ATTACHMENT 2

Closure Criteria Determination				
Site Name: PLU 29 Big Sinks West CTB				
Spill Coordinates: 32.104485, -103.801960		X: 613036	Y: 3552645	
Site Specific Conditions		**Value**	**Unit**	**Reference**
1	Depth to Groundwater (nearest reference)	**>55**	feet	1
	Distance between release and nearest DTGW reference	**0.09**	miles	
	Date of nearest DTGW reference measurement	**June 3, 2024**		
2	Within 300 feet of any continuously flowing watercourse or any other significant watercourse	4,121	feet	2
3	Within 200 feet of any lakebed, sinkhole or playa lake (measured from the ordinary high-water mark)	12,657	feet	3
4	Within 300 feet from an occupied residence, school, hospital, institution or church	61,108	feet	4
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**	6,935	feet	5
	ii) Within 1000 feet of any fresh water well or spring	6,935	feet	5
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)	6
7	Within 300 feet of a wetland	7,255	feet	7
8	Within the area overlying a subsurface mine	No	(Y/N)	8
	Distance between release and nearest registered mine	**73,190**	feet	
9	Within an unstable area (Karst Map)	Medium	Critical High Medium Low	9
	Distance between release and nearest high- or critical-karst zone	0.65	Miles	
10	Within a 100-year Floodplain	No	year	10
	Distance between release and nearest FEMA Zone A (100-year Floodplain)	**4,455**	feet	
11	Soil Type	SM - Simona-Bippus Complex		11
12	Ecological Classification	Shallow sandy, bottomland		12
13	Geology	Eolian and piedmont deposits		13
	NMAC 19.15.29.12 E (Table 1) Closure Criteria	51-100'	<50' 51-100' >100'	

Poker Lake Unit 29 Big Sinks West CTB

Depth to Groundwater borehole location

XTO Energy
plu29bs ctbw

PLUGGING RECORD

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

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: C-4826 POD 1

Well owner: XTO Energy Phone No.: _____

Mailing address: 3104 E. Greene Street

City: Carlsbad State: NM Zip code: 88220

II. WELL PLUGGING INFORMATION:

1) Name of well drilling company that plugged well: Vision Resources

2) New Mexico Well Driller License No.: 1833 Expiration Date: 10-7-25

3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): _____
Jason Maley

4) Date well plugging began: 6-3-24 Date well plugging concluded: 6-3-24

5) GPS Well Location: Latitude: 32 deg, 06 min, 18.7344 sec
Longitude: -103 deg, 48 min, 04.230 sec, WGS 84

6) Depth of well confirmed at initiation of plugging as: 55 ft below ground level (bgl),
by the following manner: Tape

7) Static water level measured at initiation of plugging: Dry ft bgl

8) Date well plugging plan of operations was approved by the State Engineer: 03-14-2024

9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

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

For each interval plugged, describe within the following columns:

Depth (ft bgl)	Plugging Material Used (include any additives used)	Volume of Material Placed (gallons)	Theoretical Volume of Borehole/ Casing (gallons)	Placement Method (tremie pipe, other)	Comments ("casing perforated first", "open annular space also plugged", etc.)
0	77.50	77.50	Tremie Pipe Open hole	
Wyoming Bentonite					
55'					

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

III. SIGNATURE:

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

Signature of Well Driller

6/3/24
Date

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION

OSE POD NO. (WELL NO.)	WELL TAG ID NO.	OSE FILE NO(S).
C-4826		C-4826-POD1

WELL OWNER NAME(S)	PHONE (OPTIONAL)
XTO Energy	

WELL OWNER MAILING ADDRESS	CITY	STATE	ZIP
3104 E. Greene Street	Carlsbad	NM	88220

WELL LOCATION (FROM GPS)		DEGREES	MINUTES	SECONDS	
	LATITUDE	32	06	18.7344	N
	LONGITUDE	-103	48	04.230	W

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

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

2. DRILLING & CASING INFORMATION

LICENSE NO.	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
1833	Jason Maley	Vision Resources

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
5-29-24	5-29-24	55'	55'	N/A

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

STATIC WATER LEVEL IN COMPLETED WELL (FT): 0'

DATE STATIC MEASURED: 5-29-24

DRILLING FLUID: ☑ AIR ☐ MUD ADDITIVES – SPECIFY:

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

CHECK HERE IF PITLESS ADAPTER IS INSTALLED ☐

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
0	45	6"	PVC 2" SCH40	Thread	2"	SCH40	N/A
45	55	6"	PVC 2" SCH40	Thread	2"	SCH40	.02

3. ANNULAR MATERIAL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL *(if using Centralizers for Artesian wells- indicate the spacing below)	AMOUNT (cubic feet)	METHOD OF PLACEMENT
			None pulled and plugged		

FOR OSE INTERNAL USE

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

FILE NO.	POD NO.	TRN NO.	
LOCATION		WELL TAG ID NO.	PAGE 1 OF 2

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	10	10'	Brown sand with caliche	Y ✓ N	
10	30	20'	Tan fine sand with small rock	Y ✓ N	
30	55	25'	Tan fine sand	Y ✓ N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:

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

TOTAL ESTIMATED WELL YIELD (gpm): 0

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:

Jason Maley

6. SIGNATURE

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

Jason Maley — SIGNATURE OF DRILLER / PRINT SIGNEE NAME

6/3/24 — DATE

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

FILE NO.	POD NO.	TRN NO.	
LOCATION		WELL TAG ID NO.	PAGE 2 OF 2

U.S. Fish and Wildlife Service

National Wetlands Inventory

Intermittent 4,121 feet

December 9, 2023

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 12,657 feet

December 9, 2023

Wetlands

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

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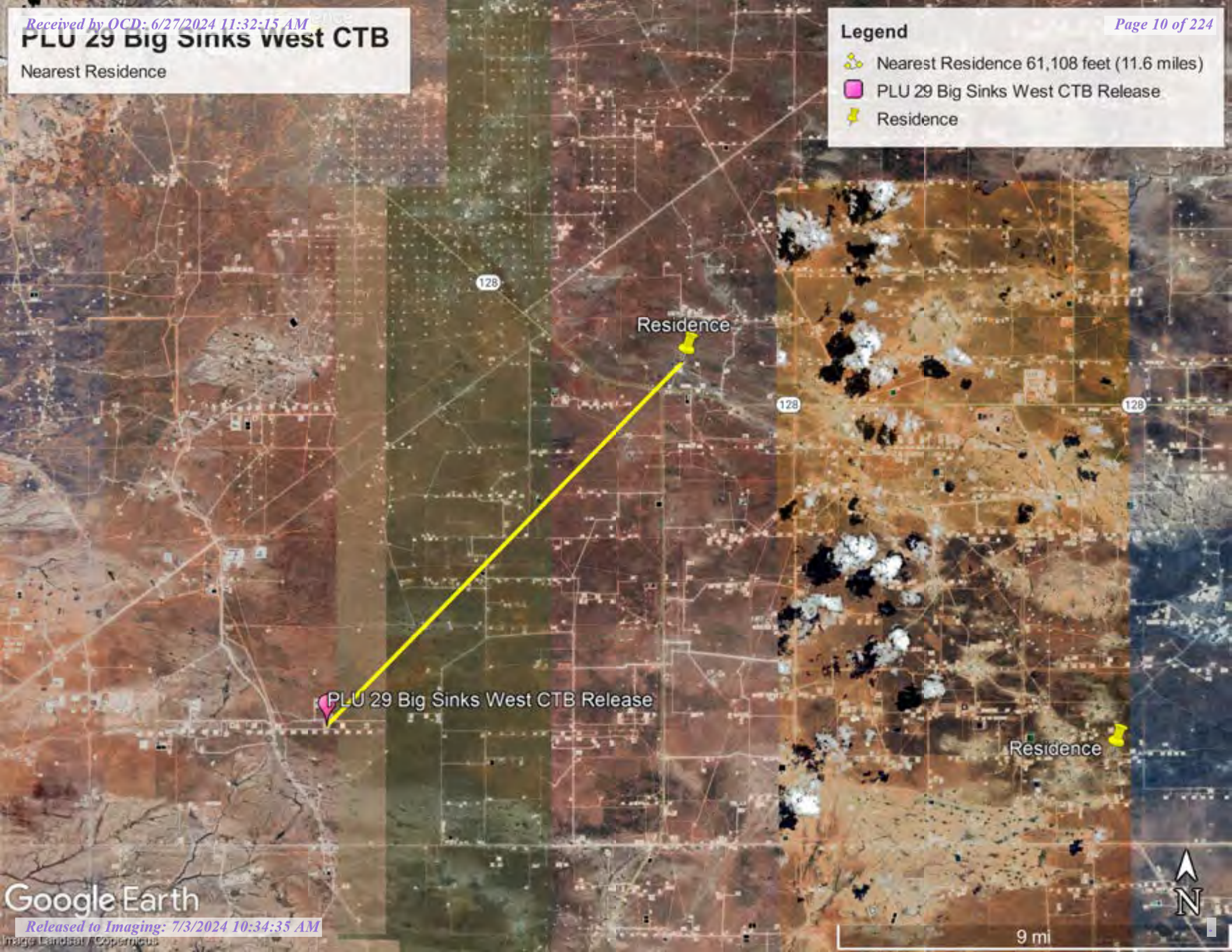
National Wetlands Inventory (NWI)
This page was produced by the NWI mapper



New Mexico Office of the State Engineer

Active & Inactive Points of Diversion

(with Ownership Information)

(acre ft per annum) (R=POD has been replaced and no longer serves this file, C=the file is closed) (quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest) (NAD83 UTM in meters)

WR File Nbr	Sub basin	Use	Diversion	Owner	County	POD Number	Well Tag	Code	Grant	Source	q 64	q 16	q 4	Sec	Twn	Rng	X	Y	Distance
C 04624	CUB	MON	0	ENSOLUM LLC	ED	C 04624 POD1	NA				4	4	1	30	25S	31E	611500	3552305	1572
C 04500	CUB	MON	0	WSP USA	ED	C 04500 POD1	NA				4	4	1	28	25S	31E	614620	3552380	1606
C 02250	CUB	STK	3	BUCK JACKSON TRUST	ED	C 02250					3	1	4	21	25S	31E	614912	3553620*	2114
LWD 01205	CUB	PLS	52.2	BUCK & LARUE JACKSON TRUST	ED	LWD 01205 POD1					1	1	3	33	25S	31E	614125	3550577*	2337
C 01831	C	PRO	0	OXY PETROLEUM INC	ED	C 01831						2	1	17	25S	31E	612972	3556126*	3481
C 03623	C	STK	0	WORTH ROSS	ED	C 03623 POD1					3	3	1	04	26S	31E	614210	3549265	3578
C 04498	CUB	MON	0	WSP USA	ED	C 04498 POD1	NA				2	1	3	25	25S	30E	609394	3552168	3672
C 04619	CUB	MON	0	DEVON ENERGY	ED	C 04619 POD1	NA				2	1	2	27	25S	31E	616749	3552958	3726
LWD 01188	CUB	PLS	89.2	BUCK & LARUE JACKSON TRUST	ED	LWD 01188 POD1					1	1	3	24	25S	30E	609238	3553754*	3956
LWD 01210	CUB	PLS	17	BUCK & LARUE JACKSON TRUST	ED	LWD 01210 POD1					3	2	3	36	25S	30E	609665	3550314*	4098
C 03781	CUB	EXP	0	ATKINS ENGR ASSOC INC	ED	C 03781 POD1				Artesian	3	3	3	13	25S	30E	609305	3554761	4288
LWD 01206	CUB	PLS	18.2	BUCK & LARUE JACKSON TRUST	ED	LWD 01206 POD1					4	4	2	04	26S	31E	615553	3549169*	4291
C 01839	C	PRO	0	OXY PETROLEUM INC	ED	C 01839						3	2	08	25S	31E	613364	3557344*	4710
LWD 01186	CUB	PLS	14	BUCK & LARUE JACKSON TRUST	ED	LWD 01186 POD1					4	4	4	04	26S	31E	615561	3548365*	4969

Record Count: 14

UTMNAD83 Radius Search (in meters):

Easting (X): 613036 **Northing (Y):** 3552645 **Radius:** 5000

Sorted by: Distance

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

New Mexico Office of the State Engineer

Point of Diversion Summary

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	C 02250	3	1	4	21	25S	31E	614912	3553620*

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

Driller License: **Driller Company:**

Driller Name: UNKNOWN

Drill Start Date:		**Drill Finish Date:**	12/31/1941	**Plug Date:**	
Log File Date:		**PCW Rcv Date:**		**Source:**	
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	6 GPM
Casing Size:	8.63	**Depth Well:**	400 feet	**Depth Water:**	390 feet

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

New Mexico Office of the State Engineer
Water Right Summary

WR File Number: C 02250 **Subbasin:** CUB **Cross Reference:** -

Primary Purpose: STK 72-12-1 LIVESTOCK WATERING

Primary Status: DCL DECLARATION

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

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

Owner: BUCK JACKSON TRUST

Contact: LARUE JACKSON

Documents on File

Trn #	Doc	File/Act	Status 1	Status 2	Transaction Desc.	From/ To	Acres	Diversion	Consumptive
198471	DCL	1992-03-16	DCL	PRC	C 02250	T	0	3	

Current Points of Diversion

(NAD83 UTM in meters)

POD Number	Well Tag	Source	Q 64	Q16	Q4	Sec	Tws	Rng	X	Y	Other Location Desc
C 02250			3	1	4	21	25S	31E	614912	3553620*	

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

Place of Use

Q 256	Q 64	Q16	Q4	Sec	Tws	Rng	Acres	Diversion	CU	Use	Priority	Status	Other Location Desc
							0	3		STK		DCL	NO PLACE OF USE GIVEN.

Source

Acres	Diversion	CU	Use	Priority	Source	Description
0	3		STK		GW	

U.S. Fish and Wildlife Service

National Wetlands Inventory

Wetland 7,255 feet

December 9, 2023

Wetlands

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

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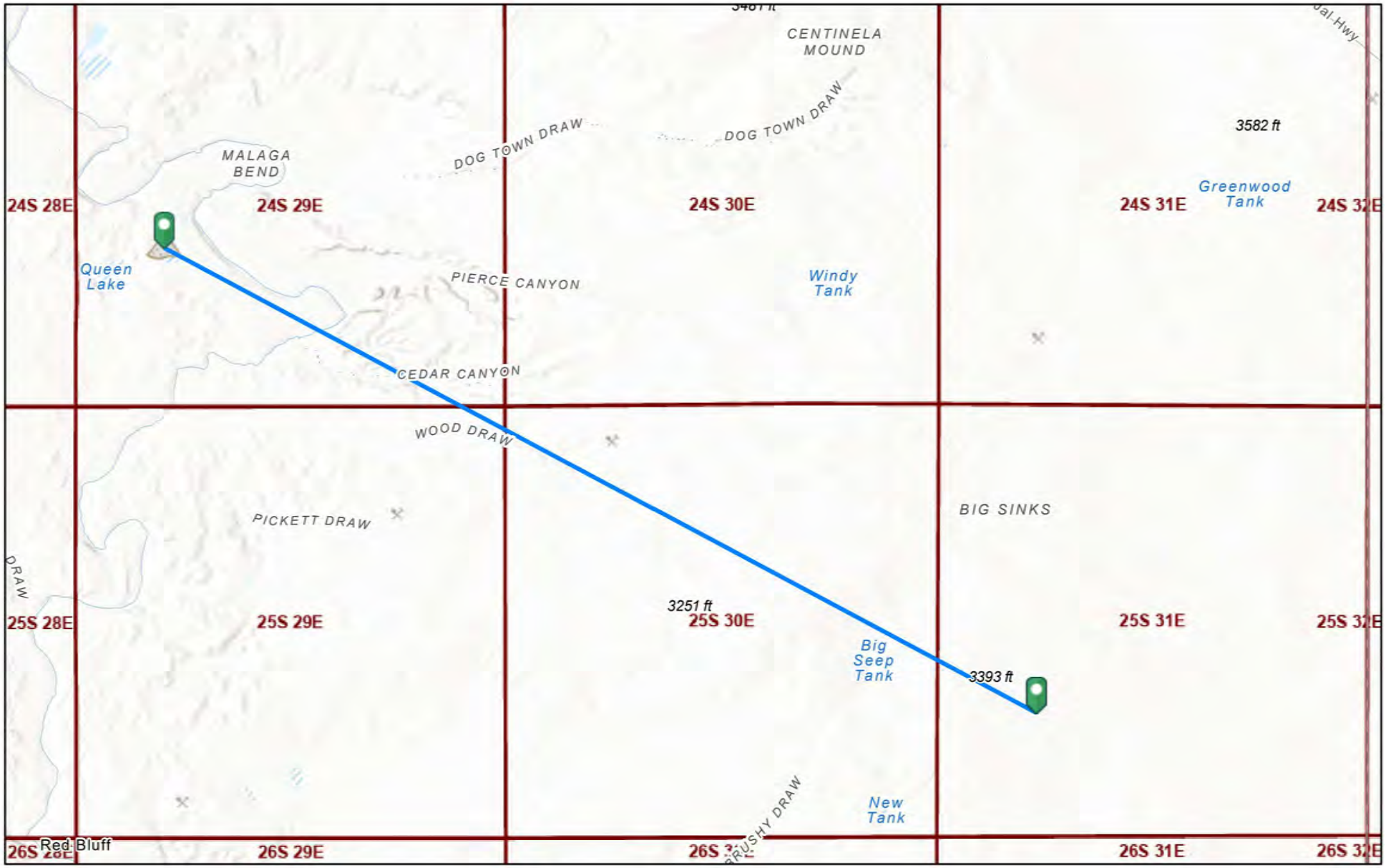
National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

Subsurface Mine 73,190 feet



12/8/2023, 8:07:20 PM

1:144,448

0 1 2 4 mi

0 1.5 3 6 km

Registered Mines

Aggregate, Stone etc.

Aggregate, Stone etc.

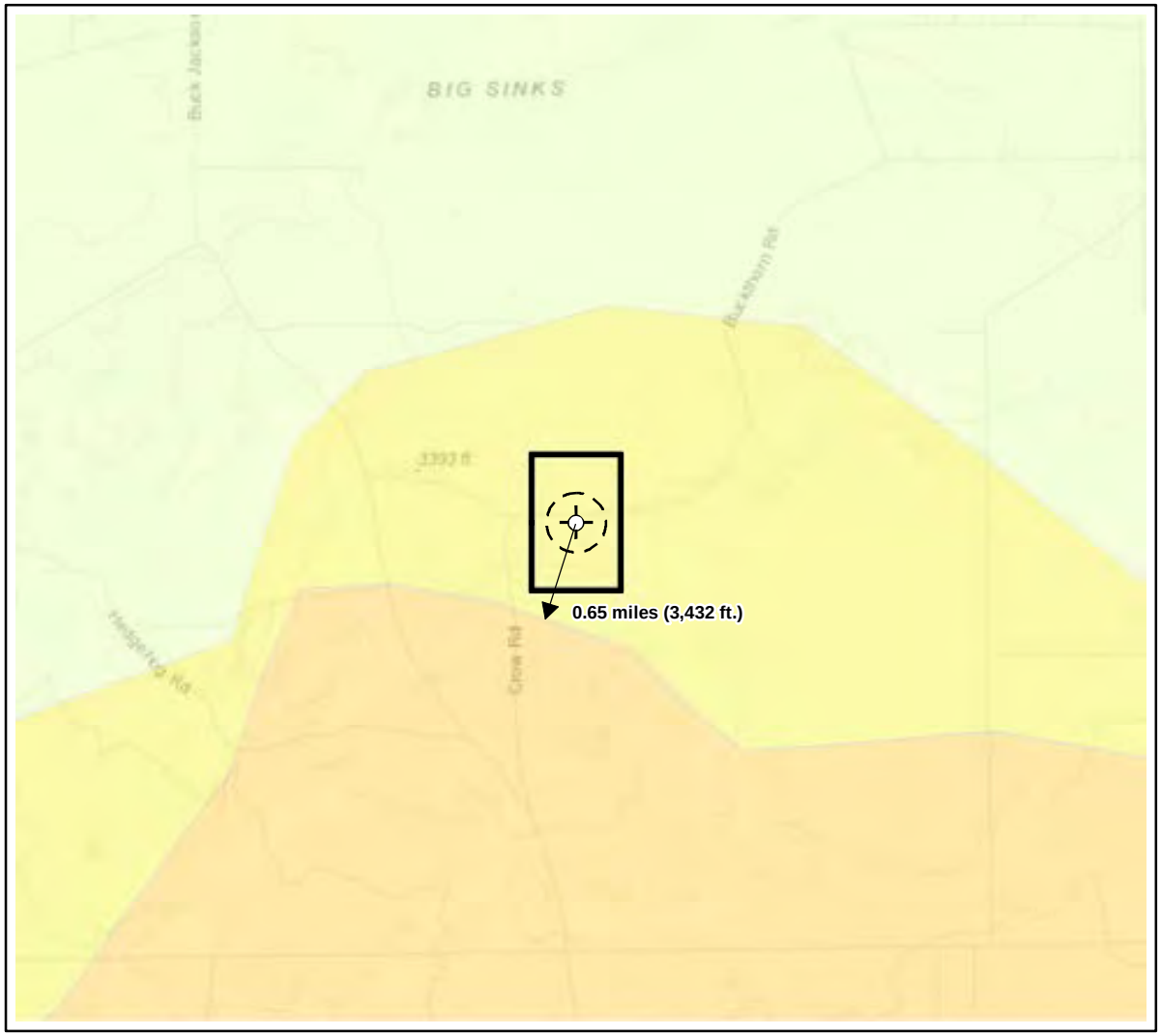
PLSS Townships

Salt

U.S. BLM, Esri, NASA, NGA, USGS, Texas Parks & Wildlife, CONANP, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA,

EMNRD MMD GIS Coordinator

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



Overview Map
0 0.25 0.5 1 mi

Detail Map
0 150 300 600 ft

Karst Potential
- Critical
- High
- Medium
- Low

Site Location
Site Buffer (1000 ft.)

VERTEX

Map Center:
32.1049, -103.8014

NAD 1983 UTM Zone 13N
Date: Jan 09/24

N

Karst Potential Map
PLU 29 Big Sinks CTB

Figure:
X

XTO ENERGY

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

Note: Inset Map, Esri 2022; Overview Map: Esri World Topographic. Karst potential data sources from Roswell Field Office, Bureau of Land Mangement, 2020 or United States Department of the Interior, Bureau of Land Management, (2018). Karst Potential.

VERSATILITY. EXPERTISE.

Document Path: D:\Vertex\GeoRequests\23E-05485\Figure X Karst Potential (23E-05485).mxd


FEMA's National Flood Hazard Layer (NFHL) Viewer
with Web AppBuilder for Arc
32.104485, -103.801960
Show search results for 32.104485, -1...
Search result
32°06'16.146"N 103°48'07.056"W
Zoom to
Zone A
0.3mi
-103.798 32.098 Degrees

National Flood Hazard Layer FIRMette

FEMA

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

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 12/8/2023 at 6:47 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

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

December 8, 2023

Custom Soil Resource Report
Soil Map

Map Scale: 1:1,830 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 25 50 100 150

Feet: 0 50 100 200 300

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

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: 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: Feb 7, 2020—May 12, 2020

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BB	Berino complex, 0 to 3 percent slopes, eroded	2.0	14.3%
SM	Simona-Bippus complex, 0 to 5 percent slopes	11.8	85.7%
Totals for Area of Interest		**13.8**	**100.0%**

Map Unit Descriptions

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

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

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

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

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Eddy Area, New Mexico

BB—Berino complex, 0 to 3 percent slopes, eroded

Map Unit Setting

National map unit symbol: 1w43
Elevation: 2,000 to 5,700 feet
Mean annual precipitation: 5 to 15 inches
Mean annual air temperature: 57 to 70 degrees F
Frost-free period: 180 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Berino and similar soils: 60 percent
Pajarito and similar soils: 25 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Berino

Setting

Landform: Plains, fan piedmonts
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Mixed alluvium and/or eolian sands

Typical profile

H1 - 0 to 17 inches: fine sand
H2 - 17 to 58 inches: sandy clay loam
H3 - 58 to 60 inches: loamy sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Maximum salinity: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water supply, 0 to 60 inches: Moderate (about 8.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: R070BD003NM - Loamy Sand
Hydric soil rating: No

Description of Pajarito

Setting

Landform: Dunes, plains, interdunes
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Mixed alluvium and/or eolian sands

Typical profile

H1 - 0 to 9 inches: loamy fine sand
H2 - 9 to 72 inches: fine sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Maximum salinity: Nonsaline (0.0 to 1.0 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water supply, 0 to 60 inches: Moderate (about 8.0 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Ecological site: R070BD003NM - Loamy Sand
Hydric soil rating: No

Minor Components

Wink

Percent of map unit: 4 percent
Ecological site: R070BD003NM - Loamy Sand
Hydric soil rating: No

Cacique

Percent of map unit: 4 percent
Ecological site: R070BD004NM - Sandy
Hydric soil rating: No

Pajarito

Percent of map unit: 4 percent
Ecological site: R070BD003NM - Loamy Sand
Hydric soil rating: No

Kermit

Percent of map unit: 3 percent
Ecological site: R070BD005NM - Deep Sand
Hydric soil rating: No

SM—Simona-Bippus complex, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 1w5x
Elevation: 1,800 to 5,000 feet
Mean annual precipitation: 8 to 24 inches
Mean annual air temperature: 57 to 70 degrees F
Frost-free period: 180 to 230 days
Farmland classification: Not prime farmland

Map Unit Composition

Simona and similar soils: 55 percent
Bippus and similar soils: 30 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Simona

Setting

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

Typical profile

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

Properties and qualities

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

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: R070BD002NM - Shallow Sandy

Hydric soil rating: No

Description of Bippus

Setting

Landform: Flood plains, alluvial fans
Landform position (three-dimensional): Talf, rise
Down-slope shape: Convex, linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Typical profile

H1 - 0 to 37 inches: silty clay loam
H2 - 37 to 60 inches: clay loam

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Calcium carbonate, maximum content: 40 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: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: R070BC017NM - Bottomland
Hydric soil rating: No

Minor Components

Simona

Percent of map unit: 8 percent
Ecological site: R070BD002NM - Shallow Sandy
Hydric soil rating: No

Bippus

Percent of map unit: 7 percent
Ecological site: R070BC017NM - Bottomland
Hydric soil rating: No

Natural Resources
Conservation Service

Ecological site R070BC017NM
Bottomland

Accessed: 12/09/2023

General information

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

Figure 1. Mapped extent

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

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site occurs on broad valleys, flood plains or basins at the lowest position in relation to adjacent landscapes. They are derived from mixed alluvium for sandstone, shale and limestone. It is found at the mouth of intermittent drainages or draws. Slopes are level to nearly level, averaging less than 3 percent. Elevations range from 2,842 to 4,000 feet.

Table 2. Representative physiographic features

Landforms	(1) Alluvial flat (2) Valley floor (3) Basin floor
Flooding duration	Very brief (4 to 48 hours) to brief (2 to 7 days)
Flooding frequency	Rare to frequent
Ponding frequency	None
Elevation	2,842–4,000 ft
Slope	1–3%
Aspect	Aspect is not a significant factor

Climatic features

The climate of the area is “semi-arid continental”. 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

The average frost-free season is 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 this site. This site receives overflow from heavy summer rains periodically. Occasionally water will stand on the surface for short periods. When this happens frequently, or when water stands for longer periods, only the plants that can tolerate inundation, such as giant sacaton, will survive. During drought periods or when long periods occur between overflows, a variety of plants will move in and establish on the site.

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 may be associated or influenced by wetlands and/or streams but does not normally meet wetland criteria.

Soil features

The soils of this site are deep and very deep. Surface textures are loamy fine sand, very fine sandy loam, fine sandy loam, sandy loam, silty loam, loam, clay loam or silty clay loam. The underlying layers may be loam, silt loam, clay loam, silty clay loam, sandy loam, fine sandy loam or loamy fine sand. These soils may have thin stratas of sand, silt, clay, very fine sand or very fine sandy loam. The soils have rapid to moderately slow permeability.

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

Characteristic Soils:
Glendale
Bippus
Bigetty
Largo
Harkey
Pecos
Pima
Dev
Pima Varient

Table 4. Representative soil features

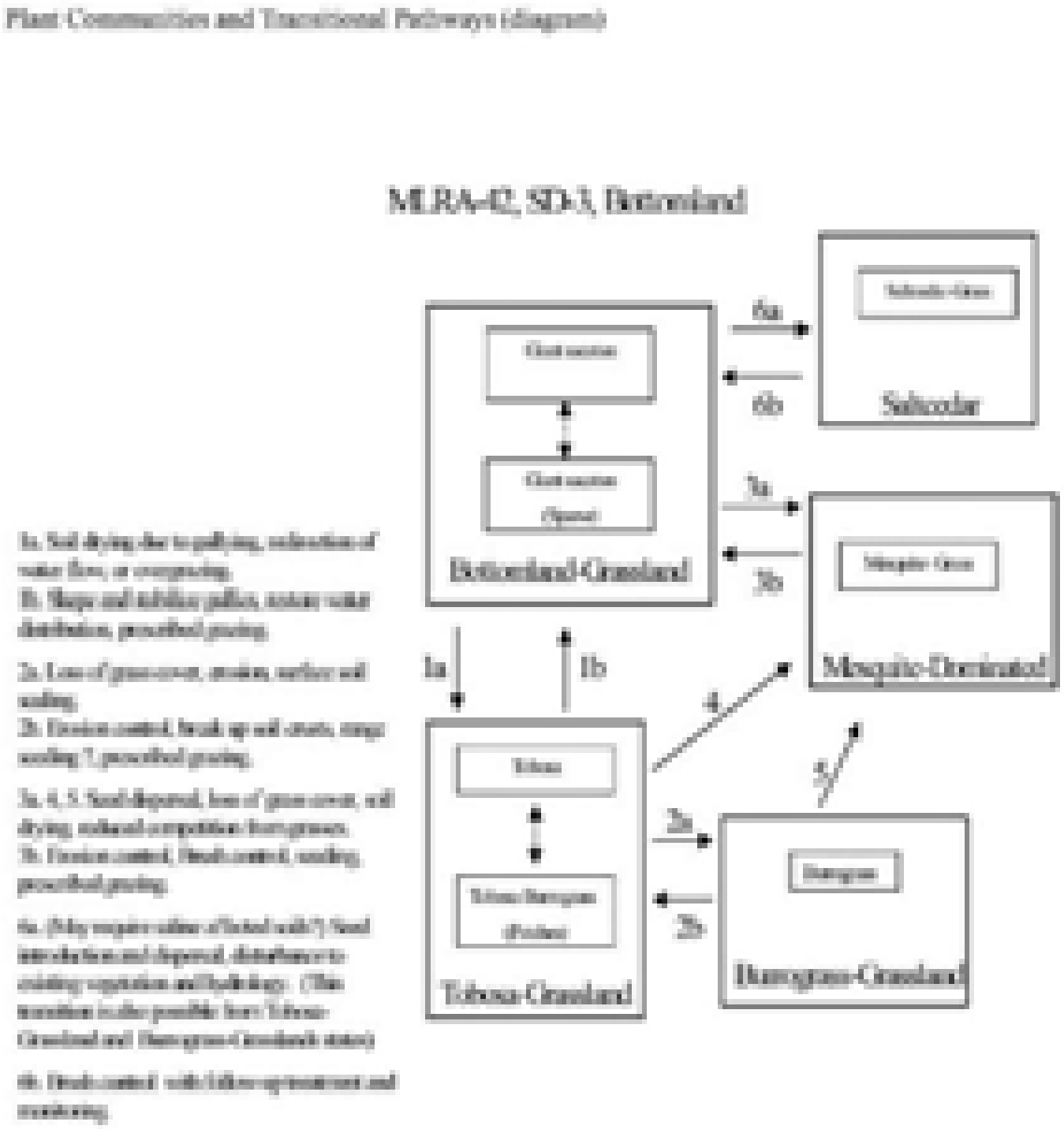
Surface texture	(1) Loamy fine sand (2) Loam (3) Fine sandy loam
Family particle size	(1) Loamy
Drainage class	Moderately well drained to well drained
Permeability class	Moderately slow to rapid
Soil depth	72 in
Surface fragment cover <=3"	0–10%
Surface fragment cover >3"	0–1%
Available water capacity	3–8 in

Calcium carbonate equivalent (0-40in)	3–15%
Electrical conductivity (0-40in)	0–4 mmhos/cm
Sodium adsorption ratio (0-40in)	0–5
Soil reaction (1:1 water) (0-40in)	7.4–8.4
Subsurface fragment volume <=3" (Depth not specified)	0–15%
Subsurface fragment volume >3" (Depth not specified)	0–1%

Ecological dynamics

The Bottomland site occurs on broad valleys and flood plains at the lowest positions on the landscape and is subject to periodic flooding. This periodic flooding and deep wetting essentially determine vegetation patterns on this site. The Bottomland site is associated with and often found at the mouth of Draw sites. The potential plant community exhibits a tall grass aspect largely dominated by giant sacaton. Soil drying due to overgrazing, gullying, and redirection or blockage of water flow may cause the transition to a tobosa-dominated state. A state dominated by burrograss may result due to continued loss of tobosa, erosion, and soil surface sealing—especially on silt loam and silty clay loam textured surface soils. A mesquite-dominated state may result from the loss of grass cover and dispersal of mesquite seed. Saltcedar may invade in response to changes in the historical flow regimes and the introduction of its seed—especially along stream channels or on soils adjacent to areas with a high water table.

State and transition model



State 1
Historic Climax Plant Community

Community 1.1
Historic Climax Plant Community

Bottomland Grassland: The historic plant community is principally dominated by giant sacaton. Some additional grass species representative of this site include alkali sacaton, tobosa, vine mesquite, plains bristlegrass, and twoflower trichloris. Fourwing saltbush and mesquite are two of the more common shrubs associated with this site, but in the historic community they are sparsely scattered across the site. Giant sacaton has the capability to produce large amounts of aboveground biomass, which provides important forage for livestock and helps to slow runoff, increase infiltration, and protect the site from erosion. Grazing in the spring, deferring grazing in the fall, or during

quality and accessibility while minimizing negative effects on production.3 Fire has produced mixed results depending on time of year and fire intensity. Several growing seasons may be required for giant sacaton to recover pre-burn production levels. Overgrazing, drought, or fire can cause a decrease in giant sacaton, vine mesquite, alkali sacaton, plains bristlegrass, and twoflower trichloris. A sparser, less vigorous sacaton community may result. Continued loss of grass cover increases erosion, effectively drying the site causing the transition to an alternate grassland state (Tobosa Grassland). Diagnosis: Giant sacaton is the dominant grass. Grass cover is uniform. Litter cover is high, and bare patches are few and less than 2 m in length. Shrubs are sparse, averaging less than three percent canopy cover.

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	2125	3188	4250
Shrub/Vine	200	300	400
Forb	175	262	350
Total	**2500**	**3750**	**5000**

Table 6. Ground cover

Tree foliar cover	0%
Shrub/vine/liana foliar cover	0%
Grass/grasslike foliar cover	35-40%
Forb foliar cover	0%
Non-vascular plants	0%
Biological crusts	0%
Litter	40-45%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	15-20%

Figure 5. Plant community growth curve (percent production by month). NM2817, R042XC017NM Bottomland HCPC. R042XC017NM Bottomland HCPC Warm Season Plant Community.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	5	10	10	25	30	15	5	0	0

State 2
Tobosa Grassland

Community 2.1
Tobosa Grassland

Additional States: Tobosa Grassland: This state is characterized by the predominance of tobosa. On fine-textured soils that receive surface run-in water, tobosa may attain dense almost pure stands. On drier sites that receive less water due to gullying, or due to decreased infiltration, associated with loss of grass cover, tobosa occurs in scattered patches with large areas of bare ground. Burrograss is the sub-dominant species. In the absence of grazing, tobosa tends to stagnate and accumulates large amounts of standing dead material. Rotational grazing, or burning during years with adequate precipitation following fire may help to maximize tobosa production and forage

following fire.6 Diagnosis: Tobosa is the dominant grass species. Grass cover is variable (depending on the degree of site degradation) ranging from uniform to patchy. Transition to Tobosa Grassland (1a) The transition to a tobosa-dominated community is believed to result from decreased available soil moisture due to the redirection or blockage of run-in water, gullying, or overgrazing. Roads or other physical barriers on site or off site may cause the redirection or blockage of run-in water. Reduction of overland flow and decreased residence time of stand water may favor tobosa dominance. Tobosa is favored by sites that receive periodic flooding, but cannot withstand extended periods of inundation. Overgrazing increases runoff rates and gully formation, reduces infiltration, effectively drying the site. Sites with finer textured soils may have a greater susceptibility for dominance by tobosa. 12 Key indicators of approach to transition: Decreased vigor and cover of giant sacaton Increase in the amount of tobosa Reduced overland flow and residence time of standing water Formation of gullies or deepening of existing channels Transition back to Bottomland Grassland (1b) The natural hydrology of the site must be restored. Culverts, turnouts, or rerouting roads may help re-establish natural overland flow, if roads or trails have blocked or altered the flow of run-in water. Erosion control structures or shaping and filling gullies may help regain natural flow patterns and establish vegetation if the flow has been channeled. Prescribed grazing will help establish proper forage utilization and maintain grass cover and litter necessary to protect the site from accelerated erosion.

State 3
Burrograss Grassland

Community 3.1
Burrograss Grassland

Burrograss Grassland: Burrograss is the dominant species. Tobosa is typically present in varying amounts, usually in patches or clumps occupying the more moist depressions. Burrograss ranks poor as a forage grass, but begins growth early and is used to some extent when young and green. Burrograss is favored by calcareous fine textured soils and spreads by seed and stolons. It produces large amounts of seed with wiry awns that help in dissemination, and in augering the hardened callus (tip of the seed) into the soil. The ability of burrograss to auger into soils enables it to establish and expand on bare soils prone to crust over with physical and biological crusts. Diagnosis: Burrograss is the dominant grass species. Grass cover is variable ranging from patchy to very patchy. Large bare areas are present and interconnected. Physical crusts are present and may occupy most of the bare areas. Transition to Burrograss Grassland (2a) Loss of grass cover, decreased soil moisture, soil surface sealing, and erosion enable this transition. As grass cover declines, organic matter and infiltration decrease. Erosion increases, removing soil and nutrients from bare areas, which results in soil sealing. Burrograss produces substantial amounts of viable seed and is one of the few grasses able to maintain, and even increase, on bottomland soils that are sealed by biological and physical crusts. Key indicators of approach to transition: Decrease in cover of tobosa Increased amount of bare ground Increased evidence of physical and biological crusts. Transition back to Tobosa Grassland (2b) Erosion control structures may help regain natural overland flow and increase vegetation cover (see transition1b above). Re-establishing grass cover will further decrease erosion and increase infiltration. Breaking up physical crusts by soil disturbance may promote infiltration and seedling emergence. Seeding may be necessary if inadequate seed source remains. Prescribed grazing will help establish proper forage utilization and maintain grass cover.

State 4
Mesquite-Dominated

Community 4.1
Mesquite-Dominated

Mesquite-Dominated State: This state is characterized by the dominance of mesquite, and by accelerated erosion. Grass cover is variable, but typically patchy. Diagnosis: Mesquite is the dominant species in aspect and composition. Grass cover is typically patchy with large, interconnected bare areas present. Giant sacaton and alkali sacaton are absent or restricted to small patches. Tobosa or burrograss are the dominant grasses on this site. Rills and gullies may be common and actively eroding. Transition to Mesquite-Dominated (3a, 4, 5) The reasons for different pathways in transitions to a mesquite-dominated state versus a tobosa or burrograss grassland with few shrubs are not known. Dispersal of shrub seed, persistent loss of grass cover, and competition between shrubs and remaining grasses for resources may drive this transition. Loss of grass cover reduces infiltration, decreasing

establishment and survival. Accelerated erosion due to loss of grass cover can relocate organic matter and nutrients from shrub interspaces, and concentrate them around shrub bases.14 This relocation of resources further increases the shrubs competitive advantage. 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. Transition back to Bottomland Grassland (3b) Erosion control methods such as shaping and filling gullies, net wire diversions, rock and brush dams, etc. may be needed to curtail erosion and restore site hydrology. Brush control will be necessary to overcome competition between shrubs and grass seedlings. Seeding may expedite recovery or may be necessary if an adequate seed source is no longer remaining. Prescribed grazing will help ensure adequate deferment and proper forage utilization following grass establishment. The degree to which this site is capable of recovery depends on the restoration of hydrology, the extent of degradation to soil resources, and adequate rainfall necessary to establish grasses.

State 5
Saltcedar State

Community 5.1
Saltcedar State

Saltcedar State: Saltcedar is an aggressive invader that typically invades on fine-textured soils where its roots can reach the water table, but once established it can survive without access to ground water. It reaches maximum density where the water table is from 1.5 to 6 m deep, and forms more open stands where the water table is deeper. 9,10 Saltcedar is a prolific seed producer. It is resistant to fire, periods of inundation with water, salinity, and re-sprouts following cutting. Saltcedar can also increase soil salinity by up-taking salts and concentrating them in its leaves and subsequent shedding of the leaves to the soil surface. Diagnosis: This state is characterized by the presence of saltcedar. Saltcedar cover is variable ranging from sparse to dense. Densities may depend on such variables as depth to ground water, timing and duration of flood events, and soil texture and salinity. Grass cover varies in response to saltcedar density. Transition to Saltcedar State (6a) It is not know if this transition occurs only on saline affected soils, or if it can occur on non-saline sites. Salty Bottomland sites typically have a higher susceptibility to the invasion of saltcedar. The invasion of saltcedar is associated with saline soils, the presence of saltcedar on adjacent sites and dispersal of its seed, and disturbance to existing vegetation or hydrology. Saltcedar propagules must be present to invade and establish on bottomland sites. Disturbance such as fire, grazing, or drought may facilitate the establishment of saltcedar by decreasing the vigor of native vegetation and providing bare areas for saltcedar seedling establishment with minimal competition. Changes in seasonal timing, rate and volume of run-in water may facilitate the establishment of saltcedar on Bottomland sites.8 Damming rivers has reduced flow volume and caused shifts in the timing of peak flow from spring to summer. The reduced flows have increased fine sediments, creating the ideal conditions for saltcedar seedling establishment. Summer water discharges provide water at times consistent with saltcedar seed production. Increases in salinity due to return of irrigation water to streams and ditches may also support the establishment of saltcedar. (This transition should also possible from the Tobosa-Grassland and Burrograss-Grassland states). Key indicators of approach to transition: Increase in size and frequency of bare patches. Changes in timing and volume of peak discharge Increased soil salinity Presence of saltcedar propagules Transition back to Bottomland Grassland (6b) Saltcedar control is costly and often labor intensive. Control programs utilizing herbicide, or herbicide in conjunction with mechanical control or prescribed fire have proven effective in some instances. 5,7,11 Without restoring historical flow regimes, extensive follow-up management may be necessary to maintain the bottomland grassland.13

Additional community tables

Table 7. Community 1.1 plant community composition

Natural Resources
Conservation Service

Ecological site R070BD002NM
Shallow Sandy

Accessed: 12/09/2023

General information

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

Figure 1. Mapped extent

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

Associated sites

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

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

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

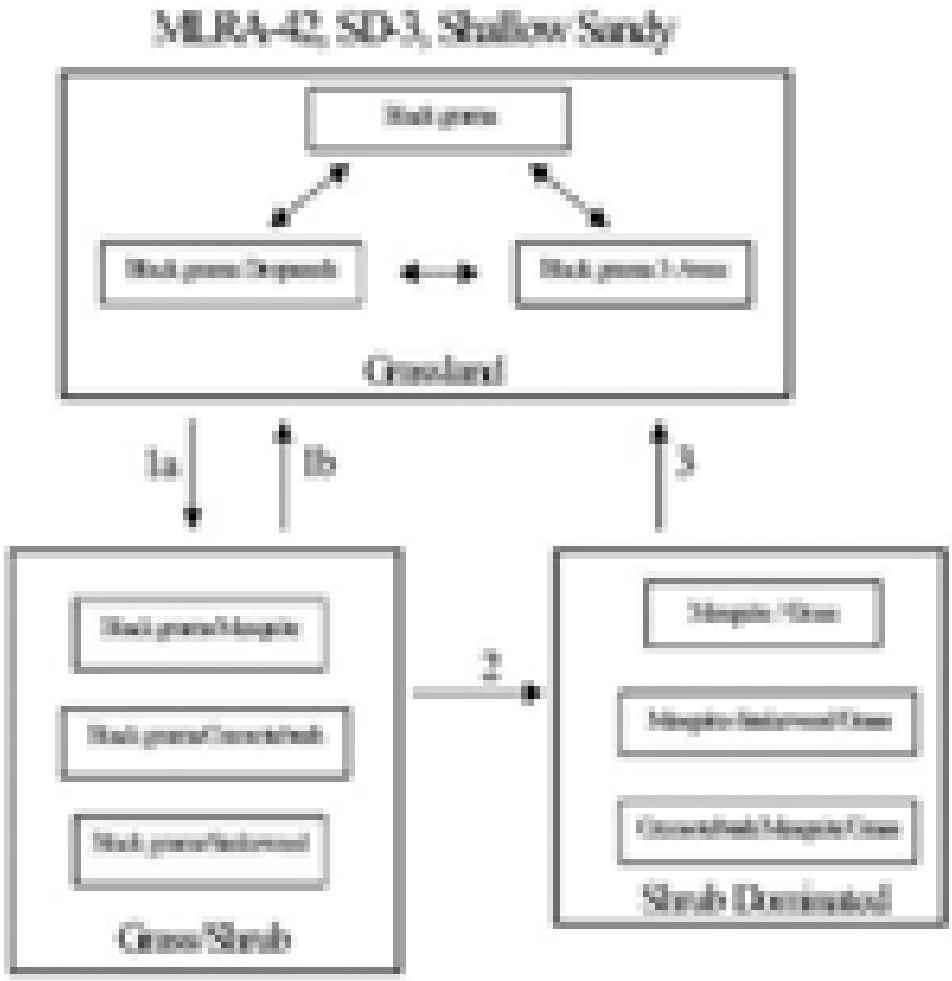
Soil depth	7–24 in
Surface fragment cover <=3"	5–25%
Surface fragment cover >3"	0%
Available water capacity (0-40in)	1–2 in
Calcium carbonate equivalent (0-40in)	5–15%
Electrical conductivity (0-40in)	0–4 mmhos/cm
Sodium adsorption ratio (0-40in)	0
Soil reaction (1:1 water) (0-40in)	7.4–8
Subsurface 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 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

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

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	–

ArcGIS Geology Map

12/8/2023, 7:21:53 PM

1:144,448

0 1 2 4 mi

0 1.5 3 6 km

Lithologic Units

Playa—Alluvium and evaporite deposits (Holocene)

Water—Perenial standing water

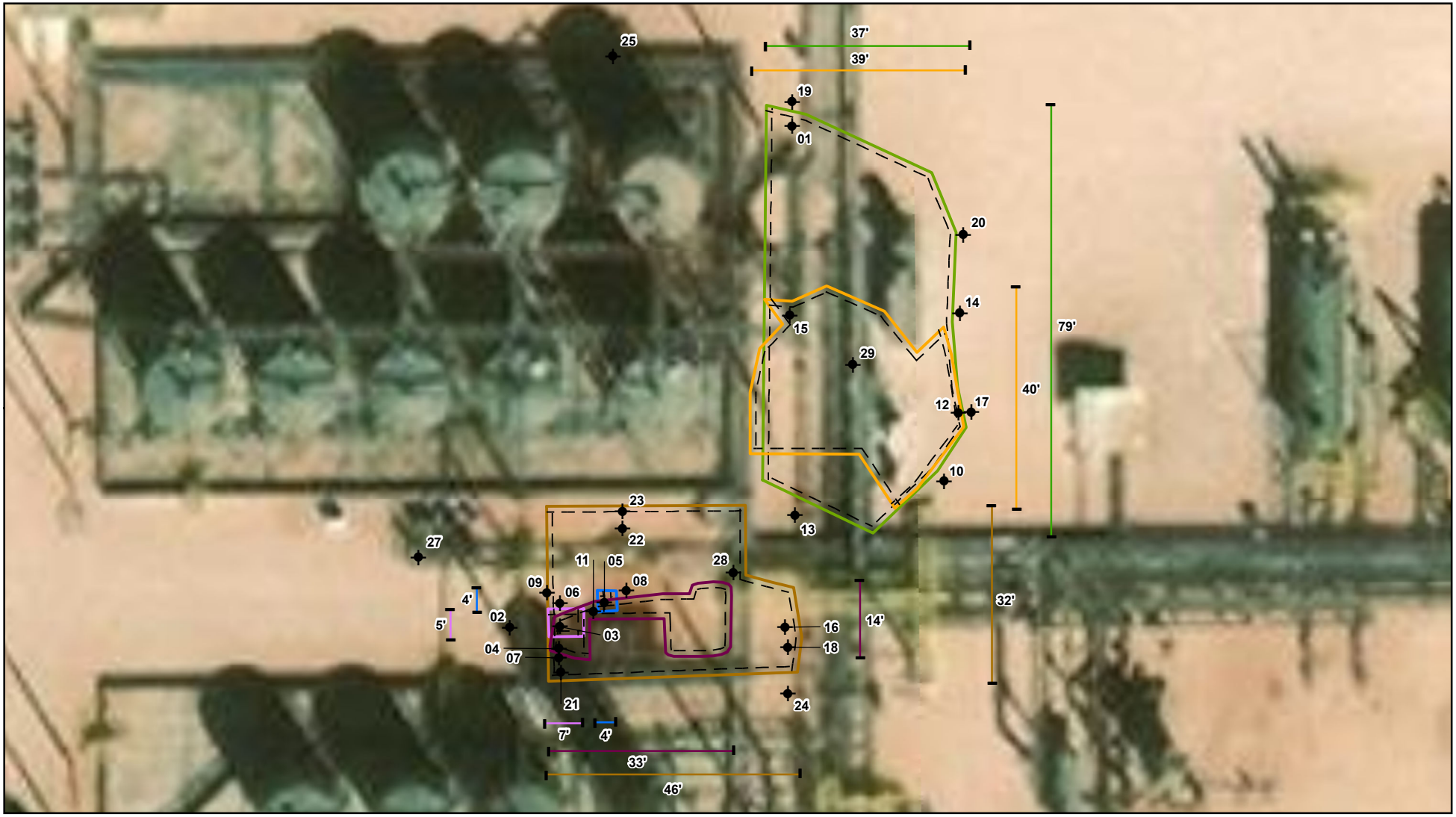
Qa—Alluvium (Holocene to upper Pleistocene)

Esri, NASA, NGA, USGS, NMBGMR, USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names

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

ATTACHMENT 1



Borehole (Prefixed by "BH24-")

Approximate Lease Boundary

North Release Area (~1,023 sq.ft.)

Proposed Excavation to 1 ft. bgs (~1,302 sq.ft.)

Proposed Excavation to 1 ft. bgs (~2,295 sq.ft.)

Proposed Excavation to 2 ft. bgs (~13 sq.ft.)

Proposed Excavation to 4 ft. bgs (~33 sq.ft.)

West Release Area (~262 sq.ft.)

VERTEX

0 5 10 20 ft

Map Center:
Lat/Long: 32.104419, -103.802373

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

N

Characterization Schematic
PLU 29 Big Sinks

FIGURE:
1

XTO ENERGY

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

Note: Georeferenced image from Esri, 2022. Site features from GPS, Vertex Professional Services Ltd., 2024.

VERSATILITY. EXPERTISE.

Document Path: G:\1-Projects_US PROJECTS\XTO Energy\23E-05485 - PLU 29 Big Sinks CTB\Figure 1 Characterization Schematic (23E-05484)ID18236.mxd

ATTACHMENT 3

Daily Site Visit Report

Client:	XTO Energy Inc. (US)	Inspection Date:	2/9/2024
Site Location Name:	PLU 29 Big Sinks West	Report Run Date:	2/9/2024 10:20 PM
Client Contact Name:	Garrett Green	API #:	
Client Contact Phone #:	575-200-0729		
Unique Project ID		Project Owner:	
Project Reference #		Project Manager:	

Summary of Times

Arrived at Site	2/9/2024 11:09 AM
Departed Site	2/9/2024 12:57 PM

Field Notes

12:49 Completed safety paperwork upon arrival.

12:50 Marked with white paint and flags the corners of the 1 call area

Next Steps & Recommendations

1

Daily Site Visit Report

Site Photos

Viewing Direction: Southwest

NE corner.

Viewing Direction: Southeast

NW corner

Viewing Direction: Southeast

SW corner point 1

Viewing Direction: Northwest

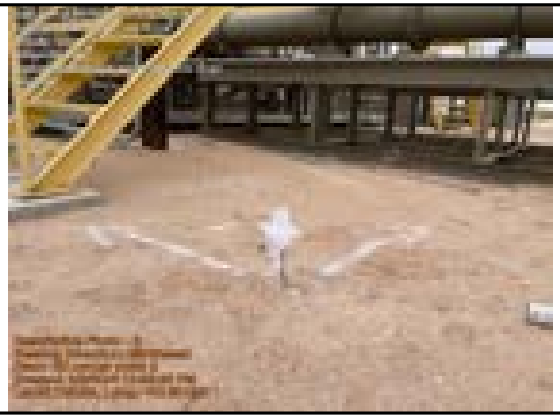
SW corner point 2

Daily Site Visit Report

Viewing Direction: Southwest

SE corner point 1

Viewing Direction: Northwest



SE corner point 2

Viewing Direction: Southeast

Release point.

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Deusavan Costa Filho

Signature: 

Daily Site Visit Report

Client:	XTO Energy Inc. (US)	Inspection Date:	2/28/2024
Site Location Name:	PLU 29 Big Sinks West	Report Run Date:	2/29/2024 12:47 AM
Client Contact Name:	Garrett Green	API #:	
Client Contact Phone #:	575-200-0729		
Unique Project ID		Project Owner:	
Project Reference #		Project Manager:	

Summary of Times

Arrived at Site	2/28/2024 9:30 AM
Departed Site	

Field Notes

15:30 Arrived on site filled out safety paper work

15:31 Began hand augering samples BH24,10,12,13,14,15 from surface to 2feet and 16 at surface

15:31 Field screened samples

15:31 Purplish hue soil

16:10 10,13 and 14 from surface to 2 feet were clean on field screening and were jarred

Next Steps & Recommendations

1

Daily Site Visit Report

Site Photos

Viewing Direction: South

BH24-15 reached depth of 2 ft and was above criteria

Viewing Direction: North

BH24-13 depth of 2ft and was below criteria

Viewing Direction: North

Purple hue to soil between BH24-13 and 15

Viewing Direction: West

BH24-12

Daily Site Visit Report

Viewing Direction: West	**Viewing Direction**: Northwest
	
BH24-14	BH24-10

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Wyatt Wadleigh

Signature:

Daily Site Visit Report

Client:	XTO Energy Inc. (US)	Inspection Date:	4/11/2024
Site Location Name:	PLU 29 Big Sinks West	Report Run Date:	4/12/2024 2:50 AM
Client Contact Name:	Amy Ruth	API #:	
Client Contact Phone #:	432-661-0571		
Unique Project ID		Project Owner:	
Project Reference #		Project Manager:	

Summary of Times

Arrived at Site	4/11/2024 10:27 AM
Departed Site	4/11/2024 2:53 PM

Field Notes

11:08 Completed JSA on arrival. On site to complete horizontal delineation of releases and attempt delineation of deferral areas.

11:29 Identified potential borehole locations and swept with magnetic locator prior to ground disturbance.

14:49 Advanced boreholes BH24-25 and BH24-26 north and east of north containment, respectively, for horizontal delineation. Samples collected at 0 and 2 feet bgs.

14:49 Advanced borehole BH24-27 immediately west of T-shaped deferral area for horizontal delineation. Samples collected at 0 and 2 feet bgs.

14:48 Advanced boreholes BH24-28 and BH24-29 in deferral areas for vertical delineation. Samples collected at 0, 2, and 3 feet bgs. Refusal at 3 feet bgs.

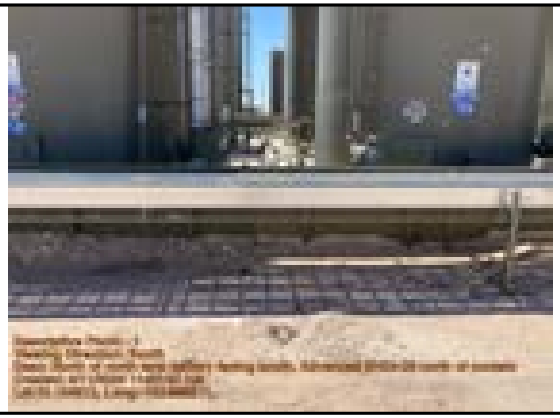
20:29 Field screening only partially completed. Plan to finish the following day.

Next Steps & Recommendations

1

Daily Site Visit Report

Site Photos

Viewing Direction: South	**Viewing Direction**: Northeast
	
North of north tank battery facing south. Advanced BH24-25 north of containment for horizontal delineation.	West of north tank battery facing northeast. Advanced BH24-26 west of containment for horizontal delineation.

Daily Site Visit Report

Viewing Direction: East

Between tank batteries facing east. Advanced BH24-27 west of T- shaped deferral area for horizontal delineation.

Viewing Direction: Northeast

Between tank batteries facing east. Advanced BH24-28 at intersection of pipes inside T-shaped deferral area for vertical delineation.

Viewing Direction: North

East of north tank battery facing east. Advanced BH24-29 inside north deferral area for vertical delineation.

Viewing Direction: North

At site entrance facing north.

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Lakin Pullman

Signature: 

ATTACHMENT 4

Client Name: XTO Energy
Site Name: PLU 29 Big Sinks West CTB
NMOCD Tracking #: nAPP2400930382, nAPP2401043023
Project #: 23E-05485 Phases 02 and 03
Lab Reports: 890-6269-1, 890-6271-1, 885-836-1, 885-837-1, 885-835-1, 885-1453-1, and 885-2903-1

Table 2. Initial Characterization Sample Field Screen and Laboratory Results - Depth to Groundwater 51-100 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	February 26, 2024	-	-	17,500	-	-	-	-	-	-	-	-
	2	February 27, 2024	-	46	268	-	-	-	-	-	-	-	-
	3	February 27, 2024	-	48	153	ND	ND	ND	ND	ND	ND	ND	177
BH24-02	0	February 26, 2024	-	50	148	ND	ND	ND	ND	ND	ND	ND	202
	2	February 26, 2024	-	45	263	ND	ND	ND	ND	ND	ND	ND	224
	3.5	February 26, 2024	-	21	275	ND	ND	ND	ND	ND	ND	ND	153
BH24-03	0	February 27, 2024	-	9,999	303	-	-	-	-	-	-	-	-
	2	February 27, 2024	-	598	163	-	-	-	-	-	-	-	-
	3.75	February 27, 2024	-	64	70	ND	0.0433	**212**	**3840**	**120**	**4052**	**4172**	75.2
	4	March 18, 2024	-	41	168	ND	ND	ND	ND	ND	ND	ND	93
BH24-04	0	February 26, 2024	-	207	160	-	-	-	-	-	-	-	-
	2	February 26, 2024	-	62	123	-	-	-	-	-	-	-	-
BH24-05	0	February 26, 2024	-	84	108	-	-	-	-	-	-	-	-
	2	February 26, 2024	-	1,118	125	-	-	-	-	-	-	-	-
BH24-06	0	February 26, 2024	-	907	235	-	-	-	-	-	-	-	-
	2	February 26, 2024	-	67	52	-	-	-	-	-	-	-	-
BH24-07	0	February 26, 2024	-	608	125	-	-	-	-	-	-	-	-
	2	February 26, 2024	-	5	95	-	-	-	-	-	-	-	-
BH24-08	0	February 26, 2024	-	542	174	-	-	-	-	-	-	-	-
	2	February 26, 2024	-	14	95	-	-	-	-	-	-	-	-
BH24-09	0	February 26, 2024	-	214	145	-	-	-	-	-	-	-	-
	2	February 26, 2024	-	53	75	-	-	-	-	-	-	-	-
BH24-10	0	February 28, 2024	-	44	55	ND	ND	ND	14	ND	14	14	170
	2	February 28, 2024	-	13	73	ND	ND	ND	10	ND	10	10	ND
BH24-11	0	March 6, 2024	-	168	275	-	-	-	-	-	-	-	-
	2	March 6, 2024	-	38	160	-	-	-	-	-	-	-	-
	3.75	March 6, 2024	-	51	143	ND	ND	ND	16	ND	16	16	ND
BH24-12	0	February 28, 2024	-	-	5,655	-	-	-	-	-	-	-	-
	2	February 28, 2024	-	-	700	-	-	-	-	-	-	-	-
BH24-13	0	February 28, 2024	-	77	325	ND	ND	ND	16	ND	16	16	410
	2	February 28, 2024	-	10	118	ND	ND	ND	ND	ND	ND	ND	ND
BH24-14	0	February 28, 2024	-	40	248	ND	ND	ND	ND	ND	ND	ND	ND
	2	February 28, 2024	-	29	158	ND	ND	ND	ND	ND	ND	ND	ND
BH24-15	0	February 28, 2024	-	-	8,125	-	-	-	-	-	-	-	-
	2	February 28, 2024	-	-	203	-	-	-	-	-	-	-	-
BH24-16	0	February 28, 2024	-	237	178	-	-	-	-	-	-	-	-
BH24-17	0	March 4, 2024	-	51	295	ND	0.33	ND	ND	ND	ND	ND	63
	2	March 4, 2024	-	20	250	ND	ND	ND	ND	ND	ND	ND	74
BH24-18	0	March 4, 2024	-	269	188	-	-	-	-	-	-	-	-
	2	March 4, 2024	-	13	175	-	-	-	-	-	-	-	-
BH24-19	0	March 4, 2024	-	63	120	ND	ND	ND	ND	ND	ND	ND	ND
	2	March 4, 2024	-	20	120	ND	ND	ND	ND	ND	ND	ND	ND
BH24-20	0	March 4, 2024	-	33	188	ND	ND	ND	ND	ND	ND	ND	ND
	2	March 4, 2024	-	40	213	ND	ND	ND	ND	ND	ND	ND	ND
BH24-21	0	March 5, 2024	-	605	273	-	-	-	-	-	-	-	-
	2	March 5, 2024	-	20	225	-	-	-	-	-	-	-	-
BH24-22	0	March 5, 2024	-	-	5,913	-	-	-	-	-	-	-	-
	2	March 5, 2024	-	67	468	-	-	-	-	-	-	-	-

Client Name: XTO Energy
Site Name: PLU 29 Big Sinks West CTB
NMOCD Tracking #: nAPP2400930382, nAPP2401043023
Project #: 23E-05485 Phases 02 and 03
Lab Reports: 890-6269-1, 890-6271-1, 885-836-1, 885-837-1, 885-835-1, 885-1453-1, and 885-2903-1

Table 2. Initial Characterization Sample Field Screen and Laboratory Results - Depth to Groundwater 51-100 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)
BH24-23	0	March 5, 2024	-	126	425	-	-	-	-	-	-	-	-
BH24-24	0	March 6, 2024	-	132	178	ND	ND	ND	30	ND	30	30	62
	2	March 6, 2024	-	33	160	ND	ND	ND	ND	ND	ND	ND	ND
BH24-25	0	April 11, 2024	3	44	441	ND	ND	ND	ND	ND	ND	ND	21
	2	April 13, 2024	2	26	161	ND	ND	ND	ND	ND	ND	ND	36
BH24-26	0	April 13, 2024	2	10	401	ND	ND	ND	ND	ND	ND	ND	24
	2	April 13, 2024	1	25	141	ND	ND	ND	ND	ND	ND	ND	18
BH24-27	0	April 13, 2024	1	43	139	ND	ND	ND	ND	ND	ND	ND	8.7
	2	April 13, 2024	0	42	132	ND	ND	ND	ND	ND	ND	ND	ND
BH24-28	0	April 13, 2024	77		1119	ND	ND	19	ND	ND	19	19	78
	2	April 13, 2024	5	45	163	ND	ND	ND	ND	ND	ND	ND	24
	3	April 13, 2024	3	79	191	ND	ND	ND	24	ND	24	24	20
BH24-29	0	April 13, 2024	11	-	2881	ND	ND	ND	ND	ND	ND	ND	**15000**
	2	April 13, 2024	1	50	430	ND	ND	ND	ND	ND	ND	ND	180
	3	April 13, 2024	0	26	0	ND	ND	ND	ND	ND	ND	ND	ND

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

VERTEX

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Chance Dixon
Vertex
3101 Boyd Dr
Carlsbad, New Mexico 88220

Generated 3/6/2024 11:42:12 AM Revision 1

JOB DESCRIPTION

PLU 29 BIGSINKS WEST CTB
23E-05485

JOB NUMBER

890-6269-1

Eurofins Carlsbad
1089 N Canal St.
Carlsbad NM 88220

See page two for job notes and contact information.

Eurofins Carlsbad

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Authorization

Generated
3/6/2024 11:42:12 AM
Revision 1

Authorized for release by
Jessica Kramer, Project Manager
Jessica.Kramer@et.eurofinsus.com
(432)704-5440

Client: Vertex
Project/Site: PLU 29 BIGSINKS WEST CTB

Laboratory Job ID: 890-6269-1
SDG: 23E-05485

Table of Contents

Definitions/Glossary

Client: Vertex
Project/Site: PLU 29 BIGSINKS WEST CTB

Job ID: 890-6269-1
SDG: 23E-05485

Qualifiers

GC VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
F2	MS/MSD RPD exceeds control limits
S1-	Surrogate recovery exceeds control limits, low biased.
U	Indicates the analyte was analyzed for but not detected.

GC Semi VOA

Qualifier	Qualifier Description
*1	LCS/LCSD RPD exceeds control limits.
S1-	Surrogate recovery exceeds control limits, low biased.
S1+	Surrogate recovery exceeds control limits, high biased.
U	Indicates the analyte was analyzed for but not detected.

HPLC/IC

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

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: 890-6269-1
Project: PLU 29 BIGSINKS WEST CTB

Job ID: 890-6269-1 **Eurofins Carlsbad**

Job Narrative
890-6269-1

REVISION

The report being provided is a revision of the original report sent on 3/4/2024. The report (revision 1) is being revised due to Per client email, requesting sample depths be added to the report.

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 2/28/2024 7:58 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 following samples were received and analyzed from an unpreserved bulk soil jar: BH24-01 (890-6269-1) and BH24-03 (890-6269-2).

GC VOA
Method 8021B: The continuing calibration verification (CCV) associated with batch 880-74453 recovered under the lower control limit for Benzene. The samples associated with this CCV were ran within 12 hours of passing CCV; therefore, the data have been reported.

Method 8021B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 880-74452 and analytical batch 880-74453 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.

Method 8021B: The method blank for preparation batch 880-74452 and 880-74472 and analytical batch 880-74453 contained Benzene above the method detection limit. This target analyte concentration was less than the reporting limit (RL) in the method blank; therefore, re-extraction and/or re-analysis of samples was not performed.

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

GC Semi VOA
Method 8015MOD_NM: Surrogate recovery for the following samples were outside control limits: BH24-01 (890-6269-1), (LCS 880-74529/2-A) and (LCSD 880-74529/3-A). Evidence of matrix interferences is not obvious.

Method 8015MOD_NM: The surrogate recovery for the blank associated with preparation batch 880-74529 and analytical batch 880-74542 was outside the upper control limits.

Method 8015MOD_NM: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 880-74529 and analytical batch 880-74542 recovered outside control limits for the following analytes: Gasoline Range Organics (GRO)-C6-C10.

Method 8015MOD_NM: The continuing calibration verification (CCV) associated with batch 880-74542 recovered above the upper control limit for Diesel Range Organics (Over C10-C28). An acceptable CCV was ran within the 12 hour window, therefore the data has been qualified and reported. The associated sample is impacted: (CCV 880-74542/47).

Case Narrative

Client: Vertex Job ID: 890-6269-1
Project: PLU 29 BIGSINKS WEST CTB

Job ID: 890-6269-1 (Continued) Eurofins Carlsbad

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
Project/Site: PLU 29 BIGSINKS WEST CTB

Job ID: 890-6269-1
SDG: 23E-05485

Client Sample ID: BH24-01

Date Collected: 02/27/24 11:15
Date Received: 02/28/24 07:58
Sample Depth: 3'

Lab Sample ID: 890-6269-1
Matrix: Solid

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		03/01/24 08:42	03/02/24 23:56	1
Toluene	<0.00200	U	0.00200		mg/Kg		03/01/24 08:42	03/02/24 23:56	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		03/01/24 08:42	03/02/24 23:56	1
m-Xylene & p-Xylene	<0.00399	U	0.00399		mg/Kg		03/01/24 08:42	03/02/24 23:56	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		03/01/24 08:42	03/02/24 23:56	1
Xylenes, Total	<0.00399	U	0.00399		mg/Kg		03/01/24 08:42	03/02/24 23:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*84*		*70 - 130*	*03/01/24 08:42*	*03/02/24 23:56*	*1*
1,4-Difluorobenzene (Surr)	*92*		*70 - 130*	*03/01/24 08:42*	*03/02/24 23:56*	*1*

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00399	U	0.00399		mg/Kg			03/02/24 23:56	1

Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<49.7	U	49.7		mg/Kg			03/03/24 22:02	1

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.7	U *1	49.7		mg/Kg		03/03/24 00:31	03/03/24 22:02	1
Diesel Range Organics (Over C10-C28)	<49.7	U	49.7		mg/Kg		03/03/24 00:31	03/03/24 22:02	1
OII Range Organics (Over C28-C36)	<49.7	U	49.7		mg/Kg		03/03/24 00:31	03/03/24 22:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*22*	*S1-*	*70 - 130*	*03/03/24 00:31*	*03/03/24 22:02*	*1*
o-Terphenyl	*9*	*S1-*	*70 - 130*	*03/03/24 00:31*	*03/03/24 22:02*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**177**		4.95		mg/Kg			03/03/24 16:53	1

Client Sample ID: BH24-03

Date Collected: 02/27/24 14:15
Date Received: 02/28/24 07:58
Sample Depth: 3.75'

Lab Sample ID: 890-6269-2
Matrix: Solid

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00198	U	0.00198		mg/Kg		03/01/24 08:42	03/03/24 00:17	1
Toluene	<0.00198	U	0.00198		mg/Kg		03/01/24 08:42	03/03/24 00:17	1
Ethylbenzene	<0.00198	U	0.00198		mg/Kg		03/01/24 08:42	03/03/24 00:17	1
m-Xylene & p-Xylene	**0.0339**		0.00396		mg/Kg		03/01/24 08:42	03/03/24 00:17	1
o-Xylene	**0.00940**		0.00198		mg/Kg		03/01/24 08:42	03/03/24 00:17	1
Xylenes, Total	**0.0433**		0.00396		mg/Kg		03/01/24 08:42	03/03/24 00:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*105*		*70 - 130*	*03/01/24 08:42*	*03/03/24 00:17*	*1*

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Client Sample Results

Client: Vertex
Project/Site: PLU 29 BIGSINKS WEST CTB

Job ID: 890-6269-1
SDG: 23E-05485

Client Sample ID: BH24-03

Date Collected: 02/27/24 14:15
Date Received: 02/28/24 07:58
Sample Depth: 3.75'

Lab Sample ID: 890-6269-2

Matrix: Solid

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,4-Difluorobenzene (Surr)	*100*		*70 - 130*	*03/01/24 08:42*	*03/03/24 00:17*	*1*

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	**0.0433**		0.00396	mg/Kg			03/03/24 00:17	1

Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	**4170**		50.5	mg/Kg			03/03/24 23:06	1

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	**212**	***1**	50.5	mg/Kg		03/03/24 00:31	03/03/24 23:06	1
Diesel Range Organics (Over C10-C28)	**3840**		50.5	mg/Kg		03/03/24 00:31	03/03/24 23:06	1
Oil Range Organics (Over C28-C36)	**120**		50.5	mg/Kg		03/03/24 00:31	03/03/24 23:06	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	*116*		*70 - 130*	*03/03/24 00:31*	*03/03/24 23:06*	*1*
o-Terphenyl	*120*		*70 - 130*	*03/03/24 00:31*	*03/03/24 23:06*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**75.2**		5.04	mg/Kg			03/03/24 16:58	1

Surrogate Summary

Client: Vertex
Project/Site: PLU 29 BIGSINKS WEST CTB

Job ID: 890-6269-1
SDG: 23E-05485

Method: 8021B - Volatile Organic Compounds (GC)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	BFB1 (70-130)	DFBZ1 (70-130)
890-6268-A-21-B MS	Matrix Spike	60 S1-	98
890-6268-A-21-C MSD	Matrix Spike Duplicate	105	95
890-6269-1	BH24-01	84	92
890-6269-2	BH24-03	105	100
LCS 880-74452/1-A	Lab Control Sample	124	102
LCSD 880-74452/2-A	Lab Control Sample Dup	111	117
MB 880-74452/5-A	Method Blank	73	91
MB 880-74472/5-A	Method Blank	78	84

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DFBZ = 1,4-Difluorobenzene (Surr)

Method: 8015B NM - Diesel Range Organics (DRO) (GC)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	1CO1 (70-130)	OTPH1 (70-130)
890-6269-1	BH24-01	22 S1-	9 S1-
890-6269-1 MS	BH24-01	113	112
890-6269-1 MSD	BH24-01	101	100
890-6269-2	BH24-03	116	120
LCS 880-74529/2-A	Lab Control Sample	107	138 S1+
LCSD 880-74529/3-A	Lab Control Sample Dup	112	138 S1+
MB 880-74529/1-A	Method Blank	145 S1+	156 S1+

Surrogate Legend

1CO = 1-Chlorooctane
OTPH = o-Terphenyl

QC Sample Results

Client: Vertex
Project/Site: PLU 29 BIGSINKS WEST CTB

Job ID: 890-6269-1
SDG: 23E-05485

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-74452/5-A
Matrix: Solid
Analysis Batch: 74453

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 74452

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		03/01/24 08:42	03/02/24 20:50	1
Toluene	<0.00200	U	0.00200		mg/Kg		03/01/24 08:42	03/02/24 20:50	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		03/01/24 08:42	03/02/24 20:50	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		03/01/24 08:42	03/02/24 20:50	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		03/01/24 08:42	03/02/24 20:50	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		03/01/24 08:42	03/02/24 20:50	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*73*		*70 - 130*	*03/01/24 08:42*	*03/02/24 20:50*	*1*
1,4-Difluorobenzene (Surr)	*91*		*70 - 130*	*03/01/24 08:42*	*03/02/24 20:50*	*1*

Lab Sample ID: LCS 880-74452/1-A
Matrix: Solid
Analysis Batch: 74453

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 74452

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			0.100	0.09161		mg/Kg		92	70 - 130		
Toluene			0.100	0.09911		mg/Kg		99	70 - 130		
Ethylbenzene			0.100	0.1253		mg/Kg		125	70 - 130		
m-Xylene & p-Xylene			0.200	0.2501		mg/Kg		125	70 - 130		
o-Xylene			0.100	0.1258		mg/Kg		126	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*124*		*70 - 130*
1,4-Difluorobenzene (Surr)	*102*		*70 - 130*

Lab Sample ID: LCSD 880-74452/2-A
Matrix: Solid
Analysis Batch: 74453

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 74452

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene			0.100	0.08061		mg/Kg		81	70 - 130	13	35
Toluene			0.100	0.1001		mg/Kg		100	70 - 130	1	35
Ethylbenzene			0.100	0.1084		mg/Kg		108	70 - 130	14	35
m-Xylene & p-Xylene			0.200	0.2175		mg/Kg		109	70 - 130	14	35
o-Xylene			0.100	0.1087		mg/Kg		109	70 - 130	15	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*111*		*70 - 130*
1,4-Difluorobenzene (Surr)	*117*		*70 - 130*

Lab Sample ID: 890-6268-A-21-B MS
Matrix: Solid
Analysis Batch: 74453

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 74452

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene	<0.00199	U F2 F1	0.101	0.02155	F1	mg/Kg		21	70 - 130		
Toluene	<0.00199	U F2 F1	0.101	0.02183	F1	mg/Kg		22	70 - 130		

QC Sample Results

Client: Vertex
Project/Site: PLU 29 BIGSINKS WEST CTB

Job ID: 890-6269-1
SDG: 23E-05485

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

Lab Sample ID: 890-6268-A-21-B MS — **Client Sample ID: Matrix Spike**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 74453 — **Prep Batch: 74452**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Ethylbenzene	<0.00199	U F2 F1	0.101	0.01728	F1	mg/Kg		17	70 - 130
m-Xylene & p-Xylene	<0.00398	U F2 F1	0.202	0.03325	F1	mg/Kg		16	70 - 130
o-Xylene	<0.00199	U F2 F1	0.101	0.01964	F1	mg/Kg		19	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*60*	*S1-*	*70 - 130*
1,4-Difluorobenzene (Surr)	*98*		*70 - 130*

Lab Sample ID: 890-6268-A-21-C MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 74453 — **Prep Batch: 74452**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	<0.00199	U F2 F1	0.100	0.04052	F2 F1	mg/Kg		40	70 - 130	61	35
Toluene	<0.00199	U F2 F1	0.100	0.03602	F2 F1	mg/Kg		36	70 - 130	49	35
Ethylbenzene	<0.00199	U F2 F1	0.100	0.02814	F2 F1	mg/Kg		28	70 - 130	48	35
m-Xylene & p-Xylene	<0.00398	U F2 F1	0.200	0.06163	F2 F1	mg/Kg		31	70 - 130	60	35
o-Xylene	<0.00199	U F2 F1	0.100	0.03380	F2 F1	mg/Kg		34	70 - 130	53	35

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*105*		*70 - 130*
1,4-Difluorobenzene (Surr)	*95*		*70 - 130*

Lab Sample ID: MB 880-74472/5-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 74453 — **Prep Batch: 74472**

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		03/01/24 11:44	03/02/24 09:39	1
Toluene	<0.00200	U	0.00200	mg/Kg		03/01/24 11:44	03/02/24 09:39	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		03/01/24 11:44	03/02/24 09:39	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	mg/Kg		03/01/24 11:44	03/02/24 09:39	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		03/01/24 11:44	03/02/24 09:39	1
Xylenes, Total	<0.00400	U	0.00400	mg/Kg		03/01/24 11:44	03/02/24 09:39	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*78*		*70 - 130*	*03/01/24 11:44*	*03/02/24 09:39*	*1*
1,4-Difluorobenzene (Surr)	*84*		*70 - 130*	*03/01/24 11:44*	*03/02/24 09:39*	*1*

Method: 8015B NM - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 880-74529/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 74542 — **Prep Batch: 74529**

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0	mg/Kg		03/03/24 00:31	03/03/24 20:56	1

QC Sample Results

Client: Vertex
Project/Site: PLU 29 BIGSINKS WEST CTB

Job ID: 890-6269-1
SDG: 23E-05485

Method: 8015B NM - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: MB 880-74529/1-A
Matrix: Solid
Analysis Batch: 74542

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 74529

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		03/03/24 00:31	03/03/24 20:56	1
Oil Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		03/03/24 00:31	03/03/24 20:56	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*145*	*S1+*	*70 - 130*	*03/03/24 00:31*	*03/03/24 20:56*	*1*
o-Terphenyl	*156*	*S1+*	*70 - 130*	*03/03/24 00:31*	*03/03/24 20:56*	*1*

Lab Sample ID: LCS 880-74529/2-A
Matrix: Solid
Analysis Batch: 74542

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 74529

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics (GRO)-C6-C10			1000	877.9		mg/Kg		88	70 - 130		
Diesel Range Organics (Over C10-C28)			1000	910.2		mg/Kg		91	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1-Chlorooctane	*107*		*70 - 130*
o-Terphenyl	*138*	*S1+*	*70 - 130*

Lab Sample ID: LCSD 880-74529/3-A
Matrix: Solid
Analysis Batch: 74542

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 74529

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10			1000	1192	*1	mg/Kg		119	70 - 130	30	20
Diesel Range Organics (Over C10-C28)			1000	939.0		mg/Kg		94	70 - 130	3	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1-Chlorooctane	*112*		*70 - 130*
o-Terphenyl	*138*	*S1+*	*70 - 130*

Lab Sample ID: 890-6269-1 MS
Matrix: Solid
Analysis Batch: 74542

Client Sample ID: BH24-01
Prep Type: Total/NA
Prep Batch: 74529

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics (GRO)-C6-C10	<49.7	U *1	1000	1081		mg/Kg		108	70 - 130		
Diesel Range Organics (Over C10-C28)	<49.7	U	1000	1020		mg/Kg		97	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1-Chlorooctane	*113*		*70 - 130*
o-Terphenyl	*112*		*70 - 130*

QC Sample Results

Client: Vertex
Project/Site: PLU 29 BIGSINKS WEST CTB

Job ID: 890-6269-1
SDG: 23E-05485

Method: 8015B NM - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: 890-6269-1 MSD
Matrix: Solid
Analysis Batch: 74542

Client Sample ID: BH24-01
Prep Type: Total/NA
Prep Batch: 74529

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10	<49.7	U *1	1000	920.6		mg/Kg		92	70 - 130	16	20
Diesel Range Organics (Over C10-C28)	<49.7	U	1000	916.8		mg/Kg		87	70 - 130	11	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1-Chlorooctane	*101*		*70 - 130*
o-Terphenyl	*100*		*70 - 130*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-74304/1-A
Matrix: Solid
Analysis Batch: 74485

Client Sample ID: Method Blank
Prep Type: Soluble

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.00	U	5.00		mg/Kg			03/03/24 15:19	1

Lab Sample ID: LCS 880-74304/2-A
Matrix: Solid
Analysis Batch: 74485

Client Sample ID: Lab Control Sample
Prep Type: Soluble

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			250	244.1		mg/Kg		98	90 - 110		

Lab Sample ID: LCSD 880-74304/3-A
Matrix: Solid
Analysis Batch: 74485

Client Sample ID: Lab Control Sample Dup
Prep Type: Soluble

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride			250	245.7		mg/Kg		98	90 - 110	1	20

Lab Sample ID: 890-6269-2 MS
Matrix: Solid
Analysis Batch: 74485

Client Sample ID: BH24-03
Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	75.2		252	330.3		mg/Kg		101	90 - 110		

Lab Sample ID: 890-6269-2 MSD
Matrix: Solid
Analysis Batch: 74485

Client Sample ID: BH24-03
Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	75.2		252	332.1		mg/Kg		102	90 - 110	1	20

QC Association Summary

Client: Vertex
Project/Site: PLU 29 BIGSINKS WEST CTB

Job ID: 890-6269-1
SDG: 23E-05485

GC VOA

Prep Batch: 74452

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-6269-1	BH24-01	Total/NA	Solid	5035	
890-6269-2	BH24-03	Total/NA	Solid	5035	
MB 880-74452/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-74452/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-74452/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
890-6268-A-21-B MS	Matrix Spike	Total/NA	Solid	5035	
890-6268-A-21-C MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

Analysis Batch: 74453

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-6269-1	BH24-01	Total/NA	Solid	8021B	74452
890-6269-2	BH24-03	Total/NA	Solid	8021B	74452
MB 880-74452/5-A	Method Blank	Total/NA	Solid	8021B	74452
MB 880-74472/5-A	Method Blank	Total/NA	Solid	8021B	74472
LCS 880-74452/1-A	Lab Control Sample	Total/NA	Solid	8021B	74452
LCSD 880-74452/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	74452
890-6268-A-21-B MS	Matrix Spike	Total/NA	Solid	8021B	74452
890-6268-A-21-C MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	74452

Prep Batch: 74472

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 880-74472/5-A	Method Blank	Total/NA	Solid	5035	

Analysis Batch: 74722

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-6269-1	BH24-01	Total/NA	Solid	Total BTEX	
890-6269-2	BH24-03	Total/NA	Solid	Total BTEX	

GC Semi VOA

Prep Batch: 74529

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-6269-1	BH24-01	Total/NA	Solid	8015NM Prep	
890-6269-2	BH24-03	Total/NA	Solid	8015NM Prep	
MB 880-74529/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-74529/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-74529/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
890-6269-1 MS	BH24-01	Total/NA	Solid	8015NM Prep	
890-6269-1 MSD	BH24-01	Total/NA	Solid	8015NM Prep	

Analysis Batch: 74542

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-6269-1	BH24-01	Total/NA	Solid	8015B NM	74529
890-6269-2	BH24-03	Total/NA	Solid	8015B NM	74529
MB 880-74529/1-A	Method Blank	Total/NA	Solid	8015B NM	74529
LCS 880-74529/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	74529
LCSD 880-74529/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	74529
890-6269-1 MS	BH24-01	Total/NA	Solid	8015B NM	74529
890-6269-1 MSD	BH24-01	Total/NA	Solid	8015B NM	74529

QC Association Summary

Client: Vertex
Project/Site: PLU 29 BIGSINKS WEST CTB

Job ID: 890-6269-1
SDG: 23E-05485

GC Semi VOA

Analysis Batch: 74705

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-6269-1	BH24-01	Total/NA	Solid	8015 NM	
890-6269-2	BH24-03	Total/NA	Solid	8015 NM	

HPLC/IC

Leach Batch: 74304

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-6269-1	BH24-01	Soluble	Solid	DI Leach	
890-6269-2	BH24-03	Soluble	Solid	DI Leach	
MB 880-74304/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-74304/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-74304/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
890-6269-2 MS	BH24-03	Soluble	Solid	DI Leach	
890-6269-2 MSD	BH24-03	Soluble	Solid	DI Leach	

Analysis Batch: 74485

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-6269-1	BH24-01	Soluble	Solid	300.0	74304
890-6269-2	BH24-03	Soluble	Solid	300.0	74304
MB 880-74304/1-A	Method Blank	Soluble	Solid	300.0	74304
LCS 880-74304/2-A	Lab Control Sample	Soluble	Solid	300.0	74304
LCSD 880-74304/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	74304
890-6269-2 MS	BH24-03	Soluble	Solid	300.0	74304
890-6269-2 MSD	BH24-03	Soluble	Solid	300.0	74304

Lab Chronicle

Client: Vertex
Project/Site: PLU 29 BIGSINKS WEST CTB

Job ID: 890-6269-1
SDG: 23E-05485

Client Sample ID: BH24-01
Date Collected: 02/27/24 11:15
Date Received: 02/28/24 07:58

Lab Sample ID: 890-6269-1
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.01 g	5 mL	74452	03/01/24 08:42	EL	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	74453	03/02/24 23:56	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			74722	03/02/24 23:56	SM	EET MID
Total/NA	Analysis	8015 NM		1			74705	03/03/24 22:02	SM	EET MID
Total/NA	Prep	8015NM Prep			10.06 g	10 mL	74529	03/03/24 00:31	TKC	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	74542	03/03/24 22:02	SM	EET MID
Soluble	Leach	DI Leach			5.05 g	50 mL	74304	02/29/24 11:10	SMC	EET MID
Soluble	Analysis	300.0		1			74485	03/03/24 16:53	CH	EET MID

Client Sample ID: BH24-03
Date Collected: 02/27/24 14:15
Date Received: 02/28/24 07:58

Lab Sample ID: 890-6269-2
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.05 g	5 mL	74452	03/01/24 08:42	EL	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	74453	03/03/24 00:17	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			74722	03/03/24 00:17	SM	EET MID
Total/NA	Analysis	8015 NM		1			74705	03/03/24 23:06	SM	EET MID
Total/NA	Prep	8015NM Prep			9.90 g	10 mL	74529	03/03/24 00:31	TKC	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	74542	03/03/24 23:06	SM	EET MID
Soluble	Leach	DI Leach			4.96 g	50 mL	74304	02/29/24 11:10	SMC	EET MID
Soluble	Analysis	300.0		1			74485	03/03/24 16:58	CH	EET MID

Laboratory References:
EET MID = Eurofins Midland, 1211 W. Florida Ave, Midland, TX 79701, TEL (432)704-5440

Accreditation/Certification Summary

Client: Vertex
Project/Site: PLU 29 BIGSINKS WEST CTB

Job ID: 890-6269-1
SDG: 23E-05485

Laboratory: Eurofins Midland

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Texas	NELAP	T104704400-23-26	06-30-24

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
8015 NM		Solid	Total TPH
Total BTEX		Solid	Total BTEX

Method Summary

Client: Vertex
Project/Site: PLU 29 BIGSINKS WEST CTB

Job ID: 890-6269-1
SDG: 23E-05485

Method	Method Description	Protocol	Laboratory
8021B	Volatile Organic Compounds (GC)	SW846	EET MID
Total BTEX	Total BTEX Calculation	TAL SOP	EET MID
8015 NM	Diesel Range Organics (DRO) (GC)	SW846	EET MID
8015B NM	Diesel Range Organics (DRO) (GC)	SW846	EET MID
300.0	Anions, Ion Chromatography	EPA	EET MID
5035	Closed System Purge and Trap	SW846	EET MID
8015NM Prep	Microextraction	SW846	EET MID
DI Leach	Deionized Water Leaching Procedure	ASTM	EET MID

Protocol References:

ASTM = ASTM International
EPA = US Environmental Protection Agency
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.
TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

Laboratory References:

EET MID = Eurofins Midland, 1211 W. Florida Ave, Midland, TX 79701, TEL (432)704-5440

Sample Summary

Client: Vertex
Project/Site: PLU 29 BIGSINKS WEST CTB

Job ID: 890-6269-1
SDG: 23E-05485

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-6269-1	BH24-01	Solid	02/27/24 11:15	02/28/24 07:58	3'
890-6269-2	BH24-03	Solid	02/27/24 14:15	02/28/24 07:58	3.75'

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Chain of Custody

Work Order No: ______

Project Manager:	[illegible]	Bill to: (if different)	XTO Energy
Company Name:	[illegible]	Company Name:	[illegible]
Address:	[illegible]	Address:	[illegible]
City, State ZIP:	[illegible]	City, State ZIP:	[illegible]
Phone:	[illegible]	Email:	[illegible]

Project Name:	[illegible]
Project Number:	23C-[illegible]
Project Location:	
Sampler's Name:	[illegible]

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Analysis Request
BH24-01	Soil	[illegible]	[illegible]	[illegible]	TPH, BTEX, Chloride
BH24-03	↓	↓	[illegible]	[illegible]	TPH, BTEX, Chloride

Total 200.7 / 6010 200.8 / 6020 8RCRA 13PPM Texas 11 Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO2 Na Sr Tl Sn U V Zn

Circle Method(s) and Metal(s) to be analyzed TCLP / SPLP 6010 : 8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Tl U Hg: 1631 / 245.1 / 7470 / 7471

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
[signature]	[signature]	[illegible]			

Login Sample Receipt Checklist

Client: Vertex

Job Number: 890-6269-1
SDG Number: 23E-05485

Login Number: 6269
List Number: 1
Creator: Lopez, Abraham

List Source: Eurofins Carlsbad

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.	N/A	Refer to Job Narrative for details.
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").	N/A	

Login Sample Receipt Checklist

Client: Vertex

Job Number: 890-6269-1
SDG Number: 23E-05485

Login Number: 6269
List Number: 2
Creator: Kramer, Jessica

List Source: Eurofins Midland
List Creation: 03/01/24 08:03 AM

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.	True	
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").	N/A	

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ANALYTICAL REPORT

PREPARED FOR

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

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JOB DESCRIPTION

PLU29 Big Sinks West CTB

JOB NUMBER

885-837-1

Eurofins Albuquerque
4901 Hawkins NE
Albuquerque NM 87109

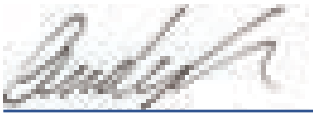
See page two for job notes and contact information.

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



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

Client: Vertex
Project/Site: PLU29 Big Sinks West CTB

Laboratory Job ID: 885-837-1

Table of Contents

Definitions/Glossary

Client: Vertex Job ID: 885-837-1
Project/Site: PLU29 Big Sinks West CTB

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
Project: PLU29 Big Sinks West CTB

Job ID: 885-837-1

Job ID: 885-837-1 Eurofins Albuquerque

Job Narrative
885-837-1

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 3/9/2024 8:30 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 1.0°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
Method 300_OF_28D_PREC: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 885-1629 and analytical batch 885-1697 were not calculated due to 20x dilution rendering original sample non-detect. 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.

Client Sample Results

Client: Vertex
Project/Site: PLU29 Big Sinks West CTB

Job ID: 885-837-1

Client Sample ID: BH24-10 0'

Lab Sample ID: 885-837-1
Matrix: Solid
Date Collected: 02/28/24 10:30
Date Received: 03/09/24 08:30

Method: SW846 8015D - 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		03/12/24 09:51	03/13/24 16:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*91*		*15 - 244*	*03/12/24 09:51*	*03/13/24 16:08*	*1*

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		03/12/24 09:51	03/13/24 16:08	1
Ethylbenzene	ND		0.049		mg/Kg		03/12/24 09:51	03/13/24 16:08	1
Toluene	ND		0.049		mg/Kg		03/12/24 09:51	03/13/24 16:08	1
Xylenes, Total	ND		0.098		mg/Kg		03/12/24 09:51	03/13/24 16:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*85*		*39 - 146*	*03/12/24 09:51*	*03/13/24 16:08*	*1*

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**14**		9.5		mg/Kg		03/12/24 14:00	03/12/24 23:57	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		03/12/24 14:00	03/12/24 23:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*99*		*69 - 147*	*03/12/24 14:00*	*03/12/24 23:57*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**170**		60		mg/Kg		03/12/24 16:30	03/13/24 05:33	20

Client Sample ID: BH24-10 2'

Lab Sample ID: 885-837-2
Matrix: Solid
Date Collected: 02/28/24 10:45
Date Received: 03/09/24 08:30

Method: SW846 8015D - 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		03/12/24 09:51	03/13/24 16:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*15 - 244*	*03/12/24 09:51*	*03/13/24 16:29*	*1*

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.023		mg/Kg		03/12/24 09:51	03/13/24 16:29	1
Ethylbenzene	ND		0.046		mg/Kg		03/12/24 09:51	03/13/24 16:29	1
Toluene	ND		0.046		mg/Kg		03/12/24 09:51	03/13/24 16:29	1
Xylenes, Total	ND		0.093		mg/Kg		03/12/24 09:51	03/13/24 16:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*86*		*39 - 146*	*03/12/24 09:51*	*03/13/24 16:29*	*1*

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**10**		8.7		mg/Kg		03/12/24 14:00	03/13/24 00:09	1
Motor Oil Range Organics [C28-C40]	ND		43		mg/Kg		03/12/24 14:00	03/13/24 00:09	1

Client Sample Results

Client: Vertex
Project/Site: PLU29 Big Sinks West CTB

Job ID: 885-837-1

Client Sample ID: BH24-10 2'
Date Collected: 02/28/24 10:45
Date Received: 03/09/24 08:30

Lab Sample ID: 885-837-2
Matrix: Solid

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Di-n-octyl phthalate (Surr)	*91*		*69 - 147*	*03/12/24 14:00*	*03/13/24 00:09*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		03/12/24 16:30	03/13/24 06:18	20

Client Sample ID: BH24-13 0'
Date Collected: 02/28/24 11:15
Date Received: 03/09/24 08:30

Lab Sample ID: 885-837-3
Matrix: Solid

Method: SW846 8015D - 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		03/12/24 09:51	03/13/24 16:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*95*		*15 - 244*	*03/12/24 09:51*	*03/13/24 16:51*	*1*

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.023		mg/Kg		03/12/24 09:51	03/13/24 16:51	1
Ethylbenzene	ND		0.046		mg/Kg		03/12/24 09:51	03/13/24 16:51	1
Toluene	ND		0.046		mg/Kg		03/12/24 09:51	03/13/24 16:51	1
Xylenes, Total	ND		0.093		mg/Kg		03/12/24 09:51	03/13/24 16:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*86*		*39 - 146*	*03/12/24 09:51*	*03/13/24 16:51*	*1*

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**16**		9.1		mg/Kg		03/12/24 14:00	03/13/24 00:21	1
Motor Oil Range Organics [C28-C40]	ND		45		mg/Kg		03/12/24 14:00	03/13/24 00:21	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Di-n-octyl phthalate (Surr)	*97*		*69 - 147*	*03/12/24 14:00*	*03/13/24 00:21*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**410**		60		mg/Kg		03/13/24 10:18	03/13/24 13:59	20

Client Sample ID: BH24-13 2'
Date Collected: 02/28/24 11:30
Date Received: 03/09/24 08:30

Lab Sample ID: 885-837-4
Matrix: Solid

Method: SW846 8015D - 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		03/12/24 09:51	03/13/24 17:13	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*94*		*15 - 244*	*03/12/24 09:51*	*03/13/24 17:13*	*1*

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		03/12/24 09:51	03/13/24 17:13	1

Client Sample Results

Client: Vertex
Project/Site: PLU29 Big Sinks West CTB

Job ID: 885-837-1

Client Sample ID: BH24-13 2'

Lab Sample ID: 885-837-4
Matrix: Solid
Date Collected: 02/28/24 11:30
Date Received: 03/09/24 08:30

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	ND		0.049		mg/Kg		03/12/24 09:51	03/13/24 17:13	1
Toluene	ND		0.049		mg/Kg		03/12/24 09:51	03/13/24 17:13	1
Xylenes, Total	ND		0.098		mg/Kg		03/12/24 09:51	03/13/24 17:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*86*		*39 - 146*	*03/12/24 09:51*	*03/13/24 17:13*	*1*

Method: SW846 8015D - 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		03/12/24 14:00	03/13/24 00:33	1
Motor Oil Range Organics [C28-C40]	ND		46		mg/Kg		03/12/24 14:00	03/13/24 00:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*98*		*69 - 147*	*03/12/24 14:00*	*03/13/24 00:33*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		03/13/24 10:18	03/13/24 14:36	20

Client Sample ID: BH24-14 0'

Lab Sample ID: 885-837-5
Matrix: Solid
Date Collected: 02/28/24 12:00
Date Received: 03/09/24 08:30

Method: SW846 8015D - 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		03/12/24 09:51	03/13/24 17:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*15 - 244*	*03/12/24 09:51*	*03/13/24 17:35*	*1*

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		03/12/24 09:51	03/13/24 17:35	1
Ethylbenzene	ND		0.049		mg/Kg		03/12/24 09:51	03/13/24 17:35	1
Toluene	ND		0.049		mg/Kg		03/12/24 09:51	03/13/24 17:35	1
Xylenes, Total	ND		0.098		mg/Kg		03/12/24 09:51	03/13/24 17:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*88*		*39 - 146*	*03/12/24 09:51*	*03/13/24 17:35*	*1*

Method: SW846 8015D - 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		03/12/24 14:00	03/13/24 00:45	1
Motor Oil Range Organics [C28-C40]	ND		45		mg/Kg		03/12/24 14:00	03/13/24 00:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*97*		*69 - 147*	*03/12/24 14:00*	*03/13/24 00:45*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		59		mg/Kg		03/13/24 10:18	03/13/24 15:13	20

Client Sample Results

Client: Vertex
Job ID: 885-837-1
Project/Site: PLU29 Big Sinks West CTB

Client Sample ID: BH24-14 2'
Lab Sample ID: 885-837-6
Date Collected: 02/28/24 12:15
Matrix: Solid
Date Received: 03/09/24 08:30

Method: SW846 8015D - 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		03/12/24 09:51	03/13/24 17:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*15 - 244*	*03/12/24 09:51*	*03/13/24 17:57*	*1*

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		03/12/24 09:51	03/13/24 17:57	1
Ethylbenzene	ND		0.048		mg/Kg		03/12/24 09:51	03/13/24 17:57	1
Toluene	ND		0.048		mg/Kg		03/12/24 09:51	03/13/24 17:57	1
Xylenes, Total	ND		0.097		mg/Kg		03/12/24 09:51	03/13/24 17:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*89*		*39 - 146*	*03/12/24 09:51*	*03/13/24 17:57*	*1*

Method: SW846 8015D - 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		03/12/24 14:00	03/13/24 00:57	1
Motor Oil Range Organics [C28-C40]	ND		49		mg/Kg		03/12/24 14:00	03/13/24 00:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*101*		*69 - 147*	*03/12/24 14:00*	*03/13/24 00:57*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		03/13/24 10:18	03/13/24 15:25	20

QC Sample Results

Client: Vertex
Project/Site: PLU29 Big Sinks West CTB

Job ID: 885-837-1

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

Lab Sample ID: MB 885-1570/1-A
Matrix: Solid
Analysis Batch: 1717

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 1570

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		03/12/24 09:51	03/13/24 15:46	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*15 - 244*	*03/12/24 09:51*	*03/13/24 15:46*	*1*

Lab Sample ID: LCS 885-1570/2-A
Matrix: Solid
Analysis Batch: 1717

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 1570

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)	*203*		*15 - 244*

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 885-1570/1-A
Matrix: Solid
Analysis Batch: 1775

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 1570

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		03/12/24 09:51	03/13/24 15:46	1
Ethylbenzene	ND		0.050		mg/Kg		03/12/24 09:51	03/13/24 15:46	1
Toluene	ND		0.050		mg/Kg		03/12/24 09:51	03/13/24 15:46	1
Xylenes, Total	ND		0.10		mg/Kg		03/12/24 09:51	03/13/24 15:46	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*87*		*39 - 146*	*03/12/24 09:51*	*03/13/24 15:46*	*1*

Lab Sample ID: LCS 885-1570/3-A
Matrix: Solid
Analysis Batch: 1775

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 1570

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			1.00	0.856		mg/Kg		86	70 - 130		
Ethylbenzene			1.00	0.860		mg/Kg		86	70 - 130		
o-Xylene			1.00	0.864		mg/Kg		86	70 - 130		
Toluene			1.00	0.861		mg/Kg		86	70 - 130		
Xylenes, Total			3.00	2.59		mg/Kg		86	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*39 - 146*

QC Sample Results

Client: Vertex
Project/Site: PLU29 Big Sinks West CTB

Job ID: 885-837-1

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

Lab Sample ID: MB 885-1591/1-A
Matrix: Solid
Analysis Batch: 1646

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 1591

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		10		mg/Kg		03/12/24 14:00	03/12/24 20:43	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		03/12/24 14:00	03/12/24 20:43	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*99*		*69 - 147*	*03/12/24 14:00*	*03/12/24 20:43*	*1*

Lab Sample ID: LCS 885-1591/2-A
Matrix: Solid
Analysis Batch: 1646

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 1591

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Diesel Range Organics [C10-C28]			50.0	38.8		mg/Kg		78	62 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Di-n-octyl phthalate (Surr)	*94*		*69 - 147*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 885-1610/1-A
Matrix: Solid
Analysis Batch: 1637

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 1610

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.5		mg/Kg		03/12/24 16:30	03/12/24 22:28	1

Lab Sample ID: LCS 885-1610/2-A
Matrix: Solid
Analysis Batch: 1637

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 1610

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			15.0	14.2		mg/Kg		95	90 - 110		

Lab Sample ID: MB 885-1629/1-A
Matrix: Solid
Analysis Batch: 1697

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 1629

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0		mg/Kg		03/13/24 10:18	03/13/24 11:04	1

Lab Sample ID: LCS 885-1629/2-A
Matrix: Solid
Analysis Batch: 1697

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 1629

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			30.2	28.6		mg/Kg		95	90 - 110		

QC Sample Results

Client: Vertex
Project/Site: PLU29 Big Sinks West CTB

Job ID: 885-837-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 885-837-3 MS
Matrix: Solid
Analysis Batch: 1697

Client Sample ID: BH24-13 0'
Prep Type: Total/NA
Prep Batch: 1629

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	410		30.0	418	4	mg/Kg		19	50 - 150

Lab Sample ID: 885-837-3 MSD
Matrix: Solid
Analysis Batch: 1697

Client Sample ID: BH24-13 0'
Prep Type: Total/NA
Prep Batch: 1629

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	410		29.8	438	4	mg/Kg		84	50 - 150	5	20

Lab Sample ID: 885-837-4 MS
Matrix: Solid
Analysis Batch: 1697

Client Sample ID: BH24-13 2'
Prep Type: Total/NA
Prep Batch: 1629

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	ND		30.2	82.6		mg/Kg		NC	50 - 150

Lab Sample ID: 885-837-4 MSD
Matrix: Solid
Analysis Batch: 1697

Client Sample ID: BH24-13 2'
Prep Type: Total/NA
Prep Batch: 1629

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	ND		30.1	82.4		mg/Kg		NC	50 - 150	0	20

QC Association Summary

Client: Vertex
Project/Site: PLU29 Big Sinks West CTB

Job ID: 885-837-1

GC VOA

Prep Batch: 1570

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-837-1	BH24-10 0'	Total/NA	Solid	5030C	
885-837-2	BH24-10 2'	Total/NA	Solid	5030C	
885-837-3	BH24-13 0'	Total/NA	Solid	5030C	
885-837-4	BH24-13 2'	Total/NA	Solid	5030C	
885-837-5	BH24-14 0'	Total/NA	Solid	5030C	
885-837-6	BH24-14 2'	Total/NA	Solid	5030C	
MB 885-1570/1-A	Method Blank	Total/NA	Solid	5030C	
LCS 885-1570/2-A	Lab Control Sample	Total/NA	Solid	5030C	
LCS 885-1570/3-A	Lab Control Sample	Total/NA	Solid	5030C	

Analysis Batch: 1717

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-837-1	BH24-10 0'	Total/NA	Solid	8015D	1570
885-837-2	BH24-10 2'	Total/NA	Solid	8015D	1570
885-837-3	BH24-13 0'	Total/NA	Solid	8015D	1570
885-837-4	BH24-13 2'	Total/NA	Solid	8015D	1570
885-837-5	BH24-14 0'	Total/NA	Solid	8015D	1570
885-837-6	BH24-14 2'	Total/NA	Solid	8015D	1570
MB 885-1570/1-A	Method Blank	Total/NA	Solid	8015D	1570
LCS 885-1570/2-A	Lab Control Sample	Total/NA	Solid	8015D	1570

Analysis Batch: 1775

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-837-1	BH24-10 0'	Total/NA	Solid	8021B	1570
885-837-2	BH24-10 2'	Total/NA	Solid	8021B	1570
885-837-3	BH24-13 0'	Total/NA	Solid	8021B	1570
885-837-4	BH24-13 2'	Total/NA	Solid	8021B	1570
885-837-5	BH24-14 0'	Total/NA	Solid	8021B	1570
885-837-6	BH24-14 2'	Total/NA	Solid	8021B	1570
MB 885-1570/1-A	Method Blank	Total/NA	Solid	8021B	1570
LCS 885-1570/3-A	Lab Control Sample	Total/NA	Solid	8021B	1570

GC Semi VOA

Prep Batch: 1591

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-837-1	BH24-10 0'	Total/NA	Solid	SHAKE	
885-837-2	BH24-10 2'	Total/NA	Solid	SHAKE	
885-837-3	BH24-13 0'	Total/NA	Solid	SHAKE	
885-837-4	BH24-13 2'	Total/NA	Solid	SHAKE	
885-837-5	BH24-14 0'	Total/NA	Solid	SHAKE	
885-837-6	BH24-14 2'	Total/NA	Solid	SHAKE	
MB 885-1591/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 885-1591/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	

Analysis Batch: 1646

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-837-1	BH24-10 0'	Total/NA	Solid	8015D	1591
885-837-2	BH24-10 2'	Total/NA	Solid	8015D	1591
885-837-3	BH24-13 0'	Total/NA	Solid	8015D	1591
885-837-4	BH24-13 2'	Total/NA	Solid	8015D	1591

QC Association Summary

Client: Vertex
Project/Site: PLU29 Big Sinks West CTB

Job ID: 885-837-1

GC Semi VOA (Continued)

Analysis Batch: 1646 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-837-5	BH24-14 0'	Total/NA	Solid	8015D	1591
885-837-6	BH24-14 2'	Total/NA	Solid	8015D	1591
MB 885-1591/1-A	Method Blank	Total/NA	Solid	8015D	1591
LCS 885-1591/2-A	Lab Control Sample	Total/NA	Solid	8015D	1591

HPLC/IC

Prep Batch: 1610

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-837-1	BH24-10 0'	Total/NA	Solid	300_Prep	
885-837-2	BH24-10 2'	Total/NA	Solid	300_Prep	
MB 885-1610/1-A	Method Blank	Total/NA	Solid	300_Prep	
LCS 885-1610/2-A	Lab Control Sample	Total/NA	Solid	300_Prep	

Prep Batch: 1629

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-837-3	BH24-13 0'	Total/NA	Solid	300_Prep	
885-837-4	BH24-13 2'	Total/NA	Solid	300_Prep	
885-837-5	BH24-14 0'	Total/NA	Solid	300_Prep	
885-837-6	BH24-14 2'	Total/NA	Solid	300_Prep	
MB 885-1629/1-A	Method Blank	Total/NA	Solid	300_Prep	
LCS 885-1629/2-A	Lab Control Sample	Total/NA	Solid	300_Prep	
885-837-3 MS	BH24-13 0'	Total/NA	Solid	300_Prep	
885-837-3 MSD	BH24-13 0'	Total/NA	Solid	300_Prep	
885-837-4 MS	BH24-13 2'	Total/NA	Solid	300_Prep	
885-837-4 MSD	BH24-13 2'	Total/NA	Solid	300_Prep	

Analysis Batch: 1637

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-837-1	BH24-10 0'	Total/NA	Solid	300.0	1610
885-837-2	BH24-10 2'	Total/NA	Solid	300.0	1610
MB 885-1610/1-A	Method Blank	Total/NA	Solid	300.0	1610
LCS 885-1610/2-A	Lab Control Sample	Total/NA	Solid	300.0	1610

Analysis Batch: 1697

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-837-3	BH24-13 0'	Total/NA	Solid	300.0	1629
885-837-4	BH24-13 2'	Total/NA	Solid	300.0	1629
885-837-5	BH24-14 0'	Total/NA	Solid	300.0	1629
885-837-6	BH24-14 2'	Total/NA	Solid	300.0	1629
MB 885-1629/1-A	Method Blank	Total/NA	Solid	300.0	1629
LCS 885-1629/2-A	Lab Control Sample	Total/NA	Solid	300.0	1629
885-837-3 MS	BH24-13 0'	Total/NA	Solid	300.0	1629
885-837-3 MSD	BH24-13 0'	Total/NA	Solid	300.0	1629
885-837-4 MS	BH24-13 2'	Total/NA	Solid	300.0	1629
885-837-4 MSD	BH24-13 2'	Total/NA	Solid	300.0	1629

Lab Chronicle

Client: Vertex
Job ID: 885-837-1
Project/Site: PLU29 Big Sinks West CTB

Client Sample ID: BH24-10 0'
Lab Sample ID: 885-837-1
Date Collected: 02/28/24 10:30
Matrix: Solid
Date Received: 03/09/24 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			1570	IMR	EET ALB	03/12/24 09:51
Total/NA	Analysis	8015D		1	1717	IMR	EET ALB	03/13/24 16:08
Total/NA	Prep	5030C			1570	IMR	EET ALB	03/12/24 09:51
Total/NA	Analysis	8021B		1	1775	IMR	EET ALB	03/13/24 16:08
Total/NA	Prep	SHAKE			1591	JU	EET ALB	03/12/24 14:00
Total/NA	Analysis	8015D		1	1646	JU	EET ALB	03/12/24 23:57
Total/NA	Prep	300_Prep			1610	KB	EET ALB	03/12/24 16:30
Total/NA	Analysis	300.0		20	1637	KB	EET ALB	03/13/24 05:33

Client Sample ID: BH24-10 2'
Lab Sample ID: 885-837-2
Date Collected: 02/28/24 10:45
Matrix: Solid
Date Received: 03/09/24 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			1570	IMR	EET ALB	03/12/24 09:51
Total/NA	Analysis	8015D		1	1717	IMR	EET ALB	03/13/24 16:29
Total/NA	Prep	5030C			1570	IMR	EET ALB	03/12/24 09:51
Total/NA	Analysis	8021B		1	1775	IMR	EET ALB	03/13/24 16:29
Total/NA	Prep	SHAKE			1591	JU	EET ALB	03/12/24 14:00
Total/NA	Analysis	8015D		1	1646	JU	EET ALB	03/13/24 00:09
Total/NA	Prep	300_Prep			1610	KB	EET ALB	03/12/24 16:30
Total/NA	Analysis	300.0		20	1637	KB	EET ALB	03/13/24 06:18

Client Sample ID: BH24-13 0'
Lab Sample ID: 885-837-3
Date Collected: 02/28/24 11:15
Matrix: Solid
Date Received: 03/09/24 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			1570	IMR	EET ALB	03/12/24 09:51
Total/NA	Analysis	8015D		1	1717	IMR	EET ALB	03/13/24 16:51
Total/NA	Prep	5030C			1570	IMR	EET ALB	03/12/24 09:51
Total/NA	Analysis	8021B		1	1775	IMR	EET ALB	03/13/24 16:51
Total/NA	Prep	SHAKE			1591	JU	EET ALB	03/12/24 14:00
Total/NA	Analysis	8015D		1	1646	JU	EET ALB	03/13/24 00:21
Total/NA	Prep	300_Prep			1629	KB	EET ALB	03/13/24 10:18
Total/NA	Analysis	300.0		20	1697	KB	EET ALB	03/13/24 13:59

Client Sample ID: BH24-13 2'
Lab Sample ID: 885-837-4
Date Collected: 02/28/24 11:30
Matrix: Solid
Date Received: 03/09/24 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			1570	IMR	EET ALB	03/12/24 09:51
Total/NA	Analysis	8015D		1	1717	IMR	EET ALB	03/13/24 17:13

Lab Chronicle

Client: Vertex
Job ID: 885-837-1
Project/Site: PLU29 Big Sinks West CTB

Client Sample ID: BH24-13 2'
Lab Sample ID: 885-837-4
Date Collected: 02/28/24 11:30
Matrix: Solid
Date Received: 03/09/24 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			1570	IMR	EET ALB	03/12/24 09:51
Total/NA	Analysis	8021B		1	1775	IMR	EET ALB	03/13/24 17:13
Total/NA	Prep	SHAKE			1591	JU	EET ALB	03/12/24 14:00
Total/NA	Analysis	8015D		1	1646	JU	EET ALB	03/13/24 00:33
Total/NA	Prep	300_Prep			1629	KB	EET ALB	03/13/24 10:18
Total/NA	Analysis	300.0		20	1697	KB	EET ALB	03/13/24 14:36

Client Sample ID: BH24-14 0'
Lab Sample ID: 885-837-5
Date Collected: 02/28/24 12:00
Matrix: Solid
Date Received: 03/09/24 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			1570	IMR	EET ALB	03/12/24 09:51
Total/NA	Analysis	8015D		1	1717	IMR	EET ALB	03/13/24 17:35
Total/NA	Prep	5030C			1570	IMR	EET ALB	03/12/24 09:51
Total/NA	Analysis	8021B		1	1775	IMR	EET ALB	03/13/24 17:35
Total/NA	Prep	SHAKE			1591	JU	EET ALB	03/12/24 14:00
Total/NA	Analysis	8015D		1	1646	JU	EET ALB	03/13/24 00:45
Total/NA	Prep	300_Prep			1629	KB	EET ALB	03/13/24 10:18
Total/NA	Analysis	300.0		20	1697	KB	EET ALB	03/13/24 15:13

Client Sample ID: BH24-14 2'
Lab Sample ID: 885-837-6
Date Collected: 02/28/24 12:15
Matrix: Solid
Date Received: 03/09/24 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			1570	IMR	EET ALB	03/12/24 09:51
Total/NA	Analysis	8015D		1	1717	IMR	EET ALB	03/13/24 17:57
Total/NA	Prep	5030C			1570	IMR	EET ALB	03/12/24 09:51
Total/NA	Analysis	8021B		1	1775	IMR	EET ALB	03/13/24 17:57
Total/NA	Prep	SHAKE			1591	JU	EET ALB	03/12/24 14:00
Total/NA	Analysis	8015D		1	1646	JU	EET ALB	03/13/24 00:57
Total/NA	Prep	300_Prep			1629	KB	EET ALB	03/13/24 10:18
Total/NA	Analysis	300.0		20	1697	KB	EET ALB	03/13/24 15:25

Laboratory References:
EET ALB = Eurofins Albuquerque, 4901 Hawkins NE, Albuquerque, NM 87109, TEL (505)345-3975

Accreditation/Certification Summary

Client: Vertex Job ID: 885-837-1
Project/Site: PLU29 Big Sinks West CTB

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
8015D	5030C	Solid	Gasoline Range Organics [C6 - C10]
8015D	SHAKE	Solid	Diesel Range Organics [C10-C28]
8015D	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

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
8015D	5030C	Solid	Gasoline Range Organics [C6 - C10]
8015D	SHAKE	Solid	Diesel Range Organics [C10-C28]
8015D	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

Method Summary

Client: Vertex
Job ID: 885-837-1
Project/Site: PLU29 Big Sinks West CTB

Method	Method Description	Protocol	Laboratory
8015D	Gasoline Range Organics (GRO) (GC)	SW846	EET ALB
8021B	Volatile Organic Compounds (GC)	SW846	EET ALB
8015D	Diesel Range Organics (DRO) (GC)	SW846	EET ALB
300.0	Anions, Ion Chromatography	EPA	EET ALB
300_Prep	Anions, Ion Chromatography, 10% Wt/Vol	EPA	EET ALB
5030C	Purge and Trap	SW846	EET ALB
SHAKE	Preparation, Shake Jar	TestAmerica SOP	EET ALB

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TestAmerica SOP = TestAmerica, Inc., Standard Operating Procedure

Laboratory References:

EET ALB = Eurofins Albuquerque, 4901 Hawkins NE, Albuquerque, NM 87109, TEL (505)345-3975

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Chain of Custody

Cost Center: [illegible]

Work Order No: ______

Project Manager:	[illegible]	Bill to: (if different)	
Company Name:	[illegible]	Company Name:	[illegible]
Address:	[illegible]	Address:	[illegible]
City, State ZIP:	[illegible]	City, State ZIP:	[illegible]
Phone:	[illegible]	Email:	[illegible]

Work Order Comments

Program: UST/PST ☐ PRP ☐ Brownfields ☐ RRC ☐ Superfund ☐

State of Project:

Reporting: Level II ☐ Level III ☐ PST/UST ☐ TRRP ☐ Level IV ☐

Deliverables: EDD ☐ ADaPT ☐ Other:

Project Name:	[illegible]	Turn Around	Routine / Rush
Project Number:	[illegible]	Due Date:	5 DAY
Project Location:			
Sampler's Name:	[illegible]		
PO #:			

ANALYSIS REQUEST: [illegible] (Cl) ; TPH - [illegible] ; [illegible]

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Grab/Comp	# of Cont	[illegible]	[illegible]	[illegible]	Sample Comments
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	
[illegible]			[illegible]	[illegible]						
[illegible]			[illegible]	[illegible]						
[illegible]			[illegible]	[illegible]						
[illegible]			[illegible]	[illegible]						
[illegible]			[illegible]	[illegible]						

Total 200.7 / 6010 200.8 / 6020: 8RCRA 13PPM Texas 11 Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO2 Na Sr Tl Sn U V Zn

Circle Method(s) and Metal(s) to be analyzed TCLP / SPLP 6010: 8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Tl U Hg: 1631 / 245.1 / 7470 / 7471

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	3/1/24 [illegible]

Login Sample Receipt Checklist

Client: Vertex Job Number: 885-837-1

Login Number: 837 **List Source: Eurofins Albuquerque**
List Number: 1
Creator: Casarrubias, Tracy

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
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").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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ANALYTICAL REPORT

PREPARED FOR

Attn: Chance Dixon
Vertex
3101 Boyd Dr
Carlsbad, New Mexico 88220

Generated 3/4/2024 5:14:34 PM

JOB DESCRIPTION

PLU 29 BIGSINKS WEST CTB
23E-05485

JOB NUMBER

890-6271-1

Eurofins Carlsbad
1089 N Canal St.
Carlsbad NM 88220

See page two for job notes and contact information.

Eurofins Carlsbad

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Authorization

Generated
3/4/2024 5:14:34 PM

Authorized for release by
Jessica Kramer, Project Manager
Jessica.Kramer@et.eurofinsus.com
(432)704-5440

Client: Vertex
Project/Site: PLU 29 BIGSINKS WEST CTB

Laboratory Job ID: 890-6271-1
SDG: 23E-05485

Table of Contents

Definitions/Glossary

Client: Vertex Job ID: 890-6271-1
Project/Site: PLU 29 BIGSINKS WEST CTB SDG: 23E-05485

Qualifiers

GC VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
F2	MS/MSD RPD exceeds control limits
S1-	Surrogate recovery exceeds control limits, low biased.
U	Indicates the analyte was analyzed for but not detected.

GC Semi VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

HPLC/IC

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

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: 890-6271-1
Project: PLU 29 BIGSINKS WEST CTB

Job ID: 890-6271-1 Eurofins Carlsbad

Job Narrative
890-6271-1

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 2/28/2024 7:58 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 following samples were received and analyzed from an unpreserved bulk soil jar: BH24-02 (890-6271-1), BH24-02 (890-6271-2) and BH24-02 (890-6271-3).

GC VOA
Method 8021B: The continuing calibration verification (CCV) associated with batch 880-74453 recovered under the lower control limit for Benzene. The samples associated with this CCV were ran within 12 hours of passing CCV; therefore, the data have been reported.

Method 8021B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 880-74452 and analytical batch 880-74453 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.

Method 8021B: The method blank for preparation batch 880-74452 and 880-74472 and analytical batch 880-74453 contained Benzene above the method detection limit. This target analyte concentration was less than the reporting limit (RL) in the method blank; therefore, re-extraction and/or re-analysis of samples was not performed.

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

GC Semi VOA
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
Project/Site: PLU 29 BIGSINKS WEST CTB

Job ID: 890-6271-1
SDG: 23E-05485

Client Sample ID: BH24-02

Date Collected: 02/26/24 14:30
Date Received: 02/28/24 07:58
Sample Depth: 0

Lab Sample ID: 890-6271-1
Matrix: Solid

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00201	U	0.00201		mg/Kg		03/01/24 08:42	03/03/24 01:42	1
Toluene	<0.00201	U	0.00201		mg/Kg		03/01/24 08:42	03/03/24 01:42	1
Ethylbenzene	<0.00201	U	0.00201		mg/Kg		03/01/24 08:42	03/03/24 01:42	1
m-Xylene & p-Xylene	<0.00402	U	0.00402		mg/Kg		03/01/24 08:42	03/03/24 01:42	1
o-Xylene	<0.00201	U	0.00201		mg/Kg		03/01/24 08:42	03/03/24 01:42	1
Xylenes, Total	<0.00402	U	0.00402		mg/Kg		03/01/24 08:42	03/03/24 01:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*81*		*70 - 130*	*03/01/24 08:42*	*03/03/24 01:42*	*1*
1,4-Difluorobenzene (Surr)	*83*		*70 - 130*	*03/01/24 08:42*	*03/03/24 01:42*	*1*

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00402	U	0.00402		mg/Kg			03/03/24 01:42	1

Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<49.9	U	49.9		mg/Kg			03/04/24 03:37	1

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	49.9		mg/Kg		03/03/24 00:24	03/04/24 03:37	1
Diesel Range Organics (Over C10-C28)	<49.9	U	49.9		mg/Kg		03/03/24 00:24	03/04/24 03:37	1
OII Range Organics (Over C28-C36)	<49.9	U	49.9		mg/Kg		03/03/24 00:24	03/04/24 03:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*106*		*70 - 130*	*03/03/24 00:24*	*03/04/24 03:37*	*1*
o-Terphenyl	*87*		*70 - 130*	*03/03/24 00:24*	*03/04/24 03:37*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**202**		5.00		mg/Kg			03/03/24 17:16	1

Client Sample ID: BH24-02

Date Collected: 02/26/24 14:45
Date Received: 02/28/24 07:58
Sample Depth: 2

Lab Sample ID: 890-6271-2
Matrix: Solid

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00202	U	0.00202		mg/Kg		03/01/24 08:42	03/03/24 02:03	1
Toluene	<0.00202	U	0.00202		mg/Kg		03/01/24 08:42	03/03/24 02:03	1
Ethylbenzene	<0.00202	U	0.00202		mg/Kg		03/01/24 08:42	03/03/24 02:03	1
m-Xylene & p-Xylene	<0.00403	U	0.00403		mg/Kg		03/01/24 08:42	03/03/24 02:03	1
o-Xylene	<0.00202	U	0.00202		mg/Kg		03/01/24 08:42	03/03/24 02:03	1
Xylenes, Total	<0.00403	U	0.00403		mg/Kg		03/01/24 08:42	03/03/24 02:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*78*		*70 - 130*	*03/01/24 08:42*	*03/03/24 02:03*	*1*

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Client Sample Results

Client: Vertex
Project/Site: PLU 29 BIGSINKS WEST CTB

Job ID: 890-6271-1
SDG: 23E-05485

Client Sample ID: BH24-02

Date Collected: 02/26/24 14:45
Date Received: 02/28/24 07:58
Sample Depth: 2

Lab Sample ID: 890-6271-2

Matrix: Solid

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

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Difluorobenzene (Surr)	*94*		*70 - 130*	*03/01/24 08:42*	*03/03/24 02:03*	*1*

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00403	U	0.00403		mg/Kg			03/03/24 02:03	1

Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<49.8	U	49.8		mg/Kg			03/04/24 03:58	1

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.8	U	49.8		mg/Kg		03/03/24 00:24	03/04/24 03:58	1
Diesel Range Organics (Over C10-C28)	<49.8	U	49.8		mg/Kg		03/03/24 00:24	03/04/24 03:58	1
OII Range Organics (Over C28-C36)	<49.8	U	49.8		mg/Kg		03/03/24 00:24	03/04/24 03:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*113*		*70 - 130*	*03/03/24 00:24*	*03/04/24 03:58*	*1*
o-Terphenyl	*101*		*70 - 130*	*03/03/24 00:24*	*03/04/24 03:58*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**224**		5.00		mg/Kg			03/03/24 17:22	1

Client Sample ID: BH24-02

Date Collected: 02/26/24 15:00
Date Received: 02/28/24 07:58
Sample Depth: 3.5

Lab Sample ID: 890-6271-3

Matrix: Solid

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00199	U	0.00199		mg/Kg		03/01/24 08:42	03/03/24 02:23	1
Toluene	<0.00199	U	0.00199		mg/Kg		03/01/24 08:42	03/03/24 02:23	1
Ethylbenzene	<0.00199	U	0.00199		mg/Kg		03/01/24 08:42	03/03/24 02:23	1
m-Xylene & p-Xylene	<0.00398	U	0.00398		mg/Kg		03/01/24 08:42	03/03/24 02:23	1
o-Xylene	<0.00199	U	0.00199		mg/Kg		03/01/24 08:42	03/03/24 02:23	1
Xylenes, Total	<0.00398	U	0.00398		mg/Kg		03/01/24 08:42	03/03/24 02:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*79*		*70 - 130*	*03/01/24 08:42*	*03/03/24 02:23*	*1*
1,4-Difluorobenzene (Surr)	*88*		*70 - 130*	*03/01/24 08:42*	*03/03/24 02:23*	*1*

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00398	U	0.00398		mg/Kg			03/03/24 02:23	1

Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<49.6	U	49.6		mg/Kg			03/04/24 04:19	1

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Client Sample Results

Client: Vertex
Project/Site: PLU 29 BIGSINKS WEST CTB

Job ID: 890-6271-1
SDG: 23E-05485

Client Sample ID: BH24-02
Date Collected: 02/26/24 15:00
Date Received: 02/28/24 07:58
Sample Depth: 3.5

Lab Sample ID: 890-6271-3
Matrix: Solid

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.6	U	49.6		mg/Kg		03/03/24 00:24	03/04/24 04:19	1
Diesel Range Organics (Over C10-C28)	<49.6	U	49.6		mg/Kg		03/03/24 00:24	03/04/24 04:19	1
Oil Range Organics (Over C28-C36)	<49.6	U	49.6		mg/Kg		03/03/24 00:24	03/04/24 04:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*109*		*70 - 130*	*03/03/24 00:24*	*03/04/24 04:19*	*1*
o-Terphenyl	*99*		*70 - 130*	*03/03/24 00:24*	*03/04/24 04:19*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**153**		4.98		mg/Kg			03/03/24 17:39	1

Surrogate Summary

Client: Vertex
Project/Site: PLU 29 BIGSINKS WEST CTB

Job ID: 890-6271-1
SDG: 23E-05485

Method: 8021B - Volatile Organic Compounds (GC)

Matrix: Solid

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)	
		BFB1	DFBZ1
Lab Sample ID	Client Sample ID	(70-130)	(70-130)
890-6268-A-21-B MS	Matrix Spike	60 S1-	98
890-6268-A-21-C MSD	Matrix Spike Duplicate	105	95
890-6271-1	BH24-02	81	83
890-6271-2	BH24-02	78	94
890-6271-3	BH24-02	79	88
LCS 880-74452/1-A	Lab Control Sample	124	102
LCSD 880-74452/2-A	Lab Control Sample Dup	111	117
MB 880-74452/5-A	Method Blank	73	91
MB 880-74472/5-A	Method Blank	78	84

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)

DFBZ = 1,4-Difluorobenzene (Surr)

Method: 8015B NM - Diesel Range Organics (DRO) (GC)

Matrix: Solid

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)	
		1CO1	OTPH1
Lab Sample ID	Client Sample ID	(70-130)	(70-130)
890-6271-1	BH24-02	106	87
890-6271-2	BH24-02	113	101
890-6271-3	BH24-02	109	99
890-6285-A-39-D MS	Matrix Spike	119	96
890-6285-A-39-E MSD	Matrix Spike Duplicate	118	97
LCS 880-74527/2-A	Lab Control Sample	83	71
LCSD 880-74527/3-A	Lab Control Sample Dup	97	84
MB 880-74527/1-A	Method Blank	107	97

Surrogate Legend

1CO = 1-Chlorooctane

OTPH = o-Terphenyl

QC Sample Results

Client: Vertex
Project/Site: PLU 29 BIGSINKS WEST CTB

Job ID: 890-6271-1
SDG: 23E-05485

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-74452/5-A
Matrix: Solid
Analysis Batch: 74453

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 74452

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		03/01/24 08:42	03/02/24 20:50	1
Toluene	<0.00200	U	0.00200		mg/Kg		03/01/24 08:42	03/02/24 20:50	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		03/01/24 08:42	03/02/24 20:50	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		03/01/24 08:42	03/02/24 20:50	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		03/01/24 08:42	03/02/24 20:50	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		03/01/24 08:42	03/02/24 20:50	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*73*		*70 - 130*	*03/01/24 08:42*	*03/02/24 20:50*	*1*
1,4-Difluorobenzene (Surr)	*91*		*70 - 130*	*03/01/24 08:42*	*03/02/24 20:50*	*1*

Lab Sample ID: LCS 880-74452/1-A
Matrix: Solid
Analysis Batch: 74453

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 74452

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			0.100	0.09161		mg/Kg		92	70 - 130		
Toluene			0.100	0.09911		mg/Kg		99	70 - 130		
Ethylbenzene			0.100	0.1253		mg/Kg		125	70 - 130		
m-Xylene & p-Xylene			0.200	0.2501		mg/Kg		125	70 - 130		
o-Xylene			0.100	0.1258		mg/Kg		126	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*124*		*70 - 130*
1,4-Difluorobenzene (Surr)	*102*		*70 - 130*

Lab Sample ID: LCSD 880-74452/2-A
Matrix: Solid
Analysis Batch: 74453

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 74452

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene			0.100	0.08061		mg/Kg		81	70 - 130	13	35
Toluene			0.100	0.1001		mg/Kg		100	70 - 130	1	35
Ethylbenzene			0.100	0.1084		mg/Kg		108	70 - 130	14	35
m-Xylene & p-Xylene			0.200	0.2175		mg/Kg		109	70 - 130	14	35
o-Xylene			0.100	0.1087		mg/Kg		109	70 - 130	15	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*111*		*70 - 130*
1,4-Difluorobenzene (Surr)	*117*		*70 - 130*

Lab Sample ID: 890-6268-A-21-B MS
Matrix: Solid
Analysis Batch: 74453

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 74452

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene	<0.00199	U F2 F1	0.101	0.02155	F1	mg/Kg		21	70 - 130		
Toluene	<0.00199	U F2 F1	0.101	0.02183	F1	mg/Kg		22	70 - 130		

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QC Sample Results

Client: Vertex
Project/Site: PLU 29 BIGSINKS WEST CTB

Job ID: 890-6271-1
SDG: 23E-05485

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

Lab Sample ID: 890-6268-A-21-B MS
Matrix: Solid
Analysis Batch: 74453

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 74452

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Ethylbenzene	<0.00199	U F2 F1	0.101	0.01728	F1	mg/Kg		17	70 - 130
m-Xylene & p-Xylene	<0.00398	U F2 F1	0.202	0.03325	F1	mg/Kg		16	70 - 130
o-Xylene	<0.00199	U F2 F1	0.101	0.01964	F1	mg/Kg		19	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*60*	*S1-*	*70 - 130*
1,4-Difluorobenzene (Surr)	*98*		*70 - 130*

Lab Sample ID: 890-6268-A-21-C MSD
Matrix: Solid
Analysis Batch: 74453

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 74452

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	<0.00199	U F2 F1	0.100	0.04052	F2 F1	mg/Kg		40	70 - 130	61	35
Toluene	<0.00199	U F2 F1	0.100	0.03602	F2 F1	mg/Kg		36	70 - 130	49	35
Ethylbenzene	<0.00199	U F2 F1	0.100	0.02814	F2 F1	mg/Kg		28	70 - 130	48	35
m-Xylene & p-Xylene	<0.00398	U F2 F1	0.200	0.06163	F2 F1	mg/Kg		31	70 - 130	60	35
o-Xylene	<0.00199	U F2 F1	0.100	0.03380	F2 F1	mg/Kg		34	70 - 130	53	35

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*105*		*70 - 130*
1,4-Difluorobenzene (Surr)	*95*		*70 - 130*

Lab Sample ID: MB 880-74472/5-A
Matrix: Solid
Analysis Batch: 74453

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 74472

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		03/01/24 11:44	03/02/24 09:39	1
Toluene	<0.00200	U	0.00200	mg/Kg		03/01/24 11:44	03/02/24 09:39	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		03/01/24 11:44	03/02/24 09:39	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	mg/Kg		03/01/24 11:44	03/02/24 09:39	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		03/01/24 11:44	03/02/24 09:39	1
Xylenes, Total	<0.00400	U	0.00400	mg/Kg		03/01/24 11:44	03/02/24 09:39	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*78*		*70 - 130*	*03/01/24 11:44*	*03/02/24 09:39*	*1*
1,4-Difluorobenzene (Surr)	*84*		*70 - 130*	*03/01/24 11:44*	*03/02/24 09:39*	*1*

Method: 8015B NM - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 880-74527/1-A
Matrix: Solid
Analysis Batch: 74540

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 74527

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0	mg/Kg		03/03/24 00:24	03/03/24 20:56	1

QC Sample Results

Client: Vertex
Project/Site: PLU 29 BIGSINKS WEST CTB

Job ID: 890-6271-1
SDG: 23E-05485

Method: 8015B NM - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: MB 880-74527/1-A
Matrix: Solid
Analysis Batch: 74540

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 74527

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		03/03/24 00:24	03/03/24 20:56	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		03/03/24 00:24	03/03/24 20:56	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*107*		*70 - 130*	*03/03/24 00:24*	*03/03/24 20:56*	*1*
o-Terphenyl	*97*		*70 - 130*	*03/03/24 00:24*	*03/03/24 20:56*	*1*

Lab Sample ID: LCS 880-74527/2-A
Matrix: Solid
Analysis Batch: 74540

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 74527

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics (GRO)-C6-C10			1000	761.7		mg/Kg		76	70 - 130		
Diesel Range Organics (Over C10-C28)			1000	1023		mg/Kg		102	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1-Chlorooctane	*83*		*70 - 130*
o-Terphenyl	*71*		*70 - 130*

Lab Sample ID: LCSD 880-74527/3-A
Matrix: Solid
Analysis Batch: 74540

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 74527

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10			1000	805.8		mg/Kg		81	70 - 130	6	20
Diesel Range Organics (Over C10-C28)			1000	1218		mg/Kg		122	70 - 130	17	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1-Chlorooctane	*97*		*70 - 130*
o-Terphenyl	*84*		*70 - 130*

Lab Sample ID: 890-6285-A-39-D MS
Matrix: Solid
Analysis Batch: 74540

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 74527

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics (GRO)-C6-C10	<49.6	U	1000	906.2		mg/Kg		86	70 - 130		
Diesel Range Organics (Over C10-C28)	<49.6	U	1000	1062		mg/Kg		102	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1-Chlorooctane	*119*		*70 - 130*
o-Terphenyl	*96*		*70 - 130*

QC Sample Results

Client: Vertex
Project/Site: PLU 29 BIGSINKS WEST CTB

Job ID: 890-6271-1
SDG: 23E-05485

Method: 8015B NM - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: 890-6285-A-39-E MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 74540 — **Prep Batch: 74527**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10	<49.6	U	1000	923.7		mg/Kg		88	70 - 130	2	20
Diesel Range Organics (Over C10-C28)	<49.6	U	1000	1070		mg/Kg		103	70 - 130	1	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1-Chlorooctane	*118*		*70 - 130*
o-Terphenyl	*97*		*70 - 130*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-74304/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 74485

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.00	U	5.00		mg/Kg			03/03/24 15:19	1

Lab Sample ID: LCS 880-74304/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 74485

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			250	244.1		mg/Kg		98	90 - 110		

Lab Sample ID: LCSD 880-74304/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 74485

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride			250	245.7		mg/Kg		98	90 - 110	1	20

Lab Sample ID: 890-6269-A-2-B MS — **Client Sample ID: Matrix Spike**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 74485

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	75.2		252	330.3		mg/Kg		101	90 - 110		

Lab Sample ID: 890-6269-A-2-C MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 74485

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	75.2		252	332.1		mg/Kg		102	90 - 110	1	20

QC Association Summary

Client: Vertex
Project/Site: PLU 29 BIGSINKS WEST CTB

Job ID: 890-6271-1
SDG: 23E-05485

GC VOA

Prep Batch: 74452

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-6271-1	BH24-02	Total/NA	Solid	5035	
890-6271-2	BH24-02	Total/NA	Solid	5035	
890-6271-3	BH24-02	Total/NA	Solid	5035	
MB 880-74452/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-74452/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-74452/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
890-6268-A-21-B MS	Matrix Spike	Total/NA	Solid	5035	
890-6268-A-21-C MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

Analysis Batch: 74453

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-6271-1	BH24-02	Total/NA	Solid	8021B	74452
890-6271-2	BH24-02	Total/NA	Solid	8021B	74452
890-6271-3	BH24-02	Total/NA	Solid	8021B	74452
MB 880-74452/5-A	Method Blank	Total/NA	Solid	8021B	74452
MB 880-74472/5-A	Method Blank	Total/NA	Solid	8021B	74472
LCS 880-74452/1-A	Lab Control Sample	Total/NA	Solid	8021B	74452
LCSD 880-74452/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	74452
890-6268-A-21-B MS	Matrix Spike	Total/NA	Solid	8021B	74452
890-6268-A-21-C MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	74452

Prep Batch: 74472

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 880-74472/5-A	Method Blank	Total/NA	Solid	5035	

Analysis Batch: 74723

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-6271-1	BH24-02	Total/NA	Solid	Total BTEX	
890-6271-2	BH24-02	Total/NA	Solid	Total BTEX	
890-6271-3	BH24-02	Total/NA	Solid	Total BTEX	

GC Semi VOA

Prep Batch: 74527

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-6271-1	BH24-02	Total/NA	Solid	8015NM Prep	
890-6271-2	BH24-02	Total/NA	Solid	8015NM Prep	
890-6271-3	BH24-02	Total/NA	Solid	8015NM Prep	
MB 880-74527/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-74527/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-74527/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
890-6285-A-39-D MS	Matrix Spike	Total/NA	Solid	8015NM Prep	
890-6285-A-39-E MSD	Matrix Spike Duplicate	Total/NA	Solid	8015NM Prep	

Analysis Batch: 74540

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-6271-1	BH24-02	Total/NA	Solid	8015B NM	74527
890-6271-2	BH24-02	Total/NA	Solid	8015B NM	74527
890-6271-3	BH24-02	Total/NA	Solid	8015B NM	74527
MB 880-74527/1-A	Method Blank	Total/NA	Solid	8015B NM	74527
LCS 880-74527/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	74527

QC Association Summary

Client: Vertex
Project/Site: PLU 29 BIGSINKS WEST CTB

Job ID: 890-6271-1
SDG: 23E-05485

GC Semi VOA (Continued)

Analysis Batch: 74540 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 880-74527/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	74527
890-6285-A-39-D MS	Matrix Spike	Total/NA	Solid	8015B NM	74527
890-6285-A-39-E MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B NM	74527

Analysis Batch: 74683

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-6271-1	BH24-02	Total/NA	Solid	8015 NM	
890-6271-2	BH24-02	Total/NA	Solid	8015 NM	
890-6271-3	BH24-02	Total/NA	Solid	8015 NM	

HPLC/IC

Leach Batch: 74304

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-6271-1	BH24-02	Soluble	Solid	DI Leach	
890-6271-2	BH24-02	Soluble	Solid	DI Leach	
890-6271-3	BH24-02	Soluble	Solid	DI Leach	
MB 880-74304/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-74304/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-74304/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
890-6269-A-2-B MS	Matrix Spike	Soluble	Solid	DI Leach	
890-6269-A-2-C MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	

Analysis Batch: 74485

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-6271-1	BH24-02	Soluble	Solid	300.0	74304
890-6271-2	BH24-02	Soluble	Solid	300.0	74304
890-6271-3	BH24-02	Soluble	Solid	300.0	74304
MB 880-74304/1-A	Method Blank	Soluble	Solid	300.0	74304
LCS 880-74304/2-A	Lab Control Sample	Soluble	Solid	300.0	74304
LCSD 880-74304/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	74304
890-6269-A-2-B MS	Matrix Spike	Soluble	Solid	300.0	74304
890-6269-A-2-C MSD	Matrix Spike Duplicate	Soluble	Solid	300.0	74304

Lab Chronicle

Client: Vertex
Project/Site: PLU 29 BIGSINKS WEST CTB

Job ID: 890-6271-1
SDG: 23E-05485

Client Sample ID: BH24-02
Date Collected: 02/26/24 14:30
Date Received: 02/28/24 07:58

Lab Sample ID: 890-6271-1
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.98 g	5 mL	74452	03/01/24 08:42	EL	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	74453	03/03/24 01:42	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			74723	03/03/24 01:42	SM	EET MID
Total/NA	Analysis	8015 NM		1			74683	03/04/24 03:37	SM	EET MID
Total/NA	Prep	8015NM Prep			10.02 g	10 mL	74527	03/03/24 00:24	TKC	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	74540	03/04/24 03:37	SM	EET MID
Soluble	Leach	DI Leach			5.00 g	50 mL	74304	02/29/24 11:10	SMC	EET MID
Soluble	Analysis	300.0		1			74485	03/03/24 17:16	CH	EET MID

Client Sample ID: BH24-02
Date Collected: 02/26/24 14:45
Date Received: 02/28/24 07:58

Lab Sample ID: 890-6271-2
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.96 g	5 mL	74452	03/01/24 08:42	EL	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	74453	03/03/24 02:03	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			74723	03/03/24 02:03	SM	EET MID
Total/NA	Analysis	8015 NM		1			74683	03/04/24 03:58	SM	EET MID
Total/NA	Prep	8015NM Prep			10.04 g	10 mL	74527	03/03/24 00:24	TKC	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	74540	03/04/24 03:58	SM	EET MID
Soluble	Leach	DI Leach			5.00 g	50 mL	74304	02/29/24 11:10	SMC	EET MID
Soluble	Analysis	300.0		1			74485	03/03/24 17:22	CH	EET MID

Client Sample ID: BH24-02
Date Collected: 02/26/24 15:00
Date Received: 02/28/24 07:58

Lab Sample ID: 890-6271-3
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.03 g	5 mL	74452	03/01/24 08:42	EL	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	74453	03/03/24 02:23	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			74723	03/03/24 02:23	SM	EET MID
Total/NA	Analysis	8015 NM		1			74683	03/04/24 04:19	SM	EET MID
Total/NA	Prep	8015NM Prep			10.09 g	10 mL	74527	03/03/24 00:24	TKC	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	74540	03/04/24 04:19	SM	EET MID
Soluble	Leach	DI Leach			5.02 g	50 mL	74304	02/29/24 11:10	SMC	EET MID
Soluble	Analysis	300.0		1			74485	03/03/24 17:39	CH	EET MID

Laboratory References:
EET MID = Eurofins Midland, 1211 W. Florida Ave, Midland, TX 79701, TEL (432)704-5440

Accreditation/Certification Summary

Client: Vertex
Project/Site: PLU 29 BIGSINKS WEST CTB

Job ID: 890-6271-1
SDG: 23E-05485

Laboratory: Eurofins Midland

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Texas	NELAP	T104704400-23-26	06-30-24

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
8015 NM		Solid	Total TPH
Total BTEX		Solid	Total BTEX

Method Summary

Client: Vertex
Project/Site: PLU 29 BIGSINKS WEST CTB

Job ID: 890-6271-1
SDG: 23E-05485

Method	Method Description	Protocol	Laboratory
8021B	Volatile Organic Compounds (GC)	SW846	EET MID
Total BTEX	Total BTEX Calculation	TAL SOP	EET MID
8015 NM	Diesel Range Organics (DRO) (GC)	SW846	EET MID
8015B NM	Diesel Range Organics (DRO) (GC)	SW846	EET MID
300.0	Anions, Ion Chromatography	EPA	EET MID
5035	Closed System Purge and Trap	SW846	EET MID
8015NM Prep	Microextraction	SW846	EET MID
DI Leach	Deionized Water Leaching Procedure	ASTM	EET MID

Protocol References:

ASTM = ASTM International

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

Laboratory References:

EET MID = Eurofins Midland, 1211 W. Florida Ave, Midland, TX 79701, TEL (432)704-5440

Sample Summary

Client: Vertex
Project/Site: PLU 29 BIGSINKS WEST CTB

Job ID: 890-6271-1
SDG: 23E-05485

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-6271-1	BH24-02	Solid	02/26/24 14:30	02/28/24 07:58	0
890-6271-2	BH24-02	Solid	02/26/24 14:45	02/28/24 07:58	2
890-6271-3	BH24-02	Solid	02/26/24 15:00	02/28/24 07:58	3.5

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Xenco

Chain of Custody

Work Order No: ______

Page ___ of ___

Project Manager:	[illegible]	Bill to: (if different)	
Company Name:	[illegible]	Company Name:	[illegible]
Address:	[illegible]	Address:	
City, State ZIP:		City, State ZIP:	
Phone:	575-361-3361	Email:	[illegible]

Work Order Comments

Program: UST/PST ☐ PRP ☐ Brownfields ☐ RRC ☐ Superfund ☐
State of Project:
Reporting: Level II ☐ Level III ☐ PST/UST ☐ TRRP ☐ Level IV ☐
Deliverables: EDD ☐ ADaPT ☐ Other:

Project Name:	[illegible]
Project Number:	[illegible]
Project Location:	
Sampler's Name:	[illegible]
PO #:	

ANALYSIS REQUEST: [illegible] | TPH 8015 [illegible] | Chloride

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Grab/Comp	# of Cont			
[redacted]									
[illegible]			[illegible]	2			✓	✓	✓
[illegible]			[illegible]	1			✓	✓	✓
[illegible]			[illegible]	3.5			✓	✓	✓

Preservative Codes — Sample Comments

Total 200.7 / 6010 200.8 / 6020: 8RCRA 13PPM Texas 11 Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO2 Na Sr Tl Sn U V Zn
Circle Method(s) and Metal(s) to be analyzed: TCLP / SPLP 6010 8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Tl U Hg: 1631 / 245.1 / 7470 / 7471

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
[illegible]	[signature]	[illegible] 7:53			

Login Sample Receipt Checklist

Client: Vertex

Job Number: 890-6271-1
SDG Number: 23E-05485

Login Number: 6271
List Number: 1
Creator: Lopez, Abraham

List Source: Eurofins Carlsbad

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.	N/A	Refer to Job Narrative for details.
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").	N/A	

Login Sample Receipt Checklist

Client: Vertex

Job Number: 890-6271-1
SDG Number: 23E-05485

Login Number: 6271
List Number: 2
Creator: Kramer, Jessica

List Source: Eurofins Midland
List Creation: 03/01/24 08:03 AM

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.	True	
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").	N/A	

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ANALYTICAL REPORT

PREPARED FOR

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

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JOB DESCRIPTION

PLU 29 Big Sinks West CTB

JOB NUMBER

885-836-1

Eurofins Albuquerque
4901 Hawkins NE
Albuquerque NM 87109

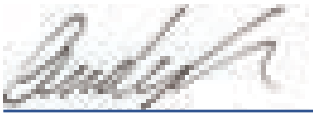
See page two for job notes and contact information.

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



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

Client: Vertex
Project/Site: PLU 29 Big Sinks West CTB

Laboratory Job ID: 885-836-1

Table of Contents

Definitions/Glossary

Client: Vertex Job ID: 885-836-1
Project/Site: PLU 29 Big Sinks West CTB

Qualifiers

GC VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

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: 885-836-1
Project: PLU 29 Big Sinks West CTB

Job ID: 885-836-1 Eurofins Albuquerque

Job Narrative
885-836-1

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 3/9/2024 8:30 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 1.0°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 matrix spike / matrix spike duplicate / sample duplicate (MS/MSD/DUP) precision for preparation batch 885-1534 and analytical batch 885-1576 was outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory control sample duplicate (LCS/LCSD) precision was within acceptance limits.

Method 8015D_DRO: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 885-1534 and analytical batch 885-1576 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
Project/Site: PLU 29 Big Sinks West CTB

Job ID: 885-836-1

Client Sample ID: BH24-17 0'

Lab Sample ID: 885-836-1
Matrix: Solid
Date Collected: 03/04/24 10:00
Date Received: 03/09/24 08:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C6-C10	<1.2		4.9	1.2	mg/Kg		03/11/24 10:44	03/12/24 20:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*105*		*15 - 244*	*03/11/24 10:44*	*03/12/24 20:07*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.013		0.024	0.013	mg/Kg		03/11/24 10:44	03/12/24 20:07	1
Ethylbenzene	<0.0097		0.049	0.0097	mg/Kg		03/11/24 10:44	03/12/24 20:07	1
Toluene	<0.012		0.049	0.012	mg/Kg		03/11/24 10:44	03/12/24 20:07	1
Xylenes, Total	**0.033**	**J**	0.098	0.018	mg/Kg		03/11/24 10:44	03/12/24 20:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*39 - 146*	*03/11/24 10:44*	*03/12/24 20:07*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Motor Oil Range Organics [C28-C40]	<25		45	25	mg/Kg		03/11/24 14:10	03/11/24 17:42	1
Diesel Range Organics [C10-C28]	<7.7		9.0	7.7	mg/Kg		03/11/24 14:10	03/11/24 17:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*101*		*69 - 147*	*03/11/24 14:10*	*03/11/24 17:42*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**63**		60	60	mg/Kg		03/12/24 07:00	03/12/24 14:01	20

Client Sample ID: BH24-17 2'

Lab Sample ID: 885-836-2
Matrix: Solid
Date Collected: 03/04/24 10:30
Date Received: 03/09/24 08:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C6-C10	<1.2		4.8	1.2	mg/Kg		03/11/24 10:44	03/12/24 20:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*107*		*15 - 244*	*03/11/24 10:44*	*03/12/24 20:54*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.013		0.024	0.013	mg/Kg		03/11/24 10:44	03/12/24 20:54	1
Ethylbenzene	<0.0095		0.048	0.0095	mg/Kg		03/11/24 10:44	03/12/24 20:54	1
Toluene	<0.012		0.048	0.012	mg/Kg		03/11/24 10:44	03/12/24 20:54	1
Xylenes, Total	<0.017		0.096	0.017	mg/Kg		03/11/24 10:44	03/12/24 20:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*39 - 146*	*03/11/24 10:44*	*03/12/24 20:54*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Motor Oil Range Organics [C28-C40]	<27		48	27	mg/Kg		03/11/24 14:10	03/11/24 17:54	1
Diesel Range Organics [C10-C28]	<8.3		9.6	8.3	mg/Kg		03/11/24 14:10	03/11/24 17:54	1

Client Sample Results

Client: Vertex
Job ID: 885-836-1
Project/Site: PLU 29 Big Sinks West CTB

Client Sample ID: BH24-17 2'
Lab Sample ID: 885-836-2
Date Collected: 03/04/24 10:30
Matrix: Solid
Date Received: 03/09/24 08:30

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*104*		*69 - 147*	*03/11/24 14:10*	*03/11/24 17:54*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**74**		60	60	mg/Kg		03/12/24 07:00	03/12/24 14:14	20

Client Sample ID: BH24-19 0'
Lab Sample ID: 885-836-3
Date Collected: 03/04/24 11:00
Matrix: Solid
Date Received: 03/09/24 08:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C6-C10	<1.3		5.0	1.3	mg/Kg		03/11/24 10:44	03/12/24 21:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*105*		*15 - 244*	*03/11/24 10:44*	*03/12/24 21:18*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.013		0.025	0.013	mg/Kg		03/11/24 10:44	03/12/24 21:18	1
Ethylbenzene	<0.0099		0.050	0.0099	mg/Kg		03/11/24 10:44	03/12/24 21:18	1
Toluene	<0.013		0.050	0.013	mg/Kg		03/11/24 10:44	03/12/24 21:18	1
Xylenes, Total	<0.018		0.10	0.018	mg/Kg		03/11/24 10:44	03/12/24 21:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*39 - 146*	*03/11/24 10:44*	*03/12/24 21:18*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Motor Oil Range Organics [C28-C40]	<25		46	25	mg/Kg		03/11/24 14:10	03/11/24 18:06	1
Diesel Range Organics [C10-C28]	<7.8		9.1	7.8	mg/Kg		03/11/24 14:10	03/11/24 18:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*100*		*69 - 147*	*03/11/24 14:10*	*03/11/24 18:06*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<60		60	60	mg/Kg		03/12/24 07:00	03/12/24 14:51	20

Client Sample ID: BH24-19 2'
Lab Sample ID: 885-836-4
Date Collected: 03/04/24 11:30
Matrix: Solid
Date Received: 03/09/24 08:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C6-C10	<1.3		5.0	1.3	mg/Kg		03/11/24 10:44	03/12/24 21:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*15 - 244*	*03/11/24 10:44*	*03/12/24 21:42*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.013		0.025	0.013	mg/Kg		03/11/24 10:44	03/12/24 21:42	1

Client Sample Results

Client: Vertex
Project/Site: PLU 29 Big Sinks West CTB

Job ID: 885-836-1

Client Sample ID: BH24-19 2'

Date Collected: 03/04/24 11:30
Date Received: 03/09/24 08:30

Lab Sample ID: 885-836-4
Matrix: Solid

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	<0.0098		0.050	0.0098	mg/Kg		03/11/24 10:44	03/12/24 21:42	1
Toluene	<0.012		0.050	0.012	mg/Kg		03/11/24 10:44	03/12/24 21:42	1
Xylenes, Total	<0.018		0.099	0.018	mg/Kg		03/11/24 10:44	03/12/24 21:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*39 - 146*	*03/11/24 10:44*	*03/12/24 21:42*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Motor Oil Range Organics [C28-C40]	<28		50	28	mg/Kg		03/11/24 14:10	03/11/24 18:18	1
Diesel Range Organics [C10-C28]	<8.5		10	8.5	mg/Kg		03/11/24 14:10	03/11/24 18:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*94*		*69 - 147*	*03/11/24 14:10*	*03/11/24 18:18*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<60		60	60	mg/Kg		03/12/24 07:00	03/12/24 15:03	20

Client Sample ID: BH24-20 0'

Date Collected: 03/04/24 13:00
Date Received: 03/09/24 08:30

Lab Sample ID: 885-836-5
Matrix: Solid

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C6-C10	<1.3		5.0	1.3	mg/Kg		03/11/24 10:44	03/12/24 22:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*15 - 244*	*03/11/24 10:44*	*03/12/24 22:06*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.013		0.025	0.013	mg/Kg		03/11/24 10:44	03/12/24 22:06	1
Ethylbenzene	<0.0099		0.050	0.0099	mg/Kg		03/11/24 10:44	03/12/24 22:06	1
Toluene	<0.013		0.050	0.013	mg/Kg		03/11/24 10:44	03/12/24 22:06	1
Xylenes, Total	<0.018		0.10	0.018	mg/Kg		03/11/24 10:44	03/12/24 22:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*39 - 146*	*03/11/24 10:44*	*03/12/24 22:06*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Motor Oil Range Organics [C28-C40]	<25		44	25	mg/Kg		03/11/24 14:10	03/11/24 18:30	1
Diesel Range Organics [C10-C28]	<7.6		8.9	7.6	mg/Kg		03/11/24 14:10	03/11/24 18:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*80*		*69 - 147*	*03/11/24 14:10*	*03/11/24 18:30*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<60		60	60	mg/Kg		03/12/24 07:00	03/12/24 15:15	20

Client Sample Results

Client: Vertex
Job ID: 885-836-1
Project/Site: PLU 29 Big Sinks West CTB

Client Sample ID: BH24-20 2'
Lab Sample ID: 885-836-6
Date Collected: 03/04/24 13:30
Matrix: Solid
Date Received: 03/09/24 08:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C6-C10	<1.2		4.7	1.2	mg/Kg		03/11/24 10:44	03/12/24 22:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*15 - 244*	*03/11/24 10:44*	*03/12/24 22:29*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.013		0.023	0.013	mg/Kg		03/11/24 10:44	03/12/24 22:29	1
Ethylbenzene	<0.0093		0.047	0.0093	mg/Kg		03/11/24 10:44	03/12/24 22:29	1
Toluene	<0.012		0.047	0.012	mg/Kg		03/11/24 10:44	03/12/24 22:29	1
Xylenes, Total	<0.017		0.094	0.017	mg/Kg		03/11/24 10:44	03/12/24 22:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*39 - 146*	*03/11/24 10:44*	*03/12/24 22:29*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Motor Oil Range Organics [C28-C40]	<27		49	27	mg/Kg		03/11/24 14:10	03/11/24 18:42	1
Diesel Range Organics [C10-C28]	<8.4		9.8	8.4	mg/Kg		03/11/24 14:10	03/11/24 18:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*90*		*69 - 147*	*03/11/24 14:10*	*03/11/24 18:42*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<60		60	60	mg/Kg		03/12/24 07:00	03/12/24 15:28	20

QC Sample Results

Client: Vertex
Project/Site: PLU 29 Big Sinks West CTB

Job ID: 885-836-1

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

Lab Sample ID: MB 885-1514/25-A
Matrix: Solid
Analysis Batch: 1654

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 1514

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C6-C10	<1.3		5.0	1.3	mg/Kg		03/11/24 10:47	03/12/24 17:20	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*15 - 244*	*03/11/24 10:47*	*03/12/24 17:20*	*1*

Lab Sample ID: LCS 885-1514/26-A
Matrix: Solid
Analysis Batch: 1654

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 1514

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
C6-C10			25.0	22.8		mg/Kg		91	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*203*		*15 - 244*

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 885-1514/25-A
Matrix: Solid
Analysis Batch: 1655

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 1514

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.013		0.025	0.013	mg/Kg		03/11/24 10:47	03/12/24 17:20	1
Ethylbenzene	<0.0099		0.050	0.0099	mg/Kg		03/11/24 10:47	03/12/24 17:20	1
Toluene	<0.013		0.050	0.013	mg/Kg		03/11/24 10:47	03/12/24 17:20	1
Xylenes, Total	<0.018		0.10	0.018	mg/Kg		03/11/24 10:47	03/12/24 17:20	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*39 - 146*	*03/11/24 10:47*	*03/12/24 17:20*	*1*

Lab Sample ID: LCS 885-1514/27-A
Matrix: Solid
Analysis Batch: 1655

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 1514

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			1.00	0.823		mg/Kg		82	70 - 130		
Ethylbenzene			1.00	0.842		mg/Kg		84	70 - 130		
Toluene			1.00	0.842		mg/Kg		84	70 - 130		
o-Xylene			1.00	0.838		mg/Kg		84	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*94*		*39 - 146*

QC Sample Results

Client: Vertex
Project/Site: PLU 29 Big Sinks West CTB

Job ID: 885-836-1

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

Lab Sample ID: MB 885-1534/1-A
Matrix: Solid
Analysis Batch: 1576

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 1534

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Motor Oil Range Organics [C28-C40]	<28		50	28	mg/Kg		03/11/24 14:10	03/11/24 16:54	1
Diesel Range Organics [C10-C28]	<8.6		10	8.6	mg/Kg		03/11/24 14:10	03/11/24 16:54	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*105*		*69 - 147*	*03/11/24 14:10*	*03/11/24 16:54*	*1*

Lab Sample ID: LCS 885-1534/2-A
Matrix: Solid
Analysis Batch: 1576

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 1534

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Diesel Range Organics [C10-C28]	50.0	48.2		mg/Kg		96	62 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Di-n-octyl phthalate (Surr)	*101*		*69 - 147*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 885-1545/1-A
Matrix: Solid
Analysis Batch: 1651

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 1545

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<1.5		1.5	1.5	mg/Kg		03/12/24 07:00	03/12/24 09:05	1

Lab Sample ID: LCS 885-1545/2-A
Matrix: Solid
Analysis Batch: 1651

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 1545

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	15.0	13.7		mg/Kg		91	90 - 110

QC Association Summary

Client: Vertex
Project/Site: PLU 29 Big Sinks West CTB

Job ID: 885-836-1

GC VOA

Prep Batch: 1514

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-836-1	BH24-17 0'	Total/NA	Solid	5030C	
885-836-2	BH24-17 2'	Total/NA	Solid	5030C	
885-836-3	BH24-19 0'	Total/NA	Solid	5030C	
885-836-4	BH24-19 2'	Total/NA	Solid	5030C	
885-836-5	BH24-20 0'	Total/NA	Solid	5030C	
885-836-6	BH24-20 2'	Total/NA	Solid	5030C	
MB 885-1514/25-A	Method Blank	Total/NA	Solid	5030C	
LCS 885-1514/26-A	Lab Control Sample	Total/NA	Solid	5030C	
LCS 885-1514/27-A	Lab Control Sample	Total/NA	Solid	5030C	

Analysis Batch: 1654

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-836-1	BH24-17 0'	Total/NA	Solid	8015D	1514
885-836-2	BH24-17 2'	Total/NA	Solid	8015D	1514
885-836-3	BH24-19 0'	Total/NA	Solid	8015D	1514
885-836-4	BH24-19 2'	Total/NA	Solid	8015D	1514
885-836-5	BH24-20 0'	Total/NA	Solid	8015D	1514
885-836-6	BH24-20 2'	Total/NA	Solid	8015D	1514
MB 885-1514/25-A	Method Blank	Total/NA	Solid	8015D	1514
LCS 885-1514/26-A	Lab Control Sample	Total/NA	Solid	8015D	1514

Analysis Batch: 1655

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-836-1	BH24-17 0'	Total/NA	Solid	8021B	1514
885-836-2	BH24-17 2'	Total/NA	Solid	8021B	1514
885-836-3	BH24-19 0'	Total/NA	Solid	8021B	1514
885-836-4	BH24-19 2'	Total/NA	Solid	8021B	1514
885-836-5	BH24-20 0'	Total/NA	Solid	8021B	1514
885-836-6	BH24-20 2'	Total/NA	Solid	8021B	1514
MB 885-1514/25-A	Method Blank	Total/NA	Solid	8021B	1514
LCS 885-1514/27-A	Lab Control Sample	Total/NA	Solid	8021B	1514

GC Semi VOA

Prep Batch: 1534

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-836-1	BH24-17 0'	Total/NA	Solid	SHAKE	
885-836-2	BH24-17 2'	Total/NA	Solid	SHAKE	
885-836-3	BH24-19 0'	Total/NA	Solid	SHAKE	
885-836-4	BH24-19 2'	Total/NA	Solid	SHAKE	
885-836-5	BH24-20 0'	Total/NA	Solid	SHAKE	
885-836-6	BH24-20 2'	Total/NA	Solid	SHAKE	
MB 885-1534/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 885-1534/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	

Analysis Batch: 1576

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-836-1	BH24-17 0'	Total/NA	Solid	8015D	1534
885-836-2	BH24-17 2'	Total/NA	Solid	8015D	1534
885-836-3	BH24-19 0'	Total/NA	Solid	8015D	1534
885-836-4	BH24-19 2'	Total/NA	Solid	8015D	1534

QC Association Summary

Client: Vertex
Project/Site: PLU 29 Big Sinks West CTB

Job ID: 885-836-1

GC Semi VOA (Continued)

Analysis Batch: 1576 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-836-5	BH24-20 0'	Total/NA	Solid	8015D	1534
885-836-6	BH24-20 2'	Total/NA	Solid	8015D	1534
MB 885-1534/1-A	Method Blank	Total/NA	Solid	8015D	1534
LCS 885-1534/2-A	Lab Control Sample	Total/NA	Solid	8015D	1534

HPLC/IC

Prep Batch: 1545

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-836-1	BH24-17 0'	Total/NA	Solid	300_Prep	
885-836-2	BH24-17 2'	Total/NA	Solid	300_Prep	
885-836-3	BH24-19 0'	Total/NA	Solid	300_Prep	
885-836-4	BH24-19 2'	Total/NA	Solid	300_Prep	
885-836-5	BH24-20 0'	Total/NA	Solid	300_Prep	
885-836-6	BH24-20 2'	Total/NA	Solid	300_Prep	
MB 885-1545/1-A	Method Blank	Total/NA	Solid	300_Prep	
LCS 885-1545/2-A	Lab Control Sample	Total/NA	Solid	300_Prep	

Analysis Batch: 1651

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-836-1	BH24-17 0'	Total/NA	Solid	300.0	1545
885-836-2	BH24-17 2'	Total/NA	Solid	300.0	1545
885-836-3	BH24-19 0'	Total/NA	Solid	300.0	1545
885-836-4	BH24-19 2'	Total/NA	Solid	300.0	1545
885-836-5	BH24-20 0'	Total/NA	Solid	300.0	1545
885-836-6	BH24-20 2'	Total/NA	Solid	300.0	1545
MB 885-1545/1-A	Method Blank	Total/NA	Solid	300.0	1545
LCS 885-1545/2-A	Lab Control Sample	Total/NA	Solid	300.0	1545

Lab Chronicle

Client: Vertex
Job ID: 885-836-1
Project/Site: PLU 29 Big Sinks West CTB

Client Sample ID: BH24-17 0'
Lab Sample ID: 885-836-1
Date Collected: 03/04/24 10:00
Matrix: Solid
Date Received: 03/09/24 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			1514	IMR	EET ALB	03/11/24 10:44
Total/NA	Analysis	8015D		1	1654	JP	EET ALB	03/12/24 20:07
Total/NA	Prep	5030C			1514	IMR	EET ALB	03/11/24 10:44
Total/NA	Analysis	8021B		1	1655	JP	EET ALB	03/12/24 20:07
Total/NA	Prep	SHAKE			1534	JU	EET ALB	03/11/24 14:10
Total/NA	Analysis	8015D		1	1576	JU	EET ALB	03/11/24 17:42
Total/NA	Prep	300_Prep			1545	KB	EET ALB	03/12/24 07:00
Total/NA	Analysis	300.0		20	1651	KB	EET ALB	03/12/24 14:01

Client Sample ID: BH24-17 2'
Lab Sample ID: 885-836-2
Date Collected: 03/04/24 10:30
Matrix: Solid
Date Received: 03/09/24 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			1514	IMR	EET ALB	03/11/24 10:44
Total/NA	Analysis	8015D		1	1654	JP	EET ALB	03/12/24 20:54
Total/NA	Prep	5030C			1514	IMR	EET ALB	03/11/24 10:44
Total/NA	Analysis	8021B		1	1655	JP	EET ALB	03/12/24 20:54
Total/NA	Prep	SHAKE			1534	JU	EET ALB	03/11/24 14:10
Total/NA	Analysis	8015D		1	1576	JU	EET ALB	03/11/24 17:54
Total/NA	Prep	300_Prep			1545	KB	EET ALB	03/12/24 07:00
Total/NA	Analysis	300.0		20	1651	KB	EET ALB	03/12/24 14:14

Client Sample ID: BH24-19 0'
Lab Sample ID: 885-836-3
Date Collected: 03/04/24 11:00
Matrix: Solid
Date Received: 03/09/24 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			1514	IMR	EET ALB	03/11/24 10:44
Total/NA	Analysis	8015D		1	1654	JP	EET ALB	03/12/24 21:18
Total/NA	Prep	5030C			1514	IMR	EET ALB	03/11/24 10:44
Total/NA	Analysis	8021B		1	1655	JP	EET ALB	03/12/24 21:18
Total/NA	Prep	SHAKE			1534	JU	EET ALB	03/11/24 14:10
Total/NA	Analysis	8015D		1	1576	JU	EET ALB	03/11/24 18:06
Total/NA	Prep	300_Prep			1545	KB	EET ALB	03/12/24 07:00
Total/NA	Analysis	300.0		20	1651	KB	EET ALB	03/12/24 14:51

Client Sample ID: BH24-19 2'
Lab Sample ID: 885-836-4
Date Collected: 03/04/24 11:30
Matrix: Solid
Date Received: 03/09/24 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			1514	IMR	EET ALB	03/11/24 10:44
Total/NA	Analysis	8015D		1	1654	JP	EET ALB	03/12/24 21:42

Lab Chronicle

Client: Vertex
Job ID: 885-836-1
Project/Site: PLU 29 Big Sinks West CTB

Client Sample ID: BH24-19 2'
Lab Sample ID: 885-836-4
Date Collected: 03/04/24 11:30
Matrix: Solid
Date Received: 03/09/24 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			1514	IMR	EET ALB	03/11/24 10:44
Total/NA	Analysis	8021B		1	1655	JP	EET ALB	03/12/24 21:42
Total/NA	Prep	SHAKE			1534	JU	EET ALB	03/11/24 14:10
Total/NA	Analysis	8015D		1	1576	JU	EET ALB	03/11/24 18:18
Total/NA	Prep	300_Prep			1545	KB	EET ALB	03/12/24 07:00
Total/NA	Analysis	300.0		20	1651	KB	EET ALB	03/12/24 15:03

Client Sample ID: BH24-20 0'
Lab Sample ID: 885-836-5
Date Collected: 03/04/24 13:00
Matrix: Solid
Date Received: 03/09/24 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			1514	IMR	EET ALB	03/11/24 10:44
Total/NA	Analysis	8015D		1	1654	JP	EET ALB	03/12/24 22:06
Total/NA	Prep	5030C			1514	IMR	EET ALB	03/11/24 10:44
Total/NA	Analysis	8021B		1	1655	JP	EET ALB	03/12/24 22:06
Total/NA	Prep	SHAKE			1534	JU	EET ALB	03/11/24 14:10
Total/NA	Analysis	8015D		1	1576	JU	EET ALB	03/11/24 18:30
Total/NA	Prep	300_Prep			1545	KB	EET ALB	03/12/24 07:00
Total/NA	Analysis	300.0		20	1651	KB	EET ALB	03/12/24 15:15

Client Sample ID: BH24-20 2'
Lab Sample ID: 885-836-6
Date Collected: 03/04/24 13:30
Matrix: Solid
Date Received: 03/09/24 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			1514	IMR	EET ALB	03/11/24 10:44
Total/NA	Analysis	8015D		1	1654	JP	EET ALB	03/12/24 22:29
Total/NA	Prep	5030C			1514	IMR	EET ALB	03/11/24 10:44
Total/NA	Analysis	8021B		1	1655	JP	EET ALB	03/12/24 22:29
Total/NA	Prep	SHAKE			1534	JU	EET ALB	03/11/24 14:10
Total/NA	Analysis	8015D		1	1576	JU	EET ALB	03/11/24 18:42
Total/NA	Prep	300_Prep			1545	KB	EET ALB	03/12/24 07:00
Total/NA	Analysis	300.0		20	1651	KB	EET ALB	03/12/24 15:28

Laboratory References:
EET ALB = Eurofins Albuquerque, 4901 Hawkins NE, Albuquerque, NM 87109, TEL (505)345-3975

Accreditation/Certification Summary

Client: Vertex Job ID: 885-836-1
Project/Site: PLU 29 Big Sinks West CTB

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
8015D	5030C	Solid	C6-C10
8015D	SHAKE	Solid	Diesel Range Organics [C10-C28]
8015D	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

Method Summary

Client: Vertex
Job ID: 885-836-1
Project/Site: PLU 29 Big Sinks West CTB

Method	Method Description	Protocol	Laboratory
8015D	Gasoline Range Organics (GRO) (GC)	SW846	EET ALB
8021B	Volatile Organic Compounds (GC)	SW846	EET ALB
8015D	Diesel Range Organics (DRO) (GC)	SW846	EET ALB
300.0	Anions, Ion Chromatography	EPA	EET ALB
300_Prep	Anions, Ion Chromatography, 10% Wt/Vol	EPA	EET ALB
5030C	Purge and Trap	SW846	EET ALB
SHAKE	Preparation, Shake Jar	TestAmerica SOP	EET ALB

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TestAmerica SOP = TestAmerica, Inc., Standard Operating Procedure

Laboratory References:

EET ALB = Eurofins Albuquerque, 4901 Hawkins NE, Albuquerque, NM 87109, TEL (505)345-3975

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Chain of Custody

Work Order No: [illegible]

Project Manager:	Sara Cuttler	Bill to: (if different)	
Company Name:	ensolum	Company Name:	XTO Energy Inc
Address:	[illegible]	Address:	[illegible]
City, State ZIP:	[illegible]	City, State ZIP:	[illegible]
Phone:	575-[illegible]	Email:	[illegible]

Project Name:	[illegible]
Project Number:	[illegible]
Project Location:	[illegible]
Sampler's Name:	[illegible]

ANALYSIS REQUEST: BTEX (8021); TPH 8015M (GRO/DRO/ORO); Chloride

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	# of Cont	BTEX	TPH	Chloride
[illegible]	Soil	[illegible]	10:[illegible]	[illegible]	1	✓	✓	✓
[illegible]			10:[illegible]					
[illegible]			11:00					
[illegible]			11:[illegible]					
[illegible]			11:[illegible]					
[illegible]			12:[illegible]					

Total 200.7 / 6010 200.8 / 6020 8RCRA 13PPM Texas 11 Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO2 Na Sr Tl Sn U V Zn
Circle Method(s) and Metal(s) to be analyzed TCLP / SPLP 6010 : 8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Tl U Hg: 1631 / 245.1 / 7470 / 7471

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
[signature]	[signature]	[illegible]	[signature]	[signature]	[illegible]

Login Sample Receipt Checklist

Client: Vertex Job Number: 885-836-1

Login Number: 836 **List Source: Eurofins Albuquerque**
List Number: 1
Creator: Casarrubias, Tracy

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
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").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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ANALYTICAL REPORT

PREPARED FOR

Attn: Wyatt Wadleigh
Vertex
3101 Boyd Dr
Carlsbad, New Mexico 88220

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JOB DESCRIPTION

PLU 29 Big Sinks West CTB

JOB NUMBER

885-835-1

Eurofins Albuquerque
4901 Hawkins NE
Albuquerque NM 87109

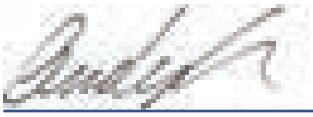
See page two for job notes and contact information.

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



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

Client: Vertex
Project/Site: PLU 29 Big Sinks West CTB

Laboratory Job ID: 885-835-1

Table of Contents

Definitions/Glossary

Client: Vertex Job ID: 885-835-1
Project/Site: PLU 29 Big Sinks West CTB

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
Project: PLU 29 Big Sinks West CTB

Job ID: 885-835-1

Job ID: 885-835-1 Eurofins Albuquerque

Job Narrative
885-835-1

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 3/9/2024 8:30 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 1.0°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 matrix spike / matrix spike duplicate / sample duplicate (MS/MSD/DUP) precision for preparation batch 885-1661 and analytical batch 885-1797 was outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory control sample duplicate (LCS/LCSD) precision was within acceptance limits.

Method 8015D_DRO: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 885-1661 and analytical batch 885-1797 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
Method 300_OF_28D_PREC: The following sample was diluted for Chloride due to the nature of the sample matrix: BH24-24 2ft (885-835-3). Elevated reporting limits (RLs) are provided.

Method 300_OF_28D_PREC: The following sample was diluted due to the nature of the sample matrix: BH24-11 3.75ft (885-835-1). 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.

Client Sample Results

Client: Vertex
Project/Site: PLU 29 Big Sinks West CTB

Job ID: 885-835-1

Client Sample ID: BH24-11 3.75ft

Lab Sample ID: 885-835-1
Matrix: Solid
Date Collected: 03/06/24 10:30
Date Received: 03/09/24 08:30

Method: SW846 8015D - 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		03/12/24 15:00	03/14/24 04:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*91*		*15 - 244*	*03/12/24 15:00*	*03/14/24 04:36*	*1*

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		03/12/24 15:00	03/14/24 04:36	1
Ethylbenzene	ND		0.047		mg/Kg		03/12/24 15:00	03/14/24 04:36	1
Toluene	ND		0.047		mg/Kg		03/12/24 15:00	03/14/24 04:36	1
Xylenes, Total	ND		0.095		mg/Kg		03/12/24 15:00	03/14/24 04:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*86*		*39 - 146*	*03/12/24 15:00*	*03/14/24 04:36*	*1*

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**16**		9.9		mg/Kg		03/13/24 08:49	03/14/24 14:38	1
Motor Oil Range Organics [C28-C40]	ND		49		mg/Kg		03/13/24 08:49	03/14/24 14:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*96*		*62 - 134*	*03/13/24 08:49*	*03/14/24 14:38*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		03/13/24 10:18	03/13/24 13:09	20

Client Sample ID: BH24-24 0ft

Lab Sample ID: 885-835-2
Matrix: Solid
Date Collected: 03/06/24 11:00
Date Received: 03/09/24 08:30

Method: SW846 8015D - 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		03/12/24 15:00	03/14/24 05:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*15 - 244*	*03/12/24 15:00*	*03/14/24 05:00*	*1*

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		03/12/24 15:00	03/14/24 05:00	1
Ethylbenzene	ND		0.050		mg/Kg		03/12/24 15:00	03/14/24 05:00	1
Toluene	ND		0.050		mg/Kg		03/12/24 15:00	03/14/24 05:00	1
Xylenes, Total	ND		0.10		mg/Kg		03/12/24 15:00	03/14/24 05:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*90*		*39 - 146*	*03/12/24 15:00*	*03/14/24 05:00*	*1*

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**30**		9.2		mg/Kg		03/13/24 08:49	03/13/24 20:04	1
Motor Oil Range Organics [C28-C40]	ND		46		mg/Kg		03/13/24 08:49	03/13/24 20:04	1

Client Sample Results

Client: Vertex
Job ID: 885-835-1
Project/Site: PLU 29 Big Sinks West CTB

Client Sample ID: BH24-24 0ft
Lab Sample ID: 885-835-2
Date Collected: 03/06/24 11:00
Matrix: Solid
Date Received: 03/09/24 08:30

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Di-n-octyl phthalate (Surr)	*73*		*62 - 134*	*03/13/24 08:49*	*03/13/24 20:04*	*1*
Di-n-octyl phthalate (Surr)	*101*		*62 - 134*	*03/13/24 08:49*	*03/14/24 14:48*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**62**		60		mg/Kg		03/13/24 10:18	03/13/24 13:46	20

Client Sample ID: BH24-24 2ft
Lab Sample ID: 885-835-3
Date Collected: 03/06/24 11:15
Matrix: Solid
Date Received: 03/09/24 08:30

Method: SW846 8015D - 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		03/13/24 15:53	03/18/24 18:33	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*95*		*15 - 244*	*03/13/24 15:53*	*03/18/24 18:33*	*1*

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		03/13/24 15:53	03/14/24 20:41	1
Ethylbenzene	ND		0.050		mg/Kg		03/13/24 15:53	03/14/24 20:41	1
Toluene	ND		0.050		mg/Kg		03/13/24 15:53	03/14/24 20:41	1
Xylenes, Total	ND		0.10		mg/Kg		03/13/24 15:53	03/14/24 20:41	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*90*		*39 - 146*	*03/13/24 15:53*	*03/14/24 20:41*	*1*

Method: SW846 8015D - 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		03/13/24 14:17	03/14/24 16:16	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		03/13/24 14:17	03/14/24 16:16	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Di-n-octyl phthalate (Surr)	*125*		*62 - 134*	*03/13/24 14:17*	*03/14/24 16:16*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		03/14/24 10:29	03/14/24 11:23	20

QC Sample Results

Client: Vertex
Project/Site: PLU 29 Big Sinks West CTB

Job ID: 885-835-1

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

Lab Sample ID: MB 885-1598/1-A
Matrix: Solid
Analysis Batch: 1719

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 1598

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		03/12/24 15:00	03/13/24 11:46	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*15 - 244*	*03/12/24 15:00*	*03/13/24 11:46*	*1*

Lab Sample ID: LCS 885-1598/2-A
Matrix: Solid
Analysis Batch: 1719

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 1598

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics [C6 - C10]			25.0	24.3		mg/Kg		97	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*216*		*15 - 244*

Lab Sample ID: MB 885-1670/1-A
Matrix: Solid
Analysis Batch: 1972

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 1670

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		03/13/24 15:53	03/18/24 10:53	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*15 - 244*	*03/13/24 15:53*	*03/18/24 10:53*	*1*

Lab Sample ID: LCS 885-1670/2-A
Matrix: Solid
Analysis Batch: 1972

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 1670

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics [C6 - C10]			25.0	21.1		mg/Kg		84	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*204*		*15 - 244*

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 885-1598/1-A
Matrix: Solid
Analysis Batch: 1720

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 1598

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		03/12/24 15:00	03/13/24 11:46	1
Ethylbenzene	ND		0.050		mg/Kg		03/12/24 15:00	03/13/24 11:46	1
Toluene	ND		0.050		mg/Kg		03/12/24 15:00	03/13/24 11:46	1
Xylenes, Total	ND		0.10		mg/Kg		03/12/24 15:00	03/13/24 11:46	1

QC Sample Results

Client: Vertex
Project/Site: PLU 29 Big Sinks West CTB

Job ID: 885-835-1

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

Lab Sample ID: MB 885-1598/1-A
Matrix: Solid
Analysis Batch: 1720

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 1598

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	93		39 - 146	03/12/24 15:00	03/13/24 11:46	1

Lab Sample ID: LCS 885-1598/3-A
Matrix: Solid
Analysis Batch: 1720

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 1598

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	1.00	0.927		mg/Kg		93	70 - 130
Ethylbenzene	1.00	0.952		mg/Kg		95	70 - 130
o-Xylene	1.00	0.947		mg/Kg		95	70 - 130
Toluene	1.00	0.942		mg/Kg		94	70 - 130
Xylenes, Total	3.00	2.88		mg/Kg		96	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	95		39 - 146

Lab Sample ID: MB 885-1670/1-A
Matrix: Solid
Analysis Batch: 1783

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 1670

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025	mg/Kg		03/13/24 15:53	03/14/24 12:20	1
Ethylbenzene	ND		0.050	mg/Kg		03/13/24 15:53	03/14/24 12:20	1
Toluene	ND		0.050	mg/Kg		03/13/24 15:53	03/14/24 12:20	1
Xylenes, Total	ND		0.10	mg/Kg		03/13/24 15:53	03/14/24 12:20	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	87		39 - 146	03/13/24 15:53	03/14/24 12:20	1

Lab Sample ID: LCS 885-1670/3-A
Matrix: Solid
Analysis Batch: 1783

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 1670

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	1.00	0.857		mg/Kg		86	70 - 130
Ethylbenzene	1.00	0.863		mg/Kg		86	70 - 130
m,p-Xylene	2.00	1.73		mg/Kg		86	70 - 130
o-Xylene	1.00	0.863		mg/Kg		86	70 - 130
Toluene	1.00	0.860		mg/Kg		86	70 - 130
Xylenes, Total	3.00	2.59		mg/Kg		86	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	90		39 - 146

QC Sample Results

Client: Vertex
Job ID: 885-835-1
Project/Site: PLU 29 Big Sinks West CTB

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

Lab Sample ID: MB 885-1624/1-A
Matrix: Solid
Analysis Batch: 1713

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 1624

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		10		mg/Kg		03/13/24 08:49	03/14/24 09:59	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		03/13/24 08:49	03/14/24 09:59	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*92*		*62 - 134*	*03/13/24 08:49*	*03/14/24 09:59*	*1*

Lab Sample ID: LCS 885-1624/2-A
Matrix: Solid
Analysis Batch: 1713

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 1624

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Diesel Range Organics [C10-C28]			50.0	49.3		mg/Kg		99	60 - 135		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Di-n-octyl phthalate (Surr)	*89*		*62 - 134*

Lab Sample ID: MB 885-1661/1-A
Matrix: Solid
Analysis Batch: 1797

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 1661

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		10		mg/Kg		03/13/24 14:17	03/14/24 10:43	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		03/13/24 14:17	03/14/24 10:43	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*91*		*62 - 134*	*03/13/24 14:17*	*03/14/24 10:43*	*1*

Lab Sample ID: LCS 885-1661/2-A
Matrix: Solid
Analysis Batch: 1797

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 1661

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Diesel Range Organics [C10-C28]			50.0	49.9		mg/Kg		100	60 - 135		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Di-n-octyl phthalate (Surr)	*84*		*62 - 134*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 885-1629/1-A
Matrix: Solid
Analysis Batch: 1697

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 1629

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0		mg/Kg		03/13/24 10:18	03/13/24 11:04	1

QC Sample Results

Client: Vertex
Project/Site: PLU 29 Big Sinks West CTB

Job ID: 885-835-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 885-1629/2-A
Matrix: Solid
Analysis Batch: 1697

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 1629

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			30.2	28.6		mg/Kg		95	90 - 110		

Lab Sample ID: MB 885-1690/1-A
Matrix: Solid
Analysis Batch: 1745

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 1690

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0		mg/Kg		03/14/24 10:29	03/14/24 10:52	1

Lab Sample ID: LCS 885-1690/2-A
Matrix: Solid
Analysis Batch: 1745

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 1690

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: MRL 885-1745/22
Matrix: Solid
Analysis Batch: 1745

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	0.532		mg/L		106	50 - 150		

QC Association Summary

Client: Vertex
Project/Site: PLU 29 Big Sinks West CTB

Job ID: 885-835-1

GC VOA

Prep Batch: 1598

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-835-1	BH24-11 3.75ft	Total/NA	Solid	5030C	
885-835-2	BH24-24 0ft	Total/NA	Solid	5030C	
MB 885-1598/1-A	Method Blank	Total/NA	Solid	5030C	
LCS 885-1598/2-A	Lab Control Sample	Total/NA	Solid	5030C	
LCS 885-1598/3-A	Lab Control Sample	Total/NA	Solid	5030C	

Prep Batch: 1670

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-835-3	BH24-24 2ft	Total/NA	Solid	5030C	
MB 885-1670/1-A	Method Blank	Total/NA	Solid	5030C	
LCS 885-1670/2-A	Lab Control Sample	Total/NA	Solid	5030C	
LCS 885-1670/3-A	Lab Control Sample	Total/NA	Solid	5030C	

Analysis Batch: 1719

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-835-1	BH24-11 3.75ft	Total/NA	Solid	8015D	1598
885-835-2	BH24-24 0ft	Total/NA	Solid	8015D	1598
MB 885-1598/1-A	Method Blank	Total/NA	Solid	8015D	1598
LCS 885-1598/2-A	Lab Control Sample	Total/NA	Solid	8015D	1598

Analysis Batch: 1720

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-835-1	BH24-11 3.75ft	Total/NA	Solid	8021B	1598
885-835-2	BH24-24 0ft	Total/NA	Solid	8021B	1598
MB 885-1598/1-A	Method Blank	Total/NA	Solid	8021B	1598
LCS 885-1598/3-A	Lab Control Sample	Total/NA	Solid	8021B	1598

Analysis Batch: 1783

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-835-3	BH24-24 2ft	Total/NA	Solid	8021B	1670
MB 885-1670/1-A	Method Blank	Total/NA	Solid	8021B	1670
LCS 885-1670/3-A	Lab Control Sample	Total/NA	Solid	8021B	1670

Analysis Batch: 1972

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-835-3	BH24-24 2ft	Total/NA	Solid	8015D	1670
MB 885-1670/1-A	Method Blank	Total/NA	Solid	8015D	1670
LCS 885-1670/2-A	Lab Control Sample	Total/NA	Solid	8015D	1670

GC Semi VOA

Prep Batch: 1624

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-835-1	BH24-11 3.75ft	Total/NA	Solid	SHAKE	
885-835-2	BH24-24 0ft	Total/NA	Solid	SHAKE	
MB 885-1624/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 885-1624/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	

Prep Batch: 1661

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-835-3	BH24-24 2ft	Total/NA	Solid	SHAKE	

QC Association Summary

Client: Vertex
Project/Site: PLU 29 Big Sinks West CTB

Job ID: 885-835-1

GC Semi VOA (Continued)

Prep Batch: 1661 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 885-1661/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 885-1661/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	

Analysis Batch: 1686

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-835-2	BH24-24 0ft	Total/NA	Solid	8015D	1624

Analysis Batch: 1713

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-835-1	BH24-11 3.75ft	Total/NA	Solid	8015D	1624
885-835-2	BH24-24 0ft	Total/NA	Solid	8015D	1624
MB 885-1624/1-A	Method Blank	Total/NA	Solid	8015D	1624
LCS 885-1624/2-A	Lab Control Sample	Total/NA	Solid	8015D	1624

Analysis Batch: 1797

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-835-3	BH24-24 2ft	Total/NA	Solid	8015D	1661
MB 885-1661/1-A	Method Blank	Total/NA	Solid	8015D	1661
LCS 885-1661/2-A	Lab Control Sample	Total/NA	Solid	8015D	1661

HPLC/IC

Prep Batch: 1629

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-835-1	BH24-11 3.75ft	Total/NA	Solid	300_Prep	
885-835-2	BH24-24 0ft	Total/NA	Solid	300_Prep	
MB 885-1629/1-A	Method Blank	Total/NA	Solid	300_Prep	
LCS 885-1629/2-A	Lab Control Sample	Total/NA	Solid	300_Prep	

Prep Batch: 1690

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-835-3	BH24-24 2ft	Total/NA	Solid	300_Prep	
MB 885-1690/1-A	Method Blank	Total/NA	Solid	300_Prep	
LCS 885-1690/2-A	Lab Control Sample	Total/NA	Solid	300_Prep	

Analysis Batch: 1697

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-835-1	BH24-11 3.75ft	Total/NA	Solid	300.0	1629
885-835-2	BH24-24 0ft	Total/NA	Solid	300.0	1629
MB 885-1629/1-A	Method Blank	Total/NA	Solid	300.0	1629
LCS 885-1629/2-A	Lab Control Sample	Total/NA	Solid	300.0	1629

Analysis Batch: 1745

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-835-3	BH24-24 2ft	Total/NA	Solid	300.0	1690
MB 885-1690/1-A	Method Blank	Total/NA	Solid	300.0	1690
LCS 885-1690/2-A	Lab Control Sample	Total/NA	Solid	300.0	1690
MRL 885-1745/22	Lab Control Sample	Total/NA	Solid	300.0	

Lab Chronicle

Client: Vertex
Job ID: 885-835-1
Project/Site: PLU 29 Big Sinks West CTB

Client Sample ID: BH24-11 3.75ft
Lab Sample ID: 885-835-1
Date Collected: 03/06/24 10:30
Matrix: Solid
Date Received: 03/09/24 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			1598	JP	EET ALB	03/12/24 15:00
Total/NA	Analysis	8015D		1	1719	JP	EET ALB	03/14/24 04:36
Total/NA	Prep	5030C			1598	JP	EET ALB	03/12/24 15:00
Total/NA	Analysis	8021B		1	1720	JP	EET ALB	03/14/24 04:36
Total/NA	Prep	SHAKE			1624	JU	EET ALB	03/13/24 08:49
Total/NA	Analysis	8015D		1	1713	PD	EET ALB	03/14/24 14:38
Total/NA	Prep	300_Prep			1629	KB	EET ALB	03/13/24 10:18
Total/NA	Analysis	300.0		20	1697	KB	EET ALB	03/13/24 13:09

Client Sample ID: BH24-24 0ft
Lab Sample ID: 885-835-2
Date Collected: 03/06/24 11:00
Matrix: Solid
Date Received: 03/09/24 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			1598	JP	EET ALB	03/12/24 15:00
Total/NA	Analysis	8015D		1	1719	JP	EET ALB	03/14/24 05:00
Total/NA	Prep	5030C			1598	JP	EET ALB	03/12/24 15:00
Total/NA	Analysis	8021B		1	1720	JP	EET ALB	03/14/24 05:00
Total/NA	Prep	SHAKE			1624	JU	EET ALB	03/13/24 08:49
Total/NA	Analysis	8015D		1	1713	PD	EET ALB	03/14/24 14:48
Total/NA	Prep	SHAKE			1624	JU	EET ALB	03/13/24 08:49
Total/NA	Analysis	8015D		1	1686	JU	EET ALB	03/13/24 20:04
Total/NA	Prep	300_Prep			1629	KB	EET ALB	03/13/24 10:18
Total/NA	Analysis	300.0		20	1697	KB	EET ALB	03/13/24 13:46

Client Sample ID: BH24-24 2ft
Lab Sample ID: 885-835-3
Date Collected: 03/06/24 11:15
Matrix: Solid
Date Received: 03/09/24 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			1670	IMR	EET ALB	03/13/24 15:53
Total/NA	Analysis	8015D		1	1972	RA	EET ALB	03/18/24 18:33
Total/NA	Prep	5030C			1670	IMR	EET ALB	03/13/24 15:53
Total/NA	Analysis	8021B		1	1783	IMR	EET ALB	03/14/24 20:41
Total/NA	Prep	SHAKE			1661	JU	EET ALB	03/13/24 14:17
Total/NA	Analysis	8015D		1	1797	JU	EET ALB	03/14/24 16:16
Total/NA	Prep	300_Prep			1690	JT	EET ALB	03/14/24 10:29
Total/NA	Analysis	300.0		20	1745	RC	EET ALB	03/14/24 11:23

Laboratory References:
EET ALB = Eurofins Albuquerque, 4901 Hawkins NE, Albuquerque, NM 87109, TEL (505)345-3975

Accreditation/Certification Summary

Client: Vertex Job ID: 885-835-1
Project/Site: PLU 29 Big Sinks West CTB

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
8015D	5030C	Solid	Gasoline Range Organics [C6 - C10]
8015D	SHAKE	Solid	Diesel Range Organics [C10-C28]
8015D	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

Method Summary

Client: Vertex
Project/Site: PLU 29 Big Sinks West CTB

Job ID: 885-835-1

Method	Method Description	Protocol	Laboratory
8015D	Gasoline Range Organics (GRO) (GC)	SW846	EET ALB
8021B	Volatile Organic Compounds (GC)	SW846	EET ALB
8015D	Diesel Range Organics (DRO) (GC)	SW846	EET ALB
300.0	Anions, Ion Chromatography	EPA	EET ALB
300_Prep	Anions, Ion Chromatography, 10% Wt/Vol	EPA	EET ALB
5030C	Purge and Trap	SW846	EET ALB
SHAKE	Preparation, Shake Jar	TestAmerica SOP	EET ALB

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TestAmerica SOP = TestAmerica, Inc., Standard Operating Procedure

Laboratory References:

EET ALB = Eurofins Albuquerque, 4901 Hawkins NE, Albuquerque, NM 87109, TEL (505)345-3975

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Chain of Custody

Work Order No: ______

Project Manager:	[illegible]	Bill to: (if different)	[illegible]
Company Name:	[illegible]	Company Name:	[illegible] Energy Inc
Address:	[illegible]	Address:	[illegible]
City, State ZIP:	[illegible]	City, State ZIP:	[illegible]
Phone:	[illegible]	Email:	[illegible]

Work Order Comments

Project Name:	[illegible]	Turn Around	
Project Number:	[illegible]		
Project Location:		Due Date:	[illegible]
Sampler's Name:	[illegible]		

ANALYSIS REQUEST

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Grab/Comp	# of Cont	TPH (8015)	TPH: [illegible]	Chlorides	Sample Comments
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			✓	✓	✓	
[illegible]			[illegible]	[illegible]						
[illegible]			[illegible]	[illegible]						
[illegible]			[illegible]	[illegible]						
[illegible]			[illegible]	[illegible]						

Total 200.7 / 6010 200.8 / 6020 8RCRA 13PPM Texas 11 Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO2 Na Sr Tl Sn U V Zn

Circle Method(s) and Metal(s) to be analyzed TCLP / SPLP 6010: 8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Tl U Hg: 1631 / 245.1 / 7470 / 7471

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Login Sample Receipt Checklist

Client: Vertex Job Number: 885-835-1

Login Number: 835 **List Source: Eurofins Albuquerque**
List Number: 1
Creator: Casarrubias, Tracy

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
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").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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ANALYTICAL REPORT

PREPARED FOR

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

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JOB DESCRIPTION

PLU29 Big Sinks West CTB

JOB NUMBER

885-1453-1

Eurofins Albuquerque
4901 Hawkins NE
Albuquerque NM 87109

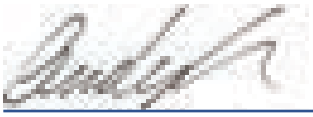
See page two for job notes and contact information.

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



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

Client: Vertex
Project/Site: PLU29 Big Sinks West CTB

Laboratory Job ID: 885-1453-1

Table of Contents

Definitions/Glossary

Client: Vertex Job ID: 885-1453-1
Project/Site: PLU29 Big Sinks West CTB

Qualifiers

GC Semi VOA

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

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
Project: PLU29 Big Sinks West CTB

Job ID: 885-1453-1

Job ID: 885-1453-1 Eurofins Albuquerque

Job Narrative
885-1453-1

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 sample was received on 3/20/2024 8:00 AM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.3°C.

GC VOA
Method 8021B: The method blank for preparation batch 880-76266 and analytical batch 880-76263 contained Benzene above the method detection limit. This target analyte concentration was less than the reporting limit (RL) in the method blank; therefore, re-extraction and/or re-analysis of samples was not performed.

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

GC Semi VOA
Method 8015MOD_NM: The surrogate recovery for the blank associated with preparation batch 880-76189 and analytical batch 880-76256 was outside the upper control 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
Project/Site: PLU29 Big Sinks West CTB

Job ID: 885-1453-1

Client Sample ID: BH24-03 4'

Date Collected: 03/18/24 14:00
Date Received: 03/20/24 08:00

Lab Sample ID: 885-1453-1

Matrix: Solid

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.0020		mg/Kg		03/22/24 09:04	03/22/24 14:44	1
Toluene	ND		0.0020		mg/Kg		03/22/24 09:04	03/22/24 14:44	1
Ethylbenzene	ND		0.0020		mg/Kg		03/22/24 09:04	03/22/24 14:44	1
Xylenes, Total	ND		0.0040		mg/Kg		03/22/24 09:04	03/22/24 14:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*74*		*70 - 130*	*03/22/24 09:04*	*03/22/24 14:44*	*1*
1,4-Difluorobenzene (Surr)	*98*		*70 - 130*	*03/22/24 09:04*	*03/22/24 14:44*	*1*

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	ND		50		mg/Kg		03/21/24 10:51	03/22/24 18:12	1
Diesel Range Organics (Over C10-C28)	ND		50		mg/Kg		03/21/24 10:51	03/22/24 18:12	1
Oll Range Organics (Over C28-C36)	ND		50		mg/Kg		03/21/24 10:51	03/22/24 18:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*0*	*S1-*	*70 - 130*	*03/21/24 10:51*	*03/22/24 18:12*	*1*
o-Terphenyl	*0*	*S1-*	*70 - 130*	*03/21/24 10:51*	*03/22/24 18:12*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**93**		5.0		mg/Kg			03/21/24 15:33	1

QC Sample Results

Client: Vertex
Project/Site: PLU29 Big Sinks West CTB

Job ID: 885-1453-1

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-76266/5-A
Matrix: Solid
Analysis Batch: 76263

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 76266

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.0020		mg/Kg		03/22/24 09:04	03/22/24 11:39	1
Toluene	ND		0.0020		mg/Kg		03/22/24 09:04	03/22/24 11:39	1
Ethylbenzene	ND		0.0020		mg/Kg		03/22/24 09:04	03/22/24 11:39	1
Xylenes, Total	ND		0.0040		mg/Kg		03/22/24 09:04	03/22/24 11:39	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*71*		*70 - 130*	*03/22/24 09:04*	*03/22/24 11:39*	*1*
1,4-Difluorobenzene (Surr)	*100*		*70 - 130*	*03/22/24 09:04*	*03/22/24 11:39*	*1*

Lab Sample ID: LCS 880-76266/1-A
Matrix: Solid
Analysis Batch: 76263

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 76266

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			0.100	0.0917		mg/Kg		92	70 - 130		
Toluene			0.100	0.0974		mg/Kg		97	70 - 130		
Ethylbenzene			0.100	0.109		mg/Kg		109	70 - 130		
m-Xylene & p-Xylene			0.200	0.224		mg/Kg		112	70 - 130		
o-Xylene			0.100	0.109		mg/Kg		109	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*111*		*70 - 130*
1,4-Difluorobenzene (Surr)	*102*		*70 - 130*

Lab Sample ID: LCSD 880-76266/2-A
Matrix: Solid
Analysis Batch: 76263

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 76266

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene			0.100	0.0899		mg/Kg		90	70 - 130	2	35
Toluene			0.100	0.0918		mg/Kg		92	70 - 130	6	35
Ethylbenzene			0.100	0.101		mg/Kg		101	70 - 130	7	35
m-Xylene & p-Xylene			0.200	0.206		mg/Kg		103	70 - 130	9	35
o-Xylene			0.100	0.100		mg/Kg		100	70 - 130	8	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*104*		*70 - 130*
1,4-Difluorobenzene (Surr)	*113*		*70 - 130*

Method: 8015B NM - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 880-76189/1-A
Matrix: Solid
Analysis Batch: 76256

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 76189

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	ND		50		mg/Kg		03/21/24 10:51	03/22/24 07:39	1

QC Sample Results

Client: Vertex
Project/Site: PLU29 Big Sinks West CTB

Job ID: 885-1453-1

Method: 8015B NM - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: MB 880-76189/1-A
Matrix: Solid
Analysis Batch: 76256

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 76189

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (Over C10-C28)	ND		50		mg/Kg		03/21/24 10:51	03/22/24 07:39	1
OII Range Organics (Over C28-C36)	ND		50		mg/Kg		03/21/24 10:51	03/22/24 07:39	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*175*	*S1+*	*70 - 130*	*03/21/24 10:51*	*03/22/24 07:39*	*1*
o-Terphenyl	*188*	*S1+*	*70 - 130*	*03/21/24 10:51*	*03/22/24 07:39*	*1*

Lab Sample ID: LCS 880-76189/2-A
Matrix: Solid
Analysis Batch: 76256

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 76189

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics (GRO)-C6-C10			1000	1080		mg/Kg		108	70 - 130		
Diesel Range Organics (Over C10-C28)			1000	1010		mg/Kg		101	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1-Chlorooctane	*112*		*70 - 130*
o-Terphenyl	*127*		*70 - 130*

Lab Sample ID: LCSD 880-76189/3-A
Matrix: Solid
Analysis Batch: 76256

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 76189

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10			1000	1160		mg/Kg		116	70 - 130	8	20
Diesel Range Organics (Over C10-C28)			1000	1020		mg/Kg		102	70 - 130	1	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1-Chlorooctane	*110*		*70 - 130*
o-Terphenyl	*124*		*70 - 130*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-76153/1-A
Matrix: Solid
Analysis Batch: 76212

Client Sample ID: Method Blank
Prep Type: Soluble

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		5.0		mg/Kg			03/21/24 13:52	1

QC Sample Results

Client: Vertex
Project/Site: PLU29 Big Sinks West CTB

Job ID: 885-1453-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 880-76153/2-A
Matrix: Solid
Analysis Batch: 76212

Client Sample ID: Lab Control Sample
Prep Type: Soluble

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			250	239		mg/Kg		95	90 - 110		

Lab Sample ID: LCSD 880-76153/3-A
Matrix: Solid
Analysis Batch: 76212

Client Sample ID: Lab Control Sample Dup
Prep Type: Soluble

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride			250	238		mg/Kg		95	90 - 110	0	20

QC Association Summary

Client: Vertex
Project/Site: PLU29 Big Sinks West CTB

Job ID: 885-1453-1

GC VOA

Analysis Batch: 76263

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-1453-1	BH24-03 4'	Total/NA	Solid	8021B	76266
MB 880-76266/5-A	Method Blank	Total/NA	Solid	8021B	76266
LCS 880-76266/1-A	Lab Control Sample	Total/NA	Solid	8021B	76266
LCSD 880-76266/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	76266

Prep Batch: 76266

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-1453-1	BH24-03 4'	Total/NA	Solid	5035	
MB 880-76266/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-76266/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-76266/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	

GC Semi VOA

Prep Batch: 76189

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-1453-1	BH24-03 4'	Total/NA	Solid	8015NM Prep	
MB 880-76189/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-76189/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-76189/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	

Analysis Batch: 76256

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-1453-1	BH24-03 4'	Total/NA	Solid	8015B NM	76189
MB 880-76189/1-A	Method Blank	Total/NA	Solid	8015B NM	76189
LCS 880-76189/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	76189
LCSD 880-76189/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	76189

HPLC/IC

Leach Batch: 76153

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-1453-1	BH24-03 4'	Soluble	Solid	DI Leach	
MB 880-76153/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-76153/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-76153/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	

Analysis Batch: 76212

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-1453-1	BH24-03 4'	Soluble	Solid	300.0	76153
MB 880-76153/1-A	Method Blank	Soluble	Solid	300.0	76153
LCS 880-76153/2-A	Lab Control Sample	Soluble	Solid	300.0	76153
LCSD 880-76153/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	76153

Lab Chronicle

Client: Vertex
Job ID: 885-1453-1
Project/Site: PLU29 Big Sinks West CTB

Client Sample ID: BH24-03 4'
Date Collected: 03/18/24 14:00
Date Received: 03/20/24 08:00

Lab Sample ID: 885-1453-1
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			76266	MNR	EET MID	03/22/24 09:04
Total/NA	Analysis	8021B		1	76263	MNR	EET MID	03/22/24 14:44
Total/NA	Prep	8015NM Prep			76189	TKC	EET MID	03/21/24 10:51
Total/NA	Analysis	8015B NM		1	76256	SM	EET MID	03/22/24 18:12
Soluble	Leach	DI Leach			76153	SA	EET MID	03/21/24 08:27
Soluble	Analysis	300.0		1	76212	SMC	EET MID	03/21/24 15:33

Laboratory References:
EET MID = Eurofins Midland, 1211 W. Florida Ave, Midland, TX 79701, TEL (432)704-5440

Accreditation/Certification Summary

Client: Vertex
Job ID: 885-1453-1
Project/Site: PLU29 Big Sinks West CTB

Laboratory: Eurofins Midland

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Texas	NELAP	T104704400-23-26	06-30-24

Method Summary

Client: Vertex
Project/Site: PLU29 Big Sinks West CTB

Job ID: 885-1453-1

Method	Method Description	Protocol	Laboratory
8021B	Volatile Organic Compounds (GC)	SW846	EET MID
8015B NM	Diesel Range Organics (DRO) (GC)	SW846	EET MID
300.0	Anions, Ion Chromatography	EPA	EET MID
5035	Closed System Purge and Trap	SW846	EET MID
8015NM Prep	Microextraction	SW846	EET MID
DI Leach	Deionized Water Leaching Procedure	ASTM	EET MID

Protocol References:

ASTM = ASTM International

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET MID = Eurofins Midland, 1211 W. Florida Ave, Midland, TX 79701, TEL (432)704-5440

HALL ENVIRONMENTAL
ANALYSIS LABORAT

Chain-of-Custody Record

Login Sample Receipt Checklist

Client: Vertex Job Number: 885-1453-1

Login Number: 1453 **List Source: Eurofins Albuquerque**
List Number: 1
Creator: Proctor, Nancy

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.	True	
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	

Login Sample Receipt Checklist

Client: Vertex Job Number: 885-1453-1

Login Number: 1453
List Number: 2
Creator: Rodriguez, Leticia

List Source: Eurofins Midland
List Creation: 03/21/24 10:45 AM

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
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").	N/A	

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ANALYTICAL REPORT

PREPARED FOR

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

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JOB DESCRIPTION

PLU 29 Big Sinks West CTB

JOB NUMBER

885-2903-1

Eurofins Albuquerque
4901 Hawkins NE
Albuquerque NM 87109

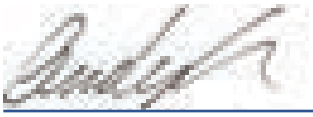
See page two for job notes and contact information.

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



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

Client: Vertex
Project/Site: PLU 29 Big Sinks West CTB

Laboratory Job ID: 885-2903-1

Table of Contents

Definitions/Glossary

Client: Vertex Job ID: 885-2903-1
Project/Site: PLU 29 Big Sinks West CTB

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

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
Project: PLU 29 Big Sinks West CTB

Job ID: 885-2903-1

Job ID: 885-2903-1 Eurofins Albuquerque

Job Narrative
885-2903-1

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 4/16/2024 7:55 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 1.7°C.

Receipt Exceptions
The container label for the following samples did not match the information listed on the Chain-of-Custody (COC): BH24-25 0' (885-2903-1), BH24-25 2' (885-2903-2), BH24-26 0' (885-2903-3), BH24-26 2' (885-2903-4), BH24-27 0' (885-2903-5), BH24-27 2' (885-2903-6), BH24-29 0' (885-2903-7), BH24-29 2' (885-2903-8), BH24-29 4' (885-2903-9), BH24-29 0' (885-2903-10), BH24-29 2' (885-2903-11) and BH24-29 4' (885-2903-12). The container labels list , BH24-28 while the COC lists <SAMPLEID> BH24-29. The client was contacted, and the lab was instructed to use the information on the COC.

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: BH24-29 0' (885-2903-7). 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: 885-2903-1
Project/Site: PLU 29 Big Sinks West CTB

Client Sample ID: BH24-25 0'
Date Collected: 04/11/24 11:40
Date Received: 04/16/24 07:55

Lab Sample ID: 885-2903-1
Matrix: Solid

Method: SW846 8015D - 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		04/17/24 15:27	04/18/24 12:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*15 - 244*	*04/17/24 15:27*	*04/18/24 12:52*	*1*

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		04/17/24 15:27	04/18/24 12:52	1
Ethylbenzene	ND		0.048		mg/Kg		04/17/24 15:27	04/18/24 12:52	1
Toluene	ND		0.048		mg/Kg		04/17/24 15:27	04/18/24 12:52	1
Xylenes, Total	ND		0.096		mg/Kg		04/17/24 15:27	04/18/24 12:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*89*		*39 - 146*	*04/17/24 15:27*	*04/18/24 12:52*	*1*

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		8.5		mg/Kg		04/18/24 16:14	04/19/24 14:13	1
Motor Oil Range Organics [C28-C40]	ND		42		mg/Kg		04/18/24 16:14	04/19/24 14:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*87*		*62 - 134*	*04/18/24 16:14*	*04/19/24 14:13*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**21**		5.0		mg/Kg			04/23/24 18:30	1

Client Sample Results

Client: Vertex
Job ID: 885-2903-1
Project/Site: PLU 29 Big Sinks West CTB

Client Sample ID: BH24-25 2'
Date Collected: 04/11/24 11:50
Date Received: 04/16/24 07:55

Lab Sample ID: 885-2903-2
Matrix: Solid

Method: SW846 8015D - 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		04/17/24 15:27	04/18/24 13:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*15 - 244*	*04/17/24 15:27*	*04/18/24 13:58*	*1*

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		04/17/24 15:27	04/18/24 13:58	1
Ethylbenzene	ND		0.049		mg/Kg		04/17/24 15:27	04/18/24 13:58	1
Toluene	ND		0.049		mg/Kg		04/17/24 15:27	04/18/24 13:58	1
Xylenes, Total	ND		0.099		mg/Kg		04/17/24 15:27	04/18/24 13:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*91*		*39 - 146*	*04/17/24 15:27*	*04/18/24 13:58*	*1*

Method: SW846 8015D - 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		04/18/24 16:14	04/19/24 15:00	1
Motor Oil Range Organics [C28-C40]	ND		43		mg/Kg		04/18/24 16:14	04/19/24 15:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*83*		*62 - 134*	*04/18/24 16:14*	*04/19/24 15:00*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**36**		5.0		mg/Kg			04/23/24 18:49	1

Client Sample Results

Client: Vertex
Job ID: 885-2903-1
Project/Site: PLU 29 Big Sinks West CTB

Client Sample ID: BH24-26 0'
Date Collected: 04/11/24 12:00
Date Received: 04/16/24 07:55

Lab Sample ID: 885-2903-3
Matrix: Solid

Method: SW846 8015D - 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		04/17/24 15:27	04/18/24 15:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*15 - 244*	*04/17/24 15:27*	*04/18/24 15:03*	*1*

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		04/17/24 15:27	04/18/24 15:03	1
Ethylbenzene	ND		0.047		mg/Kg		04/17/24 15:27	04/18/24 15:03	1
Toluene	ND		0.047		mg/Kg		04/17/24 15:27	04/18/24 15:03	1
Xylenes, Total	ND		0.094		mg/Kg		04/17/24 15:27	04/18/24 15:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*88*		*39 - 146*	*04/17/24 15:27*	*04/18/24 15:03*	*1*

Method: SW846 8015D - 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		04/18/24 16:14	04/19/24 15:24	1
Motor Oil Range Organics [C28-C40]	ND		46		mg/Kg		04/18/24 16:14	04/19/24 15:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*104*		*62 - 134*	*04/18/24 16:14*	*04/19/24 15:24*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**24**		5.0		mg/Kg			04/23/24 18:55	1

Client Sample Results

Client: Vertex
Project/Site: PLU 29 Big Sinks West CTB

Job ID: 885-2903-1

Client Sample ID: BH24-26 2'
Date Collected: 04/11/24 12:10
Date Received: 04/16/24 07:55

Lab Sample ID: 885-2903-4
Matrix: Solid

Method: SW846 8015D - 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		04/17/24 15:27	04/18/24 15:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*15 - 244*	*04/17/24 15:27*	*04/18/24 15:25*	*1*

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		04/17/24 15:27	04/18/24 15:25	1
Ethylbenzene	ND		0.049		mg/Kg		04/17/24 15:27	04/18/24 15:25	1
Toluene	ND		0.049		mg/Kg		04/17/24 15:27	04/18/24 15:25	1
Xylenes, Total	ND		0.098		mg/Kg		04/17/24 15:27	04/18/24 15:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*86*		*39 - 146*	*04/17/24 15:27*	*04/18/24 15:25*	*1*

Method: SW846 8015D - 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		04/18/24 16:14	04/19/24 15:48	1
Motor Oil Range Organics [C28-C40]	ND		45		mg/Kg		04/18/24 16:14	04/19/24 15:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*136*	*S1+*	*62 - 134*	*04/18/24 16:14*	*04/19/24 15:48*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**18**		5.0		mg/Kg			04/23/24 19:01	1

Client Sample Results

Client: Vertex
Project/Site: PLU 29 Big Sinks West CTB

Job ID: 885-2903-1

Client Sample ID: BH24-27 0'

Date Collected: 04/11/24 12:30
Date Received: 04/16/24 07:55

Lab Sample ID: 885-2903-5

Matrix: Solid

Method: SW846 8015D - 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		04/17/24 15:27	04/18/24 15:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*15 - 244*	*04/17/24 15:27*	*04/18/24 15:47*	*1*

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		04/17/24 15:27	04/18/24 15:47	1
Ethylbenzene	ND		0.050		mg/Kg		04/17/24 15:27	04/18/24 15:47	1
Toluene	ND		0.050		mg/Kg		04/17/24 15:27	04/18/24 15:47	1
Xylenes, Total	ND		0.099		mg/Kg		04/17/24 15:27	04/18/24 15:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*88*		*39 - 146*	*04/17/24 15:27*	*04/18/24 15:47*	*1*

Method: SW846 8015D - 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		04/18/24 16:14	04/19/24 16:12	1
Motor Oil Range Organics [C28-C40]	ND		48		mg/Kg		04/18/24 16:14	04/19/24 16:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*97*		*62 - 134*	*04/18/24 16:14*	*04/19/24 16:12*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**8.7**		5.0		mg/Kg			04/23/24 19:08	1

Client Sample Results

Client: Vertex
Project/Site: PLU 29 Big Sinks West CTB

Job ID: 885-2903-1

Client Sample ID: BH24-27 2'
Date Collected: 04/11/24 12:40
Date Received: 04/16/24 07:55

Lab Sample ID: 885-2903-6
Matrix: Solid

Method: SW846 8015D - 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		04/17/24 15:27	04/18/24 16:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*15 - 244*	*04/17/24 15:27*	*04/18/24 16:08*	*1*

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		04/17/24 15:27	04/18/24 16:08	1
Ethylbenzene	ND		0.049		mg/Kg		04/17/24 15:27	04/18/24 16:08	1
Toluene	ND		0.049		mg/Kg		04/17/24 15:27	04/18/24 16:08	1
Xylenes, Total	ND		0.099		mg/Kg		04/17/24 15:27	04/18/24 16:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*88*		*39 - 146*	*04/17/24 15:27*	*04/18/24 16:08*	*1*

Method: SW846 8015D - 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		04/18/24 16:14	04/19/24 16:35	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		04/18/24 16:14	04/19/24 16:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*106*		*62 - 134*	*04/18/24 16:14*	*04/19/24 16:35*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		5.0		mg/Kg			04/23/24 19:27	1

Client Sample Results

Client: Vertex
Job ID: 885-2903-1
Project/Site: PLU 29 Big Sinks West CTB

Client Sample ID: BH24-29 0'
Date Collected: 04/11/24 13:20
Date Received: 04/16/24 07:55

Lab Sample ID: 885-2903-7
Matrix: Solid

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	19		4.7		mg/Kg		04/17/24 15:27	04/18/24 16:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*175*		*15 - 244*	*04/17/24 15:27*	*04/18/24 16:30*	*1*

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.023		mg/Kg		04/17/24 15:27	04/18/24 16:30	1
Ethylbenzene	ND		0.047		mg/Kg		04/17/24 15:27	04/18/24 16:30	1
Toluene	ND		0.047		mg/Kg		04/17/24 15:27	04/18/24 16:30	1
Xylenes, Total	ND		0.094		mg/Kg		04/17/24 15:27	04/18/24 16:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*119*		*39 - 146*	*04/17/24 15:27*	*04/18/24 16:30*	*1*

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	2900		88		mg/Kg		04/18/24 16:14	04/22/24 19:00	10
Motor Oil Range Organics [C28-C40]	660		440		mg/Kg		04/18/24 16:14	04/22/24 19:00	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*0*	*D S1-*	*62 - 134*	*04/18/24 16:14*	*04/22/24 19:00*	*10*

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	78		5.0		mg/Kg			04/23/24 19:33	1

Client Sample Results

Client: Vertex
Project/Site: PLU 29 Big Sinks West CTB

Job ID: 885-2903-1

Client Sample ID: BH24-29 2'

Date Collected: 04/11/24 13:30
Date Received: 04/16/24 07:55

Lab Sample ID: 885-2903-8

Matrix: Solid

Method: SW846 8015D - 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		04/17/24 15:27	04/18/24 16:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*103*		*15 - 244*	*04/17/24 15:27*	*04/18/24 16:52*	*1*

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		04/17/24 15:27	04/18/24 16:52	1
Ethylbenzene	ND		0.048		mg/Kg		04/17/24 15:27	04/18/24 16:52	1
Toluene	ND		0.048		mg/Kg		04/17/24 15:27	04/18/24 16:52	1
Xylenes, Total	ND		0.096		mg/Kg		04/17/24 15:27	04/18/24 16:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*88*		*39 - 146*	*04/17/24 15:27*	*04/18/24 16:52*	*1*

Method: SW846 8015D - 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		04/18/24 16:14	04/19/24 17:24	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		04/18/24 16:14	04/19/24 17:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*99*		*62 - 134*	*04/18/24 16:14*	*04/19/24 17:24*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**24**		5.0		mg/Kg			04/23/24 19:39	1

Client Sample Results

Client: Vertex
Project/Site: PLU 29 Big Sinks West CTB

Job ID: 885-2903-1

Client Sample ID: BH24-29 4'

Date Collected: 04/11/24 13:35
Date Received: 04/16/24 07:55

Lab Sample ID: 885-2903-9

Matrix: Solid

Method: SW846 8015D - 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		04/17/24 15:27	04/18/24 17:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*15 - 244*	*04/17/24 15:27*	*04/18/24 17:14*	*1*

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		04/17/24 15:27	04/18/24 17:14	1
Ethylbenzene	ND		0.049		mg/Kg		04/17/24 15:27	04/18/24 17:14	1
Toluene	ND		0.049		mg/Kg		04/17/24 15:27	04/18/24 17:14	1
Xylenes, Total	ND		0.097		mg/Kg		04/17/24 15:27	04/18/24 17:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*89*		*39 - 146*	*04/17/24 15:27*	*04/18/24 17:14*	*1*

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**24**		9.4		mg/Kg		04/18/24 16:14	04/19/24 17:48	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		04/18/24 16:14	04/19/24 17:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*99*		*62 - 134*	*04/18/24 16:14*	*04/19/24 17:48*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**20**		5.0		mg/Kg			04/23/24 19:46	1

Client Sample Results

Client: Vertex
Project/Site: PLU 29 Big Sinks West CTB

Job ID: 885-2903-1

Client Sample ID: BH24-29 0'
Date Collected: 04/11/24 13:45
Date Received: 04/16/24 07:55

Lab Sample ID: 885-2903-10
Matrix: Solid

Method: SW846 8015D - 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		04/17/24 15:27	04/18/24 17:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*105*		*15 - 244*	*04/17/24 15:27*	*04/18/24 17:36*	*1*

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.023		mg/Kg		04/17/24 15:27	04/18/24 17:36	1
Ethylbenzene	ND		0.047		mg/Kg		04/17/24 15:27	04/18/24 17:36	1
Toluene	ND		0.047		mg/Kg		04/17/24 15:27	04/18/24 17:36	1
Xylenes, Total	ND		0.094		mg/Kg		04/17/24 15:27	04/18/24 17:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*92*		*39 - 146*	*04/17/24 15:27*	*04/18/24 17:36*	*1*

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		8.8		mg/Kg		04/18/24 16:14	04/19/24 18:12	1
Motor Oil Range Organics [C28-C40]	ND		44		mg/Kg		04/18/24 16:14	04/19/24 18:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*97*		*62 - 134*	*04/18/24 16:14*	*04/19/24 18:12*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**15000**		100		mg/Kg			04/23/24 19:52	20

Client Sample Results

Client: Vertex
Project/Site: PLU 29 Big Sinks West CTB

Job ID: 885-2903-1

Client Sample ID: BH24-29 2'

Date Collected: 04/11/24 14:05
Date Received: 04/16/24 07:55

Lab Sample ID: 885-2903-11

Matrix: Solid

Method: SW846 8015D - 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		04/17/24 15:27	04/18/24 18:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*15 - 244*	*04/17/24 15:27*	*04/18/24 18:19*	*1*

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		04/17/24 15:27	04/18/24 18:19	1
Ethylbenzene	ND		0.050		mg/Kg		04/17/24 15:27	04/18/24 18:19	1
Toluene	ND		0.050		mg/Kg		04/17/24 15:27	04/18/24 18:19	1
Xylenes, Total	ND		0.10		mg/Kg		04/17/24 15:27	04/18/24 18:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*86*		*39 - 146*	*04/17/24 15:27*	*04/18/24 18:19*	*1*

Method: SW846 8015D - 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		04/18/24 16:14	04/19/24 18:36	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		04/18/24 16:14	04/19/24 18:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*89*		*62 - 134*	*04/18/24 16:14*	*04/19/24 18:36*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**180**		5.0		mg/Kg			04/23/24 19:58	1

Client Sample Results

Client: Vertex
Project/Site: PLU 29 Big Sinks West CTB

Job ID: 885-2903-1

Client Sample ID: BH24-29 4'
Date Collected: 04/11/24 14:10
Date Received: 04/16/24 07:55

Lab Sample ID: 885-2903-12
Matrix: Solid

Method: SW846 8015D - 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		04/17/24 15:27	04/18/24 18:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*15 - 244*	*04/17/24 15:27*	*04/18/24 18:41*	*1*

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		04/17/24 15:27	04/18/24 18:41	1
Ethylbenzene	ND		0.049		mg/Kg		04/17/24 15:27	04/18/24 18:41	1
Toluene	ND		0.049		mg/Kg		04/17/24 15:27	04/18/24 18:41	1
Xylenes, Total	ND		0.098		mg/Kg		04/17/24 15:27	04/18/24 18:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*87*		*39 - 146*	*04/17/24 15:27*	*04/18/24 18:41*	*1*

Method: SW846 8015D - 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		04/18/24 16:14	04/19/24 19:01	1
Motor Oil Range Organics [C28-C40]	ND		46		mg/Kg		04/18/24 16:14	04/19/24 19:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*117*		*62 - 134*	*04/18/24 16:14*	*04/19/24 19:01*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		5.0		mg/Kg			04/23/24 20:17	1

QC Sample Results

Client: Vertex
Project/Site: PLU 29 Big Sinks West CTB

Job ID: 885-2903-1

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

Lab Sample ID: MB 885-3460/1-A
Matrix: Solid
Analysis Batch: 3570

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 3460

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		04/17/24 15:27	04/18/24 12:31	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*15 - 244*	*04/17/24 15:27*	*04/18/24 12:31*	*1*

Lab Sample ID: LCS 885-3460/2-A
Matrix: Solid
Analysis Batch: 3570

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 3460

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)	*220*		*15 - 244*

Lab Sample ID: 885-2903-1 MS
Matrix: Solid
Analysis Batch: 3570

Client Sample ID: BH24-25 0'
Prep Type: Total/NA
Prep Batch: 3460

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics [C6 - C10]	ND		24.0	27.5		mg/Kg		115	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*234*		*15 - 244*

Lab Sample ID: 885-2903-1 MSD
Matrix: Solid
Analysis Batch: 3570

Client Sample ID: BH24-25 0'
Prep Type: Total/NA
Prep Batch: 3460

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		24.0	27.6		mg/Kg		115	70 - 130	0	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*249*	*S1+*	*15 - 244*

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 885-3460/1-A
Matrix: Solid
Analysis Batch: 3572

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 3460

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		04/17/24 15:27	04/18/24 12:31	1
Ethylbenzene	ND		0.050		mg/Kg		04/17/24 15:27	04/18/24 12:31	1
Toluene	ND		0.050		mg/Kg		04/17/24 15:27	04/18/24 12:31	1

QC Sample Results

Client: Vertex
Project/Site: PLU 29 Big Sinks West CTB

Job ID: 885-2903-1

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

Lab Sample ID: MB 885-3460/1-A
Matrix: Solid
Analysis Batch: 3572

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 3460

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Xylenes, Total	ND		0.10		mg/Kg		04/17/24 15:27	04/18/24 12:31	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*89*		*39 - 146*	*04/17/24 15:27*	*04/18/24 12:31*	*1*

Lab Sample ID: LCS 885-3460/3-A
Matrix: Solid
Analysis Batch: 3572

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 3460

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			1.00	0.997		mg/Kg		100	70 - 130		
Ethylbenzene			1.00	0.995		mg/Kg		100	70 - 130		
m,p-Xylene			2.00	2.00		mg/Kg		100	70 - 130		
o-Xylene			1.00	0.996		mg/Kg		100	70 - 130		
Toluene			1.00	0.984		mg/Kg		98	70 - 130		
Xylenes, Total			3.00	3.00		mg/Kg		100	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*89*		*39 - 146*

Lab Sample ID: 885-2903-2 MS
Matrix: Solid
Analysis Batch: 3572

Client Sample ID: BH24-25 2'
Prep Type: Total/NA
Prep Batch: 3460

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene	ND		0.991	1.11		mg/Kg		112	70 - 130		
Ethylbenzene	ND		0.991	1.14		mg/Kg		115	70 - 130		
m,p-Xylene	ND		1.98	2.29		mg/Kg		115	70 - 130		
o-Xylene	ND		0.991	1.14		mg/Kg		115	70 - 130		
Toluene	ND		0.991	1.12		mg/Kg		113	70 - 130		
Xylenes, Total	ND		2.97	3.42		mg/Kg		115	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*89*		*39 - 146*

Lab Sample ID: 885-2903-2 MSD
Matrix: Solid
Analysis Batch: 3572

Client Sample ID: BH24-25 2'
Prep Type: Total/NA
Prep Batch: 3460

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	ND		0.989	1.12		mg/Kg		113	70 - 130	1	20
Ethylbenzene	ND		0.989	1.15		mg/Kg		116	70 - 130	1	20
m,p-Xylene	ND		1.98	2.30		mg/Kg		116	70 - 130	1	20
o-Xylene	ND		0.989	1.15		mg/Kg		116	70 - 130	1	20
Toluene	ND		0.989	1.14		mg/Kg		115	70 - 130	1	20
Xylenes, Total	ND		2.97	3.45		mg/Kg		116	70 - 130	1	20

QC Sample Results

Client: Vertex
Project/Site: PLU 29 Big Sinks West CTB

Job ID: 885-2903-1

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

Lab Sample ID: 885-2903-2 MSD
Matrix: Solid
Analysis Batch: 3572

Client Sample ID: BH24-25 2'
Prep Type: Total/NA
Prep Batch: 3460

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	88		39 - 146

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

Lab Sample ID: MB 885-3540/1-A
Matrix: Solid
Analysis Batch: 3722

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 3540

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		10		mg/Kg		04/18/24 16:14	04/22/24 10:32	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		04/18/24 16:14	04/22/24 10:32	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Di-n-octyl phthalate (Surr)	100		62 - 134	04/18/24 16:14	04/22/24 10:32	1

Lab Sample ID: LCS 885-3540/2-A
Matrix: Solid
Analysis Batch: 3722

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 3540

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Diesel Range Organics [C10-C28]			50.0	64.4		mg/Kg		129	60 - 135		

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

Lab Sample ID: 885-2903-12 MS
Matrix: Solid
Analysis Batch: 3635

Client Sample ID: BH24-29 4'
Prep Type: Total/NA
Prep Batch: 3540

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Diesel Range Organics [C10-C28]	ND		43.1	52.4		mg/Kg		122	44 - 136		

Surrogate	MS %Recovery	MS Qualifier	Limits
Di-n-octyl phthalate (Surr)	113		62 - 134

Lab Sample ID: 885-2903-12 MSD
Matrix: Solid
Analysis Batch: 3635

Client Sample ID: BH24-29 4'
Prep Type: Total/NA
Prep Batch: 3540

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		49.5	57.7		mg/Kg		117	44 - 136	10	32

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Di-n-octyl phthalate (Surr)	107		62 - 134

QC Sample Results

Client: Vertex
Project/Site: PLU 29 Big Sinks West CTB

Job ID: 885-2903-1

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-79116/1-A
Matrix: Solid
Analysis Batch: 79129

Client Sample ID: Method Blank
Prep Type: Soluble

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		5.0		mg/Kg			04/23/24 18:11	1

Lab Sample ID: LCS 880-79116/2-A
Matrix: Solid
Analysis Batch: 79129

Client Sample ID: Lab Control Sample
Prep Type: Soluble

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			250	240		mg/Kg		96	90 - 110		

Lab Sample ID: LCSD 880-79116/3-A
Matrix: Solid
Analysis Batch: 79129

Client Sample ID: Lab Control Sample Dup
Prep Type: Soluble

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride			250	240		mg/Kg		96	90 - 110	0	20

Lab Sample ID: 885-2903-1 MS
Matrix: Solid
Analysis Batch: 79129

Client Sample ID: BH24-25 0'
Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	21		252	258		mg/Kg		94	90 - 110		

Lab Sample ID: 885-2903-1 MSD
Matrix: Solid
Analysis Batch: 79129

Client Sample ID: BH24-25 0'
Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	21		252	258		mg/Kg		94	90 - 110	0	20

Lab Sample ID: 885-2903-11 MS
Matrix: Solid
Analysis Batch: 79129

Client Sample ID: BH24-29 2'
Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	180		252	421		mg/Kg		96	90 - 110		

Lab Sample ID: 885-2903-11 MSD
Matrix: Solid
Analysis Batch: 79129

Client Sample ID: BH24-29 2'
Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	180		252	419		mg/Kg		95	90 - 110	1	20

QC Association Summary

Client: Vertex
Project/Site: PLU 29 Big Sinks West CTB

Job ID: 885-2903-1

GC VOA

Prep Batch: 3460

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-2903-1	BH24-25 0'	Total/NA	Solid	5030C	
885-2903-2	BH24-25 2'	Total/NA	Solid	5030C	
885-2903-3	BH24-26 0'	Total/NA	Solid	5030C	
885-2903-4	BH24-26 2'	Total/NA	Solid	5030C	
885-2903-5	BH24-27 0'	Total/NA	Solid	5030C	
885-2903-6	BH24-27 2'	Total/NA	Solid	5030C	
885-2903-7	BH24-29 0'	Total/NA	Solid	5030C	
885-2903-8	BH24-29 2'	Total/NA	Solid	5030C	
885-2903-9	BH24-29 4'	Total/NA	Solid	5030C	
885-2903-10	BH24-29 0'	Total/NA	Solid	5030C	
885-2903-11	BH24-29 2'	Total/NA	Solid	5030C	
885-2903-12	BH24-29 4'	Total/NA	Solid	5030C	
MB 885-3460/1-A	Method Blank	Total/NA	Solid	5030C	
LCS 885-3460/2-A	Lab Control Sample	Total/NA	Solid	5030C	
LCS 885-3460/3-A	Lab Control Sample	Total/NA	Solid	5030C	
885-2903-1 MS	BH24-25 0'	Total/NA	Solid	5030C	
885-2903-1 MSD	BH24-25 0'	Total/NA	Solid	5030C	
885-2903-2 MS	BH24-25 2'	Total/NA	Solid	5030C	
885-2903-2 MSD	BH24-25 2'	Total/NA	Solid	5030C	

Analysis Batch: 3570

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-2903-1	BH24-25 0'	Total/NA	Solid	8015D	3460
885-2903-2	BH24-25 2'	Total/NA	Solid	8015D	3460
885-2903-3	BH24-26 0'	Total/NA	Solid	8015D	3460
885-2903-4	BH24-26 2'	Total/NA	Solid	8015D	3460
885-2903-5	BH24-27 0'	Total/NA	Solid	8015D	3460
885-2903-6	BH24-27 2'	Total/NA	Solid	8015D	3460
885-2903-7	BH24-29 0'	Total/NA	Solid	8015D	3460
885-2903-8	BH24-29 2'	Total/NA	Solid	8015D	3460
885-2903-9	BH24-29 4'	Total/NA	Solid	8015D	3460
885-2903-10	BH24-29 0'	Total/NA	Solid	8015D	3460
885-2903-11	BH24-29 2'	Total/NA	Solid	8015D	3460
885-2903-12	BH24-29 4'	Total/NA	Solid	8015D	3460
MB 885-3460/1-A	Method Blank	Total/NA	Solid	8015D	3460
LCS 885-3460/2-A	Lab Control Sample	Total/NA	Solid	8015D	3460
885-2903-1 MS	BH24-25 0'	Total/NA	Solid	8015D	3460
885-2903-1 MSD	BH24-25 0'	Total/NA	Solid	8015D	3460

Analysis Batch: 3572

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-2903-1	BH24-25 0'	Total/NA	Solid	8021B	3460
885-2903-2	BH24-25 2'	Total/NA	Solid	8021B	3460
885-2903-3	BH24-26 0'	Total/NA	Solid	8021B	3460
885-2903-4	BH24-26 2'	Total/NA	Solid	8021B	3460
885-2903-5	BH24-27 0'	Total/NA	Solid	8021B	3460
885-2903-6	BH24-27 2'	Total/NA	Solid	8021B	3460
885-2903-7	BH24-29 0'	Total/NA	Solid	8021B	3460
885-2903-8	BH24-29 2'	Total/NA	Solid	8021B	3460
885-2903-9	BH24-29 4'	Total/NA	Solid	8021B	3460
885-2903-10	BH24-29 0'	Total/NA	Solid	8021B	3460

QC Association Summary

Client: Vertex
Project/Site: PLU 29 Big Sinks West CTB

Job ID: 885-2903-1

GC VOA (Continued)

Analysis Batch: 3572 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-2903-11	BH24-29 2'	Total/NA	Solid	8021B	3460
885-2903-12	BH24-29 4'	Total/NA	Solid	8021B	3460
MB 885-3460/1-A	Method Blank	Total/NA	Solid	8021B	3460
LCS 885-3460/3-A	Lab Control Sample	Total/NA	Solid	8021B	3460
885-2903-2 MS	BH24-25 2'	Total/NA	Solid	8021B	3460
885-2903-2 MSD	BH24-25 2'	Total/NA	Solid	8021B	3460

GC Semi VOA

Prep Batch: 3540

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-2903-1	BH24-25 0'	Total/NA	Solid	SHAKE	
885-2903-2	BH24-25 2'	Total/NA	Solid	SHAKE	
885-2903-3	BH24-26 0'	Total/NA	Solid	SHAKE	
885-2903-4	BH24-26 2'	Total/NA	Solid	SHAKE	
885-2903-5	BH24-27 0'	Total/NA	Solid	SHAKE	
885-2903-6	BH24-27 2'	Total/NA	Solid	SHAKE	
885-2903-7	BH24-29 0'	Total/NA	Solid	SHAKE	
885-2903-8	BH24-29 2'	Total/NA	Solid	SHAKE	
885-2903-9	BH24-29 4'	Total/NA	Solid	SHAKE	
885-2903-10	BH24-29 0'	Total/NA	Solid	SHAKE	
885-2903-11	BH24-29 2'	Total/NA	Solid	SHAKE	
885-2903-12	BH24-29 4'	Total/NA	Solid	SHAKE	
MB 885-3540/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 885-3540/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	
885-2903-12 MS	BH24-29 4'	Total/NA	Solid	SHAKE	
885-2903-12 MSD	BH24-29 4'	Total/NA	Solid	SHAKE	

Analysis Batch: 3635

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-2903-1	BH24-25 0'	Total/NA	Solid	8015D	3540
885-2903-2	BH24-25 2'	Total/NA	Solid	8015D	3540
885-2903-3	BH24-26 0'	Total/NA	Solid	8015D	3540
885-2903-4	BH24-26 2'	Total/NA	Solid	8015D	3540
885-2903-5	BH24-27 0'	Total/NA	Solid	8015D	3540
885-2903-6	BH24-27 2'	Total/NA	Solid	8015D	3540
885-2903-8	BH24-29 2'	Total/NA	Solid	8015D	3540
885-2903-9	BH24-29 4'	Total/NA	Solid	8015D	3540
885-2903-10	BH24-29 0'	Total/NA	Solid	8015D	3540
885-2903-11	BH24-29 2'	Total/NA	Solid	8015D	3540
885-2903-12	BH24-29 4'	Total/NA	Solid	8015D	3540
885-2903-12 MS	BH24-29 4'	Total/NA	Solid	8015D	3540
885-2903-12 MSD	BH24-29 4'	Total/NA	Solid	8015D	3540

Analysis Batch: 3722

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-2903-7	BH24-29 0'	Total/NA	Solid	8015D	3540
MB 885-3540/1-A	Method Blank	Total/NA	Solid	8015D	3540
LCS 885-3540/2-A	Lab Control Sample	Total/NA	Solid	8015D	3540

QC Association Summary

Client: Vertex
Project/Site: PLU 29 Big Sinks West CTB

Job ID: 885-2903-1

HPLC/IC

Leach Batch: 79116

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-2903-1	BH24-25 0'	Soluble	Solid	DI Leach	
885-2903-2	BH24-25 2'	Soluble	Solid	DI Leach	
885-2903-3	BH24-26 0'	Soluble	Solid	DI Leach	
885-2903-4	BH24-26 2'	Soluble	Solid	DI Leach	
885-2903-5	BH24-27 0'	Soluble	Solid	DI Leach	
885-2903-6	BH24-27 2'	Soluble	Solid	DI Leach	
885-2903-7	BH24-29 0'	Soluble	Solid	DI Leach	
885-2903-8	BH24-29 2'	Soluble	Solid	DI Leach	
885-2903-9	BH24-29 4'	Soluble	Solid	DI Leach	
885-2903-10	BH24-29 0'	Soluble	Solid	DI Leach	
885-2903-11	BH24-29 2'	Soluble	Solid	DI Leach	
885-2903-12	BH24-29 4'	Soluble	Solid	DI Leach	
MB 880-79116/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-79116/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-79116/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
885-2903-1 MS	BH24-25 0'	Soluble	Solid	DI Leach	
885-2903-1 MSD	BH24-25 0'	Soluble	Solid	DI Leach	
885-2903-11 MS	BH24-29 2'	Soluble	Solid	DI Leach	
885-2903-11 MSD	BH24-29 2'	Soluble	Solid	DI Leach	

Analysis Batch: 79129

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-2903-1	BH24-25 0'	Soluble	Solid	300.0	79116
885-2903-2	BH24-25 2'	Soluble	Solid	300.0	79116
885-2903-3	BH24-26 0'	Soluble	Solid	300.0	79116
885-2903-4	BH24-26 2'	Soluble	Solid	300.0	79116
885-2903-5	BH24-27 0'	Soluble	Solid	300.0	79116
885-2903-6	BH24-27 2'	Soluble	Solid	300.0	79116
885-2903-7	BH24-29 0'	Soluble	Solid	300.0	79116
885-2903-8	BH24-29 2'	Soluble	Solid	300.0	79116
885-2903-9	BH24-29 4'	Soluble	Solid	300.0	79116
885-2903-10	BH24-29 0'	Soluble	Solid	300.0	79116
885-2903-11	BH24-29 2'	Soluble	Solid	300.0	79116
885-2903-12	BH24-29 4'	Soluble	Solid	300.0	79116
MB 880-79116/1-A	Method Blank	Soluble	Solid	300.0	79116
LCS 880-79116/2-A	Lab Control Sample	Soluble	Solid	300.0	79116
LCSD 880-79116/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	79116
885-2903-1 MS	BH24-25 0'	Soluble	Solid	300.0	79116
885-2903-1 MSD	BH24-25 0'	Soluble	Solid	300.0	79116
885-2903-11 MS	BH24-29 2'	Soluble	Solid	300.0	79116
885-2903-11 MSD	BH24-29 2'	Soluble	Solid	300.0	79116

Lab Chronicle

Client: Vertex
Job ID: 885-2903-1
Project/Site: PLU 29 Big Sinks West CTB

Client Sample ID: BH24-25 0'
Lab Sample ID: 885-2903-1
Date Collected: 04/11/24 11:40
Matrix: Solid
Date Received: 04/16/24 07:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			3460	JP	EET ALB	04/17/24 15:27
Total/NA	Analysis	8015D		1	3570	RA	EET ALB	04/18/24 12:52
Total/NA	Prep	5030C			3460	JP	EET ALB	04/17/24 15:27
Total/NA	Analysis	8021B		1	3572	RA	EET ALB	04/18/24 12:52
Total/NA	Prep	SHAKE			3540	JU	EET ALB	04/18/24 16:14
Total/NA	Analysis	8015D		1	3635	JU	EET ALB	04/19/24 14:13
Soluble	Leach	DI Leach			79116	SA	EET MID	04/23/24 12:59
Soluble	Analysis	300.0		1	79129	SMC	EET MID	04/23/24 18:30

Client Sample ID: BH24-25 2'
Lab Sample ID: 885-2903-2
Date Collected: 04/11/24 11:50
Matrix: Solid
Date Received: 04/16/24 07:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			3460	JP	EET ALB	04/17/24 15:27
Total/NA	Analysis	8015D		1	3570	RA	EET ALB	04/18/24 13:58
Total/NA	Prep	5030C			3460	JP	EET ALB	04/17/24 15:27
Total/NA	Analysis	8021B		1	3572	RA	EET ALB	04/18/24 13:58
Total/NA	Prep	SHAKE			3540	JU	EET ALB	04/18/24 16:14
Total/NA	Analysis	8015D		1	3635	JU	EET ALB	04/19/24 15:00
Soluble	Leach	DI Leach			79116	SA	EET MID	04/23/24 12:59
Soluble	Analysis	300.0		1	79129	SMC	EET MID	04/23/24 18:49

Client Sample ID: BH24-26 0'
Lab Sample ID: 885-2903-3
Date Collected: 04/11/24 12:00
Matrix: Solid
Date Received: 04/16/24 07:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			3460	JP	EET ALB	04/17/24 15:27
Total/NA	Analysis	8015D		1	3570	RA	EET ALB	04/18/24 15:03
Total/NA	Prep	5030C			3460	JP	EET ALB	04/17/24 15:27
Total/NA	Analysis	8021B		1	3572	RA	EET ALB	04/18/24 15:03
Total/NA	Prep	SHAKE			3540	JU	EET ALB	04/18/24 16:14
Total/NA	Analysis	8015D		1	3635	JU	EET ALB	04/19/24 15:24
Soluble	Leach	DI Leach			79116	SA	EET MID	04/23/24 12:59
Soluble	Analysis	300.0		1	79129	SMC	EET MID	04/23/24 18:55

Client Sample ID: BH24-26 2'
Lab Sample ID: 885-2903-4
Date Collected: 04/11/24 12:10
Matrix: Solid
Date Received: 04/16/24 07:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			3460	JP	EET ALB	04/17/24 15:27
Total/NA	Analysis	8015D		1	3570	RA	EET ALB	04/18/24 15:25

Lab Chronicle

Client: Vertex
Job ID: 885-2903-1
Project/Site: PLU 29 Big Sinks West CTB

Client Sample ID: BH24-26 2'
Lab Sample ID: 885-2903-4
Date Collected: 04/11/24 12:10
Matrix: Solid
Date Received: 04/16/24 07:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			3460	JP	EET ALB	04/17/24 15:27
Total/NA	Analysis	8021B		1	3572	RA	EET ALB	04/18/24 15:25
Total/NA	Prep	SHAKE			3540	JU	EET ALB	04/18/24 16:14
Total/NA	Analysis	8015D		1	3635	JU	EET ALB	04/19/24 15:48
Soluble	Leach	DI Leach			79116	SA	EET MID	04/23/24 12:59
Soluble	Analysis	300.0		1	79129	SMC	EET MID	04/23/24 19:01

Client Sample ID: BH24-27 0'
Lab Sample ID: 885-2903-5
Date Collected: 04/11/24 12:30
Matrix: Solid
Date Received: 04/16/24 07:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			3460	JP	EET ALB	04/17/24 15:27
Total/NA	Analysis	8015D		1	3570	RA	EET ALB	04/18/24 15:47
Total/NA	Prep	5030C			3460	JP	EET ALB	04/17/24 15:27
Total/NA	Analysis	8021B		1	3572	RA	EET ALB	04/18/24 15:47
Total/NA	Prep	SHAKE			3540	JU	EET ALB	04/18/24 16:14
Total/NA	Analysis	8015D		1	3635	JU	EET ALB	04/19/24 16:12
Soluble	Leach	DI Leach			79116	SA	EET MID	04/23/24 12:59
Soluble	Analysis	300.0		1	79129	SMC	EET MID	04/23/24 19:08

Client Sample ID: BH24-27 2'
Lab Sample ID: 885-2903-6
Date Collected: 04/11/24 12:40
Matrix: Solid
Date Received: 04/16/24 07:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			3460	JP	EET ALB	04/17/24 15:27
Total/NA	Analysis	8015D		1	3570	RA	EET ALB	04/18/24 16:08
Total/NA	Prep	5030C			3460	JP	EET ALB	04/17/24 15:27
Total/NA	Analysis	8021B		1	3572	RA	EET ALB	04/18/24 16:08
Total/NA	Prep	SHAKE			3540	JU	EET ALB	04/18/24 16:14
Total/NA	Analysis	8015D		1	3635	JU	EET ALB	04/19/24 16:35
Soluble	Leach	DI Leach			79116	SA	EET MID	04/23/24 12:59
Soluble	Analysis	300.0		1	79129	SMC	EET MID	04/23/24 19:27

Client Sample ID: BH24-29 0'
Lab Sample ID: 885-2903-7
Date Collected: 04/11/24 13:20
Matrix: Solid
Date Received: 04/16/24 07:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			3460	JP	EET ALB	04/17/24 15:27
Total/NA	Analysis	8015D		1	3570	RA	EET ALB	04/18/24 16:30
Total/NA	Prep	5030C			3460	JP	EET ALB	04/17/24 15:27
Total/NA	Analysis	8021B		1	3572	RA	EET ALB	04/18/24 16:30

Lab Chronicle

Client: Vertex
Job ID: 885-2903-1
Project/Site: PLU 29 Big Sinks West CTB

Client Sample ID: BH24-29 0'
Lab Sample ID: 885-2903-7
Date Collected: 04/11/24 13:20
Matrix: Solid
Date Received: 04/16/24 07:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	SHAKE			3540	JU	EET ALB	04/18/24 16:14
Total/NA	Analysis	8015D		10	3722	JU	EET ALB	04/22/24 19:00
Soluble	Leach	DI Leach			79116	SA	EET MID	04/23/24 12:59
Soluble	Analysis	300.0		1	79129	SMC	EET MID	04/23/24 19:33

Client Sample ID: BH24-29 2'
Lab Sample ID: 885-2903-8
Date Collected: 04/11/24 13:30
Matrix: Solid
Date Received: 04/16/24 07:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			3460	JP	EET ALB	04/17/24 15:27
Total/NA	Analysis	8015D		1	3570	RA	EET ALB	04/18/24 16:52
Total/NA	Prep	5030C			3460	JP	EET ALB	04/17/24 15:27
Total/NA	Analysis	8021B		1	3572	RA	EET ALB	04/18/24 16:52
Total/NA	Prep	SHAKE			3540	JU	EET ALB	04/18/24 16:14
Total/NA	Analysis	8015D		1	3635	JU	EET ALB	04/19/24 17:24
Soluble	Leach	DI Leach			79116	SA	EET MID	04/23/24 12:59
Soluble	Analysis	300.0		1	79129	SMC	EET MID	04/23/24 19:39

Client Sample ID: BH24-29 4'
Lab Sample ID: 885-2903-9
Date Collected: 04/11/24 13:35
Matrix: Solid
Date Received: 04/16/24 07:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			3460	JP	EET ALB	04/17/24 15:27
Total/NA	Analysis	8015D		1	3570	RA	EET ALB	04/18/24 17:14
Total/NA	Prep	5030C			3460	JP	EET ALB	04/17/24 15:27
Total/NA	Analysis	8021B		1	3572	RA	EET ALB	04/18/24 17:14
Total/NA	Prep	SHAKE			3540	JU	EET ALB	04/18/24 16:14
Total/NA	Analysis	8015D		1	3635	JU	EET ALB	04/19/24 17:48
Soluble	Leach	DI Leach			79116	SA	EET MID	04/23/24 12:59
Soluble	Analysis	300.0		1	79129	SMC	EET MID	04/23/24 19:46

Client Sample ID: BH24-29 0'
Lab Sample ID: 885-2903-10
Date Collected: 04/11/24 13:45
Matrix: Solid
Date Received: 04/16/24 07:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			3460	JP	EET ALB	04/17/24 15:27
Total/NA	Analysis	8015D		1	3570	RA	EET ALB	04/18/24 17:36
Total/NA	Prep	5030C			3460	JP	EET ALB	04/17/24 15:27
Total/NA	Analysis	8021B		1	3572	RA	EET ALB	04/18/24 17:36
Total/NA	Prep	SHAKE			3540	JU	EET ALB	04/18/24 16:14
Total/NA	Analysis	8015D		1	3635	JU	EET ALB	04/19/24 18:12

Lab Chronicle

Client: Vertex
Job ID: 885-2903-1
Project/Site: PLU 29 Big Sinks West CTB

Client Sample ID: BH24-29 0'
Lab Sample ID: 885-2903-10
Date Collected: 04/11/24 13:45
Matrix: Solid
Date Received: 04/16/24 07:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Soluble	Leach	DI Leach			79116	SA	EET MID	04/23/24 12:59
Soluble	Analysis	300.0		20	79129	SMC	EET MID	04/23/24 19:52

Client Sample ID: BH24-29 2'
Lab Sample ID: 885-2903-11
Date Collected: 04/11/24 14:05
Matrix: Solid
Date Received: 04/16/24 07:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			3460	JP	EET ALB	04/17/24 15:27
Total/NA	Analysis	8015D		1	3570	RA	EET ALB	04/18/24 18:19
Total/NA	Prep	5030C			3460	JP	EET ALB	04/17/24 15:27
Total/NA	Analysis	8021B		1	3572	RA	EET ALB	04/18/24 18:19
Total/NA	Prep	SHAKE			3540	JU	EET ALB	04/18/24 16:14
Total/NA	Analysis	8015D		1	3635	JU	EET ALB	04/19/24 18:36
Soluble	Leach	DI Leach			79116	SA	EET MID	04/23/24 12:59
Soluble	Analysis	300.0		1	79129	SMC	EET MID	04/23/24 19:58

Client Sample ID: BH24-29 4'
Lab Sample ID: 885-2903-12
Date Collected: 04/11/24 14:10
Matrix: Solid
Date Received: 04/16/24 07:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			3460	JP	EET ALB	04/17/24 15:27
Total/NA	Analysis	8015D		1	3570	RA	EET ALB	04/18/24 18:41
Total/NA	Prep	5030C			3460	JP	EET ALB	04/17/24 15:27
Total/NA	Analysis	8021B		1	3572	RA	EET ALB	04/18/24 18:41
Total/NA	Prep	SHAKE			3540	JU	EET ALB	04/18/24 16:14
Total/NA	Analysis	8015D		1	3635	JU	EET ALB	04/19/24 19:01
Soluble	Leach	DI Leach			79116	SA	EET MID	04/23/24 12:59
Soluble	Analysis	300.0		1	79129	SMC	EET MID	04/23/24 20:17

Laboratory References:
EET ALB = Eurofins Albuquerque, 4901 Hawkins NE, Albuquerque, NM 87109, TEL (505)345-3975
EET MID = Eurofins Midland, 1211 W. Florida Ave, Midland, TX 79701, TEL (432)704-5440

Accreditation/Certification Summary

Client: Vertex Job ID: 885-2903-1
Project/Site: PLU 29 Big Sinks West CTB

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
8015D	5030C	Solid	Gasoline Range Organics [C6 - C10]
8015D	SHAKE	Solid	Diesel Range Organics [C10-C28]
8015D	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

Laboratory: Eurofins Midland

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Texas	NELAP	T104704400-23-26	06-30-24

HALL ENVIRONMENTAL
ANALYSIS LABORA
Chain-of-Custody Record
Sample Name:

Login Sample Receipt Checklist

Client: Vertex Job Number: 885-2903-1

Login Number: 2903 **List Source: Eurofins Albuquerque**
List Number: 1
Creator: Proctor, Nancy

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.	False	Refer to Job Narrative for details.
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.	True	
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	

Login Sample Receipt Checklist

Client: Vertex Job Number: 885-2903-1

Login Number: 2903
List Number: 2
Creator: Rodriguez, Leticia

List Source: Eurofins Midland
List Creation: 04/23/24 11:00 AM

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
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").	N/A	

General Information

NMOCD District:	2 – Artesia	Incident IDs:	nAPP2400930382
Landowner:	Bureau of Land Management		nAPP2401043023
Client:	XTO Energy	Site Location:	PLU 29 Big Sinks West CTB
Date:	June 11, 2024	Project #:	23E-05485-02, 23E-05485-03
Client Contact:	Amy Ruth	Phone #:	432.661.0571
Vertex PM:	Sally Carttar	Phone #:	575.361.3561

Objective

The objective of the environmental remediation work plan is to identify exceedances found during the site assessment/characterization activity and propose an appropriate remediation technique to address these areas. Areas of environmental concern were identified and delineated east and south of the north containment as shown on Figure 1 (Attachment 1). Closure criteria have been selected as per New Mexico Administrative Code 19.15.29. All applicable research as it pertains to closure criteria selection is presented in Attachment 2. The closure criteria for the site are presented below.

Table 1. 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
51 feet - 100 feet	Chloride	10,000 mg/kg
	TPH (GRO+DRO+MRO)	2,500 mg/kg
	GRO+DRO	1,000 mg/kg
	BTEX	50 mg/kg
	Benzene	10 mg/kg

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

Site Assessment/Characterization

Site characterization was completed on April 13, 2024. A total of 29 sample points were established and samples collected for field screening. Daily Field Reports with site photographs are presented in Attachment 3. Samples at the deepest vertical distance below closure criteria were submitted to the laboratory for analysis. In total, 33 samples were submitted to Eurofins Laboratories for analysis. The sample locations are presented on Figure 1 (Attachment 1). Laboratory analysis results have been compared to the above noted closure criteria and the results from the characterization activity are presented in Attachment 4. Exceedances are identified in the table as bold with a grey background.

Remedial Activities

General

Areas identified with contaminant concentrations above closure criteria will be remediated through excavation. Laboratory results from the site assessment/characterization have been referenced to estimate both the vertical and horizontal limits of the impacts and the volume of soil to be removed. Soil will be excavated to a depth of 1 foot, or 6 inches around production equipment to maintain stability. Field screening will be utilized to confirm removal of contaminated soil below the applicable closure criteria. Contaminated soils will be stored on a 30 mil liner prior to disposal at an approved facility. Once excavation is complete, confirmatory samples will be collected and

laboratory analysis completed to confirm closure criteria guidelines are met. Once excavation has been safely completed to the fullest extent possible, a deferral will be requested for any areas that still exceed reclamation closure criteria. Excavations will be backfilled with clean soil sourced locally.

nAPP2400930382 (December 27, 2023) – Under Pipe Rack East of North Containment

Ten samples were collected for analysis east of the tank containment area. Exceedances to closure criteria were found at multiple sample points listed in the table below. A hydrovac truck will be utilized to identify the location of all underground lines. A backhoe will be used to complete excavation in all areas away from production equipment. Due to the proximity to tanks and potential for safety concerns related to undermining the tank foundations, Vertex Resource Services Ltd. (Vertex) may request a deferral for all impacted areas immediately surrounding production equipment if all contamination cannot be removed during excavation. Field screening will be utilized to find the horizontal and vertical extents of the spill area. Confirmatory samples will be collected as per New Mexico Oil Conservation Division (NMOCD) guidance and submitted for laboratory analysis of all applicable parameters. The estimated volume to be excavated is **110 cubic yards**.

Sample Point	Excavation Depth (ft.)	Remediation Method
BH24-01	1'	Handcrew
BH24-15	1'	Handcrew
BH24-12	1'	Handcrew
BH24-29	1'	Handcrew

nAPP2401043023 (January 8, 2024) – Between the North and South Containments

A total of 17 samples were collected for analysis in the area between the two battery containments. Exceedances to closure criteria were found at multiple sample points. Soil will be excavated at a planned depth of 1 foot around sample points shown in the table below. The excavation is also planned to extend to a depth of 2 feet and 4 feet at sample points BH24-05 and BH24-03, respectively. A hand crew will remove contaminated soil in close proximity to the production equipment. Due to the proximity to tanks and potential for safety concerns related to undermining the tank foundations, Vertex may request a deferral for all impacted areas immediately surrounding production equipment if all contamination cannot be removed during excavation. Heavy equipment will be used to complete excavation where possible. Horizontal and vertical extents of the impacted area will be identified using field screening. Confirmatory samples will be collected as per NMOCD guidance and submitted for laboratory analysis of all applicable parameters. The estimated volume to be excavated is **75 cubic yards**.

Sample Point	Excavation Depth (ft.)	Remediation Method
BH24-03	4'	Hydrovac/Backhoe
BH24-05	2'	Handcrew
BH24-04	1'	Handcrew
BH24-06	1'	Handcrew
BH24-07	1'	Handcrew
BH24-08	1'	Handcrew
BH24-09	1'	Handcrew
BH24-11	1'	Handcrew
BH24-15	1'	Handcrew
BH24-16	1'	Handcrew
BH24-18	1'	Handcrew
BH24-21	1'	Handcrew
BH24-22	1'	Handcrew
BH24-23	1'	Handcrew
BH24-28	1'	Handcrew
BH24-29	1'	Handcrew

Should you have any questions or concerns, please do not hesitate to contact the undersigned at 575.361.3561 or scarttar@vertex.ca.

Sally Carttar

Sally Carttar, BA
PROJECT MANAGER, REPORT REVIEW

June 20, 2024

Date

Attachments

Attachment 1. Characterization Sampling and Excavation Site Schematic
Attachment 2. Closure Criteria Research
Attachment 3. Daily Field Reports and Site Photographs
Attachment 4. Laboratory Results Table and Laboratory Data Reports

FW: XTO - Extension Request - PLU 29 Big Sinks West CTB nAPP2400930382

Ruth, Amy <amy.ruth@exxonmobil.com>
Thu 3/28/2024 9:52 AM
To:Sally Carttar <SCarttar@vertex.ca>
Cc:Romero, Alan <alan.romero1@exxonmobil.com>

Regards,

Amy C. Ruth

Environmental Advisor

UOG Unconventional Permian/Delaware

amy.ruth@exxonmobil.com

XTO ENERGY, INC. – An ExxonMobil Subsidiary

3104 E. Greene Street | Carlsbad, NM 88220 | M: 432.661.0571

From: Hamlet, Robert, EMNRD <Robert.Hamlet@emnrd.nm.gov>
Sent: Tuesday, March 26, 2024 2:21 PM
To: Ruth, Amy <amy.ruth@exxonmobil.com>
Cc: Garcia, Amanda <amanda.garcia@exxonmobil.com>; Romero, Alan <alan.romero1@exxonmobil.com>; Bratcher, Michael, EMNRD <mike.bratcher@emnrd.nm.gov>; Wells, Shelly, EMNRD <Shelly.Wells@emnrd.nm.gov>; Velez, Nelson, EMNRD <Nelson.Velez@emnrd.nm.gov>
Subject: XTO - Extension Request - PLU 29 Big Sinks West CTB nAPP2400930382

RE: Incident **#NAPP2400930382**

Amy,

Your request for a 90-day extension to **June 24th, 2024,** is approved. Please include this e-mail correspondence in the remediation and/or closure report.

Robert Hamlet • Environmental Specialist - Advanced

Environmental Bureau

EMNRD - Oil Conservation Division

506 W. Texas Ave.| Artesia, NM 88210

575.909.0302 | robert.hamlet@state.nm.us

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

From: Wells, Shelly, EMNRD <Shelly.Wells@emnrd.nm.gov>
Sent: Tuesday, March 26, 2024 1:12 PM
To: Hamlet, Robert, EMNRD <Robert.Hamlet@emnrd.nm.gov>
Cc: Bratcher, Michael, EMNRD <mike.bratcher@emnrd.nm.gov>
Subject: FW: [EXTERNAL] XTO - Extension Request - PLU 29 Big Sinks West CTB nAPP2400930382

From: Ruth, Amy <amy.ruth@exxonmobil.com>
Sent: Tuesday, March 26, 2024 11:08 AM
To: Enviro, OCD, EMNRD <OCD.Enviro@emnrd.nm.gov>
Cc: Garcia, Amanda <amanda.garcia@exxonmobil.com>; Romero, Alan <alan.romero1@exxonmobil.com>
Subject: [EXTERNAL] XTO - Extension Request - PLU 29 Big Sinks West CTB nAPP2400930382

Good morning,

XTO is requesting an extension for the current deadlines to complete remedial activities and submitting a report required in 19.15.29.12.B.(1) NMAC at the PLU 29 Big Sinks West CTB, incident numbers nAPP2400930382 (current deadline March 26, 2024) and nAPP2401043023 (current deadline April 7, 2024). In order to complete all remedial activities and submit a report, XTO requests an extension until June 24, 2024.

Please contact me with any questions or concerns.

Respectfully,

Amy C. Ruth

Environmental Advisor

UOG Unconventional Permian/Delaware

amy.ruth@exxonmobil.com

XTO ENERGY, INC. – An ExxonMobil Subsidiary

3104 E. Greene Street | Carlsbad, NM 88220 | M: 432.661.0571

XTO - Extension Request - PLU 29 Big Sinks West CTB NAPP2401043023

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

Fri 4/5/2024 3:18 PM

To:alan.romero1@exxonmobil.com <alan.romero1@exxonmobil.com>
Cc:amy.ruth@exxonmobil.com <amy.ruth@exxonmobil.com>;Sally Carttar <SCarttar@vertex.ca>;Bratcher, Michael, EMNRD <mike.bratcher@emnrd.nm.gov>;Rodgers, Scott, EMNRD <Scott.Rodgers@emnrd.nm.gov>;Velez, Nelson, EMNRD <Nelson.Velez@emnrd.nm.gov>

RE: Incident **#NAPP2401043023**

Alan,

Your request for a 90-day extension to **July 4th, 2024,** is approved. Please include this e-mail correspondence in the remediation and/or closure report.

Robert Hamlet • Environmental Specialist - Advanced

Environmental Bureau

EMNRD - Oil Conservation Division

506 W. Texas Ave.| Artesia, NM 88210

575.909.0302 | robert.hamlet@state.nm.us

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

From: Rodgers, Scott, EMNRD <Scott.Rodgers@emnrd.nm.gov>
Sent: Friday, April 5, 2024 10:55 AM
To: Hamlet, Robert, EMNRD <Robert.Hamlet@emnrd.nm.gov>; Bratcher, Michael, EMNRD <mike.bratcher@emnrd.nm.gov>
Subject: FW: [EXTERNAL] XTO - Extension Request - PLU 29 Big Sinks West CTB nAPP2400930382

Scott Rodgers ● Environmental Specialist – Adv.

Environmental Bureau

EMNRD - Oil Conservation Division

8801 Horizon Blvd. NE, Suite 260 | Albuquerque, NM 87113

505.469.1830 | scott.rodgers@emnrd.nm.gov

http://www.emnrd.nm.gov/ocd

From: Romero, Alan <alan.romero1@exxonmobil.com>
Sent: Friday, April 5, 2024 10:53 AM
To: Enviro, OCD, EMNRD <OCD.Enviro@emnrd.nm.gov>
Cc: Ruth, Amy <amy.ruth@exxonmobil.com>; Ruth, Amy <amy.ruth@exxonmobil.com>; Sally Carttar <SCarttar@vertex.ca>
Subject: [EXTERNAL] XTO - Extension Request - PLU 29 Big Sinks West CTB nAPP2400930382

Good afternoon,

XTO is requesting an extension for the current deadline to complete remedial activities and submitting a report required in 19.15.29.12.B.(1) NMAC at the PLU 29 Big Sinks West CTB, incident number nAPP2401043023 (current deadline April 7, 2024). In order to complete all remedial activities and submit a report, XTO requests an extension until July 6, 2024.

Please contact me with any questions or concerns.

Respectfully,

Alan Romero

Environmental Advisor

Permian BU – New Mexico-Delaware

ExxonMobil Upstream Oil & Gas Unconventional

Direct: (575) 988-3383

alan.romero1@exxonmobil.com

XTO ENERGY, INC. – An ExxonMobil Subsidiary

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State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
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Santa Fe, NM 87505

QUESTIONS

Action 359183

QUESTIONS

Operator: XTO ENERGY, INC 6401 Holiday Hill Road Midland, TX 79707	OGRID: 5380
	Action Number: 359183
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

QUESTIONS

Prerequisites	
Incident ID (n#)	**nAPP2401043023**
Incident Name	**NAPP2401043023 PLU 29 BIG SINKS WEST TB @ 0**
Incident Type	**Produced Water Release**
Incident Status	**Remediation Plan Received**

Location of Release Source	
Please answer all the questions in this group.	
Site Name	PLU 29 Big Sinks West TB
Date Release Discovered	01/08/2024
Surface Owner	Federal

Incident Details	
Please answer all the questions in this group.	
Incident Type	Produced Water Release
Did this release result in a fire or is the result of a fire	No
Did this release result in any injuries	No
Has this release reached or does it have a reasonable probability of reaching a watercourse	No
Has this release endangered or does it have a reasonable probability of endangering public health	No
Has this release substantially damaged or will it substantially damage property or the environment	No
Is this release of a volume that is or may with reasonable probability be detrimental to fresh water	No

Nature and Volume of Release	
Material(s) released, please answer all that apply below. Any calculations or specific justifications for the volumes provided should be attached to the follow-up C-141 submission.	
Crude Oil Released (bbls) Details	*Not answered.*
Produced Water Released (bbls) Details	Cause: Equipment Failure | Gasket | Produced Water | Released: 26 BBL | Recovered: 25 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.*

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QUESTIONS (continued)

Operator: XTO ENERGY, INC 6401 Holiday Hill Road Midland, TX 79707	OGRID: 5380
	Action Number: 359183
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

QUESTIONS

Nature and Volume of Release (continued)	
Is this a gas only submission (i.e. only significant Mcf values reported)	**No, according to supplied volumes this does not appear to be a "gas only" report.**
Was this a major release as defined by Subsection A of 19.15.29.7 NMAC	**Yes**
Reasons why this would be considered a submission for a notification of a major release	**From paragraph A. "Major release" determine using:** **(1) an unauthorized release of a volume, excluding gases, of 25 barrels or more.**
With the implementation of the 19.15.27 NMAC (05/25/2021), venting and/or flaring of natural gas (i.e. gas only) are to be submitted on the C-129 form.	

Initial Response	
The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury.	
The source of the release has been stopped	True
The impacted area has been secured to protect human health and the environment	True
Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices	True
All free liquids and recoverable materials have been removed and managed appropriately	True
If all the actions described above have not been undertaken, explain why	*Not answered.*
Per Paragraph (4) of Subsection B of 19.15.29.8 NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please prepare and attach a narrative of actions to date in the follow-up C-141 submission. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see Subparagraph (a) of Paragraph (5) of Subsection A of 19.15.29.11 NMAC), please prepare and attach all information needed for closure evaluation in the follow-up C-141 submission.	

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

I hereby agree and sign off to the above statement	Name: Melanie Collins Title: Regulatory Analyst Email: Melanie.Collins@exxonmobil.com Date: 01/10/2024

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QUESTIONS (continued)

Operator: XTO ENERGY, INC 6401 Holiday Hill Road Midland, TX 79707	OGRID: 5380
	Action Number: 359183
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

QUESTIONS

Site Characterization	
Please answer all the questions in this group (only required when seeking remediation plan approval and beyond). This information must be provided to the appropriate district office no later than 90 days after the release discovery date.	
What is the shallowest depth to groundwater beneath the area affected by the release in feet below ground surface (ft bgs)	Between 51 and 75 (ft.)
What method was used to determine the depth to ground water	Direct Measurement
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 ½ and 1 (mi.)
Any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)	Between 1 and 5 (mi.)
An occupied permanent residence, school, hospital, institution, or church	Greater than 5 (mi.)
A spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes	Between 1 and 5 (mi.)
Any other fresh water well or spring	Between 1 and 5 (mi.)
Incorporated municipal boundaries or a defined municipal fresh water well field	Greater than 5 (mi.)
A wetland	Between 1 and 5 (mi.)
A subsurface mine	Greater than 5 (mi.)
An (non-karst) unstable area	Between ½ and 1 (mi.)
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)	15000
TPH (GRO+DRO+MRO) (EPA SW-846 Method 8015M)	4172
GRO+DRO (EPA SW-846 Method 8015M)	4052
BTEX (EPA SW-846 Method 8021B or 8260B)	0.4
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	07/01/2024
On what date will (or did) the final sampling or liner inspection occur	09/30/2024
On what date will (or was) the remediation complete(d)	09/30/2024
What is the estimated surface area (in square feet) that will be reclaimed	3600
What is the estimated volume (in cubic yards) that will be reclaimed	185
What is the estimated surface area (in square feet) that will be remediated	3600
What is the estimated volume (in cubic yards) that will be remediated	185
These estimated dates and measurements are recognized to be the best guess or calculation at the time of submission and may (be) change(d) over time as more remediation efforts are completed.	
The OCD recognizes that proposed remediation measures may have to be minimally adjusted in accordance with the physical realities encountered during remediation. If the responsible party has any need to significantly deviate from the remediation plan proposed, then it should consult with the division to determine if another remediation plan submission is required.	

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QUESTIONS (continued)

Operator: XTO ENERGY, INC 6401 Holiday Hill Road Midland, TX 79707	OGRID: 5380
	Action Number: 359183
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

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: Alan Romero Title: Regulatory Analyst Email: alan.romero1@exxonmobil.com Date: 06/27/2024
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.	

District I
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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 (continued)

Operator: XTO ENERGY, INC 6401 Holiday Hill Road Midland, TX 79707	OGRID: 5380
	Action Number: 359183
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

QUESTIONS

Deferral Requests Only	
Only answer the questions in this group if seeking a deferral upon approval this submission. Each of the following items must be confirmed as part of any request for deferral of remediation.	
Requesting a deferral of the remediation closure due date with the approval of this submission	No

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QUESTIONS (continued)

Operator: XTO ENERGY, INC 6401 Holiday Hill Road Midland, TX 79707	OGRID: 5380
	Action Number: 359183
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

QUESTIONS

Sampling Event Information	
Last sampling notification (C-141N) recorded	*{Unavailable.}*

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

Action 359183

CONDITIONS

Operator: XTO ENERGY, INC 6401 Holiday Hill Road Midland, TX 79707	OGRID: 5380
	Action Number: 359183
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

CONDITIONS

Created By	Condition	Condition Date
rhamlet	The Remediation Plan is Conditionally Approved. If a Deferral is requested, all sample points must be vertically/horizontally delineated. Additionally, a formal Deferral Request will need to be submitted to OCD Permitting for review. All samples must be analyzed for all constituents listed in Table I of 19.15.29.12 NMAC. Floor confirmation samples should be delineated/excavated to meet closure criteria standards from Table 1 of the OCD Spill Rule for site assessment/characterization/proven depth to water determination. Sidewall/Edge samples should be delineated/excavated to 600 mg/kg for chlorides and 100 mg/kg for TPH to define the edge of the release. All sidewall samples should be taken from the sidewall of the excavation. Please make sure that the edge of the release extent is accurately defined. Please collect confirmation samples, representing no more than 200 ft2. The work will need to occur in 90 days after the report has been reviewed.	7/3/2024