EET ALB	08/20/24 04:22
Total/NA	Prep	5030C			10423	AT	EET ALB	08/16/24 12:01
Total/NA	Analysis	8021B		1	10628	RA	EET ALB	08/20/24 04:22
Total/NA	Prep	SHAKE			10601	KR	EET ALB	08/20/24 11:05
Total/NA	Analysis	8015M/D		1	10594	KR	EET ALB	08/21/24 02:07
Total/NA	Prep	300_Prep			10630	KB	EET ALB	08/20/24 14:02
Total/NA	Analysis	300.0		20	10676	EH	EET ALB	08/20/24 23:32

Client Sample ID: WES24-06 0-4'
Lab Sample ID: 885-10039-3
Date Collected: 08/13/24 10:10
Matrix: Solid
Date Received: 08/16/24 08:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			10423	AT	EET ALB	08/16/24 12:01
Total/NA	Analysis	8015M/D		1	10627	RA	EET ALB	08/20/24 04:46
Total/NA	Prep	5030C			10423	AT	EET ALB	08/16/24 12:01
Total/NA	Analysis	8021B		1	10628	RA	EET ALB	08/20/24 04:46
Total/NA	Prep	SHAKE			10601	KR	EET ALB	08/20/24 11:05
Total/NA	Analysis	8015M/D		1	10594	KR	EET ALB	08/21/24 02:20
Total/NA	Prep	300_Prep			10638	EH	EET ALB	08/20/24 15:09
Total/NA	Analysis	300.0		20	10718	EH	EET ALB	08/20/24 22:03

Client Sample ID: WES24-07 0-4'
Lab Sample ID: 885-10039-4
Date Collected: 08/13/24 10:15
Matrix: Solid
Date Received: 08/16/24 08:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			10423	AT	EET ALB	08/16/24 12:01
Total/NA	Analysis	8015M/D		1	10627	RA	EET ALB	08/20/24 05:09

Lab Chronicle

Client: Vertex
Job ID: 885-10039-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: WES24-07 0-4'
Lab Sample ID: 885-10039-4
Date Collected: 08/13/24 10:15
Matrix: Solid
Date Received: 08/16/24 08:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			10423	AT	EET ALB	08/16/24 12:01
Total/NA	Analysis	8021B		1	10628	RA	EET ALB	08/20/24 05:09
Total/NA	Prep	SHAKE			10601	KR	EET ALB	08/20/24 11:05
Total/NA	Analysis	8015M/D		1	10594	KR	EET ALB	08/21/24 02:34
Total/NA	Prep	300_Prep			10638	EH	EET ALB	08/20/24 15:09
Total/NA	Analysis	300.0		20	10718	EH	EET ALB	08/20/24 22:16

Client Sample ID: BES24-03 2.0'
Lab Sample ID: 885-10039-5
Date Collected: 08/13/24 10:30
Matrix: Solid
Date Received: 08/16/24 08:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			10423	AT	EET ALB	08/16/24 12:01
Total/NA	Analysis	8015M/D		1	10627	RA	EET ALB	08/20/24 05:33
Total/NA	Prep	5030C			10423	AT	EET ALB	08/16/24 12:01
Total/NA	Analysis	8021B		1	10628	RA	EET ALB	08/20/24 05:33
Total/NA	Prep	SHAKE			10601	KR	EET ALB	08/20/24 11:05
Total/NA	Analysis	8015M/D		1	10594	KR	EET ALB	08/21/24 02:48
Total/NA	Prep	300_Prep			10638	EH	EET ALB	08/20/24 15:09
Total/NA	Analysis	300.0		20	10718	EH	EET ALB	08/20/24 22:29

Client Sample ID: BES24-04 2.0'
Lab Sample ID: 885-10039-6
Date Collected: 08/13/24 10:35
Matrix: Solid
Date Received: 08/16/24 08:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			10423	AT	EET ALB	08/16/24 12:01
Total/NA	Analysis	8015M/D		1	10627	RA	EET ALB	08/20/24 05:56
Total/NA	Prep	5030C			10423	AT	EET ALB	08/16/24 12:01
Total/NA	Analysis	8021B		1	10628	RA	EET ALB	08/20/24 05:56
Total/NA	Prep	SHAKE			10601	KR	EET ALB	08/20/24 11:05
Total/NA	Analysis	8015M/D		1	10596	KR	EET ALB	08/20/24 19:42
Total/NA	Prep	300_Prep			10638	EH	EET ALB	08/20/24 15:09
Total/NA	Analysis	300.0		20	10718	EH	EET ALB	08/20/24 22:42

Client Sample ID: BES24-05 4.0'
Lab Sample ID: 885-10039-7
Date Collected: 08/13/24 10:40
Matrix: Solid
Date Received: 08/16/24 08:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			10423	AT	EET ALB	08/16/24 12:01
Total/NA	Analysis	8015M/D		1	10627	RA	EET ALB	08/20/24 06:20
Total/NA	Prep	5030C			10423	AT	EET ALB	08/16/24 12:01
Total/NA	Analysis	8021B		1	10628	RA	EET ALB	08/20/24 06:20

Lab Chronicle

Client: Vertex
Job ID: 885-10039-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BES24-05 4.0'
Lab Sample ID: 885-10039-7
Date Collected: 08/13/24 10:40
Matrix: Solid
Date Received: 08/16/24 08:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	SHAKE			10601	KR	EET ALB	08/20/24 11:05
Total/NA	Analysis	8015M/D		1	10594	KR	EET ALB	08/21/24 03:16
Total/NA	Prep	300_Prep			10638	EH	EET ALB	08/20/24 15:09
Total/NA	Analysis	300.0		20	10718	EH	EET ALB	08/20/24 22:54

Client Sample ID: BES24-08 3.0'
Lab Sample ID: 885-10039-8
Date Collected: 08/14/24 08:40
Matrix: Solid
Date Received: 08/16/24 08:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			10423	AT	EET ALB	08/16/24 12:01
Total/NA	Analysis	8015M/D		1	10627	RA	EET ALB	08/20/24 06:43
Total/NA	Prep	5030C			10423	AT	EET ALB	08/16/24 12:01
Total/NA	Analysis	8021B		1	10628	RA	EET ALB	08/20/24 06:43
Total/NA	Prep	SHAKE			10601	KR	EET ALB	08/20/24 11:05
Total/NA	Analysis	8015M/D		1	10594	KR	EET ALB	08/21/24 03:30
Total/NA	Prep	300_Prep			10642	KB	EET ALB	08/21/24 16:07
Total/NA	Analysis	300.0		20	10841	EH	EET ALB	08/22/24 08:04

Client Sample ID: BES24-01 2.0'
Lab Sample ID: 885-10039-9
Date Collected: 08/14/24 12:30
Matrix: Solid
Date Received: 08/16/24 08:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			10460	AT	EET ALB	08/16/24 18:36
Total/NA	Analysis	8015M/D		1	10658	AT	EET ALB	08/20/24 22:17
Total/NA	Prep	5030C			10460	AT	EET ALB	08/16/24 18:36
Total/NA	Analysis	8021B		1	10659	AT	EET ALB	08/20/24 22:17
Total/NA	Prep	SHAKE			10601	KR	EET ALB	08/20/24 11:05
Total/NA	Analysis	8015M/D		1	10594	KR	EET ALB	08/21/24 03:43
Total/NA	Prep	300_Prep			10642	KB	EET ALB	08/21/24 16:07
Total/NA	Analysis	300.0		20	10841	EH	EET ALB	08/22/24 08:42

Client Sample ID: WES24-01 0-2'
Lab Sample ID: 885-10039-10
Date Collected: 08/14/24 14:00
Matrix: Solid
Date Received: 08/16/24 08:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			10460	AT	EET ALB	08/16/24 18:36
Total/NA	Analysis	8015M/D		1	10658	AT	EET ALB	08/20/24 22:39
Total/NA	Prep	5030C			10460	AT	EET ALB	08/16/24 18:36
Total/NA	Analysis	8021B		1	10659	AT	EET ALB	08/20/24 22:39
Total/NA	Prep	SHAKE			10601	KR	EET ALB	08/20/24 11:05
Total/NA	Analysis	8015M/D		1	10594	KR	EET ALB	08/21/24 03:57

Lab Chronicle

Client: Vertex Job ID: 885-10039-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: WES24-01 0-2' Lab Sample ID: 885-10039-10

Date Collected: 08/14/24 14:00 **Matrix: Solid**
Date Received: 08/16/24 08:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	300_Prep			10642	KB	EET ALB	08/21/24 16:07
Total/NA	Analysis	300.0		20	10841	EH	EET ALB	08/22/24 08:55

Client Sample ID: WES24-05 0-3' Lab Sample ID: 885-10039-11

Date Collected: 08/14/24 14:10 **Matrix: Solid**
Date Received: 08/16/24 08:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			10510	AT	EET ALB	08/19/24 11:42
Total/NA	Analysis	8015M/D		1	10663	JP	EET ALB	08/21/24 03:13
Total/NA	Prep	5030C			10510	AT	EET ALB	08/19/24 11:42
Total/NA	Analysis	8021B		1	10664	JP	EET ALB	08/21/24 03:13
Total/NA	Prep	SHAKE			10601	KR	EET ALB	08/20/24 11:05
Total/NA	Analysis	8015M/D		1	10594	KR	EET ALB	08/21/24 04:10
Total/NA	Prep	300_Prep			10642	KB	EET ALB	08/21/24 16:07
Total/NA	Analysis	300.0		20	10841	EH	EET ALB	08/22/24 09:08

Laboratory References:

EET ALB = Eurofins Albuquerque, 4901 Hawkins NE, Albuquerque, NM 87109, TEL (505)345-3975

Accreditation/Certification Summary

Client: Vertex Job ID: 885-10039-1
Project/Site: Shakespeare 20 Fed Com #001H

Laboratory: Eurofins Albuquerque

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
New Mexico	State	NM9425, NM0901	02-26-25

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
300.0	300_Prep	Solid	Chloride
8015M/D	5030C	Solid	Gasoline Range Organics [C6 - C10]
8015M/D	SHAKE	Solid	Diesel Range Organics [C10-C28]
8015M/D	SHAKE	Solid	Motor Oil Range Organics [C28-C40]
8021B	5030C	Solid	Benzene
8021B	5030C	Solid	Ethylbenzene
8021B	5030C	Solid	Toluene
8021B	5030C	Solid	Xylenes, Total

Oregon	NELAP	NM100001	02-26-25

Chain-of-Custody Record

Client: Vertex (Mack Energy)

Mailing Address: Vertex Resources Services Inc. 3101 Boyd Dr., Carlsbad, NM 88220

Phone #: On File

email or Fax#:

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

Accreditation: ☐ Az Compliance ☐ NELAC ☐ Other

☐ EDD (Type)

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

Project Name: Shakespeare 20 Fed Com #001H

Project #: 24E-02953

Project Manager: Sally Carttar

Sampler:

On Ice: ☒ Yes ☐ No

# of Coolers: Citrucky

Cooler Temp(including CF): 5.4-0.4=5.0 (°C)

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

885-10039 COC
100391

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)
8.13.24	0950	soil	WES24-02 0-2'	4 oz	ICE	1										
	0955		WES24-03 0-2'			2										
	1010		WES24-06 0-4'			3										
	1015		WES24-07 0-4'			4										
	1030		BES24-03 2.0'			5										
	1035		BES24-04 2.0'			6										
	1040		BES24-05 4.0'			7										
8.14.24	0840	soil	BES24-08 3.0'			8										
	1230		BES24-01 2.0'			9										
	1400		WES24-01 0-2'			10										
	1410		WES24-05 0-3'			11										

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
			[signature]		8/15/24	915
8/15/24	1900	[signature]	SCM	COURIER	8/16/24	0820

Remarks: Direct Bill to Mack Energy
cc: SCarttar@Vertex.ca
ALudvik@Vertex.ca

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.

Login Sample Receipt Checklist

Client: Vertex Job Number: 885-10039-1

Login Number: 10039 **List Source: Eurofins Albuquerque**
List Number: 1
Creator: McQuiston, Steven

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
TCEQ Mtd 1005 soil sample was frozen/delivered for prep within 48H of sampling.	N/A	

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Ms. Sally Carttar
Vertex
3101 Boyd Dr
Carlsbad, New Mexico 88220

Generated 9/17/2024 6:20:14 PM

JOB DESCRIPTION

Shakespeare 20 Fed #001H

JOB NUMBER

885-11432-1

Eurofins Albuquerque
4901 Hawkins NE
Albuquerque NM 87109

See page two for job notes and contact information.

Eurofins Albuquerque

Job Notes

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing South Central, LLC Project Manager.

Authorization

Generated
9/17/2024 6:20:14 PM

Authorized for release by
Cheyenne Cason, Project Manager
cheyenne.cason@et.eurofinsus.com
(505)345-3975

Client: Vertex
Project/Site: Shakespeare 20 Fed #001H

Laboratory Job ID: 885-11432-1

Table of Contents

Definitions/Glossary

Client: Vertex Job ID: 885-11432-1
Project/Site: Shakespeare 20 Fed #001H

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Vertex Job ID: 885-11432-1
Project: Shakespeare 20 Fed #001H

Job ID: 885-11432-1 Eurofins Albuquerque

Job Narrative
885-11432-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

- Matrix QC may not be reported if insufficient sample is provided or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 9/10/2024 9:08 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 1.2°C.

Gasoline Range Organics
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

GC VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Diesel Range Organics
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

HPLC/IC
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Client Sample Results

Client: Vertex
Job ID: 885-11432-1
Project/Site: Shakespeare 20 Fed #001H

Client Sample ID: BES24-06 4.5'
Lab Sample ID: 885-11432-1

Date Collected: 09/06/24 11:35
Matrix: Solid
Date Received: 09/10/24 09:08

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.6		mg/Kg		09/10/24 11:11	09/11/24 19:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*107*		*35 - 166*	*09/10/24 11:11*	*09/11/24 19:07*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.023		mg/Kg		09/10/24 11:11	09/11/24 19:07	1
Ethylbenzene	ND		0.046		mg/Kg		09/10/24 11:11	09/11/24 19:07	1
Toluene	ND		0.046		mg/Kg		09/10/24 11:11	09/11/24 19:07	1
Xylenes, Total	ND		0.092		mg/Kg		09/10/24 11:11	09/11/24 19:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*105*		*48 - 145*	*09/10/24 11:11*	*09/11/24 19:07*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.3		mg/Kg		09/11/24 15:53	09/13/24 07:17	1
Motor Oil Range Organics [C28-C40]	ND		46		mg/Kg		09/11/24 15:53	09/13/24 07:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*84*		*62 - 134*	*09/11/24 15:53*	*09/13/24 07:17*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**110**		60		mg/Kg		09/12/24 08:39	09/12/24 15:16	20

Client Sample Results

Client: Vertex
Job ID: 885-11432-1
Project/Site: Shakespeare 20 Fed #001H

Client Sample ID: BES24-02 11'
Lab Sample ID: 885-11432-2

Date Collected: 09/06/24 14:06
Matrix: Solid
Date Received: 09/10/24 09:08

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.8		mg/Kg		09/10/24 11:11	09/11/24 19:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*111*		*35 - 166*	*09/10/24 11:11*	*09/11/24 19:29*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		09/10/24 11:11	09/11/24 19:29	1
Ethylbenzene	ND		0.048		mg/Kg		09/10/24 11:11	09/11/24 19:29	1
Toluene	ND		0.048		mg/Kg		09/10/24 11:11	09/11/24 19:29	1
Xylenes, Total	ND		0.095		mg/Kg		09/10/24 11:11	09/11/24 19:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*103*		*48 - 145*	*09/10/24 11:11*	*09/11/24 19:29*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.2		mg/Kg		09/11/24 15:53	09/13/24 07:29	1
Motor Oil Range Organics [C28-C40]	ND		46		mg/Kg		09/11/24 15:53	09/13/24 07:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*88*		*62 - 134*	*09/11/24 15:53*	*09/13/24 07:29*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**1000**		60		mg/Kg		09/12/24 08:39	09/12/24 15:29	20

Client Sample Results

Client: Vertex
Job ID: 885-11432-1
Project/Site: Shakespeare 20 Fed #001H

Client Sample ID: BES24-09 5'
Lab Sample ID: 885-11432-3
Date Collected: 09/05/24 09:50
Matrix: Solid
Date Received: 09/10/24 09:08

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		09/10/24 11:11	09/11/24 19:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*113*		*35 - 166*	*09/10/24 11:11*	*09/11/24 19:51*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		09/10/24 11:11	09/11/24 19:51	1
Ethylbenzene	ND		0.050		mg/Kg		09/10/24 11:11	09/11/24 19:51	1
Toluene	ND		0.050		mg/Kg		09/10/24 11:11	09/11/24 19:51	1
Xylenes, Total	ND		0.10		mg/Kg		09/10/24 11:11	09/11/24 19:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*108*		*48 - 145*	*09/10/24 11:11*	*09/11/24 19:51*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**54**		9.5		mg/Kg		09/11/24 15:53	09/13/24 07:41	1
Motor Oil Range Organics [C28-C40]	**70**		48		mg/Kg		09/11/24 15:53	09/13/24 07:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*91*		*62 - 134*	*09/11/24 15:53*	*09/13/24 07:41*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**130**		60		mg/Kg		09/12/24 08:39	09/12/24 16:46	20

QC Sample Results

Client: Vertex
Project/Site: Shakespeare 20 Fed #001H

Job ID: 885-11432-1

Method: 8015M/D - Gasoline Range Organics (GRO) (GC)

Lab Sample ID: MB 885-11936/1-A
Matrix: Solid
Analysis Batch: 12112

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 11936

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		09/10/24 11:11	09/11/24 11:30	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*111*		*35 - 166*	*09/10/24 11:11*	*09/11/24 11:30*	*1*

Lab Sample ID: LCS 885-11936/2-A
Matrix: Solid
Analysis Batch: 12112

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 11936

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics [C6 - C10]			25.0	28.3		mg/Kg		113	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*221*		*35 - 166*

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 885-11936/1-A
Matrix: Solid
Analysis Batch: 12114

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 11936

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		09/10/24 11:11	09/11/24 11:30	1
Ethylbenzene	ND		0.050		mg/Kg		09/10/24 11:11	09/11/24 11:30	1
Toluene	ND		0.050		mg/Kg		09/10/24 11:11	09/11/24 11:30	1
Xylenes, Total	ND		0.10		mg/Kg		09/10/24 11:11	09/11/24 11:30	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*106*		*48 - 145*	*09/10/24 11:11*	*09/11/24 11:30*	*1*

Lab Sample ID: LCS 885-11936/3-A
Matrix: Solid
Analysis Batch: 12114

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 11936

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			1.00	1.02		mg/Kg		102	70 - 130		
Ethylbenzene			1.00	1.04		mg/Kg		104	70 - 130		
m,p-Xylene			2.00	2.07		mg/Kg		103	70 - 130		
o-Xylene			1.00	1.01		mg/Kg		101	70 - 130		
Toluene			1.00	1.03		mg/Kg		103	70 - 130		
Xylenes, Total			3.00	3.08		mg/Kg		103	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*106*		*48 - 145*

QC Sample Results

Client: Vertex
Project/Site: Shakespeare 20 Fed #001H

Job ID: 885-11432-1

Method: 8015M/D - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 885-12078/1-A
Matrix: Solid
Analysis Batch: 12120

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 12078

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		10		mg/Kg		09/11/24 15:53	09/13/24 06:53	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		09/11/24 15:53	09/13/24 06:53	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*82*		*62 - 134*	*09/11/24 15:53*	*09/13/24 06:53*	*1*

Lab Sample ID: LCS 885-12078/2-A
Matrix: Solid
Analysis Batch: 12120

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 12078

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Diesel Range Organics [C10-C28]			50.0	39.3		mg/Kg		79	60 - 135		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Di-n-octyl phthalate (Surr)	*82*		*62 - 134*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 885-12096/1-A
Matrix: Solid
Analysis Batch: 12139

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 12096

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0		mg/Kg		09/12/24 08:39	09/12/24 14:12	1

Lab Sample ID: LCS 885-12096/2-A
Matrix: Solid
Analysis Batch: 12139

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 12096

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			30.0	29.1		mg/Kg		97	90 - 110		

QC Association Summary

Client: Vertex Job ID: 885-11432-1
Project/Site: Shakespeare 20 Fed #001H

GC VOA

Prep Batch: 11936

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-11432-1	BES24-06 4.5'	Total/NA	Solid	5030C	
885-11432-2	BES24-02 11'	Total/NA	Solid	5030C	
885-11432-3	BES24-09 5'	Total/NA	Solid	5030C	
MB 885-11936/1-A	Method Blank	Total/NA	Solid	5030C	
LCS 885-11936/2-A	Lab Control Sample	Total/NA	Solid	5030C	
LCS 885-11936/3-A	Lab Control Sample	Total/NA	Solid	5030C	

Analysis Batch: 12112

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-11432-1	BES24-06 4.5'	Total/NA	Solid	8015M/D	11936
885-11432-2	BES24-02 11'	Total/NA	Solid	8015M/D	11936
885-11432-3	BES24-09 5'	Total/NA	Solid	8015M/D	11936
MB 885-11936/1-A	Method Blank	Total/NA	Solid	8015M/D	11936
LCS 885-11936/2-A	Lab Control Sample	Total/NA	Solid	8015M/D	11936

Analysis Batch: 12114

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-11432-1	BES24-06 4.5'	Total/NA	Solid	8021B	11936
885-11432-2	BES24-02 11'	Total/NA	Solid	8021B	11936
885-11432-3	BES24-09 5'	Total/NA	Solid	8021B	11936
MB 885-11936/1-A	Method Blank	Total/NA	Solid	8021B	11936
LCS 885-11936/3-A	Lab Control Sample	Total/NA	Solid	8021B	11936

GC Semi VOA

Prep Batch: 12078

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-11432-1	BES24-06 4.5'	Total/NA	Solid	SHAKE	
885-11432-2	BES24-02 11'	Total/NA	Solid	SHAKE	
885-11432-3	BES24-09 5'	Total/NA	Solid	SHAKE	
MB 885-12078/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 885-12078/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	

Analysis Batch: 12120

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-11432-1	BES24-06 4.5'	Total/NA	Solid	8015M/D	12078
885-11432-2	BES24-02 11'	Total/NA	Solid	8015M/D	12078
885-11432-3	BES24-09 5'	Total/NA	Solid	8015M/D	12078
MB 885-12078/1-A	Method Blank	Total/NA	Solid	8015M/D	12078
LCS 885-12078/2-A	Lab Control Sample	Total/NA	Solid	8015M/D	12078

HPLC/IC

Prep Batch: 12096

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-11432-1	BES24-06 4.5'	Total/NA	Solid	300_Prep	
885-11432-2	BES24-02 11'	Total/NA	Solid	300_Prep	
885-11432-3	BES24-09 5'	Total/NA	Solid	300_Prep	
MB 885-12096/1-A	Method Blank	Total/NA	Solid	300_Prep	
LCS 885-12096/2-A	Lab Control Sample	Total/NA	Solid	300_Prep	

QC Association Summary

Client: Vertex
Job ID: 885-11432-1
Project/Site: Shakespeare 20 Fed #001H

HPLC/IC

Analysis Batch: 12139

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-11432-1	BES24-06 4.5'	Total/NA	Solid	300.0	12096
885-11432-2	BES24-02 11'	Total/NA	Solid	300.0	12096
885-11432-3	BES24-09 5'	Total/NA	Solid	300.0	12096
MB 885-12096/1-A	Method Blank	Total/NA	Solid	300.0	12096
LCS 885-12096/2-A	Lab Control Sample	Total/NA	Solid	300.0	12096

Lab Chronicle

Client: Vertex
Job ID: 885-11432-1
Project/Site: Shakespeare 20 Fed #001H

Client Sample ID: BES24-06 4.5'
Lab Sample ID: 885-11432-1
Date Collected: 09/06/24 11:35
Matrix: Solid
Date Received: 09/10/24 09:08

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			11936	JP	EET ALB	09/10/24 11:11
Total/NA	Analysis	8015M/D		1	12112	AT	EET ALB	09/11/24 19:07
Total/NA	Prep	5030C			11936	JP	EET ALB	09/10/24 11:11
Total/NA	Analysis	8021B		1	12114	AT	EET ALB	09/11/24 19:07
Total/NA	Prep	SHAKE			12078	EM	EET ALB	09/11/24 15:53
Total/NA	Analysis	8015M/D		1	12120	KR	EET ALB	09/13/24 07:17
Total/NA	Prep	300_Prep			12096	RC	EET ALB	09/12/24 08:39
Total/NA	Analysis	300.0		20	12139	EH	EET ALB	09/12/24 15:16

Client Sample ID: BES24-02 11'
Lab Sample ID: 885-11432-2
Date Collected: 09/06/24 14:06
Matrix: Solid
Date Received: 09/10/24 09:08

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			11936	JP	EET ALB	09/10/24 11:11
Total/NA	Analysis	8015M/D		1	12112	AT	EET ALB	09/11/24 19:29
Total/NA	Prep	5030C			11936	JP	EET ALB	09/10/24 11:11
Total/NA	Analysis	8021B		1	12114	AT	EET ALB	09/11/24 19:29
Total/NA	Prep	SHAKE			12078	EM	EET ALB	09/11/24 15:53
Total/NA	Analysis	8015M/D		1	12120	KR	EET ALB	09/13/24 07:29
Total/NA	Prep	300_Prep			12096	RC	EET ALB	09/12/24 08:39
Total/NA	Analysis	300.0		20	12139	EH	EET ALB	09/12/24 15:29

Client Sample ID: BES24-09 5'
Lab Sample ID: 885-11432-3
Date Collected: 09/05/24 09:50
Matrix: Solid
Date Received: 09/10/24 09:08

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			11936	JP	EET ALB	09/10/24 11:11
Total/NA	Analysis	8015M/D		1	12112	AT	EET ALB	09/11/24 19:51
Total/NA	Prep	5030C			11936	JP	EET ALB	09/10/24 11:11
Total/NA	Analysis	8021B		1	12114	AT	EET ALB	09/11/24 19:51
Total/NA	Prep	SHAKE			12078	EM	EET ALB	09/11/24 15:53
Total/NA	Analysis	8015M/D		1	12120	KR	EET ALB	09/13/24 07:41
Total/NA	Prep	300_Prep			12096	RC	EET ALB	09/12/24 08:39
Total/NA	Analysis	300.0		20	12139	EH	EET ALB	09/12/24 16:46

Laboratory References:

EET ALB = Eurofins Albuquerque, 4901 Hawkins NE, Albuquerque, NM 87109, TEL (505)345-3975

Accreditation/Certification Summary

Client: Vertex Job ID: 885-11432-1
Project/Site: Shakespeare 20 Fed #001H

Laboratory: Eurofins Albuquerque

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
New Mexico	State	NM9425, NM0901	02-26-25

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
300.0	300_Prep	Solid	Chloride
8015M/D	5030C	Solid	Gasoline Range Organics [C6 - C10]
8015M/D	SHAKE	Solid	Diesel Range Organics [C10-C28]
8015M/D	SHAKE	Solid	Motor Oil Range Organics [C28-C40]
8021B	5030C	Solid	Benzene
8021B	5030C	Solid	Ethylbenzene
8021B	5030C	Solid	Toluene
8021B	5030C	Solid	Xylenes, Total

Oregon	NELAP	NM100001	02-26-25

Chain-of-Custody Record

Client: Mack MV Vertex (bill to Mack)

Mailing Address: 3101 Boyd Dr. Carlsbad, NM, 88220

Phone #:

email or Fax#:

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
☐ Standard ☐ Rush 48 hr

Project Name: Shakespeare 20 Fed #001H

Project #: 24E-02953

Project Manager: Sally Carttar

Sampler: M. Veliz

On Ice: ☑ Yes ☐ No mop

# of Coolers: 1

Cooler Temp(including CF): 1.1 +0.1 = 1.2 (°C)

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

885-11432 COC

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)
9-6-24	11:35	Soil	BES24-06 4.5'	4oz Jar	ICE	1	X	X					X			
9-6-24	2:06 PM		BES24-02 11'			2										
9-5-24	9:50 AM		BES24-09 5'			3										

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
			[signature]		9/9/24	1015
9/9/24	1900	[signature]		courier	9/10/24	8:05

Remarks: Direct Bill to Mack Energy
ATTN: Matt Buckles
cc: scarttar@vertexresource.com
mveliz@vertexresource.com

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.

Login Sample Receipt Checklist

Client: Vertex Job Number: 885-11432-1

Login Number: 11432 **List Source: Eurofins Albuquerque**
List Number: 1
Creator: Casarrubias, Tracy

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
TCEQ Mtd 1005 soil sample was frozen/delivered for prep within 48H of sampling.	True	

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Ms. Sally Carttar
Vertex
3101 Boyd Dr
Carlsbad, New Mexico 88220

Generated 10/10/2024 9:39:53 AM

JOB DESCRIPTION

Shakespeare 20 Fed Com #001H

JOB NUMBER

885-12592-1

Eurofins Albuquerque
4901 Hawkins NE
Albuquerque NM 87109

See page two for job notes and contact information.

Eurofins Albuquerque

Job Notes

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing South Central, LLC Project Manager.

Authorization

Generated
10/10/2024 9:39:53 AM

Authorized for release by
Cheyenne Cason, Project Manager
cheyenne.cason@et.eurofinsus.com
(505)345-3975

Client: Vertex
Project/Site: Shakespeare 20 Fed Com #001H

Laboratory Job ID: 885-12592-1

Table of Contents

Definitions/Glossary

Client: Vertex Job ID: 885-12592-1
Project/Site: Shakespeare 20 Fed Com #001H

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.

HPLC/IC

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
F2	MS/MSD RPD exceeds control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Vertex Job ID: 885-12592-1
Project: Shakespeare 20 Fed Com #001H

Job ID: 885-12592-1 Eurofins Albuquerque

Job Narrative
885-12592-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

- Matrix QC may not be reported if insufficient sample is provided or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 9/26/2024 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 4.4°C.

Gasoline Range Organics
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

GC VOA
Method 8021B: The continuing calibration verification (CCV) associated with batch 885-13309 recovered above the upper control limit for 8021. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: WES24-17 3-6' (885-12592-11), BES24-04 2' (885-12592-12), BES24-7 4.5' (885-12592-13), BES24-12 3' (885-12592-14), BES24-13 3' (885-12592-15), BES24-14 3' (885-12592-16), BES24-15 2' (885-12592-17), WES24-18 0-3' (885-12592-18), WES24-19 3-4.5' (885-12592-19) and WES24-20 2-4.5' (885-12592-20).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Diesel Range Organics
Method 8015D_DRO: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 885-13227 and analytical batch 885-13239 were outside control limits for one or more analytes. See QC Sample Results for detail. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery is within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

HPLC/IC
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Client Sample Results

Client: Vertex
Job ID: 885-12592-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BES24-02 12'
Lab Sample ID: 885-12592-1
Date Collected: 09/23/24 10:00
Matrix: Solid
Date Received: 09/26/24 08:00

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.9		mg/Kg		09/26/24 10:33	09/28/24 15:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*35 - 166*	*09/26/24 10:33*	*09/28/24 15:24*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		09/26/24 10:33	09/28/24 15:24	1
Ethylbenzene	ND		0.049		mg/Kg		09/26/24 10:33	09/28/24 15:24	1
Toluene	ND		0.049		mg/Kg		09/26/24 10:33	09/28/24 15:24	1
Xylenes, Total	ND		0.098		mg/Kg		09/26/24 10:33	09/28/24 15:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*48 - 145*	*09/26/24 10:33*	*09/28/24 15:24*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.4		mg/Kg		09/28/24 09:16	09/28/24 22:38	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		09/28/24 09:16	09/28/24 22:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*89*		*62 - 134*	*09/28/24 09:16*	*09/28/24 22:38*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	73		60		mg/Kg		09/30/24 12:54	10/01/24 20:36	20

Client Sample Results

Client: Vertex
Job ID: 885-12592-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BES24-09 6'
Lab Sample ID: 885-12592-2
Date Collected: 09/23/24 14:55
Matrix: Solid
Date Received: 09/26/24 08:00

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.9		mg/Kg		09/26/24 10:33	09/28/24 16:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*35 - 166*	*09/26/24 10:33*	*09/28/24 16:34*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		09/26/24 10:33	09/28/24 16:34	1
Ethylbenzene	ND		0.049		mg/Kg		09/26/24 10:33	09/28/24 16:34	1
Toluene	ND		0.049		mg/Kg		09/26/24 10:33	09/28/24 16:34	1
Xylenes, Total	ND		0.098		mg/Kg		09/26/24 10:33	09/28/24 16:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*48 - 145*	*09/26/24 10:33*	*09/28/24 16:34*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.3		mg/Kg		09/28/24 09:16	09/28/24 22:51	1
Motor Oil Range Organics [C28-C40]	ND		46		mg/Kg		09/28/24 09:16	09/28/24 22:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*96*		*62 - 134*	*09/28/24 09:16*	*09/28/24 22:51*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**140**		60		mg/Kg		09/30/24 12:54	10/01/24 21:15	20

Client Sample Results

Client: Vertex
Job ID: 885-12592-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BES24-10 12'
Lab Sample ID: 885-12592-3
Date Collected: 09/23/24 10:05
Matrix: Solid
Date Received: 09/26/24 08:00

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.8		mg/Kg		09/26/24 10:33	09/28/24 17:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*35 - 166*	*09/26/24 10:33*	*09/28/24 17:45*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		09/26/24 10:33	09/28/24 17:45	1
Ethylbenzene	ND		0.048		mg/Kg		09/26/24 10:33	09/28/24 17:45	1
Toluene	ND		0.048		mg/Kg		09/26/24 10:33	09/28/24 17:45	1
Xylenes, Total	ND		0.096		mg/Kg		09/26/24 10:33	09/28/24 17:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*48 - 145*	*09/26/24 10:33*	*09/28/24 17:45*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.7		mg/Kg		09/28/24 09:16	09/28/24 23:04	1
Motor Oil Range Organics [C28-C40]	ND		48		mg/Kg		09/28/24 09:16	09/28/24 23:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*82*		*62 - 134*	*09/28/24 09:16*	*09/28/24 23:04*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		09/30/24 14:04	10/01/24 01:41	20

Client Sample Results

Client: Vertex
Job ID: 885-12592-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BES24-11 6'
Lab Sample ID: 885-12592-4
Date Collected: 09/23/24 15:00
Matrix: Solid
Date Received: 09/26/24 08:00

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.8		mg/Kg		09/26/24 10:33	09/28/24 18:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*35 - 166*	*09/26/24 10:33*	*09/28/24 18:08*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		09/26/24 10:33	09/28/24 18:08	1
Ethylbenzene	ND		0.048		mg/Kg		09/26/24 10:33	09/28/24 18:08	1
Toluene	ND		0.048		mg/Kg		09/26/24 10:33	09/28/24 18:08	1
Xylenes, Total	ND		0.096		mg/Kg		09/26/24 10:33	09/28/24 18:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*48 - 145*	*09/26/24 10:33*	*09/28/24 18:08*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**18**		9.2		mg/Kg		09/28/24 09:16	09/28/24 23:16	1
Motor Oil Range Organics [C28-C40]	ND		46		mg/Kg		09/28/24 09:16	09/28/24 23:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*91*		*62 - 134*	*09/28/24 09:16*	*09/28/24 23:16*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**170**		61		mg/Kg		09/30/24 14:04	10/01/24 14:23	20

Client Sample Results

Client: Vertex
Job ID: 885-12592-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: WES24-11 0-12'
Lab Sample ID: 885-12592-5

Date Collected: 09/23/24 10:10
Matrix: Solid
Date Received: 09/26/24 08:00

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.7		mg/Kg		09/26/24 10:33	09/28/24 18:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*35 - 166*	*09/26/24 10:33*	*09/28/24 18:32*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		09/26/24 10:33	09/28/24 18:32	1
Ethylbenzene	ND		0.047		mg/Kg		09/26/24 10:33	09/28/24 18:32	1
Toluene	ND		0.047		mg/Kg		09/26/24 10:33	09/28/24 18:32	1
Xylenes, Total	ND		0.094		mg/Kg		09/26/24 10:33	09/28/24 18:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*48 - 145*	*09/26/24 10:33*	*09/28/24 18:32*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.4		mg/Kg		09/28/24 09:16	09/28/24 23:42	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		09/28/24 09:16	09/28/24 23:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*95*		*62 - 134*	*09/28/24 09:16*	*09/28/24 23:42*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		09/30/24 14:04	10/01/24 14:36	20

Client Sample Results

Client: Vertex
Job ID: 885-12592-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: WES24-12 0-12'
Lab Sample ID: 885-12592-6

Date Collected: 09/23/24 10:15
Matrix: Solid
Date Received: 09/26/24 08:00

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.8		mg/Kg		09/26/24 10:33	09/28/24 18:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*35 - 166*	*09/26/24 10:33*	*09/28/24 18:55*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		09/26/24 10:33	09/28/24 18:55	1
Ethylbenzene	ND		0.048		mg/Kg		09/26/24 10:33	09/28/24 18:55	1
Toluene	ND		0.048		mg/Kg		09/26/24 10:33	09/28/24 18:55	1
Xylenes, Total	ND		0.096		mg/Kg		09/26/24 10:33	09/28/24 18:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*48 - 145*	*09/26/24 10:33*	*09/28/24 18:55*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.1		mg/Kg		09/28/24 09:16	09/28/24 23:54	1
Motor Oil Range Organics [C28-C40]	ND		46		mg/Kg		09/28/24 09:16	09/28/24 23:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*75*		*62 - 134*	*09/28/24 09:16*	*09/28/24 23:54*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**82**		60		mg/Kg		09/30/24 14:04	10/01/24 15:15	20

Client Sample Results

Client: Vertex
Job ID: 885-12592-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: WES24-13 0-12'
Lab Sample ID: 885-12592-7

Date Collected: 09/23/24 10:20
Matrix: Solid
Date Received: 09/26/24 08:00

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.7		mg/Kg		09/26/24 10:33	09/28/24 19:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*35 - 166*	*09/26/24 10:33*	*09/28/24 19:19*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.023		mg/Kg		09/26/24 10:33	09/28/24 19:19	1
Ethylbenzene	ND		0.047		mg/Kg		09/26/24 10:33	09/28/24 19:19	1
Toluene	ND		0.047		mg/Kg		09/26/24 10:33	09/28/24 19:19	1
Xylenes, Total	ND		0.094		mg/Kg		09/26/24 10:33	09/28/24 19:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*48 - 145*	*09/26/24 10:33*	*09/28/24 19:19*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		8.7		mg/Kg		09/28/24 09:16	09/30/24 14:56	1
Motor Oil Range Organics [C28-C40]	ND		43		mg/Kg		09/28/24 09:16	09/30/24 14:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*82*		*62 - 134*	*09/28/24 09:16*	*09/30/24 14:56*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		59		mg/Kg		09/30/24 14:04	10/01/24 15:27	20

Client Sample Results

Client: Vertex
Job ID: 885-12592-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: WES24-14 2-12'
Lab Sample ID: 885-12592-8
Date Collected: 09/23/24 10:25
Matrix: Solid
Date Received: 09/26/24 08:00

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.8		mg/Kg		09/26/24 10:33	09/28/24 19:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*35 - 166*	*09/26/24 10:33*	*09/28/24 19:42*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		09/26/24 10:33	09/28/24 19:42	1
Ethylbenzene	ND		0.048		mg/Kg		09/26/24 10:33	09/28/24 19:42	1
Toluene	ND		0.048		mg/Kg		09/26/24 10:33	09/28/24 19:42	1
Xylenes, Total	ND		0.096		mg/Kg		09/26/24 10:33	09/28/24 19:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*48 - 145*	*09/26/24 10:33*	*09/28/24 19:42*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		8.7		mg/Kg		09/28/24 09:16	09/29/24 00:20	1
Motor Oil Range Organics [C28-C40]	ND		43		mg/Kg		09/28/24 09:16	09/29/24 00:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*67*		*62 - 134*	*09/28/24 09:16*	*09/29/24 00:20*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**69**		60		mg/Kg		09/30/24 14:04	10/01/24 16:06	20

Client Sample Results

Client: Vertex
Job ID: 885-12592-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: WES24-15 0-6'
Lab Sample ID: 885-12592-9
Date Collected: 09/23/24 15:05
Matrix: Solid
Date Received: 09/26/24 08:00

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.9		mg/Kg		09/26/24 10:33	09/28/24 20:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*35 - 166*	*09/26/24 10:33*	*09/28/24 20:06*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		09/26/24 10:33	09/28/24 20:06	1
Ethylbenzene	ND		0.049		mg/Kg		09/26/24 10:33	09/28/24 20:06	1
Toluene	ND		0.049		mg/Kg		09/26/24 10:33	09/28/24 20:06	1
Xylenes, Total	ND		0.099		mg/Kg		09/26/24 10:33	09/28/24 20:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*48 - 145*	*09/26/24 10:33*	*09/28/24 20:06*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.4		mg/Kg		09/28/24 09:16	09/29/24 00:32	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		09/28/24 09:16	09/29/24 00:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*77*		*62 - 134*	*09/28/24 09:16*	*09/29/24 00:32*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**130**		59		mg/Kg		09/30/24 14:04	10/01/24 16:19	20

Client Sample Results

Client: Vertex
Job ID: 885-12592-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: WES24-16 3-6'
Lab Sample ID: 885-12592-10
Date Collected: 09/23/24 15:10
Matrix: Solid
Date Received: 09/26/24 08:00

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.9		mg/Kg		09/26/24 10:33	09/28/24 20:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*35 - 166*	*09/26/24 10:33*	*09/28/24 20:29*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		09/26/24 10:33	09/28/24 20:29	1
Ethylbenzene	ND		0.049		mg/Kg		09/26/24 10:33	09/28/24 20:29	1
Toluene	ND		0.049		mg/Kg		09/26/24 10:33	09/28/24 20:29	1
Xylenes, Total	ND		0.097		mg/Kg		09/26/24 10:33	09/28/24 20:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*48 - 145*	*09/26/24 10:33*	*09/28/24 20:29*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		8.4		mg/Kg		09/28/24 09:16	09/29/24 00:45	1
Motor Oil Range Organics [C28-C40]	ND		42		mg/Kg		09/28/24 09:16	09/29/24 00:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*82*		*62 - 134*	*09/28/24 09:16*	*09/29/24 00:45*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**110**		60		mg/Kg		09/30/24 12:00	09/30/24 22:28	20

Client Sample Results

Client: Vertex
Job ID: 885-12592-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: WES24-17 3-6'
Lab Sample ID: 885-12592-11
Date Collected: 09/23/24 15:15
Matrix: Solid
Date Received: 09/26/24 08:00

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.9		mg/Kg		09/26/24 10:33	09/28/24 21:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*35 - 166*	*09/26/24 10:33*	*09/28/24 21:16*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		09/26/24 10:33	09/28/24 21:16	1
Ethylbenzene	ND		0.049		mg/Kg		09/26/24 10:33	09/28/24 21:16	1
Toluene	ND		0.049		mg/Kg		09/26/24 10:33	09/28/24 21:16	1
Xylenes, Total	ND		0.098		mg/Kg		09/26/24 10:33	09/28/24 21:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*48 - 145*	*09/26/24 10:33*	*09/28/24 21:16*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**29**	**F1**	8.9		mg/Kg		09/28/24 09:16	09/29/24 00:58	1
Motor Oil Range Organics [C28-C40]	**48**		44		mg/Kg		09/28/24 09:16	09/29/24 00:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*85*		*62 - 134*	*09/28/24 09:16*	*09/29/24 00:58*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**260**		60		mg/Kg		09/30/24 14:04	10/01/24 16:32	20

Client Sample Results

Client: Vertex
Job ID: 885-12592-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BES24-04 2'
Lab Sample ID: 885-12592-12
Date Collected: 09/24/24 09:00
Matrix: Solid
Date Received: 09/26/24 08:00

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.7		mg/Kg		09/26/24 10:33	09/28/24 21:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*35 - 166*	*09/26/24 10:33*	*09/28/24 21:39*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		09/26/24 10:33	09/28/24 21:39	1
Ethylbenzene	ND		0.047		mg/Kg		09/26/24 10:33	09/28/24 21:39	1
Toluene	ND		0.047		mg/Kg		09/26/24 10:33	09/28/24 21:39	1
Xylenes, Total	ND		0.094		mg/Kg		09/26/24 10:33	09/28/24 21:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*48 - 145*	*09/26/24 10:33*	*09/28/24 21:39*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.4		mg/Kg		09/28/24 11:03	09/29/24 02:00	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		09/28/24 11:03	09/29/24 02:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*89*		*62 - 134*	*09/28/24 11:03*	*09/29/24 02:00*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**200**		60		mg/Kg		09/30/24 12:54	10/01/24 16:45	20

Client Sample Results

Client: Vertex
Job ID: 885-12592-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BES24-7 4.5'
Lab Sample ID: 885-12592-13
Date Collected: 09/24/24 08:55
Matrix: Solid
Date Received: 09/26/24 08:00

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.9		mg/Kg		09/26/24 10:33	09/28/24 22:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*35 - 166*	*09/26/24 10:33*	*09/28/24 22:03*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		09/26/24 10:33	09/28/24 22:03	1
Ethylbenzene	ND		0.049		mg/Kg		09/26/24 10:33	09/28/24 22:03	1
Toluene	ND		0.049		mg/Kg		09/26/24 10:33	09/28/24 22:03	1
Xylenes, Total	ND		0.098		mg/Kg		09/26/24 10:33	09/28/24 22:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*48 - 145*	*09/26/24 10:33*	*09/28/24 22:03*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.9		mg/Kg		09/28/24 11:03	09/29/24 02:13	1
Motor Oil Range Organics [C28-C40]	ND		49		mg/Kg		09/28/24 11:03	09/29/24 02:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*89*		*62 - 134*	*09/28/24 11:03*	*09/29/24 02:13*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**120**		60		mg/Kg		09/30/24 12:54	10/01/24 17:23	20

Client Sample Results

Client: Vertex
Job ID: 885-12592-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BES24-12 3'
Lab Sample ID: 885-12592-14
Date Collected: 09/24/24 08:30
Matrix: Solid
Date Received: 09/26/24 08:00

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.9		mg/Kg		09/26/24 10:33	09/28/24 22:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*35 - 166*	*09/26/24 10:33*	*09/28/24 22:26*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		09/26/24 10:33	09/28/24 22:26	1
Ethylbenzene	ND		0.049		mg/Kg		09/26/24 10:33	09/28/24 22:26	1
Toluene	ND		0.049		mg/Kg		09/26/24 10:33	09/28/24 22:26	1
Xylenes, Total	ND		0.097		mg/Kg		09/26/24 10:33	09/28/24 22:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*48 - 145*	*09/26/24 10:33*	*09/28/24 22:26*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**160**		9.4		mg/Kg		09/28/24 11:03	09/30/24 12:02	1
Motor Oil Range Organics [C28-C40]	**200**		47		mg/Kg		09/28/24 11:03	09/30/24 12:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*115*		*62 - 134*	*09/28/24 11:03*	*09/30/24 12:02*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**130**		59		mg/Kg		09/30/24 12:54	10/01/24 17:36	20

Client Sample Results

Client: Vertex
Job ID: 885-12592-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BES24-13 3'
Lab Sample ID: 885-12592-15
Date Collected: 09/24/24 09:15
Matrix: Solid
Date Received: 09/26/24 08:00

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.9		mg/Kg		09/26/24 10:33	09/28/24 22:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*35 - 166*	*09/26/24 10:33*	*09/28/24 22:50*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		09/26/24 10:33	09/28/24 22:50	1
Ethylbenzene	ND		0.049		mg/Kg		09/26/24 10:33	09/28/24 22:50	1
Toluene	ND		0.049		mg/Kg		09/26/24 10:33	09/28/24 22:50	1
Xylenes, Total	ND		0.099		mg/Kg		09/26/24 10:33	09/28/24 22:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*48 - 145*	*09/26/24 10:33*	*09/28/24 22:50*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.6		mg/Kg		09/28/24 11:03	09/29/24 02:50	1
Motor Oil Range Organics [C28-C40]	ND		48		mg/Kg		09/28/24 11:03	09/29/24 02:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*92*		*62 - 134*	*09/28/24 11:03*	*09/29/24 02:50*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**110**		60		mg/Kg		09/30/24 12:54	10/01/24 17:49	20

Client Sample Results

Client: Vertex
Job ID: 885-12592-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BES24-14 3'
Lab Sample ID: 885-12592-16
Date Collected: 09/24/24 09:20
Matrix: Solid
Date Received: 09/26/24 08:00

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.7		mg/Kg		09/26/24 10:33	09/28/24 23:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*35 - 166*	*09/26/24 10:33*	*09/28/24 23:13*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		09/26/24 10:33	09/28/24 23:13	1
Ethylbenzene	ND		0.047		mg/Kg		09/26/24 10:33	09/28/24 23:13	1
Toluene	ND		0.047		mg/Kg		09/26/24 10:33	09/28/24 23:13	1
Xylenes, Total	ND		0.095		mg/Kg		09/26/24 10:33	09/28/24 23:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*48 - 145*	*09/26/24 10:33*	*09/28/24 23:13*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.4		mg/Kg		09/28/24 11:03	09/29/24 03:03	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		09/28/24 11:03	09/29/24 03:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*88*		*62 - 134*	*09/28/24 11:03*	*09/29/24 03:03*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**270**		60		mg/Kg		09/30/24 12:54	10/01/24 18:02	20

Client Sample Results

Client: Vertex
Job ID: 885-12592-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BES24-15 2'
Lab Sample ID: 885-12592-17
Date Collected: 09/24/24 09:35
Matrix: Solid
Date Received: 09/26/24 08:00

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.8		mg/Kg		09/26/24 10:33	09/28/24 23:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*35 - 166*	*09/26/24 10:33*	*09/28/24 23:37*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		09/26/24 10:33	09/28/24 23:37	1
Ethylbenzene	ND		0.048		mg/Kg		09/26/24 10:33	09/28/24 23:37	1
Toluene	ND		0.048		mg/Kg		09/26/24 10:33	09/28/24 23:37	1
Xylenes, Total	ND		0.095		mg/Kg		09/26/24 10:33	09/28/24 23:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*48 - 145*	*09/26/24 10:33*	*09/28/24 23:37*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.4		mg/Kg		09/28/24 11:03	09/29/24 03:16	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		09/28/24 11:03	09/29/24 03:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*100*		*62 - 134*	*09/28/24 11:03*	*09/29/24 03:16*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		09/30/24 12:54	10/01/24 18:40	20

Client Sample Results

Client: Vertex
Job ID: 885-12592-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: WES24-18 0-3'
Lab Sample ID: 885-12592-18
Date Collected: 09/24/24 08:35
Matrix: Solid
Date Received: 09/26/24 08:00

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.7		mg/Kg		09/26/24 10:33	09/29/24 00:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*35 - 166*	*09/26/24 10:33*	*09/29/24 00:01*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		09/26/24 10:33	09/29/24 00:01	1
Ethylbenzene	ND		0.047		mg/Kg		09/26/24 10:33	09/29/24 00:01	1
Toluene	ND		0.047		mg/Kg		09/26/24 10:33	09/29/24 00:01	1
Xylenes, Total	ND		0.095		mg/Kg		09/26/24 10:33	09/29/24 00:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*48 - 145*	*09/26/24 10:33*	*09/29/24 00:01*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.5		mg/Kg		09/28/24 11:03	09/29/24 03:41	1
Motor Oil Range Organics [C28-C40]	ND		48		mg/Kg		09/28/24 11:03	09/29/24 03:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*93*		*62 - 134*	*09/28/24 11:03*	*09/29/24 03:41*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**240**		60		mg/Kg		09/30/24 12:54	10/01/24 18:53	20

Client Sample Results

Client: Vertex
Job ID: 885-12592-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: WES24-19 3-4.5'
Lab Sample ID: 885-12592-19
Date Collected: 09/24/24 08:40
Matrix: Solid
Date Received: 09/26/24 08:00

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		09/26/24 10:33	09/29/24 00:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*35 - 166*	*09/26/24 10:33*	*09/29/24 00:24*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		09/26/24 10:33	09/29/24 00:24	1
Ethylbenzene	ND		0.050		mg/Kg		09/26/24 10:33	09/29/24 00:24	1
Toluene	ND		0.050		mg/Kg		09/26/24 10:33	09/29/24 00:24	1
Xylenes, Total	ND		0.10		mg/Kg		09/26/24 10:33	09/29/24 00:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*48 - 145*	*09/26/24 10:33*	*09/29/24 00:24*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**9.9**		8.4		mg/Kg		09/28/24 11:03	09/29/24 03:53	1
Motor Oil Range Organics [C28-C40]	ND		42		mg/Kg		09/28/24 11:03	09/29/24 03:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*99*		*62 - 134*	*09/28/24 11:03*	*09/29/24 03:53*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**220**		60		mg/Kg		09/30/24 12:54	10/01/24 19:06	20

Client Sample Results

Client: Vertex
Job ID: 885-12592-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: WES24-20 2-4.5'
Lab Sample ID: 885-12592-20
Date Collected: 09/24/24 08:50
Matrix: Solid
Date Received: 09/26/24 08:00

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.7		mg/Kg		09/26/24 10:33	09/29/24 00:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*35 - 166*	*09/26/24 10:33*	*09/29/24 00:47*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		09/26/24 10:33	09/29/24 00:47	1
Ethylbenzene	ND		0.047		mg/Kg		09/26/24 10:33	09/29/24 00:47	1
Toluene	ND		0.047		mg/Kg		09/26/24 10:33	09/29/24 00:47	1
Xylenes, Total	ND		0.094		mg/Kg		09/26/24 10:33	09/29/24 00:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*48 - 145*	*09/26/24 10:33*	*09/29/24 00:47*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		8.9		mg/Kg		09/28/24 11:03	09/29/24 04:06	1
Motor Oil Range Organics [C28-C40]	ND		44		mg/Kg		09/28/24 11:03	09/29/24 04:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*89*		*62 - 134*	*09/28/24 11:03*	*09/29/24 04:06*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**110**		60		mg/Kg		09/30/24 12:54	10/01/24 19:19	20

Client Sample Results

Client: Vertex
Job ID: 885-12592-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: WES24-21 3-4.5'
Lab Sample ID: 885-12592-21
Date Collected: 09/24/24 08:45
Matrix: Solid
Date Received: 09/26/24 08:00

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.8		mg/Kg		09/26/24 16:22	09/30/24 20:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*35 - 166*	*09/26/24 16:22*	*09/30/24 20:11*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		09/26/24 16:22	09/30/24 20:11	1
Ethylbenzene	ND		0.048		mg/Kg		09/26/24 16:22	09/30/24 20:11	1
Toluene	ND		0.048		mg/Kg		09/26/24 16:22	09/30/24 20:11	1
Xylenes, Total	ND		0.096		mg/Kg		09/26/24 16:22	09/30/24 20:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*105*		*48 - 145*	*09/26/24 16:22*	*09/30/24 20:11*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.6		mg/Kg		09/28/24 11:03	09/29/24 04:18	1
Motor Oil Range Organics [C28-C40]	ND		48		mg/Kg		09/28/24 11:03	09/29/24 04:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*81*		*62 - 134*	*09/28/24 11:03*	*09/29/24 04:18*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**220**		60		mg/Kg		09/30/24 12:54	10/01/24 19:32	20

Client Sample Results

Client: Vertex
Job ID: 885-12592-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: WES24-22 0-3'
Lab Sample ID: 885-12592-22

Date Collected: 09/24/24 09:25
Matrix: Solid
Date Received: 09/26/24 08:00

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		09/26/24 16:22	09/30/24 21:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*105*		*35 - 166*	*09/26/24 16:22*	*09/30/24 21:16*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		09/26/24 16:22	09/30/24 21:16	1
Ethylbenzene	ND		0.050		mg/Kg		09/26/24 16:22	09/30/24 21:16	1
Toluene	ND		0.050		mg/Kg		09/26/24 16:22	09/30/24 21:16	1
Xylenes, Total	ND		0.099		mg/Kg		09/26/24 16:22	09/30/24 21:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*48 - 145*	*09/26/24 16:22*	*09/30/24 21:16*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.3		mg/Kg		09/28/24 11:03	09/29/24 04:31	1
Motor Oil Range Organics [C28-C40]	ND		46		mg/Kg		09/28/24 11:03	09/29/24 04:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*99*		*62 - 134*	*09/28/24 11:03*	*09/29/24 04:31*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**180**	**F2**	60		mg/Kg		09/30/24 12:54	10/01/24 19:45	20

Client Sample Results

Client: Vertex
Job ID: 885-12592-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: WES24-23 0-4.5'
Lab Sample ID: 885-12592-23
Date Collected: 09/24/24 09:30
Matrix: Solid
Date Received: 09/26/24 08:00

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.6		mg/Kg		09/26/24 16:22	09/30/24 22:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*35 - 166*	*09/26/24 16:22*	*09/30/24 22:21*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.023		mg/Kg		09/26/24 16:22	09/30/24 22:21	1
Ethylbenzene	ND		0.046		mg/Kg		09/26/24 16:22	09/30/24 22:21	1
Toluene	ND		0.046		mg/Kg		09/26/24 16:22	09/30/24 22:21	1
Xylenes, Total	ND		0.092		mg/Kg		09/26/24 16:22	09/30/24 22:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*48 - 145*	*09/26/24 16:22*	*09/30/24 22:21*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.9		mg/Kg		09/28/24 11:03	09/29/24 04:43	1
Motor Oil Range Organics [C28-C40]	ND		49		mg/Kg		09/28/24 11:03	09/29/24 04:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*88*		*62 - 134*	*09/28/24 11:03*	*09/29/24 04:43*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	92		61		mg/Kg		09/30/24 12:54	10/01/24 20:23	20

QC Sample Results

Client: Vertex
Project/Site: Shakespeare 20 Fed Com #001H

Job ID: 885-12592-1

Method: 8015M/D - Gasoline Range Organics (GRO) (GC)

Lab Sample ID: MB 885-13078/1-A
Matrix: Solid
Analysis Batch: 13308

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 13078

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		09/26/24 10:33	09/28/24 15:01	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*35 - 166*	*09/26/24 10:33*	*09/28/24 15:01*	*1*

Lab Sample ID: LCS 885-13078/2-A
Matrix: Solid
Analysis Batch: 13308

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 13078

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics [C6 - C10]			25.0	20.2		mg/Kg		81	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*194*		*35 - 166*

Lab Sample ID: 885-12592-1 MS
Matrix: Solid
Analysis Batch: 13308

Client Sample ID: BES24-02 12'
Prep Type: Total/NA
Prep Batch: 13078

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics [C6 - C10]	ND		24.6	20.9		mg/Kg		85	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*201*		*35 - 166*

Lab Sample ID: 885-12592-1 MSD
Matrix: Solid
Analysis Batch: 13308

Client Sample ID: BES24-02 12'
Prep Type: Total/NA
Prep Batch: 13078

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics [C6 - C10]	ND		24.5	21.3		mg/Kg		87	70 - 130	2	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*205*		*35 - 166*

Lab Sample ID: MB 885-13112/1-A
Matrix: Solid
Analysis Batch: 13362

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 13112

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		09/26/24 16:22	09/30/24 19:49	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*35 - 166*	*09/26/24 16:22*	*09/30/24 19:49*	*1*

QC Sample Results

Client: Vertex
Project/Site: Shakespeare 20 Fed Com #001H

Job ID: 885-12592-1

Method: 8015M/D - Gasoline Range Organics (GRO) (GC) (Continued)

Lab Sample ID: LCS 885-13112/2-A
Matrix: Solid
Analysis Batch: 13362

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 13112

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics [C6 - C10]			25.0	22.9		mg/Kg		91	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*212*		*35 - 166*

Lab Sample ID: 885-12592-21 MS
Matrix: Solid
Analysis Batch: 13362

Client Sample ID: WES24-21 3-4.5'
Prep Type: Total/NA
Prep Batch: 13112

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics [C6 - C10]	ND		24.0	21.8		mg/Kg		91	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*208*		*35 - 166*

Lab Sample ID: 885-12592-21 MSD
Matrix: Solid
Analysis Batch: 13362

Client Sample ID: WES24-21 3-4.5'
Prep Type: Total/NA
Prep Batch: 13112

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics [C6 - C10]	ND		23.9	21.0		mg/Kg		88	70 - 130	4	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*210*		*35 - 166*

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 885-13078/1-A
Matrix: Solid
Analysis Batch: 13309

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 13078

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		09/26/24 10:33	09/28/24 15:01	1
Ethylbenzene	ND		0.050		mg/Kg		09/26/24 10:33	09/28/24 15:01	1
Toluene	ND		0.050		mg/Kg		09/26/24 10:33	09/28/24 15:01	1
Xylenes, Total	ND		0.10		mg/Kg		09/26/24 10:33	09/28/24 15:01	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*48 - 145*	*09/26/24 10:33*	*09/28/24 15:01*	*1*

QC Sample Results

Client: Vertex
Job ID: 885-12592-1
Project/Site: Shakespeare 20 Fed Com #001H

Method: 8021B - Volatile Organic Compounds (GC) (Continued)

Lab Sample ID: LCS 885-13078/3-A
Client Sample ID: Lab Control Sample
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 13309
Prep Batch: 13078

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			1.00	1.03		mg/Kg		103	70 - 130		
Ethylbenzene			1.00	0.993		mg/Kg		99	70 - 130		
m,p-Xylene			2.00	2.00		mg/Kg		100	70 - 130		
o-Xylene			1.00	0.987		mg/Kg		99	70 - 130		
Toluene			1.00	1.01		mg/Kg		101	70 - 130		
Xylenes, Total			3.00	2.99		mg/Kg		100	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*100*		*48 - 145*

Lab Sample ID: 885-12592-2 MS
Client Sample ID: BES24-09 6'
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 13309
Prep Batch: 13078

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene	ND		0.985	1.01		mg/Kg		103	70 - 130		
Ethylbenzene	ND		0.985	1.00		mg/Kg		102	70 - 130		
m,p-Xylene	ND		1.97	2.02		mg/Kg		102	70 - 130		
o-Xylene	ND		0.985	1.00		mg/Kg		102	70 - 130		
Toluene	ND		0.985	0.989		mg/Kg		100	70 - 130		
Xylenes, Total	ND		2.96	3.02		mg/Kg		102	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*48 - 145*

Lab Sample ID: 885-12592-2 MSD
Client Sample ID: BES24-09 6'
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 13309
Prep Batch: 13078

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	ND		0.992	1.02		mg/Kg		102	70 - 130	1	20
Ethylbenzene	ND		0.992	1.00		mg/Kg		101	70 - 130	0	20
m,p-Xylene	ND		1.98	1.99		mg/Kg		99	70 - 130	1	20
o-Xylene	ND		0.992	0.994		mg/Kg		100	70 - 130	1	20
Toluene	ND		0.992	0.997		mg/Kg		100	70 - 130	1	20
Xylenes, Total	ND		2.98	2.99		mg/Kg		100	70 - 130	1	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*100*		*48 - 145*

Lab Sample ID: MB 885-13112/1-A
Client Sample ID: Method Blank
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 13363
Prep Batch: 13112

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		09/26/24 16:22	09/30/24 19:49	1
Ethylbenzene	ND		0.050		mg/Kg		09/26/24 16:22	09/30/24 19:49	1
Toluene	ND		0.050		mg/Kg		09/26/24 16:22	09/30/24 19:49	1

QC Sample Results

Client: Vertex
Job ID: 885-12592-1
Project/Site: Shakespeare 20 Fed Com #001H

Method: 8021B - Volatile Organic Compounds (GC) (Continued)

Lab Sample ID: MB 885-13112/1-A
Matrix: Solid
Analysis Batch: 13363

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 13112

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Xylenes, Total	ND		0.10		mg/Kg		09/26/24 16:22	09/30/24 19:49	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*48 - 145*	*09/26/24 16:22*	*09/30/24 19:49*	*1*

Lab Sample ID: LCS 885-13112/3-A
Matrix: Solid
Analysis Batch: 13363

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 13112

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			1.00	1.07		mg/Kg		107	70 - 130		
Ethylbenzene			1.00	1.05		mg/Kg		105	70 - 130		
m,p-Xylene			2.00	2.09		mg/Kg		104	70 - 130		
o-Xylene			1.00	1.02		mg/Kg		102	70 - 130		
Toluene			1.00	1.06		mg/Kg		106	70 - 130		
Xylenes, Total			3.00	3.10		mg/Kg		103	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*103*		*48 - 145*

Lab Sample ID: 885-12592-22 MS
Matrix: Solid
Analysis Batch: 13363

Client Sample ID: WES24-22 0-3'
Prep Type: Total/NA
Prep Batch: 13112

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene	ND		0.988	1.01		mg/Kg		103	70 - 130		
Ethylbenzene	ND		0.988	0.993		mg/Kg		101	70 - 130		
m,p-Xylene	ND		1.98	1.96		mg/Kg		99	70 - 130		
o-Xylene	ND		0.988	0.977		mg/Kg		99	70 - 130		
Toluene	ND		0.988	0.994		mg/Kg		101	70 - 130		
Xylenes, Total	ND		2.96	2.94		mg/Kg		99	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*102*		*48 - 145*

Lab Sample ID: 885-12592-22 MSD
Matrix: Solid
Analysis Batch: 13363

Client Sample ID: WES24-22 0-3'
Prep Type: Total/NA
Prep Batch: 13112

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	ND		0.985	1.00		mg/Kg		102	70 - 130	1	20
Ethylbenzene	ND		0.985	1.00		mg/Kg		102	70 - 130	1	20
m,p-Xylene	ND		1.97	1.98		mg/Kg		101	70 - 130	1	20
o-Xylene	ND		0.985	0.985		mg/Kg		100	70 - 130	1	20
Toluene	ND		0.985	0.996		mg/Kg		101	70 - 130	0	20
Xylenes, Total	ND		2.96	2.97		mg/Kg		100	70 - 130	1	20

QC Sample Results

Client: Vertex
Project/Site: Shakespeare 20 Fed Com #001H

Job ID: 885-12592-1

Method: 8021B - Volatile Organic Compounds (GC) (Continued)

Lab Sample ID: 885-12592-22 MSD
Matrix: Solid
Analysis Batch: 13363

Client Sample ID: WES24-22 0-3'
Prep Type: Total/NA
Prep Batch: 13112

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	*101*		*48 - 145*

Method: 8015M/D - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 885-13227/1-A
Matrix: Solid
Analysis Batch: 13239

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 13227

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		10		mg/Kg		09/28/24 09:16	09/28/24 19:28	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		09/28/24 09:16	09/28/24 19:28	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Di-n-octyl phthalate (Surr)	*87*		*62 - 134*	*09/28/24 09:16*	*09/28/24 19:28*	*1*

Lab Sample ID: LCS 885-13227/2-A
Matrix: Solid
Analysis Batch: 13239

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 13227

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Diesel Range Organics [C10-C28]			50.0	40.5		mg/Kg		81	60 - 135		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Di-n-octyl phthalate (Surr)	*87*		*62 - 134*

Lab Sample ID: 885-12592-11 MS
Matrix: Solid
Analysis Batch: 13239

Client Sample ID: WES24-17 3-6'
Prep Type: Total/NA
Prep Batch: 13227

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Diesel Range Organics [C10-C28]	29	F1	46.0	37.2	F1	mg/Kg		17	44 - 136		

Surrogate	MS %Recovery	MS Qualifier	Limits
Di-n-octyl phthalate (Surr)	*84*		*62 - 134*

Lab Sample ID: 885-12592-11 MSD
Matrix: Solid
Analysis Batch: 13239

Client Sample ID: WES24-17 3-6'
Prep Type: Total/NA
Prep Batch: 13227

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Diesel Range Organics [C10-C28]	29	F1	48.9	48.1	F1	mg/Kg		38	44 - 136	26	32

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Di-n-octyl phthalate (Surr)	*86*		*62 - 134*

QC Sample Results

Client: Vertex
Job ID: 885-12592-1
Project/Site: Shakespeare 20 Fed Com #001H

Method: 8015M/D - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: MB 885-13233/1-A
Matrix: Solid
Analysis Batch: 13239

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 13233

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		10		mg/Kg		09/28/24 11:03	09/29/24 01:36	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		09/28/24 11:03	09/29/24 01:36	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*91*		*62 - 134*	*09/28/24 11:03*	*09/29/24 01:36*	*1*

Lab Sample ID: LCS 885-13233/2-A
Matrix: Solid
Analysis Batch: 13239

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 13233

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Diesel Range Organics [C10-C28]			50.0	45.3		mg/Kg		91	60 - 135		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Di-n-octyl phthalate (Surr)	*92*		*62 - 134*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 885-13298/1-A
Matrix: Solid
Analysis Batch: 13313

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 13298

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0		mg/Kg		09/30/24 14:04	09/30/24 22:41	1

Lab Sample ID: MB 885-13298/1-A
Matrix: Solid
Analysis Batch: 13383

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 13298

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0		mg/Kg		09/30/24 14:04	10/01/24 13:32	1

Lab Sample ID: LCS 885-13298/2-A
Matrix: Solid
Analysis Batch: 13313

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 13298

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			30.0	30.2		mg/Kg		101	90 - 110		

Lab Sample ID: LCS 885-13298/2-A
Matrix: Solid
Analysis Batch: 13383

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 13298

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			30.0	32.1		mg/Kg		107	90 - 110		

QC Sample Results

Client: Vertex
Job ID: 885-12592-1
Project/Site: Shakespeare 20 Fed Com #001H

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: MB 885-13314/1-A
Client Sample ID: Method Blank
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 13313
Prep Batch: 13314

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0		mg/Kg		09/30/24 12:00	09/30/24 15:49	1

Lab Sample ID: MB 885-13316/1-A
Client Sample ID: Method Blank
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 13383
Prep Batch: 13316

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0		mg/Kg		09/30/24 12:54	10/01/24 13:57	1

Lab Sample ID: LCS 885-13316/2-A
Client Sample ID: Lab Control Sample
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 13383
Prep Batch: 13316

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			30.0	31.8		mg/Kg		106	90 - 110		

Lab Sample ID: 885-12592-12 MS
Client Sample ID: BES24-04 2'
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 13383
Prep Batch: 13316

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	200		30.3	229	4	mg/Kg		81	50 - 150		

Lab Sample ID: 885-12592-12 MSD
Client Sample ID: BES24-04 2'
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 13383
Prep Batch: 13316

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	200		29.8	243	4	mg/Kg		128	50 - 150	6	20

QC Association Summary

Client: Vertex Job ID: 885-12592-1
Project/Site: Shakespeare 20 Fed Com #001H

GC VOA

Prep Batch: 13078

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-12592-1	BES24-02 12'	Total/NA	Solid	5030C	
885-12592-2	BES24-09 6'	Total/NA	Solid	5030C	
885-12592-3	BES24-10 12'	Total/NA	Solid	5030C	
885-12592-4	BES24-11 6'	Total/NA	Solid	5030C	
885-12592-5	WES24-11 0-12'	Total/NA	Solid	5030C	
885-12592-6	WES24-12 0-12'	Total/NA	Solid	5030C	
885-12592-7	WES24-13 0-12'	Total/NA	Solid	5030C	
885-12592-8	WES24-14 2-12'	Total/NA	Solid	5030C	
885-12592-9	WES24-15 0-6'	Total/NA	Solid	5030C	
885-12592-10	WES24-16 3-6'	Total/NA	Solid	5030C	
885-12592-11	WES24-17 3-6'	Total/NA	Solid	5030C	
885-12592-12	BES24-04 2'	Total/NA	Solid	5030C	
885-12592-13	BES24-7 4.5'	Total/NA	Solid	5030C	
885-12592-14	BES24-12 3'	Total/NA	Solid	5030C	
885-12592-15	BES24-13 3'	Total/NA	Solid	5030C	
885-12592-16	BES24-14 3'	Total/NA	Solid	5030C	
885-12592-17	BES24-15 2'	Total/NA	Solid	5030C	
885-12592-18	WES24-18 0-3'	Total/NA	Solid	5030C	
885-12592-19	WES24-19 3-4.5'	Total/NA	Solid	5030C	
885-12592-20	WES24-20 2-4.5'	Total/NA	Solid	5030C	
MB 885-13078/1-A	Method Blank	Total/NA	Solid	5030C	
LCS 885-13078/2-A	Lab Control Sample	Total/NA	Solid	5030C	
LCS 885-13078/3-A	Lab Control Sample	Total/NA	Solid	5030C	
885-12592-1 MS	BES24-02 12'	Total/NA	Solid	5030C	
885-12592-1 MSD	BES24-02 12'	Total/NA	Solid	5030C	
885-12592-2 MS	BES24-09 6'	Total/NA	Solid	5030C	
885-12592-2 MSD	BES24-09 6'	Total/NA	Solid	5030C	

Prep Batch: 13112

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-12592-21	WES24-21 3-4.5'	Total/NA	Solid	5030C	
885-12592-22	WES24-22 0-3'	Total/NA	Solid	5030C	
885-12592-23	WES24-23 0-4.5'	Total/NA	Solid	5030C	
MB 885-13112/1-A	Method Blank	Total/NA	Solid	5030C	
LCS 885-13112/2-A	Lab Control Sample	Total/NA	Solid	5030C	
LCS 885-13112/3-A	Lab Control Sample	Total/NA	Solid	5030C	
885-12592-21 MS	WES24-21 3-4.5'	Total/NA	Solid	5030C	
885-12592-21 MSD	WES24-21 3-4.5'	Total/NA	Solid	5030C	
885-12592-22 MS	WES24-22 0-3'	Total/NA	Solid	5030C	
885-12592-22 MSD	WES24-22 0-3'	Total/NA	Solid	5030C	

Analysis Batch: 13308

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-12592-1	BES24-02 12'	Total/NA	Solid	8015M/D	13078
885-12592-2	BES24-09 6'	Total/NA	Solid	8015M/D	13078
885-12592-3	BES24-10 12'	Total/NA	Solid	8015M/D	13078
885-12592-4	BES24-11 6'	Total/NA	Solid	8015M/D	13078
885-12592-5	WES24-11 0-12'	Total/NA	Solid	8015M/D	13078
885-12592-6	WES24-12 0-12'	Total/NA	Solid	8015M/D	13078
885-12592-7	WES24-13 0-12'	Total/NA	Solid	8015M/D	13078
885-12592-8	WES24-14 2-12'	Total/NA	Solid	8015M/D	13078

QC Association Summary

Client: Vertex Job ID: 885-12592-1
Project/Site: Shakespeare 20 Fed Com #001H

GC VOA (Continued)

Analysis Batch: 13308 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-12592-9	WES24-15 0-6'	Total/NA	Solid	8015M/D	13078
885-12592-10	WES24-16 3-6'	Total/NA	Solid	8015M/D	13078
885-12592-11	WES24-17 3-6'	Total/NA	Solid	8015M/D	13078
885-12592-12	BES24-04 2'	Total/NA	Solid	8015M/D	13078
885-12592-13	BES24-7 4.5'	Total/NA	Solid	8015M/D	13078
885-12592-14	BES24-12 3'	Total/NA	Solid	8015M/D	13078
885-12592-15	BES24-13 3'	Total/NA	Solid	8015M/D	13078
885-12592-16	BES24-14 3'	Total/NA	Solid	8015M/D	13078
885-12592-17	BES24-15 2'	Total/NA	Solid	8015M/D	13078
885-12592-18	WES24-18 0-3'	Total/NA	Solid	8015M/D	13078
885-12592-19	WES24-19 3-4.5'	Total/NA	Solid	8015M/D	13078
885-12592-20	WES24-20 2-4.5'	Total/NA	Solid	8015M/D	13078
MB 885-13078/1-A	Method Blank	Total/NA	Solid	8015M/D	13078
LCS 885-13078/2-A	Lab Control Sample	Total/NA	Solid	8015M/D	13078
885-12592-1 MS	BES24-02 12'	Total/NA	Solid	8015M/D	13078
885-12592-1 MSD	BES24-02 12'	Total/NA	Solid	8015M/D	13078

Analysis Batch: 13309

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-12592-1	BES24-02 12'	Total/NA	Solid	8021B	13078
885-12592-2	BES24-09 6'	Total/NA	Solid	8021B	13078
885-12592-3	BES24-10 12'	Total/NA	Solid	8021B	13078
885-12592-4	BES24-11 6'	Total/NA	Solid	8021B	13078
885-12592-5	WES24-11 0-12'	Total/NA	Solid	8021B	13078
885-12592-6	WES24-12 0-12'	Total/NA	Solid	8021B	13078
885-12592-7	WES24-13 0-12'	Total/NA	Solid	8021B	13078
885-12592-8	WES24-14 2-12'	Total/NA	Solid	8021B	13078
885-12592-9	WES24-15 0-6'	Total/NA	Solid	8021B	13078
885-12592-10	WES24-16 3-6'	Total/NA	Solid	8021B	13078
885-12592-11	WES24-17 3-6'	Total/NA	Solid	8021B	13078
885-12592-12	BES24-04 2'	Total/NA	Solid	8021B	13078
885-12592-13	BES24-7 4.5'	Total/NA	Solid	8021B	13078
885-12592-14	BES24-12 3'	Total/NA	Solid	8021B	13078
885-12592-15	BES24-13 3'	Total/NA	Solid	8021B	13078
885-12592-16	BES24-14 3'	Total/NA	Solid	8021B	13078
885-12592-17	BES24-15 2'	Total/NA	Solid	8021B	13078
885-12592-18	WES24-18 0-3'	Total/NA	Solid	8021B	13078
885-12592-19	WES24-19 3-4.5'	Total/NA	Solid	8021B	13078
885-12592-20	WES24-20 2-4.5'	Total/NA	Solid	8021B	13078
MB 885-13078/1-A	Method Blank	Total/NA	Solid	8021B	13078
LCS 885-13078/3-A	Lab Control Sample	Total/NA	Solid	8021B	13078
885-12592-2 MS	BES24-09 6'	Total/NA	Solid	8021B	13078
885-12592-2 MSD	BES24-09 6'	Total/NA	Solid	8021B	13078

Analysis Batch: 13362

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-12592-21	WES24-21 3-4.5'	Total/NA	Solid	8015M/D	13112
885-12592-22	WES24-22 0-3'	Total/NA	Solid	8015M/D	13112
885-12592-23	WES24-23 0-4.5'	Total/NA	Solid	8015M/D	13112
MB 885-13112/1-A	Method Blank	Total/NA	Solid	8015M/D	13112
LCS 885-13112/2-A	Lab Control Sample	Total/NA	Solid	8015M/D	13112

QC Association Summary

Client: Vertex
Job ID: 885-12592-1
Project/Site: Shakespeare 20 Fed Com #001H

GC VOA (Continued)

Analysis Batch: 13362 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-12592-21 MS	WES24-21 3-4.5'	Total/NA	Solid	8015M/D	13112
885-12592-21 MSD	WES24-21 3-4.5'	Total/NA	Solid	8015M/D	13112

Analysis Batch: 13363

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-12592-21	WES24-21 3-4.5'	Total/NA	Solid	8021B	13112
885-12592-22	WES24-22 0-3'	Total/NA	Solid	8021B	13112
885-12592-23	WES24-23 0-4.5'	Total/NA	Solid	8021B	13112
MB 885-13112/1-A	Method Blank	Total/NA	Solid	8021B	13112
LCS 885-13112/3-A	Lab Control Sample	Total/NA	Solid	8021B	13112
885-12592-22 MS	WES24-22 0-3'	Total/NA	Solid	8021B	13112
885-12592-22 MSD	WES24-22 0-3'	Total/NA	Solid	8021B	13112

GC Semi VOA

Prep Batch: 13227

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-12592-1	BES24-02 12'	Total/NA	Solid	SHAKE	
885-12592-2	BES24-09 6'	Total/NA	Solid	SHAKE	
885-12592-3	BES24-10 12'	Total/NA	Solid	SHAKE	
885-12592-4	BES24-11 6'	Total/NA	Solid	SHAKE	
885-12592-5	WES24-11 0-12'	Total/NA	Solid	SHAKE	
885-12592-6	WES24-12 0-12'	Total/NA	Solid	SHAKE	
885-12592-7	WES24-13 0-12'	Total/NA	Solid	SHAKE	
885-12592-8	WES24-14 2-12'	Total/NA	Solid	SHAKE	
885-12592-9	WES24-15 0-6'	Total/NA	Solid	SHAKE	
885-12592-10	WES24-16 3-6'	Total/NA	Solid	SHAKE	
885-12592-11	WES24-17 3-6'	Total/NA	Solid	SHAKE	
MB 885-13227/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 885-13227/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	
885-12592-11 MS	WES24-17 3-6'	Total/NA	Solid	SHAKE	
885-12592-11 MSD	WES24-17 3-6'	Total/NA	Solid	SHAKE	

Prep Batch: 13233

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-12592-12	BES24-04 2'	Total/NA	Solid	SHAKE	
885-12592-13	BES24-7 4.5'	Total/NA	Solid	SHAKE	
885-12592-14	BES24-12 3'	Total/NA	Solid	SHAKE	
885-12592-15	BES24-13 3'	Total/NA	Solid	SHAKE	
885-12592-16	BES24-14 3'	Total/NA	Solid	SHAKE	
885-12592-17	BES24-15 2'	Total/NA	Solid	SHAKE	
885-12592-18	WES24-18 0-3'	Total/NA	Solid	SHAKE	
885-12592-19	WES24-19 3-4.5'	Total/NA	Solid	SHAKE	
885-12592-20	WES24-20 2-4.5'	Total/NA	Solid	SHAKE	
885-12592-21	WES24-21 3-4.5'	Total/NA	Solid	SHAKE	
885-12592-22	WES24-22 0-3'	Total/NA	Solid	SHAKE	
885-12592-23	WES24-23 0-4.5'	Total/NA	Solid	SHAKE	
MB 885-13233/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 885-13233/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	

QC Association Summary

Client: Vertex
Job ID: 885-12592-1
Project/Site: Shakespeare 20 Fed Com #001H

GC Semi VOA

Analysis Batch: 13239

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-12592-1	BES24-02 12'	Total/NA	Solid	8015M/D	13227
885-12592-2	BES24-09 6'	Total/NA	Solid	8015M/D	13227
885-12592-3	BES24-10 12'	Total/NA	Solid	8015M/D	13227
885-12592-4	BES24-11 6'	Total/NA	Solid	8015M/D	13227
885-12592-5	WES24-11 0-12'	Total/NA	Solid	8015M/D	13227
885-12592-6	WES24-12 0-12'	Total/NA	Solid	8015M/D	13227
885-12592-8	WES24-14 2-12'	Total/NA	Solid	8015M/D	13227
885-12592-9	WES24-15 0-6'	Total/NA	Solid	8015M/D	13227
885-12592-10	WES24-16 3-6'	Total/NA	Solid	8015M/D	13227
885-12592-11	WES24-17 3-6'	Total/NA	Solid	8015M/D	13227
885-12592-12	BES24-04 2'	Total/NA	Solid	8015M/D	13233
885-12592-13	BES24-7 4.5'	Total/NA	Solid	8015M/D	13233
885-12592-15	BES24-13 3'	Total/NA	Solid	8015M/D	13233
885-12592-16	BES24-14 3'	Total/NA	Solid	8015M/D	13233
885-12592-17	BES24-15 2'	Total/NA	Solid	8015M/D	13233
885-12592-18	WES24-18 0-3'	Total/NA	Solid	8015M/D	13233
885-12592-19	WES24-19 3-4.5'	Total/NA	Solid	8015M/D	13233
885-12592-20	WES24-20 2-4.5'	Total/NA	Solid	8015M/D	13233
885-12592-21	WES24-21 3-4.5'	Total/NA	Solid	8015M/D	13233
885-12592-22	WES24-22 0-3'	Total/NA	Solid	8015M/D	13233
885-12592-23	WES24-23 0-4.5'	Total/NA	Solid	8015M/D	13233
MB 885-13227/1-A	Method Blank	Total/NA	Solid	8015M/D	13227
MB 885-13233/1-A	Method Blank	Total/NA	Solid	8015M/D	13233
LCS 885-13227/2-A	Lab Control Sample	Total/NA	Solid	8015M/D	13227
LCS 885-13233/2-A	Lab Control Sample	Total/NA	Solid	8015M/D	13233
885-12592-11 MS	WES24-17 3-6'	Total/NA	Solid	8015M/D	13227
885-12592-11 MSD	WES24-17 3-6'	Total/NA	Solid	8015M/D	13227

Analysis Batch: 13282

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-12592-14	BES24-12 3'	Total/NA	Solid	8015M/D	13233

Analysis Batch: 13285

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-12592-7	WES24-13 0-12'	Total/NA	Solid	8015M/D	13227

HPLC/IC

Prep Batch: 13298

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-12592-3	BES24-10 12'	Total/NA	Solid	300_Prep	
885-12592-4	BES24-11 6'	Total/NA	Solid	300_Prep	
885-12592-5	WES24-11 0-12'	Total/NA	Solid	300_Prep	
885-12592-6	WES24-12 0-12'	Total/NA	Solid	300_Prep	
885-12592-7	WES24-13 0-12'	Total/NA	Solid	300_Prep	
885-12592-8	WES24-14 2-12'	Total/NA	Solid	300_Prep	
885-12592-9	WES24-15 0-6'	Total/NA	Solid	300_Prep	
885-12592-11	WES24-17 3-6'	Total/NA	Solid	300_Prep	
MB 885-13298/1-A	Method Blank	Total/NA	Solid	300_Prep	
LCS 885-13298/2-A	Lab Control Sample	Total/NA	Solid	300_Prep	

QC Association Summary

Client: Vertex
Job ID: 885-12592-1
Project/Site: Shakespeare 20 Fed Com #001H

HPLC/IC

Analysis Batch: 13313

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-12592-3	BES24-10 12'	Total/NA	Solid	300.0	13298
885-12592-10	WES24-16 3-6'	Total/NA	Solid	300.0	13314
MB 885-13298/1-A	Method Blank	Total/NA	Solid	300.0	13298
MB 885-13314/1-A	Method Blank	Total/NA	Solid	300.0	13314
LCS 885-13298/2-A	Lab Control Sample	Total/NA	Solid	300.0	13298
LCS 885-13314/2-A	Lab Control Sample	Total/NA	Solid	300.0	13314

Prep Batch: 13314

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-12592-10	WES24-16 3-6'	Total/NA	Solid	300_Prep	
MB 885-13314/1-A	Method Blank	Total/NA	Solid	300_Prep	
LCS 885-13314/2-A	Lab Control Sample	Total/NA	Solid	300_Prep	

Prep Batch: 13316

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-12592-1	BES24-02 12'	Total/NA	Solid	300_Prep	
885-12592-2	BES24-09 6'	Total/NA	Solid	300_Prep	
885-12592-12	BES24-04 2'	Total/NA	Solid	300_Prep	
885-12592-13	BES24-7 4.5'	Total/NA	Solid	300_Prep	
885-12592-14	BES24-12 3'	Total/NA	Solid	300_Prep	
885-12592-15	BES24-13 3'	Total/NA	Solid	300_Prep	
885-12592-16	BES24-14 3'	Total/NA	Solid	300_Prep	
885-12592-17	BES24-15 2'	Total/NA	Solid	300_Prep	
885-12592-18	WES24-18 0-3'	Total/NA	Solid	300_Prep	
885-12592-19	WES24-19 3-4.5'	Total/NA	Solid	300_Prep	
885-12592-20	WES24-20 2-4.5'	Total/NA	Solid	300_Prep	
885-12592-21	WES24-21 3-4.5'	Total/NA	Solid	300_Prep	
885-12592-22	WES24-22 0-3'	Total/NA	Solid	300_Prep	
885-12592-23	WES24-23 0-4.5'	Total/NA	Solid	300_Prep	
MB 885-13316/1-A	Method Blank	Total/NA	Solid	300_Prep	
LCS 885-13316/2-A	Lab Control Sample	Total/NA	Solid	300_Prep	
885-12592-12 MS	BES24-04 2'	Total/NA	Solid	300_Prep	
885-12592-12 MSD	BES24-04 2'	Total/NA	Solid	300_Prep	

Analysis Batch: 13383

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-12592-1	BES24-02 12'	Total/NA	Solid	300.0	13316
885-12592-2	BES24-09 6'	Total/NA	Solid	300.0	13316
885-12592-4	BES24-11 6'	Total/NA	Solid	300.0	13298
885-12592-5	WES24-11 0-12'	Total/NA	Solid	300.0	13298
885-12592-6	WES24-12 0-12'	Total/NA	Solid	300.0	13298
885-12592-7	WES24-13 0-12'	Total/NA	Solid	300.0	13298
885-12592-8	WES24-14 2-12'	Total/NA	Solid	300.0	13298
885-12592-9	WES24-15 0-6'	Total/NA	Solid	300.0	13298
885-12592-11	WES24-17 3-6'	Total/NA	Solid	300.0	13298
885-12592-12	BES24-04 2'	Total/NA	Solid	300.0	13316
885-12592-13	BES24-7 4.5'	Total/NA	Solid	300.0	13316
885-12592-14	BES24-12 3'	Total/NA	Solid	300.0	13316
885-12592-15	BES24-13 3'	Total/NA	Solid	300.0	13316
885-12592-16	BES24-14 3'	Total/NA	Solid	300.0	13316
885-12592-17	BES24-15 2'	Total/NA	Solid	300.0	13316

QC Association Summary

Client: Vertex Job ID: 885-12592-1
Project/Site: Shakespeare 20 Fed Com #001H

HPLC/IC (Continued)

Analysis Batch: 13383 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-12592-18	WES24-18 0-3'	Total/NA	Solid	300.0	13316
885-12592-19	WES24-19 3-4.5'	Total/NA	Solid	300.0	13316
885-12592-20	WES24-20 2-4.5'	Total/NA	Solid	300.0	13316
885-12592-21	WES24-21 3-4.5'	Total/NA	Solid	300.0	13316
885-12592-22	WES24-22 0-3'	Total/NA	Solid	300.0	13316
885-12592-23	WES24-23 0-4.5'	Total/NA	Solid	300.0	13316
MB 885-13298/1-A	Method Blank	Total/NA	Solid	300.0	13298
MB 885-13316/1-A	Method Blank	Total/NA	Solid	300.0	13316
LCS 885-13298/2-A	Lab Control Sample	Total/NA	Solid	300.0	13298
LCS 885-13316/2-A	Lab Control Sample	Total/NA	Solid	300.0	13316
885-12592-12 MS	BES24-04 2'	Total/NA	Solid	300.0	13316
885-12592-12 MSD	BES24-04 2'	Total/NA	Solid	300.0	13316

Lab Chronicle

Client: Vertex
Job ID: 885-12592-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BES24-02 12'
Lab Sample ID: 885-12592-1
Date Collected: 09/23/24 10:00
Matrix: Solid
Date Received: 09/26/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			13078	JP	EET ALB	09/26/24 10:33
Total/NA	Analysis	8015M/D		1	13308	JP	EET ALB	09/28/24 15:24
Total/NA	Prep	5030C			13078	JP	EET ALB	09/26/24 10:33
Total/NA	Analysis	8021B		1	13309	JP	EET ALB	09/28/24 15:24
Total/NA	Prep	SHAKE			13227	KR	EET ALB	09/28/24 09:16
Total/NA	Analysis	8015M/D		1	13239	KR	EET ALB	09/28/24 22:38
Total/NA	Prep	300_Prep			13316	EH	EET ALB	09/30/24 12:54
Total/NA	Analysis	300.0		20	13383	EH	EET ALB	10/01/24 20:36

Client Sample ID: BES24-09 6'
Lab Sample ID: 885-12592-2
Date Collected: 09/23/24 14:55
Matrix: Solid
Date Received: 09/26/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			13078	JP	EET ALB	09/26/24 10:33
Total/NA	Analysis	8015M/D		1	13308	JP	EET ALB	09/28/24 16:34
Total/NA	Prep	5030C			13078	JP	EET ALB	09/26/24 10:33
Total/NA	Analysis	8021B		1	13309	JP	EET ALB	09/28/24 16:34
Total/NA	Prep	SHAKE			13227	KR	EET ALB	09/28/24 09:16
Total/NA	Analysis	8015M/D		1	13239	KR	EET ALB	09/28/24 22:51
Total/NA	Prep	300_Prep			13316	EH	EET ALB	09/30/24 12:54
Total/NA	Analysis	300.0		20	13383	EH	EET ALB	10/01/24 21:15

Client Sample ID: BES24-10 12'
Lab Sample ID: 885-12592-3
Date Collected: 09/23/24 10:05
Matrix: Solid
Date Received: 09/26/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			13078	JP	EET ALB	09/26/24 10:33
Total/NA	Analysis	8015M/D		1	13308	JP	EET ALB	09/28/24 17:45
Total/NA	Prep	5030C			13078	JP	EET ALB	09/26/24 10:33
Total/NA	Analysis	8021B		1	13309	JP	EET ALB	09/28/24 17:45
Total/NA	Prep	SHAKE			13227	KR	EET ALB	09/28/24 09:16
Total/NA	Analysis	8015M/D		1	13239	KR	EET ALB	09/28/24 23:04
Total/NA	Prep	300_Prep			13298	EH	EET ALB	09/30/24 14:04
Total/NA	Analysis	300.0		20	13313	RC	EET ALB	10/01/24 01:41

Client Sample ID: BES24-11 6'
Lab Sample ID: 885-12592-4
Date Collected: 09/23/24 15:00
Matrix: Solid
Date Received: 09/26/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			13078	JP	EET ALB	09/26/24 10:33
Total/NA	Analysis	8015M/D		1	13308	JP	EET ALB	09/28/24 18:08

Lab Chronicle

Client: Vertex
Job ID: 885-12592-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BES24-11 6'
Lab Sample ID: 885-12592-4
Date Collected: 09/23/24 15:00
Matrix: Solid
Date Received: 09/26/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			13078	JP	EET ALB	09/26/24 10:33
Total/NA	Analysis	8021B		1	13309	JP	EET ALB	09/28/24 18:08
Total/NA	Prep	SHAKE			13227	KR	EET ALB	09/28/24 09:16
Total/NA	Analysis	8015M/D		1	13239	KR	EET ALB	09/28/24 23:16
Total/NA	Prep	300_Prep			13298	EH	EET ALB	09/30/24 14:04
Total/NA	Analysis	300.0		20	13383	EH	EET ALB	10/01/24 14:23

Client Sample ID: WES24-11 0-12'
Lab Sample ID: 885-12592-5
Date Collected: 09/23/24 10:10
Matrix: Solid
Date Received: 09/26/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			13078	JP	EET ALB	09/26/24 10:33
Total/NA	Analysis	8015M/D		1	13308	JP	EET ALB	09/28/24 18:32
Total/NA	Prep	5030C			13078	JP	EET ALB	09/26/24 10:33
Total/NA	Analysis	8021B		1	13309	JP	EET ALB	09/28/24 18:32
Total/NA	Prep	SHAKE			13227	KR	EET ALB	09/28/24 09:16
Total/NA	Analysis	8015M/D		1	13239	KR	EET ALB	09/28/24 23:42
Total/NA	Prep	300_Prep			13298	EH	EET ALB	09/30/24 14:04
Total/NA	Analysis	300.0		20	13383	EH	EET ALB	10/01/24 14:36

Client Sample ID: WES24-12 0-12'
Lab Sample ID: 885-12592-6
Date Collected: 09/23/24 10:15
Matrix: Solid
Date Received: 09/26/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			13078	JP	EET ALB	09/26/24 10:33
Total/NA	Analysis	8015M/D		1	13308	JP	EET ALB	09/28/24 18:55
Total/NA	Prep	5030C			13078	JP	EET ALB	09/26/24 10:33
Total/NA	Analysis	8021B		1	13309	JP	EET ALB	09/28/24 18:55
Total/NA	Prep	SHAKE			13227	KR	EET ALB	09/28/24 09:16
Total/NA	Analysis	8015M/D		1	13239	KR	EET ALB	09/28/24 23:54
Total/NA	Prep	300_Prep			13298	EH	EET ALB	09/30/24 14:04
Total/NA	Analysis	300.0		20	13383	EH	EET ALB	10/01/24 15:15

Client Sample ID: WES24-13 0-12'
Lab Sample ID: 885-12592-7
Date Collected: 09/23/24 10:20
Matrix: Solid
Date Received: 09/26/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			13078	JP	EET ALB	09/26/24 10:33
Total/NA	Analysis	8015M/D		1	13308	JP	EET ALB	09/28/24 19:19
Total/NA	Prep	5030C			13078	JP	EET ALB	09/26/24 10:33
Total/NA	Analysis	8021B		1	13309	JP	EET ALB	09/28/24 19:19

Lab Chronicle

Client: Vertex
Job ID: 885-12592-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: WES24-13 0-12'
Lab Sample ID: 885-12592-7
Date Collected: 09/23/24 10:20
Matrix: Solid
Date Received: 09/26/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	SHAKE			13227	KR	EET ALB	09/28/24 09:16
Total/NA	Analysis	8015M/D		1	13285	JE	EET ALB	09/30/24 14:56
Total/NA	Prep	300_Prep			13298	EH	EET ALB	09/30/24 14:04
Total/NA	Analysis	300.0		20	13383	EH	EET ALB	10/01/24 15:27

Client Sample ID: WES24-14 2-12'
Lab Sample ID: 885-12592-8
Date Collected: 09/23/24 10:25
Matrix: Solid
Date Received: 09/26/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			13078	JP	EET ALB	09/26/24 10:33
Total/NA	Analysis	8015M/D		1	13308	JP	EET ALB	09/28/24 19:42
Total/NA	Prep	5030C			13078	JP	EET ALB	09/26/24 10:33
Total/NA	Analysis	8021B		1	13309	JP	EET ALB	09/28/24 19:42
Total/NA	Prep	SHAKE			13227	KR	EET ALB	09/28/24 09:16
Total/NA	Analysis	8015M/D		1	13239	KR	EET ALB	09/29/24 00:20
Total/NA	Prep	300_Prep			13298	EH	EET ALB	09/30/24 14:04
Total/NA	Analysis	300.0		20	13383	EH	EET ALB	10/01/24 16:06

Client Sample ID: WES24-15 0-6'
Lab Sample ID: 885-12592-9
Date Collected: 09/23/24 15:05
Matrix: Solid
Date Received: 09/26/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			13078	JP	EET ALB	09/26/24 10:33
Total/NA	Analysis	8015M/D		1	13308	JP	EET ALB	09/28/24 20:06
Total/NA	Prep	5030C			13078	JP	EET ALB	09/26/24 10:33
Total/NA	Analysis	8021B		1	13309	JP	EET ALB	09/28/24 20:06
Total/NA	Prep	SHAKE			13227	KR	EET ALB	09/28/24 09:16
Total/NA	Analysis	8015M/D		1	13239	KR	EET ALB	09/29/24 00:32
Total/NA	Prep	300_Prep			13298	EH	EET ALB	09/30/24 14:04
Total/NA	Analysis	300.0		20	13383	EH	EET ALB	10/01/24 16:19

Client Sample ID: WES24-16 3-6'
Lab Sample ID: 885-12592-10
Date Collected: 09/23/24 15:10
Matrix: Solid
Date Received: 09/26/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			13078	JP	EET ALB	09/26/24 10:33
Total/NA	Analysis	8015M/D		1	13308	JP	EET ALB	09/28/24 20:29
Total/NA	Prep	5030C			13078	JP	EET ALB	09/26/24 10:33
Total/NA	Analysis	8021B		1	13309	JP	EET ALB	09/28/24 20:29
Total/NA	Prep	SHAKE			13227	KR	EET ALB	09/28/24 09:16
Total/NA	Analysis	8015M/D		1	13239	KR	EET ALB	09/29/24 00:45

Lab Chronicle

Client: Vertex
Job ID: 885-12592-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: WES24-16 3-6'
Lab Sample ID: 885-12592-10
Date Collected: 09/23/24 15:10
Matrix: Solid
Date Received: 09/26/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	300_Prep			13314	EH	EET ALB	09/30/24 12:00
Total/NA	Analysis	300.0		20	13313	RC	EET ALB	09/30/24 22:28

Client Sample ID: WES24-17 3-6'
Lab Sample ID: 885-12592-11
Date Collected: 09/23/24 15:15
Matrix: Solid
Date Received: 09/26/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			13078	JP	EET ALB	09/26/24 10:33
Total/NA	Analysis	8015M/D		1	13308	JP	EET ALB	09/28/24 21:16
Total/NA	Prep	5030C			13078	JP	EET ALB	09/26/24 10:33
Total/NA	Analysis	8021B		1	13309	JP	EET ALB	09/28/24 21:16
Total/NA	Prep	SHAKE			13227	KR	EET ALB	09/28/24 09:16
Total/NA	Analysis	8015M/D		1	13239	KR	EET ALB	09/29/24 00:58
Total/NA	Prep	300_Prep			13298	EH	EET ALB	09/30/24 14:04
Total/NA	Analysis	300.0		20	13383	EH	EET ALB	10/01/24 16:32

Client Sample ID: BES24-04 2'
Lab Sample ID: 885-12592-12
Date Collected: 09/24/24 09:00
Matrix: Solid
Date Received: 09/26/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			13078	JP	EET ALB	09/26/24 10:33
Total/NA	Analysis	8015M/D		1	13308	JP	EET ALB	09/28/24 21:39
Total/NA	Prep	5030C			13078	JP	EET ALB	09/26/24 10:33
Total/NA	Analysis	8021B		1	13309	JP	EET ALB	09/28/24 21:39
Total/NA	Prep	SHAKE			13233	KR	EET ALB	09/28/24 11:03
Total/NA	Analysis	8015M/D		1	13239	KR	EET ALB	09/29/24 02:00
Total/NA	Prep	300_Prep			13316	EH	EET ALB	09/30/24 12:54
Total/NA	Analysis	300.0		20	13383	EH	EET ALB	10/01/24 16:45

Client Sample ID: BES24-7 4.5'
Lab Sample ID: 885-12592-13
Date Collected: 09/24/24 08:55
Matrix: Solid
Date Received: 09/26/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			13078	JP	EET ALB	09/26/24 10:33
Total/NA	Analysis	8015M/D		1	13308	JP	EET ALB	09/28/24 22:03
Total/NA	Prep	5030C			13078	JP	EET ALB	09/26/24 10:33
Total/NA	Analysis	8021B		1	13309	JP	EET ALB	09/28/24 22:03
Total/NA	Prep	SHAKE			13233	KR	EET ALB	09/28/24 11:03
Total/NA	Analysis	8015M/D		1	13239	KR	EET ALB	09/29/24 02:13
Total/NA	Prep	300_Prep			13316	EH	EET ALB	09/30/24 12:54
Total/NA	Analysis	300.0		20	13383	EH	EET ALB	10/01/24 17:23

Lab Chronicle

Client: Vertex
Job ID: 885-12592-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BES24-12 3'
Lab Sample ID: 885-12592-14
Date Collected: 09/24/24 08:30
Matrix: Solid
Date Received: 09/26/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			13078	JP	EET ALB	09/26/24 10:33
Total/NA	Analysis	8015M/D		1	13308	JP	EET ALB	09/28/24 22:26
Total/NA	Prep	5030C			13078	JP	EET ALB	09/26/24 10:33
Total/NA	Analysis	8021B		1	13309	JP	EET ALB	09/28/24 22:26
Total/NA	Prep	SHAKE			13233	KR	EET ALB	09/28/24 11:03
Total/NA	Analysis	8015M/D		1	13282	KR	EET ALB	09/30/24 12:02
Total/NA	Prep	300_Prep			13316	EH	EET ALB	09/30/24 12:54
Total/NA	Analysis	300.0		20	13383	EH	EET ALB	10/01/24 17:36

Client Sample ID: BES24-13 3'
Lab Sample ID: 885-12592-15
Date Collected: 09/24/24 09:15
Matrix: Solid
Date Received: 09/26/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			13078	JP	EET ALB	09/26/24 10:33
Total/NA	Analysis	8015M/D		1	13308	JP	EET ALB	09/28/24 22:50
Total/NA	Prep	5030C			13078	JP	EET ALB	09/26/24 10:33
Total/NA	Analysis	8021B		1	13309	JP	EET ALB	09/28/24 22:50
Total/NA	Prep	SHAKE			13233	KR	EET ALB	09/28/24 11:03
Total/NA	Analysis	8015M/D		1	13239	KR	EET ALB	09/29/24 02:50
Total/NA	Prep	300_Prep			13316	EH	EET ALB	09/30/24 12:54
Total/NA	Analysis	300.0		20	13383	EH	EET ALB	10/01/24 17:49

Client Sample ID: BES24-14 3'
Lab Sample ID: 885-12592-16
Date Collected: 09/24/24 09:20
Matrix: Solid
Date Received: 09/26/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			13078	JP	EET ALB	09/26/24 10:33
Total/NA	Analysis	8015M/D		1	13308	JP	EET ALB	09/28/24 23:13
Total/NA	Prep	5030C			13078	JP	EET ALB	09/26/24 10:33
Total/NA	Analysis	8021B		1	13309	JP	EET ALB	09/28/24 23:13
Total/NA	Prep	SHAKE			13233	KR	EET ALB	09/28/24 11:03
Total/NA	Analysis	8015M/D		1	13239	KR	EET ALB	09/29/24 03:03
Total/NA	Prep	300_Prep			13316	EH	EET ALB	09/30/24 12:54
Total/NA	Analysis	300.0		20	13383	EH	EET ALB	10/01/24 18:02

Client Sample ID: BES24-15 2'
Lab Sample ID: 885-12592-17
Date Collected: 09/24/24 09:35
Matrix: Solid
Date Received: 09/26/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			13078	JP	EET ALB	09/26/24 10:33
Total/NA	Analysis	8015M/D		1	13308	JP	EET ALB	09/28/24 23:37

Lab Chronicle

Client: Vertex
Job ID: 885-12592-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: BES24-15 2'
Lab Sample ID: 885-12592-17
Date Collected: 09/24/24 09:35
Matrix: Solid
Date Received: 09/26/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			13078	JP	EET ALB	09/26/24 10:33
Total/NA	Analysis	8021B		1	13309	JP	EET ALB	09/28/24 23:37
Total/NA	Prep	SHAKE			13233	KR	EET ALB	09/28/24 11:03
Total/NA	Analysis	8015M/D		1	13239	KR	EET ALB	09/29/24 03:16
Total/NA	Prep	300_Prep			13316	EH	EET ALB	09/30/24 12:54
Total/NA	Analysis	300.0		20	13383	EH	EET ALB	10/01/24 18:40

Client Sample ID: WES24-18 0-3'
Lab Sample ID: 885-12592-18
Date Collected: 09/24/24 08:35
Matrix: Solid
Date Received: 09/26/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			13078	JP	EET ALB	09/26/24 10:33
Total/NA	Analysis	8015M/D		1	13308	JP	EET ALB	09/29/24 00:01
Total/NA	Prep	5030C			13078	JP	EET ALB	09/26/24 10:33
Total/NA	Analysis	8021B		1	13309	JP	EET ALB	09/29/24 00:01
Total/NA	Prep	SHAKE			13233	KR	EET ALB	09/28/24 11:03
Total/NA	Analysis	8015M/D		1	13239	KR	EET ALB	09/29/24 03:41
Total/NA	Prep	300_Prep			13316	EH	EET ALB	09/30/24 12:54
Total/NA	Analysis	300.0		20	13383	EH	EET ALB	10/01/24 18:53

Client Sample ID: WES24-19 3-4.5'
Lab Sample ID: 885-12592-19
Date Collected: 09/24/24 08:40
Matrix: Solid
Date Received: 09/26/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			13078	JP	EET ALB	09/26/24 10:33
Total/NA	Analysis	8015M/D		1	13308	JP	EET ALB	09/29/24 00:24
Total/NA	Prep	5030C			13078	JP	EET ALB	09/26/24 10:33
Total/NA	Analysis	8021B		1	13309	JP	EET ALB	09/29/24 00:24
Total/NA	Prep	SHAKE			13233	KR	EET ALB	09/28/24 11:03
Total/NA	Analysis	8015M/D		1	13239	KR	EET ALB	09/29/24 03:53
Total/NA	Prep	300_Prep			13316	EH	EET ALB	09/30/24 12:54
Total/NA	Analysis	300.0		20	13383	EH	EET ALB	10/01/24 19:06

Client Sample ID: WES24-20 2-4.5'
Lab Sample ID: 885-12592-20
Date Collected: 09/24/24 08:50
Matrix: Solid
Date Received: 09/26/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			13078	JP	EET ALB	09/26/24 10:33
Total/NA	Analysis	8015M/D		1	13308	JP	EET ALB	09/29/24 00:47
Total/NA	Prep	5030C			13078	JP	EET ALB	09/26/24 10:33
Total/NA	Analysis	8021B		1	13309	JP	EET ALB	09/29/24 00:47

Lab Chronicle

Client: Vertex
Job ID: 885-12592-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: WES24-20 2-4.5'
Lab Sample ID: 885-12592-20
Date Collected: 09/24/24 08:50
Matrix: Solid
Date Received: 09/26/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	SHAKE			13233	KR	EET ALB	09/28/24 11:03
Total/NA	Analysis	8015M/D		1	13239	KR	EET ALB	09/29/24 04:06
Total/NA	Prep	300_Prep			13316	EH	EET ALB	09/30/24 12:54
Total/NA	Analysis	300.0		20	13383	EH	EET ALB	10/01/24 19:19

Client Sample ID: WES24-21 3-4.5'
Lab Sample ID: 885-12592-21
Date Collected: 09/24/24 08:45
Matrix: Solid
Date Received: 09/26/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			13112	JP	EET ALB	09/26/24 16:22
Total/NA	Analysis	8015M/D		1	13362	AT	EET ALB	09/30/24 20:11
Total/NA	Prep	5030C			13112	JP	EET ALB	09/26/24 16:22
Total/NA	Analysis	8021B		1	13363	AT	EET ALB	09/30/24 20:11
Total/NA	Prep	SHAKE			13233	KR	EET ALB	09/28/24 11:03
Total/NA	Analysis	8015M/D		1	13239	KR	EET ALB	09/29/24 04:18
Total/NA	Prep	300_Prep			13316	EH	EET ALB	09/30/24 12:54
Total/NA	Analysis	300.0		20	13383	EH	EET ALB	10/01/24 19:32

Client Sample ID: WES24-22 0-3'
Lab Sample ID: 885-12592-22
Date Collected: 09/24/24 09:25
Matrix: Solid
Date Received: 09/26/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			13112	JP	EET ALB	09/26/24 16:22
Total/NA	Analysis	8015M/D		1	13362	AT	EET ALB	09/30/24 21:16
Total/NA	Prep	5030C			13112	JP	EET ALB	09/26/24 16:22
Total/NA	Analysis	8021B		1	13363	AT	EET ALB	09/30/24 21:16
Total/NA	Prep	SHAKE			13233	KR	EET ALB	09/28/24 11:03
Total/NA	Analysis	8015M/D		1	13239	KR	EET ALB	09/29/24 04:31
Total/NA	Prep	300_Prep			13316	EH	EET ALB	09/30/24 12:54
Total/NA	Analysis	300.0		20	13383	EH	EET ALB	10/01/24 19:45

Client Sample ID: WES24-23 0-4.5'
Lab Sample ID: 885-12592-23
Date Collected: 09/24/24 09:30
Matrix: Solid
Date Received: 09/26/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			13112	JP	EET ALB	09/26/24 16:22
Total/NA	Analysis	8015M/D		1	13362	AT	EET ALB	09/30/24 22:21
Total/NA	Prep	5030C			13112	JP	EET ALB	09/26/24 16:22
Total/NA	Analysis	8021B		1	13363	AT	EET ALB	09/30/24 22:21
Total/NA	Prep	SHAKE			13233	KR	EET ALB	09/28/24 11:03
Total/NA	Analysis	8015M/D		1	13239	KR	EET ALB	09/29/24 04:43

Lab Chronicle

Client: Vertex
Job ID: 885-12592-1
Project/Site: Shakespeare 20 Fed Com #001H

Client Sample ID: WES24-23 0-4.5'
Lab Sample ID: 885-12592-23

Date Collected: 09/24/24 09:30
Matrix: Solid
Date Received: 09/26/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	300_Prep			13316	EH	EET ALB	09/30/24 12:54
Total/NA	Analysis	300.0		20	13383	EH	EET ALB	10/01/24 20:23

Laboratory References:

EET ALB = Eurofins Albuquerque, 4901 Hawkins NE, Albuquerque, NM 87109, TEL (505)345-3975

Accreditation/Certification Summary

Client: Vertex Job ID: 885-12592-1
Project/Site: Shakespeare 20 Fed Com #001H

Laboratory: Eurofins Albuquerque

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
New Mexico	State	NM9425, NM0901	02-26-25

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
300.0	300_Prep	Solid	Chloride
8015M/D	5030C	Solid	Gasoline Range Organics [C6 - C10]
8015M/D	SHAKE	Solid	Diesel Range Organics [C10-C28]
8015M/D	SHAKE	Solid	Motor Oil Range Organics [C28-C40]
8021B	5030C	Solid	Benzene
8021B	5030C	Solid	Ethylbenzene
8021B	5030C	Solid	Toluene
8021B	5030C	Solid	Xylenes, Total

Oregon	NELAP	NM100001	02-26-25

Chain-of-Custody Record

Client: **Vertex (bill to Mack Energy, Matt Buckles)**

Mailing Address: (On File)

Phone #:

email or Fax#:

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other_____
☐ EDD (Type) _____

Turn-Around Time:
☐ Standard X Rush_5-day-rush

Project Name:
Shakespeare 20 Fed Com #001H

Project #:
24E-02953

Project Manager:
Sally Carttar
SCarttar@vertexresource.com

Sampler: L. Pullman
On Ice: ☒ Yes ☐ No
# of Coolers: 1 YOG1
Cooler Temp(including CF): 4.1+0.3=4.4°C

HALL ENVIRONMENTAL ANALYSIS LABOR
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 871(
Tel. 505-345-3975 Fax 505-345-4107
885-12592 COC

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)
9.23.24	10:00	Soil	BES24-02 12'	1, 4oz jar		1	X	X					X			
9.23.24	14:55	Soil	BES24-09 6'	1, 4oz jar		2	X	X					X			
9.23.24	10:05	Soil	BES24-10 12'	1, 4oz jar		3	X	X					X			
9.23.24	15:00	Soil	BES24-11 6'	1, 4oz jar		4	X	X					X			
9.23.24	10:10	Soil	WES24-11 0-12'	1, 4oz jar		5	X	X					X			
9.23.24	10:15	Soil	WES24-12 0-12'	1, 4oz jar		6	X	X					X			
9.23.24	10:20	Soil	WES24-13 0-12'	1, 4oz jar		7	X	X					X			
9.23.24	10:25	Soil	WES24-14 2-12'	1, 4oz jar		8	X	X					X			
9.23.24	15:05	Soil	WES24-15 0-6'	1, 4oz jar		9	X	X					X			
9.23.24	15:10	Soil	WES24-16 3-6'	1, 4oz jar		10	X	X					X			
9.23.24	15:15	Soil	WES24-17 3-6'	1, 4oz jar		11	X	X					X			
9.24.24	9:00	Soil	BES24-04 2'	1, 4oz jar		12	X	X					X			

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
9-25-24	0700	Lakin Pullman	ACummings		9/25/24	0700
9/25/24	1900	ACummings	SCH	COURIER	9/26/24	0800

Remarks:
Direct Bill to Mack Energy: ATTN: Matt Buckles
CC.Sally Carttar (SCarttar@vertexresource.com) and Lakin Pullman (LPullman@vertexresource.com)for Final Report.

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.

1/2

Chain-of-Custody Record

Client: **Vertex (bill to Mack Energy, Matt Buckles)**

Mailing Address: (On File)

Phone #:

email or Fax#:

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
☐ Standard X Rush_5-day-rush

Project Name:
Shakespeare 20 Fed Com #001H

Project #:
24E-02953

Project Manager:
Sally Carttar
SCarttar@vertexresource.com

Sampler: L. Pullman
On Ice: ☒ Yes ☐ No
# of Coolers: 1 YOG1
Cooler Temp(including CF): 4.1 +0.3=4.4°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.	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)
9.24.24	8:55	Soil	BES24-7 4.5'	1, 4oz jar		13	X	X					X			
9.24.24	8:30	Soil	BES24-12 3'	1, 4oz jar		14	X	X					X			
9.24.24	9:15	Soil	BES24-13 3'	1, 4oz jar		15	X	X					X			
9.24.24	9:20	Soil	BES24-14 3'	1, 4oz jar		16	X	X					X			
9.24.24	9:35	Soil	BES24-15 2'	1, 4oz jar		17	X	X					X			
9.24.24	8:35	Soil	WES24-18 0-3'	1, 4oz jar		18	X	X					X			
9.24.24	8:40	Soil	WES24-19 3-4.5'	1, 4oz jar		19	X	X					X			
9.24.24	8:50	Soil	WES24-20 2-4.5'	1, 4oz jar		20	X	X					X			
9.24.24	8:45	Soil	WES24-21 3-4.5'	1, 4oz jar		21	X	X					X			
9.24.24	9:25	Soil	WES24-22 0-3'	1, 4oz jar		22	X	X					X			
9.24.24	9:30	Soil	WES24-23 0-4.5'	1, 4oz jar		23	X	X					X			

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
9-25-24	07:00	Lakin Pullman			9/25/24	0700
9/25/24	1900		SCN	COURIER	9/26/24	0800

Remarks:
Direct Bill to Mack Energy: ATTN: Matt Buckles
CC.Sally Carttar (SCarttar@vertexresource.com) and Lakin Pullman (LPullman@vertexresource.com)for Final Report.

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.

2/2

Login Sample Receipt Checklist

Client: Vertex Job Number: 885-12592-1

Login Number: 12592 **List Source: Eurofins Albuquerque**
List Number: 1
Creator: McQuiston, Steven

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
TCEQ Mtd 1005 soil sample was frozen/delivered for prep within 48H of sampling.	N/A	

APPENDIX F – Talon/LPE Soil Assessment and Remediation Work Plan

talonlpe.com • 866.742.0742

TALON LPE

Soil Assessment and Remediation Work Plan

Shakespeare 20 Federal #1 * 30-015-36376 * 2RP-3360
Talon Project No. 700794.213.01

Prepared For:

Devon Energy Production
6488 Seven Rivers Hwy
Artesia, New Mexico 88210

Prepared By:

Kimberly M. Wilson
Talon/LPE
408 West Texas
Artesia, New Mexico 88210

February 21, 2017

Mr. Mike Bratcher
NMOCD District 2
811 S. 1st Street
Artesia, NM 88210

Subject: **Soil Assessment and Remediation Work Plan**
Shakespeare 20 Federal #1
API # 30-015-36376 * 2RP-3360

Dear Mr. Bratcher,

Devon Energy (Devon) has contracted Talon/LPE (Talon) to perform soil assessment and remediation services at the above referenced location. The results of our soil assessment and proposed remediation activities consist of the following.

Site Information

The Shakespeare 20 Federal #1 is located approximately seventeen (17) miles southeast of Artesia, New Mexico. The legal location for this site is Unit Letter H of Section 27, Township 18 South, and Range 28 East in Eddy County, New Mexico. More specifically the latitude and longitude for the location are 32.720956 North and -104.157078 West. See site plan in Appendix I.

According to the soil survey provided by the United States Department of Agriculture Natural Resources Conservation Service (NRCS), the soil in this area is made up of Simona gravelly fine sandy loam with 0 to 3 percent slopes. The local surface and shallow geology, Quaternary Age sedimentary deposits, is comprised of alluvium and eolian sands under lain by gravelly fine sandy loam and hard caliches. Drainage courses in this area are normally dry.

Ground Water and Site Ranking

According to the New Mexico State Engineer web site there is no published groundwater information within 4,000 meters of the release area. See Appendix II for the referenced groundwater data.

Depth to ground water	>100'
Wellhead Protection Area	>1000'
Distance to surface water body	>1000'

Based upon the site ranking of **0**, NMOCD Recommended Remedial Action Levels (RRAL) are 50 mg/kg for BTEX, 10 mg/kg for Benzene, 5,000 mg/kg for TPH and recommended guidelines for total chlorides is 1,000 mg/kg.

Incident Description

The stuffing box blew out on the pump jack causing 1 barrel of oil and 4 barrels of produced water to be released on the location. A vac truck was called to the location and recovered 4 barrels of fluid. A site plan is presented in Appendix I which illustrates the impacted area.

On February 16, 2017 Talon mobilized personnel to begin the site assessment and soil sampling activities for the construction of a work plan. Grab soil samples were collected utilizing a hand auger where refusal was encountered. Laboratory results are presented below..

Laboratory Results

See Appendix III for complete report of laboratory results.

February 19, 2017

Sample ID	Depth (feet)	BTEX (mg/kg)	Chlorides (mg/kg)	TPH (mg/kg) GRO	TPH (mg/kg) DRO
S-1	0'	<0.300	96	<10	<10
	1'	<0.300	432	<10	<10
	2'	<0.300	640	<10	<10
	3'	<0.300	48	<10	<10
	4'	--	32	--	--
	5'	--	64	--	--
	7'	--	112	--	--
S-2	0'	<0.300	6880	<10	44.5
	0.5'	<0.300	2320	<10	<10
	1'	<0.300	840	<10	<10
	1.5'	<0.300	800	<10	<10

Proposed Remedial Actions

- The impacted soil in the vicinity of sample location S-2 will be excavated to a depth of 1-feet deep.
- All contaminated soil will be transported to Lea Land, LLC, a NMOCD approved disposal facility.
- The excavated area will be backfilled with new caliche. Once the backfill activities are complete the work area will be compacted.
- A final closure report documenting all remedial actions will be provided to the NMOCD Artesia Office along with a Final C-141 Form.

Should you have any questions or if further information is required, please do not hesitate to contact our office at (575)-746-8768

Respectfully submitted,

TALON/LPE

Kimberly M. Wilson
Project Manager

David J. Adkins
District Manager

Attachments:

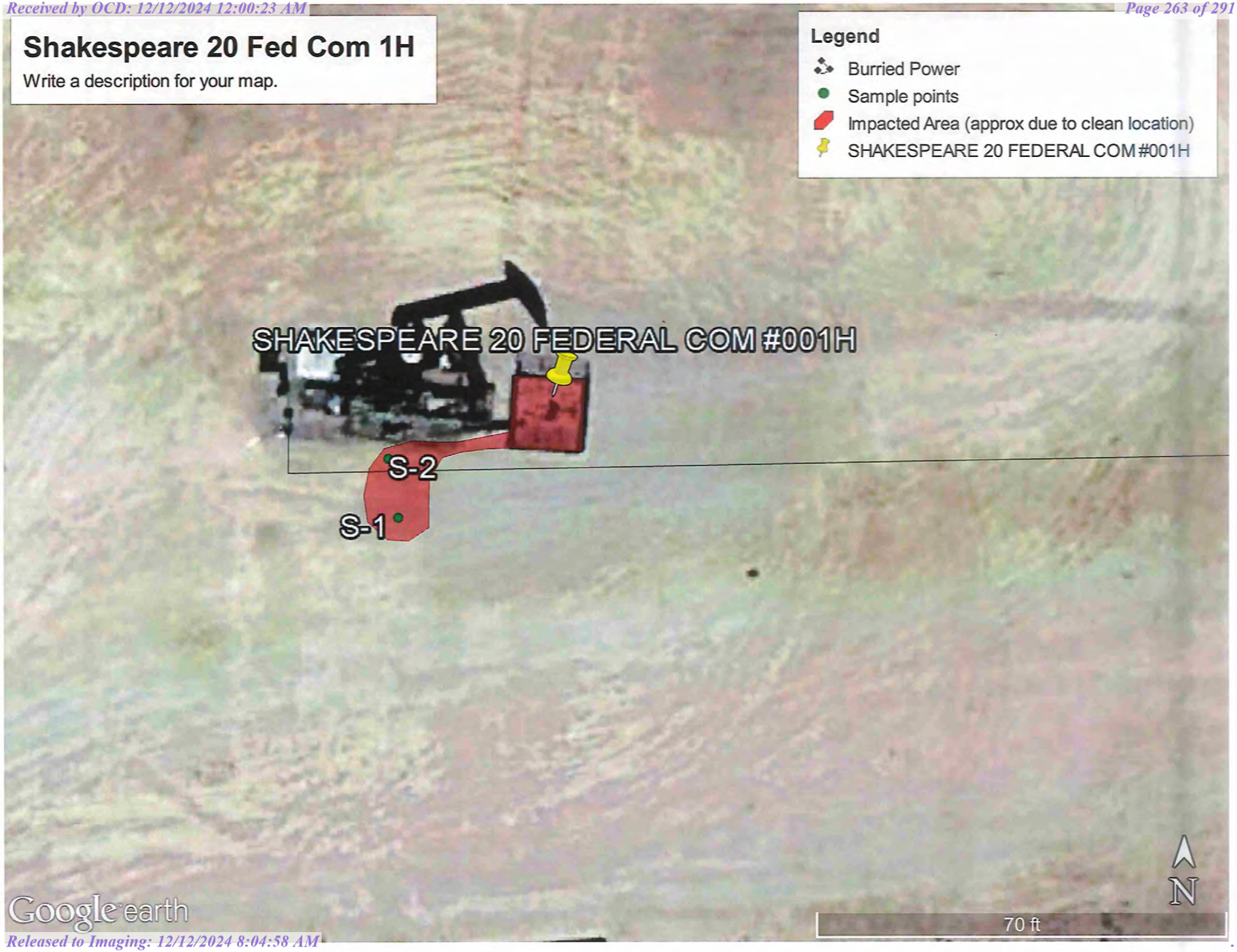
Appendix I	Site Plan
Appendix II	Groundwater Data & Initial C-141
Appendix III	Laboratory Results

APPENDIX I

SITE MAP

Shakespeare 20 Fed Com 1H

Write a description for your map.



APPENDIX II

GROUNDWATER DATA

INITIAL C-141

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

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

No records found.

UTMNAD83 Radius Search (in meters):

Easting (X): 575704 Northing (Y): 3640631 Radius: 4000

1/25/17 7:44 AM

WATER COLUMN/ AVERAGE DEPTH TO WATER

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

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

Form C-141
Revised August 8, 2011

Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

Release Notification and Corrective Action

nAB1530148267

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company Devon Energy Production 6137	**Contact** Mike McMahan Production Assistant Foreman
Address 6488 Seven Rivers Hwy Artesia, NM 88220	**Telephone No.** 575.706.4165
Facility Name Shakespeare 20 Fed Com 1H	**Facility Type** Oil

Surface Owner Federal	**Mineral Owner** Federal	**API No.** 30-015-36376

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
P	20	16S	28E	400	FSL	330	FEL	EDDY

Latitude: **Longitude:**

NATURE OF RELEASE

Type of Release Spill Oil & Produced water	**Volume of Release** **1 BBL oil & 4 BBL produced water**	**Volume Recovered** **1 BBL oil & 3 BBL produced water**
Source of Release Stuffing box blow out on pump jack	**Date and Hour of Occurrence** **10.18.15 at 1:00 pm**	**Date and Hour of Discovery** **10.18.15 at 1:00 pm**
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	**If YES, To Whom?** Mike Bratcher BLM Jim Amos OCD	
By Whom? Mike McMahan	**Date and Hour** **10.19.15 at 9:45 am**	
Was a Watercourse Reached? ☐ Yes ☒ No	**If YES, Volume Impacting the Watercourse**	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*
Stuffing box blew out on pump jack. Lease operator shut down valve.

Describe Area Affected and Cleanup Action Taken.*
1 BBL of oil and 4 BBL of produced water released. A vacuum truck recovered 1 BBL oil and 3 BBL produced water. All this occurred on location on an 8 x10 area near the wellhead and a 3x10 area near the pump jack. An environmental agency will be contacted for remediation.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD 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 NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD 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.

Signature: Jeanette Barron

Printed Name: **Jeanette Barron**

Title: **Field Admin Support**

E-mail Address: **Jeanette.barron@dvn.com**

Date: 10.27.15 Phone: **575.748.1813**

OIL CONSERVATION DIVISION

Signed By Mike Bratcher

Approved by Environmental Specialist:

Approval Date: 10/28/15 Expiration Date: N/A

Conditions of Approval: Attached ☐

Remediation per O.C.D. Rules & Guidelines
SUBMIT REMEDIATION PROPOSAL NO
LATER THAN: 11/29/15

2RP-3360

* Attach Additional Sheets If Necessary

APPENDIX III

LABORATORY RESULTS

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

February 19, 2017

KIMBERLY WILSON

TALON LPE

408 W. TEXAS AVE.

ARTESIA, NM 88210

RE: SHAKESPEARE 20 #1

Enclosed are the results of analyses for samples received by the laboratory on 02/17/17 9:30.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-16-8. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

TALON LPE
KIMBERLY WILSON
408 W. TEXAS AVE.
ARTESIA NM, 88210
Fax To: (575) 745-8905

Received:	02/17/2017	Sampling Date:	02/16/2017
Reported:	02/19/2017	Sampling Type:	Soil
Project Name:	SHAKESPEARE 20 #1	Sampling Condition:	Cool & Intact
Project Number:	700794.213.01	Sample Received By:	Jodi Henson
Project Location:	EDDY CO		

Sample ID: S-1 0' (H700415-01)

BTEX 8021B mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/18/2017	ND	2.11	105	2.00	1.07	
Toluene*	<0.050	0.050	02/18/2017	ND	1.98	98.8	2.00	0.580	
Ethylbenzene*	<0.050	0.050	02/18/2017	ND	1.98	99.1	2.00	0.582	
Total Xylenes*	<0.150	0.150	02/18/2017	ND	5.66	94.4	6.00	0.374	
Total BTEX	<0.300	0.300	02/18/2017	ND					

Surrogate: 4-Bromofluorobenzene (PIL *99.7 %* *73.6-140*

Chloride, SM4500Cl-B mg/kg Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**96.0**	16.0	02/19/2017	ND	464	116	400	10.9	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	02/18/2017	ND	187	93.6	200	3.41	
DRO >C10-C28	<10.0	10.0	02/18/2017	ND	196	97.8	200	6.66	

Surrogate: 1-Chlorooctane *78.5 %* *35-147*

Surrogate: 1-Chlorooctadecane *87.5 %* *28-171*

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

TALON LPE
KIMBERLY WILSON
408 W. TEXAS AVE.
ARTESIA NM, 88210
Fax To: (575) 745-8905

Received:	02/17/2017	Sampling Date:	02/16/2017
Reported:	02/19/2017	Sampling Type:	Soil
Project Name:	SHAKESPEARE 20 #1	Sampling Condition:	Cool & Intact
Project Number:	700794.213.01	Sample Received By:	Jodi Henson
Project Location:	EDDY CO		

Sample ID: S-1 1' (H700415-02)

BTEX 8021B mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/18/2017	ND	2.11	105	2.00	1.07	
Toluene*	<0.050	0.050	02/18/2017	ND	1.98	98.8	2.00	0.580	
Ethylbenzene*	<0.050	0.050	02/18/2017	ND	1.98	99.1	2.00	0.582	
Total Xylenes*	<0.150	0.150	02/18/2017	ND	5.66	94.4	6.00	0.374	
Total BTEX	<0.300	0.300	02/18/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID *99.1 %* *73.6-140*

Chloride, SM4500Cl-B mg/kg Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**432**	16.0	02/19/2017	ND	464	116	400	10.9	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	02/18/2017	ND	187	93.6	200	3.41	
DRO >C10-C28	<10.0	10.0	02/18/2017	ND	196	97.8	200	6.66	

Surrogate: 1-Chlorooctane *79.4 %* *35-147*

Surrogate: 1-Chlorooctadecane *96.0 %* *28-171*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

TALON LPE
KIMBERLY WILSON
408 W. TEXAS AVE.
ARTESIA NM, 88210
Fax To: (575) 745-8905

Received:	02/17/2017	Sampling Date:	02/16/2017
Reported:	02/19/2017	Sampling Type:	Soil
Project Name:	SHAKESPEARE 20 #1	Sampling Condition:	Cool & Intact
Project Number:	700794.213.01	Sample Received By:	Jodi Henson
Project Location:	EDDY CO		

Sample ID: S-1 2' (H700415-03)

BTEX 8021B mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/19/2017	ND	2.16	108	2.00	0.378	
Toluene*	<0.050	0.050	02/19/2017	ND	2.03	102	2.00	0.392	
Ethylbenzene*	<0.050	0.050	02/19/2017	ND	2.05	103	2.00	0.236	
Total Xylenes*	<0.150	0.150	02/19/2017	ND	5.85	97.5	6.00	0.262	
Total BTEX	<0.300	0.300	02/19/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID *98.6 %* *73.6-140*

Chloride, SM4500Cl-B mg/kg Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**640**	16.0	02/19/2017	ND	464	116	400	10.9	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	02/18/2017	ND	187	93.6	200	3.41	
DRO >C10-C28	<10.0	10.0	02/18/2017	ND	196	97.8	200	6.66	

Surrogate: 1-Chlorooctane *75.4 %* *35-147*

Surrogate: 1-Chlorooctadecane *87.5 %* *28-171*

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

TALON LPE
KIMBERLY WILSON
408 W. TEXAS AVE.
ARTESIA NM, 88210
Fax To: (575) 745-8905

Received:	02/17/2017	Sampling Date:	02/16/2017
Reported:	02/19/2017	Sampling Type:	Soil
Project Name:	SHAKESPEARE 20 #1	Sampling Condition:	Cool & Intact
Project Number:	700794.213.01	Sample Received By:	Jodi Henson
Project Location:	EDDY CO		

Sample ID: S-1 3' (H700415-04)

BTEX 8021B mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/19/2017	ND	2.16	108	2.00	0.378	
Toluene*	<0.050	0.050	02/19/2017	ND	2.03	102	2.00	0.392	
Ethylbenzene*	<0.050	0.050	02/19/2017	ND	2.05	103	2.00	0.236	
Total Xylenes*	<0.150	0.150	02/19/2017	ND	5.85	97.5	6.00	0.262	
Total BTEX	<0.300	0.300	02/19/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID *98.8 %* *73.6-140*

Chloride, SM4500Cl-B mg/kg Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**48.0**	16.0	02/19/2017	ND	464	116	400	10.9	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	02/18/2017	ND	187	93.6	200	3.41	
DRO >C10-C28	<10.0	10.0	02/18/2017	ND	196	97.8	200	6.66	

Surrogate: 1-Chlorooctane *73.9 %* *35-147*

Surrogate: 1-Chlorooctadecane *88.8 %* *28-171*

Sample ID: S-1 4' (H700415-05)

Chloride, SM4500Cl-B mg/kg Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**32.0**	16.0	02/19/2017	ND	464	116	400	10.9	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

TALON LPE
KIMBERLY WILSON
408 W. TEXAS AVE.
ARTESIA NM, 88210
Fax To: (575) 745-8905

Received:	02/17/2017	Sampling Date:	02/16/2017
Reported:	02/19/2017	Sampling Type:	Soil
Project Name:	SHAKESPEARE 20 #1	Sampling Condition:	Cool & Intact
Project Number:	700794.213.01	Sample Received By:	Jodi Henson
Project Location:	EDDY CO		

Sample ID: S-1 5' (H700415-06)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**64.0**	16.0	02/19/2017	ND	464	116	400	10.9	

Sample ID: S-1 7' (H700415-07)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**112**	16.0	02/19/2017	ND	464	116	400	10.9	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

TALON LPE
KIMBERLY WILSON
408 W. TEXAS AVE.
ARTESIA NM, 88210
Fax To: (575) 745-8905

Received:	02/17/2017	Sampling Date:	02/16/2017
Reported:	02/19/2017	Sampling Type:	Soil
Project Name:	SHAKESPEARE 20 #1	Sampling Condition:	Cool & Intact
Project Number:	700794.213.01	Sample Received By:	Jodi Henson
Project Location:	EDDY CO		

Sample ID: S-2 0' (H700415-08)

BTEX 8021B mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/19/2017	ND	2.16	108	2.00	0.378	
Toluene*	<0.050	0.050	02/19/2017	ND	2.03	102	2.00	0.392	
Ethylbenzene*	<0.050	0.050	02/19/2017	ND	2.05	103	2.00	0.236	
Total Xylenes*	<0.150	0.150	02/19/2017	ND	5.85	97.5	6.00	0.262	
Total BTEX	<0.300	0.300	02/19/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID *99.0 %* *73.6-140*

Chloride, SM4500Cl-B mg/kg Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**6880**	16.0	02/19/2017	ND	464	116	400	10.9	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	02/18/2017	ND	187	93.6	200	3.41	
DRO >C10-C28	**44.5**	10.0	02/18/2017	ND	196	97.8	200	6.66	

Surrogate: 1-Chlorooctane *68.9 %* *35-147*

Surrogate: 1-Chlorooctadecane *87.7 %* *28-171*

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

TALON LPE
KIMBERLY WILSON
408 W. TEXAS AVE.
ARTESIA NM, 88210
Fax To: (575) 745-8905

Received:	02/17/2017	Sampling Date:	02/16/2017
Reported:	02/19/2017	Sampling Type:	Soil
Project Name:	SHAKESPEARE 20 #1	Sampling Condition:	Cool & Intact
Project Number:	700794.213.01	Sample Received By:	Jodi Henson
Project Location:	EDDY CO		

Sample ID: S-2 0.5' (H700415-09)

BTEX 8021B mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/19/2017	ND	2.16	108	2.00	0.378	
Toluene*	<0.050	0.050	02/19/2017	ND	2.03	102	2.00	0.392	
Ethylbenzene*	<0.050	0.050	02/19/2017	ND	2.05	103	2.00	0.236	
Total Xylenes*	<0.150	0.150	02/19/2017	ND	5.85	97.5	6.00	0.262	
Total BTEX	<0.300	0.300	02/19/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID *98.9 %* *73.6-140*

Chloride, SM4500Cl-B mg/kg **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**2320**	16.0	02/19/2017	ND	464	116	400	10.9	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	02/18/2017	ND	187	93.6	200	3.41	
DRO >C10-C28	<10.0	10.0	02/18/2017	ND	196	97.8	200	6.66	

Surrogate: 1-Chlorooctane *66.6 %* *35-147*

Surrogate: 1-Chlorooctadecane *81.3 %* *28-171*

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*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

TALON LPE
KIMBERLY WILSON
408 W. TEXAS AVE.
ARTESIA NM, 88210
Fax To: (575) 745-8905

Received:	02/17/2017	Sampling Date:	02/16/2017
Reported:	02/19/2017	Sampling Type:	Soil
Project Name:	SHAKESPEARE 20 #1	Sampling Condition:	Cool & Intact
Project Number:	700794.213.01	Sample Received By:	Jodi Henson
Project Location:	EDDY CO		

Sample ID: S-2 1' (H700415-10)

BTEX 8021B mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/19/2017	ND	2.16	108	2.00	0.378	
Toluene*	<0.050	0.050	02/19/2017	ND	2.03	102	2.00	0.392	
Ethylbenzene*	<0.050	0.050	02/19/2017	ND	2.05	103	2.00	0.236	
Total Xylenes*	<0.150	0.150	02/19/2017	ND	5.85	97.5	6.00	0.262	
Total BTEX	<0.300	0.300	02/19/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID *99.2 %* *73.6-140*

Chloride, SM4500Cl-B mg/kg Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**840**	16.0	02/19/2017	ND	464	116	400	10.9	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	02/18/2017	ND	187	93.6	200	3.41	
DRO >C10-C28	<10.0	10.0	02/18/2017	ND	196	97.8	200	6.66	

Surrogate: 1-Chlorooctane *78.0 %* *35-147*

Surrogate: 1-Chlorooctadecane *92.8 %* *28-171*

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Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

TALON LPE
KIMBERLY WILSON
408 W. TEXAS AVE.
ARTESIA NM, 88210
Fax To: (575) 745-8905

Received:	02/17/2017	Sampling Date:	02/16/2017
Reported:	02/19/2017	Sampling Type:	Soil
Project Name:	SHAKESPEARE 20 #1	Sampling Condition:	Cool & Intact
Project Number:	700794.213.01	Sample Received By:	Jodi Henson
Project Location:	EDDY CO		

Sample ID: S-2 1.5' (H700415-11)

BTEX 8021B mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/19/2017	ND	2.16	108	2.00	0.378	
Toluene*	<0.050	0.050	02/19/2017	ND	2.03	102	2.00	0.392	
Ethylbenzene*	<0.050	0.050	02/19/2017	ND	2.05	103	2.00	0.236	
Total Xylenes*	<0.150	0.150	02/19/2017	ND	5.85	97.5	6.00	0.262	
Total BTEX	<0.300	0.300	02/19/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID *98.8 %* *73.6-140*

Chloride, SM4500Cl-B mg/kg Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**800**	16.0	02/19/2017	ND	464	116	400	10.9	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	02/18/2017	ND	187	93.6	200	3.41	
DRO >C10-C28	<10.0	10.0	02/18/2017	ND	196	97.8	200	6.66	

Surrogate: 1-Chlorooctane *71.4 %* *35-147*

Surrogate: 1-Chlorooctadecane *85.0 %* *28-171*

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Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Notes and Definitions

QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

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Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240
(575) 393-2326 FAX (575) 393-2476

Company Name: Talon/LPE	BILL TO
Project Manager: Kimberly Wilson	P.O. #:
Address: 408 W. Texas Ave.	Company: Talon/LPE
City: Artesia State: NM Zip: 88210	Attn:
Phone #: 575-746-8768 Fax #: 575-746-8905	Address:
Project #: 700794.213.01 Project Owner: Devon	City:
Project Name: Shakespeare 20 #1	State: Zip:
Project Location: Eddy Cty	Phone #:
Sampler Name: Kim Wilson	Fax #:

ANALYSIS REQUEST: Chlorides; TPH; BTEX

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	PRESERV.: ACID/BASE:	ICE / COOL	OTHER:	SAMPLING: DATE	TIME
H700415														
1	S-1 0'	G	1			X					X		1/16/17	10:10
2	1'	G	1			X					X			10:15
3	2'	G	1			X					X			10:20
4	3'	G	1			X					X			10:25
5	4'	G	1			X					X			10:30
6	5'	G	1			X					X			10:37
7	7'	G	1			X					X			10:45
8	S-2 0'	G	1			X					X			10:47
9	0.5'	G	1			X					X			10:50
10	1'	G	1			X					X		↓	10:55

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By: Kim Wilson	Date: 2/17/17	Received By: Kevin Lopez	
Relinquished By:	Time: 800	Received By: Tamara Oldaker	
Delivered By: (Circle One)	Date: 2-17-17	Sample Condition: Cool Yes / No; Intact Yes / No	CHECKED BY: (Initials)
Sampler - UPS - Bus - Other: #5 2.9°C	Time: 9:30		TD

Phone Result: ☐ Yes ☐ No Add'l Phone #:
Fax Result: ☐ Yes ☐ No Add'l Fax #:
REMARKS: RUSH

† Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326

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Page 2 of 2

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240
(575) 393-2326 FAX (575) 393-2476

Company Name: Talon/LPE
Project Manager: Kimberly Wilson
Address: 408 W. Texas Ave.
City: Artesia State: NM Zip: 88210
Phone #: 575-746-8768 Fax #: 575-746-8905
Project #: 700794.213.01 Project Owner: Devon
Project Name: Shakespeare 20 #1
Project Location: Eddy Cty
Sampler Name: Kim Wilson

BILL TO
P.O. #:
Company: Talon/LPE
Attn:
Address:
City:
State: Zip:
Phone #:
Fax #:

Lab I.D. (FOR LAB USE ONLY)	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	PRESERV.: ACID/BASE:	ICE / COOL	OTHER :	SAMPLING: DATE	TIME	ANALYSIS REQUEST: Chlorides	TPH	BTEX
H700415 11	S-2 1.5	G				/					/		2/16/17	11:00	/	/	/

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By: Kim Wilson — Date: 2/17/17 Time: 8WA — Received By: Laurie Lopez

Relinquished By: [signature] — Date: 2-17-17 Time: 9:30 — Received By: Tamara Oldaker

Delivered By: (Circle One)
Sampler - UPS - Bus - Other: #75 2.9°C

Sample Condition: Cool ☑ Yes ☐ No; Intact ☑ Yes ☐ No

CHECKED BY: (Initials) T.O.

Phone Result: ☐ Yes ☐ No Add'l Phone #:
Fax Result: ☐ Yes ☐ No Add'l Fax #:
REMARKS: Rush

† Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326

APPENDIX G – Talon/LPE Correspondence with NMOCD

Bratcher, Mike, EMNRD

From: Bratcher, Mike, EMNRD
Sent: Wednesday, March 29, 2017 12:04 PM
To: 'Kimberly M. Wilson'; Shelly Tucker
Cc: Weaver, Crystal, EMNRD; Shoemaker, Mike; Brett Fulks; David Adkins
Subject: RE: Shakespeare 20 Federal #1 * 30-015-36376 * 2RP-3360

RE: Devon Energy * Shakespeare 20 Fed 1H * 2RP-3360 * DOR: 10/18/15

Kimberly,

Your proposal for remediation of the above referenced release is approved. OCD requests the excavation extend to the area immediately around the well head, as practicable. Also, attempt to perform a more complete delineation for chloride impact in the excavated area. Field screens may be used for this purpose, with lab confirmation on the deepest sample obtained. Federal sites will require like approval from BLM. Please advise once remedial activities have been scheduled.

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 ground water, 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, local laws and/or regulations.

If you have any questions or concerns, and for notification, please contact me.

Mike Bratcher
NMOCD District 2
811 S. First St.
Artesia NM 88210
575-748-1283 Ext 108
mike.bratcher@state.nm.us

From: Kimberly M. Wilson [mailto:kwilson@talonlpe.com]
Sent: Tuesday, March 21, 2017 8:23 AM
To: Bratcher, Mike, EMNRD <mike.bratcher@state.nm.us>; Shelly Tucker <stucker@blm.gov>
Cc: Weaver, Crystal, EMNRD <Crystal.Weaver@state.nm.us>; Shoemaker, Mike <Mike.Shoemaker@dvn.com>; Brett Fulks <brett.fulks@dvn.com>; David Adkins <dadkins@talonlpe.com>
Subject: Shakespeare 20 Federal #1 * 30-015-36376 * 2RP-3360

Good morning everyone,

Attached please find attached the work plan for the above referenced location. If you have any questions or concerns please feel free to contact me.

Thank you.

Respectfully submitted,

Kimberly

Kimberly M. Wilson

Project Manager

408 West Texas Avenue

Artesia, New Mexico 88210

(575) 746.8768 office

(575) 616.4023 direct

(575) 602.3826 cell

(866) 742.0742 emergency

Email: kwilson@talonlpe.com

Web: www.talonlpe.com

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

General Information
Phone: (505) 629-6116

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

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

QUESTIONS

Action 410639

QUESTIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 410639
	Action Type: [C-141] Deferral Request C-141 (C-141-v-Deferral)

QUESTIONS

Prerequisites	
Incident ID (n#)	**nAB1530148267**
Incident Name	**NAB1530148267 SHAKESPEARE 20 FEDERAL COM #001H @ 30-015-36376**
Incident Type	**Produced Water Release**
Incident Status	**Deferral Request Received**
Incident Well	**[30-015-36376] SHAKESPEARE 20 FEDERAL COM #001H**

Location of Release Source	
Please answer all the questions in this group.	
Site Name	SHAKESPEARE 20 FEDERAL COM #001H
Date Release Discovered	10/18/2015
Surface Owner	Federal

Incident Details	
Please answer all the questions in this group.	
Incident Type	Produced Water Release
Did this release result in a fire or is the result of a fire	No
Did this release result in any injuries	No
Has this release reached or does it have a reasonable probability of reaching a watercourse	No
Has this release endangered or does it have a reasonable probability of endangering public health	No
Has this release substantially damaged or will it substantially damage property or the environment	No
Is this release of a volume that is or may with reasonable probability be detrimental to fresh water	No

Nature and Volume of Release	
Material(s) released, please answer all that apply below. Any calculations or specific justifications for the volumes provided should be attached to the follow-up C-141 submission.	
Crude Oil Released (bbls) Details	Cause: Equipment Failure | Other (Specify) | Crude Oil | Released: 1 BBL | Recovered: 1 BBL | Lost: 0 BBL.
Produced Water Released (bbls) Details	Cause: Equipment Failure | Other (Specify) | Produced Water | Released: 4 BBL | Recovered: 3 BBL | Lost: 1 BBL.
Is the concentration of chloride in the produced water >10,000 mg/l	Yes
Condensate Released (bbls) Details	*Not answered.*
Natural Gas Vented (Mcf) Details	*Not answered.*
Natural Gas Flared (Mcf) Details	*Not answered.*
Other Released Details	*Not answered.*
Are there additional details for the questions above (i.e. any answer containing Other, Specify, Unknown, and/or Fire, or any negative lost amounts)	*Not answered.*

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

General Information
Phone: (505) 629-6116

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

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

QUESTIONS (continued)

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 410639
	Action Type: [C-141] Deferral Request C-141 (C-141-v-Deferral)

QUESTIONS

Nature and Volume of Release (continued)	
Is this a gas only submission (i.e. only significant Mcf values reported)	**More info needed to determine if this will be treated as a "gas only" report.**
Was this a major release as defined by Subsection A of 19.15.29.7 NMAC	**No**
Reasons why this would be considered a submission for a notification of a major release	*Unavailable.*
With the implementation of the 19.15.27 NMAC (05/25/2021), venting and/or flaring of natural gas (i.e. gas only) are to be submitted on the C-129 form.	

Initial Response	
The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury.	
The source of the release has been stopped	True
The impacted area has been secured to protect human health and the environment	True
Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices	False
All free liquids and recoverable materials have been removed and managed appropriately	True
If all the actions described above have not been undertaken, explain why	Release occurred in 2015, outside of containment.
Per Paragraph (4) of Subsection B of 19.15.29.8 NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please prepare and attach a narrative of actions to date in the follow-up C-141 submission. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see Subparagraph (a) of Paragraph (5) of Subsection A of 19.15.29.11 NMAC), please prepare and attach all information needed for closure evaluation in the follow-up C-141 submission.	

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

I hereby agree and sign off to the above statement	Name: Sally Carttar Title: Consultant Email: scarttar@vertex.ca Date: 12/11/2024

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

General Information
Phone: (505) 629-6116

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

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

QUESTIONS (continued)

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 410639
	Action Type: [C-141] Deferral Request C-141 (C-141-v-Deferral)

QUESTIONS

Site Characterization	
Please answer all the questions in this group (only required when seeking remediation plan approval and beyond). This information must be provided to the appropriate district office no later than 90 days after the release discovery date.	
What is the shallowest depth to groundwater beneath the area affected by the release in feet below ground surface (ft bgs)	Less than or equal 25 (ft.)
What method was used to determine the depth to ground water	NM OSE iWaters Database Search
Did this release impact groundwater or surface water	No
What is the minimum distance, between the closest lateral extents of the release and the following surface areas:	
A continuously flowing watercourse or any other significant watercourse	Between 1000 (ft.) and ½ (mi.)
Any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)	Between 1 and 5 (mi.)
An occupied permanent residence, school, hospital, institution, or church	Between 1 and 5 (mi.)
A spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes	Between 1000 (ft.) and ½ (mi.)
Any other fresh water well or spring	Between 1000 (ft.) and ½ (mi.)
Incorporated municipal boundaries or a defined municipal fresh water well field	Greater than 5 (mi.)
A wetland	Between 1000 (ft.) and ½ (mi.)
A subsurface mine	Greater than 5 (mi.)
An (non-karst) unstable area	Zero feet, overlying, or within area
Categorize the risk of this well / site being in a karst geology	Medium
A 100-year floodplain	Between ½ and 1 (mi.)
Did the release impact areas not on an exploration, development, production, or storage site	No

Remediation Plan	
Please answer all the questions that apply or are indicated. This information must be provided to the appropriate district office no later than 90 days after the release discovery date.	
Requesting a remediation plan approval with this submission	Yes
Attach a comprehensive report demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined, pursuant to 19.15.29.11 NMAC and 19.15.29.13 NMAC.	
Have the lateral and vertical extents of contamination been fully delineated	Yes
Was this release entirely contained within a lined containment area	No
Soil Contamination Sampling: (Provide the highest observable value for each, in milligrams per kilograms.)	
Chloride (EPA 300.0 or SM4500 Cl B)	2400
TPH (GRO+DRO+MRO) (EPA SW-846 Method 8015M)	2310
GRO+DRO (EPA SW-846 Method 8015M)	610
BTEX (EPA SW-846 Method 8021B or 8260B)	0
Benzene (EPA SW-846 Method 8021B or 8260B)	0
Per Subsection B of 19.15.29.11 NMAC unless the site characterization report includes completed efforts at remediation, the report must include a proposed remediation plan in accordance with 19.15.29.12 NMAC, which includes the anticipated timelines for beginning and completing the remediation.	
On what estimated date will the remediation commence	08/13/2024
On what date will (or did) the final sampling or liner inspection occur	09/24/2024
On what date will (or was) the remediation complete(d)	09/24/2024
What is the estimated surface area (in square feet) that will be reclaimed	1972
What is the estimated volume (in cubic yards) that will be reclaimed	336
What is the estimated surface area (in square feet) that will be remediated	1972
What is the estimated volume (in cubic yards) that will be remediated	336
These estimated dates and measurements are recognized to be the best guess or calculation at the time of submission and may (be) change(d) over time as more remediation efforts are completed.	
The OCD recognizes that proposed remediation measures may have to be minimally adjusted in accordance with the physical realities encountered during remediation. If the responsible party has any need to significantly deviate from the remediation plan proposed, then it should consult with the division to determine if another remediation plan submission is required.	

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

General Information
Phone: (505) 629-6116

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

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

QUESTIONS (continued)

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 410639
	Action Type: [C-141] Deferral Request C-141 (C-141-v-Deferral)

QUESTIONS

Remediation Plan (continued)	
Please answer all the questions that apply or are indicated. This information must be provided to the appropriate district office no later than 90 days after the release discovery date.	
This remediation will (or is expected to) utilize the following processes to remediate / reduce contaminants:	
(Select all answers below that apply.)	
(Ex Situ) Excavation and **off-site** disposal (i.e. dig and haul, hydrovac, etc.)	Yes
Which OCD approved facility will be used for **off-site** disposal	HALFWAY DISPOSAL AND LANDFILL [fEEM0112334510]
OR which OCD approved well (API) will be used for **off-site** disposal	*Not answered.*
OR is the **off-site** disposal site, to be used, out-of-state	*Not answered.*
OR is the **off-site** disposal site, to be used, an NMED facility	*Not answered.*
(Ex Situ) Excavation and **on-site** remediation (i.e. On-Site Land Farms)	*Not answered.*
(In Situ) Soil Vapor Extraction	*Not answered.*
(In Situ) Chemical processing (i.e. Soil Shredding, Potassium Permanganate, etc.)	*Not answered.*
(In Situ) Biological processing (i.e. Microbes / Fertilizer, etc.)	*Not answered.*
(In Situ) Physical processing (i.e. Soil Washing, Gypsum, Disking, etc.)	*Not answered.*
Ground Water Abatement pursuant to 19.15.30 NMAC	*Not answered.*
OTHER (Non-listed remedial process)	*Not answered.*
Per Subsection B of 19.15.29.11 NMAC unless the site characterization report includes completed efforts at remediation, the report must include a proposed remediation plan in accordance with 19.15.29.12 NMAC, which includes the anticipated timelines for beginning and completing the remediation.	
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.	
I hereby agree and sign off to the above statement	Name: Sally Carttar Title: Consultant Email: scarttar@vertex.ca Date: 12/11/2024
The OCD recognizes that proposed remediation measures may have to be minimally adjusted in accordance with the physical realities encountered during remediation. If the responsible party has any need to significantly deviate from the remediation plan proposed, then it should consult with the division to determine if another remediation plan submission is required.	

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QUESTIONS (continued)

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 410639
	Action Type: [C-141] Deferral Request C-141 (C-141-v-Deferral)

QUESTIONS

Deferral Requests Only	
Only answer the questions in this group if seeking a deferral upon approval this submission. Each of the following items must be confirmed as part of any request for deferral of remediation.	
Requesting a deferral of the remediation closure due date with the approval of this submission	Yes
Have the lateral and vertical extents of contamination been fully delineated	**Yes**
Is the remaining contamination in areas immediately under or around production equipment where remediation could cause a major facility deconstruction	Yes
Please list or describe the production equipment and how (re)moving the equipment would cause major facility deconstruction	Complete remediation would require removal of the pumpjack, which is critical for production.
What is the remaining surface area (in square feet) that will still need to be remediated if a deferral is granted	89
What is the remaining volume (in cubic yards) that will still need to be remediated if a deferral is granted	13
Per Paragraph (2) of Subsection C of 19.15.29.12 NMAC if contamination is located in areas immediately under or around production equipment such as production tanks, wellheads and pipelines where remediation could cause a major facility deconstruction, the remediation, restoration and reclamation may be deferred with division written approval until the equipment is removed during other operations, or when the well or facility is plugged or abandoned, whichever comes first.	
Enter the facility ID (f#) on which this deferral should be granted	*Not answered.*
Enter the well API (30-) on which this deferral should be granted	30-015-36376 SHAKESPEARE 20 FEDERAL COM #001H
Contamination does not cause an imminent risk to human health, the environment, or groundwater	True
Per Subsection B of 19.15.29.11 NMAC unless the site characterization report includes completed efforts at remediation, the report must include a proposed remediation plan in accordance with 19.15.29.12 NMAC, which includes the anticipated timelines for beginning and completing the remediation.	
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.	
I hereby agree and sign off to the above statement	Name: Sally Carttar Title: Consultant Email: scarttar@vertex.ca Date: 12/11/2024

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QUESTIONS (continued)

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 410639
	Action Type: [C-141] Deferral Request C-141 (C-141-v-Deferral)

QUESTIONS

Sampling Event Information	
Last sampling notification (C-141N) recorded	**384608**
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	**09/24/2024**
What was the (estimated) number of samples that were to be gathered	**10**
What was the sampling surface area in square feet	**1200**

Remediation Closure Request	
Only answer the questions in this group if seeking remediation closure for this release because all remediation steps have been completed.	
Requesting a remediation closure approval with this submission	No

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CONDITIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 410639
	Action Type: [C-141] Deferral Request C-141 (C-141-v-Deferral)

CONDITIONS

Created By	Condition	Condition Date
crystal.walker	Deferral is approved. Per 19.15.29.12.C.(2). If the contamination is located in areas immediately under or around production equipment such as production tanks, wellheads and pipelines where remediation could cause a major facility deconstruction, the remediation, resortoration and reclamation may be deferred with division written approved until the equipment is removed during other operations, or when the well or facility is plugged or abandoned, whichever comes first. Final remediation and reclamation shall take place in accordance with 19.15.29.12 and 19.15.29.13 NMAC once the site is no longer being used for oil and gas operations.	12/12/2024